Students create microbe to weaken superbug

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A team of undergraduate students from the University of Waterloo have designed a synthetic organism that may one day help doctors treat MRSA, an antibiotic-resistant superbug.

The synthetic bacterium, Staphylocide, essentially turns off the antibiotic-resistance gene in MRSA, making it responsive to treatment again. MRSA, or methicillin-resistant Staphylococcus aureus, is at the core of many skin infections that spread easily and can cause serious, untreatable infections for hospital patients.

The International Genetically Engineered Machine (iGEM) team, composed of students from Waterloo's Faculties of Science, Engineering and Mathematics, won a gold medal for designing Staphylocide at the recent International Giant Jamboree in Boston. They also took the prize for best model for their use of mathematical models and computer simulations that describe the structures and systems they used to complete Staphylocide.

"Our members are enthusiastic and always strive for excellence. I think that's part of the Waterloo culture, the idea of why not, which opens up the possibilities to pursuing bigger and better projects," said Suzie Alexander, fourth-year Science student and iGEM director.

This year's project was divided into three phases. First, the team conducted a series of lab experiments to find the best way to silence the resistance gene in MRSA. Then, they looked for ways to deliver the gene into their synthetic bacterium. Finally, they translated their idea into an

antibiotic resistance ointment for patients.

The group won a gold medal and the award for best poster at the North American regionals last year. The iGEM team has consistently earned medals at competitions since 2007.

"I realized at the jamboree how lucky we are," said Tessa Alexanian, a Waterloo Engineering student. "Science has a whole course—Biology 349—that's intended for students to develop synthetic biology project skills. I think it's really special the amount of support we receive."

Provided by University of Waterloo