

## Shana O. Kelley

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DOB: July 20, 1970

### Education

Ph.D.	Chemistry	<b>California Institute of Technology</b>	1999
B.A.	Chemistry ( <i>summa cum laude</i> )	<b>Seton Hall University</b>	1994

### Professional experience

<b>President</b>	Chan Zuckerberg Biohub Chicago	2023 - present
<b>Neena Schwartz Professor</b>	Northwestern University	2021 - present
<b>University Professor</b>	University of Toronto	2018 - 2021
<b>Professor</b>	University of Toronto	2006 - 2018
<b>Professor</b>	Boston College, Chemistry	2006
<b>Assistant Professor</b>	Boston College, Chemistry	2000 - 2006
<b>NIH Postdoctoral Fellow</b>	Scripps Research Institute, Mol. Bio.	1999 - 2000

### Awards and honors

Member, National Academy of Inventors	2023
Member, American Academy of Arts and Sciences	2023
Guggenheim Fellowship	2022
ACS Doolittle Award	2022
Fellow, Royal Society of Canada	2021
Order of Ontario	2021
AFPC Pfizer Research Career Award	2020
University Professor Award, University of Toronto	2018
Distinguished Visiting Fellow, Rowland Institute, Harvard University	2018
ACS Inorganic Nanoscience Award	2017
Gabor A. and Judith K. Somorjai Visiting Miller Professorship (UC Berkeley)	2017
NSERC Brockhouse Prize	2016
SLAS Innovation Award	2016
Fellow, American Institute of Biological and Medical Engineers	2016
Fellow, Canadian Academy of Health Sciences	2016
Fulbright Canada Chair at the California NanoSystems Institute, UCLA	2013
Distinguished Professor Award, University of Toronto	2013
Queen Elizabeth II Diamond Jubilee Medal	2012
ORION Leadership Award	2012
Steacie Prize	2011
University of Toronto Inventor of the Year	2011
NSERC E.W.R. Steacie Fellowship	2010
Named one of "Canada's Top 40 under 40"	2009
Pittsburgh Conference Achievement Award	2006
Camille Dreyfus Teacher-Scholar Award	2005
TR100: Voted a top 100 innovator by MIT's Technology Review	2004
Alfred P. Sloan Fellowship	2004
NSF CAREER award	2004
Research Corporation Innovation Award	2000
Dreyfus New Faculty Award	2000

Herbert Newby McCoy Thesis Award (Caltech)	1999
Everhart Distinguished Graduate Student Award (Caltech)	1998

### **Professional activities**

*Editorial Advisory Boards*, ACS Nano and Nano Letters, 2020 – present.  
*Chemistry Advisory Board*, Stealth Biotherapeutics, 2020 – 2022.  
*Founder and Board Director* CTRL Therapeutics, 2019 – present.  
*Founder and Board Director*, Arma Biosciences, 2020 – present.  
*Scientific Advisory Board*, Sartorius AG, 2019 – present.  
*Scientific Advisory Committee*, Argonne National Laboratory, 2018 – 2023.  
*Board Director*, Fight Against Cancer Trust, 2017 – 2023.  
*Board Director*, Canadian Academy of Health Sciences, 2017 - 2021.  
*Editorial Advisory Board*, Journal of the American Chemical Society, 2016 – present.  
*Executive Leadership Team & Co-Director*, Medicine by Design (CFREF), 2016 – 2021.  
*Director*, PRiME – A Precision Medicine Initiative, 2019 – 2021.  
*Associate Editor*, ACS Sensors, 2015 – present.  
*Board Director*, Ontario Genomics, 2016 – 2019.  
*Program Committee*, ACS Biological Chemistry Div., 2016 – 2019.  
*Co-Founder and Board Director*, Xagenic Inc., 2010 - 2017 (acquired by General Atomics).  
*Co-Founder and Consultant*, GeneOhm Sciences, 2000 - 2006 (acquired by Becton Dickinson).  
*Board Director*, Ohio Children’s Foundation, 1995 - 2000

