The Essential Biotech

How to Invest in the Healthcare Biotechnology and Life Sciences Sector

This invaluable book tells the reader how to invest in the healthcare biotechnology and life sciences sector, one of the fast-growing sectors of the US economy. Aimed at biotech investors as well as bioentrepreneurs and venture capitalists, it has been written from the perspectives of risk management and asset management/allocation. It strives to teach readers how to fish, rather than giving them fish.

Contents: Biotech Stock for Wealth Growth; The Basics of Investing; An Introduction to Biotechnology and Genomics; Understanding Biotechnology Invention and the FDA Process; Introduction to Biotechnology Investing; How to Value and Invest in a Biotech Company; Investing in Biotechnology Mutual Funds; Healthcare Biotechnology Index Investing — Strategies Using Exchange-Traded-Funds (ETFs), Biotech iShares, and BOXES; Risk Management Consideration for Biotech Investors with Concentrated Equity Positions; Managing Biotech Stock Options: Your Employee Benefits; An Introduction to Healthcare Biotechnology Hedge Fund Investing; An Introduction to Healthcare Biotechnology Private Equity Investing; Retirement Planning Considerations for Biotech Executives and Investors; Charitable Disposition of Appreciated Biotech Stocks; Managing Your Bio-Wealth — Estate Planning for Biotech Investors, Executives, and Founders.

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Malaysia — More than one thousand scientists, doctors and government officials congregated on 17–18 June for the World Health Organization (WHO) Global Conference on SARS. WHO officials declared that the epidemic has been successfully contained, but cautioned against complacency, for the virus has not been eradicated totally, and it could make a comeback in the winter months at the end of the year.

On the first day of the conference, the WHO lifted its travel warning for Taiwan, leaving Beijing the only place affected by the travel advisory.

Although there was significant political undertones, in particular the China-Taiwan tussle, Dr. Brundtland was adamant in steering questions back to the real issues — the science of the disease and public health systems, saying, “There is a political situation here (on China and Taiwan). We are doing our best to move the SARS situation forward and I’m not going to get myself dragged into a political decision made by the UN.”

Without specifically mentioning China, Dr. Brundtland said, “The first and most important lesson (from SARS) concerns the need to report openly and promptly. Attempts to conceal for fear of social and economic consequences carry a high price and loss of credibility in international eyes.” However, she also offered praise for China, acknowledging that the country had undergone a “big debate internally” before making a turn-around to “respond in a different way.”

The 1000 clinicians, scientists, researchers and health policy makers who attended the conference deliberated on the need to review international health regulations that would strengthen global alerts, reporting and response to SARS and emerging viruses of the future. Dr. Brundtland suggested that the revised regulations include agreements on the issuance of travel restrictions, which have been seen as a “curse” on the economy and tourism of areas affected.

The conference acknowledged the high possibility that SARS might never be eradicated, unless a vaccine and reliable point-of-care diagnostic kit become available to interrupt the chain of transmission.
The focus also turned to preventing SARS from becoming endemic, a monumental task as researchers grapple to understand the virus’ origins. Current data points to an animal reservoir for the SARS coronavirus, although scientists are inconclusive about this theory. Further testing is necessary, especially of animal populations in the wild which would present a different set of circumstances than tests on the civet cats found in the market environment in Guangdong province, the epicenter of the outbreak last November.

SARS may make a comeback in November when another outbreak of influenza and respiratory illnesses is anticipated. “Don’t be complacent, thinking that SARS is over,” warned Dr. Brundtland.

She went on further to say that while the scientific community battles to find a diagnostic kit and a vaccine, governments must refine the manner in which they use traditional tools of containment such as isolation, quarantine and case tracing. They must be on constant watch and develop public healthcare systems that are ready to meet new crises.

Calling this the “good legacy” of SARS, Dr. Brundtland said the world now had this experience behind it, to face new diseases of the future.

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**Political Undertones of the Conference**

The conference was a significant milestone for Taiwan because for the first time in 30 years, Taiwanese officials were invited. The WHO revealed that Taiwan was invited after consultation with China. The invitation to Taiwan was not sent directly from the WHO but sent through China instead, reflecting the sensitivities involved.

China regards Taiwan as a renegade province and had repeatedly opposed and blocked the latter’s attempt to join international organizations such as the WHO.

