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EDUCATION:

- 1992 B.S. Biology. University of Illinois at Urbana-Champaign, IL (UIUC)
2000 Ph.D. Molecular and Integrative Physiology. UIUC
“Information processing in the auditory thalamus of *Myotis lucifugus*: Implications for temporal pattern recognition.” Advisor: Albert S. Feng, Ph.D.
2002 (Honors) M.D. University of Illinois, External rotations: Medicine (Ramon E. Betances Hospital, Mayaguez, Puerto Rico), Neurology (Mayo Clinic, Rochester, Mn.)

POSTDOCTORAL TRAINING:

- 2002-03 Internship in Internal Medicine,
Massachusetts General Hospital/Harvard Medical School.
2003-06 Residency in Neurology,
Massachusetts General Hospital/Brigham and Women’s Hospital,
Harvard Medical School.
2007 MGH/MIT/HMS Athinoula A. Martinos Center for Biomedical Imaging
Visiting Fellowship Program in fMRI
2006-08 Post-doctoral research, Laboratory of Dr. Murray Sherman
Research Fellow, Cognitive and Behavioral Neurology, University of Chicago.

POSITIONS AND EMPLOYMENT:

- 2002-03 Clinical Fellow in Medicine, Harvard Medical School, Boston, MA
2003-06 Clinical Fellow in Neurology, Harvard Medical School, Boston, MA
2006-08 Instructor, Department of Neurology, University of Chicago, Chicago, IL
2008-10 Associate Medical Director, Neuroscience Development, Abbott Laboratories
2010-17 Assistant Professor, Dept of Molecular and Integrative Physiology, UIUC
2010- Staff Neurologist, Cognitive and Behavioral Neurology
Carle Hospital and Carle Neuroscience Institute, Urbana, Illinois
2010- Full-time faculty member, Beckman Institute for Advanced Science and
Technology, University of Illinois, Urbana-Champaign
2017- Associate Professor and Benjamin R. and Elinor W. Bullock and Edwin E. and Jeanne
Bullock Goldberg Professorial Scholar, Dept of Molecular and Integrative Physiology,
Neuroscience, Dept of Biomedical and Translational Sciences, UIUC
2022- Courtesy appointment, Speech and Hearing Science, UIUC

LICENSE AND CERTIFICATION:

- 2003-2007 Massachusetts Full Medical License Registration
2006- Illinois Full Medical License Registration
2008- Diplomat, American Board of Psychiatry and Neurology, Certificate #54519,
Maintenance of Certification 2018

HONORS AND AWARDS:

- 1991 Howard Hughes Undergraduate Research Award
1993 Walter Rice Craig Fellow, University of Illinois
1999 Outstanding Thesis Award, Dept of Molecular and Integrative Physiology, UIUC
1999 Dr. P.S. and Kalpagam Ramachandran Research Award
2001 Ross Award for Excellence in Pediatrics
2002 Alpha Omega Alpha, Medical Honor Society
2006 Excellence in Teaching, Harvard Medical School
2011 American Neurological Assn, Invited Symposium Speaker on “Brain and Language.”
2012 Guest editor, *Brain and Language*
2013 Keynote Speaker, Molecular and Cellular Biology Commencement Ceremonies, UIUC
2015 Golden Apple Teaching Award, University of Illinois College of Medicine
2016 Advances in Medicine Award, Carle Hospital, Urbana, IL.

2017 Helen Corley Petit Scholar, UIUC
 2017 Benjamin R. and Elinor W. Bullock and Edwin E. and Jeanne Bullock
 Goldberg Professorial Scholar
 2017 Arnold O. Beckman Research Award, UIUC
 2012-19,'21-22 Excellence in Teaching Recognition, UIUC
 2019 Presidential Early Career Award for Scientists and Engineers (PECASE)
 2023 LAS Dean's Distinguished Professorial Scholar

TEACHING:

1992-2000: Graduate Teaching Assistant: University of Illinois, Urbana-Champaign:
 Medical Neuroscience, Introduction to Human Physiology,
 Cellular and Molecular Physiology, Systems and Integrative Physiology,
 Ecology and Organismic Biology and General Chemistry.

2005: St. Mary of Nazareth Hospital, Chicago, IL. Family practice residency educational lecture,
 "The neurologic exam."

2007: University of Chicago, Lecture for neurology residents,
 "The thalamus."

2007-2011: University of Chicago undergraduate course: Workings of the Human Brain,
 "Hearing, language and music."

2008: University of Chicago, graduate course: Neurobiology of Disease,
 "Language and aphasia."

2008: University of Chicago, Lecture for neurology residents
 "Aphasia prognosis."

2008: Rush University, Department of Communication Disorders and Sciences, graduate course:
Auditory Neuroscience,: "The auditory thalamus."

2009: University of Chicago, Chicago Academic Medicine Program,
 "The pathophysiology and treatment of Alzheimer's Disease."

2010: University of Chicago, graduate course: Neurotheology: Brain, Mind and
 Religion. "Attention and transcendental meditation."

2010: University of Chicago, graduate course: Human Memory.
 "Pharmacological enhancement of human memory?"

2011: Lecture to Internal Medicine Residency Program, University of Illinois
 "Non-Alzheimer Dementia"

2011: Lecture to Geriatric Fellowship Program, Carle Hospital
 "Update on Alzheimer Disease"

2013: "Ethics in Dementia Care," Carle Hospital Seminar Series.

2014: "Dementia overview: Diagnosis and management," Carle Hospital Seminar Series.

2012-2014: Course Director and Primary Lecturer, UIUC College of Medicine M1
 Step 1 USMLE Review for Medical Neuroscience, UIUC College of Medicine.

2016: "Evaluation of memory loss," Carle primary care provider lecture, Mattoon, IL.

2004-2019: Falcon/Becker USMLE Reviews Lecturer:
 Step 1: Physiology, Biostatistics, Pharmacology, Neuroscience, Behavioral Science
 Step 2: Neurology, Pharmacology

2012-2018: Course director, primary lecturer, Brain, Behavior and Human Development.
 30 lectures/year, ~150 students/year
Ranked as Excellent by students 2012-2018 (UIUC ICES system).

2012-2018: Lecturer, MCB 493/320, Mechanisms of Human Disease, UIUC
 "Mechanisms of Neurological Disease."
 6 lectures/year, ~100 students/year
Ranked as Excellent by students 2012-2018 (UIUC ICES system).

2015-2019: Lecturer, UIUC College of Medicine M2 Pathophysiology
 "Movement Disorders" and "Dementia"
 2 lectures/year, ~20 students/year

2016-2020: Lecturer, Neuroscience survey course (UIUC NEUR 598)
 "Translational neuroscience" and "Dementia"
 3 lectures/year, ~15 students/year

- 2017-Current: Associate Course Director, Clinical Neurosciences, Carle Illinois College of Medicine
Co-developed curriculum
10-20 lectures/year, ~30-60 students/year
This course does not participate in ICES system
- 2018-Current: Course Director, Primary lecturer, Neuroscience for Psychiatry Residents,
Carle Illinois College of Medicine.
30 lectures/year, ~4-8 students/year
This course does not participate in ICES system
- 2018-Current: Course Director, primary lecturer MCB 314, Introduction to Neurobiology, UIUC
~30 lectures/year, ~150 students/year
Ranked as Excellent by students 2018, 2019, 2021, 2022 (UIUC ICES system).

