

Michael W. Shiflett, Ph.D.

Curriculum Vitae

Department of Psychology
Rutgers University–Newark
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Positions Held

2012-present Assistant Professor Non-Tenure Track, Department of Psychology, Rutgers University–Newark
2009-2012 Research Associate, Department of Psychology, Rutgers University–Newark
2006-2008 Post-doctoral Scholar, Department of Psychology, University of California, Los Angeles
2003-2006 Post-doctoral Scholar, Department of Neurobiology, University of Pittsburgh

Education

1998-2003 Cornell University
Ph.D., Psychology (2003)
1993-97 University of California, Berkeley
B.A., Distinction and High Honors in Research, Psychology (1997)

Honors and Awards

2010 Early Career Investigator Travel Award, National Institute on Drug Abuse
2006 Ruth L. Kirschstein National Research Service Award (NRSA) for Individual Post-doctoral Fellows, National Institute on Drug Abuse
2001 Ruth L. Kirschstein National Research Service Award (NRSA) for Individual Pre-doctoral Fellows, National Institute of Mental Health
2000 Honorable Mention, Frank Beach Award for Outstanding Publications in the Journal of Comparative Psychology
1998 Sage Fellowship, Cornell University
1997 Warner Brown Prize for Undergraduate Research in Psychology, UC Berkeley
1994 Kraft Scholar, UC Berkeley

Grant Support

Active Support

Rutgers University: Initiative for Multidisciplinary Research Teams (IMRT) “Consequences of retrograde axonal loss after traumatic brain injury” Total \$40,000. 05/2022-04/2024
Role: Co-PI (Wilma Friedman, RU-Newark PI).

Pending and Submitted Grants

National Institute of Mental Health “Motivational control of sensory-seeking behavior and its relevance to behavioral addictions” R03A1 submitted 06/2023. Impact score 35/28th percentile
Role: PI

National Institute of Neurological Disorders and Stroke “Spatiotemporally specific Neuropilin 2 signaling impacts hippocampal circuits and autism-epilepsy behaviors” R01A1 submitted 10/2023
Role: Co-PI (PI: Tracy Tran RU-Newark, Co-PI Vijayalakshmi Santhakumar, UC Riverside)

Busch Biomedical Grant Program “Motivational and neural substrates of sensory-seeking behavior” submitted 06/2024

Previous Support

Rutgers University: Busch Biomedical Grant Program “Regulation of striatal cholinergic interneuron activity and related behavior by $\beta 2$ -containing nicotinic receptors” Total: \$49,986. 10/2020-09/2023
Role: Co-PI (PI: Maxime Assous, RU-Newark)

New Jersey Governor’s Council for Medical Research and Treatment of Autism “A Role for Semaphorin Functions in Cortico-Basal Ganglia Development, Repetitive Behavior, and Autism Spectrum Disorder.” Total: \$400,000 07/2016-06/2021
Role: Co-PI (PI: Tracy Tran, RU-Newark)

New Jersey Governor’s Council for Medical Research and Treatment of Autism “Developmental dysregulation of inhibitory neuron migration as an experimental model to analyze mechanisms of pediatric autism-epilepsy syndromes” Total: \$400,000 07/2016-06/2021
Role: Co-PI (PI: Tracy Tran, RU-Newark; Co-PI Vijayalakshmi Santhakumar, UC Riverside)

Rutgers University: Initiative for Multidisciplinary Research Teams (IMRT) for Non-Tenure Track Faculty; Rutgers University–Newark. “Assessing the Role of Striatal Interneurons in Reward Learning, Motivation and Substance Abuse” Total: \$100,000 11/2016-06/2019
Role: PI (Co-PI Tibor Koos, RU-Newark)

Rutgers University: Chancellor’s Seed Grant for New Initiatives, Rutgers University–Newark. “Investigating the Neural Mechanisms Underlying Attention-Deficit/Hyperactivity Disorder (AD/HD)”. Total: \$49,482 07/15-06/17
Role: Co-PI (PI: Elizabeth Tricomi RU-Newark)

Rutgers University: Initiative for Multidisciplinary Research Teams (IMRT) Rutgers University–Newark. “A Novel Model for Autism Spectrum Disorders: Semaphorin Signaling Regulates Neuronal Morphology Leading to Altered Brain Circuitry and Behavioral Output.” Total: \$160,000 05/15-04/17
Role: Co-PI (PI: Tracy Tran, RU-Newark; Co-PI: James Tepper, RU-Newark PI)

