FAIR_bioinfo : Open Science and FAIR principles in a bioinformatics project

How to make a bioinformatics project more reproducible

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June 2021

General information

Practical information:

- Dates: June 28th - 30th
- Location: Institut des Systèmes Complexes, 113 rue Nationale, 75013-Paris
- Courses: 9:00 to 17:30
- Meal: 12:30-14:00
- Pauses: 10:30-11:00 + 15:30-16:00
- 2 days of courses + 1 day of course building

Round table:

- Teachers
- Learners

Ressources:

- 

- GitLab
- LaTeX

Training schedule

Day 1:

- Introduction to reproducibility
- History management (3 Practical Sessions,  , )
- Control your development environment (1 PS,)
- Encapsulation (2 PS, )

Day 2:

- Workflow (2 PS, )
- Traceability with notebooks (2 PS,  , )
- IFB resources (2 PS,  , )
- Sharing and disseminating ( , )
- Conclusion

Day 3:

- Empowerment and improvement of resources

Table of contents

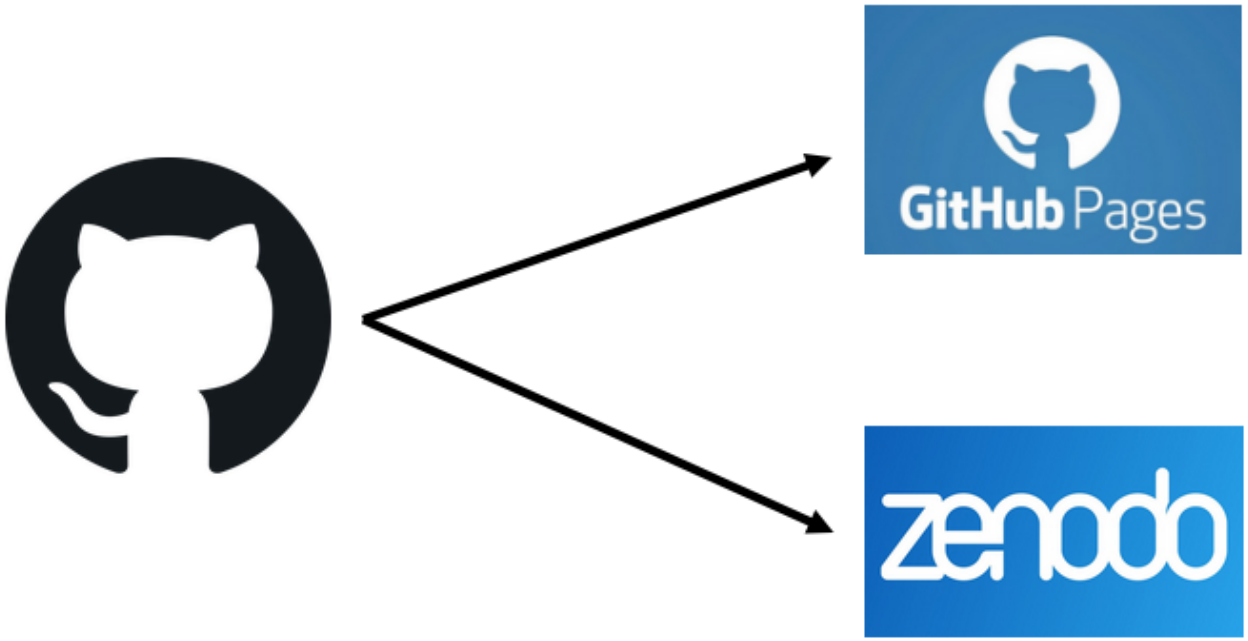
1. Introduction to reproducibility
2. History management
3. Control your development environment
4. Workflow
5. Tracability with Notebook
6. IFB resources
7. Sharing and dissemination
   - Showcase your work
   - Release
   - Obtain a DOI
8. Conclusion
9. 3rd Day

Sharing and disseminating your project

Sharing and disseminating

Goals of this session:

- Showcase your work
- Add a licence
- Create a release
- Obtain a DOI for the project



Showcase your work

Showcase your work

Showcase your work

Why ?

- Your project is simpler to share and find

Advantages

- Free hosting of static websites
- Able to convert Markdown into a website

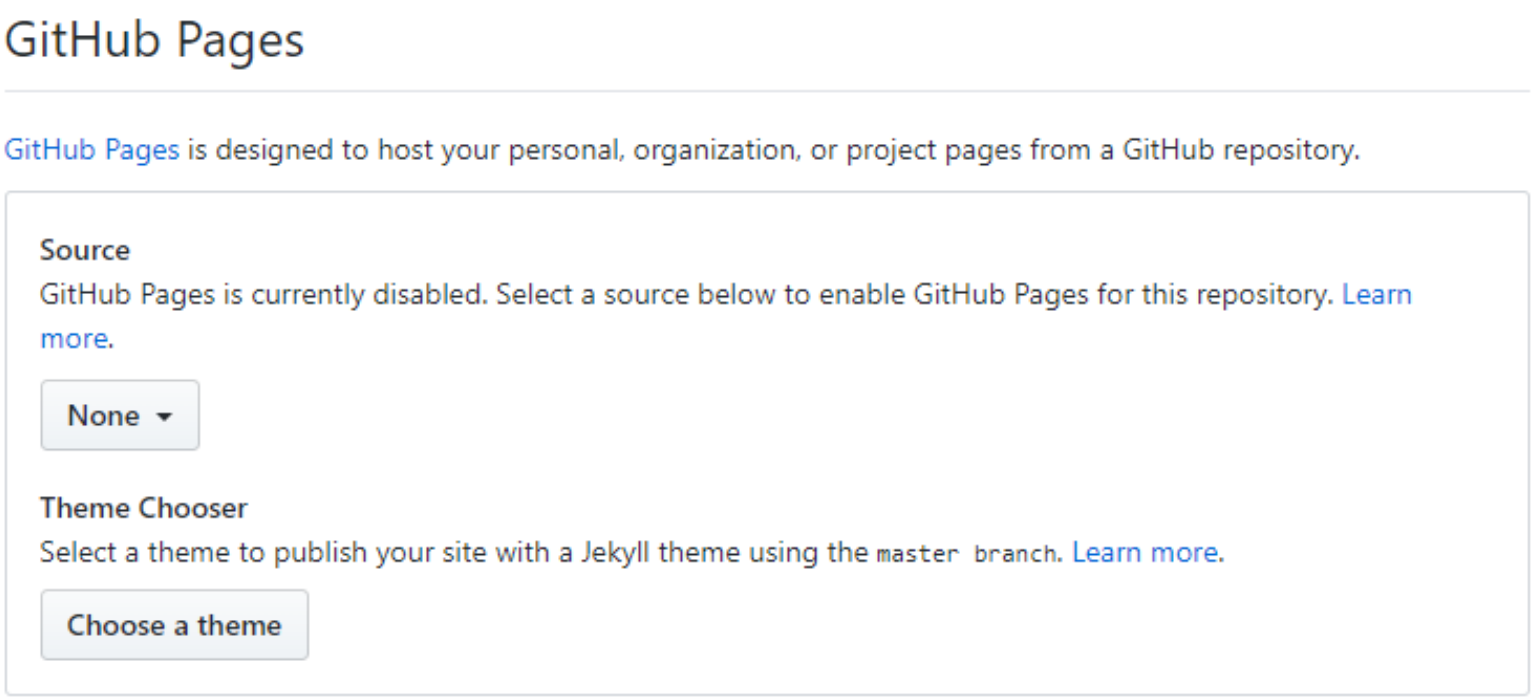
Documentation : https://pages.github.com/

