

## Kevin M. Dean, Ph.D.

### Work Address

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### VISION

As a scientist, I am dedicated to advancing and scaling imaging technologies that enable the cancer research community to interrogate tissue complexity at unprecedented levels of resolution and throughput. My research focuses on developing and disseminating tools that bridge cutting-edge microscopy, automation, and computational analysis to uncover the molecular and cellular mechanisms underlying cancer progression. With a strong history of completing interdisciplinary and collaborative research projects, I have led efforts to transform how biologists access and utilize advanced imaging platforms.

### EDUCATION

*Ph.D.*, Biochemistry

University of Colorado, Boulder, CO, USA.

2007 - 2013

*Dissertation:* Fluorescent Proteins: Spectroscopic Studies, Microfluidic Analysis, and Generation of Improved Variants. Research conducted under the guidance of Drs. Amy E. Palmer and Ralph Jimenez.

*B.A.*, Chemistry

Willamette University, Salem, OR, USA.

2002 - 2006

*Thesis:* Laser Light Scattering Investigations of the Isobutyric Acid/Water Binary Liquid System. Research conducted under the guidance of Dr. J. Charles Williamson.

### RESEARCH & WORK ACTIVITIES

#### Professional Positions

*Tenure-Track Assistant Professor*

2022 – Present

Lyda Hill Department of Bioinformatics and Cecil H. and Ida Green Center for Systems Biology, UT Southwestern Medical Center, Dallas, TX, USA.

My lab aims to establish a broadly generalizable method for studying cell biological processes within complex tissues such as the hematopoietic niche. This includes creating advanced tissue processing techniques that enable interrogation of the location and activation state for 20 different proteins with 80 nm resolution, deep tissue imaging microscopes that adapt to and optimally probe the biological specimen, and cutting-edge software that comprehensively analyzes the architecture of single cells throughout entire tissues. Ultimately, our goal is to bridge the gap between traditional cell biology and the complex reality of living organisms, providing deeper insights into health and disease. Member of the Biomedical Engineering and Molecular Biophysics Graduate Programs, and the Simmons Comprehensive Cancer Center's Development and Cancer Program.

*Executive Director, Cancer Cell Imaging Core (CCIC)*

2025 – Present

UT Southwestern Medical Center, Dallas, TX, USA.

Founded and established the Cancer Cell Imaging Core (CCIC), a centralized facility dedicated to democratizing access to advanced imaging technologies for the cancer research community across Texas. As Executive Director, I oversee a state-of-the-art platform that integrates custom light-sheet microscopy, expansion microscopy, cyclic multiplexed imaging, and automated tissue clearing to enable high-throughput, subcellular-resolution imaging of thick tissue specimens. The CCIC supports user training, collaborative research, and fee-for-service imaging workflows, providing optimized sample preparation pipelines, robotics-enabled imaging automation, and cloud-based image analysis. Under my direction, the CCIC builds upon technologies developed through multiple NIH- and CPRIT-funded initiatives, offering unprecedented capa-

bilities for visualizing and quantifying protein localization, abundance, and activation states in situ. The CCIC also partners with other spatial biology cores to integrate functional imaging with transcriptomic and metabolic profiling and serves as a hub for statewide dissemination of cutting-edge imaging approaches.

*Founder* 2019 – Present  
Discovery Imaging Systems, LLC, Dallas, TX, USA.

Established an LLC to provide customized and world-class imaging solutions to academic research centers. Business portfolio focused on new methods for imaging chemically transparent biological specimens with the cleared tissue variants of Axially Swept Light-Sheet Microscopy. Customer purchases third-party components, and Discovery Imaging Systems provides expert assembly on site and annual maintenance thereafter.

*Research-Track Assistant Professor, and Director of the Microscopy Innovation Lab* 2018 – 2022  
Department of Cell Biology, UT Southwestern Medical Center, Dallas, TX, USA.

The pace of microscopy technology development far outstrips the rate at which it can be commercialized and delivered to the greater biological community. The Microscopy Innovation Lab at UT Southwestern worked to eliminate this delay by developing potentially transformative instrumentation that is tailored to address specific biological questions, and engaging in close collaborations with life scientists to gain molecular insight into physiological and pathophysiological phenomena. Towards these means, I worked one-on-one with diverse biomedical scientists and physicians to develop custom imaging workflows that synergistically combine advances in optical probes, sample preparation, instrument design and operation, and computer vision-based analyses of TB-scale datasets.

*Postdoctoral Fellow, Fiolka and Danuser Laboratories* 2014 – 2018  
Lyda Hill Department of Bioinformatics, UT Southwestern Medical Center, Dallas, TX, USA.

Development and application of light-sheet microscopy and computer vision technologies to elucidate mechanisms of cell-extracellular matrix adhesions, Rho GTPase signaling, and cytoskeletal dynamics of breast cancer cells disseminating into 3D tissue-like environments. Ruth L. Kirschstein Postdoctoral Fellow. Research conducted under the guidance of Drs. Reto Fiolka and Gaudenz Danuser.

*Director, BioFrontiers Advanced Imaging Resource* 2013 – 2014  
BioFrontiers Institute, University of Colorado, Boulder, CO, USA.

Established first campus-wide microscopy facility and expanded user base expanded to over 100 users from eight departments, two universities, and two biotechnology firms. Led a collaborative team in the building and development of novel microscopy and super-resolution instrumentation and techniques; executed independent research; provided facility strategic vision; organized analytical training for users; worked with researchers to develop customized protocols and assays; collaborated with faculty to compete for grants and contracts to support facility research activities and lead infrastructure grants; interfaced and worked closely with industrial users. Directly reported to the Chief Scientific Officer, Dr. Leslie Leinwand, and Dr. Tom Cech.

*Graduate Research Assistant, Palmer Laboratory.* 2007 – 2013  
Department of Biochemistry, University of Colorado, Boulder, CO, USA.

Investigated the role of site-specific mutations in dark-state conversion and irreversible photobleaching for red-fluorescent proteins; developed high-throughput microfluidic cell-sorter capable of measuring fluorescence lifetime and the rate of photobleaching on single mammalian cells; directed-evolution of red-fluorescent proteins for improved photostability; collaborated with other lab members on the development and evaluation of optical biosensors. Research conducted under the guidance of Drs. Amy E. Palmer and Ralph Jimenez.

*Undergraduate Research Assistant, Williamson Laboratory.* 2003 – 2006  
Department of Chemistry, Willamette University, Salem, OR, USA.

Development of semi-automated laser light scattering instrumentation and the measurement of highly accurate and precise binary liquid-liquid phase diagrams. Research conducted under the guidance of Dr. J.

Charles Williamson.

## Patents & Patents Pending

13,360,706	Optically Integrated Microfluidic Cytometer for High Throughput Screening of Photophysical Properties of Cells or Particles.
62,155,980	Uniform and Scalable Light-Sheets Generated by Extended Focusing.
16,093,561	Light-Sheet Microscope with Parallelized 3D Image Acquisition.
63,688,197	Mechanically Sheared Axially Swept Light-Sheet Microscopy.

## PUBLICATIONS

Current citation metrics are maintained in Google Scholar; publication metadata is maintained in ORCID.

