



**Progress Report**  
**CEI UAM+CSIC**  
**2009-10**

*Leading Madrid North*

## Index

|  |           |
|--|-----------|
| <b>PROJECT DATA .....</b>                                | <b>1</b>  |
| <b>1. SUMMARY .....</b>                                  | <b>2</b>  |
| 1.1. Project Description and Main Partners .....         | 2         |
| 1.2. The CEI UAM+CSIC Strategic Plan.....                | 2         |
| 1.3. Strategic Plan Execution in 2009 and 2010 .....     | 3         |
| <b>2. QUALITATIVE AND QUANTITATIVE DESCRIPTION .....</b> | <b>6</b>  |
| 2.1. Main Actions in 2010.....                           | 6         |
| 2.2. Ongoing Actions in 2011.....                        | 8         |
| 2.3. Progress Indicators .....                           | 1         |
| 2.4. Monetary Resources.....                             | 1         |
| <b>3. THE CEI UAM+CSIC GOVERNANCE.....</b>               | <b>2</b>  |
| 3.1. The CEI UAM+CSIC Development Association.....       | 3         |
| <b>4. ANNEX I: ACTIONS CARRIED OUT IN 2010 .....</b>     | <b>5</b>  |
| <b>5. ANNEX II: ACTIONS PLANNED FOR 2011.....</b>        | <b>11</b> |

**PROJECT DATA**

|                          |  |
|--------------------------|--|
| Type of CEI:             | <b>Global</b>  |
| Acronym:                 | <b>CEI UAM+CSIC</b>  |
| Coordinating University: | <b>Universidad Autónoma de Madrid</b>  |
| Period:                  | <b>2009-10</b>   |
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## 1. SUMMARY

### 1.1. Project Description and Main Partners

The UAM+CSIC International Campus of Excellence is the sum of the combined efforts of the Universidad Autónoma de Madrid and the Consejo Superior de Investigaciones Científicas (CSIC), the Spanish National Research Council, who have a long track record of joint collaboration and success. The project, which also brings together the Madrid Science Park, the IMDEA Institutes on Campus, local councils and business organisations, plus a significant number of private companies, is born of three specific elements: a clear teaching vocation, consolidated research capacity and prestige (already of international excellence in certain fields) and a strong commitment to our social, cultural and economic surroundings.

**The Universidad Autónoma de Madrid** has some 34,000 students, a 2,500-strong teaching and research staff and nearly 1,000 administrative and service personnel. It is one of the leading Spanish research universities, highly recognised for both its research activity and its teaching quality in national and international rankings. The UAM is moreover an open, enterprising and supportive university, attuned to the needs of society and characterised by its cultural and social commitment. The UAM is also a member of the Alliance of 4 Universities (A4U), a strategic partnership between four leading Spanish public universities: UAB, UC3M, UPF and UAM. They officially formed the Alliance, the first of its kind in Spain, in 2008 to optimize the combined resources of the four universities to achieve high-quality scientific research and teaching excellence. The Alliance is proud of the fact that all its four member-universities got the nomination of “Campus of International Excellence”.

**The Consejo Superior de Investigaciones Científicas**, ascribed to the Spanish Ministry of Science and Innovation, is the third European research institution and the eleventh worldwide. With more than 15,000 employees spread over 136 centres, it runs five institutions of its own and five joint UAM-CSIC centres on Campus, staffed by almost 2,500 researchers and technologists.

The CEI UAM+CSIC aggregation as a whole has served to create the foremost research community in Spain and one of the most significant in Europe.

### 1.2. The CEI UAM+CSIC Strategic Plan

The Universidad Autónoma de Madrid and the Spanish National Research Council together spearhead a project that has two fundamental objectives:

- Position the CEI UAM+CSIC as the leading Spanish Campus by 2015 and an international reference point.
- Make the most of the CEI UAM+CSIC’s integration with its geographic surroundings to pioneer cultural, economic and social development in the north of Madrid.

The Strategic Plan envisages **6 major lines of activity**:

1. **Strengthen strategic fields of research and increase international profile**, by leveraging the three common axes that unite the UAM and the CSIC, namely Biology, Biomedicine and Food Science, Advanced Matter and Nanoscience, Theoretical Physics and Mathematics, and by catalysing research on the Campus as a whole, particularly in the fields of Social Science, Law and the Humanities.
2. **Improve teaching quality and ensure that degree and postgraduate studies fully adhere to the EHEA**, by continuing the process of aligning our degree and postgraduate courses to the EHEA framework, by developing systems to guarantee teaching quality and how it should be carried

out, by modernising teaching infrastructure and by promoting continuous education and employability.

3. **Attract international talent** by implementing a series of International Excellence Programs at Master and Doctorate level, by hiring highly prestigious researchers and by raising the international profile of the Campus through a series of conferences designed to achieve maximum projection and impact.
4. **Configure a powerful transfer network**, by reinforcing the Campus' existing transfer channels (the Offices for the Transfer of Research Results or OTRIs, the Centre for Entrepreneurial Initiatives or CIADE, and the Madrid Science Park or PCM), by extending the incubation capacity of the PCM and by working closely with local business organisations.
5. **Transform the Campus into a University City**, by finishing the "Plaza Mayor" building, by extending the e-Campus and by strengthening the UAM's social commitment as one of its hallmarks.
6. **Foment a Campus with strong territorial impact** by promoting cultural links, shared services and activities, and institutional integration.

In order to achieve this, the implementation of formal aggregation measures is a key to ensure that the project is developed and governed in the best possible manner. One significant milestone in this sense is the creation of the **CEI UAM+CSIC Development Association** in 2011, founded by the UAM, the CSIC and the *Asociación para el Fomento de la Innovación en Madrid Norte* (Association for the Promotion of Innovation in the north of Madrid). This CEI association is a legal entity in its own right and is designed to plan, develop and monitor the activities of the CEI project.

### 1.3. Strategic Plan Execution in 2009 and 2010

The CEI UAM+CSIC project was one of five designated an International Campus of Excellence in 2009. The UAM received a loan of 11 million Euros from the Ministry of Education (6 million towards research and 5 million for other activities) and a subsidy of 3 million Euros from the Ministry of Science and Innovation to further research and transference.

In the 2010 call of the CEI program, the UAM received 3,285,000 Euros from two subprograms (the *Subprograma de Fortalecimiento* and the *Subprograma de Financiación Adicional*) run by the Ministry of Education, plus 6,033,000 Euros from the Ministry of Science and Innovation's Innocampus programme, largely in the form of loans.

The UAM has therefore received a total of 23,318,000 Euros in 2009 and 2010, which as of April 2011 have all been invested or committed to specific initiatives. During this time, 31 of the 55 activities envisaged in the Strategic Plan are being carried out and 12 are in the stage of advanced planning. Many of them fall entirely within the University's natural dynamics and although the CEI calls have influenced their design, they have been carried out with the University's own resources. Some particularly worth of mention include the adaptation of all the UAM's degree and postgraduate studies to the EHEA, the implantation of the Tutoring Action Plan, the development of the Virtual Teaching Campus, the new UAM website, the move towards e-administration and analytic accountancy, the start of the Office for Gender Equality, the emphasis consistently placed on providing comprehensive support for disability and removing barriers, or the role played by the CEI UAM+CSIC in Madrid city life via the "La Corrala" Cultural Centre. As far as knowledge transfer is concerned, the creation of the *Asociación para el Fomento de la Innovación en Madrid Norte* (Association for the Promotion of Innovation in the north of Madrid) by the UAM and the business associations of Alcobendas, Colmenar Viejo, San Sebastián de los Reyes and Tres Cantos has proved especially important in terms of both

increasing demand for innovation in the CEI's geographic area and providing an answer to that demand from within the Campus.