FUNDING:

Current:

National Institute on Deafness and Other Communications Disorders
R01DC016599 (Llano, PI) 01/01/21 - 12/31/25
“Synaptic mechanisms of auditory cross-modal communication”
\$250,000/year x 5 years, Direct

National Institute on Aging
R21 AG077173 (Llano, PI, Song Co-I) 04/2022-03/2024
“Super-resolution imaging of brain microvascular changes in a model of Alzheimer Disease”
\$275,000/2 years, Direct

National Institute on Deafness and Other Communications Disorders
R21DC019473 (Llano, PI, Rhodes, Dobrucki, Park Co-I) 04/01/2021-09/30/2023
“Examination of the bidirectional relationship between hearing loss and Alzheimer Disease pathology”
\$275,000/2 years, Direct

National Cancer Institute (NCI)
R01CA241618-01 8/15/2019-7/31/2023
(PI: Tu)
“Imaging tumor microenvironment by optical fiber-tehered simultaneous lifetime-resolved autofluorescence multiharmonic (OFT-SLAM) microscopy”

Kiwanis Neuroscience Research Foundation
(Llano, PI) 7/01/2014 – 6/30/2024
“Seeing phantom sounds: Imaging the neural correlates of tinnitus”
\$20,000/year x 5 years, Direct

Previous:

National Institute on Deafness and Other Communications Disorders
1R01DC013073-01 (Llano, PI) 4/01/2015 – 3/31/2022 (extra year from PECASE)
“Functional organization of the auditory corticocollicular system”
\$250,000/year x 5 years, Direct

National Institutes of Mental Health (NIMH)
1R43-MH119979-01 4/15/2019-3/31/2022
(PI: Durack)
“Fiber-delivered programmable supercontinuum laser adaptive to evolving neurophotonic research”

National Institute on Aging
R03AG059103 (Llano, PI) 9/01/2018 - 8/31/2021
Mechanisms of exercise-induced neuroprotection in a mouse model of presbycusis
\$50,000/year x 2 years, Direct

Capita Foundation (Llano, PI) 1/08/2019- 12/31/2019
“An exercise intervention to prevent aging-related hearing loss in a mouse model.”
\$10,000/year x 1 year, Direct

UIUC Campus Research Board
(Llano, PI) 1/01/2017-7/31/2019
“Examination of exercise-induced protection against aging-related hearing loss in a mouse model of presbycusis”
\$29,031/year x 1 year, Direct

National Science Foundation (NSF) Division of Information and Intelligent Systems
1515587 8/16/2015 – 8/15/2018
(Llano, PI, Berger-Wolf, co-PI, Kenyon, co-I)
“CRCNS: Community Dynamic Imaging of Corticothalamic Projections”
\$250,000/year x 3 years, Direct

Carle Neuroscience Institute 6/1/2017 – 5/30/2018
“Strategic Processing Ability in Mild Cognitive Impairment”
(Llano, PI, Mudar co-PI)
\$15,000/year x 1 years, Direct

NIH-Office of Research Infrastructure Programs
S10OD023569-01 (Llano, PI) 3/01/2017 – 2/28/2018
“An upright multiphoton microscope for biomedical research applications”

National Institute on Aging (NIA)
R21-AG05421602S1 9/15/2017-5/31/2018
(PI: Stine-Morrow)
“Everyday reading, personality and cognitive health in older adults”

National Institutes of Mental Health (NIMH)
R43-MH11221401 4/04/2017-4/03/2018
(PI: Zhao)
“Portable optogenetics/Two-photon imaging instrument for in vivo brain studies”

Center for Nutrition Learning and Memory, UIUC
Grant (PI: Barbey) 6/1/2012 - 5/31/2017
“Nutritional Intake, Cognitive Function, and Measures of Brain Aging”
\$250,000/year x 5 years, Direct

National Institute on Deafness and Other Communications Disorders
R21 DC014765-01 (Llano, PI) 6/23/2015-5/31/2017
“Thalamic reticular nucleus modulation of auditory thalamocortical function”
\$275,000 over two years, Direct

National Institute on Aging (NIA)
L30 AG045918-02 (Llano, PI) 7/01/2015-6/30/2017
“Biomarkers for Subjective Cognitive Impairment”
\$12,000/year x 2 years, Direct

UIUC Campus Research Board
(Llano, PI) 10/06/2015-4/30/2017
“Impact of developmental PCB exposure on synaptic inhibition in the rodent auditory cortex”
\$25,000/year x 1 year, Direct

Beckman Institute Seed Grant

(Llano, Ceman, Sutton, co-PIs) 5/16/2014 - 8/15/2016
“Development of novel optogenetic and brain imaging approaches to study top-down control mechanisms”
\$100,000/year x 2 years, Direct

National Institute on Aging (NIA)
L30 AG045918-01 (Llano, PI) 7/01/2013-6/30/2015
“Biomarkers for Subjective Cognitive Impairment”
\$12,000/year x 2 years, Direct

Center for Health, Aging and Disability, UIUC
Grant (PI: Mudar) 9/1/2012 – 8/31/2013
“Neural Markers of Strategic Learning in Individuals with Subject Memory Impairment”
\$30,000/year x 1 year, Direct

National Institute on Deafness and Other Communications Disorders
1R03DC012125-01 (Llano, PI) 9/26/2011 – 5/31/2015
“Age-Related changes in GABAergic influence on auditory corticothalamic projection.”
\$100,000/year x 3 years, Direct

Alzheimer Association
NIRG-12-242848 (Llano, PI) 9/01/2012 – 8/31/2014
“Diminished cortical GABAergic inhibition in mouse model of Alzheimer Disease”
\$50,000/year x 2 years, Direct

Social Science Brownbag, UIUC 6/01/2013-5/31/2014
(Co-PI, with Matt Dye, Speech/Hearing Science, UIUC)
“iHear: Promoting Hearing Sciences at the University of Illinois”
\$2500/year x 1 year, Direct

American Federation for Aging Research
AFAR 2011-03147 (Llano, PI) 7/01/2011 – 6/30/2013
“Changes in Auditory Cortical Circuitry in Aging: Exploration of the Links between Aging and the Cortical
Circuitry of Attention”
\$50,000/year x 2 years, Direct

National Institute on Deafness and Other Communications Disorders
K08 DC008320 (Llano, PI) 6/01/2006-6/01/2008
“Functional Organization of Auditory Corticothalamic Projection Systems.”

Brain Research Foundation Seed Grant 6/01/2007-5/31/2008
(Llano, PI)
“Investigation of attentional modulation via fronto-thalamic networks.”
\$50,000/year x 1 year, Direct

National Institute on Deafness and Other Communications Disorders
L30 DC009286-01 (Llano, PI) 7/01/2007-6/30/2009
“Development of an Aphasia Database”

As Mentor:

National Institute on Aging (NIA)
Individual Predoctoral NRSA for M.D./Ph.D. Fellowships
F30AG055283-01 (PI: Cerjanic) 9/15/2017 – 9/15/2020
“Developing quantitative biomarkers for monitoring longitudinal changes in brain microvascular health”
\$30,000/year x 3 years, Direct

National Institute on Deafness and Other Communications Disorders (NIDCD)

Individual Predoctoral Fellowship (National Research Service Award)
F31 DC 015967-01 (PI: Lesicko) 1/01/2017 – 12/31/2019
“Functional modularity and multisensory convergence in the lateral cortex of the mouse inferior colliculus”
\$30,000/year x 3 years, Direct

Beckman Graduate Fellows Award 8/16/2016-8/15/2017
(PI: Stebbings, co-mentor: Justin Rhodes, Psychology, UIUC)
“Redox mechanisms of exercise-induced rescue of decline in neural function with aging”
\$30,000/year x 1 year, Direct

National Institute on Deafness and Other Communications Disorders (NIDCD)
Individual Predoctoral Fellowship (National Research Service Award)
F31 DC013501-01 9/1/2013-8/31/2016
(PI: Slater, co-mentor: Lee Cox, UIUC)
“The role of the thalamic reticular nucleus in temporal processing in the medial geniculate body”
\$30,000/year x 3 years, Direct

Beckman Postdoctoral Fellows Award 9/1/2013-8/31/2015
(PI: Sadowski, Primary mentor: Susan Schantz, Comparative Biosciences, UIUC)
“Effects of developmental PCB exposure on activation of the adult auditory cortex and hippocampus”
\$50,000/year x 2 years, Direct

Beckman Graduate Fellows Award 8/16/2013-8/15/2014
(PI: Slater, co-mentors: Matt Dye, Speech/Hearing Science and Brad Sutton, Biomedical Eng., UIUC)
Declined since another award was in place
“The impact of hearing loss on cross-modal plasticity: An interdisciplinary investigation using optogenetic approaches in a novel in vitro system”
\$30,000/year x 1 year, Direct

As Trainee:

F32DC008215 NIDCD 07/01/2006 - 07/02/2006
“Auditory corticothalamic projection systems”
Awarded and declined in lieu of K08 award.

Systems and Integrative Physiology Predoctoral Training Grant
NRSA T32 8/01/1995-7/31/1998
“Neural correlates of fluttering target detection in the echolocating bat”

PEER-REVIEWED PUBLICATIONS:

1. **Llano D.A.** and Ramirez V.D. (1994) Isolation of DARP (dopamine-releasing protein) from fetal rat brain and effects of DARP immunoneutralization on fetal mesencephalic dopamine levels. *Molecular and Cellular Neuroscience*. Dec;5(6):649-57.
2. **Llano D.A.** and Feng A.S. (1999) Response characteristics of neurons in the medial geniculate body of the little brown bat to simple and temporally-patterned sounds. *Journal of Comparative Physiology [A]*. 184: 371-385.
3. Galazyuk A.V., **Llano D.** and A.S. Feng (2000) Temporal dynamics of acoustic stimuli enhance amplitude tuning of inferior colliculus neurons. *Journal of Neurophysiology*. Jan;83(1):128-38.
4. **Llano D.A.** and A.S. Feng (2000) Computational models of temporal processing in the auditory thalamus. *Biological Cybernetics*. 83: 419-433.

