

About the ACGT project: a description

The ACGT work plan relies on 3 core activities:

1 Integration

Creation of advanced databases that **combine clinical history**; symptoms and signs; laboratory and histopathology; **medical imaging**; procedural and surgery results; and **genetic data**, taking into account standard clinical and genomic ontologies.

2 Knowledge Grid

Development of Knowledge Grid infrastructures for the distributed mining and **extraction of knowledge** from data repositories offering knowledge discovery services in the domain of biomedical informatics, and creating a **high-performing computational environment** to:

- cope with the huge-amount of both clinical and genomic data at the population level;
- meet the computationally costly data processing needs;

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 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.

Practical Example

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 trial scenarios will be run to assess the utility of tumour-growth simulation on both BRCA and PN.

Objectives of the project

The underlying motivation of ACGT is provide researchers and patricians with optimal means and resources to fight cancer.



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 readily be 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.**

The ACGT project is designed to realise this vision and will focus on this achievement by:

- Defining common standards of data storage at each level of investigation,
- Developing new ontologies for cross-referencing terms and their biological contexts;
- Implementing a bio-medical GRID infrastructure offering seamless mediation services for sharing data and data-processing.

ACGT will therefore deliver a unifying infrastructure allowing cancer researchers to share their data and to benefit from the innovative informatics tools that are been developed by other researchers.



Expected Results & Impacts

The completion of the Human Genome Project sparked the development of many new tools for today's biomedical research.

The combination of clinical and genetic information to cure the **paediatric nephroblastoma cancer**, has given significant results, up to **85%** treatment success rate.

The ACGT project sees its mission to develop a GRID platform to support and stimulate further exchanges of both clinic and genetic information, with a particular focus on **breast cancer treatment**. ACGT hopes to trigger the emergence of latent **clinico-genomic synergies** to ensure **faster diagnosis more efficient therapy**.

In this perspective, the ACGT project will be:

- Providing the **advanced tools** needed by biomedical scientific researchers in their daily lab or clinical work, so that they are properly equipped to "innovate".
- Facilitating **exchanges and interactions among clinical and genetical cancer researchers** to pool their expertise towards identifying the best treatment for every patient.
- Allowing for discoveries in the laboratory to be **quickly transferred to the clinical management and treatment of patients** and obtaining societal benefits. In former times, the discovery of diseases such as tuberculosis or diabetes did not lead to immediate therapies. In some cases, an elapse of more than 60 years was needed to improve therapeutics. New technologies such as **in-silico experimentation, Grid or data and text mining** are contributing to reduce these periods of time.

Contributing 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.

BEL

- Hospitaller Universitaire Bordet
- Association Hospitaliere de Bruxelles
- Custodix
- Facultes Universitaires Notre-Dame de la Paix

ESP

- Universidad de Malaga
- Universidad Politecnica de Madrid

FRA

- ERCIM EEIG
- HealthGrid
- Institut National de Recherche en Informatique et en Automatique

GER

- Fraunhofer-Gesellschaft zur Foerderung angewandten Forschung
- Uniersitaet Hannover
- Uniersitaet des Saarland
- Uniersitaet Hamburg

GRE

- Foundation for Reseah and Technology Hellas
- A. Persidis & SIA O.E.
- University of Crete
- Institute of Communications and Computer Systems

ITA

- Istituto Europeo di Oncologia s.r.l.

ROM

- S.C. Siveco Romania SA

NED

- University van Amsterdam
- Philips Electronics Ned erland B.V.

POL

- Instytut Chemii Bioorganicznej pan w Poznaniu

SWI

- Institut Suisse de Bioinformatique

SWE

- Lunds Universitet

UK

- University of Oxford

JPN

- The Chancellor, Masters and Scholars of the Hokkaido University

FIGHT CANCER WITH NEW TECHNOLOGIES

Website: www.eu-acgt.org

Project co-ordinator: ERCIM EEIG

Contact person: Remi Ronchaud

Tel: + 33 4 92 38 50 12 / Fax: 50 11

Email: remi.ronchaud@ercim.org



Scientific co-ordinator: FORTH

Contact person: Manolis Tsinakis

Email: tsiknaki@ics.forth.gr



Timetable: from 02/06 – to 01/10

Total cost: 16 747 206 €

EC funding: 11 800 000 €

Instrument: Integrated Project

Project Identifier: FP6-2005-IST-026996

MORE THAN A DREAM

A REALITY



Advancing Clinico Genomic Trials On Cancer