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# **Current Position(s)**

## **Data Science Trainer – Data Science & Education Research and Outreach Laboratory 06/22 – present**

Donald Danforth Plant Science Center

*Provide ongoing skill development in a variety of computational skills including programming (Python), version control, statistical analysis (R language), data visualization, data management, bioinformatics, image analysis, geospatial analysis, and other relevant skills.*

## **Postdoctoral Researcher – NSF IUSE-HSSU Data Science CURE 10/21 – present**

Harris-Stowe State University/Danforth Plant Science Center

*Collaboration between Harris-Stowe State University and the Donald Danforth Plant Science Center (DDPSC) to develop a course-based undergraduate research experience to expose underrepresented minority students to authentic STEM research, innovative techniques in image analysis, and data science techniques currently being used at the DDPSC.*

## **Adjunct Professor – Department of Biology 01/22 – present**

Harris-Stowe State University

*Primary educator for freshmen-level Biology laboratory course (BIO0152). Designed and presented didactic lectures to prepare students for a career in investigational research while providing them a functioning vocabulary and comprehension skills necessary for success in upper-level STEM courses at Harris-Stowe State University as well as a career in industry sectors.*

## **Chief Scientific Advisor/Pharmacologist/Intake Coordinator 09/19 – present**

Silo Wellness/ Silo Wellness Retreats

*Supply scientific consultation, particularly pharmacology-related information, to ensure proper dosing of all psychedelic-assisted modalities used in a therapeutic retreat environment. Engage in discourse with participants in review of their intake applications to ensure that the participant’s medication and medical conditions do not endanger themselves or any retreat guests. Interfaced with media outlets to convey scientific reasoning behind psychedelic-assisted modalities in treating severe forms of mental illness.*

# **Education**

## Graduate degree:

**Doctor of Philosophy, Pharmacology and Physiology 08/18**

Saint Louis University School of Medicine, Saint Louis MO

Dissertation Title: *The Neurotrophic Actions of Serotonin and Dopamine on the Development of the Larval Stomatogastric Nervous System in* Drosophila melanogaster.

Mentor: Dr. Wendi S. Neckameyer, Ph.D.

## Undergraduate degree:

**Bachelor of Science, Biology 06/11**

Saint Louis University, Saint Louis MO

**Professional Society Membership**

Genetics Society of America 2011 – 2017; 2020 – 2021

Midwest Postdoctoral Society 2020 – 2021

National Postdoctoral Association 2020 – 2021

**Honors and Awards**

Predoctoral Pharmacological Sciences Training Grant, T32-GM008306 07/13 – 06/17

National Institute of General Medical Sciences, National Institute of Health

Dr. Elizabeth J. Keath Undergraduate Research Award Honorable Mention 04/10

**Certifications**

Cannabis Concentrate Production Technology Course04/19

Westminster, Colorado

ISO/IEC 17025: 2017 Accredited06/18

A2LA Accreditation Body – University Center, Grayslake, Illinois

*Introduction to Molecular Spectroscopy* 02/18

[University of Manchester on Coursera](https://www.coursera.org/account/accomplishments/certificate/JU3GJUEW2MX4)

**Previous Appointments**

Post-doctoral Fellow Researcher 09/20 – 10/21

Harris-Stowe State University – Department of Biology – Leal Lab

Investigating the interaction between the transcription factor Midline and members of the Notch-Delta signaling pathway in developing *Drosophila* larval imaginal discs

*Project 1: Midline functions as an essential member of the Notch-Delta signaling pathway by regulating differential gene expression via heterocomplex formation with Extramacrochaetae (Emc) or other transcription factor proteins downstream of Notch-Delta.*

Summary: Used the genetic tractability of *Drosophila* to manipulate mRNA expression of *midline* and other key transcription factors found within the Notch-Delta signaling pathway during the development of the compound eye funded by an NSF Research Initiation Grant. Used immunocytochemical approaches to immunostain and visualize the morphology of third instar larval eye imaginal discs using confocal microscopy through a grant partnership with Saint Louis University Department of Biology. Outcome: *Manuscript in preparation.*

Postdoctoral Researcher 06/20 – 09/20

Harris-Stowe State University – Department of Biology – Horrell Lab

Developed a novel undergraduate research experience to expose students at Harris-Stowe State University to fermentation biology with the goal of developing novel pharmacology-based research experiences for underrepresented minority students funded by an NSF Target Infusion Project.

