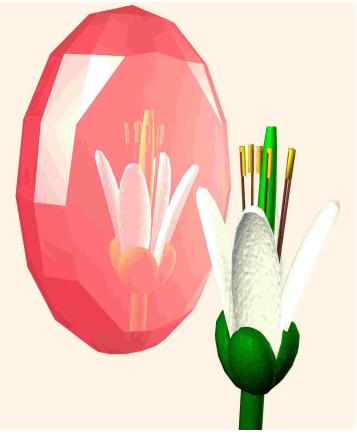
July 2004.Edition 1

GARNish

The official GARNet newsletter



Welcome to the new version of GARNish the official GARNet newsletter.

GARNish aims to provide the UK Arabidopsis community with relevant and useful information about research, resources and new technologies.

GARNish will be circulated twice a year in both electronic (available at the GARNet website) and printed formats.

Genomic Arabidopsis Resource Network

GARNet was established in 2000 with BBSRC funding. GARNet was set up to provide reliable, user-driven and publicly available functional genomic resources for Arabidopsis research.

Information about GARNet and other Arabidopsis resources are available on the GARNet website http://garnet.arabidopsis.org.uk

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Arabidopsis Ensembl:- A comprehensive Genome Browser from NASC **Page 4**

5th GARNet meeting with UK-BRC.

University of Leicester 1-2 September 2004. Speakers will include **Pam Green, Caroline Dean, Thomas Laux, Gloria Coruzzi, Derek Lydiate** and many more.

For more details and registration go to the GARNet website.

http://garnet.arabidopsis.org.uk

Poster abstract deadline 5th July. Registration deadline 6th August.

Ruth Bastow
GARNet administrator

For further Information about GARNet and GARNish please contact me:-

R.M.Bastow @warwick.ac.uk

Arabidopsis Resources

Transcriptome analysis

An affymetrix gene chip service is provided by Sean May and his team at NASC (Nottingham Arabidopsis Stock Centre) http://Arabidopsis.info/

Users provide RNA and NASC carries out all technical procedures associated with hybridisation and data capture. The gene expression data generated is provided to the user in raw and excel formats. A 'post-chip' service for help with data analysis is also provided.

For further information see http://www.york.ac.uk/res/garnet/providers.htm

Proteome analysis

The Cambridge Centre for Proteomics (CCP) provides a proteomic resource for the UK Arabidopsis community.

The service carries out quantitative proteome analysis, by employing difference gel electrophoresis and identifying proteins exhibiting a change in expression under a given set of circumstances by a combination of peptide mass fingerprinting and de novo sequencing.

For further information see http://www.york.ac.uk/res/garnet/providers.htm

Metabolome analysis

This resource is provided by Prof Mike Beale and located at the National Plant and Microbial Metabolic Centre at Rothamsted Research.

The facility provides both targeted and general metabolite profiling of the Arabidopsis metabolome using HPLC, MS and NMR.

For further information see http://www.york.ac.uk/res/garnet/providers.htm

Library Screening

Gene Transfer Clone Identification and Distribution service is available from GeTCID.

Users provide DNA for hybridisation to colony filters representing 4 different Arabidopsis libraries. Clones are then sent to user.

For further information see http://www.york.ac.uk/res/garnet/providers.htm

General Arabidopsis databases

PLANET, A Network of European Plant Databases
http://www.eu-plant-genome.net/

GABI, Genome Analysis of the Plant Biological Systems
http://gabi.de/

MASC, Multinational Arabidopsis Steering Committee
http://www.arabidopsis.org/info/2010_projects/index.jsp

TAIR, The Arabidopsis Information Service
http://www.arabidopsis.org/

Genoplante Joint Programme in Plant Genomics
http://www.genoplante.com

Genome Databases

UK Crop Net, Crop Plant Bioinformatics Network
http://ukcrop.net/

MIPS, Munich Information Centre for Protein Sequence
http://mips.gsf.de/projects/plants

