THE GRADUATE COLLEGE OF THE
UNIVERSITY OF OKLAHOMA HEALTH SCIENCES CENTER

ANNOUNCES THE FINAL EXAMINATION OF

Agnieshka Maneesha Agasing

FOR THE DEFENSE OF DOCTOR OF PHILOSOPHY DEGREE
GRADUATE COLLEGE
Department of Microbiology and Immunology

Friday, April 17, 2020 | 09:15 am
Location: BRC109 | ZOOM:
https://omrf.zoom.us/j/894523879?pwd=d0RKLzZpUXl0SEZnaEFKakRlb1l0dz09
Meeting ID: 894 523 879 and Password: 004442

THE IMPACT OF TYPE 1 INTERFERON ON B CELLS IN TWO DISTINCT NEUROINFLAMMATORY DISORDERS: NEUROMYELITIS OPTICA & MULTIPLE SCLEROSIS

COMMITTEE IN CHARGE: Robert C. Axtell, PhD, Lauren A. Zenewicz, PhD, Madeleine W. Cunningham, PhD, William H. Hildebrand, PhD, Robert H. Scofield, MD

ABSTRACT: Type 1 Interferons (IFN-I) are a major focus of research in autoimmune diseases because of their ability to define clinical phenotypes and treatment responses. Depending on disease context, IFN-I can drive either inflammatory or immunosuppressive responses. This dual nature of IFN-I has thus been a major challenge in determining their exact functions in autoimmunity. In this work, we investigate the mechanisms driven by IFN-I in two neuroinflammatory autoimmune diseases: neuromyelitis optica spectrum disorders (NMOSD) and multiple sclerosis (MS). In NMOSD, we establish that IFN-I, T-helper 17 (TH17) and interleukin-6 (IL-6) cooperate to drive severe disease pathology and that IFN-I impact B cells directly to drive TH17 pathogenicity via IL-6. In MS, we describe markers associated with active relapse, namely, low IFN-I, low transitional B cells and high neurofilament light (NFL). Finally, using a B cell driven model of neuroinflammation, we show that the mechanisms driven by IFN-I during disease depends on the inflammatory or regulatory functions of B cells. Overall, our findings demonstrate that heterogeneity in T-helper subsets, endogenous IFN-I levels and B cell functions influences the differential effects of IFN-I in NMOSD and MS.