12th Annual FTN/IAK Symposium in Molecular and Cellular Neuroscience

December 13, 2013
9:00 am - Alte Mensa

09:00-09:15 Opening Remarks

09:15-10:05 Inhibition in neural circuits of fear
Andreas Lüthi (Basel)

10:05-10:45 Pinpointing sufficient cannabinoid CB1 receptor function in fear processing by using genetic rescue approaches.
F Remmers (Mainz) and V Reyes-Puerta (Mainz) Laminar and columnar structure of sensory evoked multineuronal spike sequences in adult rat barrel cortex.

11:00-11:50 Regeneration of the adult zebrafish brain. What’s the trick?
Michael Brandt (Dresden)

11:50-12:10 Oligodendroglogenic and neurogenic adult subependymal zone neural stem cells constitute distinct lineages and exhibit differential responsiveness to Wnt signaling.
F Ortega de la O (Mainz)

12:30-14:45 Poster Session

14:45-15:35 The neural network of Drosophila's circadian clock
Charlotte Helfrich-Förster (Würzburg)

15:35-16:15 From Calcium Channel Function to Behavior and Evolution
S Ryglewski (Mainz)

16.45-17:05 Reactivation and growth control in larval neural stem cells in Drosophila
C Berger (Mainz)

17:05-17:55 Synaptic vesicle endocytosis - keeping neurotransmission up to speed
Volker Haucke (Berlin)
**Short Talk Presentations**

(15 minutes talk plus 5 minutes discussion)

10:05 – 10:25 am

**Pinpointing sufficient cannabinoid CB1 receptor function in fear processing by using genetic rescue approaches**
Floortje Remmers, Sabine Ruehle, Hector Romo-Parra, Giovanni Marsicano, Hans-Christian Pape, Beat Lutz

Endocannabinoids (eCB) modulate synaptic transmission through retrograde depolarization-induced suppression of inhibition (on GABAergic neurons) and excitation (on glutamatergic neurons). The eCB system is involved in the regulation of a large variety of functions, including feeding behavior, stress responses, seizure susceptibility, anxiety, and extinction of aversive memories. It was previously demonstrated that cannabinoid CB1 receptor-deficient mice are strongly impaired in short-term and long-term extinction in auditory fear conditioning, with unaffected memory acquisition and consolidation. We recently found that CB1 receptor-mediated modulation of glutamatergic signaling was not sufficient to rescue this fear extinction impairment observed in complete CB1 receptor knockout mice. To further address the sufficient role of CB1 receptor signaling in distinct cell populations, we applied the Cre/loxP system in mouse lines for conditional rescue (Stop-CB1) of this receptor. The CB1 receptor was rescued cell-type specifically by crossing Stop-CB1 mice with a mouse line expressing Cre recombinase in forebrain GABAergic neurons (Dlx5/6-Cre). In a second approach, this GABAergic CB1-rescue was combined with the glutamatergic CB1-rescue described above using a Cre line specific for dorsal telencephalic glutamatergic neurons (Nex-Cre) to obtain CB1 rescue in both these neuronal populations. To further pinpoint the circuitry involved in CB1-receptor dependent modulation of fear processing, we supplemented the CB1 receptor rescue on glutamatergic neurons (Stop-CB1 x Nex-Cre) with a local rescue in the prefrontal cortex by stereotaxic delivery of a recombinant adeno-associated virus (AAV) vector expressing Cre-recombinase. These animals with cell-type selective and brain-region specific rescue of the CB1 receptor were tested in elevated-plus maze, open field, light-dark test and auditory fear conditioning to assess the influence of altered CB1 receptor expression on the processing of innate and learned fear.

