

# GRANATUM



## A social collaborative working space semantically interlinking biomedical researchers, knowledge and data for the design and execution of in silico models and experiments in cancer chemoprevention

**GRANATUM** is a social collaborative working space semantically interlinking biomedical researchers, knowledge and data for the design and execution of in-silico models and experiments in cancer chemoprevention..

### Objectives of the project

GRANATUM has the vision to bridge the information, knowledge and collaboration gap among biomedical researchers in Europe.

The challenge of global health requires a global outlook on healthcare that strategically embraces international and multidisciplinary cooperation between biomedical research institutions. During the last decade biomedical scientific research collaborations became popular, but complex problems, rapidly changing technology, dynamic growth of knowledge, and highly specialized areas of expertise make it difficult.

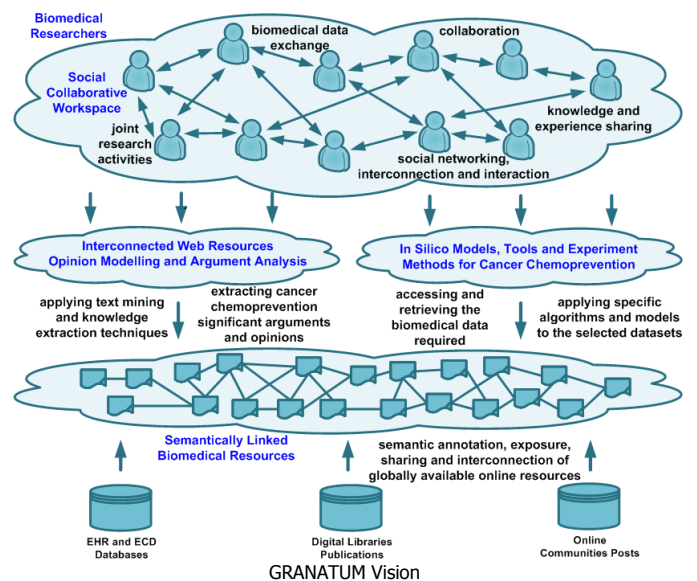
With specific focus on cancer chemoprevention experiments GRANATUM ensures the homogenized, integrated access to the globally available information and data resources needed to perform complex experiments and conduct studies on large-scale datasets.

The GRANATUM initiative will

- build the next-generation, semantically-enriched, and interlinked collaborative biomedical information space about cancer chemoprevention in the enlarged Europe;
- empower the contribution and involvement of the pan-European biomedical research community towards the unified cancer chemoprevention collaboration space in the enlarged Europe, enabling scientists to take full advantage of the distributed multimedia biomedical information;
- support sound decision making towards the effective prioritization and organization on the combination of agents to be developed and evaluated in chemoprevention clinical trials;
- validate and evaluate the GRANATUM results by developing proof of concept collaboration scenarios in cancer chemoprevention research.

### Project Description

The GRANATUM consortium follows an innovative, open, generic approach which introduces the concepts and tools for the social interconnection of the biomedical researchers and scientists in the cancer chemoprevention domain, and the semantically enriched publication and interlinking of cancer chemoprevention biomedical data, information, and knowledge.



GRANATUM will provide

- the open, generic GRANATUM Framework and Conceptual Architecture for socially interconnecting and semantically linking the cancer chemoprevention biomedical researchers, data, and resources;
- the innovative GRANATUM Platform that enables cancer chemoprevention researchers in universities, research institutes and pharmaceutical industry (across the enlarged Europe at least) to socially share, dynamically discover and fruitfully combine biomedical data, knowledge and experiences;
- the GRANATUM Semantic Model that constitutes a common ontological reference model for the semantic annotation, sharing and interconnection of globally available biomedical resources, such as EHR databases, digital libraries and archives, online communities and discussions;
- a set of GRANATUM Research Collaboration Showcases and Experiments in Cancer Chemoprevention that will validate and prove the concepts and tools of the proposed GRANATUM initiative;

#### CASE STUDY

Maria works for a pharmaceutical company. Her company is interested in producing a drug which would closely match the biological function of tamoxifen, a breast cancer preventive and therapeutic drug, but cheaper to produce. Maria needs to search several databases for information on chemical properties, toxicity, biomedical activities, clinical information, use in-silico tools, assemble the virtual screening workflow (VSW) with all the filters and push the preferable results through the VSW into the next databases in the search for an answer. Using the GRANATUM platform, Maria can search several databases, send the results to in-silico tools, assemble the VSW with all the different filters and push data into graphing and statistical analysis software. Through its interface, Maria can find all these functionalities bundled together.

- the GRANATUM Methodology that constitutes a step-by-step cookbook with methodological adoption guidelines for leveraging the quality of the integrative biomedical research in cancer chemoprevention;
- Wide-scale dissemination and exploitation of the project results to the European academic, scientific and industrial stakeholders in the enlarged Europe and beyond.

## Expected Results & Impacts & Preliminary results

GRANATUM is bound to have significant impact on

- the way that current biomedical research is being conducted, and
- the accuracy of the produced results and the speed with which these results are produced.

GRANATUM will facilitate research collaboration amongst researchers from geographically dispersed, multidisciplinary research groups, with focus on *tackling a shared challenge, exchanging heterogeneous and large volumes of biomedical data, models and knowledge, and allowing their experiences to be socially shaped, leveraged and shared.*

GRANATUM will provide an *IT-based collaborative environment for building and executing complex biomedical studies and in silico experiments on largely available and high-quality data repositories*, so as to perform simulations on heterogeneous biomedical datasets and to predict the biological outcome.



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#### Partners:

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- National University of Ireland Galway (Ireland)
- Foundation For Research And Technology Hellas (Greece)
- Cybion Srl. (Italy)
- Centre for Research and Technology Hellas (Greece)
- University of Cyprus (Cyprus)
- German Cancer Research Center – DKFZ (Germany)
- Gioumpitek Meleti Schediasmos Ylopoiisi Kai Polisi Ergon Pliroforikis Etaireia Periorismenis Efthynis – Ubitech (Greece)

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### KEYWORDS

eHealth networks and architectures, International research cooperation, In-silico bioinformatics models and tools, Linked biomedical data space, Opinion modelling and argument analysis, Social collaborative working space, Cancer chemoprevention