

Running Jupyter Notebooks using Binder



OpenMendel Workshop
ASHG Annual Meeting 2020
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Why use Jupyter Notebooks?

Reproducible Research. Can annotate code. Notebooks can be shared easily among researchers.

Jupyter = Julia, Python, R but there are 100's more languages supported.

Tutorials in the Cloud

Our tutorials are found on the github site:

<https://github.com/OpenMendel/ASHG-OpenMendelWorkshop-2020-Oct>

To run them without having to install Julia locally, we created a cloud version using Binder. Click on the icon:



You should then see:

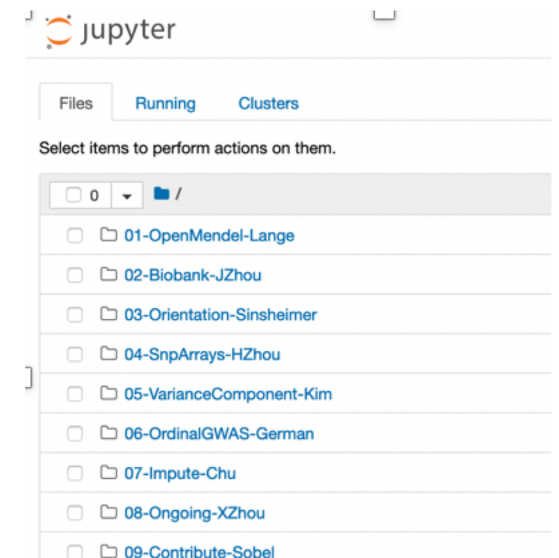
Thanks to Google Cloud, OVH, GESIS Notebooks and the Turing Institute for supporting us! 🙌



Starting repository: OpenMendel/ASHG-
OpenMendelWorkshop-2020-Oct/master

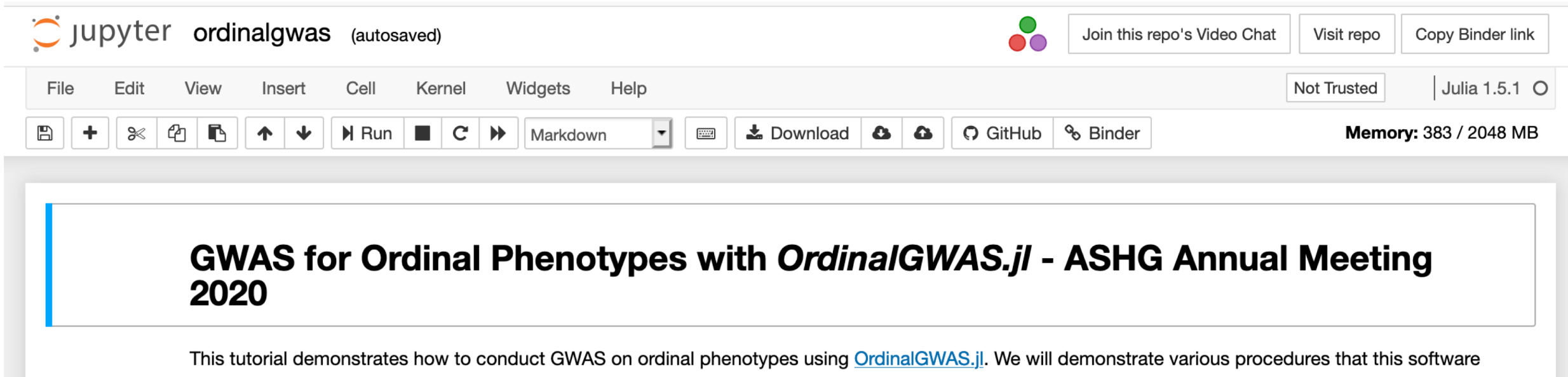
New to Binder? Check out the [Binder Documentation](#) for more information

and then active directories:



Opening a Jupyter Notebook

Click on the directory for the tutorial you wish to run.
Then click on the ipynb file. You will then see something like:



The screenshot displays the Jupyter Notebook interface for the 'ordinalgwas' repository. The top bar shows the Jupyter logo, the repository name 'ordinalgwas', and a status '(autosaved)'. On the right, there are links to 'Join this repo's Video Chat', 'Visit repo', and 'Copy Binder link'. Below this is a menu bar with options: File, Edit, View, Insert, Cell, Kernel, Widgets, and Help. To the right of the menu bar are 'Not Trusted' and 'Julia 1.5.1' indicators. A toolbar contains icons for saving, adding cells, deleting, copying, pasting, undo, redo, running, and other actions. On the right side of the toolbar, there are links to 'GitHub' and 'Binder', and a memory usage indicator 'Memory: 383 / 2048 MB'. The main content area features a title 'GWAS for Ordinal Phenotypes with *OrdinalGWAS.jl* - ASHG Annual Meeting 2020'. Below the title, a paragraph states: 'This tutorial demonstrates how to conduct GWAS on ordinal phenotypes using [OrdinalGWAS.jl](#). We will demonstrate various procedures that this software

Executing a Command in the Jupyter Notebook

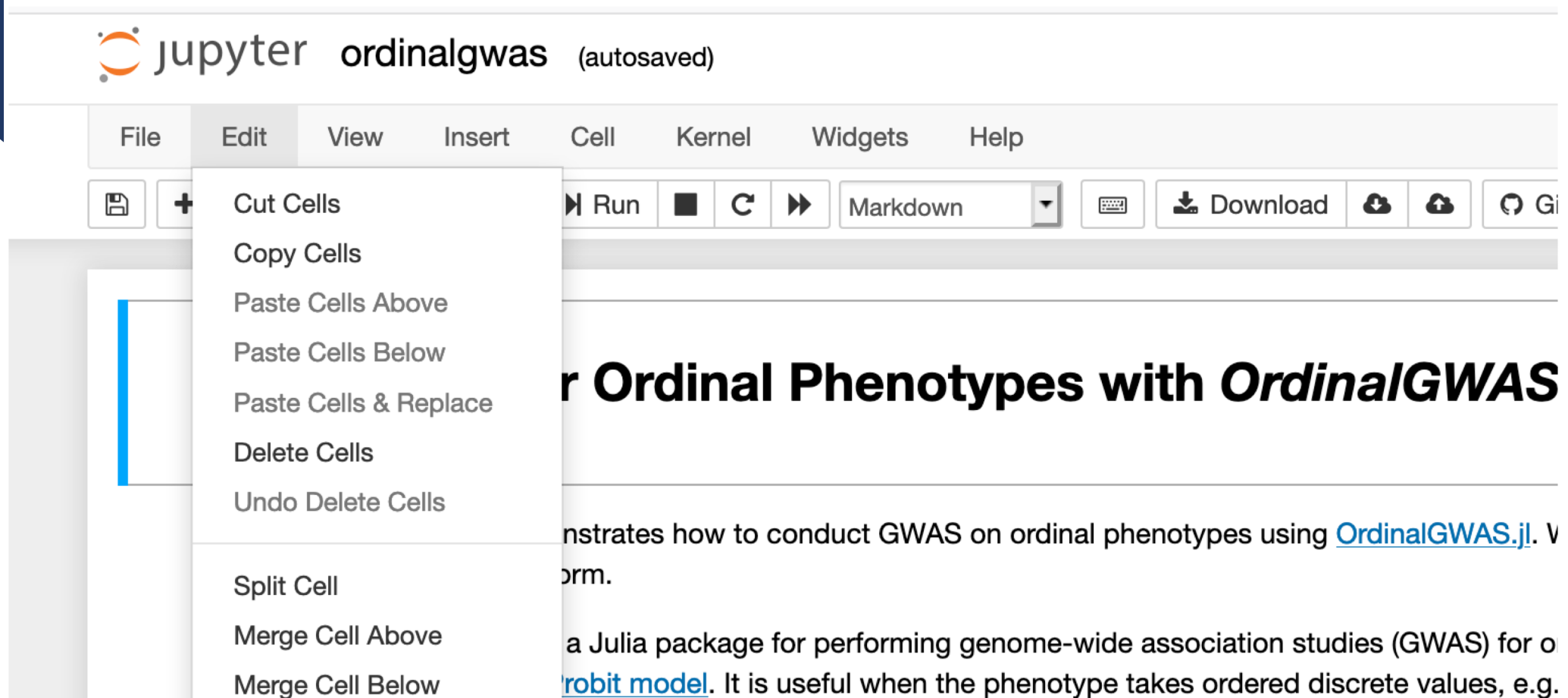
To execute a command put cursor within a cell and press SHIFT-RETURN

```
In [ ]: # for use in this tutorial  
using CSV, OrdinalGWAS, SnpArrays|
```

