Nikhil Malvankar – *Curriculum Vitae*

Molecular Biophysics & Biochemistry (MB&B), Microbial Sciences Institute (MSI), Yale University

Phone: 203 737 7590; **FAX:** 203 737 6715; nikhil.malvankar@yale.edu **Web:** Protein Nanowires Lab

Education and Research Experience

2014-2015 Burroughs Wellcome Fund Career Award at the Scientific Interfaces Fellow (About)
2010-2014 Postdoctoral Associate, Dept. of Microbiology, UMass, Amherst. (Advisor: Derek Lovley)
2004-2010 Ph.D. in Biophysics, Dept. of Physics, UMass, Amherst. (Advisor: Mark Tuominen)
2001-2003 M.Sc. in Physics, Department of Physics, Indian Institute of Technology, Mumbai, India.
1998-2001 B.Sc. in Physics, Department of Physics, University of Mumbai, India.

Appointments

7/22- Associate Professor (on term) of MB&B and MSI, Yale University
7/15-6/22 Assistant Professor of MB&B and MSI, Yale University

Major Honors

2021-2026 Camille Dreyfus Teacher-Scholar Award (About). Yale Highlight
2021-2023 Blavatnik Award (About) Yale Highlight) Faculty Spotlight
2018-2023 National Science Foundation CAREER Award (About)
2017-2022 NIH Director's New Innovator Award (About)
2017-2020 Hartwell Foundation Individual Biomedical Research Award (About)
2017-2019 Charles H. Hood Foundation Child Health Research Award (About)
2014-2019 Burroughs Wellcome Fund – Career Award at the Scientific Interface (About)

Other Honors

2022-2023 Fellow, NSF Game Changer Academics for Advancing Research Innovation (About)
2022 Finalist, Burroughs Wellcome Fund – Pathogenesis of infectious disease (About)
2021-2022 Public Voices Fellow by the OpEd project. (About)
2019 Finalist, NSF Materials Innovation Platform (About)
2016-2017 Helmsley Interdisciplinary Research Fellowships, Cold Spring Harbor Laboratory (About)
2009 Biophysics Scholarship, University of Massachusetts, Amherst (About)
2008-2009 Entrepreneurship Fellowship, University of Massachusetts, Amherst (About)
2004-2008 Graduate fellowship American alumni association, India,
2004 Indo-American Society travel grant for graduate studies

PUBLICATIONS (Total: 48, h-index: 33) †equal contribution *corresponding author

Google Scholar Citations **> 8000** (> 5500 citations in last 5 years). **Key publications are underlined**

Top five cited papers with a number of citations

1) **Nikhil S. Malvankar**, M. Vargas, K. Nevin, A. Franks, C. Leang, B. Kim, K. Inoue, T. Mester, S. Covalla, J. Johnson, V. Rotello, M. Tuominen, and D. Lovley. Tunable metallic-like conductivity in microbial nanowire networks. ***Nature Nanotechnology*** 6, 573 (2011). ~ **850 citations**

2) Z. Summers, H. Fogarty, C. Leang, A. Franks, **Nikhil S. Malvankar,** D. Lovley. Cooperative exchange of electrons within aggregates of an evolved syntrophic co-culture. ***Science*** 330, 1413-1415 (2010). **> 800 citations**

3) F. Wang† Y. Gu†, J. P. O'Brien, S. Yi, SE Yalcin, V. Srikanth, C. Shen, D. Vu, N. Ing, A. Hochbaum*, Edward H. Egelman* & **Nikhil S. Malvankar***. Structure of microbial nanowires reveals stacked hemes that transport electrons over micrometers. ***Cell*** 177, 1-9 (2019). **~300 citations**

4) **N. Malvankar***, S Yalcin, M. Tuominen, D. Lovley. Visualization of charge propagation along individual proteins using electrostatic force microscopy. ***Nature Nano*** 9, 1012 (2014). ~ **200 citations**

5) **N. Malvankar***, M. Tuominen, D. Lovley. Biofilm conductivity is a decisive variable for the high-current-density microbial fuel cells. *Energy & Environmental Science* 5, 5790 (2012) **~230 citations**