### **Publications from Kelley Research Group (> 25,000 citations)**

1. “Active-reset protein sensors enable continuous in vivo monitoring of inflammation” H. Zargartalebi, S. Mirzaie, A. Ghavamin-Ejad, S.U. Ahmed, F. Esmaeili, A. Geraili, C.D. Flynn, D. Chang, J. Das, A. Abdrabou, E.H. Sargent, S. O. Kelley  
*Science*, **2024**, 386, 6726, 1146-1153.
2. “Self-Healing Materials for Bioelectronic Devices” C. Liu, S.O. Kelley, Z. Wang  
*Advanced Materials*, **2024**, 26, 35, 2401219.
3. “Identification of VISTA regulators in macrophages mediating cancer cell survival” A.M. Abdrabou, S.U. Ahmed, M. J. Fan, B.T.B. Duong, K. Chen, P. Lo, J.M. Mayes, F. Esmaeili, A. Ghavamin-Ejad, H. Zargartalebi, R.S. Atwal, S. Lin, S. Angers, S.O. Kelley  
*Science Advances*, **2024**, 10, 48.
4. “Highly Stable Biotemplated InP/ZnSe/ZnS Quantum Dots for In Situ Bacterial Monitoring” H. Yousefi, L.K. Sagar, A. Geraili, D. Chang, F.P. Garcia de Arquer, C.D. Flynn, S. Lee, E.H. Sargent, S.O. Kelley  
*ACS Applied Materials & Interfaces*, **2024**, 16, 41, 55086-55096.
5. “Identification of Cellular Determinants Impacting Mesangial Cells in IgA Nephropathy: TH-PO540” R.S. Atwal, S.E. Quaggin, H.H. Munshi, S.O. Kelley  
*Journal of the American Society of Nephrology*, **2024**, 35 (10S), 10.1681
6. “Mitochondrial Probe for Glutathione Depletion Reveals NME3 Essentiality for Mitochondrial Redox Response” P. Dhavarasa, T. Sack, C.P. Cerrato, A.P. Cheng, Y.Y. Zhang, K. Chen, S.O. Kelley  
*ACS Chemical Biology*, **2024**, 19, 9, 2012-2022.
7. “Self-Healing Materials for Bioelectronic Devices” C Liu, SO Kelley, Z Wang  
*Advanced Materials*, **2024**, 36 (35), 2401219.
8. “Spiky Gold Nanoparticles, a Nanoscale Approach to Enhanced Ex Vivo T-Cell Activation” F. Esmaeili, Y.L. Wu, Z. Wang, A. Abdrabou, V.B. Juska, H. Zargartalebi, C.D. Flynn, T.W.

