



“Old Dogs with New Tricks: G Protein-Coupled Receptors in Depression and Motivation”

Jonathan A. Javitch, MD, PhD

Lieber Professor of Experimental Therapeutics in Psychiatry and Professor of Pharmacology
Scientific Director, Lieber Center for Schizophrenia Research, Columbia University

Thursday, September 26, 2019
4:10 pm

Dr. Javitch's research focuses on the structure, function and regulation of G protein-coupled receptors and neurotransmitter transporters, with an emphasis on dopamine D2 receptor and dopamine transporter, the targets, respectively, for antipsychotic drugs and psychostimulants, using biochemical and biophysical approaches to elucidate molecular mechanisms of drug action, receptor signaling and sodium-coupled transport. The lab has created novel signaling biased mutants of the D2 receptor and has begun to explore their role in vivo using mouse models. The Javitch Lab and collaborators are also studying the mechanism of action of the atypical antidepressant tianeptine and have discovered that the compound is a selective and efficacious mu opioid agonist. The lab uses bacterial transporter homologs for biochemical and biophysical studies to explore transport mechanisms and is studying the function and regulation of dopamine transporter and dopamine receptors in the fruit fly *Drosophila melanogaster*, using the power of fly genetics to uncover novel mechanisms of amphetamine action.

On the Cover, Winner of “*The 2018 Best Poster*”

Michael Martini, MD PhD Student / The Jin Lab
Structure-based studies of the D2 Dopamine Receptor (D2R) agonist, cariprazine. The docked pose of cariprazine suggests key residues that function as a “lid” covering the binding pocket of D2R leading to increased ligand residence times and β -arrestin recruitment.



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The Department of Pharmacological Sciences at Icahn School of Medicine at Mount Sinai focuses on research discovery of the biological mechanisms underlying complex physiology and pathophysiology and translating biological knowledge into new therapeutics. We study biological processes at the molecular, cellular, tissue, and organismal levels in order to understand how these processes function and how we can modulate them for therapeutic purposes. Studies involve analysis of interactions of exogenous and endogenous substances with biological systems and the development of new therapeutics based on our understanding of cellular and molecular interactions. Structural biology, molecular and systems pharmacology, and therapeutics with integrated experimental and computational approaches represent a continuum of thought and research in understanding the origins and mechanisms underlying complex diseases and how we can treat them.

The mission of the Department is to provide a nurturing environment for discovery and innovation in basic and translational biomedical research of human health and disease, and for advanced academic training for the next-generation of physicians and scientists; and to function as a scientific hub for interdisciplinary collaborations with researchers of different disciplines to solve the most challenging problems in biomedical sciences.

For more information, please visit the website:

<http://icahn.mssm.edu/about/departments/pharmacological-sciences>

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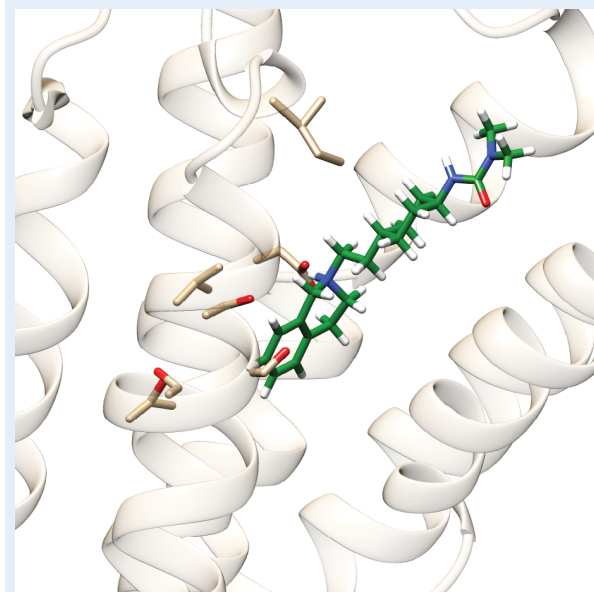
Retreat Organizers:

Jian Jin, Daniel Wacker, Carmen Davison & Yoori Kim

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2019 Research Retreat
Department of
Pharmacological Sciences
Icahn School of Medicine
at Mount Sinai



