APAN Advances and Perspectives in Auditory Neuroscience

8:00 – 9:00   Registration, Poster Set-up, Light Breakfast
9:00 – 9:05   Opening Remarks (Maria Chait, Stephen David, Kerry Walker; program committee co-chairs)

<u>Keynote Lecture (Chair: Maria Chait)</u>
9:05 – 10:00   Lori Holt, Carnegie Mellon University. Listening in on Auditory Learning.

<u>Poster Teaser Session I</u>
10:00 – 10:15   Three 3-minute Teasers
- Sophie Bagur, Pasteur Institute. A spatial code for temporal information is necessary for auditory learning.
- Hemant Kumar Srivastava, Baylor College of Medicine. Emergence of prominent brain state-dependence of sound responses in the inferior colliculus.
- Kyle Rupp, University of Pittsburgh. Using deep neural networks and intracerebral recordings to reveal encoding properties of human auditory cortex.

10:15 – 12:00   Poster Session 1 and Coffee Break

<u>Platform Session I</u>
12:00 – 12.15   Kameron Clayton, Harvard University. Cortical PV neurons shape the neural code for loudness perception and are a critical point of failure in auditory hypersensitivity disorders.
12:15 – 12:30   Manaswini Kar, University of Pittsburgh. Active listening enhances vocalization category decoding in primary auditory cortex.
12:30 – 12:45   Xindong Song, Johns Hopkins. Discrete patches of cortical pitch processing in common marmosets.
12:45 – 1:00   Ilina Bhaya-Grossman, UC San Francisco. Language familiarity dependent encoding of natural speech in human temporal lobe.

1:00 – 2:30   Lunch and mentoring sessions

2:30 – 2:35   NIDCD Announcements (Amy Poremba)

<u>Young Investigator Spotlight I</u>
2:35 – 3:00   Nai Ding, Zhejiang University. Title TBA.
Kishore Kuchibhotla, Johns Hopkins. Dr. Kuchibhotla has opted for Celine Drieu to give a podium presentation on behalf of their laboratory in the next slide session.

<u>Platform Session II</u>
3:00 – 3:15   Celine Drieu, Johns Hopkins. Rapid emergence of latent knowledge in the sensory cortex drives learning.
3:15 – 3:30   Matheus Macedo-Lima, University of Maryland, College Park. Orbitofrontal cortex shapes auditory cortical and perceptual sensitivity.
3:30 – 3:45   Kaho Magami, University College London. Microsaccades as a window to auditory attention.

<u>Poster Teaser Session II</u>
3:45 – 4:00   Three 3-minute Teasers
- Arthur Lefevre, UC San Diego. Anterior cingulate cortex (ACC) encodes conversations in marmoset monkeys.
- Thomas Harmon, Duke University. Evidence of a vocal motor corollary discharge signal in the mouse auditory cortex.
- Sarah Tune, University of Luebeck. Neural attentional-filtering does not predict individual change in aging adults' listening behavior.

4:00 – 6:00   Poster Session 2 and open beer/wine bar

6:00 – 6:10   Travel Awards and Other Announcements (Maria Chait)

6:10 – 6:45   Business Meeting (Open to all)

<u>Special Lectures</u>
S1. Listening in on Auditory Learning
S2. Neural encoding of the rhythms of speech

<u>Platform Presentations</u>
T1. Cortical PV neurons shape the neural code for loudness perception and are a critical point of failure
    in auditory hypersensitivity disorders
T2. Active listening enhances vocalization category decoding in primary auditory cortex
T3. Discrete patches of cortical pitch processing in the common marmosets
T5. Rapid emergence of latent knowledge in the sensory cortex drives learning
T6. Orbitofrontal cortex shapes auditory cortical and perceptual sensitivity
T7. Microsaccades as a window to auditory attention

