Quorum
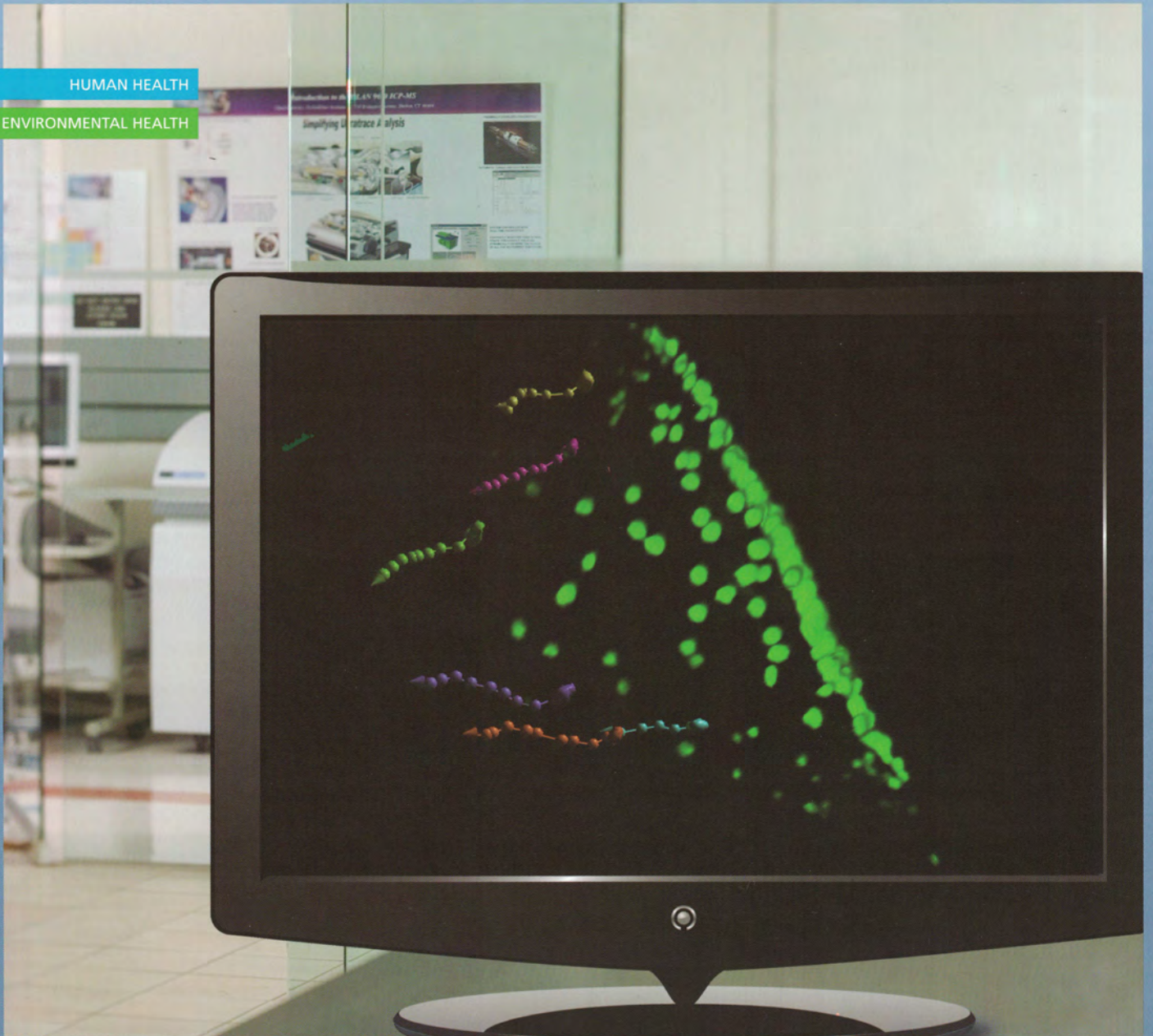
FOR MORE ACCURATE MEASUREMENTS

Volocity Quantitation
Identify, measure, track and analyze cells in 2D, 3D and 4D

Quorum

light at work

FOR QUANTITATIVE FLUORESCENT IMAGING

Objects and tracks can be overlaid with 3D image data to allow a better understanding of results.

Volocity® Quantitation provides a comprehensive range of options to analyze structure and function in 2D, 3D and 4D. Perform morphological analysis, measure fluorescence localization and colocalization and study trends. Present and publish images with measurement overlays, measurement tables, statistical data, charts and tracks. Analysis applications include FRAP, FRET, colocalization and ratiometric analysis.