In any case, a series of clearly strategic actions have been made possible and carried out largely thanks to the CEI grants and should be mentioned specifically at this point. During 2010 the following have been undertaken:

- **Food Studies Platforms (Phase 1)**, marked by the purchase and installation of scientific equipment in the joint UAM-CSIC Institute for Food Science Research (CIAL), which will form the basis for the CEI UAM+CSIC's activity in the area of food and nutrition.
- **Supercomputing Node (Phase 1)**, with an initial 2010 investment of 400,000 Euros in the Scientific Computing Centre, as a first step towards creating a node for the CEI in the Spanish Supercomputing Network.
- The **Centre for R&D Support Laboratories (CLAID)**, installed in an 8,500 m<sup>2</sup> building within the Cantoblanco Campus and owned by the Madrid Science Park, has been operative since June 2010 as an incubation centre for R&D businesses and laboratories.
- **Research Laboratory Refurbishment** in the Faculties of Sciences and Medicine, as part of a multi-year program to remodel and update equipment and infrastructure.
- **Quality Assurance System**. The UAM has implanted a system to manage quality control for the future monitoring audits and with a view to achieve EHEA accreditation for the UAM's new degree programs.
- **Aula 2015 Program** designed to bring together all the activities carried out to transform classrooms in line with the new degree courses' teaching requirements, which has resulted in the refurbishment of some 40 classrooms in 2009 and 2010.

These actions represent an important first step on a journey that will continue into 2011, to gain critical momentum in the process of aggregating CEI UAM+CSIC's research capacity. Under this light, the following activities should be underlined:

- **Initiative to attract internationally prestigious researchers**, by leveraging the privileged CEI UAM+CSIC facilities and environment to draw leading scientists and teaching staff, and thereby strengthen strategic fields of research and further new fields of research that show great potential.
- **Postgraduate Programs of International Excellence** that provide the perfect environment for attracting talent. A limited number of International Master and Doctorate Programs will be created to the highest standards and quality.
- **Scientific-technological platforms for bioscience and biomedicine**, two fields in which excellence is so dependent upon the availability of state-of-the-art infrastructure and services. This initiative is designed to overcome the relative dispersion of CEI UAM+CSIC activity in this area at present, to ensure that an all-important critical mass of activity is reached and to guarantee its professional, efficient and sustainable management.
- **Nanomanufacturing Centre**, which will be located in the Madrid Institute for Advanced Studies in Nanoscience (IMDEA-Nanoscience) on the Cantoblanco Campus, and which will give the CEI UAM+CSIC an unprecedented ability to produce nanostructured samples for both research and knowledge transfer purposes.

- **Food Studies Platforms (Phase 2)**, which will give continuity to the activities undertaken in 2010 and provide the CIAL with a pilot plant to produce bioactive food ingredients on a small scale, using enzymatic and supercritical fluid technologies.
- **Joint UAM-CSIC Institutes for Mathematics and Physics**, housed in a building which is the largest infrastructure in Spain for research into Theoretical Physics and Mathematics, and which will situate the CEI UAM+CSIC in an even more privileged position in both disciplines and encourage new synergies between the two.
- **Bio UAM+CSIC (BUC)**, a strategic plan to effectively aggregate the CEI UAM+CSIC's extremely intense research activity, developed in exceptional biomedical facilities which are one of a kind in Spain and even in Europe. This plan aims to bring the CEI (via the Faculties of Medicine and Sciences, six associate hospitals, the "Severo Ochoa" Molecular Biology Centre, the "Alberto Sols" Biomedical Research Institute and the National Center of Biotechnology) together with the emblematic Spanish National Cancer (CNIO) and Cardiovascular (CNIC) Research Centres at the Carlos III Health Institute, which are located right next to the Faculty of Medicine and the *La Paz* and *Ramón y Cajal* University Hospitals.
- **Supercomputing Node (Phase 2)**, continuation of 2010 activities to enhance computing infrastructure and ensure that the CEI has the computing resources required to join the Spanish Supercomputing Network.
- **Docentia Program** to consolidate, stabilise and achieve definitive certification for our teaching assessment and recognition program.
- **New "Plaza Mayor" UAM building**, with a total surface area of over 17,000m<sup>2</sup>, to provide a focus and rebalance for the new Cantoblanco campus where more than 2,000 people live on a permanent basis and more than 30,000 visit it daily.

## 2. QUALITATIVE AND QUANTITATIVE DESCRIPTION

### 2.1. Main Actions in 2010

2010 has been a take-off year for the CEI UAM+CSIC, where many first steps were taken in different directions; however, it has also been a year of consolidation, as its initial ideas and approaches took consistent shape. It has also been a year in which the Campus of Excellence Program itself has come of age, with the announcement of specific subprograms for reinforcement (*Fortalecimiento*), additional funding (*Financiación Adicional*) and the *Innocampus* call. This has naturally had a direct effect upon the CEI UAM+CSIC project, particularly in terms of the significant impact the *Innocampus* call has made and in terms of the subprograms' almost exclusive focus on research infrastructure and equipment. The negative effect of the economic climate and budgetary cuts must also be mentioned at this point, which has undoubtedly meant that the scope and schedule of certain activities has had to be revised.

All these factors have, in one way or another, directly affected key initiatives of the CEI UAM+CSIC in 2010, which were largely made possible by financial assistance from the Campus of Excellence Program. These initiatives included:

1. Food Studies Platforms (Phase 1).
2. Supercomputing Node (Phase 1).
3. Centre for R&D Support Laboratories (CLAID).
4. Research Laboratory Refurbishment.
5. Quality Assurance System.
6. Aula 2015 Program.

The development of these initiatives is described briefly below.

#### 1. Food Studies Platforms (Phase 1).

An initial deployment of scientific equipment was made in the Institute for Food Science Research (CIAL) in 2010. This joint UAM-CSIC institute was created with the strategic mission to form the basis for CEI UAM+CSIC research activity in the field of food and nutrition sciences. On the one hand, it has the goal to achieve international scientific relevance; on the other, it aims to become a benchmark for industrial R&D in Spain and an effective means of technology transfer in the food and nutrition field, with a strong emphasis on furthering the binomial relationship between health and food.

The equipment deployment had a three-fold aim:

- Provide general equipment for laboratories, installing basic equipment for the instrumental analysis of food and the preparation of samples and biological activity analyses for functional ingredients.
- Provide specialised equipment, namely a pure gas network and controlled-temperature conservation chambers.
- Install P-2 level biological containment for work with microorganisms and cell cultures. This facility, one of the most remarkable at the CIAL, will enable functional food ingredients to be assessed in vitro.

## **2. Supercomputing Node (Phase 1).**

Although the importance of powerful IT resources in pioneering research is impossible to deny, the cost of installing and updating such equipment and infrastructure is high, and requires intensive effort. This is only possible if the advanced computing resources used by different research groups are pooled in a central space, with suitable infrastructure and services. This approach has been followed by the UAM at its Scientific Computing Centre (Centro de Computación Científica, CCC) and was the primary reason behind its refurbishment in 2010 (which will continue into 2011). The aim here is to ensure that the CCC adheres to and maintains a model for the upkeep of IT equipment used by research groups. The existence of a series of hosting agreements means that the groups themselves can forget about equipment maintenance tasks and concentrate on research, while savings arise from the lower cost of decentralised facilities, and unused computing time can be used by other Campus users or even third parties.

In 2010, an initial investment of almost 400,000 Euros was made to condition an area of 150m<sup>2</sup> with a false floor to make electrical and computer connectivity easier. A cooling system was also installed to make intensive computing possible, and a false ceiling put in place to make additional electrical light cabling and services viable. Finally, the general electric system was moved to an adjacent 100m<sup>2</sup> space, equipped with the necessary cooling systems, 1MW power supply and a UPS with sufficient autonomy to sustain the infrastructure in the case of power failure.

