

THE ROLE OF BIOBANKS IN MEDICAL RESEARCH

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Introduction

Biobanks are structured organizations whose purpose is to obtain samples with high information quality, helping research projects have reliable results. Biobanks associated with clinical samples should maintain a high confidentiality; the associated ethics committees play an important role in the protection of information of the samples.

Historical background

The activity of storing tissues for research dates back to the seventeenth century. Thus, pathology laboratories have been custodians of the tissues obtained in surgeries for the diagnosis and characterization of diseases. It was only in 2001 that the Organization for Economic Cooperation and Development (OECD) defined biobanks as biological resource centers. However, this activity was promoted and regulated in Europe a few decades earlier. In the U.S became more relevant with the Human Genome Project by inserting, in translational research, the ethical and bioethical aspects of the use of biological samples.

Biobanks and translational medicine

Translational medicine relies on samples with high-quality associated clinical information, in order to impact the diagnosis and treatment of different terms. In cancer, mutations or the expression of certain proteins, which helps establish targeted treatments.

Biobanks help provide materials for research with relevant clinical information, with protocols where authorization is received of the patient for the collection of information and sample biological protecting the identity of the donor. The quality evaluation takes into account the type variables collection, transport and storage. Physical and environmental conditions are also controlled.

Specialized pathological analysis

In addition to keeping track of the variables that can affect the tissue, a pathologist performs an analysis of sample composition. In the case of a tumor, indicates the percentage of neoplastic tissue and whether there is necrosis or inflammation. It also identifies the areas that are suitable for the extraction of the material genetic or protein expression studies. Those Marked areas are used to perform an analysis of the DNA, RNA and protein content.

Biobanks and academic institutions

Puerto Rico has formal institutional biobanks such as the Comprehensive Cancer Center (CCC) from the University of Puerto Rico and Ponce Health Science University, which are part of the Latin American and Caribbean Biobank Network, where initiatives for international collaboration are shared. The mission of the CCC BioBank is to follow the guidelines established by both the International Society for Biological Research and Environmental Biorepository (ISBER) and the American College of Pathologists so that stored material meets CLIA standards (Clinical Laboratory Improvement Amendments). Thus, if a patient requires some tissue or Biobank sample to enter a protocol of novel drugs, this can be used because the same standards of clinical laboratories are shared.

Commentary

In Puerto Rico, we have worked with biobanks for more of a decade. These are a fundamental piece in the development of therapeutic alternatives and for translational research. It has been possible to establish models for the development of biobanks with hospitals of community. In addition, it has collaborated in studies of disparity establishing the mutation profile of lung cancer in the Hispanic population compared with African American and Caucasian, and in studies of epigenetics of endometriosis.