

United Kingdom

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GARNet

GARNet, the **Genomic Arabidopsis Resource Network** was established in 2000 to provide public functional genomics resources, which now operate through “user pays” cost recovery. Coordination activities are funded for 2005-2010, to provide an information resource (<http://garnet.arabidopsis.info/>, newsletter, annual meeting) and point of contact for other UK research communities and international genomics programmes. Plant systems biology and translational research are now important parts of GARNet’s activities.

Current Foci of UK Funding of Arabidopsis Research

The Biotechnology and Biological Science Research Council, BBSRC, is the major funding agency for *Arabidopsis* Research. BBSRC encourages applications that build upon functional genomics to develop integrative and predictive understanding, in line with Systems Biology. Recent initiatives include: Six new Centres for Integrative Systems Biology (£30M in 2005 and 2006; http://www.bbsrc.ac.uk/media/pressreleases/06_04_20_sysbio.html). The Centre for Plant Integrative Biology (CPIB, Nottingham; <http://www.cpiib.info/>) aims to create a virtual Arabidopsis root as an exemplar of Systems Biology in multi-cellular systems. The Centre for Systems Biology at Edinburgh (CSBE; <http://csbe.bio.ed.ac.uk/>) aims to streamline the modelling of dynamic intracellular processes including the plant circadian clock. The independently-funded Warwick Systems Biology centre (<http://www2.warwick.ac.uk/fac/sci/systemsbiology/>) also includes *Arabidopsis* researchers. Systems Approaches to Biological Research (<http://www.bbsrc.ac.uk/science/initiatives/sabr.html>) in 2007 will fund £30M of projects across systems biology. Two new UK initiatives (BBR and TRDF) fund infrastructure development and maintenance.

Future Outlook

Basic plant science, much of it in *Arabidopsis*, is being encouraged to translate into applications that address agronomic problems or deliver economic and environmental benefits, such as Bioenergy. Long-term funding, coordination, standards and data policies are understood to be needed, nationally and internationally, to underpin comprehensive *Arabidopsis* biology *in silico*. To underpin this, a BBSRC Data Sharing Policy was agreed in 2006. Other areas such as Synthetic Biology provide new interdisciplinary approaches.

Other UK funding bodies supporting Arabidopsis research include

- NERC (Natural Environmental Research Council) (www.nerc.ac.uk/)
- DEFRA (Department for Environment Food and Rural Affairs) (www.defra.gov.uk/)
- SEERAD (Scottish Executive Environment and Rural Affairs) (www.scotland.gov.uk/topics/agriculture)

International Genomics Collaborations

The first call from ERA-PG (European Research Area in Plant Genomics; <http://www.erapg.org/>) funded 15 projects across Europe, of which 13 had UK partners.

- The FP6 plant project AGRON-OMICS (<http://www.agron-omics.eu/>) which includes two UK partners) focuses on integrative biology for leaf growth.
- BBSRC supported part of the *Brassica rapa* sequencing consortium (www.brassica.info); it also supports international collaborations via partnering schemes with China, India and Japan (<http://www.bbsrc.ac.uk/international>); and has a joint scheme with the Department for International Development (DFID) to promote Sustainable Agriculture Research (http://www.bbsrc.ac.uk/science/initiatives/sus_ag_dfid.html).

UK Arabidopsis Meetings

- GARNet hosts an annual meeting for plant scientists across the UK and Europe to disseminate information about new technologies and resources. GARNet 2007 will be held at the John Innes Centre, Norwich, 11-12th September (http://garnet.arabidopsis.info/garnet_meeting.htm).
- The Genetics Society hosts an annual one-day meeting on *Arabidopsis*, which in 2007 was held at Durham University on May 12th (<http://www.genetics.org.uk>).

Arabidopsis genomics tools and resources

Resources initiated by GARNet include transcriptomics, proteomics and metabolomics, insert clone libraries and insertional mutagenesis populations. Data from GARNet-funded projects are available at NASC (<http://arabidopsis.info>), and Rothamsted <http://www.metabolomics.bbsrc.ac.uk/>. The CPIB and CSBE centre will develop new biological resources, software and modeling standards over 5 years.

European Stock Centre

NASC (<http://arabidopsis.info>) has acted as the European stock centre for germplasm (seed, DNA, clones and data) since 1991 and is twinned with the ABRC (U.S). In addition it provides an integrated genome browser (AtEnsembl) and acts as the primary repository for Affymetrix data within the community through NASCarrays. All data held by NASC is open and disseminated to meta-repositories such as TAIR, GenevestigATor, MapMan, BBC, GEO and ArrayExpress.en-mass and by web-services such as SOAP-labs / BioMOBY.

- Phenotype data is held according to both plant ontology (PO) and Phenotype (PATO) standards (http://arabidopsis.info/bioinformatics/Ontology_details.html).
- The NASC genome browser (<http://atensembl.arabidopsis.info>) brings together MIPS and TIGR annotation; germplasm; Affymetrix GeneChip data; comprehensive insertion line coverage; and RNA-i knockdown clone resources.
- NASC provides a not-for-profit international GeneChip hybridization service and database and currently holds data from 3,000 GeneChips (<http://affy.arabidopsis.info>).
- NASCarrays: (<http://affymetrix.arabidopsis.info/narrays/experimentbrowse.pl>)