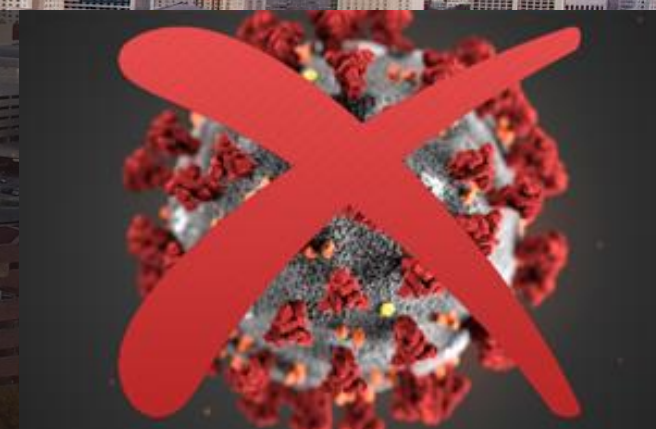




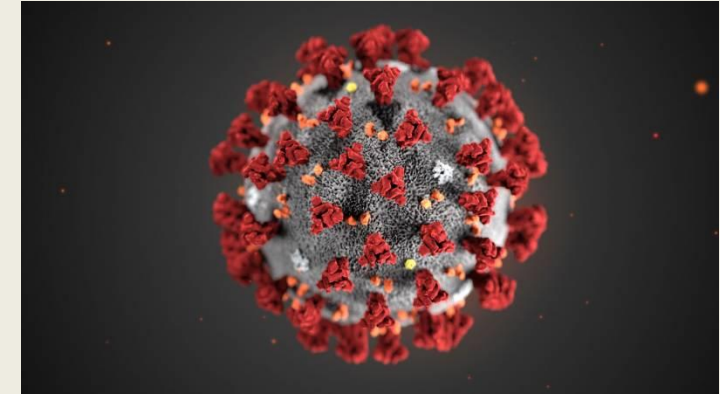
# FOLDING@HOME

Volunteer Computing – Fight against COVID-19!



# What is Folding@Home?

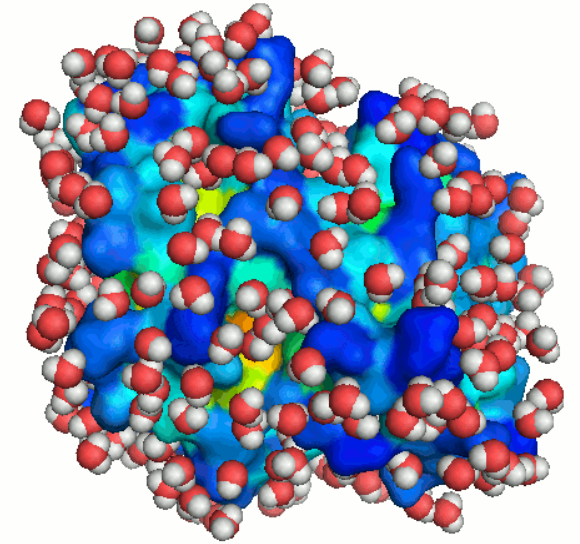
- Proteins are molecular machines that perform functions we associate with life. They:
  - Sense the environment (e.g. in taste and smell)
  - Perform work (e.g. muscle contraction and breaking down food)
  - Play structural roles (e.g. your hair)
- **Viruses also have proteins** that they use to suppress our immune systems and reproduce themselves.
  - It is crucial to understand how these viral proteins work to **design therapeutics** to stop them
  - Seeing the protein in action is important because it captures valuable information that is inaccessible by any other means





