

NIGMS Portfolio in Bioinorganic Chemistry

Peter C. Preusch

Division of Pharmacology, Physiology, and Biological Chemistry, National Institute of General Medical Sciences, National Institutes of Health.

The National Institute of General Medical Sciences (NIGMS) supports a significant portfolio of research in bioinorganic chemistry and metallobiochemistry. Much of this research has been focused on the preparation and study of small molecule models for the active sites of metalloenzymes and parallel studies of the enzymes themselves. A small but growing number of grants deal with other aspects of inorganic chemistry with potential medical applications. NIGMS developed the Metals in Medicine program initiative as a way to increase the diversity of the portfolio and the impact of bioinorganic chemistry research on human health. See: <http://www.nigms.nih.gov/metals/>. As of April, 2005, proposals for 141 uniquely different projects have been received. Of those, 30 projects have been funded and 28 projects are pending review this summer. Over \$8.0 million in competing awards have been issued and over \$20 million total awarded since the program began.

Areas represented by the NIGMS bioinorganic chemistry portfolio include mechanisms of action of heme, non-heme iron, copper, zinc, manganese, nickel, and molybdenum containing enzymes; mechanisms of metal ion uptake, transport, and insertion into their sites of action; mechanisms of cellular metal ion regulation; mechanisms of metal ion toxicity; and interactions of metal complexes with nucleic acids. Notable recent additions to the NIGMS portfolio include projects on sensors for zinc and copper ions; function of Mg regulatory channels; toxicity of metals associated with protein aggregates; removal of toxic heavy metals from tissue stores; metal complexes as protein kinase inhibitors; and metal-catalyzed peroxynitrite decomposition catalysts for sepsis; as well as new projects on classical problems such as the mechanism of nitrogenase. Projects were recently funded on determining the metalloproteomes of yeast and of red blood cells.

In general, the portfolio remains dynamic with a new projects being funded and new investigators receiving grant support.

This poster will provide additional analysis of relevant NIH grant portfolios, information on changes in peer review, and information on other NIH programs of potential interest to ICBIC attendees.