

Curriculum Vitae Marten Smidt

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1 Personal details

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2 Education

- Higher Laboratory Education: September 1981-August, 1984, Main subject :Medical Microbiology
- Biology, University of Groningen: September 1986- March 1991, Main Subject :Biochemistry/Microbial-Physiology
- Doctorate at University of Groningen: June 1991- May 1996, Title of thesis :Two DNA-binding proteins recognizing the apo-VLDL-II gene cis-regulatory element D.

3 Civil service

- 1984-1986: Staff member in the division hospital in the Seedorf Facility, Germany

4 Professional experience

- 1986: Technician at the special blood bank facility as part of "Eurotransplant", Academic Hospital Groningen, The Netherlands
- 1991-1995: PhD in the group of Dr. Geert AB: Analysis of the involvement of liver specific or enriched transcription factors on the liver specific and estradiol inducible apoVLDL II gene, University of Groningen, The Netherlands.
- 1995-1999: Postdoc at the Rudolf Magnus Institute for Neuroscience in the lab of Prof Dr. J.P.H. Burbach: Study of brain development in relation to mental disorders and cloning of specific transcription factors which are involved in that process, University of Utrecht, The Netherlands.
- 2000- 2006: Assistant professor at the Department of Neuroscience and Pharmacology, Rudolf Magnus Institute of Neuroscience, University Medical Center, Utrecht, The Netherlands.
- 2001-present: Team leader of the midbrain dopaminergic system research team at the Department of Neuroscience and Pharmacology, Rudolf Magnus Institute of Neuroscience, University Medical Center, Utrecht, The Netherlands.
- 2002-present: Coordinator Section Developmental Neuroscience of the Rudolf Magnus Institute of Neuroscience, University Medical Center, Utrecht, The Netherlands
- 2006-present: Associate professor in the department Neuroscience and Pharmacology, University Medical Center, Utrecht, The Netherlands.
- 2008-present: Head of the research platform Neurodevelopment.

5 Professional activities

5.1 Grant support

1. 1998-2001: National Parkinson Foundation Research Grant: Involvement of the homeobox gene Pitx3 in development and maintenance of mesDA neurons. (PI)
2. 1999-2001: NWO-MW Fellowship: The role of the novel homeodomain Pitx3 in molecular cascades of development and maintenance of the mesencephalic dopaminergic system. (PI)
3. 1999-2002: Korczak Foundation Fellowship: Molecular processes in brain development, Postdoc 3 years. (PI) (With co-PI JPH burbach)
4. 2000-2004: Korczak Foundation Project: Molecular processes in brain development, PhD 4 years, (PI) (With co-PI JPH burbach)
5. 1999-2001: Industrial project with Solvay Pharmaceuticals: Pitx3 function and development of model systems with disturbed mesencephalic dopamine systems . Postdoc (PI) (With co-PI JPH burbach)
6. 2000-2002: NWO-MW grant: Genetic and epigenetic control of mesencephalic dopamine system development, Framework of scientific cooperation between The Netherlands and the Russian Federation. (PI with co-PI WH Gispen)
7. 2003-2007: NWO-ALW grant: The Pitx3 homeobox gene cascade and dysfunction of the midbrain dopamine system. (PI) (with co-PI JPH burbach)
8. 2004-2009: Hypotential program of the University of Utrecht: BAMI: Brain Analysis through Molecular Imaging (PI) (With co-PI Freek Beekman)
9. 2004: Brain Foundation in The Netherlands (Hersenstichting Nederland) research grant. (PI)
10. 2006-2010: NWO-ALW research grant: Identification of Pitx3 regulated genes in midbrain dopamine neurons (PI)
11. 2007-2011: TI-Farma initiative, The Netherlands: 2 PhD and 1 PD position (PI with co PI J Pasterkamp and JPH Burbach))
12. 2007: Brain Foundation in The Netherlands (Hersenstichting Nederland) research grant. (PI)
13. 2009-2012: KP7 EU-grant proposal/project, medium sized EU-research project (coordinator and PI)
14. 2009-2014: NWO-ALW VICI grant (PI)
15. 2009-2013: NWO-ALW program grant (PI)

5.2 Reviewing/editorial activities

- Reviewer for Science, Trend in Cell Science, Journal of Neurochemistry, Neuroscience, European Journal of Neuroscience, European Journal of Pharmacology, Journal of Biochemistry, Gene, Pharmacology Biochemistry and Behavior and Cell.
- Grant reviewer for the Netherlands and Israel organizations for scientific research.
- Member of the grant evaluation board of NWO-ALW(2005-2009).
- Chairman of the grant evaluation board for NWO-ALW-VENI (2009-present).
- Member of the French National Research Agency (ANR) reviewing board.
- Member of the Reviewing board of Frontiers in Neuroanatomy,

