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Biology as science and profession in the 21st century

Most of the biological visions from the last century are now real priorities both for biologists and society. In effect, biotechnology, environment and nature conservation, bio-safety, biological agriculture, biodiversity, human biology, biomedicine, and many other “bio-related” activities are, not only common areas of professional action for biologists but also concerns and hopes for modern society. As such biology is identified as a cornerstone to good citizenship and we can easily accept that the XXI century is in fact the “bio-society century”.

The knowledge and techniques that are now available in life sciences have direct and significant implications at social, economic and environmental levels. We clearly understand the questions raised by citizens that are related to genetically modified organisms, human genetics, cloning, environmental change, pollution, management of nature reserves, threatened species, aquaculture and many other “bio-based” concepts. This implies an ethical obligation for biologists and it is their duty to contribute information to society relating to these subjects.

The major challenges to health, the environment, food production and bio-safety are predominantly based on biological knowledge and so it will be from within the life sciences and biotechnology that biologists will find the means to satisfy the expectations of society about these subjects.

Information and public awareness of scientific progress and the possible implications for the life quality of society as well as its risks are an ethical obligation for biologists as well as other professionals. A guarantee of the quality of the professional services provided by biologists is the basis of public trust. This is the role that professional associations must play as mediators between professionals, society and

policy makers. The new challenges created in biology set up new tasks in education and lifelong training.

The environment, biotechnology and human biology are also new outlets for biologists as free professionals. Auditing, consultancy, environmental and health monitoring, medical and pharmaceutical technical applications, food production and quality control are classical fields of action for biologists and also provide new business and employment opportunities. These aims can be fulfilled by

- cooperation with related organisations
- cooperation with politicians and institutions at European Union level

Taking responsibility for a variety of tasks viz.

- Information
- Consultation
- Provision of expert panels
- Organisation of specialist-public group discussions
- Publication of strategic papers for special areas of interest within biology.

What a biologist does

Biologists alone and in cooperation with other professionals are able to work in a wide range of activities viz.

- a) Study, identification and classification of living and fossil organisms
- b) Ecological studies relating to all aspects of the environment, biodiversity, nature conservation, land management and environmental impact assessment;
- c) The exploitation, planning and management of natural resources;
- d) Studies, biological analysis and treatment of pollution originating from industry, agriculture or urban populations;
- e) Studies and biological analysis of water, soil and food quality;
- f) Organization, management and conservation of protected areas, zoological and botanical gardens, and natural history museums or other institutions engaged in biological related activities;
- g) Studies and analysis of biological materials;
- h) Study, identification and control of pathogenic agents, including pests and parasites;
- i) Study development and management of biological techniques for industrial application;

- j) Study, control and identification of products and materials of biological origin, as well as biological agents associated with biodeterioration, and that interfere with the conservation and quality of materials and products;
- k) Human, animal, vegetable and microbial genetic studies;
- l) Studies and application of techniques in human biology;
- m) Teaching biology as a fundamental scientific subject, environmental and health education at all levels;
- n) Scientific research in the fields of applied and fundamental biology;
- o) Consultancy, specialist assistance in all biological disciplines and fields of interest of biologists;
- p) Any other activities where scientific knowledge and professional specialized skills in the field of biology are required.

None of the preceding activities listed are in conflict with those of other scientific specialists engaged in professional activities.

What is a professional biologist (EurProBiol) in Europe?

A professional biologist basically fulfills the following requirements:

1. A university degree in the area of biological sciences in which the biological content is not less than 50% of the total time of the academic curriculum and covers several levels of organization of living systems.
2. Academic formation and professional experience of a minimum of 8 years (3/5 years degree/diploma + 5/3 years training or professional experience).

In the European Countries Biologists Association (ECBA), European biologists have agreed that these requirements constitute a basis for the mutual recognition of academic and professional experience throughout Europe. The professional title corresponding to these minimum requirements for a professional biologist in Europe is entitled EurProBiol, which is a title created and supported by ECBA and all national biological associations which are members of ECBA.

- A EurProBiol is entitled to practise his/her professional activity as a biologist in any European country where the profession of biology is regulated and managed by National Biological Associations authorised by national governments.

- A EurProBiol title holder also has the right to practise his/her profession as a biologist in European countries where the biologist's profession is supervised and managed by National Biological Associations, representing professional biologists.