

# Alex K. Shalek

Core Member, Institute for Medical Engineering & Science, MIT  
Associate Professor, Department of Chemistry, MIT  
Extramural Member, Koch Institute for Integrative Cancer Research, MIT  
Member, Ragon Institute of MGH, MIT, & Harvard  
Institute Member, Broad Institute of MIT & Harvard  
Assistant in Immunology, MGH  
Faculty, Harvard-MIT Health Sciences and Technology (HST), HMS

# Curriculum Vitae

77 Massachusetts Ave  
E25-348a  
Cambridge, MA 02139  
Office: (617) 324-5670  
[shalek@mit.edu](mailto:shalek@mit.edu)  
[ashalek@mgh.harvard.edu](mailto:ashalek@mgh.harvard.edu)  
[shalek@broadinstitute.org](mailto:shalek@broadinstitute.org)

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## EDUCATION

### Harvard University

Cambridge, MA

A.M., Ph.D. Chemical Physics, 2006, 2011

Thesis: “Nano- and Micro-structured Interfaces For Interrogating Living Cells”

Advisor: Prof. Hongkun Park (Chemistry and Physics)

### Columbia University

New York, NY

B.A. Chemical Physics, *Summa Cum Laude*, 2004

## RESEARCH AND TEACHING EXPERIENCE

**Associate Professor with Tenure, Department of Chemistry, MIT** 2021-Present

**Member, Ragon Institute of MGH, MIT, & Harvard** 2020-Present

**Associate Professor, Department of Chemistry, MIT** 2019-2021

**Institute Member, Broad Institute of MIT & Harvard** 2019-Present

**Extramural Member, Koch Institute for Integrative Cancer Research, MIT** 2018-Present

**Pfizer-Laubach Career Development Professorship, HST, MIT** 2017-2020

**Core Member, Institute for Medical Engineering & Science, MIT** 2014-Present

**Assistant in Immunology, MGH** 2014-Present

**Faculty, Harvard-MIT Health Sciences and Technology (HST), HMS** 2014-Present

**Associate Member, Ragon Institute of MGH, MIT, & Harvard** 2014-2020

**Assistant Professor, Department of Chemistry, MIT** 2014-2019

**Associate Member, Broad Institute of MIT & Harvard** 2014-2018

**Hermann L.F. Von Helmholtz Career Development Professor, HST, MIT** 2014-2017

My research program is directed to the development and application of new technologies – rooted in nanotechnology and chemical biology – that facilitate our understanding of how cells collectively perform systems-level functions in healthy and diseased states.

**Postdoctoral Fellow** 2011-2014

Prof. Hongkun Park & Prof. Aviv Regev

Harvard University & Broad Institute of MIT and Harvard

Developed nano- and micro-scale technologies for perturbing and profiling single cells and cell populations.

Applied these platforms to dissect naïve T cell differentiation and factors governing heterogeneity in the dendritic cell response to pathogens.

**Graduate Research Associate** 2004-2011

Prof. Hongkun Park

Harvard University

Designed, fabricated, tested, and implemented nano- and micro-scale devices for biological applications.

Utilized these tools to study antiviral sensing in dendritic cells, variability in the response of a primary human leukemia to perturbations, and signaling in networks of neurons.

### Fellow

**Teaching**

**2005-2007**

Cellular Basis of Neuronal Function (MCB 115 – Fall 2007): Professor Venkatesh Murthy, Harvard

Advanced Physical Chemistry (Chem 91r – Spring 2006): Professor Eric Heller, Harvard

Physical Chemistry (Chem 160 – Fall 2005): Professor Eric Heller, Harvard

Statistical Thermodynamics (Chem 161 – Spring 2005): Professor Eugene Shakhnovich, Harvard

**Undergraduate Research Associate**

**2003-2004**

Prof. Louis Brus

Columbia University

Optical and electrical properties of thin-film organic FETs and carbon nanotubes

**Undergraduate Research Associate**

**2002**

Prof. Richard Bersohn

Columbia University

Gas-phase chemical reaction dynamics and kinetics modeling

**AWARDS AND HONORS**

- 2021 NIDA Avant Garde Pioneer (DP1) Award
- 2020 2019-2020 Harold E. Edgerton Faculty Achievement Award, MIT
- 2020 Young Mentor Award, Harvard Medical School
- 2019 Selected as a “voice” who will guide the next 15 years of methods development, *Nature Methods*, 2019
- 2019 Selected as 1 of the 25 “voices” who will guide the next 25 years of Immunology, *Immunity*, Cell Press, 2019
- 2018-2022 Pew-Stewart Scholar
- 2018-2020 Alfred P. Sloan Research Fellow in Chemistry
- 2017-Present Associate Editor, *Science Advances*
- 2017-2020 Pfizer-Laubach Career Development Professorship, MIT
- 2016 Associate Scientific Advisor, *Science Translational Medicine*
- 2015-2020 NIH Director’s New Innovator Award
- 2015-2019 Beckman Young Investigator
- 2015-2018 Searle Scholar
- 2015 NIH “Follow That Cell” Competition, First Place (team member)
- 2014-2017 Hermann L.F. Von Helmholtz Career Development Professor, MIT
- 2013 Excellence Award, Broad Institute
- 2012 Rowland Junior Fellowship, Harvard University (Declined)
- 2006 Dudley R. Herschbach Teaching Award, Harvard University
- 2005-2008 National Science Foundation Graduate Research Fellowship
- 2005 Certificate of Distinction in Teaching, Harvard University
- 2004 Phi Beta Kappa, Columbia University
- 2000-2004 John Jay Scholar, Columbia University
- 2000-2004 Dean’s List, Columbia University

