



DEPARTMENT OF  
**Chemistry**  
UNIVERSITY OF WISCONSIN-MADISON

## Ph.D. Dissertation Defense

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Ge Research Group

**Wednesday, May 8th 10 am in WIMR II room 8571**

### “Development and Application of Top-down and Middle-down Proteomics for Comprehensive Protein Characterization in the Muscle Proteome”

Sarcomeric proteins, the main components of the muscle contractile unit, play important roles in modulating muscle contractility. These proteins are expressed in multiple proteoforms arising from genetic variations, alternative RNA splicing, and post-translational modifications (PTMs). The various protein forms of sarcomeric proteins, such as isoforms and PTMs, are associated with muscle contractile properties and thus affect the entire muscle function. However, a comprehensive characterization of sarcomeric protein isoforms and PTMs is still challenging due to the high complexity of the muscle proteome and the limitations in techniques for protein separation and characterization. Mass spectrometry (MS)-based proteomics, including top-down, middle-down and bottom-up approaches, have become the method of choice for protein identification, quantification, and characterization. In this presentation, I will talk about the development of (1) top-down proteomics for the characterization of sarcomeric proteins greater than 100 kDa and (2) middle-down proteomics for the characterization of sarcomeric proteins less than 100 kDa.

