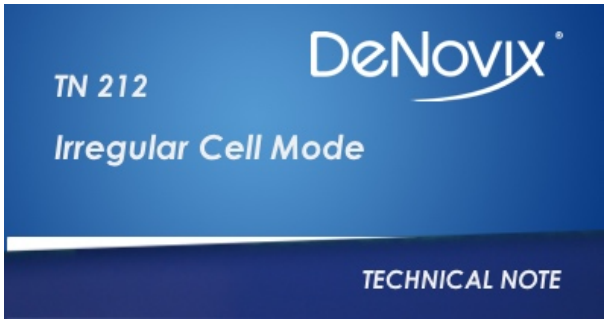

Technical Note 212

Irregular Cell Mode

Introduction

Automated cell counters utilize standardized algorithms for identifying cells in suspension. Protocol settings for counts removes individual subjectivity from cell counting. Most common research cell lines are spherical and therefore appear circular in live-cell imaging. However, when cells are elliptical in shape and less perfectly round, the cell count can be inaccurate. CellDrop Series Cell Counters include an optional **Irregular Cell Mode** in the protocol settings to address this issue. This feature enables researchers to accurately count a wider variety of cells.

Counting with Irregular Cell Mode

CellDrop Series Cell Counters come with powerful reprocessing tools that allow researchers to optimize protocol settings in real time. While the default protocols built into the software are designed to be representative of many common research cell lines, it is impossible to represent all cell lines with one protocol. Therefore, if the counted cells do not agree with how a trained researcher would count them, optimizing the settings will yield better results.

Cell Morphology

Figure 1 is an example of a sample that can be improved through the use of Irregular Cell Mode. The circles drawn around the cells have incorrectly bisected the cells. The standard CellDrop counting algorithms identify circular objects, so long elliptical cells can result in inaccurate counting. When many of the cells in a sample have multiple circles drawn through the middle of the ellipse that is the whole cell border, the algorithm needs to be adjusted to better address the elongated cells.

Enable Irregular Cell Mode from the Protocol Settings or the Optimize Setting button on the results screen. The counting algorithm will adjust for the elongated and irregular shaped cells. This is ideal for cells that are not round when trypsinized, such as fibroblasts or epithelial cells with a high degree of structure.

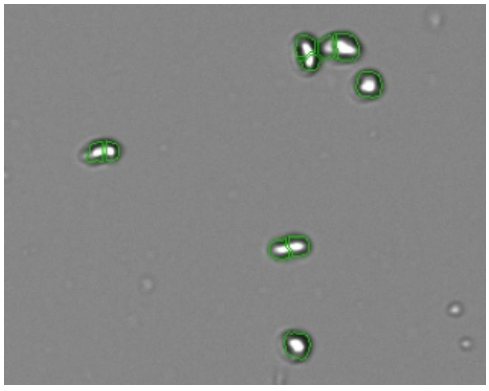

Figure 1: Elongated cells without irregular cell mode are miscounted. Human lung fibroblasts from the MRC5 cell line are often double counted when irregular cell mode is inactive.

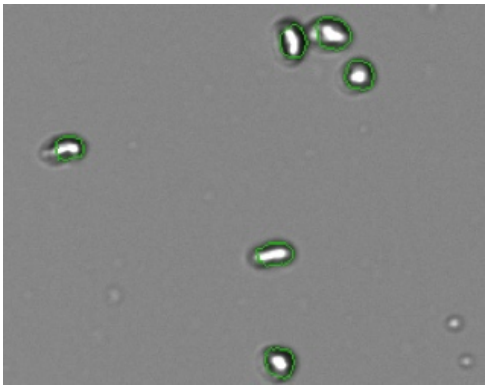

Figure 2: Elliptical shaped cells are correctly identified when using irregular cell mode. The same cells from Figure 1 were recounted with irregular cell mode and are correctly identified as one cell.

Further Information

Refer to Technical Note 189 – CellDrop Count Settings for more information on optimization.

18-JUL-2022