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1. Introduction

The HUBc is a specialized project focusing on the field of health. It was designed with the primary goal of consolidating, in a single hub, the departments of the University of Barcelona (UB) and the research centres, hospitals, and companies affiliated with the university that share common teaching, research and healthcare activities in the area of health sciences and biomedicine.

To achieve this goal, the participation of the town and city councils of the municipalities in which the UB’s biomedicine and health sector units and facilities are located has been essential, as they have helped to promote and implement various initiatives that are currently in the development phase. These city and town councils include those of Hospitalet del Llobregat, where the Bellvitge Health Campus is located; Sant Boi de Llobregat, developer of the Mental Health Cluster; Santa Coloma de Gramenet, site of the Food and Nutrition Torribera Campus; and, of course, Barcelona.

The initial objectives defined in the HUBc strategic plan were:

- To promote excellence in university medical teaching and other studies in the field of healthcare.
- To foster lifelong learning in order to keep all professionals in healthcare-related fields up to date on the latest developments.
- To integrate translational research into clinical practice and teaching at the HUBc.
- To promote the consolidation of HUBc hospitals as international benchmark tertiary care centres.
- To maintain and increase levels of scientific production and its impact on international networks of medical knowledge.
- To create new companies in the fields of medicine, bioengineering and medical technologies.
- To facilitate knowledge transfer and application of innovation through university faculties, university hospitals, research centres, and companies, all with a focus on improving people’s health.
- To strengthen the capacity for regional, social and environmental transformation towards sustainable economic development and a model of social inclusion.

To these initial objectives, a series of more specific goals have been added, which are defined as progress indicators and which are discussed throughout this report. This report also addresses another overall objective and key factor for the future of campuses of excellence: internationalization.
International networks

The HUBc project’s initial approach revolved around cooperation between the public and private sectors in order to jointly accomplish objectives such as improving the quality of life of local residents and turning the HUBc into a driving force for the transformation of the region, economic development and social well-being.

To this end, a fabric of involvement has been woven through the various networks of international excellence in which the entities that make up the HUBc have planted the seeds of the campus of excellence in order to construct future projects originating at the HUBc.

Eurolife Network

Through its Faculty of Medicine (HUBc), the UB will be coordinating the Eurolife Network during the period of 2015-2017. This involves a coalition that brings together the most important medical faculties in Europe, which are dedicated to the task of advancing research and education in the life sciences.

LERU, League of European Research Universities

The University of Barcelona is considered one of the best universities in Europe, according to criteria such as research quality, scientific output, and the socio-economic impact of its activities on the GDP of Catalonia’s economy (more than €3 million per year according to a recent study from the Barcelona Chamber of Commerce). These assets have made the UB the only Spanish university to become a member of the League of European Research Universities (LERU). This association is made up of 21 leading research institutions, all committed to the values of quality education and all highly competitive in the context of international research. It is important to mention how much membership in the LERU has facilitated the University of Barcelona’s participation in major research projects and other international networks.

KIC - EIT Health

The HUBc is the core of a new proposal aligned with one of the six social challenges addressed in the European Commission’s Horizon 2020 programme: Health, Demographic Change and Wellbeing. Since 2010, the EU’s European Institute of Technology has promoted the creation of Knowledge and Innovation Communities (KICs) as a means of driving innovation and entrepreneurship through European alliances. The stakeholders in these KICs have the capabilities to plan and integrate the three sides of the knowledge triangle – research, training and business – at the highest levels of excellence. The HUBc was considered at the time to meet these requirements and to represent KIC in itself, uniting university faculties and schools, research centres and companies.

Within this context, the HUBc has acquired a reputation among leading European institutions as a well-established and highly competitive partner in the area of health sciences, in relation to the ageing population structure, a sustainable approach to healthcare system management and integration, and in the areas of innovation and knowledge transfer.
This effort has already begun to yield rewards. On 9 December 2014, after completing the initial candidacy phase and through the European Institute of Innovation and Technology (EIT), the EU announced the winning project for its call for proposals for the new Knowledge and Innovation Community (KIC) centred on healthy lifestyles and active ageing. This winning project was EIT Health, a proposal submitted through the underlying structure of the HUBc and spearheaded in Spain by the University of Barcelona through the HUBc and with the impetus of Biocat. EIT Health will have its headquarters in Spain, located at the Barcelona Science Park (PCB). EIT Health is a consortium made up of more than 140 leading European companies, universities and research centres from 14 European countries.

With a total budget of €2.1 billion, EIT Health is one of the world’s largest publicly funded initiatives in the health sector. As part of its first years of activity, the consortium is expecting to create around 80 new business ideas in 2016, with this figure increasing to 140 by 2018. The programmes sponsored by EIT Health are also expected to create 70 start-ups each year and provide training for up to 1 million students. EIT Health has branches in Spain, France, the UK, Belgium, Sweden and Germany. The presence of the headquarters of EIT Health at the University of Barcelona’s Science Park will also provide access to European funding for education and innovation projects.

New additions

The HUBc was initially comprised of an alliance of over 25 organizations (research centres, hospitals, companies and technology centres) and enjoyed the support of the city councils of Barcelona, Hospitalet de Llobregat and Santa Coloma de Gramenet. The primary strengths of the alliance are its high degree of specialization in the field of health, its ability to attract talent, its propensity for internationalization, and its potential as a driver for regional transformation, which is why these city governments so firmly back the project.

In successive periods of activity, a new member joined the HUBc alliance: a private university from Porto, Portugal, known as CESPU (the Ensino Advanced Polytechnic and University Cooperative), which is specifically dedicated to the health sector. This centre was already linked to the UB through collaborative agreements promoted by the HUBc and involving the study of dentistry and podiatry. The scientific board of IINFACTS (CESPU’s Health Sciences Research Institute) had also already included some members from the University of Barcelona.

Other institutions incorporated into the HUBc have included the Josep Carreras Leukaemia Research Institute (IJC), the Consorci Sanitari de Terrassa and the city council of Sant Boi de Llobregat, home of the Mental Health Cluster, of which the HUBc is a founding partner.
Evolution of the project

Firstly, it must be remembered that during the period of 2010 to 2015, a major economic crisis has taken place throughout Europe, and Spain has been among the most heavily affected countries.

Many projects involving the construction or restoration of large buildings and which required shared financing have been forced to undergo significant adjustments. It is also important to mention, however, that at no time have any of these projects been entirely abandoned by the HUBc (Digital Factory, Health Strategic Programme in Technological Innovation, Biopol Research Institutes), but rather they have been redesigned in a manner that allows them to be implemented in a context that can often be considered adverse.

Digital Factory

In the case of the Digital Factory, a project requiring the restoration of disused factory buildings in Barcelona’s Zona Franca area, significant changes have occurred. This project is already in its re-adaptation phase, thanks to an agreement with the Barcelona City Council (signed on 20 February 2015) to cede two buildings called Can Ricart and Can Jaumandreu in the district known as 22@. This will eliminate the need for further investment in the Zona Franca that, under the current circumstances, cannot be made. The Can Jaumandreu building is already in use (it is the location of the Digital Factory Digitization centre), while Can Ricart first requires a renovation phase, although at a much lower cost than initially forecasted.

Biopol’H

The Biopol Consortium, which had been leading the BIOPOL RESEARCH INSTITUTES project, was dissolved by the Government of Catalonia as part of its recent budget adjustments and its functions have been assumed by the IDIBELL (also part of the HUBc). Within this context, and facing the suspension of the project, changes were requested and accepted by the Secretary of State for Research and the project was re-named FARMATEC (more detailed comments on this can be found in the section on scientific improvement). This will represent a common-use service for the hospitals and research centres belonging to the HUBc, and it is slated for inauguration this year.

Health Strategic Programme in Technological Innovation

The Health Strategic Programme in Technological Innovation has been redefined. The initial costs, which involved a large experimental surgery facility in the Zona Franca, were clearly beyond the scope of the HUBc and the Hospital Clínic de Barcelona as the sponsors of the project. In the end, a decision was made to reform Sector 8 of the Faculty of Medicine of the Campus Clínic, where a smaller-sized project will be implemented. This will also take advantage of the proximity of the Forensic Anatomy Institute and the Cadaver Dissection Room, which will allow experimentation on animals to be replaced by the use of donated cadavers. This change represents an optimization of costs, making the implementation of the programme feasible.

These changes were discussed and eventually approved at several HUBc plenary assemblies. It was understood that the limitations imposed by the context of the economic crisis require us to be extremely rigorous about committing to certain investments.
Rankings

The University of Barcelona (UB) — the Catalan university with the highest number of students — is one of the top 200 universities in the world, according to the Academic Ranking of World Universities (ARWU), a classification also known as the Shanghai Ranking. To be exact, UB is located between position 151 and 200 of this prestigious ranking and it is the only university in the Spanish State that has managed to get in among the world’s 200 best universities.
2. Work completed

The Campus has been developed with the following priority lines of action:

- Restoring degraded urban districts
- Committing to strengthening international cooperation and supportive action
- Attracting and retaining talent

The specific sections (teaching improvement, scientific improvement, and transformation of the Campus) contain further details on the actions performed and the results obtained. In any event, it must be emphasized that these lines of action were considered wide-ranging elements that governed the approach to all of the initiatives.

The projects included in the strategic plan prior to establishment of the Campus have undergone significant changes, as during the reporting period we have been immersed in an unprecedented economic crisis that has required some actions to be reconsidered and restructured. In all cases, the Administration has been aware of and has accepted these changes. However, none of the projects has been entirely abandoned.

Objective and impact of actions

Certain objectives have been established that are common to all of the measures:

- Creating common-use services that are beneficial to all associated members. The idea has been to offer services to the members that can reduce system costs. It is important to mention the following projects in this first section: Barcino, Farmatec-UB, Digital Factory, Health Meeting Point-Innovation Showroom, and the future Bellvitge University Hall of Residence.

- Encouraging the use of new technologies, especially ICT, in order to create new applications that will improve research, teaching, healthcare and technology transfer. This section should also include the following projects: Barcino, Digitization Service, the Digital Medical Teaching Platform (AISCHANNEL), the Can Ricart and Can Jaumandreu Technology spaces and the Cellular Therapy Unit.

- Strengthening the general application of minimally invasive surgery in order to improve patient care and the economy of the sector. Here the Faculty of Medicine’s Sector 8 project must be included as well as the latest version of the Digital Medical Teaching Platform, which includes the creation of a television channel to broadcast specific teaching on advances in minimally invasive surgery (AISCHANNEL).

- Increasing the international presence of the Campus in a manner that fosters relationships with research groups and hospitals – primarily European – with the objective of gaining access to competitive projects that will lead to improved future funding for research conducted at HUBc centres. The primary objective of this section refers to the awarding of the health-related KIC (EIT Health) to the consortium led by the UB through the HUBc at the co-location centre in Spain.
It is important to mention that virtually all of the services created for the HUBc Campus of International Excellence are financially self-sustainable. Some of these have the potential to become future business units, so that the HUBc and the University of Barcelona would not need to contribute to their continued operation. In some cases, notable revenues are already being generated. This is something that has been taken into consideration from the project’s inception in order to avoid launching entities and services whose initial level of quality cannot be maintained due to a lack of maintenance funds.

The construction of buildings that made up part of the project has been delayed and the sizes of these buildings have been reconsidered. In some cases, the planned location of the buildings has been changed to better adjust to the current economic reality. However, as evidence of the importance that these buildings have for the UB, and taking into account their strategic value for the future, in no case have the plans been completely discarded.

Creation of direct employment

All of these activities have contributed to the creation of jobs. The projects directly receiving competitive funding through the Ministry of Education and Ministry of the Economy and Competitiveness have resulted in the creation of 25 new jobs for highly qualified applicants, related to the research, teaching and innovation activities that are the objective of the Campus project.
IMPROVEMENT OF TEACHING ACTIVITIES

The HUBc Strategic Plan produced in 2011 included some preferential areas of action, the development of which has been a priority throughout the course of the project:

- Teaching excellence and adaptation to the European Higher Education Area (EHEA)
- Internationalization of teaching
- Teaching innovation in the field of health sciences
- Teaching founded on the excellence of the teaching and research staff
- Excellence in postgraduate and doctoral training
- Creation of links between teaching centres and healthcare facilities

Teaching excellence and adaptation to the EHEA

One fundamental activity linked to adaptation to the EHEA has been the construction of a new classroom block at the Bellvitge Health Sciences Campus, using resources from the HUBc provided by the Ministry of Education, Culture and Sport. This new building comprises 6,000 m² of space and houses 14 new classrooms, 10 new teaching laboratories, an auditorium and various seminar rooms.

In order to promote the use of this classroom block along with the rest of the Campus belonging to the HUBc, one of the projects that received funding was to improve the teaching laboratories on both the Bellvitge Campus and the Casanova-Clínica Campus. This has included renovation of microscopes and other essential equipment in order to foster laboratory exercises undertaken by students, in line with the guidelines for the development of the EHEA. In order to promote learning through the improvement of clinical simulation exercises, the Health Meeting Point-Innovation Showroom project has been jointly implemented with Bellvitge University Hospital. Investment from the HUBc has made it possible to transform a former intensive care unit (ICU) at the hospital for the purpose of providing training for undergraduate and postgraduate students, as well as training for professionals from the institutions associated with the HUBc, primarily from the affiliated hospitals.

This installation adds to the use of clinical simulation as a fundamental teaching tool for current and future healthcare professionals. This type of training is particularly relevant in critical care. The centre is stocked with various types of dummies and other equipment essential for ICU operation, as well as a classroom with all of the audio-visual material needed to complement more hands-on training. A total of 460 m² of space is available. Since it opened, this facility has been used by more than 3,000 students from a variety of medical specialisms and numerous healthcare professionals. Within the context of this new classroom block, the podiatry laboratories the Bellvitge Campus have also been renovated.

AIS Channel

As a member of the HUBc, the Faculty of Medicine at the UB is participating in the digital initiative AIS Channel (Advances in Surgery Channel), which is directed and promoted by a group of internationally renowned surgeons in a variety of medical specialisms. The initiative consists of an internet platform for teaching surgery, exchanging information and discussing related subjects. It is coordinated by the team led by Dr Antonio M. de Lacy, professor in the Department of Surgery and Surgical Specializations at the UB and head of the Gastrointestinal Surgery Service at the Hospital Clínica de Barcelona.
The AIS Channel is intended for surgeons from all medical specialisms as well as medical students, residents, nurses and surgery staff, as well as for patients interested in the latest international news regarding surgical treatments in minimally invasive surgery.

A visit from Akihiro Taguchi, president of Olympus Medical Systems Corporation, accompanied by Dr de Lacy and Dr Cardellach in the auditorium of the UB’s Faculty of Medicine.

The website allows viewers to follow live conference broadcasts and features a news section and a training section providing access to specialized content on general surgery. All of this material is organized by Dr de Lacy’s team in collaboration with other experts.

**Internationalization of teaching**

This section provides an overview of the improvements introduced by the HUBc during this period from the perspective of several different actions:

- Strengthening of the Eurolife Network through a call for applications for doctoral student visits to centres belonging to the network, with the goal of increasing doctoral student participation in international projects
- Creation of Erasmus Mundus doctoral programmes with the participation of European and Spanish universities: Fetal Med and Nueva Domus
  - **Erasmus Mundus Fetal Med.** In collaboration with Lund University and the University of Leuven, this is a programme for foetal and perinatal surgery. It is the first doctoral programme specializing in this type of surgery. It has been approved by the European Union for a total of five editions. The UB receives €6 million for organizing the programme.
  - **Erasmus Mundus Nueva Domus.** The primary objective of this project is to create a network of excellence that promotes the flow of knowledge and strengthens relationships among the participating universities. These include, in the United States and Canada: Dalhousie University, the University of British Columbia, the University of Montreal, the University of Ottawa, and Brown University; and in Europe: Lund University, the University of Bologna, the University of Glasgow, Catholic University of Louvain, Pompeu Fabra
University, Universitat Autònoma de Barcelona, and the University of Barcelona, which is acting as coordinator.

