

VERSION 2

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OPEN  ACCESS

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## Laptop setup and piranhaGUI install V.2

Aine.OToole<sup>1</sup>, rachel.colquhoun<sup>1</sup>, c.ansley<sup>1</sup>, Zoe Vance<sup>1</sup>, Daniel Maloney<sup>1</sup>, Joyce Akello<sup>2</sup>, Catherine Troman<sup>2</sup>, Erika Bujaki<sup>1</sup>, Javier Martin<sup>1</sup>, Alex Shaw<sup>2</sup>, Nick Grassly<sup>2</sup>, Andrew Rambaut<sup>1</sup>

<sup>1</sup>Institute of Ecology and Evolution, University of Edinburgh; <sup>2</sup>Imperial College London

Poliovirus Sequencing Consortium



Aine.OToole

### ABSTRACT

This protocol provides step-by-step guidance on installing MiKNOW, piranhaGUI and its dependency Docker Desktop.

### MATERIALS

Addditional troubleshooting resources

Docker install and running issues

<https://docs.docker.com/desktop/troubleshoot/topics/>

WSL installation issues

<https://learn.microsoft.com/en-us/windows/wsl/install>

PiranhaGUI download page

<https://github.com/polio-nanopore/piranhaGUI/releases/>

**MANUSCRIPT CITATION:**

Automated detection and classification of polioviruses from nanopore sequencing reads using piranha

Áine O'Toole, Rachel Colquhoun, Corey Ansley, Catherine Troman, Daniel Maloney, Zoe Vance, Joyce Akello, Erika Bujaki, Manasi Majumdar, Adnan Khurshid, Yasir Arshad, Muhammad Masroor Alam, Javier Martin, Alexander G Shaw, Nicholas C Grassly, Andrew Rambaut  
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<https://doi.org/10.1101/2023.09.05.556319>

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**Protocol status:** Working

We use this protocol and it's working

**Created:** Feb 02, 2024

**Last Modified:** Feb 05, 2024

**PROTOCOL integer ID:** 94618

**Keywords:** piranha, bioinformatics, phylogenetics, analysis, poliovirus

**Funders Acknowledgement:**

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## Laptop requirements

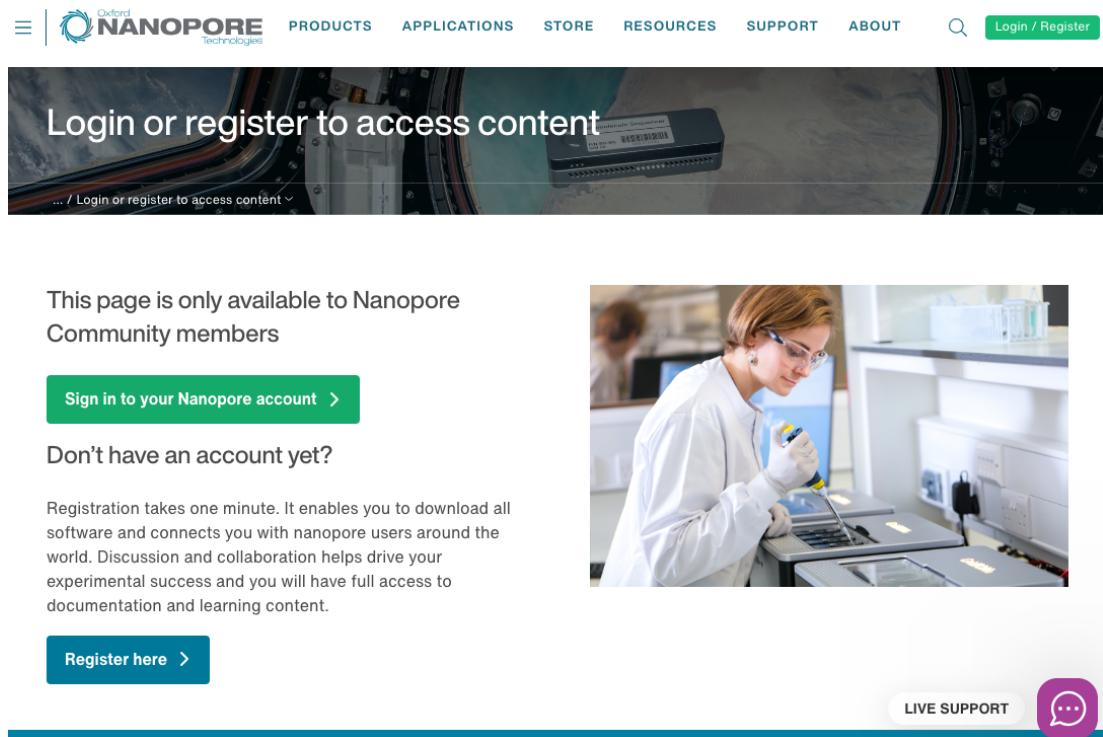
### 1 Requirements:

1. Administrator access to the laptop

2. A high-performance laptop with a GPU

## Setting up a Nanopore account & installing MinKNOW

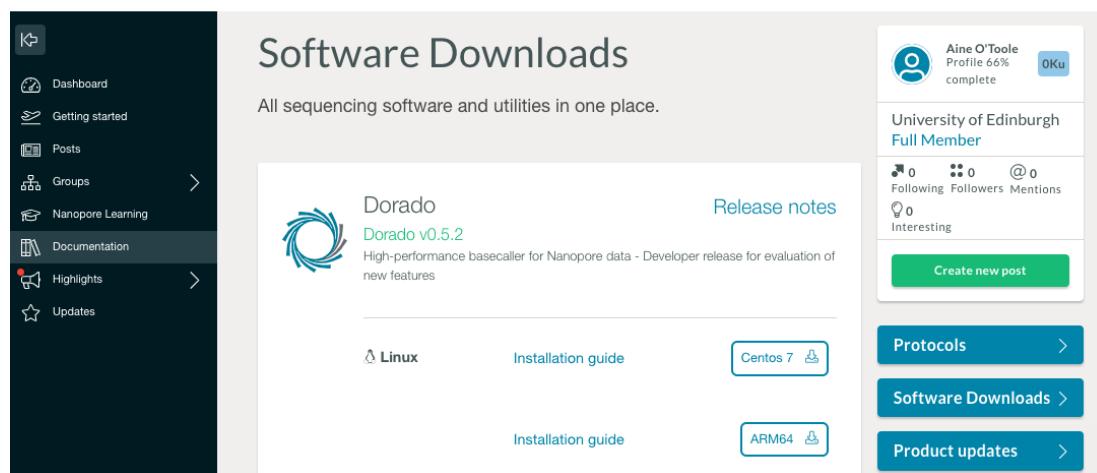
- 2** Register for an Oxford Nanopore Technologies Account at <https://nanoporetech.com/community> by clicking the "Register here" button. You will have to verify your email address and log in. If you already have an account, sign in.



The screenshot shows the Oxford Nanopore Technologies website's login/register page. At the top, there is a navigation bar with links for PRODUCTS, APPLICATIONS, STORE, RESOURCES, SUPPORT, and ABOUT. On the far right of the navigation bar is a 'Login / Register' button. Below the navigation bar, a banner features the text 'Login or register to access content' over a background image of laboratory equipment. Underneath the banner, there is a link '... / Login or register to access content ▾'. The main content area contains the message 'This page is only available to Nanopore Community members'. Below this message are two buttons: 'Sign in to your Nanopore account >' and 'Don't have an account yet?'. To the right of the text, there is a photograph of a female scientist in a white lab coat and safety glasses working in a laboratory. Further down the page, there is another button labeled 'Register here >' and a 'LIVE SUPPORT' section with a purple speech bubble icon.

