

Sönke Johnsen

Education:

University of North Carolina at Chapel Hill: Ph.D., Biology, 1996, 1996 Dr. William M. Kier, advisor	1990-
Swarthmore College: B.A. with Distinction, Mathematics, 1988, Phi Beta Kappa and National Merit Scholarship	1984-1988

Professional experience:

Professor, Biology Department, Duke University, Durham, NC	2012-
Research Associate, Smithsonian Museum of Natural History	2012-2018
Adjunct Professor, Nicholas School of the Environment, Duke University	2003-
Associate Professor, Biology Department, Duke University	2007-2012
Assistant Professor, Biology Department, Duke University	2001-2007
Adjunct Scientist, Woods Hole Oceanographic Institution	2002-2005
Assistant Scientist, Woods Hole Oceanographic Institution	2000-2001
Postdoctoral Scholar, Woods Hole Oceanographic Institution, Dr. Laurence P. Madin, advisor	1999-2000
Postdoctoral Fellow, Harbor Branch Oceanographic Institution, Dr. Edith A. Widder, advisor	1997-1998
Lecturer, Department of Biology, University of North Carolina at Chapel Hill	1996-1997
National Science Foundation Pre-Doctoral Fellow, Department of Biology, University of North Carolina at Chapel Hill	1991-1994

Awards, honors, and fellowships:

Deans Award for Excellence in Mentoring, Duke University	2016
Hilgendorf Lecturer, University of Tübingen, Germany	2014
Miller Institute Symposium Speaker, Miller Institute, Berkeley, CA	2014
Paul Illg Distinguished Lecturer, Friday Harbor Laboratories	2010
Schmidt-Nielsen Memorial Lecturer, Duke University	2010
University Distinguished Teaching Award, Duke University	2006
Julius Thomas Hansen Lecturer, University of California, Berkeley	2005
George A. Bartholomew Award for Research in Comparative Physiology,	2001
Woods Hole Postdoctoral Scholarship, Woods Hole Oceanographic Institution	1999-2000
Harbor Branch Postdoctoral Fellowship, Harbor Branch Institution	1997-1998
Campus-Wide Dissertation Award, University of North Carolina at Chapel Hill	1996
Dissertation Improvement Award, National Science Foundation	1994-1995
Pre-Doctoral Fellowship, National Science Foundation	1991-1994

Merit Fellowship, University of North Carolina at Chapel Hill 1990-1991

Research grants (other PI names not listed):

“The Sigsbee Deep Expedition: Exploration of life and light in the water column below 1000 m” NOAA Ocean Exploration, \$665,995 (lead-PI of five)	2017-2019
“Bioluminescence in the deep-sea benthos II” NOAA Ocean Exploration, \$478,914 (one of five PIs)	2014-2015
“Long-range geomagnetic navigation in sea turtles: An interdisciplinary approach to localizing magnetite-based biological magnetoreceptors” Air Force Office of Scientific Research \$2,462,029 (one of three PIs)	2014-2019
“Dynamic Camouflage in Benthic and Pelagic Cephalopods: An interdisciplinary approach to crypsis based on color, reflection, and bioluminescence” Office of Naval Research \$7,341,938 (lead-PI of five)	2009-2015
“Bioluminescence in the deep-sea benthos” NOAA Ocean Exploration, \$424,807 (= \$81,607 + 11 days ship/submersible time at \$31,200/day) (one of five PIs)	2009-2010
“Midwater animal models: Optical measurement of metabolic transitions in transparent pelagic biota”, National Science Foundation, ~\$650,000 (one of two PIs with equal roles)	2009-2012
“Deep Down Under: Exploration of Australia’s deep waters” ARC and private support (~\$500,000 USD and 3 years of ship and submersible time) (one of many coPIs: minor role)	2007-2009
“Operation Deep-Scope 2007: Characterization of cliff ecosystems using new technologies” NOAA Ocean Exploration, \$361,500 (lead-PI of five)	2007-2008
"Selective invisibility based on the differing temporal resolutions of sea turtles and billfish under low light conditions" NOAA/NMFS, \$15,306. (Sole PI)	2005-2006

"Operation Deep-Scope 2005" NOAA Ocean Exploration, \$328,905 (one of five PIs)	2005-2006
"Transparency: ultrastructural and biochemical modification in muscular and ocular tissues" National Science Foundation, \$410,000. (one of two PIs with equal roles)	2005-2008
"Mathematical model of the visual abilities of sea turtles and pelagic fishes" NOAA/NMFS, \$39,470. (sole PI)	2003-2004
"Characterization of deep-sea communities using advanced optical techniques" NOAA Ocean Exploration, \$296,377 (one of five PIs)	2004
"Integrative and Comparative Vision Research" National Science Foundation, \$6,000. (one of three PIs)	2003
"Perception of bioluminescent signals underwater" Office of Naval Research, \$12,004. (sole PI)	2002-2003
"Biologically Inspired Underwater Navigation Based on Geomagnetism" Office of Naval Research, \$99,956. (one of two PIs with equal roles)	2002-2003
"Development of a Large Area Plankton Imaging System" National Science Foundation, \$499,820. (one of two PIs with equal roles in proposal, but left WHOI before project began)	2002-2004
"Development of a Portable Underwater Hyperspectral Radiometer", Cecil H. and Ida M. Green Technology Foundation, \$30,700. (lead PI of two)	2000-2002
"Eutrophication in Waquoit Bay: Effects on Visual Predation", Rinehart Coastal Research Center, \$31,792. (Lead PI of two)	2000-2001

Books:

Cronin, T. W., Johnsen, S., Marshall, N. J. and E. J. Warrant (2014). *Visual Ecology*. Princeton University Press. **(selected as Best Biology Text for 2014 by the Association of American Publishers – the top award for academic publishing)**

Johnsen, S. (2012). *The Optics of Life: A Biologist's Guide to Light in Nature*. Princeton University Press. **(one of Choice's Outstanding Academic Titles for 2012)**

Articles:

Caves, E. M., Green, P. A., Zipple, M. N., Peters, S., Johnsen, S., and S. Nowicki (in review). Categorical perception of carotenoid-based coloration in an assessment signal. *Science*

Costello, M. J. et al (in review). Quantitative morphometric analysis of the cortical remodeling zone in non-human primate lenses. *Molecular Vision*.

Fitak, R. R., Caves, E. M., and S. Johnsen (in review) Orientation in pill bugs: an interdisciplinary activity to engage students in concepts of biology, physics, and circular statistics. *American Biology Teacher*.

Arniella, M. B., Fitak, R. R., and S. Johnsen (in review). Unmapped sequencing reads identify additional candidate genes linked to magnetoreception in trout. *Environmental Biology of Fishes*

¹²¹Bagge, L. E., Kinsey, S. T., and S. Johnsen (in press). Transparent anemone shrimp (*Ancylomenes pedersoni*) become opaque after exercise and physiological stress due to increased hemolymph perfusion. *Journal of Experimental Biology*.

