

Foreword

Winning the Battle

BY ANDREW VON ESCHENBACH, MD

Less than seventy years ago, medicine as an art started to give way to medicine as a science. The inflection point was the discovery of DNA's structure. Before then, we could only observe the results of diseases, such as cancer, without having much in our arsenal to treat them effectively. The change occurred when medical scientists began to understand the mechanisms of disease at the genetic, molecular, and cellular level. A torrent of fundamental discoveries began to emerge from research laboratories.

Research, however, does not alleviate the suffering of patients. Research must be *translated* into clinical therapies before any of us can benefit. This involves grant applications, experimentation, publication, peer review, patenting, licensing, commercial investment, preclinical studies, clinical trials, regulatory review and approval, manufacturing, distribution, and more. By the early 1990s, discovery was rapidly outpacing this infrastructure for developing and delivering medical

solutions. In one of the most fortuitous and profound coincidences of medical history, that's when Michael Milken assumed a leadership role—by transforming and accelerating the research and development process.

Mike was determined to improve the system, first for cancer and then for all life-threatening diseases. He wasn't alone in recognizing the problems—they were apparent to everyone in the field. What set him apart—what defined his genius—was the way he used a unique combination of energy, perceptiveness, and skill to create solutions. He advocated for and largely implemented new efficiencies and greater collaboration. That transformed the way many medical and scientific investigators did their work and exchanged data. No one in recent years has done more to advance the fight against serious disease.

The impact of organizations Mike launched—the Milken Family Foundation, the Milken Institute, CaP CURE, the Prostate Cancer Foundation, *FasterCures*, the Melanoma Research Alliance, and others—has been widely reported. Now he has wrapped them into the broader context of a lifetime's work. His narrative begins in childhood during the 1950s, moves on through his awakening to the tragic consequences of disease among family and friends, and then continues with his inspired efforts in medical research and public health that incorporated innovations he developed in finance.

Over the last thirty years, it has been my privilege to work in parallel with Mike on several of his initiatives to help accelerate a biomedical revolution. Thanks to that revolution, we now can not only detect and eliminate many diseases more successfully, but also prevent and control them. The tools we deploy are no longer limited to the life sciences—physical, computational, and materials sciences play a growing role.

Advances in medicine since the 1950s have been astounding: polio all but eliminated, heart disease cut in half, AIDS mostly controlled, cancer heading down, several hereditary defects corrected, COVID

vaccines in record time. We should all be grateful to the dedicated researchers whose work has helped give us extra decades to enjoy life. That, says Mike Milken, is only the beginning. Exponential progress lies ahead as new discoveries arrive with breathtaking speed. Some therapies now entering the clinic would have been considered science fiction less than a decade ago. As a result, millions of patients are living longer.

Mike's personal journey, as told in this memoir, is an enlightening reflection on the path of progress. It is even more valuable as a road map to a future in which patients' hopes become reality.

Following three decades as an oncologist, surgeon, and medical executive, Dr. Andrew C. von Eschenbach was named director of the National Cancer Institute in 2001. From 2006 to 2009, he served as commissioner of the United States Food and Drug Administration. He is currently president of Samaritan Health Initiatives and an adjunct professor at the University of Texas MD Anderson Cancer Center.

Introduction

The Rivers of a Life

Three rivers converge near downtown Pittsburgh. The Allegheny rises from a spring on Cobb Hill in Potter County, Pennsylvania. It widens and deepens when joined by many tributaries as it races southwest to unite with the Monongahela. Their confluence becomes a third major river—the Ohio—and continues for another thousand miles through the heart of America. Hundreds of smaller streams add volume.

Sometimes my life seems like a river with three main tributaries of interest—science, education, and access to capital. These commingled with personal values—commitment to family and community—instilled by my parents. Over time, science focused increasingly on medical research and public health; education on student achievement and teacher development; business on job creation and the democratization of finance. Thousands of friends and associates contributed to the mix, each a stream that influenced and enlarged the whole.

This book invites you to join me on a personal journey highlighting stories of challenges and triumphs in medical science. Some of our initiatives in education and finance are also part of the narrative because they help define me. But this is not an autobiography. I intend to write a future volume on education—including development of the Milken Center for Advancing the American Dream and such programs as the Milken Educator Awards, the Milken Scholars, and the International Finance Corporation–Milken Institute Capital Markets Program.

