

Biotechnology: a development plan for Canada

Canada needs to encourage the establishment of biotechnology industries and the supporting scientific and technical infrastructures, according to the recently released report of the federal Task Force on Biotechnology.

Excerpts from the report entitled, Biotechnology: A Development Plan, follow:

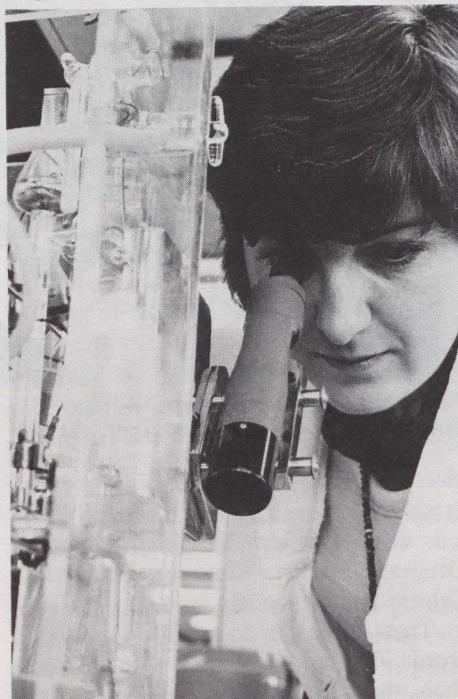
Biotechnology represents an important element in Canada's future industrial and economic development. The development of biotechnology is just beginning and the major economic impact of its applications will probably not be seen for close to a decade. Nevertheless, it is vitally important to implement, at this stage in Canada's effort in biotechnology, a plan of development which will ensure that this country may vigorously pursue appropriate biotechnological opportunities and at the same time be in a position to capitalize upon developments in other countries.

The objective of the proposed biotechnology development plan is to create in Canada the climate which will encourage the establishment and growth of a variety of industries which are built upon biotechnology. To achieve this objective it is necessary to create a strong, viable research and development infrastructure with which to support an emerging biotechnological industry.

Long-term commitment required

The long-term nature of the research and development activity required for the successful exploitation of biotechnology together with the perceived impact which this area of technology could have upon Canada's industrial future, underscore the importance of developing a national strategy embodying long-term commitments to biotechnology by all sectors. While industries, universities and governments, both federal and provincial have significant roles to play in working together towards the promotion and development of biotechnology in Canada, it is the responsibility of the federal government to take the lead in co-ordinating and catalyzing the national commitment. However, the nature of biotechnology as an area of high technology is such that, unless a long-term approach and commitment are made by each sector, any short-term strategies or token activities may impede rather than promote this area of technology in Canada.

The lack of a significant biotechnological industry in Canada requires that



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A strong research and development infrastructure is needed to support a biotechnological industry.

fundamental measures must be instituted at this stage in order to encourage the formation of this industry and to nurture it during its early years. Biotechnology, as an area of high technology, offers the opportunity for the development of new industries as well as the revitalization of existing ones. Therefore, a variety of measures must be initiated in order to ensure that the entire range of industrial activity, from research and development to commercialization, is vigorously pursued.

For an established company, one which is profitable and therefore paying taxes, tax write-offs for research and development investment are recommended. For a new, developing company, direct government financial assistance, government procurement as well as tax shelters to make available venture capital for biotechnology, would seem to be most appropriate.

Technology transfer between sectors represents an important element in the development of a Canadian biotechnological industry. Existing government pro-

grams which promote technology transfer will be important factors. Technology transfer is a people-oriented activity; therefore, a strategy which encourages the continued interaction between scientists, technologists and industrialists will greatly enhance the potential for effective technology transfer and thereby enhance the degree of industrial application.

Interdisciplinary science base

An interdisciplinary science base is the foundation of the techniques comprising biotechnology. The scientific effort in Canadian universities and government establishments has been badly eroded over the past decade. A major long-term financial commitment from both federal and provincial sources must be forthcoming to ensure that Canada can actively participate in rapid biotechnological advances.

It will be important, however, to ensure that scientific development in Canada is properly nurtured. Biotechnology is an interdisciplinary area and the scientific knowledge for its development must come from an interdisciplinary environment. Moreover, the group approach to scientific and technical developments in biotechnology must be fostered in order to guarantee the creation of the appropriate critical masses upon which any true development can grow.

The successful development of a Canadian biotechnological industry and the accompanying research capacity will depend largely upon the availability of appropriate manpower. Unless sufficient appropriately trained people are available, the demand which is already beginning to emerge in Canada will have to be satisfied from foreign sources. Reliance on other countries, however, for the supply of biotechnological manpower will not be practical in the long term because of the rapid expansion of biotechnological activity world-wide and the concomitant increase in the demand for manpower.

As the Canadian biotechnological industry develops, demands for certain skills will increase. Of particular need will be interdisciplinary skills which will provide graduates from both the universities and technical colleges with the flexibility to adapt and thus contribute to the broad range of opportunities presented by biotechnology.

Shortages in many of the skills required for biotechnological development are