

PROGRAM

August 31, Wednesday

16:00-19.00 Registration

19:30- Get-together party

September 1, Thursday

9.00-10.00 Registration

10.00-10.15 Opening of the symposium

10.15-12.00 Oral presentations
Chairman: **J.-G. Hildebrand**

Ernst Florey Memory Lecture

Arthropod nervous systems: Their historical impact on ideas about the common origin of brains, and a modern rejection of convergent evolution. N. J. Strausfeld (*Department of Neurosciences, University Arizona, Tucson, Arizona, USA*)

The locust stomatogastric nervous system – recent updates. A. Ayali (*Department of Zoology, Tel Aviv University, Tel Aviv*)

Insect brain neurons labeled by actin isoforms. F.-W. Schürmann (*University of Göttingen, Göttingen, Germany*)

12.00-13.30 Lunch

13.30-15.30 Oral presentations
Chairman: **H.-J. Pflüger**

Coding of essential ‘odor objects’ in the antennal lobe of the sphinx moth *Manduca sexta*. J. G. Hildebrand (*Department of Neurosciences, University of Arizona, Tucson, USA*)

The olfactory system of the red flower beetle, *Tribolium castaneum*: architecture and postmetamorphic plasticity. J. Schachtner (*FB Biologie–Tierphysiologie, Philipps-Universität Marburg, Marburg, Germany*)

Single-cell-based analysis of neuropeptide expression in *Periplaneta americana* antennal lobe neurons. R. Predel (*Biocenter, Institute for Zoology, University of Köln, Köln, Germany*)

The synaptology and 5-HT-immunoreactive innervation of the procerebrum cell body layer suggest a role of local circuits in olfactory integration. K. Elekes,¹ I. Battonyai,¹ S. Kobayashi,² E. Ito² (¹*Department of Experimental Zoology, Balaton Limnological Research Institute, HAS, Tihany, Hungary;* ²*Kagawa School of Pharmaceutical Sciences, Tokushima Bunri University, Sanuki, Japan*)

15.30-15.45 Break
15.45-17.15 Oral presentations
Chairman: **K. Elekes**

Plenary lecture

Neuroanatomy for photoperiodism in insects. S. Shiga (*Graduate School of Science, Osaka City University, Osaka, Japan*)

Synaptic circuits in the *Drosophila* visual system: Serial EM yields progress but also some inconvenient truths. I. A. Meinertzhagen,^{1,2} S. Takemura,² Z. Lu,^{1,2} L. Scheffer,² M. Chklovskii² (¹*Life Sciences Centre, Dalhousie University, Halifax, Canada;* ²*Janelia Farm Research Campus of HHMI, Ashburn, USA.*)

Selective visual attention in *Drosophila*. R. Wolf, P. Sareen, M. Heisenberg (*Rudolf-Virchow-Zentrum, DFG Research Center for Experimental Biomedicine University of Würzburg, Germany*)

17.15- Poster presentations

September 2, Friday

9.00-10.30 Oral presentations
Chairman: **D. R. Nässel**

Plenary Lecture

Neuropeptides and behavioural plasticity in *C. elegans*. L. Holden-Dye, R. J Walker, V. O'Connor (*Institute for Life Sciences, Highfield Campus, University of Southampton, Southampton, UK.*)

Serotonin inhibits dopamine-induced contraction of the snail salivary duct. T. Kiss, L. Hiripi, L. Hernádi (*Department of Experimental Zoology, Balaton Limnological Research Institute, HAS, Tihany, Hungary*)

High resolution spatial distribution of neuropeptides by MALDI imaging in the pond snail *Lymnaea stagnalis*. L. Mark,¹ G. Maasz,¹ Z. Laszlo,² Zs. Pirger² (¹*Institute of Biochemistry and Medical Chemistry, Medical School, University of Pécs, Pécs, Hungary;* ²*School of Life Sciences, University of Sussex, Falmer, Brighton, United Kingdom*)

