

DIEGO BERNAL

Assistant Professor, Department of Biology, University of Massachusetts at Dartmouth
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Education:

B.S. - Universidad Autónoma de Baja, California. Major: Biological Oceanography

M.S. - Scripps Institution of Oceanography, Univ. of California, San Diego. Marine Biology. 2001

Ph.D. - Scripps Institution of Oceanography, Univ. of California, San Diego. Marine Biology. Thesis title:
Physiological and morphological specializations for high performance swimming in the mako shark,
Isurus oxyrinchus (Family Lamnidae). 2002.

Positions:

2005-Present: Assistant Professor. Department of Biology, Univ. of Massachusetts, Dartmouth

2003-Present: Visiting Research Scientist, Scripps Institution of Oceanography, Univ. of California, San Diego

2002-2005: Assistant Professor. Department of Zoology, Weber State University. Marine Biology Advisor

Teaching Experience

Assistant Professor, Department of Biology, University of Massachusetts, Dartmouth. Courses:
Organisms I, Animal Physiology, Shark Biology (2005-present).

Assistant Professor, Department of Zoology, Weber State University. Courses: Animal Biology,
Principles in Zoology I, Fish Biology, Aquatic Ecology, and Comparative Physiology (2002-2005).

Adjunct faculty, California State University, San Marcos. Comparative Animal Physiology laboratory
instructor. (2001)

Adjunct faculty, Department of Biology, San Diego Mesa College. Courses: Oceanography (2001).

Adjunct faculty, Saddleback College. Courses: Oceanography (2001-2002).

Awards and Honors:

National Science Foundation, Research Experience for Undergraduates Fellowship, University of Texas Marine
Science Institute (1995). San Diego Fellowship, Scripps Institution of Oceanography. University of California,
San Diego. (1996-1997). Recipient, National Science Foundation, Predoctoral Fellowship Program (1998 –
2001).

Relevant funding:

2000 – 2001: NSF- IBN-0077502: Doctoral Dissertation Award. Physiological and morphological
specializations for high-performance swimming in the mako shark, *Isurus oxyrinchus*
(Family Lamnidae).

2002-2004: RSPG-WSU: The application of molecular-physiological techniques for determining
capture-related stress in angled fishes.

2003-2004: Beishline Fellow: Using 2-dimensional high-resolution images to construct a 3-
dimensional model of muscle distribution in high-performance swimming sharks.

2003-2004: NSF IBN 00-91987 supplemental funding collaboration with Dr. Robert Shadwick,
Scripps Institution of Oceanography: Muscle contractile properties in endothermic and
ectothermic sharks.

2003-2004: RSPG-WSU: Do high performance shark hearts show an enhanced biochemical capacity
when compared to other less active sharks?

2005-2006: NOAA/UNH: Redesign of SPLASH satellite transmitting tags used for large, filter
feeding, pelagic fishes.

2006-2007: NOAA/UNH: Habitat utilization, movement patterns, and post-release survivorship of
porbeagle sharks (*Lamna nasus*) captured on longline in the North Atlantic.

2006-2009: NSF IBN 0617403: Collaborative proposal. The functional significance of divergent locomotor muscle designs in high performance fishes.

Recent Relevant Publications:

- Bernal, D.**, Dickson K. A., Shadwick R. E. & Graham J. B. (2001). Analysis of the evolutionary convergence for high-performance swimming in lamnid sharks and tunas. *Comp. Biochem. Physiol.* **179**:695-726.
- Bernal, D.**, Sepulveda, C. & Graham, J. B. (2001). Water tunnel studies of heat balance in swimming mako sharks. *J. Exp. Biol.* **204**:4043-4054.
- Bernal, D.**, Sepulveda, C., Mathieu-Costello, O. and Graham, J. B. (2003). Comparative studies of high performance swimming in sharks: I. Red muscle morphometrics, vascularization, and ultrastructure. *J. Exp. Biol.* **206**, 2831-2843.
- Bernal, D.**, Smith, D., Lopez, G., Weitz, D., Griminger, T., A., Dickson, K.A. and Graham, J. B. (2003). Comparative studies of high performance swimming in sharks. II. Metabolic biochemistry of locomotor and myocardial muscle in endothermic and ectothermic sharks. *J. Exp. Biol.* **206**, 2845-2857.
- Bernal, D.** and Sepulveda, C. (2005). Evidence for temperature elevation in the aerobic swimming musculature of the Common thresher shark, *Alopias vulpinus*. *Copeia* **2005**, 146-151.
- Bernal, D.**, Donley, J.M., Shadwick, R.E. and Syme, D.A. (2005). Mammal-like muscles power swimming in a cold-water shark, *Nature* **437**, 1349-1352.
- Sepulveda, C.A., Wegner, N.C., **Bernal, D.** and Graham, J.B. (2005). The red muscle morphology of the thresher sharks (family Alopiidae). *J. Exp. Biol.* **208**, 4255-4261.
- Cameron N.P, **Bernal, D.**, Theilmann, R.J., Sepulveda, C.A., Graham, J.B. and Frank, L.R. (in review). The use of T₁-weighted magnetic resonance imaging to quantify red myotomal muscle volume and geometry in the mako shark, *Isurus oxyrinchus*. *J. Exp. Biol.*
- Bernal, D.**, Cech, J.J., Roessig, J.M., Matsumoto, S., Sepulveda, C.A. and Graham, J.B. (in review). Blood-oxygen equilibria in a warm bodied pelagic shark, the shortfin mako (*Isurus oxyrinchus*). *J. Exp. Biol.*
- Hight, B.V., Holts, D., Graham, J.B., Kennedy, B.P., Taylor, V., Sepulveda, C.A., **Bernal, D.**, Ramon, D., Rasmussen, R, and Lai, Chin, L. (in review). Plasma catecholamine levels as indicators of the post-release survivorship of juvenile pelagic sharks caught on experimental drift longlines in the Southern California Bight.