

WOMEN IN THE FACULTY



Women are often the majority of students, postdoctoral fellows and instructors across academic institutions, but not professors who lead independent research programs. Women of color are especially underrepresented in medical school faculty and research staff, which contributes to the lack of diversity, equity and inclusion in academic research and education as well as role models and support systems for trainees. The Department of Pharmacological Sciences (DPS) at the Icahn School of Medicine at Mount Sinai (ISMMS) is fully committed to improving "Diversity & Inclusion" in our Department through programs including "Krulwich Fellowship", "Diversity Lectureship", "Diversity Symposium", and "Commission of Diversity and Equity Support (CoDES)" that are collectively led by our students, postdoctoral fellows and faculty members. In this Newsletter, we are extremely proud with great enthusiasm to feature our five outstanding woman faculty members who head their vibrant research laboratories in our Department. Their extraordinary personal qualities and

scientific accomplishments and unwavering dedication as academic leaders in research and education make them exceptional role models and inspirations not only for women in science but also all of us that enrich the academic working environment at Mount Sinai as a nation's leading academic biomedical institution.



LAKSHMI DEVI, PHD, is the Mount Sinai Professor of Molecular Pharmacology. Her research focus is to explore novel mechanisms of G protein-coupled receptor signaling in analgesia, addiction and reward-related disorders. [Her group](#) has taken a pioneering role in establishing the physiological significance of G protein-coupled receptor heteromers and establishing them as new therapeutic targets (*Nature* 1999). Dr. Devi's recent research defined deorphanizing G protein-coupled receptors as druggable targets. This has resulted in the identification of receptors for three highly abundant novel neuropeptides and identification of small molecule ligands for these receptors; these ligands are being used to explore the physiological roles of the receptor systems in health and disease. Dr. Devi is deeply committed to mentoring of students, postdoctoral trainees as well as junior faculty. She has mentored more than 80 trainees. Dr. Devi served as the Director of the NIDA Interdisciplinary Postdoctoral Training in Addiction Research at Mount

Sinai (2009-2019) and Dean for Academic Development and Enrichment (2013-2020) and currently serves as the Vice Chair of Education, Department of Pharmacological Sciences (2017-present). In the current capacity... [Read More Here!](#)



JINYE DAI, PHD, has recently been recruited to Mount Sinai as an Assistant Professor in the DPS this summer after completing her highly productive postdoctoral study at Stanford University School of Medicine with Prof. Thomas Südhof (Nobel Laureate, 2013 in Physiology or Medicine). Dr. Dai's research interest is directed at better understanding of basic molecular mechanisms of brain synaptic function and neuropsychiatric disorders. She received her PhD degree from the Institute of Biophysics, the Chinese Academy of Sciences in 2015 where she studied the fundamental mechanisms of synaptic transmission (*J Neurosci.*, 2015). At Stanford, she has elucidated mechanistically the function of synaptic molecules whose mutations are found in neuropsychiatric disorders including autism spectrum disorder or schizophrenia (*Cell*, 2019; *Neuron*, 2019; *Nature*, 2021). In her more recent study, she is the first to demonstrate that very similar synaptic molecular complexes are differentially active in different synapses (*BioRxiv*, 2022). In her new

lab at Mount Sinai, Dr. Dai will dissect the interplay between genetic and environmental stressors in the adaptive healthy brain function and pathology of stress-induced decompensation in neuropsychiatric disorders... [Read More Here!](#)



MARTA FILIZOLA, PHD, is the Sharon & Frederick A. Klingenstein-Nathan G. Kase, MD Professor in the DPS, and Professor in the Departments of Neuroscience, and Artificial Intelligence & Human Health. She also serves as the Dean for The Graduate School of Biomedical Sciences (GSBS) at Mount Sinai. Dr. Filizola is an internationally well-respected leading investigator in the field of cellular signal transduction triggered by molecular recognition in membrane protein complex systems, particularly G-Protein Coupled Receptors (GPCRs) and platelet integrin $\alpha IIb\beta 3$ with the use of computational biophysics methodologies. [Her research](#) aims to understand at an atomic-level resolution the mechanistic insights into molecular recognition, signal transduction, allostery, oligomerization, and functional selectivity underlying the biological functions of membrane protein complexes such as GPCRs for the purpose of developing improved therapeutics. Her computational research is closely intertwined with collaborative experimental investigations

to provide new and biologically relevant insights about the ligand-induced transmission of the signal from the exterior to the interior of the cell membrane, giving rise to new hypotheses to guide further experimental inquiry. Her outstanding accomplishments in science are well reflected through her publications in *Cell*, *Nature*... [Read More Here!](#)



