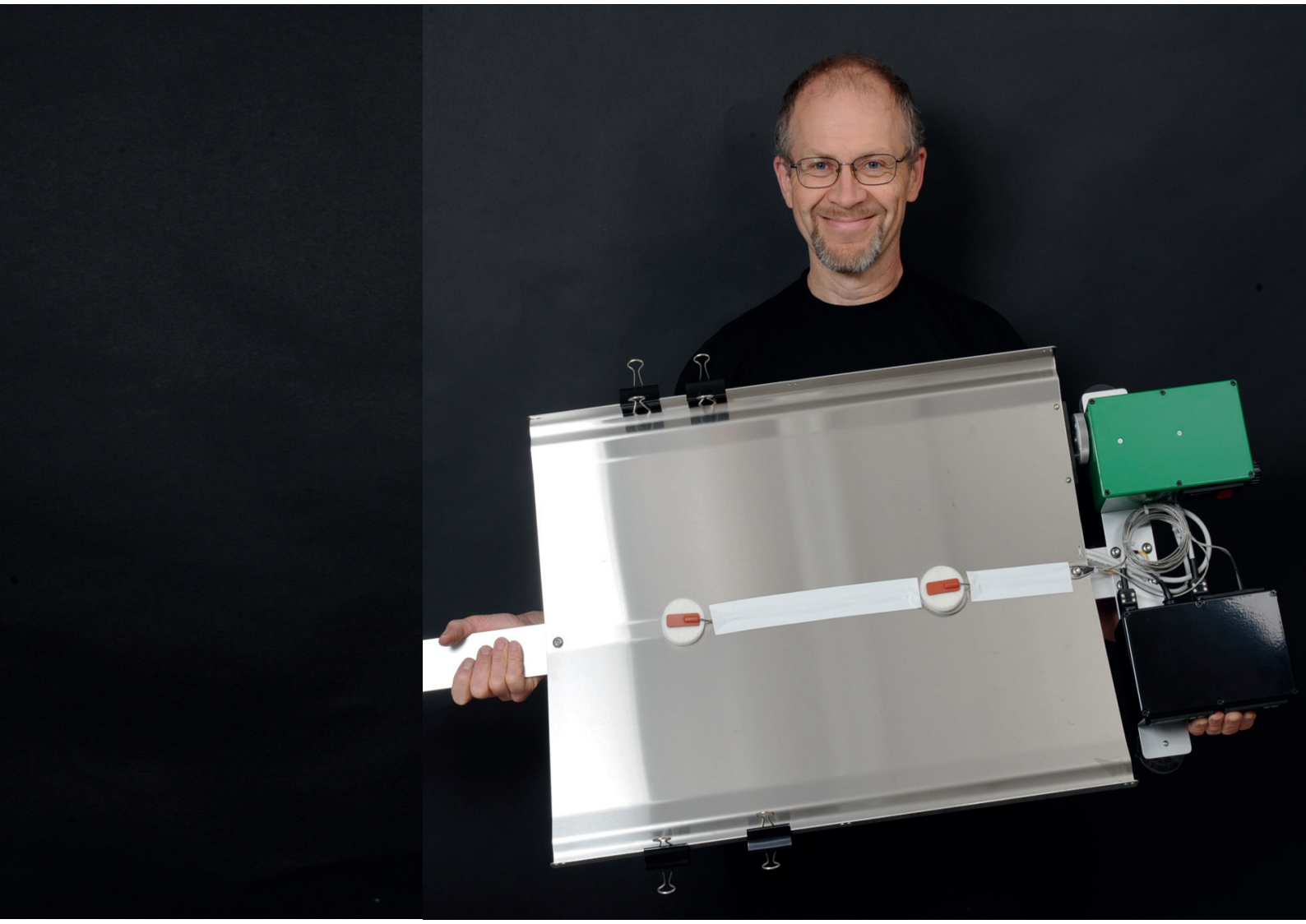
