



Consortium Committee

BioHealth Computing Erasmus Mundus Master

Report of the Kickoff Meeting, Technopole d'Archamps, October 18th, 2010

Invited members

Present. UJF Grenoble. Michel Sève, Emmanuel Drouet, Christine Demeilliers [Faculty of Pharmacy], Christophe Pison, Dominique Bicout [Faculty of Medicine]; Laurent Desbat [Faculty of Mathematics], **UB Barcelona.** Josefa Badia Palacin (*Pepita!*), Amparo Cortès. [Faculty of Pharmacy] Josep Roca [Faculty of Medicine] Josep Vives [Faculty of Mathematics], **UNITO Torino.** Fiorella Altruda, Ferdinando Di Cunto [Scuola Universitaria Interfacoltà per le Biotecnologie biologia molecolare], **UM Maastricht.** Annemie Schols [School of Nutrition, Toxicology and Metabolism], **USAMV Cluj-Napoca.** Vasile Cozma [Faculty Veterinary Medicine], **UNIGE Geneva.** Gerrit Borchard [Faculty of Pharmacy, Pharmapeptides].

Excused: UJF Grenoble. Jean-Luc Lenormand, Jean Breton [Faculty of Pharmacy], Anne Maitre, Charles Auffray [Faculty of Medicine]; Eric Bonnetier, Christophe Prud'homme [Faculty of Mathematics], **UB Barcelona.** Marta Cascante. [Faculty of Biology], **UNITO Torino.** Lorenzo Silengo [Scuola Universitaria Interfacoltà per le Biotecnologie biologia molecolare], **UM Maastricht.** Emiel Wouters [School of Nutrition, Toxicology and Metabolism], **UNIGE Geneva.** Patricia Pallaggi [SIB].

Progress of the meeting

➤ Morning

[9:30-10:15]. Presentation: Need Analysis; Overview; Academic Structure; Competencies

[10:30-13:00]. Students admission: Admission criteria; Application procedure; Students selection; Students enrolment; Scholarships-fellowships.

➤ Afternoon

[14:00-15:00] Curriculum: Organization of the tracks; Transfer of credits; Examination and dissertation; Awarding the degree.

[15:00-16:00] Partnerships: Interactions between Universities and Partners (Training; Internships and Governance); International policy (China; India; Korea; Japan; Brazil; Chile; Mexico; Canada; Turkey; Israel; Tunisia; etc.).

[16:00-17:00] Organization: Financial arrangements: Regulation rules; Fixed costs; Variable costs; Budget; Tuition fees.

Consortium organization: Consortium committee; Technical secretariat, Academic and organizational issues; Financial and administrative regulations, Associated members;

➤ Four key-points have been discussed:

1. Learning Outcomes and Internships
2. Summer School and Advanced Courses
3. Partnership and International Policy: A challenge for attracting students
4. Working calendar, and Agreement.

Learning Outcomes and Internships

➤ **System Medicine.** Great challenge in introducing System Biology in Medical and Pharmaceutical R&D. Necessity to stop the decline in output of new molecular entities in the context of steadily growing R&D expenditure. Projects much more prone to failure: only 5% of phase 1 projects produce output. Development time is increasing: 8 yrs (1960) to 14 yrs (1990). Training programme in System Medicine addresses both : (i) Basic biological and medical knowledge (basic experimental skills; scientific method and approach); and (ii) Information handling skills, prioritizing information and gleaning most important points (mathematical and analytical problem solving skills using calculus to solve problems; computing proficiency and basic programming skills).

➤ **Learning outcomes.** The BioHealth Computing Master's Programme aimed to develop three additional skills: (i) Communication skills (communicating scientific and technical information through both written and oral presentations); (ii) Organizational and management skills (time management, meeting deadlines, focus and staying power, appropriately utilizing

resources, grant writing, etc.) and (iii) Personal/interpersonal skills (adaptative behavior, creativity, sociability). From the point of view of the companies, these learning outcomes are also very important.

➤ **Research Project.** The Internship is the most critical component of this Master's Programme. The research project must give to student the opportunity to work on a translational research program, in the context of a genuine interdisciplinary approach. The students have to develop integrated system-wide approaches, using mathematical modeling and simulation to combine data from clinical, molecular and environmental protocols, and from high-throughput techniques. This approach is powerful both: (i) for understanding the complexity of biological interactions (between human, aggressors, drugs and environment); and (ii) for translating research results into predictive, preventive and personalized medicine.

