**Curriculum Vitae**

**Thomas Ross Gray**

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**Citizenship**

United States of America, NA

Colombia, SA

**ACADEMIC HISTORY & TRAINING**

**Ph.D. Neuroscience** August 2020 – September 2026

Brandeis University

Waltham, MA

**B.S. Neuroscience** August 2016 – May 2020

Georgia State University

Atlanta, GA

**The Genome Access Course** November 2019

Cold Spring Harbor Laboratories

Cold Spring Harbor, NY

**RESEARCH EXPERIENCE**

**Doctoral Candidate – R01 Diversity Supplement Awardee** Oct 2023 – Present

**NIH T32 Training Grant** August 2020 – August 2022

Principal Investigator: Donald B. Katz

Brandeis University, Waltham, MA

Visiting Scholar with Joost Maier, Ph.D. (Wake Forest University, January 2023)

**Doctoral Rotation Student - NIH T32 Training Grant** August 2020 – May 2021

Rotations with Paul Garrity, Ph.D.; Eve Marder Ph.D.; and Leslie Griffith Ph.D.

Brandeis University, Waltham, MA

**Undergraduate Assistant Researcher - NIH IMSD R25 Fellow** March 2017 – May 2020

Principal Investigator: Daniel N. Cox, Ph.D.

Georgia State University, Atlanta, GA

**Undergraduate Assistant Researcher - Volunteer** June 2019 – September 2019

Principal Investigator: Manfred Schmidt, Ph.D.

Georgia State University, Atlanta, GA

**COVID-19 Epidemiology Assistant** July 2020 – September 2020

Supervisor: Amanda Seaman, MPH

Georgia Department of Public Health, Decatur, GA

**Awards, honors, and funding**

R01 Diversity Supplement Awardee ($154,216) 2023

Co-PI Jetstream2 ACCESS Allocation (400,000 SUs and 12TB Storage) 2023, 2024

Association for Chemoreception Sciences Conference Travel Award ($2,400) 2022, 2023

NIH R13 SACNAS NDiSTEM Conference Travel Award ($1,200) 2022

Volen Retreat Best Poster Prize ($50) 2021

NIH T32 Predoctoral Training Grant ($51,156) 2020-2022

NIH R25IMSD Fellowship, Initiative for Maximizing Student Development ($35,000) 2017-2020

The Symposium for Undergraduate Research Exploration at UT Austin Travel Award ($1200) 2019

Admission to Honors College 2017

HOPE Scholarship 2017

Dean’s List 2016, 2018

**PUBLICATIONS**

1. Himmel NJ, Sakurai A, Letcher JM, Patel AA, Maggie N. Benson MN, Bhattacharjee S, **Gray TR**, Cymbalyuk GS, and Cox DN. (2023) Chloride-dependent mechanisms of multimodal sensory discrimination and neuropathic sensitization *eLife* <https://doi.org/10.7554/eLife.76863>
2. Himmel NJ, Letcher JM, Sakurai A, **Gray TR**, Benson MN, Donaldson KJ, and Cox DN. (2021). Identification of a neural basis for cold acclimation in *Drosophila* larvae, *iScience* <https://doi.org/10.1016/j.isci.2021.102657>
3. Himmel NJ, **Gray TR**, Cox DN. (2020). Phylogenetics identifies two eumetazoan TRPM clades and an 8th TRP family, TRP soromelastatin (TRPS), *Molecular Biology and Evolution* 37, 7, (2034-2044), <https://doi.org/10.1093/molbev/msaa065>
4. Himmel NJ, Letcher JM, Sakurai A, **Gray TR**, Benson MN, and Cox DN. (2019). *Drosophila* menthol sensitivity and the Precambrian origins of transient receptor potential-dependent chemosensation. *Philosophical Transactions of the Royal Society B.* 374(1785):20190369, <https://doi.org/10.1098/rstb.2019.0369>

