

# Jonathan Paul Fadok, Ph.D.

## Curriculum vitae

April 2020

Tulane Brain Institute  
Tulane University #1345  
6823 St. Charles Avenue  
New Orleans, Louisiana 70118  
Email: jfadok@tulane.edu

Office: 504-862-3300  
Fax: 504-862-8744  
<https://www.researchgate.net/profile>  
<https://www.linkedin.com/profile>  
<https://www.fadoklab.org/>

---

## EDUCATION

---

2010        **Ph.D.**, Neurobiology and Behavior, University of Washington.  
2000        **B.A.**, Anthropology, University of Arizona (*magna cum laude*)

## PROFESSIONAL APPOINTMENTS AND EMPLOYMENT

---

2017-pres    **Assistant professor**, Department of Psychology, Tulane University  
2017-pres    **Faculty member**, Tulane Brain Institute, Tulane University  
2010-2017    **Postdoctoral fellow**, Neurobiology, Friedrich Miescher Institute for  
                  Biomedical Research  
2001-2004    **Research technician**, Department of Physiology and Biophysics,  
                  University of Washington

## REFEREED RESEARCH ARTICLES

---

Publication impact: <http://tinyurl.com/fadok>

- (1) Borkar, C; Dorofeikova, M; Le, QE, Hereford, D; Vutukuri, R; Vo, C; Resendez, A; Basavanhalli, S; Sifnugel, N; **Fadok, JP**. (2020) Sex differences in behavioral responses during a conditioned flight paradigm. *Behavioural Brain Research*. (in press).  
Preprint available on bioRxiv: <https://doi.org/10.1101/2019.12.20.885038>
- (2) **Fadok, JP**; Markovic, M; Tovote P; Lüthi, A. (2018) New perspectives on central amygdala function. *Current Opinion in Neurobiology*. 49: 141-147.  
<https://doi.org/10.1016/j.conb.2018.02.009>
- (3) **Fadok, JP**; Krabbe, S; Markovic, M; Courtin, J; Xu, C; Massi, L; Botta, P; Bylund, K; Müller, C; Kovacevic, A; Tovote, P; Lüthi, A. (2017) A competitive inhibitory circuit for selection of active and passive fear responses. *Nature*. 542(7639): 96-100. <http://dx.doi.org/10.1038/nature21047>

- (4) Karmakar, K; Narita, Y; **Fadok, JP**; Ducret, S; Loche, A; Kitazawa, T; Genoud, C; Di Meglio, T; Thierry, R; Bacelo, J; Lüthi, A; Rijli, FM. (2017) *Hox2* genes are required for tonotopic map precision and sound discrimination in the mouse auditory brainstem. ***Cell Reports***. 18(1): 185-197.  
<http://dx.doi.org/10.1016/j.celrep.2016.12.021>
- (5) Xu, C; Krabbe, S; Botta, P; **Fadok, JP**; Gründemann, J; Osakada, F; Saur, D; Grewe, B; Schnitzer, M; Callaway, EM; Lüthi, A. (2016) Distinct hippocampal pathways mediate dissociable roles of context in memory retrieval. ***Cell***. 167(4): 961-972. <http://dx.doi.org/10.1016/j.cell.2016.09.051>
- (6) Tovote, P; Esposito, MS; Botta, P; Chaudun, F; **Fadok, JP**; Markovic, M; Wolff, SB; Ramakrishnan, C; Fenno, L; Deisseroth, K; Herry, C; Arber, S; Lüthi, A. (2016) Midbrain circuits for defensive behavior. ***Nature***. 534(7606): 206-12.  
<http://dx.doi.org/10.1038/nature17996>
- (7) Tovote, P; **Fadok, JP\***; Lüthi, A. (2015) Neuronal circuits for fear and anxiety. ***Nature Reviews Neuroscience***. 16(6): 317-31. **\*Co-first author**.  
<http://dx.doi.org/10.1038/nrn3945>
- (8) Botta, P; Demmou, L; Kasugai, Y; Markovic, M; Xu, C; **Fadok, JP**; Lu, T; Poe, MM; Xu, L; Cook, JM; Rudolph, U; Sah, P; Ferraguti, F; Lüthi, A. (2015) Regulating anxiety with extrasynaptic inhibition. ***Nature Neuroscience***. 18(10): 1493-500. <http://dx.doi.org/10.1038/nn.4102>
- (9) Senn, V; Wolff, SBE; Herry, C; Grenier, F; Ehrlich, I; Gründemann, J; **Fadok, JP**; Müller, C; Letzkus, JJ; Lüthi, A. (2014) Long-range connectivity defines behavioral specificity of amygdala neurons. ***Neuron***. 81(2): 428-437.  
<http://dx.doi.org/10.1016/j.neuron.2013.11.006>
- (10) Zweifel, LS; **Fadok, JP\***; Argilli, E; Garelick, MG; Jones, GL; Dickerson, TM; Allen, JM; Mizumori, SJ; Bonci, A; Palmiter, RD. (2011) Activation of dopamine neurons is critical for aversive conditioning and prevention of generalized anxiety. ***Nature Neuroscience***. 14(5): 620-6. **\*Co first-author**.  
<http://dx.doi.org/10.1038/nn.2808>
- (11) Darvas, M; **Fadok, JP**; Palmiter, RD. (2011) Requirement of dopamine signaling in the amygdala and striatum for learning and maintenance of a conditioned avoidance response. ***Learning and Memory***. 18(3): 136-43.  
<http://dx.doi.org/10.1101/lm.204121>
- (12) Wall, VZ; Parker, JG; **Fadok, JP**; Darvas, M; Zweifel, L; Palmiter, RD. (2011) A behavioral genetics approach to understanding D1 receptor involvement in phasic dopamine signaling. ***Molecular and Cellular Neuroscience***. 46(1): 21-31.  
<http://dx.doi.org/10.1016/j.mcn.2010.09.011>