5.3 Brief summary of research

My main interest is molecular programming during development of the central nervous system. Since at that time almost nothing was known on the subject, I started with JPH Burbach a cloning effort to identify transcription factors that play a role during CNS development. From this work three major breakthroughs were established:

1. The cloning, identification and characterization of the homeobox gene Pitx3 (publication 50). This gene was found to be exclusively expressed in the substantia nigra (SNc) and ventral tegmental area (VTA) forming the midbrain dopamine system, essential for mood and movement regulation in mammals. The real impact of the work was that this factor is exclusively expressed in these neurons and this formed the first step in the understanding of molecular programming of midbrain dopamine neurons.
2. The identification of the role of the orphan nuclear hormone receptor Nurr1 (publication 49). It was shown by us and others that Nurr1 is essential for the development of fully differentiated midbrain dopamine neurons. This was the second factor identified to be involved in midbrain dopamine neurodevelopment.
3. The identification of Lmx1b (publication 46). We showed that the early specification of the midbrain by Lmx1b is essential for the formation of midbrain dopaminergic neurons. Moreover, we showed that TH expression was possible in early DA neurons without the expression of Pitx3, indicating that Pitx3 might be involved in molecular processes other than transmitter phenotype.

After this cloning and descriptive phase I was interested to go into depth into the role of Pitx3 (as an NWO fellow) in the neurodevelopment of midbrain dopamine neurons and to broaden my view on molecular signaling events in neuronal cells. This was accomplished by the start of analysis of the Pitx3 knock out and by the start of a new research line on forkhead proteins (FoxO and FoxK family). The work led to three major findings:

1. The data from the Pitx3 knock-out analysis (aphakia mouse) formed a new chapter in the understanding of the role of Pitx3 in the development of midbrain dopamine neurons (publication 33). We showed that Pitx3 is essential for the formation of the SNc and the ventral part of the VTA. Moreover it was clear from the analysis that the defect was apparent at the early stage of terminal differentiation. Most importantly, the defect was not present in all midbrain dopamine neurons but mainly in the ventral medial SNc and ventral VTA.
2. The cloning and functional characterization of FoxO6, a novel member of the FoxO family (FoxO1, FoxO3 and FoxO4). We showed that FoxO6 had unique properties in terms of nucleo-cytoplasmic shuttling, as a result of PKB signaling, compared to its family members (publication 39). Later we showed the mechanism of the altered shuttling behavior and showed that phosphorylation by PKB does inactivate FoxO6 by inhibiting DNA interaction without the extra level of inhibition of nuclear removal (publication 26). We have gained quickly a good position by this work. A review from our team received much enthusiasm as highlighted by 82 citations so-far and the 25th place of most downloaded papers in the publication year (publication 32).
3. The identification a novel factor of the FoxK family, namely (mouse) Foxk2. This factor was, based on sequence homology, the designated orthologue of yeast Fkh2 which is essential in the progression of the cell-cycle (G2/M phase progression). Our analysis showed that the functional similarity is not apparent, Foxk2 has a function in cell-survival but does not stimulate the G2/M phase transition (Manuscript submitted to JBC).

The fact that a subset of the complete group of dopamine neurons was affected in the Pitx3 knock-out (Pitx3 itself is expressed in all midbrain dopamine cells) initiated the novel idea that the molecular coding of the SNc and VTA is not the same. A real step forward was made by the identification of subset specific markers and coding differences in the ventricular zone. This concept of subset specification was a crucial step in the way the field regarded the molecular pathways leading to the development of dopamine neurons of the SNc and VTA (publication 17). In addition, it became clear that the neurons populating the SNc and VTA are not generated exclusively in the midbrain but also in the diencephalon. Therefore, the name of this neuronal group was changed to mesodiencephalic dopaminergic (mdDA) neurons and has been used as such from that point on.