**PREPRINTS**

1. Himmel NJ, Sakurai A, Letcher JM, Patel A, Bhattacharjee S, Benson MN, **Gray TR,** Cymbalyuk GS,and Cox DN. Chloride-dependent mechanisms of multimodal sensory discrimination and neuropathic sensitization in *Drosophila, bioRxiv*. doi: <https://doi.org/10.1101/2021.12.10.472093>
2. Himmel NJ, Letcher JM, Sakurai A, **Gray TR**, Benson MN, Donaldson KJ,and Cox DN. The evolution of cold nociception in drosophilid larvae and identification of a neural basis for cold acclimation, *bioRxiv*. doi: [doi.org/10.1101/2021.01.04.425280](https://doi.org/10.1101/2021.01.04.425280)
3. Himmel NJ, **Gray TR**, and Cox DN. (2019). Phylogenetic inference identifies two eumetazoan TRPM clades and an 8th family of TRP channel, TRP soromelastatin (TRPS). *bioRxiv*. doi: [10.1101/860445](https://www.biorxiv.org/content/10.1101/860445v1)
4. Himmel NJ, Letcher JM, Sakurai A, **Gray TR**, Benson MN, and Cox DN. (2019). *Drosophila* menthol sensitivity and the Precambrian origins of TRP-dependent chemosensation. *bioRxiv*. doi: [10.1101/690933](https://doi.org/10.1101/690933)

**ORAL PRESENTATIONS**

1. **Gray TR,** Katz DB. The relationship of gustatory and olfactory activity during retronasal olfaction. April 2023. *ACHEMS Annual Conference,* Fort Myers, FL.
2. **Gray TR**, Himmel NJ, Cox DN. Phylogenetics identifies TRP soromelastatin (TRPS), an 8th TRP family. April 2020. *GSURC Research Conference,* Atlanta, GA.
3. **Gray TR**, Himmel NJ, Cox DN. The neuropeptide Ccap is required in multimodal sensory neurons in order to drive stimulus-appropriate behavior. November 2019. *Annual Symposium for Undergraduate Research Exploration at the University of Texas at Austin*, Austin, TX.
4. **Gray TR**, Himmel NJ, Cox DN. Neuropeptides function in multimodal sensory neurons in order to drive stimulus-appropriate behavior selection. April 2019. *Oral presentation at the National Council for Undergraduate Research*, Atlanta, GA.
5. **Gray TR**. Dissecting the molecular and neural circuit bases of nociception. October 2017. *Course-based Undergraduate Research Experience Showcase*, Atlanta, GA.

**PRESENTATIONS AND PUBLISHED ABSTRACT**

1. **Gray TR,** Katz DB. Comparison of Retro- and Orthonasal Olfaction in Rat Cortical Networks. November 2022. *SFN Conference,* San Diego, CA
2. **Gray TR**, Katz DB. The Multisensory Coding of Flavor in Freely Moving Rats. October 2022. *SACNAS NDiSTEM Conference,* San Juan, PR
3. **Gray TR**, Baas-Thomas N, Svedberg DA, Lin J, Katz DB. Simultaneous Recordings in Gustatory and Olfactory Cortex During Retronasal Olfaction. September 2021. *Volen Center for Complex Systems Retreat*, West Dennis, MA.