### Selected Publications

1. **Dean KM**, Palmer AE. Advances in fluorescence labeling strategies for dynamic cellular imaging. *Nat Chem Biol.* 2014 Jul;10(7):512-23. doi: 10.1038/nchembio.1556. PMID: 24937069; PMCID: PMC4248787.
2. Chu J, Oh Y, Sens A, Ataie N, Dana H, Macklin JJ, Laviv T, Welf ES, **Dean KM**, Zhang F, Kim BB, Tang CT, Hu M, Baird MA, Davidson MW, Kay MA, Fiolka R, Yasuda R, Kim DS, Ng HL, Lin MZ. A bright cyan-excitable orange fluorescent protein facilitates dual-emission microscopy and enhances bioluminescence imaging in vivo. *Nat Biotechnol.* 2016 Jul;34(7):760-7. doi: 10.1038/nbt.3550. Epub 2016 May 30. PMID: 27240196; PMCID: PMC4942401.
3. **Dean KM**, Roudot P, Welf ES, Danuser G, Fiolka R. Deconvolution-free Subcellular Imaging with Axially Swept Light Sheet Microscopy. *Biophys J.* 2015 Jun 16;108(12):2807-15. doi: 10.1016/j.bpj.2015.05.013. PMID: 26083920; PMCID: PMC4472079.
4. Sapoznik E, Chang BJ, Huh J, Ju RJ, Azarova EV, Pohlkamp T, Welf ES, Broadbent D, Carisey AF, Stehbins SJ, Lee KM, Marín A, Hanker AB, Schmidt JC, Arteaga CL, Yang B, Kobayashi Y, Tata PR, Kruithoff R, Doubrovinski K, Shepherd DP, Millett-Sikking A, York AG, **Dean KM**<sup>‡</sup>, Fiolka RP. A versatile oblique plane microscope for large-scale and high-resolution imaging of subcellular dynamics. *Elife.* 2020 Nov 12;9:e57681. doi: 10.7554/eLife.57681. PMID: 33179596; PMCID: PMC7707824.
5. Chakraborty T, Driscoll MK, Jeffery E, Murphy MM, Roudot P, Chang BJ, Vora S, Wong WM, Nielson CD, Zhang H, Zhemkov V, Hiremath C, De La Cruz ED, Yi Y, Bezprozvanny I, Zhao H, Tomer R, Heintzmann R, Meeks JP, Marciano DK, Morrison SJ, Danuser G, **Dean KM**<sup>‡</sup>, Fiolka R. Light-sheet microscopy of cleared tissues with isotropic, subcellular resolution. *Nat Methods.* 2019 Nov;16(11):1109-1113. doi: 10.1038/s41592-019-0615-4. Epub 2019 Oct 31. PMID: 31673159; PMCID: PMC6924633.
6. Han SJ, Azarova EV, Whitewood AJ, Bachir A, Guttierrez E, Groisman A, Horwitz AR, Goult BT, **Dean KM**<sup>‡</sup>, Danuser G. Pre-complexation of talin and vinculin without tension is required for efficient nascent adhesion maturation. *Elife.* 2021 Mar 30;10:e66151. doi: 10.7554/eLife.66151. PMID: 33783351; PMCID: PMC8009661.
7. **Dean KM**<sup>‡</sup>, Chakraborty T, Daetwyler S, Lin J, Garrelts G, M'Saad O, Mekbib HT, Voigt FF, Schaettin M, Stoeckli ET, Helmchen F, Bewersdorf J, Fiolka R. Isotropic imaging across spatial scales with axially swept light-sheet microscopy. *Nat Protoc.* 2022 Sep;17(9):2025-2053. doi: 10.1038/s41596-022-00706-6. Epub 2022 Jul 13. PMID: 35831614; PMCID: PMC10111370.
8. Marin Z, Wang X, Collison DW, McFadden C, Lin J, Borges HM, Chen B, Mehra D, Shen Q, Galecki S, Daetwyler S, Sheppard SJ, Thien P, Porter BA, Conzen SD, Shepherd DP, Fiolka R, **Dean KM**<sup>‡</sup>. Navigate: an open-source platform for smart light-sheet microscopy. *Nat Methods.* 2024 Nov;21(11):1967-1969. doi: 10.1038/s41592-024-02413-4. PMID: 39261640; PMCID: PMC11540721.
9. Lin J, Marin Z, Wang X, Borges HM, Shen Q, Galecki S, Haug J, Abbott DH, **Dean KM**<sup>‡</sup>. Mechanically sheared axially swept light-sheet microscopy. *Biomed Opt Express.* 2024 Aug 19;15(9):5314-5327. doi: 10.1364/BOE.526145. PMID: 39296406; PMCID: PMC11407235.

- Lin J, Marin Z, Wang X, Borges HM, Shen Q, N'Guetta PY, Luo X, Porter BA, Xue Y, Islam MT, Ngo T, Idonije D, Galecki S, Aurora AB, Zhao H, Conzen SD, Morrison SJ, Liang S, Zhong Z, O'Brien LL, **Dean KM**<sup>‡</sup>. Feature-driven whole-tissue imaging with subcellular resolution. *Cell Rep Methods*. 2025 Sep 15;5(9):101148. doi: 10.1016/j.crmeth.2025.101148. Epub 2025 Sep 2. PubMed PMID: 40902591.

### Peer-Reviewed Publications

- Warshaw JN, Oh S, Chaney CP, Felan BL, Pham JB, Hiremath C, Geshow K, Liu H, Rivera AM, Wong R, Zhang S, **Dean KM**, Fiolka RP, Dellinger MT, Whittamore JM, Carroll TJ, Marciano DK. An epithelial morphogenetic program for maximal urine concentration. *Nat Commun*. 2026 Mar 21. doi: 10.1038/s41467-026-70938-7. Epub ahead of print. PMID: 41862496.
- Haug J, Galecki S, Lin HY, Wang X, **Dean KM**<sup>‡</sup>. A high-resolution, easy-to-build light-sheet microscope for subcellular imaging. *Elife*. 2026 Feb 5;14:RP106910. doi: 10.7554/eLife.106910. PMID: 41642252; PMCID: PMC12875610.
- Zhou FY, Marin Z, Yapp C, Zou Q, Nanes BA, Daetwyler S, Jamieson AR, Islam MT, Jenkins E, Gihana GM, Lin J, Borges HM, Chang BJ, Weems A, Morrison SJ, Sorger PK, Fiolka R, **Dean KM**, Danuser G. Universal consensus 3D segmentation of cells from 2D segmented stacks. *Nat Methods*. 2025 Nov 11. doi: 10.1038/s41592-025-02887-w. Epub ahead of print. PMID: 41219412.
- Lin J, Marin Z, Wang X, Borges HM, Shen Q, N'Guetta PY, Luo X, Porter BA, Xue Y, Islam MT, Ngo T, Idonije D, Galecki S, Aurora AB, Zhao H, Conzen SD, Morrison SJ, Liang S, Zhong Z, O'Brien LL, **Dean KM**<sup>‡</sup>. Feature-driven whole-tissue imaging with subcellular resolution. *Cell Rep Methods*. 2025 Sep 15;5(9):101148. doi: 10.1016/j.crmeth.2025.101148. Epub 2025 Sep 2. PubMed PMID: 40902591.
- Isogai T, **Dean KM**, Roudot P, Azarova EV, Bhatt K, Driscoll MK, Royer SP, Mittal N, Chang BJ, Han SJ, Fiolka R, Danuser G. Direct Arp2/3-vinculin binding is required for pseudopod extension, but only on compliant substrates and in 3D. *iScience*. 2025 May 9;28(6):112623. doi: 10.1016/j.isci.2025.112623. PMID: 40502699; PMCID: PMC12152658.
- Jeppesen DK, Sanchez ZC, Kelley NM, Hayes JB, Ambroise J, Koory EN, Krystofiak E, Taneja N, Zhang Q, Dungan MM, Perkins OL, Tyska MJ, Knapik EW, **Dean KM**, Doran AC, Coffey RJ, Burnette DT. Blebbisomes are large, organelle-rich extracellular vesicles with cell-like properties. *Nat Cell Biol*. 2025 Mar;27(3):438-448. doi: 10.1038/s41556-025-01621-0. Epub 2025 Feb 21. PMID: 39984653; PMCID: PMC11906356.
- Marin Z, Wang X, Collison DW, McFadden C, Lin J, Borges HM, Chen B, Mehra D, Shen Q, Galecki S, Daetwyler S, Sheppard SJ, Thien P, Porter BA, Conzen SD, Shepherd DP, Fiolka R, **Dean KM**<sup>‡</sup>. Navigate: an open-source platform for smart light-sheet microscopy. *Nat Methods*. 2024 Nov;21(11):1967-1969. doi: 10.1038/s41592-024-02413-4. PMID: 39261640; PMCID: PMC11540721.
- Mcfadden C, Marin Z, Chen B, Daetwyler S, Wang X, Rajendran D, **Dean KM**, Fiolka R. Adaptive optics in an oblique plane microscope. *Biomed Opt Express*. 2024 Jul 9;15(8):4498-4512. doi: 10.1364/BOE.524013. PMID: 39346993; PMCID: PMC11427218.
- Lin J, Mehra D, Marin Z, Wang X, Borges HM, Shen Q, Galecki S, Haug J, Abbott DH, **Dean KM**<sup>‡</sup>. Mechanically sheared axially swept light-sheet microscopy. *Biomed Opt Express*. 2024 Aug 19;15(9):5314-5327. doi: 10.1364/BOE.526145. PMID: 39296406; PMCID: PMC11407235.
- Nanes BA, Bhatt K, Azarova E, Rajendran D, Munawar S, Isogai T, **Dean KM**, Danuser G. Shifts in keratin isoform expression activate motility signals during wound healing. *Dev Cell*. 2024 Oct 21;59(20):2759-2771.e11. doi: 10.1016/j.devcel.2024.06.011. Epub 2024 Jul 12. PMID: 39002537; PMCID: PMC11496015.
- Driscoll MK, Welf ES, Weems A, Sapoznik E, Zhou F, Murali VS, García-Arcos JM, Roh-Johnson M, Piel M, **Dean KM**, Fiolka R, Danuser G. Proteolysis-free amoeboid migration of melanoma cells through crowded environments via bleb-driven worrying. *Dev Cell*. 2024 Sep 23;59(18):2414-2428.e8. doi: 10.1016/j.devcel.2024.05.024. Epub 2024 Jun 12. PMID: 38870943; PMCID: PMC11421976.

