

# Ian F. Smith

Phone: (330) 932-9565  
Email: ismith@udel.edu

University of Delaware  
Newark, DE 19716, USA

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## Education

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- Neuroscience** (Ph.D. track - *In progress*)  
University of Delaware  
Advisors: Anna Klintsova, Ph.D. and Tania Roth, Ph.D.
- B.S. Psychology** 2020  
Ohio Northern University  
Concentration: Behavioral Neuroscience  
Minors:  
    Biology  
    Applied Statistics  
    Music

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## Funding, Honors, Scholarships, & Awards

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- 2022 Integrative Neuroscience Graduate Program Summer Research Fellowship  
University of Delaware  
Total Costs = \$7000
- 2022 Integrative Neuroscience Graduate Program Travel Award  
University of Delaware  
Total Costs = \$1000
- 2022 Graduate College Graduate Student Travel Award  
University of Delaware  
Total Costs = \$1000
- 2021 Research Society on Alcoholism Graduate Student Small Grants Program  
Finalist
- 2021 Society for Neuroscience Trainee Professional Development Award
- 2019 DeBow Freed Award for Outstanding Leadership as an Undergraduate Student
- 2019 *Examination of changes in neurotransmitter levels and inflammatory protein expression in females exposed to a rodent model of post-traumatic stress disorder*

Psi Chi International Honorary Society in Psychology  
Total Costs = \$3,000

- 2019 ONU Nominee for the Barry M. Goldwater Scholarship
- 2018 *The relationship between ketamine and the gut-microbiome in swamp monkey exhibiting PTSD-like symptomology*  
Bio-Department Polar Research Experience Program (PREP)  
Ohio Northern University  
Total Costs = \$1,600
- 2016 Non-Major Music Talent Award, Ohio Northern University
- 2016 Legacy Award, Ohio Northern University
- 2016 Trustee Scholarship, Ohio Northern University
- 2016 Theodore Gregory Award
- 2016 Carrie Harper Scholarship
- 2016 Robert Beatty Award

### Research Positions

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- Graduate Research Assistant** Fall 2020-Present  
Department of Psychological & Brain Sciences  
University of Delaware
- Head Research Assistant** Summer 2019-Spring 2020  
Behavioral Neuroscience Lab  
Department of Psychology  
Ohio Northern University  
Primary Investigator: Phillip Zoladz, Ph.D.
- Research Assistant** Spring 2018-Summer 2019  
Department of Biological & Allied Health Sciences  
Ohio Northern University  
Primary Investigator: Katherine Krynak, Ph.D.
- Research Assistant** Fall 2017-Spring 2020  
Behavioral Neuroscience Lab  
Department of Psychology  
Ohio Northern University  
Primary Investigator: Phillip Zoladz, Ph.D.

## Research Assistant

Developmental Psychopathology Lab  
Department of Psychology  
Ohio Northern University  
Primary Investigator: Ann Johnson, Ph.D.

Fall 2017-Spring 2020

## Peer-Reviewed Journal Publications

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Zoladz, P.R., Del Valle, C.R., Goodman, C.S., Dodson, J.L., **Smith, I.F.**, Elmouhawesse, K.M., Sparkman, H.R., Naylor, M.M., & Hopson, E.P. (2022). Ketamine sex- and dose-dependently mitigates behavioral sequelae induced by a predator-based psychosocial stress model of post-traumatic stress disorder. *Behavioural Brain Research*, 428, Article 113895. doi: <https://doi.org/10.1016/j.bbr.2022.113895>

Milbocker, K.A., Campbell, T.S., Collins, N.J., Kim, S., **Smith, I.F.**, Roth, T.L., & Klintsova, A.Y. (2021). Glia-driven brain circuit refinement is altered by early-life adversity: Behavioral outcomes. *Frontiers in Behavioral Neuroscience*, 15, 786234. doi: <https://doi.org/10.3389/fnbeh.2021.786234>

