PAL`s experience
- IMOMESIC Project
Introduction

Institute:

German Cancer Research Center

Heidelberg

http://www.universityfairs.com/directory/german-cancer-research-center-dkfz-1467
Introduction

Institute:
German Cancer Research Center

Group:
Systems Biology of Signal Transduction

Heidelberg

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http://www.servier.com/Powerpoint-image-bank
Introduction

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Expertise:
Protein analysis by Mass Spectrometry
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Connection to FAIRDOM: IMOMESIC project

- Metabolism
  Experiments and Modelling

- Liver cancer

- Signalling
  Experiments and Modelling

Application

development of drugs
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Connection to FAIRDOM:
IMOMESIC project

Metabolism
Experiments and Modelling

Liver cancer
Development of drugs

Signalling
Experiments and Modelling

Application
Why Data Management and PAL Activities?

- **PAL** (Project Area Liaisons) Contact person / mediator for experimentalists, modelers and software developer.
- Integrating Modeling of Metabolism and Signalling towards an Application in Liver Cancer
- Application in medicine
- Exp. partners from metabolomics, proteomics and genomics

<table>
<thead>
<tr>
<th>IMOMESIC PALs</th>
<th>FAIRDOM team and supporters</th>
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<tbody>
<tr>
<td>• Martin Böhm (Markus Stepath) / Experimantalist</td>
<td>• Scientific IT service of the ETH Zürich:</td>
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<td>• Joep Vanlier / modelling background</td>
<td>• Rostyslav Kuzyakiv</td>
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<td>• Bernd Rinn (also Basel)</td>
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<td>• HITS:</td>
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<td>• Wolfgang Müller</td>
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<td>• Olga Krebs</td>
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<td>• Andreas Weidemann</td>
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<td>• IT core facility DKFZ</td>
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<td>• ...</td>
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• Integrating Modeling of Metabolism and Signalling towards an Application in Liver Cancer
• Application in medicine
• Exp. partners from metabolomics, proteomics and genomics

► All areas (modellers and experimentalists) are covered
► Support from FAIRDOM team is close and straightforward
Why Data Management and PAL Activities?

- Protection from data loss
  - 3 HDDs defect in 12 month
  - Data is stored on private data storage
  - Departure of co-workers

Findable, Accessible, Interoperable and Reusable (FAIR) Data

- Experiments are done twice
- Searching for data takes time (hours - days)
- Wrong interpretation of data
- Copy and paste errors

Financial and time benefits
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- Data is not annotated
- Annotations are not standardized
- Data is not available to partners / no communication
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Project founders ask for data management

- Reduced stress and time in finding data
- Financial benefits

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What are we Doing in Klingmüllers Lab?

SEEK
- Sharing of results, presentations, SOPs & Organization of events
- SEEK server, access via browser

OpenBIS
- Storage and analysis of mass spectrometry data (proteomics)
- Local server, access via browser

Exemplify
- Storage and handling of IMMUNOBLOT, (qPCR and LUMINEX) data
- Local server, access via browser

Antibody Database
- Database for all antibodies in our lab (>700 entries)
- Local server, access via browser
• User commitment
  • “…this needs to much time!”
  • “…it’s too complicated!”
  • “…I did it always like that!”
• Willingness to share data is limited and it is difficult to convince researchers to share raw data even after publication

► It is good to have one or more PALs who are responsible for data management
► Communication with users
► Make software tools as simple as possible (e.g.: wizard)
► DOIs for raw data
PAL’s tasks:
► Optimizing data storage
► Implementing standardized and controlled vocabulary/formats to integrate data (JERM, MIBBI, SBML, …)
► Ensure that data is findable, accessible, interoperable and reusable (long term perspective)
► Teaching users
► Communicate with users
• Storage location, amount, product information, users,...
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Costs for Data management & Databases
[ € / year ]

- openBIS
- Antibody Database
- Data storage
• Storage location, amount, product information, users,…

▶ Spendings saved per year for antibodies: ~10% (~10,000 €))
▶ No more double orderings or hidden supplies
▶ Minimized time to find antibodies
• Exemplify (= Excel + Simplify) in Klingmüller’s Lab
  • User-friendly database
  • Web based application
  • Main functions of Exemplify:
    • Storage and sharing of experimental data and meta information in a standardized way
    • Support of experimentalists in the data handling procedure and data submission

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► Minimized copy and paste errors
► Reduced time to find data across experimentalists / projects (search function & standardized metadata/annotations)
► Connected to SEEK
► Wizard for experimental design
Outlook

- Implementation of openBIS in our daily workflow
- Implement button to upload data from openBis to Seek
- Integrate Exemplify into openBis
- Integrate primers and restriction enzymes into antibody DB
- Integrate antibody DB into openBis
Thank you for your attention!