

ERIC K. BRENGEL

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EDUCATION

Northeastern University		Boston, MA
2022–	Ph.D. Candidate, Psychology	
Present	Area of Specialization: Behavioral Neuroscience Advisor: Craig F. Ferris, Ph.D.	
University of Delaware		Newark, DE
2022	M.S., Neuroscience (GPA: 4.0/4.0) Master's Thesis: <i>Effects of neonatal alcohol exposure on oligodendrocyte-lineage cell quantity in the rat corpus callosum</i> Advisor: Anna Y. Klintsova, Ph.D.	
2021	Honors B.S. with Distinction, Neuroscience (magna cum laude) Honors Senior Thesis: <i>Uncovering the therapeutic potential of aerobic exercise with a rodent model of Fetal Alcohol Spectrum Disorders</i> Advisor: Anna Y. Klintsova, Ph.D.	
2021	Honors B.A., Biological Sciences (magna cum laude) Minor in Public Policy, Joseph R. Biden, Jr. School of Public Policy & Administration	

RESEARCH EXPERIENCE

Center for Translational Neuroimaging (CTNI) Northeastern University		2022–Present
Graduate Research Assistant		
<ul style="list-style-type: none"> Examining the effects of repetitive concussions on microarchitecture and connectivity of the aging brain using preclinical neuroimaging, histopathology, and behavioral assays with dietary and pharmacological interventions Adapting the closed-head momentum exchange model for use in conscious mice to maximize the translational value and accessibility of mild head injury research Established CTNI Histology Core: designed immunohistochemical protocols, ordered and organized supplies, trained all new research assistants Established CTNI Concussion Journal Club: contextualizes research in the field and develops scientific communication skills for research assistants Mentoring students at the master's (3), undergraduate (20), and high school (3) levels 2 manuscripts in preparation as first author; 3 presentations as first author 		
Klintsova Laboratory University of Delaware		2018–2022
Research Assistant		
<ul style="list-style-type: none"> Examined the effects of Fetal Alcohol Spectrum Disorders on corpus callosum myelination and neuronal development using preclinical neuroimaging and histopathology with an exercise intervention Developed and implemented novel immunohistochemical protocols for quantification of myelinating and pre-myelinating oligodendrocytes Obtained 2 departmental grants to fund research involvement and 2 awards recognizing academic achievement Mentored undergraduate students (4) through biweekly journal clubs and bench skill training 2 manuscripts published as co-author; 4 presentations and invited talks as first-author 		
Concussion Research Laboratory University of Delaware		2020–2022
Research Assistant		
<ul style="list-style-type: none"> Organized NCAA-DOD CARE Consortium data for studies examining post-concussion lower extremity musculoskeletal injury in collegiate athletes Assisted collection of baseline physical and neurocognitive exams Reviewed submitted manuscripts and published literature 1 presentation as first-author 		

PUBLICATIONS

- Brenzel, E.K.**, Balaji, S., Ghaw, A., Kulkarni, P.P., & Ferris, C.F. (2024) *Multimodal characterization of momentum exchange concussion in conscious mice with implications for second impact syndrome*. Manuscript in preparation.
- Hightower, R. *, **Brenzel, E.K.**, *, Prom, S., Kulkarni, P.P., & Ferris, C.F. (2024) *Testing the efficacy of minocycline in an awake, female rat model of repetitive mild head injury*. Manuscript in preparation. *shared first authorship
- Milbocker, K.A., Smith, I.F., **Brenzel, E.K.**, LeBlanc, G.L., Roth, T., & Klintsova, A.Y. (2023) Exercise in adolescence enhances callosal white matter refinement in the female brain in a rat model of Fetal Alcohol Spectrum Disorders. *Cells*, 12(7), 975. <https://doi.org/10.3390/cells12070975>
- Milbocker, K.A., LeBlanc, G.L., **Brenzel, E.K.**, Hekmatyar, K.S., Kulkarni, P.P., Ferris, C.F., & Klintsova, A.Y. (2022). Reduced and delayed myelination and volume of corpus callosum in an animal model of Fetal Alcohol Spectrum Disorders partially benefit from voluntary exercise. *Scientific Reports*, 12(10653). <https://doi.org/10.1038/s41598-022-14752-3>

