

## HYONGSOK (TOM) SOH

Professor of Electrical Engineering  
 Professor of Radiology  
 Professor of Bioengineering  
 Stanford University  
 Stanford, CA 94305

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### EDUCATION

June 1999	Ph.D.	Stanford University, Stanford, CA	Electrical Engineering
June 1995	M.S.	Stanford University, Stanford, CA	Electrical Engineering
May 1993	M.Eng.	Cornell University, Ithaca, NY	Electrical Engineering
May 1992	B.S.	Cornell University, Ithaca, NY	Double Major with Distinction in Mechanical Engr. & Materials Science

### EMPLOYMENT

1/16 - Present	<b>Professor</b> , Department of Chemical Engineering, by courtesy Stanford University, Stanford, CA
7/15 - Present	<b>Professor</b> , Department of Electrical Engineering and Radiology by courtesy, Department of Bioengineering Stanford University, Stanford, CA
10/11 - 6/15	<b>Associate Director</b> , California NanoSystems Institute (CNSI), University of California, Santa Barbara
7/11 - 6/15	<b>Professor</b> , Department of Mechanical Engineering & Department of Materials, University of California, Santa Barbara
3/11 - 6/15	<b>Ruth Garland Endowed Chair</b> at the University of California, Santa Barbara
5/08 - 6/15	<b>Co-Director</b> , Center for Stem Cell Biology and Engineering, University of California, Santa Barbara
7/11 - 7/13	(By Courtesy), Department of Molecular & Medical Pharmacology, David Geffen School of Medicine, University of California, Los Angeles
7/07 - 7/11	<b>Associate Professor</b> , Departments of Mechanical Engineering & Materials, University of California, Santa Barbara
4/03 - 6/07	<b>Assistant Professor</b> , Departments of Mechanical Engineering & Materials, University of California, Santa Barbara
8/00 - 4/03	<b>Technical Manager</b> , MEMS Device Research Group Bell Laboratories, Lucent Technologies, Murray Hill, NJ and Agere Systems R&D group, Agere Systems, Allentown, PA
12/99 - 7/00	<b>Member of Technical Staff</b> , MEMS Research group, Physical Sciences Division, Bell Laboratories, Lucent Technologies, Murray Hill, NJ
6/99 - 12/99	<b>Research Associate</b> , Prof. C.F. Quate Laboratory Department of Electrical Engineering, Stanford University, Stanford CA

### RESEARCH INTERESTS

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- *In vitro* directed evolution of functional molecules
  - Biosensors and integrated molecular diagnostics
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## **MAJOR AWARDS AND HONORS**

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- 2020 Academy for Radiology & Biomedical Imaging Research - Distinguished Investigator Award
  - 2017 Elected to National Academy of Inventors (NAI)
  - 2017 Chan Zuckerberg Biohub Investigator
  - 2014 Fellow of the American Institute for Medical and Biological Engineering (AIMBE)
  - 2012 Humboldt Research Fellowship
  - 2011 Ruth Garland Endowed Chair at UCSB
  - 2011 NIH Edward Nagy Award
  - 2010 John Simon Guggenheim Fellowship
  - 2009 NIH Director's TR01 Award
  - 2009 ALA Innovator Award
  - 2005 Beckman Young Investigator Award
  - 2004 ONR Young Investigator Award
  - 2002 MIT Technology Review – World's Top 100 Young Innovator Award (TR100)
  - 2000 Bell Labs President's Award - Gold Medal (Team award)
  - 1997 Samsung Thesis Competition - Gold Medal
  - 1995 Leland Edwards Fellowship at Stanford University
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## **PROFESSIONAL SERVICE AND ACTIVITIES**

### **Industrial Activities:**

Co-founder: CytomX, LunglifeAI, Range Biosystems, Eigen Biosciences

**Society Membership:** AAAS, AACR, ACS, AIChE, AIMBE, IEEE, MRS

### **Journal Reviews:**

Approximately ~20 reviews per year for multiple journals including: *Nature Materials*, *Nature Nanotechnology*, *Nature Biotechnology*, *Nature Chemistry*, *Nature Communications*, *PNAS*, *Angewandte Chemie Int'l Ed.*, *JACS*, *Analytical Chemistry*, *ACS Nano*, *Lab on a Chip*, *Accounts of Chemical Research*, *Nature Chemistry*, *Chemistry & Biology*, and others.

### **Funding Reviews:**

Approximately ~3 funding review panels per year for NIH and DOD

### **Professional Service**

<i>Years</i>	<i>Position</i>	<i>Types of Service</i>	<i>Organization</i>
2022	Chair	Micro and Nanotechnology in Medicine Conference	IEEE Engineering in Medicine & Biology Society
2020	Chair	Early Detection of Cancer	Canary Center at Stanford
2019	Reviewer	Conference Guggenheim Fellowship	Guggenheim Foundation
2018	Organizer	SystemX workshop on Bio-Interfaces	Stanford SystemX Alliance
2016	Co-Organizer	Workshop on Bio-Interfaces	Stanford SystemX Alliance
2015	Session Chair	Diagnostics/Biosensors/Chemistry	ASGCT Aptamers Symposium

2015	Reviewer	New Innovator Award Program	National Institutes of Health
2014	Reviewer	Young Investigators Review Panel	Beckman Foundation
2014	Co-Organizer	RNA Consortium	UCSB College of Engineering
2012	Session Chair	Biological Devices/Biosensors and Molecular Diagnostics	International Conference on Bioengineering & Nanotechnology
2012	Co-Organizer	Joint Workshop on Nanobiotechnology	California NanoSystems Institute and Karolinska Institute
2011	Session Chair	Biophysical Measurements in Microfluidic Systems	Gordon Conference on Microfluidics
2008	Member	Technical Committee	Korea Research Foundation (Global Alliance Program)
2005	Member	Technical Committee	UKC 2005 Conference, Nanosciences Division
2004	Member	Technical Committee	ASME MEMS Division
2003	Member	Technical Committee	ASME Nano Institute

### University Service – Stanford

<i>Years</i>	<i>Position</i>	<i>Type of Service</i>	<i>Organization</i>
2023	Examiner	Qualifying Exam Committee	Department of Bioengineering
2022-23	Coordinator	Ph.D. Admissions Committee	Department of Electrical Engineering
2022-23	Member	Ph.D. Admissions Committee	Department of Bioengineering
2021-22	Member	Quantum and Facilities (QUAF) Committee	School of Engineering
2021-22	Member	Faculty Search Committee	Department of Electrical Engineering
2020-21	Member	Ph.D. Admissions Committee	Department of Bioengineering
2020-21	Coordinator	Graduate Admissions Committee	Department of Electrical Engineering
2020	Member	Organizing Committee	Canary Center at Stanford
2019-20	Member	Merits and Promotions Committee	Department of Electrical Engineering
2019-20	Coordinator	Ph.D. Admissions Committee	Department of Electrical Engineering
2019-20	Member	MD Admissions Committee	School of Medicine
2019	Coordinator	Graduate Admissions Committee	Department of Electrical Engineering
2019	Member	Faculty Search Committee	Department of Bioengineering
2019	Coordinator	Ph.D. Admissions Committee	Department of Electrical Engineering
2019	Member	Nano-Facilities Design Team	University-wide
2019	Member	Faculty Search Committee	Medical Physics
2018	Coordinator	Ph.D. Admissions Committee	Department of Electrical Engineering
2018	Member	Faculty Search Committee	Department of Electrical Engineering
2018	Member	Faculty Search Committee	Department of Radiation Oncology
2018	Member	Faculty Evaluation Unit Committee	Department of Radiology
2018	Member	Catalyst Advisory Committee	School of Engineering
2017	Coordinator	Graduate Admissions Committee	Department of Electrical Engineering
2017	Co-Chair	Faculty Search Committee	Department of Radiology (Canary Center)
2017	Member	Faculty Ad Hoc Committee	Department of Radiology
2017	Examiner	Qualifying Exam Committee	Department of Electrical Engineering
2016	Member	“Leading the Biomedical Revolution” Faculty Committee	University-wide
2016	Member	Faculty Search Committee	Department of Chemical Engineering
2016	Member	Committee on Biomedical Research at Stanford	University-wide
2016	Chair	Faculty Search Committee	Department of Radiology (Canary Center)

