

# Career Connection: Dr. Chris Whitfield & Dr. Eric Brown

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## Teacher Resource

1. What does Glycomics study? Do you think the study of Glycomics is important? Create a list of applications that Glycomics research may provide to society.

Glycomics has evolved to cover a range of scientific disciplines that are applied to study the structure and function of carbohydrates (sugars) in biological systems. Glycomics research has led to successful commercialization of several carbohydrate-based drugs, including ones that fight influenza, blood clots, diabetes, seizures and migraines. The rapid advances of enabling technologies are helping to unravel the complexity associated with glycomics. Insights into antimicrobial drugs, genetic diseases, diabetes, obesity, chronic disease and new therapeutic proteins and vaccines will potentially be gained. This will be beneficial to both pharmaceutical and biotechnology companies.

2. All research isn't without its challenges. Outline some of the challenges that the professors described with regards to carbohydrate research.

Carbohydrates and microorganisms are extremely difficult to analyze and synthesize; and often there is a lack of technology up to the task. Now, however, new technologies have emerged that simplify and accelerate carbohydrate analysis and synthesis. The common sugars found in cells can be combined in a myriad number of ways to form complex carbohydrate structures (glycans). The glycan repertoire (glycome) of a given cell or organism is thus many orders of magnitude more complex than the genetic make-up of a cell.

3. The Canadian Glycomics Network initiative involves over 150 researchers from across Canada. How is this collaborative approach beneficial?

This network brings experts who are leaders in these diverse areas of glycomics together. Researchers need to collaborate with each other to complement their knowledge and skills, access specialized equipment, and expand the data they can utilize.

4. Use this article, the Internet, or other resources to generate a list of careers and positions available in the field of microbiology. Choose one and elaborate on its requirements.

Bacteriologist: Biochemist: Biotechnologist: Cell Biologists: Clinical Microbiologist: Dentistry: Environmental Scientists: Geneticists:	Immunologists: Medicine: Mycologist: Parasitologists: Science Writer: Teaching: <ul style="list-style-type: none"><li>• Secondary School Teaching:</li><li>• College and University Teaching:</li></ul> Virologists
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Last update: April, 2020