## **3. Centre for R&D Support Laboratories (CLAID).**

The CLAID is an 8,500m<sup>2</sup> building belonging to the Madrid Science Park (of which the UAM is a leading stakeholder), built on plot 14 at the Cantoblanco Campus. It houses offices of various sizes, designed for R&D+I projects to be carried out in almost every area of the Humanities and Social Sciences, ICT, Engineering, Physics, Chemistry, the Environment, Renewable or Material Energies, plus chemistry and biology laboratories. The cost of this building amounts to 17,000,000 €, and it has been made possible thanks to initial funding to the tune of 15.8 M€ from the Spanish Ministry for Science and Innovation's 2006-2008 Parks program, plus a subsidy of 1.2 M€ from the E 2009 plan. Together these two sources of funding covered the entire cost of the development.

The CLAID has been in operation since June 2010, and is currently 60% full. The activities carried out therein under the CEI program included the acquisition and installation of data storage and supply systems, as well as the installation of gas extractor columns to enable new research groups and companies to start working right away at the CLAID laboratories without having to buy and install general purpose equipment.

## **4. Research Laboratory Refurbishment.**

Research activity at the Universidad Autónoma de Madrid has been one of its hallmarks since its creation and over its 40-year lifetime; the promotion of research has consistently positioned the UAM at the forefront of Spanish research institutions, thanks to both the quality and quantity of results obtained in a wide range of fields. Some nine years ago, the UAM started a multi-year plan to refurbish the research laboratories at the Faculties of Sciences and Medicine, as the intensive use made of these labs and their age made their update and remodelling a must.

The following actions have been furthered in 2010 within the CEI UAM+CSIC framework, with a two-tier scope:

1. Dismantle obsolete installations and carry out the civil engineering work required to replace them with new facilities and equipment.

2. Install the infrastructure required for research activities, including resistant, long-lasting, versatile and ergonomic laboratory furniture, water facilities, a powerful electric network, networks for combustible gases and cryogenic fluids, and finally safety devices such as extractor fans, security vaults, showers and eyebaths or laminar flow cabinets.

## 5. Quality Assurance System.

During the 2008-2009 academic year, the UAM defined an Internal Quality Assurance System (SGIC) for the courses it offers, which was duly adapted to fit all official degree and postgraduate programs, and incorporated into all the verification reports made on them. In 2009-2010, the first year of the new degrees adapted to the EHEA, work commenced to provide the necessary follow-up to this system and thereby help to improve course quality. Indicators were thus established to assess all SGIC aspects in each course, and to improve the opinion polls carried out on both students and teaching staff by simplifying them and making them easier to implement.

The Degree Monitoring System, an IT platform, was drawn up and implemented throughout 2010. This platform gives the University key support when it comes to evaluating titles and proposing changes to improve them. The ultimate goals of this strategic initiative within the CEI UAM+CSIC project framework are, on the one hand, to endow its centres and degrees with an on-line tool to ensure that quality assurance is managed through an established protocol, which serves to minimise the effort required to gather information, analyse data and design plans for the continuous improvement of our educational programs. On the other hand, the system also paves the way for audits to be carried out in the future by the assessment agencies entrusted with the task of monitoring and accrediting the new degree programs.

## 6. Aula 2015 Program.

In 2009, the UAM launched its Aula 2015 program, which brings together all the activities carried out to transform classrooms in line with the new degree courses' teaching requirements. The goal here is to provide each classroom with a standard teaching infrastructure, comprising (as a minimum) one fixed and protected overhead projector, a projection screen, a speaker system, sufficient electric sockets for student's laptop computers and Wi-Fi connectivity. In some instances, the furniture provided is moveable, so that the classroom can be configured according to the type of class to be imparted (seminars, practical lessons, etc.).

During 2009 and 2010, refurbishment was completed in classrooms from the Faculties of Sciences (15, of which 6 were situated in the Biology building), Economics (14), Law (5), Medicine (4) and Psychology (3).

### 2.2. Ongoing Actions in 2011

In the light of the initial actions undertaken in 2010, 2011 must be the consolidation year of the CEI UAM+CSIC, via the Association created for the Development of the CEI, and mark an important drive forward for its research aggregation process. The following initiatives will help towards this end, funded in large part with program resources:

1. Initiative to attract internationally prestigious researchers.
2. Postgraduate Programs of International Excellence.
3. Bioscience scientific-technological platforms on campus.
4. Food Study Platforms (Phase 2).

5. Joint UAM-CSIC Institutes for Mathematics and Physics.
6. Bio UAM+CSIC (BUC).
7. Supercomputing Node (Phase 2).
8. Docentia Program.
9. New “Plaza Mayor” UAM building.

The main characteristics and goals of these initiatives are outlined briefly below.

### **1. Initiative to attract internationally prestigious researchers.**

The CEI UAM+CSIC boasts a privileged environment to attract top scientists and teaching staff, who can take the lead in research groups, reinforce the strategic fields of research and provide thrust in fields that show great potential. For this reason, one of our most important strategic objectives is to hire such scientists. The UAM has successfully taken part in the various editions of the Ramón y Cajal program, opening its doors since its outset to more than 150 young researchers, many of whom now being part of the teaching and research staff of the University. Moreover, flexible measures must be implemented at the UAM to make the University extremely competitive on the international stage, so that it is in a position to offer opportunities to and hire national and international scientists who have the ability to drive up research activity. One first step in this direction has been achieved by hiring a new Director for the Materials Microanalysis Centre in December 2009, who was selected by an international committee on the strength of a public call advertised in the most widely read magazines. In 2011, the first edition of a public call to attract talent will take place. This initiative will then be reinforced and extended in years to come.

### **2. Postgraduate Programs of International Excellence.**

Training highly qualified researchers and professionals, at the cutting-edge of different academic and scientific fields, is key to consolidating an internationally competitive university campus. In this sense, it is important to bear in mind that Spanish Universities are currently undergoing a fast-track transformation process to converge with the EHEA and the ERA. This demands Master and Doctorate degrees that are not only similar to those offered elsewhere in the European Area, but which can also command international attraction. The UAM has therefore set to work to transform itself into a postgraduate University, with the overriding aim of increasing the number of international students. This strategy provides an excellent complement to the initiative to attract talent referred to above. Our main objective is to create in 2011-2015 a limited number of International Master and Doctorate programs of the utmost quality, which will be taught in English and serve to attract and train highly motivated and talented postgraduate students from around the globe.

### **3. Scientific-technological platforms on Campus.**

The decentralisation of different research services severely limits the national and international competitiveness of an institution, as it can never achieve the necessary critical mass to effectively justify the implementation of state-of-the-art technologies. Furthermore, excellence in biomedical research currently depends to a large extent on the availability of pioneering scientific-technological support services, with cutting-edge infrastructure and highly qualified scientific and technical staff, all managed in an effective and sustainable way.

The CEI UAM+CSIC therefore seeks to aggregate and transform its existing research facilities into new platforms, which will enable it to offer more competitive services at a national and international level. One important tool for this is the PCM (Madrid Science Park). The professional management structure

in place at that institution, together with its top scientific management teams, serves to multiply all the research funding obtained by groups at our centres by increasing their competitive effectiveness.

In 2011 an ambitious plan to organise and put two separate platforms into operation will be carried out, creating a first platform for Advanced Technologies in the Generation and Characterisation of Animal Models, and a second for Proteomics and Metabolomics.

The reassignment of old services to these new platforms will enable us to optimise the use of resources through integrated management, to reduce maintenance costs, to achieve better economic conditions in purchase processes through a unified bidding, to avoid the duplication involved in equipping different teams spread over various centres, to optimise performance, to make the speedier amortisation and renovation of equipment viable, and finally to acquire large infrastructure that could never have been afforded for isolated services or users.

