Christie Lin, PhD

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Medical Imaging Device Innovator with 10+ years in translational research, product development, and business strategy possessing domain expertise in medical physics, medical imaging, radiotherapy, and translational medicine for surgical and therapeutic applications. Collaborative team leader adept at driving strategic product development initiatives within regulated industries from prototype to product launch. A visionary adept at leveraging data-driven insights to pioneer innovative solutions, consistently delivering quantifiable, value-based outcomes.

PROFESSIONAL EXPERIENCE

OnLume Surgical, Madison, WI

VP of Research **(May 2021 - March 2024)**

- Demonstrated clinical performance of the Avata™ System for its FDA cleared indication and superiority over existing technologies
- Led four first-in-human, IRB-approved clinical studies and trials with four different PIs for promising surgical applications
- Led successful grant application preparation and submission for non-dilutive funding
- Co-managed intellectual property and patent portfolio
    - Negotiated in-licensing opportunities
    - Executed multiple B2B agreements
    - Filed patent applications
- Enabled first three sales of custom research systems for key collaborators
    - Act as voice of customer for internal product development
- Performed technical, clinical, and customer support
- Defined growth strategies with team and rapidly grew team 3x in one year
    - Established best practices for meaningful mentorship and career development opportunities
    - Established diversity, equity, and inclusion best practices

Director of Research **(May 2020 - May 2021)**

- Successfully applied for and awarded $2M non-dilutive federal funding via an NIH/NCI SBIR Phase II Grant
- Acted as primary contact for clinical research and vendor representative in a multicenter Phase I/II clinical trial evaluating a novel nerve-targeted fluorescent agent
- Installed the initial four clinical units in academic hospitals
    - Developed and performed in-person as well as remote device support for installed units
- Led several academic-industry collaborations for novel fluorescence translational imaging studies

    - Submitted and successfully received Institutional Review Board approval for research studies
- Performed due diligence on licensing and business opportunities
- Defined product development roadmap that enable rapid iteration based on user feedback gathered from early/beta users and data-driven analytics
- Assessed clinical market opportunities
- Prepared external facing material including peer-reviewed publications, professional talks, and marketing materials (powerpoints, webinars, company website)
- Negotiated multi-year six-figure contracts with third-parties
- Heavily supported private investment fundraising efforts (Series A round)
- Represented R&D as board observer for the Board of Directors

***Senior Scientist* (Jan 2019 - May 2020)**

- Led the strategy, collection, and analysis for the clinical safety and efficacy report in our first FDA 510(k) clearance
- Supported product safety testing to meet NRTL certification of our product
- Led several academic-industry collaborations for novel fluorescence preclinical imaging studies
- Established best practices for staying nimble amidst global supply chain and medical uncertainties
    - Supported private investment fundraising efforts (Seed round)
- Represented company at professional societies, government workshops, networking events, and fundraising opportunities

***Scientist — part-time* (Nov 2017 - Dec 2018)**

- Performed *in vitro* drug-device testing for targeted fluorescence agents
- Developed robust fluorescence phantoms for in-house R&D performance testing
- Established quantitative protocols for device development
- Defined key collaboration opportunities, including with cancer targeted fluorescence agents

MIT Alumni Club of Wisconsin — *Board of Directors*

***Secretary* (July 2022 - July 2023)**

***President* (Nov 2015 - July 2022)**

- Led the organization to provide an average of 1-2 events/month to 600+ alumni
    - Pivoted to provide virtual and hybrid events as a result of the pandemic
- Developed a sustainable financial plan based on non-profit organization best practices
- Increased paid membership base and new event attendees base
- Established a diverse and inclusive Board of Directors
- Won the the Great Dome Award (2019), the highest honor from the MIT Alumni Association

***Executive Vice President* (July 2014 - Nov 2015)**

***Director of Volunteering and Outreach* (Oct 2013 - July 2014)**

- Initiated a focus on K-12 STEM outreach events for the general community in WI

University of Wisconsin-Madison, Madison, WI — *Adjunct Assistant Professor*
July 2019 - Present

Massachusetts General Hospital, Boston, MA — *Research Assistant*
June 2011 - June 2012, Department of Radiation Oncology