¹²⁰Caves, E. M., and S. Johnsen (2017). AcuityView: portraying the effects of spatial acuity on the visual scene observed by an animal. *Methods in Ecology and Evolution* **8**, 1-5. DOI: 10.1111/2041-210X.12911

¹¹⁹Fitak, R. R., and S. Johnsen (2017). Bringing the analysis of animal orientation data full circle: model-based approaches with maximum likelihood. *Journal of Experimental Biology* **220**, 3878-3882.

¹¹⁸Taylor, B.K., Johnsen, S., and K. J. Lohmann (2017). Detection of magnetic field properties using distributed sensing: A computational neuroscience approach. *Bioinspiration and Biomimetics* **12**, 03613.

¹¹⁷Fitak, R. R., Wheeler, B. R., Ernst, D. A., Lohmann, K. J., and S. Johnsen (2017). Candidate genes mediating magnetoreception in rainbow trout (*Oncorhynchus mykiss*). *Biology Letters* **13**, 20170142.

- ¹¹⁶Caves, E., and S. Johnsen (2017). Visual acuity in ray-finned fishes correlates with eye size and habitat. *Journal of Experimental Biology* **220**, 1586-1596.
- ¹¹⁵Marshall, N. J. and S. Johnsen (2017). An evaluation of fluorescence as a means of colour signal enhancement.. *Philosophical Transactions of the Royal Society of London: Biological Sciences* **372**, 20160335.
- ¹¹⁴Cronin, T. W., Fasick, J. I., Schweikert, L. E., Johnsen, S., Kezmoh, L. J., and M. F. Baumgartner (2017). Coping with copepods: Do right whales (*Eubalaena glacialis*) forage visually in dark waters? *Philosophical Transactions of the Royal Society of London: Biological Sciences* **372**, 20160067.
- ¹¹³Thomas, K. N., Robison, B. H., and S. Johnsen (2017). Two eyes for two purposes: *in situ* evidence for asymmetric vision in the cockeyed squids *Histioteuthis heteropsis* and *Stigmatoteuthis dofleini* (Cephalopoda: Histioteuthidae). *Philosophical Transactions of the Royal Society of London: Biological Sciences* **372**, 20160069.
- ¹¹²Bagge, L. E., Osborn, K. J., and S. Johnsen (2016) Nanostructures and monolayers of spheres reduce surface reflections in transparent hyperiid amphipods. *Current Biology* **26**, 3071-3076.
- ¹¹¹Ruxton, G., and S. Johnsen (2016). The effect of aggregation on visibility in open water. *Proceedings of the Royal Society of London: Biological Sciences* **283**, 20161463.
- ¹¹⁰Costello, M. J., Brennan, L. A., Mohamed, A., Gilliland, K. O., Johnsen, S., and M. Kantorow (2016) Identification and ultrastructural characterization of a novel nuclear degradation complex in differentiating lens fiber cells. *PLoS ONE*.
<http://dx.doi.org/10.1371/journal.pone.0160785>
- ¹⁰⁹Speiser, D. I., Gagnon, Y., Chhetri, R. K., Oldenburg, A. L., and S. Johnsen (2016). Examining the effects of chromatic aberration, object distance, and eye shape on image-formation in the mirror-based eyes of the bay scallop *Argopecten irradians*. *Integrative and Comparative Biology*. DOI:10.1093/icb/icw099
- ¹⁰⁸Tedore, C. A., and S. Johnsen (2016). Using RGB displays to portray realistic color imagery to animals. *Current Zoology*. DOI:<http://dx.doi.org/10.1093/cz/zow076>
- ¹⁰⁷Tedore, C. A., and S. Johnsen (2016). Disentangling the visual cues used by a jumping spider to locate its microhabitat. *Journal of Experimental Biology*. **219**, 2396-2401.
- ¹⁰⁶Johnsen, S., Gagnon, Y., Marshall, N. J., Cronin, T. W., Gruev, V., and S. Powell (2016). Polarization vision seldom increases the sighting distance of silvery fish. *Current Biology* **26**, R752-R754. **(cover article)**

- ¹⁰⁵Cronin, T. W., Gagnon, Y. L., Johnsen S., Marshall, N. J., and N. W. Roberts (2016). Comment on “Open-ocean fish reveal an omnidirectional solution to camouflage in polarized environments.” *Science* **353**, DOI:10.1126/science.aaf4481
- ¹⁰⁴Cronin, T. W., and S. Johnsen (2016). Extra-ocular, non-visual, and simple photoreceptors. *Integrative and Comparative Biology*. DOI:10.1093/icb/icw106 **(cover article)**
- ¹⁰³Akre, K. L., and S. Johnsen (2016). Communication through a window of error: Proportional processing and signal categorization. Pp 137-167 in *Physiological Mechanisms in Animal Communication*, (Bee M. A., Miller, C. T., eds.), Springer.
- ¹⁰²Wilkins, L., Marshall, N. J., Johnsen, S., and D. Osorio (2016). Modelling colour constancy in reef fish: implications for vision and colour signalling. *Journal of Experimental Biology* **219**, 1884-1892.
- ¹⁰¹Zylinski, S., Johnsen, S., and D. Osorio (2016). European cuttlefish *Sepia officinalis* fine-tunes camouflage using asymmetrical shading in response to pictorial depth cues and directional illumination. *Proceedings of the Royal Society of London: Biological Sciences*. **283**, 20160062.
- ¹⁰⁰Johnsen, S. (2016). How to measure colour using spectrometers and calibrated photographs. *Journal of Experimental Biology* **219**, 772-778.
- ⁹⁹Brandley, N. C., Johnson, M., and S. Johnsen (2016) Aposematic signals in North American black widows are more conspicuous to predators than to prey. *Behavioral Ecology* 1-9: DOI:10.1093/beheco/arw014.
- ⁹⁸Caves, E., Frank, T. M., and S. Johnsen (2016). Spectral sensitivity, acuity, and temporal resolution and their implications for conspecific signaling in three species of cleaner shrimp. *Journal of Experimental Biology* **219**, 597-608.
- ⁹⁷Bedore, C. A., Kajiura, S. M., and S. Johnsen (2015) Freezing behaviour facilitates bioelectric crypsis in cuttlefish faced with predation risk. *Proceedings of the Royal Society of London: Biological Sciences* **282**, 20151886.
- ⁹⁶Taniguchi, D. A. A., Gagnon, Y. L., Wheeler, B. J., Johnsen, S., and J. S. Jaffe (2015). Cuttlefish *Sepia officinalis* preferentially respond to bottom rather than side stimuli when not allowed adjacent to tank walls. *PLoS ONE*. DOI:10.1371/journal.pone.0138690
- ⁹⁵Tedore, C. A., and S. Johnsen (2015). Immunological dependence of plant-dwelling animals on the medicinal properties of their plant substrates: a preliminary test of a novel evolutionary hypothesis. *Arthropod-Plant Interactions*. DOI:10.1007/s11829-015-9386-8
- ⁹⁴Baldwin-Fergus, J. L., Johnsen, S., and K. J. Osborn (2015). A unique apposition compound eye in the mesopelagic hyperiid amphipod *Paraphronima gracilis*. *Current Biology* **25**, 473-478. **(cover article)**