This was a crucial moment in my career, I established my own group and my work clearly surpassed the initial identification and function-description of transcription factors involved in the development of mdDA neurons. My interest went into two additional research directions:

1. The live visualization of dopamine neurotransmission through multi-pinhole SPECT. Prof dr. Freek Beekman designed a spectacular micro-SPECT system to follow tracers in the mouse brain with a resolution of 0.3 mm. Together we started to image live dopamine transmitter events in a living mouse. This work has led to two high impact publications (publication: 25 and 4).
2. Understand how subset specification is established, which subsets exist and what the relationship is between subset and specific connectivity. A crucial finding in the understanding of subsets specific molecular coding was established through the identification of a subset specific transcriptional target of Pitx3. This gene, (retinal) aldehyde

dehydrogenase 2 (Ahd2, Raldh1) is expressed, in the adult brain, in the ventral cells of the SNc and VTA, the neurons that are lost in the Pitx3 mutant (publication 6). A second novel finding was that retinoic acid (RA) has a role in terminal differentiation of this specific set of neurons in addition to its role in the ventricular zone. Ahd2 is present in ventricular zone cells, its transcription is terminated when cells leave the ventricular zone and under the control of Pitx3, Ahd2 is transcribed again in a (lateral) subset of mdDA neurons and is essential for the synthesis of RA out of retinal. We were able to show the dependence of mdDA differentiation for RA signalling by rescuing the Pitx3 knock-out phenotype through the exogenous application of RA.

Although I am still working on- and interested in the FoxO6 knock out (we have generated chimeric animals) my main interest lies with the molecular programming of mdDA neuronal subsets. My lab is currently investigating 1) why Ahd2 activation is only happening in the described subset; 2) we are mapping transcriptional targets of Engrailed, Lmx1a/b, and Nurr1 to get a better idea about the molecular programming that is initiated within mdDA neurons; 3) the functional interaction between Pitx3/Nurr1 (publication 1) and En1 and 4) we are finalizing the identification of adult subset specific markers. At this moment my research group consist of 3 PhD students, 1 postdoc, 2 technicians and every year about 3 master students.

The work described above has been very fruit-full and has lead to a leading position of my research group mainly in the field of development and engineering of mdDA neurons, marked by many invitations to write reviews/books on the topic, the high amount/level of peer-reviewed publications and the invitations to speak at the international level about my work.

5.4 Trainees

5.4.1 PhD students:

1. 1997-2001: Cerial Asbreuk: "Cloning and characterization of neurohypophysial transcription factors involved in development and function of the hypothalamo/hypophysial axis."
2. 1998-2002: Marjan Kromkamp: "Expression patterns of genes involved in brain development and human brain disorders".
3. 2000-2004: Simone Smits: Analysis of Pitx3 mutants.
4. 2000-2004: Lars van der Heide: PKB Signaling in the developing and adult nervous system
5. 2001-2005: Patrick Wijchers: Cloning of Forkhead genes related to midbrain development and function.
6. 2003-2007: Koen Hornman (PhD student): Development and function of the mesDA system, involvement of Pitx3.
7. 2004-2008: Frank Jacobs (PhD student): Identification of target genes of the homeodomain gene Pitx3.
8. 2007-2011: Teresa Alves Dos Santos: Identification of Pitx3 regulated genes in midbrain dopamine neurons
9. 2007-2011: Elisa Hoekstra: Molecular coding of mdDA neurons during development

5.4.2 Co-Promoter:

1. Co-promotor of Cerial Asbreuk (PhD in 2002).
2. Co-promotor of Marjan Kromkamp (PhD in 2002).
3. Co-promotor of Lars van de Heide (PhD in 2004).
4. Co-promotor of Patrick Wijchers (PhD in 2005).
5. Co-promotor of Frank Jacobs (Thesis finalized, promotion in 2009)

5.4.3 Master Students:

1. 1998-1999: Kyra Campbell: Cloning of Xenopus Pitx3.
2. 1999-2000: Leontien Spierings: Analysis of Pitx3 protein in Human SNc in healthy controls and Parkinsonian brain.; Erik Baaijens: Analysis of new markers in the mesDA system; Max Custers: Provision of cRNA probes for ISH analysis of mesDA markers.
3. 2001-2002: Frank Jacobs: Cloning of homeodomain and forkhead genes from the mesDA systems.; Wiebe Hielkema: Recombinant protein production/purification and generation of antibodies.; Suzanne van der Nobelen: Subtraction library screening of wt and AK mesDA tissue.; Koen Hornman: Generation of a TH-Pitx3 knock-in construct.

4. 2004: Rolf Meijer: analyzing the molecular code on developing midbrain dopaminergic neurons; Joris van Arnsbergen: Analyzing signaling cascades in midbrain dopaminergic neurons; Marijke de Backer: mGluR distribution in the developing and adult mouse brain.
5. 2005/2006: Joanna Korecka, Hanneke Verstegen
6. 2007: Susan van Erp, Mark Mizee, Thomas Gora.
7. 2008: Louk van der Kallen, Willem de Munnik, Jesse Veenvliet.
8. 2009: Diewertje Bink, Gerard Scheppink.