- Developed a rapid 2D-3D image registration method using sparse base set for clinical implementation in stereotactic radiation therapy

EDUCATION

University of Wisconsin-Madison, Madison, WI — *MS/PhD*
Sept 2013 - Nov 2018, Department of Medical Physics

Massachusetts Institute of Technology, Cambridge, MA — *BS/MS*
Sept 2007 - June 2012 , Department of Nuclear Science and Engineering

Universidad Politecnica de Madrid — *Study Abroad*
Jan 2010 - June 2010, Department of Physics

Universidad Complutense de Madrid — *Study Abroad*
Jan 2010 - June 2010, Humanities and Literature

AWARDS

Wisconsin SBIR Advance Awardee (OnLume) 2021 • Wisconsin Innovation Award Winner (OnLume), October 2020 • MIT Alumni Association Great Dome Award, September 2019 • National Academies of Sciences, Engineering, and Medicine: Research Associateship Program 2018 (declined) • Society of Nuclear Medicine and Molecular Imaging: Alavi-Mandell Publication Award, June 2017 • UW Student Research Travel Grant, May 2017 • American Association of Physicists in Medicine: Expanding Horizons Travel Grant, October 2015 • Association for Computing Machinery SIGKDD: Data Mining Travel Grant, August 2014 • Wisconsin Entrepreneurship Bootcamp, June 2014 • MIT Public Service Center Fellowship, April 2012 • MIT Yunus Challenge Finalist, March 2012 • MIT Council of the Arts: Director's Grant Winner for “Interactive Theremin Suit,” October 2011 • Paul Gray (MIT ’54) Fellowship, December 2010 • Tau Beta Pi Engineering Fellowship, May 2010 • MIT Public Service Center Fellowship, April 2010 • AmeriCorps Student Leader in Service Award, September 2009 • Kelly-Douglas Fellowship, June 2009

PROFESSIONAL MEMBERSHIPS

Optica (formerly Optical Society of America) — *Member, Program committee member for OMP* (Feb 2021 – current)

Wisconsin Innovation Award — *Judge* (2021)

International Society for Fluorescence Guided Surgery (ISFGS) — *Member* (Feb 2020 – current)

World Molecular Imaging Society (WMIS) — *Member* (April 2019 – current)

International Society for Optics and Photonics (SPIE) — *Member* (Jan 2019 – current)

Women in Biohealth — *Member* (Nov 2018 – current)

Bioforward — *Member* (Nov 2017 – current)

Society of Nuclear Medicine and Molecular Imaging (SNMMI) — *Member* (Jan 2016 – current)

American Association for Cancer Research (AACR) — *Member* (Jan 2016 – current)

Madison Metropolitan School District: Schools Make a Difference Speaker — *Member* (Jan 2014 – current)

American Association of Physicists in Medicine (AAPM) — *Full Member* (Sept 2021 – current)
Working Group for Fluorescence-Guided Intervention, Vice Chair (Nov 2021 – Dec 2024)
Student member (Jan 2012 – Dec 2018)

LEADERSHIP, OUTREACH, AND MENTORSHIP EXPERIENCE

BadgerBOTS Robotics Corporation, Madison, WI — *Mentor to FRC Team 1306* (Sept 2013 - June 2018)
- Mentor to over 30 Madison-area high school students in FIRST FRC Robotics Team 1306, supporting student-led STEM community outreach, team building, and engineering

BadgerBOTS Robotics Corporation, Madison, WI — *Board of Directors* (June 2014 - June 2018)
- Stabilized the 501(c)(3) organization serving 600+ students by designing and implementing long-term, sustainable planning

University of Wisconsin-Madison, Dept of Medical Physics Outreach, Madison, WI — *Co-founder* (June 2015 - December 2018)
- Initiated graduate-student led medical physics outreach program (performed 15+ events, engaging 700+ K-12, undergraduate, and community college students)

Singapore University of Technology and Design, Singapore — *Lecturer* (July 2012 - Aug 2013)
- Assisted in the development and launch of the undergraduate physics II curriculum and labs (statistical mechanics, thermodynamics, quantum mechanics, and kinematics) in its first offering (university est. 2010)

