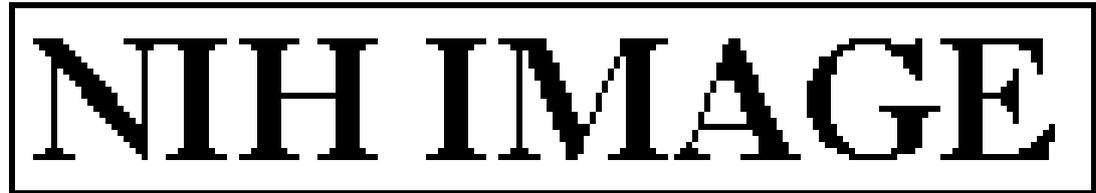




Some ImageJ History

NIH Image

Apple Mac only



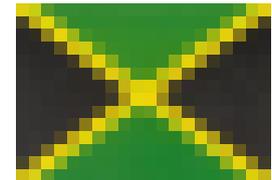
ImageJ

Java – all platforms



ImageJA

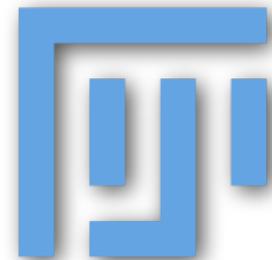
Applet, Advanced



FIJI

“installer for TrakEM2”

... and then much more



FIJI Is Just ImageJ (batteries included)

FIJI for users

one free software package

lots of bundled plugins

lots of scripting languages

tutorials/documentation

coherent menu structure

FIJI for developers

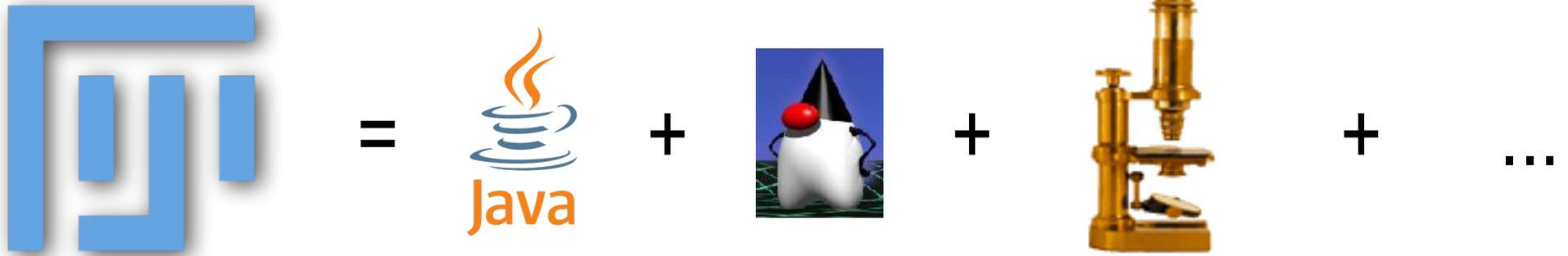
version control

build system

open source



Batteries Included !



One software package

Java Runtime + Java3D,
for Windows, Mac, Linux

32/64-bit

ImageJA

Plugins!

<http://pacific.mpi-cbg.de/>

A screenshot of the Fiji software website. The page features a navigation menu at the top with links for 'articles', 'downloads', 'edit', 'history', 'plugins', 'news', and 'search'. The main content area includes a 'Fiji' header, a brief description of the software as an image processing package based on ImageJ, and a 'Download Fiji now' button. Below this is a 'News' section with several recent updates, a 'Contents' section listing various features and documentation, and a 'Snapshots' section displaying several thumbnail images of 3D reconstructions and image processing results. The website has a clean, professional layout with a light blue and white color scheme.

FIJI for Users - (that's YOU!)

Sane plugin menu structure that doesn't fall off the bottom of the screen.

FIJI Wiki for documentation and step by step how to **tutorials** and movies

Bug tracker that is actively followed by the dev team

Easy double click install of ImageJ + plugins + java + java 3D + javac

FIJI Updater, makes updating ImageJ, and the plugins very easy.

(plugin manager coming – like OSX software update or synaptic on Ubuntu linux)

Scripting!!!

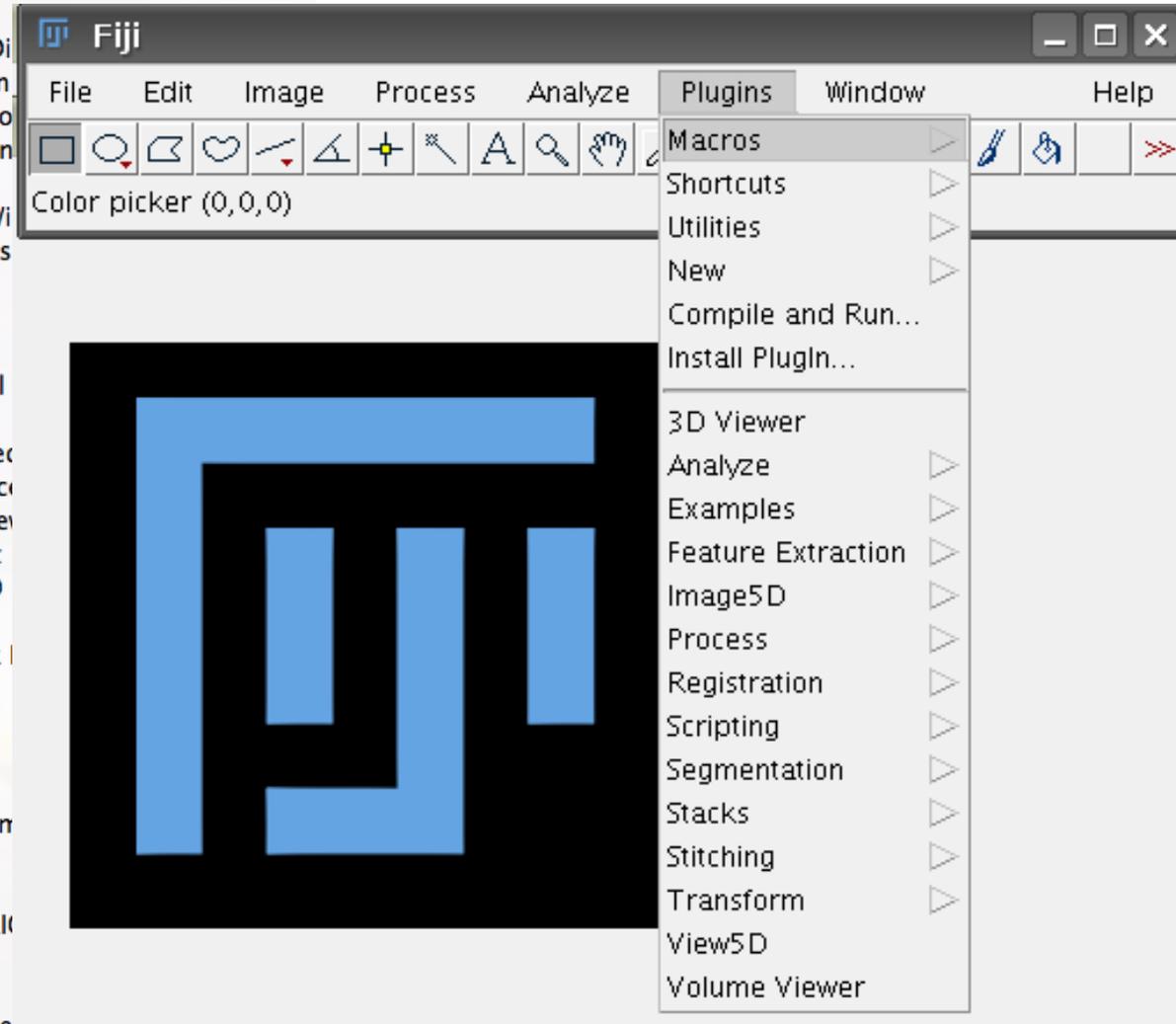
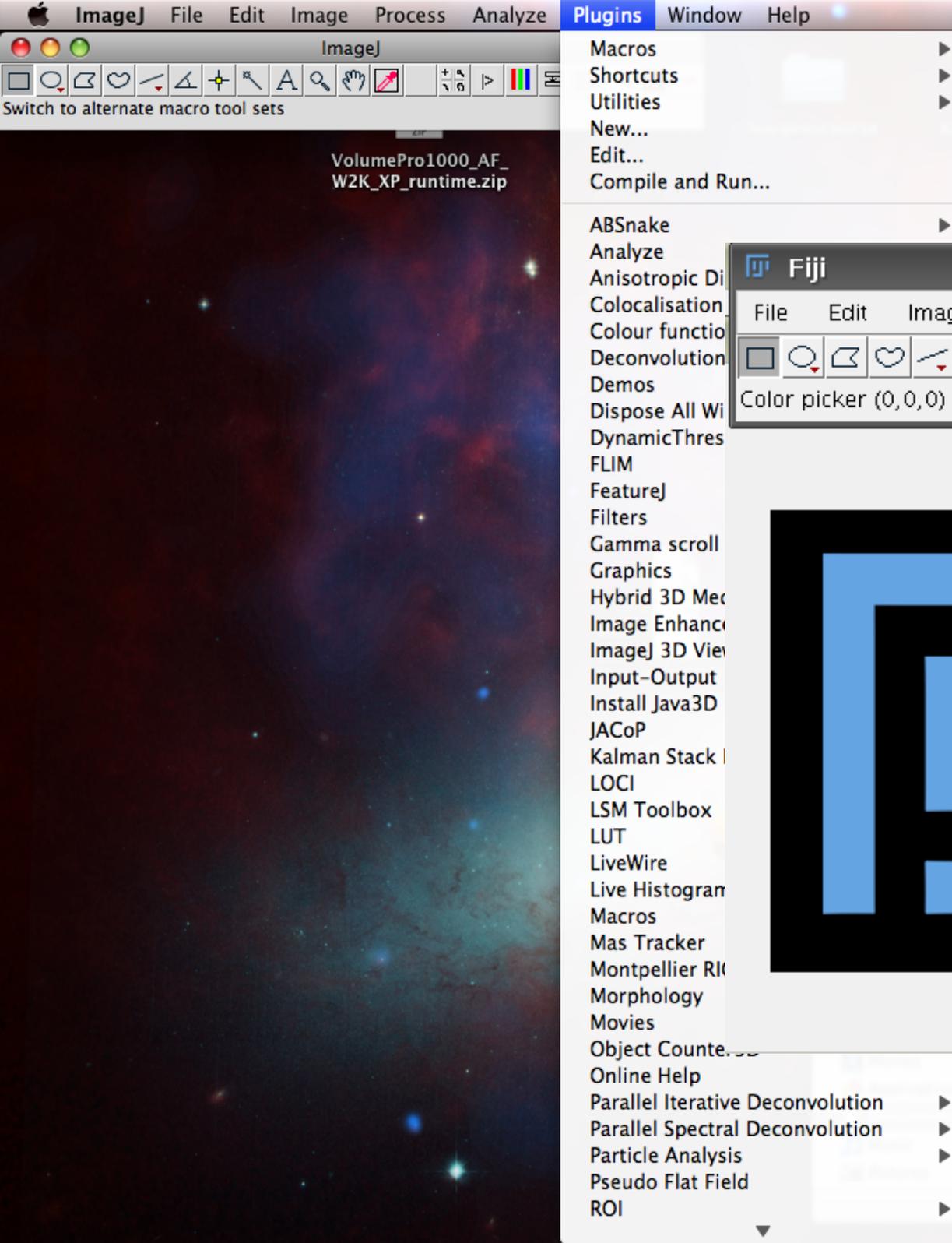
replacements for macro language, because its not thread safe!

