

Curriculum Vitae

Corette J. Wierenga

ORCID # 0000-0001-9073-4099

Personal

Birth date and place : 23 October 1972 in Nijmegen (NL)
Nationality : Dutch
Marital status : living with partner and children
Children : 2 (April 2008 and April 2012)
Languages : Dutch (mother tongue), English (fluent), German (good)

Current position (since 2022)

Full Professor of Neurophysiology
Faculty of Science & Donders Institute
Radboud University, Nijmegen (NL)

Previous positions

2015-2022 Associate Professor at the Faculty of Science at Utrecht University (NL)
2012 - 2015 Assistant Professor at the Faculty of Science at Utrecht University (NL)
2011 - 2012 Research associate in the group of Prof. Casper Hoogenraad at Utrecht University (NL)
2005 - 2011 Group leader/senior postdoc in the group of Prof. Tobias Bonhoeffer at the Max Planck Institute of Neurobiology in Martinsried-Munich (DE)
2002 - 2005 Postdoctoral fellow in the group of Prof. Gina Turrigiano at Brandeis University in Waltham (MA, USA)

Education

2002 **Ph.D. neurobiology**, Universiteit van Amsterdam (NL)
Title: "*Functional interactions between interneurons and the pyramidal cell population in the hippocampal CA1 area*"
Supervisor: Prof. Dr. W.J. Wadman
1996 **M.Sc. physics**, Vrije Universiteit, Amsterdam (NL)
Title: "*Quantum electrodynamics of vertical cavity surface emitting lasers*"
Supervisor: Prof. Dr. D. Lenstra

Publications

Peer-reviewed articles

1. Bijlsma A, Omrani A, Spoelder M, Verharen JPH, Bauer L, Cornelis C, de Zwart B, van Dorland R, Vanderschuren LJMJ, **Wierenga CJ** (2022) Social play is critical for the development of prefrontal inhibitory synapses and cognitive flexibility in rats. *BioRxiv*.
2. Liang J, Kruijssen DLH, Verschuuren ACJ, Voesenek BJB, Benavides F, Sáez Gonzalez M, Ruiter M, **Wierenga CJ** (2021) Axonal CB1 receptors mediate inhibitory bouton formation via cAMP increase. *Journal of Neuroscience*, 41: 8279-8296.

3. Homberg J et al. (2021) The continued need for animals to advance brain research. *Neuron* 109: 2374-2379.
4. Ruiten M, Lützkendorf C, Liang J, **Wierenga CJ** (2021) Amyloid- β oligomers induce only mild changes to inhibitory bouton dynamics. *Journal of Alzheimer's Disease Reports*, 5: 153-160.
5. Lindhout FW, Portegies S, Kooistra R, Herstel LJ, Stucchi R, Hummel JJA, Scheefhals N, Katrukha EA, Altelaar M, MacGillavry HD, **Wierenga CJ**, Hoogenraad CC (2021) Centrosome-mediated microtubule remodeling during axon formation in human iPSC-derived neurons. *EMBO Journal* e106798.
6. Peerboom C, **Wierenga CJ** (2021) The postnatal GABA shift: A developmental perspective. *Neuroscience and Biobehavioral Reviews* 124: 179–192.
7. Herstel LJ, **Wierenga CJ** (2021) Network control through coordinated inhibition. *Current Opinion in Neurobiology* 67: 34-41.
8. Ruiten M, Herstel LJ, **Wierenga CJ** (2020) Reduction of dendritic inhibition in CA1 pyramidal neurons in amyloidosis models of early Alzheimer's disease. *Journal of Alzheimer's Disease* 78: 951-964.
9. Lindhout FW, Kooistra R, Portegies S, Herstel LJ, Stucchi R, Snoek BL, Altelaar M, MacGillavry MD, **Wierenga CJ**, Hoogenraad CC (2020) Quantitative mapping of transcriptome and proteome dynamics during polarization of human iPSC-derived neurons. *eLIFE* 9: e58124.
10. Genzel L. et al. (2020) How the COVID-19 pandemic highlights the necessity of animal research. *Current Biology* 30: 1009-1035.
11. Kruijssen DLH, **Wierenga CJ** (2019) Single Synapse LTP: a Matter of Context? *Frontiers in Cellular Neuroscience* 13: 496.
12. Hu HY, Kruijssen DLH, Frias CP, Rózsa B, Hoogenraad CC, **Wierenga CJ** (2019) Endocannabinoid signaling mediates local dendritic coordination between excitatory and inhibitory synapses. *Cell Reports* 27: 666-675.
13. Frias CP, Liang J, Bresser T, Scheefhals L, van Kesteren M, van Dorland R, Hu HY, Bodzeta A, van Bergen en Henegouwen PMP, Hoogenraad CC, **Wierenga CJ** (2019) Semaphorin4D induces inhibitory synapse formation by rapid stabilization of presynaptic boutons via MET co-activation. *Journal of Neuroscience* 39: 4221-4237.
14. Nijhof SL, Vinkers CH, van Geelen SM, Duijff SN, Achterberg EJM, van der Net J, Veltkamp RC, Grootenhuys MA, van de Putte EM, Hillegers MHJ, van der Brug AW, **Wierenga CJ**, Benders MJNL, Engels RCME, Van der Ent CK, Vanderschuren LJM, Lesscher HMB (2018) Healthy play, better coping: The importance of play for the development of children in health and disease. *Neuroscience & Biobehavioral Reviews* 95: 421-429.
15. Niculescu D, Michaelsen-Preusse K, Güner Ü, van Dorland R, **Wierenga CJ**, Lohmann C (2018) A BDNF-mediated push-pull plasticity mechanism for synaptic clustering. *Cell Reports* 24: 2063-2074.
16. Schätzle P, Esteves da Silva M, Tas RP, Katrukha EA, Hu HY, **Wierenga CJ**, Kapitein LC, Hoogenraad CC (2018) Activity-dependent actin remodeling at the base of dendritic spines promotes microtubule entry. *Current Biology* 28: 2081-2093.
17. Schulte JT, **Wierenga CJ***, Bruining H* (2018) Chloride transporters and GABA polarity in developmental, neurological and psychiatric conditions. *Neuroscience & Biobehavioral Reviews* 90: 260-271. * co-senior author
18. **Wierenga CJ** (2017) Live imaging of inhibitory axons: Synapse formation as a dynamic trial-and-error process. *Brain Research Bulletin* 129: 43-49.

