

**Medical Studies Support MDs Prescribing
Hydroxychloroquine for Early Stage COVID-19
and for Prophylaxis**

**By
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Section 1

Vladimir Zelenko, M.D.

Item #1

Title and Authors of the Published Paper Entitled:

“COVID-19 Outpatients – Early Risk-Stratified Treatment with Zinc Plus Low Dose Hydroxychloroquine and Azithromycin: A Retrospective Case Series Study”

“COVID-19 Outpatients – Early Risk-Stratified Treatment with Zinc Plus Low Dose Hydroxychloroquine and Azithromycin: A Retrospective Case Series Study”

About The Authors



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Based in Munich, Derwand is a medical doctor and life science industry expert with almost 20 years of experience. He currently heads the medical affairs department of a U.S. biotech company in Germany. His engagement and contribution to this study has been private and independent. Before he held various positions in the pharma and biotech industry with national, European and global responsibilities. He holds an M.D. from Johannes Gutenberg University in Mainz, Germany, an MBA from the PFH Private University of Applied Sciences in Göttingen, Germany, and he did his doctorate in cardiovascular physiology.



Professor Martin Scholz

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Item #2

Published Preprint for the Article Entitled:

“COVID-19 outpatients – early risk-stratified treatment with zinc plus low dose hydroxychloroquine and azithromycin: a retrospective case series study”

“COVID-19 outpatients – early risk-stratified treatment with zinc plus low dose hydroxychloroquine and azithromycin: a retrospective case series study”

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ABSTRACT

Objective: To describe outcomes of patients with coronavirus disease 2019 (COVID-19) in the outpatient setting after early treatment with zinc, low dose hydroxychloroquine, and azithromycin (the triple therapy) dependent on risk stratification.

Design: Retrospective case series study.

Setting: General practice.

Participants: 141 COVID-19 patients with laboratory confirmed severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infections in the year 2020.

Main outcome measures: Risk-stratified treatment decision, rate of hospitalization and all-cause death.

Results: Of 335 positively PCR-tested COVID-19 patients, 127 were treated with the triple therapy. 104 of 127 met the defined risk stratification criteria and were included in the analysis. In addition, 37 treated and eligible patients who were confirmed by IgG tests were included in the treatment group (total N=141). 208 of the 335 patients did not meet the risk stratification criteria and were not treated. After 4 days (median, IQR 3-6, available for N=66/141) of onset of symptoms, 141 patients (median age 58 years, IQR 40-67; 73% male) got a prescription for the triple therapy for 5 days. Independent public reference data from 377 confirmed COVID-19 patients of the same community were used as untreated control. 4 of 141 treated patients (2.8%) were hospitalized, which was significantly less ($p<0.001$) compared with 58 of 377 untreated patients (15.4%) (odds ratio 0.16, 95% CI 0.06-0.5). Therefore, the odds of hospitalization of treated patients were 84% less than in the untreated group. One patient (0.7%) died in the treatment group versus 13 patients (3.5%) in the untreated group (odds ratio 0.2, 95% CI 0.03-1.5; $p=0.16$). There were no cardiac side effects.

Conclusions: Risk stratification-based treatment of COVID-19 outpatients as early as possible after symptom onset with the used triple therapy, including the combination of zinc with low dose hydroxychloroquine, was associated with significantly less hospitalizations and 5 times less all-cause deaths.

Keywords: SARS-CoV-2, COVID-19, outpatients, treatment, zinc, hydroxychloroquine, azithromycin

ARTICLE SUMMARY

Strength and limitations of this study

- The first COVID-19 outpatient risk stratification and treatment study
- ▲ Repurposed antimalarial drug hydroxychloroquine at low dose in combination with zinc and azithromycin as a therapeutic approach early in the course of COVID-19 until specific drugs or vaccines are available
- Retrospective case series study with findings that have to be validated in prospective controlled clinical trials
- Only outcome data of the untreated control group of the same community based on public reference was available but no other patient characteristics, clinical symptoms, etc.
- ▲ No conclusion on the efficacy and safety of the used triple therapy related to severely ill hospitalized patients

Item #3

Full Text of the Article Entitled:

“COVID-19 outpatients – early risk-stratified treatment with zinc plus low dose hydroxychloroquine and azithromycin: a retrospective case series study”

INTRODUCTION

In December 2019, the new severe acute respiratory syndrome coronavirus 2 (SARSCoV-2) started as an outbreak in Wuhan, China. This coronavirus has spread rapidly as a pandemic around the world,¹ causing coronavirus disease 19 (COVID-19) pneumonia, acute respiratory distress syndrome (ARDS), cardiac injury, liver and renal injury, thrombosis, and death.²

As of June, 2020, diagnosis and treatment of COVID-19 have been almost exclusively studied from an inpatient perspective, including intensive care with mechanical ventilation. Only one study has described characteristics and key health outcomes of COVID-19 diagnosed patients in an outpatient setting.³ This is surprising as primary care physicians see COVID-19 patients often first. They could play a critical role in early diagnosis, treatment, and management of disease progression and virus spread. This assumption is supported by the established principle in medicine that speed of eradication is linked to the outcome of life-threatening infections.⁴

The early clinical phase of COVID-19 has not been the focus of research until today even though timing of antiviral treatment seems to be critical.⁵ The more optimal window for therapeutic intervention is before the infection spreads from upper to lower respiratory tract and before the severe inflammatory reactions.⁶ Therefore, diagnosis and treatment of COVID-19 outpatients as early as possible, even based on clinical diagnosis only, may have been an underestimated first step to slow down or even stop the pandemic more effectively. Based on clinical application principles of antiviral therapies, as demonstrated in the case of influenza A,⁷ antiviral treatments should be used early in the course of infection.

Due to the lack of vaccines as well as SARS-CoV-2 specific therapies, the proposed use of repurposed antiviral drugs remains a valid practical consideration.⁸ One of the most controversial drugs during the current SARS-CoV-2 pandemic is the well-known oral antimalarial drug hydroxychloroquine (HCQ), routinely used in the treatment of autoimmune diseases like rheumatoid arthritis or lupus.^{9 10} HCQ is currently listed as an essential medication for lupus by the World Health Organization (WHO)¹¹. With more than 5.6 million prescriptions in the United States, HCQ was the 128th most commonly prescribed medication in 2017.¹² In the meantime, first observational studies concluding beneficial therapeutic effects of HCQ as monotherapy or in combination with the antibiotic azithromycin were reported just a few weeks after the start of the SARS-CoV-2 outbreak.¹³ All studies that used HCQ with rather

contradictory results were done with hospitalized and often sicker patients¹³⁻¹⁶ and one publication was recently withdrawn.^{17 18} As of June 2020, no studies with COVID-19 outpatients treated with HCQ at an early stage of the disease have been reported.

Antiviral effects of HCQ are well-documented.¹⁹ It is also known that chloroquine and probably HCQ have zinc ionophore characteristics, increasing intracellular zinc concentrations.²⁰ Zinc itself is able to inhibit coronavirus RNA-dependent RNA polymerase activity (RdRp).²¹ It has been hypothesized that zinc may enhance the efficacy of HCQ in treating COVID-19 patients.²² The first clinical trial results confirming this hypothesis were recently published as preprint.²³ Nevertheless, many studies with HCQ in monotherapy or in combination with the antibiotic azithromycin have been inconclusive so far.¹³⁻¹⁶ In all of these studies, HCQ was used later than 5 days after onset of symptoms when hospitalized patients most likely had already progressed to stage II or III of the disease.⁶ Regardless of the established antiviral effects of zinc and that many COVID-19 patients are prone to zinc deficiencies, dependent on comorbidities and drug treatments,²² none of these studies were designed to include zinc supplementation as combination treatment.

This first retrospective case series study with COVID-19 outpatients was done to show whether a) a simple to perform outpatient risk stratification might allow for rapid treatment decision shortly after onset of symptoms, and b) whether the triple 5-day therapy with zinc, low dose HCQ, and azithromycin might result in less hospitalizations and less fatalities compared with relevant public reference data of untreated patients.

METHODS

SETTING

This retrospective case series study analysed data from COVID-19 outpatients with confirmed severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection in a community in New York State, USA. Outcome of patients who were treated with a specific triple therapy was compared to public reference data of patients in the same community who were not treated with this therapy.

CONFIRMATION OF COVID-19 DIAGNOSIS

COVID-19 diagnosis was confirmed if patients were positively tested for SARS-CoV-2 by means of PCR of nasal or pharyngeal swab specimens (majority of tests by Roche, Basel; 99,1% sensitivity and 99,7% specificity; other tests used with lower frequency included: Diasorin: 500 copies/mL; ThermoFisher: 10 genomic copy equivalents/reaction; Seegene: 1,250 copies/mL; Hologic: TCID₅₀/mL: 1X10⁻²) or retrospectively by IgG detection tests (DiaSorin: Sensitivity 97.6% (\geq 15 days after diagnosis), specificity 99.3%; Diazyme: Sensitivity 91.2%, specificity 97.3%). Only patients who did have a record of a positive test result were included in the analysis. The PCR assays were authorized by the Food and Drug Administration (FDA) without clinical sensitivity/specificity data due to the urgent nature of the pandemic. Only one positive test was necessary for the patient to be included in the retrospective analysis.

PATIENTS

Sequentially consecutive COVID-19 outpatients older than 18 years at diagnosis were included in the analysis as treatment group. All patients were white. Patients received a prescription for the triple therapy only if they met one of the following risk stratification requirements during a medical office-based or telehealth consultation:

Group A: age >60 years; with or without clinical symptoms;

Group B: age ≤ 60 years and shortness of breath (SOB);

Group C: age ≤ 60 years, clinically symptomatic and with at least one of the following comorbidities: hypertension, hyperlipidemia, diabetes, obesity (body mass index ≥ 30 kg/m²), cardiovascular disease, heart failure, history of stroke, history of deep vein thrombosis or pulmonary embolism, asthma, chronic

obstructive pulmonary disease (COPD), other lung disease, kidney disease, liver disease, autoimmune disease, or history of cancer. Pregnant women, if any, were to be included in this group as well.

Laboratory confirmed COVID-19 patients of the same community who were not treated with the described triple therapy and related outcome data represented the untreated control group (public reference data).

PROCEDURE AND TREATMENT

Data of treated patients was collected from electronic health records in the year 2020. Demographics, as reported by the patient, and a current medical history of hypertension, hyperlipidemia, diabetes, obesity (body mass index ≥ 30 kg/m²), cardiovascular disease, heart failure, stroke, asthma, COPD, other lung disease, kidney disease, liver disease, autoimmune disease, history of cancer, thyroid disease psychiatric disorder, or pregnancy were collected.

The presence of the following clinical symptoms of treated patients were documented:

cough/dry cough, fever, SOB, changes of or no smell or taste, sore throat, headache, runny nose/clear rhinorrhea, sinus congestion, diarrhea/vomiting, cold symptoms, feeling sick, weakness, and low back pain. If reported, number of days since onset of symptoms was documented.

The following vital signs, if available, were collected and documented: heart rate (beats per minute), breaths per minute (BPM), systolic and diastolic blood pressure (mmHg), body temperature (°C), oxygen saturation measured by pulse oximetry (O₂ %), body weight (kg), and/or body mass index (BMI).

Main co-medications were characterised based on primary care prescriptions active at the time of diagnosis, were documented as categorical variables and included: betablockers, angiotensin-converting enzyme inhibitors, angiotensin-2 antagonists, calcium channel blockers, hydrochlorothiazide, statins, bronchodilators, antidiabetics, and insulin.

Only diagnosed COVID-19 patients who met the defined risk stratification requirements of group A, B, or C got a prescription for the following triple therapy for 5 consecutive days in addition to standard supportive care: zinc sulfate (220 mg capsule once daily, containing 50 mg elemental zinc), HCQ (200 mg twice daily), and azithromycin (500 mg once daily). No loading dose was used. Patients who did not meet the risk stratification requirements received standard of care to treat common upper respiratory infection. Patients were not treated with HCQ if they had known contraindications, including QT prolongation, retinopathy, or glucose-6-phosphate dehydrogenase (G6PD) deficiency. As usual and

following best practice patients were informed about possible drug related side effects. Reported events, if any, were documented as required.

The selection of the used zinc supplement and drugs, dosages and the combination thereof, were based on treatment guidelines, positive reports from other countries like South Korea, emerging first clinical evidence, and based on the discretion of the treating physicians.

OUTCOME

Two outcomes were studied: COVID-19 related hospital admission and all-cause death during time of follow up of at least 28 days in the treatment group and in the untreated control group (public reference). The outcome of COVID-19 patients of the untreated control group was reported by the responsible health department.

STATISTICAL ANALYSES

Only patients of the treatment group who met the defined risk stratification requirements and who received at least a prescription for HCQ, with or without zinc, for 5 days, were included in the retrospective analysis and were categorized accordingly. If the patient's electronic health record did not include information on a clinical characteristic, it was assumed that the characteristic was not present. In the group of the public reference data only confirmed COVID-19 patients who were not treated in the respective general practice with the triple therapy were included in the analysis. For this untreated control group only outcome data for hospitalization and all cause death was available and used for the statistical comparison with the treatment group.

No sample-size calculations were performed. Descriptive statistics are presented as median and interquartile range (IQR) for continuous variables and frequencies for categorical variables. For comparison with results of other studies means and standard deviations were calculated as needed. Normality of distribution for continuous variables was assessed by the Shapiro-Wilk-Test. A 2-tailed Student's t-test was used for parametric analysis, and a Wilcoxon Signed-Rank test was used for nonparametric data analysis. For calculation of correlation the point biserial correlation coefficient was applied if one variable was dichotomous. Associations between two categorical variables were calculated with the Chi-Square test. Odds ratio (OR) were calculated for comparison of the outcome of the treatment group with the untreated control group. The α : 0.05 was considered as a significance level. The data were

analysed using Microsoft Excel for Microsoft 365 MSO (32-Bit), the Excel add-on Real Statistics, SigmaStat 4, and Sigma Plot 14.0.

PATIENT AND PUBLIC INVOLVEMENT

In this retrospective case series study no patients were involved in the study design or in setting the research questions or the outcome measures directly. No patients were asked to advise on interpretation or writing of results.

STUDY APPROVAL

The study was approved by the Western Institutional Review Board and it was exempt under 45 CFR § 46.104(d)(4). The analysis was conducted with de-identified patient data, according to the USA Health Insurance Portability and Accountability Act (HIPAA), Safe Harbor. For that reason exact dates and locations are not mentioned in this study.

RESULTS

PATIENTS

In accordance with available public reference data, 712 confirmed SARS-CoV-2 PCR positively tested COVID-19 patients were reported for the respective community at the defined time point of the analysis. Of these 712 patients, 335 presented as outpatients at a general practice and 127 were treated with the triple combination therapy. Of these 127 patients, 104 met the risk stratification criteria and were included in the analysis (table 1). 208 patients of the 335 did not meet the defined risk stratification criteria were treated with standard of care and recovered at home. The SARS-CoV-2 infection of 37 additional patients who met the risk stratification criteria and who were also treated with the triple therapy was later confirmed by IgG tests (table 1). These patients were included additionally in the analysis resulting in a total number of 141 patients, all with a confirmed SARS-CoV-2 infection by PCR or IgG tests. None of these patients were lost to follow-up for the defined outcome. The outcome of the remaining N=377 positively tested but not treated COVID-19 patients, e.g. from other practices of the community, served as public reference (fig 1). Analysis of the 141 patients in the treatment group showed that all of these patients (100%) got a prescription of HCQ, 136 (96.5%) of zinc sulfate, and 133 (94.3%) of azithromycin, while 1 patient (0.7%) got doxycycline instead.

BASELINE CHARACTERISTICS OF THE PATIENTS

Table 2 shows the baseline demographics and clinical characteristics of all 141 patients in the treatment group and for the risk stratification groups A, B, and C. 69 patients (49%) belonged to group A, 48 (34%) to group B, and 24 (17%) to group C. Age ranged from 18 to 80 years and the median age was 58 years with an interquartile range (IQR) of 40-67. The median age of group A, B, and C was 67, 39, and 45 years. A total of 103 patients (73.1%) were male with a male-to-female ratio of 2.71. Most common comorbidities included hypertension (28%), obesity (28%), hyperlipidemia (23%), and diabetes (18%), whilst least common ones were liver disease (2%), heart failure (1%), and stroke (1%). One patient was pregnant (1%) at initiation of treatment. There was a positive and significant correlation between age and hypertension ($r=0.3309$, $p=0.001$), hyperlipidemia ($r=0.26306$, $p<0.001$), and cardiovascular disease ($r=0.16757$, $p<0.05$), while asthma was negatively correlated with age ($r=-0.30867$, $p<0.001$).

Median time between onset of clinical symptoms and medical consultation was 4 days (IQR 3-6; available for 66/141 patients, mean 4.8 days \pm 2.7) (table 3). There was no significant correlation between age and days of onset of clinical symptoms to consultation ($p>0.05$). Days from onset of symptoms to consultation were not significantly different between groups ($p>0.05$).

Most common clinical symptoms included cough (87.2%), fever (77.3%), SOB (46.1%), and changes of or no smell or taste (30%), whilst least common ones were sinus congestion (16%), diarrhea/vomiting (5%), and low back pain (3%). Table 4 shows symptoms of all patients and stratified by groups A, B, and C. There was a significant negative correlation between age and changes of smell or taste ($r=-0.43$, $p<0.001$). No patient had a clinical diagnosis of pneumonia.

Table 5 shows vital signs, as they were available, for all patients and by group A, B, and C. Many patients consulted the general practice during the COVID-19 crisis via telehealth so vital signs were not available for all of these patients. The highest proportion of patients had available measurements for heart rate (63%) and pulse oximetry (60%). Vital signs were not significantly different between risk stratification groups ($p>0.05$) except for systolic blood pressure of group A and B ($p<0.05$).

Table 6 summarizes most important co-medications. 16% of patients were taking angiotensin-converting enzyme inhibitors, angiotensin-2-antagonists, hydrochlorothiazide or a combination thereof. The most common long-term therapies at the time of COVID-19 diagnosis were statins (20%), beta-blockers (12%), and insulin (18%).

HOSPITALIZATIONS AND ALL-CAUSE DEATH

In the treatment group 4 of 141 patients were hospitalized, which was significantly less than in the untreated group with 58 of 377 patients (15.4%), (fig 2.), (OR 0.16; [95% CI, 0.06 to 0.5]; $p < 0.001$), (table 7, fig 4). Therefore, the odds of hospitalization of treated patients were 84% less than in the untreated patients. All hospitalized patients were male, one in his twenties, two in their forties, and one in his seventies. Three of the 4 hospitalized patients (75%) belonged to risk stratification group B and one to group A (25%). All patients (100%) reported SOB at time of consultation. Median days from onset of symptoms to consultation were 4 days. Of the treatment group 1 patient had to stay only one day in hospital, 2 other patients were discharged as cured, and 1 patient died (s. below). No patient was on a ventilator.

One of the 141 patients (0.71%) who belonged to treatment group A died after being hospitalized. This patient had a history of cancer and did only take one daily dose of the triple therapy before hospital admission. With 13 of 377 patients (3.5%, fig 3) more patients died in the untreated group (OR 0.2; [95% CI, 0.03 to 1.5]) (table 7, fig 4). The odds of all-cause death of treated patients were 80% less ($p = 0.16$) than in the untreated group.

The 208 patients presenting at the general practice who did not meet the risk stratification requirements and who were not treated with the triple therapy recovered at home and no hospital admissions or deaths were reported.

SAFETY

In general, the triple therapy with zinc, low dose HCQ, and azithromycin was well tolerated. After initiation of treatment 30 of 141 patients (21%) reported weakness, 20 (14%) nausea, 15 (11%) diarrhea, and 2 (1%) rash (table 8). No patient reported palpitations or any cardiac side effect.

DISCUSSION

This first retrospective case series study with COVID-19 outpatients in primary care setting showed that risk-stratified treatment early after onset of clinical symptoms, with the triple therapy zinc, low dose HCQ, and azithromycin was associated with significantly less hospitalizations (odds ratio 0.16; $p < 0.001$) and less all-cause deaths (odds ratio 0.2; $p = 0.16$) in comparison to untreated patients (public reference data) of the same community. Based on the performed risk stratification prevalence of the comorbidities hypertension, hyperlipidemia, and diabetes were the highest in group A (>60 years and clinical

symptoms), asthma and other lung diseases were the highest in group B (<60 years and SOB), and obesity and autoimmune disease were the highest in group C (<60 years, clinical symptoms, and defined comorbidities). Most frequent symptoms of these COVID-19 patients were cough followed by fever while available median body temperature measurements were in a normal range. Almost 50% of risk-stratified and treated patients were suffering from SOB while breaths per minute and blood oxygen saturation were still in the normal range. Median time from onset of symptoms to first medical consultation was 4 days (IQR 3-6). Approximately 16% of patients received co-medications known to be associated with zinc deficiency, such as antihypertensive drugs. No patient experienced any known severe adverse events that were considered drug related during treatment or follow up.

STRENGTHS AND WEAKNESSES OF THE STUDY

At the time of this manuscript submission, only one peer-reviewed study had analyzed the key health outcomes of COVID-19 patients diagnosed in primary care setting.³ Because of this gap in data, the value of this study is multifold. It provides much needed recommendations for risk stratification and a treatment regimen to prevent hospitalization and death of COVID-19 patients. Diagnosis of COVID-19 for all patients in this analysis was confirmed by PCR or IgG tests compared with a recent study in which less than 3% had a diagnosis confirmed by laboratory tests.²⁴ To start the triple therapy as early as possible after symptom onset is critical for treatment success, because SARS-CoV-2 viral load seems to peak at day 5 to 6 after symptom onset²⁵⁻²⁷ and severe cases progress to acute respiratory distress syndrome (ARDS) after only 8 to 9 days.^{28 29} Early antiviral treatment is an established protocol to manage severe disease progression, as was shown, for example, by a cumulative case control study during the 2009 H1N1 influenza pandemic in Canada.³⁰ For patients at high risk for severe viral disease progression, it is recommended to start antiviral therapy as early as possible.^{31 32} Early treatment might be also critically important to effectively reduce SARS-CoV-2 viral load,⁵ and this underscores the role of early intervention by primary care physicians as reported herein.

Further strength of this approach was the simple risk stratification of symptomatic outpatients to determine the need for therapy, a strategy not yet applied in COVID-19 primary care,³³ but routinely implemented in primary care for other diseases.³⁴ Underlying assumptions of the risk stratification used in this setting are different than other recommendations.³⁵ Here, age stratified high risk was defined as >60 years (typically defined as >65 years) to encompass the common increase of comorbidity incidences

in this age group.³⁶ Patients ≤ 60 years with SOB, even without reduced pulse oximetry values, were treated because it was assumed virus will likely spread from upper to lower respiratory tract.³⁷ Also treated were patients ≤ 60 years with clinical symptoms and prognostically relevant comorbidities.³⁵ By applying this risk stratification approach, respective care was tailored to patients with a higher likelihood for hospitalizations or fatalities, which ensured that the medical principles of “patient first” and “doing no harm” were maintained.³⁸ As a result, 62% of COVID-19 patients were treated with standard of care only and recovered at home, and only 38% needed treatment with the triple therapy.

The antiviral potential of HCQ was broadly described *in vitro* and *in vivo*.³⁹⁻⁴¹ HCQ has a long terminal elimination half-life of 32 days in plasma and 50 days in blood.⁴² Therefore, the treatment approach was conservative, with starting dose being the same as maintenance dose and with a short treatment duration of only 5 days, being even more conservative than other recommendations.⁴⁰ HCQ-dependent intracellular increases in pH might directly interfere with pH-dependent SARS-CoV-2 replication.¹⁹ Also, chloroquine and probably HCQ have characteristics of a zinc ionophore resulting in increasing intracellular zinc concentrations.²⁰ The dose of elementary zinc in this study was similar to doses previously studied to successfully prevent infections in the elderly.⁴³ Antiviral effects of zinc against a variety of viruses have been demonstrated during the last decades.⁴⁴ Zinc, in addition to its role as a general stimulant of antiviral

immunity, is known to specifically inhibit coronavirus RNA-dependent RNA polymerase.²¹ Based on HCQ’s ionophore properties, it has been hypothesized that zinc may enhance the efficacy of HCQ in treating COVID-19 patients.²² In addition, zinc might inhibit the serine protease furin.⁴⁵ Furin is expressed on endothelial cells, monocytes/macrophages, and smooth muscle cells in human atherosclerotic plaques⁴⁶ and therefore might play a critical role for the severe cardiovascular complications of COVID-19. As furin might be responsible to favor SARS-CoV-2 spreading compared with other beta coronaviruses^{47 48} and as furin-inhibition protects from certain viral-dependent infections⁴⁹, it may be important to evaluate the potential role of zinc in inhibiting this pathway.

Azithromycin was added to the treatment regimen as preliminary data provides evidence for more efficient or synergic virus elimination in conjunction with bacterial superinfection.^{13 50} Although there is a synergistic antiviral effect between zinc, HCQ, and azithromycin, zinc supplementation may be instrumental for the outcome of patient

populations with severe clinical courses. Zinc deficiency was confirmed in a large number of healthy elderly⁵¹ and in diabetic patients.⁵² In addition, it has been documented that the antihypertensive drugs hydrochlorothiazide, angiotensin-converting-enzyme inhibitors, and angiotensin 2 receptor antagonists can result in an increased urinary excretion of zinc with subsequent systemic zinc deficiency.⁵³ Age, comorbidities, and relevant co-medications align well with the majority of described COVID-19 patients at high risk, including the risk-stratified population of this analysis. Zinc deficiency might explain why certain patient groups seem not to benefit from HCQ in monotherapy. During the 5-day treatment with the triple therapy and during follow up, no severe adverse events were observed and no cases of cardiac arrhythmia were reported in this general practice, which is in accordance with available safety data of more than 300,000 patients.⁵⁴

Inherent to all retrospective analyses, our study has certain limitations such as nonrandomization and blinding of treatment. Also, only the outcome data of the untreated control group based on the public reference was available but no other patient characteristics or clinical symptoms and so no risk adjustment was possible. Therefore, confounding factors and selection bias, among other issues, do exist. The demographic composition of the treatment group might have also had an influence on our findings. Because many physician appointments had to be managed by telehealth, vital parameters were not available for the majority of patients. Viral load and ECG data were not analyzed. Treatment with the triple therapy resulted in a numerically lower rate of all-cause deaths. In the absence of clinical details about the untreated patient group, the lower rate of all-cause death in the treated group was not statistically significant. However, the patients in the treated group were all positively risk-stratified while the risk of the untreated group was obviously lower as this group included high and low-risk patients.

STRENGTHS AND WEAKNESSES IN RELATION TO OTHER STUDIES, DISCUSSING IMPORTANT DIFFERENCES IN RESULTS

In this study, the ratio of males and average age was comparable with a relevant number of other studies, but distribution of comorbidities was not.⁵⁵ The latter was expected because outpatients usually have a different distribution of age and especially of comorbidities than critically ill inpatients. As expected the prevalence of hypertension, hyperlipidemia, and cardiovascular disease correlated positively with age while asthma correlated negatively. Approximately 50% of risk-stratified and treated patients presented with SOB while the parameters breaths per minute and blood oxygen saturation were still within the

normal range. These patients would usually not be considered for hospital admission, although SOB might be considered an alarming early sign of disease progression. Based on the implemented risk stratification, these patients were identified and treated immediately.

In contrast to many other studies, the most frequent symptom was cough and not fever.^{56 57} Changes in smell or taste in one third of patients and a negative correlation with age were similar to findings from other groups.⁵⁸ While mean time from onset of symptoms to treatment was only 4.8 days (median 4 days), previously reported time spans range from 6.3 days,⁵⁹ to 8 days,¹⁶ up to 16.6 days,¹⁴, or was often even not reported.⁶⁰ In most of these studies, COVID-19 disease had most likely already progressed at the time of presentation to stages II or even stage III of the disease.⁶ In

many studies, often only limited information is provided about co-medications and specifically about clinical symptoms at admission.⁶⁰ The latter would be very important to better understand the differences of clinical presentation between inpatients and outpatients, and thus the urgency for early anti-COVID-19 treatment in outpatient setting.⁶¹ The potential of zinc to enhance the antiviral efficacy of HCQ was already described in detail elsewhere.²² This hypothesis was recently confirmed by a study using a similar triple therapy and treatment duration.²³ Zinc added to HCQ and azithromycin resulted in a significantly increased number of patients being discharged, a reduction in mortality, or transfer to hospice. In another study, when a lower dose of 200 mg HCQ twice daily was added to basic treatment, mortality of even critically ill patients was significantly reduced.⁶² These and our findings indicate that proper dosing of HCQ with its long half-life might be key for the favourable outcome of COVID-19 patients. In critical care, drugs with short half-lives are usually preferred. Especially in critically ill COVID-19 patients, higher doses of HCQ may have unforeseeable effects, for example, on insulin sensitivity in obese patients⁶³ and glucose levels in diabetics.⁶⁴

⁶⁵ Besides glucose levels, it is important to closely monitor renal function which is increasingly affected during progression of COVID-19.⁶⁶ Because HCQ is substantially excreted by the kidneys, the risk of toxic reactions is greater in patients with impaired renal function.⁶⁷

POTENTIAL IMPLICATIONS FOR CLINICIANS AND POLICY MAKERS

Clinical experience from severely ill inpatients with pneumonia who were treated with high dose HCQ are not readily transferable to the outpatient setting with upper respiratory disease only. For outpatients

with a median of only 4 days after onset of symptoms, COVID-19 represents a totally different disease and needs to be managed and treated differently.⁶¹ A simple to perform outpatient risk stratification, as shown here, allows rapid treatment decisions and treatment with the triple therapy zinc, low dose HCQ, and azithromycin and may prevent a large number of hospitalizations and probably deaths during the SARS-CoV-2 pandemic. This might also help to avoid overwhelming of the health care systems.

UNANSWERED QUESTIONS AND FUTURE RESEARCH

Almost no general clinical data of COVID-19 outpatients exists and hence responsible experts and stakeholders should ensure a common effort to close this gap by designing studies specifically for primary care setting. Ongoing studies with HCQ should be amended to include combination with zinc. Based on our and others preliminary data, the triple therapy zinc, low dose HCQ, and azithromycin should be used and tested to generate prospective data as soon as possible. As zinc deficiency may play an important role during infection, development, and the clinical course of COVID-19, zinc supplementation in accordance with defined recommended dietary allowances should be evaluated as a simple option for primary prevention. Zinc has a high safety margin and it would be physiologically already available if for example treatment with HCQ is initiated.

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Conflict of interest

The author Roland Derwand is/was at the time of writing an employee of Alexion Pharma Germany GmbH. His engagement and contribution to this study and publication was private and independent from his employer. The author Martin Scholz is/was at the time of writing External Senior Advisor for the company LEUKOCARE in Munich, Germany, and is/was Managing Director at Starts- and -Ups

Consulting, Frankfurt, Germany. Vladimir Zelenko is/was general practitioner in New York State. All three authors confirm that this article content has no conflict of interest.

All authors have completed the ICMJE uniform disclosure form at www.icmje.org/coi_disclosure.pdf and declare: no support from any organisation for the submitted work; no financial relationships with any organisations that might have an interest in the submitted work in the previous three years; no other relationships or activities that could appear to have influenced the submitted work.

References:

1. Wu D, Wu T, Liu Q, et al. The SARS-CoV-2 outbreak: What we know. *Int J Infect Dis* 2020;94:44-48. doi: 10.1016/j.ijid.2020.03.004 [published Online First: 2020/03/17]
2. Atri D, Siddiqi HK, Lang J, et al. COVID-19 for the Cardiologist: A Current Review of the Virology, Clinical Epidemiology, Cardiac and Other Clinical Manifestations and Potential Therapeutic Strategies. *JACC Basic Transl Sci* 2020;5(5):518-36. doi: 10.1016/j.jacbts.2020.04.002 [published Online First: 2020/04/16]
3. PRIETO-ALHAMBRA D, Ballo E, Coma-Redon E, et al. Hospitalization and 30-day fatality in 121,263 COVID-19 outpatient cases. *medRxiv* 2020:2020.05.04.20090050. doi: 10.1101/2020.05.04.20090050
4. Talan DA, Guterman JJ, Overturf GD, et al. Analysis of emergency department management of suspected bacterial meningitis. *Ann Emerg Med* 1989;18(8):856-62. doi: 10.1016/s0196-0644(89)80213-6 [published Online First: 1989/08/01]
5. Gonçalves A, Bertrand J, Ke R, et al. Timing of antiviral treatment initiation is critical to reduce SARS-Cov-2 viral load. *medRxiv* 2020:2020.04.04.20047886. doi: 10.1101/2020.04.04.20047886
6. Siddiqi HK, Mehra MR. COVID-19 illness in native and immunosuppressed states: A clinical-therapeutic staging proposal. *J Heart Lung Transplant* 2020;39(5):405-07. doi: 10.1016/j.healun.2020.03.012 [published Online First: 2020/05/05]
7. Fry AM, Goswami D, Nahar K, et al. Efficacy of oseltamivir treatment started within 5 days of symptom onset to reduce influenza illness duration and virus shedding in an urban setting in Bangladesh: a randomised placebo-controlled trial. *Lancet Infect Dis* 2014;14(2):109-18. doi: 10.1016/s1473-3099(13)70267-6 [published Online First: 2013/11/26]
8. Schlagenhauf P, Grobusch MP, Maier JD, et al. Repurposing antimalarials and other drugs for COVID-19. *Travel Med Infect Dis* 2020;34:101658. doi: 10.1016/j.tmaid.2020.101658 [published Online First: 2020/04/06]
9. Wallace DJ. The use of chloroquine and hydroxychloroquine for non-infectious conditions other than rheumatoid arthritis or lupus: a critical review. *Lupus* 1996;5 Suppl 1:S59- 64. [published Online First: 1996/06/01]
10. Gordon C, Amissah-Arthur MB, Gayed M, et al. The British Society for Rheumatology guideline for the management of systemic lupus erythematosus in adults. *Rheumatology (Oxford)* 2018;57(1):e1-e45. doi: 10.1093/rheumatology/kex286 [published Online First: 2017/10/14]
11. (WHO) WHO. Model List of Essential Medicines 2020 [Available from: <https://list.essentialmeds.org/> accessed 2020/05/23]
12. LLC C. Hydroxychloroquine Sulfate Drug Usage Statistics, United States, 2007 – 2017 2020 [Available from: <https://clincalc.com/DrugStats/Drugs/HydroxychloroquineSulfate> accessed 2020/05/23]
13. Gautret P, Lagier JC, Parola P, et al. Hydroxychloroquine and azithromycin as a treatment of COVID-19: results of an open-label non-randomized clinical trial. *Int J Antimicrob Agents* 2020:105949. doi: 10.1016/j.ijantimicag.2020.105949 [published Online First: 2020/03/25]
14. Tang W, Cao Z, Han M, et al. Hydroxychloroquine in patients mainly with mild to moderate COVID-19: an open-label, randomized, controlled trial. *medRxiv* 2020:2020.04.10.20060558. doi: 10.1101/2020.04.10.20060558
15. Chen J, Liu D, Liu L, et al. [A pilot study of hydroxychloroquine in treatment of patients with moderate COVID-19]. *Zhejiang Da Xue Xue Bao Yi Xue Ban* 2020;49(2):215-19. [published Online First: 2020/05/12]

16. Mahevas M, Tran V-T, Roumier M, et al. No evidence of clinical efficacy of hydroxychloroquine in patients hospitalized for COVID-19 infection with oxygen requirement: results of a study using routinely collected data to emulate a target trial. *medRxiv* 2020:2020.04.10.20060699. doi: 10.1101/2020.04.10.20060699
17. Mehra MR, Ruschitzka F, Patel AN. Retraction—Hydroxychloroquine or chloroquine with or without a macrolide for treatment of COVID-19: a multinational registry analysis. *The Lancet* doi: 10.1016/S0140-6736(20)31324-6
18. The Lancet E. Expression of concern: Hydroxychloroquine or chloroquine with or without a macrolide for treatment of COVID-19: a multinational registry analysis. *The Lancet* doi: 10.1016/S0140-6736(20)31290-3
19. Yang N, Shen HM. Targeting the Endocytic Pathway and Autophagy Process as a Novel Therapeutic Strategy in COVID-19. *Int J Biol Sci* 2020;16(10):1724-31. doi: 10.7150/ijbs.45498 [published Online First: 2020/04/01]
20. Xue J, Moyer A, Peng B, et al. Chloroquine is a zinc ionophore. *PLoS One* 2014;9(10):e109180. doi: 10.1371/journal.pone.0109180 [published Online First: 2014/10/02]
21. te Velthuis AJ, van den Worm SH, Sims AC, et al. Zn(2+) inhibits coronavirus and arterivirus RNA polymerase activity in vitro and zinc ionophores block the replication of these viruses in cell culture. *PLoS Pathog* 2010;6(11):e1001176. doi: 10.1371/journal.ppat.1001176 [published Online First: 2010/11/17]
22. Derwand R, Scholz M. Does zinc supplementation enhance the clinical efficacy of chloroquine/hydroxychloroquine to win today's battle against COVID-19? *Med Hypotheses* 2020;142:109815. doi: 10.1016/j.mehy.2020.109815 [published Online First: 2020/05/15]
23. Carlucci P, Ahuja T, Petrilli CM, et al. Hydroxychloroquine and azithromycin plus zinc vs hydroxychloroquine and azithromycin alone: outcomes in hospitalized COVID-19 patients. *medRxiv* 2020:2020.05.02.20080036. doi: 10.1101/2020.05.02.20080036
24. Boulware DR, Pullen MF, Bangdiwala AS, et al. A Randomized Trial of Hydroxychloroquine as Postexposure Prophylaxis for Covid-19. *New England Journal of Medicine* 2020 doi: 10.1056/NEJMoa2016638
25. Pan Y, Zhang D, Yang P, et al. Viral load of SARS-CoV-2 in clinical samples. *Lancet Infect Dis* 2020;20(4):411-12. doi: 10.1016/s1473-3099(20)30113-4 [published Online First: 2020/02/28]
26. Kim JY, Ko JH, Kim Y, et al. Viral Load Kinetics of SARS-CoV-2 Infection in First Two Patients in Korea. *J Korean Med Sci* 2020;35(7):e86. doi: 10.3346/jkms.2020.35.e86 [published Online First: 2020/02/23]
27. Zou L, Ruan F, Huang M, et al. SARS-CoV-2 Viral Load in Upper Respiratory Specimens of Infected Patients. *N Engl J Med* 2020;382(12):1177-79. doi: 10.1056/NEJMc2001737 [published Online First: 2020/02/20]
28. Huang C, Wang Y, Li X, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet* 2020;395(10223):497-506. doi: 10.1016/s0140-6736(20)30183-5 [published Online First: 2020/01/28]
29. Wang D, Hu B, Hu C, et al. Clinical Characteristics of 138 Hospitalized Patients With 2019 Novel Coronavirus-Infected Pneumonia in Wuhan, China. *Jama* 2020;323(11):1061-9. doi: 10.1001/jama.2020.1585 [published Online First: 2020/02/08]
30. Zarychanski R, Stuart TL, Kumar A, et al. Correlates of severe disease in patients with 2009 pandemic influenza (H1N1) virus infection. *Cmaj* 2010;182(3):257-64. doi: 10.1503/cmaj.091884 [published Online First: 2010/01/23]
31. (CDC) CfDCaP. Influenza Antiviral Medications: Summary for Clinicians 2020 [Available from: <https://www.cdc.gov/flu/professionals/antivirals/summary-clinicians.htm> accessed 2020/05/23 2020]
32. (CDC) CfDCaP. Managing People at High Risk for Severe Varicella 2020 [Available from: https://www.cdc.gov/chickenpox/hcp/index.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov/flu/professionals/antivirals/summary-clinicians.htm accessed 2020/05/23 2020]

33. Esper RB, da Silva RS, Oikawa FTC, et al. Empirical treatment with hydroxychloroquine and azithromycin for suspected cases of COVID-19 followed-up by telemedicine. In: Prevent Senior Institute SP, Brazil, ed. São Paulo, 2020:25.
34. Johnson M, Rigge L, Culliford D, et al. Primary care risk stratification in COPD using routinely collected data: a secondary data analysis. *NPJ Prim Care Respir Med* 2019;29(1):42. doi: 10.1038/s41533-019-0154-6 [published Online First: 2019/12/05]
35. (CDC) CoDCaP. People Who Are at Higher Risk for Severe Illness 2020 [Available from: <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-at-higherrisk.html> accessed 2020/05/23 2020]
36. van den Akker M, Buntinx F, Metsemakers JF, et al. Multimorbidity in general practice: prevalence, incidence, and determinants of co-occurring chronic and recurrent diseases. *J Clin Epidemiol* 1998;51(5):367-75. doi: 10.1016/s0895-4356(97)00306-5 [published Online First: 1998/06/10]
37. Onder G, Rezza G, Brusaferro S. Case-Fatality Rate and Characteristics of Patients Dying in Relation to COVID-19 in Italy. *Jama* 2020 doi: 10.1001/jama.2020.4683 [published Online First: 2020/03/24]
38. Ghaly RF, Knezevic NN. What happened to "Patient first" and "Do no harm" medical principles? *Surg Neurol Int* 2018;9:176. doi: 10.4103/sni.sni_447_17 [published Online First: 2018/09/18]
39. Liu J, Cao R, Xu M, et al. Hydroxychloroquine, a less toxic derivative of chloroquine, is effective in inhibiting SARS-CoV-2 infection in vitro. *Cell Discov* 2020;6:16. doi: 10.1038/s41421-020-0156-0 [published Online First: 2020/03/21]
40. Yao X, Ye F, Zhang M, et al. In Vitro Antiviral Activity and Projection of Optimized Dosing Design of Hydroxychloroquine for the Treatment of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). *Clin Infect Dis* 2020 doi: 10.1093/cid/ciaa237 [published Online First: 2020/03/10]
41. Meo SA, Klonoff DC, Akram J. Efficacy of chloroquine and hydroxychloroquine in the treatment of COVID-19. *Eur Rev Med Pharmacol Sci* 2020;24(8):4539-47. doi: 10.26355/eurrev_202004_21038 [published Online First: 2020/05/07]
42. Tett SE, Cutler DJ, Day RO, et al. Bioavailability of hydroxychloroquine tablets in healthy volunteers. *Br J Clin Pharmacol* 1989;27(6):771-9. doi: 10.1111/j.1365-2125.1989.tb03439.x [published Online First: 1989/06/01]
43. Prasad AS, Beck FW, Bao B, et al. Zinc supplementation decreases incidence of infections in the elderly: effect of zinc on generation of cytokines and oxidative stress. *Am J Clin Nutr* 2007;85(3):837-44. doi: 10.1093/ajcn/85.3.837 [published Online First: 2007/03/09]
44. Read SA, Obeid S, Ahlenstiel C, et al. The Role of Zinc in Antiviral Immunity. *Adv Nutr* 2019;10(4):696-710. doi: 10.1093/advances/nmz013 [published Online First: 2019/07/16]
45. Podsiadlo P, Komiyama T, Fuller RS, et al. Furin inhibition by compounds of copper and zinc. *J Biol Chem* 2004;279(35):36219-27. doi: 10.1074/jbc.M400338200 [published Online First: 2004/05/14]
46. Stawowy P, Kallisch H, Borges Pereira Stawowy N, et al. Immunohistochemical localization of subtilisin/kexin-like proprotein convertases in human atherosclerosis. *Virchows Arch* 2005;446(4):351-9. doi: 10.1007/s00428-004-1198-7 [published Online First: 2005/03/10]
47. Coutard B, Valle C, de Lamballerie X, et al. The spike glycoprotein of the new coronavirus 2019-nCoV contains a furin-like cleavage site absent in CoV of the same clade. *Antiviral Res* 2020;176:104742. doi: 10.1016/j.antiviral.2020.104742 [published Online First: 2020/02/15]
48. Millet JK, Whittaker GR. Host cell entry of Middle East respiratory syndrome coronavirus after two-step, furin-mediated activation of the spike protein. *Proc Natl Acad Sci U S A* 2014;111(42):15214-9. doi: 10.1073/pnas.1407087111 [published Online First: 2014/10/08]

49. Shiryayev SA, Remacle AG, Ratnikov BI, et al. Targeting host cell furin proprotein convertases as a therapeutic strategy against bacterial toxins and viral pathogens. *J Biol Chem* 2007;282(29):20847-53. doi: 10.1074/jbc.M703847200 [published Online First: 2007/06/01]
50. Andreani J, Le Bideau M, Dufлот I, et al. In vitro testing of combined hydroxychloroquine and azithromycin on SARS-CoV-2 shows synergistic effect. *Microb Pathog* 2020;145:104228. doi: 10.1016/j.micpath.2020.104228 [published Online First: 2020/04/29]
51. Ervin RB, Kennedy-Stephenson J. Mineral intakes of elderly adult supplement and nonsupplement users in the third national health and nutrition examination survey. *J Nutr* 2002;132(11):3422-7. doi: 10.1093/jn/132.11.3422 [published Online First: 2002/11/08]
52. Anderson RA, Roussel AM, Zouari N, et al. Potential antioxidant effects of zinc and chromium supplementation in people with type 2 diabetes mellitus. *J Am Coll Nutr* 2001;20(3):212-8. doi: 10.1080/07315724.2001.10719034 [published Online First: 2001/07/11]
53. Braun LA, Rosenfeldt F. Pharmaco-nutrient interactions - a systematic review of zinc and antihypertensive therapy. *Int J Clin Pract* 2013;67(8):717-25. doi: 10.1111/ijcp.12040 [published Online First: 2013/01/03]
54. Lane JCE, Weaver J, Kostka K, et al. Safety of hydroxychloroquine, alone and in combination with azithromycin, in light of rapid wide-spread use for COVID-19: a multinational, network cohort and self-controlled case series study. *medRxiv* 2020:2020.04.08.20054551. doi: 10.1101/2020.04.08.20054551
55. Richardson S, Hirsch JS, Narasimhan M, et al. Presenting Characteristics, Comorbidities, and Outcomes Among 5700 Patients Hospitalized With COVID-19 in the New York City Area. *Jama* 2020;323(20):2052-9. doi: 10.1001/jama.2020.6775 [published Online First: 2020/04/23]
56. Lovato A, de Filippis C. Clinical Presentation of COVID-19: A Systematic Review Focusing on Upper Airway Symptoms. *Ear Nose Throat J* 2020:145561320920762. doi: 10.1177/0145561320920762 [published Online First: 2020/04/15]
57. Chen T, Wu D, Chen H, et al. Clinical characteristics of 113 deceased patients with coronavirus disease 2019: retrospective study. *Bmj* 2020;368:m1091. doi: 10.1136/bmj.m1091 [published Online First: 2020/03/29]
58. Giacomelli A, Pezzati L, Conti F, et al. Self-reported olfactory and taste disorders in SARS-CoV-2 patients: a cross-sectional study. *Clin Infect Dis* 2020 doi: 10.1093/cid/ciaa330 [published Online First: 2020/03/28]
59. Million M, Lagier JC, Gautret P, et al. Early treatment of COVID-19 patients with hydroxychloroquine and azithromycin: A retrospective analysis of 1061 cases in Marseille, France. *Travel Med Infect Dis* 2020:101738. doi: 10.1016/j.tmaid.2020.101738 [published Online First: 2020/05/11]
60. Geleris J, Sun Y, Platt J, et al. Observational Study of Hydroxychloroquine in Hospitalized Patients with Covid-19. *New England Journal of Medicine* 2020 doi: 10.1056/NEJMoa2012410
61. Risch HA. Early Outpatient Treatment of Symptomatic, High-Risk Covid-19 Patients that Should be Ramped-Up Immediately as Key to the Pandemic Crisis. *Am J Epidemiol* 2020 doi: 10.1093/aje/kwaa093 [published Online First: 2020/05/28]
62. Yu B, Li C, Chen P, et al. Low dose of hydroxychloroquine reduces fatality of critically ill patients with COVID-19. *Sci China Life Sci* 2020:1-7. doi: 10.1007/s11427-020-1732-2 [published Online First: 2020/05/18]
63. Mercer E, Rekedal L, Garg R, et al. Hydroxychloroquine improves insulin sensitivity in obese non-diabetic individuals. *Arthritis Res Ther* 2012;14(3):R135. doi: 10.1186/ar3868 [published Online First: 2012/06/09]
64. Pareek A, Chandurkar N, Thomas N, et al. Efficacy and safety of hydroxychloroquine in the treatment of type 2 diabetes mellitus: a double blind, randomized comparison with pioglitazone. *Curr Med Res Opin* 2014;30(7):1257-66. doi: 10.1185/03007995.2014.909393 [published Online First: 2014/03/29]
65. Gupta A. Real-World Clinical Effectiveness and Tolerability of Hydroxychloroquine 400 Mg in Uncontrolled Type 2 Diabetes Subjects who are not Willing to Initiate Insulin Therapy (HYQ-Real-World Study). *Curr*

Diabetes Rev 2019;15(6):510-19. doi: 10.2174/1573399815666190425182008 [published Online First: 2019/11/13]

66. Ronco C, Reis T, Husain-Syed F. Management of acute kidney injury in patients with COVID-19. *Lancet Respir Med* 2020 doi: 10.1016/s2213-2600(20)30229-0 [published Online First: 2020/05/18]

67. Plaquenil drug monograph, Concordia Pharmaceuticals Inc.: U.S. Food & Drug Administration (FDA); 2017 [Available from: https://www.accessdata.fda.gov/drugsatfda_docs/label/2017/009768s037s045s047lbl.pdf accessed 2020/06/04 2020]

Tables and Figures

Table 1. COVID-19 Diagnostics by PCR and IgG tests of Patients in the Treatment Group				
COVID-19 Diagnostics – no. (%)	Risk Stratified Group A (N=69)	Risk Stratified Group B (N=48)	Risk Stratified Group C (N=24)	All Patients Treatment Group (N=141)
SARS-CoV-2 – PCR Test	51 (74)	39 (81)	14 (58)	104 (74)
SARS-CoV-2 – IgG Test	18 (26)	9 (19)	10 (42)	37 (26)

Table 2. Baseline Demographics and Clinical Characteristics of Patients in the Treatment Group*				
Characteristics	Risk Stratified Group A (N=69)	Risk Stratified Group B (N=48)	Risk Stratified Group C (N=24)	All Patients Treatment Group (N=141)
Median age (IQR) – years	67 (64-69)	39 (24-47)	45 (36-50)	58 (40-67)
Male sex – no. (%)	46 (67)	40 (83)	17 (71)	103 (73)
Coexisting conditions – no. (%)				
Any condition	44 (64)	31 (65)	24 (100)	99 (70)
Hypertension	27 (39)	4 (8)	8 (33)	39 (28)
Hyperlipidemia	21 (30)	7 (15)	5 (21)	33 (23)
Diabetes	16 (23)	4 (8)	5 (21)	25 (18)
Obesity	20 (29)	10 (21)	10 (42)	40 (28)
Cardiovascular Disease	9 (13)	1 (2)	3 (13)	13 (9)
Heart Failure	2 (3)	0 (0)	0 (0)	2 (1)
Stroke	1 (2)	0 (0)	0 (0)	1 (1)
Asthma	2 (3)	9 (19)	2 (8)	13 (9)
COPD	0 (0)	0 (0)	0 (0)	0 (0)
Other Lung Disease	6 (9)	5 (10)	4 (17)	15 (11)
Kidney Disease	1 (2)	3 (6)	2 (8)	6 (4)
Liver Disease	1 (2)	2 (4)	0 (0)	3 (2)
Autoimmune Disease	2 (3)	4 (8)	4 (17)	10 (7)
History of Cancer	6 (9)	2 (4)	1 (4)	9 (6)
Thyroid Disease	7 (10)	4 (8)	2(8)	13 (9)
Psychiatric Disorder	7 (10)	4 (8)	5 (21)	16 (11)
Pregnancy	-	-	1 (4)	1 (1)

*IQR interquartile range

Table 3. Patients with Reported Days Since Onset of Symptoms in the Treatment Group

Characteristics	Risk Stratified Group A (N=69)	Risk Stratified Group B (N=48)	Risk Stratified Group C (N=24)	All Patients Treatment Group (N=141)
Patients with reported days – no. (%)	32 (46)	25 (48)	9 (38)	66 (47)
Median days since onset of symptoms – (IQR)	4 (3-6)	3 (3-6.5)	4 (3-5.5)	4 (3-6)

Table 4. COVID-19 Diagnostics and Baseline Reported Clinical Symptoms of Patients in the Treatment Group

Clinical Symptoms – no. (%)	Risk Stratified Group A (N=69)	Risk Stratified Group B (N=48)	Risk Stratified Group C (N=24)	All Patients Treatment Group (N=141)
Cough/Dry Cough	60 (87)	39 (81)	24 (100)	123 (87)
Fever	53 (77)	38 (79)	18 (75)	109 (77)
Shortness of Breath (SOB)	17 (25)	48 (100)	0 (0)	65 (46)
Changes of or no smell or taste	21 (30)	19 (40)	2 (8)	42 (30)
Sore Throat	19 (28)	8 (17)	7 (29)	34 (24)
Headache	19 (28)	6 (13)	7 (29)	32 (23)
Runny Nose/Clear Rhinorrhea	16 (23)	8 (17)	4 (17)	28 (20)
Sinus Congestion	10 (15)	9 (19)	4 (17)	23 (16)
Diarrhea/Vomiting	1 (2)	5 (10)	1 (4)	7 (5)
Cold Symptoms	31 (45)	16 (33)	12 (50)	59 (42)
Feels Sick	40 (58)	38 (79)	17 (71)	95 (67)
Weakness	44 (64)	22 (46)	11 (46)	77 (55)
Low Back Pain	3 (4)	0 (0)	1 (4)	4 (3)

Table 5. Physical Examination – Vital Signs of Patients in the Treatment Group

Parameter		Patients with available Parameters – no. (%) of N=141
Median Heart Rate – beats per minute – (IQR)	86 (80-94)	89 (63)
Median Breaths per Minute [BPM] – (IQR)	16 (15-18)	43 (31)
Median Systolic Blood Pressure [mmHg] – (IQR)	126 (120-139)	66 (47)
Median Diastolic Blood Pressure [mmHg] – (IQR)	80 (74-85.5)	66 (47)
Median Body Temperature [°C] – (IQR)	37.2 (37-37.8)	79 (56)
Median Pulse Oximetry [O ₂ %] – (IQR)	97 (96-98)	85 (60)
Median Body Weight [kg] – (IQR)	88 (72.6-98.4)	43 (31)
Median Body Mass Index [kg/m ²] – (IQR)	32.2 (28.5-36.3)	30 (21)

Table 6. Co-Medications of Patients in the Treatment Group

Drug Class	Patients – no. (%) of N=141
Betablockers	17 (12)
Angiotensin-converting enzyme inhibitors	8 (6)
Angiotensin-2 Antagonists	13 (9)
Calcium channel blockers	8 (6)
Hydrochlorothiazide	6 (4)
Statins	28 (20)
Bronchodilators	10 (7)
Antidiabetics	11 (8)
Insulin	26 (18)

Table 7. Clinical Outcome in the Treated Patient Group versus the Untreated Patient Group

Outcome	Treated Group – no. (%) of N=141	Untreated Group – no. (%) of N=377	Odds Ratio	95% CI	P-value
Hospitalization	4 (2.8)	58 (15.4)	0.16	0.06- 0.5	<0.001
All-cause death	1 (0.71)	13 (3.5)	0.2	0.03- 1.5	0.16

CI=Confidence Interval

Table 8. Summary of Adverse Events	
Event	Patients – no. (%) of N=141
Any adverse event	67 (48)
Weakness	30 (21)
Nausea	20 (14)
Diarrhea	15 (11)
Rash	2 (1)

Figure 1

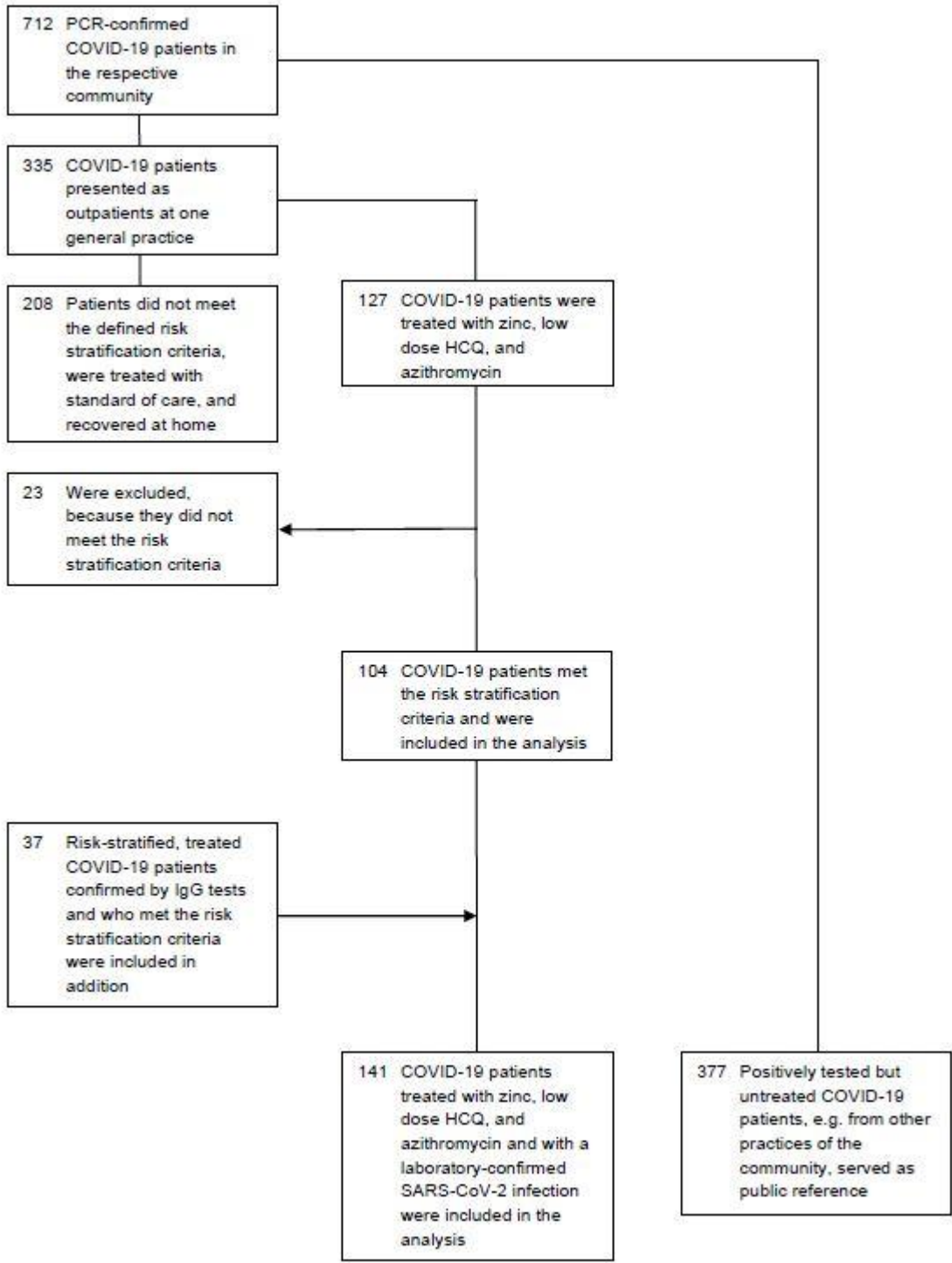


Figure 1: Study population. N=141 COVID-19 patients, all with a laboratory-confirmed SARS-CoV-2 infection, were included in the analysis as treated group. N=377 positively tested COVID-19 patients of the public reference were included in the analysis as untreated group.

Figure 2

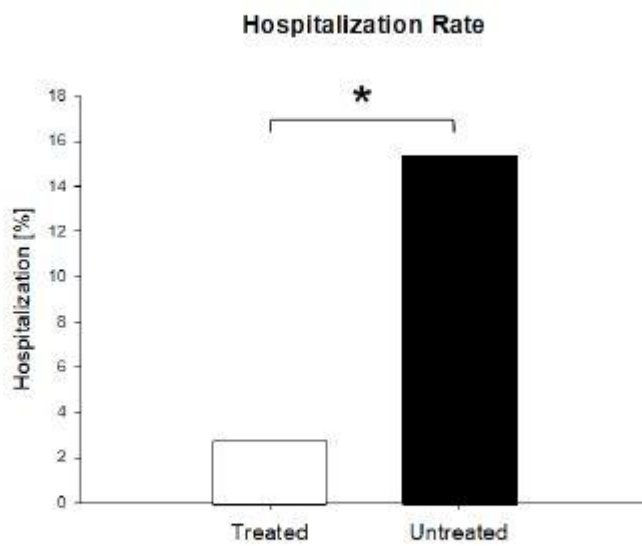


Figure 2: Treatment with the triple therapy zinc, low dose HCQ, and azithromycin was associated with significantly less hospitalizations in comparison to untreated patients of the public reference data. $\chi^2(1, N=518)=14.17, *P<0.001$

Figure 3

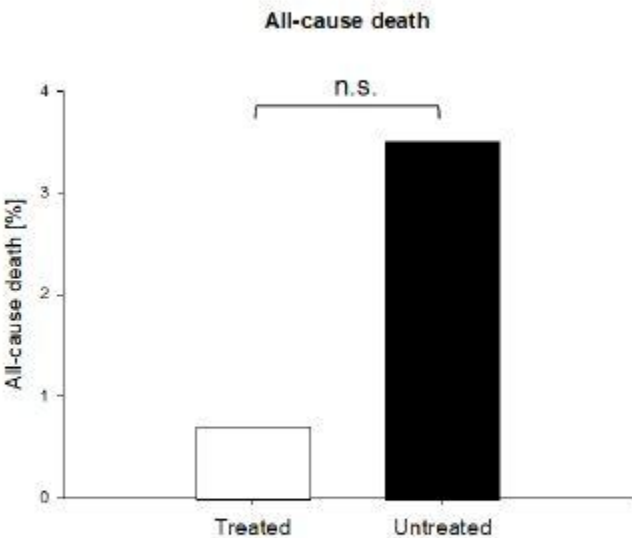


Figure 3: Treatment with the triple therapy zinc, low dose HCQ, and azithromycin was associated with numerically less all-cause deaths in comparison to untreated patients of the public reference data. n.s.=not significant. $\chi^2(1, N=518)=1.98, P=0.16$

Figure 4

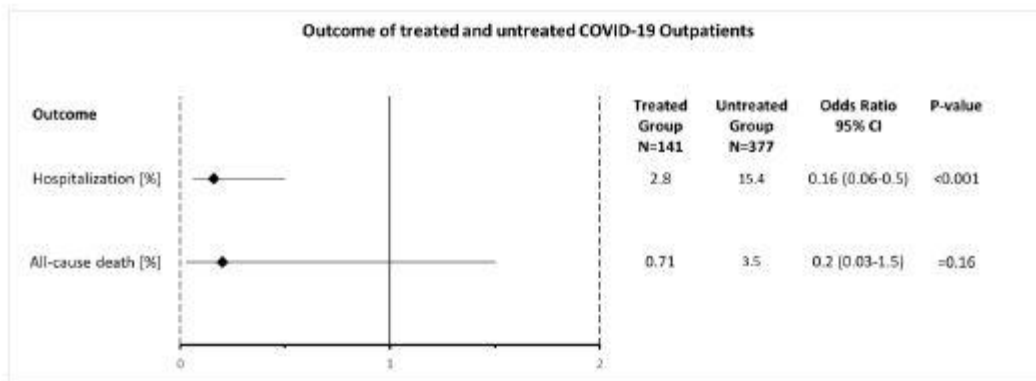


Figure 4: The odds of hospitalization of the treated patient group were 84% less than in the untreated patient group, and was statistically significant ($p < 0.001$). The odds of all-cause death of the treated patient group were 80% less than in the untreated patient group, but did not reach statistical significance ($p = 0.16$). CI=Confidence Interval.

Section Two

Harvey A. Risch, M.D., PH.D.

Item #1

Abstract for:

“Early Outpatient Treatment of Symptomatic, High-Risk Covid-19 Patients that Should be Ramped-Up Immediately as Key to the Pandemic Crisis”

ABSTRACT

More than 1.6 million Americans have been infected with SARS-CoV-2 and >10 times that number carry antibodies to it. High-risk patients presenting with progressing symptomatic disease have only hospitalization treatment with its high mortality. An outpatient treatment that prevents hospitalization is desperately needed. Two candidate medications have been widely discussed: remdesivir, and hydroxychloroquine+azithromycin. Remdesivir has shown mild effectiveness in hospitalized inpatients, but no trials have been registered in outpatients. Hydroxychloroquine+azithromycin has been widely misrepresented in both clinical reports and public media, and outpatient trials results are not expected until September. Early outpatient illness is very different than later hospitalized florid disease and the treatments differ. Evidence about use of hydroxychloroquine alone, or of hydroxychloroquine+azithromycin in inpatients, is irrelevant concerning efficacy of the pair in early high-risk outpatient disease. Five studies, including two controlled clinical trials, have demonstrated significant major outpatient treatment efficacy. Hydroxychloroquine+azithromycin has been used as standard-of-care in more than 300,000 older adults with multicomorbidities, with estimated proportion diagnosed with cardiac arrhythmias attributable to the medications 47/100,000 users, of which estimated mortality is <20%, 9/100,000 users, compared to the 10,000 Americans now dying each week. These medications need to be widely available and promoted immediately for physicians to prescribe.

Item #2

Original Unedited Accepted Manuscript for

“Early Outpatient Treatment of Symptomatic, High-Risk Covid-19 Patients that Should be Ramped-Up Immediately as Key to the Pandemic Crisis”

Early Outpatient Treatment of Symptomatic, High-Risk Covid-19 Patients that Should be Ramped-Up Immediately as Key to the Pandemic Crisis

Harvey A. Risch

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Conflict of Interest: Dr. Risch acknowledges past advisory consulting work with two of the more than 50 manufacturers of hydroxychloroquine, azithromycin and doxycycline. This past work was not related to any of these three medications and was completed more than two years ago. He has no ongoing, planned or projected relationships with any of these companies, nor any other potential conflicts-of-interest to disclose.

Running Head: Outpatient Treatment of High-Risk Covid-19

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Abstract

More than 1.6 million Americans have been infected with SARS-CoV-2 and >10 times that number carry antibodies to it. High-risk patients presenting with progressing symptomatic disease have only hospitalization treatment with its high mortality. An outpatient treatment that prevents hospitalization is desperately needed. Two candidate medications have been widely discussed: remdesivir, and hydroxychloroquine+azithromycin. Remdesivir has shown mild effectiveness in hospitalized inpatients, but no trials have been registered in outpatients.

Hydroxychloroquine+azithromycin has been widely misrepresented in both clinical reports and public media, and outpatient trials results are not expected until September. Early outpatient illness is very different than later hospitalized florid disease and the treatments differ. Evidence about use of hydroxychloroquine alone, or of hydroxychloroquine+azithromycin in inpatients, is irrelevant concerning efficacy of the pair in early high-risk outpatient disease. Five studies, including two controlled clinical trials, have demonstrated significant major outpatient treatment efficacy. Hydroxychloroquine+azithromycin has been used as standard-of-care in more than 300,000 older adults with multicomorbidities, with estimated proportion diagnosed with cardiac arrhythmias attributable to the medications 47/100,000 users, of which estimated mortality is <20%, 9/100,000 users, compared to the 10,000 Americans now dying each week. These medications need to be widely available and promoted immediately for physicians to prescribe.

Keywords: Azithromycin; Covid-19; Doxycycline; Hydroxychloroquine; Remdesivir; SARSCoV-2; Zinc

Abbreviations: AZ, azithromycin; CDC, US Centers for Disease Control; FAERS, FDA Adverse Events Reporting System database; FDA, US Food and Drug Administration; HCQ, hydroxychloroquine; NIH, US National Institutes of Health; QTc, corrected electrocardiogram Q-T-wave duration; RCT, randomized controlled trial; RR, relative risk; R_t , epidemic reproduction number at time t .

Introduction

Aside from the now more than 1.6 million Americans found through testing and public health reporting to be infected with SARS-CoV-2, seropositivity studies in California (1, 2), Colorado (3) and New York City and State (4) suggest that some 10-50-fold larger numbers of people carry antibodies to the virus. The workforce and effort required to carry out contact tracing on these tens of millions of Americans is not practical. While these studies have generated some media criticism, recent similar studies of blood donor samples in the Netherlands found 3% with SARS-CoV-2 antibodies (5), and 5% among household volunteers in Spain (6). Even allowing for some degree of false-positivity of these antibody tests, they still indicate that appreciably larger fractions of the population have been infected than have been characterized by identified reported cases. “Flattening the curve,” by social distancing, mask wearing and staying at home, serves to reduce hospital loads and spread them out over time, but to-date has pushed infection reproduction numbers R_t down only to about 1.0 (7), thus even if maintained, over time very large numbers of people in the US may eventually get the infection. The great majority of infected people are at low risk for progression or will manifest the infection asymptotically. For the rest, outpatient treatment is required that prevents disease progression and hospitalization. Exposures will occur as isolation policies are lifted and people begin to mix, even with various degrees of public isolation such as mask usage and physical separation still in place. Thus, *the key to returning society toward normal functioning and to preventing huge loss of life, especially among older individuals, people with comorbidities, African Americans and Hispanics and Latinos, is a safe, effective and proactive outpatient treatment that prevents hospitalization in the first place.*

All treatments have costs and benefits. In an ideal world, randomized double-blinded controlled clinical trials establish evidence for the relative degree of benefit, and if large enough, for estimates of the frequencies of adverse events. These trials take time to conduct: to get formal approval, to get funding, to enroll enough eligible patients, to wait for the outcomes to occur, and to analyze the data. In the context of the Covid-19 pandemic, we are presently averaging about 10,000 deaths per week in the US, under moderately strong isolation policies that have put more than 36 million people out of work. Results of currently ongoing or planned randomized trials for use of a number of outpatient medications are many weeks or months off, and there are no guarantees that the results for these agents, even if statistically significant, will show sufficient magnitudes of effectiveness to be useful clinically. We are rapidly reaching a breaking point in the ability to maintain the status quo; states have begun the process of lifting their restrictions, and we thus need to evaluate what evidence we do have for promising outpatient treatments.

Review of Evidence

Based on laboratory and other preliminary evidence to-date, among many others, two candidate medication regimens have been widely discussed for outpatient treatment: remdesivir (Gilead Sciences, Inc., Foster City, California), and hydroxychloroquine (HCQ) plus azithromycin (AZ). Remdesivir has been studied extensively in laboratory work and in animals (8) and for other viral diseases and has good biological properties, suggesting utility for SARSCoV-2 infection. In a study of remdesivir compassionate use in 53 hospitalized patients with severe disease (9), 13% died, which appears lower than what might have been expected without treatment, though greater than the deaths in the placebo arm of the Adaptive COVID-19 Treatment Trial (more below). In a randomized, controlled but relatively underpowered trial in severe non-ventilated hospitalized patients in China (10), benefit vs placebo was not able to be

shown either in improvement or mortality. An appreciable fraction of the remdesivir patients left the trial early because of serious adverse events. The Adaptive COVID-19 Treatment Trial of hospitalized patients with advanced lung disease has released initial results (11) showing that patients on remdesivir had 31% faster recovery than patients on placebo, medians 11 vs 15 days, which difference was statistically significant, but these results involve patients who did indeed survive. Mortality of the two groups, 8.0% vs 11.6%, respectively, was better for remdesivir but not significantly so (P -value=.059). More specific for consideration here, remdesivir has not been studied in outpatient use. The Scientists to Stop Covid-19 “secret” Report (12, p. 7) recommends widespread use of remdesivir, and “as early in infection as possible,” but no actual evidence as yet shows in humans that it would be helpful for routine outpatient circumstances and disease. The FDA recently approved use of remdesivir in the current public-health emergency circumstances (13), but only for patients with “severe disease defined as $SpO_2 \leq 94\%$ on room air, requiring supplemental oxygen, mechanical ventilation, or extracorporeal membrane oxygenation (ECMO)” and “administered in an in-patient hospital setting via intravenous (IV) infusion by a healthcare provider.” This approval seems specifically not to allow outpatient use. Symptomatic outpatient infection is a pathologically and clinically different disease than the life-threatening inpatient acute respiratory distress syndrome caused by SARS-CoV-2, thus there is little reason to think that the same treatment would be useful for both (14). In any event, none of 20 currently registered trials is scheduled to provide data on outpatient use of remdesivir, thus we may not know whether it could be used effectively to prevent hospitalization of symptomatic outpatients unless or until it is actually tried that way.

The other suggestion is the combined regimen of HCQ+AZ (or its variant HCQ+doxycycline). The FDA has recently issued guidance (15) to physicians and the general public advising that the combination HCQ+AZ should not generally be used except by critically ill hospital inpatients or in the context of registered clinical trials. The NIH panel for Covid-19

treatment guidelines say essentially the same (16), and a similar statement has been released by the major cardiology societies (17). Numerous reviews of HCQ efficacy and adverse events have been and continue to be published. To my knowledge, *all of these reviews have omitted the two critical aspects of reasoning about these drugs: use of HCQ combined with AZ or with doxycycline, and use in the outpatient setting.* For example, the Veterans' Administration Medical Centers study (18) examined treated *hospitalized* patients and was fatally flawed (19). The same point about outpatient use of the combined medications has been raised by a panel of distinguished French physicians (20) in petitioning their national government to allow outpatient use of HCQ+AZ. It appears that the FDA, NIH and cardiology society positions have been based upon theoretical calculations about potential adverse events and from measured physiologic changes rather than from current real-world mortality experience with these medications and that their positions should be revised. In reviewing all available evidence, I will show that HCQ+AZ and HCQ+doxycycline are generally safe for short-term use in the early treatment of most symptomatic high-risk outpatients, where not contraindicated, and that they are effective in preventing hospitalization for the overwhelming majority of such patients. If these combined medications become standard-of-care, they are likely to save an enormous number of lives that would otherwise be lost to this endemic disease.

