

Jari Willing
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Department of Psychology: Neural and Cognitive Sciences
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Education:

Ph.D. in Psychology-Behavioral Neuroscience, State University of New York at Albany, Advisor:
Dr. Christine Wagner, 2014

B.S. in Psychology, Union College, Schenectady, NY: Departmental Honors,
cum laude, minor in Environmental Studies, 2006

High School Diploma, Honors degree, Regents Diploma, Berne-Knox-Westerlo High school,
Berne, NY, 2002

Academic Employment:

Present Assistant Professor of Psychology: Neural and Cognitive Sciences, Bowling
Green State University

2015-2017 Postdoctoral Fellow: NIEHS Training Program in Endocrine, Developmental and
Reproductive Toxicology

2014-2015 Postdoctoral Researcher: University of Illinois at Urbana Champaign: Laboratory
of Janice Juraska, Psychology-Behavioral Neuroscience program

Teaching Experience:

Bowling Green State University

Instructor of record for:

PSYC 3350; Psychoneuroendocrinology

PSYC 2700; Quantitative Methods I

PSYC 4400; Seminar: "Developmental Psychobiology"

PSYC 5800; Graduate Seminar: "Developmental Psychobiology"

PSYC 1010; Introduction to Psychology

PSYC 1010H: Introduction to Psychology (Honors)

PSYC 4310: Developmental Psychobiology

PSYC 7800: Graduate Seminar: Exogenous Influences on The Brain and Behavior

University of Illinois

Spring 2017 Certificate in Foundations of Teaching (April, 2017): Requirements were attending 8 hours of teaching development workshops, observation of and reflecting on my teaching, exploring literature on teaching, observing an experienced instructor and writing a teaching philosophy statement.

University at Albany

Spring 2013 Instructor of record, Course Title: "Advanced Behavioral Neuroscience"
2009- 2010 Teaching Assistant, Course Title: "Advanced Biopsychology and Behavioral Neuroscience"
2009- 2010 Teaching Assistant, Course Title: "Introduction to Biopsychology and Behavioral Neuroscience"
2010 Teaching practicum in Psychology, Instructor of record for Discussion Section for Introduction to Psychology
2007- 2009 Teaching Assistant, Course Title: "Introduction to Psychology"

Research Grants:

Brain & Behavior Research Foundation NARSAD Young Investigator Grant #26804 (\$70,000, 2018-2020). Environmental endocrine disruptors and maternal infection: Potential interactive effects on development of the prefrontal cortex.

Bowling Green State University Building Strength Grant (\$10,000, 2019-2020). You are what you eat: Does corn grown on dredge material impact body and brain development? **(Co-PI with Dr. Louise Stevenson)**.

Bowling Green State University Building Strength Grant (\$10,000, 2023-2024). Anti-Aging Supplements and Early Brain Development: Potential Risks and Therapeutic Benefits.

Peer-Reviewed Publications:

Flanigan KAS, Czuba MI, Riesgo VR, Rua MA, Stevenson LM, **Willing J** (2023). Developmental exposure to corn grown on Lake Erie dredged material: a preliminary analysis. *Frontiers In Behavioral Neuroscience*, 17, In Press 4/21/2023, <https://doi.org/10.3389/fnbeh.2023.987239>

Vogt ME, Riesgo VR, Flanigan KAS, **Willing J** (2022). Housing Environment Affects Pubertal Onset, Anxiety-like Behavior, and Object Interaction in Male and Female Long Evans Rats. *J Am Assoc Lab Anim Sci*. 2022 May 1;61(3):241-247. PMID: 35512999

Sellinger EP, Riesgo VR, Brinks AS, **Willing J**, Juraska JM (2021). Perinatal phthalate exposure increases developmental apoptosis in the rat medial prefrontal cortex. *Neurotoxicology*, S0161-813X(21)00119-4. PMID: 34599995

Sellinger EP, Drzewiecki CM, **Willing J**, Juraska JM (2021). Cell death in the male and female rat medial prefrontal cortex during early postnatal development. *IBRO Neuroscience Reports*, 10, 186-190. PMID: 33870262

Drzewiecki CM, **Willing J**, Cortes LR, Juraska JM (2021). Adolescent stress during, but not after, pubertal onset impairs indices of prepulse inhibition in adult rats. *Developmental Psychobiology*, 63(5), 837-850. PMID: 33629385

Drzewiecki CM, **Willing J**, Juraska JM. (2020). Influences of age and pubertal status on number of perineuronal nets in the rat medial prefrontal cortex. *Brain Structure and Function*, 225(8), 2495-2507. PMID: 32914251