Science Club for Girls, Cambridge, MA — *Assistant* (Aug 2010 - Aug 2012)
- Mentor-scientist to K-12 students
- Led planning for the annual fundraiser
- Developed a low-cost physics education curriculum and toolkit for distribution in developing world classrooms
- Accelerated the first SCFG international science club in Pokuase, Ghana by developing the teacher-mentor training program
- Assisted in designing a low-cost ray projector for hands-on optics course

Robert College High School, Istanbul, Turkey — *Engineering and Public Service Fellow* (April - Dec 2010)
- Created a workshop integrating engineering and public health awareness for high school students addressing carbon monoxide poisoning caused by residential heaters in Turkey

MATCH Charter High School, Boston, MA — *Tutor* (Sept 2007 -June 2012)
- Prepared high school students for the Massachusetts standardized test in mathematics, science, and English

PEER-REVIEWED PUBLICATIONS

- Junak M, Zajac JC, Liu A, Jupitz S, Seets T, Kawahara T, Uselmann A, **Lin C**, Nosanov L, Faucher L, Gibson A. “Evaluation of burn depth and reactive inflammation using perioperative fluorescence imaging" was accepted for a poster presentation at the 2024 ABA conference. Journal of Burn Care & Research. 2024.
- Shaffrey EC, Moura SP, Seitz AJ, Jupitz SA, Seets T, Kawahara T, Uselmann AJ, **Lin C**, Poore SO. “Use of Ambient Light Compatible Fluorescence-Guided Surgical Technology for Objective Assessment of Flap Perfusion in Autologous Breast Reconstruction,” J Reconstr Microsurg 2024;00:1–15.
- Shaffrey EC, Moura SP, Jupitz SA, Seets T, Kawahara T, Uselmann AJ, **Lin C**, Poore SO. “Predicting Nipple Necrosis with a “Lights-on” Indocyanine Green Imaging System: A Report of Two Patients” Arch Plast Surg; 51(03): 337-341. DOI: 10.1055/s-0043-1777068. 2024.
- Seets T, Lin W, Lu Y, **Lin C**, Uselmann AJ, Velten A, “OFDVDnet: A Sensor Fusion Approach for Video Denoising in Fluorescence-Guided Surgery,” Proceedings of Machine Learning Research 227:1564–1580, 2023.
- Seets T, Shaffrey EC, Kawahara T, Singh S, Seitz A, Poore SO, Uselmann AJ, **Lin C**, “An ambient light-compatible, fluorescence-guided surgery imaging platform for real-time clinical assessment of vascular perfusion and flap viability in breast reconstruction,” in: Molecular-Guided Surgery: Molecules, Devices, and Applications IX, SPIE, pp. 9–16. https://doi.org/10.1117/12.2649353. 2023.
- Shaffrey E, Seitz A, Kawahara T, Uselmann AJ, **Lin C**, Poore SO. “Clinical Evaluation of Novel, Ambient Light Compatible, Fluorescence-Guided Surgical Technology for Real-time Assessment of Vascular Perfusion in Free Flap Breast Reconstruction,” American Society of Reconstructive Microsurgery. 2023.
- Zajac J, Liu A, Uselmann AJ, **Lin C**, Hassan SE, Faucher LD, Gibson ALF, “Lighting the way for necrosis excision through indocyanine green fluorescence-guided surgery." *J Am College of Surgeons*. DOI: 10.1097/XCS.0000000000000329. 2022.
- Zajac J, Liu A, Uselmann AJ, **Lin C**, Hassan SE, Gibson ALF, “Use of indocyanine green fluorescence-guided techniques in burn surgery to preserve wound healing potential,” (under review).
- Santoso AP, Jupitz S, **Lin C**, “A framework for developing community‐focused medical physics outreach programs,” *Journal of Applied Clinical Medical Physics* 22 (10), 305-314. 2021.
- Hernandez Vargas S, **Lin C**, Ikoma N, AghaAmiri S, Ghosh SC, Uselmann AJ, Azhdarinia A, “Receptor-targeted fluorescence-guided surgery with low molecular weight agents,” *Frontiers in Oncology* 11. 2021.
- Albano NJ, Zeng W, **Lin C**, Uselmann AJ, Eliceiri KW, Poore SO, "Augmentation of Chicken Thigh Model With Fluorescence Imaging Allows for Real-Time, High Fidelity Assessment in Supermicrosurgery Training," *Journal of Reconstructive Microsurgery* 37 (06), 514-518. 2021.
- Karim AS, Liu A, **Lin C**, Uselmann AJ, Eliceiri KW, Brown ME, Gibson ALF, “Evolution of ischemia and neovascularization in a murine model of full thickness human wound healing,” *Wound Repair and Regeneration* 28 (6), 812-822. 2020.
- Hernandez Vargas S, **Lin C**, Voss J, Ghosh SC, Halperin DM, AghaAmiri S, Tran Cao HS, Ikoma N, Uselmann AJ, Azhdarinia A, “Development of a drug–device combination for fluorescence-guided surgery in neuroendocrine tumors,” Journal of Biomedical Optics 25 (12), 126002. 2020.
- Albano NJ, Zeng W, **Lin C**, Uselmann AJ, Eliceiri KW, Poore SO, “The Addition of Fluorescence to the University of Wisconsin “Blue-Blood” Chicken Thigh Model Significantly Enhances Its Effectiveness

