

## RESEARCH ENHANCEMENT STRATEGY OFFICE



Director  
 UENO, Naoto

Vice-Director:



Vice-Director:  
 MANO, Shoji (Nov. 1~)

NISHIMURA, Mikio ~Sep. 30)

In order to fulfill two goals, to encourage cutting-edge academic research in the field of natural sciences through international joint research, and to contribute to the enhancement of research capabilities of universities etc. in Japan using the world's most advanced research environment for joint utilization and joint research, NIBB started in 2013 a research enhancement project with the following four approaches: 1) Support for the promotion of international advanced research, 2) Support for the promotion of joint utilization and joint research in Japan, 3) Dissemination of information and enhancement of public relations in Japan and abroad, 4) Support for researchers, especially young, female or foreign researchers.

The Research Enhancement Strategy Office is aimed at supporting researchers so that NIBB improves its ability as a collaborative research institution, and was restructured in 2013 from the former Strategic Planning Department, the Office of Public Relations, and the Office of International Cooperation which existed from 2005. The Office's activities are mainly carried out by URAs (University Research Administrators) according to the advice of the group adviser chosen from NIBB's professors and in close collaboration with the NIBB's Research Enhancement Promotion Headquarters.

In 2017, Young Researcher Support Group was newly added as the 6th group to the Research Enhancement Strategy Office to provide comprehensive support for young researchers in NIBB.

### Evaluation and Information Group

Associate Professor: KODAMA, Ryuji  
 Group Adviser: KAWAGUCHI, Masayoshi

This group serves as a central office for assisting the Director General in preparing for NIBB's evaluation procedure and in planning long-range strategies for the institute.

### The main activities of the group

#### 1) Management of external evaluation processes

NIBB asks non-NIBB members of the Advisory Committee for Programming and Management to answer a questionnaire on research achievements and collaborative research activities of the institute. Several of the members are further invited to participate in a meeting for the evaluation of these activities and for proposing future directions for the institute. This group manages these processes.

#### 2) Editing of the Annual Report (in collaboration with the Public Relations Group)

This group edits the annual report (this print) which summarizes the annual activities of laboratories and facilities and is used in the evaluation procedures of the institute.

#### 3) Assistance in budget requests and long-range planning of the institute

This group also assists the Director General in preparing long-range plans for building the most advanced research facilities, and in budget requests to the government to realize and implement these plans.

#### 4) Assistance in making the plans and reports of the institute

In addition we assist in drafting NIBB's Medium-term Goals and Plans (for a six-year-period), and in instituting Annual Plans to implement them. The department also assists in preparing Business and Performance Reports for external evaluation on whether we are meeting the goals set both annually and for the medium-term.

### Public Relations Group

Specially Appointed Assistant Professor (URA):  
 KURATA, Tomoko  
 Technical Assistant:  
 OTA, Kyoko  
 KAWAGUCHI, Colin  
 BAN, Misato  
 Group Adviser:  
 FUJIMORI, Toshihiko

This group, in order to publicize the activities of NIBB to the widest audience, actively facilitates communication between NIBB and the public, school teachers, and the international community of scientific researchers.

### The main activities of the group in 2017

#### 1) Press releases

The group sends news on scientific achievements to newspaper and magazine reporters via leaflets, e-mails and web pages. We also arrange press conferences for some releases.

#### 2) Updating and maintenance of the NIBB web page

#### 3) Editing of publications, production of posters and leaflets

Publication of "NIBB News" (Intra-institutional newsletter, in Japanese). Publication of leaflets introducing the individual researchers of NIBB (in Japanese). Design and distribution of posters of NIBB events.

#### 4) Producing Videos

Creation of videos introducing NIBB and interviews with researchers that are published on the web.

#### 5) Organization of scientific outreach programs

Organizing the Summer Program for university students, and coordinating special classes for middle school students.

## INTERNATIONAL COOPERATION GROUP

*Specially Appointed Assistant Professor (URA):*  
TATEMATSU, Kiyoshi  
*Technical Assistant:*  
TAKAHASHI, Ritsue  
KAWAGUCHI, Colin  
NISHIMURA, Akiko  
*Group Advisor:*  
UENO, Naoto

NIBB has a mission to continually explore the leading-edge of biology and form research communities that link Japan to the world. For this purpose, NIBB holds scientific meetings including “NIBB Conferences” and “Okazaki Biology Conferences (OBC)”, and educational programs such as “NIBB International Practical Courses”. Further, NIBB is tightly interacting with the European Molecular Biology Laboratory (EMBL, European member states), the Temasek Life Sciences Laboratory (TLL, Singapore) and Princeton University (USA) on the basis of cooperative agreements, through exchanging people and techniques and jointly holding scientific meetings. NIBB is also conducting the “NIBB International Collaborative Research Initiative” to promote high-level international collaborations between faculty members of NIBB and researchers around the world. NIBB invites leading-edge researchers from abroad as “Guest Professors” to promote academic exchange with NIBB members and to start new international collaborations.

This group supports and coordinates NIBB’s activities related to international research collaborations, through organizing the various above-mentioned international scientific meetings and technical courses, coordination of dispatching NIBB’s researchers to international conferences, and support of researchers visiting from the institutes mentioned above. This group also supports NIBB internship students visiting from foreign countries, and the dispatching of graduate students of SOKENDAI (the Graduate University for Advanced Studies) to international conferences, which are aimed at nurturing the next generation of researchers in biology. This group, cooperating with the Okazaki Administration Office and International Affairs Division, City of Okazaki, supports other researchers and students who visit NIBB.

