
Science Policy News

European Molecular Biology Laboratory [EMBL]: Excerpts from the Annual Report 1989

There are numerous new projects for the organization of basic research in molecular biology in a united Europe which, according to EMBL Director-General L. Philipson, should be supported during the next 5-year period. The opening of the borders towards the East and the progressing unification of Western Europe might ultimately lead to a much stronger base for science provided that we can pool our resources and recognize scientific excellence irrespective of national borders or cultural background. The EMBO as well as the Laboratory might make a very significant contribution to this unification process which, if successful, might give Europe a leading role in the biological sciences.

Belgium has recently become the 15th Member State to join the EMBL, which is now also seeking the accession of Iceland and Ireland, the only EMBC Member States that have not yet joined. Both organizations might thus soon have the same Member States, perhaps calling for a fusion of EMBC and EMBL into a single international intergovernmental organization that will provide the budget for EMBO grants and fellowships, and funds for the Laboratory. Such a fusion of EMBC and EMBL Council into one organization representing basic molecular biology would facilitate attempts to solicit additional support for this research area from national governments, the European Community, EUREKA and the European Science Foundation.

Expansion of European collaboration in molecular biology: At present major programmes in molecular biology are sponsored not only by EMBO and EMBL and their governmental organizations, EMBC and EMBL Council, but also by the European Community, the EUREKA and other organizations. At the same time there is a strong urge to further integrate European science along with domestic markets and industrial enterprises. The recent plans to sequence the human genome also require international collaboration in molecular biology and the

scientists have, therefore, established the Human Genome Organization (HUGO) modeled on the EMBO.

EMBO/EMBL expansion: Efforts should be aimed at removing some of the major obstacles that currently impede closer interaction between the European national states. First, the research funds available to the European Community and similar organizations are largely earmarked and targeted towards applied rather than basic research. Second, the traditional structure of the European universities raises great difficulties in adapting to the flexible and highly diversified research environment of current molecular biology. It has been particularly hard to establish support for postdoctoral positions which are open to young scientists on an international basis and which extend for more than two years at the post-doctoral level. Third, most European universities make it very difficult for young scientists to become truly independent since research grants are awarded to senior investigators. Finally, several emerging research fields such as neurobiology, developmental biology, plant molecular biology and protein engineering require coordinated investments on a supranational scale if Europe wants to improve its competitiveness in these important research areas.

The EMBO and EMBL together are therefore currently formulating plans for a substantial increase in support from Member States and also from the European Community, in order to provide European support for basic molecular biology and contribute to an integrated Europe before the end of the century.

Financial situation: Main items of income and expenditure during 1989: Total income for 1989, DM 59.0 million, of which DM 48.5 million came as Ordinary Contributions from the Member States. The total expenditure of DM 58.5 million consisted of personnel costs (DM 34.3 million), operating costs (DM 16.3 million) and capital expenditure (DM 8.0 million).

United Kingdom – The Science and Engineering Research Council: New Biotechnology Research Programme under the LINK initiative into oligosaccharides

The Government is providing money under the LINK R & D scheme to help finance research which could help identify possible causes of diseases such as cancer and rheumatoid arthritis. The DTI and the Biotechnology Directorate of the Science and Engineering Research Council have contributed 50% of a £ 800,000 grant for Dundee University of carry out a four-year research pro-

gramme into complex carbohydrates, known as oligosaccharides.

Oligosaccharides consist of long, branching chains of sugar residues similar to glucose. They are found attached to other molecules throughout animals and plants, and until recently were thought to have no specific function. It is now recognised that oligosaccha-

rides are often necessary for the correct functioning of important biological molecules such as antibodies and hormones. For example when the biological mechanism for the synthesis of sugar does not function correctly, this may give rise to a variety of diseases such as rheumatoid arthritis and cancer.

The research also has implications for the biotechnology industry by making it easier to produce effective therapeutic proteins, such as insulin. Present methods of synthesising them cannot necessarily ensure that the end product will have the desired biological effect. This is often because the proteins sometimes occur with the 'incorrect' oligosaccharides for the required 'correct' biological effect. By investigating the mechanism by which oligosaccharides are synthesised at the molecular level, it

will be possible to design novel compounds with the 'correct' oligosaccharide. It will also be necessary to investigate new automated methods to determine the structure of oligosaccharides. Current technology is slow and inefficient, and severely hinders research in this area.

The Carbohydrate Research Centre, which forms the core of the project, will also function as a national resource to train staff through 'hands-on' experience of the high-technology methods required for oligosaccharide research. There are at present only two such facilities worldwide. The research programme will be a collaborative venture with four leading British companies: Glaxo, Wellcome Foundation, Celltech and ICI. Together these companies have provided half of the research funds.

United Kingdom: Report on the Research Programme on AIDS supported by the Medical Research Council [MRC]

In 1983, the Medical Research Council set up a Working Party on AIDS and began to support research in this field. Since 1987, the MRC has been receiving special allocations of funding from the government for AIDS research. So far, over the four financial years 1987/91, this has amounted to a total of £38.8 million, and work is likely to continue, at about the current level of activity, until at least the end of the century. Copies of the full report, 'MRC AIDS Research 1990', published in May 1990, are available from the Publications Group, 20 Park Crescent, London W1N 4AL, UK.

A brief overview of current AIDS research: The Acquired Immune Deficiency Syndrome, first described in 1981, is the final stage of infection with the human immunodeficiency virus (HIV), when there is substantial breakdown in immune function and increased susceptibility to a wide range of debilitating and ultimately fatal illnesses. Without treatment, the average life expectancy of a patient with AIDS is about one year and the great majority would die within two years of diagnosis. However, while AIDS is the most dramatic stage in the course of HIV infection, many people with HIV stay apparently healthy and lead normal lives for some years. During this time they are capable of transmitting infection to others through sexual intercourse or through transfer of blood or when drug addicts share needles. There is at present no cure for HIV infection or AIDS, thus treatment remains largely palliative. Research is needed to develop vaccines for prevention and new drugs for treatment; however, these aims can only be achieved in the medium and long term. More immediately, there is the need to control the spread of infection as much as possible through health education.

These are some of the projects which are being carried out under the auspices of the MRC AIDS Research Programme:

AIDS research at the Centre for Applied Microbiology and Research (CAMR): The Public Health Laboratory Service (PHLS) plays a leading role in monitoring the incidence of AIDS in Great Britain and in developing procedures by which this epidemic can be controlled; CAMR is part of the PHLS. In conjunction with the MRC, CAMR has developed a coordinated research programme on the HIV which builds on its facilities and in-depth experience of handling human pathogens. There are three major projects within this research programme: the characterization of HIV isolates, production of HIV and purification of HIV antigens and development of a non-human primate model of AIDS.

MRC AIDS reagent project – establishment of the repository: As part of its policy of providing centralized resources and facilities for scientists participating in the AIDS Directed Programme, the Steering Committee decided during 1988 to establish a central repository to collect, store, characterize and distribute a wide range of research reagents needed by MRC-funded scientists working in the AIDS field in the U.K. and abroad. The service has since been extended on a limited scale to other scientists worldwide through collaborative ventures with the WHO and the European Community, as well as through bilateral cooperative agreements with other national AIDS programmes.

The European Collaborative Study on children born to HIV-positive women: This prospective multicentre European study was set up in 1986 with the following objectives: to determine the rate of transmission of HIV infec-