- Odom, E.H. Sargent, S.O. Kelley  
*ACS Nano*, **2024**, 18, 32, 21554-21564.
9. "Self-Assembled Monolayer Transporters Enable Reagentless Analysis of Small Molecule Analytes" C. Flynn, K. Riordan, T. Young, D. Chang, Z. Wu, S. Isaacson, H. Yousefi, J. Das, S.O. Kelley  
*bioRxiv*, **2024**
  10. "Phenotypic Targeting Using Magnetic Nanoparticles for Rapid Characterization of Cellular Proliferation Regulators" Z. Wang, H. Wang, S. Lin, S. Angers, E.H. Sargent, S.O. Kelley  
*Science Advances*, **2024**, 19, eadj1468.
  11. "Identification of Druggable Regulators of Cell Secretion Via a Kinome-Wide Screen and High-Throughput Immunomagnetic Cell Sorting" M. Labib, Z. Wang, Y. Kim, S. Lin, A. Abdrabou, H. Yousefi, P.Y. Lo, S. Angers, E.H. Sargent, S.O. Kelley  
*Nature Biomedical Engineering*, **2024**, 8 (3), 263-277.
  12. "CRISPR Screening in Tandem with Targeted mtDNA Damage Reveals WRNIP1 Essentiality" T. Sack, P. Dhavarasa, D. Szames, S. O'Brien, S. Angers, S.O. Kelley  
*ACS Chem. Biol.*, **2023**, 18(12): 2599-2609.
  13. "Digital Microfluidics as an Emerging Tool for Bacterial Protocols" C.R. Nemr, A.A Sklavonous, A.R. Wheeler, S.O. Kelley  
*SLAS Discov.*, **2023**, S2472-5552(23)00095-3.
  14. "Apta FastZ: An Algorithm for the Rapid Identification of Aptamers with Defined Binding Affinities" Z. Wang, D. Chang, E.H. Sargent, S.O. Kelley  
*Analytical Chemistry*, **2023**, 95(48):17438-17443.
  15. "Self-Assembled Homopolymeric Spherulites from Small Molecules in Solution" Q. Song, Y. Li, Z. Jin, H. Liu, M.N. Creyer, W. Yim, Y. Huang, X. Hu, T. He, Y. Li, S.O. Kelley, L. Shi, J. Zhou J. V. Jokerst  
*J. Am Chem Soc.*, **2023**, 145(47):25664-25672.
  16. "CRISPR Screening in Tandem with Targeted mtDNA Damage Reveals WRNIP1 Essentiality" T. Sack, P. Dhavarasa, D. Szames, S. O'Brien, S. Angers, S.O. Kelley  
*bioRxiv*, **2023**.
  17. "A Magneto-Activated Nanoscale Cytometry Platform for Molecular Profiling of Small Extracellular Vesicles" K. Chen, B.T.V Duong, S.U. Ahmed, P. Dhavarasa, Z. Wang, M. Labib, C. Flynn, J. Xu, Y.Y. Zhang. H. Wang, X Yang, J. Das, H. Zargartalebi, Y. Ma, S.O. Kelley  
*Nature Communication*, **2023**, 11;14(1):5576.
  18. "Isolation of Tumour-Reactive Lymphocytes from Peripheral Blood via Microfluidic Immunomagnetic Cell Sorting" Z. Wang, S. Ahmed, M. Labib, H. Wang, L. Wu, F. Bavaghar-Zaeimi, N. Shokri, S. Blanco, S. Karim, K. Dzarnecka-Kujawa, E.H. Sargent, A.J.R McGray, M. de Perrot, S.O. Kelley  
*Nature Biomedical Engineering*, **2023**, 7(9):1188-1203.
  19. "Efficient Delivery of Biological Cargos into Primary Cells by Electrodeposited Nanoneedles via Cell-Cycle-Dependent Endocytosis" Z. Wang, H. Wang, S. Lin, M. Labib, S. Ahmed, J. Das, S. Angers, E.H. Sargent, S.O. Kelley  
*Nano Letters*, **2023**, 23(13):5877-5885.
  20. "A High-Dimensional Microfluidic Approach for Selection of Aptamers with Programmable Binding Affinities" D. Chang, Z. Wang, C.D. Flynn, A. Mahmud, M. Labib, H. Wang, A. Geraili, X. Li, J. Zhang, E.H. Sargent, S.O. Kelley  
*Nature Chemistry*, **2023**, 15(6):773-780.
  21. "Biomolecular Sensors for Advanced Physiological Monitoring" C. Flynn, D. Chang, A. Mahmud, H. Yousefi, J. Das, K.T. Riordan, E.H. Sargent, S.O. Kelley  
*Nature Reviews Bioengineering*, **2023**, 11:1-16.

