

Jess Holz

ARTIST/SCIENTIST

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EDUCATION

MASTER OF FINE ARTS

Art + Technology

University of Wisconsin-Milwaukee
2019

BACHELOR OF ARTS

Major: Art, Minor: Neuroscience

Lawrence University
2008

SKILLS

- Specimen preparation techniques for both electron and optical microscopy such as immunostaining, SNAP labeling, cryostat and ultrathin serial sectioning.
- Mammalian cell culture.
- Software competency in ImageJ/Fiji, Reconstruct, Huygens, Microsoft Office, Adobe Photoshop, Illustrator, & Rhino CAD modeling software.
- 9+ years experience with digital fabrication and design (CNC, 3D printing, laser cutting).

MICROSCOPY EXPERIENCE

- Scanning electron microscopy
- Transmission electron microscopy
- Confocal microscopy
- 2-photon microscopy
- Spectral FRET
- Serial sectioning for TEM
- Serial block face sectioning EM

WORK EXPERIENCE

ELECTRON MICROSCOPY RESEARCH FELLOW

Boston University / 2019 – present

Research fellow in the systems neuroscience lab of Dr. Helen Barbas.

- Participating in collaborative research on the structure and function of neurons in the primate cerebral cortex.
- Specimen preparation and imaging of brain tissue on the electron microscope, including serial sectioning and serial block face sectioning.
- Training students and lab members on scanning and transmission electron microscopes, ultramicrotomes, and various other instruments, as well as EM data analysis.

TEACHING ASSISTANT

University of Wisconsin-Milwaukee / 2017 – 2019

Teaching Assistant for Art 118, Digital Arts and Culture.

- Assisted lead instructor with grading and record keeping.
- Supported lab instructors in teaching Adobe Creative Suite.
- Collaborated with lead teachers to recognize issues students are facing and recommend solutions.

PHOTOGRAPHY AREA PROJECT ASSISTANT

University of Wisconsin-Milwaukee / 2016 — 2017

Operator of UWM PSOA Photo Documentation Lab.

- Aided lead instructor in photography workshops and performed photo shoots at UW-Milwaukee public events.
- Utilized knowledge of photography and lighting techniques to document student work.
- Researched and updated all required materials needed for photo shoots and photo process equipment.

RESEARCH ASSISTANT

University of Wisconsin-Milwaukee / 2011 – 2014

Research Assistant in the biophysics laboratory of Dr. Valerica Raicu.

- Set up and maintained a two-photon microscopy facility.
- Independent research involved spectral FRET analysis of SNAP labeled mammalian cells with the goal of single molecule imaging.
- Assisted development and testing of a novel high speed line-scan two-photon spectrally resolved microscope.
- Maintained mammalian cell lines.

MICROSCOPY TECHNICIAN

Whitehead Institute, MIT / 2008 – 2011

Technician for the W. M. Keck Microscopy Facility.

- Training and maintenance of microscopes. Helped users design and execute effective experiments to test their hypotheses.
- Provided sample preparation services for microscopy such as cryostat sectioning, immunolabeling, and fixation/embedding for TEM.

AWARDS

- Winner, Teravarna WATER Art Competition 2023
- Winner, JEOL Image Awards, 2021
- Honorable Mention, 2018 National Juried Exhibition, Willard Arts Center, 2018
- UW-Milwaukee Chancellor's Award, 2017
- UW-Milwaukee Layton Fellowship, 2017
- UW-Milwaukee Layton Fellowship, 2016
- Winner, David H. Koch Center for Integrative Cancer Research Image Awards, 2011

ACTIVITIES

- Member, FEMeeting, 2021-
- Artist in Residence at Iowa Lakeside Labs, June 2019
- Member, Microscopy Society of America, 2014-
- Organizing committee member, Open Forum for Innovation in Two Photon Microspectroscopy, 2012-2014
- Tour guide and presenter, Whitehead Institute High School Program, 2009-2011
- Member, ASCI (Art and Science Collaborations, Inc.), 2009-2012

CONFERENCES

- FEMeeting: Women in Art, Science, & Technology, 2022 & 2024
- International Symposium on Electronic/Emerging Art (ISEA), 2018
- Focus on Microscopy, 2013
- Open Forum for Innovation in Two Photon Microspectroscopy, 2012-2014

