Functionality of CellTank Single-Use-Bioreactor

How does the CellTank cultivate suspension cell lines in perfusion?

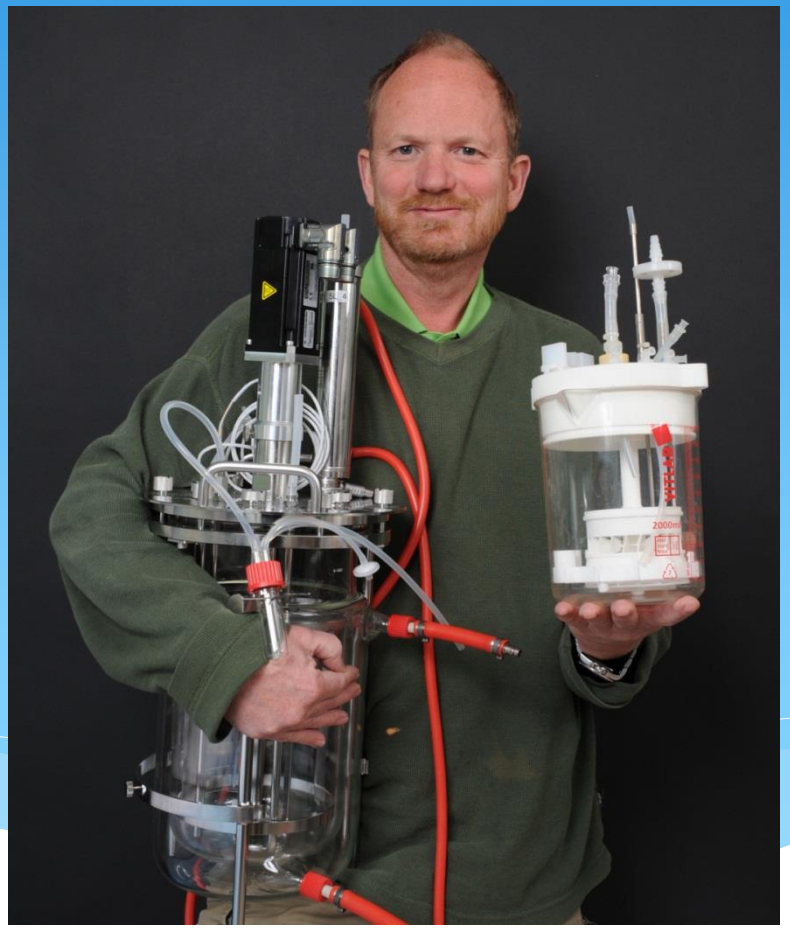
It´s easy to understand

1. Typically billions of cells are hosted in one large cavity - the glass/steel Stirred-Tank-Reactor

2. Think opposite - cells hosted in millions of small cavities in a scaffold

3. Then think 500 cells in each cavity

4. It´s that simple



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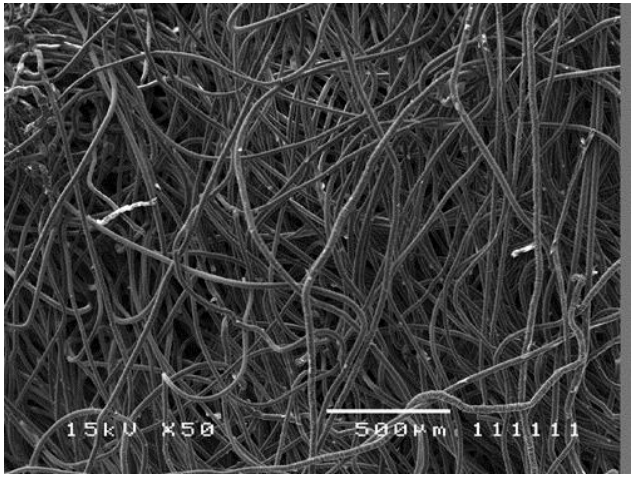
Scaffold

Perfusion is a method for continuous cultivation preferably in a bioreactor where cells are harbored inside a scaffolding.