National Institute on Drug Abuse Academic Research Enhancement Award (AREA) R15 DA029544 “Investigating the role of negative feedback across rats and humans”. Total: \$431,678 03/2010-09/2013
Role: Co-PI (PI: Elizabeth Tricomi, RU-Newark)

National Institute on Drug Abuse Behavioral Science Track Award for Rapid Transition (B/START) R03 DA026559 “Pavlovian Influences on Reward-seeking Behavior” Total: \$61,445 05/2009-04/2010
Role: PI

Publications

Corrubia L, Huang A, Nguyen S, **Shiflett M.W.**, Jones M.V., Ewell L.A., Santhakumar V. (2023) Early deficits in dentate circuit and behavioral pattern separation after concussive brain injury. *Experimental Neurology*. 370:114578. doi: 10.1016/j.expneurol.2023.114578.

Zanin JP, Pandya MA, Espinoza D*, Friedman WJ, **Shiflett M.W.** (2023) Excess cerebellar granule neurons induced by the absence of p75NTR during development elicit social behavior deficits in mice. *Frontiers in Molecular Neuroscience*. May 25;16:1147597. doi: 10.3389/fnmol.2023.1147597.

Natsheh, J.Y.*, Espinoza, D.*, Bhimani, S.* and **Shiflett, M.W.** (2021) The effects of the dopamine D2/3 agonist quinpirole on incentive value and palatability-based choice in a rodent model of attention-deficit/hyperactivity disorder. *Psychopharmacology* 238, 3143-53 doi.org/10.1007/s00213-021-05931-7

Eisenberg, C.*, Subramanian, D., Afrasiabi, M., Ziobro, P., DeLucia, J., Hirschberg, P.R., **Shiflett, M.W.**, Santhakumar, V., Tran, T.S.. (2021) Reduced hippocampal inhibition and enhanced autism-epilepsy comorbidity in mice lacking neuropilin 2. *Translational Psychiatry* **11**, 537. <https://doi.org/10.1038/s41398-021-01655-6>

Assous, M., Martinez, E., Eisenberg, C.*, Shah, F., Kosci, A.*, Varghese, K., Espinoza, D.*, Bhimani, S.*, Tepper, J.M., **Shiflett, M.W.**, Tran, T.S.. (2019) Neuropilin 2 signaling mediates corticostriatal transmission, spine maintenance, and goal-directed learning in mice. *Journal of Neuroscience* Nov 6;39(45):8845-8859 doi: 10.1523/JNEUROSCI.1006-19

Zanin, J., Verpeut, J., Li, Y., **Shiflett, M.W.**, Wang, S.S., Santhakumar V., Friedman, W. (2019) The p75NTR influences cerebellar circuit development and adult behavior via regulation of cell cycle duration of granule cell progenitors *Journal of Neuroscience* Nov 13;39(46):9119-9129 doi: 10.1523/JNEUROSCI.0990-19

Kaminer, J., Espinoza, D.*, Bhimani, S.*, Tepper, J.M., Koos, T., **Shiflett, M.W.** (2019) Loss of striatal tyrosine-hydroxylase interneurons impairs instrumental goal-directed behavior. *European Journal of Neuroscience* Aug;50(4):2653-2662 doi 10.1111/ejn.14412

Natsheh, J.Y.*, and **Shiflett, M.W.** (2018). Dopaminergic Modulation of Goal-Directed Behavior in a Rodent Model of Attention-Deficit/Hyperactivity Disorder. *Frontiers in Integrative Neuroscience* Oct 5;12:45 (2018) doi: 10.3389/fnint.2018.00045.

Shiflett, M. W., E. Martinez, H. Khmour and T. S. Tran (2017) Functions of Neuropilins in Wiring the Nervous System and Their Role in Neurological Disorders. The Neuropilins: Role and Function in Health and Disease. Neufeld and Kessler. Berlin, Springer-Verlag.

Natsheh, J. Y.* and **Shiflett, M. W.** The Effects of Methylphenidate on Goal-Directed Behavior in a Rat Model of ADHD. *Frontiers in Behavioral Neuroscience* Nov 25;9:326 doi:10.3389/fnbeh.2015.00326.

