



Labforward GmbH

Elsenstr. 106, 12435 Berlin, Germany

www.labforward.io

Contact| Labforward Team

contact@labforward.io

+49 (0)30 / 91572642

White Paper:

Labfolder Data Portability

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Labfolder Data Portability

As a central platform for all data managed within a laboratory or an entire scientific institution, Labfolder offers a variety of options to import and export data for securing data in Labfolder and retrieving data for use outside the application. Exemplary use cases for import/export scenarios are:

- Import of data into Labfolder from devices, platforms, databases etc.
- Import of legacy data
- Automated transfer of measurement or surveillance data to Labfolder
- Import of protocols
- Export of data for archiving or migration

This guide will give an overview of the methods Labfolder provides for data portability.

Labfolder Data Hierarchy - Notebook

In the Labfolder notebook, scientific data as protocols, measurements, analyses, observations, calculations and conclusions are stored. Data in the notebook of Labfolder is organized according to the following hierarchical data model:

Folders are collections of a number of projects or any number of subfolders, which can, in turn, contain any number of projects.

Projects are collections of documents and files. Collaboration sharing and archiving is done at the level of projects as well. Projects are comparable with Document Folders in conventional file systems, and follow the notion of a project-based or person-bound paper lab notebook.

	Owner	Last Modified	Created
Folder → Group projects: Department of Neurobiology			
Projects → Biochemistry	Clark Williams	21.12.2021 18:27	08.12.2021 12:07
Cardiac Panel (hsTnl, NT-proBNP, D-dimer)	Frances Spiller	26.02.2021 18:40	06.05.2020 16:29
Interplay between asyn and ATP13A2	Sophie Dubois	29.12.2021 16:13	01.10.2018 11:47
Alzheimer's Disease Research Center	Jacek Antkowiak	21.10.2021 14:46	05.03.2020 09:24
[DEMO]	Frances Spiller	06.12.2021 15:58	06.10.2021 07:31
Staining of iNOS in APP/PS1 Alzheimer model	Jacek Antkowiak	30.09.2021 12:32	13.09.2017 16:14
sub folder	Frances Spiller	06.10.2021 10:26	06.10.2021 10:26
Folder → Common projects	Anne Kriegel	11.03.2021 08:14	11.03.2021 08:13
Buffer Preparation	Sophie Dubois	10.12.2021 15:19	11.03.2021 08:14
Labfolder Training and Guidelines	Anne Kriegel	11.03.2021 10:40	11.03.2021 08:14
Publication / Monthly Meeting data	Frances Spiller	11.03.2021 08:14	11.03.2021 08:14

Entries are documents in Labfolder which can contain an unlimited number of text, images, files etc. Entries are also the hierarchical level at which signatures, tags, dates, full audit trails and deletion can be applied. Entries thus represent logical units (i.e. experiments, theoretical notes on one topic, etc.) within the digital lab notebook and can be arbitrarily large or small.

Entry Elements (Blocks) are content contained in an entry like texts, spreadsheets, images, files, drawings, data elements and others and represent the lowest level of hierarchy in Labfolder.

Entries →

Entry 38/39 in Project: Interplay between asyn and ATP13A2

No entry title yet

Author: Frances Spiller Created: 16.12.2021 Last modified: 16.12.2021 Custom dates

Analysis

Entry 33/39 in Project: Interplay between asyn and ATP13A2

Immunocytochemistry

Author: Katja Wagner Created: 10.12.2021 Last modified: 10.12.2021 Custom dates

ATP13A2 SynT ICC

Entry Elements →

Alpha-synuclein and ATP13A2 - Immunocytochemistry for inclusions formation N=1

Background: Aberrant protein-protein interactions are a common pathological hallmark among neurodegenerative diseases, including Parkinson's disease (PD). Thus far, mutations in more than 20 genes have been associated with PD. These genes encode for proteins involved in distinct intracellular pathways, complicating our understanding of the precise molecular mechanisms underlying the disease. Recent reports suggested that the endolysosomal protein ATP13A2 can determine the fate of alpha-synuclein (α -Syn), although no consensus has yet been reached on the mechanisms underlying this effect.

Experimental approach: To understand whether the **ATP13A2 Δ C** mutation impacts on **α -Syn** aggregation, we used a well-described cellular aggregation model based on the co-expression of a C-terminally modified form of α -Syn. H4 neuroglioma cells were transfected with the previously described conditions.

Cells were seeded in a 6 well-plate format, 1 day prior to transfection, and kept up to 48 h after transfection. For ICC, the protocol used is described below

Intracellular aggregates.png

		Aggregate formation count							
		A	B	C	D	E	F	G	H
1	% of cells with aggregates								

Labregister Data Hierarchy - Inventory Manager

In Labregister, materials used in the lab are stored for easy and central management and for reference.