Zoladz, P.R., Del Valle, C.R., **Smith, I.F.**, Goodman, C.S., Hepp, J.K., Dodson, J.L., Elmouhawesse, K.M., Kasler, C.D., & Rorabaugh, B.R. (2021). Glucocorticoid abnormalities in female rats exposed to a predator-based psychosocial stress model of PTSD. *Frontiers in Behavioral Neuroscience*, 15, 130. doi: <https://doi.org/10.3389/fnbeh.2021.675206>

Zoladz, P.R., D'Alessio, P.A., Seeley, S.L., Kasler, C.D., Goodman, C.S., Mucher, K.E., Allison, A.S., **Smith, I.F.**, Dodson, J.L., Stoops, T.S., & Rorabaugh, B.R. (2019). A predator-based psychosocial stress animal model of PTSD in females: Influence of estrous phase and ovarian hormones. *Hormones and Behavior*, 115, Article 104564. doi: <https://doi.org/10.1016/j.yhbeh.2019.104564>

## Manuscripts in Preparation or Under Review

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**Smith, I.F.**, Gursky, Z.H., & Klintsova, A.Y. (submitted). Representation of prefrontal axonal efferents in the thalamic nucleus reuniens in a rodent model of fetal alcohol exposure during third trimester. *Frontiers in Behavioral Neuroscience*.

## Conference Presentations

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**Smith, I.F.**, Krynak, K.L., & Zoladz, P.R. (April 2019). Influence of a rat model of post-traumatic stress on the gut-associated bacterial microbiome. Presented at the 128<sup>th</sup> annual meeting of the Ohio Academy of Science, Columbus, OH.

## Poster Presentations

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**Smith, I.F.**, Milbocker, K.A., Roth, T.L., & Klintsova, A.Y. (November 2022). Reduced oligodendrocyte-related gene expression and epigenetic markers in mPFC and corpus callosum in a rodent model of third trimester alcohol exposure. To be presented at the 51<sup>st</sup> Annual Meeting of the Society for Neuroscience, San Diego, CA.

**Smith, I.F.**, Milbocker, K.A., Klintsova, A.Y., & Roth, T.L. (November 2022). Altered myelin-related gene expression and epigenetic markers in a rodent model of third trimester alcohol exposure. To be presented at the 55<sup>th</sup> Annual Meeting of the International Society for Developmental Psychobiology, San Diego, CA.

Williams, L.T., Milbocker, K.A., **Smith, I.F.**, Brengel, E.K., LeBlanc, G.L., Klintsova, A.Y., Van Houten, E.E.W., McGarry, M.D.J., & Johnson, C.L. (October 2022). MRE of *in vivo* rodent brain mechanical properties using nonlinear inversion. To be presented at the Annual Meeting of the Biomedical Engineering Society, San Antonio, TX.

**Smith, I.F.**, Milbocker, K.A., Roth, T.L., & Klintsova, A.Y. (June 2022). Epigenetic markers related to oligodendrocyte precursor cells in a rat model of fetal alcohol spectrum disorders. Presented at the 45<sup>th</sup> Annual Meeting of the Research Society on Alcoholism, Orlando, FL.

Williams, L.T., Milbocker, K.A., Sullivan, S.R., **Smith, I.F.**, Brengel, E., LeBlanc, G., Klintsova, A.Y., McGarry, M.D.J., & Johnson, C.L. (May 2022). Mapping rodent brain mechanical properties *in vivo* with magnetic resonance elastography and nonlinear inversion. Presented at the Joint Annual International Society for Magnetic Resonance in Medicine – European Society for Magnetic Resonance in Medicine and Biology Meeting and 31<sup>st</sup> Annual Meeting of the International Society for MR Radiographers and Technologists, London, UK.

**Smith, I.F.**, Gursky, Z.H., & Klintsova, A.Y. (November 2021). Representation of mPFC axonal efferents in the thalamic nucleus reuniens in a rodent model of FASD. Presented at the 50<sup>th</sup> Annual Meeting of the Society for Neuroscience, Chicago, IL, virtual format.