12. Ju RJ, Falconer AD, Schmidt CJ, Enriquez Martinez MA, **Dean KM**, Fiolka RP, Sester DP, Nobis M, Timpson P, Lomakin AJ, Danuser G, White MD, Haass NK, Oelz DB, Stehbins SJ. Compression-dependent microtubule reinforcement enables cells to navigate confined environments. *Nat Cell Biol.* 2024 Sep;26(9):1520-1534. doi: 10.1038/s41556-024-01476-x. Epub 2024 Aug 19. PMID: 39160291.
13. Xie P, Xie X, Ye C, **Dean KM**, Laothamatas I, Taufique SKT, Takahashi J, Yamazaki S, Xu Y, Liu Y. Mammalian circadian clock proteins form dynamic interacting microbodies distinct from phase separation. *Proc Natl Acad Sci U S A.* 2023 Dec 26;120(52):e2318274120. doi: 10.1073/pnas.2318274120. Epub 2023 Dec 21. PMID: 38127982; PMCID: PMC10756265.
14. Roudot P, Legant WR, Zou Q, **Dean KM**, Isogai T, Welf ES, David AF, Gerlich DW, Fiolka R, Betzig E, Danuser G. u-track3D: Measuring, navigating, and validating dense particle trajectories in three dimensions. *Cell Rep Methods.* 2023 Dec 18;3(12):100655. doi: 10.1016/j.crmeth.2023.100655. Epub 2023 Dec 1. PMID: 38042149; PMCID: PMC10783629.
15. Cheikh MI, Tchoufag J, Osterfield M, **Dean KM**, Bhaduri S, Zhang C, Mandadapu KK, Doubrovinski K. A comprehensive model of Drosophila epithelium reveals the role of embryo geometry and cell topology in mechanical responses. *Elife.* 2023 Oct 2;12:e85569. doi: 10.7554/eLife.85569. PMID: 37782009; PMCID: PMC10584372.
16. Weems AD, Welf ES, Driscoll MK, Zhou FY, Mazloom-Farsibaf H, Chang BJ, Murali VS, Gihana GM, Weiss BG, Chi J, Rajendran D, **Dean KM**, Fiolka R, Danuser G. Blebs promote cell survival by assembling oncogenic signalling hubs. *Nature.* 2023 Mar;615(7952):517-525. doi: 10.1038/s41586-023-05758-6. Epub 2023 Mar 1. PMID: 36859545; PMCID: PMC10881276.
17. Pagani CA, Bancroft AC, Tower RJ, Livingston N, Sun Y, Hong JY, Kent RN 3rd, Strong AL, Nunez JH, Medrano JMR, Patel N, Nanes BA, **Dean KM**, Li Z, Ge C, Baker BM, James AW, Weiss SJ, Franceschi RT, Levi B. Discoidin domain receptor 2 regulates aberrant mesenchymal lineage cell fate and matrix organization. *Sci Adv.* 2022 Dec 21;8(51):eabq6152. doi: 10.1126/sciadv.abq6152. Epub 2022 Dec 21. PMID: 36542719; PMCID: PMC9770942.
18. Chen B, Chang BJ, Zhou FY, Daetwyler S, Sapoznik E, Nanes BA, Terrazas I, Gihana GM, Castro LP, Chan IS, Conacci-Sorrell M, **Dean KM**, Millett-Sikking A, York AG, Fiolka R. Increasing the field-of-view in oblique plane microscopy via optical tiling. *Biomed Opt Express.* 2022 Oct 4;13(11):5616-5627. doi: 10.1364/BOE.467969. PMID: 36733723; PMCID: PMC9872888.
19. Chen B, Chang BJ, Roudot P, Zhou F, Sapoznik E, Marlar-Pavey M, Hayes JB, Brown PT, Zeng CW, Lambert T, Friedman JR, Zhang CL, Burnette DT, Shepherd DP, **Dean KM**, Fiolka RP. Resolution doubling in light-sheet microscopy via oblique plane structured illumination. *Nat Methods.* 2022 Nov;19(11):1419-1426. doi: 10.1038/s41592-022-01635-8. Epub 2022 Oct 24. PMID: 36280718; PMCID: PMC10182454.
20. **Dean KM**<sup>‡</sup>, Chakraborty T, Daetwyler S, Lin J, Garrelts G, M'Saad O, Mekbib HT, Voigt FF, Schaettin M, Stoeckli ET, Helmchen F, Bewersdorf J, Fiolka R. Isotropic imaging across spatial scales with axially swept light-sheet microscopy. *Nat Protoc.* 2022 Sep;17(9):2025-2053. doi: 10.1038/s41596-022-00706-6. Epub 2022 Jul 13. PMID: 35831614; PMCID: PMC10111370.
21. Haarman SE, Kim SY, Isogai T, **Dean KM**, Han SJ. Particle retracking algorithm capable of quantifying large, local matrix deformation for traction force microscopy. *PLoS One.* 2022 Jun 22;17(6):e0268614. doi: 10.1371/journal.pone.0268614. PMID: 35731725; PMCID: PMC9216574.
22. Pop IV, Espinosa F, Blevins CJ, Okafor PC, Ogujiofor OW, Goyal M, Mona B, Landy MA, **Dean KM**, Gurumurthy CB, Lai HC. Structure of Long-Range Direct and Indirect Spinocerebellar Pathways as Well as Local Spinal Circuits Mediating Proprioception. *J Neurosci.* 2022 Jan 26;42(4):581-600. doi: 10.1523/JNEUROSCI.2157-20.2021. Epub 2021 Dec 2. PMID: 34857649; PMCID: PMC8805613.
23. Liu H, Hiremath C, Patterson Q, Vora S, Shang Z, Jamieson AR, Fiolka R, **Dean KM**, Dellinger MT, Marciano DK. Heterozygous Mutation of Vegfr3 Reduces Renal Lymphatics without Renal Dysfunction. *J Am Soc Nephrol.* 2021 Dec 1;32(12):3099-3113. doi: 10.1681/ASN.2021010061. Epub 2021 Dec 1. PMID: 34551997; PMCID: PMC8638391.

