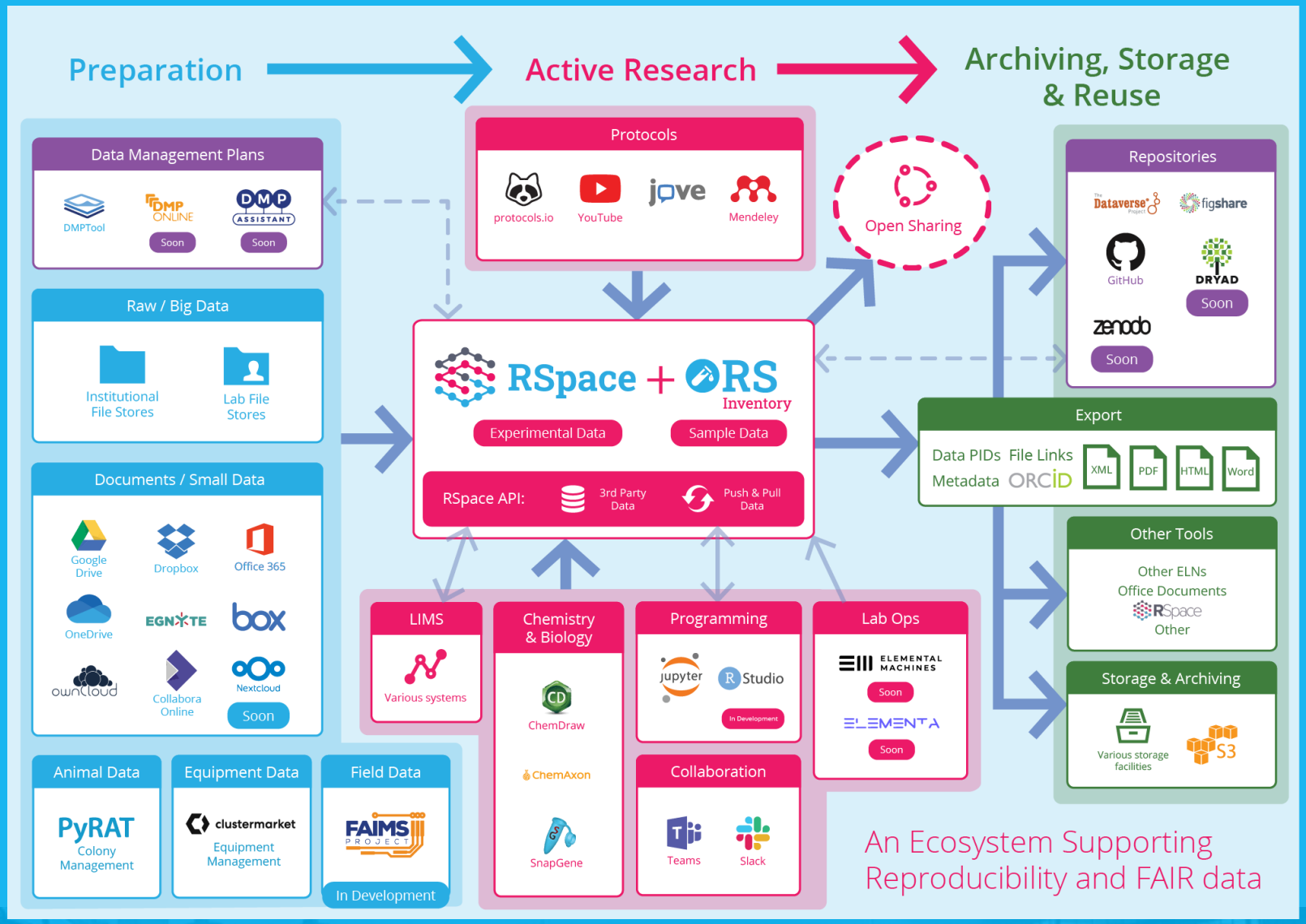
2022 RDA E-Seminar Series - Laboratory Information Management Systems (LIMS) and Electronic Laboratory Notebooks (ELNs)

RSpace

Rory Macneil
August 4, 2022

Built around openness and connectivity
Enhancing FAIRification of data



Current development 1

Enhanced discoverability through association of metadata schemas and PIDs with RSpace datasets

- PIDS
  - Associate DataCite DOIs with RSpace datasets
  - Associate domain specific PIDS (e.g., IGSNs) with RSpace sample data