Showcase your work

In practice

From the main page of your repository, go to :

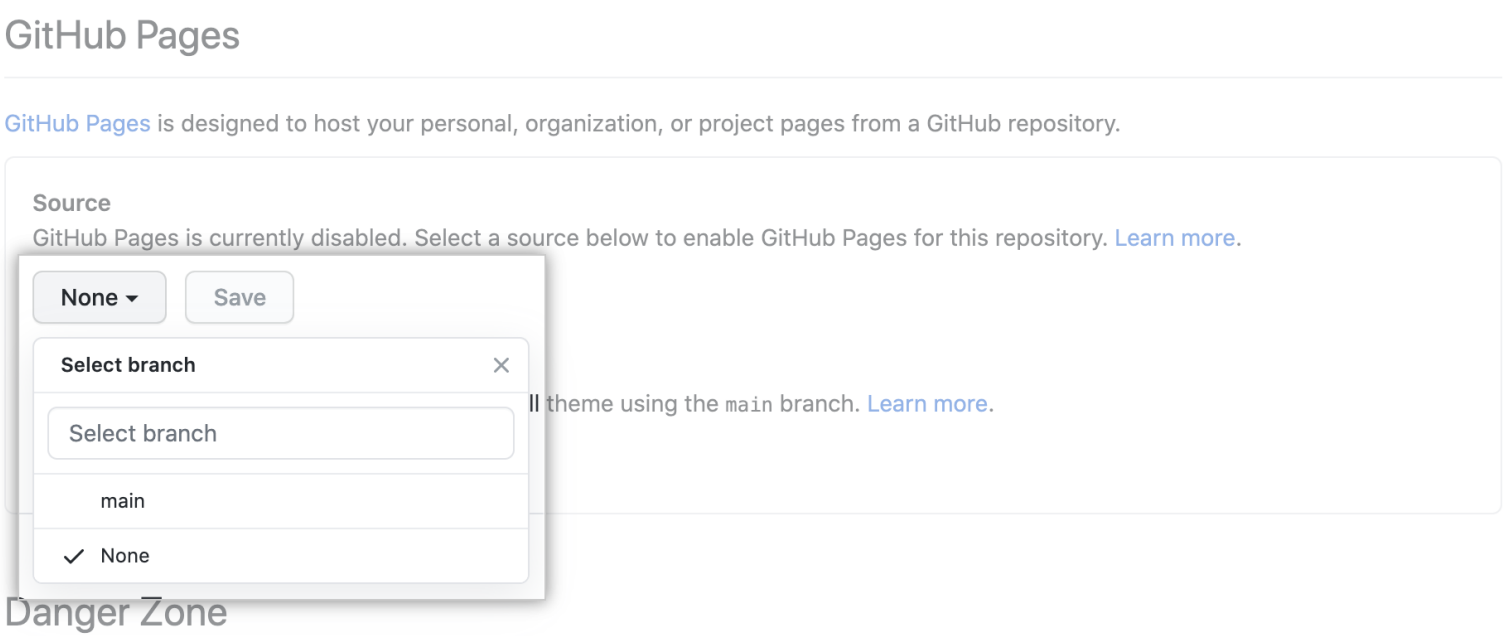
- "Settings" tab
- → "Options" (left hand side menu)
- → navigate to the "GitHub Pages" paragraph.



Showcase your work

In practice
From the main page of your repository, go to "Settings" → "Options" → "GitHub Pages".

1. Choose the source



Showcase your work

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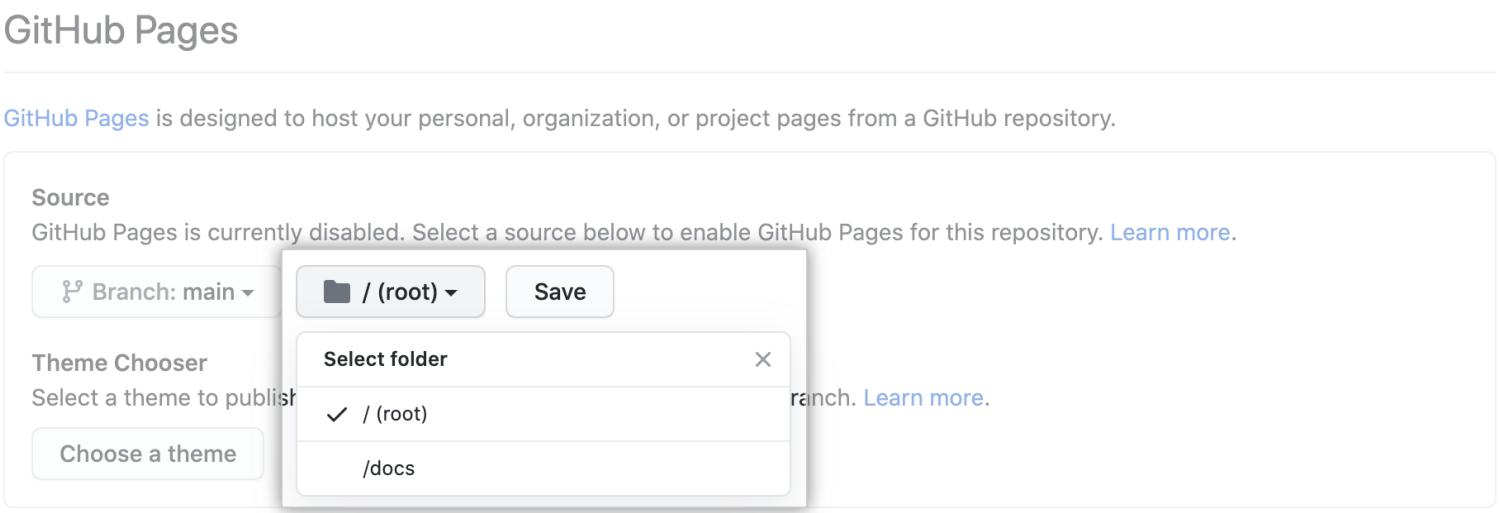

