As of March 2018

Department of Biological Sciences

Research Area : Molecular Genetics

(URL : https://sites.google.com/view/nakagoshi-lab-hp/home)
(URL : http://www.biol.okayama-u.ac.jp/kutukake/nadyn.html)
(URL : https://sites.google.com/view/molecularmicrobelab/home)

Hideki NAKAGOSHI, Professor
Tatsuhiko ABO, Associate Professor
Akira TOMINAGA, Associate Professor

Research Themes :

》 Regulatory mechanisms of sexual differentiation and fertility in *Drosophila*
》 Ribosome rescue in *Escherichia coli*
》 Structural analysis of ribosome resuce factors
》 DNA inversion system in bacteria, flagellotropic bacteriophage χ

Representative Publication :

• T. Abo, and Y. Chadani, The fail-safe system to rescue the stalled ribosomes in Escherichia coli. Front. Microbiol. 5: 156 (2014)
• R. Minami, M. Wakabayashi, S. Sugimori, K. Taniguchi, A. Kokuryo, T. Imano, T. Adachi-Yamada, N. Watanabe, and H. Nakagoshi, The homeodomain protein Defective proventriculus is essential for male accessory gland development to enhance fecundity in *Drosophila*. PLoS One 7: e32302 (2012)

Research Area : Molecular Physiology

(URL: http://www.biol.okayama-u.ac.jp/takahashi_y/index.htm)

Yuichiro TAKAHASHI, Professor
Miho NISHIMURA, Assistant Professor

Research Themes:

》 Study on the structure, function, and assembly of Photosystem I
》 Study on the structure and function of oxygen-evolution of Photosystem II
》 Study on the quality control of Photosystem II

Representative Publication :

• S. Bujaldon, N. Kodama, F. Rappaport, R. Subramanyam, C. de Vitry, Y. Takahashi, and F.-A. Wollman, The functional accumulation of antenna proteins in chlorophyll *b*-less mutants of *Chlamydomonas reinhardtii*. Molecular Plant 10: 115-130 (2017)
• Y. Kato, S. Ozawa, Y. Takahashi, and W. Sakamoto, D1 fragmentation in photosystem II repair caused by photo-damage of a two-step model, Photosynthesis Res. 126: 409-416 (2015)
• H. Takahashi, A. Okamuro, J. Minagawa, and Y. Takahashi, Biochemical Characterization of Photosystem I-Associated Light-Harvesting Complexes I and II Isolated from State 2 Cells of Chlamydomonas reinhardtii, Plant Cell Physiol. 55: 1437-1449 (2014)
• S. Takahashi, M. Yoshioka-Nishimura, D. Nanba, and M. R. Badger, Thermal acclimation of the symbiotic alga Symbiodinium spp. alleviates photobleaching under heat stress, Plant Physiology 161: 477-85 (2013)

Research Area : Molecular Cell Biology

(URL: https://sites.google.com/view/taga-lab)

Masatoki TAGA, Professor
Kiyoshi NAKAHORI, Assistant Professor

Research Themes:

》 Molecular cytogenetics of filamentous fungi
》 Photomorphogenesis of agaricomycete *Coprinopsis cinerea*

Representative Publication :

• M. Taga., K. Tanaka, S. Kato, and Y. Kubo, Cytological analyses of the karyotypes and chromosomes of three *Colletotrichum species, C. orbiculare, C. graminicola and C. Higginsianum*, Fungal Genet. Biol. 82:238-250 (2015)
• H. S. Garmaroodi and M. Taga, Meiotic inheritance of a fungal supernumerary chromosome and its effect on sexual fertility in *Nectria haematococca*, Fungal Biol. 119: 929-939 (2015)
• T. Nakazawa, Y. Ando, T. Hata, and K. Nakahori, A mutation in the *Cc.arp9* gene encoding a putative actin-related protein causes defects in fruiting initiation and asexual development in the agaricomycete *Coprinopsis cinerea*, Curr. Genet. 62: 565-74 (2016)

Research Area : Structural Biology

(URL: http://www.biol.okayama-u.ac.jp/shen2/%E3%83%88%E3%83%83%E3%83%97.htm)

Jian-Ren SHEN, Professor
Michihiro SUGA , Associate Professor
Fusamichi AKITA, Associate Professor

