# 3D CONSTRUCTOR™

## 3D Reconstruction and Visualization Plug-In for Image-Pro® Plus v4.5
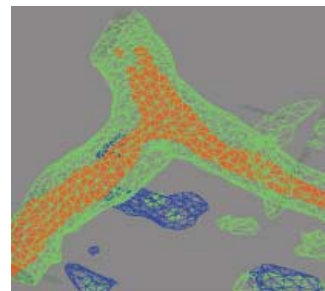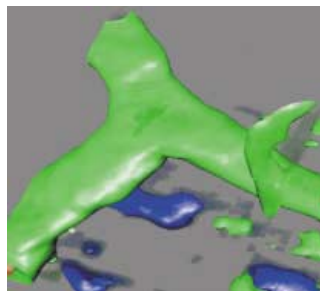
### Overview

3D Constructor is for scientific researchers who wish to expose hidden relationships within and among objects. The OpenGL® visualization tools enable virtually instant reconstruction from an image Z-stack within a workspace integrated into the popular Image-Pro Plus environment. Unlike any other set of image analysis tools, the plug-in architecture and modules of Image-Pro Plus offer a smooth and seamless workflow: image capture, 2D processing, 2D analysis, deconvolution, and 3D visualization. Z-stacks may be collected with Media Cybernetics' Scope-Pro® and AFA™ modules for Image-Pro Plus, or loaded from stored files (including all major confocal formats).
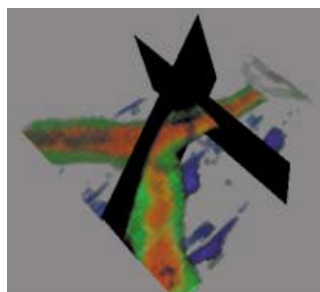
### Features

- Seamless integration with Image-Pro Plus v4.5
- Full 32-bit application available for Windows 98/ME/NT/2000
- Multi-language menu selections (upon request)
- Fully automated 3D solution for light microscopy, when seamlessly integrated with Image-Pro Plus' Scope-Pro Advanced Fluorescence Acquisition (AFA) module
- Reads the following file formats:
  - AutoQuant files
  - TIFF-series
  - Image Pro Sequence files
  - Olympus FluoView Confocal files
  - BioRad Confocal files
  - Carl Zeiss Confocal files
  - Leica Confocal files
  - Nikon Confocal files
- Automated reading of the image parameters for visualization, including wavelength, NA, magnification, immersion refractive index, and X,Y,Z spacing. Alternatively these values can be entered manually.
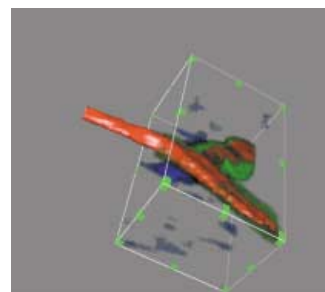
### Visualization

- Includes a volume renderer, stack slicer, and montage tools - all with full interaction
- Volume renderer viewable from any angle, with adjustable transparency and shading
- Full interactive control with 3D image for zoom, rotate, and panning with the image-stack
- Voxel-size and sub-sampling functionality



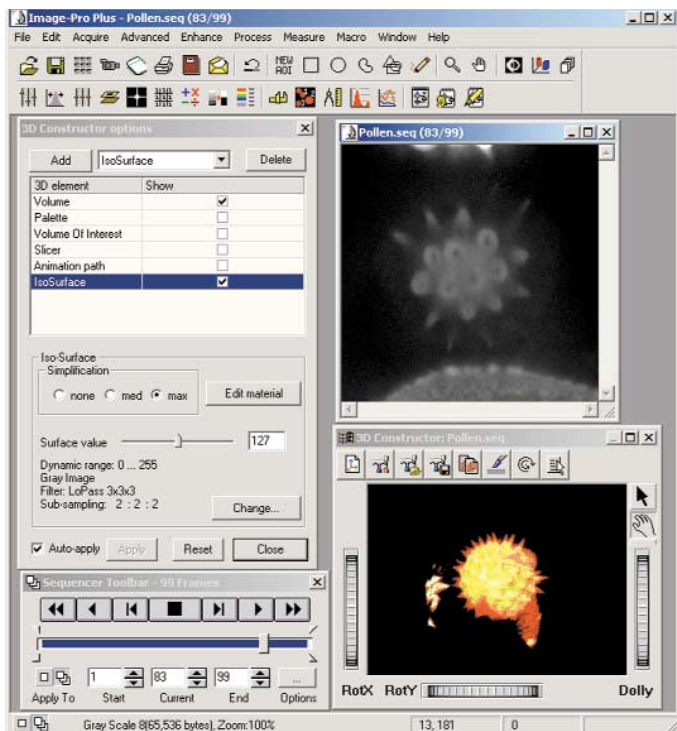*Solid and wireframe rendering example of blood vessel*