Independent Contributions at Yale

2022

- Jens Neu†, Catharine Shipps†, Matthew Guberman-Pfeffer, Cong Shen, Vishok Srikanth, Jacob Spies, Nathan Kirchhoffer, Sibel Ebru Yalcin, Gary Brudvig, Victor Batista and **Nikhil S. Malvankar*** Microbial biofilms as living photoconductors due to ultrafast electron transfer in cytochrome OmcS nanowires. ***Nature Communications*** (2022). Press Release Selected for Yale Today
- P. Dahl, S. Yi, Y. Gu, A. Acharya, J. Neu, P. O'Brien, SE Yalcin, U. Morzan, S. Chaudhuri, Matthew Guberman-Pfeffer, D. Vu, V. Batista & **Nikhil S. Malvankar*** 300-fold conductivity increase in microbial cytochrome nanowires due to temperature-induced restructuring of hydrogen bonding networks. ***Science Adv.*** 8, eabm7193 (2022). Press Release, Selected for Monthly Yale News. Selected for News Highlight by *International Center for Theoretical Physics*.
- Duy Phan…Peter Dahl.. **Nikhil S. Malvankar**.. and Kristopher Kahle* Impaired neurogenesis alters brain biomechanics in a neuroprogenitor-based genetic subtype of congenital hydrocephalus ***Nature Neuroscience*** 25, 458–473 (2022). News, Tweetorial, Press Release Boston Children's Hospital
- D. Shapiro, G. Mandava**,** SE Yalcin, P. Arranz-Gibert, P. Dahl, C. Shipps, Y. Gu, V.Srikanth, A.Salazar-Morales, J. O'Brien, K. Vanderschuren, D.Vu, V. Batista, **Nikhil S. Malvankar***† and Farren Isaacs*† (co-last authors) Protein nanowires with tunable functionality and programmable self-assembly using sequence-controlled synthesis ***Nature Communications*** 13, 829 (2022)

2021

- Yangqi Gu†, Vishok Srikanth†, Aldo Salazar-Moralez, Ruchi Jain, Patrick O'Brien, Sophia Yi, Rajesh Soni, Fadel Samatey, Sibel Ebru Yalcin, and **Nikhil Malvankar*** **Structure of *Geobacter* pili reveals secretory rather than nanowire behavior.** ***Nature*** 597, 430 (2021) News & Views Tweetorial; Full text access Animations: Structure Tour **Press:** Yale News, EurekAlert! Yale Today, Best of the Week, Live Science. Recommended on Faculty Opinions
- Catharine Shipps, H. Ray Kelly, Peter Dahl, Sophia M. Yi, Dennis Vu, David Boyer, Calina Glynn, Michael Sawaya, David Eisenberg, Victor S. Batista & **Nikhil Malvankar***. Intrinsic electronic conductivity in atomically resolved amyloid protein fibrils reveals micrometer-long hole hopping via stacked tyrosines. ***PNAS*** 118, e2014139118. **Press:** Yale, Yale Today, and Research Outreach
- S. E. Yalcin*& **Nikhil S. Malvankar*** Novel imaging methods help identify structure and function of *Geobacter* nanowires in biofilms *in* Roadmap on emerging concepts in the physical biology of bacterial biofilms: from surface sensing to community formation. ***Physical Biology*** 18 (5), 051501 (2021).
- Matthew Guberman-Pfeffer & **Nikhil S. Malvankar*** Making protons tag along with electrons ***Biochemical Journal*** 478 (23): 4093–4097 (2021). Selected for the Cover.

2020

- Sibel Ebru Yalcin†*, J. Patrick O'Brien†, Yangqi Gu, Krystle Reiss, Sophia M. Yi, Ruchi Jain, Vishok Srikanth, Peter Dahl, Winston Huynh, Dennis Vu, Atanu Acharya, Subha Chaudhuri, Tamas Varga, Victor S. Batista & **Nikhil S. Malvankar*** **Electric field stimulates highly conductive microbial OmcZ nanowires**. ***Nature Chemical Biology*** **16**, 1136–1142 (2020). News and Views **Press:** Press Release, Scientific American**,** Live Science, Oxford Instruments, Nature Portfolio, NBC-SYFY**,** Yale Today, Yale News, Behind the Paper in ***Nature Micro.*** & ***Nature Bioengineering***. **American Society of Microbiology Podcast** (@ 16:30 minutes). In 98 percentiles across all journals
- Sibel Ebru Yalcin*, Benjamin A. Legg, Merve Yeşilbaş, **Nikhil S. Malvankar*** and Jean-François Boily* Direct observation of anisotropic water film growth on minerals driven by defects and surface tension. ***Science Advances*** 6, 30, eaaz9708 (2020). **Press:** Yale Press Release
- Sibel Yalcin* and **Nikhil S. Malvankar*** The blind men and the filament: Understanding structures and functions of microbial nanowires. ***Current Opinion in Chemical Biology*** 59, 193-201 (2020).

2019

- Fengbin Wang† and Yangqi Gu†, J. Patrick O'Brien, Sophia M. Yi, Sibel Ebru Yalcin, Vishok Srikanth, Cong Shen, Dennis Vu, Nicole L. Ing, Allon I. Hochbaum*, Edward H. Egelman* & **Nikhil S. Malvankar***. **Structure of microbial nanowires reveals stacked hemes that transport electrons over micrometers.** ***Cell*** 177, 1-9 (2019). **Animations:** Interactive 3D complement

  Press: Yale Press Release; EurekAlert! **Highlights**: New York Times, Nature Chemical Biology, Yale Scientific and Proteopedia. **Citations > 200** in ~ 2 years (In 94th percentile for citations)