10.30-11.00 Break

11.00-12.00 Oral presentations
Chairman: **G. Kemenes**

János Salánki Memorial Lecture

Genomic deciphering of memory mechanisms and multiple origins of neural circuits. L. L. Moroz (*Department of Neuroscience, McKnight Brain Institute and Whitney Laboratory for Marine Bioscience University of Florida, Gainesville and St. Augustine, USA*)

12.30- EXCURSION (Visiting: Szigliget, fortress, XIII. century – Keszthely, castle, XVIII. century – Héviz, hot spring spa, romantic dinner) (Lunch on the board)

September 3, Saturday

9.30-11.30 Oral presentations
Chairman: **I. Meinertzhagen**

Plenary Lecture

Regulation of synaptic plasticity in simple nervous systems. P. M. Balaban (*Institute of Higher Nervous Activity and Neurophysiology, Moscow, Russia*)

Axonal spike processing and long-term associative memory in *Lymnaea*. E. S. Nikitin,¹ T. Korshunova,¹ P. M. Balaban,¹ G. Kemenes² (¹*Institute of Higher Nervous Activity and Neurophysiology, Moscow, Russia*; ²*Sussex Centre for Neuroscience, School of Life Sciences, University of Sussex, Brighton, U.K.*)

Insulin and memory in *Lymnaea*. E. Ito,¹ Y. Sakamoto,¹ R. Okada,¹ K. Mita,¹ E. Otshuka,¹ A. Okuta,² H. Sunada,³ M. Sakakibara³ (¹*Kagawa School of Pharmaceutical Sciences, Tokushima Bunri University, Sanuki, Japan*; ²*Kyoto University, Kyoto, Japan*; ³*Tokai University, Numazu, Japan*)

Neurotransmitters regulating of insulin signaling in *Drosophila*. D. R. Nässel, R. T. Birse, L. E. Enell, N. Kapan, J. Luo, J. A. E. Söderberg, Å. M. E. Winther (*Department of Zoology, Stockholm University, Stockholm, Sweden*)

12.00-13.30 Lunch

13.30-15.15 Oral presentations
Chairman: **R. J. Walker**

Adaptive control of cockroach locomotion. A. Ayali (*Department of Zoology, Tel Aviv University, Tel Aviv*)

In search for the neural basis of behavioral spontaneity in insects: Lessons from predatory wasps and zombie cockroaches. F. Libersat (*Department of Life Sciences, Ben Gurion University, Beer Sheva, Israel*)

Insect behaviour and the functional role of biogenic amines. H.-J. Pflüger (*Institut für Biologie, Neurobiologie, Fachbereich Biologie, Chemie, Pharmazie, Freie Universität Berlin, Germany*)

Physiological, behavioral and life-span plasticity in *Drosophila*. A. Ueda, H. Ruan, C.-F. Wu (*Department of Biology, University of Iowa, Iowa City, USA*)

Special Lecture

Chairman: **Anonymous**

The anti-intuitive visual system of the honey bee. A. Horridge (*Australian National University, Canberra, Australia*)

15.15-15.30 Break

15.30-17.00 Poster presentations

17.00-19.00 Oral presentations

Chairman: **E. Ito**

Mechanism of delayed action of serotonin overproduction in early molluscan development. E. E. Voronezhskaya, M. Yu. Khabarova, E. G. Ivashkin (*Institute of Developmental Biology, RAS, Moscow, Russia*)

Patterns of serotonin, FMRFamide and NO in the complex life cycle of *Digene* O. O. Tolstakov,¹ N. B. Terenina,¹ M. K. S. Gustafsson² (¹*Centre of Parasitology of A. N. Severtsov Institute of Ecology and Evolution, Russian Academy of Sciences, Moscow, Russia;* ²*Department of Biology, Åbo Akademi University, Åbo, Finland*)

