Workshop Preparation Guide

A Practical Introduction to 3DP-Jmol and 3D Printing
Trainer: *Marius Mihășan, PhD Alexandru Ioan Cuza University of Iași*
When: *7th of November, 11:30-12:30*
Where: *Emmanuel de Martonne Street, no. 1, CLUB Hall (same building as AUDITORIUM MAXIMUM)*

Introduction

This workshop is designed to provide participants with both the theoretical background and practical skills required to generate and 3D print molecular models using **Proteopedia** and **3DP-Jmol**. Through guided exercises, participants will explore how 3D-printed macromolecular models can enhance teaching, communication, and research in the molecular life sciences.

To ensure that all attendees can fully benefit from the hands-on component of the session, several software tools need to be installed in advance, and a few files must be downloaded. The following document provides step-by-step instructions for:

- Required computer hardware;
- setting up the required software environment;
- creating an account on **Proteopedia**;
- preparing necessary files to use during the workshop.

Please make sure that you complete all setup steps before arriving at the session for a smooth experience.

1. Computer Hardware Requirements

Attendees must bring a personal **laptop computer** running Windows, macOS, or Linux. Most modern laptops will work perfectly well, so there is no need to worry about performance requirements. A **mouse** (wired or wireless) is **strongly recommended**, as precise model manipulation is difficult using a touchpad alone. And most importantly — don't forget to bring your **laptop charger**!

2. Required Software

During the workshop, we will use two software tools: **Jmol** and **Bambu Studio**. Please make sure that both are downloaded and installed before the session.

2.1. Jmol

Purpose: Jmol will be used to visualize molecular structures and generate 3D-printable files (.STL) using the 3DP-Jmol script.
Web-page: https://jmol.sourceforge.net/
Direct Download ink:
https://sourceforge.net/projects/jmol/files/Jmol/Version%2016.3/Jmol%2016.3.33/Jmol-16.3.33-binary.zip/download
Installation instructions:

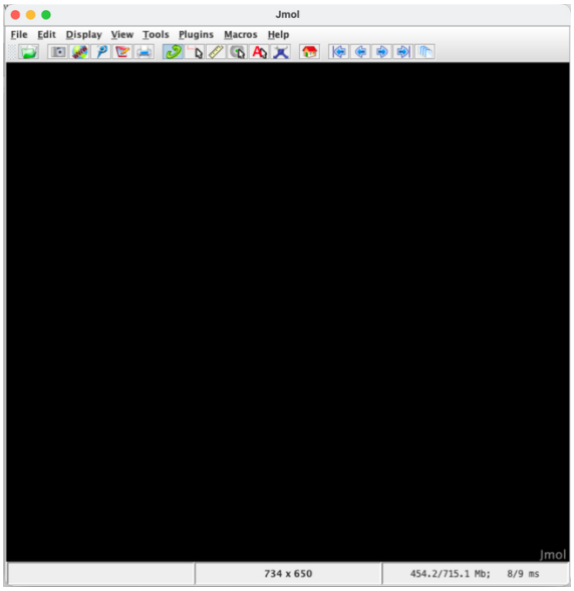
a. Click on the link above and save the **Jmol-16.3.33-binary.zip** file on your computer.

b. After the download finishes, unzip the folder to a location of your choice (for example, Desktop or Documents).

c. **Jmol does not require installation** — it runs directly from the unzipped folder.

d. To launch it, double-click **Jmol.jar** (on some systems, you may need to right-click and choose *Open with → Java*).

e. If Java is not installed, follow the prompt to download and install it from https://www.java.com .



Check if everything works: When Jmol opens, you should see an empty viewer window titled "Jmol" (as shown on the right). This means it is ready for use during the workshop.

2.2. Bambu Studio

Purpose: **Bambu Studio** is a slicer program used to prepare 3D printable models for the printer. It converts .STL files into printer instructions (.gcode).

Download link: https://bambulab.com/en/download/studio

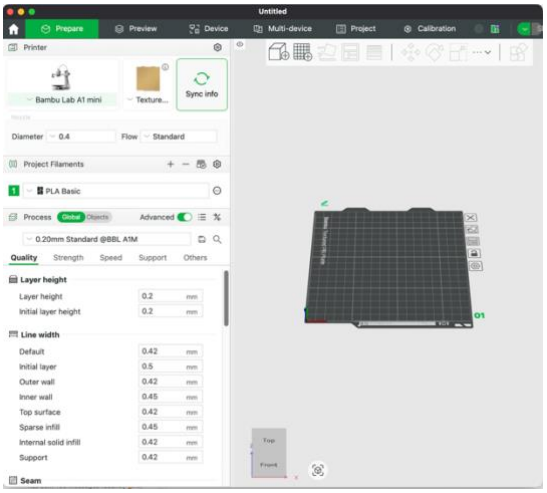
Installation instructions:

a. Visit the link above and select the installer for your operating system.

b. Download and run the installer following the on-screen instructions.

c. When first launched, run the **Configuration Wizard** and accept all default options, **except for the printer selection screen**:

- Select "Bambu Lab A1 Mini" (used for demonstration).



d. Once installation is complete, close the program — it will be configured later during the workshop.

