

Macao Funding Scheme for Key R & D Projects 2022

Application Guideline for Projects of Precision Medicine

I. Background

At the forefront of the development of medical technology, precision medicine is the convergence and application of biotechnology and information technology in medical clinical practice. The systematic strengthening of the research layout of precision medicine is of vital importance for accelerating technological breakthroughs in the prevention and control of major diseases, taking up the dominant role in the development of future medicine and related industries, and creating a driving force for the development of the life and health industry. The Mainland has also elaborated relevant plans in the National Medium-and-long-term Program for Scientific and Technological Development Outline (2021-2035) and the Healthy China 2030 initiative.

The big health industry is a key development area clearly stipulated in the Macao SAR government's "Policy Address for the Fiscal Year 2022" as well as 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 in which Macao has a good foundation and certain advantages. It is of great significance to carry out key research on the diagnosis and treatment technology of tumors or non-tumor chronic diseases and other diseases, to promote the development of Macao's life and health technology and general health industry, and to enhance the comprehensive strength of

Macao's scientific and technological innovation.

In order to give full play of 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) of Macao 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 and the development of the Guangdong-Macao In-Depth Cooperation Zone in Hengqin through technological innovations in support of the development of International Innovation and Technology Hub in the Guangdong-Hong Kong-Macao Greater Bay Area, thereby contributing to China's development into an innovative country.

II. Overall Objectives

Taking common and chronic diseases in Macao as the entry point, and clinical transformation as the key target, to implement scientific research and technology R&D related to precision medicine, establish a new plan with equal emphasis on diagnosis and treatment, implement individualized treatment and generate social benefits.

III. Research Fields

Field 1: Individualized treatment based on accurate tumor diagnosis

To aim at the problems of drug resistance and metastasis of high-incidence tumors such as breast cancer; to carry out accurate diagnosis and efficacy prediction by means of analysis combining multi-omics data of organoids and animal models; to focus on discovering, identifying and verifying the relevant targets of tumor resistance and metastasis; to clarify the mechanism of action and to develop strategies and plans for individualized treatment.

Performance Indicators: Discovering the molecular pathways and regulatory mechanisms associated with metastasis and drug resistance. 1) Developing a kit for accurate detection of tumor drug resistance and metastasis, and submitting it to the regulatory authorities for approval. 2) Developing at least 1 set of individualized treatment plans based on precision diagnosis, and conducting prospective clinical trials for verification.

Field 2: New technologies for diagnosis and treatment of non-tumor chronic diseases

To develop wearable devices to form an integrated system for precision diagnosis and drug treatment for rheumatoid arthritis and other high-incidence diseases in Macao.

Performance Indicators: Creating new products that integrate technologies such as electronic sensing. 1) Developing wearable devices that can dynamically and accurately monitor molecular markers, completing the declaration for medical devices of the drug regulatory departments above the provincial level, and applying for and authorizing at least 1 patent. 2) Developing an intelligent minimally invasive treatment system based on the dynamic monitoring of wearable devices, and applying for and authorizing at least 1 patent.

IV. Application Requirements

The applying entity shall file the application in the form of a project under the research topics of the fields listed in this Guideline. Each project should be submitted for the application as a whole, with content research and performance indicators fully covered. The leading entity of the project must be a local one but we also encourage cooperation with entities from areas outside Macao. No more than 6 participating units in each project are allowed. Unless otherwise specified, a project should include no more than 3 topics. Every project leader or topic leader(s) must be qualified to work full-time in Macao. Led by Macao's scientific research units, research should include participation from hospitals and enterprises, and a formal cooperation agreement must be provided.

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

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