Showcase your work

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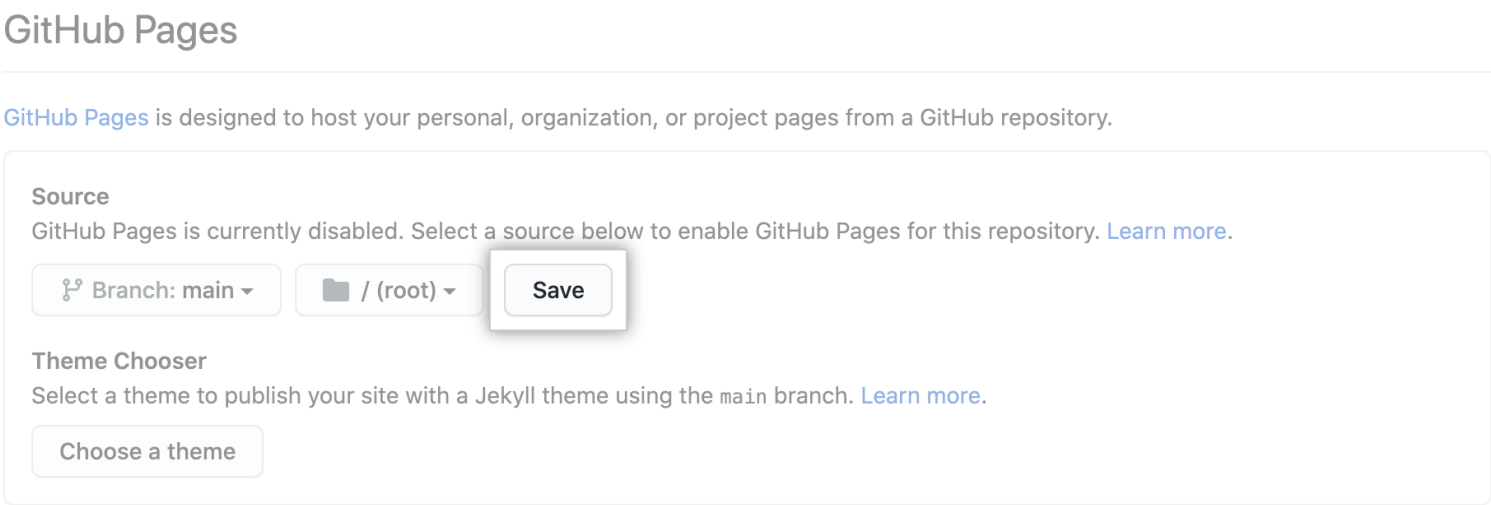
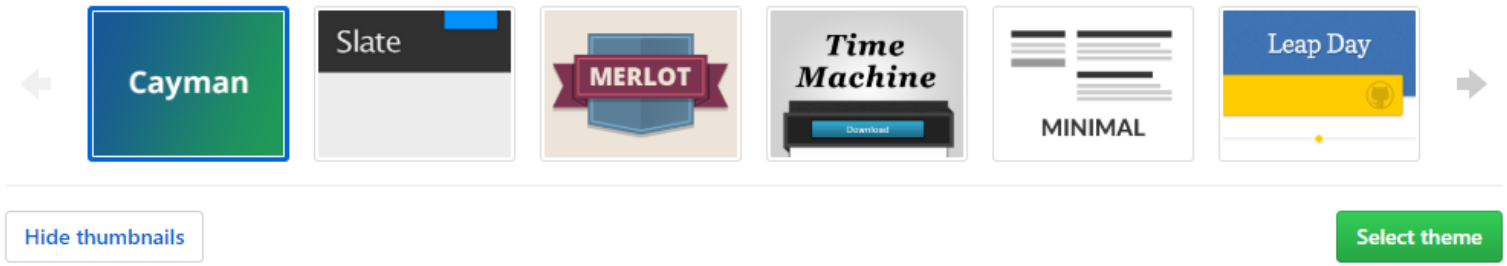
1. Choose the source



Showcase your work

In practice
From the main page of your repository, go to "Settings" → "Options" → "GitHub Pages".

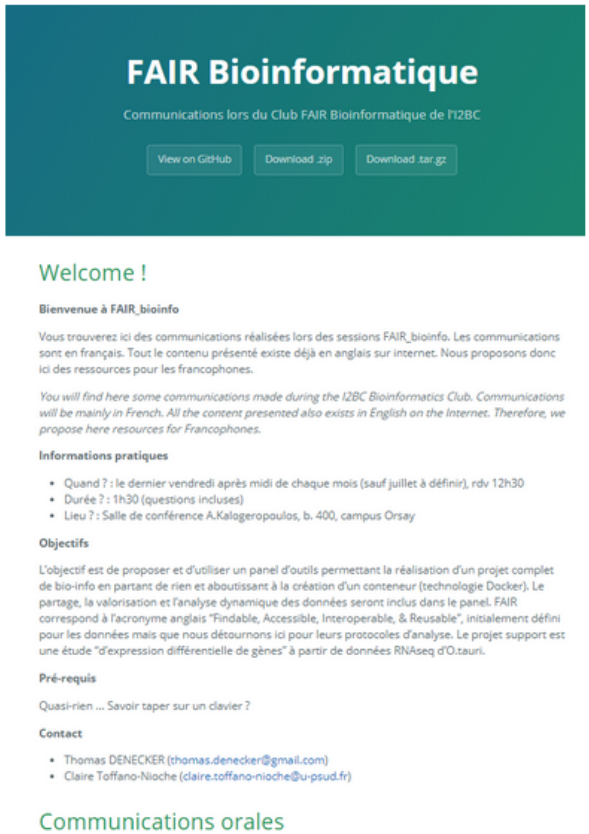
1. Choose the source
2. Choose the theme



Showcase your work

Convert Markdown into HTML !

```
# Welcome !

**Bienvenue à FAIR_bioinfo**

Vous trouverez ici des communications réali

*You will find here some communications mad

**Informations pratiques**
- Quand ? : le dernier vendredi après midi
- Durée ? : 1h30 (questions incluses)
- Lieu ? : Salle de conférence A.Kalogeropo

**Objectifs**

L'objectif est de proposer et d'utiliser un
FAIR correspond à l'acronyme anglais "Finda
Le projet support est une étude "d'expressi

**Pré-requis**
```