The scaffold may be fibers arranged randomly creating millions of cavities such as 100 µm large pores.

Suspension cell lines are captured and stay inside the cavities as to various filtration phenomenon.



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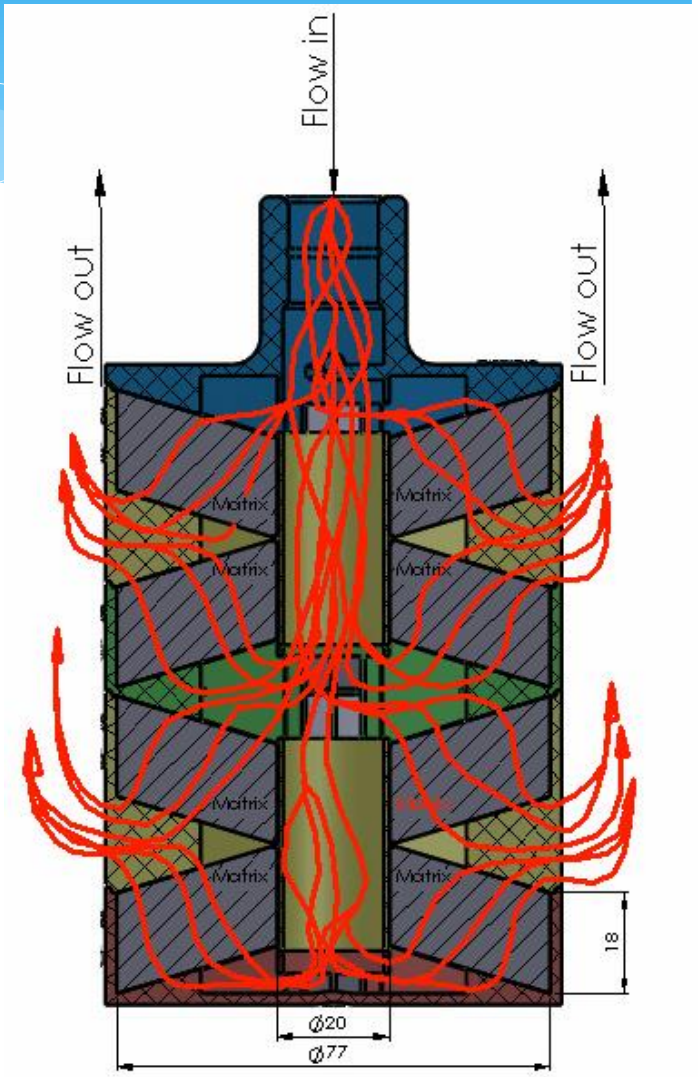
Gradient free

Perfusion is a method for continuous cultivation preferably in a bioreactor where flow of nutrients are fed to each cell, giving a continues harvest for an extended period.

The scaffold may also be fibers arranged randomly creating stacked discs with 95% porosity.

Forced media which flow through the packed discs reach all the harboured cells.



