ASSOCIATED PARTNERS

Institut Pasteur-Korea (Korea), Institut Pasteur of Shanghai (China), University of Keel (United Kingdom), University of Birmingham (United Kingdom), Bilkent University (Turkey), National University of Science and Technology of Pakistan (Pakistan), University of Istanbul (Turkey), VetAgo Sup (France), ESRF Grenoble (France), Parc Cientific de Barcelona (Spain), BioCat (Spain), BioIndustry Park Silvano-Fumero (Italy), Floralis (France) and BioPark (France), Swiss Institute of BioInformatics (Switzerland), University Hospitals of Grenoble (France), of Barcelona (Spain), of Cluj-Napoca (Romania), of Dongguk (Korea) and of Tongji (China), Sanofi-Pasteur (France), bioMérieux (France), Mérial (France), SoBios (France), Novadiscovery (France), NovImmune (Switzerland), Pharmapeptides (France), Lyon BioPole (France) , BioPmed (Italy).

>Practical informations

>Practical informations

Online application: www.biohealth-computing.eu
Within the BioHealth Computing Programme, three types of Erasmus Mundus scholarships are available for Non-European applicants, European applicants, Scholars and Academics. Industrial Scholarships will be assigned by BioHealth Computing Consortium, to applicants whose background and interest match closely with the priorities of the Partner Industries.

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Maastricht University

UNIVERSITAT DE BARCELONA

UNIVERSITATEA DE STIINTE AGRICOLE SI MEDICINA VETERINARA DE CLUJ NAPOCA

UNIVERSITÀ DEGLI STUDI DI TORINO
ALMA UNIVERSITAS TAURINENSIS

Université Joseph Fourier
GRENOBLE
SCHOOL OF BIOTECHNOLOGY

BIOHEALTH COMPUTING
Erasmus Mundus programme

EACEA
European Commission ERASMUS MUNDUS
Education, Audiovisual & Culture Executive Agency

BioHealth Computing
Graduate School

Catalyzing worldwide innovation in Clinical and Life Sciences, through the promotion of Systems Biology and Bioengineering.

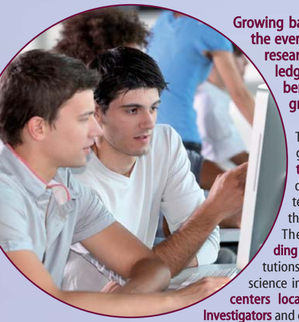
Université Joseph Fourier
GRENOBLE

The BioHealth Computing Alliance brings together 10 leading universities and 25 associate partners linking academic institutions, technology transfer centers, university hospitals and life science industries. This unique network of actors distributed over 13 centers located in Europe and Asia brings together 150 Principal Investigators and combines a great diversity of relevant scientific disciplines and know-how to develop research and training in the field of clinical and life sciences.

PARTNER UNIVERSITIES

Université Joseph Fourier Grenoble, France
Universitat de Barcelona, Spain
Università degli studi di Torino, Italy
University of Maastricht, The Netherlands
Universitatea de Stiinte Agricole si Medicina Veterinara de Cluj Napoca, Romania

>Presentation



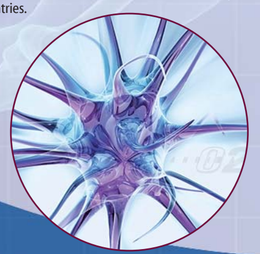
Growing barriers between clinical and basic research, along with the ever increasing complexities involved in conducting health research, are making it more difficult to translate new knowledge from the bench to the bedside - and back again to the bench. To tackle the problem of complexity is one of the greatest challenges of the BioHealth Computing Alliance.

The BioHealth Computing Alliance aims at forming a new generation of professionals that will be able **to exploit (and further enhance) cutting-edge technologies in Systems Biology** to design and implement - typically in multi-disciplinary work teams - innovative solutions that take into account the needs of the patients and the expectations of the stakeholders.

The BioHealth Computing Alliance brings together **10 leading universities and 25 associate partners** linking academic institutions, technology transfer centers, university hospitals and life science industries. This unique network of actors distributed over **13 centers located in Europe and Asia** brings together **150 Principal Investigators** and combines a great diversity of relevant scientific disciplines and know-how to develop research and training in the field of clinical and life sciences.

A MULTIDISCIPLINARY PROGRAMME SUPPORTED BY EUROPEAN COMMISSION

The BioHealth Computing students will learn to work on a joint research program associating multidisciplinary approaches. They are expected understanding biology from molecules to cells, to organs, to organisms and to populations, analyzing multiscale dynamics of all the forces that make up the complex living systems, by the use of integrated system-wide approaches, systemic modeling and simulation tools including data from bedside, environment, omics and high-throughput techniques, for accelerating health innovation laboratory discoveries into treatments for patients. The BioHealth Computing Consortium is supported by Erasmus Mundus, a program launched by the European Commission to promote the European Union as a centre of excellence in learning and research around the world; and the intercultural understanding through cooperation with Third Countries in the field of higher education. In addition, it contributes to the development of human resources and the international cooperation capacity of Higher education institutions in Third Countries by increasing mobility between the European Union and these countries.



