

**A review of 2018 and outlook for 2019 and beyond.**

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- **The new SFB 1340 "Matrix in Vision" and the 1.5<sup>th</sup> cohort of BIOQIC**



Last May, the DFG granted the new SFB (Sonderforschungsbereich), or CRC (Collaborative Research Centre) in English, "Matrix in Vision". It has an important complementary research focus and methodological overlap

with BIOQIC, namely the characterization of the extracellular matrix by molecular and biophysical probes in quantitative medical imaging. Prof. Bernd Hamm and Prof. Matthias Taupitz from the Department of Radiology of the Charité are the spokespersons, coordinator is Maria-Katharina Kuhn. The CRC involves cooperations between Charité, Freie Universität (FU), and Humboldt Universität (HU). Active members of the CRC are: 23 PhD students, 10 SoMi (sonstige Mitarbeiter) of which 3 are MTA/CTA, and 28 Postdocs. Overall funding for the next 4 years is 11.5 million Euros.

The SFB students will be the intermediate, or "1.5<sup>th</sup> cohort", of BIOQIC and will take part in the BIOQIC PhD training program. As such, they will be associated to BIOQIC. Some PhD positions remain open and the recruitment process is going on.

In the third week of January, from the 14<sup>th</sup> to the 18<sup>th</sup>, an introductory course on Methods and Biology of the SFB is organized. [Click](#) to see the preliminary program. This course is mandatory for SFB students and recommended for BIOQIC students. Please note: during your PhD you have to collect 30 ECTS points besides your research and thesis. Attending the Blockseminar gives you 2.7 ECTS (2 ECTS for Research-Methodology and 0,7 ECTS for the basic curriculum). After the seminars on Monday evening (January 14<sup>th</sup>), all are invited for dinner in a nearby restaurant.

In the week prior to the course, on Thursday 10<sup>th</sup> of January 2019, a celebration of the New Year will take place to which all SFB and BIOQIC, students and PIs are invited! We will go lounge-bowling in the Strike Lanes bowling center in the Alexa shopping center near Alexanderplatz. A dinner buffet serviced by Aveato, business caterer of the year 2017, will satisfy our hunger afterwards. The dinner will also take place inside the bowling center. The celebration will be a nice opportunity for PhD students from BIOQIC and Matrix in Vision to get to know each other and start the collective journey towards the PhD degree.

- **PhD Review committees**

The PhD Review committees took place in spring/summer 2018, one year after the start of BIOQIC. Goal of the committee meetings is to evaluate progression of the PhD projects, to discuss potential pitfalls and perspectives. The committees take place once a year in addition to the BIOQIC Days and are organized by the students. They include the student her-/himself, 1 or more supervisors, 1-2 external reviewers, and the chair and reporting person (BIOQIC coordinator). In contrast to the BIOQIC Days, where students present and discuss their projects for a wider public, the PhD review committees are confidential and feedback can be provided in both directions, i.e. from the student about the supervision and BIOQIC and from the supervisor about the student. All 15 students' progresses were satisfactory with recommendations from the panels to continue unconditionally.

The format was well received by both the students and the PIs. The organization of the committees by the students themselves should enable them to learn organizational and communication skills early in the scientific career and provide responsibility about her/his own project, promotion trajectory and progress. Consequently, on request of the students, four 2<sup>nd</sup>/3<sup>rd</sup> supervisor roles were transferred to other PIs who are closely involved in the project and expert in the specific field of research. They will therefore be an excellent asset to the students' projects.

- **New BIOQIC faculty members in 2018**

We are happy to have the support of the following experts which strengthen our competence in the fields of neuro-immunology, applied mathematics, medical physics, cardiology & angiology, neurology, and machine learning, respectively: PD Dr. Carmen Infante Duarte (Charité), Prof. Dr. Markus Haltmeier (University of Innsbruck), Dr. Christoph Kolbitsch (PTB), Dr. Antje Ludwig (Charité), PD Dr. med. Barbara Steiner (Charité), and Dr. Sebastian Stober (Otto-von-Guericke-University Magdeburg)!

