

Curriculum Vitae

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Luis Lemus PhD

Department of Cognitive Neuroscience
Institute of Cell Physiology
National Autonomous University of Mexico (UNAM)
Mexico City, 04510
+52 55 56225675 | lemus@ifc.unam.mx

Academic Background

2009 – 2011 Postdoctoral fellow, Dept. of Psychology, Princeton University (PI: Asif Ghazanfar)
2002 – 2008 Doctorate, Biomedical Sciences, UNAM (Advisor: Ranulfo Romo)
1996 – 2001 Bachelor of Biology, Faculty of Sciences, UNAM (Advisor: Ranulfo Romo)

Languages

Spanish	Native
English	Proficient
French	Intermediate

Positions

2019 – Present Associate Professor, Cognitive Neuroscience Department, Institute of Cell Physiology, UNAM
2012 – 2018 Assistant Professor, Cognitive Neuroscience Department, Institute of Cell Physiology, UNAM

Awards & Distinctions

2014 – 2019 PRIDE C UNAM
2012 – 2019, 2021 SNI I, CONACYT
2018 Outstanding Contribution in Reviewing. Neuroscience. Elsevier
2012 – 2013 PAIPA C UNAM
2000 Maximiliano Ruiz Castaneda Award, AMM. Mexico

Editorial Positions

2019 – Present Topic Editor: *Fundamentals of 21st Century Neuroscience*. Frontiers in Neuroscience
2019 – Present Guest Associate Editor for Frontiers in Molecular Neuroscience
2017 – Present Reviewer Editor, Frontiers in Integrative Neuroscience
2015 – Present Reviewer Editor, Frontiers in Psychology, Consciousness research

Funding Support

2018 – Present PAPIIT IN207919 *Neuronal Circuits for the Representation of Complex Sounds in Rhesus Monkeys*
Principal Investigator
2016 – 2019 FC CONACYT 196 *Audiomotor Circuitry Bottom-up and Down Processing, During Metronome Rhythm-Synchronization by Nonhuman Primates*. Co-Investigator
2016 – 2019 CB-2015-02 CONACYT 256767 *Cortical Coding of Acoustic Objects*. Principal Investigator
2013 – 2015 PAPIIT IA 201513-2 *Study of the Perception Phenomena through Intersensory Information Exchange*.
Principal Investigator
2012 – 2015 CB-2012-01 CONACYT 181301 *Study of Perception Phenomena through Intersensory Information Exchange* Principal Investigator

Publications (33)

Research Papers (23)

