# DIR RESEARCH UPDATE

## SIRT1 in Metabolism, Tissue Homeostasis, and Human Diseases

**Xiaoling Li, Ph.D.**

Metabolism, Genes, and Environment Group
Signal Transduction Laboratory, DIR, NIEHS

The overarching goal of the Metabolism, Genes, and Environment Group is to understand how organisms monitor environmental changes and coordinate cellular signaling pathways to regulate processes associated with metabolism and animal physiology. Specifically, we study the functions of SIRT1, the most conserved class III histone deacetylase that plays vital roles in metabolism and stress responses. Our efforts at NIEHS have focused on the role of SIRT1 in cell signaling, metabolism, development, diseases, as well as environmental regulation of SIRT1 activity using culture cells and mouse models. In particular, our recent research revealed critical function of SIRT1 in embryonic stem cell biology, animal development, and cancer cell metabolism. Our studies advance our understanding of the role of SIRT1 in mediating gene-environment interaction during the process of development and diseases, which may provide the molecular basis for novel therapeutic targets against a number of human diseases.