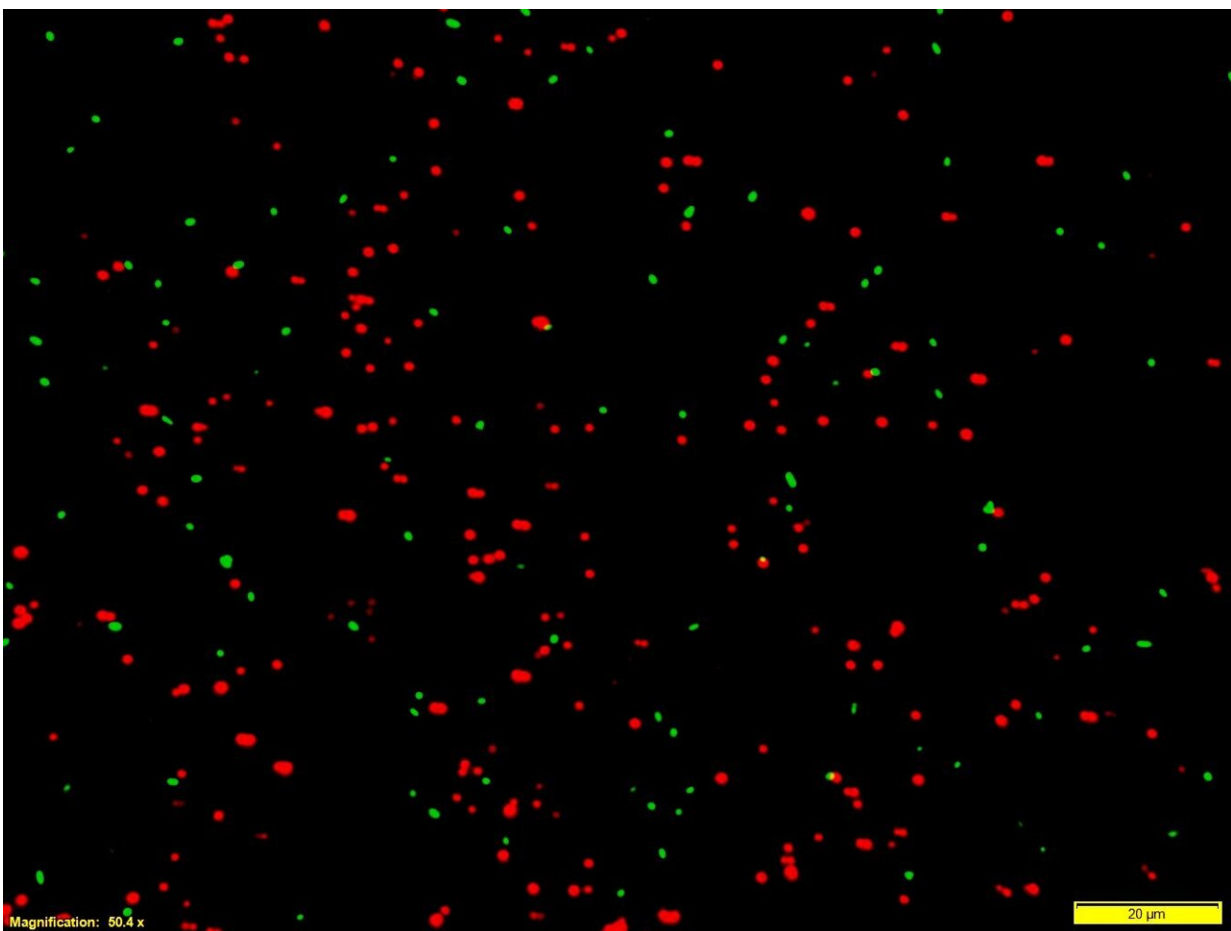


# Research into bacteria may lead to new ways of treating infections, improving human health

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Staphylococcus Aureus and Pseudomonas Aeruginosa Communicating. Credit: Nova Southeastern University

New research from Nova Southeastern University (NSU) is working towards understanding human infections and unlocking how bacteria "work together" to make these infections much more difficult to treat. Understanding this symbiotic relationship can lead to better ways to treat various ailments.

This new study was recently published in the journal *eLife*.

"There are [good bacteria](#) and not so good [bacteria](#)," said Robert Smith, Ph.D., and Associate Professor and Research Scientist, Cell Therapy Institute in NSU's Kiran Patel College of Allopathic Medicine (NSU MD). "Bacteria are all around us, with some providing beneficial aspects to life, but there are others that cause infections or worsen illnesses."

Smith was the Principal Investigator on a research team that looked at how bacteria may work together, exacerbating illness and making treatment more difficult. Specifically, they looked at two bacteria that are commonly found together in infections—*Staphylococcus aureus* and *Pseudomonas aeruginosa*. Staph can be found on the skin of around 50% of the population; *Pseudomonas* can be found in the soil. However, when they get together in infections, things can get bad.

"Most infections are caused by a single bacterium, but when bacterial species 'gang up,' they can become even more challenging to treat," Smith said. "The infection is more severe, and they can resist antibiotic treatment."

According to Smith, these bacteria communicate in the wound, causing the infection to be more severe and challenging to treat. This is particularly important in individuals with [cystic fibrosis](#) where these two bacteria thrive.

"Towards trying to develop new ways to treat infection with these

bacteria, we found that how fast each bacteria grows and how much energy each bacteria has determines how they talk to each other in the wound," Smith said. "If we can interrupt their ability to talk to each other, then we might be able to come up with ways to change their growth or the amount of energy they possess, which could decrease the severity of the infection and may make them more susceptible to antibiotics."

Smith said there is much more research to be done, but every discovery is a step toward improving the overall human condition.

**More information:** Camryn Pajon et al, Interactions between metabolism and growth can determine the co-existence of *Staphylococcus aureus* and *Pseudomonas aeruginosa*, *eLife* (2023). [DOI: 10.7554/eLife.83664](https://doi.org/10.7554/eLife.83664)

Provided by Nova Southeastern University

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