

**Personal Information**

Address: 3500 N. Broad Street, MERB - Room 858

Philadelphia, PA 19140-4106

email: gunes.kutlu@temple.edu

Resume Website: [www.kutlulab.com](http://www.kutlulab.com)

**Education & Research Positions****2024 – Current; Assistant Professor**

Department of Neural Science

Center for Substance Abuse Research (CSAR)

Temple University Lewis Katz School of Medicine

**2023 – 2024; Assistant Professor**

Department of Cell Biology & Neuroscience

Rowan-Virtua School of Osteopathic Medicine

Rowan-Virtua School of Translational Biomedical Engineering and Sciences

Rowan University

**2017– 2023; Research Instructor**, Department of Pharmacology, Vanderbilt University School of Medicine

Advisor: Dr. Erin S. Calipari

**2016 – 2017; Research Associate**, Department of Biobehavioral Health, Pennsylvania State University

Advisor: Dr. Thomas J. Gould

**2013 – 2016; Post-Doctoral Fellow**, Department of Psychology, Temple University

Advisor: Dr. Thomas J. Gould, Dr. Vinay Parikh

**2013; Ph.D. in Cognitive Neuroscience**, Department of Psychology and Neuroscience, Duke University

Advisor: Dr. Nestor Schmajuk

**2006; B.A. in Psychology**, Department of Psychology, Istanbul Bilgi University/Turkey

Advisor: Dr. Hasan G. Bahcekapili

**Grant Support**Pending Grant Support

- **The Brain & Behavior Research Foundation NARSAD Young Investigator Grant – (Jan 2025 - Jan 2027)**  
- Role: PI (\$70,000). *“Controlling traumatic memories via cholinergic signaling in the insula”*

Ongoing Grant Support

- **R21 - National Institute of Mental Health - MH132052- (2023-2025) - Role: PI (\$420,575).** *“Predicting maladaptive aversive learning via computational modeling of insular single cell ensemble activity patterns”.*
- **R01 - National Institute on Drug Abuse - DA052317- (2021-2026) - Role: Co-I.** *“Mechanisms of dopaminergic dysfunction in substance use disorder”.*

Completed

- **KL2 NIH/NCATS Clinical and Translational Science Award (CTSA) - KL2TR002245 – (2020-2023) - Role: Trainee (\$300,000).** *“The role of mesocortical pathway in avoidance behavior”*
- **The Brain & Behavior Research Foundation NARSAD Young Investigator Grant – (2020-2022) - Role: PI (\$70,000).** *“Encoding of escapable versus inescapable aversive events within the mesocortical circuit”*

- **The Pfeil Foundation Investigator - 2021 - 2022 - Role: PI (\$35,000).**
- **Vanderbilt University Medical Center Faculty Research Scholar Grant – (2019-2021) - Role: PI (\$220,000).**
- **Edge for Scholars Research Relaunch Funds - 2020 - Role: PI (\$4,400).**

### Honors and Awards

- Associate member – American College of Neuropsychopharmacology (ACNP)
- Featured Scientist in Brain Medicine, Innovators & Ideas: Rising Star Series, titled "Munir Gunes Kutlu: *Exploring the neural mechanisms of learning and social behaviors – A scientist's journey and perspective*", 2024.
- Rowan University Summer Undergraduate Research Experience (SURE) – Mentor (Mentee: Jake Caselli) - 2024
- Rowan University Summer Medical Research Fellowship (SMRF) – Mentor (Mentee: Taylor Good) – 2024
- American College of Neuropsychopharmacology (ACNP) Past Travel Award Scholarship (\$1000) – 2023
- American College of Neuropsychopharmacology (ACNP) Past Travel Award Scholarship (\$1000) – 2022
- Vanderbilt University School of Medicine Faculty Incentive Award (\$3750) – 2022
- The Brain & Behavior Research Foundation 2021 Leading Research Achievement – 2022
- American College of Neuropsychopharmacology (ACNP) Travel Award – 2021
- The Pfeil Foundation Investigator – 2020
- Winter Conference for Brain Research (WCBR) Panel Travel Award (\$1000) – 2020
- Catecholamine Gordon Research Seminar – Selected for Oral Presentation – 2019
- Japan Neuroscience Society Travel Award (\$2000) – 2018 (Declined)
- Federation of European Neurosciences Societies Forum of Neuroscience Travel Award (\$2000) – 2018
- Society for Neuroscience, Trainee Professional Development Award (\$1000) – 2017
- Society for Research on Nicotine and Tobacco Travel Award (\$2000) – 2017
- Duke University Graduate School Conference Travel Award (\$500) – 2012
- Vertical Integration Program Graduate Fellow (\$3000) – Duke University – 2011
- Claire Hamilton Graduate Studies Conference Travel Award (\$500) – 2010
- Fellowship for Vienna International Summer Uni./Scientific World Conceptions – 2010
- Duke University Graduate Fellowship - 2008-2013
- Superior Achievement Scholarship - Istanbul Bilgi University - 2003-2006

