Summary of the Roundtable on Industrial Biotechnology in the Czech Republic

15-16 May 2008, Brno

Introduction

The roundtable on industrial biotechnology in the Czech Republic has been organised on 15 and 16 May 2008 in Brno (Hotel Park). The event has been initiated by EuropaBio in the framework of the European Technology Platform "SusChem".
The roundtable has been locally organised by Jiri Damborsky from the Masaryk University, Michal Kostka from the South Moravian Innovation centre and Vladimir Kren from the Institute of Microbiology.
Participants to the roundtable consisted in representatives from academia, enterprises, development agencies and ministries/government bodies with an interest in the field of biotechnology (see Annexes).

The first part of the roundtable consisted in presentations.

- Dr. Johan Vanhemelrijck (EuropaBio) started by a general presentation placing industrial biotechnology in a political context in Europe.

- Ms. Camille Burel (EuropaBio) presented the European Technology platform SusChem and its section on industrial biotechnology. SusChem objectives are to boost sustainable chemistry, industrial biotechnology and chemical engineering research, development and innovation in Europe. More specifically, the Industrial Biotechnology section ensures a coherent policy framework and the most effective use of R&D resources. It guarantees that biotechnology is properly integrated in the chemical industry.

- Dr. Monika Sormann (DG Research, European Commission) presented biotechnology and the Knowledge-Based Bio-Economy (KBBE) in the 7th Framework Programme for Research and Development. She particularly focused on activities dedicated for industrial biotechnology and on the participation of Czech stakeholders in calls.

- Dr. Peter Šebo (Biotech & Biomed Research Centre) presented a general overview of the state of (industrial) biotechnology in the Czech Republic. His presentation "Great past, sad present, promising future" (cf. annexes) focused mainly on stakeholders active in the field of biotechnology as well as current research/development projects and initiatives. He gave a general picture of universities, research centres, enterprises, students making biotechnology in the Czech Republic.

Two hours were then dedicated to group discussions. Participants were divided into 3 groups following their affinities:
- Research and development
- Innovation
- Policy

The objectives of discussions were, firstly, to draft a picture of Czech IB in the field of group discussion topics with the help of a SWOT analysis and, secondly to propose recommendations to overcome identified barriers and build on key achievements to further develop and reinforce industrial biotechnology in the Czech Republic.

Group discussions were very constructive (see below "Resume of group discussions") and several recommendations were formulated either towards Czech authorities and European authorities. (see below "Recommendations").

On 16 May, results of group discussions were presented to all participants and a general discussion took place on the basis of the group discussions recommendations. Participants agreed that further coordination at national level was needed to develop (industrial) biotechnology more in the Czech Republic. As follow-up, the South Moravian Innovation Centre will organise a follow-up event for Czech biotech actors on 22-23 October in Brno.

Resume of group discussions

1. Research and development

R&D Funding

Strength

- Strong horizontal funding system
- Increasing funding support to R&D

Weakness

- Fragmentation / atomisation of funds in several projects
- No specific programme for industrial biotechnology
- Lack of continuity in the administration – delay to receive promised funds
- Lack of long term vision strategy

Opportunities

- More focusing on industrial biotech
- Improvement of the quality of projects
- EU funds represent an opportunity for the amount of money and the evaluation of projects (need for a good project to be supported)

Threats

- Human resources (quality and quantity)
- Decrease or stagnation of the R&D budget
- CZK exchange rate appreciation (as EU funds are in euros
- Lack of continuity in the administration

Biotech sector

Strength

- Traditional biotechnology (fermentation)
- Pharma generics
- Biotech machinery (but not very high level/quality machineries)
- Good level of research and education

Weakness

- Lack of white biotech research
- Lack of SMEs
- Transfer of technology/research to industry (problem of innovation)

Opportunities

- Pressure of “green processes”, that will need cleaner technologies and processes (ex: REACH)
- Algae & Waste treatment
- Biofuels
- Biomaterials
- Food crisis (cf. GMO agriculture)

