High Performance Screening Platform

DESCRIPTION OF THE TECHNOLOGY

The first step in the process of discovery and development of a new drug, which forms part of its pre-clinical phase, focuses on understanding the biology of the disease, to identify a new therapeutic target ('Target Identification') that may play an essential role in the pathology, and on validating it ('Target Validation'), demonstrating both that the target actually participates in the disease and that it is a candidate for therapeutic intervention. Once the target is identified, a series of enzymatic or cellular tests are developed to determine the pharmacological activity of possible specific drugs against it.

High-throughput screening is a process that combines robotics and data processing to quickly identify compounds, antibodies or genes that modulate a particular molecular pathway. A large number of possible drugs can be analyzed to identify binding or biological activity against target molecules. Out of the molecules showing a possible therapeutic potential, some of them will be classified as main molecules, based on the relevance of their pharmacological properties (solubility, permeability, stability, etc.). Once a drug candidate ('Lead') has been identified, scientists try to optimise its capacity to combat the disease by modifying its structure using different medical chemistry techniques ('Lead Optimization').

On the other hand, the development of "omic" technologies has significantly increased the knowledge of the molecular mechanisms responsible for a large number of diseases. Among the findings that these new technologies have revealed stands out the significant heterogeneity existing amongst the molecular mechanisms responsible for the same disease in different individuals.

This new scenario has opened the door to the development of a huge number of individualized treatments for each patient and forces, on the one hand, the scientific community to search for what is now called "personalized medicine" and, on the other, the drug development platforms to update and adapt to the new needs of the patient.

The mission of the Screening Platform for chemical compound libraries (chemical libraries) is to carry out the evaluation of the biological / pharmacological activity of the compounds in order to identify and characterize new bioactive molecules. Moreover, It´s specialized in the identification of compounds modulating protein-protein and protein-RNA interactions, which are key in numerous human pathologies, and in the development of tests with both adult and embryonic stem cells.

The main activities are the generation and maintenance of a collection of compounds of high chemical diversity, the adaptation of tests to mass screening methodologies, and the selection of active compounds against numerous therapeutic targets of interest.

MARKET APPLICATION SECTORS

- Public or private research entities.
- Pharmaceutical companies and R&D departments.
- Biotechnology companies.
- Hospitals

TECHNICAL ADVANTAGES AND BUSINESS BENEFITS

The High Performance Screening Platform brings advantages and added value to purely technological capabilities, such as the capacity, experience and scientific excellence of its staff, the participation in unique European projects and infrastructures, specialisation in work with stem cells, or additional experience in the clinical phase of new drugs development.

On the other hand, the Platform benefits from a position of transversality within the scientific and technological services infrastructure of the IPPC, which allows it great flexibility , adaptation and maneuverability in the design and execution of projects with very specific needs .

In addition, through its activity and numerous collaborations, the platform is aligned with European initiatives such as 'Innovative Medicine Iniative (IMI)', the largest public-private initiative in Europe designed to accelerate the development of better and safer medicines for patients, or the European Strategy Forum on Research Infrastructures (ESFRI) 'EU-Openscreen', whose objectives are the discovery of biologically active substances in all areas of life sciences, providing open access to advanced technologies, to chemicals and to biological resources, and the use and exploitaition of the experience of the European knowledge in chemistry in a common compounds collection to advance into the elucidation of the molecular mechanisms of complex biological phenomena.

CURRENT STATE OF DEVELOPMENT

Since 2005, the CIPF has been developing multiple actions and initiatives aimed at the development of Innovative and Precision Medicines, through the Pharmacological Screening Platform as well as through the Therapeutic Polymers, Peptides and Proteins, and Organic Molecules laboratories, among others. Thus, the approach to the development of new drugs is based on multi and interdisciplinary collaboration between chemists, biologists, pharmacists, bioinformaticians and clinicians all sharing the same objective, which stablishes a differential fact that is undoubtedly one of the strengths of the platform.

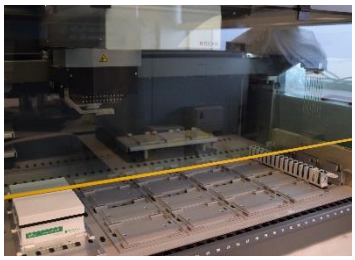
INTELLECTUAL PROPERTY RIGHTS

Does not apply.

COLLABORATION SOUGHT

Innovative medicine development projects at national and international level, as well as provision of services related to available technologies .

RELATED IMAGES



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