

Nathaniel J. Himmel

Curriculum Vitae

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EDUCATION

PhD	Neuroscience , Georgia State University, Atlanta, GA	2015–Present
BS	Biology , University of Florida, Gainesville, FL	2013
AA	Biological Sciences , Santa Fe College, Gainesville, FL	2011

RESEARCH EXPERIENCE

Graduate Research , Georgia State University (PI: Daniel N. Cox)	2015–Present
Research Technician , Emory University (PI: Mitsi A. Blount)	2013–2015

PUBLICATIONS

*co-first author; †co-corresponding author; §undergraduate mentee

12. **Himmel NJ**, Letcher JM, Sakurai A, Benson MN[§], Gray TR[§], Donaldson KJ, and Cox DN. Identification of a neural basis for cold acclimation in *Drosophila* larvae. *iScience*. 2021.
11. **Himmel NJ**, Rogers RT, Redd SK, Wang Y[§], and Blount MA. Purinergic signaling is enhanced in the absence of UT-A1 and UT-A3. *Physiological Reports*. 2021.
10. **Himmel NJ**^{*}, Letcher JM^{*}, and Cox DN. Dissecting the molecular and neural circuit bases of behavior as an introduction to discovery-driven research: a report on a Course-Based Undergraduate Research Experience. *Journal of Undergraduate Neuroscience Education*. 2020.
9. **Himmel NJ** and Cox DN. Transient Receptor Potential Channels: Current Perspectives on Evolution, Structure, Function, and Nomenclature. Review in *Proceedings of the Royal Society B*. 2020.
8. **Himmel NJ**[†], Gray TR[§], and Cox DN[†]. Phylogenetics identifies two eumetazoan TRPM clades and an eighth TRP family, TRP Soromelastatin (TRPS). *Molecular Biology and Evolution*. 2020.
7. **Himmel NJ**[†], Letcher JM, Sakurai A, Gray TR[§], Benson MN[§], and Cox DN[†]. *Drosophila* menthol sensitivity and the Precambrian origins of TRP-dependent chemosensation. *Philosophical Transactions of the Royal Society B*. 2019.
6. Lopez-Bellido R, **Himmel NJ**, Gutstein HB, Cox DN, and Galko MJ. An assay for chemical nociception in *Drosophila* larvae. *Philosophical Transactions of the Royal Society B*. 2019.
5. **Himmel NJ**, Rodriguez DA[§], Wang Y[§], Sun MA[§], and Blount MA. Chronic lithium treatment induces novel patterns of pendrin localization and expression. *American Journal of Physiology – Renal Physiology*. 2018.

4. **Himmel NJ** and Cox DN. Sensing the Cold: TRP channels in thermal nociception. Commentary in *Channels*. 2017.
3. **Himmel NJ***, Patel AA*, and Cox DN. Invertebrate Nociception. Review in *The Oxford Research Encyclopedia of Neuroscience*. 2017.
2. Turner HN*, Armengol K*, Patel AA, **Himmel NJ**, Sullivan L, Iyer SC, Battacharya S, Iyer EPR, Landry C, Galko MJ†, and Cox DN†. The TRP channels Pkd2, NompC, and Trpm mediate unique aversive behaviors to noxious cold in *Drosophila*. *Current Biology*. 2016.
1. Sim JH, **Himmel NJ**, Redd SK, Pulous FE, Rogers RT, Black LN, Hong SM, von Bergen TN, and Blount MA. Absence of PKC-alpha attenuates lithium-induced nephrogenic diabetes insipidus. *PLoS ONE*. 2014.

FUNDING and AWARDS

Grants & Funding:

Ruth L. Kirschstein National Research Service Award (F31 NRSA) <i>National Institute of Neurological Disease and Stroke</i> Grant ID: F31NS117087	2020–Present
Kenneth W. and Georganne F. Honeycutt Fellowship <i>Georgia State University, Neuroscience Institute</i>	2017–2020
Brains & Behavior Fellowship <i>Georgia State University, Brains & Behavior Program</i> Honorary Fellow, 2020–Present	2017–2020

Other Awards:

Writing Across the Curriculum Pedagogy Award , <i>Georgia State University</i>	2021
Neuroscience Institute Outstanding Doctoral Scholar , <i>Georgia State University</i>	2020
Neuroscience Institute Outstanding Graduate Student Mentor , <i>Georgia State University</i>	2019
Meritorious Research Award , <i>American Physiological Society</i>	2016
Meritorious Research Award , <i>American Physiological Society</i>	2015

TEACHING EXPERIENCE

Course design/prep:

PERS2002 – Course-Based Undergraduate Research Experience
Co-designers: Daniel N. Cox & Jamin M. Letcher

Teaching assistantships:

PERS2002 - Course-Based Undergraduate Research Experience Instructor: Daniel N. Cox	2017
NEUR3010/4000 – Neuroscience Laboratory (x2) Instructor: Michael P. Black	2016 & 2018

