



EBIS

EUROPEAN BIOTECHNOLOGY INFORMATION SERVICE

DECEMBER 1991

ISSUE SIX

Editorial: Biotechnology, environment and development

Biotechnology increasingly seen as relevant to the basic challenges facing human existence

Biotechnology is most often considered as one of the new key technologies that will lead to innovatory products and processes, revitalizing industry and creating wealth and prosperity. It is increasingly seen as relevant to the basic challenges facing human existence: food, health, environment and population. Recently several reports have been published and events have taken place on this theme. In this issue some of these are considered: COBIOTECH, the Biotechnology Committee of the International Council of Scientific Unions: "Biotechnology Worldwide"; the US Congressional Office of Technology Assessment: "Biotechnology in a Global Economy"; and the inauguration of the China-European Communities Biotechnology Centre in Beijing.

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The Community's "Life Sciences and Technologies for Developing Countries"

The Community also has many activities. The series of "Science and Technology for Development" (STD) programmes has over many years stimulated endogenous research capacity in developing countries, via projects in tropical agriculture, health and nutrition. The title of the new programme "Life Sciences and Technologies for Developing Countries" (see EBIS 5 p. 5) indicates a more comprehensive perspective, with full scope for biotechnology. Larger sums are spent via the European Development Fund. A Community policy statement on "Towards sustainability" is currently being prepared, as the 5th Action Programme on environment.

UN Agencies making many contributions

The UN agencies in this field are making many contributions : UNESCO supporting a major conference in Montreal in September on "Biotechnology and Environment: for sustainable development", UNIDO in October in Vienna on the "Commercialisation of Biotechnology" – with particular emphasis on developing nations; and an expert meeting was held in New Delhi in October to prepare the biotechnology agenda point for the June 1992 "UN Conference on Environment and Development".

Member States alert to the potential of biotechnology in developing countries

Member States have been alert to the potential of biotechnology in developing countries and particular mention should be made of the excellent "Biotechnology and Development Monitor" published since September 1989 by the University of Amsterdam and supported by the Municipality of Amsterdam and the Ministry of Foreign Affairs. The constant question remains: who really benefits? Will the small farmer in India with 0.2 ha reap the benefits of new developments in clonal propagation in plants or another culture? Will the new vaccines developed through recombinant DNA techniques be mass produced and distributed in countries with limited purchasing power?

Biotechnology fulfilling its promise

Albert Sasson of UNESCO, speaking at the Montreal conference, gave many examples and concluded: "During the 1980s, biotechnologies have taken root in developing countries. Through international and regional cooperation and joint ventures not only will developing countries meet their needs, they will join the rest of the band. In short, biotechnology is delivering results".

I. Community activities (Commission, Parliament, Council)

I.1. Commission News

Commission sets up its Bioethics Advisory Body

Eminent persons as Group of Advisers on the Ethical Implications of Biotechnology

In its April 1991 communication to Parliament and Council, "Promoting the Competitive Environment for the Industrial Activities based on biotechnology within the Community" (see EBIS 3 p. 3-5 and discussion in the Council, article below) the Commission announced its intention to set up an advisory structure on ethics in relation to biotechnology which would be capable of dealing with ethical issues where they arose in the course of Community activities.

The terms of reference, and operating procedures of the Group of Advisers on the Ethical Implications of Biotechnology have now been decided:

Terms of reference:

- Identification and definition of ethical issues raised by biotechnology;
- Appraisal of the ethical aspects of Community activities in the field of biotechnology and their potential impact on society and the individual;
- Advising the Commission as regards the ethical aspects of biotechnology with a view to improving public understanding and acceptance of it.

The group will consist of not more than 6 members who will be eminent and independent figures. Its chairman will be elected from amongst its members.

In performing its tasks the group will provide the Commission with appraisals of the potential ethical impact of activities based on biotechnology. The Commission may request the Group's opinion on a particular issue. It will also be able to submit reports to the Commission on its own initiative and present its opinions on all general matters of an ethical nature. The members of the group are yet to be announced.

Council approves Commission strategy paper

The Commission's strategy for support of biotechnology

The Council of (Industry) Ministers meeting on 18 November strongly endorsed the Commission communication SEC(91)629 on "Promoting the Competitive Environment for the Industrial Activities based on Biotechnology within the Community" (see EBIS 3 p. 3-5). This document indicates the Commission's strategy towards biotechnology for the foreseeable future. The Ministers welcomed the "much needed and long awaited" report and gave every encouragement to the implementation of the actions proposed.

Strong endorsement for re-inforcement of Community research and coordination of Member States' programmes

Particular attention was drawn to the need for re-inforcing the Community research programmes, ensuring their relevance to the needs of industry and maintaining coordination and cooperation between the research programmes of Member States.

Commission proposal for UNCED 92

A basis for EC and Member State positions

The Commission has sent to Council a 50-page communication entitled "A Common Platform : Guidelines for the Community for UNCED 1992", which is intended to serve as a basis for the formation of agreed positions for the Community and its Member States.

UNCED 92: UN Conference on the Environment and Development

The United Nations General Assembly in its resolution 44/228 of December 1989, concerned at the continuing deterioration of the state of the environment and degradation of global life support systems, formally decided to convene a UN Conference on the Environment and Development (UNCED), to be held in Brazil, June 1992. Amongst its overall aims for

**European Council, Dublin,
1990; a special responsibility
for international action**

sustainable development, the Conference has to make recommendations on effective modalities for favourable access to and transfer of environmentally sound technologies, and for efforts to develop endogenous technological capacities.