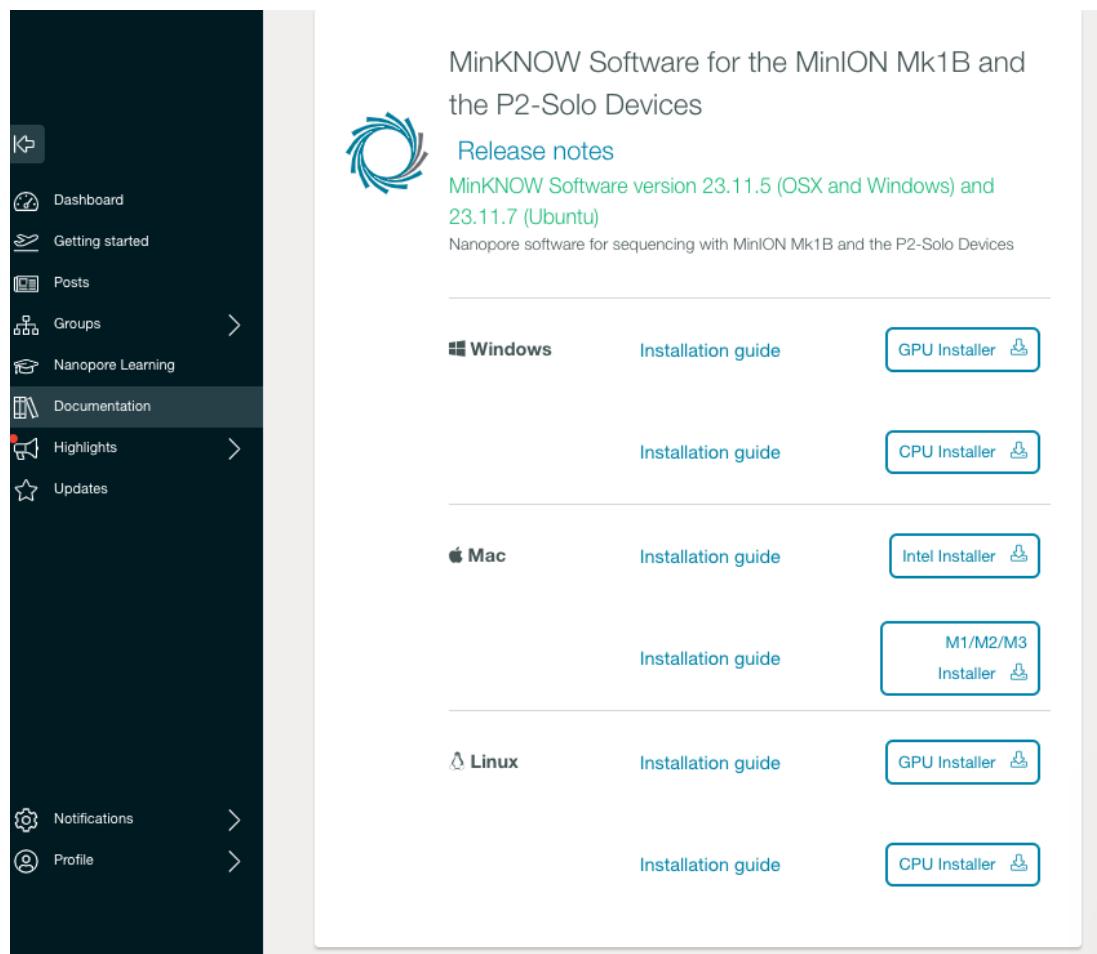
To access the useful software, you will need to associate your account with a full membership or else order a starter pack and become a full member.

- 3** Navigate in a web-browser to <https://community.nanoporetech.com/downloads>, you will need to log in to your Nanopore account to access this page.



The screenshot shows the 'Software Downloads' section of the protocols.io website. On the left is a dark sidebar with navigation links: Dashboard, Getting started, Posts, Groups, Nanopore Learning, Documentation (which is currently selected), Highlights, and Updates. The main content area displays a project titled 'Dorado' with version 'v0.5.2'. It's described as a 'High-performance basecaller for Nanopore data - Developer release for evaluation of new features'. Below the description are two download options: 'Linux' (Installation guide) and 'Centos 7' (button). Further down are 'ARM64' (button) and another 'Installation guide'. To the right of the main content is a user profile for 'Aine O'Toole' showing activity stats: Following 0, Followers 0, Mentions 0, and Interesting 0. Below the profile are three buttons: 'Create new post', 'Protocols', 'Software Downloads', and 'Product updates'.

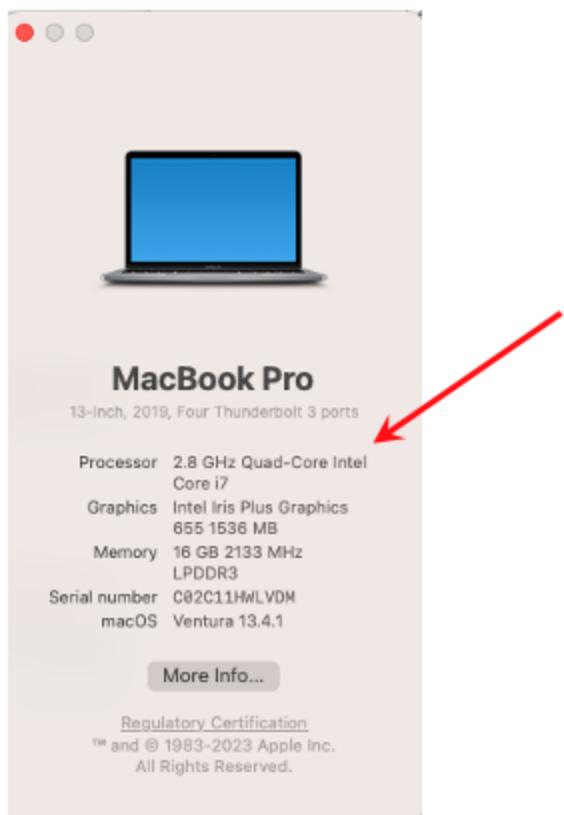
Scroll down once you have reached this page to view the "MiKHOW download" and download the respective link depending on whether you are using a Windows, Mac or Linux machine.