- 2021 Morán, I., Perez-Orive, J., Melchor, J., Figueroa, T., & **Lemus, L.*** Auditory decisions in the supplementary motor area. *Progress in Neurobiology*, 202, 102053. **FI = 12.3**
- 2020 Melchor J, Vergara J, Morán I, Perez-Orive J, Figueroa T, Lemus L*. Invariant Recognition of sounds in macaques. *bioRxiv*. doi:10.1101/805218
- 2018 Duarte F, Figueroa T, **Lemus L***. A Two-interval Forced-choice Task for Multisensory Comparisons. *J Vis Exp*. (141):e58408. doi:10.3791/58408
- 2017 Duarte F and **Lemus L***. The Time Is Up: Compression of Visual Time Interval Estimations of Bimodal Aperiodic Patterns. *Frontiers in Integrative Neuroscience*, 11:doi:10.3389/fnint.2017.00017
- 2017 Haegens S, Vergara J, Rossi-Pool R, **Lemus L**, Romo R. Beta Oscillations Reflect Supramodal Information During Perceptual Judgment. *Proceedings of the National Academy Sciences, USA*, doi:10.1073/pnas.1714633115
- 2013 Chandrasekaran C, **Lemus L**, Ghazanfar A. Dynamic faces speed up the onset of auditory cortical spiking responses during vocal detection. *Proceedings of the National Academy Sciences, USA*, 110:E4668-77
- 2012 Romo R, **Lemus L**, de Lafuente V. Sense, memory, and decision-making in the somatosensory cortical network. *Current Opinion in Neurobiology*, 6:914-19
- 2011 Chandrasekaran C, **Lemus L**, Trubanova A, Gondan M, Ghazanfar A. Monkeys and Humans Share a Common Computation for Face/Voice Integration. *PloS Computational Biology*, 7:e1002165
- 2010 **Lemus L**, Hernández A, Luna R, Zainos A, Romo R. Do sensory cortices process more than one sensory modality during perceptual judgments? *Neuron*, 67:335-48
 - [Commentary by C Kayser (2010) "The Multisensory Nature of Multisensory Cortices: A Puzzle Continued." *Neuron*, 67:178-180]
- 2010 Hernández A, Nácher V, Luna R, Zainos A, **Lemus L**, Alvarez M, Vázquez Y, Camarillo L, Romo R. Decoding a perceptual decision process across cortex. *Neuron*, 66:300-14
- 2010 Jun JK, Miller P, Hernández A, Zainos A, **Lemus L**, Brody CD, Romo R. Heterogenous population coding of a short-term memory and decision task. *Journal of Neuroscience*, 30:916-29
- 2009 **Lemus L**, Hernández A, Romo R. Neural encoding of auditory discrimination in ventral premotor cortex. *Proceedings of the National Academy Sciences, USA*, 106:14640-5
- 2009 **Lemus L**, Hernández A. & Romo R. Neural Codes for Perceptual Discrimination of Acoustic Flutter in the Primate Auditory Cortex. *Proceedings of the National Academy Sciences, USA*, 106:9471-6
- 2008 Hernández A, Nácher V, Luna R, Álvarez M, Zainos A, Cordero S, Camarillo L, Vázquez Y, **Lemus L**, Romo R. Procedure for recording the simultaneous activity of single neurons distributed across cortical areas during sensory discrimination. *Proceedings of the National Academy Sciences, USA*, 105:16785-90
- 2007 **Lemus L**, Hernández A, Luna R, Zainos A, Nácher V, Romo R. Neural correlates of a postponed decision report. *Proceedings of the National Academy Sciences, USA*, 104:17174-9
- 2006 Romo R, Hernandez A, Zainos A, **Lemus L**, de Lafuente V, Luna R, Nácher V. Decoding the temporal evolution of a simple perceptual act. *Novartis Foundation Symposium*, 270:170-86.
- 2002 Brody CD, Hernandez A, Zainos A, **Lemus L**, Romo R. Analysing neuronal correlates of the comparison of two sequentially presented sensory stimuli. *Philosophical Transactions of the Royal Society of London*, 357:1843-50
- 2002 Romo R, Hernandez A, Zainos A, **Lemus L**, Brody CD. Neuronal correlates of decision-making in secondary somatosensory cortex. *Nature Neuroscience*, 5:1217-25
- 2002 Romo R, Hernandez A, Salinas E, Brody CD, Zainos A, **Lemus L**, de Lafuente V, Luna R. From sensation to action. *Behavioral Brain Research*, 135:105-18
- 2002 Romo R, Hernandez A, Zainos A, **Lemus L**, De Lafuente V, Luna R. Probing the cortical neuronal correlates of a sensory discrimination process. *Archives Italiannes de Biologie*, 140:253-62
- 2002 Romo R, Salinas E, Hernandez A, Zainos A, **Lemus L**, de Lafuente V, Luna R. Neural codes for perception. *Revista de Neurología*, 34:364-71

- 2000 Romo R, Hernandez A, Zainos A, Brody CD, **Lemus L**. Sensing without touching: psychophysical performance based on cortical microstimulation. *Neuron*, 26:273-8
- 1999 Romo R, Brody CD, Hernandez A, **Lemus L**. Neuronal correlates of parametric working memory in the prefrontal cortex. *Nature*, 399:470-3

Reviews

- 2020 **Lemus L**, Shepherd S. La Emoción y el Comportamiento. Ciencias. 133. Pp. 4-11. Fac. Ciencias, UNAM.
- 2019 **Lemus L**. For Plato's beards! Explaining the biology of emotions. *Oikos* <http://web.ecologia.unam.mx/oikos3.0/index.php/articulos/biologia-de-las-emociones>
- 2016 Morales-Lazaro S*, **Lemus L***, Rosenbaum T*. Regulation of thermoTRPs by lipids. *Temperature*, doi:10.1080/23328940.2016.1254136

