ACGT project: description

The ACGT work plan relies on three core activities:

① Integration

Development of services to enable integrated access to heterogeneous, multi-level data (from the level of genes, proteins, organs, to the individual and population), taking into account standard clinical and genomic ontologies.

② Knowledge Grid

Development of Knowledge Grid infrastructures for the distributed discovery of knowledge from data repositories, offering data analysis services in the domain of biomedical informatics and creating a high-performant computing environment in order to:

- cope with the huge amount of both clinical and genomic data
- meet the computationally costly data processing needs
- easily distribute the extracted knowledge among researchers and clinicians

Case Studies

ACGT aims to present the 'next-step' in cancer research and fill in the technological gaps of clinical trials running in Europe and world-wide.

ACGT targets two major cancer diseases namely, breast cancer (BRCA) and paediatric nephroblastoma (PN) presented by three (running) clinical trials.

In addition, in-silico oncology trials scenarios will be run to assess the utility of tumour-growth simulation on both BRCA and PN.

③ Clinical trials

Design and implementation of specific clinico-genomic trials based on:

- clear-cut research objectives for cancer-related clinical and genomic inquiries at all level of the human organism
- incorporation of the clinical-trials in an integrated GRID environment enriched with knowledge-discovery capabilities
- interpretation of results into standardized clinical guidelines and protocols

Objectives of the project

The aim of ACGT is to provide medical researchers with optimal means and resources to fight cancer.

The project will focus on this achievement by:

- Defining common standards of data storage
- Developing new ontologies
- Implementing a bio-medical GRID infrastructure offering seamless mediation services for sharing data and data-processing tools

Imagine

that for selected cancer patients, biopsies are taken before, during and after treatment, made anonymous and the analyses stored promptly in an accessible fashion.

Imagine also that the patient's data can be readily compared with those from other trials. And imagine that one can drill down into clinical and other databases in an intelligent search in hours rather than months.

This might lead to the rapid identification of cancer profiles, and of their corresponding optimal therapy.

Expected results and impacts

The ACGT project aims to develop a GRID-enabled european infrastructure supporting multisided clinical studies and translational research and to stimulate the sharing of both clinical and genetic data and analytical tools, with a particular focus on breast cancer and paediatric nephroblastoma.

In this perspective, the ACGT project will:

- Provide the advanced tools needed by biomedical scientific researchers in their daily lab or clinical work, so that they are properly equipped to to conduct innovative research

- Facilitate exchanges and interactions among clinical and genetic researchers to pool their expertise towards identifiying the best treatment tailored to every patient

- Allow for discoveries in the laboratory to be quickly transferred to the clinical management and treatment of patients and obtain societal benefits

- Contribute to the scientific development of new biomedical informatics approaches, where Europe is already leading the initiatives in the field, but strengthening the competitive efforts of industry to reach economic success