22. "Monitoring Cardiac Biomarkers with Aptamer-Based Molecular Pendulum Sensors"  
M. Karlikow, E. Ama, S.O. Kelley  
*Angew Chem Int. Ed. Engl.*, **2023**, 8;62(20):e202213567.
23. "CRISPR-Induced DNA Reorganization for Multiplexed Nucleic Acid Detection"  
M. Karlikow, E. Amalfitano, X. Yang, J. Doucet, A. Chapman, P.S. Mousavi, P. Homme, P. Sutryina, W. Chan, S. Lemak, A.F. Yakunin, A.G. Dolezal, S.O. Kelley, L.J. Foster, B.A. Harpur, K. Pardee  
*Nature Communication*, **2023**, 14(1):1505.
24. "nuPRISM: Microfluidic Genome-Wide Phenotypic Screening Platform for Cellular Nuclei"  
A.M. Abdrabou, B.T.V Duong, K. Chen, R.S. Atwal, M. Labib, S. Lin, S. Angers, S.O. Kelley  
*ACS Cent. Sci.*, **2022**, 8(12):1618-1626
25. "Ultra-throughput Immunomagnetic Cell Sorting Platform."  
D.N. Philpott, K. Chen, R.S. Atwal, D. Li, J. Christie, E.H. Sargent, S.O. Kelley  
*Lab on a Chip*, **2022**, 22, 4822-4830.
26. "PillarX: A Microfluidic Device to Profile Circulating Tumor Cell Clusters Based on Geometry, Deformability, and Epithelial State." B.J. Green, M. Marazzini, B. Hershey, A. Fardin, Q. Li, Z. Wang, G. Giangreco, F. Pisati, S. Marchesi, A. Disanza, E. Martini, S. Magni, G.V. Beznoussenko, C. Vernieri. R. Lobefaro, D. Parazzoli, P. Maiuri, K. Havas, M. Labib, S. Sigismund, P.P. Di Fiore, R.H. Gunby, S.O. Kelley, G. Scita.  
*Small*, **2022**, 2106097.
27. "Capillary-Assisted Molecular Pendulum Bioanalysis" H. Zargartalebi, H. Yousefi, C.D. Flynn, S. Gomis, J. Das, T.L. Young, E. Chien, S. Mubareka, A. McGeer, H. Wang, E.H. Sargent, A.S. Nezhad, and S.O. Kelley.  
*J. Am. Chem. Soc.*, **2022**, 40, 18338-18349.
28. "Genome-Wide in Vivo Screen of Circulating Tumor Cells Identifies SLIT2 as a Regulator of Metastasis." F. Xia, Y. Ma, K. Chen, B. Duong, S. Ahmed, R. Atwal, D. Philpott, T. Ketela, J. Pantea, S. Lin, S. Angers, S. O. Kelley.  
*Science Advances*, **2022**, 35, eabo7792.
29. "Nanoparticle Amplification Labeling for High Performance Magnetic Cell Sorting."  
Z. Wang, H. Wang, S. Lin, S. Ahmed, S. Angers, E.H. Sargent, S.O. Kelley,  
*Nano Letters*, **2022**, 22, 4774-4783.
30. "Challenges and Opportunities for Wearable Sensing Systems." S.O. Kelley  
*ACS Sensors*, **2022**, 7, 345-346.
31. "Efficient Recovery of Potent Tumor-Infiltrating Lymphocytes Through Quantitative Immunomagnetic Cell Sorting" Z. Wang, S. Ahmed, M. Labib, H. Wang, X. Hu, J. Wei, Y. Yao, J. Moffat, E.H. Sargent, S.O. Kelley  
*Nature Biomedical Engineering*, **2022**, 6, 108-117.
32. "Rapid On-Cell Selection of High-Performance Human Antibodies."  
D. Philpott, S. Gomis, H. Wang, R. Atwal, A. Kelil, T. Sack, B. Morningstar, C. Burnie, E.H. Sargent, S. Angers, S. Sidhu, S.O. Kelley  
*ACS Central Science*, **2022**, 8, 102-109.
33. "Phage-Based Profiling of Rare Single Cells Using Nanoparticle-Directed Capture."  
Y. Ma, K. Chen, F. Xia, R. Atwal, H. Wang, S.U. Ahmed, L. Cardarelli, I. Lui, B. Duong, Z. Wang, J.A. Wells, S.S. Sidhu, S.O. Kelley  
*ACS Nano*, **2021**, 15, 19202-19210.
34. "A Microfluidic Platform Enables Comprehensive Gene Expression Profiling of Mouse Retinal Stem Cells." M. Labib, B. Coles, M. Poudineh, B. Innes, J. Belair-Hickey, S. Gomis, Z. Wang, G. Bader, E.H. Sargent, S.O. Kelley, D. van der Kooy  
*Lab on a Chip*, **2021**, 21, 4208-4222.

