# Evan Collins

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## EDUCATION

**Massachusetts Institute of Technology** — 2022 – ongoing
Doctor of Philosophy (PhD) 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 — Beijing, China (*virtual)*

## EXPERIENCE

**Massachusetts Institute of Technology** — 2022 – present
**David H. Koch Institute for Integrative Cancer Research** — Cambridge, MA
Doctoral Researcher
- Leveraging high-throughput chemical engineering, biological engineering, deep learning, and data science to build state-of-the-art targeted delivery systems for nucleic acid therapeutics
- Advised by Robert Langer ScD, Daniel Anderson PhD

**Yale University** — 2017 – 2023
Student Investigator — New Haven, CT
- Used big data approaches to unravel how structure-function varies in the human brain (2021 – present)
- Investigated the association of seizure spread features with surgical outcome for patients with intractable epilepsy (2021 – present)
  - Principal Investigators: Hitten P. Zaveri PhD, Dennis D. Spencer MD
- Investigated functionalization of nanoparticles containing PNAs/DNAs for application to in-utero gene editing (2019 – 2020)
  - Academic Mentor: Adele Ricciardi MD-PhD
  - Principal Investigators: 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 (2017 – 2018)
  - Academic Mentor: Gordon Pennycook PhD
  - Principal Investigator: David Rand PhD (now MIT Sloan)

**Simplex Sciences** — 2019 – 2022
Chief Operating Officer & Chief Science Officer — New Haven, CT
- Produced single-stranded DNA ladders as size standards for gel electrophoresis
- Developed all synthesis protocols which led 2000% increase in sales
- 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 *Nature Protocols*

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

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

## AWARDS

MIT Jameel Clinic Fellowship for AI in Health (2022)
Yale D. Allan Bromley Prize 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 Award (2019 – 2022)
Yale Summer Research Fellowship (2019)
Intel International Science and Engineering Fair 3rd Place Prize (2018)
Valedictorian of Ridgeview High School (2018)

## TEACHING

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

**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. "Mapping the structure-function relationship along macroscale gradients in the human brain". In revision (2024).

Sivaraju A., Quraishi I., **Collins E.**, McGrath H., Ramos A., Turk-Browne N., Zaveri H. P., Damisah E., Spencer D. D., Hirsch L. J. "Systematic 1 Hz Direct Electrical Stimulation for Seizure Induction: A Reliable Method for Localizing Seizure Onset Zone and Predicting Seizure Freedom". In revision (2024).

Chishti O., **Collins E.**, McGrath H., Zhang T., Quraishi I., Hirsch L. J., Benjamin C., Damisah E. C., Zaveri H. P., Spencer D. D., Sivaraju A. "Multitask Language Mapping to Visualize the Spatial Configuration of Polyfunctional Language Cortex". Under review (2024).

McGrath H., Zaveri H. P., **Collins E.**, Jafar T., Chishti O., Obaid S., Ksendzovsky A., Wu K., Papademetris X., Spencer D. D. "High-resolution cortical parcellation based on robust brain landmarks for precise localization of multimodal data". *Scientific Reports* (2022).

Pennycook G., Bear A., **Collins E.,** & Rand D. G. "The Implied Truth Effect: Attaching Warnings to a Subset of Fake News Headlines Increases Perceived Accuracy of Headlines Without Warnings." *Management Science* (2019).

## CONFERENCES

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". Forthcoming 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". Forthcoming 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**

“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 functionalization of PLGA nanoparticles for in-utero gene therapy”. Talk at Yale University Summer Research Symposium. July 9, 2019.