- A significant increase in the number of university-specific master’s degree programmes (88 since 2010) in collaboration with foreign institutions, with four main areas of interest to be developed to reach a total number of 50 in the field of health sciences:
  - Organ transplants and their coordination
  - Sports medicine
  - Global health
  - Emergency and critical care

A total of 20 courses have been given in the section on transplants; six courses in the section on sports medicine; 15 courses in the section on global health; and in the section on emergency and critical care, a total of 9 courses.

These courses have been taught in various languages: Spanish, English, Portuguese, French and Italian.

Independent of these courses, an entire series of initiatives has been implemented for the purpose of increasing the synergies arising from the aggregation that is the HUBc:

- A course for professionals in the public health sector, essentially from Central and South American countries, jointly with the Johns Hopkins Bloomberg School during the month of February 2012.
- A training programme on Biodesign, adapted from a programme from Stanford University in California. This programme reflects the interfaces of biohealth, technology and business. The aim is to train leaders in innovation in the medical technology sector. The programme also benefits from collaboration with Stanford University’s Biodesign group, who are acting as mentors for the programme.
- Teaching of two summer courses in Porto, together with the Portuguese university CESPU, a member of the HUBc: the first course on stem cells, with the collaboration of TERCEL (the Spanish cellular therapy network), and directed by Dr Jordi Alberch and Dr Josep Canals from the University of Barcelona, and the second course on Diabetes and Obesity, presented by Dr Ramón Gomís, Director of the IDIBAPS. Both of these institutions are members of the the HUBc.
- Grants for collaboration with institutions from the Eurolife Network.
- Grants to attend the University of Montreal’s 2015 Summer School for Medicine.

**Vocational training**

During the last few years, the HUBc has worked on expanding the types of studies being offered, including vocational training linked to the health sector. In May 2014, a conference was held dedicated to the experiences existing in other fields on the relationship between universities and vocational training programmes. At this conference some success stories could be analysed (Cooperativa Mondragón, among others), and members of the OCDE and institutions linked to the educational sector also participated.
As a result of the conclusions drawn from the conference, the University of Barcelona, through the HUBc, has signed an agreement with the publisher Planeta to develop vocational training programmes in the biosciences sector, whether in-person, semi-in-person, or on-line. These programmes will enhance the quality of education in the health sector, taking advantage of facilities and laboratories at the University of Barcelona and the possibilities for internships, as well as employment offered by the hospitals and companies linked to the HUBc Campus of International Excellence.

The Digital Factory medical platform

This service is dedicated to improving on-line teaching for the Faculty of Medicine, especially for master’s degrees and other postgraduate degrees. The INNOCAMPUS project contributed to the funding needed for acquiring computer servers for storing large volumes of data. These allow the classes to be viewed simultaneously, either at the time they are being presented or later as a rebroadcast.

During the 2013-2014 academic year, the use of the system known as Mediasite was introduced. It is being used as a tool for providing dual (in-person and on-line) teaching in the Master’s Degree in Professional Critical Illness and Emergencies (MCE) and in the specialism Integrated Care for Critical Illness and Emergencies, in the Master’s Degree in Clinical Research (MRC). Both of these programmes are part of the Integrated Critical Illness and Emergencies programme at the UB’s Faculty of Medicine.

Overall, nearly 500 recordings have been made including both live and on-demand, with a total of 27,233 playbacks as of the end of June 2015. The classes are stored on the servers acquired with the INNOCAMPUS aid.

Campus of the Americas: Panama

Panama’s National Institute of Culture (INAC) signed a collaborative agreement with the general foundation of the University of Salamanca to establish a Panamanian Campus of International Excellence. The agreement provides for the restoration of the building where for many years the Casa de Arte was located in the historic centre of Panama.
City, so that this can become the headquarters of the Campus of International Excellence known as ‘CEI of the Americas’.

The restoration will benefit from funding through the 2011 Reinforcement Programme of the Spanish Ministry of Education and Culture, with an investment of nearly $1 million. The universities participating in this project include the University of Salamanca, the University of Barcelona, Pablo de Olavide University in Seville, University of Almería, University of Cadiz, University of Cordoba, the University of Huelva, the University of Jaen, and the International University of Andalusia, all of these through their Campuses of International Excellence.

The CEI of the Americas will be a centre for advanced studies, research, and technology transfer. It has been planned as a centre for connections with Spanish universities and a source of educational excellence in the region. As the INAC explains, the centre will carry out a variety of activities linked to culture, training, research and technology transfer, all of which will facilitate better adaptation to the changes taking place in scientific, professional and social spheres in relation to the public and business sectors in Panama and Latin America. Through this initiative, the INAC seeks to establish plans to promote science, education and culture in the community and in its organizations by means of advanced professional training and specialization and execution of lifelong learning programmes, according to official information.
IMPROVEMENT OF SCIENTIFIC ACTIVITIES

This section addresses the series of priorities included in the proposal established by the HUBc Strategic Plan:

- To improve the international scientific output of the entities that make up the HUBc Campus of Excellence
- To make the HUBc play a driving role in bringing together projects that represent an improvement for the Campus of International Excellence as a whole
- To increase the excellence of the research staff linked to the Campus
- To increase tertiary activities in the field of healthcare
- To establish the HUBc as a pioneering centre for translational research
- To create strategic ties with the private sector

The purpose of this proposal was to seek out activities that could have significant economic returns for the members of the HUBc, with the following projects.

Farmatec-UB

It is important to underscore the significance of the creation of the FARMATEC-UB project. A production laboratory for experimental medications for human use, it represents a nexus between basic research and applied research. It is based on a pilot facility for drug research and production, with GMP certification and authorization from Spain’s Agency of Medicines and Health Products (AEMPS). The design of the pilot facility makes it possible to research and develop new drugs and to produce clinical batches of medications for use in clinical research during any of its various phases. The team of professors and researchers at the core of the project belong to the IDIBELL research group (Bellvitge Biomedicine Research Institute, a member of the HUBc) known as Pharmacotherapy, Pharmacogenetics and Pharmaceutical Technology. The project itself is due to begin in October 2015.
Barcino project

This project has enjoyed significant success and is currently economically self-sufficient. The results of the project’s research will have a substantial number of applications in the immediate future. It involves taking advantage of existing knowledge of low-temperature thermal spraying of any type of material onto any type of substrate. In this case, a bio-inert metal such as titanium is sprayed onto a skeleton made of a lighter, more economical bio-compatible material (such as moulded femur ends made of ceramic or rigid plastic), in order to obtain prosthetic devices that are highly resistant to fracturing or breakage at a much lower cost than with conventional processes. This technology is applicable in numerous biomedical uses.

KIC: EIT Health

In December 2014, the European Institute of Innovation and Technology (EIT) established the Knowledge and Innovation Community (KIC) in Health, called EIT-Health. This represents Europe’s largest initiative in the area of innovation and entrepreneurship for a healthy lifestyle and active ageing. The local branch, EIT Health Spain, has its headquarters at the Barcelona Science Park. It is headed by the University of Barcelona and is the co-location centre for Spain. The Spanish branch is made up of 25 entities: universities, companies, research centres, hospitals and technology centres, all leaders in their sectors and committed to innovation in health and its impact on improving quality of life for local residents. The HUBc, which is part of EIT Health, played a key role in accomplishing this position of leadership from the UB proposal.

EIT Health has branches in Spain, France, the UK, Belgium, Sweden and Germany. The location of the Spanish headquarters in Barcelona makes it possible to gain preferential access to European funding for education and innovation programmes.

Digital Factory digitization service

This service is provided by the new facility, which organizes its activities around three broad lines of work, preferentially in the field of health sciences:

- **Digitization**: production of digitization plans, capture and conversion of metadata, digitization of graphic and printed documentation, digitization of sound and image records
- **Digital preservation**: production of preservation plans, creation of back-up archives, advising on data security and authentication, migration of formats
- **Conversion of digital data**: digital archaeology and forensic analysis techniques, recovery and preservation of obsolete media, mapping, integration and migration of XML diagrams

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**European Innovation Partnership in Active and Healthy Ageing (EIP-AHA)**

The HUBc has participated in this association jointly with TIC Salut through the TicSalut Innohealth HUB Cataluña, which is notable for its contributions to the prevention and treatment of pathologies associated with ageing, such as cancer, cardiovascular disease, neurological and metabolic degeneration, mental health disorders, arteriosclerosis and problems derived from falls, among others. Three exceptional projects were awarded three stars: the Nexes project, the MECASS project, and the early detection programme for colon and rectal cancer.
The goal of this project is to digitize bibliographic resources related to medicine and health sciences, in order to increase access to and use of them and to facilitate preservation of digital objects and original printed works. This service will offer alternatives and new possibilities to research groups, while at the same time making it easier to view documents and books of great historical value, which currently can only be consulted under strict conditions of use. Simultaneously, this service is being offered to the UB Dental Clinic, which will digitize its 80,000 clinical case histories. This will be expanded to cover other relevant documents and incorporate clinical case histories of the patients (diagnostic evidence and radiological images, etc.).

**Cellular therapy unit**

The Spanish Agency of Medicines and Health Products (AEMPS) has authorized the University of Barcelona to produce advanced therapy drugs for the HIV virus in the clean room at its Research and Development Unit, which is part of the UB’s Cell Therapy Programme (TCUB).

The first medication this unit will produce will be the cellular HIV vaccine for a clinical trial that will be led by Hospital Clinic de Barcelona. The HUBc has participated in funding scientific equipment at this facility, with a donation of €250,000 obtained from the Ministry of Education, Culture and Sport’s 2011 Reinforcement Programme.

The TCUB’s Research and Development Unit, located in the UB Faculty of Medicine, has 300 m² of space that includes two culture rooms and a laboratory for preclinical research on human stem cells. The work performed there includes research with pluripotent cells, such as embryonic cells. The facilities also house three cellular production rooms in a Good Manufacturing Practices (GMP) environment to standardize protocols using procedures and infrastructures that are appropriate for clinical use according to Spain’s drug law.
The equipment includes Catalonia’s first production room for combined cellular and genetic medications. There are currently four highly qualified technicians working in the unit who work as consultants for new advanced therapy product development as well as for the application of such products.
CAMPUS EVOLUTION

The most important activity performed by the HUBc has focused on the Health Sciences Campus located in Bellvitge in the city of Hospitalet del Llobregat. This Campus specializes in health sciences studies (medicine, nursing, dentistry, podiatry, etc.) and required facilities that would give it the structure of a consolidated university campus.

The strategy adopted centres on the following activities:

- Creation of the Bellvitge Hall of Residence
- Contribution to the execution of the BARCINO project (low-temperature thermal spraying for coating materials) to improve the conditions for collaboration between the business and scientific communities
- Creation of the bio-incubator for science groups that may in the future establish biotechnology companies linked to the health sector
- Creation of FARMATEC-UB, a laboratory for the production of experimental drugs for human use
- Construction of a new classroom block at Bellvitge in order to incorporate new EHEA-adapted study programmes, including vocational training linked to the health sector
- Construction of new podiatry teaching laboratories

Bellvitge Hall of Residence

As part of the 2010 Reinforcement Programme, a €100,000 grant was awarded for a competitive call for proposals for the creation of the Bellvitge University Hall of Residence. The objective was to give this Campus a facility that would facilitate international exchanges of lecturers, students and researchers, while at the same time serving as a resource for a campus that includes hospitals (Bellvitge University Hospital and Duran Reynals Hospital) and research centres such as the IDIBELL, in addition to the Dentistry and Podiatry hospitals belonging to the Josep Finestres Foundation of the University of Barcelona.

As a result of the competitive call for proposals, negotiations were held with the Hospitalet City Council to reach an agreement that would cede land and allow for supervision by the city’s Urban Development Agency. The agreement was signed on 31 January 2014. The procedures prior to the competitive call for construction and operation proposals for the hall of residence are currently being finalized (this has already been approved by the
University’s Governing Council and the viability report has been published). Contracts are expected to be awarded in 2015. The hall of residence will have at least 100 places available.

**Barcino project**

This project, which was already described in the section on scientific improvement, represents an example of the HUBc’s desire to promote the generation of business initiatives based on research projects that could become profitable companies, thereby achieving implementation at the Campus of a business zone in the health sector to contribute to the development of the city of Hospitalet de Llobregat, while also generating other economic benefits.

The design and implementation of this project seek a change of scale in the value of the activity carried out, with the principal objective being the commercial exploitation of new cold gas spray technology. The new materials involved are authorized for use as coatings for prosthetic materials. The success of the planned developments has allowed us to become a European benchmark in biomedical applications of thermal spray technologies.

The current phase includes a search for investors in order to expand production because, so far, marketing and sales of these products have been successful. This process has also involved the creation of six jobs.

**Bioincubator for scientific groups**

To accomplish the project’s primary goal, improvements have been made to spaces at the Bellvitge Campus to create a zone dedicated to supporting proto-companies and spin-offs resulting from the work of research groups where research results have given rise to the possibility of creating companies.

The process of creating the business bioincubator space has involved completing the construction work to adapt the space and add soundproofing, installing new furnishings, carpentry, and electrical and air-conditioning systems, as well as equipping the space with material related to the computer resource networks.

The space is now partially occupied by the Cognition and Cerebral Plasticity research group. This very active group has projects funded by the Spanish Ministry of Innovation and Competitiveness (MINECO), the foundation La Marató de TV3 and the European Research Council.

*The IDIBELL-UB Cognition and Cerebral Plasticity group*
Finally, it should be mentioned that in addition to the master’s theses and directed work projects, the group also performs regular training and information dissemination activities. Various members of the group are also participating in master’s degree and pre-doctoral training programmes approved by the Ministry of Education: Behaviour and Cognition at the UB; Master’s Degree in Neurosciences also at the UB; and doctoral programmes.

Farmatec-UB

The Farmatec-UB project (laboratory for the production of experimental drugs for human use) will primarily offer services to hospitals associated with the HUBc and to research centres. However, the idea of working with the health sector in general by preparing drug lots for clinical trials has not been ruled out, and the laboratory will also be available to provide services to the rest of the health system, especially the national and international pharmaceutical industry, as required. This centre will open this year, probably during the month of September.

These laboratories also represent the direct creation of nine jobs initially, and that number is expected to continue to increase.

New classroom block in Bellvitge

This new classroom block, an architectural project by Albert de Pineda, includes a total of 6,141 m² of constructed surface area. This space houses 14 classrooms of various capacities, 10 teaching laboratories, 3 computer classrooms, an auditorium and seminar room, and 11 workspaces for small groups of students. The construction work, with the budget of €8 million, has been primarily funded by resources provided to the HUBc Campus of International Excellence by the Spanish Ministry of Education, Culture and Sport under its 2010 call for proposals. The rest of the funding came from the Government of Catalonia’s multi-year plan for investment in the region’s public universities through its Ministry of Economy and Knowledge.

The execution of this project and its construction work meet a historical demand for the health sciences campus at Bellvitge. The work has consolidated the Campus through increasing, improving and intensifying its interaction with its surroundings. The new podiatry laboratories have also been inaugurated, represented by three spaces located on the second floor of the administrative pavilion. One of these is a multi-use space for the areas of orthopodiatry, podiatric surgery and chiropodiatry, which also includes rooms used for preparing and finishing arch supports and for simulation of surgical cleansing. The second laboratory is equipped with beds for teaching about examinations, while the third space is used for biomechanical examinations. It is equipped with a platform for studying walking motion as well as various computer systems for conducting biomechanical tests.

Health Meeting Point–Innovation Showroom

This joint facility of Bellvitge University Hospital and the University of Barcelona represents the creation of a two-pronged centre: on one hand, it is a high-quality training centre for students using clinical simulation, as it was previously an ICU and therefore has specialized installations; and on the other hand, it is a classroom for demonstrating new equipment and therapies for professionals from the hospital, from the university or from companies in the sector. The classroom is also used for presentations given to local residents on health-related subjects.

The most optimistic expectations have been met for this project. During the 2012-2013 academic year, 1,351 people participated in a range of activities and classes at the Health Meeting Point–Innovation Showroom, which
took place through collaboration with various hospitals and companies in the healthcare sector. During the 2013-2014 academic year, 1,386 participated in activities, for a cumulative total of more than 2,700 participants.

