

# ESF RESEARCH CONFERENCES

## Rapporteur Report

Partnership:	ESF-BU-CeBiTec Conference
Conference Title:	Microorganisms for Bio-Fuel Production from Sunlight
Dates:	18-21 September 2011
Chair:	Olaf Kruse
Rapporteur:	Huub J.M. de Groot

### General Comments

This was an excellent meeting in the spirit of the ESF, shaping new research communities for European Science at the highest ambition level:

- Excellent science level in the program
- The international key players were present
- Vision includes societal need by bridging from science into process technology
- Exploration of cross fertilization between green and white biotech
- Exploration of cross fertilization between the cell level and (semi-) artificial systems
- Scientific hotspot where the coordinators and teams of three FP7 EU programs were present to explore novel networking opportunities and the coordinators of the complementary ESF Eurocores EuroSolarfuels were participating.

### Quality of Scientific Programme, Presentations and Discussion

Comments on the balance and scope of the scientific programme, the scientific quality of the presentations and discussions.

*Balance and scope:*

Microorganisms for bio-fuel production require a scope on and balance between fundamental problems and applied research for finding solutions. While the scientific discipline is a much stronger discipline than the discipline of the market and tells where the scientific problems are, the market tells where the solutions to societal needs can be found. The scope of the conference was to bring these two viewpoints together in an atmosphere of open scientific discussion with a focus on Microorganisms for Bio-Fuel Production from Sunlight. This is an urgent need in the research community, and it is thus not surprising that all high level speakers that were approached by the conference organizers swiftly agreed to come to the meeting based on the proposed program (with one or two exceptions for personal reasons).

In this first meeting on the topic in the conference series the balance was towards the science of the problems, with the science of the solutions for application somewhat less present in terms of quantity, but at a very high level in excellent presentations on high quality research. The conference chairs for the next meeting, Alison Smith and René Wijffels, will undoubtedly shift and find a more equal balance between science and engineering for the next green meeting in the series in three years time.

*Scientific quality of the presentations:* Excellent

*Scientific quality of the discussions:* Combining basic science with bioprocess engineering was very much appreciated by the participants, in a science driven atmosphere with an applied background in a genuine Gordon conference atmosphere with long discussion times. The research community is at a crossroads, where the science thinking and looking for understanding is complemented with an applied orientation. This innovation benefits from cross-disciplinary thinking, and this is where the program seeded the most intense discussion. Highlights: what can we learn from white biotech, how can the highest yield of fuels from feedstock be realized in a production environment; what can we learn from (semi-)artificial systems, seeded by an excellent talk on microbial fuel cells; do we need an extensive *Synechocystis* model platform, optimal for genetic accessibility; is it important to work on a dedicated high level scientific infrastructure for fuel, rather than taking a free ride on genomics technology and imaging technology development from other fields (eg. health); what will be the fuel of the future, hydrogen or carbon based: are we running around in circles pushing up against effective developmental biology boundaries and should we not start reinventing microorganisms, specifically for the purpose of biofuels, analogous to the transition that was already made in artificial photosynthesis; how do we realize an optimum between high value low volume products and low value high volume fuels in production

## Informal Networking and Exchange; Atmosphere

*Was the schedule and the atmosphere conducive to an easy exchange of information?*

Yes.

*Was there time and space for an informal discussion?*

Yes, the participants were interacting throughout the three days of the conference, in venue, hotel and buss trips in between.

*Were younger researchers integrated?*

Yes, in particular also with the poster session. One young researcher from Iran gave a spontaneous and marvellous piano recital at the closing session of the meeting.

## Balance of Participants

*Was there an appropriate balance between young and senior participants?*

Yes.

*Was a balance of national groups and researchers from different (sub)fields achieved?*

Yes. This conference is filling a gap, bridges between science and engineering. International advisors of companies also participated in the conference.

## Outlook and Future Developments

*Will new collaborations emerge from this conference?*

With intense discussions and new calls coming up from the Brussels side as explained during the meeting, there are ample grounds to expect new collaborations

*(How) could the conference outcomes be utilized further?*

By exploring the possibilities for establishing cross-disciplinary ESF conferences, within the program (by broadening and balancing of science and processing, cross fertilization with white biotech) and by other means, such as cross fertilization with the (semi-)artificial CRP's in the ESF Eurosolarfuel Eurocores program.

*Are there suitable (ESF) programmes or instruments to further the work of the conference?*

An excellent next step now would be to set up an ESF research network. Many researchers remember an ESF network on photosynthesis many years ago that has boosted European research ahead of international competition, from the US and elsewhere. The FP7 SolarH2, Sunbiopath, Directfuel, and solarbiofuels consortia were present, and there was the first scientific committee meeting of the Eurosolarfuel Eurocores program here. This follows the science policy that was drawn in the LESC/PESC science policy briefing of the ESF. An important aspect in the near future will be to continue bridging between these active and expending groups in Europe, together with experts from elsewhere. It is recommended to plan for a common ESF network with the algal researchers in this conference network and the Eurocores CRP's, possibly in connection with EU schemes as well, and ESF has the instruments at hand to support the new networks established at this meeting.

Last but not least, a follow-up of phase 2 of this conference scheme is important for the community to gain momentum. Participants expect another follow-up in another three years, which will happen because it is already ESF funded. New chairs have already identified. Rene Wijffels as process engineer from Wageningen and Alison Smith from Cambridge for the basic science have accepted to organize this next meeting. The first two meetings have been successful and the coordinators will certainly opt for years 7,8,9 of the conference scheme to be approved by ESF at the earliest possible stage. LESC is kindly asked to take this into consideration.

## Follow-up

*What immediate and long term follow-up would benefit collaborations and dialogues that may have begun at the conference?*

The organizers plan for a special journal issue, already 20 commitments reflects the existing interest.

An ESF network bridging between solar biofuels from microorganism and the (semi-)artificial systems of the Eurocores collaborative research programmes, and seeding into the ERA networking efforts with the EU in Brussels (at the meeting an EU official was present and discussions on this topic were started.

Honoring the request for extension of the conference scheme with the requested three years

## Organisation and Infrastructure

*Were venue, catering and accommodation appropriate for this conference? Were participants satisfied with the on-site administration and support?*

Yes. Bielefeld University did an excellent job in providing the venue. The ZIF conference location is well equipped and well organized, it has all the facilities and is dedicated to this kind of meetings.

## **Summary & Overall Assessment**

*Was the conference successful; were its aims achieved?*

Yes.