What is the evidence for these assertions? Similar to remdesivir, 16 clinical trials of HCQ+AZ are listed in the ClinicalTrials.gov database (21). Of these, only five involve treating outpatients with the combined HCQ+AZ regimen (Web Table 1). For the earliest trial, between now and September, assuming a flat epidemic curve of 10,000 deaths per week, I estimate that approximately 180,000 more deaths will occur in the US before the trial results are known. The CDC has estimated substantially greater numbers of deaths (22).

In this context, we cannot afford the luxury of perfect knowledge and must evaluate, now and on an ongoing basis, the evidence for benefit and risk of these medications (23). Available

evidence of efficacy of HCQ+AZ has been repeatedly described in the media as “anecdotal,” but most certainly is not. The evidence is not perfect either. Each piece of evidence, contained in each study, must be carefully considered and not dismissed because in an ideal world such evidence would fall in a lower part of the evidence-quality triangle. Furthermore, and most critical to the correct understanding of what evidence is available, *evidence for single agents cannot be extrapolated to apply to combined agents, evidence for one biochemical form of a drug cannot be extrapolated to another form, and even more importantly, evidence for utility or lack thereof or toxicity in hospitalized patients cannot be extrapolated to apply to outpatient use*, outpatient use comprising the sole argument for application that I am making in this review.

Thus for example, studies of chloroquine or HCQ used alone do not bear upon evidence for efficacy of HCQ+AZ or HCQ+doxycycline. This point has been argued forcefully by the French doctors (20). The first study of HCQ+AZ (24) was controlled but not randomized or blinded, and involved 42 patients in Marseilles, France. This study showed a 50-fold benefit of HCQ+AZ vs standard-of-care, with P -value=.0007. In the study, six patients progressed, stopped medication use and left the trial before the day-6 planned outcome measure of swabsampled nasopharyngeal viral clearance. Reanalysis of the raw study data elsewhere (25) and by myself shows that including these six patients does not much change the 50-fold benefit. What does change the magnitude of benefit is presentation with asymptomatic or upper respiratorytract infection, vs lower respiratory-tract infection, the latter cutting the efficacy in half, 25-fold vs standard-of-care. This shows that the sooner these medications are used, the better their effectiveness, as would be expected for viral early respiratory disease. The average start date of medication use in this study was day-4 of symptoms. This study has been criticized on various grounds that are not germane to the science, but the most salient criticism is the lack of randomization into the control and treatment groups. This is a valid general scientific criticism, but does not represent epidemiologic experience in this instance. If the study had shown a 2-fold

or perhaps 3-fold benefit, that magnitude of result could be postulated to have occurred because of subject-group differences from lack of randomization. However, the 25-fold or 50-fold benefit found in this study is not amenable to lack of randomization as the sole reason for such a huge magnitude of benefit. Further, the study showed a significant, 7-fold benefit of taking HCQ+AZ over HCQ alone, P -value=.035, which cannot be explained by differential characteristics of the controls, since it compares one treatment group to the other, and the treated subjects who received AZ had more progressed pneumonia than the treated subjects receiving HCQ alone, which should otherwise have led to worse outcomes. The study has also been described as “small,” but that criticism only applies to studies not finding statistical significance. Once a result has exceeded plausible chance finding, greater statistical significance does not contribute to evidence for causation (26). No different conclusion would have resulted had a study with 1000 patients found the same 50-fold benefit but with a P -value of 10^{-10} . Study size limitation only applies to studies having findings within the play of chance. That is not the case here.

A second study of the Marseilles group (27) involved 1061 patients tested positive for SARS-CoV-2 and treated with HCQ+AZ for at least 3 days and followed for at least 9 days. The authors state “No cardiac toxicity was observed.” Good clinical outcome and virological cure were seen in 973 patients (92%). Five patients died, and the remainder were in various stages of recovery.

The third piece of evidence involves the cohort of 1450 patients treated by Dr. Vladimir Zelenko of Monsey, NY. Dr. Zelenko has released a two-page report (28) describing his clinical reasoning and procedures, dosing conditions and regimen, and patient results through April 28. Symptomatic patients presenting to Dr. Zelenko were treated with five days of HCQ+AZ+zinc sulfate if they were considered high-risk, as evidenced by one or more of: age 60 years or older; high-risk comorbidities; body-mass index>30; mild shortness of breath at presentation. Patients

were considered to have Covid-19 based on clinical grounds and started treatment as soon as possible following symptom onset, rather than delaying for test results before starting treatment. Of the 1450 patients, 1045 were classified as low-risk and sent home to recuperate without active medications. No deaths or hospitalizations occurred among them. Of the remaining 405 treated with the combined regimen, 6 were ultimately hospitalized and 2 died. No cardiac arrhythmias were noted in these 405 patients.

The fourth relevant study was a controlled non-randomized trial of HCQ+AZ in 636 symptomatic high-risk outpatients in São Paulo, Brazil (29). All consecutive patients were informed about the utility and safety profile of the medications and offered the treatment, and those who declined (n=224) comprised the control group. Patients were monitored daily by telemedicine. The study outcome was need for hospitalization, defined as clinically worsening condition or significant shortness of breath (blood oxygen saturation <90%). Even though the severities of all of the recorded flu-like signs and symptoms and of important comorbidities (diabetes, hypertension, asthma, stroke) were substantially greater in the treated patients than the controls, the need for hospitalization was significantly lower, 1.2% in patients starting treatment before day 7 of symptoms, 3.2% for patients starting treatment after day 7, and 5.4% for controls, P -value<.0001. No cardiac arrhythmias were reported in the 412 treated patients. The most common side effect of treatment was diarrhea (16.5%), but 12.9% of treated patients presented with diarrhea before treatment began.

Finally, a small study is ongoing in a long-term care facility in Long Island, NY. This study has been employing HCQ+doxycycline rather than HCQ+AZ for treatment of high-risk Covid-19 patients. Doxycycline itself has antiviral activity against SARS-CoV-2 at in vitro concentrations 5.6 μ M median (30). Among the first 54 residents treated in the Long Island study, 6 were hospitalized and 3 (5.6%) died (31). An unofficial update of these data indicates that of about 200 high-risk patients treated with HCQ+doxycycline, 9 (4.5%) have died.

The two non-randomized but controlled trials provide important evidence, if not “proof,” for the major efficacy of early use of HCQ+AZ against SARS-CoV-2 infection in symptomatic high-risk outpatients. What can be said about the uncontrolled large case series of treated patients? Standard published case reports provide clinical evidence of the possibility of an exposure-outcome relationship, but not of the regularity, magnitude or representativeness of such a relationship. The same can be said of case series reports, meaning that subject entry into the series is not necessarily well-defined and no denominator information is provided from which to gauge what the series represents. However, a large series in the context of known risks of mortality or adverse events can allow for ballpark estimates of the denominator and thus provide a reasonable frame of reference for whether the outcomes likely represent beneficial or harmful results. For example, among Connecticut cases 60 years of age or older, at present the mortality is 20% (32). Thus, it would be ballpark to estimate that some 20% of the 1466 treated high-risk patients in the Zelenko and Marseilles cohorts would have died without outpatient HCQ+AZ treatment, 293 patients, compared to the 7 who did die. An alternative is to use the 12-13% mortality of hospitalized patients in the placebo arms of the remdesivir trials (10, 11). This would give about 180 expected deaths.

Adverse Events

Both proposed drug regimens have shown side effects. Remdesivir, in its phase-3 trial of 10-day vs 5-day therapeutic courses in hospitalized patients, produced a range of adverse events in more than 70% of patients in both treatment arms (33). Adverse events requiring medication discontinuation were many fewer, 5% in the 5-day group and 10% in the 10-day group. In the Chinese trial, 12% of remdesivir patients stopped the medication before the end of the 10-day treatment because of drug-related adverse events (10).

For HCQ+AZ use, the argued issue concerns fatal cardiac arrhythmias: the warnings issued by the FDA, the NIH and the cardiology societies. Indeed, both HCQ and AZ produce QT prolongation, rare instances of fatal Torsades de Pointes and long QT-interval syndrome. A number of essays by cardiologists published in *JAMA* and other journals have anxiously warned about these risks, but have not examined mortality from them. The sole question is whether these fatal events, or even any fatal cardiac arrhythmia events, would occur with enough frequency that general treatment of non-contraindicated high-risk outpatients by HCQ+AZ would outweigh benefit in preventing hospitalization and mortality. A number of studies have examined hospital inpatient use, but these studies have had major flaws discussed at length in the literature, not least of which is that patients hospitalized with multiple medical problems and more-advanced disease do not represent the mortality experience of outpatient use of these medications in patients otherwise well enough not to be hospitalized. One source of data on mortality associated with these medications is the FDA FAERS database (34). Examination of the database for adverse events reported from the beginning of the database in 1968 through 2019 and into the beginning of 2020, shows for hydroxychloroquine 1064 adverse event reports including 200 deaths for the total of cardiac causes that could be both specifically and broadly classified as rhythm-related. Of these, 57 events including 10 deaths were attributed to Torsades de Pointes and long QT-interval syndrome combined. This concerns the entirety of HCQ use over more than 50 years of data, likely millions of uses and of longer-term use than the 5 days recommended for Covid-19 treatment. For AZ use, the numbers of reported Torsades de Pointes and long QT-interval syndrome events total 37, of which 2 deaths. FAERS data are generated by patient, physician and pharmacist report initiation and likely underrepresent true event occurrences. However, even if the true numbers were 10-fold larger, they would still be minuscule compared to the amounts of medication usage. How much the risk of QT prolongation would be enhanced with HCQ and AZ taken together is unknown, but the

Physicians' Desk Reference (35) says that coadministration of these medications risks “additive QT prolongation.” Not multiplicative. “Pharmacokinetic drug interactions associated with the highest risk of TdP include antifungal agents, macrolide antibiotics (except azithromycin)” (36, p. 139). Nevertheless, even if the combined HCQ+AZ produced a 10-fold higher incidence of fatal Torsades de Pointes and long QT-interval syndrome than either agent alone, and even if both events were 10-fold underreported in FAERS, thus hypothetically giving 1200 fatal events, that would still be very small compared to the millions of uses of these medications that the FAERS database represents. Therefore, while it is established that HCQ+AZ lengthens the QTc interval by 18-55ms on average (37-40), in 40, 84, 90 and 98 hospitalized severely ill patients in the four studies, respectively, treated with these medications and having this lengthening, a total of one case of Torsade de Pointes occurred and it was not fatal—there were no deaths.

Substantial fractions of these hospitalized patients were taking diuretics, which may be contraindicated for HCQ+AZ use in the first place. This arrhythmia issue is a real, physiologically measurable effect of the use of these combined medications, but fatal arrhythmia outcomes are so rare that they are of much lesser clinical significance than the hospitalization and mortality that the drugs prevent. This fact is also clear from the lack of any cardiac arrhythmia events or arrhythmia mortality noted in the 405 Zelenko patients or the 1061 Marseilles patients or the 412 Brazil patients. Patients were not enrolled in these studies if they had known histories of QTc prolongation. History of cardiac arrhythmia or other possible contraindications for use of HCQ or AZ or doxycycline is a normal part of workup and clinical judgement in physician choice to use these medications and how to monitor the patients (see Web Appendix).

Further evidence of the real-world unimportance of arrhythmia and other cardiovascular adverse event endpoints of HCQ+AZ use is given in the large Oxford-based record-linkage study (41, 42). Fourteen large medical-records databases were examined for all-cause mortality and

for 15 specified classes of adverse events among hundreds of thousands of patients with rheumatoid arthritis who had used these drugs. First, 323,122 users of HCQ+AZ were compared to 351,956 users of HCQ+amoxicillin. No significant difference in all-cause mortality was seen: as reported by the authors, relative risk (RR)=1.36, P -value=.10, and as I calculate from the data provided by the authors in their supplement to the paper (42), RR=1.18, P -value=.37; either way, a null association within the range of chance. However, the authors selectively presented from among the 15 analyzed endpoints the three most significant associations: cardiovascular mortality RR=2.19, P -value=.0088; chest pain/angina RR=1.15, P -value=.0027; and heart failure RR=1.22, P -value=.027. What is misrepresented in the authors' presentation of these data in this way is that these three outcomes were not individually specified to be of more interest than any of the other 12 specific outcomes that they examined, and they did not correct their calculated levels of statistical significance for the 15 classes of outcomes. In lay terms, a fishing expedition. When accounting is done, by the standard Bonferroni correction of multiple comparisons, the respective P -values are .12, .040 and .35. The large amount of data in this study thus shows that there is no significant relationship of HCQ+AZ use vs HCQ+amoxicillin use for any of the 15 outcomes specified or for all-cause mortality, except a just-barely significant association with chest pain/angina, with a 15% higher risk which even if a true finding would still be of little clinical import for a relatively infrequent outcome in the context of the mortality to be saved by HCQ+AZ use in widespread symptomatic high-risk outpatient Covid-19 treatment.

Second, the stated concern of the FDA and NIH advisories and the cardiology society opinion restricting use of HCQ+AZ was for fatal Torsades de Pointes and long QT-interval syndrome, two rare types of cardiac arrhythmias, as well as for cardiac arrhythmias in general. The Oxford study (41, 42) examined cardiac arrhythmia outcomes and obtained for its random effects meta-analysis result, RR=1.08, P -value=.36 for HCQ+AZ use vs HCQ+amoxicillin use.

The fixed-effects meta-analysis $RR=1.04$, $P\text{-value}=.41$. This study clearly demonstrates that cardiac arrhythmia adverse events are not appreciably increased by combining HCQ with AZ. The same study compared HCQ use to sulfasalazine use and again found no difference in cardiac arrhythmia risk: for HCQ, a slightly lower $RR=0.89$, $P\text{-value}=.13$. The subjects analyzed in the Oxford study were largely older adults with multiple comorbidities in addition to rheumatoid arthritis.

Finally, the Oxford study allows for a direct estimate of the number of arrhythmia events attributable to HCQ+AZ use (41, 42). Among 306,106 people taking sulfasalazine (which is known not to produce QT prolongation), 877 with cardiac arrhythmias were identified, 0.287%. In 320,589 people taking HCQ+AZ, 1,068 had arrhythmias, 0.333%. The difference, 0.047% or 47/100,000 older multicomorbidity patients taking HCQ+AZ, is attributable to the HCQ+AZ use. These are events, not fatalities. As noted above, fatalities according to FAERS comprise <20% of HCQ-related arrhythmia events. The maintenance HCQ dose in the Oxford study patients, 200 mg/day, gives as large or larger plasma drug levels as five days of HCQ at 400 mg/day, the recommended dose for outpatient Covid-19. These very small numbers of arrhythmias, as well as the null results in this very large empirical study should therefore put to rest the anxieties about population excess mortality of HCQ+AZ outpatient use, either from cardiac arrhythmias, or as mortality from all causes.

This discussion thus shows that the FDA, NIH and cardiology society warnings about cardiac arrhythmia adverse events, while appropriate for theoretical and physiological considerations about use of these medications, are not borne out in mortality in real-world usage of them. Treatment-failure mortality will be much higher, but even that pales in comparison to the lives saved. It would therefore be incumbent upon all three organizations to reevaluate their positions as soon as possible. It is unclear why the FDA, NIH and cardiology societies made their recommendations about HCQ+AZ use now, when the Oxford study (41, 42) analyzed

323,122 users of HCQ+AZ compared to 351,956 users of HCQ+amoxicillin, i.e., that the combination of HCQ+AZ has been in widespread standard-of-care use in the US and elsewhere for decades, use comparable to HCQ+amoxicillin as if it just involved an alternate antibiotic choice, this use predominantly in older adults with multiple comorbidities, with no such strident warnings about the use given during that time. I note that since doxycycline is believed to cause even fewer cardiac arrhythmias than AZ, in patients where that is a concern (43), the long-term care-facility evidence suggests that HCQ+doxycycline likely will work about as well.

Discussion

Given that a detailed and dispassionate review of all of the available relevant evidence leads to conclusions about outpatient HCQ+AZ use different than those of the FDA and NIH panels (which comprise wider expertise than the cardiology societies), I address how different underlying scientific worldviews might be involved. This is particularly reflected in the Scientists to Stop Covid-19 position about remdesivir use “as early as possible,” i.e., early outpatient use implied (12, p. 5). All but one of the scientists on the Scientists to Stop Covid-19 panel are laboratory or clinical scientists; only one is an epidemiologist. Their recommendation for remdesivir use as early as possible was made without either FDA approval or RCT evidence of efficacy in the outpatient context. This recommendation therefore appears to be an extrapolation from animal and laboratory data and from use in severely ill hospitalized patients. However, a history of epidemiology shows numerous instances of failed extrapolation from animals to humans. “Animal research on almost any topic of epidemiologic interest is so heterogeneous and inadequately synthesized that it is possible to selectively assemble a body of evidence from the animal and in-vitro studies that support almost any epidemiologic result.” (44, p. 221) For example, some carcinogens have been affirmed in animal studies but not shown in human studies (acrylamide, alar, cyclamate, red dye #2, saccharin) (44). This is in part why the

FDA has an approval system of phased RCTs leading to safety and efficacy of use in humans, *in the specific contexts* in which the drug is intended. It is not a question of off-label use, but of who are the patients for which to use the medication. For Covid-19, inpatient acute respiratory distress syndrome is typically a florid immune-system overreaction, whereas initial outpatient illness is a viral multiplication problem involving the beginnings of immune response. These are different diseases. Thus, how well remdesivir might perform in outpatients won't be known until it is tried in typical outpatient circumstances, whether in RCTs or in any other unbiased systematic study of such use. Further, to the degree that remdesivir is similar in temporal characteristics to an antiviral like Tamiflu, it would be used in general societal contexts where patients must first recognize that they might have symptoms of the disease and not something else and go to their physicians or clinics for care, and either be rapidly tested positive with an assay that has negligible false negatives, or be symptomatic enough for the disease to be clinically distinguished and diagnosed, but definably positive in this way not more than two days after symptoms start. This is a very narrow temporal window to be definitive and to obtain full antiviral effectiveness, and could be difficult to achieve in general in the mass-treatment circumstances that we are facing. So regardless of the strength of the *implied* evidence of outpatient efficacy when given shortly after the start of symptoms, remdesivir efficacy might be substantially less in the context of actual population outpatient usage. This is another reason why empirical studies of medication use in the full context of application are needed.

The extrapolation from laboratory theory to empirical use also seems to underlie resistance to the idea that combined HCQ regimens could work for early outpatient use. HCQ is known to interfere with toll-like receptor signaling, reducing dendritic cell activation and immune response. This would seem to be counterproductive for suppressing SARS-CoV-2 multiplication in early treatment. Again, in extrapolation from physiologic theory to human data, the epidemiologic data are definitive. The fact that epidemiologic data to-date show strong

evidence for efficacy of combined HCQ+AZ in early outpatient treatment, even if not “proof” yet at the level of several successful RCTs, is evidence that this medication regimen works in that context. The clash in scientific worldviews is that basic and clinical scientists seem to feel that biological and drug-development evidence for medication use in non-human and nonoutpatient contexts can be extrapolated to recommendations for outpatient use without benefit of RCT evidence but don’t accept epidemiologic evidence without RCTs, whereas epidemiologists have had career experience with laboratory and animal evidence that did not hold up under epidemiologic study, but do reason by including all types of epidemiologic study designs and derive causal conclusions in the standard way following Hill’s Aspects (26) on the basis of strong totality of evidence, sometimes even without RCT evidence. There are contexts where each approach is valid. However, it is not my point to say that remdesivir has little evidence to support its potential outpatient utility, only efficacy considerations that have not been addressed and that could lead to lack of efficacy under general use, but that HCQ+AZ has been directly studied in actual early high-risk outpatient use with all of its temporal considerations and found empirically to have sufficient epidemiologic evidence for its effective and safe employment that way, and that requiring delay of such general use until availability of additional RCT evidence is untenable because of the ongoing and projected continuing mortality. No studies of Covid-19 outpatient HCQ+AZ use have shown higher mortality with such use than without, cardiac arrhythmias included, thus there is no empirical downside to this combined medication use.

Some of my medical colleagues still prefer to wait until more studies are done and stronger evidence such as from RCTs becomes available, and government and professional advisory panels do reevaluate the evidence. I strongly urge these panels to reconsider the data and arguments discussed above. Substantial fractions of physicians treating Covid-19 patients in Europe and elsewhere report use of HCQ+AZ: 72% in Spain, 49% in Italy, 41% in Brazil, 39% in Mexico, 28% in France, 23% in the US, 17% in Germany, 16% in Canada, 13% in the UK

(45), much of the non-US use in outpatients. HCQ+AZ has been standard-of-care treatment at the four New York University hospitals, where a recent study showed that adding zinc sulfate to this regimen significantly cut both intubation and mortality risks by almost half (46). The French physicians are insistent that with careful clinical judgement and supervision, these medications are safe and should be used as early as possible for outpatients, and they provide a detailed clinical guide to their use (20). Until we have quantitative evidence for the utility and safety of other medications for preventing hospitalization and mortality in high-risk Covid-19 outpatients, the urgency of current mass mortality requires an immediate application of the best that we have available, even if knowledge is imperfect and even if yet unproven to the standards of doubleblinded RCTs. This problem will get even worse as states and cities yield to the acute pressure at this moment to begin lifting stay-at-home restrictions and even more people become infected. Some people will have contraindications and will need other agents for treatment or to remain in isolation. But for the great majority, I conclude that HCQ+AZ and HCQ+doxycycline, preferably with zinc (47) can be this outpatient treatment, at least until we find or add something better, whether that could be remdesivir or something else. It is our obligation not to stand by, just “carefully watching,” as the old and infirm and inner city of us are killed by this disease and our economy is destroyed by it and we have nothing to offer except high-mortality hospital treatment. We have a solution, imperfect, to attempt to deal with the disease. We have to let physicians employing good clinical judgement use it and informed patients choose it. There is a small chance that it may not work. But the urgency demands that we at least start to take that risk and evaluate what happens, and if our situation does not improve we can stop it, but we will know that we did everything that we could instead of sitting by and letting hundreds of thousands die because we did not have the courage to act according to our rational calculations.

References

1. Bendavid E, Mulaney B, Sood N, et al. COVID-19 antibody seroprevalence in Santa Clara County, California. Preprints. 2020.
(<https://doi.org/10.1101/2020.04.14.20062463>). Accessed April 21, 2020.
2. Los Angeles County Public Health. USC-LA County Study: Early results of antibody testing suggest number of COVID-19 infections far exceeds number of confirmed cases in Los Angeles County. April 20, 2020.
<http://publichealth.lacounty.gov/phcommon/public/media/mediapubhpdetail.cfm?prid=23>
28. Accessed May 7, 2020.
3. Sullum J. Antibody tests in Colorado highlight the huge gap between confirmed COVID-19 cases and total infections. April 17, 2020. <https://reason.com/2020/04/17/antibodytests-in-colorado-highlight-the-huge-gap-between-confirmed-covid-19-cases-and-totalinfections/>. Accessed May 7, 2020.
4. New York State Office of the Governor. Amid ongoing COVID-19 pandemic, Governor Cuomo announces results of completed antibody testing study of 15,000 people showing 12.3 percent of population has COVID-19 antibodies. May 2, 2020. <https://www.governor.ny.gov/news/amid-ongoing-covid-19-pandemic-governor-cuomoannounces-results-completed-antibody-testing>. Accessed May 7, 2020.
5. Sterling T. Dutch study suggests 3% of population may have coronavirus antibodies. Reuters, April 16, 2020. <https://www.reuters.com/article/us-health-coronavirusnetherlands-study/dutch-study-suggests-3-of-population-may-have-coronavirusantibodies-idUSKCN21Y102>. Accessed May 7, 2020.
6. Instituto de Salud Carlos III. Estudio ENE-Covid19: Primera Ronda Estudio Nacional de Sero-Epidemiología de la Infección por SARS-COV-2 en España. Informe Preliminar 13 de Mayo de

2020.

<https://www.isciii.es/Noticias/Noticias/Paginas/Noticias/PrimerosDatosEstudioENECOV19.aspx> and <https://bit.ly/2Z0ptQ0>. Accessed May 14, 2020.

7. Xu J, Hussain S, Wei S, et al. Associations of stay-at-home order and face-masking recommendation with trends in daily new cases and deaths of laboratory-confirmed COVID-19 in the United States. Preprints. 2020. (<https://doi.org/10.1101/2020.05.01.20088237>). Accessed May 7, 2020.
8. Williamson BN, Feldmann F, Schwarz B, et al. Clinical benefit of remdesivir in rhesus macaques infected with SARS-CoV-2. Preprints. 2020. (<https://doi.org/10.1101/2020.04.15.043166>). Accessed May 7, 2020.
9. Grein J, Ohmagari N, Shin D, et al. Compassionate use of remdesivir for patients with severe Covid-19. N Engl J Med. 2020 Apr 10. <https://www.nejm.org/doi/full/10.1056/NEJMoa2007016>. Accessed April 21, 2020.
10. Wang Y, Zhang D, Du G, et al. Remdesivir in adults with severe COVID-19: a randomised, double-blind, placebo-controlled, multicentre trial. Lancet 2020 Apr 29. [https://doi.org/10.1016/S0140-6736\(20\)31022-9](https://doi.org/10.1016/S0140-6736(20)31022-9). Accessed April 21, 2020.
11. ACTT Trial. NIH clinical trial shows remdesivir accelerates recovery from advanced Covid-19. April 29, 2020. <https://www.niaid.nih.gov/news-events/nih-clinical-trialshows-remdesivir-accelerates-recovery-advanced-covid-19>. Accessed April 29, 2020.
12. Scientists to Stop COVID19. March and April 2020. https://s.wsj.net/public/resources/documents/Scientists_to_Stop_COVID19_2020_04_23_FINAL.pdf. Accessed May 7, 2020.
13. US Food & Drug Administration. remdesivir EUA Letter of Authorization. May 1, 2020. <https://www.fda.gov/media/137564/download>. Accessed May 7, 2020.

14. Bauchner H, Fontanarosa PB. Randomized clinical trials and COVID-19: managing expectations. JAMA May 4, 2020. <https://jamanetwork.com/journals/jama/fullarticle/2765696>. Accessed May 7, 2020.
15. US Food & Drug Administration. FDA Drug Safety Communication: FDA cautions against use of hydroxychloroquine or chloroquine for COVID-19 outside of the hospital setting or a clinical trial due to risk of heart rhythm problems. April 24, 2020. <https://www.fda.gov/media/137250/download>. Accessed May 7, 2020.
16. COVID-19 Treatment Guidelines Panel. Coronavirus Disease 2019 (COVID-19) Treatment Guidelines. National Institutes of Health. <https://covid19treatmentguidelines.nih.gov/>. Accessed May 21, 2020
17. Roden DM, Harrington RA, Poppas A, et al. Considerations for drug interactions on QTc in exploratory COVID-19 (coronavirus disease 2019) treatment. Circulation 2020 Apr 8. <https://doi.org/10.1161/CIRCULATIONAHA.120.047521>. Accessed April 21, 2020.
18. Magagnoli J, Narendran S, Pereira F, et al. Outcomes of hydroxychloroquine usage in United States veterans hospitalized with Covid-19. Preprints. 2020. (<https://doi.org/10.1101/2020.04.16.20065920>). Accessed April 16, 2020.
19. Million M, Roussel Y, Raoult D. Response to Magagnoli, MedRxiv, 2020. Preprints. 2020. (<https://www.mediterranee-infection.com/wp-content/uploads/2020/04/Responseto-Magagnoli.pdf>). Accessed May 7, 2020
20. Guerin V, Lardenois T, Levy P, et al. Covid-19: Etude rétrospective chez 88 sujets avec 3 approches thérapeutiques différentes. April 30, 2020. https://stopcovid19.today/wpcontent/uploads/2020/04/COVID_19_RAPPORT_ETUDE_RETROSPECTIVE_CLINIQUE_ET_THERAPEUTIQUE_200430.pdf. Accessed May 7, 2020.
21. US National Library of Medicine. ClinicalTrials.gov. <https://clinicaltrials.gov/ct2/search/advanced>. Accessed May 7, 2020.

22. CDC Centers for Disease Control and Prevention. COVID-19 Forecasts.
<https://www.cdc.gov/coronavirus/2019-ncov/covid-data/forecasting-us.html>. Accessed May 7, 2020.
23. Catillon M, Zeckhauser R. Unleash the Data on COVID-19. Harvard Kennedy School for Business and Government. Mossavar-Rahmani Center.
https://www.hks.harvard.edu/centers/mrcbg/news-events/COVID_Zeckhauser. Accessed April 30, 2020.
24. Gautret P, Lagier J-C, Parola P, et al. Hydroxychloroquine and azithromycin as a treatment of COVID-19: results of an open-label non-randomized clinical trial. *Int J Antimicrob Agent* 2020 Mar 17. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7102549/>. Accessed April 10, 2020.
25. Lover AA. Quantifying treatment effects of hydroxychloroquine and azithromycin for Covid-19: A secondary analysis of an open label non-randomized clinical trial. Preprints. 2020.
(<https://doi.org/10.1101/2020.03.22.20040949>). Accessed April 10, 2020.
26. Hill AB. The environment and disease: association or causation? *Proc R Soc Med* 1965;58(5):295-300. <https://doi.org/10.1177/003591576505800503>. Accessed April 21, 2020.
27. Million M, Lagier J-C, Gautret P, et al. Early treatment of 1061 COVID-19 patients with hydroxychloroquine and azithromycin, Marseille, France. April 20, 2020.
<https://www.mediterranee-infection.com/wp-content/uploads/2020/04/MS.pdf>. Accessed May 2, 2020.
28. Zelenko V. To all medical professionals around the world. April 28, 2020.
<https://docs.google.com/document/d/1pjgHlqIZuKOziN3txQsN5zz62v3K043pR3DdhEmcos/>. Accessed April 28, 2020.
29. Barbosa Esper R, Souza da Silva R, Oikawa FTC, et al. Empirical treatment with hydroxychloroquine and azithromycin for suspected cases of COVID-19 followed-up by

- telemedicine. April 15, 2020. <https://pgibertie.files.wordpress.com/2020/04/2020.04.15-journal-manuscript-final.pdf>. Accessed April 30, 2020.
30. Gendrot M, Andreani J, Jardot P, et al. In vitro antiviral activity of doxycycline against SARS-CoV-2. April 14, 2020. https://www.mediterranee-infection.com/wpcontent/uploads/2020/04/Dox_Covid_pre-print.pdf. Accessed April 30, 2020.
31. ABC Eyewitness News. Coronavirus News: Long Island doctors embrace combination drug therapy in fighting COVID-19. April 13, 2020. <https://abc7ny.com/coronavirustreatment-long-island-news-nassau-county/6093072/>. Accessed April 14, 2020.
32. State of Connecticut. COVID-19 Update May 07, 2020. <https://portal.ct.gov/-/media/Coronavirus/CTDPHCOVID19summary5072020.pdf>. Accessed May 7, 2020.
33. Gilead Pharmaceuticals. Gilead announces results from phase 3 trial of investigational antiviral remdesivir in patients with severe COVID-19. April 29, 2020. <https://www.gilead.com/news-and-press/press-room/press-releases/2020/4/gileadannounces-results-from-phase-3-trial-of-investigational-antiviral-remdesivir-in-patientswith-severe-covid-19>. Accessed May 7, 2020.
34. US Food & Drug Administration. FDA Adverse Events Reporting System (FAERS) Public Dashboard. <https://fis.fda.gov/sense/app/d10be6bb-494e-4cd2-82e4-0135608ddc13/sheet/7a47a261-d58b-4203-a8aa-6d3021737452/state/analysis>. Accessed April 21, 2020.
35. PDR Prescribers' Digital Reference. hydroxychloroquine sulfate - Drug Summary. <https://www.pdr.net/drug-summary/Plaquenil-hydroxychloroquine-sulfate-1911>. Accessed May 10, 2020.
36. Tisdale JE. Drug-induced QT interval prolongation and torsades de pointes: Role of the pharmacist in risk assessment, prevention and management. *Can Pharm J (Ott)* 2016;149:139-152. <https://journals.sagepub.com/doi/10.1177/1715163516641136>. Accessed April 21, 2020.

37. Bessière F, Rocchia H, Delinière A, et al. Assessment of QT intervals in a case series of patients with coronavirus disease 2019 (COVID-19) infection treated with hydroxychloroquine alone or in combination with azithromycin in an intensive care unit. *JAMA Cardiol*, May 1, 2020.
<https://jamanetwork.com/journals/jamacardiology/fullarticle/2765633>. Accessed May 10, 2020.
38. Chorin E, Dai M, Shulman E, et al. The QT interval in patients with SARS-CoV-2 infection treated with hydroxychloroquine/azithromycin. Preprints. 2020.
<https://doi.org/10.1101/2020.04.02.20047050>). Accessed April 21, 2020.
39. Mercurio NJ, Yen CF, Shim DJ, et al. Risk of QT interval prolongation associated with use of hydroxychloroquine with or without concomitant azithromycin among hospitalized patients testing positive for coronavirus disease 2019 (COVID-19). *JAMA Cardiol* May 1, 2020.
<https://jamanetwork.com/journals/jamacardiology/fullarticle/2765631>. Accessed May 10, 2020.
40. Ramireddy A, Chugh H, Reinier K, et al. Experience with hydroxychloroquine and azithromycin in the COVID-19 pandemic: Implications for QT interval monitoring. Preprints. 2020.
<https://doi.org/10.1101/2020.04.22.20075671>). Accessed April 25, 2020.
41. Lane JCE, Weaver J, Kostka K, et al. Safety of hydroxychloroquine, alone and in combination with azithromycin, in light of rapid wide-spread use for COVID-19: a multinational, network cohort and self-controlled case series study. Preprints. 2020.
<https://doi.org/10.1101/2020.04.08.20054551>). Accessed April 25, 2020.
42. Lane JCE, Weaver J, Kostka K, et al. Safety of hydroxychloroquine, alone and in combination with azithromycin, in light of rapid wide-spread use for COVID-19: a multinational, network cohort and self-controlled case series study (Supplement). Preprints. 2020.
<https://www.medrxiv.org/content/10.1101/2020.04.08.20054551v1.supplementarymaterial>). Accessed April 25, 2020.
43. Giudicessi JR, Noseworthy PA, Friedman PA, et al. Urgent guidance for navigating and circumventing the QTc prolonging and torsadogenic potential of possible pharmacotherapies for

COVID-19. JMCP: Mayo Clin Proc 2020 Apr 7. (<https://doi.org/10.1016/j.mayocp.2020.03.024>).

Accessed April 25, 2020.

44. Bracken MB. Why are so many epidemiology associations inflated or wrong? Does poorly conducted animal research suggest implausible hypotheses? *Ann Epidemiol* 2009;19(3):220-224. <https://doi.org/10.1016/j.annepidem.2008.11.006>. Accessed April 21, 2020.
45. Sermo. Breaking Results: Sermo's COVID-19 Real Time Barometer Study. Wave I. <https://publiccdn.sermo.com/covid19/c8/be4e/4edbd4/dbd4ba4ac5a3b3d9a479f99cc5/wave-i-sermocovid-19-global-analysis-final.pdf>. Accessed April 30, 2020.
46. Carlucci PM, Ahuja T, Petrilli C, et al. Hydroxychloroquine and azithromycin plus zinc vs hydroxychloroquine and azithromycin alone: outcomes in hospitalized COVID-19 patients. Preprints. 2020. (<https://doi.org/10.1101/2020.05.02.20080036>). Accessed May 8, 2020.
47. Derwand R, Scholz M. Does zinc supplementation enhance the clinical efficacy of chloroquine/hydroxychloroquine to win today's battle against COVID-19? *Med Hypotheses* 2020, in press. (<https://doi.org/10.1016/j.mehy.2020.109815>). Accessed May 7, 2020.

Web Material

Early Outpatient Treatment of Symptomatic, High-Risk Covid-19 Patients that Should be Ramped-Up Immediately as Key to the Pandemic Crisis

Harvey A. Risch

Web Table 1: Randomized Controlled Trials of Hydroxychloroquine plus

Azithromycin in Outpatients, Registered in ClinicalTrials.gov2

Web Appendix: General Contraindications for Use of Hydroxychloroquine

plus Azithromycin Together3

Web Table 1. Randomized Controlled Trials of Hydroxychloroquine plus Azithromycin in Outpatients, Registered in ClinicalTrials.gov

Trial Number	Location	Current Status	Planned Enrollment Completion	Planned Results
NCT04371406	Paris, France	Recruiting	August 2, 2020	September 2, 2020
NCT04354428	Multi-site US, based at Univ. Washington	Recruiting	End of July, 2020	October, 2020
NCT04370782	St. Francis Hospital, Roslyn, New York	Recruitment of patients presenting at emergency room; starting soon	September 30, 2020	October, 2020
NCT04324463	Hamilton, Ontario, Canada	Recruiting	September 30, 2020	December, 2020
NCT04358068	Multi-site US, based at UCLA and UCSD	Recruitment starting soon	October 9, 2020	March, 2021

Web Appendix:

General Contraindications for Use of Hydroxychloroquine plus Azithromycin Together

Some patients may have contraindications for taking hydroxychloroquine+azithromycin together. Typical contraindications include: history of QT prolongation or cardiac arrhythmia, psoriasis, porphyria, hepatic disease, alcoholism, G6PD deficiency, HIV, neurological diseases with myopathy, seizure disorders, women breastfeeding, hypoglycemia or diabetes mellitus, uncorrected hypocalcemia, hypokalemia or hypomagnesemia, hypothyroidism, history of myocardial infarction or cardiac failure, and various interacting medications including diuretics, antifungals, etc. (1). Some patients with these conditions may be able to take HCQ+doxycycline safely. All of these circumstances need to be evaluated by treating physicians, who may elect to obtain screening ECGs prior to treatment and at some point or points during treatment if indicated. Portable cell-phone based FDA-approved ECG sensors with QTc functionality are available (2, 3) and could be loaned out on an outpatient basis and mailed back in and disinfected.

References

1. PDR Prescribers' Digital Reference. hydroxychloroquine sulfate - Drug Summary. Downloaded May 10, 2020. <https://www.pdr.net/drug-summary/Plaquenilhydroxychloroquine-sulfate-1911>
2. Giudicessi JR, Noseworthy PA, Friedman PA, et al. Urgent guidance for navigating and circumventing the QTc prolonging and torsadogenic potential of possible pharmacotherapies for COVID-19. JMCP: Mayo Clin Proc 2020 Apr 7. <https://doi.org/10.1016/j.mayocp.2020.03.024>
3. Alivecor. ATTENTION: Clinicians may now use KardiaMobile 6L to monitor QTc in patients being treated for COVID-19. Downloaded May 11, 2020. <https://clinicians.alivecor.com/>

Item #3

AJE-00843-2020

RESPONSES TO PUBLISHED ARTICLE

Response to: "Early Outpatient Treatment of Symptomatic, High-Risk Covid-19 Patients" and "Re: Early Outpatient Treatment of Symptomatic, High-Risk Covid-19 Patients that Should be Ramped-Up Immediately as Key to the Pandemic Crisis"

Journal:	<i>American Journal of Epidemiology</i>
Manuscript ID	AJE-00843-2020.R1
Manuscript Type:	Response to Letter to the Editor

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**Response to: “Early Outpatient Treatment of Symptomatic, High-Risk Covid-19 Patients”
and “Re: Early Outpatient Treatment of Symptomatic, High-Risk Covid-19 Patients that
Should be Ramped-Up Immediately as Key to the Pandemic Crisis”**

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Abbreviations: AZ, azithromycin; Dox, doxycycline; HCQ, hydroxychloroquine; SOC, standard-
of-care

Financial Support: None

Running Head: Outpatient Treatment of High-Risk Covid-19

Conflicts of Interest: Dr. Risch acknowledges past advisory consulting work with two of the
more than 50 manufacturers of hydroxychloroquine, azithromycin and doxycycline. This past
work was not related to any of these three medications and was completed more than two years
ago. He has no ongoing, planned or projected relationships with any of these companies, nor any
other potential conflicts-of-interest to disclose.

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4 Dr. Korman's thesis is that no available treatments are effective in preventing hospitalization for
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6 the overwhelming majority of COVID-19 patients, and that potential hazards are associated with
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8 use of hydroxychloroquine (HCQ) + azithromycin (AZ) (1). The studies that I reviewed (2)
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10 contradict this. Dr. Korman superficially describes the same studies that I discussed at length,
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12 except with negative adjectives and numerous terms in "quotation" marks to imply, without
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14 evidence, their lack of validity. He calls all these studies "anecdotal," to distinguish from the
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16 "magic" of randomized controlled trials (3), when government medical and scientific regulatory
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18 agencies of western countries around the world routinely use epidemiologic evidence to establish
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20 facts of causation, benefit and harm (4). This disingenuous argument has been discussed at
21
22 length elsewhere (5). Dr. Korman's only novel point is that macrolide antibiotics such as AZ can
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24 lead to development of antibiotic resistance. Such instances can occur but are uncommon, and
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26 this issue has seemingly not been of substantial concern in the hundreds of millions of uses of
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28 AZ world-over during the past 30 years.
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34 Drs. Peiffer-Smadja and Costagliola (6) discuss the data in some of the studies that I reviewed.
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36 They first question the small non-randomized trial by Gautret et al. (7). I also have concerns
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38 about subject baseline differences between the treated and untreated subjects in that study and
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40 thus limit my conclusions to the 26 treated patients. Gautret et al. (7) provided individual-
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42 subject data on all 26 which enabled me to carry out my own Cox-regression analyses. The data
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44 are that 14 patients received HCQ only, 6 received HCQ+AZ, and under intention-to-treat
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46 principles, 6 were lost to follow-up and had received 3 days or fewer of HCQ but were
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48 unspecified as to receipt of AZ. I conducted my analyses starting with the 20 subjects with
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50 completed medication usage, and then included bracketing of the unknown-exposure subjects,
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52 first assuming all had taken HCQ+AZ and then only HCQ, and in each case, whether the 6
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3 subjects presented with upper vs lower respiratory infections. In the 20 main subjects, for
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5 HCQ+AZ vs HCQ alone, the hazard ratio for viral clearance = 7.4 (95%CI 1.12-48.4). Across
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7 the four bracketed-combination analyses, the hazard ratios ranged from 3.5 to 8.0 and *P*-values
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9 from .078 to .021. Drs. Peiffer-Smadja and Costagliola need to use the outcome event times in
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11 Cox regression in order to obtain proper *P*-values. They also say that the trial was not conducted
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13 in outpatients and therefore cannot be applied to outpatients. However, the Marseille hospital
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15 was used as both an outpatient clinic and a small inpatient facility for a city-wide COVID-19
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17 population screening and treatment program and patients were seen as daily “inpatients” as well
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19 as stayed overnight in it. Many of the patients in the Gautret et al. study were asymptomatic or
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21 very mildly symptomatic and would be treated as outpatients in most circumstances.
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27 Second, Drs. Peiffer-Smadja and Costagliola refer to the larger Marseille screening program (8).
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29 I have discussed those data at length in my response (9) to Dr. Fleury (10). Third, they label a
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31 carefully performed, sequential-patient non-randomized controlled clinical trial an “unpublished,
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33 poorly designed studies whose quality is even lower than the papers discussed above.” I disagree
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35 with this characterization as it is unsupported by the evidence. Fourth, Drs. Peiffer-Smadja and
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37 Costagliola assert that the Boulware prevention trial (11) demonstrates lack of treatment
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39 efficacy. That prevention trial is not relevant to treatment of high-risk outpatients, because
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41 virtually all its subjects were low-risk; it would be difficult for any active treatment to do much
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43 better than the one hospitalization observed among the 58 test-positive placebo patients. In fact,
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45 a preventive medication that allows subjects to develop antibodies while protecting them from
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47 severe disease and hospitalization is a better goal than blocking infection altogether. Fifth, Drs.
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49 Peiffer-Smadja and Costagliola take issue with the use of case series of treated patients. In the
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3 mass-mortality circumstances we face, a cohort of 400 treated high-risk outpatients with one or
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5 two deaths can only be considered informative about the fact of treatment efficacy.
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9 Finally, in pandemic times when months and years of delay cannot be tolerated before large
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11 randomized controlled trials are completed, it is possible to quibble with apparent imperfections
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13 in almost any study. That misses the forest for the trees. Since my paper (2) discussing five
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15 studies was published, data from seven other studies of high-risk outpatients have become
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17 available, all showing the same substantial and significant benefit of use of HCQ along with AZ
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19 or other companion medications (Table 1). Two additional large studies of hospital patients
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21 given HCQ within 48 hours of admission show significant benefit adjusted for age and
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23 comorbidities (12, 13), and a meta-analysis of studies to-date completely demonstrates this
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25 benefit (14). Perhaps even more important, the exponential COVID-19 mortality explosion in
26
27 the northern state of Pará, Brazil (15), reversed direction, downward dramatically about 5 weeks
28
29 after a shipment of 75,000 doses of AZ and 90,000 doses of HCQ began to be distributed to
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31 infected individuals (Figure 1). No such decline has been observed in the rest of Brazil. This is
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33 a compelling, large-scale experiment demonstrating efficacy of HCQ+AZ in saving lives of
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35 high-risk people infected with SARS-CoV-2.
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References

1. Korman TM. Early Outpatient Treatment of Symptomatic, High-Risk Covid-19 Patients. *Am J Epidemiol* 2020 xxxx###.
2. Risch HA. Early outpatient treatment of symptomatic, high-risk Covid-19 patients that should be ramped-up immediately as key to the pandemic crisis. [available online ahead of print May 27, 2020] *Am J Epidemiol* kwaa093. (doi: [10.1093/aje/kwaa093](https://doi.org/10.1093/aje/kwaa093)).
[Accessed May 28, 2020.](#)
3. Collins R, Bowman L, Landray M, et al. The magic of randomization versus the myth of real-world evidence. *N Engl J Med* 2020;382(7):674-678.
<https://www.nejm.org/doi/full/10.1056/NEJMsb1901642>
4. Frieden TR. Evidence for health decision making-beyond randomized, controlled trials. *N Engl J Med* 2017;377:465-475. <https://www.nejm.org/doi/10.1056/NEJMra1614394>
5. Woodworth E. The Media Sabotage of Hydroxychloroquine Use for COVID-19: Doctors Worldwide Protest the Disaster. Media and Big Pharma are in lockstep to suppress a cheap, life-saving Covid-19 therapy in order to reap pandemic-sized profits. June 30, 2020. Accessed July 2, 2020. <https://www.globalresearch.ca/media-sabotage-hydroxychloroquine-covid-19-doctors-worldwide-protest-disaster/5717382>
6. Peiffer-Smadja N, Costagliola D. Re: Early Outpatient Treatment of Symptomatic, High-Risk Covid-19 Patients that Should be Ramped-Up Immediately as Key to the Pandemic Crisis. *Am J Epidemiol* 2020 xxxx###.
7. Gautret P, Lagier J-C, Parola P, et al. Hydroxychloroquine and azithromycin as a treatment of COVID-19: results of an open-label non-randomized clinical trial.

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2
3 [available online ahead of print March 20, 2020] *Int J Antimicrob Agent* 20 Mar 2020,
4 105949. (doi: [10.1016/j.ijantimicag.2020.105949](https://doi.org/10.1016/j.ijantimicag.2020.105949)). Accessed May 28, 2020.
5
6
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8 8. Million M, Lagier J-C, Gautret P, et al. Early treatment of COVID-19 patients with
9 hydroxychloroquine and azithromycin: A retrospective analysis of 1061 cases in
10 Marseille, France. *Travel Med Infect Dis* 2020;35:101738.
11
12 <https://doi.org/10.1016/j.tmaid.2020.101738>
13
14
15 9. Risch HA. Response to: Comment on “Early Outpatient Treatment of Symptomatic,
16 High-Risk Covid-19 Patients That Should be Ramped-Up Immediately as Key to the
17 Pandemic Crisis”. *Am J Epidemiol* 2020 xxxx###.
18
19
20 10. Fleury V. Comment on “Early Outpatient Treatment of Symptomatic, High-Risk Covid-
21 19 Patients That Should be Ramped-Up Immediately as Key to the Pandemic Crisis”.
22 *Am J Epidemiol* 2020 xxxx###.
23
24
25 11. Boulware DR, Pullen MF, Bangdiwala AS, et al. A randomized trial of
26 hydroxychloroquine as postexposure prophylaxis for Covid-19. *N Engl J Med* 2020 June
27 3:NEJMoa2016638. <https://www.nejm.org/doi/full/10.1056/NEJMoa2016638>
28
29
30 12. Arshad S, Kilgore P, Chaudhry ZS, et al. Treatment with hydroxychloroquine,
31 azithromycin, and combination in patients hospitalized with COVID-19. [available
32 online ahead of print June 29, 2020] *Int J Infect Dis*. (doi: [10.1016/j.ijid.2020.06.099](https://doi.org/10.1016/j.ijid.2020.06.099)).
33
34
35 [Accessed June 30,2020](https://doi.org/10.1016/j.ijid.2020.06.099).
36
37
38 13. Mikami T, Miyashita H, Yamada T, et al. Risk factors for mortality in patients with
39 COVID-19 in New York City. [available online ahead of print June 30, 2020] *J Gen
40 Intern Med*. (doi: [10.1007/s11606-020-05983-z](https://doi.org/10.1007/s11606-020-05983-z)). Accessed June 30, 2020.
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45
46
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14. Raoult D, Million M, Gautret P, et al. Hydroxychloroquine and azithromycin as a treatment of COVID-19: Results of an open-label non-randomized clinical trial: Response to David Spencer (Elsevier). July 8, 2020. Accessed July 10, 2020. <https://www.mediterranee-infection.com/wp-content/uploads/2020/07/Response-to-Mr.-David-Spencer-ELSEVIER.pdf>
 15. Ministério da Saúde Brasil. Template:COVID-19 pandemic data/Brazil medical cases. July 2020. Accessed July 9, 2020. https://en.wikipedia.org/wiki/Template:COVID-19_pandemic_data/Brazil_medical_cases
 16. Zelenko V. To all medical professionals around the world. April 28, 2020. Accessed April 28, 2020. <https://docs.google.com/document/d/1pjgHlqI-ZuKOziN3txQsN5zz62v3K043pR3DdhEmcos/>
 17. Barbosa Esper R, Souza da Silva R, Oikawa FTC, et al. Empirical treatment with hydroxychloroquine and azithromycin for suspected cases of COVID-19 followed-up by telemedicine. April 15, 2020. Accessed April 30, 2020. <https://pgibertie.files.wordpress.com/2020/04/2020.04.15-journal-manuscript-final.pdf>
 18. Ahmad I, Alam M, Saadi R, et al. Doxycycline and hydroxychloroquine as treatment for high-risk COVID-19 patients: Experience from case series of 54 patients in long-term care facilities. Preprints. 2020. (doi: [10.1101/2020.05.18.20066902](https://doi.org/10.1101/2020.05.18.20066902)). Accessed May 22, 2020.
 19. Lagier J-C, Million M, Gautret P, et al. Outcomes of 3,737 COVID-19 patients treated with hydroxychloroquine/azithromycin and other regimens in Marseille, France: A retrospective analysis. [available online ahead of print June 25, 2020] *Travel Med Infect Dis* 2020, 101791. (doi: [10.1016/j.tmaid.2020.101791](https://doi.org/10.1016/j.tmaid.2020.101791)). Accessed June 25, 2020.

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20. The Marc Cox Morning Show. Local physician has 100% survival rate with early administration of hydroxychloroquine. June 12, 2020. Accessed June 18, 2020. <https://971talk.radio.com/blogs/the-marc-cox-morning-show/dr-steve-crawford-of-festus-manor-on-hydroxychloroquine>

For Peer Review

Table 1. Studies Examining High-Risk Outpatient COVID-19 Disease Treated Early with HCQ

Principal Investigator	Location	Subject Status	Number Treated with HCQ	Number of Comparison Subjects	Other Medications with HCQ	Comparison-Subject Medications	Outcome	Direction of Benefit	RR (95% CI), Statistical Significance or Number of Deaths	Reference
P. Gautret	Marseille, France	Mixed older adults	6	14	AZ	HCQ alone	Nasopharyngeal viral clearance	Reduced risk	7.4 (1.12-48.4)	(6)
V. Zelenko	Kiryas Joel, NY	High-risk	405 (series 1)	--	AZ, zinc sulfate	--	Mortality	Reduced risk	2 deaths/405	(16)
V. Zelenko	Kiryas Joel, NY	High-risk	400 (series 2)	--	AZ, zinc sulfate	--	Mortality	Reduced risk	0 deaths/400	PC ^a
R. Barbosa Esper	São Paulo, Brazil	Mixed older adults	412	224	AZ	SOC	Hospitalization	Reduced risk	0.35 (0.14-0.87)	(17)
I. Ahmad	Long Island, NY Nursing Home	High-risk	200	--	Dox	--	Mortality	Reduced risk	9 deaths/200	(18), PC ^b
J.-C. Lagier	Marseille, France	High-risk	199	199	AZ	Propensity-score matched; HCQ or AZ alone or neither	Mortality	Reduced risk	0.41 (0.17-0.99)	(19)

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5	M. Leriger	Indiana Nursing Homes	High-risk	105	113	None, AZ, Dox	SOC, +AZ or Dox	Mortality	Reduced risk	$P < .05$	PC ^c
6											
7											
8											
9	L. Kacmar	Aurora, IL	High-risk	68	--	AZ	--	Mortality	Reduced risk	0 deaths/68	PC ^d
10											
11											
12	S. Fonseca	Brazil HMO	High-risk	159	558	Prednisone	Neither HCQ nor Prednisone	Hospitalization	Reduced risk	$P < .05$	PC ^e
13											
14											
15											
16	B. Procter	McKinney, TX	High-risk	50	--	AZ, zinc sulfate, losartan, aspirin	--	Mortality	Reduced risk	0 deaths/50	PC ^f
17											
18											
19											
20											
21	S. Crawford	Festus, MO Nursing Home	High-risk	52	--	Rehydration	--	Mortality	Reduced risk	0 deaths/52	(20)
22											
23											
24											
25											
26	B. Tyson	El Centro, CA	High-risk	219	--	AZ (2 with Dox)	--	Mortality	Reduced risk	0 deaths/219	PC ^g
27											
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Abbreviations: AZ, azithromycin; Dox, doxycycline; HCQ, hydroxychloroquine; PC, personal communication as described in the following footnotes; SOC, standard-of-care.

^a Vladimir Zelenko MD, PC, Family Practice, Monroe, NY, personal communication, 2020.

^b Imtiaz Ahmad, 21st Century Oncology, Inc., Fort Myers, FL, personal communication, 2020.

^c Monica Leriger, American Senior Communities, Indianapolis, IN, personal communication, 2020.

^d Lawrence Kacmar, The Center for Primary Care and Sports Medicine, Aurora IL, personal communication, 2020.

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^e Sílvia Fonseca, Hospital São Francisco, Ribeirão Preto, Brazil, personal communication, 2020.

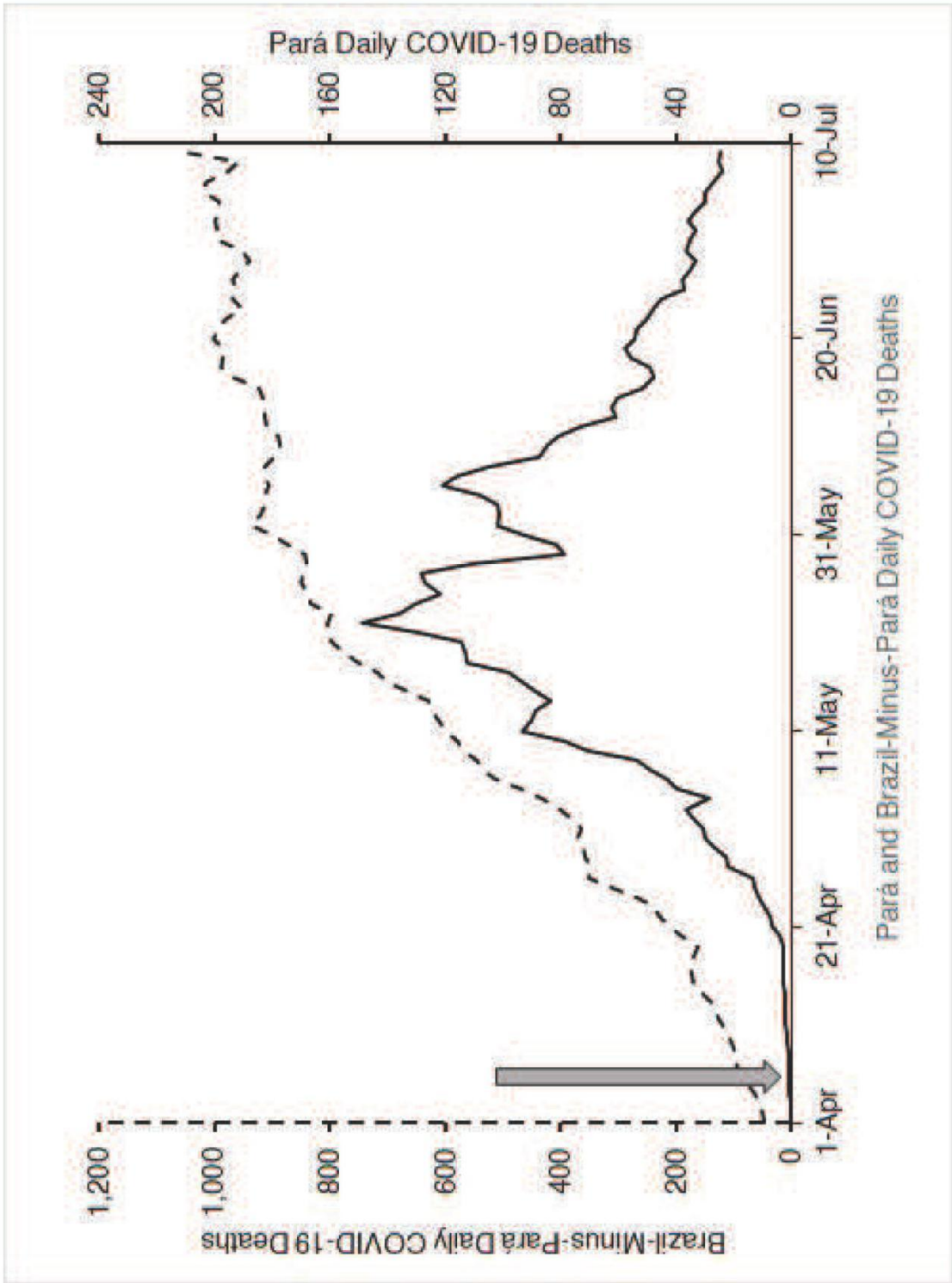
^f Brian Procter, McKinney Family Medicine, McKinney TX, personal communication, 2020.

^g Brian Tyson, All Valley Urgent Care, El Centro, CA, personal communication, 2020.

For Peer Review

Figure Legend

Figure 1. Pará and Brazil-Minus-Pará Daily COVID-19 Deaths, April 1, 2020 through July 9, 2020. Points plotted are 7-day symmetrical moving averages of the raw data, which are available from CORONAVÍRUS BRASIL as posted daily (15). Solid line, daily COVID-19 deaths in Pará; dashed line, daily COVID-19 deaths in the rest of Brazil. The daily numbers of newly identified COVID-19 cases in Pará were increasing through May 28 and then have stayed roughly flat at about 2,100 per day, whereas the daily numbers of new cases in the rest of Brazil have risen throughout the period (data not shown). On April 6, the public hospital network of Pará purchased 75,000 doses of azithromycin (AZ) and 90,000 doses of hydroxychloroquine (HCQ) and started distributing them to infected individuals over the next few weeks; the Hapvida HMO hospitals in the state also acquired the medications and started using them in the same period (Alexandre Wolkoff, Hapvida Saúde HMO, Fortaleza, Brazil, personal communication, 2020). The gray arrow denotes when the medications were initially purchased. Approximately five weeks after the medications began distribution, the mortality numbers in Pará turned down dramatically. In Pará, the July 2 mortality ($n=40$) as a fraction of June 2 incidence ($n=2,068$) = 1.9%, whereas the same for the rest of Brazil was $1,026/23,733 = 4.3\%$. Brazil outside of Pará was not systematically using HCQ and AZ over the time period shown in the figure.



Item #4

Resume CV

Curriculum Vitae for: HARVEY A. RISCH, M.D., PH.D.

Professor of Epidemiology
Yale School of Public Health, Yale School of Medicine

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60 College Street, LEPH 413
P.O. Box 208034, New Haven, CT 06520-8034
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E-mail: harvey.risch@yale.edu

Education:

<i>Date</i>	<i>School</i>	<i>Degree, Major</i>
9/80-12/82	University of Washington	Postdoctoral Fellow, Epidemiology
9/76-8/80	University of Chicago	Ph.D., Biomathematics
9/72-6/76	UC San Diego School of Medicine	M.D., Medicine
9/67-6/72	California Institute of Technology	B.S. (Honors), Biology; Mathematics

Professional Appointments:

7/01- Professor of Epidemiology, Department of Chronic Disease Epidemiology, Yale School of Public Health, Yale School of Medicine, New Haven, CT.

1/12- Director, Molecular Cancer Epidemiology Laboratory and Shared Resource, Yale Comprehensive Cancer Center and Yale School of Public Health

9/06-8/07 Lady Davis Visiting Professor, Department of Community Medicine and Epidemiology, Faculty of Medicine, Technion-Israel Institute of Technology, Haifa, Israel

1/91-6/01 Associate Professor of Epidemiology, Department of Epidemiology and Public Health, Yale University School of Medicine.

1/83-12/90 Epidemiologist-Biostatistician, Epidemiology Unit, National Cancer Institute of Canada, Toronto, Ontario.

7/90-12/90 Associate Professor, Department of Preventive Medicine and Biostatistics, University of Toronto, Toronto, Ontario (Concurrent Appointment).

1/83-6/90 Assistant Professor, Department of Preventive Medicine and Biostatistics, University of Toronto, Toronto, Ontario (Concurrent Appointment).

9/80-12/82 Postdoctoral Fellow, Department of Epidemiology, School of Public Health and Community Medicine, University of Washington, Seattle, Washington.

7/79-8/80 Postdoctoral Fellow, Department of Pathology, University of Chicago, Chicago, Illinois.

h-Index: 88. Publication citations: more than 36,200 research citations as of June 1, 2020.

Awards, Memberships, etc.:

NSF Undergraduate Research Fellowship, Department of Mathematics, California Institute of Technology, Pasadena (6/70-9/70)

General Medicine Stipended Externship, UC San Diego School of Medicine, La Jolla (6-9/73)

Theoretical Biology Predoctoral Traineeship, University of Chicago (9/76-6/79)

Pathobiology Postdoctoral Traineeship (GM 7190), University of Chicago (7/79-8/80)

Cancer Epidemiology Postdoctoral Traineeship (CA 9168), University of Washington (9/80-12/82)

Member, Society for Epidemiologic Research (1982-)

Member, American Society of Preventive Oncology (1984-)

Full Member, Sigma Xi (1986-)

Fellow, American College of Epidemiology (1991-); Member (1984-91)

Member, Yale Cancer Center (1992-), Sections: Cancer Prevention and Control; Gynecologic Oncology; Cancer Genetics

“Best of the AACR Journals” for “Aspirin Use and Reduced Risk of Pancreatic Cancer,” one of the most highly cited *Cancer Epidemiology, Biomarkers & Prevention (CEBP)* articles published in 2016 (April 2018) (<http://aacrjournals.org/h-a-risch-bio>)

The Ruth Leff Siegel Award for Excellence in Pancreatic Cancer Research (2018), \$50,000 (<http://columbiasurgery.org/pancreas/ruth-leff-siegel-award>)

Member, [Connecticut Academy of Science and Engineering](#) (2019-)

Highest attention paper ever published in the American Journal of Epidemiology (2020) (<https://oxfordjournals.altmetric.com/details/82900954>)

Consortia:

BEACON: Barrett's Esophagus and Esophageal Adenocarcinoma Consortium (2005-)

OCAC: Ovarian Cancer Association Consortium (International Consortium of Case-Control Studies of Ovarian Cancer) (2005-)

PanC4: Pancreatic Cancer Case-Control Consortium (2006-); Elected Steering Committee Member (2008-2013, 2014-2017, 2018-2021)

Panscan: Pancreas Cancer Genome-wide Association Study Consortium (2008-)

CIMBA: Consortium of Investigators of Modifiers of BRCA1/2 (2017-)

Research Interests:

Cancer epidemiology and etiology—Pancreas, Ovary, Lung, Breast, Stomach, Bladder, etc.

Cancer genetic epidemiology: polymorphisms, major genes; Hormonal factors and cancer; Occupational/environmental exposures and cancer; Diet and cancer; *Helicobacter pylori* and cancer

Epidemiologic methods; Causal inference; Cancer registration, control and prevention

Teaching Experience:

Advanced Epidemiologic Research Methods (Yale University CDE 619a) (Course developer)

Fundamentals of Epidemiology (Yale University CDE/EMD 508) (Course developer)

Principles of Epidemiology II (Yale University CDE 516) (Course developer)

Research Methods in Epidemiology I (University of Toronto CHL 4102f) (Course co-developer)

Research Methods in Epidemiology II (University of Toronto CHL 4105s) (Course developer)

Cancer Epidemiology (University of Toronto CHL 4103f; Yale University CDE 532b)

Trainees

PhD: Advisor to five students; dissertation committee member for 11 students.

MPH or MSc: Advisor to 36 students.

Postdoctoral Fellows: Advisor to 16 fellows.

Visiting Faculty: Host to four visiting professors.

Service Activity:

Grant Review Panels:

Health Canada, National Health Research and Development Program: Epidemiology, Occupational Health and Chronic Disease Panel (1987-91)
NIH External Site Reviewer (1995)
NIH Study Section Regular Member: Epidemiology and Disease Control (EDC2) (1997)
US Army MRMC Ovarian Cancer Research Program Integration Panel Member (1997-2002)
American Cancer Society Extramural Grant Reviewer (1998)
Chair, Epidemiology Grant Review Panel, National Cancer Institute of Canada (2000-2)
Dutch Cancer Society Extramural Research Grant Reviewer (2000, 2001, 2008)
Cancer Council Australia Extramural Research Grant Reviewer (2004)
Pancreatic Cancer Action Network-AACR Career Development Awards Scientific Review Committee (2016-8)
NIH Study Section Member: Epidemiology and Disease Control (EDC2) (2000)
NIH Study Section Member: Epidemiology Special Emphasis Panel (ZRG4, 1998; ZRG1, 2001-3)
NIH Study Section Member: Pancreas SPORE Panel (ZCA1 GRB-V, 2002-3)
NIH Study Section Member: Small Grants Program for Cancer Epidemiology Panel (ZCA1 SRRB-Q, 2003)
NIH Study Section Member: Cancer Genetics Panel (CG) (2004, 2006)
NIH Study Section Member: Cancer Epidemiology, Prevention and Control (NCI-E X1) (2005)
NIH Study Section Member: Breast and Ovarian Cancer Genetics (ZRG1 ONC-U 03M) (2005)
NIH Study Section Member: Gene-Environment Interactions (ZHL1 CSR-D S1 R) (2007)
NIH Study Section Member: Epidemiology of Cancer Member Conflicts (ZRG1 HOP-Q, 2009; ZRG1 PSE-B, 2010)
NIH Study Section Member: Barrett's Esophagus Translational Research Network (ZCA1 SRLB-1 (O1) R, 2011)
NIH Study Section Member: Core Infrastructure and Methodological Research for Cancer Epidemiology Cohorts (ZCA1 SRLB-9 (M2) B, 2013; ZCA1 TCRB-9 (J2) R, 2014; ZCA1 SRBJ (O2) S, 2015)
NIH Study Section Member: Cancer Management, Epidemiology, and Health Behavior (ZCA1 SRLB-B (J1) S, 2013)
NIH Study Section Member: Population Science (U01) (ZCA1 RTRB-Z M1 R, 2016)
Medical Research Council UK External Reviewer (2019)

Journal Editor:

Associate Editor, *American Journal of Epidemiology* (1997-2014)
Editor pro tem, *American Journal of Epidemiology* (2002-2014)
Member, Board of Editors, *American Journal of Epidemiology* (2014-)
Associate Editor, *Journal of the National Cancer Institute* (2000-)
Editor, *International Journal of Cancer* (2008-)

Journal Referee:

Alimentary Pharmacology & Therapeutics (2015-)
American Journal of Epidemiology (1986-)
American Journal of Medical Genetics (2004-)
American Journal of Obstetrics and Gynecology (2015-)
American Journal of Preventive Medicine (1988-)

Annals of Epidemiology (1992-)
Annals of Oncology (2001-)
Annals of Surgical Oncology (2011-)
Biodemography and Social Biology (2018-)
Biometrics (1990-)
Blood Transfusion (2015-)
BMC Cancer (2007-)
BMC Public Health (2007-)
British Journal of Cancer (2003-)
Canadian Journal of Public Health (1987-)
Canadian Medical Association Journal (1983-)
Cancer (1996-)
Cancer Causes and Control (1992-)
Cancer Detection and Prevention (2003-2009)
Cancer Epidemiology (2009-)
Cancer Epidemiology, Biomarkers and Prevention (1995-)
Cancer Genetics (2012-)
Cancer Research (1988-)
Carcinogenesis (2008-)
Clinical Cancer Research (2015-)
Clinical Gastroenterology and Hepatology (2007-)
Current Pharmacogenomics (2007-)
DNA and Cell Biology (2019-)
Environmental Pollution (2018-)
Epidemiology (1989-)
European Journal of Cancer (2001-)
European Journal of Epidemiology (1995-)
European Journal of Human Genetics (2008-)
Gastroenterology (2007-)
Gynecologic Oncology (1997-)
International Journal of Cancer (1995-)
International Journal of Epidemiology (1995-)
JAMA (1990-)
Journal for Nurse Practitioners (2018-)
Journal of Clinical Epidemiology (2006-)
Journal of Clinical Gastroenterology (2010-)
Journal of Clinical Medicine (2019-)
Journal of Epidemiology (2016-)
Journal of Infectious Diseases (2002-)
Journal of the National Cancer Institute (1992-)
Menopause (2011-)
Molecular Carcinogenesis (2009-)
Nature Clinical Practice Oncology (2005-)
Nature Scientific Reports (2016-)
New England Journal of Medicine (2017-)
Oncology Research (2001-)
Oncotarget (2017-)
Preventive Medicine (1994-)

Reproductive Sciences (2008-)
Science (2004-)
Treatments in Endocrinology (2003-)
Tumor Biology (2015-)
World Journal of Gastroenterology (2013-)

Other Review and Service:

Society for Epidemiologic Research Student Prize Paper Review Committee (1987, 1994)
American Society for Clinical Oncology Cancer Prevention Curriculum (2006)
External Advisory Board Member, Multiple Myeloma Prevention Program Project, Washington University (2014-2015)
Mayo Clinic SPORE in Pancreatic Cancer External Advisory Committee (2018-2023)
Connecticut Academy of Science and Engineering (CASE) Advisory Committee on Covid-19 for Reopening Connecticut (2020)

Academic and Professional Standing Committees:

Yale School of Public Health:

Doctoral (Admissions and Progress; 1991-1999)
MPH (Academic Progress; 1991-1995)
Computer (1999-2001)
Medical Studies (2000-2005)
Chair, Genetics and Public Health Interest Group (2003-2006)
Chair, C.E.A. Winslow Medal Committee (2007-2010)
Chair, Hildreth Memorial Fund Committee (2007-2012)
The Honorable Tina Brozman Foundation Small Grant Proposal Review Committee (2010)
Chair, MPH Thesis Dean's Prize Committee (2010-)
Chair, Department of Chronic Disease Epidemiology, Epidemiology Competencies Committee (2015-)
Committee for Academic and Professional Integrity (2018-2021)
Education Committee (2019-)

Yale School of Medicine:

Program in Investigative Medicine Doctoral Committee (1999-2007)
Mentored Clinical Research Scholar Program Advisory Board (2003-2008)

Yale Cancer Center:

Rapid Case Ascertainment System Shared Resource (1995-)
American Cancer Society Institutional Research Award Review Committee (1996-2001)

American College of Epidemiology:

Education Committee (1996-2002)
Policy Committee (1997-2003)

Peer-Reviewed Research Publications:

Accepted for Publication or In-Press

Risch HA. Early outpatient treatment of symptomatic, high-risk Covid-19 patients that should be ramped-up immediately as key to the pandemic crisis. Accepted for publication, *Am J Epidemiol*. *Not a result of NIH funding.

Streicher SA, Klein AP, Olson SH, Kurtz RC, Amundadottir LT, DeWan AT, Zhao H, **Risch HA.** A pooled genome-wide association study identifies pancreatic cancer susceptibility loci on chromosome 19p12 and 19p13.3 in the full-Jewish population. Accepted for publication, *Hum Genet*. PMID: PMC Journal in Process.

Shen Y, **Risch H,** Lu L, Ma X, Irwin M, Lim J, Taddei T, Pawlish K, Brown R, Wang Z, Jia W, Wong L, Mayne S, Yu H. Risk factors for hepatocellular carcinoma (HCC) in the northeast of the United States: Results of a case-control study. Accepted for publication, *Cancer Causes Control*. PMID: PMC Journal in Process.

Brieger KK, Peterson S, Lee A, Mukherjee B, Bakulski KM, Alimujiang A, Anton-Culver H, Anglesio MS, Bandera EV, Berchuck A, Bowtell DDL, Chenevix-Trench G, Cho KR, Cramer DW, DeFazio A, Doherty JA, Fortner RT, Garsed DW, Gayther S, Gentry-Maharaj A, Goode EL, Goodman MT, Harris HR, Høgdall E, Huntsman DG, Shen H, Jensen A, Johnatty SE, Jordan SJ, Kjaer SK, Kupryjanczyk J, Lambrechts D, McLean K, Menon U, Modugno F, Moysich K, Ness R, Ramus SJ, Richardson J, **Risch H,** Rossing MA, Trabert B, Wentzensen N, Ziogas A, Terry KL, Wu AH, Hanley GE, Pharoah P, Webb PM, Pike MC, Pearce CL. Menopausal hormone therapy prior to the diagnosis of ovarian cancer is associated with improved survival. Accepted for publication, *Gyn Oncol*. PMID: PMC Journal in Process.