ART EXHIBITIONS

- 2024, *Vision and Process: Art Inspired by Science*, Mosesian Center for the Arts, Watertown, MA
- 2024, *Cross Pollination*, Artisans Asylum, Boston, MA
- 2024, *Art Party*, Artisans Asylum, Boston, MA
- 2023, *Plankton Painting*, Aeronaut Brewery, Cambridge, MA
- 2022, *Human/Nature*, Mosesian Center for the Arts, Watertown, MA
- 2020, *Edge of Light*, Plaxall Gallery, New York City, NY
- 2020, *The Trajectory Series*, Villa Terrace Decorative Arts Museum, Milwaukee, WI
- 2019, *Umbra (Solo Show)*, Manifest Gallery, Cincinnati, OH
- 2019, *Of the Between*, Kenilworth Square East Gallery, Milwaukee, WI
- 2018, *Future of History*, Boston Cyberarts Gallery, Jamaica Plain, MA
- 2018, *Art & Science*, Ushaka Aquarium, Durban, KwaZulu-Natal, South Africa
- 2018, *Project L*, The Drama Science Lab, Chicago, IL
- 2018, *Master Pieces*, Manifest Gallery, Cincinnati, OH
- 2018, *Tech Art Faire*, Ontario Science Center, Toronto, ON, Canada
- 2018, *2018 National Juried Exhibition*, Willard Arts Center, Idaho Falls, IA
- 2018, *Emerging Artists Winter Sessions*, Morpho Gallery, Chicago, IL
- 2017, *Various Flora & Fauna*, View Gallery, Old Forge, NY
- 2017, *Master Pieces*, Manifest Gallery, Cincinnati, OH
- 2011, *2011 KI Image Awards*, Koch Center for Integrative Cancer Research, Cambridge, MA

In addition to these, I've exhibited my participatory interactive artwork 'Light Painting Photo Booth' for Cambridge Science Festival 2022 & 2023, Boston Children's Museum CreatedBy Festival 2021 & 2022, and Maker Faire Milwaukee 2017 & 2018.

PUBLICATIONS

Tafti, A. P., Kirkpatrick, A. B., Holz, J. D., Owen, H. A., & Yu, Z. (2018). A Comparative Study on the Application of SIFT, SURF, BRIEF and ORB for 3D Surface Reconstruction of Electron Microscopy Images. *Computer Methods in Biomechanics*, 6(1), 17-30.

Tafti, A. P., Holz, J. D., Kirkpatrick, A. B., Owen, H. A., & Yu, Z. (2016). 3D SEM Surface Reconstruction: An Adaptive and Intelligent Approach. *Micron*, 87, 33-45.

Patowary, S., Pisterzi, L. F., Holz, J. D., Oliver, J. A., Wells, J. W., & Raicu, V. (2015). Experimental verification of the kinetic theory of Förster resonance energy transfer using optical micro-spectroscopy and obligate oligomers expressed in living cells. *Biophysical Journal*, 108(7), 1613-1622.

Biener, G., Stoneman, M. R., Acbas, G., Holz, J. D., Orlova, M., Komarova, L., Kuchin, S., & Raicu, V. (2013). Development and Experimental Testing of an Optical Micro-Spectroscopic Technique Incorporating True Line-Scan Excitation. *International Journal of Molecular Sciences*, 15(1), 261-276.

Patowary, S., Alvarez-Curto, E. C., Xu, T. R., Holz, J. D., Oliver, J. A., Milligan, G., & Raicu, V. (2013). The muscarinic M3 acetylcholine receptor exists as two differently sized complexes at the plasma membrane. *Biochemical Journal*, 452(2), 303-312.

Pritchard, C. D., Arnér, K. M., Neal, R. A., Neeley, W. L., Bojo, P., Bachelder, E., Holz, J., Watson, N., Botchwey, E. A., Langer, R. S., & Ghosh, F. K. (2010). The use of surface modified poly (glycerol-co-sebacic acid) in retinal transplantation. *Biomaterials*, 31(8), 2153-2162.