5. **Llano D.A.** and R.S. Abernethy (2004) Severe depression, obsessive-compulsive disorder, and pulmonary embolism. (case report) *Psychosomatics*. Jul-Aug;45(4):364-5.
6. Galazyuk A.V., Lin W., **Llano D.** and A.S. Feng. (2005) Leading inhibition and oscillation in time-domain processing in the auditory midbrain. *Journal of Neurophysiology*. Jul;94(1):314-26.
7. **Llano D.A.** and S.M. Sherman (2008) Evidence for non-reciprocal organization of the mouse auditory thalamocortical-corticothalamic projection systems. *Journal of Comparative Neurology*. 507:1209-1227.
8. **Llano D.A.**, Theyel B.B., Mallik A., Sherman S.M. and N.P. Issa (2009) Rapid and sensitive mapping of long range connections in vitro using flavoprotein autofluorescence imaging combined with laser photostimulation. *Journal of Neurophysiology*. 101(6):3325-40
9. **Llano D.A.** and S.M. Sherman (2009) Differences in intrinsic properties and local network connectivity of identified layer 5 and layer 6 adult mouse auditory corticothalamic neurons support a dual corticothalamic projection hypothesis. *Cerebral Cortex*. Dec;19(12):2810-26.
10. Small S.L. and **Llano D.A.** (2009) Biological therapy for aphasia. (Invited review) *Current Neurology and Neuroscience Reports*. Nov;9(6):443-50.
11. Lu E., **Llano D.A.** and S. M. Sherman. (2009) Different distributions of calbindin and calretinin immunostaining across the medial and dorsal divisions of the mouse medial geniculate body. *Hearing Research*. Nov;257(1-2):16-23.
12. Theyel B.B., **Llano D.A.** and S. M. Sherman. (2010) Evidence for a cortico-thalamocortical pathway for cortical communication. *Nature Neuroscience*. 13(1):84-8.
13. Luo F., Seifert T., Roesner B., Hradil V., Hillen H., Ebert U., Day M., **Llano D.A.**, Rustay N.R. and G.B. Fox. (2010) MRI detection and time course of cerebral microhemorrhages during A β antibody treatment in living APP transgenic mice. *Journal of Pharmacology and Experimental Therapeutics*. Dec;335(3):580-8.
14. **Llano D.A.**, Laforet, G. and V. Devanarayan (2011) Derivation of a new ADAS-cog composite using tree-based multivariate analysis: Prediction of conversion from mild cognitive impairment to Alzheimer's disease. *Alzheimer's Disease and Associated Disorders*. Jan-Mar;25(1):73-84.
15. Chin C-L, Carr R.A., **Llano D.A.**, Barret O., Xu H., Marsh K.C., Tamagnan G., Decker M.W., Day M., and G.B. Fox. (2011) Displacement of [123I]-5IA-85380 Binding in baboons by the nicotinic α 4 β 2 receptor partial agonist ABT-089 - Implications of dosing regimens. *Journal of Pharmacology and Experimental Therapeutics*. Mar;336(3):716-23.
16. Theyel B.B., **Llano D.A.**, Issa N., Mallik A. and S. M. Sherman. (2011) Laser photostimulation with flavoprotein autofluorescence imaging *in vitro*. *Nature Protocols*. Apr;6(4):502-8.
17. Luo F. Rustay N., Ebert U., Hradil V., Cole, T., **Llano, D.A.**, Mudd, S., Zhang, Y. and G.B. Fox (2012) Characterization of 7 and 19 month old Tg2576 mice using multimodal in-vivo imaging: Limitations as a translatable model of brain glucose metabolism in Alzheimer's disease. *Neurobiology of Aging*. May;33(5):933-44.
18. Li J., **Llano D.A.**, Ellis T., LeBlond D., Lenz R. and J. F. Waring. (2012) Effect of CSF draw frequency on A β levels in human subjects. *Alzheimer's and Dementia*. Jul;8(4):295-303.
19. **Llano D.A.**, Li J., Lenz R.A., Ellis T., Cassar S., Groebe D., Gopalakrishnan M. and J.F. Waring (2012) Cerebrospinal fluid cytokine dynamics differ between Alzheimer disease patients and elderly controls. *Alzheimer's Disease and Associated Disorders* Oct;26(4):322-8.

20. Yang S., Yang S., Cox C.L., **Llano D.A.** and Feng A.S. (2012) Cell's intrinsic biophysical properties play a role in the systematic decrease in time-locking ability of central auditory neurons. *Neuroscience*. 2012 Apr 19;208:49-57.
21. **Llano D.A.**, Caspary D. and J. Turner (2012) Diminished cortical inhibition in an aging mouse model of chronic tinnitus. *Journal of Neuroscience* Nov 14;32(46):16141-8.
22. **Llano D.A.**, Simon A. and V. Devanarayan (2013) Evaluation of plasma proteomic data for Alzheimer's Disease state classification and for prediction of progression from mild cognitive impairment to Alzheimer Disease. *Alzheimer Disease and Associated Disorders* Jul-Sep;27(3):233-43.
23. **Llano D.A.** (2013) Functional imaging of the thalamus in language. (review) *Brain and Language*. Jul;126(1):62-72.
24. Hasadsri L., Wang B.H., Lee J.V., Erdman J.W., **Llano D.A.**, Barbey A.K., Wszalek T., Sharrock M.F. and H. Wang (2013) Omega-3 fatty acids for treatment of traumatic brain injury. (review) *Journal of Neurotrauma*. 2013 Jun 1;30 (11):897-906.
25. Slater B.J., Willis A.M and **D.A. Llano** (2013) Evidence for layer-specific differences in auditory corticocollicular neurons. *Neuroscience*. Jan 15;229:144-54.
26. **Llano D.A.** (2013) Voices below the surface: A role for the thalamus in language? *Brain and Language*. Jul;126(1):20-1.
27. **Llano D.A.**, Slater B.J., Lesicko A.M. and K.A. Stebbings (2014) An auditory colliculo-thalamocortical brain slice preparation in mouse. *Journal of Neurophysiology*, Jan;111(1):197-207.
28. Hasson U., **Llano D. A.**, Miceli G. and A.S. Dick (2014) Does it talk the talk? On the role of basal ganglia in emotive speech processing. *Behavioral and Brain Sciences*, Dec;37(6):556-7.
29. Stebbings K.A., Lesicko A.M.H. and **D.A. Llano** (2014) The auditory corticocollicular system: Molecular and circuit-level considerations. (review) *Hearing Research*, Aug;314C:51-59.
30. Wang H., Wang B., Normoyle K., Jackson K., Spitler K., Sharrock M.F., Miller C., Best C., **Llano D.** and R. Du (2014) Brain temperature and its fundamental properties: A review for clinical neuroscientists (review) *Frontiers in Neuroscience*, Oct 8;8:307.
31. Lenz R.A., Pritchett Y., Berry S.M., **Llano D.A.**, Han S., Berry D.A., Sadowsky D.A., Abi-Saab W.M. and M.D. Saltarelli (2015) Adaptive, dose-finding phase 2 trial evaluating the safety and efficacy of ABT-089 in mild-to-moderate Alzheimer's Disease. *Alzheimer Disease & Associated Disorders*, Jul-Sep;29(3):192-9.
32. Wang, H, Wang, B, Jackson, K, Miller CM, Hasadsri L, **Llano D**, Rubin R, Zimmerman J, Johnson C and B. Sutton (2015) A novel head-neck cooling device for concussion injury in contact sports. *Translational Neuroscience*, Volume 6, Issue 1, p20-31.
33. Slater B.J., Fan A., Stebbings K.A., Saif T., **Llano D.A.** (2015) Modification of a colliculo-thalamocortical mouse brain slice, incorporating 3-D printing of chamber components and multi-scale optical imaging. *Journal of Visualized Exp*, Sep 18;(103).
34. Fan, A, Stebbings KA, **Llano DA** and T Saif (2015) Stretch Induced Hyperexcitability of Mice Callosal Pathway. *Frontiers in Cellular Neuroscience*, Aug 5;9:292.