Threats

- Food crisis (access to raw materials)

2. Innovation

Strength

- Good research
- Capacity of people
- Costs are low

Weakness

- Transfer of technology to industry
- Education to entrepreneurship
- Success stories / leadership
- High entry barriers (resources, IPR protection, regulation) and low risk sharing
- IB specificities not considered (need for certain time before becoming beneficiary)

Opportunities

- Relaunching of proposal for a European patent (KBBE is an is based on patents)

Threats

- Political instability – lack of predictability
- No venture capitals
- No clusters

3. Policy

Strength

- Educated people
- Enough resources

Weakness

- Resources are not properly distributed due to lack of managerial skills
- Death valley between research and market
- Two different languages between academia and industry

Opportunities

- Reforms of R&D system
- Reform of university/education system

Threats

- IB specificities not understood by politicians/economist/lawers etc.
- Business if felt as a kind of « evil » by Academia
- Use of EU structural funds: no long term planning (large amount of money are dedicated to infrastructures but nothing is planned for functioning)

Recommendations

1. **<u>Recommendations towards Czech authorities</u>**

- **R&D: improve matching between academia and industry needs and get excellence**

- The evaluation of R&D projects could be improved. There should notably be a better evaluation of the concordance between research and industry needs. Also, value of projects should be better assessed and better controlled at the end (among other, the output should be marketable).

- R&D grants managers at government level could be more and better trained in order to evaluate properly the interest of projects and the match with needs and project description. Also, more funds should be invested into peer review in order to screen and evaluate projects in progress and their matching with objectives.

- More incentives for private R&D funds could be established. This could:
  - ☐ increase funds available for R&D
  - ☐ reinforce cooperation between academia and enterprises
  - ☐ create better matching between their researchers and industry needs

- **Access to market: facilitate bio-products entrance on the market**

- Dissemination of benefits of industrial biotechnology should be broader. There is a need to increase public awareness of bio-products to stimulate the market.

- Company managers need also to be more aware of benefits of industrial biotechnology and of what this technology can do for their business. This would participate to the expansion of the KBBE and expand the market for industrial biotechnology

- The establishment of specific public procurements for bio-products could participate to the development of this new market by helping their entrance on the market and help in the dissemination of these new products.

- **Innovation: fill-in the gap between R&D and market**

- Start-up, spin-offs and SMEs need to test large scale production of their products. This could be facilitated by the construction of an open production plant

- Timing for grants: there is a need of rapidity and less bureaucracy. Good ideas should be immediately supported

- There are several high barriers to enter the market and high risks of failure. Therefore, Public Private Partnership (PPP) could help in sharing those risks

- Promote success stories: innovation is risky and difficult. However, it is possible and challenging. Success stories need to be promoted

- One of the main risks that young enterprises are facing is unpredictability. It is absolutely needed to create trust, predictability and stability: political stability, coherent and predictable regulatory framework are sine qua none conditions. This would also attract venture capitalists.

- As salary costs are quite low, it is difficult to attract high level profile in Czech Republic. Also, the creation of a "special fund" (this is allowed by EU rules) to overcome salary costs differences could help in dealing with this problem

- « getting people in mind that making profit is not a sin »

- **Policy: ensure needed conditions to promote KBBE**

- Researchers, entrepreneurs and decision makers would need managerial training.

- Industrial biotechnology is a young technology and often unknown. Therefore, it is important to educate decision makers on biotech specificities (long term, etc.) and potential.

- To create a coherent regulatory and policy framework, the cooperation between actors is needed (cooperation between ministries but also cooperation between decision makers and industry/researchers).

2. Recommendations towards EU authorities

- **R&D**

- Basic research should also be funded

- Less bureaucracy

- NIH (national institute of health) style of reviewing (improve the application process to funding)

- More flexibility in the timing of R&D projects: sometimes just a few weeks more would have been sufficient to finalise the project.

