

# **John O. Dabiri**

## **Contact Information**

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## **Education**

### **Ph.D., Bioengineering with minor in Aeronautics (4/2005)**

California Institute of Technology, Pasadena, CA  
Thesis: Unsteady fluid mechanics of starting-flow vortex generators with time-dependent boundary conditions  
Advisor: Morteza (Mory) Gharib

### **M.S., Aeronautics (6/2003)**

California Institute of Technology, Pasadena, CA

### **B.S.E. *summa cum laude*, Mechanical and Aerospace Engineering (6/2001)**

Princeton University, Princeton, NJ

## **Professional Experience**

### **Professor with tenure (11/2010 – Present)**

**Associate Professor with tenure (8/2009 – 10/2010); Assistant Professor (5/2005 – 8/2009)**  
Aeronautics and Bioengineering, California Institute of Technology

### **Senior Fellow (7/2012 – 6/2013)**

Center for Turbulence Research, Stanford University

### **Research Assistant (9/2001 – 4/2005)**

Bioengineering, California Institute of Technology

### **Research Staff (6/2001 – 9/2001)**

Mechanical, Industrial and Manufacturing Engineering, University of Toledo, OH

### **Research Assistant (9/1998 – 6/2001)**

Mechanical and Aerospace Engineering, Princeton University

### **Research Fellow (6/2000 – 8/2000)**

Aeronautics, California Institute of Technology

## Research Grants

- United States - Israel Binational Science Foundation “Drift-mediated mixing” (2012-2015, US PI: Dabiri)
- National Science Foundation (Biological Oceanography) “Turbulence and suspension feeding: a new approach using the lobate ctenophore *Mnemiopsis leidyi*” (2011-2014, PI: Dabiri)
- Gordon and Betty Moore Foundation “Center for Bio-inspired Engineering” (2010-2015, PI: Dabiri)
- Office of Naval Research (Physical Sciences) “Beyond mimicry: bio-inspired propulsion via passive mechanisms” (2009-2014, PI: Dabiri)
- National Science Foundation (Fluid Dynamics) “Flexible swimmers: reverse engineering a jellyfish” (2009-2011, PI: Dabiri)
- National Science Foundation (Fluid Dynamics) “Optimizing flexible swimmers—from jellyfish to engineered propulsors” (2008-2011, PI: Dabiri)
- National Science Foundation (Biological Oceanography) “Biomixing—a controversial mechanism influencing dynamics of marine ecosystems?” (2008-2010, PI: M. Dawson)
- Office of Naval Research (Physical Sciences) “Optimal propulsion for hybrid screw-based, bio-inspired systems” (2008-2011, PI: Dabiri)
- National Science Foundation (Physiological and Structural Systems) “In situ measurement of vertebrate swimming in natural environments” (2008-2009, PI: M. Gordon)
- National Science Foundation (Energy for Sustainability) “Bio-inspired fluid dynamic energy conversion” (2007-2011, PI: Dabiri)
- National Science Foundation (Ocean Technology) “Phase two development of a self-contained underwater velocimetry apparatus” (2007-2009, PI: Dabiri)
- Office of Naval Research SBIR “Biomimetic sonobuoy” (2007-2010, PI: Triton Systems, Inc.)
- National Science Foundation (Biological Oceanography) “Prediction of medusan predatory roles based on quantitative studies of animal-fluid interactions” (2006-2009, PI: Dabiri)

## Honors and Awards

### Research Achievement

- Bloomberg Businessweek Magazine “Technology Innovator” (2012)
- Senior Fellow, Stanford University Center for Turbulence Research (2012)
- MacArthur Fellow (2010)
- Ebony Magazine “Power 100” Most Influential Black Americans (2010)
- T. Francis Ogilvie Lectureship in Ocean Engineering, MIT (2010)
- Presidential Early Career Award for Scientists and Engineers (2009)
- Enzo Levi Lecture, National University of Mexico (2009)
- Popular Science Magazine “Brilliant 10” Scientists (2008)
- Office of Naval Research Young Investigator Award (2008)
- Nominee, MIT Technology Review Magazine TR35 Award (2007)
- Invitee, Summit of Experts in Biomechanics, U.S. National Committee for Biomechanics (2007)
- Donald Coles Prize for Best Experiment, California Institute of Technology (2005)
- Winner, American Physical Society Gallery of Fluid Motion (2004)
- Oral Presentation Award, Southern California Biomedical Engineering Symposium (2002)
- Sigma Xi National Research Honor Society Book Award, Princeton University (2001)
- John Marshall II Memorial Prize for Independent Research, Princeton University (2001)

Morgan W. McKinzie Senior Thesis Prize Finalist with Distinction, Princeton University (2001)  
Grade of A with Distinction (A+), B.S.E. Thesis, Princeton University (2001)  
Nominee, Marcella and Joel Bonsall Prize for Technical Writing, California Institute of  
Technology (2000)

**Graduate Fellowships**

Y. C. Fung Fellowship, California Institute of Technology (2001 – 2005)  
Department of Defense Science and Engineering Graduate Fellowship (2001 – 2004)  
Ford Foundation Graduate Fellowship (2001, declined)  
Sir Frank Whittle Rolls Royce Fellowship in Propulsion, MIT (2001, declined)  
Presidential Graduate Fellowship, Princeton University (2001, declined)  
National Finalist, Hertz Foundation Fellowship (2001)

**Academic and Leadership Achievement**

Harold Willis Dodds Achievement Award, Princeton University (2001)  
Finalist, Pyne Prize, Princeton University (2001)  
National Finalist, Rhodes Scholarship (2001)  
National Finalist, British Marshall Scholarship (2001)  
Outstanding Academic Achievement in the B.S.E. Program, Princeton University (1998 – 2000)  
Academic Excellence in Engineering Coursework, Princeton Black Graduate Caucus (1999)  
Academic Achievement in Engineering, National Association of Minority Engineers (1999)

**Service and Mentoring Achievement**

Professor of the Month (February), California Institute of Technology (2012)  
Outstanding Paper (Mentor), Freshman Summer Institute, California Institute of Technology  
(2002)  
Tau Beta Pi National Engineering Honor Society Prize (2001)  
George Bienkowski Memorial Prize, Princeton University (2001)

**Miscellaneous Honors and Awards**

Convocation Address, California Institute of Technology (2010)  
Richard C. Biedebach Lecture, California Institute of Technology (2009)  
William Randolph Hearst Scholarship, Princeton University (1997 – 2001)  
Samuel Bayard Dod Scholarship, Princeton University (1997 – 2001)  
The Boeing Company Undergraduate Scholarship (2000)  
Class of 1907 Scholarship, Princeton University (2000)  
National Achievement Scholarship (1997)  
National Merit Scholarship Commendation (1997)