35. Normoyle K.P., Kim M., Farahvar A., **Llano D.** and H. Wang (2015) The emerging neuroprotective role of mitochondrial UCP2 in TBI translational neuroscience. (review) *Translational Neuroscience*, 6(1), 179-186.
36. Willis A.M., Slater B.J., Gribkova E. and **D.A. Llano** (2015) Open-loop organization of thalamic reticular nucleus and dorsal thalamus: A computational model. *Journal of Neurophysiology* Oct;114(4):2353-67.
37. Ma C., Forbes A.G., **Llano D.A.**, Berger-Wolf T. and R.V. Kenyon (2016) SwordPlots: Exploring neuron behavior within dynamic communities of brain networks. *Journal of Imaging Science and Technology*. Volume 60, Number 1, pp. 10405-1-10405-13(13).
38. Stebbings K.A., Choi H.W., Ravindra A., Caspary D.M., Turner J.G. and **D.A. Llano** (2016) Aging-related changes in GABAergic inhibition in the mouse auditory cortex, measured using in vitro flavoprotein autofluorescence imaging. *Journal of Physiology*. Jan 1;594(1):207-21.
39. Wang H., Kim M., Normoyle K.P. and **D. Llano** (2016) Thermal regulation of the brain – an anatomical and physiological review for clinical neuroscientists. (review) *Frontiers in Neuroscience*, Jan 21;9:528.
40. Stebbings K.A., Choi H.W., Ravindra A., and **D. A. Llano** (2016) The impact of aging, hearing loss and body weight on mouse hippocampal redox state, measured in brain slices using fluorescence imaging. *Neurobiology of Aging*, Jun;42:101-9.
41. Sadowski R.N., Stebbings K.A., Slater, B.J., Bandara, S.B., **Llano, D.A.** and S.L. Schantz (2016) Developmental exposure to PCBs alters the activation of the auditory cortex in response to GABA_A antagonism. *Neurotoxicology*. Jul 12;56:86-93.
42. Paul K., Cauller L.J. and **D.A. Llano** (2016) Presence of a chaotic region at the sleep-wake transition in a simplified thalamocortical circuit model. *Frontiers in Computational Neuroscience*, Sep 1;10:91.
43. Lesicko A.M.H., Hristova T.S., Maigler K.C., and **D.A. Llano** (2016) Connectional modularity of top-down and bottom-up multimodal inputs to the lateral cortex of the inferior colliculus. *Journal of Neuroscience*, Oct 26;36(43):11037-11050.
44. Lesicko A.M.H. and **D.A. Llano** (2017) Impact of peripheral hearing loss on top-down auditory processing. (review) *Hearing Research*, Jan;343:4-13
45. Patel M., Sons S., Yudintsev G., Lesicko A.M.H., Yang L., Taha G.A., Pierce S.M. and **D.A. Llano** (2017) Anatomical characterization of subcortical descending projections to the inferior colliculus in mouse. *Journal of Comparative Neurology*, Mar 1;525(4):885-900.
46. Caspary D.M. and **D.A. Llano** (2017) Auditory thalamic circuits and GABA_A receptor function: Putative mechanisms in tinnitus pathology. (review) *Hearing Research*, Jun;349:197-207.
47. **Llano, D.A.**, Mudar R., Bundela S. and D. Devanarayan (2017) A multivariate predictive modeling approach reveals a novel CSF peptide signature for both Alzheimer's Disease state classification and for predicting future disease progression. *PLOS One*, Aug 3;12(8):e0182098.
48. Ibrahim B.A., Wang H., Lesicko A.M.H., Bucci B., Paul K. and **D.A. Llano** (2017) Effect of temperature on FAD and NADH-derived signals and neurometabolic coupling in the mouse auditory and motor cortex. *JPflügers Archiv - European Journal of Physiology*, Dec;469(12):1631-1649.
49. Sottile S.Y., Hackett T.A., Cai R., **Llano D.A.**, and D.M. Caspary (2017) Presynaptic neuronal

nicotinic receptors differentially shape select inputs to auditory thalamus and are negatively impacted by aging. *Journal of Neuroscience*, Nov 22;37(47):11377-11389.

50. Ma C., Pellolio F, **Llano DA**, Stebbings KA, Kenyon RV , Marai GE (2018). RemBrain: Exploring dynamic biospatial networks with mosaic-matrices and mirror glyphs *Visualization and Data Analysis* pp. 060404-1-060404-13(13).
51. Swords G.M., Nguyen L.T., Mudar R.A. and **D.A. Llano** (2018) Auditory system dysfunction in Alzheimer Disease and its prodromal states: A review. (review) *Ageing Research Reviews*, Apr 6;44:49-59.
52. Swords G.M., Nguyen L.T., Mudar R.A. and **D.A. Llano** (2018) Incorporating audiological measurements into Alzheimer's diagnosis. *The Hearing Journal*. June 71(6) 6.
53. Gribkova, E.D., Ibrahim, B.A. and **D.A. Llano** (2018) A novel mutual information estimator to measure spike train correlations in a model thalamocortical network. *Journal of Neurophysiology*, Dec 1;120(6):2730-2744.
54. Devanarayan, P., Devanarayan, V. and **D.A. Llano** (2019) Identification of a simple and novel cut-point based CSF and MRI signature for predicting Alzheimer's disease progression that reinforces the 2018 NIA-AA research framework. *Journal of Alzheimer Disease*, 68(2):537-550.
55. Slater, B.J., Sons S.K., Yudintsev G., Lee C.M. and **D.A. Llano** (2019) Thalamocortical and intracortical inputs differentiate layer-specific mouse auditory corticocollicular neurons. *Journal of Neuroscience*, Jan 9;39(2):256-270.
56. Nguyen LT, Marini F, Zacharczuk L, **Llano D.A.**, Mudar RA. (2019) Theta and Alpha Band Oscillations During Value-Directed Strategic Processing. *Behav Brain Res*. 2019 Jul 23;367:210-214.
57. **Llano, D.A.**, Devanarayan, P. and V. Devanarayan, (2019) VGF in cerebrospinal fluid combined with conventional biomarkers enhances prediction of conversion from MCI to Alzheimer's Disease. *Alzheimer's Disease and Associated Disorders*, 33(4):307-314.
58. Esmaeeli, S., Murphy K., Swords, GM, Ibrahim BA, Brown JW, **D.A. Llano** (2019) Visual hallucinations, thalamocortical physiology and Lewy Body Disease: A review. *Neuroscience and Biobehavioral Reviews*, Aug;103:337-351.
59. Rajagopal MC, Brown JW, Gelda D, Valavala KV, Wang H, **Llano DA**, Gillette R, and S. Sinha (2019) Transient heat release during induced mitochondrial proton uncoupling. *Communications Biology*, Jul 26;2:279.
60. Ibrahim, BA and **DA Llano** (2019) Aging and central auditory disinhibition: Is it a reflection of homeostatic downregulation or metabolic vulnerability? (Invited Review). *Brain Sciences*. Dec 1;9(12).
61. Zhao Y, Maguluri G, Ferguson RD, Tu H, Paul K, Boppart SA, **Llano DA**, Iftimia N (2020) Two-photon microscope using a fiber-based approach for supercontinuum generation and light delivery to a small-footprint optical head. *Optics Letters*. Feb 15;45(4):909-912.
62. Brown JW, Taheri A, Kenyon RV, Berger-Wolf T, **DA Llano** (2020) Propagation of cortical activity via open-loop intrathalamic architectures: a computational analysis. *ENeuro*. Feb 25;7(1).
63. Maclaine KD, Stebbings KA, **Llano DA**, Rhodes JS. (2020) Voluntary wheel running has no impact on brain and liver mitochondrial DNA copy number or mutation measures in the PolG mouse model of aging. *PLoS One*. 2020 Mar 2;15(3):e0226860.