10:25 – 10:45 am

**Laminar and Columnar Structure of Sensory Evoked Multineuronal Spike Sequences in Adult Rat Barrel Cortex in vivo**
Dr. Vicente Reyes-Puerta, Dr. Heiko Luhmann
Institute for Physiology and Pathophysiology, University Medical Center of Mainz, Germany

One of the most relevant questions regarding the function of the nervous system is how sensory information is represented in populations of cortical neurons. Despite its importance, the manner in which sensory evoked activity propagates across neocortical layers and columns has yet not been fully characterized. In this study we took advantage of the distinct organization of the rodent barrel cortex and recorded with multi-electrode arrays simultaneously from up to 74 neurons localized in several functionally identified layers and columns of anesthetized adult Wistar rats in vivo. The flow of activity within neuronal populations was characterized by temporally precise spike sequences, which were repeatedly evoked by single whisker stimulation. The majority of the spike sequences representing instantaneous responses were led by a subgroup of putative inhibitory neurons at thalamorecipient layers of the principal column, thus revealing the presence of feedforward inhibition. However, later spike sequences were mainly led by infragranular excitatory neurons in neighboring columns. Although
the starting point of the sequences was anatomically confined, their ending point was rather scattered, suggesting that the population responses are structurally dispersed. Our data show for the first time the simultaneous intra- and inter-columnar processing of information at high spatio-temporal resolution.

11:50 – 12:10
Title: Oligodendrogliogenic and neurogenic adult subependymal zone neural stem cells constitute distinct lineages and exhibit differential responsiveness to Wnt signaling
Dr. Felipe Ortega de la O, Institute of Physiological Chemistry

The adult mouse subependymal zone (SEZ) harbors adult neural stem cells (aNSCs) that give rise to neuronal and oligodendroglial progeny. However it is not known whether the same aNSC can give rise to neuronal and oligodendroglial progeny or whether these distinct progenies constitute entirely separate lineages. Continuous live imaging and single cell tracking of aNSCs and their progeny isolated from the mouse SEZ revealed that aNSCs exclusively generate oligodendroglia or neurons, but never both within a single lineage. Moreover, activation of canonical Wnt signaling selectively stimulated proliferation within the oligodendroglionic lineage, resulting in a massive increase in oligodendrogliongenesis without changing lineage choice or proliferation within neurogenic clones. In vivo activation or inhibition of canonical Wnt signaling respectively increased or decreased the number of Olig2 and PDGFR-α positive cells, suggesting that this pathway contributes to the fine tuning of oligodendrogenesis in the adult SEZ.

15:35 – 15:55
From Calcium Channel Function to Behavior and Evolution
Dr. Stefanie Rygklewski, Institute of Zoology, Neurobiology, Johannes Gutenberg University

Voltage gated calcium channels (VGCCs) carry out diverse functions in different types of neurons and different brain parts. In vertebrates, 10 genes code for VGCC alpha subunits, which fall into three different families, namely Cav1, Cav2, and Cav3 channels. In the Drosophila melanogaster genetic model system each of these families is represented by only one gene: Dmca1A (Cav1 homolog), Dmca1D (Cav2 homolog), and DmaG (Cav3) homolog. We employ targeted genetic manipulation of these calcium channels to test the function of these channels in motoneurons with distinctly different behavioral functions, i.e. crawling versus flight motoneurons. As is the case in mammalian motoneurons, in larval Drosophila crawling motoneurons Cav2 channels (Dmca1D) mediate somatodendritic L-type calcium currents which may serve to boost synaptic drive to their dendrites, especially in the presence of aminergic modulation. By contrast, adult flight/courtship motoneurons exhibit somatodendritic LVA T-type and HVA N-type like calcium currents, as well as presynaptic P-/Q-type calcium current, all three of which are mediated by the Cav2 homolog, Dmca1A. Therefore, the different requirements to motoneurons firing patterns as evident during crawling versus flight are reflected in the expression of different calcium channels. Part of the underlying mechanism to produce three distinct calcium currents from one gene in adult motoneuons is alternative splicing. Therefore, expression of specific splice variants in a null background rescues only one out of three current produced by Dmca1A. Animals will normal Dmca1A mediated presynaptic P-/Q-type currents, but without Dmca1A mediated somatodendritic calcium currents show altered courtship song and significantly reduced mating success. In fact courtship song structure is an important factor in species recognition in Drosophila. Based on these findings we hypothesize changes in Cav2 isoform expression as a potential mechanism of prezygotic isolation during speciation in Drosophila.
15:55 – 16:15
Reactivation and growth control in larval neural stem cells in Drosophila
Waldemar Kaiser, Rouven Ding and Christian Berger, Institute of Genetics, Johannes Gutenberg University

During development organismal and cellular growth have to be tightly coordinated to the nutritional status of the organism to ensure a metabolic homeostasis. By this it is assured that different tissues grow together in a harmonized manner to regulate the final body size. A prerequisite are inter- and intracellular signalling events from higher systemic regulatory organs, which sense the nutritional status, down to single cells in peripheral tissues that ultimately have to coordinate cell size and proliferation accordingly.

