

EPOBIO WORKSHOP

22 - 24 May 2006

Wageningen International Conference Centre, The Netherlands

Products from Plants - the Biorefinery Future

Fossil reserves are finite and increasingly expensive to use as raw materials for manufacture. Plants offer a sustainable solution: through photosynthesis complex products can be made cheaply and in large quantities. The impact of plants for use as raw materials in sectors as diverse as pharmaceuticals, chemicals and construction can only increase.

Building on previous workshops organised under the auspices of the EC-US Task Force on Biotechnology Research, the workshop will address the issues related to realising the economic potential of biorenewables and sustainable resources for manufacture. The topic spans several European Technology Platforms including plants for the future, sustainable chemistry, industrial biotechnology, forest-based sector and biofuels and will address global issues.

EPOBIO is a new Science to Support Policy project funded by the EC in Framework 6 and is entitled: 'Realising the economic potential of sustainable resources – bioproducts from non-food crops'. Academic and industrial scientists are working together to design new international initiatives at the interface of field-grown crops and industrial fermenter applications. Each target-led R&D programme is being developed as a 'Flagship' theme in the context of its environmental impact, economics and regulatory frameworks, attitudes and expectations of policy makers and the public, and a communication strategy to convey the ideas to a wider audience.

Flagship Criteria

Discussions by the EC-US Task Force during 2004/05 have established criteria to identify Flagship themes that represent important areas for international R&D focus:

user/consumer benefit

demonstrable societal benefit across the entire supply chain

scientific challenge

the research requires large-scale, complementary multinational input to overcome current bottlenecks to the development of next generation bioproducts

economic benefits and risk analysis

analysis of each project and product as a continuum – from research to proof-of-concept and eventual market

private sector involvement

pre-competitive research with clear demonstration of value and commitment to supply products to the market place 10-15 years from now

The first three Flagship themes to meet these criteria were identified to be:

- **plant oils**
- **biopolymers**
- **plant cell walls in relation to biorefining**

The international community is invited to work with EPOBIO and participate in the development of these Flagships, designing new collaborative R&D projects underpinning plant-based bioproducts within each of the three themes. **The community is also invited to identify additional Flagships for future development within EPOBIO and beyond.**

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Monday 22 May

8:00 - 8:45 Registration (also available Sunday 18:00 – 20:00)

8:45 **Welcome by Professor Martin Kropff, Rector Magnificus, Wageningen University.**

9:00 **Introduction:** Co-Chairs - Laurent Bochereau (EC) and Judy St John (US)

9:15 - 11:15 **Keynote addresses**

9:15 A global perspective - James McLaren (StrathKirn Inc)

9:35 A European industry perspective - Bernward Garthoff (Bayer CropScience)

9:55 A US industry perspective - John Pierce (DuPont)

10:15 A European agriculture perspective - Federico Vecchioni (Confagricoltura)

10:35 Opportunities for the developing world - Stanislav Miertus (ICS-UNIDO)

10:55 Question and answer session

11:15 Coffee

11:45 - 13:00 **The EPOBIO programme:** vision, timescales and links to European Technology Platforms: Dianna Bowles (EPOBIO), Marc Zabeau (Plants for the Future), Colja Laane (Sustainable Chemistry – Industrial Biotechnology), Claes-Göran Beckeman (Forest-based sector)

12:45 Question and answer session

13:00 Lunch

14:00 - 15:00 **Plenary introductions to the Flagship themes and nature of input from the support work packages**

14:00 Plant cell walls - Markus Pauly (Max Planck Institute, Golm), Sarah Hake (ARS Albany and UC Berkeley)

14:20 Plant oils - Sten Stymne (Swedish University of Agricultural Sciences), John Dyer (ARS New Orleans)

14:40 Biopolymers - Yves Poirier (University of Lausanne), Bill Orts (ARS Albany)

15:00 Flagships in the wider agenda: the EPOBIO approach - Dianna Bowles (EPOBIO)

15:30 Tea

16:00 Parallel Breakout Groups for Flagship discussions:

Breakout Groups are facilitated by the EU/US co-ordinators of each Flagship theme and will involve round-table discussions in specialist areas led by invited participants.

Each round-table discussion will address a set of common questions to ensure the Flagship theme has been described comprehensively, the R&D needs and actions required have been defined thoroughly, and the described deliverables and future products have been identified within realistic time-lines.