Don't need to learn macro lang, if you already know python or java or ruby

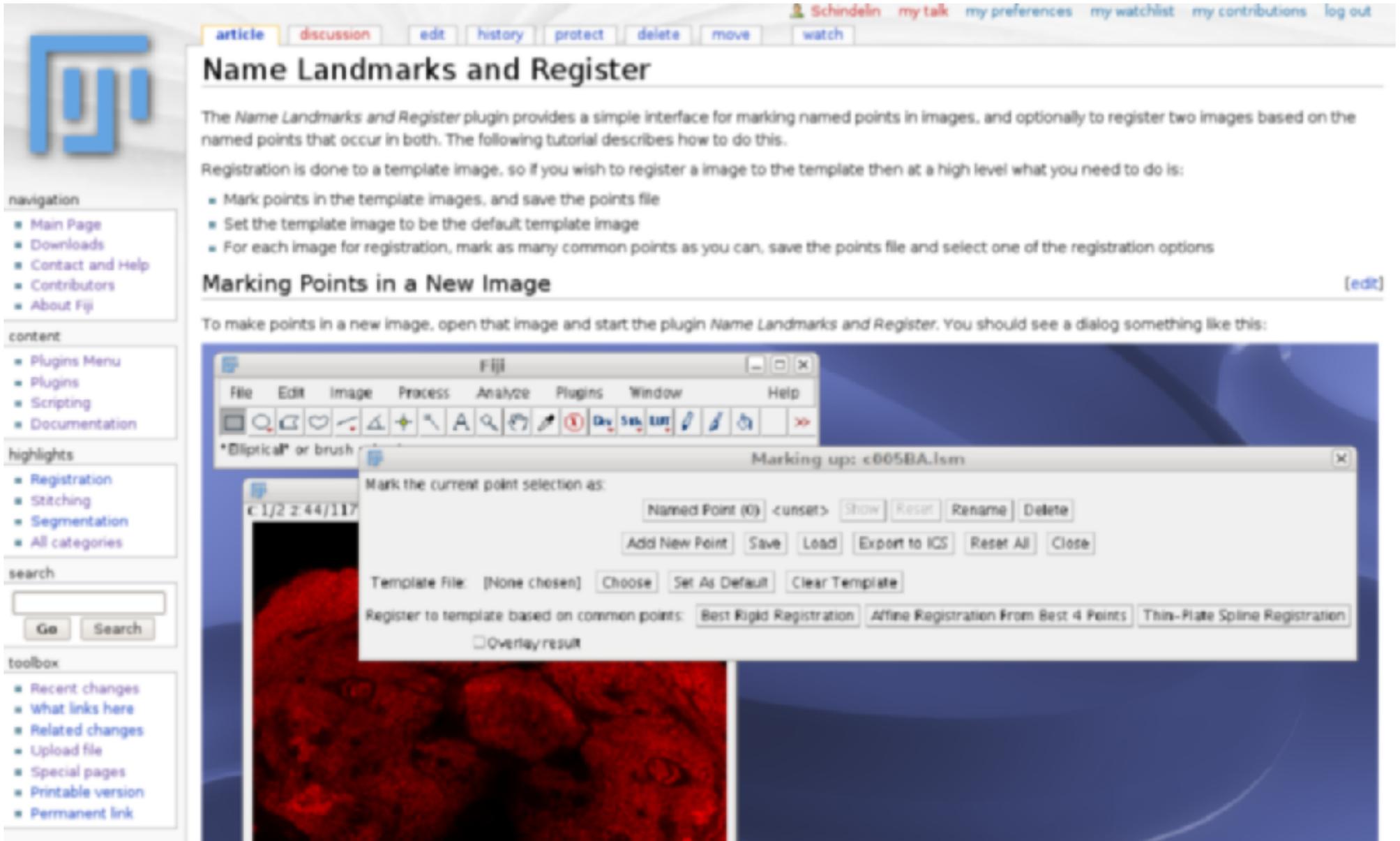
Accelerates the development of imageJ with cool stuff like the command launcher