5.4.4 Other trainees

1. 1997-1999: Dr. Pilar Cazorla: "Characterisation of the novel homeodomain gene Pitx3".
2. 1997-1998: Prof. Dr. Michael Selmanoff : "Cloning of novel homeodomain genes involved in the development and function of the hypothalamus".
3. 2004-2007: Dr. Simone Smits: Development of the mesDA system.
4. 2005-2007: Dr. Cornelle Noorlander: The role of prenatal antidepressant use for the setting of the serotonin system.
5. 2008-2011: Dr. Koushik Chakrabarty: Gene profiling of early developmental events in mesodiencephalic dopaminergic neurons.

5.5 Selection of invited lectures

1. March 5, 1999: Title: Molecular cascades in development of the mesDA system; Invited by Andreas Hartmann, INSERM, Paris, France
2. March 19, 1999: Title: Cloning and analysis of homeobox genes in CNS development; Invited by Dr. M. Linskens, University of Groningen, The Netherlands
3. May 19, 1999: Title: Homeodomain transcription factors and MesDA development; Invited by Joost Verhagen, Netherlands Brain Institute, Amsterdam, The Netherlands
4. December 10, 1999: Title: Molecular cascades in mesDA development and function; Invited by Dr. Jochem Graw, Max Plank Institute, Munich, Germany
5. April 6-9, 2000: Title: Molecular cascades in mesDA development and function; Invited by: Professor K.V. Sudakov, Russian Academy of Medical Sciences, P.K. Anokhin Institute of Normal Physiology, Moscow, Russia.
6. November 24, 2000: Title: New directions in the development and function of the mesencephalic dopaminergic system; Invited by: Dr. Bert Joosten, Department of Neurology, University Medical Center, Utrecht, The Netherlands
7. June 9-14, 2002: Title: Development of the substantia nigra pars compacta is depending on the homeodomain gene Pitx3; Invited by: The 2002 Dopamine Conference in Portland, Oregon, USA
8. January 31, 2003: Title: Development of the substantia nigra pars compacta is depending on the homeodomain gene Pitx3; Invited by: Dutch Neuro Federation Research Class 2003
9. July 17, 2003: Title: Development of the substantia nigra pars compacta is depending on the homeodomain gene Pitx3; Invited by: Dr. Horst Simon, Department of Anatomy and Cell Biology III, University of Heidelberg, Heidelberg, Germany.
10. November 8-12, 2003: Title: Early developmental failure of substantia nigra dopamine neurons in mice lacking the homeodomain gene Pitx3; Invited by: The 2003 American Society of Neuroscience Meeting, New Orleans, USA
11. December 18, 2003: Title: Early developmental failure of substantia nigra dopamine neurons in mice lacking the homeodomain gene Pitx3; Invited by: Dr. Silke Rinkwitz, University of Oldenburg, Oldenburg, Germany
12. May 27, 2004: Title: The homeobox gene Pitx3 and its role in the development of dopamine neurons of the substantia nigra; Invited by: Prof. Dr. Luis Puelles, Department of Human Anatomy and Psychobiology, Faculty of Medicine, University of Murcia, Murcia, Spain.

13. June 6, 2005: Title: The role of Pitx3 in survival of midbrain dopaminergic neurons; Invited by: The 16th International congress on Parkinson disease and related disorders, The world congress on Parkinson disease, Berlin, Germany
14. March, 8, 2006: Title: Developmental origin and fate of meso-diencephalic dopamine neurons; Invited by Ronald van Kesteren, VU, Amsterdam The Netherlands
15. July 3, 2006: Title: Origin and subset specification of mesodiencephalic dopaminergic neurons; Invited by: International Symposium entitled Development of Neurotransmitter Systems. The Collaborative Research Center - Sonderforschungsbereich 488 of the German Research Foundation - Molecular and Cellular Bases of Neural Development and the Interdisciplinary Center for Neuroscience (IZN) at Heidelberg University
16. May 30-June 2, 2007: Title : Early development and neuronal specification of mesodiencephalic dopaminergic neurons; Invited by Thomas Perlmann for the symposium: 50 years of Dopamine, Stockholm, Sweden.
17. August 30-Sept 1, 2007: Title: The role of Ahd2 in neuronal specification and maintenance of SNc neurons; Invited by Anders Bjorklund and Thomas Perlmann for the Nobel symposium: Development and Engineering of Dopamine Neurons: From Genes to Therapy, Stockholm, Sweden.
18. November 30-Dec 1, 2007: Title: A Pitx3 regulatory network in development and maintenance of mesodiencephalic dopamine neurons. Invited by I. Dori and G. C. Papadopoulos for the symposium: brain: from cells to behavior, Tessaloniki, Greece.
19. January 22-27, 2008: Visiting professor, V International Course on Morphological Interpretation in Neuroembryology, Murcia Spain. Invited by Luis Puelles.
20. April 17, 2008: Title: Vulnerability of dopaminergic neurons: a Pitx3 regulatory network, Heinrich-Heine-University, Duesseldorf , Germany.
21. June 4-6, 2008: Title: Molecular programming of mesodiencephalic dopaminergic neurons, 2008 Dutch Endo-Neuro-Psycho meeting, Doorwerth, The Netherlands.
22. November 26, 2008: Title: A Pitx3 induced gene regulatory network in the formation and maintenance of substantia nigra dopamine neurons, 2008 RMI symposium, Utrecht , The Netherlands.
23. Januari 7, 2009: Title: A Pitx3 induced gene regulatory network in the formation and maintenance of substantia nigra dopamine neurons, Invited by Siew-lan Ang, MRC, London, UK
24. Februari 6, 2009: How to build the central nervous system, Emma Andersson, Karolinska Intitute, Stockholm, Sweden (Main opponnet of Thesis defence of Emma Andersson).

