

Research Data Management and Central Service Facilities: eResearch Services for PhD students at UMG

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IT-Controlling, UMG

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Medizinische Informatik, UMG

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Biobank, UMG

Xenia Schulz

Med. Biometrie und Statistische Bioinformatik, UMG

Philipp Wieder

eScience Gruppe, GWDG

Agenda

1. Management of research data
2. The Göttingen eResearch Alliance
 - 2.1. Division Library Medicine (SUB)
 - 2.2. Computing-Services (GWDG)
3. Service facilities at UMG
4. IT-Controlling at UMG
5. Advisory services at the Department of Medical Informatics
6. Advisory services at the Institute for Medical Statistics
7. Services of the central UMG Biobank



1. Management of Research Data

Example: CRC 1002

Electronic laboratory notekeeping

Paper lab notebook

OCTOBER 15 1998

DIGEST:

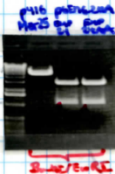
2 µl p116 Met25 2.5 µl p6EM6.2HA Eno24/AA
 4.5 µl UNIVERSAL B 4.5 µl UNIVERSAL B
 22.5 µl H₂O 22.5 µl H₂O
 0.5 µl BstNI 0.5 µl BstNI
 0.5 µl EcoRI 0.5 µl EcoRI
 → D CIP

LIGS:

6 µl p116 MET25
 2 µl Eno24/AA / H₂O
 1 µl H₂O
 3 µl T4-LIG B
 0.5 µl T4-LIGASE

AND TRANSFORM AFTER 4h OF LIGATION

DIGEST TEMPLATE-DNA FOR MAKING RNA:




Electronic lab notebook (ELN)

Close Save as Template Delete Sign

Home / AG Lehnart Demo / Experiments / Experiment 1 based on Template AG Lehnart STED Microscopy Image Acquisition

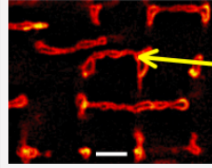
Name: Experiment 1 based on Template AG Lehnart STED Tags: di-8-ANEPPS, STED, Microscopy, Fluorescence SD381

Microscopy Image Acquisition

Publication

Wagner et al. 2012

`<field id="229625">
 <fieldName>Primary antibody</fieldName>
 <fieldType>STRING</fieldType>
 <lastModifiedDate>2015-08-26</lastModifiedDate>
 <fieldData>https://hdl.handle.net/11022/umg-sfb1002-antibody-primary-119</fieldData>`



Audit: My RSpace Activity
 You can filter this audit by Actions and Date Range
 Get Audit Report

You found 482 hits.

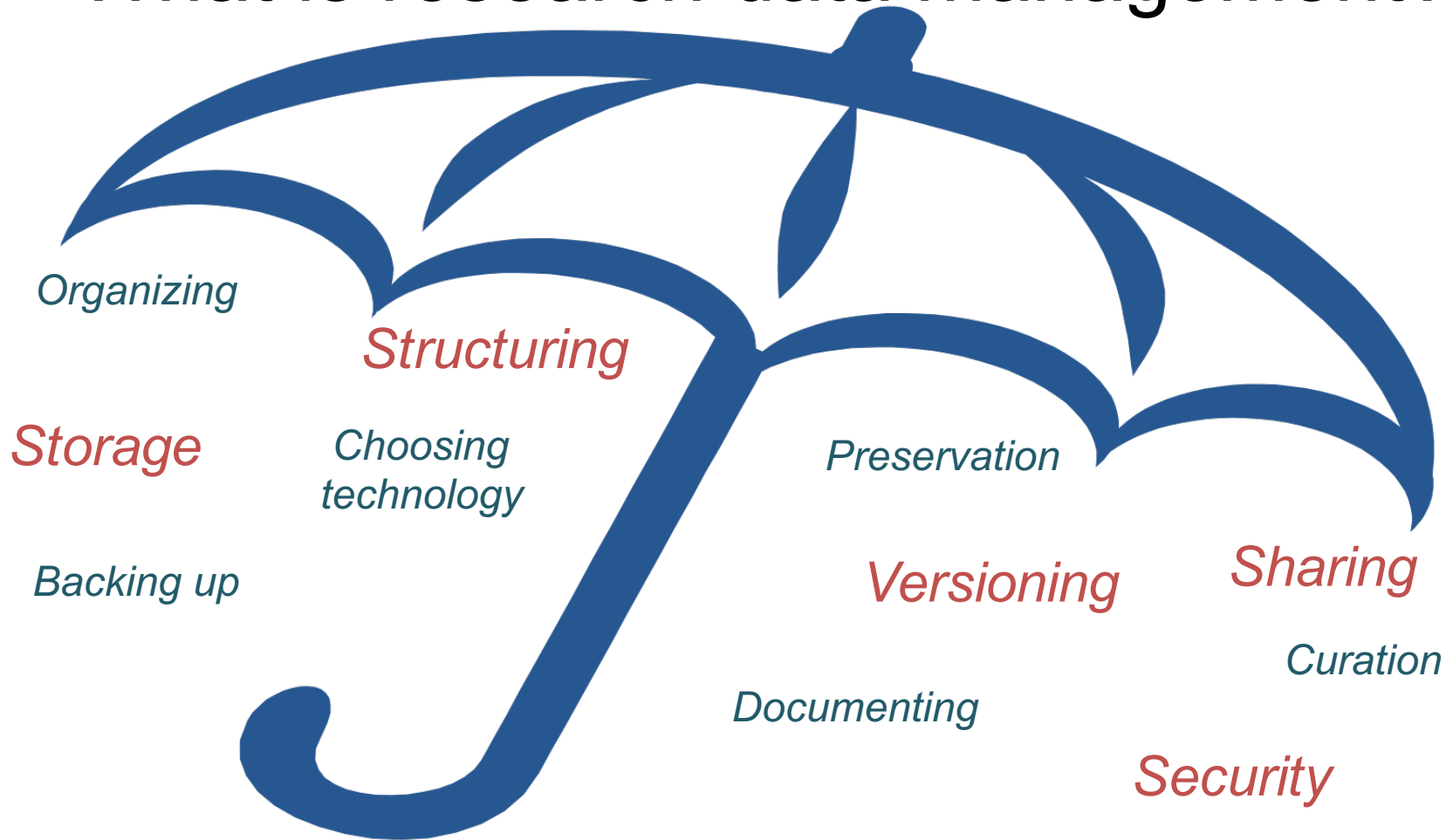
Time	User	Action	Type	Resource	Name
2016-04-21 15:38:12	Dr. Harald Kusch	READ	RECORD	SD381	Experiment 1 based on Template AG Lehnart STED Microscopy Image Acquisition
2016-04-21 12:21:12	Dr. Harald Kusch	READ	RECORD	SD366	Experiment 1 based on Template - AG Lehnart - Western Blot - Immuno detection for Western Blotting
2016-04-21 11:54:56	Dr. Harald Kusch	DELETE	RECORD	SD499	Untitled document
2016-04-21 11:54:56	Dr. Harald Kusch	DELETE	RECORD	SD505	Untitled document
2016-04-21 11:42:08	Dr. Harald Kusch	READ	RECORD	SD353	Template - AG Lehnart - Western Blot - Immuno detection for Western Blotting

Dye: di-8-ANEPPS

Excitation in nm: 490

laser: pulsed diode laser (Pico TA 490, Optics, Munich, Germany)

What is research data management?



