CURRICULUM VITAE

Jonathon Howard
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CONTACT

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EDUCATION

1979	B.Sc. (Hons)	Pure Mathematics (1st Class Honours), Australian National University, Canberra
1983	Ph.D.	Neurobiology (advisors S.B. Laughlin, A. Snyder), Australian National University
1984	Postdoctoral	Dept. Physiology, University of Bristol, UK (advisor: Jonathan Ashmore)
1985-87	Postdoctoral	Dept. Physiology, UC San Francisco, USA (advisor: A.J. Hudspeth)

ACADEMIC APPOINTMENTS

2015 - present	Fellow, Jonathan Edward College, Yale University
2014 - present	Professor of Physics (secondary appointment), Yale University
2013 - present	Eugene Higgins Professor of Molecular Biophysics & Biochemistry, Yale University
2019 - 2022	Director, Yale Quantitative Biology Institute, Yale University
2018 (Jan-Jun)	Visiting Professor, University of New South Wales, Australia
2017 - 2019	Co-Director, Yale Quantitative Biology Institute, Yale University
2001 - 2013	Honorary Professor of Biophysics, Physics Department, Technical University of Dresden
2000 - 2013	Director, Max Planck Institute of Molecular Cell Biology & Genetics
1997 - 2001	Professor, Department of Physiology & Biophysics, Univ. Washington, Seattle
1994 - 1997	Associate Professor, Department of Physiology & Biophysics, UW, Seattle
1989 - 1994	Assistant Professor, Department of Physiology & Biophysics, UW, Seattle
1988 - 1989	Assistant Research Physiologist, University of California in San Francisco

AWARDS AND HONORS

2017	Connecticut Academy of Arts and Sciences, elected Member
2017	Connecticut Academy of Science and Engineering, elected Member
2017	Fellow of the Biophysical Society
2016	Max Planck Society, external Member, MP Institute for the Physics of Complex Systems
2015	Pioneer Award, National Institutes of Health
2013	Honorary Master of Arts (MAH), Yale University
2013	Eugene Higgins Professor of Molecular Biophysics & Biochemistry, Yale University
2008	Timoshenko Fellow, Mechanical Engineering, Stanford University
2004	European Molecular Biology Organization (EMBO), elected Member,
2000	Max Planck Society, Member, Max Planck Institute for Molecular Cell Biology & Genetics
2000	MERIT Award, National Institute of Arthritis & Musculoskeletal & Skin Diseases
1990	Pew Scholar, Program in the Biomedical Sciences
1990	Alfred P. Sloan Research Fellow
1988	Fondation pour l'Etude du Système Nerveux Fellow
1981	M.G.F. Fuortes Traveling Scholar

1979 Australian Commonwealth Postgraduate Research Scholar
1976 Australian National Undergraduate Scholar

NAMED LECTURES

2015 Alan J. Hunt Memorial Lecture, University of Michigan
2014 Bragg Lecture, Physics of Living Matter, Cambridge, UK
2014 Arthur K. Parpart Endowed Lecture, Marine Biological Laboratory
2012 Max Birnstiel Lecture, Institute of Molecular Pathology, Vienna
2011 Arthur K. Parpart Endowed Lecture, Marine Biological Laboratory
2010 Russell Marker Lecture, University of Maryland
2010 Max Delbrück Lecture, IIT Kanpur Golden Jubilee
2009 Poincaré Seminar, Paris
2007 Mill Hill Lecture, National Institute of Medical Research, Mill Hill, London
2006 George A. Feigen Memorial Lecture, Stanford University
1993 New Investigator Science in Medicine Lecturer, University of Washington

PROFESSIONAL ACTIVITIES

2023 12th RIKEN Advisory Council, Wako, Japan
2022-2024 Editorial Board, Biophysical Journal
2021-2023 Standing Committee for the evaluation of the International Max Planck Centers
2019-2010 Max Planck-Humboldt Research Award in the Life Sciences, nomination committee
2019 11th RIKEN Advisory Council, Wako, Japan
2018-2023 Biophysical Society Awards Committee
2018-2022 Faculty Opinions (formerly Faculty of 1000)
2017-2024 Scientific Advisory Board, Physics of Life, Dresden, Germany
2017-2021 MFSC Study Section, NIH, member
2017-2021 Biophysical Society-Institute of Physics eBooks Editorial Advisory Board
2016 Chair, International Review Panel, Mechanobiology Institute (MBI), Singapore
2015 MFSC Study Section, NIH, ad hoc member
2015-2020 Scientific Advisory Board, Institute for the Physics of Living Systems, UC London
2013-2019 Scientific Advisory Board, Center for Advanced Electronics, Dresden, Germany
2013 9th RIKEN Advisory Council, Wako, Japan
2012-2017 Chair, Advisory Council, RIKEN Quantitative Biology Center (QBiC), Osaka
2012-2017 Editorial Board, Bioarchitecture
2011-2013 Chair, Perspectives Committee, Biomedical Section, Max Planck Society
2011-present Editorial Board, BMC Biophysics
2008-2012 Scientific Advisory Board, Casimir Research School, Delft & Leiden
2007-present Editorial Board, Cellular & Molecular Bioengineering
2007-2010 Scientific Advisory Board, Joliot-Curie Laboratory, Lyon
2007-2010 Scientific Advisory Board, Department of Nanosciences, University of Delft
2006-2010 Editorial Board, HFSP Journal
2002-2009 Editorial Board, Journal of General Physiology
2004-2006 Editorial Board, Nanotechnology, Technical E-Bulletin
2008-1010 Review Committee, ERC Senior Grants Program
2005-2007 Review Committee, HFSP Grants Program
2005 Review Committee, Cell Biology and Biophysics, EMBL
2002-03 Review Committee, VW Stiftung, Single Molecules
2001 NRC Physics & Engineering Panel, Bio2010: Undergraduate Biology Education
1996-1999 Biol-2, BBCB Study Sections, NIH, ad hoc member

PROFESSIONAL ORGANIZATIONS

American Association for the Advancement of Science

American Physical Society
American Society for Biochemistry & Molecular Biology
American Society for Cell Biology
Biophysical Society
Connecticut Academy of Arts & Sciences
Connecticut Academy of Science & Engineering
Deutsche Physikalische Gesellschaft
European Molecular Biology Organization
European Society for Mathematical & Theoretical Biology
German Biophysical Society
Institute of Physics
Max Planck Society
Society of General Physiologists

RESEARCH INTERESTS

Mechanics of motor proteins and the cytoskeleton
Cilia and flagella
Cell motility, mitosis
Neuronal morphogenesis
Mechanical signaling

SUMMARIES OF RESEARCH INTERESTS AND CONTRIBUTIONS

Biography

Jonathon (Joe) Howard is the Eugene Higgins Professor of Molecular Biophysics & Biochemistry, a Professor of Physics, and a member of the Quantitative Biology Institute at Yale University. He is best known for his research on the mechanical properties of motor proteins and the cytoskeleton, and the development of techniques for observing, measuring and manipulating individual biological molecules. His group studies several cellular systems in which force and motion play key roles, including the motility of cilia, and the branching of developing neurons.

Brought up in Australia, where he studied mathematics and neurobiology at the Australian National University, Professor Howard was a professor at the University of Washington Medical School in Seattle, a founding Director of the Max Planck Institute for Molecular Cell Biology and Genetics in Dresden, Germany, before moving to Yale 2013 where he enjoys new research projects and teaching.

Description of research for the non-specialist

The Howard laboratory is fascinated by the question of how small molecules like proteins, lipids and nucleotides self-organize into cells and tissues that are thousands or even millions of times larger than molecular dimensions. How do molecules know whether the structures that they have made are the right size, shape and composition? By using highly sensitive techniques to visualize and manipulate individual biological molecules, he is elucidating the interaction rules that allow molecules to work together to form cells, which are both highly organized and highly dynamic. How can cells maintain their shape and retain their memories even as they move and replace all their components?

Jonathon Howard's contributions to single-molecule and cellular biophysics

Jonathon (Joe) Howard is the Eugene Higgins Professor of Molecular Biophysics & Biochemistry, a Professor of Physics at Yale University, where he founded the Yale Quantitative Biology Institute. Brought up in Sydney Australia, he attended the Australian National University where he studied mathematics as an undergraduate and neurobiology for his PhD. He is best known for his research on motor proteins and the cytoskeleton, and the development of techniques for observing, measuring and manipulating individual biological molecules.

While a postdoctoral fellow with A.J. Hudspeth at the University of California, San Francisco (UCSF), Howard developed very precise mechanical techniques to study how hair cells of the inner ear detect

sound and acceleration. He measured the force necessary to open a single mechanically sensitive ion channel, the size of the conformational change that the ion channel undergoes as it moves from its closed to open conformation, and the number of mechanically-gated ion channels per hair cell (Howard & Hudspeth, 1988). He also discovered that hair cells adapt to sustained stimuli via a mechanical mechanism in which an active process, hypothesized and later confirmed to be driven by the motor protein myosin-1, regulates the tension on the channels (Howard & Hudspeth 1987).

At UCSF, and then as a faculty member at the University of Washington Medical School, Howard discovered that kinesin-1 is a processive motor protein, meaning that it takes hundreds of steps along a microtubule before dissociating (Howard et al. 1989). This finding explained how kinesin could carry cargos long distances in the axons of nerve cells. In subsequent work, his laboratory developed single-molecule biophysical techniques to characterize many of the fundamental mechanical properties of kinesin-1, including its path on the microtubule lattice (Ray et al. 1993), its force (Hunt et al. 1994, Meyhöfer & Howard 1995, Gittes et al. 1996), and the stoichiometry with which it couples ATP hydrolysis to stepping (Coy et al. 1999). He also made the first accurate measurements of the bending stiffness of microtubules using a now-widely used shape fluctuation method (Gittes et al. 1993, Mickey & Howard 1995) The culmination of this work was the writing of a monograph *Mechanics of Motor Proteins and the Cytoskeleton* published by Sinauer and Associates (Howard 2001).

In 2000 Howard moved to Germany, where he played a key role, as Director, in establishing the Max Planck Institute for Molecular Cell Biology and Genetics in Dresden, one of the most successful research institutes in Europe. Continuing his single-molecule studies, his group showed that kinesin-related proteins don't just move on microtubules but also regulate the growth and shrinkage of these polymers. He showed that the kinesin-13 MCAK depolymerizes microtubules from both ends and, rather than walking directionally along the microtubule, targets the ends through a diffusion and capture mechanism, the first measurement of individual proteins diffusing along polymers (Helenius et al. 2006). His group discovered that the budding yeast kinesin-8, Kip3, is a microtubule depolymerase that depolymerizes long microtubules faster than short ones (Varga et al. 2006)! He found that the microtubule polymerase XMAP215 "surfs" the growing microtubule end, meaning that it stays at the end over several rounds of tubulin addition (Brouhard et al. 2008).

After moving back to the Unites States in 2013, Howard has maintained his interest in motor proteins and the microtubule cytoskeleton. He discovered that the budding yeast kinesin Kip2 is a microtubule polymerase that uses its processive motility as a part of a positive feedback loop to switch short microtubules to long ones (Hibbel et al. 2015). Recently the group discovered that the microtubule severing enzyme spastin has a nucleation-like activity that promotes microtubule regrowth and leads to an amplification of microtubule number and mass (Kuo et al. 2019). His group has a track record of using innovative optical and mechanical techniques, such as interference reflection microscopy (Mahamdeh et al. 2018). for quantitative measurements of molecules and cells (Liao et al. 2022). Thus, the Howard lab has demonstrated the remarkable diversity of microtubule-associated proteins in regulating dynamics.

In addition to these molecular studies, the Howard group has worked on the mechanics and energetics of several fundamental cellular processes, all involving motor proteins and the cytoskeleton.

- The group used magnetic tweezers to measure the force generated by growing and shrinking microtubules to move the mitotic spindle to the cell center prior to chromosome segregation (Garzon-Coral et al. 2016). They also showed that during asymmetric cell division dynein provides the force to displace the spindle away from the cell center so that division produces and large and small cell (Pecreaux et al. 2006, 2016). The final spindle position is a balance between these two processes.
- In experimental and theoretical studies on cilia and flagella, they showed that mechanical interactions between dyneins drive the oscillating beating patterns of motile cilia and flagella (Sartori et al. 2016, Geyer et al. 2016) and that the ciliary beat is robust again environmental, pharmacological, and genetic perturbation (Geyer et al. 2022).
- Using calorimetry, they discovered that during early embryogenesis in vertebrates, dividing cells dissipate heat at different rates during the cell cycle, and, surprisingly, heat oscillations arise from biochemical machinery that dirces the cell cycle, rather than for example DNA synthesis or cell division. (Rodenfels et al. 2019).

- The lab has an ongoing interest in mechanoreceptors: their hypothesis that the TRP channel NOMPC uses its ankyrin-repeat domain as a helical spring that conveys force to the channel's pore (Howard & Bechstedt 2004, Liang et al. 2013) has recently been supported by structural studies (reviewed in Liang & Howard 2017). Recently, we used optical tweezers to directly stimulate cilia in the vertebrate left-right organizer and showed that they are mechanoreceptors whose activation is necessary and sufficient to induce left-right asymmetry of the internal organs during development (Djenoune et al. 2023).
- Currently, the group is investigating how the dynamical growth and shrinkage of neuronal dendrites gives rise to the highly branched morphology of neurons. We have shown that branching, growth and retraction of dendrites accounts for the growth of dendrites during development, and for the density, length and orientation of their branches (Shree et al. 2022, Ouyang et al. in preparation). We discovered that dendrites have a scale-invariant network architecture that optimizes their function and metabolism (Liao et al. 2023). In future work we hope to elucidate the machinery that generates he forces required to drive branching morphogenesis.

Specialized Terms: Motor proteins, Cytoskeleton; Microtubule dynamics; Cell motility; Mitosis; the Axoneme; Neuronal Morphology, Optical tweezers, Single-molecule biophysics; Hair Cells

Publications: see "Jonathon Howard" on Google Scholar

CURRENT RESEARCH: THE MECHANICS OF MOTOR PROTEINS AND THE CYTOSKELETON

The Howard lab is fascinated by the question of how small molecules like proteins, lipids and nucleotides self-assemble into cells and tissues that are thousands to millions of times larger than molecular dimensions. How do the molecules know where they are, whether the structures they make have the right size and shape, and whether they function correctly? By combining highly sensitive techniques to visualize and manipulate individual biological molecules, with theory and modeling, the Howard lab is trying to understand the interaction rules that allow molecules to work together to form highly organized yet dynamic cellular structures.

The research focuses on the biochemistry and biophysics of the cytoskeleton, with particular emphasis on the mechanics of microtubules and microtubule-based motor proteins. On the one hand, the lab is interested in the mechanisms by which these proteins work: that is, how do kinesins and dyneins act as molecular machines to convert chemical energy derived from the hydrolysis of ATP into mechanical work used to move along or to depolymerize microtubules? And, on the other hand, the lab is interested in the roles that microtubules and their motors play in shaping and moving cells and tissues. For example, how do the dynamic properties of microtubules drive spindle and chromosome movements in mitosis, and how does dynein drive axonemal motility? What roles do microtubules and their motors play in mechanoreception in sensory cells and in shaping neurons in the brain?

Our starting point to understanding the self-organization of molecules is to characterize the interactions between the individual motor and cytoskeletal molecules in vitro and in vivo using single-molecule techniques. These interactions constitute a form of mechanical signaling. We then use theory to predict how the interactions lead to the collective behavior of ensembles of molecules, and then test these predictions with quantitative in vivo experiments. The lab combines several techniques—single-molecule fluorescence, optical and magnetic tweezers, image processing, modeling, molecular biology, nanofabrication and nanofluidics, and electron microscopy.

PUBLICATIONS ☆☆☆ Top twenty ☆☆ Favorite ☆ Starred

Citation analysis: Google Scholar (January 2024)
Jonathon Howard's publications have been cited 34,000 times, including the monograph *Mechanics of Motor proteins and the Cytoskeleton*, which has been cited more than 3000 times. Howard's H-index is 91. See "Jonathon Howard" on Google Scholar. Peer reviewed and not peer reviewed.