- **Report on BIOQIC Days and Retreat 2018**

The BIOQIC Days and Retreat 2018 took place from 26-28 September. The BIOQIC Days were held in the auditorium of the CharitéCrossOver and were attended by the students, PIs, and the BIOQIC advisory board consisting of Professors Schnabel (King's College London, UK), Janmey (University of Pennsylvania, Philadelphia, USA), Ehman (Mayo Clinic, Rochester, USA), and the dean of the Charité, Professor Pries. This year's retreat took place in the beautiful location of the lake Oberuckersee, at Panorama Hotel am Oberuckersee, with talks from invited speakers, a dinner accompanied with live music, and a boat trip on the Oberuckersee with coffee, cake and champagne.



The advisory board was very positive about BIOQIC and the accomplishments and level of the PhD students. They offered temporary places in their labs, as an exchange, for students with projects relevant to their fields of research. Please contact me if you are interested. Winners of the presenter prize 'Panorama Award' were Nader Aldoj and Stephan Wäldchen, who shared the first place for best presentation and both won 250 Euros. This price was sponsored by the company Pure Devices, Würzburg.



Students' talks were scheduled for 15 minutes, a format regularly used at conferences, while the invited speakers' seminars took 30 minutes to one hour. We received the feedback that a different ratio would be preferred, with shorter times for the experts' talks and more time for the students. The BIOQIC executive committee furthermore agreed that next year the BIOQIC Days and Retreat will be organized by the students. We are looking forward to the next BIOQIC Days!



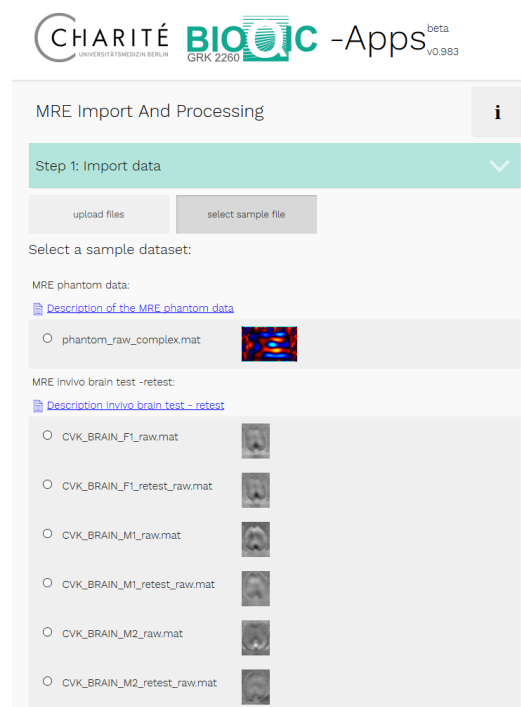
- **Other BIOQIC events in 2018**

- Matlab: 2 days-course in object-oriented programming. This course on advanced programming took place in autumn 2018 and was organized especially for BIOQIC students with teaching through Mathworks®. The costs of 4900 euros were paid by BIOQIC. The course was well received by the students. Twelve students attended the course: Ledia Lilaj, Sebastian Dietrich, Jean Pierre Bassenge, Felix Schrank, Azadeh Mohtashamdolatshahi, Matteo Ippoliti, Clarissa Wink, Bernhard Kreft, Nader Aldoj, Mehrgan Shahryari, Helge Herthum, and Stephan Wäldchen.
- Journal clubs are regularly scheduled for students to discuss research papers of their choice, to learn reading and processing research papers and presenting to and discussing with a wider public. For next year's schedule, SFB students will be included in the journal club program. Attendance and presentation is mandatory for all PhD students which are associated or included in the BIOQIC program. In 2019, three of the 15 BIOQIC students still need to present a journal club.
- Scientific writing seminar part two by Judith Bergs took place and online platforms to further develop scientific writing skills were discussed.
- The following online learning platforms are also accredited for ECTS credits:
  - [Coursera](#)
  - [DataCamp](#)
  - [edX](#)
  - [Stanford Online](#)
  - Additional E-learning platforms may be acknowledged after showing a proof of participation, either in the form of a snapshot of the results page or as a certificate (does not need to be an official, paid, certificate)

In the case of DataCamp, an academic group subscription exists for BIOQIC and Matrix in Vision, where you can learn and practice free of charge. You have received an invitation to join this group. If not, and you would like to participate, please let me know so I can invite you.

For information about acknowledgements for ECTS credit points, see the website of the Charité Promotionsumgebung: <https://promotion.charite.de/promotionsumgebung/anererkennung/> (Available in English soon).

