Kelly Sutherland and Richard Emlet both study aspects ecology and hydromechanical function in zooplankton. These organisms play important roles in structuring planktonic communities but are understudied. OIMB has good access to a diversity of zooplankton. (1) An example project would allow students to investigate the mechanics of ctenophore propulsion across life history stages. How does metachronal beating in ctene rows control thrust production across ctenophore size? Considering that length of ctene relative to body size shifts as comb jellies grow larger, force production and maneuvering likely shift with size. This sets up a rich system for testing hypotheses about functional morphology as it relates to animal-fluid interactions, and specifically thrust production. Cilia-fluid interactions will have broad relevance to other biological systems. (2) Another example project would involve measuring swimming speeds of different sized barnacle larvae (cyprids) of different species. Initially, the student would need to collect cyprids and figure out cues to get them to swim. For both projects, students will be able to do field sampling with plankton nets, current meters, CTDs and cameras as well as laboratory flow visualizations and high-speed, high-resolution video. Finally, towards the end of the REU, students could potentially sample vertical and horizontal variability of zooplankton and their prey off the Oregon coast via a research vessel.