GERGELY F. TURI, Ph.D.

New York State Psychiatric Institute
1051 Riverside Drive
Kolb bld. Rm 419
New York, NY, 10032, USA

(646) 774-5027
gt2253@cumc.columbia.edu
https://gergelyturi.github.io

Education

Eötvös Loránd University, Budapest, Hungary, 1998-2003
MSc in Biology

Semmelweis University, Budapest, Hungary 2003-2008
Ph.D. in Neuroendocrinology

Employment

New York State Psychiatric Institute 2016 – present
Research Scientist IV.

Columbia University, New York 2023 – present
Adjunct Assistant Professor in the Department of Psychiatry

Columbia University Medical Center, New York 2010 – 2016
Postdoctoral Research Fellow
Laboratory of Attila Losonczy

Institute of Experimental Medicine, Budapest, Hungary 2008 - 2010
Postdoctoral Research Fellow
Laboratory of Balázs Rózsa/Femtonics

Institute of Experimental Medicine, Budapest, Hungary 2003 - 2008
Undergraduate/ Graduate student
Laboratory of Zsolt Liposits

Rutgers University, Newark, USA. 09/2004-12/2004
Short Term Scholar
Laboratory of Laszlo Zaborszky

RESEARCH SUPPORT:

Ongoing Research Support

Investigating the neuronal mechanisms of PTSD and anxiety at the subcellular and network levels 01/15/2021 – 07/14/2023
BRAIN & BEHAVIOR RESEARCH FOUNDATION
YOUNG INVESTIGATOR GRANT
Role: Principal Investigator

The major goal of this grant is to investigate the neuronal mechanisms of PTSD and anxiety at the subcellular and network levels

Fear generalization after traumatic experience in the dentate gyrus 09/17/2020 – 08/31/2023

NIH/National Institute of Mental Health – R21 MH122965-01A1
Role: Principal Investigator

The major goal of this project is to identify the neuronal correlate of fear generalization in mossy cells and serotonergic axons in the dentate gyrus

Uncovering Neural Substrates of Diminished Temporal Binding Capacity in Aging 09/30/2022 – 06/30/2023

NIH/National Institute of Aging – R21AG079025
Role: Co-investigator

This project will identify aging-associated alterations in brain activity functions supporting temporal binding capacity with the long-term aim of identifying potential targets to slow or alleviate cognitive and emotional impairments in aging and aging-associated neuropsychiatric disorders.

REU Site - Developmental Neuroscience PENDING 03/01/2023 – 03/01/2026

National Science Foundation
Role: Co-PI

This training grant aims to provide mentored summer research experience for a diverse cohort of undergraduate students.

Sleep-induced slow oscillation in the dentate gyrus PENDING 07/01/2023 – 06/30/2028

NIH/National Institute of Neurological Disorders and Stroke – R01
Role: Multi-PI

The aim of this grant is to reveal the role of a newly discovered ultra-slow oscillation in the dentate gyrus on memory consolidation during sleep.

LIST OF PUBLICATIONS

PEER-REVIEWED:

2022

1. Clay Lacefield, Hongtao Cai, Huong Ho, Carla Dias, Hannah Chung, René Hen, **Gergely F. Turi**. Open-Source Virtual Reality System for the Measurement of Spatial Learning in Head-Restrained Mice. 2022; Journal of Visualized Experiments;
Accepted for publication

2021

2. Tuncdemir SN, Grosmark AD, **Turi GF**, Shank A, Bowler JC, Ordek G, Losonczy A, Hen R, Lacefield CO. Parallel processing of sensory cue and spatial information in the dentate gyrus. Cell Rep. 2022 Jan 18;38(3):110257. doi: 10.1016/j.celrep.2021.110257. PMID: 35045280; PMCID: PMC8918037.

2020

3. Troullinou, Eirini; Tsagkatakis, Grigorios; Chavlis, Spyridon; **Turi, Gergely F.**; Li, Wenke; Losonczy, Attila; Tsakalides, Panagiotis; Poirazi, Panayiota (2021). "Artificial Neural Networks in Action for an automated Cell-Type Classification of Biological Neural Networks." IEEE Transactions on Emerging Topics in Computational Intelligence 5(5): 755-767.

