Report on the 2nd European Triticeae Genomics Initiative (ETGI) Workshop, OCT 12, 2006, at the Plant Genome European Meeting (PlantGEM), in Venice. Catherine Feuillet (catherine.feuillet@clermont.inra.fr) and Nils Stein (stein@ipk-gatersleben.de)

During the 5th Plant Genome European Meeting (OCT 11th-14th) in Venice, the second ETGI workshop was held as a satellite meeting. The aim of the workshop was to provide the community with a summary of ETGI activities in the past year and to stimulate further the coordination of activities. The ETGI objectives are of central interest to a large European research community as testified by the number of workshop attendees (over 100 participants, more than one fourth of the overall conference’s audience).

Catherine Feuillet opened the workshop with an overview about the establishment of ETGI and its activities during the past year. As she indicated, ETGI is a platform to coordinate, represent, and advocate for Triticeae Genomics Research activities in Europe and serves as a link to the International efforts in Triticeae genomics (IWGSC, IBSC, and ITMI). A website has been established (http://www.etgi.org) that contains the mission and structure of ETGI, and documents that have been submitted by the initiative. ETGI has written a whitepaper describing its mission and vision that was supported by more than 60 public research institutes, universities and industrial partners. The paper was submitted to the “Technology platform: Plants for the Future” as well as to the DG in Bruxelles. ETGI has also provided a letter of intent to the EU commission, EPSO, and TP Plants for the Future with a summary of its scientific program and has applied for a COST action (“TritiGen”) (see below). Finally, ETGI members have submitted an Expression of interest (EOI) to a call from the ESF (EuroBioFund) with the aim of establishing a framework for a large collaborative project on physical mapping in wheat and barley. As a result of these activities, ETGI became visible as a very efficient platform for coordinating research activities in Triticeae genomics and the coordinating committee has received numerous encouraging comments from research, political and industry representatives.

As part of the annual report about ETGI activities, Nils Stein provided a brief digest from a survey performed among ETGI community members. The country coordinators were asked to collect comprehensive information from their national collaborators about ongoing Triticeae research topics, targeted traits and available resources (populations, markers, libraries, collections, etc). As he indicated, the survey was initiated to allow for efficient coordination between European partners and to facilitate identification of common interests that could become a focus for a putative ETGI proposal in the framework 7 (FP7) program calls of the EU. Although the intermediate result of the survey is incomplete, it provided valuable information and a glimpse into the complexity of the available resources and existing knowledge. The survey indicated that while important target traits are distributed all over the Triticeae genomes, a clustering for key traits could be identified on the homoeologous linkage groups 1, 2, and 3 of the Triticeae, with a number of them being at orthologous locations in wheat and barley. Most traits tackled by ETGI members fall in the category of biotic stress followed by quality and yield. Less activities relate to traits underlying responses to abiotic stress and plant development while few activities target traits involved in biology of reproduction. A lot of populations are available in all Triticeae and a common interest became obvious for a public database that could accumulate and provide...
such information on genetic resources for shared use by the community. Ways to develop such a database resource could become a part of a funded ETGI-COST action. Within the main scope of ETGI, a strong need for improved, concerted, optimized phenotyping of traits became clear. Finally, it was also clear that Triticeae proteomics was not yet very developed within Europe. The consensus at the meeting was that focusing on traits of chromosome groups 1 and 3 would be the easiest way to bring together the greatest number of partners for initial project developments within ETGI.

The ETGI coordinators announced that the policy of inviting a variable number of country representatives to the coordinating committee of ETGI was modified to a single representative per country to enhance efficient coordination and communication among the ETGI partners.

Alan Schulman provided an overview of the ETGI-COST proposal, “TritiGEN”. He stated that he had given the same presentation in Brussels just before the PlantGEM meeting (a short version can be found: http://www.etgi.org/documents). COST is a EU tool to provide funding for networking and the ETGI proposal would provide formal support for networking within ETGI. (Subsequent to the meeting, we were notified that the funding of the ETGI COST proposal was formally confirmed.) The purpose of Tritigen is to fund the coordination platform for encouraging interaction at the EU level. The Tritigen proposal includes 123 scientists and is structured in 4 working groups: DivGen (Tools for Assessing and Harvesting Genetic Diversity), PhysGen (Accessing the Physical Genome for Sustainability and Quality), TraitGen (Implementation of Genomics Approaches for Understanding Cereal Traits), FuncGen (Functional Genomics for Testing and Validation of Candidate Genes). The Tritigen proposal requested 90,000 euros per year. As he mentioned, the main task now is to identify working group coordinators. The hope is the coordination by COST will strongly support us in preparing future applications for funding at the national and European levels.