Yuan F, Hung RJ, Walsh N, Zhang H, Platz EA, Wheeler W, Song L, Arslan AA, Beane Freeman LE, Bracci PM, Canzian F, Du M, Gallinger S, Giles GG, Goodman PJ, Kooperberg C, Le Marchand L, Neale RE, Rosendahl J, Scelo G, Shu X-O, Visvanathan K, White E, Zheng W, Albanes D, Amiano P, Andreotti G, Babic A, Bamlet WR, Berndt SI, Brennan P, Bueno-de-Mesquita B, Buring JE, Campbell PT, Chanock SJ, Fuchs C, Gaziano JM, Goggins M, Hackert T, Hartge P, Hassan M, Holly EA, Hoover RN, Katzke V, Kirsten H, Kurtz RC, Lee I-M, Malats N, Markus S, Milne RL, Murphy N, Ng K, Oberg AL, Orlow I, Porta M, Rabe KG, Real FX, Rothman N, Sesso HD, Silverman DT, Thompson IM Jr, Wactawski-Wende J, Wang X, Wentzensen N, Wilkens LR, Yu H, Zeleniuch-Jacquotte A, Shi J, Kraft P, Duell EJ, Amundadottir LT, Li D, Petersen GM, Wolpin BM, **Risch HA,** Yu K, Klein AP, Stolzenberg-Solomon RZ. Genetic

susceptibility to chronic inflammatory intestinal diseases and pancreatic ductal adenocarcinoma risk: an analysis using genome-wide association study data. Accepted for publication, *Cancer Res.* PMID: PMC Journal in Process.

Kho PF, Amant F, Annibali D, Ashton K, Attia J, Auer PL, Beckmann MW, Black A, Brinton L, Buchanan DD, Chanock SJ, Chen C, Chen MM, Cheng THT, Cook LS, Crous-Bous M, Czene K, De Vivo I, Dennis J, Dörk T, Dowdy SC, Dunning AM, Dürst M, Easton DF, Ekici AB, Fasching PA, Fridley BL, Friedenreich CM, García-Closas M, Gaudet MM, Giles GG, Goode EL, Gorman M, Haiman CA, Hall P, Hankinson SE, Hein A, Hillemanns P, Hodgson S, Hoivik E, Holliday EG, Hunter DJ, Jones A, Kraft P, Krakstad C, Lambrechts D, Le Marchand L, Liang X, Lindblom A, Lissowska J, Long J, Lu L, Magliocco AM, Martin L, McEvoy M, Milne RL, Mints M, Nassir R, Otton G, Palles C, Pooler L, Prescott J, Proietto T, Rebbeck TR, Renner SP, **Risch HA**, Rübner M, Runnebaum I, Sacerdote C, Sarto GE, Schumacher F, Scott RJ, Setiawan VW, Shah M, Sheng X, Shu X-O, Southey MC, Tham E, Tomlinson I, Trovik J, Turman C, Tyrer JP, Van Den Berg D, Wang Z, Wentzensen N, Xia L, Xiang Y-B, Yang HP, Yu H, Zheng W, Webb PM, Thompson DJ, Spurdle AB, Glubb DM, O'Mara TA. Mendelian randomization analyses suggest a role for cholesterol in the development of endometrial cancer. Accepted for publication, *Int J Cancer.* PMID: PMC Journal in Process.

Barnes DR, Rookus MA, McGuffog L, Leslie G, Mooij TM, Dennis J, Mavaddat N, Adlard J, Ahmed M, Aittomäki K, Andrieu N, Andrulis IL, Arnold N, Arun BK, Azzollini J, Balmaña J, Barkardottir RB, Barrowdale D, Benitez J, Berthet P, Białkowska K, Blanco AM, Blok MJ, Bonanni B, Boonen SE, Borg Å, Bozsik A, Bradbury AR, Brennan P, Brewer C, Brunet J, Buys SS, Caldés T, Caligo MA, Campbell I, Christensen LL, Chung WK, Claes KBM, Colas C, GEMO Study Collaborators, EMBRACE Collaborators, Collonge-Rame M-A, Cook J, Daly MB, Davidson R, de la Hoya M, de Putter R, Delnatte C, Devilee P, Diez O, Ding YC, Domchek SM, Dorfling CM, Dumont M, Eeles R, Ejlersen B, Engel C, Evans DG, Faivre L, Foretova L, Fostira F, Friedlander M, Friedman E, Frost D, Ganz PA, Garber J, Gehrig A, Gerdes A-M, Gesta P, Giraud S, Glendon G, Godwin AK, Goldgar DE, González-Neira A, Greene MH, Gschwantler-Kaulich D, Hahnen E, Hamann U, Hanson H, Hentschel J, Hogervorst FBL, Hooning MJ, Horvath J, Hu C, Hulick PJ, Imyanitov EN, kConFab Investigators, HEBON Investigators, GENEPSO Investigators, Isaacs C, Izatt L, Izquierdo A, Jakubowska A, James PA, Janavicius R, John EM, Joseph V, Karlan BY, Kast K, Koudijs M, Kruse TA, Kwong A, Laitman Y, Lasset C, Lazaro C, Lester J, Lesueur F, Liljegren A, Loud JT, Lubiński J, Mai PL, Manoukian S, Mari V, Mebirouk N, Meijers-Heijboer HEJ, Meindl A, Mensenkamp AR, Miller A, Montagna M, Mouret-Fourme E, Mukherjee S, Mulligan AM, Nathanson KL, Neuhausen SL, Nevanlinna H, Niederacher D, Nielsen FC, Nikitina-Zake L, Noguès C, Olah E, Olopade OI, Ong K-r, O'Shaughnessy-Kirwan A, Osorio A,

Ott C-E, Papi L, Park SK, Parsons MT, Pedersen IS, Peissel B, Peixoto A, Peterlongo P, Pfeiler G, Phillips K-A, Prajzencanc K, Pujana MA, Radice P, Ramser J, Ramus SJ, Rantala J, Rennert G, **Risch HA**, Robson M, Rønlund K, Salani R, Schuster H, Senter L, Shah PD, Sharma P, Side LE, Singer CF, Slavin TP, Soucy P, Southey MC, Spurdle AB, Steinemann D, Steinsnyder Z, Stoppa-Lyonnet D, Sutter C, Tan YY, Teixeira MR, Teo SH, Thull DL, Tischkowitz M, Tognazzoc S, Toland AE, Trainer AH, Tung N, van Engelen K, van Rensburg EJ, Vega A, Vierstraete J, Wagner G, Walker L, Wang-Gohrke S, Wappenschmidt B, Weitzel JN, Yadav S, Yang X, Yannoukakos D, Zimbalatti D, Offit K, Thomassen M, Couch FJ, Schmutzler RK, Simard J, Easton, DF, Chenevix-Trench G, Antoniou AC, Consortium of Investigators of Modifiers of BRCA and BRCA. Polygenic risk scores and breast and epithelial ovarian cancer risks for carriers of BRCA1 and BRCA2 pathogenic variants. Accepted for publication, Genet Med. PMID: PMC Journal in Process.

Shuch B, Li S, **Risch H**, Bindra RS, McGillivray PD, Gerstein M. Estimation of the carrier frequency of fumarate hydratase alterations and implications for kidney cancer risk in hereditary leiomyomatosis and renal cancer. In press, Cancer. PMID: PMC Journal in Process.

Lin Y, Nakatochi M, Hosono Y, Ito H, Kamatani Y, Inoko A, Sakamoto H, Kinoshita F, Kobayashi Y, Ishii H, Ozaka M, Sasaki T, Matsuyama M, Sasahira N, Morimoto M, Kobayashi S, Fukushima T, Ueno M, Ohkawa S, Egawa N, Kuruma S, Mori M, Nakao H, Adachi Y, Okuda M, Osaki T, Kamiya S, Wang C, Hara K, Shimizu Y, Miyamoto T, Hayashi Y, Ebi H, Kohmoto T, Imoto I, Kasugai Y, Murakami Y, Akiyama M, Ishigaki K, Matsuda K, Hirata M, Shimada K, Okusaka T, Kawaguchi T, Takahashi M, Watanabe Y, Kuriki K, Kadota A, Okada R, Mikami H, Takezaki T, Suzuki S, Yamaji T, Iwasaki M, Sawada N, Goto A, Kinoshita K, Fuse N, Katsuoka F, Shimizu A, Nishizuka SS, Tanno K, Suzuki K, Okada Y, Horikoshi M, Yamauchi T, Kadowaki T, Yu H, Zhong J, Amundadottir L, Doki Y, Ishii H, Eguchi H, Bogumil D, Haiman C, Le Marchand L, Mori M, **Risch H**, Setiawan VW, Tsugane S, Wakai K, Yoshida T, Matsuda F, Kubo M, Kikuchi S, Matsuo K. Genome-wide association meta-analysis identifies GP2 gene risk variants for pancreatic cancer. Accepted for publication, Nat Commun. PMID: PMC Journal in Process.

Tang H, Jiang L, Stolzenberg-Solomon RZ, Arslan AA, Beane Freeman LE, Bracci PM, Brennan P, Canzian F, Du M, Gallinger S, Giles GG, Goodman PJ, Kooperberg C, Le Marchand L, Neale RE, Shu X-O, Visvanathan K, White E, Zheng W, Albanes D, Andreotti G, Babic A, Bamlet WR, Berndt SI, Blackford A, Bueno-de-Mesquita B, Buring JE, Campa D, Chanock SJ, Childs E, Duell EJ, Fuchs C, Gaziano JM, Goggins M, Hartge P, Hassam MH, Holly EA, Hoover RN, Hung RJ, Kurtz RC, Lee I-M, Malats N, Milne RL, Ng K, Oberg AL, Orlow I, Peters U, Porta M, Rabe KG, Rothman N, Scelo G, Sesso HD, Silverman DT, Thompson IM Jr, Tjønneland A, Trichopoulou A, Wactawski-Wende J,

Wentzensen N, Wilkens LR, Yu H, Zeleniuch-Jacquotte A, Amundadottir LT, Jacobs EJ, Petersen GM, Wolpin BM, **Risch HA**, Chatterjee N, Klein AP, Li D, Kraft P, Wei P. Genome-wide gene-diabetes and gene-obesity interaction scan in 8,255 cases and 11,900 controls from Pancreatic Cancer Cohort Consortium and Pancreatic Cancer Case Control Consortium. Accepted for publication, *Cancer Epidemiol Biomarkers Prev*. PMID: PMC Journal in Process.

Zhang Y, Wilcox A, Zhang H, Choudhury PP, Easton D, Milne R, Simard J, Hall P, Michailidou K, Dennis J, Schmidt M, Chang-Claude J, Gharahkhani P, Whiteman D, Campbell P, Hoffmeister M, Jenkins M, Peters U, Hsu L, Gruber S, Casey G, Schmit S, O'Mara T, Spurdle A, Thompson D, Tomlinson I, De Vivo I, Landi MT, Law M, Iles M, Demenais F, Kumar R, Macgregor S, Bishop D, Ward S, Bondy M, Houlston R, Wiencke J, Melin B, Barnholtz-Sloan J, Kinnersley B, Wrensch M, Amos C, Hung R, Brennan P, McKay J, Caporaso N, Berndt S, Birmann B, Camp N, Kraft P, Rothman N, Slager S, Berchuck A, Pharoah PD, Sellers T, Gayther S, Pearce C, Goode E, Schildkraut J, Moysich K, Amundadottir L, Jacobs E, Klein A, Petersen G, **Risch H**, Stolzenberg-Solomon R, Wolpin B, Li D, Eeles R, Haiman C, Kote-Jarai Z, Schumacher F, Al Olama AA, Purdue M, Scelo G, Dalgaard M, Greene M, Grotmol T, Kanetsky P, McGlynn K, Nathanson K, Turnbull C, Wiklund F, Breast Cancer Association Consortium (BCAC), Vaughan T, Colon Cancer Family Registry (ColonCFR), Huyghe J, Glubb D, Genetics and Epidemiology of Colorectal Cancer Consortium (GECCO), Newton-Bishop J, Glioma International Case-Control Study (GICC), Liu G, Le Marchand L, Cerhan J, Riggan M, Ferreiro-Iglesias A, Bracci P, Hoover R, The Practical Consortium, Hofmann J, Testicular Cancer Consortium (TECAC), Chanock S, Chatterjee N, Garcia-Closas M. Assessment of polygenic architecture and risk prediction based on common variants across fourteen cancers. Accepted for publication, *Nat Commun*. PMID: PMC Journal in Process.

Babic A, Sasamoto N, Rosner BA, Tworoger SS, Jordan SJ, **Risch HA**, Harris HR, Rossing MA, Doherty JA, Fortner RT, Chang-Claude J, Goodman MT, Thompson PJ, Moysich KB, Ness RB, Kjaer SK, Jensen A, Schildkraut JM, Titus LJ, Cramer DW, Bandera EV, Qin B, Sieh W, McGuire V, Sutphen R, Pearce CL, Wu AH, Pike M, Webb PM, Modugno F, Terry KL. Association between breastfeeding and ovarian cancer risk. In press, *JAMA Oncol* 2020. PMID: PMC Journal in Process.

Zhu J, Shu X, Guo X, Liu D, Bao J, Milne R, Giles GG, Wu C, Du M, White E, **Risch HA**, Malats N, Duell EJ, Goodman PJ, Li D, Bracci P, Katzke V, Neale RE, Gallinger S, Van Den Eeden S, Arslan A, Canzian F, Kooperberg C, Beane-Freeman L, Scelo G, Visvanathan K, Haiman CA, Le Marchand L, Yu H, Petersen GM, Stolzenberg-Solomon R, Klein AP, Cai Q, Long J, Shu X-O, Zheng W, Wu L. Associations between genetically predicted blood protein biomarkers

and pancreatic cancer risk. Accepted for publication, *Cancer Epidemiol Biomarkers Prev*. PMID: PMC Journal in Process.

Pham YT-H, Utuama O, Thomas CE, Park JA, La Vecchia C, **Risch HA**, Tran CT-D, Le TV, Boffetta P, Raskin L, Luu HN. High Mobility Group A Protein-2 (HMGA2) as a tumor cancer diagnostic and prognostic marker: A systematic review and meta-analysis. Accepted for publication, *Eur J Cancer Prev*. *Not a result of NIH funding.

Xiao Y, He L, Chang W, Zhang S, Wang R, Chen X, Li X, Wang Z, **Risch H**. Self-harm behaviors, suicidal ideation and associated factors among rural left-behind children in west China. Accepted for publication, *Annals of Epidemiology*. *Not a result of NIH funding.

Lor GCY, **Risch HA**, Fung JW, Yeung SLA, Wong IOL, Zheng W, Pang H. Reporting and guidelines for Mendelian randomization analysis: a systematic review of oncological studies. Accepted for publication, *Cancer Epidemiol*. *Not a result of NIH funding.

Feng H, Gusev A, Pasaniuc B, Wu L, Long J, Abu-Full Z, Aittomäki K, Andrulis IL, Anton-Culver H, Antoniou AC, Arason A, Arndt V, Aronson KJ, Arun BK, Asseryanis E, Auer PL, Azzollini J, Balmaña J, Barkardottir RB, Barnes DR, Barrowdale D, Beckmann MW, Behrens S, Benitez J, Bermisheva M, Białkowska K, Blanco A, Blomqvist C, Boeckx B, Bogdanova NV, Bojesen SE, Bolla MK, Bonanni B, Borg A, Brauch H, Brenner H, Briceno I, Broeks A, Brüning T, Burwinkel B, Cai Q, Caldés T, Caligo MA, Campbell I, Canisius S, Campa D, Carter BD, Carter J, Castelao JE, Chang-Claude J, Chanock SJ, Christiansen H, Chung WK, Claes KBM, Clarke CL; GEMO Study Collaborators; EMBRACE Collaborators; GC-HBOC study Collaborators, Couch FJ, Cox A, Cross SS, Cybulski C, Czene K, Daly MB, de la Hoya M, De Leeneer K, Dennis J, Devilee P, Diez O, Domchek SM, Dörk T, Dos-Santos-Silva I, Dunning AM, Dwek M, Eccles DM, Ejlertsen B, Ellberg C, Engel C, Eriksson M, Fasching PA, Fletcher O, Flyger H, Fostira F, Friedman E, Fritschi L, Frost D, Gabrielson M, Ganz PA, Gapstur SM, Garber J, García-Closas M, García-Sáenz JA, Gaudet MM, Giles GG, Glendon G, Godwin AK, Goldberg MS, Goldgar DE, González-Neira A, Greene MH, Gronwald J, Guénel P, Haiman CA, Hall P, Hamann U, Hake C, He W, Heyworth J, Hogervorst FBL, Hollestelle A, Hooning MJ, Hoover RN, Hopper JL, Huang G, Hulick PJ, Humphreys K, Imyanitov EN; ABCRB Investigators; HEBON Investigators; BCFR Investigators; OCGN Investigators, Isaacs C, Jakimovska M, Jakubowska A, James P, Janavicius R, Jankowitz RC, John EM, Johnson N, Joseph V, Jung A, Karlan BY, Khusnutdinova E, Kiiski JI, Konstantopoulou I, Kristensen VN, Laitman Y, Lambrechts D, Lazaro C, Leroux D, Leslie G, Lester J, Lesueur F, Lindor N, Lindström S, Lo WY, Loud JT, Lubiński J, Makalic E, Mannermaa A, Manoochehri M, Manoukian S, Margolin S, Martens JWM, Martinez ME, Matricardi L, Maurer T, Mavroudis D,

McGuffog L, Meindl A, Menon U, Michailidou K, Kapoor PM, Miller A, Montagna M, Moreno F, Moserle L, Mulligan AM, Muranen TA, Nathanson KL, Neuhausen SL, Nevanlinna H, Nevelsteen I, Nielsen FC, Nikitina-Zake L, Offit K, Olah E, Olopade OI, Olsson H, Osorio A, Papp J, Park-Simon TW, Parsons MT, Pedersen IS, Peixoto A, Peterlongo P, Peto J, Pharoah PDP, Phillips KA, Plaseska-Karanfilska D, Poppe B, Pradhan N, Prajzencanc K, Presneau N, Punie K, Pylkäs K, Radice P, Rantala J, Rashid MU, Rennert G, **Risch HA**, Robson M, Romero A, Saloustros E, Sandler DP, Santos C, Sawyer EJ, Schmidt MK, Schmidt DF, Schmutzler RK, Schoemaker MJ, Scott RJ, Sharma P, Shu XO, Simard J, Singer CF, Skytte AB, Soucy P, Southey MC, Spinelli JJ, Spurdle AB, Stone J, Swerdlow AJ, Tapper WJ, Taylor JA, Teixeira MR, Terry MB, Teulé A, Thomassen M, Thöne K, Thull DL, Tischkowitz M, Toland AE, Tollenaar RAEM, Torres D, Truong T, Tung N, Vachon CM, van Asperen CJ, van den Ouweland AMW, van Rensburg EJ, Vega A, Viel A, Vieira-Balo P, Wang Q, Wappenschmidt B, Weinberg CR, Weitzel JN, Wendt C, Winqvist R, Yang XR, Yannoukakos D, Ziogas A, Milne RL, Easton DF, Chenevix-Trench G, Zheng W, Kraft P, Jiang X. Transcriptome-wide association study of breast cancer risk by estrogen-receptor status. *Genet Epidemiol* 2020;1-27. doi: 10.1002/gepi.22288. PMID: PMC Journal in Process.

Zhong J, Jermusyk A, Wu L, Hoskins JW, Collins I, Zhang M, Lei S, Chung CC, Zhang T, Xiao W, Albanes D, Andreotti G, Arslan AA, Babic A, Bamlet WR, Beane-Freeman L, Berndt S, Borgida A, Bracci PM, Brais L, Brennan P, Bueno-de-Mesquita B, Buring J, Canzian F, Childs EJ, Cotterchio M, Du M, Duell EJ, Fuchs C, Gallinger S, Gaziano JMM, Giles GG, Giovannucci E, Goggins M, Goodman GE, Goodman PJ, Haiman C, Hartge P, Hasan M, Helzlsouer KJ, Holly EA, Klein EA, Kogevinas M, Kulke MH, Kurtz RJ, LeMarchand L, Malats N, Mannisto S, Milne R, Mucci E, Neale RE, Obazee O, Oberg AL, Olson SH, Orlow I, Patel AV, Peters U, Porta M, Real FX, Rothman N, Scelo G, Sesso HD, Severi G, Silverman D, Sund M, Thornquist MD, Tobias GS, Van Den Eeden SK, Visvanathan K, Wactawski-Wende J, Wentzensen N, White E, Yu H, Zeleniuch-Jacquotte A, Hoover R, Brown K, Kooperberg C, **Risch HA**, Jacobs EJ, Li D, Yu K, Shu X-O, Chanock SJ, Wolpin BM, Stolzenberg-Solomon R, Olson S, Chatterjee N, Klein AP, Smith JP, Kraft P, Shi J, Petersen GM, Zheng W, Amundadottir LT. A transcriptome-wide association study (TWAS) identifies novel candidate susceptibility genes for pancreatic cancer. Accepted for publication, *J Natl Cancer Inst*. PMID: PMC Journal in Process.

Zhang H, Ahearn TU, Lecarpentier J, Barnes D, Beesley J, Jiang X, O'Mara TA, Qi G, Zhao N, Bolla MK, Dunning AM, Dennis J, Wang Q, Abu Ful Z, Aittomäki K, Andrulis IL, Anton-Culver H, Arndt V, Aronson KJ, Arun BK, Auer PL, Azzollini J, Barrowdale D, Becher H, Beckmann MW, Behrens S, Benitez J, Bermisheva M, Bialkowska K, Blanco A, Blomqvist C, Bogdanova NV, Bojesen SE, Bonanni B, Bondavalli D, Borg A, Brauch H, Brenner H, Briceno I, Broeks A, Brucker SY, Brüning T, Burwinkel B, Buys SS, Byers H, Caldés T, Caligo

MA, Calvello M, Campa D, Castelao JE, Chang-Claude J, Chanock SJ, Christiaens M, Christiansen H, Chung WK, Claes KBM, Clarke CL, Cornelissen S, Couch FJ, Cox A, Cross SS, Czene K, Daly MB, Devilee P, Diez O, Domchek SM, Dörk T, Dwek M, Eccles DM, Ekici AB, Evans DG, Fasching PA, Figueroa J, Foretova L, Fostira F, Friedman E, Frost D, Gago-Dominguez M, Gapstur SM, Garber J, García-Sáenz JA, Gaudet MM, Gayther SA, Giles GG, Godwin AK, Goldberg MS, Goldgar DE, González-Neira A, Greene MH, Gronwald J, Guénel P, Häberle L, Hahnen E, Haiman CA, Hake CR, Hall P, Hamann U, Harkness EF, Heemskerk-Gerritsen BAM, Hillemanns P, Hogervorst FBL, Holleczeck B, Hollestelle A, Hooning MJ, Hoover RN, Hopper JL, Howell A, Huebner H, Hulick PJ, Imyanitov EN, kConFab Investigators, ABCTB Investigators, Isaacs C, Izatt L, Jager A, Jakimovska M, Jakubowska A, James P, Janavicius R, Janni W, John EM, Jones ME, Jung A, Kaaks R, Kapoor PM, Karlan BY, Keeman R, Khan S, Khusnutdinova E, Kitahara CM, Ko Y-D, Konstantopoulou I, Koppert LB, Koutros S, Kristensen VN, Laenkholm A-V, Lambrechts D, Larsson SC, Laurent-Puig P, Lazaro C, Lazarova E, Lejbkowitz F, Leslie G, Lesueur F, Lindblom A, Lissowska J, Lo W-Y, Loud JT, Lubinski J, Lukomska A, MacInnis RJ, Mannermaa A, Manoochehri M, Manoukian S, Margolin S, Martinez ME, Matricardi L, McGuffog L, McLean C, Mebirouk N, Meindl A, Menon U, Miller A, Mingazheva E, Montagna M, Mulligan AM, Mulot C, Muranen TA, Nathanson KL, Neuhausen SL, Nevanlinna H, Neven P, Newman WG, Nielsen FC, Nikitina-Zake L, Nodora J, Offit K, Olah E, Olopade OI, Olsson H, Orr N, Papi L, Papp J, Park-Simon T-W, Parsons MT, Peissel B, Peixoto A, Peshkin B, Peterlongo P, Peto J, Phillips K-A, Piedmonte M, Plaseska-Karanfilska D, Prajzendanc K, Prentice R, Prokofyeva D, Rack B, Radice P, Ramus SJ, Rantala J, Rashid MU, Rennert G, Rennert HS, **Risch HA**, Romero A, Rookus MA, Rübner M, Rüdiger T, Saloustros E, Sampson S, Sandler DP, Sawyer EJ, Scheuner MT, Schmutzler RK, Schneeweiss A, Schoemaker MJ, Schöttker B, Schürmann P, Senter L, Sharma P, Sherman ME, Shu X-O, Singer CF, Smichkoska S, Soucy P, Southey MC, Spinelli JJ, Stone J, Stoppa-Lyonnet D, EMBRACE Study, GEMO Study Collaborators, Swerdlow AJ, Szabo CI, Tamimi RM, Tapper WJ, Taylor JA, Teixeira MR, Terry M, Thomassen M, Thull DL, Tischkowitz M, Toland AE, Tollenaar RAEM, Tomlinson I, Torres D, Troester MA, Truong T, Tung N, Untch M, Vachon CM, van den Ouweland AMW, van der Kolk LE, van Veen EM, van Rensburg EJ, Vega A, Wappenschmidt B, Weinberg CR, Weitzel JN, Wildiers H, Winqvist R, Wolk A, Yang XR, Yannoukakos D, Zheng W, Zorn KK, Zuradelli M, Milne RL, Kraft P, Simard J, Pharoah PDP, Michailidou K, Antoniou AC, Schmidt MK, Chenevix-Trench G, Easton DF, Chatterjee N, García-Closas M. Genome-wide association study identifies 32 novel breast cancer susceptibility loci from overall and subtype-specific analyses. Accepted for publication, Nat Genet. PMID: PMC Journal in Process.

Fachal L, Aschard H, Beesley J, Barnes DR, Allen J, Kar S, Pooley KA, Dennis J, Michailidou K, Turman C, Soucy P, Lemaçon A, Lush M, Tyrer JP, Ghousaini M, Moradi Marjaneh M, Jiang X, Agata S, Aittomäki K, Alonso MR, Andrulis IL, Anton-Culver H, Antonenkova NN, Arason A, Arndt V, Aronson KJ, Arun BK, Auber B, Auer PL, Azzollini J, Balmaña J, Barkardottir RB, Barrowdale D, Beeghly-Fadiel A, Benitez J, Bermisheva M, Biłkowska K, Blanco AM, Blomqvist C, Blot W, Bogdanova NV, Bojesen SE, Bolla MK, Bonanni B, Borg A, Bosse K, Brauch H, Brenner H, Briceno I, Brock IW, Brooks-Wilson A, Brüning T, Burwinkel B, Buys SS, Cai Q, Caldés T, Caligo MA, Camp NJ, Campbell I, Canzian F, Carroll JS, Carter BD, Castelao JE, Chiquette J, Christiansen H, Chung WK, Claes KBM, Clarke CL, GEMO Study Collaborators, EMBRACE Collaborators, Collée JM, Cornelissen S, Couch FJ, Cox A, Cross SS, Cybulski C, Czene K, Daly MB, de la Hoya M, Devilee P, Diez O, Ding YC, Dite GS, Domchek SM, Dörk T, dos-Santos-Silva I, Droit A, Dubois S, Dumont M, Duran M, Durcan L, Dwek M, Eccles DM, Engel C, Eriksson M, Evans DG, Fasching PA, Fletcher O, Floris G, Flyger H, Foretova L, Foulkes WD, Friedman E, Fritschi L, Frost D, Gabrielson M, Gago-Dominguez M, Gambino G, Ganz PA, Gapstur SM, Garber J, García-Sáenz JA, Gaudet MM, Georgoulas V, Giles GG, Glendon G, Godwin AK, Goldberg MS, Goldgar DE, González-Neira A, Greene MH, Grip M, Gronwald J, Grundy A, Guénel P, Hahnen E, Haiman CA, Håkansson N, Hall P, Hamann U, Harrington PA, Hartikainen JM, Hartman M, He W, Healey CS, Heemskerk-Gerritsen BAM, Heyworth J, Hillemanns P, Hogervorst FBL, Hollestelle A, Hooning MJ, Hopper JL, Howell A, Huang G, Hulick PJ, Imyanitov EN, ABCTB Investigators, KConFab Investigators, HEBON Investigators, Isaacs C, Iwasaki M, Jager A, Jakimovska M, Jakubowska A, James P, Janavicius R, Jankowitz RC, John EM, Johnson N, Jones ME, Jukkola-Vuorinen A, Jung A, Kaaks R, Kang D, Karlan BY, Keeman R, Kerin MJ, Khusnutdinova E, Kiiski JI, Kirk J, Kitahara CM, Ko Y-D, Konstantopoulou I, Kosma V-M, Koutros S, Kubelka-Sabit K, Kwong A, Kyriacou K, Laitman Y, Lambrechts D, Lee E, Leslie G, Lester J, Lesueur F, Lindblom A, Lo W-Y, Long J, Lophatananon A, Loud JT, Lubiński J, MacInnis RJ, Maishman T, Makalic E, Mannermaa A, Manoochchri M, Manoukian S, Margolin S, Martinez ME, Matsuo K, Maurer T, Mavroudis D, Mayes R, McGuffog L, McLean C, Mebirouk N, Meindl A, Middha P, Miller N, Miller A, Montagna M, Moreno F, Mulligan AM, Muñoz-Garzon VM, Muranen TA, Narod SA, Nassir R, Nathanson KL, Neuhausen SL, Nevanlinna H, Neven P, Nielsen FC, Nikitina-Zake L, Norman A, Offit K, Olah E, Olopade OI, Olsson H, Orr N, Osorio A, Pankratz VS, Papp J, Park SK, Park-Simon T-W, Parsons MT, Paul J, Pedersen IS, Peissel B, Peshkin B, Peterlongo P, Peto J, Plaseska-Karanfilska D, Prajzandanz K, Prentice R, Presneau N, Prokofyeva D, Pujana MA, Pylkäs K, Radice P, Ramus SJ, Rantala J, Rau-Murthy R, Rennert G, **Risch HA**, Robson M, Romero A, Rossing CM, Saloustros E, Sánchez-Herrero E, Sandler DP, Santamariña M, Saunders C, Sawyer EJ, Scheuner MT, Schmidt DF, Schmutzler RK, Schneeweiss A, Schoemaker MJ, Schöttker B, Schürmann P, Scott C, Scott RJ, Senter L, Seynaeve CMD, Shah M, Sharma P, Shen C-Y, Shu X-O, Singer

CF, Slavin TP, Smichkoska S, Southey MC, Spinelli JJ, Spurdle AB, Stone J, Stoppa-Lyonnet D, Sutter C, Swerdlow AJ, Tamimi RM, Tan YY, Tapper WJ, Taylor JA, Teixeira MR, Tengström M, Teo SH, Terry MB, Teulé A, Thomassen M, Thull DL, Tibiletti MG, Tischkowitz M, Toland AE, Tollenaar RAEM, Tomlinson I, Torres D, Torres-Mejía G, Troester MA, Tung N, Tzardi M, UlmerH-U, Vachon CM, van Asperen CJ, van der Kolk LE, van Rensburg EJ, Vega A, Viel A, Vijai J, Vogel MJ, Wang Q, Wappenschmidt B, Weinberg CR, Weitzel JN, Wendt C, Wildiers H, Winqvist R, Wolk A, Wu AH, Yannoukakos D, Zhang Y, Zheng W, Hunter D, Pharoah PDP, Chang-Claude J, García-Closas M, Schmidt MK, Milne RL, Kristensen VN, French JD, Edwards SL, Antoniou AC, Chenevix-Trench G, Simard J, Easton DF, Kraft P, Dunning AM. Fine-mapping of 150 breast cancer risk regions identifies 191 high confidence target genes. Accepted for publication, Nat Genet. PMID: PMC Journal in Process.

Dong J, Gharakhani P, Chow W-H, Gammon MD, Liu G, Caldas C, Wu AH, Ye W, Onstad L, Anderson LA, Bernstein L, Pharoah PD, **Risch HA**, Corley DA, Fitzgerald RC, Stomach and Esophageal Cancer Study (SOCS) Consortium, Iyer PG, Reid BJ, Lagergren J, Shaheen NJ, Vaughan TL, MacGregor S, Love S, Palles C, Tomlinson I, Gockel I, May A, Gerges C, Anders M, Böhmer AC, Becker J, Kreuser N, Thieme R, Noder T, Venerito M, Veits L, Schmidt T, Schmidt C, Izbicki JR, Hölscher AH, Lang H, Lorenz D, Schumacher B, Mayershofer R, Vashist Y, Ott K, Vieth M, Weismüller J, Nöthen MM, Moebus S, Knapp M, Peters WHM, Neuhaus H, Rösch T, Ell C, Jankowski J, Schumacher J, Neale RE, Whiteman DC, Thrift AP. Vitamin D status and the risks of Barrett's esophagus and esophageal adenocarcinoma: a Mendelian randomization study. Clin Gastroenterol Hepatol. 2019: S1542-3565(19)30088-6. doi: 10.1016/j.cgh.2019.01.041. PMID: PMC Journal in Process.

Ferreira MA, Gamazon ER, Aittomäki K, Andrulis IL, Anton-Culver H, Arndt V, Aronson KJ, Arun BK, Asseryanis E, Auer PL, Azzollini J, Balmaña J, Barkardottir RB, Barnes DR, Barrowdale D, Beckmann MW, Behrens S, Benitez J, Bermisheva M, Blomqvist C, Bogdanova NV, Bojesen SE, Bolla MK, Borg A, Brauch H, Brenner H, Broeks A, Burwinkel B, Caldés T, Caligo MA, Campbell I, Canzian F, Carter J, Carter BD, Castelao JE, Chang-Claude J, Chanock SJ, Christiansen H, Chung WK, Claes KBM, Clarke CL, Couch FJ, Cox A, Cross SS, Czene K, Daly MB, de la Hoya M, Dennis J, Devilee P, Diez O, Dörk T, Dunning AM, Dwek M, Eccles DM, Ejlertsen B, Ellberg C, Engel C, Eriksson M, Fasching PA, Fletcher O, Flyger H, Friedman E, Frost D, Gabrielson M, Gago-Dominguez M, Ganz PA, Gapstur SM, Garber J, García-Closas M, García-Sáenz JA, Gaudet MM, Giles GG, Glendon G, Godwin AK, Goldberg MS, Goldgar DE, González-Neira A, Greene MH, Gronwald J, Guénel P, Haiman CA, Hall P, Hamann U, He W, Heyworth J, Hogervorst FBL, Hollestelle A, Hoover RN, Hopper JL, Huang G, Hulick PJ, Humphreys K, Imyanitov EN, Isaacs C, Jakimovska M, Jakubowska A, James P, Janavicius R, Jankowitz RC, John EM, Johnson N, Jones ME, Joseph V, Kaczmarek K, Kar S, Karlan BY, Keuhl T, Khusnutdinova

E, Kiiski JI, Ko Y-D, Konstantopoulou I, Kristensen VN, Laitman Y, Lambrechts D, Lazaro C, Leslie G, Lester J, Lesueur F, Lindor N, Lindström S, Long J, Loud JT, Lubiński J, Makalic E, Mannermaa A, Margolin S, Mavroudis D, McGuffog L, Meindl A, Menon U, Michailidou K, Miller A, Montagna M, Moreno F, Moserle L, Mulligan AM, Nathanson KL, Neuhausen SL, Nevanlinna H, Nevelsteen I, Nielsen FC, Nikitina-Zake L, Nussbaum RL, Offit K, Olah E, Olopade OI, Olsson H, Osorio A, Papp J, Park-Simon T-W, Parsons MT, Pedersen IS, Peixoto A, Peterlongo P, Pharoah PDP, Plaseska-Karanfilska D, Poppe B, Prentice R, Presneau N, Radice P, Rantala J, Rennert G, **Risch HA**, Saloustros E, Sanden K, Sandler DP, Sawyer EJ, Schmidt MK, Schmutzler RK, Sharma P, Shu X-O, Simard J, Singer CF, Soucy P, Southey MC, Spinelli JJ, Spurdle AB, Stone J, Swerdlow AJ, Tapper WJ, Taylor JA, Teixeira MR, Terry MB, Teulé A, Thomassen M, Thöne K, Thull DL, Tischkowitz M, Toland AE, Torres D, Truong T, Tung N, Vachon C, van Asperen CJ, van den Ouweland AMW, van Rensburg EJ, Vega A, Viel A, Wang Q, Wappenschmidt B, Weinberg CR, Weitzel JN, Wendt C, Winqvist R, Yang XR, Yannoukakos D, Ziogas A, GC-HBOC study collaborators, OCGN, HEBON Investigators, GEMO Study Collaborators, EMBRACE, BCFR Investigators, kConFab Investigators, ABCTB Investigators, Antoniou AC, Kraft P, Easton DF, Zheng W, Milne RL, Beesley J, Chenevix-Trench G. Genome-wide association and transcriptome studies identify novel putative target genes and risk loci for breast cancer. Accepted for publication, Nat Commun. PMID: PMC Journal in Process.

2019

Xiao Y, Yang H, Lu J, Li D, Xu C, **Risch HA**. Serum gamma-glutamyltransferase and the overall survival of metastatic pancreatic cancer. *BMC Cancer* 2019;19:1020. doi: 10.1186/s12885-019-6250-8. *Not a result of NIH funding.

Xiao Y, Wang Y, Chang W, Chen Y, Yu Z, **Risch H**. Factors associated with psychological resilience in left-behind children in southwest China. *Asian J Psychiatr* 2019;46:1-5. doi: 10.1016/j.ajp.2019.09.014. *Not a result of NIH funding.

Baecker A, Kim S, **Risch HA**, Nuckols TK, Wu BU, Hendifar AE, Pandol SJ, Pisegna JR, Jeon CY. Do changes in health reveal the possibility of undiagnosed pancreatic cancer? Development of a risk-prediction model based on healthcare claims data. *PLoS One* 2019;14(6):e0218580. doi: 10.1371/journal.pone.0218580. PMID: PMC6592596.

Chen FC, Childs EJ, Mocchi E, Bracci PM, Gallinger S, Li D, Neale R, Olson SH, Scelo G, Bamlet WR, Blackford A, Borges M, Brennan P, Chaffee KG, Duggal P, Hassan M, Holly EA, Hung RJ, Goggins M, Kurtz RC, Oberg AL, Orlow I, Yu H, Petersen GM, **Risch HA**, Klein AP. Analysis of heritability and genetic architecture of pancreatic cancer: a PanC4 study. *Cancer Epidemiol Biomarkers*

Prev 2019;28(7):1238-45. doi: 10.1158/1055-9965.EPI-18-1235. PMID: PMC6606380.

Reid BM, Permuth JB, Chen YA, Fridley BL, Iversen E, Chen Z, Jim HS, Vierkant RA, Cunningham JM, Barnholtz-Sloan J, Narod S, **Risch H**, Schildkraut JM, Goode EL, Monteiro ANA, Sellers TA. Genome-wide analysis of common copy number variation and epithelial ovarian cancer risk. *Cancer Epidemiol Biomarkers Prev* 2019;28(7):1117-26. PMID: PMC Journal in Process.

Buckley MA, Woods NT, Tyrer J, Mendoza-Fandino G, Lawrenson K, Hazelett DJ, Najafabadi HS, Gjyshi A, Carvalho RS, Lyra PC Jr, Coetzee SG, Shen HC, Karevan R, Yang A, Earp M, Chen YA, Yoder SJ, **Risch HA**, Aben KKH, Anton-Culver H, Antonenkova N, Bruinsma F, Bandera EV, Bean YT, Beckmann MW, Bisogna M, Bjorge L, Bogdanova N, Brinton LA, Brooks-Wilson A, Bunker CH, Butzow R, Campbell IG, Carty K, Chang-Claude J, Cook LS, Cramer DW, Cunningham JM, Cybulski C, Dansonka-Mieszkowska A, du Bois A, Dicks E, Doherty JA, Dörk T, Dürst M, Easton DF, Eccles DM, Edwards RP, Ekici AB, Fasching PA, Fridley BL, Gao Y-T, Gentry-Maharaj A, Giles GG, Glasspool R, Goodman MT, Gronwald J, Harter P, Hasmad HN, Hein A, Heitz F, Hildebrandt MAT, Hillemanns P, Hogdall CK, Hogdall E, Hosono S, Iversen ES, Jakubowska A, Jensen A, Ji B-T, Karlan BY, Kellar M, Kelley JL, Kiemeny LA, Krakstad C, Kjaer SK, Kupryjanczyk J, Lambrechts D, Lambrechts S, Le ND, Lee AW, Lele S, Leminen A, Lester J, Levine DA, Liang D, Lim BK, Lissowska J, Lu K, Lubinski J, Lundvall L, Massuger LFAG, Matsuo K, McGuire V, McLaughlin JR, McNeish I, Menon U, Milne RL, Modugno F, Moysich KB, Ness RB, Nevanlinna H, Eilber U, Odunsi K, Olson SH, Orlow I, Orsulic S, Weber RP, Paul J, Pearce CL, Pejovic T, Pelttari LM, Permuth-Wey J, Pike MC, Poole EM, Rosen B, Rossing MA, Rothstein JH, Rudolph A, Runnebaum IB, Rzepecka IK, Salvesen HB, Schwaab I, Shu X-O, Shvetsov YB, Siddiqui N, Sieh W, Song H, Southey MC, Spiewankiewicz B, Sucheston-Campbell L, Teo S-H, Terry KL, Thompson PJ, Thomsen L, Tangen IL, Tsai Y, Tworoger SS, van Altena AM, Van Nieuwenhuysen E, Vergote I, Walsh CS, Wang-Gohrke S, Wentzensen N, Whittemore AS, Wicklund KG, Wilkens LR, Wu AH, Wu X, Woo Y-L, Yang H, Zheng W, Ziogas A, Berchuck A, Chenevix-Trench G, AOCs management group, Schildkraut JM, Ramus SJ, Kelemen LE, Freedman ML, Phelan CM, Coetzee GA, Noushmehr H, Hughes TR, Sellers TA, Goode EL, Pharoah PD, Gayther SA, Monteiro ANA. Functional analysis and fine mapping of the 9p22.2 ovarian cancer susceptibility locus. *Cancer Res* 2019;79(3):467-81. doi: 10.1158/0008-5472.CAN-17-3864. PMID: PMC Journal in Process.

Chhoda A, Lu L, Clerkin BM, **Risch H**, Farrell J. Pancreatic cancer screening: current approaches. *Am J Pathol* 2019;189(1):22-35. doi: 10.1016/j.ajpath.2018.09.013. *Not a result of NIH funding.

Webb PM, Na R, Weiderpass E, Adami HO, Anderson KE, Bertrand KA, Botteri E, Brasky TM, Brinton LA, Chen C, Doherty JA, Lu L, McCann SE, Moysich KB, Olson S, Petruzella S, Palmer JR, Prizment AE, Schairer C, Setiawan VW, Spurdle AB, Trabert B, Wentzensen N, Wilkens L, Yang HP, Yu H, **Risch HA**, Jordan SJ. Use of aspirin, other nonsteroidal anti-inflammatory drugs and acetaminophen and risk of endometrial cancer: The Epidemiology of Endometrial Cancer Consortium. *Ann Oncol* 2019;30(2):310-316. doi: 10.1093/annonc/mdy541. PMID: PMC Journal in Process.

Jiang X, Finucane HK, Schumacher FR, Schmit SL, Tyrer JP, Han Y, Michailidou K, Lesueur C, Kuchenbaecker KB, Dennis J, Conti DV, Casey G, Gaudet MM, Huyghe JR, Albanes D, Aldrich MC, Andrew AS, Andrulis IL, Anton-Culver H, Antoniou AC, Antonenkova NN, Arnold SM, Aronson KJ, Arun BK, Bandera EV, Barkardottir RB, Barnes DR, Batra J, Beckmann MW, Benitez J, Benlloch S, Berchuck A, Berndt SI, Bickeböller H, Bien SA, Blomqvist C, Boccia S, Bogdanova NV, Bojesen SE, Bolla MK, Brauch H, Brenner H, Brenton JD, Brook MN, Brunet J, Brunnström H, Buchanan DD, Burwinkel B, Butzow R, Cadoni G, Caldés T, Caligo MA, Campbell I, Campbell PT, Cancel-Tassin G, Cannon-Albright L, Campa D, Caporaso N, Carvalho AL, Chan AT, Chang-Claude J, Chanock SJ, Chen C, Christiani DC, Claes KBM, Claessens F, Clements J, Collée JM, Cruz Correa M, Couch FJ, Cox A, Cunningham JM, Cybulski C, Czene K, Daly MB, deFazio A, Devilee P, Diez O, Gago-Dominguez M, Donovan JL, Dörk T, Duell EJ, Dunning AM, Dwek M, Eccles DM, Edlund CK, Velez Edwards DR, Ellberg C, Evans DG, Fasching PA, Ferris RL, Liloglou T, Figueiredo JC, Fletcher O, Fortner RT, Fostira F, Franceschi S, Friedman E, Gallinger SJ, Ganz PA, Garber J, García-Sáenz JA, Gayther SA, Giles GG, Godwin AK, Goldberg MS, Goldgar DE, Goode EL, Goodman MT, Goodman G, Grankvist K, Greene MH, Gronberg H, Gronwald J, Guénel P, Håkansson N, Hall P, Hamann U, Hamdy FC, Hamilton RJ, Hampe J, Haugen A, Heitz F, Herrero R, Hillemanns P, Hoffmeister M, Høgdall E, Hong Y-C, Hopper JL, Houlston R, Hulick PJ, Hunter DJ, Huntsman DG, Idos G, Imyanitov EN, Ingles SA, Isaacs C, Jakubowska A, James P, Jenkins MA, Johansson M, Johansson M, John EM, Joshi AD, Kaneva R, Karlan BY, Kelemen LE, Köhl T, Khaw K-T, Khusnutdinova E, Kibel AS, Kiemeny LA, Kim J, Kjaer SK, Knight JA, Kogevinas M, Kote-Jarai Z, Koutros S, Kristensen VN, Kupryjanczyk J, Lacko M, Lam S, Lambrechts D, Landi MT, Lazarus P, Le ND, Lee E, Lejbkowitz F, Lenz H-J, Leslie G, Lessel D, Lester J, Levine DA, Li L, Li CI, Lindblom A, Lindor NM, Liu G, Loupakis F, Lubiński J, Maehle L, Maier C, Mannermaa A, Le Marchand L, Margolin S, May T, McGuffog L, Meindl A, Middha P, Miller A, Milne RL, MacInnis RJ, Modugno F, Montagna M, Moreno V, Moysich KB, Mucci L, Muir K, Mulligan AM, Nathanson KL, Neal DE, Ness AR, Neuhausen SL, Nevanlinna H, Newcomb PA, Newcomb LF, Nielsen FC, Nikitina-Zake L, Nordestgaard BG, Nussbaum RL, Offit K, Olah E, Al Olama AA, Olopade OI, Olshan AF, Olsson H, Osorio A, Pandha H, Park JY, Pashayan N, Parsons MT, Pejovic T, Penney KL, Peters WHM, Phelan CM, Phipps AI, Plaseska-

Karanfilska D, Pring M, Prokofyeva D, Radice P, Stefansson K, Ramus SJ, Raskin L, Rennert G, Rennert HS, van Rensburg EJ, Riggan MJ, **Risch HA**, Risch A, Roobol MJ, Rosenstein BS, Rossing MA, De Ruyck K, Saloustros E, Sandler DP, Sawyer EJ, Schabath MB, Schleutker J, Schmidt MK, Setiawan VW, Shen H, Siegel EM, Sieh W, Singer CF, Slattery ML, Sorensen KD, Southey MC, Spurdle AB, Stanford JL, Stevens VL, Stintzing S, Stone J, Sundfeldt K, Sutphen R, Swerdlow AJ, Tajara EH, Tangen CM, Tardon A, Taylor JA, Teare MD, Teixeira MR, Terry MB, Terry KL, Thibodeau SN, Thomassen M, Bjørge L, Tischkowitz M, Toland AE, Torres D, Townsend PA, Travis RC, Tung N, Tworoger SS, Ulrich CM, Usmani N, Vachon CM, Van Nieuwenhuysen E, Vega A, Aguado-Barrera ME, Wang Q, Webb PM, Weinberg CR, Weinstein S, Weissler MC, Weitzel JN, West CML, White E, Whittemore AS, Wichmann H-E, Wiklund F, Winqvist R, Wolk A, Woll P, Woods M, Wu AH, Wu X, Yannoukakos D, Zheng W, Zienolddiny S, Ziogas A, Zorn KK, Lane JM, Saxena R, Thomas D, Hung RJ, Diergaard B, McKay J, Peters U, Hsu L, García Closas M, Eeles RA, Chenevix-Trench G, Brennan PJ, Haiman CA, Simard J, Easton DF, Gruber SB, Pharoah PDP, Price AL, Pasaniuc B, Amos CI, Kraft P, Lindström S. Shared heritability and functional enrichment across six solid cancers. *Nat Commun* 2019;10(1):431. doi: 10.1038/s41467-018-08054-4. PMID: PMC Journal in Process.

2018

Liu G, Mukherjee B, Lee S, Lee AW, Wu AH, Bandera EV, Jensen A, Rossing MA, Moysich KB, Chang-Claude J, Doherty J, Gentry-Maharaj A, Kiemeny L, Gayther SA, Modugno F, Massuger L, Goode EL, Fridley B, Terry KL, Cramer DW, Ramus SJ, Anton-Culver H, Ziogas A, Tyrer JP, Schildkraut JM, Kjaer SK, Webb PM, Ness RB, Menon U, Berchuck A, Pharoah PD, **Risch H**, Pearce CL, Ovarian Cancer Association Consortium. Robust tests for additive gene-environment interaction in case-control studies using gene-environment independence. *Am J Epidemiol* 2018;187(2):366-77. doi: 10.1093/aje/kwx243. PMID: PMC Journal in Process.

Harris HR, Babic A, Webb PM, Nagle CM, Jordan SJ, Australian Ovarian Cancer Study Group, **Risch HA**, Rossing MA, Doherty JA, Goodman MT, Modugno F, Ness RB, Moysich KB, Kjær SK, Høgdall E, Jensen A, Schildkraut JM, Berchuck A, Cramer DW, Bandera EV, Wentzensen N, Kotsopoulos J, Narod SA, Phelan CM, McLaughlin JR, Anton-Culver H, Ziogas A, Pearce CL, Wu AH, Terry KL, Ovarian Cancer Association Consortium. Polycystic ovary syndrome, oligomenorrhea, and risk of ovarian cancer histotypes: Evidence from the Ovarian Cancer Association Consortium. *Cancer Epidemiol Biomarkers Prev* 2018;27(2):174-82. doi: 10.1158/1055-9965.EPI-17-0655. PMID: PMC Journal in Process.

Dong J, Buas MF, Gharahkhani P, Kendall BJ, Onstad L, Zhao S, Anderson LA, Wu AH, Ye W, Bird NC, Bernstein L, Chow W-H, Gammon MD, Liu G, Caldas C, Pharoah PD, Risch HA, Iyer PG, Reid BJ, Hardie LJ, Lagergren J, Shaheen NJ, Corley DA, Fitzgerald RC, Stomach and Oesophageal Cancer Study (SOCS) Consortium, Whiteman DC, Vaughan TL, Thrift AP. Determining risk of Barrett's Esophagus and esophageal adenocarcinoma based on epidemiologic factors and genetic variants. *Gastroenterology* 2018;154(5):1273-81.e3. doi: 10.1053/j.gastro.2017.12.003. PMID: PMC Journal in Process.

Dong J, Levine DM, Buas MF, Zhang R, Onstad L, Fitzgerald RC, Stomach and Oesophageal Cancer Study (SOCS) Consortium, Corley DA, Shaheen NJ, Lagergren J, Hardie LJ, Reid BJ, Iyer PG, **Risch HA**, Caldas C, Caldas I, Pharoah PDP, Liu G, Gammon MD, Chow W-H, Bernstein L, Bird NC, Ye W, Wu AH, Anderson LA, MacGregor S, Whiteman DC, Vaughan TL, Thrift AP. Interactions between genetic variants and environmental factors affect risk of esophageal adenocarcinoma and Barrett's Esophagus. *Clin Gastroenterol Hepatol* 2018;16(10):1598-606.e4. doi: 10.1016/j.cgh.2018.03.007. PMID: PMC Journal in Process.

Dixon-Suen SC, Nagle CM, Thrift AP, Pharoah PDP, Pirie A, Pearce CL, Zheng W, Australian Ovarian Cancer Study Group, Chenevix-Trench G, Fasching PA, Beckmann MW, Lambrechts D, Vergote I, Lambrechts S, Van Nieuwenhuysen E, Rossing MA, Doherty JA, Wicklund KG, Chang-Claude J, Jung AY, Moysich KB, Odunsi K, Goodman MT, Wilkens LR, Thompson PJ, Shvetsov YB, Dörk T, Park-Simon T-W, Hillemanns P, Bogdanova N, Butzow R, Nevanlinna H, Peltari LM, Leminen A, Modugno F, Ness RB, Edwards RP, Kelley JL, Heitz F, du Bois A, Harter P, Schwaab I, Karlan BY, Lester J, Orsulic S, Rimel BJ, Kjær SK, Høgdall E, Jensen A, Goode EL, Fridley BL, Cunningham JM, Winham SJ, Giles GG, Bruinsma F, Milne RL, Southey MC, Hildebrandt MAT, Wu X, Lu KH, Liang D, Levine DA, Bisogna M, Schildkraut JM, Berchuck A, Cramer DW, Terry KL, Bandera EV, Olson SH, Salvesen HB, Vestrheim Thomsen LC, Kopperud RK, Bjorge L, Kiemeny LA, Massuger LFAG, Pejovic T, Bruegl A, Cook LS, Le ND, Swenerton KD, Brooks-Wilson A, Kelemen LE, Lubiński J, Huzarski T, Gronwald J, Menkiszak J, Wentzensen N, Brinton L, Yang H, Lissowska J, Høgdall CK, Lundvall L, Song H, Tyrer JP, Campbell I, Eccles D, Paul J, Glasspool R, Siddiqui N, Whittemore AS, Sieh W, McGuire V, Rothstein JH, Narod SA, Phelan C, **Risch HA**, McLaughlin JR, Anton-Culver H, Ziogas A, Menon U, Gayther SA, Ramus SJ, Gentry-Maharaj A, Wu AH, Pike MC, Tseng C-C, Kupryjanczyk J, Dansonka-Mieszkowska A, Budzylowska A, Rzepecka IK, Webb PM, Ovarian Cancer Association Consortium. Adult height is associated with increased risk of ovarian cancer: a Mendelian randomisation study. *Br J Cancer* 2018;118(8):1123-9. doi: 10.1038/s41416-018-0011-3. PMID: PMC Journal in Process.

Antwi SO, Bamlet WR, Pedersen KS, Chaffee KG, Risch HA, Shivappa N, Steck SE, Anderson KE, Bracci PM, Polesel J, Serraino D, La Vecchia C, Bosetti C, Li D, Oberg AL, Arslan AA, Albanes D, Duell EJ, Huybrechts I, Amundadottir LT, Hoover R, Mannisto S, Chanock S, Zheng W, Shu X-O, Stepien M, Canzian F, Bueno-de-Mesquita B, Quirós JR, Zeleniuch-Jacquotte A, Bruinsma F, Milne RL, Giles GG, Hébert JR, Stolzenberg-Solomon RZ, Petersen GM. Pancreatic cancer risk is modulated by inflammatory potential of diet and ABO genotype: A consortia-based evaluation and replication study. *Carcinogenesis*. 2018;bgy072. doi: 10.1093/carcin/bgy072. PMID: PMC Journal in Process.

Earp M, Tyrer JP, Winham SJ, Lin H-Y, Chornokur G, Dennis J, Aben KKH, Anton-Culver H, Antonenkova N, Bandera EV, Bean YT, Beckmann MW, Borge L, Bogdanova N, Brinton LA, Brooks-Wilson A, Bruinsma F, Bunker CH, Butzow R, Campbell IG, Carty K, Chang-Claude J, Cook LS, Cramer DW, Cunningham JM, Cybulski C, Dansonka-Mieszkowska A, Despiere E, Doherty JA, Dörk T, du Bois A, Dürst M, Easton DF, Eccles DM, Edwards RP, Ekici AB, Fasching PA, Fridley BL, Gentry-Maharaj A, Giles GG, Glasspool R, Goodman MT, Gronwald J, Harter P, Hein A, Heitz F, Hildebrandt MAT, Hillemanns P, Hogdall CK, Høgdall E, Hosono S, Iversen ES, Jakubowska A, Jensen A, Ji B-T, Jung AY, Karlan BY, Kellar M, Kiemeny LA, Lim BK, Kjaer SK, Krakstad C, Kupryjanczyk J, Lambrechts D, Lambrechts S, Le ND, Lele S, Lester J, Levine DA, Li Z, Liang D, Lissowska J, Lu K, Lubinski J, Lundvall L, Massuger LFAG, Matsuo K, McGuire V, McLaughlin JR, McNeish I, Menon U, Milne RL, Modugno F, Moysich KB, Ness RB, Nevanlinna H, Odunsi K, Olson SH, Orlow I, Orsulic S, Paul J, Pejovic T, Pelttari LM, Permuth JB, Pike MC, Poole EM, Rosen B, Rossing MA, Rothstein JH, Runnebaum IB, Rzepecka IK, Schernhammer E, Schwaab I, Shu X-O, Shvetsov YB, Siddiqui N, Sieh W, Song H, Southey MC, Spiewankiewicz B, Sucheston-Campbell L, Tangen IL, Teo S-H, Terry KL, Thompson PJ, Thomsen L, Tworoger SS, van Altena AM, Vergote I, Vestheim Thomsen LC, Vierkant RA, Walsh CS, Wang-Gohrke S, Wentzensen N, Whittemore AS, Wicklund KG, Wilkens LR, Woo Y-L, Wu AH, Wu X, Xiang Y-B, Yang H, Zheng W, Ziogas A, Lee AW, Pearce CL, Berchuck A, Schildkraut JM, Ramus SJ, Monteiro ANA, Narod SA, Sellers TA, Gayther SA, Kelemen LE, Chenevix-Trench G, **Risch HA**, Pharoah PDP, Goode EL, Phelan CM. Variants in genes encoding small GTPases and association with epithelial ovarian cancer susceptibility. *PLoS One* 2018;13(7):e0197561. doi: 10.1371/journal.pone.0197561. PMID: PMC Journal in Process.

Mukhtar F, Boffetta P, Dabo B, Park JY, Tran TV, Tran HT-T, Whitney M, **Risch HA**, Le LC, Zheng W, Shu X-O, Luu HN. Disparities by race, age, and sex in the improvement of survival for lymphoma. *PLoS One* 2018;13(7):e0199745. doi: 10.1371/journal.pone.0199745. *Not a result of NIH funding.

Lu Y, Beeghly-Fadiel A, Wu L, Guo X, Li B, Moysich KB, Im HK, Andrulis IL, Anton-Culver H, Arun BK, Bandera EV, Barkardottir RB, Barnes DR, Barnes D, Benitez J, Bjorge L, Brenton J, Butzow R, Caldes T, Caligo MA, Campbell I, Chang-Claude J, Claes KBM, Couch FJ, Cramer DW, Daly MB, deFazio A, Dennis J, Diez O, Domchek SM, Dörk T, Easton DF, Eccles DM, Fasching PA, Fortner RT, Fountzilas G, Friedman E, Ganz PA, Garber J, Giles GG, Godwin AK, Goldgar DE, Goodman MT, Greene MH, Gronwald J, Hamann U, Heitz F, Hildebrandt MAT, Høgdall CK, Hollestelle A, Hulick PJ, Huntsman DG, Imyanitov EN, Isaacs C, Jakubowska A, James P, Karlan BY, Kelemen LE, Kiemeny LA, Kjaer SK, Kupryjanczyk J, Kwong A, Lambrechts D, Le ND, Leslie G, Lesueur F, Levine DA, May T, McGuffog L, McNeish I, Modugno F, Montagna M, Neuhausen SL, Nevanlinna H, Nielsen FC, Nikitina-Zake L, Nussbaum RL, Offit K, Olah E, Olopade OI, Olson SH, Olsson H, Osorio A, Park SK, Parsons M, Peeters PHM, Pejovic T, Peterlongo P, Phelan CM, Pujana MA, Ramus SJ, Rennert G, Riboli E, **Risch H**, Rodriguez GC, Rodríguez-Antona C, Romieu I, Rookus MA, Rossing MA, Sandler DP, Schmutzler RK, Setiawan VW, Sharma P, Sieh W, Simard J, Singer CF, Song H, Southey MC, Spurdle AB, Sutphen R, Swerdlow AJ, Teixeira MR, Teo SH, Thomassen M, Tischkowitz M, Toland AE, Tung N, Tworoger SS, van Rensburg EJ, Vega A, Edwards DV, Webb PM, Weitzel JN, Wentzensen N, White E, Wolk A, Wu AH, Yannoukakos D, Zorn KK, BCFR, EMBRACE, GEMO Study Collaborators, HEBON, KConFab Investigators, SWE-BRCA, Mod SQuaD study collaborators, GC-HBOC study collaborators, CONSIT study collaborators, Gayther SA, Antoniou AC, Berchuck A, Goode EL, Chenevix-Trench G, Sellers TA, Pharoah PDP, Zheng W, Long J. A transcriptome-wide association study among 97,898 women to identify candidate susceptibility genes for epithelial ovarian cancer risk. *Cancer Res* 2018;78(18):5419-30. doi: 10.1158/0008-5472.CAN-18-0951. PMID: PMC Journal in Process.

O'Mara TA, Glubb DM, Amant F, Annibaldi D, Ashton K, Attia J, Auer PL, Beckmann MW, Black A, Bolla MK, Brauch H, Brenner H, Brinton L, Buchanan DD, Burwinkel B, Chang-Claude J, Chanock SJ, Chen C, Chen MM, Cheng THT, Clarke CL, Clendenning M, Cook LS, Couch FJ, Cox A, Crous-Bous M, Czene K, Day F, Dennis J, Depreeuw J, Doherty JA, Dörk T, Dowdy SC, Dürst M, Ekici AB, Fasching PA, Fridley BL, Friedenreich CM, Fritschi L, Fung J, García-Closas M, Gaudet MM, Giles GG, Goode EL, Gorman M, Haiman CA, Hall P, Hankinson S, Healey CS, Hein A, Hillemanns P, Hodgson S, Hoivik E, Holliday EG, Hopper JL, Hunter DJ, Jones A, Krakstad C, Kristensen VN, Lambrechts D, Le Marchand L, Liang X, Lindblom A, Lissowska J, Long J, Lu L, Magliocco AM, Martin L, McEvoy M, Meindl A, Michailidou K, Milne RL, Mints M, Montgomery GW, Nassir R, Olsson H, Orlow I, Otton G, Palles C, Perry JRB, Peto J, Pooler L, Prescott J, Proietto T, Rebbeck TR, **Risch HA**, Rogers PAW, Rübner M, Runnebaum I, Sacerdote C, Sarto GE, Schumacher F, Scott RJ, Setiawan VW, Shah M, Sheng X, Shu X-O, Southey MC, Swerdlow AJ, Tham E, Trovik J, Turman C, Tyrer JP, Vachon C, VanDen Berg D,

Vanderstichele A, Wang Z, Webb PM, Wentzensen N, Werner HMJ, Winham SJ, Wolk A, Xia L, Xiang Y-B, Yang HP, Yu H, Zheng W, National Study of Endometrial Cancer Genetics Group (NSECG), RENDOCAS, The Australian National Endometrial Cancer Study Group (ANECS), CHIBCHA Consortium, Pharoah PDP, Dunning AM, Kraft P, De Vivo I, Tomlinson I, Easton DF, Spurdle AB, Thompson DJ. Identification of nine new susceptibility loci for endometrial cancer. *Nat Commun* 2018;9(1):3166. doi: 10.1038/s41467-018-05427-7. PMID: PMC Journal in Process.

Kelemen LE, Earp M, Fridley BL, Chenevix-Trench G, Australian Ovarian Cancer Study Group, Fasching PA, Beckmann MW, Ekici AB, Hein A, Lambrechts D, Lambrechts S, Van Nieuwenhuysen E, Vergote I, Rossing MA, Doherty JA, Chang-Claude J, Behrens S, Moysich KB, Cannioto R, Lele S, Odunsi K, Goodman MT, Shvetsov YB, Thompson PJ, Wilkens LR, Dörk T, Antonenkova N, Bogdanova N, Hillemanns P, Runnebaum IB, du Bois A, Harter P, Heitz F, Schwaab I, Butzow R, Peltari LM, Nevanlinna H, Modugno F, Edwards RP, Kelley JL, Ness RB, Karlan BY, Lester J, Orsulic S, Walsh C, Kjaer SK, Jensen A, Cunningham JM, Vierkant RA, Giles GG, Bruinsma F, Southey MC, Hildebrandt MAT, Liang D, Lu K, Wu X, Sellers TA, Levine DA, Schildkraut JM, Iversen ES, Terry KL, Cramer DW, Tworoger SS, Poole EM, Bandera EV, Olson SH, Orlow I, Vestrheim LC, Bjorge L, Krakstad C, Tangen IL, Kiemeny LA, Aben KKH, Massuger LFAG, van Altena AM, Pejovic T, Bean Y, Kellar M, Cook LS, Le ND, Brooks-Wilson A, Gronwald J, Cybulski C, Jakubowska A, Lubiński J, Wentzensen N, Brinton LA, Lissowska J, Hogdall E, Engelholm SA, Hogdall C, Lundvall L, Nedergaard L, Pharoah PDP, Dicks E, Song H, Tyrer JP, McNeish I, Siddiqui N, Carty K, Glasspool R, Paul J, Campbell IG, Eccles D, Whittemore AS, McGuire V, Rothstein JH, Sieh W, Narod SA, Phelan CM, McLaughlin JR, **Risch HA**, Anton-Culver H, Ziogas A, Menon U, Gayther SA, Gentry-Maharaj A, Ramus SJ, Wu AH, Pearce CL, Lee AW, Pike MC, Kupryjanczyk J, Podgorska A, Plisiecka-Halasa J, Sawicki W, Goode EL, Berchuck A, Ovarian Cancer Association Consortium. rs495139 in the TYMS-ENOSF1 region and risk of ovarian carcinoma of mucinous histology. *Int J Mol Sci* 2018;19(9). pii: E2473. doi: 10.3390/ijms19092473. PMID: PMC Journal in Process.

Visvanathan K, Shaw P, May B, Bahadirli-Talbot A, Kaushiva A, **Risch H**, Narod S, Wang T-L, Parkash V, Vang R, Levine D, Soslow R, Kurman R, Shih I-M. Fallopian tube lesions in women at high risk for ovarian cancer: A multicenter study. Accepted for publication, *Cancer Prev Res (Phila)* 2018;11(11):697-706. doi: 10.1158/1940-6207.CAPR-18-0009. PMID: PMC Journal in Process.

Walsh N, Zhang H, Hyland P, Yang Q, Mocci E, Zhang M, Childs EJ, Collins I, Wang Z, Arslan AA, Beane-Freeman L, Bracci PM, Canzian F, Duell EJ, Gallinger S, Giles GG, Goodman GE, Goodman PJ, Kooperberg C, LeMarchand L, Neale RE, Olson SH, Scelo G, Shu XO, Van Den Eeden SK, Visvanathan K,

White E, Zheng W, Albanes D, Andreotti G, Babic A, Bamlet WR, Berndt SI, Borgida A, Boutron-Ruault MC, Brais L, Brennan P, Bueno de-Mesquita B, Buring J, Chaffee KG, Chanock S, Cleary S, Cotterchio M, Foretova L, Fuchs C, Gaziano JMM, Giovannucci E, Goggins M, Hackert T, Haiman C, Hartge P, Hasan M, Helzlsouer KJ, Herman J, Holcatova I, Holly EA, Hoover R, Hung RJ, Janout V, Klein EA, Kurtz RC, Laheru D, Lee I-M, Lu L, Malats N, Mannisto S, Milne RL, Oberg AL, Orlov I, Patel AV, Peters U, Porta M, Real FX, Rothman N, Sesso HD, Severi G, Silverman D, Strobel O, Sund M, Thornquist MD, Tobias GS, Wactawski-Wende J, Wareham N, Weiderpass E, Wentzensen N, Wheeler W, Yu H, Zeleniuch-Jacquotte A, Kraft P, Li D, Jacobs EJ, Petersen GM, Wolpin BM, **Risch HA**, Amundadottir LT, Yu K, Klein AP, Stolzenberg-Solomon RZ. Agnostic pathway/gene set analysis of genome-wide association data identifies associations for pancreatic cancer. *J Natl Cancer Inst* 2018:djy155. doi: 10.1093/jnci/djy155. PMID: PMC Journal in Process.

Klein AP,* Wolpin BM,* **Risch HA**,* Stolzenberg-Solomon RZ,* Mocci E, Zhang M, Obazee O, Childs EJ, Hoskins JW, Jermusyk A, Zhong J, Chen F, Albanes D, Andreotti G, Arslan AA, Babic A, Bamlet WR, Beane-Freeman L, Berndt SI, Blackford A, Borges M, Borgida A, Bracci PM, Brais L, Brennan P, Brenner H, Bueno-de-Mesquita B, Buring J, Campa D, Capurso G, Cavestro GM, Chaffee KG, Chung C, Cleary S, Cotterchio M, Dijk F, Duell EJ, Foretova L, Fuchs C, Funel N, Gallinger S, Gaziano JMM, Gazouli M, Giles GG, Giovannucci E, Goggins M, Goodman GE, Goodman PJ, Hackert T, Haiman C, Hartge P, Hasan M, Hegyi P, Helzlsouer KJ, Herman J, Holcatova I, Holly EA, Hoover R, Hung RJ, Jacobs EJ, Jamroziak K, Janout V, Kaaks R, Khaw K-T, Klein EA, Kogevinas M, Kooperberg C, Kulke MH, Kupcinskis J, Kurtz RJ, Laheru D, Landi S, Lawlor RT, Lee I-M, LeMarchand L, Lu L, Malats N, Mambrini A, Mannisto S, Milne RL, Mohelníková-Duchoňová B, Neale RE, Neoptolemos JP, Oberg AL, Olson SH, Orlov I, Pasquali C, Patel AV, Peters U, Pezzilli R, Porta M, Real FX, Rothman N, Scelo G, Sesso HD, Severi G, Shu X-O, Silverman D, Smith JP, Soucek P, Sund M, Talar-Wojnarowska R, Tavano F, Thornquist MD, Tobias GS, Van Den Eeden SK, Vashist Y, Visvanathan K, Vodicka P, Wactawski-Wende J, Wang Z, Wentzensen N, White E, Yu H, Yu K, Zeleniuch-Jacquotte A, Zheng W, Kraft P, Li D, Chanock S, Canzian F, Petersen GM, Amundadottir LT. Genome-wide meta-analysis identifies five new susceptibility loci for pancreatic cancer. *Nat Commun* 2018;9:556. PMID: PMC Journal in Process.

Peres LC, **Risch H**, Terry KL, Webb PM, Goodman MT, Wu AH, Alberg AJ, Bandera EV, Barnholtz-Sloan J, Bondy ML, Cote ML, Funkhouser E, Moorman PG, Peters ES, Schwartz AG, Terry PD, Manichaikul A, Abbott SE, Camacho F, Jordan SJ, Nagle CM, Australian Ovarian Cancer Study Group, Rossing MA, Doherty JA, Modugno F, Moysich K, Ness R, Berchuck A, Cook L, Le N, Brooks-Wilson A, Sieh W, Whittemore A, McGuire V, Rothstein J, Anton-Culver H, Ziogas A, Pearce CL, Tseng C, Pike M, Schildkraut JM, African American Cancer Epidemiology Study, Ovarian Cancer Association Consortium.

Racial/ethnic differences in the epidemiology of ovarian cancer: A pooled analysis of 12 case-control studies. *Int J Epidemiol* 2018;47(2):460-72. PMID: PMC Journal in Process.

Babic A, Harris HR, Vitonis AV, Titus LJ, Jordan SJ, Webb PM, Australian Ovarian Cancer Study Group, **Risch HA**, Rossing MA, Doherty JA, Wicklund K, Goodman MT, Modugno F, Moysich KB, Ness R, Kjaer SK, Schildkraut J, Berchuck A, Pierce CL, Wu AH, Cramer DW, Terry KL. Menstrual pain and risk of epithelial ovarian cancer: results from the Ovarian Cancer Association Consortium. *Int J Cancer* 2018;142(3):460-9. PMID: PMC Journal in Process.

2017

Zhou Y, Cartmel B, Gottlieb L, Ercolano EA, Li F, Harrigan M, McCorkle R, Ligibel JA, von Gruenigen VE, Gogoi R, Schwartz PE, **Risch HA**, Irwin ML. Randomized trial of exercise on quality of life in women with ovarian cancer: Women's Activity and Lifestyle Study in Connecticut (WALC). *J Natl Cancer Inst* 2017;109(12):dix072. doi: 10.1093/jnci/dix072. PMID: PMC Journal in Process.

Streicher SA, Klein AP, Olson SH, Amundadottir LT, DeWan AT, Zhao H, **Risch HA**. Impact of sixteen established pancreatic cancer susceptibility loci in American Jews. *Cancer Epidemiol Biomarkers Prev* 2017;26(10):1540-8. PMID: PMC Journal in Process.

Risch HA, Lu L, Streicher SA, Wang J, Zhang W, Ni Q, Kidd MS, Yu H, Gao Y-T. Aspirin use and reduced risk of pancreatic cancer. *Cancer Epidemiol Biomarkers Prev* 2017;26(1):68-74. PMID: PMC5225096.

