

Durstewitz, Daniel, Prof. Dr. rer. nat.

General information

Date of birth

Address

Position

Children

University training and degree

1998	Ph.D. thesis in biopsychology & neuroinformatics (summa cum laude), Ruhr-University Bochum (Güntürkün, von Seelen)
1989 – 1994	Diploma studies (Major: Psychology, Minor: Mathematics), TU Berlin
1992 – 1994	Student of computer science at TU Berlin

Postgraduate professional career

2022 –	Prof. at Interdisciplinary Center for Scientific Computing, Heidelberg University
2016 –	Affiliated Prof. at Faculty of Physics and Astronomy, Heidelberg University
2014 –	Head, Dept. of Theoretical Neuroscience, Central Institute of Mental Health, Mannheim
2013 – 2014	(part-time) Professor in Computational Neuroscience, School for Computing and Mathematics, Plymouth University, UK
2011 –	Full Professor (W3) for Theoretical Neuroscience at Heidelberg University/ CIMH (DFG Heisenberg Professorship until Oct. 2013)
2010 –	Coordinator and Director of the Bernstein Center for Computational Neuroscience (BCCN) Heidelberg-Mannheim
2008 – 2011	Independent Research Group Leader (DFG Heisenberg program), CIMH, Mannheim, Germany
2005 – 2008	Reader (Associate Professor) for Computational Neuroscience, Centre for Theoretical and Computational Neuroscience, University of Plymouth, UK
2000 – 2005	Independent Research Group Leader, Emmy-Noether-Program of DFG, Ruhr-University of Bochum, Germany
1998 – 2000	Research Associate (PostDoc) at Computational Neurobiology Lab at Salk Institute for Biological Studies, La Jolla, USA

Other Scientific Activities, Honors, Awards

2010 –	Coordinator & Director of BMBF-funded Bernstein Center for Computational Neuroscience Heidelberg-Mannheim
2008	Heisenberg-Award of German Science Foundation (DFG)
2002 – 2007	Membership awarded in the 'Junge Akademie' at Berlin-Brandenburgische Akademie der Wissenschaften (since 2008 National Academy of Science)
2000	Emmy-Noether-Award of the Deutsche Forschungsgemeinschaft
1998	Award of Ruhr-University Bochum for outstanding Ph.D. thesis

Referee for >50 different journals and conference proceedings in the fields of machine learning/ AI, neuroscience, physics, psychiatry, and cognitive science, incl. Science, Nature journals, Neuron, eLife, PNAS, Lancet journals, NeurIPS, ICML, AAAI, ICLR, TMLR, PLoS Computational Biology, Neural Computation, Journal of Computational Neuroscience, IEEE Transactions on Neural Networks, Journal of Neuroscience, Trends in Neurosciences, Psychological Reviews, Trends in Cognitive Science, Behavioral & Brain Sciences (BBS)

Referee for various funding agencies incl. German Science Foundation (DFG), German Ministry of Education and Research (BMBF)/ EU programs, Human Frontiers Science Program (HFSP), The Wellcome Trust (UK), Medical Research Council (UK), Netherlands Organization for Scientific Research (NL), Canada Research Chairs, USA DARPA Action Editor for PLoS ONE (until ~2017)

