



PLANT2FOOD

A Novo Nordisk Foundation Sponsored Initiative

GUIDELINE

OPEN SHARING

OF DATA AND RESULTS IN

PLANT2FOOD PROJECTS



INTRODUCTION

A cornerstone in Plant2Food projects is the **open sharing of data and results** from the funded projects. We believe that this will help accelerate the transition to more sustainable and healthy food systems for the benefit of both people and planet. Plant2Food grant holders are responsible for implementing correct data management in their projects.

Before the start of an Plant2Food project, a Project Agreement must be signed and all involved parties must agree upon where, how and when the data and results can be shared. The Technology Transfer Office at each of the four partner universities can help discuss open sharing of data-related issues with each project.

All data and results must be uploaded on [Zenodo](#) – the open dissemination repository hosted at CERN, as soon as it is ready. A step-by-step guide about how to upload your results and publications is provided in the last section(s) of the text. There is also a list with examples of which types of data to share.

Please note; that no data from your project can be shared before all project participants have been notified about it. In this respect, we would like to draw your attention to section 8.3 of the Plant2Food Project Agreement. This section states that all parties must be notified at least 20 calendar days prior to the intended submission – as soon as all parties agree, the data can be openly shared.

If you have any questions, please contact the Plant2Food Secretariat:

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DATA MANAGEMENT

You must be aware of how you collect and process data. Therefore, please make sure that you have considered the following points:

Before you collect the data:

1. Do you have the right to collect, use and/or reuse the data for your project?
2. Is there any personal data involved? If so, do you have the necessary rights to collect, store, and process (and share) this data - and the consent of the participants? Do the data need to be anonymized or pseudonymized?

When you collect and use the data:

3. Be aware of the different types of data that you collect. Do you have a consistent way of classifying your data (across collaborators)?
4. Do you have a standard for storing data in the short term, and how will you ensure that the necessary security is in place?
5. Do you collect data in a way that will allow others to easily reproduce your results (i.e. using open access or gold standard software)? Please also be aware that this may require you to share samples.

Sharing data and results:

6. Please make sure that you create metadata describing the data and that you also describe the conditions for accessing the data.
7. Regarding long-term storage of the data, you must make sure that you follow the FAIR principles described in the next section.
8. In open projects, your data and results must be shared openly as soon as possible. Your publications should be uploaded to CERN's Zenodo repository for open dissemination (please see the next section. It is important that you either upload your data directly to Zenodo OR somewhere else (e.g. GitHub). Alternatively, make sure to upload a link to Zenodo where you clearly state, where the full data is stored and how to access it.
9. The Grant Number from the Novo Nordisk Foundation (NNF22SA0081019) must be mentioned in all journal articles and the like.
10. Links to all data and results uploaded on Zenodo must be reported/inserted in the half-year Plant2Food progress report in alignment with deliverables and milestone described in the Gantt Chart. The Plant2Food Secretariat will make all links to data and results available to the public on the Plant2Food webpage (plant2food.dk).



THE “FAIR” PRINCIPLES

In Denmark, the national strategy for data management is based on the FAIR principles, which states that all data must be Findable, Accessible, Interoperable, and Reusable. Please keep in mind that the data that you openly share, should be findable by both humans and machines – now and in the future.

FAIR data is not necessarily open. However, in Plant2Food it is a requirement that all publications are available through open access only. Potential costs related to open publishing are eligible costs in Plant2Food projects, if they have been budgeted. If possible, all supplementary data must be submitted and published with the article. As an alternative, supplementary data must be uploaded to Zenodo and the articles should clearly state the given DOI.

We suggest that you consider the following points to ensure that your data is as FAIR as possible. Please note that this is not the official description of the FAIR principles, which you can find on go-fair.org.

Making data FINDABLE:

- 1. REPOSITORY:** All data and publications should be uploaded to the “Plant2Food community” under the Zenodo repository (see section below). If you choose to share your data via a different repository, you must make sure to post a link to this repository on Zenodo. This will provide an easy overview of all articles published within the Plant2Food project, and each uploaded post will be assigned its own DOI for easy referencing.
- 2. METADATA:** All data must be accompanied by rich metadata (see the REUSABLE section). In practice, this means that all your data should always be accompanied by a document describing how the data was collected and why. If data and metadata are uploaded separately, it is important that the metadata refers directly to the DOI of the dataset.