**PEER REVIEWED PUBLICATIONS**

\* or # Denotes equal authorship

112. Francis, J.M., Leistriz-Edwards, E., Dunn, A., Tarr, C., Lehman, J., Dempsey, C., Hamel, A., Rayon, V., Liu, G., Wang, Y., Wille, M., Durkin, M., Hadley, K., Sheena, A., Roscoe, B., Ng, M., Rockwell, G., Manto, M., Gienger, E., Nickerson, J., MGH COVID-19 Collection and Processing Team, Moarefi, A., Noble, M., Malia, T., Bardwell, P.D., Gordon, W., Swain, J., Skoberne, M., Sauer, K., Harris, T., Goldrath, A.W., Shalek, A.K., Coyle, A.J., Benoist, C., and Pregibon, D.C., “Allelic variation in class I HLA determines CD8<sup>+</sup> T cell repertoire shape and cross-reactive memory responses to SARS-CoV-2,” *Science Immunology*, **AOP** (2021).
111. Prakadan, S.M.#, Alvarez-Breckenridge, C.#, Markson, S.C.#, Klein, R.H., Nayyar, N., Navia, A.W., Kuter, B.M., Kolb, K.E., Bihun, I., Moara, J.L., Bertalan, M.S., Shaw, B., White, M., Kaplan, A., Stocking, J.H., Wadsworth II, M.H., Subramanian, M., Cahill, D.P., Miller, J.W., Sullivan, R.J., Carter, S.L.\*, Brastianos, P.K.\*, Shalek, A.K.\*, “Multicellular responses to PD-1 blockade within the tumor microenvironment of leptomeningeal metastases,” *Nature Communications*, 12 5955 (2021).

110. Rodel, H.E., Ferreira, I.M., Ziegler, C.G.K., Ganga, Y., Berstein, M., Hwa, S.-H., Nargan, K., Lustig, G., Kaplan, G., Noursadeghi, M., Shalek, A.K., Steyn, A., and Sigal, A., “Aggregated Mycobacterium tuberculosis enhances the inflammatory response,” *Frontiers in Microbiology*, **Accepted** (2021).
109. Raghavan, S.<sup>#</sup>, Winter, P.S.<sup>#</sup>, Navia, A.W.<sup>#</sup>, Williams, H.L., DenAdel, A., Kalekar, R.L., Galvez-Reyes, J., Lowder, K.E., Mulugeta, N., Raghavan, M.S., Borah, A.A., Väyrynen, S.A., Costa, A.D., Ng, R.W.S., Wang, J., Reilly, E., Ragon, D., Brais, L.K., Jaeger, A.M., Spurr, L.F., Li, Y.Y., Cherniak, A.D., Wakrio, I., Rotem, A., Johnson, B.E., McFarland, J.M., Sicinska, E., Jacks, T., Clancy, T.E., Perez, K., Rubinson, D.A., Ng, K., Cleary, J.M., Crawford, L., Manalis, S.R., Nowak, J.A., Wolpin, B.M.<sup>\*</sup>, Hahn, W.C.<sup>\*</sup>, Aguirre, A.J.<sup>\*</sup>, and Shalek, A.K.<sup>\*</sup>, “Transcriptional subtype-specific microenvironmental crosstalk and tumor cell plasticity in metastatic pancreatic cancer,” *Cell*, **Accepted** (2021); [bioRxiv 2020.08.25.256214](https://doi.org/10.1101/2020.08.25.256214).
108. Bein, A.<sup>\*</sup>, Kim, S.<sup>\*</sup>, Goyal, G.<sup>\*</sup>, Cao, W.<sup>\*</sup>, Fadel, C., Naziripour, A., Sharma, S., Swenor, B., LoGrande, N., Nurani, A., Maio, V.M., Navia, A.W., Ziegler, C.G.K., Ordovas-Montañes, J., Prabhala, P., Kim, M.S., Prantil-Baun, R., Rodas, M., Jiang, A., Tillya, G., Shalek, A.K., and Ingber, D.E., “Enteric coronavirus infection and treatment modeled with an immunocompetent human intestine-on-a-chip,” *Frontiers in Pharmacology*, **Accepted** (2021).
107. Wang, Y., Goods, B.A., Russo, D.A., Pattarawat, P., Zhang, Q., Zelinski, M.B., Shalek, A.K., and Xiao, S., “Vitrification preserves murine follicular cell transcriptome in a 3D encapsulated in vitro follicle growth system,” *Biology of Reproduction*, **Accepted** (2021).
106. Hamza, B.<sup>#</sup>, Miller, A.B.<sup>#</sup>, Meier, L., King, E., Stockslager, M., Ng, S.R., DeGouveia, K., Mesfin, N., Calistri, N., Strouf, H., Lin, L., Chin, C.R., Shalek, A.K., Jacks, T., and Manalis, S.R., “Measuring Kinetics and Metastatic Propensity of CTCs by Blood Exchange between Mice,” *Nature Communications*, **Accepted**.
105. Fardoos, R., Asowata, O.E., Herbert, N., Nyquist, S.K., Zungu, Y., Singh, A., Ngoepe, A., Mbanjo, I.M., Mthabela, N., Ramjit, D., Karim, F., Kuhn, W., Madela, F., Manzini, V.T., Anderson, F., Berger, B., Pers, T.H., Shalek, A.K., Leslie, A., and Kløverpris, H.N., “HIV infection drives interferon signaling within intestinal SARS-CoV-2 target cells,” *JCI Insight*, **6** e148920 (2021).
104. Song, H., Weinstein, H.N.W., Allegakoen, P., Wadsworth II, M.H., Xie, J., Yang, H., Lu, K.L., Stohr, B.A., Feng, F.Y., Carroll, P.R., Wang, B., Copperberg, M.R., Shalek, A.K., and Huang, F.W., “Single-cell analysis of human primary prostate cancer reveals the heterogeneity of tumor-associated epithelial cell states,” *Nature Communications*, **Accepted**.
103. Youngs, J.<sup>#</sup>, Provine, N.M.<sup>#</sup>, Lim, N.<sup>#</sup>, Sharpe, H.<sup>†</sup>, Amini, A.<sup>†</sup>, Chen, Y.-L.<sup>†</sup>, Edmans, M., Zacharapoulou, P., Luo, J., Chen, W., Sampson, O., Paton, R., Duncan, D.A., McNaughton, A., Miao, V.N., Leaver, S., Wyncoll, D., Oxford Immunology Network COVID-19 (OPTIC) Clinical team, Skelly, D.T., Barnes, E., Dunachie, S., Ogg, G., Lambe, T., Pavord, I., Shalek, A.K., Thompson, C., Xue, L., Macallan, D., Goulder, P.<sup>#</sup>, Klenerman, P.<sup>#</sup>, and Bicanic, T.<sup>#</sup>, “Identification of immune correlates of fatal outcomes in critically ill COVID-19 patients,” *PLOS Pathogens*, **17** e1009804 (2021).
102. Crouchet, E., Bandiera, S., Fujiwara, N., Li, S., El Saghire, H., Sun, X., Hirschfield, H., Roehlen, N., Juehling, F., Saviano, A., Motos, V.G., Venkatesh, A., Ponsolles, C., Verrier, E.R., Van Renne, N., Lupberger, J., Thumann, C., Duong, F.H.T., Zhu, S., Sojoodi, M., Masia, R., Wei, L., Oudot, M.A., Durand, S.C., Nakagawa, S., Ono, A., Song, W., Higashi, T., Sanchez, R., Kim, R.S., Bian, C.B., Kiani, K., Croonenborghs, T., Subramanian, A., Chung, R.T., Heide, D., Hetzer, J., Staub, B.K., Schuppan, D., Ankavay, M., Cocquerel, L., Schaeffer, E., Goossen, N., Koh, A.P., Mahajan, M., Nair, V.D., Gunasekaran, G., Schwartz, M.E., Bardeesy, N., Shalek, A.K., Rozenblatt-Rosen, O., Regev, A., Heikenwalder, M., Felli, E., Pessauz, P., Tanabe, K.K., Schuster, C., Pochet, N., Zeisel, M.B., Fuchs, B.C., Hoshida, Y., and Baumert, T.F., “Fast-track liver disease chemoprevention discovery using a clinical gene signature-inducible human cell culture model,” *Nature Communications*, **12** 5525 (2021).
101. Mead, B.E.<sup>\*</sup>, Hattori, K.<sup>\*</sup>, Levy, L., Vukovic, M., Sze, D., Matute, J.D., Duan, J., Langer, R., Blumberg, R.S., Ordovas-Montanes, J., Karp, J.M.<sup>#</sup>, and Shalek, A.K.<sup>#</sup>, “High-throughput organoid screening

