

## Shana O. Kelley

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 Northwestern University  
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### 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>Assistant Professor</b>	Boston College, Chemistry	2000 - 2006
<b>NIH Postdoctoral Fellow</b>	Scripps Research Institute, Mol. Bio.	1999 - 2000

### Awards and honors

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
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
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

## Publications (> 30,000 citations)

1. "Non-Invasive Isolation of Tumor-Reactive Lymphocytes from Blood for Cancer Immunotherapy" Z. Wang, S. Ahmed, M. Labib, H. Wang, L. Wu, F. Bavaghar-Zaeimi, N. Shokri, S. Blanco, S. Karim, K. Czarnecka-Kujawa, A.J.R. McGray, M. dePerrot, S.O. Kelley  
*Nature Biomedical Engineering*, **2022**, in press.
2. "Biomolecular Sensors for Next Generation Physiological Monitoring." C. Flynn, D. Chang, A. Mahmud, H. Yousefi, J. Das, K.T. Riordan, E.H. Sargent, S.O. Kelley  
*Nature Reviews Bioengineering*, **2022**, in press.
3. "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.
4. "Ulthroughput 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.
5. "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.
6. "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.
7. "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.
8. "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.
9. "Ulthroughput immunomagnetic cell sorting platform." D.N. Philpott, K. Chen, R.S. Atwal, D. Li, E.H. Sargent, S.O. Kelley  
*Lab on a Chip*, **2022**, 22, 4822-4830
10. "Challenges and Opportunities for Wearable Sensing Systems." S.O. Kelley  
*ACS Sensors*, **2022**, 7, 345-346
11. "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.
12. "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.
13. "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.

14. "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.
15. "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.
16. "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.
17. "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.
18. "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.
19. "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.
20. "Circulating Tumor Cell Profiling for Precision Oncology"  
M. Labib, S.O. Kelley  
*Molecular Oncology*, **2021**, *15*, 1622-1646.
21. "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.
22. "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.
23. "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.O. 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.
24. "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.
25. "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.
26. "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.
27. "A Multiplexed, Electrochemical Interface for Gene Circuit-Based Sensors."  
P. Sadat Mousavi, S.J. Smith, J.B. Chen, M. Karlikow, A. Tinafar, W. Liu, D. Ma, A.A. Green, S.O. Kelley,\* K. Pardee\*  
*Nature Chemistry*, **2020**, *12*, 48-55.
28. "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.
29. "A New Era in Liquid Biopsy: From Genotype to Phenotype." S.O. Kelley and K. Pantel,  
*Clinical Chemistry*, **2020**, *66*, 89-96.
30. "High-Performance Nucleic Acids Sensors for Liquid Biopsy Applications."  
J. Das and S.O. Kelley  
*Angew. Chem. Intl. Ed.* **2020**, *59*, 2554-2564.
31. "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.
32. "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.
33. "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.
34. "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.
35. "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.
36. "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.
37. "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.
38. "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.

