

Enabling connectivity in electronic laboratory notekeeping

A pilot approach in biomedical sciences

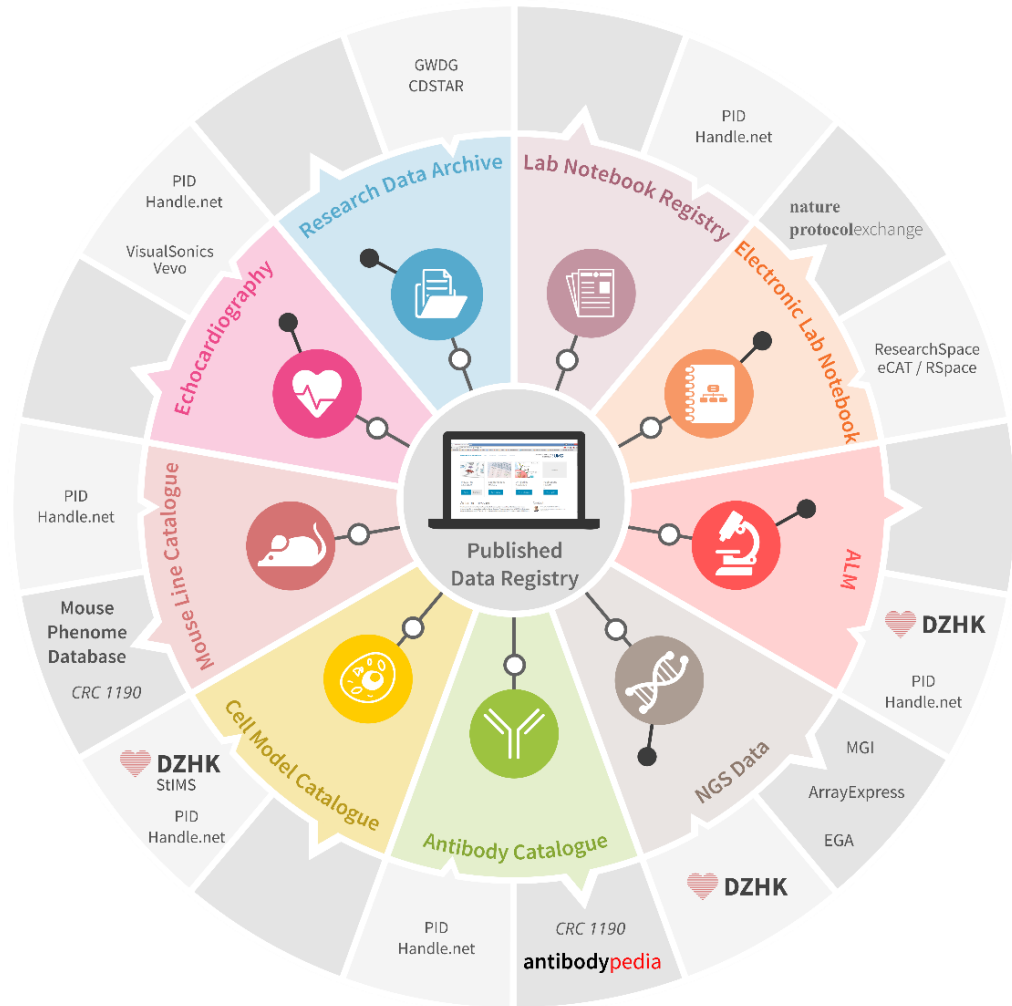
SFB 1002/1190 INF team

Challenges:

Introduction of an 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

- Collection and interconnection of research data used in publications
- Persistent resolvable access and long-term re-usability of CRC 1002 data
- Data standardization for submission to public repositories
- Data access: Development of Use & Access Policies

