

Mimi Le Phan, Ph.D.

Associate Research Professor
Department of Psychology
848 445 8954 | mphan@scarletmail.rutgers.edu

Fields

Systems and behavioral neuroscience with an emphasis on auditory plasticity/stability and perceptual functions in humans, non-human primates, rodents, and songbirds across the lifespan and pathologies. Effects of stress and epigenetic influences on sensory and sensorimotor learning and memory. Modelling of infant vocal learning.

Education

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| Rutgers College (New Brunswick, NJ) | Biology | B.A. |
| Rutgers College (New Brunswick, NJ) | Psychology | B.A. |
| University of California, Davis (Davis, CA) | Neuroscience | Ph.D. |

Funding

Successfully managed both federally- (National Institutes of Health) and privately- (Rutgers) funded sponsored research projects as principal investigator (PI) of grants totaling more than \$400,000 (direct). As a result of my oversight on these projects, my research team has published in the Proceedings of the National Academy of Sciences of the United States of America, PloS ONE, and the Journal of Neurophysiology including presentation at several major international conferences.

Active

- Grant Number: Johanna Busch Biomedical Grant Program
Principal Investigator: Phan, Mimi L.
Project Title: Epigenetic modulation of auditory memories in a songbird model.
- Grant Number: NIEHS CEED Pilot Project
Principal Investigator(s): Samuels, Benjamin A. / DiCicco-Bloom, Emanuel
Project Title: Gene-Environment Interactions in an Experimental Animal Model of Neurodevelopmental Disorders and Stress

Completed

- Grant Number: R15 HD085102
Principal Investigator(s): Pytte, Carolyn L. / Phan, Mimi L. / Remage-Healey, Luke
Project Title: Effects of Statins on Juvenile Learning, Memory and Neuroestrogen
Project Period: 08/06/2015 - 07/31/2019
- Grant Number: R03 HD068960
Principal Investigator(s): Phan, Mimi L. / Pytte, Carolyn L.
Project Title: Effects of Statins on the Neurobiology of Learning and Memory Across the Lifespan
Project Period: 3/4/2011 - 2/28/2014
- Grant Number: The Busch Biomedical Grant Program (Rutgers University)
Principal Investigator: Phan, Mimi L.
Project Title: Effects of Statins on Neural Processes of Learning and Memory Across the Lifespan
Project Period: 7/1/2010 - 5/1/2012
- Grant Number: R03 DC007971
Principal Investigator: Phan, Mimi L.
Project Title: Mechanisms Underlying the Development of Auditory Perception in Songbirds
Project Period: 12/06/2005 - 11/30/2009
- Grant Number: R03 DC007971-03S1 (ARRA Administrative Supplement)
Principal Investigator: Phan, Mimi L.
Project Title: Mechanisms Underlying the Development of Auditory Perception in Songbirds
Project Period: 06/01/2009 - 10/31/2009

- Grant Number: DC 008854-02S1 (ARRA Administrative Supplement)
Principal Investigator: Vicario, David S.
Project Title: Auditory Processing & Memory for Complex Signals
Project Period: 8/14/2009 - 6/30/2012.
Role: Key Personnel

Teaching Experience

- 1) Department of Psychology, Rutgers University | 2004 to present

Introduced, reinforced, and provided students with a didactic and active learning curriculum on various topics and issues in the scientific exploration of mind and behavior, with an emphasis on human and animal biology/physiology, learning, development, and social interactions.

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| General Psychology | 830:101 |
| Perception and Cognition Laboratory | 830:302 |
| Conditioning and Learning/Learning Processes | 830:311 |
| Learning Processes Lab | 830:312 |
| Physiological Psychology | 830:313 |
| Physio Psych Lab | 830:314 |

- 2) Rutgers University Center for Cognitive Science (RuCCS), Rutgers University | 2019-present

Developed innovative curriculum courses for the Cognitive Science Major in the Rutgers University Center for Cognitive Science (RuCCS). All courses approved by the School of Arts and Sciences Curriculum Committee, Rutgers University.