In Drosophila neural stem cells, called neuroblasts (NBs), enter a phase of quiescence at the end of embryogenesis and recent work showed, that the beginning of larval feeding changes the nutritional status of the animal and leads to a systemic signal that reactivates the neuroblasts via the conserved insulin signalling pathway (IIS). In the quiescence phase NBs are very small (3-4µm) and cannot be distinguished from the surrounding neurons. Upon or during reactivation NBs first start to grow and reaching a threshold size of 7µm start to proliferate. The regulators of growth downstream of the IIS are not known and we can now show that the conserved Hippo signalling cascade is involved in the growth initiation during reactivation. Another unsolved question is how the reactivation is coordinated with development? What are the signals enabling the NBs to react to the insulin-like peptides secreted from glial cells in response to a systemic signal? In this context, our investigations show that the steroid hormone Ecdysone (Ecd) functions cell-autonomously in NBs to regulate the competence to get reactivated. The lack of Ecd signalling blocks reactivation and growth in NBs presumably by regulating the expression or activity of the Insulin receptor.

16:45 – 17:05
How oligodendrocyte precursor cells modulate the neuronal network
Dr. Dominik Sakry, Dr. Angela Mainz, Unit of Molecular Cell Biology

Adhesion molecules expressed at neuronal synapses regulate synaptic activity. The neuronal adhesion molecules Neuroligin and N-Cadherin are cleaved by secretases in an activity-dependent fashion which modulates synaptic function. Oligodendrocyte precursor cells (OPC) characteristically express the transmembrane proteoglycan NG2 and are unique glial cells forming synapses with neurons. Here we report that NG2 is processed by α- and γ-secretases yielding an extracellular matrix-associated ectodomain, a c-terminal fragment and an intracellular domain. Chemical LTP increases ADAM 10-dependent ectodomain cleavage and release (shedding). Lack of NG2 expression in OPC, or pharmacological inhibition of NG2 ectodomain shedding, results in a striking reduction of NMDA receptor-dependent LTP in pyramidal neurons of the somatosensory cortex and alterations in the subunit composition of their AMPA receptors. These results demonstrate a bidirectional cross-talk between OPC and the surrounding neuronal network, and demonstrate a novel physiological role for OPC in regulating information processing at neuronal synapses.
1. THE ROLE OF GLUTAMATERGIC CB1 CANNABINOID RECEPTORS IN THE REGULATION OF OBESITY
Ruiz de Azua, Aparisi Rey, Guggenhuber S, Lutz B
Institute of Physiological Chemistry, University Medical Center of the Johannes Gutenberg University, Mainz, Germany

2. Impact of oligodendrocyte-derived exosomes on neuronal metabolism: a role in neuroprotection?
Wen Ping Kuo¹, Dominik Fröhlich¹, Carsten Frühbeis¹, Jorge Moreno Herrero¹, Christoph Zehendner², Heiko J. Luhmann², Jacqueline Trotter¹ and Eva-Maria Krämer-Albers¹
¹Molecular Cell Biology, University of Mainz, Germany; ²Institute for Physiology and Pathophysiology, University Medical Center of Mainz, Germany

3. REGULATION AND IMPACT OF ULTRABITHORAX RNA PROCESSING IN DROSOPHILA CNS DEVELOPMENT
Ana Rogulja-Ortmann¹, Casandra Villava², Joao Picao Osorio², Pedro Patraquim², Elvira Lafuente², Richard Kaschula², Julie Aspden², Adrien Savy², Stefan Thomsen², Simone Renner¹, Gerd Technau¹ and Claudio R. Alonso²
¹Institute of Genetics, University of Mainz, Mainz, Germany; ²John Maynard Smith Building, School of Life Sciences, University of Sussex, Brighton BN1 9QG, United Kingdom

4. Translational read-through of as therapeutic strategy for retinal degenerations caused by nonsense mutations
Fabian Möller, Inessa Penner, Ananya Samanta, Uwe Wolfrum and Kerstin Nagel-Wolfrum
Cell & Matrix Biology, Institute of Zoology, Johannes Gutenberg University Mainz, Germany