NO-inducing signals are essential for the regeneration of the snail tentacular ganglion. Z. Serfözö (*Department of Experimental Zoology, Balaton Limnological Research Institute, HAS, Tihany, Hungary*)

The different strategy of muscle and neuronal systems development in larvae of closely related bivalve species. V. Dyachuk¹, N. Odintsova,¹ E. E. Voronezhskaya² (¹*A. V. Zhirmunsky Institute of Marine Biology Far Eastern Branch of Russian Academy of Sciences, Vladivostok, Russia;* ²*Institute of Developmental Biology, Russian Academy of Sciences, Moscow, Russia.*)

DNA endoreplication in the brain neurons during body growth of an adult slug. R. Matsuo (*Kagawa School of Pharmaceutical Sciences, Tokushima Bunri University, Sanuki, Japan*)

Microglia recruitment during the CNS repair in the medicinal leech, *Hirudo medicinalis*. A. Garçon-Bocquet, F. Croq, J. Vizioli, M. Tahtouh, C. Van Camp, P. Nagnan-Le Meillour, M. Salzet, P.-E. Sautière, C. Lefebvre (*Laboratoire de Spectrométrie de Masse Biologique Fondamentale et Appliquée, Université Lille1, Villeneuve d'Ascq France*)

September 4, Sunday

9.00-12.00 Oral presentations

Chairman: **P. M. Balaban**

Plenary Lecture

Dynamic cellular and molecular mechanisms of memory: new insights from molluscan models G. Kemenes (*Sussex Centre for Neuroscience, School of Life Sciences, University of Sussex, Falmer, Brighton, U.K.*)

A systems level analysis of decision making: the interaction of feeding and withdrawal behaviors in *Lymnaea*. I. Kemenes, Z. Pirger, Z. Laszlo, G. Kemenes, P. R. Benjamin, M. O'Shea (*Sussex Centre for Neuroscience, School of Life Sciences, University of Sussex, Falmer, Brighton, U. K.*)

Analysis of feeding and withdrawal circuits reveals neural mechanisms of decision making. Z. Pirger, Z. Laszlo, G. Kemenes, M. O'Shea, P. R. Benjamin, I. Kemenes (*Sussex Centre for Neuroscience, School of Life Sciences, University of Sussex, Falmer, Brighton, U.K.*)

Repetitive noxious stimuli altered the shadow-induced withdrawal behavior in *Lymnaea*. H. Sunada,¹ K. Lukowiak,² M. Sakakibara³ (*¹Graduate School of Bioscience, Tokai University, Numazu, Japan; ²Hotchkiss Brain Institute, University of Calgary, Calgary, Canada; ³School of High-Technology for Human Welfare, Tokai University, Numazu, Japan*)

Neuroanatomical background of space positioning of olfactory organ in the snail, *Helix pomatia*. L. Hernádi,¹ T. Teyke² (*Department of Experimental Zoology, Balaton Limnological Research Institute, Tihany, Hungary; ²Zoological Institute, Johannes-Gutenberg University, Mainz, Germany*)

11.15-11.45 Break

11.45-13.30

How and where should (and can) we publish? (Discussion on the publication possibilities of invertebrate neurobiology – with the participation of Lindy Holden-Dye - Invertebrate Neuroscience, Ian Meinertzhagen – Journal of Comparative Neurology, John G. Hildebrand – Journal of Comparative Physiology)

General assembly of ISIN

Closing remarks

19.30- Farewell dinner

POSTER SECTION

Posters Nos. 1-35, September 1-4 (Thursday-Sunday, continuous display)