- (13) **Fadok, JP**; Darvas, M; Dickerson, TM; Palmiter, RD. (2010) Long-term memory for Pavlovian fear conditioning requires dopamine in the nucleus accumbens and basolateral amygdala. *PLoS ONE*. 5(9): e12751.  
<http://dx.doi.org/10.1371/journal.pone.0012751>
- (14) **Fadok, JP**; Dickerson, TM; Palmiter, RD. (2010) Dopamine is necessary for cue-dependent fear conditioning. *Journal of Neuroscience*. 29(36): 11089-11097.  
<http://dx.doi.org/10.1523/JNEUROSCI.1616-09.2009>
- (15) Zweifel, LS; Parker, JG; Lobb, CJ; Rainwater, A; Wall, VZ; **Fadok, JP**; Darvas, M; Kim, MJ; Mizumori, SJ; Paladini, CA; Phillips, PE; Palmiter, RD. (2009) Disruption of NMDAR-dependent burst firing by dopamine neurons provides selective assessment of phasic dopamine-dependent behavior. *Proceedings of the National Academy of Sciences*. 106(18): 7281-88.  
<http://dx.doi.org/10.1073/pnas.0813415106>

## MANUSCRIPTS IN PREPARATION

---

Borkar, C and **Fadok, JP**. A novel paradigm for exploring defensive action selection. Submitted to *JoVE*.

Whittle, N; **Fadok, JP**; Botta, B; Wolff, SBE; Müller, C; Tovote, P; Holmes, A; Singewald, N; Ciochi, S; Lüthi, A. Central amygdala inhibitory circuits mediate fear extinction.

## ACADEMIC AND PROFESSIONAL HONORS AND AWARDS

---

- 2018 **Travel Award**, American College of Neuropsychopharmacology for registration, lodging, and travel costs to the 57<sup>th</sup> Annual Meeting. Also includes an invitation to the next four meetings.
- 2018 **Faculty Networking Seminar**, Tulane Provost's Office, funding awarded to host Dr. Steve Maren for a two-day campus visit for mentorship and early career development.
- 2018 **Travel Grant** for Emerging Faculty, awarded by the National Science Foundation and Louisiana Board of Regents for travel to the 2018 Winter Conference on Neural Plasticity.
- 2017 **Travel Grant**, Committee on Research Faculty, awarded by the Tulane University Provost's Office for travel to the 2018 Winter Conference on Neural Plasticity.

