Geert Ramakers
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Brain
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Biography

Geert Ramakers obtained his PhD degree in Utrecht (1995) with Willem Hendrik Gispen en Flaminio Catabeni (co promotores: Pierre de Graan and Ivan Urban). He performed postdoctoral research in Utrecht (1995 – 1997) at the department of Neuroscience and Anatomy and Oslo (1998 – 2000) at the department of Physiology. In 2000 he was appointed at the UMC Utrecht as assistant professor at the department of Neuroscience and Pharmacology.
His research focusses on cellular and synaptic plasticity; he wants to know how neurons integrate synaptic signals and convert these signals into output signals (action potentials). Research focusses on two brain areas: the hippocampus and the midbrain dopamine system (ventral tegmental area and striatum). Whole cell patch-clamp and field potential recordings in vitro, in vivo electrophysiology and optogenetic approaches are primarily used to study these phenomena. Plasticity of neural circuits plays an important role during development, learning and ongoing behaviour. Plasticity of neural systems can result from alterations in synaptic strength, as well as changes in neuronal excitability. Unraveling the mechanisms underlying plasticity is fundamental in understanding the physiology of learning and memory and pathophysiology of neurological diseases (e.g. addiction). The aim of his research is to delineate specific processes involved in synaptic and cellular plasticity and eventually the role of these processes in physiological and pathophysiological conditions.
In addition to his research efforts, Geert is also coordinator of the master program Neuroscience and Cognition and the neurotrack within the bachelor Biomedical Sciences.
Research line
Cellular and Synaptic Plasticity
Most recent key publications
1: Jongbloets, B. C., Ramakers, G. M. J. & Pasterkamp, R. J. (2013) Semaphorin7A and its receptors: Pleiotropic regulators of immune cell function, bone homeostasis, and neural development. Seminars in Cell and Developmental Biology 1–36. doi:10.1016/j.semcd
2: Meye, F. J., van Zessen, R., Smidt, M. P., Adan, R. A. H. & Ramakers, G. M. J. (2012) Morphine Withdrawal Enhances Constitutive μ-Opioid Receptor Activity in the Ventral Tegmental Area. Journal of Neuroscience 32, 16120–16128
3: Meye, F. J., Trezza, V., Vanderschuren, L. J. M. J., Ramakers, G. M. J. & Adan, R. A. H. (2012) Neutral antagonism at the cannabinoid 1 receptor: a safer treatment for obesity. Mol. Psych. doi:10.1038/mp.2012.145
4: Notenboom, R. G. E., Ramakers, G. M. J., Kamal, A., Spruijt, B. M. & De Graan, P. N. E. (2010) Long-lasting modulation of synaptic plasticity in rat hippocampus after early-life complex febrile seizures. European Journal of Neuroscience 32, 749–758
5: Hoogendam JM, Ramakers GM, Di Lazarro V (2010) Physiology of repetitive transcranial magnetic stimulation of the human brain. Brain Stim. 3, 95-118

Employment

TN groep Ramakers
UMC Utrecht
1 Jan 2002 → 31 Dec 9999

Brain
Research UMC Utrecht
Utrecht, Netherlands
1 May 2016 → present

Research outputs

A postsynaptic transient K(+) current modulated by arachidonic acid regulates synaptic integration and threshold for LTP induction in hippocampal pyramidal cells
Ramakers, G. M. J. & Storm, J. F., 2002, In: Proceedings of the National Academy of Sciences of the United States of America. 99, 15, p. 10144-10149 6 p.

Long term depression in the CA1 field is associated with a transient decrease in pre- and postsynaptic PKC substrate phosphorylation
Ramakers, G. M. J., Heinen, K., Gispen, W. H. & De Graan, P. N. E., 15 Sept 2000, In: Journal of Biological Chemistry. 275, 37, p. 28682-28687 6 p.

Long term depression in the CA1 field is associated with a transient decrease in pre- and post-synaptic PKC substrate phosphorylation
Ramakers, G. M. J., Heinen, K., Gispen, W. H. & de Graan, P. N. E., 2000, In: Journal of Biological Chemistry. 275, p. 28682-28687 6 p.