*Multiple orthogonal and oblique slicing*

*Volume of interest with iso-surface rendering*

- Averaging, sum, and maximum intensity rendering
- Full freedom of light control for the intensity, direction for the optimum light and shading effects
- Choice of material textures, transparencies, and opacity
- Free choice of palette colors for optimum color spectrum visualization
- Orthogonal slicing aligned with the X, Y, or Z axis and free oblique choice of slicing plane
- Visualization of clipping planes in orthogonal and oblique plane selection and the combination of both
- Selection of VOI (Volume of Interest), which will include or exclude the sub-volume for better visualization of underlying features in the 3D stack
- Stack Slicer for exploring stack data with synchronized display of orthogonal slices through a stack
- Animation composer with full flexibility in camera positions, quality, and export to e.g. AVI files
- Multiple iso-surface rendering based on triangularization of the selected intensities and colors
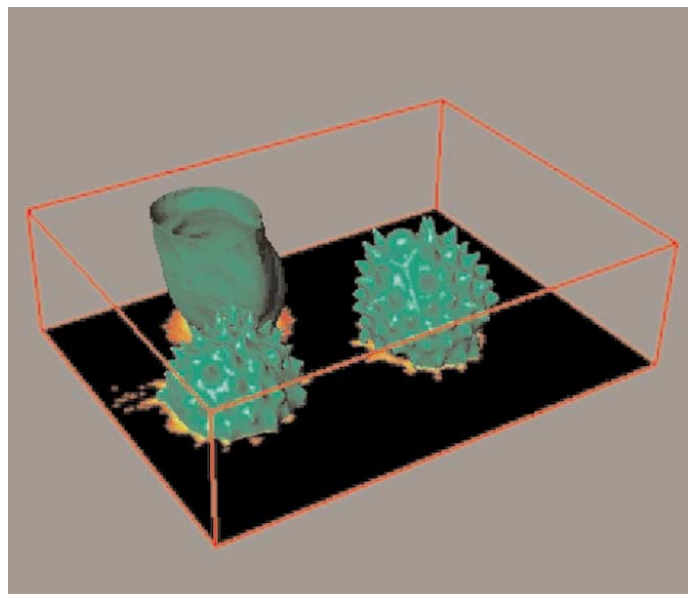- All rendering methods can be displayed in stereo mode using the OpenGL technology
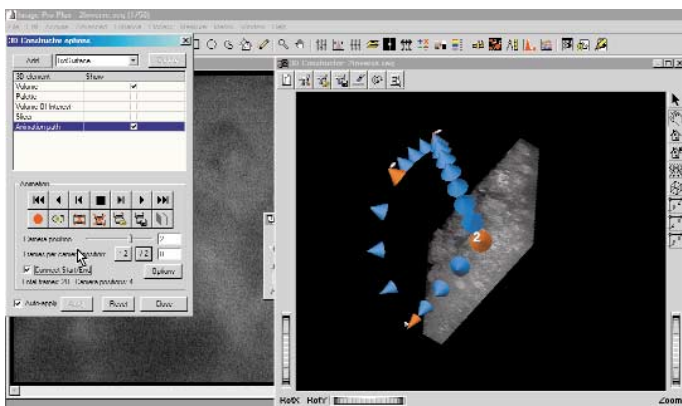
*User interface showing an input slice and rendered image*

## 3D Constructor System Requirements

- Image-Pro Plus v4.5 or higher
- Pentium III or Athlon CPU, running at 450 Mhz or higher
- Microsoft Windows™ 98/ME/NT/2K
- 256 MB of RAM (512 MB recommended)
- 3 GB disk drive with available disk space for installation with additional space to accomodate four times the image size with four bytes/pixel
- Color monitor displaying 16-bit high color (24 or 32- bit color preferred)
- OpenGL accelerated graphics card with a hardware accelerator; with 32M memory; supports 2D texturing



*Animation creation showing the user interface within Image-Pro Plus*



*Iso-surface plot of pollen grains*

**3D Constructor™**
P L U G - I N
*An Image-Pro®Solution*

**MediaCybernetics**
From Images to Answers®

**Media Cybernetics, Inc.**
8484 Georgia Avenue, Suite 200
Silver Spring, MD 20910 USA
Phone: +1.301.495.3305
Fax: +1.301.495.5964
**Email: info@mediacy.com**
**Web: www.mediacy.com**

**South America:** Phone: +55.11.4427.7803
Fax: +55.11.4427.9527

**Europe:** Phone: +31.715.730.639
Fax: +31.715.730.640

**Asia Pacific:** Phone: +65.245.4965
Fax: +65.245.4967