The screenshot shows the 'Software Downloads' section of the protocols.io website for 'MinKNOW Software'. The sidebar is identical to the previous screenshot. The main content area displays the 'MinKNOW Software for the MinION Mk1B and the P2-Solo Devices'. It includes a 'Release notes' section mentioning 'MinKNOW Software version 23.11.5 (OSX and Windows) and 23.11.7 (Ubuntu)' and 'Nanopore software for sequencing with MinION Mk1B and the P2-Solo Devices'. Below this are four sections for different platforms: 'Windows' (Installation guide, GPU Installer button), 'Mac' (Installation guide, Intel Installer button), 'Linux' (Installation guide, GPU Installer button), and 'Linux' (Installation guide, CPU Installer button). The 'CPU Installer' button for Linux appears to be a duplicate entry.

#### 4 Mac Installation of MiKNOW

If you have a Mac and are not sure whether you have an Apple or Intel chip, click the apple icon in the top left hand side of the screen, and navigate to "About this Mac". A window will pop up (like the one in the image) that describes various things about your computer, including "Processor". If your processor has Intel in it, you have an Intel chip, otherwise you have an Apple chip. Another clue would be how new your Mac is. If you've purchased a Mac in the last 3 years it's very likely to be an Apple chip.

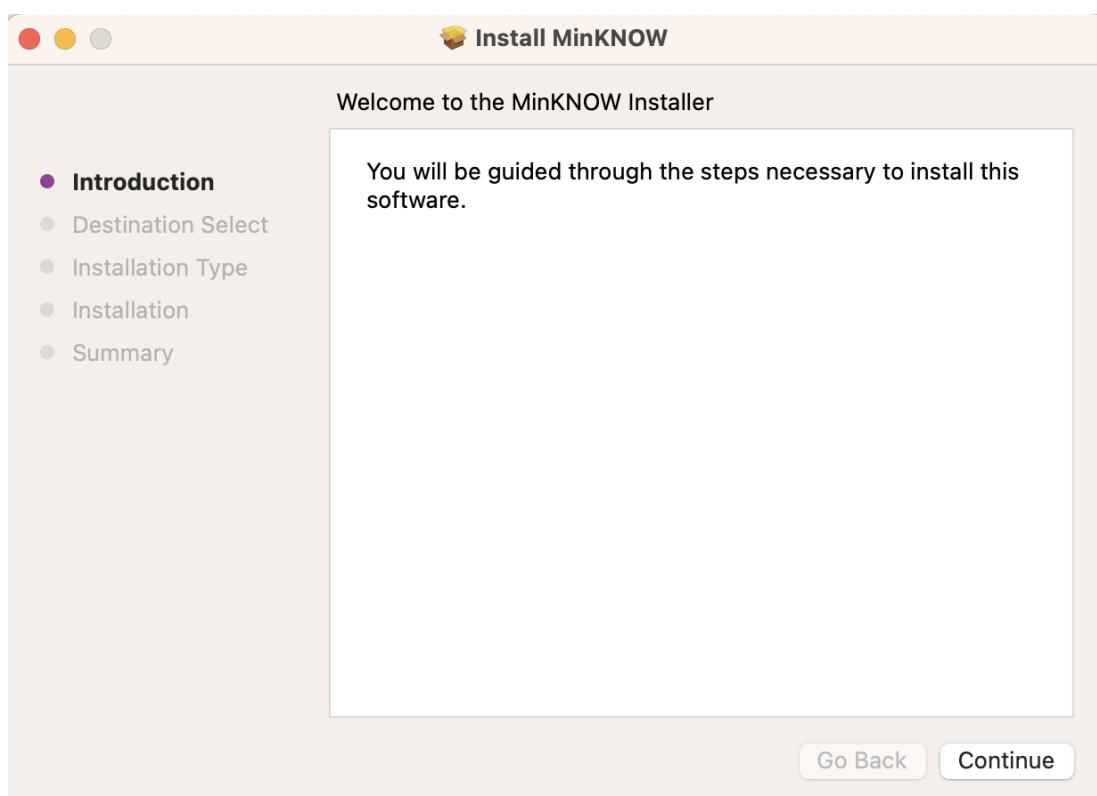


**About this mac** In this example the processor is an intel one, so the link to click on would be the Mac Intel installer.

Once you've downloaded the Mac dmg file, extract it and open the MinKNOW.pkg file by double clicking on the icon.