2016

- J. P. O'Brien and **Nikhil S. Malvankar*** A simple and low-cost procedure for growing *Geobacter sulfurreducens* cell cultures and biofilms in bioelectrochemical systems. ***Current Protocols in Microbiology*** 43: A.4K.1-A.4K.27 (2016). Selected in Commonly used methods for cell culture
- **Nikhil S. Malvankar**, VM Rotello, M. T. Tuominen, D. Lovley. Reply to 'Measuring conductivity of living *Geobacter sulfurreducens* biofilms'. ***Nature Nanotechnology*** 11, 913-914 (2016)

Patents

- F. Isaacs, **Nikhil S. Malvankar**, Danial Shapiro, S. E. Yalcin and G. Mandava. **Compositions and methods for making and using protein nanowires with tunable functionality.** Filed on 1/25/2022.
- **Nikhil S. Malvankar** and S. E. Yalcin. Systems and methods for forming biological nanowires and applications thereof. US application pending 62/637,853. Filed 3/2018. Published 1/2021.
- D. Lovley, **Nikhil S. Malvankar,** R. Adhikari, Y. Tan, J. Ward, K. Nevin Microbial nanowires with increased conductivity & reduced diameter. Patent no. 11066449. Issued on 7/20/21.

Publications Prior to Yale

2017

- Y. Tan, RY Adhikari, **Nikhil S. Malvankar**, S. Pi, JE. Ward, T. Woodard, Kelly P. Nevin, Qiangfei Xia, Mark T. Tuominen, and Derek R. Lovley. Expressing the *Geobacter metallireducens* pili in *Geobacter sulfurreducens* yields pili with surprisingly high conductivity. *mBio* 8: e02203-16 (2017)

2016

- Yang Tan, Ramesh Y Adhikari, **Nikhil S Malvankar**, Joy E Ward, Kelly P Nevin, Trevor L Woodard, Jessica A Smith, Oona Snoeyenbos-West, AE Franks, Mark T Tuominen and DR Lovley. The low conductivity of *Geobacter uraniireducen*s pili suggests a diversity of extracellular electron transfer mechanisms in the genus *Geobacter*. *Frontiers in Microbiology* 7, 980 (2016)
- Yang Tan, Ramesh Y. Adhikari, **Nikhil S. Malvankar**, Shuang Pi, Joy E. Ward, Trevor L. Woodard, Kelly P. Nevin, Qiangfei Xia, Mark T. Tuominen, and Derek R. Lovley. Synthetic biological protein nanowires with high conductivity. *Small* 12, 4481-4485 (2016)
- Ke Xiao, **Nikhil S. Malvankar**, Eric Martz, Chuanjun Shu, Derek Lovley and Xiao Sun. Low energy atomic models suggesting a pilus structure that could account for electrical conductivity of *Geobacter sulfurreducens* pili. *Scientific Reports* 6, 23385 (2016). **Animations:** Interactive 3D
- Ramesh Adhikari, **Nikhil S. Malvankar**, Mark Tuominen, and Derek Lovley. Conductivity of individual *Geobacter* pili. *RSC Advances* 6, 8354 (2016).
- Jiae Yun, **Nikhil S. Malvankar,** Toshiyuki Ueki, and Derek R. Lovley. Functional environmental proteomics: Elucidating the role of a c-type cytochrome abundant during uranium bioremediation *The International Society of Microbial Ecology Journal* 10, 310 (2016).

2015

- **Nikhil S. Malvankar*** and D. R. Lovley. "Electronic conductivity in biofilms: Physical meaning, mechanisms and measurement methods" Book Chapter in "Biofilms in bioelectrochemical systems: From laboratory practice to data interpretation." Willey, NY (2015). Book Preview
- **Nikhil S. Malvankar,** Madeline Vargas, Kelly Nevin, PL Tremblay, Kenenth Evans-Lutterodt, Dymtro Nykypanchuk, E. Martz, M. Tuominen and DR Lovley. Structural basis for metallic-like conductivity in microbial nanowires *mBio* 6 (2), e00084-15 (2015). **Animations:** Interactive 3D Selected for the Cover **Press:** EurekAlert
- **Nikhil Malvankar***, G. King, D. Lovley. Centimeter-long electron transport in marine sediments via conductive minerals. *The International Society of Microbial Ecology Journal* 9, 527-531 (2015).
- Xi Yu, **Nikhil S. Malvankar**, Ryan Landis, Serkan Eymur, Oscar Miranda, and V. M. Rotello. Impedance spectroscopy of ionic ligand modulated gold nanoparticles assembly and their application in volatile gas sensing. *Small* 11 (31) ,3814-3821 (2015).
- Derek Lovley and **Nikhil S. Malvankar**. Seeing is believing: Novel imaging techniques help clarify microbial nanowire structure and function. *Environmental Microbiology* 17, 2209 (2015)
- Fanghua Liu, Amelia-Elena Rotaru, Pravin Shrestha, **Nikhil S. Malvankar**, Kelly P. Nevin, Derek Lovley. Magnetite compensates for the lack of a pilin-associated *c*-type cytochrome in extracellular electron exchange. *Environmental Microbiology* 17 (3), 648-655 (2015).