3D measurements for precise results

Visualize the full range of 3D image renderers while working in the measurements view enabling you to have a clear and concise working view of your dataset while configuring your analysis. When using 3D data sets, Volocity Quantitation creates measurements using the entire volume of data. By working with 3D voxels instead of 2D pixels, the precision of your results is improved and you can understand your samples in greater detail. This is particularly important when tracking moving objects which may travel up and down within a sample as well as in X and Y. By analyzing the whole volume of the sample, objects can be tracked over many time points.

Step-by-step protocol design

Volocity Quantitation works by creating a measurement protocol to detect the objects that you wish to measure or track. The protocol is made step-by-step using a combination of criteria – intensity, size and shape are just some of the options you can include. Feedback to your images is displayed in the Measurement view so that you can refine your protocol quickly and easily. Protocols can be saved and applied to multiple volumes as a batch process, which is useful, for example, when working with time lapse data.

Auto Analyze all saved analysis protocols from a measurements protocol so that when a measurement item is created using the protocol the analysis will be done in one step.

Erode, Dilate, Open and Close processing is available to further refine objects found in a measurements protocol.
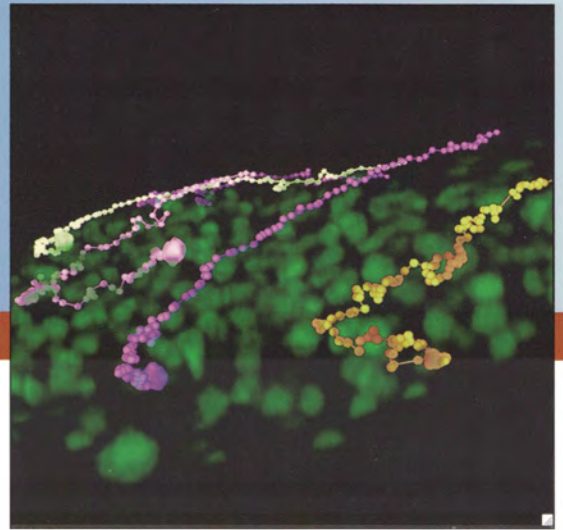
Key Features

- Use with a wide range of file formats from confocal and wide field microscopes.
- Rapid measurement and analysis of objects in 2D, 3D and 4D.
- Batch process measurements and analysis.
- Provides automatic tracking of large numbers of objects in time resolved 2D and 3D data.
- Overlay the measured objects on the image data to better understand your results.
- Includes features to create charts and graphs as well as to analyze colocalization, ratioed and FRET images.
- Available for Mac® OS X, 64-bit and 32-bit Windows®.
- Export images, graphs, measurement tables and statistics for publication or further analysis.
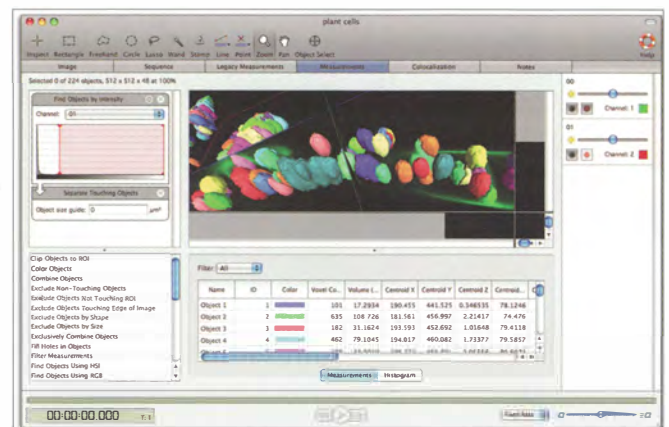
Measurement protocols are created step-by-step, with automatic feedback to the image data, so that you can immediately see the results. Add text to a measurement protocol at any point to remind yourself what the protocol is for or why it is designed in a particular way. You can also add comments to instruct other users.

A RANGE OF TOOLS TO FIND, MEASURE, TRACK AND ANALYZE IN 3D AND 4D

Data analysis tools

Volocity Quantitation includes a powerful suite of tools to analyze your measurements. The results generated by the measurement protocol are stored in an analysis table. This provides the ability to summarize and extract data from your measurements; for example you may wish to analyze your data for patterns of change in intensity or volume over time at selected points; once the measurements have been made on the sequential volumes, the analysis table will allow the data to be extracted quickly and easily.