As a Supermicrosurgery Training Tool," *Plastic and Reconstructive Surgery Global Open* 8 (9 Suppl). 2020.

- Hernandez Vargas S, **Lin C**, AghaAmiri S, Voss J, Ikoma N, Tran Cao HS, Ghosh SC, Uselmann AJ, Azhdarinia A, "A proof-of-concept methodology to validate the *in situ* visualization of residual disease using cancer-targeted molecular agents in fluorescence-guided surgery," Molecular-Guided Surgery: Molecules, Devices, and Applications VI 11222, 112220P. 2020.
- **Lin C,** Harmon S, Bradshaw T, et al, "Response-to-repeatability of quantitative imaging features for longitudinal response assessment," *Phys Med Biol,* November 2018.
- Perk T, Chen S, Harmon S, **Lin C,** et al, "A Statistically Optimized Regional Thresholding Method (SORT) for Bone Lesion Detection in ^{18}F-NaF PET/CT Imaging," *Phys Med Biol,* Oct 2018.
- Harmon S, Perk T, **Lin C,** et al, "Quantitative Assessment of Early ^{18}F-Sodium Fluoride PET/CT Response to Treatment in Men with Metastatic Prostate Cancer to Bone," *Journal of Clinical Onco*logy. DOI: 10.1200/JCO.2017.72.2348. June 2017.
- **Lin C,** Bradshaw T, Perk T, Harmon S, et al, "Repeatability of Quantitative ^{18}F-NaF PET: A Multicenter Study," *Journal of Nuclear Medicine*. 57(12):1872-1879. Dec 2016.
- Bean M, DeWitt G, … **Lin C**, et al, "Conceptual Design of Molten Salt Loop Experiment for MIT Research Reactor," Massachusetts Institute of Technology. Center for Advanced Nuclear Energy Systems. MIT Reactor Redesign Program. June 2011.

