CCB JUPYTER NOTEBOOKS

Jupyter on PC	2
Downloading the CCB Jupyter script	
Using the CCB Jupyter script	3
Jupyter on Mac	5
Downloading the CCB Jupyter script	5
Using the CCB Jupyter script	5
If you get disconnected	8
Closing your Jupyter session	8
Changing working directory	9
Adding CCB modules to Jupyter	.10
Advanced User Quickstart	.12

JUPYTER ON PC

DOWNLOADING THE CCB JUPYTER SCRIPT

- 1. Open this link: https://datashare.molbiol.ox.ac.uk/public/files/jupyter.bat
- 2. Press Control + S to open the Save dialogue
- 3. Change Save as type: to All files (*.*)
- 4. Under File name, delete the text. Do not skip this step.
- 5. Under File name, name the file jupyter.bat

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\leftarrow C	Added securi	ity https:/	//datashare.mo	olbiol.ox.ac.uk/	oublic/files/jupyter	r.bat	A" to	ר_		🜔
@echo off setlocal Enal cls	C Save As								×	
if not exist mkdir %LOC/	$\leftarrow \rightarrow \checkmark \uparrow$	↓ > Dov	vnloads		~	С	Search Downloads		Q	
)	Organise - New	v folder						≣ •	?	
powershell.e: jupyter\conn	> 📥 Duncan - Pers	on Na	ime			Dat	e modified	Туре		ATA%\ccb-
start %LOCAL/		- 1			No items match your	search.				
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	_							1	₽	
	File <u>n</u> ame:	jupyter.bat							~	
	Save as <u>t</u> ype:	All files (*.*)							~	
	∧ Hide Folders						Save	Cance		

- 6. Press Save
- 7. Use File Explorer to find the file you just saved. It should look like this, with a small gear icon:

📧 jupyter

8. If it looks like this, with a text document icon then you have skipped step 4 or done the steps out of order, and you'll need to delete the file and start again:

jupyter.bat

USING THE CCB JUPYTER SCRIPT

- 1. Double click the file to run it
- 2. The first time you run the script you may get a warning from Windows Defender Smart Screen. If you do, click More info and then Run anyway:

Windows protected your PC	Windows protected your PC
Microsoft Defender SmartScreen prevented an unrecognised app from starting. Running this app might put your PC at risk.	Microsoft Defender SmartScreen prevented an unrecognised app from starting. Running this app might put your PC at risk. Application: jupyter.bat Publisher: Unknown publisher
Don't run	Run anyway Don't run

- 3. A black window will briefly flash on the screen as the program downloads the latest version, and then a command prompt will appear.
- 4. The first time you run the script you'll be prompted to enter your CCB username. Do this, and press Enter:



5. The first time you run the script you'll get a warning that the authenticity of the host can't be established. Type yes and press Enter:



6. Enter your CCB password (or your SSH key password if you have already set up SSH keys):



- 7. The message Initialising Jupyter... will appear
- 8. When Jupyter is ready, the message ...done will appear, followed by instructions on how to open your notebook:

C:\WINDOW5\system32\cmd. × +	~	-	×
This key is not known by any othe Are you sure you want to continue	connecting (yes/no/[fingerprint])? yes er.molbiol.ox.ac.uk' (ED25519) to the list of known hosts.		
*****	**		
* CCB Jupyter Notebook ***********************************			
* * Notebook available here: *			
* ++ * http://localhost:8888 * ++	* * * *		
* To open the link: * Control + click (PC) * OR	* * *		
 Select the text and then Control ^ + click and choose Open Link (MAC) 			
* * DO NOT CLOSE THIS WINDOW * UNTIL YOU FINISH WORKING!			
* ************************************	* ***		

- 9. Following the instructions, hold down Control and left click the link http://localhost:8888 to open your notebook in your default browser. If you want to use a different browser, you can cut and paste the URL.
- 10. Do not close the command prompt
- 11. Switch to your browser to access your notebook:

Home Page - Select or create a n × +	- • ×
\leftarrow C (i) localhost:8888/tree?	A to I to 🍪 … 🜔
💭 Jupyter	Quit
Files Running Clusters Select items to perform actions on them.	↓ Upload New → C
	Name Last Modified File size
🗆 🗅 data	2 years ago
C Desktop	2 years ago
Documents	3 months ago
	a vear ann

JUPYTER ON MAC

DOWNLOADING THE CCB JUPYTER SCRIPT

- 1. Open this link: https://datashare.molbiol.ox.ac.uk/public/files/jupyter.command
- 2. Press Command + S to open the Save dialogue

	🗎 datashare.molbiol.ox.ac.uk	C	
<pre>#1/bin/bash CONFDIR=\$HOME/.ccb-jupyter CONFFILE=\$CONFDIR/config.txt if [1 -d \$CONFDIR]; then mkdir \$CONFDIR]; then fi curl -Ss -o \$CONFDIR/connect.sh https://dat. chmod 700 \$CONFDIR/connect.sh exec \$CONFDIR/connect.sh</pre>	share.molbiol.ox.ac.uk/public/files/connect.sh Save As: upyter Tags: Where: Downloads		
	Format: Page Source S Saves only the source text of this page.	Save	

