# LYDIA LEE SOHN

**Almy C. Maynard and Agnes Offield Maynard Chair in Mechanical Engineering**

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## EDUCATION

1988-1992 Ph.D., Dept. of Physics, Harvard University, Cambridge, MA
1988-1990 A.M., Dept. of Physics, Harvard University, Cambridge, MA
1984-1988 A.B., Chemistry & Physics (*magna cum laude*), Harvard University, Cambridge, MA

## DOCTORAL AND POSTDOCTORAL TRAINING

PhD Advisor: Professor Michael Tinkham, Physics Dept., Harvard University
PhD Thesis: *Geometrical Effects in Two-Dimensional Arrays of Josephson Junctions*
Postdoc Advisor: Prof. dr. J. E. Mooij, Dept. of Applied Physics, Delft University of Technology
Postdoc Advisor: Dr. Robert Willett, Semiconductor Physics Research Dept., AT&T Bell Laboratories

## POSITIONS

1992-1993 NSF/NATO Postdoctoral Fellow, Dept. of Applied Physics, Delft University of Technology, Delft, The Netherlands
1993-1995 AT&T Postdoctoral Research Fellow, Semiconductor Physics Research Dept., AT&T Bell Laboratories, Murray Hill, NJ
1995-2003 Assistant Professor, Dept. of Physics, Princeton University, Princeton, NJ
2003- Assistant, Associate, Professor, Dept. of Mechanical Engineering, UC Berkeley
2011-2022 Faculty Assistant to the Vice Chancellor for Research, UC Berkeley
2019-2021 Executive Committee, UCSF-UC Berkeley Joint Graduate Group in Bioengineering
2021 (Fall) Vice Chair of Diversity, Equity, Inclusion, Dept. of Mechanical Engineering, UC Berkeley

## AFFILIATIONS

2003-2019 Biophysics Graduate Group, UC Berkeley
2003-present Applied Science and Technology, UC Berkeley
2009-present Core Member, UCSF and UC Berkeley Joint Graduate Group in Bioengineering

## HONORS AND AWARDS

- Westinghouse Science Talent Search, Honors group (1984)
- Thomas S. Monfried Scholar, New Jersey Harvard Alumni Assoc. (1985)
- Francis Lee Friedman Physics Award, Harvard-Radcliffe Colleges (1987)
- Rowland Foundation Physics Research Award (1986-1988)
- Phi Beta Kappa, Alpha Iota Chapter
- Office of Naval Research Predoctoral Fellowship (1988-1991)
- National Science Foundation-NATO Postdoctoral Fellowship (1992-1993)
- Wu Foundation Award (1996)
- AT&T and Lucent Technologies Foundation Award (1996)
- DuPont Young Professor Award (1996-1999)
- National Science Foundation Faculty Career Early Development Award (1996-2000)
- Army Research Office Young Investigator Award (1997-2000)
- American Physical Society Le Roy Apker Award (2001): awarded to Heather J. Lynch for her Senior Thesis work performed in the Sohn laboratory at Princeton University
- Sigma Pi Sigma, National Physics Honor Society (2004)

- William Pyle Philips Distinguished Visitor, Haverford College (2005)
- Vogel Moral Courage Speaker, Principia College (2006)
- National Academy of Engineering US Frontiers of Engineering Symposium (2007)
- W. M. Keck Foundation Medical Research Program Award (2010-2013)
- Presidential Chair Fellow, UC Berkeley (2012-2013)
- Bakar Fellow, UC Berkeley (2013-2018)
- Winner: Identifying Revolutionary Platform Technologies for Advancing Life Sciences Research Competition, sponsored by the W. M. Keck Foundation, Gordon & Betty Moore Foundation, Kavli Foundation, Burroughs-Wellcome Fund, John Templeton Foundation, and Research Corporation (2014)
- American Association for Clinical Chemistry 2014 Emerging Clinical & Laboratory Diagnostics: The Portable Lab—Outstanding Poster Award (2014)
- American Association for Clinical Chemistry 2014 Personalized Diagnostics Today Conference—Outstanding Poster Award (2014)
- Distinguished Lectureship Award, New England Bioscience Society (2017)
- Fellow, American Institute for Medical and Biological Engineering (2017)
- Chancellor's Professor (2019-2020)
- Almy C. Maynard and Agnes Offield Maynard Chair in Mechanical Engineering (2020-present)
- MicroTAS Outstanding Sensors and Actuators, Detection Technologies Poster Award (2021)
- 23rd Annual University of California Bioengineering Symposium, Best Poster Runner-Up in the Cells & Tissue Category (2023)

## PATENTS/TECHNOLOGY DISCLOSURES

- **US Patent No. 7,279,883**: "Particle Analyzer and Methods for Use Thereof", issued to O. A. Saleh and **L. L. Sohn**, October 9, 2007.
- **US Patent No. 9,201,043**: "Devices for Detecting a Particle and Methods for Use Thereof", issued to K. Balakrishnan, M. Chapman, G. Anwar, and **L. L. Sohn**, December 1, 2015.
- **US Patent No. 9,719,991**: "Devices for Detecting a Particle and Methods for Use Thereof", issued to K. Balakrishnan, M. Chapman, G. Anwar, and **L. L. Sohn**, August 1, 2017.
- **US Patent No. 10,350,602**: "Devices for Separating Constituents in a Sample and Methods for Use Thereof", D. Yang and **L. L. Sohn**, July 16, 2019.
- **European Patent No. 2764347**: "Devices for Detecting a Particle in a Sample and Methods for Use Thereof", K. Balakrishnan, M. Chapman, G. Anwar, and **L. L. Sohn**, Patent in the Netherlands, Belgium, France, Germany, and the United Kingdom, April 20, 2022.
- **US Patent No. 11,383,241**: "Mechano-node-pore sensing," J. Kim, S. Han, and **L. L. Sohn**, issued July 12, 2022.
- PCT/US2014/024574: "Devices for Sorting in a Sample and Methods for Use Thereof", M. Chambers and **L. L. Sohn**, filed March 15, 2014.
- PCT/US2015/038656: "Devices for Separating Constituents in a Sample and Methods for Use Thereof," D. Yang and **L. L. Sohn**, filed June 30, 2015.
- PCT/US17/56423: "Mechano-node pore sensing," J. Kim, S. Han, and **L. L. Sohn**, filed October 12, 2017.
- US Patent Application 62/933,040: "Compositions and Methods for Temporal Control of Cell Modulation," O. J. Scheideler, C. Tsuchida, **L. L. Sohn**, D. Schaffer, filed November 11, 2019.
- US Patent Application 62,942,216: "Lipid-DNA Labeling of Extracellular Vesicles for Amplification Quantitation," Thomas Carey, Molly Kozminsky, and **L. L. Sohn**, filed December 2, 2019.

## SERVICE

*Department (Princeton University and UC Berkeley)*

- Physics Graduate Admissions Committee, Princeton University (2000-2001)
- Chair, Applied Science & Technology Graduate Admissions, UC Berkeley (2005-2006)
- Member, Executive Committee for the Applied Science & Technology Program, UC Berkeley (2004-2006)
- Committee on Seminars, Dept. of Mechanical Engineering, UC Berkeley (2004-2006)

- Committee on Faculty Awards, Dept. of Mechanical Engineering, UC Berkeley (2004-2006)
- Committee on Undergraduate Admissions, ME Dept., UC Berkeley (2004-2008)
- Biophysics Graduate Group Graduate Admissions, UC Berkeley (2004-2007; Chair, 2006-2007)
- Chair, Committee on Faculty and Student Affirmative Action, Dept. of Mechanical Engineering, UC Berkeley (2006-2007)
- Committee on Academic Planning, Dept. of Mechanical Engineering, UC Berkeley (2006-2007)
- Committee on Student Prizes, Dept. of Mechanical Engineering, UC Berkeley (2004-2006; 2007-2008)
- Committee on Graduate Study, Dept. of Mechanical Engineering, UC Berkeley (2006-2008; 2013-present)
- Committee on ABET and Undergraduate Study, Dept. of Mechanical Engineering, UC Berkeley (2007-2014; 2015-2016; 2016-2017)
- Committee on Safety, Dept. of Mechanical Engineering, UC Berkeley (2010-2011; 2015-2016)
- Faculty Search Committee (Biomechanical Engineering), Dept. of Mechanical Engineering, UC Berkeley (2012-2013)
- Faculty Search Committee (Ocean Engineering), Dept. of Mechanical Engineering, UC Berkeley (2014-2015)
- Chair's Advisory Committee, Dept. of Mechanical Engineering, UC Berkeley (2015-2016)
- Member, Teaching Points Committee, Dept. of Mechanical Engineering, UC Berkeley (2015-2016)
- Chair, Ad-Hoc Committee for Excellence Review for a Continuing Lecturer appointment, Dept. of Mechanical Engineering, UC Berkeley (2015)
- Member, Ad-Hoc Committee for the Mid-Career Review of an Assistant Professor, Dept. of Mechanical Engineering, UC Berkeley (2016)
- Member, Ad-Hoc Committee for an Adjunct Professor, Dept. of Mechanical Engineering, UC Berkeley (2016)
- Chair, Faculty Search Committee (Assistant Professor in Design, Robotics, Applied Energy Systems, and/or Nanoscale Systems Engineering), Dept. of Mechanical Engineering, UC Berkeley (2016-2017)
- Committee on the Drake Scholarship, Dept. of Mechanical Engineering, UC Berkeley (2016-2017)
- Committee on Seminars, Dept. of Mechanical Engineering, UC Berkeley (2016-2017; 2018-2019)
- Powley Fund Committee, Dept. of Mechanical Engineering, UC Berkeley (2016-2017)
- Chair, Powley Fund Committee, Dept. of Mechanical Engineering, UC Berkeley (2017-2019)
- Member, Chair's Advisory Committee, Dept. of Mechanical Engineering, UC Berkeley (2017-2018)
- Co-Chair, Faculty Search Committee (Tenure-Track/Tenured Professors in Mechanical Engineering), Dept. of Mechanical Engineering, UC Berkeley (2017-2018)
- Co-Chair, Faculty Search Committee for one of five open College of Engineering Faculty positions (Tenure-Track Professor), Dept. of Mechanical Engineering, UC Berkeley (2017-2018)
- Committee on Equity, Diversity, & Inclusion, Dept. of Mechanical Engineering, UC Berkeley (2017-2018; 2018-2019)
- Committee on Graduate Study, Dept. of Mechanical Engineering, UC Berkeley (2018-2019)
- Major Field Advisor (Nano/MEMS), Dept. of Mechanical Engineering, UC Berkeley (2018-2019)
- Member, Ad-Hoc committee for the Tenure Review of an Assistant Professor, Dept. of Mechanical Engineering, UC Berkeley (2018)
- Member, Faculty Search Committee (Tenure-Track Professor in Bioengineering), Dept, of Bioengineering, UC Berkeley (2018-2019)
- Member, Faculty Search Committee (Tenure-Track Professor in Mechanical Engineering), Dept. of Mechanical Engineering, UC Berkeley (2018-2019)
- Chair, Ad-Hoc Committee for a Professor-in-Residence, Dept. of Mechanical Engineering, UC Berkeley (2019)
- Building Oversight Committee for Research Restart, Etcheverry Hall (Summer, 2020)
- Member, Ad-Hoc Committee for the Tenure Review of an Assistant Professor, Dept. of Mechanical Engineering, UC Berkeley (Fall, 2020)
- Member, Task Force on College of Engineering Master Plan, Dept. of Mechanical Engineering, UC Berkeley (2020-2021)
- Member, Chair's Advisory Committee (2020-2022)
- Chair, Committee on Web and Communication (2020-2021)

- Chair, Committee on Safety and COVID-19 Building Oversight (2020-2021)
- Vice Chair, Diversity, Equity, and Inclusion (Fall, 2021)
- Chair, Committee on Equity, Diversity, and Inclusion (Fall, 2021)
- Member, Ad Hoc Committee for an Assistant Professor's Tenure review (2021)
- Member and Equity Advisor, Search Committee for an Assistant Professor in Sustainable Energy Science and Technologies (2021-2022)
- Member, Committee on Master of Engineering (Spring 2022)
- Chair, Committee on Undergraduate Awards (2022-2023)
- Member, Committee on Department Seminars (2022-2023)
- Member, Committee on Courses & Undergraduate Study (2023-2024)
- Member, Committee on Graduate Fellowship (2023-2024)