Making data openly ACCESSIBLE:

- 3. METADATA:** It is important to ensure that the metadata is always findable. Therefore, make sure to thoroughly describe the dataset (under the section “Description”), when you upload the data to Zenodo.
- 4. OPENNESS:** All data generated in the Plant2Food projects must be shared openly as stated above.



THE “FAIR” PRINCIPLES - CONTINUED

Making data openly **ACCESSIBLE**:

- 5. BACKGROUND KNOWLEDGE:** In some cases, background knowledge is confidential, and it is of the utmost importance to respect this using the publication procedures described in the Project Agreement (section 8). This involves presenting your company partner(s) with the output to the published 20 calendar days ahead of publication so that they can screen for potential spill-over of background/confidential information. However, as described in the Project Agreement, exchange of confidential background information must not prevent the access to, or usage of the foreground data generated in the project.
- 6. PROTOCOLS:** Protocols for your experiments must be open, free and possible for everyone to use. Thus, it is best to use standard equipment and communication protocols. If you have developed specialized equipment, you must provide instructions for making the equipment too.

Making data **INTEROPERABLE**:

- 7. VOCABULARIES:** Researchers working within the Plant2Food framework, must make sure to use well-known naming conventions for e.g. genes, proteins, microbial lines and the like and any abbreviations must be clearly stated in the text.
- 8. METADATA:** All Plant2Food projects must have well-established metadata standards. All datasets should be accompanied by ex. readme.txt files that thoroughly explain which methods, programs and instruments were used to generate the data, how the data should be interpreted and if there are any specifics that the reader must pay special attention to.
- 9. FILEFORMAT:** It is important to use open format when sharing data. When appropriate, please use .csv files or similar file types for your field of research. Never use pdf files unless you are uploading an accepted article text. In this case, always make sure that datasets are available in separate files.



THE “FAIR” PRINCIPLES - CONTINUED

Making data REUSABLE:

10. **LICENSE:** The openly available data should be licensed to be reused unlimitedly as long as the data is adequately referenced.
11. **STANDARDS:** Make sure to always use field-specific standards such as vocabularies and nomenclature.
12. **PROVENANCE:** Provenance is the information that describes how the data was generated. You should make sure to include information such as:
 - a. Who generated/collected the data?
 - b. How was the data generated/collected?
 - c. What is the purpose of the data collection/generation?
 - d. Does the data refer to other datasets?
 - e. Specifications about equipment use to collect data
 - f. Background for the project





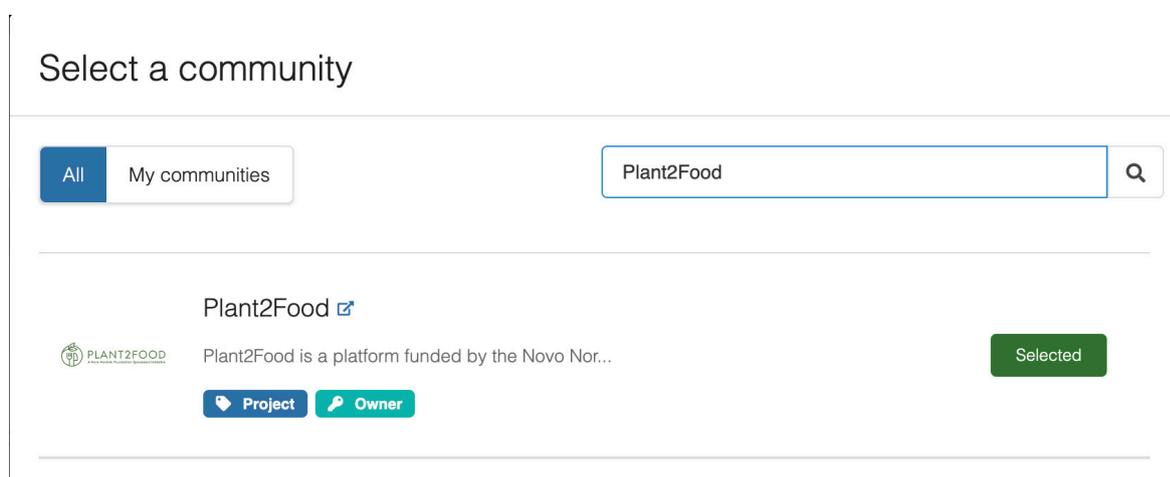
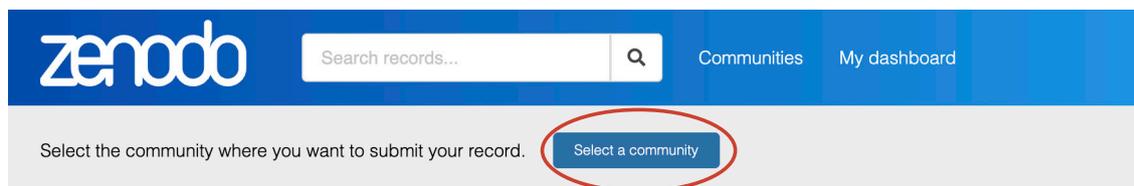
UPLOADING DATA AND PUBLICATIONS TO ZENODO