➤ **Organization.** Research Projects are designed by Partner Universities, and proposed to the students, during their application, taking into account their academic background: (i) Clinical Research; (ii) Environmental & Animal Health; (iii) Molecular Biotechnology; or (iv) Computational Mathematics. Each Research Project must be both attached to one of these four disciplinary approaches, and inserted in an interdisciplinary approach. It is anticipated that the thesis will be relevant to the student's track and will address a question of importance in the student's field. Following BioHealth Computing EM procedures, the scientific quality and feasibility of the research master thesis proposals have to be assessed by the Education Committee, and to be approved by the two universities awarding the double degree.

➤ In the medium term, the consortium's goal is to propose pairs of complementary subjects, attached to two different disciplines. So that each student will be introduced to another student coming from a complementary track, to finally develop an original and innovative Joint research work, under the co-supervision of two academic staffs. We consider that the iterative application of two different approaches, promises to speed the understanding of translational concepts and methodologies. The students' twinning must integrate two different approaches.

➤ Pending the development of joint research projects, it would be desirable that an initial list of subjects is disseminated within the consortium, as soon as possible, so that we can rework these subjects collectively. To work, effectively, on research projects, it would be helpful that you each team send by e-mail several forms of proposed subjects, and/or working programme of your labs (find forms attached). Optionally, part of the research project can be conducted at another institute or company outside Partner Universities, but in this case, it is always under supervision of a Partner University staff member.

Summer School and Advanced Courses

- **Summer School:** Michel had propose a first Agenda for the Summer School (Early September)
 - **Integration Period:** 2 weeks courses (W1 and W2)
 - Introduction: Overviews and Needs
 - Project management, IP, HR, Innovation and Tech transfer
 - Multicultural and holistic approaches of the health
 - Bibliography, Communication
 - Keynotes on BioHealth & Computing topics
 - Bioethics and philosophical aspects through the watching of documents and a roundtable
 - **Thesis presentations** (2 days, W3)
 - **Scientific conferences** (2 days, W3)
 - Introductory conference by an internationally recognized scientist (Nobel prize,...)
 - Conferences on the 4 topics of BioHealth & computing, translational and system medicine,...
 - Poster session by Master and PhD students
 - Widely opened to scientists (academic and industry), but priority for PhD students from universities of the consortium
 - **Steering committee** (1 day, W3)
- **Advanced Courses:** Two tracks are finalized, but we are waiting some feedbacks from: Josep, Annemie and Christophe (for Clinical research) and Laurent, Eric and Josep (for Computational Mathematics).

Partnership and International Policy

➤ **Public-Private Partnership.** One important output of the International Advisory Board, held in LyonBiopole October 14th, is that the Public-Private Partnership, especially for internships, provides a shared interest for universities and industries.

- *Industries* have the opportunity to pre-recruit worldwide collaborators from emerging countries (China, India, Korea, Latin America and Mediterranean), and to educate them. This implies: (i) that companies are involved in the selection of trainees; (ii) that they can undergo a trial period at the beginning of the internship; (iii) and for some of them that the payment of training allowances must be provided by an external academic structure (not the HRD). Furthermore, it should be necessary to study collectively on the implementation of privacy procedures for accommodating students.

- *Universities* have the opportunity to expand their offer of internships adapted to need of (and granted by) the companies. This opportunity will contribute to insure the sustainability of the BioHealth Computing Consortium. Indeed, it is expected that the European funding, awarded to the consortium, to decrease gradually. The coordinating university proposes to manage all public and private funding granted to the BioHealth Computing Master Programme inside the Foundation Université Joseph Fourier. The payment of training allowances to students can be provided directly by the Foundation.

- **Industries' Scholarships.** Most partner companies have proposed to fund internships. A call for proposals of topics of training will be sent in November. Yves Laurent (LyonBioPole) will organize the consultation of SME which are members of the LyonBioPole. Jordi Quintana has committed to propose a similar approach on the site of Barcelona with BioCat. Bruno Cedat (Rovaltai Pole of Ecotoxicology) will, in turn, consult officials of the Pole.

- **Worldwide recruitment.** The website www.biohealth-computing.eu receives about one hundred daily visitors, and we answer to a dozen emails per day, of candidates. We have implemented an application process online, but it will be difficult to recruit good applicants by such a procedure. To better secure our recruitment, we develop a network of partner universities in the country of origin of candidates. This network currently consists of universities that have already signed partnership agreements with the University UJF of Grenoble and partners in connection with our industrial partnership (Universities, Companies, BioParks and Pole of Competiveness).

- **Current network.** Our network of contacts covers three major geographical areas: Asia; Americas; Mediterranean.

