Tucker-Davis Symposium on Advances and Perspectives in Auditory Neurophysiology (APAN VI)

Friday, November 14, 2008

Location:  Congressional A & B, Renaissance Washington, DC Hotel
999 9th Street, NW
(directly across from the Washington Convention Center;
http://www.dcconvention.com/pdfs/OneMileMap.pdf)

Scientific Program

8:30-9:00  Registration and Poster set-up (all posters)
9:00-9:05  Introduction (Andrew King)
9:05-10:00  **Keynote lecture:** Josef P. Rauschecker (Georgetown University)
Maps and streams in the auditory cortex of primates
10:00-11:00  Poster Session & Coffee Break

**Slide Session** (Chair: Amy Poremba)

11:00-11:20  The contribution of different neural codes to the encoding of natural sounds in auditory cortex. Christoph Kayser1, Marcelo A. Montemurro*, Nikos K. Logothetis1, Stefano Panzeri2,3, 1 Max Planck Institute for Biological Cybernetics, Spemannstrasse 38, 72076 Tübingen, Germany. 2 Faculty of Life Sciences, University of Manchester, Manchester M60 1QD, United Kingdom. 3 Robotics, Brain and Cognitive Sciences Department, Italian Institute of Technology, Via Morego 30, 16163 Genova, Italy

11:20-11:40  Investigation of cortical pitch processing in humans using depth electrode recording. T. D. Griffiths1, S. Kumar1, W. Sedley1, K. Nourski2, H. Kawasaki2, H. Oya3, J. F. Brugge2, M. A. Howard2; 1Auditory Group, Newcastle Univ., Newcastle upon Tyne, United Kingdom; 2Univ. of Iowa, Iowa City, IA

11:40-12:00  Dynamic activation and modulation of human neocortex during phonemic reception. Edward F. Chang*,1,2, Erik Edwards*,1, Noa Fogelson1, Sarang Dalal1, Nicholas M. Barbaro2, Heidi Kirsch*, Srikantan Nagarajan3, Robert T. Knight1 *First co-authors. 1Helen Wills Neuroscience Institute, University of California, Berkeley. 2Department of Neurological Surgery, 3Neurology, and 4Radiology, University of California, San Francisco


12:20-12:40  Distinct temporal lobe projections to auditory and visual regions in the ventral prefrontal cortex support face and vocalization processing. Maria M. Diehl, Jennifer A. Bartlow-Kang, Tadashi Sugihara, Lizabeth M. Romanski. Department of Neurobiology & Anatomy, University of Rochester, Rochester, NY

12:40-1:45  **Lunch** (on your own)
**Workshop: Neural Processing of Communication Calls**
(Chairs: Jonathan Fritz & Liz Romanski)

1:45-2:10 Xiaoqin Wang, Johns Hopkins University  
**What do we need to know about cortical coding of communication calls?**

2:10-2:35 Robert Liu, Emory University  
**Mouse "songs" and spikes: Using rodent communication to study audition**

2:35-3:00 Jan Schnupp, University of Oxford  
**The neural basis of pitch perception in ferrets**

3:00-3:20 **Coffee Break**

3:20-3:45 Michael Kilgard, University of Texas at Dallas  
**Neural correlates of degraded speech sound discrimination in rats**

3:45-4:10 Asif Ghazanfar, Princeton University  
**Vocal communication through coupled oscillations**

4:10-4:35 Sophie Scott, Institute of Cognitive Neuroscience, London  
**Acoustic properties and cortical processing of human vocalizations**

4:35-5:00 Pascal Belin, University of Glasgow  
**Hearing voices: the cognitive neuroscience of voice processing**

5:00-6:00 **Poster Session** (continued)

**POSTERS** (listed alphabetically, by first author)

1. **Contextual effects in neuronal responses to complex acoustic stimuli differ between areas A1 and AAF.** Misha B. Ahrens¹, Jennifer F. Linden² and Maneesh Sahani¹, ¹Gatsby Computational Neuroscience Unit; ²Ear Institute and Dept. of Neurosci. Physiol. and Pharmacol., University College London, London, United Kingdom

2. **Late-deafness induces massive crossmodal reorganization of ferret auditory cortex.** BL Allman, LP Keniston and MA Meredith, Department of Anatomy and Neurobiology, Virginia Commonwealth University School of Medicine, Richmond, VA, USA