Zoladz, P.R., Del Valle, C.R., **Smith, I.F.**, Goodman, C.S., Dodson, J.L., Elmouhawesse, K.M., Kasler, C.D., & Rorabaugh, B.R. (November 2021). Increased hippocampal markers of catecholamines and enhanced negative feedback of the HPA axis in females exposed to a predator-based psychosocial stress model of post-traumatic stress disorder. Presented at the 50<sup>th</sup> Annual Meeting of the Society for Neuroscience, Chicago, IL, virtual format.

Onesi, N.L., **Smith, I.F.**, & Klintsova, A.Y. (August 2021). Effect of developmental alcohol exposure on associative memory and medial prefrontal cortical-reuniens-hippocampal circuit in a rodent model of fetal alcohol spectrum disorders. Presented at the UD Summer Scholars Symposium, virtual format.

**Smith, I.F.**, Gursky, Z.H., Milbocker, K.A., & Klintsova, A.Y. (June 2021). Representation of mPFC axon terminals in the thalamic nucleus reuniens in a rat model of third trimester binge drinking. Presented at the 14<sup>th</sup> annual meeting of the Fetal Alcohol Spectrum Disorders Study Group, virtual format.

**Smith, I.F.**, Kasler, C.D., Krynak, K.L., & Zoladz, P.R. (April 2020). Changes in the gut-associated microbiome as a result of exposure to a predator-based psychosocial stress model of PTSD. Presented at the ONU Student Research Colloquium, Ada, OH.

Del Valle, C.R., Goodman, C.S., **Smith, I.F.**, Elmouhawesse, K.M., Dodson, J.L., Hepp, J.K., & Zoladz, P.R. (April 2020). Impact of ketamine on physiological and behavioral sequelae induced by a predator-based psychosocial stress model of PTSD. Presented at the ONU Student Research Colloquium, Ada, OH.

Goodman, C.S., **Smith, I.F.**, Dodson, J.L., Elmouhawesse, K.M., Del Valle, C.R., Hepp, J.K., & Zoladz, P.R. (April 2020). Impact of alcohol on the development of PTSD-like sequelae following intense stress. Presented at the ONU Student Research Colloquium, Ada, OH.

**Smith, I.F.**, Goodman, C.S., Elmouhawesse, K.M., Dodson, J.L., Del Valle, C.R., Hepp, J.K., Rorabaugh, B.R., & Zoladz, P.R. (April 2020). Enhanced negative feedback of the HPA axis and increased noradrenergic activity in females exposed to a predator-based psychosocial stress model of PTSD. Presented at the ONU Student Research Colloquium, Ada, OH.

Del Valle, C.R., Goodman, C.S., **Smith, I.F.**, Elmouhawesse, K.M., Dodson, J.L., Hepp, J.K., & Zoladz, P.R. (April 2020). Impact of ketamine on physiological and behavioral sequelae induced by a predator-based psychosocial stress model of PTSD. Presented at the BGSU Undergraduate Symposium for Research and Scholarship, Bowling Green, OH.

Goodman, C.S., **Smith, I.F.**, Dodson, J.L., Elmouhawesse, K.M., Del Valle, C.R., Hepp, J.K., & Zoladz, P.R. (April 2020). Impact of alcohol on the development of PTSD-like sequelae following intense stress. Presented at the BGSU Undergraduate Symposium for Research and Scholarship, Bowling Green, OH.

**Smith, I.F.**, Goodman, C.S., Elmouhawesse, K.M., Dodson, J.L., Del Valle, C.R., Hepp, J.K., Rorabaugh, B.R., & Zoladz, P.R. (April 2020). Enhanced negative feedback of the HPA axis and increased noradrenergic activity in females exposed

to a predator-based psychosocial stress model of PTSD. Presented at the BGSU Undergraduate Symposium for Research and Scholarship, Bowling Green, OH.

