

Licensable Technologies

Extracting Clean Biological Material for High-Throughput Liquid Handling

Application:

- High-throughput liquid handling of biological samples

Benefits:

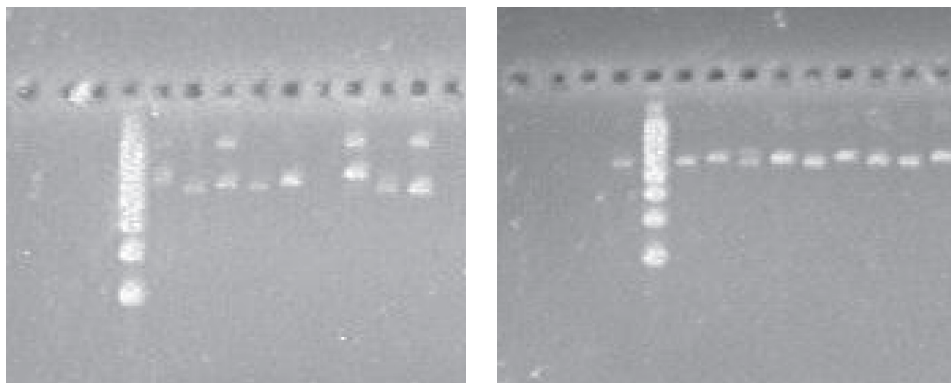
- Improved efficiency, results, and cost-effectiveness for liquid handling processes
- Improved sample uniformity, in both quality and yield (e.g., 750 to 850 base pairs or longer of DNA)
- Recovery of supernatant without risk of contaminating samples with cell debris
- Recovery of supernatant without risk of clogging expensive liquid handling equipment
- Reduced required equipment maintenance and downtime
- 60 96-well plates of DNA processed in 8 hours using 2 Robbins Scientific Hydra-96 liquid handling robots at a cost of \$7/96-well plate using SPRI method

Contacts:

David Pesiri, 505-665-7279,
pesiri@lanl.gov

tmt-1@lanl.gov

Technology Transfer Division



Left: Contaminated DNA bands are seen in the samples in which the pellet retainer was not used. Right: Pellet retainer-obtained DNA samples visualized by agarose gel electrophoresis shows single, pure DNA bands for all samples.

Summary:

High-throughput processing of liquid biological samples is becoming mandatory in the medical, biotechnological, and pharmaceutical industries. The aspiration of solid contaminants by liquid handling equipment can make separation of soluble from particulate fractions especially problematic, particularly for those working with micro-volumes of biological samples in multi-well format plates.

To increase the effectiveness and speed of high-throughput liquid handling, Los Alamos National Laboratory (LANL) has invented a method for separating solutes from pelleted biological samples. It comprises the following steps: (1) Centrifuging biological materials in a container; (2) inserting a separation barrier into the container to separate biological materials small enough to pass through the barrier from those too large to pass through the barrier; and (3) withdrawing a portion of the biological materials from only one side of the separation barrier.

The separation barrier, or Pellet Retainer (see above diagram), prevents equipment aspiration of unwanted matter, such as cell debris and genomic DNA, during collection of soluble plasmid DNA using an automated liquid handling machine (such as the Robbins Scientific Hydra-96). A laboratory can plan work based on the number of plates per day to be processed, rather than on beating the response time required to aspirate material before debris contaminates it (usually one minute or less after centrifugation ceases). This liquid handling tool could be made as disposable plastic ware to work with a variety of formats, including 96-well plates.

Patent Status:

US Patent No. 6,890,740

“Method and Apparatus for Biological Material Separation”

Licensing Status:

This technology is available for exclusive or non-exclusive licensing.