5. Role of p21-activated kinase Mbt in proliferation of central brain neuroblasts with special focus on the mushroom body neuroblasts
Melzer J.²*, Kraft K.F.¹*, Urbach R.¹, Raabe T.²⁸
¹Institut für Genetik, Universität Mainz; ²Institut für Medizinische Strahlenkunde und Zellforschung, Universität Würzburg

6. Post-transcriptional regulation of Myelin Basic Protein during cellular stress
Gonsior C, Hoch-Kraft P, Kraemer-Albers EM, Trotter J (Molecular Cell Biology, Department of Biology, Johannes Gutenberg-University of Mainz, Germany)

7. Posttranscriptional regulation of Myelin Basic Protein by DEAD Box RNA Helicase 5 (DDX5)
Department of Biology, Molecular Cell Biology, Johannes Gutenberg University of Mainz, Germany
8. Neuroglobin expression in the brain: a critical re-evaluation
Daniel Andre, Andrej Fabrizius, Thomas Hankeln
Institute of Molecular Genetics, University of Mainz, Germany

9. Role of the Hox gene Antennapedia (Antp) in segment specific lineage development in the Drosophila embryonic Central Nervous System
Myneni S. R., Lühr K., Rogulja-Ortmann A., Technau G. M
Institute of Genetics, Johannes Gutenberg University, Mainz, Germany

10. Magi2 is as a novel binding partner of the Usher syndrome type 2C gene product Vlgr1b/GPR98
Barbara Knapp1, Katharina Bauss1, Stef Letteboer2, Erwin van Wijk2,3, Hannie Kremer3, Ronald Roepman2 and Uwe Wolfrum1
1Cell and Matrix Biology, Institute of Zoology, Johannes Gutenberg University of Mainz, Germany
2,3University Med.Centre Nijmegen, 2Dept. of Human Genetics, 3Dept. of Otorhinolaryngology, The Netherlands

11. Temporal coherency between receptor expression, neural activity and AP-1-dependent transcription regulates Drosophila motoneuron dendrite development
Vonhoff F, Kuehn C, Blumenstock S, Sanial S, Duch C
Institute of Zoology/Neurobiology, Johannes Gutenberg University, Mainz

12. Function of mbc during glial migration in the Drosophila embryo
Dietrich J, Technau G M and Altenhein B
Institute of Genetics, Johannes Gutenberg University, Mainz, Germany

13. Differential expression of the Usher syndrome 1C scaffold protein harmonin in human and non-human primate photoreceptor cells
Mirjana M. Becker1, Kerstin Nagel-Wolfrum1, Ieva Sliesoraityte3, Tobias Goldmann1, Simone Schimpf-Linzenbold1, Jan Reiners1, Melissa Faust2, Nico Fuhrmann1, Christina Müller2, Jan M. Vetter1, Bernd Wissinger2, Eberhart Zrenner1, and Uwe Wolfrum1
1Cell and Matrix Biology, Institute of Zoology, Johannes Gutenberg University of Mainz, Germany
2Department of Ophthalmology, University Medical Centre Mainz, Germany
3Institute for Ophthalmic Research, Centre for Ophthalmology, Tübingen, Germany

14. Nuclear retention of castor mRNA and temporal neuroblast identity
Jüngling A, Urban J
Institute of Genetics, Johannes Gutenberg University, Mainz, Germany

15. The Drosophila gene nazgul is involved in Tyramine metabolism
de Visser A, Altenhein B
Institute of Genetics, Johannes Gutenberg University, Mainz, Germany

16. Revealing the locally translated mRNA repertoire at synapses between neurons and NG2-expressing glial cells
Hatice Yigit1, Malte Paulsen2 and Jacqueline Trotter1
1Molecular Cell Biology, Department of Biology, Johannes Gutenberg University of Mainz, Germany; 2Cytometry Core Facility, Institute of Molecular Biology gGmbH, Mainz, Germany
17. Phosphorylation of the Usher syndrome protein SANS controls Magi2-mediated endocytosis
Katharina Bauß, Barbara Knapp, Pia Jores, Benjamin Spitzbarth, Ronald Roepman, Erwin v. Wijk, Tina Maerker, and Uwe Wolfrum
1Cell and Matrix Biology, Inst. of Zoology, Johannes Gutenberg University of Mainz, Germany; 2Dept of Human Genetics, 3Institute for Genetic and Metabolic Disease, 4Dept of Otorhinolaryngology, Head and Neck Surgery, 5Nijmegen Centre for Molecular Life Sciences, 6Donders Institute for Brain, Cognition and Behaviour, Radboud University Nijmegen Medical Centre, Nijmegen, Netherlands