MARIA SOLEDAD SOSA, PHD, is an Assistant Professor in the DPS. The research interest of [her lab](#) is centered on exploring the intrinsic and extrinsic signaling pathways that allow the establishment and maintenance of minimal residual disease in cancer patients with specific goals to understand how residual tumor cells enter dormancy, and to identify the sources of minimal residual disease. Her recent work has led to the important discovery that while lost in primary tumors, a major transcription factor NR2F1 is re-expressed upon surgical removal of the primary tumor in local and distant residual tumor cells and allows them to undergo dormancy. Importantly, she demonstrated the re-expression of NR2F1 in dormant disseminated tumor cells (DTCs) derived from prostate cancer patients. This dormancy phase regulated by NR2F1 involved upregulation of cell cycle inhibitors and interestingly it also required the induction of stem cell genes (*Nature* 2016). The latter result is surprising and important since it is the first time that a connection between pluripotency genes

and quiescence programs has been established in tumor cells and dormancy. Recently, Dr. Sosa and her colleagues found a novel function of NR2F1 in regulation of histone modifications during dormancy. These findings open a new door to... [Read More Here!](#)



LAHOUIRIA HADRI, PHD, is an Assistant Professor at the Departments of Pharmacological Sciences and Medicine at Mount Sinai. She received her M.Sc. degrees in Cell Biology and Physiology and Integrative Biology and Physiology at University of Science, Rouen and Paris Diderot University, Paris, France. She completed her Ph.D. in 2005 at University of Pharmacy PARIS XI, Châtenay-Malabry & Pitié-salpêtrière School of medicine, Paris, France. In 2006, she relocated to the United States and undertook a postdoc position at Massachusetts General Hospital/Harvard Medical School in Boston, and in 2007, she moved with the team to Mount Sinai. The research focus of [her laboratory](#) is centered on studying pathophysiology and the underlying molecular and cellular events that contribute to the development and progression of cardiovascular diseases, pulmonary vascular and lung diseases, and defining a platform for the design of novel therapeutic strategies using gene and small compounds targeted therapies. The long-term

objective is to obtain a comprehensive knowledge of genes & signaling alterations (calcium handling proteins, calcium signaling, cAMP/EPAC enzyme, gene expression and epigenetic alterations) to identify relevant targets for the... [Read More Here!](#)

FEATURED NEWS



AGGARWAL, PHD
Professor

Professor Aggarwal and colleagues reported the first high-resolution crystal structures of SARS-CoV-2 N7-methyltransferase (*Nat. Struct. Mol. Biol.*, 2022). The SARS-CoV-2 N7-methyltransferase (N7-MTase) is an attractive target for the development of antivirals, but there was no high-resolution structural information available for this critical enzymatic activity that employs S-adenosylmethionine (SAM) as a cofactor to methylate



or cap the viral mRNA. The work uncovered distinctive structural characteristics of N7-MTase that are essential for the development of antiviral drugs and reported on the identification of S-adenosylhomocysteine (SAH) as the optimal scaffold for the design of SAM competitors. The high quality and high resolution of the structures reported in this work will inspire efforts in many labs to develop new inhibitors of SARS-CoV-2 and other pathogenic coronaviruses. This work was led by postdoctoral fellow Jithesh Kottur, PhD. [Read More Here!](#)

PAPERS AND GRANTS

PAPERS

He L, **Dar AC**. Targeting drug-resistant mutations in ALK. *Nat Cancer*. 2022 Jun;3(6):659-661.

