

# Single-use biomanufacturing

The journey begins

Market trend

Industry need

Our solution


## Past

**185%** Biologic product revenues: **\$200B** in 2016<sup>1</sup>  
 ↑ to **\$370B** in 2021<sup>2</sup>

**>70%** Process titers: **1.95** in 2008  
 ↑ to **3.53** in 2020<sup>3</sup>

## Present

**>2200**<sup>2</sup> biologics in phases 2 and 3

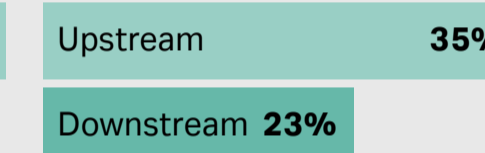
 The large biopharma internal rate of return (IRR) on late-stage pipeline has declined to **1.8%**. Companies need to transform digitally and find new ways of working<sup>4</sup>.  
 Mid-tier biopharma R&D ROI: **43%** from 2013<sup>2</sup>

### Use of single-use technologies


#### Clinical manufacturing<sup>3</sup>



#### Commercial manufacturing<sup>3</sup>



## Future

 % of industry facing severe or significant capacity constraints: **17.3%** in 2009 to **24.6%** in 2020<sup>3</sup>

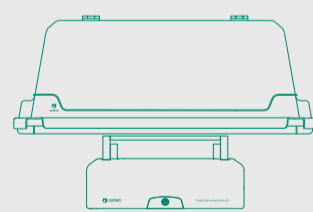
 **38%** of industry survey respondents will be testing a new automation solution in their facility in the next 12 months<sup>3</sup>.

- Flexibility, efficiency, speed
- Lower cost at smaller scale

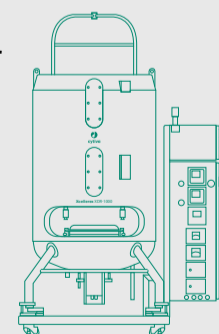
### Single-use technology emerges

#### Industry's first

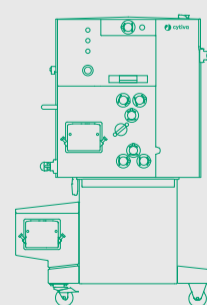
**WAVE Bioreactor™**  
 Rocking single-use bioreactor platform



**Xcellerex™**  
 Stirred tank single-use bioreactor platform



**ÅKTA™ chromatography system and ReadyToProcess™ prepacked columns**  
 Single-use chromatography solution



- Greater productivity
- Accelerated drug development
- Risk-mitigated biomanufacturing capacity

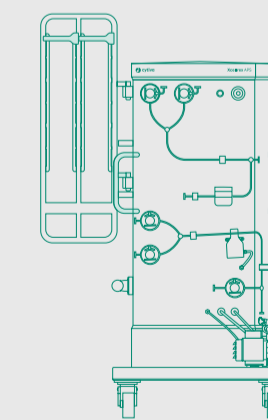
### Single-use technologies widely used in clinical manufacturing

#### Industry's first

**FlexFactory™**  
 Modular facility solutions for cGMP mAb production, vaccines, plasmids, and cell and gene therapies utilizing the FlexFactory™ single-use platform



**Xcellerex™ APS**  
 Fully automated cGMP cell culture perfusion system

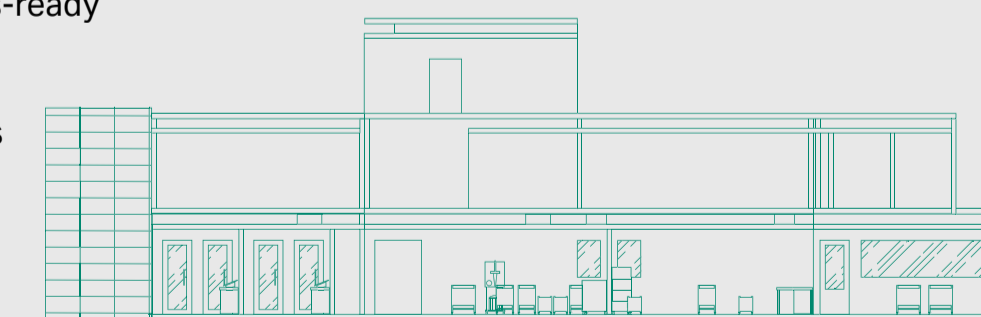


- Improved consistency and productivity
- Improved business performance

### The uptake of single-use technologies and broader single-use solutions increases in commercial processes.

#### Industry's first

Our **KUBio™** solutions increase manufacturing capacity with process-ready solutions, including pre-fabricated and pre-qualified modules



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<sup>1</sup> Evaluate Pharma.

<sup>2</sup> Global Data.

<sup>3</sup> 17th Annual Report and Survey of Biopharmaceutical Manufacturing Capacity and Production. BioPlan Associates, Inc. 2020.

<sup>4</sup> Seeds of Change: Measuring the Return from Pharmaceutical Innovation 2020. Deloitte, 2021.

<https://www2.deloitte.com/uk/en/pages/life-sciences-and-healthcare/articles/measuring-return-from-pharmaceutical-innovation.html>