*College of Engineering, UC Berkeley*

- SUPERB Committee (2005-2006)
- Faculty Advisory Board, Engineering Research Support Office (2005-2007)
- Commencement Student Relations Committee (2007)
- Faculty Search Committee, Dept. of Civil Engineering (2007-2008)
- Task Force Member, Biology in the College of Engineering (2007-2008)
- Task Force Member, Nanoscience & Nanotechnology in the College of Engineering (2007-2008)
- Founding Faculty Director Search Committee, Fung Institute for Engineering Leadership, (2010-2011)
- Faculty Advisory Committee, Biomolecular Nanotechnology Center (2010-present)
- Reviewer of scholarships for admitted diversity undergraduate students (2013)
- BlackRock Scholars Screening Committee (2017)
- NextProf Nexus Speaker: Career workshop for the next generation of academic leaders in engineering, co-sponsored by UC Berkeley, University of Michigan, and Georgia Institute of Technology (2018-2023)
- Member, Engineering Science Committee (2020-2021)
- Member, Nanosciences and Nanoengineering (2020-2021)
- Member, Council on Equity and Inclusion (Fall 2021)

*University, UC Berkeley*

- Nanoelectronics Search Committee & Affirmative Action Officer, Berkeley Nanosciences & Nanoengineering Institute (2005-2006)
- Faculty Advisory Board, Nanoscale Science & Engineering Graduate Group (2005-2007)
- Dean Search Committee, College of Natural Resources (2007-2008)
- Member, Research Compliance Advisory Committee (2011-present)
- Chair, Committee on Laboratory and Environmental Biosafety (Institutional Biosafety Committee) (2011-2022)
- Search Committee for Assistant Biosafety Office, Environmental, Health, & Safety (2012)
- Reviewer of campus pre-proposals for the NSF: Scalable Nanomanufacturing (SNM) Program (2013)
- Selection Committee for 2014 Summer Undergraduate Research Fellows on campus (2014)
- Selection Committee for EH&S Campus Biosafety Officer (2014)
- Selection Committee for EH&S Campus Assistant Biosafety Officer (2014)
- Member, Committee on Educational Policy, Berkeley Division, Academic Senate (2015-2017)
- Member, Campus Ad Hoc Committee for Full Professor consideration of a faculty individual (2016)
- Member, Campus Ad Hoc Committee for Tenure consideration of a faculty individual (2016)
- Member, Campus Search Committee for EHS Director, UC Berkeley (2017-2018)
- Reviewer to select the UC Berkeley Nomination of Moore Inventor Fellows (2019)
- Member, Campus Search Committee for EHS Biosafety Officer (2019)
- Chair, Campus Ad Hoc Committee for Tenure consideration of a faculty individual (2019)
- Member, Campus Search Committee for EHS Assistant Biosafety Officer (January, 2020)
- Member, Campus Search Committee for EHS Assistant Biosafety Officer (June, 2020)

- Chair, Campus Search Committee for the Berkeley Stem Cell Center Director (Fall, 2020)
- Member, Rose Hills Innovators Final Selection Committee (2020, 2021)
- Member, Committee on Committees, Academic Senate (2021-2022)
- Member, Rose Hills Innovators Review Committee (2022, 2023)
- Member, Advisory Board for the UC Berkeley Stem Cell Center (2021-2026)
- Member, Budget and Interdepartmental Relations (2022-2025)

*University of California, System-Wide*

- Member of Presidential Task Force on Biosafety and Biosecurity (2014-2015)
- Member, UCSF-UC Berkeley Joint Graduate Group in Bioengineering Admissions Committee (2016-2019)
- Member, Executive Committee, UCSF-UC Berkeley Joint Graduate Group in Bioengineering (2019-2021)
- Reviewer, UCOP National Lab Proposal to the NIH (2022)

## PROFESSIONAL ACTIVITIES

*Conferences*

- Co-Director, *NATO Advanced Study Institute: Mesoscopic Electron Transport*, Curaçao, The Netherlands Antilles, June 24-July 5, 1996
- Chair in Micro/NanoBiotechnology, IEEE Engineering in Medicine & Biology Society Annual Meeting (2004)
- Panelist, Global Technology Leader Conference (2009)
- Co-Chair, "Biological Devices/ Biosensors and Molecular Diagnostics" at the 6th International Conference on Bioengineering and Nanotechnology, UC Berkeley, June 2012
- Session Chair, “Microfluidics II”, at the 2013 SPIE Micro+Nano Materials, Devices, and Applications, Melbourne, Australia (December, 2013)
- Co-organized and Co-Chair of “Cancer Nanotechnology” session at the IEEE Engineering in Medicine and Biology Society, Chicago, IL (August 26-30, 2014)
- Member of Organizing Committee for the 2015 American Association for Clinical Chemistry Emerging Clinical Laboratory Diagnostics Conference (2014-2015)
- Session Chair, Fall Material Research Society Symposium on Biomaterials for Regenerative Medicine (Nov. 2016)
- Session Co-Chair, Special Session on Single-Cell Analysis and Tumor Heterogeneity, 2018 BMES Annual Meeting (October 2018)
- Organizer, Microfluidics Consortium MF11.1 Meeting, Berkeley, CA (February 2020)
- Breakout Session, “Extracellular Vesicles (EV) Are Heterogeneous, but Would Single EV Analysis Be Helpful for Making Clinical Decisions?”, Enabling Technologies for Liquid Biopsy Conference, Washington DC, August 2020 (online due to COVID-19)

*AIMBE College of Fellows*

- AIMBE Biosensors, Nanotechnology Review Committee for Selection of New Fellows (September 2019, 2020, 2021)

*Reviews of Programs, Grants, & Policies*

- Chair or Co-Chair
  - NIH/NCI Special Emphasis Panel (2018/01 ZCA1 TCRB-D (J3) R) (2017)
  - NIH/NCI Special Emphasis Panel (ZCA1 TCRB-D(M1), Molecular and Cellular Analysis Technologies (2018)
  - NIH/NCI Special Emphasis Panel (ZCA1 TCRB-W(O1)), Molecular and Cellular Analysis Technologies (2018)
  - NIH/NCI Special Emphasis Panel (ZCA1 TCRB-D(J1)R, Innovative Molecular Analysis Technologies

(2019)
- NIH/NCI Special Emphasis Panel (ZCA1 TCRB-D(O1)), Biospecimen Science Technologies for Cancer (2020)
- NIH/NCI Special Emphasis Panel (ZCA1 TCRB-D(J1)R, Technologies for Basic and Clinical Research (2021)
- NIH/NCI Special Emphasis Panel, Basic and Clinical Cancer Research, IMAT (2023)

Member

- Advanced Research & Experiments in Sensing II, Office of the Undersecretary of Defense for Acquisition & National Academy of Sciences and Engineering (2000-2001)
- National Research Council committee review of the Federal National Nanotechnology Initiative (2001-2002)
- (Public Member) NJ Domestic Security Preparedness Task Force (2001-2003)
- NIEHS Nanotechnologies Workshop (2004)
- NIEHS sub-group for NIH's American Gene-Environment Study (AGES, 2004)
- NIH Director's New Innovator Award Program (DP2) Review Panel (2015-2021)
- NIH/NCI Beau Biden Cancer Moonshot Initiative: Integration and Validation of Emerging Technologies to Accelerate Cancer Research (2017)
- NIH Director's Pioneer Award Competition Review Panel (2017)
- (Panel Member) *The Future Face of Biosafety Oversight,* Workshop on the NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules, NIH (2017)
- NIH/NCI Special Emphasis Panel (ZCA1 RTRB-C (M1)), Site-Review of the Robert H. Lurie Comprehensive Cancer Center, Northwestern Medical School, Chicago, IL (2018)
- (Standing Member) Instrumentation and Systems Development (ISD) Study Section, NIH Center for Scientific Review (2018-2021)
- Device Development and Validation Peer Review Panel, 2020 Breast Cancer Research Program for the Dept. of Defense Congressionally Directed Medical Research Programs (2020)
- NIH/NIBIB Institutional Training Program (T32) Review Special Emphasis Panel, October 2021
- NIH/NCI Special Emphasis Panel ZCA1 TCRB-D (M1) S, February 2022

- Reviewer and Nominator
  - MacArthur Foundation Fellows Program
  - Japan Prize

*Advisory and Editorial Boards*

- Member, Biophysical Society Minority Affairs Committee (2002-2007)
- Scientific Advisory Board, NSF ScienCentral "Public Understanding of Research" (2003-2006)
- Member, Advisory Board, Boulder School of Condensed Matter Physics and Materials Physics (2004-2021)
- Editorial Board: *Journal of Physical Chemistry and Biophysics* (2011-present)
- Associate Editor, *Research*—AAAS/Science Partner Journal (2018-present)
- Biomicrofluidics External Advisory Board, AIP (2020-2021)
- Editorial Board, *Frontiers in Lab on a Chip Technologies* (2023-present)
- Associate Member, Women in Cell Biology Committee, American Society of Cell Biology (2023-)

*Outreach Activities*

- Faculty Advisor: Pi Tau Sigma, Mechanical Engineering Honor Society, UC Berkeley (2004-2006)
- Interviewer for the Harvard Alumni Association/Harvard Admissions Committee (2005-present)
- Mentor to College Preparatory High School students interested in science and engineering (2006-2014)
- Mentor, Expanding Your Horizons. Led a workshop, "Go with the Flow," to 6-8th grade girls (March 2013)
- Lead Faculty, Girls in Engineering, University of California, Berkeley, Summer (2016-2018)
- Mentor, Harvard University January Winternship (2016-2018)

- Judge, BioE High School Competition (BioEHSC™), UC Berkeley, Berkeley, CA (2017-2018)
- Panel Member, East Bay Biden Cancer Community Summit (on the invitation of Congressman M. DeSaulnier, 11th District, California), Concord, CA (September 2018)
- Lab tour and demonstration, Burton Valley Elementary School Gifted Program, UC Berkeley, CA (2019)
- Graduate Women in Engineering Dinner, UC Berkeley, CA (2020)
- Speaker, Career Day at Montera Middle School, Oakland Unified School District, CA (2020)—rescheduled because of COVID-19 Pandemic Shelter-in-Place order.

*Additional Professional Activities*

- Panel member for numerous NIH and DoD workshops regarding integrating nanotechnology and physics with molecular biology (2000-present); panel reviewer for numerous NSF evaluation committees in the areas of Physics, Biophysics, Bioinformatics, and Computer Science
- Referee for Nature, Nature Communications, Nature Microsystems and Nanoengineering, Science, National Research Council, Applied Physics Letters, Langmuir Letters, NanoLetters, Lab Chip, Journal of Optical Society of America, Journal of Physics D: Applied Physics, Clinical Chemistry, Integrative Biology, Biomedical Microdevices, Small, Small Methods, Advanced Functional Materials, Advanced Healthcare Materials, EClinicalMedicine (Lancet Journal), JACS Au

*Startup*

- Nodexus—Venture Capital-backed startup (nodexus.com)

