Liquidator 96

RAININ
Pipetting 360°

Ultra-sensitive Immunoassays

Using Liquidator 96 at Singulex®

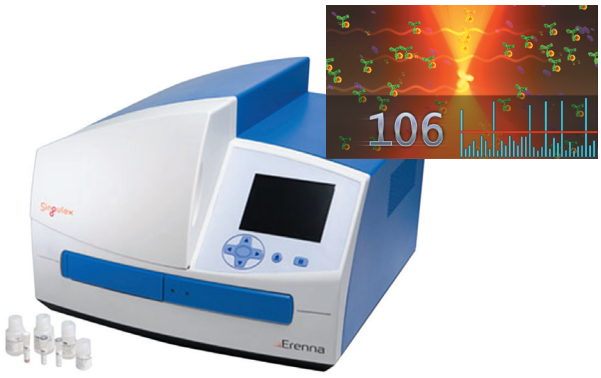
About the author

As a scientist at Singulex Inc., in Alameda, California, Ali Vahedi supports customers who use Singulex® ultra-sensitive immunoassays to conduct research on low abundant biomarkers. He is also involved in the development, optimization and ongoing improvement of the Singulex Ultra-Sensitive Immunoassay menu.

Previously with Aviir, Inc., in Palo Alto, California, Vahedi gained extensive experience developing, optimizing and automating various multiplex immunoassay platforms, such as the MSD® and Luminex® assays. He has spoken at various Planet xMAP symposia and other industry events about the importance of automation, semi-automation and operator introduced errors, and the tools to identify true outliers in data.

Background

Singulex, Inc. has pioneered single-molecule counting technology that can quantitatively measure single molecules such as proteins and metabolites directly in complex biological samples without abundant protein stripping techniques. The company provides instrumentation and immunoassays with the requisite sensitivity and specificity to enable biomarker discovery and validation for drug safety and efficacy.



Molecules are counted as they pass through the detector.

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Singulex technology is a powerful test method for use in a variety of biotech and clinical research settings. To minimize operator-introduced errors and reduce assay time, we evaluated the Rainin Liquidator™ 96. The Liquidator 96 is a simple, yet powerful liquid handling tool that streamlines workflow without the need for complicated programming or dedicated technician time. Extremely fast, the Liquidator 96 adds outstanding features to high throughput pipetting across a wide spectrum of applications.

Liquidator 96

12-channel Manual Pipette

Method

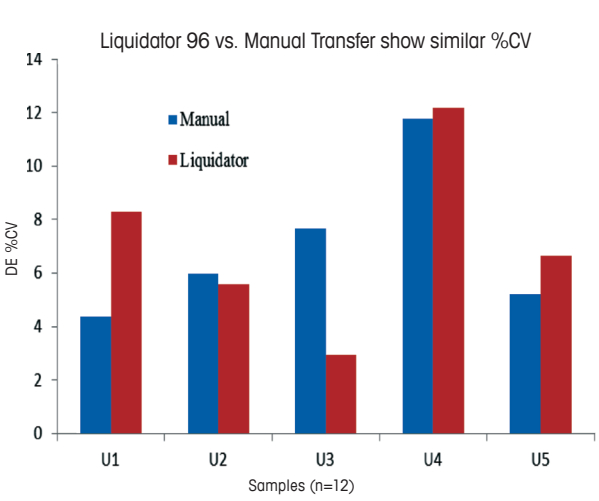
Using Singulex IL-22 assay, two plates were tested using standards, normal and spiked samples prepared in bulk and loaded on the two plates. During the plate transfer step of the assay, one plate was transferred using a manual multichannel pipette and the other with the Liquidator 96. All other equipment, reagents and Singulex Erenna® reader were kept the same for both plates.

Results

In evaluating the Liquidator 96, performance (signal correlation and %CV), transfer time, number of repetitive motions, simplicity of use, cost and other parameters between the Liquidator 96 and manual multichannel pipette were compared (see Table 1). The %CV of signals such as DE (detected event), EP (event photon) and TP (total photons), as wells as the %CV of measured sample concentration (pg/mL) were analyzed and compared.

Note, only %CV of DE signals are shown in this paper, however, all data show similar and comparable results.

Graphs of %CV and Correlation (Liquidator 96 vs. Manual 12-channel pipette)



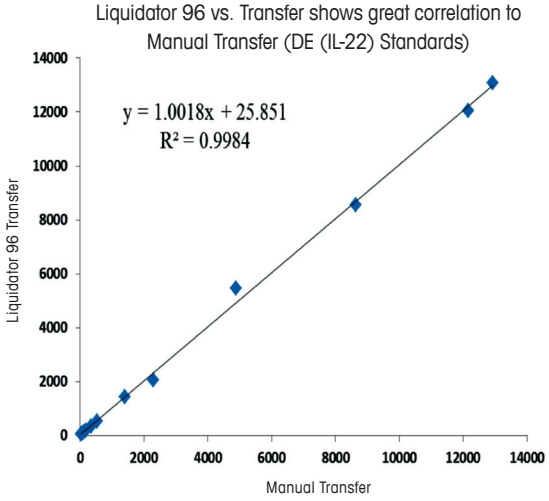


Table 1: Comparing Liquidator 96 and Manual Pipetting

Tool used for transfer	Transfer time	Repetitive motions per plate	Electricity	Program-ming	Training	Transfer from 96- to 384-well plate
Liquidator 96 channel	<1 min	20	n/a	n/a	SImple	Simple
Manual 12 channel	>5 min	160	n/a	n/a	Simple	Complex

Conclusion

This preliminary and basic evaluation of the Liquidator 96 performance appears to show the results obtained by using the Liquidator 96 are similar and comparable to those obtained manually. However, using the Liquidator 96 reduced the transfer time significantly (by about 5- to 10-fold). It also reduced the transfer repetitive motion significantly, possibly helping to prevent RSI (repetitive stress injury). Note that the %CV measurement is not a direct measure of the precision between the Liquidator 96 vs. manual.

As a result of this preliminary evaluation of the Liquidator 96, its advantages over manual process (see Table 1) and its wide range of applications, the Liquidator 96 is now routinely used by various departments at Singulex for various applications.

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