

Spinning Disk Confocal Microscopy




AutoDeblur[®] 3D 9.3: Sales Crib Sheet

Preparation for the demonstration:

- 1) Install the AutoQuant Combination Suite 9.3 on the computer.
 - a. Insert the AutoDeblur & AutoVisualize Installation CD
 - b. Open Windows Explorer and double click Setup.exe on the CD.
 - c. When “Please select the type of setup ...”, select *Complete*. This will create folders with sample data sets under subfolders entitled Tutorial Data and Demo Data.
2. Specify the startup directory to be the demonstration directory by carrying out the following steps:
 - a. Start AutoDeblur 9.3
 - b. Click on the following: File → Operation Settings.
Under “Please specify startup directory”, press “Browse”, then navigate to and choose
C:\Program Files\AutoQuant\AutoQuant Imaging Suite 9.3\Demo Data.

Demonstration:

With AutoDeblur running:

1. Go to File → Open → *C:\Program Files\AutoQuant\AutoQuant Imaging Suite 9.3\Demo Data\spinning disk.tif*
2. Go to Deconvolution → Start 3D Deconvolution.
The Deconvolution Settings in the dialog box are preset. Double check with the footnote below¹.
3. Press Start. The program will require less than 5 minutes. The deconvolved picture will appear in the workspace entitled *20_spinning disk*. The focus will be on this picture.
4. Click on the data set titled *spinning disk.tif* to place the focus on that file.
5. Go to Visualization → Movie Maker. The 3D Viewer will pop up.
6. Within the 3D Viewer, go to View → Volume Projection - Software. The max. value projection will appear.
7. Within the 3D Viewer, go to Movie → Quick Movies → Y Axis → +/- 30 Degrees. A movie will begin to play. While this movie is playing, go to Movie → Create Movie. This will create and play a movie file that can be saved as an AVI file.
8. Close the 3D Viewer.
9. Click on the data set titled *20_spinning disk* to place the focus on that file.
10. Go to Visualization → Movie Maker. The 3D Viewer will pop up.
11. Within the 3D Viewer, go to View → Volume Projection. The max. value projection will appear.
12. Within the 3D Viewer, go to Movie → Quick Movies → Rotate Y Axis → +/- 30 Degrees. The dataset within the 3D Viewer will begin to rotate back and forth. Click the *Stop* button  in the 3D Viewer to stop the movie. Go to Movie → Create Movie. This will create a movie file that can be saved as an AVI file.
13. Close the 3D Viewer, click on the original spinningdisk dataset (raw, not deconvolved) and click on the 3D Viewer button again. Repeat steps 11 and 12.
14. There will be 2 movie player windows open entitled *Untitled0* and *Untitled1*. Within each of these two movie player windows, press the *rock* button  then press the *play* button .
15. Notice that the movie of the deconvolved data sets shows a much clearer specimen.

Footnote

¹Deconvolution settings: Total Iterations – 20, Save Interval – 20, Noise Level – Medium, Performance – Faster Processing/Reduced Resolution should be checked, Use Recommended Expert Settings – checked.

Algorithm Background:

The algorithm research for this product was carried out from 1985 to 1994 by Dr. Tim Holmes (Cofounder, President, CEO) and a group of graduate students while on the faculties of the University of Missouri and the Rensselaer Polytechnic Institute (Ch. 24, Handbook of Biological Confocal Microscopy, J. Pawley). AutoQuant was founded in 1994 and now sells AutoDeblur worldwide through an extensive dealer and OEM network. AutoQuant was the first to introduce the Maximum Likelihood Estimation and Blind Deconvolution commercially in 1996. It is the only commercial product available with true Blind Deconvolution.

Advantages to AutoDeblur:

- Blind Deconvolution - requires no points-spread function measurement
- Maximum Likelihood - most robust¹ mathematical approach
- Many important utilities
 - Data correction for attenuation of light with depth into the sample
 - ***IMPORTANT ADVANTAGE FOR LIVE IMAGING:*** Special Image Alignment Plug-In feature compensates for motion of the sample

Questions?

Call (518)276-2138; ask for *Technical Support*. Online go to support.aqi.com.

Footnote

¹ “Robust” means that it eliminates noise and works with a variety of sample types and difficult imaging conditions (low-light, attenuation, aberrations, etc).