2016	Member	Graduate Admissions Committee	Department of Electrical Engineering
2016	Member	Faculty Search Committee	Molecular Imaging Program at Stanford (MIPS)/Department of Radiology
2015	Coordinator	Admissions Committee	Department of Electrical Engineering
2015	Co-Leader	SystemX Alliance (Bio Interfaces)	
2015	Member	Faculty Search Committee	Department of Radiology
2015-17	Member	Bio-X Affiliated Faculty	Bio-X program
2015-17	Member	ChEM-H Fellow	Chem-H Institute

### University Service – UCSB

<i>Years</i>	<i>Position</i>	<i>Type of Service</i>	<i>Organization</i>
2014	Member	Graduate Symposium Judging Panel	Chemical Engineering
2014	Member	California Advisory Board	Cal-BRAIN Oversight Board
2014	Member	Central Fellowship Review Committee	UCSB Campus-wide
2014-15	Chair	Elings Fellowship Committee	California NanoSystems Institute
2013	Member	CSEP Review Committee	California NanoSystems Institute
2013-14	Member	Graduate Affairs Committee	Chemical Engineering
2013	Interim Director	Biological Nanostructures Laboratory	California NanoSystems Institute
2013	Chair	Search Committee for Director of BNL	California NanoSystems Institute
2013	Chair	Faculty Search Committee	Mechanical Engineering
2012	Member	Central Fellows Panel Discussion	College of Engineering
2012	Member	Advisory Committee on Space	Mechanical Engineering
2012-	Member	Chair's Advisory Committee on Planning	Mechanical Engineering
2012-	Member	Graduate Committee	Mechanical Engineering
2012-	Member	Department Development Committee	Mechanical Engineering
2012-	Member	CIRM Training Grant Review Committee	UCSB Campus-wide
2011-12	Member	Merits and Promotions Committee	Mechanical Engineering
2011-14	Member	Errett Fisher Fellowship Committee	UCSB Campus-wide
2011-	Associate Director		California NanoSystems Institute
2010-	Member	Executive Committee	California NanoSystems Institute
2010-12	Chair	Seminar Committee	Center for BioEngineering
2010-11	Member	Seminar Committee	California NanoSystems Institute
2010-12	Member	Mellichamp Chair Search Committee	UCSB Campus-wide
2010-11	Member	Graduate Admissions Committee	Mechanical Engineering
2009-10, 2013	Member	CIRM Fellowship Committee	UCSB Campus-wide
2009-10	Member	CNSI Graduate Fellowship Committee	UCSB Campus-wide
2008-09	Member	Advisory Committee on Space	Mechanical Engineering
2008-09	Member	Advisor for 1st Year Graduate Students	Mechanical Engineering
2008-	Member	Bioengineering Building Committee	UCSB Campus-wide
2008-	Co-Director		Center for Stem Cell Biology & Engineering

2008-09	Member	Biotechnology Space Planning Committee	UCSB Campus-wide
2008-09	Member	CNSI Fellowship Committee	UCSB Campus-wide
2007-09	Member	Graduate Screening Exam Committee	Mechanical Engineering
<i>Years</i>	<i>Position</i>	<i>Type of Service</i>	<i>Organization</i>
2006-07	Member	KAIST-UCSB Joint Undergraduate Program Committee	UCSB Campus-wide
2006-08	Member	Advisory Committee on Planning	Mechanical Engineering
2006-08	Member	Graduate Admissions Committee	BioMolecular Science & Engineering
2005-06	Member	UCSB Stem Cell Initiative Committee	UCSB Campus-wide
2005-07	Chair	Academic Advisor to all graduate students (Micro/Nano research area)	Mechanical Engineering
2005-07	Member	Faculty Search Committee	Mechanical Engineering
2005-06	Member	Faculty Search Committee	BioMolecular Science & Engineering
2005-06	Member	International Advisory Committee	College of Engineering
2005-06	Member	UCSB/Santa Barbara Cancer Center Committee	UCSB Campus-wide
2005-06	Member	Life Sciences Building Committee	UCSB Campus-wide
2004-06	Member	Graduate Screening Exam Committee	Mechanical Engineering
2004-05	Member	Proposition 71 Committee	UCSB Campus-wide
2004-05	Member	Mann Institute Development Committee	UCSB Campus-wide
2004-05	Member	NSF LEAPS Fellowship Panel	UCSB Campus-wide
2004-05	Member	Advisory Committee on Strategy Planning	Mechanical Engineering
2004-05	Member	Graduate Program Committee	Mechanical Engineering
2004-05	Member	Seminar Committee	BioMolecular Science & Engineering
2004-05	Member	CNSI Fellowship Committee	UCSB Campus-wide

## **TEACHING ACTIVITIES**

- Instructor for EE 235A and EE235B at Stanford
- Courses developed at Stanford:
  - EE 235A: Analytical Methods in Biotechnology I
  - EE 235B: Analytical Methods in Biotechnology II
- UCSB Academic Senate Faculty Teaching Award nominee (2005)
- Courses developed at UCSB:
  - Mechanical Engineering (ME 6): “Basic Circuits”
  - Mechanical Engineering (ME 291): “Physics of Transducers - Electromagnetism”
  - BioMolecular Science and Engineering (BMSE 253): “Analytical Biotechnology”

**CURRENT ADVISEES**

Dr. Kaiyu Fu	Postdoc	Alexandra Adams	Ph.D. Student
Dr. Yasser Gidi	Postdoc	Alyssa Cartwright	Ph.D. Student
Dr. Amani Hariri	Lecturer	Yihang Chen	Ph.D. Student
Dr. Vladimir Kesler	Postdoc	Deepak Gopalan	Ph.D. Student
Dr. Dehui Kong	Postdoc	Linus Hein	Ph.D. Student
Dr. Jean Kwak	Postdoc	Nicolo Maganzini	Ph.D. Student
Dr. Alexandra Rangel	Postdoc	Sharon Newman	Ph.D. Student
Dr. Yujia Sun	Postdoc	Jason Saunders	Ph.D. Student
Dr. Quang Tuan Trinh	Postdoc	Ian Thompson	Ph.D. Student
Dr. Helen Wu	Postdoc	Nicholas Vitale	Ph.D. Student
Dr. Zijian Yang	Postdoc	Leighton Wan	Ph.D. Student
Dr. Alex Yoshikawa	Postdoc	Alex White	Ph.D. Student
Dr. Brian Young	Postdoc	Benj Wollant	Ph.D. Student
Dr. Liwei Zheng	Postdoc	Steven Yee	Ph.D. Student

**FORMER ADVISEES**

Brandon Wilson	Postdoc 2022 Ph.D. 2020	CEO, Range Biosystems
Chan Ho Park	Postdoc 2022	Assistant Professor, Gachon University, South Korea
Hnin Hyein	Postdoc 2021	Assistant Professor, Hong Kong University of Science and Technology
Jun-Chau Chien	Postdoc 2020	Assistant Professor, National Taiwan University
Jiwon Seo	Postdoc 2021	Member of Technical Staff, LAM Research
Xizhen Lian	Postdoc 2020	Postdoc, UT Southwestern Medical Center – Dallas, TX
Diana Wu	Postdoc 2020 Ph.D. 2019	Research Scientist, Genentech – South San Francisco, CA
Liqin Zhang	Postdoc 2019	Assistant Professor, Peking University – Beijing, China
Mahla Poudineh	Postdoc 2019	Assistant Professor, University of Waterloo, Canada
Jing Pan	Postdoc 2019	Assistant Professor, University of Florida – Gainesville, FL
Chelsea L. Gordon	Postdoc 2018	Scientist, BD Biosciences
Anusha Pusuluri	Ph.D. 2018	Staff Scientist, Kala Pharmaceuticals - Waltham, MA
Peter Mage	Postdoc 2018 Ph.D. 2016	Research Scientist, BD Biosciences - San Jose, CA
Trevor Feagin	Postdoc 2017	Research Scientist, Los Alamos National Lab
Margaret Nakamoto	Postdoc 2017	Research Scientist, BD Biosciences - San Jose, CA
Jacob Hunho Jo	Postdoc 2017	Research Scientist, Innomed
Tracy Chuong	Ph.D. 2017	Engineer, Google
Sandra Hu	Scientist 2017	Self Employed
Dong-Wook Park	Postdoc 2017	Assistant Professor, Seoul City