HONORS & AWARDS

- 2022 **New Entrant Stipend – International Society for Magnetic Resonance in Medicine**
- Travel grant awarded for the 2022 ISMRM conference
- 2021 **Student Award – American Association of University Professors, UD Chapter**
- Competitive scholarship awarded to three graduating University of Delaware (UD) students aspiring to become university professors
- 2021 **Halsey MacPhee Award – UD Dept. of Psychological & Brain Sciences**
- Recognition awarded annually to one graduating neuroscience student for outstanding all-around performance in research, classwork, and departmental engagement
- 2020 **Carol Mueller Plasket Award – UD Dept. of Psychological & Brain Sciences**
- Research grant awarded annually to one undergraduate in psychology or neuroscience; used for Honors Senior Thesis project design and data collection
- 2019 **Summer Fellow – UD Undergraduate Research Program**
- Research fellowship awarded to fund summer research with the Klintsova Lab
- 2019 **Advocacy Initiative of the Year – UD Resident Student Association**
- Recognition awarded for leading initiative to acquire and maintain residence hall recycling bins
- 2019 **General Honors Award – UD Honors Program**
- Academic honor awarded for excellence in honors coursework
- 18-21 **Chemistry Leadership Award – UD Dept. of Chemistry & Biochemistry**
- Granted for leading workshops in General Chemistry
- 17-21 **Dean's List – UD College of Arts & Sciences**
- Academic honor awarded for scholastic excellence each semester

SELECTED PRESENTATIONS

- Brenzel, E.K.**, Balaji, S., Kulkarni, P.P., & Ferris, C.F. (2023, Nov. 11-15). *Novel closed-head, awake model of repetitive concussion with momentary loss of consciousness in mice* [Poster session]. 2023 Society for Neuroscience Conference, Washington, D.C., United States.
- Brenzel, E.K.**, Kulkarni, P.P., & Ferris, C.F. (2023, Apr. 13). *Longitudinal model investigating repetitive mild head injury, high-fat diet, and neurodegenerative risk* [Poster session]. 2023 Research, Innovation, Scholarship, and Entrepreneurship Exposition, Boston, MA, United States.
- Brenzel, E.K.** (2023, Mar. 17) *Myelin maldevelopment in Fetal Alcohol Spectrum Disorders: Pairing histology with MRI* [Seminar presentation]. Northeastern University Department of Psychology Master's Convention, Boston, MA, United States.
- Milbocker, K.A., **Brenzel, E.K.**, & Klintsova, A.Y. (2022, Nov. 9-11). *Sexual dimorphisms in oligodendrocyte proliferation and differentiation in infancy in a rat model of Fetal Alcohol Spectrum Disorders* [Poster session]. 2022 International Society for Developmental Psychobiology Conference, San Diego, CA, United States.
- Milbocker, K.A., Kulkarni, P., Athreya, D., **Brenzel, E.K.**, Kedharnath, S., Ferris, C.F., & Klintsova, A.Y. (2022, Nov. 12-16). *Discovering the potential for an adolescent intervention to restore corpus callosum myelination and*