64. Nguyen LT, Marini F, Shende S.A., **Llano D.A.**, Mudar RA. (2020) Investigating EEG theta and alpha oscillations as measures of value-directed strategic processing in cognitively normal younger and older adults. *Behav Brain Res.* May 24;391:112702
65. Mohandass A., Krishnan V, Gribkova ED, Asuthkar S, Baskaran P, Nersesyan Y, Hussain Z, Wise LM, George RE, Stokes N, Alexander B, Cohen A, Pavlov E, **Llano DA**, Zhu MX, Thyagarajan B, and E Zakharian (2020) A rapid testosterone signaling receptor, TRPM8, regulates dimorphic sexual and social behaviors. *FASEB Journal*, Jul 1.
66. Nadhimi, Y. and **D.A. Llano** (2020) Does hearing loss lead to dementia? A review of the literature (Review). *Hearing Research*, Jul 30:108038.
67. Lesicko A.M.H., Sons S.K. and **D.A. Llano** (2020) Circuit mechanisms underlying the segregation and integration of parallel processing streams in the inferior colliculus. *Journal of Neuroscience*, Aug 12;40(33):6328-6344.
68. Liu Y-Z, Renteria C, Courtney CD, Ibrahim B, You S, Chaney EG, Barkalifa R, Iyer RR, Zurauskas M, Tu H, **Llano DA**, Christian CA, SA Boppart (2020) Simultaneous two-photon activation and imaging of neural activity based on spectral-temporal modulation of supercontinuum light *Neurophotonics*, Oct;7(4):045007.
69. Xiao G. and **D.A. Llano** (2020) Hitting the right spot: NMDA receptors in the auditory thalamus may hold the key to understanding schizophrenia. *Journal of Neuropsychopharmacology*. Dec 3;23(9):578-580.
70. **Llano, D.A.**, Issa, L.K., Devanarayan, P., and V. Devanarayan (2020). Hearing loss in Alzheimer Disease is associated with altered serum lipidomic biomarker profiles. *Cells*. Nov 28;9(12):E2556.
71. Asilador A and **D.A. Llano** (2021) Top-down inference in the auditory system: Potential roles for corticofugal projections. (Review) *Frontiers in Neural Circuits*, Jan 22;14:615259.
72. **Llano, D.A.**, and V. Devanarayan (2021). Serum phosphatidylethanolamine and lysophosphatidylethanolamine levels differentiate Alzheimer Disease from controls and predict progression from mild cognitive impairment. *Journal of Alzheimer Disease*, 80(1):311-319.
73. Lee CM, Sadowsky, RN, Schantz SL and **D.A. Llano** (2021) Developmental PCB exposure disrupts synaptic transmission and connectivity in the rat auditory cortex, independent of its effects on peripheral hearing threshold. *eNeuro*. Feb 1;8(1):ENEURO.0321-20.2021.
74. **Llano DA**, Ma C, Di Fabrizio U, Taheri A, Stebbings KA, Yudintsev G, Xiao G, Kenyon RV, Berger-Wolf TY (2021) A novel dynamic network imaging analysis method reveals aging-related fragmentation of cortical networks in mouse. *Network Neuroscience*, Jun 21;5(2):569-590.
75. Stauffer K. **Llano DA**, Kitten S (2021) Nicotinic ganglionic acetylcholine receptor autoantibodies associated with paraneoplastic disease in a neuropsychiatric patient. *BMJ Case Reports*, May 27;14(5):e240824.
76. Ibrahim BA, Murphy C, Yudintsev G., Shinagawa Y, Banks MI, **Llano DA** (2021) Corticothalamic gating of population auditory thalamocortical transmission in mouse. *eLife*, May 24;10:e56645.
77. Chandrasekaran NV, Deshpande MS, Ibrahim BA, Xiao G, Shinagawa Y, **Llano DA** (2021) Patterns of unilateral and bilateral projections from layer 5 and 6 of the auditory cortex to the inferior colliculus in mouse. *Frontiers in Systems Neuroscience*, Oct 21;15:674098.

78. **Llano DA**, Kwok SS and V. Devanarayan (2021) Reported hearing loss in Alzheimer disease is associated with loss of brainstem and cerebellar volume. *Frontiers in Human Neuroscience*, Sep 24;15:739754.
79. Maclaine, KD, Stebbings, KA, **Llano, DA**, Havird, JC (2021) The mtDNA mutation spectrum in the PolG mutator mouse reveals germline and somatic selection. *BMC Genomic Data*, Nov 26;22(1):52.
80. Yudintsev, G, Asilador A, Sons S, Vaithiyalingam Chandra Sekaran N, Coppinger M, Nair K, Prasad M, Xiao G, Ibrahim BA, Yoshitaka Shinagawa Y, **DA Llano** (2021) Evidence for layer-specific connectional heterogeneity in the mouse auditory corticocollicular system. *Journal of Neuroscience*, Dec 1;41(48):9906-9918.
81. Lowerison, MR, Chandra Sekaran N, Zhang W, Dong Z, Chen X, **Llano DA** and Pengfei Song. (2022) Aging-related cerebral microvascular changes visualized using Ultrasound Localization Microscopy in the living mouse. *Scientific Reports*. Jan 12;12(1):619.
82. Kim J, Lowerison MR, Sekaran NC, Kou Z, Dong Z, Oelze ML, **Llano DA**, Song P. (2022) Improved Ultrasound Localization Microscopy based on Microbubble Uncoupling via Transmit Excitation (MUTE). *IEEE Trans Ultrason Ferroelectr Freq Control*. 2022 Jan 18;PP.
83. Kwok SS, Nguyen X-MT, Wu D, Mudar RA, and **DA Llano** (2022) Pure tone audiometry and hearing loss in Alzheimer's Disease: A metaanalysis. *Frontiers in Psychology*, Jan 21;12:788045.
84. You Q , Trzasko J , Lowerison M, Chen X , Dong Z, ChandraSekaran N, **Llano D**, Chen S, and Pengfei Song. (2022) Curvelet Transform-based Sparsity Promoting Algorithm for Fast Ultrasound Localization Microscopy. *IEEE Transactions on Medical Imaging*. 41(9), pp.2385-2398.
85. Walters JM, Kim EC, Zhang J, Jeong HG, Bajaj A, Baculis BC, Tracy GC, Ibrahim B, Christian-Hinman CA, **Llano DA**, Huesmann GR, Chung HJ. (2022) Pharmacological inhibition of STriatal-Enriched protein tyrosine Phosphatase by TC-2153 reduces hippocampal excitability and seizure propensity. *Epilepsia*. May;63(5):1211-1224.
86. Nguyen LT, Lydon EA, Shende SA, **Llano DA**, RA Mudar (2022) Disrupted Value-Directed Strategic Processing in May 11;7(3):56. Individuals with Mild Cognitive Impairment: Behavioral and Neural Correlates. *Geriatrics*, May 11;7(3):56.
87. Pérez-González D, Schreiner TG, **Llano DA** and MS Malmierca (2022) Alzheimer's Disease, Hearing Loss and Deviance Detection (Review) *Frontiers in Neuroscience*, Jun 2;16:879480.
88. EA L Stine-Morrow, GS McCall, I Manavbasi, S Ng, **DA Llano**, AK. Barbey (2022) The Effects of Sustained Literacy Engagement on Cognition and Sentence Processing among Older Adults *Frontiers in Psychology*, Jul 11;13:923795.
89. S Kitten, ND Jani, **DA Llano** (2022) Functional Neurological Symptom Disorder Manifesting as Auditory Verbal Agnosia in a 19-Year-Old Patient. *Cureus*, Aug 12;14(8):e27930
90. Narins, PM, **Llano DA**, GKH Zupanc (2023) Neuroethology of auditory systems: contributions in memory of Albert S. Feng (commentary). *Journal of Comparative Physiology A*, Jan;209(1):1-4.
91. **Llano DA**, Devanarayan P, Devanarayan D (2023) CSF peptides from VGF and other markers enhance prediction of MCI to AD progression using the ATN framework. *Neurobiology of Aging*. Jan;121:15-27.

92. Kou Z, You Q, Kim J, Dong Z, Lowerison MR, V. Chandra Sekaran N, **Llano DA**, Song P, Oelze M (2023) High-level synthesis design of scalable ultrafast ultrasound beamformer with single FPGA. *IEEE Transactions on Biomedical Circuits and Systems*. 17 April: 1-12.
93. Macias S. and **DA Llano** (2023) Descending projection to the auditory midbrain: Evolutionary considerations (Review). *Journal of Comparative Physiology A*. Jan;209(1):131-143
94. Naik AG, Kenyon RV, Taheri A, Berger-Wolf T, Ibrahim B, Shinagawa and **DA Llano** (2023) V-Neurostack: Open-source 3D time stack software for identifying patterns in neuronal data. *Journal of Neuroscience Research*, Feb;101(2):217-231
95. Ghimire M, Cai R, Ling L, Brownell KA, Hackett TA, **Llano DA**, DM Caspary (2023) Increased pyramidal and VIP neuronal excitability in primary auditory cortex directly correlates with tinnitus behavior *Journal of Physiology*, In Press.
96. Brunelle DL, **Llano DA**. (2023) Role of auditory-somatosensory corticothalamic circuit integration in analgesia. (Mini-review) *Cell Calcium*. 2023 Mar 12;111:102717.
97. Ibrahim BA, Louie JJ, Shinagawa Y, Xiao G, Asilador AR, Sable HK, Schantz S, **DA Llano** (2023) Developmental exposure to polychlorinated biphenyls prevents recovery from noise-induced hearing loss and disrupts the functional organization of the inferior colliculus. *Journal of Neuroscience*, In Press.
98. Issa LK, Vaithiyalingam Chandra Sekaran N, **DA Llano** (2023) Highly branched and complementary distributions of layer 5 and layer 6 auditory corticofugal axons in mouse *Cerebral Cortex*, In Press.

