

# Cologne Evolution Colloquium

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## **Exploiting B cell receptor analyses to fight infectious diseases**

The human antibody repertoire is generated by the recombination of different gene segments as well as by processes of somatic mutation. Together these mechanisms result in a tremendous diversity of antibodies that are able to combat various pathogens including viruses, bacteria, and malignant cells. We have established advanced protocols that allow us to analyze B cell receptor repertoires, to isolate monoclonal antibodies from single B cells, and to characterize antibodies for their neutralizing activity. With these methods, we have studied the antibody response in the context of natural infection and vaccination against different pathogens, including HIV-1, Ebola virus, HCV, SARS-CoV-2 and MERS-CoV. As a result, we found pathogen-specific traces of antibody convergence across multiple donors and identified numerous neutralizing antibodies, including a SARS-CoV-2 antibody, which is currently evaluated in a clinical phase II/III study. Our data demonstrate how B cell repertoire analyses can help to better understand, treat, and prevent infectious diseases and thereby contribute substantially to public health.

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Institute for Biological Physics

Online via Zoom

Hosted by Florian Klein and Michael Lässig