### Professional Service

- 2024 – Symposium Co-Chair, *Diverse dopaminergic neural circuit activities controlling aversive learning*, Neuro Japan, Fukuoka, Japan
- 2024 - Panel reviewer for National Collaborative Research in Computational Neuroscience (CRCNS) Program (National Science Foundation (NSF)/National Institutes of Health (NIH))
- 2024 - Molecular Cell Biology and Neuroscience PhD program admission interviewer (Rowan University)
- 2022 - Poster judge for Vanderbilt Post-doctoral Association Symposium
- 2022 - Symposium Co-Chair, *Dopaminergic pathways in adaptive and maladaptive behaviors*, Winter Conference for Brain Research Meeting, Snowmass, CO
- 2020 - 2022 – Vanderbilt Center for Addiction Research Work-in-Progress Talk Series, Co-Chair
- 2021 & 2022 - Vanderbilt Undergraduate Summer Research Program (VUSRP) Review Committee member
- 2020 - Symposium Co-Chair, *Dopaminergic Modulation of Learning and Cognition*, Winter Conference for Brain Research Meeting, Big Sky, MT.
- 2019 - 2020 – Vanderbilt Center for Addiction Research Journal Club, Co-Chair
- 2019 - Basic Science/Preclinical Program Reviewer, Society for Research on Nicotine and Tobacco (SRNT) 2019 Meeting, San Francisco, CA.
- 2018 - Symposium Chair, *Tobacco-Control Campaigns: Research to Evaluation*, SRNT Meeting, Baltimore, MD.
- 2018 - Symposium Chair, *Transgenerational effects of parental nicotine and tobacco exposure on emotion, cognition, and reward*, SRNT Meeting, Baltimore, MD.
- 2018 - Basic Science/Preclinical Program Committee Member, Society for Research on Nicotine and Tobacco (SRNT) 2018 Meeting, Baltimore, MD.
- 2017-2018 - Invited Grant Reviewer for *Deutsche Forschungsgemeinschaft (German Research Foundation)*
- 2017 – 2019 - Basic Science Network Advisory Committee Member, Society for Research on Nicotine and Tobacco (SRNT).

## **Editorial Board:** Frontiers in Psychiatry (Addictive Disorders) (2021-2023)

**Invited Ad-Hoc Reviewer** for *Molecular Psychiatry, Journal of Neuroscience, Neuropsychopharmacology, Neuroscience and Biobehavioral Reviews, Scientific Reports, Hippocampus, Neuropharmacology, Experimental Neurology, Neurobiology of Learning and Memory, Psychopharmacology, Biochemical Pharmacology, Genes, Brain & Behavior, Pharmacology Research, Journal of Neuroscience Research, BMC Genomics, BMC Neuroscience, Journal of Affective Disorders, Nicotine and Tobacco Research, Physiology & Behavior, Pharmacology Biochemistry and Behavior, Neurochemistry International, Brain Research Bulletin, Behavioural Brain Research, Neuroscience Letters, Journal of Visualized Experiments (JoVE), Behavioural Processes, Hormones and Behavior, European Journal of Neuroscience, Addiction Neuroscience.*

## **Media Coverage**

- “Munir Gunes Kutlu: Exploring the neural mechanisms of learning and social behaviors – A scientist’s journey and perspective” **Innovators & Ideas: Rising Star. Brain Medicine.** December 17, 2024. [Link](#)
- “True behavior of the ‘pleasure molecule’ will reshape how we treat psychiatric diseases and addiction” **Science Daily.** September 16, 2021. [Link](#)
- “The true behavior of the “pleasure molecule” reforms the treatment of mental illness and addiction” **Florida News Times.** September 16, 2021. [Link](#)
- “Mental Disorder, Behavior: How Are They Affected By Increased Dopamine Release in the Brain?” **The Science Times.** September 16, 2021. [Link](#)
- “Dopamine is NOT just the ‘feel-good’ hormone, reshaping treatment of psychiatric diseases” **Study Finds** September 17, 2021. [Link](#)
- “AI and Optogenetics Disrupt the Neuroscience of Dopamine” **Psychology Today.** September 20, 2021. [Link](#)

## **Pre-print publications and publications under review** (\* denotes corresponding author; # denotes co-first author)

1. **Kutlu, M.G.\***, Zachry, J.E., Thibeault, K.C., Chevee, M., Nieh, E.H., Calipari, E.S. (under review). Dynamic cellular recruitment underlies stable stimulus-evoked activity patterns in the nucleus accumbens core. *Nature*.
2. Dinckol, O., Wenger, N.H., **Kutlu, M.G.\*** (under review). Dopamine and Acetylcholine Crosstalk in the Striatum: Implications for Substance Use Disorders. *Addiction Neuroscience*.
3. Rinker, J., Hoffman, M., Knapp, J., Wukitsch, T.J., **Kutlu, M.G.**, Calipari, E.S., McMahan, C.S., Baker, G.H., Woodward, J.J., Mulholland, P.J. (submitted). Prelimbic neuron calcium activity predicts perceived hedonic value across drinking solutions and ethanol dependent states in mice. *Biorxiv*.

