

Smart Notes

QA

How do you maximize cell pellet recovery and minimize freezer storage space in cell cultures?

In bacterial and other cell cultures where the goal is to retain biomass for stock or downstream processing, a variety of factors during harvest and separation may impact yield and quality, especially in concentrated cultures. For example, reduced biomass quantity can occur in filter-based separation methods due to clogs and membrane fouling, while continuous and most batch centrifugation separation methods expose the culture to risks of contamination from the surrounding environment.

At the same time, freezing collected biomass in bottles for later use takes up valuable space in freezers – especially if the bottles are only partially filled.

Use of sterilized, single-use Thermo Scientific™ CentriPAK™ BioProcess Containers (BPC) and the Thermo Scientific™ Sorvall™ BIOS 16 Centrifuge is an excellent method to achieve maximum biomass recovery while using minimal freezer storage space. The nature of batch centrifugation eliminates the risks of clogs and fouling and this closed-system method also avoids contamination risks that could negatively impact yield. Additionally, cell pellets may be stored directly in the flexible CentriPAK BPC chamber to save significant freezer space. In this example, we harvest biomass from a 30 L fermentation culture.



Thermo Scientific™ CentriPAK™ BPC Single

Fill

Place empty CentriPAK BPC sterilized, single use chambers with manifold into racked adapters. Connect the manifold to the single use fermentor (SUF), open the feed clamp and BPC clamps to fill each BPC chamber to 1.7 L. Close the feed clamp and stabilize pressure through the BPC chambers. Repeat with additional racks containing BPC chambers and adapters until the culture vessel is empty. Disconnect the manifold and seal each filled BPC chamber.

Centrifuge

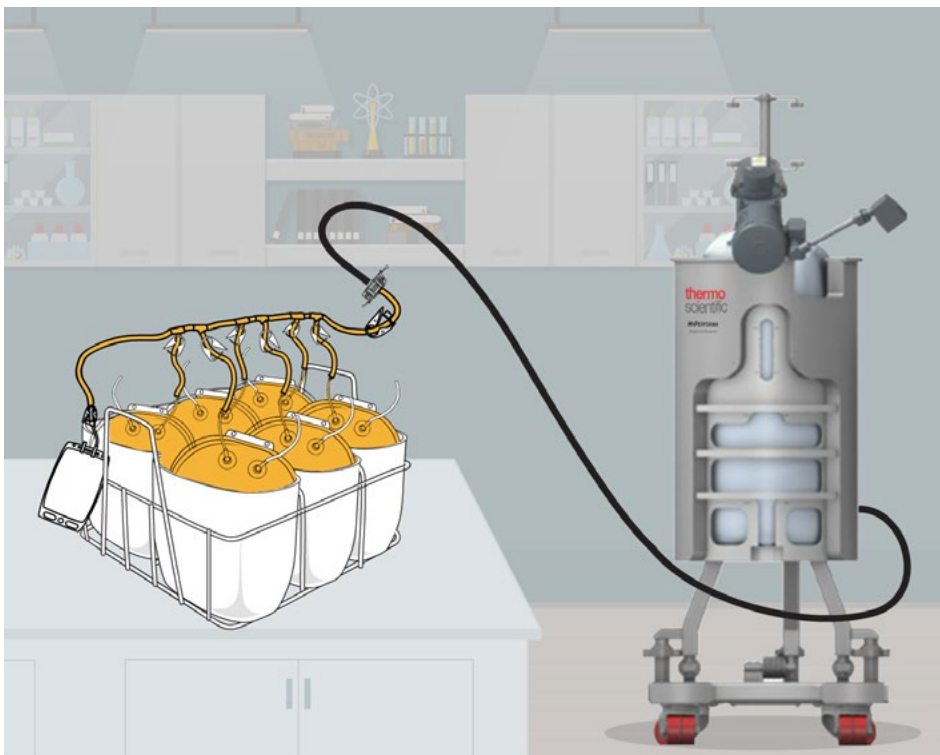
Load adapters containing filled BPC chambers into the BIOS 16 Centrifuge equipped with the 8 x 2000 mL or 6 x 2000 mL oval swinging bucket rotor, taking care to tuck the BPC chamber hoses into the adaptor. Centrifuge to separate the supernatant from the solid biomass. Repeat as necessary until all BPC chambers are centrifuged.

Separate and store

Reattach the manifold to the centrifuged BPC chambers and open the clamps to drain the supernatant to waste by gravity while the biomass remains intact. A general use pump or suction force may also be used to drain the supernatant. Disconnect the manifold and seal each BPC chamber. The BPC chambers containing solid biomass may be stacked in a freezer for storage and future use.

Summary

Using the Thermo Scientific Sorvall BIOS 16 Centrifuge and single-use CentriPAK BPC chambers, cell cultures from 3 to 300 L may be harvested rapidly in a closed system with maximum yield, while taking up minimal storage space.



Thermo Scientific™ CentriPAK™ BPC



Cell pellet solid biomass frozen in standard bottle



Cell pellet solid biomass frozen in new generation CentriPAK BPC

Find out more at [thermofisher.com/centriPAK](https://www.thermofisher.com/centriPAK)

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