The Commission, recalling the European Council's declaration at Dublin in June 1990, that "the Community and its Member States have a special responsibility to encourage and participate in international action to combat global environmental problems", envisages that the Community should play a leading role at UNCED. In view of ongoing negotiations on climatic change and biodiversity, the current document does not deal with these issues. It reviews the global and regional threats to sustainable development, in OECD, Central and Eastern Europe, and developing countries (DCs), and the corresponding national and international responsibilities.

**R&D information on
environmentally sound
technologies**

Within the latter, the section on Research and Technological Development emphasises as an obstacle the lack of information about available environmentally sound technologies, and advocates steps towards:

**Bio-science information
infrastructure**

"the setting up of a jointly financed, easily accessible bio-scientific information infrastructure (BSII), including the necessary transfer of hard and soft technology to the DCs which will join the BSII;

and a four-part declaration including several references to biotechnology and the applied life sciences:

**R&D programmes: involve
developing countries in
biotechnology**

suitable Community R&D Programmes (notably those concerning Environment, Marine Sciences and Technologies, Agro-industry, and Biotechnology) will, where appropriate, open up towards developing countries in providing room for preparatory work in order to include joint research involving DCs at a later stage.

**Reinforce existing
collaboration**

existing Community programmes for collaboration between European scientists and scientists from the DCs will be intensified to reinforce research on the environment and on matters of importance for the environment and enlarged to include other areas of priority for development in addition to health and agriculture.

**Screen plant materials, set
up genetic and
phytochemical databases**

the Community will intensify its activities aiming at inviting researchers from developing countries to Community or member state research facilities for research of mutual interest (ways and means of environmentally benign products, setting up of databases for genetic and phytochemical data, etc.).

the Community will encourage the world wide exploitation of results from its R&TD Programmes, which can have a beneficial effect on the environment".

**Environmentally sound
management of
biotechnology**

Dealing with sectoral issues, the Commission paper devotes a page specifically to "Environmentally Sound Management of Biotechnology". The Community position proposed is

**Exchange information on
safety and risk**

"that UNCED should promote exchanges of information in the preparation of safety methodologies and to assist all countries to develop a coordinated approach to risk management and assessment with the view to preparing international regulations on the technology."

Regulatory mechanisms and appropriate frameworks

As a first step, the Community should encourage all industrialised countries to adopt regulatory mechanisms and should assist DCs to develop an appropriate framework for the use of Genetically Modified Organisms (GMOs).

Risks of international trade in GMO's: prior informed consent

Similarly, UNCED should examine the setting up of mechanisms, and subsequently of an international agreement, to reduce the risks associated to international trade in GMO's. As a minimum, a prior informed consent procedure is necessary.

Proposed Community position

In summary, the Community position should be:

- promote exchanges of information on all aspects concerning the sound management of biotechnology particularly on methods for risk assessment and management;
- as a preliminary step, encourage other countries to adopt effective measures for the protection of human health and the environment;
- the establishment of international rules regarding the development and application of biotechnology should be encouraged".

The new communication, reference SEC(91) 1693, date 30 October 1991, is available in all Community languages. (see back page).

1.2. Research and related**News of biotechnology programme**

The Development Council of 28 November 1991 adopted the common position on the RTD programme in the field of biotechnology (1990-94) on which the Research Council of 28 October had been able to reach a political agreement.

A final decision establishing the programme is expected in the early months of 1992.

Call for proposals for the Research and Technological Development and Demonstration programme for the European Economic Communities in the field of Agriculture and Agro-industry, including Fisheries 1991-1994

Agriculture, horticulture, forestry, fisheries, aquaculture and related food and non-food industries

On 10 October 1991 the Commission issued the first call for proposals for this new programme, in the Official Journal of the European Communities (91/C264/11), the closing date being 31 January 1992.

The scientific and technical areas covered by the programme are:

1. Primary production in agriculture, horticulture, forestry, fisheries and aquaculture.

2. Inputs to agriculture, horticulture, forestry, fisheries and aquaculture.
3. Processing of biological raw materials from agriculture, horticulture, forestry, fisheries and aquaculture.
4. End-use and products.

An information pack containing further details of the programme and the application forms is available in all nine Community languages.

For written/fax/telex enquiries:

Commission of the European Communities, Rue Montoyer 75,
Ref: First Call for Proposals, Agriculture and Agro-industry,
including Fisheries, B-1049 Brussels; Telex COMEU B21877; Fax (32)
2 236 43 22.

For telephone enquiries:

Directorate-General for Science, Research and Development,
Division for Agro-Industrial Research, DGXII-F/3; Tel. (32) 2 236 31
64.

Directorate-General for Agriculture, Division for Coordination of
Agricultural Research, DG VI- FII/3; Tel. (32) 2 235 86 12.

Directorate-General for Fisheries, Division for Research and
Scientific Analyses, DG XIV-C/2; Tel. (32) 2 235 51 37.

A second call for proposals will be published in 1992.

Agro-industrial and forestry research and technology days **11-12 March 1992**

The Commission, (DGXII) is organising a 2 day conference in Brussels, on the ECLAIR, FLAIR and FOREST research programmes.

