



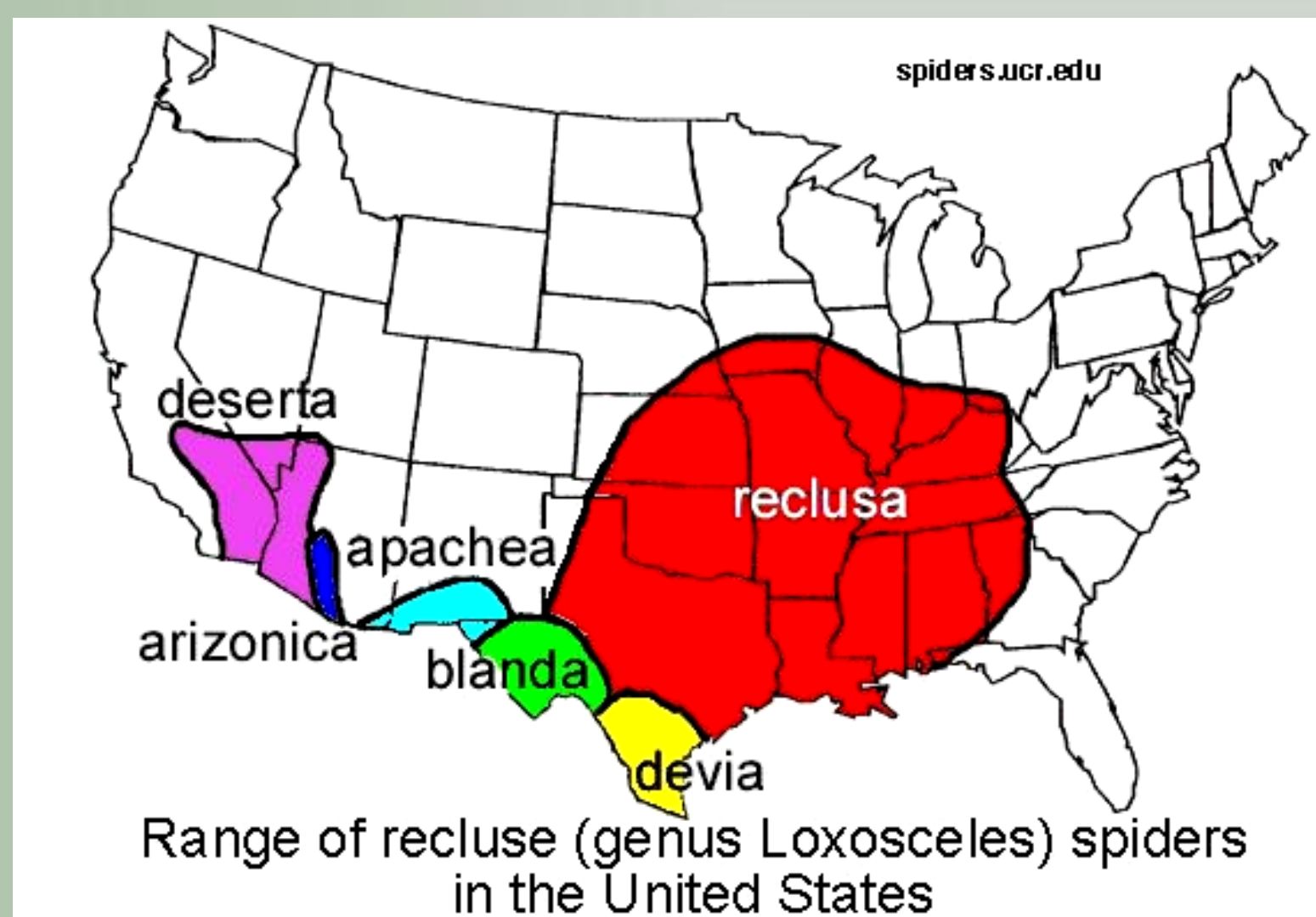
Swab Test Using Enzyme-Linked Immunosorbent Assay (ELISA) Technique for Diagnosis of Brown Recluse Spider Bites



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Missouri: Brown Recluse Central

Missouri lies near the center of the habitat for the brown recluse spider. The death of a St. Louis woman in 2008 was attributed to complications from a brown recluse bite.



