Daniela Cihakova, M.D., Ph.D.

Titles & Department

Professor of Pathology; Associate Director of Clinical Immunology Laboratory

Specialization Area

Autoimmune disease of the heart (myocarditis and dilated cardiomyopathy); and an immunology and inflammation approach to other heart conditions such as pericarditis and myocardial infarction.

Unmet Need

Understanding the unique role of immune cells in autoimmune diseases and inflammatory conditions of the heart.

Summary of Research & Work

Through the lens of autoimmune disease and immunology, Dr. Cihakova has made strides in understanding the role of the immune system in inflammatory conditions of the heart. Most notably, the Cihakova lab has elucidated a specific pathway that plays a significant role in the fate of Th17 T cells and subsequent inflammation or recovery in dilated cardiomyopathy. This immune-cell-mediated approach has been expanded to an array of other cardiac diseases and conditions, recently focusing on autoreactive T cells in heart inflammation of patients receiving immune checkpoint inhibitors. In addition, the Cihakova lab's work has been key in understanding the pathogenesis of cardiac inflammation following COVID-19 infection by investigating transcriptomic and proteomic changes to stromal and immune cells of cardiac tissue from human autopsy tissue.

Value Proposition

- Application of immune cell expertise to multiple disease states
- Novel therapeutic breakpoints in immune cell signaling for cardiac disease and injury
- Chemical and cell-based interventions may be faster and easier to engineer than tissue

Recent Publications

- Won T, Kalinoski HM, Wood MK, Hughes DM, Jaime CM, Delgado P, Talor MV, Lasrado N, Reddy J, Cihakova D. Cardiac myosin-specific autoimmune T cells contribute to immune-checkpoint-inhibitor-associated myocarditis. Cell Reports, November 2022.
- Won T, Gilotra NA, Wood MK, Hughes DM, Talor MV, Lovell J, Milstone AM, Steenburgen C, Cihakova D. Increased Interleukin 18-Dependent Immune Respoonses are Associated with Myopericarditis After COVID-19 mRNA Vaccination, Frontiers in Immunology, 2022.
- Won T, Wood MK, Hughes DM, Talor MV, Ma Z, Schneider J, Skinner JT, Asady B, Goerlich E, Halushka MK, Hays AG, Kim D, Parikh CR, Rosenberg AZ, Coppens I, Johns RA, Gilotra NA, Hooper JE, Pekosz A, Cihakova D. Endothelial thrombomodulin downregulation caused by

hypoxia contributes to severe infiltration and coagulopathy in COVID-19 patient lungs, eBioMedicine, 2022.

- Bracamonte-Baran W, Gilotra NA, Won T, Rodriguez KM, Talor MV, Oh BC, Griffin J, Wittstein I, Sharma K, Skinner J, Johns RA, Russell SD, Anders RA, Zhu Q, Halushka MK, Brandacher G, Cihakova D. Endothelial Stromal PD-L1 (Programmed Death Ligand 1) Modulates

Awards & Honors

- 2020 America Heart Association COVID-19 and Its Cardiovascular Impact Rapid Response Grant
- 2019 Children's Cardiomyopathy Foundation Grant
- 2017/2018 Sjörgen's Foundation Research Grant
- 2017 Journal of Nuclear Cardiology Young Investigators Award – Basic Science