Additionally, in October 2014 a double session on Chagas disease was held at these facilities. This is a pathology that affects 8 million people worldwide, mostly of Latin American origin. In Hospitalet de Llobregat alone, a city with a high proportion of South American immigrants, 700 cases have been diagnosed in the last seven years. Because this city shows a very high incidence of this disease, the objective of this conference was especially relevant.

The morning session was targeted at doctors in services in public health clinics in Hospital de Llobregat in order to provide them with treatment guidelines for the disease, which is endemic in many South American countries. The proportion of residents from these countries is very high in the areas served by the Bellvitge University Hospital. The afternoon session was then directed at patients who wanted to gain better knowledge of this pathology in order to improve their quality of life. These sessions took place in collaboration with the Bellvitge University Hospital and the Hospitalet de Llobregat City Council.

The need to manage these spaces has led to creation of one job, an employee in charge of managing and scheduling for the centre and ensuring that the facilities are properly maintained and used.

**Digital Factory**

The initial proposal to build the **Digital Factory** in the Zona Franca area of Barcelona has been replaced by a more modest plan being carried out in the city’s 22@ district, an area that is heavily colonized by the technology sector and houses companies from the ICT and digital design fields. The project now involves restoration of the old Can Ricart factory, which was built in the Catalan modernist style and is registered as a historical building with the Barcelona City Council. The space consists of 6,780 m² with an additional 3,170 m² available in the adjoining Can Jaumandreu building. The city of Barcelona’s 50-year cession of these buildings to the UB was formalized before a notary public on 20 February 2015. The project’s purpose remains the same as in the original plan.

The University of Barcelona’s new Digitization service (CEDI) has been created as part of this macro project.
The Sant Boi Mental Health Cluster

The Mental Health Cluster of Catalonia was established in January 2013 in the city of Sant Boi de Llobregat. It is an association of institutions in which the HUBc participates as a founding member representing the University of Barcelona. The Cluster’s objectives include:

- encouraging competitiveness in order to combine the knowledge of the participating companies and institutions (those participating in the Cluster include hospitals, research centres and universities specialized in the field, as well as the Baix Llobregat County Council with the leadership of the Sant Boi de Llobregat City Council),
- acting as a meeting point where healthcare, research, teaching, and related companies all converge.

The Cluster’s offices opened for operation in July 2015. A proposed plan of action is currently being drawn up within the framework of the collaborative objectives of the regional RIS3 programme due to the specialized dedication of the city and its surroundings in this section. The HUBc has been a driving force in the creation of the Cluster’s strategic plan.

The Spanish Network of Campuses of International Excellence in Food and Agriculture: Torribera Food and Nutrition Campus

The Torribera Food and Nutrition campus is located in Santa Coloma de Gramenet to the north of the city of Barcelona, and specializes in studies and research on nutrition, diet and food. It belongs to the University of Barcelona and is also part of the HUBc.

It is in this setting that the HUBc, along with the Fundación ALICIA (Food and Science), the CETT (Centre for Technical-Tourism Studies, affiliated with the UB) and researchers from Torribera, carried out the project entitled Gastronomy and Health, for which HUBc provided the funding. The Applied Nutrition research group (GRNA) of the Faculty of Pharmacy also participated.

This represents a multidisciplinary project created on behalf of commercial restaurants that want to adapt their menus and products to diners who have some sort of food restriction, intolerance or allergy.

The project arose from concerns about ways for the commercial restaurant and catering sector to accommodate these types of individuals by being able to offer them foods adapted to their needs.

The project included a total of 2,614 participants and 99 restaurant establishments, and the project’s conclusions were presented at a conference held on 29 April 2013. The event was attended by representatives of the Government of Catalonia’s Public Health Agency and members of the Santa Coloma de Gramenet City Council. The conference was geared towards professionals in the restaurant industry and included workshops organized by the CETT, Fundación ALICIA and the Barcelona Restaurant Association.

Independent of these activities, the HUBc also participates in the Spanish Network of Campuses of Excellence in Food and Agriculture. Meetings have already been held in Santiago de Compostela and Valencia, and the next event is scheduled for the month of September in Tarragona. This network aims to serve as a tool that would make it possible to work on obtaining the future KIC for Food and Agriculture that the EIT (European Institute of Technology) is planning to announce, bringing together what would become the future Spanish node of the international consortium that will be established.
Agreement between CEIs

In 2014, the University of Barcelona and University of Madrid signed a strategic agreement to use their Campuses of International Excellence to strengthen their institutions in four areas: internationalization, cooperation in areas of common interest, research and innovation, and academic corporation. The agreement will provide the incentive for exchanges of professors and students, and the universities will look into the possibility of creating joint degree programmes, partially delivered on-line. The agreement also provides for the promotion of joint MOOCs and collaboration in the summer school programmes offered by the two institutions.
3. Management of the project

The model of governance defined in the HUBc Strategic Plan aims to organize all of the functions that should form part of the project, and especially the governance and coordination among the entities that make up the alliance and the measures that determine the accomplishment of the objectives for each of the strands of action.

The creation of an entity with its own legal status was proposed, but did not come to fruition in the end. The intention was to bring together all of the project’s stakeholders through this entity, which would also provide more appropriate structures for governance, direction and management in order to meet the proposed objectives. In this regard, the HUBc has operated via its main management structure, the Technical Office, which has put the UB’s internal structure in charge of the project’s coordination and management. The control body from this office has been the HUBc’s Plenary Assembly, made up of all members of the alliance.

Plenary Assembly of the HUBc

The position of executive director of the HUBc, responsible for the structure, was held by Dr Josep Samitier, a lecturer in electronics at the UB and director of the Catalonia Bioengineering Institute (IBEC), during the entire initial period of the project. As a university administrator, he has served as director of the Department of Electronics, vice-rector of international policy, vice-rector of innovation, and rector for operations at the UB. He has also served as assistant director of the Barcelona Science Park. Samitier was awarded the City of Barcelona Prize in 2003 in the category of technological innovation. During 2015, the institute he directs, the IBEC, received the Severo Ochoa Award for excellence in research.

During the second stage, beginning in 2014, Dr Joan Roca held the position of executive director of the Campus, while also serving as the executive director of the Barcelona Knowledge Campus. At the beginning of 2011, Roca rejoined the University of Barcelona as director of the Campus of International Excellence (CEI). Up until that date he had held various positions with the Government of Catalonia, with highlights including director general of research (2009-2011), director of the Interdepartmental Research and Technological Innovation Council (CIRIT) (2006-2009), and director of the Advisory Board for Sustainable Development (2004-2006).
Dr Roca holds a doctorate in biological sciences from the UB with a specialism in pre-clinical pharmacology, and has a specialization in experimental surgery from the University of Zaragoza. He has also been the head of the pre-clinical R&D departments at a variety of companies in the biopharmaceutical sector, and has been responsible for technology transfer in the areas of biomedicine, chemistry and environment at the UB.

The Executive Board has been supported by the technical director, Ernest Trias, who directs the Technical Office, made up of three units:

- Communication and Marketing: responsible for giving the project visibility and an international presence, international networks and alliances, internal structuring
- Project Management: coordination of projects to help implement the projects approved
- Internal Monitoring and Management of Activities: the unit responsible for submitting reports and for internal and external accountability as well as submission of data, international comparisons and information systems

**Monitoring and accountability system**

The monitoring and accountability system has been articulated through the HUBc’s Plenary Assembly, which is the main control body for the HUBc with a membership that includes all partners in the alliance. The Plenary Assembly has met on four occasions during the project’s existence.

The HUBc has incorporated a system for monitoring the progress of each action carried out in association with the project’s strands of action. The structural indicators are the basis of the monitoring and accountability system for the HUBc project. The governance model designed for the project has made use of a system of monitoring through tracking the progress of the battery of indicators articulated within the computer system. This has allowed for the rendering of accounts and full compliance with the principle of transparency.

The monitoring system described in the previous section is based on the set of specific indicators that correspond to each of the measures set out in the report. Therefore, by assigning a qualitative or quantitative indicator to each measure, the exact status of the project can be tracked at every point throughout the transformation process.

**Resolutions adopted at the plenary sessions of HUBc**

**Plenary March 9, 2011**

- Creation of HUBc governing bodies and their functions.
- Creation of the technical office of HUBc.
- Approval of the work plan for 2011.

**Plenary March 22, 2012**

- Approval of the report of the technical office.
- Approval of the work plan for 2012.
- Creation of a working committee to prepare the candidature for the future KIC
- Approval of the new website of HUBc.
- Approval HUBc accession to the City of Sant Boi de Llobregat.
Plenary March 19, 2013

- Approval of the memory of the technical office.
- Work plan approved for 2013.
- Approval of the efforts of the Executive Director on the future KIC in health.
- Approval of Health Consortium of Terrassa HUBc membership

Plenary May 20, 2014

- Approval of the memory of the technical office.
- Approval of the work plan for 2014.
- Approval of the submission of the application to Health KIC scheduled for September.
- Approval of Research Institute of the José Carreras Foundation and the Portuguese CESPU University membership.

Plenary May 28, 2015

- Approval of the memory of the technical office.
- Approval of a motion of thanks to Dr. Josep Samitier for success in achieving the health KIC.
- Approval of the involvement in projects associated with the RIS3 strategy using the potential of the KIC

Project Management

The Technical Office has obtained a very considerable volume of economic resources and projects to be developed as part of the HUBc project. Throughout the period from 2011 to 2014, the projects funded under the 2010 CEI call for proposals, in the 2010 INNOCAMPUS call for proposals, and in the 2011 Reinforcement Programme were monitored using a system of work plans that have allowed for effective the deployment of projects and tracking of the results achieved. The main challenge that had to be overcome when developing projects for the 2011 Reinforcement Programme was how to reformulate and strengthen the system for progress tracking and rendering of accounts, as the HUBc Technical Office was jointly managing, with eight other entities, 23 projects with a total budget of €14,860,842.

The HUBc Technical Office took on the challenge of properly managing these 23 projects, achieving the expected accounts rendered in cases that shaped the governance of the HUBc project.

The monitoring system was defined with a double objective:

a) To provide a tool that would allow knowledge of the projects’ progress.
b) To generate the information needed for the rendering of accounts.

A grant-funded project management support assistant helped to monitor and record results.
Communication and dissemination activities

Since the inception of the HUBc project, communication has been emphasized as a crucial tool for sharing the activities derived from the project with the public. The website hubc.ub.edu was created, which is periodically updated with any news affecting the various stakeholders in the alliance, and which has currently received around 30,000 visits. Institutional profiles were also created on various social networks, such as Facebook, Youtube and Twitter, where the HUBc has more than 1,600 followers.

Senescència, a monthly electronic magazine on active ageing and healthy lifestyle habits, was created as a means of compiling the health-related information generated by the entities that make up the Campus. The contents of this magazine address the subject of ageing from the various fields of knowledge that study this phenomenon, including biomedicine and clinical experimentation, the neurosciences, genetics and genomics, lifestyles and environmental factors, the social and human sciences, the psychological sciences, care and services, the biological sciences and basic experimentation, and infrastructure.

The publication aims to raise awareness regarding the need to promote active and healthy ageing in order to improve the quality of life of the population, to delay dependency, and to reduce the impact on community healthcare systems. This is an HUBc initiative with content clearly linked to the EU’s strategic focus for the coming years in the area of health: active and healthy ageing.

Work carried out in the area of communications during the Campus’ period of existence includes:

- Adding a team member in charge of project monitoring and communication who is also responsible for creating the new website
- Producing graphic materials, such as various HUBc brochures, a key component in increasing the project’s visibility
Creating an HUBc image bank
Revitalizing the Campus’s presence on social networks as another mechanism for publicizing the HUBc
Holding a conference for the Campuses of Excellence in Catalonia in order to address issues related to governance and communication
Meeting with the heads of communication at the entities that make up the HUBc

The Spanish news agency EFE and the HUBc Campus of International Excellence signed a collaborative agreement covering a period of one year, the first year the Campus was in operation. A dedicated channel for the generation and distribution of news was created for the Campus, backed up by the vast experience and distribution network for news and other content available via the EFE agency. An especially important aspect was a certain number of reports and interviews broadcast during the year. This type of content is essential for reaching media sources as well as for updating and renewing content on the Campus’s website. The ability to include events planned by the HUBc on EFE’s international calendar gives them greater relevance, including the benefit of being able to reach a larger segment of the general public.
4. Plans for the future

Over the five years that have passed since the plan was launched to convert the HUBc to a Campus of International Excellence (CEI), the project has received a series of positive progress reports issued by the International Committee. The final stage of the plan’s execution has seen completion of the most significant actions of the HUBc, bringing into view the value of the alliance among the formidable hospital environment of the University of Barcelona and the biomedical research centres linked to it, as well as the other institutions associated with the Campus.

The University of Barcelona’s dedication to maintaining continuity within the framework of the policy that gave rise to the Campuses of International Excellence, even beyond the context of the CEI programme of the Spanish Ministry of Education, Culture and Sport, was clearly demonstrated during the most recent meeting of the HUBc Plenary Assembly, held in April under the presidency of the university’s rector. The members of the HUBc expressed their interest in continuing to maintain and promote the policy for participation and coordination of the affiliated institutions, even beyond the administrative duration of the underlying plan.

The will of these institutions to continue the alliance becomes clear upon analysing the governance section, where the common management tree that directs the Campus is described along with the rest of structures that have allowed for the ambitious execution of the measures completed.

The future of this Campus of International Excellence, beyond the framework of development promoted by the Ministry of Education, Culture and Sport, is clearly encouraging if we consider that the sponsoring institutions have internalized the need to continue fostering an environment of knowledge in the field of biomedicine and health sciences, which is one of the University of Barcelona’s areas of specialization.

Naturally, the continuity of this project cannot exist outside the possible financial contributions that might be approved by government administrations and the prioritization that the government may give to this programme. However, from the perspective of its critical mass and the quality of its activities, the HUBc is an excellent platform to benefit from projects based on competitive public-sector funding as well as projects undertaken in collaboration with the business world.

Challenges for the future

Over the past 150 years, the average life expectancy has increased by approximately four to five years per generation. This represents tremendous progress for humanity and has contributed to economic growth and prosperity. However, it has also brought with it significant socio-economic challenges in relation to an ageing population and a decreasing trend in birth rates, which has led to a reduction in the proportion of the population within the active workforce. The gap between active and inactive members of the labour force has widened, and the cost of healthcare and social programmes is placing increasing pressure on society. Today, all over the world, healthcare represents more than 10% of the global gross domestic product (GDP), with an annual growth rate that varies between 6% and 19% in different regions of the world. These rates of increase in healthcare expenses are unsustainable over the medium and long term, and it is therefore necessary to look for ways to promote prevention and develop new treatments. This is changing the manner in which the preventive aspect of healthcare
is perceived, and it represents a mission that universities must take up during the coming years through their Campuses of Excellence.

**Towards the European triple helix**

As widely commented upon elsewhere in this report, the HUBc has acted as an essential seed for creating the candidacy for, and subsequent attainment of, the KIC for Health in the form of EIT Health. As with the HUBc, the primary objective of EIT Health is to improve the quality of life of Europe’s residents as well as, by extension, citizens throughout the world. In relation to this, the commitment to health must be established at three levels:

- **Strategically**: Activities and investment must be focused on the key priorities and the defined challenges – promotion of a healthy lifestyle, support for active ageing, and improvement in healthcare services. EIT Health must implement an expansion strategy for participation with the objective of increasing excellence, in particular in Europe’s convergence regions.
- **Structurally**: EIT Health is integrating the triangle of knowledge and bringing together excellent organizations in the field as well as industry and business, education, research, and the general public. Execution of this helix will make it possible for a necessary critical mass to be reached to launch solutions that provide tangible benefits to citizens.
- **Operationally**: The EIT Health tools ensure that multidisciplinary teams made up of professionals from various sectors work together throughout Europe, taking advantage of the benefits of interconnection, innovation, education and the entrepreneurial spirit.

The main objective of EIT Health will be to have a positive impact on the general public, including a direct effect on economic growth, development of human capital, creation of high-quality employment, improved quality of life for Europe’s citizens, and sustainability for European healthcare systems. Just as the Campus of Excellence has done, EIT Health will work to achieve substantial benefits for members of the general public in relation to their quality of life, increasing their ability to enjoy healthy lives with a minimal need for assistance. There is evidence that lifestyle changes can have a significant impact on people’s quality and length of life, and it is now understood that making changes towards a healthy lifestyle is the most effective way to prevent illness and disability. This will undoubtedly be the most pressing line of work in the immediate future.

