Slides, videos, links and more:
https://github.com/physicell-training/01-Welcome-to-training

Module 01: What you need to code in PhysiCell

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PhysiCell Project

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PhysiCell is a C++ toolkit

- To actively develop PhysiCell models, you will need an appropriate C++ development environment.

- For models that aren't shared as cloud-hosted simulators, running PhysiCell-based projects requires compiling and running C++ codes.

- This module will help you create your own 64-bit C++ development environment.

PhysiCell development environment

- **Local install** (64-bit g++ environment with OpenMP support)
  - 64-bit g++ (with OpenMP) and standard command-line tools
  - Your choice of code editing
  - Ideal for long-term development

- **Cloud-hosted environment on nanoHUB.org**
  - Cloud-hosted workstation on nanoHUB.org
  - Ideal for use in short courses and classrooms

- **Virtual appliance (no longer supported)**
  - Pre-configured environment that runs in VirtualBox as a virtual machine
  - Use this while debugging your local install, but slow (and not frequently updated)

Local environment

- **Minimal tools**:
  - 64-bit g++ with OpenMP support (other compilers okay)
  - Make and zip/unzip (at command line)
  - Some sort of code editor (I just use a text editor.)
- **Setup tutorials**:
  - **Linux**: You probably already have it! Use your package manager as needed.
  - **Windows**: We wrote detailed instructions here, based on mingw-w64 and msys:
    http://www.mathcancer.org/blog/setting-up-a-64-bit-gcc-environment-on-windows/
  - **OSX**: We wrote a tutorial using Homebrew:
    - *Note:* OSX has "gcc" which is actually llvm/clang without OpenMP support
    - *Note:* OSX users must set an environment variable. So *please do* use the tutorial
      http://www.mathcancer.org/blog/setting-up-gcc-openmp-on-osx-homebrew-edition/

nanoHUB Account

- These tutorials use cloud-hosted PhysiCell models on nanoHUB.org.
- nanoHUB is **free**, but it requires a one-time registration.
- **Steps**:
  1. Visit https://nanohub.org/register
  2. Choose "Sign in with Google"
  3. Choose a Google account
  4. Click "No" (so it doesn't try to associate with some other nanoHIB account)
  5. Finish filling in details, and you're done!
  6. Use your google account to sign in in the future.

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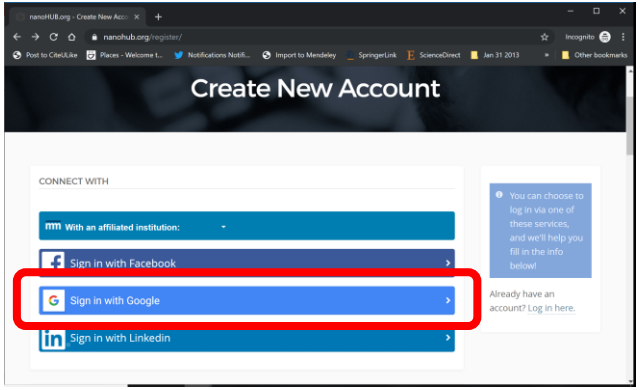

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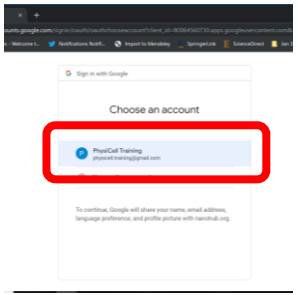

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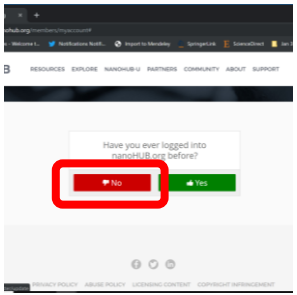
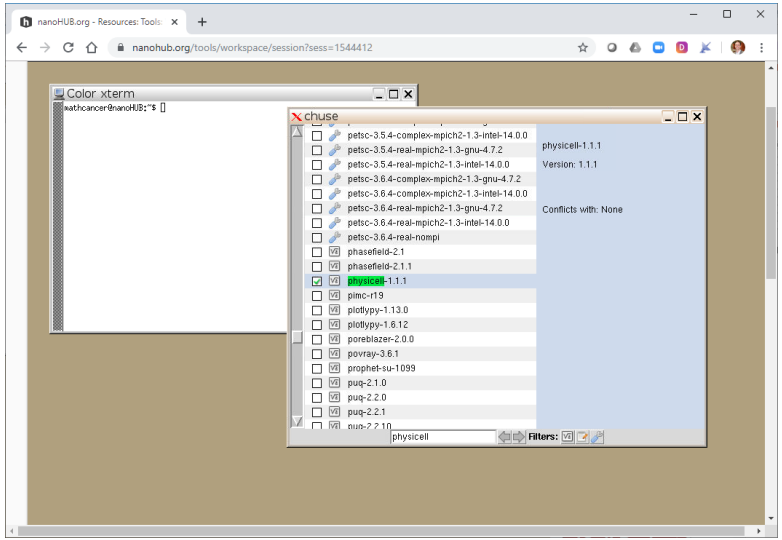


Cloud-hosted environment (1)

- nanoHUB created the **workspace** tool to allow online development
- We created a specialized *PhysiCell* environment in workspace



1. Request to join the physicelldev group: https://nanohub.org/groups/physicelldev
2. Go to the workspace tool: http://nanohub.org/tools/workspace
3. Start the tool
4. Select the physicell environment using "chuse"
   a. Right-click the desktop
   b. Select "chuse"
   c. Type "physicell" in the bottom search bar
   d. Select physicell-x.y.z (currently 1.1.1)
   e. close chuse and all xterm windows
   f. open a new xterm window, and get PhysiCell by typing "get_PhysiCell.sh" and follow the prompts

Cloud-hosted environment (2)

- After running the script, you have a full Linux-based dev environment:
  - Latest PhysiCell is in ~/PhysiCell
  - Also installed:
    - 64-bit g++ with OpenMP
    - Anaconda / Python 3.x
    - ImageMagick (to batch edit images)
    - geany (text editor)
    - gedit (text editor)
    - nautilus (file browser)
    - mirage (to view images)
    - mplayer (to play videos)
    - povray (for 3D raytracing)

Next steps

Super fast: Please proceed to 02
(How to use a PhysiCell App on nanoHUB)

Intermediate: Please proceed to 02
(How to use a PhysiCell App on nanoHUB)

Full training: Please proceed to 02
(How to use a PhysiCell App on nanoHUB)

link: https://github.com/physicell-training/02-How-to-nanoHUB

More materials: https://github.com/physicell-training/master-list

Credits

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Slides: Paul Macklin

Recording: Paul Macklin

Post-production: Paul Macklin, Drew Willis*, Kali Konstantinopoulos*

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* denotes undergraduate researcher

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