2023

210. Glomb O, Swaim G, LLancao PM; Lovejoy C, Sutradhar S, Park J, Wu Y, Cason S, Holzbaur E, Hammarlund M, Howard J, Ferguson S, Gramlich MW, Yogev S. (2023) *Developmental Cell* **58**:1847-1863. e12 https://doi.org/10.1016/j.devcel.2023.08.031

☆☆ 209. Liao, M., Bird, A. D., Cuntz, H., & Howard, J. (2023). Topology recapitulates ontogeny of dendritic arbors. *Cell Report* **42**, PMC10756852. 113268 doi.org/10.1016/j.celrep.2023.113268

☆ 208. Al-Hiyasat A, Tuna Y, Kuo K-W and Howard J (2023). Herding of proteins by the ends of shrinking polymers. *Phys. Rev. E* **107**: L042601. PMID: 37198784 https://doi.org/10.1103/PhysRevE.107.L042601

207. Luchniak L, Kuo YW, McGuinness C, Sutradhar, Orbach R, Mahamdeh M & Howard J (2023). Dynamic microtubules slow down during their shrinkage phase. *Biophys. J*. **122**: 616–623. https://www.biorxiv.org/content/10.1101/2022.07.27.501773v1

☆☆ 206. Djenoune L, Mahamdeh M, Truong TV, Nguyen CT, Fraser SE, Brueckner M, Howard J, Yuan S (2023). Cilia function as calcium-mediated mechanosensors that instruct left-right asymmetry. *Science* **379**: 71-78 PMC9939240. https://doi.org/10.1126/science.abq7317

2022

205. Howard J, Chasteen A, Ouyang X, Geyer VF and Sartori P (2022) Predicting the locations of force-generating dyneins in beating cilia and flagella. *Front. Cell Dev. Biol.* **10**:995847.33 doi: 10.3389/fcell.2022.995847.

☆☆☆ 204. Kuo YW, Mahamdeh M, Tuna Y and Howard J (2022). The force required to remove tubulin from the microtubule lattice by pulling on its α-tubulin C-terminal tail. *Nature Communications* **13**: 1-10. PMCID: PMC9233703 https://www.biorxiv.org/content/10.1101/2022.03.28.486117v1

☆☆☆ 203. Shree S, Sutradhar S, Trottier O, Tu Y, Liang X, & Howard J (2022) Dynamic instability of dendrite tips generates the highly branched morphologies of sensory neurons. *Science Advances* **8**: eabn0080, PMC9242452, DOI: 10.1126/sciadv.abn0080

202. Yazgan Tuna, Amer Al-Hiyasat, and Jonathon Howard (2022) Imaging dynamic microtubules and associated proteins by simultaneous interference-reflection and total-internal-reflection-fluorescence microscopy. JoVE (Journal of Visualized Experiments), e63730 https://arxiv.org/abs/2201.07911

☆☆ 201. Geyer V, Howard J & P Sartori. P (2022) Ciliary beating patterns map onto a low-dimensional behavioral space that accords with a simple mechanochemical model. *Nature Physics* **18**: 332-337. https://doi.org/10.1038/s41567-021-01446-2

200. Liao M, Kuo YW, Howard J. (2022) Counting fluorescently labeled proteins in tissues in the spinning-disk microscope using single-molecule calibrations. *Mol Biol Cell*. **15**: ar48. PMC9265152 doi: 10.1091/mbc.E21-12-0618. https://doi.org/10.1091/mbc.E21-12-0618

2021

☆ 199. Rao Q, Wang Y, Chai P, Han L, Kuo Y-W, Yang R, Hu F, Yang Y, Howard J & Zhang K (2021) Structures of outer-arm dynein array on microtubule doublet reveal a motor coordination mechanism. *Nat. Struct. Mol. Biol*. **28**: 799-810 PMID: 34556869 DOI: 10.1038/s41594-021-00656-9

198. Basak R, S Sutradhar S & J Howard J (2021) Focal laser stimulation of fly nociceptors activates distinct axonal and dendritic Ca2+ signals. *Biophys. J.* **120**: 3222-3233

PMID: 34175294 PMCID: PMC8390926 DOI: 10.1016/j.bpj.2021.06.001

197. Yang X, Heinemann M, Howard J, Huber G, Iyer-Biswas S, Le Treute G, Lynch M, Montooth KL, Needleman DJ, Pigolottik S, Rodenfels J, Ronceray P, Shankar S, Tavassoly I, Thutupallir S, Titov DV, Wang J and Foster PJ (2021) Physical bioenergetics: Energy fluxes, budgets, and constraints in cells. *Proc. Natl. Acad. Sci.* **118**, e2026786118.
PMID: 34140336 PMCID: PMC8255778 DOI: 10.1073/pnas.2026786118

196. Kuo Y-W, & Howard J (2021) In vitro reconstitution of microtubule dynamics and severing imaged by label-free interference reflection microscopy. In: *Microtubules - Methods and Protocols. Meth Mol Biol (Springer Protocols)* (in press).

☆☆ 195. Liao M, Liang, X & Howard J (2021) The narrowing of dendrite branches across nodes follows a well-defined scaling law. *Proc. Natl. Acad. Sci.* **118**, e2022395118.
PMID: 34215693 PMCID: PMC8271565 DOI: 10.1073/pnas.2022395118

☆ 194. Kuo Y-W, & Howard J (2021) Cutting, amplifying, and aligning microtubules with severing enzymes. *Trends in Cell Biology*. **1**:50-61. PMC7749064 DOI: 10.1016/j.tcb.2020.10.004

2020

193. Orbach R and Howard J (2020) Purification of ciliary tubulin from *Chlamydomonas reinhardtii*. *Current Protocols in Protein Science*. **100** (1), e107 http://dx.doi.org/10.1002/cpps.107

☆ 192. Rodenfels J, Sartori, P Golfier S, Nagendra K, Neugebauer KM, and Howard J (2019) Contribution of increasing plasma membrane to the energetic cost of early zebrafish embryogenesis. *Molecular Biology of the Cell* **31**: 520-526

191. Howard, J., and Hancock, W.O. (2020). Three Beads Are Better Than One. *Biophys. J*. **118**, 1–3.

2019

☆ 190. Kuo Y-W, Trottier O & Howard J (2019) Predicted effects of severing enzymes on the length distribution and total mass of microtubules. *Biophys J* **117**: 2066-2078. PMC6895720. https://doi.org/10.1016/j.bpj.2019.10.027

189. Mahamdeh M and Howard J (2019) Implementation of interference reflection microscopy for label-free, high-speed imaging of microtubules. *J Vis Exp* (150), e59520. doi:10.3791/59520

☆ 188. Feofilova M, Mahamdeh M, and Howard J (2019). The Kinetics of Nucleotide Binding to Isolated Chlamydomonas Axonemes Using UV-TIRF Microscopy. *Biophys J* **117**: 679–687. doi: 10.1016/j.bpj.2019.07.004

187. Luchniak, A., Mahamdeh, M., and Howard, J. (2019). Nicotinamide adenine dinucleotides and their precursor NMN have no direct effect on microtubule dynamics in purified brain tubulin. *PLoS ONE* **14**, e0220794. doi: 10.1371/journal.pone.0220794

☆ 186. Khataee H and Howard J (2019) Force generated by two kinesin motors depends on load direction and intermolecular coupling. *Phys Rev Lett*. **122**, 188101. doi: 10.1103/PhysRevLett.122.188101

☆☆ 185. Orbach R and Howard J (2019) The dynamic and structural properties of axonemal tubulins support the high length stability of cilia. *Nat Comms* **10**, 1838. doi: 10.1038/s41467-019-09779-6

☆☆ 184. Kuo Y-W, Trottier O, Mahamdeh M and Howard J (2019) Spastin is a dual-function enzyme that severs microtubules and promotes their regrowth to increase the number and mass of microtubules. *PNAS* **116**, 5533–5541. http://doi.org/10.1073/pnas.1818824116.

☆☆☆ 183. Rodenfels J, Neugebauer KM, and Howard J (2019) Heat oscillations driven by the embryonic cell cycle reveal the energetic costs of signaling. *Developmental Cell* **48**: 646–658. http://doi.org/10.1016/j.devcel.2018.12.024

2018

☆☆ 182. Mahamdeh, M., Simmert, S., Luchniak, A., Schäffer, E., and Howard, J. (2018). Label-free high-speed wide-field imaging of single microtubules using interference reflection microscopy. *J Microsc*. doi:10.1111/jmi.12744, PMID 30044498

181. Garzon-Coral C & Howard J (2018). Cell Biology: Stars take centre stage. *Nat. Phys.* doi: 10.1038/s41567-018-0164-2
180. Liang, X. and Howard, J. (2018). Structural Biology: Piezo Senses Tension through Curvature. *Curr Biol*. **28**: R357-R359.
179. Geyer VF, Sartori P, Jülicher F, & Howard J (2018). Computational modeling of dynein activity and the generation of flagellar beating waveforms. In *Dyneins* (1st ed., pp. 192–212). Academic Press.

2017

178. Liang, X., and Howard, J. (2017). Structural Biology: A force-sensitive ion channel springs to life. *Curr Biol* **27**, R1017–R1020.
☆ 177. Howard J & Garzon-Coral C (2017) Physical limits on the precision of mitotic spindle positioning by microtubules pushing forces. *Bioessays*. Doi:01.1002/bies.201700122 (Epub)

2016

176. Ganguly S, Trottier O, Liang X, Bowne-Anderson H & Howard J (2016) Morphology of fly larval Class IV dendrites accords with a random branching and contact based branch deletion model. arXiv preprint arXiv:1611.05918. https://arxiv.org/abs/1611.05918
175. Coombes, C., Yamamoto, A., McClellan, M., Reid, T.A., Plooster, M., Luxton, G.W.G., Alper, J., Howard, J., and Gardner, M.K. (2016). Mechanism of microtubule lumen entry for the α-tubulin acetyltransferase enzyme αTAT1. *PNAS* **113**, E7176–E7184.
☆ 174. Sartori, P., Geyer, V.F., Howard, J., and Jülicher, F. (2016). Curvature regulation of the ciliary beat through axonemal twist. *Phys. Rev. E* **94**, 042426.
☆☆ 173. Pecreaux J, Redemann S, Alayan Z, Mercat B, Pastezeur S, Garzon-Coral C, Hyman AA & Howard J (2016) The mitotic spindle in the one-cell *C. elegans* embryo is positioned with high precision and stability. *Biophys. J.* **111**:1773-1784. PMC5071606
172. Xiao X, Geyer VF, Bowne-Anderson H, Howard J & Sbalzarini, IF (2016) Automatic optimal filament segmentation with sub-pixel accuracy using generalized linear models and B-spline level-sets. *Medical Image Analysis* **32**, 157–172.
☆☆☆ 171. Garzon-Coral C, Fantana H & Howard J (2016) A force-generating machinery maintains the spindle at the cell center during mitosis. *Science* **352**, 1124–1127. science.sciencemag.org/content/352/6289/1124
☆ 170. Battle C, Broedersz CP, Fakhri N, Geyer VF, Howard J, Schmidt CF & MacKintosh FC (2016). (2016). Broken detailed balance at mesoscopic scales in active biological systems. *Science* **352**, 604–607.
☆☆ 169. Geyer VF, Sartori P, Jülicher F & Howard J (2016) Independent control of static and dynamic components of the Chlamydomonas flagellar beat. *Current Biology* **26**, 1098–1103.
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☆ 167. Carrillo Oesterreich F, Herzel L, Straube K, Hujer K, Howard J, & Neugebauer KM (2016). Splicing of nascent RNA coincides with intron exit from RNA polymerase II. *Cell* **165**, 372–381.
☆☆☆ 166. Sartori P, Geyer VF, Jülicher F & Howard J (2016) Dynamic curvature regulation accounts for the symmetric and asymmetric beats of *Chlamydomonas* flagella. *eLife* **5**, 343-368. elifesciences.org/articles/13258

2015

☆ 165. Bowne-Anderson H, Hibbel A, & Howard J (2015). Regulation of microtubule growth and catastrophe: unifying theory and experiment. *Trends Cell Biol* **25**: 769-779.
☆☆ 164. Hibbel A, Bogdanova A, Mahamdeh M, Jannasch A, Storch M, Schäffer E, Liakopoulos D & Howard J (2015). Kinesin Kip2 enhances microtubule growth in vitro through length-

dependent feedback on polymerization and catastrophe. *eLife* **4** e10542. doi: 10.7554/eLife. PMID: 26576948. elifesciences.org/articles/10542

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2014

☆ 162. Alper JD, Decker F, Agana B & Howard J (2014) The motility of axonemal dynein is regulated by the tubulin code. *Biophys. J*. **107**: 2872–2880. PMC 4808650

☆ 161. Liang X, Madrid J & Howard J (2014) The microtubule-based cytoskeleton is a component of a mechanical signaling pathway in fly campaniform receptors. *Biophys J*. **107**: 2767–2774. doi: 10.1016/j.bpj.2014.10.052. PMCID: PMC4269791

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☆☆ 158. Mukundan V, Sartori P, Geyer VF, F. Julicher F & Howard J (2014). Motor regulation results in distal forces that bend partially disintegrated Chlamydomonas axonemes into circular arcs. *Biophysical J.* **106**:2434-42.

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1983

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5. Howard, J. (1983) Variations in the voltage response to single quanta of light in the photoreceptors of *Locusta migratoria*. *Biophys. Struct. Mech*. **9**:341-348, 1983.

1982

4. Howard, J. (1982) *Kinetics and Noise of Transduction by Insect Photoreceptors*. Ph.D. Thesis, Australian National University, Canberra.

1981

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PATENTS

1. Method of producing three-dimensional structures using motor proteins
https://patents.google.com/patent/WO2004096831A3/ru
Stefan Diez, Cordula Reuther, Jonathon Howard, Ralf Seidel, Michael Mertig, Wolfgang Pompe, Max Bergmann
Worldwide applications: 2009 WO
Application PCT/EP2004/004630 events
Priority claimed from EP03009938.6

2004-04-30: Application filed by Max Planck Gesellschaft, Univ Dresden Tech
2004-11-11: Publication of WO2004096831A2
2005-03-03: Publication of WO2004096831A3

2. Optical trapping particle and optical trapping method
Inventors: Volker Bormuth, Anita Jannasch, Alfons Van Blaaderen, Jonathon Howard, Erik SCHÄFFER
Worldwide applications: 2009 WO
Application PCT/EP2009/001425 events
Priority claimed from EP08152033.0
2009-02-27: Application filed by MAX-PLANCK-Gesellschaft zur Förderung der Wissenschaften e.V.
2009-09-03: Publication of WO2009106348A2
2009-11-12: Publication of WO2009106348A3

CONFERENCES AND SYMPOSIA ORGANIZED

2018

Mechanobiology Down Under (co-organizer with Maté Biro and Kate Poole), Sydney, 3-4 May, 2018

2016

Biophysical Society Annual Meeting Symposium: Structure and Motion of Cilia and Flagella (Chair), Los Angeles, 28 February

2014

Physical Concepts in Biology, Yale University, 10 October (co-Organizer with Thomas Appelquist, Thierry Emonet, Nicolas Read)

2012

Force Transduction & Emerging Ion Channels, Berlin, 9-12 May 2012 (co-Organizer with Martin Göpfert and Gary Lewin)

Max Planck Symposium, Biodiversity, Berlin, 5-6 March 2012 (Organizer)

2011

American Society for Cell Biology Annual Meeting Minisymposium, 5 December 2011 (co-Organizer with Pat Wadsworth)

2010

"Mechanics of Cells and Tissues", 101st International Titisee Conference, 17-21 March 2010 (Organizer)

2008

Max Planck Society Section Symposium, Berlin, 27-28 November 2008 (Organizer)

Gordon Research Conference: "Muscle & Molecular Motors", Colby-Sawyer College, NH, 29 June - 4 July, 2008 (Session Chair)

2007

"Engineering Life Symposium: NanoDogs and NanoCities", Dresden, 3-7 December, 2007 (Organizing Committee, Daniel Müller organizer)