- enables engineering of intestinal epithelial composition,” *Nature Biomedical Engineering*, **Accepted**; **bioRxiv** 2020.04.27.063727
100. Ziegler, C.G.K. \*, Miao, V.N. \*, Owings, A.H. \*, Navia, A.W. \*, Tang, Y. \*, Bromley, J.D. \*, Lofty, P., Sloan, M., Laird, H., Williams, H.B., George, M., Drake, R.S., Christian, T., Parker, A., Sindel, C.B., Burger, M.W., Pride, Y., Hasan, M., Abraham, G.E., Senitko, M., Robinson, T.O., Shalek, A.K.<sup>#</sup>, Glover, S.C.<sup>#</sup>, Horwitz, B.H.<sup>#</sup>, and Ordovas-Montanes, J.<sup>#</sup>, “Impaired local intrinsic immunity to SARS-CoV-2 infection in severe COVID-19,” *Cell*, **184** 4713 (2021).
  99. Buchheit, K.M., Lewis, E., Gakpo, D., Hacker, J., Sohail, A., Taliaferro, F., Giron, E.B., Asare, C., Vukovic, M., Bensko, J.C., Dwyer, D., Shalek, A.K., Ordovas-Montanes, J., and Laidlaw, T.M., “Mepolizumab targets multiple immune cells in aspirin-exacerbated respiratory disease”, *JACI*, **148** 574 (2021).
  98. Jiang, R., Meng, H., Raddassi, K., Fleming, I., Hoehn, K.B., Dardick, K.R., Belperron, A.A., Montgomery, R.R., Shalek, A.K., Hafler, D.A., Kleinstein, S.H. \*, and Bockenstedt, L.K. \*, “Single Cell Immunophenotyping of the Skin Lesion Erythema Migrans Identifies IgM Memory B Cells”, *JCI Insight*, **6** e148035 (2021).
  97. Genshaft, A.S.<sup>#</sup>, Ziegler, C.G.K.<sup>#</sup>, Tzouanas, C.N.<sup>#</sup>, Mead, B.E., Jaeger, A.M., Navia, A.W., King, R.P., Jacks, T., Van Humbeck, J., and Shalek, A.K., “Spatially-resolved live cell tagging and isolation using protected photoactivatable cell dyes,” *Nature Communications*, **12** 4995 (2021).
  96. Ma, F., Hughes, T.K., Teles, R.M.B., Andrade, P.R., de Andrade Silva, B.J., Plazyo, O., Tsoi, L.C., Do, T., Wadsworth II, M.H., Oulee, A., Ochoa, M.T., Sarno, E.N., Iruela-Arispe, M.L., Bryson, B., Shalek, A.K., Bloom, B.R., Gudjonsson, J.E., Pellegrini, M., and Modlin, R.L., “Single Cell and Spatial Transcriptomics Defines the Cellular Architecture of the Antimicrobial Response Network in Human Leprosy Granulomas”. *Nature Immunology*, **22** 839 (2021).
  95. Jacobsen, J.T., Hu, W., Castro, T.B.R., Solem, S., Galante, A., Lin, Z., Allon, S.J., Mesin, L., Bilate, A.M., Schiepers, A., Shalek, A.K., Rudensky, A.Y., and Victora, G.D., “Expression of Foxp3 by T follicular helper cells promotes contraction of late-stage germinal centers,” *Science*, **373** 297 (2021).
  94. Mana, M.D., Hussey, A.M., Tzouanas, C.N., Imada, S., Millan, Y.B., Bahceci, D., Saiz, D.R., Webb, A., Lewis, C.A., Carmeliet, P., Mihaylova, M.M., Shalek, A.K., and Yilmaz, O.H. “High-fat diet-activated fatty acid oxidation mediates intestinal stemness and tumorigenicity,” *Cell Reports*, **35**, 109212 (2021).
  93. Amoozgar, Z.<sup>#</sup>, Kloepper, J.<sup>#</sup>, Ren, J.<sup>#</sup>, Tay, R.E., Kazer, S.W., Kiner, E., Krishnan, S., Ghosh, M., Mamessier, E., Wong, C., Ferraro, G.B., Batista, A., Wang, N., Posada, J.M., Badeaux, M., Xu, L., Huang, P., Shalek, A.K., Fukumura, D., Kim, H-J. \*, and Jain, R.K. \*, “Reprogramming CD4 Tregs by GITR activation overcomes resistance to immune checkpoint in glioblastoma,” *Nature Communications*, **12** 2582 (2021).
  92. Delorey, T.M.<sup>#</sup>, Ziegler, C.G.K.<sup>#</sup>, Heimberg, G.<sup>#</sup>, Normand, R.<sup>#</sup>, Yang, Y.<sup>#</sup>, Segerstolpe, A.<sup>#</sup>, Abbondanza, D.<sup>#</sup>, Fleming, S.J.<sup>#</sup>, Subramanian, A.<sup>#</sup>, Jagadeesh, K.A.<sup>#</sup>, Dey, K.<sup>#</sup>, Slyper, M.<sup>#</sup>, Montoro, D.T.<sup>#</sup>, Pita-Juarez, Y.<sup>#</sup>, Phillips, D.<sup>#</sup>, Sen, P.<sup>#</sup>, Bloom-Ackerman, Z., Ganna, A., Gomez, J., Normandin, E., Naderi, P., Popov, Y., Niezen, S., Tsai, L., Siddle, K.J., Sud, M., Tran, V.M., Vellarikkal, S.K., Amir-Zilberstein, L., Atri, D.S., Barkas, N., Brook, O.R., Chen, J., Divakar, P., Dorceus, P., Engreitz, J.M., Fitzgerald, D.M., Fropf, E., Gazel, S., Gould, J., Grzyb, J., Harvey, T., Hecht, J., Jane-Valbuena, J., Leney-Greene, M., Ma, H., McCabe, C., McLoughlin, D.E., Miller, E.M., Muus, C., Niemi, M., Padera, R., Pfiffner-Borges, J., Pinto, C.J., Plaisted, J., Raju, S.S., Ross, M., Rucy, M., Rueckert, E.H., Siciliano, M., Strum, A., Todres, E., Waghay, A., Warren, S., Zhang, S., Zollinger, D., Cosimi, L., Gupta, R.M., Hacohen, N., Price, A.L., Rajagopal, J., Tata, P.R., Tickle, T.L., Hung, D. \*, Sabeti, P.C. \*, Novak, R. \*, Rogers, R. \*, Ingber, D.E. \*, Jiang, Z.G. \*, Juric, D. \*, Babadi, M. \*, Farhi, S.L. \*, Stone, J. \*, Vlachos, I.S. \*, Solomon, I.H. \*, Ashenberg, O. \*, Porter, C.B.M. \*, Li, B. \*, Shalek, A.K. \*, Villani, A.-C. \*, Rozenblatt-Rosen, O. \*, and Regev, A. \*, “COVID-19 tissue atlases reveal SARS-CoV-2 pathology and cellular targets,” *Nature*, **595** 107 (2021).

