

KATE CHRISTISON-LAGAY

 kate.christison-lagay@yale.edu

 Yale University School of Medicine
New Haven, Connecticut

EDUCATION

University of Pennsylvania , Philadelphia, Pennsylvania Ph.D. in Neuroscience	2008-2015
University of Virginia , Charlottesville, Virginia Bachelor of Arts, awarded with Highest Distinction Majors: Cognitive Science, Distinguished Major Program, <i>Concentrations in Neuroscience and Cognitive Psychology</i> Comparative Literature, <i>Concentrations in English and German Literature</i>	2004-2008
IES Abroad , Freiburg, Germany	Fall 2006

RESEARCH EXPERIENCE

POSTDOCTORAL RESEARCH:

Postdoctoral Associate/Fellow January 2017-present

Yale University

Supervisor: Hal Blumenfeld, MD, Ph.D.

Researching the events that lead to the conscious perception of sensory stimuli. Developing experimental paradigms to test perception across sensory modalities, using human intracranial recordings, fMRI and EEG. Focusing on auditory perception. Developed and co-developed new perceptual tasks to study auditory and tactile perception.

Postdoctoral Researcher 2015-2016

University of Pennsylvania

Supervisor: Yale Cohen, Ph.D.

Analyzed neurophysiological and behavioral data set exploring the neural correlates of auditory figure-ground segregation (i.e., the 'cocktail party problem').

DOCTORAL RESEARCH:

Doctoral Thesis:

Advisor: Yale Cohen, Ph.D.

2009-2015

Thesis: *The neural and behavioral correlates of auditory streaming*

Trained rhesus macaques and recorded from single neurons in auditory cortex to study the behavioral and neural correlates of auditory stream formation and conspecific vocalization categorization. Demonstrated that nonhuman primates form auditory streams (i.e., group or segregate auditory stimuli) in a manner consistent with humans, validating them as a model of human auditory streaming. Wrote all customized code to: analyze neural data (spiking activity, multiunit activity, LFP, and field-spike coherence), analyze behavioral performance, and generate auditory stimuli.

Ph.D. Laboratory Rotations:

Researched spontaneous activity in olfactory receptor neurons with Minghong Ma, Ph.D. Spring 2009

Researched decision-making in a perceptual learning task with Joshua Gold, Ph.D. Fall 2008

UNDERGRADUATE RESEARCH:

Undergraduate Researcher/Distinguished Major Research 2007-2008

University of Virginia, Department of Biology

Mentor: DeForest Mellon, Ph.D.

Thesis: *The hydrodynamic mechanoreceptive response characteristics of the standing feathered hair of the crayfish antennule*

Conducted neurophysiological recordings from the crayfish antennule. Characterized the neural activity associated with a sensory hair of the crayfish in a pathway that triggers a tail-flip escape response. Described a novel mechanism (position-dependent axonal conduction velocity) used by the sensory hair that leads to coincident detection that triggers a startle reflex. Developed code to analyze neural activity.

Undergraduate Researcher and NSF-REU Intern

2004 –2008

University of Connecticut, Department of Ecology and Evolutionary Biology

Mentor: Janine Caira, Ph.D.

Researched taxonomy of new genera and species of shark and ray tapeworms, and assisted with databasing historical documents at the British Museum of Natural History on the Global Cestode Database, a National Science Foundation's Partnerships for Enhancing Expertise in Taxonomy initiative.

PUBLICATIONS AND PRESENTATIONS

RESEARCH ARTICLES

Christison-Lagay KL, Cohen YE. (2018). The contribution of primary auditory cortex to auditory categorization in behaving monkeys. *Frontiers in Neuroscience: auditory cognition*.

Christison-Lagay KL, Bennur S, Cohen YE. (2017). Contribution of spiking activity in the primary auditory cortex to detection in noise. *J. Neurophysiology* 118(6): 3118-3131.

Christison-Lagay KL, Bennur S, Blackwell J, Lee JH, Schoeder T, Cohen YE. (2014). Natural variability in species-specific vocalizations constrains behavioral and neural activity. *Hearing Research* 312: 128-142.

Christison-Lagay KL, Cohen YE. (2014). Behavioral correlates of auditory streaming in rhesus macaques. *Hearing Research* 309: 17-25.

Tsunada J, Baker AE, **Christison-Lagay KL**, Davis SJ, Cohen YE. (2011). Modulation of cross-frequency coupling by novel and repeated stimuli in the primate ventrolateral prefrontal cortex. *Frontiers in Psychology* 2.

Mellon D, **Christison-Lagay K**. (2008). A mechanism for neuronal coincidence revealed in the crayfish antennule. *Proc. Nat. Acad. Sci.* 105: 14626-14631.

BOOK CHAPTERS AND REVIEWS

Cohen YE, Bennur S, **Christison-Lagay K**, Gifford AM, Tsunada J. (2016). Functional organization of the ventral auditory pathway. *Advances in experimental medicine and biology* 894: 381-388.

Johnston JM, Cohen YE, Shirley H, Tsunada J, Bennur S, **Christison-Lagay K**, Veeder CL. (2016). Recent refinements to cranial implants for rhesus macaques (*Macaca mulatta*). *Lab animal* 45(5): 180-186.