Hatcher KM, **Willing J**, Chiang C, Rattan S, Flaws JA, Mahoney MM. (2019). Exposure to di-(2-ethylhexyl) phthalate transgenerationally alters anxiety-like behavior and amygdala gene expression in adult male and female mice. *Physiology and Behavior*, 207, 7-14. PMID: 31022410

Newell AJ, Lalitsasivimol D, **Willing J**, Gonzales K, Waters EM, Milner TA, McEwen BS, Wagner CK. (2018). Progesterone receptor expression in Cajal-Retzius cells of the developing rat dentate gyrus: potential role in hippocampus-dependent memory. *Journal of Comparative Neurology* [Epub ahead of print]. PMID: 30069875

Kougias DG, Sellinger EP, **Willing J**, Juraska JM. (2018). Perinatal exposure to an environmentally relevant mixture of phthalates results in a lower number of neurons and synapses in the medial prefrontal cortex and decreased cognitive flexibility in adult male and female rats. *Journal of Neuroscience* [Epub ahead of print]. PMID: 30012688

Hankosky ER, Westbrook SR, Haake RM, **Willing J**, Raetzman LT, Juraska JM, Gulley JM. (2018). Age- and sex-dependent effects of methamphetamine on cognitive flexibility and 5-HT_{2C} receptor localization in the orbitofrontal cortex of Sprague-Dawley rats. *Behavioural Brain Research*, 349, 16-24. PMID: 29715538

Walker DM, Bell MR, Flores C, Gulley JM, **Willing J**, Paul MJ. (2017). Adolescence and Reward: Making Sense of Neural and Behavioral Changes Amid the Chaos. *Journal of Neuroscience*, 37(45), 10855-10866. PMID: 29118215

Willing J, Cortes LR, Brodsky, JM, Kim T, Juraska JM. (2017). Development of dopaminergic fibers in the medial prefrontal cortex of male and female rats during adolescence. *Developmental Psychobiology*, 59 (5), 583-589. PMID: 28561889

Juraska, JM, **Willing J**. (2017). Pubertal onset as a critical transition for neural development and cognition. *Brain Research*, 1654 (Pt B). PMID: 27060769

Willing J, Drzewiecki CM, Cuenod BA, Cortes LR, Juraska JM. (2016). A role for puberty in water maze performance in male and female rats. *Behavioral Neuroscience*, 130 (4), 422-427. PMID: 27054406

Drzewiecki CM, **Willing J**, Juraska JM. (2016). Synaptic number changes in the medial prefrontal cortex across adolescence in male and female rats: A role for pubertal onset. *Synapse*, 70 (9), 361-368. PMID: 27103097

Willing J, Wagner CK. (2016). Exposure to the synthetic progestin 17 α -hydroxyprogesterone caproate (17-OHPC) during development impairs cognitive flexibility in adulthood. *Endocrinology*, 157 (1), 77-82. PMID: 26556535

Wise LM, Sadowski RN, Kim T, **Willing J**, Juraska JM. (2016). Long term effects of adolescent exposure to Bisphenol A on neuron and glia number in the prefrontal cortex: differences between sex and cell type. *Neurotoxicology*, 53, 186-192. PMID: 26828634

Willing J, Wagner CK. (2016). Progesterone receptor expression in the developing mesocortical pathway: importance for complex cognitive behavior in adulthood. *Neuroendocrinology*, 103 (3-4), 207-222. PMID: 26065828

Willing J, Juraska JM. (2015). The timing of neuronal loss across adolescence in the medial prefrontal cortex of male and female rats. *Neuroscience*, 301, 268-275. PMID: 26047728

Willing, J. & Wagner, C.K. (2013). Sensorimotor development in neonatal progesterone receptor knockout mice, *Developmental Neurobiology*, 74 (1), 16-24. PMID: 23983142

Manuscripts In Preparation:

Riesgo VR, Sellinger EP, Brinks AS, Juraska JM, **Willing J**. Reproductive success and neuroanatomical outcomes of combined exposure to maternal infection and an environmentally relevant phthalate mixture. To be re-submitted to *Neurotoxicology and Teratology*, Fall, 2023.

Honors and Awards:

2017: Certificate in Foundations of Teaching: University of Illinois Center for Innovation in Teaching & Learning

2016: International Society for Developmental Psychobiology Travel Award

2015- 2017: Awarded the NIEHS Environmental Toxicology Postdoctoral Training Fellowship

2014: International Society for Developmental Psychobiology Travel Award

2013: Society for Behavioral Neuroendocrinology Graduate Student Poster Award

2012: University at Albany Psychology Department Graduate Student Initiative Award

Service:

2008 Biopsychology Faculty Search Committee student member
2009 University at Albany Animal Facility Staff Search Committee student member
2009- 2012 Tutoring Undergraduates in Behavioral Neuroscience
2012 Paid editor for Pearson Education, Inc.
2016, 2017 Volunteer at Brain Awareness Day, Champaign, IL
2018- present BGSU CURS Advisory Council member
2018- present BGSU Graduate Faculty Representative
2021- 2023 BGSU Institutional Animal Care and Use Committee (IACUC) member
2023- present BGSU Institutional Animal Care and Use Committee (IACUC) Chair
2021- present BGSU Academic Honesty Committee member
2021- present Psychology Graduate Student Teaching Committee member
2022- present BGSU Academic Honesty Committee Chair

Society Memberships:

Society for Neuroscience (SFN)
Society for Behavioral Neuroendocrinology (SBN)
International Society for Developmental Psychobiology (ISDP)
Organization for the Study of Sex Differences (OSSD)
American Association for Laboratory Animal Science (AALAS)

Selected Invited Talks:

Title: *The role of pubertal onset in maturation of the prefrontal cortex and cognition during adolescence.* Minisymposium: *Adolescence and Reward: Making sense of neural and behavioral changes amid the chaos.* Given at the annual meeting of the Society for Neuroscience, Washington D.C., November 2017.

Title: *Behavioral and neuroanatomical effects of perinatal exposure to corn grown with dredge material.* Workshop on Steroid Hormones and Brain Function: *Symposium title: Environmental contaminants and the brain – sex differences and endocrine activity.* March 6-10 2022, Breckenridge, CO.

Title: *Interactive effects of maternal infection and an environmentally relevant phthalate mixture on development of the medial prefrontal cortex.* University of Colorado Denver Department of Integrative Biology Spring Seminar Series. March, 2023, Denver, CO.

Title: *Behavioral and Neurodevelopmental Implications for Corn Grown on Dredged Material.* University of Illinois Department of Comparative Biology Seminar. April, 2023, University of Illinois at Urbana-Champaign, Champaign, IL

Conference Presentations:

Riesgo VR, Beedy TA, Ruby HM, Thompson KM, Flanigan KAS, Willing J. The effects of age and pubertal onset on development of the ventral tegmental area during adolescence. Society For Neuroscience Meeting in November, 2022.

Flanigan KAS, Czuba M, Rúa MA, Willing J. Corn grown on dredge-amended soils affects hippocampal development and behavior. Society For Neuroscience Meeting in November, 2022.

Thompson K, Roush V, Willing J, Cromwell HC. Pubertal Changes on Dopaminergic Populations of the Striatum. Society for Neuroscience Meeting in November, 2022.

Riesgo, V., Flanigan, K.A.S., Willing, J. (2022). Ventral tegmental area development across adolescence in male and female rats. Society for Behavioral Neuroendocrinology, Atlanta, GA

Woodburn MG, Riesgo VR, Willing J. A role for pubertal onset in changes in midbrain dopamine neuron number during adolescence. Abstract accepted Spring 2021: Society for Neuroscience Meeting in November, 2021.

Riesgo VR, Sellinger EP, Juraska JM, Willing J. Prenatal activation of the maternal immune system alters prefrontal cortex neuroanatomy in adult offspring. Abstract accepted Spring 2021: Society for Neuroscience Meeting in November, 2021.

Flanigan KA, Julian A, Riesgo VR, Rúa MA, Willing J. Effects of corn grown on dredge-amended soil on hippocampal development and behavior. Abstract accepted Spring 2021: Society for Neuroscience Meeting in November, 2021.

M. VOGT, J. ASBERRY, J. WILLING (Bowling Green State University) (2019). Effects of developmental and acute exposure to environmental estrogenic compounds on anxiety and memory in male and female rats. To be presented at the annual meeting of the Society for Neuroscience, Chicago, October, 2019.

Willing J., Kougias D.G., Juraska J.M. (2017). Effects of developmental exposure to an environmentally relevant combination of phthalates on apoptosis in the medial prefrontal cortex of male and female rats. Annual Meeting of the Organization for the Study of Sex Differences, Montreal, QC, Canada, May 2017.

Hatcher K.M., Willing J., Chiang C., Rattan S., Juraska J.M., Flaws J.A., Mahoney, M.M. (2017). Transgenerational effects of di-(2-ethylhexyl) phthalate on behavior and hippocampal gene expression in male and female mice. Annual Meeting of the Society for Developmental Neurotoxicology, Denver, CO, June 2017.

Willing J., Kougias D.G., Cortes L.R., Drzewiecki C.M., Wehreim K.E., Juraska J.M. (2016). Long-term behavioral effects of perinatal exposure to phthalates and maternal high-fat diet in male and female rats. Annual Meeting of the Society for Neuroscience, San Diego, CA, November, 2016.

Willing J., Drzewiecki C.M., Cortes L.R., Juraska J.M. (2016). Stress during the pubertal period exerts sex-specific effects on behavior in adult rats. Annual Meeting for the International Society for Developmental Psychobiology, San Diego, CA, November 2016.

