

Jacob Nordman, Ph.D.

Assistant Professor
Southern Illinois University School of Medicine
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EXPERIENCE

October 2021 - Present	Assistant Professor Department of Physiology, Southern Illinois University School of Medicine, Carbondale, IL
March 2023 - Present	Assistant Professor (cross-appointed) Department of Pharmacology, Southern Illinois University School of Medicine, Springfield, IL
May 2014 – September 2021	Postdoctoral Fellow NIMH at NIH, Bethesda, MD
January 2020 - May 2021	Graduate School Faculty and Lead Instructor for FAES NIH, Bethesda, MD
May 2016 – August 2019	Postdoctoral Research Associate (PRAT) Fellowship NIGMS at NIH, Bethesda, MD
September 2008 – June 2009	Post-Baccalaureate IRTA NCI at NIH, Bethesda, MD

EDUCATION

September 2009 – May 2014	Ph.D. Neuroscience George Mason University, Fairfax, VA
September 2005 – December 2007	BS in Molecular, Cellular, and Developmental Biology University of Colorado, Boulder, CO

PUBLICATIONS (in reverse order, * = co-first author, § = corresponding author)

Manuscripts

1. N. Mojahed, M. Adjei, E. Qasem, S. Aaflaq, T. Adu, J.T. Jacobs, B. D. Richardson, **J.C. Nordman**[§] (2024) Acute social defeat during adolescence promotes long-lasting aggression through activation of the medial amygdala. *Frontiers in Neuroscience*, vol. 18, 2024.
2. C.J. Bartsch, J.T. Jacobs, N. Mojahed, E.S. Qasem, M. Smith, O. Caldwell, S. Aaflaq, **J.C. Nordman**[§] (2023) Visualizing traumatic stress-induced structural plasticity in a medial amygdala pathway using mGRASP. *Frontiers in Molecular Neuroscience*, 16, DOI: 10.3389/fnmol.2023.1313635
3. M. Potegal, **J.C. Nordman**^{*§} (2023) Non-angry aggressive arousal and angriffsberietschaft: A narrative review of the phenomenology and physiology of proactive/offensive aggression

motivation and escalation in people and other animals. *Neuroscience and Biobehavioral Reviews*, 147, 105110, doi.org/10.1016/j.neubiorev.2023.105110.

