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

Friday, November 12, 2010

San Diego Marriott Hotel and Marina, Room: Marina Ballroom Salons F & G
333 West Harbor Drive, San Diego, CA 92101
www.marriott.com/hotels/travel/sandt-san-diego-marriott-hotel-and-marina

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**: Norman Weinberger (University of California at Irvine)
Auditory Cortex: Past, Present and Future

10:00-11:30 **Poster Session** & **Coffee Break**

Slide Session (Chair: Liz Romanski)

11:30-11:45 **Wireless multi-channel single unit recordings from the pre-motor cortex of freely roaming and vocalizing marmosets**
SABYASACHI ROY & XIAOQIN WANG
Dept. of Biomedical Engineering, Johns Hopkins University, Baltimore, MD

11:45-12:00 **Cortical mechanisms of auditory feedback effecting human vocal motor control**
EDWARD CHANG, SRIKANTAN NAGARAJAN & JOHN HOUDE
Departments of Neurological Surgery and Physiology, Keck Center for Integrative Neuroscience, University of California, San Francisco

12:00-12:15 **Responses of amygdalar neurons to social vocalizations in big brown bats**
*M. A. GADZIOLA[1,2] & J. J. WENSTRUP[1,2]
[1]Anat. & Neurobio., NE Ohio Universities Col. of Med., Rootstown, OH; [2]School of Biomed. Sci., Kent State Univ., Kent, OH

12:15-12:30 **Neural encoding of natural sounds in macaque auditory cortex probed with micro-electrocorticographic arrays**
M. FUKUSHIMA, R.C. SAUNDERS, D.A. LEOPOLD, M. MISHKIN & B.B. AVERBECK
Lab. Neuropsychology, NIMH/NIH, Bethesda, MD

12:30-12:45 **Cortical regions sensitive to sound movement in the monkey brain**
C. POIRIER, S. BAUMANN, C. I. PETKOV & T. D. GRIFFITHS
Newcastle Univ., Newcastle upon Tyne, United Kingdom

12:45-1:45 **Lunch** (*on your own*)

Workshop: Quantitative Approaches to Studying Auditory Function
(Chairs: Robert Liu & Tim Griffiths)

1:45-2:10 Israel Nelken, Alexander Silberman Institute of Life Sciences, Jerusalem
Using Information-theoretic Methods to Study Auditory Processing

2:10-2:35 Jennifer Linden, University College London

Modelling Responses to Complex Sounds

2:35-3:00 Cyrus Billimoria, Boston University
Using Spike Timing-Based Stimulus Filtering to Characterize Auditory Neurons

3:00-3:15 **Break**

3:15-3:40 Laurel Carney, Rochester University
Computational studies of "Molecular" Behavior and Physiology: Using Reproducible Noise Maskers to Reveal Neural Mechanisms

3:40-4:05 Jonathan Simon, University of Maryland
Auditory Neuroscience with Magnetoencephalography: New Quantitative Approaches

4:05-4:30 Ingrid Johnsrude, Queen's University, Kingston, Ontario
Optimizing the Sensitivity of fMRI data in the Study of Language Processing

4:30-6:00 **Poster Session** (continued) plus **Cash Bar**

1. **Integration of eeg-fmri in an auditory oddball paradigm using joint-independent component analysis**
*J. MANGALATHU ARUMANA[1,2], E. LIEBENTHAL[1,3] & S. BEARDSLEY[2,4]
[1]Dept. of Neurol., Med. Col. of Wisconsin, Milwaukee, WI; [2]Dept. of Biomed. Engin., Marquette Univ., Milwaukee, WI; [3]Natl. Res. Council Inst. for Biodiagnostics, Winnipeg, MB, Canada; [4]Dept. of Biomed. Engin., Boston Univ., Boston, MA

2. **Brain bases for auditory figure-ground segregation**
SUNDEEP TEKI[1, 2], MARIA CHAIT[3], SUKHBINDER KUMAR[1, 2], KATHARINA VON KRIEGSTEIN[1, 4], & TIMOTHY D. GRIFFITHS[1, 2]
[1] Wellcome Trust Centre for Neuroimaging, University College London, London WC1N 3BG, United Kingdom; [2] Newcastle Auditory Group, Medical School, Newcastle University, Newcastle-upon-Tyne NE2 4HH, United Kingdom; [3] UCL Ear Institute, University College London, London WC1X 8EE, United Kingdom; [4] Max Planck Institute for Human Cognitive and Brain Sciences, 04103 Leipzig, Germany.