**FUNDING**

*Awarded*

- **NATO Advanced Study Institute 951289:** *Special Program on Nanoscale Science—Mesoscopic Electron Transport*, 1996. Sohn (PI)
- **Office of Naval Research N00014-96-1-0724:** *Mesoscopic Electron Transport: Advanced Study Institute*, 1996. Sohn (PI)
- **NSF DMR-9624536**: *CAREER— Probing Mesoscopic Phenomena in Novel Materials*, 9/15/96 -8/31/00. Sohn (PI)
- **Army Research Office DAAG55-97-1-0401:** *Young Investigator Award—Spin-Polarized Transport in Semiconductor-Based Mesoscopic Devices*, 9/27/97 – 9/21/00. Sohn (PI)
- **DuPont Young Professor Award:** *A Microscale Electronic Sensor for Material Identification*, 1997 - 2000. Sohn (PI)
- **Office of Naval Research (DURIP):** *The Fabrication and Exploration of Quasi-3 Dimensional Mesoscopic Devices*, 3/1/97 – 2/28/98. Sohn (PI)
- **Army Research Office (DURIP):** *Electronic Biosensors*, 2000 – 2001. Sohn (PI)
- **Army Research Office/DARPA DAAD19-00-1-0065:** *Electronic Biosensing for Microfluidic Devices*, 05/1/00 – 04/30/03. Sohn (PI)
- **NSF BES-0074780**: *POWRE: Electronic Biosensors—An Integration of Nanotechnology with Molecular Biology*, 8/1/00 – 7/31/01. Sohn (PI)
- **Fluidigm Corporation:** Measurement of Nanoscale Particles, 2001. Sohn (PI)
- **NSF EIA-0103215**: *Nano Initiative: The Single-Molecule DNA Transistor*, 9/15/01 – 8/31/02. Sohn (PI)
- **NSF EIA-0121405**: *Collaborative Proposal-ITR/SY: Molecular Computation with Automated Microfluidic Sensors (MCAMS)*, 9/30/01 – 9/29/06. Sohn (co-PI)
- **DARPA BioComp:** *Molecular Computation with Automated Microfluidic Sensors*, 2001-2004. Sohn co-PI)
- **Office of Naval Research:** *Measuring the Electron Transport of Single Molecules*, 2001-2004. Sohn (PI)
- **NSF EIA-0205098**: *QuBIC: NSF Information Technology Research/QuBIC Principal Investigators' Meeting Conference*, 1/15/02 – 12/31/02. Sohn (PI)
- **DOE DE-FG02-02ER15355:** *Probing Interactions at the Nanoscale: Sensing Protein Molecules and Protein Networks In Vivo Using On-Chip Electronic Nanosensors*, 10/1/02– 8/24/05. Sohn (PI)

- **Army Research Office:** *A Microfluidics Approach to Investigate Axon Guidance*, 4/1/06 – 12/31/06. Sohn (PI)
- **DARPA NBCH1060008:** *On-Chip NMR*, 5/8/06 – 5/7/07. Sohn (PI)
- **NIH/NIEHS 2 P42 ES004705-19:** *Toxic Substances in the Environment*, 6/19/06-5/30/2009. Sohn (co-PI)
- **NIH/NINDS 5R21NS058600-02**: *A Controllable Microfluidic Gradient Device for Studying Neuronal Polarization*, 3/15/07- 2/28/10. Sohn (PI)
- **NSF CBET-0651799:** *NanoCytometry: A Point-of-Care Technology for Monitoring Chronic Leukemia Patients*, 6/1/07 - 5/31/10. Sohn (PI)
- **CITRIS:** *Improving Point-of-Care Diagnostics for Disease Surveillance in the Developing World*, 6/1/08 – 5/31/09. Sohn (PI)
- **Michael J. Fox Foundation for Parkinson's Research:** *A Pore-Based Method to Sort and Characterize Human Embryonic Stem-Cell Derived Dopaminergic Neurons*, 12/17/08-12/16/09. Sohn (PI)
- **W.M. Keck Foundation Medical Research Program:** *Applying Embryonic Signal Integration for Adult Limb and Organ Regeneration*, 1/15/10-1/14/14. Sohn (PI)
- **Siebel Stem-Cell Institute:** *PALM-Mediated Tracking of Stem-Cell Surface Proteins*,10/1/09-12/31/11. Sohn (PI)
- **DoD Breast Cancer Research Program:** *Using 3-D Super-Resolution Microscopy to Probe Breast Cancer Stem Cells and Their Microenvironment*, 2/14/11– 2/13/14. Sohn (PI)
- **Siemens Center of Knowledge Interchange (Healthcare Division):** *Direct Detection Diagnostics*, 6/15/11-3/31/11. Sohn (PI)
- **NIH/NCI 1R21CA156139-01:** *Rapid Label-Free Detection of Acute Promyelocytic Leukemia*, 8/31/2011 – 7/30/2014. Sohn (PI)
- **Siemens Center of Knowledge Interchange (Healthcare Division):** *Direct Detection Diagnostics Phase II*, 4/1/2012 – 9/30/2013. Sohn (PI)
- **Bakar Fellows Program:** *Label-Free Isolation and Analysis of Circulating Tumor Cells for Metastatic Breast Cancer Biomarker Discovery*, 7/1/2013 – 6/30/2018, Sohn (PI)
- **Siemens Healthcare:** *Isolation and Screening of Circulating Tumor Cells—Pilot Study*, 10/1/2014 – 12/1/2014, Sohn (PI)
- **NIH/NCI 1R01CA190843-01**: *A Label-Free, Point-of-Care Platform to Diagnose Acute Promyelocytic Leukemia*, 3/1/2015 – 8/01/2021, Sohn (PI)
- **NIH/NIBIB 1R21EB019181-01A1:** *Node-Pore Sensing for Cellular Screening*, 4/1/2015 – 1/31/2017, Sohn (PI)
- **NIH/NCI 1R21CA182375-01A1:** *Isolating Circulating Tumor Cells*, 5/6/2015 – 4/30/2018, Sohn (PI)
- **NSF 1509921:** *A Microfluidic Platform for Detecting Circulating Endothelial Cells at the Point-of-Care*, 7/1/2015 – 6/30/2018, Sohn (PI)
- **Arthritis National Research Foundation:** *Predicting Tissue Growth Potential Using High-Throughput Screening for Cell Mechanics*, 6/1/17– 5/31/2019, O'Connell (PI) and Sohn (co-I)
- **NIH/NIBIB 1R01EB024989-01:** *Mechanical Phenotyping of Random Periaerolar Fine-Needle Aspiration-Collected Cells for Early Breast Cancer Detection*, 08/01/17 – 04/30/22 (Multi-PI: Sohn, LaBarge)
- **NIH/NIAMS 1R21AR0272248-01A1:** *High-Throughput Screening of Cell Mechanics to Direct 3D Tissue Culture*, 06/01/18 – 03/31/21, O'Connell (PI) and Sohn (co-I)
- **CITRIS COVID-19 Seed Grant**: *An Ultra-Sensitive Method to Determine Viral Load of COVID-19 Patients for Patient Stratification and Care*, 05/15/2020 – 4/01/2021, Sohn (PI)
- **Gift from Michael and Margaret Checca to the Sohn Research Laboratory** 11/1/2018– 12/31/2022, Sohn (PI)
- **Gift from David and Philana Yu to support ME126/226:** Science and Engineering of Cooking, 4/2021
- **Agilent Biodesign Award (Gift):** *Determining the Spatio-temporal Presentation of Cues Underlying Breast Cancer Stem Cell Plasticity*, 06/29/2021– 6/28/2022, Sohn (PI)
- **NSF 2125069**: *MIM: A thermodynamic theory of microbiome assembly, adaptation, and evolution evaluated using modular microbial environments*, 10/01/2021 – 09/30/2025, E. Brodie (PI), Sohn (co-PI)
- **Siebel Stem Cell Institute Seed Grant:** *Accelerating Aging in Cerebral Organoids*, 07/01/2022 – 06/30/2024, Sohn (PI)

- **Agilent Biodesign Award (Gift):** *Label-Free, Real-Time Monitoring of Cells Using Mechano-Node-Pore Sensing*, 11/01/2022 – 10/31/2023, Sohn (PI)
- **NIH/NIBIB 1R01EB024989-05**: *Detection of Emergent Mechanical Properties of Biologically Complex Cellular States*, 03/01/2023 – 02/28/2027, Multi-PI: Sohn, LaBarge
- **DoD:** Establishing Digital Twins for High Throughput Cellular Analysis in Whole Blood, 11/01/2023 – 10/31/2026, Randles (PI), Sohn (co-I)
- **Agilent Biodesign Award (Gift):** High- Throughput Mechanophenotyping of Adipocytes, 11/01/2023 – 10/31/2024, Sohn (PI)

*Pending*

- **NIH/NCI R01CA271432-01A1**: *PEAK1 dysregulation with age is a vulnerability in breast cancer cells of origin*, 04/01/24 – 03/31/2029 (Multi-PI: LaBarge, Sohn)
- **NIH/NCI R21CA284095-01:** *Developing a high-throughput DNA-directed platform to investigate EMT-MET Plasticity in Breast Cells*, 07/01/2023 – 06/30/2025 (Multi-PI: Sohn, LaBarge)

## SELECTED TALKS AND PRESENTATIONS

*Invited talks (Colloquia, Seminars, Plenary)*

1. Condensed Matter Seminar, Physics Dept., Harvard University, "Searching for Cancer Cells One-by-One," Cambridge, MA, October 1999.
2. Dept. of Electrical Engineering and Computer Science, Stanford University, "Capacitance Cytometry: Measuring Single Cells One-by-One," Palo Alto, CA, April 2000.
3. XX Congress for the Int'l. Soc. for Analytical Cytology, "A Micro-Electronic Flow Cytometer," Montpellier, France, May 2000.
4. Defense Science Research Council, "Capacitance Cytometry: Measuring Single Cells One-by-One," San Diego, CA, July 2000.
5. Colloquium, Dept. of Physics, Princeton University, "(Electrically) Shocking Observations about DNA," Princeton, NJ, October 2000.
6. Dept. of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, "(Electrically) Shocking Observations about DNA," Cambridge, MA, February 2001.
7. National Research Council, "(Electrically) Shocking Observations about DNA," Washington, D.C., February 2001.
8. Materials Science and Engineering Dept., Cornell University, "(Electrically) Shocking Observations about DNA," Ithaca, NY, April 2001.
9. Condensed Matter Seminar, Physics Dept., California Institute of Technology, "(Electrically) Shocking Observations about DNA," Pasadena, CA, May 2001.
10. American Chemical Society Prospectives: Biological Applications of Nanotechnology, "Nanoelectronic Sensing: From Single Cells to Single Molecules," Berkeley, CA, June 2001.
11. International Conference on Electronic Interactions in DNA, ""(Electrically) Shocking Observations about DNA," University of California, Los Angeles, September 2001.
12. Molecular Biology Department, Princeton University, "Molecular Sensing Using an Artificial Lateral Nanopore," Princeton, NJ, October 2001.
13. National Science Foundation, "Molecular Sensing Using an Artificial Lateral Nanopore," Washington, D.C., December 2001.
14. Stanford Genome Science Technology Center, "Nanoelectronic Sensing: From Single Cells to Single Molecules," Palo Alto, CA, February 2002.
15. Dept. of Hematology and Oncology, Harvard Medical School, "Nanoelectronic Sensing: From Single Cells to Single Molecules," Beth Israel Deaconess Hospital, Boston, MA, March 2002.
16. Physics Dept., Columbia University, "Molecular Sensing Using an Artificial Lateral Nanopore," New York, NY, April 2002.
17. American Vacuum Society, "Molecular Sensing Using an Artificial Lateral Nanopore," Monterey, CA, May 2002.
18. Dept. of Bioengineering, Duke University, "Molecular Sensing Using an On-Chip Artificial Pore," Durham, NC, January 2003.

