JUSTIN D. YAO, Ph.D.

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Scholarly Profile

As a sensory neuroscientist interested in systems, behavioral, and cognitive neuroscience, I study how the brain solves complex problems for auditory function and perceptual decision-making. My research program has two objectives: first, to understand the neural circuits that integrate sensory information for guiding perceptual choices; and second, to identify the underlying neural basis that links sensory processing impairments with cognitive dysfunction. I utilize psychophysics, neural circuit manipulations, electrophysiological, and computational approaches to meet these objectives.

Personal Information

Place of birth: Manila, Philippines
Citizenship: USA

Career History

Assistant Professor, Rutgers University Department of Otolaryngology, Brain Health Institute	2022 – Present
Postdoctoral Fellow, New York University Center for Neural Science	2016 – 2022

Education and Research Experience

Ph.D. Research, University of California at Irvine Department of Neurobiology and Behavior	2010 – 2016
Undergraduate Honors Research, University of California at Berkeley Psychology Department	2008 – 2010
B.A., University of California at Berkeley Psychology Department	2008 – 2010
A.A., Psychology, Pasadena City College, CA	2006 – 2008

Research Support

K99/R00 Pathway to Independence Award, NIDCD	2020 – Present
NRSA Postdoctoral (F32) Individual Research Fellowship, NIDCD	2017 – 2020
Postdoctoral Institutional Training Program (T32), NIMH	2016 – 2017
NRSA Predoctoral (F31-Diversity) Individual Research Fellowship, NIDCD	2013 – 2016
Predoctoral Interdisciplinary Training Program (T32) in Hearing Research, NIDCD	2012 – 2013

Honors and Recognition

Advances and Perspectives in Auditory Neurophysiology (APAN), Travel Award	2021
Advances and Perspectives in Auditory Neurophysiology (APAN), Travel Award	2017
University of California, Irvine School of Biological Sciences, Travel Award	2014
Most Outstanding Graduate Student Award, Center for Hearing Research, UC Irvine	2014
Honors in Psychology, University of California, Berkeley	2010

Warner Brown Memorial Prize, University of California, Berkeley	2010
Alpha Gamma Sigma Scholar, Pasadena City College, Pasadena, CA	2008
Extraordinary in Social Sciences Award, Pasadena City College, Pasadena, CA	2008

Publications and Presentations

Publications

Yao JD, Zemlianova KO, Hocker DL, Savin C, Constantinople CM, Chung SY, Sanes DH. (2022). Transformation of acoustic information to sensory decision variables in the parietal cortex. *bioRxiv* doi: 10.1101/2022.07.05.498869

Anbuhl, KL, **Yao JD**, Hotz RA, Mowery TM, Sanes DH. (2022). Auditory processing remains sensitive to environmental experience during adolescence, *Nature Communications* 13(1):2872. doi: 10.1038/s41467-022-30455-9

Yao JD, Sanes DH. (2021). Tempor al encoding is required for categorization, but not discrimination, *Cerebral Cortex* 31(6):2886-2897, doi: 10.1093/cercor/bhaa396

Yao JD, Gimoto J, Constantinople CM, Sanes DH. (2020). Parietal cortex is required for the integration of acoustic evidence, *Current Biology* 30(17):3293-3303.e4, doi:10.1016/j.cub.2020.06.017

Yao JD, Sanes DH. (2018) Developmental deprivation-induced perceptual and cortical processing deficits in awake-behaving animals. *Elife,* doi: 10.7554/eLife.33891

Yao JD, Bremen P, Middlebrooks JC. (2015). Emergence of Spatial Stream Segregation in the Ascending Auditory System. *Journal of Neuroscience* 35(49):16199–16212.

Yao JD, Bremen P, Middlebrooks JC. (2015). Transformation of Spatial Sensitivity along the Ascending Auditory Pathway. *Journal of Neurophysiology* 113(9):3098−111.

Yao JD, Bremen P, Middlebrooks JC. (2013). Rat Primary Auditory Cortex is Exclusively Tuned to the Contralateral Hemifield. *Journal of Neurophysiology* 110(9):2140−51.

van der Helm E, **Yao J**, Dutt S, Rao V, Saletin JM & Walker MP. (2011). REM Sleep Depotentiates Amygdala Activity to Previous Emotional Experiences. *Current Biology,* 21(23):1-4.