**Smith, I.F.**, Kasler, C.D., Krynak, K.L., & Zoladz, P.R. (October 2019). Changes in the gut-associated microbiome as a result of exposure to a predator-based psychosocial stress model of PTSD. Presented at the 49<sup>th</sup> Annual Meeting of the Society for Neuroscience, Chicago, IL. Abstract published in *Society for Neuroscience Abstracts*, 49, 780.15.

Goodman, C.S., D'Alessio, P.A., Seeley, S.L., Kasler, C.D., Mucher, K.E., Allison, A.S., **Smith, I.F.**, Dodson, J.L., Stoops, T.S., Elmouhawesse, K.M., Rorabaugh, B.R., & Zoladz, P.R. (October 2019). A predator-based psychosocial stress model of post-traumatic stress disorder in females: Influence of estrous phase and ovarian hormones. Presented at the 49<sup>th</sup> Annual Meeting of the Society for Neuroscience, Chicago, IL. Abstract published in *Society for Neuroscience Abstracts*, 49, 780.02.

Johnson, A.C., Shuster, C., Huffman, C., Lininger, S., Wagner, K., **Smith, I.**, & Hurd, K. (May 2019). Working hard to remember: A component analysis of working memory in college students. Presented at the 31<sup>st</sup> Association for Psychological Science Annual Convention, Washington, DC.

**Smith, I.F.**, Zoladz, P.R., & Krynak, K.L. (April 2019). Rodent Model of PTSD and Accompanied Changes in the Gut-associated Microbiome. Presented at the ONU Student Research Colloquium, Ada, OH.

Wohlgamuth, T., Reuss, K., Rabold, T., Torbet, P., Huffman, C., Wagner, K., **Smith, I.**, Hurd, K., Lieb, J., & Johnson, A.C. (April 2019). Examining verbal ability and externalizing behaviors among college students. Presented at the 91<sup>st</sup> Annual Meeting of the Midwestern Psychological Association, Chicago, IL.

**Smith, I.F.**, Zoladz, P.R., Dennis, P.M., & Krynak, K.L. (August 2018). How does the enteric microbiome change in response to anxiolytics? A case study of a zoo-housed Allen's swamp monkey (*Allenopithecus nigroviridis*). Presented at the S.E.A.R.C.H. Undergraduate Research Symposium of the Cleveland Botanical Garden, Cleveland, OH.

Wohlgamuth, T., Reuss, K., Rabold, T., Torbet, P., Huffman, C., Wagner, K., **Smith, I.**, Hurd, K., Lieb, J., & Johnson, A.C. (April 2018). Talking it out: Investigating the relationship between verbal ability and externalizing behaviors among college students. Presented at the Northwest Ohio Undergraduate Symposium for Research and Scholarship, Ada, OH.

Johnson, A.C., Shuster, C., Huffman, C., Lininger, S., Wagner, K., **Smith, I.**, & Hurd, K. (April 2018). Working hard to remember: Academic habits and working memory. Presented at the Northwest Ohio Undergraduate Symposium for Research and Scholarship, Ada, OH.

**Smith, I.,** Kedenburg, S., Mader, C., Mast, A., & Sexton, T. (April 2018). The effects of combined exercise and mastication on free recall. Presented at the Northwest Ohio Undergraduate Symposium for Research and Scholarship, Ada, OH.

## **Invited Talks**

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*Exploring the effects of alcohol and exercise on corpus callosum myelination in a rodent model of Fetal Alcohol Spectrum Disorders.* (May 2022). Invited seminar talk. Institute for Medical Research, University of Cambridge, Cambridge, UK

*Overview of graduate program application process in the United States.* (May 2022). Invited talk. Warsaw International Studies in Psychology, University of Warsaw, Warsaw, Poland.

*Outcomes of alcohol exposure during third trimester on the brain throughout the lifespan: Consequences and potential behavioral interventions in a rodent model of FASD.* (May 2022). Invited talk. Warsaw International Studies in Psychology, University of Warsaw, Warsaw, Poland.