## **Peer-Reviewed Publications** (\* denotes corresponding author; # denotes co-first author)

1. Zachry, J.E.#, **Kutlu, M.G.#**, Patel, D.D., Gaidici, A., Melugin, P.R., Isiktas, A.U., Yoon, H.J., Joffe, M.E., Cai, D.J., Grueter, B.A., Conn, P.J., Calipari, E.S. (2023). Accumbal D1 and D2 medium spiny neurons have distinct and valence-independent roles in learning. *Neuron*, 112(5), 835-849.
2. Dinckol, O., Wenger, N.H., Zachry, J.E., **Kutlu, M.G.\*** (2023). Nucleus accumbens core single cell ensembles bidirectionally respond to experienced versus observed aversive events. *Scientific Reports*, 13, 22602.
3. **Kutlu, M.G.**, Tat, J., Christensen, B.A., Zachry, J.E., Calipari, E.S. (2023). Dopamine release at the time of a predicted aversive outcome causally controls the trajectory and expression of conditioned behavior. *Cell Reports*, 42(8), 112948.
4. **Kutlu, M.G.#**, Zachry, J.E.#, Melugin, P.R.#, Tat, J., Cajigas, S.A., Isiktas, A., Siciliano., C.A., Schoenbaum, G., Sharpe, M.J., Calipari, E.S. (2022). Dopamine signaling in the nucleus accumbens core mediates latent inhibition. *Nature Neuroscience*, 25, 1071–1081.
  - a. Highlighted by Burton et al. (2022). “What does dopamine release reveal about latent inhibition?”, *Learning & Behavior*, 1-2.
5. **Kutlu, M.G.**, Zachry, J.E., Melugin, P.R., Cajigas, S.A., Chevee, M.F., Kelly, S.J., Kutlu, B., Tian, L., Siciliano., C.A., Calipari, E.S. (2021). Dopamine release in the nucleus accumbens core signals perceived saliency. *Current Biology*. 31(21), 4748-4761.
  - a. Highlighted by Chen & Bruchas (2021). “Neuromodulation: A model for dopamine in salience encoding”, *Current Biology*, 31(21).
  - b. Highlighted as Exceptional on Faculty Opinions (formerly F1000). Dalley J: Faculty Opinions Recommendation of [Kutlu MG et al., Curr Biol 2021]. In Faculty Opinions, 14 Oct 2021; 10.3410/f.740812110.793588838.

- c. Selected for the Brain & Behavior Research Foundation 2021 Leading Research Achievement, 28 Dec 2021.
6. Goldberg, L.R., **Kutlu, M.G.**, Zeid, D., Seemiller, L.R., and Gould, T.J. (2021). Systems genetic analysis of nicotine withdrawal deficits in hippocampus-dependent learning. *Gene, Brain and Behavior*, 20(6), e12734.
  7. Lopez, A., Johnson, A.R., Euston, T.J., Nolan, S.O., Brady, L.J., Thibeault, K.C., **Kutlu, M.G.**, Kelly, S.J., Kondev, V., Melugin, P., Chuang, E., Siciliano, C.A., Kiraly, D.D., Calipari, E.S. (2021). Cocaine self-administration induces sex-dependent protein expression in the nucleus accumbens. *Communications Biology*, 4(1), 1-13.
  8. Goldberg, L.R., Zeid, D., **Kutlu, M.G.**, Cole, R., Lallai, V., Sebastian, A., Albert, I., Fowler, C., Parikh, V., and Gould, T.J. (2021). Paternal nicotine enhances fear memory, reduces nicotine self-administration and alters hippocampal genetic and cholinergic function in subsequent generations. *Addiction Biology*, e12859
  9. **Kutlu, M.G.**<sup>#</sup>, Zachry, J.E.<sup>#</sup>, Brady, L., Melugin, P., L.J., Sanders, C., Tat, J., Johnson, A.R., Lopez, A., Siciliano, C.A., Calipari, E.S. (2020). A novel multidimensional reinforcement task in mice elucidates sex-specific behavioral strategies. *Neuropsychopharmacology*, 45(9), 1463-1472.
  10. Badimon, A., Strasburger, H.J., Ayata, P., Chen, X., Nair, A., Ikegami, A., Hwang, P., Chan, A.T., Graves, S.M., Uweru, O.J., Ledderose, C., **Kutlu, M.G.**, Wheeler, M.A., (...) Calipari, E.S., Kenny, P.J., Eyo, U., Colonna, M., Quintana, F.J., Wake, H., Gradinaru, V., Schaefer, A. (2020). Negative feedback control of neuronal activity by microglia. *Nature*, 586, 417-423.
  11. Lopez, A., Johnson, A.R., Kunnath, A.J., Zachry, J.E., Thibeault, K.C., **Kutlu, M.G.**, Siciliano, C.A., Calipari, E.S. (2021). An optimized procedure for robust volitional cocaine intake in mice. *Experimental and Clinical Psychopharmacology*, 29(4), 319.
  12. Cole, R., Zimmerman, M., Matchanova, A., **Kutlu, M.G.**, Gould, T.J., Parikh, V. (2020). Cognitive rigidity and BDNF-mediated frontostriatal glutamate neuroadaptations during spontaneous nicotine withdrawal. *Neuropsychopharmacology*, 45, 866-876.
  13. Johnson, A.R., Thibeault, K.C., Lopez, A., Peck, E.G., Sands, L.P., Sanders, M.C., **Kutlu, M.G.**, Calipari, E.S. (2019). Cues play a critical role in estrous cycle-dependent enhancement of cocaine reinforcement. *Neuropsychopharmacology*, 44(7), 1189-1197.
  14. Thibeault, K.C.<sup>#</sup>, **Kutlu, M.G.**<sup>#</sup>, Sanders, M.C., Calipari, E.S. (2019). Cell-type and projection-specific dopaminergic encoding of aversive stimuli in addiction. *Brain Research*, 1713, 1-15.
  15. Mervosh, N.L., Wilson, R., Rauniyar, N., Hofford, R.S., **Kutlu, M.G.**, Calipari, E.S., Lam, T.T., Kiraly, D.D. (2018). Granulocyte-colony stimulating factor alters the proteomic landscape of the ventral tegmental area. *Proteomes*, 6(4), 35.
  16. **Kutlu, M.G.**<sup>\*</sup>, Connor, D.A., Tumolo, J.M., Cann, C., Garret, B., & Gould, T.J. (2018). Nicotine modulates contextual fear extinction through changes in ventral hippocampal GABAergic function. *Neuropharmacology*, 142, 192-200.
  17. **Kutlu, M.G.**, Brady, L.J., Peck, E.G., Hofford R.S., Siciliano, C.A., Kiraly, D.D., Calipari, E.S. (2018). Granulocyte colony stimulating factor enhances reward learning through potentiation of mesolimbic dopamine system. *Journal of Neuroscience*, 38(41), 8845-8859.
  18. Zeid, D., **Kutlu, M.G.**, & Gould, T.J. (2018). Differential effects of nicotine exposure on the hippocampus across lifespan. *Current Neuropharmacology*, 16(4), 388-402.
  19. **Kutlu, M.G.**<sup>\*</sup>, Zeid, D., Tumolo, J.M., & Gould, T.J. (2018). Pre-adolescent and adolescent mice are less sensitive to the effects of acute nicotine on extinction and spontaneous recovery. *Brain Research Bulletin*, 138, 50-55.
  20. **Kutlu, M.G.**<sup>\*</sup>, Marin, M.<sup>#</sup>, Tumolo, J.M., Kaur, N., VanElzakker, M., Shin, S.M., & Gould, T.J. (2018). Nicotine exposure leads to deficits in differential fear conditioning in mice and humans: a potential role of the subgenual anterior cingulate cortex. *Neuroscience Letters*, 673, 142-149.
  21. **Kutlu, M.G.**<sup>\*</sup>, Cole, R., Connor, D.A., Natwora, B., & Gould, T.J. (2018). TrkB receptor activation reverses the impairing effects of acute nicotine on contextual fear extinction. *Journal of Psychopharmacology*, 32(3), 367-372.
  22. **Kutlu, M.G.**<sup>\*</sup>, Tumolo, J.M., Cann, C., & Gould, T.J. (2018). Differential effects of  $\alpha 4\beta 2$  nicotinic receptor antagonists and partial-agonists on contextual fear extinction in male C57BL/6 mice. *Psychopharmacology*, 235, 1211-1219.
  23. Oliver, C., **Kutlu, M.G.**, Zeid, D., & Gould, T.J. (2018). Sex differences in the effects of nicotine on contextual fear extinction. *Biochemistry, Pharmacology, and Behavior*, 165, 25-28.
  24. Tumolo, J.M., **Kutlu, M.G.**, & Gould, T.J. (2018). Chronic nicotine differentially alters spontaneous recovery of contextual fear in male and female mice. *Behavioural Brain Research*, 341, 176-180.