		University, South Korea
Andrew Csordas	Postdoc 2017	Research Scientist, Amgen -Thousand Oaks, CA
Faye Fong	Ph.D. 2017	
Jia Niu	Postdoc 2017	Assistant Professor, Boston College - Boston, MA
Michael Gotrick	Ph.D. 2017	Postdoc, DAS lab, Stanford University
Jinwen Yu	Postdoc 2017	R&D Manager, Beijin Genomics Institute, China
Gurpreet Sekhon	Scientist 2017	Entrepreneur
Faye Walker	Ph.D. 2015	
Hao Qu	Postdoc 2015	Associate Professor, Hefei University of Technology (HFUT) - Hefei, Anhui, China
Seung Soo Oh	Postdoc 2014, Ph.D. 2012	Assistant Professor, Pohang University of Science and Technology (POSTECH) - Pohang, South Korea
J.P. Wang	Project Scientist 2014 Ph.D. 2013	CTO, Aptitude Medical Systems – Santa Barbara, CA
Scott Ferguson	Project Scientist 2013, Ph.D. 2011	CEO, Aptitude Medical Systems – Santa Barbara, CA
Yi Xiao	Research Scientist 2011	Assistant Professor (Chemistry), Florida International University - Miami, FL
Jackelyn Alva	Project Scientist 2012	Research Associate, UCLA School of Medicine – Los Angeles, CA
Qiang (Jackson) Gong	Postdoc 2013	COO, Aptitude Medical Systems - Santa Barbara, CA
Minseon Cho	Postdoc 2013	Scientist, University of Pennsylvania
Kuangwen Hsieh	Postdoc 2013, Ph.D. 2012	Whitaker International Scholar, Taiwan
Anders Olsen	Postdoc 2012	Research Scientist, UC-Los Angeles
Kareem Ahmad	Ph.D. 2012	Scientist, Illumina - La Jolla, CA
Stijn Deborggraeve	Postdoc 2011	Postdoc, Institute of Tropical Medicine - Antwerp, Belgium
Jean-Luc Fraikin	Postdoc 2011	Research Engineer, InDevR - Boulder, CO
Jianyuan Dai	Postdoc 2011	Postdoc, Florida International University - Miami, FL
Jonathan Adams	Ph.D. 2010	Postdoc, École Polytechnique Fédérale de Lausanne (EPFL) - Switzerland
Yun-Kyung Jung	Postdoc 2009	Postdoc, UC-Berkeley
Yanli Liu	Postdoc 2009	Research Scientist, Sandia Labs - Livermore, CA
Unyoung (Ashley) Kim	Ph.D. 2009	Assistant Professor (BioE), Santa Clara University - Santa Clara, CA

Aren Gerdon	Postdoc 2008	Assistant Professor (Chemistry), Emmanuel College - Boston, MA
Xinhui Lou	Postdoc 2008	Associate Professor (Chemistry), Capital Normal University - Beijing, China
Jiangrong (Karen) Qian	Ph.D. 2008	Researcher, CTEC - Hefei, China
Keerthi Nawarathna	Postdoc 2007	Research Associate, UC-Irvine
Liz Pavlovic	Postdoc 2007	Scientist, R&D Biomaterials at Allergan Medical - Goleta, CA
James Swenson	Postdoc 2007	Research Scientist, Pacific Northwest National Laboratory - Richland, WA
Eric Lagally	Postdoc 2006	Assistant Professor (BioE), University of British Columbia - Vancouver, BC
Sanghyun Oh	Postdoc 2006	Professor (ECE), University of Minnesota, Twin-Cities - Minneapolis, MN
Yanting Zhang	Postdoc 2006	Senior Engineer, Cynvenio Biosystems - Westlake Village, CA
Sandra Hu	Postdoc 2005	Member of Technical Staff, Applied Materials - Santa Clara, CA
Sangho Lee	Postdoc 2005	Member of Technical Staff, KITECH National Labs - Korea
Philip Tavernier	Postdoc 2004	Member of Technical Staff, Intel Corporation - Beaverton, OR
Lisan Viel	M.S. 2007	Business Analytics Associate Consultant, ZS Associates - Los Angeles, CA
Amarendra Singh	M.S. 2006	Black Rock Investments - New York, NY
Paul Banicevic	M.S. 2005	Aerospace Engineer, NASA Langley Research - Hampton, VA
Emily Gruber	Lab Intern 2012- 13	Student, University of Waterloo - Waterloo, ON
Forrest McClellan	Lab Intern 2012- 13	Student, Harvard Law School - Cambridge, MA
Ki Soo Park	Lab Intern 2012	Korea Advanced Institute of Science & Technology (KAIST)
Patrick Thevoz	Lab Intern 2012	Project Manager (Strategy, Marketing and R&D, Life Sciences), Alcimed - Lausanne, Switzerland
Nupur Maheshwari	Lab Intern 2011- 13	Research Assistant, University of Waterloo - Waterloo, ON
David Hoggarth	Lab Intern 2011- 12	Student, University of Waterloo - Waterloo, ON
Mayra Perez	Lab Intern 2009	Masters Student in Biomedical Sciences, San Francisco State University - San Francisco, CA
Steven Buchsbaum	Lab Intern 2009	Ph.D. candidate, UC Irvine
Kory Plakos	Lab Intern 2009	Ph.D. candidate, University of Oregon



**THESIS COMMITTEES**

Sarah Hooper	Department of Electrical Engineering, Stanford University
Ella Thomson	Department of Electrical Engineering, Stanford University
Raphael Eguchi	Department of Biochemistry, Stanford University
Matthew Grant	Department of Physics, Stanford University
Behrad Habib Afshar	Department of Electrical Engineering, Stanford University
Kai Chang	Department of Electrical Engineering, Stanford University
Matias Kaplan	Department of Bioengineering, Stanford University
Taewon Park	Department of Electrical Engineering, Stanford University
Louis Blankemeier	Department of Electrical Engineering, Stanford University
Ashwin Ramachandran	Department of Aeronautics and Astronautics, Stanford University
Caitlin Maikawa	Department of Bioengineering, Stanford University
Mo Wu	Department of Electrical Engineering, Stanford University
Ruishan Liu	Department of Electrical Engineering, Stanford University
Hyun Shin Park	Department of Chemistry, Stanford University
Eric Wei Wei	Department of Electrical Engineering, Stanford University
Spyridon Baltasvias	Department of Electrical Engineering, Stanford University
Michael G. Mohsen	Department of Chemistry, Stanford University
Doreen Chan	Department of Materials Science and Engineering, Stanford University
Lyndsay M. Stapleton	Department of Bioengineering, Stanford University
Hacer Umay Geyikci	Department of Electrical Engineering, Stanford University
Charmaine Chia	Department of Electrical Engineering, Stanford University
Daniel Heywood	Department of Mechanical Engineering, Stanford University
Yashar Rajavi	Department of Electrical Engineering, Stanford University
Jamin Koo	Department of Chemical Engineering, Stanford University
Xiaolin Hu	Department of Electrical Engineering, Stanford University
Anthony Hung Yu Ho	Department of Genetics, Stanford University
Jose Padovani	Department of Electrical Engineering, Stanford University
Sarah Edwards	Department of Chemistry, Stanford University, Stanford University
Yuhong Cao	Department of Materials Science and Engineering, Stanford University
Punnag Pahy	Department of Electrical Engineering, Stanford University

**INVITED TALKS & SEMINARS****2024:**

Jul 23-25—Plenary speaker at EMBL Microfluidics 2024 (Heidelberg, Germany)

