Macao Funding Scheme for Key R & D Projects 2023

Biomedicine

Application Guideline for Projects of Precision Medicine

I. Background

With the progress of science and the development of society, clinical medicine has entered the era of precision medicine, and disease diagnosis and treatment are developing towards personalization and precision. Precision medicine is a new healthcare service paradigm that integrates the application of modern scientific and technological means and traditional medicine methods, scientifically recognizes human functions and the nature of diseases, systematically optimizes the principles and practices of human disease prevention and health promotion, and maximizes individual and social health benefits with efficient, safe and economical health care services. The “14th Five-Year Plan” for Bioeconomy Development Planning issued in 2022 clearly proposed to focus on improving the original innovation ability in the field of precision medicine and others.

The big health industry is a key development area explicitly proposed by the Macao SAR Government in the “Policy Address for the Fiscal Year 2022” and the “Second Five-Year Plan for Economic and Social Development of the Macao Special Administrative Region (2021-2025)”, among which precision medicine is an area where Macao possesses a relatively good foundation and certain advantages. Conducting research on the diagnosis and treatment technology for major diseases with high incidence rates in Macao is of great significance for promoting the development of Macao’s life and health technology and big health industry, thereby enhancing the comprehensive strength of technological innovation in Macao.

In order to fully leverage Macao’s advantages in the field of precision medicine, further integrate existing advantaged resources and enhance R&D capabilities and industrialization levels, the Science and Technology Development Fund (FDCT) has, upon seeking opinions from researchers of relevant fields in Macao and expertise from experts in the Mainland, proposed a key R & D project of precision medicine in Macao that aims to: bring Macao’s advantages into full play in a planned and step-by-step manner to accommodate the needs of our country; cater to the needs of Macao’s social, economic and technological development; promote the moderate diversification of Macao’s economy through technological innovations in support of the development of an international innovation and technology hub

in the Guangdong-Hong Kong-Macao Greater Bay Area and the construction of the Guangdong-Macao In-depth Cooperation Zone in Hengqin, thereby contributing to China's development into a new country.

II. Overall Objectives

Taking the major diseases with high incidence rates in Macao as the entry point and the clinical transformation as the research goal, to implement scientific research and technological R&D related to precision medicine, to develop new technologies and methods that prioritize diagnosis and treatment, and to achieve personalized diagnosis and treatment that generate social benefits.

III. Research Fields

Field 1: Target discovery and precise intervention of major diseases

In response to clinical issues such as low early-diagnosis rates and a lack of effective intervention measures for liver diseases, to adopt non-invasive detection, regeneration and other technologies to focus on discovering and identifying new targets and verifying their mechanisms of action. To carry out R&D of new strategies for early diagnosis, precise staging, and clinical intervention, as well as clinical transformation.

Performance Indicators:

(1) Identifying effective new targets for liver diseases and clarifying their mechanisms of action.

(2) Establishing new methods and technologies for rapid identification and early accurate staging of liver fibrosis, and conducting trials in at least three hospitals.

(3) Conducting R&D of no less than three innovative drugs of small molecules or immune cells, and completing preclinical research, with the aim of promoting liver regeneration and treating chronic liver diseases.

Field 2: New biomedical technologies for precise intervention of major diseases

To carry out research on new biomedical technologies based on antibody synthetic biology, supermolecule engineering, stem cells, and other cutting-edge technologies, and develop related products, in order to meet the needs of precise treatment of liver cancers and cerebral stroke.

Performance Indicators:

(1) Establishing new targeted intervention methods and elucidating relevant mechanisms based on the specific pathological characteristics of major diseases.

(2) Completing corresponding preclinical studies and initiating clinical studies.

IV. Requirements

(1) The applying entity shall file the application in the form of a project in one of the research topics in any of the fields listed in this Guideline. Unless otherwise specified, a project should include no more than 3 topics.

(2) Each project should be submitted for the application as a whole, and all the research content and performance indicators must be covered.

(3) The lead unit shall be a Macao entity, Macao and Hengqin enterprises are welcome to participate in cooperation. The number of participating units for each project shall not exceed 6.

(4) Every project leader or topic leader(s) must be qualified to work full-time in Macao.

(5) The project must be led or participated by hospitals, and a formal cooperation agreement shall be provided if the project is collaborative.

(6) The implementation period of the project is 3 years. The maximum application amount for each project is MOP 15 million.

V. Experts Involved in the Formulation of the Guideline

Bei Jinxin	Professor of Sun Yat-Sen University
Duan Huilong	Professor of Zhejiang University
Jiang Chen	Professor of Fudan University

Li Yansheng	Professor of Renji Hospital Affiliated to the Shanghai Jiao Tong University School of Medicine
Su Zhiguang	Professor of Sichuan University