Guest Associate Editor for Frontiers in Systems Neuroscience

Guest Editor for Current Opinion in Behavioral Sciences

Research funding

2023 – 2027	DFG TRR-265 2 nd FP, TP A06: AI-based multi-modal data integration for prediction, mechanistic insight and subgroup stratification (~640,000 €), shared with Drs. Koppe & Schwarz
2022 – 2025	Du 354/15-1: Theoretical framework and bifurcation analysis for deep recurrent neural networks inferred from neural measurements (427,050 €)
2021 – 2025	Du 354/14-1: Reconstructing neuro-dynamical principles of prefrontal cortical computations across cognitive tasks and species; TP8 within FOR 5159 (627,200 €)
2023 – 2024	Project ‘Identifying predictive dynamical signatures of anaesthesia effects using deep dynamical systems reconstruction’ within AI Health Innovation Cluster (1.5 yr PostDoc, ~129,000 €; together with Prof. Wiegert at UMM)
2022 – 2024	Project ‘Predicting tipping points toward sepsis in ICU patients using deep dynamical systems reconstruction’ within AI Health Innovation Cluster (28 months PostDoc, ~200,000 €; together with Drs. Schneider-Lindner & Lindner at UMM)
2021 – 2023	AI Living Lab for digital personalized mental health prevention in young adults (AI4Y) – together with Drs. Koppe, Reininghaus, & Krumm (MWK; our share: ~250,000 €)
2021 – 2024	EU Consortium “Implementation of Digital Mobile Mental Health in clinical care pathways: Towards person-centered care in psychiatry (IMMERSE)” (our share: ~178,000 €)
2020 – 2023	Subprojects in CP6 (Networks and Machine Learning) and EP 3.3 of DFG Excellence Cluster STRUCTURES (EXC-2181 – 390900948) at Heidelberg University (~412,000 €)
2019 – 2023	DFG DU 354/10-1: Inferring computational dynamics from neural measurements using deep recurrent neural networks (442,320 €)
2019 – 2023	DFG TRR-265, TP A06: AI-based predictive neuro-behavioral modeling of individual trajectories in addiction (191,700 €)
2019	SFB 1134 V01: Statistical characterization of cellular ensembles in neuronal data, DFG, (117,600 €)
2015 – 2018	SFB 1134 D01: Statistical characterization of cellular ensembles in neuronal data, DFG, (458,300 €)
2016 – 2019	DU 354/8-2: Network dynamics and computational mechanisms of rule learning II, DFG (223,700 €)
2015	Du 354/9-1: DFG support for Bernstein Conference 2015 in Heidelberg (~16,600 €)
2013 – 2016	Du 354/8-1: Network dynamics and computational mechanisms of rule learning, DFG, (~150,000 €)

2013 – 2018	e:Med SysMedAlcoholism SP 7: Mathematical Modeling II: Local neurodynamics and treatment predictions, BMBF (454,490 €)
2013 – 2018	e:Med IntegraMent TP 10: Neurodynamic analysis of psychiatric disease mechanisms using computational network models. BMBF (216,726 €)
2011 – 2015	B08 ('Phasic dopamine modulation of spike-timing-dependent plasticity ...') within DFG-funded SFB-636; shared with Dr. Wolfgang Kelsch (total 475,200 €)
2011 – 2013	DFG Du 354/7-2: Continuation of Heisenberg-Professorship (~210,000 €)
2010 – 2015	Coordinator of the application of the ZI Mannheim and University of Heidelberg for a Bernstein-Center for Computational Neuroscience (BMBF initiative), total volume ~10 Million € (own projects: ~1,200,00 €)
2009	DFG Du 354/7-1: Conversion of Heisenberg Fellowship into DFG Heisenberg-Professorship (W3), 37,900 €
2008 – 2011	DFG Du 354/6-1: Adjusting Neural Dynamics to Cognitive Demands: Dopaminergic Control of Cortical Activity Regimes (~415,000 €)
2008 – 2011	DFG Du 354/5-1: Heisenberg-fellowship (~150,000 €)
2007 – 2012	Research grant from Canadian Institutes of Health Research (MOP-84319), jointly with Dr. Jeremy Seamans (PI) and Dr. Stan Floresco at UBC, Vancouver, Canada (total ~ CAD 639,000)
2005	Start-up funding of the University of Plymouth (total volume ~140,000 €)
2003 – 2004	DFG Du 354/2-4: Continuation of Emmy-Noether-Program (~194,000 €)
2000 – 2003	DFG Du 354/2-1, 2-2, & 2-3: Emmy-Noether-Program (~640,000 €)
1999 – 2000	DFG Du 354/1-1: Research stipend of the Deutsche Forschungsgemeinschaft (~28,000 €)
1998 – 1999	Research stipend of the DAAD (~26,000 €)

Teaching and supervision

General teaching-related qualifications

Certificate of Professional Development (Learning, Teaching and Assessment: Theory and Practice); 5-day course at the University of Plymouth.