Research Themes:

》 Mechanism of photosynthetic water-splitting
》 High-resolution structural analysis of membrane proteins
》 Expression, purification and structural studies of plant transporters

Representative Publication :

• M. Suga, F. Akita, K. Hirata, G. Ueno, H. Murakami, Y. Nakajima, T. Shimizu, K. Yamashita, M. Yamamoto, H. Ago, and J.-R. Shen, Native structure of photosystem II at 1.95 Å resolution viewed by femtosecond X-ray pulses. Nature 517: 99-103 (2015)
• X. Qin, M. Suga, T. Kuang, and J.-R. Shen, Structural basis for the energy transfer pathways in plant PSI-LHCI super-complex. Science 348: 989-995 (2015)
• M. Suga et al., Light-induced structural changes and the site of O=O bond formation in PSII caught by XFEL. Nature 543: 131-135 (2017)
• L.-J. Yu, M. Suga, Z.-Y. Wang-Otomo, J.-R. Shen, Structure of photosynthetic LH1-RC super-complex at 1.9 resolution. Nature 556: 209-213 (2018)

Research Area : Neural Control of Behavior

(URL: http://www.science.okayama-u.ac.jp/~rinkai/en/index.html)
(URL: https://sites.google.com/view/molecular-ethology-laboratory/english)

Hirotaka SAKAMOTO, Associate Professor
Hideaki TAKEUCHI, Associate Professor

Research Themes:

》 Studies on neuroendocrinological regulation of behavior in vertebrates
》 Evolutional origin of the hormone-receptor system
》 Exploring the neural geography of the social brain using medaka fish
》 Investigation of behavioral rules underlying emergence of social structure

Representative Publication :

• H. Sakamoto, K.I. Matsuda, D.G. Zuloaga, H. Hongu, E. Wada, K. Wada, C.L. Jordan, S.M. Breedlove, and M. Kawata, Sexually dimorphic gastrin releasing peptide system in the spinal cord controls male reproductive functions, Nat. Neurosci. 11: 634-636 (2008)
• T. Okuyama, S. Yokoi, H. Abe, Y. Isoe, Y. Suehiro, H. Imada, M. Tanaka, T. Kawasaki, S. Yuba, Y. Taniguchi, Y. Kamei, K. Okubo, A. Shimada, K. Naruse, H. Takeda, Y. Oka, T. Kubo, and H. Takeuchi, A neural mechanism underlying mating preferences for familiar individuals in medaka fish, Science 343:91-94 (2014)

Research Area : Environmental Biology and Chronobiology

(URL: https://sites.google.com/site/chronobiologyokayamauni/)

Kenji TOMIOKA, Professor
Taishi YOSHII, Associate Professor

Research Themes:

》 Molecular oscillatory mechanism and photic entrainment mechanism of the circadian clock in hemimetabolous insects
》 Molecular physiological analysis of the insect photoperiodic time-measurement mechanism
》 Neuronal circuits underlying the circadian clock in *Drosophila melanogaster*
》 Functional analysis of neuropeptides involved in the *Drosophila* circadian clock

Representative Publication :

• A. Tokuoka, T.Q. Itoh, S. Hori, O. Uryu, Y. Danbara, M. Nose, T. Bando, T. Tanimura, and K. Tomioka, *cryptochromes* form an oscillatory loop that can operate independent of the *per/tim* loop in the circadian clockwork of the cricket *Gryllus bimaculatus*. Zoological Lett. 3: 5 (2017)
• K. Tomioka, and A. Matsumoto, Circadian molecular clockworks in non-model insects. Curr. Opin. Insect Sci. 7: 58-64 (2015)
• T. Yoshii, C. Hermann-Luibl, C. Kistenpfennig, B. Schmid, K. Tomioka, and C. Helfrich-Förster, Cryptochrome-dependent and -independent circadian entrainment circuits in *Drosophila*, J. Neurosci. 35: 6131-6141 (2015)
• C. Hermann-Luibl, T. Yoshii, P.R. Senthilan, H. Dircksen, C. Helfrich-Förster, The ion transport peptide is a new functional clock neuropeptide in the fruit fly *Drosophila melanogaster*, J. Neurosci. 34: 9522-9536 (2014)