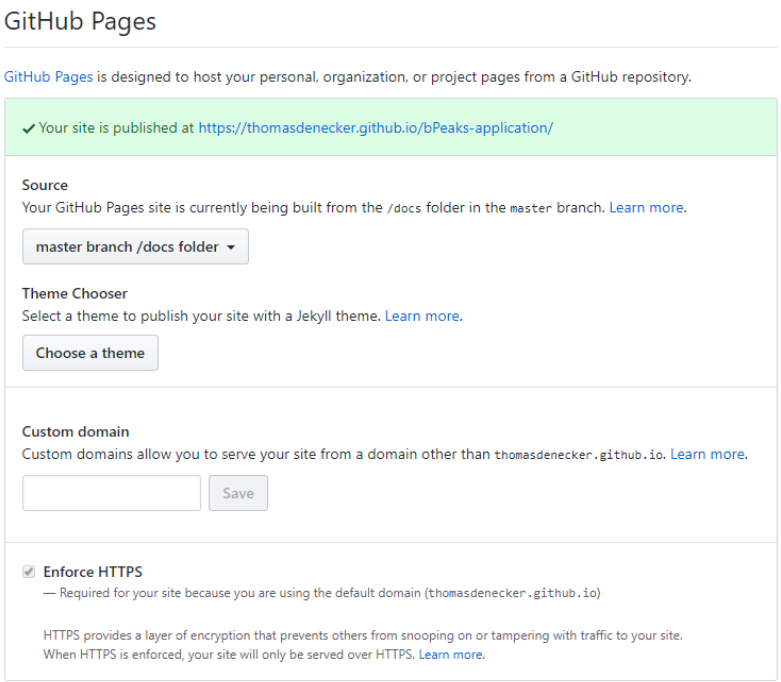


https://thomasdenecker.github.io/FAIR_Bioinfo

Showcase your work

Also works directly from HTML

1. Create a folder named "docs"
   - main file must be named index.html
2. "Settings" $\rightarrow$ "Options" $\rightarrow$ "GitHub Pages"



`https://thomasdenecker.github.io/bPeaks-application/`

Showcase your work

Remember to choose a licence !
This will determine whether anyone can use, modify, and distribute your code / tool / software...

`https://help.github.com/en/articles/licensing-a-repository`

1. Create a file named "LICENCE"
2. GitHub will suggest templates

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1. Create a file named "LICENCE"
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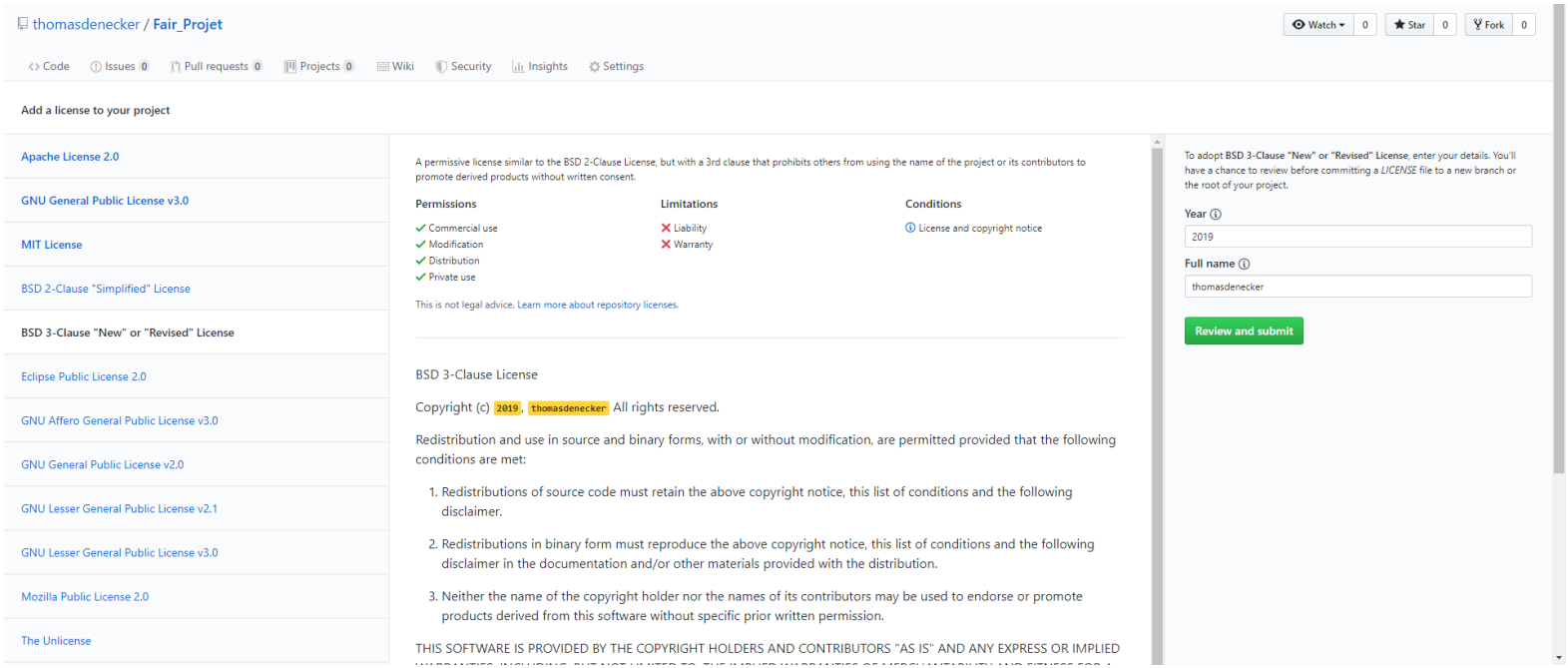
The CeCILL licence (v.2.1) is recommended by the CEA, CNRS and INRIA ("CEA CNRS INRIA Logiciel Libre"). Copy it directly.
`http://cecill.info/licences.fr.html`

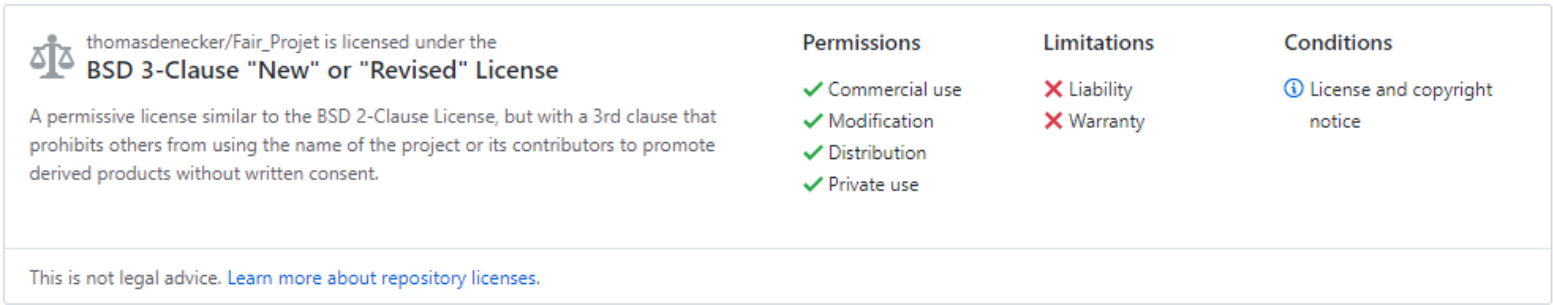
Showcase your work

GitHub takes care of displaying the information on your repository.



Showcase your work

Validate and merge with the main branch



Showcase your work

Kind reminder: consequence of not choosing a licence.

