

## Code of Conduct for Biotechnologists

### Kodeks ponašanja biotecnologa

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Rapid development of technical and biological sciences, catalyzed by simultaneous exponentially developing informatics, advanced the potentials of human population tremendously. It is quite clear that normal intentions are to direct these potentials towards the world benefits. But there is always a risk that new discoveries and knowledge gained might be misapplied, with the resulting possible harm to human population and the world in general. Therefore, and for the purpose of reducing to minimum the possibility of harmful and undesirable consequences, the emphasis is placed on the role of ethics in each and every field of human activities.

Development of biotechnology is very rapid. The progress is evident in nearly all of its disciplines, especially when considering the new ones. Biotechnology is becoming more important every day, regardless of the area of application, i.e. the food industry, the pharmaceutical industry, the waste material treatment, soil fertilization and detoxication, toxic or nontoxic substance production; whether working with pathogenic or non-pathogenic microorganisms, whether producing human insulin, interferon, or some agent with harmful effects.

Since any bioprocess can to a certain extent be accompanied with adverse effects, the specific GMP (good manipulation practice) is recommended in each and every case. But in such a way possible risks cannot be completely avoided.

When »new biotechnology« is the issue, the question arises whether the new discovery shall be more harmful than useful, whether it could result in the outbreaks that cannot be efficiently controlled. For that reason the importance of safety is immeasurable.

To avoid the unwanted consequences resulting from insufficient knowledge, inadequate behaviour or ethi-

cally incorrect application of knowledge, the responsible biotechnology experts and leading scientists concluded that it shall be necessary to promulgate for biotechnologists the obligatory code of conduct.

The Dutch initiative in this respect appeared to be very useful. Following the systematic reconsideration of the Dutch proposal at the Joint Meeting of different European Federation of Biotechnology (EFB) boards, committees and task groups, and during the contacts of EFB responsible individuals, the more elaborate proposal was submitted to the European Federation of Biotechnology Working Party on Education (EFBWPE) to be discussed and adopted at the meeting held in Frankfurt/Main on October 16–18, 1995. The discussion held was very fruitful and it resulted in an acceptable text of the Code of Conduct for Biotechnologists.

It is my privilege that the Working Party on Education (WPE) chairman Prof. J. G. Kuenen and other WPE members agreed that the complete text of the Code of Conduct be published in the Food Technology and Biotechnology Review (*Prehrambeno-tehnol. biotehnol. rev.*). And here is its true and authentic wording:

It can be expected that the proposed draft shall be accepted by the EFB shortly, and that changes might be of minor character only, if any. Its acceptance by EFB society members is expected as well. Regardless of the circumstances as how and when this will happen I think that the *Prehrambeno-tehnol. biotehnol. rev.* readers should be informed as soon as possible. I personally, and as the member of the EFBWPE and the Croatian Society of Biotechnology, recommend that the students oriented towards biotechnology be also informed about the presented text of the Code of Conduct for Biotechnologists.

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## Text of the proposal for a code of conduct<sup>1</sup> for biotechnologists<sup>1</sup>

- 1) Biotechnological<sup>1</sup> work should be carried out or supervised by qualified personnel with the necessary education, knowledge and experience, who are aware of their scientific, leadership, managerial and social responsibilities, including health, safety, ethical<sup>1</sup> and environmental issues<sup>2</sup>.
- 2) Biotechnologists should be aware of and adhere to the legal obligations<sup>3</sup> relevant to their work<sup>4</sup>. Biotechnologists should notify the responsible authorities<sup>3</sup> when they are confronted with imperfections and/or inconsistencies in the regulations relevant to their work.
- 3) If no legal obligations exist, or if they are imperfect, biotechnologists should use the principle of precaution. This principle implies that in scientific research and the application of its results (as far as can be foreseen at that moment) the starting point should be that one should not progress unless one can make plausible that no harmful or irreversible consequences will occur, that the risks can be sufficiently estimated, and that the possible side effects are justified for the community by the purpose and the expected advantages of the application<sup>4</sup>.
- 4) Information to authorities, civil organisations and/or the general public should be provided in a balanced way, with attention to various viewpoints<sup>5</sup>.
- 5) If a biotechnologist believes, based on the use of the principle of precaution or any other parts of the code of conduct, that the work that he is required to carry out is incompatible with the code of conduct, he should discuss this with his employer.

If, after this discussion, the biotechnologist still holds insurmountable objections with respect to the work that he is required to carry out, he should request his employer to give him other duties.

If necessary, a biotechnologist can consult a confidential agent<sup>5</sup>, to check the legitimacy of his objections.

## Annex: DEFINITIONS

### BIOTECHNOLOGY (EFB-Definition)

Biotechnology is the integration of natural sciences and engineering sciences in order to achieve the application of organisms, cells, parts thereof and molecular analogues for products and services.

### BIOTECHNOLOGIST

For the purpose of this code of conduct, a biotechnologist is defined as a student or a professional, whose occupation contributes to biotechnological work. This can be managerial or practical, in research and development or in application, in education, in advisory- and in policy making positions.

To improve the readability of this code of conduct only the he-designation is used for both male and female biotechnologists.

### CODE OF CONDUCT

A code of conduct is a collection of starting points and/or guidelines and/or standpoints, which apply to the professional behaviour of a certain group of professionals.

Depending on the type of code (aspirational, advisory or disciplinary) the emphasis lies respectively on starting points, guidelines or standpoints.

### ETHICS

Ethics means the systematic and critical thinking about the moral standards and values, which determine our attitude and acting in society.

### BROCHURE

Brochure titled »Code of Conduct for Biotechnologists« (Publ. of EFB) appeared just during the printing phase of this journal No 4. Those interested in matter are kindly requested to contact the Publisher: Cambridge Bio-medical Consultants, Schuytstraat 12, NL-2517 XE Den Haag.

<sup>1</sup> See annex: Definitions.

<sup>2</sup> For each individual the mix of responsibilities is of course different.

<sup>3</sup> Legal obligations are also meant to include other obligations, such as university-, company- or institution rules. Responsible authorities are those persons or »bodies« who have established the laws and/or rules and/or are responsible for their execution.

<sup>4</sup> See annex: Biotechnologist

<sup>5</sup> See for example the publications of the Task Group on Public Perceptions of Biotechnology.