Navish Wadhwa, Ph.D.

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Current position

2020 – **Principal Investigator** of NIH K99/R00 Award (NIGMS K99GM134124)

2016 – Postdoctoral fellow, Harvard University
Advisors: Dr. Howard Berg and Dr. Ethan Garner

Education

2012 – 2015 Ph.D., Physics, Technical University of Denmark
Thesis: *Zooplankton hydrodynamics – An investigation into the physics of aquatic interactions.*
Advisors: Dr. Anders Andersen, Dr. Thomas Kiørboe, Dr. Tomas Bohr

2010 – 2012 M.S., Engineering Mechanics, Virginia Tech.
Thesis: *Non-coalescence of jets*.
Advisor: Dr. Sunghwan Jung

2004 – 2008 B.Tech., Mechanical Engineering, Indian Institute of Technology Delhi.
Thesis: *Boundary element method (BEM) modeling of cardiovascular bubble dynamics*.
Advisor: Dr. Brijesh Eshpuniyani

Funding

2020 – 2025 **NIH K99/R00** Pathway to Independence, National Institute of General Medical Sciences
Identifying the mechanisms of mechanosensing by the bacterial flagellar motor
Direct cost: $950,000, Role: PI.

Select Awards and Honors

2019 **Meselson Prize for the most beautiful experiment of the year**, MCB Harvard.

2017 Society of General Physiologists Scholar, Marine Biological Laboratory.

2014 **Young Scientist Award**, European Fluid Mechanics Conference.

2013 Best Poster Award, Department of Physics, Technical University of Denmark.

2010 **Milton Van Dyke Award**, American Physical Society Division of Fluid Dynamics.

2009 Junior Research Fellowship, National Centre for Biological Sciences.

Training and Courses

2017 Student, Physiology course, Marine Biological Laboratory.

Visiting Scientist, Janelia Research Campus.
Supervisor: Jennifer Lippincott-Schwartz

2016 Student, Advanced Bacterial Genetics course, Cold Spring Harbor Laboratories.

2014 Student, Particle Image Velocimetry course, German Aerospace Center (DLR).

2008-2010 Junior Research Fellow, National Centre for Biological Sciences
Supervisor: Sanjay Sane.

Publications and preprints

‡corresponding author, * co-first author

1. **Wadhwa, N.**‡, Tu, Y., & Berg, H. C. (2021). Mechanosensitive remodeling of the bacterial flagellar motor is independent of direction of rotation. *Proc. Natl. Acad. Sci.*, *118*(15). doi:10.1073/pnas.2024608118
2. Santiveri, M., Roa-Eguiara, A., Kühne, C., **Wadhwa**, **N.**, Hu, H., Berg, H. C., … Taylor, N. M. (2020). Structure and function of stator units of the bacterial flagellar motor. *Cell*, *183*(1), 244–257.e16. doi:10.1016/j.cell.2020.08.016
3. **Wadhwa, N.**‡, Phillips, R., & Berg, H. C. (2019). Torque-dependent remodeling of the bacterial flagellar motor. *Proc. Natl. Acad. Sci.*, *116*(24), 11764–11769. doi:10.1073/pnas.1904577116
4. Andersen, K., Berge, T., Gonçalves, R., Hartvig, M., Heuschele, J., Hylander, S., … Kiørboe, T. (2016). Characteristic sizes of life in the oceans, from bacteria to whales. *Annu. Rev. Mar. Sci.*, *8*(1), 217–241. doi:10.1146/annurev-marine-122414-034144
5. Andersen, A., **Wadhwa**, **N.**, & Kiørboe, T. (2015). Quiet swimming at low reynolds number. *Phys. Rev. E*, *91*, 042712. doi:10.1103/PhysRevE.91.042712
6. Martens, E. A.*‡, **Wadhwa, N.***‡, Jacobsen, N. S., Lindemann, C., Andersen, K. H., & Visser, A. (2015). Size structures sensory hierarchy in ocean life. *Proc. R. Soc. B*, *282*(1815), 20151346. doi:10.1098/rspb.2015.1346
7. Kiørboe, T., Jiang, H., Gonçalves, R. J., Nielsen, L. T., & **Wadhwa**, **N.** (2014). Flow disturbances generated by feeding and swimming zooplankton. *Proc. Natl. Acad. Sci.*, *111*(32), 11738–11743. doi:10.1073/pnas.1405260111
8. **Wadhwa, N.**‡, Andersen, A., & Kiørboe, T. (2014). Hydrodynamics and energetics of jumping copepod nauplii and copepodids. *J. Exp. Biol*, *217*(17), 3085–3094. doi:10.1242/jeb.105676
9. **Wadhwa**, **N.**, Vlachos, P., & Jung, S. (2013). Noncoalescence in the oblique collision of fluid jets. *Phys. Rev. Lett.*, *110*, 124502. doi:10.1103/PhysRevLett.110.124502
10. **Wadhwa**, **N.**, & Jung, S. (2011). Non-coalescence of jets. *Phys. Fluids*, *23*(9), 091105. doi:10.1063/1.3640005
11. **Wadhwa**, **N.**, Jain, V., Fowlkes, J. B., Bull, J. L., & Eshpuniyani, B. (2010). A boundary element model of multiple microcirculatory bubbles in cardiovasculature. *Int. J. Emerg. Multidiscip. Fluid Sci.*, *2*, 143–160.

