



# MIC-MAQ

Microscopy Images of Cells-Multi Analysis and Quantifications

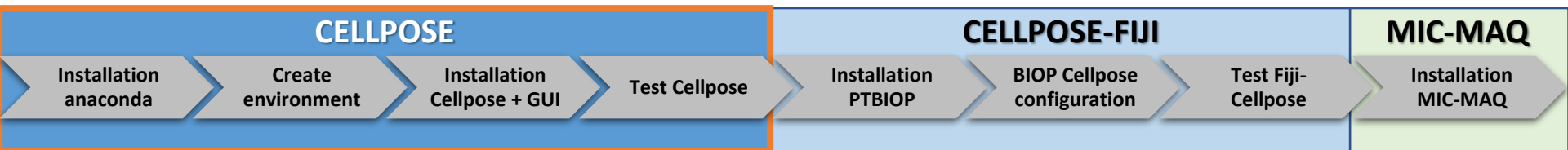


# Installation

## For MIC-MAQ

- Installation of Cellpose
  - Configuration of Fiji to run Cellpose from Fiji
- Installation of the plugin MIC-MAQ

# Installation of Cellpose



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## • Download a python distribution

You have the possibility to download Miniconda (small version) or Anaconda (full version) :

- Miniconda : <https://docs.conda.io/en/main/miniconda.html>
- Anaconda : <https://www.anaconda.com/download>

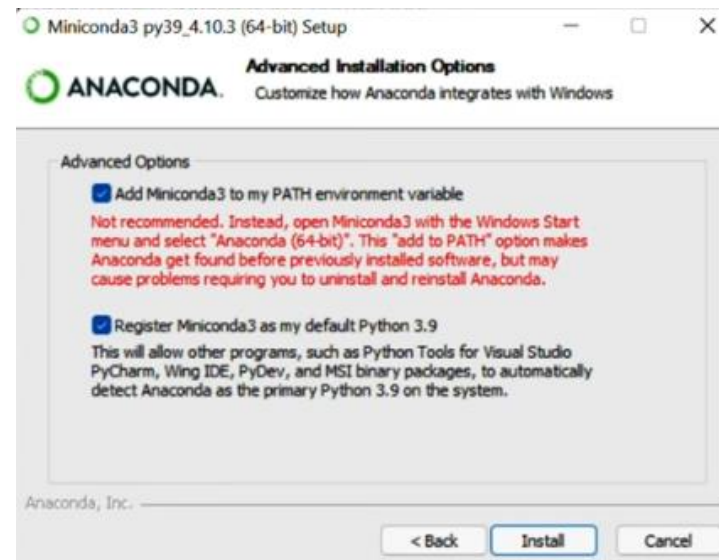
## • • Installation of Miniconda/Anaconda



Follow installer instructions

Install the software in **C:\Users\YourSessionName\anaconda3**

During the installation, please tick the box **"add anaconda/miniconda to my PATH environment variable »** .



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## • Open the Anaconda Prompt application



In the Windows search toolbar, enter **anaconda** and open the « **Anaconda Prompt application** ».



Use the **MacOs terminal** directly.



Use the **terminal** directly.

## • • Create a new anaconda environment

In the Anaconda Prompt window, write this command line and validate by pressing Enter key:

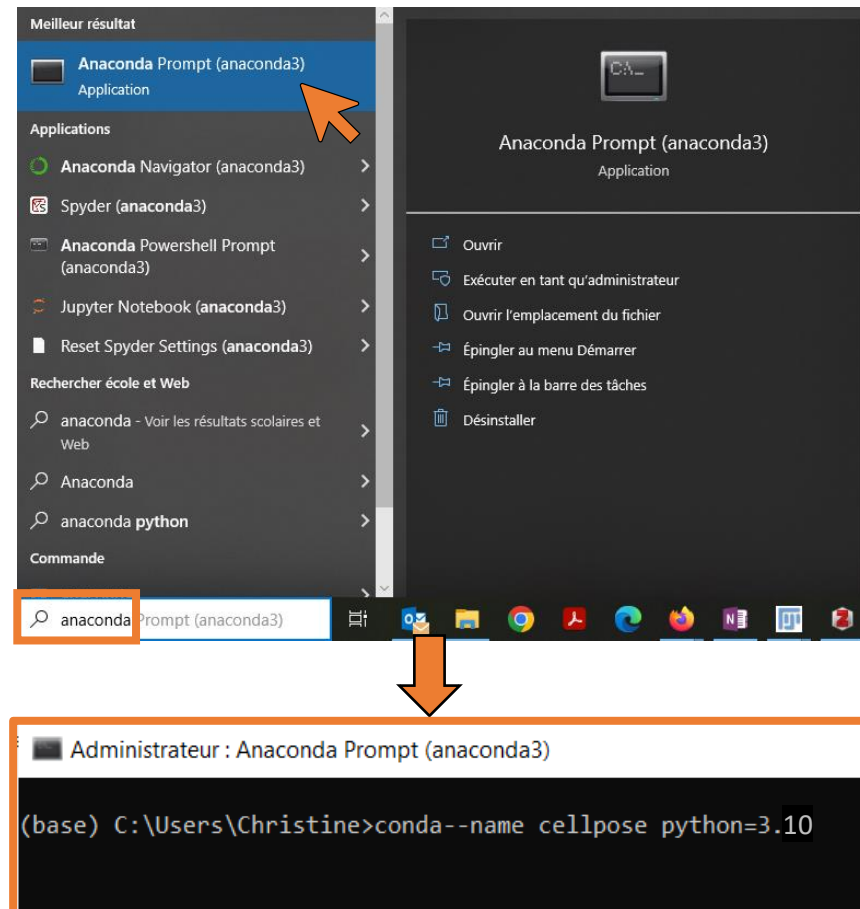
*conda create --name cellpose python=3.10*

!! Lot of packages will be downloaded and you need to press the « y » key to launch the installation !!



If you are behind a proxy, configure it using following instructions for your system:

<https://docs.anaconda.com/free/anaconda/configurations/proxy/>



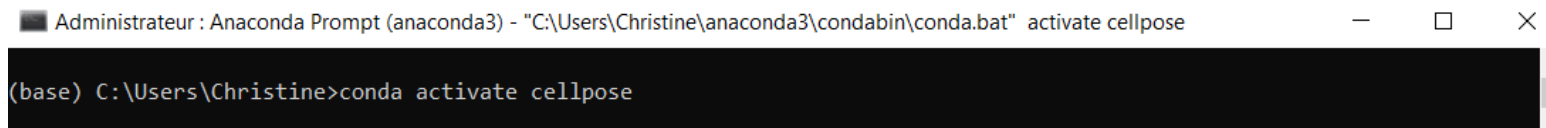
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## • Activate the cellpose anaconda environment

In the Anaconda Prompt window, write this command line : *conda activate cellpose*



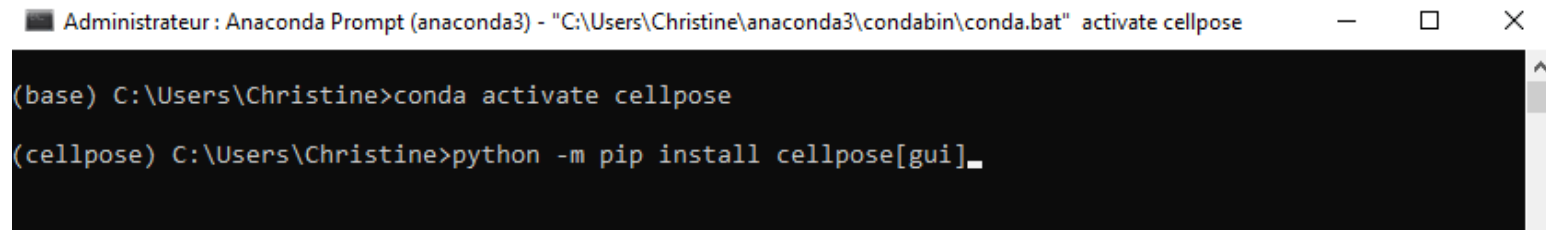
```
Administrateur : Anaconda Prompt (anaconda3) - "C:\Users\Christine\anaconda3\condabin\conda.bat" activate cellpose
(base) C:\Users\Christine>conda activate cellpose
```

## • • Cellpose installation in anaconda (CPU installation)

In the Anaconda prompt window, write this command line : *python -m pip install cellpose[gui]*



write this command line : *python -m pip install 'cellpose[gui]'*

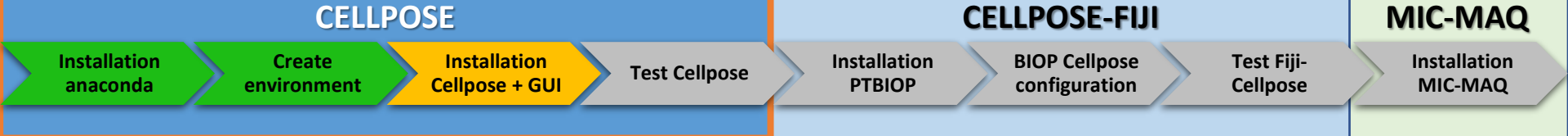


```
Administrateur : Anaconda Prompt (anaconda3) - "C:\Users\Christine\anaconda3\condabin\conda.bat" activate cellpose
(base) C:\Users\Christine>conda activate cellpose
(cellpose) C:\Users\Christine>python -m pip install cellpose[gui]
```



This will install the last version of Cellpose (currently 4.0) which is based on CellposeSAM and is incompatible with previous versions.