- ⁹³Tedore, C. A., and S. Johnsen (2015). Visual mutual assessment of size in male *Lyssomanes viridis* jumping spider contests. *Behavioral Ecology* **26**, 510-518.
- ⁹²Palmer, G., and S. Johnsen (2015) Downwelling spectral irradiance during evening twilight as a function of the lunar phase. *Applied Optics* **54**, B85-B92.
- ⁹¹Johnsen, S., Gassmann, E., Reynolds, R. A., Stramski, D., and C. D. Mobley (2014). The asymmetry of the underwater horizontal light field and its implications for mirror-based camouflage in silvery pelagic fish. *Limnology and Oceanography* **59**, 1839-1852.
- ⁹⁰Dougherty, L. F., Johnsen, S., Caldwell, R. L., and N. J. Marshall (2014). A dynamic broadband reflector built from microscopic silica spheres in the "disco" clam *Ctenoides ales*. *Proceedings of the Royal Society: Interface* **11**, 20140407. **(cover article)**
- ⁸⁹Gagnon, Y. L., Speiser, D. I., and S. Johnsen (2014). Simplifying numerical ray-tracing for characterizing imaging systems. *Applied Optics* **21**, 4784-4790.
- ⁸⁸Muchhala, N., Johnsen, S. and S. D. Smith (2014). Competition for hummingbird pollination and the evolution of flower color diversity in Andean Solanaceae. *Evolution* **68**, 2275-2286. **(cover article)**
- ⁸⁷Akre, K. L. and Johnsen, S. (2014). Psychophysics and the evolution of behavior. *Trends in Ecology and Evolution* **29**, 291-300.
- ⁸⁶Zylinski, S. and S. Johnsen (2014). Visual cognition in deep-sea cephalopods: what we don't know and why we don't know it. Pp. 223-243 in: *Cephalopod Cognition*, Editors: S. Darmaillacq and J. Mather. Cambridge University Press.
- ⁸⁵Nilsson, D. E., Warrant, E. J., and S. Johnsen (2014). Computational visual ecology in the pelagic realm. *Philosophical Transactions of the Royal Society of London, Series B* **369**, 20140038.
- ⁸⁴Johnsen, S. (2014). Hide and seek in the open sea: Pelagic camouflage and visual countermeasures. *Annual Review of Marine Science* **6**, 369-392.
- ⁸³Mohamed, A., Gilliland, K. O., Metlapally, S., Johnsen, S., and M. J. Costello (2013). Simple fixation and storage protocol for preserving the internal structure of intact human donor lenses and extracted human nuclear cataract specimens. *Molecular Vision* **19**, 2352-2359.
- ⁸²Warrant, E. J., and S. Johnsen (2013). Vision and the light environment. *Current Biology* **23**, R990-R994.
- ⁸¹Costello, M. J., Mohamed, A., Gilliland, K. O., Fowler, W. C., and S. Johnsen (2013) Ultrastructural analysis of the human lens fiber cell remodeling zone and the initiation of cellular compaction. *Experimental Eye Research* **116**, 411-418.

- ⁸⁰Nilsson, D. E., Warrant, E. J., Johnsen, S., Hanlon, R. T., and N. Shashar (2013). The giant eyes of giant squid are indeed unexpectedly large, but not if used for spotting sperm whales. *BMC Evolutionary Ecology* **13**, 187-189.
- ⁷⁹Brandley, N. C., Speiser, D. I., and S. Johnsen (2013). Eavesdropping on visual secrets. *Evolutionary Ecology*. **6**, 1045-1068.
- ⁷⁸Costello, M. J., Chauss, D., Mohamed, A., Gilliland, K. O., Johnsen, S., Bates, M., Brennan, L. A., and M. Kantorow (2013). Autophagy and mitophagy in ocular lens organelle degradation. *Experimental Eye Research* **116**, 141-150.
- ⁷⁷Gagnon, Y. L., Sutton, T. T., and S. Johnsen (2013). Visual acuity in pelagic fishes and mollusks. *Vision Research* **92**, 1-9.
- ⁷⁶Tedore, C. A., and S. Johnsen (2013). Pheromones exert top-down effects on visual recognition in the jumping spider *Lyssomanes viridis*. *Journal of Experimental Biology* **216**, 1744-1756.
- ⁷⁵Moore, B. A., Kamilar, J. M., Collin, S. P., Bininda-Emonds, O. R. P., Dominy, N. J., Hall, M. I., Heesy, C. P., Iwaniuk, A. N., Johnsen, S., Lisney, T. J., Loew, E. R., Moritz, G., Nava, S. S., Warrant, E. J., Yopak, K. E., and E. Fernández-Juricic (2012). A novel method for comparative analysis of retinal specialization traits from topographic maps. *Journal of Vision* **12**, 1-24.
- ⁷⁴Costello, M. J., Burette, A., Weber, M., Metlapally, S., Gilliland, K. O., Fowler, W. C., Mohamed, A., and S. Johnsen (2012). Electron tomography of fiber cell cytoplasm and dense cores of multilamellar bodies from human age-related nuclear cataracts. *Experimental Eye Research* **101**, 72-81.
- ⁷³Johnsen, S., Frank, T. M., Haddock, S. H. D., Widder, E. A., and C. G. Messing (2012). Light and vision in the deep-sea benthos. I. Bioluminescence at 500-1000 m depth in the Bahamian Islands. *Journal of Experimental Biology* **215**, 3335-3343. **(featured article)**
- ⁷²Frank, T. M., and S. Johnsen (2012). Light and vision in the deep-sea benthos. II. Special visual adaptations in deep-sea benthic crustaceans. *Journal of Experimental Biology* **215**, 3344-3353. **(featured article)**
- ⁷¹Nilsson, D. E., Warrant, E. J., Johnsen, S., Hanlon, R. T., and N. Shashar (2012). A unique advantage for giant eyes in giant squid. *Current Biology* **22**, 683-688. **(featured article)**
- ⁷⁰Baldwin, J. L., and S. Johnsen (2012). The male blue crab, *Callinectes sapidus*, uses both chromatic and achromatic cues during mate choice. *Journal of Experimental Biology* **215**, 1184-1191.