A few things to think about

Organization and storage

- Can you find what you need, when you need it?
- Is your data stored securely? Do you have a back-up plan in place?

Documentation and record keeping

- Is it clear what everything is, and what's been done to it?
- Will information remain intelligible if you return to it later?



Thinking further ahead...

Curation and sharing

- What's the long term plan for your data?
- Can you make it available to other researchers?
 - Many funders now mandate sharing
- Is there a repository or archive where you could deposit your data?
- What do you need to do now to facilitate this?





28. August 2014: Research data policy of the Georg-August University Goettingen (incl. UMG)

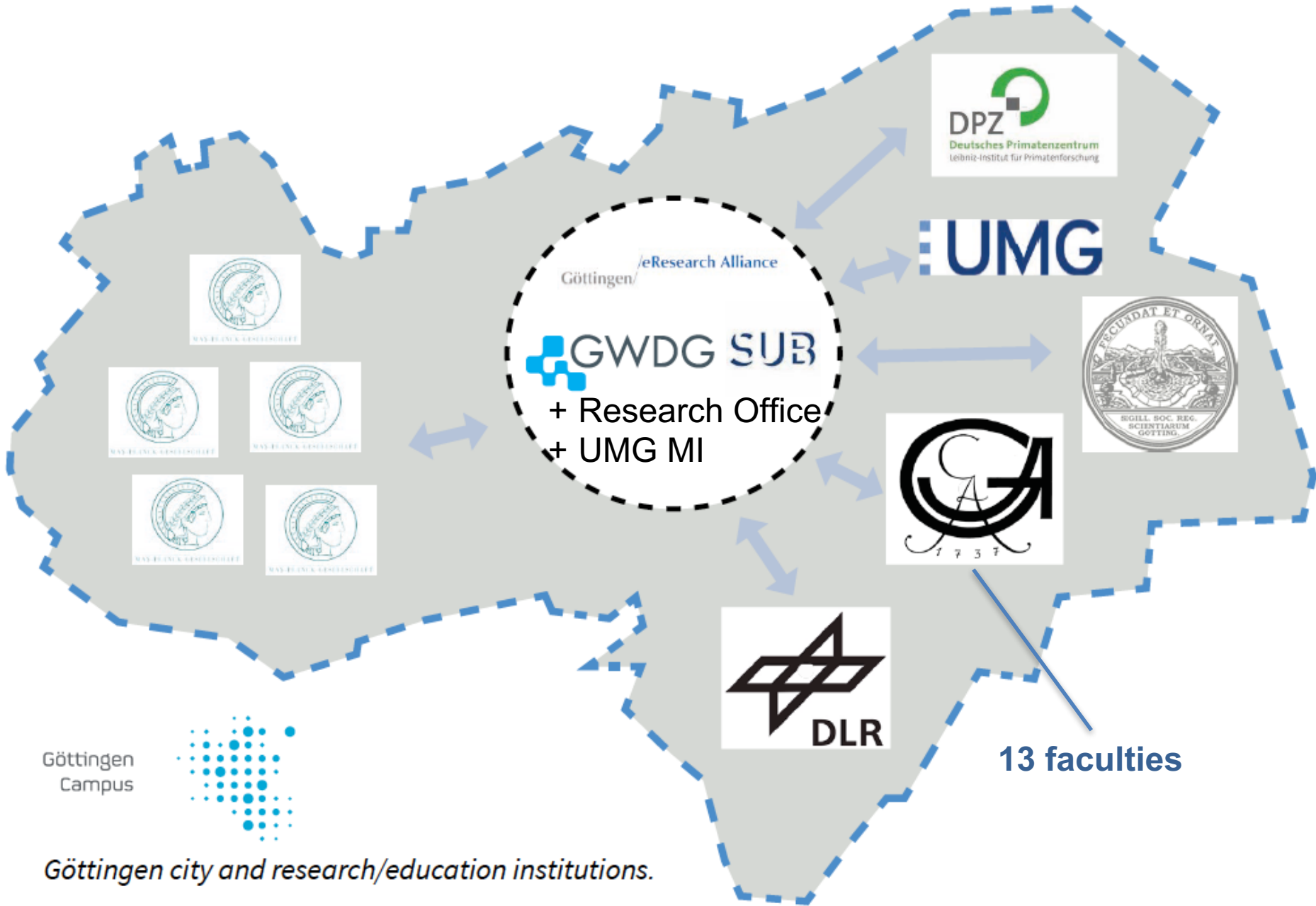
Preamble:

The Georg-August-University Goettingen is committed to diligently preserve results of scholarship, to produce novel results through research, and to make results accessible and reusable for academia and the wider society, now and for future generations. The management, protection, preservation and sustainable provision of research data must therefore be carried out in accordance with recognized standards, meet high expectations and fulfil legal and ethical obligations. The University acknowledges that the implementation of this guideline will depend on the settings and requirements of each subject area.