To install a previous version use the command: *python -m pip install cellpose[gui]==3.1.1.2*



## • Optional: GPU activation for Cellpose



We recommend to use the GPU installation version to speed up the segmentation process.  
At least 8GB of RAM is required to run the Graphical User Interface (GUI) of Cellpose.

In the Anaconda prompt window, write this first command line :

```
conda uninstall pytorch
```

In the Anaconda prompt window, write this second command line :

```
conda install pytorch pytorch-cuda=11.6 -c pytorch -c nvidia
```

**Complete installation instructions at these websites:**

- <https://github.com/MouseLand/cellpose#gpu-version-cuda-on-windows-or-linux>
- <https://github.com/BIOP/ijl-utilities-wrappers#conda-cellpose-gpu>

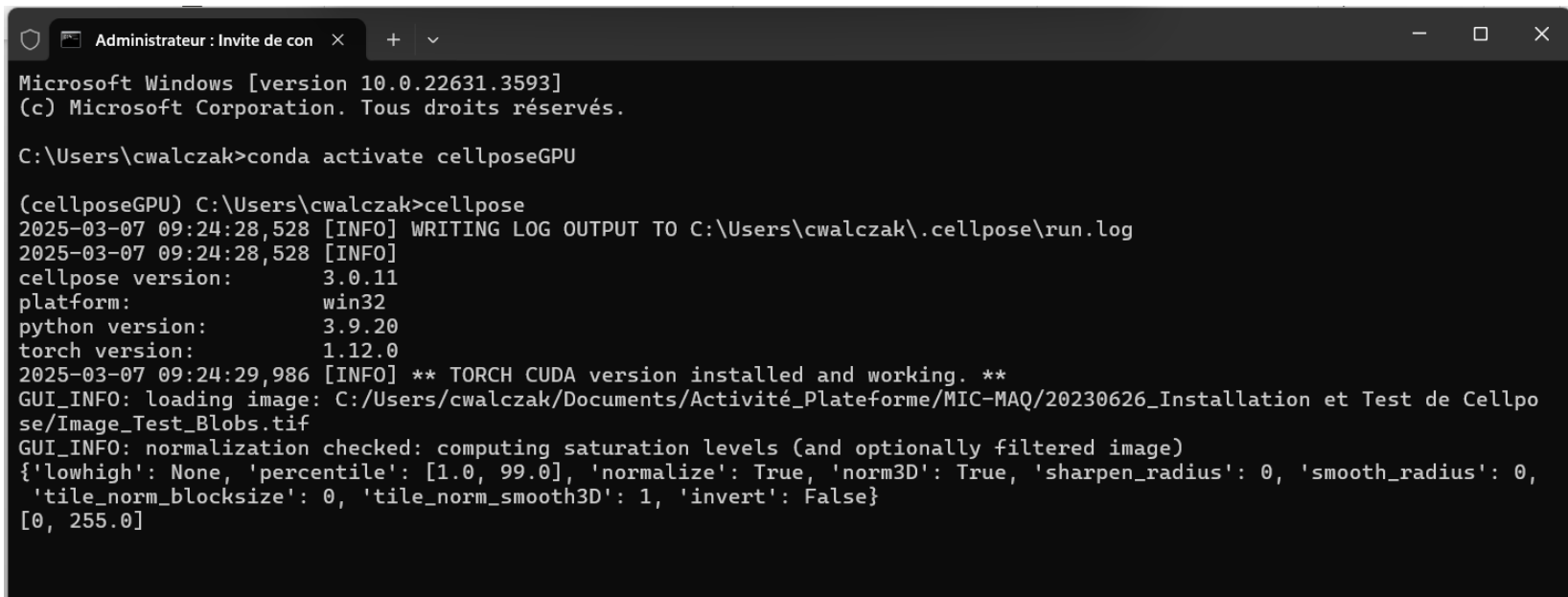
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## • Start Cellpose in Anaconda

In the Anaconda Prompt window, write this command line : *python -m cellpose*



```
Administrateur : Invite de con x + v
Microsoft Windows [version 10.0.22631.3593]
(c) Microsoft Corporation. Tous droits réservés.

C:\Users\cwalczak>conda activate cellposeGPU

(cellposeGPU) C:\Users\cwalczak>cellpose
2025-03-07 09:24:28,528 [INFO] WRITING LOG OUTPUT TO C:\Users\cwalczak\.cellpose\run.log
2025-03-07 09:24:28,528 [INFO]
cellpose version:      3.0.11
platform:              win32
python version:        3.9.20
torch version:         1.12.0
2025-03-07 09:24:29,986 [INFO] ** TORCH CUDA version installed and working. **
GUI_INFO: loading image: C:/Users/cwalczak/Documents/Activité_Plateforme/MIC-MAQ/20230626_Installation et Test de Cellpo
se/Image_Test_Blobs.tif
GUI_INFO: normalization checked: computing saturation levels (and optionally filtered image)
{'lowhigh': None, 'percentile': [1.0, 99.0], 'normalize': True, 'norm3D': True, 'sharpen_radius': 0, 'smooth_radius': 0,
'tile_norm_blocksize': 0, 'tile_norm_smooth3D': 1, 'invert': False}
[0, 255.0]
```



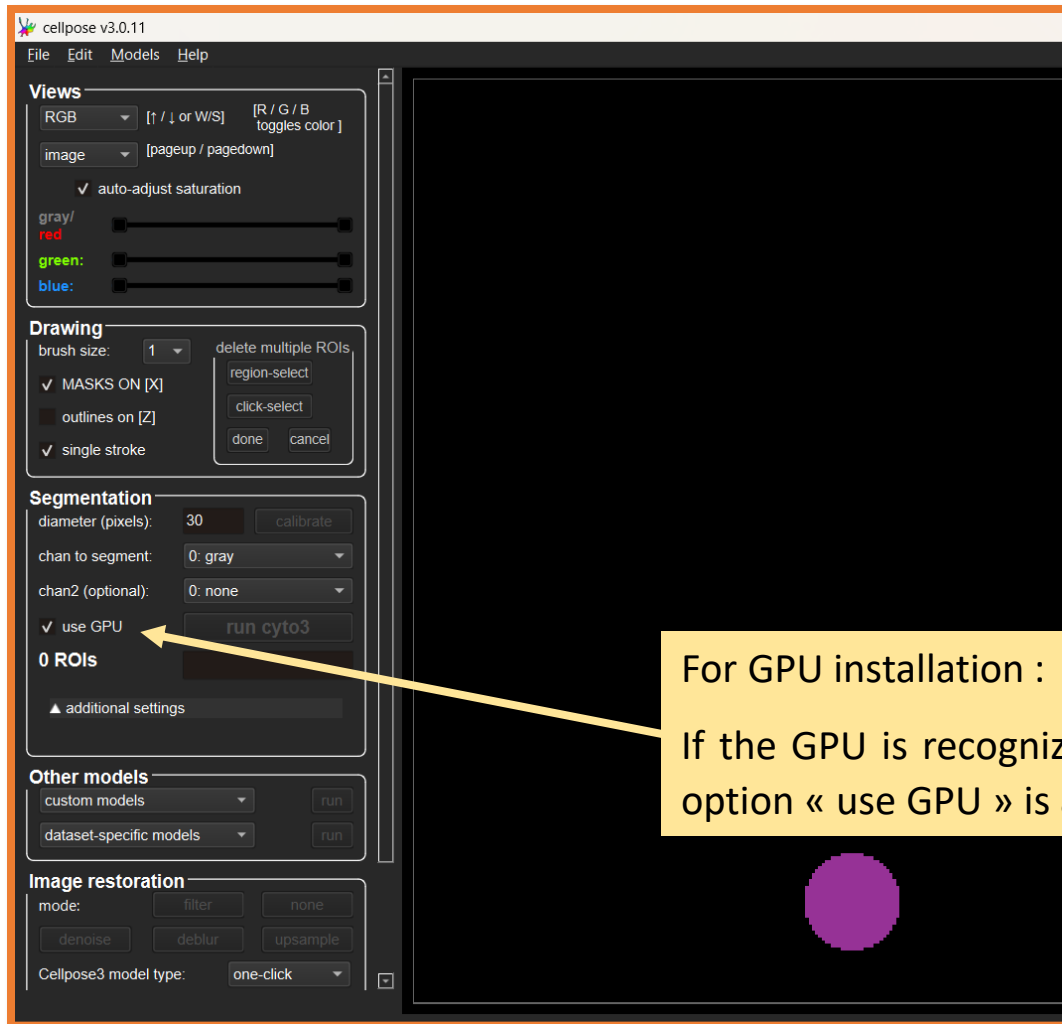
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## • Start Cellpose in Anaconda