ctrl L – for keyboard lovers

Coherent Menu Structure



Tutorials and Documentation



The screenshot shows a web browser displaying a tutorial page for the 'Name Landmarks and Register' plugin in Fiji. The page has a navigation bar at the top with tabs for 'article', 'discussion', 'edit', 'history', 'protect', 'delete', 'move', and 'watch'. The user 'Schindeln' is logged in, with links for 'my talk', 'my preferences', 'my watchlist', 'my contributions', and 'log out'. On the left side, there is a navigation menu with sections for 'navigation', 'content', 'highlights', 'search', and 'toolbox'. The main content area features the title 'Name Landmarks and Register' and a brief introduction: 'The Name Landmarks and Register plugin provides a simple interface for marking named points in images, and optionally to register two images based on the named points that occur in both. The following tutorial describes how to do this.' Below this, it states 'Registration is done to a template image, so if you wish to register a image to the template then at a high level what you need to do is:' followed by a bulleted list of steps: 'Mark points in the template images, and save the points file', 'Set the template image to be the default template image', and 'For each image for registration, mark as many common points as you can, save the points file and select one of the registration options'. A sub-section titled 'Marking Points in a New Image' includes an '[edit]' link and a paragraph: 'To make points in a new image, open that image and start the plugin Name Landmarks and Register. You should see a dialog something like this:'. An inset image shows the Fiji software interface with a 'Marking up: c005BA.ism' dialog box open. The dialog box contains the following elements: 'Mark the current point selection as:' with a text input field containing 'Named Point (0) <unset>' and buttons for 'Show', 'Reset', 'Rename', and 'Delete'; 'Add New Point', 'Save', 'Load', 'Export to ICS', 'Reset All', and 'Close' buttons; 'Template File: [None chosen]' with 'Choose', 'Set As Default', and 'Clear Template' buttons; 'Register to template based on common points:' with radio buttons for 'Best Rigid Registration', 'Affine Registration From Best 4 Points', and 'Thin-Plate Spline Registration'; and an unchecked checkbox for 'Overlay result'. The background of the inset image shows a red fluorescence microscopy image with several points marked by small circles.

[article](#) [discussion](#) [edit](#) [history](#) [protect](#) [delete](#) [move](#) [watch](#)

Schindeln [my talk](#) [my preferences](#) [my watchlist](#) [my contributions](#) [log out](#)

Name Landmarks and Register

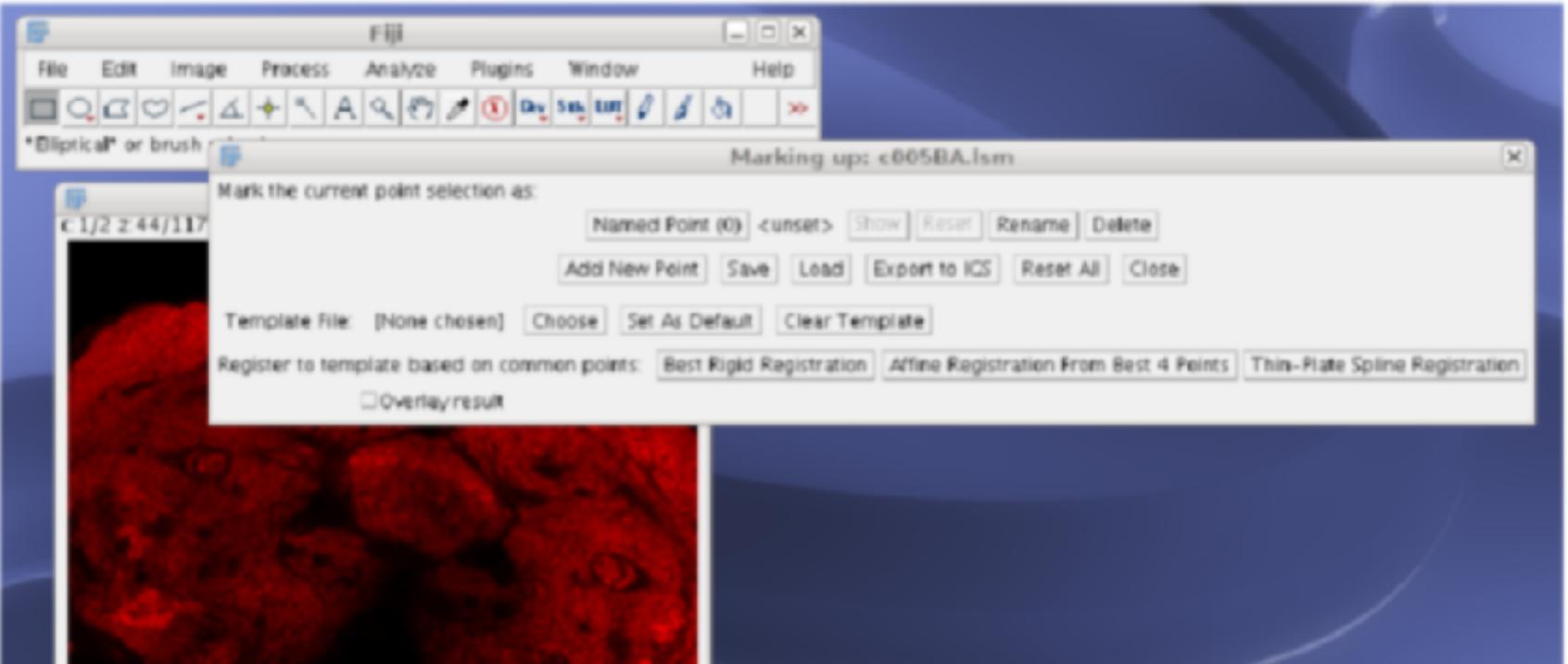
The *Name Landmarks and Register* plugin provides a simple interface for marking named points in images, and optionally to register two images based on the named points that occur in both. The following tutorial describes how to do this.

Registration is done to a template image, so if you wish to register a image to the template then at a high level what you need to do is:

- Mark points in the template images, and save the points file
- Set the template image to be the default template image
- For each image for registration, mark as many common points as you can, save the points file and select one of the registration options

Marking Points in a New Image [\[edit\]](#)

To make points in a new image, open that image and start the plugin *Name Landmarks and Register*. You should see a dialog something like this:



Why do developers participate in FIJI?

Their Projects

3D Viewer

TrakEM2

SIFT and MOPS

bUnwarpJ

Virtual Insect Brain

Stitching 2D/3D

Simple Neurite Tracer

...

Benefits

overlapping interests

code reuse

inspiration

hackathons

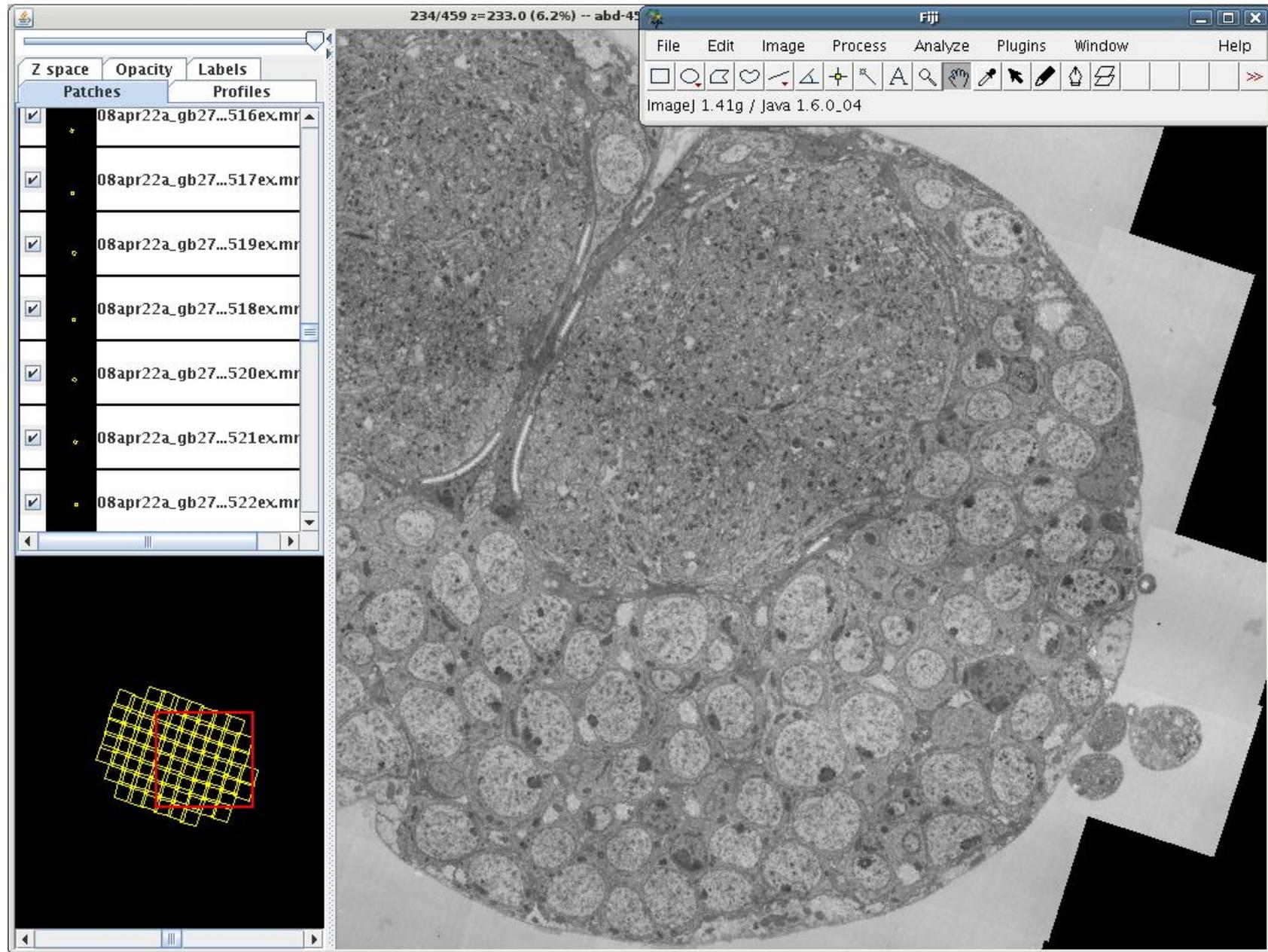
fun!