RIKEN Resource Centre
http://www.brc.riken.jp/lab/epd/Eng/index.html

CATMA, Complete Arabidopsis Transcriptome Microarray
http://www.catma.org

AtEnsembl, Arabidopsis Ensembl Genome Browser
http://atensembl.arabidopsis.info/

In this issue;

Seeds and Stocks

NASC, Nottingham Arabidopsis Stock Centre
http://nasc.nott.ac.uk/

Arabidopsis Biological Resource Centre (ABRC)
http://www.biosci.ohio-state.edu/~plantbio/Facilities/abrc/abrchome.htm

Other Resources

Proteomics and Metabolomics Facilities

Aberdeen Proteome Facility (UK)
http://www.abdn.ac.uk/~mmb023/proteome/
Contact Dr.Phil Cash

Technology Facility York University (UK)
http://www.york.ac.uk/depts/biol/tf/index.htm

Sir Henry Wellcome Functional Genomics Facility (UK)
http://www.gla.ac.uk/functionalgenomics

Structural Biology Centre at Imperial College (UK)
http://www.ic-csb.ic.ac.uk/

Michael Barber Centre for Mass Spectrometery UMIST (UK)
http://www2.umist.ac.uk/chemistry/cms/index.html
Contact Dr. Isabel Rica Garcia

John Innes Centre Metabolite Service (UK)
http://www.jic.bbsrc.ac.uk/SERVICES/metabolomics/index.htm
Please note this is a small facility principally for JIC use but very willing to help all.

Biosytems Genomics (Netherlands)
http://www.biosystemsgenomics.nl/

Havard Microchemistry and Proteomics facility (USA)
http://mcb.harvard.edu/microchem/

Yale NHLBI Proteomics Centre (USA)
http://info.med.yale.edu/nhlbi-proteomics/

Protein Facility Iowa State University (USA)
http://www.biotech.iastate.edu/facilities/protein/

NRC Plant Biotechnology Institute (Canada)
http://www.pbi.nrc.ca/en/research/massspec.htm

Australian Proteome Facility
http://www.proteome.org.au/

Yeast 2 Hybrid Facilities

GABI-LAPP GABI, Large-scale Automated Plant Proteomics
http://www.molgen.mpg.de/~gabi/

Libraries available from ABRC

Walker two hybrid libraries
Generated from Nossen

Kim & Theologis Two Hybrid cDNA libraries
Generated from 3 day-old etiolated Columbia seedlings

Horwitz and Ma Two-Hybrid cDNA libraries
Generated from inflorescence meristem, floral meristem and floral buds

http://www.biosci.ohio-state.edu/~plantbio/Facilities/abrc/abrchome.htm

Microarray Facilities

Sir Henry Wellcome Functional Genomics Facility (UK)
http://www.gla.ac.uk/functionalgenomics

JIC Genome Centre (UK)
http://www.jicgenomelab.co.uk/

VIB MicroArray Facility (Belgium)
http://www.microarrays.be/Home.htm

NIDDK Biotechnology Consortium (USA)
http://info.med.yale.edu/wmkeck/dna_arrays.htm

CPG Workgroups (USA)
http://www.plantgenomics.iastate.edu/microarray/

SUNY Stony Brook DNA Microarray Facility (USA)
http://www.osa.sunysb.edu/udmf/

Penn Genomics Institute- Microarray facility (USA)
http://www.genomics.upenn.edu/microarraycore/forms.htm

Arabidopsis Oligonucleotide Microarrays (USA)
http://www.ag.arizona.edu/microarray/

SRC Microarray Facility (Australia)
http://microarray.imb.uq.edu.au/index.html

The Centre for Applied Genomics (Canada)
http://tcag.bioinfo.sickkids.on.ca/index.php?pagename=microarray.php

Useful Micro Array Links

At NASC
NASCArrays
Microarray database containing all of the data from NASC's affymetrix service.
http://affymetrix.arabidopsis.info/narrays/experimentbrowse.pl

