

**Confocal Imaging Meets Tissue Microarrays:  
High Throughput Biology Moves to the Next Level**

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Confocal microscopy has is a powerful, but low throughput methodology. The images produced are excellent for interpretation, and can be subject to many forms of image analysis. However, the data gained is rarely suited for statistical evaluation to compare one cell type to another. The resultant data of confocal microscopy is primarily a used in cell biology research. Individual assays using confocal microscopy have been developed and applied in high through put platforms, largely for drug screening.

Tissue microarray methodologies have revolutionized research pathology, providing a high throughput platform for analysis of samples. A tissue microarray is a platform which allows in excess of 500 samples to be placed on a single slide. Primarily used in cancer research with immunohistochemistry, tissue microarrays are used to study signaling pathways in tumors, molecular epidemiology studies, and for *target verification* of findings from other platforms. Tissue microarrays have become a driving force in image analysis in pathology and clinical trials. Novel tissue array platforms allow cultured cells to be placed in a tissue array platform. These new platforms, as well as new tools for traditional pathology offer new opportunities to apply confocal imaging to fixed tissue.

Combining tissue microarrays with confocal microscopy results in a glut of data that resist current methods of interpretation. At the same time the questions that can be asked are dramatically altered. Utilizing tissue microarrays as a platform, there are now confocal systems that allow for the development of new, rigorously tested analytic methods based on analysis of hundreds of samples in a single experiment. The challenges, as well as the potential of, marrying confocal microscopy to tissue microarrays will be discussed, as well as examples of how tissue microarrays are allowing new forms of experimentation in biology.