Substrate phosphorylation in the protein kinase Cγ knockout mouse
Ramakers, G. M. J., Gerendasy, D. D. & De Graan, P. N. E., 22 Jan 1999, In: Journal of Biological Chemistry. 274, 4, p. 1873-1874 2 p.

Activation of pre- and postsynaptic protein kinase C during tetraethylammonium-induced long-term potentiation in the CA1 field of the hippocampus
Ramakers, G. M. J., Pasinelli, P., van Beest, M., van der Slot, A., Gispen, W. H. & de Graan, P. N. E., 1999, In: Neuroscience Letters. 11, p. 3512-3516 5 p.

Differential changes in the phosphorylation of the protein kinase C substrates myristoylated alanine-rich C kinase substrate and growth-associated protein-43/B-50 following Schaffer collateral long-term potentiation and long-term depression.
Ramakers, G. M. J., McNamara, R. K., Lenox, R. H. & de Graan, P. N. E., 1999, In: Journal of Neurochemistry. 73, p. 2175-2183 9 p.

Substrate phosphorylation in the protein kinase Cgamma knockout mouse.
Ramakers, G. M. J., Gerendasy, D. D. & de Graan, P. N. E., 1999, In: Journal of Biological Chemistry. 274, p. 1873-1874 2 p.

Changes in pre- and post-synaptic protein kinase C substrate phosphorylation after induction of long-term potentiation and glutamate treatment.
Ramakers, G. M. J., Pasinelli, P., di Luca, M., Pastorino, L., Cattabeni, F., Gispen, W. H. & de Graan, P. N. E., 1998, *Metabotropic Glutamate Receptors and Brain Function.* Moroni, F., Nicoletti, F. & Pellegrini-Giampietro, D. E. (eds.). London/Miami: Portland Press, p. 191-200 10 p.

Protein kinase C in synaptic plasticity: changes in the in situ phosphorylation state of identified pre- and postsynaptic substrates
Ramakers, G. M. J., Pasinelli, P., Hens, J. J. H., Gispen, W. H. & de Graan, P. N. E., 1997, In: Biological Psychiatry. 21, p. 455-486 32 p.

Temporal differences in the phosphorylation state of pre- and postsynaptic protein kinase C substrates B-50/GAP-43 and neurogranin during long term potentiation
Ramakers, G. M. J., De Graan, P. N. E., Urban, I. J. A., Kraay, D., Tang, T., Pasinelli, P., Oestreicher, A. B. & Gispen, W. H., 1 Jan 1995, In: Journal of Biological Chemistry. 270, 23, p. 13892-13898 7 p.

Temporal differences in the phosphorylation state of pre- and postsynaptic PKC substrates B-50/GAP-43 and neurogranin during long-term potentiation
Ramakers, G. M. J., de Graan, P. N. E., Urban, I. J. A., Kraaij, A., Tong, T., Pasinelli, P., Oestreicher, A. B. & Gispen, W. H., 1995, In: Journal of Biological Chemistry. 270, p. 13892-13898 7 p.

The impaired long-term potentiation in the CA1 field of the hippocampus of cognitive deficient microencephalic rats is restored by d-serine
Ramakers, G. M. J., Urban, I. J. A., De Graan, P. N. E., Luca, M. D., Cattabeni, F. & Gispen, W. H., 1 Jan 1993, In: Neuroscience. 54, 1, p. 49-60 12 p.

CNQX, a new non-NMDA receptor antagonist, reduces spike wave discharges in the WAG/Rij rat model of absence epilepsy
Ramakers, G. M. J., Peeters, B. W. M. M., Vossen, J. M. H. & Coenen, A. M. L., 1 Jan 1991, In: Epilepsy Research. 9, 2, p. 127-131 5 p.

Prizes

Heijmans van den Bergh Education Prize
Ramakers, G. (Recipient), 6 Dec 2019