

Samuel W. Kazer

190 Prospect St. Apt. 1, Cambridge, MA 02139
skazer@mit.edu • 720.560.3590 • <http://shaleklab.com/author/sam/>

EDUCATION

Massachusetts Institute of Technology (MIT), Cambridge, MA
Ph.D. in Chemistry, Apr. 13 2020.

Columbia University, Columbia College, New York, NY
B.A. in Chemical Physics, *Summa Cum Laude*, May 2014.

RESEARCH EXPERIENCE

Massachusetts Institute of Technology (MIT), Department of Chemistry, Cambridge, MA

Advisor: Professor Alex K. Shalek

Position: Graduate Student, Nov. 2014 – May 2020.

Spearheaded the integration of single-cell RNA-sequencing (scRNA-seq) into HIV research through ongoing collaborations with the Ragon Institute of MGH, MIT, and Harvard and the African Health Research Institute (AHRI). Adapted scRNA-seq to explore early acute HIV infection and the effects of early treatment thereon. Developed novel computational framework to discover multicellular immune responses changing over disease trajectory. Trained researchers in South Africa, Switzerland, United Kingdom, and around the U.S. in experimental and computational scRNA-seq techniques.

Columbia University, Department of Chemistry, New York, NY

Advisor: Professor Kenneth B. Eisenthal

Position: Undergraduate Research Assistant, Jan. 2011 – May 2014.

Applied Second Harmonic Generation (SHG) to study DNA-enzyme and DNA-small molecule interactions in label-free environments.

Max Planck Institute for Polymer Research, Mainz, Germany

Advisor: Professor Katharina Landfester, Director

Position: German Academic Exchange (DAAD) RISE Scholar, May 2012 – Aug. 2012.

Developed and characterized magneto-polymer hybrid nanoparticles via mini-emulsion polymerization.

University of Colorado Denver, Department of Chemistry, Denver, CO

Advisor: Professor Scott M. Reed

Position: Undergraduate Research Assistant, May 2011 – Aug. 2011.

Investigated the role of C-reactive protein with low density liposomes (LDLs) using surface plasmon resonance (SPR) on nanoparticle models.

PUBLICATIONS

1. **S.W. Kazer** et al., ‘Integrated single-cell analysis of multicellular immune dynamics during hyperacute HIV-1 infection.’ *Nat. Med.*, **26**, 511, (2020).
2. M. Sangesland, L. Ronsard, **S.W. Kazer**, et al., ‘Antibody gene-endowed-targeting facilitates vaccine-amplification of a human broadly neutralizing response against influenza virus.’ *Immunity*, **51**:4, 735, (2019).
3. A. Ardain*, R. Domingo-Gonzalez*, S. Das*, **S.W. Kazer**, et al., ‘Group 3 innate lymphoid cells mediate early protective immunity against tuberculosis.’ *Nature*, **570**, 528 (2019).
4. Z.M. Ndhlovu, **S.W. Kazer**, et al., ‘Augmentation of HIV-specific T cell function by immediate treatment of hyperacute HIV-1 infection.’ *Sci. Transl. Med.* **11**, 493 (2019).
5. J. Roider et al., ‘High-Frequency, Functional HIV-Specific T-Follicular Helper and Regulatory Cells Are Present Within Germinal Centers in Children but Not Adults.’ *Front. Immunol.*, **9**, 1975, (2018).
6. J. Ordovás-Montañes* et al., ‘Allergic inflammatory memory in human respiratory epithelial progenitor cells.’ *Nature*, **560**, 649 (2018).
7. E. Martin-Gayo* et al., ‘A Reproducibility-Based Computational Framework Identifies an Inducible, Enhanced Antiviral State in Dendritic Cells from HIV-1 Elite Controllers.’ *Genome Biol.*, **19**, 10 (2018).
8. I.S. Nandin et al., ‘Novel in vitro booster vaccination to rapidly generate antigen-specific human monoclonal antibodies’ *J. Exp. Med.*, **8**, 214 (2017).

