LU researcher: NASA's ET hype does disservice to science

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NASA researchers recently unveiled a major discovery -- the first identified microorganism on Earth able to thrive using toxic arsenic rather than phosphorus, which forms the DNA-backbone of all other living things. But now, scientists are voicing concerns about the study's conclusions, with some saying the results are not what the researchers claim.

Validity of the science aside, Lehigh microbiologist Amy Hitchcock Camp says that the clumsy delivery of the news had already overshadowed the potentially groundbreaking science. NASA touted the microorganism's impact on the search for extraterrestrial life, generating buzz about alien life forms. Yet, the microbe in question hailed from California.

This is a common error, says Camp, when there's breaking science news. A major scientific finding becomes at best misunderstood, and at worst, an example of how science has trouble communicating even its best discoveries.

"The announcement made the science look like a disappointment. This does a great disservice to the actual findings—and leaves the public with misconceptions," says Camp, who joined the Lehigh faculty this year as an assistant professor of biological sciences. "I think the general public would have been able to appreciate it more if NASA and Science (the journal in which the study was published) had not allowed speculation and rumors to run rampant."

A remarkable discovery

If, in fact, the newly discovered bacterium can live on arsenic—and is not simply sneaking phosphorous as some have claimed—our notion of what life can be would change, Camp says.

"Until now, science has taken a rather narrow view of life—that oxygen, carbon, sulfur, phosphorous, hydrogen and nitrogen are the six essential atoms for life," she says. "This study could alter longstanding assumptions about that with the addition of arsenic. It's not a truly different life form. But it could inform our search for alternative forms of life."

As for the short-lived buzz that an alien life form had been discovered, Camp doesn't share the public disappointment. "If we found this microbe in a galaxy far, far away, we couldn't study it," says Camp, who studies how bacterial cells communicate and regulate their genes. "Perhaps for the public it would be more exciting to find life on another planet. But for me, it is more exciting because we can actually study it here."

Camp's attraction to the story comes from her work on understanding how microbes adapt to different environments. Because the vast majority of cellular life and diversity is microbial, scientists who are interested in finding other forms of life wisely look at microbes.

The recent findings "could open up a whole new study of the arsenic-containing biological molecules, their relative stabilities and their biochemistry," Camp says.

Arsenic was—and is still, by many—considered too unstable an element to function in biological molecules.

“Even if this microbe isn’t utilizing arsenic in place of phosphorus in its biomolecules, it is still remarkable that it can thrive in the presence of ordinarily lethal concentrations of arsenic,” Camp says. “I think we can reliably take away from it that if there is any possible solution to avoiding death, nature will find it.”

Provided by Lehigh University