Pratik Koppikar

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EDUCATION

University of Cambridge   08/23 – 05/27
Doctor of Philosophy in Clinical Biochemistry — King's College Cambridge
Supervisors: Michael Ward, Florian Merkle, Andrew Bassett
National Institutes of Health Oxford-Cambridge Scholars Programme (NIH OxCam), Cambridge Trust

The University of Texas at Dallas   08/19 – 05/23
Bachelor of Science in Biology — Minors: Political Science, Secondary STEM Education   **GPA: 4.0**
Eugene McDermott Scholars Program, National Merit Scholars Program, Collegium V Honors College

EXPERIENCE

National Institutes of Health & University of Cambridge   August 2023 – Present
Doctoral Student – Bethesda, MD/Cambridge, United Kingdom

- Optimization of base and prime gene editing tools for use in human induced pluripotent stem cell (hiPSC) model systems to effect pathogenic Alzheimer's Disease and Related Dementias (ADRD) variants.
- Segmentation and base classification of large-scale optical pooled screening datasets to extract cell-level phenotypes and barcode identities from multiplexed imaging and sequencing data.
- Regression and neural network based modeling to predict gene identity from microscopy images of endogenously tagged proteins, using data from proteome-wide pooled next-gen editing.
- Molecular dynamics simulation of tagged proteins for computational-experimental looped validation of intrinsically favorable internal tag regions.

Yale School of Medicine   May 2022 – September 2022
Research Intern, Monkol Lek Group – New Haven, CT

- Single-cell atlas for muscle cells with representation of histological features.
- Dimensionality reduction, high-throughput image analysis, web development.

Revvity (prev. PerkinElmer Genomics)   May 2021 – May 2023
Research Intern – Pittsburgh, PA

- Analytical chemistry to produce 3 assays/protocols translated to clinical production, including for Facioscapulohumeral Muscular Dystrophy through Optical Genome Mapping.
- Developed liquid chromatography-tandem mass spectrometry assay for quantification of Cerebrotendinous xanthomatosis bile acid analytes CDCA and THCA.
- RNA Extraction and RNA Library Creation protocols from fresh blood and frozen tissue.

Center for Life Sciences at National University of Singapore   January 2022 – May 2022
Research Intern, Jai Polepalli Group – Singapore, Singapore

- Validated use of Cre-lox and Flp-frt genetic manipulation tools using cloning, transduction, culturing, and visualization.
- Tested specificity and suitability of target antibody to the 5HT3AR interactor protein found in axons and nerve terminals.
- Designed co-immunoprecipitation methodology for synaptosome preparation and quantification of target interactor protein.

Potomac Institute for Policy Studies   August 2021 – December 2021
Science and Technology Policy Intern – Washington, D.C.

- Developed a capstone analytical review on the state of government funding for neural implantable technology.
- Weekly reports on broader technology topics including smart cities, gene editing, data privacy, etc.

Neuronal Networks and Interfaces Lab at UT Dallas   October 2019 – May 2021
Research Assistant, Joseph Pancrazio Group – Dallas, TX

- Investigated axonal nociceptive function in sensory neurons through use of microelectrode arrays integrated with microfluidics.
- Assessed the role of Ca-dependent K channels in dorsal root ganglion (DRG) stimulation through analysis of electrical stimulation data from microelectrode arrays.
- Quantified colocalization of DRGs with nociceptive marker TRPV1 from representative immunocytochemistry images including 2.7x increased axonal expression after IL-6 sensitization.

Human Genetics Lab at Emory University   June 2018 – August 2018
Research Assistant, Madhuri Hegde Group – Atlanta, GA

- Tested non-invasive alternative diagnosis pathway for limb-girdle muscular dystrophies (LGMDs) utilizing whole blood cells.
- Performed and analyzed western blot results to verify CAPN3 as a major contributing gene to the LGMD phenotype.
- Validated enzyme assays for GAA enzyme related to Pompe disease from muscle biopsy and fresh blood protein extract.

PUBLICATIONS

Guruju, N. M., Jump, V., Lemmers, R., Van Der Maarel, S., Liu, R., Nallamilli, B. R., Shenoy, S., Chaubey, A., Koppikar, P., Rose, R., Khadilkar, S., & Hegde, M. (2023). Molecular Diagnosis of Facioscapulohumeral Muscular Dystrophy in Patients Clinically Suspected of FSHD Using Optical Genome Mapping. *Neurology. Genetics*, 9(6), e200107. `https://doi.org/10.1212/NXG.0000000000200107`

Koppikar, P., Shenoy, S., Guruju, N., & Hegde, M. (2023). Testing for Facioscapulohumeral Muscular Dystrophy with Optical Genome Mapping. *Current protocols*, 3(1), e629. `https://doi.org/10.1002/cpz1.629`

Atmaramani, R., Veeramachaneni, S., Mogas, L. V., Koppikar, P., Black, B. J., Hammack, A., Pancrazio, J. J., & Granja-Vazquez, R. (2021). Investigating the function of adult DRG neuron axons using an in vitro microfluidic culture system. *Micromachines*, 12(11), 1317. `https://doi.org/10.3390/mi12111317`.

SKILLS & INTERESTS

Programming: Python, bash, Java, AMBER, Functional Assays, Cloning
Languages: Spanish (working), Hindi (intermediate), Korean (novice)
Interests: Jazz (Guitar/Vibraphone), Japanese/Russian Literature, Blogging, Dallas Mavericks Basketball
Awards: Cambridge Trust Scholarship (2023), Goldwater Scholarship (2022), Bill Archer Fellowship (2021), Eugene McDermott Scholarship (2019), Eagle Scout (2019)