- ⁶⁹Tedore, C. A., and S. Johnsen (2012). Weaponry, color, and contest success in the jumping spider *Lyssomanes viridis*. *Behavioural Processes* **89**, 203-211.
- ⁶⁸Zylinski, S. and S. Johnsen (2011). Mesopelagic cephalopods switch between transparency and pigmentation to optimize camouflage in the deep. *Current Biology* **21**, 1937-1941. **(cover and featured article)**
- ⁶⁷Marshall, N. J. and S. Johnsen (2011). Camouflage in Marine fish. In *Animal Camouflage: Current issues and new perspectives*. (eds. Martin Stevens, Sami Merilaita) Cambridge University Press: Cambridge UK.
- ⁶⁶Baldwin, J. L., and S. Johnsen (2011). The effects of molting on the visual acuity of the blue crab *Callinectes sapidus*. *Journal of Experimental Biology*. **214**, 3055-3061.
- ⁶⁵Jackson, E. and S. Johnsen (2011). Orientation to objects in the sea urchin *Strongylocentrotus purpuratus* depends on apparent and not actual object size. *Biological Bulletin (Woods Hole)* **220**, 86-88.
- ⁶⁴Holt, A., Sweeney, A. M., Johnsen, S., and D. E. Morse (2011). A highly-distributed Bragg stack with unique geometry provides effective camouflage for Loliginid squid eyes. *Proceedings of the Royal Society: Interface* **8**, 1386-1399. **(cover article)**
- ⁶³Speiser, D. I., Eernisse, D. and S. Johnsen (2011). A chiton uses aragonite lenses to form images. *Current Biology* **21**, 665-670.
- ⁶²Sweeney, A. M., Boch, C. A., Johnsen, S., and D. E. Morse (2011). Twilight spectral dynamics and the coral reef invertebrate spawning response. *Journal of Experimental Biology* **214**, 770-777. **(featured article)**
- ⁶¹Bhandiwad, A., and S. Johnsen (2011). The effects of salinity and temperature on the transparency of the grass shrimp *Palaemonetes pugio*. *Journal of Experimental Biology* **214**, 709-716.
- ⁶⁰Shashar, N., Johnsen, S., Lerner, A., Sabbah, S., Chiao, C-C., Mäthger, L. M., and R. T. Hanlon (2011). Underwater linear polarization- physical limitations to biological functions. *Philosophical Transactions of the Royal Society of London, Series B* **366**, 649–654.
- ⁵⁹Johnsen, S., Marshall, N. J., and E. A. Widder (2011). Polarization sensitivity as a contrast enhancer in pelagic predators: Lessons from *in situ* polarization imaging of transparent zooplankton. *Philosophical Transactions of the Royal Society of London, Series B* **366**, 655–670. **(cover article)**
- ⁵⁸Speiser, D. I., Loew, E. R., and S. Johnsen (2011). Spectral sensitivity of the concave mirror eyes of scallops: The influence of habitat and longitudinal chromatic aberration. *Journal of Experimental Biology* **214**, 422-431.

- ⁵⁷Costello, M. J., Johnsen, S., Frame, L., Gilliland, K. O., Metlapally, S., and D. Balasubramanian (2010). Multilamellar spherical particles as potential sources of excess light scattering in human age-related nuclear cataracts. *Experimental Eye Research* **91**, 881-889.
- ⁵⁶Yerramilli, D., and S. Johnsen (2010). Spatial vision in the purple sea urchin *Strongylocentrotus purpuratus* (Echinoidea). *Journal of Experimental Biology* **213**, 249-255. **(cover and featured article)**
- ⁵⁵Baldwin, J. L., and S. Johnsen (2009). The importance of color in mate choice in the blue crab *Callinectes sapidus*. *Journal of Experimental Biology* **212**, 3762-3768.
- ⁵⁴Leech, D. M. and S. Johnsen (2009). Light, Biological Receptors. In *Encyclopedia of Inland Waters*, (ed. G. E. Likens). Academic Press, New York, Vol 2, pp 671-681.
- ⁵³Speiser, D. I., and S. Johnsen (2008). Comparative morphology of the mirror-based eyes of scallops (Pectinoidea). *American Malacological Bulletin* **26**, 27-34. **(cover article)**
- ⁵²Matz, M. V., Frank, T. M., Marshall, N. J., Widder, E. A., Johnsen, S. (2008) Giant deep-sea protist produces bilaterian-like traces. *Current Biology* **18**, 1849-1854.
- ⁵¹Costello, M. J., Johnsen, S., Gilliland, K. O., Metlapally, S., Ramamurthy, B., Krishna, P. V., Balasubramanian, D. (2008) Ultrastructural analysis of damage to nuclear fiber cell membranes in advanced age-related cataracts from India. *Experimental Eye Research*. **87**, 147-158.
- ⁵⁰Speiser, D. I., and S. Johnsen (2008). Scallops visually respond to the presence and speed of virtual particles. *Journal of Experimental Biology*. **211**, 2066-2070.
- ⁴⁹Metlapally, S., Costello, M. J., Gilliland, K. O., Ramamurthy, B., Krishna, P. V., Balasubramanian, D., and S. Johnsen (2008). Analysis of nuclear lens fiber cell cytoplasmic texture in advanced cataractous lenses from Indian subjects using Debye-Bueche theory. *Experimental Eye Research*. **86**, 434-444.
- ⁴⁸Gilliland, K. O., Johnsen, S., Metlapally, S., Costello, M. J., Ramamurthy, B., Krishna, P. V. and D. Balasubramanian (2008). Mie Light Scattering Calculations for Multilamellar Bodies in Indian Age-Related Nuclear Cataracts. *Molecular Vision* **14**, 572-582.
- ⁴⁷Johnsen, S., and K. J. Lohmann (2008). Magnetoreception in animals. *Physics Today* **61(3)**, 29-35.
- ⁴⁶Gagnon, Y. L., Shashar, N., Warrant, E. J., and S. Johnsen (2007). Light scattering from pelagic zooplankton: measurements at different angles and modeling corresponding sighting distances. *Journal of Experimental Biology* **210**, 3728-3735.