#### **4. Nanomanufacturing Centre.**

The Nanomanufacturing Centre, which will be housed in the IMDEA-Nanoscience building currently being erected on the Cantoblanco Campus, will give the CEI UAM+CSIC an unprecedented ability to produce nanostructured samples for both research and knowledge transfer purposes.

In terms of the facilities available in the Madrid region, the Centre marks an enormous scientific step forward. It will be situated in a state-of-the-art cleanroom of some 200m<sup>2</sup>, with ISO-6 and ISO-5 air quality in certain areas, and the necessary infrastructure to guarantee the security, quality and cleanliness of the facilities. The cleanroom will be endowed with modern nanomanufacturing equipment, including equipment for both conventional optical lithography and electron or ion beam lithography, plus various cutting-edge devices to prepare thin films, ion or reactive beam attacks, plasma-assisted dry chemical attacks or depositions.

#### **5. Food Studies Platforms (Phase 2).**

A pilot floor for food innovation (NOVALINDUS) will be built at the Research Institute for Food Science, CIAL, during 2011, to promote the study of biological activity in animals and humans, prepare products, demonstrate how ingredients and functional foodstuffs can be obtained and study their industrial roll-out.

NOVALINDUS will notably provide a specific pilot plant for the development of processes to obtain bioactive food ingredients and produce them on a small scale, using enzymatic and supercritical fluid technologies. R&D at NOVALINDUS will be geared towards obtaining different types of bioactive products, suitable for use as functional foodstuffs or nutritional complements.

#### **6. Joint UAM-CSIC Institutes for Mathematics and Physics**

The Institute of Mathematical Sciences (ICMAT, CSIC-UAM-UCM-UC3M) and the Institute of Theoretical Physics (IFT CSIC-UAM) moved at the beginning of 2011 to a new CFTMAT building on the Cantoblanco Campus, which comprises one central area providing core services and two wings to house the IFT and the ICMAT respectively, in two 5-floor blocks equipped with office space, seminar and meeting rooms.

This unique building required an investment of almost 20 million Euros and it represents, without any doubt, the biggest infrastructure built in Spain for research into Theoretical Physics and Mathematics. It will enable further, important synergies to flourish between both disciplines in the years to come and situate the CEI UAM+CSIC in a privileged position in both fields.

#### **7. Bio UAM+CSIC (BUC)**

The UAM campus (Cantoblanco and Medicine) carry out intense research activity in the field of life sciences, which is focused around the Faculty of Medicine and its associate hospitals, the Departments

of Biology and Molecular Biology at the Faculty of Sciences and three research centres: the “Severo Ochoa” Molecular Biology Centre (CBMSO), the “Alberto Sols” Biomedical Research Institute (IIBM) and the National Center of Biotechnology (CNB) – the first two of which are joint UAM-CSIC centres and the latter belonging to the CSIC itself. In the Bioscience area, pioneering scientific work is carried out in different fields of human and animal healthcare, environmental and agricultural disciplines, with a significant emphasis on technology transfer. It is also important to note that a large part of this exceptional biomedical hub is placed in a geographic area that is also home to the Faculty of Medicine, the IIBM and the Hospital La Paz. Given its proximity to another major hospital in the Madrid region, the Ramón y Cajal University Hospital, and two leading international Research Centres - the Spanish National Cancer (CNIO) and Cardiovascular (CNIC) Research Centres belonging to the Carlos III Health Institute -, this hub is quite probably unique in our country and even in Europe. The UAM seeks and fosters a close and growing collaboration with many of the area’s groups in different fields, including specific agreements for postgraduate teaching.

In summary, an extremely important scientific community works in the CEI UAM+CSIC vicinity in the biology field, particularly on biomedicine and biotechnology. One strategic objective of the CEI UAM+CSIC is to design a **Bio UAM-CSIC (BUC) system** to develop research and postgraduate teaching of excellence, and to play a very active role in technology transfer in association with the Madrid Science Park spin-offs and the significant cluster of pharmaceutical companies located close to the UAM (in Alcobendas, San Sebastián de los Reyes, Tres Cantos and Colmenar Viejo).

### **8. Supercomputing Node (Phase 2).**

This activity gives continuity to the initial remodelling carried out in 2010 and seeks to extend the CEI UAM+CSIC’s power, UPS and cooling infrastructure. It will also enable advanced computing resources to be acquired to meet the demands made on nodes belonging to the Spanish Supercomputing Network (RES). In this regard, total computing capacity will be increased, electric power and communication lines will be reinforced and additional cooling systems put in place. Finally, these initiatives will be underpinned with the enclosure of a highly efficient cold aisle, isolated from the extraction of hot air from the backs of the servers. The UPS systems will also be reinforced and access control implemented with CCTV recordings and fire protection measures.

Moreover, with a view to achieve the strategic objective of belonging to the Spanish Supercomputing Network, 125 new CPUs will be installed and connected to each other via InfiniBand, which will enable memory to be distributed in parallel processing systems. This infrastructure will allow the CEI UAM+CSIC to make available 20% of the Node’s computing capacity to the RES.

### **9. Docentia Program**

Over the last four years, the UAM has implemented and perfected a system to evaluate the teaching practices of its staff on a course by course basis, with a view to better understand, guarantee and recognise quality in the teaching provided by our University. This process has been aligned with the DOCENTIA Program of the ANECA-ACAP since its first edition, where we have routinely received favourable reports from the Accreditation Agencies charged with the Program’s review. Any suggestions made have been duly adopted and implemented.

The DOCENTIA-UAM Program is currently in a position to assess the teaching activity of staff members who have received a complementary incentive payment for their teaching during the previous academic course. Such assessments enable the University to better understand and evaluate good teaching practice, and thereby compile information used in other quality assurance programs such as the Title Monitoring System and the ACREDITA program run by the National Agency for Quality Assessment and Accreditation (ANECA).

The UAM is on the verge of obtaining definitive accreditation for this system, which will ensure that our assessments of the education the University provides – one of its most elementary *raisons d'être* – are both stable and ready to be rolled-out in full.

#### **10. New “Plaza Mayor” UAM building**

This building, of some 17,000m<sup>2</sup> spread over a basement and two floors, will provide services for the university community and staff from the Spanish National Research Council's centres and institutes situated on Campus, plus personnel from the Madrid Science Park. The basic building project has been complemented by a landscaping development covering over 21,000m<sup>2</sup>, together with the regulation and total refurbishment of access to the building plot, particularly where it joins the Francisco Tomás y Valiente and Einstein streets.

Located in a central position on the Cantoblanco campus, the Plaza will be used to provide various activities and services that up to now have only been offered in part. However, most importantly it will also provide balance to the new Cantoblanco Campus, as it is situated at the heart of a geographic area that spans more than 500,000m<sup>2</sup>, which is fully immersed in an expansion process, where over 2,000 people live on a permanent basis and in excess of 30,000 visit daily. Its inauguration will mark an important step on the road to creating a true University City.

