Kaitavjeet Chowdhary
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Education

HARVARD MEDICAL SCHOOL Boston, MA

- MD/PhD, Harvard-MIT Medical Scientist Training Program Anticipated May 2025
  - MD in Harvard-MIT Division of Health, Sciences, and Technology
  - NIH Medical Scientist Training Program (MSTP) Fellowship, Harvard Stem Cell Institute Medical Scientist Training Fellowship

HARVARD UNIVERSITY Cambridge, MA

- A.B, Chemical and Physical Biology. Cumulative GPA:3.89/4 May 2017
  - *Magna cum laude* with High Honors
- Relevant Coursework in Molecular and Cellular Biology, Organic and Inorganic Chemistry, Linear Algebra and Differential Equations, Statistics and Probability, Mathematical Modeling, Computer Science, Computational Biology, Physics, Synthetic Biology, Immunology, Psychology, Stem Cell Biology, Health Policy, and Global Health

GLASTONBURY HIGH SCHOOL Glastonbury, CT

- GPA: 4.83/4.0 (Unweighted 4.0/4.0), Rank 2/539 SAT: CR: 800 M: 790 W: 760 June 2013

Research Experiences

HARVARD MEDICAL SCHOOL DIVISION OF IMMUNOLOGY Boston, MA
Graduate Rotation Student January 2018 – May 2018; October 2018 – Present

- Work in lab of Professors Diane Mathis and Christophe Benoist; Using experimental mouse models and computational single cell RNASeq approaches to understand development of autoimmunity in Type 1 Diabetes as well as to characterize heterogeneity of various splenic immune populations
- Techniques: single cell RNASeq analysis, mouse dissection, FACS

BRIGHAM & WOMEN'S HOSPITAL DEPARTMENT OF NEUROLOGY Boston, MA
Graduate Rotation Student August 2018 – October 2018

- Worked in lab of Professor Vijay Kuchroo; Examined the role of neuropeptides in regulating innate lymphoid cell (ILC) function in the context of lung allergic inflammation
- Techniques: T cell & ILC culture + differentiation, lung tissue isolation, allergic mouse model induction

HARVARD MEDICAL SCHOOL DEPARTMENT OF PEDIATRICS Boston, MA
Graduate Rotation Student June 2018 – August 2018

- Worked in lab of Professor Vijay Sankaran; Investigated the function of a noncoding variant associated with development of myeloproliferative neoplasms using CRISPRi and CRISPR/Cas9 perturbation in cell lines and human primary hematopoietic stem/progenitor cell populations
- Techniques: human hematopoietic stem cell culture + differentiation, CRISPRi, CRISPR/Cas9, ATACSeq/RNASeq analysis

HARVARD MEDICAL SCHOOL DEPARTMENT OF GENETICS Boston, MA
Graduate Rotation Student July 2017 - September 2017

- Worked in lab of Professor Steven McCarroll; Developed new computational pipelines for analysis of single cell RNASeq (DropSeq) data in project aimed at mapping the mouse brain connectome
- Techniques: Computational analysis of single cell RNASeq datasets; Adult/neonatal mouse brain dissection and culture

HARVARD UNIVERSITY DEPARTMENT OF STEM CELL AND REGENERATIVE BIOLOGY
Cambridge, MA

Undergraduate Researcher March 2014 – May 2017

- Worked in lab of Professor Kevin Eggan as PRISE Fellow, PRISE Program Assistant Fellow, Harvard Amgen Scholar, and Harvard College Research Program fellow; Developed novel protocol for directing differentiation of human pluripotent stem cells to upper motor neuron fates and investigated cellular/molecular mechanisms underlying pathogenesis of Amyotrophic Lateral Sclerosis, particularly associated with the *C9ORF72* Hexanucleotide Expansion Repeat
- Lab Techniques: Stem cell (ES and iPS) culture and directed differentiation, Mammalian cell culture, Gel electrophoresis, Transfection, Viral infection, Fluorescence microscopy, Phase contrast microscopy, Super-resolution fluorescence microscopy, FACS/Flow Cytometry, RNA purification, DNA purification, Immunostaining, qRT-PCR, Protein Purification and Analysis, RNASeq Analysis

UNIVERSITY OF CONNECTICUT HEALTH CENTER Farmington, CT

Student Researcher June 2010 – March 2014

- Worked in lab of Professor Lawrence Rothfield; Studied effects of FtsZ mutagenesis on *E. coli* cell division and chromosomal segregation dynamics; Manuscript in preparation
- Presented at National Junior Science and Humanities Symposium, Intel International Science and Engineering Fair (3rd place—Microbiology); Intel Science Talent Search (Semifinalist), Siemens Competition for Math, Science, and Technology (Semifinalist)
- Lab Techniques: Bacterial cell culture, fluorescence and phase-contrast, PCR, gel electrophoresis, immunostaining, DNA purification, viral transduction, plasmid construction and transformation, Western Blot