## Peer-Reviewed Publications

*Students and Postdoctoral Scholars underlined.*

48. Costello JH, Colin SP, Villanueva A, Smith C, Priya S, **Dabiri JO**, Blottman JB (2012) “Biomimetic robots reveal the mechanistic advantages of nature’s flexible propulsors,” submitted.
47. Kinzel M, Mulligan Q, **Dabiri JO** (2012) “Energy exchange in an array of vertical-axis wind turbines,” in press.
46. O’Farrell C, **Dabiri JO** (2012) “Perturbation response and pinch-off of vortex rings and dipoles,” *Journal of Fluid Mechanics*, in press.
45. Nawroth JC, Lee H, Feinberg AW, Ripplinger CM, McCain ML, Grosberg A, **Dabiri JO**, Parker KK (2012) “A tissue-engineered jellyfish with biomimetic propulsion,” in press.
44. Sutherland KR, **Dabiri JO**, Koehl MAR (2011) “Simultaneous field measurements of ostracod swimming behavior and background flow,” *Limnology and Oceanography: Fluids and Environment* 1: 135-146.  
[http://dabiri.caltech.edu/publications/SuDaKo\\_LOFE11.pdf](http://dabiri.caltech.edu/publications/SuDaKo_LOFE11.pdf)
43. Katija K, Colin SP, Costello JH, **Dabiri JO** (2011) “Quantitatively measuring in situ flows using a self-contained underwater velocimetry apparatus (SCUVA),” *Journal of Visualized Experiments* 56: e2615.  
[http://dabiri.caltech.edu/publications/KaCoCoDa\\_JOVE11.mov](http://dabiri.caltech.edu/publications/KaCoCoDa_JOVE11.mov)
42. Katija K, Beaulieu WT, Regula C, Colin SP, Costello JH, **Dabiri JO** (2011) “Quantification of flows generated by the hydromedusa *Aequorea victoria*: A Lagrangian coherent structure (LCS) analysis,” *Marine Ecology Progress Series* 435: 111-123.  
[http://dabiri.caltech.edu/publications/KaBeReCoCoDa\\_MEPS11.pdf](http://dabiri.caltech.edu/publications/KaBeReCoCoDa_MEPS11.pdf)
41. **Dabiri JO** (2011) “Potential order-of-magnitude enhancement of wind farm power density via counter-rotating vertical-axis wind turbine arrays,” *Journal of Renewable and Sustainable Energy* 3: 043104.  
[http://dabiri.caltech.edu/publications/Da\\_JRSE11.pdf](http://dabiri.caltech.edu/publications/Da_JRSE11.pdf)
40. Ruiz LA, Whittlesey RW, **Dabiri JO** (2011) “Vortex-enhanced propulsion,” *Journal of Fluid Mechanics* 668: 5-32.  
[http://dabiri.caltech.edu/publications/RuWhDa\\_JFM11.pdf](http://dabiri.caltech.edu/publications/RuWhDa_JFM11.pdf)
39. Colin SP, Costello JH, Hansson LJ, Titelman J, **Dabiri JO** (2010) “Stealth predation: the basis of the ecological success of the invasive ctenophore *Mnemiopsis leidyi*,” *Proceedings of the National Academy of Sciences of the USA* 107 (40): 17223-17227.  
[http://dabiri.caltech.edu/publications/CoCoHaTiDa\\_PNAS10.pdf](http://dabiri.caltech.edu/publications/CoCoHaTiDa_PNAS10.pdf)

38. Whittlesey RW, Liska SC, **Dabiri JO** (2010) "Fish schooling as a basis for vertical-axis wind turbine farm design," *Bioinspiration and Biomimetics* 5: 035005.  
[http://dabiri.caltech.edu/publications/WhLiDa\\_BB10.pdf](http://dabiri.caltech.edu/publications/WhLiDa_BB10.pdf)
37. Breitburg DL, Crump BC, **Dabiri JO**, Gallegos CL (2010) "Ecosystem engineers in the pelagic realm: Habitat alteration by species ranging from microbes to jellyfish," *Integrative and Comparative Biology* 50 (2): 188-200.  
[http://dabiri.caltech.edu/publications/BrCrDaGa\\_ICB10.pdf](http://dabiri.caltech.edu/publications/BrCrDaGa_ICB10.pdf)
36. **Dabiri JO** (2010) "The role of vertical migration in biogenic ocean mixing," *Geophysical Research Letters* L11602, doi:10.1029/2010GL043556.  
[http://dabiri.caltech.edu/publications/Da\\_GRL10.pdf](http://dabiri.caltech.edu/publications/Da_GRL10.pdf)
35. Nawroth JC, Feitl KE, Colin SP, Costello JH, **Dabiri JO** (2010) "Phenotypic plasticity in juvenile jellyfish medusae facilitates effective animal-fluid interaction," *Biology Letters* 6 (3): 389-393. [http://dabiri.caltech.edu/publications/NaFeCoCoDa\\_BL10.pdf](http://dabiri.caltech.edu/publications/NaFeCoCoDa_BL10.pdf)
34. **Dabiri JO**, Colin SP, Katija K, Costello JH (2010) "A wake-based correlate of swimming performance and foraging behavior in seven co-occurring jellyfish species," *Journal of Experimental Biology* 213 (8): 1217-1225.  
[http://dabiri.caltech.edu/publications/DaCoKaCo\\_JEB10.pdf](http://dabiri.caltech.edu/publications/DaCoKaCo_JEB10.pdf)
33. O'Farrell C, **Dabiri JO** (2010) "A Lagrangian approach to identifying vortex pinch-off," *Chaos* 20: 017513. [http://dabiri.caltech.edu/publications/OFDa\\_Chaos10.pdf](http://dabiri.caltech.edu/publications/OFDa_Chaos10.pdf)
32. Feitl KE, Millett AF, Colin SP, **Dabiri JO**, Costello JH (2009) "Functional morphology and fluid interactions during early development of scyphomedusae," *Biological Bulletin* 217: 283-291. [http://dabiri.caltech.edu/publications/FeMiCoDaCo\\_BB09.pdf](http://dabiri.caltech.edu/publications/FeMiCoDaCo_BB09.pdf)
31. Rosenfeld M, Katija K, **Dabiri JO** (2009) "Circulation generation and vortex ring formation by static conic nozzles," *Journal of Fluids Engineering* 131 (9): 091204.  
[http://dabiri.caltech.edu/publications/RoKaDa\\_JFE09.pdf](http://dabiri.caltech.edu/publications/RoKaDa_JFE09.pdf)
30. Katija K, **Dabiri JO** (2009) "A viscosity-enhanced mechanism for biogenic ocean mixing," *Nature* 460: 624-626.  
[http://dabiri.caltech.edu/publications/KaDa\\_Nature09.pdf](http://dabiri.caltech.edu/publications/KaDa_Nature09.pdf)
29. Wilson M, Peng J, **Dabiri JO**, Eldredge JD (2009) "Lagrangian coherent structures in low Reynolds number swimming," *Journal of Physics: Condensed Matter* 21: 204105.  
[http://dabiri.caltech.edu/publications/WiPeDaEl\\_JPCM09.pdf](http://dabiri.caltech.edu/publications/WiPeDaEl_JPCM09.pdf)
28. Peng J, **Dabiri JO** (2009) "Transport of inertial particles by Lagrangian Coherent Structures: application to predator-prey interaction in jellyfish feeding," *Journal of Fluid Mechanics* 623: 75-84.  
[http://dabiri.caltech.edu/publications/PeDa\\_JFM09.pdf](http://dabiri.caltech.edu/publications/PeDa_JFM09.pdf)

