Universität Basel

Research Project

IMMUNIBY (ERC starting grant)

Third-party funded project

Project title IMMUNIBY (ERC starting grant)
Principal Investigator(s) Pinschewer, Daniel ;
Organisation / Research unit
Departement Biomedizin / Experimental Virology (Pinschewer)
Department
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Status Completed

This project aims for a quantum leap in the understudied area of memory B cell immunity to chronic viral infection. It provides i) a landscape analysis of primary and memory B cell responses to chronic viral challenge, ii) investigates receptor hypermutation of memory B cells for broadened protection against viral escape variants, and iii) studies the role of memory CD4+ T cells in augmenting memory B cell protection in chronic viral infection. Memory B cells represent a main pillar of immunological memory and account for long-term protection by the hepatitis B virus vaccine, the only one to afford protection against a persistent viral infection in humans. Yet our understanding of memory B cell immunity to chronic viral infection remains rudimentary, owing to a lack of advanced methodology and model systems for its investigation. My laboratory has developed a comprehensive set of tools to overcome these hurdles in the prototypic chronic infection model of lymphocytic choriomeningitis virus (LCMV) in mice. We have at hands the first LCMV-neutralizing monoclonal B cell receptor-expressing mouse (unpublished), and will collaborate with a world-leading lab in B cell biology to exploit their novel mouse model for in vivo tracing of polyclonal antigen-specific memory B cells. Combined with genetically engineered LCMV mutants, multi-parameter flow cytometry, state-of-the-art immunological methods, histopathology and deep sequencing of B cell receptor repertoires, these models will allow for unprecedented cell transfer and viral infection studies in vivo. Our leading expertise in LCMV molecular biology and immunology, combined with our partners' expertise in B cell biology warrants for a high likelihood of success in this ambitious journey to virgin territory. We expect this project to provide a conceptual basis and incentive to successfully exploit memory B cell immunity in the battle against global hepatitis C virus and human immunodeficiency virus pandemics.

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Add publication

Published results

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