The Department of Biochemistry and Molecular Biophysics presents the

Richard H. and Elizabeth C. Hageman Distinguished Lecturer in Agricultural Biochemistry Seminar

Dr. Fred Nijhout, John Franklin Crowell Distinguished Professor of Biology

Department of Biology, Duke University

The Nonintuitive Genetics of Polygenic Traits in a Nonlinear World

Most phenotypes have evolved to be robust to genetic and environmental variation. This phenotypic stability is achieved by diverse feedback and homeostatic mechanisms that stabilize molecular, physiological and biochemical networks to achieve particular and stable outcomes. The kinetics of regulated biological systems are inherently nonlinear, and this degrades the clean and unambiguous relationship between cause and effect and between genotype and phenotype. I will illustrate how this stabilization works using well-validated mathematical models of complex metabolic systems related to human health. This work shows how different genotypes can produce the same phenotype, and why the effect of a given mutation on a trait depends entirely on the activities of other genes in the system.

Wednesday, March 11 at 4:00 p.m. in Ackert 120

Refreshments at 3:30 p.m. in Chalmers 168