

University of Colorado
MCDB and Psychology/Neuroscience
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Zoe R. Donaldson, Ph.D.

RESEARCH STATEMENT

The Donaldson Lab investigates the neural and genetic basis of complex social behaviors with a particular focus on bonding and loss. We combine perspectives from evolutionary biology, genetics, neurobiology, and psychiatry to elucidate the biological mechanisms that contribute to species and individual differences in behavior.

POSITIONS

University of Colorado Boulder

Departments of Molecular, Cellular, Developmental Biology and Psychology/Neuroscience	
Professor	2025 - present
Larry Gold Endowed Chair	2022-2028
Associate Professor with Tenure	2022-2025
Assistant Professor	2016 - 2022

EDUCATION AND TRAINING

Columbia University, New York, NY

Post-doctoral K99 Fellow	2014 - 2016
Post-doctoral Fellow, Affective Disorders Training Grant (NIMH T32)	2011 - 2014
Robert Wood Johnson Health & Society Post-Doctoral Scholar	2009 - 2011
Mentor: René Hen	

Emory University, Atlanta, GA

Ph.D. in Neuroscience; HHMI Predoctoral Fellow	2003 - 2009
Mentor: Larry Young	

University of California, Los Angeles

B.S. Biology, Summa Cum Laude with College and Highest Departmental Honors	2001 - 2002
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SELECTED HONORS AND AWARDS

Larry Gold Endowed Chair	2022-28
NSF CAREER Award	2021
Janett Trubatch Career Development Award, Society for Neuroscience	2019
Early Career Award, International Behavior and Neural Genetics Society (IBANGS)	2019
Frank Beach Award, Society for Behavioral Neuroendocrinology	2018
NIH DP2: New Innovator Award	2018
NIMH Biobehavioral Research Award for Innovative New Scientist (<i>unable to accept</i>)	2018

CURRENT GRANT FUNDING

Co-PI: NIH U01 NS131406 + NS131406-S1 (\$1,344,176 to Donaldson) Sep 2023 – Aug 2026
 Co-PIs: Y. Kozorovitskiy, J. Rogers (Northwestern)
"Dynamic entanglements: the functional role and mechanistic basis of inter-individual neural synchrony" (includes diversity supplement to Dr. Donaldson)

PI: NIH R01 MH125423 (\$2,741,154) Jan 2022 – Nov 2026
"The neuromolecular basis of adaptation to bond loss"

PI: NSF CAREER Award (\$1,610,000) Jun 2021 – May 2026
"CAREER: Harnessing species differences to identify the cellular basis of attachment"

SELECTED PEER-REVIEWED PRIMARY PUBLICATIONS

- Loth, M.K., Schmidt, J.C., Gonzalez, C.A., Brusman, L.E., Sadino, J.M., Winther, K.E., Protter, D.S.W., **Donaldson, Z.R.**, (2025). Oxytocin and Dopamine Receptor Expression: Cellular Level Implications for Pair Bonding. *Scientific Reports*. doi: 10.1038/s41598-025-06367-1
- Pierce, A.P., Protter, D.S.W., Chapel, G.D., Cameron, R.T., **Donaldson, Z.R.** (2024) Nucleus accumbens dopamine release reflects the selective nature of pair bonds. *Current Biology*. doi: 10.1016/j.cub.2023.12.041
- Sadino, J.M., Brusman, L. E., X.G. Bradeen, C.J. Kelly, D.M. Walker, **Z.R. Donaldson**. (2023) Prolonged partner separation erodes nucleus accumbens transcriptional signatures of pair bonding in male prairie voles. *eLife*. doi: 10.7554/eLife.80517 (submitted prior to 2022 change in editorial policy).
- Murphy, K.Z., Haile, E., McTigue, A. Pierce, A.P., **Donaldson, Z.R.** (2023) PhAT: A flexible open-source GUI-driven toolkit for photometry analysis. *Current Protocols in Neuroscience* doi:10.1002/cpz1.763
- Brusman, L. E., D.S.W. Protter, A.C. Fultz, M.U. Paulson, G.D. Chapel, I.O. Elges, R.T. Cameron, A.K. Beery, **Z. R. Donaldson**. (2022) Emergent intra-pair sex differences and behavioral coordination in pair bonded prairie voles. *Genes, Brain & Behavior*. doi: 10.1111/gbb.12786
- Scribner, J.L., E. Vance, D.S.W. Protter, W. M. Sheeran, E. Saslow, R. Cameron, E. Klein, J.C. Jimenez, M.A. Khierbek, **Z.R. Donaldson**. (2020) A neuronal signature for monogamous reunion. *Proceeding of the National Academies of Science*. 117 (20) 11076-11084 doi:10.1073/pnas.1917287117
- Gutzeit, V.A., Ahuna, K., Santos, T.L., Cunningham, A.M., Sasad Rooney, M., Denny, C.A., **Z.R. Donaldson**. (2020) Optogenetic reactivation of prefrontal social neural ensembles mimics social buffering of fear. *Neuropsychopharmacology*. doi:10.1038/s41386-020-0631-1. ****Cover article**
- Donaldson, Z.R.** and L.J. Young. (2013) The relative contribution of proximal 5' flanking sequence and microsatellite variation on brain vasopressin 1a receptor (*Avpr1a*) gene expression and behavior. *PLOS Genetics*. 9(8):e1003729. doi: 10.1371/journal.pgen.1003729
- Donaldson, Z. R.**, S. H. Yang, A. W. S. Chan, and L. J. Young (2009) Production of germline transgenic prairie voles (*Microtus ochrogaster*) using lentiviral vectors. *Biology of Reproduction*. (81)6:1189-1195.
- Donaldson, Z.R.**, L.J. Young (2008) Oxytocin, vasopressin, and the neurogenetics of sociality. *Science*. (322) 5903:900-904.