Weill Cornell Medicine
Physiology, Biophysics & Systems Biology

The Graduate Program in Physiology, Biophysics and Systems Biology (PBSB)
The Weill Cornell Graduate School of Medical Sciences (WCGS)
1300 York Avenue
New York, NY 10065
http://pbsb.med.cornell.edu/

WCGS - PBSB 2024 Matriculated Students

Name / Photo	Research Interests
 **Hana Burgess** hmb4005@med.cornell.edu	B.A. in Biochemistry Scripps College I am broadly interested in protein translation, including applying high throughput methods to profile translation systems involved in disease pathogenesis or engineer translation to develop useful biomedical or environmental tools. I am curious to explore how the addition of non-standard amino acids into proteins could facilitate structural studies of membrane proteins, and how establishing better methods to sequence tRNAs or other small RNAs could aid cancer research. I am also interested in cell-free synthetic biology and developing cell-free systems out of non-model organisms, as well as microbial or molecular engineering for astrobiology applications.
 **Ariaki Dandawate** ard4008@med.cornell.edu	B.S. in Biotechnology and Computer Science New York University (NYU) Tandon School of Engineering I am interested in harnessing the power of machine learning methodologies to decipher epigenetic profiles from multiomic datasets. I am deeply intrigued by the potential of computational approaches to reveal the complexities of biological systems. By integrating diverse omics data streams, including genomics, transcriptomics, and epigenomics, I aim to develop innovative algorithms capable of uncovering underlying patterns and relationships in various pathologies. Through this interdisciplinary approach, I seek to not only enhance our comprehension of specific diseases but also to pave the way for personalized diagnostic and therapeutic interventions, ultimately contributing to advancements in precision medicine.

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 **Luke DeMarco** lud4004@med.cornell.edu	B.S. in Bioengineering Northeastern University My research interests lie in cancer and its relationship with the immune system. I am particularly inspired by the successes of cell therapies against hematologic cancers, and I am excited by their potential for improvement and success in solid malignancies.
 **Aksharkumar (Akshar) Dobariya** akd4005@med.cornell.edu	B.Eng in Biomedical Engineering Gujarat Technological University, India M.S. in Applied Cognition and Neuroscience University of Texas at Dallas I am deeply interested in research questions that intersect the fields of neuroscience and data science, particularly in using neurophysiology to characterize and understand behavior or the pathophysiology of diseases by employing modern data science tools. I have experience in developing large-animal brain models for neurological disorders. I seek to understand the pathophysiology of acute ischemic stroke to model real-world stroke scenarios and potentially show feasibility of extending the therapeutic window.

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 **Fa'alataitaua (Taua) Fitisemanu** fmf4002@med.cornell.edu	B.A. in Molecular Biology & Biochemistry and Chemistry Wesleyan University My research interests lie mainly in the intersection of biology and chemistry as it relates to disease mechanisms. I am interested in learning and developing skills in structural biology, chemical biology, and biophysics to answer complex questions. I am particularly interested in autoimmunity, and the molecular drivers of auto immune disease.
 **Nicole Gallien** nfg4001@med.cornell.edu	B.S. in Biotechnology University of New Hampshire at Manchester My research interests revolve around understanding the mechanisms behind tissue regeneration and exploring therapeutic strategies to optimize or enhance these processes. From cellular therapies to the functional replacement of tissues and organs, I am deeply intrigued by our limited regenerative capacity and the potential impact of major advancements in this field.

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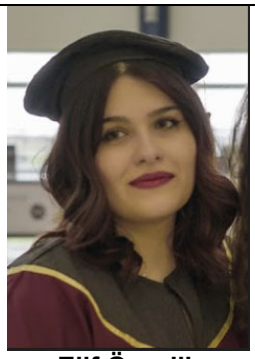
 **William Khayyo** wnk4001@med.cornell.edu	B.S. in Biochemistry and Applied Mathematics State University of New York (SUNY) Stony Brook My research interests are in membrane protein biophysics. I am interested in bridging structural and computational biology in order to understand how ligands, lipids, local membrane environment, and/or auxiliary subunits modulate the properties of ion channel and transporter function and conformation. I am interested in what insights this may provide in discovering novel treatments, but also elucidate mechanistic insights in how these proteins are able to fulfill their roles in the human body. I would like to bridge structural biology techniques, such as cryo-EM and smFRET, with computational techniques, including Molecular Dynamics Simulation, to elucidate transmembrane protein biophysical properties.
 **Elif Özçelik** elo4010@med.cornell.edu	B.S. in Computer Science B.S. in Molecular Biology Sabanci University, Istanbul, Turkey My research focuses on cancer biology, specifically cancer cell and immune cell metabolism during carcinogenesis. I am interested in studying these processes from both a computational and a wet-lab perspective to better understand their effect on cancer progression and whether we can interfere with the process. As a new interest, I am looking forward to exploring anastasis, a fascinating process where cells recover from near death, and it's utilization in cancer stem cells.