3. **The effect of temporal-lobe lesions on the perception of spectrotemporal modulation**
*M. GRUBE[1], T.D. GRIFFITHS[1], S.K. SHIVAPOUR[1] & S. ANDERSON[2]
[1]Med. Sch., Newcastle Univ., Newcastle-upon-Tyne, United Kingdom; [3] Department of Neurology, University of Iowa, Iowa, IA, USA

4. **Detection of amplitude modulation as a function of modulation frequency and stimulus duration: Comparisons between macaques and humans.**
K. N. O'CONNOR[1,2,3], J. S. JOHNSON[2,1], M. NIWA[1,2], N. C. NORIEGA[1,2], E. A. MARSHALL[1,2] & M. L. SUTTER[1,2,3]
[2]Ctr. for Neurosci., [3]Neurobiology, Physiol. and Behavior, [1]UC Davis, CA

5. **Effects of noise on the behavioral detection of tones by nonhuman primates**
MARGIT DYLLA, CHRISTOPHER RICE & RAMNARAYAN RAMACHANDRAN
Dept. Neurobiol & Anat, Wake Forest University Health Sciences, Winston-Salem, NC

6. **Developmental changes in CBA/CaJ mouse vocalizations: an analysis of song structure**
JASMINE GRIMSLEY, JESSICA MONAGHAN & JEFFREY WENSTRUP
Anatomy and Neurobiology, NEOUCOM, Ohio.

7. **Wireless multi-channel single unit recordings from the pre-motor cortex of freely roaming and vocalizing marmosets**
SABYASACHI ROY & XIAOQIN WANG
Dept. of Biomedical Engineering, Johns Hopkins University, Baltimore, MD, USA.

8. **Cortical mechanisms of auditory feedback effecting human vocal motor control**
EDWARD CHANG, SRIKANTAN NAGARAJAN & JOHN HOUDE
Departments of Neurological Surgery and Physiology, Keck Center for Integrative Neuroscience, University of California, San Francisco

9. **Responses of amygdalar neurons to social vocalizations in big brown bats**
*M. A. GADZIOLA[1,2] & J. J. WENSTRUP[1,2]
[1]Anat. & Neurobio., NE Ohio Universities Col. of Med., Rootstown, OH; [2]School of Biomed. Sci., Kent State Univ., Kent, OH

10. **Visual influences on voice-sensitive neurons**
C. PERRODIN[1], C. KAYSER[1], N.K. LOGOTHETIS[1,2] & C.I. PETKOV[1,3]
[1] Dept. Physiology of Cognitive Processes, Max-Planck Institute for Biological Cybernetics, Tübingen, Germany, [2] Imaging Science and Biomedical Engineering, University of Manchester, U.K., [3] Institute of Neuroscience, Newcastle University, Newcastle upon Tyne, U.K.

11. **A brain region consisting of neurons with moderate sensitivity for voices**
C. PERRODIN[1], C. KAYSER[1], N.K. LOGOTHETIS[1,3] & C.I. PETKOV[1,2]
[1] Dept. Physiology of Cognitive Processes, Max-Planck Institute for Biological Cybernetics, Tübingen, Germany, [2] Institute of Neuroscience, Newcastle University, Newcastle upon Tyne, U.K., [3] Imaging Science and Biomedical Engineering, University of Manchester, Manchester, U.K.