Wu Q, Nie DY, Ba-Alawi W, Ji Y, Zhang Z, Cruickshank J, Haight J, Ciamponi FE, Chen J, Duan S, Shen Y, Liu J, Marhon SA, Mehdipour P, Szweczyk MM, Dogan-Artun N, Chen W, Zhang LX, Deblois G, Prinos P, Massierer KB, Barsyte-Lovejoy D, **Jin J**, et al. PRMT inhibition induces a viral mimicry response in triple-negative breast cancer. *Nat Chem Biol*. 2022 Aug;18(8):821-830.

Shen Z, Sang Z, **Shi Y**. Nanobodies as a powerful platform for biomedicine. *Trends Mol Med*. 2022 Sep 5:S1471-4914(22)00212-X. [Full Publications List!](#)

GRANTS

Inga Peter & **Robert DeVita**, MPI, "Preclinical Validation of Novel Gut-Restricted LRRK2 Inhibitors as Therapeutic Leads for IBD," R01, NIDDK, 09/2022-06/2025, \$1,199,934.

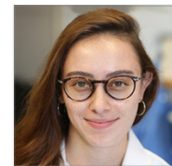
Michael Lazarus, PI, "Chemical and Structural Approaches to Study Energy Homeostasis Pathways in Cancer and Metabolic disorders," R35, NIGMS, 08/2022-07/2027, \$2,322,265.

Pei Wang, **Avi Ma'ayan**, MPIs, "Proteogenomic translator for cancer biomarker discovery towards precision medicine," U24, NCI, 07/2022-04/2027, \$4,203,785.

Magdalena Janecka, **Avner Schlessinger**, MPIs, "Prenatal medication exposure in autism, birth complications and developmental disabilities," R01, NICHD, 09/2022-08/2027, \$3,439,860 [Full Grants List!](#)

MEMBER SPOTLIGHT

Emily Teichman, is a 4th year PhD student who, uses electrophysiology (brain slice, cell culture), molecular biology techniques, and mutagenesis to study drug selectivity towards HCN ion channels as a basis for future antidepressant drug discovery. This multidisciplinary project spans the labs of Drs. Ming-Hu Han/Carole Morel, Dr. Jian Jin, and Dr. Paul Slesinger. She recently received the National Institute of Mental Health, Ruth L. Kirschstein National Research Service Award for her project "Unveiling and Exploiting the Structural Determinants of HCN2 Channel Selectivity" (F31, NIMH, 09/2022-09/2025, \$46,752 per year). Outside of lab she is actively involved in Student Council and THAW (Trainee Health and Wellness), works as a counselor for the Crisis Text Line, and loves to play soccer, rock climb, ski, and travel.



Audrey Warren, is a PhD student in the Wacker lab. She uses cryo-EM and in vitro signaling assays to study G-protein coupled receptors. She was recently awarded the National Institute of Mental Health's Ruth L. Kirschstein National Research Service Award for her project "Structural studies of psychedelic activity at the serotonin receptor 5-HT1A" (F31, NIMH, 09/2022-09/2025, \$45,152 per year). Outside of lab, Audrey enjoys cooking and cycling.



DPS MEMBER UPDATE

NEW MEMBERS



Jinye Dai, PhD
Asst. Professor



Z. Bolgarina, PhD
Assoc. Researcher
Zaidi Lab



William Cheung, PhD
Asst. Professor



S. Khamrui, PhD
Instructor
Lazarus Lab



P.S Akella, PhD
Postdoctoral Fellow
DeVita Lab



Ido Diamant
Bioinfo Softw. Eng. R
Ma'ayan Lab



Funda Korkmaz, PhD
Instructor
Zaidi Lab



Kwang-Su Park, PhD
Instructor
Jin Lab

NEW ALUMNI



Valeria Muradova, MD
Pediatric Endo. Fellow
SUNY Downstate



Alcina Rodriguez
PhD Student
Rutgers BHS



Yu, Xufen, PhD



L. Sédes, PhD

[See Full Members List!](#)

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