



Session 3	Artificial Intelligence in service of biomanufacturing
Pitch Title	perfect Downscale - Cutting biotech process scale up time to zero
Company	p4b GmbH
Speaker	Peter Satzer
Keywords feedstock	-
Keywords technology	Scale-up, bioreactor, AI, 3d printing, downscale, process development
Keywords End-Product	Downscale Reactor
Abstract:	
<p>Bringing essential medications, like COVID-19 vaccines, from the lab to customers can still take up to a year due to the challenges of scaling production. Large production reactors mix less efficiently, leading to varying conditions for growing cells and complicating or even halting production. Currently, production is scaled up step by step, with issues analyzed and the process adjusted at each stage. This approach is time-consuming and resource-intensive.</p> <p>p4b takes a different approach by intentionally modifying the mixing behavior of small reactors to mimic large-scale production. Using an evolutionary AI coupled with fluid dynamics, they calculate small reactors for existing lab systems. These reactors have specialized wall structures that create the same mixing patterns as large reactors.</p> <p>By simulating the large reactors, necessary parameters are identified. p4b's automated platform then calculates the appropriate vessels for a selected small reactor system within days, with 3D printing used for production. This allows customers to replicate their production reactors on a small scale in the lab.</p> <p>This method helps identify and solve "scale-up" issues early, enabling a direct leap from lab to large-scale production. It can save up to a year in time and reduce resource use by 90%, significantly speeding up the availability of new pharmaceuticals.</p>	