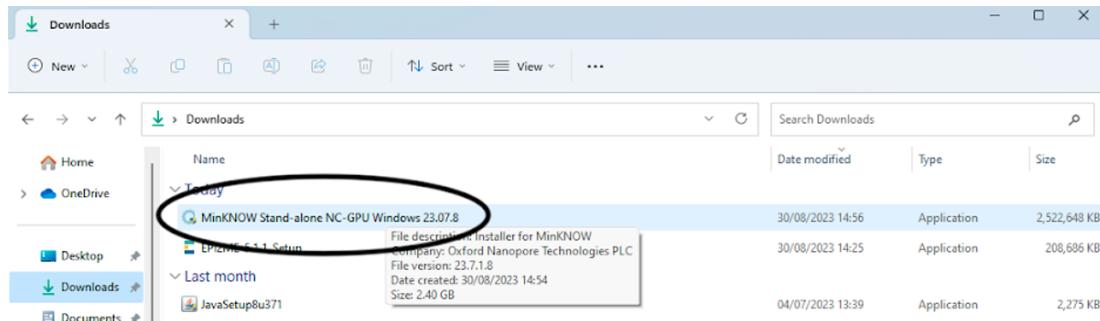
An installer window will open and you'll be guided through the installation steps:



## 5 Windows installation of MiKNOW

Download the windows installer, the machine you're using should have a GPU so click on the GPU installer link. If your machine does not have a GPU, running basecalling for a Nanopore run will take a very long time.

Run the installer by double clicking it in the directory it was downloaded to (likely your downloads folder).



When the installer pops up, follow the installation instructions to install MiKNOW.

- 6 You should now be ready to run MinKNOW when you go to perform a sequencing run.

## Install piranha through piranhaGUI

- 7 PiranhaGUI can be installed on a Windows, MacOSX or Linux machine.

To install piranhaGUI, navigate to [piranhaGUI GitHub](#) on a web browser. You should see a page similar to the one below, which shows the latest releases of piranha GUI, along with some installation instructions.

The screenshot shows the GitHub releases page for the repository `polio-nanopore/piranhaGUI`. The release `v1.5.3` is highlighted as the latest. The page includes sections for **Installation on Mac**, **Installation on Linux**, and **Installation on Windows**, along with a full changelog link.

PiranhaGUI releases page. A release is like a checkpoint for software that pins everything at a specific version. There may be periodic updates of piranhaGUI (new releases) and also of the piranha software that piranhaGUI runs.

- 8** To download the latest release, click on the relevant link on this page under the "assets" category of the latest releases.
- If you're a window's user, download the `PiranhaGUlvX.X.X_installer_windows.exe` installer and double click to run it
  - If you are a MacOS user download the `PiranhaGUlvX.X.X.zip` file and extract it, then drag it to your Applications folder. The first time you run it, right-click or control-click on the icon and select Open - this will the allow you to agree to run it. After this, you just need to double-click the icon.
  - For Linux install the `piranhaGUI_X.X.X.deb` file.

▼ Assets 5

<a href="#">piranhaGUIv1.5.3.zip</a>	901 MB	Nov 21, 2023
<a href="#">PiranhaGUIv1.5.3_installer_windows.exe</a>	402 MB	Nov 20, 2023
<a href="#">piranhagui_1.5.3.deb</a>	653 MB	Nov 21, 2023
<a href="#">Source code (zip)</a>		Nov 7, 2023
<a href="#">Source code (tar.gz)</a>		Nov 7, 2023

(1)

Download links for piranhaGUI

- 9 If you have never run Docker on your computer before, you will need to install Docker Desktop. Navigate to <https://www.docker.com/products/docker-desktop/> on a web browser and you should see a page like the one below. Click on the relevant download link (Mac- Apple Chip, Mac - Intel Chip, Windows or Linux). See the next step if you are not sure whether you have an Apple Chip or Intel Chip.