PREPRINTS:

1. Ibrahim BA, Shinagawa Y, Xiao G, Asilador AR, **DA Llano** (2022) [Microprism-based two-photon imaging of the lateral cortex of the mouse inferior colliculus reveals novel organizational principles of the auditory midbrain](#). bioRxiv 2022.11.05.515308.
2. Lowerison MR, Vaithiyalingam Chandra Sekaran N, Dong Z, Chen X, You Q, **Llano DA**, P Song (2022) [Super-resolution ultrasound imaging of cerebrovascular impairment in a mouse model of Alzheimer's disease](#) bioRxiv 2022.10.05.511008.
3. You Q, Lowerison MR, Shin YR, Chen X, Vaithiyalingam Chandra Sekaran N, Zhijie Dong Z, Daniel A. **Llano DA**, Mark A. Anastasio MA, P Song. (2022) [Contrast-free Super-resolution Doppler \(CS Doppler\) based on Deep Generative Neural Networks](#) bioRxiv 2022.09.29.510188.

BOOK CHAPTERS:

1. Varela, C., **Llano D.A.** and B.B. Theyel. (2012) "Brain slice electrophysiology." In [Neuronal Network Analysis](#), Fellin T, Hallasa M, eds. Springer Publishers.
2. **Llano D.A.** (2015) "Thalamus and Language" In [The Neurobiology of Language](#). Small S. and Hickok G. eds. Elsevier Publishers.
3. **Llano D.A.** and Small S. L. (2015) "Pharmacotherapy for Aphasia" In [The Neurobiology of Language](#). Small S. and Hickok G. eds. Elsevier Publishers.
4. Small S.L. and **Llano D.A.** (2015) "Biological Approaches to Treatment of Aphasia" In

Handbook on Adult Language Disorders, Hillis A., eds. Taylor & Francis Publishers.

5. Huynh, N, Lee C.M., Ibrahim B.A., Key M.N. and **Llano D.A.** (2019) “Injections of viral optogenetic tracers into the cerebral cortex of neonatal mouse” In Neuromethods: Basic Neurobiology Techniques. Wright N. ed. Springer Publishers.
6. Yudintsev G., Lee C.M., Asilador A. and **Llano D.A.** (2019) “Transcranial imaging of the mouse auditory cortex in the GCaMP6 mouse” In Neuromethods: Basic Neurobiology Techniques. Wright N. ed. Springer Publishers.
7. Caspary D.M. and **Llano D.A.** (2019) “The aging auditory brainstem” in Neuroscience Handbook Series: The Auditory Brainstem: Organization, Function, and Plasticity, Kandler, K. ed. Oxford Press.
8. Maclaine K.D. and **Llano D.A.** (2020) “The aging central auditory system” in The Senses - Vol.II Audition, Grothe, B. ed. Elsevier Press.
9. Singh M and Llano D.A. (2023) “Drugs for Neurodegenerative Dementias” in An Introduction to Basic and Clinical Pharmacology, Uteshev, Shadiak, Llano eds. Cambridge Scholars Press.
10. Llano D.A. (2023) “Ataxia, Dizziness and Balance Problems” in An Introduction to Basic and Clinical Pharmacology, Uteshev, Shadiak, Llano eds. Cambridge Scholars Press.
11. **Llano DA** (2023) “Auditory thalamic nuclei, cell types and parallel pathways” in The Cerebral Cortex and Thalamus. Shermant and Usrey ed. Oxford University Press.

CONFERENCE PROCEEDINGS:

1. Ma C., Kenyon R.F., Forbes A., Berger-Wolf T., Slater B.J. and **D.A. Llano** (2015) Visualizing dynamic brain networks using an animated dual-representation. *Eurographics Conference on Visualization (EuroVis)*, May 25-29.
2. Patel M. B., Sons S., Yang L., Taha G.A., Lesicko A.M.H., Yudintsev, G. and **D.A. Llano** (2015). The thalamotectal system: An ancient projection for modulating the auditory midbrain. *Proceedings of Meetings on Acoustics*, 25(1).
3. Lowerison, M; Chen, X; Huang, C; Zhang, W; Tang, S; Sekaran, N; **Llano, D**; Chen, S; Song, P Multi-resolution Data Processing for Accelerated and Robust Ultrasound Localization Microscopy (2020) *IEEE International Ultrasonics Symposium (IUS)*. 2020, p.1-4
4. Kim, J., Dong, Z., Lowerison, M.R., Sekaran, N.V.C., You, Q., **Llano, D.A.** and Song, P., 2022, October. Deep Learning-based 3D Beamforming on a 2D Row Column Addressing (RCA) Array for 3D Super-resolution Ultrasound Localization Microscopy. In *2022 IEEE International Ultrasonics Symposium (IUS)* (pp. 1-4). IEEE.
5. Shin, Y., Lowerison, M.R., Dong, Z., Chen, X., You, Q., ChandraSekaran, N.V., **Llano, D.A.**, Anastasio, M. and Song, P., 2022. Deep learning-based fast and dense microbubble localization for ultrasound localization microscopy. *The Journal of the Acoustical Society of America*, 152(4), pp.A112-A112.

INVITED LECTURES:

- 2002: Ramon E. Betances Hospital, Department of Medicine, Mayaguez, PR
“tPA en accidente cerebrovascular agudo”
- 2006: Massachusetts General Hospital/Brigham and Women’s Hospital Resident Conference,
“The role of the thalamus in cortical function.”
- 2007: University of Chicago Neurology Grand Rounds,
“The role of the thalamus in cortico-cortical communication.”

- 2007: University of Chicago Neuroscience Roundtable,
“Proposal for fMRI investigation of the role of the thalamus in attention.”
- 2009: Abbott Neuroscience Grand Rounds,
“The use of biomarkers in Alzheimer’s Disease drug development.”
- 2010: New Faculty Talk, Cell and Molecular Biology & Molecular Biophysics Training Grants - 23rd
Annual Research Symposium, UIUC. “A role for the thalamus in cortical function.”
- 2010: UIUC Neuroscience Program Colloquia Talk
“A role for the thalamus in cortical function.”
- 2010: Southern Illinois University, Department of Pharmacology
“A role for the thalamus in auditory cortical function.”
- 2011: Grand Rounds, Department of Medicine, Carle Hospital
“Management of Behavioral Symptoms of Alzheimer Disease”
- 2011: American Neurological Association, Symposium Speaker
“The role of the thalamus in language”
- 2011: Northeast Ohio University College of Medicine, Department of Anatomy and Neurobiology.
“A role for the thalamus in auditory cortical function.”
- 2012: Ear Day Symposium at Rush University, Chicago, IL.
“Studies on the mouse auditory forebrain in normal and pathological states”
- 2013: UIUC, Department of Molecular/Integrative Physiology Seminar
“Studies on mouse auditory forebrain processing”
- 2013: UIUC, Department of Psychology Brownbag Seminar
“Sounds from the deep: Studies of auditory subcortical processing”
- 2013: University of Iowa, Department of Neurosurgery Seminar
“Flavoprotein imaging as a potential tool in functional neurosurgery”
- 2013: Ear Day Symposium at Rush University, Chicago, IL.
“Sounds from the deep: Insights on subcortical auditory processing”
- 2013: University of Wisconsin-Madison. Bioengineering Imaging Seminar
“Top-down modulation of auditory processing in the mouse midbrain and thalamus.”
- 2014: Illiana Alzheimer Disease Conference, Covington, IN
“MCI and Early Alzheimer’s: Screening, Assessment and Intervention”
- 2014: Kiwanis Club Annual Meeting, Bloomington, IL
“Seeing phantom sounds: Imaging the neural correlates of tinnitus”
- 2014: Purdue University, Biological Sciences Seminar
“Sounds from the deep: New insights on auditory subcortical processing”
- 2014: Ear Day, Rush University
“Bottom up meets top-down: Studies of auditory corticofugal projections”
- 2015: Illiana Alzheimer Disease Conference, Urbana, IL
“New therapies for mild cognitive impairment and Alzheimer disease”
- 2015: Illinois Summer Neuroscience Institute, Distinguished Lecture
“Mechanisms of top-down auditory control”
- 2015: Acoustic Society for America, semi-annual meeting
“Frogs, thalamotectal neurons and other things I learned about from Al Feng”
- 2015: Ear Day Symposium at Rush University, Chicago, IL.
“The thalamotectal system: an ancient projection for modulating the auditory midbrain”
- 2016: *Synapse: A Collaborative Neuroscience Symposium*, Beckman Institute, Urbana, IL
“What’s new in the treatment of Alzheimer’s Disease?”
- 2016: Molecular and Integrative Physiology Seminar, UIUC
“Bottom up meets top-down: Modulation in the auditory system”
- 2016: Department of Cancer Biology and Pharmacology, University of Illinois at Peoria
“Top-down modulation in the mouse auditory system”
- 2016: University of Wisconsin-Madison, “Brain and Bagels” seminar series
“Descending projections in the mouse auditory system”
- 2017: Carle Brain Injury Symposium
“Vascular Dementia: An Update”
- 2017: Clinical and Translational Neuroscience Workshop
Interdisciplinary Health Sciences Initiative, UIUC

