Emergence
A Foundation for Synthetic Biology in Europe

Minutes Meeting Zurich
April 29, 2009, ETH Zurich, Main Building
Month 29 of the Emergence project

Participants:

- ETHZ: Sven Panke (SP), Mario Marchisio (MM), Sonja Billerbeck (SB), Jörg Stelling (JS)
- CRG: Raik Grünberg (RG), Andreu Alibes (AA)
- CSIC: Esteban Martinez (EM)
- HZI: Vitor Martins dos Santos (VMdS)
- DSM: Luis Passamontes (LP)
- Geneart: Frank Notka (FN)
- UCL: Nicholas Szita (NS)
- UCAM Jim Ajioka (JA)

Excused: Alfonso Valencia (AV) (CNIO), Alfonso Jaramillo (AJ) (Ecole Polytechnique), Luis Pasamotens (LP) (DSM)

1) **General introduction** (SP)

a) **Money**: We have received notification of the EC commission that we are not going to receive money for the second period. The argument goes as follows: We have underspent in the first half. The amount by which we have underspent is more than what we planned to spend in the second half. Therefore, there is no need to give us additional money for the second half. Of course that ignores that many of the activities we did not do in the first half were supposed to be transferred to the second half. Therefore, I do not expect problems in recruiting the money that was expected for the second half as well. However, until now, we have not received additional money for the second half of the project. If you want to follow up on the details of this, please consult page 42 of the attached file "midtermreport". We had roughly requested 63% for the first 18 months, but spent only 31% (particularly: 31% (ETHZ), 8% (HZI), 24% (DSM), 1% (UCL), 4% (CRG), 10% (UCAM), 7% (EP))

b) **Claimed person-months**: Please note that as per 18 months into the project, the following partners had not claimed substantial man-months: HZI (0/14), UCL (0/14), and CRG (1/21).

c) News

a. At the TU Delft, there . One of the participants, David Koepsell, presented his ideas on SynBio and IP at a meeting in Brussels which I happened to attend. A scan of his slides is attached. (http://www.ethicsandtechnology.eu/research/projects/1122)

b. EUROSynBio: The ESF initiative in Synthetic Biology finished its first round. They received 24 proposals, 16 of which were invited for full submission. The participants are strongly biased towards The Netherlands, Germany, UK, and Switzerland.

c. The UK Royal Academy of Engineering and the Swiss Academy of Technical Sciences published reports on Synbio. They are available under:

http://www.raeng.org.uk/news/publications/list/reports/Synthetic_biology.pdf and http://www.bsse.ethz.ch/bpl/publications/SATW.pdf

d) The KBBE-net (a network to support and advise the EU-knowledge-based bio-economy has selected synthetic biology as one of its topics. There were 2 meetings in Brussels (2.2.2009, 8.5.2009), the second including a hearing with set of Synbio-experts. The net is evaluating how Synbio can be funded by member-states that compose the net (currently: Denmark, Estonia, France, Germany, Greece, Norway, Switzerland, Turkey, UK, Latvia, Austria. Contact: Wilfried.Diekmann Wilfried.Diekmann@dlr.de)
e) **NEXT MEETING**: Emergence plans to have the next (potentially final) meeting on Nov 12/13. Location: to be decided. Format: extended (Emergence, advisory board, selected external guests representing US, (Asia?,) and European players such as Imperial, Groningen, Freiburg, etc.)

2) **Progress in the different work packages**:

The progress is detailed in the attached presentations. **Central points regarding the period from 19 to 36 months**:

Workpackage 1: General networking activities (VMdS)

Deliverable 1.6. "Report on workshop on foundations of measurement statistics in synthetic biology (month 24): **Delayed**. Actions: Two workshops are currently scheduled regarding this topic. Workshop 1: "Microfluidics as analytical tool for synthetic biology" 28/29 May 2009, UCL London, hosted by Partner 6 (UCL, Nicholas Szita). Workshop 2: "Standardization in transcription and translation", 21/22 Oct 2009, Illetes, Mallorca, hosted by partner 2 (CSIC, Victor de Lorenzo). The required document will be produced after the second workshop by partners 2 and 6, Victor de Lorenzo and Nicholas Szita.
Action: Participants 2 (CSIC) and 6 (UCL)

Milestone 1.6. "Steering committee and advisory board decide whether the critical mass in Europe-Asian relations in synthetic biology has been reached and drafting a "common interests" document is going to be useful (month 24)". **The Steering Board decides that the critical mass is available and such a document should be prepared**. The details on which this decision is based can be found in the attached presentation on WP1, slide 25.

Deliverable 1.7. "Document identifying "common European-Asian interests and ways to develop them" or similar document in place and signed by Extra-European and European groups/organization involved in synthetic biology (month 32)". To be delivered in Month 32.
Action: Participant 4 (HZI)

Workpackage 2: Attracting talents to Synthetic Biology in Europe (SP)

Deliverables 2.1 to 2.3. Summer school organized with Randy Rettberg as a European iGEM meeting
Action: Partner 1 (ETHZ)

Deliverable 2.4. “Master studies implemented at the leading and the collaborating schools.” Input AJ, I did not yet manage to get a hold oh Alfonso Jaramillo, this point will be finished later.