1. **Gray TR**, Himmel HJ, Letcher JM, Benson MN, Cox DN. Cold nocifensive behavior in various drosophilid species. November 2019. *oSTEM National Conference,* Detroit, MI.
2. **Gray TR**, Himmel NJ, Cox DN. The role of neuropeptides in *Drosophila melanogaster* multimodal sensory neurons in driving stimulus-appropriate behavior. October 2019. *Undergraduate STEM Research Society Seminar Series,* Atlanta, GA.
3. Himmel NJ, Letcher JM, Sakurai A, **Gray TR**, Benson MN, Cox DN. Menthol elicits *Trpm*- and *TrpA1*-dependent rolling in *Drosophila* larvae, suggesting Precambrian origins for TRP-dependent menthol sensing. October 2019. *Platform presentation at biennial Neurobiology of Drosophila meeting, Cold Spring Harbor Laboratories,* Cold Spring Harbor, NY.
4. **Gray TR**, Himmel HJ, Letcher JM, Benson MN, Cox DN. A characterization of cold nocifensive behavior in varied drosophilid species. August 2019. *Annual CASA Summer Research Symposium,* Atlanta, GA.
5. Himmel NJ, Letcher JM, **Gray TR**, Benson MN, Cox DN. TRP-dependent chemical sensing: the Precambrian hypothesis. May 2019. *Poster presented at Annual GSU Brains & Behavior Retreat*, Atlanta, GA.
6. Benson MN, Himmel NJ, Letcher JM, **Gray TR**, Cox DN. The ancient origins of chemosensation. April 2019. *Georgia State University Undergraduate Research Conference*, Atlanta, GA.
7. Himmel NJ, Letcher JM, **Gray TR**, Benson MN, Cox DN. Menthol elicits a *Trpm*- and *TrpA1*-dependent nocifensive response in Drosophila melanogaster larvae. February 2019. *Theo Murphy International Scientific Meeting on the evolution of mechanisms and behaviour important for pain, hosted by The Royal Society*, Chicheley, Buckinghamashire, UK.
8. **Gray TR**, Himmel NJ, Letcher JM, Cox DN. Closely related drosophilid species differ in their behavioral response toward noxious cold. September 2018. *GSU IMSD Poster Session*, Atlanta, GA.
9. **Gray TR**, Himmel NJ, Letcher JM, Cox DN. The evolution of cold nocifensive behavior in drosophilid larvae. September 2018*. Herty Medal Undergraduate Research Symposium*, Lawrenceville, GA.
10. Himmel NJ, Letcher JM, **Gray TR**, Cox DN. The evolution of cold nociception in drosophilid larvae. May 2018*. Annual GSU B&B/IMSD Summer Poster Session*, Atlanta, GA.
11. Himmel NJ, **Gray TR**, Cox DN. Calcium-activated chloride channels are required for distinguishing between noxious and innocuous stimuli in multimodal sensory neurons. April 2018. *Annual meeting of the Genetics Society of America.* Abstract.
12. **Gray TR**, Himmel NJ, Cox DN. The role of the crustacean cardioactive peptide gene in the regulation of the cold nociceptive response in *Drosophila melanogaster*. July 2017. *Annual GSU B&B/IMSD Summer Poster Session*, Atlanta, GA.

**PROFESSIONAL SOCIETIES**

Association for Chemoreception Sciences 2021 - Present

Diverse Brandeis Scholars 2020 – Present

Society for Advancement of Chicanos/Hispanics and Native Americans in Science 2019 - Present

Undergraduate STEM Research Society 2019 - 2020

oSTEM 2019 - 2020

*Nu Rho Psi* Neuroscience Honor Society 2017 - Present

**TEACHING EXPERIENCE**

**Teaching Assistant for Introduction to Behavioral Neuroscience** Spring 2023/2024

Brandeis University

Instructor: Donald Katz, Ph.D.

(Invited to give lecture on Nociception and Somatosenation)

**Teaching Assistant for Introduction to Psychology** Fall 2022

Brandeis University

Instructor: James Howard, Ph.D.

(Invited to give lecture on Chemosensory Systems)

**Teaching Assistant for Introduction to Cognitive Neuroscience** Spring 2022

Brandeis University

Instructor: Teresa Mitchell, Ph.D.

(Invited to give lecture on Chemosensory Systems)

**Teaching Assistant for General Biology Laboratory** Fall 2021

Brandeis University

Instructor: Melissa Kosinski-Collins, Ph.D.

**Teaching Assistant for Crustacean Neuroscience Laboratory** Spring 2020

Georgia State University

Instructor: Manfred Schmidt, Ph.D.

**Teaching Assistant for Fruit Fly Neurogenetics Laboratory** Spring 2020

Georgia State University

Instructor: Sarah Clark, Ph.D.

**Teaching Assistant for Optogenetics Laboratory** July 2019

*The Neuroscience School*, Georgia State University

Instructor: Sarah Clark, Ph.D.

**MENTORING EXPERIENCE**

**HHMI Galaxy Program Mentor** August 2022 – May 2024

Undergraduate Student Cohort at Brandeis University

Mentees: 11 first years in 2022, 8 first years in 2023, 5 first years in 2024

**Graduate Student Mentor** April 2022 – Present

Undergraduate Student at Brandeis University

Mentee: Isaac Goldstein

Presentations: SciFest 2023

**Peer Graduate Student Mentor** September 2021 – May 2022

First year graduate Student at Brandeis University

Mentee: Michael Vivien

***Nu Rho Psi* Graduate Student Mentor** September 2020 – December 2021

Undergraduate Student at Georgia State University

Mentee: Jimena Pamela Castillo

**Leadership Positions**

Brandeis University Graduate Student Social Club - President 2021 - 2024

Brandeis University Diverse Brandeis Scholars - Public Relations Chair 2020 - 2023

