

**The NIH Chemistry
Seminar Series Presents:**

Professor Linda Hsieh-Wilson

*California Institute of Technology
HHMI*

**“Chemical approaches to
elucidating the neurobiology of
carbohydrates”**

**Time: 10:00 AM
Friday, January 15**

**Location: Building 50,
Room 1328/1334**

The field of chemical neurobiology is rapidly evolving and providing insights into the molecules and interactions involved in brain development, neuronal communication and memory storage. We will describe the synergistic application of organic chemistry and neurobiology to understand how specific carbohydrate structures contribute to neuronal communication and axonal growth. Chondroitin sulfate glycosaminoglycans are extracellular polysaccharides that participate in neuronal development and spinal cord injury. We have developed chemical strategies that permit the first direct investigations into the structure-activity relationships of chondroitin sulfate and demonstrate that these biopolymers can encode functional information in a sequence-specific manner, analogous to DNA, RNA and proteins. In the intracellular context, the covalent attachment of *O*-linked- β -*N*-acetylglucosamine (*O*-GlcNAc) to protein side chains is a dynamic modification that shares features with protein phosphorylation. The development of new technologies to study the modification in cells, as well as functional implications of *O*-GlcNAc for regulating cAMP-response-element binding protein (CREB), a transcription factor important for long-term memory storage, will be discussed.

Host: Hans Luecke (lueckeh@niddk.nih.gov)

Co-sponsor: The NIH Chemistry Interest Group