27. **Dabiri JO** (2009) "Optimal vortex formation as a unifying principle in biological propulsion," *Annual Review of Fluid Mechanics* 41: 17-33.  
[http://dabiri.caltech.edu/publications/Da\\_ARFM09.pdf](http://dabiri.caltech.edu/publications/Da_ARFM09.pdf)
26. Peng J, **Dabiri JO** (2008) "The 'upstream wake' of swimming and flying animals and its correlation with propulsive efficiency," *Journal of Experimental Biology* 211 (16): 2669-2677. [http://dabiri.caltech.edu/publications/PeDa\\_JEB08b.pdf](http://dabiri.caltech.edu/publications/PeDa_JEB08b.pdf)
25. Costello JH, Colin SC, **Dabiri JO** (2008) "The medusan morphospace: phylogenetic constraints, biomechanical solutions and ecological consequences," *Invertebrate Biology* 127 (3): 265-290. [http://dabiri.caltech.edu/publications/CoCoDa\\_IB08.pdf](http://dabiri.caltech.edu/publications/CoCoDa_IB08.pdf)
24. Katija K, **Dabiri JO** (2008) "In situ field measurements of aquatic animal-fluid interactions using a self-contained underwater velocimetry apparatus (SCUVA)," *Limnology and Oceanography: Methods* 6: 162-171.  
[http://dabiri.caltech.edu/publications/KaDa\\_LOM08.pdf](http://dabiri.caltech.edu/publications/KaDa_LOM08.pdf)
23. Peng J, **Dabiri JO** (2008) "An overview of a Lagrangian method for analysis of animal wake dynamics," *Journal of Experimental Biology* 211 (2): 280-287.  
[http://dabiri.caltech.edu/publications/PeDa\\_JEB08.pdf](http://dabiri.caltech.edu/publications/PeDa_JEB08.pdf)
22. Shadden SC, Katija K, Rosenfeld M, Marsden JE, **Dabiri JO** (2007) "Transport and stirring induced by vortex formation," *Journal of Fluid Mechanics* 593: 315-331.  
[http://dabiri.caltech.edu/publications/ShKaRoMaDa\\_JFM07.pdf](http://dabiri.caltech.edu/publications/ShKaRoMaDa_JFM07.pdf)
21. Franco E, Pekarek DN, Peng J, **Dabiri JO** (2007) "Geometry of unsteady fluid transport during fluid-structure interactions," *Journal of Fluid Mechanics* 589: 125-145.  
[http://dabiri.caltech.edu/publications/FrPePeDa\\_JFM07.pdf](http://dabiri.caltech.edu/publications/FrPePeDa_JFM07.pdf)
20. **Dabiri JO** (2007) "Renewable fluid dynamic energy derived from aquatic animal locomotion," *Bioinspiration and Biomimetics* 2: L1-L3.  
[http://dabiri.caltech.edu/publications/Da\\_BB07.pdf](http://dabiri.caltech.edu/publications/Da_BB07.pdf)
19. Peng J, **Dabiri JO** (2007) "A potential-flow, deformable-body model for fluid-structure interactions with compact vorticity: application to animal swimming measurements," *Experiments in Fluids* 43 (5): 655-664.  
<http://dabiri.caltech.edu/publications/PeDa{EIF07.pdf>
18. **Dabiri JO**, Colin SP, Costello JH (2007) "Morphological diversity of medusan lineages constrained by animal-fluid interactions," *Journal of Experimental Biology* 210 (11): 1868-1873. [http://dabiri.caltech.edu/publications/DaCoCo\\_JEB07.pdf](http://dabiri.caltech.edu/publications/DaCoCo_JEB07.pdf)
17. Peng J, **Dabiri JO**, Madden PG, Lauder GV (2007) "Non-invasive measurement of instantaneous forces during aquatic locomotion: A case study of the bluegill sunfish pectoral fin," *Journal of Experimental Biology* 210 (4): 685-698.  
[http://dabiri.caltech.edu/publications/PeDaMaLa\\_JEB07.pdf](http://dabiri.caltech.edu/publications/PeDaMaLa_JEB07.pdf)

16. **Dabiri JO**, Colin SP, Costello JH (2006) "Fast-swimming hydromedusae exploit velar kinematics to form an optimal vortex wake," *Journal of Experimental Biology* 209 (11): 2025-2033. [http://dabiri.caltech.edu/publications/DaCoCo\\_JEB06.pdf](http://dabiri.caltech.edu/publications/DaCoCo_JEB06.pdf)
15. Shadden SC, **Dabiri JO**, Marsden JE (2006) "Lagrangian analysis of fluid transport in empirical vortex ring flows," *Physics of Fluids* 18 (4): 047105. [http://dabiri.caltech.edu/publications/ShDaMa\\_POF06.pdf](http://dabiri.caltech.edu/publications/ShDaMa_POF06.pdf)
14. **Dabiri JO** (2006) "Note on the induced Lagrangian drift and added-mass of a vortex," *Journal of Fluid Mechanics* 547: 105-113. [http://dabiri.caltech.edu/publications/Da\\_JFM06.pdf](http://dabiri.caltech.edu/publications/Da_JFM06.pdf)
13. **Dabiri JO** (2005) "On the estimation of swimming and flying forces from wake measurements," *Journal of Experimental Biology* 208 (18): 3519-3532. [http://dabiri.caltech.edu/publications/Da\\_JEB05.pdf](http://dabiri.caltech.edu/publications/Da_JEB05.pdf)
12. Gharib M, Rambod E, Kheradvar A, Sahn DJ, **Dabiri JO** (2006) "Optimal vortex formation as an index of cardiac health," *Proceedings of the National Academy of Sciences of the USA* 103 (16): 6305-6308. [http://dabiri.caltech.edu/publications/GhRaKhSaDa\\_PNAS06.pdf](http://dabiri.caltech.edu/publications/GhRaKhSaDa_PNAS06.pdf)
11. Krueger PS, **Dabiri JO**, Gharib M (2006) "The formation number of vortex rings formed in uniform background co-flow," *Journal of Fluid Mechanics* 556: 147-166. [http://dabiri.caltech.edu/publications/KrDaGh\\_JFM06.pdf](http://dabiri.caltech.edu/publications/KrDaGh_JFM06.pdf)
10. Shusser M, Rosenfeld M, **Dabiri JO**, Gharib M (2006) "Effect of time-dependent piston velocity program on vortex ring formation in a piston/cylinder arrangement," *Physics of Fluids* 18 (3): 033601. [http://dabiri.caltech.edu/publications/ShRoDaGh\\_POF06.pdf](http://dabiri.caltech.edu/publications/ShRoDaGh_POF06.pdf)
9. **Dabiri JO**, Colin SP, Costello JH, Gharib M (2005) "Vortex motion in the ocean: in situ visualization of jellyfish swimming and feeding flows," *Physics of Fluids* 17 (9): 091108. [http://dabiri.caltech.edu/publications/DaCoCoGh\\_POF05.pdf](http://dabiri.caltech.edu/publications/DaCoCoGh_POF05.pdf)
8. **Dabiri JO**, Gharib M (2005) "The role of optimal vortex formation in biological fluid transport," *Proceedings of the Royal Society B: Biological Sciences* 272: 1557-1560. [http://dabiri.caltech.edu/publications/DaGh\\_PRSB05.pdf](http://dabiri.caltech.edu/publications/DaGh_PRSB05.pdf)
7. **Dabiri JO**, Gharib M (2005) "Starting flow through nozzles with temporally variable exit diameter," *Journal of Fluid Mechanics* 538: 111-136. [http://dabiri.caltech.edu/publications/DaGh\\_JFM05.pdf](http://dabiri.caltech.edu/publications/DaGh_JFM05.pdf)
6. **Dabiri JO**, Colin SP, Costello JH, Gharib M (2005) "Flow patterns generated by oblate medusan jellyfish: field measurements and laboratory analyses," *Journal of Experimental Biology* 208 (7): 1257-1265. [http://dabiri.caltech.edu/publications/DaCoCoGh\\_JEB05.pdf](http://dabiri.caltech.edu/publications/DaCoCoGh_JEB05.pdf)