5.6 Selection of current collaborations with (foreign) academic groups

1. Function of the Engrailed 1 and 2 genes: Dr. Horst H. Simon, University of Heidelberg, Heidelberg, Germany. (Manuscript is published)
2. Analysis of cRet genetically modified mice, Edgar Kramer, Max Planck Institute of Neurobiology, Martinsried, Germany. (Manuscript is published)
3. Serotonin action in the developing CNS, Hans van Hooft, AMC, Amsterdam The Netherlands. (First manuscript in preparation)
4. Apoptotic events in aphakia animals as a consequence of Pitx3 ablation: Dr. I. Dori, Tessaloniki, Greece.
5. Developmental effects of prenatal SSRI exposure, Gerard Visser, Neonatologie, WKZ, Utrecht. The Netherlands (First manuscript published)
6. Genetics of Parkinson's Disease, Peter Heutink, VU, Amsterdam, The Netherlands
7. Dopaminergic phenotype of Ercc1-delta mice, Dr. Nicola Lawrence, Erasmus University, Rotterdam, The Netherlands
8. KP7 partners in mdDA neurodev project: O. Marin; T. Perlmann, W. Wurst, A. Simeone, W. Driever, A Prochianz and J. Pasterkamp.
9. Role of Foxd2 in development of mdDA neurons, Tsutomu Kume, Ph.D. Assistant Professor Department of Medicine Vanderbilt University Medical Center 332 PRB, Nashville, TN 37232-6300, USA
10. Analysis of the DLK-1 knock out, Y. Wang and H.S. Sul, Department of Nutritional Science and Toxicology, University of California, Berkeley, Berkeley, CA 94720, USA. (Manuscript finalized)

5.7 Selection of management activities

5.7.1 Research management

2001-present:

- Team leader of the Development and function of the mesencephalic dopaminergic system research team (start 2001).
- Member of the organizing committee: Dutch Neurofederation Research Class on Brain Development (2003).
- Chairman: Rudolf Magnus Institute of Neuroscience Summerschool 2003.
- Co-Coordinator of the Section Neurodevelopment of the Rudolf Magnus Institute of Neuroscience.
- Member of organizing committee: Rudolf Magnus Institute of Neuroscience Summerschool 2004.
- Member of the NWO-ALW board (open program and VENI)(start 2006)
- Coordinator of a KP7 EU-grant proposal/project (2008-2011), medium sized EU-research project, selected for funding, grant agreement negotiations are started.
- Head of the research platform "Neurodevelopment" (start 2008).
- Coordinator of the Neurodevelopment section of the Rudolf Magnus Institute (start 2008).
- Chairman of the NWO-ALW-VENI committee (2009).
- Member of the NWO-Life Sciences panel (start 2009)

5.7.2 IT management

1998-2002

- Adviser of IT steering group in the medical department, University of Utrecht.
- Representative of the section molecular neuroscience for IT-support.
- Interim IT-coordinator Division "Hersenen" of the University Medical Center, Utrecht -until 2005

2001-present

- Interim IT-coordinator Division "Hersenen" of the University Medical Center, Utrecht -until 2005
- Developer/System administer of a Linux server for molecular genetics software -until 2005.
- IT adviser for the department neuroscience and pharmacology, University Medical Center, Utrecht.
- Development and implementation of a new IT infrastructure for the department neuroscience and pharmacology of the University Medical Center, Utrecht -until 2004.
- Manager IT in the department neuroscience and pharmacology, University Medical Center, Utrecht