In the Anaconda Prompt window, write this command line : `python -m cellpose`



This is the GUI for Cellpose 3

For GPU installation :

If the GPU is recognized by Cellpose the option « use GPU » is activated.

# CELLPOSE

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# CELLPOSE-FIJI

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BIOP Cellpose  
configuration

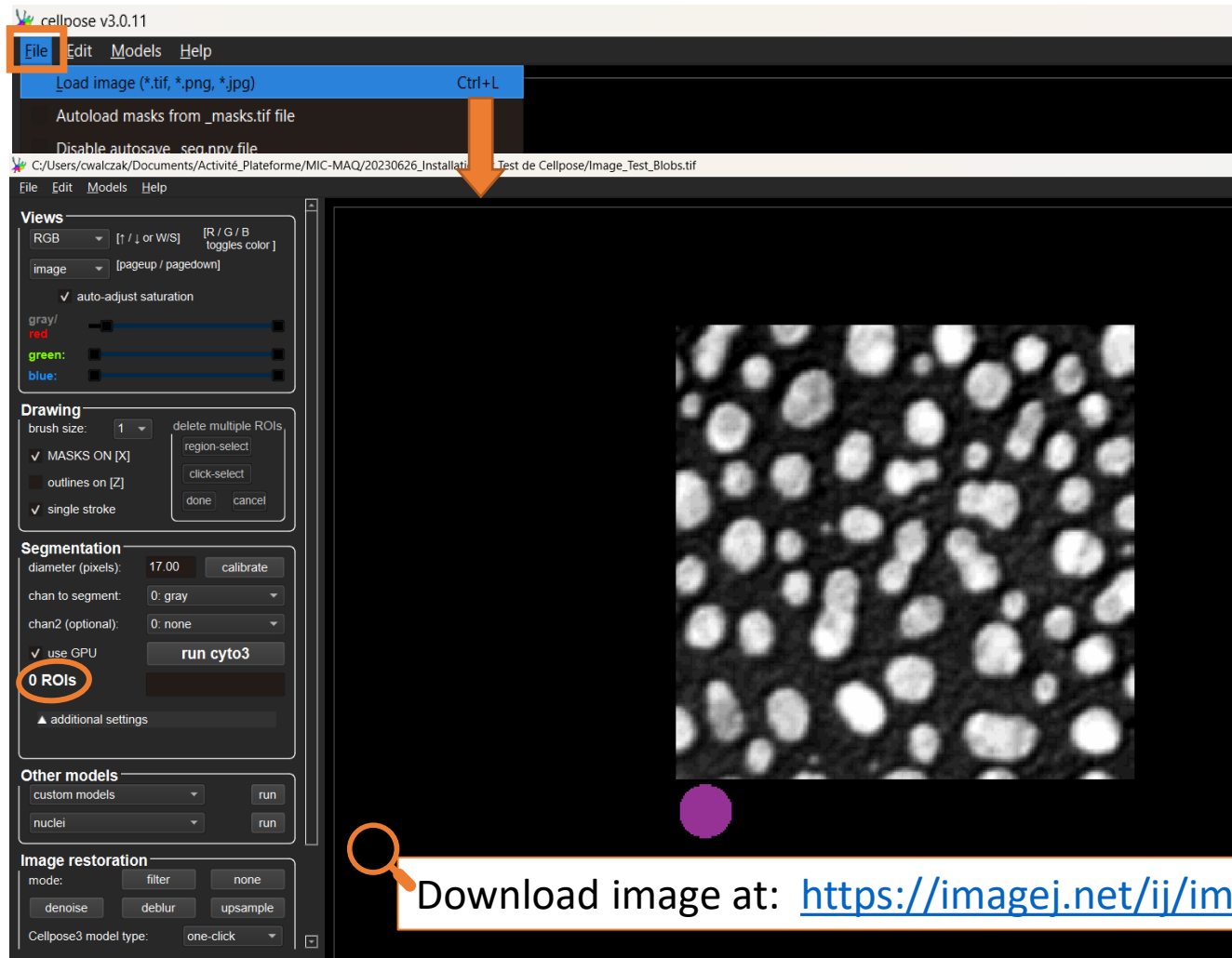
Test Fiji-  
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# MIC-MAQ

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## • Load image in Cellpose GUI

In the Cellpose GUI, load the image called « *Image\_Test\_Blobs* »: **File > Load image**

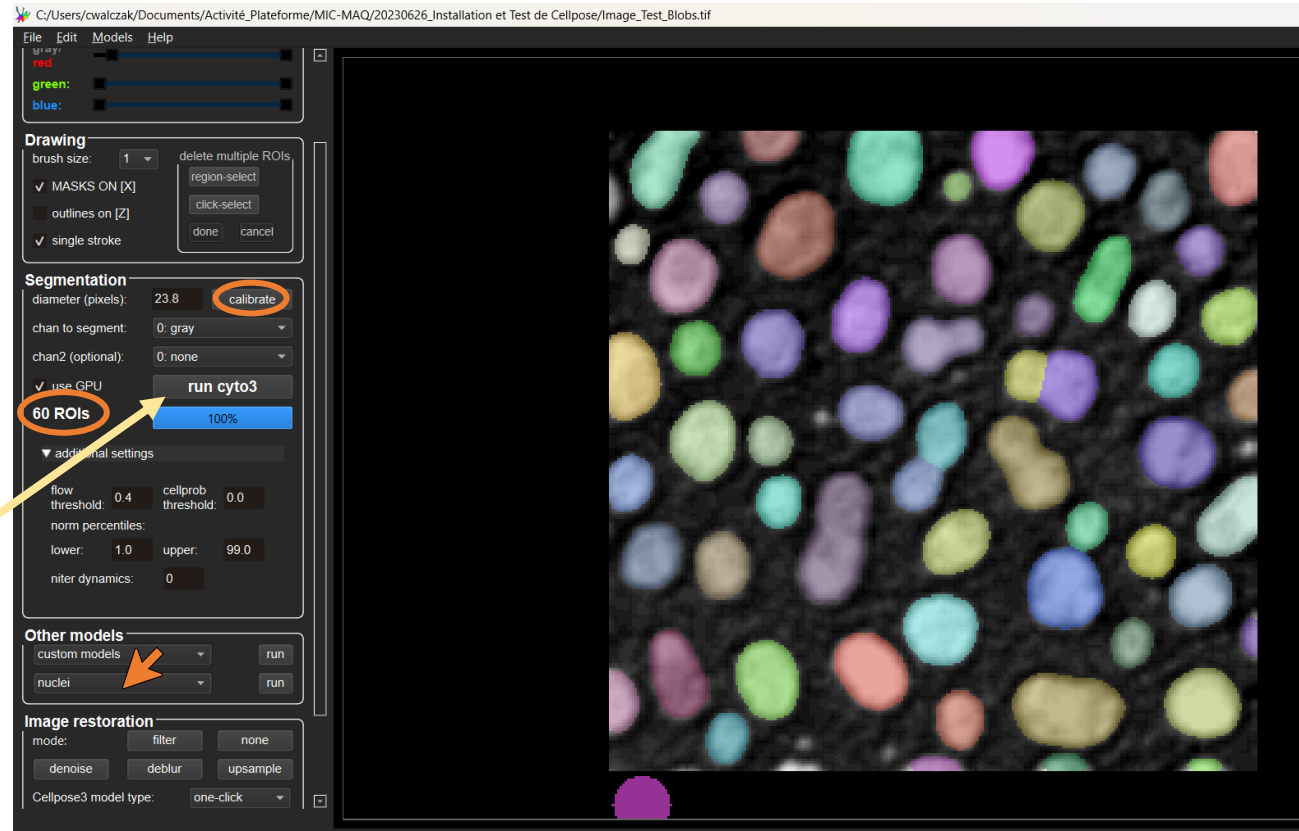


Download image at: <https://imagej.net/ij/images/blobs.gif>

## ● Run Cellpose

In the Cellpose GUI:

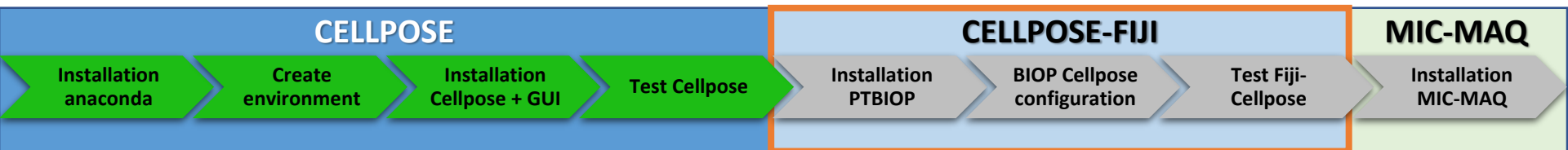
- Click on « **calibrate** » to define automatically the **object's diameter** (the value should be at 23.8 pixels)
- Click run on « **cyto 3** » cellpose model zoo



As results, the number of segmentation regions will appear on the GUI (60 ROIs) and a mask of segmented objects will be created with random color rendering.

# Installation of Cellpose

## Configuration to run from Fiji



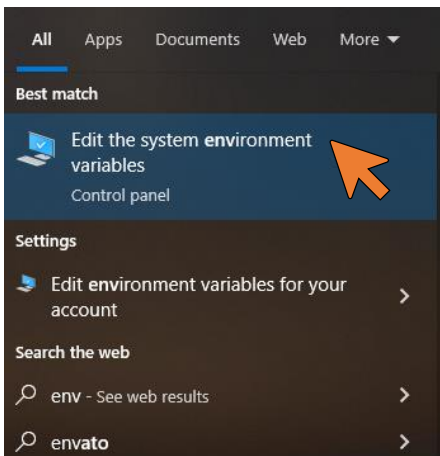
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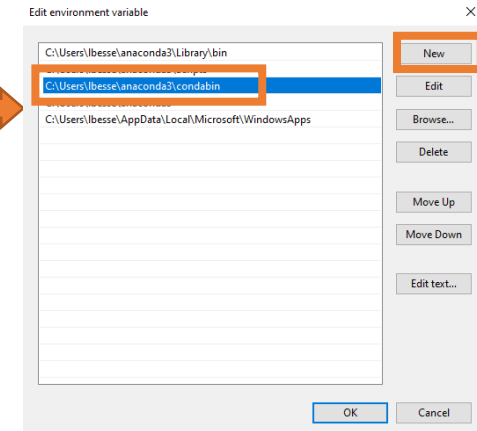
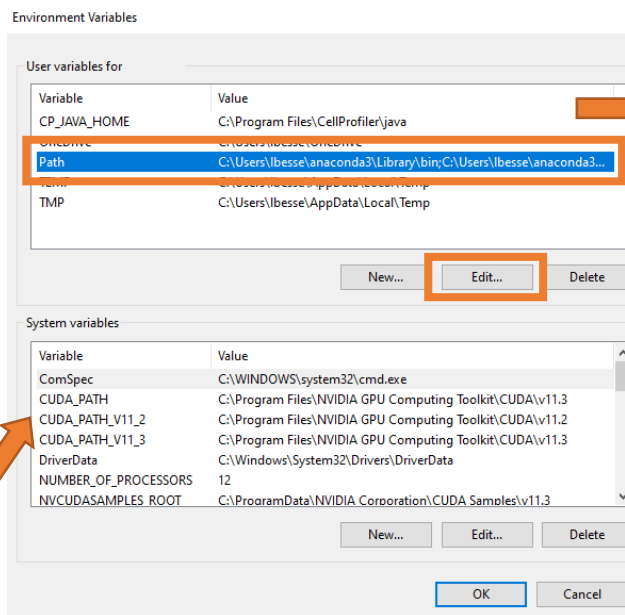
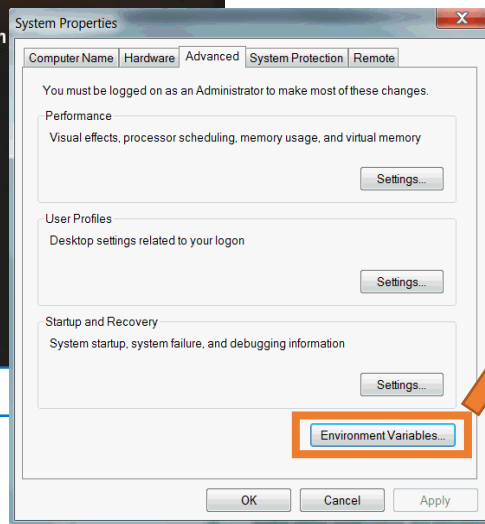
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## ● Modify the Environment Variables

In the Windows search toolbar, enter « **env** » and open « **edit the system environment variables** » panel.



- Click on « Environment Variables » to open a new window.
- Select Path variables and click on Edit
- Select New and paste the folder directory of your conda bin for anaconda  
As example: `C:\Users\YourSessionName\anaconda3\condabin`
- Validate by clicking on OK

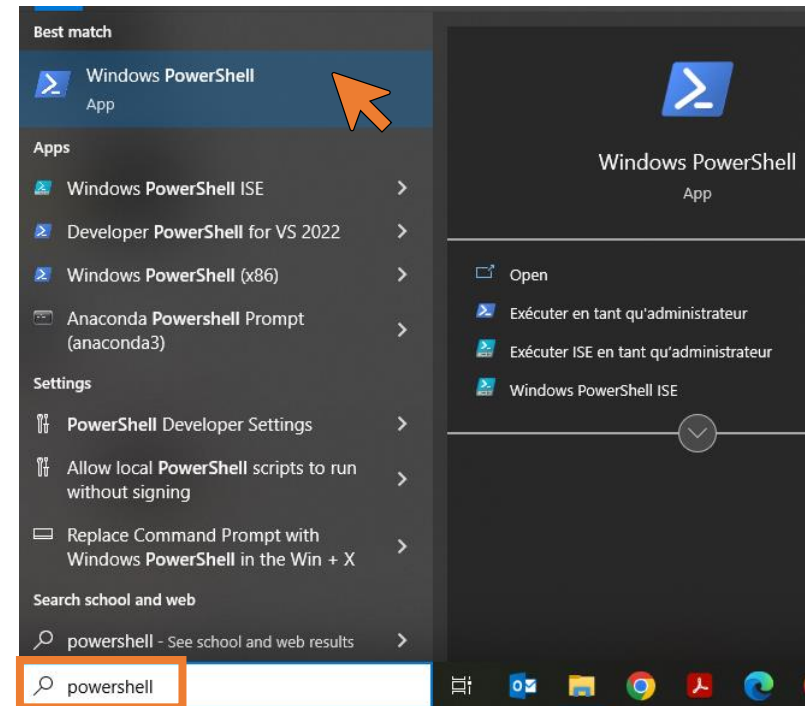


## • Initialize Conda for Windows

In the Windows search toolbar, enter **powershell** and open the « **Windows Powershell** » application.

In the **Powershell** window, write this command line :

*conda init*



### **Check the initialization:**

In the Windows search toolbar, enter **[cmd]** and open the « **Command Prompt** » application.

In the **Command Prompt** window, write this command line : *conda env list*

As results, the list of the conda environment is displayed.

