

Curriculum Vitae

Benjamin Dann



Personal details

Address	Wilhelm-Weber-Str.27a, Göttingen, Germany
Email	Benjamin.dann@googlemail.com
Birthday	September 25 th 1982 in Darmstadt, Germany
Nationality	German
Family Status	Married with Tanja Strecker, one daughter: Julia Sophia Dann (August 11st 2016)
Current position	Postdoc at the German Primate Center, Goettingen, Germany

Education

2017 -	Research Scientist, Neurobiology Lab of Hans Scherberger, German Primate Center (DPZ), Göttingen, German
2011 - 2017	Graduate Student, Neurobiology Lab of Hans Scherberger, German Primate Center (DPZ), Göttingen, German
2009 – 2011	Research Assistant, Neurobiology Lab of Hans Scherberger, German Primate Center (DPZ), Göttingen, German
2007 – 2009	Diploma Student, Diploma theses/ Master theses, Department of Neurophysiology of Wolf Singer, Max-Planck Institute for Brain Research, Frankfurt, Germany
2005 – 2007	Undergraduate, Hauptstudium/ Master classes in Neurobiology/Neuroscience, Otto-von-Guericke-University, Magdeburg, Germany

2006 – 2007	Research Assistant, Neuroprotheses Lab of Frank Ohl, Leibniz-Institute for Neurobiology (LIN), Magdeburg, Germany
2003-2005	Undergraduate, Grundstudium/ Bachelor classes in Biology, Technical University Darmstadt, Darmstadt, Germany
2002	Abitur, Eleonorenschool, Darmstadt, Germany

Research

Interest: System neuroscience, multi-electrode array electrophysiological recordings of behaving animals, population coding and dynamics, dimensionality reduction methods, functional connectivity, effective connectivity, graph theory, network analyses, parametric and nonparametric statistics including modern multiple comparison corrections, clustering algorithms, frequency analyses.

Skills: Animal care, training, and surgery (rat, gerbil, cat, and monkey). Neural data acquisition (optical imaging and electrophysiological recordings), programming (Matlab, Lab View), signal processing, spike sorting, statistics, graph theory measures, functional connectivity measures, frequency analyzes, dimensionality reduction techniques

Awards and honours

German Primate Center Sponsorship Award (2017).

Doctoral Thesis awarded “summa cum laude” (2017).

Talks

2018	Information and Coordinator Hubs of the macaque fronto-parietal single neuron network. Department of Psychological and Brain Sciences, Indiana University. July 13 th , Bloomington, IN, USA.
2017	Three categorical subspaces explain population dynamics in the fronto-parietal grasping network. 40 th Annual Meeting of the Society for Neuroscience. November 14 th , Washington, DC, USA.
2017	Single trial population activity of the fronto-parietal grasping network evolves through three independent subspaces. 13 th Bernstein

- Conference. September 15th, Göttingen, Germany.
- 2017 Three population dynamical states describe single trial activity in the fronto-parietal network. 10th Primate Neurobiology Meeting. March 6th, Göttingen, Germany.
- 2016 Separable decoding of visual, intention, and movement information from the fronto-parietal grasping-network. 6th International Brain-Computer Interface Meeting. May 31st, Pacific Grove, CA, USA.
- 2016 Functional rich-club, hub neurons of the front-parietal network are predominantly oscillators. Ernst-Strüngmann Institute (ESI). May 23rd, Frankfurt, Germany.
- 2014 Delta and Beta dynamics of the fronto-parietal spiking-network. 7th Primate Neurobiology Meeting. March 26th, Tübingen, Germany.

Papers in peer-reviewed journals

- Intveld RW, **Dann B**, Michaels JA, Scherberger H (2018). Neural coding of intended and executed grasp force in macaque areas AIP, F5, and M1. *Scientific Reports*:1–16.
- Michaels JA*, **Dann B***, Intveld RW, Scherberger H (2018) *Equal contribution. Neural Dynamics of Variable Grasp-Movement Preparation in the Macaque Frontoparietal Network. *J Neurosci* 38:5759–5773.
- Michaels JA, **Dann B**, Scherberger H (2016). Neural Population Dynamics during Reaching Are Better Explained by a Dynamical System than Representational Tuning. *PLoS Comput Biol* 12:e1005175–22.
- Dann B**, Michaels JA, Schaffelhofer S, Scherberger H (2016). Uniting functional network topology and oscillations in the fronto-parietal single unit network of behaving primates. *Elife* 5:2870.
- Michaels JA, **Dann B**, Intveld RW, Scherberger H (2015). Predicting Reaction Time from the Neural State Space of the Premotor and Parietal Grasping Network. *J Neurosci* 35:11415–11432.
- Takagaki K, Lippert MT, **Dann B**, Wanger T, Ohl FW (2008). Normalization of Voltage-Sensitive Dye Signal with Functional Activity Measures Mansvelder HD, ed. *PLoS ONE* 3:e4041–12.