35. "Bacterial Classification and Antibiotic Susceptibility on an Integrated Microfluidic Platform." A. Sklavounos, C.R. Nemr, S.O. Kelley, A.R. Wheeler  
*Lab on a Chip*, **2021**, *21*, 4464-4476.
36. "Cell-Free DNA and Circulating Tumor Cell Kinetics in a Pre-Clinical Head and Neck Cancer Model Undergoing Radiation Therapy." N. Muhanna, D. Eu, H.H.L. Chan, C. Douglas, J.L. Townson, M.A. Di Grappa, R.M. Mohamadi, S.O. Kelley, S.V. Bratman, J. Irish  
*BMC Cancer*, **2021**, *143*, 15606-15615.
37. "Bright and Stable Light-Emitting Diodes Based on Perovskite Quantum Dots in Perovskite Matrix." Y. Liu, Y. Dong, T. Zhu, D. Ma, A. Proppe, B. Chen, C. Zheng, Y. Hou, S. Lee, Y. Liu, Y. Dong, T. Zhu, D. Ma, A. Proppe, B. Chen, C. Zheng, Y. Hou, S. Lee, B. Sun, E. Hyuk Jung, F. Yuan, Y. Wang, L. K. Sagar, S. Hoogland, F. Pelayo García de Arquer, M.-J. Choi, K. Singh, S.O. Kelley, O. Voznyy, Z.-H. Lu, and E.H. Sargent  
*Journal of the American Chemical Society*, **2021**, *143*, 15606-15615.
38. "Multifunctional 3D-Printed Wound Dressings." M. Alizadehgiashi, C.R. Nemr, M. Chekini, D. Pinto Ramos, N. Mittal, S.U. Ahmed, N. khuu, S.O. Kelley, E. Kumacheva  
*ACS Nano*, **2021**, *15*, 12375-12387.
39. "AbCellera's Success is Unprecedented: What Have We Learned?"  
D. Sinton, S.O. Kelley  
*Lab Chip*, **2021**, *21*(12):2330-2332.
40. "Multication Perovskite 2D/3D Interfaces Form via Progressive Dimensional Reduction."  
A.H. Proppe, A. Johnston, S. Teale, A. Mahata, R. Quintero-Bermudez, E. H. Jung, L. Grater, T. Cui, T. Filleter, C.-Y. Kim, S.O. Kelley, F. De Angelis, E.H. Sargent  
*Nature Communications*, **2021**, *12*, 3472.
41. "Circulating Tumor Cell Profiling for Precision Oncology" M. Labib, S.O. Kelley  
*Molecular Oncology*, **2021**, *15*, 1622-1646.
42. "Mitochondrial ATP Fuels ABC Transporter-Mediated Drug Efflux in Cancer Chemoresistance."  
E.L. Giddings, D.P. Champagne, M.H. Wu, J.M. Laffin, T.M. Thornton, F. Valenca-Pereira, R. Culp-Hill, K.A. Fortner, N. Romero, J. East, P. Cao, H. Arias-Pulido, K. S. Sidhu, B. Silverstrim, Y. Kam, S. Kelley, M. Pereira, S.E. Bates, J.Y. Bunn, S.N. Fiering, D.E. Matthews, R.W. Robey, D. Stich, A. D'Alessandro, M. Rincon  
*Nature Communications*, **2021**, *12*, 2804.
43. "Reagentless Biomolecular Analysis Using a Nanoscale Molecular Pendulum"  
J. Das, S. Gomis, J.B. Chen, H. Yousefi, S. Ahmed, A. Mahmud, W. Zhou, S.O. Kelley  
*Nature Chemistry*, **2021**, *14*, 428-434.
44. "COVID-19: A Crisis Creating New Opportunities for Sensing"  
S.O. Kelley  
*ACS Sens.*, **2021**, *6*(4):1407.
45. "Strategies for Biomolecular Analysis and Continuous Physiological Monitoring"  
A. Clifford, J. Das, H. Yousefi, A. Mahmud, J.B. Chen, S.O. Kelley  
*Journal of the American Chemical Society*, **2021**, *143*, 5281-5294.
46. "Detection of SARS-CoV-2 Viral Particles Using Direct, Reagent-Free Electrochemical Sensing."  
H. Yousefi, A. Mahmud, D. Chang, J. Das, S. Gomis, J.B. Chen, H. Wang, T. Been, L. Yip, E. Coomes, Z. Li, S. Mubareka, A. McGeer, N. Christie, S. Gray-Owen, A. Cochrane, J.M. Rini, E.H. Sargent, and S.O. Kelley  
*Journal of the American Chemical Society*, **2021**, *143*, 1722-1727.
47. "Ultrasensitive Detection of Rare Leukemic B Cells in T Cell Populations."  
Z. Wang, E.H. Sargent, S.O. Kelley  
*Analytical Chemistry*, **2021**, *93*, 2327-2335.