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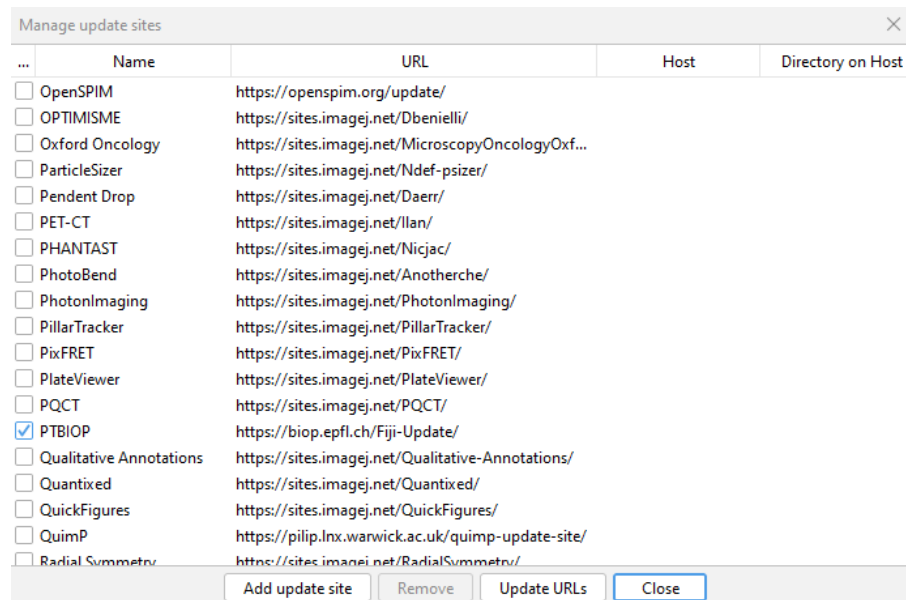
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## • Installation of Wrapper BIOP plugin under Fiji

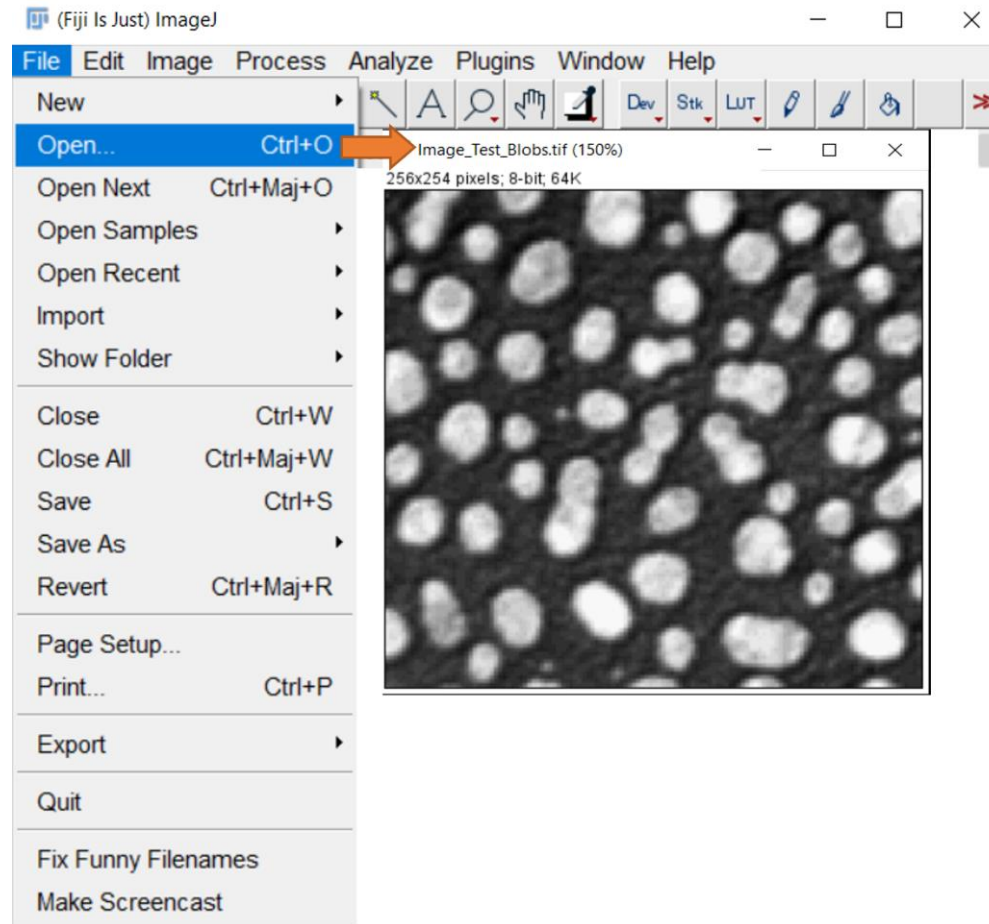
Use the built-in update manager : **Help > Update...**

- Click on the button “Manage update sites”
- Install PTBIOP
  - ☐ Scroll down the list and tick the checkbox for update site “PTBIOP”
  - ☐ Click the “Close” button
- Click the “Apply changes” button
- Restart Fiji



## ● Load image in Fiji

In Fiji, load the image called « *Image\_Test\_Blobs* »: **File > Open**



Download image at: <https://imagej.net/ij/images/blobs.gif>



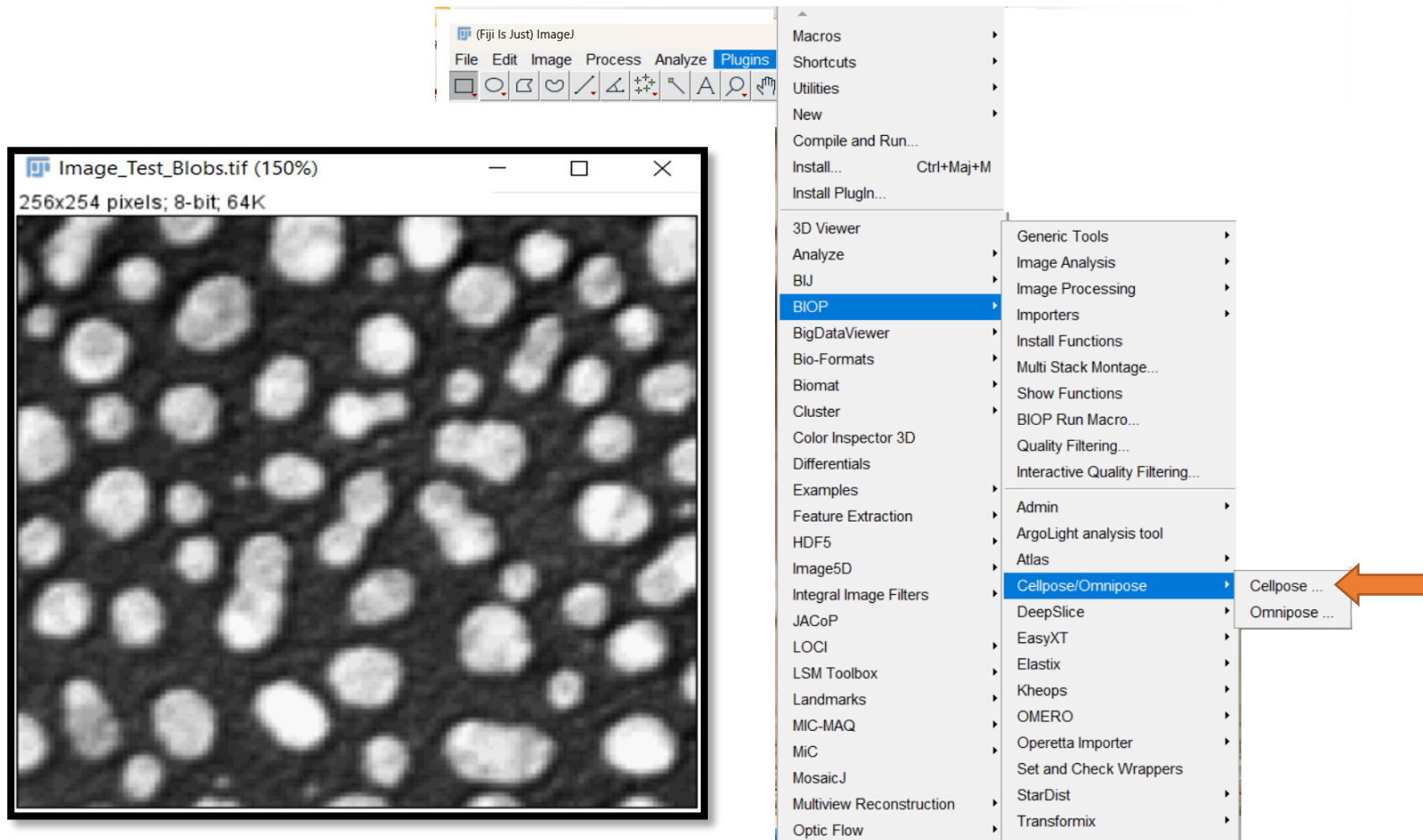
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## • Run Cellpose under Fiji

In Fiji, run cellpose with the wrapper BIOP on the test image: **Plugins > BIOP > Cellpose/Omnipose > Cellpose...**



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## • Run Cellpose under Fiji

Cellpose/Omnipose

Cellpose ...  
Omnipose ...

