HUMAN HEALTH

ENVIRONMENTAL HEALTH

FOR A MORE COMPLETE

PICTURE OF CELLULAR ACTIVITY

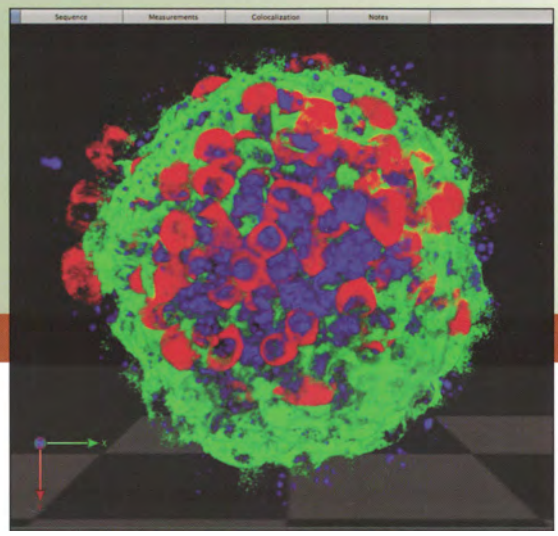
Volocity Visualization

Interactive, high resolution rendering of 3D and 4D volumes

Quorum

light at work

FAST, INTERACTIVE,
4D VOLUME RENDERING



Interactive 3D and 4D rendering adds a new dimension to your research.

Volocity® Visualization is designed to provide rapid, interactive, high resolution volume rendering of multi-channel 3D and 4D data sets. This Volocity product puts you in full control of the way that you view your 3D data, offering a choice of rendering methods so that you can achieve the best results. A range of file formats can be imported from wide field and confocal microscopes, and snapshots and movies can be created quickly and easily to share and publish.

3D imaging brings a new perspective to your research

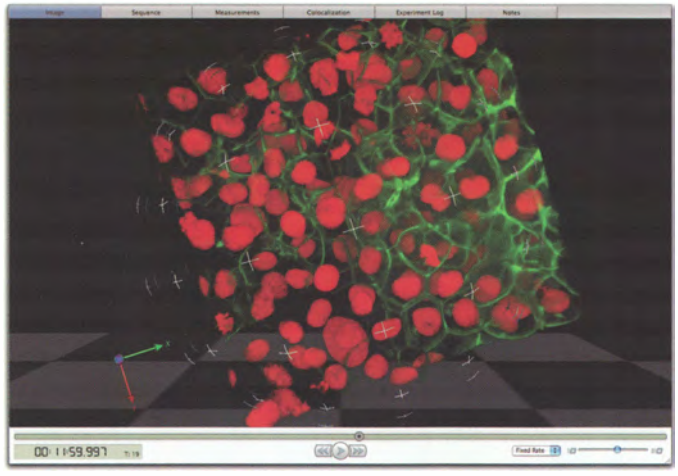
To truly understand the biology of your samples, you need to view them in 3D. Only when you see your sample from every direction, both inside and out, can you fully appreciate the complex interactions that occur between structures. Morphology that is difficult to comprehend in two dimensions can become clearer when viewed in 3D. Tracking moving objects such as vesicles and relating structure to function in time resolved experiments can give better results in 3D, as the whole volume of the sample can be explored, compared to only one optical Z slice using standard 2D imaging. Volocity Visualization will allow you to achieve this greater understanding quickly and easily, using high resolution rendering techniques.

Interactive 3D rendering

Volocity Visualization creates a high resolution rendering of your data which is fully interactive. This enables you to rotate, zoom and fly through the rendered object in real time, so that you can interact with and explore the data in new and exciting ways. Simultaneously, the channel controls allow you to vary the contribution of each channel to the rendered view to allow a better understanding of structural relationships within the object. For time lapse data, you can interact with the volume while playing through the data at each point, so that temporal changes in structure can be observed in 3D.

Key Features

- Interactive, high resolution rendering of 3D and 4D volumes providing new and exciting ways to explore your samples.
- Choice of rendering options included.
- Use with a wide range of file formats from confocal and wide field microscopes.
- Share and publish your results as images, QuickTime®, AVI and WMV movies, or QuickTime® Virtual Reality movies.
- Available for 64-bit and 32-bit Windows®.

