

Curriculum Vitae: Dan A. Svedberg

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Education

PhD 2024 **Brandeis University, Waltham MA**
Program in Neuroscience, Quantitative Biology Specialization
Advisor: Dr. Donald Katz
Dissertation title: *Neural and Behavioral Correlates of Rapid Familiarization to Novel Taste*

MS 2019 **Brandeis University, Waltham MA.**
Neuroscience Major

BA 2017 **University of Minnesota-Twin Cities, Minneapolis MN**
Physiology Major, Neuroscience Minor

Research Experience

Jan 2016-
August 2017 **University of Minnesota Department of Integrative Biology & Physiology**
Research Assistant, Advisor: Dr. Alessandro Bartolomucci
Studied relationship between stress, brown adipose tissue thermogenesis, and obesity in mice

Jan 2014-
May 2016 **University of Minnesota Department of Neuroscience**
Research Assistant, Advisor: Dr. Marija Cvetanovic
Studied role of microglial activation in Spinocerebellar Ataxia Type-1 in mice

Teaching Experience

Sept-
Dec 2018 **Teaching Assistant, Brandeis University Dept. of Psychology**
Course: Cognitive Psychology. Director: Dr. Bob Sekuler
Facilitated discussions, assisted with exam creation, and graded exams

Jan-
May 2019 **Teaching Assistant, Brandeis University Dept. of Biology**
Course: Biology Lab. Director: Dr. Melissa Kosinski-Collins
Gave pre-lab lectures, supervised lab section, graded assignments & projects

June 2014-
Aug 2014 **Teaching Assistant, University of Minnesota Dept. of Integrative Biology & Physiology**
Course: Physiology: From Cells to Systems. Director: Dr. Lisa Anderson.
Facilitated discussions and graded assignments for upper-level general physiology class.

Fellowships & Awards

Sept 2019-
Sept 2020 **BNC Los Angeles Chapter Endowed Fellowship in Neuroscience and Biomedical Sciences**
PhD Fellowship funded by Brandeis National Committee Donors

June 2016-
May 2017 **NIH Administrative Supplement Recipient**
Project: *Molecular dissection of TLQP-21 peptide functions in obesity*
Funded by PA-13-302, via NIH/NIDDK 1R01DK102496-02S1

Jan-
May 2016 **Louis Stokes Alliance for Minority Participation (LSAMP) Research Fellowship**
Project: *Role of Sympathetic Innervation of Brown Adipose Tissue in Stress-Induced Obesity*
Funded by North Star STEM Alliance via NSF grant #1201983

June-
Aug 2015 **Louis Stokes Alliance for Minority Participation (LSAMP) Research Fellowship**
Project: *Investigating the Effects of NF- κ B Inhibition in the Microglia of SCA1 Mice*
Funded by North Star STEM Alliance via NSF grant #1201983

Jan- **University of Minnesota Undergraduate Research Opportunities (UROP) Award**
 May 2015 Project: *Investigating Synaptic Pruning in LysM-Cre IKK β -flox Mice*
 June- **University of Minnesota Undergraduate Research Opportunities (UROP) Award**
 Aug 2014 Project: *Impact of Eliminating Expression of IKK β in the Cerebellar Astrocytes of Mice*

Presentations

Jan 2024 **Winter Conference on Brain Research. Breckenridge, CO**
 Cortical Taste Processing Changes with Taste Experience across Trials and Days. Daniel Svedberg, Donald B. Katz. Poster & data blitz presentation.

April 2023 **ACHEMS XLV. Bonita Springs, FL**
 Cortical Sensory Processing Changes With Experience Across Days and Trials. Daniel Svedberg, Donald B. Katz. Poster.

Nov 2022 **Society for Neuroscience Conference. San Diego, CA**
 Cortical sensory processing changes with experience across days and even initial trials
 Daniel Svedberg, Thomas Gray, Donald B. Katz. Poster

Sep 2021 **Volen National Center for Complex Systems Scientific Retreat. West Dennis, MA**
 Effect of Taste pre-exposure on changes in taste responses related to experience. Daniel Svedberg, Donald B. Katz. Data blitz presentation.

