



## Contents

**Introduction**  
p. 1

**ESF statement**  
p. 2

**Guidelines**  
p. 3

**High Level  
Expert Group  
on Biology  
and Society**  
p. 4

**Reference  
Group on  
GMOs**  
p. 4

The European Science Foundation acts as a catalyst for the development of science by bringing together leading scientists and funding agencies to debate, plan and implement pan-European initiatives.

## Foreword

Since 1994 Genetically Modified Plants have been cultivated worldwide. Some of these plants have been authorised for human consumption in different countries, including Europe. The reactions that have been produced in most European Countries may be one of the best examples of the need for an open debate on the consequences of the application of modern biological research. Although the scientific basis of these modifications and their interest may be clear for most scientists and, in general, for those involved in their production and use, the perception of citizens has, so far, been very negative. A consequence of this may be a decrease in public funding towards specific research fields in this area and a diminution in the numbers and enthusiasm of European biologists engaged in this research.

The ESF High Level Expert Group on Biology and Society has produced a study on Genetically Modified Plants. It includes a series of guidelines aimed at having a common approach to the question and to strengthen and clarify the position of the scientific community in the debate. The need for regulations that are based on scientific data, for maintaining the independence of scientists, for the analysis of the reasons of different attitudes in different countries and for increasing the technological transfer to developing countries are some of the subjects included in the study. European science has the responsibility to respond to the concerns of its society and to explain the most recent achievements of biological research and the framework that will make its applications useful for society as a whole.

The ESF will continue to play its part, along with its Member Organisations and other European organisations and authorities, in developing the debate between the scientific community and the public on this matter of major concern.

**Enric Banda**  
ESF Secretary General

## Introduction

The use of Genetically Modified Organisms (GMOs), especially in foods, has raised wide spread concern in Europe and there is a lively debate about the role of biotechnology in our society. The rate at which this new biotechnology has been applied in agriculture and medicine has taken many people by surprise, and they are concerned that products are being applied and marketed in advance of acceptance of the technology. Thus, it is essential that a real effort is made to ensure a proper two way dialogue between scientists and society.

The application of recombinant DNA technology is immensely increasing our knowledge of biological systems. In the first few years of the 21<sup>st</sup> century, the sequencing of the genome of humans, animals, plants and micro-organisms will be completed. This knowledge will lead to a deeper understanding of the regulation and inheritance of biological processes and their interaction with the environment, as well as of human health. Also we can expect more rapid and efficient plant and animal breeding, where transgenesis will be an essential tool for exploiting post-genomic research.

Knowledge of gene function and regulation, coupled with the development of efficient transformation technologies, is opening new ways to selectively introduce, or modify, genetic characters that were not accessible for traditional plant or animal breeding. Not only has biotechnology considerable significance as a tool for academic research, but it also has a major impact on agricultural, environmental and health issues, and, in consequence, it has attracted the interest of seed, agrochemical and pharmaceutical industries and has led to the creation of start-up biotechnological firms.

In this statement we focus on plant varieties produced by transgenesis. There are several recent reports from international organisations

that deal with some of these issues.<sup>1,2,3</sup>

The ESF has a long-standing interest in this subject in general and currently supports a programme on *Assessing the impact of genetically modified plants*.<sup>4</sup>

## ESF statement

**In 2000, more than 40 millions of hectares worldwide of cultivated land were planted with transgenic seeds<sup>5</sup>, mostly varieties of soybean, maize, cotton and oil seed rape (colza). Regulations for the control of greenhouse and field experiments already exist and are being further developed worldwide. Research on risk assessment and monitoring of long-term effects on environment and health is being carried out. Commercialisation of transgenic seeds is permitted only after tests on health, environment and agronomic effects of the modified varieties.**

**The arrival of food containing components from transgenic plants has created a negative reaction from a significant part of the European population and has become a high priority issue for many consumer and environmental organisations. These reactions have produced a complex and often confused debate. At present, many consumers do not believe they benefit from GM foods and even deem it harmful. One outcome of these debates is the further tightening of regulations, such as the labelling of foods. It is considered essential that safety regulations are scientifically based and transparent. However, the nature of the debate around this and other food safety issues is not only having major**

**consequences for industry but also affecting the credibility of scientists.**

**The ESF and its Member Organisations have an important role to play both towards the public and research institutions in dealing with the on-going debate on GMOs and GM foods. In particular, it seems important to draw lessons from this debate. Every effort should be made to promote a better public understanding of the development and potential application of promising biotechnology. At the same time, transparent information on the potential risks should be made available. On the one hand, we wish to avoid the negative effects of a purely market-driven approach and, on the other hand, of delays in the funding for basic plant research and of the loss of scientific competitiveness in Europe.**

---

<sup>1</sup> *GM Food Safety: Facts, Uncertainties and Assessment*, the OECD Edinburgh Conference on the Scientific and Health Aspects of Genetically Modified Foods, 28 February - 1 March 2000.

<sup>2</sup> *Transgenic Plants and World Agriculture*, published by the national science academies of Brazil, China, India, Mexico, USA, the Third World Academy of Sciences and the Royal Society (UK).