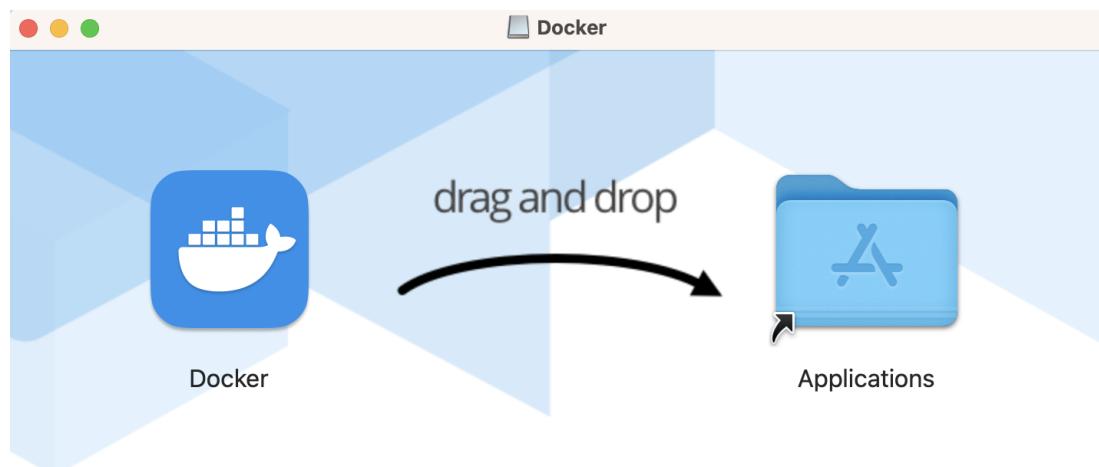
The screenshot shows the Docker Desktop landing page. At the top, there is a navigation bar with the Docker logo, a search icon, and buttons for "Sign In" and "Get Started". Below the navigation, the text "Docker Desktop" is displayed above a large, bold headline: "The #1 containerization software for developers and teams". Underneath the headline, it says "Your command center for innovative container development". On the left, there is a blue button labeled "Create an account". On the right, there is a dark blue call-to-action button labeled "Download for Mac - Apple Chip" with a downward arrow icon. Below this button, there are four smaller download options: "Download for Mac - Intel Chip", "Download for Windows", and "Download for Linux", each with its own downward arrow icon.

- 10 Install on a Mac



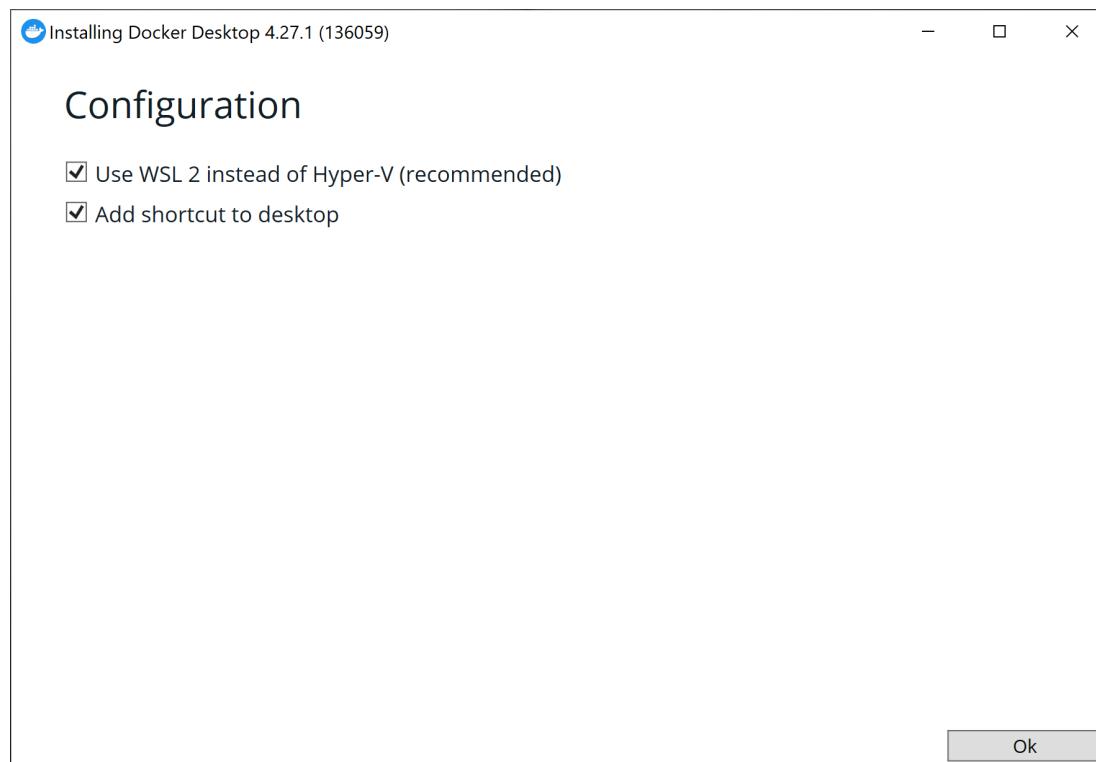
**About this mac** In this example the processor is an intel one, so the link to click on would be the Mac Intel installer.

If you downloaded a Mac dmg file, click on it to open and a window should pop up prompting you to drag the Docker icon into the Applications folder. Drag the icon into Applications.



