

BIOTECH 2011—LIFE SCIENCES

25
YEARS

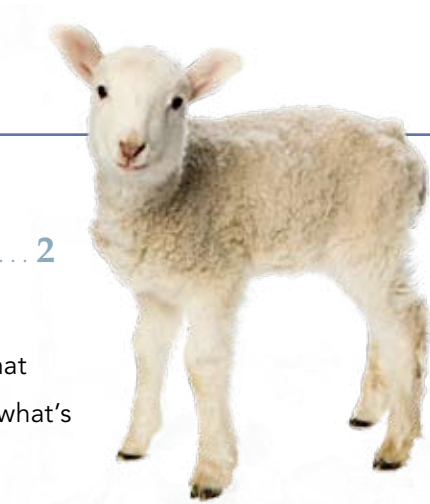
LOOKING BACK TO SEE AHEAD



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Introduction: Looking Back 2

Twenty-five years ago, it would have been difficult for most people to imagine the enormous value that biotechnology would create. Some reflections on what's happened since the first edition of this report.



Chapter 2: Reinventing an Industry 20

The need to find faster and cheaper ways to bring new drugs to market has grown urgent as the industry struggles with a number of trends that are putting unprecedented pressures on pharmaceutical companies to reinvent themselves.

Chapter 3: Mapping the Future 44

A transformation in medicine is underway. Ten years after researchers completed a draft map of the human genome, a new understanding of the role genes play in disease is starting to lead to new therapeutics and diagnostics. It's not just this new understanding of genomics that is driving change, but a convergence of technologies that is empowering patients to take greater control over their own health and promising to address the rising cost of healthcare by changing the way disease is diagnosed and monitored and how care is accessed and delivered.



Chapter 4: Mending a Broken System 70



As political battles over healthcare reform rage on, the pressures on healthcare systems continue to force changes to address the problems of access and affordability. The healthcare reform legislation signed into law in the United States in 2010 represents a significant step to address these issues in terms of the historic fight for healthcare reform, but it remains to be seen to what extent it will change the practice of medicine and address the problems that underlie

its rising cost. The lessons of the past show this is possible, but only through disruptive innovation.

Chapter 5: Seeking Balance 94

With the renewal of the Prescription Drug User Fee Act moving to the center of the policy stage along with the fight over a pathway for biosimilars, the need to balance the FDA's mission to protect the public with the need to lower barriers to innovation will underlie the debates ahead.



Chapter 6: Emerging Markets Fuel Growth 122

Facing competition from generic drugs on more than \$142 billion in sales over the next five years, the industry jumped headlong into increasing its presence in emerging markets.

The strategy accelerated in 2009 and remained strong through 2010 as Big Pharma cut its workforce in developed countries and shifted resources to emerging markets. These countries are also moving fast to embrace biotechnology as a driver of economic growth.





Chapter 7: Addressing Global Challenges 268

Environmental, energy, and food security risks posed by climate change and the rapid growth of economies and populations are driving nations to search for ways to move from a fossil fuel-based economy to a low-carbon economy, one that runs on renewable sources of energy and sustainable agricultural practices. Nations are turning to industrial biotechnology for sustainable solutions that could lead to energy security and mitigate global warming.



Chapter 8: Shifting Risk 308

Pressure on companies to carve out successful new deals and partnerships is intensifying. Pharmaceutical companies face billions of dollars in lost revenue in 2011 as their top products lose patent protection in developed markets, leaving little choice but to acquire promising new drugs and development platforms for growth. At the same time, deal making activity has been reshaped by a new attitude toward risk.

Chapter 9: Playing by New Rules 330



The biotech financing machinery hasn't been working well. For companies, capital is scarce and expensive. For venture investors, risks are high and returns are low. And for investors in initial public offerings, performance has been dismal. There are reasons to believe that the funding woes biotech face are not a cyclical phenomenon, but represent a structural change to the finance landscape for the life sciences.

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As the industry sets forth on its journey during the next 25 years, we take a peek at where it may be heading during this period and describe some of the major drivers that will influence its direction.

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A look inside Burrill & Company and its venture capital, merchant banking, private equity, international, and media operations.



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Note: USD M = U.S. Dollars in Millions, USD B = U.S. Dollars in Billions

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REINVENTING THE INDUSTRY

Considered required reading by top executives in the life science industry, this book is an invaluable, one-stop resource to make sense of the changing landscape.

In *Looking Back to See Ahead*, you will discover:

- How pharmaceutical companies are reinventing themselves to address their pipeline problems and the competition from generics
- New strategies investors are pursuing to improve their returns
- How the convergence of wireless, mobile, and Internet technologies is making personalized medicine a reality
- The global interplay between science, business, regulatory, reimbursement, politics and policy

Comprehensive, unparalleled coverage of key trends makes *Looking Back to See Ahead* a critical resource for senior executives, as well as business development, sales, investment, legal, economic development, and other professionals who support the industry, to stay competitive in a fast-moving world.



G. Steven Burrill has been involved in the growth and prosperity of the biotechnology industry for more than 45 years. In 2002, Mr. Burrill was recognized as a biotech investment visionary by *Scientific American* magazine, and in 2008 he received the BayBio Pantheon DiNA lifetime achievement award for his worldwide biotech leadership. He is an advisor to University of Illinois Institute for Genomic Biology, University of Wisconsin College of Agricultural and Life Sciences, University of California, Davis, University of Minnesota College of Biological Sciences, and the Duke University Institute for Genome Science and Policy, and is an adjunct professor at University of California, San Francisco. He is the founder and CEO of Burrill & Company, a global financial services firm exclusively serving the life sciences industry.



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