

Ways to Collaborate – Multigroup Instance

How to integrate two sister laboratories with a joint infrastructure

Matthias Rösslein

Particles-Biology Interactions (403)



We pioneer innovative particle-based solutions for personalized healthcare applications to meet the growing needs of our society.

We seek to characterize, understand and steer the interactions of particulate materials with biomolecules, human cells and barrier tissues.





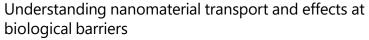
















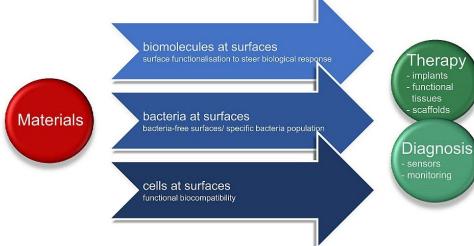
Multigroup Instance



- 403 was the first laboratory, which went through the setup process
- 403 and 404 are sister laboratories using many joint labs, instruments, stocks and procedures
- Still each lab has also their own special labs, instruments, stocks and procedures
- The initial discussion highlighted that single group instances for each lab means double work (instruments and procedures) and unsynchronized stocks
- Therefore Caterina proposed to use a multigroup instance for 403 & 404

Biointerfaces (404)





Multigroup Instance

Multigroup Instance allows:

- Common inventories for
 - Materials
 - Methods
- Lab specific inventories for
 - Materials
 - Methods
- Easy setup of projects for
 - Individual users
 - Collaboration within the lab
 - Collaboration between labs of the multi group instance
- Common administration of the multigroup instance



- Inventory
 - □ L403 Eln Lims
 - Openbis User Guide
 - L403 Materials
 - Particles
 - **□** L403 Methods
 - Histology
 - Physical Characterisation
 - Placenta
 - Viability
 - Materials
 - Cell Lines
 - Primers
 - Reagents
 - Methods
 - Instruments
 - Protocols

Collaboration Scenarios



Single Group Instance

- Lab uses mainly its own instruments
- Lab has mainly its own inventory and stocks
- Each member of the lab has access to the single group instance
- Collaboration within the lab and single group instances easy
- Collaboration with other labs person receives account in single group instance
- Outside person only sees and works in spaces and projects with granted access rights
- Instance manager can adopted single group instance fully to the needs and requirements of the lab

Multi Group Instance

- Labs use many joined instruments
- Labs have many joined inventories and stocks
- Each member of the labs has access to the spaces and projects of their lab and joined inventories
- Collaboration within and between each lab of the multi group instance easy
- Collaboration with other labs person receives account in multi group instance
- Outside person sees and works in spaces and projects with granted access rights
- One instance manager for all the labs of the multi group instance
- Adoption of the multi group instance has to consider the needs of all involved labs

Stepwise Integration of New Persons



- No big bang!
- Stepwise integration of new persons
- Initial users receive training during the setup phase of the instance
- Initial users start filling the inventories
- Initial users start specifying adopted protocols and experimental steps according to their individual needs and specialization
- Any new users receives introduction to the basic functionalities of openBIS
- Further familiarization with the already existing inventories, protocols and experimental steps
- Test project to learn the main functionality of openBIS and specific instance
- New users may specify additional adopted protocols and experimental steps according to their specific needs

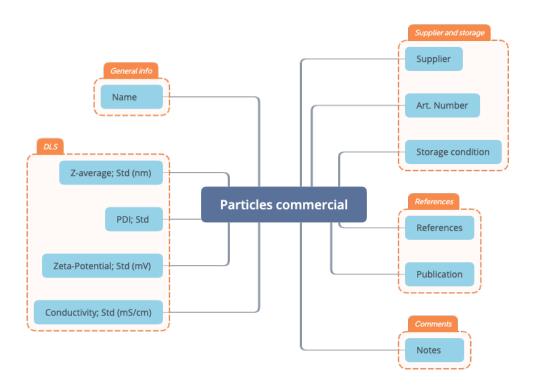
- Lab Notebook
 - My Space (L403 Rm)
 - Others
 - O