Other teaching:

Writing Advisor - Writing Across the Curriculum Program GSU, Center for Excellence in Teaching and Learning	2018–Present
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Guest lectures:

GSU's Neuroscience School: <i>Presenting Data in Different Forms</i> .	2019
GSU's Neuroscience School: <i>Neurological Diseases</i> .	2016
Atlanta Brain Bee Prep Course: <i>Senses, Perception, and Movement</i> .	2015
Emory University SUPERR Program: <i>Techniques in Renal Physiology</i> .	2015

MENTORING, SERVICE, and OUTREACH

Organized research mentorship:

GSU, Initiative for Maximizing Student Development (IMSD)	2017–Present
Emory, Summer Undergrad Program in Emory Renal Research (SUPERR)	2015
Emory/American Physiological Society, Frontiers in Physiology	2014
Emory, Summer Undergraduate Research Experience (SURE)	2013–2015

Peer review:

Preprint Editorial Team Leader (Physio. & Neuro), <i>Proceedings of the Royal Society B</i>	2019–Present
Reviewer: <i>Genes, Brain and Behavior</i>	
<i>Journal of Economic Entomology</i> [x2]	

Media coverage:

Weiner S. "Do insects enjoy sex?" *Gizmodo*. June 2017. Web: <https://gizmodo.com/doinsects-enjoy-sex-1796376553>.

Professional Memberships:

American Association for the Advancement of Science; American Physiological Society; Genetics Society of America; Society for Neuroscience; Society for the Study of Evolution

PRESENTATIONS, ABSTRACTS, and INVITED SYMPOSIA

§undergraduate co-author; presenter underlined

Conference oral presentations:

2. 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 talk at Neurobiology of Drosophila Meeting, Cold Spring Harbor Lab, Cold Spring Harbor, NY*.
1. Himmel NJ, Rodriguez DA[§], Blount MA. Chronic lithium treatment induces β -intercalated cell expression in the renal inner medulla. March 2015. *Oral presentation at Experimental Biology, Boston, MA*.

Posters (first-authored) & published abstracts:

21. Himmel NJ, Letcher JM, Sakurai A, Benson MN[§], Gray TR[§], Donaldson KJ, and Cox DN. How The Fly Youth Chil. March 2021. *Poster presented at Annual GSU Brains & Behavior Retreat, virtual*.

20. **Himmel NJ**, Letcher JM, Sakurai A, Benson MN[§], Gray TR[§], Donaldson KJ, and Cox DN. How The Fly Youth Chill: The evolution of cold nociception in drosophilid larvae and identification of a neural basis for cold acclimation. March 2021. *Animal Behavior Conference, hosted by Indiana University—Bloomington, virtual*.
19. **Himmel NJ**, Sakurai A, Letcher JM, Benson MA, Gray TR, and Cox DN. Excitatory chloride physiology discriminately encodes noxious cold in a multimodal sensory neuron. January 2021. *Annual meeting of the Society for Neuroscience, virtual*.
18. **Maksymchuk N**, Sakurai A, Patel AA, **Himmel NJ**, Cox DN, Cymbalyuk G. Mechanisms of cold temperatures rate coding by *Drosophila* CIII neurons. October 2019. *Annual meeting of the Society for Neuroscience, San Diego, CA*. [Abstract online](#).
17. **Letcher JM**, **Himmel NJ**, Sakurai A, Holgiun-Lopez M, Cox DN. TrpA1 mediates cold nociception in *Drosophila melanogaster* larvae. October 2019. *Neurobiology of Drosophila Meeting, Cold Spring Harbor Lab, Cold Spring Harbor, NY*.
16. **Maksymchuk N**, Sakurai A, Patel AA, **Himmel NJ**, Cox DN, Cymbalyuk G. Role of TRP channels in temperature rate coding by *Drosophila* noxious cold sensitive neurons. *Conference abstract in BMC Neuroscience*, 20:56, July 2019. doi: [10.1186/s12868-019-0538-0](https://doi.org/10.1186/s12868-019-0538-0)
15. **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*.
14. **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. *Poster presented at the Theo Murphy International Scientific Meeting on the evolution of mechanisms and behaviour important for pain, hosted by The Royal Society, Chicheley, Buckinghamshire, UK*.
13. Patel AA, **Himmel NJ**, **Cox DN**. Calcium induced calcium release mechanisms in cold nociception. February 2019. *Poster presented at the Theo Murphy International Scientific Meeting on the evolution of mechanisms and behaviour important for pain, hosted by The Royal Society, Chicheley, Buckinghamshire, UK*.
12. **Patel AA**, **Himmel NJ**, Yang JJ, Cox DN. Cellular and behavioral requirements for calcium release mechanisms in cold nociception. October 2018. *Poster presented at the annual meeting of the Society for Neuroscience, San Diego, CA*. [Abstract online](#).
11. **Maksymchuk N**, Patel AA, **Himmel NJ**, Cox DN, Cymbalyuk G. Modeling of TRP channel mediated noxious cold sensation in *Drosophila* sensory neurons. *Conference abstract in BMC Neuroscience*, 19(Suppl 2):64, July 2018. doi: [10.1186/s12868-018-0452-x](https://doi.org/10.1186/s12868-018-0452-x)
10. **Himmel NJ**, Letcher JM, Gray TR[§], Cox DN. The evolution of cold nociception in drosophilid larvae. May 2018. *Poster presented at Annual GSU Brains & Behavior Retreat*.
9. **Himmel NJ**, Gray TR[§], Cox DN. Anoctamins are required for cold nociception in *Drosophila*. April 2018. *Poster presented at the annual Georgia Collegiate Neuroscience Symposium, Athens, GA*.
8. **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. *Poster presented at the annual meeting of the Genetics Society of America, Philadelphia, PA*. [Abstract online](#).
7. **Maksymchuk N**, Patel AA, **Himmel NJ**, Cox DN, Cymbalyuk G. Modeling cellular noxious cold sensation in *Drosophila* sensory neurons. October 2017. *Poster presented at the annual meeting of the Society for*