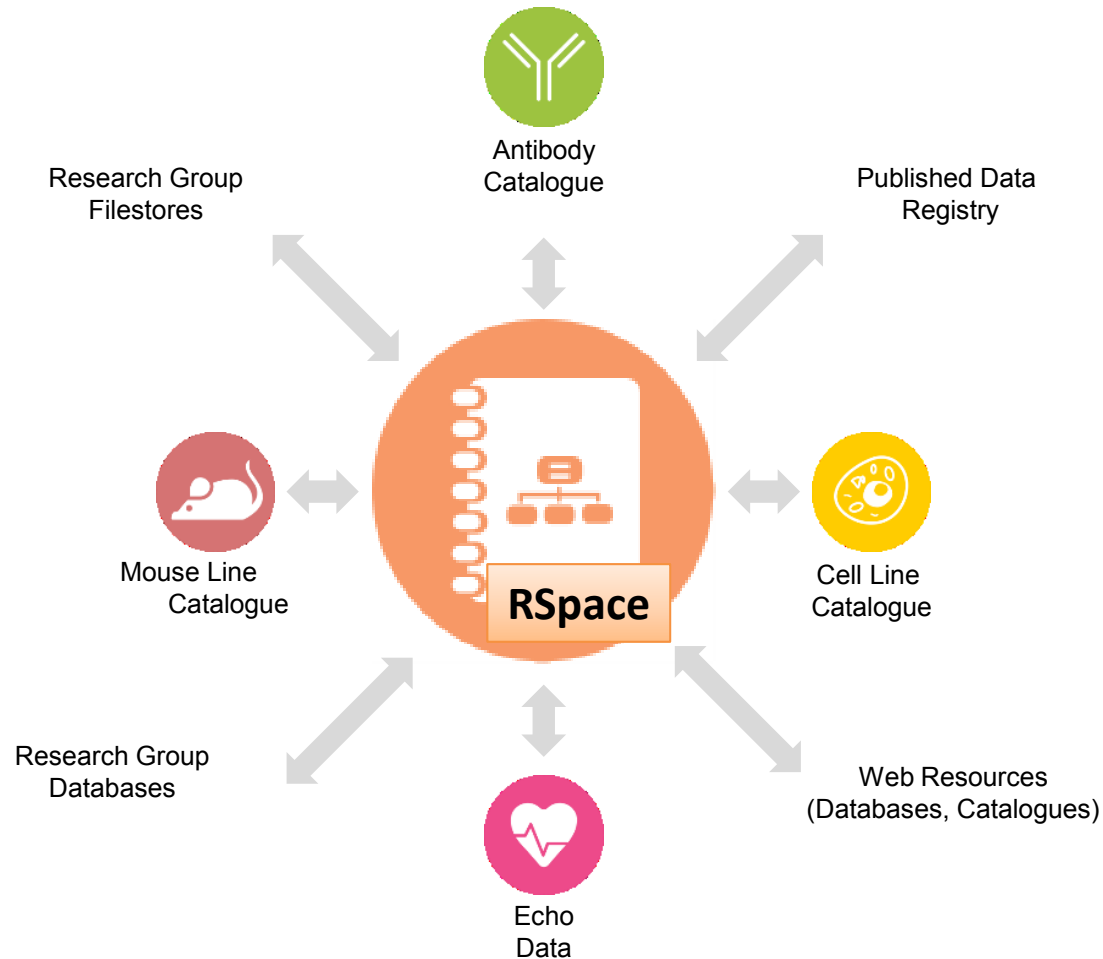


C 1002

Research Data Platform

ELN organization

Cross-linking data in an ELN



Name:  Manual antibody description

Tags: 

Unique ID: SD6216 



The antibody used in the experiment is p115 (BD Biosciences Catalog no. 612261). It is highly specific and stored at -20°C.