24. Chang BJ, Manton JD, Sapoznik E, Pohlkamp T, Terrones TS, Welf ES, Murali VS, Roudot P, Hake K, Whitehead L, York AG, **Dean KM**, Fiolka R. Real-time multi-angle projection imaging of biological dynamics. *Nat Methods*. 2021 Jul;18(7):829-834. doi: 10.1038/s41592-021-01175-7. Epub 2021 Jun 28. PMID: 34183831; PMCID: PMC9206531.
25. Han SJ, Azarova EV, Whitewood AJ, Bachir A, Guttierrez E, Groisman A, Horwitz AR, Goult BT, **Dean KM**<sup>‡</sup>, Danuser G. Pre-complexation of talin and vinculin without tension is required for efficient nascent adhesion maturation. *Elife*. 2021 Mar 30;10:e66151. doi: 10.7554/eLife.66151. PMID: 33783351; PMCID: PMC8009661.
26. Welf ES, Miles CE, Huh J, Sapoznik E, Chi J, Driscoll MK, Isogai T, Noh J, Weems AD, Pohlkamp T, **Dean KM**, Fiolka R, Mogilner A, Danuser G. Actin-Membrane Release Initiates Cell Protrusions. *Dev Cell*. 2020 Dec 21;55(6):723-736.e8. doi: 10.1016/j.devcel.2020.11.024. Epub 2020 Dec 11. PMID: 33308479; PMCID: PMC7908823.
27. Sapoznik E, Chang BJ, Huh J, Ju RJ, Azarova EV, Pohlkamp T, Welf ES, Broadbent D, Carisey AF, Stehbins SJ, Lee KM, Marin A, Hanker AB, Schmidt JC, Arteaga CL, Yang B, Kobayashi Y, Tata PR, Kruithoff R, Doubrovinski K, Shepherd DP, Millett-Sikking A, York AG, **Dean KM**<sup>‡</sup>, Fiolka RP. A versatile oblique plane microscope for large-scale and high-resolution imaging of subcellular dynamics. *Elife*. 2020 Nov 12;9:e57681. doi: 10.7554/eLife.57681. PMID: 33179596; PMCID: PMC7707824.
28. Lee KM, Guerrero-Zotano AL, Servetto A, Sudhan DR, Lin CC, Formisano L, Jansen VM, González-Ericsson P, Sanders ME, Stricker TP, Raj G, **Dean KM**, Fiolka R, Cantley LC, Hanker AB, Arteaga CL. Proline rich 11 (PRR11) overexpression amplifies PI3K signaling and promotes antiestrogen resistance in breast cancer. *Nat Commun*. 2020 Oct 30;11(1):5488. doi: 10.1038/s41467-020-19291-x. PMID: 33127913; PMCID: PMC7599336.
29. Chakraborty T, Chen B, Daetwyler S, Chang BJ, Vanderpoorten O, Sapoznik E, Kaminski CF, Knowles TPJ, **Dean KM**, Fiolka R. Converting lateral scanning into axial focusing to speed up three-dimensional microscopy. *Light Sci Appl*. 2020 Sep 18;9:165. doi: 10.1038/s41377-020-00401-9. PMID: 33024553; PMCID: PMC7501866.
30. Chang BJ, **Dean KM**, Fiolka R. Systematic and quantitative comparison of lattice and Gaussian light-sheets. *Opt Express*. 2020 Aug 31;28(18):27052-27077. doi: 10.1364/OE.400164. PMID: 32906967; PMCID: PMC7679196.
31. Chen B, Chakraborty T, Daetwyler S, Manton JD, **Dean KM**, Fiolka R. Extended depth of focus multiphoton microscopy via incoherent pulse splitting. *Biomed Opt Express*. 2020 Jun 19;11(7):3830-3842. doi: 10.1364/BOE.393931. PMID: 33014569; PMCID: PMC7510929.
32. Chakraborty T, Driscoll MK, Jeffery E, Murphy MM, Roudot P, Chang BJ, Vora S, Wong WM, Nielson CD, Zhang H, Zhemkov V, Hiremath C, De La Cruz ED, Yi Y, Bezprozvanny I, Zhao H, Tomer R, Heintzmann R, Meeks JP, Marciano DK, Morrison SJ, Danuser G, **Dean KM**<sup>‡</sup>, Fiolka R. Light-sheet microscopy of cleared tissues with isotropic, subcellular resolution. *Nat Methods*. 2019 Nov;16(11):1109-1113. doi: 10.1038/s41592-019-0615-4. Epub 2019 Oct 31. PMID: 31673159; PMCID: PMC6924633.
33. Driscoll MK, Welf ES, Jamieson AR, **Dean KM**, Isogai T, Fiolka R, Danuser G. Robust and automated detection of subcellular morphological motifs in 3D microscopy images. *Nat Methods*. 2019 Oct;16(10):1037-1044. doi: 10.1038/s41592-019-0539-z. Epub 2019 Sep 9. PMID: 31501548; PMCID: PMC7238333.
34. Mohan AS, **Dean KM**, Isogai T, Kasitinon SY, Murali VS, Roudot P, Groisman A, Reed DK, Welf ES, Han SJ, Noh J, Danuser G. Enhanced Dendritic Actin Network Formation in Extended Lamellipodia Drives Proliferation in Growth-Challenged Rac1P29S Melanoma Cells. *Dev Cell*. 2019 May 6;49(3):444-460.e9. doi: 10.1016/j.devcel.2019.04.007. PMID: 31063759; PMCID: PMC6760970.
35. Chang BJ, Kittisopikul M, **Dean KM**, Roudot P, Welf ES, Fiolka R. Universal light-sheet generation with field synthesis. *Nat Methods*. 2019 Mar;16(3):235-238. doi: 10.1038/s41592-019-0327-9. Epub 2019 Feb 25. PMID: 30804550; PMCID: PMC6561754.

36. **Dean KM**, Fiolka R. Lossless Three-Dimensional Parallelization in Digitally Scanned Light-Sheet Fluorescence Microscopy. *Sci Rep.* 2017 Aug 24;7(1):9332. doi: 10.1038/s41598-017-08113-8. PMID: 28839150; PMCID: PMC5570909.
37. **Dean KM**, Roudot P, Welf ES, Pohlkamp T, Garrelts G, Herz J, Fiolka R. Imaging Subcellular Dynamics with Fast and Light-Efficient Volumetrically Parallelized Microscopy. *Optica.* 2017 Feb 20;4(2):263-271. doi: 10.1364/OPTICA.4.000263. PMID: 28944279; PMCID: PMC5609504.
38. Chu J, Oh Y, Sens A, Ataie N, Dana H, Macklin JJ, Laviv T, Welf ES, **Dean KM**, Zhang F, Kim BB, Tang CT, Hu M, Baird MA, Davidson MW, Kay MA, Fiolka R, Yasuda R, Kim DS, Ng HL, Lin MZ. A bright cyan-excitable orange fluorescent protein facilitates dual-emission microscopy and enhances bioluminescence imaging in vivo. *Nat Biotechnol.* 2016 Jul;34(7):760-7. doi: 10.1038/nbt.3550. Epub 2016 May 30. PMID: 27240196; PMCID: PMC4942401.
39. Williamson JC, Brown AM, Helvie EN, **Dean KM**. Determination of liquid-liquid critical point composition using 90° laser light scattering. *Phys Rev E.* 2016 Apr;93:042610. doi: 10.1103/PhysRevE.93.042610. Epub 2016 Apr 21. PMID: 27176355.
40. **Dean KM**, Roudot P, Reis CR, Welf ES, Mettlen M, Fiolka R. Diagonally Scanned Light-Sheet Microscopy for Fast Volumetric Imaging of Adherent Cells. *Biophys J.* 2016 Mar 29;110(6):1456-65. doi: 10.1016/j.bpj.2016.01.029. PMID: 27028654; PMCID: PMC4816690.
41. Welf ES, Driscoll MK, **Dean KM**, Schäfer C, Chu J, Davidson MW, Lin MZ, Danuser G, Fiolka R. Quantitative Multiscale Cell Imaging in Controlled 3D Microenvironments. *Dev Cell.* 2016 Feb 22;36(4):462-75. doi: 10.1016/j.devcel.2016.01.022. PMID: 26906741; PMCID: PMC4784259.
42. **Dean KM**, Roudot P, Welf ES, Danuser G, Fiolka R. Deconvolution-free Subcellular Imaging with Axially Swept Light Sheet Microscopy. *Biophys J.* 2015 Jun 16;108(12):2807-15. doi: 10.1016/j.bpj.2015.05.013. PMID: 26083920; PMCID: PMC4472079.
43. **Dean KM**, Davis LM, Lubbeck JL, Manna P, Friis P, Palmer AE, Jimenez R. High-speed multi-parameter photophysical analyses of fluorophore libraries. *Anal Chem.* 2015;87(10):5026-30. doi: 10.1021/acs.analchem.5b00607. Epub 2015 Apr 29. PMID: 25898152; PMCID: PMC4648346.
44. **Dean KM**, Lubbeck JL, Davis LM, Regmi CK, Chapagain PP, Gerstman BS, Jimenez R, Palmer AE. Microfluidics-based selection of red-fluorescent proteins with decreased rates of photobleaching. *Integr Biol (Camb).* 2015 Feb;7(2):263-73. doi: 10.1039/c4ib00251b. PMID: 25477249; PMCID: PMC4323946.
45. **Dean KM**, Fiolka R. Uniform and scalable light-sheets generated by extended focusing. *Opt Express.* 2014 Oct 20;22(21):26141-52. doi: 10.1364/OE.22.026141. PMID: 25401646.
46. **Dean KM**, Palmer AE. Advances in fluorescence labeling strategies for dynamic cellular imaging. *Nat Chem Biol.* 2014 Jul;10(7):512-23. doi: 10.1038/nchembio.1556. PMID: 24937069; PMCID: PMC4248787.
47. Qin Y, Miranda JG, Stoddard CI, **Dean KM**, Galati DF, Palmer AE. Direct comparison of a genetically encoded sensor and small molecule indicator: implications for quantification of cytosolic Zn(2+). *ACS Chem Biol.* 2013 Nov 15;8(11):2366-71. doi: 10.1021/cb4003859. Epub 2013 Sep 3. PMID: 23992616; PMCID: PMC4022295.
48. Davis LM, Lubbeck JL, **Dean KM**, Palmer AE, Jimenez R. Microfluidic cell sorter for use in developing red fluorescent proteins with improved photostability. *Lab Chip.* 2013 Jun 21;13(12):2320-7. doi: 10.1039/c3lc50191d. Epub 2013 May 2. PMID: 23636097; PMCID: PMC4047792.
49. **Dean KM**, Qin Y, Palmer AE. Visualizing metal ions in cells: an overview of analytical techniques, approaches, and probes. *Biochim Biophys Acta.* 2012 Sep;1823(9):1406-15. doi: 10.1016/j.bbamcr.2012.04.001. Epub 2012 Apr 13. PMID: 22521452; PMCID: PMC3408866.
50. Lubbeck JL, **Dean KM**, Ma H, Palmer AE, Jimenez R. Microfluidic flow cytometer for quantifying photobleaching of fluorescent proteins in cells. *Anal Chem.* 2012 May 1;84(9):3929-37. doi: 10.1021/ac202825z. Epub 2012 Apr 9. PMID: 22424298; PMCID: PMC3341488.