19. Harschnitz O, van den Berg LH, Johansen LE, Jansen MD, Kling S, Vieira De Sá R, Vlam L, van Rheenen W, Karst H, **Wierenga CJ**, Pasterkamp RJ, van der Pol WL (2016) Autoantibody pathogenicity in a multifocal motor neuropathy iPSC-derived model. *Annals of Neurology* 80: 71-88.
20. Kellner Y, Fricke S, Kramer S, Iobbi C, **Wierenga CJ**, Schwab ME, Korte M, Zagrebelsky M (2016) Nogo-A controls structural plasticity at dendritic spines by rapidly modulating actin dynamics. *Hippocampus* 26: 816-831.
21. Lenz M, Galanis C, Müller-Dahlhaus F, Opitz A, **Wierenga CJ**, Szabó G, Ziemann U, Deller T, Klaus Funke, and Vlachos A (2016) Repetitive magnetic stimulation induces plasticity of inhibitory synapses. *Nature Communications* 7: 10020.
22. Esteves da Silva M, Adrian M, Schätzle P, Lipka J, Watanabe T, Cho S, Futai K, **Wierenga CJ**, Kapitein LC, Hoogenraad CC (2015) Positioning of AMPA receptor-containing endosomes regulates synapse architecture. *Cell Reports* 13: 933-943.
23. Müllner F, **Wierenga CJ***, Bonhoeffer T* (2015) Precision of inhibition: Dendritic inhibition by individual GABAergic synapses on hippocampal pyramidal cells is confined in space and time. *Neuron* 87, 576-589. * co-senior author
24. Adrian M, Kusters R, **Wierenga CJ**, Storm C, Hoogenraad CC and Kapitein LC (2014) Barriers in the Brain: Resolving Dendritic Spine Morphology and Compartmentalization. *Frontiers in Neuroanatomy* 8: 142.
25. Gomis-Rüth S, Stiess M, **Wierenga CJ**, Meyn L, Bradke F (2014) Single cell axotomy of cultured hippocampal neurons integrated in neuronal circuits. *Nature Protocols* 9: 1028-1037.
26. Frias CP, **Wierenga CJ** (2013) Activity-dependent adaptations in inhibitory axons. *Frontiers in Cellular Neuroscience* 7: 219.
27. Schuemann A, Klawiter A, Bonhoeffer T, **Wierenga CJ** (2013) Structural plasticity of GABAergic axons is regulated by network activity and GABA_A receptor activation. *Frontiers in Neural Circuits* 7: 113.
28. Vogels TP, Froemke RC, Doyon N, Gilson M, Haas JS, Liu R, Maffei A, Miller P, **Wierenga CJ**, Woodin MA, Zenke F and Sprekeler H (2013) Inhibitory synaptic plasticity: spike timing-dependence and putative network function. *Frontiers in Neural Circuits* 7: 119.
29. Keck T, Scheuss V, Jacobsen I, **Wierenga CJ**, Eysel U, Bonhoeffer T, Hübener M (2011) Loss of sensory input causes rapid structural changes of inhibitory neurons in adult mouse visual cortex. *Neuron* 71: 869-882.
30. **Wierenga CJ**, Müllner FE, Rinke I, Keck T, Stein V, Bonhoeffer T (2010) Molecular and electrophysiological characterization of GFP-expressing interneurons in GAD65-GFP mice. *PLoS One* 5: e15915.
31. **Wierenga CJ**, Becker N, Bonhoeffer T (2008) GABAergic synapses are formed without the involvement of dendritic protrusions. *Nature Neuroscience*, 11: 1044-1052.
32. Becker N, **Wierenga CJ**, Fonseca R, Bonhoeffer T, Nägerl UV (2008) Presynaptic boutons show a large degree of turnover after hippocampal LTD resulting in the removal of synaptic connections. *Neuron* 60:590-597.
33. Gomis-Rüth S, **Wierenga CJ**, Bradke F (2008) Plasticity of polarization: changing axonal and dendritic identity in mature neurons. *Current Biology* 18: 992-1000.
34. **Wierenga CJ**, Walsh MF, Turrigiano GG (2006) Temporal regulation of the expression locus of homeostatic plasticity. *Journal of Neurophysiology* 96: 2127-2133.
35. **Wierenga CJ**, Ibata K, Turrigiano GG (2005) Postsynaptic expression of homeostatic plasticity at neocortical synapses. *Journal of Neuroscience* 25: 2895-2905.