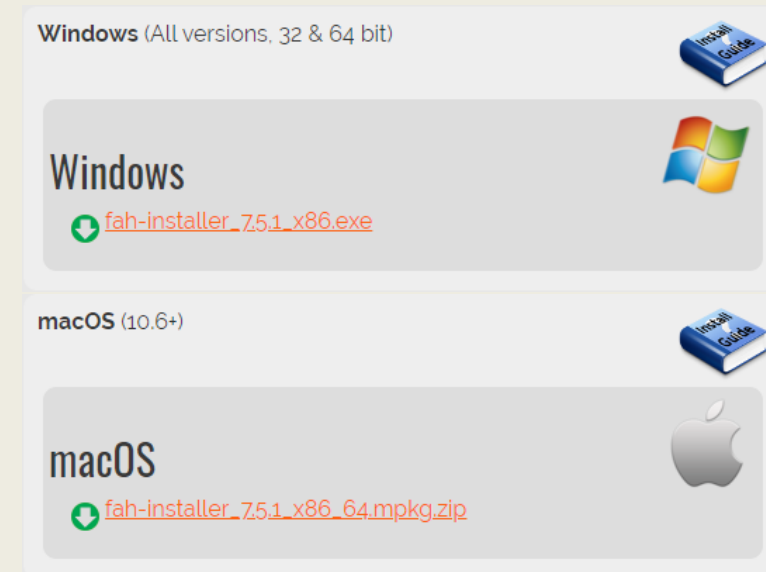
# What is Folding@Home?

- Using **computer simulations** to understand proteins' moving parts can help uncover alternative structures that may be the key to **discovering a new therapeutic**.
  - However, the computer simulations require extensive computing power and billions of simultaneous calculations
- By using **Folding@Home**, you can lend your graphics processing unit (GPU) and start putting your computing power toward finding a **cure for COVID-19!**
  - Although a single user's computer is a small contribution, combination of many users' computers makes a significant impact on advancing scientific knowledge



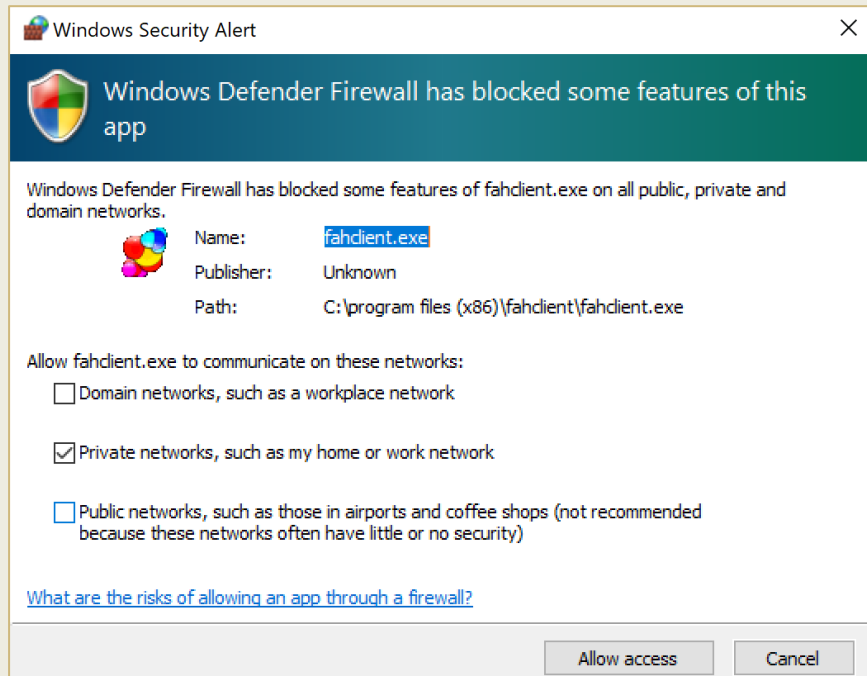
# How to start?

