Alex S Genshaft

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Education

Graduate Student in Chemistry, Massachusetts Institute of Technology August of 2014–Present
B.A. (Biochemistry, Biophysics, and Physics), *magna cum laude*,
University of Pennsylvania – 2014
M.S. (Chemistry), University of Pennsylvania – 2014
HS Regent Diploma, New York Stuyvesant High School – 2010

Honors & Awards

Daniel S. Kemp Fellowship, Summer 2015
Roy and Diana Vagelos Scholar of Molecular Life Sciences
Dean's List 2012-2013

Relevant Work Experience

Massachusetts Institute of Technology – Shalek Lab November of 2014– Present

- Setup computational systems and pipelines for lab's use
- Developed technology to gather multiplexed information from single cells

Massachusetts Institute of Technology – Ting Lab July of 2014– August 2014

- Assisted with rat brain dissections to culture neurons for the lab
- Designed and created constructs for neural synapse localization of horseradish peroxidase

University of Pennsylvania – Christianson Group May of 2011 – May 2014

- Analyzed bond geometries of acetylated lysine residues
- Designed and expressed taxadiene synthase domain truncations and active site mutations
- Measured activity of taxadiene synthase variants

University of Pennsylvania - Physics Department Tutor September 2013 – May 2014

- Held weekly tutoring hours in classical mechanics and calculus
- Followed up with students to ensure adequate progress

NYU Langone Medical Center – Ostrer Lab Volunteer Summers of 2008 and 2009

- Analyzed genome-wide association studies, copy number variation and protein expression data on a team of 4
- Helped develop a metastatic potential score for prostate cancer which is currently being used to design a medical device for onsite prediction
- Developed a pipeline from raw data to analytics of big data

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Skills

Research Techniques

- Single cell mRNA preparation
- Next generation sequencing
- Microscopy
- Protein expression and purification
- Protein crystallization
- Spectrometry
- Gel electrophoresis
- Radioactive scintillation

Software Experience

- Programming in R, Python, Unix, Java, C, Matlab, Assembly
- Proficient working with large datasets
- Expertise in the Adobe Suite: Photoshop, Illustrator
- Expertise in Microsoft Office Suite: Excel, Powerpoint, Word
- Worked with protein structure tools such as Coot & Pymol

Publications

- **Alex S Genshaft***, Shuqiang Li*, Caroline J. Gallant, Spyros Darmanis, Sanjay M. Prakadan, Carly G.K. Ziegler, Martin Lundberg, Simon Fredriksson, Joyce Hong, Kenneth J. Livak, Ulf Landegren, and Alex K. Shalek. Multiplexed targeted profiling of single-cell proteomes and transcriptomes in a single reaction. **Genome Biol** *17*, 188 (2016).
- Itay Tirosh, Benjamin Izar, Sanjay M. Prakadan, Marc H. Wadsworth II, Daniel Treacy, John J. Trombetta, Asaf Rotem, Christopher Rodman, Christine Lian, George Murphy, Mohammad Fallahi-Sichani, Ken Dutton-Regester, Jia-Ren Lin, Ofir Cohen, Parin Shah, Diana Lu, **Alex S Genshaft**, Travis K. Hughes, Carly G. K. Ziegler, Samuel W. Kazer, Aleth Gaillard, Kellie E. Kolb, Chloe Villani, Cory M. Johannessen, Aleksandr Y. Andreev, Elizer van Allen, Monica Bertagnolli, Peter K. Sorger, Ryan P. Sullivan, Keith T. Flaherty, Dennie T. Frederick, Judit Jané-Valbuena, Charles Yoon, Orit Rozenblatt-Rosen, Alex K. Shalek, Aviv Regev and Levi A. Garraway. Dissecting the multicellular ecosystem of metastatic melanoma by single-cell RNA-seq. **Science** *352*, 189-196.
- Robert J. Kimmerling, Gregory Lee Szeto, Jennifer W. Li, **Alex S Genshaft**, Samuel W. Kazer, Kristofor R. Payer, Jacob de Riba Borrajo, Paul C. Blainey, Darrell J. Irvine, Alex K. Shalek, Scott R. ManalisA microfluidic platform enabling single-cell RNA-seq of multigenerational lineages. **Nat Comm** *7*, Article number 10220 (2016).
- **Alexander Genshaft***, Joe-Ann S. Moser*, Edward L. D'Antonio, Christine M. Bowman, David W. Christianson. (2013) Energetically Unfavorable Amide Conformations for N6-Acetyllysine Side Chains in Refined Protein Structures. **Proteins** *81*, 1051-1057.
- Alexander Pearlman, Christopher Campbell,1 Eric Brooks, **Alex Genshaft**, Shahin Shajahan, Michael Ittman, G. Steven Bova, Jonathan Melamed, Ilona Holcomb, Robert J. Schneider, and Harry Ostrer. (2012) Clustering-Based Method for Developing a Genomic

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Copy Number Alteration Signature for Predicting the Metastatic Potential of Prostate Cancer. **J Prob & Stat**. Article ID 873570 (2012).

