Mark D. Lessard

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Profile

Motivated, personable research professional with a 24-year track record of exceptional work ethic. Talent for quickly mastering technology. Flexible and versatile – able to maintain a sense of humor under pressure. Poised and competent with demonstrated ability to convey complex ideas/methods with professionals and non-professionals at all levels. Ability to thrive in deadline-driven environment.

Employment History

BATES COLLEGE – Lewiston, ME 04240
Science Resource Technician, 09/2021 – present

YALE UNIVERSITY SCHOOL OF MEDICINE – New Haven, CT 06510
Research Associate 3 MS, Lab Manager, Microscopy Specialist, 05/2015 to 9/2021

THE JACKSON LABORATORY – Bar Harbor, ME 04609
Microscopy Specialist, 05/2009 to 5/2015

THE JACKSON LABORATORY – Bar Harbor, ME 04609
Lab Manager, 03/2006 to 05/2009

THE JACKSON LABORATORY – Bar Harbor, ME 04609
Research Assistant II, 04/1999 to 03/2006

Education

FRANKLIN PIERCE COLLEGE	Rindge, NH	Bachelor of Arts/Biology1998	Magna Cum Laude

Employment Experience

Administrative --

- Collection and tracking of metrics relevant to the core service
  - Instrument usage, user satisfaction, capacity evaluation, billing
- Managed spending across multiple funding sources supporting various projects/aims of the lab
- Negotiation of pricing/discounts associated with all major equipment purchases
- Served as the lab safety officer, maintaining compliance with all state, federal, and university requirements.

Training/Education/Mentorship --

- New user/lab member training on the labs different instrument platforms
- Developed presentations/posters to promote the lab/core service
- Direction of day to day activities within the lab and provided support and guidance to the 12-17 graduate students, post-docs, and interns.

Research --

- Assisted in experimental design
- New technique/procedure research and development
- Developed guides for best imaging practices, image analysis basics, user manuals for custom instruments
- Wet lab bench work (see Skills)
- Custom instrument design (CAD) and construction

Maintenance/Repair/Construction --

- General instrument upkeep, repair, and trouble shooting
- New product evaluation
- Lab website maintenance and modifications
- Maintenance of the lab NAS system and OMERO image server.

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Skills

- Tissue Culture
- Preparation of reagents
- Small animal surgery
- Flow cytometry
- Immunohistochemistry
- Immunofluorescence
- cryostat/vibratome use
- extensive wide-field/confocal microscopy knowledge
- extensive super resolution microscopy knowledge (FPALM, STED, 4Pi, etc.)
- Scanning Electron Microscopy
- Image analysis and associated software programs (Amira, Imaris, FIJI, Cell Profiler)
- CAD design (SolidWorks)
- PC and MAC operating systems as well as system design and assembly

Professional Service

Course Facilitator/Teaching Assistant
2019 - Present
Optical Microscopy & Imaging in the Biomedical Sciences Marine Biological Laboratory
Woods Hole, MA 02543

Publications

Brain W. Soper, Mark D. Lessard, Carole A. Vogler, Beth Levy, Wesley G. Beamer, William S. Sly, and Jane Barker. Nonablative neonatal marrow transplantation attenuates functional and physical defects of β-glucuronidase deficiency. Blood. 2001; 97:1498-1504.

Jane E. Barker, Sue Deveau, Mark Lessard, Nancy Hamblen, Carole Vogler, and Beth Levy. *In Utero* Fetal Liver Cell Transplantation without Toxic Irradiation Alleviates Lysosomal Storage in Mice with Mucopolysaccharidosis Type VII. Blood Cells, Molecules, and Diseases. 2001; 27:861-873.

Brian W. Soper, Mark D. Lessard, Craig D. Jude, Adam J. Schuldt, and Jane E. Barker. Delayed administration of carrier marrow can decrease competition on donor stem cells during engraftment and maintain radioprotection of the host. Experimental Hematology. 2002; 30:837-845.

J.E. Barker, A.J.T. Schuldt, M.D. Lessard, C.D. Jude, C.A. Vogler, and B.W. Soper. Donor cell replacement in mice transplanted *in utero* is limited by immune-independent mechanisms. Blood Cells, Molecules, and Diseases. 2003; 31:291-297.

Jane E. Barker, Adam J.T. Schuldt, Mark D. Lessard, Craig D. Jude, Carole A. Vogler, and Brian W. Soper. Donor cell expansion is delayed following nonablative *in utero* transplantation to treat murine mucopolysaccharidosis type VII. Experimental Hematology. 2003; 31:1112-1118.