- 2015 **Best poster award**, Gordon Research Conference, The Amygdala in Health and Disease, Easton, Massachusetts. Selected by a panel of anonymous judges.
- 2012 **Travel Fellowship** to attend Frontiers in Stress and Cognition conference, Ascona, Switzerland. Awarded by conference organizing committee.
- 2012 **Volker Henn Best Poster Award**, Swiss Society for Neuroscience Annual Meeting, Zürich, Switzerland. Awarded by a panel of anonymous judges.

## GRANTS

---

### Current:

- 2020-2024 **Neural circuits regulating flight and panic behavior** (1R01MH122561), *National Institute of Mental Health*, \$2,241,902. Role: Principal Investigator. 03/01/2020-12/31/2024
- 2020-2021 *COR Research Fellowship*, University Senate Committee on Research / Provost's Office, \$5,000. Role: Principal Investigator. 06/01/2020-05/31/2021
- 2018-2021 **Neuronal Mechanisms Controlling the Scalability of Fear** (LEQSF (2018-21)-RD-A-17), *Research Competitiveness Subprogram Grant*, Louisiana Board of Regents, \$157,639. Role: Principal Investigator. 6/1/2018-6/1/2021

### Completed:

- 2019 *Research Fund in Cognitive and Brain Aging*, Tulane Office of Research, \$5,000. Role: Principal Investigator
- 2018-2019 **Determining the Neuronal Correlates of Fear Intensity using Advanced Neurotechnology**, *Marko Spark Research Innovation Award*, Tulane Brain Institute Research Fund, \$50,000. Role: Principal Investigator (PIs: Fadok, Mostany). 7/1/2018-6/30/2019
- 2018-2019 **Defining complex fear states**, *Carol Lavin Bernick Faculty Grant*, Tulane University Office of Academic Affairs, and Provost, \$10,000. Role: Principal Investigator. 6/1/2018-5/31/2019
- 2015-2016 **The role of CRF projection pathways in active fear responding**, *NARSAD Young Investigator Award*, Brain and Behavior Research Foundation, \$70,000. Role: Principal Investigator. 1/1/2015-12/31/2016
- 2012-2013 **Understanding the function of amygdala to basal forebrain**

**projections using novel virus-based strategies and optogenetics** (ALTF 952-2011), *Long-term Fellowship*, European Molecular Biology Organization, 116,062 CHF (~\$120,000). Role: Postdoctoral Fellow. 1/1/2012-10/1/2013

2007-2009 **Determining the role of dopamine in fear conditioning** (PHS NRSA 2T32 GM007270), *Ruth L. Kirschstein National Research Service Award*, National Institute of General Medical Sciences, \$100,000. Role: Graduate student. 1/1/2007-12/31/2009

## INVITED TALKS

---

- 2019 Central amygdala circuits mediate the selection of adaptive behavior. Department of Psychology, University of California, Davis
- 2018 Elucidating the neuronal mechanisms that modulate fear intensity. Center for Molecular and Behavioral Neuroscience, Rutgers University, New Brunswick, New Jersey
- 2018 Neuronal mechanisms controlling fear scalability. Alcohol and Drug Abuse Center of Excellence 9<sup>th</sup> Scientific Retreat, LSU School of Medicine, New Orleans, Louisiana
- 2017 Dissecting the neuronal circuits of defensive behavior. Department of Cell Biology and Anatomy, Louisiana State University Health Science Center, New Orleans, Louisiana
- 2017 Dissecting the neuronal circuits of defensive behavior. Neurocentre Magendie, INSERM, Bordeaux, France
- 2017 Dissecting the neuronal circuits of defensive behavior. Center for Neural Science, New York University, New York, New York
- 2017 Dissecting the neuronal circuits of defensive behavior. Department of Psychological and Brain Sciences, Boston University, Boston, Massachusetts
- 2017 Dissecting the neuronal circuits of defensive behavior. Department of Psychology, University of Maryland, College Park, Maryland
- 2017 Dissecting the neuronal circuits of defensive behavior. Tulane Brain Institute, Tulane University, New Orleans, Louisiana
- 2013 The role of CE1 CRF neurons in active fear responding, Department of Biochemistry, University of Washington, Seattle, Washington

2011 Determining the Function of Amygdala Projections to the Basal Forebrain, University College London, London, England

---

**CONFERENCE PROCEEDINGS - ORAL PRESENTATIONS**

---

2020 Distributed circuits for the selection of defensive responses. Winter Conference on Brain Research, Big Sky, Montana

2019 Competitive inhibitory circuits for selection of active and passive fear responses. Minisymposium speaker, Society for Neuroscience Annual Meeting, Chicago, Illinois

2019 Neural circuit mechanisms controlling defensive responses. Association for Psychological Science Annual Convention, Washington, D.C.