*Project 1: Developing a pharmacology-based course to expose undergraduate first-year students to novel pharmacology-focused research inquiries using* Saccharomyces *as a model organism.*

Summary: Modeled course curriculum after Swanson et al., 2016 which used yeast as a model to introduce undergraduate freshmen to basic pharmacology principles with the goal of conducting novel research to investigate receptor-ligand interactions between commercially available supplements that claim to have mood-modulating properties via the serotonin system. Outcome: *Course still in development with plans to initiate pilot course in 2022-2023 Academic Year*

Adjunct Professor 05/19-3/20

Harris-Stowe State University – Department of Mathematics and Natural Sciences.

Primary educator for freshmen-level Biology laboratory course (BIO0152). Developed and administered didactic lectures to prepare students for a career in investigational research while supplying them a functioning vocabulary and comprehension skills necessary for success in upper-level STEM courses at Harris-Stowe State University as well as a career in industry sectors.

Postdoctoral Researcher 11/19 – 06/20

Harris-Stowe State University – Department of Biology – Leal Lab

Elucidated the pharmacological effects of cannabidiol on motor-driven behaviors using *Drosophila* larval behavioral paradigms that magnify perturbations in motor output of the animal. Developed mentorship protocols to supply instruction for two undergraduate researchers in classical investigative pharmacology techniques such as establishing dose-response curves, calculating binding affinities between receptor-ligand interactions, and designing behavioral paradigms to assess the functional output of motor-driven circuits.

*Project 1: The Effect of Cannabidiol on Motor and Sensory Behaviors in* Drosophila melanogaster *larvae*

Summary: Investigated the neurobehavioral effects of cannabidiol on third instar larval behavior using established behavioral paradigms that amplify perturbations in motor and sensory neurons. Used immunocytochemical approaches to immunostain third instar larval brains to elucidate changes in neuronal structures implicated in higher-ordered cognitive functions. Outcome: *Manuscript in preparation*

Science and Mathematics Academy Biology Instructor Part-time 06/19-07/19

Harris-Stowe State University – Science and Mathematics Academy – Biology Instructor

Supplied didactic biology lectures to incoming first-year students to aid in their college preparation and support their transition from high school to the university by presenting basic concepts in biological sciences.

Mathematics Tutor 10/17-10/18

Varsity Tutors, LLC.

Tutor for Middle School to College-level in science and mathematics

Graduate Teaching Assistant 08/16-12/16

Saint Louis University

Lecturer for Drugs We Use and Abuse

Graduate Teaching Assistant 08/15-12/15

Saint Louis University

Course Director for Drugs We Use and Abuse

Guest Lecturer 08/15-12/15

Saint Louis University School of Medicine

Department of Pharmacological and Physiological Sciences

Lecturer for Pharmacology and Physiology PPY513

*Dopaminergic & Serotonergic Neuropharmacology*

Graduate Teaching Assistant 08/14-12/14

Saint Louis University

Course Co-Director for Drugs We Use and Abuse

Graduate Teaching Assistant 08/13-12/13

Saint Louis University

Lecturer for Drugs We Use and Abuse

# **Bibliography**

## Peer reviewed articles:

1. **Bhatt, P.K.,** Perkin, A., Roberts, B., and Leal, S.M. Midline Regulation of *decapentaplegic* Activity in *Drosophila melanogaster* Imaginal Eye Discs. *In Preparation.* 2022
2. **Bhatt, P.K.,** Lowery, C., and Leal, S.M. The Effect of Cannabidiol on Motor and Sensory Behaviors in *Drosophila melanogaster* larvae. *In Preparation*. 2022
3. **Bhatt, P.K.**, Neckameyer, W.S. The Impact of Oxidative Stress on a Simple Neural Circuit. Psychology and Neuroscience. 2018; *11*(3), 291-305.
4. **Bhatt, P.K.,** Vilza, I., Swamy, H., Avdagic, S., and Neckameyer, W.S. The neurotrophic actions of serotonin and dopamine on the larval feeding circuit in *Drosophila* are sexually dimorphic. Psychology and Neuroscience. 2018; *11*(2), 216-227.
5. **Bhatt, PK** and Neckameyer, W.S. Functional analysis of the larval feeding circuit in *Drosophila*. Journal of Visualized Experiments. 2013; 81; e51062.
6. Neckameyer, W. S.and **Bhatt, P**. Neurotrophic actions of dopamine on the development of a serotonergic feeding circuit in *Drosophila melanogaster*. BMC Neuroscience. 2012; 13; 26.