**real research problems
drive FIJI development!**

ANY ImageJ plugin will work in FIJI!

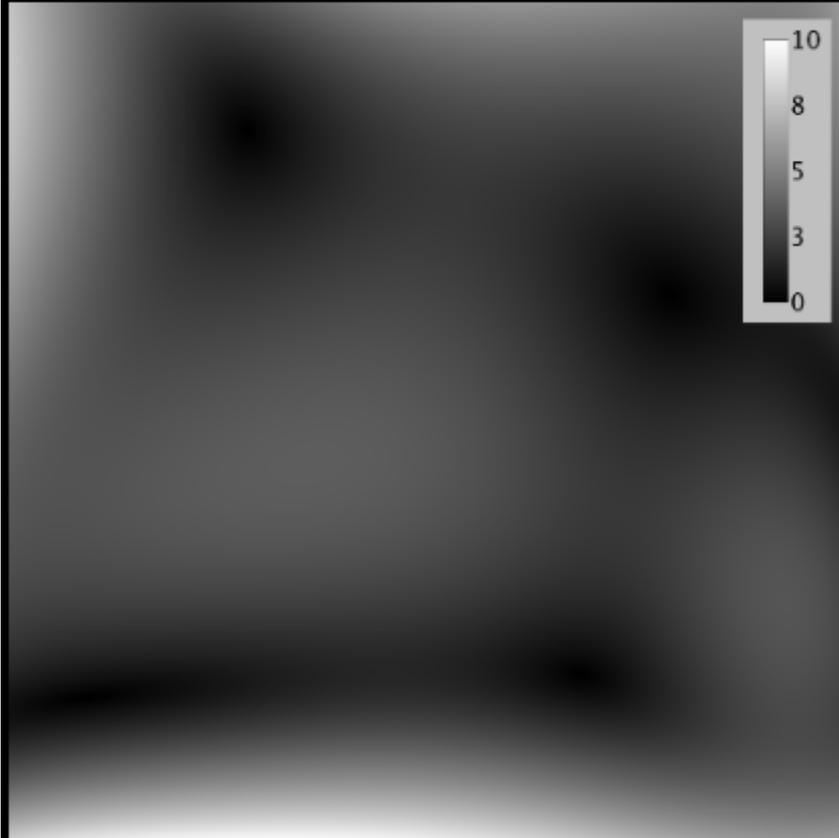
TrakEM2

(Albert Cardona, Stephan Preibisch, Stephan Saalfeld)

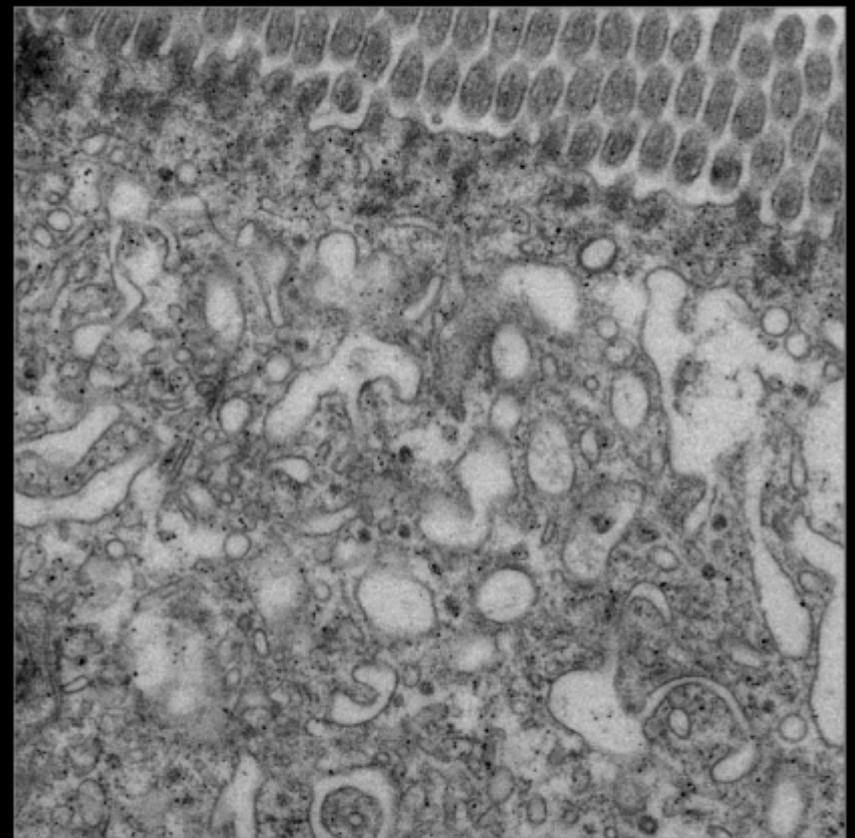


Automatic EM-lens distortion correction in TrakEM2

Lens model



Original tile

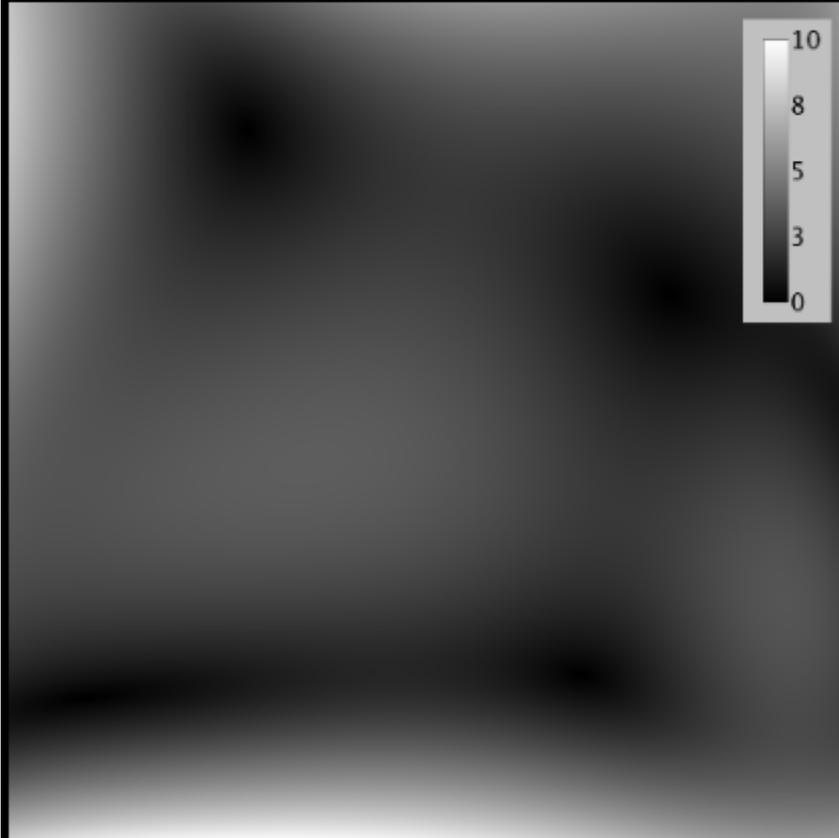


V. Kaynig, B. Fischer, and J. M. Buhmann. Probabilistic image registration and anomaly detection by nonlinear warping. In *IEEE Conference on Computer Vision and Pattern Recognition*, 2008, pages 1–8.