Willing J., Drzewiecki C.M., Cortes L.R., Juraska J.M. (2016). Sex-specific effects of pubertal, but not post-pubertal, stress on pre-pulse inhibition and depressive-like behavior. Annual Meeting of the Organization for the Study of Sex Differences, Philadelphia, PA, May, 2016.

Drzewiecki C.M., Willing J., Juraska J.M. (2015). Changes in the number of synapses in the medial prefrontal cortex across adolescence. Annual meeting of the Society for Neuroscience, Chicago, IL, October, 2015.

Juraska, JM, Drzewiecki, CM, Cuenod, BA, Cortes, LR & Willing, J. (2015). Pubertal status affects cognitive flexibility on a water maze task in male and female rats. Annual Meeting of the Society for Neuroscience, Chicago, IL, October, 2015.

Willing, J., Brodsky, J.M., Cortes, L.C., Kim, T.H., & Juraska, J.M. (2015). Dopaminergic innervation of the medial prefrontal cortex in male and female rats across adolescence. Annual Meeting of the Society for Behavioral Neuroendocrinology, Pacific Grove, CA, June 2015.

Willing, J., Kim, T.H., Brodsky, J.M., Cortes, L.C. & Juraska, J.M. (2014). The timing of neuroanatomical changes across adolescence in the male and female rat medial prefrontal cortex. Annual Meeting of the Society for Neuroscience, Washington DC, November, 2014.

Willing, J., Kim, T.H., Brodsky, J.M., Cortes, L.C. & Juraska, J.M. (2014). Puberty-induced changes in neuron and glia number in the prefrontal cortex of male and female rats. Annual Meeting of the International Society for Developmental Psychobiology, Washington DC, November, 2014.

Willing, J., Kim, T.H., Brodsky, J.M., Cortes, L.C. & Juraska, J.M. (2014). Sex differences in periadolescent neuronal loss in the rat medial prefrontal cortex. Annual Meeting of the Society for Behavioral Neuroendocrinology, Sydney, Australia, 2014.

Willing, J. & Wagner, C.K. (2014). Progesterone receptor activity during development is critical for cognitive flexibility performance in adulthood. Annual Meeting of the Society for Behavioral Neuroendocrinology, Sydney, Australia, 2014.

Willing, J. & Wagner, C.K. (2013). Neonatal treatment with 17alpha-hydroxyprogesterone caproate decreases performance on the attentional set shift task in adulthood. Annual Meeting of the Society for Neuroscience, San Diego, CA, November, 2013.

Willing, J. & Wagner, C.K. (2012). Progesterone receptor is expressed in dopaminergic midbrain cells projecting to the medial prefrontal cortex in neonatal rats. Annual Meeting of the Society for Behavioral Neuroendocrinology, Madison, WI, June, 2012.

Willing, J. & Wagner, C.K. (2011) The role of progesterone receptor in the development of dopaminergic neurons of the ventral tegmental area. Annual Meeting of the Society for Neuroscience, Washington DC, November 2011.

Willing, J. & Wagner, C. K. (2011). The role of progesterone receptor in development of the mesocortical dopaminergic pathway. Annual Meeting of the Society for Behavioral Neuroendocrinology, June, 2011, Querataro, Mexico.

Willing, J., Gonzales, K.L. & Wagner, C.K. (2010) The role of the progesterone receptor in regulation of MAP-2 in the developing medial prefrontal cortex. Annual Meeting of the Society for Neuroscience, San Diego CA, November 2010.

Willing, J., Costanzo, V. & Wagner, C.K. (2010) Neonatal treatment with the progesterone receptor antagonist RU486 decreases tyrosine hydroxylase and MAP-2 immunoreactivity in the medial prefrontal cortex. Annual Meeting of the Society for Behavioral Neuroendocrinology, Toronto, Canada, July, 2010.

Willing, J., Gonzales, K.L. & Wagner, C.K. (2009) Neonatal treatment with the progesterone antagonist RU486 disrupts performance on an inhibitory avoidance task in adulthood. Annual Meeting of the Society for Neuroscience, Chicago, IL, October, 2009.

Willing, J., Gonzales, K.L. & Wagner, C.K. (2009) Progesterone receptor is transiently expressed in pyramidal cell layers of developing cortex during periods of dendritic maturation and spinogenesis. Annual Meeting of the Society for Behavioral Neuroendocrinology, Michigan State University, East Lansing, MI, June, 2009.

Beck, L.A., Gonzales, K. L., Willing, J. & Wagner, C.K. (2009) Potential Role of progesterone receptor in medial preoptic area development. Annual Meeting of the Society for Neuroscience, Chicago, IL, October, 2009.