

Advances and Perspectives in Auditory Neurophysiology (APAN)

Sponsored by Tucker-Davis Technologies and NIDCD

Marriott Marquis, Washington, DC

Friday, November 14, 2014

8:00 AM – 6:30 PM

8:00 – 9:00 **Registration and Poster set-up**

9:00 – 9:05 **Opening Remarks** (Robert C. Liu)

Keynote Lecture

9:05 – 10:00 **Christoph E. Schreiner, UCSF**

What happened on the way to the forum: Traffic maps from auditory midbrain to forebrain

10:00 – 10:05 **NIDCD Announcements**, *Christopher Platt*

Poster Teaser Session I (Chairs: Robert Liu and Chris Petkov)

10:05 – 10:25 **Five 3-minute Teasers**

Learning-related neuronal circuit dynamics in mouse auditory cortex investigated by chronic two-photon calcium imaging (40), **Balazs Laurenczy, Fritjof Helmchen, Henry Lütcke*

Neural correlates of auditory-tactile integration in meter perception: an EEG study (66), **Juan Huang, Tianxu Wu, Steven Hsiao, Xiaoqin Wang*

Neural encoding of noisy vocalizations in primary auditory cortex of the marmoset monkey (64), **Ruiye Ni, Noah M. Ledbetter, Jeffrey R. Gamble, David A. Bender, Dennis L. Barbour*

Modulation of core auditory cortex putative pyramidal neuron responses by vocalization categories depends on behavioral relevance (33), *Kathryn N. Shepard, *Kelly Chong, Frank G. Lin, Charles Zhao, Robert C. Liu*

Relative contributions of the auditory and prefrontal cortices to auditory perceptual decision-making (17), **Joji Tsunada, Andrew S. Liu, Joshua I. Gold, Yale E. Cohen*

10:25 – 11:25 **Morning Poster Session** and Coffee Break

Slide Session I (Chairs: Jennifer Bizley and Bo Hong)

11:30 – 11:45 **Subcortical neuronal correlates of behavior during detection of signals in noise by nonhuman primates**, **Ramnarayan Ramachandran, Margit Dylla, Peter Bohlen*

11:45 – 12:00 **Thalamic encoding of dynamic audiovisual signals in the actively foraging mouse**, **Ross S. Williamson, Kenneth E. Hancock, Barbara G. Shinn-Cunningham, Daniel B. Polley*

12:00 – 12:15 **Complementary mechanisms contribute to the developmental plasticity of spatial hearing**, **Peter Keating, Johannes C Dahmen, Andrew J King*

12:15 – 12:30 **Functional organization of human auditory cortex: Investigation of response latencies through direct recordings**, **Kirill V. Nourski, Mitchell Steinschneider, Bob McMurray, Christopher K. Kovach, Hiroyuki Oya, Hiroto Kawasaki, Matthew A. Howard III*

12:30 – 2:00 **Lunch** on your own (posters remain up through entire meeting). Check APAN website for options.

Slide Session II (Chairs: Dan Polley and Heather Read)

2:15 – 2:30 **Oxytocin receptors in left auditory cortex enable learned social behavior**, **Bianca J. Marlin, Mariela Mitre, James A. D'amour, Moses V. Chao, Robert C. Froemke*

2:30 – 2:45 **Responses to natural sounds reveal the functional organization of human auditory cortex**, **Samuel Norman-Haignere, Josh McDermott, Nancy Kanwisher*

2:45 – 3:00 **Cortical inhibition regulates frequency discrimination acuity and specialization of emotional learning**, **Mark Aizenberg, Laetitia Mwilambwe-Tshilobo, Maria Geffen*

Young Investigator Spotlight

3:00 – 3:30 **Jonas Obleser, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig**

The Listening Brain: Acoustic challenges and adaptive mechanisms

Poster Teaser Session II (Chairs: Dan Polley and Heather Read)

