Alejandro Parga-Becerra MD PhD

Neuroscientist

alejandro-parga.github.io

apargab@gmail.com | +1(480)244-5947

SUMMARY

As a neuroscientist with medical training and advanced research skills in **neuro-electrophysiology**, I am an expert on the **synaptic plasticity** of neuronal circuits and their alterations in functional brain disorders. In my research, I bring together electrophysiological tools to investigate the function of neuronal networks. My strengths are in the **interpretation of neuro-anatomical studies** and the **biophysics** involved in hippocampal neuronal circuits. My goal is to understand the function of neuronal ensembles that is relevant to cognitive function and translate this knowledge into concrete applications that potentiate technology to modulate neuronal networks.

RELEVANT EXPERIENCE

2017-present ***Advanced electrophysiological training***

Research Scientist/Engineer3 – Department of Physiology and Biophysics – UW, Seattle |Dembrow lab

●*Multimodal analysis of primate infragranular pyramidal neurons and their modulation*

Senior Fellow **-** Department of Neurology - University of Washington, Seattle

Epilepsy Center of Excellence and Neurology Service VA Puget Sound | Ransom lab

● *Regulation of Extra-synaptic $GABA_A$ Receptors in Health and Disease.*[1]

2015-2016 ***Electrophysiological tools, Optogenetics, and Computational training***

Postdoctoral Research Associate - University of Arizona, Phoenix Campus | Anderson lab

● *Optogenetic regulation of CSD using targeted pyramidal inhibition and activation.*[2]

● *Neurosteroid action on Cortical Spreading Depression (CSD) through differential GABAergic signal onto pyramidal neuron.*

2008-2014 ***Pharmacological and Neuroanatomical training***

Research Assistant – Barrow Neurological Institute - ASU, Phoenix | Hammer lab

● *Retrograded trans-synaptic tracing of auditory neuronal circuits using pseudorabies virus-152.*

● *Dopamine-induced auditory cortical activation and attenuation by D2-like receptor-selective antagonist in the caudatoputamen of the rat.*[5]

EDUCATION

2014 ***Doctor of Philosophy (Ph.D.) Neuroscience***

Barrow Neurological Institute - ASU - Phoenix

Dissertation: *Cortical auditory functional activation by cortico-striato-thalamo-cortico circuits: An endogenous mechanism of the brain to activate the auditory cortex, relevant to the neuronal basis of auditory hallucinations.* https://repository.asu.edu/items/27433

2006 ***Postgraduate Medical Training***

La Arandia Military Base - Caqueta - ML 18964/2006

EMS physician | Military Surgical Brigates | Tropical Diseases Service.

2005 ***Doctor of Medicine (MD) Neurophysiology***

National University of Colombia – COM Bogota

Clerkship - San Rafael Hospital/Ramon Gonzalez Valencia University Hospital - UIS

REPRESENTATIVE PUBLICATIONS AND WORKS IN PROGRESS

RESEARCH SKILLS

in vitro and *in vivo* electrophysiology
Tracing neuronal circuits with viral vectors
Opto/chemogenetics
Confocal and multiphoton microscopy
Patch-Seq
Intrinsic Optical Signal imaging
Stereotaxic intracranial surgeries
in situ hybridization
immuno-histochemistry
Fluorogold iontophoretic infusions for cellular labeling

COMPUTATIONAL SKILLS

Programming Languages
Python, C++
Version Control
GIT
Imaging
ImageJ
NiE
Imaging Workbench
Stereoinvestigator
Neurolucida
Data Recording
Igor Pro, MIES, PolyScan2, pClamp, Linlab
Statistics
Origin, SPSS, SAS, STATA
Blaise, CDISC

1. **A. Parga** & C. Ransom (2021). Traumatic brain injury broadly affects GABAergic signaling in dentate gyrus granule cells. *eNeuro*, 8 (3) 0055-20.2021 doi: 10.1523/ENEURO.0055-20.2021
2. **A. Parga** & T. Anderson (2017). Targeted optogenetic pyramidal neurons to regulate cortical spreading depression. *Journal of Neurophysiology*. in revision.
3. **A. Parga**, G. Muñoz & R. P. Hammer (2016) Excessive striatal dopamine activates the auditory cortex via striato-thalamo-cortical projections in the rat. *Biological Psychiatry* 77(9), 62S. doi.org/10.1016/j.biopsych.2015.03.006
4. A. N. Hoffman, **A. Parga**, P. Paode, L. R. Watterson, E. M. Nikulina, R. P. Hammer, Jr., and C. D. Conrad (2015). Chronic stress-enhanced fear memories are associated with induced amygdala zif268 expression and are resistant to reconsolidation. *Neurobiology of Learning and Memory*, 120, 61-8. doi: 10.1016/j.nlm.2015.02.004.
5. **A. Parga** & R. P Hammer (2012). Auditory cortical activation after dopamine infusion in caudal caudatoputamen of the rat. *Biological Psychiatry*, 71(8), 312S. doi.org/10.1016/j.biopsych.2012.02.014