Conference proceedings contributions

- Dann B**, Michaels JA, Scherberger H. 2016 (published). Separable decoding of cue, intention,

and movement information from the fronto-parietal grasping-network. Proceedings of the Sixth International Brain-Computer Interface Meeting, pp 1–261.

In-progress publications

Dann B, Sporns O., Scherberger H (in prep.). Distributed Neuronal Network Dynamics in Macaque Cortex related to Cognition and Behavior

Dann B*, Michaels JA*, Scherberger H. *Equal contribution (in prep.). Encoding subspaces explains monkey single trial visuo-motor decision dynamics

Scherberger H, **Dann B**, Kronen P (in prep.) Population single unit recording from primate sub-surface cortical areas using floating multi-electrode arrays.

Sheshadri S*, **Dann B***, Intveld RW, Scherberger H (in prep.) *Equal contribution. Behavioral and temporal dynamics of the fronto-parietal grasping network in macaques.

Posters and conference participations

Dann B, Scherberger H (2018). Uncorrelated low-dimensional population response and noise correlation network structure in the macaque fronto-parietal grasping network. 41th Annual Meeting of the Society for Neuroscience. November 6th, San Diego, CA, USA.

Dann B, Michaels JA, Agudelo-Toro A, Scherberger H (2018). Subspace population dynamics of single-trial spiking activity in the fronto-parietal grasping network. Mechanisms of Dexterous Behavior. May 14th – 15th, Ashburn, VA, USA

Dann B, Michaels JA, Scherberger H (2018). Information subspaces capture decision related population dynamics of the fronto-parietal grasping network. 11th Primate Neurobiology Meeting. March 16th, Tübingen, Germany.

Dann B, Michaels JA, Agudelo-Toro A, Scherberger H (2017). Single trial population activity of the fronto-parietal grasping network evolves through three independent subspaces. 13th Bernstein Conference. September 13th, Göttingen, Germany.

Dann B, Sheshadri S, Scherberger H (2017). Behavioral dependant antagonistic coordination of beta and low-frequency hub units in front-parietal grasping network. ESI – Systems Neuroscience Conference 2017. Frankfurt, Germany.

Dann B, Michaels JA, Scherberger H (2016). Separable decoding of visual, intention, and

- movement information from the fronto-parietal grasping-network. 6th International Brain-Computer Interface Meeting. Pacific Grove, CA, USA.
- Dann B**, Michaels JA, Scherberger H (2016). Disentangling cue, intention, and movement information from the fronto-parietal network. 9th Primate Neurobiology Meeting. Tübingen, Germany.
- Dann B**, Michaels, JA, Stefan Schaffelhofer S, Scherberger H (2015). The single unit network for hand grasping has a small-world and rich-club topology with oscillators as hubs. 6th biennial NEURIZONS Conference. Göttingen, Germany.
- Dann B**, Michaels, JA, Stefan Schaffelhofer S, Scherberger H. Small world and rich club dynamics of the single unit motor network and their correlation to oscillations. 8th Primate Neurobiology Meeting. Göttingen, Germany.
- Dann B**, Michaels, JA, Stefan Schaffelhofer S, Scherberger H (2015). Small world and rich club dynamics of the single unit motor network and their correlation to oscillations. 11th Göttingen Meeting of the German Neuroscience Society. Göttingen, Germany.
- Wellner B**, Michaels, JA, Schaffelhofer S, Scherberger H (2014). Role of beta and low frequency oscillations in functional network connectivity of single units in the primate motor system. 10th Bernstein Conference. Göttingen, Germany.
- Wellner B**, Michaels, JA, Schaffelhofer S, Scherberger H (2014). Role of beta and low frequency oscillations in functional network connectivity of single units in the primate motor system. ESI – Systems Neuroscience Conference 2014 - Workshop on Inter-areal interactions 2014. Frankfurt, Germany.
- Wellner B**, Suway SB, Scherberger H (2014). Neuronal network dynamics within and between frontal and parietal cortex in a massively parallel recording approach in the macaque monkey. Computational and Systems Neuroscience (Cosyne) 2014. Salt Lake City, UT, USA.
- Wellner B**, Suway SB, Scherberger H (2013). Network dynamics of spike-spike interactions within and between frontal and parietal cortex. 43rd Annual Meeting of the Society for Neuroscience. San Diego, CA, USA.
- Wellner B**, Suway SB, Scherberger H (2013). Neuronal network dynamics within and between frontal parietal cortex in a massively parallel recording approach. The Assembly and Function of Neuronal Circuits 2013. Ascona, Switzerland.
- Wellner B**, Michaels JA, Wellner A, Scherberger H (2013). Single trial neuronal correlates of

decision-making for hand grasping in macaque area F5 and AIP. 10th Göttingen Meeting of the German Neuroscience Society. Göttingen, Germany.