3. **Selectivity for natural sounds in the auditory forebrain is strongly shaped by the acoustic environment.** Noopur Amin and Frederic E. Theunissen, U.C. Berkeley

4. **Temporal envelope coding and decoding in the inferior colliculus.** Sharba Bandyopadhyay¹, Paul C. Nelson², Zachary M. Smith³ and Eric D. Young². ¹Institute for Systems Research, University of Maryland, College Park; ²Department of Biomedical Engineering, Johns Hopkins University, Baltimore; ³Research and Applications, Cochlear Americas, Englewood

5. **Dynamic Range Preservation by Auditory Neurons.** Dennis L. Barbour, Paul V. Watkins, Department of Biomedical Engineering, Washington University, St. Louis, MO, USA

6. **Representation of amplitude modulation envelope in the marmoset auditory thalamus.** Edward L. Bartlett¹ and Xiaoqin Wang². ¹Purdue University; ²Johns Hopkins University

7. **Characterisation of the BOLD response in the auditory system of non-human primates.** S. Baumann, T.D. Griffiths, D. Hunter, L. Sun, A. Thiele, Institute of Neuroscience, Newcastle University, UK
8. **Learning strategies that rely on tone-onset during auditory associative learning predict the development of signal-specific plasticity in A1.** K.M. Berlau*, N. Gross, & N.M. Weinberger, Center for the Neurobiology of Learning and Memory and Dept. of Neurobiology and Behavior, University of California, Irvine, CA


10. **Click train responses in the left and right auditory cortex of awake primates.** Michael Brosch, Elena Oshurkova, Henning Scheich, Leibniz-Institut für Neurobiologie, Brennekestraße 6, 39118 Magdeburg, Germany

11. **Modulation rate tuning of LFPs in macaque auditory cortex: comparison to single unit data.** C.R. Camalier1 and Troy A. Hackett1,2, 1Vanderbilt Brain Institute; 2Dept. of Psychology, Dept. of Hearing and Speech Sciences; Vanderbilt University, Nashville TN

12. **Experience-dependent changes in neuronal response properties within the avian telencephalic auditory area field L.** E. Caporello T. Q. Gentner, CSD Neuroscience Program.

13. **Differential information exchange between primary auditory cortex and the anterior auditory field in the cat.** Andres Carrasco, Kelly N. Decker, and Stephen G. Lomber, Centre for Brain and Mind, Department of Physiology and Pharmacology and Department of Psychology, University of Western Ontario, London, ON, Canada.

14. **Functional connectivity underlying evoked inhibition in primary auditory cortex in vivo.** P Chadderton & KD Harris, Center for Molecular & Behavioral Neuroscience, Rutgers Newark, NJ 07102 USA


16. **Control of single neuron activity by sensory stimuli and global network dynamics in auditory cortex.** C. Curto, S. Sakata, S. Marguet, K.D. Harris, CMBN (Newark), Rutgers Univ., Newark, NJ

17. **Neuronal and perceptual adaptation to the statistics of a binaural spatial cue.** Johannes C Dahmen, Andreas Schulz, Peter Keating & Andrew J King, Department of Physiology, Anatomy and Genetics, University of Oxford, UK


19. **Involvement of the Inferior Colliculus in tinnitus.** Didier A Depireux, Yadong Ji, Barak Shechter, Elizabeth Powell, Anatomy and Neurobiology, University of Maryland, Baltimore MD 21201 USA

20. **Network Precision Plasticity for Communication Calls in Awake Mouse Auditory Cortex.** Edgar Galindo-Leon and Robert C. Liu, Department of Biology, Emory University, 1510 Clifton Road NE, Atlanta, GA 30322; Center for Behavioral Neuroscience, Atlanta, GA 30302

21. **Human psychophysics of spectral and temporal modulations and their interaction: a systematic approach to the processing of dynamic ripples.** Manon Grube, Paul Eastaugh, Timothy D Griffiths, Med. Sch., Newcastle Univ., Newcastle upon Tyne, United Kingdom
22. **Stimulus specific adaptations in the gaze control system of the barn owl (Tyto alba).** Yoram Gutfreund and Amit Reches, Department of Physiology and Biophysics, The Ruth and Bruce Faculty of Medicine, Technion, Haifa 31096, Israel