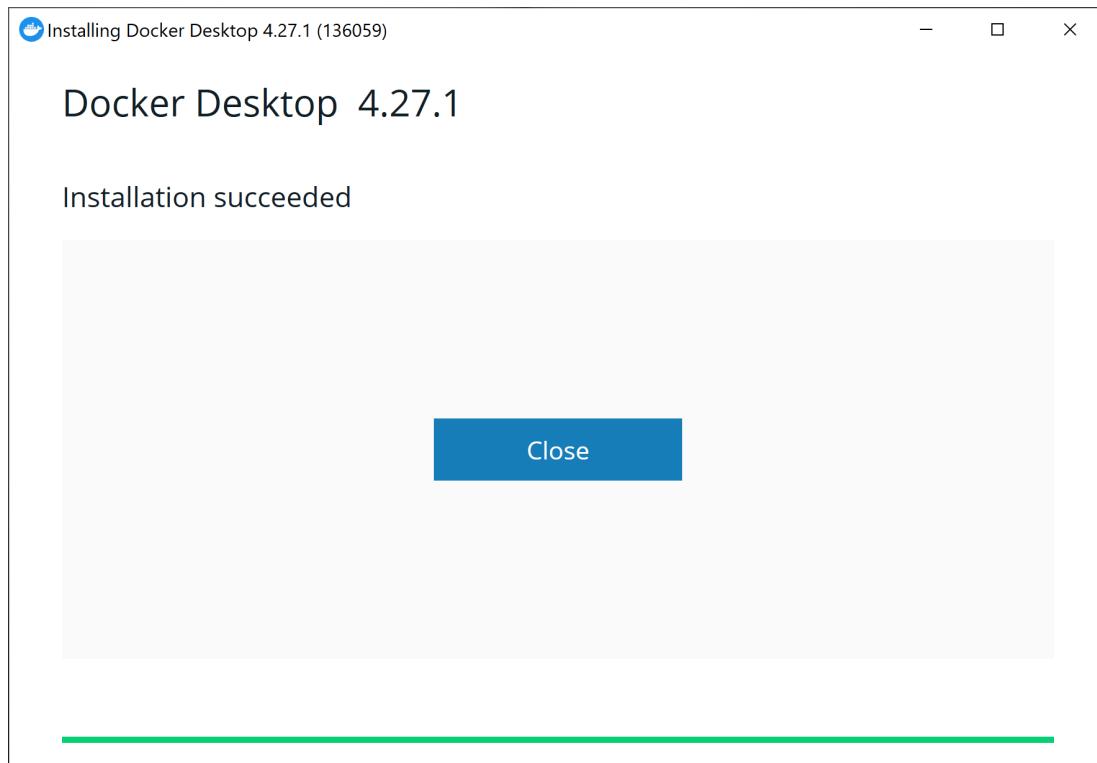
## 11 Install on a windows machine

If you downloaded a windows executable, double-click to open and follow the installation instructions on the window that pops up.



Tick use WSL2 instead of Hyper-V if possible

When you have clicked through and completed the instructions, you should see the following success screen:

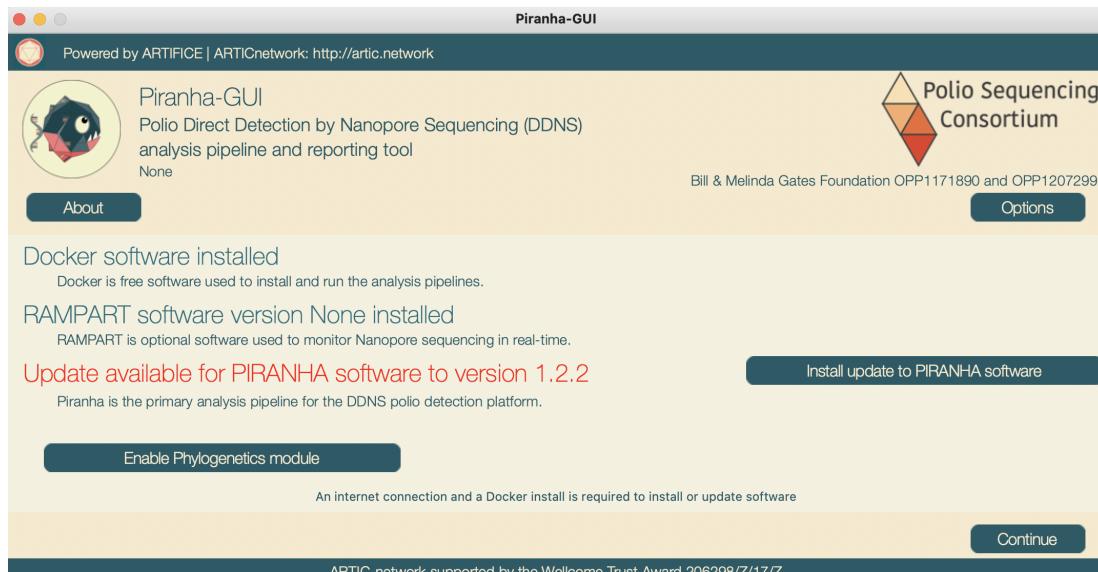


- 12 Open Docker Desktop by clicking on the icon in your file browser to check it has installed sucessfully.