2014

- **Nikhil S. Malvankar***, Sibel E. Yalcin, Mark T. Tuominen and Derek R. Lovley. **Visualization of charge propagation along individual pili proteins using ambient electrostatic force microscopy.** ***Nature Nanotechnology*** 9, 1012-1017 (2014). **Press:** EurekAlert!. In 98 percentiles in all journals
- **Nikhil S. Malvankar** and Derek R. Lovley. 2014. "Microbial Nanowires for bioenergy applications." *Current Opinion in Biotechnology* 27, 88-95 (2014). In 99 percentiles
- X. Liu, PL Tremblay, **Nikhil Malvankar**, K Nevin, D Lovely, M Vargas. *Geobacter sulfurreducens* strain expressing *Pseudomonas aeruginosa* pili localizes OmcS on pili but is deficient in Fe (III) oxide reduction & current production. *Applied & Environmental Microbiology* 80, 1219 (2014).
- PM Shrestha, **Nikhil S. Malvankar**, J. Werner, A. Franks, A. Rotaru, M. Shrestha, F. Liu, K. Nevin, L. Angenent, D. Lovley. Correlation between microbial community and granule conductivity in anaerobic bioreactors for brewery wastewater treatment. *Bioresource Technology* 174, 306 (2014).
- Shanshan Chen, AE Rotaru, **Nikhil S. Malvankar**, F. Liu, Kelly Nevin, Derek Lovley. Promoting interspecies electron transfer with biochar. *Scientific Reports* 4, 5019 (2014). ~ 450 citations

2013

- Ching Leang, **Nikhil S. Malvankar**, AE Franks, Kelly Nevin Derek R. Lovley. Engineering *Geobacter sulfurreducens* to produce a highly cohesive conductive matrix with enhanced capacity for current production. *Energy and Environmental Science,* 6:1901-1908 (2013).
- M. Vargas, **Nikhil S. Malvankar**, PL Tremblay, Ching Leang, Jessica Smith, Pranav Patel, Oona Synoeyenbos-West, K. Nevin, D. Lovley. Aromatic amino acids required for pili conductivity and long-range extracellular electron transport in *Geobacter sulfurreducens*. *mBio*, 4: e00105-13 (2013). **Commentary -** Molecular dissection of bacterial nanowires
- PM Shrestha, AE Rotaru, M. Aklujkar, F. Liu, M. Shrestha, Z. M. Summers, **Nikhil S. Malvankar**, Dan Carlo Flores, and D. Lovley. Syntrophic growth with direct interspecies electron transfer as the sole mechanism for energy exchange. *Environmental Microbiology Reports,* 5:904-910 (2013).

2012

- **Nikhil S. Malvankar***, Tünde Mester, M. T. Tuominen, and D. R. Lovley. Supercapacitors based on *c*-type cytochromes using electrically conductivity nanostructured networks of living bacteria. *ChemPhysChem*, 13, 463 – 468 (2012). Selected for the Cover
  Inside Science News Article - Could Pacemakers Be Powered by Sugar?
- **Nikhil S. Malvankar***, M. T. Tuominen and D. R. Lovley. Biofilm conductivity is a decisive variable for the high-current-density of *Geobacter sulfurreducens* microbial fuel cells. *Energy and Environmental Science* 5, 5790-5797 (2012).
- **Nikhil S. Malvankar***, M. T. Tuominen, and D. R. Lovley. Lack of involvements of *c*-type cytochromes in long-range electron transport in microbial biofilms and nanowires. *Energy and Environmental Science*, 5, 8651-8659 (2012).
- **Nikhil S. Malvankar***, J. Lau, K. Nevin, AE Franks, M. Tuominen, D. Lovley. Electrical conductivity in mixed-species biofilms. *Applied and Environmental Microbiology*, 78, 5967 (2012).
- **NS Malvankar*,** DR. Lovley. Microbial nanowires: A new paradigm for biological electron transfer and bioelectronics. *ChemSusChem* 5, 1039-1046 (2012). **Spotlight in** *Angew. Chem.* 51, 7358.
- **Nikhil S. Malvankar**, M. T. Tuominen and D. R. Lovley. Comment on ''On electrical conductivity of microbial nanowires and biofilms'' by Strycharz-Glaven *et al.*, Energy Environ. Sci., 2011, 4, 4366. *Energy and Environmental Science* 5, 6247:6249 (2012).
- F Liu, A Rotaru, P Shrestha, **Nikhil Malvankar**, K Nevin, D Lovley. Promoting direct interspecies electron transfer with activated carbon. *Energy and Environmental Science*, 5, 8982 (2012).

