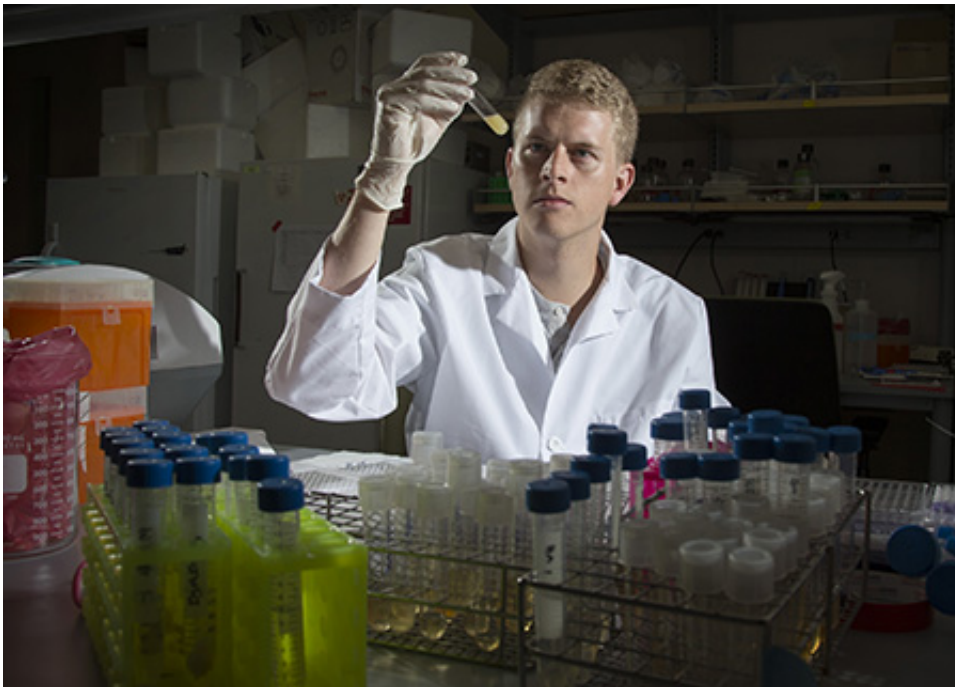


Student targets MRSA after it costs father his leg

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MRSA is bad news. If you've never heard of it, here's what you need to know: It's pronounced MER-suh, it's a nasty bacterial infection and it can cause serious disease and death.

Senior molecular biology major Jacob Hatch knows MRSA as the infection that took his dad's leg.

Hatch was thousands of miles away on an LDS (Mormon) mission when Methicillin-Resistant *Staphylococcus aureus* decalcified the bones in his dad's foot and lower leg, leading to an emergency amputation just below the knee.

"It was really hard to hear the news—you never expect to hear someone in your family having to have a limb amputated," Hatch said. "I felt helpless being so far away."

Now Hatch is exacting revenge on the [bacteria](#). Researching alongside assistant professor of microbiology and [molecular biology](#) (and brother-in-law) Bradford Berges, Hatch is unlocking the power of a new MRSA-killer: bacteriophage.

Phages are viruses that seek out, infect and kill bacteria. BYU researchers have successfully used them to save beehives from American foulbrood, and now they are harnessing their abilities to find MRSA and eliminate it.

In a recent study published in high-ranking journal *PLOS ONE*, Hatch, Berges and colleagues demonstrate the ability of [phages](#) to decontaminate (kill off) human MRSA bacteria from both hard surfaces (glass table top) and fabrics (lab coat).

The findings on phage effectiveness against MRSA are increasingly vital since the deadly bacterium is now resistant to almost all available antibiotics. Doctors worry that the one antibiotic that can still treat MRSA—vancomycin—may soon be ineffective as well.

MRSA is most problematic in hospitals and nursing homes—places where the sick and wounded are susceptible to infection. Berges said about 30 percent of humans are carriers for the bacteria, but it only "gets nasty" when it penetrates the skin.

People who are infected can develop sepsis, pneumonia, meningitis or even die. Fortunately, Berges and Hatch's research is showing that phages kill more than 99 percent of MRSA pathogens.

"And while phages kill off bacteria, they will never cause any problems to humans because it's a virus that's evolved to infect bacteria cells," Berges said. "It's never going to infect human cells—it's not even a possibility."

To date, the research team has identified six unique phage types that can kill off MRSA. Their future research will identify even more MRSA-killing phages.

Thanks to the mentoring of Berges, Hatch has now published as an undergraduate student and is in prime position for medical school next year. He hopes his work can prevent others from the challenges his dad has faced.

"This research is my way of coping with it and feeling like I've been able to do something to solve these type of problems," Hatch said. "It's been so rewarding to see that it is working."

More information: *PLOS ONE*, journals.plos.org/plosone/article?id=10.1371/journal.pone.0131714

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