18. European young investigators network for Usher syndrome: Deciphering the molecular pathogenesis and evaluate gene-based therapy strategies
Kerstin Nagel-Wolfrum* and EUR-USH network members
*Cell and Matrix Biology, Institute of Zoology, Johannes Gutenberg University of Mainz, Mainz 55099, Germany

19. Dendritic delivery across the blood brain barrier
J. Hedrich, D. Ng, M. Jansen, T. Weil, H. J. Luhmann
1Institute of Physiology, University Medicine Mainz, Germany; 2Institute of Organic Chemistry III, University of Ulm, Germany

20. Conceptualization of relative size by honeybees
Daniele d’Amaro, Marita Metzler, Aurore Avarguès-Weber, and Adrian G. Dyer
1Institut für Zoologie III (Neurobiologie), Johannes Gutenberg-Universität Mainz, Germany; Université de Toulouse; UPS; Centre de Recherches sur la Cognition Animale; 118 route de Narbonne, F-31062 Toulouse Cedex 9, France; 2CNRS; Centre de Recherches sur la Cognition Animale; 118 route de Narbonne, F-31062 Toulouse Cedex 9, France; 3Department of Physiology, Monash University, Clayton, Victoria, VIC 3800, Australia; 4School of Media and Communication, Royal Melbourne Institute of Technology (RMIT), Melbourne, Victoria 3000, Australia

21. Evaluation of Korean Medical Plant Extracts for their Potential in Alzheimer’s Disease Therapy
Florian Schuck, Sven Reinhardt, Christian Freese, Ulrich Schmitt, Thomas Efferth, Kristina Endres
UNIVERSITÄTSMEZIDIN der Johannes Gutenberg-Universität Mainz, Klinik für Psychiatrie und Psychotherapie

22. CB1 RECEPTOR SIGNALING IN CENTRAL SEROTONERGIC NEURONS REGULATES ANXIETY-LIKE BEHAVIOR, SOCIABILITY AND BODY WEIGHT GROWTH
Vanessa Enk, Martin Häring, Alejandro Rey Aparisi, Giovanni Marsicano, Tillmann Weber, Dusan Bartsch, Beat Lutz, Kristzina Monory
1Department of Physiological Chemistry, University Medical Center of the Johannes Gutenberg University, Mainz, Germany; 2Neurocentre Magendie INSERM U862, Université Bordeaux 2, Bordeaux, France; 3Department of Molecular Biology, Central Institute of Mental Health J5, Mannheim, Germany
23. Role of the NG2 proteoglycan expressed by oligodendrocyte precursor cells in glutamate receptor-dependent synaptic plasticity in the somatosensory cortex of mice.
   Angela Neitz1, Dominik Sakry2, Jacky Trotter2 and Thomas Mittmann1
   1Inst. for Physiology, UM Mainz; 2Institute of Molecular Cell Biology, Faculty of Biology

24. Development of an ex vivo Alzheimer’s Disease Cell Model
   Kristen Duckro, Florian Schuck, Sven Reinhardt, Dr. Kristina Endres

25. Towards the Biochemical Components of the Visual Orientation Memory in Drosophila
   Sara Kuntz, Burkhard Poeck, and Roland Strauss
   Johannes Gutenberg-University, Department of Zoology III – Neurobiology, 55099 Mainz

26. The role of LRP1 in Aβ clearance across the blood-brain barrier in Alzheimer’s disease.
   Steffen Storck1, Erik Hameister1, Sabrina Meister1, Dirk A. Ridder2, Markus Schwaninger2, Carsten Korth3, Sascha Weggen3 and Claus U. Pietrzik1
   1Institute for Pathobiochemistry, University Medical Center of the Johannes Gutenberg-University, Mainz, Germany; 2Institute of Experimental and Clinical Pharmacology and Toxicology, University of Lübeck, Germany; 3Department of Neuropathology, Heinrich Heine University Düsseldorf, Germany