5. **Dabiri JO**, Gharib M (2004) “Fluid entrainment by isolated vortex rings,” *Journal of Fluid Mechanics* 511: 311-331.  
[http://dabiri.caltech.edu/publications/DaGh\\_JFM04.pdf](http://dabiri.caltech.edu/publications/DaGh_JFM04.pdf)
4. **Dabiri JO**, Gharib M (2004) “A revised slug model boundary layer correction for starting jet vorticity flux,” *Theoretical and Computational Fluid Dynamics* 17 (4): 293-295. [http://dabiri.caltech.edu/publications/DaGh\\_TCFD04.pdf](http://dabiri.caltech.edu/publications/DaGh_TCFD04.pdf)
3. **Dabiri JO**, Gharib M (2004) “Delay of vortex ring pinch-off by an imposed bulk counter-flow,” *Physics of Fluids* 16 (4): L28-L30.  
[http://dabiri.caltech.edu/publications/DaGh\\_POF04.pdf](http://dabiri.caltech.edu/publications/DaGh_POF04.pdf)
2. **Dabiri JO**, Gharib M (2003) “Sensitivity analysis of kinematic approximations in dynamic medusan swimming models,” *Journal of Experimental Biology* 206 (20): 3675-3680. [http://dabiri.caltech.edu/publications/DaGh\\_JEB03.pdf](http://dabiri.caltech.edu/publications/DaGh_JEB03.pdf)
1. Krueger PS, **Dabiri JO**, Gharib M (2003) “The formation number of vortex rings formed in the presence of uniform background co-flow,” *Physics of Fluids* 15 (7): L49-L52.  
[http://dabiri.caltech.edu/publications/KrDaGh\\_POF03.pdf](http://dabiri.caltech.edu/publications/KrDaGh_POF03.pdf)

### Invited Lectures

54. “Nature’s Propulsion Methods,” *29th Symposium on Naval Hydrodynamics*, August 26-31, 2012, Gothenburg, Sweden.
53. “A global approach to wind energy,” *Global Alliance of Technological Universities Workshop*, December 7-8, 2011, Mumbai, India.
52. “A new approach to wind energy,” *Mechanical Engineering Seminar Series, Carnegie Mellon University*, November 18, 2011, Pittsburgh, PA.
51. “Lagrangian fluid dynamic models for analysis of planktonic predator-prey systems and small-scale fluid motions,” *Workshop on Coherent Structures in Dynamical Systems*, May 16-20, 2011, Leiden, Netherlands.
50. “Jellyfish-inspired Engineering,” *California State University at Dominguez Hills*, April 7, 2011, Carson, CA.
49. “Organisms causing flow: Darwinian mixing,” *2011 Journal of Experimental Biology Symposium*, March 14-18, 2011, Cambridge, United Kingdom. Delivered by K. Katija.
48. “A new approach to wind energy,” *Center for Environmental and Applied Fluid Mechanics Seminar, Johns Hopkins University*, March 5, 2011, Baltimore, MD.
47. “Vertical-axis wind turbines revisited,” *Los Alamos National Laboratory Turbine-Turbine Interaction Workshop*, March 2-3, 2011, Los Alamos, NM.

46. “Jellyfish-inspired propulsion,” *Society for Integrative and Comparative Biology Symposium: Bioinspiration: Applying Mechanical Design to Experimental Biology*, January 3-7, 2011, Salt Lake City, UT.
45. “Do swimming animals mix the ocean?,” *Center for Fluid Mechanics, Turbulence, and Computation, Brown University*, November 2, 2010, Providence, RI.
44. “Do swimming animals mix the ocean?,” *Monterey Bay Aquarium Research Institute Seminar*, October 20, 2010, Monterey Bay, CA.
43. “Do swimming animals mix the ocean?,” *Ecology and Evolutionary Biology Seminar, University of California at Los Angeles*, October 6, 2010, Los Angeles, CA.
42. “Order-of-magnitude enhancement of wind power density via optimized vertical-axis wind turbine arrays,” *Resnick Institute Sustainable Energy and Infrastructure Forum*, September 16-17, 2010, Pasadena, CA.
41. “Using vortices for locomotion,” *University of Minnesota Institute for Mathematics and Its Applications Workshop on Natural Locomotion in Fluids and on Surfaces: Swimming, Flying, and Sliding*, June 1-5, 2010, Minneapolis, MN.
40. “Unsteady hydrodynamics in bio-inspired propulsion,” *T. Francis Ogilvie Lecture, Massachusetts Institute of Technology*, May 7, 2010, Cambridge, MA.
39. “Fish schooling as a basis for vertical axis wind turbine farm design,” *First World Summit on Small Wind Turbines*, March 19, 2010, Husum, Germany.
38. “A Darwinian mechanism for biogenic ocean mixing,” *Ecology Seminar Luncheon, Scripps Institution of Oceanography*, March 10, 2010, La Jolla, CA.
37. “Jellyfish-inspired Engineering,” *Alabama School for Math and Science*, November 19, 2009, Mobile, AL.
36. “A Darwinian mechanism for biogenic ocean mixing,” *Colloquium Series, Dauphin Island Sea Lab*, November 19, 2009, Dauphin Island, AL.
35. “Jellyfish-inspired Engineering,” *Civil and Environmental Engineering Seminar, Stanford University*, November 13, 2009, Palo Alto, CA.
34. “A Darwinian mechanism for biogenic ocean mixing,” *Hopkins Marine Station Seminar, Stanford University*, November 12, 2009, Palo Alto, CA.
33. “Jellyfish-inspired Engineering,” *Virginia Air and Space Museum Sigma Lecture*, November 3, 2009, Hampton, VA.

