

Abstract Robin Klemm- TWS meeting Graz 2015

A role for ER remodeling in lipid droplet size regulation

The atlastins (ATLs) belong to the dynamin family of GTPases and mediate membrane fusion of the endoplasmic reticulum (ER), an important organelle in all eukaryotic cells. Mutations in ATL1 (also known as SPG3a) can cause hereditary spastic paraplegia. Recently we reported that ATL is also necessary for the size regulation of lipid droplets (LDs), which are organelles specialized in storage of lipids. We found that compared to wild type mutations in ATL caused smaller LDs in *C.elegans* intestinal cells and *Drosophila* fat body. Unexpectedly, mutation or depletion of ATL caused a significant reduction of fat content on the level of the whole organism. We are currently investigating whether ATL is necessary for size regulation of LDs in mammalian cells specialized in lipid storage called adipocytes. Our preliminary data indicate that ATL is required for the differentiation of mammalian adipocytes and we further discovered that ATL is necessary for efficient progression through the cell cycle.