91. Khuzwayo, S., Mthembu, M., Meermeier, E.W., Prakadan, S.M., Kazer, S.W., Bassett, T., Nyamande, K., Kahn, D.F., Maharaj, P., Mitha, M., Suleman, M., Mhlane, Z., Ramjit, D., Karim, F., Shalek, A.K., Lewinsohn, D.M., Ndung'u, T., and Wong, E.B., "MR1-restricted MAIT cells from the human lung mucosal surface have distinct phenotypic, functional and transcriptomic features that are relatively preserved in HIV-infection." *Frontiers in Immunology*, **12** 631410 (2021).
90. Askenase, M.<sup>#</sup>, Goods, B.A.<sup>#</sup>, Beatty, H.E., Steinschneider, A.F., Osharov, A., Landreneau, M.J., Carroll, S.L., Tran, T.B., Avram, V.S., Massey, J.A., Karouppagounder, S.S., Ratan, R.R., Matouk, C.C., Sheth, K.N., Awad, I.A., Ziai, W., Zuccarello, M., Thompson, R.E., Lees, K.R., Hanley, D.F., Love, J.C.\* , Shalek, A.K.\*, and Sansing, L.\* , "Longitudinal transcriptomics define the stages of myeloid activation in the living human brain after intracerebral hemorrhage," *Science Immunology*, **6**, eabd6279 (2021).
89. Dwyer, D.F.<sup>#</sup>, Ordovas-Montanes, J.<sup>#</sup>, Allon, S.J., Buchheit, K.M., Vukovic, M., Derakhsan, T., Hughes, T.K., Nyquist, S.K., Giannetti, M.P., Bhattacharyya, N., Katz, H.R., Laidlaw, T.M., Shalek, A.K.\*, Barrent, N.A.\* , and Boyce, J.A.\* , "Human airway mast cells proliferate and acquire distinct inflammation-driven phenotypes during type 2 inflammation," *Science Immunology*, **6**, eabb7221 (2021).
88. Goods, B.A.<sup>#</sup>, Askenase, M.<sup>#</sup>, Markarian, E., Beatty, H., Drake, R.S., Matouk, C.C., Awad, I.A., Zuccarello, M., Hanley, D.F., Love, J.C.\* , Shalek, A.K.\*, and Sansing, L.\* , on behalf of the ICHseq Investigators "Leukocyte dynamics after intracerebral hemorrhage in a living patient," *JCI Insight*, **6**, e145857 (2021).
87. Pae, J., Ersching, J., Castro, T.B.R., Schips, M., Mesin, L., Allon, S.J., Ordovas-Montanes, J., Efeyan, Mlynarczyk, C., Melnick, A., Shalek, A.K., Meyer-Hermann, M., and Victora, G.D., "Cyclin D3 drives inertial cell cycling in dark zone germinal center B cells," *J. Exp. Med.*, **218**, e20201699 (2021).
86. Kazer, S.W.<sup>#</sup>, Walker, B.D.<sup>#</sup>, and Shalek, A.K.<sup>#</sup>, "Evolution and diversity of immune responses during acute HIV infection," *Immunity*, **53**, 908 (2020).
85. Tkachev, V., Fulan, S.N., Potter, E.L., Kaminski, J., Hunt, D.J., McGuckin, C., Zheng, H., Colonna, L., Gerdemann, U., Yu, A., Carlson, J., Hoffman, M., Olvera, J., English, C., Baldessari, A., Panoskaltis-Mortari, A., Ordovas-Montanes, J., Shalek, A.K., Blazer, B.R., Roederer, M., and Kean, L.S., "Deconvoluting alloimmunity in time and space through Serial Intravascular Staining: Evidence for rapid donor T cell resident memory formation during gastrointestinal GVHD." *Science Translational Medicine*, **13**, eabc0227 (2021).
84. Huang, S.<sup>#</sup>, Ziegler, C.G.K.<sup>#</sup>, Austin, J., Mannoun, N., Ordovas-Montanes, J., Vukovic, M., Shalek, A.K.\* and Von Andrian, U.\* , "Lymph nodes are innervated by a unique population of sensory neurons with immunomodulatory potential." *Cell*, **184**, 441 (2021).
83. Zhivaki, D., Borriello, F., Chow, O., Doran, B., Fleming, I., Theissen, D., Pallis, P., Shalek, A.K., Sokol, C., Zandoni, I., and Kagan, J.C., "Inflammasomes within Hyperactive Murine Dendritic Cells Stimulate Long-Lived T Cell-Mediated Anti-tumor Immunity," *Cell Reports*, **33**, 108381 (2020).
82. Majumder, P.P.\* , Mhlanga, M.M.\* , and Shalek, A.K.\* , "The Human Cell Atlas & Equity: Lessons Learned," *Nature Medicine*, **26**, 1509 (2020).
81. Kotliar, D.<sup>#</sup>, Lin, A.E.<sup>#</sup>, Logue, J., Hughes, T.K., Khoury, N., Raju, S.S., Wadsworth II, M.H., Chen, H., Kurtz, J.R., Dighe-Kemp, B., Bjornson, Z.B., Mukherjee, N., Sellers, B., Tran, N., Bauer, M.R., Adams, G.C., Adams, R., Rinn, J.L., Melé, M., Nolan, G.P., Barnes, K.G., Hensley, L.E.\* , McIlwain, D.R.\* , Shalek, A.K.\*, Sabeti, P.C.\* , and Bennett, R.S.\* , "Single-cell profiling of Ebola virus infection *in vivo* reveals viral and host transcriptional dynamics," *Cell*, **183**, 1383 (2020).
80. Tucker, N.R., Chaffin, M., Bedi Jr., K.C., Papangeli, I., Akkad, A.D., Arduini, A., Hayat, S., Eraslan, G., Muus, C., Bhattacharyya, R.P., Stegmann, C.M., Human Cell Atlas Lung Biological Network, Margulies, K.B., Ellinor, P.T., "Myocyte-Specific Upregulation of *ACE2* in Cardiovascular Disease: Implications for SARS-CoV-2-Mediated Myocarditis," *Circulation*, **142**, 708 (2020).

