



**MediaCybernetics**<sup>®</sup>  
From Images to Answers<sup>®</sup>



L I F E S C I E N C E S

# *Image-Pro*<sup>®</sup> P L U S

Powerful and Customizable  
Image Processing  
and Analysis Software  
for Life Sciences

Image-Pro Plus allows us to quantitate these morphological differences and not merely rely on subjective assessments, resulting in data that is more reliable.

Dr. Lawrence L. Kunz, Experimental Pathologist  
Nerox Corporation, USA

## Process & Analyze



Create a focused image from a series of unfocused z-stacks with Extended Depth of Field. Image courtesy of Michael King, Ph.D., Dept. of Neuroscience, University of Florida, Gainesville, FL, USA.

### Process and Manage Multiple Images

Tile together a series of images or align sequence images to see a full representation of your research sample. Use Extended Depth of Field to create a focused image from a series of unfocused images.

### Morphology

Use a wide range of morphological filters to precisely segment structures and prepare images for automatic measurement.

### Filter and Enhance

Choose from a variety of enhancement and edge filters to filter noise and improve image detail. Use built-in deconvolution features to remove haze and retrieve better data from your images.

### Merge Color Channels

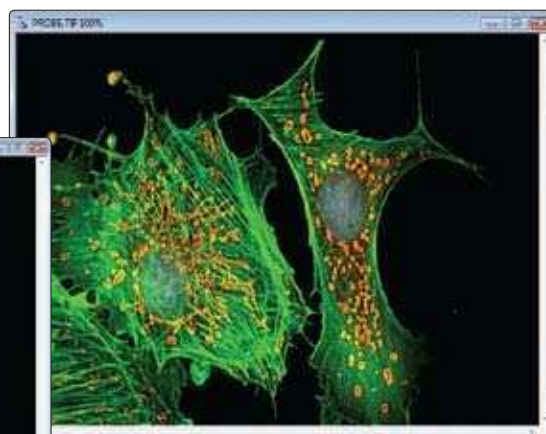
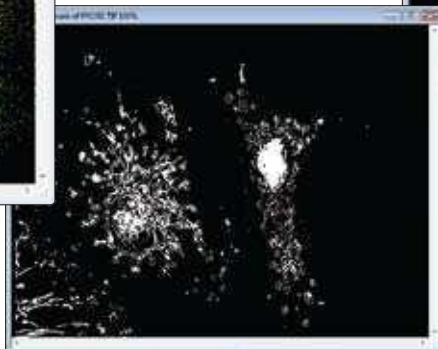
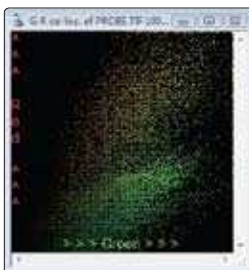
Use the Color Composite feature to merge multiple fluorescent images acquired as monochrome single wavelengths into a color composite image.

### Co-localization

Detect co-localization in biological specimens and graphically display the association between the two sets of data in a scatter plot.

### Pseudo-color

Use pseudo-color to highlight features of interest in a gray scale image. Use colors to visually amplify specific intensities which are normally difficult to distinguish from their surroundings.

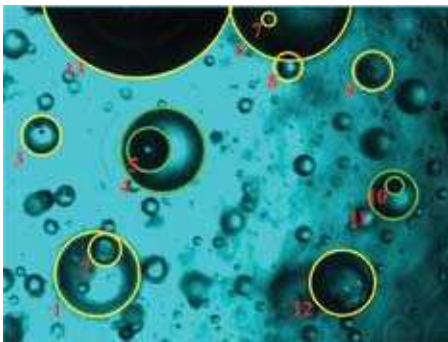


Detect co-localization in fluorescent images. Mouse fibroblast cells - microtubules stained with FITC, mitochondria stained with Texas Red, nuclei stained with DAPI.

# Measure & Classify

## Count and Classify Objects

Count and characterize objects using over 70 manual and automatic measurement tools including areas, perimeters, lengths, roundness, major and minor axes, angles, centroids, holes, and population density. Tag objects of interest and easily sort by size or other measurement parameters.