51. **Dean KM**, Lubbeck JL, Binder JK, Schwall LR, Jimenez R, Palmer AE. Analysis of red-fluorescent proteins provides insight into dark-state conversion and photodegradation. *Biophys J.* 2011 Aug 17;101(4):961-9. doi: 10.1016/j.bpj.2011.06.055. PMID: 21843488; PMCID: PMC3175071.
52. **Dean KM**, Williamson JC. The Stir-Settle Approach to Semiautomated Light Scattering Determination of Liquid-Liquid Coexistence Curves. *J. Chem. Eng. Data.* 2011 Jan 26;56(4):1433-7. doi: 10.1021/je101143g.
53. **Dean KM**, Babayco CB, Sluss DR, Williamson JC. The accuracy of liquid-liquid phase transition temperatures determined from semiautomated light scattering measurements. *J Chem Phys.* 2010 Aug 21;133(7):074506. doi: 10.1063/1.3469778. PMID: 20726651.

## Manuscripts in Review

1. Kang H, Choi JH, Sun Y, Mittal M, Korlakunta S, Pagani CA, Vishlaghi N, Somatilaka BN, Juan C, Nanes B, Lin HY, Bhatt K, Borges H, **Dean KM**, Lemoff A, Karner CM, Levi B. O-GlcNAcylation of a Phosphodegron-Proximal Site Rewires YAP Proteostasis and Cell Fate.
2. Chouhan S, Boujemaa-Paterski R, Munawar S, Bhatt K, German Do Nascimento L, Li A, Galecki S, Rajendran D, Isogai T, **Dean KM**, Danuser G, Medalia O, Nanes BA. Keratin filaments and soluble vimentin interact with isoform specificity to organize cell signaling.
3. Ngo T, Faiyazuddin M, Nguyn TD, Haug J, Shen Q, Galecki S, Borges HM, Chen B, Wang X, Zhu H, Pappas SS, Voigt FF, Fiolka R, **Dean KM**. Altair-dvOPM: an open-access platform for large-field three-dimensional tissue imaging. *bioRxiv [Preprint]*. doi: 10.64898/2026.05.08.723912.
4. Backman V, Matei D, Zhang H, Wirtz D, Wood L, Fiolka R, **Dean KM**, Provenzano P, Eliceiri K. Cancer is a 4D Disease: Finding a Cure Demands New Cellular Imaging
5. Kamada S, Dang TT, Newman C, Sudderth J, Kim K, Parida PK, Llamas CB, Shen Q, Cai F, Yang C, Zacharias LG, Toffessi Tcheuyap V, Christie A, Hipsh S, Jackson B, Small C, Ghosh S, Reese T, Kim D, Kontoyiannis PD, Mathews TP, Halawa O, Lee J, Shmuel-Galia L, Mishra P, McDaniel P, Lin L, Margulis V, **Dean KM**, Zhang Q, Kapur P, DeBerardinis RJ, Brugarolas J, Malladi S. Organ-specific bioenergetic constraints define metastatic fitness in renal cell carcinoma.
6. Almasian M, Saberigarakani A, Zhang X, Brewer JA, Hameed R, Chai J, Lu Y, Ware SA, Zhou S, Wen Y, Lalami H, Hossein Beigi H, Yuan J, Liao J, **Dean KM**, Hong Y, Wu M, Tong D, Sapkota D, Ding Y. Mapping mesoscale cardiac architecture with axially swept dithered light-sheet microscopy.
7. Aleksandrovic E, Fross SR, Golomb SM, Ma W, Liu X, Zhao Z, Das NM, Reese TC, Borgez H, Tenekeci A, Yu L, Lopez J, Zhao M, Zhong Z, **Dean KM**, Lea J, Xu L, Stack MS, Zhang S. Tumor-intrinsic IFN $\gamma$  signaling and niche adaptation define an early colonization bottleneck in ovarian cancer metastasis.
8. Gihana GM, Bhatt K, Chang BJ, Murali V, Zhou F, Noh J, Ravishankar R, Borges H, Lin J, Oceguela J, Nogueira PA, Castro LP, Venkateswaran N, Chen B, Fiolka R, Conacci-Sorrell M, **Dean KM**, Danuser G. Modulation of Oncogenic KRAS Signaling by Branched Actin-driven Cell Membrane Protrusions. *bioRxiv [Preprint]*. 2026 Apr 13:2026.04.09.717047. doi: 10.64898/2026.04.09.717047. PMID: 42039391; PMCID: PMC13104973.
9. Wu S, Chavula T, Calamai C, Wasser CR, Lazarrova I, Leal-Garcia M, Busson M, Peghaire C, Sacharidou A, Chen B, Fiolka R, **Dean KM**, Kounnas MZ, Herz J, Calvier L. A self-amplifying inflammatory loop driven by circulating Reelin sustains neurovascular dysfunction in Alzheimer's disease.
10. Felan BL, Warshaw JN, Rivera AM, Hiremath C, Geshow K, Dean KM, Zhou FY, Moe OW, Carroll TJ, Chaney C, Miner JH, Marciano DK. Tubular COL4A5 drives epithelial dysfunction and survival in Alport syndrome.
11. Xue Y, Merchant S, Reyes A, Luo M, Zhang R, Tippetts T, Grabowski G, Ngo T, Zhang Y, Shang Z, Jiang N, Jeffery E, Li Y, Wei T, Gu W, Du L, DeBerardinis RJ, **Dean KM**, Mathews TP, Lucas D, Zhao Z, Morrison SJ. Leptin Receptor<sup>+</sup> cells create a perisinusoidal niche for thrombopoiesis in the bone marrow by synthesizing CXCL14. *bioRxiv [Preprint]*. 2026 Jan 28:2026.01.27.702029. doi: 10.64898/2026.01.27.702029. PMID: 41659692; PMCID: PMC12873943.

12. Baroody C, Sheth V, Calhoun H, Park J, Lin J, Eissa A, Marah M, Karami D, Means N, Lowe J, Mian M, Mathew J, Fiolka R, **Dean KM**, Wilhelm S. Multiscale imaging of nanoparticle spatiotemporal distributions in entire expanded multicellular cancer spheroids.
13. Gałecki, S, Chang B-J, Zhou FY, Shen Q, Stoddard D, Chen B, Nicastro D, Fiolka R, **Dean KM**<sup>‡</sup>. Unraveling Subcellular Ultrastructure with Cyclically Multiplexed Expansion Microscopy. *bioRxiv* [Preprint]. 2026 Jan 2:2026.01.01.697161. doi: 10.64898/2026.01.01.697161. PMID: 41509327; PMCID: PMC12776423.
14. Weems AD, Islam T, Borges H, Yapp C, Perez-Castro L, Nogueira P, Connerty-Marin Z, Lin J, Maliga Z, Lewis AJ, Kutter C, Mannino M, Vallius T, Santagata S, Morrison S, Sorger P, Conacci-Sorrell M, **Dean KM**, Danuser G. In vivo evidence for bleb-induced survival signaling in metastatic melanoma. *bioRxiv* [Preprint]. doi: 10.64898/2026.01.05.697601.
15. Chen B, Millett-Sikking A, Gałecki S, Daetwyler S, Jiou J, Monistrol J, Shen Q, Zhou F, Lin HY, Jenkins E, Stein MC, Marlar-Pavey M, Sturm G, Li AL, Tang Q, Feng B, Diaz U, Chen Y, Shalizi A, Gillich A, Friedman JR, Tomer R, Chang BJ, Marshall WF, Shahmoradian S, **Dean KM**, Fiolka R. Multi-immersion Oblique Plane Microscope (miOPM): A reconfigurable platform for high-resolution Light-Sheet Fluorescence Microscopy. *bioRxiv* [Preprint]. 2025 Oct 6:2025.10.04.680473. doi: 10.1101/2025.10.04.680473. PMID: 41279040; PMCID: PMC12632540.
16. Isogai T, Murali VS, Zhou FY, Wang X, Rajendran D, Perez-Castro L, Nogueira PA, Borges H, Rajendran D, Venkateswaran N, **Dean KM**, Conacci-Sorrell M, Danuser G. Anchorage-independent cell proliferation promoted by fascin's F-actin bundling. *bioRxiv* [Preprint]. 2024 May 4:2024.05.04.592404. doi: 10.1101/2024.05.04.592404. PMID: 38746129; PMCID: PMC11092747.