4. C.J. Bartsch, S. Aafraq, J.T. Jacobs, M. Smith, F. Summa, S. Skinner, E.S. Qasem, R. Thompson, Z. Li, **J.C. Nordman**[§] (2023) A single dose of ketamine enhances early life stress-induced aggression with no effect on fear memory, anxiety-like behavior, or depression-like behavior in mice. *Behavioral Neuroscience*, 137(5):281-288. doi: 10.1037/bne0000560.
5. C.J. Bartsch, **J.C. Nordman**[§] (2022) Promises and Pitfalls of NMDA receptor antagonists in treating violent aggression. *Frontiers in Behavioral Neuroscience*, 16, doi.org/10.3389/fnbeh.2022.938044.
6. **J.C. Nordman**[§], C.J. Bartsch, Z. Li, (2022) Opposing effects of NMDA receptor antagonists on aggression induced by early life stress. *Aggress Behav*, 48(3):365-373.
7. **J.C. Nordman**[§] (2021) Anger management: mechanisms of glutamate receptor-mediated synaptic plasticity underlying animal aggression. *Int J Biochem Cell Biol*, doi: 10.1016/j.biocel.2021.106120.
8. **J.C. Nordman**, X. Ma, Q. Gu, M. Potegal, H. Li, A.V. Kravitz, Z. Li (2020) Potentiation of Divergent Medial Amygdala Pathways Drives Experience-Dependent Aggression Escalation. *J Neurosci* 40, 4858-4880. (**Featured article and cover**).
9. **J.C. Nordman**, X. Ma, Z. Li (2020) Traumatic stress induces aggression increase through synaptic potentiation in the medial amygdala circuits. *eNeuro*. DOI: <https://doi.org/10.1523/ENEURO.0448-17.2019>. (**Featured article**).
10. **J.C. Nordman** & Z. Li (2020) The dorsal raphe regulates the duration of attack through the medial orbitofrontal cortex and medial amygdala. *eNeuro*. <https://www.eneuro.org/content/2020/10/14/ENEURO.0331-20.2020>.
11. J.R. King, **J.C. Nordman**, S.P. Bridges, M.K. Lin, N. Kabbani (2015) Identification and Characterization of a G Protein-binding Cluster in alpha7 Nicotinic Acetylcholine Receptors. *J Biol Chem* 290, 20060-20070.
12. S.D. Alsharari, J.R. King, **J.C. Nordman**, P.P. Muldoon, A. Jackson, A.Z. Zhu, R.F. Tyndale, N. Kabbani, M.I. Damaj (2015) Effects of Menthol on Nicotine Pharmacokinetic, Pharmacology and Dependence in Mice. *PLoS One* 10, e0137070.
13. **J.C. Nordman**, W.S. Phillips, N. Kodama, S.G. Clark, C.A. Del Negro, N. Kabbani (2014) Axon targeting of the alpha 7 nicotinic receptor in developing hippocampal neurons by Gprn1 regulates growth. *J Neurochem* 129, 649-662.
14. **J.C. Nordman**, P. Muldoon, S. Clark, M.I. Damaj, N. Kabbani (2014) The alpha4 nicotinic receptor promotes CD4+ T-cell proliferation and a helper T-cell immune response. *Mol Pharmacol* 85, 50-61. (**Cover**)
15. **J.C. Nordman**. & N. Kabbani (2014) Microtubule dynamics at the growth cone are mediated by alpha7 nicotinic receptor activation of a Galphaq and IP3 receptor pathway. *FASEB J* 28, 2995-3006.
16. J.M. Jia*, Z. Hu*, **J. Nordman***, Z. Li (2014) The schizophrenia susceptibility gene dysbindin regulates dendritic spine dynamics. *J Neurosci* 34, 13725-13736.
17. B.A. Corgiat*, **J.C. Nordman***, N. Kabbani (2014) Chemical crosslinkers enhance detection of receptor interactomes. *Front Pharmacol* 4, 171.

18. N. Kabbani, **J.C. Nordman**, B.A. Corgiat, D.P. Veltri, A. Shehu, V.A. Seymour, D.J. Adams (2013). Are nicotinic acetylcholine receptors coupled to G proteins? *Bioessays* 35, 1025-1034.
19. A. Ashoor, **J.C. Nordman**, D. Veltri, K.H. Yang, Y. Shuba, L. Al Kury, B. Sadek, F.C. Howarth, A. Shehu, N. Kabbani, M. Oz (2013) Menthol inhibits 5-HT3 receptor-mediated currents. *J Pharmacol Exp Ther* 347, 398-409.
20. A. Ashoor, **J.C. Nordman**, D. Veltri, K.H. Yang, L. Al Kury, Y. Shuba, M. Mahgoub, F.C. Howarth, B. Sadek, A. Shehu, M. Oz (2013). Menthol binding and inhibition of alpha7-nicotinic acetylcholine receptors. *PLoS One* 8, e67674.
21. **J.C. Nordman**, N. Kabbani (2012) An interaction between alpha7 nicotinic receptors and a G-protein pathway complex regulates neurite growth in neural cells. *J Cell Sci* 125, 5502-5513. **(Cover)**.
22. N. Kabbani, M.P. Woll, **J.C. Nordman**, R. Levenson (2012) Dopamine receptor interacting proteins: targeting neuronal calcium sensor-1/D2 dopamine receptor interaction for antipsychotic drug development. *Curr Drug Targets* 13, 72-79.

Book Chapters

1. N. Kabbani* & **J.C. Nordman*** (2013) Capture of D2 dopamine receptor signaling complexes in striatal cells for mass spectrometry proteomic analysis. *Methods Mol Biol* 964, 43-60.

Editorials

1. **J.C. Nordman**[§], C. Summers, K. Ball, (2023) The Impact of Chronic Stress on Neuroplasticity and Abnormal Behavior. *Frontiers in Behavioral Neuroscience*, accepted.