- ⁴⁵Sweeney, A., Haddock, S. H. D., and S. Johnsen (2007). Comparative visual acuity of coleoid cephalopods. *Integrative and Comparative Biology* **47**, 808-814.
- ⁴⁴Johnsen, S., Mattern, E., and T. Ritz (2007). Light-dependent magnetoreception: quantum catches and opponency mechanisms of possible photosensitive molecules. *Journal of Experimental Biology* **210**, 3171-3178.
- ⁴³Martin, C. H. and S. Johnsen (2007). A Field Test of the Hamilton-Zuk Hypothesis in the Trinidadian guppy (*Poecilia reticulata*). *Behavioral Ecology and Sociobiology* **61**, 1897-1909.
- ⁴²Johnsen, S. (2007). Does new technology inspire new directions? Examples drawn from pelagic visual ecology. *Integrative and Comparative Biology* **47**, 799-807.
- ⁴¹Cummings, M. M. and S. Johnsen (2007). Light in the rocky shores. Pp. 327-331 in *Encyclopedia of Tidepools and Rocky Shores*, (M. Denny and S. Gaines Eds.), University of California Press.
- ⁴⁰Sweeney, A. M., Des Marais, D. L., Ban, Y. A. and S. Johnsen (2007). Evolution of Graded Refractive Index in Squid Lenses. *Journal of the Royal Society Interface* **4**, 685-698.
- ³⁹Costello, M. J., Johnsen, S., Gilliland, K. O., Freel, C. D., and C. Fowler (2007). Predicted light scattering from particles observed in human age-related nuclear cataracts using Mie scattering theory. *Investigative Ophthalmology and Visual Science*. **48**, 303-312.
- ³⁸Leech, D. and S. Johnsen (2006). UV vision and the Feeding Ecology of Juvenile Bluegill Sunfish, *Lepomis machrochirus*. *Canadian Journal of Fisheries and Aquatic Sciences*. **63**, 2183-2190.
- ³⁷Tuthill, J. and S. Johnsen (2006) Polarization sensitivity in the red swamp crayfish *Procambarus clarkii* enhances the detection of moving transparent objects. *Journal of Experimental Biology*. **209**, 1612-1616.
- ³⁶Johnsen, S., Kelber, A., Warrant, E. J., Sweeney, A. M., Lee, R. H. Jr., Hernández-Andrés, J. (2006). Crepuscular and nocturnal illumination and its effects on color perception by the nocturnal hawkmoth *Deilephila elpenor*. *Journal of Experimental Biology* **209**, 789-800. **(cover and featured article)**
- ³⁵Johnsen, S. and K. J. Lohmann (2005). The physics and neurobiology of magnetoreception. *Nature Reviews Neuroscience* **6**, 703-712 (invited review).
- ³⁴Johnsen S. (2005). Visual ecology on the high seas. *Marine Ecology Progress Series* **287**, 281-285 (invited article).
- ³³Johnsen, S. (2005). The red and the black: Bioluminescence and the color of animals in the deep sea. *Integrative and Comparative Biology* **45**, 234-246. (invited article).

- ³²Blevins, E., and S. Johnsen (2004). Spatial vision in the echinoid genus *Echinometra*. *Journal of Experimental Biology* **207**, 4249-4253.
- ³¹Gilliland, K. O., Freel, C. D., Johnsen, S., Fowler, C., and M. J. Costello (2004). Distribution, spherical structure and predicted Mie scattering of multilamellar bodies in human age-related nuclear cataracts. *Experimental Eye Research* **79**, 563-576.
- ³⁰Marsili, S., Salganik, R. I., Albright, C. D., Freel, C. D., Johnsen, S., Peiffer, R. L., and M. J. Costello (2004). Cataract formation in a strain of rats selected for high oxidative stress. *Experimental Eye Research*. **79**, 595-612.
- ²⁹Johnsen, S. and H. M. Sosik (2004). Shedding light on light in the ocean. *Oceanus* **43**, 24-28. (invited article)
- ²⁸Johnsen, S., Widder, E. A., and C. D. Mobley (2004). Propagation and perception of bioluminescence: factors affecting the success of counterillumination as a cryptic strategy. *Biological Bulletin* **207**, 1-16.
- ²⁷Johnsen, S. (2003). Lifting the cloak of invisibility: the effects of changing optical conditions on pelagic crypsis. *Integrative and Comparative Biology* **43**, 580-590.
- ²⁶Johnsen, S., and K. J. Lohmann (2003). Neurobiology of magnetoreception. In *Encyclopedia of Neuroscience 3rd Edition* (G. Adelman, B. H. Smith eds.), Elsevier Science, New York. (invited review)
- ²⁵Sweeney, A. M., Jiggins, C., and S. Johnsen (2003). Polarized light as a butterfly mating signal. *Nature* **423**, 31-32.
- ²⁴Johnsen, S. and H. M. Sosik (2003). Cryptic coloration and mirrored sides as camouflage strategies in near-surface pelagic habitats: implications for foraging and predator avoidance. *Limnology and Oceanography* **48**, 1277-1288.
- ²³Avens, L., Wang, J., Johnsen, S., Dukes, P., and K. J. Lohmann (2003). Responses of hatchling sea turtles to rotational displacements. *Journal of Experimental Marine Biology and Ecology* **288**, 111-124.
- ²²Leech, D. and S. Johnsen (2003). Avoidance and UV vision. Pp. 455-484 in *UV Effects in Aquatic Organisms and Ecosystems*, (W. Helbling, H. Zagarese eds.), Royal Society of Chemistry, London. (invited review)
- ²¹Johnsen, S. (2002). Cryptic and conspicuous coloration in the pelagic environment. *Proceedings of the Royal Society of London: Biological Sciences* **269**, 243-256. (cover article)

- ²⁰Johnsen, S. (2001). Hidden in plain sight: the ecology and physiology of organismal transparency. *Biological Bulletin* **201**, 301-138. (invited review and cover article)
- ¹⁹Johnsen, S., and E. A. Widder (2001). Ultraviolet absorption in transparent zooplankton and its implications for depth distribution and visual predation. *Marine Biology* **138**, 717-730.
- ¹⁸Widder, E. A., and S. Johnsen (2000). 3D spatial point patterns of bioluminescent plankton: a map of the minefield. *Journal of Plankton Research* **22**, 409-420.
- ¹⁷Johnsen, S. (2000). Transparent animals. *Scientific American* **282**(2), 62-71.
- ¹⁶Lohmann, K. J., and S. Johnsen (2000). The neurobiology of magnetoreception in vertebrate animals. *Trends in Neurosciences* **23**, 153-159. (invited review)
- ¹⁵Widder, E. A., Johnsen, S., Bernstein, S. A., Case, J. F., and D. J. Neilson (1999). Thin layers of bioluminescent copepods found at density discontinuities in the water column. *Marine Biology (Berlin)* **134**, 429-437.
- ¹⁴Johnsen, S., and E. A. Widder (1999). The physical basis of transparency in biological tissue: ultrastructure and the minimization of light scattering. *Journal of Theoretical Biology* **199**, 181-198.
- ¹³Johnsen, S., and W. M. Kier (1999). Shade-seeking behavior under polarized light by the brittlestar *Ophioderma brevispinum*. *Journal of the Marine Biological Association of the United Kingdom* **79**, 761-763.
- ¹²Johnsen, S., Balser, E. J., and E. A. Widder (1999). Light-emitting suckers in an octopus. *Nature* **398**, 113-114. **(cover article)**
- ¹¹Johnsen, S., Balser, E. J., Fisher, E. C., and E. A. Widder (1999). Bioluminescence in the deep-sea cirrate octopod *Stauroteuthis syrtensis* Verrill (Mollusca: Cephalopoda). *Biological Bulletin (Woods Hole)* **197**, 26-39.
- ¹⁰Johnsen, S., and E. A. Widder (1998). The transparency and visibility of gelatinous zooplankton from the north west Atlantic and Gulf of Mexico. *Biological Bulletin (Woods Hole)* **195**, 337-348. **(cover article)**
- ⁹Johnsen, S., and W. M. Kier (1998). Damage due to solar ultraviolet radiation in the brittlestar *Ophioderma brevispinum* (Echinodermata: Ophiuroidea). *Journal of the Marine Biological Association of the United Kingdom* **78**, 681-684.
- ⁸Johnsen, S., and E. A. Widder (1998). The transparency and visibility of gelatinous zooplankton. Proceedings of the Fourteenth Conference of the Ocean Optics Society, Kailua-Kona, HI, USA.