12. **Factors affecting neuronal activity in the primate ventral frontal lobe during discrimination tasks of emotional faces and vocalizations**
M. M. DIEHL, M. D. DILTZ & L. M. ROMANSKI.
University of Rochester Medical Center, Rochester, NY

13. **Effects of face and motion stimuli on auditory processing in the ventrolateral prefrontal cortex**
JAEWON HWANG[1] & LIZABETH M. ROMANSKI[2]
[1]Brain & Cognitive Sciences, University Rochester, Rochester, NY; [2]Department of Neurobiology & Anatomy, University of Rochester, NY

14. **Behavioral and neural integration of faces and voices in macaque monkeys**
CHANDRAMOULI CHANDRASEKARAN[1, 2], LUIS LEMUS[1, 2], MATTHIAS GONDAN[3] & ASIF A GHAZANFAR[1, 2,4]
[1]Neuroscience Institute and Departments of [2]Psychology and [4]Ecology & Evolutionary Biology Princeton University, Princeton, NJ 08540, USA
[3]Department of Psychology, University of Regensburg, D-93050, Regensburg, Germany

15. **Band-specific modulations of neural oscillations during habituation to vocalizations in the primate ventrolateral prefrontal cortex**
JOJI TSUNADA[1], ALLISON E. BAKER[2], KATE L. CHRISTISON-LAGAY[1] & YALE E. COHEN[1]
[1]Department of Otorhinolaryngology: Head and Neck Surgery, University of Pennsylvania School of Medicine; [2]Department of Neurobiology, Harvard University

16. **Coding of vocalization variance in the auditory-cortex lateral belt**
J. LEE, K. CHRISTISON-LAGAY & Y.E. COHEN
Univ. of Pennsylvania Sch. of Med., Philadelphia, PA

17. **Acoustic-phonetic processing and temporal complexity in the auditory ventral stream: a meta-analysis**
IAIN DEWITT & JOSEF P. RAUSCHECKER
Georgetown University Medical Center

18. **Discriminating communication calls through selective versus differential responses in auditory cortex**
KATHRYN N. SHEPARD[1], FRANK LIN[1,2] & ROBERT C. LIU[1]
[1] Emory University, Atlanta, GA [2] Georgia Institute of Technology, Atlanta, GA

19. **Effect of presentation rate on speech discrimination in the adult rat**
ROSEN, T.M., SLOAN, A. M., ENGINEER, C., RENNAKER, R., ABDULALI, Z.M., CHEUNG, R.J. & KILGARD, M.P.
The University of Texas at Dallas, 800 West Campbell Rd, Richardson, TX 75080-3021

20. **Responses to communication sounds in the guinea pig auditory cortex during partial removal of intracortical inhibitions**
EDELINE JEAN-MARC, HUETZ CHLOÉ, GOURÉVITCH BORIS & GAUCHER QUENTIN
CNPS, UMR CNRS 8195, Bat 446, Université Paris-Sud, 91405 Orsay cédex.

21. **Multiple, simultaneous recordings in the auditory cortex of the awake, behaving primate**
ELLIOT SMITH & BRADLEY GREGER
University of Utah

22. **Dual pathways for sound discrimination in the rat auditory cortex**
MASAHARU KUDOH[1], GO OGAWA[1] & YOKO NISHIDA[1, 2]
[1]Dept Physiol, Teikyo Univ Sch Med, [2]Teikyo Heisei Univ, Tokyo, Japan

23. **Tone-elicited response patterns recorded directly from human auditory cortex on the posterior lateral superior temporal gyrus**
M. STEINSCHNEIDER*[1], K. NOURSKI[2],H. KAWASAKI[2], H. OYA[2] & M. HOWARD[2]
A Einstein Coll. Med.[1], Bronx, NY and Univ. of Iowa Coll. Med.[2], Iowa City, IA.