Neuroscience, Washington, DC. [Abstract online.](#)

6. **Kronk TA, Himmel NJ, Mehran NA[§], Blount MA.** Lithium administration can attenuate the progression of polycystic kidney disease. *Conference abstract in The FASEB Journal*, 31(Suppl 1):1032.4, April 2017. doi: [10.1096/fasebj.31.1_supplement.1032.4](https://doi.org/10.1096/fasebj.31.1_supplement.1032.4)
5. **Patel AA, Moon D[§], Himmel NJ, Cox DN.** Cellular and molecular dissection of noxious cold nociception in *Drosophila*. March 2017. *Poster presented at the 58th Annual Drosophila Research Conference, San Diego, CA.* [Abstract.](#)
4. **Patel AA, Turner HN, Armengol K, Himmel NJ, Galko MJ, Cox DN.** Cellular and molecular dissection of noxious cold nociception in *Drosophila*. July 2016. *Poster presented at The Allied Genetics Conference, Orlando, FL.* [Abstract online.](#)
3. **Himmel NJ, Rodriguez DA[§], Wang Y[§], Sun MA[§], Blount MA.** Chronic lithium treatment induces novel patterns of pendrin localization and expression in the kidney. *Conference abstract in The FASEB Journal*, 30(Suppl1):968.14, April 2016. doi: [10.1096/fasebj.30.1_supplement.968.14](https://doi.org/10.1096/fasebj.30.1_supplement.968.14)
2. **Himmel NJ, Rogers RT, Redd SK, Blount MA.** Purinergic signaling is enhanced in the absence of UT-A1 and UT-A3. October 2014. *Poster presented at the Emory Department of Medicine Research Day, Atlanta, GA.*
1. **Rogers RT, Himmel NJ, Redd SK, Blount MA.** Purinergic signaling is enhanced in the absence of UT-A1 and UT-A3. *Conference abstract in The FASEB Journal*, 38(Suppl 1): 969.17, April 2014. doi: [10.1096/fasebj.28.1_supplement.1137.10](https://doi.org/10.1096/fasebj.28.1_supplement.1137.10)

Institutional oral presentations:

5. **Himmel NJ, Letcher JM, Sakurai A, Benson MN[§], Gray TR[§], Donaldson KJ, and Cox DN.** How The Fly Youth Chill: The protective role of cold nociception in *Drosophila* larvae. June 2021. *Neuroscience Institute Breakfast and Lecture Series, Atlanta, GA.*
4. **Himmel NJ, Gray TR[§], Cox DN.** Insects and vertebrates are the odd ones out: Unexpected findings in the evolution of TRP channels. September 2019. *Neuroscience Institute Breakfast and Lecture Series, Atlanta, GA.*
3. **Himmel NJ, Gray TR[§], Cox DN.** Multimodality in *Drosophila melanogaster* sensory neurons. February 2018. *Neurogenomics Forum, Atlanta, GA.*
2. **Himmel NJ, Gray TR[§], Cox DN.** Calcium-activated chloride channels play a role in the function of multimodal sensory neurons. August 2017. *Neuroscience Institute Breakfast and Lecture Series, Atlanta, GA.*
1. **Himmel NJ, Blount MA.** Chronic lithium treatment induces renal β -intercalated cell expression in the inner medulla. October 2014. *Emory TSWU Seminar, Atlanta, GA.*

Invited symposia:

- Invited participant at the Theo Murphy International Scientific Meeting on the evolution of mechanisms and behaviour important for pain, hosted by The Royal Society. Feb 2019. *Chicheley, Buckinghamshire, UK.*
- Panelist for NIDDK/KUH Researcher Panel, Summer Student Symposium. Jul 2015. *Atlanta, GA.*