- The BIOQIC App was introduced by Tom Meyer, developer of the app and administrator of the BIOQIC server. This website works through a central server installed at Charité and can be used for quantitative image reconstruction in MR elastography, image registration, motion analysis and SNR measurements. Extension towards more quantitative imaging techniques such as perfusion MRI, 4D flow and diffusion MRI is planned. To access the server please go to <https://bioqic.de/bioqic-server/>. More info from [tom.meyer@charite.de](mailto:tom.meyer@charite.de)



- The list of BIOQIC seminars with external experts was very rich and colorful this year including speakers such as Christian Renner from the DFG, Jürgen Reichenbach (University Clinic Jena), Marvin Dooley (University of Rochester, USA), and Joaquim Mura (Pontifical Catholic University of Chile).

- **BIOQIC publications 2018**

Congratulations to all students and other authors who published their work in 2018!!

Publications are posted on our website: <https://bioqic.de/publications/>

- BIOQIC book "Quantification of Biophysical Parameters in Medical Imaging". Springer International Publishing AG, 2018. Authored by BIOQIC PIs, edited by Ingolf Sack and Tobias Schäffter.  
<https://link.springer.com/book/10.1007/978-3-319-65924-4>
- Ingolf Sack, Fortschr Röntgenstr 2017; 188(01): 86.  
[Forschungsförderung – BIOQIC – Neue Generation von Bildgebungsspezialisten](#)
- Ippoliti M, Adams LC, Brenner W, Hamm B, Spincemaille P, Wang Y, Makowski MR. J Magn Reson Imaging 2018; 48: 1410–1420.  
[Quantitative susceptibility mapping across two clinical field strengths: Contrast-to-noise ratio enhancement at 1.5T](#)
- Bertalan G, Guo J, Tzschätzsch H, Klein C, Barnhill E, Sack I, Braun J. Magn Reson Med 2018; 1–12.  
[Fast tomoelastography of the mouse brain by multifrequency single-shot MR elastography](#)
- Guardiola G, Prezado Y, Roulin C, Bergs J. Clin Transl Rad Oncol 2018; 13: 7-13.  
[Effect of X-ray minibeam radiation therapy on clonogenic survival of glioma cells](#)
- Tzschätzsch H, Kreft B, Schrank F, Bergs J, Braun J, and Sack I. Sci Rep, in press.  
In vivo time-harmonic ultrasound elastography of the human brain detects acute cerebral stiffness changes induced by intracranial pressure variations.

For publications (including conference contributions), please refer to BIOQIC in your acknowledgements:

xxx gratefully acknowledges funding from the German Research Foundation (GRK2260, BIOQIC)

Please send me all accepted papers and conference presentations!

- **News/ future events**

It is my pleasure to inform you about the outlook for BIOQIC in the coming year and further:

- We received funding approval for the 9th early career workshop in medical imaging technology of the DFG (Nachwuchsakademie Medizintechnik). The topic is "Quantitative MRI as a key technology in life sciences". The first part of the workshop is a 4-5 days symposium held at Charité in 2019 inviting young scientists from German universities. The invited attendees can then apply for own funding from the DFG within the special funding line of the

Nachwuchsakademie. The organizers of the Nachwuchsakademie are: Dr. Judith Bergs (PhD), PD Dr. rer. nat. Jürgen Braun, Dr. rer. nat. Jing Guo, Dr. Christoph Kolbitsch (PhD), Prof. Dr. med. Marcus Makowski, Prof. Dr. rer. nat. med. habil. Jürgen Reichenbach, Prof. Dr. rer. nat. Ingolf Sack, Prof. Dr. rer. nat. Tobias Schäffter, and Dr. rer. nat. Leif Schröder.

- Internal evaluation of our current first cohort of students will take place in the autumn of 2019, during the 3rd BIOQIC Days. New projects for the 2nd BIOQIC cohort will be planned based on this internal evaluation.
- Advertisements for the recruitment of new PhD students for the 2nd cohort will be posted at the end of 2019.
- After selection, another assessment center, for the 2nd cohort of students, will take place in Feb-March 2020.
- Regarding the renewal of BIOQIC: the renewal proposal will be submitted in October 2020. We will receive the funding decision in May 2021.



Thank you all for the cooperation and nice times in 2018 and I wish you happy holidays and the best for the New Year!

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You can read all news also on <https://bioqic.de/>