Wellner B, Michaels JA, Wellner A, Scherberger H (2013). Single trial neuronal correlates of decision-making for hand grasping in macaque area F5 and AIP. 6th Primate Neurobiology Meeting. Göttingen, Germany.

Wellner B, Wellner A, Suway SB, Scherberger H (2012). Differential neuronal activity during freely chosen and instructed hand grasping movements. Internal Conference on Brain Dynamics and Decision Making 2012. Ascona, Switzerland.

Wellner B, Wellner A, Suway SB, Scherberger H (2012). Different activity for choice and instructed trials for grasping in AIP and F5. 5th Primate Neurobiology Meeting. Tübingen, Germany.

Wellner B, Wellner A, Scherberger, H (2011). Neuronal correlates of decision-making for hand grasping. 40th Annual Meeting of the Society for Neuroscience. San Diego, Washington, DC, USA.

Wellner B, Wellner A, Scherberger, H (2011). Decision-making between two grasp types modulated by different reward values in Area AIP and F5 of macaque monkey. 9th Göttingen Meeting of the German Neuroscience Society. Göttingen, Germany.

Wellner B, Wellner A, Scherberger, H (2011). Decision-making between two grasp types modulated by different reward values in Area AIP and F5 of macaque monkey. 4th Primate Neurobiology Meeting. Göttingen, Germany.

Wellner B, Wellner A, Scherberger, H (2011). Decision-making between different grasp types in AIP and F5 of macaque monkey modulated by different reward values. FENS-IBRO HERTIE Winter School, The systems neuroscience of primate hand function: models, mechanisms, rehabilitation and mirror systems. Obergurgl, Austria.

Wellner B, Wellner A, Scherberger, H (2010). Decision-making between different grasp types in AIP and F5 of macaque monkey. 39th Annual Meeting of the Society for Neuroscience. San Diego, CA, USA.

Supervised theses

Ph.D. Theses

2015 - Swathi Sheshadri. Amplitude free reconfiguration of the beta and theta fronto-parietal network for different grasps and tasks (Georg-August-University Göttingen)

Master Theses

2017 - 2017 Michael Lutz. Coupling to population rate within and across areas of the front-parietal grasping network (University of Konstanz)

2014 - 2015 Yves Baetz, Fronto-parietal synchronization for hand grasping in macaque monkey (Georg-August-University Göttingen)

2009 - 2011 Alexandra Wellner. LFP activity in AIP and F5 encode grip type and object orientation (Westfälische Wilhelms-University Münster).

Bachelor Theses

2013 - 2013 Carolina Focke. Spike-field coherence between and within F5 and AIP for different grasp conditions

2012 - 2012 Yves Baetz. LFP activity for decision making and grasping (Georg-August-University Göttingen)

Long Internships

2011 - 2012 Steve Suway, Reward representation in AIP and F5 during decision-making in a grasping task (German Primate Center Göttingen)

Teaching experience

2018 Experimental design in Neurobiology, Laboratory Animal Course on Primates (LAS), German Primate Center (DPZ), Göttingen, Germany

2017 Wie steuert das Gehirn Bewegungen?, lecture for final grade Gymnasium students Leistungskurs Biologie, German Primate Center (DPZ), Göttingen, Germany

2016 Experimental design in Neurobiology, Laboratory Animal Course on Primates (LAS), German Primate Center (DPZ), Göttingen, Germany

2008 Introduction to Neurophysiology, lecture for the master program biology, Max-Planck Institute for Brain Research, Frankfurt, Germany

2008 Methods of Neurophysiology, lecture for the master program biology,
Max-Planck Institute for Brain Research, Frankfurt, Germany

Workshop participations

2016 Primate Neurobiology Methods: Behavior, Experiments, Analysis, and
Ethics

2015 EUPRIM-NET Course on General Primatology, Göttingen, Germany

2014 ESI-SyNC - Workshop on Inter-areal interactions, Frankfurt, Germany

2014 Laboratory Animal Science Course on Primates, Tübingen Germany

2014 Fieldtrip Workshop, Göttingen, Germany

2012 Fieldtrip Workshop, Frankfurt, Germany

2012 Scientific integrity & the responsible conduct of research, Göttingen,
Germany

2011 Press communication training of the Klaus Tschira Stiftung, Göttingen,
Germany

2010-2011 FENS-IBRO HERTIE Winter School, The systems neuroscience of
primate hand function: models, mechanisms, rehabilitation and mirror
systems, Obergurgl, Austria

2009 FELASA Compact course: experimental animals and replacement
methods, Course on Laboratory Animal Science, Berlin, Germany