27. APP processing by the metalloprotease meprin β
   J. Bien*, C. Schönherr*, S. Isbert*, S. Lichtenhaler§, C. Becker-Pauly§, CU. Pietrzik*
   *Department of Pathobiochemistry, University Medical Center of the Johannes Gutenberg-University of Mainz
   § German Center for Neurodegenerative Diseases (DZNE), Munich, Germany
   # Institute of Biochemistry, Unit for Degradomics of the Protease Web, Christian-Albrechts-University, Kiel, Germany

28. The Interaction of the Usher syndrome 1G protein SANS with the multi-ciliopathy related protein Cep290
   Nasrin Sorusch, Andrea Kunz, Katharina Bauß, Tina Maerker, and Uwe Wolfrum
   Cell and Matrix Biology, Inst. of Zoology, Johannes Gutenberg-University of Mainz, Germany

29. Impaired blood-brain barrier integrity of ALS spinal cord derived endothelial cells
   Sabrina Meister, Steffen Storck, Christian Behl, Albrecht M. Clement, Claus U. Pietrzik
   Institute for Pathobiocemistry, University Medical Center of the Johannes Gutenberg-University, Mainz, Germany

30. Characterization of newly identified proteostasis regulators in mammalian cells
   Anna S. Besemer, Andreas Kern, Christian Behl, Albrecht M. Clement
   Institute for Pathobiochemistry; University Medical Center; Johannes Gutenberg University, Mainz

31. GFAP antibodies interact with ERP57 on the cell membrane of RGC5 cells and have prosurvival potential against oxidative stress
   C. Wilding, K. Bell, S. Beck, S. Funke, N. Pfeiffer, F.H. Grus
   Experimental Ophthalmology, Department of Ophthalmology, University Medical center, Johannes Gutenberg University Mainz, Germany
32. Hippocampus-specific impairment of 2-AG-mediated short-term depression at glutamatergic synapses increases anxiety-like behavior
Stephan Guggenhuber¹, Hector Romo-Parra², Raissa Lerner¹, Matthias Klugmann¹, Hans-Christian Pape², Beat Lutz¹
¹Institute of Physiological Chemistry, University Medical Center of the Johannes Gutenberg University, Mainz, Germany, ²Institute of Physiology I (Neurophysiology), Westfälische Wilhelms-University, Muenster, Germany, ³Translational Neuroscience Facility, Department of Physiology, School of Medical Sciences, University of New South Wales, UNSW Kensington Campus, Sydney, NSW, 2052, Australia

33. Binding of Usher syndrome 1G protein SANS to the kinesin kif2a may participate in microtubule dynamics of photoreceptor cilia
Lars Tebbe, Katharina Bauß, and Uwe Wolfrum
Cell and Matrix Biology, Institute of Zoology, Johannes Gutenberg University of Mainz, Germany

34. Neuronal MeCP2 Gain of Function in Drosophila
Alison Williams and Carsten Duch
School of Life Sciences, Arizona State University and Institute of Zoology/Neurobiology, Johannes Gutenberg University, Mainz

35. Endocytosis and trafficking of the Cannabinoid receptor 1
M.Wickert¹, M.Schneider² and B. Lutz¹
¹Institute of Physiological Chemistry, University Medical Centre Mainz; ²Central Institute of Mental Health Mannheim

36. Ex vivo Myelinating Cortical Slice Cultures
Kim Korrell, Heiko Luhmann & Robin White
Institute of Physiology, University Medical Center of the Johannes Gutenberg University Mainz

37. CNS tissue response to Multiple Sclerosis
Sabina Berl, Ari Waisman
Universitätsmedizin der Johannes Gutenberg-Universität Mainz, Institut für Molekulare Medizin

38. Behavioural Analysis of Drosophila Flies with altered β-Amyloid Precursor Protein-Like (APPL) Processing
Rieche, F., Buschoff, A., Poeck, B., Strauss, R.
Institut für Zoologie III – Neurobiologie, Johannes Gutenberg-Universität Mainz