2011

- **Nikhil S. Malvankar**, M. Vargas, K. Nevin, A. Franks, C. Leang, B. Kim, K. Inoue, T. Mester, S. Covalla, J. Johnson, V. Rotello, M. Tuominen, and D. Lovley. **Tunable metallic-like conductivity in microbial nanowire networks.** ***Nature Nanotechnology*** 6, 573 (2011). News & Views
  On the Cover; In 97 percentiles across all journals **> 800 citations**
- Morita, M., **Nikhil S. Malvankar,** Franks, A.E., Summers, Z.M., Giloteaux, L., Rotaru, A.E., Rotaru, C., & Lovley, D.R., Potential for direct interspecies electron transfer in methanogenic wastewater digester aggregates. *mBio* 2 (4), e00159-00111 (2011).
- D. Lovley, T. Ueki, T. Zhang, **N. Malvankar**, P. Shrestha, K. Flanagan, M. Aklujkar, J. Butler, L. Giloteaux, A. Rotaru, D. Holmes, A Franks, R. Orellana, C. Risso, K. Nevin, *Geobacter*: The microbe electric's physiology, ecology, & practical applications. *Adv. in Microbial Physiology.*, 59:1-100 (2011).

2010

- Z. Summers, H. Fogarty, C. Leang, A. Franks, **Nikhil S. Malvankar,** D. Lovley. **Cooperative exchange of electrons within aggregates of an evolved syntrophic co-culture.** ***Science*** 330, 1413-1415 (2010). **> 750 citations** Press: EurekAlert!
- Debabrata Patra, **Nikhil S. Malvankar**, Erica Chin, Mark Tuominen, Zhiyong Gu, and Vincent M. Rotello. Fabrication of conductive microcapsules via self-assembly and crosslinking of gold nanowires at liquid–liquid interfaces. *Small*, 6: 1402–1405 (2010).
- A. E. Franks, **Nikhil S. Malvankar**, K.P. Nevin. Bacterial biofilms: the powerhouse of a microbial fuel cell. *Biofuels* 1:589-604 (2010).
- **Nikhil S. Malvankar** Investigations of electron transport and storage mechanisms in microbial biofilms. *Ph.D. Thesis*, University of Massachusetts, Amherst (2010).

TEACHING Number of lectures given are shown in parentheses. *In Charge – Instructor in Charge.*

MB&B 435a/635a	.
	2015 (6), 2016 (6), 2017 (*In Charge*, 6), 2019 (6), 2021 (*In Charge*, 6), 2022 (6)
MB&B 490b	Senior Project with Research Symposium
	2020 (6), 2020 (12), 2021 (6), 2022 (14), 2023 (*In Charge*, 9)
MB&B 420/720	*Macromolecular Structure and Biophysical Analysis* (6 lectures)
	2016 (4), 2017 (5), 2019 (6)
MB&B 750	*Biological Membranes* (2 lectures)
	2016 (2), 2017 (2)
MBIO 685	*Biophysical Approaches to Microbial Pathogenesis* (2 lectures)
	2016 (2), 2017 (2), 2018 (2)
MB&B 517	Methods and Logic in Interdisciplinary Research
	2016 (2), 2022 (2)
MB&B 676b	*Responsible Conduct of Research*
	2016 (1), 2020 (1)
MB&B 591a	Integrated Workshop on how to visualize 3D protein molecular structures
	2018 (2)
MB&B 445b/545b	Undergraduate Methods & Logic
	2020 (4)
MB&B 431b	*Illuminating Biomolecular Mechanism with Structure* (8 lectures)
	2022 (8 – cancelled), 2023 (8 – cancelled)
MB&B 268	Identity, Society and STEM
	2022 (1 student review)
MB&B 470a/471b	Research in Biochemistry and Biophysics for the Major
	2017-2018, 2019-2020, 2020-21
MB&B 472a/473b	Research in Biochemistry and Biophysics
	2016-2017
MB&B 675a	Seminars for First Year Students 2016 (1)
Chem 529	Special Topics in Chem.Bio.: Reinventing Biology Through Chemistry
	2018 (2)
MCDB 950 & 951	Second Year Research (Independent Study) 2018-2019

Current Trainees (13 total)

Graduate students (7 total): Micro: Cong Shen, MB&B: Peter Dahl, Catharine Shipps, Vishok Srikanth, Aldo Salazar-Morales, Joey Erwin, Pilar Castillo Portela (Co-mentor, Portugal)

Postdoctoral Researchers/Research Scientists (3 total): Matthew Guberman-Pfeffer, Jens Neu Sibel Ebru Yalcin

Undergraduate students (3 total): MCDB: 2019-Jerry Ruvalcaba, 2022 – Anthony Coelho

Current Positions of Past Trainees (35 total)

Faculty Positions (3): Jens Neu (Texas), Amber Hudspeth (Montana), Atanu Acharya (Syracuse, co-mentor)

Grad. School (4): D. Shapiro (Duke), T. De (NYU), A. Rodriguez (Yale, MB&B), D. Kashyap (Cambridge)

Professional Schools (4 total): Y. Gu (Postdoc-Cambridge), X. Ren (Postdoc-Cambridge), D. Vu (Yale School of Medicine), G. Mandava (Yale Institute of Biomolecular Design and Discovery)

Industry (5): P. O'Brien (Boston Consulting), W. Huynh (Finance). R. Jain (Artizan) R. Basak (Pharma)

Undergraduates (10 total): R. Qureshi (REU-Regulatory Coordinator at Maesa), N. Jabarullad (Exchange student - Singapore), Yale graduates – MBB: R. Hood, L. Delgado, M. Lee, MCDB: E. Li, Hyerim Bianca Nam. Physics: C. Sheen, Ecology & Evolutionary Biology: Hanwen Zhang, Vanessa Saldivar (REU) – UC Irvine.

