Zev Armour-Garb

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EDUCATION

Harvard University – Medical School, September 2025 – Present
PhD, Biophysics

University of Cambridge – Churchill College, October 2024 – August 2025 Expected
MPhil, Chemistry, Physical and Biological Research Interest Groups

Thesis: *Digital seed amplification quantifies disease-associated amyloids*
Supervised and fully funded by Professor Tuomas P. J. Knowles

University of California, Berkeley – College of Chemistry, August 2020 – May 2024
BS, Chemical Biology, Computational Chemistry Concentration
Highest Honors in the Major; Honors in General Scholarship
GPA: 3.901 / 4.000

Honors Thesis: *Base-Editing Mutagenesis in Human T Cells for Immunotherapy Development*
Supervised by Professor Jennifer Doudna and Professor Alexander Marson

PAPERS

5. Aviad Levin#, Shenglin Cai#, Hannes Ausserwoeger#, Georg Meisl, Daoyuan Qian, **Zev Armour-Garb**, Vikramdeep Singh, Irina A. Edu, Gareth Jenkins, Rob Scrutton, Georg Krainer, Tomas Sneideris, Lin Chai, William E. Arter, Luis M. A. Oliveira, Tuomas P. J. Knowles*. Quantification of α-synuclein Seed Levels in Native CSF from Parkinson's Disease Subjects through Digital Amplification. *Under Review*

4. Alison Fanton, Liam J. Bartie, Juliana Q. Martins, Vincent Q. Tran, Laine Goudy, Courtney Kernick, Matthew G. Durrant, Jingyi Wei, **Zev Armour-Garb**, April Pawluk, Silvana Konermann, Alexander Marson, Luke A. Gilbert, Theodore L. Roth, Patrick D. Hsu*. Site-specific DNA insertion into the human genome with engineered recombinases. *Nature Biotechnology*, Accepted

3. Michele Mosconi*, Chiara Leonardi, **Zev Armour-Garb**, Beatrice Rocutto, Marten Beeg, Georg Meisl, Lei Ortigosa-Pascual, Luca Broggini, Mario Salmona, Stefano Ricagno, Tuomas P. J. Knowles, Luisa Diomede*. Tau catalyzes amyloid-β aggregation in a fold-dependent manner. *bioRxiv*, 2025 October 22. DOI: 10.1101/2025.10.21.683640

2. Ralf Schmidt#*, Carl Ward#*, Rama Dajani, **Zev Armour-Garb**, Mineto Ota, Vincent Allain, Rosmely Hernandez, Madeline Layeghi, Galen Xing, Laine Goudy, Dmytro Dorovskyi, Charlotte Wang, Yan Yi Chen, Chun Jimmie Ye, Brian R. Shy, Luke A. Gilbert, Justin Eyquem, Jonathan K. Pritchard, Stacie Dodgson, Alexander Marson*. Base-editing mutagenesis maps alleles to tune human T cell functions. *Nature*, 2023 December 13. DOI: 10.1038/s41586-023-06835-6

1. Hehua Liu#, Yanqing Gao#, Johnsi Mathivanan#, **Zev Armour-Garb**, Zhiwei Shao, Yixi Zhang, Xin Zhao, Qiyuan Shao, Weizhen Zhang, Jie Yang, Chulei Cao, Huili Li, Jia Sheng,* Jianhua Gan.* Crystal structures and identification of novel Cd2+-specific DNA aptamer. *Nucleic Acids Res.*, 2023 April 4. DOI: 10.1093/nar/gkad239

* Corresponding author
# Contributed equally

RESEARCH EXPERIENCE

Knowles Lab, Centre for Misfolding Diseases at the University of Cambridge, Cambridge, UK
Postgraduate Researcher, September 2024 – August 2025

- Leveraging digital droplet microfluidics to create high-sensitivity diagnostic tools for protein misfolding diseases using minimally-invasive tissue samples. In collaboration with Professor Sara Linse (Lund University)
- Serve as lab social chair, organizing outreach and team-building events

Linse Lab, Lund University, Lund, Sweden
Visiting Student, October 2024 – November 2024

- Studied how different tau protein fragments aggregate in an effort to create a seed amplification assay for Alzheimer's Disease
- Learned best practices for tau protein production

Marson Lab, Gladstone-UCSF Institute of Genomic Immunology, San Francisco, CA
Student Intern, June 2022 – July 2024

- Helped develop high-resolution base editor mutagenesis platform in primary human T cells for forward genetic screening
- Uncovered novel protein domains and protein-protein interaction sites which could be mutated to positively or negatively tune T cell activity
- Led work on a platform to engineer Tregs to evade monoclonal antibody treatment for autoimmune disease, enabling Treg-promoting/Teff-suppressing combination immunotherapies, in collaboration with Professor Qizhi Tang (Gladstone-UCSF)
- Independently worked with collaborators in adapting the platform to screen for: pro- and anti-viral factors influencing HIV infection (Dr. Ujjwal Rawthore and Eli Dugan, Marson Lab, Gladstone-UCSF), cytokine signaling pathway regulators (Professor Sagar Bapat, UCSF), and novel transcriptional pathways in resting T cells *in vitro* (Maya Arce, Marson Lab, Gladstone-UCSF) and *in vivo* (Dr. Qi Liu, Marson Lab, Gladstone-UCSF)
- Optimized mRNA synthesis encoding large serine recombinase variants for efficient integration of large DNA payloads into primary human T cells
- Taught and guided two rotation students through projects involving base editing in T cells