Affy watch
The data from NASC's affymetrix service on CD's
http://affymetrix.arabidopsis.info/AffyWatch.html

BioResearch
A gateway to internet resources on gene expression profiling in a number of organisms
http://bioresearch.ac.uk/browse/mesh/C0752248L1408116.html

At TAIR
A wide range of resources and tools for Arabidopsis gene expression profiling
http://www.arabidopsis.org/info/expression/index.jsp

ATTED
Arabidopsis tissue specific expression database
http://www.atted.bio.titech.ac.jp

AtEnsembl

AtEnsembl is an Ensembl Arabidopsis thaliana genome browser developed at NASC. It is the product of a joint project between EMBL-EBI and the Sanger Institute and is freely available at http://atensembl.arabidopsis.info.

AtEnsembl aims to provide the most accurate and complete information about the Arabidopsis genome. To achieve this goal it supports both the TIGR and MIPS annotations and provides tools such as BLAST and SSAHA for the user to mine the data available.

AtEnsembl is an outstanding genomic resource and with future additions such as EnsMART, a powerful tool for data retrieval, as well as NASC services, such as insert watch, this will become an indispensable tool for any Arabidopsis researcher.

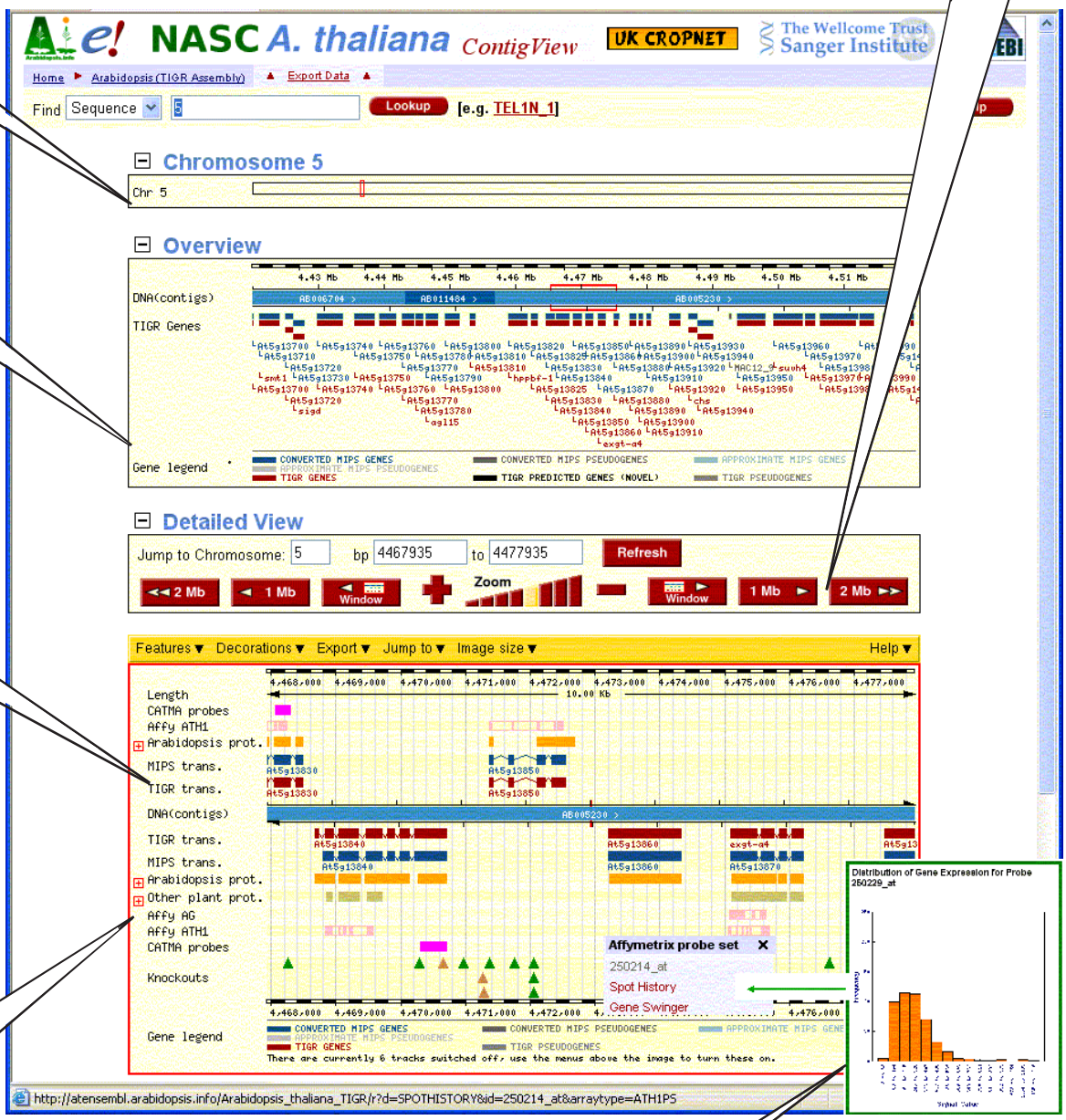
Zoom in to the base pair view to discover Arabidopsis and other plant proteins, CATMA probes, Affymetrix data and knockouts linked to the gene of interest.

