

Curriculum Vitae

MANUEL KUHN

Date Prepared: 05/22/2023
Name: Manuel Kuhn
Office Address: 233B, de Marneffe Building, McLean Hospital, 115 Mill St, Belmont, MA 02478
Work Phone: +1 (617) 855-4405
Work Email: mkuhn@mclean.harvard.edu
Place of Birth: Dresden, Germany

Education:

10/2005 – 09/2007		Media Computer Science	Technical University of Dresden, Germany
10/2007 – 03/2013	Mag. rer. nat. (summa cum laude)	Psychology (<i>Advisors:</i> <i>Lukas Pezawas, MD</i> <i>Claus Lamm, PhD</i>)	University of Vienna, Austria
04/2013 – 08/2017	Dr. rer. hum. biol. (magna cum laude)	Human Biology (<i>Advisors:</i> <i>Tina B. Lonsdorf, PhD</i> <i>Christian Büchel, MD</i>)	Institute for Systems Neuroscience, Medical University Center Hamburg- Eppendorf, Germany

Postdoctoral Training:

09/2017 – 06/2019	Post-doctoral Associate	Research group Fear, Anxiety & Stress (<i>PI: Tina B. Lonsdorf, PhD</i>)	Institute for Systems Neuroscience, Medical University Center Hamburg- Eppendorf, Germany
07/2019 – 05/2020	Post-doctoral Associate	Affective & Translational Neuroscience Laboratory (<i>PI: Alexander J. Shackman, PhD</i>)	University of Maryland
06/2020 – 06/2022	Post-doctoral Fellow	Laboratory for Affective and Translational Neuroscience (<i>PI: Diego A. Pizzagalli, PhD</i>)	Center for Depression, Anxiety and Stress Research, McLean Hospital / Harvard Medical School

Faculty Academic Appointments (double check format):

07/2022 – Instructor, Department of Psychiatry, Harvard Medical School
present

Appointments at Hospitals/Affiliated Institutions (check titles):

06/2020 – Research Fellow PhD Laboratory for Affective and Translational Neuroscience
06/2022 (PI: Diego A. Pizzagalli, PhD) Center for Depression, Anxiety and Stress Research, McLean Hospital / Harvard Medical School

07/2022 – Assistant Neuroscientist Laboratory for Affective and Translational Neuroscience
present (PI: Diego A. Pizzagalli, PhD) Center for Depression, Anxiety and Stress Research, McLean Hospital / Harvard Medical School

Major Administrative Leadership Positions:**Local**

2022 – Director, Neuroimaging and Instrumentation Core, Laboratory for Affective and
present Translational Neuroscience, McLean Hospital

Other Professional Positions:

2007-2012 Research Assistant Vienna University of Technology
2009-2010 Research Assistant University of Vienna
2011-2013 Research Assistant Medical University of Vienna

Professional Societies:

2014 Organization for Human Brain Mapping (OHBM) Student Member
2015- The German Psychological Society (DGPs; Member
present Section: Biological Psychology and Neuropsychology)
2015- Research network for the (European) Member
present Interdisciplinary study of Fear and Extinction Learning as well as the Return of Fear (EIFEL-ROF)
2016 Society for Neuroscience (SfN) Student Member

Editorial Activities:

Ad hoc Reviewer

Biological Psychiatry: CNNI
International Journal of Psychophysiology
PLOS One
Psychophysiology
Scientific Reports
Social, Cognitive and Affective Neuroscience
Translational Psychiatry

Honors and Prizes:

2010	Joint study program	University of Vienna / University of Urbana- Champaign, IL	Academic success
2011	Performance scholarship	University of Vienna	Academic success
2012	Performance scholarship	University of Vienna	Academic success
2015	Poster award	The German Psychological Society (DGPs)	Research
2017	Poster award	World Association for Stress Related and Anxiety Disorders	Research

Report of Funded and Unfunded Projects

Current

2023-2024
(start 06/23) A combined investigation of the protective impact of the NOF/Q antagonist LY-2940094 on stress-induced depression- and anxiety-related phenotypes in humans. Eric Dorris Memorial Fellowship (competitive local selection process).
Principal Investigator
This project elucidates the role of the nociceptin system on depression- and fear-related phenotypes within the same individual to determine a potential dissociable impact of a nociceptin antagonist on emotional disorders.