View primary antibody

Basic data

PID	umg-sfb1002-antibody-primary-656
EPIC PID	https://hdl.handle.net/11022/umg-sfb1002-antibody-primary-656
Research group	AG Lehmann
Quality (mean)	no score (0.00)
Sharing level	Group

Name:  Cross-linked antibody description

Tags: 

Unique ID: SD6218 



Used Antibody: <https://hdl.handle.net/11022/umg-sfb1002-antibody-primary-656>

Antibody data

Antigen symbol	
Antibody Registry ID(s)	AB_399578
Name	p115
Alternative name	Golgi Marker
Tag / Fluorophore	
Raised in	Mouse
Reacts with	Mouse
Clone	
Isotype	IgG1
Clonality	monoclonal
Demasking	unknown
Antigen	rat p115 aa 843-955
Crafted By	company
Company / Manufacturer	BD Biosciences
Catalog no.	612261
Lot no.	
Description	high specific
Localization	
Storage instruction	-20°C
Receipt date	2017-11-06 00:00:00
Preparation date	2017-11-06 00:00:00
Created by	Aschenbrandt, Georg
Last modified	Aschenbrandt, Georg

CRC 1002 (Scientific Consortium)

Research Group 1

1. Community (optional)
2. PI
3. Lab Manager
4. User (Scientist)



Research Group 2

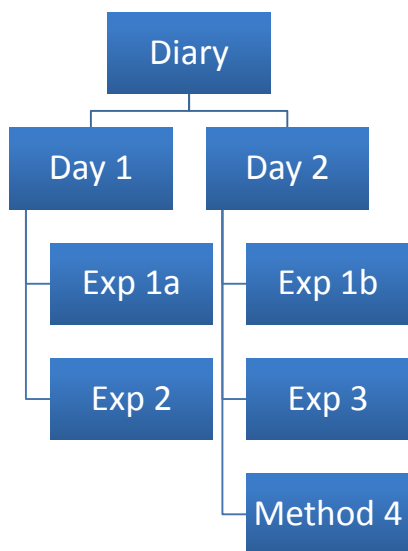
1. Community (optional)
2. PI
3. Lab Manager
4. User (Scientist)



