

Vassar College Department of Biology

Fluid Entrainment and Medusae Morphology Reveal Row Propulsion Proficiency

Senior Biology Thesis

Author: Jo Hsuan Brian Lee

Supervisors: Dr. John H. Long, Dr. Jodi A. Schwarz

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Abstract:

Row propulsion doubles as a locomotive and foraging technique exhibited in oblate medusae swimming. The mechanism propels fluids away from the animal during bell contraction, and draws fluids into the bell during bell relaxation via systematic fluid entrainment. We proposed a thrust-based acceleration model to verify the formation and propulsive effects of such hydrodynamic structure. The model is successfully developed to compute the maximum swimming acceleration of two oblate species based on medusae morphology and rate of pulsation. Lateral vortex superstructures facilitated by the velum were found to be essential in understanding and comparing the biomechanics and ecology of oblate medusae.

For the full article, please message or reach me at jlee@vassar.edu