



Constanza Garcia Keller, PhD

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Pronouns: she, her

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Biography

Dr. Garcia Keller joined the Medical College of Wisconsin as Assistant Professor in July of 2022. Prior to her arrival at MCW, she joined the Kalivas laboratory at the Medical University of South Carolina, where she completed her post-doctoral training and then held the position of Research Assistant Professor. Dr. Garcia Keller graduated from National University of Cordoba, Argentina in 2007 with a Bachelor of Science in Biochemistry. She continued her studies there, and later earned her Ph.D. in Chemical Sciences, with specialization in neuropharmacology. For her doctoral studies, she was awarded first place in Best Argentinian Neuroscience Thesis 2014. Dr. Garcia Keller's research focuses on the neurobiology of stress and addiction.

Research Interest (keywords)

- Trauma and Stress-Related Disorder/ Post-Traumatic Stress Disorder
- Addiction/Substance Use Disorder (Cocaine, Heroin, Nicotine, Cannabinoids)
- Extracellular Matrix (ECM)
- Synaptic Plasticity/Pentapartite Synapsis (pre and postsynaptic neurons, astrocyte, microglia, ECM)
- NeuroImmunoEndocrinology
- Neuropharmacology
- System Neuroscience

Research Interests

The long-term goal of the Garcia Keller laboratory is to identify the neurological mechanisms underlying stress-induced vulnerability in the development of substance use disorders (SUDs). Converging epidemiological studies indicate that a history of acute life threatening events increases the incidence of post-traumatic stress disorder (PTSD), and a diagnosis for PTSD carries 30-50% comorbidity with SUDs. Such comorbidity results in greater drug use and poorer treatment outcomes. The lab uses a preclinical rodent model to understand how a single stressful event induces long-lasting adaptations within corticostriatal synapses that lead to increased vulnerability to addiction, not only facilitating drug self-administration but also the exposure to a stress conditioned cue can precipitate relapse.

Current ongoing projects are aimed to **1)** understand the neurobiology and neurocircuits involved in how stress induce vulnerability to addiction, **2)** study the role of the pentapartite synapse in stress and addiction, and **3)** study novel therapeutic treatments for PTSD and SUD using an oligonucleotide technology to target key gene of interest.

THE CGK LAB TEAM

- Michael Meyerink, MS. Lab Supervisor
- Rose Mary Akiki, MSTP Student at MUSC, Collaborator.
- Devki Bhatt, Undergraduate Researcher.