

Problem Solved: Rapid Sample Transfer Between Differing Labware Formats

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The Problem

Multichannel pipettes have become an indispensable liquid handling tool for biochemical and molecular biology assays in life science laboratories over the last decades. This demand is fueled by the need to increase productivity due to reasons like growing sample numbers, faster sample processing and analysis as well as the shareholder demands of running the business most profitably.

Yet many laboratory standard applications involve moving samples between different labware formats as the samples are often collected or prepared in vessels differing from the vessels where subsequent working process steps are conducted. Moving samples from racked single tubes to 96 or 384 well assay plates; 6, 24 or 48 well cell culture plates, PCR strips or plates and SDS or agarose gels is routine in many labs.

Many of these reformatting steps present a substantial bottleneck in the productivity of a lab, as the liquid handling steps traditionally have been executed with a single channel pipette which, with increasing number of samples, can become a very time consuming process. Additionally, labs have the choice to buy an automated liquid handler to accelerate this process, but for many labs this represents not only an expensive option, but also adds a whole new level of complexity to a rather simple process.



The Solution

A new generation of adjustable spacing pipettes is now available that addresses the need for simple and rapid sample reformatting. In principle these innovative liquid handling tools provide all the features of a standard electronic multichannel pipette, but beneficially also allow the user to program a desired spacing between wells, tubes or gel pockets. While pipetting, users can now automatically alter the spacing between the pipette tips with a simple press of a button, which allows sample transfer between differing labware as easily as between labware of the same format.

Adjustable tip spacing – in action

An application that demonstrates the benefits from adjustable tip spacing is the loading of an agarose gel from a PCR plate. With an adjustable spacing pipette, users can now load pipette tips from the tip rack, press a button to adjust to 9.0mm spacing for the PCR plate, aspirate the sample volume needed, press the button a second time to adjust tip spacing for example to 4.5mm of the

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agarose gel's sample wells spacing and dispense the samples into the wells. Using an eight channel 12.5uL Voyager Multichannel Pipettor, 2uL of sample can be added to eight wells of an agarose gel in approximately 17 seconds. This includes loading tips, aspirating sample, dispensing to the gel box and ejecting tips. The same process takes over a minute with a single channel pipette. An example of the gel loading application with an INTEGRA Voyager pipette can be viewed at <http://www.youtube.com/watch?v=LY8bx5yMBDM>.

Reformatting between two different assay or cell culture well plates is another application where an adjustable spacing pipette can be extremely useful. For example, when setting up cell based assays, the individual cell lines are often grown in the larger volume 24 and 48 well cell culture plates, but the actual assay is later performed in a 96 well plate. Using a six channel Voyager Multichannel Pipettor the tip spacing can be adjusted anywhere from 9.00mm to 19.50mm. This allows labs undertaking cell based assays to load pipette tips at the 9.00mm spacing of the 96-well format and simply at the press a button expand the tip spacing to the 24 well format (19.30mm) or a 48 well format (13.08mm). After aspirating the cells, a simple press of the button adjusts the tip spacing to the 96 well format (9.00mm). The whole process using the 6-channel Voyager Multichannel pipette takes approximately 90 seconds for a 48 well plate. The same process takes around 8 minutes with a single channel pipette. Reliability, safety and comfort of setting up the experiment is also significantly increased as the number of pipetting steps as well as the failure rate of pipetting is reduced by a factor of 6 by the six channel Voyager Multichannel Pipettor.

Conclusion

The productivity benefits of multichannel versus single channel pipetting are widely documented. The advent of adjustable spacing multichannel pipetting, as available in the INTEGRA Viaflo Voyager, presents labs with a valuable new tool for accelerating tasks where samples need reformatting and at the same time increasing precision, reliability and comfort of the pipetting procedure. The Voyager Multichannel Pipette is proving itself to be an ideal liquid handling tool that bridges the gap between time consuming single channel transfers and the considerable investment required to purchase an automated multichannel liquid handling system. For further information please visit, http://www.integra-biosciences.com/voyager_1_e.html.

Further information

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