Li N, Petrick JL, Steck SE, Bradshaw PT, McClain KM, Niehoff NM, Engel LS, Shaheen NJ, **Risch HA**, Vaughan TL, Wu AH, Gammon MD. A pooled analysis of dietary sugar/carbohydrate intake and esophageal and gastric cardia adenocarcinoma incidence and survival in the United States (US). *Int J Epidemiol* 2017;46(6):1836-46. PMID: PMC Journal in Process.

McGee J, Gianneakas V, Karlan B, Lubinski J, Gronwald J, Rosen B, McLaughlin J, **Risch H**, Sun P, Foulkes WD, Neuhausen S, Kotsopoulos J, Narod SA, Hereditary Ovarian Cancer Clinical Study Group. Risk of breast cancer after a diagnosis of ovarian carcinoma cancer in *BRCA* mutation carriers: is preventive mastectomy warranted? *Gynecol Oncol* 2017;145(2):346-51. *NIH funding pre-dates mandate.

Mukhtar F, Boffetta P, **Risch HA**, Bubu OM, Womack L, Tran TV, Zgibor JC, Luu HN. Survival predictors of Burtkitt's Lymphoma in children, adults and elderly in the United States during 2000-2013. *Int J Cancer* 2017;140(7):1494-502. *Not a result of NIH funding.

Rasmussen CB, Kjaer SK, Albieri V, Bandera EV, Doherty JA, Høgdall E, Webb PM, Jordan SJ, AOCS Study Group, Rossing MA, Wicklund KG, Goodman MT, Modugno F, Moysich KB, Ness RB, Edwards RP, Schildkraut JM, Berchuck A, Olson SH, Kiemeny LA, Massuger LFAG, Narod SA, Phelan C, Anton-Culver H, Ziogas A, Wu AH, Pearce CL, Risch HA, Jensen A, on behalf of the Ovarian Cancer Association Consortium. Pelvic inflammatory disease and risk of ovarian cancer and borderline ovarian tumors: a pooled analysis of 13 case-control studies. *Am J Epidemiol* 2017;185(1):8-20. PMID: PMC Journal in Process.

Buas MF, He Q, Johnson LG, Onstad L, Levine DM, Thrift AP, Gharahkhani P, Palles C, Lagergren J, Fitzgerald RC, Ye W, Caldas C, Bird NC, Shaheen NJ, Bernstein L, Gammon MD, Wu AH, Hardie LJ, Pharoah PD, Liu G, Iyer P, Corley DA, **Risch HA**, Chow WH, Prenen H, Chegwidden L, Love S, Attwood S, Moayyedi P, MacDonald D, Harrison R, Watson P, Barr H, deCaestecker J, Tomlinson I, Jankowski J, Whiteman DC, MacGregor S, Vaughan TL, Madeleine MM. Germline variation in inflammation-related pathways and risk of Barrett's oesophagus and oesophageal adenocarcinoma. *Gut* 2017;66(10):1739-47. PMID: PMC Journal in Process.

Akbari MR, Zhang S, Cragun D, Lee JH, Coppola D, McLaughlin J, **Risch HA**, Rosen B, Shaw P, Sellers TA, Schildkraut J, Narod SA, Pal T. Correlation between germline mutations in MMR genes and microsatellite instability in ovarian cancer specimens. *Fam Cancer* 2017;16(3):351-5. PMID: PMC Journal in Process.

Kotsopoulos J, Sopik V, Rosen B, Fan I, McLaughlin JR, **Risch H**, Sun P, Narod SA, Akbari MR. Frequency of germline PALB2 mutations among women with epithelial ovarian cancer. *Fam Cancer* 2017;16(1):29-34. PMID: PMC Journal in Process.

Kim SJ, Rosen B, Fan I, Ivanova A, McLaughlin JR, **Risch H**, Narod SA, Kotsopoulos J. Epidemiologic factors that predict long-term survival following a diagnosis of epithelial ovarian cancer. *Br J Cancer* 2017;116(7):964-71. PMID: PMC Journal in Process.

Præstegaard C, Jensen A, Jensen SM, Nielsen TSS, Webb PM, Nagle CM, DeFazio A, Australian Ovarian Cancer Study Group, Høgdall E, Rossing MA, Doherty JA, Wicklund KG, Goodman MT, Modugno F, Moysich K, Ness RB, Edwards R, Matsuo K, Hosono S, Goode EL, Winham SJ, Fridley BL, Cramer DW, Terry

KL, Schildkraut JM, Berchuck A, Bandera EV, Paddock LE, Massuger LFAG, Wentzensen N, Pharoah P, Song H, Whittemore A, McGuire V, Sieh W, Rothstein J, Anton-Culver H, Ziogas A, Menon U, Gayther SA, Ramus SJ, Gentry-Maharaj A, Wu AH, Pearce CL, Pike M, Lee AW, Sutphen R, Chang-Claude J, **Risch HA**, Kjaer SK, Ovarian Cancer Association Consortium. Cigarette smoking is associated with adverse survival among women with ovarian cancer: results from a pooled analysis of 19 studies. *Int J Cancer* 2017;140(11):2422-35. PMID: PMC Journal in Process.

Kar SP, Adler E, Tyrer J, Hazelett D, Anton-Culver H, Bandera EV, Beckmann MW, Berchuck A, Bogdanova N, Brinton L, Butzow R, Campbell I, Carty K, Chang-Claude J, Cook LS, Cramer DW, Cunningham JM, Dansonka-Mieszkowska A, Anne Doherty JA, Dörk T, Dürst M, Eccles D, Fasching PA, Flanagan J, Gentry-Maharaj A, Glasspool R, Goode EL, Goodman MT, Gronwald J, Heitz F, Hildebrandt MAT, Høgdall E, Høgdall CK, Huntsman DG, Jensen A, Karlan BY, Kelemen LE, Kiemeny LA, Kjaer SK, Kupryjanczyk J, Lambrechts D, Levine DA, Li Q, Lissowska J, Lu KH, Lubiński J, Massuger LFAG, McGuire V, McNeish I, Menon U, Modugno F, Monteiro AN, Moysich KB, Ness RB, Nevanlinna H, Paul J, Pearce CL, Pejovic T, Permuth JB, Phelan C, Pike MC, Poole EM, Ramus SJ, **Risch HA**, Rossing MA, Salvesen HB, Schildkraut JM, Sellers TA, Sherman M, Siddiqui N, Sieh W, Song H, Southey M, Terry KL, Tworoger SS, Walsh C, Wentzensen N, Whittemore AS, Wu AH, Yang H, Zheng W, Ziogas A, Freedman ML, Gayther SA, Pharoah PDP, Lawrenson K. Enrichment of putative PAX8 target genes at serous epithelial ovarian cancer susceptibility loci. *Br J Cancer* 2017;116(4):524-35. PMID: PMC Journal in Process.

Lindström S, Finucane H, Bulik-Sullivan B, Schumacher F, Amos C, Hung R, Rand K, Gruber SB, Conti D, Permuth-Wey J, Lin H-Y, Sellers TA, Amundadottir L, Stolzenberg-Solomon R, Klein A, Petersen G, **Risch H**, Wolpin B, Peters U, GECCO Consortium, Eeles R, Easton D, Haiman CA, Hunter DJ, Neale B, Price A, Kraft P, PanScan, GECCO Consortium, CORECT Consortium, DRIVE Consortium, ELLIPSE Consortium, FOCI Consortium, TRICL Consortium. Quantifying the genetic correlation between multiple cancer types. *Cancer Epidemiol Biomarkers Prev* 2017;26(9):1427-35. PMID: PMC Journal in Process.

Jordan SJ, Na R, Johnatty SE, Wise LA, Adami HO, Brinton LA, Chen C, Cook, LS, Dal Maso L, De Vivo I, Freudenheim JL, Friedenreich CM, La Vecchia C, McCann SE, Moysich KB, Lu L, Olson SH, Palmer JR, Petruzella S, Pike MC, Rebbeck TR, Ricceri F, **Risch HA**, Sacerdote C, Setiawan VW, Sponholtz TR, Shu XO, Spurdle AB, Weiderpass E, Wentzensen N, Yang HP, Yu H, Webb PM. Breastfeeding and endometrial cancer risk: an analysis from the Epidemiology of Endometrial Cancer Consortium. *Obstet Gynecol* 2017;129(6):1059-67. PMID: PMC Journal in Process.

Telomeres Mendelian Randomization Collaboration, Haycock PC, Burgess S, Nounu A, Zheng J, Okoli GN, Bowden J, Wade KH, Timpson NJ, Evans DM, Willeit P, Aviv A, Gaunt TR, Hemani G, Mangino M, Ellis HP, Kurian KM, Pooley KA, Eeles RA, Lee JE, Fang S, Chen WV, Law MH, Bowdler LM, Iles MM, Yang Q, Worrall BB, Markus HS, Hung RJ, Amos CI, Spurdle AB, Thompson DJ, O'Mara TA, Wolpin B, Amundadottir L, Stolzenberg-Solomon R, Trichopoulou A, Onland-Moret NC, Lund E, Duell EJ, Canzian F, Severi G, Overvad K, Gunter MJ, Tumino R, Svenson U, van Rij A, Baas AF, Bown MJ, Samani NJ, van t'Hof FNG, Tromp G, Jones GT, Kuivaniemi H, Elmore JR, Johansson M, Mckay J, Scelo G, Carreras-Torres R, Gaborieau V, Brennan P, Bracci PM, Neale RE, Olson SH, Gallinger S, Li D, Petersen GM, **Risch HA**, Klein AP, Han J, Abnet CC, Freedman ND, Taylor PR, Maris JM, Aben KK, Kiemeny LA, Vermeulen SH, Wiencke JK, Walsh KM, Wrensch M, Rice T, Turnbull C, Litchfield K, Paternoster L, Standl M, Abecasis GR, SanGiovanni JP, Li Y, Mijatovic V, Sapkota Y, Low SK, Zondervan KT, Montgomery GW, Nyholt DR, van Heel DA, Hunt K, Arking DE, Ashar FN, Sotoodehnia N, Woo D, Rosand J, Comeau ME, Brown WM, Silverman EK, Hokanson JE, Cho MH, Hui J, Ferreira MA, Thompson PJ, Morrison AC, Felix JF, Smith NL, Christiano AM, Petukhova L, Betz RC, Fan X, Zhang X, Zhu C, Langefeld CD, Thompson SD, Wang F, Lin X, Schwartz DA, Fingerlin T, Rotter JI, Cotch MF, Jensen RA, Munz M, Dommisch H, Schaefer AS, Han F, Ollila HM, Hillary RP, Albagha O, Ralston SH, Zeng C, Zheng W, Shu XO, Reis A, Uebe S, Hüffmeier U, Kawamura Y, Otowa T, Sasaki T, Hibberd ML, Davila S, Xie G, Siminovitich K, Bei JX, Zeng YX, Försti A, Chen B, Landi S, Franke A, Fischer A, Ellinghaus D, Flores C, Noth I, Ma SF, Foo JN, Liu J, Kim JW, Cox DG, Delattre O, Mirabeau O, Skibola CF, Tang CS, Garcia-Barcelo M, Chang KP, Su WH, Chang YS, Martin NG, Gordon S, Wade TD, Lee C, Kubo M, Cha PC, Nakamura Y, Levy D, Kimura M, Hwang SJ, Hunt S, Spector T, Soranzo N, Manichaikul AW, Barr RG, Kahali B, Speliotes E, Yerges-Armstrong LM, Cheng CY, Jonas JB, Wong TY, Fogh I, Lin K, Powell JF, Rice K, Relton CL, Martin RM, Davey Smith G. Association between telomere length and risk of cancer and non-neoplastic diseases: a mendelian randomization study. *JAMA Oncol* 2017;3(5):636-51. PMID: PMC Journal in Process.

Minlikeeva AN, Freudenheim JL, Cannioto RA, Szender JB, Eng KH, Modugno F, Ness RB, LaMonte MJ, Friel G, Segal BH, Odunsi K, Mayor P, Zsiros E, Schmalefeldt B, Klapdor R, Dörk T, Hillemanns P, Kelemen LE, Köbel M, Steed H, de Fazio A; Australian Ovarian Cancer Study Group, Jordan SJ, Nagle CM, **Risch HA**, Rossing MA, Doherty JA, Goodman MT, Edwards R, Matsuo K, Mizuno M, Karlan BY, Kjær SK, Høgdall E, Jensen A, Schildkraut JM, Terry KL, Cramer DW, Bandera EV, Paddock LE, Kiemeny LA, Massuger LF, Kupryjanczyk J, Berchuck A, Chang-Claude J, Diergaarde B, Webb PM, Moysich KB; Ovarian Cancer Association Consortium. History of hypertension,

heart disease, and diabetes and ovarian cancer patient survival: evidence from the ovarian cancer association consortium. *Cancer Causes Control* 2017;28(5):469-86. PMID: PMC Journal in Process.

Dixon SC, Nagle CM, Wentzensen N, Trabert B, Beeghly-Fadiel A, Schildkraut JM, Moysich KB, deFazio A; Australian Ovarian Cancer Study Group, **Risch HA**, Rossing MA, Doherty JA, Wicklund KG, Goodman MT, Modugno F, Ness RB, Edwards RP, Jensen A, Kjær SK, Høgdall E, Berchuck A, Cramer DW, Terry KL, Poole EM, Bandera EV, Paddock LE, Anton-Culver H, Ziogas A, Menon U, Gayther SA, Ramus SJ, Gentry-Maharaj A, Pearce CL, Wu AH, Pike MC, WebbPM. Use of common analgesic medications and ovarian cancer survival: results from a pooled analysis in the Ovarian Cancer Association Consortium. *Br J Cancer* 2017;116(9):1223-8. PMID: PMC Journal in Process.

Phelan CM, Kuchenbaecker KB, Tyrer JP, Kar SP, Lawrenson K, Winham SJ, Dennis J, Pirie A, Riggan M, Chornokur G, Earp MA, Lyra PC Jr, Lee JM, Coetzee S, Beesley J, McGuffog L, Soucy P, Dicks E, Lee A, Barrowdale D, Lecarpentier J, Leslie G, Aalfs CM, Aben KKH, Adams M, Adlard J, Andrulis IL, Anton-Culver H, Antonenkova N, AOCS study group, Aravantinos G, Arnold N, Arun BK, Arver B, Azzollini J, Balmaña J, Banerjee SN, Barjhoux L, Barkardottir RB, Bean Y, Beckmann MW, Beeghly-Fadiel A, Benitez J, Bermisheva M, Bernardini M, Birrer MJ, Bisogna M, Bjorge L, Black A, Blankstein K, Blok MJ, Bodelon C, Bogdanova N, Bojesen A, Bonanni B, Borg Å, Bradbury AR, Brenton JD, Brewer C, Brinton L, Broberg P, Brooks-Wilson A, Bruinsma F, Brunet J, Buecher B, Butzow R, Buys SS, Caldes T, Caligo MA, Campbell I, Cannioto R, Carney ME, Cescon T, Chan SB, Chang-Claude J, Chanock S, Chen XQ, Chiew Y-E, Chiquette J, Chung WK, Claes KBM, Conner T, Cook LS, Cook J, Cramer DW, Cunningham JM, D'Aloisio AA, Daly MB, Damiola F, Damirovna SD, Dansonka-Mieszkowska A, Dao F, Davidson R, DeFazio A, Delnatte C, Doheny KF, Diez O, Ding YC, Doherty JA, Domchek SM, Dorfling CM, Dörk T, Dossus L, Duran M, Dürst M, Dworniczak B, Eccles D, Edwards T, Eeles R, Eilber U, Ejlersen B, Ekici AB, Ellis S, Elvira M, EMBRACE Study, Eng KH, Engel C, Evans DG, Fasching PA, Ferguson S, Ferrer SF, Flanagan JM, Fogarty ZC, Fortner RT, Fostira F, Foulkes WD, Fountzilas G, Fridley BL, Friebel TM, Friedman E, Frost D, Ganz PA, Garber J, García MJ, Garcia-Barberan V, Gehrige A, GEMO Study Collaborators, Gentry-Maharaj A, Gerdes A-M, Giles GG, Glasspool R, Glendon G, Godwin AK, Goldgar DE, Goranova T, Gore M, Greene MH, Gronwald J, Gruber S, Hahnen E, Haiman CA, Håkansson N, Hamann U, Hansen TVO, Harrington PA, Harris HR, Hauke J, HEBON Study, Hein A, Henderson A, Hildebrandt MAT, Hillemanns P, Hodgson S, Høgdall CK, Høgdall E, Hogervorst FBL, Holland H, Hooning MJ, Hosking K, Huang R-Y, Hulick PJ, Hung J, Hunter DJ, Huntsman DG, Huzarski T, Imyanitov EN, Isaacs C, Iversen ES, Izatt L, Izquierdo A, Jakubowska A, James P, Janavicius R, Jernetz M, Jensen A, Jensen UB, John EM, Johnatty S, Jones ME, Kannisto P, Karlan BY, Karzenis A, Kast K,

KConFab Investigators, Kennedy CJ, Khusnutdinova E, Kiemeney LA, Kiiski JJ, Kim S-W, Kjaer SK, Köbel M, Kopperud RK, Kruse TA, Kupryjanczyk J, Kwong A, Laitman Y, Lambrechts D, Larrañaga N, Larson MC, Lazaro C, Le ND, Marchand LL, Lee JW, Lele SB, Leminen A, Leroux D, Lester J, Lesueur F, Levine DA, Liang D, Liebrich C, Lilyquist J, Lipworth L, Lissowska J, Lu KH, Lubiński J, Luccarini C, Lundvall L, Mai PL, Mendoza-Fandiño G, Manoukian S, Massuger LFAG, May T, Mazoyer S, McAlpine J, McGuire V, McLaughlin JR, McNeish I, Meijers-Heijboer HEJ, Meindl A, Menon U, Mensenkamp AR, Merritt M, Milne RL, Mitchell G, Modugno F, Moes-Sosnowska J, Moffitt M, Montagna M, Moysich KB, Mulligan AM, Musinsky J, Nathanson KL, Nedergaard L, Ness RB, Neuhausen SL, Nevanlinna H, Niederacher D, Nussbaum RL, Odunsi K, Olah E, Olopade OI, Olsson H, Olswold C, O'Malley DM, Ong K-r, Onland-Moret NC, OPAL study group, Orr N, Orsulic S, Osorio A, Palli D, Papi L, Park-Simon T-W, Paul J, Pearce CL, Pedersen IS, Peeters PHM, Peissel B, Peixoto A, Pejovic T, Peltari LM, Permut JB, Peterlongo P, Pezzani L, Pfeiler G, Phillips K-A, Piedmonte M, Pike MC, Piskorz AM, Poblete SR, Pocza T, Poole EM, Poppe B, Porteous ME, Prieur F, Prokofyeva D, Pugh E, Pujana MA, Pujol P, Radice P, Rantala J, Rappaport-Fuerhauser C, Rennert G, Rhiem K, Rice P, Richardson A, Robson M, Rodriguez GC, Rodríguez-Antona C, Romm J, Rookus MA, Rossing MA, Rothstein JH, Rudolph A, Runnebaum IB, Salvesen HB, Sandler DP, Schoemaker MJ, Senter L, Setiawan VW, Severi G, Sharma P, Shelford T, Siddiqui N, Side LE, Sieh W, Singer CF, Sobol H, Song H, Southey MC, Spurdle AB, Stadler Z, Steinemann D, Stoppa-Lyonnet D, Sucheston-Campbell LE, Sukiennicki G, Sutphen R, Sutter C, Swerdlow AJ, Szabo CI, Szafron L, Tan YY, Taylor JA, Tea M-K, Teixeira MR, Teo S-H, Terry KL, Thompson PJ, Thomsen LCV, Thull DL, Tihomirova L, Tinker AV, Tischkowitz M, Tognazzo S, Toland AE, Tone A, Trabert B, Travis R, Trichopoulou A, Tung N, Tworoger SS, van Altena AM, Van Den Berg D, van der Hout AH, van der Luijt RB, Van Heetvelde M, Van Nieuwenhuysen E, van Rensburg EJ, Vanderstichele A, Varon-Mateeva R, Vega A, Edwards DV, Vergote I, Vierkant RA, Vijai J, Vratimos A, Walker L, Walsh C, Wand D, Wang-Gohrke S, Wappenschmidt B, Webb PM, Weinberg CR, Weitzel JN, Wentzensen N, Whittemore AS, Wijnen JT, Wilkens LR, Wolk A, Woo M, Wu X, Wu AH, Yang H, Yannoukakos D, Ziogas A, Zorn KK, Narod SA, Easton DF, Amos CI, Schildkraut JM, Ramus SJ, Ottini L, Goodman MT, Park SK, Kelemen LE, **Risch HA**, Thomassen M, Offit K, Simard J, Schmutzler RK, Hazelett D, Monteiro AN, Couch FJ, Berchuck A, Chenevix-Trench G, Goode EL, Sellers TA, Gayther SA, Antoniou AC, Pharoah PDP. Identification of 12 new susceptibility loci for different histotypes of epithelial ovarian cancer. *Nat Genet* 2017;49(5):680-91. PMID: PMC Journal in Process.

Minlikeeva AN, Freudenheim JL, Eng KH, Cannioto RA, Friel G, Szender JB, Segal B, Odunsi K, Mayor P, Diergaarde B, Zsiros E, Kelemen L, Köbel M, Steed H, de Fazio A, Australian Ovarian Cancer Study Group, Jordan S, Fasching PA, Beckmann MW, **Risch HA**, Rossing MA, Doherty JA, Chang-Claude J,

Goodman MT, Dörk T, Edwards R, Modugno F, Ness RB, Matsuo K, Mizuno M, Karlan BY, Goode EL, Kjær SK, Høgdall E, Schildkraut JM, Terry KL, Cramer DW, Bandera EV, Paddock L, Kiemeny LA, Massuger LF, Sutphen R, Anton-Culver H, Ziogas A, Menon U, Gayther S, Ramus S, Gentry-Maharaj A, Pearce CL, Kupryjanczyk J, Jensen A, Webb PM, Moysich KB, Ovarian Cancer Association Consortium. History of comorbidities and survival of ovarian cancer patients, results from the Ovarian Cancer Association Consortium. *Cancer Epidemiol Biomarkers Prev* 2017;26(9):1470-3. PMID: PMC Journal in Process.

2016

Chen MM, O'Mara TA, Thompson DJ, Painter JN, Australian National Endometrial Cancer Study Group (ANECS), Attia J, Black A, Brinton L, Chanock S, Chen C, Chen C, Cheng THT, Cook LS, Crous-Bou M, Doherty J, Friedenreich CM, Garcia-Closas M, Gaudet MM, Gorman M, Haiman C, Hankison SE, Hartge P, Henderson BE, Hodgson S, Holliday EG, Horn-Ross PL, Hunter DJ, Le Marchand L, Liang X, Lissowska J, Long J, Lu L, Magliocco AM, Martin L, McEvoy M, National Study of Endometrial Cancer Genetics Group (NSECG), Olson SH, Orlov I, Pooler L, Prescott J, Rastogi R, Rebbeck TR, **Risch H**, Sacerdote C, Schumacher F, Setiawan VW, Scott RJ, Sheng X, Shu X-O, VanDen Berg D, Weiss NS, Wentzensen N, Xia L, Xiang Y-B, Yang HP, Yu H, Zhang W, Pharoah PDP, Dunning AM, Tomlinson I, Easton DF, Kraft P, Spurdle AB, De Vivo I. GWAS meta-analysis of 16,852 women identifies new susceptibility locus for endometrial cancer. *Hum Mol Genet* 2016;25(12):2612-20. PMID: PMC5868213.

Fu Y, Biglia N, Wang Z, Shen Y, **Risch HA**, Lu L, Canuto EM, Jia W, Katsaros D, Yu H. Long non-coding RNAs, *ASAP1-IT1*, *FAM215A*, and *LINC00472*, in epithelial ovarian cancer. *Gyn Oncol* 2016;143(3):642-9. *Not a result of NIH funding.

Schulte A, Pandeya N, Fawcett J, Fritschi L, Klein K, **Risch HA**, Webb PM, Whiteman DC, Neale RE. Association between family cancer history and risk of pancreatic cancer. *Cancer Epidemiol* 2016;45:145-50. *Not a result of NIH funding.

Lu L, **Risch, HA**. Exosomes: potential for early detection in pancreatic cancer. *Future Oncol* 2016;12(8):1081-90. *Not a result of NIH funding.

Lu L, Katsaros D, Canuto EM, Biglia N, **Risch HA**, Yu H. LIN-28B/let-7a/IGF-II axis molecular subtypes are associated with epithelial ovarian cancer prognosis. *Gynecol Oncol* 2016;141(1):121-7. *Not a result of NIH funding.

Wei R, De Vivo I, Huang S, **Risch H**, Moore JH, Yu H, Garmire LX. Meta-dimensional data integration identifies critical pathways for susceptibility, tumorigenesis and progression of endometrial cancer. *Oncotarget* 2016;7(34):55249-63. PMID: PMC5342415.

Clyde MA, Palmieri Weber RP, Iversen ES, Poole EM, Doherty JA, Goodman MT, Ness RB, **Risch HA**, Rossing MA, Terry KL, Wentzensen N, Whittemore AS, Anton-Culver H, Bandera EV, Berchuck A, Carney ME, Cramer DW, Cunningham JM, Cushing-Haugen KL, Edwards RP, Fridley BL, Goode EL, Lurie G, McGuire V, Modugno F, Moysich KB, Olson SH, Pearce CL, Pike MC, Rothstein JH, Sellers TA, Sieh W, Stram D, Thompson PJ, Vierkant RA, Wicklund KG, Wu AH, Ziogas A, Tworoger SS, Schildkraut JM, Ovarian Cancer Association Consortium. Risk prediction for epithelial ovarian cancer in eleven United States-based case-control studies: incorporation of epidemiologic risk factors and 17 confirmed genetic loci. *Am J Epidemiol* 2016;184(8):579-89. PMID: PMC5065620.

Karami S, Han Y, Pande M, Cheng I, Rudd J, Pierce BL, Nutter EL, Schumacher FR, Kote-Jarai Z, Lindstrom S, Witte JS, Fang S, Han J, Kraft P, Hunter D, Song F, Hung RJ, McKay J, Gruber SB, Chanock SJ, Risch A, Shen H, Haiman CA, Boardman L, Ulrich CM, Casey G, Peters U, Al Olama AA, Berchuck A, Berndt SI, Bezieau S, Brennan P, Brenner H, Brinton L, Caporaso N, Chan AT, Chang-Claude J, Christiani DC, Cunningham JM, Easton D, Eeles RA, Eisen T, Gala M, Gallinger SJ, Gayther SA, Goode EL, Grönberg H, Henderson BE, Houlston R, Joshi AD, Küry S, Landi MT, Le Marchand L, Muir K, Newcomb PA, Permuth-Wey J, Pharoah P, Phelan C, Potter JD, Ramus SJ, **Risch H**, Schildkraut J, Slattery ML, Song H, Wentzensen N, White E, Wiklund F, Zanke BW, Sellers TA, Zheng W, Chatterjee N, Amos CI, Doherty JA, GECCO and the GAME-ON Network: CORECT, DRIVE, ELLIPSE, FOCI, and TRICL. Telomere structure and maintenance gene variants and risk of five cancer types. *Int J Cancer* 2016;139(12):2655-70. PMID: PMC5198774.

Machiela MJ, Zhou W, Karlins E, Sampson JN, Freedman ND, Yang Q, Hicks B, Dagnall C, Hautman C, Jacobs KB, Abnet CC, Aldrich MC, Amos C, Amundadottir LT, Berndt SI, Black A, Blot WJ, Bock CH, Bracci PM, Brinton LA, Burdett L, Buring JE, Butler MA, Carreón T, Chang I-S, Chatterjee N, Chen C, Chen C, Chen K, Chung CC, Cook LS, Bou MC, Cullen M, Davis FG, De Vivo I, Ding T, Doherty J, Duell EJ, Epstein CG, Fan J-H, Figueroa JD, Fraumeni JF Jr, Friedenreich CM, Fuchs CS, Gao Y-T, Gapstur SM, Garcia-Closas M, Gaudet MM, Gaziano JM, Giles GG, Gillanders EM, Giovannucci EL, Goldin L, Goldstein AM, Haiman CA, Hallmans G, Hankinson SE, Harris CC, Henriksson R, Holly EA, Hong Y-C, Hoover RN, Hsiung CA, Hu N, Hu W, Hunter DJ, Hutchinson A, Jenab M, Johansen C, Khaw K-T, Kim HN, Kim YH, Kim YT, Klein R, Koh W-P, Kolonel LN, Kooperberg C, Kraft P, Krogh V, Kurtz RC, LaCroix A, Lan Q, Landgren A, Landi MT, Le Marchand L, Li D, Liang X, Liao

LM, Lin D, Liu J, Lissowska J, Lu L, Magliocco AM, Malats N, Matsuo K, McNeill LH, McWilliams RR, Melin BS, Mirabello L, Moore L, Olson SH, Orlow I, Park JY, Patiño-Garcia A, Peplonska B, Peters U, Petersen GM, Pooler L, Prescott J, Prokunina-Olsson L, Purdue M, Qiao Y-L, Rabe KG, Rajaraman P, Real FX, Riboli E, **Risch HA**, Rodriguez-Santiago B, Ruder AM, Savage SA, Schumacher F, Schwartz AG, Schwartz KL, Seow A, Sesso HD, Setiawan VW, Severi G, Shen H, Sheng X, Shin M-H, Shu X-O, Silverman DT, Spitz MR, Stevens VL, Stolzenberg-Solomon R, Stram D, Tang Z-Z, Taylor PR, Teras LR, Tobias GS, VanDen Berg D, Viswanathan K, Wacholder S, Wang J-C, Wang Z, Wentzensen N, Wheeler W, White E, Wiencke JK, Wolpin BM, Wong MP, Wu C, Wu T, Wu X, Wu Y-L, Wunder JS, Xia L, Yang HP, Yang P-C, Yu K, Zanetti KA, Zeleniuch-Jacquotte A, Zheng W, Zhou B, Ziegler RG, Perez-Jurado LA, Caporaso NE, Rothman N, Tucker M, Dean MC, Yeager M, Chanock SJ. Female chromosome X mosaicism is age-related and preferentially affects the inactivated X chromosome. *Nat Commun* 2016;7:11843. PMID: PMC4909985.

Lawrenson K, Kar S, McCue K, Kuchenbaecker K, Michailidou K, Tyrer J, Beesley J, Ramus SJ, Li Q, Delgado MK, Lee J, Aittomäki K, Andrulis IL, Anton-Culver H, Arndt V, Arun BK, Arver B, Bandera EV, Barile M, Barkardottir RB, Barrowdale D, Beckmann MW, Benitez J, Berchuck A, Bisogna M, Bjorge L, Blomqvist C, Blot W, Bogdanova N, Bojesen A, Bojesen SE, Bolla MK, Bonanni B, Borresen-Dale A-L, Brauch H, Brennan P, Brenner H, Bruinsma F, Brunet J, Buhari SA, Burwinkel B, Butzow R, Buys SS, Cai Q, Caldes T, Campbell I, Cannioto R, Chang-Claude J, Chiquette J, Choi J-Y, Claes KBM, GEMO Study Collaborators, Cook LS, Cox A, Cramer DW, Cross SS, Cybulski C, Czene K, Daly MB, Damiola F, Dansonka-Mieszkowska A, Darabi H, Dennis J, Devilee P, Diez O, Doherty JA, Domchek SM, Dorfling CM, Dörk T, Dumont M, Ehrencrona H, Ejlertsen B, Ellis S, EMBRACE, Engel C, Eunjung L, Evans DG, Fasching PA, Feliubadalo L, Figueroa J, Flesch-Janys D, Fletcher O, Flyger H, Foretova L, Fostira F, Foulkes WD, Fridley BL, Friedman E, Frost D, Gambino G, Ganz PA, Garber J, García-Closas M, Gentry-Maharaj A, Ghoussaini M, Giles GG, Glasspool R, Godwin AK, Goldberg MS, Goldgar DE, González-Neira A, Goode EL, Goodman MT, Greene MH, Gronwald J, Guénel P, Haiman CA, Hall P, Hallberg E, Hamann U, Hansen TVO, Harrington PA, Hartman M, Hassan N, Healey S, HEBON, Heitz F, Herzog J, Høgdall E, Høgdall CK, Hogervorst FBL, Hollestelle A, Hopper JL, Hulick PJ, Huzarski T, Imyanitov EN, KConFab Investigators, Australian Ovarian Cancer Study Group, Isaacs C, Ito H, Jakubowska A, Janavicius R, Jensen A, John EM, Johnson N, Kabisch M, Kang D, Kapuscinski M, Karlan BY, Khan S, Kiemeny LA, Kjaer SK, Knight JA, Konstantopoulou I, Kosma V-M, Kristensen V, Kupryjanczyk J, Kwong A, de la Hoya M, Laitman Y, Lambrechts D, Le N, De Leeneer K, Lester J, Levine DA, Li J, Lindblom A, Long J, Lophatananon A, Loud JT, Lu K, Lubinski J, Mannermaa A, Manoukian S, Le Marchand L, Margolin S, Marme F, Massuger LFAG, Matsuo K, Mazoyer S, McGuffog L, McLean C, McNeish I, Meindl A, Menon U, Mensenkamp AR, Milne RL, Montagna M, Moysich KB, Muir K, Mulligan AM,

Nathanson KL, Ness RB, Neuhausen SL, Nevanlinna H, Nord S, Nussbaum RL, Odunsi K, Offit K, Olah E, Olopade OI, Olson JE, Olswold C, O'Malley D, Orlow I, Orr N, Osorio A, Park SK, Pearce CL, Pejovic T, Peterlongo P, Pfeiler G, Phelan CM, Poole EM, Pylkäs K, Radice P, Rantala J, Rashid MU, Rennert G, Rhenius V, Rhiem K, **Risch HA**, Rodriguez G, Rossing MA, Rudolph A, Salvesen HB, Sangrajrang S, Sawyer EJ, Schildkraut JM, Schmidt MK, Schmutzler RK, Sellers TA, Seynaeve C, Shah M, Shen C-Y, Shu X-O, Sieh W, Singer CF, Sinilnikova OM, Slager S, Song H, Soucy P, Southey MC, Stenmark-Askmal M, Stoppa-Lyonnet D, Sutter C, Swerdlow A, Tchatchou S, Teixeira MR, Teo SH, Terry KL, Terry MB, Thomassen M, Tibiletti MG, Tihomirova L, Tognazzo S, Toland AE, Tomlinson I, Torres D, Truong T, Tseng C-C, Tung N, Tworoger SS, Vachon C, van den Ouweland AMW, van Doorn HC, vanRensburg EJ, Van't Veer LJ, Vanderstichele A, Vergote I, Vijai J, Wang Q, Wang-Gohrke S, Weitzel JN, Wentzensen N, Whittemore AS, Wildiers H, Winqvist R, Wu AH, Yannoukakos D, Yoon S-Y, Yu J-C, Zheng W, Zheng Y, Khanna KK, Simard J, Monteiro AN, French JD, Couch FJ, Freedman ML, Easton DF, Dunning AM, Pharoah PDP, Edwards SL, Chenevix-Trench G, Antoniou AC, Gayther SA. Functional mechanisms underlying pleiotropic risk alleles at the 19p13.1 breast-ovarian cancer susceptibility locus. *Nat Commun* 2016;7:12675. PMID: PMC5023955.

Dixon SC, Nagle CM, Thrift AP, Pharoah PDP, Pearce CL, Zheng W, Painter JN, AOCS Group, Australian Cancer Study (Ovarian Cancer), Chenevix-Trench G, Fasching PA, Beckmann MW, Lambrechts D, Vergote I, Lambrechts S, Van Nieuwenhuysen E, Rossing MA, Doherty JA, Wicklund KG, Chang-Claude J, Rudolph A, Moysich KB, Odunsi K, Goodman MT, Wilkens LR, Thompson PJ, Shvetsov YB, Dörk T, Park-Simon T-W, Hillemanns P, Bogdanova N, Butzow R, Nevanlinna H, Peltari LM, Leminen A, Modugno F, Ness RB, Edwards RP, Kelley JL, Heitz F, Karlan BY, Kjær SK, Høgdall E, Jensen A, Goode EL, Fridley BL, Cunningham JM, Winham SJ, Giles GG, Bruinsma F, Milne RL, Southey MC, Hildebrandt MAT, Wu X, Lu KH, Liang D, Levine DA, Bisogna M, Schildkraut JM, Berchuck A, Cramer DW, Terry KL, Bandera EV, Olson SH, Salvesen HB, Thomsen LC, Kopperud RK, Bjorge L, Kiemeny LA, Massuger LFAG, Pejovic T, Cook LS, Le ND, Swenerton KD, Brooks-Wilson A, Kelemen LE, Lubiński J, Huzarski T, Gronwald J, Menkiszak J, Wentzensen N, Brinton L, Yang H, Lissowska J, Høgdall CK, Lundvall L, Song H, Tyrer JP, Campbell I, Eccles D, Paul J, Glasspool R, Siddiqui N, Whittemore AS, Sieh W, McGuire V, Rothstein JH, Narod SA, Phelan C, **Risch HA**, McLaughlin JR, Anton-Culver H, Ziogas A, Menon U, Gayther SA, Ramus SJ, Gentry-Maharaj A, Wu AH, Pike MC, Tseng C-C, Kupryjanczyk J, Dansonka-Mieszkowska A, Budzylowska A, Spiewankiewicz B, Webb PM, Ovarian Cancer Association Consortium. Adult body mass index and risk of ovarian cancer by subtype: a Mendelian randomization study. *Int J Epidemiol* 2016;45(3): 884-95. PMID: PMC5644573.

Permeth JB, Reid B, Earp M, Chen YA, Monteiro ANA, Chen Z, AOCs Study Group, Chenevix-Trench G, Fasching PA, Beckmann MW, Lambrechts D, Vanderstichele A, Van Niewenhuyse E, Vergote I, Rossing MA, Doherty JA, Chang-Claude J, Moysich K, Odunsi K, Goodman MT, Shvetsov YB, Wilkens LR, Thompson PJ, Dörk T, Bogdanova N, Butzow R, Nevanlinna H, Pelttari L, Leminen A, Modugno F, Edwards RP, Ness RB, Kelley J, Heitz F, Karlan B, Lester J, Kjaer SK, Jensen A, Giles G, Neumann S, Hildebrandt M, Liang D, Lu KH, Wu X, Levine DA, Bisogna M, Berchuck A, Cramer DW, Terry KL, Tworoger SS, Poole EM, Bandera EV, Fridley B, Cunningham J, Winham SJ, Olson SH, Orlow I, Bjorge L, Kiemeny LA, Massuger L, Pejovic T, Moffitt M, Le N, Cook LS, Brooks-Wilson A, Kelemen LE, Gronwald J, Lubinski J, Wentzensen N, Brinton LA, Lissowska J, Yang H, Hogdall E, Hogdall C, Lundvall L, Pharoah PDP, Song H, Campbell I, Eccles D, McNeish I, Whittemore A, McGuire V, Sieh W, Rothstein J, Phelan CM, **Risch H**, Narod S, McLaughlin J, Anton-Culver H, Ziogas A, Menon U, Gayther S, Ramus SJ, Gentry-Maharaj A, Pearce CL, Wu AH, Kupryjanczyk J, Dansonka-Mieszkowska A, Schildkraut JM, Cheng JQ, Goode EL, Sellers TA, Ovarian Cancer Association Consortium. Inherited variants affecting RNA editing may contribute to ovarian cancer susceptibility: results from a large-scale collaboration. *Oncotarget* 2016;7(45): 72381-94. PMID: PMC5340123.

Hampras SS, Sucheston-Campbell LE, Cannioto R, Chang-Claude J, Modugno F, Dörk T, Hillemanns P, Preus L, Knutson KL, K.Wallace P, Hong C-C, Friel G, Davis W, Nesline M, Pearce CL, Kelemen LE, Goodman MT, Bandera EV, Terry KL, Schoof N, Eng KH, Clay A, Singh PK, Joseph JM, Aben KKH, Anton-Culver H, Antonenkova N, Baker H, Bean Y, Beckmann MW, Bisogna M, Bjorge L, Bogdanova N, Brinton LA, Brooks-Wilson A, Bruinsma F, Butzow R, Campbell IG, Carty K, Cook LS, Cramer DW, Cybulski C, Dansonka-Mieszkowska A, Dennis J, Despierre E, Dicks E, Doherty JA, du Bois A, Dürst M, Easton D, Eccles D, Edwards RP, Ekici AB, Fasching PA, Fridley BL, Gao Y-T, Gentry-Maharaj A, Giles GG, Glasspool R, Gronwald J, Harrington P, Harter P, Hasmad HN, Hein A, Heitz F, Hildebrandt MAT, Hogdall C, Hogdall E, Hosono S, Iversen ES, Jakubowska A, Jensen A, Ji B-T, Karlan BY, Kellar M, Kelley JL, Kiemeny LA, Klapdor R, Kolomeyevskaya N, Krakstad C, Kjaer SK, Kruszka B, Kupryjanczyk J, Lambrechts D, Lambrechts S, Le ND, Lee AW, Lele S, Leminen A, Lester J, Levine DA, Liang D, Lissowska J, Liu S, Lu K, Lubinski J, Lundvall L, Massuger LFAG, Matsuo K, McGuire V, McLaughlin JR, McNeish I, Menon U, Moes-Sosnowska J, Narod SA, Nedergaard L, Nevanlinna H, Nickels S, Olson SH, Orlow I, Weber RP, Paul J, Pejovic T, Pelttari LM, Perkins B, Permeth-Wey J, Pike MC, Plisiecka-Halasa J, Poole EM, **Risch HA**, Rossing MA, Rothstein JH, Rudolph A, Runnebaum IB, Rzepecka IK, Salvesen HB, Schernhammer E, Schmitt K, Schwaab I, Shu X-O, Shvetsov YB, Siddiqui N, Sieh W, Song H, Southey MC, Tangen IL, Teo S-H, Thompson PJ, Timorek A, Tsai Y-Y, Tworoger SS, Tyrer J, van Altena AM, Vergote I, Vierkant RA, Walsh C, Wang-Gohrke S, Wentzensen N, Whittemore AS, Wicklund KG,

Wilkens LR, Wu AH, Wu X, Woo Y-L, Yang H, Zheng W, Ziogas A, Gayther SA, Ramus SJ, Sellers TA, Schildkraut JM, Phelan CM, Berchuck A, Chenevix-Trench on behalf of the Australian Ovarian Cancer Study Group G, Cunningham JM, Pharoah PDP, Ness RB, Odunsi K, Goode EL, Moysich KB. Assessment of variation in immunosuppressive pathway genes reveals TGFBR2 to be associated with risk of clear cell ovarian cancer. *Oncotarget* 2016;7(43):69097-110. PMID: PMC5340115.

Zhang M, Wang Z, Obazee O, Jia J, Childs E, Hoskins J, Figlioli G, Mocci E, Collins I, Chung CC, Hautman C, Arslan AA, Beane-Freeman L, Bracci PM, Buring J, Duell EJ, Gallinger S, Giles GG, Goodman GE, Goodman PJ, Kamineni A, Kolonel LN, Kulke MH, Malats N, Olson SH, Sesso HD, Visvanathan K, White E, Zheng W, Abnet CC, Albanes D, Andreotti G, Austin MA, Bueno-de-Mesquita HB, Basso D, Berndt SI, Boutron-Ruault M-C, Bijlsma M, Brenner H, Burdette L, Campa D, Caporaso NE, Capurso G, Cavestro GM, Cotterchio M, Costello E, Elena J, Boggi U, Gaziano JM, Gazouli M, Giovannucci EL, Goggins M, Gorman MJ, Gross M, Haiman CA, Hassan M, Helzlsouer KJ, Hu N, Hunter DJ, Iskierka-Jazdzewska E, Jenab M, Kaaks R, Key TJ, Khaw K-T, Klein EA, Kogevinas M, Krogh V, Kupcinskis J, Kurtz RC, Landi MT, Landi S, Le Marchand L, Mambrini A, Mannisto S, Milne RL, Neale R, Oberg AL, Panico S, Patel AV, Peeters PHM, Peters U, Pezzilli R, Tavano F, Porta M, Purdue M, Quiros JR, Riboli E, Rothman N, Scarpa A, Scelo G, Shu X-O, Silverman DT, Soucek P, Strobel O, Sund M, Małecká-Panas E, Taylor PR, Travis RC, Thornquist M, Tjønneland A, Tobias GS, Trichopoulos D, Vashist Y, Vodicka P, Wactawski-Wende J, Wentzensen N, Yu H, Yu K, Zeleniuch-Jacquotte A, Kooperberg C, **Risch HA**, Jacobs EJ, Li D, Fuchs C, Hoover R, Hartge P, Chanock SJ, Petersen GM, Stolzenberg-Solomon RS, Wolpin BM, Kraft P, Klein AP, Canzian F, Amundadottir LT. Three new pancreatic cancer susceptibility signals identified on chromosomes 1q32.1, 5p15.33 and 8q24.21. *Oncotarget* 2016;7(41):66328-43. PMID: PMC5340084.

Cannioto R, LaMonte MJ, **Risch HA**, Hong C-C, Sucheston-Campbell LE, Eng KH, Szender JB, Chang-Claude J, Schmalefeldt B, Klapdor R, Gower E, Minlikeeva AN, Zirpoli G, Bandera EV, Berchuck A, Cramer D, Doherty JA, Edwards RP, Fridley BL, Goode EL, Goodman MT, Hogdall E, Hosono S, Jensen A, Jordan S on behalf of The Australian Ovarian Cancer Study Group, Kjaer SK, Matsuo K, Ness RB, Olsen CM, Olson SH, Pearce CL, Pike MC, Rossing MA, Szamreta EA, Thompson PJ, Tseng C-C, Vierkant RA, Webb PM, Wentzensen N, Wicklund KG, Winham SJ, Wu AH, Modugno F, Schildkraut JM, Terry KL, Kelemen LE, Moysich KB. Chronic recreational physical inactivity and epithelial ovarian cancer risk: Evidence from the Ovarian Cancer Association Consortium. *Cancer Epidemiol Biomarkers Prev* 2016;25(7): 1114-24. PMID: PMC4930728.

Cannioto RA, LaMonte MJ, Kelemen LE, **Risch HA**, Eng KH, Minlikeeva AN, Hong C-C, Szender JB, Sucheston-Campbell L, Joseph JM, Berchuck A, Chang-Claude J, Cramer DW, DeFazio A on behalf of The Australian Ovarian Cancer Study Group, Diergaarde B, Dörk T, Doherty JA, Edwards RP, Fridley BL, Friel G, Goode EL, Goodman MT, Hillemanns P, Hogdall E, Hosono S, Kelley JL, Kjaer SK, Klapdor R, Matsuo K, Odunsi K, Nagle CM, Olsen CM, Paddock LE, Pearce CL, Pike MC, Rossing MA, Schmalfeldt B, Segal B, Szamreta EA, Thompson PJ, Tseng C-C, Vierkant R, Schildkraut JM, Wentzensen N, Wicklund KG, Winham SJ, Wu AH, Modugno F, Ness RB, Jensen A, Webb PM, Terry K, Bandera EV, Moysich KB. Recreational physical inactivity and mortality in women with invasive epithelial ovarian cancer: Evidence from the Ovarian Cancer Association Consortium. *Br J Cancer* 2016;115(1): 95-101. PMID: PMC4931371.

Ong J-S, Cuellar-Partida G, Lu Y, Australian Ovarian Cancer Study, Fasching PA, Hein A, Burghaus S, Beckmann MW, Lambrechts D, Van Nieuwenhuysen E, Vergote I, Vanderstichele A, Doherty JA, Rossing MA, Chang-Claude J, Eilber U, Rudolph A, Wang-Gohrke S, Goodman MT, Bogdanova N, Dörk T, Dürst M, Hillemanns P, Runnebaum IB, Antonenkova N, Butzow R, Leminen A, Nevanlinna H, Pelttari LM, Edwards RP, Kelley JL, Modugno F, Moysich KB, Ness RB, Cannioto R, Høgdall E, Høgdall CK, Jensen A, Giles GG, Bruinsma F, Kjaer SK, Hildebrandt MAT, Liang D, Lu KH, Wu X, Bisogna M, Dao F, Levine DA, Cramer DW, Terry KL, Tworoger SS, Stampfer M, Missmer S, Bjorge L, Salvesen HB, Kopperud RK, Bischof K, Aben KKH, Kiemenev LA, Massuger LFAG, Brooks-Wilson A, Olson SH, McGuire V, Rothstein JH, Sieh W, Whittemore AS, Cook LS, Le ND, Gilks CB, Gronwald J, Jakubowska A, Lubiński J, Kluz T, Song H, Tyrer JP, Wentzensen N, Brinton L, Trabert B, Lissowska J, McLaughlin JR, Narod SA, Phelan C, Anton-Culver H, Ziogas A, Eccles D, Campbell I, Gayther SA, Gentry-Maharaj A, Menon U, Ramus SJ, Wu AH, Dansonka-Mieszkowska A, Kupryjanczyk J, Timorek A, Szafron L, Cunningham JM, Fridley BL, Winham SJ, Bandera EV, Poole EM, Morgan TK, **Risch HA**, Goode EL, Schildkraut JM, Pearce CL, Berchuck A, Pharoah PDP, Chenevix-Trench G, Gharahkhani P, Neale RE, Webb PM, MacGregor S. Association of vitamin D levels and risk of ovarian cancer: a Mendelian randomization study. *Int J Epidemiol* 2016;45(5):1619-30. PMID: PMC5100621.

Hollestelle A, van der Baan FH, Berchuck A, Johnatty SE, Aben KK, Agnarsson BA, Aittomäki K, Alducci E, Andrulis IL, Anton-Culver H, Antonenkova NN, Antoniou AC, Apicella C, Arndt V, Arnold N, Arun BK, Arver B, Ashworth A, Australian Ovarian Cancer Study Group, Baglietto L, Balleine R, Bandera EV, Barrowdale D, Bean YT, Beckmann L, Beckmann MW, Benitez J, Berger A, Berger R, Beuselinck B, Bisogna M, Bjorge L, Blomqvist C, Bogdanova NV, Bojesen A, Bojesen SE, Bolla MK, Bonanni B, Brand JS, Brauch H, Breast Cancer Family Register, Brenner H, Brinton L, Brooks-Wilson A, Bruinsma F,

Brunet J, Brüning T, Budzilowska A, Bunker CH, Burwinkel B, Butzow R, Buys SS, Caligo MA, Campbell I, Carter J, Chang-Claude J, Chanock SJ, Claes KBM, Collée JM, Cook LS, Couch FJ, Cox A, Cramer D, Cross SS, Cunningham JM, Cybulski C, Czene K, Damiola F, Dansonka-Mieszkowska A, Darabi H, de la Hoya M, de Fazio A, Dennis J, Devilee P, Dicks EM, Diez O, Doherty JA, Domchek SM, Dorfling CM, Dörk T, Dos Santos Silva I, du Bois A, Dumont M, Dunning AM, Duran M, Easton DF, Eccles D, Edwards RP, Ehrencrona H, Ejlertsen B, Ekici AB, Ellis SD, EMBRACE, Engel C, Eriksson M, Fasching PA, Feliubadalo L, Figueroa J, Flesch-Janys D, Fletcher O, Fontaine A, Fortuzzi S, Fostira F, Fridley BL, Friebel T, Friedman E, Friel G, Frost D, Garber J, García-Closas M, Gayther SA, GEMO Study Collaborators, GENICA Network, Gentry-Maharaj A, Gerdes A-M, Giles GG, Glasspool R, Glendon G, Godwin AK, Goodman MT, Gore M, Greene MH, Grip M, Gronwald J, Gschwantler Kaulich D, Guénel P, Guzman SR, Haeberle L, Haiman CA, Hall P, Halverson SL, Hamann U, Hansen TVO, Harter P, Hartikainen JM, Healey S, HEBON, Hein A, Heitz F, Henderson BE, Herzog J, Hildebrandt MAT, Høgdall CK, Høgdall E, Hogervorst FBL, Hopper JL, Humphreys K, Huzarski T, Imyanitov EN, Isaacs C, Jakubowska A, Janavicius R, Jaworska K, Jensen A, Jensen UB, Johnson N, Jukkola-Vuorinen A, Kabisch M, Karlan BY, Kataja V, Kauff N, KConFab Investigators, Kelemen LE, Kerin MJ, Kiemeny LA, Kjaer SK, Knight JA, Knol-Bout JP, Konstantopoulou I, Kosma V-M, Krakstad C, Kristensen V, Kuchenbaecker KB, Kupryjanczyk J, Laitman Y, Lambrechts D, Lambrechts S, Larson MC, Lasa A, Laurent-Puig P, Lazaro C, Le ND, Le Marchand L, Leminen A, Lester J, Levine DA, Li J, Liang D, Lindblom A, Lindor N, Lissowska J, Long J, Lu KH, Lubinski J, Lundvall L, Lurie G, Mai PL, Mannermaa A, Margolin S, Mariette F, Marme F, Martens JWM, Massuger LFAG, Maugard C, Mazoyer S, McGuffog L, McGuire V, McLean C, McNeish I, Meindl A, Menegaux F, Menéndez P, Menkiszak J, Menon U, Mensenkamp AR, Miller N, Milne RL, Modugno F, Montagna M, Moysich KB, Müller H, Mulligan AM, Muranen TA, Narod SA, Nathanson KL, Ness RB, Neuhausen SL, Nevanlinna H, Neven P, Nielsen FC, Nielsen SF, Nordestgaard BG, Nussbaum RL, Odunsi K, Offit K, Olah E, Olopade OI, Olson JE, Olson SH, Oosterwijk JC, Orlow I, Orr N, Orsulic S, Osorio A, Ottini L, Paul J, Pearce CL, Pedersen IS, Peissel B, Pejovic T, Pelttari LM, Perkins J, Permut-Wey J, Peterlongo P, Peto J, Phelan CM, Phillips K-A, Piedmonte M, Pike MC, Platte R, Plisiecka-Halasa J, Poole EM, Poppe B, Pylkäs K, Radice P, Ramus SJ, Rebbeck TR, Reed MWR, Rennert G, **Risch HA**, Robson M, Rodriguez GC, Romero A, Rossing MA, Rothstein JH, Rudolph A, Runnebaum I, Salani R, Salvesen HB, Sawyer EJ, Schildkraut JM, Schmidt MK, Schmutzler RK, Schneeweiss A, Schoemaker MJ, Schrauder MG, Schumacher F, Schwaab I, Scuvera G, Sellers TA, Severi G, Seynaeve CM, Shah M, Shrubsole M, Siddiqui N, Sieh W, Simard J, Singer CF, Sinilnikova OM, Smeets D, Sohn C, Soller M, Song H, Soucy P, Southey MC, Stegmaier C, Stoppa-Lyonnet D, Sucheston L, SWE-BRCA, Swerdlow A, Tangen IL, Tea M-K, Teixeira MR, Terry KL, Terry MB, Thomassen M, Thompson PJ, Tihomirova L, Tischkowitz M, Toland AE, Tollenaar RAEM, Tomlinson I, Torres D, Truong T, Tsimiklis H,

Tung N, Tworoger SS, Tyrer JP, Vachon CM, Van 't Veer LJ, van Altena AM, Van Asperen CJ, van den Berg D, van den Ouweland AMW, van Doorn HC, Van Nieuwenhuysen E, van Rensburg EJ, Vergote I, Verhoef S, Vierkant RA, Vijai J, Vitonis AF, Wachenfeldt Av, Walsh C, Wang Q, Wang-Gohrke S, Wappenschmidt B, Weischer M, Weitzel JN, Weltens C, Wentzensen N, Whittemore AS, Wilkens LR, Winqvist R, Wu AH, Wu X, Yang HP, Zaffaroni D, Zamora MP, Zheng W, Ziogas A, Chenevix-Trench G, Pharoah PDP, Rookus MA, Hooning MJ, Goode EL. No clinical utility of *KRAS* variant rs61764370 for ovarian or breast cancer. *Gynecol Oncol* 2016;141(2):386-401. PMID: PMC4630206.

Kar SP, Beesley J, Al Olama AA, Michailidou K, Tyrer J, Kote-Jarai ZS, Lawrenson K, Lindstrom S, Ramus SJ, Thompson DJ, ABCTB Investigators, Kibel AS, Dansonka-Mieszkowska A, Michael A, Dieffenbach AK, Gentry-Maharaj A, Whittemore AS, Wolk A, Monteiro A, Peixoto A, Kierzek A, Cox A, Rudolph A, Gonzalez-Neira A, Wu AH, Lindblom A, Swerdlow A, AOCs Study Group, Australian Cancer Study (Ovarian Cancer), APCB BioResource, Ziogas A, Ekici AB, Burwinkel B, Karlan BY, Nordestgaard BG, Blomqvist C, Phelan C, McLean C, Pearce CL, Vachon C, Cybulski C, Slavov C, Stegmaier C, Maier C, Ambrosone CB, Høgdall CK, Teerlink CC, Kang D, Tessier DC, Schaid DJ, Stram DO, Cramer DW, Neal DE, Eccles D, Flesch-Janys D, Edwards DRV, Wokozorczyk D, Levine DA, Yannoukakos D, Sawyer EJ, Bandera EV, Poole EM, Goode EL, Khusnutdinova E, Høgdall E, Song F, Bruinsma F, Heitz F, Modugno F, Hamdy FC, Wiklund F, Giles GG, Olsson H, Wildiers H, Ulmer H-U, Pandha H, **Risch HA**, Darabi H, Salvesen HB, Nevanlinna H, Gronberg H, Brenner H, Brauch H, Anton-Culver H, Song H, Lim H-Y, McNeish I, Campbell I, Vergote I, Gronwald J, Lubiński J, Stanford JL, Benítez J, Doherty JA, Permuth JB, Chang-Claude J, Donovan JL, Dennis J, Schildkraut JM, Schleutker J, Hopper JL, Kupryjanczyk J, Park JY, Figueroa J, Clements JA, Knight JA, Peto J, Cunningham JM, Pow-Sang J, Batra J, Czene K, Lu KH, Herkommer K, Khaw K-T, kConFab Investigators, Matsuo K, Muir K, Offitt K, Chen K, Moysich KB, Aittomäki K, Odunsi K, Kiemeny LA, Massuger LFAG, Fitzgerald LM, Cook LS, Cannon-Albright L, Hooning MJ, Pike MC, Bolla MK, Luedeke M, Teixeira MR, Goodman MT, Schmidt MK, Riggan M, Aly M, Rossing MA, Beckmann MW, Moisse M, Sanderson M, Southey MC, Jones M, Lush M, Hildebrandt MAT, Hou M-F, Schoemaker MJ, Garcia-Closas M, Bogdanova N, Rahman N, NBCS Investigators, Le ND, Orr N, Wentzensen N, Pashayan N, Peterlongo P, Guénel P, Brennan P, Paulo P, Webb PM, Broberg P, Fasching PA, Devilee P, Wang Q, Cai Q, Li Q, Kaneva R, Butzow R, Kopperud RK, Schmutzler RK, Stephenson RA, MacInnis RJ, Hoover RN, Winqvist R, Ness R, Milne RL, Travis RC, Benlloch S, Olson SH, McDonnell SK, Tworoger SS, Maia S, Berndt S, Lee SC, Teo S-H, Thibodeau SN, Bojesen SE, Gapstur SM, Kjøer SK, Pejovic T, Tammela TL, GENICA Network, PRACTICAL consortium, Dörk T, Brüning T, Wahlfors T, Key TJ, Edwards TL, Menon U, Hamann U, Mitev V, Kosma V-M, Setiawan VW, Kristensen V, Arndt V, Vogel W, Zheng W, Sieh W, Blot WJ,

Kluzniak W, Shu X-O, Gao Y-T, Schumacher F, Freedman ML, Berchuck A, Dunning AM, Simard J, Haiman CA, Spurdle A, Sellers TA, Hunter DJ, Henderson BE, Kraft P, Chanock SJ, Couch FJ, Hall P, Gayther SA, Easton DF, Chenevix-Trench G, Eeles R, Pharoah PDP, Lambrechts D. Genome-wide meta-analyses of breast, ovarian and prostate cancer association studies identify multiple new susceptibility loci shared by at least two cancer types. *Cancer Discov* 2016;6(9):1052-67. PMID: PMC5010513.

Gharahkhani P, Fitzgerald RC, Vaughan TL, Tomlinson I, Gockel I, Palles C, Buas MF, May A, Gerges C, Anders M, Becker J, Kreuser N, Noder T, Venerito M, Veits L, Schmidt T, Manner H, Schmidt C, Hess T, Böhmer AC, Izbicki JR, Hölscher AH, Lang H, Lorenz D, Schumacher B, Hackelsberger A, Mayershofer R, Pech O, Vashist Y, Ott K, Vieth M, Weismüller J, Nöthen MM, Barrett's and Esophageal Adenocarcinoma Consortium (BEACON), Wellcome Trust Case-Control Consortium (WTCCC), Attwood S, Barr H, Chegwidden L, deCaestecker J, Harrison R, Love SB, MacDonald D, Moayyedi P, Prenen H, Watson RGP, Iyer PG, Anderson LA, Bernstein L, Chow W-H, Hardie LJ, Lagergren J, Liu G, **Risch HA**, Wu AH, Ye W, Bird NC, Shaheen NJ, Gammon MD, Corley DA, Caldas C, Moebus S, Knapp M, Peters WHM, Neuhaus H, Rösch T, Ell C, MacGregor S, Pharoah P, Whiteman DC, Jankowski J, Schumacher J. Genome-wide association studies in oesophageal adenocarcinoma and Barrett's oesophagus: a large-scale meta-analysis. *Lancet Oncol* 2016;17(10):1363-73. PMID: PMC5052458.

Dai J, Tapsoba J de D, Bernstein L, Chow W-H, Shaheen NJ, Anderson L, Liu G, Iyer P, Reid BJ, Wu AH, Corley DA, Gammon MD, Hardie LJ, **Risch HA**, Bird NC, Lagergren J, Ye W, Whiteman DC, Vaughan TL. Constrained score statistics identify novel genetic variants interacting with multiple risk factors in Barrett's Esophagus. *Am J Hum Genet* 2016;99(2):352-65. PMID: PMC4974090.

Lujan-Barroso L, Zhang W, Olson SH, Gao Y-T, Yu H, Baghurst PA, Bracci PM, Bueno-de-Mesquita HB, Foretová L, Gallinger S, Holcatova I, Janout V, Ji B-T, Kurtz RC, La Vecchia C, Lagiou P, Li D, Miller AB, Serraino D, Zatonski W, **Risch HA**, Duell EJ. Menstrual and reproductive factors, hormone use and risk of pancreatic cancer: analysis from the International Pancreatic Cancer Case-Control Consortium (PanC4). *Pancreas* 2016;45(10):1401-10. PMID: PMC5065728.

Kho PF, Fawcett J, Fritschi L, **Risch H**, Webb PM, Whiteman DC, Neale RE. Nonsteroidal anti-inflammatory drugs, statins and pancreatic cancer risk: a population-based case-control study. *Cancer Causes Control* 2016;27(12):1457-64. *Not a result of NIH funding.

- Drahos J, Xiao Q, **Risch HA**, Freedman ND, Abnet CC, Anderson LA, Bernstein L, Brown L, Chow W-H, Gammon MD, Kamangar F, Liao LM, Murray LJ, Ward MH, Ye W, Wu AH, Vaughan TL, Whiteman DC, Cook MB. Age-specific risk factor profiles of adenocarcinomas of the esophagus: a pooled analysis from the International BEACON Consortium. *Int J Cancer* 2016;138(1):55-64. PMID: PMC4607633.
- Shi J, Park J-H, Duan J, Berndt S, Moy W, Yu K, Song L, Wheeler W, Hua X, Silverman D, Garcia-Closas M, Hsiung CA, Figueroa JD, Cortessis VK, Malats N, Karagas MR, Vineis P, Chang I-S, Lin D, Zhou B, Seow A, Matsuo K, Hong Y-C, Caporaso NE, Wolpin B, Jacobs E, Petersen G, Klein AP, Li D, **Risch H**, Sanders AR, Hsu L, Schoen RE, Brenner H, MGS (Molecular Genetics of Schizophrenia) GWAS Consortium, GECCO (The Genetics and Epidemiology of Colorectal Cancer Consortium), The GAME-ON/TRICL (Transdisciplinary Research in Cancer of the Lung) GWAS Consortium, PRACTICAL (PRostatecancer AssoCiation group To Investigate Cancer Associated aLterations) Consortium, PanScan and PanC4 Consortium, The GAMEON/ELLIPSE Consortium, Stolzenberg-Solomon R, Gejman P, Lan Q, Rothman N, Amundadottir LT, Landi MT, Levinson DF, Chanock SJ, Chatterjee N. Winner's curse correction and variable thresholding improve performance of polygenic risk modeling based on genome-wide association study summary-level data. *PLoS Genet* 2016;12(12):e1006493. PMID: PMC5201242.
- McWilliams RR, Maisonneuve P, Bamlet WR, Petersen GM, Li D, **Risch HA**, Yu H, Fonham ET, Lockett B, Bosetti C, Negri E, La Vecchia C, Talamini R, Bueno de Mesquita HB, Bracci P, Gallinger S, Neale RE, Lowenfels AB. Risk factors for early-onset and very-early-onset pancreatic adenocarcinoma: a Pancreatic Cancer Case-Control Consortium (PanC4) analysis. *Pancreas* 2016;45(2):311-6. PMID: PMC4710562.
- Kotsopoulos J, Rosen B, Fan I, Moody J, McLaughlin JR, **Risch H**, May T, Sun P, Narod SA. Ten-year survival after epithelial ovarian cancer is not associated with *BRCA* mutation status. *Gynecol Oncol* 2016;140(1):42-7. *NIH funding pre-dates mandate.
- Ek WE, Lagergren K, Cook M, Wu AH, Abnet CC, Levine D, Chow W-H, Bernstein L, **Risch HA**, Shaheen NJ, Bird NC, Corley DA, Hardie LJ, Fitzgerald RC, Gammon M, Romero Y, Liu G, Ye W, Vaughan TL, MacGregor S, Whiteman DC, Westberg L, Lagergren J. Polymorphisms in genes in the androgen pathway and risk of Barrett's Esophagus and esophageal adenocarcinoma. *Int J Cancer* 2016;138(5):1146-52. PMID: PMC4715576.
- Lu L, Katsaros D, **Risch HA**, Canuto EM, Biglia N, Yu H. MicroRNA let-7a modifies the effect of self-renewal gene *HIWI* on patient survival of epithelial ovarian cancer. *Mol Carcinog* 2016;55(4):357-65. *Not a result of NIH funding.

Præstegaard C, Kjaer, SK, Nielsen TSS, Jensen SM, Webb PM, Australian Ovarian Cancer Study Group, Nagle CM, Høgdall E, **Risch HA**, Rossing MA, Doherty JA, Wicklund KG, Goodman MT, Modugno F, Moysich K, Ness RB, Edwards RP, Goode EL, Winham SJ, Fridley BL, Cramer DW, Terry KL, Schildkraut JM, Berchuck A, Bandera EV, Paddock L, Kiemeny LA, Massuger LF, Wentzensen N, Pharoah P, Song H, Whittemore AS, McGuire V, Sieh W, Rothstein J, Anton-Culver H, Ziogas A, Menon U, Gayther SA, Ramus SJ, Gentry-Maharaj A, Wu AH, Pearce CL, Pike MC, Lee AW, Chang-Claude J, Jensen A, Ovarian Cancer Association Consortium. The association between socioeconomic status and tumour stage at diagnosis of ovarian cancer: a pooled analysis of 18 case-control studies. *Cancer Epidemiol* 2016;41:71-9. PMID: PMC4993452.

Cuellar-Partida G, Lu Y, Dixon SC, Australian Ovarian Cancer Study, Fasching PA, Hein A, Burghaus S, Beckmann MW, Lambrechts D, Van Nieuwenhuysen E, Vergote I, Vanderstichele A, Doherty JA, Rossing MA, Chang-Claude J, Rudolph A, Wang-Gohrke S, Goodman MT, Bogdanova N, Dörk T, Dürst M, Hillemanns P, Runnebaum IB, Antonenkova N, Butzow R, Leminen A, Nevanlinna H, Peltari LM, Edwards RP, Kelley JL, Modugno F, Moysich KB, Ness RB, Cannioto R, Høgdall E, Høgdall C, Jensen A, Giles GG, Bruinsma F, Kjaer SK, Hildebrandt MAT, Liang D, Lu KH, Wu X, Bisogna M, Dao F, Levine DA, Cramer DW, Terry KL, Tworoger SS, Stampfer M, Missmer S, Borge L, Salvesen HB, Kopperud RK, Bischof K, Aben KKH, Kiemeny LA, Massuger LFAG, Brooks-Wilson A, Olson SH, McGuire V, Rothstein JH, Sieh W, Whittemore AS, Cook LS, Le ND, Gilks CB, Gronwald J, Jakubowska A, Lubiński J, Kluz T, Song H, Tyrer JP, Wentzensen N, Brinton L, Trabert B, Lissowska J, McLaughlin JR, Narod SA, Phelan C, Anton-Culver H, Ziogas A, Eccles D, Campbell I, Gayther SA, Gentry-Maharaj A, Menon U, Ramus SJ, Wu AH, Dansonka-Mieszkowska A, Kupryjanczyk J, Timorek A, Szafron L, Cunningham JM, Fridley BL, Winham SJ, Bandera EV, Poole EM, Morgan TK, Goode EL, Schildkraut JM, Pearce CL, Berchuck A, Pharoah PDP, Webb PM, Chenevix-Trench G, **Risch HA**, MacGregor S. Assessing the genetic architecture of epithelial ovarian cancer histological subtypes. *Hum Genet* 2016;135(7): 741-56. PMID: PMC4976079.

Meeks HD, Song H, Michailidou K, Bolla MK, Dennis J, Wang Q, Barrowdale D, Frost D, EMBRACE, McGuffog L, Ellis S, Feng B, Buys SS, Hopper JL, Southey MC, Tesoriero A, kConFab Investigators, James PA, Bruinsma F, Campbell IG, Australia Ovarian Cancer Study Group, Broeks A, Schmidt MK, Hogervorst FBL, HEBON, Beckman MW, Fasching PA, Fletcher O, Johnson N, Sawyer EJ, Riboli E, Banerjee S, Menon U, Tomlinson I, Burwinkel B, Hamann U, Marme F, Rudolph A, Janavicius R, Tihomirova L, Tung N, Garber J, Cramer D, Terry KL, Poole EM, Tworoger SS, Dorfling CM, van Rensburg EJ, Godwin AK, Guénel P, Truong T, GEMO Study Collaborators, Stoppa-Lyonnet D, Damiola F, Mazoyer S, Sinilnikova OM, Isaacs C, Maugard C, Bojesen SE, Flyger H, Gerdes A-M, Hansen TVO, Jensen A, Kjaer SK, Hogdall C, Hogdall E,

Pedersen IS, Thomassen M, Benitez J, González-Neira A, Osorio A, de la Hoya M, Perez Segura P, Diez O, Lazaro C, Brunet J, Anton-Culver H, Eunjung L, John EM, Neuhausen SL, Ding YC, Castillo D, Weitzel JN, Ganz PA, Nussbaum RL, Chan SB, Karlan BY, Lester J, Wu A, Gayther S, Ramus SJ, Sieh W, Whittermore AS, Monteiro ANA, Phelan CM, Terry MB, Piedmonte M, Offit K, Robson M, Levine D, Moysich KB, Cannioto R, Olson SH, Daly MB, Nathanson KL, Domchek SM, Lu KH, Liang D, Hildebrant MAT, Ness R, Modugno F, Pearce L, Goodman MT, Thompson PJ, Brenner H, Butterbach K, Meindl A, Hahnen E, Wappenschmidt B, Brauch H, Brüning T, Blomqvist C, Khan S, Nevanlinna H, Pelttari LM, Aittomäki K, Butzow R, Bogdanova NV, Dörk T, Lindblom A, Margolin S, Rantala J, Kosma V-M, Mannermaa A, Lambrechts D, Neven P, Claes KBM, Van Maerken T, Chang-Claude J, Flesch-Janys D, Heitz F, Varon-Mateeva R, Peterlongo P, Radice P, Viel A, Barile M, Peissel B, Manoukian S, Montagna M, Oliani C, Peixoto A, Teixeira MR, Collavoli A, Hallberg E, Olson JE, Goode EL, Hart S, Shimelis H, Cunningham JM, Giles GG, Milne RL, Healey S, Tucker K, Haiman CA, Henderson BE, Goldberg MS, Tischkowitz M, Simard J, Soucy P, Eccles DM, Le N, Borresen-Dale A-L, Kristensen V, Salvesen HB, Bjorge L, Bandera EV, **Risch H**, Zheng W, Beeghly-Fadiel A, Cai H, Pylkäs K, Tollenaar RAEM, van der Ouweland AMW, Andrulis IL, Knight JA, OCGN, Narod S, Devilee P, Winqvist R, Figueroa J, Greene MH, Mai PL, Loud JT, García-Closas M, Schoemaker MJ, Czene K, Darabi H, McNeish I, Siddiqui N, Glasspool R, Kwong A, Park SK, Teo SH, Yoon S-Y, Matsuo K, Hosono S, Woo YL, Gao Y-T, Foretova L, Singer CF, Feurhauser CR, Friedman E, Laitman Y, Rennert G, Imyanitov EN, Hulick PJ, Olopade OI, Senter L, Olah E, Doherty JA, Schildkraut J, Hollestelle A, Koppert LB, Kiemenev LA, Massuger LFAG, Cook LS, Pejovic T, Li J, Borg A, Öfverholm A, Rossing MA, Wentzensen N, Henriksson K, Cox A, Cross SS, Perkins BJ, Shah M, Kabisch M, Torres D, Jakubowska A, Lubinski J, Gronwald J, Agnarsson BA, Kupryjanczyk J, Moes-Sosnowska J, Fostira F, Konstantopoulou I, Slager S, Jones M, Prostate Cancer Association Group to Investigate Cancer Associated Alterations in the Genome, Antoniou AC, Berchuck A, Swerdlow A, Chenevix-Trench G, Dunning AM, Pharoah PDP, Hall P, Easton DF, Couch FJ, Spurdle AB, Goldgar DE. BRCA2 polymorphic stop codon K3326X and the risk of breast, prostate and ovarian cancers. *J Natl Cancer Inst* 2016;108(2):djv315. PMID: PMC4907358.