- “Maladaptive auditory cortical network changes associated with aging and hearing loss”
 2017: The Bullock-Goldberg Award Inaugural Seminar, UIUC
 “Voices down below: cortical-subcortical interactions in the mouse auditory system”
 2017: Illinois State University, Department of Physics Colloquium Series
 “Neurophysiology of the auditory system: Cortical-subcortical interactions”
 2018: University of Illinois Internal Medicine Grand Rounds
 “Update on Dementia”
 2018: 7th Biennial Regional Conference. Alzheimer’s Disease: Challenges and Choices
 “Alzheimer’s Update: Research and Practice”
 2018: Synapse: Frontiers of Stroke Management
 “tPA use in stroke mimics”
 2018: ZNI Seminar Series, University of Southern California
 “Parallel pathways in the auditory corticocollicular system”
 2019: University of Illinois Neuroscience Program Seminar
 “Is amyloid responsible for Alzheimer Disease?” (A debate along with Dr. Stephanie Ceman)
 2019: UTSA Neurobiology Seminar Series (invited, could not attend)
 “Sounds from the deep: Cortical modulation of auditory subcortical function in the mouse”
 2020: Univ of Michigan, Kresge Hearing Research Institute
 “Echoes from below: Examination of cortico-tectal interactions in the mouse auditory system.”
 2021: Carle Illinois College of Medicine Innovation Grand Rounds:
 “Is perception just a controlled hallucination? Evidence from the thalamocortical system”
 2022: Carle Bioethics Series
 “Bioethics in Dementia”
 2022: Department of Pharmacology, SIU School of Medicine
 “Mice, modules and modulation: Examination of a major descending projection in the auditory system.”
 2022: Department of Neurology Grand Rounds, SIU School of Medicine
 “Hearing loss and dementia – what’s the connection?”
 2022: Colloquium Seminar Series, Department of Biological Sciences, Lehigh University
 “Potential roles of the thalamic reticular nucleus in controlling cortical activation”
 2023: Institute of Neuroscience, University of Oregon
 “Sounds from the deep: Corticocollicular interactions in the mouse”
 2023: Pittsburgh Hearing Research Center seminar:
 “Of mice and modules: Cortex-midbrain interactions in the auditory system”

AD HOC JOURNAL REVIEWER (since 2010):

Austin Journal of Clinical Neurology, BMJ Open, Brain and Behavior, Brain and Cognition, Brain and Language, Brain Imaging and Behavior, Brain Research, Cell Reports, Cerebral Cortex, Clinical Interventions in Aging, Ear and Hearing, ELife, European Journal of Neuroscience, Frontiers in Auditory Cognitive Neuroscience, Frontiers in Computational Neuroscience, Frontiers in Human Neuroscience, Frontiers in Neural Circuits, Frontiers in Neuroanatomy, Frontiers in Systems Neuroscience, Hearing Research, IEEE Transactions on Neural Systems and Rehabilitation Engineering, Journal of Comparative Physiology, Journal of Neurophysiology, Journal of Neuroscience, Journal of Neuroscience and Neurological Disorders, Journal of Neuroscience Methods, Journal of Neurotrauma, Journal of the Neurological Sciences, Journal of Visualized Experiments, Language and Cognition, Nature Communications, Neurobiology of Aging, Neurobiology of Disease, Neuroscience, Neuroscience Letters, Neuroscience Research, Noise and Health, Nutritional Neuroscience, Pain, Pediatric Investigation, PLOS Biology, PLOS One. Proceedings of the National Academy of Sciences, Rejuvenation Research, Scientific Reports, Synapse, The Neuroscientist, Trends in Neuroscience

GRANT REVIEWER:

- 2011: Alzheimer Association International Grant Program Reviewer
 2012: Invited Panelist, NSF Division of Mathematical Sciences/NIGMS Review Board
 2014: Action on Hearing Loss, International Grant Program Reviewer
 2014: Neurological Foundation of New Zealand Grant Reviewer
 2015: Health Research Council of New Zealand Grant Reviewer
 2015: University of Illinois Research Board

2016: Wellcome Trust Senior Research Fellowship in Basic Biomedical Science, UK
 2016: Agir Pour L'Audition Foundation, France
 2016: Medical Research Council Review, UK
 2016: Neural Systems, NSF (invited, could not attend)
 2016: AUD Study Section, ad hoc
 2017: Panelist, NSF Collaborative Research in Computational Neuroscience/Information & Intelligent Systems Division Review
 2017: Neurological Foundation of New Zealand
 2017: French National Research Agency (ANR)
 2017: Tinnitus Review Panel for Peer Reviewed Medical Research Program (PRMRP) for the Department of Defense Congressionally Directed Medical Research Programs (CDMRP)
 2017: NSF, Division of Behavioral and Cognitive Sciences-Cogneuro
 2018: AUD Study Section, ad hoc
 2018: Medical Research Council Review, UK
 2018: Czech Science Foundation
 2019: ZDC1 SRB-X (67) - NIDCD Hearing and Balance Fellowship Review, ad hoc NIH
 2019: ZDC1 SRB-Y (56) - NIDCD Hearing and Balance Fellowship Review, ad hoc NIH
 2019: NSF EPSCoR Research Fellows Program, ad hoc reviewer
 2019: NIH Special Emphasis Panel (Alzheimer Disease – asked – unable to serve)
 2019: Action on Hearing Loss
 2020: NIH program project review
 2021: AUD Study Section, ad hoc
 2021: University of Michigan's Claude Pepper Older Americans Independence Center Pilot Grant
 2021: Royal National Institute for Deaf People (RNID) Discovery research grant reviewer
 2022: LRP NIDCD Review Panelist
 2022: Invited member, AUD Study Section, CSR, (term = 2022-2026)
 2022: RNID Discovery Research Grant
 2023: La Caixa Research Foundation

CLINICAL RESEARCH:

2006 Principal Investigator, “Development of an Aphasia Patient Database,” University of Chicago. IRB #14851B.
 2008 Sub-Investigator, “Phase 3 clinical trial of bapineuzumab (AAB-001) for the treatment of mild to moderate Alzheimer’s disease.” Wyeth and Elan.
 2008 Study Director, “Safety and Efficacy Study of ABT-XXX in Adults With Mild to Moderate Alzheimer's Disease.” Abbott Laboratories.
 2008 Study Director, “A Study of the Long-Term Safety of ABT-XXX for Subjects With Mild-to-Moderate Alzheimer's Disease Who Participated in the M06-876 Study.” Abbott Laboratories.
 2009 Study Director, “A Safety and Tolerability Study of ABT-XXX in Elderly.” Abbott Laboratories.
 2009 Study Director, “Pharmacokinetic and Exploratory Biomarker Study of ABT-XXX In Healthy Volunteers.” Abbott Laboratories.
 2009 Study Director, “Pharmacokinetic and Tolerability Study of ABT-XXX, Dosed Twice Daily, In Healthy Volunteers.” Abbott Laboratories.
 2010 Study Director, “Exploratory CSF biomarker study In Healthy Volunteers.” Abbott Laboratories.
 2010 Medical Monitor, “Safety and Efficacy Study for Cognitive Deficits in Adult Subjects With Schizophrenia.” Abbott Laboratories.
 2012 Physician Investigator (K. Federmeier, PI), “Electrophysiological Signals to Predict Age-Related Cognitive Decline.” Carle-UIUC collaboration.
 2012 Physician Investigator (A. Barbey, PI), “Nutritional Intake, Cognitive Function, and Measures of Brain Aging.” Carle-UIUC collaboration.
 2012 Physician Investigator (R. Mudar, PI), “Neural Markers of Strategic Learning in Individuals with Subject Memory Impairment.” Carle-UIUC collaboration.