- 1. The 5-HT-immunoreactive innervation of the *Helix procerebrum*.** I. Battonyai, K. Elekes (Department of Experimental Zoology, Balaton Limnological Research Institute, HAS, Tihany, Hungary)
- 2. Potassium channels in the *Helix* central nervous system: preliminary immunohistochemical studies.** I. Battonyai, Z. Serfözö, K. Elekes (Department of Experimental Zoology, Balaton Limnological Research Institute, HAS, Tihany, Hungary)
- 3. Evidences for NO-signaling in the olfactory center of the snail, *Helix pomatia*. A biochemical and morphological study.** Nacsa, K., K. Elekes, Z. Serfözö (Department of Experimental Zoology, Balaton Limnological Research Institut, HAS, Tihany, Hungary)
- 4. GABAergic effects on the slow oscillatory neural activities in the procerebrum of *Limax valentianus*.** S. Kobayashi,¹ R. Matsuo,¹ H. Sadamoto,¹ S. Watanabe,² E. Ito¹ (¹Kagawa School of Pharmaceutical Sciences, Tokushima Bunri University, Shido, Sanuki, Kagawa, Japan; ²Graduate School of Pharmaceutical Sciences, The University of Tokyo, Tokyo Japan)
- 5. Influence of serotonin and dopamine on functioning of neural network involved in olfaction and tentacle movements in *Helix* snail.** M. Roshchin, P. M. Balaban (Institute of Higher Nervous Activity and Neurophysiology, RAS, Moscow, Russia)
- 6. Immunohistochemical study on dermal photoreceptor in *Lymnaea*.** S. Takigami,¹ H. Sunada,² T. Horikoshi,³ M. Sakakibara³ (¹Graduate School of High-Technology for Human Welfare, Tokai University; ²Graduate School of Bioscience; ³Department of Biological Science and Technology, Tokai University, Numazu, Japan)
- 7. In-vitro conditioning in *Lymnaea*.** H. Sunada,¹ K. Lukowiak,² M. Sakakibara³ (¹Graduate School of Bioscience, Tokai University, Numazu, Japan; ²Hotchkiss Brain Institute, University of Calgary, Calgary, Canada; ³School of High-Technology for Human Welfare, Tokai University, Numazu, Japan)
- 8. Pharmacological and anatomical background of twitching and quivering of the superior tentacles of *Helix*.** N. Krajcs,¹ L. Hernádi,¹ L. Márk,² K. Elekes,¹ T. Kiss¹ (¹Department of Experimental Biology, Balaton Limnological Research Institute HAS, Tihany, Hungary; ²Department of Biochemistry and Medical Chemistry, University of Pécs, Pécs, Hungary)
- 9. Nitric oxide is necessary for both erasure and consolidation of memory.** T. A. Korshunova, M. V. Roshchin, P. M. Balaban (Institute of Higher Nervous Activity and Neurophysiology, RAS, Moscow, Russia)
- 10. Coordination of feeding motor rhythms in semi-intact preparation of *Lymnaea stagnalis*.** I. A. Chistopolsky, V. E. Dyakonova (Koltzov Institute of Developmental Biology, RAS, Moscow, Russia)
- 11. Do the glutamatergic neurons of the *Lymnaea* CNS possess NMDA receptors?** L. Hernádi,¹ G. Kemenes² (¹Department of Experimental Zoology, Balaton Limnological Research Institute, HAS, Tihany, Hungary; ²School of Life Sciences, University of Sussex, Brighton, U.K.)
- 12. Evidences for a possible cross-talk between serotonergic and dopaminergic neurons in the *Lymnaea* CNS.** L. Hernádi, Z. Serfözö, Á. Vehovszky (Department of Experimental Zoology, Balaton Limnological Research Institute, HAS, Tihany, Hungary)