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 **Melissa Pathil** mep4013@med.cornell.edu	B.S. Chemical Biology M.S. Chemistry Stevens Institute of Technology My research interests focus on applications of computational methods to solve biochemical problems. I'm particularly interested in machine learning applications in drug discovery, including the prediction of protein-ligand and protein-protein interactions in biological pathways, molecular design for potential therapeutic candidates, and selection of reaction conditions for drug synthesis.
 **Nathanael Singh** nis4027@med.cornell.edu	B.S in Biochemistry, Minor in Economics The City College of New York (CUNY) My general research interests lie at the intersection of structural biology, macromolecular biophysics and fragment based lead discovery, with a general focus on proteins to establish molecular mechanisms to relate structure and function. Additionally, I am further interested in utilizing these disciplines alongside a host of biophysical techniques in hopes of making meaningful contributions to the development of therapeutics.

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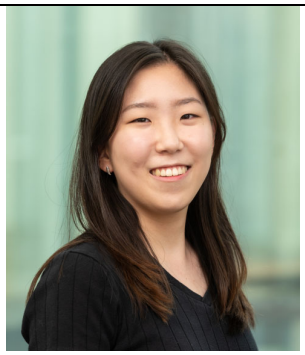
 **Manny Savvas Spanos** ess4007@med.cornell.edu	B.S. in Biomedical Engineering Cornell University I am primarily interested in cancer genomics, with a specific focus on the accumulation of somatic mutations within single cells and the subsequent evolution of distinct subclonal populations within the tumor. Using single-cell or spatial technologies in combination with machine learning methods, I hope to study how these populations compete and coexist with each other and harness their interactions with each other to create more accurate models of cancer progression and treatment plans for patients.
 **Eunseo Sung** eus4003@med.cornell.edu	B.S. in Computational Biology Carnegie Mellon University M.S. in Computational Biology Weill Cornell Graduate School My research interests are primarily in developing ML/AI methods for clinical and biological applications. Specifically, I am interested in multi-modal and multi-omics data analysis for cancer research, as well as in sequence modeling for genomics.

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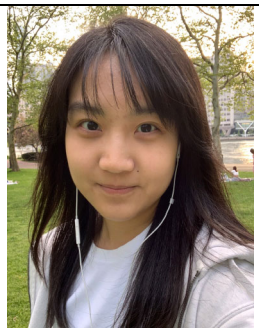
 **Samuel (Jamie) Wang** sjw4002@med.cornell.edu	B.S.E. in Biomedical Engineering B.S. in Computer Science, Minor in Religion Duke University My research interests center around the application of machine learning methods in precision medicine. I am interested in how electronic health records and multi-omic data can be integrated to generate solutions and treatment courses for patients, while also uncovering novel biomarkers to deepen our understanding of biological systems. Additionally, I am interested in exploring other areas of translational research such as immuno-oncology and computational neuroscience.
 **Zhaokun Wang** zhw4006@med.cornell.edu	B.S. in Environmental Engineering China Agricultural University M.S. in Ecology University of Science and Technology of China My research interests predominantly lie in the single-molecule study and interaction dynamics of membrane proteins. I am interested in observing the behavior of membrane proteins under physiological conditions at the single-molecule level, inspired by and based on single-molecule technologies. I am also eager to develop image-processing algorithms for single-molecule studies, thereby extracting more useful information.

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 **Yaopeng Ding** yad4004@med.cornell.edu	B.S. in Biological Science Georgia State University M.Eng. in Biomedical Engineering Cornell University My research interests mainly focus on cancer biology and immunology. I am interested in studying the biological and molecular intricacies underlying tumorigenesis, tumor progression, and metastasis formation. Also, I am focused on the dynamic interplay between the immune system and cancer, with a keen emphasis on understanding how immune responses can be harnessed for therapeutic interventions.
 **Alejandra Valdivia Padilla** alv4008@med.cornell.edu	B.A. in Biosciences Tecnológico De Monterrey My primary research interest revolves around cancer physiology. I am intrigued by immunotherapy-related approaches for cancer treatments, particularly immune checkpoint inhibitors. I am also interested in how premature senescence relates to disease in cancer survivors, as well as the different mechanisms of cellular senescence in response to stress, such as DNA damage response (DDR), mitochondrial dysfunction, and cell cycle arrest.

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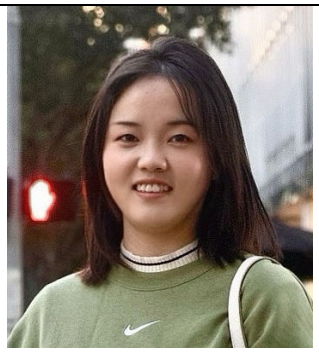 **Xiaohan Zhao** xiz4023@med.cornell.edu	B.S. in Bioinformatics Huazhong Agricultural University M.S. in Bioinformatics Fudan University My research focuses on the intersection of computer science and biology, specifically applying deep learning techniques to genomics. I am intrigued by the potential of these models to provide insights at both the single-cell and individual levels, and I am eager to explore how these scales interconnect. Through this interdisciplinary approach, I aim to advance our understanding of genetic information and its impact on health and disease.

AJR-06/14/2024