“There is no way to confirm a diagnosis of a recluse spider bite.” --An emergency room physician, commenting on the above death, UPI, April 5, 2008. A survey of ER physicians in the endemic area has shown the economic viability of a test for these spider bites.

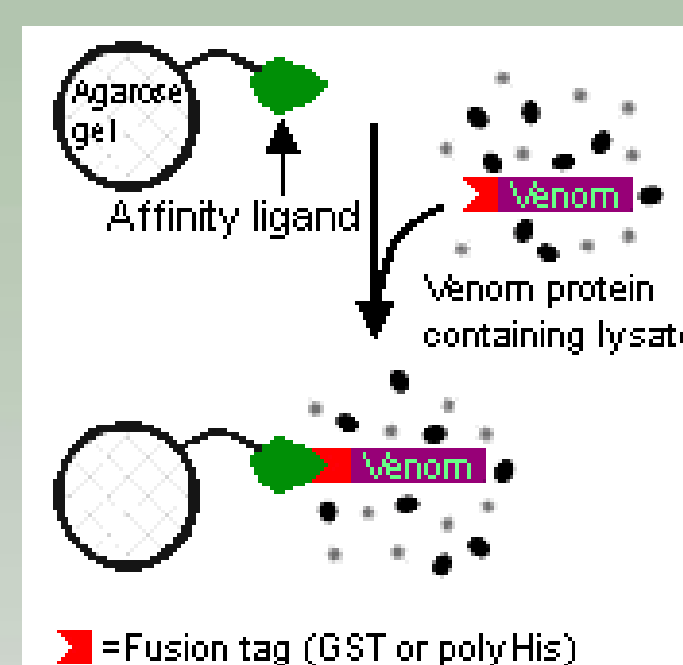
Which of these is a spider bite? These four patients were all referred for spider bites. Answer below pictures.



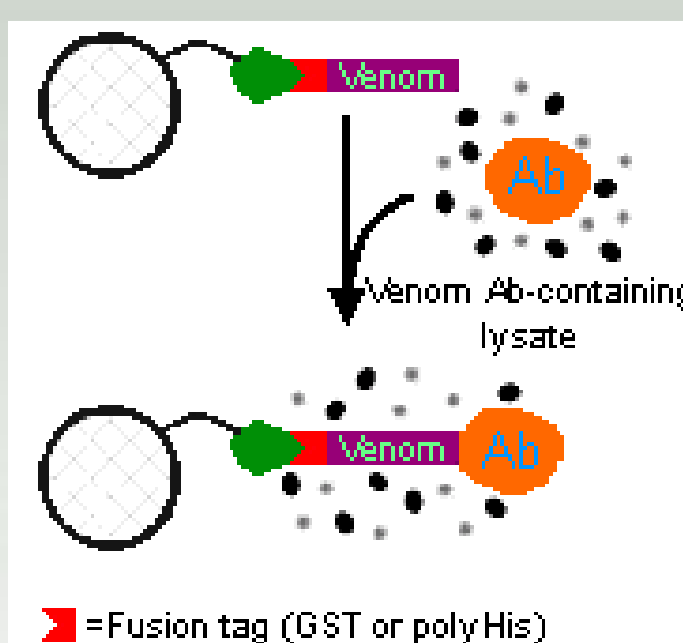
Answer: None of these

Construction of Super Polys

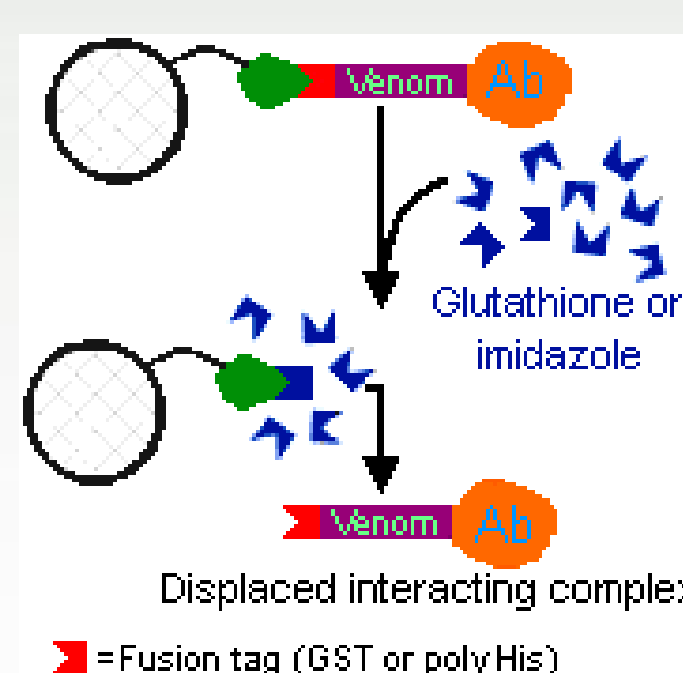
Steps 1-2: Using venom Ab raised in NZ white rabbits, immobilize the fusion-tagged venom from the lysate; wash away unbound protein.