Leadership Experience

Activities Subcommittee Chair, The Muddy Charles Pub July 2016-Present

- Worked closely with the bar manager to host events at the pub
- Redeveloped the pub's website

Speaker Seminar Coordinator, Penn Biochemistry Department September 2012-May 2013

- Worked closely with visiting speakers and Penn faculty to develop schedules & programming
- Hosted dinners and breakfasts with speakers and biochemistry undergraduates

Academic Chair, Penn Zeta Beta Tau Fraternity March 2011 – March 2012

- Developed and coordinated individualized tutoring programs
- Tutored members in science & math

Chair, Stuyvesant Big Sib Mentoring Program March 2009 – June 2010

- Managed all Big Sib run programs from Camp Stuy to the Big Sib – Little Sib Dance
- Held interviews for Big Sib applicants and led Big Sib training sessions

Invited Talks

- Ragon Institute of MGH, MIT, & Harvard, 2016.
- Biophysics Student Seminar, MIT, 2016.
- Kwazulu-Natal Research Institute for Tuberculosis and HIV, Nelson R Mandela School of Medicine, 2015.

Poster Presentations

- "'Bottom-Up' Profiling of Interacting Cellular Systems" Aleth Gaillard, **Alex S Genshaft**, Shaina Carroll, Riley S. Drake, Travis K. Hughes, Samuel W. Kazer, Kellie E. Kolb, Sophia Liu, Sanjay M. Prakadan, Marc H. Wadsworth II, Carly G. K. Ziegler, Alex K. Shalek, High-Risk, High-Reward Research Symposium, National Institute of Health, 2016.
- "'Bottom-Up' Profiling of Interacting Cellular Systems" **Alex S Genshaft**, Carly G. K. Ziegler, Shaina Carroll, Riley S. Drake, Aleth Gaillard, Travis K. Hughes, Samuel W. Kazer, Kellie E. Kolb, Sophia Liu, Sanjay M. Prakadan, Marc H. Wadsworth II, Alex K. Shalek, High-Risk, High-Reward Research Symposium, National Institute of Health, 2016.
- "Micro- & Nanoscale Tools for 'Bottom-Up' Profiling of Interacting Cellular Systems" **Alex S Genshaft**, Shaina Carroll, Riley S. Drake, Aleth Gaillard, Travis K. Hughes, Samuel W. Kazer, Kellie E. Kolb, Sophia Liu, Sanjay M. Prakadan, Marc H. Wadsworth II, Carly G. K. Ziegler, Alex K. Shalek, Centers of Excellence in Genomic Science, Stanford, 2016.
- "Measuring single-cell proteomes and transcriptomes from a single reaction" **Alex S Genshaft***, Shuqiang Li*, Caroline J. Gallant, Spyros Darmanis, Sanjay M. Prakadan,

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Carly G.K. Ziegler, Martin Lundberg, Simon Fredriksson, Joyce Hong, Kenneth J. Livak, Ulf Landegren, and Alex K. Shalek. Klarmen Cell Observatory Retreat, Broad Institute, 2016.

- "'Bottom-Up' Profiling of Interacting Cellular Systems" **Alex S Genshaft**, Kellie E. Kolb, Riley Drake, Aleth Gaillard, Travis K. Hughes, Samuel W. Kazer, Sanjay M. Prakadan, Marc H. Wadsworth II, Carly G. K. Ziegler, Alex K. Shalek, High-Risk, High-Reward Research Symposium, National Institute of Health, 2015.
- "Multi-parameter RNA and protein data from the same single cell" Kenneth J. Livak, Shuqiang Li, Caroline J. Gallant, Spyros Darmanis, **Alex S Genshaft**, Sanjay Prakadan, John J. Trombetta, Alex K. Shalek, Ulf Landegren, Single Cell Genomics, Utrecht, The Netherlands, 2015.
- "I am Single Cell and So Can You!" **Alex S Genshaft**, Samuel W. Kazer, Riley Drake, Aleth Gaillard, Travis K. Hughes, Kellie E. Kolb, Sanjay M. Prakadan, Marc H. Wadsworth II, Carly G. K. Ziegler, Alex K. Shalek, MIT Biophysics Retreat, 2015.

Service

- Assisted Alex K. Shalek in reviewing papers for *Nucleic Acids Research* and *Trends in Genetics*

References

- Alex K. Shalek
  Hermann L.F. Von Helmholtz Career Development Professor, HST
  Assistant Professor, Department of Chemistry, MIT
  Core Member, Institute for Medical Engineering & Science, MIT
  Associate Member, Ragon Institute of MGH, MIT, & Harvard
  Associate Member, Broad Institute of MIT & Harvard
  Assistant in Immunology, MGH
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- David W. Christianson
  Roy and Diana Vagelos Professor in Chemistry and Chemical Biology
  University of Pennsylvania
  Email: chris@sas.upenn.edu

- Philip Nelson
  Professor of Physics, University of Pennsylvania
  General Member, Aspen Center for Physics
  Founding Member, Nano-Bio Interface Center, University of Pennsylvania
  Director, Undergraduate Major in Biophysics, University of Pennsylvania
  Member, Institute of Medicine and Engineering, University of Pennsylvania
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- Alex Pearlman
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