

## Advanced Bioimaging Support (ABiS)

The demand for bioimaging has increased in recent years in the field of life science. However, due to advances in imaging technologies such as the diversification and specialization of imaging equipment and their increasingly complex operations, increased equipment and operating costs, and the growing need for image data analysis, individual research institutes and universities have encountered increasing difficulties related to the introduction, maintenance, and operation of imaging equipment.

ABiS was launched as one of the “Platforms for Advanced Technologies and Research Resources” in fiscal year (FY) 2016 under the newly established framework of the Grant-in-Aid for Scientific Research on Innovative Areas (Group Leader: Prof. Masanobu KANO, NIPS/The University of Tokyo). This program aims to contribute to the further development of academic research in Japan through the respective provision and dissemination of cutting-edge equipment and methodologies to individual KAKENHI (Grants-in-Aid for Scientific Research) research approved by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) under the Grant-in-Aid for Scientific Research on Innovative Areas framework (FY2016-FY2021).

ABiS provides cutting-edge instruments for light microscopy, electron microscopy, magnetic resonance imaging, and other types of methods in cooperation with domestic partner organizations that own and operate multiple types of advanced specialized imaging equipment to provide comprehensive support for advanced imaging in the field of life science. NIBB, together with NIPS, contributes to these endeavors as one of the main headquarters of the ABiS network and is in charge of the following ABiS support activities:

### ■ Light microscopy

- 4D microscopy administered by Prof. Toshihiko FUJIMORI
- IR-LEGO microscopy administered by Assoc. Prof. Yasuhiro KAMEI
- DSLM administered by Assoc. Prof. Shigenori NONAKA

### ■ Imaging analysis

- Development of image processing/analysis algorithms for biological data administered by Prof. Naoto UENO and Assist. Prof. Kagayaki KATO

### ■ Training

- Training for image analysis administered by Assist. Prof. Yoshitaka KIMORI, Assist. Prof. Hiroshi KOYAMA and Prof. Naoto UENO

To organize and coordinate ABiS activities, two secretariat offices were established at NIBB and NIPS (the former is run by Assoc. Prof. Shoji MANO), respectively, under the control of the general support group (personnel in charge of functions at NIBB include Director-general Prof. Masayuki YAMAMOTO, Prof. Naoto UENO, Prof. Shinji TAKADA and Assoc. Prof. Shoji MANO). General support includes

budget planning and management of ABiS activities. In particular, we promote ABiS activities via the official ABiS website and other media so that KAKENHI researchers are able to make full use of the ABiS platform to accelerate their research projects. In addition, we organize technology training sessions, workshops, and symposia to disseminate and share information about advanced imaging technologies. We also coordinate with the other three platforms (Platform of Supporting Cohort Study and Biospecimen Analysis, Platform of Advanced Animal Model Support, and Platform for Advanced Genome Science) to provide multidisciplinary and international support.

## ABiS joins the Global Bioimaging (GBI) Project

ABiS, a supporting platform for bioimaging in life science research in Japan, is a joint effort of imaging experts affiliated with 20 universities and research institutions nationwide which operate various types of advanced and specialized imaging equipment and aims to provide assistance in the field of life science-related advanced imaging in Japan. NIBB and NIPS are supervising this platform as the core organizations of ABiS.

Euro-BioImaging (EuBI) is the largest and most well-established imaging network in Europe, and has been expanding globally to form the Global BioImaging (GBI) network which boasts participants from other areas such as India, Australia, Singapore, the Republic of South Africa, Canada, Mexico and the USA.

In September 2018, ABiS joined the Global Bioimaging (GBI) project as a representative of the Japanese bioimaging community. A signing ceremony was held at the 3rd Exchange of Experiences (EoE) meeting convened on September 15<sup>th</sup>, 2018 in Sydney, Australia (Figure 1).

It is hoped that through GBI, ABiS will be able to raise the present quality of support to that of the currently accepted international benchmarks, and that further observations,



Figure 1. A photo of GBI representative, Dr. Jan Ellenberg and NIBB's Professor Naoto Ueno. Professor Ueno was charged with bringing the agreement signed by NIBB Director General Masayuki Yamamoto and NIPS Director General Keiji Imoto to the EoE.

analysis and research methods will be able to be better shared globally. Furthermore, it is also hoped that this collaboration will lead to a better environment in the bioimaging research field in Japan being set up; one that not only provides training courses for young researchers and the staff of imaging facilities, but also through discussions about the implementation of career paths. GBI also aims to establish a data sharing system infrastructure, promote academic/industrial cooperation and formulate a global strategy for bioimaging research.

Additionally, ABiS and GBI held a symposium, “Frontiers in Bioimaging” and an international training course from October 31 to November 4 in Okinawa as their first joint project together (see below). A subsequent GBI event, “The fifth EoE”, will be held in Okazaki, Japan in autumn of 2020.

### ABiS-GBI-OIST-ResonanceBio Joint Symposium “Frontiers in Bioimaging” and GBI-ABiS International Training Course

October 31 (Wed) ~  
November 4 (Sun) 2018

Sponsored by: Advanced Bioimaging Support and Global Bioimaging

■ Co-sponsored by:

Euro-BioImaging

Okinawa Institute of Science and Technology Graduate University

Grant-in-Aid for Scientific Research on Innovative Areas-‘Resonance Bio’

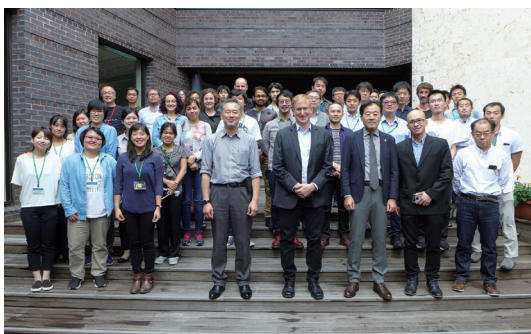
Grant-in-Aid for Scientific Research on Innovative Areas — Platforms for Advanced Technologies and Research Resources “Committee on Promoting Collaboration in Life Sciences”

■ Total number of participants: 80

■ Oral presentations: 9

■ Training course participants: 16

The ABiS-GBI-OIST-ResonanceBio Joint Symposium “Frontiers in Bioimaging” was held in Okinawa to assist in the promotion of information sharing about the forefront of bioimaging. In this symposium, two ABiS members introduced



Group photo that was taken during the joint symposium.

recent research activities related to image analysis which they have been involved in, and two researchers from Global BioImaging (GBI), promoted by Euro-Bioimaging, introduced similar activities in which they have been participants. In addition, three researchers from Grant-in-Aid for Scientific Research on Innovative Areas-‘Resonance Bio’, and two OIST members gave presentations related to cutting-edge technologies in bioimaging.

For four days after the joint symposium, the GBI-ABiS international training course was held to familiarize 16 young researchers/technicians from a variety of nationalities with computational image analysis methodologies by GBI experts.



Group photo that was taken during the international training course.