116e Novel Protein Crystallization Strategies

Soojay Banerjee

Years of scientific research to discover a method to stabilize membrane/ion channel proteins for the development of new life saving drugs has been expended by researchers to no avail. We are developing new platform technologies that help to stabilize membrane proteins during the course of crystallization. Our technology is based on the idea of dialysis. The method allows the researcher to effectively exchange and screen detergents after the protein has been purified in a detergent that perhaps is not amenable for crystallization. We are able to accurately control the concentrations of the detergent, lipids and salts in order to ascertain the conditions that enable the stablilization of a particular membrane protein. This membrane protein stabilization system has been synchronized with a dynamically controlled crystallization system that allows for the screening of several crystallization conditions in parallel. With this system one can change concentrations of precipitants, additives etc. dynamically in order to establish an accurate phase diagram. Recent accomplishments include crystallization and data collection of human ion channel proteins that has a significant impact on Type II Diabetes drug discovery.