Book Chapters

- 2009 Romo R, Hernández A, **Lemus L**, Luna R, Zainos A, Nácher V, Álvarez M, Vázquez Y, Cordero S, Camarillo L. Neural codes for perceptual decisions. In *From Development to Regeneration of the Nervous System*. Edited by CE Ribak, C Arámburo, EG Jones, JA Larriva, & LW. Swanson. Oxford University Press, New York, pp 265-96
- 2008 Romo R, Hernández A, de Lafuente V, Vázquez Y, Nácher V, Luna R, Zainos A, **Lemus L**, Álvarez M, Cordero S, y Camarillo L. Representación cerebral de la experiencia subjetiva. In *Acople cerebro Computadoras: ¿Matrimonio en Ciernes?* Edited by P Rudomin & R Romo. El colegio Nacional, Mexico, pp 35-80
- 2005 Romo R, Hernández A, Zainos A, **Lemus L**, de Lafuente V, Luna R. Probing the cortical evidence of somatosensory discrimination. In *Neural Plasticity In Adult Somatic Sensory-Motor Systems*. Edited by Ford F Ebner. Taylor & Francis. Nashville, TN, pp 79-98
- 2003 Romo R, Hernández A, de Lafuente V, Zainos A, **Lemus L**, Luna R, Nácher V, Alvarez M. Role of the primary somatosensory cortex in perceptual touch detection and discrimination. In *The Senses: A Comprehensive Reference, Vol 6, Somatosensation*. Edited by E Gardner & JH Kaas. Academic Press, San Diego, pp 215-32
- 2001 Romo R, Salinas E, Hernández A, Zainos A, **Lemus L**. Códigos Neuronales para la percepción táctil. In *Hacia la Frontera de lo Complejo; Los Misterios del Cerebro*. Edited by P Rudomín. El Colegio Nacional, México, pp 105-132

Commentaries

- 2010 Ghazanfar AA and **Lemus L** (2010) Multisensory integration: vision boosts information through suppression in auditory cortex. *Current Biology*, 20:R22-R23

Teaching

Institute of Cell Physiology UNAM

- 2020 Doctoral (Biomedical Sciences) *Auditory System* Biophysics of the Cellular Electrical Activity (1 class)
- 2019 Bachelors (Neuroscience) *Language*. Introduction to Neuroscience (1Class)
- 2018 Bachelors (Neuroscience) *Sensory Systems* Neurophysiology (5 Lectures)
- 2017 Bachelors (Neuroscience) *Vision / Audition* Functional Neuroanatomy (4 Lectures)
- 2017 Doctoral (Biomedical Sciences) *Neural Codes: From Action Potentials to Oscillations and Synchrony* (organizer)
- 2017 Doctoral (Biomedical Sciences) *Auditory System* Biophysics of the Cellular Electrical Activity (1 class)
- 2016 Intelligence Evolution. *Nuclear Sciences Institute UNAM* (1 Class)
- 2016 Doctoral (Biomedical Sciences) *Auditory System* Biophysics of the Cellular Electrical Activity (1 class)
- 2016 Doctoral (Biomedical Sciences) *Comparative Neuroanatomy of the Sensory Systems* (organizer)

2013 – 2015	Doctoral (Biomedical Sciences) <i>Somatosensory Receptors</i> Biophysics of the Cellular Electrical Activity (1 class)
2014	Doctoral (Biomedical Sciences) From Sensation to Cognition (organizer)
2012	Doctoral (Biomedical Sciences) <i>Neural Mechanisms of Sensory Perception</i> , Neurochemistry (1 class)
2009	Doctoral (Biomedical Sciences) Sensory Systems (co-organizer)

Neurobiology Institute UNAM

2014 – Present	Masters (Neurobiology) Auditory System II (1 class)
2014	Latin American Training Program LATAP Nervous System Encoding and Information Processing Workshop (1 Class)
2013	Masters (Neurobiology) <i>Auditory Cortical Processing</i> (1 Class)

Nuclear Sciences Institute UNAM

2016 – 2019	Intelligence Evolution (1 Class)
2015	Trimodal discrimination (1 Class)

