MetaMatters

Improved throughput is just a click away!

Is your MetaMorph® acquisition system overwhelmed with users?

Are users waiting in line to analyze their data?

Adding a dedicated MetaMorph offline analysis system provides improved productivity to your laboratory or core facility.

Accelerate throughput and save time by moving image analysis off the acquisition system and onto the separate dedicated workstation. This is especially helpful for analysis that requires high computational power such as deconvolution or performing segmentation and measurements on large data sets.

We offer three offline products:

- • MetaMorph Offline Basic Software: Includes standard measurement and analysis capabilities such as thresholding, segmentation, filtering and morphometry.

- • MetaMorph Offline Premier Software: Enhanced version of Basic Software plus advanced application modules and the 4D viewer application.

- • MetaMorph Offline Premier Software Network Licensing: Equivalent to offline Premier version but in a cost effective bundle with attractive per seat license pricing.

These MetaMorph packages can be purchased through any of our valued distribution partners or directly from Molecular Devices, Inc. Click HERE to find a distributor near you.

Thank you to all the wonderfully talented scientific artists who particpated in the MetaMorph Software "Work of Art" program!

The program has now concluded.
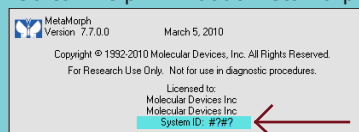
Look for the captivating images in the coming months.

Inside this issue:

MetaTool Tips: System ID #
To locate your MetaMorph Software system ID #, look in one of these two locations:
1) On the MetaMorph Software dongle.
2) In the MetaMorph Software:
   Go to "Help"..."About MetaMorph"...

MetaMorph
Version 7.7.0.0   March 5, 2010
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Licensed to:
Molecular Devices Inc
Molecular Devices Inc
System ID: #?#?

Amazing Software Incentives!

FOCUS: MetaMorph® Software Method -
Making a Panoramic Movie from a 16 mm film

*George McNamara, Ph.D., Image Core Manager
Analytical Imaging Core Facility, University of Miami*

In the 1950's David Rogers, Vanderbilt University, made a timelapse movie on 16 mm film of a human polymorphonuclear leukocyte (PMN or neutrophil) chasing a Staphylococcus aureus bacterium in a field of red blood cells and platelets. The movie used phase contrast microscopy, a technique invented in the 1930's that resulted in a Nobel Prize in Physics to Frits Zernicke in 1953 (http://nobelprize.org/nobel_ prizes/physics/laureates/1953/). The film was transferred to Thomas Stossel, Harvard Medical School, who arranged for it to be digitized (http://www.biochemweb.org/neutrophil.shtml). The movie jumps between several fields of view as the microcinematographer followed the cell. While I was manager of the Julian Dixon Cellular Imaging Core at Childrens Hospital Los Angeles, I used MetaMorph software to convert the movie into a panorama, with the permission of my supervisor, Thomas D. Coates, a well known neutrophil cell biologist and long time Image-1/AT and MetaMorph software customer. The details of this conversion are described here. A later MetaMorph Software Method will describe how I quantify cell motility from such movies.