Count and classify objects. Image courtesy of Dr. Gabriel Corkidi Blanco, Centro de Investigacion Aplicada y Desarrollo Tecnológico, UNAM, Morelos, Mexico.

## Track Moving Objects

Manually or automatically follow cells or other organisms as they move through time and space. Use correlation tracking to follow objects when image segmentation is difficult or not possible. Track and graph the changing of intensity parameters over time within an area of interest.



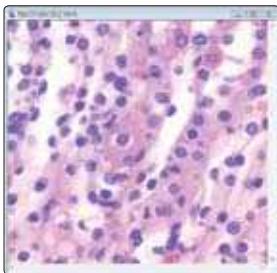
Track and measure the movement of particles.

Object Name	Area (sq. pixels)	Perim. (pixels)	Intensity (avg)
1 Track1	1000000	100000	100000
2 Track2	2000000	200000	200000
3 Object 1	1500000	150000	150000
4 Object 2	1800000	180000	180000
5 Object 3	1200000	120000	120000
6 Object 4	1600000	160000	160000
7 Object 5	1400000	140000	140000
8 Object 6	1700000	170000	170000
9 Object 7	1300000	130000	130000
10 Object 8	1900000	190000	190000

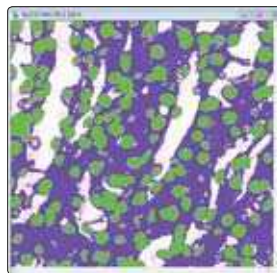
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## Interactive Measurements

Extract quantifiable data from your images using a variety of measurement options. Metrology tools allow you to measure best-fit line, arc, and circle. Detect edges and derive distance measurements using the Caliper tool. Calibrate and measure the intensity levels within your images.



Threshold and measure the percent area of objects.

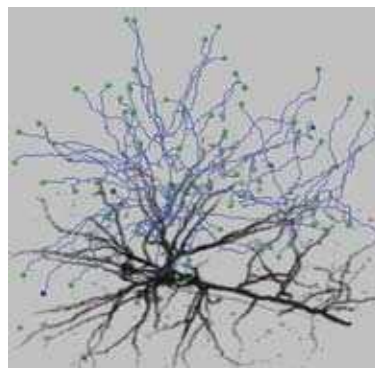


Object Name	Area (sq. pixels)	Perim. (pixels)	Intensity (avg)
1 Object 1	1000000	100000	100000
2 Object 2	2000000	200000	200000
3 Object 3	1500000	150000	150000
4 Object 4	1800000	180000	180000
5 Object 5	1200000	120000	120000
6 Object 6	1600000	160000	160000
7 Object 7	1400000	140000	140000
8 Object 8	1700000	170000	170000
9 Object 9	1300000	130000	130000
10 Object 10	1900000	190000	190000

## 3D Rendering and Measurements

Explore the depth of your images by visualizing and interacting with them in three dimensions. Measure angles, distances, and volumes to gain a more complete understanding of your specimens.

- 4D Tracking - Track and measure the movement of individual objects in a 4D sequence.
- Neuron Tracing - Visualize and count the number of branches in a neuron as well as the length and volume of each branch.



Dendritic spine tracing of 3D neuron. Image courtesy of Ling Wang and Brendan Brinkman, University of California, San Diego, CA, USA.

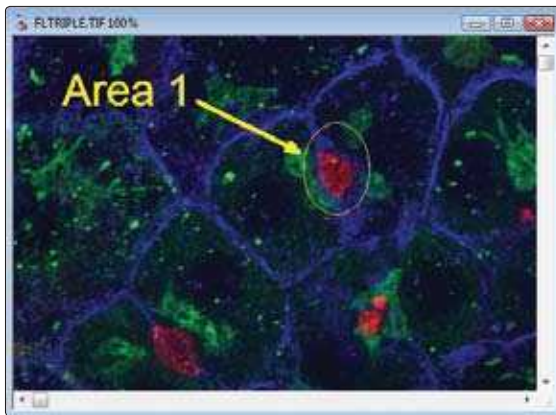
## Measure and Visualize Surface Dimensions

Create beautifully illuminated 3D visualizations of your image stacks with the optional 3D Surface Inspector. Explore the depth of your z-stacks with manual measurements and easily create AVI animations.