The Plant2Food Secretariat has created a community on Zenodo where everyone must upload their scientific outputs from their Plant2Food projects. You can access the community here: [Plant2Food \(zenodo.org\)](https://zenodo.org/communities/plant2food)

Please follow the steps below to upload to the Plant2Food community at Zenodo

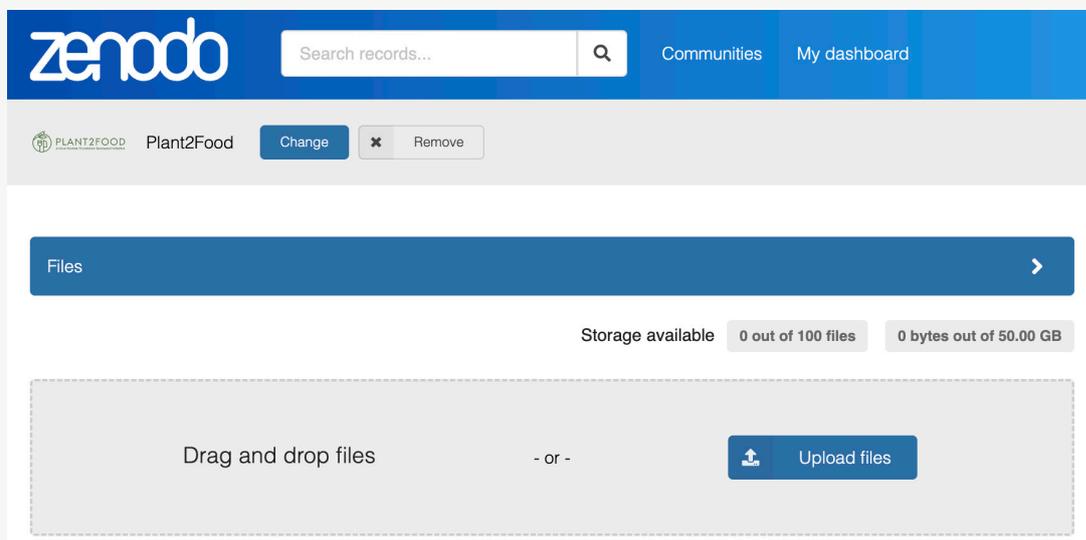
It requires that you already have a user account for Zenodo. If you do not have one yet, please sign up at <https://zenodo.org/> using the orange "sign up" button in the upper right corner.

1. Navigate to the upload page at [Plant2Food \(zenodo.org\)](https://zenodo.org/)
2. On the right, you will find a green '**New upload**' button – Please click here
3. **Select community:** Plant2Food should automatically be selected as the community when accessing Zenodo via the above link. If Plant2Food is not selected, it must be searched and chosen by entering "Plant2Food" in the search field.

