biotechnology company executives believe the 1990s will see continuous bioreactors become firmly established in the production arena. Some companies presently use bioreactors, as opposed to fermenters, to produce reagents employed in clinical diagnostics.

2. BIOSENSORS

It was predicted for the year 1988 that the global biosensor market would be $46 million, soaring to $1-2 billion by the end of the century[10].

Presently, few instruments are available for real-time analysis of cell function, nutrient concentration and molecular configuration. Biosensor monitoring devices, operating on the combined principles of biological and electronic response mechanisms, are a promising answer to this problem.

They provide rapid response time, high specificity (ability to identify correctly), and high sensitivity (ability to measure what they have identified)[13]. Biosensor monitoring is already used in cancer detection, sepsis determination, virus detection and genetic testing.

In the environmental area, there are current applications in air and water monitoring, and in food quality surveillance. Military applications include the detection of nerve gases and other chemical agents of chemical warfare.

3. HUMAN GENOME RESEARCH

Two years ago the US government launched a 15-year, $3 billion federal programme dedicated to deciphering the genetic configurations of the human chromosome.

This programme will vastly increase the base for further exciting progress in genetic diagnostics and molecular engineering. As more genes become definitively characterized, researchers expect prolific commercial opportunities. The automated identification, separation and cloning of DNA units is one of the primary outcomes expected from this line of research.

An exciting business opportunity is evident in the need to gather, organize and manage biotechnological information generated by these research programmes.