2019

4. Mehta P, Kreeger L, Wylie DC, Pattadkal JJ, Lusignan T, Davis MJ, Turi GF, Li WK, Whitmire MP, Chen Y, Kajs BL, Seidemann E, Priebe NJ, Losonczy A, Zemelman BV. Functional Access to Neuron Subclasses in Rodent and Primate Forebrain. Cell Rep. 2019 Mar 5;26(10):2818-2832.e8. doi: 10.1016/j.celrep.2019.02.011. PubMed PMID: 30840900.

5. **Gergely F. Turi***, Wen-Ke Li*, Spyridon Chavlis, Panagiotis Bozelos, Ioanna Pandi, Justin O'Hare, James B. Priestley, Andres D. Grosmark, Zhenrui Liao, Max Ladow, Jeff F. Zhang, Boris V. Zemelman, Panayiota Poirazi and Attila Losonczy. Vasoactive Intestinal Polypeptide-Expressing Interneurons in the Hippocampus Support Goal-Oriented Spatial Learning. Neuron. 2019 Jan 18. pii: S0896-6273(19)30010-8. doi:10.1016/j.neuron.2019.01.009. [Epub ahead of print] PubMed PMID: 30713030.
(* contributed equally)

2018

6. Mary J. Donahue, Attila Kaszás, **Gergely F. Turi**, Balázs Rózsa, Andrea Slézia, Ivo Vanzetta, Gergely Katona, Christophe Bernard, George G. Malliaras and Adam Williamson. Multimodal Characterization of Neural Networks using Highly Transparent Electrode Arrays. eNeuro. 21 December 2018, ENEURO.0187-18.2018; DOI: https://doi.org/10.1523/ENEURO.0187-18.2018

7. Dénes Pálfi, Balázs Chiovini, Gergely Szalay, Attila Kaszás, **Gergely F. Turi**, Gergely Katona, Péter Ábrányi-Balogh, Milán Szőri, Attila Potor, Orsolya Frigyesi, Csilla Lukácsné Haveland, Zoltán Szadai, Miklós Madarász, Anikó Vasanits-Zsigrai, Ibolya Molnár-Perl, Béla Viskolcz, Imre G. Csizmadia, Zoltán Mucsi and Balázs Rózsa. High efficiency two-photon uncaging coupled by the correction of spontaneoushydrolysis. Org Biomol Chem. 2018 Mar 14;16(11):1958-1970. doi: 10.1039/c8ob00025e.

2017

8. Nathan B. Danielson*, **Gergely F. Turi***, Max Ladow, Spyridon Chavlis, Panagiotis C Petrantonakis, Panayiota Poirazi, Attila Losonczy. *In Vivo* Imaging of Dentate Gyrus Mossy Cells in Behaving Mice. Neuron. 2017 Feb 8;93(3):552-559.e4. doi: 10.1016/j.neuron.2016.12.019. Epub 2017 Jan 26.
(* contributed equally)

2016

9. Tommy L Lewis Jr, **Gergely F. Turi**, Seok-Kyu Kwon, Attila Losonczy, Franck Polleux. Progressive Decrease of Mitochondrial Motility during Maturation of Cortical Axons *In Vitro* and *In Vivo*. Curr Biol. 2016 Oct 10;26(19):2602-2608. doi: 10.1016/j.cub.2016.07.064. Epub 2016 Sep 15.

10. Thomas R. Reardon, Andrew J. Murray, **Gergely F. Turi**, Christoph Wirblich, Katherine R. Croce, Matthias J. Schnell, Thomas M. Jessell, Attila Losonczy (2016) Rabies Virus CVS-N2c(ΔG) Strain Enhances Retrograde Synaptic Transfer and Neuronal Viability. Neuron. 89(4):711-24.

