

Minutes of the 7th Annual Community Meeting of



on 11-13 July 2016 in Fulda

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- Felix Bestvater
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- Steffen Dietzel
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- Kota Miura
- Wiebke Möbius
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- Christoph Thumser
- Achim Tieftrunk
- Silke Tulok
- Nadine Utz
- Stefanie Weidtkamp-Peters
- Werner Zuschratter

1 Introduction, status quo, and perspectives of German Biolmaging

Prof. Dr. Elisa May and Dr. Nadine Utz

After a short round of introductions of all participants, Elisa May and Nadine Utz gave a short overview about the history, activities during the last year, and perspectives of German Biolmaging (GerBI). These include amongst others:

- Job Shadowing: 14 Core Facilities (CF) have offered to host up to 33 Job Shadowing guests for a total of 133 days of job shadowing. Interested scientists can apply at <http://www.germanbioimaging.org/GerBI-MachForm/view.php?id=21763>.
- GerBI Core Facility Management Course: Next course will take place from 19 till 23 June 2017.
- “GerBI Best Practice Manual“: The article *Advanced Light Microscopy Core Facilities: Balancing Service Science and Career*¹ has been published in the journal *Microscopy Research and Technique* and also been translated into German language².
- At the CTLS congress in June 2016, a satellite meeting was organised to discuss about FIS-Professorship with heads of life science core facilities.
- GerBI proposal to DFG for second funding period: Funding has been granted for two years, starting March 2016. Funds for the second year will be allocated after submission of a business plan for achieving self-sustainability. Main goals:
 - Continue initiatives that have been most appreciated (e.g. training) and launch new activities (e.g. outreach, TIM, strengthen interaction with microscopy researchers)
 - Transform GerBI into a self-sustaining and durable organisation
 - Participate in and coordinate with national and European initiatives in bioimaging and with related communities

2 National and international initiatives on research infrastructures for biological imaging

2.1 Euro-Biolmaging and Global Biolmaging

Dr. Tanja Ninkovic

Tanja Ninkovic gave a short introduction to Euro-Biolmaging, which is a project on the European Strategy Forum on Research Infrastructures (ESFRI) roadmap, and reported on latest developments:

¹E. Ferrando-May, H. Hartmann, J. Reymann, N. Ansari, N. Utz, H.U. Fried, C. Kukat, J. Peychl, C. Liebig, S. Terjung, V. Laketa, A. Sporberr, S. Weidtkamp-Peters, A. Schauss, W. Zuschmitter, S. Agilov and the German Biolmaging Network, *Microsc Res Tech*, 79(6): 463-479, 2016

²Gerätezentren für hochentwickelte Lichtmikroskopie: Service, Forschung, Karriere; <https://dx.doi.org/10.18148/KOPS/352-0-331389>

- Preparatory Phase II: Euro-Biolmaging received funding by the European Commission for a second preparatory phase.
- The Interim Board approved a tripartite Hub: Finland will host the statutory seat, EMBL will host the community-specific site for biological imaging (Bio-Hub), and Italy the Med-Hub.
- Interim Board member states selected Euro-Biolmaging Nodes based on the evaluation result of the "Expression of Interest" call in 2013.
- Interim Operation: Users (also from Germany) can apply to carry out a research project at an Euro-Biolmaging node. User fees and travel costs are not funded by Euro-Biolmaging. User fees can be applied for through DFG grants. A list of technologies and nodes can be found on the interim operation web page <http://www.eurobioimaging-interim.eu/>.
- Data management Work Package: UK government is funding a pilot project for data management and reference data sets. The Work Package plans also to create an imaging resource portal as an access point to image analysis tools.
- Training: There are only very few training offers for core facility staff. Euro-Biolmaging is developing a training curriculum in collaboration with RI-Train, Global Biolmaging, and the Euro-Biolmaging industry board.
- Global Biolmaging is a collaboration between Euro-Biolmaging and many countries worldwide, and has received funding from the Horizon 2020 programme. Yearly meetings of CF staff (Exchange of Experience workshops), a shadowing programme, training courses, and a virtual training platform are planned.

Achim Tieftrunk is the mandated observer for Germany in the Euro-Biolmaging Interim Board. The German Ministry for Research and Education has decided not to become a member in the Euro-Biolmaging Interim Board (see also chapter 2.2). The Interim Board is currently discussing details of the legal form (European Research Infrastructure Consortium, ERIC) to be submitted to the European Commission to officially found Euro-Biolmaging in 2017.