19. Dept. of Materials Science and Engineering, UC Santa Barbara, "Molecular Sensing Using an On-Chip Artificial Pore," Santa Barbara, February 2003.
20. Dept. of Bioengineering, University of Pennsylvania, "Molecular Sensing Using an On-Chip Artificial Pore," Durham, NC, March 2003.
21. Bauer Center for Genomics, Harvard University, "Peering in the Life of a Cell: Developing Electronic Techniques to Identify Proteins *In Vivo*, Cambridge, MA, April 2003.
22. Dept. of Mechanical Engineering, UC Berkeley, "Molecular Sensing Using an On-Chip Artificial Pore," Berkeley, CA, April 2003.
23. Sandia National Laboratories, "Molecular Sensing Using an On-Chip Artificial Pore," Albuquerque, NM, April 2003.
24. American Chemical Society, Annual Meeting, "Molecular Sensing Using an On-Chip Artificial Pore," New York, NY, September 2003.
25. Plenary Talk, Fundamenteel Onderzoek der Materiel, "Molecular Sensing Using an Artificial Lateral Nanopore," Amsterdam, The Netherlands, September 2003.
26. Dept. of Mechanical Engineering, Northwestern University, Dept. of Materials Science and Engineering, "Molecular Sensing Using an On-Chip Artificial Pore," Evanston, IL, February 2004.
27. NIEHS Nanotechnologies Workshop: Technologies for Improved Risk Stratification and Disease Prevention, "Electronic Sensing: From Single Cells to Single Molecules," Research Triangle Park, NC, March 2004.
28. IBM Almaden, "Molecular Sensing Using an On-Chip Artificial Pore," San Jose, CA, April 2004.
29. Dept. of Materials Science and Engineering, "Molecular Sensing Using an On-Chip Artificial Pore," Palo Alto, CA, September 2004.
30. Plenary Talk, Sigma Pi Sigma National Physics Honor Society Congress Meeting, "Research Ethics in the Physics Community: The Sad Case of Hendrik Schön, Albuquerque, NM, October 2004.
31. ASME Nanotechnology: Miniaturization in Biomedicine, "Molecular Sensing Using an Artificial Nanopore," Irvine, CA, April 2005.
32. Gordon Research Conference on Analytical Chemistry, "Molecular Sensing Using an Artificial Lateral Pore," Roscoff Biological Station, France, June 2005.
33. Prostate Cancer Advocates Group, UC San Francisco, "NanoCytometry: A New Method to Separate Cancer Cells at the Nanoscale," San Francisco, CA, June 2005.
34. William Pyle Philips Distinguished Visitor, Haverford College, "Molecular Sensing Using an On-Chip Artificial Pore," Haverford, PA, September 2005.
35. William Pyle Philips Distinguished Visitor, Haverford College, "The Sad Case of Hendrik Schön," Haverford, PA, September 2005.
36. 9$^{th}$ Annual European Conference on Micro- and Nano-scale Technologies for the Biosciences, "Molecular Sensing Using an On-Chip Artificial Pore," Montreaux, Switzerland, November 2005.
37. Politecnico di Torino, "Introduction to Nanotechnology and Nanoscience" (series of 5, three-hour lectures), Turin, Italy, November 2005.
38. NASA Ames Research Center, "Molecular Sensing Using an On-Chip Artificial Pore," Moffett Field, CA, December 2005.
39. Vogel Moral Courage Award Talk, Principia College, "The Sad Case of Hendrik Schön," St. Louis, MO, April 2006.
40. Colloquium, Dept. of Physics, UC Riverside, "Applications to Artificial Pores—From Immunoassays to Cytometry," Riverside, CA, May 2006.
41. QB3 Biomedical Engineering Symposium, "Applications to Artificial Pores—From Immunoassays to Cytometry," San Francisco, CA, April 2006.
42. Golden Gate Polymer Forum, "Sensing with Artificial Pores," Mountain View, CA, September 2006.
43. Berkeley Sensor & Actuator Center, "Point-of-Care Technology to Diagnose and Monitor Cancer," Berkeley, CA, September 2006.
44. Dept. of Bioengineering, Massachusetts Institute of Technology, "Sensing with Artificial Pores: From Single Molecules to Single Cells," Cambridge, MA, November 2006.
45. 4$^{th}$ USA-Korea Joint Symposium on MEMS and BioSystems Technology, "NanoCytometry: A New Cell Assay for Disease Diagnosis and Monitoring," UC Berkeley, November 2006.

46. Neyman Lecture, Dept. of Statistics, UC Berkeley, "Cell Characterization Using Chemically Functionalized Pores," UC Berkeley, February 2007.
47. Division of Engineering and Applied Sciences, Harvard University, "Characterizing Cells Using a Chemically Functionalized Pore," Cambridge, MA, May 2007.
48. J. William Fulbright Foreign Scholarship Board, "Nanocytometry: Ushering a New Era in Personalized Medicine," UC Berkeley, August 2007.
49. "A Night with Industry," Keynote Speaker, Society of Women Engineers, UC Berkeley, November 2007.
50. Applied Science & Technology Colloquium, "Cell Characterization Using Chemically Functionalized Pores," UC Berkeley, February 2008.
51. 4th Annual Conference for Undergraduate Women in Physics, University of Southern California, Los Angeles, CA, January 2009.
52. UC Berkeley/Nanyang Technological University Workshop, "Microfluidic-Based Methods for Stem-Cell Purification," Singapore, March 2009.
53. Berkeley Stem-Cell Center, "Isolation of Single Organ Stem Cells from their Precise Anatomical Niche," Asilomar, CA, May 2010.
54. Berkeley-Shanghai Biotech Forum, "Label-Free Cell Diagnostics," Shanghai, China, November 2011.
55. 7th Gotham Metro Condensed Matter Meeting, New York Academy Sciences, "The Scientific Fraud of Hendrik Schön," New York, May 2012.
56. Berkeley Breakfast Club, "Label-Free Cell Diagnostics", Berkeley, CA, June 2012.
57. W. M. Keck Foundation Workshop on Imaging Detection of Single Molecules: Challenges and Opportunities, "Label-Free Single-Cell Analysis," National Academies, Beckman Center, Irvine, CA, August 2012.
58. CITRIS Research Exchange Talk, "Label-Free Single-Cell Analysis," UC Berkeley, November 2012.
59. Dept. of Mechanical Engineering, University of California, Davis, "Label-Free Single-Cell Analysis," February 2013.
60. American Physical Society Annual March Meeting, "Uncovering stem-cell heterogeneity in the microniche with label-free microfluidics," in the Micro/Nanofluidics Session sponsored by the Division of Fluid Dynamics and Group on Statistical and Nonlinear Physics, Baltimore, MD, March 2013.
61. 57th International Conference on Electron, Ion, and Photon Beam Technology and Nanofabrication, "Label-Free Cell Screening", Nashville, TN, May 2013.
62. SPIE Micro + Nano Materials, Devices, and Applications, "Label-Free Single-Cell Analysis," Melbourne, Australia, December 2013.
63. Point-of-Care Technologies for Cancer, NIH, "Label-Free, Multi-Marker Cell-Surface Screening for Cancer," Bethesda, MD, January 2014.
64. College of Engineering External Advisory Board Meeting, "Creating a Liquid Biopsy for Cancer Diagnosis and Monitoring," Berkeley, CA, March 2014.
65. Pi Tau Sigma (Mechanical Engineering Undergraduate Honor Society), "Being a Scientific Nancy Drew in the 21st Century," Berkeley, CA, March 2014.
66. Physics Dept., Sonoma State University, "Node-Pore Sensing--How a Simple Four-Terminal Measurement Can Screen Cancer Cells, March 2014.
67. American Association for Clinical Chemistry 2014 Oak Ridge Conference: Emerging Clinical & Laboratory Diagnostics: The Portable Lab, "*Node-pore sensing: A label-free platform to screen single cells for their phenotypic profile*, San Jose, CA, April 2014.
68. Invited talk, US-Korea Conference: Biomechanics, Mechanobiology, Disease, "Node-Pore Sensing," San Francisco, CA, August 2014.
69. Invited talk, IEEE Engineering in Medicine and Biology Society 2014, "Node-Pore Sensing for Surface-Marker Profiling of Single Cells," Chicago, IL, August 2014.
70. Invited talk, Micro- Nano-Engineering International Conference, "Node-Pore Sensing," Lausanne, Switzerland, September 2014.
71. Invited talk, American Association for Clinical Chemistry 2014 Personalized Diagnostics Today Conference, "Node-Pore Sensing: A label-free platform to screen single cells for their phenotypic profile," Virtual Conference, October 2014.

72. Keynote speaker, Conference for Undergraduate Women in Physical Sciences (WoPhyS'14), "Node-Pore Sensing: How a Simple Four-Terminal Measurement Can Screen Cancer Cells," University of Nebraska, Lincoln, Nebraska, November 2014.
73. Plenary talk, "Node-Pore Sensing: A Label-Free Platform to Screen Single Cells for Their Phenotypic Profile," Third International Conference on Innovative Biology, Medicine, and Engineering, Nagoya University, Nagoya, Japan, January 2015.
74. Invited talk, "Node-Pore Sensing: A Label-Free Platform to Screen Single Cells for Their Phenotypic Profile", Dept. of Mechanical & Aerospace Engineering, Princeton University, Princeton, NJ, April 2015.
75. Plenary talk, "Node-Pore Sensing: A Label-Free Platform to Screen Single Cells for Their Phenotypic Profile", Korean Life Scientists in the Bay Area Spring 2015 Meeting, UCSF, May 2015.
76. Invited talk, "Node-Pore Sensing: A Label-Free Method for Cell Screening," 2015 Electron, Ion, Photo Beam, and Nanofabrication Conference, San Diego, CA, May 2015.
77. Discussion Leader, "The Future of Precision Diagnostics with UC Berkeley," Annual Meeting of the New Champions, World Economic Forum, Dalian, China, September 2015.
78. Panelist, "Decoding Cancer", Annual Meeting of the New Champions, World Economic Forum, Dalian, China, September 2015.
79. Invited talk, "Toward a Light-Activated Dynamically Controllable Hydrogel for 3D Cell Culturing," 2016 Fall Materials Research Society Annual Meeting, Boston, MA, Nov. 29-Dec. 2, 2016.
80. Invited talk, "Node-Pore Sensing: A Label-Free Platform to Screen Single Cells for their Phenotypic Profile", Dept. of Biomedical Engineering, University of Oklahoma, Norman, OK, March 9, 2017.
81. Keynote, "Node-Pore Sensing: A Label-Free Platform to Screen Single Cells for their Phenotypic Profile", 25$^{th}$ Annual Conference, New England Bioscience Society, May 20, 2017.
82. Keynote, "Node-Pore Sensing: A Versatile, Label-Free Method for Screening Single Cells", RNA-Seq, Single Cell Analysis, & Single Molecule Analysis 2017, San Diego, CA, October 5-6, 2017.
83. Invited talk, "Mechano-Node-Pore Sensing," Dept. of Mechanical Engineering, Cornell University, October 17, 2017.
84. Invited presentation, "The Promise of Precision Medicine," Berkeley 150 Roadshow with Chancellor Carol Christ, Los Angeles, CA, May 16, 2018
85. Keynote talk, "Tumor-Derived Exosomes," Liquid Biopsy Summit, San Francisco, June 22, 2018.
86. Invited talk, "Nut and Bolts of the Faculty Search Process," NextProf Nexus 2018: Preparing the Next Generation of Scientific and Technological Leaders, University of Michigan/UC Berkeley, Berkeley, CA, Sept. 11-14, 2018.
87. Invited talk, "Mechano-Node-Pore Sensing: An electronic method to mechanically phenotype cells", RiboClub 2018, Quebec, Canada, September 24-27, 2018.
88. Invited talk, "Characterizing Epithelial Cells with Mechano-Node-Pore Sensing", Tumor Heterogeneity and Single Cell Analysis Special Session, BMES Annual Meeting, Atlanta, Georgia, October 2018.
89. Distinguished Lecture, "Mechano-Node-Pore Sensing: An electronic method to mechanically phenotype cells", Department of Mechanical Engineering, Boston University, October 2018.
90. Invited talk, "Mechano-Node-Pore Sensing: An electronic method to mechanically phenotype cells", Microfluidics Consortium 10.2 Meeting, Stanford University, February 2019.
91. Invited talk, "Mechano- and Visco-Node-Pore Sensing: An electronic method to measure the mechanical properties of cells", Nano Seminar Series, UC Berkeley, March 2019.
92. Invited talk, "Mechano-NPS: Setting the Stage for Early Breast Cancer Detection", Translational Medicine Day, UC San Diego, March 2019.
93. Keynote, "Mechano-Node-Pore Sensing: An electronic method to mechanically phenotype cells", SelectBIO Circulating Biomarkers and Liquid Biopsies, San Diego, CA, March 2019.
94. Invited talk, "Investigating Complex Signaling Environments with Spatial and Temporal Control Using a Lithographic DNA Approach", Berkeley Stem Cell Center Annual Retreat, Asilomar, CA, April 2019.
95. Invited talk, "Nut and Bolts of the Faculty Search Process," NextProf Nexus 2019: Preparing the Next Generation of Scientific and Technological Leaders, University of Michigan/UC Berkeley/Georgia Institute of Technology, Atlanta, Ga, Oct. 3, 2019.
96. Invited talk, "Mechano-NPS: Setting the Stage for Early Breast-Cancer Detection," BEST Science Chat, UC Berkeley, Berkeley, CA, October 2019.