Create charts for export

Creating charts from your measurements and tracking data is quick and easy. Choose from the many options available including bar and pie charts, histograms, and even interactive 3D charts, so that you can display your data using the most relevant method.
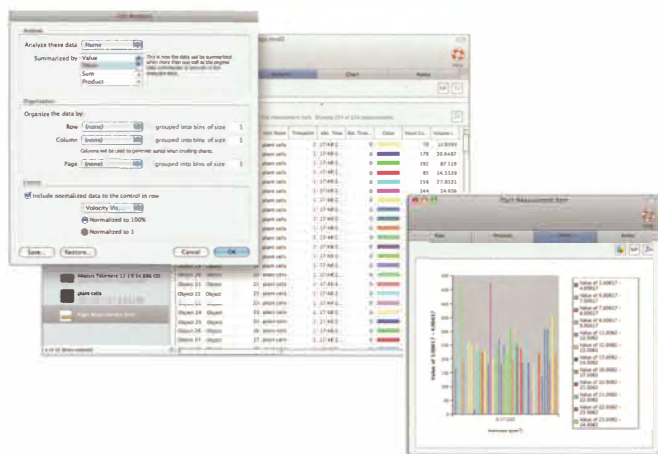
Measurements can be analyzed and charted and data and charts can be exported for publication. 3D charts can be created for 3D data.

3D object tracking

When used to track objects in 2D or 3D over time, Volocity Quantitation provides tracking data including velocity and distance traveled. For convenience each object track is identified by a number and a color in the measurements table and tracking can be performed both automatically and manually. A choice of tracking models is provided and there are options to automatically join broken tracks, ignore static objects and ignore new objects, so that you can decide what is best for your data. Volocity Quantitation can quickly and accurately track several hundred objects within a data set.
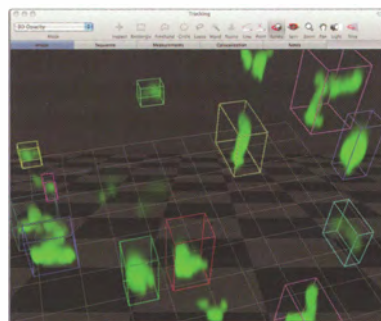
Objects and tracks can be overlaid to image data in a choice of ways. Movies can be created from this view to share and publish.

3D feedback display

Once measured, objects and tracks can be viewed as feedback to the image data, to help you to relate structure to function. If you are working with 3D data and have Volocity Visualization as well, the feedback overlay will be displayed on the 3D volume for a better understanding of events.

Analysis of colocalization

Volocity Quantitation can be used to analyze colocalization in pairs of images, by calculating measurement statistics based on the voxels and their intensity. Using voxels ensures that an accurate measurement of colocalization is obtained, although the software can be used with 2D images as well. The colocalization view shows an extended focus merge of the selected pair of channels as a preview for the current time point and the scatter plot of colocalization. Selecting a region of the scatter plot produces a binary mask on the preview image to allow you to see the position of each selected voxel or pixel. Volocity utilizes a whole set of correlation statistics including Pearson's Correlation Co-efficient to provide numerical, non-subjective results. This greatly increases accuracy and offers scientists an increased level of confidence about exactly where colocalization occurs.

To offer an additional improved means of visually identifying colocalization, Volocity includes image output displaying the product of the difference from the mean (PDM). The PDM images are an easy way of visualizing the areas of good colocalization and areas of exclusion in the sample. PDM channels show colocalization in the positive PDM channel (yellow) and exclusion or "anti-correlation" in the negative channel (purple).

FRET and ratio imaging

FRET analysis allows accurate FRET measurements and generation of net FRET (or "corrected" FRET) and normalized FRET images for publication. The analysis currently offered by Volocity Quantitation is the 3-image FRET technique.

Volocity Quantitation includes tools to ratio and analyze image pairs. When used with a Volocity Acquisition system, the optional Ratio Plug-in extends the functionality for online analysis.

Volocity, a family of integrated software products that can be used independently for image acquisition or analysis, or grouped together to provide a complete range of cellular imaging tools. Volocity is available for Windows® platforms.

Volocity Acquisition	High performance image capture software controlling a wide range of microscopes, cameras and imaging accessories for 3D live cell imaging applications
Volocity Visualization	Interactive multi-channel time-resolved 3D rendering and publication software for wide field and confocal image stacks
Volocity Quantitation	Volumetric measurement and analysis software for quantitative fluorescence imaging
Volocity Restoration	Image deconvolution software improves image quality of wide field and confocal data
Imaging License Server	Flexible cross platform software licensing to combine and share software licenses across networks
Imaging Computing Server	Advanced computing power improves performance of processing intensive tasks
Volocity FRAP plug-in	Extends the functionality of Acquisition and Quantitation for on-line FRAP acquisition and analysis
Volocity Ratio plug-in	Extends the functionality of Acquisition and Quantitation for on-line Ratio acquisition and analysis

3D Image Analysis Solutions

Application Focus

Regular Software Updates

A Complete Solution

Experienced Specialist Team

Global Service Organization

Dedicated Technical Support Desk

For more information, visit www.quorumtechnologies.com

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