A star denotes an actively running code cell:

```
In [*]: # for use in this tutorial  
using CSV, OrdinalGWAS, SnpArrays
```

Drop Down Menus Provide Many Useful Commands:



The screenshot displays the Jupyter Notebook interface for a file named 'ordinalgwas (autosaved)'. The 'Edit' menu is open, revealing a list of commands for cell manipulation. The commands include: Cut Cells, Copy Cells, Paste Cells Above, Paste Cells Below, Paste Cells & Replace, Delete Cells, Undo Delete Cells, Split Cell, Merge Cell Above, and Merge Cell Below. The background shows a markdown cell with the title 'Ordinal Phenotypes with *OrdinalGWAS*' and text describing the package's purpose in conducting GWAS on ordinal phenotypes using [OrdinalGWAS.jl](#).

jupyter ordinalgwas (autosaved)

File Edit View Insert Cell Kernel Widgets Help

Run [Stop] [Refresh] [Next] Markdown [Dropdown] [Terminal] Download [Cloud] [Cloud] [GitHub]

Ordinal Phenotypes with *OrdinalGWAS*

...nstrates how to conduct GWAS on ordinal phenotypes using [OrdinalGWAS.jl](#). V
orm.

...a Julia package for performing genome-wide association studies (GWAS) for o
[robit model](#). It is useful when the phenotype takes ordered discrete values, e.g.

Important: The Cloud Kernel will stop Working if the Jupyter Notebook is Inactive

Each tutorial is designed run in a few minutes. If you pause, you might see this:

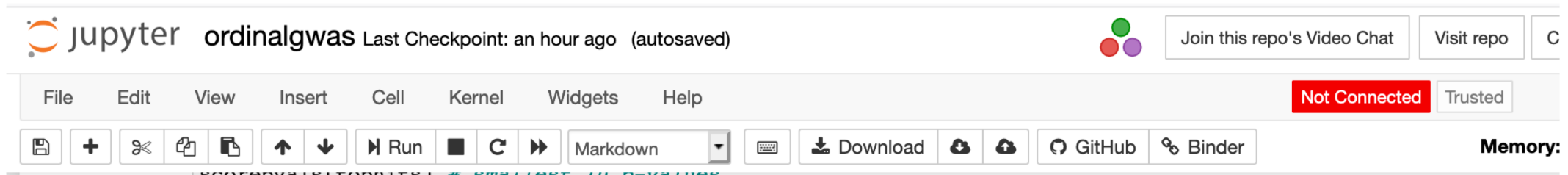
Connection failed



A connection to the notebook server could not be established. The notebook will continue trying to reconnect.
Check your network connection or notebook server configuration.

Or:

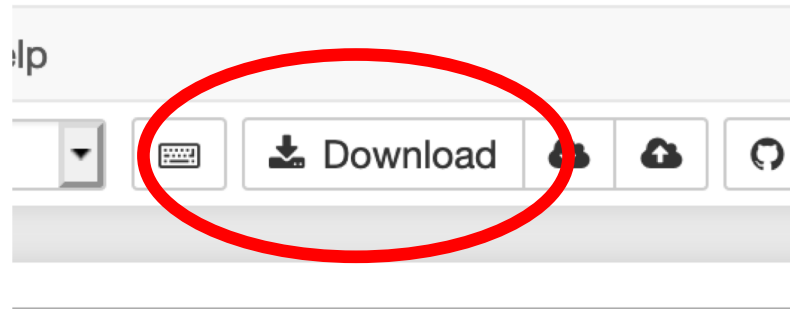
OK



You will need to relaunch Binder and you will have lost your work. **This will not occur when you run Julia and Jupyter notebooks from your local environment.**

When Finished Running a Tutorial

You can download
your work



Or print it by going to the file tab
and selecting **print preview**

To close go to the file tab
and select **close and halt**