3:30 – 3:45 **Four 3-minute Teasers**

Specialized auditory temporal processing in the theta and gamma bands revealed by priming (96), **Xiangbin Teng, David Poeppel*

Cortical feedback modulates adaptive gain control in the midbrain (80), **Charles-Henri P. Vila, Ross S. Williamson, Daniel B. Polley*

Neural codes for pitch perception in the actively- and passively-listening state (100), **Kerry M.M. Walker, Jennifer K. Bizley, Jan W.H. Schnupp, Fernando Nodal, Andrew J. King*

A preparation for optogenetic photostimulation in marmoset cortex (39), **Matthew MacDougall, Shanna Coop, Jude Mitchell, Cory Miller*

3:45 – 6:20 **Afternoon Poster Session** and Prepaid Bar

6:20 – 6:30 **Travel Awards and Other Announcements** (Yale Cohen, Liz Romanski and Xiaoqin Wang)

List of Posters:

- 1. Auditory-evoked unit responses of large GABAergic neurons in the inferior colliculus**, Tetsufumi Ito
- 2. Multisensory context portends object memory**, Antonia Thelen, Pawel J. Matusz, Micah M. Murray
- 3. Neural oscillatory correlates of detected concurrent spectrotemporal regularities in acoustic stimuli**, Adam M. Gifford, Michael J. Kahana, Yale E. Cohen
- 4. Neural and behavioral correlates of auditory scene analysis**, Kate L. Christison-Lagay, Yale E. Cohen
- 5. Sound response properties of the optogenetically identified GABAergic neurons in the inferior colliculus (IC) of mouse**, Deborah.C.Bishop, Douglas.L.Oliver
- 6. Long-term treatment with progestin does not affect auditory midbrain receptive fields in old CBA mice**, J.M. Mansour, B.H. Gross, X. Zhu, R.D. Frisina, J. P. Walton
- 7. Multisensory temporal processing is dependent upon stimulus intensity**, Aaron R. Nidiffer, Qing Qing Zheng, Mark T. Wallace
- 8. Visual influences in cat auditory cortex are lamina-specific**, Juliane Krueger Fister, LeAnne R. Kurela, Aaron R. Nidiffer, Troy A. Hackett, Mark T. Wallace
- 9. Examining the role of the serotonergic system in multisensory function**, LeAnne R. Kurela, Juliane Krueger-Fister, Mark T. Wallace
- 10. Local field potential activity in rostral superior temporal cortex during auditory short-term memory**, C.R. Camalier, B.H. Scott, P. Yin, M. Mishkin
- 11. Neural entrainment is less responsive to attentional demands in older listeners**, Molly J. Henry, Bjoern Herrmann, Jonas Obleser
