Space Travel Won’t Turn Germs Into Superbugs

International Space Station
Photo: NASA/Roscosmos

TUESDAY, Jan. 8, 2019 — Despite the terrifying plot lines of many a sci-fi film, there’s no need to worry that germs in space might transform into ferocious, malevolent microbes that threaten the human race.

Quite the opposite, new research reveals.

The harsh conditions of galactic travel don’t trigger genetic changes in bacteria that make them more dangerous to people, scientists discovered.

“There has been a lot of speculation about radiation, microgravity and the lack of ventilation, and how that might affect living organisms, including bacteria,” said study leader Erica Hartmann. She is an assistant professor of environmental engineering at Northwestern University.

“These are stressful, harsh conditions. Does the environment select for superbugs because they have an advantage?” Hartmann asked. “The answer appears to be ‘no.'”

In the study, Hartmann and her colleagues analyzed U.S. National Center for Biotechnology Information data on strains of *Staphylococcus aureus* and *Bacillus cereus* bacteria found on the International Space Station. The bacteria travel to the station on astronauts or in cargo.

While bacteria on the space station do have different genes than their counterparts on Earth, those genes do not turn them into antibiotic-resistant superbugs.

Study first author Ryan Blaustein said, “Based on genomic analysis, it looks like bacteria [in space] are adapting to live – not evolving to cause disease.” Blaustein is a postdoctoral fellow in Hartmann’s laboratory.

“We didn’t see anything special about antibiotic resistance or virulence in the space station’s bacteria,” he said in a university news release.

The study was published Jan. 8 in the journal *mSystems*.

While the findings bring good news, they don’t mean that illnesses can’t be spread on space stations or spacecraft, the researchers noted.

Hartmann explained that “everywhere you go, you bring your microbes with you. Astronauts are exceedingly healthy people. But as we talk about expanding space flight to tourists who do not necessarily meet astronaut criteria, we don’t know what will happen. We can’t say that if you put someone with an infection into a closed bubble in space that it won’t transfer to other people. It’s like when someone coughs on an airplane, and everyone gets sick.”

Increasing talk about sending people to Mars makes this type of research even more important, she pointed out.

“People will be in little capsules where they cannot open windows, go outside or circulate the air for long periods of time,” said Hartmann. “We’re genuinely concerned about how this could affect microbes.”

More information

NASA has more on the human body in space.

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