9. S. Ranasinghe*, P.A. Lamonthe*, D.Z. Soghoian, **S.W. Kazer**, et al., 'Antiviral CD8+ T Cells Restricted by Human Leukocyte Antigen Class II Exist during Natural HIV Infection and Exhibit Clonal Expansion.' *Immunity*, **45**, 917 (2016).
10. I. Tirosh et al., 'Dissecting the multicellular ecosystem of metastatic melanoma by single-cell RNA-seq.' *Science*, **352**, 6282 (2016).
11. A.S. Wong et al., 'Multiplexed barcoded CRISPR-Cas9 screening enabled by CombiGEM.' *Proc. Natl. Acad. Sci. U.S.A.*, **113**:9, 2544 (2016).
12. H. N. Kløverpris, **S.W. Kazer**, et al., 'Innate Lymphoid Cells Are Depleted Irreversibly during Acute HIV-1 Infection in the Absence of Viral Suppression.' *Immunity*, **44**:2, 391 (2016).
13. R.J. Kimmerling et al., 'A microfluidic platform enabling single-cell RNA-seq of multigenerational lineages.' *Nat. Commun.*, **7**, 10220 (2016).
14. M.B. Bannwarth, **S.W. Kazer**, et al., 'Well-Defined Nanofibers with Tunable Morphology from Spherical Colloidal Building Blocks.' *Angew. Chem. Int. Edit.*, **52**, 10107 (2013).
15. B. Doughty, Y. Rao, **S.W. Kazer**, et al., 'Probing the relative orientation of molecules bound to DNA through controlled interference using second-harmonic generation.' *Proc. Natl. Acad. Sci. U.S.A.*, **110**, 5756 (2013).
16. B. Doughty, Y. Rao, **S.W. Kazer**, et al., 'Binding of the Anti- Cancer Drug Daunomycin to DNA Probed by Second Harmonic Generation.' *J. Phys. Chem. B*, **117**, 15235 (2013).
17. B. Doughty, **S.W. Kazer**, and K.B. Eisenthal, 'Binding and cleavage of DNA with the restriction enzyme EcoR1 using time-resolved second harmonic generation.' *Proc. Natl. Acad. Sci. U.S.A.*, **108**, 19979 (2011).

MEETINGS, PRESENTATIONS, & POSTERS

- Presentation:* AAI Immunology 2020, cancelled due to COVID-19, (**Trainee Abstract Award Winner**).
- Poster:* Conference on Retroviruses and Opportunistic Infections, Boston, MA, US, Mar. 9, 2020.
- Presentation:* I4C – Immunotherapy for HIV Cure Meeting, Cambridge, MA, US, July 3, 2019.
- Presentation:* MIT Chemistry Student Seminar Series, MIT, Cambridge, MA, US, May 10, 2019.
- Poster:* Keystone Symposia – HIV Vaccines, Whistler B.C., Canada, Mar. 24, 2019, (**Scholarship Winner**).
- Poster:* Keystone Symposia – Single Cell Biology, Breckenridge, CO, USA, Jan. 14, 2019.
- Presentation:* Cell Circuits and Epigenomics, Broad Institute, Cambridge, MA, USA, Jul. 30, 2018.
- Poster:* Single Cell Genomics Conference, Wellcome Genome Campus, Hinxton, UK, Mar. 6, 2018.
- Presentation:* HIV Controllers Meeting, Ragon Institute, Cambridge, MA, USA, Feb. 12, 2018.
- Presentation:* HIV Prevention Meeting, CAPRISA/AHRI, Durban, South Africa, Nov. 15, 2017.
- Presentation:* Ragon Institute Scientific Advisory Board, Ragon Institute, Cambridge, MA, USA, Apr. 6, 2017.
- Poster:* Single Cell Genomics Conference, Wellcome Genome Campus, Hinxton, UK, Sep. 15, 2016.

LEADERSHIP, OUTREACH, & TEACHING EXPERIENCE

- Guest Lecturer:* Topics in Biophysics – 8.590[J], Nov. 9, 2018.
- Lecturer & Teaching Assistant:* Frontiers of Interdisciplinary Science in Human Health and Disease – HST.539, Feb. – Jun. 2018. (**Received Teaching Assistant Award from Department**).
- Teaching Assistant:* 2017 Workshop on Transcriptomics, Harvard University, Sep. 2017.
- Board Member:* URJ 6 Points Sci-Tech Academy Summer Camp, July 2017 – Present.
- Tutor:* General Chemistry – 5.111, Sep. 2015 – Dec. 2015.
- Teaching Assistant:* Time Resolved Spectroscopy Lab – 5.38 Module 11, Jan. – May 2015.
- Teaching Assistant:* General Chemistry – 5.111, Sep. – Dec. 2014.
- Teaching Assistant:* Advanced Organic Chemistry Lab – UN3546, Jan. – May 2013.

AWARDS & FELLOWSHIPS

- Hugh Hampton Young Memorial Fund Fellow*, Massachusetts Institute of Technology, May 2018.
- National Science Foundation Graduate Research Fellow*, National Science Foundation, May 2015.
- Richard Bersohn Prize for Outstanding Achievement*, Columbia University, May 2014.
- Junior Phi Beta Kappa*, Columbia University, Nov. 2013.
- Société de Chimie Industrielle Undergraduate Fellow*, Columbia University, May 2013.
- Duetscher Akademischer Austausch Dienst (DAAD) RISE Scholar*, DAAD, May 2012.

MENTORSHIP

Nicholas Lim, *Masters Student*, July 2019 – Sep. 2019.

Vincent Miao, *Graduate Student*, May 2019 – Present.

Kami Krista, *Undergraduate Student*, Feb. 2018 – Present.

Sarah Nyquist, *Graduate Student*, May 2017 – Present.

Toby Aicher, *Research Technician*, Mar. 2017 – Apr. 2019.

Shaina Carroll, *Research Technician*, July 2016 – July 2018.