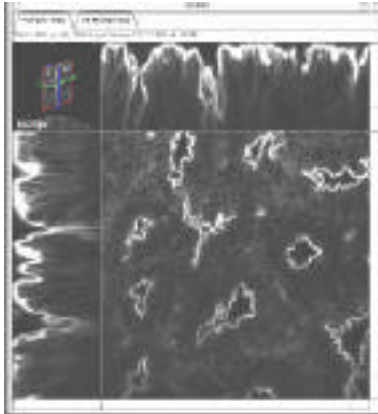
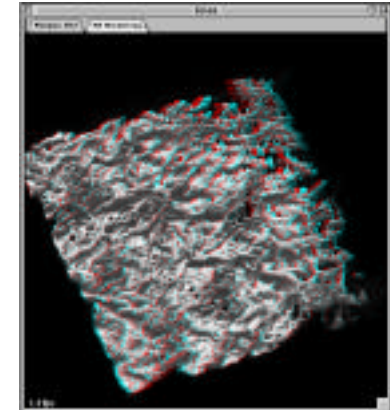




## Colonic Mucosal Studies



Colonic Mucosal Studies  
**Volocity** dialogue box  
showing the interactive  
XYZ views through the  
image set



One view of the  
stereo 3D rendering  
produced in **Volocity**

Dr Kevin Pedley and Professor Richard Naftalin at King's College London use fluorescence and confocal imaging techniques to investigate signalling pathways in a number of cell types. One area of study is the role of colonic mucosa in water and ion transport and their research has provided new insights into the normal mechanisms of faecal dehydration as well as pathophysiological disturbances such as damage by radiation.

The images shown here are a confocal stack of fixed rat colonic mucosa stained with Alexa-488 Phalloidin for F-actin. A Z-series of 126 images was collected at 0.4 $\mu$ m steps using a BioRad 1024 confocal microscope. The images were then processed using **Volocity** in order to produce both an XYZ volume view through the stack and a 3D rendering of the image set.

The XYZ view allows Dr Pedley to see the X, Y and Z plane simultaneously at a point of interest in the image stack, simply by clicking the cursor on that point. This allows full exploration of the whole data set as a series of intersecting orthogonal planes.

Creating a 3D rendering in **Volocity** is both easy and incredibly fast. The rendered image set clearly showed the topography of the mucosal surface and the invaginations of the colonic crypts, through which water absorption occurs. Rotation of the image through 180 degrees allowed the mucosa to be viewed from the serosal side, without the obscuring effect of the remaining sub-mucosal muscle layer.

Stereo views of 3D renderings can also be produced. A single plane from the stereo view of Dr Pedley's data set is shown here, and must be viewed using red/blue 3D glasses to see the stunning topography of the image.