

STUDY OF DEVELOPMENT OF THE DIRECT DEVELOPING SEA CUCUMBER, *THYONE BRIAREUS*. Maureen Wood and Hyla Sweet*, Department of Biological Sciences, mew7470@rit.edu, hxssbi@rit.edu

The direct developing sea cucumber, *Thyone briareus*, was examined to characterize its normal development. This study and future work with *Thyone* will be used to create a new model system to aid in the study of the evolution of mesoderm development in echinoderms. Light microscopy was used to examine external morphology of the developing larva. Propidium iodide staining was used to examine the development of mesenchyme tissue. Plane polarized light was used to examine skeletal development. Phalloidin staining was used to examine development of muscle tissue. Mesoderm begins to form during gastrulation, 20 hours after fertilization. Skeletal elements appear between four and six days of development, about the same time that the primary tentacles begin to emerge. Muscle fibers can be seen as early as four days into development at the budding tentacles, and continue to grow extensively as the organism reaches the pentactula stage. Future work may include fate mapping, molecular studies, and comparing the development of *Parastichopus californicus* (an indirect developing sea cucumber) to that of *Thyone briareus*.