

# Finding the right chemistry

“Industrial biotechnology embodies the attempts to unlock the secrets of nature, to benefit humankind. It is thought that industrial biotechnology may hold the key to the resolution of several large-scale environmental problems, in particular finding ways to produce sustainable chemicals and materials, and the search for clean fuels to power us into the new millennium.”

Industrial biotechnology has been identified as one of three key technologies that can help Europe achieve the Lisbon objective of becoming the most competitive and dynamic knowledge-based economy by the year 2010.

Also known as white biotechnology, industrial biotechnology (IB) manipulates cells and cell components to create new products and processes, primarily in the chemical industry. For instance, one of the holy grails of IB is the exploitation of biomass to produce a renewable source of energy with fewer greenhouse gas emissions, thereby limiting its impact on global climate change.

This is particularly important for Europe, a region rich in biomass reserves that has committed to reducing its carbon dioxide emissions via the Kyoto Protocol.

Industrial Biotechnology is a rapidly growing sector of biotechnology, nowhere more so than in the United States where significant funds have been set aside to promote American initiatives in this field. Japan is also a frontrunner. While Europe boasts considerable talent in terms of numbers and quality of IB scientists, and some Member States have made considerable progress in developing advanced research facilities, the EU overall is lagging behind its competitors.

## Collaboration as a catalyst

Since no one Member State can do it alone, the solution lies in improving collaboration between Member States. This is why the Industrial Biotechnology ERA-NET “Towards an ERA in Industrial Biotechnology” (ERA-IB) is so crucial. ERA-IB aims to harness the knowledge, funding and other relevant resources of all Member States, to bring Europe to the forefront of this field and to stimulate significant economic growth at the same time. Europe currently possesses the largest chemical industry in the world; ERA-IB will ensure that this lead is maintained in the future.


The ERA-IB consortium, which is headed by the Netherlands Organisation for Scientific Research, has drawn up a

detailed four-step plan to accomplish these challenging objectives. The composition of the consortium is, by necessity, multi-disciplinary, encompassing expertise from the fields of biotechnology, chemistry, microbiology, genomics and engineering. It should also be mentioned that the sixteen partners from twelve countries and six observers involved in ERA-IB manage a sizeable portion of the current biotech funding available in Europe.

ERA-IB will start by investigating the current state of IB research across Europe. Information will be gathered from the twelve countries represented by the ERA-IB consortium (eleven Member States and Israel) as well the remaining European Union countries. Aside from technical information on the current research and development landscape in the area of IB and the needs of the Industry in Europe, social, ethical and intellectual property aspects will be incorporated in light of the public's increased sensitivity concerning biotechnology. A SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis of the data collected will produce a coherent picture of European IB in the early 21st century.

## Building for the future

Armed with this knowledge, the experts involved in ERA-IB will devise a strategic



## Coordination Action ERA-IB

### Full title:

Towards an ERA in Industrial Biotechnology

### Research field:

Industrial Biotechnology

### Coordinator:

NWO - Netherlands Organisation for Scientific Research  
ACTS - Advanced Chemical Technologies for Sustainability

### Partners:

- France: Centre National de Recherche Scientifique / Institut National des Sciences de l'Univers
- Spain: Spanish Ministry of Education and Science
- France: French Environment and Energy Management Agency
- Romania: National Centre for Programme Management
- Portugal: Fundação para a Ciência e a Tecnologia
- Croatia: Ministry of Science, Education and Sports of the Republic of Croatia
- Germany: Federal Ministry of Education and Research
- Germany: Forschungszentrum Juelich GmbH
- Israel: Chief Scientist Office, Ministry of Health
- Israel: Ministry of Science and Technology
- Spain: Fundación Española de Ciencia y Tecnología
- United Kingdom: Department of Trade and Industry
- Poland: Ministry of Science and Higher Education
- Poland: Technical University of Lodz
- Denmark: Danish Agency for Science, Technology and Education
- Belgium: Belgian Federal Science Policy Office

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“ERA-IB wants to ensure that European scientists are in the driver's seat for this revolution. It intends to accomplish this by developing and implementing a shared vision of the future of industrial biotechnology in Europe, with transnational collaboration as its central focus.”

research agenda to be implemented throughout Europe, which will be summarised in a relevant white paper. The emphasis will be placed on working around the barriers identified during the SWOT analysis. Input into the creation of this research agenda will be sought from existing European instruments, such as the IB arm of the European Technology Platform for Sustainable Chemistry (SusChem ETP) and EuropaBio, which represents several hundred European biotech firms. Involvement of the European Biotechnology industry in all stages of the network ensures that its activities are well-aligned with industrial needs and future wishes. Opportunities for bringing together national research programmes in clusters, will be explored and facilitated by special Cluster Working Teams. Best management practices identified by individual partners will be harvested and applied at ERA-NET level.

In order to encourage fast implementation, two separate calls for proposals are foreseen, targeting cooperation between national entities as well as a transnational programme. An electronic management tool will facilitate the process throughout

the entire project lifecycle. At this stage, ERA-IB will again involve external bodies with shared objectives, such as SusChem ETP and the Applied Biocatalysis arm (ESAB) of the European Federation of Biotechnology (EFB). ERA-IB will further initiate a platform of ERA-NETs related to Industrial Biotechnology. This platform - consisting of ERA-NETs in areas such as plant genomics, chemistry and bio-energy - will exchange information and experiences and serves as a tool for alignment of relevant activities of these ERA-NETs. Finally, ERA-IB intends to appoint a Transnational Task Force that will be charged with overseeing the implementation of the research agenda, both during and beyond the five-year lifetime of the ERA-NET. Members of organisations outside ERA-IB will also be eligible.

### Duration:

5 years

### EC funding:

€2 513 644

### Project reference:

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### Directorate-General for Research:

Coordination of Research Activities

<http://www.cordis.lu/coordination/home.html>