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Ligand-dependent Regulation of Nuclear Receptors in Inflammation

Laura A. Solt, Ph.D., is an Associate Professor in the Department of Immunology and Microbiology at UF Scripps Biomedical Research in Jupiter, Florida (formerly Scripps Florida). She received her B.A. from Boston College and her Ph.D. in Immunology from the University of Pennsylvania. After completing her postdoctoral research at the Scripps Research Institute's Jupiter, Florida (Scripps Florida) campus, she started her independent laboratory at Scripps Florida in 2013. Dr. Solt's research is focused on understanding the roles of nuclear receptors in the immune system, with a specific focus on TH17 cells, and how their expression, function, and activity affects disease. As ligand-regulated transcription factors, nuclear receptors serve as excellent targets for the treatment of a variety of diseases. Therefore, her lab also works in close collaboration with medicinal chemists to design and develop small molecule ligands to nuclear receptors to further probe their functions and evaluate their therapeutic potential. Using these approaches, her lab described a negative regulatory role for the nuclear receptor REV-ERB□ in TH17 cell development and autoimmunity as well as the design and synthesis of newer, more potent synthetic REV-ERB modulators that target TH17 cells in vivo. Additionally, her lab further elucidated the essential, pathogenic role for the nuclear receptor ROR□ in TH17 cells as well as the characterization of ROR□-selective small molecules targeting TH17 cells to treat TH17-mediated autoimmunity. Thus, her lab aims to gain insight into the transcriptional regulation of nuclear receptors and their ligand(s) to better understand signaling pathways that govern TH17 cell homeostasis vs. pathogenicity, which may aid in the rational design of therapeutics for specific disease indications.