

# Dr. Melanie Meyer-Luehmann

## Curriculum Vitae



### **Date of Birth:**

May 11, 1974 in Lahr, Germany  
Married, 1 daughter (Date of birth March 31, 2007)

### **Academic Education:**

- 1993-1999: Undergraduate and graduate studies of Biology at the University of Freiburg, Germany
- 1999-2000: M.S. (Diplom) Thesis at the University of Michigan, Ann Arbor, USA with Prof. John Wayne Aldridge. Title: *Extracellular recordings in the substantia nigra pars reticulata during normal grooming behavior in rats.*
- 2000: M.S. (Diplom) in Biology, grade: very good, University of Freiburg, Germany
- 2000-2004: PhD Thesis at the University of Basel, Switzerland with Prof. Mathias Jucker. Title: *Experimental approaches to study cerebral amyloidosis in a transgenic mouse model of Alzheimer`s disease.*
- 2004: PhD in Neurobiology, grade: summa cum laude, University of Basel, Switzerland

### **Postdoctoral Training:**

- 2004: Postdoctoral fellow at the Hertie Institute of Clinical Brain Research, Tuebingen, Germany, with Prof. Mathias Jucker

- 2005-2008: Postdoctoral fellow at the Massachusetts General Institute for Neurodegenerative Disease (MIND), Harvard Medical School, Boston, USA, with Prof. Bradley T. Hyman

### **Advanced Professional Degrees:**

- Since October 2008: Independent group leader at the Adolf-Butenandt-Institut, Ludwig-Maximilians-University Munich, Germany

### **Awards and Honours:**

- Emmy Noether Career Development Grant from the Deutsche Forschungsgemeinschaft DFG (since July 2009)
- Member of the "SFB 596 Molecular Mechanisms of Neurodegeneration" (since August 2009)

### **Publications:**

1. Koffee, R.M., **Meyer-Luehmann, M.**, Hashimoto, T., Adams, K.W., Mielke, M.L., Garcia-Alloza, M., Micheva, K.D., Smith, S.J., Kim, M.L., Lee, V.M., Hyman, B.T., Spires-Jones, T.L. (2009). Oligomeric amyloid beta associates with postsynaptic densities and correlates with excitatory synapse loss near senile plaques. *ProcNatlAcadSci* 106 (10): 4012-7.
2. Koenigs-knecht-Talboo, J., **Meyer-Luehmann, M.**, Parsadanian, M., Garcia-Alloza, M., Finn, M.B., Hyman, B.T., Bacskai, B.J. and Holtzman, D.M. (2008). Rapid microglial response around amyloid pathology after systemic anti-Abeta antibody administration in PDAPP mice. *J Neurosci.* 28(52):14156-64.
3. Spires-Jones, T.L., Mielke, M.L., Rozkalne, A., **Meyer-Luehmann, M.**, de Calignon, A., Bacskai, B.J., Schenk, D. and Hyman, B.T. (2008). Passive immunotherapy increases structural plasticity in a mouse model of Alzheimer disease. *Neurobiol Dis.* 2009 Feb;33(2):213-20. Epub 2008 Nov 6.
4. Jones, P.B., Rozkalne, A., **Meyer-Luehmann, M.**, Spires-Jones, T.L., Makarova, A., Kumar, A.T., Berezovska, O., Bacskai, B.J. and Hyman, B.T. (2008). Two postprocessing techniques for the elimination of background autofluorescence for fluorescence lifetime imaging microscopy. *J Biomed Opt* 13 (1): 014008.
5. **Meyer-Luehmann, M.**, Spires-Jones, T.L., Prada, C., De Calignon, A., Rozkalne, A., Koenigs-knecht-Talboo, J., Holtzman, D.M., Bacskai, B.J. and Hyman, B.T. (2008). Rapid appearance and local toxicity of amyloid plaques in a mouse model of Alzheimer's disease. *Nature* 451, 720-4.
6. Bolmont, T., Clavaguera, F., **Meyer-Luehmann, M.**, Herzig, M.C., Radde, R., Staufenbiel, M., Lewis, J., Hutton, M., Tolnay, M. and Jucker, M. (2007). Induction

of tau pathology by intracerebral infusion of amyloid- $\beta$ -containing brain extract and by amyloid in APP X tau transgenic mice. *Am J Pathol* *171*, 2012-20.

7. Spires-Jones, T.L., **Meyer-Luehmann, M.**, Osetek, J.D., Jones, P.B., Stern, E.D., Bacskai, B.J. and Hyman, B.T. (2007). Impaired spine stability underlies plaque-related spine loss in an Alzheimer's disease mouse model. *Am J Pathol* *171*, 1304-11.