- *Universities: Asia:* China (Shanghai Jiao Tong University, School of Medicine, Tongji University, China Pharmaceutical University Nanjing); India (Anna University-Chennai, Pondicherry University; Rajiv Gandhi Center of Biotechnology); Japan (Universities of Tsukuba and Osaka); *Americas:* Brazil (National School of Public Health/Oswaldo Cruz Foundation, Rio); Canada (Université de Montréal); *Mediterranean:* Israel (Ben Gourion University); Turkey (Selçuk Üniversitesi); Iran (Tehran University of Medical Sciences, Iranian Research Organization for Science and Technology).

- *BioParks and University's Hospitals: Asia:* China (Shanghai Rujin Hospital, Institut Pasteur of Shanghai, Suzhou BioBay); India (Federation of Asian Biotech Associations, FABA); Korea (Daedeok Innopolis, Chuncheon Bioindustry Foundation); Japan (Japan Bioindustry Association, Kansai TLO); *Americas:* Brazil (BRBIOTEC, TECNOPUC-PUCRS, CERTI-UFSC, FIEMG- IEL); Chile/Mexico (BCEC-BioAmericas); Canada (CQIB Laval, BiopolisQuébec, Montréal InVivo, Sherbrooke Innopole); *Mediterranean:* Israel (BioNegev-Innovation); Turkey (Konya Teknokent AS); Tunisia (CBS Sfax); Iran.

- *Poles of Competiveness and Industries:* Asia (BioMérieux, ERAI Shanghai and India).

- **International policy.** To expand this network, we are counting on the contribution of all partners. It is important to link the development of academic partnerships with international strategies of regions and of industries involved in the consortium. For the Rhone-Alps Region, for example, there is an interest to train senior scientists who are likely to consolidate the development of international research centers and industries located in the region. Anne Chaize suggests that in each region, economic institutions and industries may offer a program to welcome students and academics. Our visitors should be able to experience culture, values, and challenges of our contractors (and not only of our universities).

Working Calendar and Agreement

- **Agenda 2010-11.**

- November 1st-30th, 2010: Listing and working on subjects of internships; Finalization of the Agreement
- December 1st, 2010-January 11th, 2011: Application of the students, Finalization of the curriculum
- February 4th, 2011: Consortium Committee, Maastricht University
- March 15th, 2011 (2:00 pm): Meeting of the International Advisory Board. Parc Científic Barcelona (PCB), c/ Baldiri Reixac10-12, 08028 Barcelona, Spain.
 - Working on the Partnership: Objectives, Members, Organization and Partnership's Agreement.
 - Choosing a representative to the Consortium Committee.
- March 27th-29th, 2011 BioVision 7th Life Sciences Forum, Lyon. Presentation of Computing BioHealth EM.
- May 16th 2011: Consortium Committee, Archamps Technopole
- May 17th, 2011: Scientific Board, Archamps Technopole

- September 5th– 23th, 2011: Summer School and Consortium Committee. Technopole d'Archamps.
- **BioHealth Computing Committes. Consortium Committee (CC)**, with one representative of each partner institution (HEI), more the Coordinator, is in charge of all academic issues. Each member of the Consortium can bring observing non-voting persons (e.g. experts ...) to the CC meetings, unless decided otherwise by the CC. This committee defines the regulations of the programme, and notably: (i) Definition of the financial regulations and particularly the distribution rules of the tuition fees, under the framework of Consortium Agreement; (ii) Appointment of other committees such as Scientific Board (SB) and International Advisory Board (IAB) to assist the CC. The **Scientific Board** board will be in charge of the organization of the Summer School. Gerrit and Michel are agrees to participate to this group. Marta, Emiel and Lorenzo could join them. The **International Advisory Board**, with a dozen representatives from the working domains of the "BioHealth Computing EM" Programme (BioParks, Industries, Poles of Competitiveness), will be installed to advise the Consortium Committee on the set-up of the MSc Course and the relevance for the professional practice. The representatives of these two boards will participate to the Consortium Committee.
- **Consortium's Agreement.** The signature of the final Consortium agreement and the final template for the student/academics candidate agreement that will be sent from the consortium to the student/candidate is a mandatory condition for the award of the first Specific Grant Agreement (ie attribution of scholarships for 2011-12). Consortia should prepare and finalise these documents during the first semester of the academic year 2010/2011 so as to send them to the Agency well in advance of the scholarship/fellowship application deadline. Three universities are fully agreed with the first draft of our Consortium agreement transmitted in September (Torino, Cluj-Napoca and Grenoble). We are waiting the feedbacks of Bachelona and Maastricht?