5.7.3 Managment trainings/activities

2007-

- Managment training 2 days full time. Academic leadership (2007).
- Personal coaching (every two months one session, start 2007)
- Interim manager/external adviser of the MT, department of Domestic animals, UU, The Netherlands (2009)

5.7.4 Personal management

- Board member of the Budo School on Martial Arts, De Mattekloppers, University of Groningen (1992)
- Chairman of the Budo school on Martial Arts, De Mattekloppers, University of Groningen (1994)
- Chairman of the MR, Driekoningen school, De Meern, The Netherlands (2008-present)

6 Educational experience

- 1989: Assistant to the course: Science and Society.
- 1991-1994: Development and application of the practical course: Biochemistry for Biologist (1 month).
- 1996-2000: Curriculum health-care (UU): Practical Kinetics of Pharmacology
- 1999, 2000: Development and lecturing: "Disease of the central nervous system".
- 2001: Development and lecturing, PhD course Neuroscience; Development and lecturing, KNAW advanced course on Neurogenomics; Development and lecturing: "Disease of the central nervous system"; Development and lecturing: Advanced Course in Neuroscience (PhD course); Lecturing brain development and function of the mesDA system: in PhD course "Neuroscience", University of Amsterdam, Netherlands Brain Institute.
- 2002/2003: Development and lecturing: Advanced Course in Neuroscience.; Development and lecturing: Neuroscience Course. ; Development and lecturing: "Disease of the central nervous system".; Organizer Research Class 2003.; Chairman: Rudolf Magnus Institute of Neuroscience Summerschool 2003.; Development and lecturing: Masters Neuroscience , elected prestigious master.
- 2004: Coordinator : Advanced Course in Neuroscience.; Development and lecturing: Neuroscience Course. ; "Meet the expert" sessions and involved in study material selection for: "Development and developmental disturbances of the Central Nervous System (CNS)".; Member of the organizing committee: Rudolf Magnus Institute of Neuroscience Summerschool 2004.; Development and lecturing: Masters Neuroscience (prestigious master).
- 2001-2009 Advanced neuroscience course for bachelor students; practical and lectures
- 2005-2009 Neuroscience Course: Development and lecturing; Development and developmental disturbances of the Central Nervous System (CNS): Meet the expert" sessions and involved in course development;
- 2005-2009 Prestigious Master Neuroscience: Development, lecturing, practicals and assignment tutor.
- 2006/2007 Visiting professor developmental neuroscience master course, VU, Amsterdam
- 2008 Visiting professor, V International Course on Morphological Interpretation in Neuroembryology, Murcia Spain.
- 2009 Lecturer at the ONWA PhD course, Utrecht, The Netherlands.

7 Selected honors

1. USA National Parkinson Foundation, Richard E. Heikkila Research Scholar Award (award for the best research proposal of 1998).
2. Personal post-doc grant (NWO-MW) (the current Veni award)
3. Rudolf Magnus Institute for Neuroscience Research Award (2000). For innovating research on the development of the mesencephalic dopaminergic system
4. The Netherlands Brain Foundation (HSN) Award for outstanding research performance (2001).
5. High-potential award, University of Utrecht (2004).
6. Vidi award, NWO-MW, The Netherlands (2004).
7. Rudolf Magnus Institute for Neuroscience Research Award to Frank Jacobs and Simone Smits (2007). Best publication in 2007: Jacobs FM, Smits SM, Noorlander CW, von Oerthel L, van der Linden AJ, Burbach JP and Smidt MP. Retinoic acid counteracts developmental defects in the substantia nigra caused by Pitx3 deficiency. *Development*. 2007 Jul;134(14): 2673-84. IF 8
8. Vici award, NWO-ALW, The Netherlands (2009)