**Future profitability**

In terms of future, the strong impact to the campus itself and their associate members to HUBc represent the fact of having certain services and infrastructures in different areas of incidence of the CEI (research, teaching, transfer and transformation of the territory).

In the scientific and technology transfer field, we must highlight the work exercised in the future facilities and scientific services as Farmatec-UB, Barcino and Cell Therapy Unit. These infrastructures, described earlier in this report, represent a significant advance in the generation of new knowledge, as well as business for the whole HUBc.

In the teaching field, the new classrooms building of the Health Campus of Bellvitge represents not only an adaptation to the EHEA but also increases the chances of developing new studies that will complete the academic
offer that takes place in the campus. The qualitative leap that represents this new classrooms building has arrived accompanied by new equipment for teaching laboratories of podiatry. This gives more power and quality to the campus in which are established many of the members of HUBc.

In addition, we must highlight the perspective offered by the future Bellvitge University Residence, which gives the campus a facility that will favour, surely, exchange and complementary activities in an environment where coexist hospitals, research centres and faculties. The residence will also allow teachers and researchers accommodate visitors as well as solve the housing problem for families of long term patients who live far from the hospital.

This set of actions has influenced on the territory, which belongs to the second most populous city of Catalonia, L'Hospitalet de Llobregat: the city has seen how one of its main centres of development, Campus Bellvitge, has grown contributing to the achievement one of the essential objectives of the CEI program: promote the transformation and revitalization of the environment.

Accordingly, the newly created Digitisation Service, which offers documentation treatment possibilities that did not exist throughout the HUBc already, have materialized several activities, addressed mainly but not exclusively, to the field of biomedicine and health sciences.

The projects described in this report are being designed to provide better services to all entities added to the campus in order to promote their preparedness existing international challenges, and facilitate obtaining more and better scientific, educational and the broad transformation territory where is located the HUBc.

Independently to the realization of these high potential projects, there is a significant contribution made by the HUBc since its creation: this is the creation of a cohesive network that has been the key to the development of a strong proposal that has enabled the consecution of Health KIC. This success opens up numerous possibilities for collaboration, both national and international.

The result of this experience, the HUBc has contributed through this extensive network of entities to the creation of the Mental Health Cluster of Catalonia. In its last general meeting, held last July, fifty companies from different fields have been added to the cluster. At this point we can say that this cluster is a solid reality that has a promising future.

Another initiative projected for the future is the creation of the Network of Campus of International Excellence in Agriculture Activity. In this case, the experience gained with the Health KIC candidature is a valuable factor to prepare an application to food. On September 18, a meeting was held to plan the strategy, which passes through contact with campus-like nature at France and Italy in order to get allies to draw a proposal.

Therefore, we think the HUBc initiative has get results that certainly prepare us better for future challenges. At present, the report summarizes the immediate benefits; but coordination created through several projects between the different entities has created a network of complicity and interest that ensures more and better international presence hopefully very beneficial for health sector results.
ANNEXES
HUBc MEMBERS LIST

- UNIVERSITY OF BARCELONA (COORDINATOR)
- HOSPITAL CLÍNIC DE BARCELONA
- HOSPITAL DURAN I REYNALS / INSTITUT CATALÀ D’ONCOLOGÍA (ICO)
- HOSPITAL SANT JOAN DE DÉU
- HOSPITAL UNIVERSITARI DE BELLVITGE
- HOSPITAL MUTUA DE TERRASSA
- PARC SANITARI DE SANT JOAN DE DÉU
- INSTITUT D’INVESTIGACIÓ BIOMÈDICA DE BELLVITGE (IDIBELL)
- INSTITUT D’INVESTIGACIÓ BIOMÈDICA AGUSTÍ PI I SUNYER (IDIBAPS)
- INSTITUT D’INVESTIGACIÓ BIOMÈDICA DE BARCELONA (IIBB-CSIC)
- INSTITUT DE BIOENGINEERIA DE CATALUNYA (IBEC)
- INSTITUT DE CIÈNCIES FOTÒNIQUES (ICFO)
- INSTITUT DE DIAGNÒSTIC PER LA IMATGE (IDI)
- FUNDACIÓ DE RECERCA SANT JOAN DE DÉU
- FUNDACIÓ PRIVADA JOSEP FINESTRES
- CENTRE D’INVESTIGACIÓ EN SALUT INTERNACIONAL DE BARCELONA (CRESIB)
- CENTRE TECNOLÒGIC LEITAT
- FENIN CATALUNYA
- LABORATORIS FERRER
- ASSOCIACIÓ EMPRESARIAL DE L’HOSPITALET DE LLOBREGAT (AEBALL)
- FÓRUM EMPRESARIAL DEL LLOBREGAT
- BIOREGIÓ DE CATALUNYA (BIOCAT)
- CATALONIA BIO
- CONSORCI DE TERRASSA
- INSTITUT D’INVESTIGACIÓ CONTRA LA LEUCÈMIA JOSEP CARRERAS
- COOPERATIVA DE ENSINO SUPERIOR POLITECNICO E UNIVERSITARIO (CESPU)
PROJECT FILES
PROJECT FILES

- VOCATIONAL TRAINING CENTRE IN THE HUBc FRAMEWORK
- HALL OF RESIDENCE IN THE AREA OF THE BELLVITGE CAMPUS
- CONSTRUCTION AND REFURBISHMENT OF BUILDINGS - UB DIGITAL FACTORY
- CLASSROOM BLOCK ON THE BELLVITGE CAMPUS
- FARMATEC-UB
- HEALTH MEETING POINT - INNOVATION SHOWROOM
- BARCINO PROJECT
- UB DIGITAL FACTORY 2 (PROVISION OF EQUIPMENT)
- UB DIGITAL FACTORY 3 (DIGITIZATION CENTRE)
- UB DIGITAL FACTORY 4 (PLATFORM FOR MEDICAL TEACHING)
- CREATION OF THE ‘CITY OF KNOWLEDGE – PANAMA’ CEI CENTRE
- EDUCATION IN TEACHING AND LEADERSHIP AT THE HUBc
- ENTREPRENEURSHIP PROGRAMME FOR HEALTH INNOVATION
- ACADEMIC EXCELLENCE AT THE HUBc FOR ADAPTING TEACHING LABORATORIES
- TRAINING OF HUBc MANAGERS
- HEALTH NETWORKS IN HIGHER EDUCATION
- INTERNATIONAL EVENTS ABOUT PUBLIC HEALTH AND HEALTHY AGEING
- TALENT ATTRACTION TO DRIVE ADVANCES IN CELL THERAPY
- GRANTS PROGRAMME FOR INTERNATIONAL MOBILITY
- PROJECT FOR IMPROVEMENT OF GOVERNANCE AT THE HUBc
- PROMOTING INNOVATION ECOSYSTEMS IN THE BIOHEALTH SECTOR
Table 1. VOCATIONAL TRAINING CENTRE IN THE HUBc FRAMEWORK

<table>
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<tr>
<th>Strand</th>
<th>CAMPUS EVOLUTION TOWARDS A SOCIALLY INTEGRATED MODEL AND INTERACTION WITH THE REGIONAL ENVIRONMENT</th>
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<tr>
<td>Action</td>
<td>VOCATIONAL TRAINING CENTRE IN THE HUBc FRAMEWORK</td>
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<td>Objectives</td>
<td>TO ADAPT THE SPACES AT THE BELLVITGE CAMPUS CLASSROOM BLOCK TO THE NEEDS ARISING FROM APPLICATION OF THE EHEA</td>
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**Initial objectives of the 2010 proposal**

The social sustainability of the project has been based on the ability to structure, within the HUBc alliance group, an overall educational offer orientated towards satisfying the training needs of those in the field of healthcare throughout their entire professional career, as well as to train and make available the various types of professionals needed to develop production and service-provision processes for hospitals, companies and research centres, not only for the HUBc alliance but also for the biomedicine and biotechnology sectors.

The HUBc project has therefore incorporated within its scope a substantial offering of postgraduate courses, and it has demonstrated its firm intention to advance towards the creation of comprehensive higher education environments, where university teaching will be combined with vocational training.

**Progress summary**

On 15 May 2013, the HUBc hosted the First Technical Conference on University–Vocational Training in Barcelona. Around 100 professionals from the sector participated, with the activities including the presentation of various examples of integrated university–vocational training campuses. The University of Barcelona presented its own model, which defines its role in the coordination of professional education.

At this conference organized by the HUBc, the contents of this model were described, including its 'commitment to specific fields of knowledge with the objective of promoting high-level, specialized centres within an environment where synergies with other entities can be established (for example companies, hospitals, research centres, public institutions and professional associations). These centres must allow for the creation of new opportunities within a context of integrated spaces for people immersed in the educational process.' Although the UB has been supporting professional education through its affiliated centres offering training programmes, 'we are now ready to take a qualitative leap forward by establishing a future model that will coordinate the relationships between the UB and vocational training, in order to address the actual needs of the country,’ explained Josep Samitier.

At the time of this conference, the HUBc was in the process of coordinating two future projects managed under the scope of the UB. The first, developed at the Bellvitge Health Sciences Campus with the support of the Hospitalet de Llobregat City Council, is focused on advanced-level vocational training in the fields of dental prostheses, oral hygiene and radiotherapy. This training will also benefit from the UB's own facilities, such as the Faculty of Dentistry and the Dental Clinic, as well as from the fact that it is located within a first-rate hospital and research setting that includes the Bellvitge University Hospital, the Catalonia Oncology Institute's Duran i Reynals Hospital, and the IDIBELL, all three centres affiliated with the HUBc.

The second project, which has the support of the Santa Coloma de Gramenet City Council, is related to advanced-level vocational training in dietetics and is based at the UB's Food and Nutrition Campus, located in the Torribera neighbourhood in the city of Santa Coloma. This represents a thematic regional campus with 12,000 m² of area available for services, classrooms and laboratories, faculty offices and R&D laboratories. These spaces are used to present undergraduate degree programmes in human nutrition and dietetics, and food science and technology, which, along with various master’s degree programmes, are affiliated with the Faculty of Pharmacy.

**Role of partners**

Several institutions have played an especially important role in the development of this action: the Bellvitge Campus, the Hospitalet de Llobregat City Council, the Santa Coloma de Gramenet City Council and the Torribera campus.
### Table 2. HALL OF RESIDENCE IN THE AREA OF THE BELLVITGE CAMPUS

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<tr>
<th>Strand</th>
<th>CAMPUS EVOLUTION TOWARDS A SOCIALLY INTEGRATED MODEL AND INTERACTION WITH THE REGIONAL ENVIRONMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action</td>
<td>HALL OF RESIDENCE IN THE AREA OF THE BELLVITGE CAMPUS</td>
</tr>
<tr>
<td>Objectives</td>
<td>TO CREATE A RESIDENTIAL SPACE TO PROVIDE SOLUTIONS FOR THE EMERGING HOUSING NEEDS AT THE BELLVITGE CAMPUS (STUDENTS, RESEARCHERS AND FAMILY MEMBERS OF PATIENTS ADMITTED FOR LONG-STAY TREATMENT), WITH THE INTENTION OF PROMOTING INTERNATIONALIZATION POLICIES AND INTERACTION WITH THE REGIONAL SURROUNDINGS</td>
</tr>
</tbody>
</table>

#### Initial objectives of the 2010 proposal

Negotiations were held with the Hospitalet de Llobregat City Council, which resulted in the cession of a plot of urban land adjacent to the Campus to be used for the construction of the hall of residence. As a first step in the development of the hall of residence, a design competition was held to decide on the most suitable architectural project.

#### Progress summary

On 31 January 2014, the University of Barcelona signed a collaborative agreement with the Hospitalet de Llobregat City Council to promote the construction, management and operation of a public university hall of residence, which will become part of the Bellvitge Health Sciences Campus.

By this agreement, the Hospitalet de Llobregat City Council cedes to the UB, for a period of 75 years, plots of land adjacent to the Bellvitge Campus. This will be used to construct a university hall of residence, which is one of the projects within the HUBc strategic plan. The agreement states that this new facility must provide at least 100 residential spaces, and may also include any complementary services considered to be appropriate, such as a dining hall, a library and a meeting room.

This project was started with the award of a €100,000 grant in a call for proposals from the Campus of International Excellence with the purpose of holding a design competition for the future building. The competition, managed through the UB’s Construction Service, took place in 2012. The winning proposal was submitted by BCA Arquitectura - Batllori & Trepat Arquitectes.

#### Role of partners

The Hospitalet City Council played a critical role by ceding land suitable for the future construction of the hall of residence.

#### Most significant results

The end of June 2012 saw the announcement of the winner of the competition to design a hall of residence at the Bellvitge Campus to house students, teaching staff and family members of patients at the hospital. The project included close to 200 single rooms and 50 double rooms, along with kitchens and various common spaces.

The constructed surface area would include around 8200 m², including space used for the car park. The winning proposal, submitted by BCA Arquitectura - Batllori & Trepat Arquitectes, features two buildings oriented perpendicular to one another on Carrer de la Residència. These buildings are 6 and 11 floors high and surround an interior patio.
Table 3. CONSTRUCTION AND REFURBISHMENT OF BUILDINGS - UB DIGITAL FACTORY

<table>
<thead>
<tr>
<th>Strand</th>
<th>CAMPUS EVOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action</td>
<td>CAMPUS EVOLUTION TOWARDS A SOCIALLY INTEGRATED MODEL AND INTERACTION WITH THE REGIONAL ENVIRONMENT</td>
</tr>
<tr>
<td>Objectives</td>
<td>TO COMPLETE THE CONSTRUCTION WORK NEEDED TO REFURBISH SPACES IN THE TECHNICAL OFFICE AND OTHER ASSOCIATED STRUCTURES</td>
</tr>
</tbody>
</table>

Initial objectives of the 2010 proposal

The purpose of the Digital Factory is to strengthen existing studies offered in the audiovisual field and to create new courses that complement those currently available, working towards the application of techniques from the audiovisual world that can give rise to innovative actions in the healthcare sector.

In order to move this project forward under circumstances in which the Can Ricart buildings are not yet available, the University of Barcelona has initiated the following actions.

- To create two temporary centres for the Digital Factory using the university’s own spaces. These spaces are located in the Faculty of Library and Information Science, which teaches the Bachelor’s Degree in Audiovisual Communication and houses the management offices for the Digital Factory and the HUBc itself. The second space is located in the Faculty of Philology. It is being used to present a new degree programme entitled Communication and Cultural Industries as well as to house the corresponding offices being used to manage all matters related to the Digital Factory.
- To provide sufficient computers and audiovisual and lighting equipment to make innovation the norm in these studies and to promote an orientation towards the health sector.
- To create a platform for medical teaching in collaboration with those responsible for these bachelor degree programmes in order to make semi-in-person teaching possible for the master’s degree and other programmes (so giving students another way to follow course content). This will allow lectures from the master’s degree and postgraduate programmes at the HUBc (and in general any type of event) to be viewed live via the Internet, and will also allow these broadcasts to be viewed later through video on demand (VOD).

Progress summary

The activities carried out have taken place in the two locations of the Digital Factory as of the closing date of this activity.

- Faculty of Library and Information Science building: adaptation of classrooms for the Bachelor’s Degree in Audiovisual Communication, which was transferred from another building that did not meet the necessary conditions
- Faculty of Library and Information Science building: creation of offices essential for the management of the bachelor’s degree programme, the project and the HUBc Campus of Excellence
- Historic Building of the University of Barcelona, Faculty of Philology: adaptation of classrooms for the new Bachelor’s Degree in Communication and Cultural Industries implemented during the 2012-2013 academic year
- Historic Building of the University of Barcelona, Faculty of Philology: creation of offices to provide services for the teaching staff of the bachelor’s degree programme and promotion of the UB Digital Factory;
- Renovation of the communication networks and electrical systems for the classrooms and laboratories used in the above-mentioned degree programmes

Role of partners

This project was carried out by the University of Barcelona
### Table 4. CLASSROOM BLOCK ON THE BELLVITGE CAMPUS

<table>
<thead>
<tr>
<th>Strand</th>
<th>Teaching Excellence and Adaptation to the EHEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action</td>
<td>Further the development of teaching formulas that bring together: active learning, student-centred teaching and continuous assessment</td>
</tr>
<tr>
<td>Objectives</td>
<td>To adapt the spaces at the Bellvitge Campus classroom block to the needs arising from application of the EHEA</td>
</tr>
</tbody>
</table>

**Initial objectives of the 2010 proposal**

The project has consisted in expanding the University of Barcelona classroom block at the Bellvitge campus.

