

SFB 1286  
Quantitative Synaptology



# Electronic laboratory note keeping

Göttingen Campus

# 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

# ELN

## Unstructured documentation

- New methods
- Room for “creativity”

The screenshot displays the RSpace web interface. At the top left is the RSpace logo with the tagline 'Next Server ENTERPRISE'. The top navigation bar includes 'Workspace', 'Gallery', 'Messaging', 'Apps', 'Help', 'My RSpace', and 'Account'. Below this is a blue action bar with buttons for 'SAVE', 'CANCEL', 'SAVE AS TEMPLATE', 'EXPORT', and 'SHARE'. The breadcrumb path is 'Home / harald.kusch / HaraldsDocuments / INF\_Notebook / 2017-06-21'. The document title is 'Name: 2017-06-21' and it has tags 'Document, Notices' and a 'Unique ID: SD4497'. The main editing area features 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 content area is currently blank, showing the text 'A blanko page...'.

# ELN

## 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://fbf1002.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**

PN 926-32213, LI-COR INC.

**Secondary antibody dilution**

1:5000

# ELN: cross-linking

## Institutional filestore connectivity

- Cross-linking of primary research data
- Enables remote access to lab data
- Exports contain selected primary data and 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_MI_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\_MI\_Prak/Projekte/SFB1002/ELN\_Filestore

Download      OK

This entry shows the ca  
RIPA buffer  
<http://www.abcam.com/protocols/buffer-and-stock-s>  
ImportExcel.xlsx

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

50 mM Tris HCl, p  
150 mM NaCl  
1% NP-40  
0.5% sodium deo  
0.1% SDS

Order by    Select None  
Insert

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

eCAT-Sch...  
Datei    Start    Freigeben    Ansicht  
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			

# ELN: data publishing

automatic integration with campus repository

## Persistent identification via DOI and ORCID integration

The screenshot displays the RSpace Enterprise interface. On the left, a workspace window shows an R script for ETL processing. A modal window titled "Required Information for Repository Deposit" is open, prompting the user to select a repository (DATAVERSE eln) and providing instructions for activating 'FIGSHARE' and 'DSpace' apps. The main interface shows the "Göttingen/eResearch Alliance" header, the user's profile "eRA > electroniclabnotebook", and a search bar. Below the search bar, a list of results is shown, including a draft titled "ETL Script 0.1" by Harald Kusch, dated Nov 17, 2017. The citation metadata for this dataset is displayed, showing the DOI: 10.5072/ITXS37, the title "ETL Script 0.1", the author "Harald Kusch (University Medical Center Göttingen) - ORCID: 0000-0002-9895-2469", and a contact button.

```
#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), mehtod 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,
#on column-wise and rbind() vertically on 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

Contact Share Edit

Search this dataverse... Find Advanced Search Add Data

Filter Results

Author Name: Harald Kusch

1 to 10 of 15 Results

ETL Script 0.1 Draft Unpublish

Nov 17, 2017

Harald Kusch, 2017, "E

This is the RSpace-Doc

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.

# Göttingen Campus

## 5 Max Planck Institutes:

- for Biophysical Chemistry
- for Dynamics and Self-Organisation
- for the Study of Religious and Ethnic Diversity
- for Experimental Medicine
- for Solar System Research



MAX-PLANCK-GESellschaft



MAX-PLANCK-GESellschaft



MAX-PLANCK-GESellschaft



MAX-PLANCK-GESellschaft



MAX-PLANCK-GESellschaft

Göttingen  
Campus



Göttingen Academy of  
Sciences and Humanities

Göttingen/  
eResearch Alliance



University of Göttingen

- 13 faculties
- ca. 30000 students  
and 5200 researchers

Library  
with a focus on research



+

Computer Centre with a focus on  
research



Gesellschaft für wissenschaftliche  
Datenverarbeitung mbH Göttingen

German Primate Center



University  
Medical  
Center

UMG



DLR

German Aerospace Center

# ELN: implementations Göttingen

- Heterogeneous applications
  - Life sciences: RSpace, Labfolder, eLabFTW, Jupyter, Redcap, self developments
  - Chemistry: self developments
  - Physics: Confluence, self developments



# ELNs: recent changes = new challenges

- ELNs get „normal“: Scientists more and more work (daily) with ELNs
- When scientist move they want to migrate their ELNs to new locations
- Large consortia: different ELNs need to be integrated
- “Source data”: some life science journals require (meta)datasets for each figure in an article
- Long term archiving: What (exactly) to do with alumni ELN data sets?

# ELNs: The (near?) future

- Alternative input methods: Voice recognition/AI
  - Labtwin.com
  - Labvoice.ai
- Interfacing
  - application programming interface (API)
  - Standard development (e.g. REST)
- Offline documentation (synchronization)???

# ELNs: The (near?) future – voice commands

## 1. Design of protocol in browser app

The screenshot shows a web interface for designing a protocol. At the top, there is a breadcrumb trail 'Protocol-15092020\_buffer...' with a link icon, a yellow dot, and a 'Generate Report' button. Below this, a vertical timeline on the left has a '+' icon at the bottom labeled 'Add Step'. Three steps are listed, each with a trash icon to its right:

- Step 1:** Add 10 ml buffer A
- Step 2:** Add 100 ml buffer B
- Step 3:** Shake for 5 minutes.

## 2. Application of protocol in mobile app

The screenshot shows a mobile app interface. At the top, a blue speech bubble contains the text '„Avocado ... read protocol“'. Below it, a status bar shows icons for location, mail, and a lock, along with signal strength, Wi-Fi, 67% battery, and 17:30. A blue checkmark icon is followed by the text 'Protocol-15092020\_buffermix'. Below this, three protocol steps are displayed in a list, each with a blue header bar:

- Step 1:** Add 10 ml buffer A
- Step 2:** Add 100 ml buffer B
- Step 3:** Shake for 5 minutes.

A speaker icon is positioned to the left of the first step, indicating audio playback.

# Summary

- Many benefits by introducing ELN documentation
- Start up phase takes some time
- Familiarize: Ideal versus real software
- Heterogeneous applications at a large Campus
- Increasing routine ELN usage evokes new challenges

# INF team



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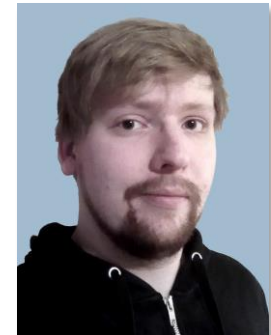
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