

# Characterizing the B cell response towards Monkeypox virus in humans

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## Abstract

Monkeypox virus belongs to the *Poxviridae* family. Additional members of this family are Cowpox, Camelpox, and the Variola virus, the causative agent of smallpox disease. Monkeypox infection manifests with an initial prodromal period of flu-like symptoms lasting 1-4 days, followed by a characteristic rash and lymphadenopathy, with 1% of cases leading to mortality. In early May 2022 Monkeypox has been detected in the UK, marking the start of a new Monkeypox outbreak spreading rapidly throughout the world. To date (June 2022), Monkeypox was detected in 47 non-endemic countries affecting more than 4,000 individuals, mainly young adults. Although the virus has been first described in humans over 50 years ago, little is known about the humoral responses against this virus. Moreover, the main targets for neutralizing antibodies are still not identified. In our study, we set to characterize the developing humoral response against the Monkeypox virus in convalescent donors. To this end, we produced six recombinant viral membrane proteins that function in the viral life cycle and virulence. These proteins were used to screen plasma from recently identified Monkeypox convalescent donors in Israel. The most reactive viral antigens were used for B cell isolation and monoclonal antibody cloning. Our study might identify new viral sites of vulnerability and contribute to the development of new therapeutic targets and vaccines.