32. “Unsteady hydrodynamics in bio-inspired propulsion,” *NASA Langley Research Center*, November 3, 2009, Hampton, VA.
31. “Jellyfish-inspired Engineering,” *Cabrillo Marine Aquarium Friends Lecture*, September 18, 2009, San Pedro, CA.
30. “Fluid dynamic constraints on morphology and propulsion of medusa at low Reynolds numbers,” *Thematic Conference on Gelatinous Plankton of the Adriatic Sea, University of Dubrovnik*, May 12-13, 2009, Dubrovnik, Croatia.
29. “A Darwinian mechanism for biogenic ocean mixing,” *Environmental Fluid Mechanics and Hydrology Seminar, Stanford University*, May 4, 2009, Palo Alto, CA.
28. “Unsteady hydrodynamics in bio-inspired propulsion,” *2009 Enzo Levi Lecture, National University of Mexico*, April 24, 2009, Mexico City, Mexico.
27. “Jellyfish-inspired Engineering,” *Earnest C. Watson Lecture, California Institute of Technology*, April 22, 2009, Pasadena, CA.
26. “Unsteady hydrodynamics in bio-inspired propulsion,” *College of Engineering Seminar, University of Michigan*, February 19, 2009, Ann Arbor, MI.
25. “Unsteady hydrodynamics in bio-inspired propulsion,” *IGERT Seminar Series, Cornell University*, January 22, 2009, Ithaca, NY.
24. “The role of fluid forces in aquatic animal morphogenesis,” *Minisymposium on Flow-Biology Interactions, International Conference of the American Society of Civil Engineers Engineering Mechanics Institute*, May 18-21, 2008, Minneapolis, MN.
23. “Lagrangian studies of animal swimming and aquatic predator-prey interactions,” *Applied Mechanics Colloquium, Harvard University*, April 23, 2008, Cambridge, MA.
22. “Lagrangian studies of animal swimming and aquatic predator-prey interactions,” *Mechanics Seminar Series, Massachusetts Institute of Technology*, April 22, 2008, Cambridge, MA.
21. “The role of fluid forces in aquatic animal morphogenesis,” *Biophysics Seminar Series, Princeton University*, April 21, 2008, Princeton, NJ.
20. “Lagrangian studies of animal swimming and aquatic predator-prey interactions,” *Biomechanics Seminar Series, University of California at San Diego*, April 9, 2008, La Jolla, CA.
19. “Lagrangian studies of animal swimming and aquatic predator-prey interactions,” *Focus Session on the Fluid Dynamics of Animal Motion, American Physical Society March Meeting*, March 10-14, 2008, New Orleans, LA.

18. “Measuring unsteady efficiency and performance of biological and bio-inspired propulsors,” *Aerospace and Mechanical Engineering, University of Southern California*, November 14, 2007, Los Angeles, CA.
17. “Measuring unsteady efficiency and performance of biological and bio-inspired propulsors,” *Aeronautics and Astronautics, University of Washington*, November 5, 2007, Seattle, WA.
16. “Measuring unsteady efficiency and performance of biological and bio-inspired propulsors,” *Mechanical Engineering, Stanford University*, October 16, 2007, Palo Alto, CA.
15. “Measuring unsteady efficiency and performance of biological and bio-inspired propulsors,” *Colloquium on Nature-Inspired Fluid Mechanics*, October 8-9, 2007, Darmstadt, Germany.
14. “Vorticity-free analyses of animal swimming measurements,” *Symposium on Dynamics and Control of Aquatic Locomotion, SIAM Dynamical Systems Meeting*, May 28-June 1, 2007, Snowbird, UT.
13. “Jellyfish-inspired diagnostics for heart failure and vehicle propulsive efficiency,” *Center for Biologically Inspired Design, Georgia Institute of Technology*, April 23, 2007, Atlanta, GA.
12. “Non-invasive studies of animal propulsion and sensing,” *Aerospace Engineering and Engineering Mechanics, San Diego State University*, April 12, 2007, San Diego, CA.
11. “Non-invasive studies of animal propulsion and sensing,” *Mechanical and Aerospace Engineering, University of California at Los Angeles*, January 19, 2007, Los Angeles, CA.
10. “The role of animal-fluid interactions in shaping medusan morphological diversity,” *Ecology and Evolutionary Biology, University of California at Irvine*, October 13, 2006, Irvine, CA.
9. “Estimating locomotive forces from wake measurements,” *World Congress of Biomechanics*, July 29-August 4, 2006, Munich, Germany.
8. “Progress toward the non-invasive determination of animal swimming and feeding dynamics,” *15th U.S. National Congress on Theoretical and Applied Mechanics*, June 25-30, 2006, Boulder, CO.
7. “Non-invasive studies of animal propulsion and sensing,” *Mechanical Engineering, Stanford University*, May 9, 2006, Palo Alto, CA.

6. “Non-invasive studies of animal swimming and feeding,” *Center for Interdisciplinary Research in Fluid Physics Seminar, University of California at Santa Barbara*, March 1, 2006, Santa Barbara, CA.
5. “Mechanics of biological propulsion,” *Global Enterprise for Micro-Mechanics and Molecular Medicine Colloquium*, October 11-13, 2005, Boston, MA.
4. “Optimal vortex ring formation in biological flows,” *Conference on Vortex Rings and Filaments in Classical and Quantum Systems*, June 6-10, 2005, Trieste, Italy.
3. “Jellyfish swimming and the dynamics of animal vortex wakes, revisited,” *International Congress of Physiological Sciences*, March 28-30, 2005, Pasadena, CA.
2. “Optimal vortex formation as a unifying principle for biological fluid transport,” *Mechanical and Aerospace Engineering, Princeton University*, December 13, 2004, Princeton, NJ.
1. “Optimal vortex formation as a unifying principle in biological propulsion,” *Mechanical and Industrial Engineering, University of Illinois at Urbana-Champaign*, November 8, 2004, Urbana, IL.

## Conference Proceedings and Abstracts

*Students and Postdoctoral Scholars underlined.*

71. Whittlesey RW, **Dabiri JO** (2011) “Improving propulsive efficiency through passive mechanisms using a Starling vortex generator,” *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 20-22, Baltimore, MD.
70. Martinez-Ortiz MP, **Dabiri JO** (2011) “Laboratory studies of ocean mixing by microorganisms,” *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 20-22, Baltimore, MD.
69. Nawroth JC, **Dabiri JO** (2011) “Lessons learned from the jellyfish: Fluid transport at intermediate Reynolds numbers,” *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 20-22, Baltimore, MD.
68. Kinzel M, Mulligan Q, **Dabiri JO** (2011) “Quantitative full-Scale wind turbine flow measurements,” *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 20-22, Baltimore, MD.
67. O’Farrell C, **Dabiri JO** (2011) “The formation of vortex rings from elliptical nozzles,” *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 20-22, Baltimore, MD.

66. Mulligan Q, Kinzel M, Dabiri JO (2011) “Wind resource evaluation at the Caltech Field Laboratory for Optimized Wind Energy,” *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 20-22, Baltimore, MD.
65. Nawroth JC, Dabiri JO (2011) “Jellyfish-inspired fluid transport at intermediate Reynolds numbers,” *48th Annual Technical Conference of The Society of Engineering Sciences*, October 12-14, Evanston, IL.
64. **Dabiri JO** (2010) “Caltech’s Fish-inspired Wind Farm: Results from the first summer,” *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 21-23, Long Beach, CA.
63. Kinzel M, Dabiri JO (2010) “A compact Self-Contained Underwater Velocimetry Apparatus (SCUVA) for in situ field measurements in daytime,” *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 21-23, Long Beach, CA.
62. Nawroth JC, Dabiri JO (2010) “Learning from jellyfish: Fluid transport in muscular pumps at intermediate Reynolds numbers,” *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 21-23, Long Beach, CA.
61. O’Farrell C, Dabiri JO (2010) “The stability of a family of vortex rings,” *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 21-23, Long Beach, CA.
60. Sutherland KR, Dabiri JO, Koehl MAR (2010) “Marine ostracod swimming behavior in the benthic boundary layer under different field flow conditions,” *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 21-23, Long Beach, CA.
59. Whittlesey RW, Dabiri JO (2010) “Passively pulsed propulsion of aquatic vehicles,” *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 21-23, Long Beach, CA.
58. Katija K, Dabiri JO (2010) “A Darwinian mechanism for biogenic ocean mixing,” *American Society of Limnology and Oceanography Ocean Sciences Meeting*, February 22-26, Portland, OR.
57. Nawroth JC, Dabiri JO (2010) “Adaptive phenotypic plasticity in juvenile Scyphomedusae facilitates effective animal-fluid interaction,” *Society for Integrative and Comparative Biology Annual Meeting*, January 3-7, Seattle, WA.
56. Breitburg DL, Crump BC, Dabiri JO, Gallegos CL (2010) “Ecosystem engineers in the pelagic realm: Habitat alteration by species ranging from microbes to jellyfish,” *Society for Integrative and Comparative Biology Annual Meeting*, January 3-7, Seattle, WA.