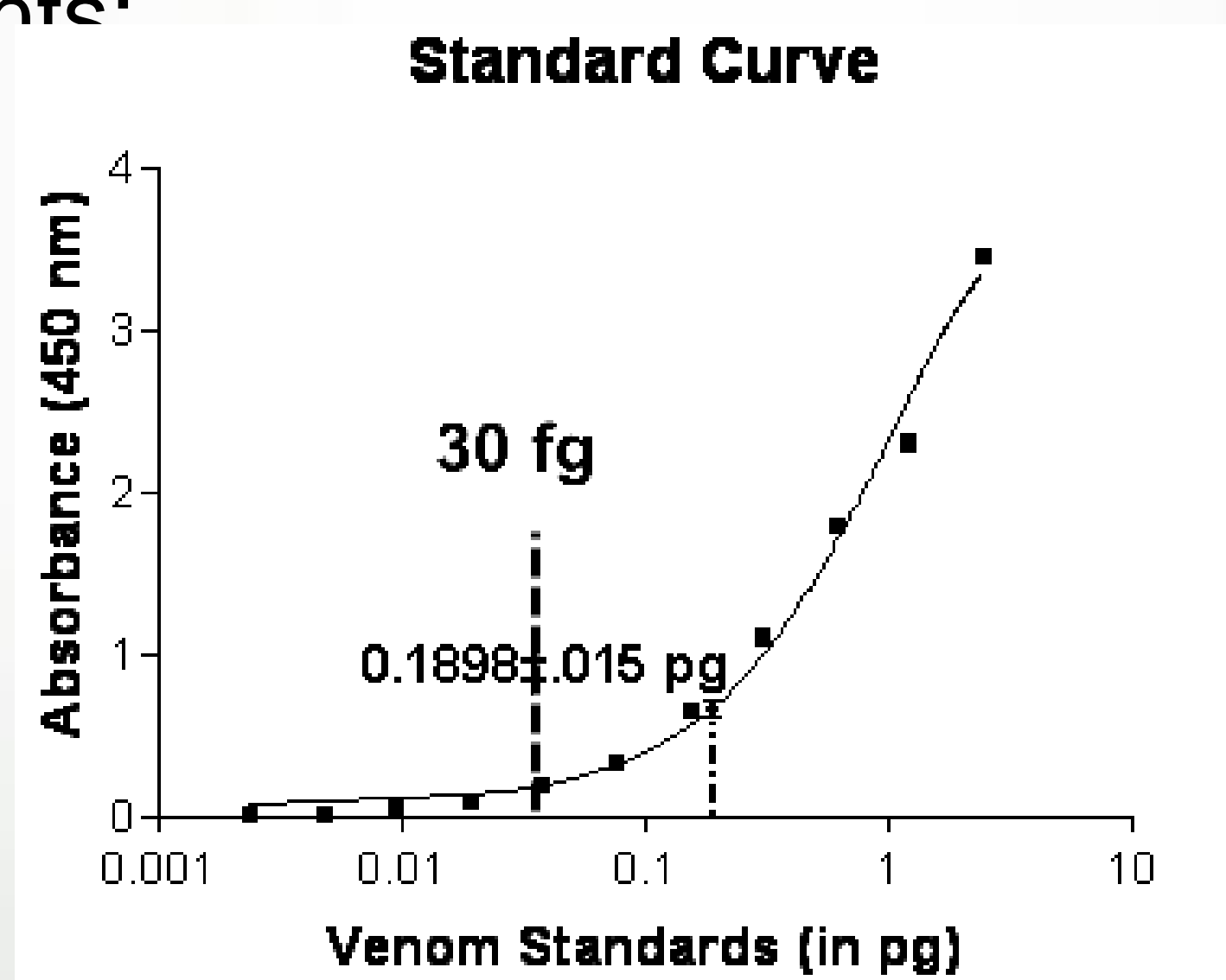
Steps 3-4: Bind venom Ab to immobilized venom protein; wash away unbound protein