- Download the Folding@Home installer from the following link:
  - <https://foldingathome.org/alternative-downloads/>
  - Pick the installer that are suitable for your operating system
- Double click the installer (e.g., *fah-installer\_7.5.1\_x86.exe*)
  - Follow the installation steps

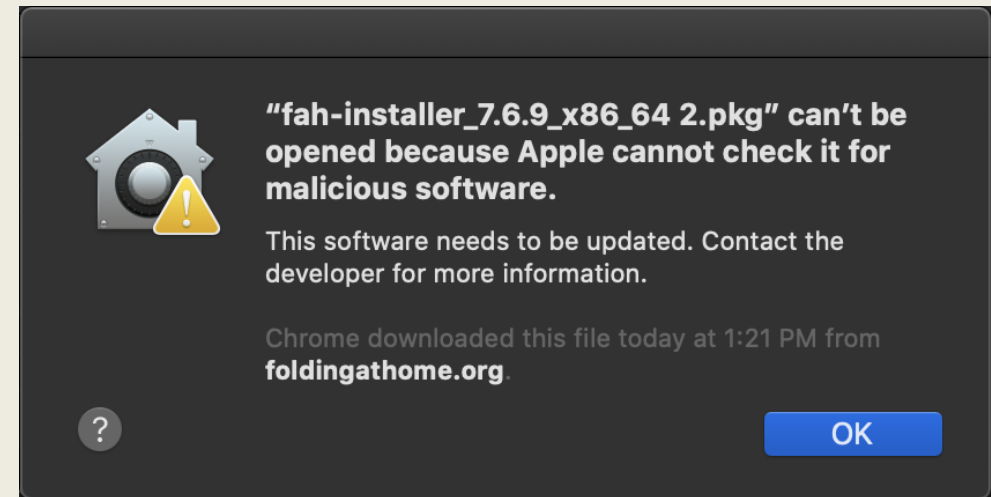


# How to start? (cont.)

- Note that you might need to allow your firewall or force open the software (on Mac) to be able to install it depending on your security settings:



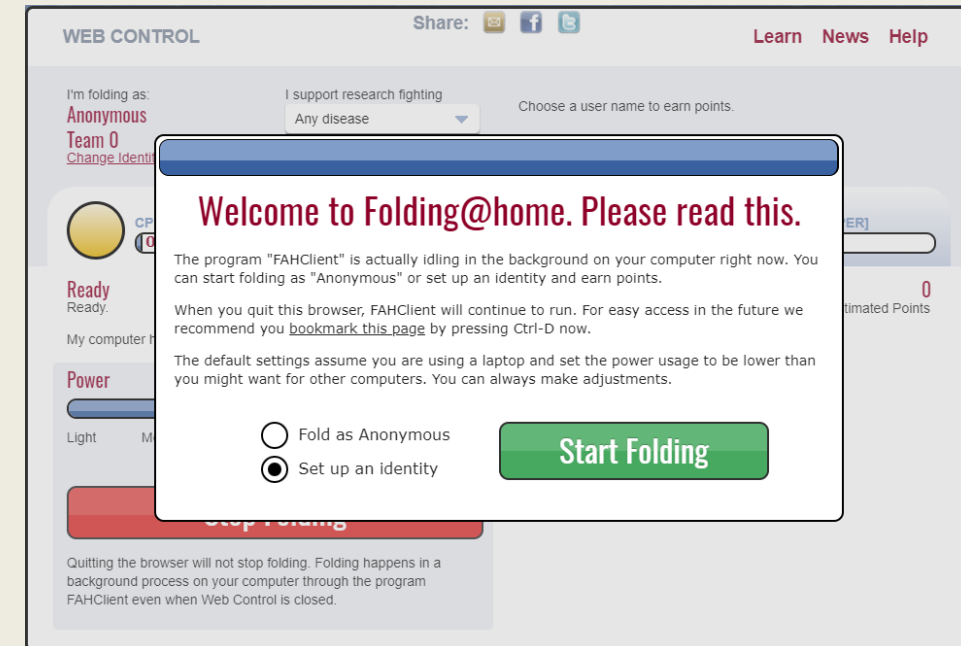
Click **Allow Access** to install the client






Mac has **Force Open** option, which you can perform by holding down the **Command+Option** keys

# Start Folding

- After you install it, you will be directed to the welcome page.
- Welcome page is a web client.
- You will **set up your account** and **join CU Denver Team** here:
  - Select “Set up an Identity”
  - Click “Start Folding”



WEB CONTROL


Share:   

Learn News Help

I'm folding as:  
**Anonymous**  
**Team 0**  
[Change Identity](#)

I support research fighting  
Any disease

Choose a user name to earn points.