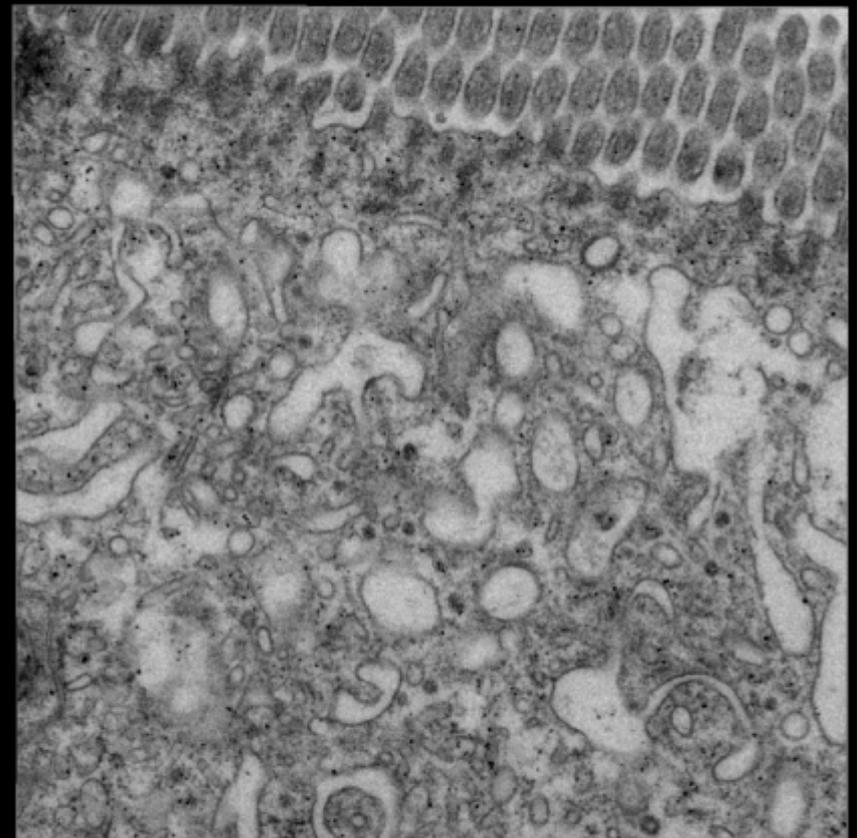
Data by Michaela Wilsch-Bräuninger

Automatic EM-lens distortion correction in TrakEM2

Lens model



Corrected tile

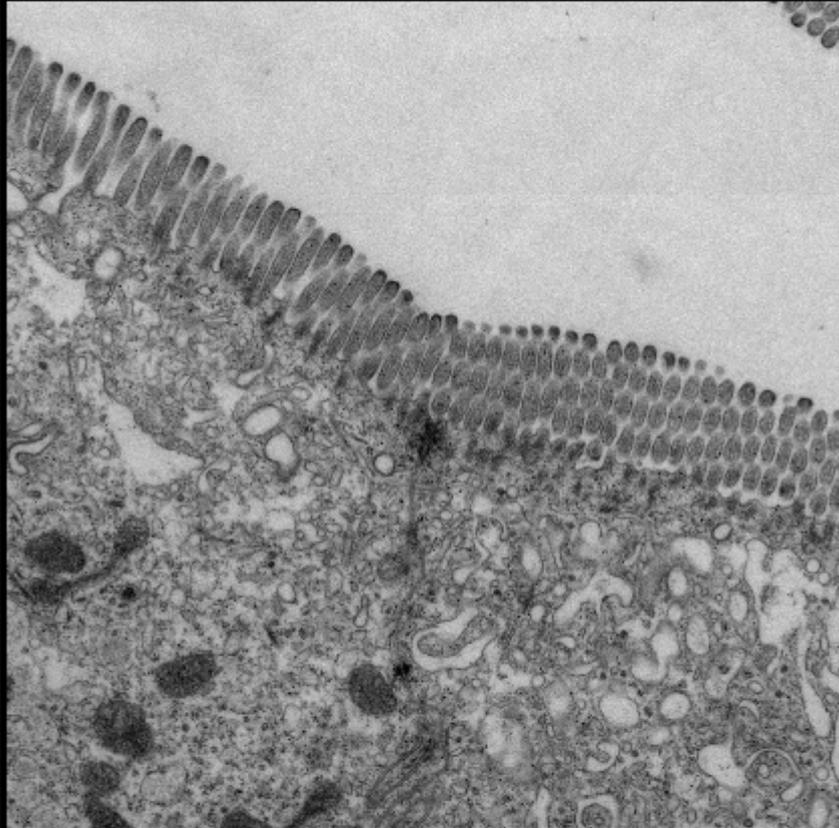


V. Kaynig, B. Fischer, and J. M. Buhmann. Probabilistic image registration and anomaly detection by nonlinear warping. In *IEEE Conference on Computer Vision and Pattern Recognition*, 2008, pages 1–8.