<u>Poster Presentation I</u>
A1. The Impact of Emotional States on Sensory Processing and Perception
A2. Elucidation of the input circuitry of the deep mouse auditory cortex. 1
A3. Visual cues modulate auditory responses in the macaque inferior colliculus
A4. Neural correlates of auditory category learning of FM sweeps in the mouse auditory cortex
A5. Behavioral and neuronal signatures of adolescence in the mouse auditory cortex
A6. Delineating Parallel Ascending Pathways onto the Secondary Auditory Cortex
A7. Contextual modulation is a stable feature of the neural code in auditory cortex of awake mice
A8. Neural tracking of linguistic features at different speech rates using a deep neural network
A9. Attention Mobilization as a Modulator of Listening Effort: Evidence from Pupillometry
is necessary for auditory learning
A11. Predicting auditory midbrain responses to natural sounds with interpretable Gabor integrate and
    fire receptive field models
A12. Applying VNS to alter phoneme processing and auditory behavior in a rodent model of ASD
A13. The Impact of Interruptions on Ongoing Context Representation in the Auditory System
A14. Encoding of musical features during naturalistic listening: an intracranial EEG study
A15. Hemodynamic and electrophysiological connectivity of attentional-control brain networks underlie
    individual differences in selective listening behavior
A16. Evidence for parallel processing of temporal and spatial information in the primate auditory cortex
    at single neuron resolution in a behaving macaque monkey.
A17. Contextual modulation in primate ventrolateral prefrontal neurons during audiovisual task-
A18. Arousal-driven modulation of cell-type specific sensory processing in the auditory cortex
A19. Cortical subpopulations perform computations to produce noise invariant representations of
    frequency embedded in noise.
A20. Neuropeptide Y signaling regulates recurrent excitation in the inferior colliculus '
A21. Role of the cholinergic system in early sensorimotor acquisition
A22. EEG as an Indicator for Perceptual Difficulties in Noise?
A23. Evaluating Dynamic Auditory Figure-Ground Processing on Predicting Speech-in-noise Perception
A25. Vasoactive Intestinal Peptide Signaling within Auditory Cortex
A26. Cortical map of auditory space
A27. Temporal integration throughout human auditory cortex is predominantly yoked to absolute time
    and not the duration of speech structures
A28. Voice patches in the marmoset auditory cortex revealed by wide-field calcium imaging
A29. Predictive filtering of primary auditory cortex activity by frontal top-down inputs
A30. Superficial inhibitory neurons in auditory cortex receive monosynaptic inputs from diverse
    subregions of the medial geniculate body
A31. Introducing BOSSA: A Biologically Oriented Sound Segregation Algorithm
A32. Neural Tracking Measures of Speech Intelligibility: Manipulating Intelligibility while Keeping
    Acoustics Unchanged
A33. Noise Schemas Aid Hearing in Noise
A34. Trans-synaptic relationship between vesicular zinc and Shank3 supports dendritic spine structure
    and function
A35. Adolescent maturation of vocalization processing in auditory cortex of freely moving gerbils
A36. Subcortical contributions to auditory perceptual learning

A37. Genetic risk for schizophrenia and experience of hearing impairment both influence auditory brain function in a mouse model of 22q11.2 Deletion Syndrome

A38. Using frequency selectivity to examine category–informative dimension–selective attention

A39. Intensity mismatch asymmetry in tinnitus – in which direction should participants pay attention?

A40. Investigating how neurons invariantly encode pitch derived from two types of acoustic cues

A41. Auditory attention decoding through the classification of event–related potentials to glimpsed and masked events

A42. Dynamic gating of perceptual flexibility by diverse cortical responses

A43. Neural entrainment: Is 40 Hz special in mice?

A44. Automatic Auditory Streaming Restores Missing Temporal Modulations in Echoic Speech

A45. Neural circuitry underlying cortical control of a vocalization–driven maternal behavior

A46. Cortical Responses Time–Locked to Continuous Speech in the High–Gamma Band Depend on Selective Attention

A47. Human–like Attentional Selection Emerges as a Solution to the Cocktail Party Problem

A48. Modeling Audiovisual Interference in Absolute Pitch

A49. Vocalization categorization deficits after temporary threshold shifts in guinea pigs

A50. Top–down control from the auditory cortex differentially modulates sub–divisions of the inferior colliculus

A51. Transcriptional changes within the adult auditory system contribute to lasting experience–dependent neuroplasticity of auditory temporal processing

A52. Visual prism adaptation can change eye–movement related eardrum oscillations (EMREOs)

A53. Functional implications of a patch/matrix–like compartmental organization in the mouse inferior colliculus

A54. The role of temporal coding in real–world hearing: evidence from task optimization

A55. Using chirped speech (Cheech) to uncover the neural, perceptual, and cognitive determinants of speech perception during a dynamic, spatial attention task.

