# Other standardisation initiatives for plant genomics

## transPLANT
## EU-US Biotechnology Task Force

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# This meeting

- Administration (Pascal Kahlem)
  - Deliverables, reporting, etc.
  - Introduction of Project partners
    - What we do, what we plan to do in transPLANT
  - General discussion
    - transPLANT web site
    - Networking work packages
    - Variation data
    - High-performance compute needs
    - Overall collaborative focus

# What is transPLANT?

- We are proposing the establishment of new European consortium, transPLANT (**trans**-national infrastructure for **PLANT** genomic science), to design, implement, deploy and operate the software infrastructure critical to the future needs of plant scientists. transPLANT will exploit solutions already developed in adjacent domains (e.g. medical informatics), applying existing approaches to plants and extending them to deal with the specific challenges and opportunities unique to the domain of plant research; and thereby will maximise the potential of genomics to contribute to the second green revolution needed to keep the growing world population from hunger.

# Why is transPLANT timely?

- Advances in sequencing technologies is making the sequencing and assembly of whole plant (especially cereal) genomes tractable for the first time
- Variomics and phenomics are rapidly developing fields in plants science and have the potential for real application
- Key parts of infrastructure needed for plant science are missing
  - Ethical issues applicable to human data are less of a barrier in plant science
  - We can still exploit developments that have occurred in the context of well-funded biomedical research products
  - Crop improvement is desperately needed to meet growing human needs for food and fuel

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# What is a trans-European infrastructure?

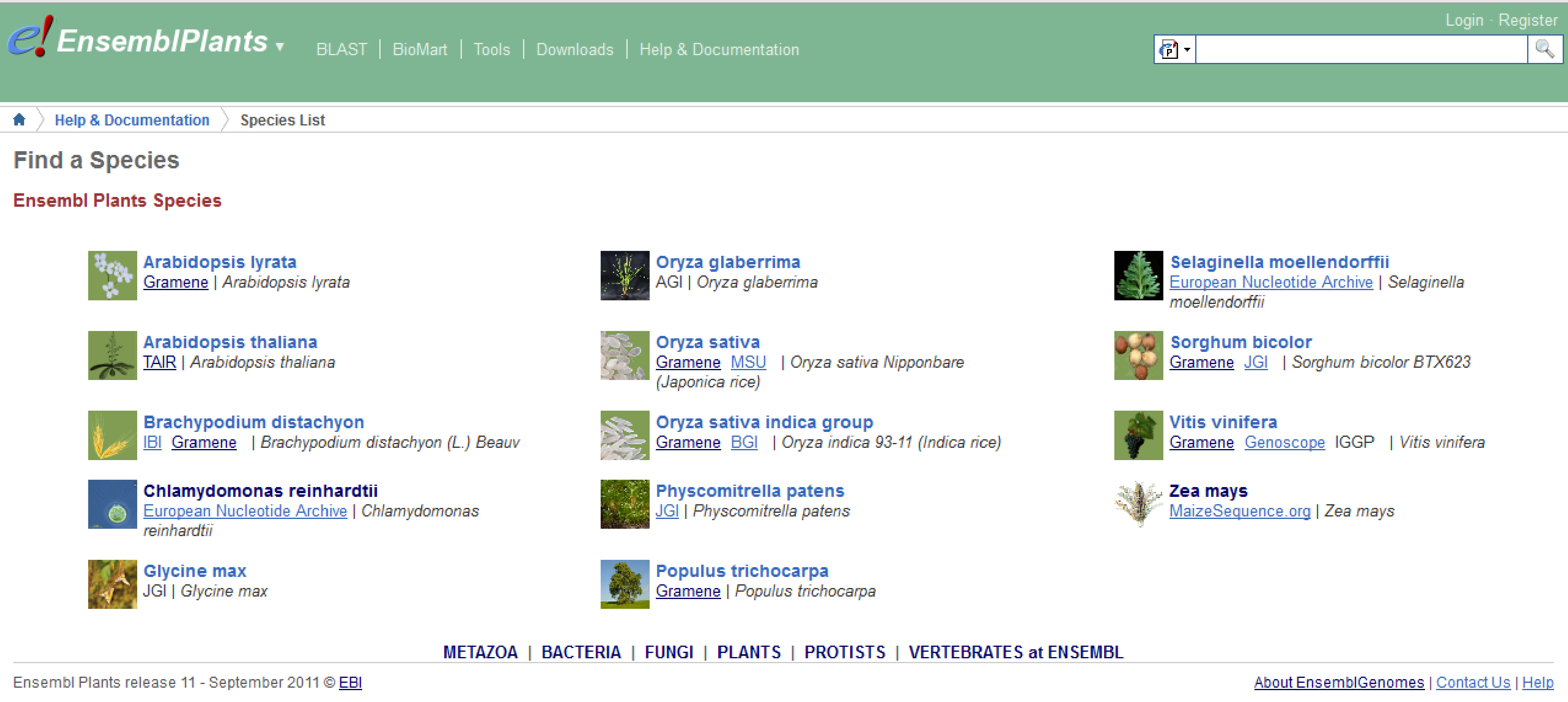
- For transPLANT, this means:
  - A common set of reference data to be shared between different researchers and service provides
  - Construction of missing data archives
  - Provision of tools to manipulate and mine plant genomic data
  - Provision of an integrating point of interactive access to diverse data sets
  - Provision of a compute environment for programatic access to plant genomic data
  - Developing common standards for use within transPLANT and a wider community
  - Training potential users
  - Engaging with other related communities to share experiences, tools and roadmaps