Press

1. "SIU scientist receives \$400,000 grant to study aggression." *WPSD Local 6*, Carbondale, IL.
2. "SIU scientist receives \$400,000 grant to study aggression." *The Illinoisian*, Carbondale, IL.
3. "SIU scientist studying brain mechanisms to find roots of aggression." *SIU SOM*, June, 6, 2024.
4. "What do rage rooms have to do with sex? A whole lot, it turns out." *USA Today*, November 15, 2023.
5. "New research highlights ketamine's unexpected aggression side effects in rodent models of early life stress." *PsyPost*, August 15, 2023
6. "The trauma detective who combs through killers' pasts to help them find mercy." *The Guardian*, March 2, 2023.
7. "Unlocking the Neuroscience of How Experiencing Traumatic Stress Leads to Aggression." *Sci Tech Daily*, May 18, 2020.
8. "How experiencing traumatic stress leads to aggression." *Science News*, May 18, 2020.

GRANTS AND AWARDS

Present

- Jan 2025 – Dec 2026 **R21 (1 1R21MH136446-01A1)**
Title: Neural mechanisms of socially transmitted aggression
Amount: \$408,375
PI: Jacob Nordman
NIMH at NIH
- Sep 2023 – Aug 2026 **R15 (1 R15 HD110925-01A1)**
Title: The Impact of Early Life Stress On Amygdala Circuitry
And Chronic Excessive Aggression
Amount: \$445,000
PI: Jacob Nordman
NICHD at NIH, Bethesda, MD
- July 2024 – June 2025 **Research Seed Grant**
Title: Neural Mechanisms of Learned Aggression
Amount: \$15,000
PI: Jacob Nordman
SIU SOM at Springfield, IL

Past

- July 2022 – June 2023 **Research Seed Grant**
Title: Opposing effects of Ketamine and Memantine on Early
Life Stress-Induced Aggression (ELSIA)
Amount: \$15,000
PI: Jacob Nordman
SIU SOM at Springfield, IL
- May 2016 – August 2019 **Postdoctoral Research Associate (PRAT) Fellowship
Award from NIH**
1 F12 GM119962
Title: Neural Mechanisms in the Medial Amygdala Underlying
Aggression
Amount: \$200,000
PI: Jacob Nordman
NIGMS at NIH, Bethesda, MD
- July 2017, 2018, 2019 **The Fellows Award for Research Excellence (FARE)**
Amount: \$6,000
NIH, Bethesda, MD
- May 2018 **NIMH IRP OFT Trainee Travel Award**
Amount: \$1,500
NIMH at NIH, Bethesda, MD
- May 2016, 2017 **Outstanding Mentor Award from Eleanor Roosevelt High
School Science and Technology Internship Program**
Eleanor Roosevelt High School, Oxon Hill, MD
- Fall 2014 **Dissertation Completion Grant**
Amount: \$10,000

Student Honors and Awards

Fall 2025 – Spring 2026	Florence M. Foote Physiology Scholarship for Magdalene Adjei (\$5,000)
December 2023 – December 2024	Keystone Grant from the Histochemical Society for Jess Jacobs, Ph.D. (\$4,600)
Fall 2024 – Spring 2025	Florence M. Foote Physiology Scholarship for Nooshin Mojahed (\$5,000)
Fall 2024 – Spring 2025	Florence M. Foote Physiology Scholarship for Sophia Aaflaq (\$5,000)
Fall 2023 – Spring 2024	Florence M. Foote Physiology Scholarship for Elana S. Qasem (\$5,000)
Spring 2024	Emma Smith Hough Library Research Scholarship Award for Elana Qasem (\$1,500)
Spring 2023	Lonnie Russell Undergraduate Research Award for Caitlyn Bartsch
Spring 2023	Emma Smith Hough Library Research Scholarship Award for Sophia Aaflaq (\$1,500)
Fall 2023 – Spring 2024	Postbaccalaureate Intramural Research Training Award (IRTA) to Caitlyn Bartsch
Fall 2022 – Spring 2023	Cayman Biomedical Research Institute (CABRI) Undergraduate Fellowship for Caitlyn Bartsch (\$2,500)
August 2023 – August 2024	REACH Award for Elana S. Qasem (\$4,000)
August 2023 – August 2024	REACH Award for Sophia Aaflaq (\$4,000)
June 2023 – August 2023	Mentored Professional Enrichment Experience (MPEE) Internship for Oliver Caldwell (\$5,000)
August 2022 – August 2023	REACH Award for Caitlyn Bartsch (\$4,000)
August 2022 – August 2023	REACH Award for Savannah Skinner (\$4,000)
November 2022	Trainee Professional Development Award (TPDA) from the Society for Neuroscience for Caitlyn Bartsch (\$1,000)
July 2022	Chandrashekar Memorial Award for Caitlyn Bartsch (\$1,000)
July 2022	Chandrashekar Memorial Award for Savannah Skinner (\$1,000)