23. **VGluT2 Expression in the Auditory Cortex of Primates.** Troy A. Hackett, Vanderbilt University School of Medicine, Dept. of Hearing and Speech Sciences; Lisa A. de la Mothe, Vanderbilt University, Dept. of Psychology

24. **Parallel electrophysiological and behavioral analysis of layer-specific electrical microstimulation in primary auditory cortex - implications for the subcortical loop hypothesis.** M.F.K. Happel$^{1,2}$, M. Jeschke$^1$, J. Handschuh$^{1,2}$, M. Deliano$^1$, F.W. Ohl$^{1,2}$, $^{1}$BioFuture Research Group, Leibniz Institute for Neurobiology, Magdeburg, Germany; $^{2}$Inst. for Biol., Otto-v.-Guericke University, Magdeburg, Germany

25. **Long-Term Tracking of Spectro-Temporal Receptive Fields.** Drew Battenfield Headley and Norman M. Weinberger, UC Irvine

26. **The effect of global and attentional state on forward masking in rat auditory cortex.** L. Hollender$^1$, G. H. Otazu$^2$, A. Renart$^1$, L.-H. Tai$^{2,3}$, K. D. Harris$^{1,4}$, $^{1}$Ctr. Mol & Beh Neurosci, Rutgers Univ., Newark, NJ; $^{2}$Cold Spring Harbor Lab., Cold Spring Harbor, NY; $^{3}$Grad. Program in Neurosci., Stony Brook University, NY; $^{4}$Smilow Neurosci. Program and Dept. of Otolaryngology,, New York Univ. Sch. of medicine, New York, NY

27. **Encoding of correct and incorrect responses by ventral prefrontal cortex neurons in an audio-visual discrimination task.** Jae Won Hwang$^1$, Mark D. Diltz$^2$, and Lizabeth M. Romanski$^2$, $^1$Brain & Cognitive Sciences, $^2$Department of Neurobiology & Anatomy, University of Rochester, Rochester, NY

28. **The effects of sleep on sound processing in auditory cortex.** Elias B. Issa & Xiaqin Wang, Laboratory of Auditory Neurophysiology, Department of Biomedical Engineering, Johns Hopkins University

29. **Compartmental analysis of sound-induced Arc/Arg 3.1 mRNA expression in mouse auditory cortex.** Tamara Ivanova$^*$, Christina Gross$^{**}$, Gary J. Bassell$^{**}$, Robert C. Liu$^*$, $^{*}$Emory University, Dept Biology, $^{**}$Dept of Cell Biology and Neurology, Atlanta, GA 30322

30. **Role of auditory cortex in auditory attention in time.** Santiago Jaramillo, Allison E. Baker & Anthony M. Zador, Cold Spring Harbor Laboratory

31. **Song recognition learning drives experience-dependent representations in the auditory forebrain region CLM.** James Jeanne$^{1,2,3}$, Tatyana Sharpee$^{1,2}$, Timothy Gentner$^1$, $^1$Neurosciences Grad. Program, Univ. of California, San Diego, La Jolla, CA; $^{2}$Salk Institute for Biological Studies, La Jolla, CA; $^{3}$Dept Psychol, Univ. California, San Diego, La Jolla, CA

32. **Effect of training paradigms on behavioral strategy in an auditory discrimination task.** M. Jeschke$^1$, F. W. Ohl$^{1,2}$, $^{1}$BioFuture Res. Group, Leibniz Inst. for Neurobiology, Magdeburg, Germany; $^{2}$Inst. for Biol., Otto-von-Guericke Univ. Magdeburg, Magdeburg, Germany

33. **Caudorostral progression of auditory information processing on the monkey's supratemporal plane.** *Y. Kikuchi$^{1,2,3}$, B. Horwitz$^2$, M. Mishkin$^3$, $^1$Physiol & Biophysics, Georgetown Univ. Med., Washington, DC; $^{2}$NIDCD, Bethesda, MD; $^{3}$NIMH, Bethesda, MD

34. **Manipulation of Neuronal Responses with Activity-Triggered Microstimulation.** Woosung Kim, Dennis L. Barbour, Biomed. Engin., Washington Univ., St.Louis, MO

35. **The auditory association cortex required for discrimination learning of synthetic speech sounds in rats.** M Kudoh$^1$, R Hishida$^2$, K Shibuki$^3$, $^1$Dept Physiol, Teikyo Univ Sch Med, Tokyo, 173-8605; Japan, $^2$Dept Neurophysiol, Brain Res Inst, Niigata Univ, Niigata, 951-8585, Japan

