

Comparison of Bioreactor Platforms

C3 perfusion bioreactors offer a number of advantages when compared to alternative technologies.

System Features	C3 Perfusion Technology	Wave-type Systems	Batch/Fed-Batch Stirred Tank	Stirred Tank + ATF Technology
Supports mammalian expression systems	Yes	Yes	Yes	Yes
Single-use disposables	Yes	Yes	No*	No*
Closed system	Yes	Yes	Yes	Yes
Producing commercial biologics for 30+ years	Yes	No	Yes	No
Turnkey perfusion bioreactor	Yes	No	No	No
Integrated control system	Yes	Yes	Yes	Yes
Compact production-scale footprint	Yes	No**	No	No
Rapid IQ/OQ, operator training, & equipment startup – within 2 weeks	Yes	Yes	No	No
Minimal technical expertise required	Yes	Yes	No	No
Minimal operator interaction required (<1 hr/day)	Yes	Yes	No	No
Minimal utilities required: 100% CO ₂ & single-phase electricity	Yes	No	No	No
Ongoing technical support at no charge	Yes	No**	No**	No**
Short product lead time <14 weeks	Yes	No	No	Yes
Process Features				
Maintains metabolic homeostasis for 60+ days (pH, glucose, lactate, l-glutamine, O ₂)	Yes	No	No	No
Cells cultured in stable, no-shear environment	Yes	No	No	No
Sparge-free gassing system; no foaming or antifoam usage	Yes	No	No	No
Produces clarified and concentrated harvest	Yes	No	No	No
No seed train required	Yes	No	No	No
Milligram to kilogram yields	Yes	Yes	Yes	Yes

*Some stirred tank bioreactors are single-use. **With exception.