

M & I  
Microbiology  
and Immunology  
University of North Carolina at Chapel Hill

**DISSERTATION SEMINAR**

**Denise Allard Trout**

“Schwann cell-derived periostin promotes autoimmune peripheral polyneuropathy via macrophage recruitment.”

Friday, June 15, 2018  
2:00 p.m.  
6004 Marsico Hall

Dissertation Advisor: Dr. Maureen Su

Presented in partial fulfillment of the requirements for the degree of  
Doctor of Philosophy

## ABSTRACT

**Denise Allard Trout:** Schwann cell-derived periostin promotes autoimmune peripheral polyneuropathy via macrophage recruitment.  
(Under the direction of Dr. Maureen Su)

Chronic inflammatory demyelinating polyneuropathy (CIDP) and Guillain-Barre syndrome (GBS) are inflammatory neuropathies that affect humans and are characterized by peripheral nerve myelin destruction and macrophage-containing immune infiltrates. In contrast to the traditional view that the peripheral nerve is simply the target of autoimmunity, we found that peripheral nerve Schwann cells exacerbate the autoimmune process through extracellular matrix (ECM) protein induction. In a spontaneous autoimmune peripheral polyneuropathy (SAPP) mouse model of inflammatory neuropathy and CIDP nerve biopsies, the ECM protein periostin (Postn) was upregulated in affected sciatic nerves and was primarily expressed by Schwann cells. Postn deficiency delayed the onset and reduced the extent of neuropathy, as well as decreased the number of macrophages infiltrating the sciatic nerve. In an in vitro assay, Postn promoted macrophage chemotaxis in an integrin (Itg)- $\alpha$ M and Itg $\alpha$ V-dependent manner. The PNS-infiltrating macrophages in SAPP-affected nerves were pathogenic, since depletion of macrophages protected against the development of neuropathy. Our findings show that Schwann cells promote macrophage infiltration by upregulating Postn, and suggest that Postn is a novel target for the treatment of macrophage-associated inflammatory neuropathies.