

# The 8th NIBB International Practical Course, The 3rd NIBB-TLL-DBS/NUS Joint International Practical Course "Experimental Techniques using Medaka and *Xenopus* - The Merits of using both -"

■ Period: September 22 (Mon) - October 1 (Wed), 2014

■ Participants: 16 (3 from Germany, 2 from Taiwan, one each from Hong Kong, India, Indonesia, Bangladesh, and USA, 6 from Japan)

■ Venue: National Institute for Basic Biology, Japan

■ Lecturers:

Dr. Toshinori HAYASHI (Tottori Univ.)  
 Dr. Yasuhiro KAMEI (NIBB)  
 Dr. Kei MIYAMOTO (Wellcome Trust/Cancer Research UK Gurdon Institute)  
 Dr. Hajime OGINO (Nagahama Institute of Bio-Science and Technology)  
 Dr. Hideaki TAKEUCHI (Univ. of Tokyo)  
 Dr. Thomas THUMBERGER (Heidelberg Univ.)  
 Dr. Christoph WINKLER (National Univ. of Singapore)  
 Dr. Hitoshi YOKOYAMA (Tohoku Univ.)  
 Dr. Takashi YOSHIMURA (Nagoya Univ./NIBB)

■ Course Staff:

Dr. Satoshi ANSAI, Dr. Shin-ichi CHISADA, Dr. Hideaki HANADA, Dr. Yasuhiro KAMEI, Dr. Akihiko KASHIWAGI, Dr. Keiko KASHIWAGI, Dr. Aiko KAWASUMI, Dr. Masato KINOSHITA, Dr. Kei MIYAMOTO, Dr. Kiyoshi NARUSE, Dr. Shigenori NONAKA, Dr. Tetsushi SAKUMA, Dr. Takao SASADO, Dr. Ken-ichi T. SUZUKI, Dr. Yusuke TAKEHANA, Dr. Marta TEPERREK, Dr. Thomas THUMBERGER, Dr. Hitoshi YOKOYAMA

■ Contents of the course:

Gene knock-out using TALEN in *Xenopus*, Gene knock-out using CRISPR/CAS9 system in medaka, Gene knock-in using CRISPR/CAS9 system in medaka, *in vitro* fertilization of eggs and manipulation of embryos, Local gene induction with the infrared laser-evoked gene operator (IR-LEGO) method, Live imaging by 2-photon microscopy and Digital Scanning Light-sheet Microscopy (DSLMS), Cryopreservation of sperm and artificial insemination for Medaka



The 8th NIBB International Practical Course & The 3rd NIBB-TLL-DBS / NUS Joint International Practical Course "Experimental Techniques using Medaka and *Xenopus* - The Merits of using both -" was held from September 22 to October 1st 2014. 16 participants from Taiwan, Hong Kong, India, Indonesia, Bangladesh, Germany, the United States, and Japan were selected from among the 29 applicants.

Unique Features of this NIBB International Practical Course were training with medaka and zebrafish, and concurrently training with *Xenopus*. Through these workshops important connections were made between the two communities of small fish and *Xenopus* researchers. The course was planned with the intention that participants should experience research using a variety of experimental systems.

In addition to the main project aims, there was also the sub-aim of displaying the rapid development of genome editing technology (such as mutants created by TALEN and CRISPR-CAS9), which can be used in *Xenopus* and small fish. In response to these changes in technology and the research environment participants were allowed to use both medaka and *Xenopus* not only in live-imaging and training in important sperm freezing technologies for long-term storage of mutants, but also in the TALEN / CRISPR-CAS9 genome editing system to produce knock-out and knock-in mutants, and the gene induction system by IR-LEGO. The results of the questionnaire show the course was very popular to those who participated. In addition to the standard training schedule, on every day except Sunday and on the last day, distinguished invited researchers in the field conducted seminars for participants. The seminars were extremely interesting because of both the cutting-edge research using small fish and amphibians, and the research using multiple model organisms concurrently.

I want to take this opportunity to dedicate a big thank you to the staff of the Office of International Cooperation. I would also like to thank the research groups that were co-sponsors of the course: National BioResource Projects (NBRP) Medaka, NBRP *Xenopus*, "Molecular Mechanisms Underlying Reconstruction of 3D Structures during Regeneration" (supported by MEXT, Japan), and "Enhancing Application of Innovative Optical Science and Technology by Making Ultimate Use of Advanced Light Sources" (supported by CREST/JST, Japan). Finally I would like to thank the staff in the Institute for Amphibian Biology, Hiroshima University, the Laboratory of BioResources, NIBB, and the Spectrography and Bioimaging Facility, NIBB, whose preparations made this training course possible.

(Kiyoshi Naruse)