48. "2021: A Year Starting Full of Hope"  
J.J. Gooding, N. Camasso, E. Bakker, S.O. Kelley, M. Sailor, M. Merkx, L. Mao, H. Clark, R. Maboudian, J.F. Masson, A. DeMello, M. Li, S.M. Liu  
*ACS Sens*, **2021**, 6(1):1-2.
49. "Tracking the Expression of Therapeutic Protein Targets in Rare Cells by Antibody-Mediated Nanoparticle Labelling and Magnetic Sorting." M. Labib, Z. Wang, S.U. Ahmed, R.M. Mohamadi, B. Duong, B. Green, E.H. Sargent, S.O. Kelley  
*Nature Biomedical Engineering*, **2021**, 5, 41-52.
50. "Mitochondrial Targeting of Probes and Therapeutics to the Powerhouse of the Cell" C. Ma, S.O. Kelley  
*Bioconjug Chem.*, **2020**, 12(1):2804
51. "A Liquid Biopsy for Detecting Circulating Mesothelial Precursor Cells: A New Biomarker for Diagnosis and Prognosis in Mesothelioma" B.T.V Duong, L. Wu, B.J. Green, F. Bavaghar-Zaeimi, Z. Wang, M. Labib, Y. Zhou, F.J.P Cantu, T. Jeganthan, S. Popescu, J. Pantea, M. dePerrot, S.O. Kelley  
*EBioMedicine*, **2020**
52. "Fluorescent Droplet Cytometry for On-Cell Phenotype Tracking."  
X. Yang, W. Liu, D. C.-H. Chan, S.U. Ahmed, H. Wang, Z. Wang, C.R. Nemr, S.O. Kelley  
*Journal of the American Chemical Society*, **2020**, 142, 14805-14809.
53. "Celebrating Rising Stars in Sensing"  
S.O. Kelley  
*ACS Sensors*, **2020**
54. "Magnetic Ranking Cytometry: Profiling Rare Cells at the Single-Cell Level."  
M. Labib, D.N. Philpott, Z. Wang, C. Nemr, J.B. Chen, E.H. Sargent, S.O. Kelley  
*Accounts of Chemical Research*, **2020**, 53, 1445-1457.
55. "Dimensional Mixing Increases the Efficiency of 2D/3D Perovskite Solar Cells"  
S. Teale, A.H. Proppe, E.H. Jung, A. Johnston, D.H. Parmar, B. Chen, Y. Hou, S.O. Kelley, E.H. Sargent  
*J. Phys Chem Lett.*, **2020**
56. "Nanostructured Architectures Promote the Mesenchymal–Epithelial Transition for Invasive Cells." Z. Wang, F. Xia, M. Labib, M. Ahmadi, H. Chen, J. Das, S.U. Ahmed, S. Angers, E.H. Sargent, S.O. Kelley  
*ACS Nano*, **2020**, 14, 5324-5336.
57. "Ultrasensitive and Rapid Quantification of Rare Tumorigenic Stem Cells in hPSC-Derived Cardiomyocyte Populations." Z. Wang, M. Gagliardi, R.M. Mohamadi, S.U. Ahmed, M. Labib, L. Zhang, S. Popescu, Y. Zhou, E.H. Sargent, G.M. Keller  
*Science Advances*, **2020**, 6, eaay7629.
58. "High-Performance Nucleic Acids Sensors for Liquid Biopsy Applications."  
J. Das and S.O. Kelley  
*Angew. Chem. Intl. Ed.* **2020**, 59, 2554-2564.
59. "A Multiplexed, Electrochemical Interface for Gene Circuit-Based Sensors."  
P. Sadat Mousavi, S.J. Smith, J.B. Chen, M. Karlikow, A. Tinagar, W. Liu, D. Ma, A.A. Green, S.O. Kelley, \* K. Pardee\*  
*Nature Chemistry*, **2020**, 12, 48-55.
60. "A New Era in Liquid Biopsy: From Genotype to Phenotype." S.O. Kelley and K. Pantel,  
*Clinical Chemistry*, **2020**, 66, 89-96.
61. "Analyzing Proteins at the Single-Cell Level: The Challenge of the Proteome."  
M. Labib and S.O. Kelley  
*Nature Reviews Chemistry*, **2020**, 4, 143-158.