ACADEMIC SERVICE:

Research Committee, UIUC College of Medicine, 2010-

Seminar Committee, Department of Molecular and Integrative Physiology, UIUC, 2011-. (Chair 2015-)
 Admissions Committee, Neuroscience Program, UIUC, 2011-2012.
 Medical Student Research Award Committee, UIUC, 2011-2013.
 Search Committee, Division of Biomedical Sciences Research Specialist, UIUC. 2012.
 Steering Committee, Medical Scholars Program, UIUC, 2012-2014.
 Search Committee, Molecular and Integrative Physiology New Faculty, UIUC. 2013, 2014, 2018, 2019
 Academic Distinction Committee, Molecular and Cellular Biology, UIUC. 2013-2016.
 Co-Organizer, Brain Awareness Day, at Orpheum Theater Children's Museum, UIUC, 2014-2015.
 Executive Committee, Neuroscience Program, UIUC, 2014-2016, 2019.
 Seminar Committee, Neuroscience Program, UIUC, 2014-2016.
 Alzheimer's Association Research Engagement Committee, 2016
 Search Committee, Carle Illinois College of Medicine, for Director, Biomedical Science and Engineering and Associate Dean for Research, 2017
 MCB Strategic Advisory Committee, 2017-2020
 MCB Distinction Committee, 2017-
 IACUC Committee, 2018-
 Molecular and Integrative Physiology Executive Committee, 2018-
 Research Integrity Office Investigation Committee, 2019
 Bob Bilger Award Committee, 2019-.
 Promotion and Tenure Committee, MCB 2019-2022
 Promotion and Tenure Committee, CIMED Biomedical and Translational Sciences 2021-2022

RESEARCH MENTORING:

Current Trainees in the Llano Laboratory:

Dr. Baher Ibrahim (Post-doctoral researcher)
 Dr. Nathiya Vaithiyalingam Chandra Sekaran (Post-doctoral researcher)
 Gang Xiao (Ph.D. student, MCB)
 Kaley Graves (AUD student, Speech and Hearing Science)

Laboratory Alumni:

| | |
|---|--|
| Dr. Adam Willis (Postdoct. researcher 2011-2012): | Currently a neurointensivist at San Antonio Military Medical Center |
| Dr. Renee Sadowski (Postdoct. researcher 2014-2016): | Currently a Senior Scientist at AbbVie Pharmaceuticals |
| Dr. Kush Paul (Research scientist 2016-2018): | Currently a scientist at Bruker Technologies |
| Dr. Christopher Lee (Postdoct. researcher 2016-2018): | Currently a post-doctoral researcher in Dr. Douglas Oliver's laboratory, UConn |
| Dr. Bernard Slater (Ph.D., Neuroscience, 2016): | Currently a post-doctoral researcher in Dr. Richard Mooney's Laboratory, Duke |
| Dr. Alexandria Lesicko (Ph.D., Neuroscience, 2018): | Currently a post-doctoral researcher in Dr. Maria Geffen's laboratory, UPenn |
| Dr. Kevin Stebbings (Ph.D., Neuroscience, 2018): | Currently a post-doctoral researcher |
| Dr. Georgiy Yudinsev (Ph.D., Neuroscience, 2019): | Currently a post-doctoral researcher in Dr. Natalia de Marco's laboratory, Cornell |
| Dr. Jeffrey Brown (Postdoct. Researcher 2016-2018) | Currently a post-doctoral researcher in Dr. William Frost's laboratory, RFUMS |
| Mili Patel (Laboratory technician): | Currently a graduate student in Neuroscience at UCSF |
| Henry Choi (Laboratory technician) | Currently a graduate student in Neuroscience at University of Rochester |

Graduate Student Training Committees (year of first exam listed):

Shane Crandall (Neuroscience, UIUC, Final Defense): 2011
 Lin Feng (Pharmacology, SIU-COM, Final Defense): 2012
 Sam Irving (Molecular and Integrative Physiology, UIUC, Qualifying Exam): 2012
 Jenessa Seymour (Neuroscience, UIUC, Qualifying Exam): 2013

Chris Boven (Neuroscience, UIUC, Qualifying Exam): 2013
Sara Schmidt (Neuroscience, UIUC, Qualifying Exam): 2013
Lily Chau (Neuroscience, UIUC, Final Defense): 2013
Suren Bandara (Neuroscience, UIUC, Final Defense): 2014
Amogh Belagodu (Neuroscience, UIUC, Qualifying Exam, Prelim Exam, Final Defense): 2014
Mariam Bonyadi (Neuroscience, UIUC, Diagnostic, Qualifying Exam, Final Defense): 2014
Lydia Nguyen (Neuroscience, UIUC, Diagnostic, Qualifying, Prelim): 2014
Richard Oliver Bido Medina (Neuroscience, UIUC, Diagnostic, Qualifying, Final Defense): 2014
Alex Asilador (Neuroscience, UIUC, Diagnostic): 2015
Sarah Sottile (Pharmacology, SIU-COM, Qualifying Exam, Prelim Exam, Final Defense): 2015
Mickeal Key (Neuroscience, UIUC, Diagnostic, Qualifying): 2015
Richard Sanders (Comparative and World Literature, UIUC, Prelim Exam): 2016
Carlos Dostal (Neuroscience, UIUC, Diagnostic, Qualifying Exam, Prelim Exam, Final Defense): 2017
Elizabeth Davis (Neuroscience, UIUC, Diagnostic, Qualifying Exam, Final Defense): 2017
Ryan Loh (Psychology, UIUC, Prelim Exam, Final Defense): 2017
Sean Collins (Psychology, UIUC, Prelim Exam, Final Defense): 2017
Brian Baculis (Neuroscience, UIUC, Diagnostic, Qualifying): 2017
Liran Zeigelman (Neuroscience, UIUC, Diagnostic, Qualifying): 2018
Jennifer Walters (Neuroscience, UIUC, Diagnostic, Qualifying): 2019
Robbie Ingram (Neuroscience, UIUC, Diagnostic, Qualifying): 2019
Katiria Soto-Diaz (Neuroscience, UIUC, Diagnostic, Qualifying): 2020
Alex Armstrong (Neuroscience, UIUC, Diagnostic): 2021
Simon Lizarazo (Molecular/Integrative Physiology, UIUC, Qualifying): 2021
Temirlan Shilikbay (Cellular and Developmental Biology, UIUC, Prelim): 2021

Formal undergraduate laboratory research mentoring (for UIUC credit, alphabetical):

Adam Abushamaa (MCB), Nisaa Aleem (Interdisciplinary Health Sciences), Bethany Bucci (MCB), Karthic Chandran (MCB), Henry Choi (MCB), Macey Coppinger (MCB, *Senior Thesis*), William Dai (MCB), Meena Deshpande (MCB), Austin Douglas (MCB), Joe Edwards (MCB), Michaela Fisch (MCB), Jairong Fu (MCB), Dan Gonzalez (MCB), Ekaterina Gribkova (Mathematics, *Senior Thesis*), Syed Haider (MCB), Nhan Huynh (MCB, *Senior Thesis*), Lina Issa (MCB), Nikita Jain (Bioengineering), Vanessa Kalinowska (MCB, *Senior Thesis*), Grace Ledogar (MCB), Alexandria Lesicko (MCB, *Senior Thesis*), Brandon Li (MCB), Junyu Li (MCB), Jeremy Louie (Bioengineering), Katie Maigler (MCB), Diana Masolak (MCB, *Senior Thesis*), Kathy Mirza (MCB), Patrick Mulligan (MCB), Kathleen Murphy (Physics), Devika Nair (MCB), Kavyakrishna Nair (MCB, *Senior Thesis*), Kaitlyn Ortgiesen (MCB), Mili Patel (MCB, *Senior Thesis*), Vraj Patel (MCB), Scott Pierce (Integrative Biology, *Senior Thesis*), Masumi Prasad (Psychology), Aditya Ravindra (MCB, *Senior Thesis*), Robin Rice (MCB), Elizabeth Rivera-Cruz (MCB), Shruti Shah (MCB), Yoshitaka Shinagawa (Bioengineering), Craig Soares (MCB), Stacy Sons (MCB, *Senior Thesis*), Kate Srikant (Psychology), Gehad Taha (MCB, *Senior Thesis*), Danica Vendiola (MCB, *Senior Thesis*), Luye Yang (MCB, *Senior Thesis*), Georgiy Yudintsev (MCB, *Senior Thesis*), Omar Zaki (MCB), Kendra Zwonitzer (MCB, *Senior Thesis*)