25. **Kutlu, M.G.\***, Garret, B., Gadiwalla, S., Tumolo, J.M., & Gould, T.J. (2017). Acute nicotine downregulates long-term memory-associated hippocampal kinases during contextual fear extinction. *Neurobiology of Learning and Memory*, *145*, 143-150.
26. Connor, D.A., **Kutlu, M.G.**, & Gould, T.J. (2017). Nicotine disrupts safety learning by enhancing fear associated with a safety cue via the dorsal hippocampus. *Journal of Psychopharmacology*, *31(7)*, 934-944.
27. Holliday, E., Nucero, P., **Kutlu, M.G.**, Oliver, C., Connelly, P., Unterwald, E., & Gould, T.J. (2016). Long-term effects of chronic nicotine on emotional and cognitive behaviors and hippocampus cell morphology in mice: comparisons of adult and adolescent exposure. *European Journal of Neuroscience*, *44(10)*, 2818-2828.
28. **Kutlu, M.G.**, & Gould, T.J. (2016). Effects of drugs of abuse on hippocampal plasticity and hippocampus-dependent learning and memory: contributions to development and maintenance of addiction. *Learning and Memory*, *23(10)*, 515-533.
29. **Kutlu, M.G.\***, Tumolo, J.M., Holliday, E., Garret, B., & Gould, T.J. (2016). Acute nicotine enhances spontaneous recovery of contextual fear and changes *c-fos* early gene expression in infralimbic cortex, hippocampus, and amygdala. *Learning and Memory*, *23(8)*, 405-414.
30. **Kutlu, M.G.\***, Oliver, C., Huang, P., Liu-Chen, L.Y., & Gould, T.J. (2016). Impairment of contextual fear extinction by chronic nicotine and withdrawal from chronic nicotine is associated with hippocampal nAChR upregulation. *Neuropharmacology*, *109*, 341-348.
31. **Kutlu, M.G.\***, Braak, D.C., Tumolo, J.M., & Gould, T.J. (2016). Adolescent mice are less sensitive to the effects of acute nicotine on context pre-exposure than adults. *Brain Research*, *1642*, 445-451.
32. Parikh, V., **Kutlu, M. G.**, & Gould, T. J. (2016). nAChR dysfunction as a common substrate for schizophrenia and comorbid nicotine addiction: Current trends and perspectives. *Schizophrenia Research*, *171 (1-3)*, 1-15.
33. **Kutlu, M. G.**, & Gould, T. J. (2016). Nicotinic modulation of hippocampal cell signaling and associated effects on learning and memory. *Physiology & Behavior*, *155*, 162-171.
34. **Kutlu, M. G.\***, Holliday, E., & Gould, T. J. (2016). High-affinity  $\alpha 4\beta 2$  nicotinic receptors mediate the impairing effects of acute nicotine on contextual fear extinction. *Neurobiology of Learning and Memory*, *128*, 17-22.
35. **Kutlu, M.G.**, & Gould, T.J. (2015). Nicotine modulation of fear memories and cellular substrates: Implications of learning and anxiety disorders. *Biochemical Pharmacology*, *97(4)*, 498-511.
36. Hall, B. J., Slade, S., Allenby, C., **Kutlu, M. G.**, & Levin, E. D. (2015). Neuro-anatomic mapping of dopamine D1 receptor involvement in nicotine self-administration in rats. *Neuropharmacology*, *99*, 689-695.
37. **Kutlu, M. G.**, Parikh, V., & Gould, T. J. (2015). Nicotine Addiction and Psychiatric Disorders. *International Review of Neurobiology*, *124*, 171-208.
38. Leach, T.L., Holliday, E., **Kutlu, M.G.**, & Gould, T.J. (2015). In C57BL/6J mice, withdrawal from chronic nicotine reduces thyroid hormone levels and levothyroxine treatment ameliorates nicotine withdrawal-induced deficits in hippocampus-dependent learning. *Nicotine & Tobacco Research*, *17(6)*, 690-696.
39. **Kutlu, M.G.#**, Ortega, L.A. #, & Gould, T.J. (2015). Strain-dependent performance in nicotine-induced conditioned place preference. *Behavioral Neuroscience*, *129(1)*, 37-41.
40. **Kutlu, M.G.\***, Oliver, C., & Gould, T.J. (2014). The effects of acute nicotine on contextual safety discrimination. *Journal of Psychopharmacology*, *28(11)*, 1064-1070.
41. Rosenthal, M.Z., & **Kutlu, M.G.** (2014). Translation of associative learning models into extinction reminders delivered via mobile phones during cue exposure interventions for substance use. *Psychology of Addictive Behaviors*, *28(3)*, 863-871.
42. **Kutlu, M.G.\***, & Gould, T.J. (2014). Acute nicotine delays extinction of contextual fear in mice. *Behavioural Brain Research*, *263*, 133-137.
43. **Kutlu, M. G.**, Burke, D., Slade, S., Hall, B. J., Rose, J. E., & Levin, E. D. (2013). Role of insular cortex D1 and D2 dopamine receptors in nicotine self-administration in rats. *Behavioural Brain Research*, *256*, 273-278.
44. **Kutlu, M.G.**, & Schmajuk, N.A. (2012). Solving Pavlov's puzzle: Attentional, associative and flexible configural mechanisms in classical conditioning. *Learning & Behavior*, *40*, 269-291.
45. **Kutlu, M.G.**, & Schmajuk, N.A. (2012). Deactivation and reactivation of the inhibitory power of a conditioned inhibitor: Testing the predictions of an attentional-associative model. *Learning & Behavior*, *40*, 83-97.
46. **Kutlu, M.G.**, & Schmajuk, N.A. (2012). Classical conditioning mechanisms can differentiate between seeing and doing in rats. *Journal of Experimental Psychology: Animal Behavior Processes*, *38(1)*, 84-101.
47. Schmajuk, N.A., & **Kutlu, M.G.** (2011). Latent inhibition and compound conditioning: A reply to Holmes and Harris (2009). *Journal of Experimental Psychology: Animal Behavior Processes*, *37(2)*, 254-260.