97. Keynote, "Linking Physical Phenotype to Drug Resistance: Single-Cell Mechanical Measurements of Acute Promyelocytic Leukemia", SelectBIO Single Cell Analysis, San Diego, CA, October 2019.
98. Keynote, "Screening Tumor-Derived Exosomes for Early Detection of Lung Cancer", SelectBIO Microfluidics for Circulating Biomarkers, San Diego, CA, October 2019.
99. Invited talk, "Mechano-NPS: An Electronic Method to Measure the Mechanical Properties of Cells," Microfluidics Consortium 11.1 Meeting, UC Berkeley, Berkeley, CA, January 2020.
100. Invited talk, "Chasing the Exosomes Dream: Developing an Exosome-Based Platform for the Screening and Monitoring of Lung Cancer," Enabling Technologies for Liquid Biopsy Conference, Washington DC, August 2020 (online due to COVID-19).
101. Invited talk, "High-Throughput DNA-Directed Patterning to Recapitulate Biological Signaling Scenarios", American Institute of Chemical Engineers Annual Meeting, San Francisco, November 2020.
102. Keynote talk, "Mechano-Node-Pore Sensing: A Novel Mechanophenotyping Platform", International Symposium on Microfluidics and BioMEMS, Shenzen, China, April 2021 (talk was given remotely)
103. Invited talk, "Chasing the Exosome Dream: Developing an Exosome-Based Platform for Screening and Monitoring of Lung Cancer", Advances in Liquid Biopsy Research Virtual Summit, UCSF, April 2021.
104. Invited talk, "Node-Pore Sensing: A Versatile Microfluidic Method for Performing Single-Cell Analysis", TechConnect, Washington DC, October 18-20, 2021.
105. Colloquium Talk, Node-Pore Sensing: How a (Humble) Four-Terminal Measurement Can Measure the Mechanical Properties of Single Cells, Dept. of Physics, UC Berkeley, October 2021.
106. Invited talk, "Nut and Bolts of the Faculty Search Process," NextProf Nexus 2021: Preparing the Next Generation of Scientific and Technological Leaders, University of Michigan/UC Berkeley/Georgia Institute of Technology, Ann Arbor, Michigan, October 2021.
107. Invited talk, Recapitulating Biological Signaling Scenarios with Spatiotemporal Control Using a Multiplexed, DNA-Patterning Approach, Cold Spring Harbor Laboratory Single-Cell Analysis Conference, Nov. 10-13, 2021.
108. Plenary talk, Node-Pore Sensing: A Versatile Microfluidic Method for Performing Single-Cell Analysis, SelectBio Lab-on-a-Chip and Microfluidics Conference, San Diego, December 13-15, 2021
109. Keynote talk, Mechano-NPS: An Electronic Method to Mechanically Phenotype Cells, SelectBio Lab-on-a-Chip and Microfluidics Conference, Boston, March, 2022.
110. Invited talk, "Mechanophenotyping Cells Using Microfluidics, Berkeley Stem Cell Institute, Berkeley, October 14, 2022.
111. Invited talk, Mechano-Node Pore Sensing, IEEE/EMB 5$^{th}$ Micro- and Nanotechnology in Medicine, O'ahu, Hawaii, December, 2022.
112. Invited talk, Node-Pore-Sensing: A Versatile Method to Phenotype Cells, Laboratory Automation, Virtual Meeting, March, 2023
113. Keynote talk, Node-Pore Sensing: A Label-Free Method to Immunophenotype and Mechanophenotype Single Cells, Select Bio Innovations in Microfluidics, Seattle, WA, May 2023
114. Plenary talk, The Future of Biosensing: Detecting Emerging Properties that Detect Underlying Disease Susceptibilities, TechConnect, Washington DC 2023
115. Invited talk, Node-Pore Sensing: How a (Humble) Four Terminal Measurement Can Measure the Mechanical Properties of Single Cells, TechConnect, Washington DC 2023
116. Keynote talk, Node-Pore Sensing: A Versatile Method to Phenotype Single Cells, Select Bio Lab-on-a-Chip and Microfluidics Asia, Tokyo, Japan, October 2023
117. Plenary talk, Microfluidics for Assessing Breast Cancer Susceptibility, MicroTAS 2023, Katowice, Poland, October 2023
118. Keynote talk, Microfluidics for Assessing Breast Cancer Susceptibility, Select Bio Lab-on-a-Chip and Microfluidics Conference, Laguna Hills, December 2023.

*Plenary or Invited talks declined due to health/family/conflicting schedule reasons*

1. PITTCON 2005, "Molecular Sensing Using an Artificial Pore," February 2005.
2. Molecular Medical Diagnostic Technologies, 5$^{th}$ China Medical Biotech Forum, Beijing, China, November 2011.
3. Keynote speaker, Conference for Undergraduate Women in Physical Sciences (WoPhyS'13), University of Nebraska, Lincoln, Nebraska, October 2013.

4. Seventh Microfluidics Consortium, University of California, Berkeley, February 2015.
5. Invited speaker, SciX Conference (Royal Society of Chemistry Symposium on Sensors for Cancer Diagnostics), Reno, Nevada, October 2017.
6. Keynote, Detecting Tumor-Derived Exosomes for Early Lung-Cancer Screening, RNA-Seq, Single Cell Analysis, & Single Molecule Analysis 2017, San Diego, CA, October 2018.
7. Invited talk, Career Development Workshop for Women in Physics, sponsored by UNESCO and The Abdus Salaam International Centre for Theoretical Physics, Trieste, Italy, October 2019.
8. Keynote, Detecting Tumor-Derived Exosomes Using Node-Pore Sensing, Circulating Biomarkers World Congress 2020, San Diego, CA, February 2020.
9. Invited speaker, Montera Middle School Career Day, Oakland, CA, March 2020.
10. Invited talk, High-Throughput DNA-Directed Patterning to Recapitulate Biological Signaling Scenarios, 2022 TechConnect World Innovation, National Harbor, Maryland, June 2022.
11. Invited talk, Mechano-Node-Pore Sensing: An electronic method to mechanically phenotype single cells, EMBL Conference: Microfluidics, Heidelberg, Germany, July 2022.

*Invited talks and oral presentations by students and postdocs*

1. O. A. Saleh, "A Quantitative Nanoscale Coulter Counter," Oral presentation, 2001 MicroTas Conference, October 2001.
2. A. Thupil, "Axonal Chemotaxis in a Microfluidic Gradient Generator," Oral presentation, 51st Annual Biophysical Society Meeting, March 2007.
3. A. Thupil, "A Controllable Microfluidic Gradient Generator for Studying Neuronal Polarization," Oral presentation, Materials Research Society Spring Meeting, April 2007.
4. A. Carbonaro, "Cell Characterization Using Protein Functionalized Pores," Oral presentation, 11th International Conference on Miniaturized Systems for Chemistry and Life Sciences, Paris, France, October 2007.
5. N. Sanford, "Hydrodynamic Stretching of Molecules of DNA Bound to an Individual Nanowire," Oral presentation, Materials Research Society Fall Meeting, Boston, MA, November 2007.
6. R. Dylla-Spears, "Use of Stagnation Point Flows for DNA Trapping, Manipulation, and Target Sequence Detection," Oral presentation, The XVth International Congress on Rheology, Monterey, CA, November 2007.
7. S. K. Mohanty, "Stem-Cell Surface Marker Interrogation via Resistive-Pulse Sensing," Oral presentation, Biomedical Engineering Society 2009 Annual Meeting, Pittsburgh, PA, October 2009.
8. N. Ho, "Using Microfluidics to Diagnose Leukemia at the Point-of-Care," Oral presentation, Biomedical Engineering Society 2009 Annual Meeting, Pittsburgh, PA, October 2009.
9. R. Dylla-Spears, "Single-Molecule Target Sequence Detection Using Extensional Flow," Oral presentation, AICHE 2009 Annual Meeting, Nashville, TN, November 2009.
10. S. K. Mohanty, "Stem-Cell Surface Marker Interrogation via Resistive-Pulse Sensing: Screening for Sca-1 Expression in Mouse Muscle Stem Cells," Oral presentation, 13th International Conference on Miniaturized Systems for Chemistry and Life Sciences, Korea, November 2009.
11. S. K. Mohanty, "Isolation and Analysis of Satellite Cells from the Muscle Niche Using Microfluidics," Invited talk, The Ottawa Conference on New Directions in Biology and Disease of Skeletal Muscle, Ottawa, Canada, May 2010.
12. M. R. Chapman, "Label-free Screening of Niche-to-Niche Variation in Satellite Stem Cells Using Functionalized Pores," Oral presentation, to be given at the Nanopores Conference, Lanzarote, Spain, January 2012.
13. K. Balakrishnan, "Label-free Screening of Multiple Cell-surface Antigens Using a Single Pore," Oral presentation, Nanopores Conference, Lanzarote, Spain, January 2012.
14. M. R. Chapman, "Label-free screening of niche-to-niche variation in satellite stem cells using functionalized pores," Oral presentation, American Physical Society Annual March Meeting, Boston, MA, February 2012.
15. E. Lyall, "Characterizing Spatial Organization of Cell Surface Receptors in Human Breast Cancer with STORM," Oral presentation, American Physical Society Annual March Meeting, Boston, MA, February 2012.
16. K. Balakrishnan, "Label-free Screening of Multiple Cell-surface Antigens Using a Single Pore," Oral presentation, American Physical Society Annual March Meeting, Boston, MA, February 2012.

17. M. R. Chapman, "Using a light-activated culture matrix to determine the microenvironmental cues that initiate breast-cancer tumor metastasis," Oral presentation, 243rd ACS National Meeting (BIOT Division), San Diego, CA, March 2012.
18. K. Balakrishnan, "Using label-free screening to investigate stem-cells from their microanatomical niche," Oral presentation, 243rd ACS National Meeting (BIOT Division), San Diego, CA, March 2012.
19. K. Balakrishnan, "Toward Multimarker Cellular Screening Using Variable Cross-Section Pores," Oral Presentation, 6th International Conference on Bioengineering and Nanotechnology, Berkeley, CA, June 2012.
20. A. Kesavaraju, "Micropost Microenvironments for Studying Luminal-Basal Lineage Commitment of Breast-Cancer Cells," Oral Presentation, American Physical Society Annual March Meeting, Baltimore, MD, March 2013.
21. K. Balakrishnan, "Node-Pore Sensing", Oral Presentation, 2013 Gordon Research Conference Physics and Chemistry of Microfluidics, Lucca (Barga), Italy, June 2013.
22. M. Mir, "Quantifying Surface-Marker Expression through Imaging of Transient Interactions," Oral Presentation, 2014 Annual Biophysics Society Meeting, San Francisco, CA, February 2014.
23. D. Yang, "High-Throughput Microfluidic Device for Circulating Tumor Cell Isolation from Whole Blood," Oral Presentation, 2015 SPIE Bio-MEMS and Medical Microdevices II Conference, Barcelona, Spain, May 2015.
24. F. Rivest, "Toward Real-Time Cell Detection and Characterization Using Barker-Coded Node-Pore Sensing," Oral Presentation, MicroTAS 2015, Gyeongju, Korea, October 2015.
25. J. Kim, "A Microfluidic Oscillatory Rheometer to Measure the Viscoelastic Properties of Cancer Cells", Oral Presentation, 7th International Conference on Bioengineering and Nanotechnology, Chicago, IL, March 2017.
26. R. Falcon-Banchs, "A Novel Platform to Investigate the Interplay of Shear Stress and Interstitial Matrix Stiffness on Transendothelial Migration", 2017 Southern California Biomedical Sciences Graduate Symposium, Poster Presentation, University of Southern California, Los Angeles, October 20, 2017.
27. J. Kim, "Microfluidic Rheology to Characterize Viscoelastic Properties of Malignant and Non-Malignant Epithelial Cells", Oral Presentation, MicroTAS 2017, Savannah, Georgia, October 2017.
28. J. Kim, "Multivariable Mechanical Phenotyping with Mechano-Node-Pore Sensing", Oral Presentation, 2018 BMES Cellular and Molecular Bioengineering Conference, Key Largo, Florida, January 2018.