2006

MPI-PKS Workshop: "Physics of Biological Systems", Dresden, 19-23 June, 2006 (co-Organizer with Frank Jülicher and Tony Hyman)

2005

Nobel Symposium: "Controlled Nanoscale Motion in Biological and Artificial Systems" Baekaskog Castle, Sweden, June 13-17, 2005 (Scientific Advisory Committee, Heiner Linke organizer)

2003

ELSO Minisymposium, "Molecular Motors", Dresden, 20-24 September 2003 (Session Chair)

MPI-PKS Workshop and Seminar: "Motion, Sensation, and Self-organization in Living Cells" Dresden October 20-31, 2003 (co-Organizer with Karsten Kruse, Frank Jülicher and Jacques Prost)

Biophysical Society Symposium: "Microtubule Motors: Structures and Mechanisms" San Antonio Texas, 1-5 March 2003 (Symposium Chair)

2002

German Biophysics Society Annual Meeting, Dresden 8-11 September 2002 (Co-organizer with Daniel Mueller)

MPI-CBG Opening Symposium: "From Molecules to Tissues", Dresden, 24-27 March 2002 (Organizer)

2001

1st International MtBio Workshop: "Function and Regulation of Cellular Systems: Experiments and Models", Dresden, 25-29 June, 2001 (co-Organizer with Andreas Deutsch, Martin Falcke and Walter Zimmermann)

American Physical Society Symposium: "From Protein Machines to Cellular Oscillators" Seattle, WA, 15 March 2001 (Session Chair)

2000

University of Washington Symposium: "Frontiers of Biological Physics", 26 February 2006 (co-Organizer with Michael Schick)

1998

Biophysical Society Motility Subgroup: “Celebrating Motility, Contractility, and Elasticity: Actin, Kinesin, Myosin, and Titin”, Kansas City, 22 February 1998 (co-Organizer with Christine Cremo)

INVITED LECTURES

2023

Colloquium, Rice University, Houston TX, 28 November
Symposium: Multiscale Integration in Biological Systems, Institute Curie, Paris, 8 November
Physics of Living Systems: From Physical Principles to Biological Function, Dresden July 3-7
Workshop on Signatures of Nonequilibrium Fluctuations in Life, ICTP, Trieste, 15-19 May
Frontiers of Biophysics Seminar Series, Purdue University, 5 April 2023
Muscles, Nerves, & Trachea Meeting, CCB, FlatIron Institute, 17 February 2023
Center for Computational Biology (CCB), FlatIron Institute, 16 February 2023

2022

Soft Matter and Biophysics, Weizmann Institute for Science, 30 October 2022
Festschrift for Steve Block, Stanford University, 15 October 2022
Space, Time, and Life, 124th Boehringer Ingelheim Fonds Titisee Conference, 15 September, 2022
Bar-Ilan University, 13 September 2022
Summer School: Introduction to Biological Physics, Weizmann Institute of Science, 10 September 2022,
Structural Biology Research Centre, Human Technopole, Milan, 21 June 2022
EMBO: Microtubules: from atoms to complex systems. Heidelberg, 9 June 2022
MPI-CBG, Dresden, 4 May 2022
Champalimaud Foundation, Lisbon, 28 April 2022
Instituto Gulbenkian de Ciência, Lisbon, 15 February 2022 (upcoming)
The Catholic University of America, Washington DC, 31 January 2022

2021

Motors in Quarantine, University of Warwick, 27 October 2021
Instituto Gulbenkian de Ciência, Lisbon, 1 October 2021
Instituto Gulbenkian de Ciência, Lisbon, 30 September 2021
Oxford Mathematical Brain Modelling Group, 11 May 2021
Biophysics and Physical Biology (BPPB) Lecture, 5 February 2021
Biophysics and Physical Biology (BPPB) Tutorial, 5 February 2021

2020

International Center for Theoretical Science, Bangalore, India, December 15
Max Plank Institute for Dynamical Systems, Göttingen, October 27
Molecular Medicine, Cornell University, August 6
Biophysical Society Annual Meeting, Motility Subgroup, San Diego, CA, February 15

2019

Cell Energetics, Kavli Institute for Theoretical Physics, UC Santa Barbara, 19 December
Workshop on Dynamics, Randomness, & Control in Molecular & Cellular Networks, Harvard, 12 Nov.
Semmelweis Symposium, Keynote, Budapest, 7 November, 2019
Systems Biology Retreat, Yale University, 24 October
Physical Biology of the Cell Course, Marine Biological Laboratory, Woods Hole MA, 12 August
Gordon Research Conference: Epithelial Differentiation and Keratinization, Newry ME, 8 July
Front Range Cytoskeleton Meeting, Fort Collins CO, 27 June
6th Annual Biophysics and Structural Biology Symposium, Yale University, 26 May

Micromotility, Istituto Veneto di Scienze, Lettere ed Arti, 25 March
Laboratory of Molecular Biology, Cambridge, 22 March
School of Life Sciences, University of Nottingham, Nottingham, 21 March
Centre for Mechanochemical Cell Biology, Warwick Medical School, 20 March
Unity & Diversity of Ciliary Systems in Locomotion & Transport, Chicheley Hall, Buckinghamshire, 18 March
Heraeus Seminar: Physics and Physiology of Motile Cilia, Bad Honnef, 28 January

2018 (368 to date)

Simons Workshop on Nonequilibrium Physics in Biology, Stony Brook, 3 December
School of Management Dean's Talk: A conversation with Joe Howard, 28 November
Summer School: Research Lecture, Weismann Institute, Tel Aviv, 9 October
Summer School: Lecture, Weismann Institute, Tel Aviv, 7 October
MPI Complex Dynamics, Göttingen, 4 October
Mathematics of the Cell, Banff, 23 August
Physical Biology of the Cell Course, MBL, Woods Hole, 3 August
EMBL Australia, Sydney, 3 July
Garvan Institute, Sydney, 2 July
The Charles Perkins Centre, Sydney University, 28 June
School of Biotechnology and Biomolecular Sciences (BABS), UNSW, Sydney, 1 June
Mechanobiology Institute, National University of Singapore, 15 May
Physics Colloquium, Queensland University, 11 May
Queensland Brain Institute, Queensland University, Brisbane, 11 May
University of Wollongong, 9 May
Mechanobiology Down Under, Sydney, 3 May
Victor Chang Institute, Sydney, 23 April
Advanced Innovation Lecture for Structural Biology, Tsinghua University, Beijing, April 11
Australian Regenerative Medicine Institute, Monash University, Melbourne, 9 March
Single Molecule Science, University of New South Wales, Sydney, 15 February
ICTS@10, International Center for Theoretical Sciences, Bangalore, 4-6 January

2017 (347 to date)

Biophysics Seminar Series, MIT, 8 November
International Workshop Dynein, Hyogo, Japan, 28 October
27th Solvay Conference on Physics, Brussels, Belgium, 19 October
Winfried Denk Symposium, Munich, Germany, 16 October
Virginia Tech, Colloquium Series, Blacksburg, VA, 31 August
Physical Biology of the Cell Course, Marine Biology Laboratory, Woods Hole, MA, 23 August
Colloquium Series, "Life in Numbers", Berlin, Germany, 22 June
Max Planck Institute, Martinsried, Germany, 23 June
Center for Systems Biology, Dresden, Germany, 31 May
Biophysics Symposium, University of Maryland, 9 May
Science and Engineering Forum, Yale University, 3 May
Flatiron Institute, Simons Center, New York, NY, 21 March
Gordon Research Conference: Stochastic Physics in Biology, Ventura, CA, 10 January

2016

Interdepartmental Colloquium, Berkeley, 21 November
MPI-CBG, Dresden, 27-29 October
KIAS, Jeju Island, Korea, 24-27 July
Muscle and Motor Proteins, Gordon Research Conference, Vermont, 22-27 July
University of Tübingen, 2 June
Microtubules: From Atoms to Complex Systems, EMBO Symposium (Landmark Lecture), Heidelberg, 1 June

Laufer Center, SUNY Stony Brook, NY, 6 May
Physics, Brown University, Providence RI, 2 May
The Company of Scholars Lecture, Yale University, 26 April
Biochemistry and Molecular Biophysics, Washington University, St. Louis,
Center for Studies in Physics and Biology, Rockefeller University, New York, 12 April
Bioengineering, Stanford University, Palo Alto, 17 March
Cell and Genome Sciences, University of Connecticut Health Science Center, 10 March
Physics, University of California San Diego, 3 March
Symposium: Structure and Motion of Cilia and Flagella (Chair), Biophysical Society Annual Meeting, Los Angeles, 28 February
Physics, Duke University, 17 February
National Institute of Genetics, Mishima, Japan, 9 February
Cell Biology and Physiology Center, NHLBI, NIH, Bethesda, 4 February
New York Symposium on Quantitative Biology of the Cell (Keynote), Columbia University, 15 January

2015

Alan J. Hunt Memorial Lecture, Biomedical Engineering, University of Michigan, 13 November
Mechanotransduction in Biological Systems, Big Bend, TX, 7 October
New England Muscle & Motors Workshop, U. Mass, Amherst, 1 August
Keynote, Gordon Research Conference, Contractile & Motile Systems, Colby-Sawyer College, July 19
Physiology Course Lecture, MBL, Woods Hole, June 30
Pennsylvania Muscle Institute, University of Pennsylvania, June 8
Physics, Princeton University, 27 April
Biology, University of Georgia, Athens, 7 April
MPI-PKS, Dresden, 23 March
Biophysics, UT South Western MS, 12 March
Biophysics, Chicago, 10 March
American Physical Society, Physics Education Symposium, San Antonio, 4 March
Biochemistry, Brandeis University, Boston, 27 February
Courant Institute, NYU, 5 February
Biomedical Engineering, Columbia University, NY, 23 January

2014

Department of Molecular Cellular and Developmental Biology Seminar, Yale, September 24
Bragg Lecture, Physics of Living Matter 9, Cambridge, UK 19 September 2014
Arthur Parpart Lecture, Marine Biological Laboratory, Woods Hole, 31 July 2014
Departments of Physiology, Pharmacology and Anatomy, University of NSW, 27 June, 2014
Garvan Institute, Sydney, 25 June, 2014
Gordon Research Conference on Physics Research and Education, South Hadley, MA, June 9
Boston Mechanobiology Seminar (Key Note), Harvard University, May 22
Engineering and Physical Biology Symposium, Harvard University, 26 April
Department of Biological Sciences, Birkbeck College, London, 31 March
Mechanochemical Cell Biology, Warwick University Medical School, 28 March
Laboratory for Molecular and Cellular Biology, UC London, 27 March
Navigating the Cell, Wiston House, West Sussex, 23 March
Physics Lunchtime Talk, Physics Department, Yale University, 7 March
Skirball Institute, New York University, 4 March
Department of Cellular & Molecular Physiology, Yale University, 27 February
Sackler Research Seminar, Yale University, 21 February
Department of Cell Biology, Harvard Medical School, 20 February
~~Understanding the Physics of Life, Oxford, 9 January~~ (cancelled)

2013

Physics Club, Yale University, 18 November
University of North Carolina, Rayleigh, 15 November
Duke University, Durham, 14 November
3rd Yale Biophysics & Structural Biology Symposium, Yale University, 8 November
Almers Symposium: The Biophysics of the Excitable Cell, Vollum Institute, Portland, 9 August
Vollum Institute, Portland, 8 August

2012

Keynote talk: "Open Problems in Biology Requiring the Physical Sciences", ASCB, Denver, 15 December
RIKEN Quantitative Biology Center Inaugural Symposium: "Towards Whole-Cell Modeling", Kobe, November 5-7
Max Birnstiel Lecture: Institute of Molecular Pathology, Vienna, 10 October
School of Physics, University of Melbourne, August 24
Physiology Course, MBL, Woods Hole, 27 July
Symposium: “Building Cellular Complexity One Molecule at a Time”, U. of Pennsylvannia, 30 March
Workshop: “Forces in Biomolecular Systems”, Venice, 26-28, March
German Society for Cell Biology, Dresden, 22 March
19th Dresden Photonics Colloquium, Institute of Applied Photo-Physics, Dresden, 7 March
Colloquium, MPI for Dynamical Systems, Göttingen, 1 February
Symposium: “Mitosis Studied with Biophysical Tools”, Biophysical Society Annual Meeting, San Diego, 27 February

2011

National Institute of Standards and Technology, Gaithersburg, MD, 8 December
Minisymposium: “Motors and Microtubule Dynamics”, Co-Chair, ASCB, Denver, 3-7 December
1st International caesar Conference: "Sperm Signaling and Motility", Bonn, 7 October
Symposium: “Emerging paradigms in Physical Biology", NCBS, Bangalore, 27-28 August
Gordon Conference, Motile & Contractile Systems, Colby-Sawyer College, NH, 1 August
Rockefeller University, 23 July
Arthur K. Parpart Endowed Lecture, Marine Biological Laboratory, 5 July
Symposium: “Towards Innovation in Developmental Cell Biology: the Impact of Emerging Technology, RIKEN, Kobe, 30 June to 1 July
Keynote Talk, Motility Subgroup of the Biophysical Society, Baltimore, 5 March
DIPP Vision Talk, Dresden International PhD Program, TUD, 11 January

2010

Physics Department, University of Paris-Diderot, 16 December
Yale University, New Haven, 6 December
Biomedical Section Symposium, Max Planck Society, Berlin, 22 November
Live Mechanics 2010, Bangalore, 4 November
National Institutes of Health, NHLBI, Bethesda, 20 October
Institute of Physical Sciences and Technology, University of Maryland, 19 October
Russell Marker Symposium, Dept. of Chemistry & Biochemistry, U. of Maryland, 18 October
11th International Conference on Systems Biology, Edinburgh, 11 October
Timing and Dynamics in Biological Systems, MPI-PKS, Dresden, 30 September
Molecular Life Sciences PhD Retreat, Chandolin, Switzerland, 3 September
New Trends in Structural Biology, Zürich, 2 September
Institut Curie Course: Cytoskeleton in cell division and migration, Paris, 10 June
EMBO Microtubules Conference, Heidelberg, 4 June
Institute of Molecular Genetics, Czech Academy of Sciences, Prague, 26 May
MitoSys Workshop, IMP, Vienna, 15 April
Dept. Biochemistry and Cell Biology, ETH, Zürich, 13 April
FPPG workshop, Montagne Saint Genevieve, Ecole Normale Supérieure, Paris, 7 April
“Mechanics of Cells and Tissues”, 101st International Titisee Conference, 17-21 March

Cytoskeleton, Contractility and Motility, FEBS Advanced Lecture Course, Pierre-Gilles de Gennes Winter School, Cargese, 26 February
Cytoskeleton, Contractility and Motility, FEBS Advanced Lecture Course, Pierre-Gilles de Gennes Winter School, Cargese, 22 February
IIT Kanpur Golden Jubilee, 4 February
Delbrück Lecture, IIT Kanpur Golden Jubilee, 2 February

2009

SFB: "Membranes and Modules", Berlin, 10-13 December
iCeMB, Kyoto, 9 December
Japanese Society for Molecular Biology, Yokohama, 8 December
Department of Physiology, Neuroscience& Development, Cambridge University, 3 December
Dept. Mechanical Engineering, MIT, 12 November
Dept. Biochemistry & Biophysics, University of North Carolina, 10 November
Biophysics Seminar, Duke University, 9 November
Dept. Biochemistry, University of Washington, 5 November
National University of Singapore, 4 November
Physics Department, University of New South Wales, Sydney, 2 November
Cell Biology of Viral Infections, Deidesheim, 6 October
John Innes Center, Norwich, 1 October
EMBO Annual Meeting, Microtubule subgroup, Amsterdam, 29 August
MBL Summer Course: Biology of the Inner Ear, Woods Hole, MA, 13 August
Gordon Research Conference: Soft Condensed Matter Physics, Colby-Sawyer College, New London, NH, 9-14 August
Physics Colloquium, University of Saarland, Saarbrücken, 24 June
Symposium: Light Microscopy meets Electron Microscopy, EMBL, 22-23 June
SFB: "Molecular Dynamics", Muenster, 4-6 June
MPI Developmental Biology, Tübingen, Colloquium, 29 April
Leibniz Graduate Program in Molecular Biophysics, FMI, Berlin 23 April
Cambridge University, Dept. Zoology, 26 February
Physics Colloquium, TU Munich, 2 February
Poincaré Seminar, Paris, 31 January

