
Curriculum Vitae

Ove Wiborg

NAME Ove Wiborg	POSITION TITLE Associate Professor		
eRA COMMONS USER NAME			
EDUCATION/TRAINING			
INSTITUTION AND LOCATION	DEGREE	YEAR	FIELD OF STUDY
University of Aarhus, Denmark	M.S.	06.09.1982	Biology
University of Aarhus, Denmark	Ph.D.	04.08.1989	Molecular Biology

A. Positions

Positions and Employment

1982-1988	Research assistant at Dept of Molecular Biology & Plant Physiology, Aarhus University, Denmark
1988-1990	Senior researcher at Dept of Chemistry, Aarhus University, Denmark
1990-1994	Assistant professor at Dept of Chemistry, Aarhus University
1998	Visiting scientist at the G. Rudnick lab, Yale University School of Medicine, New Haven, CT, USA
2006-2008	CEO, OWn Research Aps, INCUBA Science Park, Skejby
1994-	Associate professor and head of Lab of Molecular Neurobiology, Dept Clinical Medicine, Aarhus University

B. Peer-Reviewed Publications (Total: 80)

Selected Recent Publications:

1. Jayatissa, MN, Bisgaard, C, Tingström, A., Papp, M., Wiborg, O. Hippocampal cytogenesis correlates to escitalopram – mediated recovery in a chronic mild stress model of depression. *Neuropsychopharm.* 2006, 1-10.
2. Mansari, ME, Wiborg, O, Mnie-Filali, O, Benturquia, N, Sánchez, C, Haddjeri, N. Allosteric modulation of the effect of escitalopram, paroxetine and fluoxetine: *in vitro* and *in vivo* studies. *Int. Jour. Neuropsychopharm.* 2006, Feb 1, 1-10.
3. Neubauer, HA, Gram Hansen, C, Wiborg, O. Dissection of an allosteric mechanism at the serotonin transporter. *Mol. Pharm.* 2006, 69, 1242-1250.
4. Müller, H. K., Wiborg, O., Haase J. Subcellular redistribution of the serotonin transporter by secretory carrier membrane protein 2. *Jour. Biol. Chem.* 2006, 281, 28901-28909.
5. Bisgaard, C.F., Jayatissa, M.N., Enghild, J.J., Sánchez, C., Artymyshyn, R., Wiborg, O. Proteomic investigation of the rat ventral hippocampus links DRP-2 to escitalopram treatment resistance and SNAP to stress resilience in the chronic mild stress model of depression. *Jour Mol Neurosci.*, 2007, 32, 132-144.
6. Lucas, G.C., Rymar, V.V., Du, J., Mnie-Filali, O., Bisgaard, C.F., Manta, S., Lambas-Senas, L., Wiborg, O., Haddjeri, N., Pineyro, G., Sadikot, A.F., Debonnel, G. Serotonin 4 (5-HT₄) receptor agonists as putative antidepressants with rapid onset of action. *Neuron*, 2007, 55, 712-725.
7. Bergström, A., Jayatissa, M.N., Thykjær, T., Wiborg, O. Molecular pathways associated with stress resilience and drug resistance in the chronic mild stress rat model of depression-a gene expression study. *Jour. Mol. Neurosci.*, 2007, 33, 201-215.
8. Jayatissa, M.N., Bisgaard, C.F., West, M.J., Wiborg, O. The number of granule cells in rat hippocampus is reduced after chronic mild stress and reestablished after chronic escitalopram treatment. *Neuropharmacology.* 2008, 54, 530-41.

