

Jess Holz

ARTIST/SCIENTIST

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PROFILE

Jess Holz creates artworks which give the viewer a peek into invisible worlds, as well as a chance to reflect on the influence of scientific visual culture on our collective imagination. Working in both art and science has bestowed her with a keen eye and attention to detail, she has over 18 years experience working with scanning electron microscopy. Her award winning micrographs have been exhibited internationally.

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, Imaris, Huygens, Microsoft Office, Adobe Photoshop, Illustrator, & Rhino CAD modeling software.
- 7+ years experience with digital fabrication and design (CNC, 3D printing, laser cutting).

WORK EXPERIENCE

ELECTRON MICROSCOPY RESEARCH FELLOW

Boston University / 2019 – present

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

- Participates in collaborative research on the structure and function of synapses in the brain.
- Specimen preparation and scoping of brain tissue on the electron microscope, including serial sectioning.
- Overseeing operation of the transmission electron microscope, microtomes, and various other instruments.

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.
- Collaborated with lead teachers to recognize issues students are facing and recommend solutions.

PROJECT ASSISTANT

University of Wisconsin-Milwaukee / 2016 — 2017

Operator of UWM PSOA Photo Documentation Lab.

- Utilized knowledge of photography and lighting techniques to document student work and UW-Milwaukee events.
- Researched and updated all required materials needed for the 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 spectral microscope.
- Maintained mammalian cell lines.

MICROSCOPY EXPERIENCE

- Scanning electron microscopy
- Transmission electron microscopy
- Confocal microscopy
- 2-photon microscopy
- Spectral FRET
- Serial sectioning 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, 2022-
- 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

Work experience cont.

MICROSCOPY TECHNICIAN

Whitehead Institute, MIT / 2008 – 2011

Technician for the W. M. Keck Microscopy Facility.

- Training and maintenance of microscopes. Help 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

ART EXHIBITIONS

- 2022, *Human/Nature*, Mosesian Center for the Arts, Watertown, MA
- 2020, *Edge of Light*, Plaxall Gallery, New York City
- 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 Aqarium, 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 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*.

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.