# Evan Collins

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## EDUCATION

**Massachusetts Institute of Technology** — 2022 – ongoing
Doctor of Philosophy (PhD) Candidate in Biological Engineering — Cambridge, MA
- GPA: 5.00 / 5
- Advisors: Robert Langer ScD, Daniel Anderson PhD

**Yale University** — 2018 – 2022
Master of Science (MS) in Biomedical Engineering — New Haven, CT
Bachelor of Science (BS) in Biomedical Engineering
- GPA: 3.96 / 4; highest in major; High honors with Distinction

*Non-degree education:*
**Tsinghua University** — 2020
Inter-University Program for Chinese Language Study (IUP 汉语培训项目) — Beijing, China (*virtual)*

## CORE EXPERIENCE

**Massachusetts Institute of Technology** — 2022 – present
**David H. Koch Institute for Integrative Cancer Research** — Cambridge, MA
Doctoral Researcher
- Using biochemical engineering and data science to build better nanomedicines
- Advised by Robert Langer ScD, Daniel Anderson PhD

**Yale University** — 2018 – 2022
Student Investigator — New Haven, CT
- Mapped structure-function relationship in the human brain
- Analyzed association between seizure spread features and surgical outcome
- Contributed to development of Yale Brain Atlas
  - Advised by Hitten P. Zaveri PhD, Dennis D. Spencer MD
- Investigated PNAs/DNA nanoparticles for in-utero gene therapy
  - Advised by Adele Ricciardi MD-PhD, Mark Saltzman PhD, Peter Glazer MD-PhD
- Investigated accuracy perceptions of social media posts with fact-checking labels to reduce the spread of misinformation online
  - Advised by Gordon Pennycook PhD, David Rand PhD

**Simplex Sciences** — 2019 – 2022
Chief Operating Officer & Chief Science Officer — New Haven, CT
- Developed and produced single-stranded DNA ladders as size standards for gel electrophoresis
- Managed and coordinated the scientific and operational efforts of 10-person team
- Fulfilled orders across biotech industry and academia which led to products being cited in 10+ publications, including *Cell* and *Nature Protocols*

**D. E. Shaw & Co.** — 2021
Risk Analyst Intern — New York, NY (*virtual)*
- Developed software applications to assess market risk measures
- Received full-time return offer

**Click Therapeutics** — 2020 – 2021
Data Scientist — New York, NY (*virtual)*
- Worked as member of R&D clinical team building digital therapeutics for schizophrenia
- Created natural language processing and deep learning models for emotion and psychosis detection from speech

## AWARDS

- MIT Wishnok Prize for Best Talk in Bioengineering (2025)
- Emerald Society Scholarship (2024)
- MIT Jameel Clinic Fellowship for AI in Healthcare (2022)
- Yale D. Allan Bromley Prize for Highest GPA in Biomedical Engineering (2022)
- Yale SEAS Belle and Carl Morse Scholarship (2021)
- D. E. Shaw Nexus Fellowship (2021)
- Yale Richard U. Light Fellowship for Chinese Studies (2020)
- Tau Beta Pi Engineering Honor Society (2020 – 2022)
- Lockheed Martin STEM Scholarship (2019 – 2022)
- Yale Summer Research Fellowship (2019)
- Intel International Science and Engineering Fair 3rd Place Prize (2018)
- National Merit Finalist and Scholarship (2018)
- Valedictorian of Ridgeview High School (2018)

## TEACHING

- Course Content Developer, MIT 3.C01/3.C51/10.C01/20.C01/20.C51 Machine Learning for Molecular Engineering (Spring 2024 with Rafael Gomez-Bombarelli PhD, Connor Coley PhD, and Ernest Fraenkel PhD)
- Teaching Assistant, MIT 20.420[J] Principles of Molecular Bioengineering (Fall 2023 with Alan Jasanoff PhD and Ernest Fraenkel PhD)
- Tutor, Yale BENG 350 Physiological Systems (Fall 2020 with Professors Mark Saltzman PhD and Stuart Campbell PhD)
- Tutor, Yale ENAS 194 Ordinary and Partial Differential Equations (Spring 2020 with Beth Anne Bennett PhD)

## PUBLICATIONS

Jeang W J*, Wong B M*, Zhao Y, Manan R, Jiang A L, Bose S, **Collins E**, McMullen P, Rosenboom J, Lathwal S, Langer R, Anderson D G — 2024
"Antifouling Immunomodulatory Copolymer Architectures that Inhibit the Fibrosis of Implants"
*Advanced Materials*
https://doi.org/10.1002/adma.202414743