Georgia State University Rowing Club - President 2018 – 2019

Georgia State University *Nu Rho Psi* - Public Relations Director 2019 - 2020

Georgia State University Out in STEM - Vice President 2019 - 2020

Georgia Senior Classical League - Historian 2016 - 2017

**Science Community engagement**

English Immersion for Spanish Speakers Waltham HS (9-12th Grade) Lab Field Trip April 2024

Spanish Spoken Research Presentation at Waltham HS (9-12th Grade) February 2024

NCUR Abstract Reviewer January 2024

Mentor Judge for Undergraduate Posters at SACNAS 2023 October 2023

SACNAS 2023 Brandeis University Graduate Student Representative October 2023

Presented Research and Immersive Activity for Waltham Boys & Girls Club August 2023

Workshop on Personal Branding in STEM for Brandeis 1st year undergraduates April 2023

English Immersion for Spanish Speakers Waltham High School (9-12th Grade) Lab Field Trip April 2023

Lead Host for Invited Speaker Keith Hengen, Ph.D. March 2023

Invited Speaker at Weston High School (9-12th Grade) March 2023

SACNAS 2022 Brandeis University Graduate Student Representative October 2022

Lead Host for Invited Speaker Graeme Davis, Ph.D. May 2022

GSU Cox Lab Alumni Panel Member March 2022

El Hora de Saber Talk at El Bosque Universidad, Bogota, Colombia (Zoom) March 2022

Invited Speaker for Science Pizza Talk at Waltham High School (9-12th Grade) March 2022

“How Your Brain Processes Tastes and Smells” Talk - High Meadows School (4th Grade) September 2021

SACNAS 2021 Brandeis University Grad Student Representative October 2021

Going the Distance 2021 Internship Panel Member June 2021

ABRCMS 2020 Brandeis University Grad Student Representative November 2020

SACNAS 2020 Brandeis University Grad Student Representative October 2020

*Nu Rho Psi* Graduate Student Panel October 2020

Collegiate Neuroscience Society Career Panel September 2020

Atlanta Regional Brain Bee Optogenetics Demo Booth February 2020

CNS Touch a Brain Event at Fernbank Museum of Natural History February 2020

Science Night “Build-a-Brain” Activity at Ashford Park Elementary October 2019

oSTEM CV and Resume Workshop Leader October 2019

*Nu Rho Psi* Touch a Brain Science Event August 2019

Center for Advancement of Students and Alumni Panel Member May 2019

Atlanta Science Festival Station Leader March 2018

S-Stem Scholars Application Panel Member August 2017

NCR Scholars Application Panel Member August 2017

**Technical Skills**

**Molecular Biology and Neuroscience:**

Behavioral Screens

Drosophila Neurogenetics

Immunohistochemistry

RNA Extraction and qPCR

Confocal Microscopy

Electrophysiology

Optogenetics

CLARITY

Stereotaxic Surgery

Rat Husbandry

**Programming and Data Analysis:**

Python (Beginner)

MATLAB (Beginner)

FIJI-based Image Analysis

**Engineering and Technology:**

Circuit Design

SolidWorks (CSWA Certified)

3D Printing (Stereolithography and Fused Deposition Modeling)

Microcontroller Programming

IoT and Embedded Development

Jetson AI Specialist

**Hobbies**

Running

* New England Green River Marathon 4:34:26 (2023)
* **Grad PR** Martha’s Vineyard Marathon 3:29:03 [8/35 in M 18-24] [39/199 M all] (2022)
* **Grad PR** Cambridge Half-Marathon 1:41:26 [255/604 in M 18-29] [464/1390 in M all] (2021)
* **Grad PR** B.A.A. 5K 0:19:43 [24/114 in M 20-24] [282/3601 M all] (2022)
* **College PR** Kirkwood Spring Fling 5K 21:41 [12/239 in M] [14/539] (2018)
* **HS PR** NGHS CC 5K 21:41 (2016)

Cycling

* L'Enfer du Nord - Weymouth Road Race 14/22 (2022) 7 points
* Zoom Criterium 16/21 (2022) 9 points
* Mooz Criterium 7/19 (2022) 14 points
* URI Cycling Weekend – Westerly Road Race 68/74 (2023)
* URI Cycing Weekend – Charlestown Criterium 13/16 (2023) 9 points
* Pioneer Valley Showdown – Warwick Road Race 70/82 (2023)
* ECCC Road Championship – Frat Row Criterium 7/13 (2023)