

CONTACT 4 Washington Place, room 621  
INFORMATION New York, NY 10003

312-885-8749  
[upo201@nyu.edu](mailto:upo201@nyu.edu)

EDUCATION

**The University of Chicago**, Chicago, IL

Ph.D. in Statistics (advisor: Nicolas Brunel) 2018  
M.S. in Statistics 2015

**Universidad de Chile**, Santiago, Chile

M.S. in Physics, (advisor: Enrique Tirapegui) 2013  
Molecular Biotechnology Engineer Certificate (ranked 1/8) 2013  
B.S. in Physics (ranked 1/6) 2012

EMPLOYMENT

**New York University**, Center of Neural Science, New York City, NY

Swartz Fellow in Theoretical Neuroscience 3/20-present  
Postdoctoral Associate (supervisor: Xiao-Jing Wang) 1/19-3/20

HONORS AND  
AWARDS

Young Leader Prize. Diario Financiero (Chilean newspaper). 10/17  
Doctoral Fulbright Fellowship. Fulbright commission. 07/12  
Best Physics Student of Class 2011. Universidad de Chile. 12/11  
CONICYT Master Fellowship. Chilean Government. Ranked 5/1584. 03/11  
Scholarship for Undergraduate Studies. Chilean Ministry of Education. 03/04

PUBLICATIONS

5. **Pereira U** and Brunel N. Unsupervised learning of persistent and sequential activity. *Frontiers in Computational Neuroscience (in press)*, 2019.
4. Vera J, **Pereira U**, Reynaert B, Bacigalupo J and Sanhueza M. Modulation of frequency preference in heterogeneous populations of theta-resonant neurons. *Neuroscience (in press)*, 2019.
3. **Pereira U** and Brunel N. Attractor dynamics in networks with learning rules inferred from in vivo data. *Neuron*, 99(1), 227-238, 2018.
2. **Pereira U**, Coulet P and Tirapegui E. The Bogdanov-Takens normal form: a minimal model for single neuron dynamics. *Entropy*, 17(12):7859–7874, 2015.
1. Vera J, Pezzoli M, **Pereira U**, Bacigalupo J and Sanhueza M. Electrical resonance in the  $\theta$  frequency range in olfactory amygdala neurons. *Plos One*, 9(1):e85826, 2014.

SUBMITTED  
MANUSCRIPTS

2. Recanatesi\* S, **Pereira\*** U, Murakami M, Mainen<sup>†</sup> Z and Mazzucato<sup>†</sup> L. Metastable attractors explain the variable timing of stable behavioral action sequences. *bioRxiv*, January, 2020<sup>1</sup>.
1. Gillett M, **Pereira U** and Brunel N. Characteristics of sequential activity in networks with temporally asymmetric Hebbian learning. *bioRxiv*, October, 2019.

<sup>1</sup>\* =co-first author; <sup>†</sup> = co-senior author.

## INVITED TALKS

02/20 Mathematical Biology Seminar. NJIT, Newark  
 07/19 Swartz Meeting. Janelia Research Campus, Ashburn  
 11/18 Psychology Department. Pontificia Universidad Católica de Chile, Santiago  
 10/18 Institute of Neuroscience. University of Oregon, Eugene  
 09/18 Bernstein Conference, Satellite Workshops. TUB, Berlin  
 07/18 Neuroscience Program. University of Illinois at Urbana-Champaign, Champaign  
 03/18 Center for Neural Science. NYU, New York  
 03/18 Center for Theoretical Neuroscience. Columbia University, New York  
 03/18 Center for Brain Science. Harvard University, Cambridge  
 10/17 Workshop on Theoretical Neuroscience. Janelia Research Campus, Ashburn  
 09/17 Physics Department. Universidad de Chile, Santiago  
 06/17 International Conference on Mathematical Neuroscience, Boulder

