

Japan

<http://www.arabidopsis.org/portals/masc/countries/Japan.jsp>
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In Japan, Arabidopsis functional genomics is mainly carried out at RIKEN, Kazusa DNA Research Institute and National Institute of Advanced Industrial Science and Technology (AIST). RIKEN groups include the Plant Science Center (PSC), the BioResource Center (BRC) and Bioinformatics and Systems Engineering division (BASE). Funding conditions for plant research are rather getting worse in Japan even though the level of plant science becomes much better than before based on ISI Thomson. Plant science is one of the three highly cited research areas in Japan (the other two research areas are immunology and post-genomics).

1. The RIKEN PSC (<http://www.psc.riken.jp/english/index.html>) (Director: K. Shinozaki) is carrying out these projects; (1) Metabolome analysis of tagged mutants and FOX lines via GC-MS, LC-MS, CE-MS and NMR (K. Saito), (2) Hormonomics (systematic analysis of plant hormones) of Arabidopsis and rice FOX lines (H. Sakakibara, M. Matsui), (3) Transcriptomics via tiling array and Illumina-Solexa sequencer (M. Seki), (4) Phenotype analysis of Ds-tagged lines, and Arabidopsis and rice Full-length-cDNA-overexpressing (FOX) Arabidopsis transgenic lines (M. Matsui), (5) Phenotype analysis of 5,000 homozygous Ds-insertion lines in gene-coding regions (T. Kuromori), (6) Collection and phenome analysis of Ds- or T-DNA tagged mutants for nuclear-encoded chloroplast protein genes (F. Myouga), (7) Collection of *Thellungiella halophila* full-length cDNAs in collaboration with Tokyo University of Agriculture (Published: BMC Plant Biology 8: 115, 2008) (T. Sakurai, T. Taji), (8) Rice FOX Arabidopsis Mutant Database (<http://ricefox.psc.riken.jp/>) (Published: Plant J 57: 883-94, 2008) (M. Matsui), (9) Large-scale data of transcriptome in hormone response (Y. Shimada, www.arabidopsis.org/info/expression/ATGenExpress.jsp)
2. RIKEN BRC Experimental Plant Division (PI: M. Kobayashi, kobayasi@rtc.riken.jp) preserves and distributes various plant materials including Arabidopsis full-length cDNA clones and transposon-tagged mutant seeds via National BioResource Project. Now, Arabidopsis FOX lines developed by RIKEN PSC are distributed. Also, Arabidopsis T87 cells are being distributed overseas. More than 1,150 laboratories and groups in the world have already received materials from RIKEN BRC (<http://www.brc.riken.go.jp/lab/epd/Eng/>).
3. The RIKEN BASE (PI: T. Toyoda) (<http://www.base.riken.jp/english/index.html>) has been carrying out (1) Bioinformatics tools and data mining, (2) Arabidopsis transcriptome informatics (CAGE, tiling-array), (3) Informatics platform

towards genome design and metabolic engineering in Arabidopsis, (4) Japan's national integrated database project covering Arabidopsis 'omics information resources, (5) PosMed (Positional Medline) for Arabidopsis genes is an intelligent search engine integrating genome information and literature (<http://omicspace.riken.jp/PosMed/search?objectSet=gene&species=At>)

4. Kazusa DNA Research Institute Metabolome analysis of transgenic Arabidopsis plant over-expressing transcription factor cDNAs via FT-MS, GC-MS, LC-MS and CE-MS. (PI: D. Shibata, (http://www.kazusa.or.jp/e/laboratories/labo_plantbiotec.html))
5. National Institute of Advanced Industrial Science and Technology (AIST) M. Ohme-Takagi (<http://unit.aist.go.jp/rigb/gf-gre/en.html>) developed novel gene silencing system using dominant repressors (CRES-T system) and is systematically analyzing function of transcription factors in Arabidopsis and rice.

Other new activities

- A new project on peptides hormones CLEs was funded for H. Fukuda (University of Tokyo) by BRAIN. A project on plant peptide hormones and their receptors was funded for K. Okada (NIBB) by JSPS from 2007.
- **Noteworthy breakthroughs by Japanese researchers in 2008:** Publication: Inhibition of shoot branching by new terpenoid plant hormones (Umehara M, Hanada A, Yoshida S, Akiyama K, Arite T, Takeda-Kamiya N, Magome H, Kamiya Y, Shirasu K, Yoneyama K, Kyoizuka J, Yamaguchi S, Nature 2008 Sep 455:195-200.)
- **Relevant Meetings 2008:** The Arabidopsis Workshop Japan 2008 "Frontiers of Plant Science in the 21st Century" was held at the National Institute for Basic Biology on September 13-15, 2008. The aim of the annual meeting was to promote and inspire researchers and students through intensive discussion on their research achievements and results as well as their ideas and future prospects for plant science (<http://www.nibb.ac.jp/conf55/>).
- **Awards for Arabidopsis research:** Dr. Kazuo Shinozaki received 1st place of the most cited researchers in Plant Science in 1997 - 2007. [Science Watch ISI Thomson] (http://sciencewatch.com/dr/sci/08/jun22-08_4/)
- **Upcoming International Arabidopsis Conference in Japan:** The 2010 International Conference on Arabidopsis Research (ICAR) will be held in Japan for the first time. This is the 21st ICAR and the second to be held in Asia. The conference date is June 6-10, 2010 at the Pacifico Yokohama Conference Center, and is co-chaired by: Kazuo Shinozaki (RIKEN Plant Science Center) and Kiyotaka Okada (National Institute for Basic Biology). <http://arabidopsis2010.psc.riken.jp/>