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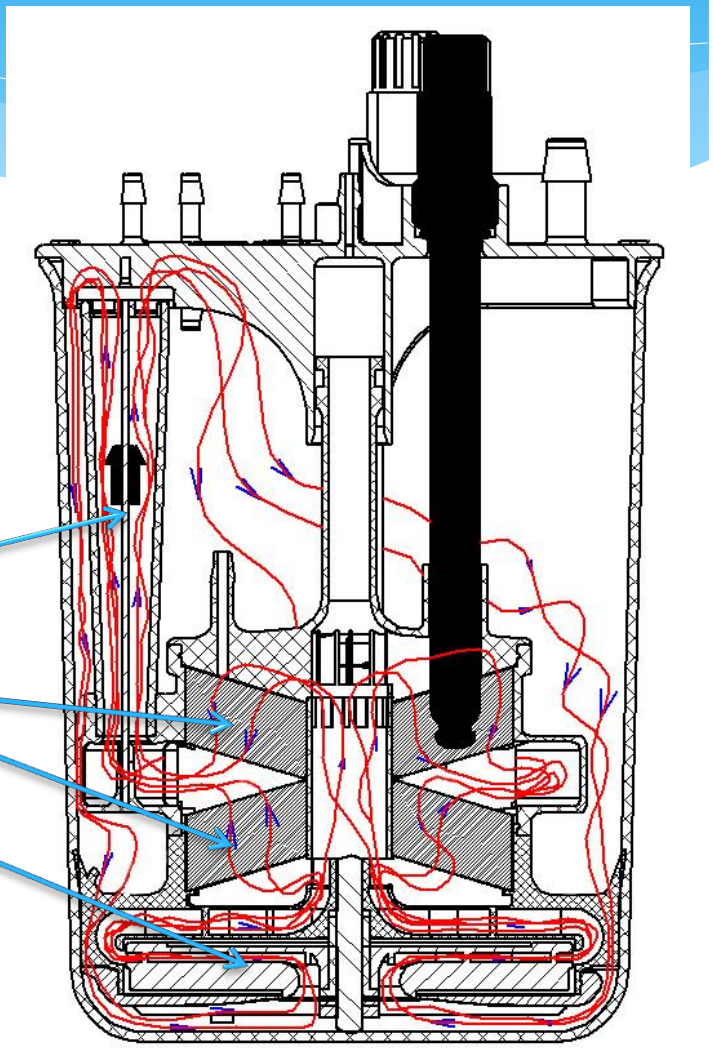
Re-circulating media

Illustration of constant media re-circulation and flow pattern in CellTank.

Follow blue arrows and red lines to imagine the flow pattern

CellTank facilitates:

* **a rotameter which measure media flow**
* **two envelopes arranged angled in parallel sharing the media flow**
* **a centrifugal pump for media re-circulation**



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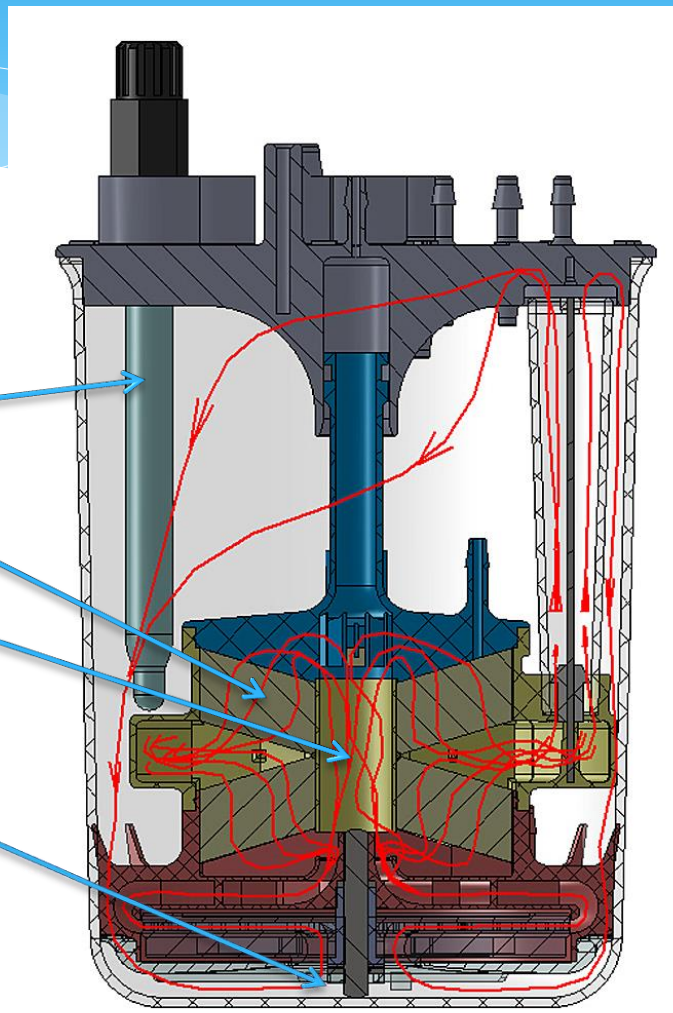
Media flow

