

Trends in Future Medicine: From Macroscopic policy to Nanoscopic precision

*Deputy Minister Dar-Bin Shieh
Ministry of Science and Technology*

With the advancement in scientific discoveries and technology evolutions, medical practices revolutionized from observing pathological changes at human body levels, through organs and tissues, then down to the cells and molecular levels. Such advancement significantly improved the precision of diagnosis and thus enabling better therapeutic approaches and thereby better clinical outcome. Precision medicine is a prevailing global trend. It takes individual variability and heterogeneity of diseases into consideration to formulate personalized approach for disease prevention, diagnosis and treatment. It consists of genomics, molecular cell biology, epidemiology, preventive medicine, clinical diagnostics and therapeutics, medical economics and more, and aims to augment disease management as well as to reduce waste of healthcare resources. Precision medicine also post huge impacts to global biomedical industry and attracted 10 billion USD government investments from US, UK, China and more countries since 2013. According to the forecast by Frost & Sullivan, its global market value will exceed 130 billion USD by 2025.

Taiwan has world-renowned high quality healthcare system and talent pool in biomedical research, outstanding ICT manufacturing capacity and engineering design. These precious asset developed solid foundation and potential for implementing precision medicine and industry. Since 2017, Taiwan government invested tremendous resources under the “5+2 Industrial Transformation Plan”, where precision medicine was highlighted. With the accumulated achievements in healthcare related database and Biobank integration, new drugs development and marketing, establishment of smart hospitals and blooming smart healthcare devices, as well as amendment of regulations and policies, Taiwan is welcoming a new era of biomedical innovation and industrial development ecosystem. These will together foster precision medicine industry in Taiwan to grow and to prosperous, and to contribute a better quality of human life.