- Metadata
  - Controlled vocabularies
  - Metadata schemas

Current development 2

iRODS integraton

- Phase 1: Solving the ‘broken links’ problem
- Phase 2: Deeper integration around metadata enabling information provided by RSpace to become discoverable in iRODS, and vice versa

Possible development

Going Open Source

- Investigation beginning in September

Rory Macneil
rmacneil@researchspace.com

RSpace

Electronic Lab Notebooks: Experiences from Göttingen Campus

Dr. Robert Kossen
CRC 1002 – Modulatory Units in Heart Failure

Department of Medical Informatics

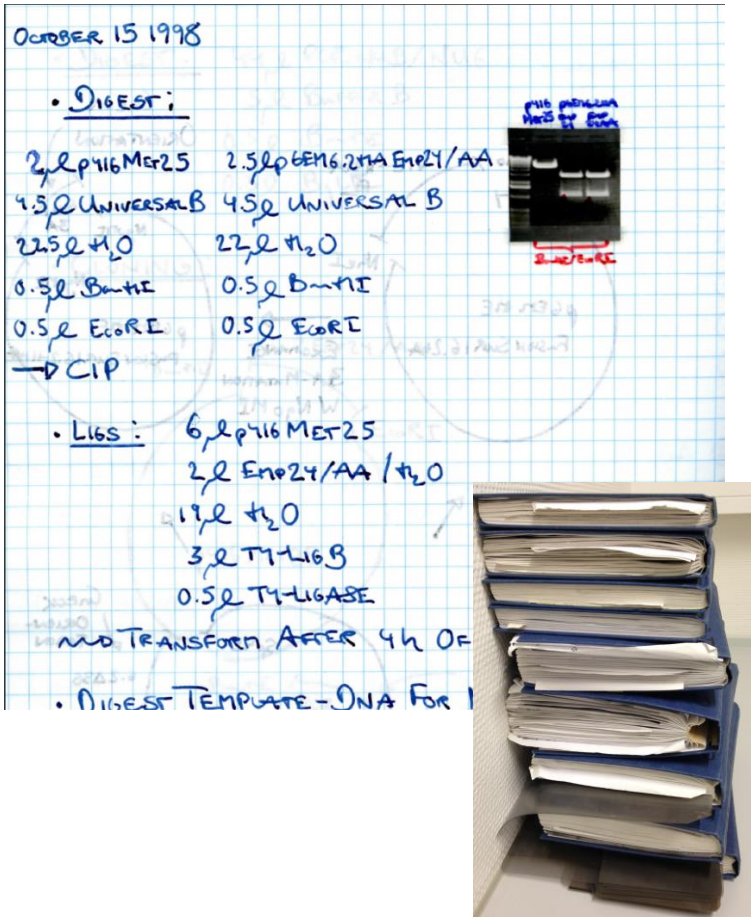
Electronic Lab Notebook
Efforts and Implementation in Göttingen

- Primary contact with RSpace through CRC funded INF project and the MBExC in the Department of Medical Informatics

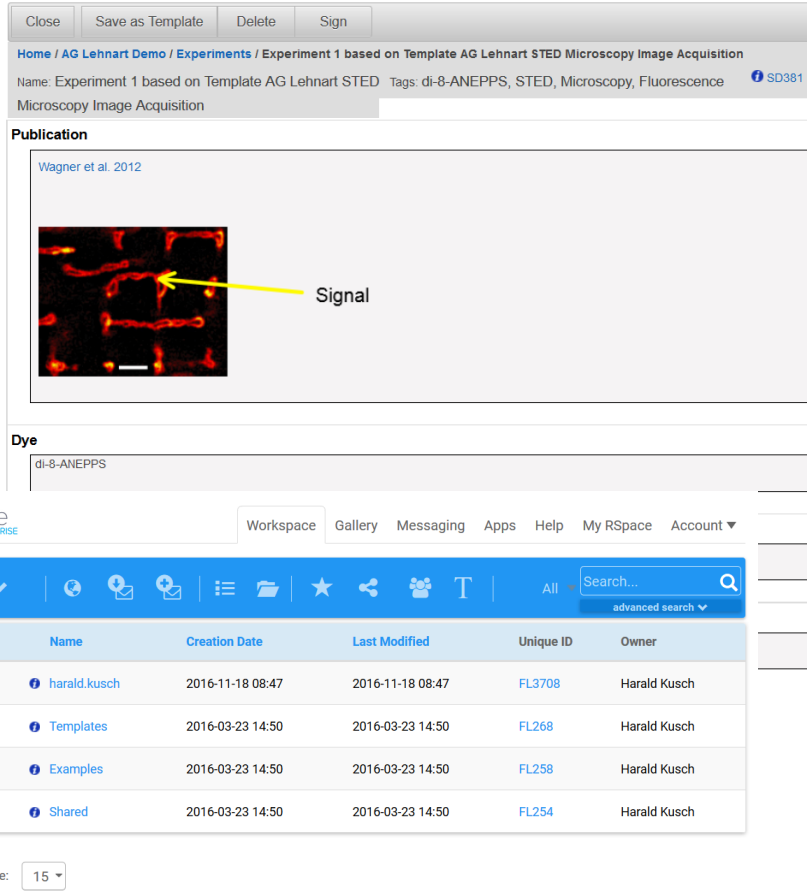
- In our role as providers of research data infrastructure and data managers, we also help to introduce, implement and train people with the ELN

