

EUCARPIA

EUCARPIA CEREALS SECTION MEETING 6-8 April 2010, CAMBRIDGE

PROVISIONAL PROGRAMME

‘Innovation in Cereal Breeding’

MOLECULAR AND FUNCTIONAL DIVERSITY OF DIPLOID AND POLYPLOID CEREAL GENOMES: ‘HOW CAN WE EFFECTIVELY DETECT AND EXPLOIT THIS VARIATION IN BREEDING PROGRAMMES?’

The format of this conference has been designed to encourage active debate and participation by attendees, combined with expert input from our keynote speakers.

JOINT HEALTHGRAIN & BIOEXPLOIT DISSEMINATION WORKSHOP ON WHEAT IMPROVEMENT

HEALTHGRAIN and BioExploit are Integrated Projects supported by the 6th Framework programme of the EU. Both aim to assist wheat breeders to develop improved varieties, by providing novel sources of genetic variation and tools.

Work from these two programmes will be presented at a special workshop to be held in Cambridge immediately before the Cereals Section meeting.

The workshop is free and lunch will be provided. Please contact Mary McPhee at NIAB (mary.mcphee@niab.com) to confirm your participation.

PROGRAMME

HEALTHGRAIN

- 11.00 Zoltan Bedo (Martonvásár, Hungary) Introduction to HEALTHGRAIN
- 11.05 Gilles Charmet (INRA Clermont-Ferrand, France) QTLs & Markers for bioactive components in wheat grain
- 11.20 Domenico Lafiandra (University of Tuscia, Viterbo, Italy) Development of a mutant wheat population and its use to develop lines with modified starch composition
- 11.35 Szilveszter Gergely (BUTE, Budapest, Hungary). Development of NIR calibrations for cereal arabinoxylan (dietary fiber)
- 11.50 Discussion

BioExploit

- 12.00 Geert Smant (Wageningen University, Netherlands) Introduction to BioExploit
- 12.05 James Brown (JIC, Norwich, UK) The role of pathogen effectors in breeding durable disease resistance in wheat
- 12.20 Robbie Waugh (SCRI, Dundee, UK) Mapping, isolation, and cloning of disease resistance genes in wheat
- 12.35 Anker Sorensen (Keygene, Netherlands) The application of novel marker technologies in disease resistance breeding
- 12.50 Discussion

13.00 LUNCH

EUCARPIA CEREALS SECTION MEETING

6-8 April 2010, CAMBRIDGE

TUESDAY, 6 APRIL 2010

REGISTRATION from 1000 until 1330

1300

LUNCH

1345

Welcome and introduction to the challenges and opportunities

Wayne Powell, Head of Eucarpia Cereals Section

1400

Lessons from maize – detecting/exploiting variation

How do breeding programmes need to change in order to effectively integrate and exploit genome knowledge?

Speaker: Bob Reiter, Monsanto, USA

1440

DEBATE Led by Wayne Powell & Bob Reiter

In Europe, are we effectively harnessing our resources to tackle the global challenges? If not, what should we be doing? What lessons can we learn from the rest of the world? What are our selective advantages: what are we good at?

1500

AFTERNOON TEA

SESSION 1 ALIEN GENE INTROGRESSION/POLYPLOIDY GENETICS, CHROMOSOME ENGINEERING

1530

Plant Artificial Chromosomes

Speaker: Neil Jones, Aberystwyth University, UK

1555

Today's Wheat Chromosome Engineering: a gainful approach to explore and utilize alien genetic variation

Speaker: Carla Ceoloni, University of Tuscia, Italy

1620

Exploiting genetic variation in relation to alien genomes in wheat

Speaker: Phil Larkin, Commonwealth Scientific & Research Organisation, Australia

1645

Bulbosum Barley

Speaker: Richard Pickering, Institute for Crop & Food Research Limited, New Zealand

1710

Development, molecular cytogenetic characterisation, physical mapping and phenotyping of wheat/barley introgression lines

Speaker: Marta Molnár-Láng, Agricultural Research Institute of the Hungarian Academy of Sciences, Hungary

1725-1740 **Highlights from Day 1, set scene for Day 2**
Wayne Powell

1845 **WELCOME RECEPTION & POSTER SESSION**

WEDNESDAY, 7 APRIL 2010

SESSION 2 GENOME DIVERSITY

Accessing and using diversity from primary, secondary and tertiary gene pools

0850 **Functional diversity of the barley genome and its application to breeding**

Speaker: Robbie Waugh, Scottish Crop Research Institute, UK

0915 **Barley EIF4E total resistance to two soil borne viruses**

Speaker: Kostya Kanyuka, Rothamsted Research, UK

0940 **Polyploidization and Domestication Signature in Diploid and Tetraploid Wheat B Genome Detected by SNPs Using Next-Generation Genotyping Assay**

Speaker: Maharajah Ponnaiah, Scuola Superiore Sant'Anna, International Doctoral Programme on Agrobiodiversity - Plant Genetic Resources ENEA-Centro Casaccia, Italy

0955 **DISCUSSION:** Identify key needs through discussion in small groups. What have we learnt that can be provide a template for broader application?