# Overall structure

| | |
|---|---|
| WP1 | Management |
| WP2-4 | Coordination activities |
| WP5-6 | Service activities |
| WP7-12 | RTD activities |

# Coordination and Support Activities

- WP1 Management
- WP2 Interaction with relevant communities
- WP3 Standards development
- WP4 User training



## Find a Species

### Ensembl Plants Species

**Arabidopsis lyrata**
Gramene | *Arabidopsis lyrata*

**Arabidopsis thaliana**
TAIR | *Arabidopsis thaliana*

**Brachypodium distachyon**
IBI Gramene | *Brachypodium distachyon (L.) Beauv*

**Chlamydomonas reinhardtii**
European Nucleotide Archive | *Chlamydomonas reinhardtii*

**Glycine max**
JGI | *Glycine max*

**Oryza glaberrima**
AGI | *Oryza glaberrima*

**Oryza sativa**
Gramene MSU | *Oryza sativa Nipponbare (Japonica rice)*

**Oryza sativa indica group**
Gramene BGI | *Oryza indica 93-11 (Indica rice)*

**Physcomitrella patens**
JGI | *Physcomitrella patens*

**Populus trichocarpa**
Gramene | *Populus trichocarpa*

**Selaginella moellendorffii**
European Nucleotide Archive | *Selaginella moellendorffii*

**Sorghum bicolor**
Gramene JGI | *Sorghum bicolor BTX623*

**Vitis vinifera**
Gramene Genoscope IGGP | *Vitis vinifera*

**Zea mays**
MaizeSequence.org | *Zea mays*

METAZOA | BACTERIA | FUNGI | PLANTS | PROTISTS | VERTEBRATES at ENSEMBL

Ensembl Plants release 11 - September 2011 © EBI

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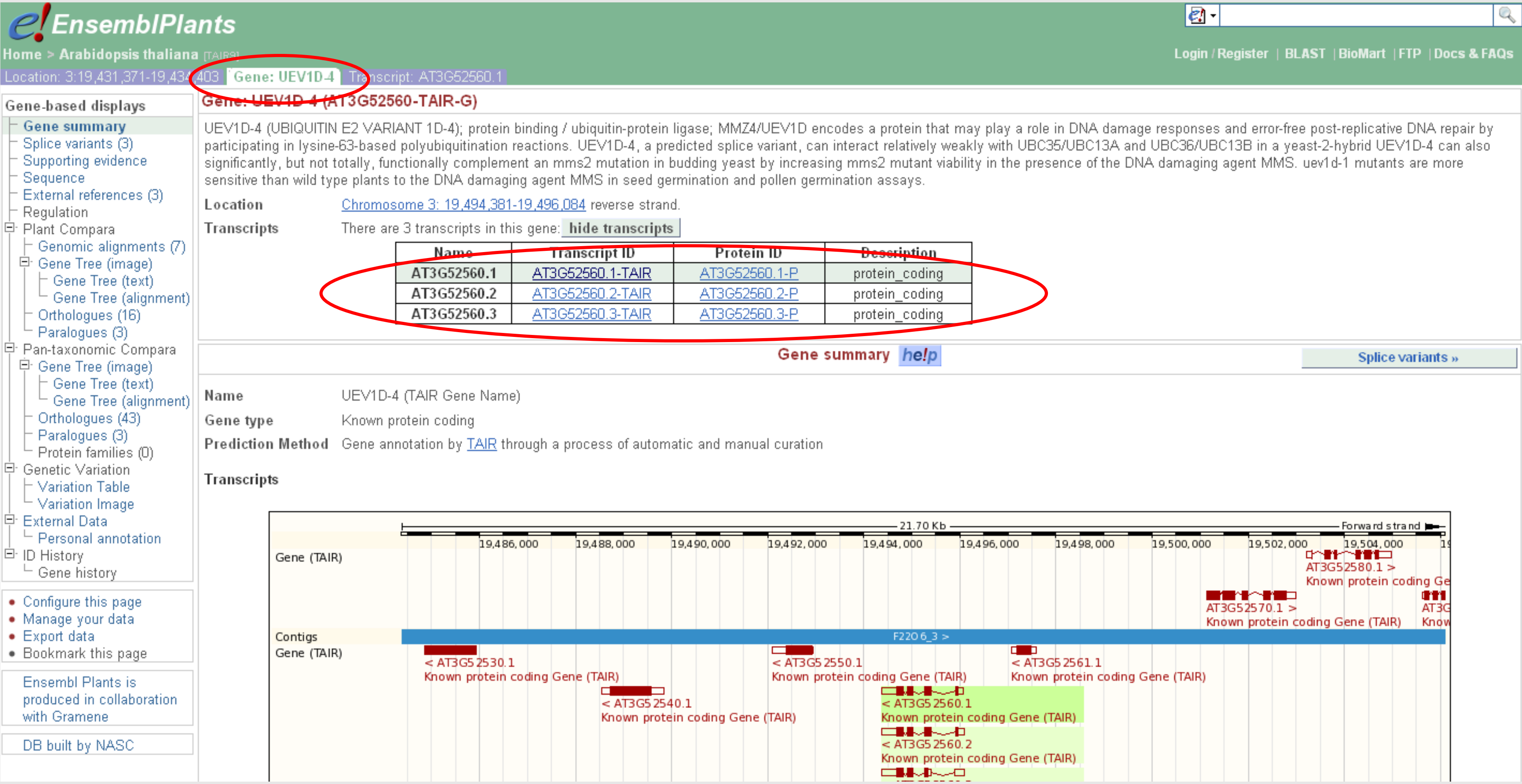