Paper VS Digital

Paper based lab notebook

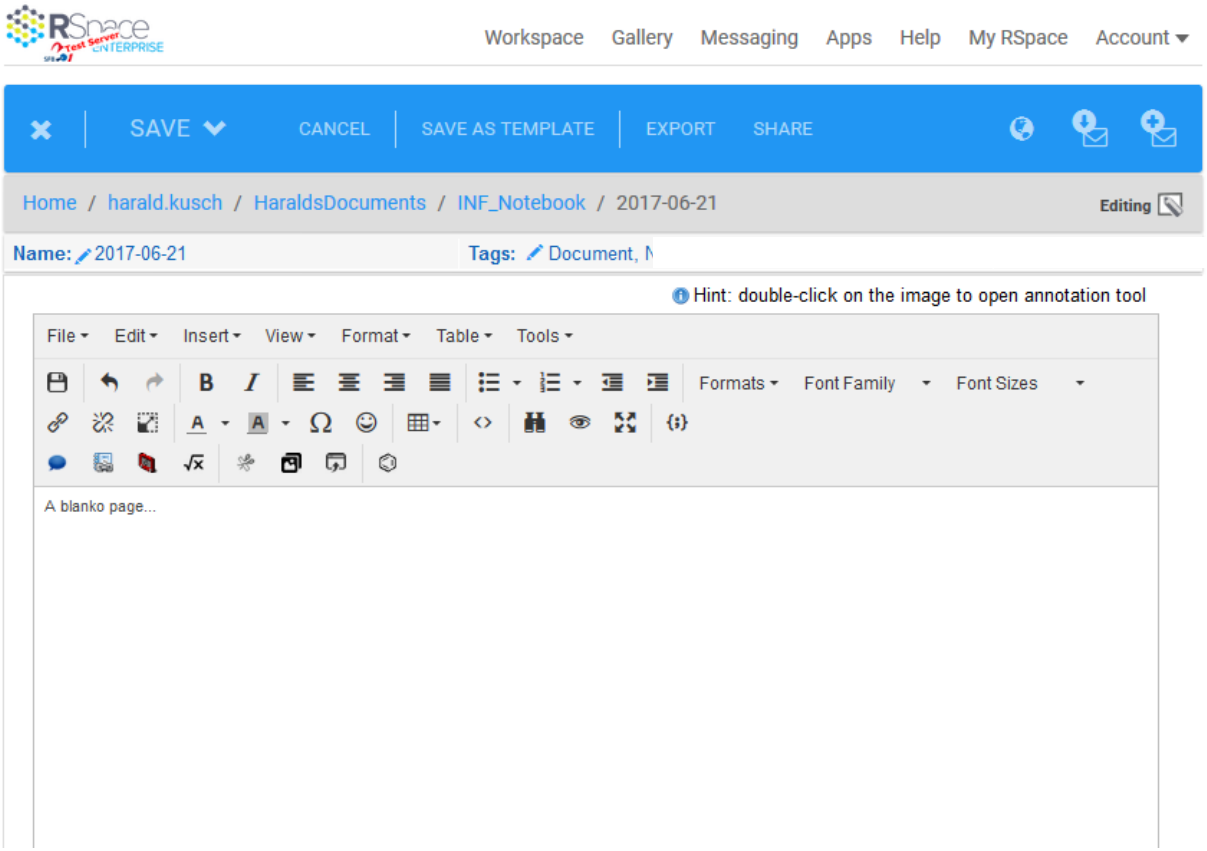


Electronical lab notebook (ELN)



