

Scientists describe how anthrax toxins cause illness, death

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Researchers at the National Institute of Allergy and Infectious Diseases (NIAID) and the National Heart, Lung, and Blood Institute, both part of the National Institutes of Health, have identified the cells in two distinct areas of the body that are simultaneously targeted for damage by anthrax toxins, eventually causing illness and sometimes death. Their findings, which appeared online today in *Nature*, are based on testing in mice. However, the results may contribute to the development of anthrax treatments for humans, the researchers say.

Anthrax disease is caused by the bacterium *Bacillus anthracis*, which produces two deadly toxins: lethal toxin and edema toxin. When *B. anthracis* infects a human or animal, both toxins seek out and bind to receptors on the surfaces of human and animal cells. Using two types of laboratory mice—those missing the [anthrax toxin](#) receptor on a single type of cell or those having the receptor present on a single type of cell—the scientists compared disease progression among the rodents. They concluded that anthrax-induced death is caused primarily by lethal toxin targeting heart cells and muscle cells surrounding blood vessels, and edema toxin targeting [liver cells](#).

These results may help scientists studying anthrax disease in humans. For example, the study authors suggest, knowing the types of cells that anthrax toxins target could spur the development of treatments that reduce damage to those cells.

More information: Liu S et al. Key tissue targets responsible for

anthrax-toxin-induced lethality. *Nature* DOI: [10.1038/nature12510](https://doi.org/10.1038/nature12510) (2013).

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