Report of Regional, National and International Invited Teaching and Presentations

No presentations below were sponsored by 3rd parties/outside entities
 Those presentations below sponsored by outside entities are so noted and the sponsor(s) is (are) identified.

National

2013 SFB TRR-58 PhD Student Research Symposium / plenary talk
Marktbreit, Germany

2014 SFB TRR-58 PhD Student Research Symposium / plenary talk
Bad Gandersheim, Germany

- 2014 Annual SPM course / workshop host tutoring beginner and expert groups neuroimaging analyses using SPM
Institute for Systems Neuroscience
University Medical Center Hamburg-Eppendorf, Hamburg, Germany
- 2014 Annual MATLAB course / workshop host tutoring beginner groups MATLAB
Institute for Systems Neuroscience
University Medical Center Hamburg-Eppendorf, Hamburg, Germany
- 2015 Annual SPM course / workshop host tutoring beginner and expert groups neuroimaging analyses using SPM
Institute for Systems Neuroscience
University Medical Center Hamburg-Eppendorf, Hamburg, Germany
- 2015 Annual MATLAB course / workshop host tutoring beginner groups MATLAB
Institute for Systems Neuroscience
University Medical Center Hamburg-Eppendorf, Hamburg, Germany
- 2016 Annual SPM course / workshop host tutoring beginner and expert groups neuroimaging analyses using SPM
Institute for Systems Neuroscience
University Medical Center Hamburg-Eppendorf, Hamburg, Germany
- 2016 Annual MATLAB course / workshop host tutoring beginner groups MATLAB
Institute for Systems Neuroscience
University Medical Center Hamburg-Eppendorf, Hamburg, Germany
- 2016 Mismatch or Allostatic Load? Timing of Life-adversity Differentially Shapes Gray Matter Volume and Anxious Temperament / plenary talk
Psychologie & Gehirn
Trier Germany
- 2017 Annual SPM course / workshop host tutoring beginner and expert groups neuroimaging analyses using SPM
Institute for Systems Neuroscience
University Medical Center Hamburg-Eppendorf, Hamburg, Germany
- 2017 Annual MATLAB course / workshop host tutoring beginner groups MATLAB
Institute for Systems Neuroscience
University Medical Center Hamburg-Eppendorf, Hamburg, Germany
- 2017 The Impact of Life Events on the Return of Fear and Fear Generalization - Mechanisms and Clinical Implications / plenary talk
Symposium of the Clinical Psychology and Psychotherapy section of the DGPs
Chemnitz, Germany
- 2020 Life stress and the neurobiology of fear, anxiety, and affective temperament - Investigations in healthy adults and their translational value for clinical research
Center for Depression, Anxiety, and Stress Research, Belmont, USA

International

- 2018 Introduction to Bayesian Analysis for Fear Conditioning Data / workshop host
European Meeting of Human Fear conditioning (EMHFC)
Cardiff, UK

- 2019 Introduction to Bayesian Analysis for Fear Conditioning Data / workshop host
European Meeting of Human Fear conditioning (EMHFC)
Würzburg, Germany
- 2021 Navigating the Multiverse of Skin Conductance Response Quantification Approaches /
plenary talk
Meeting Society for Psychophysiological Research (SPR)
Virtual meeting

Report of Education of Patients and Service to the Community

- No presentations below were sponsored by 3rd parties/outside entities*
- Those presentations below sponsored by outside entities are so noted and the sponsor(s) is (are) identified.*

Activities

- 2013 Biannual Night of Science Hamburg / Instructor
Hands-on experimental demonstrations and scientific dissemination to the public
- 2015 Biannual Night of Science Hamburg / Instructor
Hands-on experimental demonstrations and scientific dissemination to the public
- 2017 Biannual Night of Science Hamburg / Instructor
Hands-on experimental demonstrations and scientific dissemination to the public

