

Introduction to QuPath

You before this workshop



You after this workshop



Illustration reprinted from Pete Bankhead.

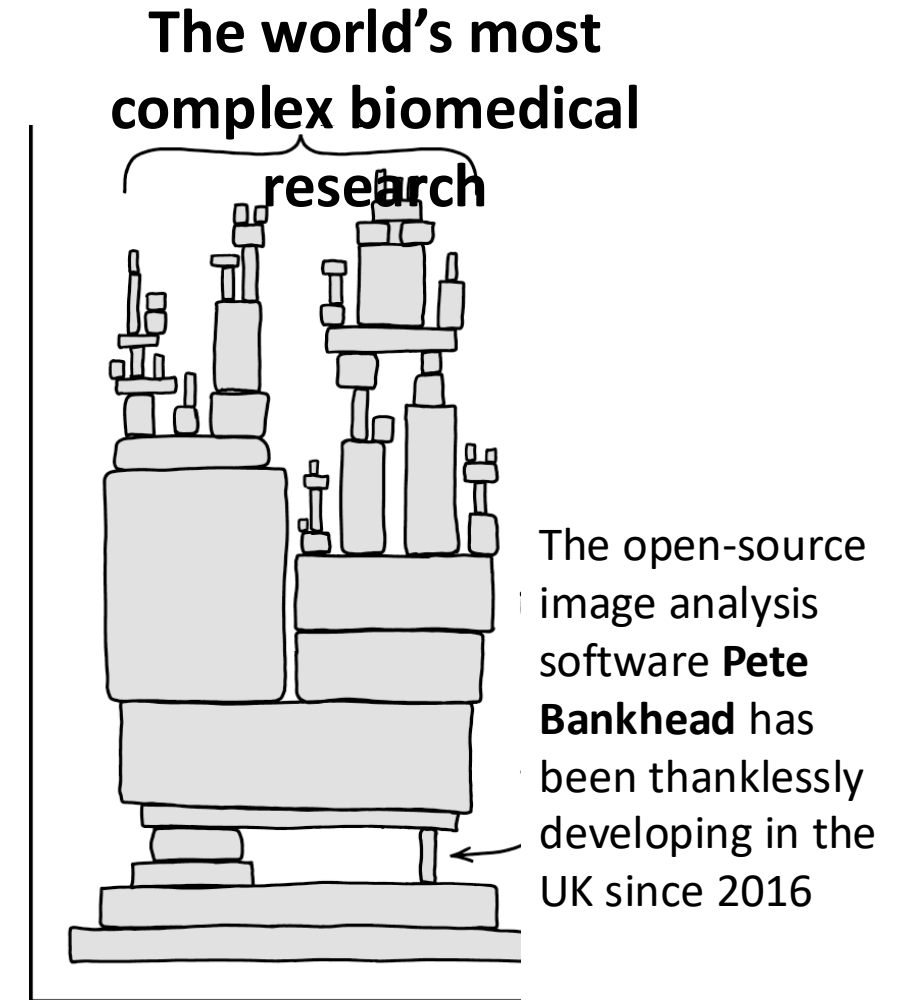
What is QuPath?

QuPath is an open-source software for bioimage analysis

- Developed and maintained by Pete Bankhead and his team at the University of Edinburgh

Key features:

1. Performant when working with very large 2D images, like those produced by slide scanner
2. Extremely well maintained



Adapted from <https://xkcd.com/2347/>

What is QuPath good at?

- It has a nice graphical user interface (GUI)
- It was designed to handle very large 2D images
- It supports common image analysis tasks: segmentation, annotation, feature analysis, and classification
- It support extensive visualization options
- It integrates with many other existing tools (Stardist, ImageJ, ...)
- It support scripting (Groovy, akin to Java)

What is QuPath not good at?

