

ALEXANDRE (ALEX) TIRIAC

Business Address:

Vanderbilt University
465 21st Ave S, MRB III Bio/Sci 8260
Nashville, TN, 37232

Email: alexandre.tiriac@vanderbilt.edu

Fluent in English, Romanian, and French

POSITIONS

2022 – Present Assistant Professor of Biological Sciences, Vanderbilt.
2016 – 2022 Postdoctoral researcher, University of California, Berkeley.
Principal investigator: Dr. Marla Feller.

EDUCATION AND TRAINING

2015 Transylvanian Experimental Neuroscience Summer School (TENSS). Cluj-Napoca, Romania.
2014 “Entering Mentoring: A Seminar to Train a New Generation of Scientists”, HHMI and NSF, Iowa Biosciences Advantage, Summer 2014.
2010 – 2016 Ph.D. Behavioral and Cognitive Neuroscience, Department of Psychological and Brain Sciences, the University of Iowa.
Principal investigator: Dr. Mark Blumberg.
2009 – 2010 Research assistant, Center for Neuroscience, University of California, Davis. Principal investigator: Dr. Leah Krubitzer.
2009 B.S. in Neurophysiology and Behavior, University of California, Davis.
2009 B.S. in Chemistry, University of California, Davis.

AWARDS, FELLOWSHIPS, AND HONORS

2021 Best poster award – Retinal Circuits Symposium
2020-2025 NIH Pathway to independence award – K99/R00
2019 Outstanding postdoc award – The Department of Molecular and Cell Biology, UC Berkeley
2018 Bay Area Molecular Neuroscience Meeting – Best Poster award.
2018 Graduate Deans’ Distinguished Dissertation Award. The University of Iowa
2016 International Society for Developmental Psychobiology (ISDP) Dissertation Award
2015 Gormezano Research Award, recognizing best student-authored research paper published in 2014
2015 DeLTA day best Graduate Student Poster Award

2014	International Society for Developmental Psychobiology (ISDP) Travel Award
2014	DeLTA day Best Communicating Your Science Award
2014	Graduate College Summer Fellowship
2013	Gormezano Research Award, recognizing best student-authored research paper published in 2012.
2013	DeLTA day Best Graduate Student Poster Award
2011	International Society for Developmental Psychobiology (ISDP) Best Poster Award
2011	International Society for Developmental Psychobiology (ISDP) Travel Award

FUNDING:

“Development of direction selectivity maps”

Principal Investigator: Alexandre Tiriac, Ph.D.

Mentor/Supervisor: Marla B. Feller, Ph.D.

Agency: National Eye Institute, National Institutes of Health

NIH K99/R00 (EY030909-01A1). Period: 08/01/2020 – 07/31/2022

R00 funded for 3 additional years (2022-2025) contingent on successful transition to independence.

The goal of this proposal is to determine how visual experience, spontaneous activity, and transient molecular gradients promote the development of retinal direction selectivity.

PUBLICATIONS IN PREPARATION:

Voufo C.W., Feller M.B., **Tiriac A.** Mechanisms underlying Stage 1 retinal waves. In preparation

PUBLICATIONS: (*DENOTES RESEARCH ARTICLES)

Tiriac A. & Feller M.B. Roles of visually evoked and spontaneous activity in the development of retinal direction selectivity maps. *Trends in Neuroscience*, 45(7):529-538. 2022

*Caval-Holme F.S, Aranda M.L., Chen A.Q., **Tiriac A.**, Zhang Y., Smith B., Birnbaumer L., Schmidt T.M., and Feller M.B. The Retinal Basis of Light Aversion in Neonatal Mice. *Journal of Neuroscience*. 8 April 2022, JN-RM-0151-22. 2022

***Tiriac A.**, Bistrong K., Pitcher M.N, Tworog J.M. & Feller M.B. The influence of spontaneous and visual activity on the development of direction selectivity maps in mouse retina. *Cell Reports*. 38(2):110225, 2022

Tiriac A. & Feller M.B. Embryonic neural activity wires the brain. *Science*, 7;364(6444):933-934, 2019. (Perspective)