Illustration of components and flow pattern in CellTank

Reactor Core facilitates:

- **Standard PG13.5x120 mm sensor**
- **Envelopes filled with porous matrix / scaffold**
- **Reactor core media distribution centre**
- **Centrifugal pump inlet**



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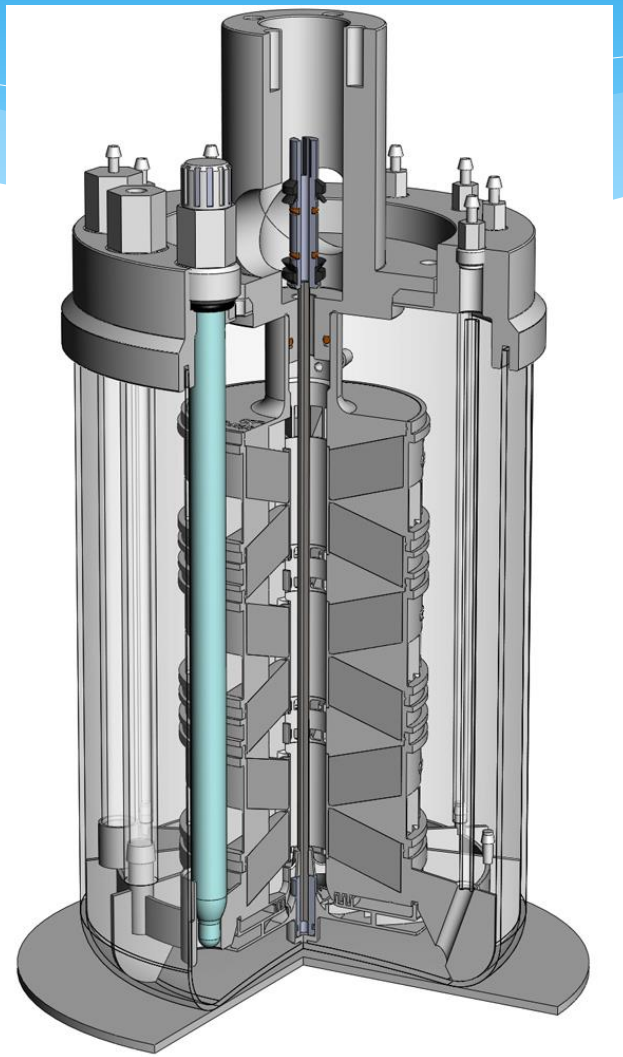
Scalable platform

The CerCore platform is a perfusion reactor core with envelopes arranged parallel and radial / axial inlet / outlet

CerCore is a cylinder with stacked pairs slightly angled and circular envelopes

As the envelope diameter and pair number are variable the incredible scalability is created