Report of Scholarship

ORCID ID: 0000-0003-2210-9130

Peer-Reviewed Scholarship in print or other media:

* Indicates shared first authorship

Research Investigations

1. Mertens G*, **Kuhn M***, Raes AK, Kalisch R, De Houwer J, Lonsdorf TB. Fear expression and return of fear following threat instruction with or without direct contingency experience. *Cogn Emot.* 2016 Aug;30(5):968-84. PMID: 25966279.
2. **Kuhn M**, Scharfenort R, Schümann D, Schiele MA, Münsterkötter AL, Deckert J, Domschke K, Haaker J, Kalisch R, Pauli P, Reif A, Romanos M, Zwanzger P, Lonsdorf TB. Mismatch or allostatic load? Timing of life adversity differentially shapes gray matter volume and anxious temperament. *Soc Cogn Affect Neurosci.* 2016 Apr;11(4):537-47. PMID: 26568620.
3. **Kuhn M**, Haaker J, Glotzbach-Schoon E, Schümann D, Andreatta M, Mechias ML, Raczka K, Gartmann N, Büchel C, Mühlberger A, Pauli P, Reif A, Kalisch R, Lonsdorf TB. Converging evidence for an impact of a functional NOS gene variation on anxiety-related processes. *Soc Cogn Affect Neurosci.* 2016 May;11(5):803-12. PMID: 26746182.

4. **Kuhn M***, Mertens G*, Lonsdorf TB. State anxiety modulates the return of fear. *Int J Psychophysiol.* 2016 Dec;110:194-199. PMID: 27496367.
5. Sjouwerman R, Niehaus J, **Kuhn M**, Lonsdorf TB. Don't startle me-Interference of startle probe presentations and intermittent ratings with fear acquisition. *Psychophysiology.* 2016 Dec;53(12):1889-1899. PMID: 27628268.
6. Lonsdorf TB, Menz MM, Andreatta M, Fullana MA, Golkar A, Haaker J, Heitland I, Hermann A, **Kuhn M**, Kruse O, Meir Drexler S, Meulders A, Nees F, Pittig A, Richter J, Römer S, Shiban Y, Schmitz A, Straube B, Vervliet B, Wendt J, Baas JMP, Merz CJ. Don't fear 'fear conditioning': Methodological considerations for the design and analysis of studies on human fear acquisition, extinction, and return of fear. *Neurosci Biobehav Rev.* 2017 Jun;77:247-285. PMID: 28263758.
7. Lueken U*, **Kuhn M***, Yang Y, Straube B, Kircher T, Wittchen HU, Pfleiderer B, Arolt V, Wittmann A, Ströhle A, Weber H, Reif A, Domschke K, Deckert J, Lonsdorf TB. Modulation of defensive reactivity by GLRB allelic variation: converging evidence from an intermediate phenotype approach. *Transl Psychiatry.* 2017 Sep 5;7(9):e1227. doi: 10.1038/tp.2017.186. PMID: 28872638.
8. Mertens G, Braem S, **Kuhn M**, Lonsdorf TB, van den Hout MA, Engelhard IM. Does US expectancy mediate the additive effects of CS-US pairings on contingency instructions? Results from subjective, psychophysiological and neural measures. *Behav Res Ther.* 2018 Nov;110:41-46. PMID: 30223152.
9. **Kuhn M**, Wendt J, Sjouwerman R, Büchel C, Hamm A, Lonsdorf TB. The neurofunctional basis of affective startle modulation in humans: Evidence from combined facial electromyography and functional magnetic resonance imaging. *Biol Psychiatry.* 2020 Mar 15;87(6):548-558. PMID: 31547934.
 - Early Career Investigator Commentary. Kaczurkin AN. Advances in mapping the startle eye-blink response onto neural circuits. *Biol Psychiatry.* 2020 Mar 15;87(6):e9-e11. PMID: 32081253.
10. Hur J, Smith JF, DeYoung KA, Anderson AS, Kuang J, Kim HC, Tillman RM, **Kuhn M**, Fox AS, Shackman AJ. Anxiety and the neurobiology of temporally uncertain threat anticipation. *J Neurosci.* 2020 Oct 7;40(41):7949-7964. PMID: 32958570.
11. Ehlers MR, Nold J, **Kuhn M**, Klingelhöfer-Jens M, Lonsdorf TB. Revisiting potential associations between brain morphology, fear acquisition and extinction through new data and a literature review. *Sci Rep.* 2020 Nov 16;10(1):19894. PMID: 33199738.
12. Hur J*, **Kuhn M***, Grogans SE, Anderson AS, Islam S, Kim HC, Tillman RM, Fox AS, Smith JF, DeYoung KA, Shackman AJ. Anxiety-Related Frontocortical Activity Is Associated With Dampened Stressor Reactivity in the Real World. *Psychol Sci.* 2022 Jun;33(6):906-924. doi: 10.1177/09567976211056635. Epub 2022 Jun 3. PMID: 35657777.
13. **Kuhn M**, Gerlicher AMV, Lonsdorf TB. Navigating the manyverse of skin conductance response quantification approaches - A direct comparison of trough-to-peak, baseline correction,