Lectures

Note: 'hrs' below refers to full hours (not 45 min academic hours)

Place	Terms	Topic	Audience
Heidelberg University	Winter 2021/22, 22/23, 23/24 (1.5+1.5 hrs/week lecture+exercises)	Dynamical Systems Theory in Machine Learning	Physics/ interdisciplinary
Heidelberg University	Summer 2018, 2019, 2020, 2023 (1.5+1.5 hrs/week lecture+exercises)	Computational Statistics & Data Analysis	Physics/ interdisciplinary
Heidelberg University	Sommer 2017, 2021, 2022, Winter 17/18, 18/19, 19/20, 20/21 (1.5+1.5 hrs/week lecture+exercises)	Time Series Analysis & Recurrent Neural Networks	Physics/ interdisciplinary
Heidelberg University	Summer 2017, 2018, 2019 (3 hrs total)	Neural coding/ computational neuroscience	Biosciences (within lecture series "Molecules, neurons, networks, behavior")

Heidelberg University	Winter 10/11, 11/12, 12/13, 13/14, 14/15, 15/16, 16/17 (1 hr/ week)	Statistical concepts in neuroscience: Advanced data analysis	Interdisciplinary/ BCCN (biology, physics, maths, psychology)
Heidelberg University	Winter 10/11, 11/12, 12/13, 13/14, 14/15, 15/16, 16/17 (1 hr/ week)	Models of neurons and networks	Interdisciplinary/ BCCN
Heidelberg University	Summer 10 & 11 (3 hrs total)	'Single Neuron & Network Computation' as part of the IZN/ Major Neuroscience curriculum (Faculty of Biosciences)	Interdisciplinary
Heidelberg University	Summer Term 10 (3 hrs total)	'Computational Neuroscience' as part of SFB636-curriculum	Interdisciplinary
Heidelberg University	Summer Term 09 (6 hrs total)	'Network Computation' as part of the IZN/ Major Neurosci. curriculum	Interdisciplinary
University of Plymouth	Spring 2007 (2 hrs/ week)	Biophysical models of neural dynamics and cognition	Interdisciplinary (M.Sc. Computat. Neurosci.)
University of Plymouth	Winter 2006 (2 hrs/ week)	Foundations of neurobiology	Interdisciplinary
University of Plymouth	Spring 2006	Neurobiology & cellular biophysics	Interdisciplinary
Ruhr-University Bochum/ Institute of Neuroinformatics	Winter 04/05 (1.5 hrs/ week)	Nonlinear dynamics and numerical methods for the neurosciences (incl. practical sessions)	Interdisciplinary
Ruhr-University Bochum/ Institute of Neuroinformatics	Summer 04 (1.5 hrs/ week)	Neural mechanisms of cognitive processes	Interdisciplinary
Ruhr-University Bochum/ Institute of Neuroinformatics	Winter 02/03 (1.5 hrs/ week)	Biophysics of neural computation II: Network mechanisms & learning	Interdisciplinary
Ruhr-University Bochum/ Institute of Neuroinformatics	Summer 02 (1.5 hrs/ week)	Biophysics of neural computation I: Cellular mechanisms	Interdisciplinary

Courses/ Seminars

<i>Place</i>	<i>Terms</i>	<i>Topic</i>	<i>Audience</i>
Heidelberg University	Summer 2022 (1.5 hrs/week)	Machine Learning for Real-World Challenges	Interdisciplinary (physics, computer science)
Ruhr-University Bochum/ Faculty of Psychology	Summer 03 (1.5 hrs/ week)	Dynamical theories of adaptive behavior and learning (lecture-like course incl. practicals)	Psychology, biology
Ruhr-University Bochum/ Faculty of Psychology	Winter 02/03 (1.5 hrs/ week)	Computational dynamics of behavior (incl. practicals)	Psychology, biology
Ruhr-University Bochum/ Faculty of Psychology	Winter 01/02 (1.5 hrs/ week)	Neural mechanisms of thinking, problem solving, and decision making (Durstewitz/ Windmann)	Psychology, biology

