UVic Biochemist Stares Down Superbug

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University of Victoria biochemist Dr. Alisdair Boraston has discovered something new about a nasty superbug—a discovery that could lead to new drugs to combat it.

Boraston and his research team have determined that the Streptococcus pneumoniae bacterium, the cause of recent cases of drug-resistant ear infections, pneumonia and meningitis, uses a specialized protein to target a particular type of cell—one that is responsible for making the soapy substance that coats the inside of our lungs. This substance keeps the lungs inflated and acts as the first line of defence against invading bacteria.

The soapy substance is produced in lung cells from specific sugars. These sugars are attacked by the bacterial protein that Boraston and his team are studying. “The next step is to figure out how to inhibit the action of the protein so that it will slow or prevent the germ’s assault on these key lung cells,” he says.

An inhibitor would be a first step in the development of a treatment to help the body fight the infection before it spreads and, perhaps, before antibiotics are required.

Because there is a known link between Streptococcus pneumoniae and the flu virus, a flu outbreak or pandemic could create a resurgence of this bacteria in the wider community. “If there are drug-resistant strains within that spread, we’re in trouble,” says Boraston. “We need to have alternative strategies to treat drug-resistant pneumonia and other serious infections.”

Boraston was recently named a Michael Smith Foundation for Health Research Scholar to study Streptococcus pneumoniae virulence factors. Boraston is also the Canada Research Chair in Molecular Interactions, a prestigious national award that has just been renewed for a second five-year term.

His work, which focuses on how proteins interact with sugars, is funded by the Canadian Institutes for Health Research, the Natural Sciences and Engineering Research Council, the Canada Foundation for Innovation and the British Columbia Knowledge Development Fund.

Source: University of Victoria