Lysis Rate and Efficiency of *Escherichia coli* at 20 and 35 kpsi

**Culture:** A single colony of *Escherichia coli* ATCC 8739 was used to inoculate 10 mL sterile LB (Lysogeny Broth: Tryptone 10 g/L, Sodium Chloride 10 g/L, Yeast Extract 5 g/L) and was grown overnight at 37°C with shaking at approximately 180 rpm. This starter culture was used in a ratio of 1% to inoculate 200 mL sterile LB in 1 L flasks. These were then grown under the same conditions until an Optical Density of approximately 0.6 was reached.

**Disruption:** The resulting culture was passed in 30 mL aliquots through either a Constant Systems Ltd. ‘Z+’ 1.1 kW Continuous Flow Cell Disruptor or a Thermo Spectronic French Pressure Cell Press at either 20 or 35 kpsi. The samples were weighed before and after being passed through the machines, and the time taken to process was recorded. The machines were rinsed with 30 mL deionised water between each use.

**Counting:** After being passed through the machines, 10 µL of lysate was mixed 1:1 with the viability stain Trypan Blue. Live cells were counted using a hemocytometer. A sample of unlysed cells from the same culture was used as a control, from which the lysis percentage was calculated.
Lysis Rate and Efficiency of Saccharomyces cerevisiae at 40 kpsi

**Culture:** Lyophilised Baker’s Yeast (*Saccharomyces cerevisiae*) was used to inoculate 200 mL sterile YMB (Yeast Mold Broth: Peptone 5 g/L, Dextrose 10 g/L, Maltose 3 g/L, Yeast Extract 3g/L) in 1 L flasks which were then incubated at 30°C with shaking at approximately 100 rpm for 24 hours.

**Disruption:** The resulting culture was passed in 30 mL aliquots through either a Constant Systems Ltd. ‘Z+’ 1.1 kW Continuous Flow Cell Disruptor or a Thermo Spectronic French Pressure Cell Press at 40 kpsi. The samples were weighed before and after being passed through the machines, and the time taken to process was recorded. The machines were rinsed with 30 mL deionised water between each use.

**Counting:** After being passed through the machines, 10 µL of lysate was mixed 1:1 with the viability stain Trypan Blue. White live cells and blue dead cells were counted using a hemocytometer. A sample of unlysed cells from the same culture was used as a control, from which the percentage partial lysis (including blue cells) and complete lysis was calculated.