### Conference Papers

1. Abbott DH, Dawod B, Perez Rodriguez A, Ngo T, Danuser G, **Dean KM**, Aguilera TA. A multi-scale imaging pipeline identifies regions of NMII activation in colorectal cancer which promote tumor survival [abstract]. In: Proceedings of the American Association for Cancer Research Annual Meeting 2026; Part 1 (Regular Abstracts); 2026 Apr 17-22; San Diego, CA. Philadelphia (PA): AACR; Cancer Res. 2026;86(7 Suppl):Abstract nr 719. doi: 10.1158/1538-7445.AM2026-719.
2. Baroody C, Lin J, Wilhelm S, **Dean KM**, Fiolka RP. Axially swept light-sheet microscopy using scattering and fluorescence contrast mechanisms. In: Biomedical Light Scattering XVI. Proc SPIE. 2026 Mar 4;13852:1385203. doi: 10.1117/12.3085022.
3. Marin Z, Wang X, Lin J, Borges H, Collison D, **Dean KM**<sup>‡</sup>. Autonomous Multiscale Axially Swept Light-Sheet Microscopy. *Microscopy and Microanalysis*. 2023.
4. Borges H, Lin J, Marin Z, **Dean KM**<sup>‡</sup>. Quantitative Cleared Tissue Imaging. *Microscopy and Microanalysis*. 2023.
5. **Dean KM**, Davis LM, Lubbeck JL, Manna P, Palmer AE, Jimenez R. Microfluidic flow cytometer for multiparameter screening of fluorophore photophysics. Conference on Lasers and Electro-Optics (CLEO) - Laser Science to Photonic Applications. 2014.

### Book Chapters

1. Borges HM, Haug J, Lin J, Calvache S, Zhou FY, Luo X, Pop IV, Zhong Z, Liang S, Lai HC, **Dean KM**<sup>‡</sup>. Advanced Tissue Clearing and Axially Swept Light-Sheet Microscopy for High-Resolution Imaging of Neural Systems. *Neuromethods*. Springer Protocols.

<sup>‡</sup> **Corresponding Author.**

## PRESENTATIONS

### Invited Talks

1. Imaging Mouse Development, Janelia Research Campus, Ashburn, VA, USA, 2026.
2. University of North Carolina, Chapel Hill, NC, USA, 2026.
3. I2KxBINA 2026, Madison, WI, USA, 2026.
4. 2026 Northwest Regional Meeting, ACS, Boise, ID, USA, 2026.
5. Cell Modeling in Space and Time, Cold Spring Harbor Laboratory, Cold Spring Harbor, NY, USA, 2026.
6. Bioimaging North America Builders Workshop, Virtual, 2026.
7. BioFrontiers Institute, University of Colorado, Boulder, CO, USA, 2026.
8. Workshop on Validation and Dissemination of Innovative Imaging Technologies, Chan-Zuckerberg Initiative, Redwood City, CA, USA, 2025.
9. Pathology Seminar Series, UT Southwestern Medical Center, Dallas, TX, USA, 2025.
10. Gliwice Scientific Meetings, Gliwice, Poland, 2025.
11. 10 Years of mesoSPIM Symposium, Zurich, Switzerland, 2025.
12. Photonics Media Webinar Series. Virtual. 2025.
13. Stowers Institute for Medical Research, Kansas City, MO, USA, 2025.
14. University of Oklahoma, Norman, OK, USA, 2025.
15. Advances in Optics for Biotechnology, Medicine and Surgery XVIII, Cork, Ireland, UK, 2025.
16. University of California San Diego, San Diego, CA, USA, 2025.
17. University of Minnesota, Minneapolis, MN, USA, 2025.
18. University of Wisconsin, Madison, WI, USA, 2024.
19. Light Microscopy Australia. Melbourne, VIC, Australia, 2024.
20. Microscopy & Microanalysis. Minneapolis, MN, USA, 2023.
21. EMBL-Janelia Bioimaging Seminar Series. Virtual. 2023.
22. MC2 Image Analysis Working Group. Virtual. 2023.
23. Willamette University. Salem, OR, USA. 2023.
24. Photonics Media Webinar Series. Virtual. 2022.
25. CLEO: Laser Science to Photonic Applications Technical Conference. San Jose, CA, USA. 2022.
26. Light-Sheet Conference and Workshop, MBL. Woods Hole, MA, USA. 2022.
27. IQ Health Science & Engineering, Michigan State University. Lansing, MI, USA. 2021.
28. Photonics Media Webinar Series. Virtual. 2020.
29. Imaging ONE WORLD Series. Virtual. 2020.
30. Next Generation Microscopy Workshop. Cambridge, U.K. 2019.
31. Cell Biology Seminar Series, Denver University, Denver, CO, USA. 2017.
32. Andor Academy, University of Colorado, Boulder, CO, USA. 2014.

### Contributed Talks

1. EPFL Latsis Symposium 2024. Lausanne, Switzerland. 2024.
2. American Society for Cell Biology (ASCB). Virtual. 2021.
3. Society for Neuroscience (SfN). Virtual. 2021.

4. EMBO & EMBL Symposium: Seeing is Believing - Imaging the Processes of Life. EMBL, Virtual. 2021.
5. Focus On Microscopy. Virtual. 2021.
6. Arizona Imaging and Microanalysis Conference. Virtual. 2021.
7. The Network of European Bioimage Analysts (NEUBIAS). Bordeaux, France. 2020.
8. Imaging Mouse Development. Howard Hughes Medical Institute. Ashburn, VA, USA. 2020.
9. Focus On Microscopy. Osaka, Japan. *Cancelled*. 2020.
10. The Academy of Medicine, Engineering & Science of Texas (TAMEST). Dallas, TX, USA. 2020.
11. American Chemical Society, Orlando, FL, USA. 2019.
12. EMBO & EMBL Symposium: Seeing is Believing - Imaging the Processes of Life. EMBL, Heidelberg, Germany. 2019.
13. Frontiers and Challenges in Laser-Based Biological Microscopy. Telluride, CO, USA. 2019.
14. Focus On Microscopy. London, U.K. 2018.
15. Focus On Microscopy. Singapore, Republic of Singapore. 2018.
16. Frontiers in Imaging Science. Howard Hughes Medical Institute. Ashburn, VA, USA. 2017.
17. Biophysical Society. New Orleans, LA, USA. 2017.
18. Quantitative BioImaging 2017. College Station, TX, USA. 2017.
19. Gordon Research Conference - Signaling by Adhesion Receptors. Bates College, Lewiston, Maine, USA. 2016.
20. EMBO & EMBL Symposium: Seeing is Believing - Imaging the Processes of Life. EMBL, Heidelberg, Germany. 2015.
21. EMBO & EMBL Symposium: Seeing is Believing - Imaging the Processes of Life. EMBL, Heidelberg, Germany. 2013.
22. Signaling and Cellular Regulation Symposium. University of Colorado, Boulder, CO, USA. 2013.
23. Computational, Optical, Sensing and Imaging. University of Colorado, Boulder, CO, USA. 2013.
24. Computational Optical, Sensing and Imaging IAB Meeting. Breckenridge, CO, USA. 2012.
25. Colorado Photonics Industry Association Annual Meeting. Boulder, CO, USA. 2011.
26. Molecular and Cellular Biophysics Symposium at the University of Denver. Denver, CO, USA. 2011.
27. Multiphoton Imaging: The Next  $6 \times 10^{23}$  Femtoseconds, Howard Hughes Medical Institute. Ashburn, VA, USA. 2010.
28. New Optical Methods in Cell Physiology, Society of General Physiologists. Wood's Hole, MA, USA. 2010.
29. Novel Approaches to Bioimaging II, Howard Hughes Medical Institute. Ashburn, VA, USA. 2010.
30. Student Scholarship Recognition Day, Salem, OR, USA. 2006.
31. Northwest Undergraduate Science Research Conference at Oregon Health & Science University, Portland, OR, USA. 2006.
32. Student Scholarship Recognition Day, Salem, OR, USA. 2005.