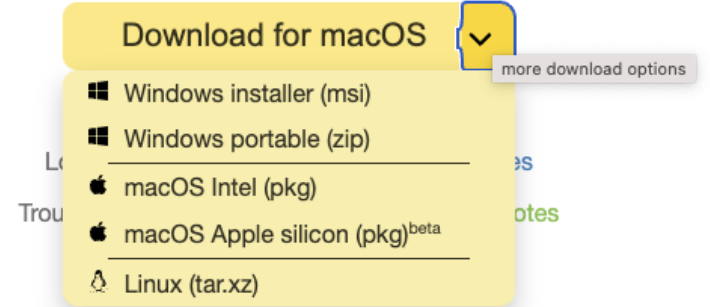
- Limited to 2D images
 - Only supports the visualization of single planes
- Does not support all file format (e.g. zarr/NGFF)

Installing QuPath

```
INSTALL.SH
#!/bin/bash

pip install "$1" &
easy_install "$1" &
brew install "$1" &
npm install "$1" &
yum install "$1" & dnf install "$1" &
docker run "$1" &
pkg install "$1" &
apt-get install "$1" &
sudo apt-get install "$1" &
steamcmd +app_update "$1" validate &
git clone https://github.com/"$1"/"$1" &
cd "$1"; ./configure; make; make install &
curl "$1" | bash &
```

<https://xkcd.com/1654/>

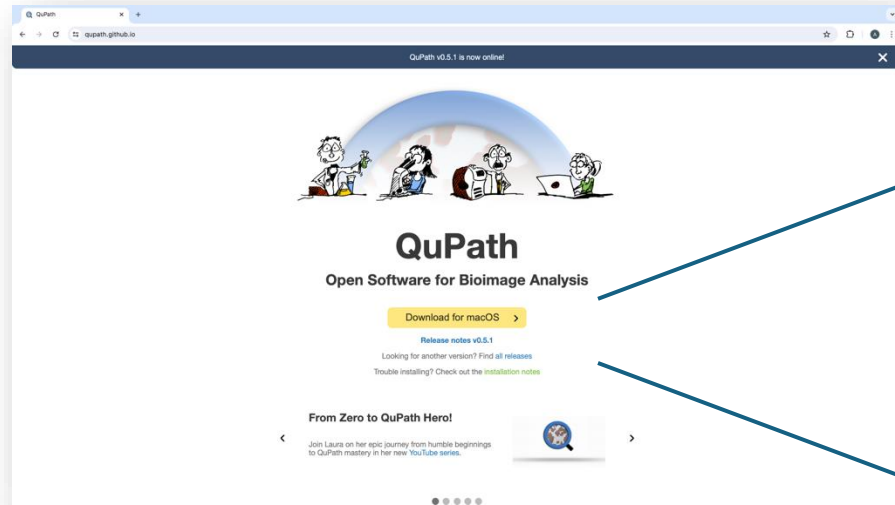


Download QuPath

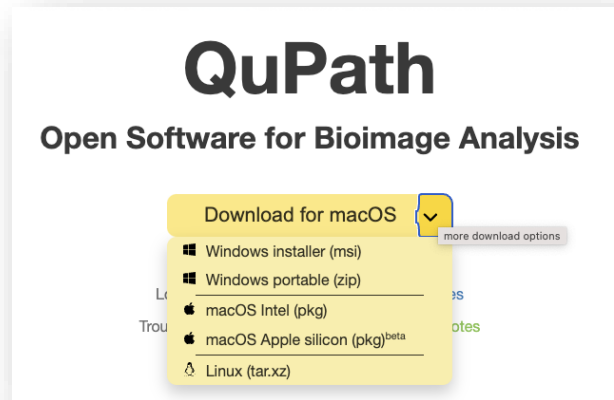
1. Go to <https://qupath.github.io/> (see *useful links on website*)