**Progress summary**

This new Bellvitge Campus classroom block, with architectural planning by Albert de Pineda, includes a total of 6,141 m² of constructed surface area. This space houses 14 classrooms of various capacities, 10 teaching laboratories, 3 computer classrooms, an auditorium and seminar room, and 11 workspaces for small groups of students. The construction work, with the budget of €8 million, has been primarily funded by resources provided to the HUBc Campus of International Excellence by the Spanish Ministry of Education, Culture and Sport under its 2010 call for proposals. The rest of the funding came from the Government of Catalonia’s multi-year plan for investment in the region’s public universities through its Ministry of Economy and Knowledge.

At the design level, the building’s exteriors were defined according to its overall structural concept: the base of the building would be constructed using concrete walls and large glass openings, with elements to protect this level from exposure to the sun depending on the orientation of the façades, while the façade of the upper structure consists of a double skin of Corian panels, which protect the interior from the sun while giving the building a more lightweight appearance. The main space houses the classrooms, laboratories and offices. These are horizontally distributed above the base level, which accommodates areas for more public uses. The building is connected to the existing classroom block by means of horizontal walkways on all of the main floors.

The research and teaching complex, inaugurated in October 2013, also includes the new podiatry laboratories, which are distributed as three spaces located on the second floor of the administrative pavilion. One of these is a multi-use space for the areas of orthopodiatry, podiatric surgery and chiropodiatry, which also includes rooms used for preparing and finishing arch supports and for simulation of surgical cleansing. The second laboratory is equipped with beds for teaching about examinations, while the third space is used for biomechanical examinations. It is equipped with a platform for studying walking motion as well as various computer systems for conducting biomechanical tests.
Table 5. FARMATEC-UB

<table>
<thead>
<tr>
<th>Strand</th>
<th>INTERACTION WITH THE SOCIAL, BUSINESS AND REGIONAL SURROUNDINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action</td>
<td>FARMATEC-UB</td>
</tr>
<tr>
<td>Objectives</td>
<td>TO ADAPT THE SPACES AT THE BELLVITGE CAMPUS CLASSROOM BLOCK TO THE NEEDS ARISING FROM APPLICATION OF THE EHEA</td>
</tr>
</tbody>
</table>

Initial objectives of the 2010 proposal

The project, initially entitled BIOPOL RESEARCH INSTITUTES, was part of the Improvement of Infrastructure category. This project was replaced by FARMATEC-UB. In view of the difficulties in executing the original plans due to the economic crisis, this change was approved by the Secretary of State for Research, along with an extension of the completion date to 24 February 2014.

Progress summary

The Farmatec-UB project is part of the HUBc alliance, and acts as a nexus between basic research and applied research, making it possible to put into practice the advances taking place in basic research. Once a new pharmaceutical substance has been produced and studied, or when a new application is developed for an existing pharmaceutical product, the corresponding applied research must be conducted. This consists of transforming the medication into a pharmaceutical format with its own formulation and production technology. Doing this means that, on the one hand, it can be properly administered, and on the other, its action can develop safely and effectively as a stable, high-quality drug. This function of applied research and the development of new drugs is the purpose of Farmatec-UB.

The project is based on a unique underlying infrastructure: a pilot facility for drug research and production, with GMP certification and authorization from Spain’s Agency of Medicines and Health Products (AEMPS). The design of the pilot facility makes research and development of new medications possible, as well as the production of clinical lots of medications for use during any phase of clinical research.

This is the first centre in its field anywhere in the world to be established on a university health campus and linked to basic, preclinical and clinical research. It provides a different type of value in the development of complementary activities and acts as a point of union between university research and the needs of the pharmaceutical business sector. In effect, the ability to offer comprehensive research that can cover each and every one of the phases necessary for the research and development of a new drug and its entry onto the market means that the pharmaceutical industry can find everything it needs to obtain its product within a single university campus. This has made it possible to advance a university excellence process that brings with it a change in the economic model, with participation of the private sector in the sustainment and progress of university research.
Table 6. HEALTH MEETING POINT - INNOVATION SHOWROOM

<table>
<thead>
<tr>
<th>Strand</th>
<th>IMPROVEMENT OF TEACHING ACTIVITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action</td>
<td>BROADEN THE SCOPE OF MEDICAL EDUCATION BASED ON SIMULATIONS, SO THAT THEY CAN BE PUT INTO GENERAL USE DURING TEACHING-LEARNING PROCESSES</td>
</tr>
<tr>
<td>Objectives</td>
<td>TO CREATE A TRAINING AND DEMONSTRATION CENTRE DEDICATED TO IMPROVING VISIBILITY OF THE SET OF COURSES AVAILABLE AT THE HUBc ON THE SUBJECT OF HOSPITAL CLINICAL RESEARCH IN ORDER TO PROVIDE BETTER PRACTICAL SUPPORT FOR TEACHING</td>
</tr>
</tbody>
</table>

Initial objectives of the 2010 proposal
To provide first-rate facilities at the Bellvitge Campus with equipment for performing simulations and for practical training. The fundamental components of the project are training in critical patient care through simulation techniques and clinical simulation.

Progress summary
A series of five contiguous laboratories (numbers 4 to 8 on floor 2-2) have been constructed at the Bellvitge University Hospital along with a storage area. Laboratories 4 and 5 are interconnected and are dedicated to high-technology simulation. They are equipped with a high-technology simulator (SimMan), connected to a computer, with all of the materials necessary to perform all types of simulations.

The other laboratories (6 to 8) are multi-purposed and can be used interchangeably for various different types of skills workshops.

The facility has an adjacent storage area for inventoried material, which can be distributed to the various classrooms as necessary. There is also a shared classroom for holding seminars, equipped with a computer and projector and with a capacity for 25 students. The central laboratory space is currently being modified to serve as a classroom for seminars with a higher capacity, and is also equipped with a projector and large plasma screen display.

There are two classrooms dedicated to the ICU School, reserved for the various classes and activities of the physicians belonging to the Intensive Medicine service, many of which are carried out jointly with the Covidien laboratory.
Table 7. BARCINO PROJECT

<table>
<thead>
<tr>
<th>Strand</th>
<th>IMPROVEMENT OF SCIENTIFIC ACTIVITIES AND KNOWLEDGE TRANSFER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action</td>
<td>DEVELOPMENT AND INDUSTRIALIZATION OF A NEW PROCESS FOR SURFACE MODIFICATION OF ORTHOPAEDIC PROSTHESES MADE FROM VARIOUS MATERIALS, WITH AN OPTIMIZED OSTEOINTEGRATION FUNCTION</td>
</tr>
<tr>
<td>Objectives</td>
<td>TO ACQUIRE FURNISHINGS AND TECHNICAL MATERIALS TO REFURBISH THE BUILDING AND THE BARCINO PROJECT (COLLABORATION WITH THE COMPANY ALHENIA FOR USE OF NEW MATERIALS FOR THE PRODUCTION OF ORTHOPAEDIC PROSTHESES)</td>
</tr>
</tbody>
</table>

Initial objectives of the 2010 proposal

To create and equip the laboratory for the construction of orthopaedic prototypes based on new titanium replacement materials, in collaboration with the company ALHENIA.

The HUBc funded acquisition of scientific material for the development of the product standardization laboratory, both in terms of the structural perspective and the properties of the designs and prototypes for orthopaedic prostheses.

In its next phase, the Barcino project plans to create a spin-off company to manufacture and market the prostheses, with the goal of generating cost savings for the public healthcare sector.

Progress summary

The work carried out over the two years of the project’s duration has allowed the team at the Thermal Spray Centre (CPT) to identify new technological and market opportunities in the biomaterials sector. The success of the developments planned during the project has made us a leading European centre in biomedical applications of thermal spray technologies, in addition to the obvious attractiveness that the industrial exploitation of these technologies will represent after completion of the in-vitro and in-vivo studies, now in their execution phase.

The main actions carried out for the laboratory equipment located on the Bellvitge campus have been:

- acquisition of a robotic arm for manipulating samples and multi-level positioning,
- completion of the standardization equipment,
- industrial and peripheral CGS equipment.

It is important to mention the following activities with regard to the role of the participants:

- The Bellvitge Campus (UB) has provided the physical spaces, within the Bellvitge Campus bioincubator.
- The Hospitalet de Llobregat City Council has been involved in the company’s future viability.
### TABLE 8: UB DIGITAL FACTORY 2 (PROVISION OF EQUIPMENT)

<table>
<thead>
<tr>
<th>Strand</th>
<th>TEACHING EXCELLENCE AND ADAPTATION TO THE EHEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action</td>
<td>DIGITIZATION OF HEALTH RELATED BIBLIOGRAPHIC COLLECTION</td>
</tr>
<tr>
<td>Objectives</td>
<td>To conserve and preserve the bibliographic and documentary collection</td>
</tr>
</tbody>
</table>

**Initial objectives of the 2010 proposal**

To digitize the bibliographic resources related to medicine and health sciences, in order to increase their dissemination and facilitate the preservation of digital objects and original printed works. This service will offer alternatives and new possibilities to research groups, while at the same time it will facilitate viewing of documents and books with great historical value, which currently can only be consulted with many limitations.

**Progress summary**

In order to provide services to the university community, the University of Barcelona Digitization Centre (CEDI) is set up for large-scale digitization using a professional team with experience in the fields of digitization and document processing. The CEDI’s equipment makes use of the latest technologies.

The CEDI, located at Carrer Peru, 52, in the Can Jaumandreu building, has a workroom with computers, a storage area, a meeting room, a scanning room and a darkroom for photographic equipment.

Work is currently under way on the digitization of the assets of the Learning and Research Resources Centre (CRAI) along two lines of action: on the one hand, generating files that can be made available to users through the University of Barcelona’s Digital Assets Library website (BiPaDi); and on the other, creating digital copies of these assets for their long-term preservation. The CEDI is also open to other digitization projects.

The Digitization Centre also manages the long-term preservation system for the university’s digital files, using Libsafe technology.

- Digitization of the CRAI assets in order to make them available to users through the University of Barcelona’s Digital Assets Library (BiPaDi)
- Digitization of books for the CRAI’s Sponsor a Document campaign.
- Digitization of clinical history files for the University of Barcelona’s Dentistry Hospital. A project with an approximate volume of 50,000 clinical histories, including paper documents and radiographs of various sizes.
- Digitization of books for the UB-Bullipedia project.
- Digitization of copies of the Diario de Barcelona newspaper.
- Digitization of theses for the site TDX http://www.tdx.cat/
- Photography of parts of a stone altarpiece from a church in the Pyrenees (Vall Fosca).
- Photography of fragments of amphora.
- Photography of manuscripts and incunables for the book Treasures of the UB.

The CEDI has been equipped following scanning equipment:

- 2 high-quality overhead manual scanners, model I2S CopiBook
- 1 automatic scanner for books, model Kirtas Kabis III
- 1 continuous feed scanner, model Microtek ArtisScan 6250S
- 2 dental X-ray scanners, model Microtek Medi 2200plus
- 1 photographic slide and negative scanner, model Plustek OpticFilm 120
- 1 digital camera for large-format photography, model Canon EOS 5D MarkIII with Zeiss 50 mm macro optics
TABLE 9: UB DIGITAL FACTORY 3 (DIGITIZATION CENTRE)

<table>
<thead>
<tr>
<th>Strand</th>
<th>TEACHING EXCELLENCE AND ADAPTATION TO THE EHEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action</td>
<td>INCORPORATE THE TEACHING OF HEALTH-RELATED DEGREE PROGRAMMES INTO THE UB DIGITAL FACTORY PROJECT</td>
</tr>
<tr>
<td>Objectives</td>
<td>TO ADAPT THE TEACHING ASSIGNED TO THE UB DIGITAL FACTORY TO EHEA REQUIREMENTS</td>
</tr>
</tbody>
</table>

Initial objectives of the 2010 proposal

Since the month of September 2012, the Bachelor’s Degree in Audiovisual Communication has occupied the temporary spaces at the Faculty of Library and Documentation Studies, while awaiting final transfer to the BZ Barcelona Innovation premises. Negotiations are still in progress between the UB and the Barcelona City Council to establish the location for the UB Digital Factory’s activities.

The Faculty’s facilities have also been modified to accommodate the Digitization Centre for recording images related to health, clinical applications and student education.

Progress summary

Construction of the Digital Factory offices, including the marketing section
- Production of the UB Digital Factory logo
- Installation of signage for the buildings that make up the Digital Factory
- Construction work and installations for computers and audiovisual equipment
- Installation of equipment for graphic digitization, printing, sound and video
- Hiring of a technician responsible for projects derived from the Digital Factory initiative
- This work has been fully backed by the HUBc’s Executive Board
- Creation of the Bachelor’s Degree in Communication and Cultural Industries
- Transfer of the Bachelor’s Degree in Audiovisual Communication to the Faculty of Library Studies and Documentation
- Start-up of the Digitization Centre with its new computers and audiovisual equipment in order to improve teaching in this field of study

The UB has appointed a delegate from the rector’s office for the UB Digital Factory project, as well as an upper-level technician to coordinate the project’s various activities. The equipment acquired has included computers, audiovisual material, lighting, and software licenses for use during the degree programme. The economic resources dedicated to the project have included:
- an investment of €200,000 to acquire new computers and audiovisual equipment,
- an investment of €200,000 for minor construction work required for installation of equipment and start-up of offices.

The primary difficulty has been rooted in the stagnated economic circumstances affecting the Barcelona Zona Franca Consortium and the Government of Catalonia, causing delays in the construction and adaptation of the buildings of the former SEAT factory.

Due to the temporary installation of the UB Digital Factory, a dialogue is currently open between the UB Rector’s Office and the various government bodies and other entities (Government of Catalonia, Barcelona City Council, Zona Franca Consortium) in order to obtain new funding options.
### TABLE 10: UB DIGITAL FACTORY 4 (PLATFORM FOR MEDICAL TEACHING)

<table>
<thead>
<tr>
<th>Strand</th>
<th>TEACHING EXCELLENCE AND ADAPTATION TO THE EHEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action</td>
<td>BLENDED LEARNING FOR THE HUBc TRAINING CENTRES</td>
</tr>
<tr>
<td>Objectives</td>
<td>TO ADAPT THE AUDIOVISUAL MEDIA FOR RECORDING IMAGES RELATED TO HEALTH, ESPECIALLY IN THE SECTION LINKED TO CLINICAL APPLICATION AND STUDENT TRAINING</td>
</tr>
</tbody>
</table>

**Initial objectives of the 2010 proposal**

To acquire computer equipment for the digital medical teaching platform in order to allow for deferred viewing of classes on video through audiovisual media.

**Progress summary**

The HUBc’s faculties and schools offer a very extensive range of postgraduate courses in faculties such as Medicine, to the extent that there are more postgraduate students than undergraduates. These include official master’s degree programmes, UB specific master’s programmes, doctoral programmes and high-specialization postgraduate courses. These types of course are targeted at students and professionals with needs and circumstances that are different to those of undergraduate students. One of these needs, inherent to the high degree of workplace insertion for HUBc students, is the difficulty of combining an existing career and ongoing studies. This is especially true in the medical sector, where shift work and unusual work schedules are very common. Numerous postgraduate students at the HUBc also come from more distant regions, attracted by the reputation of the postgraduate programmes offered within the HUBc environment.

In order to accommodate these two types of case and offer the best range of postgraduate courses possible, a technological solution for medical teaching has been sought, consisting in the ability to view the lectures presented to postgraduates at the HUBc on-line, whether live at the time of delivery or afterwards on-demand.