- 12. Population code for sound localization in the barn owl**, Fanny Cazettes, Brian J. Fischer, Jose L. Pena
- 13. Neural amplitude fluctuations in multiple frequency bands predict auditory perception in a rhythmically variable context**, Björn Herrmann, Molly J. Henry, Saskia Haegens, Jonas Obleser
- 14. Network analysis of human speech perception: An intracranial recording perspective**, Mitchell Steinschneider, Kirill V. Nourski, Ariane E. Rhone, Hiroyuki Oya, Hiroto Kawasaki, Matthew A. Howard III
- 15. Direct recordings of sustained theta-band electrical activity in the human auditory cortex during working memory for tones**, P.E. Gander, S. Kumar, K.V. Nourski, H. Oya, H. Kawasaki, M.A. Howard, T.D. Griffiths
- 16. An evolutionary origin for spatial hearing: by combining vestibular processing with somatosensory localization, the optic-tectum could localize sounds**, Mark S. Riggle
- 17. Relative contributions of the auditory and prefrontal cortices to auditory perceptual decision-making**, Joji Tsunada, Andrew S. Liu, Joshua I. Gold, Yale E. Cohen
- 18. Task-dependent modulations of the fMRI BOLD response in monkey auditory cortex**, Ross Muers, Emma Salo, Heather Slater, Teemu Rinne, Christopher I. Petkov
- 19. Multisensory integration in ferret auditory cortex: Effects of inactivating visual cortex**, Stephen Town, Katherine Wood, Gareth Jones, Huriye Atilgan, Jennifer Bizley
- 20. Online building of hierarchical structure during speech perception**, Nai Ding, Lucia Melloni, Hang Zhang, Xing Tian, David Poeppel
- 21. Effects of local inhibition on stimulus--specific adaptation across laminae of primary auditory cortex**, J. J. Briguglio, R. G. Natan, L. Mwilambwetshilobo, M. N. Geffen
- 22. Inhibitory control of the maturation of cortical temporal processing**, Xiaoyang Long, Rongrong Han, Dongqin Cai, Yang Liu, Miaomiao Liu, Limin Zhao, Kexin Yuan
- 23. Dynamics of amplitude modulation sensitivity and tuning in macaque primary auditory cortical neurons**, K.N. O'Connor, J.R. Verhein, M. Niwa, M.L. Sutter
- 24. Predictive mechanisms and speech perception in progressive non-fluent aphasia: A magnetoencephalography (MEG) study**, Thomas Edmund Cope, Karalyn Patterson, Ediz Sohoglu, Catherine Dawson, Manon Grube, Matt Davis, James Rowe
- 25. The role of inhibition in auditory cortex for encoding temporal information**, Daniel Bendor