Ready

Ready.

My computer h

Power

Light M

Stop Folding

Quitting the browser will not stop folding. Folding happens in a background process on your computer through the program FAHClient even when Web Control is closed.

ER]

0

Estimated Points

## Welcome to Folding@home. Please read this.

The program "FAHClient" is actually idling in the background on your computer right now. You can start folding as "Anonymous" or set up an identity and earn points.

When you quit this browser, FAHClient will continue to run. For easy access in the future we recommend you [bookmark this page](#) by pressing Ctrl-D now.

The default settings assume you are using a laptop and set the power usage to be lower than you might want for other computers. You can always make adjustments.

☐ Fold as Anonymous

☒ Set up an identity

Start Folding

7

# Start Folding (cont.)

- You will set up your account and join CU Denver Team on this screen:
  - Enter your name and surname
    - For example: ErsinDincelli
      - do not change your name later
      - if you do it will reset your points
  - Enter the following details to join CUDenver
    - Team #: 256041
    - Passkey: cc7efea5158b0d2acc7efea5158b0d2a

The screenshot shows a web browser window titled 'WEB CONTROL' with a 'Share' button and links for 'Learn', 'News', and 'Help'. A modal dialog box titled 'Change Identity' is open. It contains three input fields: 'Name' (with the value 'ErsinDincelli'), 'Team Number' (with the value '256041'), and 'Passkey' (with a masked value '\*\*\*\*\*'). Below the 'Name' field, there is explanatory text: 'If you choose a name, you can earn points for completing work units (WU). Note: All fields are optional.' Below the 'Team Number' field, there is text: 'If you have joined a team you should enter your team number above. Then the points you earn to be added to your team's total. For more information about teams and points see the [Stats Page](#).' Below the 'Passkey' field, there is text: 'Passkeys are used to add an extra level of security for those competing for points. Getting a passkey will also allow you to earn bonus points for completing work early. [Get a Passkey](#). For more information see [Passkey FAQ](#).' At the bottom of the dialog are 'Cancel' and 'Save' buttons. In the background, a sidebar shows 'I'm folding' with a green circular icon, 'ErsinDincelli Team 256041', and a '736 d Points' counter. A footer note at the bottom of the browser window states: 'Quitting the browser will not stop folding. Folding happens in a background process on your computer through the program FAHClient even when Web Control is closed.'

WEB CONTROL Share: [icons] Learn News Help

I'm folding  
ErsinDincelli  
Team 256041  
Change

Running  
All systems  
My computer  
Power  
Light

736 d Points

### Change Identity

|  |                                     |                                    |
|--|-------------------------------------|------------------------------------|
| Name                                       | Team Number                         | Passkey                            |
| <input type="text" value="ErsinDincelli"/> | <input type="text" value="256041"/> | <input type="text" value="*****"/> |

If you choose a name, you can earn points for completing work units (WU).  
*Note: All fields are optional.*

If you have joined a team you should enter your team number above. Then the points you earn to be added to your team's total.  
For more information about teams and points see the [Stats Page](#).

Passkeys are used to add an extra level of security for those competing for points. Getting a passkey will also allow you to earn bonus points for completing work early.  
[Get a Passkey](#).  
For more information see [Passkey FAQ](#).

Cancel Save

Quitting the browser will not stop folding. Folding happens in a background process on your computer through the program FAHClient even when Web Control is closed.

8



I'm folding  
ErsinDin  
Team 2  
[Change](#)



Running  
All syste

My comp

Power



Light

## Change Identity

Name

If you choose a name,  
you can earn points for  
completing work units  
(WU).

*Note: All fields are  
optional.*

Team Number

If you have joined a team  
you should enter your  
team number above.  
Then the points you earn  
to be added to your  
team's total.

