Introduction to QuPath

You <u>before</u> this workshop

You <u>after</u> this workshop

Illustration reprinted from Pete Bankhead.
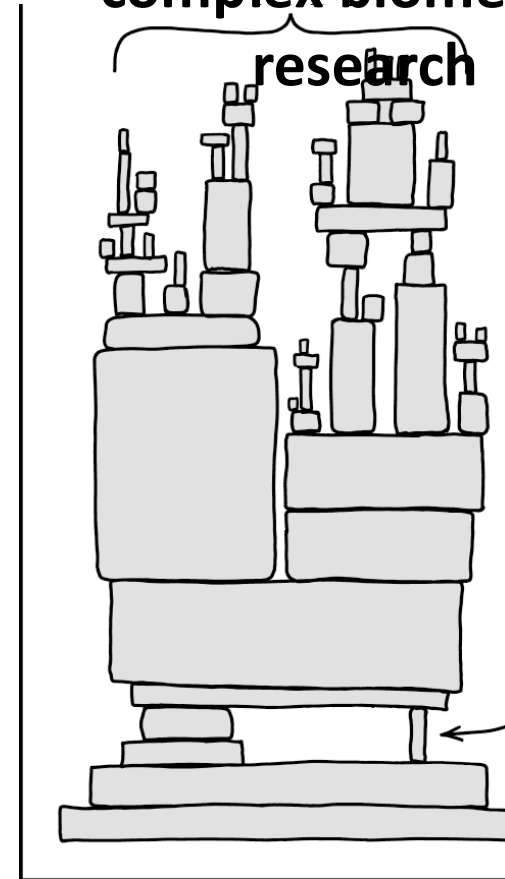
What is QuPath?

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

The world's most complex biomedical research

The open-source image analysis software **Pete Bankhead** has been thanklessly developing in the UK since 2016
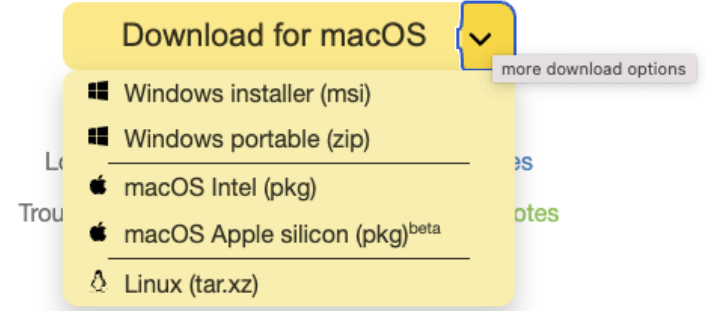
Adapted from https://xkcd.com/2347/

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 **<u>not</u>** 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
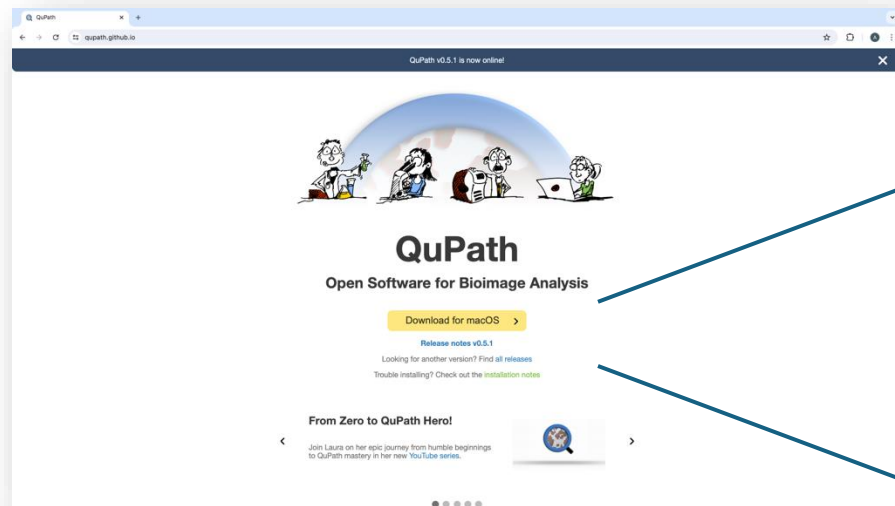