55. Katija K, **Dabiri JO** (2009) “A Darwinian mechanism for biogenic ocean mixing,” *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 22-24, Minneapolis, MN.
54. O’Farrell C, **Dabiri JO** (2009) “A Lagrangian approach to identifying vortex pinch-off,” *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 22-24, Minneapolis, MN.
53. Whittlesey RW, **Dabiri JO** (2009) “Fish schooling as a basis for wind farm design,” *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 22-24, Minneapolis, MN.
52. **Dabiri JO**, Colin SP, Katija K, Costello JH (2009) “A wake-based correlate of swimming performance in seven jellyfish species,” *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 22-24, Minneapolis, MN.
51. Peng J, **Dabiri JO** (2009) “A fluid mechanical model for mixing in a plankton predator-prey system,” *European Geosciences Union General Assembly*, April 19-24, Vienna, Austria.
50. Colin SP, Costello JH, Hansson LJ, Titelman, J, **Dabiri JO** (2009) “Fluid interactions of the lobate ctenophore *Mnemiopsis leidyi*,” *American Society of Limnology and Oceanography Aquatic Sciences Meeting*, January 25-30, Nice, France.
49. **Dabiri JO**, Peng J, Colin SP, Costello JH (2009) “A new fluid dynamic model for analysis of planktonic predator-prey systems and small-scale fluid motions,” *American Society of Limnology and Oceanography Aquatic Sciences Meeting*, January 25-30, Nice, France.
48. Nawroth JC, Ripplinger CM, Feinberg AW, **Dabiri JO**, Parker KK (2009) “Optical mapping of electrical impulse propagation in the striated muscle of live jellyfish,” *Program of European Neuroscience Schools*, January 11-18, Obergurgl, Austria.
47. Peng J, **Dabiri JO** (2009) “A fluid mechanical model for current-generated feeding of jellyfish and the effect of prey size and escape forces,” *Society for Integrative and Comparative Biology Annual Meeting*, January 3-7, Boston, MA.
46. **Dabiri JO** (2008) “The ‘upstream wake’ of swimming and flying animals revealed by Lagrangian Coherent Structures,” *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 23-25, San Antonio, TX.
45. Katija K, **Dabiri JO** (2008) “Mixing efficiency of swimming animals in stratified fluids,” *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 23-25, San Antonio, TX.

44. Peng J, Dabiri JO (2008) "A fluid mechanical model for current-generating, feeding jellyfish," *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 23-25, San Antonio, TX.
43. Ruiz L, Dabiri JO (2008) "Propulsive performance comparison of a steady and unsteady self-propelled swimmer," *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 23-25, San Antonio, TX.
42. Miller MD, Dabiri JO (2008) "Potential vortex model for wind power extraction," *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 23-25, San Antonio, TX.
41. **Dabiri JO, Peng J** (2008) "The 'upstream wake' of swimming and flying animals and its correlation with propulsive efficiency," *International Congress of Theoretical and Applied Mechanics*, August 25-29, Adelaide, Australia.
40. Katija K, Dabiri JO (2008) "Scaling of wake energy and propulsive efficiency of two representative jellyfish species: *Aurelia* and *Mastigias*," *International Congress of Theoretical and Applied Mechanics*, August 25-29, Adelaide, Australia.
39. Peng J, Miller MD, Dabiri JO (2008) "The fluid mechanical basis of jellyfish feeding and the effects of prey size and escape forces," *International Congress of Theoretical and Applied Mechanics*, August 25-29, Adelaide, Australia.
38. Trevino LA, Dabiri JO (2008) "Experimental comparison of a steady and unsteady self-propelled swimmer," *International Congress of Theoretical and Applied Mechanics*, August 25-29, Adelaide, Australia.
37. Regula C, Colin SP, **Dabiri JO**, Costello JH, Katija K (2008) "Feeding determinants in the cruising hydromedusae *Aequorea victoria*," *Proceedings of the American Society of Limnology and Oceanography 2008 Ocean Sciences Meeting*, March 2-7, Orlando, FL.
36. Peng J, Dabiri JO (2008) "Optimal stroke patterns for a model jellyfish swimmer with thin, flexible body," *Society for Integrative and Comparative Biology Annual Meeting*, January 2-8, San Antonio, TX.
35. Katija K, Dabiri JO (2008) "Comparing the energetics of jellyfish motion: laboratory and field measurements using a Self-Contained Underwater Velocimetry Apparatus (SCUVA)," *Society for Integrative and Comparative Biology Annual Meeting*, January 2-8, San Antonio, TX.
34. **Dabiri JO**, Colin SP, Costello JH (2007) "Fluid dynamic constraints on morphology and propulsion of medusae at low Reynolds numbers," Session on Ontogeny and Fluid Dynamics, *American Geophysical Union Fall Meeting*, December 10-14, San Francisco, CA.

33. Katija K, Dabiri JO (2007) “Comparing the energetics of jellyfish motion: laboratory and field measurements using a Self-Contained Underwater Velocimetry Apparatus (SCUVA),” Session on Ontogeny and Fluid Dynamics, *American Geophysical Union Fall Meeting*, December 10-14, San Francisco, CA.
32. Weston J, Colin SP, Costello JH, **Dabiri JO** (2007) “Developmental changes in the form and function of rowing hydromedusae,” Session on Ontogeny and Fluid Dynamics, *American Geophysical Union Fall Meeting*, December 10-14, San Francisco, CA.
31. Feitl KE, Millett AF, Costello JH, Colin SP, **Dabiri JO** (2007) “Functional morphology and fluid interactions during early development of scyphomedusae,” Session on Ontogeny and Fluid Dynamics, *American Geophysical Union Fall Meeting*, December 10-14, San Francisco, CA.
30. **Dabiri JO, Katija K** (2007) “Progress toward 3D wake structure measurements of aquatic animals using SCUVA,” *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 18-20, Salt Lake City, UT.
29. Katija K, Dabiri JO (2007) “Energetics of jellyfish locomotion determined from field measurements using a Self-Contained Underwater Velocimetry Apparatus (SCUVA),” *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 18-20, Salt Lake City, UT.
28. Peng J, Dabiri JO (2007) “Optimal stroke patterns for a model jellyfish swimmer with thin, flexible body,” *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 18-20, Salt Lake City, UT.
27. Trevino LA, Dabiri JO (2007) “Experimental comparison of steady and unsteady propulsion of a self-propelled swimmer,” *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 18-20, Salt Lake City, UT.
26. Katija K, Dabiri JO (2007) “Real-time field measurements of *Aurelia aurita* using a self-contained underwater velocimetry apparatus (SCUVA),” *Second International Jellyfish Blooms Symposium*, June 24-27, Brisbane, Australia.
25. Peng J, Dabiri JO (2007) “Hydrodynamic force evaluation based on vortex structure,” *Southern California Symposium on Flow Physics*, April 7, Pasadena, CA.
24. Katija K, Dabiri JO (2007) “Dynamics of tethered versus free-swimming jellyfish: A motivating argument for the Self-Contained Underwater Velocimetry Apparatus (SCUVA),” *Southern California Symposium on Flow Physics*, April 7, Pasadena, CA.
23. Katija K, Dabiri JO (2007) “Tethering versus free-swimming: a wake analysis of *Aurelia aurita*,” *Society for Integrative and Comparative Biomechanics Annual Meeting*, January 3-7, Phoenix, AZ.