- ⁷Widder, E. A., and S. Johnsen (1998). Optical imaging, identification and 3D analysis of spatial distribution patterns of bioluminescent plankton. Proceedings of the Fourteenth Conference of the Ocean Optics Society, Kailua-Kona, HI, USA.
- ⁶Johnsen, S. (1997). Identification and localization of a possible rhodopsin in the echinoderms *Asterias forbesi* (Asteroidea) and *Ophioderma brevispinum* (Ophiuroidea). *Biological Bulletin (Woods Hole)* **193**, 97-105.
- ⁵Johnsen, S. (1994). Extraocular sensitivity to polarized light in an echinoderm. *Journal of Experimental Biology* **195**, 281-291.
- ⁴Smith, A. M., Kier, W. M., and S. Johnsen (1993). The effect of depth on the attachment force of limpets. *Biological Bulletin (Woods Hole)* **184**, 338-341.
- ³Johnsen, S., and W. M. Kier (1993). Intramuscular crossed connective tissue fibers: skeletal support in the lateral fins of squid and cuttlefish. *Journal of Zoology (London)* **231**, 311-338.
- ²Kauffman, S. A., and S. Johnsen (1991). Coevolution to the edge of chaos: Coupled fitness landscapes, poised states and coevolutionary avalanches. *Journal of Theoretical Biology* **149**, 467-505.
- ¹Kauffman, S. A., and S. Johnsen (1991). Co-evolution to the edge of chaos. Pp. 325-369 in *Artificial Life II, SFI Studies in the Sciences of Complexity* vol. X (C. Langton, C. Taylor, J. Farmer, S. Rasmussen eds.) Addison-Wesley, New York.

First-author contributed presentations at meetings (28):

American Society of Zoologists Annual Meeting, Atlanta, GA	1991
American Society of Zoologists Annual Meeting, Vancouver, BC	1992
American Society of Zoologists Annual Meeting, Los Angeles, CA	1993
American Society of Zoologists Annual Meeting, St. Louis, MO	1995
American Society of Zoologists Annual Meeting, Washington, DC	1995
Society for Integrative and Comparative Biology Annual Meeting, Albuquerque, NM	1996
Fourteenth Annual Ocean Optics Meeting, Kona-Kailua, HI	1998
Society for Integrative and Comparative Biology Annual Meeting, Denver, CO,	1999
Society for Integrative and Comparative Biology Annual Meeting, Atlanta, GA	2000
Society for Integrative and Comparative Biology Annual Meeting, Chicago, IL	2001
Society for Integrative and Comparative Biology Annual Meeting, Anaheim, CA	2002
Society for Integrative and Comparative Biology Annual Meeting, Toronto, CA	2003
Society for Integrative and Comparative Biology Annual Meeting, New Orleans, LA	2004
Society for Integrative and Comparative Biology Annual Meeting, San Diego, CA	2005
Society for Integrative and Comparative Biology Annual Meeting, Orlando, FL	2006
Society for Integrative and Comparative Biology Annual Meeting, Phoenix, AZ	2007

9 th International meeting on Light and Color in Nature, Bozeman, MT	2007
Society for Integrative and Comparative Biology Annual Meeting, San Antonio, TX	2008
2 nd International Conference on Invertebrate Vision, Bäckaskog Castle, Sweden	2008
Society for Integrative and Comparative Biology Annual Meeting, Boston, MA	2009
Society for Integrative and Comparative Biology Annual Meeting, Seattle, WA	2010
Society for Integrative and Comparative Biology Annual Meeting, Salt Lake City, UT	2011
Society for Integrative and Comparative Biology Annual Meeting, Charleston, SC	2012
Society for Integrative and Comparative Biology Annual Meeting, San Francisco, CA	2013
3 rd International Conference on Invertebrate Vision, Bäckaskog Castle, Sweden	2013
Society for Integrative and Comparative Biology Annual Meeting, Austin, TX	2014
Society for Integrative and Comparative Biology Annual Meeting, Palm Beach, FL	2015
Society for Integrative and Comparative Biology Annual Meeting, Portland, OR	2016
Society for Integrative and Comparative Biology Annual Meeting, New Orleans, LA	2017

Invited presentations, including those at meetings (101, including 22 international):

University of Utah, Salt Lake City, UT	1998
Harbor Branch Oceanographic Institution, Fort Pierce, FL	1998
Woods Hole Oceanographic Institution, Woods Hole, MA	1999
Monterey Bay Aquarium and Research Institute, Moss Landing, CA	1999
University of Florida, Gainesville, FL	1999
Yale University, New Haven, CT	2000
Oregon State University, Corvallis, OR	2000
Wellesley College, Wellesley, MA	2000
Boston University Marine Program, Woods Hole, MA	2000
Duke University, Durham, NC	2001
Mount Holyoke College, South Hadley, MA	2001
Marine Biological Laboratory, Woods Hole, MA	2001
Duke University Marine Laboratory, Beaufort, NC	2001
Bartholomew Award Lecture, Anaheim, CA	2002
University of Maryland, Baltimore Campus, MD	2002
University of North Carolina at Chapel Hill	2002
Colloquium for Physical Ecology of Organisms, Roscoff, France	2002
Swarthmore College Sigma Xi, Swarthmore, PA	2002
University of Oregon Marine Laboratory, Coos Bay, OR	2002
Defense Science Research Council, Washington, DC	2003
University of Lund, Sweden	2003
National Eye Institute, Bethesda, MD	2003
Bartholomew Award Recipients Symposium, New Orleans, LA	2004
North Carolina State University, Raleigh, NC	2004
Photonics Center, Duke University, Durham, NC	2004
Georgia Tech University, Atlanta, GA	2004
University of Lund Sensory Ecology Symposium, Sweden	2004