https://xkcd.com/1654/

Download QuPath

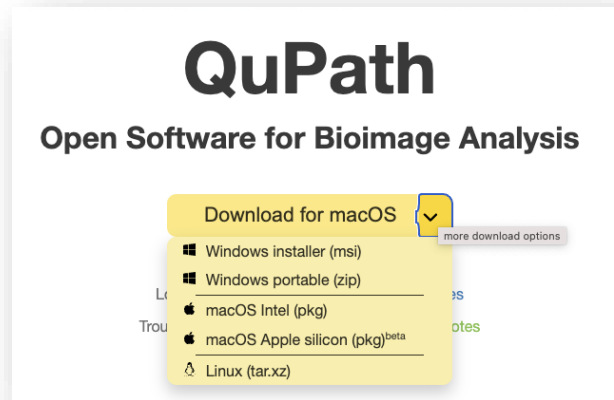1. Go to https://qupath.github.io/ (*see useful links on website*)

2. Download the installer for the latest version

NB: we recommend the .msi file for Windows users
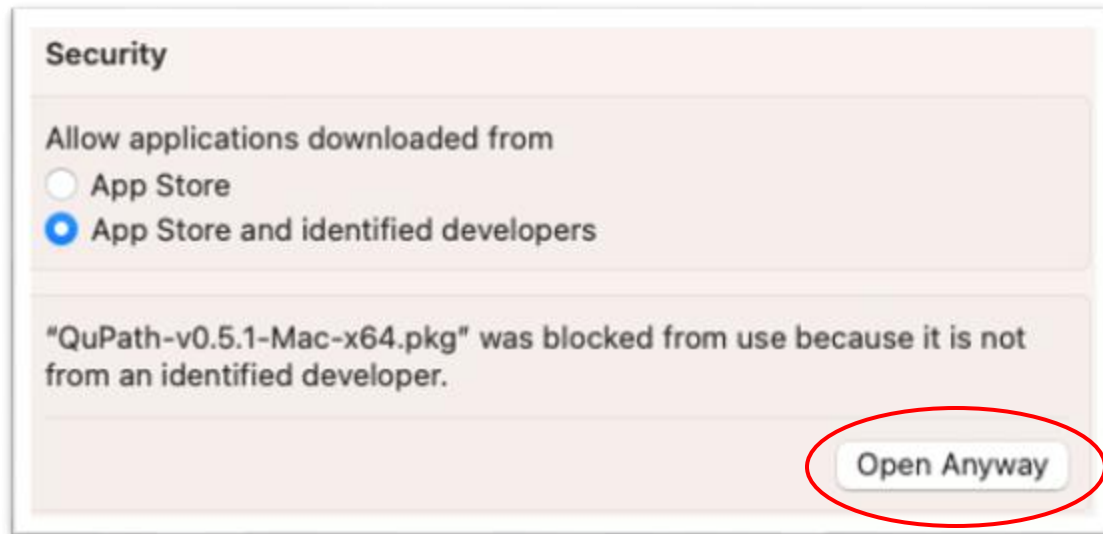