### Global configuration of Cellpose

conda environment path

virtual environment type

You can use the pretrained model, specify the model name below

--pretrained\_model

You can access the list of models by clicking on the button below.

OR To use your own model, specify the path below AND leave --pretrained\_model empty

model\_path

--diameter

--chan

--chan2

Add more parameters here. For flags: --use\_gpu, --do\_3D, or for parameters with values: --cellprob\_threshold, -6

To add more parameters (use comma separated list of flags)

You can access the full list of parameters by clicking on the button below.

- ☐ Select the path to your working Cellpose virtual environment:

example: `C:\Users\UsersFolder\anaconda3\envs\cellpose`

- ☐ Select Environment Type : **conda**

- ☐ Additionnal parameters if needed.

The most common one is :

« --use\_gpu » to compute on the GPU  
« --do\_3D » for 3D computation

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## • Run Cellpose under Fiji

### Parameters for the segmentation

Cellpose ...

conda environment path

virtual environment type

You can use the pretrained model, specify the model name below

--pretrained\_model

You can access the list of models by clicking on the button below.

OR To use your own model, specify the path below AND leave --pretrained\_model empty

model\_path

--diameter

--chan

--chan2

Add more parameters here. For flags: --use\_gpu, --do\_3D, or for parameters with values: --cellprob\_threshold, -6

To add more parameters (use comma separated list of flags)

You can access the full list of parameters by clicking on the button below.

Choose model between :

#### ☐ Pretrained

Fill first text field (available model are listed here [1])

For this exemple:

**Enter *cyto3* in the first text field**

#### ☐ own model

- Let first text field empty

- And select the path to the model

[1] : [Models — cellpose 3.1.1.1-7-g549126d documentation](#)

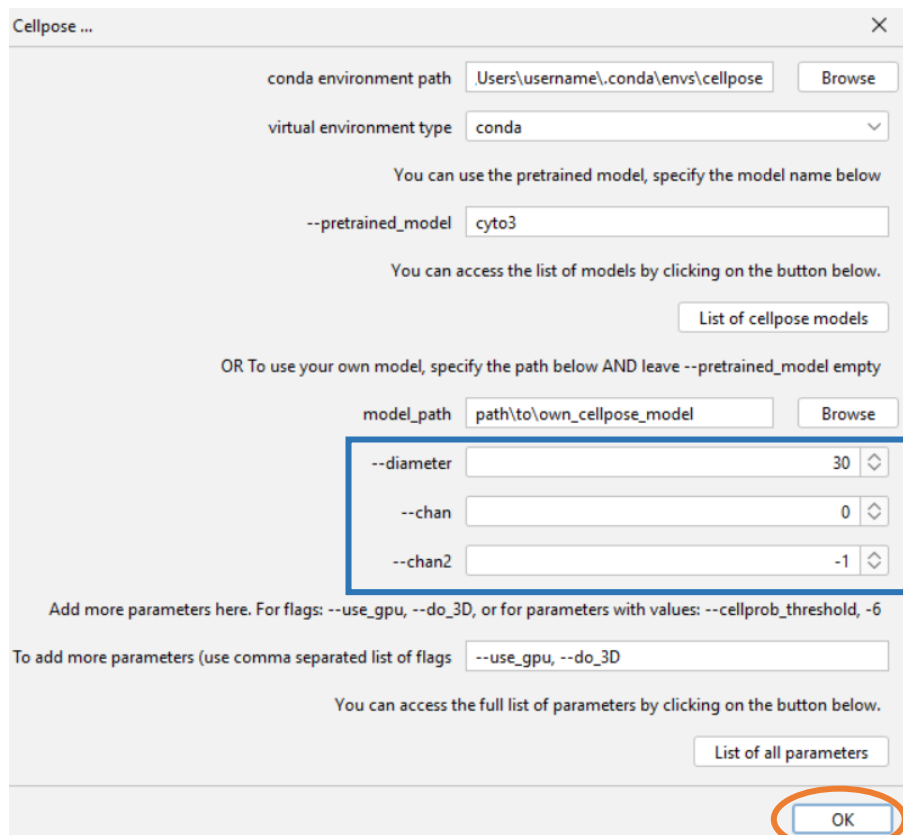
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## • Run Cellpose under Fiji

### Parameters for the segmentation



Cellpose parameters :

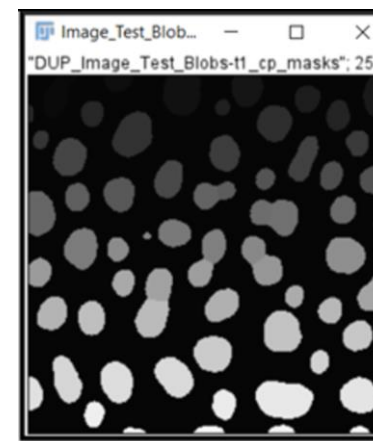
- ☐ Aproximative diameter of object
- ☐ **Chan** : Define the segmentation channel (default value 0 when you have only one channel)
- ☐ **Chan2** : when you have additional nuclei channel, you need to define the order of the channel in the composite

For this exemple:

**Diameter: 30**

**Chan : 0**

**Chan2 : -1**



Resulting image

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## ● Create ROIs from the cellpose mask

In Fiji, select the cellpose mask and create ROIs from the cellpose mask:

Plugins > BIOP > Image Analysis > ROIs > Label image to ROIs

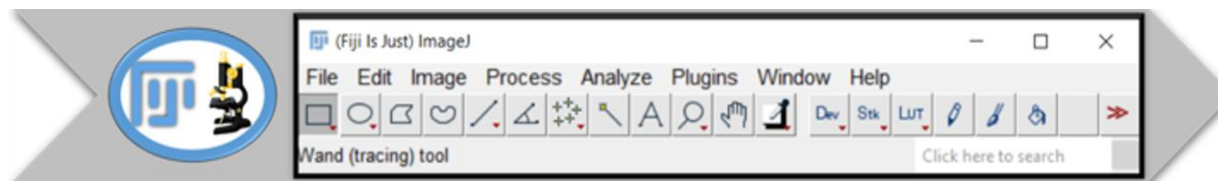
The screenshot shows the Fiji software interface. The 'Plugins' menu is open, and the path 'BIOP > Image Analysis > ROIs > Label image to ROIs' is highlighted. An orange arrow points from the 'Label image to ROIs' option to the 'Image\_Test\_Blob...' window, which displays a cellpose mask with yellow outlines. Another orange arrow points from the 'Image\_Test\_Blob...' window to the 'ROI Manager' window, which lists 17 ROIs (0001 - ID 0001 to 0001 - ID 0017). The 'Show All' checkbox in the ROI Manager is checked and circled in red.