Aug 2020 **International Symposium on Olfaction and Taste. Virtual/Online**
 Neural Correlates of Novel Taste Experience. Daniel Svedberg, Donald B. Katz. Virtual Poster

Jul 2019 **Organization for Computational Neuroscience Annual Meeting. Barcelona, SPA**
 Millisecond-Resolution Bayesian Decoding of Taste in Gustatory Cortex. Daniel Svedberg, Bradly Stone, Dr. Donald B. Katz. Poster. **Awarded travel grant to conference.**

Jul 2016 **St. Jude Medical National Undergraduate Research Conference, Memphis TN**
 Role of Brown Adipose Tissue Innervation in Resistance to Stress-Induced Obesity at Thermoneutrality. Daniel Svedberg, Dr. Maria Razzoli, Dr. Alessandro Bartolomucci. Poster & talk. By invitation, awarded travel grant to conference.

Apr 2016 **Minnesota Academy of Sciences Winchell Symposium, St. Paul MN**
 Inhibiting Microglial NF- κ B Reduces Synaptic Pruning in the Cerebellum. Daniel Svedberg, Dr. Marija Cvetanovic. Poster.

Oct 2015 **SACNAS National Conference, Washington DC**
 Effects of Microglial Activation of Spinocerebellar Ataxia Type 1. Daniel Svedberg, Dr. Marija Cvetanovic. Poster.

Apr 2015 **Minnesota Academy of Sciences Winchell Symposium, St. Paul MN**
 Effects of Microglial Activation of Spinocerebellar Ataxia Type 1. Daniel Svedberg, Dr. Marija Cvetanovic. Poster. **Awarded "Best Neuroscience Poster".**

Research Publications

- Svedberg, Daniel A., and Donald B. Katz. "Neural correlates of rapid familiarization to novel taste." *bioRxiv* (2024): 2024-05.
- Ogren, I. W., Svedberg, D. A. (2024) Assessing the Uses and Effects of Judicial Threats on the Opinion Writing Process of the United States Supreme Court. *Manuscript in preparation*.
- Razzoli, M., McGonigle, S., Sahu B.S., Svedberg, D., Rao, L., Ruocco, C., Nisoli, E., Vezzani, B., Frontini, A., Choi, Y., Bartolomucci, A. (2024). A key role for P2RX5 in brown adipocyte differentiation and energy homeostasis. *Manuscript in preparation*.
- Maigler, K. C., Crouse, E., Stone, B. T., Svedberg, D., & Katz, D. B. (2024). Experience-induced drift in the neural coding of individual differences in perception. *bioRxiv*, 2024-04.
- Lyons, Carey E., et al. "Optogenetic-induced sympathetic neuromodulation of brown adipose tissue thermogenesis." *The FASEB Journal* (2019).
- Ferro, A., Qu, W., Lukowicz, A., Svedberg, D., Johnson, A., & Cvetanovic, M. (2018). Inhibition of NF- κ B signaling in IKK β F/F; LysM Cre mice causes motor deficits but does not alter pathogenesis of Spinocerebellar ataxia type 1. *PLoS one*, 13(7), e0200013.
- Qu, W., Johnson, A., Kim, J. H., Lukowicz, A., Svedberg, D., & Cvetanovic, M. (2017). Inhibition of colony-stimulating factor 1 receptor early in disease ameliorates motor deficits in SCA1 mice. *Journal of neuroinflammation*, 14(1), 107.

Software

blechpy: Python package for extraction, spike clustering and processing of Intan recorded neural data for Katz Lab. Roshan Nanu, Daniel Svedberg. Co-author/maintainer. github.com/nubs01/blechpy

pyBAKS: Python implementation of Bayesian Adaptive Kernel Smoothing (BAKS) for neuronal firing rate estimation. Daniel Svedberg, Nur Ahmadi. Creator/maintainer. github.com/danielsvedberg/pyBAKS

cuedtaste: Python process-control software for multi-cue/outcome go/no-go task. Emma Barash, Daniel Svedberg. Co-author. github.com/emmalala123/lab_cuedtaste

blechbayes: MATLAB software for Bayesian decoding from high-dimensional time-series data with single-bin resolution. Daniel Svedberg. Creator/maintainer. github.com/danielsvedberg/blechBayes

repsubsamp: R software for drawing and evaluating representativeness of subsamples from a population data. Creator/maintainer. github.com/danielsvedberg/repsubsamp