8. Garcia-Alloza, M., Dodwell, S.A., **Meyer-Luehmann, M.**, Hyman, B.T. and Bacskai, B.J. (2006). Plaque-derived oxidative stress mediates distorted neurite trajectories in the Alzheimer mouse model. *J Neuropathol Exp Neurol* *65*, 1082-9.

9. **Meyer-Luehmann, M.**, Coomaraswamy, J., Bolmont, T., Kaeser, S., Schaefer, C., Kilger, E., Neuenschwander, A., Abramowski, D., Frey, P., Jaton, A.L., Vigouret, J.M., Paganetti, P., Walsh, D.M., Mathews, P.M., Ghiso, J., Staufenbiel, M., Walker, L.C. and Jucker, M. (2006). Induction of cerebral  $\beta$ -amyloidogenesis is governed by agent and host. *Science* *313*, 1781-4.

10. Spires, T.L., **Meyer-Luehmann, M.**, Stern, E.D., McLean, P.J., Skoch, J., Nguyen, P.T., Bacskai, B.J. and Hyman, B.T. (2005). Dendritic spine abnormalities in amyloid precursor protein transgenic mice demonstrated by gene transfer and intravital multiphoton microscopy. *J Neurosci* *25*, 7278-87.

11. Sykova, E., Vorisek, I., Antonova, T., Mazel, T., **Meyer-Luehmann, M.**, Jucker, M., Hajek, M., Or, M. and Bures, J. (2005). Changes in extracellular space size and geometry in APP23 transgenic mice: A model of Alzheimer's disease. *Proc Natl Acad Sci USA* *102*, 479-84.

12. Mueggler, T., **Meyer-Luehmann, M.**, Rausch, M., Staufenbiel, M., Jucker, M., and Rudin, M. (2004). Restricted diffusion in the brain of transgenic mice with cerebral amyloidosis. *Eur J Neurosci* *20*, 811-7.

13. **Meyer-Luehmann, M.**, Stalder, M., Herzig, M. C., Kaeser, S. A., Kohler, E., Pfeifer, M., Boncristiano, S., Mathews, P. M., Mercken, M., Abramowski, D., Staufenbiel, M. and Jucker, M. (2003). Extracellular amyloid formation and associated pathology in neural grafts. *Nat Neurosci* *6*, 370-377.

14. **Meyer-Luehmann, M.**, Thompson, J. F., Berridge, K. C., and Aldridge, J. W. (2002). Substantia nigra pars reticulata neurons code initiation of a serial pattern: implications for natural action sequences and sequential disorders. *Eur J Neurosci* *16*, 1599-1608.

## **Presentations: Abstracts**

1. Koenigsknecht-Talboo, J., **Meyer-Luehmann, M.**, Garcia-Alloza, M., Hyman, B. T., Bacskai, B. J., Holtzman, D. M. (2008). Evidence of rapid microglial responses following systemic anti-A $\beta$  antibody administration in APP transgenic mice Soc Neurosci Abstr. 34, 309.9.
2. **Meyer-Luehmann, M.**, Stoothoff, W., Spires-Jones, T.L., Kowa, T., Koker, M., Han, K., Hyman, B.J. (2008). Decreased neuronal activity in APP transgenic mice measured via dendritic protein synthesis. 11th International Conference on Alzheimer`s Disease and Related Disorders, Chicago.
3. Spires, T.L., **Meyer-Luehmann, M.**, Rozkalne, A., Stern, E. A., Bacskai, B.J., Hyman, B.T. (2007). Impaired spine stability underlies plaque-associated dendritic spine loss in an Alzheimer`s disease mouse model. Soc Neurosci Abstr. 33, 483.20.
4. Koenigsknecht-Talboo, J., **Meyer-Luehmann, M.**, Garcia-Alloza, M., Hyman, B. T., Bacskai, B. J., Holtzman, D. M. (2007). Characterization of microglial cells and dynamics surrounding amyloid deposits in a model of Alzheimer`s disease. Soc Neurosci Abstr. 33, 887.21.
5. **Meyer-Luehmann, M.**, Spires, T.L., Bacskai, B.J., Hyman, B.T. (2006). Observation of new senile plaque formation and associated neuritic abnormalities using multiphoton microscopy. 10th International Conference on Alzheimer`s Disease and Related Disorders, Madrid. Alzheimer`s & Dementia 2, S121.
6. Spires, T.L., **Meyer-Luehmann, M.**, Orne, J.D., Bacskai, B.J., Hyman, B.T. (2006). In vivo multiphoton imaging reveals plaque-related deficits in structural plasticity, underlying dendritic spine loss in Tg2576 mice. 10th International Conference on Alzheimer`s Disease and Related Disorders, Madrid. Alzheimer`s & Dementia 2, S503-504.
7. Bolmont, T., Clavaguera, F., **Meyer-Luehmann, M.**, Herzig, M., Lewis, J., Hutton, M., Staufenbiel, M., Jucker, M., Tolnay, M. (2005). Neurofibrillary pathology in mutant tau transgenic mice is triggered by intracerebral infusion of human Alzheimer`s disease brain extract. Swiss Society of Neuropathology, International Winter Meeting St. Moritz.
8. Jucker, M., Coomaraswamy, J., **Meyer-Luehmann, M.** (2004). Seeded cerebral amyloidosis in transgenic mice. Swiss Society of Neuropathology, International Winter Meeting St. Moritz.
9. **Meyer-Luehmann, M.**, Walker, L. C., Neuenschwander, A., Kaeser, S. A., Bolmont, T., Ghiso, J., Frey, P., Jaton, A. L., Vigouret, J. M., Staufenbiel, M., Jucker, M. (2003). Initiation of amyloid deposition in APP23 transgenic mice. Soc Neurosci Abstr. 29, 731.11.