Brian W. Soper, Mark D. Lessard, Craig D. Jude, Adam J.T. Schuldt, Ralph M. Bunte, and Jane E. Barker. Successful Allogeneic Neonatal Bone Marrow Transplantation Devoid of Myeloablation Requires Costimulatory Blockade. J. Immunology. 2003; 171:3270-3277.

Brian W. Soper, Ted M. Duffy, Mark D. Lessard, Craig D. Jude, Adam J.T. Schuldt, Carole A. Vogler, Beth Levy, and Jane E. Barker. Transplanted ER-MP12hi20–58med/hi myeloid progenitors produce resident macrophages from marrow that are therapeutic for lysosomal storage disease. Blood Cells, Molecules, and Diseases. 2004; 32:199-213.

A.J.T. Schuldt, T.J. Hampton, V.Chu, C. A. Vogler, N. Galvin, M.D. Lessard, and Jane E. Barker. Electrocardiographic and other cardiac anomalies in B-glucuronidase-null mice corrected by nonablative neonatal marrow transplantation. PNAS. 2004; 101:603-608.

Vogler C, Levy B, Galvin N, Lessard M, Soper B, Barker J. Early onset of lysosomal storage disease in a murine model of mucopolysaccharidosis type VII: undegraded substrate accumulates in many tissues in the fetus andvery young MPS VII mouse. Pediatr Dev Pathol. 2005 Jul-Aug; 8(4):453-62.

Lessard MD, Alley TL, Proctor JL, Levy B, Galvin N, Vogler CA, Soper BW. Attenuation of murine lysosomalstorage disease by allogeneic neonatal bone marrow transplantation using costimulatory blockade and donorlymphocyte infusion without myeloablation. Clin Immunol. 2006 May; 119(2):166-79.

Lue N, Bewersdorf J, Lessard MD, Badizadegan K, Dasari RR, Feld MS, Popescu G. Tissue refractometry using Hilbert phase microscopy. Opt Lett. 2007 Dec 15; 32(24):3522-4.

Reifsnyder P, Schott W, Pomerleau D, Lessard MD, Soper BW, Leiter EH. 2008. Bone marrow expressing a diabetes resistance MHC class II allele: Diabetes deviation by chronic immune stimulation. In: Novartis Foundation Symposia 292. Defining optimal immunotherapies for type 1 diabetes. John Wiley and Sons, Inc 32-49.

Juette MF, Gould TJ, Lessard MD, Mlodzianoski MJ, Nagpure BS, Bennett BT, Hess ST, Bewersdorf J. Three-dimensional sub-100 nm resolution fluorescence microscopy of thick samples. Nat Methods. 2008 Jun; 5(6):527-9.

Plecitá-Hlavatá L, Lessard M, Santorová J, Bewersdorf J, Jezek P. Mitochondrial oxidative phosphorylation and energetic status are reflected by morphology of mitochondrial network in INS-1E and HEP-G2 cells viewed by 4Pi microscopy. Biochim Biophys Acta. 2008 Jul-Aug; 1777(7-8):834-46.

Dlasková A, Spacek T, Santorová J, Plecitá-Hlavatá L, Berková Z, Saudek F, Lessard M, Bewersdorf J, Jezek P. 4Pi microscopy reveals an impaired three-dimensional mitochondrial network of pancreatic islet beta-cells, an experimental model of type-2 diabetes. Biochim Biophys Acta. 2010 Jun-Jul; 1797(6-7):1327-41. Epub 2010 Feb 6.

Knorz VJ, Spalluto C, Lessard M, Purvis TL, Adigun FF, Collin GB, Hanley NA, Wilson DI, Hearn T. Centriolar Association of ALMS1 and Likely Centrosomal Functions of the ALMS Motif-containing Proteins C10orf90 and KIAA1731. Mol Biol Cell. 2010 Nov 1; 21(21):3617-29. Epub 2010 Sep 15.

Miriam Fritsche, Laura G. Reinholdt, Mark Lessard, Mary Ann Handel, Jörg Bewersdorf, Dieter W. Heermann. The Impact of Entropy on the Spatial Organization of Synaptonemal Complexes within the Cell Nucleus. PLoS One. 2012; 7(5):e36282. Epub 2012 May 4.

Muneer G. Hasham, Kathy J. Snow, Nina M. Donghia, Jane A. Branca, Mark D. Lessard, Janet Stavnezer, Lindsay S. Shopland, Kevin D. Mills. Acitvation-Induced Cytidine Deaminase-Initiated Off-Target DNA Breaks Are Detected and Resolved during S Phase. J Immunol 2012; 189:2374-2382. Epub 2012 July 23.