22. Costello JH, Colin SP, **Dabiri JO** (2007) "Morphological diversity of medusan lineages in shaped by animal-fluid interactions," *Proceedings of the American Society of Limnology and Oceanography 2007 Aquatic Sciences Meeting*, February 4-9, Santa Fe, NM.
21. **Dabiri JO** (2006) "A vorticity-free approach to wake-based swimming/flying force estimation," *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 19-21, Tampa, FL.
20. Peng J, **Dabiri JO** (2006) "Identification of vortex structures in the wake of swimming and flying animals," *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 19-21, Tampa, FL.
19. Katija K, **Dabiri JO** (2006) "Dynamics of tethered versus free-swimming animals: a wake structure comparison," *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 19-21, Tampa, FL.
18. Shadden SC, Katija K, **Dabiri JO**, Marsden JE (2006) "Transport induced by vortex formation," *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 19-21, Tampa, FL.
17. Peng J, **Dabiri JO** (2006) "Determination of vortex structures in the wake of swimming and flying animals," *World Congress of Biomechanics*, July 29-August 4, Munich, Germany.
16. Katija K, Gharib M, **Dabiri JO** (2006) "Flow-induced flutter of prosthetic heart valves," *World Congress of Biomechanics*, July 29-August 4, Munich, Germany.
15. **Dabiri JO** (2005) "On the estimation of swimming and flying forces from wake measurements," *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 20-22, Chicago, IL.
14. Katija K, Gharib M, **Dabiri JO** (2005) "Characterization of fluid flow through a simplified heart valve model," *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 20-22, Chicago, IL.
13. Shadden SC, **Dabiri JO**, Marsden JE (2005) "Geometry of unsteady flows," *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 20-22, Chicago, IL.
12. Thomas AMP, **Dabiri JO**, Mohseni K, Burdick JW (2005) "Synthetic jet propulsion for small underwater vehicles," *14th International Symposium on Unmanned Untethered Submersible Technology*, August 21-24, Durham, NH.

11. **Dabiri JO**, Colin SP, Costello JH, Gharib M (2005) "Flow patterns generated by oblate medusan swimmers: *in situ* observation and analysis," *Proceedings of the American Society of Limnology and Oceanography 2005 Aquatic Sciences Meeting*, February 20-25, Salt Lake City, UT.
10. **Dabiri JO**, Gharib M (2004) "Fluid transport by pulsed-jet swimmers: entrainment and added mass in vortex wakes," *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 21-23, Seattle, WA.
9. Krueger PS, **Dabiri JO**, Gharib M (2004) "The formation number of vortex rings formed in the presence of uniform background co-flow," *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 21-23, Seattle, WA.
8. **Dabiri JO**, Morell R, Thompson N, Gharib M (2003) "Vortex rings as an essential feature of animal swimming," *International Symposium on Aqua Bio-mechanisms*, September 14-17, Honolulu, HI.
7. Krueger PS, **Dabiri JO**, Gharib M (2003) "Swimming performance limits in vortex ring-based propulsive mechanisms," *International Symposium on Aqua Bio-mechanisms*, September 14-17, Honolulu, HI.
6. **Dabiri JO**, Milano M, Gharib M (2003) "Generalization and optimization of biological and biomimetic ejection mechanisms," *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 23-25, East Rutherford, NJ.
5. **Dabiri JO**, Gharib M (2002) "Toward empirical evaluation of left ventricle function: a novel mathematical mapping," *Joint Meeting of the IEEE Engineering in Medicine and Biology Society and the Biomedical Engineering Society*, October 23-26, Houston, TX.
4. **Dabiri JO**, Krueger PS, Gharib M (2002) "The effect of uniform background flow on vortex ring formation and pinch-off," *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, November 24-26, Dallas, TX.
3. **Dabiri JO** (2002) "Ejection mechanisms and kinematics of the left ventricle," *Proceedings of the 2002 Southern California Biomedical Engineering Symposium*, January 18, Los Angeles, CA.
2. **Dabiri JO** (2000) "Analysis of ejection mechanisms and vortex dynamics during hydrozoan jelly locomotion," *Proceedings of the 2000 California Institute of Technology Fellowship Seminars*, August 15 and September 18, Pasadena, CA.
1. **Dabiri JO** (1999) "Analysis and optimization of small-scale rotor blades using computational fluid dynamics and experimental methods," *Proceedings of the Ninth NASA Space Grant Conference*, August 15, Hoboken, NJ.

## Patents and Patent Applications

“Self-Contained Underwater Velocimetry Apparatus” U.S. Patent No. 7,864,305

“A Two-Dimensional Array of Turbines” U.S. 12/644,667; PCT/US2009/069205

## Teaching Experience

### Instructor (2005 – present)

Biological Flows: Propulsion (Aeronautics/Bioengineering 242), California Institute of Technology. *Newly developed course*. Taught 2005-2006, 2006-2007, 2010-2011.

Biomechanics (Bioengineering 5/105), California Institute of Technology. Taught 2009-2010, 2011-2012. *Converted to Freshman Seminar in 2011-2012*.

Experimental Methods (Aeronautics/Applied Physics 104), California Institute of Technology. Taught 2007-2008, 2008-2009. *New laboratory component in 2008-2009*.

Fluid Mechanics (Mechanical Engineering 19) California Institute of Technology. Taught 2011-2012.

### Participating Faculty (2006)

Frontiers in Dynamical Systems (Control and Dynamical Systems 273), California Institute of Technology.

### Guest Lecturer

Bio-fluid Mechanics (Bioengineering/Aeronautics 243, 2003 – 2005), California Institute of Technology

Advanced Fluid Mechanics (Aeronautics 201, 2002), California Institute of Technology

### Research Co-mentor (2002 – 2004)

Summer Undergraduate Research Fellowship Program, California Institute of Technology

### Study Hall Instructor (2000 – 2001)

Freshman Physics and Mathematics, Princeton University

### Tutor (1998 – 2000)

Freshman Physics and Mathematics, Princeton University

### Laboratory Instructor (1998 – 1999)

Introduction to Computer Science, Princeton University

## Academic Service

Referee (2005 – present)

*Bioinspiration and Biomimetics, Chaos, Computers and Fluids, European Journal of Fluid Mechanics, Experimental Mechanics, Experiments in Fluids, Geophysical Research Letters, Integrative and Comparative Biology, International Journal of Marine Sciences, Journal of Computational Physics, Journal of Experimental Biology, Journal of Fluid Mechanics, Journal of Fluids and Structures, Journal of Nonlinear Science, Journal of Visualization, Physical Review Letters, Physics Letters A, Physics of Fluids,*

*Proceedings of the National Academy of Sciences, Proceedings of the Royal Society A, Research Letters in Ecology, Scientia Marina, Theoretical and Computational Fluid Dynamics*, National Science Foundation (mail and panel review)