The conference will interest all those involved in agro-industrial and forestry research, as it will be an opportunity to make new contacts for the EC programme for Research, Technological Development and Demonstration in Agriculture and Agro-industry (including Fisheries). (See above).

The aim of the conference is to bring together the participants of these programmes, to meet and share ideas and thereby further strengthen the programme. This should extend their range of contacts and improve technology transfer. The Commission aims to gain an insight into future trends in agro-industry, in order to define priorities for R&D in Europe. The overall aim is to unite the agro-industrial community, so it will be more able to respond to future demands and problems.

Details: European Congress Consultants and Organizers, 27 A, rue de l'Abbaye, 1050 Brussels; Tel. (32) 26478780; Fax (32) 26406697.

Workshop on bioelectronics – opportunities for European co-operation

Defining and implementing R&D programmes in bioelectronics

Recent progress in protein engineering, computer neural networking, quantum electronic devices, thin film technology and biosensors have paved the way for defining and implementing R&D programmes in bioelectronics. The Commission supported this 2 day meeting (28–29 November 1991) to explore the opportunities offered by this new area of research in order to strengthen the European scientific base and contribute to its industrial progress.

Details: Dr. G. Boggio, DGXII; Tel. (32) 22355635; Fax (32) 263308.

Proceedings of an international symposium “Environmental Biotechnology”

EERO = European Environmental Research Organisation

This symposium (22–25 April 1991) was held at Ostend by the Working Party Environmental Biotechnology of the European Federation of Biotechnology, under the auspices of the EERO (European Environmental Research Organisation), and the Commission of the European Communities. The report covers the 50 lectures given on topics ranging from nitrogen transformations, hazardous and organic waste treatment and soil depollution to public awareness and the socio-economic aspects of biotechnology in developing countries.

The proceedings of the conference are available from: Mrs. R. Peys, Desguinlei 214, 2018 Antwerpen, Belgium.

I.3. Regulatory activities

Contained use (90/219), and deliberate release (90/220) Directives

23 October 1991: Deadline for national legislation implementing the 2 Directives

The implementation deadline for these two Directives was the 23rd of October 1991. Before the deadline of implementation 4 countries (D, DK, NL, UK) had already the necessary national legislation in place. The rest are at various stages of the decision-making process and in several countries draft laws are being discussed in parliament. Eight countries have already appointed competent authorities: D, DK, NL, F, ES, P, I and UK. The list of the competent authorities is available from DG XI/A-2.

Experts meet in Athens. Eight countries have competent authorities; implementation progresses

The eighth meeting of the national experts on biotechnology and the environment took place on 15–16 October 1991 in Athens. Main subjects of discussion were the legal and technical interpretation of selected points from the Directives as well as the preparation of documents for the formal committees of the two Directives.

The formal committees of the Directives (foreseen by Article 21 of each Directive) have already been established and voted upon the draft Commission decisions on:

- The list of Community legislation providing for a specific environmental risk assessment similar to that laid down in Directive 90/220/EEC.

- The guidelines for classification of genetically modified microorganisms (article 4.3 of Directive 90/219 EEC).
- The summary notification information format for research and development releases of GMOs (article 9, Directive 90/220/EEC).

The above mentioned decisions, as well as other interpretative documents can be obtained from: Dr. J. Kloussi, DGXI/A-2; Tel. (32) 22990382.

I.4. Manpower, education and training

Skill Needs in the Biotechnology Sector to 2000 = SNIBS 2000

Biotechnology has been identified by the Commission as one of the four main technological fields for detailed analysis as part of its overall Skill Needs Project. A study is being funded on "Skill Needs in the Biotechnology Sector to 2000" (SNIBS 2000).

This study is aimed specifically at estimating and projecting as far as is possible the required numbers of people with the requisite skills in the various sectors of biotechnology over the next ten years or so and the further training required to provide them.

Three main types of information are therefore needed:

1. Forecasts of the likely main areas of development in biotechnology and biotechnology-related applications (pharmaceuticals and diagnostics, food and drink, agriculture, fine chemicals, environment, energy, biosensors, etc.).
2. Forecasts of demand for skilled personnel in each of these main areas, by scientific discipline (biochemistry, microbiology, etc.) and by type of activity (e.g. R&D, production, management, marketing, etc.).
3. Estimates of the present and likely future adequacy of education and vocational training at the various levels and in the various areas, including company in-house training, etc. and the further requirements for training.

Details: Dr. David J. Bennett; Tel. (31) 703653587.

I.5. Parliament

Bioethics in Europe: STOA Meeting, Milano 29-30 October 1991

STOA = An EP tool for technology assessment

The Science and Technology Options Assessment ("STOA") is a programme of the European Parliament (EP), currently implementing an evaluation of EC research policy.

(for further information about STOA: Dr. Robert Ramsay, Director General, European Parliament, Room 6/01, Schuman Building, L-2929 Luxembourg. Cf. also OJ C288, 6.11.91, p. 10, for STOA calls for tenders).

The STOA project on bioethics

STOA is currently conducting a study on bioethics. Its main contractor is GAB (Gruppo di Attenzione sulle Bioteconologia).

based in Milan, which since 1988 has been promoting information on environmental risks (GAB address: Via Iglesias 33, 20128 Milano, I; Tel. (39) 227001135; Fax (39) 22552281.