The solution is three-fold:

- An audiovisual system for recording video signals as well as data and audio
- On-site encoder and recorder
- Servers for streaming and VOD

The human resources involved in this activity have been managed by the audiovisual staff.
TABLE 11: CREATION OF THE ‘CITY OF KNOWLEDGE – PANAMA’ CEI CENTRE

<table>
<thead>
<tr>
<th>Strand</th>
<th>TEACHING EXCELLENCE AND ADAPTATION TO THE EHEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action</td>
<td>INTERNATIONALIZATION OF TEACHING AND NEW ALLIANCES</td>
</tr>
<tr>
<td>Objectives</td>
<td>TO PROMOTE THE TRANSFER OF KNOWLEDGE AND TECHNOLOGY BETWEEN EUROPE AND PANAMA</td>
</tr>
</tbody>
</table>

**Initial objectives of the 2010 proposal**

The general objective of the ‘City of Knowledge’ project is to help increase the competitiveness of Panama’s economy by improving its integration into global markets, through a rapid injection of technological development.

The objectives include execution of Europe-Panama Technology Transfer activities; promotion of a culture of alliance between the public and private sectors on issues related to R&D; analysis and channelling of transferable European experiences; promotion of an effective alliance among universities, research centres, government and companies to create a national technology transfer strategy; and facilitation of the presence of Spanish universities at the City of Knowledge centre.

In order to strengthen achievement of these objectives, on 1 October 2012 a request was made to the General Secretary of Universities to transfer the official location of the City of Knowledge headquarters to Panama City.

On 26 November 2012, the General Secretary authorized the new location of the centre’s headquarters shared by three projects (Studii Salmantini, Health University of Barcelona Campus and CamBio) in Panama City.

On 20 February 2013, the Republic of Panama’s Ministry of Governance announced that legal entity status had been granted to the General Foundation of the University of Salamanca. In the Republic of Panama, this foundation is a subsidiary of the entity known as the General Foundation of the University of Salamanca, legally established in Salamanca, Spain.

**Progress summary**

The following actions have been taken to carry out the project with the members of this initiative:

- A visit to Panama in February 2013, together with the University of Salamanca, to set up a working group that includes members of Panama’s business community
- Initial discussions concerning the selection of a building for the offices of the CEI project participants
- A trip to Panama in April 2013, together with the University of Salamanca, to visit the buildings that could house the joint headquarters of the project’s Campuses of International Excellence
- Consolidation of the working group with members of Panama’s business community
- Alliance with the University of Salamanca
- Visits, contacts and alliances with members of Panama’s business community
- Initiation of the selection process for the building, making visits to various buildings that meet the conditions required for the headquarters
- Establishment of the subsidiary of the General Foundation of the University of Salamanca, with granting of legal entity status by the Republic of Panama’s Ministry of Governance
TABLE 12: EDUCATION IN TEACHING AND LEADERSHIP AT THE HUBc

<table>
<thead>
<tr>
<th>Strand</th>
<th>ACADEMIC EXCELLENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action</td>
<td>DEVELOPMENT OF A SHARED MECHANISM TO ALLOW ALL UB FACULTIES AND SCHOOLS INVOLVED IN THE FIELD OF HEALTH TO JOINTLY DETECT NEW EDUCATIONAL DEMANDS</td>
</tr>
<tr>
<td>Objectives</td>
<td>TO PARTICIPATE IN THE ‘EMPIEZA POR EDUCAR’ FOUNDATION’S PROGRAMME AND THE INTERNATIONAL ‘TEACH FOR ALL’ MOVEMENT</td>
</tr>
<tr>
<td></td>
<td>TO CONTRIBUTE TO THE DEVELOPMENT OF MANAGERIAL AND COMMUNICATION SKILLS THAT WILL ACCELERATE THE PROFESSIONAL CAREERS OF PARTICIPANTS, EVALUATING THESE TRANSFERABLE LEADERSHIP SKILLS IN THE MULTIPLE PROFESSIONAL SITUATIONS THAT MAY ARISE IN THE FUTURE</td>
</tr>
<tr>
<td></td>
<td>INVESTMENT WILL BE RECOVERED IN THE COSTS OF COVERING THE TEACHING AND LEADERSHIP PROGRAMME ENROLMENT IN THE TEACHER TRAINING MASTER’S DEGREE PROGRAMME IS ALSO INCLUDED.</td>
</tr>
</tbody>
</table>

Initial objectives of the 2010 proposal

The objective of this project is to provide grants to students from a variety of disciplines in the area of health and in the field of communications who are enrolled in the Master’s Degree in Secondary Education Teacher Training so their training can include the ‘Teaching and Leadership’ programme.

Progress summary

Through the Campus of International Excellence aid programme, the HUBc has awarded grants to six students, five during the 2012-2013 academic year and one during the 2013-2014 academic year.

The selection process consisted of four phases in which the best candidates were selected for further consideration:

- **Registration.** Using a short on-line form, the candidates provide a set of basic information (degree, marks, level of English) to help establish whether they comply with the basic requirements for participation in the programme. During the 2013 campaign, approximately 65% of the more than 2,600 candidates who registered met the requirements.

- **Application.** After passing the first step, candidates receive a longer on-line form (which requires multiple days to properly complete), which they must use to provide detailed information on their academic profile and extracurricular and workplace activities, along with two 500-word essays in which they describe their motivations for participating in the School for Success and present ideas on how their work will have an impact on the lives of their students. Last year approximately 35% of the applications received were positively evaluated, and these candidates were invited to participate in the next phase.

- **Evaluation.** The Evaluation Centres represent the third phase of the selection process. After evaluating the applications, the pre-selected candidates are invited to one of our evaluation centres in Madrid and Barcelona, where they are given a battery of verbal tests (which include simulation of a class with students) and written tests (both individual and group) over the course of half a day. Candidates who pass the tests during this half-day session are invited to a personal interview with the School for Success selection team. In 2013, 35% of the candidates passed the evaluation centre process.

- **Interview.** The final phase of the process consists of a personal interview to evaluate the candidate’s skills and abilities, which lasts for approximately one hour. This includes verification of the candidate’s possession of the skills and mentality required for participation in the School for Success. The candidate’s expectations about the conditions of the programme are also clarified (training, commitment, etc.). In 2013, only 40% of the candidates passed the final interview process for participation in the School for Success programme. In total, only 1 or 2 of every 100 candidates are accepted into the programme.

The following students passed the selection process, and as a result received grants to cover enrolment costs in the Master’s Degree in Secondary Education Teacher Training programme in the Faculty of Educational Training:

<table>
<thead>
<tr>
<th>Academic year 2012-2013</th>
<th>Academic year 2013-2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carla Herrero Nebot 47874654Q</td>
<td>Raúl Manel Corrales Flores 45883035J</td>
</tr>
<tr>
<td>Irene Freixas Rigau 07263038Y</td>
<td></td>
</tr>
<tr>
<td>Mar Bayo Montoliu 48595117G</td>
<td></td>
</tr>
<tr>
<td>Mar Soriano Prats 46874092T</td>
<td></td>
</tr>
<tr>
<td>Maria Bruna Julià Morera 47872962A</td>
<td></td>
</tr>
</tbody>
</table>
## TABLE 13. ENTREPRENEURSHIP PROGRAMME FOR HEALTH INNOVATION

<table>
<thead>
<tr>
<th>Strand</th>
<th>IMPROVEMENT OF SCIENTIFIC ACTIVITIES AND KNOWLEDGE TRANSFER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action</td>
<td>PROMOTION OF RESEARCH AND CREATION OF A SPIN-OFF</td>
</tr>
<tr>
<td>Objectives</td>
<td>TO HIRE SUBSTITUTE TEACHERS TO COVER THE LEAVE PERIOD FOR A RESEARCHER WHO IS ESTABLISHING A BIOTECHNOLOGY-BASED SPIN-OFF</td>
</tr>
</tbody>
</table>

### Initial objectives of the 2010 proposal

This project consists of allowing a UB researcher and lecturer, who is in the development phase of a project for creating a biotechnology-based company, to be temporarily relieved of teaching obligations in order to dedicate time to developing this emerging company and to therefore ensure its ongoing viability.

During the 2011-2012 year, the UB’s Dr Lozano, head of the company ImmuNovative Developments S.L., was relieved of teaching duties for one year. During the same academic year, the Faculty of Medicine assigned a substitute lecturer to cover Dr Lozano’s teaching load. A six-month extension was also applied for and accepted for the next year so that Dr Lozano could continue with the project.

### Progress summary

The company ImmuNovative Developments S.L. is now fully operational, and an article was recently published in one of the leading journals in the specialism describing advances in the treatment of sepsis.

Sepsis is a severe, generalized inflammatory reaction caused by a serious infection. It can lead to multiple organ failure and a state of shock, and it results in death in 30–50% of cases. Increasing resistance to antibiotics, along with the fact that these medications can combat certain bacteria but not their pro-inflammatory effects or their toxins, has made sepsis an orphan disease to effective therapies.

An article published in the Journal of Infectious Diseases shows that CD6, a molecule produced by our own lymphocytes, may be an effective alternative or complement for antibiotics in cases of sepsis caused by bacteria, whether gram-positive or gram-negative and independently of whether they are resistant to antibiotics or producers of lethal toxins. This work, which was the result of a collaboration between academia and business, was carried out by the group led by Dr Francisco Lozano, a lecturer in the UB’s Department of Cellular Biology, Immunology and Neurosciences and head of the Immune Receptors of the Innate and Adaptive System research team at the August Pi i Sunyer Biomedical Research Institute (IDIBAPS), along with members of the R&D team at ImmunNovative Developments, a recently created spin-off based on patents generated by the research group directed by Dr Lozano.

Research will continue to advance in order to analyse the beneficial effects of the protein in other more complex infection models (polymicrobial) and in combined administration with antibiotics typically used for treatment of sepsis. Progress is also expected to be made towards the possible prevention of the state of immuno-suppression experienced by patients who survive sepsis, even in spite of antibiotic treatment, which is responsible for a high comorbidity rate in the months following an episode of this illness.
TABLE 14: ACADEMIC EXCELLENCE AT THE HUBc FOR ADAPTING TEACHING LABORATORIES

<table>
<thead>
<tr>
<th>Strand</th>
<th>TEACHING EXCELLENCE AND ADAPTATION TO THE EHEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action</td>
<td>BROADEN THE SCOPE OF MEDICAL EDUCATION BASED ON SIMULATIONS, SO THAT THEY CAN BE PUT INTO GENERAL USE DURING TEACHING-LEARNING PROCESSES</td>
</tr>
<tr>
<td>Objectives</td>
<td>TO IMPROVE THE TEACHING LABORATORIES FOR STUDENTS AT THE TWO CAMPUSES (BELLVITGE AND CASANOVA)</td>
</tr>
</tbody>
</table>

Initial objectives of the 2010 proposal

The new curricula require laboratory practice in specialized teaching laboratories. In order to optimize resources, the Faculty of Medicine plans to centralize the teaching that is now taking place in a variety of sciences (biochemistry, molecular biology, physiology and pharmacology) in a single type of shared laboratory.

Progress summary

In order to achieve the project’s main objective, improvements have been implemented at the Bellvitge Campus (by providing equipment for teaching laboratories to be used by bachelor-degree students in medicine, dentistry, nursing and podiatry) and at the Casanova Clinic Campus (by adapting a cell culture teaching laboratory and a room used for assignments with computer applications).

The plan, approved by the University of Barcelona and the HUBc, has the following objectives:

- At the Bellvitge Campus, the number of workstations equipped with a photon microscope for individual use has increased to 28. Furthermore, the workstations used by lecturers for teaching laboratory sessions have been improved with a microscope equipped with a digital camera, which in some cases has made it possible to replace obsolete analogue cameras and in other cases has given laboratories the possibility of demonstration in advance. Finally, the number of binocular loupes available has doubled (note that these are essential for carrying out biology exercises).
- At the Casanova Clinic Campus, the adaptation of a cell culture teaching laboratory has resulted in better training opportunities for students in the bachelor’s degree programmes in medicine, biomedical sciences and biomedical engineering. One of the objectives is to allow students to learn basic techniques related to cell culture for eukaryotic cells. The Faculty’s various master’s degree programmes also include plans for sessions dedicated to more advanced cell culture techniques. For this purpose, two rooms adjacent to the current teaching laboratory for cell biology have been upgraded. One room now houses all of the instrumentation needed to perform cell culturing, and the other has a work area to allow explanations to be presented prior to the exercises and to allow students to discuss their work.

At the Bellvitge Campus the following equipment has been acquired:

- 28 Zeiss Primostar photon microscopes, model 415500-0058-000
- 5 Zeiss Primostar photon microscopes, model 415500-0058-000 with digital camera
- 10 Motic 1x-4x zoom binocular loupes with LED lighting, model SMZ-141

At the Casanova Clinic Campus, there have been the following upgrades and equipment acquisitions:

- Adaptation of the space and installation of a gas system
- In the room adjacent to the cell culture laboratory, installation of a screen connected by webcam
- Acquisition of two fume cabinets for biological safety
- A CO2 incubator
- A microcentrifuge for sample preparation
- Electrophoresis tanks for analysis of cell samples
- An orbital shaker, heat baths and automatic pipettors
- A negatoscope
- Pipettors and other materials needed for cell culturing
- A computer with TV projection screen
TABLE 15: TRAINING OF HUBc MANAGERS

<table>
<thead>
<tr>
<th>Strand</th>
<th>Action</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAMPUS EVOLUTION TOWARDS A SOCIALLY INTEGRATED MODEL AND INTERACTION WITH THE REGIONAL ENVIRONMENT</td>
<td>TRAINING WITHIN THE SCOPE OF THE CAMPUSES OF EXCELLENCE IN ORDER TO OPTIMIZE MANAGEMENT</td>
<td>TO PROMOTE THE PARTICIPATION OF A STAFF MEMBER FROM THE HUBc TECHNICAL OFFICE TEAM IN THE EXECUTIVE TRAINING PROGRAMME FOR MANAGEMENT OF CENTRES OF EXCELLENCE AT THE SCHOOL OF INDUSTRIAL ORGANIZATION</td>
</tr>
</tbody>
</table>

**Initial objectives of the 2010 proposal**

This project consists of completing a four-month executive programme directed at all managers of Campuses of Excellence at Spanish universities.

It is currently being completed with the award of the pertinent accreditation to the staff member from the HUBc Technical Office who participated in the programme.

**Progress summary**

Thanks to funding received from the programme, Esther Oriol Fernandez, an advanced technician from the HUBc and head of communication and project management, enrolled in and attended the training sessions organized by the School of Industrial Organization (EOI) which took place during 2012, presented entirely in English through a variety of in-person and on-line modules.

The programme covered aspects of CIE management such as governance, strategy and alliances, marketing, the legal environment, operations and quality, funding, and managerial skills. At the end of the programme, all participants submitted a project for the purpose of transferring the learning experience to their own working environment.

The duration of the programme was 360 hours, with a blended learning methodology that combined four weeks of in-person attendance with periods of on-line learning. In order to emphasize the international nature of this training, two of the in-person periods took place at Campuses of Excellence in Germany (KIT Harsruhe) and the United Kingdom (Oxford University).

For professionals from the Campuses of International Excellence, this training programme represents a unique opportunity for reflection and interchange of ideas, experiences and knowledge of best practices on a national and international basis.
### TABLE 16: HEALTH NETWORKS IN HIGHER EDUCATION

<table>
<thead>
<tr>
<th>Strand</th>
<th>IMPROVEMENT OF SCIENTIFIC ACTIVITIES AND KNOWLEDGE TRANSFER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action</td>
<td>HEALTH NETWORKS IN HIGHER EDUCATION</td>
</tr>
<tr>
<td>Objectives</td>
<td>TO CONSOLIDATE AND PROMOTE THE ALLIANCE WITH THE ADVANCED POLYTECHNIC AND UNIVERSITY TEACHING COOPERATIVE (CESPU) IN PORTO, PORTUGAL, IN ORDER TO STIMULATE INTERNATIONAL MOBILITY ACTIVITIES AND EXCHANGES</td>
</tr>
<tr>
<td>Objectives</td>
<td>TO CREATE AND PROMOTE A RESEARCH INITIATIVE THAT FOSTERS INTEGRATION AND INTERACTION OF VARIOUS AGENTS IN THE FIELD OF NUTRITION AND HEALTH. THE FOCUS IS ON THE DESIGN OF NUTRITIONAL PROGRAMMES ADAPTED TO GROUPS WITH SPECIAL DIETS.</td>
</tr>
</tbody>
</table>

**Initial objectives of the 2010 proposal**

In the case of CESPU, in order to promote joint activities an agreement has already been signed that regulates collaboration between the parties and establishes the creation of a HUBc antenna centre in Porto. This agreement establishes the provision of a person with training in the biomedical field, who will remain at the Portuguese headquarters of CESPU in order to promote joint educational courses, research projects and fundraising, among other aspects.