A56. Theta–band Cortical Tracking of the Speech Envelope Shows the Linear Phase Property

A57. Separation of task–relevant information encoding during auditory reversal learning in top–down projections from the mouse posterior parietal cortex

A58. Modality–independent temporal segmentation principles

A59. Stimulus selection of salient stimuli in the sound localization pathway of barn owls

A60. Audiovisual Decision–Making Deficits After Hearing Loss

A61. Divergent inhibitory projections of an auditory brain stem nucleus correlate with different intrinsic firing phenotypes

A62. Phoneme and word prediction in auditory cortex revealed by whole–brain fMRI and ECoG

A63. Activity in mouse motor cortex reflects novel acoustic consequences of action

A64. Measuring and Modeling Real–World Sound Localization

A65. Continual Learning in a Self–Paced, Multi–Task Mouse Playground

A66. Segmenting words from continuous speech in human temporal cortex

A68. Cortical circuit for integration of auditory and olfactory information

A69. Benefits and limits of selective attention to auditory working memory

A70. Uncharted territory: Exploring the auditory part of the human TRN

A71. Selective Attention Modulates Cortical but not Subcortical Responses

A72. Evolutionary Prototype for Auditory Combinatorial Semantics in a Macaque

A73. Using deep neural networks and intracerebral recordings to reveal encoding properties of human auditory cortex

A74. Sensitivity of Inferior Colliculus to Interaural Time and Level Differences in Neonatally Deafened Rats

A75. Behavioral strategies for auditory categorization

A76. Stimulus competition and adaptation to free field stimuli in the barn owl's inferior colliculus

A77. End–to–end automatic speech recognition explains the hierarchical encoding of language in the auditory pathway

A78. Decoding maintenance and replay activity in the human auditory cortical mnemonic system

A79. Differential timing of maturation in the left and right auditory cortices of the mouse

A80. Subtle, rapid, and stereotyped movements of the face provide a sensitive behavioral readout of hearing

A81. Comparing neural tracking of speech and song in infancy and adulthood

A82. Modeling the generative mechanisms underlying the cortical tracking of natural speech

A83. Auditory Learning Affects the Intensity of Parvalbumin–Positive (PV+) Cell Immunostaining and the Expression of Perineuronal Nets in the Auditory Cortex.

A84. Visual Speech Differently Restores Temporal and Spectral Speech Information in the Auditory Cortex

Poster Presentation II

B1. Are pupil size and neural alpha power similarly sensitive to reward prospect under demanding listening conditions?

B2. Altered white matter morphology in age-related hearing loss

B3. A multiscale revision of corticothalamic circuit model in the auditory system

B4. Parvalbumin- and somatostatin-expressing neurons in the inferior colliculus define parallel tectothalamic pathways

B5. Motor-sensory experience reshapes neural manifolds in auditory cortex to reflect acoustic expectations

B6. Signatures of Auditory Attention Across Different Neural Frequency Bands in the Human Auditory Cortex

B7. Mice got rhythm: sound-evoked whisker, nose and pinna movements in the awake mouse and their relationship to auditory cortical activity

B8. Saccade-related eardrum oscillations are altered by surgical denervation of the middle ear muscles

B9. Age-induced modulation in sound-evoked local field potentials in the inferior colliculus of CBA/CaJ mice

B10. The influence of spectrum and modulation cues on the neural representation of vocalizations in natural background sounds

B11. A convolutional neural network model accounts for profound suppression of cortical single-unit responses to natural foreground stimuli by concurrent backgrounds

B13. A Robust and Compact Population Code for Competing Sounds in Auditory Cortex

B14. Neural correlates of residual hearing in the core and belt auditory areas of early-deaf subjects

B15. Code of silence. Encoding Information in neural activity and silence along the auditory pathways

B16. Neural correlates of auditory working memory precision: an intracranial EEG study

B17. Multisensory activity in the auditory cortex of behaving macaques

B18. Longitudinal imaging reveals distinct learning-dependent changes between layer 5 excitatory subtypes

B19. A cortical role for skilled, sound-guided behavior in mice

B20. Revealing abrupt transitions from goal-directed to habitual behavior during audio-motor learning

B21. Brain state predictors of three canonical perceptual listening errors

B22. Inter-areal cortical circuits underlying the extraction of complex acoustic features

B23. Assessing Auditory Neural Responses in the Rett Syndrome Rat Model: A Comparative Analysis of Pre- and Post-Regression Responses

B24. Mechanisms underlying frequency sweep selectivity in inferior colliculus neurons

B25. Anterior cingulate cortex (ACC) encodes conversations in marmoset monkeys

B26. Decoding Attended Spatial Location during Complex Scene Analysis with fNIRS

B27. Cellular and widefield responses to salient vocalizations across primary and higher order fields of auditory cortex

B28. Neural attentional-filtering does not predict individual change in aging adults' listening behavior

B29. Evidence of a vocal motor corollary discharge signal in the mouse auditory cortex

B30. Waveform similarities and differences of eye-movement-related-eardrum-oscillations (EMREOs) in subjects with normal hearing

B31. Synaptic zinc potentiates AMPA receptor function in mouse auditory cortex

B32. Auditory Cortex is Necessary for Learning and Expressing a Socially Rewarded Auditory Behavior