The presentation about the COST proposal was followed by two coordinators reports. Tina Barsby has become the new ETGI representative for UK groups and is now coordinating the UK network MONOGRAM (which includes NIAB, SCRI, JIC, IGER). She provided an overview of the mission and activities of MONOGRAM. The core activities are: integrating UK resources and thereby reinforcing the ability of crop genetics to deliver new breeding tools. In a first phase, the goal will be to consolidate existing working groups and task forces. A unified platform and a training plan to bring new, young scientists along will be defined also. In a second phase, links to other national programs and with industry will be reinforced. Five working groups that are based on the COST action WGs have been set up: (i) Germplasm and markers, (ii) Physical mapping, (iii) Functional genomics; transcriptomics, proteomics, (iv) VIGS, Tilling, transformation, (v)Bioinformatics. Each of the working groups will produce a position paper about the status of the field within the UK, how it matches up with international efforts, what needs to be done next, and how to reach the objectives.

Pilar Hernandez, the country representative from Spain, then discussed the composition of the ETGI Spanish network (Nine Research Groups from five different institutes at four locations. . She presented her efforts for coordinating the input of the Spanish labs into ETGI (e.g. survey of traits of interest). Further, she indicated that a consortium (INVESGEN) of 20 companies including 4 seed companies, nurseries, and bioenergy companies was founded to support plant genomics in Spain and was modelled after GABI.
In an invited presentation, Mike Bevan from JIC provided a summary about recent activities of the International Brachypodium Initiative (IBI) that aims at establishing Brachypodium as a new model for grass genomics and at reaching for a fully sequenced Brachypodium genome. IBI was set up at PAG 2006 in San Diego to develop basic resources: (i) Distribute common set of genotypes (selected LINE BD21 for sequencing), (ii) Create markers for comparative genetic mapping and diversity studies, (iii) develop a genetic map, (iv) assess the genetic diversity among Brachypodium accessions, (v) make and distribute BAC libraries (JIC, and Arizona Genome institute), and (vi) establish BAC-based physical maps of Bd21 (Arizona, JIC). He announced that the Joint Genome Institute and Department of Energy (JGI/DOE) will start whole genome shotgun (8-9X WGS) and deep EST sequencing (clones will be generated – 120,000 ESTs from one end of normalized libraries). All information will be accumulated in a newly developed database.

To conclude the meeting on the next initiatives and in particular opportunities in the FP7 program, a detailed review was provided by Isabelle Albouy from the European Affairs office at INRA, about the EU landscape for research funding and how the seventh Framework Program had been established. As it was already announced by C. Patermann in the opening session of PlantGEM 5, she confirmed that the FP7 will provide opportunities to submit proposals focusing on central ETGI objectives. A first call is expected by Dec 2006 / Jan 2007 with a closing date in April/May 2007. A second call will be expected by early 2007 with a closing date early in Sep 2007. Funding schemes will be smaller compared to FP6: i.e. small, medium or large collaborative projects with funding capacities from 2.5 up to 6 M Euros over 2 to 4 – 5 years. The size of the projects should be no more than a maximum of 20 partners (for the large collaborative projects). In the current draft of the FP7, an action for a large collaborative project with the topic: “Genomics for cereal improvement for food and non-food uses” that is specifically targeted to the Triticeae tribe species has been described.

Then, followed a discussion of the goals of the ETGI with regard to the first EU call. There was a consensus that the ETGI submits a proposal. One suggestion was to propose to do a physical map of 7 chromosomes but it was agreed that the lower funding limits would not allow for targeting more than 2 chromosome groups. Catherine Feuillet indicated that as additional funding became available, more groups could be covered and that there were ongoing efforts to secure funding for individual chromosomes at the national levels.

The agreement after the discussion was that an ETGI proposal, coordinated by Catherine Feuillet and Nils Stein, will be drafted for this expected first call and will be circulated among the ETGI partners in November 2006. This will follow the outline of the previously developed expression of interest in which ETGI stated that there is a need to establish physical maps of a number of chromosomes in wheat and for the whole genome of barley in coordination with the ongoing international efforts and with the goal of supporting map-based cloning of genes of interest for the EU agriculture. The target chromosomes will be of group 1 and 3. It was stressed that there will be other calls within FP7 that might accommodate proposals covering other ETGI objectives and that members of the ETGI are encouraged to actively participate in the development of coordinated and collaborative projects in FP7.

The meeting adjourned after an announcement that the next official ETGI business meeting would be held at the Plant and Animal Genome Conference in San Diego in January 2007.