

Imaging flow cytometry: a subtle and depth analysis of molecular mechanisms

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The ImageStream^x is an innovative instrument that takes advantage of imaging flow cytometry, a novel technique that combines the speed, statistical power, and fluorescence sensitivity of flow cytometry with the functional insights of high resolution microscopy to give the most insightful cell analysis possible [1].

Among the wide range of applications, in our laboratory we study the human gingival fibroblasts (HGF) response to resin-based materials commonly used in dentistry, in terms of membrane molecule expression, intracellular signal transduction and cell death and apoptosis. Our experimental model is thought to resemble the oral cavity by cultivating the cells in the presence of saliva flow and microorganisms commonly present *in vivo*.

As regards surface antigens expression, IDEAS image analysis software allows to virtually quantitate anything you can see using the software package's numerous pre-defined fluorescence and morphologic parameters.

Regarding the signal transduction, the IDEAS software package quantifies nuclear translocation events by automatically correlating the images of the transcription factor and the nucleus using the Similarity score.

As of cell death and expression, Image Stream^x can perform any standard flow cytometry assay, i.e. Annexin-V/PI one, with the added value of visual confirmation.

References

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- [2] Henery et al. (2008) Quantitative image based apoptotic index measurement using multispectral imaging flow cytometry: a comparison with standard photometric methods. Apoptosis. 13:1054-63.

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