Check if everything works: Launch the **Bambu Studio** from the Start Menu/Dock/Launcher. If prompted to register a MakerWorld account, simply cancel — registration is **not required** for ythis workshop. In the end You should see an window as shown on the right. This means it is ready for use during the workshop.

3. Creating a Proteopedia Account

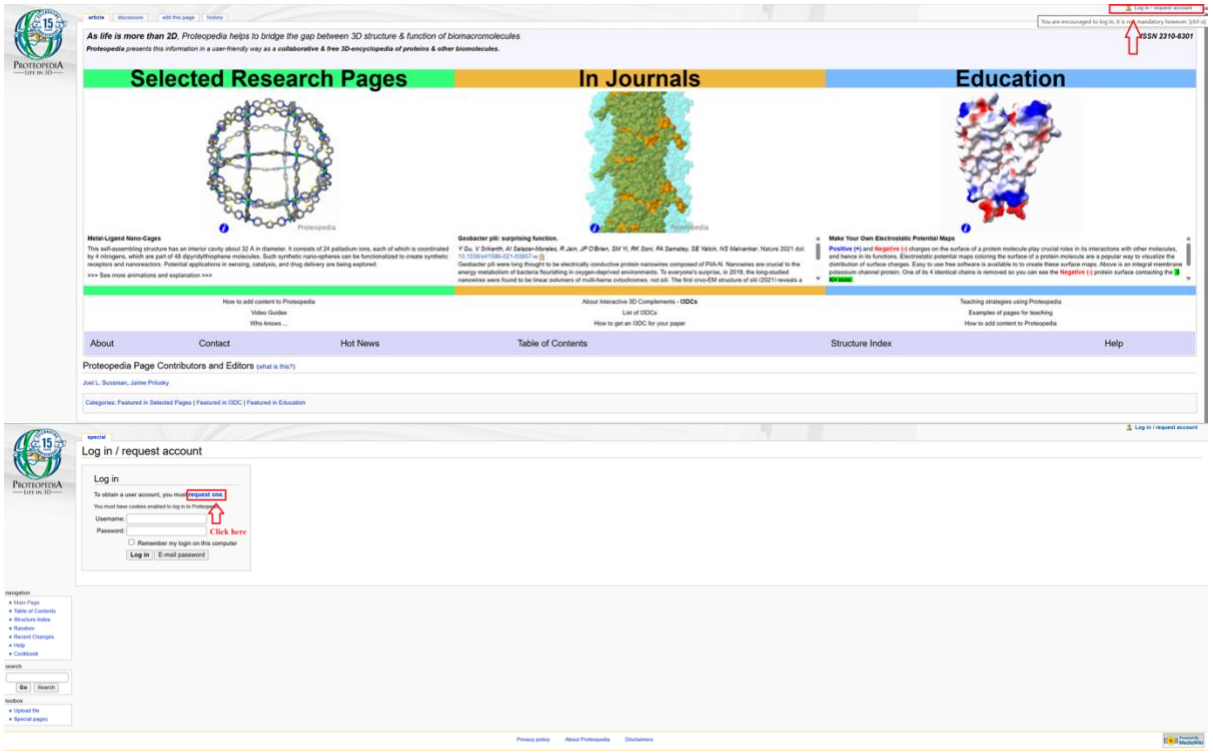
Purpose: Proteopedia will be used during the workshop to explore biomolecular structures interactively and to generate 3D-printable models directly in the browser through the Print3D tool. Creating an account beforehand will allow you to access all required tools and save your work.

3.1. Access Proteopedia

Open your browser and navigate to: https://proteopedia.org/wiki/index.php/Main_Page
You should see the Proteopedia main page, which includes navigation panels and featured molecular structures.