Rotation Students (10 total): BQBS: S. Ganesa (2017-18), M. Cook, E. Santiago (2018-19), Z. Perry, A. Kammath, C. Freniere (2020-21), Andrew Rodriguez (2021-22). **Micro:** A. Verdegaal, E. Nand (2018-19), **MCGD**: G. Andrade (2019-20)

SERVICE *Internal Service*

Departmental Committee Work

- Graduate Admissions (2015-2017)
- Graduate Recruiting (2015-2017)
- Seminar Committee (2015-2016, 2016-2017, 2022-2023)
- Graduate Education and Advising 2015-2018, 2021-2022, 2022-2023
- Junior Faculty Search Committee (2019-2020), (2021-2022, postponed). Anonymous Faculty Search
- Writing Workshop (2019-)
- Retreat co-organizer (2019-20 and 2020-21 (in-charge), Sole organizer (2021-2022, 2022-2023)

Thesis Research Committees

Current (11 total); Chair (8 total) : MB&B students (10): Daniel Konstantinovsky (Hammes-Schiffer and Yan lab, Chemistry & MB&B), Luka Maisuradze (O'Hern Lab, Mech. Eng.-Chair), David Flesher (Brudvig lab, Chemistry & MB&B -Chair), Malvankar Lab Students: Peter Dahl, Catharine Shipps, Vishok Srikanth, Aldo Morales, Joey Erwin). Microbiology students (1): Cong Shen. MCDB Students (1): Akira Nakamura (Isaacs Lab), External Students (1): Pilar Castillo Portela (Portugal, Co-mentor).

Past (3 total), Chair (2 total): MB&B students: Patrick O'Brien (Ph.D.), Clorice Reinhart (Hammes-Schiffer Lab, Chemistry & MB&B); Gunashil Mandava (M.S.), MCDB students (1): Yangqi Gu

Qualifying Exam Committees (6 total): 2016 - Helen Su (Pollard lab, MCDB) Chair; 2017 - Kathy Amaya, (Schlieker Lab, MB&B) Chair, 2019 - Daniel Konstantinovsky (Hammes-Schiffer and Yan labs, Chemistry), 2021- Yuchen Yang (Kai Zhang Lab, MB&B), David Flesher (Brudvig lab, Chemistry & MB&B)

Undergraduate & Graduate Education

- Advisory Board Member for Undergraduate Science, Technology, & Research Scholars Program (2021-)
- Undergraduate advising/ Fellow of Timothy Dwight College (2016-)
- STEM undergraduate summer research fellowship review committee (2018-)
- Organizer, BBS welcoming event (2019)

Junior Faculty Hiring and Training

- Search Committee Member, Microbial Sciences Institute (2019-20) (2020-21), (2021-22), jointly with departments of Microbial Pathogenesis, Genetics, Cellular and Molecular Physiology, Immunobiology.
- Search Committee Member, Microbial Sciences Institute & Ecology & Evolutionary Biology (2022-23)
- Search Committee Member, Molecular Biophysics and Biochemistry (2019-20), (2021-22, postponed)
- Panel member, YSM New Faculty Orientation Program (2017)
- Panel member, FAS New Faculty Orientation Program (2020)
- Panel member, FAS Faculty development and support opportunities (2020) Yale Daily News article
- Presenter, FAS Dean's Funding and Grantsmanship Training Program (2021-)
- Presenter, Yale Office of Sponsored Projects Grantsmanship Training Program (Video) (2021-)

Other Administration

- Organizer, External Seminar Series, Microbial Sciences Institute (2017-2022)
- Organizer, Internal Seminar Series, Microbial Sciences Institute (2017-2022)
- Revson Senior Fellowships in Biomedical Science review committee (2019-)
- Executive Board Member, Microbial Sciences Institute (2015-)
- Member, Advisory Committee, West Campus Materials Characterization Core (2020-)
- Member, Advisory Committee, University Materials Characterization Core (2022-)
- Member, Yale University Cores Equipment Review Panel (2022-)

External Service

Distributed strains and plasmids to researchers in developing countries.