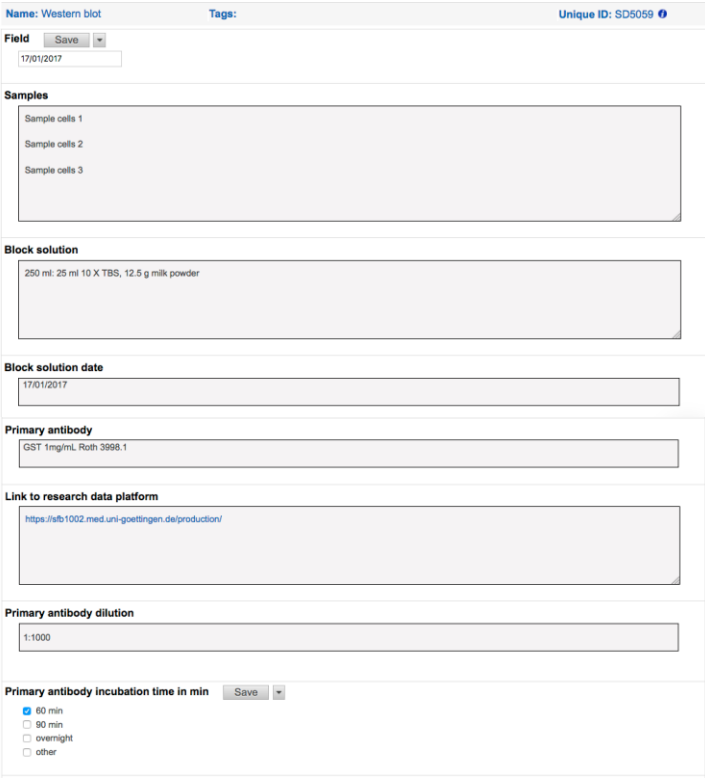
RSpace: Structured and Unstructured documentation

- Allows for creative, “form free” notes



RSpace: Structured and Unstructured documentation

- Allows for creative, “form free” notes
- Structured approaches allow for better/standardized learning tools, centralized protocols, etc.



RSpace: Structured and Unstructured documentation

- Allows for creative, “form free” notes
- Structured approaches allow for better/standardized learning tools, centralized protocols, etc.
- Audit Trail

Audit: My RSpace Activity

You can filter this audit by Actions and Date Range

Select date range to audit From 2017-01-09 To 2017-01-13 X

Get Audit Report

You found 160 hits.

Time	User	Action	Type	Resource	Name
2017-01-13 11:30:39	Evelina De Laurentiis	WRITE	RECORD	SD4629	2017_01_09_13
2017-01-13 11:30:20	Evelina De Laurentiis	READ	RECORD	SD4629	2017_01_09_13
2017-01-13 11:15:52	Evelina De Laurentiis	WRITE	RECORD	SD4629	2017_01_09_13
2017-01-13 11:05:32	Evelina De Laurentiis	READ	RECORD	SD4629	2017_01_09_13
2017-01-12 15:59:26	Evelina De Laurentiis	READ	RECORD	SD2082	PCR
2017-01-12 15:58:22	Evelina De Laurentiis	READ	RECORD	SD1924	bam mutant rtPCR
2017-01-12 15:41:54	Evelina De Laurentiis	SEARCH	WORKSPACE		
2017-01-12 14:49:25	Evelina De Laurentiis	READ	RECORD	SD4629	2017_01_09_13
2017-01-12 14:46:58	Evelina De Laurentiis	CREATE	RECORD	GL4915	MINI Prep_Kit.doc
2017-01-12 14:46:36	Evelina De Laurentiis	READ	RECORD	SD2936	MINI Prep_Kit

Show more ...