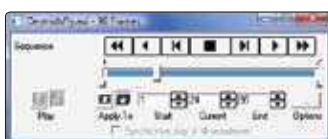
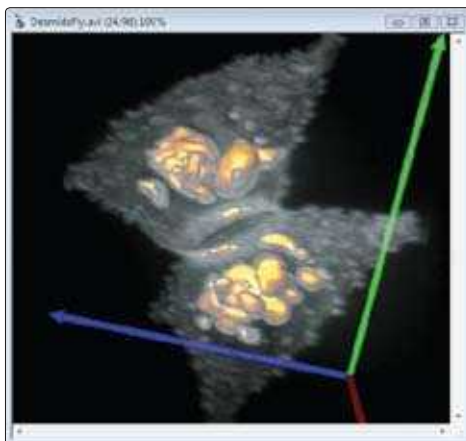
Automating the measuring process with Image-Pro Plus has allowed us to increase the accuracy and speed of measurements, take many more of them, and output the data to computers with no errors.

Dr. Bradley Stevens  
National Marine Fisheries Service  
Kodiak, Alaska, USA

## Automate & Share



Point out features of interest and add notes to your images with Annotation tools.



Convert image sequences and 3D renderings to AVI files.

### Visualize Image Data

Visualize image data with scattergrams, histograms, and line profiles.

### Annotate

Point out features of interest and add text to your images with Annotation overlay tools.

### Report and Publish Your Results

Export image data via DDE to Origin® and Microsoft Excel. Create custom reports with images data and text.

### Create AVI Movies

Easily convert sequence files and 3D rendered images to AVI files.

### Customize Your Workflow

Image-Pro Plus includes a variety of features that allow you to alter the application to fit your workflow. Create a personalized Workflow Toolbar with buttons for your most frequently used tools. Automatically convert your application to Dark Mode for low-light laboratory environments.

### Automate with Macros

Image-Pro Plus offers convenient customization tools and a built-in programming language to streamline your imaging research. Save frequently performed operations using the Macro Recording tools and easily edit macros. Use the time-saving macros included in Image-Pro Plus or download macros from the user-contributed Solutions Zone section of our website -[www.mediacy.com](http://www.mediacy.com).

For more advanced customization, Image-Pro Plus built-in IP Basic programming engine offers a debugger, full editor, and dialog builder. Use with COM objects such as Microsoft® Word® or Excel®, and integrate and customize macros with Microsoft Visual Basic or Visual C++.