A general view of the chromosome is provided.

The contig view displays the location of genes in a particular region.

Parallel views of both MIPS and TIGR assemblies.

Display of genes and pseudo genes with links to more detailed views of peptide, gene and transcript



There are also links to other databases such as NASC Arrays or NASC stock catalogue

News and Views

European vision of plant genomics

The European Research Area Plant Genomics (ERA-PG) kicked off in January this year and has the ambition to further structure the plant genomics scientific and technological programmes in Europe. At present this is taking the form of interaction between the major funding agencies in each country to promote coordination and cooperation. However, the longer-term aim will be to try and consolidate funding for plant genomics across the EU in to one agency. Watch this space for updates.

CATMA GSTs Now Available

The Complete Arabidopsis Transcriptome MicroArray (CATMA) consortium of European laboratories was set up to produce Gene-specific Sequence Tags (GSTs) covering most Arabidopsis genes for use in micro array experiment.
http://www.catma.org

These GSTs are now available as PCR amplicons in a 96 well format from NASC for those of you wishing to make in house or targeted array sets. Alternatively slides spotted with 21,000 of these GST amplicons have been generated and are also available at NASC.
http://www.nasc.nott.ac.uk

CATMA A Complete Arabidopsis Transcriptome MicroArray

Systematic RNAi silencing of Arabidopsis genes

The AGRIKOLA project (**A**rabidopsis **G**enomic **R**NA**i** **K**nock-**o**ut **L**ine **A**nalysis) was set up in 2001 with the aims of generating a complete knock out of all Arabidopsis genes by cloning CATMA GSTs into hairpin RNA vectors.
http://www.agrikola.org/

Eventually these constructs will be distributed by NASC as *E. coli* strains carrying GST entry or expression Gateway clones, providing an excellent genomic resource for the community.

AGRIKOLA

'2025: A European Vision for Plant Genomics and Biotechnology' 1st step towards a European Plant Genomics and BioTechnology Platform -

EPSO and EuropaBio, in collaboration with the European Commission, assembled last year a group of stakeholders (the Genval Group) to draft a European vision for how plant genomics and biotechnology will look in 2025. This document marks the first step towards a European Plant BioTechnology Platform, as requested by the European Council in March 2003. It will be published by Commissioner Busquin 24th June.
The Genval Group has also identified a Group of Personalities, who are invited to reflect upon this draft, provide comments, endorse and sign up to this vision.

The European Union is redoubling its efforts to forge a knowledge-based economy. This encompasses regional, national and European initiatives. At European level, new efforts - such as the proposed European Research Council to fund basic research and technology platforms to boost public and private RTD investment - are the topics of serious discussion.