**2023:**

Jan. 10—Korea University, Department of Chemical Engineering (Seoul, South Korea); Feb 21—School of Integrated Technology at Yonsei University (Songdo, South Korea); Apr 10-14—Materials Research Society Spring Meeting (San Francisco, CA); Apr 14—University of Connecticut, Department of Biomedical Engineering (Storrs, CT); May 4 -US Patent and Trademark Office (Stanford, CA); May 4-5—Keynote speaker

at SelectBIO Innovations in Microfluidics 2023 (Seattle, WA); May 11—University of Minnesota, Department of Electrical and Computer Engineering (Minneapolis, MN); Jun 1—Grunenthal GmbH (Aachen, Germany; virtual); Jul 19—Stanford BioE Bootcamp, Stanford Institute of Medicine Summer Research Program (Stanford, CA); Aug 22 – Keynote speaker at Korean Vacuum Society’s 65<sup>th</sup> Summer Annual Conference (Jeju-do, South Korea)

### **2022:**

Apr. 11—University of California, Santa Cruz Department of Electrical and Computer Engineering (Santa Cruz, CA); Sept. 8—Stanford Wearable Electronics Initiative (eWear) Symposium (Stanford, CA); Oct. 17-20—Innovation in Measurement Science Symposium (Virtual); Oct. 26—Stanford Biomedical Physics (BMP) Graduate Program (Stanford, CA); Oct. 24—King Abdullah University of Science and Technology (KAUST) (Saudi Arabia; virtual); Nov. 10—Stanford Center for Pediatric IBD and Celiac Disease Inaugural Research Symposium (Stanford, CA); Dec. 5-9—IEEE/EMBS Micro and Nanotechnology in Medicine (MNM) Conference (Kapolei, HI)

### **2021:**

Jan. 23-28—SPIE Photonics West BiOS (San Francisco, CA); Feb. 3—Indian Institute of Science (Bengaluru, India); Feb. 18—University of Massachusetts Amherst (Amherst, MA); Mar. 19—Department of Radiology, Stanford University (Stanford, CA); May 19—Seoul National University Department of Electrical and Computer Engineering (Seoul, South Korea); June 21—Grand Rounds Lecture, UC Davis Department of Nephrology (Davis, CA); June 24—Canary CREST Program (Palo Alto, CA); Aug. 29-Sept. 3—Annual Meeting of the International Society of Electrochemistry (Jeju Island, Korea); Sept 14—Generation Bio, R&D Organization (Cambridge, MA); Dec 6-10—IEEE/EMBS Micro and Nanotechnology in Medicine Conference (Kapolei, HI)

### **2020:**

Jan. 16—Stanford School of Medicine Board of Advisors (Stanford, CA); Feb. 7—Stanford Hospital Leadership Retreat (Stanford, CA); Mar. 2—Pittcon (Chicago, IL); Mar. 5—Bay Area Microfluidics Network (Newark, CA); June 3—Air Force Research Laboratory (Wright-Patterson AFB, OH); July 27—Rotary Club of Palo Alto (Palo Alto, CA); Aug. 31—Stanford Center for Human Systems Immunology (Stanford, CA); Aug. 28—US Department of Defense Wearables Summit; Oct. 4-9—Pacific Rim Meeting (PRiME) (Honolulu, HI); Nov. 1-4—International Conference on Electronic Materials and Nanotechnology for Green Environment (ENGE) (Jeju, Korea); Dec. 15—International Chemical Congress of Pacific Basin Societies (Pacifichem) (Honolulu, HI)

### **2019:**

Jan. 16—Precision Health and Integrated Diagnostics Center (PHIND) eWear Initiative Biosensor Workshop (Stanford, CA); Feb. 20—IEEE Engineering in Medicine and Biology Society (EMBS) (Stanford, CA); Mar. 20—Univ. Notre Dame Department of Chemistry (Notre Dame, IN); Mar. 21—Pittcon (Philadelphia, PA); April 1—Cate School (Carpinteria, CA); April 9—Stanford Computer Forum (Stanford, CA); April 16—Stanford Photonics Research Center (Stanford, CA); April 18—Chan Zuckerberg Biohub, (San Francisco, CA); May 1—Bill and Melinda Gates Foundation Sentinels Meeting (Stanford, CA); May 2-3—Institute for Immunity, Transplantation and Infection, (Stanford, CA); May 31—Stanford Photonics Research Center (Stanford, CA); June 6—BME Distinguished Speaker, UC-Davis (Davis, CA); June 26—Corning Technology Center (Sunnyvale, CA); July 26-27—11<sup>th</sup> Congress of the International Society for Autonomic Neuroscience (Los Angeles, CA); Aug. 25-29—American Chemical Society National Meeting (San Diego, CA); Sept. 5—Seoul National University Department of Electrical and Computer Engineering (Seoul, South Korea); Sept. 9—Seoul National University Department of Mechanical Engineering (Seoul, South Korea); Oct. 17—Bayer West Coast Innovation Center (San Francisco, CA); Nov. 20-22—National Institute of Health (Bethesda, MD); Dec. 1-6—Workshop on Innovative Nanoscale Devices and Systems (WINDS) (Waimea, HI)

### **2018:**

Jan. 12—Stanford Diabetes Research Center, Diabetes Bioengineering & Behavioral Sciences Affinity Group (Stanford, CA); Jan. 12—Stanford University, Material Science & Engineering Department Colloquium (Stanford, CA); Feb. 13—Harvard School of Engineering & Applied Sciences (Cambridge, MA); Feb. 14—MIT department of Mechanical Engineering (Cambridge, MA); Mar. 7—Stanford Center for Translational Research and Applied Medicine (Stanford, CA); Mar. 18-22—255th ACS National Meeting, (New Orleans, LA); April 12—Texas A&M University, Department of Chemistry (College Station, TX) May 6-8—Stanford Neurosciences Institute Retreat (Stanford, CA); May 9-10—Gates Foundation (Seattle, WA); May 14-16—NanoTech 2018 (Anaheim, CA); May 19—Graduate Alumni Day (Stanford, CA); May 22—Stanford Bio-X Frontiers in Interdisciplinary Biosciences Seminar (Stanford, CA); July 24- UT Southwestern Medical School (Dallas, TX); Nov 14—Department of Materials Science, POSTECH (Korea); Nov. 15—The Korean Society of Industrial and Engineering Chemistry (Seoul, Korea); Dec. 3—Stanford Maternal & Child Health Research Institute (Stanford, CA); Dec. 12-16—IEEE EMBS Micro and Nanotechnology in Medicine Conference (Kauai, HI)

### **2017:**

Jan. 26—Agilent Technologies, Inc. (Santa Clara, CA); Feb. 13—Stanford University Department of Bioengineering (Stanford, CA); Feb. 22—Stanford Translational Research and Applied Medicine Program (Stanford, CA); Feb. 27—University of California, Santa Cruz Department of Electrical Engineering (Santa Cruz, CA); Mar. 13-15—8<sup>th</sup> Alpbach Workshop on Affinity Proteomics (Alpbach, Austria); April 3—University of California, Los Angeles (Los Angeles, CA); April 28—California Institute of Technology (Pasadena, CA); May 5-6—City of Hope 12<sup>th</sup> RNA Consortium Meeting (Duarte, CA); June 21—Stanford Institute for Immunity, Transplantation and Infection Seminar Series (Stanford, CA); June 28—Verily Life Sciences (San Francisco, CA); Aug. 21—Stanford Translational Oncology Program (Stanford, CA); Nov. 6—Genentech, Inc. (San Francisco, CA); Nov. 8-9—Medical MEMS and Sensors 2017 Conference (Santa Clara, CA); Nov. 9—Biohub Investigators Meeting (San Francisco, CA); Dec. 6 — TIMtalks, BD Biosciences (San Jose, CA)