National School of Music UNAM

2013 – 2017	Masters (Musical Cognition) Neuroanatomy (organizer)
2012	Masters (Musical Cognition) Psychoacoustics (organizer)

Service

Internal

2018 – Present	IFC Computing services Committee
2014 – Present	Posters Fair Retreat (organizer)
2012 – Present	Seminars Committee
2017	Neurosciences Bachelor Admission Committee
2012 – 2014	Graduate Biomedical Sciences Admissions Committee

External

2021	COSYNE (10 papers)
2020	COSYNE (10 papers)
2014 – 2020	PAPIIT UNAM (referee)
2018	Posters Fair: National Institute of Psychiatry, Mexico City (posters judge)
2017	Musical Cognition ENM UNAM Masters and Doctoral Admissions Committee
2015	IRP IBERO (referee)
2015	Symposium Neural Circuits of Complex Behaviors SMCF (chair)
2013 – 2015	IX Colloquium of Masters and Doctorate students in music ENM UNAM (Commentator)
2014	XIX International Course on Biological Bases of Behavior (posters judge)

Reviewer for Scientific Journals

2021	J. Neurophysiology (1 paper)
2021	Frontiers in Integrative Neuroscience (2 papers)
2021	Human Brain Mapping (1 paper)
2021	Hindawi (1 a paper)
2020	Scientific Reports (1 paper)
2020	Journal of Neurophysiology (1 paper)
2019	Scientific Reports (1 paper)
2019	Frontiers in Psychology (2 paper)
2019	Frontiers in Integrative Neuroscience (2 paper)
2019	Neuroscience (7 papers)

2018	Cerebral Cortex (1 paper)
2018	Neuroscience (9 papers)
2018	Frontiers in Integrative Neuroscience (1 paper)
2017	Neuroscience (1 paper)
2016	Neuroscience (1 paper)
2016	Frontiers in Psychology (3 paper)
2015	Frontiers in Psychology (1 paper)
2012	Frontiers in Neuroscience (1 paper)

Mentoring

Doctorate Students

Current	Isaac Morán Martínez
Current	Jonathan Melchor Hernández
Current	Josué de Jesús Juárez Vidales
Current	Miguel Angel Mata Herrera
Current	Elizabeth Cabrera Ruiz

Bachelor Students

2018	Fabiola Duarte Ortiz. <i>Biomedical Research</i> . Currently at Duke University
2010	Leidy Ana Ortiz Colín. <i>Biology</i>

Doctorate & Masters Co-tutoring

Current	Marina Fuentes Dávila (Neurobiología, UNAM)
Current	Leopoldo Emmanuel Polo Castillo (ICAT, UNAM)
Current	Cecilia Paulina Mares Román (Neurobiología, UNAM)
Current	Adriana Moreno (Victor de Lafuente)
Current	Cynthia de León (Hugo Merchant)
Current	Juan Pablo Márquez (Hugo Merchant)
Current	Pablo Marquet (Pavel Rueda)
2019	Francis Manno (Fernando Barrios)
2019	Esmeralda Fonseca (Ranier Gutierrez)
2017	Rafael Olivares (Eduardo Rojas)
2017	Raúl Hernández (Victor de Lafuente)
2016	Jorge Gamez (Hugo Merchant)
2016	Ramón Bartolo (Hugo Merchant)

Thesis Committees

2021	Sonia María Ruiz Cejudo (Cognición musical, UNAM)
2021	Fátima Sofía Ávila Cascajares (Cognición musical, UNAM)
2021	Ana María Malagón Leal (Neurobiología, UNAM)
2021	Karla Nayeli Ayala Mercado (Neurobiología, UNAM)
2021	Oscar Eduardo Juárez Mora (I. Fisiología. BUAP)
2020	Ameyaltzin Castillo Almazán (Victor de Lafente)
2020	Annie Yoleme Luma (Pavel Rueda)
2019	Miriam Goyri (Victor de Lafuente)
2019	Jesús Hernández (Enrique Nava)
2018	Alejandra Padrón (Rocío Salceda)

