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Protein and Antibody Design

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Antibody discovery and engineering by computational design

Antibodies are indispensable in research, diagnostics, and as therapeutics. Despite significant advances in antibody discovery and engineering technologies, challenges and unsolved problems remain, particularly in targeting challenging antigens, in tailoring binding to predetermined epitopes, and in the simultaneous optimisation of multiple biophysical traits. Traditional screening methods can be labor-intensive and struggle to navigate the complex trade-offs between properties such as affinity, specificity, stability, and solubility. In this presentation, I will explore emerging computational methods of antibody design, which enable precise targeting of specific epitopes, accurate prediction of nativeness, nanobody humanisation, and the optimisation of developability potential through the simultaneous enhancement of multiple biophysical properties. These approaches can streamline antibody development, enabling to address new questions and paving the way for rapid advancements in therapeutic and diagnostic applications.

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