### **2016:**

Jan. 29—University of Missouri (Columbia, MO); Mar. 25—Applied Materials, Inc. (Santa Clara, CA); Mar. 29—University of Washington (Seattle, WA); Apr. 11-14—Keynote Speaker, Foundations of Nanoscience (Snowbird, UT); Apr. 19—UCSF Diabetes Center (San Francisco, CA); Apr. 20—Radiological Science Laboratory at Stanford (Stanford, CA); Apr. 23—City of Hope RNA Consortium (Duarte, CA); May 13—Stanford University Department of Genetics (Stanford, CA); May 26—Early Detection Seminar Series (Palo Alto, CA); June 24-25—APTAMERS 2016 (Bordeaux, France); June 30—Keynote Lecture, Qualcomm's QTech Forum (San Diego, CA); July 19-22—Keynote Speaker, International Symposium on Environmental Analytical Chemistry (Hamburg, Germany); July 21-23—European Molecular Biology Laboratory (EMBL) Microfluidics Conference (Heidelberg, Germany); Aug. 28-30—Roche Symposium "Molecular Monitoring on a Chip" (Buonas, Switzerland); Sept. 21-23—13<sup>th</sup> Key Symposium 2016: Bioelectronic Medicine (New York, NY); Sept. 25-28—12<sup>th</sup> Annual Meeting of the Oligonucleotide Therapeutics Society (Montreal, QC); Nov. 11—Merck (Kenilworth, New Jersey); Dec. 12-16—IEEE EMBS Micro and Nanotechnology in Medicine Conference (Waikoloa, HI)

### **2015:**

Feb. 1—Gordon Research Conference on RNA Nanotechnology (Ventura, CA); Feb. 7—RNA Consortium (San Diego, CA); Feb. 22—Cal-BRAIN Workshop (La Jolla, CA); Mar. 11—Alpbach Workshop on Affinity Proteomics (Alpbach, Austria); Apr. 17—SRI International Bioscience Seminar (Menlo Park, CA); Apr. 24—Nano Seminar Series (Berkeley, CA); May 10-11—ASCGT Symposium (New Orleans, LA); May 28-29—10<sup>th</sup> OOAC Symposium (Toronto, ON); June 2—Molecular Engineering Seminar Series (Seattle, WA); Aug. 6-7—9<sup>th</sup> Peptoid Summit (Berkeley, CA); Oct. 11-14—Korean Society for Biotechnology and Bioengineering Fall Meeting and International Symposium (Incheon, Korea); Oct. 15—Korea University (Seoul, Korea); Nov. 30—Stanford University Department of Chemistry (Stanford, CA); Dec. 15-20—2015 International Chemical Congress of Pacific Basin Societies (Honolulu, HI)

**2014:**

Feb. 8—Co-organizer and presenter, RNA Consortium (Santa Barbara, CA); Feb. 22—Board of Trustees talk (UCSB); Mar. 19—Feinstein Institute for Medical Research Centricity Symposium (Manhasset, NY); Apr. 4-5—American Association for Cancer Research annual meeting (San Diego, CA); Apr. 10—Center for Bioengineering Seminar Series (UCSB); Apr. 21-23—Materials Research Society Spring meeting (San Francisco, CA); Apr. 25—American Association for Clinical Chemistry 46th Annual Oak Ridge Conference (San Jose, CA); Apr. 27—Experimental Biology 2014 (San Diego, CA); May 15—Merck Pharmaceuticals (Rahway, NJ); May 30—University of California Irvine (Irvine, CA); Aug. 12—University College (London, UK); Sept. 10 - University of North Carolina (Chapel Hill, NC); Dec. 8 - IEEE EMBS Micro/Nanotechnology in Medicine Conference (Honolulu, HI)

**2013:**

Jan. 26—RNA Consortium (Duarte, CA); Feb. 5—Materials Research Outreach Symposium (UCSB); Feb. 14—Molecular, Cellular and Developmental Biology Symposium (UCSB); Mar. 11-16—Affinity Proteomics Workshop (Alpbach, Austria); Mar. 19—ETH (Basel, Switzerland); May 10—Max Planck Institute (Berlin, Germany); July 18—University of Augsburg (Augsburg, Germany); Aug. 26—Agilent Technologies (Santa Clara, CA); Sept. 12—Stanford School of Medicine (Stanford, CA); Oct. 4—Targeted RNA Therapeutics and Diagnostics Conference (Naples, Italy); Dec. 16-17—Bioelectronic Medicines Summit (New York, NY); Dec. 3—SuperFACS Seminar, Sogang University (Seoul, Korea)

**2012:**

Jan. 30—CNSI Karolinska workshop (Los Angeles, CA); Feb. 4—RNA Consortium (Miami, FL); Feb. 16—Chemical Eng. (UCSB); Mar. 1—ICB Army-Industry Collaboration Conference (Santa Barbara, CA); Apr. 16—Future Diagnostics Conference (Irvine, CA); May 9—Keynote Speaker - MedImmune Science Days (Gaithersburg, MD); June 24-26—International Conference on Bioengineering and Nanotechnology (Berkeley, CA); Sept. 14—Department of Biomedical Engineering, Columbia University (New York, NY); Oct. 26—MIT Mechanical Engineering Colloquium (Cambridge, MA); Dec. 10—Protein Capture Consortium (Rockville, MD)

**2011:**

Jan. 20—UCSB-SBMRI workshop (La Jolla, CA); Feb. 9—ICB Army-Industry Collaboration Conference (Santa Barbara, CA); Mar. 12—Aptamer Symposium (City of Hope, Duarte, CA); Mar. 30—UC Berkeley; Apr. 12—E. Nagy Award Lecture at NIH (Bethesda, MD); Apr. 22—Harvard University (Cambridge, MA); June 26—Gordon Conference on Microfluidics (Waterville Valley, NH); Aug. 29—Korea Advanced Institute of Science and Technology (Taejon, Korea); Sept. 2—Seoul National University (Seoul, Korea); Oct. 20—Purdue University (West Lafayette, IN); Nov. 17—Nanohealth Symposium (Seoul, Korea); Dec. 15—Protein Capture Meeting at NIH (Bethesda, MD)

**2010:**

Jan. 13—Armed Forces Institute for Regenerative Medicine (St. Petersburg, FL); Jan. 28—Burnham Institute for Medical Research (La Jolla, CA); Feb. 24—UCLA School of Medicine, Pediatrics; Mar. 11—U. of Twente, (Enschede, the Netherlands); Mar. 30—BioEngineering at Berkeley (Berkeley, CA); Apr. 15—Michigan State University (East Lansing, MI); Apr. 21—AACC Oakridge Conference (San Jose, CA); May 18—California Institute of Technology (Pasadena, CA); Sept. 21—Young Presidents' Organization (Santa Barbara, CA); Oct. 20—Vanderbilt University (Nashville, TN); Nov. 15—NanoBioTech 2010 (Montreux, Switzerland)

**2009:**

Feb. 19—ECE colloquium (U. of Minnesota); Mar. 5—Musculoskeletal Seminar at Cleveland Clinic (Cleveland, OH); Apr. 20—SomaLogic (Boulder, CO); Apr. 22—City of Hope Colloquium (Duarte, CA); Center on Proteolytic Pathway at Burnham Institute for Medical Research (La Jolla, CA); May 13—ALA-

ACHEMA (Frankfurt, Germany); June 25—Korean Molecular Biology Society Meeting (Seoul, Korea); Sept. 3—Beckman-Coulter, Inc. (Miami, FL); Oct. 26—BioEngineering Insights (UCSB); Nov. 3—Society for Biomolecular Sciences conference (San Diego, CA); Dec. 3—University of Wisconsin (Madison, WI); Dec. 9—UCLA School of Medicine (Los Angeles, CA)

### **2008:**

Jan. 18—UCLA Dept. Bioengineering; Mar. 24—Dept. Bioengineering at KAIST (Daejeon, Korea); June 27—Errett Fisher Foundation (Santa Barbara, CA); Aug. 20—Armed Force Institute for Regenerative Medicine (Pittsburgh, PA); Aug. 30—Arnold & Mabel Beckman Foundation (Irvine, CA); Sept. 22—Molecular Imaging Program at Stanford (Stanford, CA); Oct. 7— Mechanical Engineering at Cornell University (Ithaca, NY); Oct. 13— CRUMP Institute for Molecular Imaging at UCLA Medical School (Los Angeles, CA)