### The main activities of the group in 2017

#### 1) Coordination of international conferences and the International Practical Course

This group coordinated the following international conference hosted by NIBB:

- The 65th NIBB Conference “Renaissance of *Marchantia polymorpha* – the genome and beyond” Okazaki, Japan, December 16 – 18, 2017 (p. 94)

#### 2) Support of visiting researchers to NIBB

This group supported visits of foreign researchers related to the following events:

- Two researchers coming from Princeton University as lecturers for The NIBB-Princeton Joint Proteomics Training Course (July 19-21, 2017; p. 96)

- One Dean for Research coming from Princeton University (October)

#### 3) Support of education-related programs

This group supported graduate students participating in the following student exchange programs of NIBB/EMBL and NIBB internship:

- The 19th EMBL International Ph.D. Symposium “Bridging the Gaps – Interdisciplinary Approaches in Life Sciences –” Heidelberg, Germany, October 19-21, 2017(p. 95)
- NIBB Internship Program 2017 (p. 100)

## Collaborative Research Group

*Specially Appointed Associate Professor (URA):*  
SHIGENOBU, Shuji  
KAMEI, Yasuhiro  
*Technical Assistant:*  
ICHIKAWA, Mariko  
ICHIKAWA, Chiaki  
*Group Adviser:*  
YOSHIDA, Shosei

Specially appointed associate professors of this group belong to the NIBB core research facilities and are responsible for managing collaborative research projects and practical courses taking advantage of their expertise in their field, through which this group explores further promotion of information exchange and collaboration among scientific communities, and also supports the development of new equipment and methods.

In 2017, this group hosted a total of 99 collaboration projects. The success of these collaborations are proved by 30 research papers published in this year. One of the examples is a 5-year collaboration of the group of Drs. Kondoh (Osaka Univ. and Kyoto Sangyo Univ.) and Shigenobu (NIBB): they established a technique of ChIP-seq using *in vivo* biotinylated transcription factors (TFs), which enabled them to reveal the gene regulatory network in mouse epiblast stem cells where ZIC2 TF plays a central role (Matsuda et al., 2017). Another noteworthy achievement is a series of publications about development of a platform to study the psychology of vision using medaka fish. Dr. Fukamachi (Japan Woman’s University) conducted the Priority Collaborative Research Project “Study of molecular mechanisms for vision and color perception-dependent sexual behavior” with many collaborators including Dr. Kamei and other NIBB members. The collaboration team created a red opsin KO medaka and analyzed the red-color perception using the Okazaki Large Spectrograph (Homma et al., 2017). Dr. Watanabe (NIBB) used a 3D virtual imaging system and found that movement is crucial for medaka to discriminate each other (Nakayasu et al., 2017). Dr. Yoshimura (NIBB and Nagoya Univ.) revealed seasonal changes in color perception of medaka by using the resources and the platform developed as described above (Shimmura et al., 2017).

- Homma, N., Harada, Y., Uchikawa, T., Kamei, Y., and Fukamachi, S. (2017). Protanopia (red color-blindness) in medaka: a simple system for producing color-blind fish and testing their spectral sensitivity. *BMC Genetics* 18, 10.
- Matsuda, K., Mikami, T., Oki, S., Iida, H., Andrabi, M., Boss, J.M., Yamaguchi, K., Shigenobu, S., and Kondoh, H. (2017). ChIP-seq analysis of genomic binding regions of five major transcription factors in mouse epiblast stem cells that highlights a central role for ZIC2. *Development* 144, 1948-1958.
- Nakayasu, T., Yasugi, M., Shiraishi, S., Uchida, S., and Watanabe, E. (2017). Three-dimensional computer graphic animations for studying social approach behaviour in medaka fish: Effects of systematic manipulation of morphological and motion cues. *PLoS ONE* 12, e0175059.
- Shimmura, T., Nakayama, T., Shinomiya, A., Fukamachi, S., Yasugi, M., Watanabe, E., Shimo, T., Senga, T., Nishimura, T., Tanaka, M., Kamei, Y., Naruse, K., and Yoshimura, T. (2017). Dynamic plasticity in phototransduction regulates seasonal changes in color perception. *Nat. Commun.* 8, 412.

### Young Researcher Support Group

Assistant Professor: KOMINE, Yuriko  
Group Adviser: FUJIMORI, Toshihiko

Cultivation of future researchers is also an important mission of NIBB, as an international leading institute in the field of basic biology. Constituting the Department of Basic Biology in the School of Life Science of SOKENDAI (the Graduate University for Advanced Studies), NIBB provides PhD courses for graduate students. The young researcher support group was organized in 2017 aiming to support young researchers in NIBB, including graduate students (SOKENDAI students and special research students from other universities), to help make their study and research experiences in NIBB effective and fruitful for their future careers.

### The main activities of this group

- 1) *Coordination and management of courses provided by the Department of Basic Biology (lectures, research presentation, etc.), in collaboration with all faculty members in NIBB.*
- 2) *Support in organizing NIBB's programs related to the PhD courses, such as the Open Campus Day for prospective students.*
- 3) *Cooperation in the interdepartmental programs offered by the SOKENDAI headquarters, including the Freshman Course.*
- 4) *Gathering and providing information useful for both students and faculty members.*

### Gender Equality Promotion Group

Associate Professor: TSUBOUCHI, Tomomi  
Group Adviser: TAKADA, Shinji

NIBB is committed to promoting gender equality in the scientific community. To help scientists maintain their work-life balance and progress their careers during life events, such as having children, this group manages the research assistant

system for those in need, and promotes networking among female researchers.

In 2017, this group established a mailing list for female researchers working in NIBB, held several meetings to facilitate networking and provided opportunities to discuss their concerns on career development. This group has also been working towards setting up a room where NIBB members can bring their children to work.