No License

When you make a creative work (which includes code), the work is under exclusive copyright by default. Unless you include a license that specifies otherwise, nobody else can copy, distribute, or modify your work without being at risk of take-downs, shake-downs, or litigation. Once the work has other contributors (each a copyright holder), "nobody" starts including you.

Even in the absence of a license file, you may grant some rights in cases where you publish your source code to a site that requires accepting terms of service. For example, if you publish your source code in a public repository on GitHub, you have accepted the **Terms of Service**, by which you allow others to view and fork your repository. Others may not need your permission if **limitations and exceptions to copyright** apply to their particular situation. Neither site terms nor jurisdiction-specific copyright limitations are sufficient for the kinds of collaboration that people usually seek on a public code host, such as experimentation, modification, and sharing as fostered by an open source license.

You don't have to do anything to not offer a license. You may however wish to add a copyright notice and statement that you are not offering any license in a prominent place (e.g., your project's README) so that **users** don't assume you made an oversight. If you're going to accept others' contributions to your non-licensed project, you may wish to explore with your lawyer adding a contributor agreement to your project so that you maintain copyright permission from contributors, even though you're not granting the same.

Disallowing use of your code might not be what you intend by "no license." An **open-source license** allows reuse of your code while retaining copyright. If your goal is to completely opt-out of copyright restrictions, try a **public domain dedication**.

For users

If you find software that doesn't have a license, that generally means you have no permission from the creators of the software to use, modify, or share the software. Although a code host such as GitHub may allow you to view and fork the code, this does not imply that you are permitted to use, modify, or share the software for any purpose.

Your options:

- **Ask the maintainers nicely to add a license.** Unless the software includes strong indications to the contrary, lack of a license is probably an oversight. If the software is hosted on a site like GitHub, open an issue requesting a license and include a link to this site. If you're bold and it's fairly obvious what license is most appropriate, open a pull request to add a license – see "suggest this license" in the sidebar of the page for each license on this site (e.g., **MIT**).
- **Don't use the software.** Find or create an alternative that is under an open source license.
- **Negotiate a private license.** Bring your lawyer.

Release

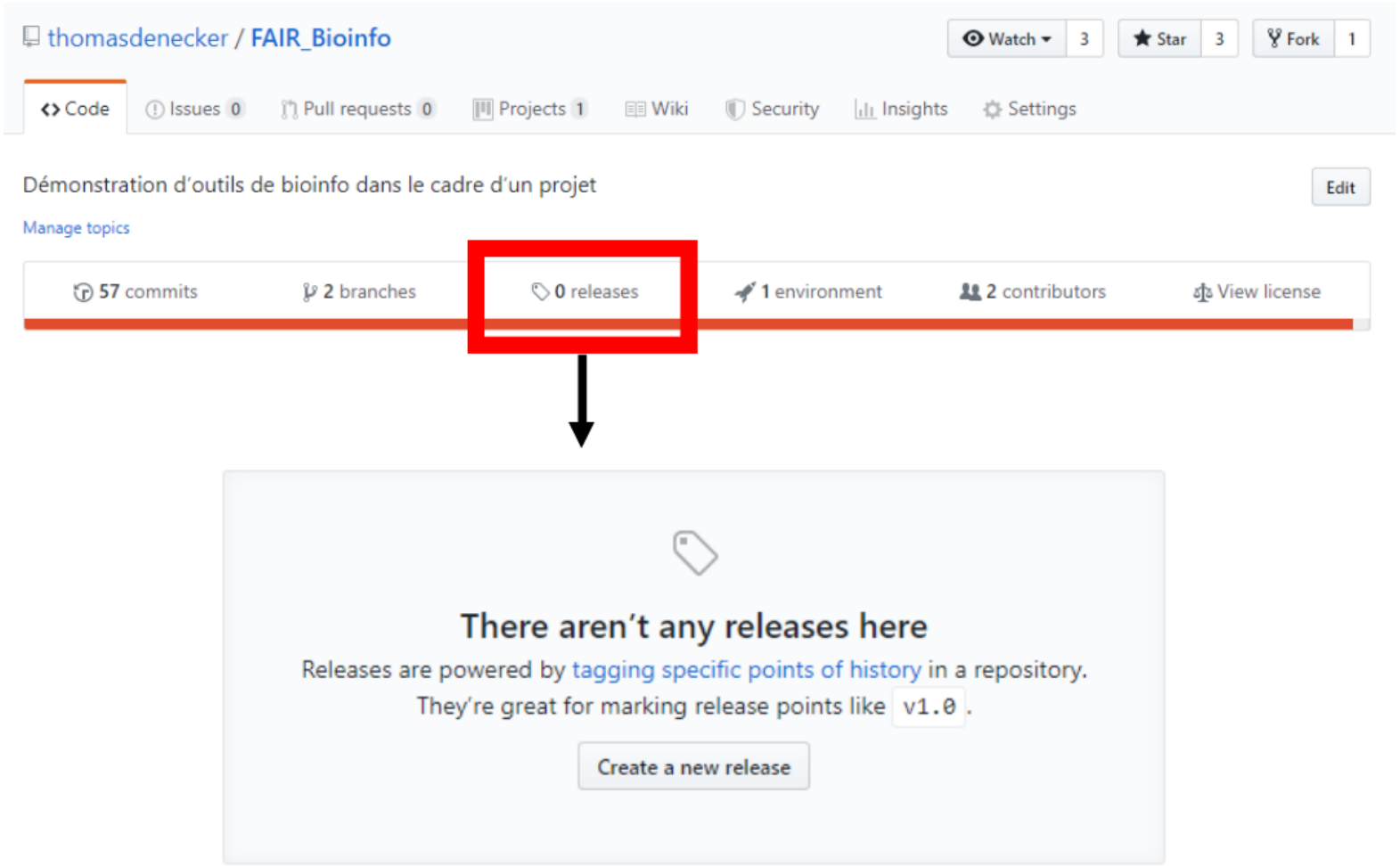
Release

Goal : provide users with a version of your code that has been fixed in time and labelled.
All the steps are detailed here:

- `https://help.github.com/en/articles/creating-releases`

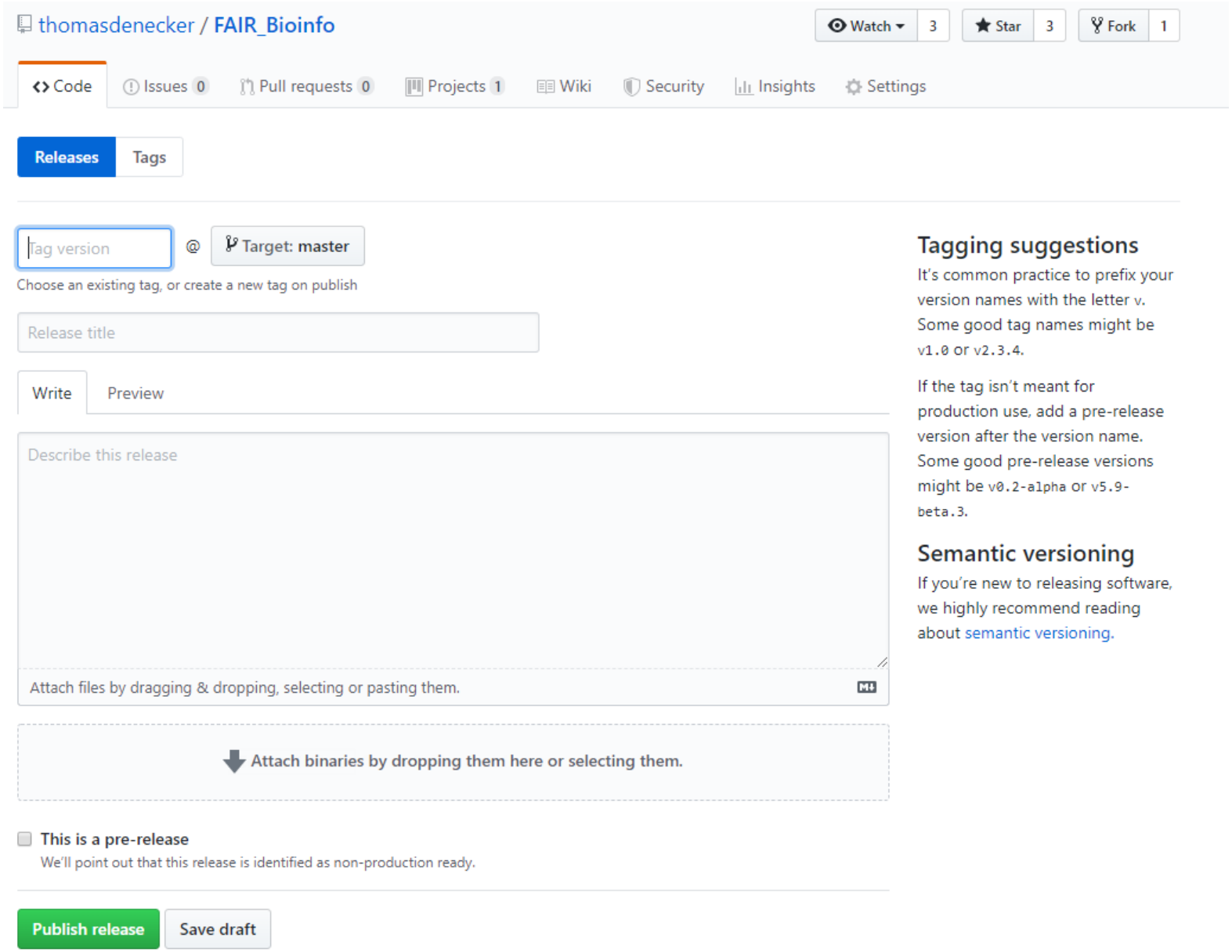
Release

Make a release



Release

Make a release



Release

Semantic of a release number

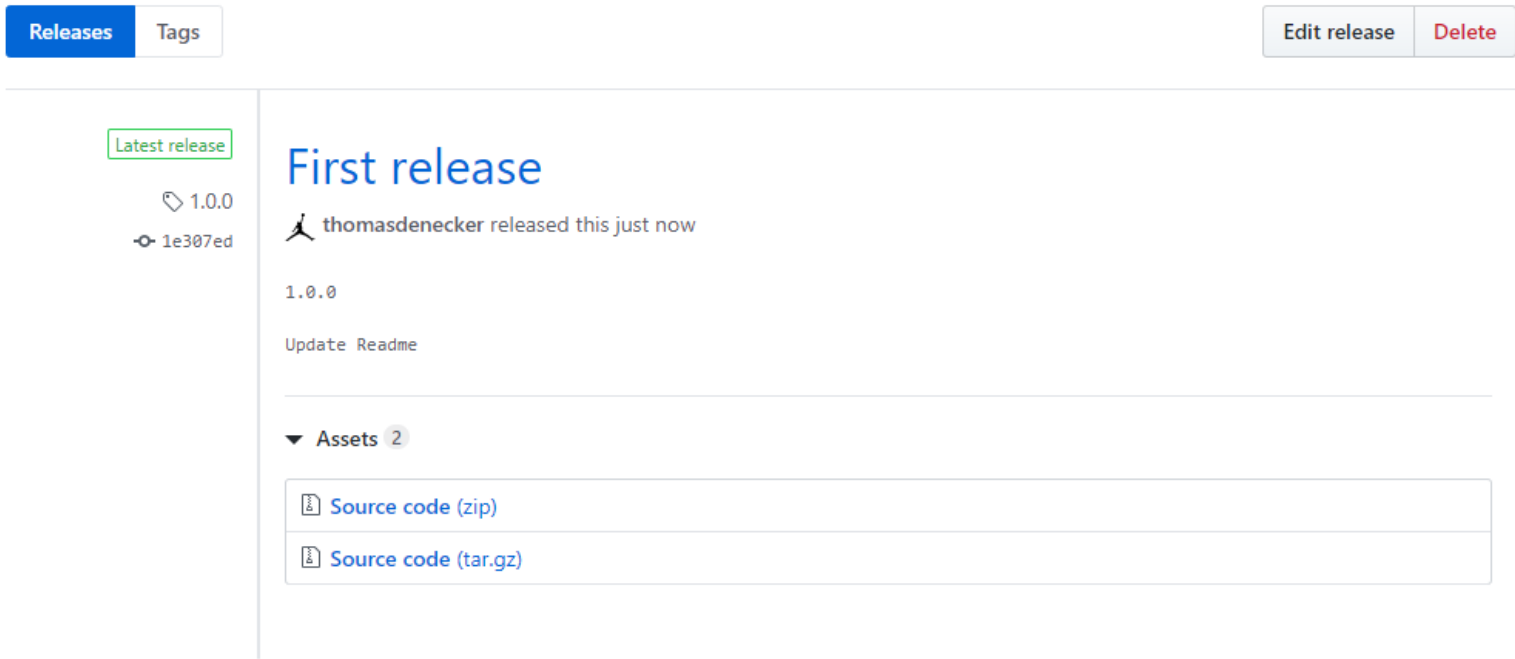
1.0.0
MAJOR.MINOR.PATCH

- MAJOR : changes not backwards-compatible
- MINOR : new/modified functionalities, backwards-compatible
- PATCH : bug fixes, backwards-compatible

More details : `https://semver.org/`

Release

First release for FAIR_Bioinfo



Obtain a DOI

Obtain a DOI

Obtain a DOI

Digital Object Identifier
Reference system to cite an object (A GitHub project in our case)