2015

11. **Gergely F. Turi**, Gábor Wittmann, Ronald M. Lechan and Attila Losonczy (2015) Ambient GABA modulates septo-hippocampal inhibitory terminals via presynaptic GABAb receptors. Neuropharmacology 88C: 55-62 Oct.

2014

12. Christine A Denny, Mazen A Kheirbek, Eva L Alba, Kenji F Tanaka, Rebecca A Brachman, Kimberly B Laughman, Nicole K Tomm, **Gergely F. Turi**, Attila Losonczy, René Hen (2014) Hippocampal memory traces are differentially modulated by experience, time, and adult neurogenesis. Neuron 83: 1. 189-2014 Jul.

13. Balázs Chiovini*, **Gergely F. Turi***, Gergely Katona, Attila Kaszás, Dénes Pálfi, Pál Maák, Gergely Szalay, Mátyás Forián Szabó, Gábor Szabó, Zoltán Szadai, Szabolcs Káli, Balázs Rózsa (2014) Dendritic Spikes Induce Ripples in Parvalbumin Interneurons during Hippocampal Sharp Waves. Neuron 82: 4. 908-924 May.
(* contributed equally)

14. Matthew Lovett-Barron, Patrick Kaifosh, Mazen A Kheirbek, Nathan Danielson, Jeffrey D Zaremba, Thomas R Reardon, **Gergely F. Turi**, René Hen, Boris V Zemelman, Attila Losonczy (2014) Dendritic inhibition in the hippocampus supports fear learning. Science (New York, N.Y.) 343: 6173. 857-863 Feb.

2013

15. Patrick Kaifosh, Matthew Lovett-Barron, **Gergely F. Turi**, Thomas R Reardon, Attila Losonczy (2013) Septo-hippocampal GABAergic signaling across multiple modalities in awake mice. Nature neuroscience 16: 9. 1182-1184 Sep.

2012

16. F Bolze, J -F Nicoud, C Bourgogne, S Gug, X H Sun, M Goeldner, A Specht, L Donato, D Warther, **Gergely F. Turi**, A Losonczy (2012) Two-photon uncaging: The chemist point of view Optical Materials 34: 10. 1664-1669 08.

17. M Lovett-Barron, **Gergely F. Turi**, P Kaifosh, P H Lee, F Bolze, X H Sun, J F Nicoud, B V Zemelman, S M Sternson, A Losonczy (2012) Regulation of neuronal input transformations by tunable dendritic inhibition Nat Neurosci 15: 3. 423-30, 03.

18. Attila Heinrich, Romeo D. Andó, **Gergely F. Turi**, Balázs Rózsa, Beáta Sperlágh (2012) K+ depolarization evokes ATP, adenosine and glutamate release from glia in rat hippocampus: a microelectrode biosensor study. British journal of pharmacology 167: 5. 1003-1020 Nov.

2011

19. Gergely Katona, Attila Kaszás, **Gergely F. Turi**, Norbert Hajos, Gábor Tamas, Szilveszter E. Vizi, Balázs Rózsa (2011) Roller Coaster Scanning reveals spontaneous triggering of dendritic spikes in CA1 interneurons Proc Natl Acad Sci U S A 108: 5. 2148-53 02.

2010

20. Balázs Chiovini, **Gergely F. Turi**, Gergely Katona, Attila Kaszás, Ferenc Erdelyi, Gábor Szabo, Hannah Monyer, Attila Csákányi, Szilveszter E. Vizi, Balázs Rózsa (2010) Enhanced dendritic action potential backpropagation in parvalbumin-positive basket cells during sharp wave activity Neurochem Res 35: 12. 2086-95 12.

2008

21. **Gergely F. Turi**, Zsolt Liposits, Erik Hrabovszky (2008) Cholinergic afferents to gonadotropin-releasing hormone neurons of the rat Neurochemistry International 52: 4-5. 723-728 03.