39. "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.
40. "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.
41. "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.
42. "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.
43. "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.
44. "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.
45. "A Fully-Integrated and Automated Testing Device for PCR-free Viral Nucleic Acid Detection in Whole Blood." W. Liu, J. Das, A.H. Mephram, C.R. Nemr, E.H. Sargent, S.O. Kelley, *Lab on a Chip*, **2018**, *18*, 1928 – 1935.
46. "Single-Cell Tumbling Enables High-Resolution Size Profiling of Retinal Stem Cells." S. Gomis, M. Labib, B.L.K. Coles, D. van der Kooy, E.H. Sargent, S.O. Kelley, *ACS Appl. Mater. Inter.*, **2018**, *10*, 34811 - 34816.
47. "DNA Polymerase  $\theta$  Increases Mutational Rates in Mitochondrial DNA." S. Wisnovsky, T. Sack, D. J. Pagliarini, R.R. Laposa, S.O. Kelley, *ACS Chemical Biology*, **2018**, *13*, 900 - 908.
48. "Pore Shape Defines Paths of Metastatic Cell Migration." B.J. Green, M. Panagiotakoulou, F. M. Pramotton, G. Stefopoulos, S. O. Kelley, D. Poulidakos, A. Ferrari, *Nano Letters*, **2018**, *18*, 2140-2147.
49. "Mitochondrial Tyrosyl-DNA Phosphodiesterase 2 and its TDP2S Short Isoform." S.-Y. N. Huang, I. Dalla Rosa, S.A. Michaels, D.V. Tulumello, K. Agama, S. Khiati, S.R. Jean, S.A. Baechler, S. Varma, J. Murai, L.M.M. Jenkins, S.O. Kelley, Y. Pommier, *EMBO Reports*, **2018**, *19*, e42139.
50. "Profiling Circulating Tumour Cells and Other Biomarkers of Invasive Cancers." M. Poudineh, E.H. Sargent, K. Pantel, *Nature Biomedical Engineering*, **2018**, *2*, 74-82.
51. "Curvature-Mediated Surface Accessibility Enables Ultrasensitive Electrochemical Human Methyltransferase Analysis" Wang, G., Das, J., Ahmed, S., C.R. Nemr, L. Zhang, E.H. Sargent, S.O. Kelley, *ACS Sensors*, **2018**, *3*, 1765 – 1772.
52. "Tracking the Dynamics of Circulating Tumor Cell Phenotypes Using Nanoparticle-Mediated Magnetic Ranking." M. Poudineh, P.M. Aldridge, S. Ahmed, B.J. Green, L. Kermanshah, V.

- Nguyen, C. Tu, R.M. Mohamadi, R.K. Nam, A. Hansen, S.S. Sridhar, A. Finelli, N.E. Fleshner, A.M. Joshua, E.H. Sargent, S.O. Kelley,  
*Nature Nanotechnology*, **2017**, *12*, 274-282.
53. "Delivery and Release of Small-Molecule Probes in Mitochondria Using Traceless Linkers."  
E.K. Lei and S.O. Kelley,  
*J. Am. Chem. Soc.*, **2017**, *139*, 9455-9458.
54. "High-Curvature Nanostructuring Enhances Probe Display for Biomolecular Detection."  
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*Nano Letters*, **2017**, *17*, 1289-1295.
55. "Chemistry-Driven Approaches to Ultrasensitive Nucleic Acid Analysis."  
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*J. Am. Chem. Soc.* **2017**, *139*, 1020-1028.
56. "Profiling Functional and Biochemical Phenotypes of Circulating Tumour Cells Using a Two-Dimensional Sorting Device." M. Poudineh, M. Labib, S. Ahmed, L.N.M. Nguyen, L. Kermanshah, R.M. Mohamadi, E.H. Sargent, S.O. Kelley,  
*Angew. Chem. Intl. Ed.*, **2017**, *56*, 163-168.
57. "Advancing Ultrasensitive Molecular and Cellular Analysis Methods to Speed and Simplify the Diagnosis of Disease." S.O. Kelley,  
*Acc. Chem. Res.*, **2017**, *50*, 503-507. ("Holy Grails in Chemistry" issue)
58. "Enhancing the Potency of Nalidixic Acid toward a Bacterial DNA Gyrase with Conjugated Peptides." M. Ahmed & S.O. Kelley,  
*ACS Chemical Biology*, **2017**, *12*, 2563-2569.
59. "Amplified Micromagnetic Field Gradients Enable High-Resolution Profiling of Rare Cell Subpopulations." M. Poudineh, E.H. Sargent, and S.O. Kelley,  
*ACS Appl. Mater. Inter.*, **2017**, *9*, 25683-2569.
60. "Multifunctional Quantum Dot-DNA Hydrogels."  
L. Zhang, S.R. Jean, S. Ahmed, P.M. Aldridge, X. Li, F. Fan, E.H. Sargent, S.O. Kelley  
*Nature Communications*, **2017**, doi: 10.1038/s41467-017-00298-w.
61. "Isolation of Phenotypically-Distinct Cancer Cells using Nanoparticle-Mediated Sorting."  
B.J. Green, L. Kermanshah, M. Labib, S.U. Ahmed, P.N. Silva, L. Mahmoudian, I.-H. Chang,  
R.M. Mohamadi, J.V. Rocheleau, S.O. Kelley  
*ACS Appl. Mater. Inter.* **2017**, *9*, 20435-20443.
62. "Steric Hindrance Assay for Secreted Factors in Stem Cell Culture." W. Zhou, S.S. Mahshid, W. Wang, A. Vallee-Belisle, P.W. Zandstra, E.H. Sargent, S.O. Kelley  
*ACS Sensors*, **2017**, *2*, 495-500.
63. "Power-Free, Digital and Programmable Dispensing of Picoliter Droplets using a Digit Chip."  
A. Mephram, J.D. Besant, A. Weinstein, I.B. Burgess, E.H. Sargent, S.O. Kelley  
*Lab Chip*, **2017**, *17*, 1505-1514.
64. "Biomolecular Steric Hindrance Effects Are Enhanced on Nanostructured Microelectrodes."  
S.S. Mahshid, A. Vallee-Belisle, S.O. Kelley  
*Analytical Chemistry*, **2017**, *89*, 9751-9757.
65. "Electrochemical DNA-Based Immunoassay That Employs Steric Hindrance to Detect Small Molecules Directly in Whole Blood." S.S. Mahshid, F. Ricci, S.O. Kelley, A. Vallee-Belisle  
*ACS Sensors*, **2017**, *2*, 718-723.
66. "What are Clinically-Relevant Levels of Cellular and Biomolecular Analytes?"  
S.O. Kelley  
*ACS Sensors*, **2017**, *2*, 193-197.
67. "DNA Clutch Probes for Circulating Tumor DNA Analysis."