Honors

Harvard Stem Cell Institute Medical Scientist Training Fellowship	**2019**
Medical Scientist Training Program Fellowship	**2017**
Harvard-Amgen Scholars Program Fellow	**2016**
Harvard College John Harvard Scholar Award	**2014, 2017**
Harvard College Pechet Undergraduate Research Fellowship	**2015, 2016**
Harvard College Research Program Fellow	**2015**
Harvard College Program for Science and Engineering (PRISE) Program Assistant Fellow	**2015**
Harvard College PRISE Fellow	**2014**
Harvard College Detur Book Prize	**2014**
National Merit Scholarship Winner	**2013**
Recipient—H. Joseph Gerber Medal of Excellence from CT Academy of Science and Engineering	**2013**
1st place, Life Sciences, 2013 Connecticut Science Fair	**2013**
1st place, 2013 Connecticut Junior Science and Humanities Symposium	**2013**
National Semifinalist—Siemens Competition in Math, Science, and Technology	**2013**
National Semifinalist—Intel Science Talent Search	**2012**
2x National Semifinalist—USA Biology Olympiad	**2011, 2012**
National AP Scholar	**2012**
Gold, National Spanish Exam	**2012**
Princeton Book Award	**2012**

Publications

Ludwig LS, Lareau CA, Bao EL, Nandakumar SK, Muus C, Ulirsch JC, **Chowdhary K**, Buenrostro JD, Mohandas N, An X, Aryee MJ, Regev A, Sankaran VG. Transcriptional States and Chromatin Accessibility Underlying Human Erythropoiesis. Cell Rep. 2019 Jun 11;27(11):3228-3240.e7. doi: 10.1016/j.celrep.2019.05.046.

Mordes DA, Prudencio M, Goodman LD, Klim JR, Moccia R, Limone F, Pietilainen O, **Chowdhary K**, Dickson DW, Rademakers R, Bonini NM, Petrucelli L, Eggan K (2018). Dipeptide repeat proteins activate a heat shock response found in C9ORF72-ALS/FTLD patients. *Acta Neuropathologica Communications*, 6(1), p. 55. doi: 10.1186/s40478-018-0555-8.

Vats P, **Chowdhary K,** Hao B, Rothfield LI. Saturation mutagenesis of the Escherichia coli FtsZ protein surface**.** *In Preparation.*

Chowdhary K. "Boss" Tweed, Tammany Hall, and the Politics of the Gilded Age (Winter 2012)**.** *The Concord Review.*

Chowdhary K. Bacteria Have Skeletons, Too! (September 2013). ***The Hartford Courant*** **NIE Science Matters!**

Abstracts and Presentations

Vijaykumar, B., **Chowdhary, K.** (2018, December). *Single Cell RNA-Seq of Mouse Splenocytes*. Oral Presentation at Immunological Genome Project Workshop, Boston, MA.

Chowdhary, K., Maroof, A., Eggan, K. (2016, August). *Investigating Cell Type-Specific Degenerative Mechanisms in C9orf72 Amyotrophic Lateral Sclerosis Using Human Pluripotent Stem Cell-Derived Neurons.* Oral Presentation at the Harvard-Amgen Scholars Research Symposium.

Chowdhary, K., Maroof, A., Eggan, K. (2016, August). *Investigating Cell Type-Specific Degenerative Mechanisms in C9orf72 Amyotrophic Lateral Sclerosis Using Human Pluripotent Stem Cell-Derived Neurons.* Poster presented at the Affiliated Summer Undergraduate Research Programs at Harvard Poster Session.

Maroof, A., Burberry, A., Klim, J., Zhang, Y., **Chowdhary, K.**, Eggan, K. (2015, October). *In vitro disease modeling of ALS using neuronally enriched populations derived from human induced pluripotent cells*. Poster presented at the meeting of the Society for Neuroscience, Chicago, IL.

Chowdhary, K., Maroof, A., Eggan, K. (2015, August). *An in vitro Model of Amyotrophic Lateral Sclerosis Using Directed Differentiation of Human Pluripotent Stem Cells into a Variety of Neuronal Subtypes.* Oral presentation at the Harvard Program for Research in Science and Engineering Symposium.

Chowdhary, K., Maroof, A., Eggan, K. (2014, August). *Modeling Cortical Development Using Human Embryonic Stem Cells.* Oral presentation at the Harvard Program for Research in Science and Engineering Symposium.