    ***Selected for the 2018 CMBE Conference Graduate Student Shooting Star Award (Travel Grant) for "outstanding work in the field of cell and biomolecular engineering.***

29. B. Li, "Mechanical Phenotyping of Acute Myeloid Leukemias for Predicting Response to Retinoic Acid", Poster Presentation, Biophysical Society 62nd Annual Meeting, San Francisco, CA, February 2018.
30. Y. Kim, "Microfluidic Rheology to Study Effects of Cell Cycle to Viscoelastic Properties of Epithelial Cells", Poster Presentation, Biophysical Society 62nd Annual Meeting, San Francisco, CA, February 2018.
31. T. Carey, "Resistive Pulse Sensing Tumor-Derived Exosome Detection Device for Resource-Limited Settings, Oral Presentation, 2018 Molecular Med Tri-Con, San Francisco, CA, February 2018

    ***Tri-Con Diagnostics World Early Innovator Award***

32. B. Li, J. Kim, and L. L. Sohn, "Mechanical Phenotyping of Acute Myeloid Leukemias for Predicting Response to Retinoic Acid, Poster Presentation, 9th International Conference on Microtechnologies in Medicine and Biology, March 2018.
33. B. Li, J. Kim, and L. L. Sohn, "Mechanical Phenotyping of Acute Myeloid Leukemias for Predicting Response to Retinoic Acid, Microfluidics for Hematology, Poster Presentation, CMBS Workshop, Boston, MA, April 2018.
34. K. L. Cotner, "Node-Pore Sensing Enables Integrated Surface Marker Screening and Mechanical Phenotyping of Single Cells", Poster Presentation, 40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Honolulu, Hawaii, July 2018.
35. T. Carey, C. W. Yu, J. Hall, and L. L. Sohn, "Resistive-Pulse Sensing Platform for Detecting Tumor-Derived Extracellular Vesicles", Poster Presentation, MicroTAS 2018, Kaohsiung, Taiwan, October 2018.
36. T. Carey, "Resistive-Pulse Sensing Platform for Detecting Tumor-Derived Extracellular Vesicles", Keynote, RNA-Seq, Single Cell Analysis, & Single Molecule Analysis, San Diego, CA, October 2018.

37. B. Li, "Cellular Mechanophenotyping Using Mechano-Node-Pore Sensing," Poster Presentation, American Society for Cell Biology Annual Meeting, San Diego, CA, December 2018.
38. O. Scheideler and L. L. Sohn, "A High-Throughput Approach for Assembling Multiplexed DNA Patterns to Recapitulate Niche Signaling Interactions with Spatiotemporal Control", Poster Presentation, 2019 Cellular and Molecular Bioengineering Conference, San Diego, CA, January 2019.
39. M. Kozminsky and L. L. Sohn, "Fabrication and validation of an in vitro bone marrow microenvironment for the study of prostate cancer progression", Poster Presentation, 2019 American Association for Cancer Research Annual Meeting, Atlanta, Georgia, March 2019.
40. R. Falcon-Banchs, P. Vijayakumar, and L. L. Sohn, "A Microfluidic Platform that Enables Multi-Zone Trans-Endothelial Electrical Resistance Measurements in Real Time," Poster Presentation, Biomedical Engineering Society, Philadelphia, PA, October 2019.
41. B. Li and L. L. Sohn, "Linking Physical Phenotype to Drug Resistance: Single-Cell Mechanical Measurements of Acute Promyelocytic Leukemia," Poster Presentation, Biomedical Engineering Society, Philadelphia, PA, October 2019.
42. T. R. Carey, J. Hall, and L. L. Sohn, "Node-Pore Sensing Device to Detect Tumor-Derived Extracellular Vesicles," Oral Presentation, MicroTAS 2019, Basel, Switzerland, October 2019.
43. M. Kozminsky and L. L. Sohn, "Application of DNA-Directed Patterning to Fabricate An In Vitro Bone Marrow Microenvironment for the High-Throughput Study of Prostate Cancer Dormancy," Poster Presentation, MicroTAS 2019, Basel, Switzerland, October 2019.
44. B. Li, A. Maslan, A. Streets, and L. L. Sohn, "Linking Physical Phenotype to Drug Resistance: Single-Cell Mechanical Measurements of Acute Promyelocytic Leukemia," Poster Presentation, MicroTAS 2019, Basel, Switzerland, October 2019.
45. O. Scheideler, D. Schaffer, and L. L. Sohn, "Recapitulating Biological Signaling Scenarios with Spatiotemporal Control Using a Multiplexed, DNA-Patterning Approach," Oral Presentation, American Society of Cell Biology Annual Meeting, Washington DC, December 2019.

***ACSB Travel Award based on scientific career stage***

46. S. Kitayama and L. L. Sohn, "Development of an In Vitro Lung Microenvironment Model for the Investigation of Extracellular Vesicle Preparation of the Pre-Metastatic Niche", Poster Presentation, 2020 Cellular and Molecular Bioengineering Conference, Puerto Rico, January 2020.
47. S. Kitayama and L. L. Sohn, "Creating an In Vitro Lung Microenvironment via DNA-Directed Patterning to Investigate the Role of Extracellular Vesicles in Metastasis," Poster Presentation, MicroTAS 2020 Virtual Conference, October 2020.
48. K. L. Cotner and L. L. Sohn, "Multiplexed Resistive-Pulse Sensing Through Coded Node-Pore Channel Geometry," Poster Presentation, MicroTAS 2020 Virtual Conference, October 2020.
49. N. Liu, K. Chan, and L. L. Sohn, "Label-Free Single-Cell Capture and Release Via a First-In First-Out Microfluidic Cell Router," Poster Presentation, MicroTAS 2020 Virtual Conference, October 2020.
50. M. Kozminsky, "DNA-directed patterning enables fabrication of an in vitro bone marrow niche to study prostate tumor cell dormancy," Oral Presentation, Cell Bio Virtual 2020, December 2020.
51. M. Kozminsky, "DNA-directed patterning as a tool to study prostate cancer-bone marrow niche interactions at single cell and system level," Poster Presentation, AACR Annual Meeting, April 2021.
52. M. Kozminsky, O. J. Scheideler, B. Li, N. K. Liu, and L. L. Sohn, *Multiplexed DNA-Directed Patterning of Antibodies for Single-Cell Surface Marker Analysis*, Poster Presentation, MicroTAS 2021, October 2021.
53. A. Lai, *Microfluidic Platform for Multi-Frequency Viscoelastic Phenotyping of Single Cells*, Poster Presentation, MicroTAS 2021, October 2021.

***Outstanding Sensors and Actuators, Detection Technologies Poster Award***

54. M. Kozminsky, "DNA-Directed Patterning to Validate a Liposome Model of SARS-CoV-2, Oral Presentation, American Institute of Chemical Engineering Annual Meeting, November 2021.
55. M. Kozminsky, "High-Throughput DNA-Directed Patterning as a Tool to Study Prostate Cancer-Bone Marrow Niche Interactions at Single Cell and System Level, Oral Presentation, American institute of Chemical Engineering Annual Meeting, November 2021.
56. M. Kozminsky, "Detecting Intact Virus with Oligonucleotide Labels," Oral Presentation, American institute of Chemical Engineering Annual Meeting, November 2021.

57. R. Rex, "Measuring Strain-Dependent Cell Mechanics with Sequential-Squeeze Node-Pore Sensing," Oral Presentation, MicroTAS 2022, October 2022.
58. J. Chen, "Spatial Interactions Between Breast Cancer and Immune Cells Using High-Throughput DNA-Directed Patterning," Poster Presentation, 2023 Annual University of California Bioengineering Symposium, June 2023.
    ***Best Poster Runner-Up in Cells & Tissue Category***

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***Finalist for the Best Poster Award at μTAS 2015.***

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***Finalist for Tri-Con Diagnostics World Early Innovator Award***

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***Tri-Con Diagnostics World Early Innovator Award***

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104. B. Li, J. Kim, and **L. L. Sohn**, *Mechanical Phenotyping of Acute Myeloid Leukemias for Predicting Response to Retinoic Acid*, Microfluidics for Hematology, CMBS Workshop Proceedings (2018).
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***Top Downloaded Article for WIRES Nanomedicine and Nanobiotechnology in 2019***

108. M. Kozminsky and **L. L. Sohn**, *Fabrication and validation of an in vitro bone marrow microenvironment for the study of prostate cancer progression*, to appear in the supplement to Cancer Research (2019).
109. J. Kim, B. Li*, O. J. Scheideler*, Y. Kim, and **L. L. Sohn**, *Visco-Node-Pore Sensing: A Microfluidic Rheology Platform to Characterize Viscoelastic Properties of Epithelial Cells*, iScience 13, 214-228 (2019), doi: 10.1016/j.isci.2019.02.021. (*) denotes equal contribution.
110. J. M. Muncie, R. Falcon-Banchs, J. N. Lakins, **L. L. Sohn**, and V. M. Weaver, *Patterning the geometry of human embryonic stem cell colonies on compliant substrates to control tissue-level mechanics*, J. Vis. Exp. (151), e60334, doi:10.3791/60334 (2019).
111. O. J. Scheideler, C. Yang, M. Kozminsky, K. I. Mosher, R. Falcón-Banchs, E. C. Ciminelli, A. W. Bremer, S. A. Chern, D. V. Schaffer, and **L. L. Sohn**, *Recapitulating complex biological signaling environments using a multiplexed, DNA-patterning approach*, Science Advances vol. 6, no. 12, eaay5696, doi: 10.1126/sciadv.aay5696 (2020)
112. M. Kozminsky and **L. L. Sohn**, *The promise of single-cell mechanophenotyping in clinical applications*, Biomicrofluidics 14, 031301 (2020). doi: 10.1063/5.0010800.

***Featured Article in Biomicrofluidics***

113. **L. L. Sohn**, P. Schwille, A. Hierlemann, S. Tay, J. Samitier, J. Fu, P. Loskill, *How can microfluidic and microfabrication approaches make experiments more physiologically relevant?* Cell Systems, 2020 Aug 29;S2405-4712(20)30246-5. doi: 10.1016/j.cels.2020.07.003.
114. K. A. Cabral, D. M. Patterson, O. J. Scheideler, R. Cole, A. R. Abate, D. V. Schaffer, **L. L. Sohn**, and Z. J. Gartner, Simple, affordable, and modular patterning of cells using DNA, J. Vis. Exp. 2021 Feb 24;(168). doi: 10.3791/61937.
115. S. Hinz, A. Manousopoulou, M. Masaru, R. W. Sayaman, K. Y. Aguilera, M. Todhunter, J. C. Lopez, S. D. Garbis, **L. L. Sohn**, L. D. Wang, and M. A. LaBarge, *Deep proteome profiling of the aging mammary epithelium*, iScience 24, 103026, September 24, 2021. doi: 10.1016.j.isci.2021.103026.
116. M. Kozminsky*, O. J. Scheideler*, B. Li, N. K. Liu, and **L. L. Sohn**, *Multiplexed DNA-directed patterning of antibodies for applications in cell subpopulation analysis*, ACS Applied Materials & Interfaces. 2021 Oct 6;13(39);46421-46430. doi: 10.1021/acsami.1c15047. (*) denotes equal contribution.
117. M. Kozminsky, T. Carey, and **L. L. Sohn**, *DNA-Directed Patterning for Versatile Validation and Characterization of a Lipid-Based Nanoparticle Model of SARS-CoV-2*, Adv Sci. 2021 Dec;8(23):e2101166. doi: 10.1002/advs.202101166.
118. B. Li*, K. A. Cotner*, N. Liu, S. Hinz, M. A. LaBarge, and **L. L. Sohn**, *Evaluating sources of technical variability in the mechano-node-pore sensing pipelines and their effect on the reproducibility of single-cell mechanical phenotyping*, PLoS One. 2021 Oct 25;16(10):e025898. doi: 10.1372/journal.pone.0258982. (*) denotes equal contribution

