

# Image data science with Python and Napari @EPFL

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# Course schedule

	Monday	Tuesday	Wednesday	Thursday	Friday
Morning	<ul style="list-style-type: none"><li>• Introduction to Bio-image analysis</li><li>• Python basics</li><li>• Image data</li></ul>	<ul style="list-style-type: none"><li>• Introduction to Napari</li><li>• Image Filtering</li></ul>	<ul style="list-style-type: none"><li>• Machine learning</li><li>• Deep learning</li></ul>	<ul style="list-style-type: none"><li>• Working with tabular data</li><li>• Plotting</li></ul>	<ul style="list-style-type: none"><li>• Writing good code</li><li>• Licensing</li></ul>
Afternoon	<ul style="list-style-type: none"><li>• For-loops</li><li>• Conditions</li><li>• Functions</li></ul>	<ul style="list-style-type: none"><li>• Image segmentation</li><li>• Feature extraction</li></ul>	Project work in groups		Group presentations

- 9:30 Recap discussion
- 10:00 Lecture
- 10:30 Joint exercise

Short break

- 11:00 Lecture
- 12:00 Lunch + homework

Flexible time/place

Monday/Tuesday only

- 14:00 Recap discussion
- 14:30 Lecture

- 15:30 Homework

Flexible time/place

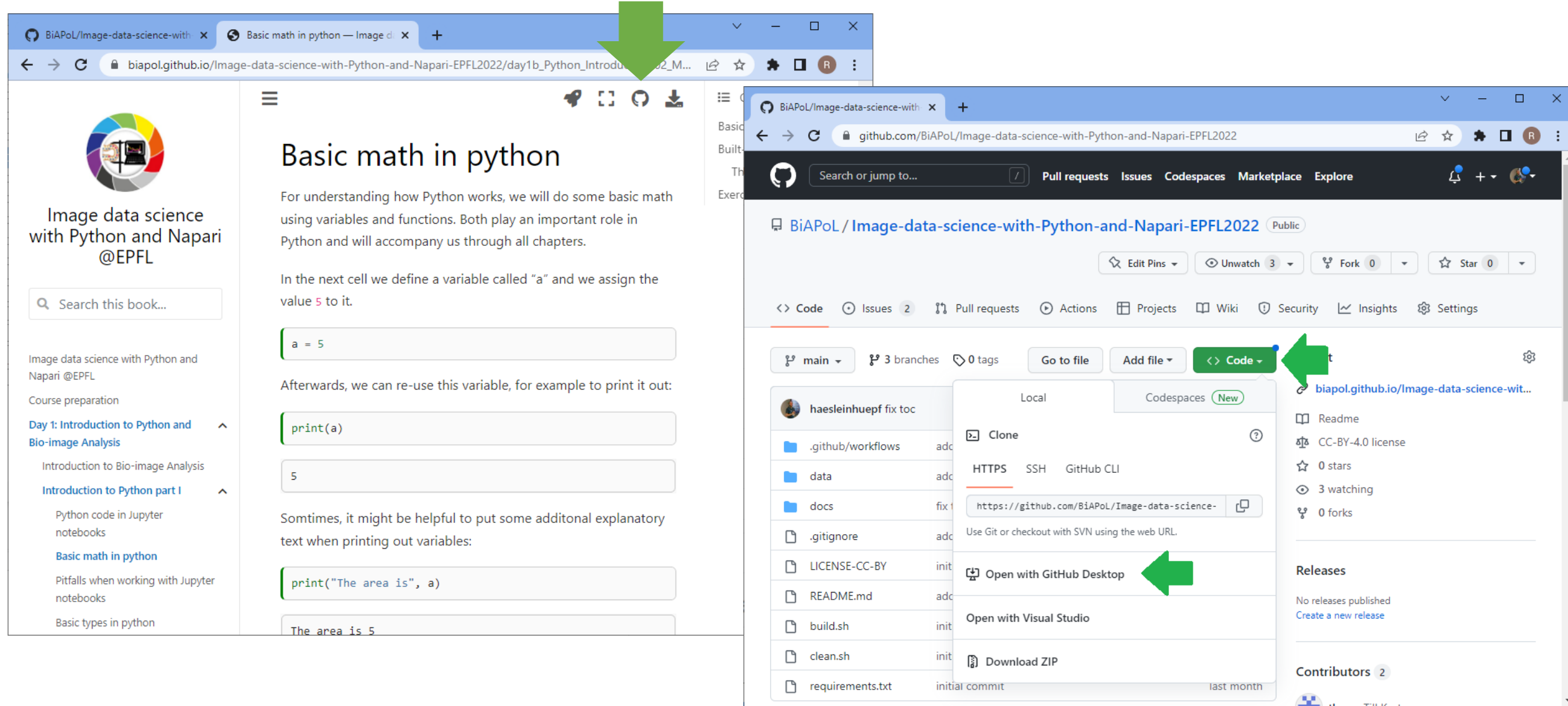
Short break

- Wednesday / Thursday: Group projects
  - Group size: 2-5 people
  - Goals:
    - Develop an image analysis workflow
      - Image segmentation
      - Quantification
      - Plotting
      - Statistics
      - Quality assurance
- Be a brave scientist and document your work well.
  - Hint: Take screenshots!

If your group consists of 5 members; divide your project into sub-projects!

