Broad-Nucleate Innovation Fellowship

Inaugural Cohort of Innovation Fellows

Nucleate

BROAD INSTITUTE

Abhishek Aditham
PI: X Wang, Core Institute Member

Katlyn Gabriel
PI: A Greka,Institute Member

Sameed Siddiqui
PI: P Sabeti, Institute Member

Mai Tan
PI: D Farzan, Assoc Institute Member

Giuseppe Tarantino
PI: D Liu, Assoc Institute Member

Axel Vera
PI: R Raine, & A Choudhary, Assoc Institute Members

Abhishek Aditham

PI: Xiao Wang, MIT

Abhishek is a graduate student at MIT applying site-specific chemical modifications to improve mRNA therapeutics. As an undergraduate, he studied chemical engineering at UC Berkeley, where he worked on CRISPR biochemistry in Prof. Jennifer Doudna's lab, then later studied carbon nanotubes in Prof. Markita Landry's lab. As a Ph.D. candidate in Biological Engineering at MIT, he joined the Wang lab to develop new engineering strategies to increase therapeutic mRNA expression, lifetime, and diversify its application space.

X Wang, Core Institute Member

Katlyn Gabriel

PI: Anna Greka, Harvard

Katlyn is a current G4 in the Biological Sciences in Public Health program at Harvard University where she uses high-content imaging to explore mechanisms of lipid biology. Katlyn hopes to expand our understanding of metabolic disease states to ultimately positively impact patient lives.

A Greka, Institute Member

Sameed Siddiqui

PI: Pardis Sabeti , Harvard School of Public Health

Sameed Siddiqui is a G6 PhD candidate in MIT's Computational and Systems Biology program. His research spans both computational and molecular domains, including the development of data science pipelines for analyzing human immune responses to SARS-CoV-2, engineering innovative molecular reporter systems for CRISPR-based viral diagnostics, and, currently, designing novel machine learning architectures for biological data analysis. Concurrently with his PhD, he is pursuing an MBA at the MIT Sloan School of Management, focusing on bridging the gap between scientific and business domains. Before his graduate studies, Sameed worked as a bioinformatics software engineer at Dovetail Genomics and as a software engineer at Google

P Sabeti, Institute Member

Mai Tan

PI: Michael Farzan, Boston Children's Hospital

Mai Tran, is a postdoctoral fellow developing methods to engineer the B-cell receptor locus without the use of an exogenous nuclease like CRISPR/Cas9. This work would streamline and increase the safety of *in vivo* B-cell editing. Engineered B lymphocytes have significant therapeutic potential because they can be programmed with specific antibodies and other biologics, while still proliferating and affinity maturing like natural B cells to control chronic infections such as HIV-1. Mai holds a B.S. from Troy University, Alabama, and a Ph.D. from Scripps Research Institute where she studied novel CRISPR effector proteins and class-switch recombination of B cells. She is currently a recipient of the National Research Service Award (NRSA) for her postdoctoral studies.

D Farzan, Assoc Institute Member

Giuseppe Tarantino

PI: Dave Liu, Dana-Farber Cancer Institute

Giuseppe is a postdoctoral fellow at DFCI working to uncover biomarkers for immunotherapy response in metastatic melanoma. His work led to the identification of high heterogeneity and low ploidy as robust biomarkers of intrinsic resistance to the single agent anti-PD1, and to the development of a high interpretable decision tree model to identify with high precision intrinsic resistant patients He brings a wealth of experience from both clinical and research settings, particularly in cancer research and predictive model development. In his project, Giuseppe plans to integrate and analyze clinical target panels to guide more personalized and rational utilization of immune checkpoint blockade for metastatic melanoma patients, interpreting complex data patterns and translating these insights into comprehensible, actionable clinical models. He is a bioinformatician B.S. in Biotechnology from the University of Palermo, Italy a Master's in Bioinformatics from the University of Bologna, which culminated in a Ph.D. in Oncology in 2020. His doctoral research, focusing on immune checkpoint blockade treatments in gastrointestinal stromal tumors,

D Liu, Assoc Institute Member

Axel Vera

PI: Ronald T. Raine, MIT and Amit Choudhary, Brigham and Womans

Axel is a Ph.D. candidate, NIH F31 Fellow, and HHMI Gilliam Fellow at the MIT Department of Chemistry working on precision control of the dosage of Cas9-based technologies, which are essential because off-target effects, genotoxicity, and immunogenicity are observed at elevated levels and with prolonged activity of Cas9. Phage-encoded anti-CRISPR proteins inhibit and control Cas9 but are impermeable to the cell membrane. To address this limitation, Axel developed the first cell-permeable anti-CRISPR proteins and used them to efficiently inhibit Cas9-mediated knockout, knock-in, transcription, and base editing and increase genome-editing specificity.

R Raine, & A Choudhary, Assoc Institute Members