Collaborative Clinical Genomics Data Analysis with Sage Bionetworks Synapse

The past two decades have seen an exponential growth in the technical ability to generate genetic and biomolecular data fueled by advances in measurement technologies. However, with a few exceptions, these data have failed to improve prevention or treatment of common human disease. A fundamental reason for this discrepancy between data generation and clinical improvement is the immature development of analytical techniques to meaningfully interpret these new data types. As with any new field, analytical methodologies need to be iteratively developed and refined. The difficulty of accessing, understanding, and reusing data, analysis methods, or models of disease across multiple labs with complimentary fields of expertise is a major barrier to the effective interpretation of genomic data today. Additionally, much of the relevant data to answer a particular research question is spread among multiple public and private repositories. Sage Bionetworks' mission is to catalyze a cultural transition from the traditional single lab, single-company, and single-therapy research paradigm to a model founded on broad precompetitive collaboration on analysis of large-scale biological data. In this talk we will focus on the technology component of Sage Bionetworks’ solution strategy, Synapse, an informatics platform for open data-driven collaborative research. Synapse provides programmatic access to a variety of clinical and genomic data sets, tracking of analysis workflows, and integration with common analysis tools like R/Bioconductor.

Dr. Kellen is Director of Technology and Software Development at Sage Bionetworks, a non-profit research institute focused on improving human health by promoting open science. In this role he leads the team developing Synapse, serving the needs of Sage researchers and the broader research community. He has over 10 years experience developing software for academic and corporate users in the life sciences, and have brought several innovative and award-winning products to market in this space covering simulation, data capture and analysis workflow, data integration, and team collaboration. Prior to working at Sage Bionetworks, he held a variety of positions with Teranode corporation since joining as the company's first employee in 2002, covering product development, field consulting, product management, and development management. Michael completed a doctorate in bioengineering at the University of Washington in 2002 with a focus in computational biology.