



PHYSICAL CHEMISTRY SEMINAR

"Mechanisms of GPCR Signaling by Membrane Lipids"



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Wednesday

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219 BRL

A growing body of literature from biophysical studies has highlighted the special roles of membrane lipids as endogenous regulators of G protein-coupled receptor (GPCR) signaling. Earlier spectroscopic studies showed GPCRs exist in a function-related equilibrium of simultaneously populated conformers, the relative populations of which are regulated by bound orthosteric drugs. We now present NMR data that show membrane phospholipids and sterols also control this equilibrium with a magnitude comparable to or greater than the influence of drug efficacy with the human class A human GPCR A2AAR. Integrating NMR data with correlative functional assays and molecular modeling allows us to propose a molecular mechanism explaining how lipids influence the formation of GPCR signaling complexes.

Dr. Matthew Eddy received his PhD in physical chemistry from MIT in the laboratory of Professor Robert Griffin where he developed new approaches using solid-state NMR to study membrane proteins in cellular environments. Dr. Eddy then joined the laboratories of Professors Raymond Stevens and Kurt Wüthrich at The Scripps Research Institute as an American Cancer Society Postdoctoral Fellow, applying an integrative structural biology approach to study human G protein-coupled receptors (GPCRs), focusing on applications of NMR to improve our understanding of GPCR signaling. In 2018, Dr. Eddy started his independent laboratory at the University of Florida where his group focuses on investigating the impact of the cellular environment on GPCR drug responses.



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