GAB's founder and coordinator is Fabio Terragni (a member of the National Committee of Bioethics of the Italian government). On 29-30 October in Milan, the STOA programme on bioethics was presented in a meeting at which a wide range of speakers contributed.

The dangers of bias versus complexity

A first session offered several approaches to interdisciplinary assessment of bioethics, including Terragni's (general), Byk (France) and Quintana (Spain, recently elected chairman of the Council of Europe experts committee on bioethics). France and Spain are an interesting paradox: France has a National Bioethics Committee, which since 1983 has effectively focused on social controversies, but supported with a limited set of legislative measures; Spain has many regulations, all fairly liberal about research but more cautious on applications, and yet no national committee; both presentations were well-balanced and professional. The U.K. presentation by Wheale and McNally, Bio-Information Ltd. introduced the very complex web of institutions active in UK deliberations on bioethics (see EBIS 5 p. 13 for Nuffield Council on Bioethics).

Public participation and bioethics

A second session emphasized public participation in bioethics. Bioethics contributors included: J. Elizalde (Legal Adviser, DGXII); Else-Marie Sejer-Larsen, President of the Danish Council on Bioethics; and Naomi Pfeffer, from CERES (UK health consumers for ethics in research). A lively discussion followed, in which it was very evident that all the people present already had independent and often contrary opinions on the relevant issues.

Politics and bioethics: A tentative conclusion

A last session featured some important European voices on bioethics: Adriano Bompiani (Chairman of the Italian Bioethics National Committee), Alain Pompidou (a leader of the bioethics interest in the European Parliament); Marcelo Palacios (a similar role in the Council of Europe's Assembly); Guido Gerin (Chairman of the Trieste Institute of Human Rights and UNESCO consultant on bioethics), Stefano Rodota (MEP, Professor of Law in Rome, who gave a brilliant lecture on the fluent relationship between ethics, law and culture in Europe and called for a "moralità provvisoria" towards research issues); Anne Maria Goedmakers (MEP); Ludger Honnefelder (Professor of Philosophy, Bonn, asking for interdisciplinary debates and professional self-regulation, rather than regulatory laws); Franck Sérusclat (French Senator, leading a parliamentary project on life sciences and human rights) and Lady Mary Warnock (Philosopher, Girton College, Cambridge). It is to GAB's merit to have gathered such an assembly, which concluded that cultural differences in Europe make bioethical harmonisation very difficult. National legislation, must be preceded by informed public debate. A more direct presence of scientific and industrial interests together with environment and consumer protection groups and political leaders, could help the STOA bioethics project to reach more balanced conclusions. If the diversity of thoughts and realities in European bioethics is to be respected - and assessed -, research itself cannot be ignored.

II: Member States

Bioinformatics in the 90s (20–22 November)

Cosponsored by Commission and US National Center for Biotechnological Information

Amongst the conferences at Maastricht in late 1991, not the least important may have been that on "Bioinformatics in the 90's", cosponsored by the Commission and the US National Center for Biotechnological Information (NCBI). This started with a sparkling presentation from Sydney Brenner of Cambridge on "Molecular biology in the Year 2000" (everything is already published – in the DNA sequence – and therefore all we need to do is look it up in "nature" – not the journal – and our prime objective is to understand the genetic language. The "manifesto" of the molecular biologist is to be able to "compute" organisms from their genomes – subject to certain starting conditions"). Dennis Benson of NCBI, head of information research, gave a wide-ranging inventory of the many activities and institutes through which bioinformatics is supported in the U.S. The NCBI itself spends some \$6m per year.

"European Bioinformatics Institute" or "European Nucleotide Sequence Centre"?

The conference was largely dominated by molecular biology and sequence data, and the problems posed by the growth of this data – not merely exponential (it has reached 80 m base pairs after 10 years), but possibly going to increase 1000-fold. A lively debate focussed on alternatives for the future "European Bioinformatics Institute" (advocated by Lennart Philipson, Director General of the European Molecular Biology Laboratory, which houses the European end of the global sequence inputting activity), or "European Nucleotide Sequence Centre" (as advocated by CEFIC in a Commission co-financed bioinformatics report delivered a year ago, making recommendations since largely accepted).

Invidious to select, but among the non-sequence contributions were: an impressive tour de force on quantitative modelling of cell metabolism and steady-state optimisation by Professor Vilu of Estonia; a description by Dorte Hammelev of experiments in gene technology at secondary schools in Denmark; and finally, a reminder of the broader picture by plant taxonomist Frank Bisby from Southampton, speaking on bioinformatics and species diversity.

Outputs and follow up

Proceedings are not promised, but there will be outputs and follow-up, not least from the conference organisers to the Commission; enquiries to Jack Franklin of ASFRA, conference secretary, Tel. (31) 2993 72751; Fax (31) 2993 72877.

Bioinformatics newsletter announced

Further proof that this field is maturing was the announcement at the meeting of a newsletter – BIOINFORMATICS – to be devoted to this multidisciplinary and technology driven subject.

The magazine's prime aim is to cover developments that would not usually warrant a research paper. Some of these articles will be traditional news items – book, journal, software and hardware reviews, but others will be technical descriptions, reviews of services, updates on bioinformatics projects and services and reviews of technical, legal and scientific advances and/or events that impinge upon the field. All such reports will be refereed for technical and scientific accuracy. Issue 1 of BIOINFORMATICS will be published shortly – Volume 1 will consist of 8 issues and will cost: Dfl 295.00 or \$ 162.00.