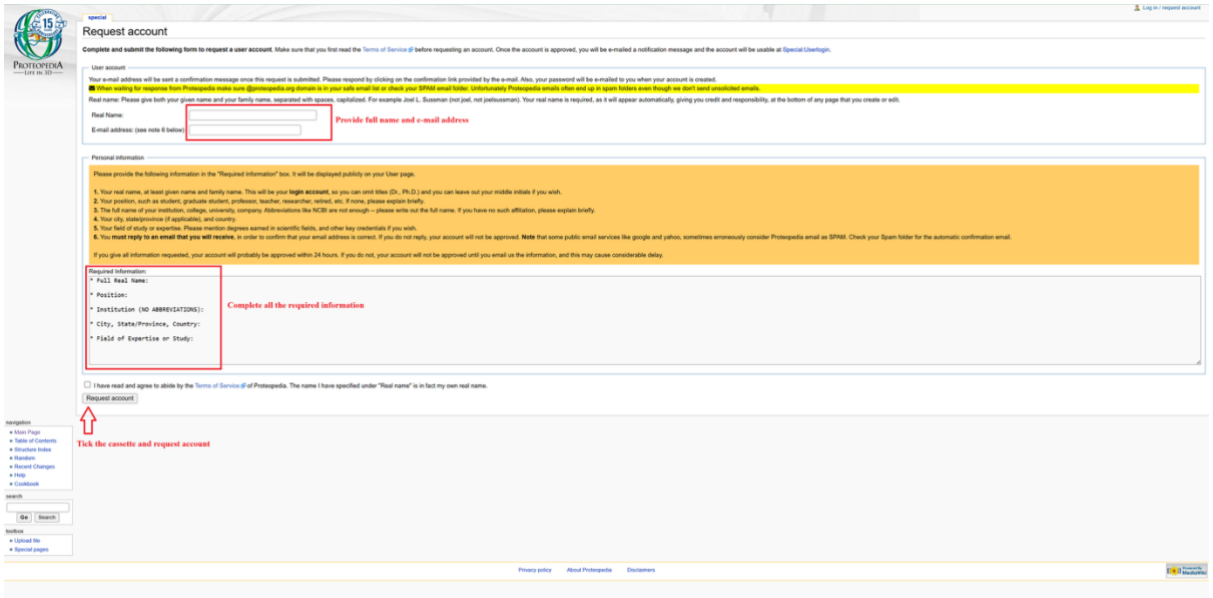
3.2. Create an Account

In the upper-right corner of the page, click "Request account" .



Complete the short registration form:

- Username: use your full name or institutional e-mail identifier;
- E-mail address: use a valid e-mail (you will receive an activation link);
- Real name and affiliation: please fill these fields accurately, as Proteopedia is an academic resource.



Submit the form and check your e-mail for the account activation link. Click the link in the e-mail to activate your account. Return to the Proteopedia homepage and log in using your credentials. **Tip:** If you do not receive the activation e-mail within a few minutes, check your Spam/Junk folder.

3.3. Verify Access

Once logged in, check that you can see your username displayed in the top-right corner.

4. Workshop Files and Folder Setup

Purpose: To ensure a smooth start during the practical part of the workshop, you will need two files:

- a configuration file for Bambu Studio (**.bbscfg**), and
- the 3DP-Jmol script **(.txt**), which will be used in Jmol to generate 3D-printable molecular models.

Both files are provided together in a single compressed archive (**.zip**) available for download from the link below.

4.1. Download the Workshop Package

Download link:
https://github.com/mariusmihasan/3DP-Jmol/raw/refs/heads/main/workshops/ICMB2025_Cluj_Romania/ICMB2025_Cluj_Romania.zip

Click on the link above to download the **ICMB2025_Cluj_Romania.zip** archive to your computer.

Save the file to a convenient location (for example, your Desktop or Documents folder).

4.2. Unpack and Store the Files

Once the download is complete, unzip the archive (usually by double-clicking it or right-clicking on it → Extract All).

You should now see two files:

Bambu Lab A1 mini 0.4 nozzle.bbscfg – configuration bundle to be imported later into Bambu Studio;

3DP-Jmol.v.alfa1.public.txt – the text file containing the script that will be used in Jmol.

Save both files in a clearly labeled folder (for example, 3D_Printing_Workshop_Files).

You will use them during the hands-on session, so make sure they are easy to locate.

4.3. Verify the Files

After extraction, confirm that both files are visible in your chosen folder and that the .txt file opens correctly in a text editor (e.g., Notepad, TextEdit). Do not modify their contents before the workshop.

All materials, including this guide and the slides used for the presentation and workshop are available at:
https://github.com/mariusmihasan/3DP-Jmol/tree/devel/workshops/ICMB2025_Cluj_Romania

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