'2025: A European Vision for Plant Genomics and Biotechnology' is the first step to help chart a responsible course for this vital sector. The platform will involve key stakeholders from research, industry, the farming community, regulatory bodies, consumer and environmental groups, as well as policy-makers.

They will develop a coherent strategic research agenda and detailed action plan by end of 2004. Implementation of the action plan will help to reverse the recent deterioration of the EU plant biotechnology research and industry base, which poses a severe challenge for the long term competitiveness of the European agri-food sector and which is the basis for the €600 billion-a-year food and drinks sector.

This initiative aims to provide a fresh impetus for plant science and a bio-based economy in Europe.

Karin Metzlaff, European Plant Science Organisation (EPSO), member of the Genval Group
http://www.epsoweb.org/catalog/TP/index.htm
Karin.Metzlaff@psb.ugent.be

EPSO

In this issue;

Glossary of Terms

EuropaBio:- The European Association for Bioindustries

Technology Platform:- Mechanism to bring together all interested parties to develop a strategy to address a specific challenge

RTD:- Research and Technology Development

Editorial by Professor Andrew J Millar

As BBSRC's funding moves from "functional genomics" to "systems biology", GARNet's focus is also changing. The resources funded under GARNet's first grant are on line, including data from the proteomics and metabolomics projects, the arrival of the last tagged lines and the release of arrays carrying the CATMA GST probes, from NASC.
We're now faced with a wide choice of service providers for functional genomics assays, so Ruth has collated a selection of services that are happy to process samples from the UK Arabidopsis community. Have you had good or bad experiences of these facilities? Please let us know, by email to Ruth (R.M.Bastow@warwick.ac.uk)

Systems biology will need all of the functional genomics approaches that we know, together with the physics and engineering to develop new assays, the computer science, statistics and mathematics to assemble and understand the data. Which new resources would you like to see in this area, or can you offer a new service? One proposal is to provide shared licenses for bioinformatics software, such as GeneSpring, to the GARNet community, together with a database of all the publicly-available Affymetrix data from NASC and TAIR.
Shared, community resources are one of the strengths of UK Arabidopsis research and new resources start from your input and ideas, so contact Ruth or one of the advisory committee members, and join us at the GARNet meeting in Leicester.

We'll see you there!
Andrew

Diary

15th International Conference on Arabidopsis
Berlin, Germany 11-14 July 2004
http://www.arabidopsis2004.de/

BioScience 2004
Glasgow, UK 18 - 21 July 2004
http://www.bioscience.org

Plant Molecular Biology Gordon Conference
Plymouth, New Hampshire, US 18 - 23 July 2004
http://www.grc.org/programs/2004/plantmol.htm

ASPB - Plant Biology 2004
Orlando, Florida, USA 22-28 July 2004
http://www.aspb.org/meetings/pb-2004/

14th Congress of Federation of European Societies of Plant Biology (FESPB)
Cracow, Poland 23 - 27 August 2004
http://www.zfr-pan.krakow.pl/konf/

EuroScience Open Forum 2004
Stockholm, Sweden 25-28 August 2004
http://www.esof2004.org/

5th GARNet meeting with UK-BRC
Leicester, UK 1-2 September 2004
http://garnet.arabidosis.org.uk

3rd Plant Genomics European Meeting (Plant GEMs)
Lyon, France 22-25 September 2004
http://www.plant-gems.org

If you would like to advertise your meeting in the next issue of GARNish please contact Ruth Bastow R.M.Bastow@warwick.ac.uk

In this issue;

PLANET: A Network of European Plant Databases

What is it?

PlaNet is a distributed, shared effort among both bioinformatics groups and plant molecular biologists to establish a high level plant genome database for the systematic exploration of Arabidopsis and other plants.

PlaNet has developed the infrastructure and data sources to capture plant-related information into a comprehensive and integrated platform, which brings together data from various European partners.

Who is involved?

