

# Research Projects 2009-2010

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## National

- Aronica, E. et al. Department of Pathology, Academic Medical Centre, Amsterdam. Switch in the expression of mGlu1 and mGlu5 metabotropic glutamate receptors in the cerebellum of mice developing experimental autoimmune encephalomyelitis and in autoptic cerebellar samples from patients with multiple sclerosis.
- Bergen, A. et al. Department of Molecular Ophthalmogenetics, Netherlands Institute for Neuroscience, Amsterdam. The molecular machinery of the choroid plexus in health and disease.
- Bonifati, V. Department of Clinical Genetics, Erasmus MC Rotterdam. Characterization of the FBXO7 (PARK15) protein.
- Borgers, A.J., Alkemade, A. et al. Department of Endocrinology and Metabolism, Academic Medical Centre, Amsterdam. Distribution of serotonin transporters in the human hypothalamus.
- Borgers, A.J., Alkemade, A. et al. Department of Endocrinology and Metabolism, Academic Medical Centre, Amsterdam. Arginine vasopressin immunoreactivity in the suprachiasmatic nucleus is decreased in patients treated for a suprasellar tumor leading to visual field defects.
- Bossers, K. et al. Netherlands Institute for Neuroscience, Amsterdam. Transcriptional alterations during the progression of Alzheimer's disease.
- Dijkstra, A.A., Van de Berg, W.D.J. et al. Department of Anatomy and Neurosciences, Neuroscience Campus Amsterdam, VU University Medical Center, Amsterdam. Canonical pathways involved in the prodromal and motor phase of the Parkinson's disease.
- Garcia-Falgueras, A., Swaab, D.F. et al. Netherlands Institute for Neuroscience, Amsterdam. Galanin neurons in the Intermediate nucleus (van Noort et al. 694-703) of the human hypothalamus in relation to sex, age and gender identity.
- García Vallejo, J.J. and Van Kooyk, Y. Departments of Molecular Cell Biology & Immunology, VU University Medical Center, Amsterdam. Glycosylation controls immune homeostasis in the human brain.
- Ishunina, T.A. and Swaab, D.F. Netherlands Institute for Neuroscience, Amsterdam. Estrogen receptor- $\alpha$  splice variants in the Alzheimer's disease brain.
- Kan, A.A., De Graan, P.N.E. et al. Department of Neuroscience & Pharmacology, Rudolf Magnus institute of Neuroscience, Utrecht. Towards unraveling the activated immune system in refractory temporal lobe epilepsy patients.
- Kipp, M., Amor, S. et al. Department of Pathology, VU University Medical Center, Amsterdam. Astrocyte-derived signals to promote myelin formation and repair.

- Klok, M.D., DeRijk, R.H. et al. Division of Medical Pharmacology, Leiden/Amsterdam Center for Drug Research, Leiden University, Leiden. Differential corticosteroid receptor mRNA expression in postmortem brain regions of patients with major depressive disorder.
- Kondova, I. Division of Pathology and Microbiology, Department of Animal Science, Biomedical Primate Research Centre, Rijswijk. Age-related neurological disorders: comparison of brain tissues from humans, chimpanzees and rhesus macaques and exploring the role of miRNAs and small non-coding RNAs (ncRNAs) in the pathogenesis of neurodegeneration.
- Kooi, E., Geurts, J.J.G. et al. Department of Anatomy and Neuroscience, Division of Clinical Neuroscience and Department of Pathology, VU University Medical Center, Amsterdam. Cholinergic imbalance in the multiple sclerosis hippocampus.
- Kreft, K.L., Hintzen, R.Q. et al. Department of Neurology and MS Centre ErasMS, Erasmus University Medical Center, Rotterdam. Genetic determinants of kinesin expression in multiple sclerosis patients.
- Laman, J.D. et al. Department of Immunology, Erasmus medical centre, Rotterdam. Pathogenic mechanisms during multiple sclerosis in the central nervous system and the draining cervical lymph nodes.
- Lucassen, P.J. et al. Center for Neuroscience, Swammerdam Institute of Life Sciences, University of Amsterdam, Amsterdam. Neurogenesis and cellular proliferation in the Alzheimer hippocampus.
- Lucassen, P.J. et al. Center for Neuroscience, Swammerdam Institute of Life Sciences, University of Amsterdam, Amsterdam. Hippocampal neurogenesis during major depression.
- Lucassen, P.J. et al. Center for Neuroscience, Swammerdam Institute of Life Sciences, University of Amsterdam, Amsterdam. Glucocorticoid receptor (GR) in the hippocampus during aging, Alzheimer's disease (AD) and in depression.
- Luchetti, S., Huitinga, I. et al. Department of Neuroimmunology, Netherlands Institute for Neuroscience, Amsterdam. Neurosteroids and multiple sclerosis: lack of synthesis of molecules that mediate neuroprotection and remyelination?
- Luchetti, S., Swaab, D.F. et al. Netherlands Institute for Neuroscience, Amsterdam. Neurosteroid biosynthetic pathways changes in prefrontal cortex in Alzheimer's disease.
- Luchetti, S., Swaab, D.F. et al. Netherlands Institute for Neuroscience, Amsterdam. Neurosteroid Biosynthetic Pathway Changes in Substantia Nigra and Caudate Nucleus in Parkinson's disease.
- Luchetti, S., Swaab, D.F. et al. Netherlands Institute for Neuroscience, Amsterdam. Neurosteroid synthetic pathways in the human brain: differences in relation to age and brain area but not to sex.
- Melief, J., Huitinga, I. et al. Department of Neuroimmunology, Netherlands Institute for Neuroscience, Amsterdam. Isolation and characterization of human post-mortem microglia.
- Middeldorp, J. and Hol, E. Astrocyte Biology & Neurodegeneration, Netherlands Institute for Neuroscience, Amsterdam. Astrocyte subtypes in Alzheimer's disease.