Ruhr-University Bochum/ Faculty of Psychology	Summer 01 (1.5 hrs/ week)	Theory of Neural Networks and Computational Neuroscience (lecture- like course)	Psychology, biology
Ruhr-University Bochum	Winter 00/01 (1.5 hrs/ week)	Principles of working memory (Prior/ Durstewitz)	Psychology, biology

Colloquia / Journal Clubs

Place	Terms	Topic	Audience
Heidelberg University	Summer 10 & 11 Winter 10/11, 11/12, 12/13, 13/14, 14/15, 15/16, 16/17 (1 hr/ week)	BCCN seminar series (colloquium with internal & external speakers)	Interdisciplinary/ BCCN
Heidelberg University	Summer 10 & 11 Winter 10/11, 11/12, 12/13, 13/14, 14/15, 15/16, 16/17 (1 hr/ week)	BCCN journal club	Interdisciplinary/ BCCN

Supervision

BSc students: <5

MSc students: >30

Ph.D. students: 18

Postdocs: 10

Meeting organizations

- COSYNE 2024 Workshop “Reconstructing Dynamical Systems from Neural Data” (together with Memming Park)
- Bernstein Conference 2015 (Heidelberg)
- Intl. BCCN workshop on ‘Computational Properties of Prefrontal Cortex: Prefrontal – Hippocampal Interactions’ at Heidelberg University (Sept. 2012)
- Lecturer and tutor at the Computational Neuroscience Summer School (Sept. 2001) of the Neurowissenschaftliche Gesellschaft.

Membership in scientific organizations

- European Laboratories for Learning & Intelligent Systems (ELLIS) (since 2024)
- Bernstein Association Computational Neuroscience (since 2010)
- Society for Neuroscience (1995 – 2017)
- Neurowissenschaftliche Gesellschaft e.V. (since 1999)
- Junge Akademie at the Berlin-Brandenburgische Akademie der Wissenschaften (2002-2007)

Invited talks

I have been invited numerous times for talks at (conference) workshops and symposia (like COSYNE, Bernstein Conference, CNS, CSHL, IPAM @UCLA, HHMI/ Janelia, Gatsby, FENS, ICON etc.), diverse seminar series, three times for an Ernst-Strüngmann-Forum at FIAS, and keynotes at the DGPPN congress (largest German psychiatry society) or the International Symposium 'Dopamine – 50 Years'.

Preprints

- Göring N, Hess F, Brenner M, Monfared Z, **Durstewitz D** (2024) Out-of-Domain Generalization in Dynamical Systems Reconstruction. arXiv:
- Brenner, M. Koppe, G. & **Durstewitz, D.** (2023) Multimodal Teacher Forcing for Reconstructing Nonlinear Dynamical Systems. arXiv:2212.07892
- Fechtelpeter, J. Rauschenberg, C., Jamalabadi, H. Boecking, B. van Amelsvoort, T. Reininghaus, U. **Durstewitz, D.** & Koppe, G. (2023) A control theoretic approach to evaluate and inform ecological momentary interventions. PsyArXiv
- Russo, E. Becker, N., Domanski, Aleks P.F., **Durstewitz, D.** & Jones, M.W. (2023) Integration of rate and temporal codes by hippocampal cell-assemblies supports theta phase coding of episodic information. bioRxiv 2023.12.06.570348
- Monfared, Z., Patra, M. & **Durstewitz, D.** (2022) Robust chaos and multi-stability in piecewise linear recurrent neural networks. Preprint from Research Square, <https://doi.org/10.21203/rs.3.rs-2147683/v1>
- Bähner, F. Popov, T., Hermann, S., Boehme, N., Merten, T., Zingone, H, Koppe, G., Meyer-Lindenberg, A. Toutounji, H. & **Durstewitz, D.** (2022) Species-conserved mechanisms of cognitive flexibility in complex environments. bioRxiv 2022.11.14.516439

