UBC Vancouver Summer Program

*July 16–August 16, 2016 Course Package Offerings*

**Pharmaceutical Sciences**

**Making Better Medicines**

***The Discovery of New Medicines***

“What does it take to find a new drug?” The objective of the course will be to answer this question by introducing the participants to the drug discovery and development process. Specifically, the role of the Pharmaceutical Sciences in the discovery of new medicines will be described. Case studies will be presented by experienced scientists that illustrate challenges that interdisciplinary drug discovery teams must overcome. In addition, participants will have an opportunity to visit the laboratories of a local research organization involved in supporting drug discovery efforts. By taking this course, participants will gain an appreciation of the collaborative work that is required in the search for new therapies.

***Personalizing Medicines with Genomics and Biotechnology***

For millennia, we have sought to understand how to treat disease using potions, teas, pills and most recently, genetically engineered cells. Indeed, the use of cutting-edge technology in drug discovery is not new – for example, the most powerful anti-malaria drug was re-discovered in the writings of Ge Hong, a physician who practiced 1700 years ago. Today when one thinks of drug discovery and development, large multibillion dollar pharmaceutical companies come to mind, with their remarkable medications for infections, heart disease and cancer. Despite their effectiveness, these medicines tend to treat all patients as members of one homogeneous population. Obviously every patient is unique and the best medicine for you is one that is tailored to you. Recently, next generation DNA sequencing is making this possibility a reality. Cancer treatments can now be designed to match your specific DNA, eliminating the trial-and-error approach to treatment. Similarly, DNA sequencing can match your prescriptions to your genome. The integration of DNA sequencing with drug therapy has been a disruptive innovation, bringing the science of “big data” to medicine and pharmacy. In this course we will explore how these and other innovations are revolutionizing healthcare and wellness. Students will have the opportunity to explore these innovations first hand in the laboratory.