- ***Tiriac A.**, Smith B.E. & Feller M.B. Light prior to eye-opening promotes retinal waves and eye-specific segregation. *Neuron*, 100(5):1059-1065, 2018.
- ***Tiriac A.** & Blumberg M.S. Gating of reafference in the external cuneate nucleus during self-generated movements in wake but not sleep. *eLife*, 5, p. e18749, 2016.
- Tiriac A.** & Blumberg M.S. The case of the disappearing spindle burst. *Neural Plasticity*, 2016.
- Blumberg M.S., Sokoloff G., **Tiriac A.**, & Del Rio-Bermudez C. A valuable and promising method for recording brain activity in behaving newborn rodents. *Developmental Psychobiology*, 57(4):506-517, 2015.
- Tiriac A.**, Sokoloff G., & Blumberg M.S. Myoclonic twitching and sleep-dependent plasticity in the developing sensorimotor system. *Current Sleep Medicine Reports*, 1: 74-79, 2015.
- ***Tiriac A.**, Del Rio-Bermudez C., & Blumberg M.S. Self-generated movements with “unexpected” sensory consequences. *Current Biology*, 24:2136-2141, 2014.
- ***Tiriac A.**, Uitermarkt B.D., Fanning A., Sokoloff G., & Blumberg M.S. Rapid whisker movements in sleeping newborn rats. *Current Biology*, 22: 2075-2080, 2012.
- *Cooke D.F., Goldring A.B., Yamayoshi I., Tsourkas P., Recanzone G.H., **Tiriac A.**, Pan T., Simon S.I., & Krubitzer L.A. Fabrication of an inexpensive, implantable cooling device for reversible brain deactivation in animals ranging from rodents to primates. *Journal of Neurophysiology*, 12: 3543-3558, 2012.

TALKS:

- Tiriac A.**, Bistrong K., Pitcher M.N, Tworig J.M. & Feller M.B. The influence of spontaneous and visual activity on the development of direction selectivity maps in mouse retina. Altea, Spain, June 2022, SPONT2022.
- Tiriac A.** & Feller M.F. Development of direction selectivity maps, Society For Neuroscience virtual conference, September, 2020. Development and Regeneration: Common Themes and Important Differences.
- Tiriac A.** & Feller M.F. Development of direction selectivity maps, Berkeley, CA, September, 2019. Neurodinner seminar.
- Tiriac A.** & Feller M.F. Development of direction selectivity maps, Berkeley, CA, September, 2019. Bay Area Research Vision Day.
- Tiriac A.**, Smith B.E. & Feller M.F. Light contributes to the development of the visual system before eye-opening, Richmond, CA, October, 2018. UC Berkeley Neuroscience Conference.
- Tiriac A.**, & Feller M.F. Light stimulation prior to eye-opening promotes retinal waves and eye-specific segregation, Santa Cruz, CA, March, 2018. Neuroscience seminar.
- Tiriac A.**, Del Rio-Bermudez C., & Blumberg M.S. State-Dependent Processing of Sensory Reafference from Self-Generated Movements. International Society for Developmental Psychobiology, Washington, DC, November, 2017. **(Dissertation Award)**
- Tiriac A.**, Del Rio-Bermudez C., & Blumberg M.S. Differential processing of sensory reafference from self-generated movements. International Society for Developmental Psychobiology, Washington, DC, November, 2014.