48. Schmajuk, N.A., & **Kutlu, M.G.** (2009). The computational nature of associative learning. *Behavioral Brain Science*, 32, 223-224.

### **Book Chapters**

1. **Kutlu, M. G.**, Holliday, E. & Gould, T. J. (2016). Genetic, developmental, and receptor level influences on nicotine withdrawal-associated deficits in learning. In F.S. Hall, J.W. Young; A. Der-Avakian (Eds.) *Negative Affective States and Cognitive Impairments in Nicotine Dependence* (pp. 53-69).
2. **Kutlu, M. G.**, & Gould, T. J. (2015). Nicotinic receptors, memory, and hippocampus. In D.J.K. Balfour & M.R. Munafo (Eds.) *The Neurobiology and Genetics of Nicotine and Tobacco* (pp. 137-163). Current Topics in Behavioral Neurosciences Vol. 23, Springer International Publishing Switzerland.
3. Schmajuk, N.A., & **Kutlu, M. G.** (2010). A computational model that provides an associative interpretation of outcome additivity and maximality effects on blocking. In E. Alonso and E. Mondragon (Eds.) *Computational Neuroscience for Advancing Artificial Intelligence: Models, Methods and Applications*. Hershey, PA: IGI Global.
4. Schmajuk, N.A., **Kutlu, M.G.**, Dunsmoor, J., & Larrauri, J.A. (2010). Attention, associations, and configurations in conditioning. In N.A. Schmajuk (Ed.), *Computational Models of Conditioning*. New York, N.Y.: Cambridge University Press.