- Friday afternoon (14:00): Group presentations
  - 3 min presentation time + 2 minutes discussion (per group member)
  - Talk about
    - why you chose certain tools,
    - bottlenecks,
    - troubleshooting,
    - solutions
  - Make sure others could reproduce your analysis
    - installation instructions,
    - documentation,
    - hints

# Download materials from github



The image shows a Jupyter notebook titled "Basic math in python" and its corresponding GitHub repository page. The notebook contains the following code:

```
a = 5
```

Afterwards, we can re-use this variable, for example to print it out:

```
print(a)
```

5

Sometimes, it might be helpful to put some additional explanatory text when printing out variables:

```
print("The area is", a)
```

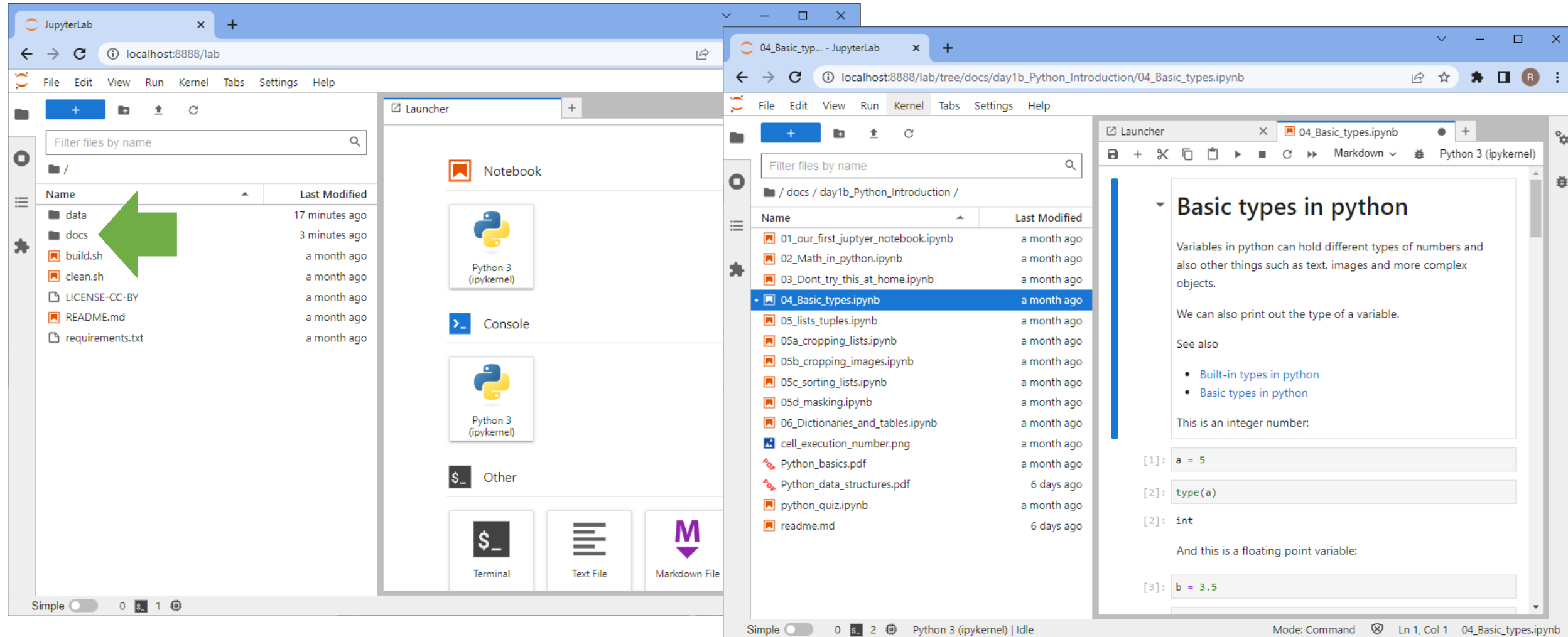
The area is 5

The GitHub repository page for `BiAPoL / Image-data-science-with-Python-and-Napari-EPFL2022` is shown. The `Code` button is highlighted with a green arrow. The dropdown menu shows the `Clone` option, which is also highlighted with a green arrow. The `Clone` dropdown menu shows the `HTTPS` option, which is also highlighted with a green arrow. The `Clone` dropdown menu also shows the `SSH` and `GitHub CLI` options. The `Clone` dropdown menu also shows the `Open with GitHub Desktop` option, which is also highlighted with a green arrow. The `Clone` dropdown menu also shows the `Open with Visual Studio` option. The `Clone` dropdown menu also shows the `Download ZIP` option.

# Download materials from github

```
conda activate devbio-napari-env
```

```
jupyter lab
```



The image displays two screenshots of the JupyterLab interface. The left screenshot shows the JupyterLab home page with a green arrow pointing to the 'docs' directory in the file browser. The right screenshot shows the '04\_Basic\_types.ipynb' notebook open, displaying the title 'Basic types in python' and the first few lines of code.

**Left Screenshot: JupyterLab Home Page**

- File browser: Shows a list of files and directories. A green arrow points to the 'docs' directory.
- Launcher: Shows options to create a new Notebook, Console, or Other.
- Terminal, Text File, and Markdown File buttons are visible at the bottom.

**Right Screenshot: JupyterLab Notebook (04\_Basic\_types.ipynb)**

- File browser: Shows a list of files and directories. The '04\_Basic\_types.ipynb' file is selected.
- Notebook content: The title is 'Basic types in python'. The text describes variables in python and provides examples of built-in types and basic types.
- Code cells: The first three code cells are visible, showing the assignment of a variable 'a' to the value 5, the output of 'type(a)', and the assignment of a variable 'b' to the value 3.5.