My future plans also include a third book covering my years on Wall Street, beginning in 1969, which have been chronicled extensively, but not accurately. Those years ended with a prosecution that manufactured a false profile of me—it was the antithesis of how I lived my life and who I am. The process even held members of my family hostage. Under intense public scrutiny that affected my loved ones, I decided not to drag it out through years of fighting in court as others who prevailed chose to do. Although I was incarcerated for twenty-two months, my lifelong dedication to the democratization of capital was undiminished. That mission simply shifted to the non-profit arena with the launch of the Milken Institute. I look forward to writing about this. As the English philosopher Francis Bacon said, “Truth is the daughter of time, not of authority.”

WHAT THIS BOOK IS ABOUT

The stories in the following chapters tell of important events in my life. The early innovations in finance turned out to be a template for much of what we’ve accomplished in the search for faster cures.* That

* “No man is an island,” wrote John Donne. If we achieve anything, it is only with the help of others. This presents a dilemma for an author who writes about his own experiences

search includes our programs to accelerate the work of medical pioneers whose achievements have changed the course of history.

I'll also touch briefly on other issues involved in my financial work: what I saw that others missed in the capacity of certain innovations to create jobs. Why, despite initial resistance to those innovations, they became the foundation for much of the world's financial markets. When we provided financing for such key industries as cable, cellular phones, energy, healthcare, housing, media, and telecommunications, the goal was more than wealth creation. Everyone who worked with me understood that no matter what level of success we achieved, we all wanted meaningful lives for our children; and they wouldn't have that unless *all* children in society had an opportunity. That understanding is the basis of the American dream. It provides the motivation for building our Center for Advancing the American Dream.

Here I've written about matters of health including the emotional devastation of my father's fatal illness and my children's medical issues. How my life (and the life of my wife, Lori) was turned upside down when we thought our first son might die and when our daughter was born very small and fragile. How we bonded with parents everywhere who can never rest when faced with such unpredictable threats as childhood epilepsy, life-threatening allergies, or type 1 diabetes.

One of my goals is to provide you with useful information and a realistic perspective because you and your family, like all families, have had to deal with life-threatening issues (or will someday). Financial resources can help, but they do little to prepare people for the emotional burden of disease. I would have traded all my financial

without resorting to constant use of the first person singular. It would be unfair to omit the contributions of others when I was often one of many responsible for a project's success. Yet frequent use of compound subjects like "my colleagues and I" becomes tedious. Instead, the stories within often begin sentences with "we" as shorthand for the hundreds of managers and professionals who have worked with me over the years. Their dedication to speeding the search for cures has earned my lasting respect and admiration.

success if it could have saved my father's life, brought back other relatives and friends stricken in their prime, or cleared an easier path for my children. Perhaps my experiences can lighten some of the burden for others.

You'll read about our meetings with health leaders, industry CEOs, government officials, and others as we developed new strategies and figured out what could work. You'll see why we rejected the advice of the American Cancer Society, which initially thought our 1998 March on Washington would "fragment the movement." And you'll understand why, a dozen years later, we used a totally different strategy to convene the leaders of bioscience in an innovation retreat and then—a year after that—to reenergize the nation's commitment in what we called the Celebration of Science.

There's nothing wrong with writing checks to support good causes. We've done it extensively. But such charitable giving is not enough to change the underlying research process. Instead, we set out to build a more effective and efficient research infrastructure; to create a model that others could use in pursuit of faster solutions for all life-threatening diseases.

We began by recruiting top scientists and physicians to careers in medical research and public health, making it easier and more worthwhile for them to communicate with each other, and removing bureaucratic roadblocks that impeded their efforts. Our funding jump-started the process so that others, including government and industry, would follow our lead. In the search for faster cures that save lives, we worked to make the scientific, translational, and clinical processes more fulfilling and productive pursuits.

The message to other health advocates, foundations, and disease-specific organizations was inclusive. We invited them to join our efforts toward substantially increasing funding for every type of medical research. They had a front-row seat at our planning meetings for events like the March on Washington, the Celebration of

Science, our Future of Health Summits, and relevant panels at the annual Milken Institute Global Conferences. We didn't ask these other groups to help fund events, but always sought their input. The idea was that by sharing our thinking on how to improve the research process, we would all benefit.