Christison-Lagay KL, Gifford AM, Cohen YE. (2014). Neural correlates of auditory scene analysis and perception. *International Journal of Psychophysiology* 95(2): 238-245.

Christison-Lagay KL, Cohen YE. (2013). The neural basis of vocalization perception. In: *Animal Communication Theory: Information and Influence* (Stegmann UE, ed.), Cambridge University Press.

TALKS AND PANEL DISCUSSIONS

Association for the Scientific Study of Consciousness 24, Tel Aviv, Israel *postponed to 2021*
“The neural timeline of consciousness: detect, pulse, switch and wave.” Selected tutorial. Tutorial organizer and speaker, with co-speakers Sharif Kronemer and Drs. Hal Blumenfeld and Michael Pitts.

Monday Afternoon Coffee Seminars in Epilepsy Research, Yale University February 2020
“Neural correlates of auditory conscious perception as measured through intracranial EEG.” Invited speaker.

- Society for Neuroscience 2018**, San Diego, CA November 2018
 “Bringing a student-run outreach program to your institution.” Invited panelist with co-speakers Drs. Joshua Gold, Kelly Jordan-Sciutto, Chris Pierce, Samantha White, and Jesse Isaacman-Beck.
- 6th Sesquiennial Yale Comprehensive Epilepsy Center Research Retreat** October 2018
 “Intracranial EEG provides a direct window to investigate auditory conscious perception.”
- Northwell-North Shore University Hospital**, Lab. of Human Brain Mapping November 2017
 “Mechanisms of conscious auditory perception.”
- University of Texas-Austin**, Sound Brain Lab February 2016
 “Neural and behavioral correlates of auditory streaming.” Invited speaker.
- Boston University**, Hearing Research Center Seminar September 2014
 “Neural and behavioral correlates of audition.” Invited speaker.
- University of Pennsylvania**, Systems and Integrative Biology Retreat June 2014
 “Neural and behavioral correlates of auditory streaming in the rhesus macaque.”
- American Society of Parasitologists**, *N. American Parasitology Congress*, Merida, Mexico June 2007
 “Homoplasy in bothridial pouches and its implications for the identity of the Tetraphyllidean genus *Carpobothrium*.”

POSTERS AND PRESENTATIONS

*Denotes presenter

- GRC Thalamocortical Interactions**, Ventura, CA February 2020
 Gusso M, **Christison-Lagay KL**, Zuckerman D, Chandrasekaran G, Gummadavelli A, Kronemer SI, Nohama P, Gerrard JL, Blumenfeld H. (2020). Investigating the neural signatures of tactile conscious perception using scalp EEG, pupillometry and single-unit recordings in subcortical structures.
- Society for Neuroscience 2018**, San Diego, CA November 2018
Christison-Lagay KL*, Micek C, Kronemer SI, Forman S, Aksen M, Abdel-Aty A, van Duyne F, Boly M, Juan E, Bugnon T, Yeagle E, Herrero J, Bickel S, Mehta A, Hirsh LJ, Gerrard JL, Spencer DD, Blumenfeld H. (2018). Investigating auditory conscious perception with a threshold task and intracranial EEG.
- Society for Neuroscience 2018**, San Diego, CA November 2018
 Micek C, **Christison-Lagay KL**, Williams M, Kronemer SI, Herman WX, Li J, Hirsh LJ, Gerrard JL, Spencer DD, Blumenfeld H. (2018). Relationship between stimulus opacity and intracranial cortical broadband gamma power in a conscious visual perception task.
- Society for Neuroscience 2018**, San Diego, CA November 2018
 Forman S, **Christison-Lagay KL**, Micek C, Kronemer SI, Aksen M, Chun MM, Blumenfeld H. (2018). Potential novel mechanism for the attentional blink in a conscious perception task.
- Society for Neuroscience 2018**, San Diego, CA November 2018
 Kronemer SI, Aksen M, Kwon H, Micek C, **Christison-Lagay KL**, Forman S, Prince J, Ding J, Ryu JH, Khosla M, Saberski E, Aydin U, Grova C, Wu J, Crowley M, Constable RT, Blumenfeld H. (2018). Early and late electrophysiological changes to visual conscious perception.
- Society for Neuroscience 2017**, Washington, DC November 2017
 Ding Z, Prince JS, Forman S, Morgan O, Zhao CW, Wafa S, Chen Y, Xiao W, Kronemer SI, **Christison-Lagay KL**, Steinerberger S, Mcginley M, McCormick D, Blumenfeld H. (2017). Machine learning to predict conscious visual perception using pupillary dynamics. Soc Neurosci Abstr, Program No. 804.13.
- Society for Neuroscience 2016**, San Diego, CA November 2016

Christison-Lagay KL*, Bennur SB, Cohen YE. (2016). Contribution of population activity in the auditory cortex to the cocktail-party problem. Soc Neurosci Abstr, Program No. 431.19.