26. **Streaming of repeated embedded noise in ferret auditory cortex**, Daniela Saderi, Brad N. Buran, Josh H. McDermott, Stephen V. David
27. **Neural coding of pitch in human auditory cortex: Evidence from intracranial ECoG recordings**, Roozbeh Behroozmand, Jeremy Greenlee, Hiroyuki Oya, Hiroto Kawasaki, Matthew Howard
28. **Attention modulates single-trial adaptation of human high-frequency cortical auditory responses**, Steven J. Eliades, Anna Korzeniewska, William S Anderson, Deepti Ramadoss, Nathan E Crone, Dana Boatman-Reich
29. **Neural mechanisms underlying long-lasting contextual modulations in auditory cortex of awake marmoset studied by intracellular recording**, Lixia Gao, Xiaoqin Wang
30. **Simultaneous multi-scale electrophysiological measurement and optical manipulation of in vivo cortical networks**, K.E. Bouchard, P. Ledochowitsch, L. Muller, E.A.K. Phillips, B.A. Seybold, M. Maharbiz, A. Hasenstaub, C.E. Schreiner, E.F. Chang
31. **Attentional modulation of repetition suppression effects in human face- and voice-sensitive cortex**, Yukiko Kikuchi, Jennifer Ip, James C. Mossom, Nick Barraclough, Christopher I. Petkov, Quoc C. Vuong
32. **Syllabification and recognition of noisy speech using spiking neurons**, Phillip B. Schafer, Dezhe Z. Jin
33. **Modulation of core auditory cortex putative pyramidal neuron responses by vocalization categories depends on behavioral relevance**, Kathryn N. Shepard, Kelly Chong, Frank G. Lin, Charles Zhao, Robert C. Liu
34. **Elevated cholinergic tone disrupts the balance of stability and plasticity in the auditory cortex of ChAT-ChR2-EYFP transgenic mice**, Wei Guo, Barbara G. Shinn-Cunningham, Daniel B. Polley
35. **Ontogeny of antiphonal calling in common marmosets**, Cecilia P. Chow, Jude F. Mitchell, Cory T. Miller
36. **Adaptive interpretation of sounds without the auditory cortex**, Tyler L. Gimenez, Maja Lorenc, Santiago Jaramillo
37. **Stimulus-specific adaptation and novelty detection in a Down syndrome mouse model overexpressing Dyrk1A**, Daniel Duque, Maria Martinez de Lagran, Mara Dierssen, Manuel S. Malmierca
38. **Comparing cortical pitch responses in humans and monkeys**, Samuel Norman-Haignere, Josh McDermott, Nancy Kanwisher, B.R. Conway
39. **A preparation for optogenetic photostimulation in marmoset cortex**, Matthew MacDougall, Shanna Coop, Jude Mitchell, Cory Miller
40. **Learning-related neuronal circuit dynamics in mouse auditory cortex investigated by chronic two-photon calcium imaging**, Balazs Laurenczy, Fritjof Helmchen, Henry Lütcke
41. **Effects of noise-induced tinnitus on frequency discrimination acuity in mice**, Laetitia Mwilambwe-Tshilobo, Andrew Davis, Maria N. Geffen
42. **Hearing the light: Perceptual and neurophysiological encoding of optogenetic stimulation delivered to the auditory midbrain**, A.E. Hight, W. Guo, J.X. Chen, N.C. Klapoetke, B.G. Shinn-Cunningham, E.S. Boyden, D.J. Lee, D.B. Polley
43. **Supramodal processing in medial prefrontal cortex during audiovisual working memory**, Bethany Plakke, Mark D. Diltz, Liz M. Romanski
44. **Mapping developing subplate microcircuits in a mouse model of autism**, Daniel A. Nagode, Xiangying Meng, Patrick O. Kanold
45. **Crossmodal plasticity alters correlated neuronal activity in auditory cortex**, Krystyna L Solarana, Patrick Kanold
46. **Vocal signal processing and social categorization during natural communication in marmoset frontal cortex neurons**, Vladimir Jovanovic, Shanna H. Coop, Cory T. Miller
47. **Limitations in fine-grained within-category semantic auditory discrimination: insights from spatio-temporal analyses**, Rosanna De Meo, Micah M. Murray, W. Reid Thompson, Stephanie Clarke
48. **Visual –auditory interactions in ferret auditory cortex: The effect of temporal coherence**, H. Atilgan, S. Town, G. Jones, K. Wood, J.K. Bizley
49. **Critical period hearing loss disrupts subsequent amplitude modulation detection**, Melissa L. Caras, Dan H. Sanes
50. **Single-unit physiological characterization of putative auditory parabelt cortex in the marmoset monkey**, Darik Gamble, Xiaoqin Wang
51. **Active retrieval of long-term auditory memories modulates neuronal activity in primary and secondary auditory cortices**, Pingbo Yin, Dana L. Strait, Jonathan B. Fritz, Shihab A. Shamma