1020 **MORNING TEA**

SESSION 3 CEREAL GENOMICS AND POTENTIAL FOR CEREAL BREEDING

Using genome understanding to focus in on traits and genes

1050 **Functional gene analysis in wheat: tools, strategies and applications**

Speaker: Cristobal Uauy, John Innes Centre/National Institute of Agricultural Botany, UK

1115 **GABI-RYE genomics resources: sequences, SNPs and beyond**

Speaker: Eva Bauer, Technische Universitaet Muenchen, Germany

1140 **Barley genome: maps & sequence**

Speaker: Nils Stein, IPK Gatersleben, Germany

- 1205 **What can Brachypodium offer Cereal Breeders?**
Speaker: Jerome Salse, Institut National de la Recherche Agronomique, France
- 1230 **BrachyTAG: T-DNA Insertional Mutagenesis in *Brachypodium Distachyon* (Genotype Bd21)**
Speaker: Phillipe Vain, John Innes Centre, UK
- 1245 **Oat Genomic Resources**
Speaker: Marcus Brautigam, Svensk Harve, Sweden
- 1310 **LUNCH**
- 1400 **Genome wide selection and population development in cereals**
Speaker: Mark Sorrells, Cornell University, USA
- 1440 **General Statistical Power of Nested Association Mapping**
Speaker: Gilles Charmet, Institut National de la Recherche Agronomique, France
- 1505 **The Wheat Genome Project: Laying the Foundation for a Paradigm Shift in Wheat Breeding**
Speaker: Catherine Feuillet, Institut National de la Recherche Agronomique, France
- 1530 **AFTERNOON TEA**
- SESSION 4 BEYOND GENETIC MAPS AND GENE ISOLATION**
- 1600 **The future: isolating genes controlling complex traits and their manipulation in plant breeding**
Speaker: John Snape, John Innes Centre, UK
- 1625 **SNP Diversity and Association Mapping of β -Glucan Content in Barley**
Speaker: Ieva Mezaka, University of Latvia, Latvia
- 1640 **Genome-wide association mapping in barley**
Speaker: James Cockram, National Institute of Agricultural Botany, UK
- 1705 **Epigenetic reprogramming in maize**
Speaker: Jose Gutierrez-Marcos, HRI Warwick, UK
- 1900 **CONFERENCE DINNER**
KINGS COLLEGE, CAMBRIDGE

THURSDAY, 8 APRIL 2010

0845 **Highlights from Day 2, set scene for Day 3**
Wayne Powell

**SESSION 5 GENOME COLLISION, RECOMBINATION, HETEROSIS
AND STRATEGIES FOR DELIVERING NEW CULTIVARS**

0900 **Implications of ph1 for homeologous recombination**
Speaker: Graham Moore, John Innes Centre, UK

0925 **Genetic and Molecular Analysis of Early Stage Heterosis for Growth
Related Traits in the Model Species *Arabidopsis thaliana***
Speaker: Rhonda Meyer, IPK Gatersleben, Germany

0950 **Composite crosses for reduced input agriculture**
Speaker: Martin Wolfe, Organic Research Centre, Elm Farm, UK

1015 **Client-oriented breeding**
Speaker: John Witcombe, CAZS Natural Resources, UK

1040 **MORNING TEA**

1110 **Developmental Phase Dependent *versus* Independent Acclimation Strategies
to Cold in Wheat: *CBF* Regulon and Antioxidants**
Speaker: Gábor Galiba, Agricultural Research Institute of the Hungarian Academy of
Sciences & University of Pannonia, Hungary

1125 **Genetic Modification in Wheat**
Speaker: Tina Barsby, National Institute of Agricultural Botany, UK

1150 **Relevance of Genomics to Cereal Breeding**
Speaker: Peter Langridge, Australian Centre for Plant Functional Genomics,
Australia

1230 **Solutions Identified – the way forward**
Chaired by Wayne Powell & Peter Langridge

1250 **CLOSE**

1250 **BUSINESS SECTION**
▪ Selection of Section Chairperson

1300 **LUNCH**