

Johan Winnubst

Curriculum vitae

Contact Information

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Education

2010 – 2015 PhD Student, Netherlands Institute for Neuroscience (*cum laude*)
2008 – 2010 Master of Neuroscience, Vrije Universiteit Amsterdam (*cum laude*)
2004 – 2007 Bachelor of Biological Psychology, Vrije Universiteit Amsterdam

Research Experience

2019-Now Research Scientist, *Janelia Research Campus*, Nelson Spruston, Ph.D.
“*Spatial coding and generalization in the mouse hippocampus*”
Aug. 2015-2019 Postdoctoral Associate, *Janelia Research Campus*, MouseLight Project, Jayaram Chandrashekar, Ph.D.
“*High-throughput complete single cell reconstruction throughout the mouse brain*”
Aug. 2010-2015 PhD Student, *Netherlands Institute for Neuroscience*, Prof. Dr. Christian Lohmann
“*Activity-dependant clustering of co-active synapses during development*”
Feb. –Jul.2010 M.Sc. Internship, *Netherlands Institute for Neuroscience*, Prof. Dr. Christian Lohmann
Feb.– Jul.2009 M.Sc. Internship, *CNCR Amsterdam*, Prof. Dr. Sabine Spijker
“*Endocytosis of GluA2 during a passive avoidance fear conditioning task*”
Feb.– Jul.2007 B.Sc. Internship, *Vrije Universiteit Amsterdam*, Asst. Prof. Dennis van 't Ent
“*Genetic influence of MEG-recorded somatosensory evoked responses*”

Honors and Awards

2016 Top Paper DN 2016 - Winnubst et al. 2015, *Neuron*: Spontaneous Activity Drives Local Synaptic Plasticity in Vivo
2016 Second place Dutch Neurofederation Ph.D. Thesis Prize
2015 Received distinction ‘Cum Laude’, awarded in cases of outstanding competence and a dissertation of excellent academic quality
2012 Honorable Mention. Art of Neuroscience.

Publications

1. [Winnubst J.](#), Spruston N., Harris J.A. (2020). *Linking axon morphology to gene expression: a strategy for neuronal cell-type classification*. **Curr. Opin. Neurob.** 65, 70-76
2. Phillips J.W., Schulmann A., Hara E., [Winnubst J.](#), Liu C., Valakh V., Wang L., Shields B.C., Korff W., Chandrashekar J., Lemire A.L., Mensh B., Dudman J.T., Nelson S.B., Hantman A.W. (2019). *A repeated molecular architecture across thalamic pathways*. **Nat. Neuroscience** 22, 1925-1935
3. [Winnubst J.](#), Bas E., Ferreira T.A., Wu Z., Economo M.N., Edson P., Arthur B.J., Bruns C., Rokicki K., Schauder D., Olbris D.J., Murphy S.D., Ackerman D.G., Arshadi C., Baldwin P., Blake R., Elsayed A., Hasan M., Ramirez D., Dos Santos B., Weldon M., Zafar A., Dudman J.T., Gerfen C.R., Hantman A.W., Korff W., Sternson S.M., Spruston N., Svoboda K., Chandrashekar J. (2019). *Reconstruction*

of 1,000 projection neurons reveals new cell types and organization of long-range connectivity in the mouse brain. **Cell** 179, 268-281

Media coverage: Nature, Nature Rev. Neuro., Scientific American, Vice, The Scientist, Futurism

4. Economo M.N., Winnubst J., Bas E., Ferreira T.A., Chandrashekar J. (2019). *Single-neuron axonal reconstruction: The search for a wiring diagram of the brain*. **J. Comp. Neurol.** 527, 2190-2199
5. Economo M., Viswanathan S., Tasic B., Bas E., Winnubst J., Menon V., Graybuck L., Nguyen TN., Wang L., Gerfen CR., Chandrashekar J., Zeng H., Looger LL., Svoboda K. (2018). *Distinct descending motor cortex pathways and their roles in movement*. **Nature** 563, 79-84
6. Cembrowski MS., Phillips MG., DiLisio SF., Shields BC., Winnubst J., Chandrashekar J., Bas E., Spruston N. (2018). *Dissociable Structural and Functional Hippocampal Outputs via Distinct Subiculum Cell Classes*. **Cell** 173, 1280-1292
7. Hooks BM., Papale AE., Paletzki R., Feroze M., Eastwood b., Couey J., Winnubst J., Chandrashekar J., Gerfen CR. (2018). *Cell type-specific variation of somatotopic precision across corticostriatal projections*. **Nat. Commun.** 9, 1-16
8. Winnubst J., Lohmann C. (2017). *Mapping synaptic inputs of developing neurons using calcium imaging*. **Synapse Development (book chapter)**. 341-352
9. Winnubst J.*, Cheyne J.*, Niculescu D.*, Lohmann C. (2015). *Spontaneous Activity Drives Local Synaptic Plasticity In Vivo*. **Neuron** 87, 399-410
10. Winnubst J., Lohmann C. (2012). *Synaptic clustering during development and learning: the why, when, and how*. **Front. Mol. Neurosci.** 5, 70
11. Kleindienst T. *, Winnubst J.*, Roth-Alpermann C., Bonhoeffer T., Lohmann C. (2011). *Activity-dependent clustering of functional synaptic inputs on developing hippocampal dendrites*. **Neuron** 72, 1012–1024

* Shared first authorship

Selected Conference Abstracts

- *The Janelia MouseLight Database: Complete axonal reconstructions from hundreds of individual long-range projecting neurons*. **Annual meeting SFN 2017** (Talk).
- *Spontaneous Activity Drives Local Synaptic Plasticity In Vivo*. **Gordon Research Conference. Dendrites: Molecules, Structure and Function 2015** (Selected talk).
- *Spontaneous network activity drives the clustering of temporally-related synaptic inputs during development*. **Annual meeting SFN 2013** (Poster).
- *Spontaneous network activity drives the clustering of temporally-related synaptic inputs during development*. **Dutch Endo-Neuro-Psycho Meeting 2012** (Talk).
- *Activity dependence of dendritic fine-scale organization*. **Göttingen Meeting of the German Neuroscience Society 2011** (Poster).
- *Activity-dependent clustering of functional synaptic inputs on developing hippocampal dendrites*. **Dutch Endo-Neuro-Psycho Meeting 2011** (Poster).
- *Rate of extinction during disrupted AMPA receptor endocytosis in a passive avoidance task*. **Dutch Endo-Neuro-Psycho Meeting 2009** (Poster).

Teaching and mentoring experience

- 2010-2015 Yearly one week workshop for the course 'Live Cell Imaging' from the Vrije Universiteit Amsterdam Neuroscience master.
- Jan-June 2013 Mentor of Jon-Ruben van Rhijn (master student). *Inducing synchronous activity by optogenetic stimulation during hippocampal development in vitro*.
- Jan-June 2012 Mentor of Robin Broersen (master student). *Spontaneous and optogenetically controlled activity patterns in hippocampal pyramidal neurons during development*.

Related Professional Experience

- 2019-Now Co-president of the Janelia Association of Research Scientists.
- 2012-2015 Member of the Swammerdam Lecture Committee.
- 2012-2015 Member of the Representative Advisory Board of the Netherlands Institute for Neuroscience.
- 2009 – 2010 Student Representative, Master of Neurosciences Programme committee