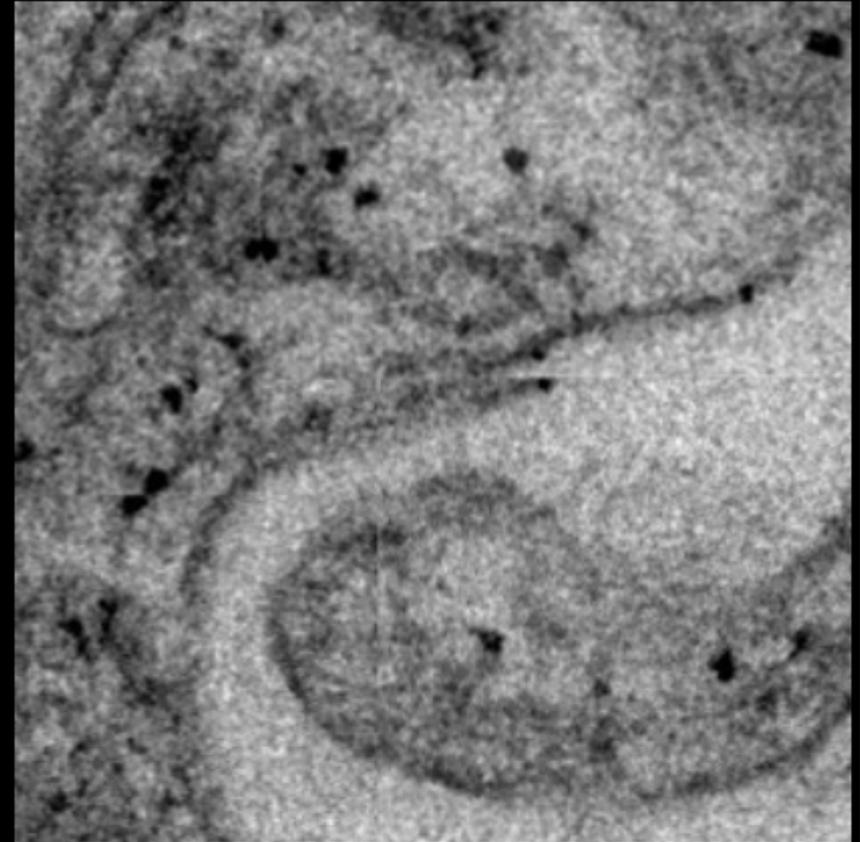
Data by Michaela Wilsch-Bräuninger

Automatic EM-lens distortion correction in TrakEM2

Rigid montage



Detail

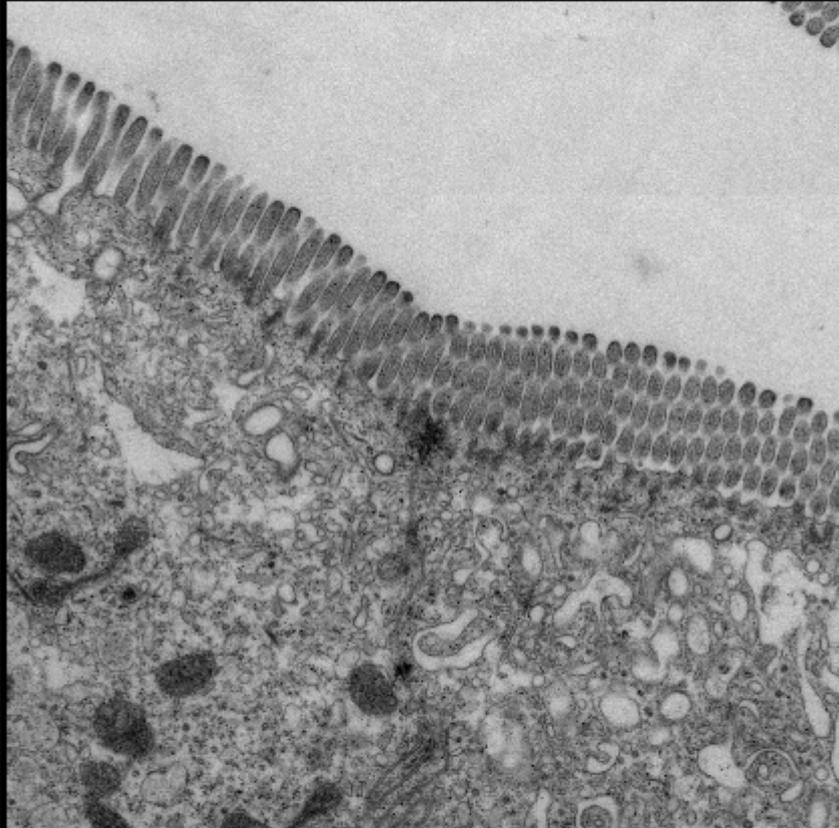


V. Kaynig, B. Fischer, and J. M. Buhmann. Probabilistic image registration and anomaly detection by nonlinear warping. In *IEEE Conference on Computer Vision and Pattern Recognition*, 2008, pages 1–8.

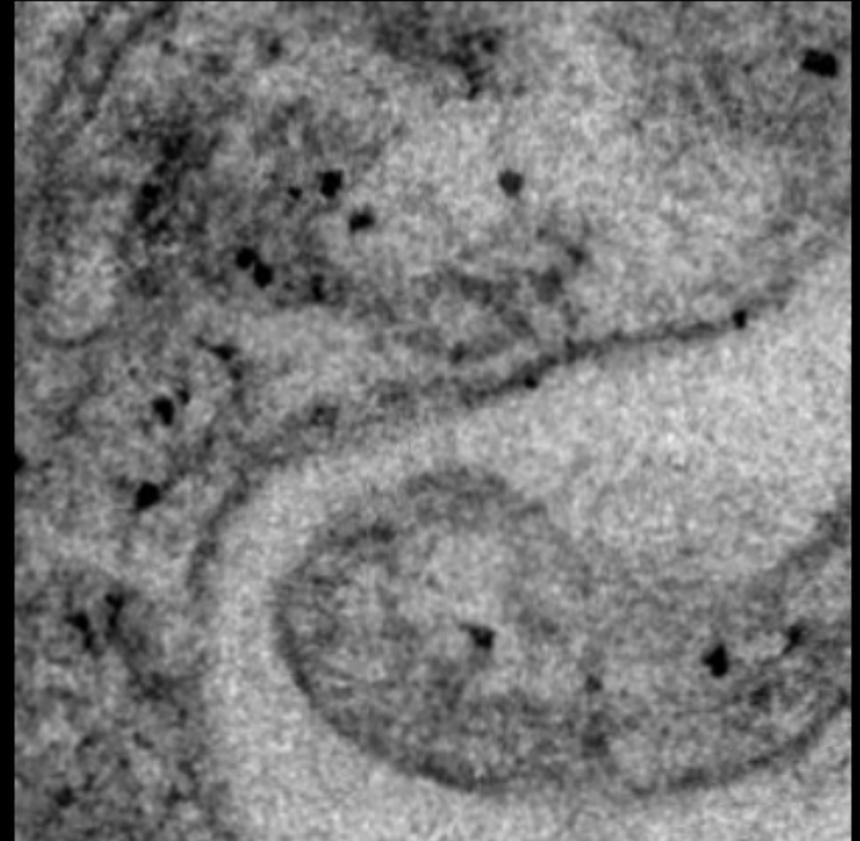
Data by Michaela Wilsch-Bräuninger

Automatic EM-lens distortion correction in TrakEM2

Lens-corrected montage



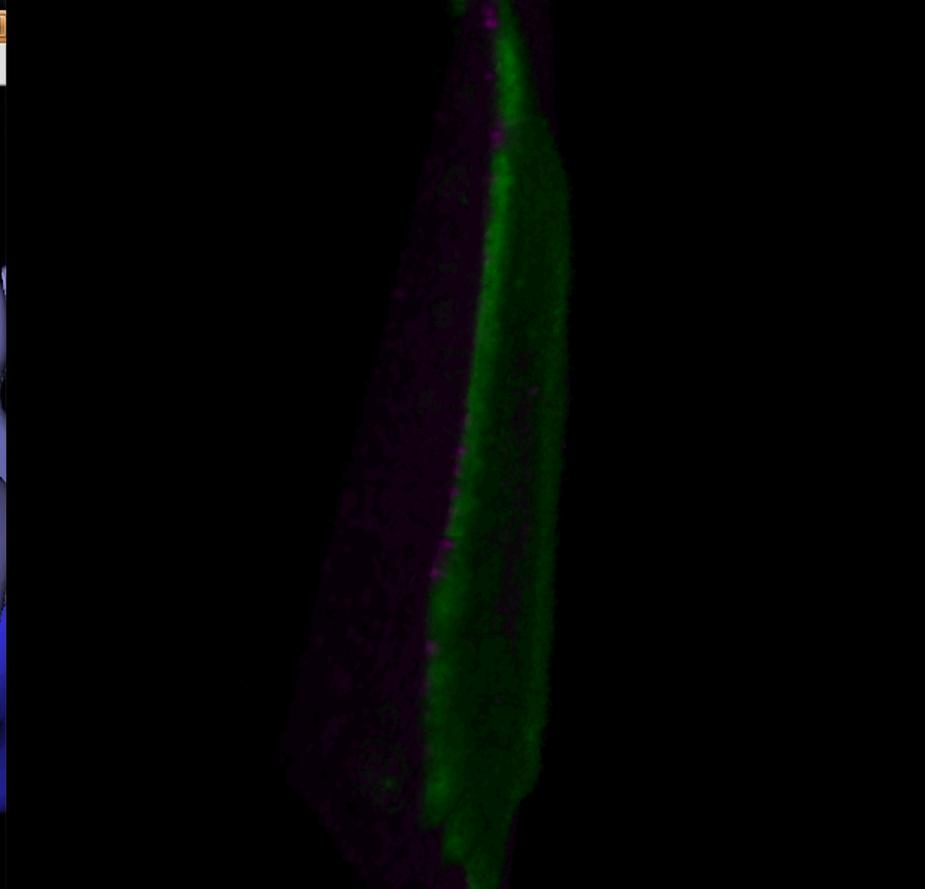
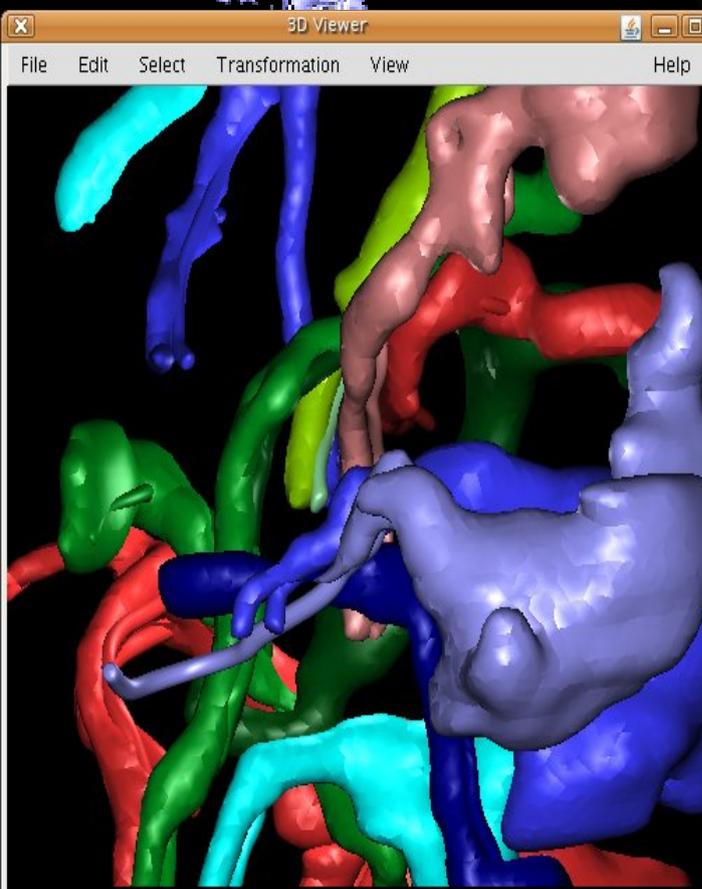
Detail