2008

Workshop on Molecular Motors, International Center for Condensed Matter Physics, Basilia, Brazil. 1-5 December
European Life Sciences Organization Annual Meeting, Nice, 2 September
Gordon Research Conference: Single molecule Approaches to Biology, Colby-Sawyer College, New London, NH 17-22 August
Physics in Biology, Oxford, 14-16 July
Gordon Research Conference: Muscle & Molecular Motors, Colby-Sawyer College, New London, NH, 29 June - 4 July
ZMBH, Heidelberg, 5 June
Force-Gated Ion Channels: From Structure to Sensation, HHMI, Janelia Farm, May 18 - 21, (Keynote Address)
MCRI Microtubule Dynamics Workshop, Oxted, 10-12 May
FMP Retreat, Berlin, 4 May
Bio-inspired Complex Networks in Science and Technology: From Topology to Structure and Dynamics, International Workshop and Seminar, MPI-PKS, Dresden, 14 April - 9 May
Intracellular Transport and Trafficking, SFB523, MPI-BC, Goettingen, 3 April
Department of Mechanical Engineering, Stanford University, 13 March
Cytokinetics, South San Francisco, 10 March

2007

Minerva-Weizmann Workshop: Moving Cells - from Molecules to Animals, Rehovot, Israel, 27 November
Fujihara Seminar, Tomakomai, 23-27 August 2007
Laboratory for Enzymology and Structural Biology, CNRS, Gif-sur-Yvette, 2 October
EMBO Practical Course, "Studying cytoskeletal dynamics: from biology to physics", Gif-Sur-Yvette, 24 September - 4 October
Kavli Institute for Nanoscience, Delft University of Technology, 10 September
Institute for Molecular Bioscience, Brisbane, 24 July
Eurohear Microscopy Course: “Atomic force microscopy”, Venice, 21 June
Kavli Conference: “Merging of Bio and Nano – towards Cyborg Cells”, Ilulissat, Greenland, June 11-15
NIMR, Mill Hill, London, 6 June
Cancer Research UK, Lincoln’s Inn Fields, London, 5 June
Graduate Student Symposium: “Cell Dynamics in Development”, Muenster, 29 March
German Physical Society, Symposium: “Nonlinear and anomalous transport in complex systems”, Regensburg, 28 March
“Systems Dynamics of Intracellular Communication: Overcoming distance in signaling networks” Maale Hachamisha, Jerusalem Hills, 19 March
Graduate Student Symposium: “Dynamics of macromolecular complexes in biosynthetic transport” Odenwald, 9 March
MPG/CNRS symposium on Systems Biology, Evry, France, 8 February
Gordon Research Conference: “Cilia, Mucus and Mucociliary Interactions”, Ventura Beach, CA, 4 February

2006

Department of Molecular & Cellular Physiology, Hannover Medical School, 6 December
European School of Molecular Medicine, IFOM-IEO, Milan 30 October
George A. Feigen Memorial Lecture, “From single motor proteins to cell motility” Stanford University, 23 October
Biophysical Discussions on Motor Proteins “Meeting Summary: What we have learnt and where we are going”, Asilomar, 19-22 October
Center for Cell Dynamics, Friday Harbor Laboratories, 18 October
Physics Department, Simon Fraser University, Vancouver, 16 October
UBC and SFU Biophysics Graduate Student Retreat, Loon Lake, British Columbia, 13-15 Oct.
Biosystems Summer School, Beijing, 29-30 September
Tschira Conference: “Molecular Forces of Life”, Villa Bosch, Heidelberg, 22 September
Biosystems Conference, Berlin, 27 June
Workshop: “Physics of Molecular Motors”, La Londe-les-Maures, 16 June
Leiden and Delft University PhD and Postdoc Retreat, Heeg, 2 May
Gurdon Institute, Cambridge University, 7 March
Biophysical Society Motility Subgroup, Salt Lake City, 18 February

2005

Eurohear Annual Meeting, Paris, 16 December
BioQuant Colloquium, Heidelberg, 6 December
Dutch Academy of Sciences, Amsterdam, 8 November
University of Osaka, 28 October
International Symposium on Protein Mechanics, Madrid, 19 October
61st Harden Conference of the British Biochemical Society: “Molecular Motors: Structure and Function”, Cambridge, 22 September
Institute of Economics and Traffic, Faculty of Traffic Sciences, TUD, 12 September
FEBS/IUBMB, Budapest, 3 July
Nobel Symposium, Baekaskog Slott, 15 June
MPI-MiS Workshop: “Multiscale Modeling in Biology”, Leipzig, 20 April
IOP 2005, “The role of thermal motion in the operation of motor proteins”, Warwick, 12 April

German Biochemical Society, Mosbach, 2 April
DPG Frühjahrstagung: “Biological Physics”, Berlin, 8 March

2004

ASCB Subgroup: “Molecular Motors”, Washington DC, 4 December
Computational Biology in Saxony, Dresden, 2 December
MPI-PKS Workshop: “Complex Dynamical Processes in Electroreceptors and Hair Cells” Dresden, 21 May
W.E. Heraeus Seminar: “Molecular Motors”, Bad Honnef, 19 April
Ferienschule: “Motor proteins”, Jülich, 31 March
American Physical Society Symposium: “Teaching Biological Physics”, “2010 and beyond: What undergraduate physics does the next generation of biology researchers need?” Montreal Canada, 25 March
École Polytechnique Fédérale de Lausanne, 29 January
Max Planck Institute for Metals Research, Stuttgart, 12 January

2003

Department of Physics, Waseda University, Tokyo, 5 December
19th International Symposium associated with the award of the International prize for Biology Nara, Japan, 3 December
Biology and Medicine Section Symposium, Max Planck Society, 28 November
European Life Science Organization, Dresden, 24 September
EMBO/FEBS Workshop: “Frontiers of the Cytoskeleton”, Salzburg, 15 September
Institute for Molecular pathology, IMP, Vienna, 3 July
Institut Curie, Paris, 27 June
Laboratoire d'Enzymologie et Biochimie Structurales, CNRS, Gif-sur-Yvette, 26 June
MPI-PKS, Dresden, 23 May
Society of Experimental Biology, Southampton, 3 April
Symposium on “Joining Forces -- Chemistry, Engineering and Computer Science applied to the study of biological questions”. ETH, Zurich, 18 March
Computation Biology in Saxony, TU-Dresden, 14 March
Biophysical Society Symposium on “Microtubule Motors: Structures and Mechanisms” San Antonio Texas, 1-5 March
Max Planck Institute for Infection Biology, Berlin, 27 January
Opening Symposium of the Max Bergmann Center, Dresden, 6 January

2002

Motors Schwerpunkt, Hamburg, 1-4 December
“Cell Systems Biology”, Humboldt University, Berlin, 22 November
Symposium: “From Molecular Cell Biology to Molecular Medicine”, MPG and Polish Academy of Sciences, Warsaw, 7-8 November
Department of Physics, TU Dresden, 5 November
HSFP Molecular motors Meeting, Tsukuba City, 21 October
XXXVIIIth Annual Meeting of the Polish Biochemical Society, Wroclaw, 18-22 September
5th Abercrombie Meeting, British Society for Cell Biology, Oxford, 15-18 September
Symposium to honor the retirement of Klaus Halbrock, MPI for Plant Breeding Research, Cologne, 2-6 September
European Physical Society, Budapest, 26-30 August
Biophysics of the Cochlea, Titisee, 27 July-2 August
Hereus Symposium: “Single Molecules”, Bad Honnef, 18-21 June
BioMet, Dresden 31 May
Max Delbrück Center, Berlin, 15 April
MPI-PKS, Dresden 8 April
Marie Curie Institute, Oxted, 7 April

Free University of Amsterdam, 6 February
AMOLF, Amsterdam, 5 February

2001

Max Planck Institute for Colloids & Interface Chemistry, Golm, 4 December
Symposium: “Molecular Motors: Biology, Biophysics and Applications” University of Warwick, Warwick, 13 November
“Proteins: From Chemical to Physiological Mechanism” to celebrate Freddie Gutfreund’s 80th birthday, The Royal Society, London, 26 October
Max Planck Institute for Molecular Cell Biology & Genetics, Dresden, 19 October
Ringberg Workshop on “Biomimetic Materials Processing”, Ringberg, 10 October
DFG Schwerpunkt on “Molecular Motors”, Cologne, 2 October
Society of General Physiologists 55th Annual Meeting and Symposium: "Molecular Motors" 5-9 September
École d'été de physique théorique: "Physics of Bio-molecules and Cells", Les Houches, 2-13 July, (9 lectures)
Technical University Dresden, Institute for Applied Photophysics, 22 June
7th Annual German-American Frontiers of Science Symposium, Alexander von Humboldt-Foundation, Bad Homburg, 7-10 June,
University of Colorado, Boulder, 18 April
Max Planck Society Intersektionelles Forum: "Functional Mechanisms in Biology and Materials Science", Berlin, 14 February
ICOS, Bothell, WA, 24 January

2000

University of Indiana, Bloomington, Department of Physics, 6 December
University of Idaho, Moscow, 20 October
Biological Physics, Banff, 26 August - 1 September
University of Washington, WWAMI Workshop on Molecular Motors, 15 June
Vollum Institute, Portland, 11 May
Emery University, Department of Cell Biology, 26 April
University of Pennsylvania, Department of Physiology, 24 April
University of British Columbia, Dept. Physics, 4 April
Humboldt University of Berlin, Department of Molecular Biophysics, 30 March
European Molecular Biology Laboratory: "Millennium Symposium on Structural Biology" Heidelberg, 26-29 March
Marie Curie Research Institute: "Motors Workshop", Oxted, UK, 25-26 March
University of Washington: "Frontiers of Biological Physics", 26 February
Biophysical Society Symposium: "Molecular Motors - Design and Performance", New Orleans, LA, 12-16 February
Pew Scholars in the Biomedical Sciences, Puerto Vallarta, 8-12 January

1999

Gordon Research Conference: "Muscle: Contractile Proteins", Colby-Sawyer College, NH, 6-11 June
University of Washington, Department of Physics, 5 April
7th Japan Science & Technology International Symposium: "Molecular Processes and Biosystems", Tokyo, 24-25 February
Biophysical Society: Motility Subgroup, Washington, DC, 13 February

1998

Duke University, Dept. Cell Biology, 19 November
European Molecular Biology Laboratory, 11 November
European-Nordic Summer School and Workshop: "Physics of Biological Systems – from Molecules to Species", Humlebæk, Denmark 24-28 August

COE International Conference on Kinesin and Dynein, Tokyo, 19-23 August
University of Tokyo, Dept. Life Science, 18 August
Alpbach Motor Meeting, Alpbach, Austria 28 March – 3 April
Marie Curie Research Institute: "Motors Workshop", Oxted, UK, 27 March
University of Colorado, Dept. Mol. Cell and Dev. Biology, 17 March
University of Colorado Medical School, Dept. Physiology & Biophysics, 16 March
Johns Hopkins University, Dept. Biophysics,2 March
Univ. of Washington, Center for Nanotechnology, 17 February

1997

Max Planck Institute, Hamburg, 29 July
Max Planck Institute, Dortmund, 25 July
Randall Institute, Kings College London, 18 July
NIMR, Mill Hill, London, 717 July
University of Dresden, Departments of Biology & Physics, 4 July
University of Munich, Institute of Physiological Chemistry, 11 June
University of Bayreuth, Physics Department, 10 June
U.C. San Diego, Physics Department, 5 June
European Molecular Biology Laboratory: "Polymorphism and Protein Function: A Symposium in Honor of Sir John Kendrew", Heidelberg, 25 April
Rijksuniversiteit Groningen, Department of Biophysics, 10 April
Washington State University: "Motor Proteins: A Symposium in Honor of Ralph Yount", 29 March
Marie Curie Research Institute: "Motors Workshop", Oxted, UK, 20-21 March
German Physiological Society: "Muskelkontraktion und Zellmotilität", Rostock, 15 March
Max Planck Institute for Medical Research, Heidelberg, 10 March

1996

Höchstleistungsrechenzentrum (HLRZ), Forschungszentrum Jülich, Germany 5 December
Molecular Motors Workshop: Heidelberg, 29-30 November
National Institutes of Health, Bethesda, 16 July
GRC: "Motile and Contractile Systems", Henniker, New Hampshire, 7-12 July
Washington State University, Dept. Biochemistry & Biophysics, 9 April
Marie Curie Research Institute: "Motors Workshop", Oxted, UK, 22 March
Case Western Reserve University, Dept. Physiology & Biophysics, 4 March
University of Washington, Dept. Chemical Engineering,15 February
Gordon Research Conference: "Signal Transduction in Microorganisms", Ventura, CA, 21-26 January

1995

University of California in Los Angeles, Dept. Physiology, 14 December
Institut de Biologie Structurale, Grenoble, France 9 October
ERC: "Biophysics of the Cytoskeleton", Sant Feliu de Guixols, Spain 3-8 October
European-Nordic Summer School and Workshop, "Physics of Biological Systems – from Molecules to Species", Humlebæk, Denmark 14-27 August
University of Washington, Department of Chemistry, 24 May
University of Pennsylvania, Dept. Physiology,10 April
Fred Hutchison Cancer Research Center, 8 March
Keystone Symposium: "Molecular Motors", Taos, NM 19-25 February
University of Texas at Dallas, Dept. Cell Biology & Neuroscience 31 January
Stanford University, Dept. Molecular & Cellular Physiology 10 January

1994

The Rockefeller University, Friday Seminar, New York, 2 December
Johns Hopkins University, Dept. Physiology, 23 October
Biophysical Discussions: "Molecular Motors", Arlie, Virginia, 21-23 October

Cornell University, Dept. Applied Physics, New York, 119 October
University of Wisconsin, Dept. Physiology, Madison, 25 May
Albert Einstein College of Medicine, Dept. Anatomy & Cell Biol., N.Y. 18 May
NIMR, Mill Hill, London 31 March
EMBL, Heidelberg, 29 March
Wellcome Trust Meeting: "Molecular Motors", London, 21-25 March

1993

Bell Labs, Nutley, NJ 14 June
Symposium: "Proteins on the Move", Princeton University, 11-12 June
UCSF, Department of Pharmacology, 31 March
U.W., School of Medicine, New Investigator Science in Medicine Lecture, 25 March
National Inst. for Adv. Interdisciplinary Res. Workshop, Tsukuba, Japan, 11 March
Biophysical Society Symposium: "Structure and Function of the Cytoskeleton", Wash. DC, 15 Feb.