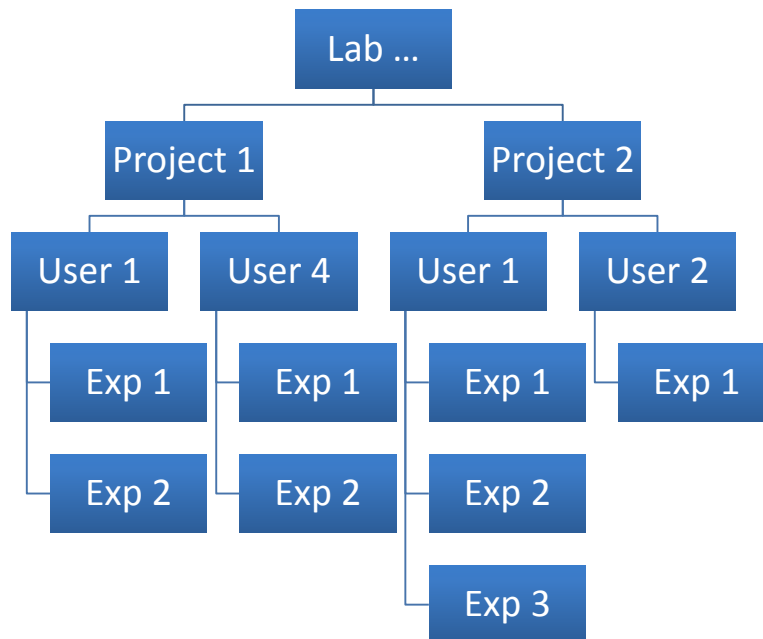
ELN organization

Structuring data in an ELN

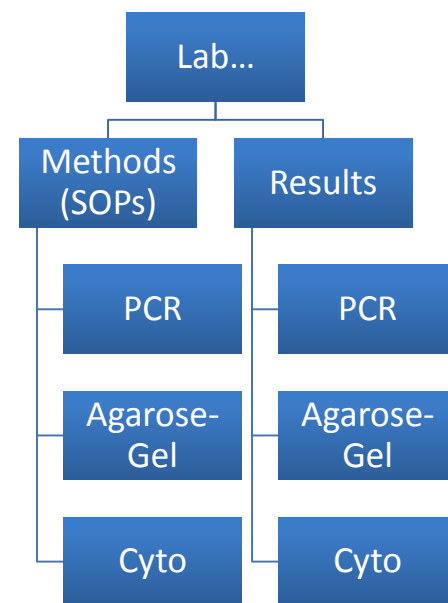
a. Chronologically



b. Project-oriented



c. Method-oriented



ELN organization

Restricted access

Welcome to RSpace

User 

Password 

[Forgotten your password?](#)

☐ remember me

LOGIN

ELN organization Workspace

CREATE ▼



All ▼



advanced search ▼

☐	Type	Name	Creation Date	Last Modified	Unique ID	Owner
☐		harald.kusch	2016-11-18 08:47	2016-11-18 08:47	FL3708	Harald Kusch
☐		Templates	2016-03-23 14:50	2016-03-23 14:50	FL268	Harald Kusch
☐		Examples	2016-03-23 14:50	2016-03-23 14:50	FL258	Harald Kusch
☐		Shared	2016-03-23 14:50	2016-03-23 14:50	FL254	Harald Kusch

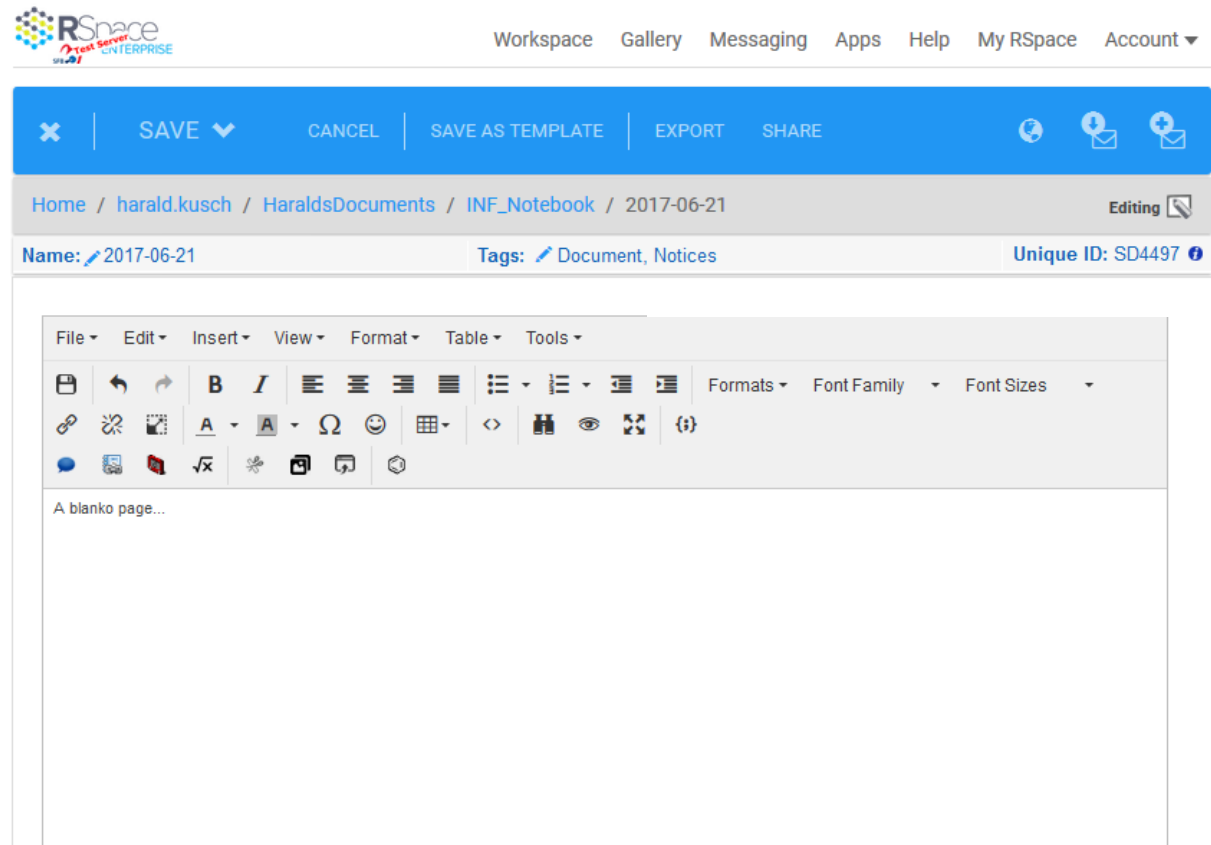
Items per page:

15 ▼

ELN documentation

Unstructured documentation

- New methods
- Room for “creativity”



The screenshot displays the RSpace web interface. At the top, there is a navigation bar with links for Workspace, Gallery, Messaging, Apps, Help, My RSpace, and Account. Below this is a blue action bar with buttons for Cancel, Save, Save as Template, Export, and Share. The main content area shows a document titled '2017-06-21' with tags 'Document, Notices' and a unique ID 'SD4497'. The document is currently in 'Editing' mode. The interface includes a rich text editor with a menu bar (File, Edit, Insert, View, Format, Table, Tools) and a toolbar with various icons for text formatting, alignment, and insertion. The main editing area is currently blank, displaying the text 'A blanko page...'.

ELN documentation

Structured documentation

- Centralized protocols
- Learning tool
- Quickly shared
- Metadata recording facilitated

Name: Western blot Tags: Unique ID: SD5059

Field 17/01/2017

Samples

Sample cells 1
Sample cells 2
Sample cells 3

Block solution

250 ml: 25 ml 10 X TBS, 12.5 g milk powder

Block solution date

17/01/2017

Primary antibody

GST 1mg/mL Roth 3998.1

Link to research data platform

<https://sfb1002.med.uni-goettingen.de/production/>

Primary antibody dilution

1:1000

Primary antibody incubation time in min

☒ 60 min
☐ 90 min
☐ overnight
☐ other

Primary antibody incubation temperature

RT

Secondary antibody

IRDye 800 CW Donkey anti-Rabbit IgG

Secondary antibody supplier

P/N 926-32213, LI-COR INC.

Secondary antibody dilution

1:5000

ELN documentation

Institutional filestore connectivity

- Cross-linking of primary research data
- Enables remote access to lab data
- Exports contain automatic lists of cross-linked data

Owner: Harald Kusch Calculation Table Example Page: 3

Network files

File System Id	File System URL	Path
1	smb://filer4.be-mrz.med.uni-goettingen.de/Gruppenlaufwerk_ML_Prak/Projekte/SFB1002/ELN_Filestore	eCAT-Schulung/ImportExcel.xlsx

Export date: 2018-02-27 Exported by: Harald Kusch

File details:

Name: ImportExcel.xlsx
Full path: eCAT-Schulung/ImportExcel.xlsx

Stored on a File System:

Name: Mltest
URL: smb://filer4.be-mrz.med.uni-goettingen.de/Gruppenlaufwerk_ML_Prak/Projekte/SFB1002/ELN_Filestore

Download

OK

This entry shows the calculation table for the RIPA buffer

RIPA buffer

<http://www.abcam.com/protocols/buffer-and-stock-solutions>

ImportExcel.xlsx

RIPA buffer contains the ionic detergent sodium deoxycholate as an active ingredient. A RIPA buffer gives low background but can denature kinases. It is used for immunoprecipitations and pull-down assays.