2007

22. Erik Hrabovszky, Levente Deli, **Gergely F. Turi**, Imre Kallo, Zsolt Liposits (2007) Glutamatergic innervation of the hypothalamic median eminence and posterior pituitary of the rat Neuroscience 144: 4. 1383-1392 02.

2006

23. Erik Hrabovszky, Imre Kallo, **Gergely F. Turi**, Katalin May, Gábor Wittmann, Csaba Fekete, Zsolt Liposits (2006) Expression of vesicular glutamate transporter-2 in gonadotrope and thyrotrope cells of the rat pituitary. Regulation by estrogen and thyroid hormone status Endocrinology 147: 8. 3818-3825 08.

24. Erik Hrabovszky, Agnes K. Csapo, Imre Kallo, Tamas Wilheim, **Gergely F. Turi**, Zsolt Liposits (2006) Localization and osmotic regulation of vesicular glutamate transporter-2 in magnocellular neurons of the rat hypothalamus Neurochemistry International 48: 8. 753-761 06.

2005

25. Erik Hrabovszky, Gábor Wittmann, **Gergely F. Turi**, Zsolt Liposits, Csaba Fekete (2005) Hypophysiotropic thyrotropin-releasing hormone and corticotropin-releasing hormone neurons of the rat contain vesicular glutamate transporter-2 Endocrinology 146: 1. 341-347 01.

26. Erik Hrabovszky, **Gergely F. Turi**, Zsolt Liposits (2005) Presence of vesicular glutamate transporter-2 in hypophysiotropic somatostatin but not growth hormone-releasing hormone neurons of the male rat European Journal of Neuroscience 21: 8. 2120-2126 04.

2004

27. Sarah Threlfell, Stephanie J Cragg, Imre Kallo, **Gergely F. Turi**, Clive W. Coen, Sarah A. Greenfield (2004) Histamine h3 receptors inhibit serotonin release in substantia nigra pars reticulata Journal of Neuroscience 24: 40. 8704-8710 10.

28. Erik Hrabovszky, **Gergely F. Turi**, Imre Kallo, Z Liposits (2004) Expression of vesicular glutamate transporter-2 in gonadotropin-releasing hormone neurons of the adult male rat Endocrinology 145: 9. 4018-4021 09.

2003

29. **Gergely F. Turi**, Zsolt Liposits, Suzanne M. Moenter, Csaba Fekete, Erik Hrabovszky (2003) Origin of neuropeptide Y-containing afferents to gonadotropin-releasing hormone neurons in male mice Endocrinology 144: 11. 4967-4974 11.

Pre-prints:

1. Sebnem N Tuncdemir, Andres D Grosmark, **Gergely F. Turi**, Amei Shank, Jack Bowler, Gokhan Ordek, Attila Losonczy, Rene Hen, Clay O Lacefield. Parallel processing of sensory cue and spatial information in the Dentate Gyrus, BioRxiv; doi: https://doi.org/10.1101/2020.02.13.947903 (2021)

INTERNATIONAL PATENTS

1. Method and measuring system for scanning multiple regions of interest E. Szilveszter Vizi, Gergely Katona, J. Balázs Rózsa, Attila Kaszás, **Gergely F. Turi** US 20110279667; EP2187252; WO/2010/055361; PCT/HU2009/000094

SELECTED PRESENTATIONS

1. *In vivo* imaging dentate gyrus principal neuron subpopulations during navigation and learning – Society for Neuroscience, Annual Meeting, 2017

2. Role of hippocampal VIP interneurons in reward-oriented spatial learning – Society for Neuroscience, Annual Meeting, 2017

THESIS:

Gergely, F. T. (2007). *Implication of novel neurotransmitter systems in the regulation of gonadotropin - releasing hormone neurons* *http://semmelweis.hu/wp-content/phd/phd_live/vedes/export/turigergely.e.pdf*

FELLOWSHIPS AND AWARDS:

Deciphering neuronal encoding in the dentate gyrus during anxiety Columbia University, Dept. of Psychiatry – Chairman's Collaborative Pilot Awards Role: PI	2018
New combined femto-chemical, nonlinear microscopy technology for drug and neurotransmitter effect screening with unprecedented spatial and temporal resolution Pfizer R&D Award, Hungary Role: Co-PI	2010
Travel grant of the German Neuroscience Society	2010
IBRO Travel Grant	2010
FENS-CEERC Travel Grant	2008
XXVI. National Council of Student Research Societies, Neuroscience section, 2nd place, Szeged, Hungary	2003

TEACHING EXPERIENCE:

09/1997 – 06/1998: Teaching Assistant at Mihály Babits High School (Budapest, Hungary)

PROFESSIONAL MEMBERSHIPS AND POSTIONS:

Society for Neuroscience - member
2023 – International Society for Serotonin Research - member
2016 – present Head of the Preclinical Imaging Core at New York State Psychiatric Institute
2020 – *ad hoc* reviewer, NIH – Neurobiology of Motivated Behavior study section

ADVISING AND MENTORSHIP

Turi lab
2022/09 – present Trang Phan, Barnard College, Senior thesis advisor
2022 – present Stephanie Lee, Columbia University, undergrad researcher
2021 – present Carla Dias, Princeton Univ., Research Assistant
2021 – present Isla Weber, Princeton Univ., Research Assistant, Senior thesis advisor. Currently: Scientist at Lorentz Bio
2022/06 – 08 Chinaza Onwukanjo; High School Student intern (BRAINYAC program).
2022/06 – 08 Aliza Hacking; Summer intern.
2021 – 2022 Huong Ho, New York Institute of Technology, undergrad researcher. Currently at Vaughn College of Aeronautics and Technology
2020 – 2022 Pallavi Pareek, undergrad researcher, Drexel Univ.
2020 – 2022 Nicola Sheybani, Barnard College, undergrad researcher, Senior thesis advisor. Currently: Analyst at Morgan Stanley
2018 – 2020 Rehnuma Khan, undergrad researcher/Research Assistant. Currently: Albert Einstein College of Medicine
2020 – 2022 Hongtao Cai, Columbia University, Columbia Engineering, undergrad researcher. Currently Semiconductor Test Engineer at Allegro Microsystems
2021/06 – 2021/08 Robina Afzal, Emory Univ., Summer Intern.
2020 – 2021 Zvi Goldstein, Columbia University, Columbia Engineering, undergrad researcher. Currently: Biomedical Engineer at PathAI
2019 – 2021 Colin Payne-Rogers, Columbia University, undergrad researcher. Currently: senior software engineer at Cedar

2020 – 2021 Siyuan Lu, Columbia University, undergrad researcher
2019 – 2020 Angelica Prastiti, Barnard College, undergrad researcher, currently in dental school at Universidad Europea (Spain)

Other training and mentorship activities
2016 – 2022 Sebnem Tuncdemir, Current position: PI at University of Connecticut
2016 – 2021 Jack Berry, Current position: MD-PhD student in Dr. René Hen's lab
2016 – 2019 Jeff Zhang, Current position: Medical student, Jacobs School of Medicine at University of Buffalo
2010 – 2016 Nathan Danielson, Current position: Research Science Manager at Meta
2010 – 2016 Jeff Zaremba, Current position: Senior Data Scientist at Zoox
2010 – 2016 Joseph Tsai, rotation and graduate student
2013 – 2016 Alexandra Kaufman, Current position: Postdoctoral Scientist at Regeneron
2013 – 2016 Sebastian Rolotti, Current position: Research Scientist at Meta
2015 – 2017 Max Ladow, Current position: PhD student in Kheirbek lab at UCSF
2015 – 2018 Zhenrui Liao, Current position: MD-PhD student in Losonczy lab, Columbia University
2014 – 2016 Alyson Lowell, Current position: PhD student, CUNY Stony Brook
2012 – 2013 Anna Sarfaty
2008 – 2010 Balázs Chiovini, Current position: researcher in Dr. Balazs Rózsa's lab
2008 – 2010 Gergely Szalay, Current position: Head of Biological Research Department at Femtonics