119. B. Li, A. Maslan, S. E. Kitayama, C. Pierce, A. Streets, and **L. L. Sohn**, *Mechanical phenotyping of acute promyelocytic leukemia reveals unique biomechanical responses in retinoic-acid resistant populations*, iScience. 2022 Jan 15;25(2):103772. doi: 10.1101/2021.04.25.441378.
120. T. Carey, B. Li, and **L. L. Sohn**, Using Node-Pore Sensing for Characterizing Cells and Extracellular Vesicles, Invited Chapter in Biomedical Engineering Technologies Vol. 2, eds. A. Rasooly, H. Baker, and M. R. Ossandon, Humana Press, New York, NY (2022).
121. T. Carey, M. Kozminsky, J. Hall, V. Vargas-Zapata, K. Geiger, L. Coscoy, and **L. L. Sohn**, *Detecting Intact Virus Using Exogeneous Oligonucleotide Labels*, Anal. Chem. 2022 May 31;94(21):7619-7627. doi: 10.1021/acs.analchem.2c00835.
122. A. Lai*, R. Rex*, K. Cotner, A. Dong, M. Lustig, and **L. L. Sohn**, *Mechano-node-pore sensing: a rapid, label-free platform for single-cell viscoelastic measurements*, J Vis Ex. 2022 Dec 2;(190). Doi: 10.3791/64665.
123. C. Lu, R. Rex, Z. Lung, J. Wang, F. Wu, H. J. Kim, L. Zhang, **L. L. Sohn**, and A. Dernburg, *A cooperative network at the nuclear envelope counteracts LINC-mediated forces during oogenesis in C. elegans*, Sci. Adv. 2023 Jul 14;9(28):eabn5709. doi: 10.1126/sciadv.abn5709.
124. A. Dong, **L. L. Sohn**, M. Lustig, *Metal Pad-Enhanced Resistive Pulse Sensor Reveals Complex-Valued Braess Paradox*, Phys. Rev. E 108, 014408 (2023) doi: 10.1103/PhysRevE.108.014408.
125. E. Lindberg, T. Wu, K. Cotner, A. Glazer, A. Jamali, **L. L. Sohn**, T. Alliston, and G. D. O'Connell, Priming Chondrocytes During Expansion Alters Cell Behavior and Improves Matrix Production in 3D Culture, to appear in Osteoarthritis and Cartilage (accepted December 2023).
126. A. Lai, A. Dong, M. Lustig, **L. L. Sohn**, *Multi-Zone Visco-NPS: Microfluidic Platform for Multi-Frequency Viscoelastic Phenotyping of Single Cells*, in preparation 2024.
127. O. Scheideler*, S. Kitayama*, M. Kozminsky*, C. Tsuchida, K. I. Mosher, C. Ciminelli, J. A. Doudna, D. V. Schaffer, and **L. L. Sohn**, *Nuclease-mediated temporal control over DNA-instructed ligands,* in preparation (2024). (*) denotes equal contribution.

## SOHN LAB MEMBERS (PAST & PRESENT)

### Postdoctoral Fellows

- Dr. Geoffrey R. Facer (1999-2001)—VP of Engineering, Levitas
- Dr. Troy Messina (2003)—Associate Professor, Berea College
- Dr. Stephan Thiberge (2003)—Director, Bezos Center Facility, Princeton University
- Dr. Ian Chan (2003-2004)—Stanford Research Systems
- Dr. Swomitra Mohanty (2007-2010)
  - —California Institute for Regenerative Medicine Postdoctoral Fellow (2009-2010)
  - —Associate Professor, Chemical Engineering, University of Utah
- Dr. Mustafa Mir (2013-2014)
  - —California Institute for Regenerative Medicine Postdoctoral Fellow (2014)
  - —Assistant Prof., Cell and Developmental Biology, Perelman School of Medicine,UPenn
- Dr. Eric Jabart (2014)
  - —Senior Product Applications Scientist, Berkeley Lights
- Dr. Sewoon Han (2015-2017)
  - —Head of Engineering, CellFE
- Dr. Molly Kozminsky (2018-2022)
  - —NIH Ruth Kirschstein National Research Service Award Postdoctoral Fellowship (F32)
  - —MIT Rising Stars in Chemical Engineering (2018)
  - —AACR-Women in Cancer Research Scholar Award (2021)
  - —Assistant Professor, Chemical Engineering, Iowa State University
- Dr. Olivia Scheideler (2019-2020)
  - — Scientist II, Adimab

### Primary Ph.D. Students

- Omar A. Saleh, Princeton University PhD in Physics (2003)
  *A Novel Resistive Pulse Sensor for Biological Measurements*
  —Full Professor, Materials Science Dept., UC Santa Barbara
- Andrea Carbonaro, UC Berkeley PhD in Mechanical Engineering (2008)
  *Cell Characterization Using Protein-Functionalized Pores*
  —Director of Product Management, Thermo Fisher Scientific
- Rebecca Dylla-Spears, UC Berkeley PhD in Chemical Engineering (2009)
  *Single-Molecule Target Sequence Detection via Microfluidic Planar Extensional Flow at a Stagnation Point*
  —Deputy Group Leader, Laser Material Interaction Science. Materials Science Division, Lawrence Livermore National Laboratory
- Eric Jabart, Bioengineering, UC Berkeley (2009-2013)
  *Embryonic and Adult Stem Cells Explored through Microfluidics and Biological Manipulation*
  —2011 Siebel Foundation Scholar Award
  —Senior Product Applications Scientist, Berkeley Lights
- Karthik Balakrishnan, Mechanical Engineering, UC Berkeley (2009-2014)
  *Node-Pore Sensing: A Robust, High-Dynamic Range Method for Multi-Parametric Screening of Biological Samples*
  —2011-2014 National Defense Science & Engineering Graduate Fellow
  —C.E.O., Nodexus
- Junghyun Kim, Mechanical Engineering, UC Berkeley (2013-2018)
  *Mechano-NPS and Visco-NPS: Microfluidic Approaches to Single-Cell Mechanics*
  —Jongsong Fellowship (2013-2016)
  —John and Janet McMurty Fellowship (2018)
  —2018 BMES Molecular and Cellular Bioengineering “Graduate Student Shooting Star” Award
  —Senior Engineering, Process Development, Illumina
- Nahyun Cho, Chemical and Biomolecular Engineering, UC Berkeley (2014-2018)
  *A Dynamic-Stiffness Hydrogel Platform Utilizing PhyB and PIF6 as a Light-Inducible Crosslinker*
  —Scientist III, Artemys Foods
- Olivia Scheideler, Bioengineering, UC Berkeley (2014-2019)
  *DNA-Based Engineering Strategies to Dissect Complex Signaling Environments within the Adult Neural Stem Cell Niche*
  —NSF Graduate Research Fellowship (2014-2017)
  —P.E.O. Fellow (2017-2018)
  —Siebel Scholar (2017-2018)
  —MIT Rising Stars in Mechanical Engineering (2018)
  —Scientist II, Adimab
- Francois Rivest, Bioengineering, Ecole Polytechnique Federale de Lausanne (2015-2019)
  *Personalized Immunotherapeutic Screen using Patient-Derived Tumor Infiltrating Lymphocytes And Heterotypic 3D Tumor Models*
  —Co-advised by Prof. Matthias Lutolf, EPFL
  —Application Development Engineering, Lunaphore
- Roberto Falcón-Banchs, Bioengineering, UC Berkeley (2015-2020)
  *Enabling Multi-Zone Impedance Measurements for Higher Resolution Trans-Endothelial Electrical Resistance (TEER) and Single-Cell Viscoelastic Analysis*
  —Chancellor Fellowship, UC Berkeley (2014-2015)
  —NSF Graduate Research Fellowship (2015-2018)
  —Siebel Scholar (2019-2020)
  —R&D Engineer, Avails Medical
  —Sr Engineering, Process Development, Illumina
- Thomas Carey, Bioengineering (2016-2021)
  *Detection and Characterization of Lipid Bilayer Nanoparticles*

—Kang Family Graduate Award for Biotechnology (2017-2018)
—Brodie Scholar, Dept. of Bioengineering, UC Berkeley (2017-2018)
—Tri-Con Diagnostics World Early Innovator Award (2018)
—Lloyd Scholar, Dept. of Bioengineering, UC Berkeley (2018-2019)
—University of California Cancer Research Coordinating Committee Fellowship (2020-2021)
—Engineer, Inscripta
—Senior Engineer, Cytovale

- Brian Li, Bioengineering (2017-2021)
  *Node-Pore Sensing Techniques for Biomarker Discovery*
  —NSF Graduate Research Fellowship (2017-2020)
  —Process Engineer, Illumina
- Kristen Cotner, Bioengineering (2017-2022)
  *Integrated Node-Pore Sensing Techniques for Label-Free Single-Cell Measurements*
  —NSF Graduate Research Fellowship (2017-2020)
  —Siebel Scholar (2021-2022)
  — R&D Engineer, Avails Medical
- Sean Kitayama, Bioengineering (2019-present)
  *Engineering In Vitro Cellular Microenvironments to Investigate Biological Signaling Phenomena*
  —Berkeley Stem Cell Center's NIH Stem Cell Biological Engineering Training Program T32 Fellowship (2019-2021)
  —Craven Scholar, Dept. of Bioengineering (2020-2021)
  —H2H8 Association Graduate Research Fellowship (2022)
  —Lloyd Scholar, Dept. of Bioengineering (2021-2022)
- Rachel Rex, Mechanical Engineering (Fall 2019-present)
  —2020 GE Women's Network Scholarship, Society of Women Engineers
  —H2H8 Association Graduate Research Fellowship (2021)
  —Slater Fellowship (2023)
  —Mechanical Engineering Department Fellowship (2023)
- Andre Lai, Bioengineering (Summer 2020-present)
  —Brodie Scholar, Dept. of Bioengineering (2021-2022)
  —H2H8 Association Graduate Research Fellowship (2021)
  —Siebel Scholar (2024)
- Stephanie Eberly, Mechanical Engineering (Fall 2020-present)
  —Berkeley Fellow (2020-2022)
  —H2H8 Association Graduate Research Fellowship (2021)
  —NIH Biology and Biotechnology of Cell and Gene Therapy Training Program T32 Fellowship (2021-2022)
  —NSF Graduate Research Fellowship (2022-2025)
- Taylor Thomsen, Bioengineering (Summer 2023-present)
  —H2H8 Association Graduate Research Fellowship (2023)
- Chang Chen, Mechanical Engineering (Fall 2023-present)
  —Chancellor's Fellow, University of California, Berkeley

**Co-Advised Ph.D. Students (e.g. Departmental PhD advisor)**

- Merwan Benhabib, UC Berkeley PhD in Mechanical Engineering (2009)
  *Multichannel Mars Organic Analyzer for Planetary Analysis of Organic Molecules and Biomarkers*
  —Vice President, OndaVia
- Maria Schriver, UC Berkeley (2008-2012)
  *Amorphous Silicon-Carbon Nanostructure Photovoltaic Devices* (2012)
  —Lead Validation Engineer, Amber Kinetics

**Masters of Science Students**

- Dionne C. G. Klein: Ordered Stretching of Single Molecules of DNA," March 2000
  —Co-Advised with Prof. dr. Leo P. Kouwenhoven, Dept. of Applied Physics, Delft University of Technology
  —Project Leader, Cubiss
- Karthik Balakrishnan: "Microscale Biological Analysis Using Resistive Pulse Sensing," May 2011
  Mechanical Engineering, UC Berkeley
  —C.E.O., Nodexus
- Daniel Yang: "An Inertial Microfluidic Device for CTC Isolation from Whole Blood," December 2015
  Mechanical Engineering, UC Berkeley
  —Product Manager, Ginkgo Bioworks
- Francois Rivest: "Barker-Coded Node-Pore Sensing," August 2015
  Bioengineering, Ecole Polytechnique Federale de Lausanne, Switzerland
  — Application Development Engineering, Lunaphore
- Nathaniel Liu: "Label-Free Microfluidic Router for Repeated Measurement of Single Cells," August 2020 Mechanical Engineering, UC Berkeley
- Pierre-Jean Croux, "Development of an Integrated Nanocalorimetry-Microfluidics Platform for Regulated Culture of Microbiome Components," November 2022 (MEMS, Ecole Polytechnique Federale de Lausanne, Switzerland)

**Masters of Engineering Teams**

- Matthew M. Hart: "The Design and Commercialization of a Point-of-Care Platform for Neonatal Complete Blood Count," May 2015
- Shilpi Mathrani: "The Design and Commercialization of a Point-of-Care Platform for Neonatal Complete Blood Count," May 2015
- Zijian Meng: "The Design and Commercialization of a Point-of-Care Platform for Neonatal Complete Blood Count," May 2015
- Lung Y. Yu: "The Design and Commercialization of a Point-of-Care Platform for Neonatal Complete Blood Count," May 2015
- Lingshu Lu: "SAHAI: A Mobile App for Hospital Acquired Infections", May 2017
- Kai W. Tan: "SAHAI: A Mobile App for Hospital Acquired Infections", May 2017
- Elnaz Barati: "Quantifying Tumor-Derived Exosomes for Liquid Biopsies", May 2024
- Yuna Lee: "Quantifying Tumor-Derived Exosomes for Liquid Biopsies", May 2024
- Sang-Hoon Han: "Quantifying Tumor-Derived Exosomes for Liquid Biopsies", May 2024
- Sydney Lo: "Quantifying Tumor-Derived Exosomes for Liquid Biopsies", May 2024