University of Rhode Island, Kingston, RI	2004
Julius Thomas Hansen Lecture (grad student-invited), UC-Berkeley	2005
University of Bergen, Norway	2005
Conference Jacques Monod, Roscoff, France	2005
Rochester Institute of Technology, NY	2006
Wake Forest University, Winston-Salem, NC	2006
Lund University, Sweden	2006
North Carolina State University (Physics)	2006
University of South Carolina, Columbia, SC (grad student-invited)	2007
University of North Carolina at Wilmington (grad student-invited)	2007
Duke University Marine Laboratory, Beaufort, NC	2007
Whitney Marine Lab, University of Florida	2007
Old Dominion University, VA (Mathematics)	2007
University of North Carolina at Chapel Hill (Biochemistry)	2008
Polarization Conference, University of Queensland, Australia	2008
University of North Carolina at Chapel Hill (Environmental Science)	2008
Cornell University, Ithaca, NY	2008
University of Lund Sensory Ecology Symposium, Sweden	2008
National Intelligence Council, Washington, DC	2009
University of California at Davis	2009
Bodega Bay Marine Laboratory, CA	2009
University of Exeter, United Kingdom (Psychology)	2009
University of Texas at Austin (ONR Workshop)	2009
University of Toronto, Canada	2010
Duke University (Knut Schmidt-Nielsen Memorial Lecture)	2010
University of Pennsylvania, Philadelphia, PA	2010
Janelia Farm, Howard Hughes Medical Institute, Ashburn, VA	2010
Friday Harbor Laboratories, Seattle, WA (Paul Illg Memorial Lectures)	2010
University of North Carolina at Chapel Hill (Medical School)	2010
University of Lund Sensory Ecology Symposium, Sweden	2010
Scripps Institute of Oceanography, La Jolla, CA (ONR Workshop)	2010
Harvard University, Cambridge, MA	2010
University of North Carolina at Chapel Hill (Mathematics)	2011
Ithaca College, Ithaca, NY	2011
Undersecretary of Defense, Washington, DC	2011
Army Research Laboratory, Washington, DC	2011
Chairman of the Joint Chiefs of Staff, US Department of Defense	2012
Monterey Bay Aquarium and Research Institute, Moss Landing, CA	2012
Hopkins Marine Station, Stanford University, Pacific Grove, CA	2012
Tenth International Congress on Neuroethology, College Park, MD	2012
Plenary talk at Ocean Optics XXI, Glasgow, Scotland	2012
University of Lund Sensory Ecology Symposium, Sweden	2012
Washington University, St. Louis, MO	2013

University of California, Santa Barbara	2013
Scripps Institution of Oceanography, La Jolla, CA	2013
STINT Symposium on low-light vision, Bäckaskog Castle, Sweden	
2013	
Iowa State University, Ames, IA	2013
Nova Southeastern University, Fort Lauderdale, FL	2013
Sea and Learn Foundation, Saba, Netherlands Antilles	2013
Duke University Marine Lab, Beaufort, NC	2014
University of Illinois, Urbana-Champaign	2014
Miller Institute Symposium, Berkeley, CA	2014
St. Andrews University, United Kingdom (Psychology and Biology)	2014
University of Lund Sensory Ecology Symposium, Sweden	2014
Hilgendorf Lecture, Tübingen University, Germany	2014
University of Richmond, VA	2015
Longwood University, Farmville, VA	2015
San Francisco State University, CA	2015
Gordon Conference on Neuroethology, Il Ciocco, Italy	2015
St. Andrews University, United Kingdom (Ocean Institute)	2015
Virginia Tech, Blacksburg (Engineering)	2015
University of Pittsburgh, PA	2015
University of Miami, FL	2015
University of California at Irvine (Engineering)	2015
University of Queensland, Brisbane, Australia	2016
Keynote Speaker, Living Light Conference, Scripps, La Jolla, CA	2016
High Point University, NC	2016
University of Lund Sensory Ecology Symposium, Sweden	2016
Plenary Lecture, Marine Imaging Conference at the University of Kiel, Germany	2017
University of Maryland, Baltimore (grad-invited superspeaker)	2017
NC State University, Raleigh (University Scholars Forum)	2017
University of Pennsylvania (Physics)	2017
University of Virginia, Charlottesville	2017
Keynote Speaker, The Malacological Society of London	2017
Spotlight Session Keynote Speaker, Evolution Meetings, Portland, OR	2017
Max Planck Institute for Cell Biology and Genetics, Dresden, Germany	2017
Colorado State University, Fort Collins	2017
Sigma Xi, Durham, NC	2017
University of Cincinnati, OH (grad-invited superspeaker) (January 22)	2018
John Wiley Jones Distinguished Lecturer, Rochester Institute of Technology (April 6)	2018
Smithsonian Museum of Natural History, Washington, DC (April 20)	2018
University of Maryland, College Park (grad-invited superspeaker) (April 23)	2018
Keynote Speaker, IEEE-ICCP conference, Carnegie-Mellon U., Pittsburgh, PA (May 5)	2018

Undergraduates, Graduate Students, Postdoctoral Students:

Dr. Dina Leech: postdoctoral student, now an assistant professor at Longwood University
 Dr. Sandra Cooke: postdoctoral student, now an assistant professor at High Point University
 Dr. Sarah Zylinski: postdoctoral student, now an assistant professor at Leeds University
 Dr. Yakir Gagnon: postdoctoral student, now a postdoc at the University of Queensland
 Dr. Christine Bedore: postdoctoral student, now an assistant professor at Georgia Southern U.
 Dr. Karin Akre: postdoctoral student, now a visiting assistant professor at Hunter College
 Dr. Robert Fitak: postdoctoral student
 Dr. Lori Schweikert: postdoctoral student, Hargitt Fellow

Alison Sweeney: graduate student, NSF Predoctoral and James B. Duke Fellow, now an assistant professor at the University of Pennsylvania, a Sloan Fellow, and a Packard Fellow
 Daniel Speiser: graduate student, NSF Predoctoral and James B. Duke Fellow, now an assistant professor at the University of South Carolina
 Jamie Baldwin: graduate student, EPA STAR Fellowship (declined), now a postdoc at the Smithsonian Museum of Natural History
 Cynthia Tedore: graduate student, NSF Predoctoral and James B. Duke Fellow, now a postdoc at Lund University in Sweden
 Nicholas Brandley: graduate student, James B. Duke Fellow, now a visiting assistant professor at Colorado College
 Laura Bagge: graduate student, now a postdoc at the University of California at Irvine
 Katie Thomas: graduate student, NSF Predoctoral Fellow
 Eleanor Caves: graduate student, NDSEG Fellow, University Scholar, and James B. Duke Fellow
 Sarah Solie: graduate student
 Julia Notar: graduate student, NDSEG Fellow

