

SÉMINAIRES ET CONFÉRENCES



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« Recognition of the Plasmodium spp. circumsporozoite protein by malaria inhibitory antibodies »

Plasmodium sporozoites express circumsporozoite protein (CSP) on their surface, an essential protein that contains central repeating motifs. Antibodies targeting this region can neutralize infection, and the partial efficacy of RTS,S/AS01 – the leading malaria vaccine against *P. falciparum* – has been associated with the humoral response against the repeats. Although structural details of antibody recognition of *P. falciparum* CSP have recently emerged, the molecular basis of antibody-mediated inhibition of other Plasmodium species via CSP binding remains unclear.

We analyzed the structure and molecular interactions of potent monoclonal antibodies against CSP from *P. berghei* and *P. vivax* using molecular dynamics simulations, X-ray crystallography, and cryoEM. We revealed that monoclonal antibodies against *P. berghei* and *P. vivax* CSP can accommodate all subtle variances of the CSP repeating motifs. Interestingly, we discovered that monoclonal antibody 3D11 induces structural ordering of *P. berghei* CSP through homotypic interactions. Together, our findings uncover common mechanisms of antibody evolution in mammals against the CSP repeats of Plasmodium sporozoites.



Le lundi 26 avril 2021, 11h30

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Invité de Pascale Legault