- J. Das, I. Ivanov, E.H. Sargent, S.O. Kelley  
*J. Am. Chem. Soc.* **2016**, *138*, 11009-11016.
68. "Mitochondrial DNA Repair and Replication Proteins Revealed by Targeted Chemical Probes." S.M. Wisnovsky, S.R. Jean, S.O. Kelley, *Nature Chemical Biology*, **2016**, *12*, 567-573.
69. "Mitochondrial Chemical Biology: New Probes Elucidate the Secrets of the Powerhouse of the Cell." S.M. Wisnovsky, E. Lei, S.R. Jean, *Cell Chemical Biology*, **2016**, *23*, 917-927.
70. "Electrochemical Methods for the Analysis of Clinically-Relevant Biomolecules" M. Labib, E.H. Sargent, S.O. Kelley, *Chem. Rev.*, **2016**, *116*, 9001-9090.
71. "Mitochondria-Targeted Doxorubicin: a New Therapeutic Strategy Against Doxorubicin-Resistant Osteosarcoma." I. Buondonno, E. Gazzano, S.R. Jean, V. Audrito, J. Kopecka, M. Fanelli, I. C. Salaroglio, C. Costamagna, I. Roato, E. Mungo, C. M. Hattinger, S. Deaglio, S.O. Kelley, M. Serra, C. Riganti, *Mol. Cancer Ther.*, **2016**, *15*, 2640-2652.
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73. "Peptide-Mediated Delivery of Chemical Probes and Therapeutics to Mitochondria." S.R. Jean, M. Ahmed, E.K. Lei, S. P. Wisnovsky, S.O. Kelley, *Acc. Chem. Res.*, **2016**, *49*, 1893-1902.
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### **Professional activities**

*Editorial Advisory Boards*, ACS Nano and Nano Letters, 2020 – present.  
*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 – present.  
*Board Director*, Fight Against Cancer Trust, 2017 – present.  
*Board Director*, Canadian Academy of Health Sciences, 2017 - present.  
*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

### **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).

### ***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).

### ***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)