Invited talks

2021	École polytechnique fédérale de Lausanne, Physics of Living Systems Seminar
	Microscale Ocean Biophysics Seminar Series
2020	Yale Quantitative Biology Institute (cancelled due to Covid-19)
2019	Princeton University, Center for the Physics of Biological Function
	Brandeis University, Materials Research Science and Engineering Center
2018	Brown University, Division of Applied Mathematics Fluids and Thermal Sciences
2015	Cambridge Department of Applied Mathematics and Theoretical Physics
	Max Planck Institute for Terrestrial Microbiology
2014	Harvard School of Engineering and Applied Sciences
2012	Jawaharlal Nehru Centre for Advanced Scientific Research

Conference presentations

2021	American Physical Soceity March Meeting, virtual
	Biophysical Society Meeting, virtual
2020	Physics of Living Matter 15, virtual
	Gordon Research Conference - Sensory Transduction in Microorganisms, Ventura, CA
2019	American Society of Cell Biology Conference, Washington, DC
	Bacterial Locomotion and Signal Transduction Conference, New Orleans, LA
2017	American Society of Cell Biology Conference, Philadelphia, PA
	Bacterial Locomotion and Signal Transduction Conference, New Orleans, LA
2014	American Physical Society's Division of Fluid Dynamics Meeting, San Francisco, CA
	European Fluid Mechanics Conference, Kgs. Lyngby, Denmark
	Active Fluids Workshop, Mariehamn, Åland
2013	International workshop on Trait-based approaches to Ocean Life, Copenhagen, Denmark
	Complex Motion in Fluids Summer School, Humlebæk, Denmark
	Microscale interactions in aquatic environments, Les Houches, France
2012	American Physical Society's Division of Fluid Dynamics Meeting, San Diego, CA
2011	American Physical Society's Division of Fluid Dynamics Meeting, Baltimore, MD

Service

2021	Keynote Session Chair, Bacterial locomotion and signal transduction meeting
2016	Finance Committee, Harvard FAS Postdoctoral Association
2014-	Ad hoc reviewer: *PLOS One*, *eLife*, *Physical Review Letters*, *Nature Communications*, *Proceedings of the National Academy of Sciences*, National Science Foundation, *Physical Review X*, *Physical Review E*, *Frontiers in Marine Science*, *The American Naturalist*, *Communications Biology*, *Biomolecules*, *Journal of Physics D*, and *Journal of Experimental Marine Biology and Ecology*

Teaching

2020	Guest lecturer, *Freshman Seminars*: *Physics*, Emory University
2014	Instructor, "Consulting project", Technical University of Denmark
	Teaching Assistant, *Experimental Methods and Instrumentation in Physics*, Technical University of Denmark
2013	Guest lecturer, *Introduction to Biophysics*, Technical University of Denmark
	Guest lecturer, *Physical Oceanography*, Technical University of Denmark
2012	Instructor, *Foundations of Physics Laboratory*, Virginia Tech
2011	Instructor, *Mechanical Behavior of Materials*, Virginia Tech
	Teaching Assistant, *Dynamics*, Virginia Tech
2010	Teaching Assistant, *Statics*, Virginia Tech

Supervision

2019	Jinming Yang (visiting student). After: Ph.D. student at Yale U., Physics
	Sophia Belser (visiting student). After: M.Phil. student at U. Cambridge, Biotechnology
2018	Olenka Jain (undergraduate researcher). After: Undergrad at Harvard U.

Supervision (continued)

	Daozheng Gong (visiting student). After: Ph.D. student at U. Chicago, Biophysics
	Siyu He (visiting student). After: Ph.D. student at Columbia U., Biomedical Engineering
2017	Isabel Esain Garcia (visiting student). After: Ph.D. student at U. Cambridge, Chemistry
2016	Ying Zuo (visiting student). After: Ph.D. student at Ph.D. student at Hong Kong U. Sci. Tech.

Outreach

2020	Judge, ENVISION (proposal-writing competition organized by Women in STEM)
2019	Social media contributor, Biophysical Journal
2017	Judge, Massachusetts State Science & Engineering Fair
	Panelist, Harvard iGEM club, SynBio Research Panel
2014	Volunteer, Science in the City (science festival organized by EuroScience Open Forum)