June 2022 – August 2022 **Mentored Professional Enrichment Experience (MPEE) Internship** for Fletcher Summa (\$5,000)

June 2022 – August 2022 **Mentored Professional Enrichment Experience (MPEE) Internship** for Molly Smith (\$5,000)

TEACHING

2023 - present **Instructor for PHSL 410B/511B**
Department of Physiology at SIU SOM, Carbondale, IL

2024 - present **Neurophysiology Resource Session**
Medical Curriculum at SIU SOM, Carbondale, IL

2024 - present **Memory LTP/LTD Resource Session**
Medical Curriculum at SIU SOM, Carbondale, IL

2022 - present **Instructor for UHON 499-705**
Department of Physiology at SIU SOM, Carbondale, IL

2023 - present **Instructor for PHSL 510**
Department of Physiology at SIU SOM, Carbondale, IL

2022 - present **Instructor for PHSL 500**
Department of Physiology at SIU SOM, Carbondale, IL

2022 - present **Instructor for PHSL 492-707 Special Problems in Physiology**
Department of Physiology at SIU SOM, Carbondale, IL

2022 - present **Tutor for Neuromuscular and Behavior Unit**
Department of Physiology at SIU SOM, Carbondale, IL

Spring 2021 **Instructor for BIOL 350/351 Fundamentals in Cellular Neuroscience**
FAES at NIH, Bethesda, MD

Fall 2020, 2021 **Instructor for BIOL 325/6 Human Neuroscience at NIH**
FAES at NIH, Bethesda, MD

MENTORSHIP/SERVICE

2025 **Study Section Reviewer for Pathophysiological Basis of Mental Disorders and Addictions Study Section (PMDA), ad hoc member**
National Institutes of Health, Bethesda, MD

2024 **Study Section Reviewer for BRAIN Initiative K99 Special Emphasis Panel: ZMH1-ERB-P(05), ad hoc member**
National Institutes of Health, Bethesda, MD

2022 – present **Grant Review Committee**
SIU SOM, Carbondale, IL

2023	Study Section Reviewer for Pathophysiological Basis of Mental Disorders and Addictions Study Section (PMDA), ad hoc member National Institutes of Health, Bethesda, MD
2023 – Present	Physiology Awards Committee SIU SOM, Carbondale, IL
March 2023	SIU Extern Program Mentored 2 students
2022 - 2023	Society for Neuroscience’s Program Committee
2022 – present	Honorary Degree & Distinguished Service Award Committee SIUC, Carbondale, IL
2021 – Present	Currently mentoring 4 undergraduate students in my lab Department of Physiology at SIU SOM, Carbondale, IL
2022 - 2023	Mentored Professional Enrichment Experience (MPEE) Mentored 3 medical students
2022 – Present	Graduate Program Committee Department of Physiology at SIU SOM, Carbondale, IL
2022 – 2023	Faculty Search Committee Department of Physiology at SIU SOM, Carbondale, IL
2022 – Present	Chair of Physiology Seminar Committee Department of Physiology at SIU SOM, Carbondale, IL
2023 – Present	Chair of Ph.D. Committee for Magdalene Pine Adjei Department of Physiology at SIU SOM, Carbondale, IL
2023 – Present	Ph.D. Committee Member for Savannah Brannan Department of Pharmacology at SIU SOM, Springfield, IL
2022 – 2023	Ph.D. Committee Member for Sakia Ferdousy Department of Physiology at SIU SOM, Carbondale, IL
2022 – 2023	Ph.D. Committee Member for Natalee Hite Department of Physiology at SIU SOM, Carbondale, IL
2017 - 2019	High School Scientific Training & Enrichment Program (Hi-STEP) NIMH at NIH, Bethesda, MD
2018 - 2019	Summer Internship Program (SIP) in Biomedical Science NIH, Bethesda, MD
2015 - 2019	Eleanor Roosevelt High School Science and Technology Internship Program NIH, Bethesda, MD
2018 - 2020	Judge for The Fellows Award for Research Excellence (FARE) NIH, Bethesda, MD
2010 - 2014	Aspiring Scientists Summer Internship Program (ASSIP) George Mason University, Fairfax, VA