and model-based approaches in Ledalab and PsPM. *Psychophysiology*. 2022 Sep;59(9):e14058. doi: 10.1111/psyp.14058. Epub 2022 Apr 2. PMID: 35365863.

14. Sjouwerman R, Illius S, **Kuhn M**, Lonsdorf TB. A data multiverse analysis investigating non-model based SCR quantification approaches. *Psychophysiology*. 2022 Jul 2:e14130. doi: 10.1111/psyp.14130. Epub 2022 Jul 2. PMID: 35780077.
15. Klingelhöfer-Jens M, Ehlers MR, **Kuhn M**, Keyaniyan V, Lonsdorf TB. Robust group- but limited individual-level (longitudinal) reliability and insights into cross-phases response prediction of conditioned fear. *Elife*. 2022 Sep 13;11:e78717. doi: 10.7554/eLife.78717. PMID: 36098500.
16. Koppold A, Kastrinogiannis A, **Kuhn M**, & Lonsdorf TB. Watching with Argus Eyes: Characterization of emotional and physiological responding in adults exposed to childhood maltreatment and/or recent adversity. *Psychophysiology*. 2023 Feb 2:e14253. doi: 10.1111/psyp.14253. Epub ahead of print. PMID: 36727722.
17. Wendt J, **Kuhn M**, Hamm AO, Lonsdorf TB. The primary startle response pathway and its affective modulation in humans: Recent advances and implications for clinical research. *Psychophysiology* (accepted). Preprint. PsyArXiv. May 13, 2022. doi:10.31234/osf.io/gtasm.

Other peer-reviewed scholarship

1. **Kuhn M**, Popovic A, Pezawas L. Neuroplasticity and memory formation in major depressive disorder: an imaging genetics perspective on serotonin and BDNF. *Restor Neurol Neurosci*. 2014;32(1):25-49. PubMed PMID: 23603442.
2. Popovic A, **Kuhn M**, Pezawas L. [Chronic pain from a psychiatric perspective - Neurobiology and therapy]. *Manuelle Medizin*. 2013 February; 51(1):1-5. German.

Non-peer reviewed scholarship in print or other media:

Proceedings of meetings or other non-peer reviewed scholarship

1. Grogans S, Hur J, Barstead MG, Anderson AS, Islam S, Kim HC, **Kuhn M**, Tillman RM, Fox AS, Smith JF*, DeYoung KA*, Shackman AJ*. Neuroticism/negative emotionality is associated with increased reactivity to uncertain threat in the bed nucleus of the stria terminalis, not the amygdala. Preprint. bioRxiv. February 9, 2023. doi: 10.1101/2023.02.09.527767.