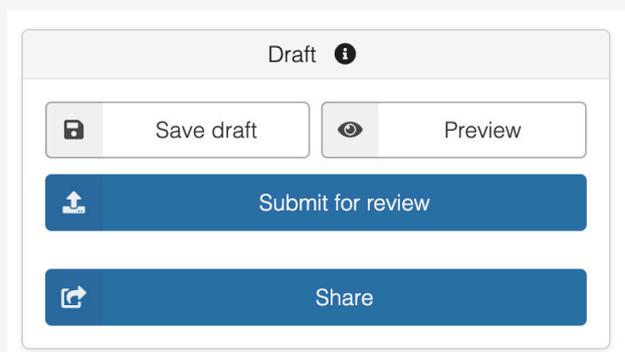


UPLOADING DATA AND PUBLICATIONS TO ZENODO

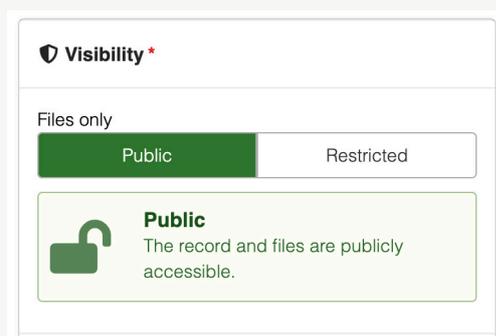
4. Upload your files – either via “drag and drop” or choose the file from a folder:



5. Draft: When you have uploaded your file the ‘Draft’-box on the right gets active. Here you can save your draft, preview it, share it and publish it.



6. Visibility: Under the ‘Draft’-box to the right, there is a box indicating your file's visibility; This is automatically set to public, which it should always remain.





UPLOADING DATA AND PUBLICATIONS TO ZENODO

7. Type in basic Information (required):

- **Digital Object Identifier (DOI):** If the material you upload already has a DOI, please state it and provide the original publication date and title. If your material does not yet have a DOI, please create one. You can do this by checking the 'No' box and selecting the option 'Get a DOI now!'.

Basic information

Digital Object Identifier *

Do you already have a DOI for this upload? Yes No

Reserve a DOI by pressing the button (so it can be included in files prior to upload). The DOI is registered when your upload is published.

- **Resource type:** From the dropdown menu you can choose the right classification for your upload (see the next section 'Suggested types of sharable data' for more information). Please pay special attention to software, which must be shared under a different license.
- **Title:** You should always begin your title by writing the project's acronym followed by a colon and then the title of the material to be uploaded. For example; Plant2Food: Guide to Zenodo.
- **Publication date:** In case your upload has already been published elsewhere, please use the date of the first publication.

Resource type *

Presentation

Title *

Plant2Food: Guideline 2024

+ Add titles

Publication date *

2024-07-02

In case your upload was already published elsewhere, please use the date of the first publication. Format: YYYY-MM-DD, YYYY-MM, or YYYY. For intervals use DATE/DATE, e.g. 1939/1945.

- **Creators:** All creators should be listed – preferentially with ORCID IDs, if possible.
- **Description:** When you upload datasets, it is important that you thoroughly fill out this text field. You can consider it the entry point for your metadata. Therefore, please include information about provenance (see REUSABLE section above) and any other information that you might find relevant. If you are uploading an article, you can copy-paste the abstract to be used as the “description”.



UPLOADING DATA AND PUBLICATIONS TO ZENODO

7. Type in basic Information (required) - Continued:

- **Licenses:** All scientific project outputs in Plant2Food must be open for everyone to use or reuse. Therefore, **you must choose the “Creative Commons Zero v1.0 Universal” option** in most cases. Automatically, the license is set to 'Creative Commons Attribution 4.0 International'. Therefore, this needs to be edited.

Licenses

~~Creative Commons Attribution 4.0 International~~ Edit Remove

The Creative Commons Attribution license allows re-distribution and re-use of a licensed work on the condition that the creator is appropriately credited. [Read more](#)

+ Add standard + Add custom

Change standard license ×

Search Q Recommended All Data Software

Apache License 2.0
A permissive license whose main conditions require preservation of copyright and license notices. Contributors provide an express grant of patent rights. Licensed works, modifications, and larger works may be distributed under different terms and without source code.

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The Creative Commons Attribution license allows re-distribution and re-use of a licensed work on the condition that the creator is appropriately credited.

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Permits almost any use subject to providing credit and license notice. Frequently used for media assets and educational materials. The most common license for Open Access scientific publications. Not recommended for software.

Creative Commons Zero v1.0 Universal
CC0 waives copyright interest in a work you've created and dedicates it to the world-wide public domain. Use CC0 to opt out of copyright entirely and ensure your work has the widest reach.

