

4. BIOTECHNOLOGY

Biotechnology is an infant industry on the verge of explosive growth. A decade ago the industry didn't exist. Today its annual market stands at almost \$1 billion. Within the next decade, biotechnology-based industries worldwide are expected to grow to more than \$100 billion annually.

Biotechnology is not so much a single industrial sector as a set of technologies whose applications extend over a broad range of economic activities. Such diverse industries as agriculture, pharmaceuticals, mining, chemicals, food technology, forestry, medicine, hazardous waste management, and fisheries have been and will continue to be impacted by applications of biotechnology. A number of these will be changed beyond recognition in the next ten years. Equally important for Oregon, biotechnology is knowledge-intensive rather than capital-intensive, and is thus well suited for development by small businesses.

Biotechnology in Oregon already encompasses a broad range of activity, from basic research in universities to the manufacture of products in some 25 businesses located throughout the state. Biotechnology-based industries currently provide over 2,000 jobs and attract annual revenue of over \$65 million into the state. The Biotechnology Committee expects biotechnology in Oregon at least to keep pace with the growth rate of the industry worldwide. With strategic investments, that pace could be significantly accelerated.

Oregon already has a sizeable biotechnology industry. But because biotech companies make a wide variety of products, the industry has been nearly invisible. Moreover, communications among companies and between the industry and universities has been limited.

Vision

Biotechnology is a clean, knowledge-intensive industry which will become a key element in the development of Oregon's evolving economy of the mind. Biotechnology will lend itself to diverse applications among small businesses, promoting regional economic development and diversification in Oregon.

Biotechnology will enhance Oregon's traditional resource-based economy by creating high-value-added and non-cyclical products and processes. In addition, biotechnology will provide substantial economic diversification in both biomedical and industrial process technologies.

As the major West Coast centers of biotechnology -- San Diego, the Bay Area, and Seattle -- experience escalating disincentives to growth (congestion, housing costs,

and pollution), Oregon will become increasingly attractive for biotechnology relocations from these areas as well as for new ventures.

Strategy for Achieving the Vision

Three groups are key to the development of biotechnology in Oregon, 1) private industry (including the financial community), 2) the Oregon State System of Higher Education and the community colleges, and 3) the Economic Development Department. More than nearly any industry, biotechnology depends for its success upon the smooth transfer of ideas and trained people from universities and community colleges to private firms. In addition, an informed financial community is vital for providing supportive financing.

To facilitate communication, the Biotechnology Committee should be continued, to work with the universities and community colleges to link biotechnology research with private investment, to make recommendations to the Economic Development Department on specific biotechnology product companies that can be logically recruited here, and to communicate information about the industry to the financial community. By matching industry with education resources, and by assuring a steady stream of qualified, technically trained people, we can accelerate the growth of the industry.

The committee should pay particular attention to applying biotechnology to Oregon's natural resource-based industries -- forest products, agriculture and fisheries.

Actions To Implement the Strategy

- The Biotechnology Committee should be continued, with contract staff support to be provided by the Economic Development Department. The committee's task will be to:
 - Complete the strategic plan, which identifies the most likely candidates for biotechnology in Oregon, based on existing university talent, and on the state's natural resource base, where biotechnology applications appear feasible.
 - Present information about Oregon's biotechnology industry to the state's financial institutions in order to familiarize them with opportunities in the state.
 - Create a subcommittee to work with the State System of Higher Education to communicate needs for basic research, and trained professionals for the industry.

- Coordinate with the agriculture, forestry, and fisheries industries (with the assistance of the Economic Development Department and other appropriate State agencies) to identify applications for those industries.
- The Oregon State System of Higher Education should review its resources applicable to biotechnology, and establish formal linkage with the Biotechnology Committee. The purpose should be to identify ways university resources can best be applied to the biotechnology industry.
- With guidance from the strategic planning committee, the Economic Development Department should target biotechnology research firms as part of its recruiting efforts. In particular, the department should concentrate on landing a private research laboratory in biotechnology to increase the visibility and private sector presence of biotechnology in Oregon.