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Company works medical magic in orbit

Astrogenetiz conducts experiments on space shuttle

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AUSTIN (KXAN) - Imagine a vaccine that could protect you against serious, even deadly diseases, a vaccine that does not yet exist. Where might you look for something like that coming down the road? Try up.

When the space shuttle Atlantis lifted off the launch pad in Florida Nov. 16, it carried into orbit an experiment created by the Austin-based company, Astrogenetix.

"It's a very simple process for the astronauts," said company spokesperson Scott Haywood. "The simpler, the better, because we're utilizing astronaut time which is a valuable commodity."

On board the shuttle, an astronaut attaches a crank to the top of a tube containing several vials. Inside each vial is a chamber holding a strain of bacteria. Above it, another chamber holds a worm with an immune system that acts much like our own.

As the crank is turned, the bacterium is forced into the worm. Each of the strains of bacteria has had its genes tweaked by scientists. By seeing which strains do not cause illness in the worms, researchers can pinpoint them as candidates for a human vaccine.

"We see how the bacteria impacts those worms," said Haywood. "Did it get them sick? Did it not get them sick? Did it even infect them at all? What kind of reactions occurred when those two combined? And what we're looking for is a strain of the bacteria where the virulence has been removed. So it entered the worm but it didn't get it sick."

Already, promising results are turning up.

"Salmonella is actually the first bacteria that we worked on and we've already found a vaccine candidate for Salmonella," said Haywood.

The progress on Salmonella in space took only a few months to achieve. Scientists on Earth have laboring over the task for years. The explanation for that is still under investigation. It may be because the low gravity environment in orbit enables interactions between materials that would be more isolated from each other as gravity weighs them down on Earth.

"From our standpoint, we're mostly interested in the fact that it does occur," said Haywood. "We know that it happens and we know that we can take that information and then develop products based on it."

The Salmonella "product" is expected to get clinical trials to assure its safety within the next year. If it's approved by the Federal Drug Administration, it could significantly reduce infections of the agonizing food-borne illness.

"A lot of travelers would look at getting a vaccine like that as they're going to countries that may not have the same sanitary environment that the U.S. has even," said Haywood.

On the current Atlantis flight, the experiments are aimed at a vaccine for MRSA, a deadly disease that kills an estimated 19,000 people a year in the United States, alone. The antibiotic-resistant disease is often found in hospital settings.

"If you were having an elective procedure," said Haywood, "you know, you're going into the hospital, for example, you could get this vaccine in advance of that to ensure that you're not going to get impacted by MRSA when you go into the hospital. Also for health care workers, it would be a great thing for them to have, so they're not carrying that bacteria around with them and infecting other people inside that hospital environment."

If the space experiments pan out, progress could advance beyond vaccines.

"Currently, most of our work is focused on vaccines," said Haywood, "but we're hopeful that we can also take that same knowledge gained and also do development of therapeutics, so that you could have an antibiotic or something that you could take after getting an infection. So you would be able to attack both sides of the problem."

Look up.

Editor's note: If you'd like to keep up with AstroGenetix projects in space, you can subscribe to the company's news feed.