## REFEREED CONFERENCE ABSTRACTS AND PROCEEDINGS

6. Recanatesi\* S, **Pereira**\* U, Murakami M, Mainen<sup>†</sup> Z and Mazzucato<sup>†</sup> L. Metastable attractors in secondary motor cortex underlie self-initiated behavior. COSYNE poster presentation. Denver, EEUU. February, 2020.<sup>2</sup>
5. Gillett M, **Pereira** U and Brunel N. Unsupervised learning of sequential activity with temporally asymmetric Hebbian learning rules. COSYNE Poster Presentation. Denver, EEUU. February 2018.
4. **Pereira** U and Brunel N. Optimal Unsupervised Hebbian Learning Rules For Attractor Neural Networks. COSYNE Poster Presentation. Salt Lake City, EEUU. February 2017.
3. **Pereira** U and Brunel N. Unsupervised Learning of Persistent and Sequential Activity. COSYNE Poster Presentation. Salt Lake City, EEUU. February 2016.
2. Contreras D, **Pereira** U, Hernández V, Reynaert B and Letelier JC. A loop conjecture for metabolic closure. In *ECAL*, pages 176–183, 2011. MIT press. pages 176–183, 2011.
1. Jaramillo S., Honorato-Zimmer R., **Pereira** U., Contreras D., Reynaert B., Hernández V., Soto-Andrade J., Cárdenas M.L., Cornish-Bowden A. and Letelier J.C. (M,R) Systems and RAF Sets: Common Ideas, Tools and Projections. *XII Artificial life Conference*. Odense, Denmark. August, 2010.

## CONFERENCE POSTERS

9. **Pereira** U and Brunel N. Unsupervised Learning of Sequential Activity. XV International Workshop on Instabilities and Nonequilibrium Structures. Valparaíso, Chile. December 2015.
8. Vera J, **Pereira** U, Reynaert B, Bacigalupo J and Sanhueza M. Modulation of frequency preference by changes in input resistance. 44th Annual Meeting Society for Neuroscience. Washington D.C., USA. November 2014.
7. Vera J, **Pereira** U, Reynaert B, Deichler A, Astudillo D, Bacigalupo J, and Sanhueza M. A biological context for theta-frequency neuronal resonance: a comparative study between cortical amygdala and hippocampal neurons. X Annual meeting of the Chilean Society for Neuroscience. October, 2014. Valdivia, Chile.
6. **Pereira** U, Tirapegui E. Una Ecuación Universal Para la Dinámica Neuronal. In Proceedings of the XVII Conference on Nonequilibrium Statistical Mechanics and Nonlinear Physics. Santiago, Chile. December 2012.

---

<sup>2</sup>\* =co-first author; <sup>†</sup> = co-senior author.

5. **Pereira U**, Tirapegui E. Una Ecuación Universal Para la Dinámica Neuronal. In Proceedings of the XVIII Simposio Chileno de Física. La Serena, Chile. November, 2012.
4. **Pereira U**, Vera J, Pezzoli M, Bacigalupo J and Sanhueza M. A computational conductance-based model that reproduce theta resonance dynamics in olfactory amygdala neurons. *41st Annual meeting of the Society for Neuroscience*. Washington DC, EEUU. November, 2011.
3. Vera J, **Pereira U**, Pezzoli M, Bacigalupo J and Sanhueza M. Sub and supra-threshold dynamics of resonant neurons in the olfactory amygdala. *41st Annual meeting of the Society for Neuroscience*. Washington DC, EEUU. November, 2011.
2. Contreras D, **Pereira U**, Hernández V, Reynaert B and Letelier JC. A loop conjecture for metabolic closure. *Eleventh European Conference on the Synthesis and Simulation of Living Systems*. Paris, France. August 2011.
1. **Pereira U**, Pezzoli M, Bacigalupo J, Sanhueza M. A computational conductance-based model of electrical resonance in the theta frequency range in olfactory amygdala neurons. VI meeting of the Chilean Society of Neuroscience. Valdivia, Chile. September 2010.

#### TEACHING EXPERIENCE

##### New York University

Computational Neuroscience of Elemental Cognition (TA and invited lecturer)  
Fall 19

##### The University of Chicago

Theoretical Neuroscience (TA)	Winter 17
Statistical Methods and Applications (TA)	Fall 16
Statistical Models and Methods (TA)	Spring 15
Statistical Models and Methods (Lecturer)	Winter 15
Statistical Methods and Applications (TA)	Fall 15
Statistical Methods and Applications (TA)	Spring 14
Elementary Statistic (TA)	Fall 14
Theoretical Neuroscience (TA)	Winter 13

##### Universidad de Chile

General Physiology (TA)	Fall 10
Biological Instrumentation (TA)	Spring 08

#### COURSES

Methods in Computational Neuroscience. Marine Biology Lab. Woods Hole, MA, USA. July 29-August 24, 2018  
 Latin American Summer School in Computational Neuroscience. Institute of Complex Systems. Valparaíso, Chile. January 11-29, 2010  
 VI Summer School of Complex Systems. Institute of Complex Systems. Valparaíso, Chile. January 7-11, 2008

#### SERVICE

Journal reviewer: PLOS Computational Biology.