## **Scientific Techniques**

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**Behavioral Neuroscience Procedures:** radial-arm water maze (spatial memory), elevated plus maze (anxiety testing), open field (locomotor activity assessment), object in place (associative memory assessment), startle response testing, psychosocial predator stress model (Zoladz et al., 2008), maternal separation, intraperitoneal injection, subcutaneous injection, whole brain extraction, microdissection, stereotaxic surgery, intracardial perfusion, intragastric intubation

**Wet Lab Techniques:** immunohistochemistry (IHC), DNA/RNA extraction, PCR/RT-PCR, gel-electrophoresis, terminal restriction fragment length polymorphism (TRFLP), brightfield and fluorescent microscopy

**Medical Imaging Techniques:** diffusion tensor imaging, magnetic resonance elastography

## **Computer Software/Programming Skills**

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IBM Statistical Package for the Social Sciences (SPSS)

Statistical Analysis System (SAS)

R: The R Project for Statistical Computing

GraphPad: Prism

mothur (MiSeq processing of bacterial communities)

Schloss, P.D., et al. (2009). Introducing mothur: Open-source, platform-independent, community-supported software for describing and comparing microbial communities. *Applied and Environmental Microbiology*, 75(23), 7537-7541. doi: <https://doi.org/10.1128/AEM.01541-09>

StereoInvestigator (MBF Bioscience)

## Teaching Experience

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<b>Invited Lecturer</b> NSCI320/PSYC320 Introduction to Neuroscience Lecture: Chemical Control of the Brain and Behavior University of Delaware, Department of Psychological and Brain Sciences	Fall 2021
<b>Tutor</b> PSYC3251 Cognitive Psychology with Lab Ohio Northern University, Department of Psychology	Spring 2020
<b>Teaching Assistant</b> PSYC3301 Sensation and Perception with Lab Ohio Northern University, Department of Psychology	Fall 2019
<b>Teaching Assistant</b> PSYC3401 Experimental Psychology with Lab Ohio Northern University, Department of Psychology	Fall 2018
<b>Tutor</b> PSYC1001 Introductory Psychology Ohio Northern University, Department of Psychology	Fall 2018-Spring 2020
<b>Tutor</b> PSYC3151 Learning and Behavior with Lab Ohio Northern University, Department of Psychology	Fall 2018-Spring 2020
<b>Curriculum Development</b> BIOL1301 Biology I: Cells, Molecules, & Evolution Ohio Northern University, Department of Biological and Allied Health Sciences Molecular Methods: PCR and Gel Electrophoresis Lab	Implemented Fall 2018

## Professional Service

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<b>Treasurer</b> Project Brain Light University of Delaware	Winter 2022-present
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<b>Graduate Student Representative</b> Behavioral Neuroscience Area, Department of Psychological and Brain Sciences University of Delaware	Fall 2021-Winter 2022
<b>Vice President</b> Project Brain Light University of Delaware	Spring 2021-Summer 2021
<b>President</b> Psi Chi – The National Honor Society in Psychology, Ohio Northern University	Spring 2019-Spring 2020
<b>Vice President</b> Psi Chi – The National Honor Society in Psychology, Ohio Northern University	Spring 2018-Spring 2019
<b>College of Arts &amp; Sciences Student Advisory Board, Ohio Northern University</b>	
Department Representative for Psychology, Sociology & Criminal Justice	Spring 2018-Spring 2020
ONU Research Colloquium Committee	Fall 2018-Spring 2020
Committee on Assessment	Spring 2018-Fall 2018

### **Professional Affiliations**

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International Society for Developmental Psychobiology  
International Society for Magnetic Resonance in Medicine  
Research Society on Alcoholism  
FASDSG (Fetal Alcohol Spectrum Disorders Study Group)  
Eastern Psychological Association  
Society for Neuroscience  
Association for Psychological Science  
Ohio Academy of Science  
Psi Chi – The National Honor Society in Psychology  
Omicron Delta Kappa – National Leadership Honor Society

### **Memberships on Editorial Boards**

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*Aurora: The Research Journal of Ohio Northern University*      Fall 2018-Spring 2020

**Last Updated 07-14-2022**