Personal subscriptions, pre-paid and addressed to a private address: Dfl 175.00 or \$ 90.00. Further information and requests for sample copies, from ASFRA, Voorhaven 33, 1135 BL EDAM, The Netherlands (see above).

"Made by Genetic Engineering" publication of a series

Commercial products made by using GMOs

The Working Party on Applied Molecular Genetics of the European Federation of Biotechnology has decided to promote gene technology in Europe by publishing in the journal "Biotech Forum Europe" a series of papers which will present and update a list of commercial products currently made by genetically engineered organisms. The Working Party believes that increasing awareness of these beneficial products which are safely produced, will familiarize the general public with the new technology. Companies are now being asked to contribute to this series.

Companies now sought for contributions

The manuscripts should be sent to the secretary or the chairman of the Working Party. Their addresses are given below.

Dr. B. Diderichsen, Director of Research, Gene Technology, Industrial Biotechnology R&D, Novo Nordisk, Novo Allee, DK-2880 Bagsvaerd; Tel. (45) 444466663401; Fax (45) 44490555.

Prof. Dr. A. Puhler, Universität Bielefeld, Fakultät für Biologie, Lehrstuhl für Genetik, Postfach 8640, D-4800 Bielefeld 1; Tel. (49) 5211065607; Fax (49) 5211065626.

SAGB: green & growing

Environment benefits highlighted in new publication

"Benefits and Priorities for the Environment" is the subtitle of the latest publication on "Community Policy for Biotechnology" by the Senior Advisory Group Biotechnology, the industrial policy forum supported by major European biotech companies.

Biotechnology for sustainable growth

The document, launched at a reception in Brussels on 5 November, emphasises the practical contribution of biotechnology to environmentally sustainable growth over coming decades, as world population doubles, and as concern to preserve natural habitats and ecosystems increases. Specific examples are given of how modern biotech can reduce the environmental impact of industrial processes and products, expand the use of natural processes, further reducing their impact, and improve pollution treatment and clean-up. The authors focus on various policy-level actions to encourage the development and application of these technologies, at Community, national and local levels.

SAGB: over 20 members in 1992

Presenting the document, SAGB Chairman Peter Doyle, Research & Technology Director at ICI, announced that SAGB's membership would from 1 January 1992 expand from the current 7 to over 20 companies, including some small and medium-sized. Those present included industry leaders, and MEP Ken Collins, Chairman of the European Parliament's Environment Committee and Commission staff. The document is available in Dutch, English, French, German, Italian and Spanish; from SAGB Director Brian Ager, Ave. E. Van Nieuwenhuysse, 4, B-1160 Brussels; Tel. (32) 26767286, Fax (32) 26767288.

The R&D Programmes of the Danish Government 1991

In a 95-page report (in English), the Danish Ministry of Education and Research emphasises internationalisation (partnerships with best labs elsewhere in the world) and competitiveness. The means to be employed: specialisation, concentration, better post-graduate training programmes, and the introduction of market principles to the research system.

The report acknowledges that "As a small country, Denmark lacks the resources needed to be active in all areas of knowledge, which implies that much of the knowledge and understanding that are preconditions for maintaining and extending the basis for Danish production – and thereby general living conditions in Denmark – must be sought internationally". A message not limited to countries as small as Denmark!

DKK 450 m devoted to Danish biotechnology research programme (1991–1995)

"Biotechnology is one of the most internationally oriented areas of Danish industry where R&D is on an international level and way above the average for Danish industry as such. This together with the strong national tradition in basic research in biotechnology and the increasing application of biotechnology in many sectors places Denmark in a favourable position. For this reason, from 1991 to 1995 the Government will devote over DKK 450 m to a special biotechnological research programme that will seek to make full use of the dynamism and initiative characteristic of the area."

The report is distributed by Ms. Vibeke Hein Olsen of the Ministry of Education and Research; Tel. (45) 33154645470; Fax (45) 3332 3501; or write to the Ministry at H.C. Andersens Boulevard 40, DK-1553 Copenhagen V.

France

CEA progress report published

Life Science Programme includes "Protéine 2000"

The Life Science directorate of CEA (Commissariat à l'Énergie Atomique) is divided into 5 departments: cellular biology, molecular biology and protein engineering, physiology and pharmacology, pathology and toxicology, and plant physiology. The long-standing research activities of CEA on the effects of ionizing radiation on plants and animals have led to R&D activities in plant physiology, human health and more recently in protein engineering. "Protéine 2000", the CEA protein engineering programme was launched in 1989 with the aim of designing proteins with improved activities for chemical, pharmaceutical and agro-food applications. While the molecular biology and modelling parts are located in Saday, the structural analysis component has been built this year in Grenoble with the CNRS and will benefit in 1994 from the European Synchrotron Radiation Source (ESRF).

Details: Christian VINCENT, CEA, 31-33 rue de la Fédération, 75752 Paris Cédex 15; Tel. (33) 140561000.

Bioavenir: New cooperative research programme announced

**Government and industry
contribute 1.61 billion FF**

Bioavenir: a 5 year cooperative research programme has been announced involving Rhone Poulenc Rorer and the Ministry of Research and Technology. It covers a wide spectrum of research and development activities including health, agrochemistry and chemistry programmes and costing 1.61 billion FF. The contribution of the government is estimated at 610 million FF over 5 years.