2015

Risch HA, Yu H, Lu L, Kidd MS. Detectable symptomatology preceding the diagnosis of pancreatic cancer and absolute risk of pancreatic cancer diagnosis. *Am J Epidemiol* 2015;182(1):26-34. PMID: PMC4479115.

Schulte A, Pandeya N, Fawcett J, Fritschi L, **Risch HA**, Webb PM, Whiteman DC, Neale RE. Association between *Helicobacter pylori* and pancreatic cancer risk: a meta-analysis. *Cancer Causes Control* 2015;26(7):1027-35. *Not a result of NIH funding.

- Ivanova A, Loo A, Tworoger S, Crum CP, Fan I, McLaughlin JR, Rosen B, **Risch H**, Narod SA, Kotsopoulos J. Ovarian cancer survival by tumor dominance, a surrogate for site of origin. *Cancer Causes Control* 2015;26(4):601-8. *NIH funding pre-dates mandate.
- Wang Z, Katsaros D, Shen Y, Fu Y, Canuto EM, Benedetto C, Lu L, Chu W-M, **Risch HA**, Yu H. Biological and clinical significance of *MAD2L1* and *BUB1*, genes frequently appearing in expression signatures for breast-cancer prognosis. *PLoS One* 2015;10(8):e0136246. PMID: PMC4546117.
- Waterhouse M, **Risch HA**, Bosetti C, Anderson KE, Petersen GM, Bamlet WR, Cotterchio M, Cleary SP, Ibiebele T, La Vecchia C, Skinner H, Strayer L, Bracci PM, Maisonneuve P, Bueno-de-Mesquita HB, Zatoński W, Lu L, Yu H, Janik-Konieczny K, Polesel J, Serraino D, Neale RE, for the Pancreatic Cancer Case-Control Consortium (PanC4). Vitamin D and pancreatic cancer: a pooled analysis from the Pancreatic Cancer Case-Control Consortium. *Ann Oncol* 2015;26(8):1776-83. PMID: PMC4511221.
- Amankwah EK, Lin H-Y, Tyrer JP, Lawrenson K, Dennis J, Chornokur G, Aben KKH, Anton-Culver H, Antonenkova N, Bruinsma F, Bandera EV, Bean YT, Beckmann MW, Bisogna M, Bjorge L, Bogdanova N, Brinton LA, Brooks-Wilson A, Bunker CH, Butzow R, Campbell IG, Carty K, Chen Z, Chen YA, Chang-Claude J, Cook LS, Cramer DW, Cunningham JM, Cybulski C, Dansonka-Mieszkowska A, du Bois A, Despierre E, Dicks E, Doherty JA, Dörk T, Dürst M, Easton DF, Eccles DM, Edwards RP, Ekici AB, Fasching PA, Fridley BL, Gao Y-T, Gentry-Maharaj A, Giles GG, Glasspool R, Goodman MT, Gronwald J, Harrington P, Harter P, Hasmad HN, Hein A, Heitz F, Hildebrandt MAT, Hillemanns P, Hogdall CK, Hogdall E, Hosono S, Iversen ES, Jakubowska A, Jensen A, Ji B-T, Karlan BY, Jim H, Kellar M, Kiemenev LA, Krakstad C, Kjaer SK, Kupryjanczyk J, Lambrechts D, Lambrechts S, Le ND, Lee AW, Lele S, Leminen A, Lester J, Levine DA, Liang D, Lim BK, Lissowska J, Lu K, Lubinski J, Lundvall L, Massuger L FAG, Matsuo K, McGuire V, McLaughlin JR, McNeish I, Menon U, Milne RL, Modugno F, Moysich KB, Ness RB, Nevanlinna H, Eilber U, Odunsi K, Olson SH, Orlow I, Orsulic S, Weber RP, Paul J, Pearce CL, Pejovic T, Pelttari LM, Permuth-Wey J, Pike MC, Poole EM, **Risch HA**, Rosen B, Rossing MA, Rothstein JH, Rudolph A, Runnebaum IB, Rzepecka IK, Salvesen HB, Schernhammer E, Schwaab I, Shu X-O, Shvetsov YB, Siddiqui N, Sieh W, Song H, Southey MC, Spiewankiewicz B, Sucheston-Campbell L, Teo S-H, Terry KL, Thompson PJ, Thomsen L, Tangen IL, Tworoger SS, van Altena AM, Vierkant RA, Vergote I, Walsh CS, Wang-Gohrke S, Wentzensen N, Whittemore AS, Wicklund KG, Wilkens LR, Wu AH, Wu X, Woo Y-L, Yang H, Zheng W, Ziogas A, Kelemen LE, Berchuck A, Chenevix-Trench G on behalf of the AOCs management group, Schildkraut JM, Ramus SJ, Goode EL, Monteiro ANA, Gayther SA, Narod SA, Pharoah PDP, Sellers TA, Phelan CM. Epithelial-mesenchymal transition (EMT) gene variants and epithelial ovarian cancer (EOC) risk. *Genet Epidemiol* 2015;39(8):689-97. PMID: PMC4721602.

Collaborative Group on Epidemiological Studies of Ovarian Cancer. Menopausal hormone use and ovarian cancer risk: Individual participant meta-analysis of 52 epidemiological studies. *Lancet* 2015;385:1835-42. *Not a result of NIH funding.

Wang Z, **Risch H**, Lu L, Irwin M, Mayne S, Schwartz P, Rutherford T, De Vivo I, Yu H. Joint effect of genotypic and phenotypic features of reproductive factors on endometrial cancer risk. *Sci Rep* 2015;5:15582. PMID: PMC Journal in Process.

Machiela MJ, Zhou W, Sampson JN, Dean MC, Jacobs KB, Black A, Brinton LA, Chang I-S, Chen C, Chen C, Chen K, Cook LS, Crous Bou M, De Vivo I, Doherty J, Friedenreich CM, Gaudet MM, Haiman CA, Hankinson SE, Hartge P, Henderson BE, Hong Y-C, Hosgood III HD, Hsiung CA, Hu W, Hunter DJ, Jessop L, Kim HN, Kim YH, Kim YT, Klein R, Kraft P, Lan Q, Lin D, Liu J, Le Marchand L, Liang X, Lissowska J, Lu L, Magliocco AM, Matsuo K, Olson SH, Orlow I, Park JY, Pooler L, Prescott J, Rastogi R, **Risch HA**, Schumacher F, Seow A, Setiawan VW, Shen H, Sheng X, Shin M-H, Shu X-O, VanDen Berg D, Wang J-C, Wentzensen N, Wong MP, Wu C, Wu T, Wu Y-L, Xia L, Yang HP, Yang P-C, Zheng W, Zhou B, Abnet CC, Albanes D, Aldrich MC, Amos C, Amundadottir LT, Berndt SI, Blot WJ, Bock CH, Bracci PM, Burdett L, Buring JE, Butler MA, Carreón T, Chatterjee N, Chung CC, Cook MB, Cullen M, Davis FG, Ding T, Duell EJ, Epstein CG, Fan J-H, Figueroa JD, Fraumeni Jr. JF, Freedman ND, Fuchs CS, Gao Y-T, Gapstur SM, Patiño-Garcia A, Garcia-Closas M, Gaziano JM, Giles GG, Gillanders EM, Giovannucci EL, Goldin L, Goldstein AM, Greene MH, Hallmans G, Harris CC, Henriksson R, Holly EA, Hoover RN, Hu N, Hutchinson A, Jenab M, Johansen C, Khaw K-T, Koh W-P, Kolonel LN, Kooperberg C, Krogh V, Kurtz RC, LaCroix A, Landgren A, Landi MT, Li D, Liao LM, Malats N, McGlynn KA, McNeill LH, McWilliams RR, Melin BS, Mirabello L, Peplonska B, Peters U, Petersen GM, Prokunina-Olsson L, Purdue M, Qiao Y-L, Rabe KG, Rajaraman P, Real FX, Riboli E, Rodriguez-Santiago B, Rothman N, Ruder AM, Savage SA, Schwartz AG, Schwartz KL, Sesso HD, Severi G, Silverman DT, Spitz MR, Stevens VL, Stolzenberg-Solomon R, Stram D, Tang Z-Z, Taylor PR, Teras LR, Tobias GS, Viswanathan K, Wacholder S, Wang Z, Weinstein SJ, Wheeler W, White E, Wiencke JK, Wolpin BM, Wu X, Wunder JS, Yu K, Zanetti KA, Zeleniuch-Jacquotte A, Ziegler RG, de Andrade M, Barnes KC, Beaty TH, Bierut LJ, Desch KC, Doheny KF, Feenstra B, Ginsburg D, Heit JA, Kang JH, Laurie CA, Li JZ, Lowe WL, Marazita ML, Melbye M, Mirel DB, Murray J, Nelson SC, Pasquale LR, Rice K, Wiggs JL, Wise A, Tucker M, Perez-Jurado LA, Laurie CC, Caporaso NE, Yeager M, Chanock SJ. Characterization of large structural genetic mosaicism in human autosomes. *Am J Hum Genet* 2015;96(3):487-97. PMID: PMC Journal in Process.

- Fritschi L, Benke G, **Risch HA**, Schulte A, Webb PM, Whiteman DC, Fawcett J, Neale RE. Occupational exposure to *N*-nitrosamines and pesticides and risk of pancreatic cancer. *Occup Environ Med* 2015;72(9):678-83. *Not a result of NIH funding.
- Salmena L, Shaw P, Fan I, McLaughlin JR, Rosen B, **Risch H**, Mitchell C, Sun P, Narod SA, Kotsopoulos J. Prognostic value of INPP4B protein immunohistochemistry in ovarian cancer. *Eur J Gynaecol Oncol* 2015;36(3):260-7. PMID: PMC Journal in Process.
- Lee E, Stram DO, Ek W, Onstad LE, MacGregor S, Buas M, Gharahkhani P, Ye W, Lagergren J, Bird NC, Romero Y, Shaheen NJ, Murray LJ, Hardie LJ, Gammon MD, Chow W-H, **Risch HA**, Corley DA, Reid BJ, Levine DM, Abnet C, Whiteman DC, Bernstein L, Vaughan TL, Wu AH. Pleiotropic analysis of cancer risk loci on esophageal adenocarcinoma risk. *Cancer Epidemiol Biomarkers Prev* 2015;24(11):1801-3. PMID: PMC Journal in Process.
- Prescott J, Setiawan VW, Wentzensen N, Schumacher F, Yu H, Delahanty R, Bernstein L, Chanock SJ, Chen C, Cook LS, Friedenreich C, Garcia-Closas M, Haiman CA, Le Marchand L, Liang X, Lissowska J, Lu L, Magliocco AM, Olson SH, **Risch HA**, Shu X-O, Ursin G, Yang HP, Kraft P, De Vivo I. Body mass index genetic risk score and endometrial cancer risk. *PLoS One* 2015;10(11):e0143256. PMID: PMC Journal in Process.
- Petrick JL, Steck SE, Bradshaw PT, Chow W-H, Engel LS, He K, **Risch HA**, Vaughan TL, Gammon MD. Dietary flavonoid intake and Barrett's Esophagus in western Washington State. *Ann Epidemiol* 2015;25(10):730-5.e2. PMID: PMC Journal in Process.
- Dai JY, Tapsoba Jde D, Buas MF, Onstad LE, DM, **Risch HA**, Chow W-H, Bernstein L, Ye W, Lagergren J, Bird NC, Corley DA, Shaheen NJ, Wu AH, Reid BJ, Hardie LJ, Whiteman DC, Vaughan TL. A newly identified susceptibility locus near *FOXP1* modifies the association of gastroesophageal reflux with Barrett's Esophagus. *Cancer Epidemiol Biomarkers Prev* 2015;24(11):1739-47. PMID: PMC Journal in Process.
- Shen Y, Wang Z, Loo LWM, Ni Y, Jia W, Fei P, **Risch HA**, Katsaros D, Yu H. *LINC00472* expression is regulated by promoter methylation and associated with disease-free survival in patients with grade 2 breast cancer. *Breast Cancer Res Treat* 2015;154(3):473-82. *Not a result of NIH funding.
- Lagergren K, Ek WE, Levine D, Chow W-H, Bernstein L, Casson AG, **Risch HA**, Shaheen NJ, Bird NC, Reid BJ, Corley DA, Hardie LJ, Wu AH, Fitzgerald RC, Pharoah P, Caldas C, Romero Y, Vaughan TL, MacGregor S, Whiteman D, Westberg L, Nyren O, Lagergren J. Polymorphisms in genes of relevance for

oestrogen and oxytocin pathways and risk of Barrett's Oesophagus and oesophageal adenocarcinoma: a pooled analysis from the BEACON Consortium. *PLoS ONE* 2015;10(9):e0138738. PMID: PMC Journal in Process.

Kar SP, Tyrer JP, Li Q, Lawrenson K, Aben KKH, Anton-Culver H, Antonenkova N, Chenevix-Trench G, Australian Cancer Study, Australian Ovarian Cancer Study Group, Baker H, Bandera EV, Bean YT, Beckmann MW, Berchuck A, Bisogna M, Bjørge L, Bogdanova N, Brinton L, Brooks-Wilson A, Butzow R, Campbell I, Carty K, Chang-Claude J, Chen YA, Chen Z, Cook LS, Cramer D, Cunningham JM, Cybulski C, Dansonka-Mieszkowska A, Dennis J, Dicks E, Doherty JA, Dörk T, du Bois A, Dürst M, Eccles D, Easton DF, Edwards RP, Ekici AB, Fasching PA, Fridley BL, Gao Y-T, Gentry-Maharaj A, Giles GG, Glasspool R, Goode EL, Goodman MT, Grownwald J, Harrington P, Harter P, Hein A, Heitz F, Hildebrandt MAT, Hillemanns P, Hogdall E, Hogdall CK, Hosono S, Iversen ES, Jakubowska A, James P, Jensen A, Ji B-T, Karlan BY, Kjaer SK, Kelemen LE, Kellar M, Kelley J, Kiemeny LA, Krakstad C, Kupryjanczyk J, Lambrechts D, Lambrechts S, Le ND, Lee AW, Lele S, Leminen A, Lester J, Levine DA, Liang D, Lissowska J, Lu K, Lubinski J, Lundvall L, Massuger L, Matsuo K, McGuire V, McLaughlin JR, McNeish IA, Menon U, Modugno F, Moysich KB, Narod SA, Nedergaard L, Ness RB, Nevanlinna H, Odunsi K, Olson SH, Orlow I, Orsulic S, Weber RP, Pearce CL, Pejovic T, Pelttari LM, Permuth-Wey J, Phelan CM, Pike MC, Poole EM, Ramus SJ, **Risch HA**, Rosen B, Rossing MA, Rothstein JH, Rudolph A, Runnebaum IB, Rzepecka IK, Salvesen HB, Schildkraut JM, Schwaab I, Shu X-O, Shvetsov YB, Siddiqui N, Sieh W, Song H, Southey MC, Sucheston-Campbell LE, Tangen IL, Teo S-H, Terry KL, Thompson PJ, Timorek A, Tsai Y-Y, Tworoger SS, van Altena AM, Van Nieuwenhuysen E, Vergote I, Vierkant RA, Wang-Gohrke S, Walsh C, Wentzensen N, Whittemore AS, Wicklund KG, Wilkens LR, Woo Y-L, Wu X, Wu A, Yang H, Zheng W, Ziogas A, Sellers TA, Monteiro ANA, Freedman ML, Gayther SA, Pharoah PDP. Network-based integration of GWAS and gene expression identifies a HOX-centric network associated with serous ovarian cancer risk. *Cancer Epidemiol Biomarkers Prev* 2015;24(10):1574-84. PMID: PMC Journal in Process.

Felix AS, Gaudet MM, La Vecchia C, Nagle CM, Shu X-O, Weiderpass E, Adami HO, Beresford S, Bernstein L, Chen C, Cook LS, De Vivo I, Doherty JA, Friedenreich CM, Gapstur SM, Hill D, Horn-Ross PL, Lacey JV, Levi F, Liang X, Lu L, Magliocco A, McCann SE, Negri E, Olson SH, Palmer JR, Patel AV, Petruzella S, Prescott J, **Risch HA**, Rosenberg L, Sherman ME, Spurdle AB, Webb PM, Wise LA, Xiang Y-B, Xu W, Yang HP, Yu H, Zeleniuch-Jacquotte A, Brinton LA. Intrauterine devices and endometrial cancer risk: a pooled analysis of the Epidemiology of Endometrial Cancer Consortium. *Int J Cancer* 2015;136(5):E410-22. PMID: PMC Journal in Process.

Lee AW, Tyrer JP, Doherty JA, Stram DA, Kupryjanczyk J, Dansonka-Mieszkowska A, Plisiecka-Halasa J, Spiewankiewicz B, Myers EJ, Australian Cancer Study (Ovarian Cancer), Australian Ovarian Cancer Study Group, Chenevix-Trench G, Fasching PA, Beckmann MW, Ekici AB, Hein A, Vergote I, Nieuwenhuysen EV, Lambrechts D, Wicklund KG, Eilber U, Wang-Gohrke S, Chang-Claude J, Rudolph A, Sucheston L, Odunsi K, Moysich KB, Shvetsov YB, Thompson PJ, Goodman MT, Wilkens LR, Dörk T, Hillemanns P, Dürst M, Runnebaum IB, Bogdanova N, Pelttari LM, Nevanlinna H, Leminen A, Edwards RP, Kelley JL, Harter P, Schwaab I, Heitz F, du Bois A, Orsulic S, Lester J, Walsh C, Karlan BY, Hogdall E, Kjaer SK, Jensen A, Vierkant RA, Cunningham JM, Goode EL, Fridley BL, Southey MC, Giles GG, Bruinsma F, Wu X, Hildebrandt MAT, Lu K, Liang D, Bisogna M, Levine DA, Weber RP, Schildkraut JM, Iversen ES, Berchuck A, Terry KL, Cramer DW, Tworoger SS, Poole EM, Olson SH, Orlow I, Bandera EV, Bjorge L, Tangen IL, Salvesen HB, Krakstad C, Massuger LFAG, Kiemeny LA, Aben KKH, van Altena AM, Bean Y, Pejovic T, Kellar M, Le ND, Cook LS, Kelemen LE, Brooks-Wilson A, Lubinski J, Gronwald J, Cybulski C, Jakubowska A, Wentzensen N, Brinton LA, Lissowska J, Yang H, Nedergaard L, Lundvall L, Hogdall C, Song H, Campbell IG, Eccles D, Glasspool R, Siddiqui N, Carty K, Paul J, McNeish I, Sieh W, McGuire V, Rothstein JH, Whittemore AS, McLaughlin JR, **Risch HA**, Phelan CM, Anton-Culver H, Ziogas A, Menon U, Ramus SJ, Gentry-Maharaj A, Harrington P, Pike MC, Modugno F, Rossing MA, Ness RB, Pharoah PDP, Stram DO, Wu AH, Pearce CL. Evaluating the ovarian cancer gonadotropin hypothesis: a candidate gene study. *Gyn Oncol* 2015;136(3):542-8. PMID: PMC Journal in Process.

Campa D, Rizzato C, Stolzenberg-Solomon R, Pacetti P, Vodicka P, Cleary SP, Capurso G, Bueno-de-Mesquita HB, Werner J, Gazouli M, Butterbach K, Ivanauskas A, Giese N, Petersen GM, Fogar P, Wang Z, Bassi C, Ryska M, Theodoropoulos GE, Kooperberg C, Hassan M, Greenhalf W, Pasquali C, Hackert T, Fuchs CS, Mohelnikova-Duchonova B, Sperti C, Funel N, Dieffenbach AK, Wareham NJ, Buring J, Holcátová I, Costello E, Zambon C-F, Kupcinskis J, **Risch HA**, Kraft P, Bracci PM, Pezzilli R, Olson SH, Sesso HD, Hartge P, Strobel O, Małacka-Panas E, Visvanathan K, Arslan AA, Pedrazzoli S, Souček P, Gioffreda D, Key TJ, Talar-Wojnarowska R, Scarpa A, Mambrini A, Jacobs EJ, Jamroziak K, Klein A, Tavano F, Bambi F, Landi S, Austin MA, Vodickova L, Brenner H, Chanock SJ, Delle Fave G, Piepoli A, Cantore M, Zheng W, Wolpin BM, Amundadottir LT, Canzian F. The *TERT* gene harbors multiple variants associated with pancreatic cancer susceptibility. *Int J Cancer* 2015;137(9):2175-83. PMID: PMC Journal in Process.

Lu Y, Cuellar G, Painter JN, Nyholt D, Australian Ovarian Cancer Study, The International Endogene Consortium, Morris AP, Fasching PA, Hein A, Burghaus S, Beckmann MW, Lambrechts; D, Van Nieuwenhuysen E, Vergote I, Vanderstichele A, Doherty JA, Rossing MA, Wicklund KG, Chang-Claude J, Eilber U, Rudolph A, Wang-Gohrke S, Goodman MT, Bogdanova N, Dörk T,

Dürst M, Hillemanns P, Runnebaum IB, Antonenkova N, Butzow R, Leminen A, Nevanlinna H, Pelttari LM, Edwards RP, Kelley JL, Modugno F, Moysich KB, Ness RB, Cannioto R, Høgdall E, Jensen A, Giles GG, Bruinsma F, Kjaer SK, Hildebrandt MAT, Liang D, Lu KH, Wu X, Bisogna M, Dao F, Levine DA, Cramer DW, Terry KL, Tworoger SS, Missmer S, Bjorge L, Salvesen HB, Kopperud RK, Bischof K, Aben KKH, Kiemeny LA, Massuger LFAG, Brooks-Wilson A, Olson SH, McGuire V, Rothstein JH, Sieh W, Whittemore AS, Cook LS, Le ND, Gilks CB, Gronwald J, Jakubowska A, Lubiński J, Gawelko J, Song H, Tyrer JP, Wentzensen N, Brinton L, Trabert B, Lissowska J, McLaughlin JR, Narod SA, Phelan C, Anton-Culver H, Ziogas A, Eccles D, Gayther SA, Gentry-Maharaj A, Menon U, Ramus SJ, Wu AH, Dansonka-Mieszkowska A, Kupryjanczyk J, Timorek A, Szafron L, Cunningham JM, Fridley BL, Winham SJ, Bandera EV, Poole EM, Morgan TK, **Risch HA**, Goode EL, Schildkraut JM, Webb PM, Pearce CL, Berchuck A, Pharoah PDP, Montgomery GW, Zondervan KT, Chenevix-Trench G, Macgregor S. Shared genetics underlying epidemiological association between endometriosis and ovarian cancer. *Hum Mol Genet* 2015;24(20):5955-64. PMID: PMC Journal in Process.

Nagle CM, Dixon SC, Jensen A, Kjaer SK, Modugno F, deFazio A, Fereday S, Hung J, Johnatty SE, Australian Ovarian Cancer Study Group, Fasching PA, Beckmann MW, Lambrechts D, Vergote I, Van Nieuwenhuysen E, Lambrechts S, **Risch HA**, Rossing MA, Doherty JA, Wicklund KG, Chang-Claude J, Goodman MT, Ness RB, Moysich K, Heitz F, du Bois A, Harter P, Schwaab I, Matsuo K, Hosono S, Goode EL, Vierkant RA, Larson MC, Fridley BL, Høgdall C, Schildkraut JM, Weber RP, Cramer DW, Terry KL, Bandera EV, Paddock L, Rodriguez-Rodriguez L, Wentzensen N, Yang HP, Brinton LA, Lissowska J, Høgdall E, Lundvall L, Whittemore A, McGuire V, Sieh W, Rothstein J, Sutphen R, Anton-Culver H, Ziogas A, Pearce CL, Wu AH, Webb PM, Ovarian Cancer Association Consortium. Obesity and survival among women with ovarian cancer: results from the Ovarian Cancer Association Consortium. *Br J Cancer* 2015;113(5):817-26. PMID: PMC Journal in Process.

Childs EJ, Mocchi E, Campa D, Bracci PM, Gallinger S, Goggins M, Li D, Neale R, Olson SH, Scelo G, Amundadottir LT, Bamlet WR, Bijlsma MF, Blackford A, Borges M, Brennan P, Brenner H, Bueno-de-Mesquita HB, Canzian F, Capurso G, Cavestro GM, Chaffee KG, Chanock SJ, Cleary SP, Cotterchio M, Foretova L, Fuchs C, Funel N, Gazouli M, Hassan M, Herman JM, Holcatova I, Holly EA, Hoover RN, Hung RJ, Janout V, Key TJ, Kupcinskas J, Kurtz RC, Landi S, Lu L, Malecka-Panas E, Mambrini A, Mohelnikova-Duchonova B, Neoptolemos JP, Oberg AL, Orlow I, Pasquali C, Pezzilli R, Rizzato C, Saldia A, Scarpa A, Stolzenberg-Solomon RZ, Strobel O, Tavano F, Vashist YK, Vodicka P, Wolpin BM, Yu H, Petersen GM, **Risch HA**, Klein AP. Common variation at 2p13.3, 3q29, 7p13 and 17q25.1 associated with susceptibility to pancreatic cancer. *Nat Genet* 2015;47(8):911-6. PMID: PMC4520746.

Lawrenson K, Li Q, Kar S, Seo J-H, Tyrer J, Spindler TJ, Lee J, Chen Y, Karst A, Drapkin R, Aben KKH, Anton-Culver H, Antonenkova N, Australian Ovarian

Cancer Study Group, Baker H, Bandera EV, Bean Y, Beckmann MW, Berchuck A, Bisogna M, Bjorge L, Bogdanova N, Brinton LA, Brooks-Wilson A, Bruinsma F, Butzow R, Campbell IG, Carty K, Chang-Claude J, Chenevix-Trench G, Chen A, Chen Z, Cook LS, Cramer DW, Cunningham JM, Cybulski C, Dansonka-Mieszkowska A, Dennis J, Dicks E, Doherty JA, Dörk T, du Bois A, Dürst M, Eccles D, Easton DT, Edwards RP, Eilber U, Ekici AB, Fasching PA, Fridley BL, Gao Y-T, Gentry-Maharaj A, Giles GG, Glasspool R, Goode EL, Goodman MT, Grownwald J, Harrington P, Harter P, Hasmad HN, Hein A, Heitz F, Hildebrandt MAT, Hillemanns P, Hogdall E, Hogdall C, Hosono S, Iversen ES, Jakubowska A, James P, Jensen A, Ji B-T, Karlan BY, Kjaer SK, Kelemen LE, Kellar M, Kelley JL, Kiemeney LA, Krakstad C, Kupryjanczyk J, Lambrechts D, Lambrechts S, Le ND, Lee AW, Lele S, Leminen A, Lester J, Levine DA, Liang D, Lissowska J, Lu K, Lubinski J, Lundvall L, Massuger LFAG, Matsuo K, McGuire V, McLaughlin JR, Nevanlinna H, McNeish I, Menon U, Modugno F, Moysich KB, Narod SA, Nedergaard L, Ness RB, Noor Azmi MA, Odunsi K, Olson SH, Orlow I, Orsulic S, Weber RP, Pearce CL, Pejovic T, Pelttari LM, Permuth-Wey J, Phelan CM, Pike MC, Poole EM, Ramus SJ, **Risch HA**, Rosen B, Rossing MA, Rothstein JH, Rudolph A, Runnebaum IB, Rzepecka IK, Salvesen HB, Schildkraut JM, Schwaab I, Sellers TA, Shu X-O, Shvetsov YB, Siddiqui N, Sieh W, Song H, Southey MC, Sucheston L, Tangen IL, Teo S-H, Terry KL, Thompson PJ, Timorek A, Tsai Y-Y, Tworoger SS, van Altena AM, Van Nieuwenhuysen E, Vergote I, Vierkant RA, Wang-Gohrke S, Walsh C, Wentzensen N, Whittemore AS, Wicklund KG, Wilkens LR, Woo Y-L, Wu X, Wu AH, Yang H, Zheng W, Ziogas A, Monteiro A, Pharoah PD, Gayther SA, Freedman ML. *Cis-eQTL analysis and functional validation of candidate susceptibility genes for high-grade serous ovarian cancer.* Nat Commun 2015;6:8234. PMID: PMC4580986.

Kelemen LE, Lawrenson K, Tyrer J, Li Q, Lee JM, Seo J-H, Phelan CM, Beesley J, Chen X, Spindler TJ, Aben KKH, Anton-Culver H, Antonenkova N, Australian Ovarian Cancer Study Group, Baker H, Bandera EV, Bean Y, Beckmann MW, Bisogna M, Bjorge L, Bogdanova N, Brinton LA, Brooks-Wilson A, Bruinsma F, Butzow R, Campbell IG, Carty K, Chang-Claude J, Chen YA, Chen Z, Cook LS, Cramer DW, Cunningham JM, Cybulski C, Dansonka-Mieszkowska A, Dennis J, Dicks E, Doherty JA, Dörk T, du Bois A, Eccles D, Easton DT, Edwards RP, Eilber U, Ekici AB, Engelholm SA, Fasching PA, Fridley BL, Gao Y-T, Gentry-Maharaj A, Giles GG, Glasspool R, Goode EL, Goodman MT, Grownwald J, Harrington P, Harter P, Hasmad HN, Hein A, Heitz F, Hildebrandt MAT, Hillemanns P, Hogdall E, Hogdall C, Hosono S, Iversen ES, Jakubowska A, Jensen A, Ji B-T, Karlan BY, Kellar M, Kelley JL, Kiemeney LA, Krakstad C, Kjaer SK, Kupryjanczyk J, Lambrechts D, Lambrechts S, Le ND, Lee AW, Lele S, Leminen A, Lester J, Levine DA, Liang D, Lissowska J, Lu K, Lubinski J, Lundvall L, Massuger LFAG, Matsuo K, McGuire V, McLaughlin JR, McNeish I, Menon U, Modugno F, Moes-Sosnowska J, Moysich KB, Narod SA, Nedergaard L, Ness RB, Nevanlinna H, Noor Azmi MA, Odunsi K, Olson SH, Orlow I, Orsulic S, Weber RP, Paul J, Pearce CL, Pejovic T, Pelttari LM,

- Permuth-Wey J, Pike MC, Poole EM, Ramus SJ, **Risch HA**, Rosen B, Rossing MA, Rothstein JH, Rudolph A, Runnebaum IB, Rzepecka IK, Salvesen HB, Schildkraut JM, Schwaab I, Shu X-O, Shvetsov YB, Siddiqui N, Sieh W, Song H, Southey MC, Sucheston L, Tangen IL, Teo S-H, Terry KL, Thompson PJ, Tworoger SS, van Altena AM, Van Nieuwenhuysen E, Vergote I, Vierkant RA, Wang-Gohrke S, Walsh C, Wentzensen N, Whittemore AS, Wicklund KG, Wilkens LR, Wlodzimierz S, Woo Y-L, Wu X, Wu AH, Yang H, Zheng W, Ziogas A, Sellers TA, Freedman ML, Chenevix-Trench G, Pharoah PD, Gayther SA, Berchuck A, Ovarian Cancer Association Consortium. Genome-wide significant risk associations for mucinous ovarian carcinoma. *Nat Genet* 2015;47(8):888-97. PMID: PMC4520768.
- Petrick JL, Steck SE, Bradshaw PT, Trivers KF, Abrahamson PE, Engel LS, He K, Chow W-H, Mayne ST, **Risch HA**, Vaughan TL, Gammon MD. Dietary intake of flavonoids and oesophageal and gastric cancer: incidence and survival in the United States of America (USA). *Br J Cancer* 2015;112():1291-300. PMID: PMC Journal in Process.
- Yang HP, Cook LS, Weiderpass E, Adami H-O, Anderson KE, Cai H, Cerhan JR, Clendenen TV, Felix AS, Friedenreich CM, Garcia-Closas M, Goodman MT, Liang X, Lissowska J, Lu L, Magliocco AM, McCann SE, Moysich KB, Olson SH, Petruzella S, Pike MC, Polidoro S, Ricceri F, **Risch HA**, Sacerdote C, Setiawan VW, Shu XO, Spurdle AB, Trabert B, Webb PM, Wentzensen N, Xiang Y-B, Xu Y, Yu H, Zeleniuch-Jacquotte A, Brinton LA. Infertility and incident endometrial cancer risk: a pooled analysis from the epidemiology of endometrial cancer consortium (E2C2). *Br J Cancer* 2015;112(7):925-33. PMID: PMC4453954.
- Kuchenbaecker KB, Ramus SJ, Tyrer J, Lee A, Shen H, Beesley J, Lawrenson K, McGuffog L, Healey S, Lee JM, Spindler TJ, Lin YG, Pejovic T, Bean Y, Li Q, Coetzee S, Hazelett D, Miron A, Southey M, Terry MB, Goldgar DE, Buys SS, Janavicius R, Dorfling CM, van Rensburg EJ, Neuhausen SL, Ding YC, Hansen TVO, Jønson L, Gerdes A-M, Ejlersen B, Barrowdale D, Dennis J, Benitez J, Osorio A, Garcia MJ, Komenaka I, Weitzel JN, Ganschow P, Peterlongo P, Bernard L, Viel A, Bonanni B, Peissel B, Manoukian S, Radice P, Papi L, Ottini L, Fostira F, Konstantopoulou I, Garber J, Frost D, Perkins J, Platte R, Ellis S, EMBRACE, Godwin AK, Schmutzler RK, Meindl A, Engel C, Sutter C, Sinilnikova OM, GEMO Study Collaborators, Damiola F, Mazoyer S, Stoppa-Lyonnet D, Claes K, Leeneer KD, Kirk J, Rodriguez GC, Piedmonte M, O'Malley DM, de la Hoya M, Caldes T, Aittomäki K, Nevanlinna H, Collée JM, Rookus MA, Oosterwijk JC, Breast Cancer Family Registry, Tihomirova L, Tung N, Hamann U, Isacs C, Tischkowitz M, Imyanitov EN, Caligo MA, Campbell I, Hogervorst FBL, HEBON, Olah E, Diez O, Blanco I, Brunet J, Lazaro C, Pujana MA, Jakubowska A, Gronwald J, Lubinski J, Sukiennicki G, Barkardottir RB, Plante M, Simard J, Soucy P, Montagna M, Tognazzo S, Teixeira MR, KConFab Investigators, Pankratz VS, Wang X, Lindor N, Szabo CI, Kauff N, Vijai J, Aghajanian CA, Pfeiler G, Berger A, Singer CF, Tea M-K, Phelan CM, Greene

MH, Mai PL, Rennert G, Mulligan AM, Tchatchou S, Andrulis IL, Glendon G, Toland AE, Jensen UB, Kruse TA, Thomassen M, Bojesen A, Zidan J, Friedman E, Laitman Y, Soller M, Liljegren A, Arver B, Einbeigi Z, Stenmark-Askmal M, Olopade OI, Nussbaum RL, Rebbeck TR, Nathanson KL, Domchek SM, Lu KH, Karlan BY, Walsh C, Lester J, Australian Cancer Study (Ovarian Cancer), Australian Ovarian Cancer Study Group, Hein A, Ekici AB, Beckmann MW, Fasching PA, Lambrechts D, Van Nieuwenhuysen E, Vergote I, Lambrechts S, Dicks E, Doherty JA, Wicklund KG, Rossing MA, Rudolph A, Chang-Claude J, Wang-Gohrke S, Eilber U, Moysich KB, Odunsi K, Sucheston L, Lele S, Wilkens LR, Goodman MT, Thompson PJ, Shvetsov YB, Runnebaum IB, Dürst M, Hillemanns P, Dörk T, Antonenkova N, Bogdanova N, Leminen A, Pelttari LM, Butzow R, Modugno F, Kelley JL, Edwards RP, Ness RB, du Bois A, Heitz F, Schwaab I, Harter P, Matsuo K, Hosono S, Orsulic S, Jensen A, Kruger Kjaer S, Hogdall E, Hasmad HN, Noor Azmi MA, Teo S-H, Woo Y-L, Fridley BL, Goode EL, Cunningham JM, Vierkant RA, Bruinsma F, Giles GG, Liang D, Hildebrandt MAT, Wu X, Levine DA, Bisogna M, Berchuck A, Iversen ES, Schildkraut JM, Concannon P, Weber RP, Cramer DW, Terry KL, Poole EM, Tworoger SS, Bandera EV, Orlow I, Olson SH, Krakstad C, Salvesen HB, Tangen IL, Bjorge L, van Altena AM, Aben KKH, Kiemeny LA, G. LFA, Kellar M, Brooks-Wilson A, Kelemen LE, Cook LS, Le ND, Cybulski C, Yang H, Lissowska J, Brinton LA, Wentzensen N, Hogdall C, Lundvall L, Nedergaard L, Baker H, Song H, Eccles D, McNeish I, Paul J, Carty K, Siddiqui N, Glasspool R, Whittemore AS, Rothstein JH, McGuire V, Sieh W, Ji B-T, Zheng W, Shu X-O, Gao Y-T, Rosen B, **Risch HA**, McLaughlin JR, Narod SA, Monteiro AN, Chen A, Lin H-Y, Permuth-Wey J, Sellers TA, Tsai Y-Y, Chen Z, Ziogas A, Anton-Culver H, Gentry-Maharaj A, Menon U, Harrington P, Lee AW, Wu AH, Pearce CL, Coetzee G, Pike MC, Dansonka-Mieszkowska A, Timorek A, Rzepecka IK, Kupryjanczyk J, Freedman M, Noushmehr H, Easton DF, Offit K, Couch FJ, Gayther S, Pharoah PDP, Antoniou AC, Chenevix-Trench G on behalf of the Consortium of Investigators of Modifiers of BRCA1 and BRCA2. Identification of six new susceptibility loci for invasive epithelial ovarian cancer. *Nat Genet* 2015;47(2):164-71. PMID: PMC Journal in Process.

Xie G, Lu L, Qiu Y, Ni Q, Zhang W, Gao Y-T, **Risch HA**, Yu H, Jia W. Plasma metabolite markers for the detection of pancreatic cancer. *J Proteome Res*. 2015;14(2):1195-202. PMID: PMC4324440.

Segev Y, Zhang S, Akbari MR, Sun P, Sellers TA, McLaughlin J, **Risch HA**, Rosen B, Shaw P, Schildkraut J, Narod SA, Pal T. Survival in women with ovarian cancer with and without microsatellite instability. *Eur J Gynaecol Oncol* 2015;36(6):681-4. *Not a result of NIH funding.

Lu L, Katsaros D, Risch E, Deng Q, Biglia N, Picardo E, Mitidieri M, **Risch HA**, Yu H. Associations of LIN-28B/let-7a/IGF-II axis haplotypes with disease survival in epithelial ovarian cancer. *Am J Clin Exp Obstet Gynecol* 2015;2(3)102-15. *Not a result of NIH funding.

Chornokur G, Lin H-Y, Tyrer JP, Jim HSL, Lawrenson K, Amankwah EK, Qu X, Denis J, Tsai Y-Y, Chen Z, Chen AY, Permuth-Wey J, Aben K, Anton-Culver H, Antonenkova N, Australian Cancer Study, Australian Ovarian Cancer Study, Bruinsma F, Baker H, Bandera E, Bean Y, Beckmann M, Bisogna M, Bjorge L, Bogdanova N, Brinton L, Brooks-Wilson A, Bunker C, Butzow R, Campbell I, Carty K, Chang-Claude J, Concannon P, Cook LS, Cramer DW, Cunningham JM, Cybulski C, Dansonka-Mieszkowska A, du Bois A, Despierre E, Dicks E, Doherty JA, Dork T, Durst M, Easton D, Eccles D, Edwards RP, Ekici AB, Fasching PA, Fridley BL, Gao Y-T, Gentry-Maharaj A, Giles GG, Glasspool R, Goodman MT, Gronwald J, Harrington P, Harter P, Hein A, Heitz F, Hildebrandt MAT, Hillemanns P, Hogdall C, Hogdall E, Hosono S, Jakubowska A, Jensen A, Ji B-T, Karlan BY, Kelemen LE, Kellar M, Kiemeny L, Krakstad C, Kruger Kjaer S, Kupryjanczyk J, Lambrechts D, Lambrechts S, Le ND, Lee A, Lele S, Leminen A, Lester J, Levine DA, Liang D, Lim BK, Lissowska J, Lu K, Lubinski J, Lundvall L, Massuger LFAG, Matsuo K, Milne RL, McGuire V, McLaughlin JR, McNeish I, Menon U, Modugno F, Moysich KB, Nedergaard L, Ness RB, Nevanlinna H, Nickels S, Odunsi K, Olson SH, Orlow I, Orsulic S, Palmieri-Weber R, Paul J, Pearce CL, Pejovic T, Pelttari LM, Pike MC, Poole EM, **Risch HA**, Rosen B, Rossing MA, Rothstein JH, Rudolph A, Runnebaum I, Rzepecka I, Salvensen HB, Schernhammer E, Schwaab I, Shu X-O, Shvetsov YB, Siddiqui N, Sieh W, Song H, Southey MC, Sucheston L, Teo S-H, Terry KL, Thompson PJ, Thorbjornsen I, Timorek A, Tworoger SS, van Altena AM, Vierkant RA, Vergote I, Walsh C, Wang-Gohrke S, Webb P, Wentzensen N, Whittemore AS, Wicklund KG, Wilkens LR, Wu AH, Wu X, Wu Y-L, Yang H, Zheng W, Ziogas A, Zulkifli F, Berchuck A, Chenevix-Trench G, Iversen E, Schildkraut JM, Ramus SJ, Goode EL, Monteiro ANA, Gayther SA, Narod SA, Sellers TA, Pharoah PDP, Phelan CM. Common genetic variation in cellular transport genes and epithelial ovarian cancer (EOC) risk. *PLoS One* 2015;10(6):e0128106. PMID: PMC4474865.

Zhao J, Wang J, Du J, Xu H, Zhang W, Ni Q-X, Yu H, **Risch HA**, Gao Y-T, Gao Y. Urinary prostaglandin E₂ metabolite and pancreatic cancer risk: case-control study in urban Shanghai. *PLoS One* 2015;10(2):e0118004. PMID: PMC4332509.

Arem H, Yu K, Xiong X, Moy K, Freedman ND, Mayne ST, Albanes D, Amundadottir LT, Arslan AA, Austin M, Bamlet WR, Beane-Freeman L, Bracci P, Canzian F, Chanock SJ, Cotterchio M, Duell EJ, Gallinger S, Giles GG, Goggins M, Goodman PJ, Hartge P, Hassan M, Helzlsouer K, Henderson B, Holly EA, Hoover R, Jacobs EJ, Kamineni A, Klein A, Klein E, Kolonel LN, Li D, Malats N, Männistö S, McCullough ML, Olson SH, Orlow I, Peters U, Petersen GM, Porta M, Severi G, Shu X-O, Van Den Eeden S, Visvanathan K, White E, Yu H, Zeleniuch-Jacquotte A, Zheng W, Tobias GS, Maeder D, Brotzman M, **Risch H**, Sampson JN, Stolzenberg-Solomon RZ. Vitamin D metabolic pathway genes and pancreatic cancer risk. *PLoS One* 2015;10(3):e0117574. PMID: PMC4370655.

Buas MF, Onstad L, Levine DM, **Risch HA**, Chow W-H, Liu G, Fitzgerald RC, Bernstein L, Ye W, Bird NC, Romero Y, Casson AG, Corley DA, Shaheen NJ, Wu AH, Gammon MD, Reid BJ, Hardie LJ, Peters U, Whiteman DC, Vaughan TL. MiRNA-related SNPs and risk of esophageal adenocarcinoma and Barrett's Esophagus: Post genome-wide association analysis in the BEACON consortium. *PLoS One* 2015;10(6):e0128617. PMID: PMC4454432.

Shen Y, Katsaros D, Loo L, Hernandez BY, Chong C, Canuto EM, Biglia N, Lu L, **Risch H**, Chu W-M, Yu H. Prognostic and predictive values of long non-coding RNA LINC00472 in breast cancer. *Oncotarget* 2015;6(11):8579-92. *Not a result of NIH funding.

Sampson J, Wheeler WA, Yeager M, Panagiotou O, Wang Z, Berndt SI, Lan Q, Abnet CC, Amundadottir LT, Figueroa JD, Landi MT, Mirabello L, Savage SA, Taylor PR, De Vivo I, McGlynn KA, Purdue MP, Rajaraman P, Adami H-O, Ahlbom A, Albanes D, Amary MF, An S-J, Andersson U, Andriole G Jr, Andrulis IL, Angelucci E, Ansell SM, Arici C, Armstrong BK, Arslan AA, Austin MA, Baris D, Barkauskas DA, Bassig BA, Becker N, Benavente Y, Benhamou S, Berg C, Van Den Berg D, Bertrand KA, Birmann BM, Black A, Boeing H, Boffetta P, Boutron-Ruault M-C, Bracci PM, Brinton L, Brooks-Wilson AR, Bueno-de-Mesquita HB, Burdett L, Buring J, Cai Q, Cancel-Tassin G, Canzian F, Carrato A, Carreon T, Carta A, Chan JKC, Chang ET, Chang G-C, Chang I-S, Chang J, Chang-Claude J, Chen C-J, Chen C-Y, Chen C, Chen C-H, Chen C, Chen H, Chen K, Chen K-Y, Chen K-C, Chen Y, Chen Y-H, Chen Y-S, Chen Y-M, Chien L-H, Chirlaque M-D, Choi JE, Choi YY, Chow W-H, Chung CC, Clavel J, Clavel-Chapelon F, Cocco P, Colt JS, Comperat E, Conde L, Connors JM, Conti D, Cortessis VK, Cotterchio M, Cozen W, Crouch S, Crous-Bou M, Cussenot O, Davis FG, Dawsey SM, Ding T, Diver WR, Dorronsoro M, Dossus L, Duell EJ, Ennas MG, Erickson RL, Feychting M, Flanagan AM, Foretova L, Fraumeni JF Jr, Freedman ND, Freeman LEB, Fuchs C, Gago-Dominguez M, Gallinger S, Gao Y-T, Gapstur SM, Garcia-Closas M, García-Closas R, Gascoyne RD, Gastier-Foster J, Gaudet MM, Gaziano JM, Giffen C, Giles GG, Giovannucci E, Glimelius B, Goggins M, Gokgoz N, Goldstein AM, Gorlick R, Gross M, Grubb R III, Gu J, Guan P, Gunter M, Guo H, Habermann TM, Haiman CA, Halai D, Hallmans G, Hassan M, Hattinger C, He Q, He X, Helzlsouer K, Henderson B, Henriksson R, Hjalgrim H, Hoffman-Bolton J, Hohensee C, Holford TR, Holly EA, Hong Y-C, Hoover RN, Horn-Ross PL, Hosain GM, Hosgood HD III, Hsiao C-F, Hu N, Hu W, Hu Z, Huang M-S, Huerta J-M, Hung J-Y, Hutchinson A, Inskip PD, Jackson RD, Jacobs EJ, Jenab M, Jeon H-S, Ji B-T, Jin G, Jin L, Johansen C, Johnson A, Jung YJ, Kaaks R, Kamineni A, Kane E, Kang CH, Karagas MR, Kelly RS, Khaw K-T, Kim C, Kim HN, Kim JH, Kim JS, Kim YH, Kim YT, Kim Y-C, Kitahara CM, Klein AP, Klein RJ, Kogevinas M, Kohno T, Kolonel LN, Kooperberg C, Krickler A, Krogh V, Kunitoh H, Kurtz RC, Kweon S-S, LaCroix A, Lawrence C, Lecanda F, Lee VHF, Li D, Li H, Li J, Li Y-J, Li Y, Liao LM, Liebow M, Lightfoot T, Lim W-Y, Lin C-C, Lin D,

Lindstrom S, Linet MS, Link BK, Liu C, Liu J, Liu L, Ljungberg B, Lloreta J, Lollo SD, Lu D, Lund E, Malats N, Mannisto S, Le Marchand L, Marina N, Masala G, Mastrangelo G, Matsuo K, Maynadie M, McKay J, McKean-Cowdin R, Melbye M, Melin BS, Michaud DS, Mitsudomi T, Monnereau A, Montalvan R, Moore LE, Mortensen LM, Nieters A, North KE, Novak AJ, Oberg AL, Offit K, Oh I-J, Olson SH, Palli D, Pao W, Park IK, Park JY, Park KH, Patel AV, Patiño-Garcia A, Pavanello S, Peeters PHM, Perng R-P, Peters U, Petersen GM, Picci P, Pike MC, Porru S, Prescott J, Prokunina-Olsson L, Qian B, Qiao Y-L, Rais M, Riboli E, Riby J, **Risch HA**, Rizzato C, Rodabough R, Roman E, De Roos AJ, Roupert M, Ruder AM, De Sanjose S, Scelo G, Schned A, Schumacher F, Schwartz K, Schwenn M, Seow A, Serra C, Serra M, Sesso HD, Setiawan VW, Severi G, Severson RK, Shanafelt TD, Shen H, Shen W, Shin M-H, Shiraishi K, Shu X-O, Siddiq A, Sierrasesúmaga L, Sihoe ADL, Skibola CF, Smith A, Smith MT, Southey MC, Spinelli JJ, Staines A, Stampfer M, Stern MC, Stevens VL, Stolzenberg-Solomon RS, Su J, Su W-C, Sund M, Sung JS, Sung SW, Tan W, Tang W, Tardón A, Thomas D, Thompson CA, Thun MJ, Tinker LF, Tirabosco R, Tjønneland A, Travis RC, Trichopoulos D, Tsai F-Y, Tsai Y-H, Tucker M, Turner J, Vajdic CM, Vermeulen RCH, Villano DJ, Vineis P, Virtamo J, Visvanathan K, Wactawski-Wende J, Wang C, Wang C-L, Wang J-C, Wang J, Wei F, Weiderpass E, Weiner GJ, Weinstein S, Wentzensen N, White E, Witzig TE, Wolpin BM, Wong MP, Wu C, Wu G, Wu J, Wu T, Wu W, Wu X, Wu Y-L, Wunder J, Xiang Y-B, Xu J, Xu P, Yang P-C, Yang T-Y, Ye Y, Yin Z, Yokota J, Yoon H-I, Yu C-J, Yu H, Yu K, Yuan J-M, Zelenetz A, Zeleniuch-Jacquotte A, Zhang X-C, Zhang Y, Zhao X, Zhao Z, Zheng H, Zheng T, Zheng W, Zhou B, Zhu M, Zucca M, Boca SM, Cerhan JR, Ferri GM, Hartge P, Hsiung CA, Magnani C, Miligi L, Morton LM, Smedby KE, Teras LR, Vijai J, Wang SS, Brennan P, Caporaso NE, Hunter DJ, Kraft P, Rothman N, Silverman DT, Slager SL, Chanock SJ, Chatterjee N. Analysis of heritability and shared heritability based on genome-wide association studies for thirteen cancer types. *J Natl Cancer Inst* 2015;107(12):djv279. PMID: PMC Journal in Process.

Palles C, Chegwidden L, Li X, Findlay JM, Farnham G, Giner FC, Peppelenbosch MP, Kovac M, Adams CL, Prenen H, Briggs S, Harrison R, Sanders S, MacDonald D, Haigh C, Tucker A, Love S, Nanji M, deCaestecker J, Ferry D, Rathbone B, Hapeshi J, Barr H, Zietek B, Maroo N, Gay L, Underwood T, Boulter L, McMurtry H, Monk D, Patel P, Ragnath K, Al Dulaimi D, Murray I, Koss K, Veitch A, Trudgill N, Nwokolo C, Rembacken B, Atherfold P, Green E, Ang Y, Kuipers EJ, Chow W, Paterson S, Kadri S, Beales I, Grimley C, Mullins P, Beckett C, Farrant M, Dixon A, Kelly S, Johnson M, Wajed S, Dhar A, Sawyer E, Roylance R, Onstad L, Gammon MD, Corley DA, Shaheen NJ, Bird NC, Hardie LJ, Reid BJ, Ye W, Liu G, Romero Y, Bernstein L, Wu AH, Casson AG, Fitzgerald R, Whiteman DC, **Risch HA**, Levine DM, Vaughan TL, Verhaar AP, van den Brande J, Toxopeus EL, Spaander MC, Wijnhoven BPL, van der Laan LJ, Krishnadath K, Wijmenga C, Trynka G, McManus R, Reynolds JV, O'Sullivan J, MacMathuna P, McGarrigle SA, Kelleher D, Vermeire S, Cleynen

I, Bisschops R, Tomlinson I, Jankowski J. Polymorphisms near *TBX5* and *GDF7* are associated with increased risk for Barrett's Esophagus. *Gastroenterology* 2015;148(2):367-78. PMID: PMC4315134.

2014

Lu Y, Ek WE, Whiteman D, Vaughan TL, Spurdle AB, Easton DF, Pharoah PD, Thompson DJ, Dunning AM, Hayward NK, Chenevix-Trench G, Q-MEGA and AMFS Investigators, ANECS-SEARCH, UKOPS-SEARCH, BEACON Consortium, Macgregor S. Most common 'sporadic' cancers have a significant germline genetic component. *Hum Molec Genet* 2014;23(22):6112-8. PMID: PMC4271103.

Thrift AP, **Risch HA**, Onstad L, Shaheen NJ, Casson AG, Bernstein L, Corley DA, Levine DM, Chow W-H, Reid BJ, Romero Y, Hardie LJ, Liu G, Wu AH, Bird NC, Gammon MD, Ye W, Whiteman DC, Vaughan TL. Risk of esophageal adenocarcinoma decreases with height, based on consortium analysis and confirmed by Mendelian randomization. *Clin Gastroenterol Hepatol* 2014;12(10):1667-76. PMID: PMC4130803.

Neale RE, Clark P, Fawcett J, Fritschi L, Nagler BN, **Risch H**, Walters RJ, Crawford WJ, Webb PM, Whiteman DC, Buchanan DD. Association between hypermethylation of DNA repetitive elements in white blood cell DNA and pancreatic cancer. *Cancer Epidemiol* 2014;38(5):576-82. *Not a result of NIH funding.

Segev Y, Pal T, Rosen B, McLaughlin JR, Sellers TA, **Risch HA**, Zhang S, Sun P, Narod SA, Schildkraut J. Risk factors for ovarian cancers with and without microsatellite instability. *Int J Gynecol Cancer* 2014;24(4):664-9. PMID: PMC Journal in Process.

Wolpin BM, Rizzato C, Kraft P, Kooperberg C, Petersen GM, Wang Z, Arslan AA, Beane-Freeman L, Bracci PM, Buring J, Canzian F, Duell EJ, Gallinger S, Giles GG, Goodman GE, Goodman PJ, Jacobs EJ, Kamineni A, Klein AP, Kolonel LN, Kulke MH, Li D, Malats N, Olson SH, **Risch HA**, Sesso HD, Visvanathan K, White E, Zheng W, Abnet CC, Albanes D, Andriotti G, Austin MA, Barfield R, Basso D, Berndt SI, Boutron-Ruault M-C, Brotzman M, Büchler MW, Bueno-de-Mesquita HB, Bugert P, Burdette L, Campa D, Caporaso NE, Capurso G, Chung C, Cotterchio M, Costello E, Elena J, Funel N, Gaziano JM, Giese N, Giovannucci EL, Goggins M, Gorman MJ, Gross M, Haiman CA, Hassan M, Helzlsouer K, Henderson BE, Holly EA, Hu N, Hunter DJ, Innocenti F, Jenab M, Kaaks R, Key TJ, Khaw K-T, Klein EA, Kogevinas M, Kupcinkas J, Kurtz RC, LaCroix A, Landi MT, Landi S, Le Marchand L, Mambrini A, Mannisto S, Milne RL, Nakamura Y, Oberg AL, Owzar K, Panico S, Patel AV, Peeters PHM, Peters U, Piepoli A, Porta M, Real FX, Riboli E, Rothman N, Scarpa A, Shu X-O,

Silverman DT, Soucek P, Sund M, Talar-Wojnarowska R, Taylor PR, Theodoropoulos GE, Thornquist M, Tjønneland A, Tobias GS, Trichopoulos D, Vodicka P, Wactawski-Wende J, Wentzensen N, Wu C, Yu H, Yu K, Zeleniuch-Jacquotte A, Hoover R, Hartge P, Fuchs C, Chanock S, Stolzenberg-Solomon RS, Amundadottir L. Genome-wide association study identifies multiple susceptibility loci for pancreatic cancer. *Nat Genet* 2014;46(9):994-1000. PMID: PMC4191666.

Finch A, Bacopoulos S, Rosen B, Fan I, Bradley L, **Risch H**, McLaughlin JR, Lerner-Ellis J, Narod SA. Preventing ovarian cancer through genetic testing: a population-based study. *Clin Genet* 2014;86(5):496-9. *NIH funding pre-dates mandate.

Kelemen LE, Terry KL, Goodman MT, Webb PM, Bandera EV, McGuire V, Rossing MA, Wang Q, Dicks E, Tyrer JP, Song H, Kupryjanczyk J, Dansonka-Mieszkowska A, Plisiecka-Halasa J, Timorek A, Menon U, Gentry-Maharaj A, Gayther SA, Ramus SJ, Narod SA, **Risch HA**, McLaughlin JR, Siddiqui N, Glasspool R, Paul J, Carty K, Gronwald J, Lubiński J, Jakubowska A, Cybulski C, Kiemeny LA, Massuger LFAG, van Altena AM, Aben KKH, Olson SH, Orlow I, Cramer DW, Levine DA, Bisogna M, Giles GG, Southey MC, Bruinsma F, Krüger Kjær S, Høgdall E, Jensen A, Høgdall CK, Lundvall L, Engelholm S-A, Heitz F, du Bois A, Harter P, Schwaab I, Butzow R, Nevanlinna H, Pelttari LM, Leminen A, Thompson PJ, Lurie G, Wilkens LR, Lambrechts D, Van Nieuwenhuysen E, Lambrechts S, Vergote I, Beesley J, AOCs Study Group/ACS Investigators, Fasching PA, Beckmann MW, Hein A, Ekici AB, Doherty JA, Wu AH, Pearce CL, Pike MC, Stram D, Chang-Claude J, Rudolph A, Dörk T, Dürst M, Hillemanns P, Runnebaum IB, Bogdanova N, Antonenkova N, Odunsi K, Edwards RP, Modugno F, Ness RB, Karlan BY, Walsh C, Lester J, Orsulic S, Fridley BL, Vierkant RA, Cunningham JM, Wu X, Lu K, Liang D, Hildebrandt MAT, Weber RP, Iversen ES, Tworoger SS, Poole EM, Salvesen HB, Krakstad C, Borge L, Tangen IL, Pejovic T, Bean Y, Kellar M, Wentzensen N, Brinton LA, Lissowska J, Garcia-Closas M, Campbell IG, Eccles D, Whittemore AS, Sieh W, Rothstein JH, Anton-Culver H, Ziogas A, Phelan CM, Moysich KB, Goode EL, Schildkraut JM, Berchuck A, Pharoah PDP, Sellers TA, Brooks-Wilson A, Cook LS, Le ND, on behalf of the Ovarian Cancer Association Consortium. Consortium analysis of gene and gene-folate interactions in purine and pyrimidine metabolism pathways with ovarian carcinoma risk. *Mol Nutr Food Res* 2014;58(10):2023-5. PMID: PMC4197821.

Setiawan VW, Schumacher F, Prescott J, Haessler J, Malinowski J, Wentzensen N, Yang H, Chanock S, Brinton L, Hartge P, Lissowska J, Park SL, Cheng I, Bush WS, Crawford DC, Ursin G, Horn-Ross P, Bernstein L, Lu L, **Risch H**, Yu H, Sakoda LC, Doherty J, Chen C, Jackson R, Yasmeen S, Cote M, Kocarnik JM, Peters U, Kraft P, De Vivo I, Haiman CA, Kooperberg C, Le Marchand L. Cross-cancer pleiotropic analysis of endometrial cancer: PAGE and E2C2 Consortia.

Lawrenson K, Iversen ES, Tyrer J, Weber RP, Concannon P, Hazelett DJ, Li Q, Marks JR, Berchuck A, Lee JM, Aben KKH, Anton-Culver H, Antonenkova N, Australian Cancer Study (Ovarian Cancer), Australian Ovarian Cancer Study Group, Bandera EV, Bean Y, Beckmann MW, Bisogna M, Bjorge L, Bogdanova N, Brinton LA, Brooks-Wilson A, Bruinsma F, Butzow R, Campbell IG, Carty K, Chang-Claude J, Chenevix-Trench G, Chen YA, Chen Z, Cook LS, Cramer DW, Cunningham JM, Cybulski C, Plisiecka-Halasa J, Dennis J, Dicks E, Doherty JA, Dörk T, du Bois A, Eccles D, Easton DT, Edwards RP, Eilber U, Ekici AB, Fasching PA, Fridley BL, Gao Y-T, Gentry-Maharaj A, Giles GG, Glasspool R, Goode EL, Goodman MT, Grownwald J, Harter P, Hasmad HN, Hein A, Heitz F, Hildebrandt MAT, Hillemanns P, Hogdall E, Hogdall C, Hosono S, Jakubowska A, Paul J, Jensen A, Karlan BY, Kruger Kjaer S, Kelemen LE, Kellar M, Kelley JL, Kiemeny LA, Krakstad C, Lambrechts D, Lambrechts S, Le ND, Lee AW, Cannioto R, Leminen A, Lester J, Levine DA, Liang D, Lissowska J, Lu K, Lubinski J, Lundvall L, Massuger LFAG, Matsuo K, McGuire V, McLaughlin JR, Nevanlinna H, McNeish I, Menon U, Modugno F, Moysich KB, Narod SA, Nedergaard L, Ness RB, Noor Azmi MA, Odunsi K, Olson SH, Orlow I, Orsulic S, Pearce CL, Pejovic T, Pelttari LM, Permut-Wey J, Phelan CM, Pike MC, Poole EM, Ramus SJ, **Risch HA**, Rosen B, Rossing MA, Rothstein JH, Rudolph A, Runnebaum IB, Rzepecka IK, Salvesen HB, Budzylowska A, Sellers TA, Shu X-O, Shvetsov YB, Siddiqui N, Sieh W, Song H, Southey MC, Sucheston L, Tangen IL, Teo S-H, Terry KL, Thompson PJ, Timorek A, Tworoger SS, Van Nieuwenhuysen E, Vergote I, Vierkant RA, Wang-Gohrke S, Walsh C, Wentzensen N, Whittemore AS, Wicklund KG, Wilkens LR, Woo Y-L, Wu X, Wu AH, Yang H, Zheng W, Ziogas A, Coetzee GA, Freedman ML, Monteiro ANA, Moes-Sosnowska J, Kupryjanczyk J, Pharoah PDP, Gayther SA, Schildkraut JM. Common variants at the CHEK2 gene locus and risk of epithelial ovarian cancer. *Carcinogenesis* 2015;36(11):1341-53. PMID: PMC Journal in Process.

Wang Z, Zhu B, Zhang M, Parikh H, Jia J, Chung CC, Sampson JN, Hoskins JW, Hutchinson A, Burdette L, Ibrahim A, Hautman C, Raj PS, Abnet CC, Adjei AA, Ahlbom A, Albanes D, Allen NE, Ambrosone CB, Aldrich M, Amiano P, Amos C, Andersson U, Andriole G Jr, Andrulis IL, Arici C, Arslan AA, Austin MA, Baris D, Barkauskas DA, Bassig BA, Beane Freeman LE, Berg CD, Berndt SI, Bertazzi PA, Biritwum RB, Black A, Blot W, Boeing H, Boffetta P, Bolton K, Boutron-Ruault M-C, Bracci PM, Brennan P, Brinton LA, Brotzman M, Bueno-de-Mesquita HB, Buring JE, Butler MA, Cai Q, Cancel-Tassin G, Canzian F, Cao G, Caporaso NE, Carrato A, Carreon T, Carta A, Chang G-C, Chang I-S, Chang-Claude J, Che X, Chen C-J, Chen C-Y, Chen C-H, Chen C, Chen K-Y, Chen Y-M, Chokkalingam AP, Chu LW, Clavel-Chapelon F, Colditz GA, Colt JS, Conti D, Cook MB, Cortessis VK, Crawford ED, Cussenot O, Davis FG, De Vivo I, Deng X, Ding T, Dinney CP, Di Stefano AL, Diver WR, Duell EJ, Elena JW, Fan

J-H, Feigelson HS, Feychting M, Figueroa JD, Flanagan AM, Fraumeni JF Jr, Freedman ND, Fridley BL, Fuchs CS, Gago-Dominguez M, Gallinger S, Gao Y-T, Gapstur SM, Garcia-Closas M, Garcia-Closas R, Gastier-Foster JM, Gaziano JM, Gerhard DS, Giffen CA, Giles GG, Gillanders EM, Giovannucci EL, Goggins M, Gokgoz N, Goldstein AM, Gonzalez C, Gorlick R, Greene MH, Gross M, Grossman HB, Grubb R III, Gu J, Guan P, Haiman CA, Hallmans G, Hankinson SE, Harris CC, Hartge P, Hattinger C, Hayes RB, He Q, Helman L, Henderson BE, Henriksson R, Hoffman-Bolton J, Hohensee C, Holly EA, Hong Y-C, Hoover RN, Hosgood HD III, Hsiao C-F, Hsing AW, Hsiung CA, Hu N, Hu W, Hu Z, Huang M-S, Hunter DJ, Inskip PD, Ito H, Jacobs EJ, Jacobs KB, Jenab M, Ji B-T, Johansen C, Johansson M, Johnson A, Kaaks R, Kamat AM, Kamineni A, Karagas M, Khanna C, Khaw K-T, Kim C, Kim I-S, Kim YH, Kim Y-C, Kim YT, Kang CH, Jung YJ, Kitahara CM, Klein AP, Klein R, Kogevinas M, Koh W-P, Kohno T, Kolonel LN, Kooperberg C, Kratz CP, Krogh V, Kunitoh H, Kurtz RC, Kurucu N, Lan Q, Lathrop M, Lau CC, Lecanda F, Lee K-M, Lee MP, Le Marchand L, Lerner SP, Li D, Liao LM, Lim W-Y, Lin D, Lin J, Lindstrom S, Linet MS, Lissowska J, Liu J, Ljungberg B, Lloreta J, Lu D, Ma J, Malats N, Mannisto S, Marina N, Mastrangelo G, Matsuo K, McGlynn KA, McKean-Cowdin R, McNeill LH, McWilliams RR, Melin BS, Meltzer PS, Mensah JE, Miao X, Michaud DS, Mondul AM, Moore LE, Muir K, Niwa S, Olson SH, OrrN, Panico S, Park JY, Patel AV, Patino-Garcia A, Pavanello S, Peeters PHM, Peplonska B, Peters U, Petersen GM, Picci P, Pike MC, Porru S, Prescott J, Pu X, Purdue MP, Qiao Y-L, Rajaraman P, Riboli E, **Risch HA**, Rodabough RJ, Rothman N, Ruder AM, Ryu J-S, Sanson M, Schned A, Schumacher FR, Schwartz AG, Schwartz KL, Schwenn M, Scotlandi K, Seow A, Serra C, Serra M, Sesso HD, Severi G, Shen H, Shen M, Shete S, Shiraishi K, Shu X-O, Siddiq A, Sierrasesumaga L, Sierrri S, Sihoe ADL, Silverman DT, Simon M, Southey MC, Spector L, Spitz M, Stampfer M, Stattin P, Stern MC, Stevens VL, Stolzenberg-Solomon RZ, Stram DO, Strom SS, Su W-C, Sund M, Sung SW, Swerdlow A, Tan W, Tanaka H, Tang W, Tang Z-Z, Tardon A, Tay E, Taylor PR, Tettey Y, Thomas DM, Tirabosco R, Tjonneland A, Tobias GS, Toro JR, Travis RC, Trichopoulos D, Troisi R, Truelove A, Tsai Y-H, Tucker MA, Tumino R, Van Den Berg D, Van Den Eeden SK, Vermeulen R, Vineis P, Visvanathan K, Vogel U, Wang C, Wang C, Wang J, Wang SS, Weiderpass E, Weinstein SJ, Wentzensen N, Wheeler W, White E, Wiencke JK, Wolk A, Wolpin BM, Wong MP, Wrensch M, Wu C, Wu T, Wu X, Wu Y-L, Wunder JS, Xiang Y-B, Xu J, Yang HP, Yang P-C, Yatabe Y, Ye Y, Yeboah ED, Yin Z, Ying C, Yu C-J, Yu K, Yuan J-M, Zanetti KA, Zeleniuch-Jacquotte A, Zheng W, Zhou B, Mirabello L, Savage SA, Kraft P, Chanock SJ, Yeager M, Landi MT, Shi J, Chatterjee N, Amundadottir LT. Imputation and subset based association analysis across different cancer types identifies multiple independent risk loci in the *TERT-CLPTMIL* region on chromosome 5p15.33. Hum Molec Genet 2014;23(24):6616-33. PMID: PMC Journal in Process.

- Cook MB, Corley DA, Murray LJ, Liao LM, Kamangar F, Ye W, Gammon MD, **Risch HA**, Casson AG, Freedman ND, Chow W-H, Wu AH, Bernstein L, Nyrén O, Pandeya N, Whiteman DC, Vaughan TL. Gastroesophageal reflux in relation to adenocarcinomas of the esophagus: A pooled analysis from the Barrett's and Esophageal Adenocarcinoma Consortium (BEACON). *PLoS One* 2014;9(7):e103508. PMID: PMC4116205.
- Chen MM, Crous-Bou M, Setiawan VW, Prescott J, Olson SH, Wentzensen N, Black A, Brinton L, Chen C, Chen C, Cook LS, Doherty J, Friedenreich CM, Gaudet MM, Hankinson SE, Hartge P, Henderson BE, Horn-Ross PL, Hunter DJ, Le Marchand L, Liang X, Lissowska J, Lu L, Orlow I, Petruzella S, Pooler L, Rebbeck TR, **Risch H**, Sacerdote C, Schumacher F, Sheng X, Shu X-O, Weiss NS, Xia L, Van Den Berg D, Yang HP, Yu H, Chanock S, Haiman C, Kraft P, De Vivo I. Exome-wide association study of endometrial cancer in a multiethnic population. *PLoS One* 2014;9(5):e97045. PMID: PMC4014590.
- Tang H, Wei P, Duell EJ, **Risch HA**, Olson SH, Bueno-de-Mesquita HB, Gallinger S, Holly EA, Petersen G, Bracci PM, McWilliams RR, Jenab M, Riboli E, Tjønneland A, Boutron-Ruault MC, Kaaks R, Trichopoulos D, Panico S, Sund M, Peeters PHM, Khaw K-T, Amos CI, Li D. Axonal guidance signaling pathway interacting with smoking in modifying the risk of pancreatic cancer: A gene and pathway-based interaction analysis of GWAS data. *Carcinogenesis* 2014;35(5):1039-45. PMID: PMC4004205.
- Huang H, Ma X, Waagepetersen R, Holford T, Wang R, **Risch H**, Mueller L, Guan Y. A new estimation approach for combining epidemiological data from multiple sources. *J Am Stat Assoc* 2014;109(505):11-23. PMID: PMC3964681.
- Trabert B, Ness R, Lo-Ciganic W-H, Murphy M, Goode E, Poole E, Brinton L, Webb P, Nagle C, Jordan S, **Risch H**, Rossing MA, Doherty J, Goodman M, Lurie G, Krüger Kjær S, Høgdall E, Jensen A, Cramer D, Terry K, Vitonis A, Bandera E, Olson S, King M, Chandran U, Anton-Culver H, Ziogas A, Menon U, Gayther S, Ramus S, Gentry-Maharaj A, Wu A, Pearce C, Pike M, Berchuck A, Schildkraut J, Wentzensen N, on behalf of the Ovarian Cancer Association Consortium. Aspirin, non-aspirin nonsteroidal anti-inflammatory drug, and acetaminophen use and risk of invasive epithelial ovarian cancer: a pooled analysis in the Ovarian Cancer Association Consortium. *J Natl Cancer Inst* 2014;106(2):djt431. PMID: PMC3898362.
- Xu H-L, Cheng J-R, Zhang W, Wang J, Yu H, Ni Q-X, **Risch HA**, Gao Y-T. Re-evaluation of ABO gene polymorphisms detected in a genome-wide association study and risk of pancreatic ductal adenocarcinoma in a Chinese population. *Chin J Cancer* 2014;33(2):68-73. PMID: PMC3884064.

Charbonneau B, Block MS, Bamlet WR, Vierkant RA, Kalli KR, Fogarty Z, Rider DN, Sellers TA, Tworoger SS, Poole E, **Risch HA**, Salvesen HB, Kiemeny LA, Baglietto L, Giles GG, Severi G, Trabert B, Wentzensen N, Chenevix-Trench G for AOCs/ACS group, Whittemore AS, Sieh W, Chang-Claude J, Bandera EV, Orlov I, Terry K, Goodman MT, Thompson PJ, Cook LS, Rossing M, Ness RB, Narod SA, Kupryjanczyk J, Lu K, Bützow R, Dork T, Pejovic T, Campbell I, Le ND, Bunker CH, Bogdanova N, Runnebaum IB, Eccles DM, Paul J, Wu AH, Gayther SA, Hogdall E, Heitz F, Kaye SB, Karlan BY, Anton-Culver H, Gronwald J, Hogdall CK, Lambrechts D, Fasching PA, Menon U, Schildkraut J, Pearce CL, Levine DA, Kruger Kjær S, Cramer D, Flanagan JM, Phelan CM, Brown R, Massuger LFAG, Song H, Doherty JA, Krakstad C, Liang D, Odunsi K, Berchuck A, Jensen A, Lubiński J, Nevanlinna H, Bean YT, Lurie G, Ziogas A, Walsh C, Despiere E, Brinton L, Hein A, Rudolph A, Dansonka-Mieszkowska A, Olson SH, Harter P, Tyrer J, Vitonis AF, Brooks-Wilson A, Aben KK, Pike MC, Ramus SJ, Wik E, Cybulski C, Lin J, Sucheston L, Edwards R, McGuire V, Lester J, du Bois A, Lundvall L, Wang-Gohrke S, Szafron LM, Lambrechts S, Yang HP, Beckmann MW, Pelttari LM, van Altena AM, van den Berg D, Halle M, Gentry-Maharaj A, Schwaab I, Chandran U, Menkiszak J, Ekici AB, Wilkens LR, Leminen A, Modugno F, Friel G, Rothstein JH, Vergote I, Garcia-Closas M, Hildebrandt MAT, Sobiczewski P, Kelemen LE, Pharoah PDP, Moysich K, Knutson KL, Cunningham JM, Fridley BL, Goode EL. Risk of ovarian cancer and the NF- κ B pathway: Genetic association with *IL1A* and *TNFSF10*. *Cancer Res* 2014;74(3):852-61. PMID: PMC3946482.