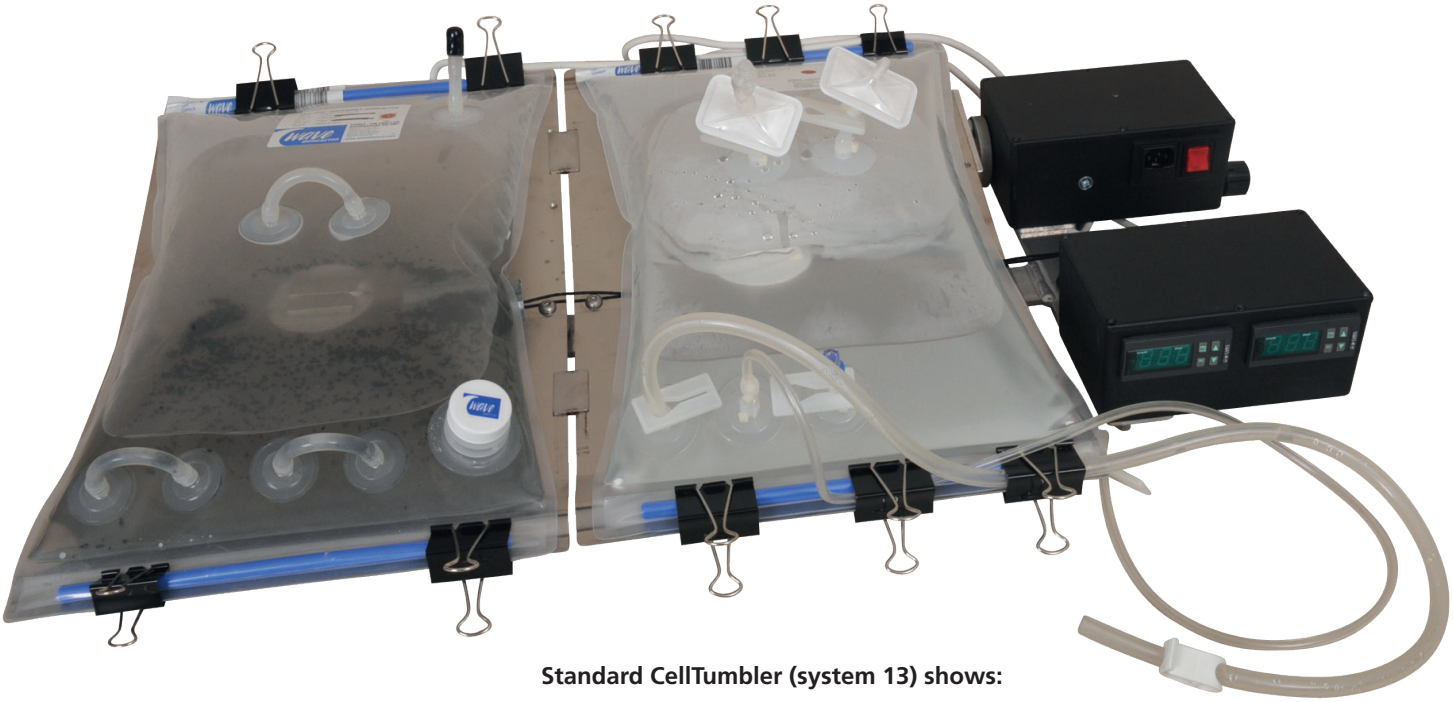
CellTumbler rocks the wave bags