# Image-Pro Plus Features Comparison

	Offline Analysis		Online Acquisition & Analysis				
Features by Product	Image-Pro Analyzer	Image-Pro Analyzer 3D	Image-Pro Plus	Image-Pro Plus Inspector	Image-Pro Plus MDA	Image-Pro Plus 3D	Image-Pro Plus AMS
<b>Description</b>	Advanced processing and measurement. Does not include acquisition.	Image-Pro Analyzer with 3D rendering/ measurement.	Single channel acquisition, advanced processing and measurement.	Image-Pro Plus with surface analysis.	Image-Pro Plus with multi-dimensional acquisition.	Image-Pro Plus with 3D and surface analysis.	Image-Pro Plus with multi-dimensional acquisition, 3D and surface analysis.
<b>Applications</b>	Life science imaging, Brightfield/Darkfield microscopy, Medical imaging, Cell counting, Pathology, Histology, Cytology	Fluorescence microscopy, Confocal imaging, 3D rendering & measurements, Neuron tracing	Life science imaging, Brightfield/Darkfield microscopy, Medical imaging, Cell counting, Pathology, Histology, Cytology	Dermatology, Dental medicine, Entomology, Environmental biology, Ophthalmology	Multichannel fluorescence microscopy, Live cell imaging	Fluorescence microscopy, Confocal imaging, 3D rendering & measurements, Neuron tracing	Multi-channel fluorescence microscopy, Live cell imaging, 3D rendering & measurements, Confocal imaging
<b>Image Acquisition &amp; Device Control</b>							
Basic capture			•	•	•	•	•
Scan			•	•	•	•	•
Time-lapse			•	•	•	•	•
Microscope automation			•	•	•	•	•
Filter wheel and shutter control			•	•	•	•	•
Triggered device control			•	•	•	•	•
Port I/O and IO-Pro			Optional	Optional	Optional	Optional	Optional
<b>Multi-dimensional acquisition</b>							
Multi-dimensional experiment configuration					•		•
Multiple wavelength acquisition					•		•
Multiple time point acquisition					•		•
Multiple microscope mode acquisition					•		•
6D acquisition					•		•
<b>Live Preview &amp; Analysis</b>							
Live preview			•	•	•	•	•
Automatic exposure/white balance			•	•	•	•	•
Dynamic auto-range			•	•	•	•	•
Live measurements			•	•	•	•	•
Real-time 2D deconvolution			•	•	•	•	•
Live tiling & Live Extended Depth of Field (EDF)			Optional	Optional	Optional	Optional	Optional
<b>Image Processing</b>							
Annotate	•	•	•	•	•	•	•
Color correction / management	•	•	•	•	•	•	•
Contrast enhancement	•	•	•	•	•	•	•
Apply contrast / invert image	•	•	•	•	•	•	•
Background correction	•	•	•	•	•	•	•
Basic filters	•	•	•	•	•	•	•
Morphological filters	•	•	•	•	•	•	•
3D filters	•	•	•	•	•	•	•
Large spectral filters (4000 x 4000)	•	•	•	•	•	•	•
Extended depth of field	•	•	•	•	•	•	•
Align images	•	•	•	•	•	•	•
Tile images	•	•	•	•	•	•	•
2D AutoQuant deconvolution	•	•	•	•	•	•	•
3D Blind AutoQuant Deconvolution		•				•	•
Image math	•	•	•	•	•	•	•
Test strips	•	•	•	•	•	•	•

	Offline Analysis		Online Acquisition & Analysis				
Features by Product	Image-Pro Analyzer	Image-Pro Analyzer 3D	Image-Pro Plus	Image-Pro Plus Inspector	Image-Pro Plus MDA	Image-Pro Plus 3D	Image-Pro Plus AMS
<b>Image Analysis</b>							
Area / Region of Interest	•	•	•	•	•	•	•
Dye list / image tinting	•	•	•	•	•	•	•
Spatial and intensity calibration	•	•	•	•	•	•	•
Lens list / calibration management	•	•	•	•	•	•	•
Auto-calibration	•	•	•	•	•	•	•
Histogram	•	•	•	•	•	•	•
Line profile	•	•	•	•	•	•	•
Sequence processing	•	•	•	•	•	•	•
Display range	•	•	•	•	•	•	•
Threshold	•	•	•	•	•	•	•
Operations	•	•	•	•	•	•	•
Segmentation	•	•	•	•	•	•	•
Color composite	•	•	•	•	•	•	•
Pseudo-color	•	•	•	•	•	•	•
Bayer interpolation	•	•	•	•	•	•	•
Registration	•	•	•	•	•	•	•
Fast Fourier Transform (FFT)	•	•	•	•	•	•	•
Grid mask	•	•	•	•	•	•	•
Count / size objects	•	•	•	•	•	•	•
Sort objects	•	•	•	•	•	•	•
Classify objects	•	•	•	•	•	•	•
Manual tag	•	•	•	•	•	•	•
Manual measurements	•	•	•	•	•	•	•
Distance & thickness measurements	•	•	•	•	•	•	•
Data collector	•	•	•	•	•	•	•
Caliper (Edge detection)	•	•	•	•	•	•	•
Auto trace	•	•	•	•	•	•	•
Co-localization	•	•	•	•	•	•	•
2D object tracking	•	•	•	•	•	•	•
Surface plot	•	•	•	•	•	•	•
<b>3D Rendering and Analysis</b>							
Basic 3D viewer	•	•	•	•	•	•	•
Advanced 3D rendering		•				•	•
3D measurements		•				•	•
4D object tracking		•				•	•
Volume measurements		•				•	•
Neuron/Filament tracing		•				•	•
<b>Z Profile &amp; Surface Measurements</b>							
Measure Z-profile				•		•	•
<b>Export &amp; Share</b>							
Report	•	•	•	•	•	•	•
Animation/AVI Creation	•	•	•	•	•	•	•
Export data to Excel	•	•	•	•	•	•	•
<b>Automation &amp; Customization</b>							
Customizable menu & toolbar	•	•	•	•	•	•	•
Macro recording	•	•	•	•	•	•	•
Macros / scripting	•	•	•	•	•	•	•
Extensible through SDK	•	•	•	•	•	•	•
IQbase database support	•	•	•	•	•	•	•
Image & batch conversion	•	•	•	•	•	•	•
<b>Image Auditing &amp; Regulation</b>							
Audit trail	•	•	•	•	•	•	•
Image signature	•	•	•	•	•	•	•