### 2.3. Progress Indicators

| Indicator  | 2008  |      |       | 2009  |      |       | 2010  |      |       |
|--|-------|------|-------|-------|------|-------|-------|------|-------|
|  | UAM   | CSIC | Total | UAM   | CSIC | Total | UAM   | CSIC | Total |
| <b>1. Multiple joint and transnational titles:</b><br>Joint national and international titles that are developed in virtue of specific agreements subscribed by the UAM and other Spanish or international Universities.                             | 36    | (*)  | 36    | 38    | (*)  | 38    | 46    | (*)  | 46    |
| <b>2. Number of post-doctorate researchers incorporated:</b><br>Number of post-doctorate researchers hired with a "Research Work" contract, with their first contract signed during the year.  | 125   | 48   | 173   | 119   | 60   | 179   | 111   | 57   | 168   |
| <b>3. Number of activities carried out with civil society organisations:</b><br>This figure reflects courses in Contemporary Humanities, Summer courses, Language and Spanish Culture Courses for Foreigners, plus exhibitions and concert programs. | 50    | n.d  | 50    | 46    | n.d  | 46    | 46    | n.d  | 46    |
| <b>4. Number of visiting members of the teaching staff from abroad</b><br>Number of members of the Teaching and Research Staff with a "Visiting Teacher" contract who stayed with us for more than 3 months, of non-Spanish nationality.             | 8     | (*)  | 8     | 10    | (*)  | 10    | 12    | (*)  | 12    |
| <b>5. Number of foreign students enrolled on Masters and Doctorates</b><br>Students enrolled on official Master courses and students enrolled on / receiving tuition on Doctorate programs during the period.  | 1.352 | (*)  | 1.352 | 1.353 | (*)  | 1.353 | 1.171 | (*)  | 1.171 |

|  |            |            |            |            |            |            |            |            |            |
|--|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| <b>6. Number of publications registered in the ISI database:</b><br>Total number of articles indexed on the ISI Web of Knowledge.  | 1.659      | 1.146      | 2.805      | 1.854      | 1.211      | 3.065      | 2.099      | 1.599      | 3.698      |
| <b>7. R&amp;D+I project funding from competitive national/regional programs:</b><br>Funds received for national and regional research projects, conceded in the year analysed.                                     | 19.629.160 | 24.766.132 | 44.395.292 | 21.036.244 | 24.655.975 | 45.692.219 | 20.289.125 | 21.967.895 | 42.257.020 |
| <b>8. R&amp;D+I project funding from competitive European programs:</b><br>Funds received for European Union research projects and from other international organisations, conceded in the year analysed.          | 3.135.037  | 6.224.441  | 9.359.478  | 2.421.571  | 5.508.881  | 7.930.452  | 2.032.771  | 7.515.651  | 9.548.422  |
| <b>9. Income from the exploitation rights to Industrial and Intellectual Property (patents, royalty agreements, etc.)</b>  | 69.500     | 1.114.769  | 1.184.269  | 0          | 440.850    | 440.850    | 46.754     | 299.389    | 346.143    |
| <b>10. CEI UAM+CSIC Licences</b>   | 7          | 14         | 21         | 4          | 6          | 12         | 10         | 4          | 14         |
| <b>11. Amounts from research contracts with private companies:</b><br>Funds for research contracts subscribed in virtue of art. 83 of the LOU (Organic Law governing Universities), conceded in the year analysed. | 17.572.682 | 9.630.281  | 27.202.963 | 15.576.214 | 8.042.166  | 23.618.380 | 15.545.730 | 7.799.327  | 23.345.057 |
| <b>12. CEI UAM+CSIC Spinoffs</b>   | 12         | 13         | 25         | 16         | 11         | 27         | 16         | 11         | 27         |
| <b>13. Number of new yearly spinoffs</b>   | 2          | 1          | 2          | 4          | 2          | 6          | 2          | 2          | 4          |
| <b>14. Number of companies hosted at the Madrid Science Park (PCM).</b>  |            |            | 107        |            |            | 113        |            |            | 122        |
| <b>15. Number CEI UAM+CSIC spinoffs hosted at PCM.</b>   | 5          | 10         | 18         | 8          | 9          | 19         | 9          | 9          | 20         |
| <b>16. Percentage of PCM's companies that are CEI UAM+CSIC spinoffs.</b>   | 4,67       | 12,15      | 16,82      | 7,08       | 9,73       | 16,81      | 6,82       | 8,33       | 15,15      |

## 2.4. Monetary Resources

The following table details actions that have received funding from the Campus of Excellence Program (excluding subsidies from the 2010 CEI *Fortalecimiento* subprogram, of about 485,000 Euros).

### 2009 CEI Call

| <b>Activities</b>              | <b>2010</b>      | <b>2011</b>      | <b>2012</b>      | <b>Total / action</b> |
|--------------------------------|------------------|------------------|------------------|-----------------------|
| <i>Aula 2015</i>               | 840,000          |                  |                  | 840,000               |
| <i>Plaza Mayor</i>             | 4,000,000        |                  |                  | 4,000,000             |
| <i>Communication plan</i>      | 160,000          |                  |                  | 160,000               |
| <i>Nanomanufacturing</i>       |                  | 1,450,000        |                  | 1,450,000             |
| <i>Bio UAM+CSIC (BUC)</i>      |                  | 100,000          | 100,000          | 200,000               |
| <i>Technologies Plat.</i>      |                  | 410,000          | 900,000          | 1,310,000             |
| <i>Postgrad. of Excellence</i> | 100,000          | 440,000          | 1,350,000        | 1,890,000             |
| <i>FPI grant program</i>       |                  | 450,000          |                  | 450,000               |
| <i>Attracting talent</i>       | 100,000          | 200,000          | 300,000          | 600,000               |
| <i>International confs.</i>    |                  | 50,000           | 50,000           | 100,000               |
| <b>Total</b>                   | <b>5,200,000</b> | <b>3,100,000</b> | <b>2,700,000</b> | <b>11,000,000</b>     |

### Spanish Ministry of Science and Innovation R&D+I subprogram, 2009

| <b>Actions</b>              | <b>2010</b>      | <b>2011</b> | <b>2012</b> | <b>Total / action</b> |
|-----------------------------|------------------|-------------|-------------|-----------------------|
| <i>PCM</i>                  | 344,211          |             |             | 344,211               |
| <i>Labs Refurbishment</i>   | 1,423,486        |             |             | 1,423,486             |
| <i>CCC</i>                  | 268,828          |             |             | 268,828               |
| <i>Food Innov. Platform</i> | 963,475          |             |             | 963,475               |
| <b>Total</b>                | <b>3,000,000</b> |             |             | <b>3,000,000</b>      |

### CEI 2010 Call: Additional Funding

| <b>Actions</b>     | <b>2010</b> | <b>2011</b>      | <b>2012</b> | <b>Total / action</b> |
|--------------------|-------------|------------------|-------------|-----------------------|
| <i>Plaza Mayor</i> |             | 2,800,000        |             | 2,800,000             |
| <b>Total</b>       |             | <b>2,800,000</b> |             | <b>2,800,000</b>      |

### Innocampus 2010

| <b>Actions</b>                | <b>2010</b>    | <b>2011</b>      | <b>2012</b> | <b>Total / action</b> |
|-------------------------------|----------------|------------------|-------------|-----------------------|
| <i>Innotec Tech. Platform</i> |                | 2,120,000        |             | 2,120,000             |
| <i>Food Innov. Platform</i>   |                | 550,000          |             | 550,000               |
| <i>Nanomanufacturing</i>      |                | 1,050,000        |             | 1,050,000             |
| <i>Labs Refurbishment</i>     | 813,000        | 1,000,000        |             | 1,813,000             |
| <i>CCC</i>                    |                | 500,000          |             | 500,000               |
| <b>Total</b>                  | <b>813,000</b> | <b>5,220,000</b> |             | <b>6,033,000</b>      |

|                       | <b>2010</b>      | <b>2011</b>       | <b>2012</b>      | <b>Total</b>      |
|-----------------------|------------------|-------------------|------------------|-------------------|
| <b>Overall totals</b> | <b>9,013,000</b> | <b>11,120,000</b> | <b>2,700,000</b> | <b>22,833,000</b> |

### 3. THE CEI UAM+CSIC GOVERNANCE

The CEI UAM+CSIC Strategic Plan, as presented in the 2009 edition, envisaged two schemes to promote transversal activities between the different aggregate entities:

- The CEI UAM+CSIC Consortium, to manage material aspects of the aggregation in a coordinated manner.
- A second entity, of a legal nature as then yet to be decided, in charge of defining and carrying out all transversal activities envisaged in the Plan which, due to their very nature, required their own, independent decision-making structure.