3. Choose your OS

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

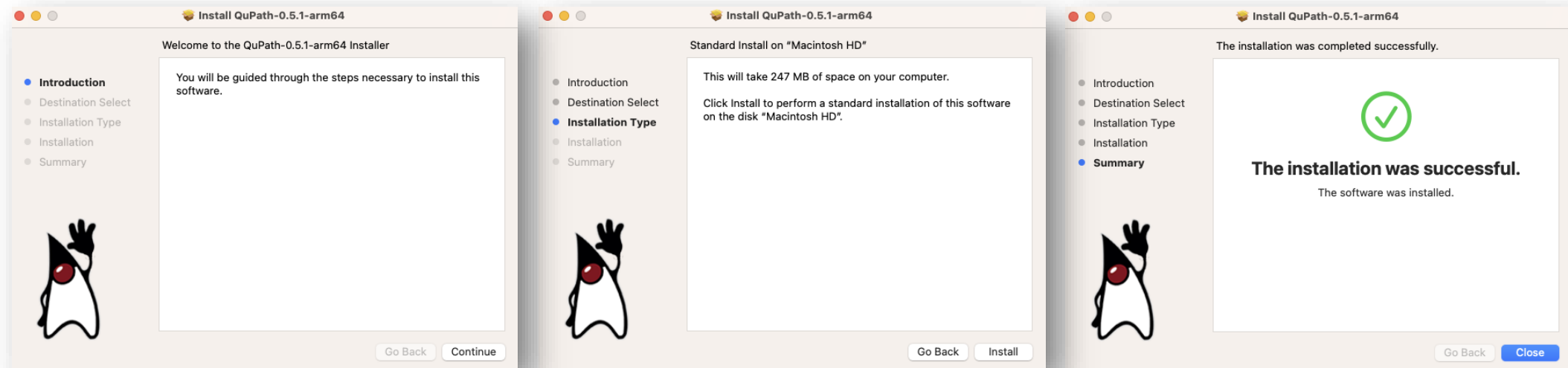# For macOS users

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.)

Security

Allow applications downloaded from
○ App Store
⦿ App Store and identified developers

"QuPath-v0.5.1-Mac-x64.pkg" was blocked from use because it is not from an identified developer.

Open Anyway

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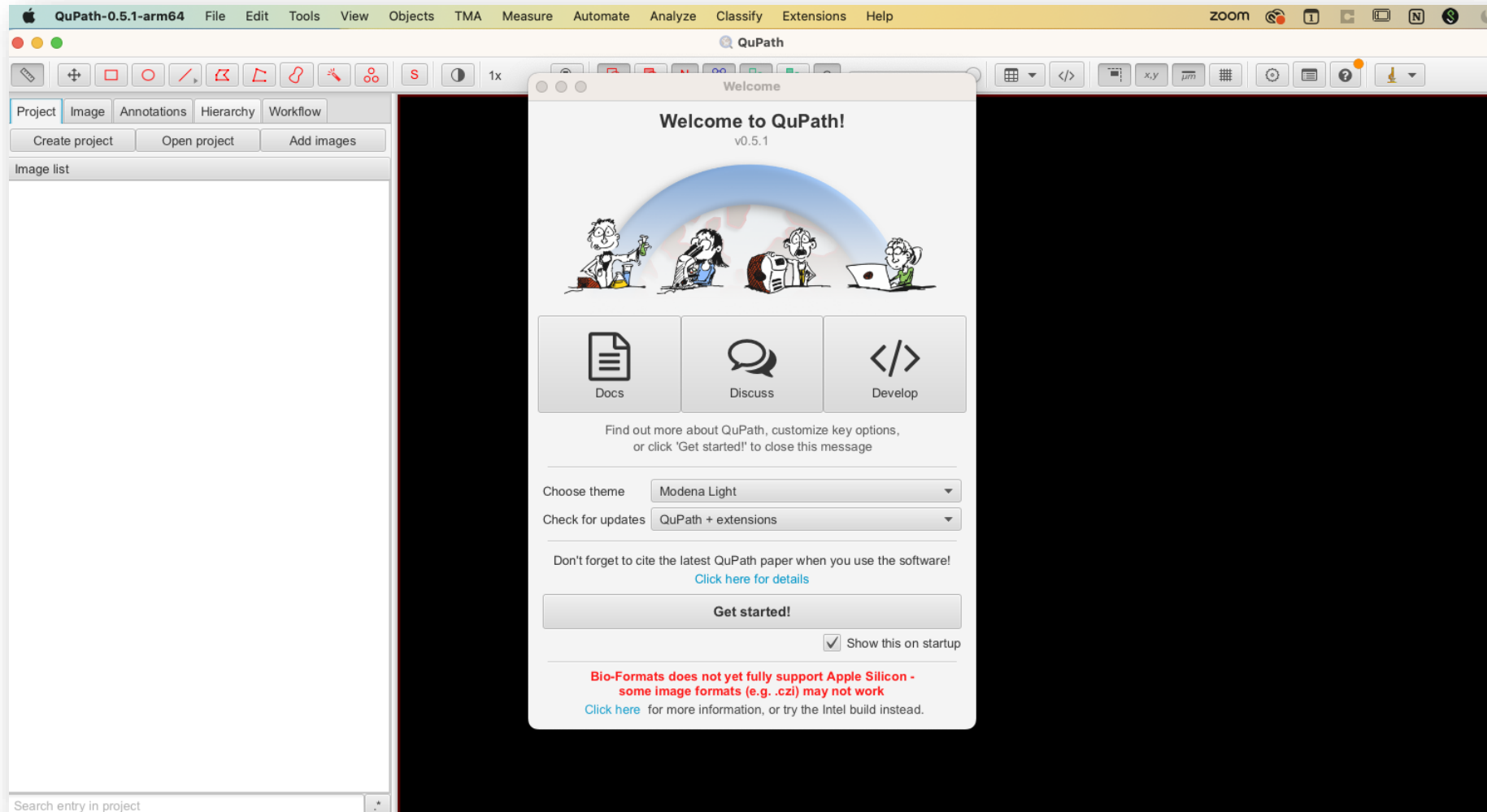
Windows users:
- C:\Program Files\QuPath
- Opening your application manager should prompt you the different version of QuPath that have been downloaded