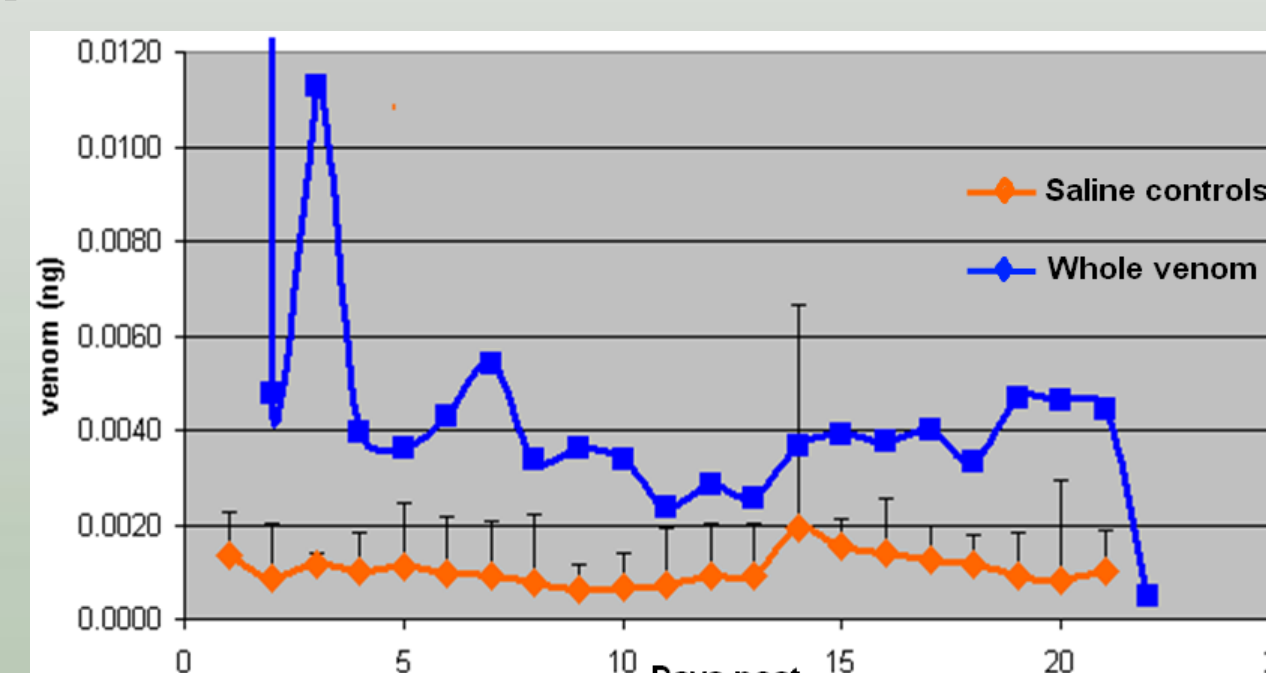
Steps 5-6: Elute protein interaction complex and Analyze on SDS-PAGE



The resulting “Super polyclonal antibodies (super polys) can recognize spider venom in femtogram amounts”

