

Macao Funding Scheme for Key R & D

Projects 2021

Application Guideline for Projects of Biomedical Materials

I. Background

In view of the development of life science, material science, physics, chemistry and other disciplines, especially that of tissue engineering, science, technology and innovation must be targeted at improving people's life and health, which means the acceleration of the research and development of biomedical materials and products is of great strategic significance in cultivating strategic emerging industries, changing the mode of economic development as well as enabling science and technology to benefit people's livelihood. 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.

After years of development, Macao has built up relatively strong capability of research and development in the field of biomedical materials. In particular, medical diagnosis utilizing nanomaterials technology and the research and development of biomedical materials have also achieved major breakthroughs and advantages. To further concentrate resources for research in this field will play an important role in promoting the development of biomedical material technology and the big health industry in Macao, and enhancing the comprehensive strengths of scientific and technological innovation in Macao.

In order to fully leverage Macao's advantages in the field of

biomedical materials, further integrate existing advantaged resources, and enhance the 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 biomedical materials 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 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

To achieve breakthroughs by utilizing both nanomaterials and modern biotechnology for the treatment of major and complicated diseases such as cancers and diabetes, combining with the accelerated knowledge in Chinese traditional medicine to provide new technologies and products for the treatment of advanced metastatic cancer and diabetes: to research for and develop tumor immune technology based on new nanomaterials and clinical application research for attacking advanced and metastatic cancers with malignant tumors, while developing polysaccharide source materials to foster the healing of wounds caused by diabetes and carrying out clinical verification.

III. Research Fields

Field 1: Research and application of the tumor immunotherapy

technology based on new carbon-based nanomaterials

To research and develop new carbon-based nanomaterials and their GMP-compliant preparation process and complete their biosafety assessment; to establish the preparation process of immune cell vaccine based on the carbon-based nanomaterial; to carry out preclinical research on tumor immunotherapy and complete its safety, effectiveness and quality controllability evaluation, as well as clinical research and preliminary assessment of the safety and effectiveness of tumor immune technology based on new nanomaterials.

Performance Indicators: Successfully completing the above-mentioned research; formulating a research report; passing the technical examinations organized by the relevant departments; obtaining 4-5 invention patents and clinical trial approval documents.

Field 2: Research and application of polysaccharides extracted from Chinese traditional medicine or stem cell materials for promoting wound healing for patients with diabetes

To research and optimize the preparation work for extracting materials from traditional Chinese medicine or stem cells that can foster the healing of wounds on patients with diabetes; to carry out preclinical study of the new materials and complete the evaluation of its safety, effectiveness and quality controllability, as well as clinical study to preliminarily assess its safety on humans and effectiveness.

Performance Indicators: Successfully completing the above-mentioned research; passing the technical examinations organized by the relevant departments; obtaining 2-4 invention patents and clinical trial approval documents.

IV. Application Requirements

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. Each project should be submitted for the application as a whole, and in principle, all the required performance indicators must be covered. Unless otherwise specified, a project should include no more than 3 topics. The leading entity of the project must be a local one but we also encourage cooperation with entities from outside Macao. Every project should be undertaken by no more than 6 entities. Every project leader or topic leader(s) must be qualified to work full-time in Macao.

The implementation period of the project is 3 years. The maximum application amount for each project of the field 1 is MOP 20 million, whereas that of the field 2 is MOP 10 million.

V. Experts Involved in the Formulation of the Guideline

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