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| Advanced Topics in Cognitive Science: Cognitive Neuroscience of Sound | 185:413 |
| Fundamentals of Cognitive Neuroscience | 185:350 |

- 3) Pop-Up Learning Communities
Department of Psychology, Rutgers University | 2019 to present

Directed a collaborative approach to multidisciplinary undergraduate research with an emphasis on active learning through a competitive Grossman Interdisciplinary Research Team Fellowship program.
Project title: “Do we know what they know”

Guided and provided students with the intellectual infrastructure to create a written scholarly review article on hemispheric asymmetry. Manuscript title: “ Hemispheric Asymmetry: Implications for Vocal Learning and Auditory Memories”

Advising Experience

- 1) Department of Psychology, Rutgers University | 2001 to present
Served the undergraduate population (Freshmen- Seniors; mainly Psychology, Cell Biology and Neuroscience, and other science majors) at Rutgers by providing academic/career advice and letters of reference for professional schools and fellowship programs. Mentored undergraduate students in senior honors capstones (8) and non-honors research (40). Several undergraduate mentees have won RU-internal and external awards (e.g., Shors prize for best neuroscience thesis, Henry Rutgers Scholar, Aresty Best Poster award, Aresty Research Funding, Douglass Project – Summer Science Program, Society for Neuroscience travel awards). Mentees have been co-authors on 30+ posters and three peer-reviewed papers.

- 2) Health Professions Office, Rutgers University | 2019 to present
Participated actively as a Faculty Committee Interviewer for Medical School Applicants. Prepared detailed committee letters that emphasized the candidate's strengths and qualifications for advance studies. Organized and selected references to accompany medical school application packets.
- 3) Outreach Faculty Mentor, Rutgers University | 2016- current
Co-Advisor for NuRhoPsi Beta in NJ, a nationally recognized Rutgers Chapter of the Honors Society in Neuroscience and a faculty mentor for ArtSci, a student-initiated community outreach program. Co-advised NuRhoPsi in organizing a regional undergraduate research conference AXON (Advancing Cross-Disciplinary Outreach in Neuroscience). Mentored ArtSci in successful workshops guiding grade school students (1st-4th) on how to use their innate creativity to see how the arts often go hand in hand with fields in STEM.
 - a) Co-Advisor: NuRhoPsi Beta in NJ, nationally recognized Rutgers Chapter of the Honors Society in Neuroscience, 2019-current
 - b) Faculty Mentor: ArtSci - a community science outreach program consisting of Rutgers students presenting science and art tutorials to local elementary school children, 2016-current
 - c) Judge, North Jersey Regional Science Fair, Spring 2006-2009, 2012
 - d) Co-founder, Adventures in Science (a community science outreach program consisting of UC Davis students presenting science tutorials to local junior high students), 1994-1995

University and Professional Service

Contributed to the advancement of my academic profession by serving as an ad hoc reviewer for peer reviewed journals and for grant and fellowship mechanisms local to the Rutgers faculty and student community. Served on graduate student interviews and undergraduate special interest panels. Directed assistance in organizing a regional undergraduate research conference (AXON, Co-Advisory role).

- 1) Conference Co-Organizer AXON Conference: "Advancing Cross-Disciplinary Outreach in Neuroscience" Brain Machine Interfaces 2020. Rutgers University, March 27th, 2020.
- 2) Faculty Interviewer: Psychology Graduate Program, 2015-current
- 3) Faculty Reviewer: Research Fellowships for Aresty Research Center, 2015-2018
- 4) Ad Hoc Reviewer: *Biology Letters*; *JoVE*, *the Journal of Visualized Experiments*; *Neuroscience*; *Scientific Reports*; *Learning and Memory*
- 5) The Busch Biomedical Grant Program (Rutgers University) Programming Committee, Spring 2011, 2015
- 6) Faculty Research Panel Member for the Rutgers Student Society for Stem Cell Research organization, Fall 2015
- 7) Member, Rutgers University Strategic Plan: "Efficient and responsive processes, infrastructure, supporting staff, and leadership" Committee, Fall 2013

Select Publications

1. Hu P, Liu J, Maita I, Kwok C, Gu E, Gergues MM, Kelada F, **Phan M**, Zhou JN, Swaab DF, Pang ZP, Lucassen PJ, Roepke TA, Samuels BA. (2020) Chronic Stress Induces Maladaptive Behaviors by Activating Corticotropin-Releasing Hormone Signaling in the Mouse Oval Bed Nucleus of the Stria Terminalis. *J Neurosci*. 2020 Mar 18;40(12):2519-2537. doi: 10.1523/JNeurosci.2410-19.2020. Epub 2020 Feb 13. PMID: 32054675
2. Bell BA, **Phan ML**, Meillère A, Evans JK, Leitner S, Vicario DS, Buchanan KL. (2018). Influence of early-life nutritional stress on songbird memory formation. *Proc Biol Sci*. 2018 Sep 26;285(1887). pii: 20181270. doi: 10.1098/rspb.2018.1270. PMID: 30257911
3. **Phan ML***, Gergues MM*, Mahidadia S, Jimenez-Castillo J, Vicario DS, Bieszczad KM. (2017). HDAC3 Inhibitor RGFP966 Modulates Neuronal Memory for Vocal Communication Signals in a Songbird Model.