### **2007:**

Mar. 5—McGowan Inst. of Regenerative Medicine (Pittsburgh, PA); June 28—DARPA workshop (Washington, DC); Sept. 7—Chemistry & Biochemistry, Arizona State University (Phoenix, AZ); Sept. 25—General Dynamics (San Diego, CA); Oct. 8—MicroTAS conference (Paris, France); Nov. 15—The Lasker Foundation for Regenerative Medicine (Palo Alto, CA)

### **2006:**

Feb. 2—Chemical Biodefense Center at Walter Reed Army Institute of Research (Silver Spring, MD); Feb. 7— UW Nanoscience & Technology Seminar (Seattle, WA); Feb. 17—UCB Nanoscience & Engineering Seminar (Berkeley, CA); Apr. 10—Cal Tech Workshop on Biological Large Scale Integration (Pasadena, CA); May 4—Interdepartmental Seminar at Université of Neuchâtel (Neuchâtel, Switzerland); May 5—École polytechnique fédérale de Lausanne (Lausanne, Switzerland); May 8—IMTEK (Freiburg, Germany); May 9—Fraunhofer Institute (Freiburg, Germany); July 24—Physics at KAIST (Daejeon, Korea); Sept. 11—UCD Joint workshop Nano/Cancer Biotechnology at the Cancer Center (Davis, CA); Oct. 26— Engineering Directorate meeting at Lawrence Livermore National Lab (Livermore, CA)

### **2005:**

Jan. 20—Mechanical Engineering at UCLA (Los Angeles, CA); Feb. 7—Mechanical Engineering at UCSD (La Jolla, CA); May 19—World Presidents' Organization Meeting (UCSB); June 2—Army Research Lab (Adelphi, MD); June 20—Stanford University Medical School (Stanford, CA); Sept. 28—U. of Wisconsin Medical School (Madison, WI); Nov. 2—Dept. Molecular & Medical Pharmacology at UCLA Medical School (Los Angeles, CA); Nov. 8—MEMS & BioMEMS conference (San Francisco, CA); Dec. 12—Winter School at KAIST (Daejeon, Korea)

### **2004:**

Oct. 4— Chemical & Materials Division at Lawrence Livermore National Lab (Livermore, CA); Oct. 17—UC Biotechnology Research & Education Program workshop (Davis, CA); Oct. 27— Electrical Engineering at USC (Los Angeles, CA)

## **CONTRACTS & GRANTS**

### **Current Funding**

<i>Years</i>	<i>Source</i>	<i>Title</i>	<i>Amount</i>	<i>Role</i>
2021-2024	The Helmsley Trust	Development of continuous insulin sensor for T1D	\$4,115,380	PI

2022-2024	Stanford Maternal & Child Health Research Institute (MCHRI)	Molecular Tracking Pill Technology for P-IBD	\$200,000	PI
2022-2024	Stanford Maternal & Child Health Research Institute (MCHRI)	Instant ELISA: Extremely Rapid Biomarker Detection at the Bedside	\$200,000	PI
2022-2024	Precision Health and Integrated Diagnostics (PHIND) Center	Ingestible Molecular Tracker	\$200,000	PI
2021-2023	Bayer AG	Detection of Recombinant Human Factor 8 in Blood Samples	\$1,023,100	PI
2021-2023	Bayer AG	Detecting Small Molecule Drugs to Treat Disseminated Intravascular Coagulation (DIC)	\$436,100	PI
2021-2022	International Alliance for Cancer Early Detection (ACED) Pilot	Novel tools for molecular imaging of pancreatic preneoplasia	\$127,510	PI
2018-2022	NIH	Real-time biosensor for mapping the function of the pancreas	\$4,541,716	PI
2018-2022	CRUK Cambridge Centre/Canary Foundation	Early cancer detection through transcriptomic analysis of host immune cells	\$66,000	Co-PI
2017-2022	NIH	Canary Cancer Research Education Summer Training (Canary Crest) Program	\$1,198,935	PI

### Past Funding

<i>Years</i>	<i>Source</i>	<i>Title</i>	<i>Amount</i>	<i>Role</i>
2021-2022	MedTech Pilot	Point-of-Care Measurement of Vancomycin Levels in the ICU	\$20,000	Co-PI
2018-2022	NIH	Integrated Instrument for non-natural aptamer generation	\$1,256,000	PI
2017-2022	CZ Biohub	Investigator Program	\$1,432,500	PI
2017-2022	Stanford Neurosciences Institute	Pilot grants	\$105,000	PI
2020-2021	Genentech, Inc.	PLA-SEQ: high-sensitivity assay for multiplexed detection of COPD biomarkers	\$217,000	PI
2020-2021	Bayer AG	CMOS Integrated Molecular Detection System (CiMOD)	\$586,500	PI
2019-2021	BARDA	Minimally invasive monitoring of stress state	\$698,251	PI
2019-2021	Stanford SystemX Alliance	CMOS technology for the rapid detection of sepsis biomarkers at the point-of-care	\$130,000	PI
2019-2020	Stanford Maternal & Child Health Research Institute (MCHRI)	Real-time Biosensors for Treating Type I Diabetes in Children	\$200,000	PI
2019-2020	BARDA	Lab-on-a-Dust System: A platform for distributed molecular diagnostics	\$695,358	PI
2018-2020	WuTsai Neurosciences	Real-time Biosensors measuring	\$200,000	PI

Institute					
2018-2019	Gates Center for Human Systems Immunology	Ultrasensitive Detection of TB Latency Through Aptamer-Enabled Kinetic Proofreading	\$200,000	PI	
2017-2018	Gates Center for Human Systems Immunology	High-resolution multiplexed cytokine quantification assay	\$200,000	PI	
2017-2018	Stanford Diabetes Research Center (SDRC)	Real-time biosensor for continuous in vivo detection of glucose	\$25,000	PI	
2016-2017	DARPA	Binder-Finder through Machine-Learning (BMFL)	\$1,095,126	PI	
2016-2017	Merck Sharp & Dohme Corp	Evaluation of differential protein expression in Jurkat T cell model of HIV latency	\$145,569	PI	
2014-2017	DARPA	Encode-Sort-Decode (ESD): Integrated System for Discovery of Non-Natural Affinity Reagents	\$3,989,992	PI	
2010-2017	Army Research Office (ARO)	Systems Biology of Coagulation and Trauma-Induced Coagulopathy	\$1,127,377	Co-PI	
2014-2017	Keck Foundation	Continuous Real-Time Measurements of Psychoactive Molecules in the Brain	\$1,000,000	Co-PI	
2009-2016	NIH	U01: Midwestern Progenitor Cell Consortium	\$927,238	Co-PI	
2011-2016	MedImmune	Detection of Host Cell Proteins	\$1,383,185	PI	
2010-2015	NIH	R01: Rapid Detection of Diagnostic Chemokines	\$982,701	Co-PI	
2009-2014	NIH	R01: Polypeptide Design with Proteomic Scope via Microfluidic mRNA Display	\$670,790	MPI	
2008-2014	Army Research Office (ARO)	High Throughput Selection of Protein-Based Affinity Reagents via Microfluidic Separation	\$834,499	PI	
2011-2013	Army Research Office (ARO)	Technology of Continuous Real-Time Monitoring of Biomarkers in Living Organisms	\$48,750	PI	
2010-2013	Sanford Burnham Institute	Hybrid Nanotechnologies for Detection and Synergistic Therapies for Breast Cancer	\$200,000	PI	
2009-2013	NIH	R01: Strain Specific Detection of Influenza at the Point-of-Care	\$1,542,874	PI	
2009-2010	NIH	R21: Micromagnetic Aptamer PCR System for Ultrasensitive Multiplexed Protein Detection	\$328,422	PI	
2008-2011	DOD/AFIRM	Army Institute of Regenerative Medicine (AFIRM): High Purity Magnetophoretic Sorting for Transplant Therapies	\$525,000	PI	
2008-2011	Office of Naval Research (ONR)	Ready-To-Use Aptamer Biosensors (RAB) for DNT and RDX	\$637,435	PI	
2008-2010	NIH	R21: Rapid Generation of High Affinity Protein Sensor Elements	\$405,000	PI	

