DREAM Challenges Academy

Sponsored by NIH

DREAM Challenges pose fundamental questions about systems biology and translational medicine. Designed and run by a community of researchers from a variety of organizations, our challenges invite participants to propose solutions—fostering collaboration and building communities in the process.

Expertise and institutional support are provided by SAGE Bionetworks, along with the infrastructure to host challenges via their Synapse platform.

Together, we share a vision allowing individuals and groups to collaborate openly so that the “wisdom of the crowd” provides the greatest impact on science and human health.

The Mission: The speed of advancement in data-rich biomedical sciences is limited in part by the lack of awareness and expertise in big data sets and tools, the absence of approaches that productively intersect disparate domains, and the underrepresentation of diverse groups in the workforce. The mission of this Academy to provide early-career biomedical researchers with the practical skills and insight needed to harness the power and advance the promise of big data science to accelerate scientific discovery.

The Target DREAM Challenge: While methodologies for the analysis of cancer genomes and transcriptomes have undergone rapid benchmarking and standardization, our understanding of how best to analyze the cancer proteome remains less developed. The NCI-CPTAC DREAM Challenge is a community-based collaborative competition of researchers from across the world working together to answer key questions in cancer research, initially focused around the integration of genomics, transcriptomics and proteomics data. Algorithms developed in this effort will be applied to a broad range of tumor types and clinical questions, providing together the most comprehensive unified view of the cancer data to date.

Cost: There is no fee to participate in the DREAM Challenge Academy, and Icahn School of Medicine at Mount Sinai will send participants to the RECOMB/ISCB Regulatory Conference on Regulatory & Systems Genomics, with DREAM Challenges in New York City. There will also be field trips to New York Genome Center, IBM Research, American Museum of Natural History and other prominent scientific sights in and around New York City.

Course Sponsor:
NIH Big Data to Knowledge (BD2K)
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DREAM Academy Mentors:

PABLO MEYER, Ph.D., Research Staff Member, IBM Research

GAURAV PANDEY, Ph.D., Assistant Professor, Genetics and Genomic Sciences, Icahn School of Medicine at Mount Sinai

GUSTAVO STOLOVITZKY, Ph.D., Adjunct Professor, Genetics and Genomic Sciences, Icahn School of Medicine at Mount Sinai & Program Director, Translational Systems Biology and Nanobiotechnology, IBM Research

Eligibility: Intended participants for the DREAM Challenges Academy are senior-undergraduate and graduate students, and post-doctoral fellows. Some knowledge of biology and/or programming is preferred. Applicants must be U.S. citizens or permanent residents, and based in or around New York City.

Skill development

- Team problem-solving

- Big data techniques to solve the DREAM Challenge:
  - Machine learning
  - Data exploration/statistics (PCA, clustering)
  - Network inference.
  - Modeling the biology of the problem

- Programming in High Performance Computing environments

You will work with peers as well as gain expertise through lectures (2 2-hour lectures per week for a month)

For more information and to apply:
http://icahn.mssm.edu/education/non-degree/creeds


For more information on the DREAM Challenge community: dreamchallenges.org

This program strives to enhance the diversity of the biomedical big data workforce through recruitment of individuals from diverse racial, ethnic, cultural, and socioeconomic backgrounds.