Benjamin Lipkin
Curriculum Vitae
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Contact:

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Education:

2016 – 2020	University of Michigan, Ann Arbor, MI Degree: B.Sc. Neuroscience, High Honors Concentration: Computation & Cognition Thesis: Decoding object color binding using multivariate pattern analysis. Advisor: Dr. David Brang, PhD.
2012 – 2016	Bronx High School of Science, Bronx, NY

Research:

2020 – Present	Fedorenko Lab, MIT, Cambridge, MA (full-time) Working on a wide variety of projects using neuroimaging, behavioral and corpus analytic approaches, and computational modeling to investigate the neural representations and computations underlying language and other hierarchically structured processes in the human brain and in state-of-the-art deep learning models. Developed software along these goals using primarily Python, MATLAB, and R, among other tools.
2018 – 2020	Brang Lab, University of Michigan, Ann Arbor, MI (part-time + summer) Processed and analyzed intraoperative electrocorticographic (ECoG) data from epilepsy and tumor patients to investigate articulation network dynamics and organization. Collected and analyzed fMRI data to assess predictive coding of visual information. Assisted in the creation, development, and maintenance of laboratory signal processing, statistical inference, and machine learning pipelines in MATLAB and Python.
2016 – 2018	Becker Lab, University of Michigan, Ann Arbor, MI (part-time + summer) Carried out behavioral experiments in rats investigating estradiol-mediated modulation of basal ganglia dopamine circuitry during psychostimulant drug

administration. Assisted in animal surgery, immunohistochemistry, and statistical data analysis.

2014 – 2015 Kandel Lab, Columbia University, New York, NY (summer)

Used SDS-PAGE to screen compounds for their effects on the aggregation of RNA binding protein TIA-1 in vitro and in COS-7 cells. Analyzed FRET data to investigate stress granule formation.

Published Manuscripts and Preprints:

2022 **Lipkin B**, Tuckute G, Affourtit J, Small H, Mineroff Z, Kean H, Jouravlev O, Rakocevic L, Pitchett B, Siegelman M, Hoeflin C, Pongos A, Blank I, Kline M, Ivanova A, Shannon S, Sathe A, Hoffman M, Nieto-Castañón A, and Fedorenko E. (preprint). LanA (Language Atlas): A probabilistic atlas for the language network based on data from >800 individuals. https://doi.org/10.1101/2022.03.06.483177

2021 Srikant S*, **Lipkin B***, Ivanova A, Fedorenko E, O'Reilly, UM. (preprint). Representations of computer programs in the human brain. https://openreview.net/pdf?id=czmQDWhGwd9

2021 Shain C, Kean H, **Lipkin B**, Affourtit J, Siegelman M, Mollica F, Fedorenko E. (preprint). Constituent length effects do not support syntactic abstraction in the human language network. https://doi.org/10.1101/2021.11.12.467812

2021 Aabedi A*, **Lipkin B***, Kaur J, Kakaizada S, Reihl S, Young JS, Lee AT, Krishna S, Chang EF, Brang D, Hervey-Jumper SL. (2021). Functional alterations in cortical processing of speech in glioma-infiltrated cortex. *PNAS*, 118(46): e2108959118.

2021 Malik-Moraleda S, Cucu T, **Lipkin B**, Fedorenko, E. (2021). The domain-general Multiple Demand system is more active in bilinguals than monolinguals during executive processing. *Neurobiology of Language*, 2(4): 647-664.

2021 Aabedi A, **Lipkin B**, Young JS, Krishna S, Kakaizada S, Kaur J, Berger M, Brang D, Hervey-Jumper SL. (2021). Spectro-temporal encoding of speech responses in glioma-infiltrated cortex. *Journal of Neurosurgery*, 135(2): 15.

Manuscripts in Preparation:

2022 **Lipkin B***, Small H*, Siegelman M, Ziegler J, Paunov A, Fedorenko E. (in prep). Functional characterization of the high-level language-responsive area in left ventral temporal cortex.

2022 **Lipkin B**, Tuckute G, Affourtit J, Small H, Mineroff Z, Nieto-Castañón A, and Fedorenko E. (in prep). A probabilistic atlas for the Multiple Demand (MD) network based on data from 691 individuals performing a spatial working memory localizer task.

2022 Small H*, **Lipkin B***, Affourtit J, Pongos A, Fedorenko E. (in prep). The right-hemisphere language network is less functionally specialized for language processing, but only for select domains.

2022 **Lipkin B**, Affourtit J, Small H, Mineroff Z, Nieto-Castañòn A, Fedorenko E. (in prep). In defense of individual-level functional neural markers: Evidence from large-scale fMRI datasets of functional 'localizers' for the language and the Multiple Demand networks.

2022 Regev T*, **Lipkin B***, Boebinger D, Paunov A, Norman-Haignere S, Fedorenko E. (in prep). Preserved functional organization of human auditory cortex in individuals missing temporal lobe from birth.

Invited Talks:

2020 Aabedi A, **Lipkin B**, Valdivia C. The neural encoding of speech errors in patients with perisylvian brain tumors. Berkeley Phonetics and Phonology Forum, Berkeley, CA.

Conference Presentations:

2021 Small H*, **Lipkin B***, Affourtit J, Pongos A, Fedorenko E. Differential selectivity of the left and right hemisphere language regions for non-linguistic processing. *Society for Neurobiology of Language.*

2019 **Lipkin B**, Plass J, Kakaizada S, Valdivia C, Sagher O, Hervey-Jumper SL, Brang D. Electrocorticographic recordings enable intraoperative language network mapping. *Society for Neuroscience*, Chicago, IL

2018 Quigley JA, **Lipkin B**, Lalani LK, Becker JB. G-protein coupled estradiol receptor 1 activation regulates drug preference and dopamine release in male rats. *Society for Neuroscience*, San Diego, CA.

2018 Quigley JA, Lalani LK, **Lipkin B**, Becker JB. Effects of ICI 182,780 on preference for cocaine in male rats. *International Behavioral Neuroscience Society*, Boca Raton, FL.

Service:

2022 Reviewer. International Conference of Machine Learning (ICML).

Awards:

2016 – 2020 University Honors.
2019 MCubed Scholars Research Fellowship.
2016 New York City Science & Engineering Fair Finalist.

Volunteer:

2021 – Present Greater Boston Food Bank. Boston, MA.
2018 – 2019 FEMMES Workshop. Ann Arbor, MI.
2016 Eisenhower Center for TBI. Ann Arbor, MI.

Affiliations:

2020 – Present	Society for the Neurobiology of Language (SNL).
2019 – Present	Cognitive Neuroscience Society (CNS).
2018 – Present	Society for Neuroscience (SfN).

Selected Coursework & Technical Experience:

Mathematics	Vector Calculus, Linear Algebra, Differential Equations, Probability
Statistics	Modelling & Inference, Bayesian Analysis, Probabilistic Programming
Engineering	Dynamic Systems & Control, Signal Processing, Reinforcement Learning
Computer Science	Data Structures & Algorithms, Software Engineering, Deep Learning
Languages	Python, MATLAB, R, Julia, JavaScript, C++, Unix Shell, SQL
Tools	Git, Docker, Make, Slurm, CircleCI, Figma, LaTeX

References:

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