Case Study:

How Lipoparticles rescued a CX3CR1 discovery program to enable MAb progression to the clinic

THE NEED

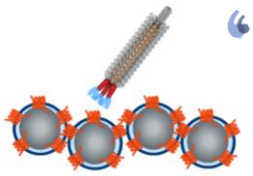
Boehringer Ingelheim and Ablynx sought to discover first-in-class inhibitory MAbs against the GPCR chemokine receptor CX3CR1 by using an immune phage library. Panning on cells did not yield the antibodies needed for success, and a new phage panning strategy was required to identify inhibitory antibodies.

THE SOLUTION

Lipoparticle Phage Panning

A Lipoparticle-based phage panning rescued the CX3CR1 MAb discovery program.

> *The higher density of CX3CR1 on the VLPs allowed the identification of a diverse set of VHH with different profiles with respect to cross-reactivity and potency.*



> *Panning with CX3CR1-expressing VLP led to the identification of Family 101 showing all the desired functionalities with potent binding and blocking to both human and cynomolgus CX3CR1.*

Low et al., 2020, mAbs

THE IMPACT

Discovery of a Lead Antibody

Antibodies isolated through Lipoparticle panning provided the basis of BI 655088, a potent CX3CR1 antagonist with therapeutic potential.

First in Human Clinical Trial

Lipoparticles enabled BI 655088 to enter Phase 1 clinical development for the treatment of chronic kidney disease (NCT02696616), representing the first clinical trial of a MAb targeting CX3CR1.

Panning Strategy	Successful MAbs	MAb Development
Cells	X	**Failure:** No cross reactivity with cynomolgus CX3CR1.
Cells	X	**Failure:** Incomplete inhibition.
Cells	X	**Failure:** Weak affinity for human and cynomolgus CX3CR1.
Lipoparticles	✓	**Success:** Strong inhibition and binding to human and cynomolgus CX3CR1. Lead development and progression to Phase 1 clinical trial.

Looking for more information? Contact us:

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