1992

Fourth International Congress on Muscle Energetics, Siena, Italy, 13-19 September
University of Vermont, Department of Physiology, 16 April
Fogerty International Conference: "Muscle as Machine, Bethesda, 13-15 April
FASEB Symposium: "Molecular Approaches to Motile Systems", Anaheim, 9 April
University of Washington, Department of Ophthalmology,

1991

Cold Spring Harbor Molecular Neurobiology Summer Course, 25 June
University of Oregon, Institute of Neuroscience, Eugene, OR 14 February
University of Washington, Department of Otolaryngology,
University of Washington, Department of Bioengineering,

1990

Gordon Research Conference: "Muscle Contraction", Tilton School, VT, 30 July - 3 August
University of Washington, Department of Neurology,
Washington State University, Department of Biochemistry, Pullman, WA, 15 May

1989

Dutch Society for Biophysics, Keynote Address, Groningen, The Netherlands, 7 November
University of Pennsylvania, Philadelphia, Department of Physiology, PA, February
Washington University, Department of Cell Biology and Physiology, St. Louis, MI, February
Biophysical Society Symposium: "Molecular Motors", Cincinnati, OH 14 February
University of California in San Francisco, Neuroscience Program, January
Stanford University, Department of Molecular and Cellular Physiology, January

1988

Northwestern University, Dept. of Neurobiology & Physiology, Evanston, IL, December
University of Washington, Dept. of Physiology and Biophysics, Seattle, WA, November
Mayo Foundation, Department of Physiology, Rochester, MN, November
California Institute of Technology, Division of Biology, Pasadena, CA, October
Rowland Institute, Cambridge, MA, June
Massachusetts General Hospital Boston MA, Boston Channel Group, June
University of California in Davis, Neurobiology Program, Davis, CA, May
Biophysical Society Minisymposium: "Stretch-activated Channels", Phoenix, AZ, 2 March

SCIENTIFIC SERVICE COMMITTEES

MB&B

2022-23 MB&B Junior Search
2022-23 MB&B Senior Search
2022-23 MB&B Executive Committee
2022-23 MB&B Undergraduate Education and Advising
2022-23 MB&B Space Committee
2022-24 MB&B Seminar Committee
2022-23 MB&B Faculty Scholar Awards/Prize Coordinator
2021- MB&B Undergraduate Education and Advising
2021- MB&B Space Committee
2021- MB&B Seminar Committee
2021- MB&B Faculty Scholar Awards/Prize Coordinator
2019-20 Faculty Search Committee, MB&B (Chair)
2019-20 MB&B Executive Committee
2018-19 Faculty Search Committee, MB&B (Chair)
2017-18 MB&B Executive Committee
2017-18 CryoEM Search Committee, MB&B (Chair)
2015-16 MB&B CryoEM Search Committee
2014-15 MB&B Executive Committee
2014-15 MB&B CryoEM Committee

Yale

2022- Silliman Lectureship Committee
2020- Systems Biology Institute SAB
2021-23 CBIC Oversight Committee
2019-20 Silliman Lectureship Committee (Chair)
2019-21 Director, Yale Institute of Quantitative Biology
2018-19 Silliman Lectureship Committee (Chair)
2018-20 Physics/Quantitative Biology Search Committee (co-Chair)
2018- Jonathon Edwards College Undergraduate Advisor
2018 Vice-Provost's Sackler/PEB-QBI Panel, member
2017-18 Quantitative Biology Search Committee, MCDB
2017- Systems Biology Institute SAB
2017-19 Co-director, Yale Institute of Quantitative Biology
2017-18 Silliman Lectureship Committee (Chair)
2016-17 Silliman Lectureship Committee (Chair)
2015-17 Biological Sciences Advisory Committee (BSAC)
2015- MCDB QBio Search Committee
2014- YSB Building Committee
2014-15 Physical Sciences and Engineering Tenure and Appointments Committee (PSETAC)
2013- Physical and Engineering Biology (PEB) Steering Committee

International Committees, Reviews, Editorial

2023 12th RIKEN Advisory Council, Wako, Japan
2022 SAC Weizmann Institute of Science (WIS), Biophysics and Soft-Matter, Rehovot, Israel
2021 RIKEN Advisory Council, Interim RAC Wako, Japan
2019 11th RIKEN Advisory Council, Wako, Japan
2017- Scientific Advisory Board, Center for the Physics of Life, Dresden, Germany
2017-22 Biophysical Society-Institute of Physics eBooks advisory board
2016 Chair, International Review Panel, Mechanobiology Institute (MBI), Singapore

2013-18 Advisory Board, Institute for the Physics of Living Systems, University College London
2013-18 Scientific Advisory Board, Center for Advanced Electronics, Dresden
2013 9th RIKEN Advisory Council, Wako, Japan
2012-17 Chair, Advisory Council, RIKEN Quantitative Biology Center (QBiC), Osaka/Kobe
2012-17 Editorial Board, BioAchitecture
2011-16 Editorial Board, BMC Biophysics
2008-10 Review Panel, ERC Senior Grants
2007-12 Editorial Board, Cellular and Molecular Bioengineering
2007-10 Scientific Advisory Board, Joliot et Curie Laboratory, Lyon, France
2007-10 Scientific Advisory Board, Department of Nanosciences, University of Delft
2005-07 Review Panel, HFSP Grants Program
2005 Review Panel, Cell Biology and Biophysics, EMBL
2003 Review Panel, Dutch Science Foundation
2002-3 Review Panel, VW Stiftung, Single Molecules
1998-99 Search Committee, Physics Faculty, University of Copenhagen/Niels Boer Institute (Denmark)
1997 Review Committee, Molecular Motors Group, Marie Curie Institute, Oxted, UK

German Committees and Reviews

2021- Committee for the Evaluation of International Max Planck Centers
2019-20 Max Planck-Humboldt Research Award in the Life Sciences, nomination committee
2011-2013 Chair, Perspectives Committee of the Biomedical Section, MPG
2010 Search Committee, Director, MPI for Brain Research, MPG
2010-2013 Search Committee, Director, MPI for Biophysics, MPG
2010-2013 Search Committee, Director, MPI for Terrestrial Microbiology, MPG
2009 SFB Committee, DFG
2006 Committee on Systems Biology, MPG
2005 External Reviewer, Professor of Experimental Physics, University of Saarland
2005 Search Committee, Director, MPI for Biophysics, MPG
2004 External Reviewer, Professor of Physics, University of Munster
2004 Search Committee, Director MPI for Metals Research, MPG
2003 Search Committee, Professor of Cellular Machines, Dresden University of Technology
2001 Search Committee, Professor of Biophysics, Dresden University of Technology
2000 Search Committee, Director, MPI for the Physics of Complex Systems, MPG

US Committees and Reviews

2022-24 Biophysical Journal Editorial Board
2018-23 Biophysical Society Awards Committee
2018- Faculty of Scholars (formerly Faculty of 1000)
2017-21 MFSC Study Section, NIH, member
2017-20 Biophysical Society-Institute of Physics eBooks Advisory Board
2015 MFSC Study Section, NIH, ad hoc member
2002 Reviewer, SSSB Special Study Section, NIH
2001 NRC Physics and Engineering Panel, Bio2010: Undergraduate Biology Education to Prepare Research Scientists for the 21st Century
2000 Review Committee, Physical Biosciences Division, Lawrence Berkeley National Laboratory
1999 Reviewer, Spinal Cord Research Foundation
1996-98 Ad hoc reviewer, BBCB Study Section, NIH
1996 Ad hoc reviewer, Biol-2 Study Section, NIH
1994 NIH Program Project Review Committee

University of Washington, School of Medicine

2000 Co-organizer (with Michael Schick), Symposium on "Frontiers of Biological Physics"
1999 Search Committee, Chair of Physiology & Biophysics
1998 Admissions Committee, Molecular & Cellular Biology (MCB) Training Program
1998 Selection Committee, Molecular Biophysics Training Program
1996 Chair, First Annual UW Cytoskeleton Retreat
1996 Selection Committee (Chair), Molecular Biophysics Training Program
1995 Selection Committee, Molecular Biophysics Training Program
1994-95 Selection Committee, MCB Training Program
1992-93 Student Evaluation Committee, MCB Training Program
1992-94 Course Reorganization Committee, UCONJ

University of Washington, Department of Physiology & Biophysics

1997-2000 Chair, PBIO Graduate Student Admissions Committee, 1997-2000
1999 Crill Retirement Committee
1998-99 Co-Director, Cellular & Neural Biophysics Graduate Program
1997-98 Primate Center Faculty Search Committee
1997 Lamport Lecture Committee
1996 Brochure Committee
Chair, Einer Hille Lecturer Committee
Chair, Faculty Lecture Series Committee
1995-96 Faculty Search Committee
1994 Machine Shop Committee
Chair, PBIO Retreat Committee
PBIO Graduate Student Admissions Committee
Committee reviewing Dr. E. Giniger
1991-93 Chair, PBIO Graduate Student Admissions Committee
Faculty Search Committee
1991-92 Faculty advisor to electronics shop
1989-91 Faculty Search Committee
1990 Committee to develop departmental brochure

Grants Reviews

Dr. Howard serves as referee for many organizations including:
Germany: DFG (German Research Council), German-Israeli Foundation for Scientific Research and Development, VW Stiftung
Israel: German-Israeli Foundation for Scientific Research and Development, Minerva Foundation (Israel),
Japan: Communications Research Laboratory, Ministry of Posts and Telecommunications (Japan)
Switzerland: Swiss National Science Foundation
UK: Biotechnology & Biological Sciences Research Council, Engineering and Physical Sciences Research Council (UK), Medical Research Council, Wellcome Trust
US: American Heart Foundation, National Institutes of Health, National Science Foundation, Spinal Cord Research Foundation

Reviewing for Journals

Dr. Howard serves as referee for many journals in the field of biophysics: Biophysical Journal, Cell, Cellular and Molecular Bioengineering, Current Biology, EMBO Journal, European Biophysical Journal, Europhysics, Letters, Euroscience Letters, Hearing Research, HFSP Journal, Journal of Biological Chemistry, Journal of Cell Biology, Journal of Cell Science, Journal of Comparative Physiology, Journal of General, Physiology, Journal of Muscle Research, Journal of Neurophysiology, Journal of Neuroscience, Journal of Physics, Journal of Physiology, Journal of Theoretical Biology, Nanoletters, Nanotechnology, Nature, Nature Cell Biology, Nature Structural Biology, Neuron, Neuroscience Letters, Physical Biology, Physical Review, Physical Review Letters, PLoS Biology, PLoS Computational Biology, Proceeding of the National Academy of Sciences, Science.

TEACHING

Yale University

2023-2024

Sp. Modeling Biological Systems (MB&B 361/562, Organizer) (26 L)
Fa. Light Microscopy: Techniques and Image Analysis (MB&B 364, with J. Wilensky (4 labs)
Fa. Macromolecular Structure & Biophysical Analysis (MB&B 420a/720a, with Y. Xiong) (13 L)

2022-2023

Sp. Modeling Biological Systems (MB&B 361/562, Organizer with D. Clark & T. Emonet) (10 L)
Sp. Responsible Conduct of Research (MB&B 676) (1 seminar)
Fa. Light Microscopy: Techniques and Image Analysis (MB&B 364, with J. Wilensky (4 labs)
Fa. Macromolecular Structure & Biophysical Analysis (MB&B 420a/720a, with Y. Xiong) (13 L)

2021-2022

Sp. on leave
Fa. Light Microscopy: Techniques and Image Analysis (MB&B 364, with J. Wilensky (4 labs)
Fa. Macromolecular Structure & Biophysical Analysis (MB&B 420a/720a, with Y. Xiong) (11 L)

2020-2021

Sp. Modeling Biological Systems (MB&B 361/562, with Damon Clark (10 L)
Sp. Methods & Logic in Interdisciplinary Research (MB&B 517) (1 seminar)
Fa. Modeling Biological Systems (MB&B 361/562, with Damon Clark) (13 L)
Fa. Macromolecular Structure & Biophysical Analysis (MB&B 420a/720a, with Yong Xiong) (12 L)

2019-2020

Sp. Dynamical Systems in Biology (MB&B 361/562, with TE) (12 L)
Sp. Methods & Logic in Interdisciplinary Research (MB&B 517) (1 seminar)
Sp. Responsible Conduct of Research (MB&B 676) (1 seminar)
Fa. Macromolecular Structure & Biophysical Analysis (MB&B 420a/720a) (8 L)

2018-2019

Sp. Dynamical Systems in Biology (MB&B 361/562, with TE) (12 L)
Fa. Quantitative Approaches in Biophysics & Biochemistry (MB&B 435/635, ENAS 518) (8 L)
Fa. Bootcamp Biology (PEB) (2 x 2hr L)
Fa. Macromolecular Structure & Biophysical Analysis (MB&B 420a/720a) (4 L)

2017-2018

Sp. on leave
Fa. Foundations of Cellular and Molecular Neurobiology (INP) (1 L)
Fa. Intro. to Dynamical Systems in Biology (MB&B 261a, with T. Emonet) (2 L)
Fa. Macromolecular Structure & Biophysical Analysis (MB&B 420a/720a) (8 L)

2016-2017

Sp. Dynamical Systems in Biology (MB&B 361a/562a, Co-organizer with DC) (14 L)
Sp. Methods & Logic (MB&B 445b, Organizer) (5 x 2hr seminar)
Fa. Intro. to Dynamical Systems in Biology (MB&B 261a, Co-teacher with TE) (13 L)
Fa. Macromolecular Structure & Biophysical Analysis (MB&B 420a/720a) (8 L)

2015-2016

Sp. Methods & Logic (MB&B 445b, Organizer) (9 x 2hr seminar)
Sp. Methods & Logic (ENAS 517b) (1 x 2hr seminar)
Fa. Macromolecular Structure & Biophysical Analysis (MB&B 420a/720a) (8 L)

2014-2015

Sp. Dynamical Systems in Biology (MB&B 361a/562a, Co-teacher with DC) (13 x 75 min lecture)
Sp. Methods & Logic (MB&B 445b) (5 x 2hr seminar)

Sp. Methods & Logic (ENAS 517b) (1 x 2hr seminar)
Sp. Responsible Conduct of Research (MB&B 676) (1 x 2hr seminar)
Fall Macromolecular Structure & Biophysical Analysis (MB&B 420a/720a) (8 x 75 min lecture)

2013-2014

Sp. Dynamical Systems in Biology (MB&B 361a/562a, with D. Clark & T. Emonet) (10 L)
Sp. Methods & Logic (ENAS 517b) (1 x 2hr seminar)
Fall Mathematical Methods in Biophysics (MB&B 435a/635a (8 L)

Summer & Winter Schools and other Courses

2019 Physical Biology of The Cell Course, Marine Biological Laboratory, Woods Hole, 12-18 August
2018 Physical Biology of The Cell Course, Marine Biological Laboratory, Woods Hole, 2-5 August
2017 Physical Biology of The Cell Course, Marine Biological Laboratory, Woods Hole, 22-25 August
2015 Physiology Course, Marine Biological Laboratory, Woods Hole, 22 June - 4 July
2014 Physiology Course, Marine Biological Laboratory, Woods Hole, 21 July - 2 August
2012 Physiology Course, Marine Biological Laboratory, Woods Hole, 16-28 July
2011 Physiology Course, Marine Biological Laboratory, Woods Hole, 4-16 July
2010 Molecular Life Sciences PhD Retreat, U. Zürich, Chandolin, Switzerland, 3-5 September
2010 Cytoskeleton, Contractility and Motility, FEBS Advanced Lecture Course, Pierre-Gilles de Gennes Winter School, Cargese, 22-26 February
2009 Biology of the Inner Ear Course, Marine Biological Laboratory, Woods Hole, MA, 13 August
2007 EMBO Practical Course, "Studying cytoskeletal dynamics: from biology to physics" Gif-Sur-Yvette, 1-3 October 2007
2007 Eurohear Microscopy Course: “Atomic force microscopy”, Venice, 21 June
2007 U. Heidelberg PhD Student Symposium: “Dynamics of macromolecular complexes in biosynthetic transport”, Odenwald, 9-10 March
2006 UBC & SFU Biophysics Graduate Student Retreat, Loon Lake, British Columbia, 13-15 October
2006 Center for Cellular Dynamics PhD course, Friday Harbor Laboratories, UW, 17 October 2006
2006 Biosystems Summer School, CAS, Beijing, 25-30 September, 2006
2006 INSERM Workshop, “Physics of Molecular motors”, Toulon, June
2006 Leiden and Delft University PhD and Postdoc Retreat, Heeg, 2-3 May
2004 Ferienschule: “Motor proteins”, Jülich, March (1 day)
2004 FEBS Practical Course on “Visualizing the Cytoskeleton”, Dresden, July (3 days)
2002 Humboldt University Berlin, “Cell Systems Biology”, November
2001 Le Houches summer school, École d'été de physique théorique: "Physics of Bio-molecules & Cells", University of Grenoble, Le Houches, July (9 lectures)
1998 European-Nordic Summer School and Workshop: "Physics of Biological Systems - from Molecules to Species", Humlebæk, August (3 days)
1995 European-Nordic Summer School and Workshop, "Physics of Biological Systems - from Molecules to Species", Humlebæk, Denmark August (3 days)
1991 Cold Spring Harbor Molecular Neurobiology Summer Course, June (1 day)

Technical University Dresden

2001-2011 International Max Planck Research School (IMPRS)
- Introduction to Statistical Inference and Models (minicourse) (up to 7 lectures + 2 tutorials + lab)
- PhD Practical Course (two weeks for 4 PhD students)
- Lecture Series (1 lecture/year)

2005-2010 Master’s courses in Molecular Bioengineering and Nanobiophysics (up to 4 lectures/year)

University of Washington

At the University of Washington, I was one of the primary participants in the teaching of the Molecular and Cell Biology core course, which was taken by all first year graduates students in the biomedical sciences (except Genetics), as well as the Molecular Neurobiology core course. This has included lectures on the cytoskeleton, motor proteins, cell motility, ion channels, pumps and transporters, sensory transduction, G-protein-coupled signaling, and bacterial chemotaxis.

