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UNIVERSITÀ DEGLI STUDI DI
MODENA E REGGIO EMILIA

PhD Program in Molecular and Regenerative Medicine

Molecular and Regenerative Medicine Seminar Series (MRMss)



Dying to get noticed: Immune responses to cell death in vivo

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Dr. Andrew Oberst is a Professor in the Department of Immunology, University of Washington in Seattle, WA, USA. Dr. Oberst graduated from Amherst College in 2001, and pursued his graduate studies in Europe, in a collaborative program between the Universities of Rome and Paris. He received his doctorate in 2006, then completed postdoctoral training in the lab of Dr. Doug Green at St. Jude Children's Research Hospital in Memphis, TN. He joined the UW Department of Immunology as an Assistant Professor in 2012, was promoted to Associate Professor in 2018, and was promoted to full Professor in 2023. Dr. Oberst's laboratory studies programmed forms of cell death, including apoptosis, necroptosis and pyroptosis. They focus on both the molecular mechanisms of these programs, and on the immunological roles of these cell death programs in vivo. Their work spans models of cancer, autoimmunity, allergy and neuroinflammation.

Scientific abstract:

Billions of cells die in our bodies each day, and this poses a challenge for the immune system: It must ignore the vast majority of cell death events, which occur during normal tissue maintenance, to avoid harmful autoimmune reactions. However, it should also recognize and react to cell death caused by infection, injury, or neoplasia to limit pathology and return tissues to homeostasis. We now understand that cells may die via any of several distinct, regulated processes, and that how cells die provides essential cues to the immune system. Apoptosis is considered an immunologically silent form of regulated cell death, while pathways such as pyroptosis, necroptosis or ferroptosis involve the release of cytokines and other molecules that provide complex, context-dependent cues to the immune system.

The Oberst Lab is broadly interested in the mechanisms of different forms of programmed cell death, and on their protective and pathogenic roles in vivo. Ongoing project within the Oberst Lab include: 1) Studies of the effects of different forms of cell death on immune responses within primary tumors and distant metastatic sites; 2) Studies of cell death in the lung and its role in balancing type-1 and type-2 immune responses during antiviral and allergic responses; 3) Investigation of roles for cell death pathways in autoinflammatory diseases, such as the type-I interferonopathy Aicardi-Goutières syndrome; and 4) The fate of cells that survive viral infection, and their roles in sustaining inflammation and driving post-infection sequelae in the brain.

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