Research Area : Chemical Correlation and Control

(URL: http://www.science.okayama-u.ac.jp/~rinkai/en/index.html)
(URL: http://www.biol.okayama-u.ac.jp/cccrg/index.html)

Tatsuya SAKAMOTO, Professor
Sumio TAKAHASHI, Professor
Sakae TAKEUCHI, Professor
Tadashi AKIYAMA, Assistant Professor
Maho OGOSHI, Assistant Professor

Research Themes:

》 Regulatory mechanism of anterior pituitary functions and reproductive functions
》 Functional evolution of adrenomedullin family in vertebrates
》 Physiological role and mechanism of action of pituitary hormones expressed in extra-pituitary tissues in vertebrates
》 Environmental Adaptation
》 Diversity of Marine Animals

Representative Publication :

- Y. Manabe, M. Tochigi, A. Moriwaki, S. Takeuchi, and S. Takahashi, Insulin-like growth factor 1(IGF1) mRNA expression in the uterus of streptozotocin (STZ)-treated diabetic mice, J. Reprod. Dev. 59: 398-404 (2013)
- Y. Takei, M. Ogoshi, and S. Nobata, Exploring new CGRP family peptides and their receptors in vertebrates, Curr. Prot. Pept. Sci. 14: 282-93 (2013)
- T. Sakamoto, S. Ogawa, Y. Nishiyama, C. Akada, H. Takahashi, T. Watanabe, H. Minakata, and H. Sakamoto, Osmotic/ionic status of body fluids in the euryhaline cephalopod suggest possible parallel evolution of osmoregulation, Sci Rep. 5: 14469 (2015)
- E. Oribe, A. Fukao, C. Yoshihara, M. Mendori, K. G. Rosal, S. Takahashi, and S. Takeuchi, Conserved distal promoter of the agouti signaling protein (ASIP) gene controls sexual dichromatism in chickens, Gen. Comp. Endocrinol. 177: 231-237 (2012)

Research Area : Developmental Biology

(URL: https://sites.google.com/view/uedalabinokayamauniv/home)
(URL: http://www.biol.okayama-u.ac.jp/takahashiTaku/T-Takahashi.html)
(URL: https://organregeneration.jimdo.com/english-version/)

Hitoshi UEDA, Professor
Taku TAKAHASHI, Professor
Hiroyasu MOTOSE, Associate Professor
Akira SATOH, Associate Professor
Takashi OKAMOTO, Assistant Professor

Research Themes:

》 Regulation mechanism of time control (biological timer) during the development of insects, gene expression and development by insect hormones
》 Molecular functions of thermospermine in plant development
》 Molecular mechanism and evolution of directional growth in plants
》 Novel physiological functions of phytohormones
》 Organ regeneration in vertebrates

Representative Publication :

- K. Akagi, M. Sarhan, A.-R. Sultan, H. Nishida, A. Koie, T. Nakayama, and H. Ueda, A biological timer in the fat body comprised of Blimp-1, βFTZ-F1 and Shade regulates pupation timing in *Drosophila melanogaster*. Development 143: 2410-2416 (2016)
- Y. Ohhara, Y, Shimada-Niwa, R. Niwa, Y. Kayashima, Y. Hayashi, K. Akagi, H. Ueda, K. Yamakawa-Kobayashi, and S. Kobayashi, Autocrine regulation of ecdysone synthesis by β3-octopamine receptor in the prothoracic gland is essential for Drosophila metamorphosis. Proc. Natl. Acad. Sci. USA. 112: 1452-1457 (2015)
- K. Yoshimoto, Y. H. Takamura, I. Kadota, H. Motose, and T. Takahashi, Chemical control of xylem differentiation by thermospermine, xylemin, and auxin. Sci. Rep. 6: e21487 (2016)
- S. Takatani, S. Ozawa, N. Yagi, T. Hotta, T. Hashimoto, Y. Takahashi, T. Takahashi, and H. Motose, Directional cell expansion requires NIMA-related kinase 6 (NEK6)-mediated cortical microtubule destabilization., Sci. Rep. 7: e7826 (2017)
- A. Makanae, K. Mitogawa, and A. Satoh, Cooperative Bmp- and Fgf-signaling inputs convert skin wound healing to limb formation in urodele amphibians, Dev. Biol. 410: 45-55 (2016)