**Senior Theses, University of California, Berkeley**

- Christina Lin, "Induction of Epithelial-Mesenchymal Transition in CAOV-3 Cells with Transforming Growth Factor b-1 & Thrombin," Chemical Biology, UC Berkeley, May 2015
- Kristina Chan, "Guided Microfluidic Flow for Cell Capture, Indexing, and Directed Release," Molecular and Environmental Biology, UC Berkeley, May 2020.
- Jennifer Hall, "Prognostic Potential of Extracellular Vesicles: Noninvasive Monitoring of Chemotherapeutic Resistance Development," Molecular & Cellular Biology, UC Berkeley, May 2021
- Corey Pierce, "Exosome-Based Liquid Biopsy," Molecular & Cellular Biology, UC Berkeley, December 2022

**Senior Theses, Princeton University**

- Amit Shah: "Dielectric Spectroscopy of Cells," May 2002
- Sunil N. Goda: "Dephasing in One Dimensional Metallic Nanowires," May 2001
- Heather J. Lynch: "A Kondo Box: Coulomb Blockade and the Kondo Effect in Iron-Doped Copper Nanoparticles," May 2000
  —*American Physical Society LeRoy Apker Award*, 2001

—*Material Research Society Undergraduate Research Initiative Award*, 2000

- Joshua W. Weitz: "Vortex and Charge Dynamics of Superconducting Arrays," May 1997

**Junior Theses, Princeton University**

- Ilana Witten: "Conduction through a DNA Molecule," May 2001
- Heather J. Lynch: "A Kondo Box: Coulomb Blockade and the Kondo Effect in Chromium-doped Aluminum Nanoparticles," May 1999
- Daniel I. Konieczny: "Magnetization Reversal in Nanosized Ferromagnetic Particles," May 1997

**Undergraduate Research Assistants**

1. Virginia Yu (2023): Molecular and Cellular Biology, Class of 2025
2. Emilie Petit (2023): Bioengineering, Class of 2026
   —Bioengineering Scholars Program, UC Berkeley
3. Pritika Acharya (2023-present): Molecular and Cellular Biology, Class of 2025
   —SURF L&S Undergraduate Research Fellow, UC Berkeley
4. Maia Jeanneau (2022-present): Bioengineering, UC Berkeley, Class of 2025
5. Christopher Yi (2022-2023): Molecular and Cellular Biology, UC Berkeley, Class of 2025
   — SURF Student-Mentoring and Research Team (SMART) program
6. Priscila Gonzalez Vallejo (2022): Bioengineering, UC Berkeley, Class of 2025
   —Bioengineering Scholars Program, UC Berkeley
7. Lillian Caballero (2021-2022): Chemistry, Berkeley City College
8. Sharicka Zutshi (2021-2023): Bioengineering, UC Berkeley, Class of 2023
9. Zahir Chaudhry (2021-2022): Bioengineering, UC Berkeley, Class of 2023
   —SURF Rose Hills Fellow, Summer 2022
10. Corey Pierce (2021-2023): Molecular and Cellular Biology, UC Berkeley, Class of 2023
11. Alice Mo (2020): Bioengineering, UC Berkeley, Class of 2021
12. Matthew Bronars (2019-2022): Mechanical Engineering, UC Berkeley, Class of 2022
13. Anni Mao (2019): Bioengineering, UC Berkeley, Class of 2023
    —Bioengineering Scholars Program, UC Berkeley
14. Kristina Chan (2019-2020): Molecular and Environmental Biology, UC Berkeley, Class of 2021
15. Kevin Rubio (2019): Bioengineering, UC Berkeley, Class of 2023
    —Bioengineering Scholars Program, UC Berkeley
16. Kate Spencer (2019): Choate Rosemary Hall
17. Seraphina Joseph (2018-2019): Berkeley High School
18. Everett Morton (2018-2021): Bioengineering, UC Berkeley, Class of 2021
    —Bioengineering Scholars Program, UC Berkeley
19. Priya Vijayakumar (2018-2021): Mechanical Engineering, UC Berkeley, Class of 2021
    —Guangyi R. Zheng Prize, UC Berkeley
20. Ashna Mangla (2018-2019): Bioengineering, UC Berkeley, Class of 2020
21. Jennifer Hall (2018-2021): Molecular & Cellular Biology, UC Berkeley, Class of 2021
22. Claudia S. Perez-Draper (2018): Molecular Biology, University of Puerto Rico
    —Amgen Scholar
23. Bita Mehziz (2017): Mechanical Engineering, UC Berkeley, Class of 2020
    — SURF Student-Mentoring and Research Team (SMART) program
24. Hannah Tang (2017-2018): Bioengineering, UC Berkeley, Class of 2018
25. Justin Lee (2017-2018): Molecular & Cellular Biology, UC Berkeley, Class of 2018
26. Youngbin Kim (2017-2019): Bioengineering, UC Berkeley, Class of 2019
27. Sabrina Chern (2017): Bioengineering, Harvard University, Class of 2020
28. Connie Yang (2016-2018): Bioengineering, UC Berkeley, Class of 2018
29. Emma Cimenelli (2016-2018): Bioengineering, UC Berkeley, Class of 2019
30. Vincent Kwan (2016-2017): Bioengineering, UC Berkeley, Class of 2019
31. Ji Min Lee (2015-2017): Bioengineering, UC Berkeley, Class of 2018
32. Alice Ma (2016-2018): Integrative Biology, UC Berkeley, Class of 2019

33. Nathaniel Liu (2016): Mechanical Engineering, UC San Diego, Class of 2017
34. Kevin Luong (2016-2017): Bioengineering, UC Berkeley, Class of 2019
35. Brian Li (2015): Mechanical Engineering, University of Texas-Austin, Class of 2016
    —Amgen Scholar
36. Shane Pracar (2015): Biology, George Washington University, Class of 2018
37. Kathleen Keh (2015): Chemical Biology, UC Berkeley, Class of 2015
38. Ilyssa Evans (2015-2016): Chemical and Biomolecular Engineering, UC Berkeley, Class of 2016
39. Shun Yao (2015): Mechanical Engineering, UC Berkeley, Class of 2016
40. Roy Park (2014-2015): Bioengineering, UC Berkeley, Class of 2016
41. Serena Leong (2014-2016): Bioengineering, UC Berkeley, Class of 2016
42. Andrew Sum (2014-2015): Bioengineering, UC Berkeley, Class of 2016
    —QUEST scholar (Summer, 2014)
43. Andy Lei (2014-2016): Bioengineering, UC Berkeley, Class of 2016
    —QUEST scholar (Summer, 2014)
44. Rui Li (2013-2015): Bioengineering, UC Berkeley, Class of 2015
45. Christopher Divsalar (2014): Bioengineering, UC Berkeley, Class of 2014 (Fall)
46. Kelly Goodman (2014): Mechanical Engineering and Electrical Engineering & Computer Science, UC Berkeley, Class of 2014
47. Peter Su (2013): Chemical Engineering, UC Berkeley, Class of 2014
48. Youny Kuang (2013-2014): Molecular & Cellular Biology, UC Berkeley, Class of 2015
49. Christina Lin (2013-2015): Chemical Biology, UC Berkeley, Class of 2015
    —Rose Hills Fellow (Summer, 2014)
50. Jeremy Whang (2013-2014): Bioengineering, UC Berkeley, Class of 2014
51. Justin Inman (2013-2014): Molecular & Cellular Biology, UC Berkeley, Class of 2014
52. Cal Dewar (2013): Molecular & Cellular Biology, UC Berkeley, Class of 2015
53. Cassidy Werner (2013): Chemical Biology, UC Berkeley, Class of 2015
54. Richard Hwang (2012-2013): Bioengineering, UC Berkeley, Class of 2013
55. Eugene Chao (2012-2013): Physics, UC Berkeley, Class of 2013
56. Trong Ngyuen (2012-2013): Engineering Physics, UC Berkeley, Class of 2013
57. Bo Qing (2011-2013): Bioengineering, UC Berkeley, Class of 2013
58. Anand Kesavaraju (2011-2012): Bioengineering, UC Berkeley, Class of 2012
59. Andrew Yu (2012): Bioengineering, UC Berkeley, Class of 2013
60. Evan Lyall (2011-2012): Bioengineering, UC Berkeley, Class of 2012
61. Katherine Mellis (2011): Bioengineering, UC Berkeley, Class of 2014
62. Farzin Fatollah-Fard (2011): Mechanical Engineering, UC Berkeley, Class of 2012
63. Sachin Rangarajan (2010-present): Bioengineering, UC Berkeley, Class of 2013
    —Berkeley Stem-Cell Center Summer Apprenticeship (2011)
64. Nga Ho (2008-2010): Bioengineering, UC Berkeley, Class of 2010
65. James Hack (2008-2010): Engineering Physics, UC Berkeley, Class of 2010
66. Jonathan Beard (2007): ME, UC Berkeley, Class of 2009
67. Nathan Sanford (2006-2007): ME, UC Berkeley, Class of 2008
68. Corinne Lieu (2005; 2009-2010): Engineering, UCSD, Class of 2008
69. Jonathan Tesch (2005-2006): ME, UC Berkeley, Class of 2006
70. Donald Winston (2004-2006): EECS, UC Berkeley, Class of 2006
71. Jason Lee (Spring 2004): Mechanical Engineering, UC Berkeley, Class of 2005
72. Alexander McDonald (2001-2002): Biology/Biophysics, Princeton Univ., Class of 2005
73. Jonathan Hoffman (2001-2002): Biology, Princeton Univ., Class of 2002
74. Richard Allan (1999-2001): Biology/Biophysics, Princeton Univ., Class of 2002
75. Craig Nakan (2000): Biology concentrator, Princeton Univ., Class of 2003
76. Christopher Roeser (1998): Harvard University Graduate Student

**QUALIFYING EXAMS (CHAIR OR MEMBER)**

- 2003-2017: >50 qualifying exams (chair or member) in Mechanical Engineering, Bioengineering, Applied Science & Technology, and Electrical Engineering & Computer Sciences

*Since 2017*

- Chaired 17 qualifying exams in Bioengineering, Applied Science & Technology, Mechanical Engineering
- Member of 50+ qualifying exams in Bioengineering, Mechanical Engineering, Chemical and Biomolecular Engineering, and Electrical Engineering & Computer Sciences

## DISSERTATION OR MASTERS COMMITTEES

*Masters*

- 11 5th-year Mechanical Engineering
- 3 Electrical Engineering & Computer Science

*Dissertation*

- 5 Mechanical Engineering
- 6 Bioengineering
- 3 Physics
- 2 Chemistry
- 2 Applied Science & Technology
- 1 Biophysics
- 4 Electrical Engineering & Computer Science

## COURSES TAUGHT

*PRINCETON UNIVERSITY*

Physics 101: Introductory Physics (non-calculus based, Mechanics)
Physics 102: Introductory Physics (non-calculus based, Electromagnetism)
Physics 103: Introductory Physics for Science and Engineering (Mechanics)
Physics 104: Introductory Physics for Science and Engineering (Electromagnetism)
Physics 312: Experimental Physics (Junior Physics Lab)

*UNIVERSITY OF CALIFORNIA, BERKELEY*

*Upper Division Undergraduate Courses*

ME102A: Introduction to Measurement Systems for Mechatronics
ME103: Experimentation and Measurement
ME107: Introduction to Experimentation and Measurement
ME118: Introduction to Nanotechnology and Nanoscience
ME119: Introduction to MEMS
ME107: Mechanical Engineering Laboratory
ME125: iACME—industry Associated Capstones in Mechanical Engineering
ME126: The Science and Engineering of Cooking

*Graduate Course*

ME290L: Introduction to Nanobiology
ME226L: The Science and Engineering of Cooking