Sheng Lab, The RNA Institute at SUNY Albany, Albany, NY
Undergraduate Research Intern, June 2021 – August 2021

- Used circular dichroism spectroscopy and systematic mutation to identify functional nucleotides in Cd^{2+}-specific DNA aptamers
- Helped determine mechanism for Cd^{2+} binding, enabling the development of cost-effective toxic heavy metal detectors

Forni Lab, The RNA Institute at SUNY Albany, Albany, NY
Research Intern, June 2019 – July 2019

- Helped identify means by which Gonadotropin-releasing hormone-1 neurons migrate along terminal nerve from nasal cavity to preoptic area of the brain

PRESENTATIONS

7. Seed amplification assays to quantify disease-associated amyloids. Knowles Lab Meeting, University of Cambridge Department of Chemistry, Cambridge, England, July 2025.

6. Digital seed amplification assays for disease biomarker detection. Peer-to-Peer Presentation, University of Cambridge Department of Chemistry, Cambridge, England, April 2025.

5. Digital seed amplification assays for disease biomarker detection. Koonin Lab Meeting, National Institutes of Health, Bethesda, MD, USA, February 2025.

4. Digital seed amplification assays for disease biomarker detection. Breakfast Seminar, Lund University Biochemistry and Structural Biology, Lund, Sweden, November 2024.

3. Base-editing mutagenesis in human T cells for immunotherapeutic development. Marson Lab Meeting, Gladstone-UCSF Institute of Genomic Immunology, San Francisco, CA, USA, April 2024.

2. Base-editing mutagenesis maps functional alleles to tune human T cell activity. Marson Lab Meeting, Gladstone-UCSF Institute of Genomic Immunology, San Francisco, CA, USA, August 2023.

1. Finding an NG PAM Cas9 for Primary Human T-Cell Base Editor Screens. Marson Lab Meeting, Gladstone-UCSF Institute of Genomic Immunology, San Francisco, CA, USA, August 2022.

AWARDS

1. Chemistry MPhil studentship, all course fees plus stipend
University of Cambridge, Cambridge, UK, July 2024.

ACADEMIC EXPERIENCE

UC Berkeley Bioengineering Department, Berkeley, CA
Lead uGSI (Head TA), BIOENG 163L/263L (Molecular and Cellular Biophotonics Laboratory), January 2024 – May 2024

- Hosted twice weekly labs for a combined class of 14 undergraduate and graduate students
- Wrote and led weekly, course-wide discussions and hosted weekly office hours
- Guided students through planning and executing complex pre-determined and independent projects

UC Berkeley Chemistry Department, Berkeley, CA
uGSI (TA), CHEM 1A/1AL (General Chemistry/Lab), June 2023 – August 2023

- Hosted and led twice weekly labs for a class of 27 students
- Taught a cohort during lecture, led biweekly course-wide/section-wide discussions and review sessions, graded assignments and exams, hosted weekly office hours, and proctored exams
- Head of student accommodations and of videography for the lecture course

Reader, CHEM 1A, January 2023 – May 2023

- Graded exams for general chemistry a class of 600 students
- Proctored exam rooms and answered students' questions

Undergraduate Mathematics Tutor, Berkeley, CA
Paid Tutor, August 2020 – May 2024

- One of two undergraduate tutors officially referred by the UC Berkeley Mathematics Department
- Tutored pre-calculus, analytic geometry, single and multivariable calculus, and linear algebra
- All 30+ students received an A- or above, improving course grade by up to two letter grades

ADDITIONAL EXPERIENCE

The Chemistry Race, Cambridge, UK
Examiner, October 2024 – February 2025
Question Author, October 2024 – February 2025

Delta Kappa Epsilon, Berkeley, CA
Executive Vice President, May 2022 – December 2022
National Undergraduate Advisory Board Member, August 2022 – December 2022
Risk Management Chair, December 2021 – May 2022

UC Berkeley Bioengineering Honor Society, Berkeley, CA
Outreach Committee, August 2022 – December 2022
Member, December 2022 – May 2024

Space Enterprise at Berkeley, Berkeley, CA
Propulsion Team Member, February 2022 – December 2022

Young Cleats Mentors, Berkeley, CA
Lead Nutritional Expert, August 2020 – December 2021

Congregation Beth Emeth, Albany, NY
Board of Trustees - Executive Board Member and Full Voting Member, September 2019 – June 2020
Youth Group - President, September 2019 – June 2020
Youth Group - Religious and Cultural Vice President, September 2018 - June 2019