- Make FP7 website intelligible

- **Innovation**

- In order to increase participation of SMEs in project and get excellence, the reimbursement of resources needed to respond to calls could be envisaged (see national examples)

- Having a follow-up, some interest from EU in the future of projects.

- KBBE is based on patents and IP protection. The harmonisation of IP rights of the 27 Member Sates is highly needed. The EU patent should be affordable, strong and well protected

- It is needed to create trust, predictability and stability. Political stability, coherent and predictable regulatory framework are sine qua none conditions to ensure the entrance of new products and of new enterprises on the market. This would also attract venture capitalists.

- Communication towards citizens and managers is needed to further develop the KBBE (« what can biotech do for you »)

- Make State Aid measures known of national decision makers and enterprises

- Create more flexible funding that can be used by private bodies

- Industrial biotechnology is a young technology and often unknown. Therefore, it is important to educate decision makers on biotech specificities (long term, etc.) and potential.

    - **Policy**

- A European seed funding programme could be established to support innovation at European level

Follow-up

No.	Action	Objective	Implementation
1	Public relations related to IB for companies, ministries, grant agencies	Disseminate and promote IB	Biotechnology Society Centre for Biocatalysis and Biotransformationa BIOCEV
2	Assessment of biotech companies and inputs from research	To access quality and outputs of oriented research	South Moravian Innovation Centre
3	Coordination of education in the technology transfers, IP, etc.	To disseminate good examples of courses going on at individual universities	Board of Vice-Rectors
4	Follow-up meeting on biotechnologies – GATE2BIOTECH, Brno, 22-23 October 2008	To secure continuity of newly created network; stimulate implementation of recommendations; to contribute towards defragmentation of biotechnologies in the country; to create platform for regular meetings of all stakeholders…	South Moravian Innovation Centre (coordination) ICRC Biotechnology Society BIOCEV CEITEC All others
5	1st follow-up meeting on IB organised for industry and SMEs, Praha, 2008.	To create a platform for coordination and formation of the nation-wide biotechnology cluster	BIOCE (coordination) Czech-Invest Biotechnology Society South Moravian Innovation Centre
5a	2nd follow-up meeting on IB organised for industry and SMEs	Additionally to point 4, bring venture capitalist to the meeting	EuropaBio
6	Pilot project on fermentation & purification	To prepare specific project for point 5	LONZA (coordination) SMEs
7	Calls for proposals to support infrastructure and networking in IB	To provide financial resources for stimulation of IB	Ministries Grant Agencies Czech-Invest

Annexes

Great past, sad present, promising future (P. Sebo)

- **Great past**
  - Used to be extremely strong in tradional biotechnology
  - Among pioneers of antibiotics production
  - World famous school of fermentative technologies (e.g. beer-brewing)

- **Sad present**
  - Lagging behind in cutting-edge biological research
  - Absence and poor interest of venture capitals
  - Limited and non-competitive advanced biotech research
  - Almost inexistent advanced biotech intellectual property
  - Minimal size of advanced biotech industry (4 real companies: Lonza, Baxter, Contipro, Exbio)
  - Low numbers of high-tech biotech SMEs

- **Promising future**
  - Government recognises the problem
    - Advanced biotechnology and molecular biology among strategic long-term research orientations - funding schemes … contradiction it comes from **very recent** progress – the new strategy has not been implemented yet (draft version is currently under discussion)
    - There are more funds than competent individuals and teams
  - The level of culture and education is good. The manpower is qualified and there are enough PhDs
  - National applied research support schemes (NPV) – large collaborative projects funded by Ministry of Education (typically for 5 years) which requires participation of partners from academia and industry (quite similar to FP7 projects)
  - Incentives for Academia collaborations with Industry --- have no information on this – you may contact Vladimir Kren or Jindrich Babicky
  - ERDF funds for OP R&D for Innovation and Enterprise for Innovation
  - Institute of Biotechnology AS CR, v.v.i. founded on January 1, 2008
  - BIOCEV, CEITEC and several other major projects in preparation