- functional connectivity in the adult brain using a rodent model of Fetal Alcohol Spectrum Disorders* [Poster session]. 2022 Society for Neuroscience Conference, San Diego, CA, United States.
- Williams, L.T., Milbocker, K.A., Smith, I.F., **Bregel, E.K.**, LeBlanc, G.L., Klintsova, A.Y., Van Houten, E.E.W., McGarry, M.D.J., & Johnson, C.L. (2022, Oct. 12-15). *MRE of in vivo rodent brain mechanical properties using nonlinear inversion* [Poster session]. 2022 Biomedical Engineering Society Conference, San Antonio, TX, United States.
- Milbocker, K.A., **Bregel, E.K.**, LeBlanc, G.L., & Klintsova, A.Y. (2022, May 7-12). *Mind the myelin: Investigating the therapeutic impact of exercise on white matter damage in a rodent model of Fetal Alcohol Spectrum Disorders* [Poster session]. 2022 International Society for Magnetic Resonance in Medicine Conference, London, United Kingdom.
- Bregel, E.K.** & Buckley, T.A. (2022, March 9). *Sex differences in NCAA cheerleading concussion recovery time* [Poster session]. 2022 College of Health Sciences Research Day, Newark, DE, United States.
- LeBlanc, G.L., Milbocker, K.A., **Bregel, E.K.**, & Klintsova, A.Y. (2022, March 3-5). *Got glia? Rescuing myelination in a model of Fetal Alcohol Spectrum Disorders* [Poster session]. 2022 Eastern Psychological Association Conference, New York, NY, United States.
- Milbocker, K.A., LeBlanc, G.L., **Bregel, E.K.**, Hekmatyar, K.S., Ferris, C.F., & Klintsova, A.Y. (2021, Nov. 8-11). *Running to repair: Does aerobic exercise intervention in adolescence mitigate the effect of prenatal alcohol exposure on myelination?* [Poster session]. 2021 Society for Neuroscience Conference, Chicago, IL, United States (Virtual).
- Milbocker, K.A., **Bregel, E.K.**, LeBlanc, G.L., Hekmatyar, K.S., & Klintsova, A.Y. (2021, June 19-23). *Alcohol exposure during the brain growth spurt delays myelination of the corpus callosum in adolescent rats: A multimodal longitudinal study* [Poster session]. 2021 Research Society on Alcoholism Conference/Fetal Alcohol Spectrum Disorders Study Group, San Antonio, TX, United States (Virtual).
- Milbocker, K.A., LeBlanc, G.L., **Bregel, E.K.**, Hekmatyar, K.S., Kulkarni, P., Ferris, C.F., & Klintsova, A.Y. (2021, Jan. 11-13). *Detecting myelin-dependent plasticity: therapeutic effect of an aerobic exercise intervention on corpus callosum myelination in a rodent model of Fetal Alcohol Spectrum Disorders* [Poster session]. Society for Neuroscience Global Connectome Conference, Washington, D.C., United States (Virtual).
- Bregel, E.K.**, Milbocker, K.A., & Klintsova, A.Y. (2020, Oct. 25). *Altered corpus callosum myelination in a rodent model of fetal alcohol spectrum disorders with an aerobic exercise intervention: A diffusion tensor imaging analysis* [Poster session]. 2020 Faculty for Undergraduate Neuroscience Symposium, Washington, D.C., United States (Virtual).
- Bregel, E.K.**, Milbocker, K.A., & Klintsova, A.Y. (2020, Aug. 13). *Post-intervention analysis of the effects of neonatal alcohol exposure and aerobic exercise on corpus callosum myelination in a rodent model of Fetal Alcohol Spectrum Disorders* [Poster session]. 2020 Undergraduate Research and Service Scholar Celebratory Symposium, Newark, DE, United States (Virtual).
- Bregel, E.K.**, Milbocker, K.A., & Klintsova, A.Y. (2019, Aug. 15). *Effects of neonatal alcohol exposures on midline thalamic nuclei in a rodent model* [Poster session]. 2019 Undergraduate Research and Service Scholar Celebratory Symposium, Newark, DE, United States.