In addition to these team-taught courses, I taught my own course on Protein Machines/Cell Motility every other year. This course led to my writing the monograph Mechanics of Motor Proteins and the Cytoskeleton which was published by Sinauer Associates in 2001.

Courses

2000 (Sp)	PBIO 520, Classic Papers in Cell Motility and the Cytoskeleton, Co-director
1998-99 (F)	CONJ 531, Molecular & Cellular Biology
1998-99 (W)	PBIO 547, Readings in Biophysics
1998 (Sp)	PBIO 560, Protein Machines, Director
1998 (F)	PBIO 510, Readings in Physiology
1996 (Sp)	PBIO 560, Protein Machines, Director
1995 (W)	BIOENG 510, Seminars in Bioengineering
1995 (F)	HuBio 512, Human Physiology for Medical Students
1994-97 (F)	CONJ 501, Molecular & Cellular Biology
1993-95 (F)	CONJ 519, Molecular Neurobiology
1993 (Sp)	PBIO 519, Seminars in Cell Physiology, Director
1993 (Sp)	UCONJ 504, Molecular & Cellular Biology
1991 (Sp)	PBIO 560, Muscle Contraction and Cell Motility, co-Director
1991 (Su)	PBIO 503, Physiological Instrumentation
1990-96 (W)	PBIO 547, Readings in Biophysics
1990-93 (Sp)	UCONJ 505, Molecular and Cellular Biology
1990 (F)	CONJ 519, Molecular Neurobiology
1990 (F)	HuBio 512, Human Physiology for Medical Students (Univ. of Idaho)
1989-92 (F)	PBIO 505, Cell Physiology

Seminars at UW

1999	Department of Physics
1998	Center for Nanotechnology
1996	Department of Chemical Engineering
1995	Department of Chemistry
1993	School of Medicine, New Investigators Lecture
1992	Department of Ophthalmology
1991	Department of Bioengineering, Department of Otolaryngology
1990	Department of Neurology

University of California in San Francisco

1986	TA, Neuroscience Graduate Program, U.C.S.F.
1987	Lecturer, Speech & Hearing Science Graduate Program, U.C.S.F.

University of Bristol

1984	Demonstrator, Department of Physiology

Australian National University

1981-82	Demonstrator, Department of Zoology
1977-79	Tutor, Department of Pure Mathematics

Habilitations

Pascal Martin, Curie Institute, 17.12.2010
Benjamin Lindner, Habilitation, Physics, TUD, 09.07.2010

Ph.D. Thesis Examinations (*my student or committee chair)

Eric Mulhall, Neuroscience, Harvard Medical School, April 30, 2020
Pei-Tzu (Ivy) Huang*, MB&B, Yale, February 24, 2020
Garrett Debs, MB&B, Yale, January 27, 2019
Neil Ravindra*, MB&B, Yale, August 9, 2019
Maria Feofilova*, Physics, TUD, August 2, 2017
Xiaohan Li, Chemistry, Yale, May 11, 2017
Anneke Hibbel*, Biology, Dresden University of Technology (TUD), July 2015
Carlos Garzon Coral*, Biology, Dresden University of Technology (TUD), 03.02.2015
Özlem Demir*, Biology, Dresden University of Technology (TUD), 2.2.2015
Marija Podolski*, Biology, Dresden University of Technology (TUD), 13.12.2013
Veikko Geyer*, Physics, Dresden University of Technology (TUD), 23.10.2013
Aaron Mertz, Engineering, Yale, 12.09.2013
Andrew Clark, Biology, Dresden University of Technology (TUD), 07.03.2013
Jöbin Gharakani, Physics, TUD, 07.01.2013
Anita Jannasch, Physics, TUD, 21.12.2012
Cihan Erkut, Biology, TUD, 06.12.2012
Sebastian Fürthauer, Physics, TUD, 15.07.2012
Johannes Höfener, Physics, Dresden University of Technology (TUD), 06.07.2012
Marko Storch*, Biology, TUD, 05.07.2012
Christian Vestergaard, Micro- and Nanotechnology, TU Denmark, Copenhagen, 11.06.2012
Anastasiya Trushko*, Physics, TUD,14.05.2012
Steffen Pfützner, Physics, TUD, 30.01.2012
Mohammed Mahamdeh, Physics, TUD, 16.12.2012
Horatiu Fantana*, Physics, TUD, 16.12.2012
Peer Mumcu, Physics, TUD, 19.10.2011
Kai Dirkes, Physics, TUD, 12.08.2011
Maté Biro, Biology, TUD, 15.06.2011
Aurelie Tomczak, Biology, TUD, 21.03.2011
Fernando Carrillo, Biology, TUD, 01.02.2011
Jörg Mütze, Physics, TUD, 13.12.2010
Stephan Preibich, Computer Science, 19.11.2010
Thomas Guerin, Physics, Curie Institute, 07.10.2010
Knut Drescher, Physics, Cambridge, UK, 22.09.2010
Markus Burkhardt, Physics, TUD, 07.09.2010
Martin Loose, Biology, TUD, 22.06.2010
Thomas Widmann, Biology, TUD, 21.12.2009
Marzuk Kamal*, Physics, TUD, 24.08.2009
Volker Bormuth*, Physics, TUD, 07.08.2009
Cordula Reuter, Engineering, TUD, 11.06.2009
Stefanie Redemann*, Biology, TUD, 30.03.2009
Agata Rybarska, Biology, TUD, 29.03.2009
Benjamin Friedrich, Physics, TUD, 17.02.2009
Bert Nitzche, Material Sciences, TUD, 18.12.2008
Thomas Bittig, Physics, TUD, 23.09.2008
Vladimir Varga*, Biology, TUD, 16.01.2008
Martin van den Heuvel, Nanoscience, Delft University of Technology, 10.09.2007
Tim Noetzel, Biology, TUD, 05.03.2007
Suzanne Bechstedt*, Biology, TUD, 02.02.2007
Giovanni Meacci, Physics, TUD, 20.12.2006
Alexej Kedrov, Biology, TUD, 20.11.2006
Alvaro Crevenna*, Biology, TUD, 01.11.2006
Cerasela Dinu*, Biology, TUD, 24.05.2006
Jean-Ives Tinevez, Physics, Curie Institute, 10.03.2006

Andy Hilfinger, Physics, TU, 07.02.2006
Gernot Klein, Physics, TUD, 15.02.2006
Ingmar Riedel-Kruse*, Physics, TUD, 13.07.2005
Karin John, Physics, TUD, 30.03.2005
Ralf Seidel, Physics, TUD, 14.01.2004
Ravi Sawhney*, UW, 10.09.2001
A. Ponti, Engineering, ETH Zürich, 03.10.2003
Ed Munro, Zoology, UW, 18.01.2000
Todd Maney, Physiology & Biophysics, UW
Libby Sunderland, MSTP, Physiology & Biophysics, UW, 27.7.1998
David Coy*, MSTP, Physiology and Biophysics, 24.11.1998
John Dennis, Physics Department, UW, 6.1998
Frederick Gittes*, Bioengineering, UW, 09.11.1994
Young-Bae Park, Physiology and Biophysics, UW, 10.03.1995
Carl A. Morris, Physiology, UCLA
Alan Hunt*, Physiology and Biophysics, 03.12.1993
Lonnie Wollmuth, Physiology and Biophysics, UW, 14.12.1992
John Assad, Neurobiology, Harvard Medical School, 20.06.1991

STUDENTS AND POSTDOCTORAL FELLOWS

Joe Howard has graduated 24 PhD students and 34 postdoctoral fellows (58).

Of these, over half (8 students , 22 postdocs = 30 total) became faculty or group leaders at Universities and Research Institutes in the North America, Europe, Asia and Australia including University of Arizona, Clemson University, Columbia University, Harvard Medical School, McGill University (Montreal, Canada), University of Michigan, University of Minnesota, Northeastern University, Pennsylvania State University, Scripps Research Institute (San Diego), Stanford University, Vanderbilt University, Washington State University, West Virginia University; Czech Academy of Sciences (Prague), Dresden University of Technology (Germany), EMBL (Monterotondo, Italy), University of Nottingham (UK), University Pierre et Marie Curie (Paris), University of Rennes (France), University of Tübingen (Germany), Gulbenkian Institute for Science (Portugal); Bar Ilan University (Israel), Monash University (Malaysia Campus, Kuala Lumpur), Tsinghua University (Beijing); University of Queensland (Brisbane, Australia)

Of those not still in training positions, most are employed as research scientists or administrators in industry or academia.

Current personnel

One Associate Research Scientist, three postdocs, one PhD student, 6 undergraduates

Current PhD Students

25. Xiaoyi (Timo) Ouyang (BSc Peking University)
    Physics and PEB
    September 2021 - present

Current Postdoctoral Fellows (former PhD students in gray)

38. Raymond Adkins (PhD Physics, UCSD, 2022)
37. Thomas Torng (PhD Biochemistry, Dartmouth College, Hanover, NH, 20??)
    July 2021 - present
36. Yazgan Tuna (PhD Physics, Friedrich-Alexander Univ. of Erlangen-Nuremberg, Erlangen, DE, 2020)
    January 2021 - present
35. Sabysachi Sutradhar (PhD Physics, Indian Association for the Cultivation of Science, Kolkata, 2016)
    July 2016 – present

Current Undergraduates

Alexander Chasteen, Math (undeclared), Spring 2022, Summer 2022, Fall 2022, Spring 2023
Adrian Hall, Physics and MB&B (undeclared), Summer 2022, Spring 2023, Spring 2024
Sean Liu, Chemistry (undeclared), Fall 2022, Spring 2023, Summer 2023, Fall 2023, Spring 2024
Sofia Fausone, Physics, Spring 2023, Summer 2023, Fall 2023, Spring 2024
Jacob Liao. MCDB, Spring 2024
Miles Taric, Fall 2023, Spring 2024
Charlotte .Misturado, Fall 2023, Spring 2024
Elija Lee, Summer 2023, Fall 2023, Spring 2024

Former Undergraduate Students

Daniel Fridman, Statistics and Data Science, Yale
Amer Al-Hiyasat, MB&B and Physics, Yale
Kendron Gurara, Biology and Physics, Yale-NUS Singapore
Avram Durling (Physics, 2017)
Paul Chung (MB&B Sophomore, August 2016 – January 2017)
Amelia Farinas (Freshman, Sophmore, Yale)
Brian Beitler (MB&B and BME, Yale, 2017)
Peter Young (Engineering, Duke, S2016)
Juliana Coraor (MB&B/Physics Senior Project, Su 2015, Fa2015, Sp2016)

Paul Chung (MB&B Sophomore, SuFa 2014, Sp2015, S2016)
Vibol Heng
Juan Manuel Iglesias Artola (Peru)
Daniel Lee (MB&B/Physics Senior Projest, SuFa 2014, Sp2015, F2015, S2016)
Michael Grace (Physics Senior Project, Fa2014, Sp2015)
Robert Pecoraro (Physics Senior Project, Sp2015)
Alois Cerbu (Physics Sophomore, Su2015)
Benjamin Koleske (High School Senior project, Su2014)

Former Postbaccalaureate

2. Ioanna Kougianou
   BSc (Hons) Biomedical Science, University of Strathclyde, UK (2021)
   MScR Integrative Neuroscience, University of Edinburgh, UK (2022)
   January 2023 – November 2023
   Present Position: PhD Student, University of Edinburgh
1. Amer Al-Hiyasat
   BSc (Yale, MB&B/Physics. 2022)
   June 2021- May 2022
   Present Position: PhD Student, MIT

Former Ph. D. Students (8/24 in faculty/group leader positions, 07/2021)

Kamal Singh (B. Tech, Biotechnology 2018, Indraprastha University, Delhi, India)
Fullbright-Nehru Fellow (Yale VAR)
PhD, Tata Institute of Fundamental Research, Mumbai, India (Advisor Ranjith Kumar)
August 2022 - April 2023

24. Rajshekhar (Raj) Basak (BA – Physics, Macaulay Honors College, CUNY, 2015)
    BBSB and PEB
    August 2015 (March 2017, Howard lab) – Spring 2021
23. Olivier Trottier (BSc/MSc, University of Montreal)
    Physics and PEB
    June 2014 (summer rotation), June 2015 (joined group) – Spring 2021
    Postdoc, U. Toronto
22. Yin-wei (Kris) Kuo (BSc, Chemistry, National Taiwan University, 2014)
    Chemistry, Biophysical Chemistry Track
    September 2015 (May 2016 Howard lab) – September 21, 2020 (Defense)
    Postdoc, MRC, LMB, Cambridge UK
21. Pei-tzu (Ivy) Huang (MS, BSc 2014, Biochemical Science & Technology 2012, National Taiwan U.)
    BBSB
    August 2014 (June 2015 Howard lab) – February 24 2020 (Defense)

Wanyu Lei (BSc, Pharmaceutical Science and Statistics, Peking University, 2016)
Position: PhD Student
Yale, INP (September 2017 Howard lab) – February 2019

Catherine McGuinness (B.A., Physics, Smith College, 2011)
Position: PhD Student
Yale, BBSB and PEB, June 2013 – December 2018 (MSc)

Ross Bauer (BA-Physics, NYU)
Position: PhD Student
Program: Mechanical Engineering & Material Sciences and PEB
Dates: June 2014 – 2016 (MSc)
Thesis: Measuring Mechanical Forces in Axonemal Dynein

Current Position: Technical Problem Solver at Epic Systems
Email: Robmwj@gmail.com

20. Maria Feofilova (Masters in Physics, 2012, University of St. Petersburg)
Position: PhD Student
Program: IMPRS Graduate School, Dresden
VAR, MB&B, Yale University
Dates: October 2012 – August 2, 2017 (graduation date)
Thesis: Dynein activity during the flagellar beat
Current Position: Postdoc, ETH, Zürich (Eric Dufresne lab)
Email: maria.feofilova@gmail.com

Jeremiah Johnston (B.Sc., Biochemistry & Molecular Biology, Gettysburg College, SC, 2013)
BBSB and PEB
August 2014 – May 2016 (M.Sc.)