13. **Control of locomotion in terrestrial snail by peptides.** I. S. Zakharov,^{1,2} D. Boguslavsky,¹ A. V. Belyavsky,² P. M. Balaban² (¹*Koltzov Institute of Developmental Biology of Russian Academy of Sciences, Moscow, Russia;* ²*Institute for Higher Nervous Activity and Neurophysiology of Russian Academy of Sciences, Moscow, Russia*)
14. **Genomic portrait of a neuron: identification and quantification of virtually all RNAs in single individually identified neurons** L. L. Moroz,^{1,2} M. R. Citarella,¹ A. B. Kohn¹ (¹*Univ. of Florida, Whitney Lab., St Augustine, FL 32080;* ²*Dept. of Neuroscience, Univ. of Florida, Gainesville, USA*)
15. **Genome wide analysis of neurotransmitter signaling in the ctenophore, *Pleurobrachia bachei*.** M. Citarella,¹ D. O. Girardo,¹ J. J. Swore,¹ A. B. Kohn,¹ L. L. Moroz^{1,2} (¹*Whitney Lab for Marine Biosciences, USA;* ²*Dept of Neuroscience, University of Florida, St. Augustine, Gainesville, USA*)
16. **Identification and expression analysis of the genes involved in the biogenic amine systems in the field cricket *Gryllus bimaculatus*.** T. Watanabe,¹ H. Sadamoto,² H. Aonuma¹ (¹*Laboratory of Neuro-Cybernetics, Research Institute for Electronic Science, Hokkaido University, Sapporo, Japan;* ²*Laboratory of Functional Biology, Kagawa School of Pharmaceutical Sciences, Tokushima Bunri University, Sanuki, Japan*)
17. **Pumping off food (PoffF): A neuromodulatable adaptive response to chronic food withdrawal in *C. elegans*.** V. O'Connor, S. Luedtke, I. Casey, R. Hellmann, C. Murray, R. Walker, L. Holden-Dye (*Southampton Neuroscience Group (SoNG), University of Southampton, UK.*)
18. **Behavioral evidence for internal factors affecting duration of conglobation in pill bugs (*Armadillidium vulgare*).** T. Moriyama,¹ H. Matsuno² (¹*Youn Researchers Empowerment Center, Shinshu University, Japan;* ²*Department of Complex Systems Science, Future University Hakodate, Hakodate, Japan*)
19. **Fighting behavior of white-eye mutants in the cricket *Gryllus bimaculatus*.** M. Sakura,^{1,2} T. Watanabe,² H. Aonuma² (¹*Graduate School of Science, Kobe University, Kobe, Japan;* ²*Research Institute for Electronic Science, Hokkaido University, Sapporo 060-0812, Japan*)
20. **Evolutionary origin of the hooks in the buccal apparatus of *Clione limacina*: neurophysiological evidences.** A. Y. Malyshev,¹ A. V. Martynov,² P. M. Balaban¹ (¹*Institute of Higher Nervous Activity and Neurophysiology of RAS, Moscow, Russia;* ²*Zoological Museum of Moscow State University, Moscow, Russia*)
21. **Mathematical analysis of honeybee waggle dance.** R. Okada,¹ H. Ikeno,² T. Kimura,² M. Ohashi,² H. Aonuma,³ E. Ito¹ (¹*Kagawa School of Pharmaceutical Sciences, Tokushima Bunri University, Sanuki, Japan;* ²*School of Human Science and Environment, University of Hyogo, Kobe, Japan;* ³*Research Institute for Electronic Science, Hokkaido University, Sapporo, Japan*)
22. **Octopaminergic control of task dependent aggression in the ant, *Formica japonica*.** H. Aonuma, T. Watanabe (*Laboratory of Neuro-Cybernetics, Research Institute for Electronic Science, Hokkaido University, Sapporo, Japan*)
23. **Neuropeptides in the antennal lobe of *Tribolium castaneum*.** M. Binzer, C. M. Heuer, J. Schachtner (*Dept. Biology – Animal Physiology, Philipps-University Marburg, Marburg, Germany*)
24. **Neuropeptides in the mushroom bodies of *Tribolium castaneum*.** C. M. Heuer, M. Binzer, J. Schachtner (*Dept. Biology – Animal Physiology, Philipps-University Marburg, Marburg, Germany*)