39. Homeostatic regulation of GABAergic synaptic transmission following focal cortical lesions
Barbara Imbrosci, Angela Neitz, Thomas Mittmann

40. Influence of Ecdysone signaling in reactivation control of quiescent neuronal stem cells in early Drosophila larvae
Waldemar Kaiser and Christian Berger
University of Mainz, Department of Genetics, Mainz 55128, Germany
41. Forced Subunit Assembly of GABAA Receptors to study the Function of individual Subunits in a pentameric Complex
   Christian Sattler, Brigitte Dreyer, Hartmut Lüddens
   Laboratory of Molecular Biology, Dept. of Psychiatry, University Medical Center of the Johannes Gutenberg University Mainz

42. Translational regulation and function of Myelin Associated Oligodendrocytic Basic Protein
   Isabelle Schäfer, Heiko J. Luhmann & Robin White
   Institute of Physiology and Pathophysiology, University Medical Center of the Johannes Gutenberg University Mainz

43. On the Importance and Interaction of Visual and Olfactory Signals in the Foraging Behaviour of the Honeybee
   Verena Reinhardt and Christa Neumeyer
   Institute of Zoology III – Neurobiology, Johannes Gutenberg-Universität Mainz, Colonel-Kleinmann-Weg 2, 55099 Mainz, Germany

44. Neurotransmitter signaling controls exosome secretion from oligodendrocytes
   Carsten Frühbeis, Dominik Fröhlich, Wen Ping Kuo, Stefan Tenzer, Wiebke Möbius, Aiman Saab, Frank Kirchhoff, Jacqueline Trotter, and Eva-Maria Krämer Albers

45. Argonaute proteins in oligodendrocytes
   Christina Müller, Heiko J. Luhmann & Robin White
   Institute of Physiology, University Medical Center of the Johannes Gutenberg University Mainz

46. Color vision and wavelength discrimination in domestic chicken
   Juliana Simon-Siebert
   Institute of Zoology, Johannes Gutenberg University of Mainz

47. Lineage progression of adult neural stem cells in vitro - role of Sox2
   Chiara Galante1, Felipe Ortega1, Giacomo Masserdotti2, Benedikt Berninger1,2
   1 Institute of Physiological Chemistry & Focus Program Translational Neuroscience, University Medical Center, Johannes Gutenberg University Mainz
   2 Department of Physiological Genomics, Institute of Physiology, Ludwig-Maximilians University Munich

48. GABAergic projections from the subplate to Cajal–Retzius cells in the neocortex
   Unichenko, Petr; Kirischuk, Sergei
   Institute of Physiology, University Medical Center of the Johannes Gutenberg University Mainz

49. EGFR Signalling in early embryonic brain development
   D. Jussen, R. Urbach
   Institute of Genetics, University of Mainz, Mainz, Germany

50. Mapping the Regulation of Behavioral Motivation in the Brain of Drosophila melanogaster
   Ariane Ries and Roland Strauss
   Johannes Gutenberg-Universität Mainz, Institute of Zoology III – Neurobiology
51. **Identification of non-homeotic functions the Drosophila Hox-Gene Ultrabithorax in neurogenesis using a forward genetics screen**
   Christian Hessinger, Olaf Vef, Ana Rogulja-Ortmann and Gerhard M. Technau
   Institute of Genetics, University of Mainz, Germany

52. **Novel Compounds to study the Role of the delta Subunit in extrasynaptic GABAA Receptors**
   Kirsten Yakoub, Christian Sattler, Brigitte Dreyer, Sascha Jung, Tanja Schirmeister, Hartmut Lüddens
   Laboratory of Molecular Biology, Dept. of Psychiatry, University Medical Center of the Johannes Gutenberg University Mainz, Laboratory of Pharmaceutical Chemistry, Institute of Pharmacy and Biochemistry, Johannes Gutenberg University, Mainz

53. **Processing of competing stimuli in the central complex of *Drosophila melanogaster***
   Stefanie Flethe and Roland Strauss
   Johannes Gutenberg-University, Department of Zoology III – Neurobiology, 55099 Mainz

54. **The Hippo signaling pathway in growth control of Drosophila melanogaster quiescent larval NBs**
   Rouven Ding and Christian Berger
   University of Mainz, Department of Genetics, Mainz 55128, Germany