

Setup PhysiCell on Apple

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2025-01-25



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SCHOOL OF INFORMATICS, COMPUTING, AND ENGINEERING



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Overview

This document describes the PhysiCell installation on Apple macOS.

- Homebrew GCC
- ImageMagick, FFmpeg

- PhysiCell

} Minimum
Setup

-
- Python3, iPython, pcdl
 - PhysiCell Studio

} Power User
Setup

-
- VSCode

} IDE
Setup



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Brew (Minimum Setup)

- Follow the instruction to download and install brew. Basically, copy the installation command, paste it into the Terminal (found at Applications / Utilities), and execute it.

<https://brew.sh/>

- In the Terminal, after you have brew install, run the following commands:

```
brew install gcc
```

```
brew install imagemagick
```

```
brew install ffmpeg
```

- If you installed brew in an uncommon place, make sure that homebrew/bin is under your PATH.



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PhysiCell (Minimum Setup)

Download PhysiCell and place it e.g in the ~/src folder.

```
mkdir -p ~/src  
cd ~/src  
git clone https://github.com/MathCancer/PhysiCell.git
```

Set the PHYSICELL_CPP environment variable.

```
g++ <TAB> <TAB> # something like g++-00 should pop up. use the exact version in the export command bellow!  
echo export PHYSICELL_CPP=g++-00 >> ~/.zshenv
```

Test the installation with the template sample project.

```
cd PhysiCell  
make template  
make -j8  
./project  
make jpeg  
make gif  
make movie
```



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Python3 part I (Power User Setup)

We will **generate a python3 environment with the default python installation**, where we will install all PhysiCell modelling related python libraries. We will name this python3 environment **physienv**, and we install it in the src folder where just before have installed PhysiCell. Here we demonstrate, how to generate the environment with the regular python. If you run mamba or conda, please adjust the commands accordingly.

- Generate a python environment named `physienv`:

```
cd ~  
python3 -m venv src/physienv
```

- Generate an alias for this environment for activation:

```
echo 'alias physienv="source /Users/<username>/src/physienv/bin/activate"' >> ~/.zshenv  
source ~/.zshenv
```



Python3 part II (Power User Setup)

- Activate the physienv python environment using the alias generated before:

```
physienv
```

- Check if the python and pip paths point to the installed location:



```
which python3
```

```
which pip3
```

- Install the iPython shell:

```
pip3 install ipython
```

- Install the PhysiCell Data Loader:

```
  pip3 install pcdl
```

PhysiCell Studio part I (Power User Setup)

- Download the studio, place it in the src folder, too, and install its python3 dependencies.

```
cd ~/src
```

```
git clone https://github.com/PhysiCell-Tools/PhysiCell-Studio.git
```

```
pip3 install -r PhysiCell-Studio/requirements.txt
```

- Put the studio under the environment's PATH:

```
cd ~/src/physienv/bin
```

```
echo 'python3 /Users/<username>/src/PhysiCell-Studio/bin/studio.py $*' > studio
```

```
chmod 775 studio
```

```
which studio
```

```
cd ~
```



PhysiCell Studio part II (Power User Setup)

- Test the installation with the template sample project.

```
cd ~/src/PhysiCell  
physienv  
studio
```

PhysiCell Studio should open and load the template PhysiCell_settings.xml file.

- Please check out the official PhysiCell Studio manual:

<https://github.com/PhysiCell-Tools/Studio-Guide/tree/main>



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MS Visual Studio Code part I (IDE Setup)

1. Install vs code, either from your operating system's app store or from <https://code.visualstudio.com/>

2. Generate a vs code profile for physicell:

File | New Window with Profile

Name: physicell

Icon: choose a cool one. e.g. 🔥.

Create

Add Folder: Home/src

click the profile icon (default is a gearwheel) on the left side bottom corner.

Profile > physicell

3. Open the Folder:

File | Open Folder... | src | Open

Yes, I trust the authors



MS Visual Studio Code part II (IDE Setup)

1. Install the official python and C++ extensions into the profile:

click the profile icon (default is a gearwheel) on the left side bottom corner.

Profile > physicell

Extension: Python Install

Extension: C/C++ Install

2. Link physienv (the python environment we generated above):

View | Command Palette... | Python: Select Interpreter |
Enter interpreter path... | Find... | src/physienv



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