- Front Syst Neurosci. 5;11:65. doi: 10.3389/fnsys.2017.00065. PMID: 28928640 (* co-first authors)
4. Tsoi SC, Barrientos AC, Pytte CL, Vicario DS, **Phan ML**. (2017). The effects of long-term atorvastatin use on the cytoarchitecture of new and older neurons of sensorimotor nucleus HVC in a juvenile songbird model. <https://www.biorxiv.org/content/early/2017/10/02/196204>
 5. **Phan ML** and Bieszczad KM. (2016). Sensory cortical plasticity participates in the epigenetic regulation of robust memory formation. *Neural Plasticity: Neural Plasticity*, vol. 2016, Article ID 7254297, 2016. doi:10.1155/2016/7254297.
 6. Bell B, **Phan ML**, and Vicario DS. (2015). Neural Responses in Songbird Forebrain Reflect Learning Rates, Acquired Salience and Stimulus Novelty after Auditory Discrimination Training. *J Neurophysiol.* Mar 1;113(5):1480-92. doi: 10.1152/jn.00611.2014. PMID: 25475353.
 7. Yoder KM, **Phan ML**, Lu K, Vicario DS. (2015). He hears, she hears: Are there sex differences in auditory processing? *Dev Neurobiol.* 75(3):302-14. doi: 10.1002/dneu.22231.
 8. Tsoi SC, Aiya UV, Wasner KD, **Phan ML**, Pytte CL, Vicario DS. (2014). Hemispheric Asymmetry in New Neurons in Adulthood Is Associated with Vocal Learning and Auditory Memory. *PLoS One*. doi: 10.1371/journal.pone.0108929. PMID:25251077.
 9. **Phan ML** and Vicario DS. (2010). Hemispheric differences in processing of vocalizations depend on early experience. *Proc. Natl. Acad. Sci. USA* 107:2301-6.
 10. Pinaud R, Terleph TA, Tremere LA, **Phan ML**, Dagostin AA, Leão RM, Mello CV, and Vicario DS. (2008). Inhibitory network interactions shape the auditory processing of natural communication signals in the songbird auditory forebrain. *Journal of Neurophysiology* 100:441-55.
 11. **Phan ML** and Recanzone GH. (2007). Single neuron responses to rapidly presented temporal sequences in the primary auditory cortex of the awake macaque monkey. *Journal of Neurophysiology* 97:1726-37.
 12. **Phan ML**, Pytte CL, and Vicario DS. (2006). Early auditory experience generates long-lasting memories that may subserve vocal learning in songbirds. *Proc. Natl. Acad. Sci. USA* 103:1088-93.
 13. **Phan ML***, Schendel KL*, Recanzone GH, and Robertson LC. (2000). Auditory and visual spatial localization deficits following bilateral parietal lobe lesions in a patient with Balint's syndrome. *Journal of Cognitive Neuroscience* 12:583-600. (* co-first authors)
 14. Recanzone GH, Guard DC, **Phan ML**, and Su TK. (2000). Correlation between the activity of single auditory cortical neurons and sound-localization behavior in the macaque monkey. *Journal of Neurophysiology* 83:2723-39.
 15. Recanzone GH, Guard DC, and **Phan ML**. (2000). Frequency and intensity response properties of single neurons in the auditory cortex of the behaving macaque monkey. *Journal of Neurophysiology* 83:2315-31.
 16. Kuwahara SK, Shinn TJ, Schreider BD, **Phan ML**, Kotake AN. (1995). Aminopyrine infusion breath test for the determination of changes in P450 metabolism in vivo. *Xenobiotica* 25(9):973-80.