An affordable rocking device supporting the well-known cell culture wave bags



CerCell

May 2012



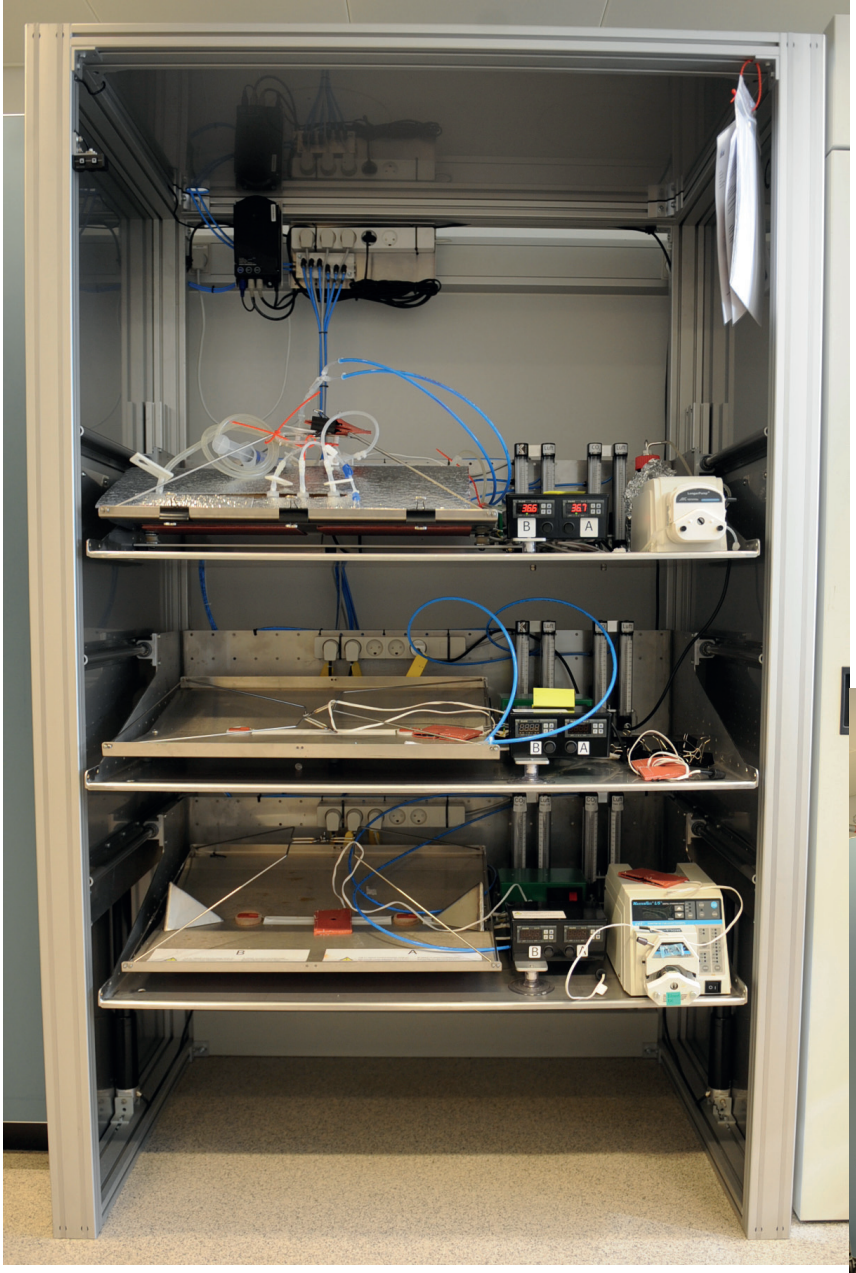
Standard CellTumbler (system 13) shows:

- Two identical sized GE 5/10 bags on individual platforms rocking mutually

Design and build CellTumbler individual:

- One GE 5/10 bag
- One SS 5/10 bag

CellTumbler is simple and flexible to work with



Stack CellTumbler on three extractable and up&down movable shelves

Ergonomic handling is important and requires traditional wave bag systems arranged horizontal on desktops next to each other. Not really efficient use of space! CerCell offer a cabinet with 3 shelf's each for one CellTumbler arranged vertical and operated with servo motors. Each shelf on bearings is easy to extract in the desired height for ergonomic handling.

How does CellTumbler work?