## GRANTS & FUNDING

### Current Grant Support

- 2025 – 2028 Sympathetic innervation controls the development of obesity-associated liver cancer  
Cancer Prevention Research Institute of Texas (CPRIT).  
RP260482  
*Co-I*
- 2025 – 2026 Administrative Supplement - UTSW-UNC Center for Cell Signaling Analysis  
National Institute of General Medical Sciences, NIH.  
RM1GM145399-04S1  
*PI*
- 2025 – 2030 Cancer Cell Imaging Core at UT Southwestern Medical Center  
Cancer Prevention Research Institute of Texas (CPRIT).  
RP250571  
*PI*
- 2025 – 2030 Mechanisms and Consequences of PAX2 Inactivation in the Initiation of Endometrial  
Carcinogenesis  
National Cancer Institute, NIH.  
R01CA295997  
*Co-I*
- 2025 – 2030 Improving Focused Ultrasound Mediated Viral Gene Therapy Delivery.  
National Institute of Mental Health, NIH.  
R01NS127900  
*Co-I*
- 2021 – 2026 UTSW-UNC Center for Cell Signaling Analysis.  
National Institute of General Medical Sciences, NIH.  
RM1GM145399  
*PI*
- 2021 – 2026 Imaging Mechanisms of Metastatic Tumor Formation in Situ  
National Cancer Institute, NIH.  
U54CA268072  
*MPI*
- 2021 – 2026 Integrated Visualization, Control, and Analysis of GEF-GTPase Networks in Living  
Cells  
National Cancer Institute, NIH.  
R01CA252826  
*PI*

### Previous Grant Support

- 2024 – 2025 Mechanisms Underlying Lobular Breast Cancer Metastasis to Bone.  
Charles Pak Family Cancer & Bone Initiative Research Grant.  
*Co-PI*
- 2024 – 2025 Advanced 3D Microscopy for Early Cancer Detection and Tissue-Based Diagnosis.  
Lyda Hill Philanthropies.  
Co-PI

- 2024 – 2025 Novel Pharmacologic Strategies to Mitigate Post-Traumatic Extremity Complications  
Trauma Research and Combat Casualty Care Collaborative  
Co-I
  
- 2023 – 2024 Illuminating the Molecular and Cellular Origins of Tissue Function in Health & Disease.  
President's Research Council, UTSW.  
*PI*
  
- 2023 – 2024 Next-Generation Histopathology Using Rapid Ultraviolet Photoacoustical Microscopy.  
Harold C. Simmons Comprehensive Cancer Center, UTSW.  
*MPI*
  
- 2022 – 2023 Mechanisms of Cell Rearrangements During Germband Extension in *D. Melanogaster*.  
National Institute of Child Health and Human Development, NIH.  
R21HD105189  
*Collaborator*
  
- 2022 – 2023 Linking Function, Structure, and Molecular Identity of Lateral Habenula Neurons.  
National Institute of Mental Health, NIH.  
R34NS121873  
*Collaborator*
  
- 2021 – 2026 UTSW Cancer Center Support Grant  
National Cancer Institute, NIH.  
P30CA142543  
*Key Personnel*
  
- 2021 – 2026 UT Southwestern Simmons Comprehensive Cancer Center  
National Cancer Institute, NIH.  
P30CA142543  
*Other*
  
- 2020 – 2025 Prune Belly Syndrome: Mechanisms of Filamin A Mutations.  
National Institute of Diabetes and Digestive and Kidney Diseases, NIH.  
R01DK127589  
*Co-Investigator*
  
- 2020 – 2024 Neuronal Signaling Mechanisms of Stress-Induced Anhedonia in the Lateral Habenula.  
National Institute of Mental Health, NIH.  
R01MH120131  
*Collaborator*
  
- 2019 – 2020 Laser for Ultra-Deep Intravital Imaging.  
National Institute of General Medical Sciences, NIH.  
S10OD026722  
*Key Personnel*
  
- 2016 – 2018 Symmetry breaking and polarization of cells in 3D environments.  
National Institute of General Medical Sciences, NIH.  
F32GM117793  
*Principal Investigator*
  
- 2011 – 2013 Integrative Graduate Education and Research Trainee (IGERT)  
Computational, Optical, Sensing and Imaging.  
Division Of Graduate Education, NSF  
0801680  
*Trainee*
  
- 2009 – 2011 Interdisciplinary Predoctoral Training in Molecular Biophysics.  
National Institute of General Medical Sciences, NIH.

T32GM065103

*Trainee*

- 2006 – 2007 Sigma Xi Undergraduate Research Fellowship.  
*Trainee*

### **Trainee Grant Support**

- 2025 Qionghua Shen, UTSW Department of Bioinformatics Discovery Engine Program.
- 2024 Derek Abbott, SCCC Translational Cancer Biology T32 Training Program.
- 2023 Hazel Borges, Carl Storm Underrepresented Minority (CSURM) Fellowship.

## **SERVICE & LEADERSHIP**

### **Leadership Positions**

2007 – 2013 Sigma Alpha Epsilon - University of Colorado Advisor and Regional Director  
2007 Coast 2 Coast 4 Kalan Memorial Bike Ride - Philanthropy Coordinator and Participant  
2005 – 2006 Willamette University Football Team Captain

### **Institutional Committees**

2026 – Present Molecular Biophysics Graduate Program Travel Awards Committee  
2024 – Present Digital Accessibility Committee  
2024 – Present UT Southwestern Core Facilities Committee  
2022 – Present Molecular Biophysics Work-In-Progress Evaluator  
2022 – Present UT Southwestern Committee on Improving Research Staff Recruitment and Hiring  
2022 – Present Lyda Hill Dept. of Bioinformatics and BME-Computational Biology Retreat  
2022 – Present UT Southwestern Graduate School Admissions Committee  
2021 – Present Dept. of Biophysics and Lyda Hill Dept. of Bioinformatics Faculty Search  
2021 – Present UT Southwestern Medical School Admissions Committee  
2021 – 2025 Faculty Senate at UT Southwestern

### **Conference Organizing**

2023 CLEO: Laser Science to Photonic Applications Technical Conference.  
2022 Biomedical Applications Program. OSA Biophotonics Congress.  
2022 BRAIN Technical Program Committee. OSA Biophotonics Congress.

### **Advisory Panels**

2021 - Present Beckman Center for Advanced Light Sheet Microscopy and Data Science,  
University of Colorado BioFrontiers Institute.

### **Consulting Agreements**

2021 - Present Intelligent Imaging Innovations, Inc., Denver, CO, USA.

### **Philanthropy & Community Service**

2020 Neonatal Support Staff, Parkland Neonatal Intensive Care Unit  
2020 Science Advocate, Science Policy, Education, and Communication club (SPEaC)  
2019 Neonatal Support Staff, Parkland Neonatal Intensive Care Unit

2019	Science Advocate, Science Policy, Education, and Communication club (SPEaC)
2018	Neonatal Support Staff, Parkland Neonatal Intensive Care Unit
2018	Science Advocate, Science Policy, Education, and Communication club (SPEaC)
2017	Neonatal Support Staff, Parkland Neonatal Intensive Care Unit
2016	Science Advocate, Science Policy, Education, and Communication club (SPEaC)
2016	Neonatal Support Staff, Parkland Neonatal Intensive Care Unit
2015	Science Advocate, Science Policy, Education, and Communication club (SPEaC)
2006	Participant and Organizer, Coast to Coast for Kalan Memorial Bicycle Ride
2004	Participant, United Way Day of Caring
2004	Participant, Willamette University Bearcat Day Student Athlete Youth Outreach
2002	Participant, Habitat for Humanity

## TEACHING & MENTORSHIP

### Teaching Experience

2025	Course Director, Scalable Data Analysis with Dask, UTSW
2025	Course Director, Introduction to Python Software Development on GitHub, UTSW
2025	Discussion Group Leader, Responsible Conduct of Research, UTSW
2024	Course Director, Introduction to Python, UTSW
2024	Lecturer, Optical Imaging and Probe Engineering, UTSW
2023	Course Director, Introduction to Python Software Development on GitHub, UTSW
2022	Discussion Group Leader, Responsible Conduct of Research, UTSW
2022	Assistant Instructor, Computational Image Analysis, UTSW
2021	Assistant Instructor, Computational Image Analysis, UTSW
2018	Assistant Instructor, Optical Microscopy, UTSW
2017	Assistant Instructor, Optical Microscopy, UTSW
2016	Assistant Instructor, Optical Microscopy, UTSW
2015	Assistant Instructor, Optical Microscopy, UTSW
2013	Laboratory Assistant, Light Microscopy, University of Colorado
2007	Teaching Assistant, Introductory Chemistry, University of Colorado
2006	Tutor, Introductory Chemistry and Physical Chemistry, Willamette University

### Scientific Mentorship

#### *High-School Students*

2021 – 2022	Samir Mamtani, Engineer, Glass-Media.
2021 – 2022	Sampath Rapuri, Undergraduate Student, Johns Hopkins University.
2021 – 2022	Renil Gupta, Undergraduate Student, UT Austin.
2019 – 2019	Ryan Hammond, Investment Banker, Santander.

#### *Undergraduate Students*

2024 – 2025	Daniel Buckelew, Undergraduate Student, UTD.
2025 – 2025	Joel Augustine, Undergraduate Student, UTD.
2024 – 2025	Easha Syed, Undergraduate Student, UTD.
2024 – 2025	Kay Lin, Undergraduate Student, UTD.
2024 – 2025	Victoria McSpadden, Undergraduate Student, UTD.
2023 – 2024	Sai Bommisetty, Graduate Student, ETH Zurich.
2023 – 2024	Joy Camposagrado, Clinical Trial Recruiter, SGS.
2023 – 2024	James Harrigan, Flight Test Engineer, United States Air Force.
2023 – 2024	Rayyan Sappayani, Hardware Test Engineer, Tesla.
2023 – 2024	Abhijeet Kulkarni, Field Engineer I, G.E.
2023 – 2024	Besher Nusair, Mechanical Engineer, Alpine ITW.