25. **Some aspects of immunolocalization of FMRFamide in the nervous system of turbellarians *Girardia tigrina* and *Polycelis termis*.** N. D. Kreshchenko,¹ O. O. Tolstenkov² (¹*Institute of Cell Biophysics, Russian Academy of Sciences, Pushchino, Moscow Region, Russia;* ²*Centre of Parasitology, Institute of Ecology and Evolution, Russian Academy of Sciences, Moscow, Russia*)
26. **PACAP – a phylogenetically conserved neuropeptide.** Z. Pirger,^{1,2} S. Naskar,² A. Pringle,² Z. Laszlo,^{1,2} A. Vaczy,³ G. Kemenes,² L. Mark,³ T. Kiss,¹ D. Reglodi⁴ (¹*Department of Experimental Zoology, Balaton Limnological Research Institute, HAS, Tihany, Hungary;* ²*School of Life Sciences, University of Sussex, Falmer, Brighton, United Kingdom;* ³*Departments of Biochemistry and Medical Chemistry, and* ⁴*Anatomy, University of Pecs, Pecs, Hungary*)
27. **Expression of early genes in the CNS of snail *Helix*.** V. Ierusalimsky, P. M. Balaban (*Institute of Higher Nervous Activity and Neurophysiology Russian Academy of Sciences, Moscow, Russia*)
28. **Biochemical and physiological-pharmacological characterization of the 5-HTergic regulation of the peripheral feeding system (buccal mass) of *Lymnaea*.** G. Balog,¹ E. E. Voronezhskaya,² L. Hiripi,¹ K. Elekes¹ (*Department of Experimental Zoology, Balaton Limnological Research Institute, HAS, Tihany, Hungary;* ²*Institute of Developmental Biology, RAS, Moscow, Russia*)
29. **Biogenic amines and FMRFamide in development of archiannelid *Dinophilus gyrociliatu*.** E. G. Fofanova, E. E. Voronezhskaya, L. P. Nezlin (*Institute of Developmental Biology, RAS, Moscow, Russia*)
30. **Transmembrane 5-HT transport during early development of molluscs.** E. G. Ivashkin, M. Yu. Khabarova, E. E. Voronezhskaya (*Institute of Developmental Biology, RAS, Moscow, Russia*)
31. **Neuronal modulation of larval growth in bay mussel *Mytilus trossilus* developed in various salinities.** E. Vekhova,² E. Ivashkin,¹ O. Yurchenko,² V. Dyachuk,² M. Khabarova¹, E. Voronezhskaya¹ (¹*Institute of Marine Biology Far Eastern Branch of RAS, Vladivostok, Russia ;* ²*Institute of Developmental Biology, RAS, Moscow, Russia*)
32. **Origin of automatism and its regulation of the gut motility in gastropods, *Aplysia* and *Lymnaea*.** M. Kurokawa,¹ Y. Kasuya,^{1,2} T. Okamoto^{1,3} (¹*Department of Biological Sciences, Tokyo Metropolitan University, Tokyo, Japan;* ²*Meiji Milk Products Co. Ltd., Japan;* ³*Department of Physiology and Cell Biology, University of Nevada School of Medicine, Reno, USA*)
33. **Pharmacological analysis of ciliary rotation and heart contraction during *Helisoma* development.** M. Yu. Khabarova, E. E. Voronezhskaya (*Institute of Developmental Biology, RAS, Moscow, Russia*)
34. **Morphology of neuropeptide CNP2 modulation of heart activity in terrestrial snail.** N. Aseyev, I. S. Zakharov, P. M. Balaban (*Institute of Higher Nervous Activity and Neurophysiology of RAS, Moscow*)
35. **Pharmacological characterization of neurotoxic effects of cyanobacterial extracts in molluscan (CNS, heart) models.** Á. Vehovszky, A. W. Kovács, H. Szabó, J. Győri, A. Farkas (*Balaton Limnological Research Institute, Tihany, Hungary*)