

# Evan Collins

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## EDUCATION

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**Massachusetts Institute of Technology** 2022 – present  
Cambridge, MA  
Doctor of Philosophy (PhD) Candidate in Biological Engineering  
Advised by Robert Langer ScD, Daniel Anderson PhD  
GPA: 5.00/5.00

**Yale University** 2018 – 2022  
New Haven, CT  
Master of Science (MS) in Biomedical Engineering  
Bachelor of Science (BS) in Biomedical Engineering  
GPA: 3.96/4.00; Highest in major; High Honors with Distinction

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

## CORE WORK EXPERIENCE

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**Massachusetts Institute of Technology,  
Koch Institute for Integrative Cancer Research** 2022 – present  
Cambridge, MA  
Doctoral Researcher

**Yale School of Medicine** 2018 – 2022  
New Haven, CT  
Student Investigator

**Simplex Sciences** 2019 – 2022  
New Haven, CT  
Chief Operating Officer & Chief Science Officer

**D. E. Shaw & Co.** 2021  
New York, NY  
Risk Analyst Intern

**Click Therapeutics** 2020 – 2021  
New York, NY  
Data Scientist

## AWARDS

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- Sigma Xi Scientific Research Honor Society (2026)
- MIT Wishnok Prize for Best Talk (2025)
- MIT Prize for Open Data Honorable Mention (2025)
- MIT Jameel Clinic Fellowship for Machine Learning in Health (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 Third Place Prize (2018)
- National Merit Finalist and Scholarship (2018)
- Valedictorian of Ridgeview High School (2018)
- Florida Sunshine State Scholar (2017)

## TEACHING

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**Massachusetts Institute of Technology** 2024  
Cambridge, MA  
**Machine Learning for Molecular Engineering (3.C01/3.C51/10.C01/20.C01/20.C51)**  
Course Content Developer

<b>Massachusetts Institute of Technology</b> <b>Principles of Molecular Bioengineering (20.420[J])</b> Teaching Assistant	2023 Cambridge, MA
<b>Yale University</b> <b>Physiological Systems (BENG 350)</b> Peer Tutor	2020 New Haven, CT
<b>Yale University</b> <b>Ordinary and Partial Differential Equations (ENAS 194)</b> Peer Tutor	2020 New Haven, CT

## **PUBLICATIONS**

“Quantitative Cryogenic Orbitrap Secondary Ion Mass Spectrometry (Q-Cryo-OrbiSIMS) demonstrated for lipid nanoparticles (LNPs)” Roberts J, Kotowska A, Aguilar-Bejarano E, <b>Collins E</b> , Witten J, Howard A, Trindade G, Gilmore I, Hook A, Winkler D, Alvey K, Figueredo G, Scurr D J, Anderson G D, Alexander M R <i>ChemRxiv. Under review.</i> <a href="https://doi.org/10.26434/chemrxiv.15001097/v1">https://doi.org/10.26434/chemrxiv.15001097/v1</a>	2026
“Translating a review of language function to the parcellation of a high-resolution brain atlas” Watson E, <b>Collins E</b> , Chishti O, Bose-Roy R, McGrath H, Segal N A, Lehman R, Sivaraju A, Zaveri H P, Spencer D D <i>Epilepsia</i> <a href="https://doi.org/10.1002/epi.70229">https://doi.org/10.1002/epi.70229</a>	2026
“Lipid Nanoparticle Database towards structure-function modeling and data-driven design for nucleic acid delivery” <b>Collins E*</b> , Ji J*, Kim SG*, Witten J, Kim S, Zhu R, Park P, Jung M, Park A, Manan R S, Rudra A, Jeang W J, Langer R, Anderson D G, Im W <i>Nature Communications</i> <a href="https://doi.org/10.1038/s41467-026-68818-1">https://doi.org/10.1038/s41467-026-68818-1</a>	2026
“Multitask Language Mapping to Visualize the Spatial Configuration of Polyfunctional Language Cortex” Chishti O, <b>Collins E</b> , McGrath H, Zhang T, Quraishi I H, Hirsch L J, Benjamin C, Damisah E C, Zaveri H P, Spencer D D, Sivaraju A <i>Neurology</i> <a href="https://doi.org/10.1212/WNL.0000000000214256">https://doi.org/10.1212/WNL.0000000000214256</a>	2025
“Self-driving labs for biotechnology” <b>Collins E</b> , Langer R, Anderson D G <i>Nature Computational Science</i> <a href="https://doi.org/10.1038/s43588-025-00885-8">https://doi.org/10.1038/s43588-025-00885-8</a>	2025
“Yale Brain Atlas to interactively explore multimodal structural and functional neuroimaging data” <b>Collins E</b> , Chishti O, McGrath H, Obaid S, King A, Qiu E, Gabriel E, Shen X, Arora J, Papademetris X, Constable T R, Spencer D D, Zaveri H P <i>Frontiers in Network Physiology</i> <a href="https://doi.org/10.3389/fnetp.2025.1585019">https://doi.org/10.3389/fnetp.2025.1585019</a>	2025
“Antifouling Immunomodulatory Copolymer Architectures that Inhibit the Fibrosis of Implants” Jeang W J*, Wong B M*, Zhao Y, Manan R, Jiang A L, Bose S, <b>Collins E</b> , McMullen P, Rosenboom J, Lathwal S, Langer R, Anderson D G <i>Advanced Materials</i> <a href="https://doi.org/10.1002/adma.202414743">https://doi.org/10.1002/adma.202414743</a>	2025