For more information  
about teams and points  
see the [Stats Page](#).

Passkey

Passkeys are used to add  
an extra level of security  
for those competing for  
points. Getting a passkey  
will also allow you to earn  
bonus points for  
completing work early.  
[Get a Passkey.](#)

For more information see  
[Passkey FAQ](#).

Cancel

Save

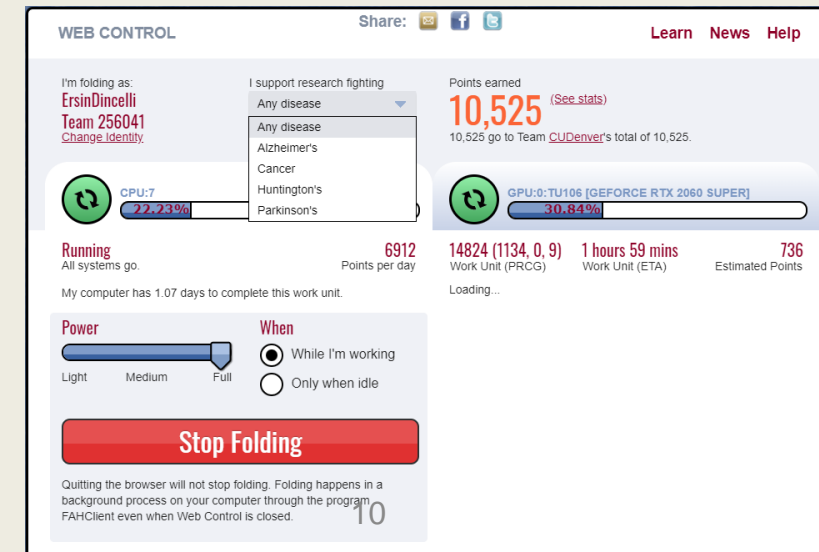
Quitting the browser will not stop folding. Folding happens in a  
background process on your computer through the program  
FAHClient even when Web Control is closed.

736  
d Points



# Start Folding (cont.)

- This is it! Now you can donate your idle computer power for scientific research!
- The main screen shows the details of folding.
  - To help COVID-19 research, you need to select "**Any disease**" in the "**I support research fighting**" drop down menu.
- Spend some time on the main screen to become familiar with the options:
  - Adjust how much computer power you want to assign by using the "**Power**" slider
  - Click "**CUDenver**" to see the leaderboard!
  - Click "**Learn**", "**News**", and "**Help**" to learn more about Folding@Home



## WEB CONTROL

Share:   

[Learn](#) [News](#) [Help](#)

I'm folding as:  
**ErsinDincelli**  
**Team 256041**  
[Change Identity](#)

I support research fighting

Any disease

Any disease

Alzheimer's

Cancer

Huntington's

Parkinson's

Points earned

**10,525** [\(See stats\)](#)

10,525 go to Team **CUDenver**'s total of 10,525.



CPU:7

22.23%



GPU:0: TU106 [GEFORCE RTX 2060 SUPER]

30.84%

**Running**

All systems go.

**6912**

Points per day

**14824 (1134, 0, 9)**

Work Unit (PRCG)

**1 hours 59 mins**

Work Unit (ETA)

**736**

Estimated Points

My computer has 1.07 days to complete this work unit.

Loading...

**Power**



Light

Medium

Full

**When**



While I'm working



Only when idle

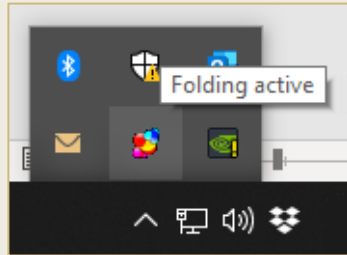
**Stop Folding**

Quitting the browser will not stop folding. Folding happens in a background process on your computer through the program FAHClient even when Web Control is closed.

