



# Department of Chemistry and Biochemistry Colloquium Speaker



## Dr. Matthew R. Pratt, PhD

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Los Angeles, CA

### "Investigating O-GlcNAc Glycosylation using Chemistry"

#### Abstract:

O-GlcNAc modification is the dynamic addition of the monosaccharide N-acetylglucosamine to intracellular proteins. Genetic experiments have demonstrated that this modification is essential for development in insects and is required for basic cell survival in mammals. Changes in the levels of O-GlcNAc are associated with various diseases, including cancer and diabetes where the levels are elevated and neurodegenerative diseases where they are decreased. Despite the clearly important role for O-GlcNAc in human health and disease, the effects of the modification on specific proteins and cellular pathways are still murky. Unfortunately, for a variety of reasons, traditional biological approaches are poorly suited to study O-GlcNAc. To overcome these limitations, we employ a range of chemical tools including chemical probes and inhibitors and protein synthesis. In this seminar, I will talk about two O-GlcNAc discoveries. First, I will explain how we used small-molecule inhibitors to discover how O-GlcNAc controls the sensitivity of a signaling pathway that results in cellular contraction and motility. Second, I will describe our use of protein chemistry to prepare site-specifically O-GlcNAcylated proteins and show that the modification is a multifaceted inhibitor of amyloid protein aggregation.

**Tuesday October 29<sup>th</sup>, 2019**  
**12:00 pm**  
**Basement Room 214**

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