INVITED TALKS AND PRESENTATIONS

- **Lin C** (invited talk). "Real-Time Surgical Assessment Using an Ambient-Light Compatible Wide-Field Fluorescence-Guided Surgery Platform," Optica: Optical Molecular Probes, Imaging and Drug Delivery. April 2023.
- Seets TS, Kawahara T, Shaffrey E, Seitz A, Poore SO, Uselmann AJ, **Lin C**. "An Ambient Light Compatible, Fluorescence-Guided Surgery Imaging Platform for Real-time Clinical Assessment of Vascular Perfusion and Flap Viability in Breast Reconstruction," Photonics West: BiOS - Molecular-Guided Surgery. January 2023.
- **Lin C** (invited speaker). "Bringing new light to optical surgical guidance: OnLume Surgical's pathway from concept to the OR," World Molecular Imaging Society: Optical Surgical Navigation at Stanford University. January 2023.
- Shaffrey E, Seitz A, Kawahara T, Uselmann AJ, **Lin C**, Poore SO. "Clinical Evaluation of Novel, Ambient Light Compatible, Fluorescence-Guided Surgical Technology for Real-time Assessment of Vascular Perfusion in Free Flap Breast Reconstruction," American Society of Reconstructive Microsurgery. January 2023.
- **Lin C** (invited speaker). "Fluorescence-Guided Surgery: Translational Research from Discovery to the Clinic," University of Wisconsin-Madison's Department of Medical Physics Distinguished Alumni Lecture Series. August 2022.
- **Lin C** and Uselmann AJ (invited speakers), "OnLume Surgical, from the Darkroom to the Operating Room," Dartmouth College's Translational Engineering in Cancer, November 2021.
- **Lin C**, "Bringing Fluorescence Imaging into Surgery," American Association of Physicists in Medicine (AAPM) Mid-Atlantic Chapter Annual Meeting, October 2021.
- **Lin C**, Uselmann AJ (invited speaker), The Future of Medical Physics - Physics out Front, " Fluorescence-guided surgery to improve precision and outcomes of surgery," December 2021. https://anchor.fm/medphys3-0/episodes/Episode-9---Interview-with-Adam-Uselmann--Christie-Lin-e1dikev

- **Lin C** (invited speaker and panelist), “2021 Annual Student Meeting: Beyond the Clinic - Medical Physics in Industry,” AAPM Students and Trainees Session, July 2021.
- **Lin C** (invited speaker), “Applications of a Novel Translational Fluorescence-guided Surgery Platform,” Optica: Optical Molecular Probes, Imaging and Drug Delivery, OM3E. 1, April 2021.
- **Lin C** (invited speaker), “Fluorescence Guided Surgery,” Goeppert Mayer Gauge podcast. May 2021.
- **Lin C**, Uselmann AJ (invited speakers) “Medical Physicists in Fluorescence-Guided Surgery,” Seminar for University of California-San Diego, Department of Radiation Medicine. June 2021.
- **Lin C**, Hernandez Vargas S, AghaAmiri S, Voss J, Ghosh S, Azhdarinia A, Uselmann A, “Optimizing the Imaging Parameters of a Multimodal Somatostatin Analog for Fluorescence-Guided Surgery,” International Conference on Porphyrins and Phthalocyanines, June 2020.
- Albano N, Zeng W, Dingle A, **Lin C**, Uselmann A, Eliceri K, Bentz M, Poore S, “Augmentation Of The Wisconsin "Blue-Blood" Chicken Thigh Model with Fluorescent Imaging Enhances The Assessment Of Anastomotic Patency In Supermicrosurgical Training,” American Council of Academic Plastic Surgeons, February 2020.
- **Lin C**, Hernandez Vargas S, AghaAmiri S, Voss J, Ghosh S, Azhdarinia A, Uselmann A, “A proof-of-concept methodology to validate the in situ visualization of residual disease using cancer-targeted molecular agents in fluorescence-guided surgery,” SPIE BiOS, January 2020.
- Albano N, Zeng W, Dingle A, **Lin C**, Uselmann A, Eliceri K, Poore S, “Let it Glow! Fluorescent Augmentation of the Wisconsin “Blue-Blood” Chicken Thigh Model Enhances the Assessment of Anastomotic Patency in Supermicrosurgical Training,” University of Wisconsin-Madison Surgery Summit, January 2020.
- Karim A, Thadikonda K, **Lin C**, Uselmann A, Eliceiri K, Poore SO, Gibson A, “Detection of necrosis avidity using indocyanine green fluorescence in human wound healing,” Wound Repair And Regeneration 28, S12-S12, 2020.
- Karim A, Liu A, **Lin C**, Uselmann A, Eliceiri K, Brown M, Gibson A, “The Use of Indocyanine Green Fluorescence in a Preclinical Model of Human Wound Healing,” University of Wisconsin-Madison Surgery Summit, January 2020.
- **Lin C**, Hernandez Vargas S, Seemuth D, Voss J, Ghosh S, Titz B, Azhdarinia A, Uselmann A, “Intraoperative, high contrast in vivo detection of subcutaneous tumors in real-time with a novel fluorescence-guided surgery imaging platform,” World Molecular Imaging Congress, Montreal, Canada, September 2019.
- **Lin C**, “Quantitative PET imaging biomarkers for treatment response assessment,” National Institute of Standards and Technology: Radiation Physics Division, Gaithersburg, MD. December 2018.
- Santoso A, **Lin C**, Weisman A, Steffel C, Jackson EF, “Graduate Student-Led Outreach Increases Awareness of and Interest in Medical Physics,” Medical Physics 45 (6), E424-E425. August 2018.
- **Lin C**, Eickhoff J, Liu G, Jeraj R, “Clinical trial design for quantitative imaging: estimating sample size for a population of patients with multiple ROIs,” Journal of Nuclear Medicine 59 (supplement 1), 661-661. 2018.
- **Lin C**, Harmon S, et al, “Evaluation of changes in PET-based texture features for quantitative response assessment,” Journal of Nuclear Medicine 59 (supplement 1), 659-659. 2018.
- **Lin C**. “Quantitative PET for Response Assessment,” Massachusetts General Hospital, Department of Radiation Oncology: Physics Seminar. December 2017.
- **Lin C**, McNeel D, “Anti-tumor DNA vaccines - how to image their effects and efficacy,” UW-Madison, Prostate Cancer Research Group. December 2017.
- Ferjancic P, Perk T, **Lin C**, Liu G, Jeraj R, “Quantifying Response Heterogeneity of MCRPC Lesions with NaF PET/CT,” Medical Physics 44 (6), August 2017.