1. The University promotes and supports open access to research data.
2. Research data are those data collected, observed, simulated, derived, or generated during the course of research.
3. Management of research data includes their planning, collection, processing, and preservation. It ensures the access to, and the reuse, reproducibility, and quality assurance of all research data underpinning research results.
4. Research data management is generally the responsibility of the person leading a project and the researcher who is acting in an individual capacity. A particular responsibility is the adherence to good practices of research as well as standards in their subject area.
5. Research projects with research data require a data management plan that includes but is not restricted to the topics of access rights to research data and necessary precautions for handling them.
6. The University provides support and advice for research data management in the preparatory stages of research projects, during their conduct and after their completion, and provides appropriate training.
7. The University implements and maintains essential services for research data infrastructure that ensures adequate storage and technical availability of digital research data. Specific requirements have to be aligned among all stakeholders and may involve additional funding.
8. Storage and archiving of digital research data is carried out within the technological and informational infrastructure of the University or in acknowledged external or internal subject repositories.
9. The University and its researchers adhere in their research data management to given conditions of ethics, data protection, intellectual property, privacy and disclosure. This leaves regulations untouched that relate to an assessment of research data according to the German employee invention act and specific contractual agreements.
10. If exploitation or publication rights of data were transferred to third parties, it should be a precondition that research data remain openly and freely available for research purposes.

eResearch = *enhanced*Research

2. Göttingen eResearch Alliance



- **Central contact**

- Phone: 39 19188 (Jens Dierkes)
- info@ereseach.uni-goettingen.de
- www.ereseach.uni-goettingen.de

- **Team with**

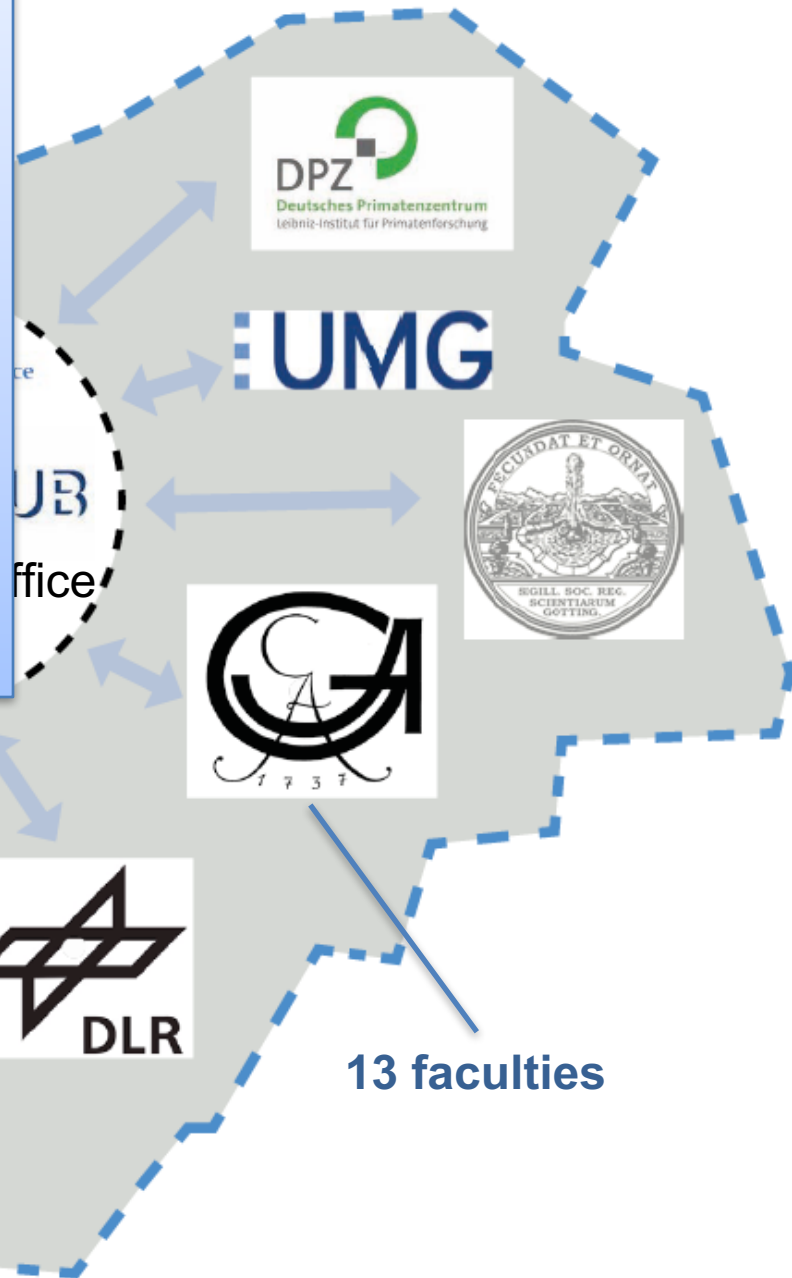
- multidisciplinary background and
- eResearch expertise



