Developing Novel Molecules to Influence Metals in Our Body

Katherine Franz
Alexander F. Hehmeyer Professor of Chemistry

CURRENT RESEARCH

Understanding, manipulating, and controlling metal ions to improve diseases

Metal ions—such as copper, iron, and zinc—are important micronutrients for essential life processes, but they can also contribute to diseases. Often considered complicated and unpredictable, these elements are typically avoided in conventional drug discovery approaches. Dr. Katherine Franz, Alexander F. Hehmeyer Professor of Chemistry at Duke University, is a pioneer in understanding the dual nature of metals in biological systems. Leveraging the principles of inorganic chemistry and metallobiology, she seeks to understand how cells and organisms manipulate, acquire, and use metals in response to different conditions. In her lab, she designs novel molecules to manage and influence metal species, identifying how they interact and influence cellular processes. Fundamentally understanding the effects of those interactions can lead to improved public health in diseases such as neurodegeneration, cancer, and infection.

Dr. Franz and her interdisciplinary team of graduate students, postdoctoral fellows, and undergraduate researchers—who specialize in inorganic chemistry, biochemistry, and analytical chemistry—collaborate with researchers and biologists with expertise in specific disease areas at the Duke University School of Medicine. They focus on understanding the structural and functional consequences of metal ion coordination in biological systems, both by endogenous species and by the synthetic molecules they develop. Metal chelation (a treatment that removes heavy metals from the blood) can have unintended consequences of altering the normal and healthy status of cellular metals. Dr. Franz and her team design, synthesize, and evaluate novel molecules that are only activated to alter their metal-binding...

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AFFILIATION

Duke University

EDUCATION

- Ph.D. in Chemistry 2000,Massachusetts Institute of Technology

AWARDS

- Dean's Award for Excellence in Mentoring, 2016
- Fellow of the Royal Society of Chemistry, 2014
- Duke University Bass Society Fellow, 2014
- Camille Dreyfus Teacher-Scholar Award, 2009
- Alfred P. Sloan Research Fellow, 2008
- and 1 more...

RESEARCH AREAS

Life Science, Infectious, Neurological / Cognitive, Oncology / Cancer

FUNDING REQUEST

Your contribution will help fund Dr. Franz's continued research in understanding how metal complexes change a biological system and identifying novel site-specific molecules that will benefit public health. A donation of $5K funds an undergraduate summer fellowship and $40–50K/year supports a graduate student or postdoc. The costs for lab equipment range from $5K–$10K per instrument. Help support this innovative research that explores the important functions of metals; fund Dr. Franz.