19. Anneke Hibbel (Masters in Biology, 2011, University of Wageningen, Netherlands)
Position: PhD Student
Program: IMPRS Graduate School, Dresden
Dates: October 2011 - July 2015
Thesis: "Characterization of *Saccharomyces cerevisiae* kinesin Kip2 by total internal reflection fluorescence microscopy"
Current position: PhD Program Director (IMB, Mainz)
Email: phd@imb.de

18. Carlos Garzon Coral (Masters in Molecular Bioengineering, 2010, TU Dresden; Diploma in Biology, 2008, National University of Columbia)
Position: PhD Student
Program: IMPRS Graduate School, Dresden
Dates: November 2010 - 03.02.2015
Thesis: "The forces that center the mitotic spindle in the *C. elegans* embryo"
Current position: Postdoc, Stanford (Alex Dunn lab)
Email: garzon@mpi-cbg.de

17. Özlem Demir (Masters in Molecular Biology and Genetics, 2008, Istanbul Technical University)
Position: PhD Student
Program: IMPRS Graduate School, Dresden
Dates: September 2010 - 2.2.2015
Thesis: "Functional characterization of microtubule associated proteins in ES cell division and neuronal differentiation"
Current position: Postdoc with Ana M.M. Oliveira, U. Heidelberg (may have left)
Email: demir@mpi-cbg.de

16. Veikko Geyer (Diploma in Biophysics 2008, HU Berlin)
Position: PhD Student
Program: IMPRS Graduate School, Dresden
Dates: 1 October 2009 - 23.10.2013
Thesis: "Characterization of the flagellar beat of the single cell green alga *Chlamydomonas Reinhardtii*"
Current Position: Research Scientist, Technische Universität, Dresden
Email: veikko.geyer@tu-dresden.de

15. Marija Podolski (Diploma in Biochemistry, University of Zagreb, Croatia, 2009)
Position: PhD Student
Program: IMPRS Graduate School, Dresden
Dates: 1 August 2009 - 13.12.2013

Thesis: "Characterization of the budding yeast microtubule polymerase Stu2"
Current position: Postdoc with Marija Zanic, Vanderbilt University
Email: marija.podolski@berkeley.edu

14. Marko Storch (Masters in Bionanotechnology, 2008, Dresden University of Technology)
Position: PhD Student
Program: IMPRS Graduate School, Dresden
Dates: February 2009 - July 2012
Thesis: "Characterization of microtubule stability regulating kinesins in vitro and introduction of a high throughput technique for studying kinesins on the single molecule level"
Current position: Head of SynBio and Automation, SynbiCITE, Imperial College, London
Email: m.storch@imperial.ac.uk

13. Anastasiya Trushko (Diploma in Physics, 2007, Belarussian National Technical Univ., Minsk)
Position: PhD Student
Program: IMPRS Graduate School, Dresden
Dates: November 2007 - May 2012
Thesis: "Interaction of XMAP215 with a microtubule plus-end studied with optical tweezers"
Current position: Postdoc with Arélien Rioux, University of Geneva
Email: anastasia.trushko@gmail.com

12. Horatiu Fantana (Diploma in Physics, 2006, University of Heidelberg)
Position: PhD Student
Program: IMPRS Graduate School, Dresden
Dates: October 2006 - August 2011
Thesis: "Using magnetic tweezers to measure forces associated with mitotic spindle positioning"
Current position: Consultant, McKinsey, Berlin
Email: fantana@posteo.de

11. Volker Bormuth (Diploma in Physics, 2005, Ludwig -Maximilian University, München)
Position: PhD Student
Program: IMPRS Graduate School, Dresden
Dates: November 2005 - August 2008
Thesis: "Optimized optical tweezers to study the mechanics of kinesin-8: stepping, slipping, protein friction"
Current Position: Assistant Professor, Physics, University Pierre et Marie Curie, Paris
Email: volker.bormuth@upmc.fr

10. Marzuk Kamal (M.Sc. in Physics, 1999, Shahjalal University of Science Technology (SUST), Bangladesh)
Position: PhD Student
Program: IMPRS Graduate School, Dresden
Dates: June 2005 - April 2010
Thesis: "Coupling between Membrane curvature and Lipid Geometry"
Current Position: Postdoc with Cécile Sykes, Curie Institute, Paris
Email: kamal@issb.genopole.fr

Henri Saleh (Diploma in Biology, 2003, University of Karlsruhe (TH), Karlsruhe)
Position: PhD Student
Program: IMPRS Graduate School, Dresden
Dates: July 2004 - 2008 (did not graduate)
Current Position: Import-export business

9. Vladimir Varga (Master in Biology, 2003, Charles University, Prague)
   - Position: PhD Student
   - Program: IMPRS
   - Dates: September 2003 – January 2008
   - Thesis: "Characterization of Saccharomyces cerevisiae kinesin-8 by single-molecule fluorescence microscopy"
   - Current Position: Group Leader, IMG, Czech Academy of Sciences
   - Email: vladimir.varga@img.cas.cz

8. Suzanne Bechstedt (Diploma in Biochemistry, 2002, Friedrich-Schiller-University Jena)
   - Position: PhD Student
   - Program: IMPRS
   - Dates: October 2002 – February 2007
   - Thesis: "Mechanotransduction in Drosophila melanogaster"
   - Current Position: Assistant Professor, Anatomy & Cell Biology, McGill University
   - Email: susanne.bechstedt@mcgill.ca

7. Cerasela Dinu (Diploma in Physics, 2000, Master in Biophysics, 2002, University of Bucharest)
   - Position: PhD Student
   - Program: IMPRS
   - Dates: 01.07.2002 to 24.05.2006
   - Thesis: "Leveraging the Motor Protein Kinesin to Manipulate DNA Molecules In Synthetic Environment",
   - Current Position: Professor of Chemical Engineering, Associate Chair, Biomedical Engineering, West Virginia University
   - Email: Cerasela-Zoica.Dinu@mail.wvu.edu

6. Alvaro H. Crevenna (Lic. Basis Biomedical Research, 2002, UNAM)
   - Position: PhD Student
   - Program: IMPRS
   - Dates: 2002 to November 2006
   - Thesis: "Kinesin-1 mechanical flexibility and motor cooperation"
   - Current Position: Group Leader and Head of Microscopy, EMBL Rome**:** Monterotondo, IT
   - Email: alvaro.crevenna@embl.it

5. Ingmar Riedel-Kruse (Diploma in Physics, 2001, TU Dresden)
   - Position: PhD Student
   - Program: IMPRS
   - Dates: 13.08.01 to 13.07.2005
   - Thesis: "Mechanics of the axoneme: Self-organized beating patterns and vortex arrays of spermatozoa"
   - Current Position: Associate Professor of Molecular & Cellular Biology, University of Arizona
   - Email: ingmar@email.arizona.edu

4. Ravi Sawhney (B.S., 1989, Biology, U. North Carolina; D.D.S, 1995, UNC; M.S.D., 1997, U. Washington)
   - Position: PhD Student
   - Program: Molecular and Cellular Biology
   - Dates: 01.09.1997 to 24.09.2001
   - Thesis: "Timecourse, dynamics, stability, and molecular determinants of fibroblast-traction-mediated collagen patterning"
   - Current Position: Orthodontist and Scientific Consultant, Washington DC
   - Email: earthtoravi@yahoo.com

Andy Hunter (B.S., 1992, Biology, UC Santa Barbara)

Position: PhD Student
Program: Physiology & Biophysics (joint with Linda Wordeman)
Dates: 01.09.1995 to 20.08.2002
Thesis: "Microtubule depolymerization by the kinesin-related protein MCAK"
Current Position: Staff Scientist
Email: huntera@musc.edu

3. David L. Coy (B.S., 1990, Chemistry, Pacific Lutheran University)
Position: PhD Student
Program: MSTP (Physiology and Biophysics)
Dates: 01.09.1993 to 24.11.1998
Thesis: "The Activation and Chemomechanical Stoichiometry of Cargo-Loaded Kinesin"
Current Position: Radiologist, Virginia Mason Medical Center, Seattle
Email: coy@u.washington.edu

2. Frederick T. Gittes (A.B., Physics, 1979, UC Berkeley)
Position: PhD Student
Program: Bioengineering
Dates: 01.03.1991 to 09.11.1994
Thesis: "The Mechanics of Microtubules and the Molecular Motor Kinesin"
Current Position: Clinical Professor of Physics, Washington State University
Email: gittes@wsu.edu

1. Alan J. Hunt (B.A., 1986, Biochemistry & Cell Biology, UC San Diego)
Position: PhD Student
Program: Physiology and Biophysics
Dates: 01.09.1990 to 03.12.1993
Thesis: "Mechanical and Force Generating Properties of the Molecular Motor Kinesin"
Last Position: Professor of Bioengineering, University of Michigan (deceased)
Email:

Former Postdoctoral Fellows (21/31 in faculty/group leader positions, 05/2021) (former grad students)

34. Maijia Liao (PhD in Physics, Hong Kong University of Science and Technology, 2016)
December 2017 - December 2023
Assistant Professor, Northeastern, January 2024 -
33. Sonal Shree, (PhD in Life Science, Jawaharlal Nehru University, New Delhi, 2016 -CSIR, Lucknow)
September 2016 - 2022
Current Position: Abcam, Boston
Yin-wei (Kris) Kuo (PhD, Chemistry Yale, 2020)
October 2020 – 2022
32. Ashley Arthur (PhD in Cell Biology, University of Minnesota, 2020
Position: Postdoctoral Fellow
Dates August 2020 – March 2022
Current position: AbCam, New Haven
Email: Ashley.Arthur@yale.edu
31. Jonathan Rodenfels (PhD, Dresden University of Technology, 2014)
Position: Postdoctoral Fellow
Dates: January 2018 – August 2020
Current position: Max Planck Group Leader, MPI Cell Biology and Genetics, Dresden)
Email: rodenfels@mpi-cbg.de
Pei-tzu (Ivy) Huang (PhD, MB&B Yale 2020)
February - August 2020

30. Anna Luchniak (PhD, University of Chicago, 2014)
    Position: Postdoctoral Fellow
    Dates: October 2016 – June 2019
    Current position: Pfizer, Sweden
    Email: anialuchniak@gmail.com

29. Ron Orbach (PhD Chemistry, The Hebrew University of Jerusalem, 2015)
    Position: Postdoctoral Fellow
    Dates April 2015 – June 2019
    Current position: Assistant Professor, Bar Ilan University, Israel
    Email: ron.orbach@yale.edu

28. Mohammed Mahamdeh (PhD Physics, Dresden University of Technology, 2011)
    Position: Postdoctoral Fellow
    Dates: January 2012 (MPI), January 2014 (Yale) – June 2018
    Current Position: Instructor in Medicine in Medicine, Harvard Medical School, Massachusetts General Hospital (Faculty-level)
    Email: MMAhamdeh@mgh.harvard.edu

27. Hamidreza Khataee (PhD in Mathematical and Computational Biology, School of Information and
    Position: Postdoctoral Fellow
    Communication Technology, Griffith University, 2016),
    Dates: March 2017 – March 2018
    Current Position: Associate Lecturer, Mathematical Sciences, University of Queensland
    Email: h.khataee@uq.edu.au

Veikko Geyer (PhD Biology, TUD, 2013)
November 2013 - 2017

26. Ganguly, Sujoy (PhD Physics, Cambridge, UK, 2012)
    Position: Postdoctoral Fellow
    Dates: June 2012 – December 2016
    Current Position: Senior Engineering Manager, Machine Learning
    Unity Technologies, Chicago
    Email:

25. Pablo Sartori (PhD Physics, Dresden University of Technology, 2015)
    Current Position: Postdoctoral Fellow
    Dates: October 2015 – March 2016
    Current Position: Group Leader, Gulbenkian Science Institute
    Email: psartori@rockefeller.edu

Marija Podolski (PhD Biology, TUD)
January 2014 – April 2015

24. Fernando Carrillo Oesterreich (PhD Biology, Dresden University of Technology, 2011)
    Position: Postdoctoral Fellow
    Dates: February 2012 – February 2016
    Current Position: Head of Data Science CoE, Henkel, Düsseldorf
    Email:

23. Hugo Bowne-Anderson (PhD Pure Mathematics, University of NSW, 2011)
    Position: Postdoctoral Fellow
    Dates: September 2011 – March 2016
    Current Position: Data Scientist at DataCamp
    Email: hugobowne@gmail.com

22. Joshua Alper (PhD Mechanical Engineering, MIT 2010)
    Position: Postdoctoral Fellow
    Dates: January 2010 – June 2015
    Current Position: Group Leader, GKS, Boston
    Email: alper@clemson.edu

21. Xin Liang (PhD Biophysics, Shanghai Jiao Tong University, 2007)
    Position: Postdoctoral Fellow
    Dates: January 2008 - December 2014
    Current Position: Associate Professor, Tsinghua University, Beijing
    Email: liangxinzj@outlook.com

20. Aliona Bogdanova (PhD Biology, Moscow State University)
    Position: Postdoctoral Fellow
    Dates: April 2011 - December 2014
    Current Position: Staff Scientist, MPI-CBG, Dresden, Germany
    Email: < Bogdanova@gmail.com>

19. Melissa Gardner (PhD Biomedical Engineering, University of Minnesota, 2007)
    Position: Postdoctoral Fellow
    Dates: October 2008 - December 2009
    Current Position: Associate Professor, Cell Biology, University of Minnesota
    Email: klei0091@umn.edu

18. Marija Zanic (PhD Physics, University of Texas at Austin, 2007)
    Position: Postdoctoral Fellow
    Dates: January 2008 - August 2014
    Current Position: Assistant Professor, Cell Biology, Vanderbilt University
    Email: "Zanic, Marija" <marija.zanic@vanderbilt.edu>

17. Vikram Mukundan (PhD Mechanical Engineering, Stanford University, 2009)
    Position: Postdoctoral Fellow
    Dates: November 2009 - December 2012
    Current Position: Engineer, Silicon Valley
    Email: Vikram Mukundan <vikram.mukundan@gmail.com>

16. Claire Friel (PhD Biochemistry, University of Leeds, 2003)
    Position: Postdoctoral Fellow
    Dates: June 2006 - July 2011
    Current Position: Lecturer in Biochemistry, University of Nottingham
    Email: Claire.Friel@nottingham.ac.uk

15. Christopher Gell (PhD Physics, University of Leeds, 2002)
    Position: Postdoctoral Fellow
    Dates: June 2006 - July 2011
    Current Position: Imaging facility, Nottingham University
    Email: c.gell@me.com

Volker Bormuth (PhD in Physics, Dresden University of Technology, 2009)
    Dates: November 2004 - September 2010
    Current Position: Assistant Professor, Physics, University Pierre et Marie Curie, Paris
    Email: Volker.Bormuth@curie.fr

Vladimir Varga (PhD in Biology, Dresden University of Technology, 2008)
    Dates: February 2008 – October 2009
    Current Position: Postdoc, Sir William Dunn School of Pathology, University of Oxford
    Email: vladimir.varga@path.ox.ac.uk

14. Jacques Pecreaux (PhD in Physics, University of Paris 6, 2004)
Position: Postdoctoral Fellow
Dates: April 2004 - November 2008
Current Position: Group leader ATIP CNRS, Faculté de Médecine (Univ. Rennes 1)
Email: jacques.pecreaux@univ-rennes1.fr

Susanne Bechstedt (PhD Biology, 2002, Dresden University of Technology, 2007)
Dates: February 2007 - February 2009
Current Position: Postdoc, McGill University, Canada
Email: susannebechstedt@googlemail.com

13. Gary Brouhard (PhD Biomedical Engineering, University of Michigan, 2004)
Position: Postdoctoral Fellow
Dates: July 2004 – July 2008
Current Position: Associate Professor of Biology, McGill University, Canada
Email: gary.brouhard@mcgill.ca

12. Ji-Jinn Foo (PhD Nanyang Technical University, Singapore, 2003)
Position: Postdoctoral Fellow
Dates: March 2004 - June 2008
Current position: Senior lecturer, School of Engineering, Monash University (Malaysia Campus)
Email: Foo Ji Jinn <foo.ji.jinn@monash.edu>

11. Khaled A. Khairy (PhD., 2002, Chemistry, Northeastern University)
Position: Postdoctoral Fellow
Dates: July 2002 – June 2007
Current Position: Associate Member, St. Jude Faculty
Director, Center for Bioimage Informatics
Email: khaled.khairy@stjude.org

10. Erik Schäffer (Dr. rer. nat., 2001, Physics, U. Konstanz)
Position: Postdoctoral Fellow
Dates: March 2002 – 31.12.2006
Current Position: Professor of Cellular Nanoscience, University of Tübingen
Email: erik.schaeffer@biotec.tu-dresden.de

Ingmar Riedel-Kruse (Ph.D., 2005, Technical University of Dresden)
Position: Postdoctoral Fellow
Dates: 31.03.2005 - 31.03.2006
Current Position: Assistant Professor of Bioengineering, Stanford University
Email: ingmar@stanford.edu

9. Michael Landolfa (Ph.D. 1992, University of California, Berkeley)
Position: Postdoctoral Fellow
Dates: 01.09.2001 - 31.07.2004
Current Position: Secondary school teacher, Florence
Email:

Ravi Sawhney (B.S., 1989, Biology, U. North Carolina; D.D.S, 1995, UNC; M.S.D., 1997, U. Washington)
Position: Postdoctoral Fellow
Dates: 24.09.2001 to 31.12.2003
Current Position: Orthodontist and Consultant, Bethesda
Email: sawhneyra@od.nih.gov, earthtoravi@yahoo.com