Witten J*, Raji I*, Manan R S*, Beyer E, Bartlett S, Tang Y, Ebadi M, Lei J, Nguyen D, Oladimeji F, Jiang A Y, MacDonald E, Hu Y, Mughal H, Self A, **Collins E**, Yan Z, Engelhardt J F, Langer R, Anderson D G — 2024
"Artificial intelligence-guided design of lipid nanoparticles for pulmonary gene therapy"
*Nature Biotechnology*
https://doi.org/10.1038/s41587-024-02490-y

**Collins E**, Chishti O, Obaid S, King A, McGrath H, Shen X, Arora J, Papademetris X, Constable T R, Spencer D D, Zaveri H P — 2024
"Mapping the structure-function relationship along macroscale gradients in the human brain"
*Nature Communications*
https://doi.org/10.1038/s41467-024-51395-6

Sivaraju A, Quraishi I, **Collins E**, McGrath H, Ramos A, Turk-Browne N, Zaveri H P, Damisah E, Spencer D D, Hirsch L J — 2024
"Systematic 1 Hz Direct Electrical Stimulation for Seizure Induction: A Reliable Method for Localizing Seizure Onset Zone and Predicting Seizure Freedom"
*Brain Stimulation*
https://doi.org/10.1016/j.brs.2024.03.011

McGrath H, Zaveri H P, **Collins E**, Jafar T, Chishti O, Obaid S, Ksendzovsky A, Wu K, Papademetris X, Spencer D D — 2022
"High-resolution cortical parcellation based on robust brain landmarks for precise localization of multimodal data"
*Scientific Reports*
https://doi.org/10.1038/s41598-022-21543-3

Pennycook G, Bear A, **Collins E,** & Rand D G 2020
"The Implied Truth Effect: Attaching Warnings to a Subset of Fake News Headlines Increases Perceived Accuracy of Headlines Without Warnings"
*Management Science*
https://doi.org/10.1287/mnsc.2019.3478

**CONFERENCES**

**Collins E**, Chen M, Langer R, Anderson D G. Poster at *MIT Department of Biological Engineering Retreat* (2024).

Watson E, **Collins E**, Chishti O, McGrath H, Sivaraju A, Zaveri H P, Spencer D D. "Yale Brain Atlas Parcellation of Overlapping Multimodal Functions in the Human Temporal Lobe". Poster at *American Epilepsy Society* conference (2024).

King A, Obaid S, Pu K, Chishti O, **Collins E**, McGrath H, King-Stephens D, Duckrow R, Spencer D D, Zaveri H P. "Use of the Yale Brain Atlas to Determine Signatures of Cortical Thinning". Poster at *American Epilepsy Society* conference (2024).

Pu K, Chen M, Chen C, King A, **Collins E,** Spencer D D, Zaveri H P. "PET Hypometabolism is Associated with Epileptogenesis at Multiple Spatial Resolutions Ranging from the Hemisphere of Seizure Onset to the Seizure Onset Area". Poster at *American Epilepsy Society* conference (2023).

Watson E, **Collins E,** Chishti O, McGrath H, Sivaraju A, Zaveri H P, Spencer D D. "The optimization of a high-resolution brain atlas as a tool for surgical planning by translating a review of language function to parcellation". Poster at *American Epilepsy Society* conference (2023).

**Collins E**, Chishti O, Obaid S, McGrath H, King A, Spencer D D, Zaveri H P. "Large-scale analysis of the relationship between structure and function in the human cortex". Poster at *American Society of Neuroradiology* Annual Meeting (2023).

**Collins E**, Chishti O, Obaid S, McGrath H, Jafar T, King A, Zaveri H P, Spencer D D. "Anatomical brain atlas for structure-function coupling: predicting surgical outcome from seizure spread and analyzing large-scale fMRI-connectome associations". Poster and presentation at *American Epilepsy Society* conference (2022).

**Collins E**, McGrath H, Zaveri H P, Papademetris X, Wu K, Spencer D D. "Systematic Parcellation of the Human Cortex for Comparison of Multimodal Neuroimaging Data". Poster at *American Epilepsy Society* conference (2021).

Jafar T, McGrath H, Ksendzovsky A, Zaveri H, Farooque P, **Collins E**, Sivaraju A, Damisah E, Papademetris X, Spencer D D. "A multimodal cortical atlas for clinical decision making and function-structure hypotheses in epilepsy surgery". Poster at *Society for Neuroscience* conference (2021).

**TALKS**

Talk for MIT Bioengineering & Toxicology Seminar. December 13, 2024.

"Applications of the Yale Brain Atlas". Talk at Yale School of Medicine Department of Neurosurgery. October 30, 2023.

"Anatomical brain atlas for structure-function coupling". Talk at *American Epilepsy Society* conference. December 3, 2022.

"Multimodal Integration and Software Developments for Yale Brain Atlas". Talk at Yale School of Medicine Department of Neurosurgery. November 1, 2021.

"Optimized formulations of PLGA nanoparticles for in-utero gene therapy". Talk at Yale University Summer Research Symposium. July 9, 2019.