### **Invited Talks and Seminars**

1. "Neural mechanisms supporting aversive and reward states in mice" Department of Neural Sciences Research Day Temple University LKSOM. *November 2024*.
2. "Nucleus accumbens dopamine release at the time of expected but omitted aversive events control safety learning". Pavlovian Society Annual Meeting 2024. *September 2024*.
3. "Accumbal dopamine release at the time of predicted but absent aversive outcomes causally controls safety learning". Neuro Japan 2024. *July 2024*
4. "Accumbal processes in reward and punishment: from dopamine terminals to single cell ensembles". Tufts University School of Medicine. *April 2024*.
5. "Accumbal processes in reward and punishment: from dopamine terminals to single cell ensembles". Lewis Katz School of Medicine at Temple University. *April 2024*.
6. "Accumbal dopamine controls learning of safety and danger". Rowan-Virtua SOM Research Day. *May 2023*.
7. "Dissecting the role of accumbal D1 and D2 medium spiny neurons in information encoding". Icahn School of Medicine at Mount Sinai, MSN Seminar Series. *September 2022*.
8. "Accumbal processes in reward and punishment: from dopamine terminals to single cell ensembles". Rowan University, Department of Cell Biology & Neuroscience Seminar Series. *August 2022*.
9. "Dissecting the role of accumbal D1 and D2 medium spiny neurons in information encoding". World Wide Neurise Seminar [virtual]. *February 2022*.
10. "The role of accumbal information encoding in safety learning and anxiety: Implications for anxiety and stress disorders". Rosalind Franklin University, Innovation Science Seminar. *January 2022*.
11. "Information encoding in the nucleus accumbens by dopamine and single cell clusters". University College London, Affective Brain Talk Series. *November 2021*.
12. "Accumbal D1 and D2 medium spiny neurons encode presence and prediction of behavioral outcomes". *Virtual Dopamine: The Future of Dopamine Symposium, November 2020*.
13. "Involvement of accumbal D1 and D2 medium spiny neurons in information encoding processes during associative learning". *Wake Forest School of Medicine, October 2020*.
14. "Behavioral and neural mechanisms of sex-specific valence encoding under conflict". *Building Interdisciplinary Research Careers in Women's Health (BIRCWH) Work in Progress, Vanderbilt University, September, 2020*.
15. "Valence-free information processing by dopamine release in the nucleus accumbens core". *Tucker-Davis Technologies (TDT) Fiber Photometry Talk Series, August 2020*.
16. "Evolution of a neural network model of general conditioning". *Cognitive and Neural Modeling Meeting, Nashville, TN, February 2020*.
17. "A novel framework of diametric stimulus encoding in the nucleus accumbens". *Vanderbilt University Psychology Department Neuroscience Brownbag Series, Nashville, TN, October 2019*.
18. "A novel framework of diametric stimulus encoding in the nucleus accumbens". *Vanderbilt University Pharmacology Department Seminar Series, Nashville, TN, September 2019*.
19. "Effects of nicotine on extinction of contextual fear: Implications for anxiety and stress disorders". *The Scripps Research Institute, Jupiter, FL, August 2017*.
20. "Evolution of an associative learning model: Deriving and testing predictions". *University of Wisconsin-Milwaukee, Milwaukee, WI, December 2012*.
21. "Evolution of an associative learning model: Deriving and testing predictions". *Mass General Hospital & Harvard Medical School, Boston, MA, November 2012*.

22. "Evolution of an associative learning model: Deriving and testing predictions". Temple University, Philadelphia, PA, November 2012.