Published Abstracts/Conference Presentations

Yao JD, Zemlianova KO, Sanes DH. (2022) Transformation of Acoustic Information to Sensory Decisions in Parietal Cortex. *ARO 2022*
Yao JD, Zemlianova KO, Sanes DH. (2021) Transformation of Acoustic Information to Sensory Decisions in Parietal Cortex. *SfN 2021*
Yao JD, Zemlianova KO, Sanes DH. (2021) Transformation of Acoustic Information to Sensory Decisions in Parietal Cortex. *APAN 2021*
Yao JD, Sanes DH. (2021) Temporal Encoding is Required for Categorization but not Discrimination. *ARO 2021*
Kelsey Anbuhl, **Yao JD**, Sanes DH. (2021) Transient developmental hearing loss after the critical period impairs cortical encoding. *ARO 2021*
Yao JD, Sanes DH. (2020) Temporal Encoding is Required for Categorization but not Discrimination. *APAN 2020*
Kelsey Anbuhl, Todd Mowery, **Yao JD**, Sanes DH. (2020) Prolonged transient hearing loss after the critical period impairs cortical encoding. *APAN 2020*
Yao JD, Gimoto J, Sanes DH. (2020) Representation of perceptual integration time downstream of auditory cortex. *ARO* 2020, San Jose, *CA*.
Yao JD, Sanes DH. (2019) Representation of behavioral integration time downstream of auditory cortex. *SfN 2019, Chicago, IL.*
Yao JD, Sanes DH. (2019) Representation of behavioral integration time downstream of auditory cortex. *APAN 2019, Chicago, IL.*
Yao JD, Sanes DH. (2019) Effect of Developmental Hearing Loss on Behaviorally Gated Responses in Auditory Cortex. *ARO 2019, Baltimore, MD.*

Yao JD, Sanes DH. (2018) Effect of developmental hearing loss on behaviorally-gated responses in auditory cortex. *Gordon Research Seminar & Conference "Auditory System"; Smithfield, RI.*
Yao JD, Sanes DH. (2018) Population coding of high frequency amplitude modulations in auditory cortex. *ARO 2018, San Diego, CA.*
Yao JD, Sanes DH. (2017) Developmental hearing loss impairs fast temporal processing. *SfN 2017, Washington, DC.*
Yao JD, Sanes DH. (2017) Developmental hearing loss impairs fast temporal processing. *APAN 2017, Washington, DC.*
Yao JD, Sanes DH. (2017) Rate coding of high frequency amplitude modulations during behavior. *ARO 2017, Baltimore, MD.*
Yao JD, Sanes DH. (2016) Rate coding of high frequency amplitude modulations during behavior. *APAN 2016, San Diego, CA.*
Yao JD, Sanes DH. (2016) Rate coding of high frequency amplitude modulations during behavior. *Gordon Research Seminar & Conference "Auditory System"; Lewiston, ME.*
Yao JD, Bremen P, Middlebrooks JC. (2016) Emergence of Spatial Stream Segregation in the Ascending Auditory Pathway. *39th Annual Association for Research in Otolaryngology MidWinter Meeting, Baltimore, MD.*
Javier L, **Yao JD**, Middlebrooks JC. (2016) Monkey Business in the Cat Auditory Cortex. *39th Annual Association for Research in Otolaryngology MidWinter Meeting, Baltimore, MD.*
Yao JD, Bremen P, Middlebrooks JC. (2015) Emergence of Spatial Stream Segregation Along the Ascending Auditory System. *SoCal Hearing Conference, UC San Diego, San Diego, CA*
Yao JD, Bremen P, Middlebrooks JC. (2015) Spatial Stream Segregation by Neurons Along the Ascending Auditory System. *38th Annual Association for Research in Otolaryngology MidWinter Meeting, Baltimore, MD.*
Yao JD, Bremen P, Middlebrooks JC. (2014) Sharpening of Spatial Tuning Along the Ascending Auditory System. *SoCal Hearing Conference, Irvine, CA*
Yao JD, Bremen P, Middlebrooks JC. (2014) Sharpening of Spatial Tuning Along the Ascending Auditory System. *Gordon Research Seminar & Conference "Auditory System"; Lewiston, ME.*
Yao JD, Bremen P, Middlebrooks JC. (2014) Spatial and frequency sensitivity in the subdivisions of the medial geniculate body. *37th Annual Association for Research in Otolaryngology MidWinter Meeting, San Diego, CA.*
Yao JD, Bremen P, Middlebrooks JC. (2013) Characterization of Spatial Sensitivity within Subdivisions of the Medial Geniculate Body: Implications for Spatial Stream Segregation in Auditory Cortex. *SoCal Hearing Conference, Los Angeles, CA*
Yao JD, Bremen P, Middlebrooks JC. (2013) Rat cortical units display sharp hemifield tuning. *36th Annual Association for Research in Otolaryngology MidWinter Meeting, Baltimore, MD.*
van der Helm E, **Yao J,** Rao V, Dutt S, Walker MP. (2011) "Overnight therapy? Sleep de-potentiates emotional brain reactivity." *Cognitive Neuroscience Society, San Francisco, CA*