- Nabuurs, R. et al. Departments of Radiology, Pathology and Anatomy, Leiden University Medical Center, Leiden. Histological basis of MRI visualization of AD/CAA in ex vivo human brain tissue.
- Ophoff, R. et al. Department of Psychiatry, Rudolf Magnus Institute, UMC, Utrecht. Genetic studies of schizophrenia: molecular analysis of human brain tissue.
- Prins, M., Van Dam, A. et al. VU University Medical Center, Neuroscience Campus Amsterdam, Amsterdam. Do glia-derived factors determine hippocampal neuronal fate in Parkinson's disease?
- Qi, X., Swaab, D.F. et al. Netherlands Institute for Neuroscience, Amsterdam. The Neurobiology of Depression.
- Reijerkerk, A., De Vries, E. et al. Blood-brain barrier Research Group, Molecular Cell Biology and Immunology, VU University Medical Center, Amsterdam. MicroRNAs in the brain vasculature.
- Riese, H., Niezen-Koning, K. et al. University Medical Center Groningen, Groningen. Comparison of methylation and expression of the serotonin reuptake transporter gene in amygdala tissue, cerebrospinal fluid and peripheral blood.
- Rizzu, P., Heutink, P. et al. Medical Genomics, department of Clinical Genetics, VU Medical Center, Amsterdam. A collection of region specific brain cDNA libraries for verification of the importance of identified SNPs for neurological traits.
- Rozemuller, J.M. et al. Department of Pathology, VU Medical Center Amsterdam. Disease mechanisms in the pathology of Alzheimer's disease and related disorders.
- Scheper, W. et al. Department of Genome Analysis and Department of Neurology, Academic Medical Center and Department of Neuropathology VU Medical Center, Amsterdam. Activation of the unfolded protein response in neurodegenerative tauopathies.
- Schuurman, K. Huitinga, I. et al. Department of Neuroimmunology, Netherlands Institute for Neuroscience, Amsterdam. Analysis of gene expression in MS lesions and normal appearing white matter.
- Shan, L., Swaab, D.F. et al. Netherlands Institute for Neuroscience, Amsterdam. The Histaminergic system neuropsychiatry disorders: a postmortem study.
- Siljee-Wong, J., Alkemade, A. et al. Netherlands Institute for Neuroscience, Amsterdam. Melanocortin-4 Receptor expression in the hypothalamus.
- Temel, Y. et al. Departments of Neuroscience and Neurosurgery, Maastricht University, Maastricht. Serotonin expression in the dorsal raphe nucleus and prefrontal cortex after deep brain stimulation for Parkinson's disease.
- Van den Berge, S. and Hol, E. Astrocyte Biology & Neurodegeneration, Netherlands Institute for Neuroscience, Amsterdam. Neural stem cells in the Parkinson's disease brain.
- Van den Berge, S., Van Strien, M. and Hol, E. Astrocyte Biology & Neurodegeneration, Netherlands Institute for Neuroscience, Amsterdam. Neural stem cells in the adult human brain.
- Van der Star, B., Van der Valk, P. and Amor, S. Department of Pathology, VU University Medical Center, Amsterdam. Axonal damage in MS: engulfment of axons and phagocytosis of neuronal antigens in MS.

