NATIONAL BIORESOURCE PROJECT

The major purpose of the National BioResource Project (NBRP) is to collect, preserve, and provide bioresources (such as experimental animals and plants) that are essential for life sciences research. The project also aims to improve these bioresources by increasing their value by enriching their genome information and developing key preservation technologies and other necessary procedures, in order to meet current scientific demands. NIBB serves as the core organization center of medaka bioresources and as a sub-center of morning glory and the zebrafish bioresources.

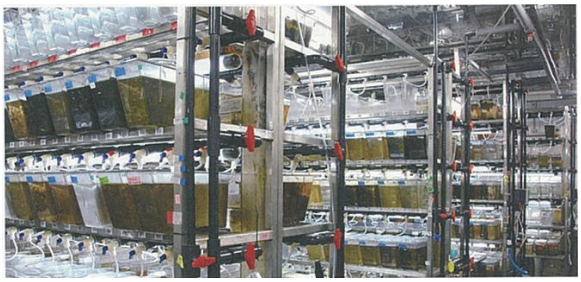
I. NBRP Medaka (*Oryzias latipes*)

Project Manager: *NARUSE, Kiyoshi*
Sub Managers: *KAMEI, Yasuhiro*
ANSAI, Satoshi

NBRP Medaka provides three groups of resources worldwide, including 1) live medaka resources comprising more than 600 strains (strains for general use, wild populations, related species, inbred strains, mutants, and transgenics), 2) genome resources (ca. 400 thousand cDNA clones originated from 33 cDNA libraries, and BAC/Fosmid clones covering the whole medaka genome), and 3) hatching enzymes necessary for manipulation and live imaging of the medaka embryos. Entries for these resources can be found by various methods such as keyword searches, sequence homologies, and by opening the expression profile on the following web site (https://shigen.nig.ac.jp/medaka/).

We provide mutant gene screening using the HRM method in the TILLING library, and also provide a genome editing platform using CRISPR/Cas9. Using collaborative research support, researchers can visit NIBB to generate mutants by genome editing. Furthermore, we have developed and provided a new genome browser (http://viewer.shigen.info/medaka/index.php) that uses a recently published genome assembly by PacBioRSII.

As one of our main accomplishments over the last ten years, we sequenced both ends of 260,000 clones originating from 11 kinds of full-length cDNA libraries and then sequenced the whole length of 17,000 independent clones from 2007 and 2009. We also developed strains in which CRE-recombinase can be expressed in any of the cell lineages using a heat shock promoter. We then started to provide strains (TG918, TG921, *etc*) established using this method. By 2010, we re-sequenced the genomes of five inbred strains by coverage corresponding to genome 100X (http://medaka.lab.nig.ac.jp/service/menu). In 2012, we developed a vitrification freezing preservation method of the testicular tissue. We are now providing a backup service aimed at preserving testicular tissues using this method.



NBRP Medaka fish facility, which is used to collect, maintain and supply live medaka.

II. NBRP Morning Glory (*Ipomoea nil*)

Project Manager: *HOSHINO, Atsushi*

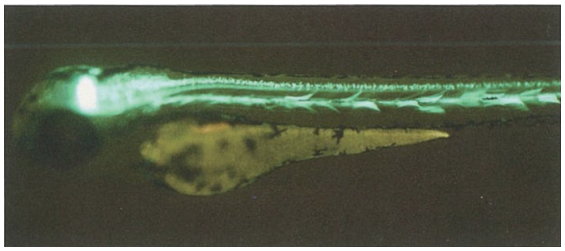
The Japanese morning glory (*Ipomoea nil*) is a traditional floricultural plant in Japan, and is studied worldwide, especially in plant physiology and genetics. NIBB collects, develops and distributes DNA clones, mutant lines for flower pigmentation, and transgenic lines as a sub-center of the National BioResource Project (NBRP) Morning Glory, and collaborates with the core organization center, Kyushu University. We have collected several mutant lines and DNA clones, and provided 9 mutant lines and 37 DNA clones to both local and international biologists during the course of 2018.

The database (http://shigen.nig.ac.jp/asagao/) contains genotype data and thousands of image data of phenotypes for 1,200 *Ipomoea* lines maintained by this project.

III. NBRP Zebrafish (*Danio rerio*) ‡

Project Manager: *HIGASHIJIMA, Shin-ichi*

NIBB is a sub-center of the National BioResource Project (NBRP) Zebrafish, and collaborates with the core organization center, RIKEN Brain Science Institute. We mainly collect zebrafish strains expressing fluorescent proteins in specific cells of the central nervous system and distribute them to researchers worldwide. The zebrafish is an important and globally used experimental vertebrate model animal with a simple body structure. It can be genetically manipulated, and its embryos are transparent enough for optical observations. Research using zebrafish for the studies of neural development and neural circuit functions are growing rapidly worldwide, and the importance of strains collected and provided by NIBB to researchers is growing accordingly.



An example of transgenic fish generated by the CRISPR/Cas9-mediated knock-in method.

‡: NBRP Zebrafish was moved to the charge of the ExCELLS from 1 April 2018.