Invited Presentations

Western University; London, Ontario, Canada, 27th January 2022

Emory University; Atlanta, GA, 20th January 2022

Simons Collaboration on the Global Brain, Simons Foundation; New York, NY, 14th December 2021

Acoustical Society of America, 181st Meeting; Seattle, WA, 1st December 2021

Boston College; Newton, MA, 22nd November 2021

Rutgers Brain Health Institute, Rutgers University; Piscataway, NJ, 29th October 2021

Center for Integrative Brain Research, Seattle Children's Research Institute, Seattle, WA, 12th October 2021

Electronic Auditory Research Seminar Series, https://www.crowdcast.io/e/ears/9, 11th May 2021

University of Illinois at Chicago; Chicago, IL, 25th February 2021

Purdue University; West Lafayette, IN, 4th February 2021

University of Washington; Seattle, WA, 13th January 2021

Rutgers University; Piscataway, NJ, 17th November 2020

University of Maryland; College Park, MD, 16th November 2020

Feinstein Institutes for Medical Research; Manhassett, NY, 20th October 2020

The SoCal Hearing Conference; University of California at San Diego, San Diego, CA, 29th August 2015
The Gordon Research Seminar & Conference "Auditory System"; Lewiston, ME, 13th July 2014

Professional Service

Peer Review Service

Ad-hoc reviewer: *Nature Neuroscience, Nature Communications, Neuron, Current Biology, Cerebral Cortex, European Journal of Neuroscience, Journal of Neurophysiology, Proceedings of The Royal Society B, Plos One, Hearing Research*

Professional Membership

Acoustical Society of America	2021 – Present
Society for Neuroscience	2013 – Present
Association for Research in Otolaryngology	2011 – Present

Professional Development & Committee Service

Association for Research in Otolaryngology Steering Committee, Mentorship Program	2021 – 2022
Neuroscience Institute Postdoc Committee, New York University, Senior Advisor	2019 – 2022

Outreach

Association of Filipino Scientists in America	2020 – Present
Regional Intel Science and Engineer Fair, Irvine, CA	2013 – 2014

Teaching Experience

Development & Dysfunction of the Nervous System, Teaching Assistant, New York University	2018
Hearing and the Brain, Teaching Assistant, University of California at Irvine	2014
Neurobiology Laboratory Course, Teaching Assistant, University of California at Irvine	2012

Supervision and Mentorship

Jianina Suazo, Undergraduate researcher, New York University	2021 – 2022
Vivian Lee, Undergraduate researcher, New York University	2021 – 2022
Janu Tatachar, Undergraduate researcher, New York University	2020 – 2021
Justin Gimoto, Undergraduate researcher, New York University	2018 – 2020
Juliana Rupolo, Undergraduate researcher, New York University	2018 – 2020
Susan Chow, Undergraduate researcher, New York University	2017 – 2018
Saurab Faruque, Undergraduate researcher, New York University	2016 – 2017