On committees of: Larisa Avens (UNC), Jon Cohen (NSOE), Ed Venit, Kim Rosvall, Lisa Mangiamale (UNC), Andrij Horodysky (College of William & Mary), Robin Hopkins, Kriti Sharma, Brian Powell, David Steinberg, Courtney Endres (UNC), Tanya Kossler, Fay-Wei Li, David Ernst (UNC), Patrick Green, Adam Blake (Simon Fraser University), Jameson Clarke, Roger Brothers (UNC), Liana Burghardt (thesis only), Patrick Green, Jamie Wagner, Emily Levy

Undergraduates supervised: Shu Ying Kwan, Emily Pearce, **Erin Blevins (Schneider awardee)**, Dahl Clark, **Christopher Martin (Horn awardee)**, Danielle Cornielle, **Cirse Gonzalez (Schneider awardee)**, John Tuthill (Swarthmore College), Nicolas Lessios, Rebecca Fink, Lauren Cooke, Divya Yerramilli, Sebastian Larion, **Teresa Gross (Rast Awardee)**, Dylan Wainwright, Leo Chan Gaskins, Amy Taggart, Glenn Palmer, **J. P. Senter (Horn awardee)**, Alexa Stefanko, Gaby Benitez, Julia Chen, Avery Siciliano, Lauren Ellis, Monica Arniella, Rhiannon Harvey, D'Amy Steward

High School students supervised: Sarah Fann (North Carolina School of Science and Math), John Thiele

Professional service and societies:

Editorial Boards: *Biological Bulletin*, *Cell Reports*, *Aquatic Biology*, *Bioinspiration & Biomimetics*, *BMC Biology*, *Journal of Experimental Biology* (advisory board), *Proceedings of the National Academy of Sciences* (temporary)

Reviewer for: *American Journal of Physics*, *Applied Optics*, *Aquaculture*, *Aquaculture Research*, *Behavioral Ecology and Sociobiology*, *Behavioral Processes*, *Bioelectromagnetics*, *Biological Bulletin*, *Biological Journal of the Linnean Society*, *Biology Letters*, *BMC Biology*, *Canadian Journal of Zoology*, **Current Biology**, *Current Zoology*, *Deep Sea Research I*, *Environmental Biology of Fishes*, *Ethology*, *Experimental Eye Research*, *Evolution*, *Evolution: Education and Outreach*, *Frontiers in Zoology*, *HFSP Journal*, *Investigative Ophthalmology and Visual Science*, *Journal of Comparative Neurology*, *Journal of Comparative Physiology*, *Journal of Ethology*, *Journal of Experimental Biology*, *Journal of Fish Biology*, *Journal of Insect Physiology*, *Journal of the Optical Society of America A*, *Journal of Plankton Research*, *Journal of the Marine Biological Association of the United Kingdom*, *Marine Biology*, *Marine Ecology Progress Series*, *Limnology and Oceanography*, *Limnology and Oceanography Methods*, *Molecular Biology and Evolution*, **Nature**, *Naturwissenschaften*, *New Phytologist*, *Oecologia*, *Oikos*, *Optics Express*, *Physical Biology*, *Physiological Entomology*, *Physiology and Behavior*, *PLOS one*, *Proceedings of the Royal Society: Interface*, **Proceedings of the National Academy of Sciences**, **Proceedings of the Royal Society of London: Series B**, *Psychonomic Bulletin and Review*, **Science**, *Scientific Reports (Nature)*, *Trends in Ecology and Evolution*, *US Navy Journal of Underwater Acoustics*, *Vision Research*

National Science Foundation
National Institutes of Health
Air Force Office of Scientific Research
Department of Energy
MacArthur Foundation
National Geographic Society
Israeli Science Foundation
Marsden Fund, New Zealand

Organizer: "Integrative and Comparative Vision Research", Symposium for Annual Meeting of the Society for Integrative and Comparative Biology, Toronto, Canada, January 2003. (with Mason Posner and Todd Oakley)

"Integrative Biology of Pelagic Invertebrates", Symposium for Annual Meeting of the Society for Integrative and Comparative Biology, Phoenix, AZ, January 2007. (with Alison Sweeney)

"Extraocular, Non-Visual, and Simple Photoreceptors", Symposium for Annual Meeting of the Society for Integrative and Comparative Biology, Portland, OR, January 2016. (with Thomas Cronin)

Participant: "Evolutionary Shifts in Vertebrate Visual Ecology and Visual System Morphology", NESCent working group, Durham, NC, 2009-2012

Societies: Sigma Xi
Society for Integrative and Comparative Biology
American Society of Naturalists

Committees (Duke Biology):

Graduate Advisory	2002
Computer	2002-04
Curriculum	2003-06
DCMB Faculty Search	2003-04
Executive Steering	2004
ADUS Evaluation	2005
Structure/Function Core Course Design	2005-06
Teaching Consultation	2005
Performance Review	2006-09
Honors Thesis	2007
Executive Steering	2008-2014
Chair, Graduate Advisory	2008-2014
Chair, Reappointment for Manuel Leal	2009
Reappointment for Nina Sherwood	2010
Tenure for David Sherwood	2011
Reappointment for Vikas Bhandawat	2013
Chair, Long-Term Planning	2015
Executive Steering	2016
Tenure for Vikas Bhandawat	2017

Committees (Duke general and external):

Nominating, Society for Integrative and Comparative Biology	2002
Scientific Advisory Board, Molecular Sciences Building	2002
Bartholomew award, Society for Integrative and Comparative Biology	2002-04
Organismal Physiologist Search, UNC-Chapel Hill	2003
Nominating, Society for Integrative and Comparative Biology	2003
Biology-Global Health Faculty Search	2007
Neuroscience Major Formation	2007
Executive Committee of the Graduate Faculty	2008-11
Co-chair, Neurobiology and Behavior Search	2008-09
Duke/UNC Oceanographic Consortium Program Advisory	2004-2013
Graduate Student Teaching and Funding, Duke University	2013
Dean's Graduate Fellowship Selection	2016

	Appointments, Promotions, and Tenure	2016-19
	Nominating, Society for Integrative and Comparative Biology	2017
	Faculty Associate of the Duke Initiative for Science & Society	2017-
Officer:	Member-at-Large, Society for Integrative and Comparative Biology	2006-07
	Director of Graduate Studies, Biology Department,	2008-2014
	Interim Director of Graduate Studies, Biology Department	2016
Advisory Board:	Zoological Lighting Institute	2012-