24. **Temporal sensitivity of cochleotopic fields in human auditory cortex**
LEAVER AM & RAUSCHECKER JP
Georgetown University Medical Center

25. **Neural encoding of natural sounds in macaque auditory cortex probed with micro-electrocorticographic arrays**
M. FUKUSHIMA, R.C. SAUNDERS, D.A. LEOPOLD, M. MISHKIN & B.B. AVERBECK;
Lab. Neuropsychology, NIMH/NIH, Bethesda, MD;

26. **The caudomedial area of rhesus monkey auditory cortex revisited**
KUŚMIEREK P & RAUSCHECKER JP
Georgetown University Medical Center, Washington, DC, USA

27. **Mapping the macaque auditory system using magnetic resonance imaging and complex sounds**
*M. ORTIZ[1], D. A. ARTCHAKOV[1], I. DEWITT[1], P. KUSMIEREK[1], J. VANMETER[2] & J. P. RAUSCHECKER[1]
[1]Dept. of Physiol. and Biophysics, Georgetown Univ., WASHINGTON, DC; [2]Ctr. for Functional and Mol. Imaging, Med. Ctr., Georgetown Uni, Washington, DC

28. **Anatomical connections of the rostral supratemporal plane in rhesus monkeys**
SCOTT, B.H., VINAL, H., MISHKIN, M. & SAUNDERS, R.C.

Laboratory of Neuropsychology, NIMH, NIH, Bethesda, MD 20892

29. **Combined lesions of rostral superior temporal gyrus and rhinal cortex nearly abolish short-term memory in monkeys**
J. B. FRITZ[1], M. MISHKIN[2] & R. C. SAUNDERS[2]
[1]Neural Systems Lab, Inst. for Systems Res., Univ. of Maryland, College Park, MD; [2]Lab of Neuropsychology, NIMH, Bethesda, MD

30. **Prefrontal neuronal population activity during auditory recognition memory demand in non-human primates**
BETHANY PLAKKE[1], CHI-WING NG[1], AND RYAN OPHEIM[1] & AMY POREMBA[1,2]
[1]Department of Psychology, Division of Behavioral and Cognitive Neuroscience, University of Iowa, Iowa City, IA 52242, [2]Neuroscience Program, University of Iowa, Iowa City, IA 52242.

31. **Local field potential activity in monkey dorsal temporal pole during auditory delayed matching-to-sample**
JAMES BIGELOW[1], CHI-WING NG[1] & AMY POREMBA[1,2]
[1] Department of Psychology, Division of Behavioral and Cognitive Neuroscience, University of Iowa, Iowa City, IA 52242; [2] Neuroscience Program, University of Iowa, Iowa City, IA 52242.

32. **Neuronal population encoding of auditory recognition memory within the primate temporal polar cortex**
CHI-WING NG[1], BETHANY PLAKKE[1] & AMY POREMBA[1,2]
[1]Department of Psychology, Division of Behavioral and Cognitive Neuroscience, University of Iowa, Iowa City, IA 52242, [2]Neuroscience Program, University of Iowa, Iowa City, IA 52242.

33. **Task-related neuronal activity in primate primary auditory cortex during auditory delayed matching-to-sample task performance**
RYAN OPHEIM[1] & AMY POREMBA[1,2]
[1]Department of Psychology, Division of Behavioral and Cognitive Neuroscience, University of Iowa, Iowa City, IA 52242, [2]Neuroscience Program, University of Iowa, Iowa City, IA 52242.

34. **Feature representation in the auditory and prefrontal cortices**
A.S. LIU[1], J. MCDANIEL[2], T. PATEL[2] & Y. E. COHEN[3];
[1]Bioengineering, [2]Dept. of Bioengineering, [3]Dept. of Otorhinolaryngology, Univ. of Pennsylvania, Philadelphia, PA

35. **Repetition suppression for a pitch stimulus**
SUKHBINDER KUMAR, COLLINE POIRIER, SIMON BAUMANN & TD GRIFFITHS
Newcastle Auditory Group, Medical School, Newcastle University, Newcastle-upon-Tyne NE2 4HH, United Kingdom

36. **The role of interactions between excitatory and inhibitory receptive field components in encoding harmonic structures in auditory cortex of awake marmosets**
LEI FENG & XIAOQIN WANG
Laboratory of Auditory Neurophysiology, Department of Biomedical Engineering, Johns Hopkins University, Baltimore, Maryland

