

Kelly Rakow Sutherland

California Institute of Technology
Pasadena, CA 91125 USA

Email: krsuth@caltech.edu
Phone: 508.221.0305
www.its.caltech.edu/~krsuth

EDUCATION

Massachusetts Institute of Technology/Woods Hole Oceanographic Institution Joint Program

PhD Biological Oceanography, 2009. Thesis: *Form function and flow in the plankton: Jet propulsion and filtration by pelagic tunicates*. Advisor: Larry Madin

University of South Alabama and Dauphin Island Sea Lab

MSc Marine Sciences, 2004. Thesis: *Oriented swimming by the scyphomedusa Aurelia against shear flow*. Advisor: Monty Graham

Tufts University

B.S. Biology and Child Development, 1999

RESEARCH AND PROFESSIONAL EXPERIENCE

California Institute of Technology, Pasadena, CA (2009- present), *Postdoctoral Scholar*

Investigating feeding in turbulence by the invasive ctenophore *Mnemiopsis leidyi* using laboratory and *in situ* techniques. Advisor: John Dabiri

Woods Hole Oceanographic Institution, Woods Hole, MA (2004- 2009), *Graduate Research Assistant*

Studied filtration mechanics and propulsion of salps using Particle Image Velocimetry, dye visualizations, microscopy and bluewater diving techniques off the Pacific coast of Panama. Assisted in study of *Salpa thompsoni* in the Southern Ocean using a combination of net tows, a towed optical instrument, bluewater diving and laboratory measurements.

Dauphin Island Sea Lab, Dauphin Island, AL (2002- 2004), *Graduate Research Assistant*

Studied jellyfish swimming mechanics in the laboratory using video analysis and in the field using ADCP, CTD and 'JellyCam' video profiles. Assisted in study of zooplankton distribution data using tucker trawl, MOCNESS, ring nets, and blue water diving in the Gulf of Mexico. Assisted in plankton identifications, dry weights and C:N ratios.

New England Aquarium, Boston, MA (1999- 2002), *Aquarist*

As jelly culture aquarist, maintained jellies and investigated new display species, culturing methods and tank designs. Advised other institutions on jellyfish maintenance and selected, trained and supervised a group of 10 interns.

FORMAL TEACHING EXPERIENCE

Guest lecturer at Caltech, Biomechanics (2010)

Lecturer at Bridgewater State College, Biology Labs (2007)

Teaching assistant at Sea Education Association, Oceanography (2006, 2007)

Teaching assistant at WHOI, Marine Invertebrates (2005)

Kelly Rakow Sutherland

INFORMAL TEACHING AND MENTORING EXPERIENCE

Poster Judge at ASLO meeting (Summer 2010)
Guest lecturer at Children's Science School, MA, Marine Biology (2007, 2008)
Mentor to two undergraduate field assistants in Panama (2007, 2008)
Ocean scientist liaison for Plymouth, MA middle schools, COSEE-NE (2005- 2007)
Mentor to SOARS intern (Significant Opportunities in Atmospheric Research in Science) (2006)
Science fair judge at Falmouth high school (2005, 2007, 2008)
Women in Science workshop leader for middle school girls (2003, 2004)
Aquarium Educator at the New England Aquarium (2000- 2001)

PEER REVIEWED PUBLICATIONS

Sutherland KR, Beet AR, Solow AR (in press) Alternative analysis of a salp population time-series. *Marine Ecology Progress Series*.

Sutherland KR, Madin LP, Stocker R (2010) Filtration of submicrometer particles by pelagic tunicates. *Proceedings of the National Academy of Sciences* 34: 15129-15134.

Sutherland KR, Madin LP (2010) Jet wake structure and swimming performance of pelagic tunicates. *Journal of Experimental Biology* 213: 2967- 2975.

Sutherland KR, Madin LP (2010) A comparison of filtration rates among pelagic tunicates using kinematic measurements. *Marine Biology* 157: 755-764.

Rakow KC, Graham WM (2006) Orientation and swimming mechanics by the scyphomedusa *Aurelia* sp. in shear flow. *Limnology and Oceanography* 51(2) 1097-1106.

POPULAR PUBLICATIONS

Sutherland KR (2009) Dye sheds light on jet-propelled salps. *Oceanus Magazine* 47 (3).

INVITED LECTURES

Sutherland KR (February 2011) Filtration of submicrometer particles by pelagic tunicates. "The relevance of jellyfish blooms in the changing global oceans". American Society of Limnology and Oceanography Winter Meeting.

Sutherland KR (October 2010) Swimming and filtration in the ocean by jet-propelled salps. Department of Mechanical Engineering, UC Santa Barbara.

Sutherland KR (2008) *In situ* filtration rates of pelagic tunicates from morphometric measurements. Biology Department, Woods Hole Oceanographic Institution.

Rakow K (2002) Blue water diving with gelatinous zooplankton. New England Aquarium.

Kelly Rakow Sutherland

PRESENTATIONS

Sutherland KR, Dabiri JO, Koehl MAR (2010) Marine ostracod swimming behavior in the benthic boundary layer under different field flow conditions. American Physical Society Division of Fluid Dynamics Annual Meeting.

Sutherland KR, Madin L, Stocker R (2010) Filtration of submicrometer particles by pelagic tunicates. American Society of Limnology and Oceanography Summer Meeting.

Sutherland KR, Madin L (2010) Comparative jet wake structure and swimming performance of pelagic tunicates. Southern California Symposium on Flow Physics.

Sutherland KR, Madin L (2010) Form function and flow in the plankton: jet wake structure and swimming performance of pelagic tunicates. Society for Integrative and Comparative Biology Annual Meeting.

Sutherland KR, Madin L (2009) *In situ* filtration rates of pelagic tunicates: results from morphometric measurements. Society for Integrative and Comparative Biology Annual Meeting. [Best poster runner-up, Division of Comparative Biomechanics]

Sutherland KR, Techet A, Madin L (2008) *In situ* visualization of the propulsive jet wakes produced by pelagic tunicates. American Physical Society Division of Fluid Dynamics Annual Meeting.

Rakow K (2008) Trade-offs between propulsion and filter feeding among three species of pelagic tunicates. Society for Integrative and Comparative Biology Annual Meeting.

Rakow K, Graham WM (2004) Swimming mechanics by jellyfish in shear flow. American Society of Limnology and Oceanography Meeting.

Rakow K, Graham WM (2004) Oriented swimming by jellyfish in flow. Southeastern Ecology and Evolution Conference [Best oral presentation]

RECOGNITION

Invitation to Eco-DAS symposium (2010)

WHOI Ocean Ventures Fellowship (2007)

Journal of Experimental Biology Traveling Fellowship (2006)

University of South Alabama Graduate Fellowship (2003)

Nelson Award for best M.Sc. candidate in Marine Sciences, U. South Alabama (2004)

ACTIVITIES

Member of NCEAS working group on jellyfish blooms (2009- present)

Elected to WHOI women's committee (2007)

Elected MIT/WHOI Graduate Student Representative (2005)

Elected DISL Graduate Student Organization Treasurer (2002)

Kelly Rakow Sutherland

PEER REVIEW

Journal of Sea Research (2); Limnology and Oceanography (1); Hydrobiologia (1); Deep-Sea Research (1 co-review); Marine Biology (1 co-review); Estuarine, Coastal and Shelf Science (1)

PROFESSIONAL SOCIETIES

American Association for the Advancement of Science
American Society of Limnology and Oceanography
Society of Integrative and Comparative Biology

SKILLS

AAUS Research SCUBA certified; experience blue water and dry-suit diving
Conversant in Spanish