# Exceptional Service and Support

## Training

Our image analysis training courses provide valuable information you can apply towards your imaging research. Whether you are new to Image-Pro Plus or you are an experienced imaging professional, our courses are designed to help you make optimum use of the latest imaging software techniques.

## Technical Support

When you register your copy of Image-Pro Plus, you are entitled to 90 days of support through our Technical Support Program. Receive installation and configuration troubleshooting from our Technical Support Engineers via phone or email. Extend your technical support beyond 90 days to receive expert support year-round.



## Free Online Tutorials and Webinars

View online video tutorials to pick up quick tips for a variety of features in Image-Pro Plus. You can also attend live imaging webinars or access our online Webinar Library to learn the latest image processing techniques

## Collaborative Imaging Forum

The Media Cybernetics Image Analysis Forum is an online community of Image-Pro software users, Media Cybernetics technical staff, and other imaging professionals. Register today to start sharing ideas and learning from the experiences of other imaging software users.

## User-contributed Solutions Zone

Explore the Media Cybernetics Solutions Zone website to find a wealth of useful information about Image-Pro Plus. The Solutions Zone is an easily searchable online database of macros, device drivers, plug-in modules, application programs, and development consultants that support Image-Pro Plus and other Media Cybernetics software programs.

## Supported File Formats

- Read Support: TIFF, IPW, JPEG, JPEG 2000, EXIF JPEG, Flat (binary), GEL, TGA, BMP, PhotoCD, HDF QED, FITS, AI, and SEQ files.
- Stack & Confocal Read Support: SEQ (Image-Pro and StreamPix), STK (MetaMorph), PIC (Bio-Rad Confocal), LSM (Zeiss Confocal), DEB and dVX (AutoQuant Stack), LEI and LIF (Leica), DM3 (Gatan), DV (DeltaVision), and Fluoview 1000 files.
- Write Support: TIFF, IPW, JPEG, JPEG 2000, Flat, TGA, BMP, EPS, AVI and SEQ files.
- Support for 24-, 36-, and 48-bit color; 8-, 12-, and 16-bit grayscale as well as 32-bit floating point images.

## System Requirements

Operating System	Computer	RAM	Storage
Windows® XP Pro (SP3)	750 MHz or better	1GB RAM*	20 GB**
Windows® Vista Business and Ultimate (32 and 64 bit) (SP1)	2.1 GHz	2 GB RAM*	40 GB**

\* 2GB RAM is recommended on all operating systems. 4GB is best on Vista operating systems.

\*\* Suggested storage size for large image files generated by advanced cameras. Image-Pro Plus is a 32-bit application. It will run on 64-bit machines.

Specifications are subject to change. Please contact Media Cybernetics or your local reseller for the latest features.



## DISTRIBUTED BY



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