Earp MA, Kelemen LE, Magliocco AM, Swenerton KD, Chenevix-Trench G, Australian Cancer Study, Australian Ovarian Cancer Study Group, Lu Y, Hein A, Ekici AB, Beckmann MW, Fasching PA, Lambrechts D, Despiere E, Vergote I, Lambrechts S, Doherty JA, Rossing MA, Chang-Claude J, Rudolph A, Friel G, Moysich KB, Odunsi K, Sucheston L, Lurie G, Goodman MT, Carney ME, Thompson PJ, Runnebaum I, Dürst M, Hillemanns P, Dörk T, Antonenkova N, Bogdanova N, Leminen A, Nevanlinna H, Pelttari LM, Butzow R, Bunker CH, Modugno F, Edwards RP, Ness RB, du Bois A, Heitz F, Schwaab I, Harter P, Karlan BY, Walsh C, Lester J, Jensen A, Kjær SK, Høgdall CK, Høgdall E, Lundvall L, Sellers TA, Fridley BL, Goode EL, Cunningham JM, Vierkant RA, Giles GG, Baglietto L, Severi G, Southey MC, Liang D, Wu X, Lu K, Hildebrandt MA, Levine DA, Bisogna M, Schildkraut JM, Iversen ES, Palmieri Weber R, Berchuck A, Cramer DW, Terry KL, Poole EM, Tworoger SS, Bandera EV, Chandran U, Orlov I, Olson SH, Wik E, Salvesen HB, Bjorge L, Halle MK, van Altena AM, Aben KK, Kiemeny LA, Massuger LFAG, Pejovic T, Bean YT, Cybulski C, Gronwald J, Lubinski J, Wentzensen N, Brinton LA, Lissowska J, Garcia-Closas M, Dicks E, Dennis J, Easton DF, Song H, Tyrer JP, Pharoah PDP, Eccles D, Campbell IG, Whittemore AS, McGuire V, Sieh W, Rothstein JH, Flanagan JM, Paul J, Brown R, Phelan CM, **Risch HA**, McLaughlin JR, Narod SA, Ziogas A, Anton-Culver H, Gentry-Maharaj A, Menon U, Gayther SA, Ramus SJ, Wu AH, Pearce CL, Pike MC, Dansonka-Mieszkowska A, Rzepecka

- IK, Szafron LM, Kupryjanczyk J, Cook LS, Le ND, Brooks-Wilson A, on behalf of the Ovarian Cancer Association Consortium. Genome-wide association study of subtype-specific epithelial ovarian cancer risk alleles using pooled DNA. *Hum Genet* 2014;133(5):481-97. PMID: PMC4063682.
- Tang H, Wei P, Duell EJ, **Risch HA**, Olson SH, Bueno-de-Mesquita HB, Gallinger S, Holly EA, Petersen GM, Bracci PM, McWilliams RR, Jenab M, Riboli E, Tjønneland A, Boutron-Ruault MC, Kaaks R, Trichopoulos D, Panico S, Sund M, Peeters PHM, Khaw K-T, Amos CI, Li D. Genes-environment interactions in obesity- and diabetes-associated pancreatic cancer: A GWAS data analysis. *Cancer Epidemiol Biomarkers Prev* 2014;23(1):98-106. PMID: PMC3947145.
- De Vivo I, Prescott J, Setiawan VW, Olson SH, Wentzensen N, Australian National Endometrial Cancer Study Group, Attia J, Black A, Brinton L, Chen C, Chen C, Cook LS, Crous-Bou M, Doherty J, Dunning AM, Easton DF, Friedenreich CM, Garcia-Closas M, Gaudet MM, Haiman C, Hankinson SE, Hartge P, Henderson BE, Holliday E, Horn-Ross PL, Hunter DJ, Le Marchand L, Liang X, Lissowska J, Long J, Lu L, Magliocco AM, McEvoy M, O'Mara TA, Orlow I, Painter JN, Pooler L, Rastogi R, Rebbeck TR, **Risch H**, Sacerdote C, Schumacher F, Scott RJ, Sheng X, Shu X-O, Spurdle AB, Thompson D, VanDen Berg D, Weiss NS, Xia L, Xiang Y-B, Yang HP, Yu H, Zheng W, Chanock S, Kraft P. Genome-wide association study of endometrial cancer in E2C2. *Hum Genet* 2014;133(2):211-24. PMID: PMC3898362.
- Buas MF, Levine DM, Makar KW, Utsugi H, Onstad L, Li X, Galipeau PC, Shaheen NJ, Hardie LJ, Romero Y, Bernstein L, Gammon MD, Casson AG, Bird NC, **Risch HA**, Ye W, Liu G, Corley DA, Blount PL, Fitzgerald RC, Whiteman DC, Wu AH, Reid BJ, Vaughan TL. Integrative post-genome-wide association analysis of *CDKN2A* and *TP53* SNPs and risk of esophageal adenocarcinoma. *Carcinogenesis* 2014; 35(12):2740-7. PMID: PMC Journal in Process.
- Thrift AP, Shaheen NJ, Gammon MD, Bernstein L, Reid BJ, Onstad L, **Risch HA**, Liu G, Bird NC, Wu AH, Corley DA, Romero Y, Chanock S, Chow W-H, Casson AG, Levine DM, Zhang R, Ek WE, MacGregor S, Ye W, Hardie LJ, Vaughan TL, Whiteman DC. Obesity and risk of esophageal adenocarcinoma and Barrett's Esophagus: a Mendelian randomization study. *J Natl Cancer Institute* 2014;106(11):dju252. doi: 10.1093/jnci/dju252. PMID: PMC4200028.
- Streicher SA, Yu H, Lu L, Kidd MS, **Risch HA**. Case-control study of aspirin use and risk of pancreatic cancer. *Cancer Epidemiol Biomarkers Prev* 2014;23(7):1254-63. PMID: PMC4091763.
- Risch HA**, Lu L, Kidd MS, Wang J, Zhang W, Ni Q, Gao Y-T, Yu H. *Helicobacter pylori* seropositivities and risk of pancreatic carcinoma. *Cancer Epidemiol Biomarkers Prev* 2014;23(1):172-8. PMID: PMC3947155.

Schulte A, Pandeya N, Tran B, Fawcett J, Fritschi L, **Risch HA**, Webb PM, Whiteman DC, Neale RE, Queensland Pancreatic Cancer Study Group. Cigarette smoking and pancreatic cancer risk: more to the story than just pack-years. *Eur J Cancer* 2014;50(5):997-1003. . *Not a result of NIH funding.

Kotsopoulos J, Prescott J, De Vivo I, Fan I, McLaughlin J, Rosen B, **Risch H**, Sun P, Narod SA. Telomere length and mortality following a diagnosis of ovarian cancer. *Cancer Epidemiol Biomarkers Prev* 2014;23(11):2603-6. PMID: PMC4221534.

Navarro Silvera SA, Mayne ST, Gammon MD, Vaughan TL, Chow W-H, Dubin JA, Dubrow R, Stanford JL, West AB, Rotterdam H, Blot WJ, **Risch HA**. Diet and lifestyle factors and risk of subtypes of esophageal and gastric cancer: classification tree analysis. *Ann Epidemiol* 2014;24(1):50-7. PMID: PMC4006990.

2013

Pearce CL, Rossing MA, Lee AW, Ness R, Webb PM for Australian Cancer Study (Ovarian Cancer) and Australian Ovarian Cancer Study Group, Chenevix-Trench G, Jordan SM, Stram DA, Chang-Claude J, Hein R, Nickels S, Lurie G, Thompson PJ, Carney ME, Goodman MT, Moysich K, Hogdall E, Jensen A, Goode EL, Fridley BL, Cunningham JM, Vierkant RA, Weber RP, Ziogas A, Anton-Culver H, Gayther SA, Gentry-Maharaj A, Menon U, Ramus SJ, Brinton L, Wentzensen N, Lissowska J, Garcia-Closas M, Massuger LFAG, Kiemeny LALM, van Altena AM, Aben KKH, Berchuck A, Doherty JA, Iversen E, McGuire V, Moorman PG, Pharoah P, Pike MC, **Risch H**, Sieh W, Stram DO, Terry KL, Whittemore A, Wu AH, Schildkraut JM, Kjaer SK for the Ovarian Cancer Association Consortium. Combined and interactive effects of environmental and GWAS-identified risk factors in ovarian cancer. *Cancer Epidemiol Biomarkers Prev* 2013;22(5):880-90. PMID: PMC3963289.

Leenders M, Bhattacharjee S, Vineis P, Stevens V, Bueno-de-Mesquita HB, Shu XO, Amundadottir L, Gross M, Tobias GS, Wactawski-Wende J, Arslan AA, Duell EJ, Fuchs CS, Gallinger S, Hartge P, Hoover RN, Holly EA, Jacobs EJ, Klein AP, Kooperberg C, Lacroix A, Li D, Mandelson MT, Olson SH, Petersen G, **Risch HA**, Yu K, Wolpin BM, Zheng W, Agalliu I, Albanes D, Boutron-Ruault MC, Bracci PM, Buring JE, Canzian F, Chang K, Chanock SJ, Cotterchio M, Gaziano JM, Giovanucci EL, Goggins M, Hallmans G, Hankinson SE, Hoffman-Bolton JA, Hunter DJ, Hutchinson A, Jacobs KB, Jenab M, Khaw KT, Kraft P, Krogh V, Kurtz RC, McWilliams RR, Mendelsohn JB, Patel AV, Rabe KG, Riboli E, Tjønneland A, Trichopoulos D, Virtamo J, Visvanathan K, Elena JW, Yu H, Zeleniuch-Jacquotte A, Stolzenberg-Solomon RZ. Polymorphisms in genes related to one-carbon metabolism are not related to pancreatic cancer in PanScan and PanC4. *Cancer Causes Control* 2013;24(3):595-602. PMID: PMC4127987.

Ek WE, Levine DM, D'Amato M, Pedersen NL, Magnusson PKE, Bresso F, Onstad LE, Schmidt PT, Törnblom H, Nordenstedt H, Romero Y, Chow W-H, Murray LJ, Gammon MD, Liu G, Bernstein L, Casson AG, **Risch HA**, Shaheen NJ, Bird NC, Reid BJ, Corley DA, Hardie LJ, Ye W, Wu AH, Zucchelli M, Spector TD, Hysi P, Vaughan TL, Whiteman DC, MacGregor S. Germline genetic contributions to risk for esophageal adenocarcinoma, Barrett's Esophagus and gastroesophageal reflux. *J Natl Cancer Inst* 2013;105(22):1711-8. PMID: PMC3833931.

Arem H, Reedy J, Sampson J, Jiao L, Hollenbeck AR, **Risch H**, Mayne ST, Stolzenberg-Solomon RZ. The Healthy Eating Index-2005 and risk of pancreatic cancer in the NIH-AARP Study. *J Natl Cancer Inst* 2013;105(17):1298-305. PMID: PMC3760780.

Arem H, Mayne ST, Sampson J, **Risch H**, Stolzenberg-Solomon RZ. Dietary fat intake and risk of pancreatic cancer in the Prostate, Lung, Colorectal and Ovarian Cancer Screening Trial. *Ann Epidemiol* 2013;23(9):571-5. PMID: PMC3752990.

Terry KL, Karageorgi S, Shvetsov YB, Merritt MA, Lurie G, Thompson PJ, Carney ME, Weber RP, Akushevich L, Lo-Ciganic W-H, Cushing-Haugen K, Sieh W, Moysich K, Doherty JA, Nagle CM, Australian Cancer Study (Ovarian Cancer), Australian Ovarian Cancer Study Group, Berchuck A, Pearce CL, Pike M, Ness RB, Webb PM, Rossing MA, Schildkraut J, **Risch H**, Goodman MT, The Ovarian Cancer Association Consortium. Genital powder use and risk of ovarian cancer: a pooled analysis of 8,525 cases and 9,859 controls. *Cancer Prev Res* 2013;6(8):811-21. PMID: PMC3766843.

Setiawan VW, Yang HP, Pike MC, McCann S, Yu H, Xiang Y-B, Wolk A, Wentzensen N, Weiss N, Webb P, van den Brandt PA, van de Vijver K, Thompson PJ, Strom B, Spurdle AB, Soslow R, Shu X-O, Schairer C, Sacerdote C, Rohan T, Robien K, **Risch HA**, Ricceri F, Rebbeck T, Rastogi R, Prescott J, Polidoro S, Park Y, Olson SH, Moysich K, Miller AB, McCullough M, Matsuno R, Magliocco AM, Lurie G, Lu L, Lissowska J, Liang X, Lacey JV, Kolonel L, Henderson B, Hankinson S, Hakansson N, Goodman M, Gaudet MM, Garcia-Closas M, Friedenreich C, Freudenheim J, Doherty J, de Vivo I, Courneya KS, Cook L, Chen C, Cerhan JR, Cai H, Brinton L, Bernstein L, Anderson K, Anton-Culver H, Schouten L, Horn-Ross P. Type I and II endometrial cancers: have they different risk factors? *J Clin Oncol* 2013;31(20):2607-18. PMID: PMC3699726.

Olsen CM, Nagle CM, Whiteman DC, Ness R, Pearce CL, Pike MC, Rossing MA, Terry KL, Wu AH, Australian Cancer Study (Ovarian Cancer), Australian Ovarian Cancer Study Group, **Risch HA**, Yu H, Doherty JA, Chang-Claude J, Hein R, Nickels S, Wang-Gohrke S, Goodman MT, Carney ME, Matsuno RK,

Lurie G, Moysich K, Kjaer SK, Jensen A, Hogdall E, Goode EL, Fridley BL, Vierkant RA, Larson MC, Schildkraut J, Hoyo C, Moorman P, Weber RP, Cramer DW, Vitonis AF, Bandera EV, Olson SH, Rodriguez-Rodriguez L, King M, Brinton LA, Yang H, Garcia-Closas M, Lissowska J, Anton-Culver H, Ziogas A, Gayther SA, Ramus SJ, Menon U, Gentry-Maharaj A, Webb PM, Ovarian Cancer Association Consortium. Obesity and risk of ovarian cancer subtypes: evidence from the Ovarian Cancer Association Consortium. *Endocr Relat Cancer* 2013;20(2):251-62. PMID: PMC3857135.

Arem H, Bobe G, Sampson J, Subar AF, Park Y, **Risch H**, Hollenbeck A, Mayne ST, Stolzenberg-Solomon RZ. Flavonoid intake and risk of pancreatic cancer in the National Institutes of Health-AARP Diet and Health Study Cohort. *Br J Cancer* 2013;108(5):1168-72. PMID: PMC3619057.

Faber MT, Kjær SK, Dehlendorff C, Chang-Claude J, Andersen KK, Høgdall E, Webb PM, Jordan SM, The Australian Cancer Study (Ovarian Cancer), Australian Ovarian Cancer Study Group, Rossing MA, Doherty JA, Goodman MT, Ness R, Goode EL, Schildkraut J, Cramer DW, Terry KL, Bandera EV, Olson SH, Kiemeny LA, Massuger L, Moysich K, Odunsi K, Song H, Pharaoh P, Whittemore A, McGuire V, Sieh W, Sutphen R, Narod SA, Menon U, Gayther SA, Ramus SJ, Gentry-Maharaj A, Pearce CL, **Risch HA**, Jensen A, Ovarian Cancer Association Consortium. Cigarette smoking and risk of ovarian cancer—a pooled analysis of 21 case-control studies. *Cancer Causes Control* 2013;24(5):989-1004. PMID: PMC3818570.

Permeth-Wey J, Lawrenson K, Shen HC, Velkova A, Tyrer JP, Chen Z, Lin H-Y, Chen YA, Tsai Y-Y, Qu X, Ramus SJ, Karevan R, Lee J, Lee N, Larson MC, Aben KK, Anton-Culver H, Antonenkova N, Antoniou A, Armasu SM, Australian Cancer Study, Australian Ovarian Cancer Study, Bacot F, Baglietto L, Bandera EV, Barnholtz-Sloan J, Beckmann MW, Birrer MJ, Bloom G, Bogdanova N, Brinton LA, Brooks-Wilson A, Brown R, Butzow R, Cai Q, Campbell I, Chang-Claude J, Chanock S, Chenevix-Trench G, Cheng JQ, Cicek MS, Coetzee GA, Consortium of Investigators of Modifiers of BRCA1/2, Cook LS, Couch FJ, Cramer DW, Cunningham JM, Dansonka-Mieszkowska A, Despierre E, Doherty JA, Dörk T, du Bois A, Dürst M, Easton DF, Eccles D, Edwards R, Ekici AB, Fasching PA, Fenstermacher DA, Flanagan JM, Garcia-Closas M, Gentry-Maharaj A, Giles GG, Glasspool RM, Gonzalez-Bosquet J, Goodman MT, Gore M, Górski B, Gronwald J, Hall P, Halle MK, Harter P, Heitz F, Hillemanns P, Hoatlin M, Høgdall CK, Høgdall E, Hosono S, Jakubowska A, Jensen A, Jim H, Kalli KR, Karlan BY, Kaye SB, Kelemen LE, Kiemeny LA, Kikkawa F, Konecny GE, Krakstad C, Krüger Kjaer S, Kupryjanczyk J, Lambrechts D, Lambrechts S, Lancaster JM, Le ND, Leminen A, Levine DA, Liang D, Lim BK, Lin J, Lissowska J, Lu KH, Lubiński J, Lurie G, Massuger LF, Matsuo K, McGuire V, McLaughlin JR, Menon U, Modugno F, Moysich KB, Nakanishi T, Narod SA, Nedergaard L, Ness RB, Nevanlinna H, Nickels S,

Noushmehr H, Odunsi K, Olson SH, Orlow I, Paul J, Pearce CL, Pejovic T, Pelttari LM, Pike MC, Poole EM, Raska P, Renner SP, **Risch HA**, Rodriguez-Rodriguez L, Rossing MA, Rudolph A, Runnebaum IB, Rzepecka IK, Salvesen HB, Schwaab I, Severi G, Shridhar V, Shu X-O, Shvetsov YB, Sieh W, Song H, Southey MC, Spiewankiewicz B, Stram D, Sutphen R, Teo S-H, Terry KL, Tessier DC, Thompson PJ, Tworoger SS, van Altena AM, Vergote I, Vierkant RA, Vincent D, Vitonis AF, Wang-Gohrke S, Weber RP, Wentzensen N, Whittemore AS, Wik E, Wilkens LR, Winterhoff B, Woo YL, Wu AH, Xiang Y-B, Yang HP, Zheng W, Ziogas A, Zulkifli F, Phelan CM, Iversen E, Schildkraut JM, Berchuck A, Fridley BL, Goode EL, Pharoah PDP, Monteiro ANA, Sellers TA, Gayther SA. Identification and molecular characterization of a new ovarian cancer susceptibility locus at 17q21.31. *Nat Commun* 2013;4:1627. PMID: PMC3709460.

Levine DM, Ek WE, Zhang R, Liu X, Onstad L, Sather C, Lao-Sirieix P, Gammon MD, Corley DA, Shaheen NJ, Bird NC, Hardie LJ, Murray LJ, Reid BJ, Chow W-H, **Risch HA**, Nyrén O, Ye W, Liu G, Romero Y, Bernstein L, Wu AH, Casson AG, Chanock S, Harrington P, Caldas I, Debiram-Beecham I, Caldas C, Hayward NK, Pharoah P, Fitzgerald R, MacGregor S, Whiteman DC, Vaughan TL. A genome-wide association study identifies new susceptibility loci for esophageal adenocarcinoma and Barrett's Esophagus. *Nat Genet* 2013; 45(12):1487-93. PMID: PMC3840115.

Klein AP, Lindström S, Mendelsohn JB, Steplowski E, Arslan AA, Bueno-de-Mesquita HB, Fuchs CS, Gallinger S, Gross M, Helzlsouer K, Holly EA, Jacobs EJ, LaCroix A, Li D, Mandelson MT, Olson SH, Petersen GM, **Risch HA**, Stolzenberg-Solomon RZ, Zheng W, Amundadottir L, Albanes D, Allen NE, Bamlet WR, Boutron-Ruault M-C, Buring JE, Bracci PM, Canzian F, Clipp S, Cotterchio M, Duell EJ, Elena J, Gaziano JM, Giovannucci EL, Goggins M, Hallmans G, Hassan M, Hutchinson A, Hunter DJ, Kooperberg C, Kurtz RC, Liu S, Overvad K, Palli D, Patel AV, Rabe KG, Shu X-O, Slimani N, Tobias GS, Trichopoulos D, Van Den Eeden SK, Vineis P, Virtamo J, Wactawski-Wende J, Wolpin BM, Yu H, Yu K, Zeleniuch-Jacquotte A, Chanock SJ, Hoover RN, Hartge P, Kraft P. An absolute risk model to identify individuals at elevated risk for pancreatic cancer in the general population. *PLoS One* 2013;8(9):e72311. PMID: PMC3772857.

Bosetti C, Lucenteforte E, Bracci PM, Ji B-T, Negri E, Neale RE, **Risch HA**, Olson SH, Gallinger S, Miller AB, Bueno-de-Mesquita HB, Talamini R, Polesel J, Ghadirian P, Baghurst PA, Zatonski W, Fontham E, Holly EA, Gao Y-T, Yu H, Kurtz RC, Cotterchio M, Maisonneuve P, Zeegers MP, Duell EJ, Boffetta P, La Vecchia C. Ulcer, gastric surgery and pancreatic cancer risk: an analysis from the International Pancreatic Cancer Case-control Consortium (PanC4). *Ann Oncol* 2013;24(11):2903-10. PMID: PMC3811904.

Sieh W, Salvador S, McGuire V, Weber RP, Terry KL, Rossing MA, **Risch H**, Wu AH, Webb PM, Moysich K, Doherty JA, Felberg A, Miller D, Jordan SJ, Australian Cancer Study (Ovarian Cancer), Australian Ovarian Cancer Study Group, Goodman MT, Lurie G, Chang-Claude J, Rudolph A, Krüger Kjaer S, Jensen A, Høgdall E, Bandera EV, Olson SH, King MG, Rodriguez-Rodriguez L, Kiemeny LA, Marees T, Massuger LF, van Altena AM, Ness RB, Cramer DW, Pike MC, Pearce CL, Berchuck A, Schildkraut JM, Whittemore AS, on behalf of the Ovarian Cancer Association Consortium. Tubal ligation and risk of ovarian cancer subtypes: a pooled analysis of case-control studies. *Int J Epidemiol* 2013;42(2):579-89. PMID: PMC3619957.

Arem H, Neuhouser ML, Irwin ML, Cartmel B, Lu L, **Risch H**, Mayne ST, Yu H. Omega-3 and omega-6 fatty acid intakes and endometrial cancer risk in a population-based case-control study. *Eur J Nutr* 2013;52(3):1251-60. PMID: PMC3548981.

Tran B, Whiteman DC, Webb PM, Fritschi L, Fawcett J, **Risch HA**, Lucas R, Pandeya N, Schulte A, Neale RE, for the Queensland Pancreatic Cancer Study Group. Association between ultraviolet radiation, skin sun sensitivity and risk of pancreatic cancer. *Cancer Epidemiology* 2013;37(6):886-92. *Not a result of NIH funding.

Wang J, Zhang W, Sun L, Yu H, **Risch HA**, Ni Q-X, Gao Y-T. Dietary energy density is positively associated with risk of pancreatic cancer in urban Shanghai Chinese. *J Nutr* 2013;143(10):1626-9. PMID: PMC3771813.

Shen H, Fridley BL, Song H, Lawrenson K, Cunningham JM, Ramus SJ, Cicek MS, Tyrer J, Stram D, Larson MC, Köbel M, PRACTICAL Consortium, Ziogas A, Zheng W, Yang HP, Wu AH, Wozniak EL, Woo YL, Winterhoff B, Wik E, Whittemore AS, Wentzensen N, Weber RP, Vitonis AF, Vincent D, Vierkant RA, Vergote I, Van Den Berg D, Van Altena AM, Tworoger SS, Thompson PJ, Tessier DC, Terry KL, Teo S-H, Templeman C, Stram DO, Southey MC, Sieh W, Siddiqui N, Shvetsov YB, Shu X-O, Shridhar V, Wang-Gohrke S, Severi G, Schwaab I, Salvesen HB, Rzepecka IK, Runnebaum I, Rossing MA, Rodriguez-Rodriguez L, **Risch HA**, Renner SP, Poole EM, Pike MC, Phelan CM, Peltari LM, Pejovic T, Paul J, Orlov I, Omar SZ, Olson SH, Odunsi K, Nickels S, Nevanlinna H, Ness RB, Narod SA, Nakanishi T, Moysich KB, Monteiro ANA, Moes-Sosnowska J, Modugno F, Menon U, McLaughlin JR, McGuire V, Matsuo K, Mat Adenan NA, Massuger LFG, Lurie G, Lundvall L, Lubiński J, Lissowska J, Levine DA, Leminen A, Lee AW, Le ND, Lambrechts S, Lambrechts D, Kupryjanczyk J, Krakstad C, Konecny GE, Krüger Kjaer S, Kiemeny LA, Kelemen LE, Keeney GL, Karlan BY, Karevan R, Kalli KR, Kajiyama H, Ji B-T, Jensen A, Jakubowska A, Iversen E, Hosono S, Høgdall CK, Høgdall E, Hoatlin M, Hillemanns P, Heitz F, Hein R, Harter P, Halle MK, Hall P, Gronwald J, Gore M, Goodman MT, Giles GG, Gentry-Maharaj A, Garcia-Closas M, Flanagan JM,

Fasching PA, Ekici AB, Edwards R, Eccles D, Easton DF, Dürst M, du Bois A, Dörk T, Doherty JA, Despierre E, Dansonka-Mieszkowska A, Cybulski C, Cramer DW, Cook LS, Chen X, Charbonneau B, Chang-Claude J, Campbell I, Butzow R, Bunker CH, Brueggmann D, Brown R, Brooks-Wilson A, Brinton LA, Bogdanova N, Block MS, Benjamin E, Beesley J, Beckmann MW, Bandera EV, Baglietto L, Bacot F, Armasu SM, Antonenkova N, Anton-Culver H, Aben KK, Australian Ovarian Cancer Study Group, Australian Cancer Study, Schildkraut JM, Sellers TA, Huntsman D, Berchuck A, Chenevix-Trench G, Gayther SA, Pharoah PDP, Laird PW, Goode EL, Pearce CL. Epigenetic analysis leads to identification of HNF1B as a subtype-specific susceptibility gene for ovarian cancer. *Nat Commun* 2013;4(1628):1-10. PMID: PMC3848248.

Bojesen SE, Pooley KA, Johnatty SE, Beesley J, Michailidou K, Tyrer JP, Edwards SL, Pickett HA, Shen HC, Smart CE, Hillman KM, Mai PL, Lawrenson K, Stutz MD, Lu Y, Karevan R, Woods N, Johnston RL, French JD, Chen X, Wesicher M, Nielsen SF, Maranian MJ, Ghousaini M, Ahmed S, Baynes C, Humphreys MK, Wang J, Dennis J, McGuffog L, Barrowdale D, Lee A, Healey S, Lush M, Tessier DC, Vincent D, Bacot F, Australian Cancer Study, Australian Ovarian Cancer Study Group, Vergote I, Lambrechts S, Despierre E, **Risch HA**, González-Neira A, Rossing MA, Pita G, Doherty JA, Álvarez N, Larson MC, Fridley BL, Schoof N, Chang-Claude J, Cicek MS, Peto J, Kalli KR, Broeks A, Armasu SM, Schmidt MK, Braaf LM, Winterhoff B, Nevanlinna H, Konecny GE, Lambrechts D, Rogmann L, Guénel P, Teoman A, Milne RL, Garcia JJ, Cox A, Shridhar V, Burwinkel B, Marne F, Hein R, Sawyer EJ, Haiman CA, Wang-Gohrke S, Andrulis IL, Moysich KB, Hopper JL, Odunsi K, Lindblom A, Giles GG, Brenner H, Simard J, Lurie G, Fasching PA, Carney ME, Radice P, Wilkens LR, Swerdlow A, Goodman MT, Brauch H, García-Closas M, Hillemanns P, Winqvist R, Dürst M, Devilee P, Runnebaum I, Jakubowska A, Lubinski J, Mannermaa A, Butzow R, Bogdanova NV, Dörk T, Pelttari L, Zheng W, Leminen A, Anton-Culver H, Bunker CH, Kristensen V, Ness RB, Muir K, Edwards R, Meindl A, Heitz F, Matsuo K, du Bois A, Wu AH, Harter P, Teo S-H, Schwaab I, Shu X-O, Blot W, Hosono S, Kang D, Nakanishi T, Hartman M, Yatabe Y, Hamann U, Karlan BY, Sangrajrang S, Krüger Kjaer S, Gaborieau V, Jensen A, Eccles D, Høgdall E, Shen C-Y, Brown J, Woo YL, Shah M, Noor Azmi MA, Luben R, Omar SZ, Czene K, Vierkant RA, Nordestgaard BG, Flyger H, Vachon C, Olson JE, Wang X, Levine DA, Rudolph A, Palmieri Weber R, Flesch-Janys D, Iversen E, Nickels S, Schildkraut JM, Dos Santos Silva I, Cramer DW, Gibson L, Terry KL, Fletcher O, Vitonis AF, van der Schoot CE, Poole EM, Hogervorst FBL, Tworoger SS, Liu J, Bandera EV, Li J, Olson SH, Humphreys K, Orlov I, Blomqvist C, Rodriguez-Rodriguez L, Aittomäki K, Salvesen HB, Muranen TA, Wik E, Brouwers B, Krakstad C, Wauters E, Halle MK, Wildiers H, Kiemeny LA, Mulot C, Aben KK, Laurent-Puig P, van Altena AM, Truong T, Massuger LF, Benitez J, Pejovic T, Arias Perez JI, Hoatlin M, Zamora MP, Cook LS, Balasubramanian SP, Kelemen LE, Schneeweiss A, Le ND, Sohn C, Brooks-Wilson A, Tomlinson I, Kerin MJ, Miller N, Cybulski C, kConFab

Investigators, Henderson BE, Menkiszak J, Schumacher F, Wentzensen N, Marchand LL, Yang HP, Mulligan AM, Glendon G, Engelholm SA, Knight JA, Høgdall CK, Apicella C, Gore M, Tsimiklis H, Song H, Southey MC, Jager A, van den Ouweland AM, Brown R, Martens JW, Flanagan JM, Kriege M, Paul J, Margolin S, Siddiqui N, Severi G, Whittemore AS, Baglietto L, McGuire V, Stegmaier C, Sieh W, Müller H, Arndt V, Labrèche F, Gao Y-T, Goldberg MS, Yang G, Dumont M, McLaughlin JR, Hartmann A, Ekici AB, Beckmann MW, Phelan CM, Lux MP, Permut-Wey J, Peissel B, Sellers TA, Ficarazzi F, Barile M, Ziogas A, Ashworth A, Gentry-Maharaj A, Jones M, Ramus SJ, Orr N, Menon U, The Genica Network, Pearce CL, Brüning T, Pike MC, Ko Y-D, Lissowska J, Figueroa J, Kupryjanczyk J, Chanock SJ, Dansonka-Mieszkowska A, Jukkola-Vuorinen A, Rzepecka IK, Pylkäs K, Bidzinski M, Kauppila S, Hollestelle A, Seynaeve C, Monteiro ANA, Tollenaar RAM, Durda K, Jaworska K, Hartikainen JM, Kosma V-M, Kataja V, Antonenkova NN, Long J, Shrubsole M, Deming-Halverson S, Lophatananon A, Siriwanarangsana P, Stewart-Brown S, Ditsch N, Lichtner P, Schmutzler RK, Ito H, Iwata H, Tajima K, Tseng C-C, Stram DO, van den Berg D, Yip CH, Ikram MK, Teh Y-C, Cai H, Lu W, Signorello LB, Cai Q, Noh D-Y, Yoo K-Y, Miao H, Iau PT, Teo YY, McKay J, Shapiro C, Ademuyiwa F, Fountzilas G, Hsiung C-N, Yu J-C, Hou M-F, Healey CS, Luccarini C, Wang Q, Peock S, Stoppa-Lyonnet D, Peterlongo P, SWE-BRCA, Rebbeck TR, Piedmonte M, Singer CF, Friedman E, Thomassen M, Offit K, Hansen TVO, Neuhausen SL, Szabo CI, Blanco I, Garber J, Narod SA, Weitzel JN, Montagna M, Olah E, Godwin AK, Yannoukakos D, Goldgar DE, Caldes T, Imyanitov EN, Tihomirova L, Arun BK, Campbell I, Mensenkamp AR, van Asperen CJ, van Roozendaal K, Meijers-Heijboer HEJ, HEBON, Collée JM, Oosterwijk JC, Hooning MJ, Rookus MA, van der Luijt RB, van Os TAM, Evans DG, Frost D, Fineberg E, Embrace, Barwell J, Walker L, Kennedy MJ, Platte R, Davidson R, Ellis SD, Cole T, De Paillerets BB, Buecher B, Damiola F, Gemo Study Collaborators, Faivre L, Frenay M, Sinilnikova OM, Caron O, Giraud S, Mazoyer S, Bonadona V, Caux-Moncoutier V, Toloczko-Grabarek A, Gronwald J, Byrski T, Spurdle AB, Bonanni B, Zaffaroni D, Giannini G, Bernard L, Dolcetti R, Manoukian S, Norbert A, Engel C, Deissler H, Rhiem K, Meindl A, Niederacher D, Plendl H, Sutter C, Wappenschmidt B, Borg A, Melin B, Rantala J, Soller M, Nathanson KL, Domchek SM, Rodriguez GC, Salani R, Geschwantler Kaulich D, Tea M-K, Paluch SS, Laitman Y, Skytte A-B, Kruse TA, Jensen UB, Robson M, Gerdes A-M, Ejlersen B, Foretova L, Savage SA, Lester J, Soucy P, Kuchenbaecker KB, Olswold C, Cunningham JM, Slager S, Pankratz VS, Dicks E, Lakhani SR, Couch FJ, Hall P, Gayther SA, Pharoah PDP, Reddel RR, Goode EL, Greene MH, Easton DF, Berchuck A, Antoniou AC, Chenevix-Trench G, Dunning AM. Multiple independent TERT variants associated with telomere length and risks of breast and ovarian cancer. *Nat Genet* 2013;45(4):371-86. PMID: PMC3670748.

Pharoah PDP, Tsai Y-Y, Ramus SJ, Phelan CM, Goode EL, Lawrenson K, Buckley M, Fridley BL, Tyrer JP, Shen H, Weber R, Karevan R, Larson MC, Song H, Tessier DC, Bacot F, Vincent D, Cunningham JM, Dennis J, Dicks E, Australian Cancer Study, Australian Ovarian Cancer Study Group, Aben KK, Anton-Culver H, Antonenkova N, Armasu SM, Baglietto L, Bandera EV, Beckmann MW, Bloom G, Bogdanova N, Brenton J, Brinton LA, Brooks-Wilson A, Brown R, Butzow R, Campbell I, Carney ME, Carvalho RS, Chang-Claude J, Chen A, Chen Z, Chow W-H, Cicek MS, Coetzee G, Cook LS, Cramer DW, Cybulski C, Dansonka-Mieszkowska A, Despierre E, Doherty JA, Dörk T, du Bois A, Dürst M, Eccles D, Edwards R, Ekici AB, Fasching PA, Fenstermacher D, Flanagan J, Gao Y-T, Garcia-Closas M, Gentry-Maharaj A, Giles G, Gjyshi A, Gore M, Gronwald J, Guo Q, Halle MK, Harter P, Hein A, Heitz F, Hillemanns P, Hoatlin M, Høgdall E, Høgdall CK, Hosono S, Jakubowska A, Jensen A, Kalli KR, Karlan BY, Kelemen L, Kiemeny LA, Krüger Kjaer S, Konecny GE, Krakstad C, Kupryjanczyk J, Lambrechts D, Lambrechts S, Le ND, Lee N, Lee J, Leminen A, Lim BK, Lissowska J, Lubiński J, Lundvall L, Lurie G, Massuger LFAG, Matsuo K, McGuire V, McLaughlin JR, Menon U, Modugno F, Moysich KB, Nakanishi T, Narod SA, Ness RB, Nevanlinna H, Nickels S, Noushmehr H, Odunsi K, Olson SH, Orlov I, Paul J, Pejovic T, Pelttari LM, Permuth-Wey J, Pike MC, Poole EM, Qu X, **Risch HA**, Rodriguez-Rodriguez L, Rossing MA, Rudolph A, Runnebaum I, Rzepecka IK, Salvesen HB, Schwaab I, Severi G, Shen H, Shridhar V, Shu X-O, Sieh W, Southey MC, Spellman P, Tajima K, Teo S-H, Thompson PJ, Timorek A, Tworoger SS, van Altena AM, Van Den Berg D, Vergote I, Vierkant RA, Vitonis AF, Wang-Gohrke S, Wentzensen N, Whittemore AS, Wik E, Winterhoff B, Woo YL, Wu AH, Yang HP, Zheng W, Ziogas A, Zulkifli F, Goodman MT, Hall P, Easton DF, Pearce CL, Berchuck A, Chenevix-Trench G, Iversen E, Monteiro AN, Gayther SA, Schildkraut JM, Sellers TA. GWAS meta analysis and replication identifies three new susceptibility loci for ovarian cancer. *Nat Genet* 2013;45(4):362-72. PMID: PMC3693183.

Delahanty RJ, Xiang Y-B, Spurdle A, Beeghly-Fadiel A, Long J, Thompson D, Tomlinson I, Yu H, Lambrechts D, Dörk T, Goodman MT, Zheng Y, Salvesen HB, Bao P-P, Amant F, Beckmann MW, Coenegrachts L, Coosemans A, Dubrowinskaja N, Dunning A, Runnebaum I, Easton D, Ekici AB, Fasching PA, Halle MK, Hein A, Howarth K, Gorman M, Kaydarova D, Krakstad C, Lose F, Lu L, Lurie G, O'Mara T, Matsuno RK, Pharoah P, **Risch H**, Schwake A, Trovik J, Turmanov N, Wen W, Lu W, Cai Q, Zheng W, Shu X-O. Polymorphisms in inflammation pathway genes and endometrial cancer risk. *Cancer Epidemiol Biomarkers Prev* 2013;22(2):216-23. PMID: PMC3677562.

Narod SA, Moody JRK, Rosen B, Fan I, **Risch [H]A**, Sun P, McLaughlin JR. Estimating survival rates after ovarian cancer among women tested for BRCA1 and BRCA2 mutations. *Clin Genet* 2013;83(3):232-7. *NIH funding pre-dates mandate.

McLaughlin JR, Rosen B, Moody J, Pal T, Fan I, Shaw P, **Risch HA**, Sellers TA, Sun P, Narod SA. Long-term ovarian cancer survival associated with mutation in BRCA1 or BRCA2. *J Natl Cancer Inst* 2013;105(2):141-8. *NIH funding pre-dates mandate.

Kelemen LE, Bandera EV, Terry KL, Rossing MA, Brinton LA, Doherty JA, Ness RB, Krüger Kjær S, Chang-Claude J, Köbel M, Lurie G, Thomson PJ, Carney ME, Moysich K, Edwards RP, Bunker CH, Jensen A, Høgdall E, Cramer DW, Vitonis AF, Olson SH, King M, Chandran U, Lissowska J, Garcia-Closas M, Yang H, Webb PM, Schildkraut JM, Goodman MT, **Risch HA**. Recent alcohol consumption and risk of incident ovarian carcinoma: a pooled analysis of 5,342 cases and 10,358 controls from the Ovarian Cancer Association Consortium. *BMC Cancer* 2013;13:28. PMID: PMC3568733.

Risch HA, Lu L, Wang J, Zhang W, Ni Q-X, Gao Y-T, Yu H. ABO blood group and risk of pancreatic cancer: a study in Shanghai and meta-analysis. *Am J Epidemiol* 2013;177(12):1326-37. PMID: PMC3732019.

Parikh H, Jia J, Zhang X, Chung C, Jacobs KB, Yeager M, Boland J, Hutchinson A, Burdett L, **Risch HA**, Jacobs EJ, Stolzenberg-Solomon RZ, Chanock SJ, Wolpin BM, Petersen GM, Fuchs CS, Hartge P, Amundadottir L. A re-sequencing analysis of genomic loci on chromosomes 1q32.1, 5p15.33 and 13q22.1 associated with pancreatic cancer risk. *Pancreas* 2013;42(2):209-215. PMID: PMC3618611.

2012

Hoyo C, Cook MB, Kamangar F, Freedman ND, Whiteman DC, Bernstein L, Brown LM, **Risch HA**, Ye W, Sharp L, Wu AH, Ward MH, Casson AG, Murray LJ, Corley DA, Nyren O, Pandeya N, Vaughan TL, Chow W-H, Gammon MD. Body mass index in relation to oesophageal and oesophagogastric junction adenocarcinomas: a pooled analysis from the international BEACON consortium. *Int J Epidemiol* 2012;41(6):1706-18. PMID: PMC3535758.

Bosetti C, Lucenteforte E, Silverman DT, Petersen G, Bracci PM, Ji BT, Negri E, Li D, **Risch HA**, Olson SH, Gallinger S, Miller AB, Bueno-de-Mesquita HB, Talamini R, Polesel J, Ghadirian P, Baghurst PA, Zatonski W, Fontham E, Bamlet WR, Holly EA, Bertuccio P, Gao YT, Hassan M, Yu H, Kurtz RC, Cotterchio M, Su J, Maisonneuve P, Duell EJ, Boffetta P, La Vecchia C. Cigarette smoking and pancreatic cancer: an analysis from the International Pancreatic Cancer Case-Control Consortium (PanC4). *Ann Oncol* 2012;23(7):1880-88. PMID: PMC3387822.

Lu L, Zhu G, Zhang C, Deng Q, Katsaros D, Mayne ST, **Risch HA**, Mu L, Canuto EM, Gregori G, Benedetto C, Yu H. Association of large noncoding RNA

HOTAIR expression and its downstream intergenic CpG island methylation with survival in breast cancer. *Breast Cancer Res Treat* 2012;136(3):875-83. *Not a result of NIH funding.

Wang J, Zhang W, Sun L, Yu H, Ni Q-X, **Risch H**, Gao Y-T. Green tea drinking and risk of pancreatic cancer: a large-scale, population-based case-control study in urban Shanghai. *Cancer Epidemiol* 2012;36(6):e354-8. PMID: PMC3490023.

Raska P, Iversen E, Chen A, Chen Z, Fridley BL, Permuth-Wey J, Tsai Y-Y, Vierkant RA, Goode EL, **Risch H**, Schildkraut JM, Sellers TA, Barnholtz-Sloan J. European American stratification in ovarian cancer case control data: the utility of genome-wide data for inferring ancestry. *PLoS One* 2012;7(5): e35235. doi:10.1371/journal.pone.0035235. PMID: PMC3348917.

Su Z, Gay LJ, Strange A, Palles C, Band G, Whiteman DC, Lescai F, Langford C, Nanji M, Edkins S, van der Winkel A, Levine D, Sasieni P, Bellenguez C, Howarth K, Freeman C, Trudgill N, Tucker AT, Pirinen M, Peppelenbosch MP, van de rLaan LJW, Kuipers EJ, Drenth JPH, Peters WH, Reynolds JV, Kelleher DP, McManus R, Grabsch H, Prenen H, Bisschops R, Krishnadath K, Siersema PD, van Baal JW, Middleton M, Petty R, Gillies R, Burch N, Bhandari P, Paterson S, Edwards C, Penman I, Vaidya K, Ang Y, Murray I, Patel P, Ye W, Mullins P, Wu AH, Bird NC, Dallal H, Shaheen NJ, Murray LJ, Koss K, Bernstein L, Romero Y, Hardie LJ, Zhang R, Winter H, Corley DA, Panter S, **Risch HA**, Reid BJ, Sargeant I, Gammon MD, Smart H, Dhar A, McMurtry H, Ali H, Liu G, Casson AG, Chow W-H, Rutter M, Tawil A, Morris D, Nwokolo C, Isaacs P, Rodgers C, Rangunath K, MacDonald C, Haigh C, Monk D, Davies G, Wajed S, Johnston D, Gibbons M, Cullen S, Church N, Langley R, Griffin M, Alderson D, Deloukas P, Hunt SE, Gray E, Dronov S, Potter SC, Tashakkori-Ghanbaria A, Anderson M, Brooks C, Blackwell JM, Bramon E, Brown MA, Casas JP, Corvin A, Duncanson A, Markus HS, Mathew CG, Palmer CNA, Plomin R, Rautanen A, Sawcer SJ, Trembath RC, Viswanathan AC, Wood N, Trynka G, Wijmenga C, Cazier J-B, Atherfold P, Nicholson AM, Gellatly NL, Glancy D, Cooper SC, Cunningham D, Lind T, Hapeshi J, Ferry D, Rathbone B, Brown J, Love S, Attwood S, MacGregor S, Watson P, Sanders S, Ek W, Harrison RF, Moayyedi P, de Caestecker J, Barr H, Stupka E, Vaughan TL, Peltonen L, Spencer CCA, Tomlinson I, Donnelly P, Jankowski JAZ. Common variants at the MHC locus and at chromosome 16q24.1 predispose to Barrett's Esophagus. *Nat Genet* 2012;44(10):1131-6. PMID: PMC3459818.

Ji Y, Shen M-C, Jin X-L, Zhu M-H, Wang H, Ni Q-X, Zhang W, Wang J, Sun L, Yu H, **Risch H**, Gao Y-T. Pathologic characteristics of pancreatic cancer in Shanghai urban area: preliminary analysis of 350 cases. *Zhong Liu [Tumor]* 2012;32(3):199-202. (Publication in Chinese).

Pal T, Akbari MR, Sun P, Lee J-H, Fulp J, Thompson Z, Coppola D, Nicosia S, Sellers TA, McLaughlin J, **Risch HA**, Rosen B, Shaw P, Schildkraut J, Narod SA. Frequency of mutations in mismatch repair genes in a population-based study of women with ovarian cancer. *Br J Cancer* 2012;107(10):1783-90. PMID: PMC3493867.

Collaborative Group on Epidemiological Studies of Ovarian Cancer. Ovarian cancer and smoking: individual participant meta-analysis including 28,114 women with ovarian cancer from 51 epidemiological studies. *Lancet Oncol* 2012;13(9):946-56. *Not a result of NIH funding.

Lu L, Katsaros D, Mayne ST, **Risch HA**, Benedetto C, Canuto EM, Yu H. Functional study of risk loci of stem cell-associated gene *lin-28B* and associations with disease survival outcomes in epithelial ovarian cancer. *Carcinogenesis* 2012;33(11):2119-25. *Not a result of NIH funding.

Fridley BL, Chalise P, Tsai Y-Y, Sun Z, Vierkant RA, Larson MC, Cunningham JM, Iversen ES, Fenstermacher D, Barnholtz-Sloan J, Asmann Y, **Risch HA**, Schildkraut JM, Phelan CM, Sutphen R, Sellers TA, Goode EL. Germline copy number variation and ovarian cancer survival. *Front Genet* 2012;3:142. PMID: PMC3413872.

Kotsopoulos J, Moody JRK, Fan I, Rosen B, **Risch HA**, McLaughlin JR, Sun P, Narod SA. Height, weight, BMI and ovarian cancer survival. *Gyn Oncol* 2012;127(1):83-7. *NIH funding pre-dates mandate.

Li D, Duell EJ, Yu K, **Risch HA**, Olson SH, Kooperberg C, Wolpin BM, Jiao L, Dong X, Wheeler B, Arslan AA, Bueno-de-Mesquita HB, Fuchs CS, Gallinger S, Gross M, Hartge P, Hoover RN, Holly EA, Jacobs EJ, Klein AP, LaCroix A, Mandelson MT, Petersen G, Zheng W, Agalliu I, Albanes D, Boutron-Ruault M-C, Bracci PM, Buring JE, Canzian F, Chang K, Chanock SJ, Cotterchio M, Gaziano JM, Giovannucci EL, Goggins M, Hallmans G, Hankinson SE, Hoffman Bolton JA, Hunter DJ, Hutchinson A, Jacobs KB, Jenab M, Khaw K-T, Kraft P, Krogh V, Kurtz RC, McWilliams RR, Mendelsohn JB, Patel AV, Rabe KG, Riboli E, Shu X-O, Tjønneland A, Tobias GS, Trichopoulos D, Virtamo J, Visvanathan K, Watters J, Yu H, Zeleniuch-Jacquotte A, Amundadottir L, Stolzenberg-Solomon RZ. Pathway analysis of genome-wide association study data highlights pancreatic development genes as susceptibility factors for pancreatic cancer. *Carcinogenesis* 2012;33(7):1384-90. PMID: PMC3405651.

Duell EJ, Lucenteforte E, Olson SH, Bracci PM, Li D, **Risch HA**, Silverman DT, Ji B-T, Gallinger S, Holly EA, Fontham EH, Maisonneuve P, Bueno-de-Mesquita HB, Ghadirian P, Kurtz RC, Ludwig E, Yu H, Lowenfels AB, Seminara D, Petersen GM, LaVecchia C, Boffetta P. Pancreatitis and pancreas cancer risk: a

pooled analysis in the International Pancreatic Cancer Case-Control Consortium (PanC4). *Ann Oncol* 2012;23(11):2964-70. PMID: PMC3477881.

Palmer AJ, Lochhead P, Hold GL, Rabkin CS, Chow WH, Lissowska J, Vaughan TL, Berry S, Gammon M, **Risch H**, El-Omar EM. Genetic variation in C20orf54, PLCE1 and MUC1 and the risk of upper gastrointestinal cancers in Caucasian populations. *Eur J Cancer Prev* 2012;21(6):541-4. PMID: PMC3460062.

Jacobs KB, Yeager M, Zhou W, Wacholder S, Wang Z, Rodriguez-Santiago B, Hutchinson A, Deng X, Liu C, Horner M-J, Cullen M, Epstein CG, Burdett L, Dean MC, Chatterjee N, Sampson J, Chung CC, Kovaks J, Gapstur SM, Stevens VL, Teras LT, Gaudet MM, Albanes D, Weinstein SJ, Virtamo J, Taylor PR, Freedman ND, Abnet CC, Goldstein AM, Hu N, Yu K, Yuan J-M, Liao L, Ding T, Qiao Y-L, Gao Y-T, Koh W-P, Xiang Y-B, Tang Z-Z, Fan J-H, Aldrich MC, Amos C, Blot WJ, Bock CH, Gillanders EM, Harris CC, Haiman CA, Henderson BE, Kolonel LN, Marchand LL, McNeill LH, Rybicki BA, Schwartz AG, Signorello LB, Spitz MR, Wiencke JK, Wrensch M, Wu X, Zanetti KA, Ziegler RG, Figueroa JD, Garcia-Closas M, Malats N, Marenne G, Prokunina-Olsson L, Baris D, Schwenn M, Johnson A, Landi MT, Goldin L, Consonni D, Bertazzi PA, Rotunno M, Rajaraman P, Andersson U, Freeman LEB, Berg CD, Buring JE, Butler MA, Carreon T, Feychting M, Ahlbom A, Gaziano JM, Giles GG, Hallmans G, Hankinson SE, Hartge P, Henriksson R, Inskip PD, Johansen C, Landgren A, McKean-Cowdin R, Michaud DS, Melin BS, Peters U, Ruder AM, Sesso HD, Severi G, Shu X-O, Visvanathan K, White E, Wolk A, Zeleniuch-Jacquotte A, Zheng W, Silverman DT, Kogevinas M, Gonzalez JR, Villa O, Li D, Duell EJ, **Risch HA**, Olson SH, Kooperberg C, Wolpin BM, Jiao L, Hassan M, Wheeler W, Arslan AA, Bueno-de-Mesquita HB, Fuchs CS, Gallinger S, Gross MD, Holly EA, Klein AP, LaCroix A, Mandelson MT, Petersen G, Boutron-Ruault M-C, Bracci PM, Canzian F, Chang K, Cotterchio M, Giovannucci EL, Goggins M, Bolton JAH, Jenab M, Khaw K-T, Krogh V, Kurtz RC, McWilliams RR, Mendelsohn JB, Rabe KG, Riboli E, Tjønneland A, Tobias GS, Trichopoulos D, Elena JW, Yu H, Amundadottir L, Stolzenberg-Solomon RZ, Kraft P, Schumacher F, Stram D, Savage SA, Mirabello L, Andrulis I, Wunder J, García AP, Sierrasesúmaga L, Barkauskas DA, Gorlick RG, Purdue M, Chow W-H, Moore LE, Schwartz KL, Davis FG, Hsing AW, Berndt SI, Black A, Wentzensen N, Brinton LA, Lissowska J, Peplonska B, McGlynn KA, Cook MB, Graubard BI, Kratz CP, Greene MH, Erickson RL, Hunter DJ, Thomas G, Hoover RN, Real FX, Fraumeni JF, Caporaso NE, Tucker M, Rothman N, Pérez-Jurado LA, Chanock SJ. Detectable clonal mosaicism and its relationship to aging and cancer. *Nat Genet* 2012;44(6):651-8. PMID: PMC3372921.

Lubin JH, Cook MB, Pandeya N, Vaughan TL, Abnet CC, Giffen C, Webb PM, Murray LJ, Casson AG, **Risch HA**, Ye W, Kamangar F, Bernstein L, Sharp L, Nyrén O, Gammon MD, Corley DA, Wu AH, Brown LM, Chow W-H, Ward MH, Freedman ND, Whiteman DC. The importance of exposure rate on odds

ratios by cigarette smoking and alcohol consumption for esophageal adenocarcinoma and squamous cell carcinoma in the Barrett's Esophagus and Esophageal Adenocarcinoma Consortium. *Cancer Epidemiology* 2012;36(3):306-16. PMID: PMC3489030

Long J, Zheng W, Xiang Y-B, Lose F, Thompson D, Tomlinson I, Yu H, Wentzensen N, Lambrechts D, Dörk T, Dubrowinskaja N, Goodman MT, Salvesen HB, Fasching PA, Scott RJ, Delahanty R, Zheng Y, O'Mara T, Healey CS, Hodgson S, **Risch H**, Yang HP, Amant F, Turmanov N, Schwake A, Lurie G, Trovik J, Beckmann MW, Ashton K, Ji B-T, Bao P-P, Howarth K, Lu L, Lissowska J, Coenegrachts L, Kaidarova D, Dürst M, Thompson PJ, Krakstad C, Ekici AB, Otton G, Shi J, Zhang B, Gorman M, Brinton L, Coosemans A, Matsuno RK, Halle MK, Hein A, Proietto A, Cai H, Lu W, Dunning A, Easton D, Gao Y-T, Cai Q, Spurdle AB, Shu X-O. Genome-wide association study identifies a possible susceptibility locus for endometrial cancer. *Cancer Epidemiol Biomarkers Prev* 2012;21(6):980-7. PMID: PMC3372671

Setiawan VW, Pike MC, Karageorgi S, Deming SL, Anderson K, Bernstein L, Brinton LA, Cai H, Cerhan JR, Cozen W, Chen C, Doherty J, Freudenheim JL, Goodman MT, Hankinson SE, Lacey JV Jr, Liang X, Lissowska J, Lu L, Lurie G, Mack T, Matsuno RK, McCann S, Moysich KB, Olson SH, Rastogi R, Rebbeck TR, **Risch H**, Robien K, Schairer C, Shu X-O, Spurdle AB, Strom BL, Australian National Endometrial Cancer Study Group, Thompson PJ, Ursin G, Webb PM, Weiss N, Wentzensen N, Xiang Y-B, Yang HP, Yu H, Horn-Ross PL, De Vivo I. Age at last birth in relation to risk of endometrial cancer: pooled analysis in the Epidemiology of Endometrial Cancer Consortium. *Am J Epidemiol* 2012;176(4):269-78. PMID: PMC3491967

Pearce CL, Templeman C, Rossing MA, Lee A, Near A, Australian Cancer Study (Ovarian Cancer), Australian Ovarian Cancer Study Group, Doherty JA, Cushing-Haugen KL, Wicklund KG, Chang-Claude J, Hein R, Wang-Gohrke S, Lurie G, Wilkens LR, Carney ME, Goodman MT, Moysich10, Kjaer SK, Hogdall E, Jensen A, Goode EL, Fridley BL, Larson MC, Schildkraut JM, Palmieri RT, Cramer DW, Terry KL, Vitonis AF, Titus-Ernstoff L, Ziogas A, Brewster W, Anton-Culver H, Gentry Maharaj A, Ramus SJ, Anderson AR, Brueggmann D, Fasching PA, Gayther SA, Huntsman D, Menon U, Nagle CM, Ness R, Pike MC, **Risch H**, Webb PM, Wu AH, Berchuck A, Ovarian Cancer Association Consortium. Association between endometriosis and risk of histological subtypes of ovarian cancer: a pooled analysis of case-control studies. *Lancet Oncol* 2012;13(4):385-94. PMID: PMC3664011.

Zeng H, Irwin ML, Lu L, **Risch H**, Mayne S, Mu L, Deng Q, Scarampi L, Mitidieri M, Katsaros D, Yu H.. Physical activity and breast cancer survival—an epigenetic link through reduced methylation of a tumor suppressor gene L3MBTL1. *Breast Cancer Res Treat* 2012;133(1):127-35. *Not a result of NIH funding.

Liao LM, Vaughan TL, Corley DA, Cook MB, Casson AG, Kamangar F, Abnet CC, **Risch HA**, Giffen C, Freedman ND, Chow W-H, Sadeghi S, Pandeya N, Whiteman DC, Murray LJ, Bernstein L, Gammon MD, Wu AH. Nonsteroidal anti-inflammatory drug use reduces risk of adenocarcinomas of the esophagus and esophagogastric junction in a pooled analysis. *Gastroenterology* 2012;142(3):442-52. PMID: PMC3488768.

Collaborative Group on Epidemiological Studies of Ovarian Cancer. Beral V, Hermon C, Peto R, Reeves G, Brinton L, Green AC, Marchbanks P, Negri E, Ness R, Peeters P, Vessey M, Calle EE, Rodriguez C, Dal Maso L, Talamini T, Cramer D, Hankinson SE, Tworoger SS, Chetrit A, Hirsh-Yechezkel G, Lubin F, Sadetzki S, Appleby P, Banks E, Berrington de Gonzalez A, Bull D, Crossley B, Goodill A, Green I, Green J, Key T, Collins R, Doll R, Agudo A, Gonzalez CA, Lee N, Ory HW, Peterson HB, Wingo PA, Martin N, Pardthaisong T, Silpisornkosol S, Theetranont C, Boosiri B, Chutivongse S, Jimakorn P, Virutamasen P, Wongsrichanalai C, Titus-Ernstoff L, Byers T, Rohan T, Mosgaard BJ, Yeates D, Marshall JR, Chang-Claude J, Anderson KE, Folsom AR, Rossing MA, Thomas D, Weiss N, Franceschi S, La Vecchia C, Adami HO, Magnusson C, Riman T, Weiderpass E, Wolk A, Freedman DM, Hartge P, Lacey JM, Hoover R, Schouten LJ, van den Brandt PA, Chantarakul N, Koetsawang S, Rachawat D, Graff-Iversen G, Selmer R, Bain CJ, Purdie DM, Siskind V, Webb PM, McCann SE, Hannaford P, Kay C, Binns CW, Lee AH, Zhang M, Nasca P, Coogan PF, Rosenberg L, Kelsey J, Paffenbarger R, Whittemore A, Katsouyanni K, Trichopoulou A, Trichopoulos D, Tzonou A, Dabancens A, Martinez L, Molina R, Salas O, Goodman MT, Laurie G, Carney ME, Wilkens LR, Bladstrom A, Olsson H, Grisso JA, Morgan M, Wheeler JE, Casagrande J, Pike MC, RKRoss RK, Wu AH, Kumle M, Lund E, McGowan L, Shu XO, Zheng W, Farley TMM, Holck S, Meirik O, **Risch HA**. Ovarian cancer and body size: Individual participant meta-analysis including 25,157 women with ovarian cancer from 47 epidemiological studies. *PLoS Med* 2012;9(4):e1001200. doi:10.1371/journal.pmed.1001200. *Not a result of NIH funding.

2011

Permuth-Wey J, Chen Z, Tsai Y-Y, Lin H-Y, Chen YA, Barnholtz-Sloan J, Birrer MJ, Chanock SJ, Cramer DW, Cunningham JM, Fenstermacher D, Fridley BL, Garcia-Closas M, Gayther SA, Gentry-Maharaj A, Gonzalez-Bosquet J, Iversen E, Jim H, McLaughlin J, Menon U, Narod SA, Phelan CM, Ramus SJ, **Risch H**, Song H, Sutphen R, Terry KL, Tyrer J, Vierkant RA, Wentzensen N, Lancaster

JM, Cheng JQ, Berchuck A, Pharoah PDP, Schildkraut JM, Goode EL, Sellers TA on behalf of the Ovarian Cancer Association Consortium (OCAC). MicroRNA processing and binding site polymorphisms are not replicated in the Ovarian Cancer Association Consortium. *Cancer Epidemiol Biomarkers Prev* 2011;20:1793-7. PMID: PMC3153581.

Permeth-Wey J, Kim D, Tsai Y-Y, Lin H-Y, Chen YA, Barnholtz-Sloan J, Birrer MJ, Gregory Bloom G, Chanock SJ, Chen Z, Cramer DW, Cunningham JM, Dagne G, Ebbert-Syfrett J, Fenstermacher D, Fridley BL, Garcia-Closas M, Gayther SA, Ge W, Gentry-Maharaj A, Gonzalez-Bosquet J, Goode EL, Iversen E, Jim H, Kong W, McLaughlin J, Menon U, Monteiro ANA, Narod SA, Pharoah PDP, Phelan CM, Qu X, Ramus SJ, **Risch H**, Schildkraut JM, Song H, Stockwell H, Sutphen R, Terry KL, Tyrer J, Vierkant RA, Wentzensen N, Lancaster JM, Cheng JQ, Sellers TA on behalf of the Ovarian Cancer Association Consortium (OCAC). *LIN28B* polymorphisms influence susceptibility to epithelial ovarian cancer. *Cancer Res* 2011;71:3896-903. PMID: PMC3107389.

Lu L, **Risch H**, Irwin ML, Mayne ST, Cartmel B, Schwartz P, Rutherford T, Yu H. Long-term overweight and weight gain in early adulthood in association with risk of endometrial cancer. *Int J Cancer* 2011;129:1237-43. PMID: PMC3125463.

Zhang S, Royer R, Li S, McLaughlin JR, Rosen B, **Risch HA**, Fan I, Bradley L, Shaw PA, Narod SA. Frequencies of BRCA1 and BRCA2 mutations among 1,342 unselected patients with invasive ovarian cancer. *Gyn Oncol* 2011;121:353-7. PMID:21324516. *NIH funding pre-dates mandate.

Freedman ND, Murray LJ, Kamangar F, Abnet CC, Cook MB, Nyrén O, Ye W, Wu AH, Bernstein L, Brown LM, Ward MH, Pandeya N, Green A, Casson AG, Giffen C, **Risch HA**, Gammon MD, Chow W-H, Vaughan TL, Corley DA, Whitman DC. Alcohol intake and risk of esophageal adenocarcinoma: a pooled analysis from the BEACON Consortium. *Gut* 2011;60:1029-37. PMID: PMC3439838.

Lu L, Zhang C, Zhu G, Irwin M, **Risch H**, Menato G, Mitidieri M, Katsaros D, Yu H. Telomerase expression and telomere length in breast cancer and their associations with adjuvant treatment and disease outcome. *Breast Cancer Res* 2011;13:R56:1-8. <http://breast-cancer-research.com/content/13/3/R56>. *Not a result of NIH funding.

Lu L, Katsaros D, Zhu Y, Hoffman A, Luca S, Marion CE, Mu L, **Risch H**, Yu H. Let-7A regulation of insulin-like growth factors in breast cancer. *Breast Cancer Res Treat* 2010, Published online: DOI 10.1007/s10549-010-1168-5. *Not a result of NIH funding.

Permeth-Wey J, Chen YA, Tsai Y-Y, Chen Z, Qu X, Lancaster JM, Stockwell H, Dagne G, Iversen E, **Risch H**, Barnholtz-Sloan J, Cunningham JM, Vierkant RA, Fridley BL, Sutphen R, McLaughlin J, Narod SA, Goode EL, Schildkraut JM, Fenstermacher D, Phelan CM, Sellers TA. Inherited variants in mitochondrial biogenesis genes may influence epithelial ovarian cancer risk. *Cancer Epidemiol Biomarkers Prev* 2011;20:1131-45. PMID: PMC3111851.

Pharoah PDP, Palmieri RT, Ramus SJ, Gayther SA, Andrulis IL, Anton-Culver H, Antonenkova N, Antoniou AC, Goldgar D for the BCFR Investigators, Beattie MS, Beckmann MW, Birrer MJ, Bogdanova N, Bolton KL, Brewster W, Brooks-Wilson A, Brown R, Butzow R, Caldes T, Caligo MA, Campbell I, Chang-Claude J, Chen YA, Cook LS, Couch FJ, Cramer DW, Cunningham JM, Despierre E, Doherty JA, Dörk T, Dürst M, Eccles DM, Ekici AB, Easton D for the EMBRACE Investigators, Fasching PA, de Fazio A, Fenstermacher DA, Flanagan JM, Fridley BL, Friedman E, Gao B, Sinilnikova O for the GEMO Study Collaborators, Gentry-Maharaj A, Godwin AK, Goode EL, Goodman MT, Gross J, Hansen TVO, Harnett P, Rookus M for the HEBON Investigators, Heikkinen T, Hein R, Høgdall C, Høgdall E, Iversen ES, Jakubowska A, Johnatty SE, Karlan BY, Kauff ND, Kaye SB, Chenevix-Trench G for the kConFab Investigators and the Consortium of Investigators of Modifiers of BRCA1/2, Kelemen LE, Kiemeny LA, Krüger Kjaer S, Lambrechts D, LaPolla JP, Lázaro C, Le ND, Leminen A, Leunen K, Levine DA, Lu Y, Lundvall L, Macgregor S, Marees T, Massuger LF, McLaughlin JR, Menon U, Montagna M, Moysich KB, Narod SA, Nathanson KL, Nedergaard L, Ness RB, Nevanlinna H, Nickels S, Osorio A, Paul J, Pearce CL, Phelan CM, Pike MC, Radice P, Rossing MA, Schildkraut JM, Sellers TA, Singer CF, Song H, Stram DO, Sutphen R, Lindblom A for the SWE-BRCA Investigators, Terry KL, Tsai Y-Y, van Altena AM, Vergote I, Vierkant RA, Vitonis AF, Walsh C, Wang-Gohrke S, Wappenschmidt B, Wu AH, Ziogas A, Berchuck A and **Risch HA** for the Ovarian Cancer Association Consortium. The role of *KRAS* rs61764370 in invasive epithelial ovarian cancer: implications for clinical testing. *Clin Cancer Res* 2011;17:3742-50. PMID: PMC3107901.

Zeng H, Yu H, Lu L, Jain D, Kidd MS, Saif MW, Chanock SJ and Hartge P for the PanScan Consortium, **Risch HA**. Genetic effects and modifiers of radiotherapy and chemotherapy on survival in pancreatic cancer. *Pancreas* 2011;40:657-63. PMID: PMC3116071.

Navarro Silvera SA, Mayne ST, **Risch HA**, Gammon MD, Vaughan T, Chow W-H, Dubin JA, Dubrow R, Schoenberg J, Stanford JL, West AB, Rotterdam H, Blot WJ. Principal component analysis of dietary and lifestyle patterns in relation to risk of subtypes of esophageal and gastric cancer. *Ann Epidemiol* 2011;21:543-50. PMID: PMC3109225.

Lochhead P, Frank B, Hold GL, Rabkin CS, Ng MTH, Vaughan TL, **Risch HA**, Gammon MD, Lissowska J, Weck MN, Raum E, Müller H, Illig T, Klopp N, Dawson A, McColl KE, Brenner H, Chow WH, El-Omar EM. Genetic variation in the prostate stem cell antigen gene and upper gastrointestinal cancer in white individuals. *Gastroenterology* 2011;140:435-41. PMID: PMC3031760.

Lochhead P, Ng MT, Hold GL, Rabkin CS, Vaughan TL, Gammon MD, **Risch HA**, Lissowska J, Mukhopadhyaya I, Chow W-H, El-Omar EM. Possible association between a genetic polymorphism at 8q24 and risk of upper gastrointestinal cancer. *Eur J Cancer Prev* 2011;20:54-7. PMID: PMC3020097.

Zhou Y, Irwin ML, **Risch HA**. Pre- and post-diagnosis body mass index, weight change and ovarian cancer mortality. *Gynecol Oncol* 2011;140:435-41. PMID: PMC3034401.

Bertuccio P, La Vecchia C, Silverman D, Petersen G, Bracci PM, Negri E, Li D, **Risch HA**, Olson SH, Gallinger S, Miller AB, Bueno-de-Mesquita HB, Talamini R, Polesel J, Gadirian P, Baghurst PA, Zatonski W, Fontham E, Bamlet WR, Holly EA, Lucenteforte E, Hassan M, Yu H, Kurtz RC, Cotterchio M, Su J, Maisonneuve P, Duell EJ, Bosetti C, Boffetta P. Cigar and pipe smoking, smokeless tobacco use and pancreatic cancer: an analysis from the International Pancreatic Cancer Case-Control Consortium (PanC4). *Ann Oncol* 2011;22:1420-6. PMID: 21245160. PMID: PMC3139985.

Arem H, Irwin ML, Zhou Y, Lu L, **Risch H**, Yu H. Physical activity and endometrial cancer in a population-based case-control study. *Cancer Causes Control* 2011;22:219-26. PMID: PMC3075067.

Soskolne CL, Jhangri GS, Scott HM, Brenner DR, Siemiatycki J, Lakhani R, Gérin M, Dewar R, Miller AB, **Risch HA**. A population-based case-control study of occupational exposure to acids and the risk of lung cancer: Evidence for specificity of association. *Int J Occup Environ Health* 2011;17:1-8. *Not a result of NIH funding.

2010

Goode EL, Chenevix-Trench G, Song H, Ramus SJ, Notaridou M, Lawrenson K, Widschwendter M, Vierkant RA, Larson MC, Kjaer SK, Birrer MJ, Berchuck A, Schildkraut J, Tomlinson I, Kiemeny LA, Cook LS, Gronwald J, Garcia-Closas M, Gore ME, Campbell I, Whittemore AS, Sutphen R, Phelan C, Anton-Culver H, Pearce CL, Lambrechts D, Rossing MA, Chang-Claude J, Moysich KB, Goodman MT, Dörk T, Nevanlinna H, Ness RB, Rafnar T, Hogdall C, Hogdall E, Fridley BL, Cunningham JM, Sieh W, McGuire V, Godwin AK, Cramer DW, Hernandez D, Levine D, Lu K, Iversen ES, Palmieri RT, Houlston R, van Altena AM, Aben KKH, Massuger LFAG, Brooks-Wilson A, Kelemen LE, Le ND,

Jakubowska A, Lubinski J, Medrek K, Stafford A, Easton DF, Tyrer J, Bolton KL, Harrington P, Eccles D, Chen A, Molina AN, Davila BN, Arango H, Tsai Y-Y, Chen Z, **Risch HA**, McLaughlin J, Narod SA, Ziogas A, Brewster W, Gentry-Maharaj A, Menon U, Wu AH, Stram DO, Pike MC, The Wellcome Trust Case-Control Consortium, Beesley J, Webb PM, The Australian Cancer Study (Ovarian Cancer), The Australian Ovarian Cancer Study Group, Chen X, Ekici AB, Thiel FC, Beckmann MW, Yang H, Wentzensen N, Lissowska J, Fasching PA, Despierre E, Amant F, Vergote I, Doherty J, Hein R, Wang-Gohrke S, Lurie G, Carney ME, Thompson PJ, Runnebaum I, Hillemanns P, Dürst M, Antonenkova N, Bogdanova N, Leminen A, Butzow R, Heikkinen T, Stefansson K, Sulem P, Besenbacher S, Sellers TA, Gayther SA, Pharoah PDP, The Ovarian Cancer Association Consortium (OCAC). A genome-wide association study identifies susceptibility loci for ovarian cancer at 2q31 and 8q24. *Nat Genet* 2010;42:874-9. PMID: PMC3020231.

Ratner E, Lu L, Boeke M, Barnett R, Nallur S, Chin LJ, Pelletier C, Blitzblau R, Tassi R, Paranjape T, Hui P, Godwin AK, Yu H, **Risch H**, Rutherford T, Schwartz P, Santin A, Matloff E, Zelterman D, Slack FJ, Weidhaas JB. A KRAS-variant in ovarian cancer acts as a genetic marker of cancer risk. *Cancer Res* 2010;70:6509-15. PMID: PMC2923587.

