

Towards a "Molecular Microscope" for the Cell

Brian Chait, D.Phil. Camille and Henry Dreyfus Professor The Rockerfeller University

#### Friday, May 18, 2018 3:00 pm

Brian T. Chait was born in Cape Town, South Africa. He received his B. Sc. (1969) and B. Sc. (Hons) (1970) from the University of Cape Town and D.Phil. (1976) in experimental nuclear physics from Oxford University. He is currently Camille and Henry Dreyfus Professor at Rockefeller University in New York, where he is Head of the Laboratory for Mass Spectrometry and Gaseous Ion Chemistry. He also directs the NIH-funded National Resource for the Mass Spectrometric Analysis of Biological Macromolecules. Professor Chait has received several awards for his research in developing instrumentation and methods for characterizing proteins, including the 2000 Bijvoet Medal, the 2002 ACS Field & Franklin Award for Outstanding Achievement in Mass Spectrometry, the 2007 HUPO 2007 Distinguished Discovery Award In Proteomics, the 2012 Per Edman Award, and the 2015 ASMS Award for a Distinguished Contribution in Mass Spectrometry. He has co-authored 398 publications (49,613 citations) and has been awarded 31 US patents.

#### On the Cover, Winner of "The 2017 Best Poster"

Anqi Ma, PhD, *Instructor / The Jin Lab* MS453 is discovered as the first selective covalent inhibitor of histone methyltransferase SETD8. Its mechanism of action is unambiguously confirmed by the co-crystal structure with SETD8. MS453 and its analogs are being tested in cancer models.



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 nextgeneration 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: Aneel Aggarwal, Maria Sosa & Yoori Kim

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## 2018 Research Retreat **Department of Pharmacological Sciences** Icahn School of Medicine at Mount Sinai



May 17 - 18, 2018

Japan Society 333 East 47th Street New York, NY 10017 www.japansociety.org

Icahn School of Medicine at **Mount** Sinai

### PROGRAM -

#### Thursday, May 17th 8:30 - 9:00 am Check In 9:00 - 9:15 am Welcoming Remarks 9:15 - 10:30 am Session Chair: Daniel Wacker Eric Sobie Elisa Wondimu [Ramirez] Aneel Aggarwal Anne Marie Barrette [Birtwistle] 10:30 - 10:45 am Break 10:45 - 12:00 am Session Chair: Michael Lazarus Derva Meral [Filizola] Roman Osman Iman Tavassoly [lyengar] Denis Torre [Ma'yan] 12:00 - 12:30 pm Group Photo 12:30 - 1:30 pm Lunch 1:30 - 3:00 pm Session Chair: Maria Sosa Seshat Mack [Devi] Carole Morel [Han] Martin Walsh Maria Jose Carlini [Sosa] Arvin Dar 3:00 - 3:15 pm Break 3:15 - 5:00 pm Poster Presentation 5:00pm End of Day 1 Friday, May 18th 9:00 - 10:30 am Session Chair: Arvin Dar Jing Liu [Jin] William Cheung [Zhou] Michael Lazarus Peter Man-Un Ung [Schlessinger] 10:30 - 10:45 pm Break 10:45 - 12:30 pm Poster Presentation 12:30 - 1:30 pm Lunch 1:30 - 2:55 pm Panel Discussion\* 2:55 - 3:00 pm Break

3:00 - 4:00 pm Keynote: Brian Chait 4:30 - 7:30 pm Award Ceremony / Reception \*Panelist - Moderator: Martin Walsh Inês Chen, PhD

Chief Editor Nature Structural & Molecular Biology Erik Lium. PhD

Senior Vice President, Mount Sinai Innovation Partners Mount Sinai Health System

Corey Strickland, PhD

Director, Structural Sciences Merck Research Laboratories

Kellev Yan. MD. PhD Dorothy L. and Daniel H. Silberberg Assistant Professor Columbia University Medical Center

## 2018 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.

## Arvin Dar. PhD





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

## Marta Filizola, PhD



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

#### Jian Jin, PhD Professor



Creating chemical probes of histone methyltransferases and functionally selective ligands of G protein-coupled receptors.

## 2018 Presenting Groups



#### Michael Lazarus, PhD, Assistant Professor Cellular mechanisms of nutrient signaling in intracellular glycosyation 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.



#### Roman Osman. PhD Professor

Molecular mechanisms of enzymatic DNA repair, receptor/ligand binding and rational drug design using molecular dynamics and simulations methods.

#### 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.