8 List of publications, books and patent applications

8.1 Peer refereed international journals (impact factors (IF) are listed)

- In the last 5 years as first/second or last author: 16 papers in the top 10 % of journals (based on mean impact factor, 5 year) (March 2009).
 - Almost all papers are in the top 25 % of journals (based on mean impact factor, 5 year).
1. Jacobs FMJ, van Erp S, van der Linden AJA, von Oerthel L, Burbach JPH and Smidt MP. Pitx3 potentiates Nurr1 in dopamine neuron terminal differentiation through release of SMRT-mediated repression. *Development* 2009 Feb;136(4):531-40 IF 8.
 2. Noorlander, CW, Ververs, FFT, Nikkels, PGJ, van Echteld, CJA, Visser, GHA, Smidt MP. Modulation of serotonin transporter function during fetal development causes dilated heart cardiomyopathy and lifelong behavioral abnormalities. *PLoS ONE* June 23, 2008.
 3. Smits SM, Noorlander CW, Kas MJ, Ramakers GM, Smidt MP. Alterations in serotonin signalling are involved in the hyperactivity of Pitx3-deficient mice. *Eur J Neurosci*. 2008 Jan;27(2):388-95. PMID: 18215235 IP 4.2
 4. Vastenhouw B, van der Have F, van der Linden AJ, von Oerthel L, Booij J, Burbach JP, Smidt MP, Beekman FJ. Movies of dopamine transporter occupancy with ultra-high resolution focusing pinhole SPECT. *Mol Psychiatry*. 2007 Nov;12(11):984-7. Epub 2007 Jul 10. PMID: 17957236 IF 12
 5. Kas MJ, van der Linden AJ, Oppelaar H, von Oerthel L, Ramakers GM, Smidt MP. Phenotypic segregation of aphakia and Pitx3-null mutants reveals that Pitx3 deficiency increases consolidation of specific movement components. *Behav Brain Res*. 2008 Jan 25;186(2):208-14. Epub 2007 Aug 31. PMID: 17919745 IF 2.4
 6. Jacobs FM, Smits SM, Noorlander CW, von Oerthel L, van der Linden AJ, Burbach JP, Smidt MP. Retinoic acid counteracts developmental defects in the substantia nigra caused by Pitx3 deficiency. *Development*. 2007 Jul;134(14):2673-84. PMID: 17592014 IF 8
 7. Kramer ER, Aron L, Ramakers GM, Seitz S, Zhuang X, Beyer K, Smidt MP, Klein R. Absence of Ret signaling in mice causes progressive and late degeneration of the nigrostriatal system. *PLoS Biol*. 2007 Mar;5(3):e39. PMID: 17298183 IF 15
 8. Smidt MP*, Burbach JP. How to make a mesodiencephalic dopaminergic neuron. *Nat Rev Neurosci*. 2007 Jan;8(1):21-32. Review. PMID: 17180160 * corresponding author IF 27
 9. Burbach JP, Smidt MP. Molecular programming of stem cells into mesodiencephalic dopaminergic neurons. *Trends Neurosci*. 2006 Nov;29(11):601-3. Epub 2006 Oct 9. Review. PMID: 17030431 IF 14
 10. Smits SM, Smidt MP. The role of Pitx3 in survival of midbrain dopaminergic neurons. *J Neural Transm Suppl*. 2006;(70):57-60. Review. PMID: 17017509 2.4
 11. Sgadò P, Albèri L, Gherbassi D, Galasso SL, Ramakers GM, Alavian KN, Smidt MP, Dyck RH, Simon HH. Slow progressive degeneration of nigral dopaminergic neurons in postnatal *Engrailed* mutant mice. *Proc Natl Acad Sci U S A*. 2006 Oct 10;103(41):15242-7. Epub 2006 Oct 2. PMID: 17015829 IF 10
 12. van der Heide LP, Ramakers GM, Smidt MP. Insulin signaling in the central nervous system: learning to survive. *Prog Neurobiol*. 2006 Jul;79(4):205-21. Epub 2006 Aug 17. Review. PMID: 16916571 IF 12
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8.2 Patent applications:

Smidt MP, Burbach JPH European Patent application, Genes with restricted expression/Genes with restricted expression in mesencephalic dopaminergic neurons, Filed 1997.

8.3 Books (chapters)

1. Smidt MP, Burbach, JP (2000) Transcription factors in the development of the mesencephalic dopamine system. In: *Molecular genetics of mental disorders* Ed: M. Briley&F. Sulser. 269-287.
2. Burbach JP, van Schaick HSA, Lopes da Silva S, Asbreuk CHJ, Smidt MP (1998) Hypothalamic transcription factors and the regulation of the hypothalamo-neurohypophysial system. In: *Vasopressin and Oxytocin. Molecular, Cellular and Clinical Advances* (Eds. H.H. Zingg, C.W. Bourque and D.G. Bichet), *Advances in Experimental Medicine and Biology* 449, Plenum Press, New York, pp. 29-37.
3. Smidt, MP*, Burbach JP (2008) Terminal differentiation of mesodiencephalic dopaminergic neurons: the role of Nurr1 and Pitx3. In "Dopamine development and engineering" (Eds. J. Pasterkamp, M.P. Smidt, J.P.H. Burbach) <http://www.eurekah.com/chapter/3937> *corresponding author
4. Smidt MP. Specific vulnerability of substantia nigra compacta neurons. In: *BIRTH, LIFE AND DEATH OF DOPAMINERGIC NEURONS IN THE SUBSTANTIA NIGRA* Eds: Di Giovanni G, Di Matteo V, Esposito E. *Journal Neuraltransmission Supplementum*, 2009. in press Springer- Verlag, Wien-New York.