- 3. Make sure your Downloads folder is selected and press Save
- 4. If a dialogue box appears asking to Save Plain Text, choose Don't append
 5. Open a terminal window (see
- https://support.apple.com/en-gb/guide/terminal/apd5265185d-f365-44cb-8b09-71a064a42125/mac)
- 6. Run the command chmod +x \$HOME/Downloads/jupyter.command
- 7. Close the terminal window

USING THE CCB JUPYTER SCRIPT

 The first time you run the script, you will need to Control + click it and choose Open:

000	< > 0	Downloads	
Favourites			
😭 dtooke	12-1		
AirDrop		Open	
Desktop	SHELL	Open With	>
Ownloads	jupyter.com	Move to Bin	
iCloud		Get Info	

 This will bring up a warning dialogue. Click Open:



3. The first time you run the script you'll be asked to enter your CCB username. Do this then press Enter:



4. The first time you run the script you'll get a warning that the authenticity of the host can't be established. Type yes and press Enter:

5. Enter your CCB password (or your SSH key password if you have already set up SSH keys):

```
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'jupyter.molbiol.ox.ac.uk' (ED25519) to the list of k
nown hosts.
dtooke@jupyter.molbiol.ox.ac.uk's password:
```

- 6. The message Initialising Jupyter... will appear. When Jupyter is ready, the message ...done will appear, followed by instructions on how to open your notebook:
- 7. Following the instructions, select the link with your mouse/trackpad, Control + click it, and choose Open Link to open your notebook in your default browser. If you want to use a different browser, you can copy and paste the URL:
- 8. Do not close the command prompt

ear. ppear, ************************************
opear,done
* CCB Jupyter Notebook *

* CCB Jupyter Notebook *

* *
* Notebook available here: *
* *
* ++ *
* http://localhc * + Quick Look Link
* + Open Link
* To open the
* Control + cli Search with DuckDuckGo
* OR
* Select the tex Copy
* Control ^ + cli ^{Paste}
* Open Link (Mark
*
* DO NOT CLOSE TH Mark as Bookmark
* UNTIL YOU FINIS Unmark
*
******************* Show Inspector
Services >

9. Switch to your browser to access your notebook:

💭 Jupyter	Q
Files Running Clusters	
Select items to perform actions on them.	Upload New -
0 - 1	Name 🗣 Last Modified File si
🗆 🗅 data	2 years ago
Desktop	2 years ago
Documents	3 months ago
Downloads	a year ago
D jupyter	an hour ago
C keep	21 days ago
La Music	3 years ago
obds_conda	10 days ago
Pictures	3 years ago
Public	3 years ago
C rpmbuild	6 months ago
source	a month ago

IF YOU GET DISCONNECTED

1. If at some point you become disconnected from the server, perhaps due to Wi-Fi or VPN issues, your notebook will become unresponsive and, after a short period of time, change to something like this:

	℃ +	lome	× +	-	
\leftarrow	С	i	localhost:8888/tree	A* ta 🚺 ta 🍪	🜔
		💭 Ju	pyter	Quit	
		Files	Running Clusters		
		Select ite	ms to perform actions on them.	Upload New 🗸 🖊	
		0	▼ 1	Name 🔶 🛛 Last Modified 🔹 File size	
				Server error: error	

2. Simply leave your browser open, reconnect your Wi-Fi and/or VPN, and wait for a little while. The CCB Jupyter script will automatically reconnect you to your notebook and the session will continue in your browser where you left off.

CLOSING YOUR JUPYTER SESSION

- 1. When you're finished, close the browser window. Do not use the Quit option in your Jupyter session unless you want to end it completely. Then close the command window.
- 2. From this point on, you can follow the steps above to run the script and log in again. Your Jupyter session will be running where you left off (unless you chose Quit as described above).

CHANGING WORKING DIRECTORY

By default, Jupyter has been basing your session at \$HOME, but eventually you will want to work within specific project folders. To change Jupyter Notebook to a project folder requires simple command-line configuration.

- 1. Close Jupyter Notebook if open.
- 2. Perform a direct SSH login into CCB cluster. See our online documentation for SSH instructions.
- 3. Edit the text file named: \$HOME/.jupyter_notebook_config.py



4. Enter these two lines into file, where 2nd is the folder path of your choice: c = get_config()

```
c.NotebookApp.notebook dir = '/project/sysadmin/aowenson/JupyterFolder'
```

• • •		— aowenson@imm-lo	ogin1: ~ — ssh ccb	— 74×7
	me/a/aowenson/.	jupyter/jupyter	_notebook_con	fig.py
c = get_co				
c.Notebook	App.notebook_di	r = '/project/s	ysadmin/aowen	son/JupyterFolder'
AG Help	^O Write Ou	t AW Where Is	^K Cut	^T Execute
^G Help ^X Exit	AB Read Fil	t ^W Where Is e ^\ Replace	^U Paste	^J Justify