The envelope volume span is from a 15 ml to >15,000 ml



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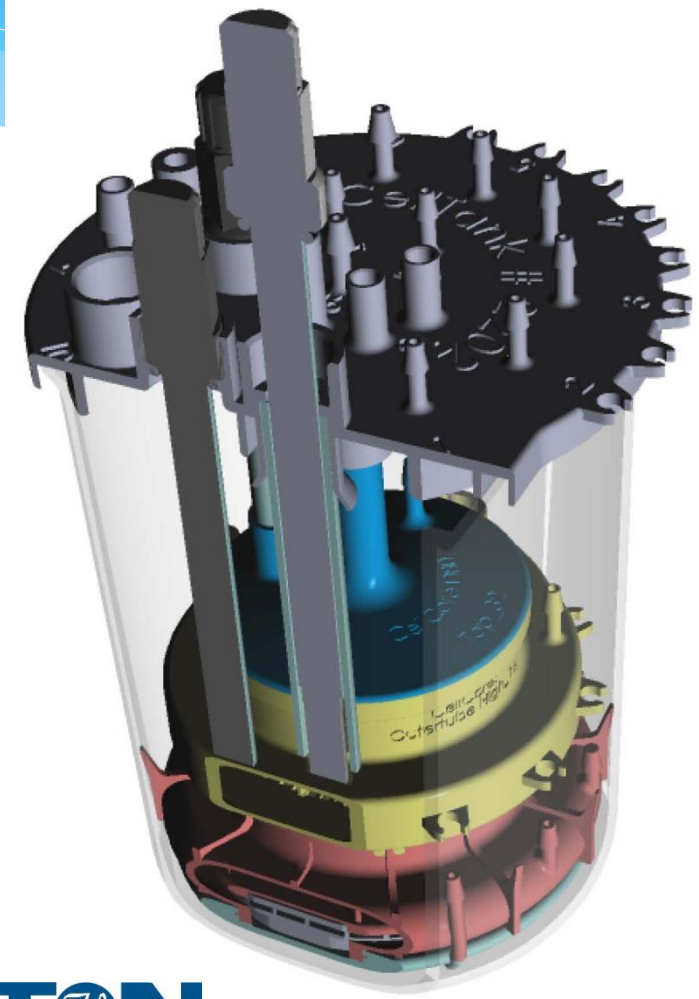
Sensors

Single-Use-Sensors (SUS) for DO and pH offer the following advantages:

- **Integrated SUS eliminates contamination risk**
- **Saves hours of prep time and labor, as no auto-claving or cleaning is needed**
- **Enables SUS integrated SUB setup right on the bench – no biosafety cabinet / hood needed for operation**
- **Optical sensing principle integrated in non-invasive well for the re-usable VisiFerm DO classical signal sensor**
- **Extends DO sensor life, as it is never autoclaved**
- **Classical pH sensor for extended lifetime needed for months of perfusion cultivation**
- **Classical pH and DO sensor signal fits any PCS**



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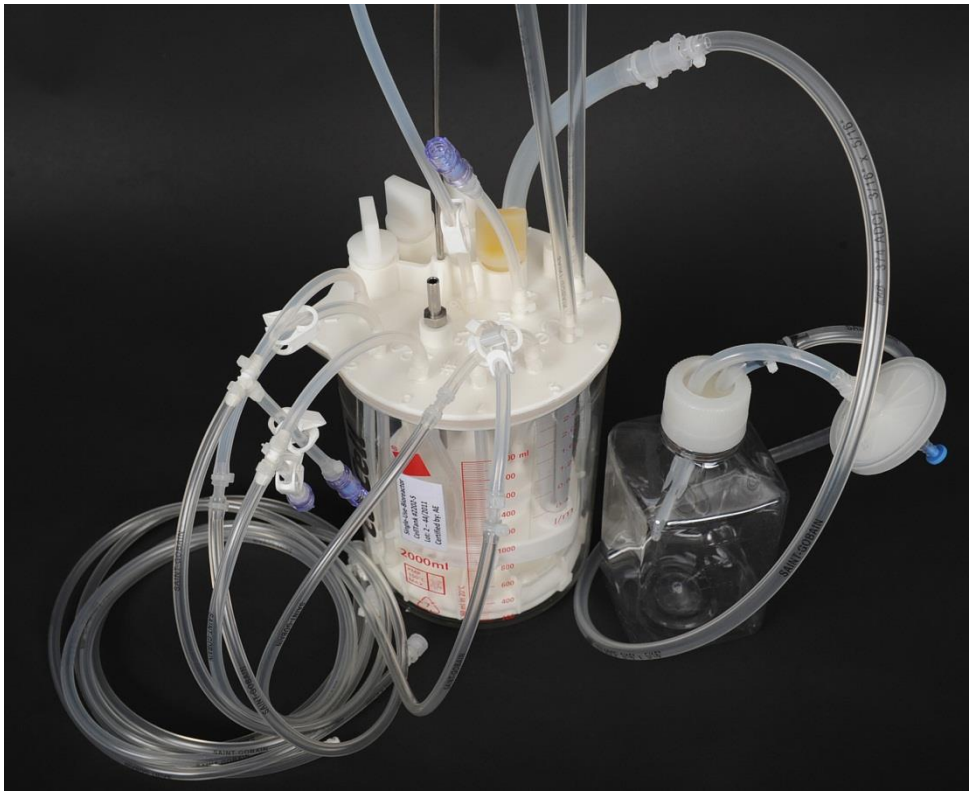
HAMILTON