10. **Meyer-Luehmann, M.**, Neuenschwander, A., Kaeser, S. A., Frey, P., Jaton, A. L., Vigouret, J. M., Walker, L. C., Staufenbiel, M., Jucker, M. (2002). Seeding of beta-amyloid in APP23 transgenic mice. 8th International Conference on Alzheimer's Disease and Related Disorders, Stockholm. *Neurobiol Aging* 23, S192, 719.
11. Jucker, M., Stalder, M., **Meyer-Luehmann, M.**, Pfeifer, M., Kaeser, S. A., Staufenbiel, M. (2001). Mechanism of cerebral amyloidosis in transgenic mice. *J Neurochem* 78 (Suppl. 1), 207.
12. Mazel, T., Antonova, T., **Meyer-Luehmann, M.**, Staufenbiel, M., Jucker, M., Sykova, E. (2001). Extracellular space diffusion parameters are altered in the brain of the APP23 mouse model of Alzheimer's Disease. *Soc Neurosci Abstr.* 27, 860.3.
13. **Meyer-Luehmann, M.**, Stalder M., Pfeifer M., Boncristiano S., Abramowski D., Staufenbiel, M., Jucker, M. (2001). Wildtype grafts in young APP23 transgenic mice develop amyloidosis prior to amyloid plaque formation in the host. *Soc Neurosci Abstr.* 27, 355.1.
14. Hadden, L.E., **Meyer-Luehmann, M.**, Berridge, K.C., Aldridge, J.W. (2000). Effective connectivity between neurons in the substantia nigra pars reticulata is modulated by grooming behavioral state. *Soc Neurosci Abstr.* 26, 360.9.
15. **Meyer-Luehmann, M.**, Thompson, J.F., Berridge, K. C., and Aldridge, J.W. (2000). Neuronal activity in the substantia nigra pars reticulata codes the onset of grooming sequences in rats. *Soc Neurosci Abstr.* 26, 360.10.

### **Invited Presentations:**

1. **Meyer-Luehmann, M.** : Kinetics of A $\beta$  plaque formation and associated neuritic pathology in a mouse model of AD. SFB Meeting of the Prion Research Focus, Munich (Germany), 2009.
2. **Meyer-Luehmann, M.** : A $\beta$  plaque formation and associated neuritic pathology: Sequence of pathogenic events in a mouse model of AD. Invited Talk at Roche, Basel (Switzerland), 2009.
3. **Meyer-Luehmann, M.** : Kinetik der Amyloid-Beta Ablagerungen im Mausmodell. Seminarreihe der Neurologischen Universitaetsklinik und Neurozentrum Ulm, (Germany), 2008.
4. **Meyer-Luehmann, M.** : Cascade of pathogenic events in Alzheimer's disease: insights from mouse models. The eighth Eibsee Meeting on cellular mechanisms of Alzheimer's disease, Eibsee (Germany), 2008.
5. **Meyer-Luehmann, M.** : Kinetics of amyloid deposition. Departmental lecture MIND seminar series, Massachusetts Institute for Neurodegenerative Disease, Charlestown (USA), 2008.

6. **Meyer-Luehmann, M.** : Exploring the early pathogenesis in Alzheimer's Disease: insights from transgenic mouse models. 20th European College Neuropsychopharmacology (ECNP) Congress, Vienna (Austria), 2007.

7. **Meyer-Luehmann, M.** : Extracellular amyloid formation causes neurodegeneration. 1st Symposia of the Hertie Institute of Clinical Brain Research, Tübingen (Germany), 2003.

8. **Meyer-Luehmann, M.** : Mechanism of cerebral amyloidosis. Departmental lecture series, Institute of Anatomy, Basel (Switzerland), 2003.

### **Professional Society Membership**

Society of Neuroscience