

Jonathan A. N. Fisher, Ph.D.

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Education

- The Rockefeller University**, New York, NY 2013
Postdoctoral Fellowship
- Developed experimental paradigms for probing auditory attention and acuity using varied physiological signals
 - Designed hybrid scanning optical interferometry apparatus for probing molecular basis of cochlear mechanics
 - Utilized computational modeling to extract biomechanical properties based on imaging data
 - Probed the biophysical underpinnings of healthy hearing
- University of Pennsylvania**, Philadelphia, PA 2007
Ph.D., Physics (focus on neuroimaging and biomedical optics)
- Developed novel endoscopic optical imaging techniques for recording neuronal activity *in vivo* and *in vitro*
 - Explored the neural circuitry underlying touch perception using implanted imaging devices
 - Designed and fabricated fiber-coupled, multi-focal nonlinear optical microscopy apparatus
- University of Pennsylvania**, Philadelphia, PA 2000
B.A. with Honors in Physics and Astronomy, Minor in English
- Designed and fabricated cryogenic optics components for the Mobile Anisotropy Telescope (MAT) and Balloon-Borne Large-Aperture Submillimeter Telescope (BLAST)
 - Constructed a Fourier transform spectrometer for analyzing microwave optical properties of telescope components

Experience

- Assistant Professor**, New York Medical College, Valhalla, NY 2014 – present
- Direct the Neurosensory Engineering Lab research group, which works on quantitative diagnostics, rehabilitation, and neuromodulation with an emphasis on optical techniques and focused ultrasound.
 - Manage a research lab that includes an imaging/neurophysiology facility, an optics instrumentation fabrication station, as well a human EEG suite
 - Explore quantitative biomarkers for traumatic brain injury by optimizing human measurement strategy using optical and electrophysiological approaches
 - Manage a research budget of \$1,115,694 secured from both governmental and intramural sources
- Adjunct Scientist**, U.S. Food and Drug Administration, Silver Spring, MD 2016 – present
- Direct regulatory research on wearable medical device technology, resulting in multiple publications and \$444,673 in funding from the National Science Foundation and FDA
- ORISE Faculty Fellow**, U.S. Food and Drug Administration, Silver Spring, MD 2014 – 2016
- Co-authored consults on medical device Premarket Notification (510(k)) submissions, Investigational Device Exemption (IDE) applications, Premarket Approval (PMA) applications, as well as Pre-submission (“Q-sub”) applications, leading to regulatory decisions for two submissions
 - Served as review panel member for the Defense Advanced Research Projects Agency (DARPA) “HAPTIX” Program (Hand Proprioception & Touch Interfaces for Prosthetic Limbs)
- Co-Founder and Managing Member**, Neurovision LLC, New York, NY 2013 – present
- Direct the Neurodome® project, the first immersive neuroscience experience for dome projection and VR
 - Led development of Neurotours™, a real-time immersive tour of real neuroimaging datasets, from concept to packaged product, licensed to major museums worldwide
 - Manage an interdisciplinary team of 10 that includes scientists, animators, and software engineers during creation of VR and dome content, real-time tools, a mobile webpage, and a prototype iOS app
 - Negotiated licensing, contracting, and IP legal agreements with domestic and international corporations

Consultant, Hybra Advance Technology, Traverse City, MI 2012 – 2013

- Advised on medical safety considerations during the development of a wireless audio headset that utilizes bone-conduction transmission of sound, resulting in white paper guidance for engineers
- Co-created marketing materials for communicating advanced scientific principles to a lay audience

Advisor, Governors Island Science and Technology (GIST) ad hoc committee, New York, NY 2007

- One of ten scientists invited by NY City Council Member Alan J. Gerson to explore concept for potential scientific research infrastructure on Governors Island
- Co-authored advisory white paper for the Governors Island Preservation and Education Corporation (GIPEC)

Selected Publications

H. Jang, S. Huang, D. X. Hammer, L. Wang, H. Rafi, M. Ye, C. G. Welle, **J. A. N. Fisher**, 2017. Alterations in neurovascular coupling following acute traumatic brain injury. *Neurophotonics* [in press].

S. Huang*, **J. A. N. Fisher***, M. Ye, Y. Kim, R. Ma, M. Nabili, V. Krauthamer, M. Myers, T. Coleman, and C. G. Welle. 2017. Epidermal electrode technology for detecting ultrasonic perturbation of sensory brain activity. *IEEE Transactions on Biomedical Engineering*, [*equal contribution].

J. A. N. Fisher, S. Huang, M. Ye, M. Nabili, W. B. Wilent, V. Krauthamer, M. Myers, C. G. Welle. 2016. Real-time detection and monitoring of acute brain injury utilizing evoked electroencephalographic potentials. *IEEE Transactions on Neural Systems & Rehabilitation Engineering* 24(9): 1003-1012.

J. A. N. Fisher, F. Nin, T. Reichenbach, R. Uthaiyah, A. J. Hudspeth. 2012. The spatial pattern of cochlear amplification. *Neuron* 76(5): 989-997.

J. A. N. Fisher, V. A. Marchenko, A. G. Yodh, R. F. Rogers. 2005. Spatiotemporal activity patterns during respiratory rhythmogenesis in the rat ventrolateral medulla. *Journal of Neurophysiology* 95(3): 1982-1991.

Selected Invited Presentations

- **Institute of Photonic Sciences (IFCO)**, Barcelona, Spain July 2016
- **IBM T.J. Watson Research Center**, Yorktown Heights, NY March 2016
- **U.S. Food and Drug Administration**, Silver Spring, MD May 2013
- **Courant Institute of Mathematical Sciences**, New York, NY February 2013

Selected Honors and Awards

- **FDA / Center for Devices and Radiological Health (CDRH) Director's Special Citation Award** 2015
- **Blavatnik Award for Young Scientists** 2013
- **Optical Society of America New Focus / Bookham Student Award** 2006

Programming Skills

- Strong: Matlab (incl. Machine Learning & Image Processing), Octave, LabVIEW
- Basic: Mathematica, Python, IGOR, HTML, IDL, Code V, Arduino robotics

Other Activities

Concert pianist: - Concert pianist, Carnegie Hall debut at Weill Recital Hall 2007, presented by Artists International