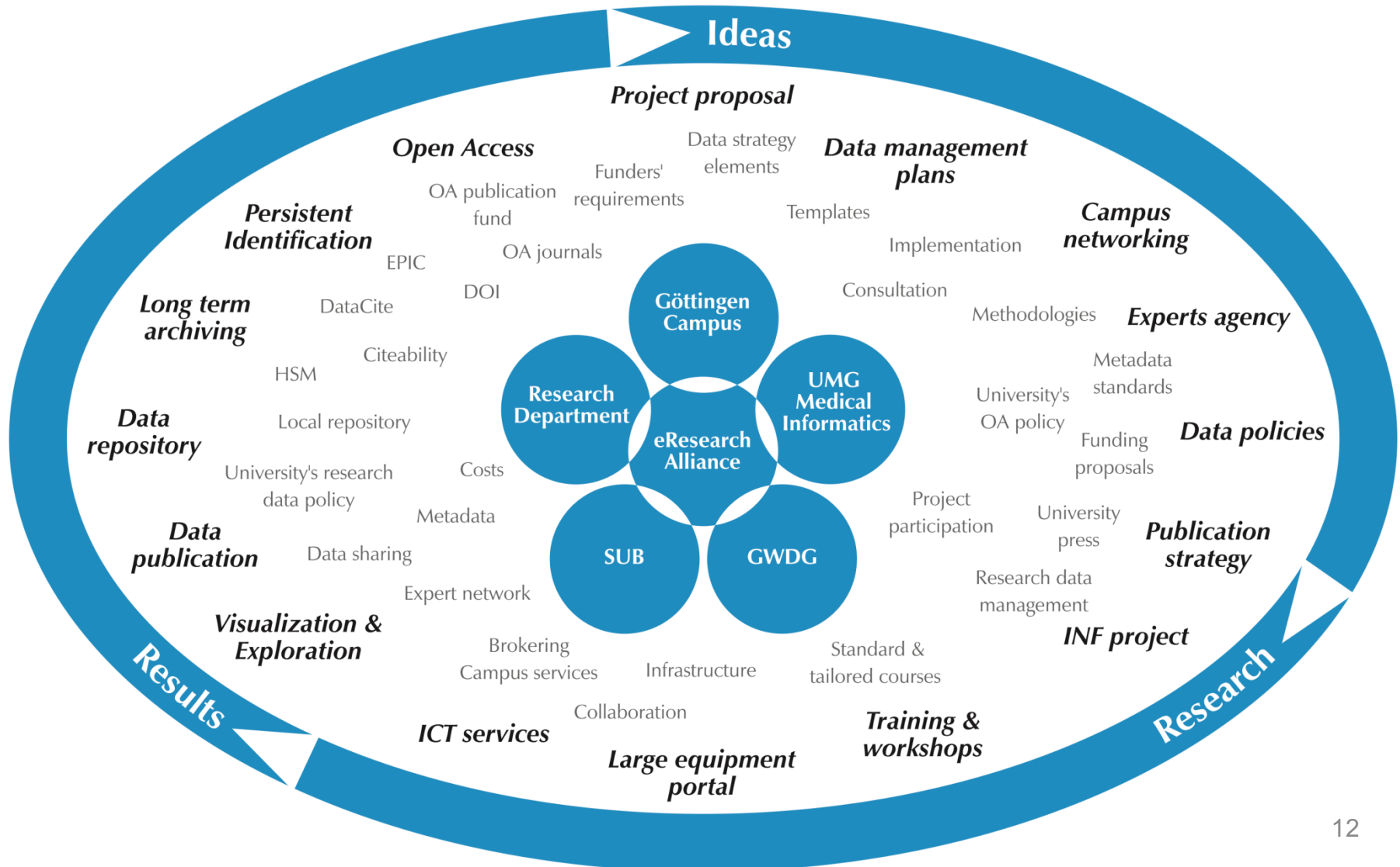
Göttingen
Campus



Göttingen city and research/education institutions.



Forschungs-Lebenzyklus



Göttingen
Campus



Göttingen/
/eResearch Alliance

Consulting

Brokering

Training

*Digital
Services*

SUB | NIEDERSÄCHSISCHE STAATS- UND
UNIVERSITÄTSBIBLIOTHEK GÖTTINGEN




Göttingen eResearch Alliance

www.eresearch.uni-goettingen.de

Search here

About Consulting & Training Tools & Services Knowledge Base News Contact us




Funders' Requirements and Guidelines

Research data policy of Göttingen University Research data policy of DFG (only in German) Horizon 2020 / Open Research Data Pilot BMBF: Data management checklist for...

More

Your research project | Your data | Our services!


We understand eResearch as *enhanced* research, which to us means an optimized usage of **digital technologies and methods for innovative research**. As a single point of contact for scientists and scholars on the [Göttingen Campus](#), we offer information, personal advice and support for key issues related to digital research through all phases of the **research life cycle**: Ideas, Research, Results!



Ideas

- Project proposal support
- Data management planning
- Expert network


more



Research

- Workshops & Trainings
- ICT services
- Visualisation & Exploration
- Data strategy implementation

more



Results

- Persistent Identification
- Data publication
- Long term archiving

more

Guidelines

- Research data policy of the Georg-August-University Göttingen (incl. UMG)
- Open Access Politik der Universität Göttingen (only German)

News

- Neues Zentrum eLabour am Göttingen Campus (Artikel Göttinger Tageblatt)
- Info-Veranstaltung Datenmanagement-Basics (UMG) am 24. Nov. 2015
- eResearch Alliance at the Scientific Integrity and the responsible Conduct of Research DPZ Workshop

www.eresearch.uni-goettingen.de

<http://eresearch.uni-goettingen.de>

Your service provider and information agency

2.1 Division Library Medicine

Your service and information provider

Contact us if you

- Need support for publication processes
- Are getting lost in the shuffle of research processes, data management and offerings
- Want to know where to find experts for these topics



We will guide you!



NIEDERSÄCHSISCHE STAATS- UND
UNIVERSITÄTSBIBLIOTHEK GÖTTINGEN

Contact:

Dagmar Härter

Phone.: 39-19527

dhaerter@sub.uni-goettingen.de



GEORG-AUGUST-UNIVERSITÄT
GÖTTINGEN

2.2. Gesellschaft für wissenschaftliche Datenverarbeitung mbH Göttingen



Erhalten Sie dynamische Rechenleistung, Anwendungen oder IT-Dienste, die mit Ihren Anforderungen wachsen.

GWDG CLOUD SERVER

Dr. Philipp Wieder

Vorstellung GWDG

IT-Innovations- & Rechenzentrum



Gesellschaft für wissenschaftliche Datenverarbeitung mbH

- Gründung 1970 – Träger: Universität Göttingen & Max Planck Gesellschaft
- Betrieb von Rechenzentren, Parallelrechnern, Netzwerken, Campus-WLAN
- 125 Mitarbeiter, > 20.000 WLAN-Geräte/Tag online, Zertifiziert nach ISO 9001
- IT-Forschungseinrichtung
 - Leitung- und Mitarbeit in nationalen und internationalen Forschungsprojekten
 - Forschungsschwerpunkte
 - Datenmanagement & elektronische Forschungsinfrastruktur
 - Virtuelle Forschungsumgebung & Innovative Digitalwerkzeuge
 - Datenanalyse, Visualisierung und Big Data Technologien
 - Cloud Computing
 - Next-Generation Networking

Portfolio

Dienste für die Wissenschaft



NEUIGKEITEN

DIENSTE ×

FORSCHUNG & LEHRE

ÜBER UNS

SUPPORT

ANMELDEN

EN DE

Speicherdienste

- Fileservice
- Archivierung
- Backup
- GWDG Cloud Share
- Cryptshare
- GWDG ownCloud
- GWDG Crash Plan PROe

Anwendungsdienste

- Persistent Identifier (PID)
- High Performance Computing
- Bibliotheksdienst Aleph
- Datenbankdienst Oracle
- Bewerbungs-/Registrierungssyste...
- Bioinformatik-Programme
- Statistik-Programme
- Onlineumfragen
- Plagiatserkennung
- Datenbankdienst MySQL

E-Mail & Kollaboration

- E-Mail-Service (MS Exchange 2010)
- Spam- und Virenfilterung
- Mailinglisten
- MS SharePoint
- Managed Services
- Projektmanagement-Service
- Etherpad

IT Sicherheit

- Sicherheitstests eines Netzwerkes...
- Public-Key-Infrastruktur (PKI)
- Authentifizierungs/Autorisierungs-I...
- Virenschutz (Sophos-Update-Serv...

