1158-92-310 **Jordan Collignon***, 5200 North Lake Road, Merced, CA 95343, and **Mikahl Banwarth-Kuhn** and **Suzanne Sindi**. *An Investigation into the Impact of Cell-Budding on Colony Structure in Simulated Yeast Colonies.* Preliminary report.

High-performance computing has made it possible to generate biologically relevant populations of cells while tracking their position and shape in time. Such models have been used to investigate the shape of bacterial colonies, progression of cancer tumors, and development of tissues in plants and mammals. Most cell-based models were developed under the assumption that cell division progressed through fission, but the yeast extit(Saccharomyces cerevisiae) reproduces through budding, a biophysically and biomechanically different process where mother and daughter cells remain attached. The few cell-based models that have considered budding, typically have done so by approximating the budding process or only considering the development of a small colony. In this work, we implement a cell-based model of yeast incorporating budding. We do this by considering mother-daughter pairs to have strong adhesion and then consider the impact of budding on colony structure. We study the impact that budding has on quantitative features of colony structure including the sparseness, expanse and connectivity. We find that budding produces significant differences in these colony features and, as such, is an important biophysical feature to include when comparing to experimental yeast colony data. (Received March 03, 2020)