Invited Talks

2021	Correlatos neuronales del reconocimiento de palabras y otros sonidos complejos en macacos. En Fronteras de la Cognición. Fac. Psicología, UNAM. Marzo 24, 2021.
2021	Correlatos neuronales de la percepción de palabras en monos Rhesus. Instituto de Neurociencias, Universidad de Guadalajara. Abril 14, 2021

- 2020 Neuronal correlate of words recognition in macaques. IFC (Autumn Symposium)
- 2019 Invariant Perception of Sounds & Words in Macaques. Boston University, Boston, USA
- 2019 Neuronal bases of the invariant perception of sounds. UASLP, San Luis Potosí, Mexico
- 2019 Alexa, how does the brain recognize words? FM, UNAM
- 2018 Behind the Blue Dress: From perception to consciousness. UNIVERSUM, UNAM
- 2017 What Is Hiding Behind the Blue Dress? From perception to consciousness. Latin American University, Mexico City
- 2017 Cortical Representation of Concepts. Brain Week. FES Zaragoza, UNAM
- 2016 Multisensory Integration. Neuroscience Department IFC, UNAM
- 2015 Multisensory Integration. Learning and Memory Symposium. INB, UNAM
- 2015 Multisensory integration. UV, Xalapa, Mexico
- 2015 Auditory System. SFN Webinar
- 2015 What Is Hiding Behind the Blue Dress? P6, UNAM
- 2015 What Is Hiding Behind the Blue Dress? LOGOS, Mexico City
- 2014 What do brains means? Sciences Fair. UNIVERSUM, UNAM
- 2014 Coding and integration of Multisensory information. FM, UNAM
- 2013 A Brief Story of the Brain. ICN, UNAM
- 2013 The Homunculus; A Little Man Who Lives in the Brain. UNIVERSUM, UNAM
- 2013 2020/01/01, 14:32 When Machines Acquired consciousness. Science-Fiction Science. ICN, UNAM
- 2013 Decision Making: An Internal Conflict. Conflict and Negotiation: A Multidisciplinary Approach. FCPYS, UNAM
- 2013 Neural encoding of multisensory information. FQ, UNAM

Congresses & symposia

- 2020 Autumn Symposium. IFC. UNAM
- 2019 Custom Design and the Chronic Vector Array. Neuronexus workshop (speaker). SFN, Chicago, USA
- 2019 Lemus L*, Melchor J, Morán I, Figueroa T. Perceptual Constancy of Naturalistic Sounds in Macaques. Poster (presenter). Society for Neuroscience. Chicago, USA
- 2019 Representation of Acoustic Objects in the Brain. Retreat (speaker). IFC, UNAM
- 2018 Association of Sounds and Images in the Brain. In Science Art & Cognition Workshop (speaker). Cuernavaca, Mexico
- 2016 Cortical Representation of Acoustic Objects in the Rhesus monkey. Retreat (speaker). IFC, UNAM
- 2016 Cortical Representation of Auditory Categories in the Rhesus monkey. SMCF Symposium (speaker & chairman). Campeche, Mexico
- 2016 Melchor J, Morán I, Figueroa T, Lemus L*. The Hierarchical Processing of Auditory Objects in the Cerebral Cortex of the Rhesus Monkey. P Rudomín Multidisciplinary Workshop. Cocoyoc, Mexico
- 2014 The Acrobatic Brain. 70th encounter of Sciences, Arts, and Humanities (speaker). IF, UNAM
- 2013 Behavioral value of the coding and integration of information in the primary auditory cortex. XVIII International course on the biological bases of behavior (speaker). Tlaxcala, Mexico
- 2012 Multisensory perception. X Course in Psychobiology and Neurosciences (speaker). FP, UNAM
- 2012 Bimodal Discrimination. FALAN Symposium (speaker). Cancun, Mexico

Outreach

- 2019 Interview to Stanislav Dehaene (Neuroscientist). In Contemporary Thinkers. TVUNAM <https://www.youtube.com/watch?v=l1E3Ze4MjEo>
- 2018 What's on the border of biomedical sciences? Round table. FILUNI, UNAM
- 2015 Brain Myths. Interview, QUO Magazine
- 2014 The Brain. Interview, IMER Radio
- 2014 Monkey business of the Brain. UNIVERSUM, UNAM

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