37. **Anterior auditory core areas in macaques are specifically responsive to regular interval noise (RIN) at rates associated with human pitch perception**
BAUMANN S, KUMAR S, SUN L, THIELE A & GRIFFITHS TD
Newcastle Auditory Group, Medical School, Newcastle University, Newcastle-upon-Tyne NE2 4HH, United Kingdom

38. **Simultaneous neural and behavioural assessment of pitch discrimination in freely moving ferrets**

*J. K. BIZLEY, K. M. WALKER, F. R. NODAL, A. J. KING & J. W. SCHNUPP
Department of Physiology, Anatomy and Genetics, University of Oxford, United Kingdom

39. **Nonlinear temporal processing of natural sounds in auditory cortex**
S.V. DAVID & S.A. SHAMMA
Institute for Systems Research, University of Maryland, College Park

40. **Fast-spiking and regular-spiking neurons in A1 of the awake macaque: Laminar variability and response latencies**
C.R. CAMALIER[1,2], LISA A DE LA MOTHE[3], ANGELA C. VOYLES[1], MICHAEL L. GARCIA[1], SHU-EN LIM[1] & TROY A. HACKETT[1,2,3]
[1]Ctr. Integrative and Cognitive Neuroscience, Dept. of Psychology, [2]Vanderbilt Brain Institute, [3]Dept. of Speech and Hearing Science; Vanderbilt University, Nashville TN

41. **Corticofugal influence on temporal modulation processing in auditory thalamus of awake marmosets**
MARCUS JESCHKE[1,2], FRANK W. OHL[2,3] & XIAOQIN WANG[1]
[1]Laboratory of Auditory Neurophysiology, Department of Biomedical Engineering, Johns Hopkins University, Baltimore, Maryland; [2]BioFuture Res. Group, Leibniz Inst. for Neurobiology, Magdeburg, Germany; [3]Inst. for Biol., Otto-von-Guericke Univ. Magdeburg, Magdeburg, Germany

42. **Cortical regions sensitive to sound movement in the monkey brain**
C. POIRIER, S. BAUMANN, C. I. PETKOV & T. D. GRIFFITHS
Newcastle Univ., Newcastle upon Tyne, United Kingdom

43. **Inhibition modulates spatial response properties of neurons in the primary auditory cortex of awake marmoset**
YI ZHOU & XIAOQIN WANG
Laboratory of Auditory Neurophysiology, Dept of Biomedical Engineering, Johns Hopkins University, Baltimore, MD

44. **Neural responses to simulated echoes in the auditory cortex of the ferret**
SANDRA TOLNAI[1], NEIL C RABINOWITZ[1], BEN D WILLMORE[1], RUTH Y LITOVSKY[2] & ANDREW J KING[1]
[1] Department of Physiology, Anatomy and Genetics, University of Oxford, United Kingdom;
[2] University of Wisconsin, Madison

45. **Time course of adaptation to stimulus statistics in the perception and neural representation of auditory space**
JOHANNES C DAHMEN, PETER KEATING & ANDREW J KING
Department of Physiology, Anatomy and Genetics, University of Oxford, United Kingdom

46. **Contrast gain control in auditory cortex**
BEN D. WILLMORE, NEIL C. RABINOWITZ, JAN. W. H. SCHNUPP & ANDREW J. KING;
Department of Physiology, Anatomy and Genetics, University of Oxford, United Kingdom

47. **Adaptation to global temporal statistical structure of sounds in the mammalian auditory cortex**
MARIA N. GEFFEN
University of Pennsylvania School of Medicine

48. **The interplay of excitation and inhibition in the inferior colliculus and its relationship to adaptation for naturalistic stimuli**
NADJA SCHINKEL-BIELEFELD[1], MAI EL-ZONKOLY[1], NICHOLAS LESICA[2], BENEDIKT GROTHE[3] & DANIEL A. BUTTS[1]

[1]Department of Biology, University of Maryland, College Park, MD, USA ; [2]Ear Institute, University College London, London, United Kingdom; [3]Division of Neurobiology, Department Biology II, Ludwig Maximilians University Munich, Munich, Germany