Full journal publications and peer-reviewed conference papers

- Miftari E, **Durstewitz D**, Sadlo F (2024) Visualization of Discontinuous Vector Field Topology, in IEEE Transactions on Visualization and Computer Graphics, vol. 30, no. 1, pp. 45-54.
- Eisenmann L, Monfared Z, Göring N, **Durstewitz D** (2023) Bifurcations and loss jumps in RNN training. *Proceedings of the 37th Conference on Neural Information Processing Systems (NeurIPS)*, 1-37.
- Durstewitz D**, Koppe G, Thurm MI (2023) Reconstructing computational system dynamics from neural data with recurrent neural networks. *Nature Reviews Neuroscience* 24(11):693-710.
- Hess F, Monfared Z, Brenner M, **Durstewitz D** (2023) Generalized Teacher Forcing for Learning Chaotic Dynamics. *Proceedings of the 40th International Conference on Machine Learning (ICML)*, PMLR 202:13017-13049.
- Thome J, Pinger M, **Durstewitz D**, Sommer WH, Kirsch P, Koppe G (2023) Model-based experimental manipulation of probabilistic behavior in interpretable behavioral latent variable models. *Frontiers in Neuroscience* 16, 1077735.
- Domanski APF, Kucewicz MT, Russo E, Tricklebank MD, Robinson ESJ, **Durstewitz D***, Jones MW* (2023) Distinct hippocampal-prefrontal neural assemblies coordinate memory encoding, maintenance, and recall. *Current Biology* 33 (7): 1220—1236. *Equal contribution
- Hanganu-Opatz IL, Klausberger T, Sigurdsson T, Nieder A, Jacob SN, Bartos M, Sauer J-F, **Durstewitz D**, Leibold C, Diester I (2023) Resolving the prefrontal mechanisms of adaptive cognitive behaviors: A cross-species perspective. *Neuron* 111 (7): 1020—1036.
- Mikhaeil JM, Monfared Z, **Durstewitz D** (2022) On the difficulty of learning chaotic dynamics with RNNs. *Proceedings of the 36th Conference on Neural Information Processing Systems (NeurIPS)*, 1-34.
- Kramer D*, Bommer P*, Tombolini C, Koppe G, **Durstewitz D** (2022) Reconstructing nonlinear dynamical systems from multi-modal time series data. *Proceedings of the 39th International Conference on Machine Learning (ICML)*, PMLR 162:11613–11633.
- Brenner M*, Hess F*, Mikhaeil JM, Bereska L, Monfared Z, Kuo P-C, **Durstewitz D** (2022) Tractable Dendritic RNNs for Reconstructing Nonlinear Dynamical Systems. *Proceedings of the 39th International Conference on Machine Learning (ICML)*, PMLR 162:2292-2320.

