

### Survey Report

Key Findings	18
Report Design and Organization	22
Profile of Survey Participants	24
1. Past, Present, Future: The Biotech Timeline	26
<i>Growth Expectations</i>	28
<i>Consolidation: Not To Be Feared</i>	33
2. Key Business Issues and Competitive Advantage	36
<i>Key Business Issues</i>	37
<i>Competitive Advantage</i>	41
3. Growth Factors: Financial Management, Strategic Alliances	45
<i>Burn Rates and the Survival Index</i>	46
<i>Financing Strategy</i>	55
<i>Strategic Alliances</i>	63
4. Development Strategy	69
<i>Research and Development</i>	69
<i>Manufacturing</i>	76
<i>Marketing and Sales</i>	82
<i>Human Resources</i>	88
5. Government and Legal Issues	92
<i>Product Liability</i>	92
<i>Patents</i>	94
<i>Government Policy</i>	97
6. Revenues, Expenses, and Profits	100
7. Assets, Liabilities, and Shareholders' Equity	113
8. Biotech 90: The Landscape of an Industry	125

## Roundtables and Interviews

### Roundtable: Financing for the 1990s

- D. Theodore Berghorst, Chairman and Chief Executive Officer,  
Vector Securities International (Chicago, Illinois)  
Daniel H. Case, III, Managing Director and head of  
investment banking, Hambrecht & Quist, Inc.  
(San Francisco, California)  
William R. Chandler, General Partner, Bay Venture Group  
(San Francisco, California)  
Howard E. Greene, Jr., General Partner, Biovest Partners  
(San Diego, California)  
G. Steven Burrill, Moderator

133

### The United States Food and Drug Administration (Rockville, Maryland)

- Frank E. Young, M.D., Ph.D., Commissioner  
*Intellectual Excitement—in the Public Service*

147

### Roundtable: Strategic Alliances Now and in the 1990s

- David F. Hale, President and Chief Executive Officer, Gensia  
Pharmaceuticals, Inc. (San Diego, California)  
Dr. Frank Kung, President and Chief Executive Officer,  
Genelabs, Inc. (Redwood City, California)  
Robert C. Riley, Director, Division of BioMedical Evaluation,  
E. R. Squibb & Sons (Princeton, New Jersey)  
G. Steven Burrill, Moderator

157

### Cold Spring Harbor Laboratory (Cold Spring Harbor, New York)

- Dr. James D. Watson, Director  
*From the Double Helix to the Human Genome*

171

### Roundtable: The Marketing Challenge

- Robert E. Leach, President, Genencor, Inc.  
(South San Francisco, California)  
William A. Linton, President, Promega Corporation  
(Madison, Wisconsin)  
Howard D. Palefsky, President and Chief Executive Officer,  
Collagen Corporation (Palo Alto, California)  
G. Steven Burrill, Moderator

183

### Immunex Corporation (Seattle, Washington)

- Stephen A. Duzan, Chairman and Chief Executive Officer  
*The Biopharmaceutical Vision*

193

**Roundtable: Starting Up**

Howard C. Birndorf, President, Progenx Inc.  
(San Diego, California)

Dr. Arthur P. Bollon, President and Chief Executive Officer,  
Wadley Biosciences Corporation-LPL (Dallas, Texas)

Dr. Nancy Chang, President, Tanox Biosystems, Inc.  
(Houston, Texas)

Alan G. Herosian, President and Chief Executive Officer,  
Embrex, Inc. (Research Triangle Park, North Carolina)

Dr. Richard Radmer, President, Martek Corporation  
(Columbia, Maryland)

G. Steven Burrill, Moderator

203

**Crop Genetics International (Hanover, Maryland)**

John B. Henry, Chairman and Chief Executive Officer  
*A Technology with a Philosophy: Biotech in Agriculture*

215

**Diagnostics Products Corporation (Los Angeles, California)**

Dr. Sigi Ziering, Chairman and Chief Executive Officer  
*A Company that Pays a Dividend*

225

**Hoffmann-La Roche Inc. (Nutley, New Jersey)**

Irwin M. Lerner, President and Chief Executive Officer  
*The Authority of a Multinational*

235