



New York State Psychiatric Institute
1051 Riverside Drive
Kolb bld. Rm 815
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 2022 – present
Adjunct Assistant Professor in the Department of
Psychiatry

Research Foundation for Mental Hygiene 2022 – present
Research Scientist V.

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

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

Institute of Experimental Medicine, Budapest, 2003 - 2008
Hungary
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

Uncovering Neural Substrates of Diminished Temporal Binding Capacity in Aging 09/30/2022 –
06/30/2024

NIH/National Institute of Aging – R21AG079025
Role: PI

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.

The impact of sleep fragmentation on memory dysfunctions in neuropsychiatric disorders

06/01/2023 –
05/31/2024

Columbia Precision Medicine
Role: Co-PI

The aim of this proposal is to investigate how fragmented sleep patterns affect memory consolidation at the population and network level in a neuroendocrine mouse model of chronic stress.

Pending Research Support

REU Site: Developmental Neuroscience
Role: Co-PI

Pending

Completed

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

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

LIST OF PUBLICATIONS

PEER-REVIEWED:

2023

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. *Journal of Visualized Experiments*; 2023 Mar 3;(193). doi: 10.3791/64863.

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; Tsagakatakis, 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 Vasánits-Zsigrai, Ibolya Molnár-Perl, Béla Viskolcz, Imre G. Csizmadia, Zoltán Mucsi and Balázs Rózsa. High efficiency two-photon uncaging coupled by the correction of spontaneous hydrolysis. *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(Δ G) 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 GABA_B 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 Bourgoigne, 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 Sperlággh (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 Wilhelm, **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. **Gergely F. Turi***, Xinyue Chen, Sasa Teng, Emily CY Lim, Carla Dias, Ruining Hu, Fenghua Zhen, Yueqing Peng*. Modulation of infraslow oscillation in the dentate gyrus during Non-NREM sleep. (2023) doi: <https://doi.org/10.1101/2023.05.12.540575>
2. 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) (Published)

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

TALKS

1. Positive vs. negative context mediates the effects of psilocybin on acute anxiety circuit activation and long-term anxiety-like behaviors in mice – *Psychedemia* 2022 (Talk given by I. Weber) ISLA WEBER, Carla Dias, Sean Lim, Jack Berry, René Hen, Gergely Turi

2. *In vivo* imaging dentate gyrus principal neuron subpopulations during navigation and learning – Society for Neuroscience, Annual Meeting, 2017
3. 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/turigergerely.e.pdf

POSTER PRESENTATIONS (PAST 3 YEARS)

1. 2023 Annual meeting of International Society for Serotonin Research
 - Contextual valence-dependent effect of psilocybin on Arc immediate early gene expression and anxiety behavior in mice.
Isla Weber, Carla Dias, Sean Lim, Jack Berry, Christine Ann Denny, Rene Hen, Gergely F. Turi
 - Modulation of ultra-slow calcium oscillation in the dentate gyrus during Non-REM sleep
Gergely F. Turi*, Xinyue Chen, Sasa Teng, Fenghua Zhen, Yueqing Peng*
2. SFN 2022
 - Acute and long-term effects of positive vs. negative context during psilocybin administration on anxiety circuits and behaviors
Isla Weber, Carla Dias, Sean Lim, Jack Berry, Rene Hen, Gergely Turi
3. SFN 2021
 - Behavioral consequences of a traumatic experience in mice
I. D. B. WEBER, R. HEN, G. F. TURI

FELLOWSHIPS AND AWARDS:

<i>Deciphering neuronal encoding in the dentate gyrus during anxiety</i>	2018
Columbia University, Dept. of Psychiatry – Chairman’s Collaborative Pilot Awards Role: PI	
<i>New combined femto-chemical, nonlinear microscopy technology for drug and neurotransmitter effect screening with unprecedented spatial and temporal resolution</i>	2010
Pfizer R&D Award, Hungary Role: Co-PI	
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

2023/08 – present Yuecheng Shi, Research Assistant

2019 – 2021, 2023/09 – present Colin Payne-Rogers, Columbia University, undergrad researcher

2023/06 – present Emma Ference, Barnard College, undergrad researcher

2022 – present Stephanie Lee, Columbia University, undergrad researcher

2023/01 – 2023/12 Hayley Judice, Hofstra University, undergrad researcher

2023/02 – 2023/06 Binny Naik, Columbia University, undergrad researcher

2021 – 2023/06 Carla Dias, Princeton Univ., Research Assistant. Currently at Cornell School of Medicine

2021 – 2023 Isla Weber, Princeton Univ., Research Assistant, Senior thesis advisor. Currently: Scientist at Lorentz Bio

2022/09 – 2023/06 Trang Phan, Barnard College, Senior thesis advisor

2022/06 – 2022/08 Chinaza Onwukanjo; High School Student intern (BRAINYAC program).

2022/06 – 2022/08 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 Rehnema 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. Currently Associate Researcher in the Cray lab

2020 – 2021 Zvi Goldstein, Columbia University, Columbia Engineering, undergrad researcher.

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