University of Minnesota
Driven to Discover℠

Department of Chemistry

Seminar

9:45 a.m. Thursday, April 7 • 331 Smith Hall

Assistant Professor

Brian Miller

Department of Chemistry and Biochemistry
Florida State University

Kinetic Cooperativity in a Monomeric Enzyme

Research interests:
understanding the evolutionary origins of protein catalysts, developing new tools and techniques to discover novel enzymes, and exploring the relationship between an enzyme's structure and its biological function.

Website: http://www.chem.fsu.edu/bio.php?id=623

Abstract

Human glucokinase catalyzes the first and rate-limiting step of glucose metabolism in the pancreas and liver. As such, glucokinase is a key regulator of glucose homeostasis. Genetic lesions in the glk gene result in maturity-onset diabetes of the young (MODY), while mutations that enhance catalysis cause hyperinsulinemia of infancy (HI). Glucokinase is a monomeric enzyme with the unique ability to be allosterically regulated by its substrate. The steady-state velocity of glucose phosphorylation is not hyperbolic, but instead displays a sigmoidal response to increasing glucose concentrations. The molecular basis for this kinetic cooperativity is unknown. In this presentation, I will report the results of recent genetic, biochemical and biophysical investigations aimed at elucidating the mechanism of cooperativity in human glucokinase.

Host: Professor Mark Distefano
Refreshments will be served prior to the seminar.