 Default
 - Default Lab Notebook
 - L403 Bba
 - L403 Ful
 - 1403 Gel

 - L403 Nini
 - L403 Pbu

 - L403 Tti
 - Others (disabled)

Visualization - Inventory



metadata - ontology



COMMERCIA	L_PARTICLE
Collection:	L_FANILOLE
/L403_MATER	IIALS/PARTICLES/COMMERCIAL_PARTICLE_2
Code (*):	
CPAR5	
General	al info
Name:	
Name	
Parent	s + W
Childre	en + III
Suppli	er and storage
Supplier:	
Art. Number:	
Storage cond	litions:
	nuons.
v DLS	HUUIS.
v DLS	
✔ DLSZ-average, st	
✔ DLSZ-average, st	id (nm):
➤ DLS Z-average, st DLS: Z-aver	id (nm):
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Visualization – Experimental Step





metadata - ontology

Type: EXPERIMENTAL_	_STEP_DLS_ZETA
Experiment: /L403_RM/DEMC	
Code (*):	
EDLSZETA1	
General i	info
Name:	
Name	
Sample name:	
Sample Name	
Parents	+ W
DLS Protocol:	+
Children	+
Cilidien	T !!!
Generate Child	ren
Measure	
ivieasure	anent en
Sample concent	
Approximate sa	ample concentration
Material RI:	
RI of the sampl	le material
Material absorpt	tion:
Absorption of the	he sample material
Cout rate (kcps):	:
Approx. count	rate
Attenuator:	
Attenuator	
Results	
Zeta potential (n	nV):
Zeta potential o	of the sample solution (value, std (mV))
Conductivity (ms	S/cm):
	f the sample solution(mS/cm)

Running Projects



- Each person in an instance has its own space for their different projects
- Each person is free to generate their own project (folders)
- Recommendation one or a few projects should comprise one publication (easy upload to repositories)
- Each person can handle access rights to their own space
- Rules in our lab
 - Each group leader has access to all the spaces of the group members
 - Each member in a collaboration has access to the specific project (folder)
 - In collaboration project is in the space of the project leader
 - They have the overall responsibility over the collaboration projects and all its data and metadata

- L403 Ful
 - Chitosan Membranes
 - 20191114 Electrospun chitosan/PEO (95:5)
 - Z0191114_Electrospinning

 - △ 20191127_SEM
 - △ 20191206_Viability 96h
 - 20191212_Transport across empty inser
 - 20200218 Electrospinning of Chitosan/PEO
 - Z0200217_Electrospinning
 - Crosslinking Study 1
 - Collaboration Julia Boos
 - 1 20191218_Chitosan/PEO membranes
- L403 Gel

Next Steps - Barcodes



Challenge

- Huge inventory of different chemicals, antibodies, celllines, media, commercial nanoparticles etc.
- Growing stock of own synthesized nanoparticles
- Different labs with various cabinets, refrigerators, freezers, -80°C freezers and lig. N₂ dewar
- It is often hard to find something and keep track of the different stocks

Solution

- openBIS allows to specify the location of an item up to the shelf, box and location in the box
- Barcodes and barcode scanners allow to identify each item unambiguously

Current status

- Barcode functionality newly integrated into openBIS -> additional functionalities might be needed
- Develop the operating procedures in the two labs
- Incorporate the different inventories into openBIS
- Convince each member of the lab to keep things in order!





Next Steps

Empa Materials Science and Technology

Challenge

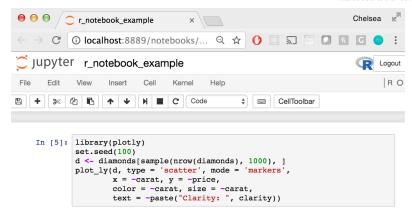
- Data analysis is done in excel with cumbersome worksheets, various in-transparent formulas and many referenced cells
- Data analysis is done using click-software
- Even the person providing the data analysis has often problems to reproduce the data analysis after some time

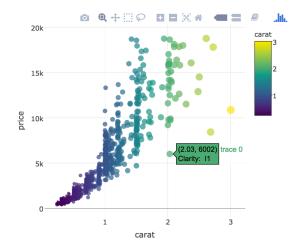
Solution

- Describe the data analysis step by step in code (R, python, julia etc.)
- Comment the data analysis path using markdown
- Access to jupyter od rstudio notebooks in openBIS