### **Selected Conference Posters & Talks**

1. **Kutlu, M.G.** (2024). *Social threat perception is mediated by dorsal striatal acetylcholine release*. American College of Neuropsychopharmacology (ACNP) annual meeting, Phoenix, AZ.
2. **Kutlu, M.G.** (2024). *Dynamic cellular recruitment underlies stable stimulus-evoked activity patterns in the nucleus accumbens core*. Gordon Research Conferences Basal Ganglia Meeting, Ventura, CA.
3. **Kutlu, M.G.** (2023). *Nucleus accumbens core single cell ensembles bidirectionally respond to experienced versus observed aversive events*. Pavlovian Society Meeting, Austin, TX.
4. **Kutlu, M.G.** (2023). *Accumbal dopamine response to predicted but absent aversive outcomes causally controls safety learning*. Gordon Research Conferences Catecholamines Meeting, Barcelona, Spain.
5. **Kutlu, M.G.** (2022). *Dopamine release at the time of a predicted aversive outcome causally controls the trajectory and expression of conditioned behavior*. American College of Neuropsychopharmacology (ACNP) annual meeting, Phoenix, AZ. **[selected for "Hot Topics" oral presentation]**
6. **Kutlu, M.G.** (2022). *Functional Clusters of Accumbal Single Cells Encode Associative Learning*. Winter Conference on Brain Research (WCBR), Snowmass, CO. **[selected for oral presentation]**
7. **Kutlu, M.G.** (2022). *Nucleus accumbens core ensembles encode dynamic properties of associative learning*. Gordon Research Conferences Basal Ganglia Meeting, Ventura, CA.
8. **Kutlu, M.G.** (2021). *Dopamine release in the nucleus accumbens core signals valence-free perceived saliency*. International Behavioral Neuroscience (IBNS) meeting, Virtual. **[selected for oral presentation]**
9. **Kutlu, M.G.**, Zachry, J.E., Melugin, P., Isiktas, A.U., Calipari, E.S. (2020). *Novelty in the environment dictates dopamine release patterns in the nucleus accumbens core*. American College of Neuropsychopharmacology (ACNP) annual meeting, Virtual.
10. **Kutlu, M.G.** (2020). *Novelty in the environment dictates dopamine release patterns in the nucleus accumbens core*. Pavlovian Society meeting, Virtual.
11. **Kutlu, M.G.** (2020). *A novel computational framework for the role of nucleus accumbens dopamine in information processing*. Computational and Systems Neuroscience (Cosyne) meeting, Denver, CO.
12. **Kutlu, M.G.** (2020). *Valence-free information processing by dopamine release in the nucleus accumbens core*. Winter Conference on Brain Research (WCBR), Big Sky, MO. **[selected for oral presentation]**
13. **Kutlu, M.G.** (2019). *A novel framework of diametric stimulus encoding in the nucleus accumbens*. Gordon Research Conferences Catecholamines Meeting, Newry, ME. **[selected for oral presentation]**
14. **Kutlu, M.G.**, L.J., Peck, E.G., Siciliano, C.A., Kiraly, D.D., Calipari, E.S. (2018). *Granulocyte colony stimulating factor enhances reward learning through potentiation of mesolimbic dopamine system function*. Forum of Neuroscience (FENS), Berlin, Germany.
15. **Kutlu, M.G.**, Cole, R., Tumolo, J.T., Zeid, D., Parikh, V. & Gould, T.J. (2017). *Paternal nicotine exposure transgenerationally alters gene expression in the cholinergic signaling pathway*. Society for Neuroscience Meeting, Washington, D.C.
16. **Kutlu, M.G.**, Cole, R., Tumolo, J.T., Parikh, V. & Gould, T.J. (2017). *Paternal nicotine exposure transgenerationally alters fear learning and cholinergic function*. College on Problems of Drug Dependence, Montreal, Canada. **[selected for oral presentation]**
17. **Kutlu, M.G.**, Cole, R., Tumolo, J.T., Parikh, V. & Gould, T.J. (2017). *Transgenerational effects of paternal nicotine exposure on fear response and cholinergic function*. Society for Research on Nicotine and Tobacco Meeting, Florence, Italy. **[selected for oral presentation]**
18. **Kutlu, M.G.**, Cole, R., Tumolo, J.T., Parikh, V. & Gould, T.J. (2016). *Paternal nicotine exposure transgenerationally alters fear response and cholinergic function: potential epigenetic mechanisms*. NIDA Genetics Consortium Meeting, Rockville, MD.
19. **Kutlu, M.G.**, Cole, R., Tumolo, J.T., Parikh, V. & Gould, T.J. (2016). *Transgenerational effects of paternal nicotine exposure on fear response and cholinergic function*. Society for Neuroscience Meeting, San Diego, CA.
20. **Kutlu, M.G.**, Tumolo, J.T., Garrett, B., Holliday, E. & Gould, T.J. (2016). *Nicotinic acetylcholine receptors modulate contextual fear extinction through ventral hippocampal GABAergic signaling*. Pavlovian Society Meeting, Jersey City, NJ.
21. **Kutlu, M.G.**, & Oliver, C. (2015). *Effects of nicotine on extinction of contextual fear: Potential sex differences and implications for anxiety disorders*. Center for Substance Abuse Research (CSAR) Research in Progress Seminar Series, Philadelphia, PA.
22. **Kutlu, M.G.**, Holliday, E., & Gould, T.J. (2015). *Acute nicotine's enhancing effects on spontaneous recovery of contextual fear is associated with increased activity in the ventral hippocampus in mice*. Brain Preparedness Research Day, Philadelphia, PA.
23. **Kutlu, M.G.**, Holliday, E., & Gould, T.J. (2015). *High-affinity  $\alpha 4\beta 2$  nicotinic receptors are required for the impairing effects of acute nicotine on contextual fear extinction*. Society for Neuroscience Meeting, Chicago, IL.