- Thome J, Steinbach R, Grosskreutz J, **Durstewitz D***, Koppe G* (2022). Classification of amyotrophic lateral sclerosis by brain volume, connectivity, and network dynamics. *Human Brain Mapping* 43(2), 681-699. *Equal contribution
- Thome J, Pinger M, Halli P, **Durstewitz D**, Sommer WH, Kirsch P, Koppe G (2022) A model guided approach to evoke homogeneous behavior during temporal reward and loss discounting. *Frontiers in Psychiatry* 13, 846119.
- Melbaum S, Russo E, Eriksson D, Schneider A, **Durstewitz D**, Brox T, Diester I (2022) Conserved structures of neural activity in sensorimotor cortex of freely moving rats allow cross-subject decoding. *Nature Communications* 13 (1): 7420.
- Götzl C, Hiller S, Rauschenberg C, Schick A, Fechtelpeter J, Fischer-Abaigar U, Koppe G, **Durstewitz D**, Reininghaus U, Krumm S (2022) Artificial intelligence-informed mobile mental health apps for young people: a mixed-methods approach on users' and stakeholders' perspectives. *Child and Adolescent Psychiatry and Mental Health* 16(1): 1-19.
- Schmidt D, Koppe G, Monfared Z, Beutelspacher M, **Durstewitz D** (2021) Identifying nonlinear dynamical systems with multiple time scales and long-range dependencies. *International Conference on Learning Representations (ICLR)*. pp. 1-29.
- Koppe G, Meyer-Lindenberg A, **Durstewitz D** (2021) Deep learning for small and big data in psychiatry. *Neuropsychopharmacology*, 46(1), 176-190.
- Durstewitz D**, Huys, QJM, Koppe G (2021). Psychiatric Illnesses as Disorders of Network Dynamics. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*, 6(9), 865-876.
- Russo E, Ma T, Spanagel R, **Durstewitz D**, Toutounji H, Köhr G (2021) Coordinated prefrontal state transition leads extinction of reward-seeking behaviors. *Journal of Neuroscience* 41(11): 2406—2419.
- Rauschenberg C, Schick A, Goetzl C, Roehr S, Riedel-Heller SG, Koppe G, **Durstewitz D**, Krumm S, Reininghaus U (2021) Social isolation, mental health, and use of digital interventions in youth during the COVID-19 pandemic: A nationally representative survey. *European Psychiatry* 64(1): e20.
- Braun U, Harneit A, Pergola G, Menara T, Schäfer A, Betzel RF, Zang Z, Schweiger JI, Zhang X, Schwarz K, ..., **Durstewitz D**, ..., Bassett D, Tost H (2021) Brain network dynamics during working memory are modulated by dopamine and diminished in schizophrenia. *Nature communications* 12(1): 3478.
- Rauschenberg C, Goetzl C, Schick A, Koppe G, **Durstewitz D**, Krumm S, Reininghaus U (2021) Living lab AI4U-artificial intelligence for personalized digital mental health promotion and prevention in youth. *European Journal of Public Health* 31: ckab164—746.
- Monfared Z, **Durstewitz D** (2020) Transformation of ReLU-based recurrent neural networks from discrete-time to continuous-time. *Proceedings of the 37th International Conference on Machine Learning, PMLR* 119:6999-7009.
- Koppe G, Meyer-Lindenberg A, **Durstewitz D** (2020) *Deep learning for small and big data in psychiatry. Neuropsychopharmacology* 46: 176–190.
- Monfared Z, **Durstewitz D** (2020) Existence of n-cycles and border-collision bifurcations in piecewise-linear continuous maps with applications to recurrent neural networks. *Nonlinear Dynamics* 101:1037-1052.
- Linke JO, Koppe G, Scholz V, Kanske P, **Durstewitz D**, Wessa M (2020) Aberrant probabilistic reinforcement learning in first-degree relatives of individuals with bipolar disorder. *Journal of affective disorders* 264: 400—406.
- Heinz A, Kiefer F, Smolka MN, Endrass T, Beste C, Beck A, Liu S, Genauck A, Romund L, Banaschewski T, ..., **Durstewitz D**, ..., Tost H, Spanagel R (2020) Addiction Research Consortium: Losing and regaining control over drug intake (ReCoDe)—From trajectories to mechanisms and interventions. *Addiction biology* 25(2): e12866.
- Oetli L-L, Scheller M, Filosa C, Wieland S, Haag F, Loeb C, **Durstewitz D**, Shusterman R, Russo E, Kelsch W (2020) Phasic dopamine reinforces distinct striatal stimulus encoding in the olfactory tubercle driving dopaminergic reward prediction. *Nature communications* 11(1): 3460.