- Tadjalli A., **Tiriac A.**, Sokoloff G., Sattler N., & Blumberg M. S. The self-tuning sleeping brain: Activity-dependent scaling of network activity in the developing brain. Annual meeting of the Associated Professional Sleep Societies, Minneapolis, June, 2014.
- Tiriac A.**, Fanning A.S., Uitermarkt B.D., Sokoloff G., & Blumberg M.S. Rapid whisker movements in sleeping newborn rats. 16th Annual James F. Jakobsen Graduate Conference, Iowa City, March, 2014.
- Tiriac A.** Departmental brown bag data blitz, “State-dependent activity in motor cortex”. September, 2013.
- Uitermarkt B.D., **Tiriac A.**, Fanning A.S., Sokoloff G., & Blumberg M.S. Rapid whisker movements during active sleep in newborn rats. Associated Professional Sleep Societies, Baltimore, Maryland, June, 2013.
- Tiriac A.**, Fanning A.S., Uitermarkt B.D., Sokoloff G., & Blumberg M.S. Rapid whisker movements in sleeping newborn rats. Departmental brown bag, Iowa City, April, 2013.
- Tiriac A.**, Fanning A.S., Uitermarkt B.D., Coleman C.M., Sokoloff G., & Blumberg M.S. Rapid whisker movements in sleeping newborn rats. International Society for Developmental Psychobiology, New Orleans, LA, October, 2012.
- Tiriac A.**, Blumberg M.S. State-dependent thalamic activity in infant rats. 17th Annual Graduate Research Symposium, Iowa City, February, 2012.
- Tiriac A.**, Blumberg M.S. State-dependent thalamic activity in infant rats. Departmental brown bag data blitz, Iowa City, September, 2011.
- Tiriac A.** Fabrication of a lightweight and inexpensive implantable cooling device for reversible brain deactivation in animals ranging from rodents to primates. Departmental brown bag data blitz, Iowa City, September, 2010.

CONFERENCE PRESENTATIONS: POSTERS

- Tiriac A.**, Bistrong K., Tworig J, and Feller M.B., Retinal Waves but not Visual Experience are Required for Development of Retinal Direction Selectivity Maps. Retinal Circuits Symposium, Virtual, 2021. **(Winner, Best Poster Award)**
- Tiriac A.**, Bistrong K., and Feller M.B., Retinal direction selectivity maps develop independently of visual input but require retinal waves. SFN Global Connectome, Virtual, January 2021.
- Tiriac A.** and Feller M.B., Development of direction selectivity maps. Society for Neuroscience, Chicago, IL, October 2019.
- Tiriac A.** and Feller M.B., Development of direction selectivity maps. Bay Area Vision Research Day, Berkeley, CA, September 2019.
- Tiriac A.**, Smith B.E., Feller M.B., A role for visual experience in activity-dependent development prior to eye-opening. Bay Area Molecular Neuroscience Meeting, Berkeley, CA, July 2018. **(Winner, Best Poster Award)**
- Tiriac A.**, Smith B.E., Feller M.B., A role for visual experience in activity-dependent development prior to eye-opening. Society for Neuroscience, Washington D.C., November 2017.
- Tiriac A.**, Del Rio-Bermudez C., Blumberg M.S., Self-generated movements with “unexpected” sensory consequences. DeLTA Day, Iowa City, IA, April 2015. **(Winner, Best Graduate Student Poster Award)**