Challenges

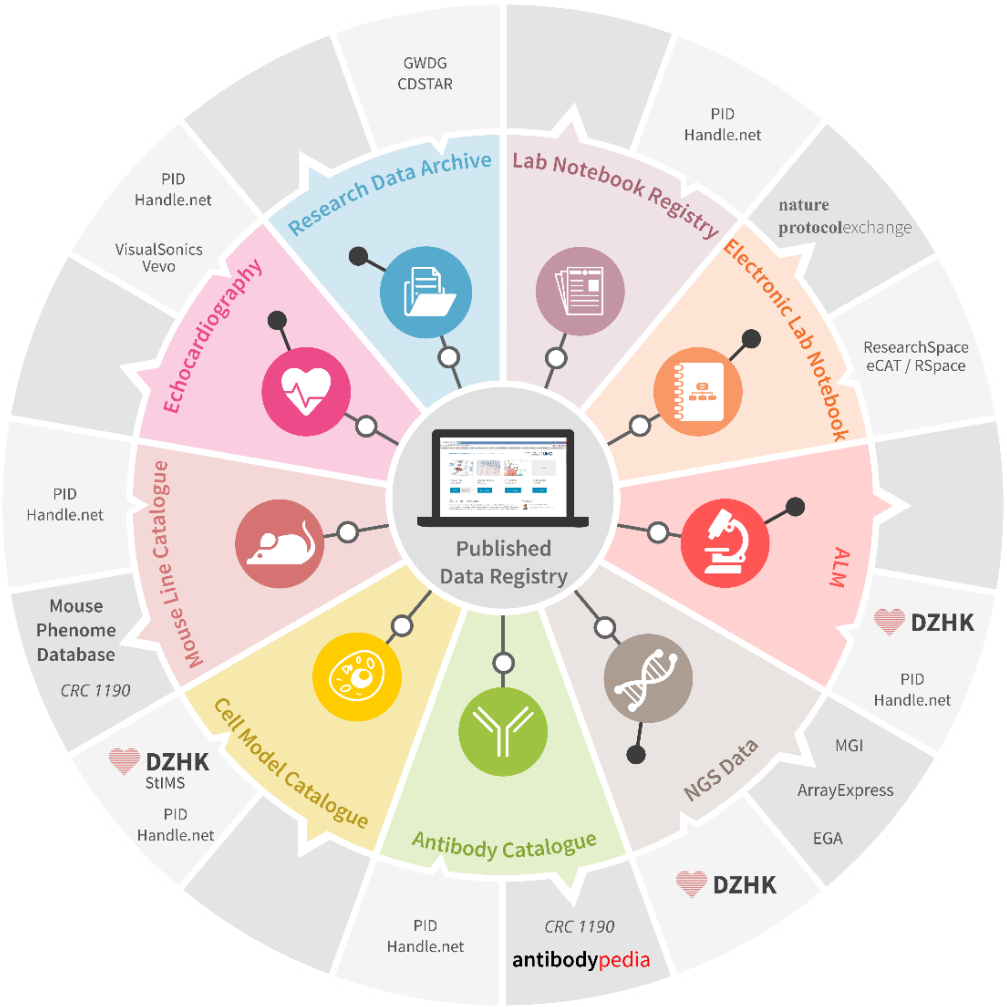
Introduction of ELN in academic research environments

- No routine workflows (basic research)
- Dynamic working structures (heterogeneous methodology)
- High dynamics of interdisciplinary team composition
- Data management/access policies rarely defined

Research Data Platform

menoci

- Collection and interconnection of research data used in publications
- Persistent resolvable access and long-term re-usability of data
- Data standardization for submission to public repositories



https://menoci.io/

Sample documentation – external representation

menoci RDP

Publication Type	Journal Article
PMID	33232743
DOI	10.1016/j.neuro.2020.11.005
Publication Year	2020
Title	JM-20 protects against 6-hydroxydopamine-induced n

External Resources

- 10116 NCBI taxonomy (rat, Rattus norvegicus
- 0000-0003-1679-1727 ORCID identifier (Tiago Flem
- 04a7f6w43 ROR identifier (04a7f6w43, Max Pla
- 021ft0n22 ROR identifier (021ft0n22, Universit
- SCR_002798 SciCrunch identifier (RRID:SCR_002
- SCR_003070 SciCrunch identifier (RRID:SCR_003070, ImageJ)
- Q102374229 Wikidata ID

+ Add External Resource

Linked Antibodies

PID	AG	Type	Antigen symbol	Antibody Registry ID	Name
primary-0280	CSt	primary	GFAP	AB_10013382	Glial Fibrillary Acidic Pr
primary-0581	TO	primary	TH	AB_11156128	Anti-Tyrosine Hydroxylase antibody [TH-100]
secondary-0582	TO	secondary		AB_2650601	Goat Anti-Mouse IgG H&L (Alexa Fluor® 594)
secondary-0583	TO	secondary			Rabbit Anti-Goat IgG H&L (Alexa Fluor® 488)

Antibody Catalogue

The catalogue currently contains 585 antibodies (primary: 474, secondary: 111).