Reviewer for Promotion and Tenure to Full Professor: Tsinghua University (2021)

Reviewer for Funding Agencies (14):
- Invited nominator for MacArthur Fellows Program (About)
- Panel member, Dept. of Energy Biological & Environmental Research (2014-2015); (2019-2020).
- Panel member, National Science Foundation's Molecular and Cellular Biosciences cluster (2021-22)
- Brookhaven National Laboratory, Center for Functional Nanomaterials (2013 –2015) (2020-present)
- National Defense Science and Engineering Graduate Fellowship program (2021-present)
- National Science Foundation ad-hoc reviewer (2019-present)
- Dept. of Energy Basic Energy Sciences
- Dept. of Energy SBIR Program
- Dept. of Energy Office of Science Graduate Student Research program (2016)
- Keck Foundation (2021)
- The Fund for Scientific Research-FNRS (F.R.S.-FNRS) - Belgium (2021)
- The Research Foundation Flanders (FWO) - Belgium (2021, 2022)
- The Excellence of Science program for the Flemish and French speakers (2021)
- UK Research & Innovation Biotechnology and Biological Sciences Research Council (BBSRC) (2022)
- Dutch Research Council (NWO) (2022)
- European Research Council (ERC) Consolidator Grant (2022)

Reviewer for Journals (57): (in alphabetical order)
- Angew. Chem., Adv. Materials, Applied & Environ. Microbio., ACS Omega, Appl. Surface Sci.,
- BBA – Bioenergetics, Biotechnology & Bioengineering, Bioelectrochemistry, Biochemical Journal, Bioorganic Chemistry, Biotechnology Adv.,
- Chemical Science, ChemComm, ChemElectroChem, ChemSusChem, Chemical Engineering Journal,
- Environmental Microbiology Energy & Environ. Science, Environ. Science & Technology, Energy & Fuels, Environ. Eng. Sciences, Electroanalysis,
- Frontiers in Microbiology, FEMS: Pathogens & Disease,
- Geophysical Research Letters.
- International Society of Microbial Ecology, iScience, Institute of Electrical and Electronics Engineers,
- Joule, Journal of Biological Chemistry, Journal of Physical Chemistry, Journal of Chemical Physics, Journal of Energy Chemistry, Journal of Materials Science,
- Lab on a Chip, Langmuir,
- mBio, Microbiology, Microbial Biotechnology, Microbiology Spectrum
- Nature, Nature Micro., Nature Geoscience, Nature Nanotechnology, Nature Communications, Nano Letters, Nanoscale, Nanomedicine,
- PNAS, Physical Chemistry Chemical Physics, Physical Review E, PLOS One,
- RSC Advances, Research in Microbiology,
- Science, Science Partner Journal – Research, Scientific Reports (Nature Publishing Group),
- Wiley

Public Policy
- The Public Voices Fellow by the OpEd project, 2021-22.
- Yale Statement Maker Fellow, 2017-2018.
- Mentored Hanwen Zhang who received President's Public Service Fellowship
- Participant, Diversity Town Hall organized by Dept. of Mol. Biophysics and Biochemistry.
- Organized Diversity Town Hall and developed core values for the lab.
- Coordinator, Yale West Campus Junior PI Group (2015-)
- Organizer, Junior PI mentoring group with organizational scientist (2021-)

Selected Invited Talks

2023

- Gordon Research Conference: Metals in Biology. Ventura, CA January 23 - 28, 2023

2022

- Andlinger Center for Energy and the Environment, Princeton University, February 7, 2022
- Connecticut Microelectronic & Optoelectronics Consortium. University of Connecticut, 9 March 2022.
- Indian Biophysical Society Meeting, Mumbai, India. 31 March 2022
- Dept. of Physics, Arizona State University. 28 April 2022.
- MRS Symposium on Genetically encoded and bioinspired materials Honolulu, Hawaii, May 2022.
- Bioderived Electronics. Ein Gedi, Israel. May 2022
- Center for Nanoscale Materials, Argonne National lab. July 6, 2022.
- National Academies of Sciences, Engineering, and Medicine: Quantum Biology workshop, July 2022
- Gordon Research Conference: Molecular Basis of Microbial Metabolism, NH Aug. 7-12, 2022.
- European Nitrogen Cycle meeting, Rome, Italy. 28-30 September 2022. (Keynote)
- NSF Convergence Accelerator Workshop: Bioinspired Design. Harvard Wyss Institute, October 4, 2022.
- Microbiology Seminar Series, Dept. of Microbial Pathogenesis, Yale University. November 3, 2022.
- NSF Nanoscale Grantees panel on Quantum Biology. December 7, 2022.

2021

- Dept. of Physics, Colgate University, New York. 27 April 2021.
- NanoBioelectronics symposium, IEEE NANO, Montreal Canada, 28-30 July 2021.
- Dept. of Physics & Astronomy, Sacramento State University, California.. 7 October 2021.
- Electromicrobiology meeting. Session: Molecules, Aarhus, Denmark, 3-5 November 2021 (Keynote).
- Semi-synthetic-biology group, Dept. of ECE and BME, Boston University. November 2021.
- Department of Molecular Biology and Biochemistry, Simon Fraser University, Canada. 26 Nov. 2021
- Intracellular organization & material synthesis Workshop, Dept. of Energy, Dec 15-16, 2021.

2020

- Central Connecticut State University, New Britain, CT. Fall 2020 (postponed)
- Blavatnik semifinalist to pitch at the Office of Cooperative Research's Pitchfest, December.