In 1998, we told these organizations that everyone stood to gain if Congress doubled the National Institutes of Health budget, which was an important goal of that summer's March on Washington. The March itself focused on cancer, not because noncancerous diseases were less worthy of support, but because cancer would draw the greatest attention on Capitol Hill. It was—and remains—a condition that touches nearly every family, including the families of senators, representatives, and their staffs. But every disease-specific group, we assured them, would be part of our campaign.

WHY HEALTH AND MEDICAL RESEARCH?

The focus on health and medical research is important because:

- Health affects everyone on the planet. With improved medical outcomes, we will be able to pass along more of our knowledge, wisdom, and life experiences to future generations. Effective health interventions improve the *quality* of life in addition to its length.
- Medical research has intersected with every stage of my life from childhood awareness of polio in the 1950s through our recent efforts to accelerate cures for a wide range of diseases.
- We've all learned crucial public health lessons from the COVID-19 pandemic. It has tested everything we thought we knew about treating disease and has shown the inestimable value of long-term research. Decades of previous investments underlay the astonishingly rapid development of vaccines and therapies.

- ✦ The future of bioscience is incredibly promising. We can look forward to great progress in such areas as cancer, the brain, the immune system, and infectious diseases. Scientists working on multi-cancer early detection have developed technologies that will save countless lives. Others are beginning to understand the fundamental mechanisms of aging. It's a magnificent opportunity: For the first time in history, we can realistically aspire to eliminate much of the burden of serious disease. It won't be easy.

One goal of this book is to share what has driven me for five decades . . . and what I've learned from that work. The original "blueprint" for my life—to borrow a phrase from a 1967 Martin Luther King Jr. speech—was to become a scientist or an astronaut. Then a dramatic 1965 encounter altered it. The blueprint changed again in the 1970s when a series of family medical issues refocused my goals. My own terminal cancer diagnosis in 1993 led to yet another change in my approach to medical research. On reflection, I have a better understanding of why my lifelong quest to speed the pace of discovery has been so central to who I am. My own process of self-discovery led me to the conclusion that medicine can now offer people controls and cures for life-threatening diseases within their own lifetimes. In other words, we can discover cures faster than the historical trend suggests.

Remember that science as we know it, especially medicine, has evolved only over the past two centuries and the *rate* of change is accelerating. As recently as the nineteenth century, people suffered through gruesome surgeries without anesthesia, childbirth without antiseptic procedures, and all manner of intractable infections. Fortunately, medicine has advanced from that dark past to the prospect of a bright future that will transform society in the years ahead.

A theme woven throughout these pages is the triumph of science over conventional wisdom and fear. At the height of the 1950s polio epidemic, economists predicted that the twentieth century would end with America spending \$100 billion a year on “iron lung hotels.” Diagnosed with lung cancer in 1964, the actor John Wayne told the world he had “the big C” and everyone assumed his death was imminent. (He lived another fifteen years and made more than twenty additional movies.) In the 1980s, one analysis estimated that, by the year 2000, AIDS patients would fill half of all hospital beds. In 2020, the COVID pandemic instilled such fear that officials in California speculated about two million future deaths in that state alone.

Science met these challenges in the form of the Salk and Sabin polio vaccines, public health campaigns, statins, antiretroviral therapy cocktails, advanced nutrition, genome sequencing, immunotherapies, monoclonal antibodies, mRNA vaccines, noninvasive surgeries, powerful new diagnostic scans, artificial intelligence, and CRISPR gene editing.

My professional journey, beginning in the 1960s, intersected with many of these advances. My *personal* journey, however, began a decade earlier in a typical mid-century American family. It proceeded through childhood adventures; the influence of my father’s early struggles; the collegiate free-speech movement; an awakening to the roots of social disparities; the challenges of a young parent; and success in my financial career.

The middle sections of this book describe a major health crisis and how it accelerated my work on a broad campaign to strengthen the impact of medical research and public health. (*Fortune* magazine said it “changed medicine.”) The later chapters look at emerging technologies, the lessons of COVID-19, and prospects for a healthier future. I conclude with some thoughts on meaningful lives.