- Van Kuppeveld, F. et al. Department of Medical Microbiology, Radboud University Nijmegen Medical Centre, Nijmegen. Role of Saffold virus, a recently identified human cardiovirus, in multiple sclerosis?
- Van Leeuwen, F.W. and Gentier R. Department of Neuroscience, Maastricht University, Maastricht. Proteasomal dysfunction: a way to classify FTD subjects?
- Van Noort, J.M., Amor, S. et al. Department of Pathology, VU University Medical Center, Amsterdam. Alpha B-crystallin is a target for adaptive immune responses, and a trigger of innate responses in preactive multiple sclerosis lesions.
- Van Swieten, J.C. et al. Department of Neurology, Erasmus MC, Rotterdam. Immunohistochemical and biochemical characterization of frontotemporal dementia and progressive supranuclear palsy.
- Van Velzen, M, Verjans, G.M.G.M. et al. Department of Virology, Erasmus MC, Rotterdam. Latent herpes simplex virus and varicella zoster virus infections of sensory neurons of the peripheral nervous system.
- Van Wamelen, D.J., Swaab, D.F. et al. Netherlands Institute for Neuroscience, Amsterdam. Hypothalamic changes in Huntington's disease.
- Veerhuis, R. and Hoozemans, J. Department of Clinical chemistry and Alzheimer center and department of Pathology, VU university medical center, Amsterdam. Analysis of mediators of inflammation in Alzheimer's disease.
- Verwer, R.W.H. and Swaab, D.F. Netherlands Institute for Neuroscience, Amsterdam. Reactivation and functional activity of neurons in cultured postmortem brain tissue slices.
- Wilhelmus, M.M.M. et al. Department of Anatomy and Neurosciences, Neuroscience Campus Amsterdam, VU University Medical Center, Amsterdam. Transglutaminases and transglutaminase-catalyzed cross-links colocalize with hyperphosphorylated tau aggregates in tauopathies.
- Wijte, D. et al. Leids Universiteit Medisch Centrum, Leiden. Detection of breakdown products in CSF during the progression of Alzheimer's disease.
- Zhao, J., Swaab, D.F. et al. Netherlands Institute for Neuroscience, Amsterdam. Alterations in GABA and glutamate pathways in the prefrontal cortex in major depressive disorder, bipolar disorder and depression in Alzheimer's disease.
- Zhao, T., Swaab, D.F. et al. Netherlands Institute for Neuroscience, Amsterdam. Dendritic cell nuclear protein-1, a novel depression-related protein, upregulates corticotropin-releasing hormone expression.

