

ANTHONY FITZPATRICK

**Assistant Professor of Biochemistry and Molecular Biophysics
Zuckerman Institute, Columbia University**



Thursday, October 9th

10:30 AM – 11:30AM

Steele 006

"Ex Vivo to In Situ Structural Neurobiology"

Abstract: Recent advances in cryo-electron microscopy (cryo-EM) have enabled structure determination of protein complexes in their native environment. During this seminar, we present atomic models of human brain-derived amyloid fibrils, implicated in multiple neurodegenerative diseases, solved using a combination of cryo-EM and mass spectrometry. This hybrid approach is extended to in-cell structural biology of hippocampal neurons with the development of a pulsed laser phase plate to improve contrast in neuronal tomograms also discussed.

Bio: Anthony Fitzpatrick is an Assistant Professor of Biochemistry and Molecular Biophysics at the Zuckerman Institute, Columbia University, New York, USA. Previously, he was a Marie Curie International Outgoing Fellow at the Laboratory of Molecular Biology, University of Cambridge (2015-2017) and the California Institute of Technology (2012-2015). He has a biophysics background (Ph.D. with Professor Sir Christopher M. Dobson, University of Cambridge) and undertook postdoctoral training with Professors Ahmed H. Zewail (Nobel Laureate, Caltech), Sjors Scheres (MRC LMB), and Michel Goedert (MRC LMB). The research focus of the Fitzpatrick lab is to determine the molecular and structural basis of neurodegeneration using a combination of electron/laser optics and molecular/cellular biophysics.