

Ultrastructural Characterization of Mitotic Germline Cells in *Caenorhabditis elegans*

S. Cai,^{1,2} L. Keller,^{3,2} G. Greenan,^{4,2} A. Hyman,^{4,2} T. Muller-Reichert^{4,2}; ¹Indiana University, Bloomington, IN, ²Physiology Course, Marine Biological Laboratory, Woods Hole, MA, ³University of California, San Francisco, San Francisco, CA, ⁴Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany

The adult *C. elegans* gonad provides a continuous population of proliferating germline cells. Little is known about how these germline cells undergo mitosis and whether it is similar to somatic cell mitosis. We are interested in investigating the detailed structural features of germline mitotic cells through the use of high-pressure freezing combined with transmission electron microscopy (TEM). The initial characterization demonstrated a number of differences and similarities between mitotic germline and somatic cells. Interestingly, we show that centrioles appear to recruit less pericentriolar material during mitosis than somatic mitotic cells, giving rise to a much smaller centrosome. Additionally, during germline cell mitosis the nuclear envelope remains intact except for fenestrations at each pole within which the centrosomes reside. We are pursuing a quantitative analysis of the mitotic cell cycle by fluorescent live cell imaging and 3D reconstruction of the germline mitotic spindle by electron tomography.