Thesis:

1. **Kuhn M**. (Doctoral thesis) Fearing nature, nurture and thyself: Inter-individual differences shape the neurobiology of fear processing and anxious temperament. Universität Hamburg. 2017. <https://d-nb.info/1140603752>

Abstracts, Poster Presentations and Exhibits Presented at Professional Meetings:

1. Grogans SE, Hur J, Barstead MG, Anderson AS, Islam S, Kim HC, **Kuhn M**, Tillman RM, Fox AS, Smith JF, DeYoung KA, Shackman AJ. Neuroticism/negative emotionality is associated with increased reactivity to uncertain threat in the bed nucleus of the stria terminalis. Annual meeting of the Society for Neuroscience (SFN) 2021, Virtual Meeting.

2. Koppold A, Kastrinogiannis A, **Kuhn M**, Lonsdorf TB. Characterization of underlying dimensions of life adversity in emotional processing in adulthood. *Psychologie & Gehirn* 2021. Virtual, Germany.
3. Klingelhöfer-Jens M, Keyaniyan V, **Kuhn M**, Lonsdorf TB. Assessing performance adjustments in and test-retest reliability of fear conditioning. *Psychologie & Gehirn* 2021. Virtual, Germany.
4. Blank JM, **Kuhn M**, Long Y, Nowicki G, Steinberger DC, Pizzagalli DA. Reward Motivation in Remitted Depression. McLean Research Day 2022. Belmont, MA, USA.
5. Steinberger DC*, Blank JM*, **Kuhn M**, Ironside MA, Kang MS, Brunner DL, Null KE, Pizzagalli DA. Mental Health Links to Group-Based Trajectories of Stress Experience and Physiology in Current and Remitted Depression. Annual meeting of the Society for Research in Psychopathology 2022. Philadelphia, PA, USA.
6. Blank JM, Steinberger DC, Long Y, Nowicki G, **Kuhn M**, Treadway MT, Pizzagalli DA. Reward Motivation in Remitted Depression. Annual meeting of the Society for Research in Psychopathology 2022. Philadelphia, PA, USA.
7. Koppold A, Kastrinogiannis A, **Kuhn M**, Lonsdorf TB. Affective Startle Modulation and Life Adversity. Annual meeting of the Society for Psychophysiological Research 2022. Vancouver, Canada.
8. Steinberger DC*, Blank JM*, **Kuhn M**, Ironside MA, Kang MS, Brunner DL, Null, KE, Pizzagalli DA. Mental health links to group-based trajectories of stress experience and physiology in current and remitted depression. 14th Annual National Network of Depression Centers Conference 2022. Ann Arbor, MI, USA.
9. Santos K*, Blank JM*, **Kuhn M**, Pizzagalli DA. Early Life Stress and Neurobiological Alterations in Adults with Remitted Depression. Annual Biomedical Research Conference for Minorized Scientists 2022. Anaheim, CA, USA.
10. **Kuhn M**, Blank JM, Steinberger DC, Long Y, Nowicki G, Yu Z, Thaikkandi S, Pedersen ML, Herrington T, Frank M, Pizzagalli DA. Approach-avoidance behavior and conflict in remitted depression: Neural correlates and latent decision-making processes. Annual Meeting of the American College of Neuropsychopharmacology 2022. Phoenix, AZ, USA.
11. Li M, **Kuhn M**, Woronko SE, Zhukovsky P, Borchers LR, Alexander MM, Landi M, Ren B, Vitaliano G, Brennan BP, & Pizzagalli DA. Using biological and behavioral markers to guide depression treatment in the Sequential Multiple Assignments for Randomized Trial (SMART): protocol overview. McLean Research Day 2023. Belmont, MA, USA.
12. Woronko SE, **Kuhn M**, Li M, Zhukovsky P, Borchers LR, Alexander MM, Landi M, Ren B, Vitaliano G, Brennan BP, & Pizzagalli DA. Using biological and behavioral markers to guide depression treatment in the Sequential Multiple Assignments for Randomized Trial (SMART): randomization and data processing protocol. McLean Research Day 2023. Belmont, MA, USA.
13. Ging-Jehli NR, **Kuhn M**, Pedersen ML, Blank J, Herrington T, Yu Z, Long Y, Thaikkandi S, Nowicki G, Steinberger D, Pizzagalli DA*, Frank MJ. Linking behavioral and neural effects of

acute stress in humans: a computational psychiatric approach with implications for depression. Winter Conference on Brain Research (WCBR) 2023. Snowbird, UT, USA