2007-2009	Errett Fisher Foundation	Directed Evolution of Molecules in Microfluidic Systems	\$150,000	PI
2007	CIRM	UCSB Laboratory for Stem Cell Biology and Engineering	\$2,263,000	Co-PI
2006-2009	Army Research Office (ARO)	Rapid Affinity Reagent Isolation for Pathogen Detection	\$2,100,000	PI
2006-2008	DOE/LLNL	Integrated Aptamer Based Protein Sensor II	\$320,000	PI
2006-2007	DOD/USAMRIC	Aptamers as Bioscavengers	\$125,000	PI
2006-2007	University of California	Instructional Improvement Grant for ME 6	\$6,241	PI
2005-2008	DOE/LLNL	Disposable Affinity Ligand Isolation of Pathogens	\$150,000	PI
2005-2008	Arnold & Mabel Beckman Foundation*	Electrokinetic Methods for Ultrahigh Throughput Separation of Human Hematopoietic Stem Cells for Autologous Transplantation Therapy	\$264,000	PI
2005-2008	Army Research Office (ARO)	Development of a Portable Microfabricated Biosensor	\$2,100,000	Co-PI
2005-2006	DOE/LLNL	Integrated Aptamer Based Protein Sensor I	\$400,000	PI
2005-2006	UC – Cancer Research	Specific Conjugation of Mammalian Cells to Dielectrophoretically Engineered Beads**	\$50,000	PI
2005-2006	DARPA	Center for Nano Initiative in Defense from Serotyping to Genotyping	\$130,000	PI
2005-2006	Army Research Office (ARO)	High Purity Microbial Cell Sorting on Chip	\$110,000	PI
2004-2007	Office of Naval Research (ONR)*	Disposable, Ultrahigh Performance Rare Cell Sorting Device	\$300,000	PI
2004-2006	University of California	Biotechnology Research and Education Program: Dielectric Labeling and Manipulation of Cells	\$100,000	PI
2004-2005	University of California	Regent's Junior Faculty Fellowship: Mammalian Cell Sorting	\$10,000	PI
2004-2005	DARPA/DMEA	Center for Nano Initiative in Defense from Serotyping to Genotyping	\$130,552	PI
2004-2005	Samsung Corporation	Samsung Research Fellowship Award: BioMEMS Technology	\$110,000	PI
2004-2005	University of California	Regent's Junior Faculty Fellowship: Micromachined Cell Sorter	\$10,000	PI
2004-2005	Army Research Office (ARO)	Characterization of Piezoelectricity in Biological Materials	\$133,000	PI



## **LIST OF PUBLICATIONS**

**Patents:** 10 issued patents (available upon request)

### **Book:**

**H. T. Soh**, K. Wilder-Guarini, C.F. Quate. *Scanning Probe Lithography*, Kluwer Academic Publishers, Norwell, MA, 2001  
ISBN: 0-7923-7361-8

### **Journal Articles: (in reverse chronological order)**

- M. Friedel, I. Thompson, G. Kasting, R. Polsky, D. Cunningham, **H.T. Soh**, J. Heikenfeld. "Dermal Interstitial Fluid as a Proxy for Blood Analyte Measurements: Exciting Prospects and Harsh Realities." *Nature Biomedical Engineering* (2023)
- A. Yoshikawa, A. Rangel, L. Zheng, L. Wan, L. Hein, A. Hariri, M. Eisenstein, **H.T. Soh**. "A massively parallel screening platform for converting aptamers into molecular switches." *Nature Communications* (2023)
- S. Newman, B. Wilson, D. Mamerow, B. Wollant, H. Nyein, Y. Rosenberg-Hasson, H. Maecker, M. Eisenstein, **H.T. Soh**. "Extending the dynamic range of biomarker quantification through molecular equalization." Accepted, *Nature Communication* (2023)
- H. Qu, M. Zheng, Q. Ma, L. Wang, Y. Mao, M. Eisenstein, **H.T. Soh**, L. Zheng. "Allosteric Regulation of Aptamer Affinity through Mechano-Chemical Coupling." *Angewandte Chemie International Edition* (2023)
- L. Wan, A. Yoshikawa, M. Eisenstein, **H.T. Soh**. "A high-throughput strategy for enhancing aptamer performance across different environmental conditions." *ACS Sensors* (2022)
- K. Park, A. Choi, H. Kim, I. Park, M. Eom, S. Yeo, R. Son, T. Park, G. Lee, **H.T. Soh**, Y. Hong, S. Pak. "Ultra-sensitive label-free SERS biosensor with high-throughput screened DNA aptamer for universal detection of SARS-CoV-2 variants from clinical samples." *Biosensors and Bioelectronics* (2023)
- D. Wu, T. Feagin, P. Mage, A. Rangel, L. Wan, A. Li, J. Coller, M. Eisenstein, S. Pitteri, **H.T. Soh**. "Flow-Cell-Based Technology for Massively Parallel Characterization of Base-Modified DNA Aptamers." *Analytical Chemistry* (2023)
- A. Hariri, A. Cartwright, C. Dory, Y. Gidi, S. Yee, K. Fu, K. Yang, D. Wu, I. Thompson, N. Maganzini, T. Feagin, B. Young, B. Afshar, M. Eisenstein, M. Digonnet, J. Vuckovic, **H.T. Soh**. "Continuous optical detection of small-molecule analytes in complex biomatrices." *bioRxiv* (2023)
- I. Thompson, J. Saunders, L. Zheng, A. Hariri, N. Maganzini, A. Cartwright, J. Pan, M. Eisenstein, **H.T. Soh**. "An Antibody-Based Molecular Switch for Continuous Biosensing." *bioRxiv* (2023)
- A. Alvarez-Buylla, M. Moya-Garzon, A. Rangel, E. Tapia, J. Tanzo, **H.T. Soh**, L. Coloma, J. Long, L. O'Connell. "Binding and sequestration of poison frog alkaloids by a plasma globulin." *bioRxiv* (2023)
- J. Chien, Y. Tsai, S. Baker, K. Gates, A. Arbabian, **H.T. Soh**. "Wireless Monitoring of Small Molecules in a Freely Moving Animal using Electrochemical Aptamer Biosensors." (Submitted, 2023)
- N. Maganzini, A. Reschke, A. Cartwright, Y. Gidi, I. Thompson, A. Hariri, Y. Rosenberg-Hasson, J. Pan, M. Eisenstein, T. Cornell, **H. T. Soh**. "A rapid ELISA platform with no sample preparation requirement." *bioRxiv* (2023)
- A. Yoshikawa, L. Wan, L. Zheng, M. Eisenstein, **H. T. Soh**. "A system for multiplexed selection of aptamers with exquisite specificity without counter-selection." *Proceedings of the National Academy of Sciences* (2022)

