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.

2010 **Gallery of Fluid Motion Winner**, American Physical Society.

Milton Van Dyke Award, American Physical Society.

2009 Junior Research Fellowship, National Centre for Biological Sciences.

Training and Courses

2017 Visiting Scientist, Janelia Research Campus
Advisor: Jennifer Lippincott-Schwartz

Student, Physiology course, Marine Biological Laboratory.
Supervisors: Rob Phillips, Jennifer Lippincott-Schwartz, Wallace Marshall

2016 Student, Advanced Bacterial Genetics course, Cold Spring Harbor Laboratories.
Supervisors: Andrew Camilli, Lionello Bossi, Houra Merrikh

2008-2010 Junior Research Fellow, National Centre for Biological Sciences.
Supervisors: 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. *bioRxiv*. doi:10.1101/2021.01.19.427295
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.

Recent invited and conference talks

2021	École polytechnique fédérale de Lausanne, Physics of Living Systems Seminar (Invited)
	Microscale Ocean Biophysics Seminar Series (Invited)
	Annual March meeting of the American Physical Society, Online
2020	Physics of Living Matter 15, Online
2019	Princeton University, Center for the Physics of Biological Function (Invited)
	Annual ASCB|EMBO Meeting, Washington, DC
	Brandeis University, Materials Research Science and Engineering Center (Invited)
2018	Brown University, Division of Applied Mathematics Fluids and Thermal Sciences (Invited)

Service

2021	Keynote Session Chair, Bacterial locomotion and signal transduction meeting
2016	Finance Committee, Harvard FAS Postdoctoral Association

Service (continued)

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*, *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.

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

2014 Volunteer, Science in the City (science festival organized by EuroScience Open Forum)