Roussel Uclaf has also agreed "in principle" to participate in the programme.

500 jobs

It is estimated that the initiative will support up to 500 researchers.

Details: D. Thomas, 1 rue Descartes, 75231 Paris Cédex 05; Tel. (33) 146343249

The Netherlands

Consumer and Biotechnology Foundation established

The "Stichting Consument & Biotechnologie" (Consumer and Biotechnology Foundation) was established by the Dutch consumer organisations in January 1991 with financial support from the Dutch Ministry of Agriculture, Fisheries and Nature Protection. The Foundation has now published a policy paper (Dutch, 1-page English summary) to provide the Dutch Consumer organizations with information on current trends in biotechnology research and product development as well as government policies, and to assist them in formulating their own policy towards biotechnology.

Details: T. Rullmann, Stichting Consument & Biotechnologie, Postbus 30500, 2500 GM Den Haag; Tel. (31) 703106053; Fax (31) 703454798.

Italy

National Research Council supports biotechnology research

**CNR programme:
"Biotechnology and Bio-
Instrumentation"**

Italy's National Research Council supports a major programme under the heading Progetto Finalizzato C.N.R. "Biotechnologia e Biostrumentazione". A convention held in Genoa, 22- 26 September 1991, brought together the participants; the 383 project abstracts have now been published, grouped under the following sub-project headings:

1. Molecular and cellular engineering (70 abstracts)
2. Biotechnological diagnostics and innovative vaccines (98)
3. Innovations in fermentation processes and bioconversion (24)
4. Biosensors, carriers and cellular bioreactors (24)

5. Biotechnological applications for cell cultures and organ transplants (60)
6. Biopharmacology (66)
7. Bioinstrumentation (41)

A directory of Italian biotech scientists

The 419-page report includes an index of the names, addresses and phone/fax numbers of all the 374 scientists involved. Publisher: C.D.S.s.n.c., Via G. Adamoli, 35, 16141 Genova; Tel. (39) 10850338.

UK

New UK Biotechnology Handbook 91/92 published

675 organisations including 380 companies described

This is the third edition of the directory of British biotechnology produced by the BioIndustry Association and BioCommerce Data Ltd. Full page profiles are provided of over 675 organisations including universities, venture capital providers, government agencies and over 380 companies. The book also includes several review articles covering biotechnology for sustainable development, UK government support, public perception of biotechnology, the investment climate for biotechnology in Europe and the competitiveness of UK biotechnology.

Obtainable at a cost of UK£95 from BioCommerce Data Ltd., Prudential Buildings, 95 High Street, Slough SL1 1DH; Tel. (44) 753511777; Fax (44) 753512239.

III. International developments

OECD

Grants to OECD expert groups

OECD: 24 developed countries: visibility and authority

Over the past 10 years, the Commission has collaborated with OECD in the latter's work on biotechnology, sometimes providing financial support. The wider forum of the 24 member countries leads to results (whether reports or recommendations) having high quality, visibility and intellectual authority.

Commission grants, for bio-environment and bio-safety work

Two further grants have recently been confirmed, under the BRIDGE Concertation Action (DGXII):

- 30.000 ECU, to support the work of the new group on "Biotechnology for a Clean Environment: Scientific and Technical Aspects of Prevention, Detection and Remediation";
- 80.000 ECU, to support the continuing work of the group of national experts on safety in biotechnology, meeting next on 12-13 December. (See EBIS (4), p. 12 re. June 1991 meeting) and DGXI has made a contribution of 62,000 ECU to the Biotechnology Programme of the Directorate of Environment.

Canada

Canadian conference 1-4 June 1992: "Bio-Recognition"?

**An international conference,
Montreal**

Bio-Recognition, an international industrial biotechnology conference, will be hosted next year, June 1-4, in Montreal by Industry, Science and Technology, Canada with the National Research Council Canada. The conference brings together leaders from the world biotechnology community, including scientists, engineers, business-people and investors. The title, deliberately ambiguous, covers both biomolecular "recognition" processes, and public perceptions of biotechnology.

For more information, contact Mrs. Doris Ruest, Bio-Recognition Secretariat, National Research Council of Canada, Ottawa, Ontario, Canada K1A 0R6; Tel. (613) 9939228; Fax (613) 9579828; Telex 0533145.

China

China-European Communities Biotechnology Centre

**CEBC = China-EC
Biotechnology Centre**

On November 1, 1991, the China-EC Biotechnology Centre (CEBC) was officially inaugurated in Beijing by Mrs. Zhu Lilan, Vice-President of the State Science and Technology Commission (SSTC) of China and Prof. P. Fasella, Director-General for Science, Research and Development at the Commission of the European Communities (CEC).

The establishment of the CEBC was decided upon in July 1986 by both Mr. Song Jian, State Councillor and President of the SSTC and Mr. Jacques Delors, President of the CEC.

The main aim of the CEBC is to promote scientific and technological cooperation between research institutes of the People's Republic of China and research institutes of Member States of the European Communities in the field of biotechnology applied to medicine and agriculture.

**To expand and improve
cooperative links with Europe**

The CEBC will act as a communication/relay centre serving the scientific communities of both parties to establish, expand or improve cooperative links in these areas. European research centres, publications and other organisations active in biotechnology, and wishing to be made known, to Chinese scientific institutes, are invited to contact the Commission for this purpose (via CUBE - see back page).