Shiflett, M.W., Gavin, M.*, Tran, T.S. (2015) Altered hippocampal-dependent memory and motor function in Neuropilin 2-deficient mice. *Translational Psychiatry* e521 (2015) doi:10.1038/tp.2015.17

Shiflett, M.W., Riccio, M.*, DiMatteo, R*. (2013) The effects of amphetamine sensitization on conditioned inhibition during a Pavlovian-instrumental transfer task in rats. *Psychopharmacology* 230(1): 137-47 doi: 10.1007/s00213-013-3144-3

Shiflett, M.W. (2012) The effects of amphetamine exposure on outcome-selective Pavlovian-instrumental transfer in rats. *Psychopharmacology* 223(3) 361-70 doi: 10.1007/s00213-012-2724-y

Shiflett M.W., and Balleine B.W. (2011) Molecular substrates of action control in striatal circuits. *Progress in Neurobiology* 95(1): 1-13 (invited review) doi: 10.1016/j.pneurobio.2011.05.007

Shiflett, M.W., and Balleine B.W. (2011) Contributions of ERK signaling in the striatum to instrumental learning and performance. *Behavioral Brain Research* 218(1): 240-7 (invited review) doi: 10.1016/j.bbr.2010.12.010

Shiflett, M.W., and Balleine, B.W. (2010) At the limbic-motor interface: disconnection of basolateral amygdala from nucleus accumbens core and shell reveals dissociable components of incentive motivation. *European Journal of Neuroscience* 32(10): 1735-43 doi: 10.1111/j.1460-9568.2010.07439.x.

Shiflett, M.W., Brown, R.A., and Balleine, B.W. (2010) Acquisition and performance of goal-directed instrumental actions depends on ERK signaling in distinct regions of dorsal striatum in rats. *Journal of Neuroscience* 30(8): 2951-9. doi: 10.1523/JNEUROSCI.1778-09.2010

Shiflett, M.W., Mauna, J.C., Chipman, A.M., Peet, E. and Thiels, E. (2009) Appetitive Pavlovian conditioned stimuli increase CREB phosphorylation in the nucleus accumbens. *Neurobiology of Learning and Memory* 92(3): 451-4 doi: 10.1016/j.nlm.2009.02.010

Shiflett, M.W., Martini, R.P., Mauna, J., Foster, R.L., Peet, E. and Thiels, E. (2008) Cue-elicited reward seeking requires Extracellular Signal-Regulated Kinase activation in the Nucleus Accumbens. *Journal of Neuroscience* 28(6): 1434-43 doi: 10.1523/JNEUROSCI.2383-07.2008

Shiflett, M.W., Rankin, A.Z., Tomaszynski, M.L., and DeVoogd, T.J. (2004) Cannabinoid antagonism in the hippocampus improves memory in food-storing birds, but with a cost. *Proceedings of the Royal Society of London. Series B, Biological Sciences* 271(1552):2043-8 doi: 10.1098/rspb.2004.2823.

Shiflett, M.W., Tomaszynski, M.L., Rankin, A.Z., and DeVoogd, T.J. (2003) Long-term memory for spatial locations requires NMDA-receptor activation in the hippocampus of a food-storing bird. *Behavioral Neuroscience* 118(1):121-130 doi: 10.1037/0735-7044.118.1.121.

Shiflett, M.W., Smulders, T.V., Benedict, L., and DeVoogd, T.J. Reversible inactivation of the hippocampal formation in food-storing black-capped chickadees (*Parus atricapillus*). *Hippocampus* 13(4):437-44 (2003) doi: 10.1002/hipo.10065.

Shiflett, M.W., Gould, K.L., Smulders, T.V., and DeVoogd, T.J. (2002) Septum volume and food-storing behavior are related in parids. *Journal of Neurobiology* 51(3):215-22 doi: 10.1002/neu.10054.

Smulders, T.V., **Shiflett, M.W.**, Sperling, A.J., and DeVoogd, T.J. (2000) Seasonal changes in neuron numbers in the hippocampal formation of a food-hoarding bird: the black-capped chickadee. *Journal of Neurobiology* 44(4):414-22 doi: 10.1002/1097-4695(20000915)44:4<414::aid-neu4>3.0.co;2-i.

