

## Dr. Lukas Kunz, CV

### Contact

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### Professional

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- **Walter Benjamin Fellow: Neuronal mechanisms of associative memory formation in the human medial temporal lobe** Since 3/2021  
Columbia University, New York, USA  
Department of Biomedical Engineering  
PI: Prof. Dr. Joshua Jacobs
- **Postdoctoral researcher: The roles of grid and place cells and phase precession in human episodic memory** 1/2018–2/2020  
University of Freiburg, Germany  
Epilepsy Center  
PI: Prof. Dr. Andreas Schulze-Bonhage
- **Visiting scholar: Single-neuron representations of goal-directed navigation in the human medial temporal lobe** 11/2019–1/2020  
Columbia University, New York, USA  
Department of Biomedical Engineering  
PI: Prof. Dr. Joshua Jacobs

### Education

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- **Dissertation (Dr. med.): Investigation of grid cell-based representations of the entorhinal cortex in adults at genetic risk for Alzheimer's disease (*summa cum laude*)** 2013–2017  
University of Bonn, Germany  
Department of Epileptology  
PI: PD Dr. Jürgen Fell
- **Human medicine (state examination)** 2010–2017  
University of Bonn, Germany
- **Philosophy and German studies (B.A.)** 2011–2018  
University of Bonn, Germany

**Publications (peer-reviewed)**

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<b>Cumulative impact factor</b>		<b>96.4</b>
8	Lachner-Piza, <b>Kunz L</b> , Brandt A, Duempelmann M, Thomschewski A, Schulze-Bonhage A (2021). Effects of spatial memory processing on hippocampal ripples. <b>Front Neurol</b> ; 12:620670.	3.6
7	Bierbrauer A*, <b>Kunz L*</b> , Gomes CA*, Luhmann M, Deuker L, Getzmann S, Wascher E, Gajewski PD, Hengstler JG, Fernandez-Alvarez M, Atienza M, Cammisuli DM, Bonatti F, Pruneti C, Percesepe A, Bellaali Y, Hanseeuw B, Strange BA, Cantero JL, Axmacher N (2020). Unmasking selective path integration deficits in Alzheimer's disease risk carriers. <b>Science Advances</b> ; 6, eab1394.	13.1
6	<b>Kunz L</b> , Wang L, Lachner-Piza D, Zhang H, Brandt A, Dümpelmann M, Reinacher PC, Coenen VA, Chen D, Wang W, Zhou W, Liang S, Grewe P, Bien CG, Bierbrauer A, Schröder TN, Schulze-Bonhage A, Axmacher N (2019). Hippocampal theta phases organize the reactivation of large-scale electrophysiological representations during goal-directed navigation. <b>Science Advances</b> ; 5, eaav8192.	13.1
5	<b>Kunz L*</b> , Maidenbaum S*, Chen D*, Wang L, Jacobs J, Axmacher N (2019). Mesoscopic neural representations in spatial navigation. <b>Trends in Cognitive Sciences</b> ; 23, 95–110.	16.2
4	Chen D*, <b>Kunz L*</b> , Wang W, Zhang H, Wang W, Schulze-Bonhage A, Reinacher PC, Zhou W, Liang S, Axmacher N, Wang L. Hexadirectional modulation of theta power in human entorhinal cortex during spatial navigation. <b>Current Biology</b> ; 28, 3310–3315 (2018).	9.2
3	<b>Kunz L</b> , Reuter M, Axmacher N, Montag C (2017). Conscientiousness is negatively associated with grey matter volume in young APOE ε4-carriers. <b>J Alzheimers Dis</b> ; 56, 1135–1144.	3.5
2	<b>Kunz L</b> , Schröder TN, Lee H, Montag C, Lachmann B, Sariyska R, Reuter M, Stirnberg R, Stöcker T, Messing-Floeter PC, Fell J, Doeller CF, Axmacher N (2015). Reduced grid-cell-like representations in adults at genetic risk for Alzheimer's disease. <b>Science</b> ; 350, 430–433. – Media discussions: <i>Nature</i> , <i>Science</i> , <i>Pacific Standard</i> , <i>Spektrum</i>	34.7
1	Montag C, <b>Kunz L</b> , Axmacher N, Sariyska R, Lachmann B, Reuter M (2014). Common genetic variation of the APOE gene and personality. <b>BMC Neurosci</b> ; 15, 64.	3.0
* contributed equally		Impact factor from year of publication

**Publications (other)**

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- 1 **Kunz L**, Deuker L, Zhang H, Axmacher N (2019). Tracking Human Engrams Using Multivariate Analysis Techniques. In Handbook of Behavioral Neuroscience (Vol. 28, pp. 481-508). Elsevier.

### Manuscripts under review

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- 4 **Kunz L**, Brandt A, Reinacher PC, Staesina BP, Reifenstein ET, Weidemann CT, Herweg NA, Tsitsiklis M, Kempter R, Kahana MJ, Schulze-Bonhage A, Jacobs J (2020). A neural code for egocentric spatial maps in the human medial temporal lobe. Preprint at *bioRxiv*
- 3 Herweg NA, **Kunz L**, Brandt A, Wanda PA, Sharan AD, Sperling MR, Schulze-Bonhage A, Kahana MJ (2020). A learned map for places and concepts in the human MTL. Preprint at *bioRxiv*
- 2 Manzouri F, Meisel C, **Kunz L**, Dümpelmann M, Stieglitz T, Schulze-Bonhage A. Low-frequency cortical stimulation reduces cortical excitability in the human brain.
- 1 Guth TA, **Kunz L**, Brandt A, Dümpelmann M, Klotz KA, Reinacher PC, Schulze-Bonhage A, Jacobs J, Schönberger J. Interictal spikes with and without high-frequency oscillations have different single-unit correlates.

### Awards

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- Poster Award of the Center for Basics in NeuroModulation of the University of Freiburg, Freiburg, Germany. 2019
- Trainee Professional Development Award (TPDA) for the Annual Meeting of the Society of Neuroscience (SfN). 2018
- Travel Award for the Grid Cell Meeting 2018 of the University College London, London, UK. 2018
- 7-year Scholarship granted by the German National Academic Foundation (Studienstiftung des deutschen Volkes). 2011–2017
- BONFOR Research Prize of the BONFOR Research Commission of the Medical Faculty of the University of Bonn, Bonn, Germany. 2016
- Beethoven Bonnensis Prize of the City of Bonn, Bonn, Germany. 2010

### Membership in Scientific Societies

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- Society for Neuroscience (SfN) 2018–present
- Federation of European Neuroscience Societies (FENS) 2019–present
- German Neuroscience Society (NWG). 2019–present



New York, March 14, 2021