52. **Spontaneous changes in state explain cortical and behavioral response variability**, *Matthew J. McGinley, Stephen V. David, David A. McCormick*
53. **Crossmodal plasticity of intracortical connections in auditory cortex**, *Xiangying Meng, Patrick O. Kanold*
54. **The role of perineuronal nets and Nogo signaling in auditory cortex-mediated fear learning**, *Sunayana B. Banerjee, Vanessa Gutzeit, Robert C. Liu, Kerry J. Ressler*
55. **Age-related changes of auditory brainstem responses in non-human primates**, *Chi-Wing Ng, Xochi Navarro, James R. Engle, Gregg H. Recanzone*
56. **Signal-to-noise ratio affects performance on a novel auditory stimulus selection task for rodents**, *S.J. Katarina Slama, Melissa L. Newton, Michael R. DeWeese*
57. **Fixed signal-to-noise ratios disrupt cortical auditory responses in a sound level dependent manner**, *B.A. Seybold, M. Teschner, B.J. Malone, C.E. Schreiner*
58. **The laminar profile of task-dependent plasticity in spiking and local field potentials from primary auditory cortex**, *Nikolas Francis, Diego Elgueda, Bernhard Englitz, Jonathan Fritz, Shihab Shamma*
59. **Neural mechanisms for preserving information about multiple sound items**, *V.C. Caruso, J. Lee, D.S. Pages, R. Estrada, J.M. Groh, S. Tokdar*
60. **Probing the perceptual and physiological mechanisms underlying an auditory delayed match-to-sample task in marmosets**, *Michael S. Osmanski, Xiaoqin Wang*
61. **Compensatory gain control partially restores midbrain and cortical sound coding following profound peripheral nerve degeneration**, *Anna R. Chambers, Yasheng Yuan, Albert S. Edge, M. Charles Liberman, Daniel B. Polley*
62. **Training induced dynamic filtering of auditory distractors in the rat primary auditory cortex**, *K.A. Mirédin, C. Holman, M. Cisneros-Franco, E. de Villers-Sidani*
63. **Studying the neural basis of vocal communication in a naturalistic environment using wireless neural recording technology in marmoset monkeys (*Callithrix jacchus*)**, *Lingyun Zhao, Hu Yi, Xiaoqin Wang*
64. **Neural encoding of noisy vocalizations in primary auditory cortex of the marmoset monkey**, *Ruiye Ni, Noah M. Ledbetter, Jeffrey R. Gamble, David A. Bender, Dennis L. Barbour*
65. **Stability versus flexibility in the encoding of envelope cues in the awake-behaving gerbil**, *Gardiner von Trapp, Kamal Sen, Malcolm N. Semple, Dan H. Sanes*
66. **Neural correlates of auditory-tactile integration in meter perception: an EEG study**, *Tianxu Wu, Juan Huang, Steven Hsiao, Xiaoqin Wang*
67. **Development of an awake-behaving fMRI preparation for investigating auditory cognition in common marmosets**, *Camille R. Toarmino, Chern-Chyi Yen, Afonso C. Silva, Cory T. Miller*
68. **Neural coding of multidimensional stimuli in auditory cortex**, *Nidal Hishmeh, Kenny Chou, Anna Chambers, Jennifer Resnick, Daniel Polley, Kamal Sen*
69. **Measurement of the BOLD response to acoustic spectral flux in the macaque superior temporal plane**, *Pradeep Dheerendra, Olivier Joly, Simon Baumann, Alexander Thiele, Timothy D. Griffiths*
70. **Possible origins of human-like pitch perception mechanisms**, *Xindong Song, Michael S. Osmanski, Yueqi Guo, Xiaoqin Wang*
71. **Adaptive control of signal production and reception in an active sensing system**, *Melville Wohlgemuth, Cynthia Moss*
72. **Effects of aging on the response of single neurons to amplitude modulated noise in primary auditory cortex of Rhesus macaque**, *Jacqueline A. Overton, Gregg H. Recanzone*
73. **Coding of vowels in the auditory midbrain of the budgerigar and rabbit**, *Kenneth S. Henry, Erikson G. Neilans, Joyce M. McDonough, Laurel H. Carney*
74. **Perception changes in ultrasonic vocalization detection in CBA/CaJ mice across lifespan**, *Anastasiya Kobrina, Micheal L. Dent*
75. **State-dependent changes in response selectivity gated by behavior in ferret higher order auditory cortex**, *Diego Elgueda, Stephen V. David, Susanne Radtke-Schuller, Shihab A. Shamma, Jonathan B. Fritz*
76. **Task-related attention affects the cortical processing of auditory spatial cues**, *Nathan C. Higgins, G. Chris Stecker*