- Huff D, Perk T, **Lin C**, Liu G, Jeraj R, “Assessing the Impact of Post-injection Acquisition Time in ^{18}F-NaF PET/CT,” Medical Physics 44 (6), August 2017.
- Weisman A, Bradshaw T, **Lin C**, Jeraj R, “Impact of PET Scanner Harmonization on Quantitative Response Assessment,” Medical Physics 44 (6), August 2017.
- **Lin C**, Perk T, Bradshaw T, et al, “An evaluation of reference tissue normalization in quantitative ^{18}F-NaF PET/CT,” Journal of Nuclear Medicine. May 1, 2017 vol. 58 no. supp 1 665. June 2017
- **Lin C**, Perk T, Harmon S, Perlman S, Liu G, Jeraj R. “Impact of Lesion Location on the Repeatability of 18F-NaF PET/CT,” Annual Meeting of the AAPM, Washington, DC. June 2016.
- **Lin C**, Eickhoff J, Bradshaw T, et al, “Factors influencing the repeatability of 18F-NaF PET/CT,” Journal of Nuclear Medicine. vol. 57 no. supp 2 362. May 2016.
- Harmon S, Perk T, **Lin C**, et al, “18F-NaF PET/CT Imaging Biomarkers in Metastatic Prostate Cancer,” 58th Annual Meeting of the AAPM, Washington, DC. June 2016.
- **Lin C**, Bradshaw T, Perk T, Harmon S, Liu G, Jeraj R, “Repeatability of 18F-NaF PET Imaging Biomarkers for Bone Lesions: A Multicenter Study,” Annual Meeting of the AAPM, Anaheim, CA. July 2015.
- Che Fru L, Desai V, Lentz J, **Lin C**, Scarpelli M, Simiele E, Taneja S, Trestrail A, Bednarz B, “Development of a Radiation Monitoring Device Using a Low-Cost CCD Camera Following Radionuclide Therapy,” 57th Annual Meeting of the AAPM, Anaheim, CA. July 2015.
- **Lin C**, Harmon S, Perk T, Jeraj R, “Subpopulations of Similarly-Responding Lesions in Metastatic Prostate Cancer,” Annual Meeting of the AAPM, Austin, TX. July 2014.
- **Lin C**, Winey B, “Linear Regression Analysis of 2D Projection Image Data of 6 Degrees-Of-Freedom Transformed 3D Image Sets for Stereotactic Radiotherapy,” Annual Meeting of AAPM, Charlotte, NC. July 2012.