× Cancel ✓ **Change license**

If you are sharing software (which you have developed from scratch), we recommend that you upload it to **GitHub** using the “**MIT license**”. Zenodo has an integration with GitHub, which you can read more about here: <https://docs.github.com/en/repositories/archiving-a-github-repository/referencing-and-citing-content>



UPLOADING DATA AND PUBLICATIONS TO ZENODO

8. Recommended Information

The various categories under 'recommended information' are not generally mandatory for uploading to Zenodo, but the following categories listed below are required according to Plant2Food.

- **Contributors:** Individuals who are not authors of the uploaded material but whose contributions should still be acknowledged can be indicated here. The contributor's role must be specified when they are added.
- **Keywords and subjects:** Please use keywords that describe the subject/theme of the uploaded material, and the project it originates from.
- **Languages:** If possible, the uploaded material should be in English.
- **Publisher:** If the material has been published elsewhere before, please indicate this. If the material has not been previously uploaded elsewhere, the default 'Zenodo' text can remain.

9. Funding

- Click on the 'Add custom' tap.
- Fill in the following information as shown below and click 'Add':
 - Funder: Novo Nordisk Foundation, DK, 04txyc737
 - Number: NNF22SA0081019
 - Titel: Plant2Food

Add custom funding

Funder *

 ✕

Additional information (optional)

Number	Title	URL
<input type="text" value="NNF22SA0081019"/>	<input type="text" value="Plant2Food"/>	<input type="text" value="Award/Grant URL"/>

✕ Cancel ✓ Add

10. **Additional categories** can be added below, but it is not required.

✓ Your material for uploading can now be published.



SUGGESTED TYPES OF SHARABLE DATA

As mentioned above, it is possible to upload many different kinds of data to Zenodo. This section provides a few concrete examples, but please note that this is not an exhaustive list of data types. Some of the ‘upload types’ available on Zenodo have different ‘publication types’ to choose from.

When you have published your results on Zenodo, you cannot remove the attached file(s). However, you can always edit the published entry and upload a new updated version of a file. In this case, please remember to state the version number in the title of the uploaded file.

Publications:

An obvious example of what to share is publications such as journal articles. However, this upload type also covers other publications such as books and data management plans.

Of special interest, is the “project milestone” where you can upload your project plan (and when it is updated, you can simply edit the Zenodo entry and upload a new version of the project plan.

Poster:

When you present your Plant2Food project at a conference with a poster, we highly recommend that you also upload the poster to Zenodo.

Presentation:

All presentations about your Plant2Food project, can be uploaded in this ‘upload type’. You can upload a PowerPoint presentation or even a recording of a live presentation (such as a Knowledge Sharing Event)

Data:

This upload type allows you to upload raw data or a specific dataset.

If you prefer to upload your data to a database specific for your research field, you can simply upload a link for this entry. We would like Zenodo to be a “hub” for all Plant2Food data (and therefore require that you upload a link), but you are welcome to use any relevant database that you prefer.

Should your data consist of images or video/audio, you can choose these specific upload types.



SUGGESTED TYPES OF SHARABLE DATA

Software:

This category is to be used, if you have developed software (entirely on your own) as part of your project. Again, we recommend that you upload first on e.g. GitHub using the “MIT license”. Afterwards you use the ‘software’ entry to make sure that there is an active link on Zenodo to GitHub.

Please make sure that you have permission to upload and share the software in question, as this type of output is often composed by many bits of code from multiple origins and possibly with many different types of licenses associated. If you are using purchased software, please make to explicitly state this in your protocol.

Workflow:

This upload type can be used for (lab) protocols. Remember that it is possible to upload new versions of a protocol to an entry. Thus, it is possible to start sharing protocols at an early stage.

Biological materials:

If you have created e.g. microbial cultures (or other materials that you are willing to openly share), you should make sure to openly state this as well.

Plant2Food expects all projects to upload information about:

- Conference posters (Poster)
- Data
- Data Management Plan (Publication)
- Journal articles (Publication)
- Preprints (Publication)
- Project milestone – in the form of your project plan. (Publication)
- Software – please make sure that you have the full permission to share the entire code, if you have not built the code from scratch (Software)
- Workflow – aka protocols (Workflow)
- Biological materials (Physical object)