

NEW METHODS FOR COLOCALIZATION ANALYSIS – REALIZE THE POWER OF 3D CELLULAR IMAGING WITH PERKINELMER

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One of the most frequent uses of 3D fluorescence microscopy is colocalization, i.e. the demonstration of a relationship between pairs of biological molecules. Commonly this is done by the use of overlays of red and green images, with areas of yellow indicating colocalization of the molecules. This data is rarely quantitated, and even when it is can still be misleading. The mathematical algorithms most frequently used yield results which overestimate the positive correlation of molecules and fail to demonstrate negative correlations. Our algorithm which calculates a thresholded correlation coefficient produces numerical values that more accurately describe both theoretical datasets and real biological examples, and will serve to bring clarity to colocalization studies using both 2D and 3D fluorescent microscopy. We have also produced an easy to interpret method of displaying areas of both correlation and anti-correlation in 3D rendered images.