>Master Programme

The BioHealth Computing Ms programme is organized into **two semesters followed at two leading Universities** that will be both in charge of awarding credits (30:30 ECTS). The courses start and finish in the Technopole of Archamps-Geneva by an intensive Summer School organized to allow students to develop communicational and entrepreneurial skills.

Combining high tech with old academic schools

The first semester, dedicated to advanced courses, is divided into four tracks, connecting each one to basic fields of application, and to entrance requirements: Clinical Research; Molecular Biotechnology; Environmental and Animal Health and Computational Mathematics. The second semester, dedicated to a Joint Research Programme, gives to students **the opportunity to apply their knowledge in a leading laboratory,** allowing them to master concepts, methodologies and tools required to develop a translational project.

The main learning output of this Master Programme is the students' ability to work on a joint research program, and to translate research into applications. This innovative approach of BioHealth Computing Ms is based on the mobility of students, exchanging experiences in different disciplines and establishing a common high quality standard in education and training. The students having successfully carried out a period of study in, at least, two universities of the Consortium, will be awarded a **Double Degree**, consisting of two independent national degrees, signed by the hosting universities, and an **Original Diploma "BioHealth Computing Ms",** signed by all the Partner Universities.

>PhD Programme

The BioHealth Computing PhD works, at least, **with two supervisors in 2 different laboratories from the partner institutions**. Typically the labs involved will have different, complementary research know-how and facilities; which are used in the PhD project. The minimum requirement is to spend at least 6 months in each lab, but in most cases the partition will be closer to 35%:65%. Students have the opportunity to visit other partners during specific courses organized every years. **Two PhD degrees are finally obtained with submission of only one thesis,** and one oral defense before a committee following a successful completion of the studies.

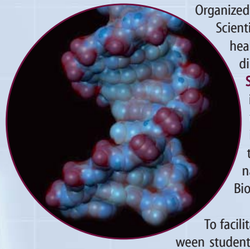
Each year the PhD students come together for an annual Summer School organized in Archamps (74, France). During PhD project, **an industry partner or a hospital center is also involved** with the obligation for the PhD student to spend a minimum of 3 months with this non-academic partner. Such challenges will provide students the chance of realistically facing concrete design issues strictly related to market and business opportunities. The implication of industry in the program is a key issue regardless of the career plans of the PhD candidates (academic or industrial perspective).

Attacking the complex, nonlinear nature of biology and medicine

Finally, BioHealth Computing PhD brings a number of **important advantages to the candidate for his/her future career:**

- opportunity to exploit and learn from a larger pool of competences and facilities from leading research groups
- international work experience, exposure to different working cultures
- professional contacts in several countries with industries and laboratories
- double diploma

>Summer School



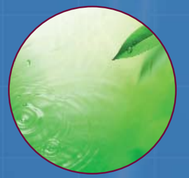
Organized each year under the responsibility of the BioHealth Computing Scientific Committee, the Summer School brings together scientists and health professionals to present and discuss research and clinical findings in all phases of "bentch to bedside" process. **The Summer School is the cornerstone of the BioHealth Computing GS**, because it provides the consortium's actors with an invaluable insight into the multi-faceted nature of Systems Biology.

Moving towards a predictive, personnalized and preventive medicine … with modelling

To facilitate the exchange between students, academia, hospitals and industry partners, it will be organized satellite events such as:

- **Interactive Training Initiative (ITI).** Introductory conferences are given by internationally recognized scientists on Systems Biology. Students are invited to work together to solve a R&D problem submitted by an industrial partner. The ITI will to provide students with tools to respond to challenging situation in translationnal programmes: pluridisciplinary approach, social and ethical responsibility, project management business plan and grant writing.

- **Conference Talks (CT); Poster Sessions (PS) and Partnering Event (PE).** The BioHealth Computing GS invite each year senior researchers to present conferences (CT), and young academic and private attendees to submit posters (PS) exhibiting their findings in Systems Biology . The aim of the PE is to gather academic, medical and industrial partners interested in building technology partnerships. The event will focus on applied research results from academia and new medical or pharmaceutical technologies developed by companies in the fields of Systems Biology.



>Job opportunities

The innovative approach, of BioHealth Computing programme, carries a **significant potential in engineering design and progress** driving in Clinical and Life industries. The tools, techniques, and approaches proposed by the Graduate School are becoming standard in research labs and R&D departments. Many organizations are going to put the core concept of Systems Biology properly into practice by **informing their research through the iterative cycle between experimentation and modelling.** These worldwide - public and private- Systems Biology's centers are looking for clinicians, pharmacists, veterinatians, biologists, engineers, chemists, mathematicians, and computer programmers.

Strong relationships with industry to boost your career prospect

Clinical and Life Sciences industries needing trained people can be divided into two broad categories: those that employ System Biology's methodology to make end products, and those that create tools, which are sold to, and used by the companies in the first group.

- **Large companies** such as drug development firms, pharmaceutical industries, and commodity producers beloning to the first category, **need people driven by biology questions who want to take computational routes.** Their demand is particularly great for people who can analyze data, who approach biology in a quantitative fashion and can integrate information from different areas.

- **Small and Medium sized Enterprises** (SMEs) in the biotech sector for example, belonging to the latter category, **seek to license their tools to larger pharmaceutical firms.** There may be opportunities for small and medium enterprises to develop software solutions for companies to handle their big amount of data effectively.