The data hierarchy in the Inventory Manager is as follows:

The screenshot displays the Labregister Inventory Manager interface. On the left, a sidebar shows a hierarchy of categories under the heading 'All categories'. The 'Chemicals' category is highlighted in green. On the right, a table lists 163 chemical items. The table has columns for 'Item ID' and 'Name'. A search bar is located at the top right of the table. Red boxes and arrows highlight the 'Department of Neur...' group, the 'Chemicals' category, and a specific item 'Potassium hydrogen carbonate'.

Item ID	Name
LR-20210304-560	1,3-Dihydroxynaphthalene
LR-20210304-561	L-(-)-Malic acid
LR-20210304-562	Nicotinic acid
LR-20210304-563	Lithium iodide hydrate
LR-20210304-564	Guanidinium rhodanide
LR-20210304-565	Formic acid sodium salt
LR-20210304-566	Potassium carbonate
LR-20210304-567	N-chlorosuccinimide
LR-20210304-568	Ethylene glycol
LR-20210304-569	6-aminocaproic acid
LR-20210304-570	Potassium hydrogen carbonate

Categories are used to organise items, which are characterised by Attributes, which can be defined as mandatory or non-mandatory for all items collected in a category.

Items represent the lowest level of hierarchy in the Labregister hierarchy and are characterized by values for each attribute, which is defined by the category in which items are placed.

Labfolder Import Methods

RESTful API

Every Labfolder exposes a RESTful API for the Import of data. Currently, the [Version 2](#) API provides access to the following data levels:

- Folders
- Projects
- Entries
- Entry Elements

Additionally, Tags and Custom Dates can be imported via the API.

The API also allows the import of Items into the Inventory Manager. A tool for the import of Excel sheets into Labregister is also available directly in the User Interface.

Labfolder Export Methods

RESTful API

Analogous to data import as described above, data can be exported from Labfolder via the API in JSON.

When exporting data via the API, Labfolder provides the data structures together with the raw files that are stored in Labfolder.

PDF

In Labfolder, Projects, Entries and Templates can be exported in a human-readable PDF format. The contents may be rearranged for improved legibility in a printable format.

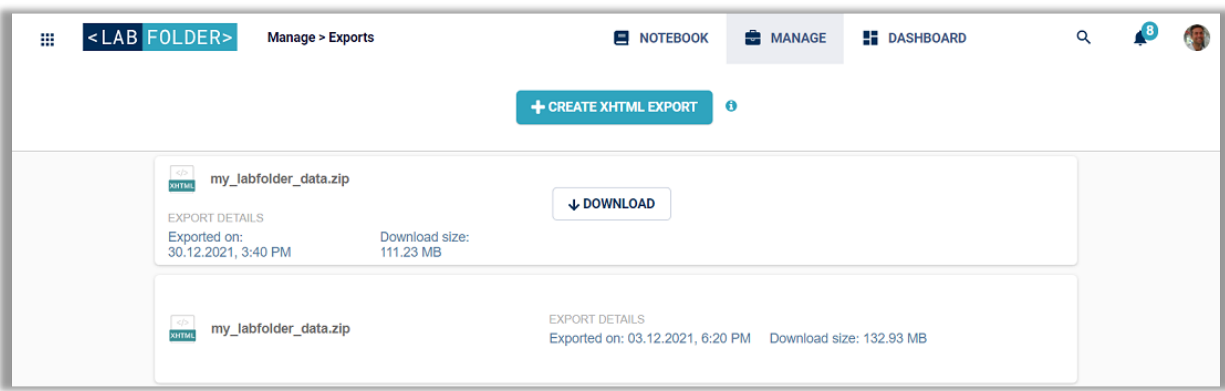
PDF export can be initiated either from the project or template view or from the notebook view.

Files deposited in the notebook are represented by hyperlinks in the PDF file which will direct to the file path in Labfolder provided that the user has a valid session token in the browser which is used to open the link.



XHTML

Labfolder allows the export of projects and templates which are owned by a user as a read-only XHTML file which can be stored and opened offline. The XHTML download is accompanied by a download of all files stored within the exported projects and templates.



After export, a zip file is downloaded, which will extract to an archive containing several HTML files plus folders containing the exported data.

When extracting the zip folder, you will find subfolders for projects and templates. For each exported project, there is a folder in the respective 'projects' subfolder. Subfolders might be empty if there has not been any data imported (i.e. the 'My private projects' is empty if there are no private projects exported).

In the project folder, all images and files which are stored within the project are available, together with a file called 'index.html'. Clicking on any 'index.html' file will open the export archive in a browser, where it is browsable exactly like in Labfolder itself.

The 'index.html' file contains structured information about the authors of entries, the date, the origin, information about digital signatures, and others.

If you have any questions about the Labfolder Data portability features, please do not hesitate to contact us anytime at feedback@labfolder.com.