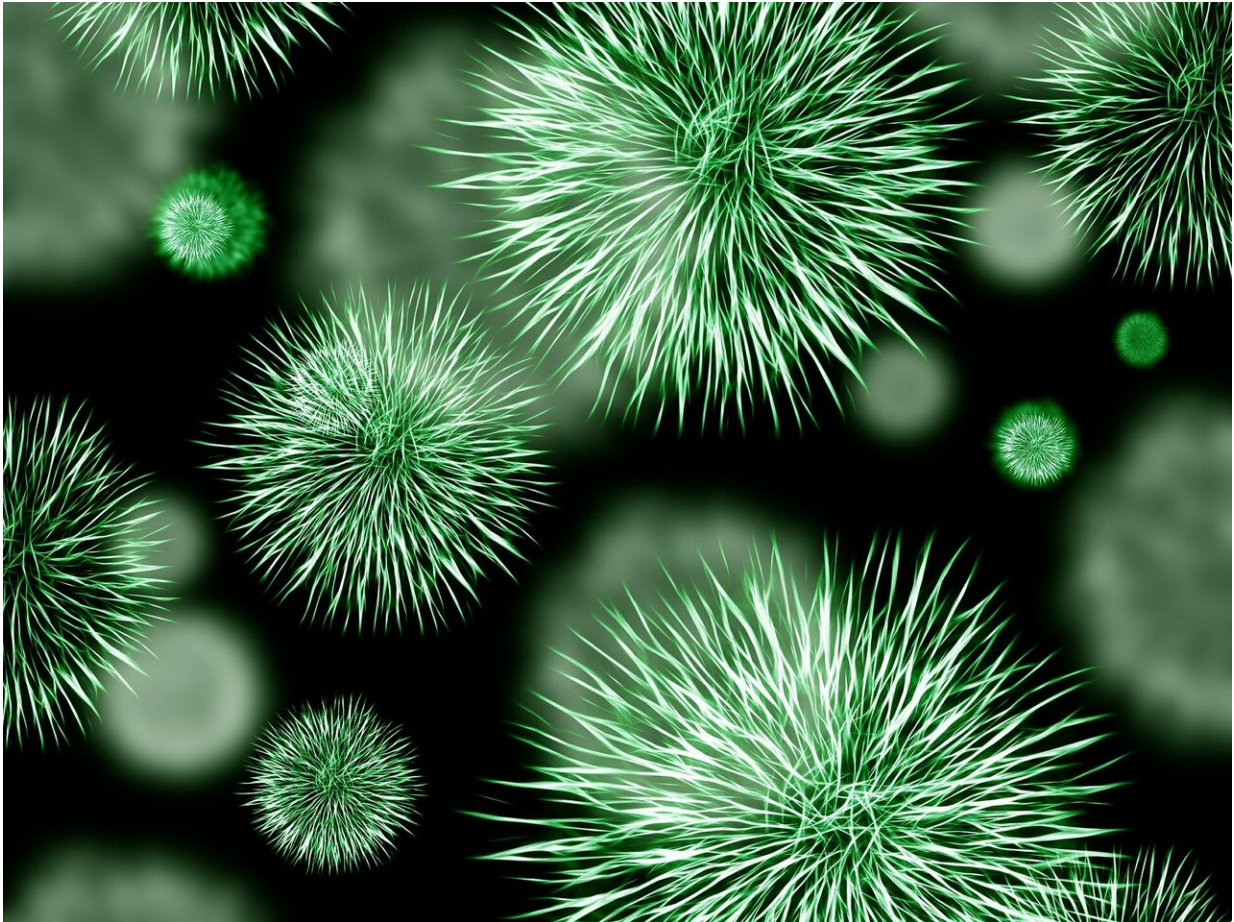


How bugs overcome host defenses

April 15 2019, by Leigh Macmillan



Credit: CC0 Public Domain

Bacterial pathogens must acquire nutrient metals from the host to survive and cause disease. To counter infection, hosts attempt to starve bacteria by hiding metals away in a process called "nutritional immunity."

Bacteria are wily foes though, and they change in order to survive metal starvation.

In a series of studies, Eric Skaar, Ph.D., and colleagues have characterized how *A. baumannii*—a leading cause of ventilator-associated pneumonia—responds to zinc starvation.

The researchers discovered that during zinc starvation, *A. baumannii* increases expression of the gene for a [cell wall](#)-modifying protein they named ZrlA. They show that [bacteria](#) missing the gene for ZrlA had leaky cell walls, and that these defects sensitized *A. baumannii* to antibiotics in vitro and in an animal model of pneumonia. They also discovered metabolic changes in *A. baumannii* in response to zinc starvation.

The studies, published in *Cell Reports* and *Cell Chemical Biology*, highlight the therapeutic potential of targeting proteins that respond to metal starvation, such as ZrlA, to treat bacterial infections.

More information: Zachery R. Lonergan et al. An *Acinetobacter baumannii*, Zinc-Regulated Peptidase Maintains Cell Wall Integrity during Immune-Mediated Nutrient Sequestration, *Cell Reports* (2019). [DOI: 10.1016/j.celrep.2019.01.089](https://doi.org/10.1016/j.celrep.2019.01.089)

Jiefei Wang et al. Multi-metal Restriction by Calprotectin Impacts De Novo Flavin Biosynthesis in *Acinetobacter baumannii*, *Cell Chemical Biology* (2019). [DOI: 10.1016/j.chembiol.2019.02.011](https://doi.org/10.1016/j.chembiol.2019.02.011)

Provided by Vanderbilt University

Citation: How bugs overcome host defenses (2019, April 15) retrieved 28 April 2024 from

<https://phys.org/news/2019-04-bugs-host-defenses.html>

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