

companies expected to begin turning a profit in the mid-1990s. In this regard, it appears however, that during the 1990s industrial applications of biotechnology will follow the trend observed in the late '80s, and they will be as unpredictable and dynamic. In fact for investors looking to make money in biotech, patience is the key. In the end, "... most biotech ventures end up doing something different than their initial plans. What you are betting on is the resourcefulness of the people and their scientific talent"²⁸. In addition, the health of the financing environment, the strength of intellectual property protection, and the ability of regulators to better recognize the major social benefits of biotechnology in making the process more expeditious, will be decisive for companies to expand and prosper.

V. FACTORS DETERMINING THE COMMERCIAL DEVELOPMENT OF BIOTECHNOLOGY

A number of factors determine the success of a biotech venture. According to their impact such a commercial venture can be classified as primary, secondary and tertiary. Primary factors are: a) Financing and tax incentives for companies; b) Government funding of basic and applied research; and c) Personnel availability and training. The Secondary factors are a) Health and safety; b) Environmental regulations; c) Intellectual property laws; d) University-industry relationships. Finally, Tertiary factors include a) International technology transfer, investment, and trade; b) Government targeting policies; and c) Public perception.

A brief discussion of the three most relevant factors will clarify by some of the considerations established in the next two sections.

A. FINANCING AND TAX INCENTIVES

One of the most intriguing financial stories of the 1980s has been the successful financing, specially in the USA, of independent biotech firms. These companies have been able to raise capital on the basis of potential, rather than actual, operating results, primarily because they offer the possibility of huge returns. The availability of venture capital to start new firms, along with tax incentives provided by the governments to encourage capital formation and stimulate R & D in the private sector, are most significant in the commercial development of biotechnology. According to a recent survey in the USA²⁹ the average biotechnology company spends 63 % of its income on R & D. Furthermore, R & D spending per employee and year averaged \$30,000. This figure was much higher for biopharmaceutical