COLLABORATIONS

Benjamin Richardson, Ph.D. – Assistant Professor, Southern Illinois University School of Medicine, Springfield, IL

Buffy Ellsworth, Ph.D. – Associate Professor, Southern Illinois University School of Medicine, Carbondale, IL

Kristin Delfino, Ph.D. – Research Assistant Professor, Southern Illinois University School of Medicine, Springfield, IL

Diana Sarko, Ph.D. – Associate Professor, Southern Illinois University School of Medicine, Carbondale, IL

Michael Potegal, Ph.D. – Associate Professor, University of Minnesota, Minneapolis, MN

He Li, Ph.D. – Associate Professor, Uniformed Services of the Health Sciences, Bethesda, MD

Alexxai Kravitz, Ph.D. – Associate Professor, Washington University in St. Louis, St. Louis, MO

Imad Damaj, Ph.D. – Professor, Virginia Commonwealth University, Richmond, VA

Christopher Del Negro, Ph.D. – Professor, William and Mary, Williamsburg, VA

Darwin Berg, Ph.D. – Professor, University of California, San Diego, San Diego, CA

Armadu Shehu, Ph.D. – Professor, George Mason University, Fairfax, VA

Murat Oz, Ph.D. – Professor, United Arab Emirates University, Abu Dhabi, United Arab Emirates

David J. Abrams, Ph.D. – Professor, University of Wollongong, Wollongong, Australia

Robert Levenson, Ph.D. – Professor, Penn State University, State College, PA

AD HOC REVIEWER

Neurobiology of Stress, iScience, International Journal of Biochemistry and Cell Biology, Frontiers in Neuroscience, Frontiers in Molecular Neuroscience, Frontiers in Behavioral Neuroscience, Neuropathology and Applied Neurobiology, Current Pharmaceutical Design, Aggressive Behavior, Neuroscience and Biobehavioral Reviews

EDITORIAL EXPERIENCE

Review Editor for Frontiers in Behavioral Neuroscience

Review Editor for Frontiers in Systems Biology

Special Issue Editor for Frontiers

iScience

PROFESSIONAL SOCIETIES

Society for Neuroscience

Sigma Xi Chapter 153

INVITED SEMINARS AND TALKS

Psychology Department Seminar Series, Southern Illinois University Carbondale, Carbondale, IL. *Violence is Learned: How Neural Plasticity in a Medial Amygdala Pathway Drives Stress-Induced Aggression*. – January 2025

Seminar Series, George Mason University, Fairfax, VA. *Violence is Learned: How Synaptic Plasticity in a Medial Amygdala Circuit Drives Experience-Dependent Aggression*. – Spring 2024

Seminar Series, SIU SOM, Springfield, IL. *The role of early life stress on chronic aggression*. – Fall 2022.

Annual PRAT Symposium, NIH, Bethesda, MD. *Medial Amygdala Circuits in Experience Dependent Violent Aggression*. – Spring 2019.

Neurobiology Interest Group, NIH, Bethesda, MD. *Medial Amygdala Circuits in Experience Dependent Violent Aggression*. – Spring 2019.

