UC RIVERSIDE
School of Medicine
DIVISION OF BIOMEDICAL SCIENCES

PH.D. DISSERTATION DEFENSE OF

EDWARD ALEXANDER VIZCARRA

Biomedical Sciences PhD Candidate
Wilson Lab
Dr. Emma H. Wilson, Chairperson

Glutamate's influence on group 1 metabotropic glutamate receptor-expressing CD8 T cells recruited to the Toxoplasma infected brain.

Toxoplasma gondii (T. gondii) is one of the most effective transmissible pathogens globally, infecting approximately two billion people. During chronic toxoplasma infection, there is an increase in extracellular (EC) glutamate in the brain due to the downregulation of astrocytic glutamate transporter-1 (GLT-1). However, it is unclear how pathophysiological levels of glutamate affect the immune cell repertoire. The ultimate goal of this research project is to determine the influence of glutamate on protective immunity exerted by T cells in response to chronic toxoplasma infection. This research contributes to our fundamental knowledge of how tissue-derived signals influence the immune landscape, and has broad implications in other areas of disease research that implicate both increased glutamate concentrations and a recruitment of T cells into the central nervous system. Our findings have led to the identification of a brain CD8 T cell population that expresses group 1 metabotropic glutamate receptors. Phenotypic studies demonstrate that mGluR-expressing CD8 T cells exhibit more memory potential than their mGluR-deficient counterparts. Finally, functional studies reveal that the production of IFNγ is partially enhanced by mGluR activation.

Wednesday, September 7, 2022
10:00AM (PST)
In-Person Location: MRB, Seminar Room

Zoom:
https://ucr-edu-hipaa.zoom.us/j/6425580070?pwd=b2orcHkzYzFSSU5SY0haMUpUUzgxQT09
Meeting ID: 642 558 0070
Passcode: 673472