Jacobs, L.F., and **Shiflett, M.W.** (1999) Spatial orientation on a vertical maze by free-ranging fox squirrels. *Journal of Comparative Psychology* 113(2) 116-27 doi: 10.1037/0735-7036.113.2.116

Lavenex P., **Shiflett, M.W.**, Lee, R.K., and Jacobs, L.F. (1998) Spatial versus non-spatial relational learning in free-ranging fox squirrels (*Sciurus niger*). *Journal of Comparative Psychology* 112(2) 127-36 doi: 10.1037/0735-7036.112.2.127

* = student author

Conference Presentations (previous 5 years)

Autism epilepsy phenotype in mice with developmental interneuron specific deletion of Neuropilin-2 D. Subramanian, C. Eisenberg, A. Huang, J. Baek, **M.W. Shiflett**, V. Santhakumar, T.S. Tran *American Epilepsy Society* 2023 Orlando F.L.

Excess cerebellar granule neurons induced by the absence of p75NTR during development elicit social behavior deficits in mice. Zanin JP, Pandya MA, **Shiflett M.W.**, Friedman WJ *Gordon Research Conference* 2023 Newport, R.I.

P75ntr mediates retrograde degeneration of basal forebrain cholinergic neurons but not in the locus coeruleus after traumatic brain injury M.A. Pandya S. Dasgupta. J.P. Zanin **M.W. Shiflett**, W.J. Friedman *Society for Neuroscience* 2023 Washington, D.C.

Autism-epilepsy phenotype in mice with developmental interneurons specific deletion of neuropilin-2 C. Eisenberg, D. Subramanian, A. Huang, J. Baek, H. Naveed, **M.W. Shiflett**, V. Santhakumar, T.S. Tran Washington D.C. *Society for Neuroscience* 2023 Washington D.C.

Spatiotemporal specificity of Neuropilin-2 functions in cortical neuron dendritic spine morphogenesis, maintenance, and learning. Eisenberg C., Near C., Strong J., DeLucia J., **Shiflett M.W.**, Tran T.S.. *Society for Neuroscience* 2022 San Diego, CA

Neuropilin-2 regulation of Excitatory and Inhibitory Circuit Function and its impact on Behaviors Associated with Autism and Epilepsy. Eisenberg C. , Subramanian D., Afrasiabi M, DeLucia J., **Shiflett M.W.**, Santhakumar V. and Tran T.S. *Gordon Research Conference* 2022 Lucca (Barga), Italy

Nicotinic signaling in striatal circuits and striatum-dependent behavior. Guven, E.B., Kocaturk, S., Shah, F., Tepper, J. M., **Shiflett, M.W**, & Assous, M. *Society for Neuroscience* 2022 San Diego, CA

Prototypic and arkypallidal globus pallidus neurons differentially innervate striatal neurons. Kocaturk S, Shah F, **Shiflett MW**, Tepper JM & Assous M. *Gordon Research Conference* 2022 Ventura, CA, USA

Role of postsynaptic $\beta 2$ -containing nicotinic acetylcholine receptors in striatal circuits and related behavior. Kocaturk S, Shah F, Guven EB, Tepper JM, **Shiflett MW** & Assous M. *Gordon Research Conference* 2022 Ventura, CA, USA

p75NTR regulates cerebellar GCP proliferation and migration inducing defects in cerebellar related behavior. Zanin J.P., **Shiflett M.W.**, and Friedman W.J. *NGF webinar series* 2022 Virtual

Reduced Hippocampal Inhibition and Enhanced Autism-Epilepsy Comorbidity in Mice Lacking Neuropilin 2 Eisenberg C., Subramanian D., Afrasiabi M., Ziobro P., Delucia J., Hirschberg P, **Shiflett MW**, Santhakumar V., Tran TS. *American Society of Neurochemistry* 2021 Virtual

Reduced Hippocampal Inhibition and Enhanced Autism-Epilepsy Comorbidity in Mice Lacking Neuropilin. Eisenberg C., Subramanian D., Afrasiabi M., Ziobro P., Delucia J., Hirschberg P, **Shiflett MW**, Santhakumar V., Tran TS *Society for Neuroscience* 2021 Virtual

The absence of p75NTR in granule cell precursors of the cerebellum increases cell proliferation and anxiety levels". Zanin JP., Shiflett MW, Friedman WJ. *Brain Health Institute symposium* 2019 NJ, USA.