2.2 German Roadmap for Research Infrastructures 2015: Proposal of German Biolmaging

Prof. Elisa May

On the European level, research infrastructures (RI) which are of importance to the EU are defined by the ESFRI roadmap. EU member state governments are responsible for implementing the ESFRI roadmap. To this end, the federal ministry for education and research (BMBF) has issued the German Roadmap for Research Infrastructures. In 2012, the biological and medical imaging communities submitted a proposal for a distributed and coordinated national infrastructure for advanced imaging technologies and the Euro-Biolmaging Hub (German Euro-Biolmaging, GEBI). GEBI was evaluated as best research infrastructure proposal by the German Council of Science and Humanities (Wissenschaftsrat, WR). Nonetheless, the BMBF did

not include GEBI in the German Roadmap for Research Infrastructures published in 2013.

Another call was published by the BMBF on 31 August 2015:

- General conditions: Development Phase of RI is maximum 10 years, minimum budget is 50 million Euro (for life and natural sciences), utilisation phase must last for at least 10 years, running costs during utilisation phase have to be covered by the research institutions.
- Idea for new German Biolmaging proposal: only biological imaging, focus on national dimension, make instruments available before they are commercially available similarly to the Janelia Advanced Imaging Center concept.
- Many scientists, core facilities, and technology developers were contacted. In October 2015, an exploratory meeting took place in Konstanz, participants voted for filing a proposal.
- German Biolmaging prepared a scientific and financial concept: five nodes for very advanced imaging, one virtual node for image analysis software and data mangement, and a coordinating hub including a training and transfer center.
- In January 2016, GerBI submitted the proposal " German Biolmaging Research Infrastructure, GerBI-RI " to the BMBF.
- Evaluation: The formal evaluation is followed by a two-tiered evaluation of the scientific (by WR) and economic (by DLR) part of the proposal. Finally, a decision will be made based on the evaluation results and the importance for society. The updated roadmap will be published in spring 2018.

Questions were raised according to the role of companies and the option of including new nodes into GerBI-RI.

2.3 Funding opportunities for core facilities (DFG)

Dr. Achim Tieftrunk

- Major Research Instrumentation Programme: Since 2013, the number of funded high end microscopes has decreased. At the same time, more microscopes are placed in core facilities. It might pay off investing in CFs and CF staff, because instruments are used more efficiently and are better taken care of. Discussion: Reviewers of large instrument proposals presume that in some cases instruments are not placed in a CF although the applicants declare to do so.
- Core Facilities Programme: Calls in 2011/2012 and 2015/2016. Programme will be evaluated in 2017. In case the programme will be continued, DFG would like to support the implementation of leadership models for CFs.
- GerBI web page: Some links on CF-sub pages do not point to the web page of the CF or its usage rules, but to a general page of the research institution and some entities which claim to be a CF are not offering access for other

users. Achim Tieftrunk gave the advice that in the future CFs should fulfill quality standards to become a GerBI member. Then, in case scientists are applying for user fees to be spent or an instrument to be placed in a GerBI-member CF, DFG would assume that the CF fulfills DFG quality standards without further examination. Discussion: Research institutes have different policies about how much information is publicly available, sometimes the CF web pages and usage rules are only visible within the intranet. All participants are encouraged to update their GerBI sub page.

- Major Equipment Initiatives (Großgeräteinitiativen): Scientists can propose new categories for expensive, high-performance equipment to be funded through a Major Equipment Initiative (financed 100% by DFG, no contribution by institute/federal Länder).
- New Instruments for Science (Neue Geräte für die Forschung): New call published in January 2016 to fund the development of new instruments to be used for science.
- e-Research Technologies: New funding programme through which also the development of software which is used by a large community can be funded. Members of non-profit research institutions (MPI,...) are also eligible to submit proposals. German BioImaging had organized a meeting with DFG representatives and image analysis software developers in October 2015 to discuss funding opportunities for image analysis software.

3 News from the bioimage data analysis community

3.1 NEUBIAS, the network of bioimage analysts and its activities

Dr. Kota Miura

NEUBIAS is the Network of European BioImage Analysts which is funded since October 2015 through the COST Action within the Horizon 2020 program. NEUBIAS offers training, a web platform for Bioimage Analysis, and open publications. Within the next four years it is planned to provide training courses for up to 400 early career scientists, facility staff and bioimage analysts. It also offers grants for short-term (one to twelve weeks) scientific missions to support early career scientists and bioimage analysts. The Open Access Textbook "Bioimage Data Analysis" has been published in January. The book can be downloaded from <http://www.imaging-git.com/olympus-website-bioimage-data-analysis>. Further information can be found at www.neubias.org.

3.2 de.NBI, the German network for bioinformatics infrastructure

Dr. Jan Peychl and Dr. Jürgen Reymann

de.NBI is a national infrastructure supported by the BMBF providing bioinformatics services to users in life sciences research and biomedicine. The partners organise

training, courses and summer schools on tools, standards and compute services. Main topics include sequencing, -omics technologies, and imaging. Preparation phase started in June 2013. The network was launched 2015 and received 15 million Euro for five years. In February 2016, a second call for proposals was launched by de.NBI. A proposal from Gene Myers, Pavel Tomancak (both MPI CBG in Dresden) and Michael Berthold (University of Konstanz) was accepted. The main focus of this proposal is to improve the interoperability between platforms (Fiji and Knime).