The CEBC will also preselect, coordinate and manage all biotechnology-related joint China-EC research activities, i.e. joint scientific research projects, post-doctoral fellowships and workshops.

The CEBC is jointly financed and managed by the China National Centre for Biotechnology Development (CNCBD) of the SSTC and by the Directorate-General for Science, Research and Development of the CEC.

For more information on the CEBC and its activities, please contact either Dr. Yonghui Lui, Director of the CEBC and

CNCBD, or, Mr. Luc Vandebon, Co-director of the CEBC and Counsellor for Science and Technology of the Delegation of the CEC in Beijing.

USA

OTA report: "Biotechnology in a global economy"

4th Office of Technology Assessment (OTA) report in 10 years

The U.S. Congress has requested from its Office of Technology Assessment (OTA) another report on biotechnology – the 4th such general report in 10 years (and the OTA has produced also 5 more specific ones). The title is ambitious, and is reflected in a pervasive emphasis on U.S. international competitiveness; while explicitly acknowledging that "market forces beyond the scope of government authority largely determine the use of biotechnology". But government "can influence technology adoption through its activities concerning basic scientific research and training, regulations, patents, and in legislation that specifically affects the industries in which biotechnology will be used".

Market forces and government influence

A broadly-based report: 183 advisers or contributors

The strength of this OTA report, as with others, is their broadly-based network of contributors, and the extensive network of advisers, formal and informal: including also OTA staff authors and contractors, 183 names are listed. This strength may be linked to a weakness: many parts of the report are significantly out-of-date, particularly where reference is made to developments outside the U.S. Statistics on field releases are "of May 15, 1991" (236 releases), the stock market is graphed to May 24, and the evolution of US regulatory policy includes (briefly) the February 1991 "Report on National Biotechnology Policy" (see EBIS 2, p. 17).

Outdated criticism on regulatory coordination

But the main discussion (and criticisms) concerning US regulation focus on the inter-agency debates during the 5 year life of the Biotechnology Science Coordinating Committee (1985 to 1990). Here, the administration has moved faster than the OTA; the last year's changes are briefly treated.

No reference to Europe's BCC, or April 1991 communication

Similarly dated and less detailed are the references to other countries and to the European Community: the report omits both our Biotechnology Coordination Committee (formally created March 1991), and the Commission's April 1991 Communication ("Promoting the Competitive Environment for the Industrial Activities based on Biotechnology within the Community"), and is correspondingly obsolete in its discussion of regulatory aspects in Europe.

National details: a July 1989 conference

For national details, in general, the report has drawn on contributions prepared for a July 1989 industrial conference. It seemed a good idea at the time; but a lot happens in biotechnology in 2 1/2 years.

A compendium of information and policy options at modest cost

Overall, and notwithstanding the above criticisms, this report provides in 284 pages a compendium of interesting information, well written, and with discussion of policy options. Relative to its value to policy-makers, the cost is trivial.

Seven policy issues for congress

The report includes a useful index, a glossary, and a 23-page summary, available separately. Under "options for Action by Congress", seven policy issues are identified and even-handedly discussed:

- federal funding for biotechnology research;
- targeting biotechnology development;
- developing regulations;
- coordinating federal agencies;
- protecting intellectual property;
- improving industry-university relationships;
- structuring coherent tax policies.

Of the 12 chapters, the longest are those on Regulations (27 pages) and Intellectual Property (23); the shortest, that on Industrial Policy (1). *Res ipsa loquitur*.

Ordering the report or the summary

Copies of the report can be ordered at OTA's Publication Office. U.S. Congress, Washington, DC 20510-8025; Tel. (202) 2248996.

The OTA single-page "Report Brief" is available (see back cover).

Industry meeting - BioEast 92

A hands-on meeting encompassing the evolving regulatory/legal aspects of health care products (FDA), agriculture (USDA) and environmental (EPA) biotechnology will be held on January 12-16 in Washington, D.C. Key government and industry experts will present the evolving regulatory approval road maps mandated under the U.S. Scope Document and how Federal Agencies regulate biotechnology products.

Details: BioEast 92, Suite 301, 1651 Third Avenue, New York, NY 10128; Tel. (1) 2129965679; Fax (1) 2129961444.

Tropical Biotech; Virus database

Tropical plant biotechnology research to be coordinated**Proposed Network for Tropical Biotechnology: "TroBioNet"**

Dr. Claude Fauquet of France's ORSTOM (Organisation pour la Recherche Scientifique et Technique d'Outre-Mer) is currently working at Scripps, California, with Dr. Roger Beachy, inventor of the technique of inducing viral resistance in plants by incorporating the gene coding for a viral coat protein. On a recent visit to the Commission, he was describing a proposed international "Tropical Biotech Network", to coordinate efforts in plant biotechnology, and overcome the isolation of researchers in less developed countries. TroBioNet would complement existing specific networks (e.g. that on cassava, or the Rice Biotech Program of Rockefeller), enabling trainees to visit one

or several laboratories as needed. Private sector labs would be involved, hosting trainees on different topics including biosafety and regulations on the use of transgenic plants.

The field of action would comprise genetic engineering and all sciences that aim to modify, study or use the genetic information of plants in order to modify the genetic composition of cultivated plants with the goal to improve their agricultural potential in tropical agriculture.