B33. Prediction and Error In the Mouse Auditory Cortex

B34. Effects of Vesicular Zinc Signaling on Parvalbumin Interneurons in the Mouse Auditory Cortex

B35. Cell-type specific enhancement of deviance detection by synaptic zinc in mouse auditory cortex

B36. Adaptive locomotor behavior on natural substrata via acoustic self-monitoring in mice

B37. Noncanonical auditory cortical plasticity for behaviorally synonymous social sounds

B38. Top-down attention affects rhythmic auditory entrainment

B39. Motor-related predictions in mouse auditory cortex are context-dependent

B40. Psilocybin acutely impairs stimulus-specific adaptation in murine auditory cortex.

B41. Contributions and synaptic basis of diverse cortical neuron responses to task performance

B42. Population coding of time-varying sounds in the non-lemniscal Inferior Colliculus

B43. Acoustic correlates of the syllabic rhythm of speech: Modulation spectrum or local features of the temporal envelope

B44. Signaling of sequence violations in the mouse auditory cortex without adaptation

B45. Cortical speech envelope tracking reflects speech rate invariant evoked responses to acoustic edges, not oscillatory entrainment.

B46. The dorsal cortex of the mouse inferior colliculus processes the Spectrotemporal features of sound through novel cellular organizations that are dynamically modulated by sound intensity

B47. Experience-dependent developmental diversification of intrinsic networks in the central nucleus of the inferior colliculus

B48. Processing of spectrally degraded speech in the human cortex: An intracranial electrophysiology study

B49. Signatures of Eye-Movement Related Eardrum Oscillations Detected in the Inferior Colliculus

B50. Deep sound source localization for the study of social vocal interactions in rodents

B51. Synthetic Faces Improve the Intelligibility of Noisy Speech, But Not As Much As Real Faces

B52. Multivariate Neural Measures of Speech Intelligibility in fMRI and iEEG

B53. The role of sensory experience in developing the auditory topographic map of space and visuo-auditory integration in the mouse superior colliculus

B54. Active sound-seeking in freely moving mice before and after hearing loss

B55. Revealing hidden sensorimotor memories in mice with AD-relevant pathology

B56. A candidate mechanism for benefits in signal-in-noise detection in auditory cortex revealed using auditory associative learning in rats

B57. Understanding Cochlear Implants Using Machine Learning

B58. How underlying statistical structures modulate the neural response to rapid auditory sequences

B59. Changes in Cortical Directional Connectivity during Difficult Listening in Younger and Older Adults

B60. Performance errors during learning reflect strategic exploration

B61. Cortical-subcortical dynamics in the auditory system during learning and overtraining

B62. Tracking engagement in real-world human communication from wearable sensors

B64. Evidence of auditory learning in the human striatum and alterations in schizophrenia

B65. Inferior colliculus neurons are sensitive to sub-millisecond variations in sound onset duration

B66. Reward history impacts performance on multiple time scales in an sustained attention-value task

B67. Novel two-choice auditory task for reversal learning in mice

B68. Neural correlates of statistically-driven auditory selective attention

B69. Representational analysis of human auditory attention in fMRI

B70. Layer dependent fMRI and biophysical modeling reveal the distinct roles of cortical laminae in processing unpredictable and mispredicted sounds

B71. Sound discrimination learning induces spatially distinct auditory cortical transcriptional changes identified by cortical layer and cell type

B72. Hierarchical neural networks for degraded speech

B73. Repetition plasticity in primary auditory cortex occurs across long timescales for randomized sounds

B74. Intracerebral electrophysiology of vocal acoustic features within human temporal voice areas

B75. The influence of sound statistics on auditory decisions in ferrets

B76. Replicating fast auditory intracranial responses using fMRI and large neural network models

B77. A novel auditory cocaine conditioning paradigm reveals multiple forms of drug-induced plasticity in early auditory processing

B78. Using 3D Whole-brain Mesoscopic Electrophysiology to Dissect the Many Sources of the Frequency-Following Response in the Monkey

B79. Spectrotemporal receptive fields predict neural response to natural sound stimuli in the primary auditory cortex

B80. MarmoPose: A Deep Learning-Based System for Multi-Marmoset 3D Real-Time Pose Tracking

B81. Statistical learning across task-irrelevant acoustic dimensions

B82. The role of the harmonic sieve in pitch perception of complex sound

B83. The Role of GABA Co-release in the Development of Glycinergic Connections in the Mouse Lateral Superior Olive

B84. Allocentric representations of auditory space in marmoset hippocampus