49. Phase-locked neural oscillation predicts human auditory brainstem responses to musical intervals
E. W. LARGE & F. V. ALMONTE
Ctr. for Complex Systems & Brain Sci., Florida Atlantic Univ., Boca Raton, FL

50. Selective responses to salient acoustic stimuli in nucleus basalis of the behaving ferret
NICHOLAS D. LEACH[1], VICTORIA M. BAJO[1], ANDREW J. KING[1], STEPHEN V. DAVID[2], SHIHAB A. SHAMMA[2], MICHAEL BROSCH[3] & JONATHAN B. FRITZ[2]
[1] Department of Physiology, Anatomy and Genetics, University of Oxford, Oxford, United Kingdom, [2] Neural Systems Lab, Institute for Systems Research, University of Maryland, College Park, MD, [3] Leibniz Institute for Neurobiology, Magdeburg, Germany.

51. Control of auditory cortical plasticity by the prefrontal cortex in the mouse
DANIEL E. WINKOWSKI, SHARBA BANDYOPADHYAY, SHIHAB A. SHAMMA & PATRICK O. KANOLD
Institute for Systems Research, University of Maryland, College Park, MD

52. Strength of extinction memory is accounted for by loss of cortical representational area
K.M. BIESZCZAD* & N.M. WEINBERGER
Center for the Neurobiology of Learning and Memory and Dept. of Neurobiology and Behavior, University of California, Irvine, CA.

53. Enhancement of gamma band activation parallels behavioral and physiological correlates across training sessions
D.B. HEADLEY & N. M. WEINBERGER
Dept. of Neurobiology and Behavior, University of California, Irvine, CA.

54. Basolateral amygdala induced cortical memory traces are discriminative
CHAVEZ, C.M., MCGAUGH, J.L. & WEINBERGER, N.M.
Department of Neurobiology and Behavior, Center for the Neurobiology of Learning and Memory, UCI, Irvine, CA

55. Hierarchical processing of vocalization signals in the auditory forebrain
JAMES JEANNE, TATYANA SHARPEE & TIMOTHY GENTNER
University of California, San Diego /Salk Institute

56. Neural correlates to auditory vocal recognition and learning in behaving European starlings
DANIEL KNUDSEN[1] & TIMOTHY GENTNER[2]
[1]Neurosciences Graduate Program, University of California, San Diego
[2]Department of Psychology, University of California, San Diego

57. Learning-dependent and independent effects of noise on the representation of vocal communication signals across multiple regions of the auditory forebrain
EMILY CAPORELLO[1] & TIMOTHY Q. GENTNER[1,2]
[1]Neuroscience Graduate Program, [2]Department of Psychology
University of California, San Diego

58. Manipulating physiological and environmental conditions to restore the sensory sensitivephase for song learning
NOOPUR AMIN & FREDERIC E. THEUNISSEN
U.C. Berkeley

59. **Age related changes in spectro-temporal receptive fields in the guinea pig auditory cortex**
B. GOURÉVITCH & J.-M. EDELINE;
CNPS UMR CNRS 8195, Univ. Paris-Sud, Orsay Cedex, France

60. **Auditory processing in normal versus aged animals assessed at the population level under challenging listening conditions**
ARAVINDAKSHAN PARTHASARATHY[1], PAUL CUNNINGHAM[2] & EDWARD BARTLETT[1, 2]
[1]Department of Biological sciences, Purdue University; [2]Weldon School of biomedical engineering, Purdue University

61. **Cortical responses to cochlear implant stimulation in the awake marmoset**
*L. A. JOHNSON[1], C. C. DELLA SANTINA[1,2] & X. WANG[1]
[1]Dept Biomed Eng, Johns Hopkins Univ., Baltimore, MD; [2]Dept of Otolaryngology-Head & Neck Surgery, Johns Hopkins Univ., Baltimore, MD

62. **Effects of microstimulation in the inferior colliculus on auditory perception in non-human primates: implications for the auditory midbrain implant**
DEBBIE ROSS & JENNIFER M. GROH
Duke University