Strengths	Weaknesses
long tradition in classic biotechnology	lagging behind in cutting-edge molecular biotechnologies
established education system; well qualified and affordable manpower	insufficient interaction of academia with industry; past brain-drain
improved infrastructure in R&D; restructuring research organizations	missing tradition of spin-offs; lack of managers trained in science
growing awareness on intellectual property protection in academia	lack of funding for patenting in academia; lack of venture capital
increasing funding to R&D; long-term funding	growing bureaucracy; complex rules for the use of funding

Programme

15 May 2008		
10:00-13:00	Arrival, registration and refreshment	
13:00-13:10	Welcome and opening	Jiri Damborsky, Johan Vanhemelrijck
13:10-13:35	Introduction of participants	
13:35-13:55	Presentation of SusChem	Camille Burel
13:55-14:15	Presentation of biotechnology in FP7	Monika Sormann
14:15-14:35	Presentation of status of IB in Czech Republic	Peter Sebo
15:00-17:15	Group discussion: - R&D - Innovation - Policy	 Vladimir Kren & Monika Sormann Marek Minarik & Johan Vanhemelrijck Jiri Krechl & Camille Burel
17:30-18:30	Preparation of draft summary	
19:00	Dinner and social evening	
16 May 2008		
9:00-9:40	Presentation of conclusions group discussions	
9:40-10:00	Presentation of summary by chairman	
10:00-11:30	General discussion & conclusions	
12:00-12:30	Press briefing	

List of Participants

Babický	Jindřich	Academy of Sciences of the Czech Republic	babicky[at]kav.cas.cz
Burel	Camille	EuropaBio	c.burel[at]europabio.org
Damborský	Jiří	Masaryk University	jiri[at]chemi.muni.cz
Doubková	Zuzana	Ministry of Environment of the Czech Republic	zuzana_doubkova[at]env.cz
Ettrich	Rüdiger	Institute of Systems Biology and Ecology	ettrich[at]greentech.cz
Fojta	Miroslav	Institute of biophysics	fojta[at]ibp.cz
Fusek	Martin	Centre for Technology Transfer UOCHB	m.fusek[at]lscapital.cz
Hradil	Ondřej	Technology Transfer Office of Masaryk University	hradil[at]rect.muni.cz
Káš	Jan	Institute of Chemical Technology in Prague	jan.kas[at]vscht.cz
Kolaříková	Jana	Ministry for Regional Development of the Czech Republic	koljan[at]mmr.cz
Kostka	Michal	South Moravian Innovation Centre	kostka[at]jic.cz
Krechl	Jiří	Czechinvest	jiri.krechl[at]czechinvest.org
Křen	Vladimír	Institute of Microbiology	kren[at]biomed.cas.cz
Marek	Jan	Inotex	marek[at]inotex.cz
Minárik	Marek	Genomac	mminarik[at]genomac.cz
Mommers	Rick	Lonza	rick.mommers[at]lonza.com
Peeters	Antoine	EuropaBio	a.peeters[at]europabio.org
Rajnoch	Jan	Biotech & Biomed Research Center	rajnoch[at]img.cas.cz
Sormann	Monika	European Commission, DG Research	monika.sormann[at]ec.europa.eu
Šebo	Peter	Biotech & Biomed Research Centre	sebo[at]biomed.cas.cz
Trčka	Josef	Lentikats	trcka[at]lentikats.eu
Ulrichová	Jitka	Palacky University Olomouc	jitka.ulrichova[at]upol.cz
Vanhemelrijck	Johan	EuropaBio	j.vanhemelrijck[at]europabio.org
Viklický	Vladimír	Research and Development Council of the Czech Republic	viklicky[at]biomed.cas.cz