One year-and-a-half since the approval of the Plan has shown, on the one hand, that the UAM assumes responsibility for submitting proposals to the CEI calls, receiving loans and grants, justifying expenditure, presenting follow-up reports and returning loan payments on time; on the other, it is clear that the CEI is made up of a series of institutions and organizations who share a Strategic Plan for the development of the project. Our main partner, the CSIC, also lends its name to the CEI and has ten research institutes on the UAM campus. Our remaining partners or entities aggregate to the project are the Madrid Science Park, the IMDEAs for Nanoscience and Food Science, other research organizations, business associations and local councils from the north of Madrid. The Vocational Training scheme (*Formación Profesional*) for the north of Madrid is also due to join the aggregation in the near future.

Therefore, the system currently being implanted to govern the CEI needs to reflect the following two realities:

- The specific and distinctive role played by the UAM.
- The vital and articulate collaboration that exists between the different partners when it comes to developing the Strategic Plan.

In consequence, the system to govern the CEI referred to above needs to take into account this two-fold operational scenario, and address these two operational prerequisites for reaching the project goals.

As a consequence, the UAM, as the institution ultimately responsible for economic management and responding to competition calls, has entrusted the overall program management to a Vice-Chancellor. Currently this mission has been entrusted to the Vice-Chancellor for Innovation, Transfer and Technology, with the following specific mandate:

- Prepare and submit proposals to CEI calls.
- Drive and coordinate the CEI programs within the UAM.
- Draft and present follow-up reports.
- Draft and present the annual economic reporting.
- Coordinate and oversee the return of loan payments.
- Coordinate the role played by the UAM in the CEI UAM+CSIC Development Association.

Secondly, the task of developing the common Strategic Plan between all the institutions and organisms that the CEI comprises falls to the recently created **Asociación para el Desarrollo del CEI UAM+CSIC**, the CEI Development Association, whose structure and modus operandi is outlined below.

### 3.1. The CEI UAM+CSIC Development Association

The CEI Development Association was initially founded by the UAM, the CSIC and the *Asociación para el Fomento de la Innovación en Madrid Norte* (Association for Promoting Innovation in the North of Madrid, or InNorMadrid). The latter was in turn founded by the UAM and four business associations from the north of Madrid (FEMAN, AICA, ASEYACOVÍ and ACENOMA), where the University is located.

#### **Mission and legal structure**

The Association main mission is to develop and monitor how the common strategy to provide quality and internationalise the CEI UAM+CSIC is being carried out. To this end, it assumes the objectives laid down by its members in the Strategic Plan and proactively furthers new initiatives that add value to the institutional aggregations.

Its natural sphere of activity is therefore rooted in carrying out and monitoring the joint programs envisaged in the project, driving new strategic aggregations in research structures and knowledge transfer, spreading awareness about and raising the profile of both the CEI and other projects of a similar nature that spring up whilst the CEI UAM+CSIC Strategic Plan is being carried out, at a national and international level. It will also act as the official “entry point”, where new institutions can be formally aggregated to the CEI UAM+CSIC.

The UAM+CSIC International Campus of Excellence Development Association is governed primarily by the Spanish Organic Law 1/2002 of the 22<sup>nd</sup> March. It was formed out of a formal agreement signed between its three initial partners, duly approved by the Governing Board of the UAM and the InNorMadrid Assembly, and which is pending the signature of the Secretary of State for Research at the Spanish Ministry of Science and Innovation on behalf of the CSIC. Its legal structure is defined in its statutes, which will be approved in the first Assembly of the Association, due to be held in the first half of May 2011.

#### **Organisation**

According to the Association’s statutes, its principal governing body is the Association Assembly, which will initially be attended by its founding members. The statutes also envisage a Steering Committee, which will act on powers delegated by the Assembly to drive, direct and oversee its activity, as outlined above. The Steering Committee is currently made up of the Vice-Chancellor for Research at the UAM, Rafael Garesse, the Vice-Chancellor for Innovation at the UAM, José Dorronsoró, the Vice-president for Organization and Institutional Relations at the CSIC, Francisco Montero de Espinosa, the Vice-President of Scientific and Technical Research at the CSIC, Carmen Peláez, and the President of the Business Association of Alcobendas, Javier Beitia.

The Executive Director of the Association is Fernando Casani, UAM professor and former University CEO. The Association will also have technical support personnel. Funding to hire for positions and to cover the management structure has been requested to the 2011 CEI *Fortalecimiento* subprogram.

The Steering Committee has created the following coordination and management committees for its routine operations:

#### **1. Research**

- a. Deputy Vice-President for Science Programs or delegate. CSIC.
- b. Deputy Vice-President for International Relations or delegate. CSIC.
- c. Amparo Cano, Full Professor. UAM.
- d. Leonardo Soriano, Director of the “Nicolás Cabrera” Material Science Institute and Professor. UAM.

**2. Postgraduate**

- a. Director of the Postgraduate Department or delegate. CSIC.
- b. Institutional Coordinator for the Region of Madrid. CSIC.
- c. Postgraduate Vice-Chancellor at the UAM or delegate.
- d. Javier Díaz Nido, Professor. UAM.

**3. Campus consortium (as per the 2009 Plan)**

- a. General Secretary of the Council or delegate. CSIC.
- b. Deputy General Secretary for Infrastructure. CSIC.
- c. University CEO or delegate. UAM.
- d. Campus Vice-Chancellor or delegate. UAM.

**4. Knowledge transfer**

- a. Deputy Vice-President for Knowledge Transfer or delegate. CSIC.
- b. Vice-Chancellor for Innovation or delegate. UAM.
- c. Representative of InNorMadrid.
- d. Representative of the PCM.

**5. Communication and visibility commission**

- a. Fernando Casani. Executive Director of the CEI Association's Steering Committee.
- b. Vice-president for Organisation and Scientific Culture or delegate. CSIC.
- c. Director of the President's Cabinet. CSIC.
- d. Vice-Chancellor for International Relations or delegate. UAM.
- e. Director of the Chancellor's Cabinet. UAM.
- f. Person in charge of communication at the FUAM.
- g. Person in charge of communication at the PCM.

In addition to the above, a committee for **International Relations** will also be created to nurture relationship, collaboration and coordination with other aggregate organisations, namely local councils from the north of Madrid, the Madrid Science Park, the Carlos III Health Institute and its CNIO and CNIC centres, and to establish a relationship between the CEI and the Vocational Training department in the north of Madrid.

This committee will also be responsible for organising cooperation activities with the National Association for the Campus of Excellence, its European counterparts and other key international partners of the CEI.

#### 4. Annex I: Actions Carried Out in 2010

##### 1. Food Science Platforms (Phase 1)

###### Area:

Scientific improvement

###### Objectives:

- Turn the CIAL into an advanced research centre for food and nutrition, with a view to contributing to the well-being of the population at large by improving their food intake, and to the competitiveness and profitability of the food industry.
- Provide the CIAL with basic infrastructure and equipment for the instrumental analysis of food.
- Provide the CIAL with a biological safety infrastructure for biofood research and to develop functional ingredients.

###### Progress made in reaching objectives

- The basic facilities were finished in May 2010.
- The installation of a P-2 laboratory was completed in December 2010.
- The centre began to operate in July 2010 and its official inauguration was held in March 2011.

###### Description of the work carried out

- General laboratory equipment: assorted laboratory equipment, fume and acid cupboards, security vaults and extractor systems.
- Specialized equipment: distribution of pure gases, systems to produce ultrapure water, installation of freezer chambers.
- Installation of P-2 level biological contention for work with microorganisms and cell cultures, which will enable functional food ingredients to be assessed in vitro. This facility is endowed with autoclaves, orbital incubators, bacteriological incubators and an anaerobiosis cabinet, biological security cabinets and horizontal laminar flow cabinets.