37. **Predicting first spikes at the onset of natural calls in the awake mouse auditory cortex.** Frank G. Lin¹, Edgar Galindo-Leon², Robert C. Liu², ¹Interdisciplinary Bioengineering Graduate Program, Georgia Institute of Technology, Atlanta, GA 30332; ²Department of Biology, Emory University, Atlanta, GA 30322

38. **Stimulus-specific adaptation occurs in neurons of the medial but not ventral auditory thalamus.** Jennifer F. Linden² and Lucy A. Anderson¹,³, ¹UCL Ear Inst., ²Dept. of Neuroscience, Physiol. & Pharmacol., Univ. Col. London, London, United Kingdom; ³Auditory Neurophysiol. Unit, Inst. of Neurosci. of Castilla y Leon, Univ. of Salamanca, Salamanca, Spain

39. **Contributions of specific auditory cortical areas to the enhanced visual abilities of the deaf.** Stephen G. Lomber¹, M. Alex Meredith² and Andrej Kral³, ¹Departments of Physiology and Pharmacology, and Psychology, University of Western Ontario, London, ON, Canada; ²Department of Anatomy and Neurobiology, Virginia Commonwealth University, Richmond, VA, USA; ³Department of Neurophysiology and Pathophysiology, University Medical Center Hamburg-Eppendorf, Hamburg, Germany

40. **Population responses to extended tone stimuli in auditory cortex of awake rats are dominated by global fluctuations.** Artur Luczak; Peter Barthó; Kenneth D. Harris, CMBN, Rutgers University, Newark, NJ, USA

41. **Auditory cortical activity across desynchronized and synchronized states.** Marguet, Stephan; Sakata, Shuzo; Curto, Carina; Harris, Kenneth D., Rutgers Univ., Newark, NJ

42. **Focusing of acoustic energy on to mechanoreceptor neurons by travelling waves in locusts tympanal ear.** T McDonagh, J F C Windmill, S Bockenhauer & D Robert, University of Bristol, UK

43. **Sensory-motor integration in primate frontal cortex neurons during a natural vocal behavior: antiphonal calling.** Cory T. Miller and Xiaoqin Wang, Laboratory of Auditory Neurophysiology, Department of Biomedical Engineering, Johns Hopkins University, School of Medicine

44. **Evoked potentials in the macaque auditory cortex after electrical stimulation of the midbrain ventral tegmental area.** Judith Mylius¹, Alexander G. Gorkin², Elena Seleznева¹, Henning Scheich¹ and Michael Brosch¹, ¹Department of Auditory Learning and Speech, Leibniz Institute for Neurobiology, 39118 Magdeburg, Germany; ²Institute of Psychology, Russian Academy of Sciences, Yaroslavskaya Street 13, 129366 Moscow, Russian Federation

45. **Behavioral and autonomic responses to FM sweeps and social calls in awake, restrained mustached bats.** R. T. Naumann¹, A. J. Murphy¹, M. S. Mellem¹, B. Wolff¹, *J. S. Kanwal², ²Dept Physiol/Biophysics; Res. Bldg., Rm WP09A, ¹Georgetown Univ. Med. Ctr., Washington, DC

46. **Auditory discrimination and brainstem auditory evoked potentials may be affected long term by isoflurane anesthesia in adult rats.** J. C. Neill¹, S. J. Gatley², ¹Dept Psychol, Long Island Univ., Brookville, NY; ²Pharmaceut. Sci., Northeastern Univ., Boston, MA

47. **Effect of reversible inactivation of different auditory cortical areas on plasticity of sound localization in adult ferrets.** Fernando R. Nodal, Victoria M. Bajo & Andrew J. King, Department of Physiology, Anatomy and Genetics, University of Oxford, UK

48. **Voice region connectivity in the monkey assessed with microstimulation and functional imaging.** C. I. Petkov¹, Y. Kikuchi²³, M. Augath¹, M. Mishkin³, J. P. Rauschecker² & N. K. Logothetis¹, ¹Dept. Physiol. of Cognitive Processes, Max Planck Inst. for Biol. Cybernetics,
49. Functional Imaging of Sensitivity to Components of the Voice in Monkey Auditory Cortex. Christopher I. Petkov1, Christoph Kayser1, Asif A. Ghazanfar2, Roy D. Patterson3 & Nikos K. Logothetis1,4, 1Max-Planck Institute for Biological Cybernetics, Tübingen, Germany; 2Princeton University, New Jersey, USA; 3University of Cambridge, Cambridge, UK; 4University of Manchester, Manchester, UK