Graduate Leadership and Activities

LEVERETT HOUSE, HARVARD UNIVERSITY Cambridge, MA
Resident Tutor August 2018 – Present

- Advise undergraduate students and support community-building in one of Harvard's undergraduate residential houses

HARVARD-MIT MD-PHD PROGRAM Boston, MA
Class Representative October 2017 – Present

- One of two elected class representatives; advocate for issues relevant to MD-PhD class at regular meetings with the MD-PhD program administration

CRIMSON CARE COLLABORATIVE Revere, MA
Junior Clinician October 2017 – October 2018

- Assist in clinical care of underserved populations at MGH Revere pediatric primary care clinic

HARVARD-MIT HEALTH SCIENCES & TECHNOLOGY JOINT COUNCIL Cambridge, MA
Social Co-Chair October 2017 – May 2018

- Organized regular social events for MD and PhD students affiliated with the Harvard-MIT Division of Health Sciences & Technology
- Managed annual student formal and retreat

Public Service Co-Chair October 2017 – May 2018

- Recruited students for STEM outreach opportunities, volunteering at community events (such as the Boston Marathon), and other activities to engage with the Greater Boston community

HARVARD MEDICAL SCHOOL PEDIATRICS INTEREST GROUP Boston, MA
Board Member September 2017 – May 2018
Organize speaker events and workshops for HMS community relevant to pediatric specialties

Undergraduate Leadership and Activities

HARVARD COLLEGE UNDERGRADUATE RESEARCH ASSOCIATION Cambridge, MA
Co-President January 2015—February 2016
Chair, Business and Finance Committee; Executive Board Member January 2014 – 2015

- Managed executive board of 20 students and organization with over 1000 members to host on-campus research events and organize the Harvard National College Research Conference (NCRC), the largest student-run undergraduate research conference in the U.S. with 200 undergraduate presenters from 8 different countries; launched new HCURA Science Research Conference for high school students

HARVARD SOUTH ASIAN ASSOCIATION Cambridge, MA
Outreach Chair; Executive Board Member April 2014 –2015

- Organized cultural and academic events for one of largest cultural organizations on campus (500+ members)
- Spearheaded a Bone Marrow Drive Fundraiser Event to increase registration in bone marrow registries: received over 180 unique new registrations
- Served as House Manager of Ghungroo, sponsored by Harvard SAA, and the largest student performance on campus

HARVARD BHANGRA DANCE COMPANY Cambridge, MA
Treasurer April 2014 – April 2016

- Managed finances and wrote grants for Harvard Bhangra, an Indian folkdance—Hip Hop fusion group
- Active member and performer with group and on competitive team

HARVARD WORLD MODEL UNITED NATIONS Cambridge, MA
Under-Secretary-General, General Assembly 2017 April 2016- March 2017

- Managed 7 different committee chairs in General Assembly throughout the process of preparing for conference
- Total General Assembly organ size of nearly 1000 delegates from around the world

Committee Chair—SPECPOL, WorldMUN 2016 (Rome) March 2016

- Wrote 80+ page policy guide on topics in statebuilding and education for college Model UN delegates
- Managed a team of 3 assistant chairs

HARVARD INTERNATIONAL RELATIONS COUNCIL Cambridge, MA
Committee Director—Special Summit on Biotechnology, Harvard Model United Nations January 2016

- Wrote 80+ page policy guide on topics in biotechnology for high school Model UN delegates
- Managed a team of 3 assistant directors

Vice President of Business—Harvard International Relations Council Welcome Week/Model Security Council April 2014 – September 2014

- Managed business and finances for recruitment of incoming Harvard freshman to International Relations Council
- On Executive Organizing Committee/Secretariat of Model Security Council Model UN conference, with almost 100 participants
- Led a team of 5 Business Directors to Secure advertisements, sponsorships, and funding for conference

Assistant Director—Harvard Model UN, Harvard National Model UN Conferences February 2014, 2015

- Wrote update papers and assisted in running substantive committees at largest high school and college Model UN conferences in the world

Member—Harvard Intercollegiate Model UN Team October 2014—May 2016

- Competed on college Model UN circuit with 2nd ranked Model UN team in the world

HARVARD COLLEGE ALZHEIMER'S BUDDIES Cambridge, MA
Volunteer September 2014 – May 2017

- Weekly visits to Alzheimer's patient at Hebrew Senior Life to provide intergenerational company and companionship, and form a long-term relationship with Alzheimer's "buddy"

CRIMSON CARE COLLABORATIVE—MASSACHUSETTS GENERAL HOSPITAL Boston, MA
January 2015—May 2017

- Research Team and Administrative Coordinator at Internal Medicine Associates clinic, MGH

HEALTH LEADS Boston, MA
Triage Specialist/Leadership Team Member September 2016—May 2017
Advocate January 2016—September 2016

- Worked at MGH branch to connect patients to resources such as food stamps, federal aid programs, etc. to address the socioeconomic determinants of health

Skills

Technical: R, Python, MatLab, C, Mathematica, HTML/CSS, Microsoft Excel, Microsoft Office Suite
Languages: English, Spanish, Hindi, Punjabi