V. Kaynig, B. Fischer, and J. M. Buhmann. Probabilistic image registration and anomaly detection by nonlinear warping. In *IEEE Conference on Computer Vision and Pattern Recognition*, 2008, pages 1–8.

Data by Michaela Wilsch-Bräuninger

3D Viewer (Benjamin Schmid, Mark Longair, Albert Cardona)



3D Rendering

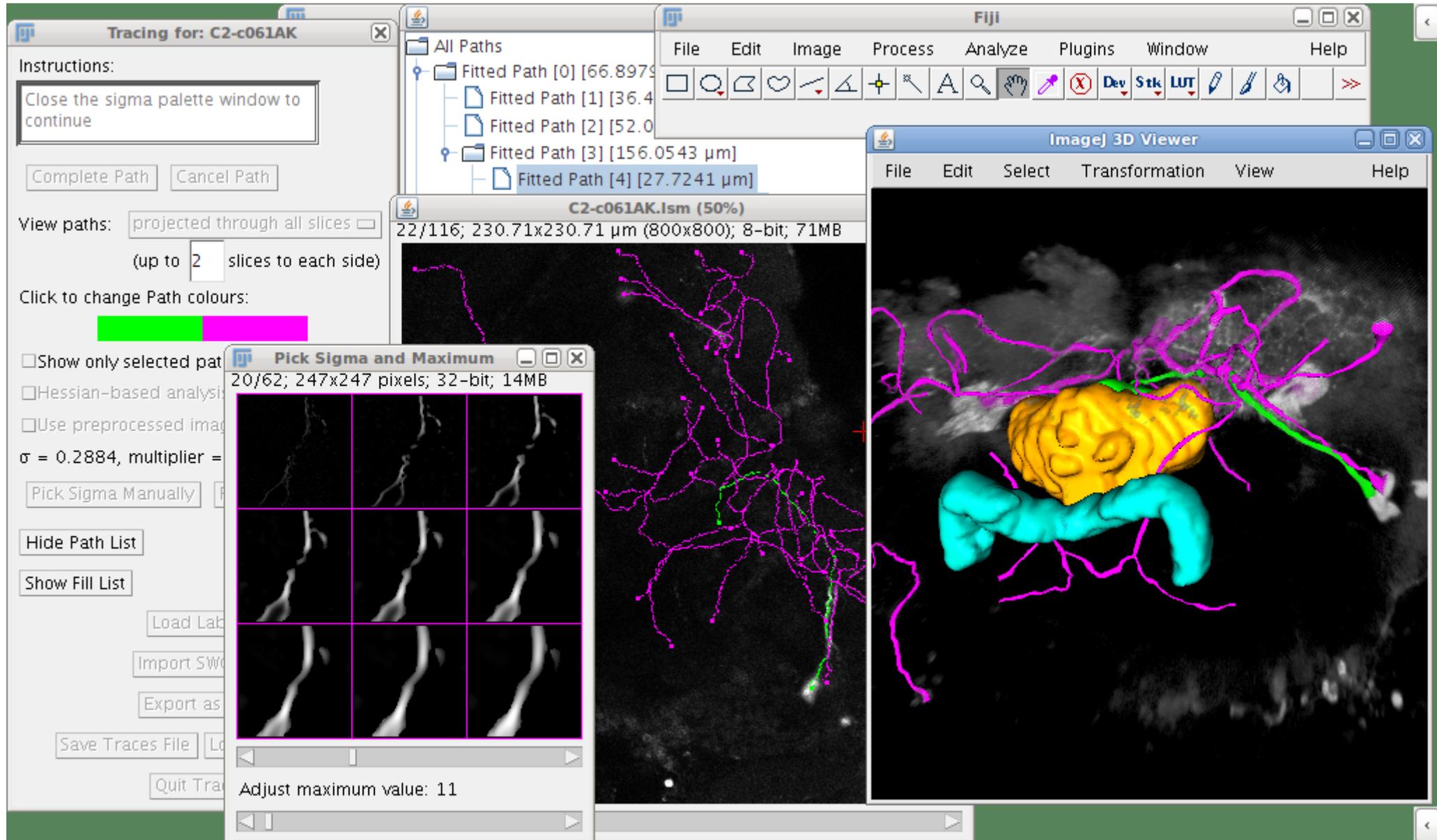
Iso-Surfaces—objects

Volume Rendering
opacity and
transparency

Orthographic View

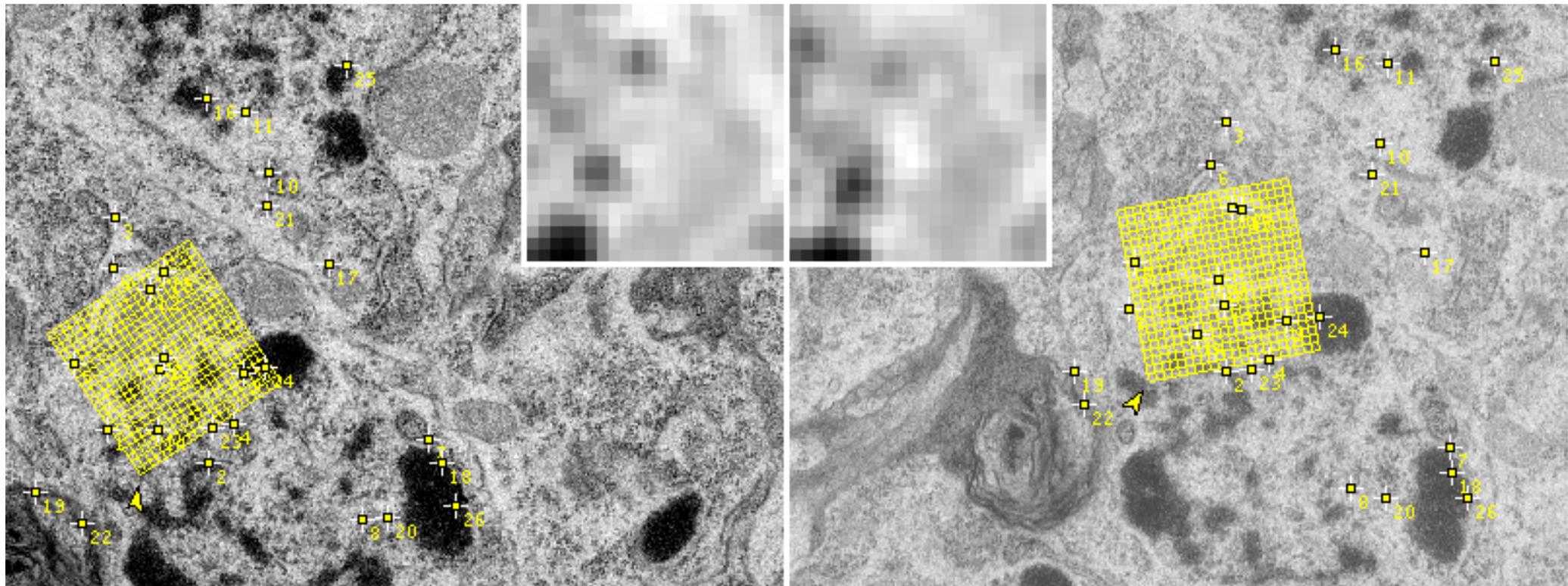
Simple Neurite Tracer

(Mark Longair, Benjamin Schmid, Stephan Preibisch, Albert Cardona)



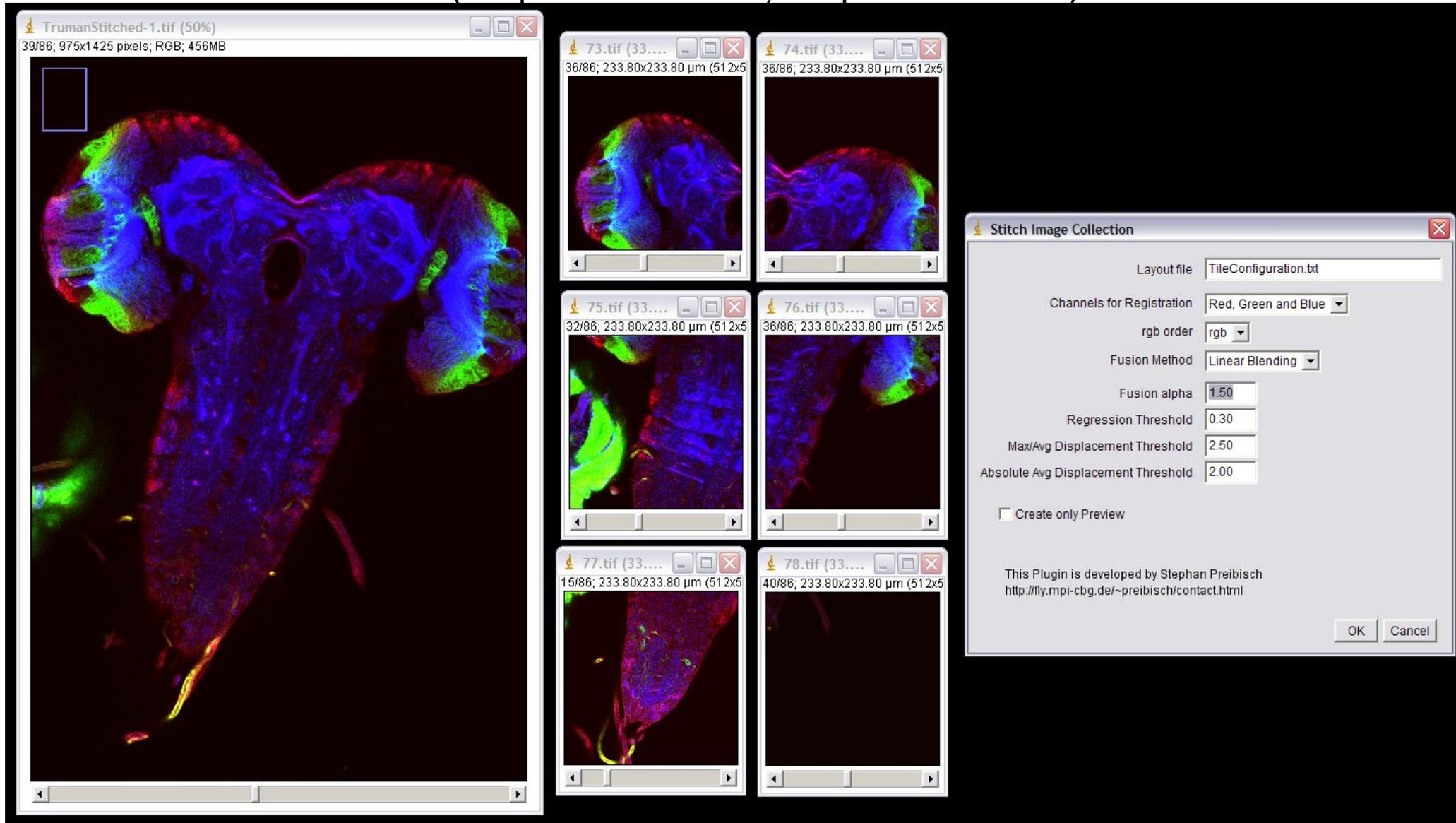
Feature Points

(Feature Descriptor based Detection and Matching - Stephan Saalfeld)



2D and 3D Multi Channel Tile Stitching and Blending

(Stephan Preibisch, Stephan Saalfeld)



The screenshot displays a software interface for multi-channel tile stitching and blending. On the left, a large window titled "TrumanStitched-1.tif (50%)" shows a stitched image of a fly head with red, green, and blue channels. A small white box in the top-left corner of this image indicates the location of a specific tile. To the right, a grid of eight smaller windows shows individual tiles, labeled "73.tif" through "78.tif", each with its own dimensions and resolution. On the far right, a "Stitch Image Collection" dialog box is open, showing the following configuration options:

- Layout file: TileConfiguration.txt
- Channels for Registration: Red, Green and Blue
- rgb order: rgb
- Fusion Method: Linear Blending
- Fusion alpha: 1.50
- Regression Threshold: 0.30
- Max/Avg Displacement Threshold: 2.50
- Absolute Avg Displacement Threshold: 2.00
- Create only Preview