18:30 End of day drinks reception

19:30 Dinner

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Tuesday 23 May

- 9:00 - 15:45 **Continuation of parallel Breakout Groups for each Flagship theme**
10:30 Coffee
12:30 Lunch
- 13:00 - 15:00 Closed meeting for economics and environment work package experts to review the strategies proposed for integration of these areas into Flagship themes
- 15:45 Tea
- 16:00 - Closed meeting: Individual Flagship co-ordinators to discuss preparations for the final plenary session, presentations/reports from the breakout sessions
- 16:00 - Possible optional visit to Plant Research International facilities
- 19:00 Drinks reception
- 19:30 Conference dinner

Wednesday 24 May

- 8:30 **Welcome to the final plenary sessions**
Co-Chairs - Christian Patermann (EC) and Antoinette Betschart (US)
- 8:45 - 10:45 **Flagship presentations - Report back and analyses**
9:15 Plant cell walls
9:45 Plant oils
10:15 Biopolymers
- 10:45 Coffee
- 11:15 - 12:45 **The Way Forward** – open round-table discussion on the way forward for the three Flagship themes within a national and international funding context, led by the Co-Chairs, including possible identification of future Flagship themes for further development. The panel to consist of the Co-Chairs, the EPOBIO Director, Flagship Leaders and additional invited speakers.
- 12:45 Closing comments from the Co-Chairs
- 13:00 Lunch and depart

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The list of participants as at 28th April is as follows :

Klaus Ammann	University of Bern, Switzerland (Recently retired)
Robert Anex,	Iowa State University, USA
Tina Barsby,	Biogemma UK Ltd
Claes-Göran Beckeman	
Jan van Beilen,	University of Lausanne
David Bennett,	Task Group on Public Perceptions of Biotechnology, European Federation of Biotechnology, The Netherlands
Antoinette Betschart,	Agricultural Research Service, USA
Laurent Bochereau,	EC - DG Research
Wout Boerjan,	Flanders Interuniversity Institute for Biotechnology (VIB), Belgium
Dianna Bowles,	CNAP
Simon Bright,	Warwick HRI
John Browse,	Washington State University, USA
Peter Bruinenberg,	AVABE Group
Edgar Cahoon,	Donald Danforth Plant Science Center, USDA-ARS, USA
Anders Carlsson,	Swedish University of Agricultural Science
Kent Chapman,	University of North Texas, USA
Joel Cherry,	Novozymes
David Clayton,	CNAP
Udo Conrad,	Institute of Plant Genetics and Crop Plant Research, Germany
Jim Coombs,	CPL Press
Katrina Cornish,	Yulex, USA
Samake Demba,	Koro Wind Farms, Mali
Albert van Dijk,	CCL Research of Cehave, The Netherlands
Peter van Dijk,	Keygene NV, The Netherlands
Peter Dörmann,	Max Planck Institute
John Dyer,	Agricultural Research Service, USA
Wolter Elberson,	Wageningen Research Centre, The Netherlands
Ines Ezcurra,	KTH Biotechnology
Ivo Feussner,	Georg August University of Göttingen, Germany
Rainer Fischer,	RWTH Aachen, Germany
Steven Fish,	Institute of Grassland and Environmental Research (IGER), Wales
Corrado Fogher,	PLANTECHNO SRL, Italy
Jens Freitag,	GABI Managing Office c/o MPIMPP Golm, Germany
Margrit Frentzen,	Institute for Biology I, RWTH Aachen University, Germany
Bernwald Garthoff,	Bayer Crop Science, Germany
George Gaskell,	London School of Economics, UK
Deborah Goffner,	UMR 5546 CNRS-UPS, France
Ian Graham,	CNAP, University of York, UK
Peter Green,	AlphaGalileo, AlphaGalileo Foundation, UK
Peter Griffie,	
Candace Haigler,	North Carolina State University, USA
Sarah Hake.	Agricultural Research Service, USA
Hinrich Harling,	KWS SAAT AG, Grimsehlstrasse 31, D-37574 Einbeck, Germany
Ron Hatfield,	U.S. Dairy Forage Research Center, USDA-ARS, USA
Ernst Heinz,	Biocentre Klein Flottbek, University of Hamburg, Germany
Thomas Heinzow,	Hamburg University, Germany
Eileen Herrera,	Agricultural Research Service, USA
Herman Höfte,	Laboratoire de Biologie Cellulaire, INRA-Versailles, France
Arland Hotchkiss,	USDA-ARS, USA
Francesco Degli Innocenti,	Novamont, Italy
Jan Jaworski,	Donald Danforth Plant Science Center, USA
Lise Jouanin,	Laboratoire de Biologie Cellulaire, INRA-Versailles, France