9. Bergström, A., Jayatissa, M.N., Mørk, A. Wiborg, O. Stress sensitivity in the chronic mild stress rat model of depression correlate to BDNF and VEGF expression levels in CA3 region of the ventral hippocampus. *Brain Research*, 2008, 1196, 41-52.
10. Henningsen, K., Andreasen, J.T., Bouzinova, E.V., Jayatissa, M.N., Jensen, M.S., Redrobe, J.P., Wiborg, O. Cognitive deficits in the rat chronic mild stress model for depression: relation to anhedonic-like
11. Jayatissa, M.N., Henningsen, K., West, M.J. Wiborg, O. Cell proliferation in the dentate gyrus do not associate with development of anhedonic-like symptoms in rats. *Brain Research*, 2009, 1290, 133-141.
12. Jayatissa, M.N., Henningsen, K., Nikolajsen, G., West, M.J. Wiborg, O. A reduced number of hippocampal granule cells does not associate with an anhedonia-like phenotype in the rat chronic mild stress model of depression. *Stress*, 2010, 13, 95-105.
13. Sinning S, Musgaard M, Jensen M, Severinsen K, Celik, L., Koldsø H, Meyer T, Bols M, Jensen HH, Schiott B, Wiborg O. Binding and orientation of tricyclic antidepressants within the central substrate site of the human serotonin transporter. *Jour. Biol. Chem.* 2010, 285(11). 8363-74.
14. Koldsø, H., Severinsen, K., Tran, T.T., Celik, L., Jensen, H.H., Wiborg, O., Schiøtt, B., Wiborg, O., Sinning, S. The two enantiomers of citalopram bind to the human serotonin transporter in reversed orientations. *J.Am.Chem.Soc.* 2010, 132, 1311-1322.
15. Christensen, T., Bisgaard, C.F., Nielsen, H.B., Wiborg, O. Transcriptome differentiation along the dorso-ventral axis of laser-captured microdissected rat hippocampal granular cell layer. *Neuroscience*, 2010, 170, 731-741.
16. Holm, M.M., Nieto-Gonzales, J.L., Vardya, I., Henningsen, K., Jayatissa, M.N., Wiborg, O., Jensen, K. GABAergic dysfunctions in a chronic mild stress model of depression. *Hippocampus*, 2011, 4, 422-33.
17. Andreasen, J.T., Henningsen, K., Bate, S., Christiansen, S., Wiborg, O. Nicotine reverses anhedonic-like response and cognitive impairment in the chronic mild stress model of depression: comparison with sertraline. *J. Psychopharm.*, 2011, 8, 1134-41.
18. Delgado y Palacios, R., Campo, A., Henningsen, K., Verhoye, M., Poot, D., Dijkstra, J., Van Audekerke, J., Benveniste, H., Sijbers, J., Wiborg O., Van der Linden, A. Magnetic resonance imaging and spectroscopy reveal differential hippocampal changes in anhedonic and resilient subtypes of the chronic mild stress rat model. *Biol. Psych.*, 2011, 70 (5), 449-457.
19. Christensen T., Bisgaard C.F., Wiborg, O. Biomarkers of anhedonic-like behavior, antidepressant drug refractoriness, and stress resilience in a rat model of depression. *Neuroscience*, 2011, 196, 66-79.
20. Packiarajan M., Marzabadi, M.R., Desai, M., Lu, Y., Noble, S.A., Wong, W.C., Jubian V., Chandrasena, G., Wolinsky, T.D., Zhong, H., Walker, M.W., Wiborg, O., Andersen, K. Discovery of Lu AA33810: a highly selective and potent NPY5 antagonist with in vivo efficacy in a model of mood disorder. *Bioorg. Med. Chem. Lett.* 2011, 21 (18), 5436-41.
21. Malmkvist, J., Brix, B., Henningsen, K., Wiborg, O. Hippocampal neurogenesis increase with stereotypic behavior in mink (*Neovision vison*). *Behav. Brain. Res.* 2012, 229, 359-64.
22. Christiansen, S., Bouzinova, E. V., Palme, R., Wiborg, O. Circadian activity of the hypothalamic pituitary adrenal axis is differentially affected in the rat chronic mild stress model of depression. *Stress*. 2012, 15 (6), 647-57.
23. Bouzinova, E., Møller-Nielsen, N., Boedtkjer, D.B., Broegger, T., Wiborg, O., Aalkjær, C., Matchkov, V. Chronic mild stress induced depression-like symptoms in rats associate with abnormalities in catecholamine uptake in small arteries. *Psychosomatic Medicine*, 2012, 74, 278-87.
24. Henningsen, K., Palmfeldt, J., Christiansen, S., Baiges, I., Gregersen, N., Wiborg, O. Hippocampal biomarkers of susceptibility and resilience to stress in an animal model of depression. *Mol. Cell. Prot.* 2012, 11 (7).
25. Christensen, T., Bétry, C., Mnie-Filali, O., Etievant, A., Ebert, B., Haddjeri, N., Wiborg, O. Synergistic antidepressant-like action of gaboxadol and escitalopram in rat models. *Eur. Neuropsychopharm.*, 2012, 22, 751-60.

26. Bisgaard, C.F, Bak, S., Christensen, T., Nørregård Jensen, O., Enghild, J.J., Wiborg, O. Vesicular signaling and immune modulation as hedonic fingerprints: proteomic profiling in the chronic mild stress depression model. *Jour. Psychopharm.*, 2012, 26 (12), 1569-83.
27. Henningsen, K., Johannesen, M.D., Bouzinova, E.V., Christiansen, S., Christensen, T., Andreasen, J.T., Palme, R., Lichota, J., Wiborg, O. Early maternal care exacerbates adult stress susceptibility in the Chronic Mild Stress rat model of depression. *Behav. Pharm.*, 2012, 23 (8), 735-43.
28. Henningsen, K., Woldbye D.P.D., Wiborg, O. Electro-convulsive stimulation reverses anhedonia and cognitive impairments in rats exposed to chronic mild stress. *Eur. Neuropsychopharm.*, 2013, in press.
29. Wiborg, O. Chronic mild stress for modeling anhedonia. *Cell & Tissue Research Special Issue "Animal models of psychiatric disorders"*, 2013, in press.

C. Research profile/interest

My overall area of research interest is the study of the diseased brain in order to improve healthcare and in a broader sense to increase our understanding of the normal brain. My focus is on the psychiatric condition; major depressive disorder, as well as related or co-morbid neurodegenerative diseases with an overlap in symptoms, i.e. dementia and anxiety.

The basis of my research is animal models and in vitro systems applied in multidisciplinary approaches based on extensive collaborations.

Using animal models we establish their behavioral profile and correlate deficits or alterations to morphological changes in brain structures, like reduced neurogenesis, and to changes in neuronal activity, like dysfunctional GABAergic neurotransmission, and to alterations in molecular pathways and individual proteins to increase our understanding of disease etiopathogenesis and pathophysiology in order to identify novel drug targets. Novel targets are validated using genetic techniques, in vitro and in vivo, and followed by characterization of transgenic conditional gene knock-out/in animals. Also pharmacological approaches are used for target validation.

The chronic mild stress (CMS) rat model, which is a realistic and extensively validated model for human depression, was established in my lab 10 years ago and is very central in my investigations. As key features of the model rats show a graduated individual response to stress; thus allowing for discriminating between beneficial stress-coping mechanisms at one extreme, stress reciliency, and stress-induced anhedonia at the other. Furthermore a substantial fraction of stress-susceptible rats refract treatment with conventional antidepressants. Thus this model will hopefully enable us to find biomarkers which correlate and may be casually related to the different behavioural abnormalities, i.e. depression symptoms, and to drug treatment.

The project is a multidisciplinary approach in which behavioural, structural, genetic, molecular and functional brain changes related to depressive symptoms are investigated.