September 26, 2019

The Metropolitan Museum of Art
1000 Fifth Avenue
New York, NY 10028
www.metmuseum.org



PROGRAM

Thursday, September 26th

8:30 - 9:00 am	Check-In
9:00 - 9:05 am	Welcoming Remarks
9:05 - 10:30 am	Session Chair: Michael Lazarus Xufen Yu [Jin] Ivone Gomes [Devi] Maria Soledad Sosa David Bechhofer Avi Ma'ayan
10:30 - 10:40 am	Break
10:40 - 12:20 pm	Session Chair: Daniel Wacker Rinku Jain [Aggarwal] Rajal Sharma [Zhou] Susmita Khamrui [Lazarus] Mary Duffy [Dar] Rayees Rahman [Schlessinger] Abhijeet Kapoor [Filizola]
12:20 - 1:10 pm	Lunch
1:10 - 2:45 pm	Session Chair: Maria Sosa Jens Hansen [Iyengar] Almudena Bosch [Walsh] Eric Sobie Keiichi Asano [Ramirez] Chalada Suebsuwong [DeVita] Sarah Montgomery [Han]
2:45 - 2:55 pm	Break
2:55 - 4:10 pm	Poster Presentation
4:10 - 5:10 pm	Keynote: Jonathan A. Javitch
5:10 - 5:15 pm	Closing Ceremony
6:00 - 8:00 pm	Reception



Mad River Bar & Grille
1442 Third Avenue
New York, NY 10028
212.988.1832

2019 Presenting Groups



Ming-Ming Zhou, PhD

Professor & Chair

Structural and molecular mechanisms of gene transcription in chromatin in human biology and diseases.



Aneel Aggarwal, PhD

Professor

Protein-nucleic acid interactions in gene transcription and translation, and DNA repair with X-ray crystallography and other biophysical methods.



David Bechhofer, PhD

Professor

Mechanism of mRNA turnover in a bacterial model organism, using next-generation transcriptome analysis in ribonuclease mutant strains.



Arvin Dar, PhD

Associate Professor

Exploring links between the regulation of drug targets and the system level properties of biological networks within cells and animals.



Lakshmi Devi, PhD

Professor

Dean for Academic Development and Enrichment
Molecular mechanism and pharmacology of opiate and cannabinoid receptor activation and morphine-induced changes in synapse.



Robert DeVita, PhD

Professor

Small molecule drug discovery, chemical biology, target validation, organic synthesis and heterocyclic chemistry.



Marta Filizola, PhD

Professor

Dean for The Graduate School of Biomed Science
Structure-function correlation in molecular recognition and signal-transduction through the development and application of computational methods.



Ming-Hu Han, PhD

Associate Professor

Neurophysiological mechanisms of depression and alcohol addiction in rodent models.



Ravi Iyengar, PhD

Professor

Director, Institute for Systems Biomedicine
Systems biology and systems pharmacology, cell signaling networks with emphasis on G protein-coupled receptor pathways.

2019 Presenting Groups



Jian Jin, PhD

Professor

Medicinal chemistry, chemical biology and drug discovery. Research interests: epigenetics, GPCRs and PROTACs.



Michael Lazarus, PhD

Assistant Professor

Cellular mechanisms of nutrient signaling in intracellular glycosylation and autophagy with chemistry, crystallography and mass spectrometry methods.



Avi Ma'ayan, PhD

Professor

Computational systems biology, bioinformatics, data mining, data science, data integration, and software development for biomedical and biological research.



Francesco Ramirez, PhD

Professor

Investigation of the role of the extracellular matrix in embryonic development, postnatal growth and adult homeostasis, and therapeutic intervention in Marfan syndrome and scleroderma.



Avner Schlessinger, PhD

Assistant Professor

Structural bioinformatics and structure-based drug design for membrane transporters.



Eric Sobie, PhD

Professor

Mathematical modeling and quantitative investigation of cardiac physiology, and mechanisms of initiation of arrhythmias and heart failure.



Maria Sosa, PhD

Assistant Professor

Mechanisms of the origins and epigenetic programs of disseminated tumor cell biology.



Martin Walsh, PhD

Professor

Mechanisms that regulate chromatin structure through processes that recognize and establish epigenetic information necessary to modulate gene transcription.