## Book Chapters:

1. Neckameyer WS, **Bhatt** **P**. Protocols to study behavior in *Drosophila*, in "*Drosophila*: Methods and Protocols", 2016, Springer.

## Abstract:

1. (4/2022) Perkin, A., Roberts, B., **Bhatt, P.K.,** Leal, S.M. Illuminating the Relationship Between the Transcription Factor Midline and the Morphogen Decapentaplegic in the Developing *Drosophila* Eye Disc. 63rd Annual *Drosophila* Research Conference. April 6-10, 2022. San Diego, CA.
2. (11/2021) Perkin, A., Roberts, B., **Bhatt, P.K.,** Leal, S.M. Illuminating the Relationship Between the Transcription Factor Midline and the Morphogen Decapentaplegic in the Developing *Drosophila* Eye Disc. ABRCMS 2021. November 20-13, 2021. Virtual.
3. (02/2016) **Bhatt, P.K.**, Neckameyer, W.S. Examining the Effects of Oxidative Stress on the Development of a Defined Neural Circuit in *Drosophila melanogaster*. Advocating Translational Genetics/Genomics Conference in St. Louis. February 27, 2016. Saint Louis, MO.
4. (03/2015) **Bhatt, P.K.**, Neckameyer, W.S. Examining the Effects of Oxidative Stress on the Development of a Defined Neural Circuit in *Drosophila melanogaster*. Annual *Drosophila* Research Conference. March 4-8, 2015. Chicago, IL.
5. (10/2014) **Bhatt, P.K.,** Swamy, H., Avdagic, S., Neckameyer, W.S. Sexual identity affects the development and mature function of a defined neural circuit in *Drosophila melanogaster*. Midwest Society for Developmental Biology. October 6-7, 2014. St. Louis, MO.
6. (09/2014) **Bhatt, P.K.**, Swamy, H., Avdagic, S., Neckameyer, W.S. Sexual identity affects the development and mature function of a defined neural circuit in *Drosophila melanogaster*. Biomedical Sciences Graduate Poster Session. September 05, 2014. St. Louis, MO.
7. (04/2014) **Bhatt, P.K.**, Swamy, H., Avdagic, S., Neckameyer, W.S. Sexual identity affects the development and mature function of a defined neural circuit in *Drosophila melanogaster*. 2014 20th Annual Graduate Research Symposium. April 11, 2014. St. Louis, MO.
8. (03/2014) **Bhatt, P.K.**, Swamy, H., Avdagic, S., Neckameyer, W.S. Sexual identity affects the development and mature function of a defined neural circuit in *Drosophila melanogaster*. 2014 55th Annual *Drosophila* Research Conference. March 26-30, 2014. San Diego, CA.
9. (09/2013) **Bhatt, P.K.**, Neckameyer, W.S. Identification of Trophic Factors that Influence CNS Development. 2013 Biomedical Graduate Poster Session. September 6, 2013. St. Louis, MO.
10. (04/2013) **Bhatt, P.K.**, Neckameyer, W.S. Identification of Trophic Factors that Influence CNS Development. 2019 19th Annual Graduate Research Symposium. April 26, 2013. St. Louis, MO.
11. (04/2013) **Bhatt, P.K.**, Swamy, H., Avdagic, S., Neckameyer, W.S. Sexual identity affects the development and mature function of a defined neural circuit in *Drosophila melanogaster*. 2013 54th Annual *Drosophila* Research Conference. April 3-7, 2013. Washington, D.C.
12. (11/2012) **Bhatt, P.K.**, Swamy, H., Avdagic, S., Neckameyer, W.S. Sexual identity affects the development and mature function of a defined neural circuit in *Drosophila melanogaster*. 2012 Midwest *Drosophila* Conference. November 2-3, 2012. Allerton, IL.
13. (03/2012) Avdagic, S., **Bhatt, P.K.**, Neckameyer, W.S. The actions of gonadotropic hormones on the development and mature function of a defined neural circuit in *Drosophila melanogaster*. 2012 53rd Annual *Drosophila* Research Conference. March 4-7, 2012. Chicago, IL.
14. (03/2012) **Bhatt, P.K.**, Neckameyer, W.S. Neurotrophic actions of dopamine on the development of a serotonergic feeding circuit in *Drosophila melanogaster*. 2012 53rd Annual *Drosophila* Research Conference. March 4-7, 2012. Chicago, IL.
15. (03/2012) **Bhatt, P.K.**, Avdagic, S., Neckameyer, W.S. Sexual identity affects the development and mature function of a defined neural circuit in *Drosophila melanogaster*. 2012 53rd Annual *Drosophila* Research Conference. March 4-7, 2012. Chicago, IL.
16. (11/2011) Avdagic, S., **Bhatt, P.K.**, Neckameyer, W.S. Sexual identity, and the actions of hormones, dopamine, and serotonin on the development and mature function of a defined neural circuit in *Drosophila melanogaster*. 2011 Midwest *Drosophila* Conference. November 19-20, 2011. Allerton, IL.
17. (11/2011) Neckameyer, W.S., Swamy, H., Avdagic, S., **Bhatt, P.K.** A genetic screen for factors needed for axon stability. 2011 Midwest *Drosophila* Conference. November 19-20, 2011. Allerton, IL.
18. (06/2011) Neckameyer, W.S., **Bhatt, P.K.** From Ring Gland to Fat Body to Brain: the actions of hormones, dopamine, and serotonin on the development and mature function of a defined neural circuit in *Drosophila melanogaster*. Society for Behavioral Neuroendocrinology 15th Annual Meeting. June 23-26, 2011. Queretaro, Mexico.
19. (03/2011) **Bhatt, P.K.,** Neckameyer, W.S. Trophic actions of neuronal dopamine during the development of a serotonergic feeding circuit in *Drosophila melanogaster*. Elizabeth J. Keath Undergraduate Research Symposium. March 26, 2011. St. Louis, MO.
20. (03/2011) **Bhatt, P.K.**, Neckameyer, W.S. Trophic actions of neuronal dopamine during the development of a serotonergic feeding circuit in *Drosophila melanogaster*. 2011 52nd Annual *Drosophila* Research Conference. March 30 – April 2, 2011. San Diego, CA.
21. (03/2011) Neckameyer, W.S., **Bhatt, P.K.** The influence of sex and hormones on the development of a neural circuit. 2011 52nd Annual *Drosophila* Research Conference. March 30 – April 2, 2011. San Diego, CA.
22. (09/2010) Neckameyer, W.S., **Bhatt, P.K.** Trophic factors and the development of neural circuitry. nEUROfly 2010 (the 13th European *Drosophila* Neurobiology Conference). September 1-3, 2010. Manchester, United Kingdom.
23. (04/2010) Neckameyer, W.S., **Bhatt, P.K.** A Trophic Role for Serotonin in the Development of a Simple Feeding Circuit. 2010 51st Annual *Drosophila* Research Conference. April 7-11, 2010. Washington, D.C.
24. (10/2009) **Bhatt, P.K.,** Neckameyer, W.S. Trophic Factors and the Development of Neural Circuitry. 2009 Midwest *Drosophila* Conference. October 2-3, 2009. Allerton, IL.