## PiranhaGUI setup

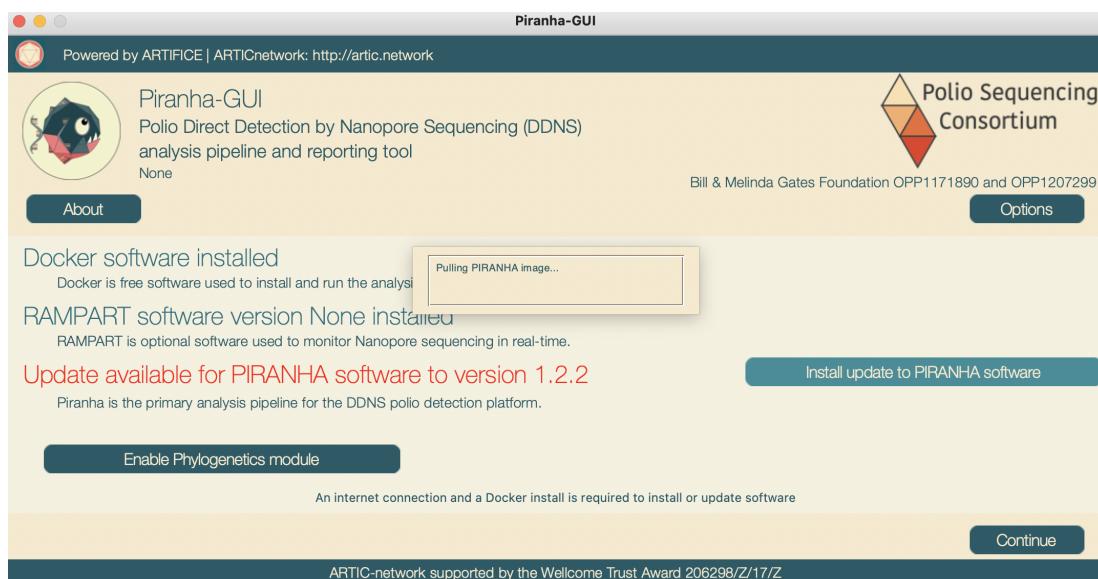
- 13 Double click on the piranhaGUI icon to open it. If you have a Mac and have not previously run piranhaGUI you should right-click or control-click on the icon and select 'Open', which will allow you to agree to run it.

When piranhaGUI has opened you should see a screen like the one below:



If the screen does not say Docker software installed, you may need to repeat the above Docker installation steps and ensure Docker installs correctly. Internet connectivity may be an issue for downloading Docker Desktop, but this only needs to be done once. Try to ensure a stable internet connection and download again if necessary. If the screen says "Docker software installed", you can move on to the next step.

- 14** You will want to make sure you have the latest version of piranha installed. If the message appears, as in the previous image, that an update is available for piranha, then click on the button to install the update to the piranha software. You should see the below message pop up that piranha GUI is pulling PIRANHA image:



This step requires an internet connection, when it is complete and piranha has been updated to the latest you should see the following screen:

Piranha-GUI  
Powered by ARTIFICE | ARTICnetwork: <http://artic.network>

 Piranha-GUI  
Polio Direct Detection by Nanopore Sequencing (DDNS)  
analysis pipeline and reporting tool  
None

 Polio Sequencing  
Consortium  
Bill & Melinda Gates Foundation OPP1171890 and OPP1207299

About Options

Docker software installed  
Docker is free software used to install and run the analysis pipelines.

RAMPART software version None installed  
RAMPART is optional software used to monitor Nanopore sequencing in real-time.

PIRANHA software installed  
Piranha is the primary analysis pipeline for the DDNS polio detection platform.

Enable Phylogenetics module

An internet connection and a Docker install is required to install or update software

Continue

ARTIC-network supported by the Wellcome Trust Award 206298/Z/17/Z

All messages are in green, so you should be now ready to run piranha.

**\*\*If you are taking part in a training workshop and do not have a reliable internet connection, you may be able to install piranha with from a distributed thumb drive.\*\***