**Gene: UEV1D-4 (AT3G52560-TAIR-G)**

UEV1D-4 (UBIQUITIN E2 VARIANT 1D-4); protein binding / ubiquitin-protein ligase; MMZ4/UEV1D encodes a protein that may play a role in DNA damage responses and error-free post-replicative DNA repair by participating in lysine-63-based polyubiquitination reactions. UEV1D-4, a predicted splice variant, can interact relatively weakly with UBC35/UBC13A and UBC36/UBC13B in a yeast-2-hybrid UEV1D-4 can also significantly, but not totally, functionally complement an mms2 mutation in budding yeast by increasing mms2 mutant viability in the presence of the DNA damaging agent MMS. uev1d-1 mutants are more sensitive than wild type plants to the DNA damaging agent MMS in seed germination and pollen germination assays.

**Location** Chromosome 3: 19,494,381-19,496,084 reverse strand.

**Transcripts** There are 3 transcripts in this gene: hide transcripts

| Name | Transcript ID | Protein ID | Description |
|---|---|---|---|
| AT3G52560.1 | AT3G52560.1-TAIR | AT3G52560.1-P | protein_coding |
| AT3G52560.2 | AT3G52560.2-TAIR | AT3G52560.2-P | protein_coding |
| AT3G52560.3 | AT3G52560.3-TAIR | AT3G52560.3-P | protein_coding |

**Gene summary** help    Splice variants »

**Name** UEV1D-4 (TAIR Gene Name)

**Gene type** Known protein coding

**Prediction Method** Gene annotation by TAIR through a process of automatic and manual curation

**Transcripts**

# Working in international partnership

- Developing in collaboration with Gramene
  - a resource for plant comparative genomics led by Doreen Ware at Cold Spring Harbor laboratory that already uses Ensembl technology
- EBI is coordinating a new European effort to develop a computational infrastructure for plant genomic science (transPLANT)
- Collaborate in producing common databases and plant-specific tools
  - Recent UK research council funding for work on barley and wheat genomes
    - These complex genomes will only be deciphered through coordinated international effort
  - Previous funding for work on variation, genome assembly

# Funding for this meeting

- BBSRC grant for coordination between the UK and the US aimed at establishing better integration in plant genomics databases (BB/H531519/1)
- transPLANT (EU FP7 283496)
- EMBL

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# EU-US Biotechnology Task Force

- “Since 1990, the EU-US Task Force on Biotechnology Research has been coordinating transatlantic efforts to promote research on biotechnology and its applications for the benefit of society.”
- Plant and Animal Biotech Working Groups (among others) – next meetings at PAG 2012
- Potential outcomes include co-ordinated funding calls
- Task force plans for meetings on standards and coordination in 2012-2013; may be co-organised with trasnPLANT