- Tiriac A.**, Del Rio-Bermudez C., Blumberg M.S., Self-generated movements with “unexpected” sensory consequences. Society for Neuroscience, Washington D.C., November 2014.
- Tiriac A.**, Del Rio-Bermudez C., Blumberg M.S., Differential processing of sensory feedback from sleep-related twitches and wake movements in the motor cortex of infant rats. Sleep, Minneapolis, MN, June 2014.
- Del Rio-Bermudez C., **Tiriac A.**, Blumberg M.S., Mechanisms underlying the differential processing by motor cortex of Reafference from sleep-related twitches and wake movements. Sleep, Minneapolis, MN, June 2014.
- Tiriac A.**, Del Rio-Bermudez C., Blumberg M.S., State-dependent gating of self-generated sensory feedback in the motor cortex of infant rats. DeLTA Day, Iowa City, IA, April 2014. **(Winner, Best Communicating your Science Award)**
- Tiriac A.**, Del Rio-Bermudez C., Blumberg M.S., State-dependent gating of self-generated sensory feedback in the motor cortex of infant rats. Society for Neuroscience, San Diego, CA, November 2013.
- Tiriac A.**, Sokoloff G., Coleman C.M., Blumberg M.S., Spontaneous motor activity in the neonatal whisker system. I. Behavioral evidence of whisker twitching during active sleep. DeLTA Day, Iowa City, IA, May 2013. **(Winner, Best Graduate Student Poster Award)**
- Fanning A.S., **Tiriac A.**, Todd III W.D., & Blumberg M.S., Spontaneous motor activity in the neonatal whisker system. II. State-dependent neural activity in whisker thalamus. DeLTA Day, Iowa City, IA, May 2013.
- Tiriac A.**, Sokoloff G., Coleman C.M., Blumberg M.S., Spontaneous motor activity in the neonatal whisker system. I. Behavioral evidence of whisker twitching during active sleep. Society for Neuroscience, New Orleans, LA, October 2012.
- Fanning A.S., **Tiriac A.**, Todd III W.D., & Blumberg M.S., Spontaneous motor activity in the neonatal whisker system. II. State-dependent neural activity in whisker thalamus. International Society of Developmental Psychobiology, New Orleans, LA, October 2012.
- Uitermarkt B.D., Sokoloff G., **Tiriac A.**, & Blumberg M.S., Spontaneous motor activity in the neonatal whisker system. III. Twitch related barrel cortex activity during active sleep revealed by voltage sensitive dye imaging (VSDI). International Society of Developmental Psychobiology, New Orleans, LA, October 2012.
- Fanning A.S., **Tiriac A.**, Todd III W.D., & Blumberg M.S., Spontaneous motor activity in the neonatal whisker system. II. State-dependent neural activity in whisker thalamus. Society for Neuroscience, New Orleans, LA, October 2012.
- Uitermarkt B.D., Sokoloff G., **Tiriac A.**, & Blumberg M.S., Spontaneous motor activity in the neonatal whisker system. III. Twitch related barrel cortex activity during active sleep revealed by voltage sensitive dye imaging (VSDI). Society for Neuroscience, New Orleans, LA, October 2012.
- Tiriac A.**, Fanning A., & Blumberg M.S. State-dependent thalamic activity in infant rats. Society for Neuroscience, Washington, D.C., November, 2011.
- Tiriac A.**, Fanning A., & Blumberg M.S. State-dependent thalamic activity in infant rats. International Society for Developmental Psychobiology, Washington, D.C., November, 2011. **(Winner, Best Poster Award)**

Cooke D.F., **Tiriac A.**, Yamayoshi I., Padberg J., Pan T., Recanzone G.H., Tsourkas P., Simon S.I., & Krubitzer L. (2009) Fabrication of a lightweight and inexpensive implantable cooling device for reversible brain deactivation in animals ranging from rodents to primates. Society for Neuroscience, Chicago, October 2009.

MEMBERSHIPS:

Society For Neuroscience.

International Society for Developmental Psychobiology

TEACHING:

Guest lecturer, Biopsychology, "Neurophysiology" "Neuropharmacology" "Auditory System" "Visual System", Spring 2015.

Teaching assistant, Biopsychology, Spring 2015.

Guest lecturer, Biopsychology, "Sleep", Summer 2014.

Teaching assistant, Biopsychology, Spring 2014.

Lecturer, Biopsychology, Summer 2013. *Created my own curriculum with tests designed to assess students' critical thinking.

Teaching assistant, Elementary Psychology, Meara Habashi, Spring 2013.

Guest lecturer, Biopsychology, "Mood and mental disorders", Spring 2011.

Teaching assistant, Biopsychology, Jason Radley, Spring 2011.

SERVICE:

National Institute of Health (NIH) Bridges to Baccalaureate (B2B) – Guest lecturer on the role of spontaneous activity and how to seek funding in neuroscience. Berkeley, CA, July 2020.

NSF REU mentor, Summer 2018.

Science fair judge at the ICS/TCN Elementary Science Fair. Oakland, CA, May, 2018.

Dinner with a Scientist. Oakland, CA, April, 2018.

Dinner with a Scientist (The goal of the event is to encourage and support our science teachers as well as inspire a generation of future scientists). Oakland, CA, April, 2017.

Science fair judge at The 56th Eastern Iowa Science & Engineering Fair (EISEF). Cedar Rapids, IA, March, 2015.

Graduate Student Representative of the DeLTA center, 2014-2015.

Science fair judge at The 55th Eastern Iowa Science & Engineering Fair (EISEF). Cedar Rapids, IA, March, 2014.

Science fair judge at The 54th Eastern Iowa Science & Engineering Fair (EISEF). Cedar Rapids, IA, March, 2013.

Science fair judge at The 53rd Eastern Iowa Science & Engineering Fair (EISEF). Cedar Rapids, IA, March, 2012.