1. The rocking speed is dependent on the culture volume, cell density and bag size. For 1/2, 5/10 and 10/20 bags set at 12 to 20 rpm initially. For very low volumes, 10-20% of the bag working volume, an initial rpm of 12 is sufficient. Increase the rpm to 20 to 25 as more media is added to the culture. When at 100% of bag working volume or at high cell density, the rpm may need to be as high as 25. These are general guidelines only. Monitor the oxygen levels and adjust the rpm and rocking angle as needed.
2. For 1/2, 5/10 and 10/20 bags an initial angle of 6 degrees is sufficient. Generally increase the angle as the oxygen demand increases. When the bag is at 100% of working volume, an angle of 7 or 8 degrees may be needed when using 1/2, 5/10 and 10/20 bags. Reduce the rocks/per/minute if excessive foaming is observed. It is important to monitor the oxygen levels of the culture and adjust the rpm as needed.
3. Simple 3 Watt constant heater are included and easily mounted on the outlet sterile filter. This in order to avoid high pressure drop over the sterile filter caused by condensation and foam passing up through the connection hose. Insure the sterile filter is mounted vertical for best possible drain into the bag. Use hangers and nylon strips in order to support the sterile filter heater.

Cultivation of CHO cells

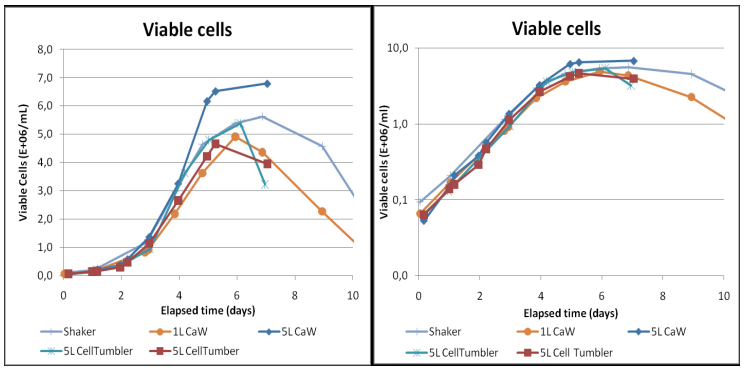


Figure 1. Viable cell density. Maximum viable cell densities are similar (left). Logarithmic curve (right) show similar growth rate.

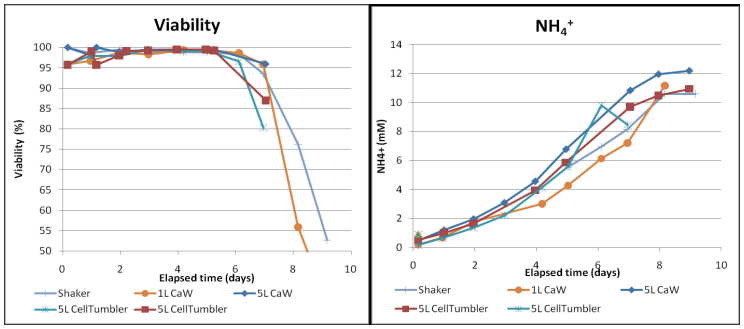


Figure 2. Viability and ammonium. Viability curves are very similar in all systems (left). NH4+ (right) measured by BioProfile.

Application Note from Symphogen, Denmark

Aim

Batch experiment – growth of CHO cells in shakers, and two wave bag systems: 1) A commercially available widely used Wave system and 2) CerCell CellTumbler in order to do:

- Comparison between two wave bag systems
- Comparison between wave bag systems and shaker culture

Results

Batch cultivations using CHO cells were carried out in:

- Shaker (90 ml working volume)
- 1L bag using a Commercially available cell culture Wave system (1L CaW)
- 5L bag using a Commercially available cell culture Wave system(5L CaW)
- Two 5L bags using CerCell's Cell Tumbler platform

All cultivations in wave systems were done using GE Cell bags.

The results of the viable cell density measurements from the experiments (Figure 1) show that the cells grow quite similarly in the different systems with respect to growth rate, peak viable cell density and cultivation length. This shows that the growth properties are very similar in the different systems. The high cell density measured in 5L CaW from day 5 and forward was not observed in other runs and most likely represents an analysis outlier. Viability curves (Figure 2, left) are very similar in all systems showing that the systems have similar effect on the cells. The increase in NH4+ in the cultures with time is also similar (Figure 2, right) as well as other parameters (glucose, L-glutamine, lactate and osmolarity profiles; data not shown).

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