Server-Dienste

- Virtuelle Server
- Hosting/Housing von Servern
- Webhosting
- GWDG Cloud Server
- FTP Server

Allgemeine Dienste

- Software und Lizenzverwaltung
- Kurse
- Videoconferencing
- Leihrechnerpool
- Identity Management
- Druck- & Scandienste

Netzwerkdienste

- Systemüberwachung
- IP-Adress-Management-System
- Kabel- und Trassenmanagement-...
- Einrichtung von eduroam
- Anschluss an das Active Directory
- Benutzerverwaltung mit OpenLDAP
- Client-Management

IT-Beratung

- Aufbau von Verzeichnisdiensten (...)
- IT-Sicherheit
- Planung von Datenübertragungs...
- Apple-Beratungszentrum
- Forschungsdaten-Management
- Hardwarekauf

DIENSTE

Beispiel Infrastruktur

GWDG Cloud Server



„Virtuelle“ Rechner für Forschende, Arbeitsgruppen und Projekte

- Rechner per Selbstbedienung
- Für beliebige Anwendungen geeignet
- Unterschiedliche Größen bestellbar
- Vollständige Kontrolle über den virtuellen Rechner
- Eigene IP Adresse
- Betrieben in Göttingen

Our Private Cloud for your dynamic, safe and scalable computing power

Server



Create your own virtual machines and use up to 3 servers for your applications

Processor



Choose the computing strength of your machine and assign up to 12

Memory



Assign up to 24.0 GB of memory to your virtual machine to match your

IP Address



Grant world wide access to your virtual machine by assigning a public ip

Compute optimized

c1.small



2 Cores
2 GB RAM
20 GB Disk

c1.medium



4 Cores
4 GB RAM
40 GB Disk

c1.large



8 Cores
8 GB RAM
80 GB Disk

c1.xlarge



16 Cores
16 GB RAM
160 GB Disk

c1.xxlarge



32 Cores
32 GB RAM
320 GB Disk

Images



CentOS 6.6 Server x86_64



CentOS 7.1 Server x86_64



Debian 7.8 Server x86_64



Fedora 20 Desktop GNOME x86_64



Fedora 20 Desktop KDE x86_64



Fedora 20 Server x86_64



openSUSE 13.1 Desktop GNOME x86_64



openSUSE 13.1 Desktop KDE x86_64



openSUSE 13.1 Server x86_64



Scientific Linux 6.8 Server x86_64



Scientific Linux 7.1 Server x86_64



Ubuntu 12.04.3 LTS Server x86_64

Beispiel kollaboratives Arbeiten

Projektmanagement



Verwalten von Projekten und Softwareentwicklung

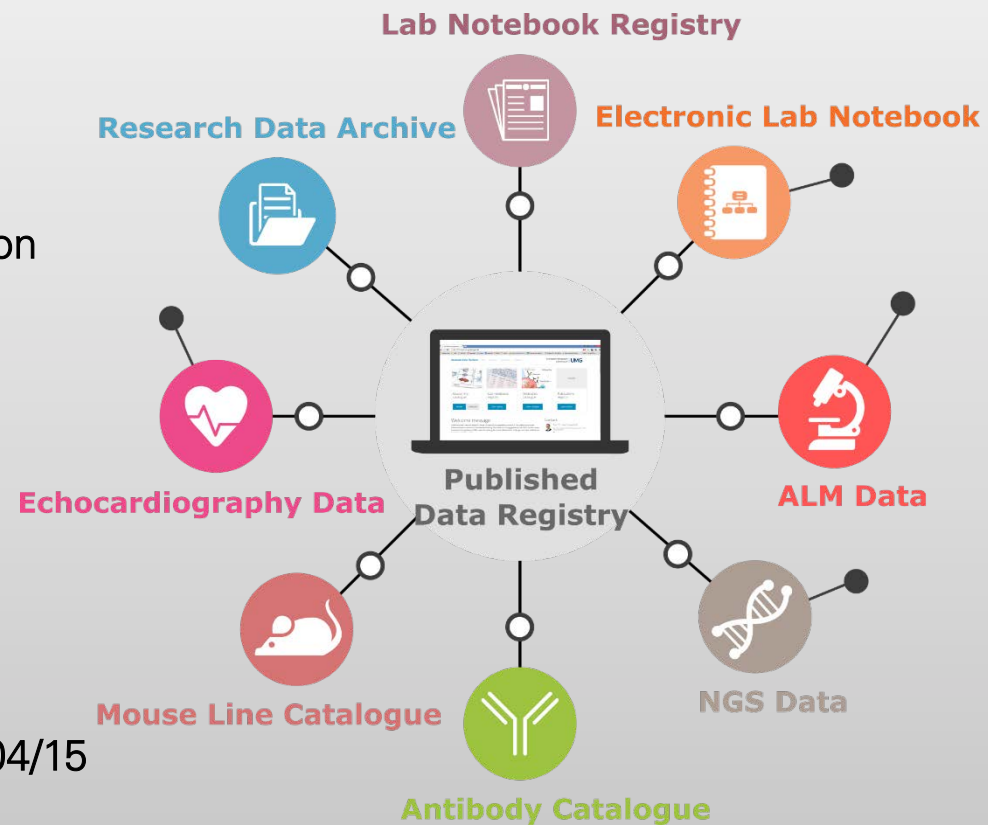
- Webbasiertes Projektmanagement mit einer großen Auswahl an Funktionen die Unterstützung des Projektlebenszyklus
- Features
 - Wiki
 - Verwaltung von Aufgaben
 - Zeitplanung
 - Dokumenten-Repository
 - Nutzermanagement
- Integriertes Git- und SVN-Repository für Softwareentwicklung
- Integration in die eigene Entwicklungsumgebung möglich
- Projektbereiche, in denen Sie eigenständig Projekte erstellen oder verwalten können

Projektspezifisches Beispiel

DFG Sonderforschungsbereich 1002

Unterstützung von Forschenden aus verschiedenen Fachdisziplinen

- Ziele
 - Nachvollziehbarkeit
 - Übermittlung von Daten an Community-Repositoryen
- Sammlung & Dokumentation von
 - Publikationen
 - ALM-Daten
 - NGS-Daten
 - Ultraschall-Daten
- Verknüpfung von
 - Publikationen
 - Antikörper
 - Laborbüchern
 - Maus-Genom-Linien
- Aktueller Stand: in Betrieb seit 04/15



Ihr persönlicher Kontakt zu uns



[+49 551 201-1523](tel:+495512011523)

Wenden Sie sich an unsere Hotline



support@gwdg.de

Schreiben Sie uns eine E-Mail und wir nehmen mit Ihnen Kontakt auf



support.gwdg.de

Ein Ticket mit Fragestellung oder Problembeschreibung erstellen
(Konto erforderlich)



www.gwdg.de/docs

www.gwdg.de/faq

Anleitungen & FAQ



Neu hier?