INVITED TALKS

- Bregel, E.K.** (2024, Feb. 22) *The Application Timeline* [Professional development seminar presentation]. Graduate School Mentorship Program, Northeastern University Department of Psychology, Boston, MA, United States.
- Milbocker, K.A., Smith, I.F., LeBlanc, G.L., **Bregel, E.K.**, Roth, T.L., & Klintsova, A.Y. (2022, May 10). *Exploring the effects of alcohol and exercise on corpus callosum myelination in a rodent model of Fetal Alcohol Spectrum Disorders* [Seminar presentation]. Cambridge Institute for Medical Research, Cambridge, United Kingdom.
- Milbocker, K.A., Smith, I.F., LeBlanc, G.L., **Bregel, E.K.**, Roth, T.L., & Klintsova, A.Y. (2022, May 5) *Harnessing myelin plasticity to mitigate neurodevelopmental delay in a preclinical model of Fetal Alcohol Spectrum Disorders* [Seminar presentation]. University of Liege Department of Preclinical Biomedical Sciences, Liege, Belgium.
- Bregel, E.K.** & Klintsova, A.Y. (2021, Nov. 9). *Chapter 12: The Somatic Sensory System* [Class lecture]. NSCI 320: Honors Introduction to Neuroscience, Newark, DE, United States.

LEADERSHIP & SERVICE

2023–Present	STEM Professional	Pen Pal Program Letters to a Pre-Scientist
2023–Present	Founder & Director	Concussion Journal Club CTNI, Northeastern University
2022–Present	Graduate Student Mentor	Graduate School Mentorship Program Dept. of Psychology, Northeastern University
2017–2020	Founder & Chair	Sustainability Committee University of Delaware

TEACHING EXPERIENCE

2023–Present	Graduate Teaching Assistant Dept. of Psychology, Northeastern University
	<ul style="list-style-type: none"> • PSYC 2320: Statistics in Psychological Research
2021–2022	Graduate Teaching Assistant Dept. of Psych. & Brain Sciences, University of Delaware
	<ul style="list-style-type: none"> • NSCI 320: Honors Introduction to Neuroscience • PSYC 414: Drugs and the Brain
2018–2021	Workshop Leader Dept. of Chemistry & Biochemistry, University of Delaware
	<ul style="list-style-type: none"> • CHEM 103: General Chemistry I • CHEM 104: General Chemistry II

OTHER RELEVANT EXPERIENCE

2022–Present	Leadership Education Advancing Discovery through Embedded Research (LEADERS) Northeastern University Ph.D. Network
	<ul style="list-style-type: none"> • Business leadership training through a research lens for Ph.D. students
2022–Present	Future Faculty Program Northeastern University Ph.D. Network
	<ul style="list-style-type: none"> • Professional teaching and mentoring development for Ph.D. students
2020	Science & Society Study Abroad Dept. of Biological Sciences, University of Delaware
	<ul style="list-style-type: none"> • Seminar on medical history through scientific, political, and social lenses in Paris, France

PROFESSIONAL AFFILIATIONS

2022	Member	International Society for Magnetic Resonance in Medicine
2021	Graduate Student Member	Society for Neuroscience
2019	Member	Nu Rho Psi Neuroscience Honor Society

SKILLS

- **Preclinical small-animal Magnetic Resonance Imaging** – Awake (functional) and anesthetized (structural)
- **Microscopy** – Image acquisition and analysis (fluorescence, confocal, bright field)
- **Histology** – Protocol development and execution (fluorescent immunohistochemistry, Nissl staining)
- **Tissue Preparation** – Perfusion, cryosectioning, slide-mounting, preservation
- **Behavioral Assays** – Spatial working memory, locomotor coordination, aerobic exercise intervention
- **Formulation & Drug Delivery** – Intraperitoneal, subcutaneous, intragastric
- **Software & Coding**
 - Statistical Analysis – SPSS, Prism GraphPad, Excel
 - MRI Analysis – MedInria, SPM12
 - Microscopy & Unbiased Stereology – MBF Bioscience StereoInvestigator, Fiji ImageJ, Zeiss ZEN
 - Languages with familiarity – R, Python, MATLAB
- **Animal Husbandry**
- **Responsible Conduct of Research Training**
- **Scientific Communication** – Manuscript publication, poster and lecture presentation, discussion facilitation