**Applications of genetics, genomics and bioinformatics in drug discovery**

Genomics and genetics also play an increasingly important role in other areas in drug discovery such as biomarker identification for drug efficacy and safety, understanding drug mechanisms of action, identifying alternative drug indications and anticipating on-target safety concerns, and selecting disease relevant experimental models. To facilitate the application of genomics in drug discovery, it is critical to systematically assess data quality and reproducibility, and to develop new methods and tools for integrative genomic data analysis. Examples of topics and problems within the scope of this session include but are not limited to:

         **Pharmacogenomics**: identify associations between germline SNPs, somatic mutations, gene expression and other molecular alterations and drug responses.

         **Toxicogenomics**: integrative analysis of genomic, histopathology, and clinical chemistry data to develop predictive toxicology biomarkers in preclinical 4-day, 14-day and 30-day studies and clinical studies.

         **Understanding drug mechanisms of action**: applying genomic profiling to de-convolute targets and delineate MoA of non-selective drugs or drugs from phenotypic screening.

        **Selection of disease-relevant experimental models:** comparative analysis of genetic and genomic data to assess and select cell line and animal models in drug discovery that best represent the disease indications.

         **Drug repurposing**: applying *in silico* approaches to identify new disease indications for existing drugs.

        **Novel methods and tools** for multi-omics data integration, analyses, and visualization