

## Biomedical Research and Biotechnology Development in Taiwan

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In association with the miraculous economic development of Taiwan, the health status of the people in Taiwan has also been greatly improved. Cancer, cardiovascular diseases and accidents have become the leading causes of death in Taiwan due to changes in socioeconomic structures and lifestyles, and improvements in health and medical care. In recent years, biomedical sciences in Taiwan have grown very rapidly. According to the Science Citation Index, a total of 12,392 scientific papers were published in major international journals in 2003, ranking Taiwan the 18<sup>th</sup> in the world. Among these publications, one third are in the biomedical fields.

The establishment of the Institute of Biomedical Sciences ( IBMS ) at Academia Sinica in 1988 is an important event in Taiwan's biomedical development. Now the Institute has total number of 700 people with about 50 long-term principal investigators. IBMS has very active research programs with emphasis on cancer, cardiovascular diseases, infectious diseases and neuroscience. In 1996, "National Health Research Institutes" ( NHRI ) was established. It is an autonomous non-profit research organization supported mainly by Government. The major goals of NHRI are ( 1 ) to promote, coordinate and integrate research efforts undertaken by biomedical institutions in Taiwan, ( 2 ) to investigate important diseases affecting the population, ( 3 ) to assist government agencies formulating national policies related to medical care, health services, and preventive medicine, ( 4 ) to develop biotechnology and bioengineering, ( 5 ) to educate and train scientists and physicians for basic and clinical research, and ( 6 ) to facilitate information exchange and international collaboration. There are ten intramural research divisions in NHRI : gerontology, environmental health and occupational disease, mental health and drug abuse, health policy, biotechnology and pharmaceutical development, cancer research, clinical research, molecular and genomic medicine, biostatistics, and medical engineering. In addition, NHRI has developed medical training programs which serve as a model for clinical subspecialty training in Taiwan. NHRI has also established the Taiwan Cooperative Oncology Group ( TCOG ) , which is a multicentered, clinical trial organization focusing on several common and important cancers in Taiwan and on new methods of cancer treatment. The establishment of all these programs can be regarded as a milestone in the development of clinical research in Taiwan. For the extramural research

program in NHRI, its goals are to integrate research efforts in medical technology and to support local medical and health research institutes to sustain outstanding research projects. In 2004, the program has supported 119 grants for the total amount of NT\$251 million dollars.

In summary, development of biomedical sciences in Taiwan during the past 3 decades has greatly flourished, yet Taiwan still needs to improve its infrastructure in areas relating to health care and medical research. The establishment of National Health Research Institutes ( NHRI ) as well as the continued improvement of other medical research centers will be the key elements for the success of medical research in Taiwan for the next century.