Society for Neuroscience 2016, San Diego, CA November 2016
Reiner D, **Christison-Lagay KL**, Folweiler K, Healey M, Kahn JB, Murphy P, Parthasarathi T, Perron IJ, Taylor MM. (2016). Graduate-led outreach initiatives: improving neuroscience literacy in children and adults. Soc Neurosci Abstr, Program No. 26.13SU.

Society for Neuroscience 2015, Chicago, IL October 2015
Christison-Lagay KL*, Cohen YE. (2015). Contribution of primary auditory cortex to auditory-streaming behavior. Soc Neurosci Abstr, Program No. 508.15.

Society for Neuroscience 2014, Washington, DC November 2014
Christison-Lagay KL*, Cohen YE. (2014). Neural and behavioral correlates of auditory scene analysis. Soc Neurosci Abstr, Program No. 815.10.

Society for Neuroscience 2014, Washington, DC November 2014
Taylor M, **Christison-Lagay KL***, Perron IJ, Reiner DJ, Gold J. (2014). Graduate-led outreach initiatives: improving neuroscience literacy in children and adults. Soc Neurosci Abstr, Program No. 26.10SU.

Society for Neuroscience 2013, San Diego, CA November 2013
Christison-Lagay KL*, Cohen YE. (2013). Auditory streaming in rhesus macaques. Soc Neurosci Abstr, Program No. 636.02.

Advances and Perspectives in Auditory Neurophysiology, New Orleans, LA October 2012
Christison-Lagay KL*, Cohen YE (2012) Behavioral correlates of auditory-object processing in rhesus macaques.

Society for Neuroscience 2011, Washington, DC November 2011
Christison-Lagay KL*, Bennur S, Cohen YE. (2011). Neural correlates of acoustic variability in conspecific vocalizations. Soc Neurosci Abstr, Program No. 173.02.

Society for Neuroscience 2010, San Diego, CA November 2010
Lee J, **Christison-Lagay KL***, Cohen YE. (2010). Coding of vocalization variance in the auditory-cortex lateral belt. Soc Neurosci Abstr, Program No. 275.11.

Society for Neuroscience 2010, San Diego, CA November 2010
Tsunada J, Baker AE, **Christison-Lagay KL**, Cohen YE. (2010). Band-specific modulations of neural oscillations during habituation to vocalizations in the primate ventrolateral prefrontal cortex. Soc Neurosci Abstr, Program No. 275.2.

International Congress of Parasitology XI, Glasgow, Scotland August 2006
Christison-Lagay KL*, Cairn JN. (2006). Resolution of the Identity of *Carpobothrium* (Tetraphyllidea: Phyllobothriidae) from Elasmobranchs of the Indopacific.

RESEARCH SUPPORT

T32 (5T32-GM086297-09) Institutional Training Grant, 2018
Systems & Integrative Biology (SIB) Training Grant, NIH, September 2008-2010
University of Pennsylvania, School of Medicine: Neuroscience Graduate Group
Research Experience for Undergraduates, National Science Foundation (Summers 2005, 2006, 2007)

HONORS AND MEMBERSHIPS

GRADUATE AND POSTDOCTORAL:

Advances and Perspectives in Auditory Neuroscience 2015 Travel Award
Award for Persistent Involvement in Community and Leadership, 2015 (*peer-selected award given to the graduating student who has demonstrated the most consistent and dedicated service to the graduate group and*

community)
Society for Neuroscience Member (2009-present)

UNDERGRADUATE:

Phi Beta Kappa
Robert C. Byrd Honors Scholarship
Dean's List (*all semesters in attendance*)
National Society of Collegiate Scholars
Golden Key International Honor Society
German Department, Book Prize

TEACHING, SERVICE AND OTHER ACTIVITIES

GENERAL:

Girls who Code mentor (Winter 2019-present)

YALE UNIVERSITY:

Women in Science at Yale mentoring (Fall 2017-present)
Mentored multiple undergraduate and postgraduate researchers

UNIVERSITY OF PENNSYLVANIA:

Certificate in College and University Teaching
BBB251: Cellular Neuroscience, teaching assistant (Fall 2010, Fall 2013)
Penn Neuroscience Graduate Group Student Retreat Committee (Spring 2009-Fall 2014)
NGG Orientation talk, "Grad school is hard: advice from your peers" (September 2011)
Upward Bound, Neuroscience Course Instructor (Summers 2009-2014)
Neuroscience Graduate-Led Initiatives and Activities Committee
Public Relations Co-Chair 2012-2013, Co-Director 2013-2014, Emeritus advisor 2014-2015
Workshop on Equality in Science Planning Committee Co-Chair/Co-Founder 2013-2014
Elementary School Neuroscience Outreach volunteer 2014-2015
Brains in Briefs (scientific publications blog) Developer/Chair (2014) and committee (2015)
Planning committee for Award for Persistent Involvement in Community and Leadership 2013-2014
Committee for Award for Persistent Involvement in Community and Leadership, Member 2014
Philadelphia Science Carnival, volunteer 2015
Graphic design for Penn Neuroscience

UNIVERSITY OF VIRGINIA:

National Society of Collegiate Scholars executive committee
Brown Residential College Governance Board