Long term perspective of de.NBI is to integrate the network into ELIXIR.

4 News from the electron microscopy community

Dr. Wiebke Möbius

Wiebke Möbius gave an overview and showed examples of a variety of electron microscopy and sample preparation techniques, including large volume imaging, correlative techniques, time resolved high resolution imaging, cryo and automated techniques, staining, high pressure freezing, and 3D. Also for EM, image analysis tools are of high importance and receiving funding for image analysts is difficult.

Within the Deutsche Gesellschaft für Elektronenmikroskopie (DGE, German Society for Electron Microscopy), the life science electron microscopists are organised in the workgroup PANOS (Präparation und Abbildung nativer organischer Systeme) and are also represented in the board of the DGE. PANOS organises a scientific "Spring Meeting" every year, which is attended by around 150 scientists, and also the basic course "bio-medical electron microscopy". It was discussed how the two communities could be brought together and whether life science electron microscopists might be interested in a society for microscopy and image analysis.

5 Core Technologies for Life Sciences (CTLs)

Dr. Ralf Palmisano

CTLs is a pan-European association which has been formed in 2016 at the second CTLs congress in Heidelberg, and covers all fields of life sciences (www.ctls-org.eu). Its aim is to promote and support core facilities, define and implement instrument policies, and to provide training. The first Annual General Meeting took place during the congress, at which an Executive Council and a Board of Directors was formed. The organisation will be legally established in September 2016. CTLs plans to file a COST (European cooperation in science and technology) application in December.

6 DIN-Committee: Confocal microscopy

Dr. Roland Nitschke

DIN (Deutsches Institut für Normung) is a non-profit organisation and acknowledged as the national standardization body which works closely together with standardization committees worldwide such as ISO (International Organization for Standardization). Members of the GerBI Workgroup "Microscope Specifications and Standardized Measurements" were invited to attend a meeting of the DIN-workgroup "Confocal fluorescence microscopy for biological and medical applications" in March 2016, and Werner Zuschmitter and Roland Nitschke became ordinary members of the DIN-Normenausschuss. The DIN-workgroup will publish a new DIN-norm for confocal fluorescence microscopes, which is directly translated into an ISO-norm. Many DIN-norms related to microscopy are already published, and Roland and Werner have access to the documents in which standards are defined.

It was discussed that there are also norms for procedures and whether a DIN-norm for running an imaging core facility should be proposed to the DIN-committee.

7 Open Discussion Session

The following topics were suggested by participants and discussed in small groups:

- Airyscan and Hyvolution: Who has experience with systems?
- Service contracts: good value for money?
- CF management software: Experiences and recommendations? A software list is available on the GerBI web page. It was suggested that GerBI develops a software itself which can be used by all future GerBI core facility members. Concerns were expressed about the complexity and investments needed.
- CF from Bayer is interested in closer cooperation between companies and core facilities in academia.
- A workgroup for intravital microscopy was formed.
- Pricing politics: User fees vary a lot between different institutions.
- Which CF is supported by an administration back office (invoicing, monitoring payments, budgeting,...)?
- GerBI WG "Training for facility users" reported on their satellite meeting and asks participants to provide feedback on teaching modules and would like to exchange with participants experienced in outreach.
- Content of planned GerBI industry course organised together with Zeiss.

8 German Bioimaging Business Plan

A draft business plan for the foundation of German Bioimaging, Gesellschaft für Mikroskopie und Bildanalyse e.V. (Society for microscopy and image analysis) was sent to participants before the meeting and was presented by Elisa May and Nadine Utz. A business plan for achieving self-sustainability has to be submitted to DFG by the end of 2016 to release funds for the second year of the renewal funding period of German Bioimaging.

In December 2016, the society will be founded as a non-profit organisation (Fachgesellschaft als eingetragener gemeinnütziger Verein). In January 2017, GerBI will be converted into the society. The first General Assembly and the election of steering bodies will take place at the next GerBI Annual Community Meeting in July 2017. The business plan of GerBI includes worst case, base case, and best case budgets to cover amongst others personell costs for a General Manager and funds for training activities, IT support, conferences, legal/tax advice. Proposed steering bodies include The General Assembly (Mitgliederversammlung), Executive Committee (Vorstand), and Advisory Board.

