Preface

Biotechnology in Taiwan
An Introduction

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Biotechnology has become an important sector for scientific research, technology innovation, and industrial development in Taiwan, as is the case elsewhere in the world. Since 1995, the biotech industry has been recognized as one of the most important industries in Taiwan. It was regarded as one of the “rising star” industries in the 6-year “Two Trillions, Two Stars” national development plan in 2002. Recently, the healthcare industry has been identified as a major target of the “Economic Development Vision for 2015.” Its aim is for Taiwan to become a global partner in biotech innovation and commercialization, and to be the Asian hub for biotechnology. With this in mind, the Taiwanese government has introduced a range of efforts to promote biotech R&D and incentives to invest in the biotech industry.

Multiministerial efforts supervised by the Science and Technology Advisory Group (STAG) of the Executive Yuan (Cabinet) in Taiwan have been devoted to the promotion of the biotech industry in Taiwan. The National Science Council (NSC) supports the scientific research and technology development in biotechnology carried out by investigators at Academia Sinica and research universities; while the Ministry of Economic Affairs (MOEA) supports the biotech industrial R&D. The NSC has established the National Applied Research Laboratories (NARL) and the National Synchrotron Radiation Research Center (NSRRC) to provide core facilities for academic R&D in biotechnology. The MOEA has established the Development Center for Biotechnology (DCB), the Medical and Pharmaceutical Industry Technology and Development Center (MPITDC), as well as the Biomedical Engineering Research Laboratories (BERL) and the Medical Electronics and Device Technology Center (MEDTC) in the Industrial Technology Research Institute (ITRI) to foster biotech industrial R&D.
The Department of Health (DOH) has established the Center for Drug Evaluation (CDE) to review applications for new drugs and medical devices in accordance with international regulatory norms, as well as the National Health Research Institutes (NHRI) to promote basic and clinical researches in medical colleges and hospitals. Several national clinical trial centers have been established in medical centers under the supervision of and with financial support from the DOH. The Taiwan Biobank has been set up by the Institute of Biomedical Sciences (Academia Sinica) and university hospitals to collect biospecimens for biomedical studies, especially for genomic and proteomic R&D. In addition, several national research institutes have been established by the Council of Agriculture (COA) to carry out R&D in agricultural biotechnology.

Four biotechnology-related National Science and Technology Program (NSTP) projects have been consecutively launched since 1998. These include the NSTPs for Agricultural Biotechnology (http://www.sinica.edu.tw/~npagrbt/page1.htm), Genomic Medicine (http://genmed.sinica.edu.tw/), Biotechnology and Pharmaceuticals (http://140.112.121.251/~npbp/), and Nanoscience and Nanotechnology (http://nano-taiwan.sinica.edu.tw/newsen.asp). They are financially supported by the MOEA, DOH, COA, and NSC; and are coordinated and evaluated by the STAG. The overall budget for these biotech NSTPs from 2005 to 2007 was US$350 million. Biotech NSTPs emphasize the concerted effort of academic and industrial R&D activities. Scientific research is carried out by Academia Sinica and major research universities, which house the core facilities; while biotech industrial R&D is carried out by the ITRI, DCB, NHRI, NARL, NSRRC, and agricultural research institutes.

The Basic Law for Science and Technology provides intellectual property management–related measures to encourage patent application and technology transfer. Incentives are also offered to researchers and their institutions for their engagement in academic/industrial collaborative R&D. A new Act for Development of New Drug Industry, which aims to facilitate the establishment of new companies specializing in pharmaceutical R&D, has recently been passed by the Legislative Yuan (Congress). Incentives given include tax reduction, participation of government employees in the biotech industry, etc.

Biotech company clusters are located in three well established science parks in northern, central, and southern Taiwan. Research institutes and universities surrounding these science parks are actively collaborating with the private industry. Biotech incubation centers have also been established in science parks to foster new companies. Two new biomedical science parks for R&D companies and supra incubation centers will be implemented in Chu-Pei in Hsin-Chu County and Nan-Kang in Taipei City. The National Development Fund provides investment and financing to underpin private sector investment in the biotech industry.

In this special issue of APBN, various aspects of biotechnology in Taiwan are described in detail. Based on the integrated efforts reported, it can be said that Taiwan is on its way to becoming a biomedical technology “island” and will play an important role in the international biotech industry.