- Nottingham Arabidopsis Stock Centre (NASC), Nottingham, Great Britain
- Institute for Bioinformatics (MIPS), Neuherberg, Germany
- Flanders Interuniversity Institute for Biotechnology (VIB),Gent, Belgium
- Genoplante-Info, Evry, France
- John-Innes-Centre, Norwich, Great Britain
- Plant Research International (PRI), Wageningen, Netherlands
- Centro Nacional de Biotecnología Madrid (CNB), Spain

How?

PlaNet's aims have been realized with BioMOBY (http://www.biomoby.org), a protocol for the discovery and distribution of biological data through webservices. While the knowledge is centralized, the data is maintained at its primary source without the need for warehousing. Thereby, the most current data is always at hand.

Where can I get more information?
http://www.eu-plant-genome.net/

Written by Beatrice Shildknecht (NASC)

Funding of UK Plant and Crop Science

A review of BBSRC funded research relevant to crop science was produced in May this year (http://www.bbsrc.ac.uk/news/reports/crop_sci_review12_05_04.html). The report states that in the 2002-2003 funding period a staggering total of £123,504,000 was spent on crop and plant research in the UK. Over 50% of this total is accounted for by funding from the BBSRC with Defra and SEERAD accounting for 21% and 13% respectively. In terms of plant species Arabidopsis dominates accounting for 30% of plant science funding in 2002-03 with wheat being the next major species accounting for 10%.

To ensure that the information and skills, gained from this large amount of Arabidopsis research, can be effectively transferred to practical application in crops, the BBSRC has pledged to increase the proportion of the basic plant science budget that addresses the knowledge transfer from plant to crop science whilst maintaining the current level of support for basic plant science. However, the BBSRC's report does indicate that in order to ensure translation from model to crops, crop science should actively drive the research agenda.

The map opposite depicts the location of plant research groups in mainland Britain. At least 170 groups carry out Arabidopsis research (as indicated by BBSRC grants) and 70 % of these are located within Universities. The majority of crop research occurs in the BBSRC funded institutes of Rothamsted, IGER, JIC, HRI and Scottish Crop Research Institute. This is clearly illustrated by the fact that over 50% of crop science is funded via core strategic grants to BBSRC sponsored institutes.

The BBSRC hopes to encourage more universities to carry out crop research by seeking grants that exploit genomic information obtained from model species such as Arabidopsis. To support this there will be financial incentives for collaboration with institutes and longer-term grants to provide a realistic and productive timeframe for crop research. To help promote and focus responsive funding in crop science the report proposes a single committee that would be responsible for assessing crop research and grant applications. The formation of this committee could however split plant science from crop research. It has therefore been suggested that either this new committee has overlapping membership with the current plant and microbial science committee, or that plant science is moved into this new committee.

Map of Plant Research Groups in mainland Britain

Version 1 April 2004
Generated by R.M.Bastow
Copyright GARNet 2004

This map was produced from web based data. If you note that a research group has been ommited please contact Ruth Bastow (R.M.Bastow@warwick.ac.uk) so this error can be corrected.

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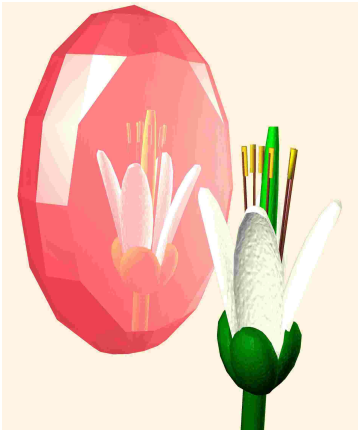

5th Annual GARNet Meeting with UK-BRC

The University of Leicester

1-2 September 2004

Speakers include

Pam Green	University of Delaware
Caroline Dean	John Innes Centre
Thomas Laux	University of Freiburg
Derek Lydiate	AAFC Saskatoon
Pierre Hilson	University of Ghent

registration http://garnet.arabidopsis.org.uk

contact R.M.Bastow@warwick.ac.uk

ROTHAMSTED RESEARCH

bbsrc biotechnology and biological sciences research council

Arabidopsis.info