Skills

Rodent Procedures

- Rodent surgery: 8 years of experience
 - Multisite neural/optogenetic probe implantation
 - Intraoral cannula implantation
 - Intracranial virus injection
 - Cranial window implantation
 - Peripheral nerve rhizotomy
- Rodent handling and injections: 8 years of experience
- Postmortem rodent dissection/specimen collection: 8 years of experience

Rodent Behavior

- *In-vivo* multielectrode electrophysiology: 6 years of experience
- Passive taste delivery paradigm: 6 years of experience
- Brief-access-task consumption assay: 6 years of experience
- Complex go/no-go paradigm: 6 years of experience
- Chronic social defeat stress: 2 years of experience
- Rotarod assay: 1 year of experience

Molecular/cellular biology

- Histology/immunohistochemistry: 8 years of experience with sample preparation, imaging (confocal & brightfield) and performing image analysis using ImageJ software (including creation of macros for analysis automation)
- Western blotting: 3 years of experience
- qPCR: 3 years of experience

Programming

- Python, R, and Matlab: high proficiency; 6, 9, and 5 years of experience respectively.
- Basic proficiency in C++: 1 year of experience
- Software publication on PyPi
- Collaborative software development/Git & Github
- Creation and implementation of integrated data analysis/machine learning software
- Creation and implementation of process control software for managing animal behavior assays

Statistics & data analysis

- Nonparametric/resampling-based models & testing
- Working with non-normal models/non-normally distributed data
- Information theory: Mutual information/Kullback-Leibler divergence, Receiver-operator analysis
- Dimensionality reduction: PCA, UMAP
- Predictive & classification models: Bayesian classification, clustering, hidden Markov modeling, GLM/multidimensional regression

Engineering

- 3D CAD design: 6 years of experience using SolidWorks; CSWA—Mechanical Design certified
- 3D printing: 6 years of experience using Formlabs SLA printers.
- Electronics prototyping: 6 years of experience designing & constructing bread/perf-board circuits, assembling PCB circuit boards
- Integrated in-vivo behavior and electrophysiology recording systems: 6 years of experience designing, installing, and maintaining electronics, mechanical components, and process-control software.

Visual Media

- Vector-graphic design in Adobe Illustrator and Inkscape
- Video editing in Adobe Premiere Pro
- Animated/3D graphs in Python

Mentored Awards

March 2024	Brandeis Computational Neuroscience Training Grant Summer Fellowship. Assessing Stability and Drift of Taste Preferences. Avi Patel, Daniel Svedberg, Donald Katz
March 2024	Barry Goldwater Scholarship Finalist. Rapid Change in Taste Preference Suggests Learning. Avi Patel, Daniel Svedberg, Donald Katz
March 2022	M.R. Bauer Summer Research Fellowship. A Novel Approach to Cue-Guided Taste Association Training. Emma Barash, Daniel Svedberg, Donald Katz.
March 2021	M.R. Bauer Summer Research Fellowship. Taste-Associated Cues Guide Behavioral Responses. Emma Barash, Daniel Svedberg, Donald Katz

Mentored Presentations

April 2023	ACHEMS XLV. Bonita Springs, FL A novel approach to investigating anticipatory cortical responses to taste associated cues. Emma Barash, Daniel Svedberg, Kathleen Maigler, Donald B. Katz. Poster Effects of Simultaneously Presented Tastes on Attenuation of Neophobia. Avi Patel, Daniel Svedberg, Donald B. Katz. Poster
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Sept 2022 **Society for Neuroscience Conference. San Diego, CA**
A novel approach to studying cue-guided food seeking
Emma Barash, Daniel Svedberg, Hannah Germaine, Donald B Katz.

Mentored Theses

Aug 2023 **A novel approach to investigating anticipatory responses to taste associated cues**
Emma Barash. Master's thesis.

Mentored Software

2023 **davis-rig-parser:** Python module for preprocessing MedAssociates Davis Rig lickometer data. Avi Patel, Bradly T. Stone. github.com/22AviPatel/davis_rig_parser