Faculty Board, California Institute of Technology (2007 – present; Vice Chair, 2011 – present)

Committee on Membership and Bylaws, California Institute of Technology (Chair, 2011 – present)

Caltech Summer Undergraduate Research Fellowship Administrative Committee (2009 – present)

External Research Advisory Committee, Cabrillo Marine Aquarium (2007 – present)

Review Committee, Senior Research Fellow, Associate and Lecturer Appointments, California Institute of Technology (2006 – present)

Guest Editor, Special Issue on Wind Energy, *Journal of Turbulence* (2012)

Faculty Co-chair, Graduate Student-Faculty Colloquium (2012)

American Physical Society Andreas Acrivos Award Committee (2010 – 2011; Chair, 2011)

Faculty Search Committee, (Applied Physics, 2007 – 2008; Bioengineering, 2006 – 2009; Biology, 2006 – 2010; Mechanical Engineering, 2009 – 2011)

Handling Editor, *Theoretical and Computational Fluid Dynamics* (2007 – 2009)

Guest Editor, Special Issue on Lagrangian Coherent Structures, *Chaos* (2009)

Bioengineering Undergraduate Curriculum Committee (2007 – 2009)

Graduate Admissions Committee (Aeronautics, 2005 – present; Bioengineering, 2007 – 2008)

GALCIT Awards Committee (2009)

GALCIT Machine Shop Committee (2007 – 2008)

Selection Committee, Richard Bruce Chapman Memorial Award in Hydrodynamics (2009)

Organizing Committee, American Physical Society Division of Fluid Dynamics 2010 Meeting (2006 – 2010)

Minisymposium Co-organizer, “Wind Energy Fluid Dynamics,” American Physical Society Division of Fluid Dynamics Meeting (2011)

Minisymposium Co-organizer, “Biological Perspectives on Locomotion,” American Physical Society Division of Fluid Dynamics Meeting (2010)

Minisymposium Organizer, “Lagrangian Coherent Structures in Fluid Flows,” American Physical Society Division of Fluid Dynamics Meeting (2008)

Selection Committee Chair, Demetriades-Tsafka Prize in Bioengineering or Related Fields, California Institute of Technology (2007)

Panel Member, Academic Job Search, Caltech Women-Mentoring-Women Program (2008)

Panel Member, Caltech New Faculty Seminar (2008)

Panel Member, Caltech Project for Effective Teachers (2007)

Coordinator, GALCIT Research Conference, California Institute of Technology (2006 – 2007, 2010 – 2011)

Coordinator, Bioengineering Seminar Series, California Institute of Technology (2005 – 2006)

Session Chair, American Physical Society Division of Fluid Dynamics Meeting (2005, 2007)

Coordinator, Freshman Summer Institute Research Program, California Institute of Technology (2003 – 2008)

Coordinator, Biomechanics Colloquium, California Institute of Technology (2003 – 2004)

Alumni Schools Committee, Princeton University (2001 – 2004)

Student Representative, Option in Bioengineering, California Institute of Technology (2002)

Graduate Review Board, California Institute of Technology (2002)

Graduate Student Council Board of Directors, California Institute of Technology (2001 – 2002)  
Professional Staff Selection Committee, University of Toledo (2001)  
Undergraduate Engineering Committee, Princeton University (2000 – 2001)  
School of Engineering Leadership Council, Princeton University (2000)

### **Current Graduate Students & Postdoctoral Scholars**

Monica Martinez-Ortiz, B.S. (Universidad Nacional Autónoma de México)  
Janna C. Nawroth, B.S. (Ruprecht-Karls University), M.S. (Yale University)  
Clara O'Farrell, B.S.E. (Princeton University)  
Robert W. Whittlesey, B.S. (Illinois Institute of Technology), M.S. (California Institute of Technology)

Matthias Kinzel, Dr.-Ing. (Mechanical Engineering, TU Darmstadt/ETH Zurich Joint Program)

### **Former Graduate Students & Postdoctoral Scholars**

Kakani Katija Young, Ph.D. (Bioengineering), 2010  
Lydia Ann Ruiz, Ph.D. (Mechanical Engineering), 2009  
Jifeng Peng, Ph.D. (Bioengineering), 2009  
Madeline Diane Miller, M.S. (Mechanical Engineering), 2009  
Cole D. Lepine, M.S. (Control and Dynamical Systems), 2008  
Ann-Marie Polsenberg-Thomas, Ph.D. (Mechanical Engineering), 2006

Kelly Rakow Sutherland, Postdoctoral Scholar (Bioengineering), 2011  
Shawn Christopher Shadden, Postdoctoral Scholar (Bioengineering), 2006

### **Ph.D. Dissertation Committees**

Pablo Abad-Manterola, Mechanical Engineering (Ph.D. 2011)  
Paul Anzel, Aeronautics  
Adrianus Aria, Aeronautics  
Hesham Azizgolshani, Bioengineering  
Philipp Boettcher, Aeronautics (Ph.D. 2012)  
Gwyneth Card, Bioengineering (Ph.D. 2008)  
Julia Cosse, Aeronautics  
Philip DuToit, Control and Dynamical Systems (Ph.D. 2009)  
Jennifer Franck, Mechanical Engineering (Ph.D. 2009)  
Daegyoun Kim, Aeronautics (Ph.D. 2010)  
Brian Kot, Ecology and Evolutionary Biology, UCLA (Ph.D. 2009)  
Jeff Krimmel, Mechanical Engineering (Ph.D. 2010)  
Ben Lin, Bioengineering (Ph.D. 2009)  
Mike Liu, Bioengineering (Ph.D. 2009)  
Laurence Loumes, Aeronautics (Ph.D. 2007)  
Emily McDowell, Bioengineering (Ph.D. 2009)  
John Meier, Mechanical Engineering (Ph.D. 2011)

Ann-Marie Polsenberg-Thomas, Mechanical Engineering (Ph.D. 2006)  
Derek Rinderknecht, Bioengineering (Ph.D. 2008)  
Shawn Shadden, Control and Dynamical Systems (Ph.D. 2006)  
Holly Swift, Biology, UC Merced  
Kunihiko Taira, Mechanical Engineering (Ph.D. 2008)  
Hsieh-Chen Tsai, Mechanical Engineering

### **Undergraduate Research Advisees**

Matt Fu (2012, SURF)  
Timea Kosztin (2012)  
Katherine Taylor (2012, SURF)  
Anna Craig (2011 – 2012, SURF, Senior Thesis, Applied Physics)  
Megan Larisch (2011, SURF)  
Quinn Mulligan (2011, SURF)  
Brad Saund (2011, SURF)  
Garrett Lewis (2010 – 2011, Senior Thesis, Applied Physics)  
Joseph Laurenti (2010, SURF)  
Caitlin Regan (2010, SURF)  
Karthik Balakrishnan (2008 – 2009, Senior Thesis, Mechanical Engineering)  
Brant Belson (2006, SURF)  
Fei Yang (2008, SURF)  
Zhonglin Zhang (2007 – 2008, Senior Thesis, Control and Dynamical Systems)

### **Professional Affiliations**

American Geophysical Union  
American Institute for Aeronautics and Astronautics  
American Physical Society  
American Society of Mechanical Engineers  
IEEE Engineering in Medicine and Biology Society  
Sigma Xi National Research Honor Society  
Society for Integrative and Comparative Biology  
Tau Beta Pi National Engineering Honor Society