79. Walesky, C.<sup>#</sup>, Kolb, K.E.<sup>#</sup>, Winston, C., Henderson, J., Krufft, B., Fleming, I., Ko, S., Monga, S.P., Mueller, F., Apte, U., Shalek, A.K.<sup>\*</sup>, and Goessling<sup>\*</sup>, “Functional Compensation Precedes Recovery of Tissue Mass Following Acute Liver Injury,” *Nature Communications*, **11**, 5785 (2020).
78. Berger, E., Yorukoglu, D., Zhang, L., Nyquist, S.K., Shalek, A.K., Kellis, M., Numanagić, I., and Berger, B., “Improved haplotype inference by exploiting long-range linking and allelic imbalance in RNA-seq datasets,” *Nature Communications*, **11**, 4662 (2020).
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**INVITED TALKS**

195. Annual Society of Human Genetics, Virtual, 2021.
194. The 16th Research Symposium on Human Natural Defense System, Yonsei University College of Medicine, Seoul, Korea, 2021.
193. Department of Bioengineering, Rice University, Houston, TX, 2021.
192. 18th H3Africa Consortium Meeting, Cape Town, South Africa, 2021.
191. 11th Federation of African Immunological Society (FAIS) meeting, Lilongwe, Malawi, 2021.
190. AAI Advanced Course in Immunology, Boston, MA, 2021.
189. COVID19 seminar series, Howard Hughes Medical Institute, Janelia Research Campus, Ashburn, VA, 2021.
188. University of São Paulo Medical School, São Paulo, Brazil, 2021.
187. Bonn Lecture Series on Systems Immunology, University of Bonn, 2021.
186. Rose Winer Levin Lecture, Dana Farber Cancer Institute (DFCI), Boston, MA, 2021.
185. 4th Annual UCI Skin Symposium, UCI, Irvine, CA, 2021.
184. UCSF ImmunoX Program, UCSF, San Francisco, CA, 2021.
183. 2021 Keystone Symposia on Single Cell Biology, Banff, AB, Canada, 2021
182. Association of Biomolecular Resource Facilities (ABRF) 2021 Virtual Annual Meeting, 2021
181. Immunology Seminar Series, Stanford University, Palo Alto, CA, 2021
180. 3rd Arab Association of Genetic Research (AAGR) Conference, KAUST, Thuwal, Saudi Arabia, 2020.
179. BD Biosciences, San Jose, CA, 2020.
178. Chemistry Department Seminar, MIT, Cambridge, MA, 2020.
177. Microbial Pathogenesis Seminar, Yale Medical School, New Haven, CT, 2020.
176. HCA Asia 2020, Beijing, China, 2020.
175. Broad Institute Virtual Media Boot Camp: The Science Of SARS-CoV-2, Broad Institute, Cambridge, MA, 2020
174. Cancer Biology Program Graduate School Keynote, MD Anderson Cancer Center, Galveston, TX, 2020.
173. Department of Hematology/Oncology, Boston Children’s Hospital & the Dana Farber Cancer Institute (DFCI), Boston, MA, 2020.
172. Human Cell Atlas Latin America Workshop, São Paulo, Brazil, 2020.
171. American Association for Cancer Research (AACR) Special Conference on Cellular Heterogeneity and Single-Cell Sequencing, AACR, 2020
170. Biochemistry, UCSF, San Francisco, CA, 2020.
169. Next generation of Assays, Tools, Technologies to Evaluate Immune Responses to Vaccines for Infectious Diseases, NIAID, NIH, Rockville, MD, 2020.
168. Indian Academy of Sciences Frontiers of Science Symposium of the Human Cell Atlas, Bangalore, India,

2020.