Daniela Maschek, Barry Goodell, Jody Jellison, Mark Lessard, Holger Militz. A new approach for the study of the chemical composition of bordered pit membranes: 4Pi and confocal laser scanning microscopy. Botany (2013) September https://doi.org/10.3732/ajb.1300004

Ciciotte SL, Lessard M, Akeson EC, Cameron E, Stearns TM, Denegre JM, Ruberte J, Svenson KL. 3-Dimensional Histological Reconstruction and Imaging of the Murine Pancreas. Mamm Genome. 2014 Oct;25(9-10):539-48. Epub 2014 May 18.

Zuo W, Zhang T, Wu DZ, Guan SP, Liew A, Yamamoto Y, Wang X, Lim SJ, Vincent M, Lessard M, Crum CP, Xian W, McKeon F. p63+Krt5+ distal airway stem cells are essential for lung regeneration. Nature. 2014 Nov 12. doi: 10.1038/nature13903. [Epub ahead of print]

Fang Huang*, George Sirinakis*, Edward S. Allgeyer, Lena K. Schroeder, Whitney C. Duim, Emil B. Kromann, Thomy Phan, Felix E. Rivera-Molina, Jordan R. Myers, Irnov Irnov, Mark Lessard,Yongdeng Zhang, Mary Ann Handel, Christine Jacobs-Wagner, C. Patrick Lusk, James E. Rothman, Derek Toomre, Martin J. Booth, Joerg Bewersdorf Ultra-High Resolution 3D Imaging of Whole Cells 2016, Cell166, 1–13

Plecitá-Hlavatá, L., Engstová, H., Alán, L.M., Špaček, T., Dlasková, A., Smolková, K., Špačková, J., Tauber, J., Strádalová, V., Malínský, J., Lessard, M., Bewersdorf, J., Ježek, P. Hypoxic HepG2 cell adaptation decreases ATP synthase dimers and ATP production in inflated cristae by mitofilin down-regulation concomitant to MICOS clustering 2016, FASEB, Vol. 30, Issue 5, 1941-1957

Francesca Bottanelli, Nicole Kilian, Andreas M. Ernst, Felix Rivera-Molina, Lena K. Schroeder, Emil B. Kromann, Mark D. Lessard, Roman S. Erdmann, Alanna Schepartz, David Baddeley, Joerg Bewersdorf, Derek Toomre, and James E. Rothman. A novel physiological role for ARF1 in the formation of bidirectional tubules from the Golgi. 2017, Molecular Biology of the Cell, Vol. 28 No. 12

Nicole Kilian, Alexander Goryaynov, Mark D. Lessard, Giles Hooker, Derek Toomre, James E. Rothman & Joerg Bewersdorf. Assessing photodamage in live-cell STED microscopy. 2018, Nature Methods, 15, 755-756.

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Yongdeng Zhang, Lena K. Schroeder, Mark D. Lessard, Phylicia Kidd, Jeeyun Chung, Yuanbin Song, Lorena Benedetti, Yiming Li, Jonas Ries, Pietro De Camilli, James E. Rothman, David Baddeley, Joerg Bewersdorf. Nanoscale subcellular architecture revealed by multicolor 3D salvaged fluorescence imaging. Nat Methods (2020) doi:10.1038/s41592-019-0676-4

Jingyu Wang, Edward S. Allgeyer, George Sirinakis, Yongdeng Zhang, Kevin Hu, Mark D. Lessard, Yiming Li, Robin Diekmann, Michael A. Phillips, Ian M. Dobbie, Jonas Ries, Martin J. Booth & Joerg Bewersdorf. Implementation of a 4Pi-SMS super-resolution microscope. Nature Protocols (2021) doi:10.1038/s41596-020-00428-7

Xiang Hao, Edward S. Allgeyer, Dong-Ryoung Lee, Jacopo Antonello, Katherine Watters, Julianne A. Gerdes, Lena K. Schroeder, Francesca Bottanelli, Jiaxi Zhao, Phylicia Kidd, Mark D. Lessard, James E. Rothman, Lynn Cooley, Thomas Biederer, Martin J. Booth & Joerg Bewersdorf. Three-dimensional adaptive optical nanoscopy for thick specimen imaging at sub-50-nm resolution. Nature Methods (2021) doi: https://doi.org/10.1038/s41592-021-01149-9