###### Most significant results

- Completion of the basic CIAL infrastructure, provision of equipment for the instrumental analysis of food, building of an extensive biological security laboratory.
- Launch of the CIAL's R&D activities in food science, in line with the CEI's strategic objectives.

###### Explanation of the use of human, material and economic resources

Total spend on this activity amounts to 1,111,087 Euros, as per the following breakdown:

- General laboratory equipment: 534,664 Euros.
- Specialist equipment: 254,449 Euros.
- Installation of biological contention: 321,974 Euros.

Funding from CEI programs has been 963,475 Euros.

## 2. Supercomputing Node (Phase 1)

### Area:

Scientific improvement

### Objectives:

- Carry out an in-depth remodelling, update and extension of the Scientific Computing Centre (CCC) at the UAM, with a view to attracting new research group users.
- Promote the role of the CCC as a core element of the Campus, to house computing resources for the CEI UAM+CSIC research groups.

### Progress made in reaching objectives

- Work on the first phase of refurbishment was completed in November 2010 and the facility was immediately put to use.
- User migration was finished with only minimal service down-time.
- Initial contact has been established with the Spanish Supercomputing Network (RES) to define exactly what computing resources should be supplied to the RES. These are due to be installed in the second phase of refurbishment.

### Description of the work carried out

- Electric power supply has been increased to 1MW.
- A UPS unit has been installed with 250KVA power and a maximum autonomy of 1 hour.
- A downflow cooling unit of 104.5kW that drives air through the false floor was installed in the data centre to guarantee refrigeration, together with another of 36.2kW that drives air out direct. This will ensure that the UPS equipment installed currently and in the future works correctly.
- Installation of a dedicated room for communications infrastructure, where all data cabling leads to.

### Most significant results

Extend the surface area used for advanced scientific computing to 150m<sup>2</sup>, with a growth capacity to at least 10.000 computing cores. 134 independent electric supply lines have been stabilised and guaranteed by UPS systems and constant cooling installed via false floor downflow.

### Explanation of the use of human, material and economic resources

The total cost of the work carried out amounts to 391,668 Euros, with the following funding:

- Funds from the R&D+I subprogram of the 2009 CEI call: 268,828 Euros.
- UAM contribution: 122,840 Euros.

### 3. Centre for R&D Support Laboratories (CLAID)

**Area:**

Knowledge transfer

**Objectives:**

- Finish IT systems for communications and mass data storage.
- Complete the basic equipment of R&D laboratories for chemistry and biology.
- Lower the entry barrier for entrepreneurs and spin-off projects by equipping and managing instrument facilities belonging to the PCM, which can be used by all the companies in incubation.

**Progress made in reaching objectives**

- The CLAUD building houses offices and laboratories in operation since June 2010.
- The installation of assorted equipment took place in the second half of 2010.
- Communication and storage equipment has played an important part in the launch of the Mass Genomic Sequencing Service in November 2010.

**Description of the work carried out**

- In general terms, completion of work on the CLAUD and the commencement of operations at the building fell under the responsibility of the Madrid Science Park Foundation. The Universidad Autónoma de Madrid is a trustee of said Foundation and its Chancellor currently chairs the Board of Trustees.
- Activities carried out within the CEI program framework include the acquisition and installation of data storage and supply systems, plus the installation of gas extractor columns.
- Funding received by the UAM from the R&D+I subprogram of the 2009 CEI call has been essentially used to acquire the equipment described, which has been placed at the Park's disposal.

**Most significant results**

- Occupation of the CLAUD in March 2011 was close to 60%, when it housed 30 companies, 18 corporate laboratories and 4 laboratories associated with Park Partners.
- Launch of the mass sequencing platform in November 2010.

**Explanation of the use of human, material and economic resources**

Funding received in virtue of the R&D+I subprogram of the 2009 CEI call was allocated as follows:

- Communications and data storage: 151,721 Euros.
- Gas extraction equipment: 197,900 Euros.

As we have explained elsewhere, the CLAUD building, owned by the Madrid Science Park, is located on the Cantoblanco Campus. It has been built and equipped using funding from other sources specifically earmarked for science park projects.

#### 4. Research Labs Refurbishment

**Area:**

Scientific improvement

**Objectives:**

- Adapt and update the Faculties of Sciences and Medicine's experimental laboratories, which are basic to many of the CEI UAM+CSIC's strategic fields of research, making them more operational, safe and versatile.

**Progress made in reaching objectives**

- Refurbishment of laboratories in the Departments of Organic Chemistry, Agricultural Chemistry and Biochemistry is complete.
- Refurbishment of laboratories in the Departments of Chemistry-Applied Physics, Analytical Chemistry and Instrumental Analysis, Geology and Geochemistry, Condensed Matter Physics, Materials Physics and Applied Physics has begun.
- Work on refurbishing laboratories from the Departments of Physiology and Pharmacology is ongoing.

**Description of the work carried out**

- Complete refurbishment, new facilities and furniture installed in laboratories from the Departments of Organic Chemistry, Chemistry-Applied Physics, Geology and Geochemistry, Condensed Matter Physics, Materials Physics, Applied Physics, Physiology and Pharmacology.
- Partial refurbishment or complementary facilities installed in laboratories from the Departments of Agricultural Chemistry, Analytical Chemistry and Instrumental Analysis, Physiology, Pharmacology and Biochemistry.

**Most significant results**

- Complete refurbishment, new facilities and furniture installed in 11 laboratories belonging to the Faculties of Sciences and Medicine.
- Partial refurbishment or complementary facilities installed in 16 laboratories belonging to the Faculties of Sciences and Medicine.

**Explanation of the use of human, material and economic resources**

Funding received from different editions of the CEI amounts to 1,423,486 Euros.

## 5. Quality Assurance System

### Area:

- Teaching improvement

### Objectives:

- Introduce a unified system to monitor and evaluate all the official degree and postgraduate degree courses offered by the UAM.
- Define the indicators that should be used, how they will be calculated and how they will be filled out from the institutional databases.
- Install an IT platform with the capacity to manage and review the information, data and indicators required to monitor the new degrees, plus the corresponding documentation.

### Progress made in reaching objectives

- A system has been introduced to obtain homogenous academic and institutional data regarding all the UAM titles, retrieving valid and reliable information in a secure environment.
- Requisites have been compiled for an IT system to manage the monitoring being carried out, which has since been evaluated, purchased and implemented.
- The UAM has played an active role in pilot studies organised by the ACAP to pave the way for monitoring the new degrees.

### Description of the work carried out and the role participants have played

- ISOTOOLS was purchased in May 2010 to provide a system capable of managing the monitoring being carried out.
- The indicators to be used were designed in July 2010 as well as the first proposals submitted regarding how they should be calculated. This process was drawn to a conclusion at the end of November.
- In September 2010, the information contained in the academic management systems of the Universidad Autónoma de Madrid underwent a complete review.
- Information was migrated to the ISOTOOLS Monitoring management system in December 2010 and data mining began.

### Most significant results

- The Monitoring System is now fully operational.
- Indicators from 2009-2010 have now been analysed; the corresponding reports have been drafted and suggestions for improvement put forward.

### Explanation of the use of human, material and economic resources

Although the amount invested in the ISOTOOLS management system is modest (41,288 Euros taken from UAM funds), the human and organisational resources involved in its deployment have been considerable: all the academic management teams of the different Centres, and all technicians working at the Information Technology service, the Analysis and Planning Office and the Institutional Assessment and Studies Cabinet of the University were involved.

## 6. Aula 2015 Program

### Area:

- Adaptation to the EHEA.

