

Measurement Precision and Accuracy

Performance that meets and exceeds traditional counting technologies

Precision and accuracy are requisites for any cell counting technology so that users can have confidence in the reliability of such measurements for their experimental protocols. Results show that Moxi Z measures cell concentrations (0 – 500,000 cells/ml) with precision and accuracy that matches or surpasses established technologies. In fact, as these graphs show, Moxi Z matches the current gold standard in counting, the Coulter Z2, with low coefficients of variation (~3%) between counts and high linear correlations ($r^2 > .9899$) with both the Z2 measurements and theoretical values.

Cultures of HEK-293 and HeLa cells were used to compare Moxi Z with the Z2 system. Identical samples, with concentrations ranging from 0 – 500,000 cells/ml, were measured by each system and plotted against each other. As the graphs demonstrate for both cell lines, there was a strong linear correlation ($r^2 = .99$) between the counts, highlighting the dynamic range and accuracy of the Moxi Z as compared to the current gold standard.

HEK-293 concentrations were also compared to theoretical cell concentrations with both the Moxi Z and the Z2. Theoretical values were prepared from serial dilutions of an initial 500,000 cells/ml sample. The strong linear correlation ($r^2 = .9982$) of the Moxi Z counts with the theoretical values, as well as the favorable comparison to the Z2, emphasize the accuracy and range of the system.

As a measure of precision, the mean coefficient of variation (CV, $n=10$) of cell counts using the Moxi Z, Coulter Z2 and a hemocytometer were calculated with CV's measured from 5 separate counts in the 200,000-300,000 cells/ml range. The small average CV of the Moxi Z is comparable to that of the Z2 and is a testament to the consistency and of its measurements.

Note: Error Bars on all graphs indicate ± 1 standard deviation.