14. Grogans SE, Hur J, Barstead MG, Anderson AS, Islam S, Kim HC, **Kuhn M**, Tillman RM, Fox AS, Smith JF, DeYoung KA, Shackman AJ. Neuroticism is associated with increased reactivity to uncertain threat—but not ‘threat-related’ emotional faces—in the bed nucleus of the stria terminalis. Annual Meeting of the Society of Biological Psychiatry (SOBP) 2023. San Diego, CA, USA
15. Grogans SE, Hur J, **Kuhn M**, Anderson AS, Islam S, Kim HC, Tillman RM, Fox AS, Smith JF, DeYoung KA, Shackman AJ. Attenuated Safety-Related vmPFC Activation is Associated With Pervasively Elevated Real-World Distress. Annual Meeting of the Society of Biological Psychiatry (SOBP) 2023. San Diego, CA, USA
16. Falkenstein MJ, **Kuhn M**, Kuckertz JM, Woodson O, Bezhler A, Webb C, & Beard C. Digital approach-avoidance training as a treatment augmentation for obsessive compulsive disorder. Flash talk presented by MJF at the Annual Meeting of the Society for Digital Mental Health. 2023. Virtual meeting.

Narrative Report

Understanding the development, etiology, and maintenance of affective and mood disorders, such as major depression disorder (MDD) and anxiety-related disorders, is at the center of my research. As an experimental psychologist and neuroscientist with a programming background from two years of undergraduate course work in computer science, I employ interdisciplinary research strategies to dissect the structural and functional neuroarchitecture that underlies affective psychopathology including its relation to environmental and psychosocial factors. In particular, I leverage multimodal techniques such as neuroimaging, psychophysiology, neuroendocrine measures, ecological momentary assessment, clinical and life-stress interviews, and genetic analyses to contribute to a mechanistic understanding of affective disorders, with the goal to promote the development of more effective, more efficient and, ultimately, personalized treatment strategies. Within my previous graduate and post-doctoral research, I focused on fear conditioning, the prime laboratory model for fear- and anxiety-related processes, targeting one phenotype of affective symptomatology that spans trans-diagnostically across MDD and anxiety disorders. Utilizing this model, I investigated the contribution of genetic and environmental inter-individual factors as well as stress sensitivity to heightened anxiety and related learning processes. In addition, using innovative measures of parallel neuroimaging and psychophysiology, I demonstrated the neurobiological validity of the pathway that underlies the main laboratory outcome measure in cross-species investigations, the affective startle reflex. This work provides a major translational contribution by linking the two fields of rodent and human experimental work, supporting direct inferences. Moreover, I have been working on meta-scientific aspects such as improving the validity and reliability of affective laboratory outcome measures and experimental models in my own work as well as a member of the Young Scientist Research Network EIFEL-ROF. At the present, I am a postdoctoral fellow at Harvard Medical School/McLean Hospital’s Center for Depression, Anxiety and Stress Research, focusing on one further cardinal phenotype of mood disorders, anhedonia, by employing laboratory models of effort and approach-avoidance conflict in MDD patients to investigate the neurobiology underlying deficits in reward-related decision-making processes. Throughout my career I have cultivated a passion to teach my extensive programming and neuroimaging skills nationally and internationally to fellow scientists on all levels of academic career stages. Currently, I have published 19 peer-reviewed articles and will actively seek funding to pursue my academic path along these areas of interest with the goal to become an independent investigator and to lead my own translational neuroscience laboratory.