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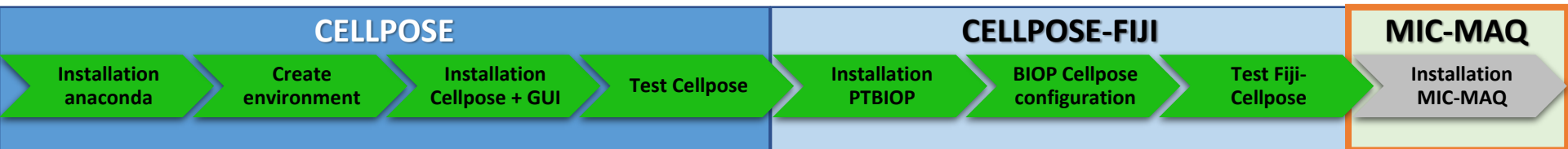
## Summary of the Cellpose test under Fiji



Raw image

Cellpose segmentation  
maskList of ROIs obtained with  
Cellpose segmentationRaw image + ROIs obtained  
with Cellpose segmentation

# Installation of MIC-MAQ





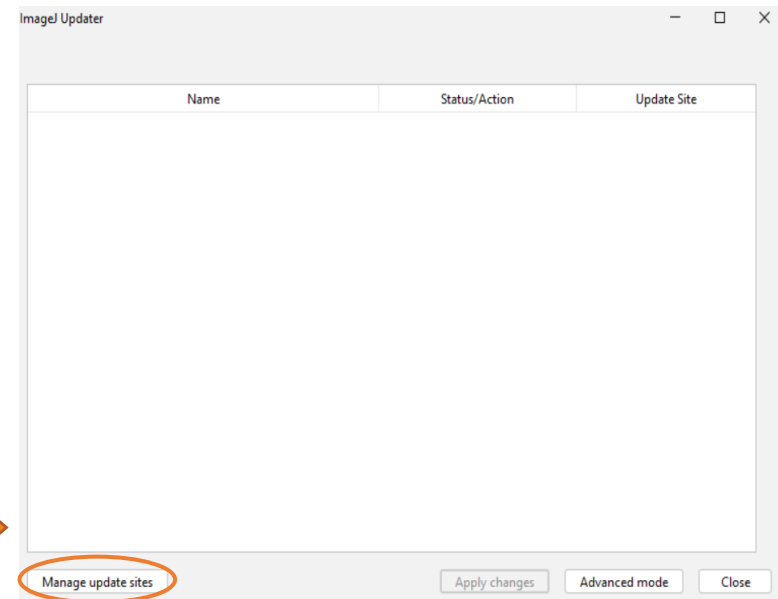
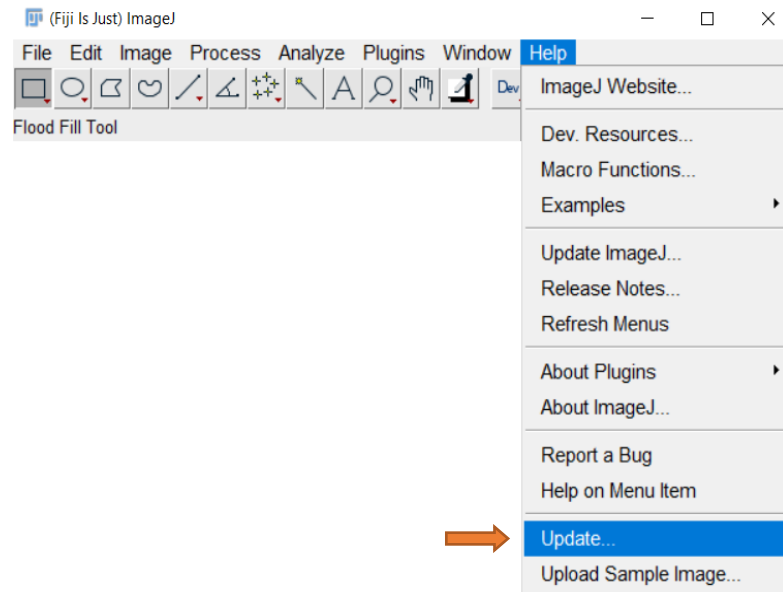
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## • Start the Fiji updater

- Use the built-in update manager : **Help > Update...**
- Click on the button “Manage update sites”





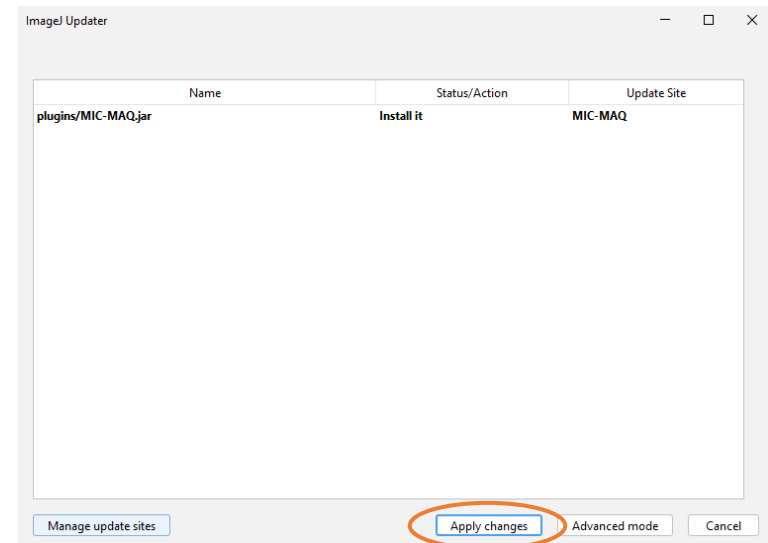
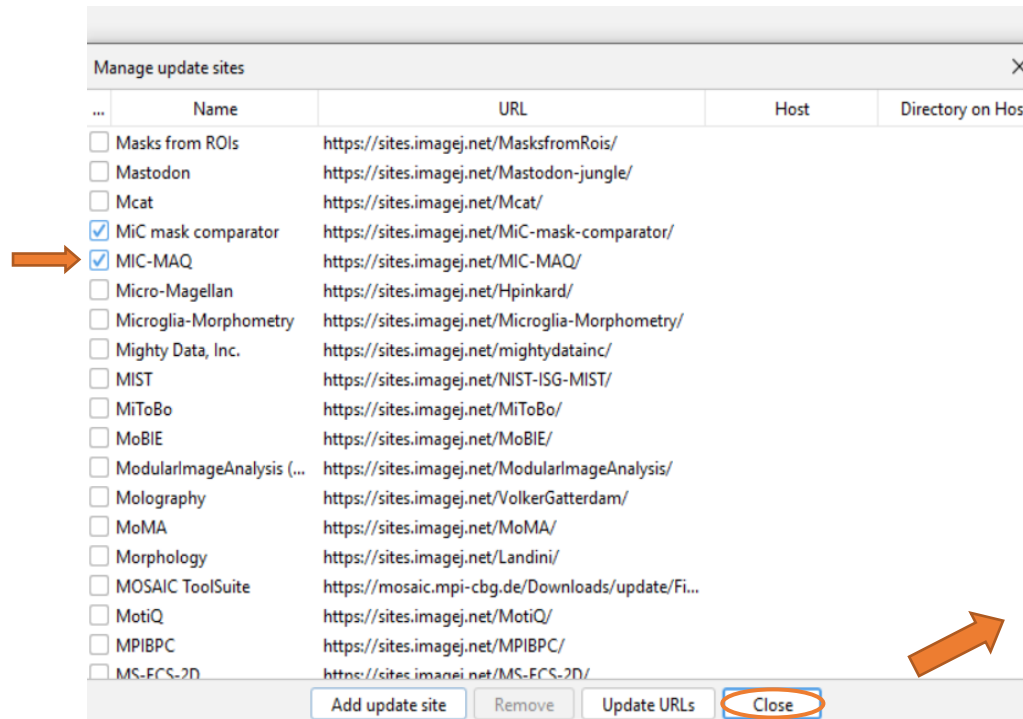
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## • Install MIC-MAQ

- Scroll down the list and tick the checkbox for update sites “MIC-MAQ”
- Click on “Close” button
- Click on “Apply changes” button
- Restart Fiji