8. Stefan Diez (Ph.D., 2000, Technical University of Berlin)

Position: Postdoctoral Fellow
Dates: 01.09.2000 - 31.3.2004
Current Position: Professor of BioNanoTools (W3), Technical University of Dresden
Email: stefan.diez@tu-dresden.de

7. Britta Schroth-Diez (Ph.D., 2000, Humboldt University, Berlin)
Position: Postdoctoral Fellow
Dates: 01.09.2000 - 30.06.2005
Current Position: Staff Scientist, Light microscopy facility, MPI-CBG
Email: schroth@mpi-cbg.de

6. William R. Schief Jr. (Ph.D., 1999, Physics, U. Washington)
Position: Postdoctoral Fellow
Dates: 16.9.1999 to 31.05.2001
Project: "Elasticity of kinesin under rotary and linear forces"
Current Position: Professor, Scripps Research Institute, San Diego
Email: schief@u.washington.edu

5. Ellen A. Lumpkin (Ph.D., 1998, Neuroscience, U.T. Southwestern Medical School)
Position: Postdoctoral Fellow
Dates: 27.4.1998 to 31.12.2000
Project: "Cutaneous touch reception by Merkel cell-SA1 neurite complexes"
Current Position: Professor of Molecular & Cell Biology, UC Berkeley
Email: lumpkin@berkeley.edu

4. Diane Frank (Ph.D., 1995, Biochemistry, U. Wisconsin)
Position: Postdoctoral Fellow
Dates: 01.12.1995 to 31.12.1997
Project: "Organelle transport"
Current Position: Staff Scientist, Fred Hutchinson Cancer Research Center
Email: difrank@fhcrc.org

Frederick L. Gittes (Ph.D., 1994, Bioengineering, U. Washington)
Dates: 01.11.1994 to 31.12.1995
Project: "Mechanics of microtubules and motors"
Current Position: Clinical Associate Professor, Physics, Washington State University
Email: gittes@wsu.edu

3. William O. Hancock (Ph.D., 1994, Bioengineering, U. Washington)
Position: Postdoctoral Fellow
Dates: 01.01.1994 to 31.12.1999
Current Position: Professor, Bioengineering, Penn. State University
Email: woh1@psu.edu

2. Sanghamitra Ray (Ph.D., 1991, Cell Biology, Stanford)
Position: Postdoctoral Fellow
Dates: 01.10.1991 to 31.12.1993
Project: "Microtubule-based motors"
Current Position: Marketing Director, National Safety Associates
Email:

1. Edgar Meyhöfer (Ph.D., 1991, Zoology, U. Washington)
Position: Postdoctoral Fellow
Dates: 01.08.1991 to 31.08.1994
Project: "Force generation by motor proteins"
Current Position: Professor, Mechanical Engineering, University of Michigan
Email: meyhofer@umich.edu

Former Master's and Diploma Students (incomplete)

Monika Kauer, Physics, TUD, 2012
Christian Bruchatz, 2012? (Physics, TUC)
Christoph Schiklenk, 2011 (Biology, University of Kassel)
Sarah Stratmann, 2010 (Biochemistry, University of Tübingen)
Jürgen Mayer, 2010 (Physics, TUD)
Claudia Martin, 2010 (Physics, TUD)
Jan Ribbe, 2009 (Physics, TUD)
Henning Urban, 2007 (Physics, TUD)
Frauke Hußmann, 2007 (Biochemistry, FU Berlin)
Anton Khmelinski, 2005 (Biochemistry, Faculdade de Ciencias da Universidade de Lisboa)
Cordula Reuter, 2002 (Material Science, TUD)

Former Rotation, Undergraduate and High-school Students (incomplete)

Michael Grace (Physics Senior Project, Fa2014, Sp2015)
Robert Pecoraro (Physics Senior Project, Sp2015)
Alois Cerbu (Physics Sophomore, Su2015)
Benjamin Koleske (High-School Research, Summer 2014)
Bernice Agana (VAR, Summer 2014)
Neal Ravinda, (Rotation, BBSB/PEB, Summer 2014)
Romain Pszczolinski, Medicine (University Denis Diderot, Paris)
Daniel Cohen, Spring 2000 to Summer 2002 (Physics/Biochemistry Undergraduate)
Andy Erickson, Summer 1998 (Physics Undergraduate)
Spenser Barlow, Fall 1997 to Spring 1998 (Biology Undergraduate)
Scott Philips, Summer 1996 to Spring 1997 (Physics Undergraduate)
Chad Thomas, Summer 1995, Winter 1996, Spring 1996 (Chemistry Undergraduate)
Kirstine Oh, Summer 1995 to Spring 1997 (International Studies Undergraduate)
Brian Mickey, 1991 to 1993 (Biochemistry Undergraduate)

Former Technicians (incomplete)

Heike Petzold, December 2008 - December 2014
Claudia Martin, October 2010 - December 2012
Regine Hartmann, October 2001- January 2009
Frauke Hußmann, 01.10.2006 - 31.08.2007
Henning Urban, 15.09.2006 - 31.07.2007
Pia Schenke, 01.02.2003 – 31.01.2005
Saylor Bayle, 01.06.2001 – 30.09.2002
Michael Wagenbach, 1997-2001
Sung Baek, 1990-1996

GRANTS

Ongoing Research Support

NIH, R01 NS118884-01A1 Jonathon Howard (PI) 12/1/2020 – 11/30/2025
Dendrite Structure: Data-Driven Models to Bridge from Molecules to Morphology
The goal of this grant is to understand how the dynamical properties of dendrite tips leads to the two-dimensional structure of branched dendrite networks.

NIH, R01 GM139337-01 Jonathon Howard (PI) 7/1/2020 – 6/31/2024
Microtubule Severing and Regrowth by Spastin
The goal of this grant is to understand how the protein spastin amplifies the microtubule cytoskeleton by severing and promoting regrowth of microtubules

NSF, PHY-2210464 Jonathon Howard (PI) 9/1/2022 – 8/31/2025
Biophysics of Branched Cells: Intracellular Transport, Scaling Laws and The Supply of Metabolic Demand
The goal is to understand how metabolic supply and demand shaped dendrites.

Spastic Paraplegia Foundation Jonathon Howard (PI) 1/1/23 – 12/31/2024
Roles of alternative isoforms of spastin on function in vitro and in vivo
The goal of this grant is to understand the roles of alternative isoforms on spastin function

Alexander von Humboldt Foundation Jonathon Howard (PI) 2/1/2022 -1/31/2025
Feodor Lynen Research Fellowship to Yazgan Tuna

Training programs
NIH, PEB

Completed Research Support (incomplete)

NSF, DBI-2021988 M. Venkadesan (PI) 9/1/2020 – 9/1/2023
BII-Design: Evolutionary Morphogenesis and Biodiversity Institute (EMBody)
The goal is to write a proposal for the EMBody Institute
Howard is co-PI

NIH, F32, Postdoctoral Fellowship Jonathon Howard (PI) 4/1/2020 – 3/31/2023
Examining cell polarity in nerve nets
Ruth L. Kirschstein National Research Service Award (NRSA) Individual Postdoctoral Fellowship to Awardee: Ashley Arthur

NIH, DP1 MH110065 Jonathon Howard (PI) 9/21/2015 – 7/31/2021
Cell Biological Limitations Constrain Dendritic Branching Morphology and Neuronal Function
The goal of this grant is to understand the rules underlying branching in nerve cells.

NIH, R01 GM110386 Jonathon Howard (PI) 5/1/2014 – 2/28/2019
Control of Microtubule Length by Polymerases and Depolymerases
The goal of this grant is to understand how the yeast polymerases Stu2 and Kip2, together with the depolymerase Kip3, control the dynamics and lengths of microtubules.

EU FP7: ERC Program grant # 241548 Jan-Michael Peters (PI) 01.06.2010 – 31.05.2014
"Systems Biology of Mitosis (MitoSys)"
The goal of this project is to model the assembly of the mitotic spindle.
Role: Co-PI

DFG (German Science Foundation) Gerhard Fettweis (PI) 01.01.2013 - 31-12-2017
"Center for Advanced Electronics Dresden (cfAED)"
The goal is to explore new technologies for electronic information processing which overcome the limits of today's predominant CMOS technology.
Role (Co-PI until 31.06.2013)

Human Frontier Science Program Andrea Musacchio (PI) 01.09.2009 – 31.08.2013
"A multidisciplinary approach to microtubule-kinetochore attachment"
The goal of this grant is to reconstitute the kinetochore components with purified proteins.
Role: Co-PI

Max Planck Society Jonathon Howard (PI) 01.01.2006 – 31.12.2010
"Max Planck Society Partner Group - Stanek"
The goal of this grant was to support the Partner Group to MPI-CBG Dresden of Dr. David Stanek at the Institute of Molecular Genetics Academy of Sciences of the Czech Republic.

VW Stiftung: I/80 984 Jonathon Howard (PI) 01.06.2005 to 31.05.2008
"Neural control of flight in *Drosophila*"
The goal is to understand the role of wing and haltere mechanoreceptors in the fly flight by combining molecular biology, behavior and modeling (with Steven Fry (ETH, Zurich) and Martin Zapotocky (MPI-PKS, Dresden)

EU: ERC Program Grant Christine Petit (PI) 01.12.2004 to 30.11.2009
"Advances in Hearing Science: From Functional Genomics to Therapies (EuroHear)"
The goal of the subproject is to understand the molecular basis of transduction by microtubule-based mechanoreceptors in the fly

VW Stiftung: I-80050 Daniel Mueller (PI) 1.1.2004 to 31.12.2006
"Developing and applying nanoscopic collagen templates for biotechnology, molecular cell biology and medicine"
A collaboration between Daniel Mueller (Biotec, TUD), Richard Funk (TUD) and Jonathon Howard to use an AFM to structure collagen monolayers on surfaces, to probe the mechanical properties of individual collagen molecules, and to study the interaction of cells with the patterned collagen.

NIH: R01 AR40593 Jonathon Howard (JH) 01.06.1990 to 31.03.2007
"Mechanics of Kinesin: a Microtubule-based Motor Protein"
The goal is to understand how conformational changes within kinesin's motor domain lead to movement and force generation.

DFG: HO 2454/1-1 Karl Leo (PI) 01.01.2003 to 31.12.2005
Forschergruppe: "Nanostrukturierte Funktionselemente in makroskopischen Systemen"
Subproject Title: "Aufbau elektrischer Netzwerke mit Motorproteinen und DNA"
one BAT 2a 3/4 position/year
Percentage effort: 5%
Goal of subproject: The aim is to use motor proteins to pattern DNA on surfaces.

BMBF: 03i4025A Juergen Hofinger (PI) 01.11.2002 to 31.10.2005
"Entwicklung eines Nanostrukturassemblers mit Motorproteinsteuerung (NAMOS)"
Principal Investigator: Juergen Hofinger
Duration: 01.11.2002 to 31.10.2005

The goal is to support a collaboration between Wolgang Pompe (TUD), Jonathon Howard, Michael Mertig (TUD), Stefan Diez (CBG), Juergen Hofinger (NAMOS GmbH) and Steffen Howitz (GeSim GmbH) to develop a computer-controlled microfluidics device for automating motor assays.

Max Planck Society Jonathon Howard (PI) 01/01/00 to 12/31/01
"Cellular and nuclear mechanics"
The goal is to determine how touch reception by Merkel cells work, to elucidate the mechanism by which the kinesin-related protein MCAK depolymerizes microtubules, and to understand how mechanical signals regulate gene expression.

NASA Viola Vogel (PI) 01.09.1999 to 31.08.2002
"Motor proteins as molecular shuttles for directed transport in synthetic matrices"
The goal is to build a molecular shuttle that is operated on a patterned array of motor proteins on nanoengineered surfaces.

HFSP: RG00201/1999-M Jonathon Howard (PI) 01.05.1999 to 30.04.2002
"Energy Transduction at the Kinesin-Microtubule Interface"
o support a collaboration between Linda Amos, Robert Cross, Sharyn Endow, Keiko Hirose and Hideo Higuchi to determine the role of the microtubule in energy transduction by kinesin.

UW Research Royalty Fund Jonathon Howard (PI) 01.03.1999 to 31.01.2000
"Mechanoelectrical Transduction by Murine Touch Receptor Cells"

NIH: PO1 HL52558-04 A.M. Gordon (PI) 30.09.1994 to 31.08.1999
"Contractile Regulation in Cardiac Muscle"

HFSP Eric Karsenti (PI) 01.04.1994 to 30.04.1997
"Molecular Physiology and Biophysics of Mitosis"
To support a collaboration with Tim MItchison and Stan Leibler

NIH George Martin (PI) 01.01.1992 to 31.12.1994
"Alzheimer's Disease Pilot Project"

Pew Scholar's Program Jonathon Howard (PI) 01.07.1990 to 30.06.1994
"Chemomechanical Transduction by the Motor Protein Kinesin"

Alfred J. Sloan Research Fellowship Jonathon Howard 01.07.1990 to 30.06.1992
Principal Investigator: Jonathon Howard

Former Fellowships

EMBO Fellowship Ron Orbach (postdoc) 1/1/2016 – 12/1/2018

AvH Xin Liang (postdoc) 2009.3-2011.2
"Molecular basis of Mechanotransduction in Drosophila" Duration
Dates 2009.3-2011.2

HFSP Marija Zanic 2008.4 -2010.4 + 1 year
"Single-molecule studies on microtubule plus-end-tracking protein EB1"

AvH Claire Friel 2007.6-2008.12
"How is the depolymerisation of microtubules by the kinesin-like protein, MCAK, coupled to ATP hydrolysis"

NIH Individual NRSA (F32) Gary Brouhard 1 Aug 2006 - 31 Jan 2008
"The structural basis for divergent function in kinesis"

Boeringer Ingelheim Fonds Volker Bormuth 01 Dec 2005 - 30 Nov 2007
"Characterization of microtubule depolymerizing proteins with optical tweezers"

HFSP Jacques Pecreaux 01 Jun 2005 - 31 May 2008
"Mitotic spindle oscillations in *Caenorhabditis elegans*"

NIH Individual NRSA William R. Schief Jr. 01.08.1999 to 31.07.2002
"Elasticity of the motor protein kinesin under torsional, longitudinal, and extensional forces"

Damon Runyon-Walter Winchell Ellen Lumpkin 01.01.1999 to 31.12.2001
"Merkel cells: Testing their role in cutaneous mechanoreception"

John Simon Guggenheim Fellowship Jonathon Howard 01.08.1996 to 31.07.1997
"Mechanics of Mitosis"
$28,000

NIH Individual NRSA Diane Frank 01.07.1995 to 31.12.1997
"Cooperativity of Force-Generating Heads in Kinesin"

Muscular Dystrophy Association (MDA) William O. Hancock 01.01.1995 to 31.12.1997
"Regulation of the Kinesin ATPase"
American Heart Association (AHA) Edgar Meyhöfer 01.01.1992 to 31.12.1994

Fondation pour l'Etude du Système Nerveux Jonathon Howard 01.01.1988 to 31.12.1989

Former Training Grants

NIH GM07108-21
Title "Institutional Grant for Neurobiology"
Principal Investigator: Marc Binder
Duration 01.07.2000 to 30.06.2005
Goals: This is an Interdisciplinary Training Grant that provides stipend support for graduate students working toward a Ph.D. in Physiology and Biophysics. The students supported on this grant may participate in research projects associated with this laboratory.

NIH GM08268-06
Title: "Training in Molecular Biophysics"
Principal Investigator: William Parson
Duration: 01.07.1993 to 30.06.1998

NIH GM07270-22
Title: "Training in Molecular and Cellular Biology"
Principal Investigator: David Kimelman
Duration: 01.07.1975 – 30.06.1998
Goals: Interdisciplinary training grant providing stipend support on a competitive basis for predoctoral students in the Departments of Biochemistry, Biological Structure, Botany, Microbiology, Pathology, Pharmacology, Physiology and Biophysics, and Zoology. Some of these students may participate in research projects associated with this laboratory.