Invited Talks

“Developing an animal model of sensory-seeking behavior” Rutgers Sensory and Cognitive Neuroscience working group annual retreat, 2024 Newark, NJ

“Action Control Deficits in Rodent Models of Psychiatric Disorders” Annual Meeting of the Pavlovian Society, 2016 Jersey City, NJ

“Molecular neural substrates for reward learning and goal-directed action in rodents” Center for Development and Behavioral Neuroscience colloquium, Binghamton University, 2011 Binghamton NY

“Neural Mechanisms Underlying Pavlovian and Instrumental Incentive Learning” Psychology Department colloquium, Rutgers University Newark, 2009 Newark NJ

“Spatial memory and the hippocampus in food-storing Black-capped Chickadees” Animal Cognition symposium, University of Western Ontario, 2003 London ON

Ad-hoc Grant Reviews

National Institutes of Health (Pathophysiological Basis of Mental Health Disorders and Addictions Study Section)

National Science Foundation (BIO/IOS)

Human Frontiers Science Program

Ad-hoc Journal Reviews

Journal of Neuroscience

Neuroscience

Neuropsychopharmacology

Brain, Behavior and Evolution

Psychopharmacology

Neuropharmacology

Behavioral Brain Research

Brain research

F1000 Research

Journal of Mammalogy

Brain Structure and Function

Biological Psychiatry

Scientific Reports

Frontiers in Behavioral Neuroscience

IBRO

Journal of Experimental Psychology:

Animal Learning and Cognition

European Journal of Neuroscience

University and Departmental Service

2018-present Coordinator, Undergraduate Major in Neuroscience & Behavior, RU-N

2018-present Member, Biomedical Advisory Committee, RBHS/RU-N/NJIT

2018 Created and initiated new undergraduate major in Neuroscience & Behavior RU-N

2012-present Coordinator, Cognitive Neuroscience Minor, Department of Psychology RU-N

2012 Created and initiated new undergraduate minor in Cognitive Neuroscience

2011-16 Assistant Graduate Chair, Department of Psychology, RU-N

2011-16 Member, Graduate Education Committee, Psychology, RU-N

Professional Memberships

1998-pres Society for Neuroscience
2009-pres Pavlovian Society

Graduate student supervision

2023 Mansi Pandya- Biological Sciences, 1-semester rotation
2022 Beyza Guven- Behavioral and Neural Science RU-N 1-semester rotation
2018-2022 Carol Eisenberg, Biological Sciences RU-N, Co-mentor with Dr. Tracy Tran
2018 Yuwoong Kim, Behavioral and Neural Science RU-N, 1-semester Rotation
2017 Miguel Diaz-Acevedo, Behavioral and Neural Science RU-Newark, 1-semester Rotation
2012-2017 Joman Natsheh, Doctoral Student- Behavioral and Neural Science Program, Primary Advisor

Service on Dissertation Committees

Beyza Guven, Behavioral and Neural Science Program, RU-N
Yuwoong Kim, Behavioral and Neural Science Program, RU-N
Jennifer Francesconi, Psychology, RU-NB
Briana Stanfield, Behavioral and Neural Science Program, RU-N
Samar Alselehder, Behavioral and Neural Science Program, RU-N
Andrea Lewis, Psychology, RU-N
Amanda Dios, Psychology, RU-N
Ekaterina Dobryakova, Psychology, RU-N

Courses taught

2023 Honors Seminar in the Sciences: Biology of Motivation and Willpower, RU-N
2015-present Psychology 441: Drugs and the Brain, RU-N
2011-present Psychology 484: Behavioral Neuroscience, RU-N
2008 Psychological Statistics, Occidental College, CA

Undergraduate Research Supervision

41 current and previous students: Jonathan Ghaly, Sarah Kozrosh, Jose Lasso, Nahed Elkayal, Dhruvi Patel, Christian Near, Youstina Youssef, Frandy Castellanos, Carolina Elliott, Martena Nabeh, Gabriela Revi, Sarah Bourouf, Jennifer Strong, Dhielan Bustos, Yumna Ain, Rahul Muchintala, Marian Calle, Dania Rohani, Shaznaan Bhimani, Diego Espinoza, Emman Chaudhry, Sydney Pacelli, Delia Duran, Victor Sanchez, Samanthika Devalaraju, Aleksandra Kosci, Richard Attia, Farah Al-shammary, Jose Torres, Linda Arce, Rose DiMatteo, Matt Gavin, Felix Gervits, Jbid Bozoglan, Monica Mawuntu, Kerolos Abadeer, Rocio Ipanique, Sejal Shah, Meghan Riccio, Claudia DeAngelo, Sara Ferreira, Jennifer Rodriguez, Roxana Morales

Michael Shiflett