Search: Antigen Symbol, Name, Alternative name, Antigen

Import Export

New primary antibodies

AG	PID	Antigen Symbol	Antibody Registry	Name	Clonality	Antigen	Quality	Company	Catalog no.
	primary-0584	METTL4		METTL4 antibod					
	primary-0581	TH	AB_11156128	Anti-Tyrosine Hydroxylase ant [TH-100]					

View primary antibody

Basic data

PID	primary-0581
EPIC PID	primary-0581
Research group	RG Outeiro
Quality (mean)	no score (0.00)
Sharing level	Public

Antibody data

Antigen symbol	TH
Antibody Registry ID(s)	AB_11156128
Name	Anti-Tyrosine Hydroxylase antibody [TH-100]

Applications

No application comments yet.

Add new application comment

Linked publications

JM-20 protects against 6-hydroxydopamine-induced neurotoxicity in models of Parkinson's disease: Mitochondrial protection and antioxidant properties

Fonseca-Fonseca LA, da Silva VDA, Wong-Guerra M, Ramírez-Sánchez J, Yaquis ASP, Ochoa-Rodríguez E, Verdecia-Reyes Y, de Araújo FM, Santana RC, Outeiro TF, Costa SL, Núñez-Figueredo Y

NeuroToxicology 2020 : 10.1016/j.neuro.2020.11.005

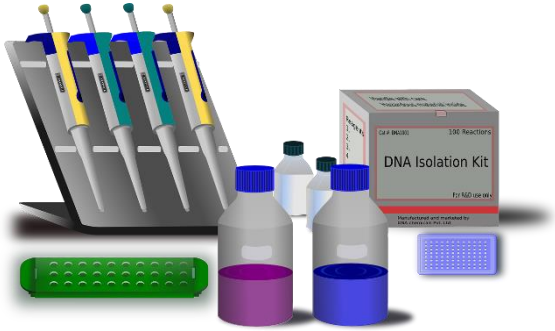
https://mbexc.uni-goettingen.de/literature/publications/236
https://menoci.io/

Sample management in research

“The lab perspective”

- Collecting, interacting with or usage of different physical samples/materials is a fundamental part of most research

Hey Paul from State College, PA, USA, CC BY 2.0, via Wikimedia Commons



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Sample management in research

“The lab perspective”

- Collecting, interacting with or usage of different physical samples/materials is a fundamental part of most research
- Samples often only come with minimal information
  Complete information often stored in central document/repository („best“ case) or personal files (not-so-good case)
- Documentation of experiments often only contains essential information

Sample management in research

Physical samples in RSpace

Mouse list

Containers / Mouse list

Info | Edit | Duplicate | Move | Delete | Transfer | Split | Create Template

General

Name
Mouse list

Can Store
Subsamples
Containers

Type
List

Description

Tags

Preview Image

Locations and Content

Search

Name	Global ID
Mouse1.01	SS721061
Mouse2.01	SS721062
Mouse3.01	SS786432

Info | Edit | Duplicate | Move | Delete | Transfer | Split | Create Template

Name
Mouse1

Sample Template
New template from AnimalCount_table

Expiry Date

Source
Lab Created

Date of experiment
24.08.2020

Animal ID in tick@lab
12-34

Ear code
-

Origin
ZTE

Date of birth
17.08.2020

Gender
m

Procedure code
INJ.Blue

INF team

PD Dr. Sara Nußbeck

(TP INF-Leader IT)

orcid.org/0000-0003-1223-6494

PD Dr. Laura Zelarayán-Behrendt

(TP INF-Leader Research)

orcid.org/0000-0002-9001-0346

Dr. Harald Kusch

(PostDoc)

orcid.org/0000-0002-9895-2469

Dr. Robert Kossen

(PostDoc)

orcid.org/0000-0003-1236-0815

Christian Henke

(Technical coordination)

orcid.org/0000-0002-4541-4018

Luca Freckmann

(Technical coordination)

orcid.org/0000-0002-8285-2586

Linus Weber

(Technical coordination)

orcid.org/0000-0001-7973-7491

Student assistants:
Georg Aschenbrandt
Christoph Lehmann
Sophia Rheinländer
Maik Darius Taylor

Georg-August University Göttingen
ror.org/01y9bpm73

University Medical Center Göttingen
ror.org/021ft0n22