36. **Wierenga CJ**, Wadman WJ (2003) Functional relation between interneuron input and population activity in the hippocampal CA1 area. *Neuroscience* 118: 1129-1139.
37. **Wierenga CJ**, Wadman WJ (2003) Excitatory inputs to CA1 interneurons show selective synaptic dynamics. *Journal of Neurophysiology* 90:811-821.
38. **Wierenga CJ**, Wadman WJ (1999) Miniature inhibitory postsynaptic currents in CA1 pyramidal neurons after kindling epileptogenesis. *Journal of Neurophysiology* 82:1352-1362.

Book Chapter

Hoogenraad CC, **Wierenga C** (2014) Neurons, Overview. In: Aminoff M.J. and Daroff R.B. (eds.) Encyclopedia of the Neurological Sciences, 2nd edition, vol. 3, pp. 456-458. Oxford: Academic Press.

Prices and Awards

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| 2012 | NWO VIDI |
| 2012 | NWO Aspasia |
| 2008 | UNESCO-L'Oréal award 'For Women in Science' Germany
<i>National award (in Germany) for excellent and promising young female scientists in natural sciences</i> |
| 1999 | Young Physiologist Price of the Dutch Physiology Society
<i>Price for the best oral presentation at the Young Physiologists Day</i> |
| 1991 | Bronze medal at the 2 nd International Biology Olympiad in Machatskala (Russia)
<i>The International Biology Olympiad is a competition for high school students. Each country sends four students, who won the national competitions.</i> |

Research grants

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| 2022-2026 | Alzheimer Nederland grant (300.000 EUR)
<i>'Investigating effects of Aβ oligomers on presynaptic nanostructure and function'</i> |
| 2020-2024 | NWO-ENW klein-I grant (350.000 EUR)
<i>'How do dendrites coordinate adjacent excitatory and inhibitory inputs?'</i> |
| 2019-2021 | Alzheimer Nederland grant (100.000 EUR)
<i>'Linking amyloid β-induced microglia activation and network hyperexcitability'</i> |
| 2017-2022 | ZonMW TOP grant (225.000 of 675.000 EUR – project leader)
<i>'Early developmental processes underlying sensory deficits in neurodevelopmental disorders'</i> |
| 2017-2022 | FOM program (346.000 of 1.755.000 EUR – co-applicant)
<i>'NeuroPhotonics: unraveling the physics of signaling in intact neuronal networks'</i> |
| 2017-2019 | Alzheimer Nederland grant (100.000 EUR)
<i>'Amyloid β-induced pathology of inhibitory synapses'</i> |
| 2016-2021 | ALW grant (284.474 EUR - with Louk Vanderschuren)
<i>'How early social experience shapes higher brain function'</i> |
| 2015-2019 | FOM grant (400.000 EUR)
<i>'Two-photon microscopy of nonlinearities in dendritic computation'</i> |
| 2014-2015 | Dynamics of Youth Seeding grant (100.000 EUR - with Louk Vanderschuren)
<i>'How early social experience shapes brain development'</i> |
| 2012-2017 | VIDI grant from the Dutch Scientific Organization (NWO) (800.000 EUR)
<i>'Balancing the Brain: Local Interactions between Excitatory and Inhibitory Synapses'</i> |
| 2010-2013 | Marie Curie European Reintegration Grant (ERG) (45.000 EUR) |

- 'Local interactions between GABAergic and glutamatergic plasticity'*
2008-2010 Christiane Nüsslein-Volhard Fellowship (9.600 EUR)
- 2007-2009 Marie Curie Intra-European Fellowship (IEF) (72.700 EUR)
'The role of filopodia in synapse formation in absence of dendritic spines'
- 2006-2007 Alexander von Humboldt Research Fellowship (27.000 EUR)
'The role of filopodia in synaptogenesis in the absence of dendritic spines'
- 2003-2004 Postdoctoral Fellowship of the Sloan-Swartz Center for Theoretical Neurobiology
(30.000 USD)
- 2002-2003 NWO TALENT fellowship (34.000 USD)
'Short-term plasticity of excitatory synapses after homeostatic plasticity'