167. 2020 AAI Advanced Course in Immunology, Boston, MA, 2020.
166. Microfluidics Consortium Open Day, Boston, MA, 2020.
165. AACR Virtual Annual Meeting, Boston, MA, 2020.
164. Pathogenesis TechTalk, MassCPR, Boston, MA, 2020.
163. MIT Math & CSAIL Bioinformatics Seminar series, MIT, Cambridge, MA, 2020.
162. Human Cell Atlas and the National Institutes of Health Joint Meeting, NIH (virtual), Bethesda, MD, 2020
161. 2019-2020 NIH Systems Biology seminar series, NIH, Bethesda, MD, 2020.
160. Oxford University Clinical Research Unit, Ho Chi Minh City, Vietnam, 2020.
159. Seminars in Oncology Lecture Series, Dana-Farber Cancer Institute and the Dana-Farber/Harvard Cancer Center, Boston, MA, 2020.
158. Ragon-NEIDL Symposium, Ragon Institute, Cambridge, MA, 2020.
157. SLAS 2020, San Diego, CA, 2020.
156. UW/Fred Hutch Center for AIDS Research (CFAR) seminar series, UW & Fred Hutch, Seattle, WA, 2020
155. 8th Annual Meeting of the Japanese Society for Immunology (JSI), Hamamatsu, Shizuoka, Japan, 2019
154. Kyoto University, Kyoto, Japan, 2019.
153. 2019 Gates Grand Challenges, Addis Ababa, Ethiopia, 2019.
152. Department of Microbiology and Immunology, University of Maryland School of Medicine, Baltimore, MD, 2019.
151. Single Cell Omics Beijing 2019 Symposium, Beijing, China, 2019.
150. Single-Cell Genomics 2019, Stockholm, Sweden, 2019.
149. Biomedicum Helsinki Seminar Series, Helsinki, Finland, 2019.
148. 2019 CSBC Annual Investigators Meeting, Irvine, CA, 2019.
147. University of São Paulo, São Paulo, Brazil, 2019.
146. Center for Cancer Systems Biology (CCSB) Seminar Series, Stanford, Palo Alto, CA, 2019.
145. 2019 Oxford Single Cell Symposium, Oxford, UK, 2019.
144. Nature NYU conference: Next-Generation Genomics, New York, NY, 2019.
143. Vaginal Microbiome Research Consortium, Bill & Melinda Gates Foundation, Seattle, WA, 2019.
142. National Institute of Health and Bill & Melina Gates Foundation Joint Workshop “Finding and Characterizing HIV Reservoirs”, NIH, Bethesda, MD, 2019.
141. Seventh Annual Broad-ISF Symposium, Jerusalem, Israel, 2019.
140. Merck, Boston, MA, 2019.
139. Agilent, Santa Clara, CA, 2019
138. IMMUNOLOGY2019, San Diego, CA, 2019.
137. Meakins-Christie Seminar Series, McGill University, Montreal, Canada, 2019.
136. Canadian Institute for Advanced Research (CIFAR) Molecular Architecture of Life Program Meeting, Orford, Quebec, 2019.

135. National Institute of Allergy and Infectious Diseases (NIAID)/Division of AIDS (DAIDS) Friday seminar series, NIH, Bethesda, MD, 2019.
134. MGH BioMEMS Resource Center (BMRC) at the Center for Engineering in Medicine, Boston, MA, 2019.
133. Department of Genetics, UCLA, Los Angeles, CA, 2019.
132. MassBiologics seminar series, University of Massachusetts Medical School, Boston, MA, 2019.
131. Abbvie, Cambridge, MA, 2019.
130. Whitehead Institute, MIT, Cambridge, MA, 2019.
129. Department of Immunology, University of Pittsburgh School of Medicine, Pittsburgh, PA, 2019.
128. National Academy of Sciences' Standing Committee on Emerging Science for Environmental Health Decisions, National Academy of Sciences, Washington, D.C., 2019.
127. Roche Webinar, GenomeWeb, Boston, MA, 2019.
126. MIT/Koch Institute Immune Engineering symposium, MIT, Cambridge, MA, 2019.
125. Single Cell Biology, Keystone Symposia on Molecular and Cellular Biology, Breckenridge, Colorado, 2019.
124. Computational Cancer Seminar Series, Institute for Computational Medicine at NYU Langone Health, New York, MA, 2018.
123. MIT AI in Life Sciences and Healthcare Conference, Cambridge, MA, 2018.
122. EMBL-EBI Industry RNA-seq workshop, Cambridge, MA, 2018.
121. New England Immunology Conference, Marine Biological Lab, Woods Hole, MA, 2018.
120. Blaffer Lecture, MD Anderson Cancer Center, Houston, Texas, 2018.
119. Cell Signaling Technology, Danvers, MA, 2018.
118. Salk Institute, La Jolla, CA, 2018.
117. NIBIB-NIAID Roundtable on Bioengineering-based HIV Vaccine Development, NIH, Bethesda, MD, 2018.
116. Illumina Single-Cell Meeting, Boston, MA, 2018.
115. Tools of Human Investigation Lecture Series, MGH, Boston, MA, 2018
114. GC Advanced Course: Single Cell Technologies and Analysis, Wellcome Genome Campus, Hinxton, Cambridge, UK, 2018
113. Conference Microfluidics 2018: New technologies and applications in biology, biochemistry and single-cell analysis, Heidelberg, Germany, 2018.
112. Case-Western University, Cleveland, OH, 2018.
111. Merck Research Labs, Boston, MA, 2018.
110. Immunobiology, University of California – San Diego, 2018.
109. Broad Global Health symposium, Cambridge, MA, 2018.
108. Mount Sinai Immunotherapy Institute, Mt. Sinai School of Medicine, 2018.
107. Sentinels Meeting, Bill and Melinda Gates Foundation, Seattle, WA, 2018.
106. American Association for Cancer Research Annual Meeting, Chicago, Illinois, 2018.
105. MGH, Boston, MA, 2018.