- Durstewitz D**, Koppe G, Meyer-Lindenberg A (2019) Deep neural networks in psychiatry. *Molecular Psychiatry*, 24: 1583–1598.
- Koppe G, Toutounji H, Kirsch P, Lis S, **Durstewitz D** (2019) Identifying nonlinear dynamical systems via generative recurrent neural networks with applications to fMRI. *PLoS computational biology*, 15(8):e1007263.
- Koppe G, Guloksuz S, Reininghaus U, **Durstewitz D** (2019) Recurrent Neural Networks in Mobile Sampling and Intervention. *Schizophr Bull.* 45(2):272-276.
- Kirschbaum E, Haußmann M, Wolf S, Sonntag H, Schneider J, Elzoheiry S, Kann O, **Durstewitz D**, Hamprecht FA (2019) LeMoNADE: Learned Motif and Neuronal Assembly Detection in calcium imaging videos. *International Conference on Learning Representations (ICLR)*.
- Toutounji H, **Durstewitz D** (2018) Detecting Multiple Change Points Using Adaptive Regression Splines With Application to Neural Recordings. *Front Neuroinform.* 4; 12:67.
- Oboti L, Russo E, Tran T, **Durstewitz D**, Corbin JG (2018) Amygdala Corticofugal Input Shapes Mitral Cell Responses in the Accessory Olfactory Bulb. *eNeuro* 5(3). pii: ENEURO.0175-18.2018.
- Peter P, Kirschbaum E, Both M, Campbell L, Harvey B, Heins C, **Durstewitz D**, Diego F, Hamprecht F (2017) Sparse convolutional coding for neuronal assembly detection. *Proceedings of the 31st Conference on Neural Information Processing Systems (NeurIPS)*, 3675-3685.
- Durstewitz D** (2017) A state space approach for piecewise-linear recurrent neural networks for identifying computational dynamics from neural measurements. *PLoS computational biology* 13, e1005542
- Koppe G, Mallien AS, Berger S, Bartsch D, Gass P, Vollmayr B & **Durstewitz D** (2017) CACNA1C gene regulates behavioral strategies in operant rule learning. *PLoS Biology* 15, e2000936
- Russo E & **Durstewitz D** (2017) Cell assemblies at multiple time scales with arbitrary lag constellations. *eLife* 6 e19428.
- Durstewitz D**, Koppe G & Toutounji H (2016) Computational models as statistical tools. *Current Opinion in Behavioral Sciences* 11, 93-99.
- Ma L, Hyman JM, **Durstewitz D**, Phillips AG, Seamans JK (2016) A Quantitative Analysis of Context-Dependent Re-mapping of Medial Frontal Cortex Neurons and Ensembles. *Journal of Neuroscience* 36(31):8258-72.
- Hass J, Hertäg L, **Durstewitz D** (2016) A Detailed Data-Driven Network Model of Prefrontal Cortex Reproduces Key Features of In Vivo Activity. *PLoS Comput Biol.* 12(5):e1004930.
- Hass J, **Durstewitz D** (2016) Time at the center, or time at the side? Assessing current models of time perception. *Current Opinion in Behavioral Sciences* 8:238–244.
- Demanele C, Bähner F, Plichta MM, Kirsch P, Tost H, Meyer-Lindenberg A, **Durstewitz D** (2015) A statistical approach for segregating cognitive task stages from multivariate fMRI BOLD time series. *Front Hum Neurosci.* 9:537.
- Demanele C, Kirsch P, Esslinger C, Zink M, Meyer-Lindenberg A, **Durstewitz D** (2015) Area-specific information processing in prefrontal cortex during a probabilistic inference task: a multivariate fMRI BOLD time series analysis. *PLoS One* 10(8):e0135424.
- Bähner F, Demanele C, Schweiger J, Gerchen MF, Zamoscik V, Ueltzhöffer K, Hahn T, Meyer P, Flor H, **Durstewitz D**, Tost H, Kirsch P, Plichta MM, Meyer-Lindenberg A (2015) Hippocampal-dorsolateral prefrontal coupling as a species-conserved cognitive mechanism: a human translational imaging study. *Neuropsychopharmacology* 40(7):1674-81
- Lapish, C.C.*, Balaguer-Ballester, E.*, Seamans, J.K., Phillips, A.G., **Durstewitz, D.** (2015) Amphetamine Exerts Dose-Dependent Changes in Prefrontal Cortex Attractor Dynamics during Working Memory. *J. Neurosci.* 35: 10172–10187.

