

## **Summer by Design 2019 – Santoshi Biswanath – GSCN travel award report**

The Summer by Design 2019 workshop, was hosted by Medicine by Design in partnership with the Centre for Commercialization of Regenerative Medicine (CCRM) and the Rotman School of Management in Toronto. The workshop brought together 21 early researchers from selected international regenerative sciences institutes and the University of Toronto.

In recent years, significant progress has been made in the field of regenerative medicine. This area of research is aiming to restore or replace damaged tissues with new functional tissues or organs, mostly by harnessing the power of stem cells and continues to be a growing segment of biotechnology financings. However, to bring a viable and effective therapy or technology, one must also have the knowledge and skills to translate the research. The goal of Summer by Design was to create awareness and tackle some of the specific hurdles the researchers would face when transforming their research product into a viable therapy.

The workshop was kicked off by Allison Brown, director of Medicine by Design and Michael May, director & CEO of CCRM. The workshop was in full swing on the second day with introduction to commercialization of regenerative therapies. As early as at the stage of basic research, scientists should pursue their goals mindful of the downstream large scale manufacturing of the product for commercialization. Elizabeth Csaszar made us aware that we should make good and effective decisions on the front end of the research, keeping the implications of large scale manufacturing in mind. Siofradh McMahon introduced us to regulatory and clinical translational aspects of regenerative medicine-based products/therapies. This was followed by a sneak peek into early stage investments and company valuations by Jonathan Yeh. He focused on the principles that drive company values and components of valuation. In this module we also had the opportunity to perform due diligence of hypothetical companies.

The Rotman School of Management provided us with an intense crash course into strategy, finance for entrepreneurs and marketing modules. The workshop was not only based on theoretical modules, but we also had the chance to put into practice the knowledge gained in this workshop on a case study related to an upcoming regenerative therapy.

Furthermore, we had the opportunity to meet eminent scientists who made their way from research to commercialization. One such scientist we met was Keith Pardee. The Pardee lab

works on reproducing a low-cost, easy to use test for Zika Virus by placing synthetic gene networks on paper. Pardee inspired and motivated us to think along the lines that we should try to bring products to the market which could be affordable by the customers even in developing countries.

Another imminent scientist who has successfully made her way from basic research to commercialization is Shana Kelley. Kelley transformed her PhD research which focused on studying the electrical conductivity of human DNA, to a commercialized product GeneOhm Sciences. During her PhD, she found that DNA is a semiconductor but upon small changes or mutations, this can halt the DNA from conducting electricity. This idea resulted into GeneOhm Sciences which designed, developed, and delivered nucleic acid-based diagnostic solutions. It focused on serving the unmet diagnostic needs in a wide range of diseases including inherited disease, infectious disease and oncology. This was then acquired by Beckton Dickinson in 2006. Apart from this, Kelley is also a co-founder for two other companies, Xagenic and Cellular Analytics. This was an appropriate wrap up of the whole session; because we could appreciate every step Pardee and Kelley took to bring out their product to the market.

In addition to all these modules, we also had workshops to learn how to pitch our science to investors, policy makers, or the general public. This workshop was in collaboration with Talk Boutique. This workshop enhanced our pitch and honed our presentation skills. At the end of the workshop, we had the opportunity to pitch our research to the other participants, and Medicine by Design and CCRM employees.

To conclude my report, I would like to thank GSCN for giving me this opportunity to participate in the workshop. The workshop gave me ample opportunity to interact and network with other fellow researchers, and experts in clinical translational and commercialization and also to engage in constructive discussions. I am confident that this workshop will be useful and will have an important impact on my career.