104. ITI Human Immune Monitoring Technology and Bioinformatics Conference, Stanford, CA, 2018.
103. Cancer Research Institute's Cancer Immunotherapy Consortium, New York, NY, 2018.
102. Regulation and Dysregulation of Innate Immunity in Disease, Keystone Symposia on Molecular and Cellular Biology, Vancouver, British Columbia, Canada, 2018.
101. 12<sup>th</sup> Annual CAVD Meeting, Gates Foundation, Seattle, WA, 2017
100. Boston University Genome Science Institute, 2017.
99. Jounce Therapeutics, Cambridge, MA, 2017.
98. NCI Physical Sciences-Oncology Network (PS-ON) Annual Investigators' Meeting, NCI, Boston, MA, 2017.
97. Cellular and Molecular Biology Program at the University of Michigan in Ann Arbor, MI 2017.
96. 24th International Symposium on Hepatitis C Virus and Related Viruses, Cape Cod, MA, 2017.
95. Fifth Basel Immunology Focus Symposium, Switzerland, 2017.
94. Illumina, 2017.
93. 5<sup>th</sup> Annual Workshop on Micro- and Nanotechnologies in Medicine, Brigham and Women's Hospital, 2017.
92. Big Data in the Life Sciences Symposium (IBS), Dartmouth, 2017.
91. Evergrande Center, Harvard Medical School, 2017.
90. Single-Cell Cancer Biology Special Symposium, Yale School of Medicine, 2017.
89. 9th Annual Progress in Winning the War on Cancer Symposium, American Cancer Society, Boston, MA, 2017.
88. Dana Farber Cancer Institute, 2017.
87. Human Cell Atlas Technology Meeting, Stanford, 2017
86. Human Cell Atlas Technology Meeting, Stanford, 2017
85. Fred Hutchinson Cancer Research Center, 2017
84. Caltech, 2017.
83. Harvard Medical School Department of Immunology, Harvard Medical School, 2017
82. AASLD Basic Science Symposium on Liver Immunology, 2016.
81. Gates Foundation Grand Challenges Meeting, 2016.
80. Next Generation Sequencing & Single Cell USA, 2016.
79. International Vascular Biology Meeting, 2016.
78. Illumina Single-Cell Genomics Experts Panel, 2016.
77. Aeras Functional Assay Workshop, NIH, 2016.
76. Merck Research Labs Boston, 2016.
75. Thermo Fisher Scientific, 2016.
74. 4<sup>th</sup> Workshop on Micro- and Nanotechnologies in Medicine, BWH, 2016.
73. Oxford Genomics Centre, 2016.
72. Front Line Genomics Festival of Genomics, 2016.
71. U. Mass Medical School, 2016.

70. AstraZeneca, 2016.
69. Emory, 2016.
68. RNA-Seq Summit, 2016.
67. Genentech, 2016.
66. Merck Research Labs Palo Alto, 2016.
65. Boston University, 2016.
64. Chugai, 2016.
63. Takada, 2016.
62. ICHG 2016, 2016
61. Novartis, 2016.
60. R&D Conference, MEDLAB Asia Pacific, 2016.
59. University of Pennsylvania, 2016.
58. Genzyme, 2015.
57. Tumor Immunity, Boston, 2015.
56. 25<sup>th</sup> Annual CSIBD Workshop, Massachusetts General Hospital, 2015.
55. EMBL-EBI Industry Program, 2015.
54. Next Generation Sequencing & Single cell USA, Boston, 2015.
53. 4<sup>th</sup> International Conference on Immunotherapy in Pediatric Oncology, 2015.
52. Massachusetts General Hospital, Immunology Seminar Series, 2015.
51. Beth Israel Deaconess Medical Center, Center for Virology and Vaccine Research, 2015.
50. European Association of Cancer Researchers, Cambridge, UK, 2015.
49. CAPRISA, 2015.
48. NIGMS/MIT Biotechnology Training Program Retreat, 2015.
47. Translational Research Institute, 2015.
46. Institute for Molecular Bioscience, University of Queensland, 2015.
45. Walter & Eliza Hall Institute, 2015.
44. Monash University, 2015.
43. Malaghan Institute & the Victoria University School of Biological Sciences, 2015.
42. Maurice Wilkins Centre, University of Auckland, 2015.
41. Harvard Medical School, Department of Immunology, 2015.
40. MGH BioMEMS Resource Center Seminar Series, 2015.
39. Centers for Excellence in Genomic Science Meeting, Broad Institute, 2014.
38. Oxford Genomics Centre Forum, Oxford University, 2014
37. HIV Prevention Workshop, Cape Town, 2014.
36. K-RITH, 2014.
35. Chemical Biology Institute, Yale, 2014.