## International

- Andreyeva, A. and Gottmann, K. Institute for Neuro- and Sensory Physiology, University Düsseldorf, Düsseldorf, Germany. Role of N-cadherin in the aging human brain and in Alzheimer's disease.
- Avila, J. et al. Centro de Biología Molecular Severo Ochoa, Madrid, Spain. Expression of somatostatin, dopamine, ghrelin and neurotensin systems is altered in the temporal lobe of Alzheimer disease patients.
- Avila, J. et al. Centro de Biología Molecular Severo Ochoa, Madrid, Spain. Tissue non-specific alkaline phosphatase and muscarinic receptors in the temporal lobe of Alzheimer disease patients.
- Bayer, T. et al. Department of Psychiatry, University Medicine Goettingen, Germany. Intraneuronal Abeta accumulation in Alzheimer's disease.
- Berrocal, M. et al. 'Departamento de Bioquímica y Biología Molecular y Genética, Facultad de Ciencias, University of Extremadura, Badajoz, Spain. Study of tau pathology, amyloid  $\beta$  pathology and calcium pumps in the progression of Alzheimer disease.
- Berson, A., Soreq, H. et al. Department of Biological Chemistry and the Edmond and Lily Safra Center of Neuroscience, The Hebrew University of Jerusalem, Jerusalem, Israel. Global gene expression analysis identifies novel molecular players in neurodegeneration.
- Borea, P.A. and Varani, K. Institute of Pharmacology, University of Ferrara, Italy. A<sub>2A</sub> adenosine receptor overexpression and functionality, as well as TNF- $\alpha$ , correlate with motor symptoms in Parkinson's disease patients.
- Brust, P. and Deuther-Conrad, W. Helmholtz-Zentrum Dresden-Rossendorf e.V., Leipzig, Germany. Use of human pineal organ for affinity determination of novel ligands for alpha3beta4 nicotinic acetylcholine receptors.
- Chen, X-N. et al. Hefei National Laboratory for Physical Sciences at Microscale, Hefei, China. The Involvement of Retinoic Acid Receptor- $\alpha$  in Corticotropin-Releasing Hormone Gene Expression and Affective Disorders.
- Csiba, L. and Farkas, S. Department of Neurology, University of Debrecen, Debrecen, Hungary. A comparative analysis of expressed and functionally active dopamine receptors in the human brain obtained from Parkinson's disease patients and age matched controls.
- Curtis, M.A. and Graham, S. Centre for Brain Research, Auckland University. Cannabinoid receptor expression in MS lesions.
- Delalle, I. et al. Boston University School of Medicine and Harvard NeuroDiscovery Center, USA. Exosomal and cell-class specific miRNA-profiles in bipolar disorder.
- Farkas, S., Csiba, L. et al. Department of Neurology, University of Debrecen, Debrecen, Hungary. A comparative analysis of expressed and functionally active dopamine receptors in the human brain obtained from Parkinson's disease patients and age matched controls.
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- Giordana, M.T. et al. University of Turin, Turin, Italy. Expression of tumour necrosis factor- $\alpha$ , its receptors (tnfr 1/2), and ask1 in the spinal cord of amyotrophic lateral sclerosis patients.
- Giordana, M.T. et al. University of Turin, Turin, Italy. Characterisation of detergent-insoluble proteins in amyotrophic lateral sclerosis.
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- Hellings, N. et al. Biomedical Research Institute, Hasselt University and School of Life Sciences, Diepenbeek, Belgium. CX<sub>3</sub>CR1 drives cytotoxic CD4+CD28- T cells into the brain of multiple sclerosis patients.
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- Johnston, J. University Belfast, School of Medicine, Dentistry and Biomedical Sciences, Centre for Public Health, RVH ICSB, N. Ireland. Processing of precursor proteins implicated in Alzheimer's disease, Parkinson's disease, and Dementia with Lewy bodies.
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- Kellenberger, S. et al. Department of Pharmacology and Toxicology, University of Lausanne, Lausanne, Switzerland. Analysis of ASIC subunit RNA expression by quantitative RT-PCR.
- Kaiser, C. and Meinl, E. Max-Planck Institute for Neurobiology, Martinsried, Germany. Targets of autoantibodies in MS.
- Klafki, H. et al. Department of Psychiatry and Psychotherapy, University of Duisburg-Essen. Identification of post-translational modifications of the  $\beta$ -amyloid peptides in amyloid plaques.
- Kosmidis, M. Neuroimmunology Laboratory, Athens University Medical School, Greece. JC virus infection in primary and secondary demyelinating diseases of the central nervous system.