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!
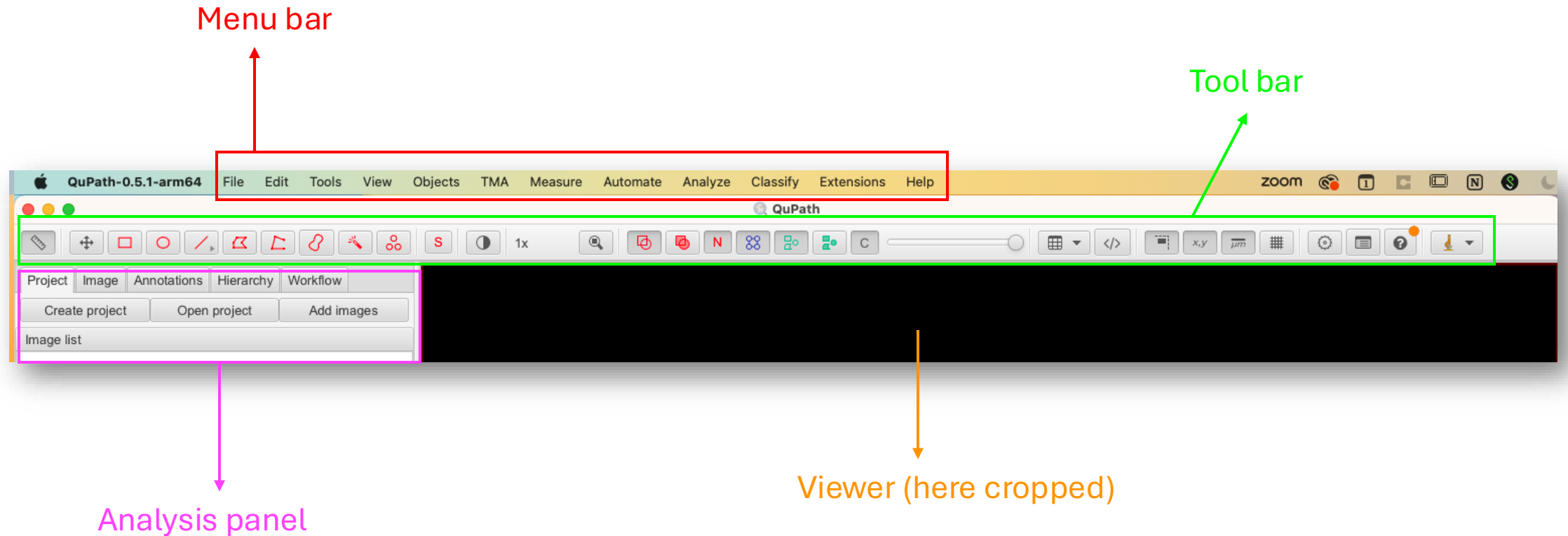

Useful resources:

Documentation:
https://qupath.readthedocs.io/en/0.5/

QuPath-speficic place in 'The Forum':
https://forum.image.sc/tag/qupath

Updater

For now, let's get started

Graphic User Interface (GUI) – intro

Menu bar

Tool bar

Viewer (here cropped)

Analysis panel

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!