Abstract Submitted
for the DFD17 Meeting of
The American Physical Society

The hydrodynamics of predator-prey interactions in zebrafish[1]
MATTHEW MCHENRY, ALBERTO SOTO, ANDRES CARRILLO, Univ of California - Irvine, MARGARET BYRON, Pennsylvania State Univ — Hydrodynamics govern the behavior of fishes when they operate as predators or prey. In addition to the role of fluid forces in propulsion, fishes relay on flow stimuli to sense a predatory threat and to localize palatable prey. We have performed a series of experiments on zebrafish (*Danio rerio*) that aim to resolve the major factors that determine whether prey survive an encounter with a predator. Zebrafish serve as a model system in this pursuit because the adults prey on larvae of the same species and the larvae are often successful in evading the attacks of the adults. We use a combination of theoretical and experimental approaches to resolve the behavioral algorithms and kinematics that determined the outcome of these interactions. In this context, the hydrodynamics of intermediate Reynolds numbers largely determines the range of flow stimuli and the limits to locomotor performance at dictate prey survival. These principles have the potential to apply to a broad diversity of fishes and other aquatic animals.

[1]ONR: N00014-15-1-2249

Matthew McHenry
Univ of California - Irvine

Date submitted: 30 Jul 2017 Electronic form version 1.4