Ready to use

Skip

- **Cleaning the old fashion glass/steel STR and waiting for the autoclave**
- **Carrying heavy gear as all CellTank are light weight**
- **Worrying about possible contamination**
- **Worrying about damaging your costly jacketed glass vessel**
- **Worrying about heavy investment for increased production capacity**



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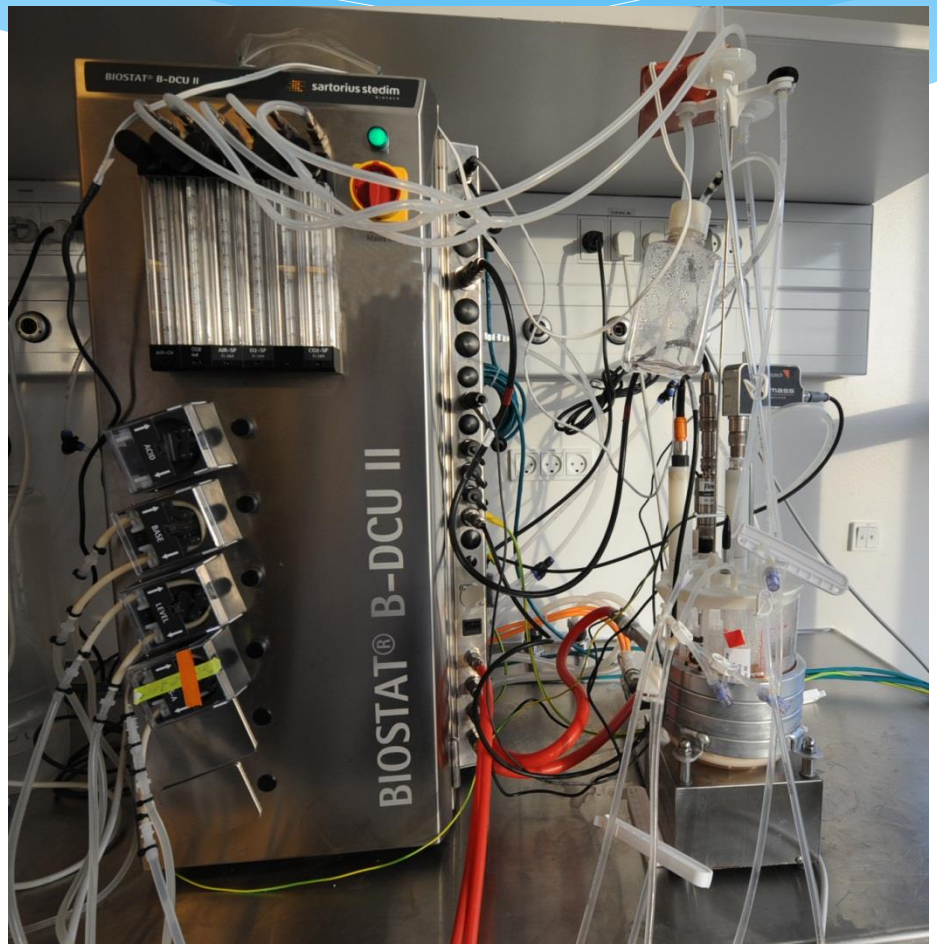
CellTank in use

Just one example!

The standard Biostat servo motor easily drives a CerCell Magnetic-Stirrer-Table for easy integration of CellTank

The photo illustrates CellTank on Biostat in perfusion cultivation which easily last more than a month.



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