<sup>3</sup> *The EU-US Biotechnology Consultation Forum*, Final Report, December 2000 ([http://europa.eu.int/comm/external\\_relations/US:biotech/report.pdf](http://europa.eu.int/comm/external_relations/US:biotech/report.pdf))

<sup>4</sup> ESF web site: <http://www.esf.org/aigm>

<sup>5</sup> James, C. 2000 *Global status of Commercialized Transgenic Crops:2000*. ISAA Briefs No. 21, Preview, ISAA, Ithaca, N.Y.

## Guidelines

**For these reasons ESF adheres and urges its Member Organisations to adhere to the following guidelines:**

*Techniques for genetic modifications are essential tools to further our understanding of biological processes, especially after the completion of genome projects.*

*The introduction of genetic modification over the last two decades has enabled plant breeders to develop new varieties of crops at a faster rate than was possible using traditional methods, with huge potential for further beneficial developments.*

*Transgenic plants are having important applications for agriculture systems in both industrial and developing countries. These plants and plant products should only reach the consumers after a thorough scientific assessment of the effects on health and environment.*

1. Decisions concerning the release of GM plants must be based on the most up-to-date scientific knowledge.
2. European research institutions should encourage the research into and monitoring of risk assessment and quality control. Fields experiments are crucial part of this system. Results of these studies should be widely published. Transparency in the application of GMOs is an important requirement for confidence.
3. While collaboration of public research with industry should be encouraged, it is essential that the independency of research bodies is guaranteed. For this reason, it is necessary that sufficient public funding is made available for innovative research and biosafety.
4. Scientists and scientific organisations have a duty to engage in dialogue with the public concerning their research and its potential consequence. Then, individuals who are especially gifted in this way need to be properly encouraged and supported by their colleagues and institutions.
5. European research institutions should promote an analysis of the debates taking place in the different countries. Humanities and social sciences should be involved in this debate.
6. European research institutions should participate in discussions on the intellectual property rights of genes and living organisms in line with the European directives and should offer their collaboration to the European Patent Office in the assessment of the innovative content of the new biotechnology applications.
7. The European public is keen that the benefits of research should reach populations other than those of the highly developed countries. In this sense the collaboration of European research centres with those of less-developed countries should continue to be encouraged. A principle guiding any such cooperation should be that patenting of genes and living organisms must not violate cultural tradition and national identities nor lay claim to stocks of knowledge embedded in the culture of these countries. European scientists working in other countries should use at least the same ethical principles that apply in Europe.

# High Level Expert Group on Biology and Society

- **Professor Gustav Björkstrand (Chairman)**

*Rector, Abo Akademi University  
Abo, Finland*

- **Professor Gerhard Heldmaier**

*Department of Biology  
Philipps University  
Marburg, Germany*

- **Dr. Yann Herault**

*Institut de Transgénèse  
CNRS  
Orléans, France*

- **Dame Bridget Ogilvie**

*Chair, Committee on the Public  
Understanding of Science  
United Kingdom*

- **Professor Pere Puigdomènech**

*Instituto de Biologia Molecular  
CID-CSIC  
Barcelona, Spain*

- **Professor Bert van Zutphen**

*Faculty of Veterinary Medicine  
University of Utrecht  
Utrecht, Netherlands*

- **Professor Peter Weingart**

*Faculty of Sociology  
Bielefeld University  
Bielefeld, Germany*

## European Science Foundation:

- **Dr. Marianne Minkowski**  
*Senior Scientific Secretary for  
Biomedical Sciences*

## Reference Group on GMOs

- **Professor Pere Puigdomènech (Chairman)**

*Instituto de Biologia Molecular  
CID-CSIC  
Barcelona, Spain*

- **Professor Eva-Mari Aro**

*Department of Biology  
University of Turku  
Turku, Finland*

- **Dr. Bernard Chevassus-Louis**

*Laboratoire de Génétique des Poissons  
et Faune Sauvage  
INRA  
Jouy en Josas, France*

- **Professor Walter P. Hammes**

*Institute of Food Technologies  
Hohenheim University  
Stuttgart, Germany*

- **Dr. Nigel Poole**

*Sekona Partnerships  
Crowthorne, Berkshire, United Kingdom*

- **Dr. Jeremy Sweet**

*National Institute of Agricultural Botany  
(NIAB)  
Cambridge, United Kingdom*

**European Science Foundation Policy Briefings** are published by the European Science Foundation (ESF). They address selected science policy issues of key concern to the Foundation's Member Organisations and the wider scientific community.

By drawing on the advice and expertise of the ESF's membership, the briefings aim both to provide information and to promote discussion.

**Further information on the ESF's scientific and science policy activities is available from the Communication and Information Unit,**

**European Science Foundation**

**1 quai Lezay-Marnésia**

**67080 Strasbourg cedex, France**

**Tel: +33 (0)3 88 76 71 25**

**Fax: +33 (0)3 88 37 05 32**

**Email: [communications@esf.org](mailto:communications@esf.org)**

**[www.esf.org](http://www.esf.org)**