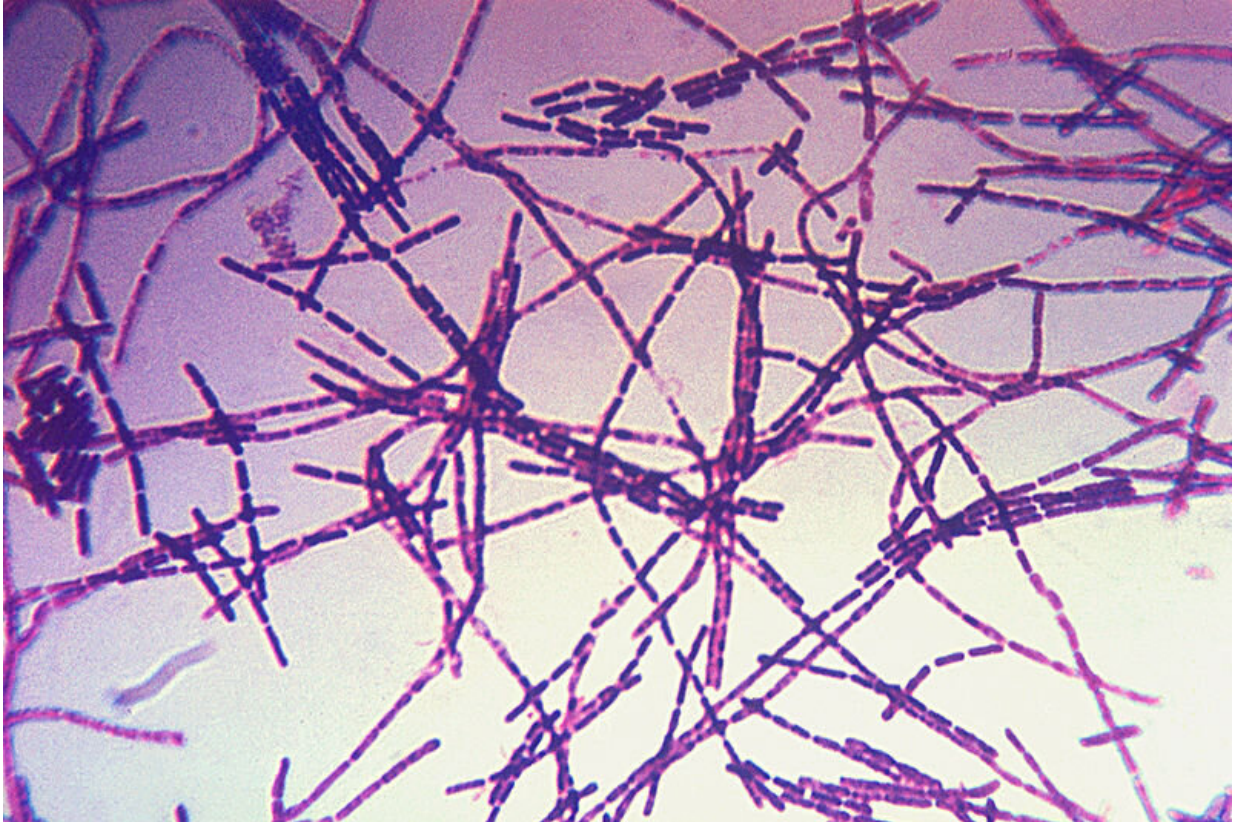


The adaptable anthrax bacterium

May 15 2020, by Leigh MacMillan



A photomicrograph of *Bacillus anthracis* bacteria using Gram-stain technique. Anthrax is diagnosed by isolating *B. anthracis* from the blood, skin lesions, or respiratory secretions, or by measuring specific antibodies in the blood of persons with suspected cases. Photo Credit: Content Providers(s): CDC

The bacterium *Bacillus anthracis*—the cause of the serious infectious disease anthrax—has been used as a bioterror agent. Understanding how

B. anthracis adapts to hostile environments to cause infection may identify new targets for treatment.

Eric Skaar, Ph.D., and colleagues studied the response of *B. anthracis* to targocil, an antimicrobial compound that damages the cell envelope.

They demonstrated that targocil treatment activates a "two-component system" called EdsRS, which increases the production of a membrane phospholipid ([cardiolipin](#)) through a previously uncharacterized cardiolipin synthase enzyme. Cardiolipin is then used to repair the envelope and maintain *B. anthracis* viability and fitness.

The findings, reported in the journal *mBio*, highlight the adaptability of *B. anthracis* and reveal a mechanism the pathogen uses to defend against structural damage and resist antimicrobial toxicity. The work underscores the importance of studying two-component systems like EdsRS that *B. anthracis* uses to adapt to its environment and cause disease.

More information: Clare L. Laut et al. *Bacillus anthracis* Responds to Targocil-Induced Envelope Damage through EdsRS Activation of Cardiolipin Synthesis, *mBio* (2020). [DOI: 10.1128/mBio.03375-19](https://doi.org/10.1128/mBio.03375-19)

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