2019 Defining the neural circuit mechanisms controlling passive and active defensive strategies. Social and Affective Neuroscience Society Annual Meeting, Miami, Florida

2018 The central amygdala mediates scalable defensive behaviors. 30<sup>th</sup> annual meeting of the Winter Conference on Neural Plasticity, Willemstad, Curacao

2016 A competitive inhibitory circuit for selection of active and passive fear responses, Inner Workings of a Molecular Brain conference, Santorini, Greece

2016 A competitive inhibitory circuit for selection of active and passive fear responses, Cellular and Molecular Neurobiology of Mental Disease conference, Giessbach, Switzerland

---

**CONFERENCE PROCEEDINGS - POSTER PRESENTATIONS**

---

2019 Sex differences in conditioned flight. American College of Neuropsychopharmacology Annual Meeting, Hollywood, Florida

2019 Sex dependent behavioral changes in a conditioned flight paradigm. Amygdala Function in Emotion, Cognition and Disease, Gordon Research Conference, Stonehill College, Easton, Massachusetts.

2018 Determining the role of the central amygdala in modulating complex fear states. American College of Neuropsychopharmacology Annual Meeting, Hollywood, Florida

2016 A competitive inhibitory circuit for selection of active and passive fear responses.

- Society for Neuroscience Annual Meeting, San Diego, California
- 2015 Central amygdala neurons gate expression of conditioned flight behavior. The Amygdala in Health and Disease, Gordon Research Conference, Stonehill College, Easton, Massachusetts.
- 2014 Central amygdala neurons gate expression of conditioned flight behavior. Society for Neuroscience Annual Meeting, Washington, D.C.
- 2014 CRF neurons in the central amygdala mediate conditioned active fear behavior. Swiss Society for Neuroscience Annual Meeting, Bern, Switzerland
- 2012 Amygdala circuits mediating the switch between active and passive fear responses. Society for Neuroscience Annual Meeting, New Orleans, Louisiana
- 2012 Amygdala circuits mediating the switch between active and passive fear responses. Frontiers in Stress and Cognition conference, Ascona, Switzerland
- 2012 Neuronal circuitry underlying multiple valence learning. NCCR Synapsy Annual Meeting, Villars, Switzerland
- 2012 Determining the function of amygdala projections to the basal forebrain. Swiss Society for Neuroscience Annual Meeting, Zurich, Switzerland.
- 2009 An essential role for dopamine in fear conditioning. 42<sup>ND</sup> Annual Winter Conference on Brain Research, Copper Mountain, Colorado
- 2008 An essential role for dopamine in fear conditioning. Howard Hughes Medical Institute Meeting on Neural Circuits, Ashburn, Virginia
- 2004 Effects of intraspinal stimulation in C6-T1 and C3-C4 segments on arm muscle activity (EMG) in behaving monkeys. Society for Neuroscience Annual Meeting, San Diego, California

## **CAMPUS AND DEPARTMENTAL TALKS**

---

- 2019 Studying the brain circuits that generate fear and anxiety. Tulane Honors Weekend faculty presentation
- 2018 Elucidating the neuronal mechanisms that modulate fear intensity. Tulane Brain Institute seminar series
- 2018 The central amygdala mediates scalable defensive behaviors. Department of Pharmacology seminar series, Tulane University Health Sciences Center

**CAMPUS POSTER PRESENTATIONS**

---

- 2019 Weissmuller, K; Dorofeikova, M; Resendez, A; **Fadok, JP**. Neuronal Circuit Mechanisms Underlying Cognitive Changes in Models of Brain Disorders. Tulane Undergraduate Research in Neuroscience Poster Session
- 2019 Borkar, C; Dorofeikova, M; Martin, R; Sifnugel, N; Vutukuri, R; Resendez, A; **Fadok, JP**. Defining the neural circuit mechanisms underlying switches from passive to active fear behavior. Poster presented at Tulane Health Science Research Day
- 2018 Martin, R; Borkar, C; Dorofeikova, M; Sifnugel, N; Le, QS; Resendez, A; **Fadok, JP**. Recording the neural correlates of fear and anxiety using deep-brain calcium imaging. Poster presented at the Greater New Orleans Society for Neuroscience Meeting
- 2018 Sifnugel, N; Dorofeikova, M; Resendez, A; **Fadok, JP**. Quantifying GABAergic, Glutamatergic, and Cholinergic Neurons in the Substantia Innominata. Tulane Undergraduate Research in Neuroscience Poster Session