- “Artificial intelligence-guided design of lipid nanoparticles for pulmonary gene therapy” 2024  
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  
*Nature Biotechnology*  
<https://doi.org/10.1038/s41587-024-02490-y>
- “Mapping the structure-function relationship along macroscale gradients in the human brain” 2024  
**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  
*Nature Communications*  
<https://doi.org/10.1038/s41467-024-51395-6>
- “Systematic 1 Hz Direct Electrical Stimulation for Seizure Induction: A Reliable Method for Localizing Seizure Onset Zone and Predicting Seizure Freedom” 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  
*Brain Stimulation*  
<https://doi.org/10.1016/j.brs.2024.03.011>
- “High-resolution cortical parcellation based on robust brain landmarks for precise localization of multimodal data” 2022  
McGrath H, Zaveri H P, **Collins E**, Jafar T, Chishti O, Obaid S, Ksendzovsky A, Wu K, Papademetris X, Spencer D D  
*Scientific Reports*  
<https://doi.org/10.1038/s41598-022-21543-3>
- “The Implied Truth Effect: Attaching Warnings to a Subset of Fake News Headlines Increases Perceived Accuracy of Headlines Without Warnings” 2020  
Pennycook G, Bear A, **Collins E**, & Rand D G  
*Management Science*  
<https://doi.org/10.1287/mnsc.2019.3478>

## CONFERENCES

- Collins E**. “Data-driven approaches for understanding and improving mRNA lipid nanoparticles”. Talk at *MIT Koch Institute for Integrative Cancer Research Retreat* (2025).
- Collins E**, Ji J, Kim SG, Witten J, Kim S, Zhu R, Park P, Jung M, Park A, Manan R S, Rudra A, Jeang W J, Im W, Langer R, Anderson D G. “LNPDB: structure-function dataset of lipid nanoparticles to advance data-driven design for nucleic acid delivery”. Poster at *MIT Molecular Machine Learning Conference (MoML)* (2025).
- Park P, **Collins E**, Kim S, Im W. “Improving Martini 3 Coarse-Grained Models for Ionizable Lipids in LNP Simulations”. Poster at *American Chemical Society Fall 2025 conference* (2025).
- Ji J, **Collins E**, Kim SG, Kim S, Im W. “LNPDB: structure-function database of lipid nanoparticles to advance data-driven design for nucleic acid delivery”. Poster at *American Chemical Society Fall 2025 conference* (2025).
- 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).

## **ACADEMIC SERVICE**

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### **Mentorship**

- Massachusetts Institute of Technology, Undergraduate thesis research 2023 – present
- Yale University, Undergraduate thesis research 2021 – present

### **Public engagement and science communication**

Press interviews for *Nature*, *YaleNews*

### **Peer review**

Contributed reviews to *Brain Structure and Function*, *Brain and Cognition*, *Epilepsy & Behavior*, *Molecular Therapy – Nucleic Acids*, *Nature Biotechnology*, *Nature Reviews Materials*, *Technology in Society*