The CETT project for the design of healthy diets is a collaborative initiative with the Food and Nutrition Campus of Torribera (Santa Coloma de Gramenet, Barcelona), the University School of Hotel Management and Tourism (a centre affiliated with the UB) and the Alicia Foundation. The result of this project will be the creation of a manual and other training actions to enable the restaurant industry to create diets for people with certain illnesses or food intolerances. Maimónides University of Buenos Aires, Argentina, is also participating through a cooperative agreement.

**Progress summary**

The CESPU project has been promoted by the delegate from the rector’s office at the Bellvitge Health Campus, Dr Miquel Viñas, as well as by the Executive Board of the HUBc. CESPU has been represented by its rector, Mr Antonio Almeida-Dias, who is also president of Grupo CESPU.

The CETT project for the design of healthy diets was coordinated by a lecturer from the Montserrat Illán Food and Nutrition Campus who served as the project’s scientific director. The technical head of the project is Nan Ferreres, director of the Hotel Alimara (University School of Hotel Management and Tourism). The HUBc has funded and promoted the project. A scientific committee has also been established, with its membership made up of experts in nutrition and food science from the UB’s Faculty of Pharmacy. Participation has also included Dr Marcela Leal from Maimónides University in Buenos Aires and the University of Monterrey in Mexico.

The agreement signed between the UB and CESPU included plans to hold a jointly organized scientific conference in Porto on 4 October 2013. During July 2013, summer courses in the area of health were prepared for 2014, to be taught at the Penafiel Campus (Porto). Additionally, in 2014 a person was hired to coordinate the affiliation between the two institutions, UB and CESPU.

The CETT project on healthy diets was implemented in four stages:

- **Collection of information (until July 2012)**
- **Presentation of ‘Healthy Diets’, a workshop for the restaurant industry (April 2013)**
- **Presentation of research results at the IUNS 20th International Congress of Nutrition, Granada (Spain)” (15-20 September 2013)**

£50,000 is being allocated to the CESPU project, of which £40,000 is to be used to cover the costs derived from hiring the technician located in Portugal as well as travel, per diem expenses and other current expenses. CESPU will assume 50% of the cost of hiring the technician. CESPU will also be responsible for the ordinary operating expense for the HUBc support office in Portugal, as well as for providing the workspace. The remaining £10,000 will be dedicated to the acquisition of furnishings and computer equipment needed to start up this project.

In relation to the CETT project on healthy diets, €40,000 will be dedicated to covering the expenses for personnel and €8,000 is being reserved to organize the conference at which the results will be presented.
TABLE 17: INTERNATIONAL EVENTS ABOUT PUBLIC HEALTH AND HEALTHY AGEING

<table>
<thead>
<tr>
<th>Strand</th>
<th>INTERNATIONALIZATION OF HUBc RESEARCH NETWORKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action</td>
<td>ORGANIZE AND LEAD INTERNATIONAL MEETINGS OF TRANSLATIONAL RESEARCH GROUPS AND CENTRES, AND DEVELOP STRUCTURES FOR THE COORDINATION OF NEW COOPERATIVE RESEARCH PROJECTS</td>
</tr>
<tr>
<td>Objectives</td>
<td>TO ORGANIZE, AT THE UNIVERSITY OF BARCELONA AND THROUGH THE HUBc, A WEEK OF IN-CLASS INSTRUCTION FOR THE CERTIFICATE PROGRAMME IN ‘EPIDEMIOLOGY FOR HEALTH MANAGERS’ OF THE BLOOMBERG SCHOOL OF PUBLIC HEALTH AT JOHNS HOPKINS UNIVERSITY (USA)</td>
</tr>
<tr>
<td></td>
<td>TO ORGANIZE AND HOLD THE HEALTHY AGEING INTERNATIONAL CONFERENCE</td>
</tr>
</tbody>
</table>

Initial objectives of the 2010 proposal

To increase international cooperation and attract the involvement of other bodies involved in the field of personal health improvement, the HUBc is leading two activities designed to disseminate and promote knowledge generated in the field of health sciences.

Firstly, the HUBc was involved in organizing the ‘Epidemiology for Health Managers’ programme designed for public health managers. This course was taught by the Johns Hopkins Bloomberg School of Public Health in conjunction with the University of Barcelona, which hosted the in-person training week in Barcelona on 24-30 March 2012.

Secondly, the HUBc organized the Barcelona International Conference on Healthy and Active Ageing, held on 14-15 November 2013 at the UB’s Faculty of Medicine. The Scientific Committee that will evaluate the conference papers has already been formed and the programme for the event has been drawn up.

Progress summary

The in-person week of the ‘Epidemiology for Health Managers’ programme was attended by 29 students, primarily from Brazil and Chile. The number of teachers from the Bloomberg School of Public Health included nine instructors, in addition to the vice-chancellor of academic affairs at Johns Hopkins University, James Yeager. The UB’s vice-rector of international relations, Carles Carreras, also attended.

The Healthy Ageing International Conference was slated to take place on 14 and 15 November 2013 at the University of Barcelona Faculty of Medicine, with the expected participation of 300 attendees. The president of the Scientific Committee appointed was Dr Alphonse López Soto, who is director of internal medicine and geriatrics at the Hospital Clínic de Barcelona. The first meetings of the Scientific Committee were held during the last quarter of 2012. A company specializing in event management was contracted to help arrange the meeting. This conference represents an effort to establish strategic international alliances in order to promote the positioning of the HUBc project as a candidate for obtaining the Knowledge Innovation Community in Healthy and Active Ageing.

The in-person instruction week contributed to strengthening the personal and scientific links between the UB and the Bloomberg School of Public Health at Johns Hopkins University.

In the end, two editions of the Healthy Ageing International Conference were held. The first took place on 14 and 15 November 2013 in the events room at the Hesperia Tower Hotel in Hospitalet de Llobregat. A variety of topics were covered during the two-day event, organized into eight roundtable sessions.

The second edition of the conference took place on 19 and 20 June 2014 in the Magna Room at the University of Barcelona’s Faculty of Medicine. The Scientific Committee, which was made up of the same members as in the first edition, designed a programme related to the previous edition but which also included new subjects to be presented by world-renowned speakers.

In total, more than 300 people attended the two editions of the conference. During second edition, an audiovisual team recorded the sessions and these were offered via real-time streaming on the University of Barcelona website.

The videos of the second edition of the conference can be viewed on the UB website at the following link: http://www.ub.edu/ubtv/colleccio/congressos-i-jornades/barcelona-international-conference-on-healthy-ageing-2n-2014
TABLE 18: TALENT ATTRACTION TO DRIVE ADVANCES IN CELL THERAPY

<table>
<thead>
<tr>
<th>Strand</th>
<th>EXCELLENCE OF RESEARCH STAFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action</td>
<td>ATTRACTING TALENT THROUGHT THE INCORPORATION OF RESEARCHERS IN THE FIELD OF CELL THERAPY</td>
</tr>
<tr>
<td>Objectives</td>
<td>TO INCORPORATE INTERNATIONALLY RENOWNED RESEARCHERS INTO THE HUBc CELL THERAPY PROGRAMME</td>
</tr>
</tbody>
</table>

Initial objectives of the 2010 proposal

The Talent Attraction to Drive Advances in Cell Therapy project has its origin in the University of Barcelona Cell Therapy Programme. This programme, coordinated by the University of Barcelona Faculty of Medicine, includes pre-clinical and clinical research teams from a variety of medical specialisms. Several clinical and translational research projects have also been developed for specific illnesses, such as acute myeloid leukaemia, myelodysplastic syndromes and multiple myeloma. Through the 2011 Reinforcement Programme, a €240,000 grant was obtained to equip the laboratory. This should allow researchers attracted to the HUBc to continue conducting research in this field. This grant was awarded to us in order to acquire research equipment, which means that, along with its associates, the HUBc had to obtain further funding to hire the Dr Pablo Menendez, a leading researcher from the University of Granada. Through an ICREA contract, the Josep Carreras Leukaemia Research Institute funded the cost of Dr Menendez’s appointment. It should be noted that this institute is part of the HUBc Campus of Excellence.

Progress summary

The Spanish Agency of Medicines and Health Products (AEMPS) has authorized the University of Barcelona to produce advanced therapy drugs for the HIV virus in the clean room at its Research and Development Unit, which is part of the UB’s Cell Therapy Programme (TCUB).

The first medication this unit will produce will be the cellular HIV vaccine for a clinical trial that will be led by Hospital Clinic de Barcelona. The HUBc has participated in funding scientific equipment at this facility, with a donation of €250,000 obtained from the Spanish Ministry of Education, Culture and Sport’s 2011 Reinforcement Programme.

The TCUB’s Research and Development Unit, located in the UB Faculty of Medicine, has 300 m² of space that includes two culture rooms and a laboratory for preclinical research on human stem cells. The work performed there includes research with pluripotent cells, such as embryonic cells. The facilities also house three cellular production rooms in a Good Manufacturing Practices (GMP) environment to standardize protocols using procedures and infrastructures that are appropriate for clinical use according to Spain’s drug law.

The equipment includes Catalonia’s first production room for combined cellular and genetic medications. There are currently four highly qualified technicians working in the unit who work as consultants for new advanced therapy product development as well as for the application of such products.
**TABLE 19: GRANTS PROGRAMME FOR INTERNATIONAL MOBILITY**

<table>
<thead>
<tr>
<th>Strand</th>
<th>TEACHING EXCELLENCE AND ADAPTATION TO THE EHEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action</td>
<td>GRANTS PROGRAMME FOR INTERNATIONAL MOBILITY</td>
</tr>
<tr>
<td>Objectives</td>
<td>TO DESIGN A SECOND GRANT PROGRAMME FOR THE INTERNATIONAL MOBILITY OF DOCTORAL STUDENTS AND A SECOND PROGRAMME TO PROMOTE THE MOBILITY OF TEACHING STAFF IN ORDER TO INCREASE INTERNATIONALIZATION OF THE DOCTORAL PROGRAMMES AT THE UB WITHIN THE CONTEXT OF THE EUROLIFE NETWORK</td>
</tr>
</tbody>
</table>

**Initial objectives of the 2010 proposal**

A first call for proposals was held for this programme, based on two sub-projects:

The first was intended for doctoral students who were required to complete part of their doctoral thesis at a foreign university, preferably one from the Eurolife network (18-month grants).

The second sub-project was especially targeted at doctoral programme directors and aimed to stimulate the implementation and formalization of joint doctoral programmes with leading foreign universities.

The application procedure was published, but because of the complexity of the requirements, none of the candidates who applied were eligible to receive a grant.

The organizers therefore decided to refocus the call for applications to include more realistic conditions, while maintaining the two previous sub-projects: a grant for mobility of doctoral students within the Eurolife network and a grant to attract lecturers of international renown to evaluate thesis projects.

The second, improved call for applications was published on 20 June 2015.

**Progress summary**

An effort is being made to increase the internationalization of doctoral studies in the field of biomedicine, foster relationships among the seven participating universities, contribute to the effectiveness of research, and improve consistency among the research and training activities taking place at the participating centres.

The initial call for applications was published on 18 December 2012 and had very strict conditions:

- Funding of a one-year pre-doctoral contract to write a doctoral thesis at the UB, extendible for a further six months.

- Commitment of the UB research group and the destination university to fund another 18 months in order to allow the doctoral student to visit a University of Excellence, preferably from the Eurolife Network.

- Travel assistance, for the doctoral student as well as for the principal investigator.

These conditions meant that no doctoral student was able to obtain the financial commitment of the destination university, so the funding could not be awarded.

In view of this situation, the organizers decided to publish two calls for applications for doctoral student mobility for a period of one to three months, and always with the condition of preference for universities affiliated with the Eurolife Network. Another condition was that a work plan had to be submitted at the destination university and a report on the work carried out by the doctoral student during the period funded by the mobility programme.

The two calls for applications were successful in both candidate submissions and awarding of funding. Sections 5.1, 5.2 and 5.3 of the annexes to this report include the scanned documents from these calls for applications, their results and the reports submitted by the students.
### TABLE 20: PROJECT FOR IMPROVEMENT OF GOVERNANCE AT THE HUBc

<table>
<thead>
<tr>
<th>Strand</th>
<th>CAMPUS EVOLUTION TOWARDS A SOCIALLY INTEGRATED MODEL AND INTERACTION WITH THE REGIONAL ENVIRONMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action</td>
<td>PROJECT FOR IMPROVEMENT OF GOVERNANCE AT THE HUBc</td>
</tr>
</tbody>
</table>
| Objectives | TO ENSURE THAT THE HUBc IS GOVERNED IN A MANNER WILL HELP IT ACHIEVE POSITIVE RESULTS  
|          | TO ENSURE PARTICIPATION AND INVOLVEMENT OF THE MEMBER ENTITIES IN ORDER TO TAKE ON THE CHALLENGES LAID OUT BY THE PROJECT TO CONSOLIDATE THE STRUCTURE OF THE HUBc IN ORDER TO INCREASE ITS OPERABILITY AND CAPACITY FOR SYNERGY |

**Initial objectives of the 2010 proposal**

- Celebrate a conference addressed to people from all over Europe where talk about campus management and governance model.
- Conduct a study on the implementation of the governance structure
- Convene and conduct a performance of international benchmarking (conference workshop) to contrast different governance systems led by universities.
- Develop HUBc management plan to ensure the achievement of results.

**Progress summary**

The work developed in the field of governance since the creation of the aggregation (May 27, 2010) can be summarized in the following correlation of actions:

- Creation of operational structures
  - Plenary Assembly
  - Government Commission
  - Executive Director (Technical Office)
- Project management
- Communication and marketing
  - Corporate Communications
  - Web and social networks
  - Corporate image and internal communication
  - Press
- Internationalization and networks
  - Knowledge Innovation Communities of the EIT
  - European Innovation Partnerships EIP
  - Mental Health Cluster
TABLE 2: PROMOTING INNOVATION ECOSYSTEMS IN THE BIOHEALTH SECTOR

<table>
<thead>
<tr>
<th>Strand</th>
<th>IMPROVEMENT OF SCIENTIFIC ACTIVITIES AND KNOWLEDGE TRANSFER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action</td>
<td>PROMOTING INNOVATION ECOSYSTEMS IN THE BIOHEALTH SECTOR</td>
</tr>
<tr>
<td>Objectives</td>
<td>TO LAUNCH A BIODESIGN INNOVATION TRAINING PROGRAMME (A DISCIPLINE BASED ON TEAMWORK WITH THE OBJECTIVE OF TRAINING LEADERS IN INNOVATION IN THE MEDICAL TECHNOLOGIES SECTOR) TO CREATE A SPACE DEDICATED TO RECEIVING BIOTECHNOLOGY COMPANIES CREATED AT THE BELLVITGE CAMPUS AND CURRENTLY IN THEIR EMBRYONIC PHASE</td>
</tr>
</tbody>
</table>

Initial objectives of the 2010 proposal

Biocat (Southern European Biocluster) has promoted the Innovation in Biodesign programme. This programme is part of the Moebio initiative, an innovative training strategy aimed at developing entrepreneurial and professional talent in the European biomedicine and health sciences sector. Specifically, this programme responds to the interfaces among biohealth, technology and business. The aim is to train leaders in innovation in the medical technology sector. The programme is designed to attract and develop talent and it benefits from the guidance of Stanford University’s Biodesign Group. This programme will begin in September in Barcelona.

Moebio was initiated in September 2013 with a duration of eight months.