## Media Exposure:

1. Brown, E.N. (2022, January 23). Inside the Growing Wellness Trend of Psilocybin Mushroom Microdosing. ***Hollywood Reporter***. <https://www.hollywoodreporter.com/lifestyle/lifestyle-news/pyschedelic-mushrooms-microdosing-medical-treatment-1235076616/>.
2. Tabackman, L. (2021, July 2). What to expect during a magic mushroom trip and how long shrooms stay in your system. ***Insider***. <https://www.insider.com/how-long-do-shrooms-last>.

## Oral Presentations:

1. **2022 Jackie Joyner-Kersee Center.** East St. Louis, IL (2022). Science Communication.
2. **2022 Donald Danfroth Plant Science Center.** Olivette, MO (2022). Undergraduate and High School Intern Lunch & Learn series.
3. **2022 Donald Danforth Plant Science Center REU.** Olivette, MO (2022). Data Science and Phenotyping Workshop.
4. **2021 CanEx Webinar.** Online (2021). Psychedelics and Mental Health.
5. **2021 Science and Mathematics Academy.** Online (2021). STEM Lunch and Learn.
6. **2020 CanEx Investment Summit (NYC).** New York City, NY (2020). What the “Green Rush” Teaches the Shroom Boom.”
7. **2011 Midwest *Drosophila* Conference**. Allerton, IL. (2011). Neurotrophic Actions of Dopamine on the Development of a Serotonergic Feeding Circuit in *Drosophila melanogaster*.