77. **Saccade-related modulation of acoustic activity recorded from the external ear canal**, *K. Gruters, C.A. Shera, J.M. Groh*
78. **Contribution of transient neural responses to stimulus discriminability in auditory cortex**, *Wensheng Sun, Noah M. Ledbetter, Dennis L. Barbour*
79. **Co-modulation as a means of enhancing signal detection and object formation in mouse primary auditory cortex**, *Joseph Sollini, Alexander Morris, Paul Chadderton*
80. **Cortical feedback modulates adaptive gain control in the midbrain**, *Charles-Henri P. Vila, Ross S. Williamson, Daniel B. Polley*
81. **Isolating distinct top-down control circuits for auditory cortex**, *Zachary P. Schwartz, Stephen V. David*
82. **Functional characterization of thalamic input to the mouse auditory cortex**, *Y. Weissenberger, S.A. Vasquez-Lopez, P. Keating, A.J. King, J.C. Dahmen*
83. **Cortical networks for spatial attention in a dynamic auditory scene**, *Inyong Choi, Hari Bharadwaj, Hannah Goldberg, Barbara Shinn-Cunningham*
84. **Inhibition within the auditory-recipient striatum is reduced during associative conditioning to an amplitude-modulated cue**, *T.M. Mowery, G. von Trapp, C.L. Rodriguez-Deliz, V.C. Kotak, D.H. Sanes*
85. **Reconstructing vocalizations from motor cortical activity recorded during vocal production in the macaque**, *Makoto Fukushima, Matthew Mullarkey, Alexandra M. Doyle, Richard C. Saunders, Naotaka Fujii, Bruno B. Averbeck, Mortimer Mishkin*
86. **Dynamic role of “top-down” influences during learning of a novel auditory discrimination task**, *Jonathan Cote, Etienne de Villers-Sidani*
87. **Inter- and intra-individual acoustic variation of vocalizations in macaque monkeys**, *Alex M. Doyle, Makoto Fukushima, Matthew Mullarkey, Mortimer Mishkin*
88. **Ultrasonic pure tone sweep discrimination by CBA/CaJ mice**, *Laurel A. Screven, Micheal L. Dent*
89. **Distinct ultrasonic vocal repertoires are elicited by females and female chemosensory cues**, *Kelly M. Seagraves, Gordon J. Berman, S.E. Roian Egnor*
90. **Anterior visuotopic parietal maps recruited for auditory spatial short-term memory**, *S.W. Michalka, M.L. Rosen, L. Kong, B.G. Shinn-Cunningham, D.C. Somers*
91. **The effects of aging and noise exposure on adaptation to repetitive stimuli in A1**, *Miguel Cisneros-Franco, Maryse Thomas, Etienne de Villers-Sidani*
92. **Spike-timing precision encodes sound envelope shape in ventral auditory cortical fields**, *C.M. Lee, A. Osman, R. Lin, D. Zhang, M.A. Escabi, H.L. Read*
93. **Auditory network optimized for sound discrimination predicts hierarchical trends of the auditory system**, *Fatemeh Khatami, Monty A. Escabi*
94. **Using nonstationary contrast and intensity statistics for sound category identification**, *Rahul Narayan, Monty A. Escabi*
95. **Frequency tagging and neural correlates of the cocktail party effect in the monkey inferior colliculus**, *D.S. Pages, V.C. Caruso, S. Tokdar, J.M. Groh*
96. **Specialized auditory temporal processing in the theta and gamma bands revealed by priming**, *Xiangbin Teng, David Poeppel*
97. **Adaptive correction of audio-visual spatial disparity entails short-term (‘visual capture’) and long-term (‘calibration’) processes**, *Adam K. Bosen, Justin T. Fleming, Paul D. Allen, William E. O’Neill, Gary D. Paige*
98. **Neural responses to spectrotemporal patterns in auditory midbrain: From simple to complex**, *Wenbo Tang, Rui Xu, Bo Hong*
99. **Categorical representation of Chinese lexical tone in human auditory cortex**, *Xiaopeng Shi, Wenjin Zhou, Bo Hong*
100. **Neural codes for pitch perception in the actively- and passively-listening state**, *Kerry M.M. Walker, Jennifer K. Bizley, Jan W.H. Schnupp, Fernando Nodal, Andrew J. King*
101. **Stimulus specific adaptation and deviance detection in inferior colliculus and auditory cortex**, *Leila Khouri, Bshara Awwad, Iati Herschenhoeren, Israel Nelken*
102. **Functional connectivity between the prefrontal and auditory cortices**, *Jason Middleton, David Vumbaco*