34. Department of Biomedical Engineering, UT Austin, 2014.
33. Department of Pharmaceutical Chemistry, UCSF, 2014.
32. ChEM-H, Stanford, 2014.
31. Lewis Sigler Institute, Princeton, 2014.
30. Institute for Medical Engineering & Science, MIT, 2014.
29. Department of Chemistry, MIT, 2014.
28. Department of Molecular Biology, Massachusetts General Hospital, 2014.
27. Department of Cell Biology, Harvard Medical School, 2014.
26. Department of Stem Cell and Regenerative Biology, Harvard University, 2014.
25. Department of Chemistry and Chemical Biology, Cornell, 2014.
24. Department of Applied Physics, Cornell University, 2014.
23. Department of Chemical Engineering, Columbia University, 2014.
22. Division of Infectious Diseases, Boston Children's Hospital, 2014.
21. Department of Bioengineering, Caltech, 2014.
20. Department of Cancer Immunology & AIDS, Dana Farber Cancer Institute, 2014.
19. Broad Institute Tenth Annual Scientific Retreat, 2014.
18. Genomics Platform Speaker Series, Broad Institute, 2014.
17. Disruptive Innovations in Neuroscience, MIT, 2014.
16. Bonn Lecture Series on Systems Biology, Bonn, 2014.
15. Oxford Single Cell Sequencing Workshop, Oxford University, 2014.
14. Single Cell Genomics, Weizmann Institute of Science, 2013.
13. Hebrew University of Jerusalem, 2013.
12. Fluidigm Single Cell Symposium: The Paradigm of the Single Cell, 2013.
11. GenoFest, University of Minnesota, 2013.
10. Medical and Population Genomics Meeting, Broad Institute, 2013.
9. SciLifeLab, Uppsala University, 2013.
8. Cancer Program Meeting, Broad Institute, 2013
7. 53<sup>rd</sup> New England Complex Fluids Workshop, 2012.
6. Broad Institute Eighth Annual Scientific Retreat, 2012.
5. Single-Cell Genomics Initiative Launch, Broad Institute, 2012.
4. Centers for Excellence in Genomic Science Meeting, University of North Carolina, 2012.
3. Broad Institute Seventh Annual Scientific Retreat, 2011.
2. New England RNA Data Club, 2010.
1. CCB Student/Post-doc Seminar Series, 2010.

**SELECT SERVICE**

- 2021 Ad Hoc Member, SeroNet Collaborative Set-Aside Funds External Reviewer, NIH

- 2021 Ad Hoc Member, NCI Innovative Molecular and Cellular Analysis Technologies for Basic and Clinical Cancer Research (R21) and Advanced Development and Validation of Emerging Molecular and Cellular Analysis Technologies for Basic and Clinical Cancer Research (R33), NCI, 2021
- 2021 Ad Hoc Member, NIAMS Skin Biology and Diseases Resource-based Center (P30) Grant Review Panel, NIH
- 2021 Ad Hoc Member, amfAR Target Grants RFP Review Panel, amfAR
- 2021 Organizing Committee, 8th International Conference on Stem Cell Engineering 2021: Engineering multicellular systems for modeling physiology and disease
- 2020 Ad Hoc Reviewer, Allen Distinguished Investigator RFP in immunometabolism research, Paul G. Allen Frontiers Group
- 2020-2022 American Association of Immunologists (AAI) Intersect Fellowship Review Committee
- 2020-Present Steering Committee, Massachusetts Consortium on Pathogen Readiness (MassCPR)
- 2020 Co-organizer, American Association for Cancer Research (AACR) Special Conference on Cellular Heterogeneity and Single-Cell Sequencing
- 2020 DoD Peer Reviewed Medical Research Program on the Coronavirus Disease - Surveillance, Triage and Modeling - 2 (COVID-STM-2) panel
- 2020 Session Chair, SLAS 2020
- 2019 Ad Hoc Member, Wallenberg Academy Fellows Review Committee, The Royal Swedish Academy of Sciences
- 2018-Present Guest Editor, *PNAS*
- 2018 Committee Member, European Research Council Starting Grant Panel LS3 “Cellular and Developmental Biology”
- 2018 Ad Hoc Member, NHGRI Novel Genomic Technology Review Panel, NIH
- 2018 Ad Hoc Member, NIDDK High-Resolution Exploration of the Human Islet Tissue Environment [HIRN Human Pancreas Analysis Consortium (HPAC)] Review Panel, NIH
- 2018 Ad Hoc Member, NIAMS Skin Biology and Diseases Resource-based Center (P30) Grant Review Panel, NIH
- 2017-Present Guest Editor, *eLife*
- 2017-Present Associate Editor, *Science Advances*
- 2017 Discussion Moderator, Common Coordinate Framework Meeting, NIH
- 2017 Associate Scientific Advisor, *Science Translational Medicine*
- 2016-Present Coleader of the Human Equity Working Group, Human Cell Atlas Project
- 2016 Mail Reviewer, NIAMS Centers of Research Translation (P50) Grant Review Panel, NIH
- 2015 Ad Hoc Member, NIAMS Skin Biology and Diseases Resources-based Centers (P30) Grant Review Panel, NIH
- 2015 Discussion Moderator, Single Cell Analysis Program, NIH
- 2014 Ad Hoc Member, Special Emphasis Panel AMP UH2 Grant Review Panel, NIH, 2014
- 2014-Present Judge, Siemens Math, Science, and Technology Competition
- 2011-Present Reviewer for *PNAS*, *JACS*, *Langmuir*, *Nano Letters*, *Nature & Nature Subjournals*, *Science & Science Subjournals*, *Cell*, *Trends in Immunology*, *PLOS ONE*, *NARS*, *Genome Biology*, *Nucleic Acids Research*, *eLife*

## MEMBERSHIPS

- 2019- American Association of Immunologists (AAI)
- 2017- Bill and Melinda Gates Foundation Collaboration for AIDS Vaccine Discovery (CTVD)
- 2016- Bill and Melinda Gates Foundation Collaboration for TB Vaccine Discovery (CTVD)
- 2016- American Association for Cancer Research
- 2015- European Association for Cancer Research
- 2013- American Chemical Society
- 2008-2012 Society for Neuroscience

## REFERENCES

Hongkun Park

Professor of Chemistry and of Physics, Harvard University  
Institute Member, Broad Institute of MIT and Harvard  
Email: [hongkun\\_park@harvard.edu](mailto:hongkun_park@harvard.edu)

Aviv Regev  
Professor of Biology, MIT & HHMI  
Core Member, Broad Institute of MIT and Harvard  
Email: [aregev@broadinstitute.org](mailto:aregev@broadinstitute.org)

Eric Lander  
Director, Broad Institute of MIT and Harvard  
Professor of Biology, MIT  
Professor of Systems Biology, Harvard Medical School  
Email: [lander@broadinstitute.org](mailto:lander@broadinstitute.org)