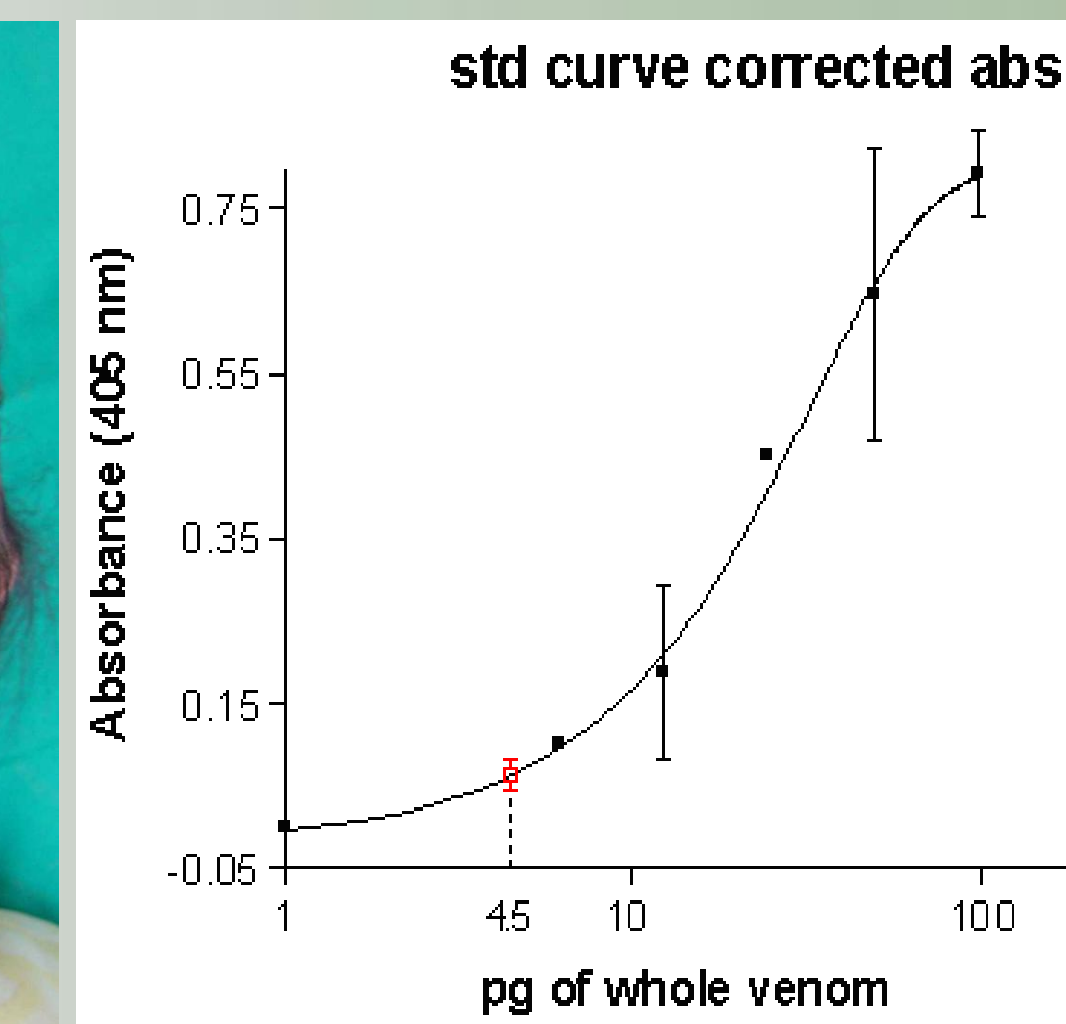


The rabbit venom Ab can recognize venom up to 5 days on the skin and sometimes beyond:



Test In Practice

- Swab lesion 30 seconds with saline
- 3-hour ELISA
- Femtogram sensitivity (micro nano pico femto)
- Cotton works better than Dacron
- We have a Missouri network of 10 sites; we pay \$350/case (within 5 d.)



First documented Turkish case (3)

ELISA results from gauze swab

Funding, Patent, References

- Phase II SBIR Score '09: 24
- Patent: Pending 11/550,130
- References:

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2. McGlasson DL, Green JA, Stoecker WV, et al. Duration of *Loxosceles reclusa* venom detection by ELISA from swabs. *Clin Lab Sci.* 2009 Fall;22(4):216-22.
3. Akdeniz S, Green JA, Stoecker WV, et al. Diagnosis of loxoscelism in two Turkish patients confirmed with an enzyme-linked immunosorbent assay (ELISA) and non-invasive tissue sampling. *Dermatol Online J.* 2007 May 1;13(2):11.
4. Stoecker WV, Green JA, Gomez HF. Diagnosis of loxoscelism in a child confirmed with an enzyme-linked immunosorbent assay and noninvasive tissue sampling. *J Am Acad Dermatol.* 2006 Nov;55(5):888-90.
5. Gomez HF, Krywko DM, Stoecker WV. A new assay for the detection of *Loxosceles* species (brown recluse) spider venom. *Ann Emerg Med.* 2002 May;39(5):469-74.

