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Abstract

"Accelerated Discovery and Analysis of Natively Paired Human Antiviral Antibodies"

Next Generation technologies have dramatically accelerated the scope of data on antibody responses and amplified the power of antibody screening technologies. Recent advances in paired heavy:light sequencing, native antibody library display have also opened up new possibilities for discovering and annotating antibody functional performance on a repertoire scale. We will discuss the application of these recently developed technologies, in combination with next generation computational data analysis and precise library screening methods, to understand immune function and to identify new antibody molecules with desired functional properties. We will emphasize applications in antibody screening against infectious disease targets with high importance to public health including HIV-1, Ebola virus, and Zika virus.

Bio-Summary

Dr. DeKosky is an Assistant Professor at the University of Kansas, Departments of Chemical Engineering and Pharmaceutical Chemistry, where his laboratory leverages recent advances in next-generation DNA sequencing technologies to achieve a more comprehensive understanding of immune function that will accelerate the development of

new vaccines and therapeutics. Dr. DeKosky co-invented the very first technology for sequencing the antibody proteins encoded by B cells at the single-cell level, at a massive scale (for example, over 5 million single B cells in a one-day experiment.) This platform is being applied in Dr. DeKosky's lab and others around the world to understand immune function and for antibody drug discovery. Recent work has incorporated high-throughput functional analyses via yeast display in efforts to better understand human and non-human primate immune responses to HIV infection and Ebola vaccines. These new antibody discovery platforms are expanding our ability to develop and understand the mechanisms of protection for human vaccines and to develop novel therapeutics against infectious diseases.