2019

- Dept. of Material Science & Engineering. State University of New York, Stony Brook, 25 Oct. 2019.
- Dept. of Chemistry, University of Pennsylvania. 8 Oct. 2019
- American Geophysical Union. Centennial Session - Biogeophysics San Francisco 13 December 2019

2018

- Center for Theoretical Biophysics, Rice University. 7 Feb. 2018
- American Physical Society. Focus Session: Quantum effects in biology, Los Angeles 5 March 2018
- Blavatnik semifinalist. Selected to pitch at the Office of Cooperative Research's Pitchfest, April.
- Department of Chemistry, Tata Institute of Fundamental Research, Mumbai, India. 25 April 2018.
- International Society of Electrochemistry, Bologna, Italy. 4 September 2018.
- Pittsburgh Quantum Institute, University of Pittsburgh. 20 September 2018.
- Department of Chemistry, Rutgers University. 28 September 2018.
- Beyond Center. Arizona State University. 5 November 2018.

2017

- Dept. of Molecular Genetics & Microbiology, & Medicine, Duke University, September 27, 2017
- Gordon Research - Microbial Adhesion & Signal Transduction, Newport, RI. July 2017 (Keynote)

2016

- International Society for Electrochemistry, Hague, Netherlands, 25 August 2016 (Keynote)

- The Physics Club, Department of Physics, Yale University. February 1, 2016.

2015

- Yale Institute for Nanoscience and Quantum Engineering seminar, November 13, 2015.
- Physical and Engineering Biology Program, Yale University, Sept. 18, 2015
- Microbiology Retreat, Dept. of Microbial Pathogenesis Yale University Sept. 4, 2015.
- Energy Sciences Institute, Yale University September 2, 2015
- Center for Research on Interface Structures and Phenomena (CRISP), Department of Mechanical Engineering and Material Science Yale University. August 5, 2015.
- Microbiology & Immunology Dept., Geisel School of Medicine, Dartmouth College, NH. June 2015.
- Joint School of Nanoscience & Nanoengineering and Dept. of Physics, North Carolina A&T State University. June (declined)
- Department of Physics, University of Wisconsin-Milwaukee, 21 May 2015 (declined).
- Pacific Northwest National Laboratory (PNNL), Richland, Washington, 27 April 2015.
- Department of Physics, Portland State University. 22 April 2015.
- Department of Chemical Engineering, Texas Tech University. 10 April 2015.
- Dept. of Physics, Astronomy & Material Sci., Missouri State University, Springfield. March 2015.
- Department of Physics, SUNY Buffalo, NY. 19 February 2015.
- Microbial Sciences Institute and Dept. of Mol. Biophysics & Biochem., Yale University. 9 Feb. 2015
- Department of Physics and Astronomy, Iowa State University, Ames IA 22 January 2015
- Dept. of Microbiology & Physiological Systems, University of Mass. Med School, 7 Jan. 2015.

2014

- Department of Microbiology, University of Massachusetts, Amherst. 4 December 2014
- Department of Physics, University of Southern California, LA. 21 November 2014.
- Department of Physics, Union College, Schenectady, New York, October 16, 2014.
- NSF - Center for Hierarchical Manufacturing, University of Massachusetts, Amherst. Sept. 24, 2014.
- The Amherst Club, Amherst MA, August 5, 2014
- American Society of Microbiology Special session: Dispelling dogmas Boston, MA. May 18, 2014
- Center for Integrated Nanotechnologies (MPA-CINT), Los Alamos National Lab., March. 11, 2014.
- Dept. of Appl. Phys. Sci., University of North Carolina, Chapel Hill. Feb. 24, 2014.
- Department of Physics, University of Denver. Feb. 19, 2014.

2013

- Nano Science Technology Center, University of Central Florida. Dec. 10, 2013.
- Dept. of Organismic and Evolutionary Biology, Harvard University. Nov. 12, 2013.
- Office of Naval Research Biosciences and Biocentric Technology annual meeting 23-25 July 2013.
- Dept. of Biosciences & Bioengineering. Indian Institute of Technology, Bombay, March 4, 2013.

2012

- From the Meso-to-Nanoscale with X-ray Spectromicroscopy, *Brookhaven National Lab.*, Sept. 2012
- International Conference on Science & Technology of Synthetic Metals, Atlanta, Georgia, July 2012

2011

- American Physical Society Meeting News briefing, Boston, MA. 27 February 2011.
- Department of Physics seminar, University of Massachusetts, Amherst. November 2011
- Talent Advancement Program, University of Massachusetts, Amherst, September 2011.
- Center for Hierarchical Manufacturing, University of Massachusetts, Amherst. Sept. 2011.
- Conversations in Physical and Structural Biology, University of Mass., Amherst. 26 Sept. 2011.

2010

- Department of Energy Genomic Sciences meeting, February 2010, Crystal City, VA
- University of Massachusetts Microbiology departmental seminar, February 2010.