**GRADUATE STUDENT COMMITTEE MEMBER**

---

**Green** denotes **Tulane** students

**Jill King** (2018-present; Markant lab), Neuroscience Ph.D. Program; **Brianna Keenan** (2018-present; Markant lab), Psychology Ph.D. Program; **Michael Langhardt** (2018; Mostany lab), Neuroscience Ph.D. Program; **Alexis Ducote** (2019-present; Mostany lab), Neuroscience Ph.D. Program; **Taylor Templeton** (2019-present; Gilpin lab), Physiology Ph.D. Program LSU School of Medicine; **Youad Darwish** (2020-present; Huang lab), Cellular and Molecular Biology Ph.D. Program

**TEACHING EXPERIENCE**

---

**Tulane University:**Instructor of record (Undergraduate):

*Brain and Behavior* (PSYC/NSCI 3300): Fall 2017, 2018, 2019

Spring 2019, 2020 (Honors section)

Guest lecturer (Graduate):

*Graduate Neuroscience II* (NSCI 6600): Spring 2018, 2019

Instructor of record: Dr. Sara Clark.

**University of Washington:**

Graduate Teaching Assistant:

*Introduction to Systems Neurobiology* (NBio 302): Spring 2007.

Instructor of record: Dr. Michael Kennedy

**SERVICE TO PROFESSION**

---

- 2020-pres **Grant reviewer**, Swiss National Science Foundation (SNF)  
2019-pres **Organizing committee member**, D'Angelo Workshop on Co-morbid  
Mental Health Disorders  
2018 **Co-Chair**, Society for Neuroscience Annual Meeting Nanosymposium:  
Cortical and Subcortical Mechanisms of Learning and Cognition  
2018-pres **Grant reviewer**, German Research Foundation (Deutsche  
Forschungsgemeinschaft)

**AD-HOC JOURNAL PEER REVIEW** (highest impact factor first)

---

Nature, Nature Neuroscience, Neuron, Trends in Cognitive Sciences, Nature  
Communications, Biological Psychiatry, Neuroscience & Biobehavioral Reviews, eLife,  
Neuropsychopharmacology, Translational Psychiatry, Psychopharmacology, Current  
Opinion in Behavioral Sciences, Neurobiology of Learning and Memory, Behavioural  
Brain Research, Physiology and Behavior

**DEPARTMENTAL SERVICE**

---

- 2019-pres **Member**, *PhD Admissions Committee*, Department of Psychology  
2018-pres **Member**, *Graduate Training Committee*, Department of Psychology  
2018-pres **Member**, *Presidential Chair Search Committee*, Tulane Brain Institute  
2017-pres **Advisor**, *20 psychology majors*, Department of Psychology  
2017-2018 **Member**, *Colloquium Committee*, Department of Psychology

**EXTRACURRICULAR UNIVERSITY SERVICE**

---

- 2019-pres **Faculty advisor**, Tulane Alzheimer's and Dementia Awareness

- Advocates, undergraduate student organization
- 2019 **Speaker**, Tulane University Neuroscience Association meeting
- 2019 **Speaker**, Gray Matters Society meeting, a freshmen neuroscience organization
- 2019 **Speaker**, Lusher High School student visit to Tulane
- 2019-pres **Poster judge**, Health Sciences Research Days, Tulane School of Medicine
- 2018-pres **Poster judge**, School of Science and Engineering Research Day
- 2017-pres **Volunteer**, Society for Neuroscience Graduate Fair, promoting Tulane Neuroscience
- 2017-2018 **Volunteer**, School of Science and Engineering Open House

---

**PROFESSIONAL MEMBERSHIPS**

---

Society for Neuroscience  
Social and Affective Neuroscience Society  
Louisiana Alliance for Minority Participation