50. Responses of the neuronal population to natural and synthetic sounds in rhesus monkey auditory cortex. *M. Ortiz, P. Kusmierek, J. P. Rauschecker, Interdisciplinary Program in Neuroscience, Georgetown Univ., Washington, DC; Department of Physiology & Biophysics, Georgetown Univ., Washington, DC


52. Neuronal activity in primate prefrontal cortex during performance of an auditory delayed matching-to-sample task. Bethany Plakke1, Amy Poremba1,2, Chi-Wing Ng1, and Ryan Opheim1, 1Department of Psychology, Division of Behavioral and Cognitive Neuroscience, University of Iowa, Iowa City, IA 52242; *Neuroscience Program, University of Iowa, Iowa City, IA 52242.

53. Effects of sound duration on the neural responses of the primary auditory cortex in awake cats. L. Qin, J. Wang, Y. Sato. Dept Physiol, Univ. Yamanashi, Chuo, Japan

54. The role of electrical synapses in the processing of sensory information. Paulo Vianney Rodrigues1,2, Dan Iancu1, Eric Washburn1, John Welsh2, 1Oregon Health Science University, Physiology/Pharmacology Dept; 2Drexel College of Medicine, Pharmacology/Physiology Dept.


56. Vocal Control during Acoustic Interference in Common Marmosets. Sabyasachi Roy, Cory T. Miller, Dane Gottsch and Xiaoqin Wang, Dept of Biomedical Engineering, Johns Hopkins University, Baltimore, MD

57. Acoustic feature analysis in the primary auditory cortex. Srivatsun Sadagopan & Xiaoqin Wang, Dept. of Neuroscience and Dept. of Biomedical Engineering, Johns Hopkins University School of Medicine, Baltimore MD 21205

58. State dependence of laminar processing in the auditory cortex. Shuzo Sakata and Kenneth D. Harris, Center for Molecular and Behavioral Neuroscience, Rutgers University, 197 University Avenue, Newark, New Jersey 07102, USA; Smilow Neuroscience Program and Department of Otolaryngology, New York University School of Medicine, 550 1st Avenue, New York, New York 10016, USA.


60. Response complexity and encoding of stimulus contrast in primary auditory cortex of the awake ferret. B. Shechter, Y. Ji, D.A. Depireux, Anat. and Neurobio., Univ. of Maryland Sch. of Med., Baltimore, MD

61. Natural-sound-evoked and tone-evoked receptive fields in songbird auditory midbrain neurons. David M. Schneider1 & Sarah M.N. Woolley2, 1Doctoral Program in Neurobiology and

63. **Pitch discrimination thresholds as a function of task design.** Kerry M. M. Walker, Jennifer K. Bizley, Andrew J. King & Jan W. H. Schnupp, Department of Physiology, Anatomy and Genetics, University of Oxford, UK

64. **Rate Regulation of Sound Level Encoding in Auditory Cortex.** Paul V. Watkins, Dennis L. Barbour, Department of Biomedical Engineering, Washington University, St. Louis, MO, USA

65. **Effects of microstimulation of prefrontal cortex on neural activity in auditory cortex.** Daniel E. Winkowski, Pingbo Yin, Jonathan B. Fritz, Shihab A. Shamma, Neural Systems Laboratory, Institute for Systems Research, University of Maryland, College Park 20742

66. **Functional microcircuits in neonatal auditory cortex before and during the onset of hearing.** Cuiping Zhao, Sharba Bandyopadhyay, Patrick O Kanold, Department of Biology, Institute for Systems Research, Program in Neuroscience and Cognitive Science; University of Maryland, College Park, MD 20742

67. **Envelope Representation in Background Noise by Auditory Cortex Neurons.** Yi Zhou, Xiaoqin Wang, Laboratory of Auditory Neurophysiology, Dept of Biomedical Engineering, Johns Hopkins Univ., Baltimore, MD

68. Behavioral and neural discrimination of temporally asymmetric sounds in cats. Y. SATO, J. WANG, SN. LI, L. QIN, Dept Physiol, Univ. Yamanashi, Chuo, Japan