

# International Congress on **Neuroimmunology and Therapeutics**

DoubleTree by Hilton Hotel San Francisco Airport, San Francisco, CA, USA

## **Physiological stress results in potent suppression of iNKT cells following alpha-galactosylceramide mediated activation**

**Christopher R. Shaler**  
University of Western Ontario, Canada

It has long been recognized that physiological stress is associated with an increased risk of infection. Despite these observations it is incompletely understood as to how physiological stress influences the immune system resulting in this increased susceptibility to infection. While it is known that the production of cortisol and its ensuing effects can potently suppress many facets of the immune response, cortisol alone cannot completely explain the impaired functionality seen following physiological stress. Indeed, stress is known to induce the release of various catecholamines with demonstrable immune modulatory effects. In our current study, we utilized a murine model of restraint stress to evaluate the impact of physiological stress on the function of a unique population of invariant Natural Killer T cells (iNKT cells). Highly enriched in mice, iNKT cells play a key role in initiating the immune response to various infections. Utilizing a potent and selective activator of iNKT cells, alpha-galactosylceramide, we have demonstrated *in vivo* that physiological stress blunts iNKT cell activation preventing the secretion of pro-inflammatory cytokines following *in vivo* activation. Further, we have demonstrated that it is the production of norepinephrine, rather than cortisol, that is responsible for this impaired functionality. Our work for the first time begins to evaluate the impact of physiological stress and its impact on the functionality of critical innate immune initiators, giving insight into the mechanisms by which stress leaves an individual highly susceptible to infection.

### **Biography**

Christopher Shaler completed his Ph.D in 2014 at McMaster University, Ontario, Canada. During his tenure as a graduate student he was the recipient of various awards, including numerous awards for graduate student excellence as well as the prestigious, Canadian Institutes of Health Research, Banting and Best's Doctoral scholarship award. Christopher Shaler has published 14 peer-reviewed publications, with 2 first author primary research papers and 2 first author reviews. Currently, Christopher is entering his second year as a postdoctoral researcher at the University of Western Ontario.

[cshaler@uwo.ca](mailto:cshaler@uwo.ca)

### **Notes:**