- Koutsilieri, E. et al. Institute of Virology and Immunobiology, Wuerzburg, Germany. Role of NMDA receptor subunits in Alzheimer's disease.
- Kravitz, E. and Biegon, A. The Joseph Sagol Neuroscience Center, Sheba Medical Center, Tel Hashomer, Israel. Measuring neuroinflammation by TSPO autoradiography in Alzheimer's disease brains post-mortem.
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 Li, A. et al. Key Lab for Organ Failure Research, Ministry of Education of China, Nanfang Hospital, Southern Medical University, Guangzhou, Guangdong, China. A descriptive study on the expression of advanced oxidation protein products in different brain areas of Alzheimer disease and vascular dementia.
- Longone, P. et al. Molecular Neurobiology Unit, Fondazione Santa Lucia, Rome, Italy. Molecular and cellular mechanisms of the motor system neurodegenerative pathologies.
- Marcello, E. et al. Department of Pharmacological Sciences and Centre of Excellence on Neurodegenerative Diseases, University of Milan, Italy. SAP97-mediated local trafficking is altered in hippocampus of Alzheimer Disease patients.
- Mohan, H. and Meinel, E. Max-Planck Institute for Neurobiology, Martinsried, Germany. What determines remyelination? Expression profiles of shadow plaques.
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- O'Callaghan, P. et al. Institute for Public Health and Caring Sciences, Uppsala University, Uppsala, Sweden. The fractal dimensions of Ab plaque complexity; an insight to the dynamics of Ab pathology.
- O'Neill, C. et al. Alzheimer's Disease Research Lab, Department of Biochemistry, BioSciences Institute, University College Cork, Cork, Ireland. Pathological signal transduction in Alzheimer's disease: focus of the IGF-I / insulin receptor-Akt pathway, an emerging mechanism central to neurodegeneration in Alzheimer's disease.
- Pavlakis P.P. et al. Department of Pathophysiology, Medical School, University of Athens, Athens, Greece. Autoimmune peripheral neuropathy and Sjögren syndrome: Clinical and Immunological approach.
- Pévet, P. Institut des neurosciences Cellulaire et Intégratives, CNRS et Université de Strasbourg, Strasbourg, France. Structure-function determination of a human brain large non-coding RNA.
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- Rodríguez-Cueto, C. et al. Instituto Universitario de Investigación en Neuroquímica, Department of Biochemistry and Molecular Biology, Faculty of Medicine, Complutense University, Madrid, Spain. Changes in different elements (CB<sub>1</sub> and CB<sub>2</sub> receptors, and FAAH enzyme) of the cannabinoid signalling in post-mortem tissues of patients with spinocerebellar ataxias.
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- Tsamis, K.I. et al. Laboratory of Neuropathology, 1<sup>st</sup> Department of Neurology, Aristotle University, Thessaloniki, Greece. Synaptic alterations of human caudate nucleus in Alzheimer's disease.
- Van de Nes, J.A.P. et al. Institute of Pathology and Neuropathology, University Hospital Essen, Essen Germany. Methylation of somatostatin and IST receptor genes in Alzheimer's disease.
- Wang, Y. et al. Institute Of Neuroscience, Shanghai Institutes for Biological Sciences, Shanghai, China. Possible roles of Trpc6 channels in Alzheimer's disease.
- Webb, S. et al. Department of Neurology, Institute of Neurosciences, Southern General Hospital, Glasgow, Scotland. A comparison of viral infections in lymph nodes of patients with multiple sclerosis and normal controls.
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- Willnow, T.E. et al. Max-Delbrück Center for Molecular Medicine, Berlin, Germany. Identification of Alzheimer's disease risk haplotype that predicts efficiency of *SORL1/SORLA* expression in the brain.
- Yoon, S.-Y. and Kim, D.-H. Department of Anatomy and Cell Biology, University of Ulsan College of Medicine, Seoul, Korea. Search for the key pathogenic molecules in Alzheimer's disease brain.

## Pharmaceutical companies

Asterand UK Ltd.

Expression of potential Alzheimer's Disease (AD)-related proteins in FFPE sections of cerebellum from donors with late stage AD.

Expression of therapeutic candidate G-protein coupled receptors in the Dorsal Root Ganglia from male and female donors.

Expression of therapeutic candidate gene in cerebellum from Type 2 Diabetic and control donors.

Bayer Schering Pharma AG

Interrelationship of activated microglia & reactive astrocytes in AD.

Characterization of alpha-synuclein binding molecules.

Characterization of small molecules binding to dementia related pathological targets.

Bioptra Ltd.

Studies on Isolated Tissues to Investigate Drug Actions.

GlaxoSmithKline

Identification of potential therapeutic targets for amyotrophic lateral sclerosis and Huntington's disease.

Identification and validation of potential therapeutic targets for multiple sclerosis.

Innogenetics

Isolation of native Tau and PHF Tau from brain material.

Loke Diagnostics ApS

Imaging MS on brain tissue samples from Alzheimer's disease (AD) patients.

Neurimmune Therapeutics AG

Development of novel human antibody therapeutics for the treatment of neurodegenerative disorders such as Alzheimer's disease, Parkinson's disease and amyotrophic lateral sclerosis.

NeuroNova AB

Identification and validation of target protein receptors in brain tissue from Parkinson's patients.

Novartis AG

Localization of S1P receptors in MS brain tissue Examination of MS lesions for macrophage activation and inhibitory markers'

Pfizer Ltd.

Pharmacological profiling of allergy related targets known to be expressed in brain frontal cortex.

Investigation of the presence and tissue distribution of potential drug targets in human tissue.

Target Characterisation

Assessment of potential urological dysfunction target using human cerebral arteries.

Schering-Plough Biopharma

Analysis of novel proteins and RNA expression in multiple sclerosis.