

FIJI hands-on workshop

- **Practical 1: Basics of FIJI ImageJ**
- Practical 2: Cell counting and characterization
- Practical 3: Simple macros

Material available from:

<https://wiki.helsinki.fi/display/biu/FIJI+workshop>

Practical 1: Basics of FIJI ImageJ

(a.k.a. How to get along with the not-so-welcoming user interface?)

- Installation
- Web resources
 - <https://imagej.net/>
 - ImageJ user guide: <https://imagej.nih.gov/ij/docs/guide/>
- Image files on various formats
 - Bio-Formats plugin
- Tool bar
 - Selection and drawing tools
 - Dev
- User interface
 - Plugins/Utilities/Control Panel **(Ctrl/⌘+)[⇧]+U**
 - Plugins/Utilities/Find Commands (or in main window)
 - Also: right click on top of an image

Practical 1: Basics of FIJI ImageJ

- File
 - Open, Save, Close, Close all
- Edit
 - Undo
 - Cut, Copy, Paste
 - Clear, Fill, Draw
 - Selection
 - Create selection
 - Create mask
 - Add to manager

Practical 1: Basics of FIJI ImageJ

- Image
 - Type
 - Bit depth
 - Adjust
 - Brightness/contrast
 - Threshold
 - Properties...
 - Color
 - Split Channels
 - Channels tool...
 - Stacks
 - Stack to Images
 - Z project...
 - Duplicate

Practical 1: Basics of FIJI ImageJ

- Process
 - Binary
 - Convert to mask
 - Watershed
 - Filters (next slide)
 - Batch
 - Macro
 - Image calculator
 - Subtract background
 - Rolling ball

Filters

- *Mean filter:*
 - The pixel is replaced with the average of itself and its neighbors within the specified radius
 - The menu item *Process* ► *Smooth* is a 3×3 mean filter
- *Gaussian filter:*
 - Similar to a smoothing filter but instead replaces the pixel value with a value proportional to a normal distribution of its neighbors
- *Median filter:*
 - Pixel value is replaced with the median of itself and its adjacent neighbors. This removes noise and *preserves boundaries* better than simple average filtering.
 - The menu item *Process* ► *Noise* ► *Despeckle* is a 3×3 median filter

Practical 1: Basics of FIJI ImageJ

- Analyze
 - Measure
 - Analyze Particles...
 - Set Measurements...
 - Set Scale...
 - Tools
 - ROI Manager...
 - Scale Bar...

Practical 1: Basics of FIJI ImageJ

- Plugins
 - Macros
 - Record...
 - Bio-Formats
 - Segmentation
 - <https://imagej.nih.gov/ij/plugins/index.html>
- Window
- Help
 - Update...