MICROFOSSILS FROM THE BELT SUPERGROUP, MONTANA: A NEW WINDOW INTO EARLY EUKARYOTE EVOLUTION. Z. R. Adam[1], M.L. Skidmore[1], D.W. Mogk[1] and N.J. Butterfield[2], [1]Department of Earth Sciences, Montana State University, Bozeman, MT, USA. (correspondence: zach@bmsis.org) for first author, [2]Department of Earth Sciences, University of Cambridge, Cambridge, UK.

Introduction: Sediments of middle Proterozoic age host the earliest recognizable eukaryotes but efforts to elucidate the paleobiology, biogeography and biostratigraphy of these organisms have been severely hampered by limited basin sampling and insufficient morphological diversity among reported assemblages. Here we report diverse microbial biota from the Greyson and Chamberlain Formations of the lower Belt Supergroup. The Greyson Formation also preserves the macroscopic compression fossil *Grypania* and other microbially induced sedimentary structures (MISS). The Greyson microfossil assemblages are characterized by *Tappania, Dictyosphaera, Gemmuloides, Caudosphaera* and lesser numbers of *Satka, Valeria, Coneosphaera,* longitudinally striated tubes and a modest assortment of filaments. The Chamberlain assemblages are characterized by abundant *Valeria, Synsphaeridium* and striated tubes with lesser numbers of *Satka, Symplassosphaeridium* and *Coniunctiophycus.*

The newly discovered Belt Supergroup biota represent one of the most complete views we have into the ecological and environmental context of the early evolution of eukaryotes, and the first of such views known from early Mesoproterozoic Laurentia. Overlapping taxa from both units exhibit similar states of preservation but dissimilar relative abundances, which we interpret as reflective of distinct paleoenvironmental conditions of the sampled sections of the Chamberlain and Greyson Formations. Complex eukaryotes (i.e., *Tappania* and other process-bearing acritarchs) occur only in the Greyson Formation, corroborating indications from other coeval deposits that early eukaryotes may have been restricted to near-shore environments. Here we will provide an overview of the Belt Supergroup fossils and their host sediments, the integration of these data with those of coeval deposits and the use of this information to characterize the early evolution of eukaryotes.