



iNOVA4Health

- Conference -

November 20th, 10h00

ITQB Auditorium

Host: Ana Sofia Coroadinha



“Large-scale functional analysis of natively paired antibody heavy light chain repertoires”

Brandon DeKosky

Assistant Professor, The University of Kansas

Short CV:

Dr. Brandon DeKosky's research leverages recent advances in next-generation DNA sequencing technologies to achieve a more comprehensive understanding of immune function and accelerate development of new vaccines and therapeutics. As part of this work, he has been recognized with several honors including a Cellular and Biomolecular Engineering Rising Star award from the Biomedical Engineering Society, an NIH Early Independence Award, and a Career Award from the United States Department of Defense. Dr. DeKosky invented the very first technology for sequencing the unique immune receptor proteins encoded by single immune cells, at a massive scale (for example, over 5 million single B cells in a one-day experiment.) Dr. DeKosky's research group is applying these technologies and collaborating with other laboratories around the world to understand immune function in the settings of viral infections, vaccination, cancer, and autoimmune diseases. Recent efforts have studied immune responses to HIV, Ebola, and Zika viruses, thus providing scientists with new molecular clues to assist in development and testing of vaccines and therapeutics against these diseases.

Abstract:

Antibody drugs have also become a leading class of therapeutics due to the high specificity of antibody binding to protein targets. Antibody responses are also critical features of the human immune response that can provide protection against disease, and can result in autoimmunity under certain conditions. Recently developed technologies in paired heavy:light sequencing, native antibody library display, and computational analysis of NGS datasets have opened up new possibilities for discovering and annotating antibodies from B cell populations. We have invented and applied single-cell technologies for large-scale interrogation of native human immune responses in a variety of settings. New strategies in antibody library design are also enabling comprehensive assessments of possible antibody improvement pathways. We will discuss the development and application of these approaches to learn more about the development of human immunity and to discover antibodies with desired functional properties.