

POLICY FACT SHEET

Enzyme paving the way to new antibiotics

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Bacteria can become resistant to current strains of antibiotics, and as a result it is important to develop new medications to thwart these drug-resistant bacteria. In addition, researchers are working to generate anti-cancer antibiotics with greater selectivity and power.

David Jakeman's research falls in both these areas. With funding from the Nova Scotia Health Research Foundation and the Canadian Institutes of Health Research, Dr. Jakeman is working to develop novel antibiotics that contain carbohydrates. He has had success using the soil bacterium *streptomyces venezuelae* ISP5230, to make new potential antibiotics for biological testing. In the course of his research, his research team has isolated over 20 different antibiotics, over half of which have never been isolated previously. In on-going collaborations with others at Dalhousie University these potential antibiotics are being tested against pathogenic bacteria and various cancer cell lines to determine their medicinal potential.

"The discovery of a new drug is a remote possibility," says Dr. Jakeman.

"However," he notes, "there is a significant amount of important fundamental science to be conducted in this area that will improve any chance of success." Dr. Jakeman's research team is pursuing additional funding to explore these questions.

In Dr. Jakeman's current research, his research team is probing the specificity of enzymes responsible for the production of sugar-containing antibiotics, looking to find efficient methods to produce potent sugar-containing antibiotics. There is significant untapped potential for the production of sugar-containing antibiotics because of advances in technology. Only a few current medicines are decorated with different sugars, largely due to the technical difficulties previously associated with producing the necessary molecules.

Dr. Jakeman's analysis of the structure, mechanism and function of glycosyltransferases will potentially lead to the development of novel carbohydrate-containing bioactive molecules that are better able to target and kill cancer cells.

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