At the bottom of the dialog box, there is a note: "This Plugin is developed by Stephan Preibisch <http://fly.mpi-cbg.de/~preibisch/contact.html>". The dialog box includes "OK" and "Cancel" buttons.

Advanced Users: Scripting

-  Jython
-  JRuby
-  Clojure
- Javascript 
- BeanShell 
- **ImageJ Macro Language**

Why not use ImageJ's macro language?

More Power!

Faster!

Many users already know Python, Ruby, Javascript...

Eg. Delayed Screenshot (screen shot of open menu or dialog which blocks the mouse, good for writing documentation and tutorials etc.)

Eg. FIJI logo 3D – you can NOT do that with macro language - it can't access full java functionality.

Using javascript, jython, jruby etc. you get full java and all ImageJ functionality + Thread Safety!

With FIJI you get a working java3D on OSX!

Fiji for Users - Summary

One-stop downloads

Platform specific or all platforms

With or Without Java Runtime Environment + Java3D

Bundled Plugins (eg. LOCI bio-formats) + easy to add other plugins

Scripting Languages – Python, Ruby, Javascript and more...

“Under the Hood” enhancements

Fiji Updater

– newest ImageJ and plugins – one click!

Issue Tracker (Bugzilla):

<http://pacific.mpi-cbg.de/bugzilla/>



Thanks!

Max Planck Institute CBG, Dresden

<http://www.mpi-cbg.de/>

Janelia Farm, Ashburn VA <http://janelia.hhmi.org>

INI, Zürich <http://www.ini.uzh.ch/>

Wayne Rasband for ImageJ

The FIJI Team:

<http://pacific.mpi-cbg.de>

Vibrant community:

YOU!



FIJI Tutorials: **Find them on the** **FIJI Wiki:**

<http://pacific.mpi-cbg.de/wiki/index.php/Category:Tutorials>

or just search FIJI Wiki for Tutorials

SpatialCalibration

DetectInformationLoss

ColocalizationAnalysis

