Nathaniel J. Himmel

Curriculum Vitae

ORCiD: 0000-0001-7876-6960 email: nhimmel1@student.gsu.edu website: natehimmel.github.io

EDUCATION

PhD	**Neuroscience**, Georgia State University	2015 - Present
BS	**Biology**, University of Florida	2013
AA	**Biological Sciences**, Santa Fe College	2011

RESEARCH POSITIONS

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 co-author

Research articles:

5. **Himmel NJ**†, Letcher JM, Sakurai A, Gray TR§, Benson MN§, Cox DN†. *Drosophila* menthol sensitivity and the Precambrian origins of TRP-dependent chemosensation. *Philosophical Transactions of the Royal Society B*, in press. doi: 10.1098/rstb.2019.0369

4. Lopez-Bellido R, **Himmel NJ**, Gutstein HB, Cox DN, Galko MJ. An assay for chemical nociception in *Drosophila* larvae. *Philosophical Transactions of the Royal Society B*, in press. doi: 10.1098/rstb.2019.0282

3. **Himmel NJ**, Rodriguez DA§, Wang Y§, Sun MA§, Blount MA. Chronic lithium treatment induces novel patterns of pendrin localization and expression. *American Journal of Physiology - Renal Physiology*, 315(2):313-322, April 2018. doi: 10.1152/ajprenal.00065.2018

2. Turner HN*, Armengol K*, Patel AA, **Himmel NJ**, Sullivan L, Iyer SC, Battacharya S, Iyer EPR, Landry C, Galko MJ†, Cox DN†. The TRP channels Pkd2, NompC, and Trpm mediate unique aversive behaviors to noxious cold in *Drosophila*. 2016. *Current Biology,* 26(23): 3116-3128, December 2016. doi: 10.1016/j.cub.2016.09.038

1. Sim JH, **Himmel NJ**, Redd SK, Pulous FE, Rogers RT, Black LN, Hong SM, von Bergen TN, Blount MA. Absence of PKC-alpha attenuates lithium-induced nephrogenic diabetes insipidus. *PLoS One*, 9(7): e101753, July 2014. doi: 10.1371/journal.pone.0101753

Other articles:

2. **Himmel NJ**, Cox DN. Sensing the cold: TRP channels in thermal nociception. Commentary in *Channels*, 11(5): 370-372, September 2017. doi: 10.1080/19336950.2017.1336401

1. **Himmel NJ**[*], Patel AA[*], Cox DN. Invertebrate Nociception. Review in *The Oxford Encyclopedia of Neuroscience*, Oxford University Press, March 2017. doi: 10.1093/acrefore/9780190264086.013.166

Articles in preprint:

1. **Himmel NJ,** Rogers RT, Redd SK, Wang Y[§], Blount MA. Purinergic signaling is enhanced in the absence of UT-A1 and UT-A3. *bioRxiv*, June 2019. doi: 10.1101/663252.

FUNDING, FELLOWSHIPS, AND AWARDS

Funded fellowships:

Kenneth W. and Georganne F. Honeycutt Fellowship 2017 – Present
Brains & Behavior Fellowship, *GSU Brains & Behavior Program* 2017 – Present

Awards:

Outstanding Graduate Student Mentoring Award, *GSU* 2019
Meritorious Research Award, *American Physiological Society* 2016
Meritorious Research Award, *American Physiological Society* 2015

TEACHING EXPERIENCE

Course prep/design:

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

Teaching assistantships:

PERS2002 - Course-Based Undergraduate Research Experience 2017
Instructor: Daniel N. Cox

NEUR3010/4000 – Neuroscience Laboratory (x2) 2016 & 2018
Instructor: Michael P. Black

Other teaching:

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

Guest lectures:

GSU's Neuroscience School: *Presenting Data in Different Forms.* 2019
GSU's Neuroscience School: *Neurological Diseases*. 2016

Atlanta Brain Bee Prep Course: *Senses, Perception, and Movement*. 2015
Emory University SUPERR Program: *Techniques in Renal Physiology*. 2015

MENTORING, SERVICE, AND OUTREACH

Daily research mentor for:

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

Research mentees:

Maggie N. Benson, GSU (undergraduate RA & IMSD fellow)
Thomas R. Gray, GSU (undergraduate RA & IMSD fellow)
Grace Swaim, Emory (SIRE fellow & SUPERR follow)
Matthew R. Borchart, Emory/Luther College (SUPERR fellow)
Michael A. Sun, Emory (undergraduate RA & SUPERR fellow)
Yirong Wang, Emory (undergraduate RA & SURE fellow)
Daniel A. Rodriguez, Emory (SIRE fellow)
Nishant Sharma, Emory/Morehouse (MD student researcher)
John Ward, Emory/Atlanta Public Schools (APS Frontiers in Physiology fellow)
Nikki A. Mehran, Emory (honors thesis research)

Peer review:

Preprint Editorial Team, *Proceedings of the Royal Society B* 2019-Present

Reviewer: *Genes, Brain and Behavior* [1]

Professional membership:

Society for the Study of Evolution 2019-Present
Genetics Society of America 2017-Present
American Association for the Advancement of Science 2016-Present
American Physiological Society 2015-Present

Media coverage:

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

ABSTRACTS, PRESENTATIONS, AND INVITED SYMPOSIA_____

§undergraduate co-author; presenter underlined

Posters (first-authored) & published abstracts:

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. July 2019. *Abstract forthcoming in BMC Neuroscience.*

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.*

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, Buckinghamashire, 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, Buckinghamashire, 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

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 Georga 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

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

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

Conference oral presentations:

1. **Himmel NJ,** Rodriguez DA[§], Blount MA. Chronic lithium treatment induces β-intercalated cell expression in the renal inner medulla. March 2015. *Experimental Biology, Boston, MA.*

Institutional oral presentations:

3. **Himmel NJ,** Gray TR[§], Cox DN. Multimodality in *Drosophila melanogaster* sensory neurons. February 2018. *GSU 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:

1. Panelist for NIDDK/KUH Researcher Panel, Summer Student Symposium. July 2015. *Atlanta, GA.*

Presentations by mentees:

11. Benson MN[§], Himmel NJ, Gray TR[§], Cox DN. Calcium-activated chloride channels are required for cold nociception in multimodal sensory neurons. *Poster presented at the annual summer B&B/IMSD poster session, Atlanta, GA.*

10. Gray TR[§], Himmel NJ, Letcher JM, Benson MN[§], Cox DN. A characterization of cold nocifensive behavior in varied drosophilid species. August 2019. *Poster presented at the annual summer B&B/IMSD poster session, Atlanta, GA.*

9. 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 Annual National Council for Undergraduate Research Conference*, *Kennesaw, GA.*

8. Benson MN[§], Himmel NJ, Letcher JM, Gray TR[§], Cox DN. The ancient origins of chemical sensing. April 2019. *Poster presented at the annual GSU Undergraduate Research Conference*, *Atlanta, GA.*

7. Gray TR[§], Himmel NJ, Letcher JM, Cox DN. Closely related drosophilid species differ in their behavioral response toward noxious cold. September 2018. *Poster presented at annual B&B/IMSD poster session*, *Atlanta, GA.*

6. Gray TR[§], Himmel NJ, Letcher JM, Cox DN. The evolution of cold nocifensive behavior in drosophilid larvae. September 2018. *Poster presented at the Herty Medal Undergraduate Research Symposium, Lawrenceville, GA.*

5. Gray TR[§]. Dissecting the Molecular and Neural Circuit Bases of Nociception. Oct 2017. *Course-based Undergraduate Research Experience Showcase*, *Atlanta, GA.*

4. 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 B&B/IMSD Summer Poster Session*, *Atlanta, GA.*

3. Wang Y[§], Himmel NJ, Mallow GM, Sun MA[§], Borchart MR[§], Blount MA. Ablation of the renal urea transporters UT-A1 and UT-A3 replicated the benefits of a low-protein diet in attenuating diabetic nephropathy. *Abstract in The FASEB Journal*, 30(Suppl 1):968.21, April 2016. doi: 10.1096/fasebj.30.1_supplement.968.21

2. Mehran NA[§], Mallow JF, Himmel NJ, Blount MA. Lithium modulates cilia length in renal collecting duct cells. *Abstract in The FASEB Journal*, 30(Suppl 1): 1219.4, April 2016. doi: 10.1096/fasebj.30.1_supplement.1219.4

1. Borchart MR[§], Pulous FE, Wang Y[§], Sun MA[§], Himmel NJ, Vanderford TH, Blount MA. Absence of PKC-alpha alters the renal immune response in Angiotensin II-dependent hypertension. *Abstract in The FASEB Journal*, 30(Suppl 1): 969.17, April 2016. doi: 10.1096/fasebj.30.1_supplement.969.17