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Poster abstract submission

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Poster title

Human-derived anti PcrV monoclonal antibodies protect against Pseudomonas aeruginosa in a bloodstream infection model

Poster abstract

Pseudomonas aeruginosa is a critical priority pathogen responsible for severe hospital acquired infections, including bloodstream infections and sepsis, with rising morbidity driven by increasing antimicrobial resistance. The Type III Secretion System (T3SS) is a key virulence factor in acute disease. By delivering cytotoxic effector proteins into host cells, it induces tissue damage and enables rapid immune evasion, making it an attractive target for antivirulence strategies that impose minimal selective pressure on bacterial survival.

We generated a panel of patient-derived monoclonal antibodies (mAbs) targeting PcrV, a structural component located at the extracellular tip of the T3SS that is essential for effector translocation. These fully human anti-PcrV mAbs exhibit broad neutralizing activity against multidrug resistant clinical isolates and demonstrate substantially improved potency relative to previously described PcrV antibodies. Lead candidate activity was evaluated in a murine P. aeruginosa bloodstream infection model. Several candidates provided robust protection, with marked reductions in bacterial burden and dissemination at doses as low as 0.1 mg/kg. Anti-PcrV mAbs also lowered circulating bacterial burden, evidenced by a strong decrease in culture positive blood samples in treated animals. Treatment was well tolerated with no detectable toxicities or adverse events.

These findings highlight the translational promise of human-derived anti-PcrV mAbs as a first fully human anti-PcrV mAbs for severe P. aeruginosa infections. Ongoing preclinical efforts include expanded pharmacokinetic profiling and manufacturability evaluations to support clinical candidate selection and advancement toward first in human studies targeting life threatening drug-resistant infections.

Research topic

Biological therapeutics