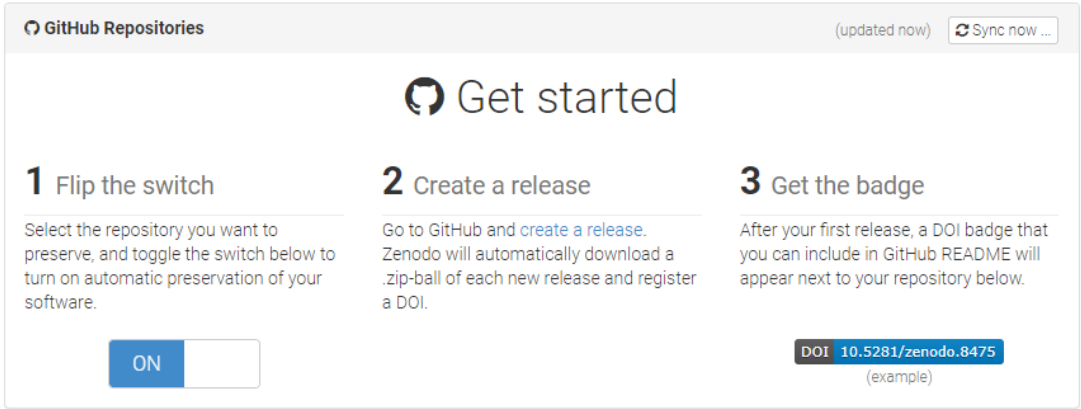
`https://guides.github.com/activities/citable-code/`

Obtain a DOI

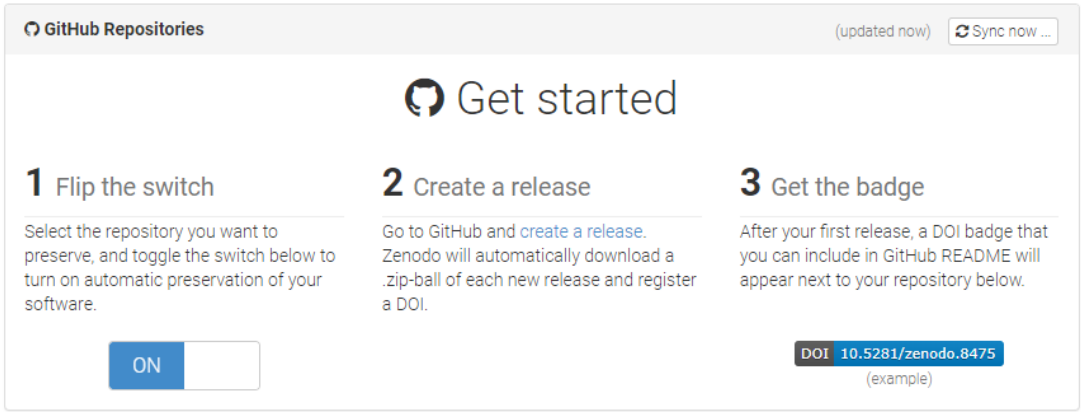
1/ Sign in to Zenodo

- With your GitHub account
- With your ORCID account (add a "Linked account" to GitHub afterwards)

2/ Go to the Settings page $\rightarrow$ GitHub tab

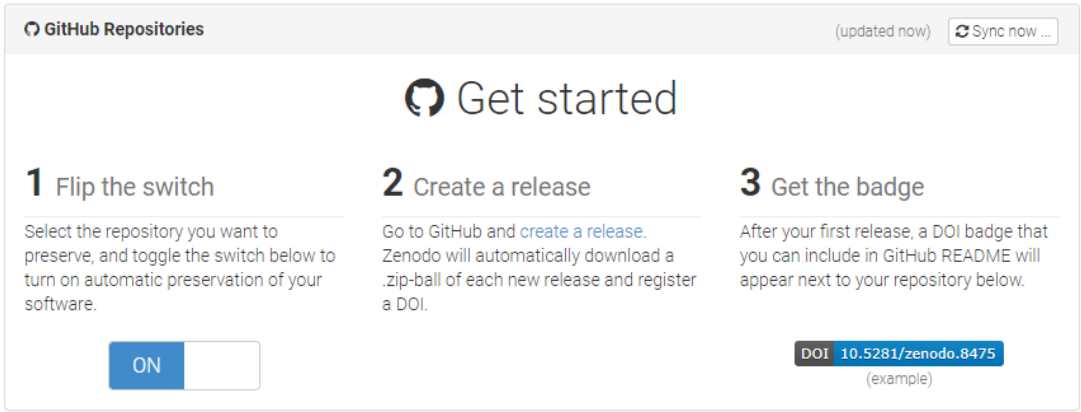


Obtain a DOI

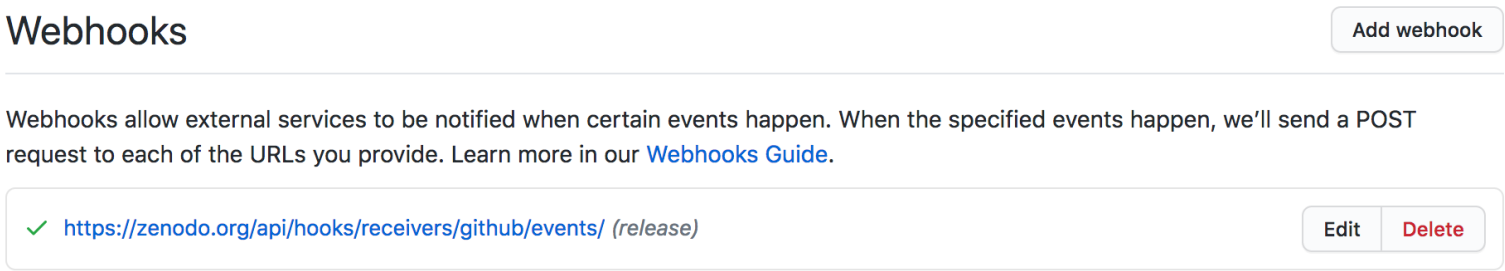


3/ In the list below, find the project you want to link to Zenodo. Flip the switch.