FOCUS: MetaMorph® Software Method - Making a Panoramic Movie from a 16 mm film
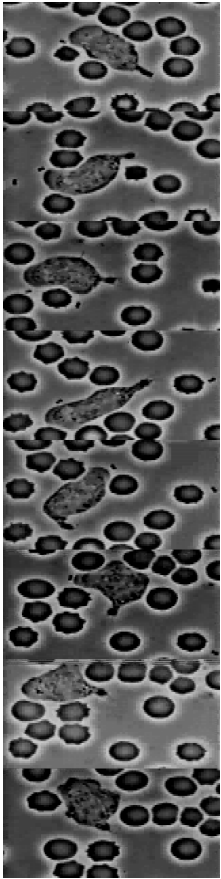
The original "jumpy" movie was downloaded as a QuickTime movie that is available on YouTube and many other web sites. Using Adobe Premiere I exported all 439 frames as RGB color TIFF image files. The paid version of QuickTime Pro also has this capability, as do many free video programs. Each image was a 320x240 pixel, 24-bit color image. For MetaMorph software to "see" the images I had to open the images using *File menu – Open Special – Build Stack – Quick*. I then had to use *Display menu – Color Separate* to split the RGB image stack to separate R, G and B channels so that I could save one channel as an 8-bit monochrome stack image file I saved as "Rogers". I arbitrarily chose the green channel. Next, I used *File menu - New* in order to create a new image of much larger size (the final size became 800x400 pixels but I started with one even larger) and gave it an intensity level of zero. I then used *Edit menu – Duplicate – Duplicate Plane* on the new, larger image and used *Stack menu – Add Plane…* 438 times, in order to generate a new 439 plane stack, saved as "Panorama". I created a 320x240 Region of Interest near the right edge of the "Panorama" stack, and used *Journal menu - Loop for All Planes*, using a journal that performed 1) *Edit menu – Copy* from the stack named "Rogers", then 2) *Edit menu – Paste* to the stack named "Panorama", with 3) *Journal – Recording tools - Change plane* on "Panorama" stack in order to keep the two stacks synchronized. Change plane will record a relative change in plane positions in a journal.

I then used *Stack – Align Stack* to shift each video segment with in the new "Panorama" stack to correct for each jump. When using Align Stack, you may need to increase the *More >> - Max Shear* value if you need to shift frames more than the default of 20 pixels. I then used *Measure – Threshold Image – Clip* to change the "background" intensity of "Panorama" from zero to 120. I then used one of my favorite MetaMorph commands, *Process – Stack Arithmetic* to make a *Stack minimum* image and a *Stack maximum* image from the "Panorama" stack. I blended these two new images together using the *Process – Arithmetic average* (stack min, stack max) command. Finally, I blended the "Panorama" stack with the min/max blended image using the same *Process – Arithmetic average* command. This resulted in a panorama with the path of the neutrophil present in the background and the moving cells overlaid onto the path. Sometime between the original panorama made in 2003 and now, I lost or misplaced (or never saved) the original. Therefore in 2010 I re-created the original panorama using a region of interest with copy/paste. This used a journal in which I used *Region menu – Transfer Regions* to copy the region from the "blended" panorama image, to a new empty panorama stack.

Next time: quantifying cell motility using morphometry and temporal area maps.

Montage from Original movie, using images 60 planes apart.
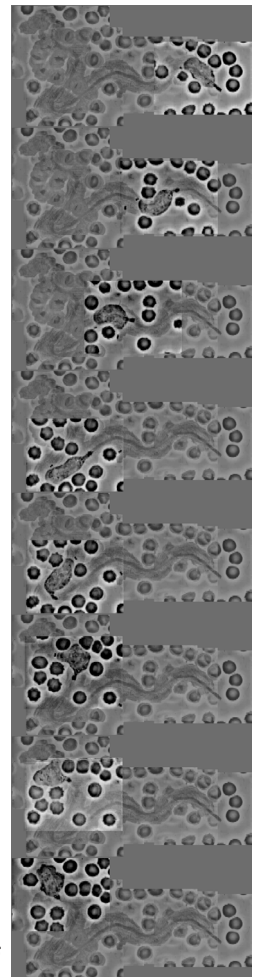
Montage from new Panorama movie, using images 60 planes apart.

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→ MetaMorph Software version 7.7 is the ONLY version compatible with the new Windows 7 OS

→ Click HERE to download a CD copy of MetaMorph Software for your computer with Windows 7 OS

→ For Windows XP or Vista compatible MetaMorph Software version 7.7 updates, click HERE

→ 32-bit *and* 64-bit Windows 7 supported

- If interested in the 64-bit version, ask your local sales representative whether your hardware and additional modules are supported in that environment.

→ Your MetaMorph Software Maintenance Plan must be up-to-date for these updates to work

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