2. Download the installer for the latest version

NB: we recommend the .msi file for Windows users





3. Choose your OS



4. Right-click on the installer file > Open > Confirm Open

For macOS users

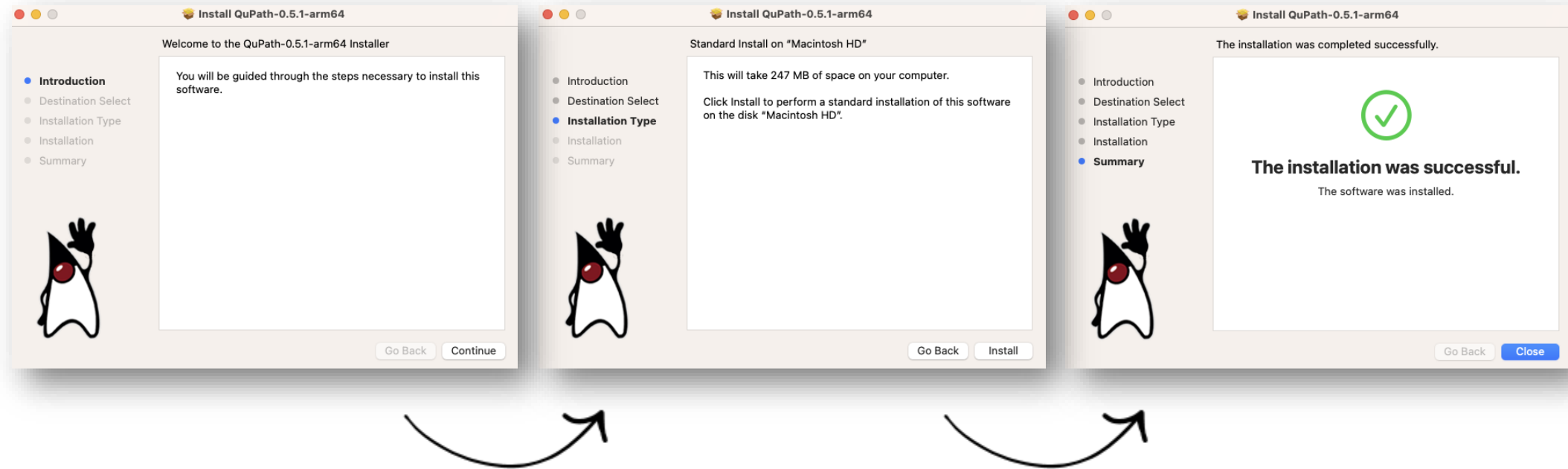
Confirm that QuPath installer is not a malware

On your Mac, choose Apple menu  > System Settings, then click Privacy & Security  in the sidebar. (You may need to scroll down.)



Download QuPath

Follow the steps of the installer



Manage different QuPath versions

macOS users:

- *Applications* > multiple versions of QuPath installed > Choose the latest one
- Cmd + space, then choose from the list of available versions

Windows users:

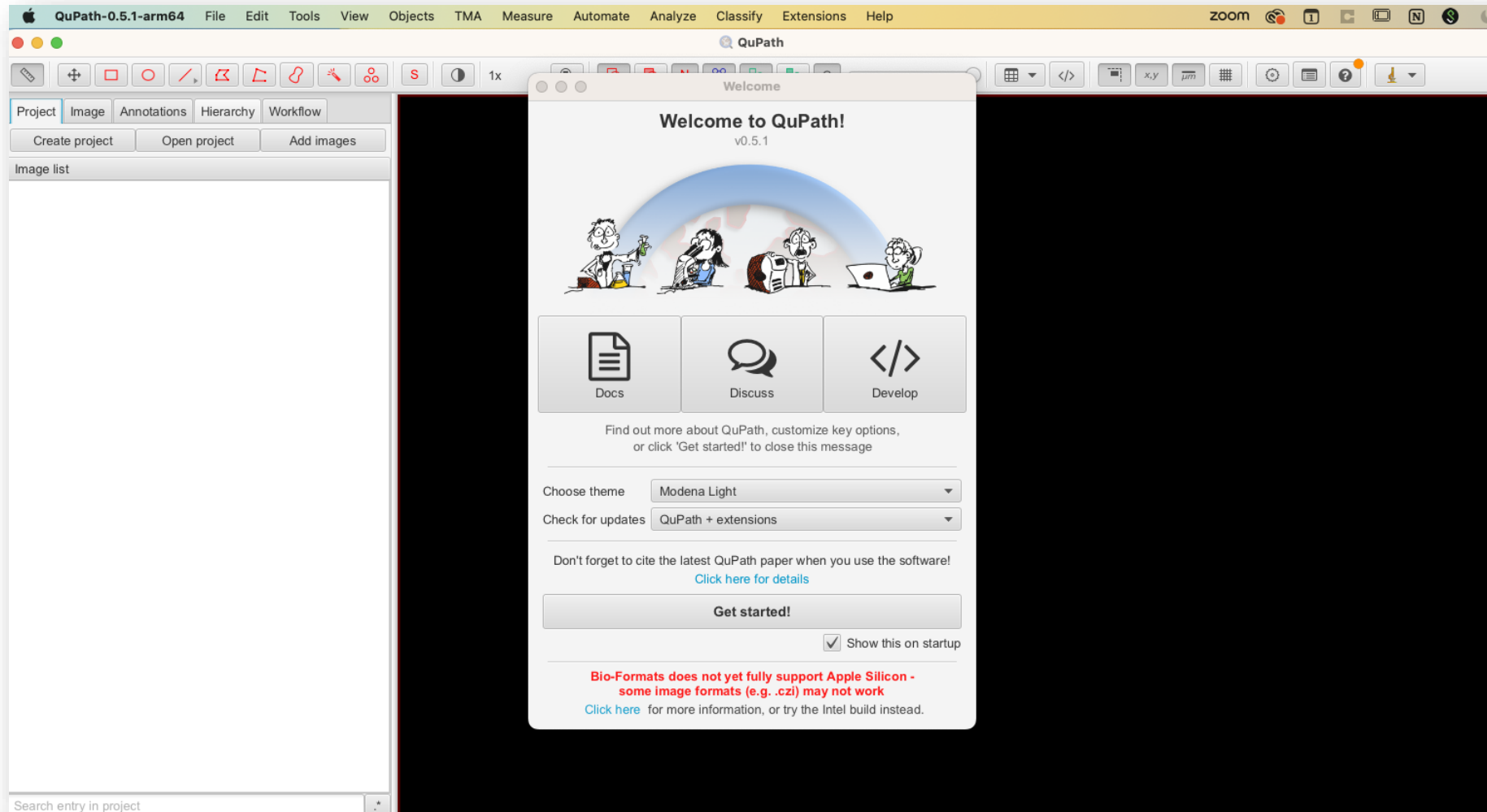
- C:\Program Files\QuPath
- Opening your application manager should prompt you the different version of QuPath that have been downloaded

Linux users:

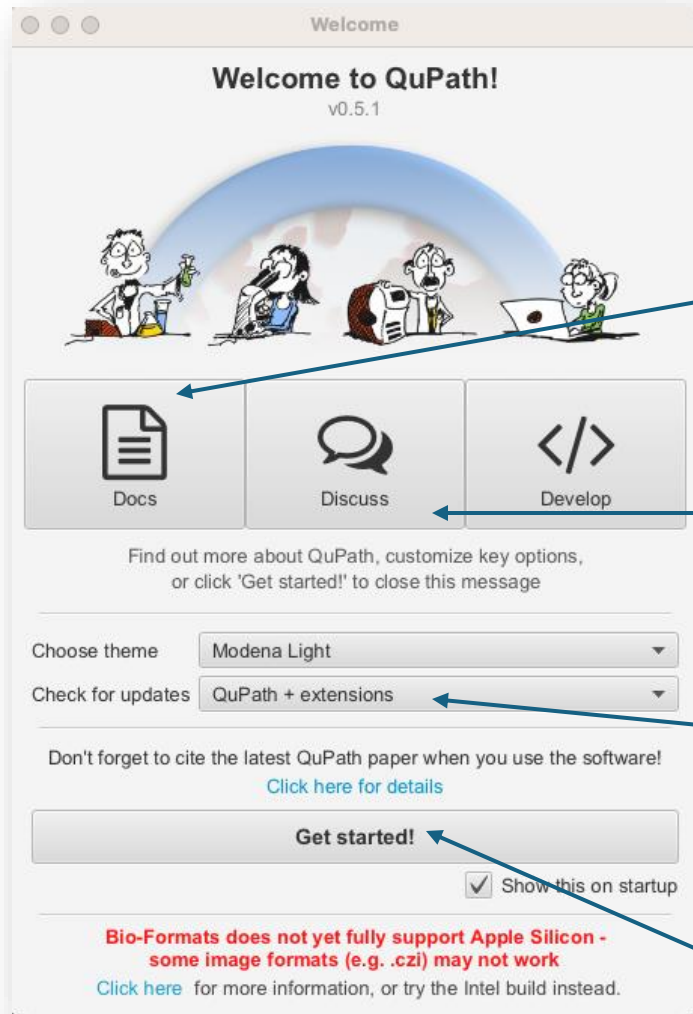
- I don't know

Trick: *using multiple versions of QuPath allows to easily run more than one app at the same time on your laptop (i.e. doing so from a single app would require launching each instance from a separate terminal on macOS).*

Open the QuPath application



Welcome to QuPath!



Useful resources:

Documentation:

<https://qupath.readthedocs.io/en/0.5/>

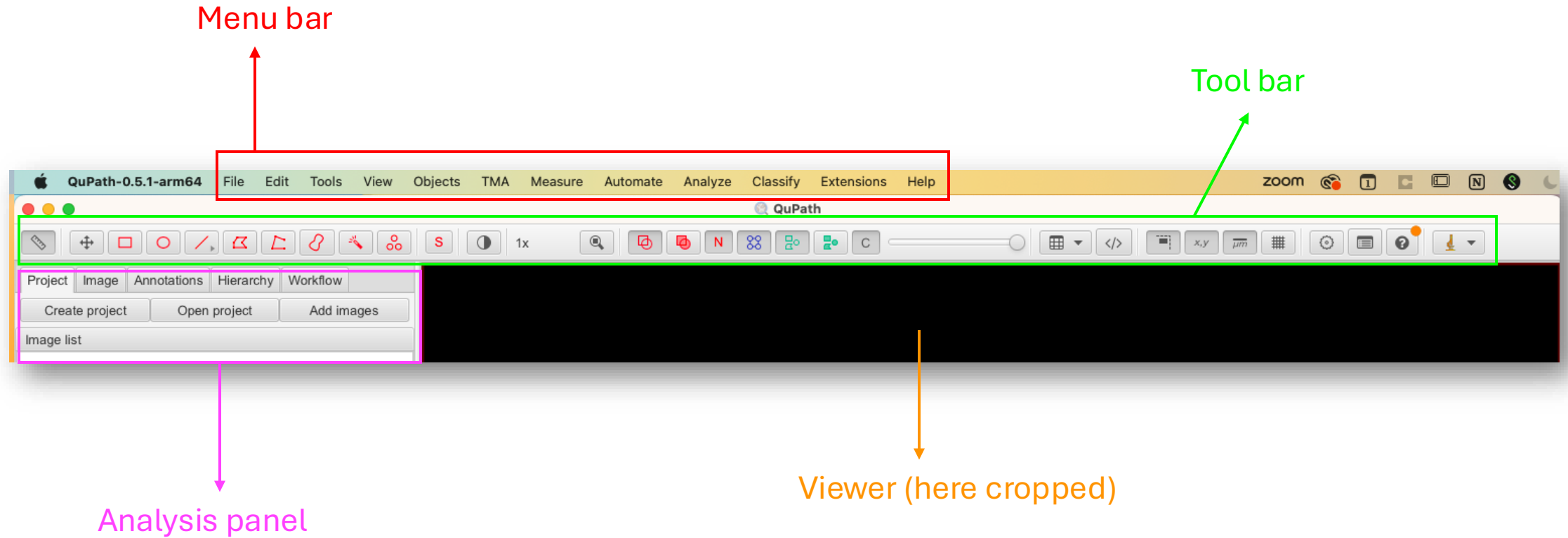
QuPath-specific place in 'The Forum':

<https://forum.image.sc/tag/qupath>

Updater

For now, let's get started

Graphic User Interface (GUI) – intro



Getting help

- In-app documentation: Help menu



- QuPath documentation: <https://qupath.github.io/>

- The Forum: <https://forum.image.sc/>  image.sc

- During this workshop, ask questions to your neighbors, the TA's and me!