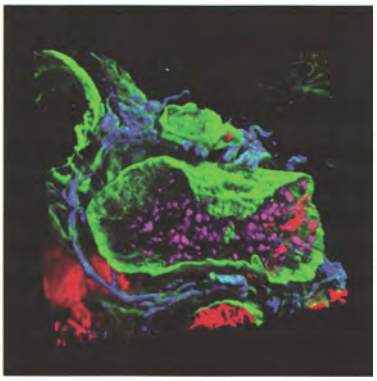


Time lapse data, such as this developing Zebrafish embryo sample, can be played through as a 3D rendering that remains fully interactive.

DISPLAY MORE, DISCOVER MORE, DELIVER MORE

Choice of renderers

Volocity Visualization provides a choice of interactive renderers which allow you to view and interact with your images as 3D objects, in either fluorescence or isosurface mode, so that you can decide how to best display your data. In addition, Volocity Visualization includes the Ray Tracer, a non-interactive renderer which produces very high quality rendered images, with user defined options such as lighting position, shadowing effects and background choices. The results can be spectacular in terms of the final image, although the process is more computationally intensive than the interactive rendering modes. This technique is ideal for producing publication quality images, when only the best will do.



Using the Ray Tracer can produce high quality images for publication.

View your data in XYZ

The Image view displays the volume as a series of orthogonal planes in XY, XZ and YZ. Move the cross hair cursor in one plane and the view in the other two planes will automatically update. The Image view is useful for precise location of structural details and you can vary the contribution of each channel as desired. For time lapse data use the playback controls to play through all the time points to see how your sample changes over time.

Reslice your data

If you find that the XYZ plane in which your volume has been acquired does not provide the best presentation of the structure that you wish to examine, you can reslice the data in a different orientation. You will then be presented with a new set of XYZ planes and your original data is unaffected by the reslicing process.

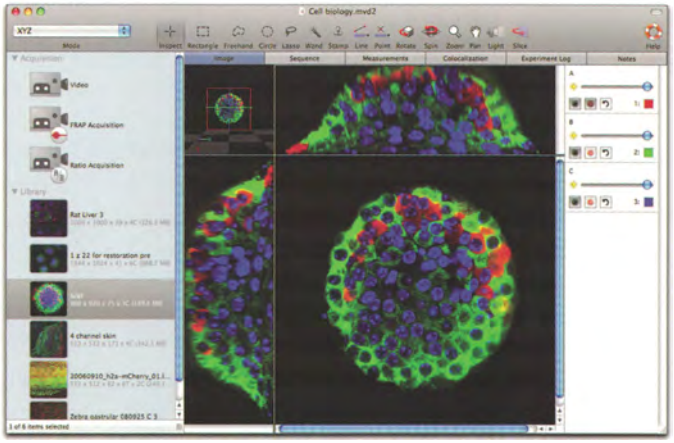
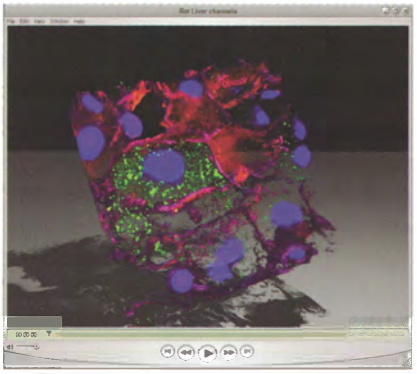


Image data can be viewed as orthoganol planes for close examination plane by plane.

Bookmarks – save a viewing state

The bookmarks feature allows you to save a viewing state (orientation, zoom factor etc.) so that you can easily compare multiple data sets and be sure that you are using the same viewing parameters. Bookmarks can be created for the 3D, XYZ and slice views and provide a quick and easy way to create movies from your data.



Make movies and snapshots to share and publish your 3D and 4D data.

Share and publish your images

Volocity Visualization includes features to share and publish your results. The "Capture Snapshot" command is a convenient way to create images which can be exported from your Volocity library in standard publication ready formats. However, a single image cannot always convey the true 3D appearance of your volume, so why not make a movie that does? Create a collection of bookmarks then drop them into the movie making interface. You can then export the sequence as a QuickTime®, AVI or WMV movie to share or publish on the internet. The option to make QuickTime® Virtual Reality movies is also provided.

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

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Images reproduced by kind permission of the following scientist: Page 3: GFP-positive neutrophil granulocytes. Courtesy of Dr. Stephen Renshaw, University of Sheffield.