62. "High-Throughput Genome-Wide Phenotypic Screening via Immunomagnetic Cell Sorting." B. Mair, P.M. Aldridge, R.S. Atwal, D. Philpott, M. Zhang, S.N. Masud, M. Labib, A.H.Y. Tong, E.H. Sargent, S. Angers, J. Moffat, S.O. Kelley, *Nature Biomed. Eng.* **2019**, *3*, 796-805.
63. "Potential-Responsive Surfaces for Dynamic Manipulation of Cell Adhesion, Release and Differentiation." L. Zhang, Z. Wang, J. Das, M. Labib, S. Ahmed, E.H. Sargent, S.O. Kelley, *Angew. Chem. Intl. Ed.* **2019**, *58*, 14519-14523.
64. "Peptide-Functionalized Nanostructured Microarchitectures Enable Rapid Mechanotransductive Differentiation." Z. Wang, L. Zhang, M. Labib, H. Chen, M. Wei, M. Poudineh, B.J. Green, B. Duong, J. Das, S. Ahmed, E.H. Sargent, S.O. Kelley, *ACS Applied Materials and Interfaces*, **2019**, *11*, 41030-41037.
65. "Combining Desmopressin and Docetaxel for the Treatment of Castration-Resistant Prostate Cancer in an Orthotopic Model." R. Bass, D. Roberto, D.Z. Wang, F.P. Cantu, R.M. Mohamadi, S.O. Kelley, L. Klotz, V. Venkateswaran, *Anticancer Research*, **2019**, *39*, 113-118.
66. "Phenotypic Profiling of Circulating Tumor Cells in Metastatic Prostate Cancer Patients Using Nanoparticle-Mediated Ranking." B.J. Green, V. Nguyen, E. Atenafu, P. Weeber, B.T.V. Duong, P. Thiagalingam, M. Labib, R.M. Mohamadi, A.R. Hansen, A.M. Joshua, S.O. Kelley, *Analytical Chemistry*, **2019**, *91*, 9348 – 9355.
67. "Single Cell mRNA Cytometry via Sequence-Specific Nanoparticle Clustering and Trapping." M. Labib, R.M. Mohamadi, M. Poudineh, S.U. Ahmed, I. Ivanov, C.L. Huang, M. Moosavi, E.H. Sargent, S.O. Kelley, *Nature Chemistry*, **2018**, *10*, 489-495.
68. "Combinatorial Probes for High-Throughput Electrochemical Analysis of Circulating Nucleic Acids." J. Das, I. Ivanov, T.S. Safaei, S.O. Kelley, *Angew. Chem. Intl. Ed.*, **2018**, *57*, 3711 - 3716.
69. "Three-Dimensional Nanostructured Architectures Enable Efficient Neural Differentiation of Mesenchymal Stem Cells via Mechanotransduction." M. Poudineh, Z. Wang, M. Labib, M. Ahmadi, L. Zhang, J. Das, S. Angers, S.O. Kelley, *Nano Letters*, **2018**, *18*, 7188 – 7193.
70. "A Multifunctional Chemical Probe for Local Micropolarity and Microviscosity in Mitochondria." A. Jiménez-Sánchez, E. Lei, S.O. Kelley, *Angew. Chem. Intl. Ed.*, **2018**, *57*, 8891 – 8895.
71. "Dynamic Circulating Tumour Cell Phenotypes in Metastatic Prostate Cancer Models Visualized Using Magnetic Ranking Cytometry." L. Kermanshah, M. Poudineh, S. Ahmed, L.N.M. Nguyen, S. Srikant, R. Makonnen, F.P. Cantu, M. Corrigan, S.O. Kelley, *Lab on a Chip*, **2018**, *18*, 2055 – 2064.
72. "Programmable Metal/Semiconductor Nanostructures for mRNA-Modulated Molecular Delivery." Zhang, L., Jean, S.R., Li, X., T. Sack, Z. Wang, S. Ahmed, J. Das, A. Zaragoza, E.H. Sargent, S.O. Kelley, *Nano Letters*, **2018**, *18*, 6222 – 6228.
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**Invited Conference Lectures (last 5 years)**

Pittcon, Chicago, IL (3/17), ACS National Meeting, San Francisco, CA (4/17), Canadian Society for Chemistry National Meeting (5/17), Next Generation Dx, Washington, DC (8/17), ACS National Meeting, Washington, DC (8/17), Liquid Biopsies and Minimally Invasive Diagnostics, San Diego, CA (10/17), Targeting Mitochondria, Berlin, Germany (10/17), Molecular Medicine Tri-Conference, San Francisco, CA (2/18), Pittcon, Orlando, FL (2/18), Bioengineering, Innovations in Microfluidics and Synthetic Biology, Boston, MA (3/18), Electrochemical Society National Meeting, Seattle, WA (5/18), United Mitochondrial

Diseases Symposium, Nashville, TN (6/18), EMBO Chemical Biology Workshop, Heidelberg, Germany (7/18), Gordon Conference on Drug Resistance, Providence, RI (7/18), ACS National Meeting, Boston, MA (8/18), Micro and Nanoengineering in Medicine Conference, Kauai, HI (12/18), Pittcon, Philadelphia, PA (3/19), Nature Biomedical Engineering Conference on In Vitro Diagnostics, Nanchang, China (3/19), ACS National Meeting, Orlando, FL (3/19), Bioelectrochemical Society Meeting, Limerick, Ireland (5/19), Canadian Society for Chemistry, Quebec City (6/19), Next Generation Dx, Washington DC (8/19), ACS National Meeting, San Diego, CA (8/19), CRUK-AACR Joint Conference on Engineering and Physical Sciences in Oncology, London (10/19), Cold Spring Harbor Single Analysis Meeting, NY (11/19), Mitochondrial Medicine, Wellcome Genome Campus, Cambridge, UK (12/19), UT Austin Centre for Electrochemistry Annual Conference, Austin, TX (2/20), Pittcon, Chicago, IL (3/20), Molecular Medicine Tri-Con, San Francisco, CA (3/20), ACS National Meeting (Virtual) (4/20). Pittcon (Virtual) (2/21), ACS National Meeting (Virtual) (3/21), AIChE, Boston, MA (11/21), Pacificchem (Virtual) (12/21), Materials Research Society, Honolulu (5/22), Bioengineering Solutions for Biology and Medicine, Munich (7/22), American Chemical Society, Chicago, IL (8/22), Asilomar Bioelectronics Meeting, Asilomar (9/22), Jonas Center Cell Therapy Symposium, Chicago, IL (9/22), Discovery on Target, Boston, MA (11/22), Micro and Nanotechnology in Medicine Conference, Hawaii (12/22), GRC Physics and Chemistry of Microfluidics, Italy (6/23), Bioelectrochemical Society meeting plenary speaker, Salt Lake City (6/23), Sartorius SAB, Germany (8/23), NMIN, Vancouver (1/24), Science to the Street Translational Research Symposium, New York, NY (4/24).