Three Minute Thesis, NIH, Bethesda, MD. *Potentiation of a medial amygdala circuit in experience-induced aggression*. – Summer 2018.

2nd Year PRAT Fellow Seminar, NIH, Bethesda, MD. *Potentiation of the Posterior Ventral Medial Amygdala Circuit Promotes Violent Aggression*. – Winter 2018

47th 19th Annual NIMH DRIP Fellows' Scientific Training Day, Leesburg, VA. *Potentiation of the Medial Amygdala Circuit Promotes Violent Aggression*. – Summer 2017

PRAT Three Minute Thesis, NIH, Bethesda. *Potentiation of Medial Amygdala Neurons Promotes Violent Aggression*. – Fall 2016

Peter Baas lab, Drexel University. *Characterizing how the $\alpha 7$ /Gprin1 Interaction Regulates Growth Cone Dynamics in Hippocampal Neurons*. – Spring 2012

Ken Kellar's lab, Georgetown University. *Alpha 7 nicotinic receptor interactomics: new tools for studying development*. – Fall 2011

Robert Levenson's Lab, Penn St. University. *The $\alpha 7$ Nicotinic Receptor Interaction Network: Neurite Growth and Development*. – Spring 2011

Serge Ferre's Lab, NIDA in Baltimore MD. *G Protein Regulated Changes in Neuron Morphology can be Induced through nACh Alpha 7 Receptors*. – Fall 2010

Student Posters (§ = corresponding author)

1. J.T. Jacobs, C.J. Bartsch, N. Mojahed, E. Quasem, M. Smith, O. Caldwell, S. Aaflaq, **J.C. Nordman**[§] (2024) Visualizing traumatic stress-induced structural plasticity in a medial amygdala pathway using mGRASP. Society for Neuroscience 2024, Chicago, IL.
2. M. Adjei, N. Mojahed, E. Qasem, S. Aaflaq, T. Adu, J. T. Jacobs, B. D. Richardshon, **J.C. Nordman**[§] (2024) Acute social defeat during adolescence promotes long-lasting aggression through activation of the medial amygdala. Society for Neuroscience 2024, Chicago, IL.

3. E.S. Qasem, S.H. Aaflaq, N. Mojahed, M. P. Adjei, **J.C. Nordman**[§] (2024) Targeting Neural Pathways with DREADD Receptors to Suppress Pathological Aggression Induced by Early-Life Stress. REACH Symposium.
4. S.H. Aaflaq, E.S. Qasem, N. Mojahed, M. Adjei, J. T. Jacobs, R. Thompson, T. Lineberry, A. Cooley, **J.C. Nordman**[§] (2024) Assessing the Generalizability of Early Life Stress Effects on Aggression. REACH Symposium.
5. N. Mojahed, C. J. Bartsch, J. T. Jacobs, E. Qasem, Z. Li, **J. C. Nordman**[§] (2023) Opposing effects of ketamine on early life stress-induced aggression. Society for Neuroscience 2023, Washington, D. C.
6. C.J. Bartsch, **J.C. Nordman**[§] (2023) Synaptogenesis in MeA-VmH Neurons After Early Life Stress: Implications for Understanding and Treating Chronic Aggression in Psychiatric Disorders. REACH symposium, Carbondale, IL.
7. S.L. Skinner, E.S. Qasem, R. Thompson, C. Spotanski, F. Summa, **J.C. Nordman**[§] (2023) Socially Transmitted Fight or Flight. REACH symposium, Carbondale, IL.
8. C.J. Bartsch, S.L. Skinner, Z. Li, **J.C. Nordman**[§] (2022) Opposing effects of NMDA receptor antagonists on early life stress-induced aggression. Society for Neuroscience 2022, San Diego, CA.
9. S.L. Skinner, C.J. Bartsch, X. Ma, Q. Gu, A. Kravitz, H. Li, M. Potegal, Z. Li, **J.C. Nordman**[§] (2022) Aggression priming is regulated by diverging medial amygdala pathways. Society for Neuroscience 2022, San Diego, CA.