Although the conference was meant to be scientific, it was shrouded by some political overtones, and several references were made to China’s initial cover-up and the Taiwan-China dispute.

Taiwan’s Center for Disease Control Director-General Dr. Ih-Jen Su said his country has been struggling for the past seven years to become a member of WHO and wants a WHO expert to be based on the island. He also asked for Taiwan to be granted direct access to the latest international information and the support of the WHO, which is most essential in dealing with emerging and re-emerging infectious diseases. He even pointed out that political differences should be put aside in matters that concern public health, obviously referring to the political blockage that Taiwan has been facing in their attempts to join WHO.

WHO Director-General Dr. Gro Harlem Brundtland’s response to Dr. Su’s remarks was that despite not having made a presentation to the whole conference, Taiwan had a representative in one of the breakout sessions. She denied that WHO had neglected Taiwan and said high-level experts from the world body had been collaborating with Taiwanese authorities closely.

China’s Vice Minister of Health Gao Qiang admitted that his country’s initial response to the SARS outbreak was “inadequate”. “We had an inadequate alert system ... (and) a slow flow of information. We’ve learnt important lessons and also paid a heavy price,” he said.
19 June 2003 — World Health Organization (WHO) experts adjourn to Singapore immediately after a two-day conference on severe acute respiratory syndrome (SARS) held in Kuala Lumpur, Malaysia.

The WHO experts hail Singapore’s efforts as exemplary, but almost in the same breath, they issue a resounding reminder to all for continued vigilance and preparedness, citing the Toronto incident as an example. Dr. Tan Chorh Chuan (Director of Medical Services, Ministry of Health, Singapore) warns of future outbreaks if appropriate precautions and quarantine measures are not maintained. If lingering cases that have gone undetected exist, a resurgence may result. Are there asymptomatic carriers amongst us? Are wild animals acting as reservoirs for the virus? Is total eradication impossible? The answers to all are æ it is still too early to say.

One of the main priorities of scientists is thus to develop an inexpensive diagnostic test which can accurately detect small amounts of the virus in the shortest time possible. According to Dr. Tan, SARS is different from most other viral diseases in that the virus is present in very minute amounts in the patient in the early days, which makes early detection with existing tests very difficult. A good SARS test must be able to identify the virus on Days 1 or 2 of the disease. The currently available antibody test can only be used on Day 28.

According to Dr. Guenael Rodier (Director, Department of Communicable Disease, Surveillance and Response, WHO), a comprehensive protocol has been put in place to ward against future outbreaks. This involves a surveillance system at the intra- and inter-country level, similar to the ones in place for other contagious diseases like malaria and HIV.

The question uppermost on most people’s minds remains: when can we have a SARS vaccine? Dr. Marie-Paule Kiery (Director of the Initiative for Vaccine Research, WHO) says it may take more than a year, and this is assuming that pharmaceutical companies are willing to invest millions on a disease that has a statistically much lower mortality rate.

For now, SARS remains the first major battle of the new millennium.
The WHO Conference on SARS in a Nutshell

Over 500 leading researchers and luminaries in the local and international medical and scientific arena gathered together at Singapore’s first World Health Organization (WHO) Conference on Severe Acute Respiratory (SARS) Research, held on 19 June 2003, barely three weeks after the country has been removed from the WHO list of affected areas.

The event was organized by the WHO and the Ministry of Health Singapore, and supported by the Agency for Science Technology and Research (A*STAR) Singapore and the National University of Singapore (NUS).

The conference focuses on the following key areas:

- Detection of disease in its early stage, understanding its pattern of transmission, and implementing disease-specific prevention and control measures.
- Development of improved diagnostic kits and antiviral drug treatments.
- Molecular biology, immunology, and the potential for vaccine development.

Most importantly, the conference provides the unique opportunity for the exchange of scientific data and information amongst top scientists such as Professor Malik Peiris (Queen Mary Hospital, Hong Kong), Distinguished Professor Michael Lai (University of Southern California, USA) and Professor Albert Osterhaus (Erasmus Universiteit National Influenza Centre Institute of Virology and WHO CC for Arboviruses and Haemorrhagic Fevers Reference and Research).

In addition, the conference allows for the formation of collaborative networks amongst various research groups around the world including those from Singapore, Hong Kong, Canada, USA and Europe.

The hosting of this conference also clearly reflects Singapore’s efforts to build itself into a global center of excellence for biomedical research.
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