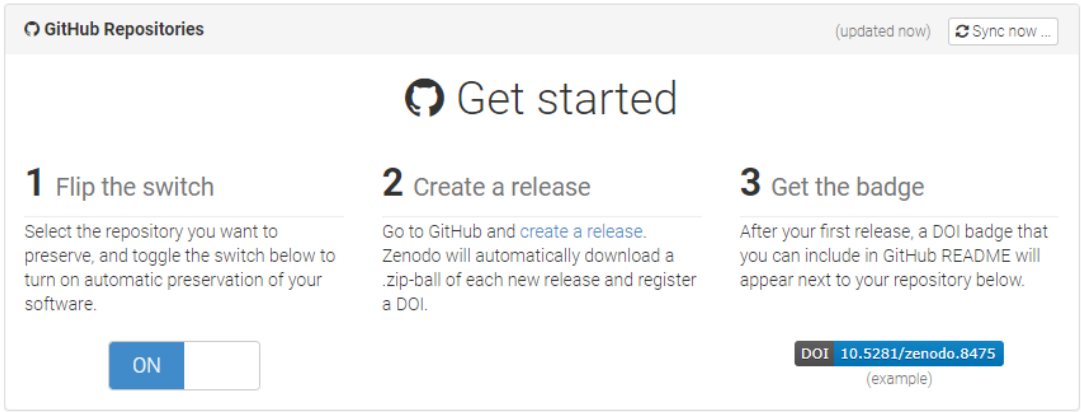
Obtain a DOI



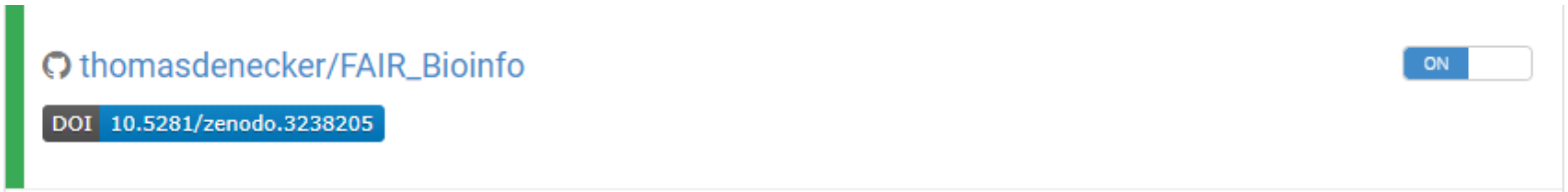
4/ On GitHub, in Settings → Webhooks, a new line has been created: Zenodo will be notified of any new release created in this project.



Obtain a DOI



5/ Back to Zenodo. After a release, a badge will be available below the project's name, in the category Enabled repositories.



Obtain a DOI

DOI Badge

This badge points to the latest released version of your repository. If you want a DOI badge for a specific release, please follow the DOI link for one of the specific releases and grab badge from the archived record.

Markdown

```
[![DOI](https://zenodo.org/badge/164655551.svg)](https://zenodo.org/badge/late
```

reStructedText

```
.. image:: https://zenodo.org/badge/164655551.svg
   :target: https://zenodo.org/badge/latestdoi/164655551
```

HTML

```
<a href="https://zenodo.org/badge/latestdoi/164655551"><img src="https://zenod
```

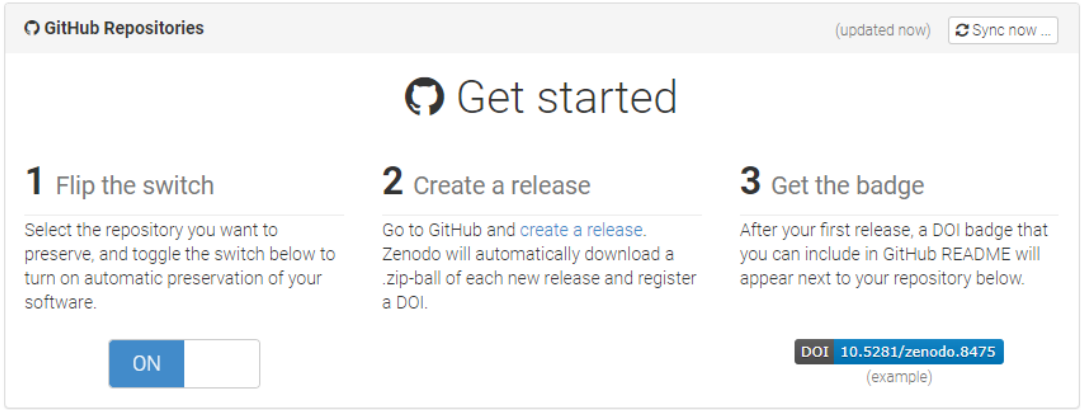
Image URL

```
https://zenodo.org/badge/164655551.svg
```

Target URL

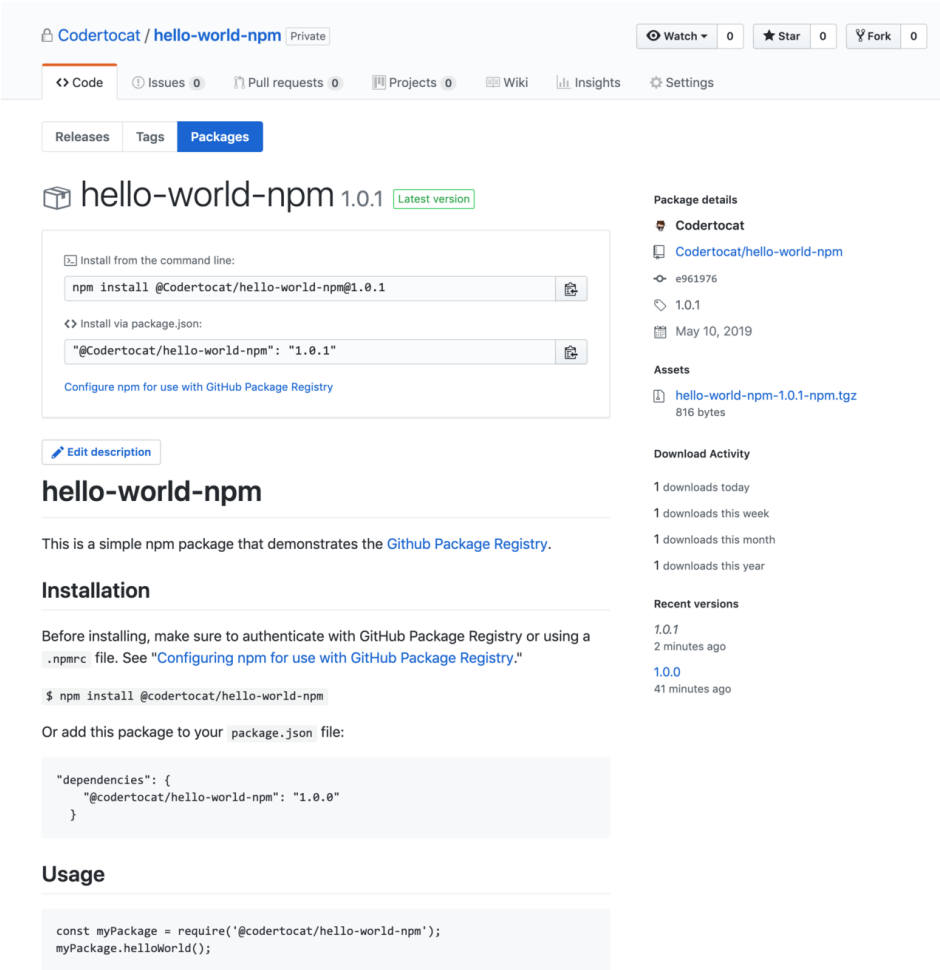
```
https://zenodo.org/badge/latestdoi/164655551
```

Obtain a DOI



6/ Add the code for the badge to the README.

GitHub Package Registry



Packages directly available on GitHub.

https://help.github.com/en/articles/about-github-package-registry

https://github.com/features/package-registry