- Hertäg L, **Durstewitz D***, Brunel N* (2014) Analytical approximations of the firing rate of an adaptive exponential integrate-and-fire neuron in the presence of synaptic noise. *Front Comput Neurosci.* 8:116. *equal contribution
- Hass J, **Durstewitz D** (2014) Neurocomputational models of time perception. *Adv Exp Med Biol.* 829:49-71.
- Spanagel R, **Durstewitz D**, Hansson A, Heinz A, Kiefer F, Köhr G, Matthäus F, Nöthen MM, Noori HR, Obermayer K, Rietschel M, Schloss P, Scholz H, Schumann G, Smolka M, Sommer W, Vengeliene V, Walter H, Wurst W, Zimmermann US (2013) Addiction GWAS Resource Group, Stringer S, Smits Y, Derks EM. A systems medicine research approach for studying alcohol addiction. *Addict Biol.* 18(6):883-96.
- Quiroga-Lombard CS, Hass J, **Durstewitz D** (2013) Method for stationarity-segmentation of spike train data with application to the Pearson cross-correlation. *Journal of Neurophysiology* **110**: 562-72.
- Richter SH, Zeuch B, Lankisch K, Gass P, **Durstewitz D**, Vollmayr B (2013) Where have I been? Where should I go? Spatial working memory on a radial arm maze in a rat model of depression. *PLoS One* **8**: e62458.
- Hertäg, L., Hass, J., Golovko, T., & **Durstewitz, D.** (2012) An approximation to the adaptive exponential integrate-and-fire neuron model allows fast and predictive fitting to physiological data. *Frontiers in Computational Neuroscience* **6**: Article 62.
- Hyman, J.M., Ma, L., Balaguer-Ballester, E., **Durstewitz, D.***, & Seamans, J.K.* (2012) Contextual encoding by ensembles of medial prefrontal cortex neurons. *Proc. Natl. Acad. Sci. USA.* **109**: 5086-91. *equal contribution
- Balaguer-Ballester, E.*, Lapish, C.C.*, Seamans, J.K., & **Durstewitz, D.** (2011) Predictive Attractor Dynamics of Cortical Populations During Memory-Guided Decision-Making. *PLoS Computational Biology* **7**(5): e1002057. *shared first-authorship
- Hass, J., & **Durstewitz, D.** (2011) Models of dopaminergic modulation. *Scholarpedia* **6**(8): 4215.
- Durstewitz, D. ***, Vittoz, N.M. *, Floresco, S.B., & Seamans, J.K. (2010) Abrupt transitions between prefrontal neural ensemble states accompany behavioral transitions during rule learning. *Neuron* **66**: 438-48. *equal contribution
- Durstewitz, D.** (2009) Implications of synaptic biophysics for recurrent network dynamics and active memory. *Neural Networks* **22**: 1189-1200.
- Seamans, J.K., Lapish, C.C., & **Durstewitz, D.** (2008) Comparing the prefrontal cortex of rats and primates: Insights from electrophysiology. *Neurotoxicity Research* **14**: 249-262.
- Lapish, C.C.*, **Durstewitz, D.***, Chandler, L.J., & Seamans, J.K. (2008) Successful choice behavior is associated with distinct and coherent network states in anterior cingulate cortex. *Proc. Natl. Acad. Sci. USA* **105**: 11963-8. *shared first-authorship
- Durstewitz, D.**, Seamans, J.K. (2008) The dual-state theory of prefrontal cortex dopamine function with relevance to COMT genotypes and schizophrenia. *Biological Psychiatry* **64**: 739-749.
- Durstewitz, D.**, & Deco, G. (2008) Computational significance of transient dynamics in cortical networks. *European Journal of Neuroscience.* **27**:217-27. Epub 2007.
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