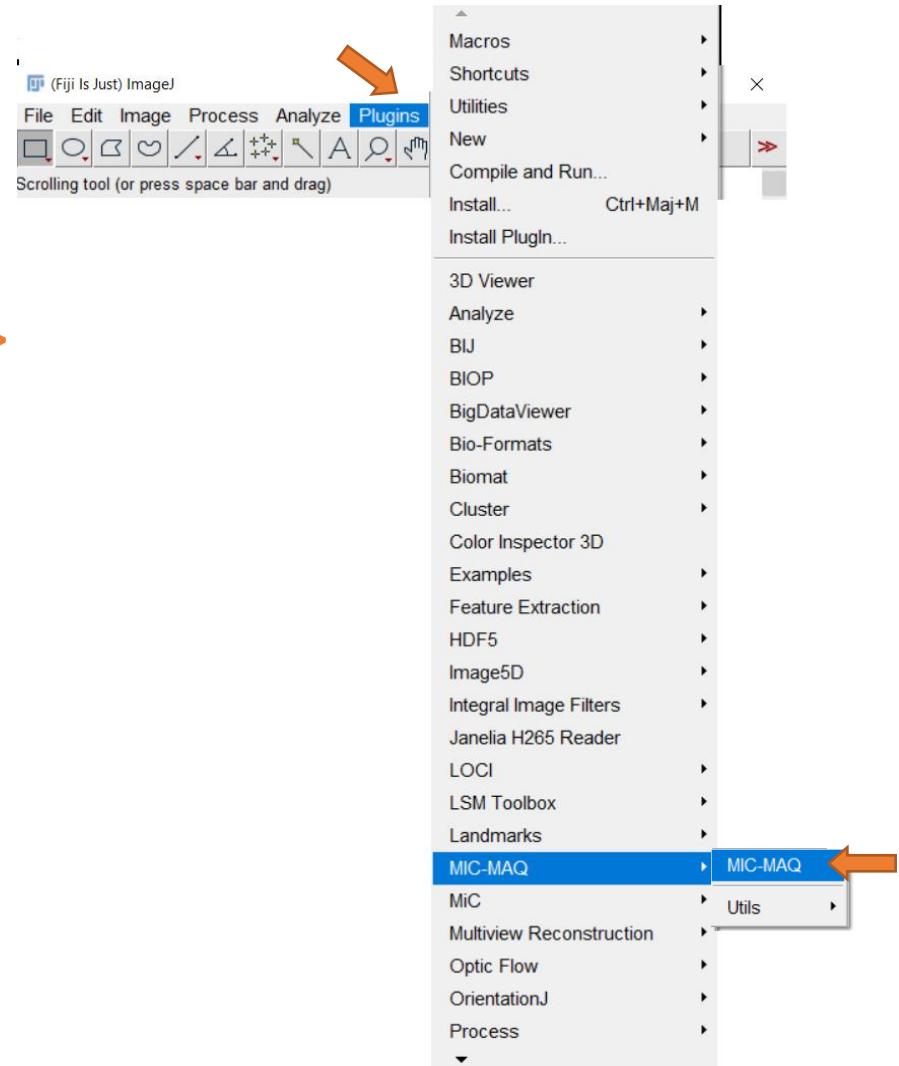
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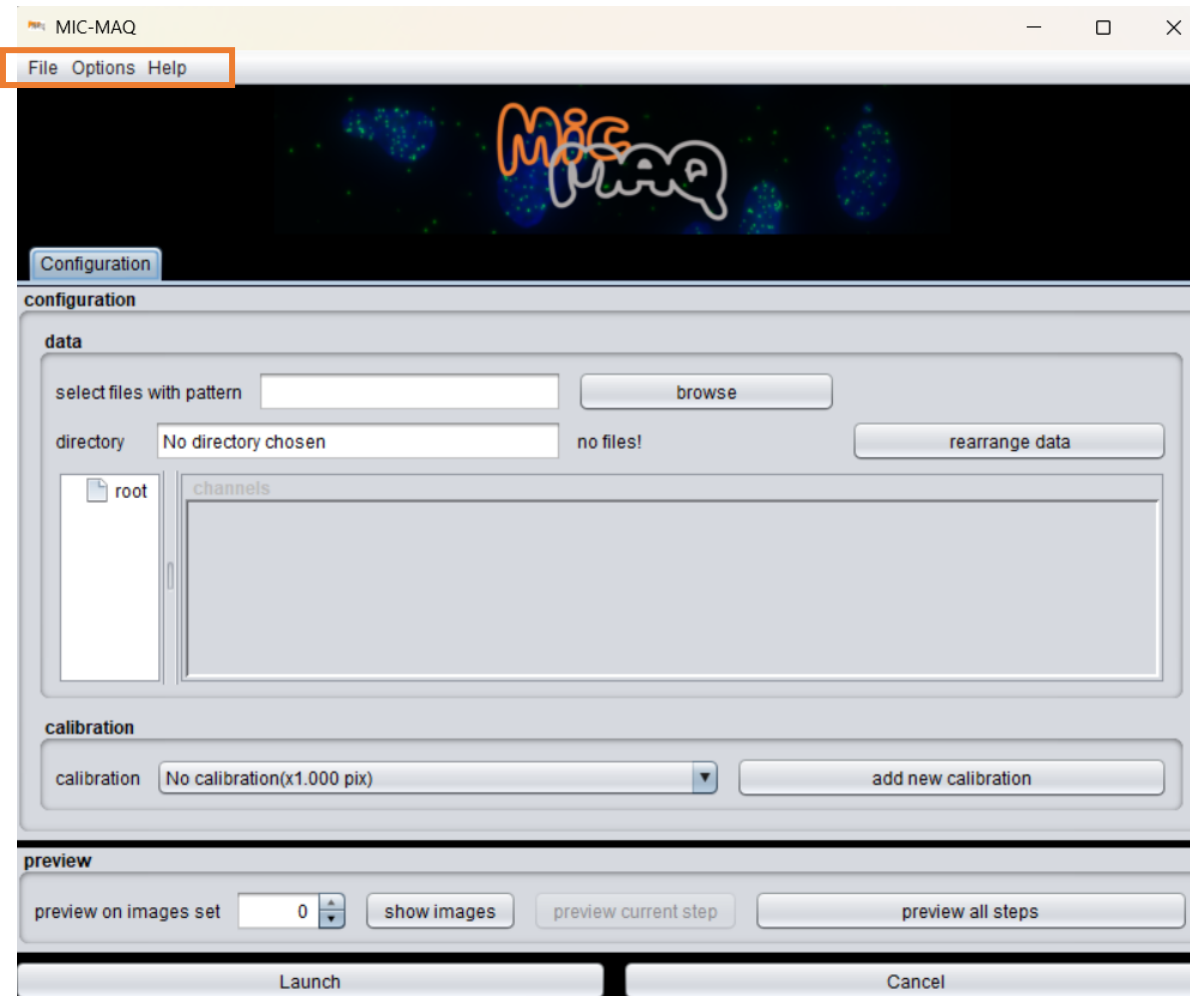
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- Open MIC-MAQ

In the toolbar select: **Plugins > MIC-MAQ >**



## Configure Cellpose under MIC-MAQ

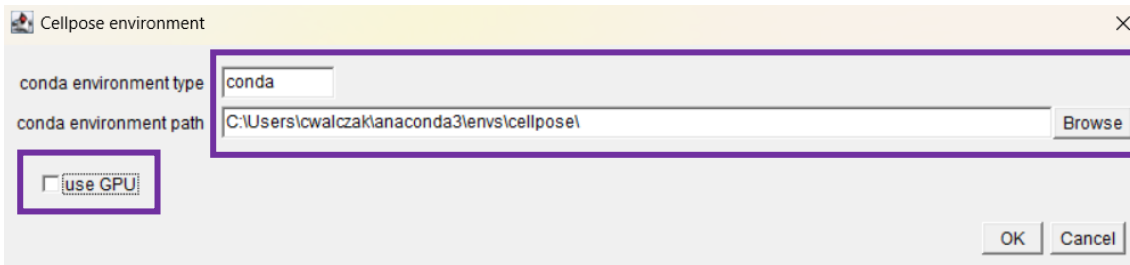
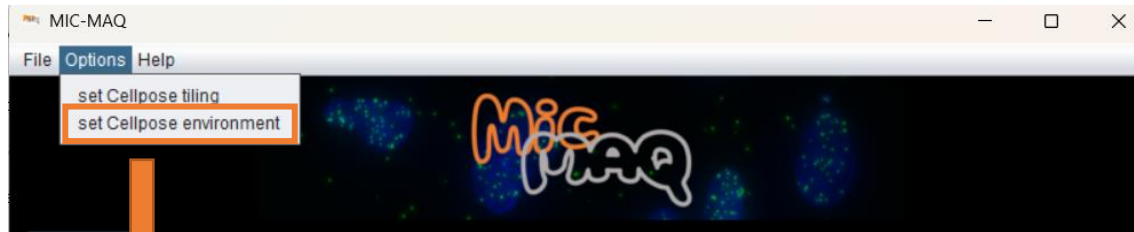


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## Configure Cellpose under MIC-MAQ



- ☐ Select Environment Type : **conda**
- ☐ Select the path to your working Cellpose virtual environment
- ☐ Check « use GPU » if cellpose is configured correctly



If the environment contains an install of Cellpose 4 (see slide 6), Cellpose will always run the model cpsam even if you choose another model.

If you need to use the cyto, cyto2, cyto3, nuclei or user-refined models, please install Cellpose3 as explained in slide 6

**Now open the manual for explanations of MIC-MAQ workflow**