Deliverable 2.5. “Eduational resource at IET available and continuously updated (month 12 and later)”. **Done/in progress**. An extensive resource has been established at http://www.synbio.org.uk/ . However, relative to the commitments made in the Emergence Annex (“This web based resource will be hosted by the IET and be associated with a new journal, IET Synthetic Biology (http://www.theiet.org/publications/). The web resource will include downloadable teaching materials, video presentations, online reviews and technical articles. For example, a server at http://www.iet.tv will provide dual screen, streaming video containing review and technical material. The resource will be available free of charge.”) the resource needs to be updated. SUGGESTION: If this webpage could be linked with contents provided by http://www.synbiosafe.eu/ (Markus Schmidt, IDC Vienna, markus.schmidt@idialog.eu, +43 (660) 6856623), I guess we would have covered most of the commitments.
Action: Partner 9 (UCAM)

Workpackage 3: European Infrastructure for Synthetic Biology (JS)

Deliverable 3.3. “Report describing the software for model-based systems design and analysis, and its integration (month 24)”: **Done/in progress**. Two papers published, one further in progress (Marchisio and Stelling, Bioinformatics 24:1903 (2008); Synthetic gene network computational design" accepted at ISCAS 2009, http://conf.ncku.edu.tw/iscas2009/)
Action: Partner 1 (ETHZ/JS) – provide the final reference once the third paper is accepted.

Deliverable 3.4. “Document describing the proof-of-concept study exploiting the integrated workflow for genetic circuit design (month 35)”. This deliverable prompted a discussion on whether all required information would be available in time for success. The situation needs to be clarified by the WP leader (3, CNIO). See also separate email.
Action: Partner 3 (CNIO)

Workpackage 4: Towards a consensus language for synthetic biology: Conceptual and hermeneutical tools for formatting and categorization of transcriptional working stages (EM)

Deliverable 4.2. “Application of design tools on standardized promoters available as a demonstrator suite on the IT infrastructure. “ **In need for modification**. There are currently no standardized promoters available. In addition, the process initiated for defining the requirements for standardized promoters will not be finished before October 2009, briefly before the end of the project. Therefore, it is currently difficult to see how this deliverable will be made in time in its original form. As a workaround, partner 2 provided novel genetic tools that in will be exceedingly helpful to achieve the desired standard state.

COMMENT: Please see attached comments on international standardization efforts provided in posteriori by RG.

Workpackage 5: Building the academic/industry interface (incl. IP rights) (FN)

Deliverable 5.1. "Reports on two industry workshops to define the priorities of the European industry in the field of synthetic biology and to evaluate the fit of the European synthetic biology projects with the industry needs." **Done/in progress**. One workshop was held (25.6.2008, Munich). Frank – please give input: Status SECOND WORKSHOP? iGEM accessory meeting as second workshop (FN)?

Deliverable 5.2. "Reports on two workshops (associated to industry-relevant scientific conferences) to teach the industry in synthetic biology concepts and tools." **Done/in progress**. One workshop was held as part of Synthetic Biology 4.0 in Hongkong (10.-12.10.2008), where Partner 7 (Geneart) chaired the session on "Synthetic Biology in Industrial Biotechnology". Finally, another workshop is organized by partner 7 (Geneart) together with DECHEMA 9-10.11.2009 in Frankfurt on "Synthetic Bio(techno)logy".

Deliverable 5.3. "Position paper on the priorities of the European industry in the field of synthetic biology, evaluation of fit with current EU synthetic biology projects, and decision on how to address the potential gaps." STATUS DELIVERABLE?

Deliverable 5.4. "Intermediate and final report on status of discussion regarding IP strategy in the field of synthetic biology, originating from company internal assessments and summarizing the ideas on IP-management (same workshops as in D5.1)". **Done/in progress**. One IP workshop was held in Munich on the 16.6.2008 with representatives from the European Patent office, DSM, Geneart, Prof. J. Henkel from the TU Munich, and Emergence representatives. Report available?. Status second report?

Comment FN: Resources Geneart are nearly spent. Participants of Emergence meeting: DSM to cover the second part of deliverable 5.4.

ATTACHMENT

Comments on International Standardization efforts, **provided by Raik Gruenberg** (CRF, Partner 8)

Standardization efforts
==========

The BioBricks Foundation (BBF) has formalized a process of proposing and collecting standards for Synthetic Biology. The process copies the way standards are being developed in other engineering communities -- with the internet group being the first and most prominent example. Standard proposals are formulated as "Requests For Comments" (RFC). RFCs are numbered and archived by the BBF:
http://openwetware.org/wiki/The_BioBricks_Foundation:RFC
These documents are then open for commenting and discussion and may, eventually, be replaced or become an official BBF standard. We are involved in two concrete standardization efforts: (1) BioBrick formats and cloning, and (2) Synthetic Biology data exchange.

(1) BioBrick formats and cloning

Several groups have proposed successors for the original BioBrick cloning format. These different proposals are now all available as RFCs. Kristian Mueller, Katja Arndt (both University of Freiburg) and me have described our extended BioBrick format in RFC 25. The format described in RFC 25 allows for the construction of fusion proteins from BioBrick parts but still retains full backwards compatibility to the classic (RFC 10) BioBrick assembly. We are in the process of writing up several related technical protocols, for example: RFC 24 (Conversion between BioBrick formats), RFC 27 (Construction of basic BioBricks).

(2) Synthetic Biology data exchange

We are involved in an effort to standardize SB data exchange. A first incomplete draft of a BioBrick data exchange standard -- termed PoBoL (Provisional Biobrick Ontology Language) -- was the result of the workshop on "Standards and specifications in Synthetic Biology" held in Seattle April 26-27 2008. We are now participating in the description of this format in RFC 31. Independent of BioBricks and any particular data model, I have outlined a technical framework for the description, exchange and interlinking of Synthetic Biology data in RFC 30. The upcoming RFC 31 is following this framework. A team around Douglas Densmore and Chris Anders from Berkeley are describing their data exchange formats in a partially overlapping RFC 33. Herbert Sauro and Drew Endy proposed to work out a joint final proposal during a workshop that is being organized for the end of July.