

## **Muscle development and function in a *Magel2* mouse model of Prader-Willi syndrome**

Rachelle Eggert, Rachel Wevrick\*, and Deborah Hemmerling\* (Concordia University of Edmonton)

### *Poster Presentation Abstract:*

Prader-Willi syndrome (PWS) is a multigene disorder commonly associated with hyperphagia and obesity. Children with PWS have increased fat mass and decreased lean mass before the onset of hyperphagia and obesity. Severe hypotonia and reduced muscle strength are typically present in PWS infants. The process of autophagy is essential in maintaining musculoskeletal homeostasis, and increased or decreased autophagy can lead to muscle atrophy. Autophagic markers such as ubiquitin (Ub), p62/SQSTM1 (p62) and microtubule associated protein 1-light chain 3 (LC3) are hypothesized to be connected to the MAGE family of proteins that includes *MAGEL2*, suggesting that loss of *MAGEL2* could modulate autophagy in muscle. Expression of *Magel2* was detected in the murine nervous system and in developing muscle, connective tissue and bone. Immunohistochemistry (IHC), and immunoblotting were used to determine whether loss of *Magel2* affects the accumulation of autophagic markers or expression of genes associated with muscle atrophy, in neonatal mice. The p62 positive aggregates were increased in muscle from *magel2* mice and atrophy genes were up-regulated. Abnormal autophagic processes likely contribute to muscle atrophy in mice lacking *Magel2*. Further studies are needed to determine how the inactivation of *Magel2* causes muscle phenotypes at a cellular level. Our mouse strain carrying loss of *Magel2* provides a model for muscular dysfunction in Prader-Willi syndrome.

\* Indicates faculty mentor