

Allergy to Galactose 1,3- α -galactose (Alpha-gal)

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Objectives

- Discuss Alpha-gal Syndrome
- Discuss the clinical presentation of allergy to Alpha-gal, including delayed urticaria and anaphylaxis
- Discuss the number of positive Alpha-gal tests in the US and Arkansas

Introduction

- Sensitization to Alpha-gal is hypothesized to lead to anaphylactic allergic response to beef, pork, milk and recombinant proteins used in medical treatments (e.g. Cetuximab)
- These reactions occur more in the mid-southern states, in Virginia, North Carolina, Tennessee, Arkansas, Oklahoma, and Missouri (NEJM)
- The reactions seem to correlate with the distribution of the tick *Amblyomma americanum*, the Lone Star Tick (JACI)

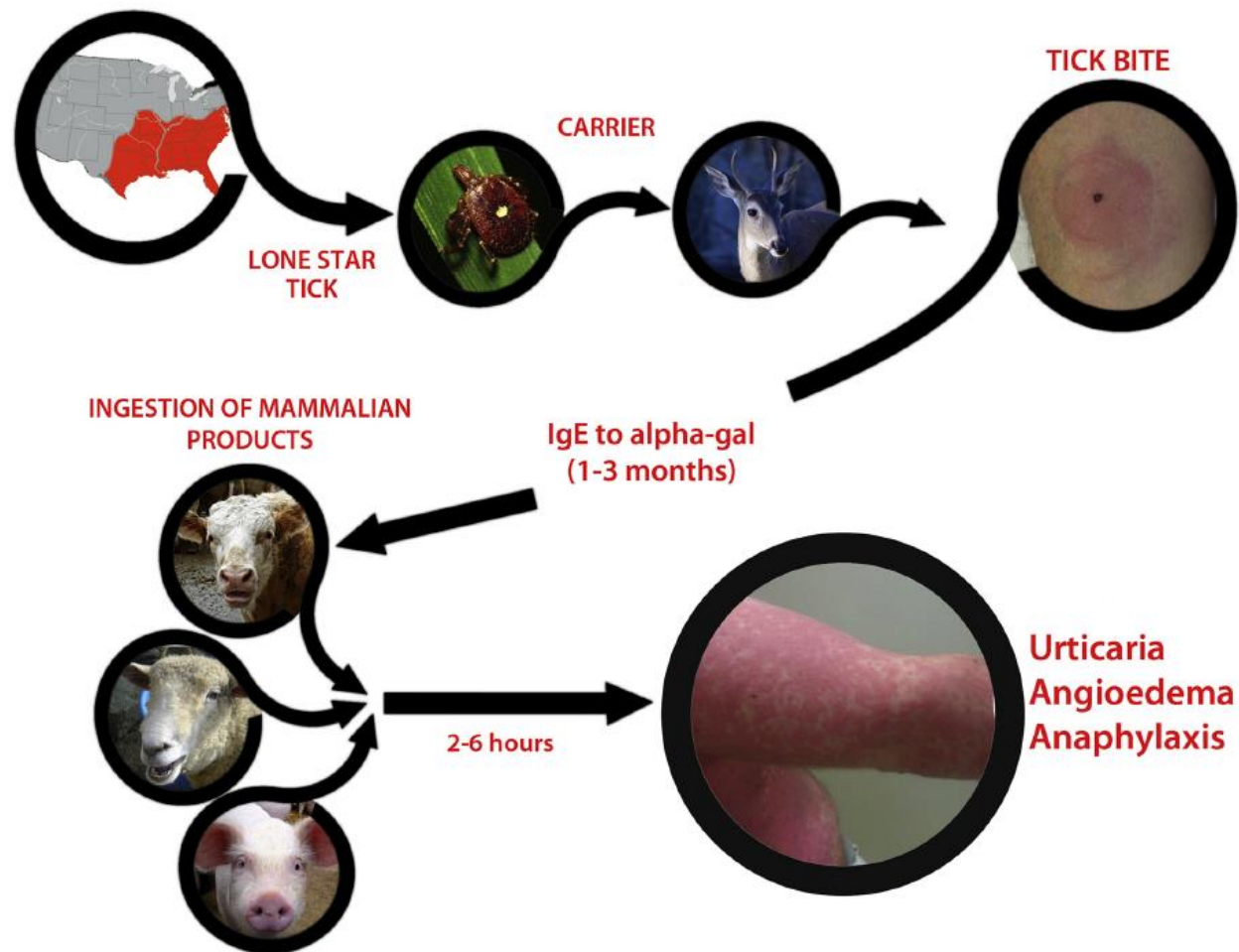
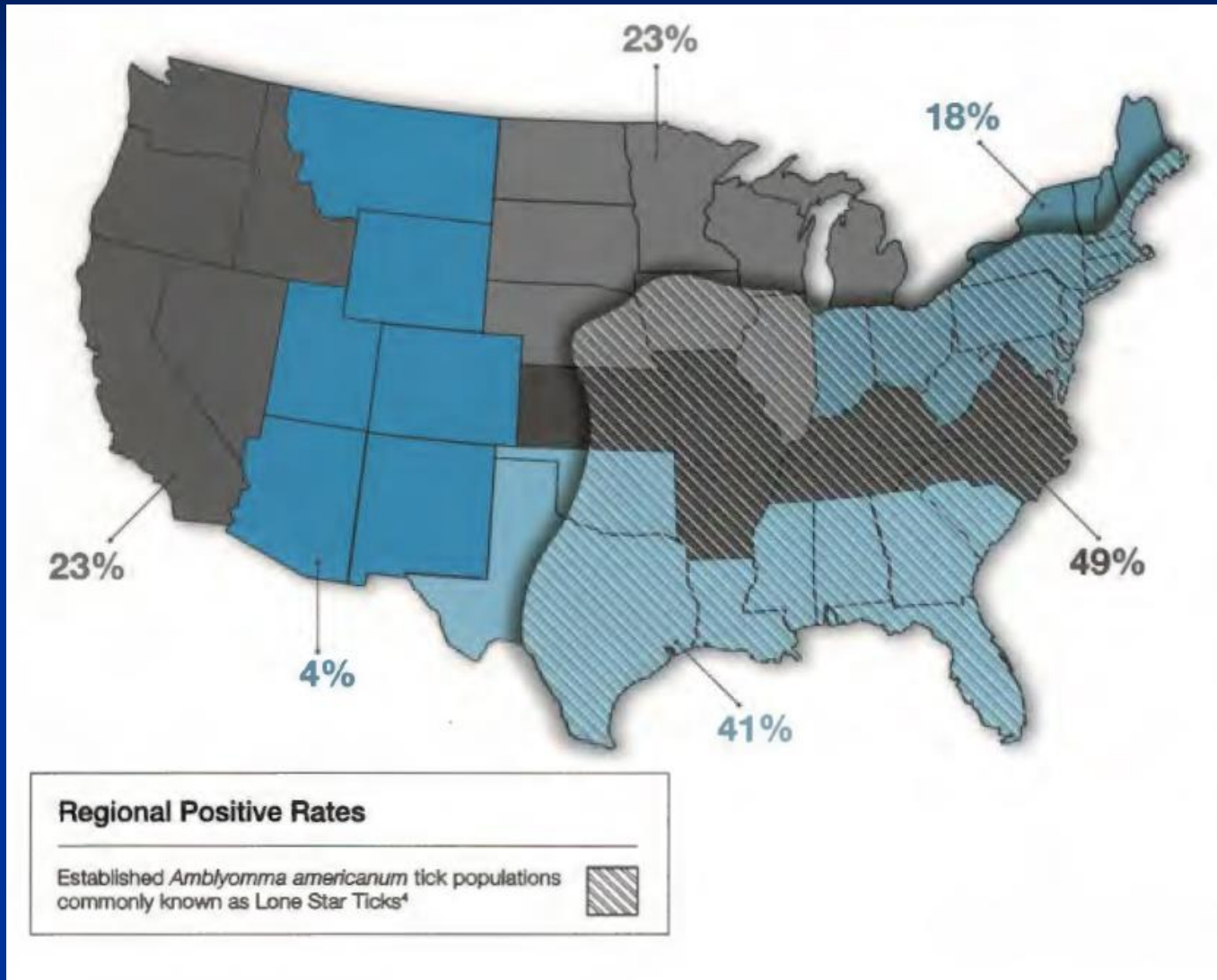