The aim would be to complement existing plant biotechnology networks in several continents, exchanging databases, and gathering information about existing research programmes. The centre of gravity will be in Europe, with some 15 European institutes expected to participate (from F, NL, D, B, UK, S and I); together with 4 private European groups and 1 American.

Universal Virus Database

Dr. Fauquet is also involved in the ambitious plans for a "Universal Virus Database", discussed in April at the Atlanta, Georgia, meeting of the International Committee on Taxonomy of Viruses. The meeting also agreed - at last - upon a definition for that elusive concept, a "viral species".

Details: Dr. C. Fauquet, Scripps/MRC7, 10666 Torrey Pines Rd., La Jolla, CA 92037; Tel. (1) 6195542906; Fax 5546330.

IV. Reports received

"Access to EC Biotechnology", by O. de Hemmer Gudme

This guidebook addresses with success its complex topic, and can reasonably claim to provide "Everything you ought to know but did not know where to obtain".

Although many elements in the report can be found in available documents and publications, there is value added in their selection and assembly, and in the accompanying commentaries and explanations. Some minor errors in the French edition may be corrected in the English.

Obtainable from: EUROCONFIDENTIEL, price 2500 BF (English and French editions available); Tel. (32) 26520284; Fax (32) 26530125.

UNESCO on biotechnology, in "Nature & Resources"

**General review, on
development, tissue culture,
microbiology and culture
collections**

The journal "Nature & Resources" is produced quarterly for UNESCO in six languages by various publishers, and Vol. 27, issue 3 of 1991 is devoted to "biotechnology: promises and pitfalls". Colourfully illustrated, it contains 5 review articles of fairly general character, on biotechnology and sustainable development, tissue culture, applied microbiology and culture collections. For lay readers and policy-makers. English and French editions are available for UK £ 8 (single issue) from Parthenon Publishing Group, Casterton hall, Carnforth, Lancs. LA6 2LA, UK; Spanish from UNESCO's Regional Office for S&T for Latin America and the Caribbean, Montevideo.

Biotechnology Worldwide by J. Coombs and P.N. Campbell; COBIOTECH, ICSU

COBIOTECH = International Scientific Committee for Biotechnology; ICSU = International Council of Scientific Unions

Biotechnology in 50 countries described

This resource book was prepared for COBIOTECH, the International Scientific Committee for Biotechnology of the International Council of Scientific Unions. It presents a unique data source reflecting the state of biotechnology in over 50 countries both developed and developing.

The topics covered include: policy, administration, sectorial interest, genetic resources, educational, legislation and intellectual property rights, commercial development, public perception, international relations and future growth by country.

The second part of the book describes international organisations involved in biotechnology.

Available: cpl Press, Science House, Winchcombe Road, Newbury, Berks. RG14 5QX, UK. Price \$US 60.00.

"World food trade and US agriculture, 1960-1989: changing the rules of trade"

Implications of biotechnology for future world agriculture trade

From MATRIC (Midwest Agribusiness Trade Research and Information Center), Iowa State University and the Greater Des Moines Chamber of Commerce Federation. Tenth Annual Edition of this fact-packed reference work, with informed balanced commentary; including two pages summarising the implications of biotechnology for future world agricultural trade. One interesting comment (among many): "The swine growth stimulant, PST, may sharply reduce grain requirements in the US and world pork industries, while increasing protein meal requirements somewhat and enhancing the quality of the final consumer product". 99 pages. Price \$8.50, from MATRIC, International Trade Center Building, 312 8th Street, Des Moines, Iowa 50309 and 578 Heady Hall, Iowa State University, Ames, Iowa 50011.

Books received

"Biotechnology in Asia: Development Strategies, Applications and Potentials", edited by Toshiomi Yoshida, Asian Productivity Association ("APO"), Tokyo, 1990.

In 412 pages, this reference work brings together 16 papers from an APO Study Meeting on Biotechnology, held in Osaka, Japan in September 1989. Survey papers (each 50-80 pages) based on a year's study describe the development of biotechnology in India, Japan, South Korea and Thailand. Shorter contributed papers cover Bangladesh, China, Hong Kong, Indonesia, Malaysia, Pakistan, Philippines, Singapore and Sri Lanka. All papers are by well-placed, knowledgeable individuals from the countries concerned.

For details of availability, contact APO at 4-14, Akasaka 8-chome, Minato-Ku, Tokyo, 107 Japan; Tel. (03) 4087221; Fax (03) 4087220; Cable: APOFFICE Tokyo; Telex APOFFICE J26477.

Response form

This page is used to invite responses, contributions and comments from EBIS readers or to offer details for ordering articles etc. mentioned in the text.

Items mentioned in the text:

- EPA – Report Brief "Biotechnology in a global economy"
- European Industrial Policy for the 1990s (state language required)
- A common platform: guidelines for the Community for UNCED 1992. SEC(91)1693 (state language required)

Your name and address (please print clearly)

Name _____

Address _____

**European Biotechnology
Information Service**

Issue Six
December 1991

Published for the Commission
of the European Communities
by ASFRA BV, Voorhaven 33,
1135 BL EDAM,
The Netherlands.

Editors:

M.F. Cantley and M. Lex
Commission of the European Communities, CUBE, DGXII,
rue de la Loi, 200, B-1049 Brussels, Belgium.
Tel. +32(2)2358145; Fax +32(2)2355365.

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