Current status

- Preparation of courses (courses & self-study) to learn R and Rmarkdown
- Provide regular courses for R & build-up R user group





Conclusion



- openBIS is a very versatile and complete system
- It can be adopted to any needs and any requirements of any lab
- During the pilot we have improved the setup process considerably
- We have found very professional partners with SIS-ETHZ
- There is a long term commitment of ETHZ and SIS-ETHZ for openBIS
 - Support
 - Further development (including our needs)
- The success of each instance depends strongly on commitment of the instance manager
- It needs sometimes encouragement of the lab and group leaders towards all lab and group members

PROJECT TITLE E-Spinning LABORATORY NOTEBOOK GUIDELINEST LABORATORY NOTEBOOK INTRODUCTION materia, you have added Huma a Labreatone Vintahook to percel lease assentional 07.11.2018 nny blank spaces at the experimentation records, observations and all work details how your cop your Laporatory Notation each have a pos-live import on the paters autourne of a sending discovery or Co not erges errors, Just Preparation of PCL electrospinning solu any enchacus entry, then correct antry nearby. Following are some overall recommendations to help you 7 You can supstance: keep more efficient and accurate Laduracry Novebunk materia (e.n., test result o tacion). But you must pe entres. Remember, nowever, that these are simply a suggested 66, of guidelines. Only your attorney rain supply the exact guidelines heiste would like you to follow to salisfy unto a page in its proper 8. Never rety socily on any specific kegai reculiments. That is very we reconveyed the Aloxys include your por enu nousult enu: Irgal enunsel recent and add any condifrum its substance. RECORDING DATA 9. Occasionally, secondary s Your Laboratory Notebook is a vital record of your work inappropriate a allach dix whether is is for patent purposes, lead records or docucase, you can add all see lary record mentained menting thus research under Good Laborstory Practice However, plways remem (GLP) guidelines. The Laboratory Notebook asri help you these secondary courses in your notebook n. Essex deails and dains of conception 3. Details and detec of reduction to practice DOCUMENTING PATENT ACT c. Cilignans in roducing your invention to practice A primary purpose of a Labora: d. Details regarding the structure and operation of your patent acrivities, it s nepesea e. Experimentation observations and results drono ocide entre with some lates, you must have at least o 2. A chromotopical record of your win s on a shake over pight to dissolve that the events actually happen g. Other work details stood your Invention by signing and Uniters out by a graning Follow a few simple guidelines Your Laboratory Notedook sho 1. Always record entries legibly, neatly and in permanent 1. Concoolian Data—This dat done en: extra bloom poin 2. In mediately enter into your notebook and date all original inal contains, daig and observations, using separate 2. Date of redoction to pr E-Spinning solutions made the day before incertings to difforent ale each. quade a working and 3. Dilligance in re-3. Report all concepts, regults, references and other - Chloroform/methanol well dissolved information in a systematic and orderly monror, (uniquage, shorts and numbering systems should be Dilugnos raf-(after 16.5h on the shaker) maintained consistently throughout 4. It is acceptable to make your entries brief. Always, roweser, include unungic desails for someone rise to - Acetic acid polyme not yet dissolved successfully displicate. Fo work you have recorded 5. _abe' til figuree and calculations. La solution cannot yet be used for 8. Nover, under any circumstances, remove pages E-Spinning A Aletic acid / PCL solution is out on a pagnetic stirring plate with a magnetic stirre and stirred for 4h After 4h the agency acid solution .g to way if Remember to treat your Laboratory Notein document: If neededs the chronological activities. The following guidelines sho to make and upe you the consistent and accurate entres antation details sufficien curposea. make and use your inventi-1. Start entries at the top is put again on the shaker Too host mods of practicin make sucressive ide! the best way to practice yo the bottom of the A non invasion colleague shock 2. A'lei cumplelii events/facts by signing the "D The next as by on the relevant raises Continued To Page 08.11.18 asself, or to its you." I were provides those sample guidal PROPRIETARY AND CONFIDENTIAL