- Select Undergraduate (*) Presentations at national and local research symposia
 1. **Phan ML**¹, Jadav N¹, Liu T¹, Yohn C¹, Lunden J², Zhou X², Vollbrecht M², Diccico-Bloom EM², Samuels BA¹. Gene-environment interactions in an experimental mouse model of neurodevelopmental disorders and stress . ¹Rutgers Univ. Dept. of Psychology, New Brunswick, NJ; ²Dept Neurosci & Cell Biol/ Pediatrics (Child Neurol. & Neurodevelopmental Disa, Rutgers Robert Wood Johnson Med. Sch., Piscataway, NJ. Program No. 280.06. 2019 Neuroscience Meeting Planner. Chicago, IL: Society for Neuroscience, 2019. Online
 2. Moshen M*, **Phan M**, Vicario D. Behavioral and Electrophysiological Assessment of Sound Discrimination Following Passive Pre-exposure. 12th Annual Perceptual & Cognitive Science Forum. Rutgers University, Spring 2019.
 3. Jadav J*, Nikodijevic I*, Liu T*, **Phan M**, Samuels B. Early Life Stress in En2 Knockout Mice. Poster | STEM | Psychology 15th Annual Undergraduate Research Symposium, Aresty Research Center, Rutgers University, Spring 2019.
 4. Dieterich A, **Phan ML**, Samuels BA. Effects of chronic stress paradigms on instrumental behaviors in mice. Rutgers Univ. Dept. of Psychology, Piscataway, NJ. Program No. 232.11. 2018 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2018. Online.
 5. Srinivasan S*, Narayanan N*, Chintaluri M*, Trivedi D*, Soyman E, **Phan M**, Vicario D. Effects of Statins on Auditory Memory and Imitative Learning. Poster | STEM | Psychology 14th Annual Undergraduate Research Symposium, Aresty Research Center, Rutgers University, Spring 2018.
 6. **Phan ML**, Gergues MM, Mahidadia S, Bernabe R, Jiménez Castillo J, Vicario DS, Bieszczad KM; Rutgers University. Epigenetic Mechanisms Modulate The Formation Of Auditory Memories In Songbirds. Program No. 2-J-143. The 6th International Conference On Auditory Cortex. September 10-15, 2017. Banff, Alberta, Canada
 7. Mcdermott, CR*, Narayanan N, Srinivasan S, **Phan ML**, Vicario DS, Pytte, CL. Simvastatin Increases Neuroestradiol In Female Zebra Finches. The Society For Neuroscience. Washington, DC, November 2017.
 8. **Phan ML**, Gergues MM, Mahidadia S, Bernabe R, Jiménez Castillo J, Vicario DS, Bieszczad KM; Psychology, Rutgers Univ. Dept. Of Psychology, Piscataway, NJ Program. Epigenetic Mechanisms Enable Song Specific Auditory Memories In Songbirds. Program No. 319.05. 2017 Neuroscience Meeting Planner. Washington, DC: Society For Neuroscience, 2017. Online.
 9. **Phan ML**, Jiménez Castillo J*, Mahidadia S*, Saad S, Vicario DS, Bieszczad KM. Histone modification enables song-specific auditory memories in an avian model. The Society for Neuroscience. San Diego, CA, November 2016.
 10. Valiveti D, Srinivasan S*, Vicario DS, **Phan ML**. Statins affect the quality of auditory memories and performance on a behavioral discrimination paradigm in an avian model. The Society for Neuroscience. San Diego, CA, November 2016.
 11. Neha Narayanan*. Study of how parental experience affects brain processing of social auditory information. 2016 The Faculty for Undergraduate Neuroscience Poster Session. November 13, 2016. The Society for Neuroscience. San Diego, CA, November 2016.
 12. Shafali Mahidadia*. Epigenetic Mechanisms of Vocal Learning and Memory
Poster 385 | PM (12:30 - 2:00) | STEM | Psychology 12th Annual Undergraduate Research Symposium, Aresty Research Center, Rutgers University, Spring 2016.

In the news

Media coverage: *Phan ML and Vicario DS. Hemispheric differences in processing of vocalizations depend on early experience. Proc. Natl. Acad. Sci. USA 107:2301-6.*

- Rutgers Highlights: Branson, Ken. “Which Side Are You On? Birds Need Tutoring to Find Out”
- “Bird Brains.” Rutgers Magazine Spring 2010.
- Rutgers.edu banner story Spring 2010.
- “U. composes connection between birdsongs and language”. Vaibhavi Shah. The Daily Targum (Rutgers University Student Paper) 04/05/10.

Media coverage: *Phan, ML, Pytte, CL, and Vicario, DS. (2006) Early auditory experience generates long-lasting memories that may subserve vocal learning in songbirds. Proc. Natl. Acad. Sci. USA 103:1088-93.*

- “Babies Babble.” Rutgers Magazine Fall 2006. Branson, Ken.
- “Zebra Finches Remember Songs Dad Sang.” Rutgers Focus 23 January 2006.
- Flores, Graciela. “Sing It to Me.” Natural History Magazine, Inc. April 2006.
- Regan, Patrick. Inside Science. News Segment on NJN: New Jersey Public Television and Radio. January 2006.
- New York Academy of Sciences. Learning to Hear: Animal, Computational and Neuroimaging Studies of Language Development., mini-conference (“The Role of Early Auditory Memories in Songbird Vocal Learning” David S. Vicario). Oct 26, 2006 • 3:00 PM - 5:30 PM