Eine Kurzübersicht häufiger Fragen

- [Konto beantragen](#)
- [Passwort ändern](#)
- [E-Mails abrufen](#)
- [WLAN \(eduroam\) nutzen](#)
- [Virenschutz downloaden](#)
- [Drucken](#)
- [Software kaufen](#)
- [Kursteilnahme](#)

3. Service facilities at UMG

Core Facilities at the UMG



Research, Data, Management: Data management basics and services for your daily research routine at the UMG

May 20, 2016

Central and Scientific Core Facilities

• Central Core Facilities

- ▶ Central Animal Facility (*Dr. Riedesel, sekretariat.zte@med.uni-goettingen.de, 39-8296*)
- ▶ Biobank (*Dr. Nußbeck, sara.nussbeck@med.uni-goettingen.de, 39-65701*)
- ▶ Scientific Workshop (*Mr. Lott, clott@gwdg.de, 39-4119*)

• Scientific Core Facilities

- ▶ Transcriptome and Genome Analysis Laboratory (TAL)
(*Dr. Salinas, gsalina@gwdg.de, 39-22316*)
- ▶ Proteomics (*Dr. Lenz, proteomics.ms@med.uni-goettingen.de, 39-8506*)
- ▶ MR-Research (*Dr. Dechent, mrforschung.sekretariat@med.uni-goettingen.de, 39-13140*)
- ▶ Medical Biometry and Statistical Bioinformatics
(*Dr. Leha, andreas.leha@med.uni-goettingen.de, 39-4987*)
- ▶ Cell Sorting (*Prof. Wulf, cellsorting@med.uni-goettingen.de, 39-12772*)

Where to find further information?

The screenshot shows the website of the University of Göttingen (UMG) with the following content:

- Navigation: Home, English, Sitemap, Kontakt, Impressum, Ad+ Ad-Ad
- Search: Suchen >>
- Breadcrumbs: Zurück | Home » Forschung » Einrichtungen » Zentrale Serviceeinrichtungen
- Section: **Zentrale Serviceeinrichtungen**
- Text: An der Universitätsmedizin Göttingen (UMG) sind, neben der seit langer Zeit bestehenden Serviceeinrichtung für wissenschaftliche Werkstattleistungen, in neuerer Zeit Serviceleistungen für Transkriptomanalysen, Proteomanalysen, Cell-Sorting, "MR Forschung in der Neurologie und Psychiatrie" hinzugekommen.
- Text: Die Etablierung von Zentralen Serviceeinrichtungen (ZSE) ermöglicht eine effiziente und effektive Bereitstellung spezieller wissenschaftlicher Dienstleistungen vor allem für die Einrichtungen der UMG. Zentrale Serviceeinheiten führen zu einer Verbesserung der Auslastung von hoch spezialisierten Geräten sowie zur Optimierung des Transfers von fachspezifischen Know-how. Zur dauerhaften Gewährleistung der hohen Methodenkompetenz sind die ZSE's mit ihrer zentralen Infrastruktur jeweils an eine (oder mehrere) wissenschaftliche Einrichtungen der UMG angebunden.
- Text: Zugangsmöglichkeiten und Nutzungsmodalitäten der einzelnen Einrichtungen sind den Kurzbeschreibungen der ZSE zu entnehmen.
- Buttons: Druckversion, Zurück, Seitenanfang
- Left sidebar menu:
 - Aktuelles
 - Aktuelle Ausschreibungen
 - Referat Forschung
 - Profil
 - Forschungsprojekte
 - Förderung
 - Wissenstransfer
 - Kooperationen
 - Stabstelle Klinische Studien
 - Einrichtungen
 - Kliniken und Institute
 - Zentren in der Forschung
 - Arbeitsstelle
 - Zentrale Serviceeinrichtungen
 - Cell-Sorting
 - Small Animal Imaging
 - Medizinische Biometrie und Statistische Bioinformatik
 - Klinische Optische Mikroskopie
 - Proteomanalyse
 - Transkriptomanalyse
 - MR-Forschung
 - Wissenschaftliche Werkstatt
 - Formulare
 - Informationen A-Z
 - Links

<http://www.med.uni-goettingen.de/de/content/forschung/1991.html>

- Contact details
- User regulations
- User fees
- Catalogue of services
- Application form

- Please contact the facilities in advance to plan and calculate the costs of the experiment

Contact Details – Referat Forschung



- **Universitätsmedizin Göttingen**
- **Referat Forschung**
- Robert-Koch-Str. 42, 37075 Göttingen
- forschung@med.uni-goettingen.de

goettingen.de/de/content/forschung/190.html

4. IT-Controlling at UMG

IT-Controlling is about asking „awkward“ questions...

- Do you plan to acquire additional IT components or staff? If yes, what additional follow up cost will occur for the UMG?
- Do you fulfill the DFG requirements of research data archival in order to ensure good scientific practice?
- Where will your research data be archived: at the UMG (your department/institute), GWDG, or a third party? Who will do the actual archiving process? (GWDG, IFS, G3-7 IT, Klinik)
- How much data is going to be archived? (Please state storage units per year: e.g. 25 GigaByte/y)
- What kind of data formats are being archived? (text, CRF, images, OMICS data, other)
- For what duration do you plan to archive your research data?

→ Future questions will include how external researchers can access research data

How to avoid „awkward“ questions...

- Having a clear but simple plan for your research data management → e.g. store data in (inter-)national databases
- Having a plan or at least an idea about how to finance your research data management and IT needs throughout the project, and if necessary, beyond → e.g. state that a subsequent project will support further costs

The UMG cannot support underfinanced research projects

5. Advisory services at the Department of Medical Informatics

Dr. Harald Kusch
20. Mai 2016



Advisory services at Medical informatics Göttingen

Advice for research data management

- Support for design of scientific studies in coordination with Med. Statistics, IFS or other service facilities at Göttingen Campus
- Provision of information infrastructures in cooperation with computing centers, external research institutions, biobanks etc.
- Open for all institutions, working groups and PhD students
- Open also for national or international research partners or consortia