- 5. Save file: Ctrl+X, Y, Enter
- 6. Launch Jupyter as normal. You should be greeted with the contents of your folder:

💭 jupyter	Quit
Files Running Clusters	
Select items to perform actions on them.	Upload New - 2
0 - 1	Name Last Modified File size
rew-folder-for-Jupyter.txt	a minute ago 0 B
	— aowenson@imm-login1: ~ — ssh ccb — 74×7
wenson@imm-login1:~\$ ls w-folder-for-Jupyter.tx	/project/sysadmin/aowenson/JupyterFolder/ t

ADDING CCB MODULES TO JUPYTER

Jupyter Notebook looks in a specific file for extra modules to load: <code>\$HOME/jupyter/ccb.modules</code>. You can edit this in Jupyter.

1. Open your Jupyter session as normal, then click on the $\verb"jupyter"$ folder to open it

Home Page - Select or create a n × +	X
← C (i) localhost:8888/tree?	A to I ta 🍪 … 🕩
💭 jupyter	Quit
Files Running Clusters Select items to perform actions on them.	Upload New • 2
0 - 1	Name Last Modified File size
C C data	2 years ago
C Desktop	2 years ago
C Documents	3 months ago
Downloads	a year ago
D jupyter	6 minutes ago
C 🗅 keep	21 days ago

2. Click New > Text File:

D jupyter/ × +		_	\times
← C (i) localhost:8888/tree/jupyter A [®] s	6 6 4		 b
💭 Jupyter	Qu	iit	
Files Running Clusters			
Select items to perform actions on them.	Upload New -	C	
	Notebook:		
0 🗸 🖿 / jupyter Name 4	Python 3 (ipykernel)	е	
۵	Other:		
D jupyter-init.sh	Text File Folder) В	
İii jupyter.bat		kВ	
jupyter.command	2 days ago 1.35	kВ	

3. At the top of the screen, click untitled.txt:

	jupyter/		×	🗋 untitled.txt - Jupyte	er Text Editor	×	+					-	×
\leftarrow	C (i	localhost:8888	/edit/ju	pyter/untitled.txt				A»	ô	•	∠ే≡		 b
	💭 Ju	pyter un	itled.	Xt✔ a minute ago									•
	File	Edit View	La	nguage							Plai	n Text	
	1												

4. Name the file ccb.modules and press OK:

← C ① localhost:8888/edit/jupyter/untitled.txt A ^N S ● S ●	
Jupyter until de de la superiore ago	
File Rename File × Text	
1 Enter a new filename:	
ccb.modules	
Cancel OK	

5. Add the modules you want to load one per line. For this example, I'll use STAR and R-cbrg:



6. Choose File > Save:

	jupyter/			×	🗅 *c	ccb.module	les - Jupy	ter Text	Edito 🗙	+						-	×
\leftarrow C	i	localhos	t :8888/e	dit/jup	yter/cc	cb.modul	les				A	1 2	õ	6	₹=	۱	 b
	💭 ju	pyter	ccb.	modu	ules	4 minut	tes ago										*
	File	Edit	View	Lang	guage										Plai	n Text	
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	Save																
	Rena																
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7. Close the tab

8. Back in the main Jupyter tab, choose Quit:

Home Page - Select or create a n × +	- • ×
\leftarrow C (i) localhost:8888/tree?	A to 🚺 🕼 👘 👘 🕕
💭 Jupyter	Quit
Files Running Clusters	
Select items to perform actions on them.	Upload New 🗸 💈
	Name Last Modified File size
🗋 🗅 data	2 years ago
Desktop	2 years ago
Documents	3 months ago

- 9. Close the tab
- 10. Close the command prompt, then open Jupyter again using the script as normal
- Your new modules are automatically loaded (note that many modules do not produce visible output, though R-cbrg does):

🖭 C:\WINDOWS\system32\cmd. × + -	

* Enter your password if prompted	
Initialising Jupyter	
Loading R-cbrg/current Loading requirement: R-base/4.3.	0
done	

* CCB Jupyter Notebook	

* Nebelsels and TelsTelsteines	size .

12. Your modules are now available for use within Jupyter. We can verify this from a notebook using the os.system command:

In [1]	import os	
In [2]	: os.system("/usr/bin/bash which STAR")	
	/package/rna-star/2.7.8a/bin/STAR	
Out[2]	: 0	
In [3]	: os.system("/usr/bin/bash which R")	
	/package/R-base/4.3.0/bin/R	
Out[3]	: 0	
In []		

ADVANCED USER QUICKSTART

The Jupyter notebook is automatically managed by the server. The scripts are a wrapper around an SSH tunnel combined with some configuration management and an auto-updater. If you want to run your own tunnel, the command used by the script is:

ssh -T -L 8888:%CCB_HOME%/jupyter/ccb.sock %CCB_USER%@jupyter.molbiol.ox.ac.uk

where %CCB HOME% must be the full path to your CCB home directory and %CCB USER% is your CCB username.