Cook MB, Kamangar F, Whiteman DC, Freedman ND, Gammon MD, Bernstein L, Brown LM, **Risch HA**, Ye W, Sharp L, Wu AH, Ward MH, Giffen C, Casson AG, Abnet CC, Murray LJ, Corley DA, Nyrén O, Vaughan TL, Chow W-H. Cigarette smoking and adenocarcinomas of the esophagus and esophagogastric junction: a pooled analysis from the International BEACON Consortium. *J Natl Cancer Inst* 2010;102:1344-53. PMID: PMC2935475.

Risch HA, Yu H, Lu L, Kidd MS. ABO blood group, *Helicobacter pylori* seropositivity, and risk of pancreatic cancer: a case-control study. *J Natl Cancer Inst* 2010;102(7):502-5. PMID: PMC2902822.

Johnatty SE, Beesley J, Chen X, Macgregor S, Duffy DL, Spurdle AB, deFazio A, Gava N, Webb PM, Rossing MA, Doherty JA, Goodman MT, Lurie G, Thompson PJ, Wilkens LR, Ness RB, Moysich KB, Chang-Claude J, Wang-Gohrke S, Cramer DW, Terry KL, Hankinson SE, Tworoger SS, Garcia-Closas M, Yang H, Lissowska J, Chanock SJ, Pharoah PD, Song H, Whitmore AS, Pearce CL, Stram DO, Wu AH, Pike MC, Gayther SA, Ramus SJ, Menon U, Gentry-Maharaj A, Anton-Culver H, Ziogas A, Hogdall E, Kjaer SK, Hogdall C, Berchuck A, Schildkraut JM, Iversen ES, Moorman PG, Phelan CM, Sellers TA, Cunningham JM, Vierkant RA, Rider DN, Goode EL, Haviv I, Chenevix-Trench G; Ovarian Cancer Association Consortium; Australian Ovarian Cancer Study Group; Australian Cancer Study (Ovarian Cancer). Evaluation of candidate stromal epithelial cross-talk genes identifies association between risk of serous ovarian cancer and TERT, a cancer susceptibility "hot-spot". *PLoS Genet*

2010;6:e1001016. PMID: PMC2900295.

Elliott KS, Zeggini E, McCarthy MI, Gudmundsson J, Sulem P, Stacey SN, Thorlacius S, Amundadottir L, Grönberg H, Xu J, Gaborieau V, Eeles RA, Neal DE, Donovan JL, Hamdy FC, Muir K, Hwang SJ, Spitz MR, Zanke B, Carvajal-Carmona L, Brown KM; Australian Melanoma Family Study Investigators, Hayward NK, Macgregor S, Tomlinson IP, Lemire M, Amos CI, Murabito JM, Isaacs WB, Easton DF, Brennan P, PanScan Consortium, Barkardottir RB, Gudbjartsson DF, Rafnar T, Hunter DJ, Chanock SJ, Stefansson K, Ioannidis JP. Evaluation of association of *HNFI1B* variants with diverse cancers: collaborative analysis of data from 19 genome-wide association studies. PLoS One 2010;5:e10858. PMID: PMC2878330.

Petersen GM, Amundadottir L, Fuchs CS, Kraft P, Stolzenberg-Solomon RZ, Jacobs KB, Arslan AA, Bueno-de-Mesquita HB, Gallinger S, Gross M, Helzlsouer K, Holly EA, Jacobs EJ, Klein AP, LaCroix A, Li D, Mandelson MT, Olson SH, **Risch HA**, Zheng W, Albanes D, Bamlet WR, Berg CD, Boutron-Ruault M-C, Buring JE, Bracci PM, Canzian F, Clipp S, Cotterchio M, de Andrade M, Duell EJ, Gaziano JM, Giovannucci EL, Goggins M, Hallmans G, Hankinson SE, Hassan M, Howard B, Hunter DJ, Hutchinson A, Jenab M, Kaaks R, Kooperberg C, Krogh V, Kurtz RC, Lynch SM, McWilliams RR, Mendelsohn JB, Michaud DS, Parikh H, Patel AV, Peeters PHM, Rajkovic A, Riboli E, Rodriguez L, Seminara D, Shu X-O, Thomas G, Tjønneland A, Tobias GS, Trichopoulos D, Van Den Eeden SK, Virtamo J, Wactawski-Wende J, Wang Z, Wolpin B, Yu H, Yu K, Zeleniuch-Jacquotte A, Fraumeni JF Jr, Hoover RN, Hartge P, Chanock SJ. A genome-wide association study identifies pancreatic cancer susceptibility loci on chromosomes 13q22.1, 1q32.1 and 5p15.33. Nat Genet 2010;42(3):224-8. PMID: PMC28533179.

2009

Song H, Ramus SJ, Tyrer J, Bolton K, Gentry-Maharaj A, Wozniak E, Anton-Culver H, Chang-Claude J, Cramer DW, DiCioccio R, Dörk T, Goode EL, Goodman MT, Schildkraut JM, Sellers T, Beckmann MW, Beesley J, Blaakaer J, Carney ME, Chanock S, Chen Z, Cunningham JM, Dicks E, Doherty JA, Duerst M, Ekici AB, Fenstermacher D, Fridley BL, Gore ME, Hankinson SE, Hogdall C, Hogdall E, Iversen ES, Jacobs IJ, Jakubowska A, Lissowska J, Lubiński J, Lurie G, McGuire V, McLaughlin J, Mędrak K, Moorman PG, Moysich K, Narod S, Phelan C, **Risch H**, Stram DO, Strick R, Terry KL, Tsai Y-Y, Tworoger SS, Van Den Berg DJ, Vierkant RA, Wang-Gohrke S, Webb PM, Wilkens LR, Wu AH, Yang H, Ziogas A, Australian Cancer (Ovarian) Study, The Australian Ovarian Cancer Study Group, The Hannover-Jena Ovarian Cancer Study Group, The Ovarian Cancer Association Consortium, Whittemore AS, Rossing MA, Ponder BAJ, Pearce CL, Ness RB, Menon U, Krüger Kjær S, Gronwald J, Garcia-Closas M, Fasching P, Easton DF, Chenevix-Trench G, Berchuck A, Pharoah PDP,

- Gayther SA. A genome-wide association study identifies a novel ovarian cancer susceptibility locus on 9p22.2. *Nat Genet* 2009;41:996-1000. PMID: PMC2844110.
- Amundadottir L, Kraft P, Stolzenberg-Solomon RZ, Fuchs CS, Petersen GM, Arslan AA, Bueno-de-Mesquita HB, Gross M, Helzlsouer K, Jacobs EJ, LaCroix A, Zheng W, Albanes D, Bamlet W, Berg CD, Berrino F, Bingham S, Buring JE, Bracci PM, Canzian F, Clavel-Chapelon F, Clipp S, Cotterchio M, de Andrade M, Duell EJ, Fox JW Jr, Gallinger S, Gaziano JM, Giovannucci E, Goggins M, González C, Hallmans G, Hankinson SE, Hassan M, Holly EA, Hunter DJ, Hutchinson A, Jackson R, Jacobs K, Jenab M, Kaaks R, Klein AP, Kooperberg C, Kurtz RC, Li D, Lynch SM, Mandelson M, McWilliams RR, Mendelsohn JB, Michaud DS, Olson SH, Overvad K, Patel AV, Peeters PHM, Rajkovic A, Riboli E, **Risch HA**, Shu X-O, Thomas G, Tobias GS, Trichopoulos D, Van Den Eeden SK, Virtamo J, Wactawski-Wende J, Wolpin BM, Yu H, Yu K, Zeleniuch-Jacquotte A, Chanock SJ, Hartge P, Hoover RN. Genome-wide association study identifies ABO blood group susceptibility variants for pancreatic cancer. *Nat Genet* 2009;41:986-90. PMID: PMC2839871.
- Hoyo C, Schildkraut JM, Murphy SK, Chow W-H, Vaughan TL, **Risch H**, Marks JR, Jirtle RL, Calingart B, Mayne S, Fraumeni J Jr, Gammon MD. IGF2R polymorphisms and risk of esophageal and gastric adenocarcinoma. *Int J Cancer* 2009;125:2673-8. PMID: PMC3008656.
- Concato J, Jain D, Uchio E, **Risch H**, Li WW, Wells CK. Molecular markers and death from prostate cancer. *Ann Intern Med* 2009;150:595-603. *Not a result of NIH funding.
- Bentov Y, Brown TJ, Akbari MR, Royer R, **Risch H**, Rosen B, McLaughlin J, Sun P, Zhang S, Narod SA, Casper RF. Polymorphic variation of genes in the fibrinolytic system and the risk of ovarian cancer. *PLoS ONE* 2009;4:e5918. PMID: PMC2691597.
- Figuroa JD, Terry MB, Gammon MD, Vaughan TL, **Risch HA**, Zhang F-F, Kleiner DE, Bennett WP, Howe CL, Dubrow R, Mayne ST, Fraumeni JF Jr, Chow W-H. Cigarette smoking, body mass index, gastro-esophageal reflux disease, and non-steroidal anti-inflammatory drug use and risk of subtypes of esophageal and gastric cancers by P53 overexpression. *Cancer Causes Control* 2009;20:361-8. PMID: PMC2726999.
- Hold GL, Rabkin CS, Gammon MD, Berry SH, Smith MG, Lissowska J, **Risch HA**, Chow W-H, Mowat NAG, Vaughan TL, El-Omar EM. CD14-159C/T and TLR9-1237T/C polymorphisms are not associated with gastric cancer risk in Caucasian populations. *Eur J Cancer Prev* 2009;18:117-9. PMID: PMC2679029.

Metcalf KA, Fan I, McLaughlin J, **Risch HA**, Rosen B, Murphy J, Bradley L, Armel S, Sun P, Narod SA. Uptake of clinical genetic testing for ovarian cancer in Ontario: a population-based study. *Gynecol Oncol* 2009;112:68-72. PMID: PMC3074978.

2008

Antoniou AC, Cunningham AP, Peto J, Evans DG, Lalloo F, Narod SA, **Risch HA**, Eyfjord JE, Hopper JL, Southey MC, Olsson H, Johannsson O, Borg A, Pasini B, Radice P, Manoukian S, Eccles DM, Tang N, Olah E, Anton-Culver H, Warner E, Lubinski J, Gronwald J, Gorski B, Tryggvadottir L, Syrjakoski K, Kallioniemi O-P, Eerola H, Nevanlinna H, Pharoah PDP, Easton DF. The BOADICEA model of genetic susceptibility to breast and ovarian cancers: updates and extensions. *Br J Cancer* 2008;98:1457-66. PMID: PMC2361716.

Navarro Silvera SA, Mayne ST, **Risch H**, Gammon MD, Vaughan TL, Chow W-H, Dubrow R, Schoenberg JB, Stanford JL, West AB, Rotterdam H, Blot WJ, Fraumeni JF Jr. Food group intake and risk of subtypes of esophageal and gastric cancer. *Int J Cancer* 2008;123:852-60. PMID: PMC3008621.

Vaninetti NM, Geldenhuys L, Porter GA, **Risch H**, Hainaut P, Guernsey DL, Casson AG. Inducible nitric oxide synthase, nitrotyrosine and p53 mutations in the molecular pathogenesis of Barrett's Esophagus and esophageal adenocarcinoma. *Mol Carcinog* 2008;47:275-85. *Not a result of NIH funding.

Pearce CL, Wu AH, Gayther SA, Bale AE, Australian Cancer Study (Ovarian Cancer) and Australian Ovarian Cancer Study Group, Beck PA, Beesley J, Chanock S, Cramer DW, DiCioccio R, Edwards R, Fredericksen ZS, Garcia-Closas M, Goode EL, Green AC, Hartmann LC, Hogdall E, Kruger Kjaer S, Lissowska J, McGuire V, Modugno F, Moysich K, Ness RB, Ramus SJ, **Risch HA**, Sellers TA, Song H, Stram DO, Terry KL, Webb PM, Whiteman DC, Whittemore AS, Zheng W, Pharoah PDP, Chenevix-Trench G, Pike MC, Schildkraut J, Berchuck A, on behalf of the Ovarian Cancer Association Consortium (OCAC). Progesterone receptor variation and risk of ovarian cancer is limited to the invasive endometrioid subtype: results from the ovarian cancer association consortium pooled analysis. *Br J Cancer* 2008;98:282-8. PMID: PMC2361465.

Collaborative Group on Epidemiological Studies of Ovarian Cancer. Beral V, Doll R, Hermon C, Peto R, Reeves G. Ovarian cancer and oral contraceptives: collaborative reanalysis of data from 45 epidemiological studies including 23257 women with ovarian cancer and 87303 controls. *Lancet* 2008;371:303-14. *Not a result of NIH funding.

Harley I, Rosen B, **Risch HA**, Siminovitch K, Beiner ME, McLaughlin J, Sun P, Narod SA. Ovarian cancer risk is associated with a common variant in the promoter sequence of the mismatch repair gene MLH1. *Gynecol Oncol* 2008;109:384-7. PMID: PMC3060029.

2007

Terry MB, Gammon MD, Zhang FF, Vaughan TL, Chow W-H, **Risch HA**, Schoenberg JB, Mayne ST, Stanford JL, West AB, Rotterdam H, Blot WJ, Fraumeni JF Jr, Santella RM. *Alcohol dehydrogenase 3* and risk of esophageal and gastric adenocarcinomas. *Cancer Causes Control* 2007;18:1039-46.

Concato J, Jain D, Li WW, **Risch HA**, Uchio EM, Wells CK. Molecular markers and mortality in prostate cancer. *BJU Intl* 2007;100:1259-63.

Hold GL, Rabkin CS, Chow W-H, Smith MG, Gammon MD, **Risch HA**, Vaughan TL, McColl KEL, Lissowska J, Zatonski W, Schoenberg JB, Blot WJ, Mowat NAG, Fraumeni JF Jr, El-Omar EM. A functional polymorphism of Toll-like receptor 4 gene increases risk of gastric carcinoma and its precursors. *Gastroenterology* 2007;132:905-12.

Wideroff L, Vaughan TL, Farin FM, Gammon MD, **Risch H**, Stanford JL, Chow W-H. GST, NAT1, CYP1A1 polymorphisms and risk of esophageal and gastric adenocarcinomas. *Cancer Detect Prev* 2007;31:233-6.

Brokaw J, Katsaros D, Wiley A, Lu L, Su D, Sochirca O, de la Longrais IAR, Mayne S, **Risch H**, Yu H. IGF-I in epithelial ovarian cancer and its role in disease progression. *Growth Factors* 2007;25:346-54.

McLaughlin JR, **Risch HA**, Lubinski J, Moller P, Ghadirian P, Lynch H, Karlan B, Fishman D, Rosen B, Neuhausen SL, Offit K, Kauff N, Domchek S, Tung N, Friedman E, Foulkes W, Sun P, Narod SA, Hereditary Ovarian Cancer Clinical Study Group. Reproductive risk factors for ovarian cancer in carriers of BRCA1 or BRCA2 mutations: a case-control study. *Lancet Oncol* 2007;8:26-34.

Koutros S, Holford TR, Hahn T, Lantos PM, McCarthy PL Jr, **Risch HA**, Swede H. Excess diagnosis of non-Hodgkin's lymphoma during spring in the USA. *Leuk Lymphoma* 2007;48:357-66.

2006

Risch HA, McLaughlin JR, Cole DEC, Rosen B, Bradley L, Fan I, Tang J, Li S, Zhang S, Shaw PA, Narod SA. Population BRCA1 and BRCA2 mutation frequencies and cancer penetrances: a kin-cohort study in Ontario, Canada. *J Natl Cancer Inst* 2006;98(23):1694-706.

Risch HA, Bale AE, Beck PA, Zheng W. *PGR +331A/G* and increased risk of epithelial ovarian cancer. *Cancer Epidemiol Biomarkers Prev* 2006;15:1738-41.

Lu L, Katsaros D, Wiley A, Rigault de la Longrais IA, **Risch HA**, Puopolo M, Yu H. The relationship of insulin-like growth factor-II, insulin-like growth factor binding protein-3, and estrogen receptor-alpha expression to disease progression in epithelial ovarian cancer. *Clin Cancer Res* 2006;12:1208-14.

Mayne ST, **Risch HA**, Dubrow R, Chow W-H, Gammon MD, Vaughan TL, Borchardt L, Schoenberg JB, Stanford JB, West AB, Rotterdam H, Blot WJ, Fraumeni JF Jr. Carbonated soft drink consumption and risk of esophageal adenocarcinoma. *J Natl Cancer Inst* 2006;98:72-5.

Beeghly A, Katsaros D, Chen H, Fracchioli S, Zhang Y, Massobrio M, **Risch H**, Jones B, Yu H. Glutathione S-transferase polymorphisms and ovarian cancer treatment and survival. *Gynecol Oncol* 2006;100:330-7.

2005

Trivers KF, De Roos AJ, Gammon MD, Vaughan TL, **Risch HA**, Olshan AF, Schoenberg JB, Mayne ST, Dubrow R, Stanford JL, Abrahamson P, Rotterdam H, West AB, Fraumeni JF Jr, Chow W-H. Demographic and lifestyle predictors of survival in patients with esophageal or gastric cancers. *Clin Gastroenterol Hepatol* 2005;3:225-30.

Antoniou AC, Pharoah PDP, Narod S, **Risch HA**, Eyfjord JE, Hopper JL, Olsson H, Johannsson O, Borg Å, Pasini B, Radice P, Manoukian S, Eccles DM, Tang N, Olah E, Anton-Culver H, Warner E, Lubinski J, Gronwald J, Gorski B, Tulinius H, Thorlacius S, Eerola H, Nevanlinna H, Syrjäkoski K, Kallioniemi O-P, Thompson D, Evans C, Peto J, Lalloo F, Evans DG, Easton DF. Breast and ovarian cancer risks to carriers of the BRCA1 5382insC and 185delAG and BRCA2 6174delT mutations: a combined analysis of 22 population based studies. *J Med Genet* 2005;42:602-3.

2004

Gammon MD, Terry MB, Arber N, Chow W-H, **Risch HA**, Vaughan TL, Schoenberg JB, Mayne ST, Stanford JL, Dubrow R, Rotterdam H, West AB, Fraumeni JF Jr, Weinstein IB, Hibshoosh, H. Nonsteroidal anti-inflammatory drug use associated with reduced incidence of adenocarcinomas of the esophagus and gastric cardia that overexpress Cyclin D1: a population-based study. *Cancer Epidemiol Biomarkers Prev* 2004;13:34-9.

2003

Engel LS, Chow W-H, Vaughan TL, Gammon MD, **Risch HA**, Stanford JL, Schoenberg JB, Mayne ST, Dubrow R, Rotterdam H, West AB, Blaser M, Blot WJ, Gail M, Fraumeni JF Jr. Population attributable risks of esophageal and gastric cancers. *J Natl Cancer Inst* 2003;95:1404-13.

Risch HA. Etiology of pancreatic cancer, with a hypothesis concerning the role of *N*-nitroso compounds and excess gastric acidity. *J Natl Cancer Inst* 2003;95(13):948-60.

Fung WLA, **Risch H**, McLaughlin J, Rosen B, Cole D, Vesprini D, Narod SA. The *N314D* polymorphism of *galactose-1-phosphate uridylyl transferase* does not modify the risk of ovarian cancer. *Cancer Epidemiol Biomarkers Prev* 2003;12:678-80.

Modugno F, Moslehi R, Ness RB, Nelson DB, Belle S, Kant JA, Wheeler JE, Wonderlick A, Fishman D, Karlan B, **Risch H**, Cramer DW, Dube M-P, Narod SA. Reproductive factors and ovarian cancer risk in Jewish *BRCA1* and *BRCA2* mutation carriers (United States). *Cancer Causes Control* 2003;14:439-46.

Modugno F, Ovarian Cancer and High-Risk Women Symposium Presenters. Ovarian cancer and high-risk women: Implications for prevention, screening, and early detection. *Gynecol Oncol* 2003;91:15-31.

El-Omar EM, Rabkin CS, Gammon MD, Vaughan TL, **Risch HA**, Schoenberg JB, Stanford JL, Mayne ST, Goedert J, Blot WJ, Fraumeni JF Jr, Chow W-H. Increased risk of noncardia gastric cancer associated with proinflammatory cytokine gene polymorphisms. *Gastroenterology* 2003;124:1193-201.

Antoniou A, Pharoah PDP, Narod S, **Risch HA**, Eyfjord JE, Hopper J, Loman N, Olsson H, Johannsson O, Borg Å, Pasini B, Radice P, Manoukian S, Eccles D, Tang N, Olah E, Anton-Culver H, Warner E, Lubinski J, Gronwald J, Gorski B, Tulinius H, Thorlacius S, Eerola H, Nevanlinna H, Syrjäkoski K, Kallioniemi O-P, Thompson D, Evans C, Peto J, Lalloo F, Evans DG, Easton DF. Average risks of breast and ovarian cancer associated with *BRCA1* or *BRCA2* mutations detected in case series unselected for family history: a combined analysis of 22 studies. *Am J Human Genet* 2003;72:1117-30.

2002

Shaw PA, McLaughlin JR, Zweemer RP, Narod SA, **Risch H**, Verheijen RHM, Ryan A, Menko FH, Kenemans P, Jacobs IJ. Histopathologic features of genetically determined ovarian cancer. *Int J Gynecol Pathol* 2002;21:407-11.

Engel LS, Vaughan TL, Gammon MD, Chow W-H, **Risch HA**, Dubrow R, Mayne ST, Rotterdam H, Schoenberg JB, Stanford JL, West AB, Blot WJ, Fraumeni JF Jr. Occupation and risk of esophageal and gastric cardia adenocarcinoma. *Am J Ind Med* 2002;42:11-22.

Ness RB, Cramer DW, Goodman MT, Kjaer SK, Mallin K, Mosgaard BJ, Purdie DM, **Risch HA**, Vergona R, Wu A. Infertility, fertility drugs and ovarian cancer: a pooled analysis of case-control studies. *Am J Epidemiol* 2002;155:217-24.

2001

Dhillon PK, Farrow DC, Vaughan TL, Chow W-H, **Risch HA**, Gammon MD, Mayne ST, Stanford JL, Schoenberg JB, Ahsan H, Dubrow R, West AB, Rotterdam H, Blot WJ, Fraumeni JF Jr. Family history of cancer and risk of esophageal and gastric cancers in the United States. *Int J Cancer* 2001;93:148-52.

Mayne ST, **Risch HA**, Dubrow R, Chow W-H, Gammon MD, Vaughan TL, Farrow DC, Schoenberg JB, Stanford JB, Ahsan H, West AB, Rotterdam H, Blot WJ, Fraumeni JF Jr. Nutrient intake and risk of subtypes of esophageal and gastric cancer. *Cancer Epidemiol Biomarkers Prev* 2001;10:1055-62.

Runnebaum IB, Wang-Gohrke S, Vesprini D, Kreienberg R, Lynch H, Moslehi R, Ghadirian P, Weber B, Godwin AK, **Risch H**, Garber G, Lerman C, Olipade OI, Foulkes WD, Karlan B, Warner E, Rosen B, Rebbeck T, Tonin P, Dubé M-P, Kieback DG, Narod SA. Progesterone receptor variant increases ovarian cancer risk in *BRCA1* and *BRCA2* mutation carriers who were never exposed to oral contraceptives. *Pharmacogenetics* 2001;11:1-4.

Risch HA, McLaughlin JR, Cole DEC, Rosen B, Bradley L, Kwan E, Jack E, Vesprini DJ, Kuperstein G, Abrahamson JLA, Fan I, Wong B, Narod SA. Prevalence and penetrance of germline *BRCA1* and *BRCA2* mutations in a population series of 649 women with ovarian cancer. *Am J Human Genet* 2001;68(3):700-10.

2000

Whiteman DC, Murphy MFG, Cook LS, Cramer DW, Hartge P, Marchbanks PA, Nasca PC, Ness RB, Purdie DM, **Risch HA**. Multiple births and risk of epithelial ovarian cancer. *J Natl Cancer Inst* 2000;92:1172-7.

Moslehi R, Chu W, Karlan B, Fishman D, **Risch H**, Fields A, Smotkin D, Ben-David Y, Rosenblatt J, Russo D, Schwartz P, Tung N, Warner E, Rosen B, Friedman J, Brunet J-S, Narod SA. *BRCA1* and *BRCA2* mutation analysis of 208 Ashkenazi Jewish women with ovarian cancer. *Am J Human Genet* 2000;66:1259-72.

Shin HR, Kim JY, Ohno T, Cao K, Mizokami M, **Risch H**, Kim SR. Prevalence and risk factors of hepatitis C virus infection among Koreans in a rural area of Korea. *Hepatology* 2000;17:185-96.

Eras JL, Saftlas AF, Triche E, Hsu C-D, **Risch HA**, Bracken MB. Abortion and its effect on risk of preeclampsia and transient hypertension. *Epidemiology* 2000;11:36-43.

Farrow DC, Vaughan TL, Sweeney C, Gammon MD, Chow W-H, **Risch HA**, Stanford JL, Hansten PD, Mayne ST, Schoenberg JB, Rotterdam H, Ahsan H,

West AB, Dubrow R, Fraumeni JF Jr, Blot WJ. Gastroesophageal reflux disease, use of H2 receptor antagonists, and risk of esophageal and gastric cancer. *Cancer Causes Control* 2000;11:231-8.

1999

Wang-Gohrke S, Weikel W, **Risch H**, Vesprini D, Abrahamson J, Lerman C, Godwin A, Moslehi R, Olipade O, Brunet J-S, Stickeler E, Kieback DG, Kreienberg R, Weber B, Narod SA, Runnebaum IB. Intron variants of the p53 gene are associated with increased risk for ovarian cancer but not in carriers of BRCA1 or BRCA2 germline mutations. *Br J Cancer* 1999;81:179-83.

Zweemer RP, Shaw PA, Verheijen RHM, Ryan A, Berchuk A, Ponder BAJ, **Risch H**, McLaughlin JR, Narod SA, Menko FH, Kenemans P, Jacobs IJ. Accumulation of p53 protein is frequent in ovarian cancers associated with BRCA1 and BRCA2 germline mutations. *J Clin Pathol* 1999;52:372-5.

1998

Risch HA. Hormonal etiology of epithelial ovarian cancer, with a hypothesis concerning the role of androgens and progesterone. *J Natl Cancer Inst* 1998;90(23):1774-86.

Narod SA, **Risch H**, Moslehi R, Dørum A, Neuhausen S, Olsson H, Provencher D, Radice P, Evans G, Bishop S, Brunet J-S, Ponder BAJ, Klijn JGM. Oral contraceptives and the risk of hereditary ovarian cancer. The Hereditary Ovarian Cancer Clinical Study Group. *N Engl J Med* 1998;339(7):424-8.

Vaughan TL, Farrow DC, Hansten PD, Chow W-H, Gammon MD, **Risch HA**, Stanford JL, Schoenberg JB, Mayne ST, Rotterdam H, Dubrow R, Ahsan H, West AB, Blot WJ, Fraumeni JF Jr. Risk of esophageal and gastric adenocarcinomas in relation to use of calcium channel blockers, asthma drugs, and other medications that promote gastroesophageal reflux. *Cancer Epidemiol Biomarkers Prev* 1998;7:749-56.

Chow W-H, Blaser MJ, Blot WJ, Gammon MD, Vaughan TL, **Risch HA**, Perez-Perez GI, Schoenberg JB, Stanford JL, Rotterdam H, West AB, Fraumeni JF Jr. An inverse relation between *cagA*⁺ strains of *Helicobacter pylori* infection and risk of esophageal and gastric cardia adenocarcinoma. *Cancer Res* 1998;58:588-90.

Farrow DC, Vaughan TL, Hansten PD, Stanford JL, **Risch HA**, Gammon MD, Chow W-H, Dubrow R, Ahsan H, Mayne ST, Schoenberg JB, West AB, Rotterdam H, Fraumeni JF Jr, Blot WJ. Use of aspirin and other non-steroidal anti-inflammatory drugs and risk of esophageal and gastric cancer. *Cancer Epidemiol Biomarkers Prev* 1998;7:97-102.

Chow WH, Blot WJ, Vaughan TL, **Risch HA**, Gammon MD, Stanford JL, Dubrow R, Schoenberg JB, Mayne ST, Farrow DC, Ahsan H, West AB, Rotterdam H, Niwa S, Fraumeni JF Jr. Body mass index and risk of adenocarcinomas of the esophagus and gastric cardia. *J Natl Cancer Inst* 1998;90:150-5.

1997

Gammon MD, Schoenberg JB, Ahsan H, **Risch HA**, Vaughan TL, Chow W-H, Rotterdam H, West AB, Dubrow R, Stanford JL, Mayne ST, Farrow DC, Niwa S, Blot WJ, Fraumeni JF Jr. Tobacco, alcohol, and socioeconomic status and adenocarcinomas of the esophagus and gastric cardia. *J Natl Cancer Inst* 1997;89:1277-84.

Chang S, **Risch HA**. Perineal talc exposure and risk of ovarian carcinoma. *Cancer* 1997;79:2396-401.

Yoo K-Y, Tajima K, Miura S, Takeuchi T, Hirose K, **Risch H**, Dubrow R. Breast cancer risk factors according to combined estrogen and progesterone receptor status: a case-control analysis. *Am J Epidemiol* 1997;146:307-14.

1996

Risch HA. Estrogen replacement therapy and risk of epithelial ovarian cancer. *Gynecol Oncol* 1996;63:254-7.

Risch HA, Marrett LD, Jain M, Howe GR. Differences in risk factors for epithelial ovarian cancer by histologic type: results of a case-control study. *Am J Epidemiol* 1996;144(4):363-72.

1995

Risch HA, Howe GR. Pelvic inflammatory disease and the risk of epithelial ovarian cancer. *Cancer Epidemiol Biomarkers Prev* 1995;4:447-51.

Risch HA, Howe GR. Menopausal hormone use and colorectal cancer in Saskatchewan: A record linkage cohort study. *Cancer Epidemiol Biomarkers Prev* 1995;4:21-8.

1994

Risch HA, Jain M, Marrett LD, Howe GR. Dietary fat intake and risk of epithelial ovarian cancer. *J Natl Cancer Inst* 1994;86:1409-15.

Risch HA, Marrett LD, Howe GR. Parity, contraception, infertility and the risk of epithelial ovarian cancer. *Am J Epidemiol* 1994;140(7):585-97.

Risch HA, Jain M, Marrett LD, Howe GR. Dietary lactose intake, lactose intolerance, and the risk of epithelial ovarian cancer in southern Ontario (Canada). *Cancer Causes Control* 1994;5:540-8.

Narod SA, Madlensky L, Bradley L, Cole D, Tonin P, Rosen B, **Risch HA**. Hereditary and familial ovarian cancer in Southern Ontario. *Cancer* 1994;74:2341-6.

Risch HA, Howe GR. Menopausal hormone usage and breast cancer in Saskatchewan: A record-linkage cohort study. *Am J Epidemiol* 1994;139:670-83.

1993

- Risch HA**, Howe GR, Jain MJ, Burch JD, Holowaty EJ, Miller AB. Are female smokers at higher risk for lung cancer than male smokers? A case-control analysis by histologic type. *Am J Epidemiol* 1993;138(5):281-93.
- Holowaty PH, Miller AB, Baines CJ, **Risch HA**. Canadian National Breast Screening Study: First screen results as predictors of future breast cancer risk. *Cancer Epidemiol Biomarkers Prev* 1993;2:11-9.
- Yoo K-Y, Tajima K, Miura S, Yoshida M, Murai H, Kuroishi T, Lee Y, **Risch HA**, Dubrow R. A hospital-based case-control study of breast-cancer risk factors by estrogen and progesterone receptor status. *Cancer Causes Control* 1993;4:39-44.

1991

- Holowaty EJ, **Risch HA**, Burch JD, Miller AB. Lung cancer in women in the Niagara region, Ontario: A case-control study. *Can J Publ Health* 1991;82:304-9.

1990

- Jain M, Burch JD, Howe GR, **Risch HA**, Miller AB. Dietary factors and risk of lung cancer: Results from a case-control study, Toronto, 1981-1985. *Int J Cancer* 1990;45:287-93.

1989

- Miller AB, Howe GR, Sherman GJ, Lindsay JP, Yaffe MJ, Dinner PJ, **Risch HA**, Preston DL. Mortality from breast cancer after irradiation during fluoroscopic examinations in patients being treated for tuberculosis. *N Engl J Med* 1989;321:1285-9.
- Burch JD, Rohan TE, Howe GR, **Risch HA**, Hill GB, Steele R, Miller, AB. Risk of bladder cancer by source and type of tobacco exposure: a case-control study. *Int J Cancer* 1989;44:622-8.
- Howe GR, Burch JD, Chiarelli AM, **Risch HA**, Choi BCK. An exploratory case-control study of brain tumors in children. *Cancer Res* 1989;49:4349-52.

1988

- Risch HA**, Burch JD, Miller AB, Hill GB, Steele R, Howe GR. Dietary factors and the incidence of cancer of the urinary bladder. *Am J Epidemiol* 1988;127(6):1179-91.
- Risch HA**, Burch JD, Miller AB, Hill GB, Steele R, Howe GR. Occupational factors and the incidence of cancer of the bladder in Canada. *Br J Ind Med* 1988;45(6):361-7.
- Narod SA, Neri L, **Risch HA**, Raman S. Lymphocyte micronuclei and sister-chromatid exchanges among Canadian federal laboratory employees. *Am J Ind Med* 1988;14:449-456.
- Risch HA**, Weiss NS, Clarke EA, Miller AB. Risk factors for spontaneous abortion and its recurrence. *Am J Epidemiol* 1988;128:420-30.

Robles SC, Marrett LD, Clarke EA, **Risch HA**. An application of capture-recapture methods to the estimation of completeness of cancer registration. *J Clin Epidemiol* 1988;41:495-501.

1987

Burch JD, Craib KJP, Choi BCK, Miller AB, **Risch HA**, Howe GR. An exploratory case-control study of brain tumors in adults. *J Natl Cancer Inst* 1987;78:601-9.

1986

Baines CJ, Wall C, **Risch HA**, Kuin JK, Fan IJ. Changes in breast self-examination behaviour in a cohort of 8214 women in the Canadian National Breast Screening Study. *Cancer* 1986;57:1209-16.

Scwabassi RJ, Kroin JS, Hinman CL, **Risch HA**. The effect of cortical ablation on afferent activity in the cat somatosensory system. *Electroenceph Clin Neurophysiol* 1986;64:31-40.

1985

Risch HA, Jain M, Choi NW, Fodor JG, Pfeiffer CJ, Howe GR, Harrison LW, Craib KJP, Miller AB. Dietary factors and the incidence of cancer of the stomach. *Am J Epidemiol* 1985;122:947-59.

Scwabassi RJ, Hinman CL, Kroin JS, **Risch HA**. A non-linear analysis of afferent modulatory activity in the cat somatosensory system. *Electroenceph Clin Neurophysiol* 1985;60:444-54.

1983

Risch HA, Weiss NS, Lyon JL, Daling JR, Liff JM. Events of reproductive life and the incidence of epithelial ovarian cancer. *Am J Epidemiol* 1983;117(2):128-39.

Risch HA. An approximate solution for the standard deterministic epidemic model. *Math Biosciences* 1983;63:1-8.

1979

Risch HA. The correlation between relatives under assortative mating for an X-linked and autosomal trait. *Ann Hum Genet* 1979;43:151-65.

1977

Scwabassi RJ, **Risch HA**, Hinman CL, Kroin JS, Enns NF, Namerow NS. Complex pattern evoked somatosensory responses in the study of multiple sclerosis. *Proc IEEE* 1977;65:626-33.

Chapters in Books:

- Holick CN, **Risch HA**. Smoking and Ovarian Cancer. In: *Tobacco: Science, Policy and Public Health, second edition*, Boyle P, Gray N, Henningfield J, Seffrin J, Zatonski W, eds. New York: Oxford University Press, pp. 503-11, 2010.
- Holick CN, **Risch HA**. Smoking and Ovarian Cancer. In: *Tobacco and Public Health: Science and Policy*, Boyle P, Gray N, Henningfield J, Seffrin J, Zatonski W, eds. New York: Oxford University Press, pp. 511-21, 2004.
- Risch HA**. Hormones and Epithelial Ovarian Cancer. In: *Proceedings of the Second International Symposium of the Portuguese Menopause Society*, Neves-e-Castro M, Wren BG, eds. London, UK: Parthenon Publishing Group, pp. 129-40, 2002.
- Risch HA**. Etiologic Mechanisms in Epithelial Ovarian Cancer. In: *Proceedings of the Third International Symposium on Hormonal Carcinogenesis*, Li JJ, Daling JR, Li SA, eds. New York: Springer Verlag, pp. 307-19, 2000.
- Howe GR, Burch JD, **Risch HA**. Artificial sweeteners, caloric intake and cancer: the epidemiologic evidence. In: *Sweeteners: Health Effects*, Williams G, ed. Princeton: Princeton Scientific Publishers, 1988.
- Choi NW, Miller AB, Fodor JG, Jain M, Howe GR, **Risch HA**, Ruder AM. Consumption of precursors of *N*-nitroso compounds and human gastric cancer. In: *The Relevance of N-Nitroso compounds to Human Cancer Exposures and Mechanisms*, Bartsch H, O'Neill I, Schulte-Hermann R, eds. Lyon: IARC Scientific Publications No. 84, 1987.

Editorials and Other Invited Papers:

- Risch HA**. Diabetes and pancreatic cancer: both cause and effect. *JNCI J Natl Cancer Inst* 2019;111(1):dgy093. doi: 10.1093/jnci/dgy093
- Risch HA**. Pancreatic cancer: *Helicobacter pylori* colonization, *N*-nitrosamine exposures, and ABO blood group. *Mol Carcinog* 2012;51(1):109-18.
- Risch HA**. It's time to accept that intake of dairy foods is not related to risk of ovarian cancer. *Nat Clin Pract Oncol* 2006;3:472-3.
- Risch H**. Involvement of dietary factors, *Helicobacter pylori*, and host inflammatory cytokine genetic polymorphisms in the etiology of pancreatic carcinoma. *Zhong Liu [Tumor]* 2003;23:445-7.
- Risch HA**. Postmenopausal estrogen-only, but not estrogen + progestin, was associated with an increased risk of ovarian cancer. *Evid-Based Obstet Gynecol* 2003;5:53-4.
- Risch HA**. Hormone replacement therapy and the risk of ovarian cancer. *Gyn Oncol* 2002; 86:115-7.

Other Papers:

- Connecticut Academy of Science and Engineering, Inc. (May 29, 2020). An Adaptive Risk-Based Strategy for Connecticut's Ongoing COVID-19 Response [White Paper]. Retrieved from <https://www.ctcase.org/reports/Adaptive%RiskBased%Approach.pdf>
- Risch HA.** Re: NSAID use and pancreatic cancer risk. *Gastroenterology* 2018;155:931 (letter).
- Risch HA.** Low-dose aspirin and pancreatic cancer risk—Reply. *Cancer Epidemiol Biomarkers Prev* 2017;26(7):1155-6 (letter).
- Risch HA.** Aspirin and pancreatic cancer—Response. *Cancer Epidemiol Biomarkers Prev* 2017;26(6):979 (letter).
- Risch HA, Yu H, Lu L, Kidd MS.** Risch et al. respond to “Clinical utility of prediction models for rare outcomes: The example of pancreatic cancer.” *Am J Epidemiol* 2015;182(1):39-40. (response to invited commentary).
- Risch HA, Berchuck A, Pharoah PDP** for the Ovarian Cancer Association Consortium. *KRAS* rs61764370 in epithelial ovarian cancer—Response. *Clin Cancer Res* 2011;17:6601 (letter).
- Bertuccio P, La Vecchia C, Silverman DT, Petersen GM, Bracci PM, Negri E, Li D, **Risch HA**, Olson SH, Gallinger S, Miller AB, Bueno-de-Mesquita HB, Talamini R, Polesel J, Ghadirian P, Baghurst PA, Zatonski W, Fontham E, Bamlet WR, Holly EA, Lucenteforte E, Hassan M, Yu H, Kurtz RC, Cotterchio M, Su J, Maisonneuve P, Duell EJ, Bosetti C, Boffetta P. Reply to: Are cohort data on smokeless tobacco use and pancreatic cancer confounded by alcohol use? *Ann Oncol* 2011;22:1931-2. (letter).
- Risch HA.** Cyclin E Overexpression Relates to Ovarian Cancer Histology but Not to Risk Factors. *Cancer Epidemiol Biomarkers Prev* 2008;17:1841 (letter).
- Zhang Y, Zhu Y, **Risch HA.** Changing incidence of thyroid cancer. *JAMA* 2006;296:1350 (letter).
- Mayne ST, **Risch HA**, Dubrow R, Chow W-H, Gammon MD, Vaughan TL, Fraumeni JF Jr. Re: “Carbonated Soft Drink Consumption and Risk of Esophageal Adenocarcinoma.” Response. *J Natl Cancer Inst* 2006;98:646-7 (letter).
- Risch HA**, Miller AB. Re: “Are Women More Susceptible to Lung Cancer?” *J Natl Cancer Inst* 2004;96(20):1560 (letter).
- Risch HA.** Re: “Etiology of pancreatic cancer, with a hypothesis concerning the role of *N*-nitroso compounds and excess gastric acidity.” Response. *J Natl Cancer Inst* 2004;96:75-6 (letter).
- Risch HA**, Narod SA. Re: “Cancer risks in BRCA1 carriers: Time for the next generation of studies.” *J Natl Cancer Inst* 2003;95:758 (letter). **Risch HA**, Narod SA. Re: “On the use of familial aggregation in population-based case probands for calculating penetrance.” *J Natl Cancer Inst* 2003;95:73-4 (letter).

- Risch HA**, Miller AB. Re: “Sex, smoking and cancer: a reappraisal.” *J Natl Cancer Inst* 2002;94:308 (letter).
- Narod SA, Sun P, **Risch HA**, for the Hereditary Ovarian Cancer Clinical Study Group. Ovarian cancer, oral contraceptives, and *BRCA* mutations. *N Engl J Med* 2001;345:1706-7 (letter).
- Whiteman DC, Murphy MFG, Cook LS, Cramer DW, Hartge P, Marchbanks PA, Nasca PC, Ness RB, Purdie DM, **Risch HA**. Re: “Multiple births and risk of epithelial ovarian cancer--Response.” *J Natl Cancer Inst* 2001;93:319-20 (letter).
- Risch HA**. Oral contraceptive use, anovulatory action and risk of epithelial ovarian cancer. *Epidemiology* 2000;11:614 (letter).
- Risch HA**. Re: “Hormonal etiology of epithelial ovarian cancer, with a hypothesis concerning the role of androgens and progesterone.” Response. *J Natl Cancer Inst* 1999;91:650-1 (letter).
- Risch HA**. Re: “Relationship between lifetime ovulatory cycles and overexpression of mutant p53 in epithelial ovarian cancer.” *J Natl Cancer Inst* 1997;89:1726-7 (letter).
- Risch HA**, Howe GR, Jain MJ, Burch JD, Holowaty EJ, Miller AB. Re: “Are female smokers at higher risk for lung cancer than male smokers? A case-control analysis by histologic type”—The authors reply. *Am J Epidemiol* 1994;140:187-8 (letter).
- Risch HA**, Howe GR, Jain MJ, Burch JD, Holowaty EJ, Miller AB. Lung cancer risk for female smokers. *Science* 1994;263(5151):1206-8 (letter).
- Risch HA**. Re: “Likelihood-based Confidence Limits.” *Ann Epidemiol* 1992;2:767-9 (letter).
- Risch HA**. Re: “A simple method to calculate the confidence interval of a standardized mortality ratio (SMR).” *Am J Epidemiol* 1991;133:212 (letter).
- Risch HA**. Re: “Risk factors for spontaneous abortion and its recurrence”—The first author replies. *Am J Epidemiol* 1990;131:571-3 (letter).
- Miller AB, **Risch HA**. Diet and lung cancer. *Chest--The Cardiopulmonary Journal* 1989 (Suppl);96:8s-9s.
- Risch HA**, Weiss NS, Daling JR, Lyon JL, Liff JM. Re: “Events of reproductive life and the incidence of epithelial ovarian cancer”—The authors reply. *Am J Epidemiol* 1989;129:862-3 (letter).
- Risch HA**, Tibshirani RJ. Likelihood-based conditional logistic regression methods for comparing different classes of controls under individual matching to a single case group. *Am J Epidemiol* 1988;128:446-8 (letter).
- Risch HA**. Book Review: Peter Taylor, *The Smoke Ring: Tobacco, Money and Multinational Politics*. *J Public Health Policy* 1985;6:137-139.
- Risch HA**. On approximate solutions for the general stochastic epidemic. Ph.D. dissertation, University of Chicago, 1980.

Risch HA. Functional power series analysis of somatosensory evoked potentials. M.D. dissertation, University of California at San Diego, 1976.

Published Abstracts:

Cartmel B, Hughes M, Zhou Y, Gottlieb L, Ercolano E, **Risch H**, Harrigan M, McCorkle R, Irwin M. Randomized trial of exercise on depressive symptoms in women diagnosed with ovarian cancer: The women's activity and lifestyle study in Connecticut (WALC). *Psychooncology* 2018;27(Suppl 1):97. doi:<http://dx.doi.org/10.1002/pon.4623>

Streicher SA, Klein AP, Olson SH, Kurtz RC, DeWan AT, Zhao H, **Risch HA.** A pooled genome-wide association study of pancreatic cancer susceptibility loci in American Jews. *Cancer Res* 2017;77(13 Suppl): Abstract 1326. doi:10.1158/1538-7445.AM2017-1326.

Rasmussen CB, Kjaer SK, Albieri V, Webb PM, **Risch HA**, Rossing MA, Goodman MT, Moysich KB, Schildkraut JM, Bandera EV, Massuger LFAG, Phelan C, Anton-Culver H, Pearce CL, Wu AH, Jensen A. Pelvic inflammatory disease and risk of invasive ovarian cancer and borderline ovarian tumors: A pooled analysis of 13 case-control studies. *Int J Gynecol Obstet* 2015;131(Suppl 5):e421.

Prastegaard C, Jensen A, Svane TS, **Risch HA**, Rossing MA, Chang-Claude J, Goodman MT, Moysich K, Matsuo K, Goode EL, Terry KL, Schildkraut JM, Massuger LFAG, Bandera EV, Wentzensen N, Whittemore A, Sutphen R, Anton-Culver H, Menon U, Gentry-Maharaj A, Wu A, Pearce CL, Webb PM, Kruger Kjaer S. The impact of cigarette smoking on ovarian cancer survival: A pooled analysis of 20 case control studies from the ovarian cancer association consortium. *Int J Gynecol Obstet* 2015;131(Suppl 5):e172.

Zhou Y, Gottlieb L, Cartmel B, Li F, Ercolano EA, Harrigan M, McCorkle R, Ligibel JA, Von Gruenigen VE, Gogoi R, Schwartz PE, **Risch HA**, Irwin ML. Randomized trial of exercise on quality of life and fatigue in women diagnosed with ovarian cancer: The Women's Activity and Lifestyle study in Connecticut (WALC). *J Clin Oncol* 2015;33(15 Suppl):9505.

Yang HP, Cook LS, Weiderpass E, Adami H-O, Anderson KE, Cai H, Cerhan JR, Clendenen T, Felix AS, Friedenreich C, Garcia-Closas M, Goodman MT, Liang X, Lissowska J, Lu L, Magliocco AM, McCann SE, Moysich KB, Olson SH, Pike MC, Polidoro S, Ricceri F, **Risch H**, Sacerdote C, Setiawan VW, Shu XO, Spurdle AB, Trabert B, Webb PM, Wentzensen N, Xiang Y-B, Xu Y, Yu H, Zeleniuch-Jacquotte A, Brinton LA. Infertility and risk of incident endometrial carcinoma: a pooled analysis from the Epidemiology of Endometrial Cancer Consortium. *Cancer Res* 2014;74(19 Suppl);2167.

Tang H, Duell EJ, **Risch HA**, Olson SH, Bueno-de-Mesquita HB, Gallinger S, Holly EA, Petersen GM, Bracci PM, McWilliams RR, Jenab M, Riboli E, Tjønneland A, Boutron-Ruault MC, Kaaks R, Trichopoulos D, Panico S, Sund M, Peeters PHM, Khaw K-T, Amos CI, Li D, Wei P. Genome-wide gene-diabetes and

- gene-obesity interaction scan in the pancreatic cancer case control consortium. *Cancer Res* 2014;74(19 Suppl);2214.
- Irwin M, Gottlieb L, Cartmel B, Ercolano E, Rothbard M, Zhou Y, Schwartz PE, Ligibel JA, Von Gruenigen VE, **Risch H**. Trial of exercise in ovarian cancer survivors. *J Clin Oncol* 2012;30(suppl; abstr TPS1614).
- Lu L, Katsaros D, **Risch H**, Yu H. Stem cell-associated gene Lin-28B genotype and phenotype in epithelial ovarian cancer and their associations with disease survival outcomes. *Cancer Res* 2012;72(8 Suppl);3655.
- Risch HA**. Why is pancreatic cancer less frequent in Asia than in the US, in spite of the higher prevalence of risk factors in Asia? Observations on the etiology of pancreatic cancer. *J Epidemiol* 2011;21(Suppl):43-6.
- Berchuck A, Pharoah P, Ramus S, Gayther S, Palmieri R, Pearce C, Couch F, Antonio A, Goode E, Schildkraut J, Chenevix-Trench G, Sellers T, **Risch H**, for the Consortium of Investigators of Modifiers of BRCA1/2 and the Ovarian Cancer Association Consortium. Association of KRAS SNP rs61764370 with risk of invasive epithelial ovarian cancer: Implications for clinical testing. *Gyn Oncol* 2011;121:S2-3.
- Tsai Y-Y, Chen YA, Chen Z, Permuth-Wey J, Iversen E, **Risch H**, Barnholtz-Sloan J, Cunningham JM, Vierkant RA, Fridley BL, Fenstermacher D, Sutphen R, Phelan CM, Narod SA, Schildkraut JM, Goode EL, Sellers TA. A novel region on 8q24.21 is associated with ovarian cancer susceptibility. *Cancer Res* 2011;70:4724. doi:10.1158/1538-7445.AM10-4724
- Permuth-Wey J, Tsai Y-Y, Chen YA, Chen Z, Lancaster JM, Iverson E, **Risch H**, Barnholtz-Sloan J, Cunningham JM, Vierkant RA, Fridley BL, Fenstermacher D, Sutphen R, Narod SA, Goode EL, Schildkraut JM, Sellers TA, Phelan CM. Mitochondrial genetic variants influence ovarian cancer risk. *Cancer Res* 2011;70:2835. doi:10.1158/1538-7445.AM10-2835
- Risch HA**. Gene, environment, and risk factor interaction in pancreatic cancer. *Cancer Prev Res* 2010;3(12 Suppl):ED02-03. doi:10.1158/1940-6207.PREV-10-ED02-03
- Ng MT, Rabkin CS, Lochhead P, Lissowska J, Vaughan TL, Gammon M, **Risch H**, Chow W-H, Hold GL, El-Omar E. Assessment of novel genetic polymorphisms and risk of upper gastrointestinal carcinoma. *Gastroenterology* 2010;138(5)(Suppl 1):S612.
- Neale R, Whiteman D, Young J, Fritschi L, Fawcete J, Webb P, **Risch H**. The Queensland Pancreatic Cancer Study--Identifying risk factors for pancreatic cancer. *Pancreas* 2008;36:223.
- Vaninetti N, Macdonald K, Geldenhuys L, **Risch H**, Porter G, Guernsey D, Casson AG. Nitric oxide in the molecular pathogenesis of Barrett Esophagus and esophageal adenocarcinoma. *Gastroenterology* 2007;132(Suppl 2):A635-6.
- Engel LS, Vaughan TL, Gammon MD, Chow WH, **Risch HA**, Dubrow R, Mayne ST, Rotterdam H, Schoenberg JB, Stanford JL, West AB, Blot WJ, Fraumeni JF.

- Occupation and risk of esophageal and gastric cardia adenocarcinoma. *Epidemiology* 2002;13:S163.
- Pharoah P, Antoniou A, **Risch H**, Narod S, Hopper J, Loman N, Olson H, Johansson O, Borg A, Pasini B, Radici P, Eccles D, Tang N, Olah E, Anton-Culver H, Eyfjord J, Evans DG, Evans C, Peto J, Easton D. Average risks of breast and ovarian cancer in women who carry a BRCA1 or BRCA2 mutation: a preliminary analysis of pooled family data from unselected case series. *Am J Human Genet* 2001;69 (Suppl 1):256.
- Ness RB, Cramer DW, Goodman M, Kjaer SK, Mosgaard B, Purdie DM, **Risch H**, Vergona R, Wu A. Infertility and ovarian cancer: A pooled analysis. *Am J Epidemiol* 2001;153:S111.
- McLaughlin J, Cole D, Narod S, Rosen B, **Risch H**. Reproductive and genetic risk factors for ovarian cancer. *Am J Epidemiol* 2001;153:S205.
- Lew EA, **Risch HA**, Chow WH, Gammon MD, Vaughan TL, Schoenberg JB, Stanford JL, West AB, Rotterdam H, Blot WJ, Blaser MJ, Fraumeni JF. Helicobacter pylori, gastroesophageal reflux, their interrelationships, and the risk of esophageal adenocarcinoma. *Gastroenterology* 2001;120(Suppl 1):A31.
- Lew EA, **Risch HA**, Chow WH, Gammon MD, Vaughan TL, Schoenberg JB, Stanford JL, Farrow D, West AB, Rotterdam H, Blot WJ, Fraumeni JF. Epidemiological study of risk factors for gastric carcinoids. *Gastroenterology* 2001;120(Suppl 1):A256.
- El-Omar EM, Chow WH, Gammon MD, Vaughan TL, **Risch HA**, Fraumeni JF Jr. Pro-inflammatory genotypes of IL-1 beta, TNF-alpha and IL-10 increase risk of distal gastric cancer but not of cardia or oesophageal adenocarcinomas. *Gastroenterology* 2001;120(Suppl 1):A86.
- Saftlas A, Wang W, **Risch H**, Woolson R, Hsu C, Bracken M. Prepregnancy body mass index and gestational weight gain as risk factors for preeclampsia and transient hypertension. *Ann Epidemiol* 2000;10:475.
- Chu W, McLaughlin J, Phelan C, Cole D, **Risch H**, Narod S. The HRAS1 minisatellite locus increases the risk of ovarian cancer in BRCA1 carriers, but not in BRCA2 carriers or sporadic ovarian cancer. *Am J Human Genet* 2000;67:(Suppl 2):82.
- Mayne ST, **Risch H**, Dubrow R, Chow W-H, Blot W, Gammon M, Vaughan T, Farrow DC, Schoenberg J, Stanford J, Ahsan H, Fraumeni JF Jr. Nutrient intake and risk of adenocarcinomas of the esophagus and gastric cardia. *FASEB J* 1999;13:A1021.
- Hibshoosh H, Gammon MD, Rotterdam H, West AB, Terry MB, Vaughan TL, **Risch HA**, Chow WH, Fraumeni J, Arber N. Cyclin D1 overexpression in esophageal and gastric carcinoma: Correlation with histopathology. *Lab Invest* 1999;79:76A. Shaw PA, Zweemer RP, McLaughlin J, Narod SA, **Risch H**, Jacobs IJ. Characteristics of genetically determined ovarian cancer. *Lab Invest* 1999;79:124A.

- Farrow DC, Vaughan TL, Sweeney C, Gammon MD, Chow W-H, **Risch HA**, Stanford JL, Hansten PD, Mayne ST, Schoenberg JB, Rotterdam H, Ahsan H, West AB, Dubrow R, Fraumeni JF Jr, Blot WJ. Gastroesophageal reflux disease, use of H₂ receptor antagonists, and risk of esophageal and gastric cancer. *Ann Epidemiol* 1998;8:456.
- Farrow DC, Vaughan TL, Hansten PD, Stanford JL, **Risch HA**, Gammon MD, Chow W-H, Dubrow R, Ahsan H, Mayne ST, Schoenberg JB, West AB, Rotterdam H, Fraumeni JF Jr, Blot WJ. Use of aspirin and other non-steroidal anti-inflammatory drugs and risk of esophageal and gastric cancer. *Ann Epidemiol* 1998;8:134.
- Chow WH, Blot WJ, Vaughan TL, **Risch HA**, Gammon MD, Farrow DC, Mayne ST, Schoenberg JB, Fraumeni JF Jr. Body mass index and risk of adenocarcinomas of the esophagus and gastric cardia. *Cancer Epidemiol Biomarkers Prev* 1998;7:175.
- Vaughan T, Farrow D, Chow W-H, Gammon M, **Risch H**, Hansten P, Schoenberg J, Mayne S, Fraumeni J Jr. Risk of esophageal and gastric adenocarcinoma and use of calcium antagonists and other medications that promote gastroesophageal reflux. *Cancer Epidemiol Biomarkers Prev* 1998;7:178.
- Chow WH, Blaser MJ, Blot WJ, Gammon MD, Vaughan TL, **Risch HA**, Pérez-Pérez GI, Fraumeni JF Jr. H. pylori and CagA status in relation to risk of adenocarcinomas of esophagus and stomach by anatomic subsite. *Gut* 1997;41(Suppl):A33-4.
- Abrahamson JLA, Vesprini DJ, Mclaughlin J, Cole D, Rosen B, Bradley L, Robb K, Jack E, Rehal P, Morris A, Patterson C, Fan I, Brunel JS, Narod SA, **Risch HA**. High proportion of germline BRCA1 and BRCA2 mutations in unselected ovarian cancer. *Am J Human Genet* 1997;61(Suppl):A59.
- Risch HA**. Estrogen replacement therapy and the risk of epithelial ovarian cancer. *Am J Epidemiol* 1996;143:S42.
- Risch HA**, Howe GR. Pelvic inflammatory disease and the risk of epithelial ovarian cancer. *Am J Epidemiol* 1995;141:S24.
- Risch HA**, Jain M, Marrett LD, Howe GR. Dietary fat intake and the risk of epithelial ovarian cancer. *Am J Epidemiol* 1994;139:S37.
- Klaus D, Dubrow R, **Risch H**, Troncale F. Risk of colorectal adenomas and use of nonsteroidal antiinflammatory drugs (NSAIDs) and acetaminophen (APAP). *Am J Epidemiol* 1994;139:S78.
- Risch HA**, Malcolm E, Howe GR. Cohort study of menopausal hormone usage and breast cancer in Saskatchewan. *Am J Epidemiol* 1993;138:610.
- Risch HA**, Howe GR, Jain MJ, Burch JD, Holowaty EJ, Miller AB. Are female smokers at higher risk for lung cancer than male smokers? A case-control analysis by histologic type. *Am J Epidemiol* 1992;136:1015.
- Risch HA**. A unified framework for meta-analysis by maximum likelihood. *Am J Epidemiol* 1988;128:906.

Risch HA. Measuring tumor induction period in case-control studies of chronic exposures. *Am J Epidemiol* 1986;124:499.

Research Grants Held:

- 2020-2025 AP Klein (Principal Investigator), G Petersen, D Li, **HA Risch**, P Bracci, S Gallinger, R Hung, M Meng, E Jacobs, J Manjer, M Sund, V Katzke, A Arslan, L Le Marchand, R Milne, R Stolzenberg-Solomon, C Kooperberg, S van den Eeden, J Genkinger, A Schwartz, J Brody, S Lynch, A Tjønneland, X-O Shu, L Amundadottir, K Visvanathan, B Wolpin. *Multi-Ancestry Mapping of Pancreatic Cancer Susceptibility Loci*. (National Cancer Institute, \$112,843 total direct costs to Yale subcontract over 60 months)
- 2018-2020 CY Jeon (Principal Investigator), S Freedland, S Kim, NY Kyeong, TK Nuckols, SJ Pandol, **HA Risch**, B Spiegel. *Predicting the Diagnosis of Pancreatic Cancer by Leveraging Big Data*. (National Cancer Institute, \$235,000 total direct costs over 24 months)
- 2018-2018 ML Irwin (Principal Investigator), L Lu, **H Risch**. *Impact of exercise and diet-induced weight loss on immunosuppression in breast cancer survivors*. (Cynthia Barnett Breast Cancer Foundation, \$25,000 total costs over 12 months)
- 2017-2018 **HA Risch** (Principal Investigator), L Lu. *Feasibility of circulating exosomal proteins in ovarian cancer diagnosis*. (Brozman Ovarian Cancer Foundation, \$25,000 total costs over 12 months)
- 2016-2021 AP Klein (Principal Investigator), P Bracci, S Cleary, S Gallinger, R Hung, D Li, R Neale, S Olson, G Petersen, **HA Risch**, G Scelo. *Validation and Fine-scale Mapping of Pancreatic Cancer Susceptibility Loci*. (National Cancer Institute, \$220,000 total direct costs to Yale subcontract over 60 months)
- 2013-2017 Y Guan, X Ma (Principal Investigators), D Zimmerman, P Diggle, T Holford, **H Risch**, L Mueller, Y Zhang. *New Statistical Methods to Handle Spatial Uncertainty in Cancer Risk Estimation*. (National Cancer Institute, \$1,100,000 total direct costs over 48 months)
- 2011-2016 R Kurman (Principal Investigator), H Berman, L Cope, T Diaz-Montes, M Gauthier, D Huso, D Levine, E Matloff, S Narod, V Parkash, **H Risch**, G Rosner, P Shaw, I-M Shih, R Soslow, R Vang, K Visvanathan, T-L Wang, et al. *Prevention of Ovarian High-Grade Serous Carcinoma by Elucidating Its Early Changes*. (Department of Defense USMRMC, \$9,166,162 total direct costs, of which \$199,000 total direct to Yale epidemiology subcontract, over 60 months).
- 2011-2015 AP Klein (Principal Investigator), P Bracci, P Brennan, E Duell, S Gallinger, D Li, R Neale, S Olson, G Petersen, **HA Risch**. *Validation and Fine-scale Mapping of Pancreatic Cancer Susceptibility Loci*.

- (National Cancer Institute, \$197,000 total direct costs to Yale subcontract over 48 months)
- 2011-2013 AP Klein, **HA Risch** (Co-Principal Investigators). *Validation and Fine-Scale Mapping of Pancreatic Cancer Susceptibility Loci*. (National Human Genome Research Institute, covers costs of large-scale high-throughput genotyping of collaborative multi-center pancreatic cancer study (see previous grant) at the Center for Inherited Disease Research (CIDR)).
- 2010-2016 H Yu (Principal Investigator), M Irwin, X Ma, S Mayne, **H Risch**, H Zhao, J Lim. *Epidemiologic Study of Hepatocellular Carcinoma in the US*. (National Cancer Institute, \$5,385,000 total direct costs over 60 months)
- 2010-2014 T Sellers (Principal Investigator), A Berchuck, G Bloom, M Clyde, D Fenstermacher, B Fridley, S Gayther, W Ge, E Goode, E Iversen, H-Y Lin, S Mears, A Monteiro, T Moorman, L Pearce, P Pharoah, C Phelan, **H Risch**, MA Rossing, J Schildkraut, G Trench, Y-Y Tsai. *Follow-up of Ovarian Cancer Genetic Association and Interaction Studies (FOCI)*. (National Cancer Institute, \$108,926 total direct costs to Yale subcontract 2012-2014)
- 2010-2013 CL Pearce (Principal Investigator), JA Doherty, S Gayther, VM McGuire, **H Risch**, MA Rossing, J Schildkraut, TA Sellers, W Sieh, D Stram, G Trench, P Webb, A Whittemore, A Wu. *Identifying Ovarian Cancer Susceptibility Alleles Using Genome-Wide Scan Data*. (National Cancer Institute, \$22,500 total direct costs to Yale subcontract)
- 2009-2014 M Irwin (Principal Investigator), J Dziura, R McCorkle, G Mor, **H Risch**, P Schwartz, H Yu. *Impact of Exercise on Ovarian Cancer Prognosis*. (National Cancer Institute, \$2,045,493 total direct costs over 59 months)
- 2009-2012 T Vaughan, D Whiteman (Principal Investigators), L Bernstein, D Corley, MD Gammon, L Hardie, N Hayward, G Liu, L Murray, O Nyrén, U Peters, B Reid, **HA Risch**, Y Romero, N Shaheen, D Stram, D Van Den Berg, B Weir, A Wu. *Barrett's and Esophageal Adenocarcinoma Consortium Genetic Susceptibility Study*. (National Cancer Institute, \$3,750,000 total direct costs over 36 months)
- 2009-2010 M Goodman (Principal Investigator), A Berchuck, J Chang-Claude, D Cramer, CM Garcia, E Goode, S Krueger Kjaer, R Ness, P Pharoah, **HA Risch**, M Rossing, R Sutphen, K Terry, G Trench, A Whittemore. *Collaborative Genetic Study of Ovarian Cancer Risk*. (National Cancer Institute, \$17,419 total direct costs over 12 months, to Yale subcontract)
- 2007-2014 **HA Risch** (Principal Investigator), Y-T Gao, MS Kidd, H Yu. *Case-Control Study of Pancreas Cancer in Shanghai, China*. (National Cancer Institute, \$1,858,377 total direct costs over 75 months)
- 2007-2012 P Salovey (Principal Investigator), M Irwin, ST Mayne, **HA Risch**. *Promoting Cancer Prevention/Control with Message Framing: III*.

- Extending Tailored Cancer Information Service-Delivered Messages Across the Cancer Continuum.* (National Cancer Institute: \$1,525,215 total direct costs over 58 months)
- 2007-2012 R Neale (Principal Investigator), D Whiteman, J Young, L Fritschi, J Fawcett, P Webb, **H Risch**. *Case-Control Study of Genetic and Environmental Risk Factors for Pancreatic Carcinoma.* (National Health and Medical Research Council (Australia): AU\$946,475 total nonacademic direct costs over 60 months)
- 2007-2011 T Sellers (Principal Investigator), D Ballinger, J Barnholtz-Sloan, ME Colter, Y Huang, E Iversen, J Lancaster, J McLaughlin, S Narod, VS Pankratz, **H Risch**, J Schildkraut, R Sutphen. *Haplotype-Based Genome Screen for Ovarian Cancer Loci.* (National Cancer Institute, \$5,726,016 total direct costs over 60 months)
- 2006-2007 R Neale (Principal Investigator), D Whiteman, L Fritschi, J Young, J Fawcett, P Webb, **H Risch**. *A Case-Control Study of the Environmental and Genetic Causes of Pancreatic Carcinoma.* (Queensland Cancer Fund: AU\$258,339 total nonacademic direct costs over 16 months)
- 2003-2012 **HA Risch** (Principal Investigator), FS Gorelick, D Jain, MS Kidd, ST Mayne, MD Topazian, H Yu. *Case-Control Study of Pancreas Cancer Etiologic Factors.* (National Cancer Institute: \$2,578,672 total direct costs over 80 months, in NCE)
- 2003-2010 H Yu (Principal Investigator), **HA Risch**, ST Mayne, M Irwin, B Cartmel. *Role of Genetic and Lifestyle Interplay in Uterus Cancer.* (National Cancer Institute: \$2,185,432 total direct costs over 60 months, in NCE)
- 2003-2006 SA Narod (Principal Investigator), B Rosen, JR McLaughlin, P Shaw, **HA Risch**. *The contribution of BRCA2 to ovarian cancer.* (National Cancer Institute of Canada: \$375,000 total nonacademic direct costs over 36 months)
- 2002-2005 H Yu (Principal Investigator), **HA Risch**. *DNA Methylation, Aging, and Prostate Cancer Risk.* (National Cancer Institute: \$600,000 total direct costs over 48 months)
- 2002-2006 JP Concato (Principal Investigator), W Li, P Peduzzi, **HA Risch**, D Jain. *Risk of Mortality in Prostate Cancer.* (USVA: \$424,000 total direct costs over 48 months)
- 2001-2007 P Salovey (Principal Investigator), **HA Risch**, ST Mayne, M Morra. *Promoting Cancer Prevention/Control with Message Framing. II.* (National Cancer Institute: \$1,324,481 total direct costs over 72 months)
- 1999-2005 **HA Risch** (Principal Investigator), AE Bale. *DNA Polymorphisms in Ovarian Cancer: Case-Control Study.* (National Cancer Institute: \$325,168 total direct costs over 58 months)

- 1998-2002 JP Concato (Principal Investigator), W Li, P Peduzzi, S Flynn, C Howe, **HA Risch**, D Esrig. *Risk of Mortality in Prostate Cancer*. (USVA: \$425,245 total direct costs over 48 months)
- 1997-2003 **HA Risch** (Principal Investigator), L DiPietro, AF Saftlas, A Duleba, ML Carcangiu. *Case-Control Study of Ovarian Cancer Hormonal Etiology*. (National Cancer Institute: \$1,445,806 total direct costs over 70 months)
- 1997-2000 SA Narod (Principal Investigator), **HA Risch**. *Risk-Factor Analysis of BRCA1 and BRCA2 Carriers*. (National Cancer Institute: \$1,228,000 total direct costs over 36 months)
- 1997-2001 P Salovey (Principal Investigator), **HA Risch**, M Morra. *Promoting Cancer Prevention/Control with Message Framing*. (National Cancer Institute: \$498,295 total direct costs over 48 months)
- 1996-1999 P Salovey (Principal Investigator), **HA Risch**, M Morra. *Message Framing, Persuasion, and Cancer Prevention/Detection*. (American Cancer Society: \$198,000 total direct costs over 24 months)
- 1994-2000 **HA Risch** (Principal Investigator), JR McLaughlin, SA Narod, NJ Risch, EJ Holowaty, BP Rosen, DEC Cole. *Genetic-Epidemiology Study of Epithelial Ovarian Tumors*. (National Cancer Institute: \$799,551 total direct costs over 69 months)
- 1994-1997 SA Narod (Principal Investigator), HT Lynch, **HA Risch**, DE Goldgar. *The Prevention of Hereditary Breast and Ovarian Cancer*. (National Cancer Institute: \$356,875 total direct costs over 34 months)
- 1992-1996 **HA Risch** (Principal Investigator), ST Mayne, R Dubrow, AB West. *Epidemiologic Study of Esophageal/Gastric Adenocarcinoma*. (National Cancer Institute: \$536,163 total direct costs over 43 months)
- 1991-1992 **HA Risch** (Principal Investigator). *Latency-Temporality Analysis in Case-Control Studies of Chronic Exposures*. (National Institutes of Health (BSRG): \$19,000 total direct costs over 12 months)
- 1990-1991 **HA Risch** (Principal Investigator), GR Howe, R West, LM Strand. *A Record-Linkage Cohort Study of Menopausal Hormone Usage and Endometrial Cancer in Saskatchewan*. (National Health Research and Development Program, Health and Welfare Canada: \$50,476 total nonacademic direct costs over 8 months)
- 1990-1994 JAJ Stolwijk (Principal Investigator), **HA Risch**, ST Mayne, R Dubrow, T Holford. *Cancer Prevention Research Unit for Connecticut at Yale*. (National Cancer Institute: \$3,865,000 total direct costs over 60 months)
- 1989-1993 **HA Risch** (Principal Investigator), LD Marrett, GR Howe, M Jain. *A Case-Control Study of Dietary Factors and Epithelial Ovarian Cancer*. (National Health Research and Development Program, Health and Welfare Canada: \$343,766 total nonacademic direct costs over 41 months)

1986-1990 GR Howe (Principal Investigator), **HA Risch**, M Jain, JD Burch, C Wall. *Research Project Support of the NCIC Epidemiology Unit*. (National Cancer Institute of Canada: total nonacademic direct costs \$228,093 in 1986-7; \$440,454 in 1987-8; \$205,617 in 1988-9, etc.)

Selected Scholarly Presentations and Workshops:

- 5/19 "Pancreatic Cancer and Diet." Pancreatic Cancer Case-Control Consortium (PanC4) Annual Meeting, Baltimore, MD.
- 3/19 "Reducing Mortality of What Will Be the #3 Cause of Cancer Death Two Years from Now." Virus and Other Infection-associated Cancers Research Seminar, Yale School of Medicine, New Haven, CT.
- 5/18 "New Concepts in Causation." Keynote speaker, Pancreatic Cancer Case-Control Consortium (PanC4) Annual Meeting, Baltimore, MD.
- 2/18 "Risk Factors for Pancreatic Cancer." Yale Pancreas Symposium 2018: Multidisciplinary Management of Pancreatic Cancer. New Haven, CT.
- 4/17 "Reducing Mortality of what will be the #2 Cause of Cancer Death Four Years from Now." Gastroenterologic Oncology Service, Yale Cancer Center, New Haven, CT.
- 3/17 "Genomewide Association Study of Pancreatic Cancer in American Jews." Pancreatic Cancer Case-Control Consortium (PanC4) Annual Meeting, Baltimore, MD.
- 3/17 "New Markers and Approaches in Predicting Risk of Pancreatic Cancer." Pancreatic Cancer Case-Control Consortium (PanC4) Annual Meeting, Baltimore, MD.
- 12/16 "Genomewide Association Study of Pancreatic Cancer in American Jews." Pancreatic Cancer Case-Control Consortium (PanC4) GWAS Study Annual Meeting, Bethesda, MD.
- 10/16 "Reducing Mortality of Pancreatic Cancer in the International Context." Inaugural Global Oncology Seminar Series speaker, Yale Cancer Center, New Haven, CT.
- 6/16 "Prevention of Pancreatic Cancer." Pancreatic Cancer Case-Control Consortium (PanC4) Annual Meeting, Milan, Italy.
- 1/16 "Reducing Mortality of what will be the #2 Cause of Cancer Death Five Years from Now." Department of Therapeutic Radiation, Yale School of Medicine, New Haven, CT.
- 10/15 "Reducing Mortality of what will be the #2 Cause of Cancer Death Five Years from Now." Division of Cancer Epidemiology and Genetics, National Cancer Institute, NIH, Rockville, MD.
- 3/15 "Absolute Risk Models for Pancreatic Cancer." Pancreatic Cancer Case-Control Consortium (PanC4) Annual Meeting, Baltimore, MD.