50 mM Tris HCl, pH 7.5
150 mM NaCl
1% NP-40
0.5% sodium deoxycholate
0.1% SDS

Filestores

Filestore: Test

- FirstFolder
- ImportExcel.xlsx
- Journal.pone.0025290.pdf
- Microscopy.PNG
- PCR-Wiki.png
- SecondFolder
- Test
- TestImportRSpace.docx
- Thumbs.db
- westernblot.jpg

Order by: Select None

Insert

File Explorer: eCAT-Sch...

Name

- FirstFolder
- SecondFolder
- Test
- ImportExcel.xlsx
- Journal.pone.0025290.pdf
- Microscopy.PNG
- PCR-Wiki.png
- TestImportRSpace.docx
- Thumbs.db
- westernblot.jpg

10 Elemente

must be protected from light.

	D	E	F	G	H
1		I RIPA Buffer			
150		ml NaCl stock solution			
50		ml Tris HCl stock solution			

Audit Trail

Audit: My RSpace Activity

You can filter this audit by [Actions](#) and Date Range

Select date range to audit From To

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 L	Modification Date Modification Details Options			
2017-01-12 15:58:22	Evelina De L				
2017-01-12 15:41:54	Evelina De L	2017-01-31 14:22:00	RENAME	View	Restore
2017-01-12 14:49:25	Evelina De L	2017-01-31 14:22:18	RENAME	View	Restore
2017-01-12 14:46:58	Evelina De L	2017-01-31 14:25:04	FIELD_CHG-Data	View	Restore
2017-01-12 14:46:36	Evelina De L	2017-01-31 14:28:39	FIELD_CHG-Data	View	Restore

[Show more ...](#)

ORCID integration



[Workspace](#)
[Gallery](#)
[Messaging](#)
[Apps](#)
[Help](#)
[My RSpace](#)
[Account ▼](#)

[My Profile](#)
[Directory](#)
[Create/Edit Form](#)

[Manage Forms](#)
[View Deleted Items](#)
[Manage Shared Documents](#)
[Auditing](#)



Connecting Research and Researchers

[EDIT YOUR RECORD](#)
[ABOUT ORCID](#)
[CONTACT US](#)
[HELP](#)

3,529,305 ORCID IDs and counting. [See more...](#)

We want to hear from you! [Please take our survey](#) to tell us about your use and experience of ORCID. Thank you!

My Profile - Username: harald.kusch

First Name: Harald

Last Name: Kusch

Optionally, add any information about you or your research.

E-Mail: harald.kusch@med.uni-goettingen.de

ORCID:  <http://orcid.org/0000-0002-9895-2469>

Manage API key

Harald Kusch

ORCID ID
 <http://orcid.org/0000-0002-9895-2469>

Country
Germany

Keywords
Forschungsdatenmanagement, e-Science, Digital Medicine, Digital transformation, Biomedical informatics

Websites
[UMG Medizinische Informatik](#)
[CRC 1002 Research Data Platform](#)
[Mendeley profile](#)
[Linked In Profile](#)
[Researchgate Profile](#)
[RDA Profile](#)

Other IDs
ResearcherID: I-5912-2015

▼ Employment (4)

Universitätsmedizin Göttingen: Göttingen, Niedersachsen, Germany
2014-08 to present
Scientist (Institut für Medizinische Informatik)
Source: Harald Kusch Created: 2015-05-06

Georg-August-Universität Göttingen: Göttingen, Niedersachsen, Germany
2010-08 to 2014-08
Scientist (Institut für Mikrobiologie und Genetik)
Source: Harald Kusch Created: 2015-05-06

Ernst-Moritz-Arndt Universität Greifswald: Greifswald, Mecklenburg-Vorpommern, Germany
2005 to 2010
(Institut für Mikrobiologie)
Source: Harald Kusch Created: 2016-10-27

Julius-Maximilians-Universität Würzburg: Würzburg, Bayern, Germany
2000 to 2004

Easy additional reusable archiving strategies:

Regular Data-Exports

Most similar to paper, partially interactive => PDF-Format

Most similar to ELN (Rspace), interactive => HTML-Format

Interoperability, human and machine readability => XML-Format

Interfaces to repository software (e.g. Dataverse, DSPACE)

Dataverse Connection


Workspace Gallery Messaging Apps My RSpace Help Account ▾

× SAVE AS TEMPLATE 🗑️ SIGN EXPORT SHARE

[Home](#) / [SFB 1002](#) / [Subproject INF](#) / [ETL Script](#)

Name: [ETL Script](#)

```
#postscript(family="Times", 'multi.ps', width=40)
#pdf(family="Times", 'multi.pdf', width=40)

# draw points (offsets is for color)
offsets <- c(0.0, 0.3, 0.3, 0.6, 0.6)
linethick <- c(0.5, 0.5, 0.5, 1.5, 1.5)
leg.txt <- c(
  "actual p(novel)",
  "p'(novel), method X",
  "p'(novel), method X+stdev",
  "p'(novel), method X-fac",
  "p'(novel), method X-fac+stdev ")

#read source file
data_table <- read.table("multi.data",
  col.names=c("vx1", "vy1", "vy2", "vy3", "vy4", "vy5", "vy6", "vy7"))

#cbind() forms matrices by binding together matrices horizontally,
#or column-wise and rbind() vertically, or row-wise
```

Required Information for Repository Deposit

Please choose a repository to submit your export in "DATAVERSE":

☒ DATAVERSE eln
 ☐ DATAVERSE eln

App 'FIGSHARE' requires activation to be available. Please ask your sysadmin to activate 'FIGSHARE'.

App 'DSpace' requires activation to be available. Please ask your sysadmin to activate 'DSpace'.

Göttingen/eResearch Alliance

eRA > electroniclabnotebook

Authors
 Name Email

Add

Description
 This script enables ETL processing for dataset /sfb-1002-alm-00001

Subject
 Medicine, Health and Life Sciences

Search this dataverse...

Find Advanced Search

+ Add Data ▾

Citation Metadata ▴

Dataset Persistent ID
 doi:10.5072/ITXS37

Title
 ETL Script 0.1

Author
 Harald Kusch (University Medical Center Göttingen) - ORCID: 0000-0002-9895-2469

Contact
 ⓘ Use email button above to contact.

Filter Results

Author Name: Harald Kusch ✕

1 to 10 of 15 Results

ETL Script 0.1

Draft Unpublish

Nov 17, 2017

Harald Kusch, 2017, "ETL Script 0.1"

This is the RSpace-Doc



Dr. Sara Nußbeck

(TP INF-Leader IT)

orcid.org/0000-0003-1223-6494



Prof. Dr. Blanche Schwappach

(TP INF-Leader Research)

orcid.org/0000-0003-0225-6432

Georg Aschenbrandt

Luca Freckmann

Christian Henke

Sophia Rheinländer

Björn Hansen



Dr. Evelina De Laurentiis

(PostDoc)

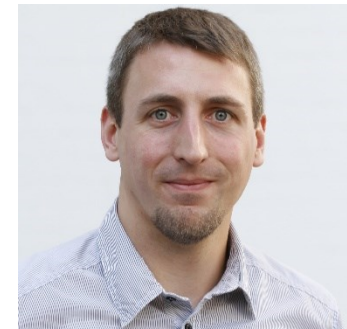
orcid.org/0000-0002-6469-1627



Dr. Harald Kusch

(PostDoc)

orcid.org/0000-0002-9895-2469



Markus Suhr

(B.Sc. Inf)

orcid.org/0000-0002-6307-3253

ELN implementation

Challenges

- Start up phase

Takes some time

- Familiarize

Ideal vs reality

All icons used were designed using Freepik from and licensed under Creative Commons BY 3.0. www.freepik.com; www.flaticon.com