Example services at Medical informatics Göttingen

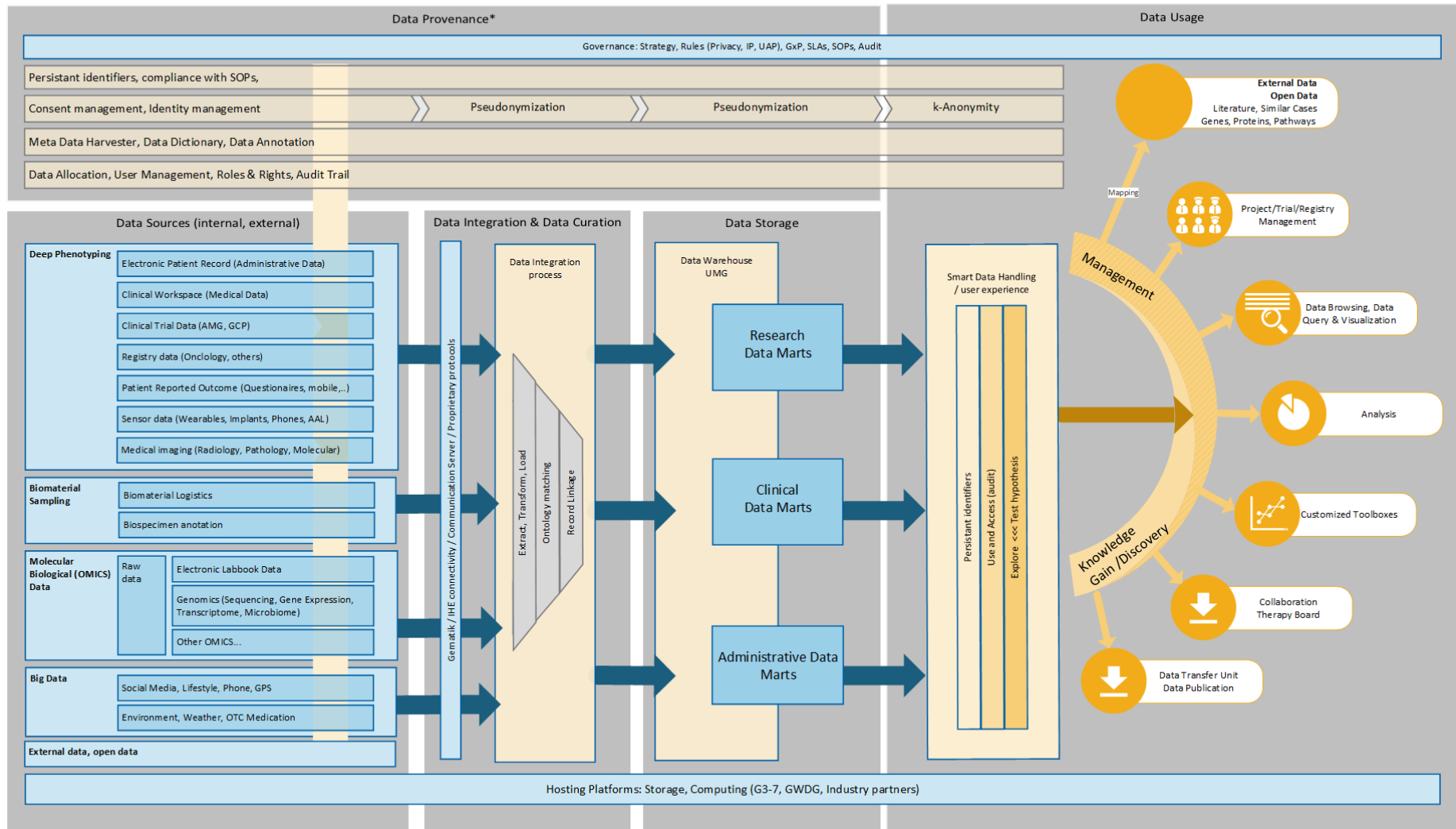
- Clinical Case Study: Investigation of rare cases in the children's hospital
- Pseudonymization of sensitive patient data: Multiple sclerosis
- Disease registers: European multiple sclerosis register (EUReMS)
- OMICS Data management: Systems medicine-consortia sysINFLAME, Deutsches Zentrum für Herz- und Kreislaufforschung (DZHK)
- Long-term analysis of data: Nationales Demenz-Netz
- IT-infrastructures for stem cell-research: DZHK
- INF-project of a Collaborative Research Center: Cardiology CRC 1002
- National consortia: Psychiatrie Netzwerk, Deutsches Zentrum für Herz- und Kreislaufforschung

Contact persons at Medical informatics Göttingen

Prof. Dr. Otto Rienhoff	International collaborative research
Prof. Dr. Ulrich Sax	IT-infrastructures for translational research
Thomas Franke	IT-infrastructures for collaborative research Image data management
Karoline Buckow	Register construction, mobile data acquisition
Dr. Nadine Umbach	OMICS-data, stem cell research
Dr. Harald Kusch	Contact to Göttingen eResearch Alliance

Hard- und software infrastructure at Medical Informatics Göttingen

Research Platform | Department of Medical Informatics | UNIVERSITÄTSMEDIZIN GÖTTINGEN **UMG**
Architecture view | University Medical Center Göttingen



*Data provenance documents the inputs, entities, systems, and processes that influence data of interest, in effect providing a historical record of the data and its origins. (Source: Buneman, P., S. Khanna, et al. (2000). Data Provenance: Some Basic Issues)

6. Advisory services at the Institute for Medical Statistics

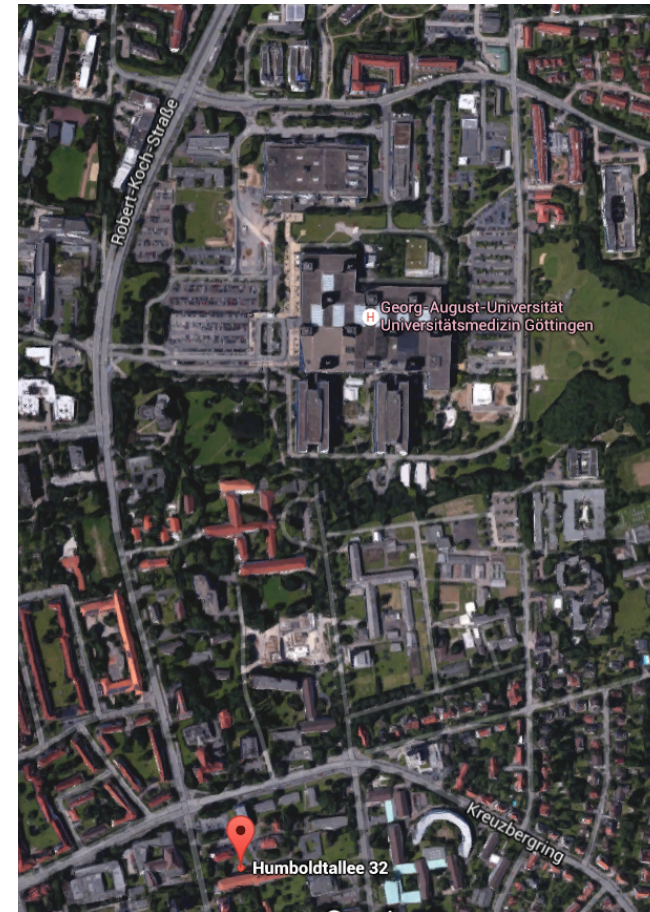
Service at the Department of Medical Statistics