The business plan was discussed among participants:

- Value Proposition
 - Name of the society (in German and English language) and Mission statement.
 - Success stories connected with GerBI.
 - Who will benefit by the establishment of the society.
- Membership options: Core Facility membership, individual membership, and supporting/corporate membership.
 - Exhaustive discussion if there should be different membership fee categories for core facilities depending on the number of users.
 - Some participants think that they cannot or are not allowed to pay a membership fee from their budget.
 - Core Facility membership will be further elaborated and CFs will be contacted again and be asked to provide feedback (survey).
- Benefits for members
 - For Core Facility members, there are only few more benefits as compared to individual membership. Further suggestions: Rebate on GerBI Annual Community Meeting and GerBI training courses is granted only for CF membership and not individual membership.
 - Additional benefit for CFs: CFs can upon request be certified by GerBI (e.g. usage rules are in agreement with DFG rules). DFG would be happy if the Fachgesellschaft would take over the certification of CFs. Depending on the level of accreditation, this can be a very demanding task.

- Benefits for companies: the majority of participants would support GerBI by receiving emails from companies and some volunteered to participate in a work group providing advice to companies.
- Financial plan: Tasks of a General Manager shall be listed (Is a 0,5 FTE position sufficient?).

9 Session with representatives from industry

9.1 Can companies contribute to the sustainability of German Bioluminescence (business plan)?

Representatives of the four big microscopy companies joined the German Bioluminescence Annual Community Meeting and were available to engage in discussion with the meeting participants:

Leica: Christoph Thumser
 Nikon: Dr. Kathrin Rudolph
 Olympus: Ivano Romano
 Zeiss: Dr. Richard Ankerhold
 PCO: Dr. Gerhard Holst

Elisa May gave an overview about the plans for transforming German Bioluminescence into a society. Three different supporting/corporate membership options for companies are envisaged: bronze, silver, and gold, which are also linked to different benefits for members.

Company representatives stated that the presented benefits for companies are interesting and appealing. The following topics were discussed during the discussions:

- Interaction between scientists and companies which goes beyond proposed benefits:
 - "Immersion" experience for companies at GerBI meeting
 - Informal exchange, feedback from users
 - Recommendations and wishes from a group of CF staff has more impact
 - CF staff is direct sensor for up-coming trends and a multiplier to scientists in their home institutions
 - Important that all bronze/silver/gold members have the same rights
- Further benefits could be:
 - Inventory/instrumentation list of CFs
 - Forum/blog for questions: Was discussed in the past and rejected/postponed. Is there a need in addition to the confocal mailing list?
 - GerBI *Manufacturer* web page: add direct links to company web pages for further information about e.g. instrument specifications
 - Training: companies are interested in providing together with GerBI training courses → GerBI industry courses

- From which field are scientific members? Only microscopists, only light microscopists, cytometry? Swiss and Austrian CF managers are attending this meeting. We are elaborating the possibility to have e.g. associated international Core Facility members.
- Advice: it was recommended to approach foundations, e.g. Carl-Zeiss-Stiftung to receive a financial backbone, this would give society more stability.
- Overlap with other organisations, in particular Euro-Biolmaging: Collaboration of GerBI with the Euro-Biolmaging Industry Board, which is an independent organisation, was proposed. The idea is going to be discussed in the next EUBI Industry Board meeting. GerBI represents not only big high-end CFs, but all kinds and sizes of CFs.
- Do you associate a success story with GerBI so far? Invitation of companies and exchange with CF staff at the GerBI Annual Community Meetings in 2014 and 2015 is already a success. Roland Nitschke proposed that companies elaborate together with the GerBI Workgroup *Microscope Specifications and Standardized Measurements* a protocol on how to use Argo slide.
- Not all German CFs are yet part of German Biolmaging: Please spread the word. There is no official membership and costs yet and all CFs can be listed on the GerBI web page.

In a final statement, all company representatives expressed their strong interest in the future society. The business plan will be refined and discussed at a Steering Committee Meeting and we will then approach companies again.

9.2 Talk by PCO AG

Dr. Gerhard Holst

Gerhard Holst gave a general introduction to Fluorescence Lifetime Imaging Microscopy (FLIM). The principal set-up, functioning, and the features such as sensitivity and resolution of the FLIM camera were presented and results of the collaboration with Gertrude Bunt and Fred Wouters shown. Considerations regarding frequency modulation, the use of LEDs, and coherence were expressed, and the PCO camera compared with the picosecond camera from Werner Zuschratter. Participants had many questions about technical details and features.

10 Wrap up and Closure

Elisa May recapitulated the meeting and presented a To-Do-List:

- Write minutes and circulate it with participant list.
- Business plan will be modified including feedback provided by participants. Crowd writing was suggested.
- Meeting with representatives from the EM and image analysts community in end of year: How to team up.

- File a proposal together with image analysis community to DFG e-Research Technologies programme?
- Setting up white paper together with administration of CF staff.
- Set up new Workgroup for in-vivo imaging.
- Fundraising
- Long term perspective: TIM 2018 (Cologne and Düsseldorf expressed their interest)