8.4 Manuscripts (soon to be) submitted

1. Sharon M. Kolk, Rou-Afza F. Gunput, Tracy S. Tran, Dianne M.A., van den Heuvel, Anita J.C.G.M. Hellemons, Youri Adolfs, David D. Ginty, Alex L. Kolodkin, J. Peter H. Burbach, Marten P. Smidt and R. Jeroen Pasterkamp (2009) Semaphorin 3F acts as a neuronal subset-specific axon guidance signal during the development of mesoprefrontal dopamine projections. Under revision *J. Neurosci.*
2. Patrick J. E. C. Wijchers, Simone M. Smits, Lars von Oerthel, Marco F. M. Hoekman, J. Peter H. Burbach and Marten P. Smidt (2009) Foxd2 is selectively expressed in diencephalic dopamine precursors of the substantia nigra. *Neuroscience* revision in progress.
3. Patrick J. E. C. Wijchers, Lars P. van der Heide, Willem van den Akker, Youri Adolfs, Antony J. Durston, Marco F. M. Hoekman, J. Peter H. Burbach and Marten P. Smidt. (2009) Foxk2, the mammalian SRF-interacting homologue of yeast Fkh2, has a distinct function in cell survival." Under revision for *PLOS one*
4. Simone M. Smits, Elisa Hoekstra, J. Peter H. Burbach and Marten P. Smidt (2009) Developmental origin and sub-set specficiation of mesodiencephalic dopaminergic neurons. In preparation for *Development*.
5. Frank M.J. Jacobs, Jesse van Veenvliet, Loek van der Kallen, Annemarie J.A. van der Linden, J. Peter H. Burbach and Marten P. Smidt (2009) Retinoic acid-dependent and -independent pathways of the Pitx3 downstream cascade as solution to selective vulnerability of the substantia nigra. Prepared for *Development*.
6. Frank M. J. Jacobs¹, Annemarie J. A. van der Linden¹, Yuhui Wang², Lars von Oerthel¹, Hei Sook Sul², J. Peter H. Burbach¹ and Marten P. Smidt (2009) Identification of Dlk1, Ptpru and Khl1 as novel Nurr1 target genes in meso-diencephalic dopamine neurons. Prepared for *Development*.
7. Laura Richter, Cornelle Noorlander, Marten P. Smidt* and Hans van Hooft* (* shared last author) The role of serotonin signaling in the dendritic arborisation of the developing cortex. In preparation for *Development*.

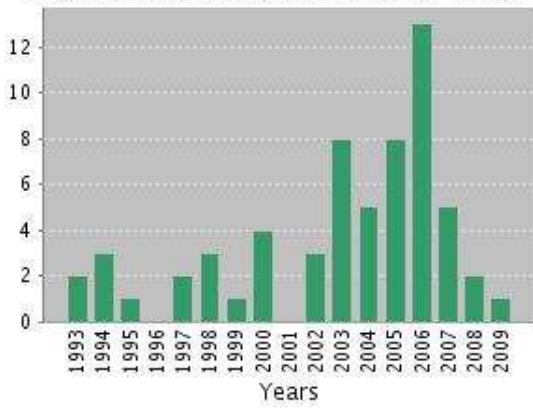
8.5 Other scientific contributions

In addition to the mentioned full papers approximately 50 abstracts and/or proceedings papers were published.

9 Citation information

- Number of papers: 61
- Average citations per item: 30 (full papers only)
- h-index: 21

Published Items in Each Year



Citations in Each Year

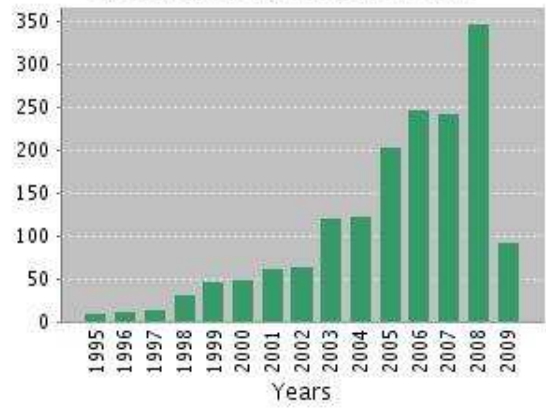


Figure 1: Graphical representation of citation information. (left) Amount of papers published each year. (right) amount of citations each year. (source: ISI, march 2009)