Xenia Schulz

Core Facility

Medical Biometry and Statistical Bioinformatics

- ▶ Infrastructure facility of the UMG
- ▶ Located at the department of medical statistics
- ▶ Offers assistance in
 - ▶ planning and
 - ▶ evaluation of scientific studies and experiments
- ▶ Open to all institutions, groups and PhD students at the UMG
- ▶ Depending on capacity, additionally open to other institutions from the research campus



Core Facility

Medical Biometry and Statistical Bioinformatics

Short consulting

- ▶ Help with short questions concerning biostatistical or bioinformatical methods
- ▶ Tuesday, 1pm – 3pm
at the Department of Medical Statistics, Humboldtallee 32
- ▶ Can be visited without prior appointment
the registration takes place on-site



Core Facility

Medical Biometry and Statistical Bioinformatics

Coached working

- ▶ Assistance with statistics- and bioinformatics- software
- ▶ Location:
 - ▶ CIP-pool of the Department of Medical Statistics
 - ▶ Learning Ressource Center (Medical Library)
- ▶ Time schedule available at the departments website
- ▶ No prior appointment necessary
registration takes place on-site

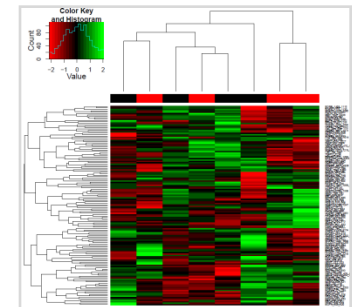
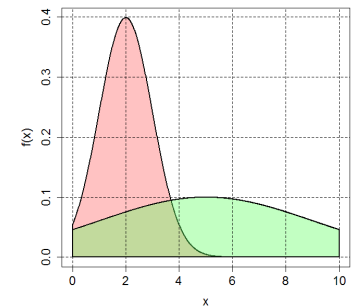


Core Facility

Medical Biometry and Statistical Bioinformatics

Project-related support

- ▶ We can carry out the biometrical and bioinformatical planning and analysis of your scientific experiments and studies:
 - ▶ Design of experiments, sample size planning
 - ▶ Statistical analysis
 - ▶ Bioinformatics analysis (e.g. array-, proteomics- and NGS-data)
 - ▶ Reporting of results

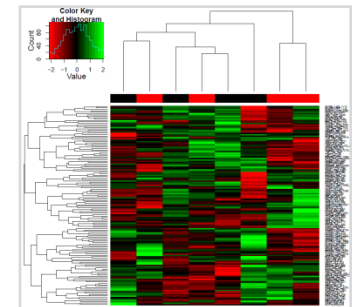
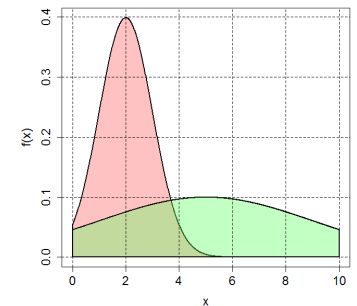


Core Facility

Medical Biometry and Statistical Bioinformatics

Project-related support

- ▶ We recommend early involvement (i.e. already in the planning phase)
- ▶ Appointment via our web form preferred (department homepage)



Core Facility

Medical Biometry and Statistical Bioinformatics

Methods and software courses

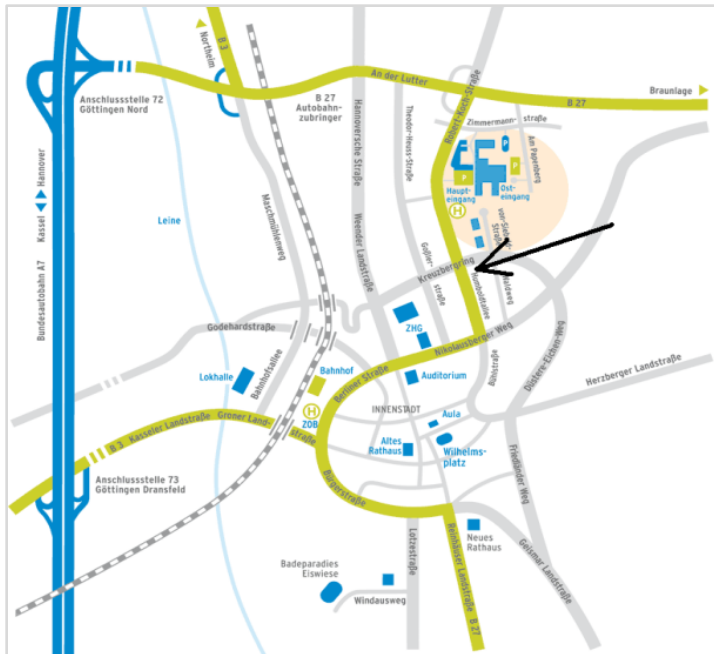
- ▶ Special courses in biometry or bioinformatics methods and software
- ▶ Courses will be announced on the department website



Core Facility

Medical Biometry and Statistical Bioinformatics

Contact



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Department of Medical Statistics

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7. Services of the central UMG Biobank

What is a biobank?



Aim

The aim of the UMG Biobank is to support biomedical research by providing high quality data and samples.

There are three ways PhD students could **get in contact** with the UMG Biobank:

1. Donators / Patients
2. PhD student in a clinic or department / project collaborating with the UMG Biobank
3. Independent researcher with own research proposal / project

Services

- Advise on sample quality and handling
- Sample storage and management
- Provision of samples and data
-

Close to kick-off



ethics

IT systems and interfaces

automation

workflows

frame work documents

Contact details and more information

biobank@med.uni-goettingen.de

www.biobank.med.uni-goettingen.de

Part of 3. Nacht des Wissens (21.01.2017)

Official opening ceremony of the UMG Biobank (autumn 2016)

Consultation hours: every 1st Thursday of the month (1-3 pm)

Thanks for your attention!

Are there further questions?

<http://ereseach.uni-goettingen.de>

info@ereseach.uni-goettingen.de