- 12/12 Keynote Speaker, “From Cancer Registration to Cancer Etiology to Cancer Prevention.” Cancer Registrars Association of New England Annual Meeting, Norwich, CT.
- 3/12 “Pancreatic Cancer Risk Models.” Pancreatic Cancer Case-Control Consortium (PanC4) Annual Meeting, Baltimore, MD.
- 3/12 Cancer Center Grand Rounds: “*Helicobacter pylori*, ABO Blood Group and the Etiology of Pancreatic Cancer in China and the US.” Yale University School of Medicine, New Haven, CT.
- 9/11 “Etiology of Pancreatic Cancer: Theory and Evidence.” Seminar, Division of Chronic Disease Epidemiology, Yale University School of Public Health, New Haven, CT.
- 3/11 “Genetic Effects and Modifiers of Radiotherapy and Chemotherapy on Survival in Pancreatic Cancer,” Pancreatic Cancer Case-Control Consortium (PanC4) Annual Meeting, New York, NY.
- 1/11 Keynote Speaker, “Why is Pancreatic Cancer Less Frequent in Asia than in the US, in Spite of the Higher Prevalence of Risk Factors in Asia? Observations on the Etiology of Pancreatic Cancer.” Japan Epidemiology Association National Meetings, Sapporo, Japan.
- 1/11 Department Seminar: “*BRCA1* and *BRCA2* Mutations: Population Frequencies and Associations with a Variety of Cancers.” Division of Epidemiology and Prevention, Aichi Cancer Center Research Institute, Nagoya, Japan.
- 1/11 Cancer Center Grand Rounds, “Why is Pancreatic Cancer Less Frequent in Asia than in the US, in Spite of the Higher Prevalence of Risk Factors in Asia? Observations on the Etiology of Pancreatic Cancer.” Japan National Cancer Center, Tokyo, Japan.
- 11/10 Educational Session Seminar, “Gene, environment, and risk-factor interaction in pancreatic cancer.” AACR Frontiers in Cancer Prevention Annual International Meeting, Philadelphia PA.
- 11/10 Workshop Presentation: “*KRAS* variation and risk of ovarian cancer.” Biennial meeting of the Ovarian Cancer Association Consortium (OCAC), Bethesda, MD.
- 5/10 Cancer Center Retreat Seminar, “ABO blood group, *Helicobacter pylori* colonization and pancreatic cancer.” Yale University School of Medicine, New Haven, CT.
- 3/10 “*Helicobacter pylori* colonization, ABO blood group and risk of pancreatic cancer,” Pancreatic Cancer Case-Control Consortium (PanC4) Annual Meeting, Bethesda, MD.
- 7/09 Epidemiology Grand Rounds: “Pancreas Cancer and *Helicobacter pylori* in the U.S. and China.” Department of Epidemiology, Shanghai Cancer Institute, Shanghai, China.

- 3/09 Cancer Center Grand Rounds: “Inconsistencies in Pancreas-Cancer Risk Factors and Disease Incidence Between the U.S. and China: Observations on the Etiology of Pancreas Cancer.” Yale University School of Medicine, New Haven, CT.
- 11/08 Workshop Participant, Defining the Public Health Research Agenda for Ovarian Cancer, Centers for Disease Control, Atlanta, GA.
- 7/08 Workshop Presentation: “*Helicobacter pylori* and pancreas cancer.” Biological and Clinical Risks and Potential Benefits of *Helicobacter pylori* Colonization, Division of Microbiology and Infectious Diseases, NIAID, NIH, Bethesda, MD.
- 1/08 Research Seminar: “Smoking and lung cancer in women—yet again.” Program in Cancer Prevention and Control, Yale Cancer Center, New Haven, CT.
- 11/07 Workshop Presentation: “*BRCA1* and *BRCA2* Mutations: Frequencies in the General Population of North America and Associations with Breast, Ovary, Stomach, Pancreas and Other Cancers.” Nanjing International Symposium of New Frontiers in Cancer Research and Advanced Training Workshop of Cancer Molecular Epidemiology, Nanjing Medical University, Nanjing, China.
- 10/07 Workshop Presentation: “Why have epidemiology data and outcomes of clinical trials not correlated?” Third Haifa Cancer Prevention Workshop. CHS National Cancer Control Center, Faculty of Medicine, Technion Israel Institute of Technology, Haifa, Israel.
- 6/07 Workshop: “Advanced Statistical Methods for Epidemiologic Studies”. Department of Community Medicine and Epidemiology, Technion Israel Institute of Technology Faculty of Medicine, Haifa, Israel.
- 3/07 Ruth and Bruce Rappaport Seminar: “Why Pancreas Cancer is Less Frequent in China than the US, in Spite of the Generally Higher Chinese Prevalence of Risk Factors: Insights on the Etiology of Pancreas Cancer.” Faculty of Medicine, Technion Israel Institute of Technology, Haifa, Israel.
- 2/07 Seminar: “Smoking and lung cancer in women—yet again.” Department of Community Medicine and Epidemiology, Technion Israel Institute of Technology Faculty of Medicine, Haifa, Israel.
- 1/07 Seminar: “Etiologic theories for epithelial ovarian cancer.” Department of Community Medicine and Epidemiology, Technion Israel Institute of Technology Faculty of Medicine, Haifa, Israel.
- 11/06 Seminar: “*BRCA1* and *BRCA2* Mutations: Frequencies in the General Population and Associations with Breast, Ovary, Stomach, Pancreas and Other Cancers.” New York University Cancer Center, New York, NY.
- 2/06 Cancer Center Grand Rounds: “*BRCA1* and *BRCA2* Mutations: Their Frequencies in the General Population and Their Associations with

- Breast, Ovary, Stomach, Pancreas and Other Cancers," Yale University School of Medicine, New Haven, CT.
- 11/05 Symposium: "Why Pancreas Cancer is Less Frequent in China than the US, in spite of the Generally Higher Chinese Prevalence of Risk Factors: Insights on the Etiology of Pancreas Cancer." Clinical Oncological Society of Australia annual scientific meeting, Brisbane, Australia (Sponsored by the Queensland Cancer Fund).
- 11/05 Symposium: "Risks and penetrances of germline *BRCA1* and *BRCA2* mutations for ovarian, breast, stomach, pancreas and other cancers: updated results from the Ontario (Canada) ovarian cancer kin-cohort study." Clinical Oncological Society of Australia annual scientific meeting, Brisbane, Australia (Sponsored by the Queensland Cancer Fund).
- 6/05 Seminar: "Why Pancreas Cancer is Less Frequent in China than the US, in spite of the Generally Higher Chinese Prevalence of Risk Factors: Insights on the Etiology of Pancreas Cancer." Tumor Registrars Association of Connecticut Quarterly Meeting, Yale-New Haven Hospital, New Haven, CT.
- 5/05 Seminar: "Why Pancreas Cancer is Less Frequent in China than the US, in spite of the Higher Prevalence of Risk Factors There: Insights on the Etiology of Pancreas Cancer." Sylvester Comprehensive Cancer Center, University of Miami, Miami, FL.
- 5/02 Symposium: "Genetic Epidemiology of Ovarian Cancer." Ovarian Cancer and High-Risk Women: Implications of Prevention, Screening and Early Detection. University of Pittsburgh, Pittsburgh, PA.
- 12/01 Seminar: "Prevalence and Penetrance of Germline *BRCA1* and *BRCA2* Mutations in Unselected Ovarian Cancer." Kaplan Cancer Center, NYU School of Medicine, New York, NY.
- 10/01 Research Seminar: "Prevalence and Penetrance of Germline *BRCA1* and *BRCA2* Mutations in Unselected Ovarian Cancer." Memorial Sloan Kettering Cancer Center, New York, NY.
- 6/01 Combined Monthly Research Seminar: "Prevalence and Penetrance of Germline *BRCA1* and *BRCA2* Mutations in Unselected Ovarian Cancer." Programs in Ovarian Cancer, Cancer Genetics and Cancer Prevention, Yale Cancer Center, New Haven, CT.
- 10/00 Departmental Seminar: "Etiology of Epithelial Ovarian Cancer." Department of Public Health Sciences, Fox Chase Cancer Center, Philadelphia, PA.
- 9/98 "Etiologic Mechanisms in Epithelial Ovarian Cancer," Third International Symposium on Hormonal Carcinogenesis, Seattle, WA.
- 5/98 Departmental Grand Rounds: "BRCA1 and BRCA2 Mutations in Unselected Ovarian Cancer," Department of Gynecologic Oncology, Yale University School of Medicine, New Haven, CT.

- 9/97 Departmental Seminar: "Etiologic Mechanisms in Epithelial Ovarian Cancer." Division of Epidemiology, Columbia University School of Public Health, New York, NY.
- 9/97 "Use of aspirin and other non-steroidal anti-inflammatory drugs and risk of esophageal and gastric cancer." American College of Epidemiology Annual Meetings, Cambridge, MA.
- 3/97 "Risk Factors for Familial and Hereditary Ovarian Cancer." American Cancer Society Science Writers Seminar, Reston, VA.
- 2/97 Departmental Grand Rounds: "Etiologic and Histologic Considerations in the Occurrence of Ovarian Cancer." Department of Pathology, Yale School of Medicine, New Haven, CT.
- 1/97 Departmental Seminar: "Ovarian Cancer Pathophysiology: Etiologic and Methodologic Issues." Department of Epidemiology, University of North Carolina School of Public Health, Chapel Hill, NC.
- 6/96 "Risk factors for BRCA1-associated ovarian cancer." NCI Extramural Genetic Epidemiology PIs Second Biennial Meetings, Frederick, MD.
- 6/96 "Estrogen replacement therapy and the risk of epithelial ovarian cancer." Society for Epidemiologic Research Annual Meetings, Boston, MA.
- 6/95 "Pelvic inflammatory disease and the risk of epithelial ovarian cancer." Society for Epidemiologic Research Annual Meetings, Snowbird, UT.
- 6/94 "Dietary fat intake and the risk of epithelial ovarian cancer." Society for Epidemiologic Research Annual Meetings, Miami, FL.
- 6/93 "A cohort study of menopausal hormone usage and breast cancer in Saskatchewan." Society for Epidemiologic Research Annual Meetings, Keystone, CO.
- 2/93 "A cohort study of menopausal hormone usage and breast cancer in the province of Saskatchewan, Canada." International Epidemiology Association Regional European Meeting, Jerusalem.
- 9/92 "A record-linkage cohort study of menopausal hormone usage and breast cancer in Saskatchewan." American College of Epidemiology Annual Meetings, Bethesda, MD.
- 9/92 "Record-linkage cohort study of menopausal hormone usage and breast cancer." Yale/Dana Farber Conference on Cancer Prevention and Control, Department of Epidemiology and Public Health, Yale University, New Haven, CT.
- 6/92 "Are female smokers at higher risk for lung cancer than male smokers? A case-control analysis by histologic type." Society for Epidemiologic Research Annual Meetings, Minneapolis, MN.
- 12/91 Departmental Seminar: "Some interesting results on lung cancer in women." Department of Epidemiology and Public Health, Yale University, New Haven, CT.

- 11/89 Departmental Seminar: "Occupational and dietary associations with bladder-cancer incidence." Department of Epidemiology and Public Health, Yale University, New Haven, CT.
- 8/89 "A demonstration of the GLIMP computer program for epidemiologic analysis." Canadian Epidemiology Research Conference Meetings, Ottawa.
- 4/89 "Nonlinear dose-response models with standard logistic regression." Upstate New York and Southern Ontario Epidemiology Group Meetings, Toronto.
- 6/88 "A unified framework for meta-analysis by maximum likelihood." Society for Epidemiologic Research Annual Meetings, Vancouver.
- 4/88 Departmental Seminar: "Occupational and dietary factors in the study of cancer of the bladder." Division of Epidemiology and Biostatistics, Graduate School of Public Health, San Diego State University, San Diego, CA.
- 3/88 Seminar: "Diet and occupation in the causation of bladder cancer." School of Public Health, New York State Department of Health, SUNY, Albany, NY.
- 12/87 Departmental Seminar: "Dietary and occupation factors in a case-control study of bladder cancer." Department of Epidemiology, Harvard School of Public Health, Boston, MA.
- 12/87 Departmental Seminar: "Risk factors for spontaneous abortion and its recurrence, and habitual abortion." Department of Medical Genetics, Hospital for Sick Children, Toronto.
- 11/87 Departmental Seminar: "Occupational and dietary factors in the causation of bladder cancer." Department of Social and Preventive Medicine, SUNY School of Medicine, Buffalo, NY.
- 11/87 Departmental Seminar: "Dietary and occupational factors in the study of bladder cancer." Department of Epidemiology and Biostatistics, University of Western Ontario, London.
- 9/87 Departmental Seminar: "Dietary and occupational factors in a case-control study of bladder cancer." Department of Epidemiology and Community Medicine, University of Ottawa.
- 11/86 Departmental Seminar: "Application of linear structural hypotheses in observational epidemiologic studies." Department of Environmental and Occupational Medicine, Mount Sinai School of Medicine, New York, NY.
- 9/86 Departmental Seminar: "Application of linear structural equations in observational epidemiologic studies." Department of Epidemiology and Public Health, Yale University, New Haven, CT.

- 6/86 "Measuring tumor induction period in case-control studies of chronic exposures." Society for Epidemiologic Research Annual Meetings, Pittsburgh, PA.
- 8/84 "Nitrate and ascorbate in a study of gastric cancer." International Epidemiology Association Meetings, Vancouver.
- 5/84 "An improved method for obtaining confidence intervals of the odds ratio in logistic regression." Epidemiologic Methods Workshop, Upstate New York and Southern Ontario Epidemiology Group Meetings, Toronto.

Item #5

Biosketch5Risch 2020-7

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Risch, Harvey A.

eRA COMMONS USER NAME (credential, e.g., agency login): hrisch

POSITION TITLE: Professor of Epidemiology

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
California Institute of Technology, Pasadena, CA	B.S.	06/1972	Mathematics, Biology
UCSD School of Medicine, La Jolla, CA	M.D.	06/1976	Medicine
University of Chicago, Chicago, IL	Ph.D.	06/1980	Biomathematics
University of Washington, Seattle, WA	Postdoctoral	12/1982	Epidemiology

A. Personal Statement

Harvey A. Risch, MD, PhD, Professor of Epidemiology at the Yale School of Public Health, Yale School of Medicine and the Yale Cancer Center; Director of the Molecular Cancer Epidemiology Laboratory and Shared Resource of the Yale Cancer Center and Yale School of Public Health. I am a medically trained epidemiologist with graduate training in biomathematics and postgraduate training in epidemiology and prevention. I have worked extensively as an investigator in the field of cancer epidemiology for more than 30 years. I have served on numerous national and international committees and review panels, as well as on various editorial boards, currently including the *Journal of the National Cancer Institute*, the *American Journal of Epidemiology*, and the *International Journal of Cancer*. Over my academic career, I have been PhD advisor to five students; PhD dissertation committee member for 11; MPH/MSc advisor for 39; Postdoctoral Fellow advisor for 16 fellows, and host to four visiting professors. My long-term research interests include dietary, hormonal, molecular and genetic factors and the etiology and prevention of neoplasms of various sites, particularly of the pancreas, and particularly involving *Helicobacter pylori*. I have been principal investigator of more than a half dozen large field studies of cancer. These projects include case-control studies of gastric cancer in Ontario, Canada; two of dietary and reproductive factors and ovarian cancer and one of *BRCA1* and *BRCA2* mutations in Ontario; and case-control studies in Connecticut of esophageal and gastric cancer and ovarian cancer. More recently, I have been principal investigator of two large population-based case-control studies of pancreatic cancer, one in the state of Connecticut and a second in Shanghai, China. I am also a co-investigator of a large population-based case-control study of pancreatic cancer in Queensland, Australia. I have also been the Yale Connecticut subcontract PI for the Connecticut-NJ Liver Cancer Study.

I am a founding member and steering committee member of the Pancreas Cancer Case-Control (PanC4) Consortium, have participated extensively in the PanScan (Pancreas Cancer Genome-wide Association Studies) Consortium and in four other international cancer research consortia. In my career to-date, I have received more than \$13 million in research funding. According to Google Scholar (<https://scholar.google.com/citations?user=E1US9ucAAAAJ&hl=en&oi=ao>), I have an h-index of **88** and more than 36,400 research citations to-date.

B. Positions and Honors

9/79-8/80	Fellow, Department of Pathology, University of Chicago, Chicago, IL.
9/80-12/82	Postdoctoral Fellow, Department of Epidemiology, School of Public Health and Community Medicine, University of Washington, Seattle, WA.
1/83-12/90	Epidemiologist-Biostatistician, National Cancer Institute of Canada, Toronto, Ontario.
1/83-6/90	Assistant Professor, Dept. of Preventive Medicine and Biostatistics, University of Toronto, Toronto, Ontario (Concurrent Appointment).
7/90-12/90	Associate Professor, Dept. of Preventive Medicine and Biostatistics, University of Toronto, Toronto, Ontario (Concurrent Appointment).
1/91-6/01	Associate Professor, Department of Epidemiology and Public Health, Yale University School of Medicine, New Haven, CT.
9/06-8/07	Lady Davis Visiting Professor, Department of Community Medicine and Epidemiology, Faculty of Medicine, Technion Israel Institute of Technology, Haifa, Israel
7/01-Present	Professor, Department of Chronic Disease Epidemiology, Yale School of Public Health.
1/12-Present	Director, Molecular Cancer Epidemiology Laboratory and Shared Resource, Yale Cancer Center and Yale School of Public Health
1982-Present	Member, Society for Epidemiologic Research
1984-Present	American Society of Preventive Oncology
1991-Present	Fellow, American College of Epidemiology (Member 1984-1990)
1987-1991	Health and Welfare Canada, National Health Research and Development Program Grant Review Panels 53, 58: Epidemiology, Occupational Health and Chronic Disease
1995	NIH External Site Reviewer
1997-2002	US Army MRMC Ovarian Cancer Research Program Advisory/Review Integration Panel
1997; 2000	NIH Study Section Member: Epidemiology (EDC2)
1998	American Cancer Society Extramural Grant Reviewer
1998, 2001-3	NIH Study Section Member: Special Emphasis (ZRG4/1)
2000-2002	Study Section Chair: National Cancer Institute of Canada Epidemiology Panel
2000, 01, 08	Dutch Cancer Society Extramural Research Grant Reviewer

- 2002-2003 NIH Study Section Member: Pancreas SPORE (ZCA1)
- 2003 NIH Study Section Member: Small Grants in Epidemiology (ZCA1)
- 2004 Cancer Council Australia Extramural Research Grant Reviewer
- 2004, 2006 NIH Study Section Member: Cancer Genetics (CG)
- 2005 NIH Study Section Member: Cancer Epidemiology, Prevention and Control (NCI-E X1)
- 2006-2008 Pancreatic Cancer Action Network-AACR Career Development Awards Scientific Review Cmte
- 2007 NIH Study Section Member: Gene-Environment Interactions (ZHL1 CSR-D S1 R)
- 2009, 2010 NIH Study Section Member: Epidemiology of Cancer Member Conflicts (ZRG1 HOP-Q, PSE-B)
- 2011 NIH Study Section Member: Barrett's Esophagus Translational Res. Network (ZCA1 SRLB-1)
- 2013-2015 NIH Study Section Member: Cancer Epidemiology Cohorts (ZCA1 SRLB-9 M2 B, TCRB-9 J2 R)
- 2013 NIH Study Section Member: Cancer Management and Epidemiology (ZCA1 SRLB-B (J1) S)
- 2016 NIH Study Section Member: Population Science (U01) (ZCA1 RTRB-Z M1 R)
- 2019 Medical Research Council UK External Reviewer
- 1997-2014 Associate Editor and Editor *pro tem*: *American Journal of Epidemiology*
- 2014-Present Member, Board of Editors: *American Journal of Epidemiology*
- 2000-Present Associate Editor: *Journal of the National Cancer Institute*
- 2008-Present Editor: *International Journal of Cancer*
- 2018 “Best of the AACR Journals” for “Aspirin Use and Reduced Risk of Pancreatic Cancer,” one of the most highly cited Cancer Epidemiology, Biomarkers & Prevention (CEBP) articles published in 2016 (April 2018) (<http://aacrjournals.org/h-a-risch-bio>)
- 2018 The Ruth Leff Siegel Award for Excellence in Pancreatic Cancer Research (2018), \$50,000 (<http://columbiasurgery.org/pancreas/ruth-leff-siegel-award>)
- 2019 Member, [Connecticut Academy of Science and Engineering](#)
- 2020 Highest attention-scoring paper ever published in the American Journal of Epidemiology (<https://oxfordjournals.altmetric.com/details/82900954>)

C. Contributions to Science (from more than 325 peer-reviewed scientific research publications to-date)

1. Etiology of Ovarian Cancer. Despite dozens of studies showing reduced risk of ovarian cancer with increasing parity and with increasing duration of oral contraceptive use, how these factors are involved in the etiologic process has remained obscure. Over the last three decades, two main theories have competed for scientific attention: the “incessant ovulation hypothesis,” and the “gonadotropin stimulation hypothesis.” Evidence bearing upon these theories does not distinguish them well. During my postdoctoral fellowship at the University of Washington, I worked on an ovarian cancer case-control study led by Dr. Noel Weiss. I developed a statistical approach that showed that the magnitudes of effects for age, parity, use of oral contraception and other factors contributing to duration of ovulation were substantially

inconsistent, and thus that these factors had to exert at least some of their effects on risk in a manner different from any effect on ovulation:

- a. **Risch HA**, Weiss NS, Lyon JL, Daling JR, Liff JM. Events of reproductive life and the incidence of epithelial ovarian cancer. *Am J Epidemiol* 1983;117:128-39.

In addition, whether the lower parity among women with ovarian cancer was a result of underlying conditions, or due to behavioral choices for having smaller families was unknown. These relations bear on the causal direction of the association between parity and ovarian cancer risk. In a case-control study of ovarian cancer that I carried out as PI in Ontario, Canada, 1989-1992, among other aspects, I examined episodes of unsuccessful pregnancy attempts, and found that for nulliparous women, later age at onset of the first unsuccessful attempt was significantly associated with risk ($p=.0016$); cases reported such infertility about 4.7 years later than controls. Over ages 15-45 years, more than 80% of the subjects were not prevented by infertility or hysterectomy from becoming pregnant. Thus, the relatively lower parity of cases compared to controls is likely due to voluntary choices for having fewer children:

- b. **Risch HA**, Marrett LD, Howe GR. Parity, contraception, infertility and the risk of epithelial ovarian cancer. *Am J Epidemiol* 1994;140:585-97.

Through the mid-1990s, epithelial ovarian cancer was considered largely one etiologic disease, with some different characteristics for endometrioid tumors. In evaluating data from my study and others, I realized that mucinous tumors also had substantially different etiologic characteristics. This work opened the field to recognizing that the main types of epithelial ovarian cancer have distinguishing etiologies:

- c. **Risch HA**, Marrett LD, Jain M, Howe GR. Differences in risk factors for epithelial ovarian cancer by histologic type: results of a case-control study. *Am J Epidemiol* 1996;144:363-72.

Finally, in considering my studies in the context of the literature on the etiology of ovarian cancer, I realized that appreciable evidence implicated the hormones progesterone and androgens in the etiology (decreasing and increasing risk, respectively). I proposed this theory in a review paper, and subsequent work by many individuals on this topic continues to-date:

- d. **Risch HA**. Hormonal etiology of epithelial ovarian cancer, with a hypothesis concerning the role of androgens and progesterone. *J Natl Cancer Inst* 1998;90:1774-86.

2. *BRCA1* and *BRCA2* Mutations and Cancer. In the mid-1990s, it became apparent that high penetrance mutations were contributing to substantial fractions of familial ovarian cancer. Just before *BRCA1* and *BRCA2* were identified, as PI I carried out during 1994-2000 a population-based case-control study of high penetrance mutations in ovarian cancer, in Ontario, Canada. After the study began, the genes were identified and we used sequencing and related methods to identify mutations. This work was conducted with Dr. Steven Narod, who became PI of the study renewal after 2000. I developed statistical methods to estimate lifetime penetrance of the mutations for ovarian and other cancers, to estimate population prevalence of the mutations, and to examine differences in risk and penetrance according to locations of the mutations in the genes. This work has been a standard of reference for knowledge about *BRCA1/2* mutations in ovarian and other cancers:

- a. Narod SA, **Risch H**, Moslehi R, Dørum A, Neuhausen S, Olsson H, Provencher D, Radice P, Evans G, Bishop S, Brunet J-S, Ponder BAJ, Klijn JGM. Oral

contraceptives and the risk of hereditary ovarian cancer. The Hereditary Ovarian Cancer Clinical Study Group. *N Engl J Med* 1998;339:424-8.

- b. **Risch HA**, McLaughlin JR, Cole DEC, Rosen B, Bradley L, Kwan E, Jack E, Vesprini DJ, Kuperstein G, Abrahamson JLA, Fan I, Wong B, Narod SA. Prevalence and penetrance of germline *BRCA1* and *BRCA2* mutations in a population series of 649 women with ovarian cancer. *Am J Human Genet* 2001;68:700-10.
- c. **Risch HA**, McLaughlin JR, Cole DEC, Rosen B, Bradley L, Fan I, Tang J, Li S, Zhang S, Shaw PA, Narod SA. Population *BRCA1* and *BRCA2* mutation frequencies and cancer penetrances: a kin-cohort study in Ontario, Canada. *J Natl Cancer Inst* 2006;98:1694-706.

Paper 2.c was among the first population-based studies to demonstrate a significant association of *BRCA2* mutations in pancreatic cancer, and helped to establish that *BRCA1* and *BRCA2* mutations (not just mutations in the gene regions) are involved in cancers other than breast and ovary.

3. Lung Cancer in Women. In the 1980s, it had become apparent that incidence rates of lung cancer in women in North America were rising dramatically. From a population-based case-control study of lung cancer in men and women in Ontario, Canada, led by Dr. Anthony Miller, I analyzed cigarette smoking differences and showed that at every level of smoking, female smokers had significantly greater risks than male smokers, and concluded that females had, dose-for-dose, greater susceptibility to cigarette smoking than males:

- a. **Risch HA**, Howe GR, Jain MJ, Burch JD, Holowaty EJ, Miller AB. Are female smokers at higher risk for lung cancer than male smokers? A case-control analysis by histologic type. *Am J Epidemiol* 1993;138:281-93.

This paper received substantial attention, as well as some criticism that absolute risks are not assessable in case-control studies. A few subsequent cohort analyses claimed to show no smoking-adjusted risk differences between males and females. I pointed out that ten cohort studies by that time had shown baseline lung-cancer risks for women at 75% of male risks, thus the huge smoking risks for women did indeed reflect higher absolute risks. Further, I showed that the cohort analyses had used erroneous statistical hypotheses, the correct one examining dose-response separately for males and females (i.e., interaction between sex and smoking dose):

- b. **Risch HA**, Howe GR, Jain MJ, Burch JD, Holowaty EJ, Miller AB. Lung cancer risk for female smokers. *Science* 1994;263:1206-8.
- c. **Risch HA**, Miller AB. Re: "Are Women More Susceptible to Lung Cancer?" *J Natl Cancer Inst* 2004;96:1560.

4. Etiology of Pancreatic Cancer. In 2001, a second report was published showing an association between colonization by *Helicobacter pylori* and risk of pancreatic cancer. After determining that *H. pylori* does not colonize the human pancreas, in reviewing the pathophysiology of the organism, I theorized that it was the bacterial effects on gastric acidity, risk up or down according to organism CagA negative or positive strain type, respectively, that modulates pancreatic cancer risk. This hypothesis has received a lot of scientific attention:

- a. **Risch HA**. Etiology of pancreatic cancer, with a hypothesis concerning the role of *N*-nitroso compounds and excess gastric acidity. *J Natl Cancer Inst* 2003;95(13):948-60.

I subsequently carried out two population-based case-control studies, one in Connecticut, where CagA positive and negative strains are both common, and a second in Shanghai, China, where CagA-positive strains predominate. These studies both showed that CagA-negative colonization is associated with increased risk, and CagA-positive colonization with decreased risk:

- b. **Risch HA**, Yu H, Lu L, Kidd MS. ABO blood group, *Helicobacter pylori* seropositivity, and risk of pancreatic cancer: a case-control study. *J Natl Cancer Inst* 2010;102(7):502-5. PMID: PMC2902822.
- c. **Risch HA**, Lu L, Kidd MS, Wang J, Zhang W, Ni Q, Gao Y-T, Yu H. *Helicobacter pylori* seropositivities and risk of pancreatic carcinoma. *Cancer Epidemiol Biomarkers Prev* 2014;23(1):172-8. PMID: PMC394715.

Meta-analysis suggests that this etiologic distinction by strain type may be real, and it has been moderately confirmed in studies in Poland and Australia, though other earlier studies are unclear. This theory needs to be resolved, as it has substantial bearing on possible prevention of pancreatic cancer. Finally, I have recently developed statistical models to show that the known risk factors, when accompanied by objective prodrome signs and symptoms of the disease, can be used to predict the diagnosis of pancreatic cancer over the subsequent 2-3 years:

- d. **Risch HA**, Yu H, Lu L, Kidd MS. Detectable symptomatology preceding the diagnosis of pancreatic cancer and absolute risk of pancreatic cancer diagnosis. *Am J Epidemiol* 2015;182(1):26-34. PMID: PMC Journal in Process.

My PhD dissertation in biomathematics involved development of quantitative stochastic differential equation models of infectious epidemic processes and advanced statistical analysis of data in these models. I completed substantial graduate coursework in measure-theoretic advanced probability theory and statistics in the department of statistics at the University of Chicago, under Patrick Billingsley, Ron Thisted and Paul Meier. This preparation, along with extensive undergraduate work in mathematics, computer programming and computation, made me highly suited for the development of the absolute-risk statistical models in the above work.

5. Genome-wide Association Studies of Ovarian, Endometrial, Esophageal and Pancreatic Cancer. I have been an active participant in the OCAC, iCOGS, E2C2, BEAGESS and PanScan consortial genome-wide association (GWAS) studies. I am also a co-investigator of the Johns Hopkins Pancreatic Cancer GWAS Study, led by Dr. Alison Klein, and Co-PI with her of the CIDR application that funded GWAS genotyping in that study. As part of my biomathematics PhD curriculum, I took coursework in human genetics, statistical genetics and theoretical population genetics. My involvements in the GWAS consortia, while not comprising leadership roles, have provided me with continuing and extensive experience with all of the methodologies employed to carry out and interpret GWAS studies of cancer. Data from my case-control studies have been included in all of these consortial analyses, and I have contributed substantial points of interpretation and discussion to the published manuscripts. To-date, I am a co-author on more than three dozen cancer GWAS publications, of which the following three serve as a representative sample among eight in pancreas cancer:

- a. Petersen GM, Amundadottir L, Fuchs CS, Kraft P, Stolzenberg-Solomon RZ, Jacobs KB, Arslan AA, Bueno-de-Mesquita HB, Gallinger S, Gross M, Helzlsouer K, Holly EA, Jacobs EJ, Klein AP, LaCroix A, Li D, Mandelson MT, Olson SH, **Risch HA**, Zheng W, Albanes D, Bamlet WR, Berg CD, Boutron-

Ruault M-C, Buring JE, Bracci PM, Canzian F, Clipp S, Cotterchio M, de Andrade M, Duell EJ, Gaziano JM, Giovannucci EL, Goggins M, Hallmans G, Hankinson SE, Hassan M, Howard B, Hunter DJ, Hutchinson A, Jenab M, Kaaks R, Kooperberg C, Krogh V, Kurtz RC, Lynch SM, McWilliams RR, Mendelsohn JB, Michaud DS, Parikh H, Patel AV, Peeters PHM, Rajkovic A, Riboli E, Rodriguez L, Seminara D, Shu X-O, Thomas G, Tjønneland A, Tobias GS, Trichopoulos D, Van Den Eeden SK, Virtamo J, Wactawski-Wende J, Wang Z, Wolpin B, Yu H, Yu K, Zeleniuch-Jacquotte A, Fraumeni JF Jr, Hoover RN, Hartge P, Chanock SJ. A genome-wide association study identifies pancreatic cancer susceptibility loci on chromosomes 13q22.1, 1q32.1 and 5p15.33. *Nat Genet* 2010;42:224-8. PMID: PMC28533179.

- b. Parikh H, Jia J, Zhang X, Chung C, Jacobs KB, Yeager M, Boland J, Hutchinson A, Burdett L, **Risch HA**, Jacobs EJ, Stolzenberg-Solomon RZ, Chanock SJ, Wolpin BM, Petersen GM, Fuchs CS, Hartge P, Amundadottir L. A re-sequencing analysis of genomic loci on chromosomes 1q32.1, 5p15.33 and 13q22.1 associated with pancreatic cancer risk. *Pancreas* 2013;42(2):209-215. PMID: PMC3618611.
- c. Tang H, Wei P, Duell EJ, **Risch HA**, Olson SH, Bueno-de-Mesquita HB, Gallinger S, Holly EA, Petersen GM, Bracci PM, McWilliams RR, Jenab M, Riboli E, Tjønneland A, Boutron-Ruault MC, Kaaks R, Trichopoulos D, Panico S, Sund M, Peeters PHM, Khaw K-T, Amos CI, Li D. Genes-environment interactions in obesity- and diabetes-associated pancreatic cancer: A GWAS data analysis. *Cancer Epidemiol Biomarkers Prev* 2014;23(1):98-106. PMID: PMC3947145.

A complete list of my published work is in MyBibliography (not including papers accepted for publication or in press):<https://www.ncbi.nlm.nih.gov/sites/myncbi/harvey.risch.1/bibliography/40494257/public/?sort=date&direction=descending>

D. Research Support

Ongoing Research Support

NIH/NCI: 1U01 CA247283 (AP Klein PI) 5/01/20-4/30/25

Multi-Ancestry Mapping of Pancreatic Cancer Susceptibility Loci

Collaborative multi-center study to validate and explore ancestry/ethnicity-specific genome-wide genetic associations in pancreatic cancer. Dr. Risch serves as epidemiology Co-Investigator and subsite PI in this study.

NIH/NCI: 2R01 CA154823 (AP Klein PI) 4/01/16-3/31/21

Validation and Fine-Scale Mapping of Pancreatic Cancer Susceptibility Loci

Collaborative multi-center study to validate and explore genome-wide genetic associations in pancreatic cancer. Dr. Risch serves as epidemiology Co-Investigator and subsite PI in this study.

Recently Completed Research Support

NIH/NCI: 1R21 CA220073 (C Jeon PI) 4/01/18-3/31/20

Predicting the Diagnosis of Pancreatic Cancer by Leveraging Big Data

Project to develop a prediction model that relies on multiple health indicators present in ongoing collections of electronic health data to identify people with a high probability of having undiagnosed pancreatic cancer. Dr. Risch serves as epidemiology Co-Investigator and subsite PI in this study

Item #6

Brazil Covid-19 Treatment Paper

Risk of Hospitalization for a New Covid-19 Outpatient Treatment Protocol in Brazil

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Abbreviations: ER, Emergency Room; HMO, Health Maintenance Organization; HCQ, hydroxychloroquine

Running Head: Covid-19 Outpatient-Treatment Hospitalization Risk in Brazil

Conflicts of Interest: Dr. Risch acknowledges past advisory consulting work with two of the more than 50 manufacturers of the various medications analyzed herein. This past work was not related to any of these medications and was completed more than two years ago. He has no ongoing, planned or projected relationships with any of these companies, nor any

other potential conflicts-of-interest to disclose. None of the other authors have any potential conflicts of interest to disclose.

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Abstract

For the past few months, HMOs have faced crowded emergency rooms and insufficient hospital and intensive-care-unit beds, all from the worst pandemic of this century, COVID-19. In a large HMO in Brazil, our approach was to allow treating physicians to prescribe antiviral medications immediately at presentation, and prednisone starting on day-6 of symptoms to treat pulmonary inflammation. We implemented this COVID-19 protocol for outpatients and studied 717 consecutive SARS-CoV-2-positive patients 40 years of age or older presenting at our emergency rooms. Use of hydroxychloroquine (HCQ), prednisone or both significantly reduced hospitalization risk by 50-60%. Ivermectin, azithromycin and oseltamivir did not reduce risk further. Hospitalization risk was doubled for people with diabetes or obesity, increased by two-thirds for people with heart disease, and by 75% for each decade of age over age 40. Similar magnitudes of reduced risk with HCQ and prednisone use were seen for mortality risk, though were not significant because of only 11 deaths among the 717 patients. This work adds to the growing literature of studies that have found substantial benefit for use of HCQ combined with other agents in the early outpatient treatment of COVID-19, and adds the possibility of steroid use to enhance treatment efficacy.

Mankind has been facing one of the greatest challenges of the XXI century: a pandemic (1) caused by a new virus, SARS-CoV-2, thought to be transmitted by droplets and contact with contaminated surfaces or objects (2). Clinical manifestations of coronavirus disease 2019 (COVID-19) patients range from asymptomatic to mild non-specific signs and symptoms to severe pneumonia with organ function damage and eventually mortality (3, 4). There is a clear need to try to stop disease progression as early in the disease process as possible. Infected patients with comorbidities such as heart failure, diabetes, asthma or chronic obstructive pulmonary disease and obesity, and patients over sixty years of age are at substantially higher risk to develop severe disease and tend to have higher risks of death (5-7). Many drugs have been tried in hospitalized patients, with largely discordant results (8-11). Randomized double-blind controlled trials demonstrating benefit or lack of benefit of drugs will not be available any time soon, as many clinical sites are still recruiting patients (12). Early outpatient illness is very different than hospitalized severe disease and treatment therefore will differ between these two distinct groups. Relatively little is established about utility of medications in early outpatient treatment. Currently (13) it is understood that COVID-19 is a four-phase illness: phase 1 is viral replication, followed by pulmonary inflammation in phase 2, “cytokine storm” and acute respiratory distress in phase 3, and disseminated multi-organ involvement in phase 4. For treatment at the beginning of the illness, there are indications that chloroquine and especially hydroxychloroquine (HCQ) may be beneficial, but no specific antiviral medications have demonstrated proven efficacy as yet (14, 15). Recently, the Brazil Federal Committee for Medicine has approved the prescription of chloroquine and HCQ for clinically suspected COVID-19 patients at the physician’s discretion with informed consent (16) and the Health Ministry has

also endorsed the use of these medications (17). Brazil has the highest rate in South America in the ranking of COVID-19 deaths, with more than 1 million people infected in the country (18) in circumstances of a large population still to be affected and with economic difficulties resulting in inadequate social distancing. Data over March-May from the Federal Health Ministry (19) show that more than 90% of hospitalized patients with severe respiratory distress who were tested were positive for SARS-CoV-2, with less than 5% detected with influenza. Therefore we assumed in clinical practice that most patients coming to the emergency room with flu-like symptoms would have COVID-19. With all that, we developed a protocol for early recognition and treatment of high-risk patients (in our population, age greater than 40 years because of generally poorer health standards, or with comorbidities) who would come to our outpatient network of emergency rooms with flu-like symptoms: fever, cough, myalgia and headache, among others, and receive early treatment, provided to patients at the first doctor visit, using physician discretion from among HCQ, ivermectin, oseltamivir, zinc sulfate, nitazoxanide and prednisone (the last starting on day-6 of symptoms). We evaluate here risks of subsequent hospitalization based upon outpatient use of these various medications.

Methods: Patient data from electronic charts of health maintenance organization (HMO) Hapvida Saúde, the largest Brazilian HMO with 6 million members spread over five regions of the country, were analyzed. Data were collected after informed consent and Institutional Ethics Committee (4.087.824 CEP-University Fortaleza UNIFOR) approval for this study. To-date, during the pandemic, more than 300,000 monthly emergency room (ER) consults have occurred. Patients were all seen at the ERs of the widespread country hospital network and admitted if indicated. At the beginning of the pandemic in Brazil, late March-April 2020, the north and northeast

cities were more affected, with a great number of ER consults and hospital and intensive-care-unit admissions. A protocol for early treatment of COVID-19 was developed by a team of senior HMO medical staff and started in early May; it included clinical recognition of the commonly described main COVID-19 signs and symptoms, and protocol criteria assessment for hospital admission vs outpatient care. Patients coming with flu-like symptoms such as fever, sore throat, myalgia, arthralgia or coryza would enter the COVID-19 protocol. Patients presenting with hypoxia, defined as the need of oxygen to maintain an oxygen saturation greater than 92%, respiratory rate of or greater than 24 respirations/minute, hypotension defined as systolic pressure less than 90 mm Hg or diastolic pressure less than 60 mm Hg, or with confusion or extreme lethargy were immediately admitted to the hospital. The remaining patients over age 40 or with comorbidities were treated as outpatients. The protocol specifics were chosen by the attending physician, and all of its steps were monitored for quality assurance. The protocol was largely automated through on-screen suggestions and physician choice boxes leading to successive screens, medication prescription choices, etc. After discharge from the ER, patients received paper charts instructing them on isolation, symptoms to expect and medications to use, and QR codes for telemedicine, chat or phone consults. Telemedicine was also always available to HMO patients on the HMO website. For discharged patients, the COVID-19 protocol included (all as oral medications), as chosen by doctors and patients: HCQ as first-line treatment, if used (400 mg bid day 1, 400 mg qd days 2-5), prednisone (1 mg/kg qd x 5 days, no taper), azithromycin (500 mg qd x 5 days), ivermectin (12 mg qd x 2 days), plus symptom relievers. Zinc sulfate and nitazoxanide were also available to be prescribed but were used infrequently. As doctors quickly found that most of the prescribed HCQ was not

arrhythmia events requiring medication termination for any of the medications used in the 717 patients that we analyzed, and no deaths attributable to such arrhythmias.

Discussion SARS CoV2 will cause greater mortality than any recent contemporary pandemic; only when the pandemic ends it will be possible to assess the full health, social and economic impact of this global disaster (21-23). Preliminary data show that in developed countries, the impact will be huge. But in developing countries, where public health systems already face great challenges to provide basic health care to all in need, the impact will be several times greater (21-23). These problems will not be solved anytime soon. In the midst of the SARS-CoV-2 pandemic, a feasible approach, with inexpensive drugs, relying on syndromic signs and symptoms rather than scarce laboratory tests may help many patients and will be even more important in developing countries. Around the world there are already over 8 million confirmed COVID-19 cases (24). Brazil has the second-largest number, with 1 million cases and 47,000 deaths as of June 18th (24). If this trend continues, in about four months, Brazil will have the worldwide largest number of cases of any country.

In March 2020, the World Health Organization recommended the use of medications oseltamivir and antibiotics (25). On March 28, 2020, the FDA issued an emergency use authorization for remdesivir and HCQ for patients in both clinical trials and with severe hospitalized disease (26). Since then, pharmacological treatments have been controversial, and on June 15 the FDA retracted its earlier authorization, allowing general access to the US national strategic stockpile of HCQ and leaving its outpatient use available but not explicitly supported (27). Countries such as China and India have issued guidelines allowing for the use of chloroquine or HCQ in

COVID-19 (28, 29). Evidence of the real-world unimportance of arrhythmia and other cardiovascular adverse-event endpoints of HCQ and HCQ+AZ use is given in the large Oxford-based record-linkage study (30). Understanding the pathophysiology of COVID-19 in the different clinical stages of the disease is important, as treatments will change according to progression of the disease (13). Our study showed that HCQ alone, prednisone alone, and HCQ plus prednisone did better than standard treatment for early stage COVID-19. It may be that the corticosteroid benefit involves low levels of type I and III interferons juxtaposed to elevated chemokines and high expressions of IL-6. Reduced initial innate antiviral defenses allow the virus to multiply, followed after a few days by relatively excess inflammatory cytokine production, allowing for steroids to reduce the latter in the early features of COVID-19, before appreciable pneumonia has occurred (31).

Because all treatments have costs and benefits, treating all high-risk patients early would take a major effort from Brazil's Universal Public System (SUS) and its private HMOs, but would be much less expensive than hospital-based inpatient treatment, which would probably be impossible on the scale needed. Our study showed that about 10% of high-risk outpatients over age 40 treated with prednisone still required hospitalization, which is substantially better than the 24% among untreated patients, thus even this treatment plan could create a large hospital-bed demand. However, we found that even in hospital, these treated patients do better and their mortality is much lower.

In an ideal world, large randomized double-blinded controlled clinical trials establish evidence, but take time to complete and many are not large enough for the randomization to be sufficiently effective in reducing biases. To-date, treatment protocols have proposed drugs with antiviral activity, and with anti-inflammatory

responses, such as therapeutic regimens of IFN- α +lopinavir/ritonavir and IFN- α +lopinavir/ritonavir+ribavirin, among others. While cost-effectiveness of these regimens have been challenged, HCQ is generic and has been prescribed for malaria for decades, as it has antiviral and anti-inflammatory properties. On March 27th, 2020 the Brazilian Federal Health Authority issued a note saying that it would treat severely ill patients in the Public System with HCQ (32). On May 20th, the same authority issued another note that HCQ would be available for physicians to prescribe for outpatients and mild cases, according to symptoms and severity (17). Prednisone is also generic and inexpensive and has been used for many decades and does not interact adversely with HCQ.

Our results demonstrate a positive benefit of HCQ and prednisone in decreasing hospital admissions in a high-risk population over 40 years of age with RT-PCR-positive SARS-CoV-2 infection when started at first doctor visit. An outpatient benefit of HCQ use has been summarized elsewhere (30) but to our knowledge this is the first time that efficacy of outpatient prednisone use has been reported. Use of these medications also showed some evidence of reduced mortality in the study group, and larger studies of mortality will be needed to validate this finding. We observed that outpatient hospitalizations of the larger group of suspected COVID-19 ER patients, from the same HMO database before vs after the protocol started, March-April vs May, decreased significantly, 23% vs 9%, and mortality declined from 1.75% to 1.39%. For May, our HMO data also show that the mortality was less than COVID-19 mortality for Brazil as a whole.

Our study has several limitations. This is a retrospective, chart-based study, and even though our initial sample of patients was large, with almost 25,000 patients, few of these patients were tested due to the scarcity of RT-PCR tests. Then, we chose to

study only tested-positive SARS-CoV-2 patients to make sure we were dealing with confirmed cases of COVID-19. Limiting analyses to patients greater than 40 years of age further reduced our sample size. Nevertheless, our experience of approaching and treating patients with flu-like symptoms in this era of pandemic SARS-CoV-2 is useful and more generally applicable. In one State Hospital Network of the cohort this spring, more than 90% of patients admitted to the hospital with appreciable respiratory distress had positive RT-PCR for SARS-CoV-2 (33), so it seems reasonable to infer that it would be similar for patients with influenza-like illness presenting at the emergency room. Also, our study involved a range of treatment medications assigned by HMO physicians using their clinical judgements, rather than mandated by study design. Clinical treatment decisions allow for the possibility that sicker patients get more or more aggressive treatments, creating the potential of confounding by indication. The comorbidity distributions of the various treatments as shown in Table 1 suggest that except for shortness of breath, patients not treated with HCQ or prednisone may have been slightly less symptomatic than treated patients. However, this would if anything have tended to reduce the magnitude of risk lowering that we found for these medications toward the null. A pattern of chronic comorbidity differences is not apparent in the table; nevertheless, our results were adjusted for those comorbidities where associations with risk of hospitalization were observed (Table 2). In spite of the aforementioned, our study was large enough to have observed statistically significant results and was based on actual clinical conditions and data recorded in active clinical charts, to enable reasonable inference about lack of reporting biases in the analyzed data.

Our analyses thus show that it is possible to give HCQ with companion medications in an early stage protocol that proves to be safe, and warnings about cardiac

arrhythmia adverse events are unnecessary unless significant contraindications are known. Treatment-failure mortality, while small, is still the major concern of patient management. Our new protocol is continuing in clinical practice in our HMO, and we hope for it to be more generally applied across the rest of Brazil as quickly as possible.

Conclusion: We found early outpatient use of HCQ and prednisone, both as individual prescriptions and used together, to lower the risk of hospitalization in symptomatic high-risk COVID-19 patients presenting for primary care at the emergency rooms of our large HMO in Brazil. Other than the small numbers of treatment failure, no potentially life-threatening adverse events were recorded with medication treatment. These medications were found to be safe and beneficial for the early outpatient treatment of COVID-19.

Table 1. Characteristics of Tested-positive Covid-19 Patients Treated Under the New Hapvida Brazil HMO Protocol

	Given neither HCQ nor Prednisone (n=244)	Given both HCQ and Prednisone (n=159)	Given HCQ Only (n=175)	Given Prednisone Only (n=139)	All Patients (n=717)
Age (mean, years)	52.0	50.4	50.3	48.8	50.6
Presentation delay* (mean, days)	4.2	4.5	4.4	5.6	4.6
Sex (% Female)	54.5	45.9	48.0	59.0	51.9
Hospitalized (%)	24.2	10.1	14.3	10.1	15.9
Ventilated (%)	3.3	2.5	1.1	3.6	2.6
Died (%)	2.9	0.6	0.6	1.4	1.5
Cough (%)	67.2	73.0	74.9	66.9	70.3
Fever (%)	59.4	66.7	65.7	61.9	63.0
Myalgia (%)	37.7	44.7	53.1	36.0	42.7
Sore Throat (%)	19.3	23.9	29.1	26.6	24.1
Headache (%)	35.7	41.5	39.4	41.0	38.9
Diarrhea (%)	7.4	8.2	11.4	11.5	9.3
Shortness of Breath (%)	30.3	28.9	28.0	20.9	27.6
Type 2 Diabetes Mellitus (%)	18.4	15.1	21.7	11.5	17.2
Obesity (BMI>30, %)	7.8	6.9	20.6	5.0	10.2
Heart Disease (%)	29.9	31.4	41.1	18.8	30.8
Pulmonary Disease (%)	4.5	1.3	4.0	3.6	3.5
Given Azithromycin (%)	43.4	50.3	65.7	58.3	53.3
Given Ivermectin (%)	24.2	77.4	42.9	59.7	47.4
Given Oseltamivir (%)	9.0	7.5	26.3	7.9	12.7

* Number of patients with data on date of start of symptoms, 222, 152, 168, 134 and 676 in the respective columns.

- Prevention. JAMA 2020;323:1239-1242.
7. Wu C, Chen X, Cai Y, Xia J, Zhou X, Xu S, et al. Risk Factors Associated with Acute Respiratory Distress Syndrome and Death in Patients with Coronavirus Disease 2019 Pneumonia in Wuhan, China. JAMA Intern Med doi:10.1001/jamainternmed.2020.0994
 8. Gautret P, Lagier J-C, Parola P, Hoang VT, Meddeb L, Mailhe M, et al. Hydroxychloroquine and azithromycin as a treatment of COVID-19: results of an open-label non-randomized clinical trial. Int J Antimicrob Agents 2020 Mar 20;105949. doi: 10.1016/j.ijantimicag.2020.105949
 9. Grein J, Ohmagari N, Shin D, Diaz G, Asperges E, Castagna A, et al. Compassionate Use of Remdesivir for Patients with Severe Covid-19. N Engl J Med 2020;382:2327-2336.
 10. Baden LR, Rubin EJ. Covid-19 - The search for effective therapy. N Engl J Med 2020;382:1851-1852.
 11. Sanders JM, Monogue ML, Jodlowski TZ, Cutrell JB. Pharmacologic Treatments for Coronavirus Disease 2019 (COVID-19): A Review. JAMA 2020;323:1824-1836.
 12. ClinicalTrials.gov [Internet]. Search of: COVID-19 - List Results. Downloaded June 15, 2020. <https://clinicaltrials.gov/ct2/results?cond=COVID-19>
 13. Siddiqi HK, Mehra MR. COVID-19 illness in native and immunosuppressed states: A clinical-therapeutic staging proposal. J Heart Lung Transplant 2020;39:405-407.

14. Wang M, Cao R, Zhang L, Yang X, Liu J, Xu M, et al. Remdesivir and chloroquine effectively inhibit the recently emerged novel coronavirus (2019-nCoV) in vitro. *Cell Res* 2020;30:269-271.
15. Yao X, Ye F, Zhang M, Cui C, Huang B, Niu P, et al. In Vitro Antiviral Activity and Projection of Optimized Dosing Design of Hydroxychloroquine for the Treatment of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). *Clin Infect Dis* 2020, ciaa237, <https://doi.org/10.1093/cid/ciaa237>
16. Conselho Federal de Medicina. Processo-consulta CFM nº8/2020 - Parecer CFM nº4/2020. Tratamento de pacientes portadores de COVID-19 com cloroquina e hidroxiclороquina [Internet]. 2020. Downloaded June 15, 2020. <https://sistemas.cfm.org.br/normas/visualizar/pareceres/BR/2020/4>
17. Brasil, Ministério da Saúde. ORIENTAÇÕES DO MINISTÉRIO DA SAÚDE PARA MANUSEIO MEDICAMENTOSO PRECOCE DE PACIENTES COM DIAGNÓSTICO DA COVID-19 [Internet]. Brasília; 2020 May. Downloaded June 11, 2020. <https://www.saude.gov.br/images/pdf/2020/May/20/orientacoes-manuseio-medicamentoso-covid19.pdf>
18. Coronavírus Brasil [Internet]. Downloaded June 15, 2020. <https://covid.saude.gov.br/>
19. Infogripe- Monitoramento de casos reportados de síndrome respiratória aguda grave (SRAG) hospitalizados . Downloaded June 17, 2020. <https://info.gripe.fiocruz.br>
20. Kucirka L, Lauer S, Laeyendecker O, Boon D, Lessler J. Variation in False

Negative Rate of RT-PCR Based SARS-CoV-2 Tests by Time Since Exposure. medRxiv preprint 2020.04.07.20051474. April 10, 2020.

21. Barnett-Howell Z, Mobarak AM. The Benefits and Costs of Social Distancing in Rich and Poor Countries. arXiv preprint <http://arxiv.org/abs/2004.04867>. April 10, 2020.
22. United Nations Development Programme. Socio-economic impact of COVID-19. Downloaded June 16, 2020.
<https://www.undp.org/content/undp/en/home/coronavirus/socio-economic-impact-of-covid-19.html>
23. Nicola M, Alsafi Z, Sohrabi C, Kerwan A, Al-Jabir A, Iosifidis C, et al. The socio-economic implications of the coronavirus pandemic (COVID-19): A review. *Int J Surg* 2020;78:185-193.
24. Johns Hopkins Coronavirus Resource Center. COVID-19 Map - Johns Hopkins Coronavirus Resource Center. Johns Hopkins Coronavirus Resource Center 2020. Downloaded June 16,2020. <https://coronavirus.jhu.edu/map.html>
25. World Health Organization. Clinical management of severe acute respiratory infection (SARI) when COVID-19 disease is suspected: interim guidance, 13 March 2020. World Health Organization. Downloaded June 17, 2020.
<https://apps.who.int/iris/handle/10665/331446>
26. U.S. Food and Drug Administration (FDA). Alert - June 15, 2020: Based on FDA's continued review of the scientific evidence available for hydroxychloroquine sulfate (HCQ) and chloroquine phosphate (CQ) to treat COVID-19, FDA has determined that the statutory criteria for EUA as outlined

- in Section 564(c)(2) of the Food, Drug, and Cosmetic Act are no longer met.
Downloaded June 17, 2020. <https://www.fda.gov/media/136537/download>
27. U.S. Food and Drug Administration. FDA news release. Coronavirus (COVID-19) Update: Daily Roundup June 15, 2020. Downloaded June 15, 2020. <https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-daily-roundup-june-15-2020>
 28. Chen Z, Hu J, Zhang Z, Jiang S, Han S, Yan D, et al. Efficacy of hydroxychloroquine in patients with COVID-19: results of a randomized clinical trial. medRxiv preprint 2020;7:2020.03.22.20040758. March 22, 2020.
 29. Government of India, Ministry of Health and Family Welfare, Directorate General of Health Services (EMR Division). CLINICAL MANAGEMENT PROTOCOL: COVID-19. Version 3 13.06.20. Downloaded June 11, 2020. <https://www.mohfw.gov.in/pdf/ClinicalManagementProtocolforCOVID19.pdf>
 30. Risch HA. Early Outpatient Treatment of Symptomatic, High-Risk Covid-19 Patients that Should be Ramped-Up Immediately as Key to the Pandemic Crisis. Am J Epidemiol 2020, kwaa093, <https://doi.org/10.1093/aje/kwaa093>
 31. Kolilekas L, Loverdos K, Giannakaki S, Vlassi L, Levounets A, Zervas E, et al. Can steroids reverse the severe COVID-19 induced 'cytokine storm'? J Med Virol 2020. Downloaded June 15, 2020. <https://doi.org/10.1002/jmv.26165>
 32. Brasil. Nota Informativa Nº 5/2020-DAF/SCTIE/MS. NOTA INFORMATIVA. Brasília; 2020. Downloaded June 11, 2020. http://www.cofen.gov.br/wp-content/uploads/2020/03/Nota-Informativa_05-2020_DAF_SCTIE_Cloroquina.pdf.pdf

33. Brasil. Boletim Epidemiológico . Doença pelo Novo Coronavírus.(COVID-19). Perfil Epidemiológico Dos Pacientes Hospitalizados por Síndrome Respiratória Aguda Grave (SRAG) no Estado do Ceará. 05 de maio de 2020/pagina9/36. Downloaded June 15, 2020. <https://coronavirus.ceara.gov.br/project/boletim-epidemiologico-no-24-de-05-de-abril-de-2020/>

Item #7

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GAGNEZ UNE MAISON GRACE A L'EXPERT FRANCESOIR !

Covid-19: l'hydroxychloroquine marche, une preuve irréfutable

Publié le 13/07/2020 à 08:51 - Mise à jour à 12:56



Covid-19: l'hydroxychloroquine marche, une preuve irréfutable
Unsplash

PARTAGER :    

Auteur(s): Michel Jullian et Xavier Azalbert pour FranceSoir A⁺ A⁻

De longs échanges ont enflammé la toile et les réseaux sociaux sur le rôle de l'hydroxychloroquine comme traitement contre la Covid-19. Ces échanges se résument souvent à se jeter à la figure les résultats d'études diverses et variées. Il s'ensuit un débat d'experts sur la validité de l'étude et des divers protocoles, permettant de donner à chacun l'opportunité d'avancer, avec une certaine mauvaise foi, ses arguments orientés. En effet, **il est toujours possible de trouver un argument en faveur du résultat** d'une étude si elle tend à démontrer l'inefficacité de l'hydroxychloroquine, et inversement.

Quand son efficacité n'est pas en question, on parle de ses effets secondaires. La réalité est que ce médicament est prescrit depuis 65 ans (1955). Ses effets secondaires et précautions d'usage sont

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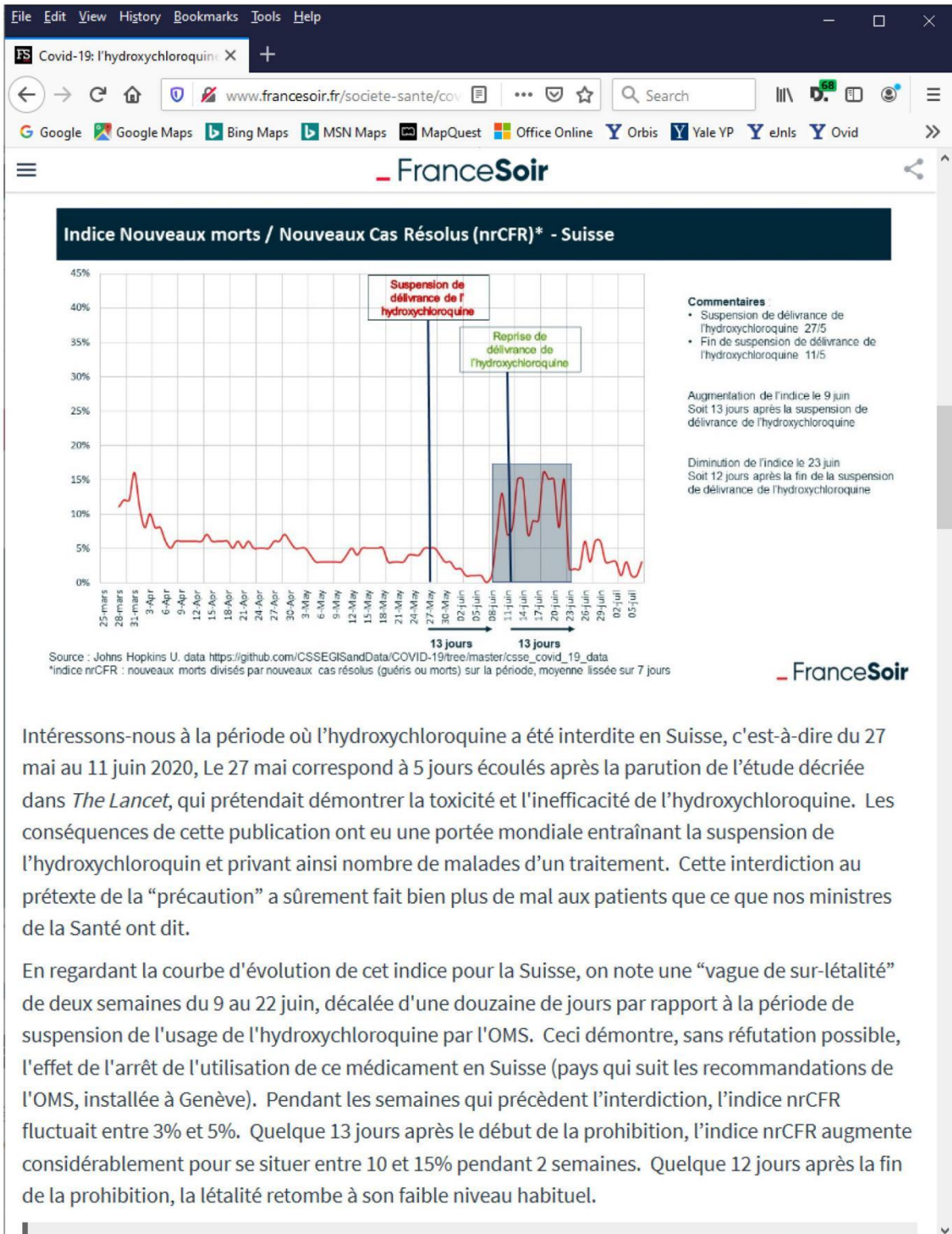
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Une différence statistiquement significative

Pour ceux qui ne seraient pas convaincus du résultat observationnel, nous avons conduit un test de différence statistique en comparant les trois périodes : 28 mai - 8 juin, 9 - 22 juin, 23 juin - 6 juillet. La période du 9 au 22 juin est celle où l'indice a augmenté quelque 13 jours après la suspension de l'hydroxychloroquine. Il y a bien entendu un effet de retard entre l'arrêt de la prescription du médicament et les décès éventuels, ce qui explique le décalage de 13 jours.

Test de différence statistique

Période	Décès	Cas résolus (guéris ou morts)	Indice nrCFR
28 mai - 8 juin	13	543	2.39%
9 - 22 juin	35	300	11.52%
23 juin - 6 juillet	9	300	3.00%

Commentaires :

- Test statistique période 28 mai au 8 juin versus 9 juin au 22 juin statistiquement différent à 99% avec $p < 0.001$
- Test statistique période 9 au 22 juin versus période du 23 juin au 6 juillet statistiquement différent à 99% avec $p < 0.001$

Source : Johns Hopkins U. data https://github.com/CSSEGISandData/COVID-19/tree/master/csse_covid_19_data
 *indice nrCFR : nouveaux morts divisés par nouveaux cas résolus (guéris ou morts) sur la période, moyenne lissée sur 7 jours

FranceSoir

Nous observons donc que pour la période du 28 mai au 8 juin l'indice est de 2,39% puis passe à 11,52% soit 4,8 fois plus pour redescendre ensuite à 3%.

En faisant le test de significativité statistique entre les diverses observations, **la différence est significative à 99% avec un $p < 0.0001$** . 13 jours après la reprise de la prescription de l'HCQ l'indice redescend à 3% et c'est de nouveau un effet **significatif**.

Et pour la France

Cet indice pour la France sur la même période se trouve dans le graphe ci-dessous. On note que dans la période de prohibition de l'hydroxychloroquine en Suisse, l'indice nrCFR était à peu près identique entre la France et la Suisse.

Section 3

George C. Fareed, M.D.

Item #1

Letter to Member of Congress Juan Vargas

July 11, 2020

Dear Member of Congress, Juan Vargas:

My name is Dr. George Fareed. I am a physician in Imperial County, California, that has been hit hard by the COVID-19 pandemic. I take care of patients on both an outpatient and inpatient basis, as well as nursing home patients, the most vulnerable among us.

In this letter, I am proposing a medical strategy that can help us not only through this current crisis, but also that will enable us to approach outbreaks of COVID-19 that may occur in the future.

In my attempts to keep people alive, I have had an opportunity to use many different types of treatments- remdesivir, dexamethasone, convalescent plasma replacement, etc. Yet, by far the best tool beyond supportive care with oxygen has been the combination of hydroxychloroquine (HCQ), with either azithromycin or doxycycline, and zinc. This "HCQ cocktail" (that costs less than \$100) has enabled me to prevent patients from being admitted to the hospital, as well as help those patients that are hospitalized. The key is giving the HCQ cocktail early, within the first five days of the disease.

Not only have I seen outstanding results with this approach, I have not seen any patient exhibit serious side-effects. To be clear- this drug has been used as an anti-malarial and to treat systemic lupus erythematosus as well as rheumatoid arthritis, and has over a 50-year track record for safety. It is shocking that it only now is being characterized as a dangerous drug.

Moreover, I am in my seventies, and I (as well as some other older physicians in the hospital) use hydroxychloroquine and zinc as prophylaxis. None of us have contracted the disease despite our high exposure to COVID patients nor have we experienced any side-effects.

Despite the characterization in the mainstream media as the drug being "ineffective" and "dangerous", the evidence in the literature tells a different story. I am not only an "MD", but a former Harvard Medical School assistant professor and UCLA School of Medicine associate professor as well and am very competent at evaluating studies. There is ample evidence now that the HCQ cocktail is effective, and there is no good evidence that there are significant side effects.

Yet, like many of my colleagues in the trenches treating COVID, I find myself being obstructed on different levels from treating my patients with hydroxychloroquine. The

next option is remdesivir, which in my opinion is inferior and very expensive. Moreover, that drug is not readily available, and is rationed by hospitals. Despite the representations by Dr. Fauci and others, there is less evidence supporting the use of remdesivir than hydroxychloroquine.

To be clear- hydroxychloroquine is normally not helpful when given to very ill patients. Unfortunately, most of the studies have evaluated this drug only in that context. The HCQ cocktail is best used to *prevent* patients from getting to that dire stage.

This is all so tragic because the use of HCQ cocktail would solve some of the very basic problems we are now facing:

#1 The HCQ cocktail can be used for outpatients to prevent hospitalizations and thus keep our hospitals and ICUs from being overrun with COVID patients.

#2 The HCQ cocktail can be used early on in hospitalization to prevent patients from requiring mechanical ventilation and reducing the length of hospital stay.

#3 HCQ/zinc can be used for prophylaxis for high risk individuals including front line health providers, first responders, and even teachers who are at high risk for COVID.

As a physician, I am committed to my patients as well as doing my part to solve the COVID crisis. It has been deflating to see how the "science" has been corrupted and manipulated in an effort to disparage hydroxychloroquine. The fact that both Lancet and the New England Journal of Medicine had to retract articles relevant to hydroxychloroquine due to gross manipulation and mischaracterization of data goes to the heart of what is best characterized as a smear campaign.

As an example of the faulty science- one study (University of Minnesota) was cited in the mainstream media as disproving the effectiveness of hydroxychloroquine as "prophylaxis"- yet the patients received the drug 1 to 4 days AFTER exposure. That is not prophylaxis at all—the drug must be taken PRIOR to exposure. This is just one example of the non-scientific way the drug has been evaluated and the subsequent mainstream media mischaracterizations.

I am writing to you out of the frustration of knowing that there is a solution, but watching as our country flounders in dealing with COVID-19. In my opinion, tens of thousands are dying unnecessarily. Our current approach of waiting for these high-risk patients to become ill and then hospitalizing them is failing. The answer is early diagnosis of the high-risk individuals, and then treating them as outpatients with the

HCQ cocktail to prevent hospitalization.

So, what I am proposing is a drastic shift from our current approach: we need to ramp up our *outpatient* efforts of treating COVID-19 to decrease the burden on hospitals and save lives. Such an approach requires an effective outpatient treatment- we have that in the HCQ cocktail.

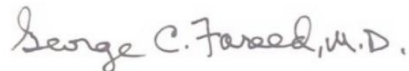
How do we get there? I propose a Congressional hearing in which our elected representatives could listen to clinicians like myself and researchers specifically regarding the HCQ cocktail (as well as the HCQ/zinc prophylaxis treatment), and how it can help us change to a model focused on outpatient treatment and prevention as opposed to a hospital-based approach only treating patients when they become ill. The FDA and CDC should be there as well given that they are the agencies that formulate the drug policies.

We need a medical strategy, not only for now while we are in a crisis, but for the future. There is no guarantee that a vaccine will rid us of COVID-19. If we had a strategy, we would not have to shut down American life, especially schools, every time there is an outbreak.

We should be seeking a solution that will save as many lives as possible, and the outpatient-based approach that I and some other doctors have been advocating will best accomplish that goal.

I hope you consider my proposal, and I look forward to hearing from you.

Sincerely yours,



George C. Fareed, M.D.
CMA Rural Physician of the Year 2015

Brawley, CA 92227
Mobile phone: 760-554-2244

Item #2

Article:

**“Local doctor pushing proven treatment of
COVID into national debate”**

Local Physician Proposes Medical Strategy Using ‘HCQ’

July 16, 2020 Dr. George Fareed



Dr. George Fareed

(EDITOR'S NOTE: The following is a July 11 letter Fareed penned to Congressman Juan Vargas and others in the federal government, including President Donald Trump. Fareed submitted it as an op-ed to be run in its entirety.)

My name is Dr. George Fareed. I am a physician in Imperial County, California, that has been hit hard by the COVID-19 pandemic. I take care of patients on both an outpatient and inpatient basis, as well as nursing home patients, the most vulnerable among us.

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I hope you consider my proposal, and I look forward to hearing from you.

Sincerely yours, George C. Fareed, M.D.

CMA Rural Physician of the Year 2015 Brawley, CA 92227

Item #3

Resume CV

CURRICULUM VITAE

GEORGE CARR FAREED, M.D.

PERSONAL:

Date of Birth August 31, 1944
Chicago, IL

Family Status Divorced with three children

EDUCATION:

June 1966 Bachelor of Arts -University of California, Berkley, CA

June 11, 1970 Doctor of Medicine - Harvard Medical School, Boston, MA (Received Soma Weiss Award for medical student research identified gene for key enzyme for recombinant technology.)

Medical Internship Peter Bent Brigham Hospital Boston, MA
1970 - 1971

LICENSURE

June 21, 1976 State of California G-31850
original date of issuance

HOSPITAL AFFILIATIONS

1988 - 1990 UCL A Medical Center, Los Angeles, CA

1992 - Present Pioneers Memorial Hospital, Brawley, CA

1996 - 1998 Pioneers Memorial Hospital Chief of Medicine

1995 - 1997 Chairman of Infection Control Committee

1993 - Present Current El Centro Regional Medical Center, El Centro, CA

1997 - 2002 Appointed Medical Director, AIDS Research Alliance, West Hollywood, CA

ACADEMIC APPOINTMENTS

1973 - 1976 Assistant Professor Harvard Medical School
Department of Biological Chemistry
Boston, MA

1979 - 1980 Visiting Professor University of Nice
Centre De Biochemie
Nice, France

Collaborative project developing one of the early vectors for gene transfer into animal and human cells.

2012 - Present Hyperbaric Therapy and Wound Management Clinic
Pioneers Memorial Healthcare District Hospital
Brawley, CA

Practice in Sports Medicine

1984 L.A. ATP Tennis Tournament Doctor

1984 - 1991 Newsweek Grand Champions Tennis Tournament
Director, Special infection (HIV) Clinic

1995 - 1996 AIDS RESEARCH ALLIANCE
West Hollywood, CA

BIOMEDICAL RESEARCH ENTERPRISES:

1980 Founded International Genetic Engineering, Inc
(INGENE) Santa Monica, CA
(Developing products for the treatment of infections, cancer, and bone disease)

1980 - 1986 Director, Scientific Planning (INGENE)

1986 - 1989 Vice-President , Scientific Planning (INGENE)

1986 - 1989 Director of Cancer Biotherapy (INGENE)

1990 - 1991 Director, New Product Development XOMA Corp. (merged with
INGENE) Santa Monica, CA

1991 - 1994 Founder /President Advanced Antigens, Inc Santa Monica, CA
(Biotechnology Company developing immunization and gene
therapy products based on novel antigenic epitopes)

PATENTS

Inventor of three U.S. patents: two pertaining to cancer
regression antigens and one for the synthetic peptides for
arthrosclerosis.

PUBLICATIONS: 1983 "Molecular Biology of Polyomaviruses and Herpes
viruses."
New York: J.Wiley and Sons

Over 60 scientific articles published.

SPECIAL SKILLS

Fluency in French, written and spoken: Fluency in Spanish, written and spoken.

Experience with a variety of Macintosh and IBM- compatible software
applications

including: QD Clinical, NexGen EMR, eClinical Works, QCPR hospital charting,
Solarian Clinical hospital charting

CLINICAL RESEARCH EXPERIENCE

- 1986 - 1990 Adjunct Associate Professor, UCLA School of Medicine
Clinical Investigator, UCLA (Investigation Review
Committee Approval)
Trial: Active Specific Immunotherapy of Patients w/ Advanced
Solid Tumors: Intralymphatic Immunization with Irradiated
Human Tumor Cell
- 1988 - 1991 Regional Director (Los Angeles) and Investigator
Biological Therapy Trials Program **11-2/LAK** cell therapy trial,
Intralymphatic IL-2 infusion in solid tumor patients
(Sponsor: Biotherapies, Inc., Franklin TN)
- 1998 Investigator: 3TC Open Label Protocol NUCA3004 sponsored by
Glaxo Research Institute
- 1995 - 2000 Director of Clinical Research, AIDS Research Alliance
West Hollywood, CA
- 2008 POEM study of Maraviroc in advanced AIDS patients
Clinicas De Salud Del Pueblo, Brawley, CA
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