FIG 3. Summary of alpha-gal sensitization leading to clinical symptoms of red meat allergy. The southeastern section of the United States is where most of the reactions to red meat have been reported. This region overlaps with the distribution of the lone star tick. The current hypothesis is that persons are bitten by lone star ticks carried by deer into rural and urban areas. After a period of time, IgE to alpha-gal develops. Once IgE to alpha-gal reaches sufficient levels, ingestion of red meat can trigger reactions. Several of the images used in this figure are licensed under a Creative Commons CC BY-NC 2.0 (Attribution-NonCommercial 2.0 Generic) license (Cow: <https://flic.kr/p/adgjhp> by user Plashing Vole; Deer: <https://flic.kr/p/jeZwq7> by user Cherry Bream; Sheep: <https://flic.kr/p/4WIrD> by user Lauren; Tick: <https://flic.kr/p/cdnNaY> by user Katja Schulz; Pig: <https://flic.kr/p/N7gpc> by user Anne).

Number of cases in the US 2017

- ViroCor Eurofins have reported approximately 58,000 positive results for Alpha-gal IgE from 2009-2017 (includes repeat testing)
- 14,580 positive tests reported in the last twelve months (reported 2/16/18)
- Cut point for positivity used for the inquiry was the lower limit of the assay, 0.10 kU/L

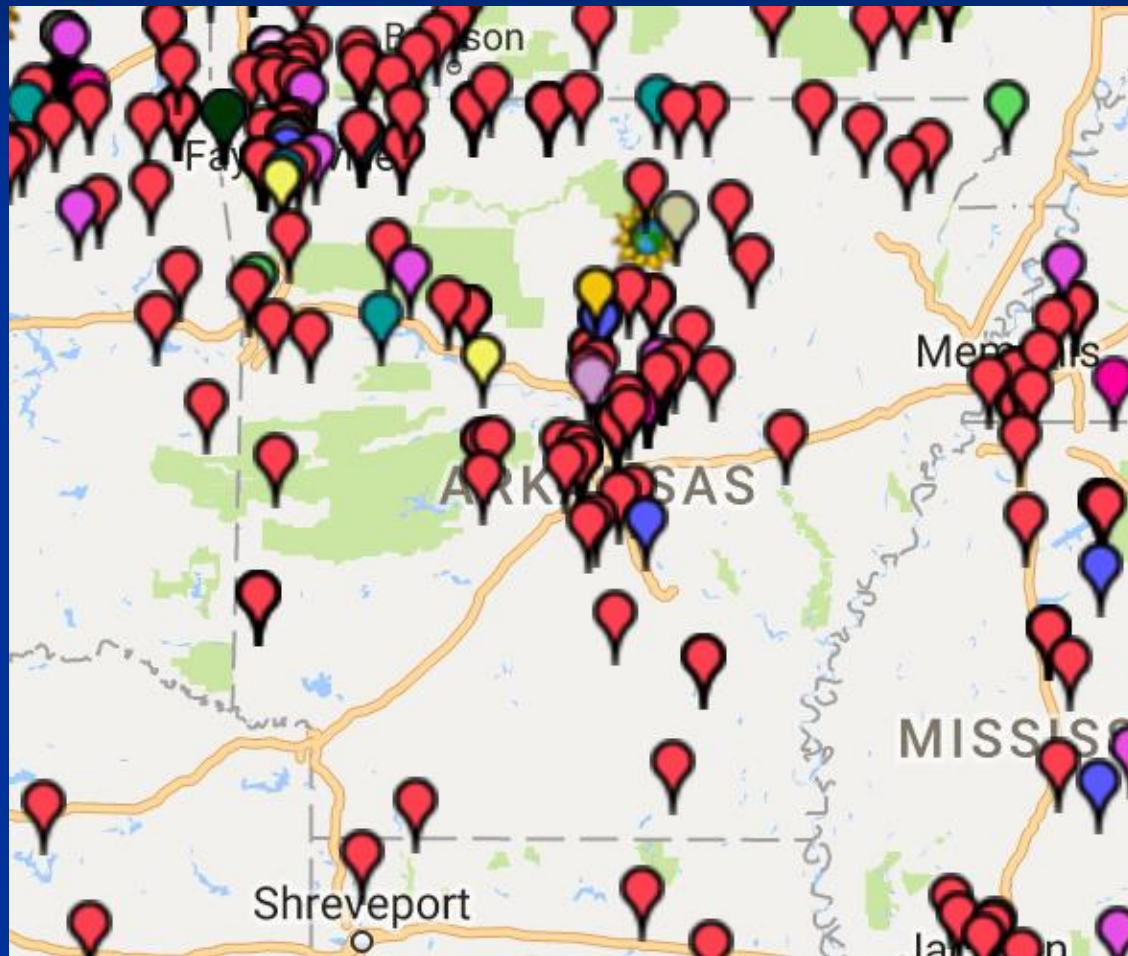
(Map and picture courtesy of the ViroCor IBT Laboratories)



Map of US Alpha-gal support group 2017



Map of Arkansas Alpha-gal support group



Resources

- www.healthy.Arkansas.gov/programs-services/topics/alpha-gal-allergy
- <http://www.alphagalencouragers.org>
(Northwest Arkansas)
- <http://www.foodallergy.org>
- <http://www.alpha-gal.org> and
www.facebook.com/alpha.gal
- UVA <http://allergytomeat.wordpress.com>
- <http://tinahatley.wordpress.com/2012/8/6/the-alpha-gal>

Conclusions

- In Arkansas thousands of people are positive for IgE to Alpha-gal (beef/pork/gelatin).
- Symptoms include anaphylaxis, urticaria, angioedema, gastrointestinal symptoms and atypical chest symptoms.
- Theories for the increase include rickettsial bacteria in the saliva of regional ticks, increased tick exposure, and exposure to pets.

Disclosures

- Dr. Tina Merritt has interest in the patent for the assay to measure IgE to chimeric monoclonal antibodies at the University of Virginia. PCT/US2008/054113.