David Kaplan,	Bioengineering and Biotechnology Centre, Tufts University, USA
Ken Keegstra,	DOE-Plant Research Laboratory, Michigan State University, USA
Tony Kinney,	Pioneer Crop Genetics Research, DuPont, USA
Manfred Kircher,	Degussa AG
Kerry Kirwan,	Warwick Manufacturing Group, University of Warwick, England
Maarit Kivimäki,	Finnish Forest Research Institute
Rainhard Koch,	Bayer BioScience, Germany
Jerome Konecsni,	Genome Prairie, Canada
Andries J Koops,	Plant Research International BV, The Netherlands
Martin Kuiper,	Flanders Interuniversity Institute for Biotechnology (VIB), Belgium
Colja Laane,	DSM Corporate Communications
André Laroche,	Agriculture and Agri-Food Canada
Rene Lessire,	CNRS Bordeaux, France
Stephen Lewis,	York Evening Press
Robert van Loo,	Plant Research International, The Netherlands
Maureen McCann,	Department of Biological Sciences, Purdue University, USA
Gordon McDougall,	Scottish Crop Research Institute
James McLaren,	StrathKirk, USA
Simon McQueen-Mason,	CNAP, University of York, England
Nikki MacLeod,	CNAP
James McLaren,	StrathKirk USA
Benedetta Mattei,	University of Rome "La Sapienza", Italy
Derek Matthews,	Velcourt R&D, Cambridge, England
Stanislav Miertus,	ICS-UNIDO, Italy
Martine Miquel,	Seed Biology, INRA Versailles - Grignon, France
Jorn Mikkelsen,	Danisco, Denmark
Judith Mitchell,	CNAP
Keita Mohamed,	Koro Wind Farms, Mali
Ralph Möller,	Max-Planck Institute for Molecular Plant Physiology, Germany
Hans Mooibroek,	Wageningen UR, Agrotechnology & Food Sciences Group - Biobased Products, Department of Bioconversion - Chair of Valorisation of Plant Production Chains
Nigel Mortimer,	North Energy Associates, UK
Richard Murphy,	Imperial College London, England
Johnathan Napier,	Rothamsted Research
Michael Obersteiner,	International Institute for Applied Systems Analysis, Austria
John Ohlrogge,	Department of Plant Biology, Michigan State University, USA
Bill Orts,	Agricultural Research Service, USA
Shivaji Pandey,	Food & Agriculture Organisation, Italy
Maria Paschou,	National Hellenic Research Foundation - Athens Greece
Martin Patel,	Utrecht University, The Netherlands
Christian Patermann,	EC - DG Research
Markus Pauly,	Max-Planck Institute for mol. PlantPhys.
Oliver Peoples,	Metabolix, USA
Andy Pereira,	Plant Research International -Wageningen UR
John Pierce,	DuPont, USA
Yves Poirier,	University of Lausanne, France
Reno Pontarollo,	Genome Prairie, Canada
Gary Punter,	British Sugar
Rongda Qu,	North Carolina State University, USA
Christine Raines,	University of Essex, England

Guido Reinhardt,	Institute for Energy and Environmental Research Heidelberg (IFEU), Germany
Magdalena Rogulska,	Bioenergy team, EC Baltic Renewable Energy Centre, Poland
Giorgos Sakellaris,	National Hellenic Research Foundation - Athens Greece
Elma Salentijn,	Plant Research International -Wageningen UR
Brett J Savary,	USDA-ARS, ERRC, USA
Henrik Scheller,	Department of Plant Biology, Royal Veterinary and Agricultural University, Denmark
Dietrich Scherzer,	BASF, Germany
J. Dirk Schladot,	Project Management organization of the BMBF, PTJ-Bio, Germany
Uwe Schneider,	Hamburg University, Germany
Peter Shewry,	Rothamsted Research, England
Alison Smith,	Department of Metabolic Biology, John Innes Centre, UK
Philippe Soucaille,	Metabolic Explorer
Petra Sperling,	Biocentrum Klein Flottbeck, Germany
Judith St John,	Agricultural Research Service, USA
Kirsten Birkegaard Staer,	Novozymes
Sten Stymne,	Swedish University of Agricultural Science
Björn Sundberg,	Umeå Plant Science Center, Sweden
Ewa Swiezewska,	Institute of Biochemistry and Biophysics, Polish Academy of Sciences
Christian Tobias,	USDA, Agricultural Research Service, USA
Marcel Toonen,	Plant Research International -Wageningen UR
Simon Turner,	Faculty of Life Sciences, University of Manchester, UK
Pasi Vainikka,	VTT, Finland
Federico Vecchioni,	Confagricoltura
Piero Venturi,	EC
John Vogel,	USDA, USA
Waltraud Vorwerg,	Fraunhofer Institute for Applied Polymer Research, Germany
Ralf Weberskitch	
Neil Westcott,	Agriculture & Agri-Food Canada
Peter Winsley,	Ministry of Agriculture & Forestry, New Zealand
Marc Zabeau,	EPSO, Belgium
Louisa Wright,	CNAP
Marc Zabeau,	EPSO
Louis Zetterling,	Department of Sociology, Autonomous University of Barcelona, Spain
Luca Zullo,	Cargill Incorporated