### ***Invited Lectures at Universities/Companies/Government Agencies (last 5 years)***

University of Montreal (3/16), University of California, Davis (3/16), Purdue University (4/16), National Institute of Standards and Technology (4/16), University of Washington (5/16), Chinese Academy of Sciences, Shanghai, China (9/16), University of Connecticut (10/16), Ohio State University (10/16), Northwestern University (12/16), University of Rochester (2/17), California Institute of Technology (2/17), Georgia Institute of Technology (4/17), University of California, Berkeley (8/17), Harvard University (10/17), California Institute of Technology (10/17), Yale University (10/17), University of Michigan (11/17), Georgia State University (1/18), University of Victoria (2/18), University of British Columbia (2/18), Simon Fraser University (2/18), University of Arizona (3/18), University of Akron (5/18), University of California, Irvine (5/18), Cambridge University (5/18), University of British Columbia (5/18), University of Stockholm (6/18), Brown University (9/18), Mayo Clinic/U. Minnesota (10/18), Northwestern University (11/18), McMaster University (11/18), McGill University (2/19), University of Illinois, Urbana-Champaign (2/19), Boston College (4/19), North Carolina State University/U. North Carolina (11/19), University of Washington (1/20), U. Ottawa (10/20), Stony Brook (10/20), Carnegie Mellon University (10/20), UC Davis (11/20), Western University (12/20), Oregon Health Sciences University (1/21), University of British Columbia (3/21), U. Chicago (11/22), University of Chicago (2/23), University of Illinois, Urbana-Champaign (4/23), University of Wisconsin (4/23), NIH Emerging Technologies (4/23), Carleton College (4/23), University of Texas (9/23), Abbvie (10/23), University of Illinois, Urbana-Champaign (10/23), TEDxChicago (10/23), University of Chicago (10/23), Chicago BioCapital (11/23) Friends of Lurie (11/23), Emory University (2/24), University of Chicago (5/24).

### ***Selected Patents and Patent Applications***

#### ***Issued***

6,649,350	Electrochemical sensor using intercalative, redox-active moieties (US, Germany)
6,461,820	Electrochemical sensor using intercalative, redox-active moieties (US, Germany)
6,221,586	Electrochemical sensor using intercalative, redox-active moieties (US, Germany)
6,958,216	DNA-bridged carbon nanotube arrays (US)
7,202,037	Electrochemical sensor using intercalative, redox-active moieties (US, Germany)
7,741,033	Electrocatalytic nucleic acid hybridization detection (US, Germany, Spain, France, UK, Ireland, Italy)
7,361,470	Electrocatalytic nucleic acid hybridization detection (US, Canada, Germany, Spain, France, UK, Ireland, Italy)
8,888,969	Nanostructured microsensors and biosensing devices employing same (US, Canada, China, Germany, Spain, France, UK, Italy, Netherlands, Hong Kong, India, Japan, Singapore)
9,173,952	Mitochondrial penetrating peptides as carriers for antimicrobials (US, China)
9,132,198	Mitochondrial penetrating peptides as carriers for anticancer compounds (US, China)

9,335,289 Bioprobes and methods of use thereof (*US*)  
9,217,179 Systems and methods for multiplexed electrochemical detection  
(*US, UK, Germany, France*)  
9,772,329 Protein detection method (*US, China, Hong Kong, Russia, Germany, France, Spain, UK, Ireland, Italy*)  
10,073,079 Device for Capture of Particles in Flow (*US, Canada*)