2023 – 2024 Cammy Kutter, Undergraduate Student, UCLA.  
 2023 – 2023 Evan Wylie, Graduate Student, University of Oregon.  
 2012 – 2013 Jordan Gringauz, Legal Associate, Finnegan.  
 2011 – 2013 Derek Gann, System Engineer, Moon Five.  
 2010 – 2011 Jennifer Binder, Graduate Student, Arizona State University.

*Graduate Students*

2025 – Present Tiffany-Chau Le, Graduate Research Assistant, UT Southwestern Medical Center.  
 2023 – Present Seweryn Galecki, M.S., Fulbright Graduate Student, Silesian University of Technology.  
 2023 – 2023 Calvin Jones, Graduate Research Assistant, Boise State University.  
 2011 – 2013 Premashis Manna, Assistant Professor, Ohio State University.

*Postdoctoral Fellows*

2024 – Present Derek Abbott, Ph.D., UT Southwestern Medical Center.  
 2023 – Present Qionghua Shen, Ph.D., UT Southwestern Medical Center.  
 2023 – Present John Haug, Ph.D., UT Southwestern Medical Center.  
 2023 – 2025 Dushyant Mehra, Ph.D., UT Southwestern Medical Center.  
 2022 – 2023 Zach Marin, Ph.D., Postdoctoral Fellow, Max Perutz Labs Vienna.  
 2018 – 2019 Qiuyan Shao, Principal Data Scientist at Capital One.

*Staff Scientists*

2025 – Present Joel Augustine, Research Technician II, UT Southwestern Medical Center.  
 2022 – Present Xiaoding 'Annie' Wang, M.S., Software Engineer, UT Southwestern Medical Center.  
 2021 – Present Hazel Borges, M.S., Research Assistant I, UT Southwestern Medical Center.  
 2024 – 2025 Doreen Idonije, Research Technician II, UT Southwestern Medical Center.  
 2023 – 2025 Samantha Calvache, Research Technician II, UT Southwestern Medical Center.  
 2022 – 2023 Melissa Glidewell, Territory Manager, 89 North.  
 2021 – 2024 Jinlong Lin, Graduate Student, Johns Hopkins University.  
 2021 – 2023 Dax Collison, Software Engineer, Atmos Energy.  
 2019 – 2021 Evgenia Azarova, Graduate Student, Johns Hopkins University.  
 2018 – 2020 Saumya Vora, M.S., Regulatory Affairs Specialist, Medtronic.  
 2017 – 2019 Justin Cillay, M.D., Resident Physician, University of Colorado.  
 2012 – 2014 Pia Friis, Laboratory Technician in Clinical Microbiomics.

**Dissertation Committees**

2026 – Present Yue Xuan, Wong Lab, Dept. of Bioinformatics and Computational Biology, MD Anderson.  
 2025 – Present Sriya Veerapaneni, Rajaram Lab, Lyda Hill Dept. of Bioinformatics, UTSW.  
 2025 – Present Shiqiu Yu, Danuser Lab, Lyda Hill Dept. of Bioinformatics, UTSW.  
 2024 – Present Eunice Song, Siegwart Lab, Dept. of Biomedical Engineering, UTSW.  
 2024 – Present Kiddist Yihunie, Yao Lab, Dept. of Immunology, UTSW.  
 2020 – Present Harshida Pancholi, Roberts Lab, Dept. of Neuroscience, UTSW.  
 2020 – 2022 Byron Weiss, Danuser Lab, Lyda Hill Dept. of Bioinformatics, UTSW.

**PROFESSIONAL ENGAGEMENT**

**Study Sections**

- 2026 National Institute on Aging Special Emphasis Panel ZRG1 HTM-V (92) S  
Division of AIDS, Behavioral and Population Sciences.  
National Institutes of Health, Bethesda, MD.
- 2026 Alliance HighTech Program  
Health + Life Science Alliance, Heidelberg, Germany.
- 2026 National Institute on Aging Special Emphasis Panel ZRG1 MCST N(85)S  
Bioanalytical, Molecular, Cellular Sciences and Technologies.  
National Institutes of Health, Bethesda, MD.
- 2026 BSF Research Grants Program  
United States-Israel Binational Science Foundation, Jerusalem, Israel.
- 2026 Fondation pour l'Université de Genève  
Université de Genève, Genève, Switzerland.
- 2025 National Institute on Aging Special Emphasis Panel ZAG1 ZIJ-T(M3)  
Review of SBIR/STTR Applications  
National Institutes of Health, Bethesda, MD, USA.
- 2025 External Reviewer  
Swiss National Science Foundation (SNSF), Switzerland.
- 2024 Center for Scientific Review Special Emphasis Panel ZRG1 BBBT-T (55)  
Biomedical Technology Optimization and Dissemination Center  
National Institutes of Health, Bethesda, MD, USA.
- 2024 National Institute on Aging Special Emphasis Panel ZAG1 ZIJ-T(M3)  
Review of SBIR/STTR Applications)  
National Institutes of Health, Bethesda, MD, USA.
- 2023 National Institute of General Medical Sciences Special Emphasis Panel ZGM1 TWD-8 (MK)  
Review of MOSAIC K99/R00 Applications)  
National Institutes of Health, Bethesda, MD, USA.
- 2023 Center for Scientific Review, Special Emphasis Panel ZRG1 NV-G (13)  
Small Business — Neuroscience Assays, Diagnostics, Instrumentation, and Interventions  
National Institutes of Health, Bethesda, MD, USA.
- 2022 Center for Scientific Review Special Emphasis Panel ZRG1 NV-G (13)  
Small Business — Neuroscience Assays, Diagnostics, Instrumentation, and Interventions  
National Institutes of Health, Bethesda, MD, USA.
- 2022 External Reviewer  
Netherlands Organization for Scientific Research (NWO, the Dutch Research Council
- 2019 External Reviewer  
Netherlands Organization for Scientific Research (NWO, the Dutch Research Council

## Editorial Boards

- Current Protocols

## Referee for Journals

- Biomedical Optics Express
- Biophysical Journal
- Journal of Biophotonics
- Cell
- Cell Reports Methods
- Cytometry Part A
- eLife
- EMBO Molecular Systems Biology
- International Journal of Biochemistry and Cell Biology
- The Journal of Cell Biology
- Laser & Photonics Reviews
- Nature Biotechnology
- Nature Communications
- Nature Photonics
- Nature Methods
- Nature Neuroscience
- Nature Protocols
- Nature Scientific Data
- Journal of Neuroscience Methods
- Scientific Reports
- Optics Express
- PLoS One

## Professional Memberships

- American Society for Cell Biology
- American Chemical Society
- Biophysical Society
- Society for Neuroscience

## DISTINCTIONS

2023	Recipient, Distinguished Researcher Award from the UTSW President's Research Council
2022	Inductee, Weed High School Hall of Fame.
2018	Dean's Discretionary Award, UT Southwestern Medical Center.
2018	Runner-Up, UTSW Brown-Goldstein Excellence in Postdoctoral Research.
2016	Nominee, AAAS/Science Program for Excellence in Science.
2015	Finalist, 2015 Educational Award, Edmund Optics.
2011	Certificate of Achievement, Colorado Photonics Industry Association (CPIA).
2007	Excellence in Graduate Teaching.
2007	ESPN & CoSIDA District 8 Academic All-American.
2007	Inducted into National Football Foundation Hampshire Honor Society.
2007	Co-Recipient, Henry Booth Outstanding Senior Male Athlete Award.
2006	Willamette University Bill Trenbeath Award.
2006	ESPN & CoSIDA District 8 Academic All-American.

2006 Sigma Alpha Epsilon National Scholar.  
2006 Willamette University Athlete of The Month.  
2006 Northwest Conference Athlete of the Week.  
2006 Willamette University Football Team Captain.  
2005 Invited to Speak at the Murdock's NW Undergraduate Research Meeting.  
2005 Willamette University Football Team Captain.  
2005 Peterson Family Scholarship for Chemistry.  
2005 Inducted into the Mortar Board National Honor Society.  
2004 Sigma Alpha Epsilon National Scholar.  
2004 Inducted into the National Society of Collegiate Scholars (NSCS).  
2004 Selected for Science Collaborative Research Program.  
2002 Haynes McHale Award.  
2002 Neal Wade Award - Weed High School Outstanding Male Athlete of the Year.  
2002 Inducted into California Scholarship Federation.