



# EXCELLENCE IN GENETICS & IMMUNOLOGY SEMINAR SERIES



**Yasmina Laouar, Ph.D.**

Assistant Professor, Department of Microbiology and Immunology  
University of Michigan, School of Medicine.

**Title:** "Lessons from CD11c<sup>dnR</sup> mice: a mouse model with TGF $\beta$ -resistant innate cell compartment"

**Thursday, April 30, 2015**

**Room #N2/2, 2:00 PM**

*Stewart Biology Building*

One central question that emerged from the evolving field of the gut microbiome is how, despite a heavy antigenic load, the gut maintains equilibrium between effective immunity against pathogens and tolerance against commensal bacteria. A clue to understanding how the gut maintains immune equilibrium came from the recognition that the complex environment of the intestine is conducive to the development of specialized immune cells. The collective efforts accumulated the last few years resulted in the identification of a number of specialized intestinal innate cells with CD103<sup>+</sup> dendritic cells (DCs) and IL-22<sup>+</sup> innate lymphoid cells (ILCs) at the center of the intestinal immune network. One pressing question that remains unsolved is how the local environment of the gut dictates development and fate of these specialized innate cells? We have recently identified a regulatory circuit in which TGF- $\beta$  - a major component of the gut milieu- is required for the development of intestinal CD103<sup>+</sup>CD11b<sup>+</sup> DCs, which in turn are required for the homeostatic maintenance of ILC3 cells. The impact of this regulatory circuit is demonstrated by deadly consequences of *Citrobacter rodentium* infection in CD11c<sup>dnR</sup> mice lacking TGF- $\beta$ R signaling in DCs. While it may appear that we, immunologists, hear and read a lot about TGF $\beta$ , in reality most we hear about and read about is related to TGF $\beta$  in T cells. Yes, T cell field has made a great advance in understanding the mechanisms of regulation by TGF $\beta$ . In comparison, what is known today about the role of TGF $\beta$  in the innate immune system in general represents the tip of the iceberg. Using CD11c<sup>dnR</sup> mice, we were able to uncover a complex network for TGF- $\beta$  activity in the innate system. This seminar will trace 10 years of investigation and discoveries of the role of TGF- $\beta$  in NK cells, DCs, and recently ILCs.

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**LOCATION:** Stewart Biology Building, Room N2/2, 2:00 PM

**HOSTED BY:** DR SILVIA VIDAL, Director, Complex Traits Group