Progress summary

For eight months, the students admitted worked in multidisciplinary, four-member teams following a joint process that began with immersion in a hospital to detect real, unsatisfied needs, continuing with the design of and prototype for a new product or service, and finishing with contacts with investors to finance the project. Throughout the process, the students acquired knowledge in medicine and business development as well as training in areas such as design thinking and creative leadership through a series of classes and workshops presented by more than 50 international specialists.

The first edition of the Health Barcelona programme included the participation of five teams that, after an initial five-week training period (boot camp), were immersed for two months (November-December 2013) in the daily operations at one of the three Barcelona hospitals collaborating with the programme: the Hospital Clinic, the Sant Joan de Déu Hospital and the Guttmann Institute. There they interacted with the medical staff and patients and gained first-hand knowledge of how the various units at the hospital operate in order to identify hundreds of needs not being covered.

During phase II (January-February 2014), the teams conceptualized and selected the requirements to which they wanted to respond, and they then designed their new product or service. During phase III (March-April) they took on the challenge of designing the business model, and the programme was completed with an investor’s day event, where the teams presented their proposals.
INDICATORS
### TABLE OF PROGRESS INDICATORS

#### TEACHING EXCELLENCE AND ADAPTATION TO THE EUROPEAN HIGHER EDUCATION AREA (EHEA)

<table>
<thead>
<tr>
<th>INDICATORS</th>
<th>INITIAL SITUATION</th>
<th>SITUATION AT REPORTING DATE</th>
<th>PROGRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STRAND 1: TEACHING EXCELLENCE AND ADAPTATION TO THE EHEA</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Objective:</strong> To consolidate teaching excellence at the HUBc</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of accredited bachelor’s degree courses</td>
<td>6</td>
<td>8</td>
<td>33%</td>
</tr>
<tr>
<td>No. of bachelor’s degree students</td>
<td>4,343</td>
<td>5,486</td>
<td>26%</td>
</tr>
<tr>
<td>No. of small rooms for small groups</td>
<td>21</td>
<td>30</td>
<td>43%</td>
</tr>
<tr>
<td>No. of students with a first option request for a place in the first year</td>
<td>8 students/place</td>
<td>6.6 students/place</td>
<td>-18%</td>
</tr>
<tr>
<td>of HUBc’s medical degree programme</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of students with a first option request for a place in the first year</td>
<td>4 students/place</td>
<td>6 students/place</td>
<td>50%</td>
</tr>
<tr>
<td>of HUBc’s degree programmes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expanded Bellvitge Campus: construction of the new classroom block</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Average number of students among the first 100 from the internal medicine</td>
<td>6</td>
<td>6</td>
<td>idem</td>
</tr>
<tr>
<td>residency (MIR)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Objective:</strong> To expand the incorporation of ICT into the teaching-learning process</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of facilities with WiFi coverage</td>
<td>90%</td>
<td>100%</td>
<td>11%</td>
</tr>
<tr>
<td>No. of video-conference rooms</td>
<td>2</td>
<td>6</td>
<td>200%</td>
</tr>
<tr>
<td>No. of laboratories with computers and audiovisual equipment</td>
<td>22</td>
<td>34</td>
<td>55%</td>
</tr>
<tr>
<td>% of teaching staff and students who use the UB’s virtual learning</td>
<td>90%</td>
<td>100%</td>
<td>11%</td>
</tr>
<tr>
<td>environments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>STRAND 2: TEACHING INNOVATION IN THE AREA OF HEALTH SCIENCES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Objective:</strong> To promote teaching innovation through new professional profiles and new methodologies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of research centres involved in design and implementation of the curricula for HUBc degree programmes</td>
<td>0</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>No. of subjects that incorporate medical simulations into the teaching/learning processes</td>
<td>-</td>
<td>18</td>
<td>-</td>
</tr>
<tr>
<td><strong>STRAND 3: TEACHING FOUNDED ON THE EXPERIENCE OF THE TEACHING AND RESEARCH STAFF</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Objective:</strong> To establish a triple dedication for professors from the UB’s Faculty of Medicine as a guarantee of teaching quality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of teaching staff involved in teaching, research and support activities</td>
<td>15%</td>
<td>16%</td>
<td>7%</td>
</tr>
<tr>
<td>No. of lecturers</td>
<td>686</td>
<td>1,176</td>
<td>71%</td>
</tr>
<tr>
<td>% of teaching staff with PhDs</td>
<td>83%</td>
<td>82.2%</td>
<td>-1%</td>
</tr>
<tr>
<td>Average number of doctoral theses during the last three years</td>
<td>118</td>
<td>134</td>
<td>14%</td>
</tr>
</tbody>
</table>

**STRAND 4: EXCELLENCE IN POSTGRADUATE AND DOCTORAL TRAINING**

Objective: To coordinate the range of master’s degrees, doctorates, other postgraduate degrees and lifelong learning

| No. of accredited master’s degree courses | 25 | 31 | 24% |
| No. of master’s degree courses | 768 | 525 | -32% |
| No. of doctoral programmes | 551 | 1,097 | 99% |
| No. of UB-specific master’s degrees and postgraduate courses | 1,987 | 2,223 | 12% |

**STRAND 5: CREATION OF LINKS BETWEEN TEACHING CENTRES AND HEALTHCARE FACILITIES**

Objective: To consolidate the collaboration processes between the UB centres and healthcare centres participating in the training process

<p>| Number of internships offered for entities affiliated with the university | 1,200 | 4,069 | 239% |
| Level of employability for HUBc graduates (AQU) | 96% | 96% | Idem |</p>
<table>
<thead>
<tr>
<th>INTERNATIONALIZATION OF TEACHING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STRAND 1: PROMOTE THE INTERNATIONAL MOBILITY OF PERSONNEL</strong></td>
</tr>
<tr>
<td><strong>Objective:</strong> To foster a workforce prepared to perform their functions within a global international context</td>
</tr>
<tr>
<td>% of teaching staff who have completed a foreign visit of longer than 3 months during the last 5 years</td>
</tr>
</tbody>
</table>

| **STRAND 2: TALENT ATTRACTION** |
| **Objective:** To become an international point of attraction for talent in the field of health sciences |
| % of international master’s degree students | 48% | 33% | **-31.2%** |
| % of international bachelor’s degree students | 5% | 5.5% | **10.9%** |
| % of international doctoral students | 28% | 30.8% | **10.1%** |
| % of international post-doctoral students | 21% | 22.1% | **5.24%** |
| No. of foreign lecturers | 14 | 24 | **71.4%** |

| **STRAND 3: INSTITUTIONAL MANAGEMENT OF INTERNATIONALIZATION POLICIES** |
| **Objective:** To have support structures available and promote internationalization of the HUBc |
| Health Meeting Point - Innovation Showroom | no | yes | **yes** |
| International promotion plan designed | no | yes | **yes** |
| % of the Campus area with English-language signage | 10% | 30% | **200%** |

| **STRAND 2: INTERNATIONALIZATION OF TEACHING AT THE HUBc** |
| **Objective:** To promote increased internationalization of studies in the field of health sciences |
| % of undergraduate students at the HUBc who have participated in international mobility programmes | - | 15% | **-32%** |
| % of doctoral students at the HUBc who have completed a visit of more than 6 months at a leading university in the field of health sciences | 0% | 12% | - |
| % of master’s degrees taught in English | 0.5% | 15% | **2900%** |

<table>
<thead>
<tr>
<th>NETWORKS AND ALLIANCES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STRAND 1: HUBc ALLIANCES IN THE AREA OF TEACHING</strong></td>
</tr>
<tr>
<td><strong>Objective:</strong> To establish joint and multiple bachelor’s and postgraduate programmes with universities where mobility agreements have been established</td>
</tr>
<tr>
<td>No. of joint degree programmes in health sciences between the UB and another university from the EUROLIFE network</td>
</tr>
<tr>
<td>No. of multiple postgraduate degree programmes in health sciences between the UB and other universities participating in the LERU and Eurolife network</td>
</tr>
</tbody>
</table>
**Objective:** To integrate the master’s and doctorate options at the HUBc to raise awareness of them at leading European universities in the field of health

| The UB’s High School Project initiated | no | yes | yes |

**STRAND 2: STRAND 2. THE BZ BARCELONA INNOVATION PROJECT**

**Objective:** To generate a new area of urban centrality in Barcelona, modelling the constructed space

| UB Digital Factory in operation (yes/no) | no | yes | yes |
### SCIENTIFIC IMPROVEMENT STRANDS

#### INDICATORS

<table>
<thead>
<tr>
<th>STRAND 1: SCIENTIFIC OUTPUT OF THE HUBc AS AN INTERNATIONAL BENCHMARK</th>
<th>INITIAL SITUATION</th>
<th>SITUATION AT REPORTING DATE</th>
<th>PROGRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objective:</strong> To consolidate and increase the scientific output of the HUBc in the field of clinical medicine</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of indexed publications</td>
<td>2,181</td>
<td>4,619</td>
<td>112%</td>
</tr>
<tr>
<td>No. of publications in indexed journals in the top quartile</td>
<td>757</td>
<td>2,660</td>
<td>251%</td>
</tr>
<tr>
<td>Impact factor</td>
<td>3,42</td>
<td>4,53</td>
<td>32%</td>
</tr>
</tbody>
</table>

#### STRAND 2: THE HUBc AS A DRIVING FORCE IN ITS FIELD

| **Objective:** To improve current levels of competitiveness and the quality of biomedical research carried out by entities within the HUBc alliance | |
|-----------------------------------------------------------------------------------------------------------------------------------|---|---|---|
| Income from projects funded by competitive national and international calls for proposals | €26,100,000 | €37,465,386 | 44% |

#### STRAND 3: EXCELLENCE OF RESEARCH STAFF

| **Objective:** To increase the current levels of international mobility among HUBc research staff | |
|-----------------------------------------------------------------------------------------------------------------------------------|---|---|---|
| Number of researchers completing stays abroad | 35 | 40 | 14% |
| ICREA staff | 19 | 28 | 47% |
| Main competitive concessions in effect (Ramón y Cajal, Juan de la Cierva, Miguel Servet) | 85 | 82 | -4% |
| Number of researchers from other institutions | 95 | 171 | 80% |
| Research staff | 1,271 | 1,919 | 51% |

#### STRAND 4: TERTIARY ACTIVITIES IN THE FIELD OF HEALTHCARE

<p>| <strong>Objective:</strong> To consolidate and increase the number of high-level healthcare activities | |
|-----------------------------------------------------------------------------------------------------------------------------------|---|---|---|
| Major Ambulatory Surgery (CMA) | 32,240 | 28,269 | -12% |
| Altas + CMA | 182,721 | 125,032 | -32% |
| Average relative weight (ERM), serious illness | 2,01 | 1,68 | -16% |
| <strong>Objective:</strong> To achieve greater visibility for complex surgical interventions on a national and international level | |
| Surgical interventions | 135,412 | 64,409 | -52% |</p>
<table>
<thead>
<tr>
<th>STRAND 5: THE HUBc, A PIONEERING CENTRE FOR TRANSLATIONAL RESEARCH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective: To facilitate execution of clinical trials, provide incentives for participation in the productive sector through joint implementation involving research teams and companies</td>
</tr>
<tr>
<td>Number of clinical trials</td>
</tr>
<tr>
<td>Objective: To ensure optimum application of the knowledge generated</td>
</tr>
<tr>
<td>No. of transfer contracts</td>
</tr>
<tr>
<td>No. of contracts with companies</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STRAND 6: INTERNATIONALIZATION OF HUBc RESEARCH NETWORKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective: To maintain and increase the HUBc’s involvement and leadership position in the various biomedical research networks in Spain</td>
</tr>
<tr>
<td>Participation in RETICS</td>
</tr>
<tr>
<td>Participation in CIBERs projects</td>
</tr>
<tr>
<td>Coordination of CIBERs</td>
</tr>
<tr>
<td>No. of users of the Scientific and Technical Services</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STRAND 7: CREATE STRATEGIC TIES WITH THE PRIVATE SECTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective: To provide incentives for the processes of valuation and marketing of the knowledge generated by HUBc</td>
</tr>
<tr>
<td>No. of national patents</td>
</tr>
<tr>
<td>No. of international patents</td>
</tr>
<tr>
<td>No. of pending patent requests</td>
</tr>
<tr>
<td>Objective: To promote a culture of innovation and enterprise in the field of health sciences</td>
</tr>
<tr>
<td>Number of spin-off companies created to date</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RESEARCH INTERNATIONALIZATION STRANDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>STRAND 1: PROMOTING THE MOBILITY AND INTERNATIONALIZATION OF PERSONNEL</td>
</tr>
<tr>
<td>Objective: To have a workforce prepared to perform their functions within a global international context</td>
</tr>
<tr>
<td>% of technical personnel who have completed a stay abroad of longer than 3 months during the last 5 years</td>
</tr>
</tbody>
</table>
## STRAND 2: INSTITUTIONAL MANAGEMENT OF INTERNATIONALIZATION POLICIES

Objective: To have support structures available and to promote the internationalization of the HUBc

| No. of European technological platforms, participation and collaboration | 2 | 7 | 250% |

## RESEARCH NETWORKS AND ALLIANCES STRAND

### STRAND 1: HUBc ALLIANCES IN THE FIELD OF RESEARCH

Objective: To increase the number of joint research programmes

| No. of coordinated European projects | 17 | 27 | 59% |
| No. of European projects conceded (participation) | 73 | 74 | 1% |
| Number of transfer activities with international companies | 10 | 69 | 590% |
# CAMPUS EVOLUTION TOWARDS A SOCIALLY INTEGRATED MODEL

AND ITS INTEGRATION WITH THE REGIONAL ENVIRONMENT

## CAMPUS EVOLUTION STRANDS

<table>
<thead>
<tr>
<th>INDICATORS</th>
<th>INITIAL SITUATION</th>
<th>SITUATION REPORTING DATE</th>
<th>AT PROGRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STRAND 1: CAMPUS EVOLUTION TOWARDS A SOCIALLY INTEGRATED MODEL</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Objective: To increase implementation and use of digital and virtual environments</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level of implementation for e-administration in the HUBc’s teaching, research and healthcare environments</td>
<td>10%</td>
<td>40%</td>
<td>300%</td>
</tr>
<tr>
<td>% of teaching staff and students who use the UB’s virtual learning environments</td>
<td>90%</td>
<td>100%</td>
<td>11%</td>
</tr>
<tr>
<td>No. of Twitter followers</td>
<td>_</td>
<td>1,620</td>
<td></td>
</tr>
<tr>
<td>No. of Tweets</td>
<td>_</td>
<td>4,585</td>
<td></td>
</tr>
<tr>
<td>Number of visits to the hubc.ub.edu website</td>
<td>_</td>
<td>30,036</td>
<td></td>
</tr>
<tr>
<td><strong>Objective: To incorporate a set of projects to provide content for the social aspect of the HUBc project, promoting the values of equality, solidarity and accessibility</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of integration initiatives for higher education in the field of health</td>
<td>_</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>% of the Campus area covered by an adapted emergency plan</td>
<td>100%</td>
<td>100%</td>
<td>idem</td>
</tr>
<tr>
<td>% of HUBc facilities and installations equipped with selective waste collection systems</td>
<td>75%</td>
<td>100%</td>
<td>33%</td>
</tr>
<tr>
<td>Websites of entities in the alliance with contents accessible for people with any kind of disability</td>
<td>25%</td>
<td>70%</td>
<td>180%</td>
</tr>
<tr>
<td>% of students with a disability at the HUBc alliance’s university schools and faculties</td>
<td>10%</td>
<td>10%</td>
<td>idem</td>
</tr>
<tr>
<td>No. of urban facilities shared with the cities of Barcelona and Hospitalet de Llobregat</td>
<td>13</td>
<td>15</td>
<td>15%</td>
</tr>
<tr>
<td>% of buildings adapted for and accessible by people with disabilities</td>
<td>71%</td>
<td>100%</td>
<td>41%</td>
</tr>
<tr>
<td>No. of jobs created indirectly through implementation of the HUBc alliance project</td>
<td>_</td>
<td>130</td>
<td></td>
</tr>
<tr>
<td>Number of ‘external’ companies located on the Campus</td>
<td>6</td>
<td>12</td>
<td>100%</td>
</tr>
</tbody>
</table>