- D. Chan, J. Chien, E. Axpe, L. Blankemeier, S. W. Baker, S. Swaminathan, V. A. Piunova, D. Y. Zubarev, **H. T. Soh**, E. A. Appel. "Combinatorial Polyacrylamide Hydrogels for Preventing Biofouling on Implantable Biosensors." *Advanced Materials* (2022)
- A. Hariri, S. Newman, S. Tan, D. Mamerow, M. Eisenstein, A. Dunn, **H. T. Soh**. "Improved immunoassay sensitivity and specificity using single-molecule colocalization." *Nature Communications* (2022)
- N. Maganzini, I. Thompson, B. D. Wilson, **H. T. Soh**. "Pre-equilibrium biosensors: A new approach towards rapid and continuous molecular measurements." *Nature Communications* (2022)
- D. Wu, C. Gordon, J. Shin, M. Eisenstein, **H. T. Soh**. "Directed Evolution of Aptamer Discovery Technologies." *Accounts of Chemical Research* (2022)
- T. Trinh, I. Thompson, F. Clark, J. Remington, M. Eisenstein, J. Li, **H.T. Soh**. "A Photoresponsive Intramolecular Triplex Motif That Enables Rapid and Reversible Control of Aptamer Binding Activity." *ACS Nano* (2022)
- J. Wang, F. Soto, P. Ma, H. Yanh, S. Chen, J. Wang, C. Liu, D. Akin, K. Fu, P. Chen, **H.T. Soh**, J. Wu, U. Demirci. "Acoustic Fabrication of Living Cardiomyocyte-based Hybrid Biorobots." *ACS Nano* (2022)
- V. Kesler, K. Fu, Y. Chen, C. Park, M. Eisenstein, B. Murmann, **H. T. Soh**. "Tailoring electrode surface charge to achieve discrimination and quantification of chemically similar small molecules with electrochemical aptamers." *Advanced Functional Materials* (2022)
- B. D. Wilson, M. Eisenstein, **H. T. Soh**. "A Metric for Quantifying the Resolution of Molecular Assays." *Nature Biomedical Engineering* (2021)
- J. W. Seo, K. Fu, S. Correa, M. Eisenstein, E. A. Appel, **H. T. Soh**. "Real-time monitoring of pharmacokinetics within tumor tissue in live animals." *Science Advances* (2021)
- A. Yoshikawa, A. Rangel, T. Feagin, E. Chun, L. Wan, A. Li, L. Moekl, M. Eisenstein, S. Pitteri, **H. T. Soh**. "Discovery of indole-modified aptamers for highly specific recognition of protein glycoforms." *Nature Communications* (2021)
- K. Fu, J. W. Seo, V. Kesler, N. Maganzini, B. D. Wilson, M. Eisenstein, **H. T. Soh**. "Accelerated electron transfer in nanostructured electrodes improves the sensitivity of electrochemical biosensors." *Advanced Science* (2021)
- H. Lee, S. Sohn, S. Alizadeh, S. Kwon, T. Kim, S. Park, **H. T. Soh**, A. Mani, S J Kim. "Overlimiting current in non-uniform arrays of microchannels: Recirculating flow and anti-crystallization." *Nano Letters* (2021)
- M. Poudineh, C. L. Maikawa, E. Y. Ma, J. Pan, D. Mamerow, Y. Han, S. W. Baker, A. Beirami, M. Eisenstein, S. Kim, J. Vuckovic, E. A. Appel, **H. T. Soh**. "Continuous detection of glucose and insulin in live animals." *Nature Biomedical Engineering* (2020)
- I. A. P. Thompson, L. Zheng, M. Eisenstein, **H. T. Soh**. "Rational Design of Aptamer Switches with Programmable pH Response." *Nature Communications*, 11, 2946 (2020)
- A. Rangel, A. Hariri, M. Eisenstein, **H. T. Soh**. "Engineering aptamer switches for multifunctional stimulus-responsive nanosystems." *Advanced Materials* (2020)
- V. Kesler, B. Murmann, **H. T. Soh**. "Going Beyond the Debye Length: Overcoming Charge Screening Limitations in Next-Generation Bioelectronic Sensors." *ACS Nano* (2020)
- H. Qu, Q. Ma, L. Wang, Y. Mao, M. Eisenstein, **H. T. Soh\***, L. Zheng\*. "Measuring aptamer folding energy using a molecular clamp." *Journal of the American Chemical Society* 142, 27, 11743-11749 (2020)

- B. D. Wilson, **H. T. Soh**. "Re-evaluating the conventional wisdom about binding assays." *Trends in Biochemical Sciences* 45 (8) 639-649 (2020)
- J. Wang, R. Ahmed, Y. Zeng, K. Fu, **H. T. Soh**, U. Demirci. "Engineering the Interaction Dynamics between Nano-Topographical Immunocyte-Templated Micromotors across Scales from Ions to Cells" *Small* 16 (49) (2020)
- J. Chien, S. W. Baker, **H. T. Soh**, A. Arabian. "Design and Analysis of a Sample-and-Hold CMOS Electrochemical Sensor for Aptamer-based Therapeutic Drug Monitoring." *IEEE Journal of Solid-State Circuits* 55 (11) 2914-2929 (2020)
- B. Kang, S. V. Park, **H. T. Soh**, S. S. Oh. "A Dual-sensing DNA Nanostructure with an Ultra-broad Detection Range." *ACS Sensors* 4 (10) 2802-2808 (2019)
- B. Wilson, A. Hariri, I. Thompson, M. Eisenstein, **H. T. Soh**. "Independent Control of the Thermodynamic and Kinetic Properties of Aptamer Switches." *Nature Communications* 10, 5079 (2019)
- P.L. Mage, A.T. Csordas, T. Brown, D. Klinger, M. Eise, S. Mitragotri, C.Hawker and **H. T. Soh**. "Shape-based Separation of Synthetic Microparticles." *Nature Materials* 18, 82-89 (2019)
- C. K. L. Gordon\*, D. Wu\*, A. Pusuluri, T. Feagin, A. T. Csordas, M. Eisenstein, C. J. Hawker, J. Niu, **H. T. Soh**. "Click-Particle Display for Base-Modified Aptamer Discovery." *ACS Chemical Biology* 14 (12) 2652-2662 (2019)
- B. Wilson, M. Eisenstein, **H. T. Soh**. "High-Fidelity Nanopore Sequencing of Ultra-Short DNA Targets." *Analytical Chemistry* 91 (10) 6783-6789 (2019)
- Barnes, L. V, D.M. Heithoff, S.P. Mahan, G.N. Fox, A. Zambrano, J. Choe, L.N. Fitzgibbons, J.D. Marth, J.C. Fried, **H. T. Soh\***, M.J. Mahan\*. "Smartphone-based pathogen diagnosis in urinary sepsis patients." *EbioMedicine* 36, 73-82 (2018)
- T. Feagin, N. Maganzini, **H. T. Soh** "Strategies for Creating Structure-Switching Aptamers." *ACS Sensors* 3 (9) 1611-1615 (2018)
- C.K. L. Gordon, M. Eisenstein, **H. T. Soh** "Direct Selection Strategy for Isolating Aptamers with pH-Sensitive Binding Activity." *ACS Sensors* 3 (12) 2574-2580 (2018)
- M. Gotrik, G. Sekhon, S. Saurabh, M. Nakamoto, M. Eisenstein, **H. T. Soh**. "Direct Selection of Fluorescence-Enhancing RNA Aptamers." *Journal of the American Chemical Society* 140 (10) 3583-3591 (2018)
- A. Pusuluri, V. Krishnan, V. Lensch, A. Sarode, E. Bunyan, D. Vogus, S. Menegatti, **H. T. Soh\***, S. Mitragotri\*. "Treating Tumors at Low Drug Doses Using an Aptamer-Peptide Synergistic Drug Conjugate." *Angewandte Chemie International Edition* 58 (5) 1437-1441 (2018)
- J. McGivney, A. Csordas, F. Walker, E. Bagley, E.Gruber, P. Mage, J. Casas-Finet, M. Nakamoto, M. Eisenstein, C. Larkin, R. Strouse, **H. T. Soh**. "A Strategy for Generating Sequence-Defined Aptamer Reagent Sets for Detecting Protein Contaminants in Biotherapeutics." *Analytical Chemistry* 90 (5) 3262-3269 (2018)
- P.L. Mage, B.S. Ferguson, D. Maliniak, K.L Ploense, T.E. Kippin, and **H.T. Soh** "Closed-loop Control of Circulating Drug Levels in Live Animals." *Nature Biomedical Engineering* 114 (4) 645-650 (2017)
- J. Niu, D. J. Lunn, A.Pusuluri, J.I. Yoo, M.A. O'Malley, S. Mitragotri, **H. T. Soh\***, C. J. Hawker\* "Engineering live cell surfaces with functional polymers via cytocompatible controlled radical polymerization." *Nature Chemistry* 9, 537-545 (2017)
- T. Chuong, A. Pallaoro, C. Chaves, Z. Li, J. Lee, M. Eisenstein, G.D. Stucky, M. Moskovits, and **H. T. Soh** "A dual-reporter SERS-based biomolecular assay with reduced false-positive signals." *Proceedings of the National Academy*

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- J.P. Wang, J. McDermott, J. Yu, R. Lagrois, Q. Gong, W. Greenleaf, M. Eisenstein, B.S. Ferguson, and **H.T. Soh**. "Multi-Parameter Particle Display (MPDD): A Quantitative Screening Method for Discovery of Highly Specific Aptamers." *Angewandte Chemie International Edition* 56 (3) 744-747 (2017)
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