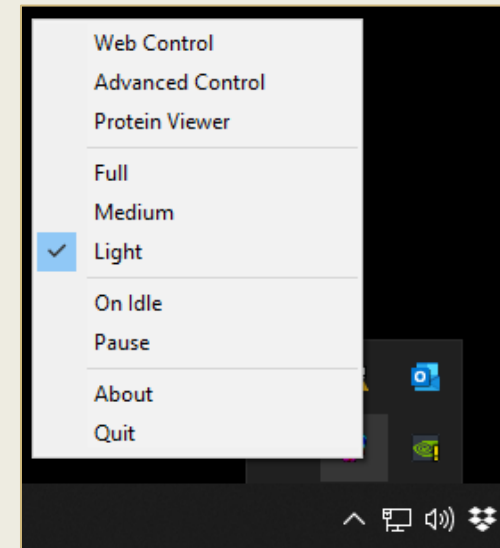


# Folding@Home on System Tray

- The web client lets you start using with the application easily.
  - You can close your browser any time and still continue folding!
- Folding@Home application (FAHClient) is actually idling in the background on your computer right now:



- You can **right click** on the icon and reach some of its settings:
  - **Web Control** opens up the web client.
  - **Advanced Control** lets you see more details about the folding process
  - **Protein Viewer** shows the snapshot of the simulation you are helping with
  - You can also change the **power** you are donating and **pause** the application



# Advanced Control

FAHControl - Folding@home Client Advanced Control

Configure Preferences Exit About

**Clients**

| Name  | Status | Address   |
|-------|--------|-----------|
| local | Online | 127.0.0.1 |

Client: local **Online** Running

Status System Info Log

Folding Power: [Slider from Light to Full]

**Identity**

Name [ErsinDincelli](#) Team [256041](#)

Points Per Day: 1096318

**Folding Slots**

| ID | Status  | Description |
|----|---------|-------------|
| 00 | Running | cpu:7       |
| 01 | Running | cpu:0:TU106 |

**Work Queue**

| ID | Status  | Progress | ETA      |
|----|---------|----------|----------|
| 00 | Running | 37.91%   | 1 h 12 m |
| 01 | Running | 47.20%   | 1 h 12 m |

**Selected Work Unit**

PRCG 14405 (0, 311, 12)

Folding Slot ID 00

Work Queue ID 00

Status **Running**

Progress: 37.91%

ETA 1 hours 12 mins

Base Credit 700

Estimated Credit 5579

Estimated PPD 68865

Estimated TPF 1 mins 10 secs

Project [14405](#)

FahCore 0xa7

Waiting On

Attempts 0

Next Attempt Unknown

Total Estimated Points Per Day: 1096318

UTC: 2020-03-30T05:45:49Z



# Protein Viewer



The screenshot displays the Protein Viewer interface. The central feature is a 3D molecular model of a protein, represented by a cluster of white, red, and blue spheres, overlaid on a dark blue world map. The interface includes several panels:

- Current Work Unit** (top left):
  - Project:
  - FahCore:
  - Progress:
  - Time Left:
- Donor** (top right):
  - Name:
  - Team:
- Status** (bottom left):
  - Snapshots: 1.1 of 4
  - Connection: Trying
  - Protein: Demo
  - Slot:
- Navigation and Logos** (bottom right):
  - A red lifebuoy icon.
  - A group of people icon.
  - A "Folding@home" logo with a blue arrow.
  - The Stanford School of Medicine logo.

# References

1. [Nvidia's calling on gaming PC owners to put their systems to work fighting COVID-19](#)
2. [Nvidia wants PC gamers to use their rigs to fight coronavirus](#)
3. [How to fight coronavirus with Folding@Home and a gaming PC](#)
4. [People Running Folding@Home Accidentally Created The World's Biggest Supercompute](#)
5. [Linus Tech Tips - Here's how you can help find a cure for COVID-19!](#)



# Questions?

- Feel free to email me!
  - [ersin.dincelli@ucdenver.edu](mailto:ersin.dincelli@ucdenver.edu)







University of Colorado **Denver**



**CU IN THE CITY**

Thank you