FROM NANOLITER TO LARGE-SCALE BIOREACTORS:
HOW INTEGRATED TECHNOLOGIES BRING ANTIBODY TREATMENTS TO PATIENTS FASTER

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The discovery and development of an antibody therapy typically takes years to reach the clinic. In the past decade, the emergence and integration of new technologies, ranging from microfluidics, machine learning, next-generation sequencing, computational biology, protein engineering, high-throughput biology, to single-use bioreactors have accelerated the discovery and development of new therapies. AbCellera's pandemic response platform, developed as part of the Defense Advanced Research Projects Agency's Pandemic Prevention Platform (DARPA P3) program, is an integrated technology stack that searches, decodes, and analyzes natural immune systems to deliver antibodies with optimal drug-like properties.

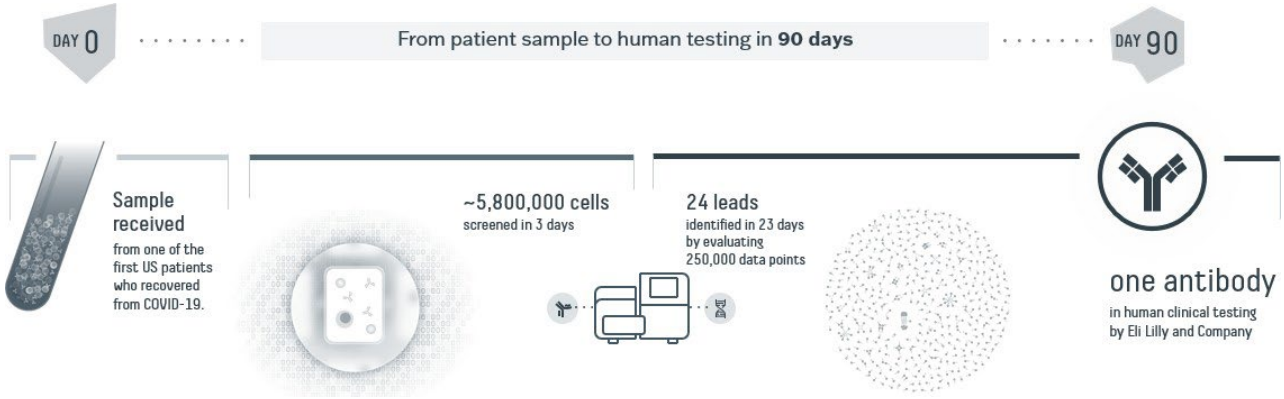

Figure 1 From COVID-19 patient samples to human clinical trials in 90 days using integrated technologies.

We will present how under the P3 program, AbCellera brought two treatments to the clinic in a year: bamlanivimab and bebtelovimab. As the COVID-19 pandemic escalated in 2020, AbCellera and partners prioritized speed, resulting in the discovery of bamlanivimab. A total of 5.8 million human immune B cells were isolated from a convalescent patient blood sample and screened in nanoliter-volume chambers, out of which 440 unique human antibodies were identified and characterized to bring the best leads forward. Bamlanivimab began human clinical trials 90 days (Figure 1) after receiving the blood sample and was the first COVID-19 antibody to receive FDA Emergency Use Authorization (EUA). The focus of P3 then shifted to the emerging variants of concern with a focus to screen for broadly neutralizing antibodies, leading to the discovery and EUA of bebtelovimab.

As speed to clinic requires seamless integration of teams and technologies, AbCellera is expanding its capabilities by investing in a new process development laboratory and a clinical manufacturing facility in Canada. By integrating cutting-edge discovery, translational research, and CMC teams, AbCellera will empower the development of high-quality treatments for production in its clinical manufacturing facility to reach patients sooner.