

Abstract Submitted
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Flow induced by a jellyfish SEIJI ICHIKAWA, OSAMU MOCHIZUKI,
Toyo University, BIOMECHANICAL ENGINEERING LABORATORY TEAM —
The purpose of this study is to understand experimentally a propulsion mechanism
of a jellyfish for applying its mechanism to a soft-matter micro robot. The traveling
of a jellyfish is governed by viscous force because of following reasons: the main
component of jellyfish is water whose percentage is 98%, and the Reynolds number
is low. We observed the motion of a jellyfish by a motion-capture camera, and
measured the vector field of flow around a jellyfish by using a PIV system. A
jellyfish is principally propelled by a vortex ring ejected at the contracting phase of
a jellyfish motion. It is interesting that it never stop traveling even at the expanding
phase. A vortex ring observed at the inside of a jellyfish at the expanding phase is
found to play an important rule for traveling at the expanding phase. We discuss
that the inside vortex ring with the opposite vorticity contribute decrease in shear
stress of the inside boundary layer and increase in circulation of the shed vortex
ring.

Seiji Ichikawa
Toyo University

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