24. **Kutlu, M.G.**, Holliday, E., & Gould, T.J. (2015). *Acute nicotine's enhancing effects on spontaneous recovery of contextual fear are associated with altered activity in the fear extinction circuitry in mice*. Gordon Research Conference/Seminar - Amygdala in Health & Disease, Easton, MA.
25. **Kutlu, M.G.** (2015). *Effects of nicotine on extinction and recovery of contextual fear: Implications for anxiety disorders*. Behavioral Neuroscience Science in Progress (SIP) Seminar Series, Philadelphia, PA.
26. **Kutlu, M.G.**, Holliday, E., & Gould, T.J. (2015). *Acute nicotine's enhancing effects on spontaneous recovery of contextual fear is associated with increased activity in the ventral hippocampus in mice*. Philadelphia Chapter of the Society for Neuroscience Meeting, Philadelphia, PA.
27. **Kutlu, M.G.**, Oliver, C., Cole, R., Connor, D., & Gould, T.J. (2015). *Acute, chronic, and withdrawal from nicotine impair extinction of contextual fear and a trkB agonist, 7,8DHF, ameliorates nicotine-induced impairment of extinction in mice*. Society for Research on Nicotine and Tobacco Meeting, Philadelphia, PA.
28. **Kutlu, M.G.**, Oliver, C., Cole, R., Connor, D., & Gould, T.J. (2014). *Acute, chronic, and withdrawal from nicotine impair extinction of contextual fear and a trkB agonist, 7,8DHF, ameliorates nicotine-induced impairment of extinction in mice*. Society for Neuroscience Meeting, Washington, D.C.
29. **Kutlu, M.G.**, & Gould, T.J. (2014). *An acute dose of nicotine delays extinction of contextual fear in mice*. Symposium on Substance Abuse in the 21st Century, Philadelphia, PA.
30. **Kutlu, M.G.**, Nichols, Z., Schmajuk, N.A., Larrauri, J., & Rosenthal, M.Z. (2012). *Evaluating the Timing of Extinction Reminders in a Nonclinical Sample: A Step Toward Enhancing Generalization of Learning*. ABCT 46th Annual Convention, National Harbor, MD
31. **Kutlu, M.G.**, Burke, D., Slade, S., Rose, J.E., and Levin, E.D. (2012). *Acute and Chronic Inhibition of Dopamine D1 Receptors in the Insular Cortex Decrease Nicotine Self-Administration in Rats*. Society for Neuroscience Meeting, New Orleans, LA.
32. **Kutlu, M.G.**, and Schmajuk, N.A. (2012). *Solving Pavlov's puzzle: Attentional, associative, and flexible configural mechanisms in classical conditioning*. Society of Computational Modeling of Associative Learning Meeting, Jersey City, NJ. [selected for oral presentation]
33. **Kutlu, M.G.**, and Schmajuk, N.A. (2012). *Associative mechanisms can differentiate between observation and intervention in rats*. Pavlovian Society Meeting, Jersey City, NJ.
34. **Kutlu, M.G.**, and Schmajuk, N.A. (2012). *Inhibitory After All: Context becomes inhibitory during extinction*. Pavlovian Society Meeting, Jersey City, NJ. **[selected for oral presentation]**
35. **Kutlu, M.G.**, and Schmajuk, N.A. (2012). *Associative mechanisms can differentiate between observation and intervention in rats*. North Carolina Cognition Group Meeting, Chapel Hill, NC. **[selected for oral presentation]**
36. **Kutlu, M.G.**, and Schmajuk, N.A. (2010). *An Attentional-Associative Model of Extinction*. Pavlovian Society Meeting, Baltimore, MD. **[selected for oral presentation]**

### Teaching Experience

- **Instructor** – Learning and Adaptive Behavior (PSY111/BIO167) – Duke University 2012
- **Lecturer** – Research Topics in Neurobiology – Rowan University 2024
- Guest Lecturer – Intro to Psych for Honors Students – New Jersey Institute of Technology 2022
- Guest Lecturer – Learning & Adaptive Behavior – Duke University 2012
- Teaching Assistant – Learning & Adaptive Behavior – Duke University 2011
- Teaching Assistant – Cognitive Psychology – Duke University 2011
- Teaching Assistant – The Biological Bases of Behavior – Duke University 2010
- Teaching Assistant – Introduction to Psychology – Duke University 2010
- Guest Lecturer – Animal Cognition and Learning – Duke University 2010

### Outreach

#### **Mentoring high school students for lab experience:**

2018-2020 – Charlie Rost, School for Science and Math at Vanderbilt

### Student Mentorship / Research Training

- 2023 – present – Oyku Dinckol, Rowan-Virtua SOM, Post-doctoral Researcher
- 2023 – present – Noah Wenger, Rowan-Virtua SOM, Research Technician
- 2024 - Taylor Good, Rowan-Virtua SOM, Summer Graduate Student
- 2024 - Jake Caselli, Rowan-Virtua SOM, Summer Undergraduate Student
- 2021-2022 – Jennifer Tat, Vanderbilt University, Research Technician
- 2019-2021 – Amanda Waters, Vanderbilt University, Graduate Student
- 2019-2020 – Atagun Isiktas, Yale University postgraduate student
- 2019-2020 – Shannon Kelly, Belmont University, Exchange Undergraduate Researcher



- 2018-2020 – Sophie Halper, Vanderbilt University, Undergraduate Researcher
- 2018-2019 – Ashley Hendricks, Vanderbilt University, Undergraduate Researcher
- 2018-2019 – Ryley Guay, Vanderbilt University, Undergraduate Researcher
- 2018-2019 – Christina Sanders, Vanderbilt University, Undergraduate Researcher (NIDA post-bac)
- 2016-2017 – Courtney Cann, Penn State University, Undergraduate Researcher (NIDA post-bac)
- 2015-2016 – David Braak, Temple University, Undergraduate Researcher (MUSC, Medical School)
- 2014-2016 – Jessica Tumolo, Temple University, Undergraduate Researcher (Industry)
- 2014-2016 – Brendan Garrett, Temple University, Undergraduate Researcher (Industry)
- 2014-2015 – Aiste Cechaviciute, Temple University, Undergraduate Researcher
- 2011-2013 – Aadya Deshpande, Duke University, Undergraduate Researcher