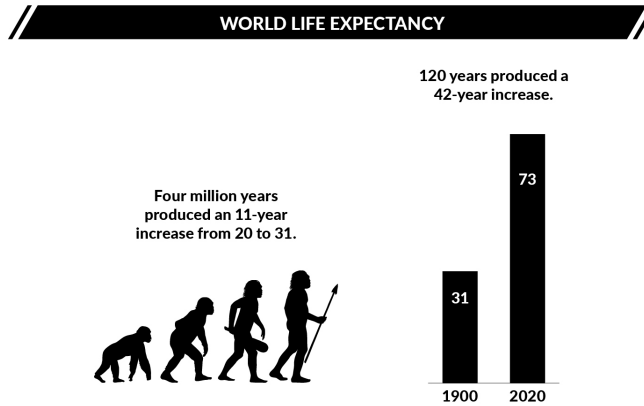
THE GREATEST ACHIEVEMENT

The idea for this volume began with a look back on five decades of interaction with thousands of patients and professionals in medicine, science, and public health. To understand the importance of their efforts, consider this question: **What is the greatest achievement in the history of civilization?** Some would argue it's the invention of the wheel, the origination of agriculture, or the evolution of communication from cave drawings to the printing press to the internet. Others might cite such concepts as the development of trade, the rule of law, and democracy.

These are epochal accomplishments. But in my opinion, the greatest achievement is the twentieth and twenty-first centuries' worldwide extension of life spans and improvements in quality of life. You can understand just how remarkable this is by comparing the rapid progress in the last century to the slow advance of longevity over four million years since the appearance of the first prehuman hominids. Today, it's not unusual to have great-grandchildren.

Our earliest ancestors survived for about twenty years. By 1900, people throughout the world lived an average of only thirty-one years, although it was forty-seven in the United States. Of course, that average was reduced by the prevalence of infant mortality, especially in poverty-stricken developing nations. Still, it's surprising that in the entire development of our species up until 1900, the *average* increased only eleven years.

One hundred years later—the blink of an eye in evolutionary terms—life spans on earth had more than doubled to sixty-seven. Today they're about seventy-four worldwide. Some countries have achieved averages as high as eighty-five. In Monaco, it's almost ninety. We reached these milestones mostly by preventing and cur-



ing more than a dozen infectious diseases that plagued humans for millennia.

As recently as 1900, one out of every five newborns in America died before celebrating a fifth birthday. The leading causes of death were pneumonia, tuberculosis, and enteritis with diarrhea—all infectious. Thanks largely to progress in sanitation and the development of vaccines and antibiotics, those diseases are now far less common. Today, at least four of every five people live into their sixties and death comes most often from cardiovascular disease and cancer. Happily, the burden of heart conditions and many types of cancer has fallen sharply.

There's also a remarkable economic benefit. In real, inflation-adjusted terms, the per capita productivity of advanced economies is eight times that of the nineteenth-century average. **And half of all economic growth over the past two hundred years is directly linked to progress in medical research and public health.***

That's a key reason for the focus of this first book. Some financial market prognosticators tend to overlook health's economic sig-

* The late British economic historian Angus Maddison calculated these facts in his monumental work, *The World Economy: A Millennial Perspective* (OECD, 2001).

nificance by citing recent “disruptive” technologies as the basis for growth. Of course it’s true that advances in communications, energy, and mobility supported much economic expansion since 1900. That growth would have been greatly diminished, however, if not for the improved health and longevity of the population.

Unfortunately, the benefits of medical and public health advances are not evenly distributed around the world. Those of us in the wealthier nations live years, often decades, longer than the average African, Latin American, or South Asian. And serious health inequities persist in the developed world. The Milken Institute’s programs to address both of these disparities have made some headway. In February 2020, before the COVID-19 pandemic fully emerged as a massive global crisis, we had just spent ten days in the Middle East and Africa. We went there to work on advancing economic development and public health.

The long flight back from Johannesburg, South Africa, to Los Angeles gave me time to outline some of the ways the Institute and our related medical organizations could contribute to solutions for what was starting to look like a major pandemic. How, I asked, might our experiences in medical science and public health be deployed? One idea was to combine everything I’d learned over the previous five decades with the insights of others who were leading the COVID-19 battle. The result is a series of podcasts that frame the issues, point to solutions, and outline strategies. (These podcasts and transcripts are at www.fastercuresbook.com.)

MY PERSONAL JOURNEY

This book is a narrative of *hope*. Not just the hope of longer lives, but also healthier, more meaningful lives for people everywhere. The concluding chapter brings the narrative full circle by focusing on a

single recent day that encompassed the three rivers of my life as reflected in the achievements of several extraordinary people.

The poet William Wordsworth famously wrote, “The child is father of the man.” So this personal journey begins in childhood, a time when my innate curiosity was nurtured. It helps explain the path that took me to the frontiers of medical science . . . and beyond.