SAMPLE 4

Optimizing the Methodology of Rare Cancer Cells Lines

In recent years, many large-scale genomic and anti-cancer compound initiatives have been used to identify potential cancer dependencies. However, these and other cutting edge technologies have been primarily applied to cancers that are represented by large numbers with established cell line models. As a result, relatively little is known about the vulnerabilities of some rare cancers, due to the limited number of existing models. If it were possible to create lines representative of cancer cells in patients, it would be feasible to apply many current technologies and experimental approaches to accelerate the progress of its research. We know additional method development is necessary to establish strategies for generating representative cancer cell lines, but research groups worldwide have largely failed to establish robust protocols for generating rare cancer cell lines from primary patient material. As of today, no firmly established protocol exists for the generation of cell line models in vitro. The Cancer Cell Line Factory (CCLF) attempts to streamline the process of primary tissue acquisition for development of standard procedures for model generation. To rapidly identify robust methods for selective growth of novel cancer cell types, a systematic approach was developed for screening cell culture conditions by combining published generation methods with other standard approaches. This includes identifying optimal cell culture conditions for novel cancer types. Additionally, CCLF has been working to develop new biosensors to rapidly assess the identity, health and viability of cells in culture. Viral constructs for these biosensors were inserted into established cell lines to test their efficiency.

Several of these constructs were identified to rapidly assess the impact of various conditions on prostate cells in culture. With this result, it is believed that the generation of rare cancer models could progress with more ease than previous attempts, strengthening the possibility of learning more to fight rare cancer.