The molecular and cellular pharmacology (MCP) program, in cooperation with the Center for Training in Pharmacology and Drug Development (CTPDD), offers interdisciplinary graduate training in the field of molecular and cellular pharmacology. The primary emphasis is doctoral training in molecular biology, biochemistry, genetics, and cell biology with a focus on integrating these methodologies with modern pharmacology. Other related degree programs under the direction of program faculty are cellular and molecular biology, environmental toxicology, neuroscience, biomolecular chemistry, and genetics.

The MCP program emphasizes study of the basic molecular and cellular mechanisms involved in the regulation of cellular events and cellular signal transduction mechanisms and the interaction of hormones, drugs, and chemicals with living systems. The faculty provides expertise in such challenging areas as the molecular events related to neurotransmitter receptor G-protein effector signaling; molecular structure of neurotransmitter receptors; genetic approaches to mechanisms for elucidating synaptic transmission; molecular mechanisms of action drugs of abuse and neurotransmitter transporters; phosphoinositide-generated second messengers and their regulation of membrane protein function and cell growth; regulation of tissue-specific gene transcription; molecular mechanisms of erythropoiesis; molecular mechanisms of leukemogenesis; regulation of hormone and neurotransmitter release; mechanism of action of polypeptide hormones; peptide–hormone receptors; control of steroid synthesis; induction of drug-metabolizing enzymes; chemical initiation and prevention of cancer; mechanisms and regulation of antibiotic action and resistance. Aside from providing insight into drug action, studies in pharmacology have led to important advances in our understanding of fundamental biological processes.

**DEGREES/MAJORS, DOCTORAL MINORS, GRADUATE/PROFESSIONAL CERTIFICATES**


**PEOPLE**

**Faculty:** Professors Anderson, Auger, Beebe, Bement, Bresnick, Chapman, Cryns, Czajkowski, Denu, Greenspan, Hardin, Hayney, Huttenlocher, Jackson, Jefcoate, Johnson, Kalejta, Kamp, Keck, Keely, Kimble, Kolesar, Kwon, Li, Martin, Miyamoto, Mosher, Murphy, Raines, Rapraeger, Schuler, Sheibani, Swaren, Thomson, Tibbetts, Wassarman, Xu, Yang, Zhang, Zhao; Associate Professors Audhya (director), Balijepalli, Burkard, Buxton, Chanda, Chang, Ge, Hornberger, Jorgensen, Kuo, Kalejta, Lee, Masters, Pagliarini, Roopra, Striker, Tang, Weaver, Wheeler, Xing; Assistant Professors, Blum, Collier, Jiang, Johannsen, M. Kimple, R. Kimple, Kreeger, Lamming, Lou, Rui, Saha, Sherer, Sridharan