### Objectives:

- Adapt UAM classrooms to the teaching demands of the new degree courses, designed in accordance with the EHEA:
- Progressively endow all UAM classrooms with a standard infrastructure comprising, at least, one fixed and protected overhead projector, a projection screen, a speaker system, sufficient electric sockets for laptops and Wi-Fi connectivity.
- Install moveable furniture in certain classrooms, which can be configured depending on the type of class (seminar, practical lesson, etc.) to take place.

### Description of the work carried out and the role participants have played

During 2009 and 2010, a grand total of 41 classrooms have been refurbished, with the following breakdown per Faculty:

- Sciences: 15 classrooms (6 of which are located in the Biology building).
- Economics: 14 classrooms.
- Law: 5 classrooms.
- Medicine: 4 classrooms.
- Psychology: 3 classrooms.

### Most significant results

Teaching spaces covering a total of some 7.000m<sup>2</sup> have been refurbished.

### Explanation of the use of human, material and economic resources

The overall budget assigned to this work is 3,257,842 Euros, of which 840,000 Euros come from CEI funding.

## 5. Annex II: Actions Planned for 2011

### 1. International Talent Recruitment Initiative

#### Area

Scientific improvement

#### Objective:

- Launch a program to attract national and international scientists at senior and junior level, with great ability or the capacity to take the lead in strategic fields.

#### Description of initiatives to be undertaken

In 2011, a talent recruitment campaign will be launched with three separate lines of activity:

- Foster the transfer of researchers to CEI UAM+CSIC centres by announcing multi-year calls to promote particularly relevant and strategically important lines of research.
- Attract postdoctoral contracts to reward excellence, advertised at international level.
- Hire scientific directors for centres and institutes of strategic importance.

#### Planned use of human, material and economic resources

Initially, 200,000 Euros have been set aside for this initiative in 2011, which may well be increased depending on how other calls currently underway proceed.

### 2. Postgraduate Programs of International Excellence

#### Area:

Scientific improvement

#### Objective:

- Launch a limited number of postgraduate programs of excellence, taught in English and in strategic CEI UAM+CSIC fields.

#### Description of initiatives to be undertaken

In 2011, the first call for applicants for pre-doctoral grants and contracts will be made, to provide support for up to 6 international postgraduate programs of excellence, which will attract and train highly-motivated and talented students from around the globe. The call will form part of a wider financial assistance program covering the 2011-2015 period.

All postgraduate programs that are eligible for such applications must be taught entirely in English, have clear research potential and offer a demonstrable track record on education and training.

In the 2014-2015 academic year, at least 30% of students enrolled on the programs must come from abroad, and at least 40% of the Ph.D. Theses read must receive the European Doctorate mention.

### **Planned use of human, material and economic resources**

The 2011 call will have a budget of 410,000 € for postgraduate grants, pre-doctoral contracts, management and communication. The 2012 edition has an estimated budget of 1,350,000 €.

### **3. Campus Bioscience Technological Platforms**

#### **Area:**

Scientific improvement

#### **Objectives:**

- Implement state-of-the-art infrastructure for the CEI UAM+CSIC's scientific-technology platforms, located in the CSIC (CNB) centres, in the joint CSIC-UAM (CBMSO and IIBM) centres and the Faculty of Medicine.
- Improve the platforms' organisation, with a view to ensuring shared access to pooled resources, and their centralised, transparent and sustainable management.

#### **Description of initiatives to be undertaken**

- Launch the platform for Advanced Technologies in the Generation and Characterisation of Animal Models, by reassigning previous and new resources to six new modules: (i) Module for the generation and maintenance of, and experimentation on, Animal Models, (ii) Transgenesis Module, (iii) Cryopreservation Module, (iv) Histology Module, (v) Genotyping Module, (v) Bioimage Module and (vi) Module for Non-Invasive Neurosensory Assessment.
- Launch of the Proteomics and Metabolomics platform, by reassigning previous and new resources to five new modules: (i) Module for the Exploration and Quantitative Analysis of Proteomes, (ii) Module for Proteomic Analysis at Protein level, (iii) Module for the Analysis and Massive Quantification of Proteomes, (iv) Module for Targeted Proteomics and (v) the Metabolomics Unit (UM).

### **Planned use of human, material and economic resources**

The two platforms will be based on existing services at the CBMSO, CNB, IIBM and the Faculty of Medicine, which has top scientists and qualified technical staff. Investment made in 2011 will all be in infrastructure and broken down as follows:

- Proteomics and Metabolomics Platform: 1,310,000 €
- Platform for Advanced Technologies in the Generation and Characterisation of Animal Models: 2,120,000 €

### **4. Nanomanufacturing Centre**

#### **Area:**

Scientific improvement

#### **Objectives:**

Build and equip the IMDEA Nanoscience cleanroom, a 200m<sup>2</sup> state-of-the-art facility with ISO-6 and ISO-5 air quality in certain areas. It will be endowed with all the necessary resources to guarantee the

safety, quality and cleanliness of the installations and it will house modern nanomanufacturing equipment.

**Description of initiatives to be undertaken**

- Build the housing space for the clean room, with its own foundation plate and vibration isolation.
- Compartmentalise the cleanroom, install general equipment and industrial service facilities.
- Implement scientific equipment for nanomanufacturing.

**Planned use of human, material and economic resources**

The total cost of this initiative amounts to 6 million Euros, broken down as follows:

- Build housing, physical space, and compartmentalisation and acquire general equipment for the cleanroom: 1.5 M€.
- Industrial service facilities: 1.4 M€.
- Scientific equipment for nanomanufacturing: 3.1 M€.

The CEI UAM+CSIC contribution will be 2,450,000 Euros, towards industrial facilities and scientific equipment.

**5. Food Science Platforms (Phase 2)**

**Area:**

Scientific improvement

**Objectives:**

Finish the process begun in 2010 to equip the pilot plant and specific laboratories at the CIAL, providing services for technology-based companies from the food industry, in order to:

- Carry out research using advanced technologies and develop processes to obtain healthy food products such as functional lipids, antioxidants, prebiotics, probiotics, bioactive proteins and peptides, antimicrobials and natural antivirals.
- Analyse the profit/risk relationship of new food products using processes involving cell cultures in vitro and trials on laboratory animals.
- Assess the health effect of products on humans, taking into account how variations in the human genome from person to person can cause individuals to react differently to diet.

**Description of initiatives to be undertaken**

- Extend the services provided by the pilot plant by making the extraction of supercritical fluids possible at the CIAL.
- Incorporate hybrid molecular distillation technology and equipment to carry out chemical and enzymatic reactions.
- Install auxiliary equipment for grinding, dehydration and preserving.
- Install auxiliary equipment to monitor the biological activity of products generated from processes developed on the pilot plant.

### **Planned use of human, material and economic resources**

The total amount earmarked for this initiative is 550,000 Euros, entirely financed by the CEI UAM+CSIC, with the following breakdown:

- Cost of acquiring new scientific-technical equipment: 500,000 €.
- Other general, supplementary costs: 50,000 €.

## **6. Joint UAM-CSIC Institutes for Mathematics and Theoretical Physics**

### **Area:**

Scientific improvement

### **Objectives:**

- Launch the CFTMAT, an emblematic CEI UAM+CSIC building which will house the UAM+CSIC Joint Institute for Theoretical Physics (IFT) and the Institute for Mathematical Sciences (ICMAT).

### **Description of initiatives to be undertaken**

- Complete the latest round of installations and equipment.
- Put both institutes into operation.

### **Planned use of human, material and economic resources**

This initiative does not have specific funding from editions of the CEI. The ordinary overall budget for both centres is estimated at 1,000,000 Euros, including UAM funding of about 300,000 Euros.

## **7. Bio UAM+CSIC (BUC)**

### **Area:**

Scientific improvement

### **Objectives:**

- Create the Biomedicine Park of North Madrid by leveraging the enormous potential in terms of research, teaching and knowledge transfer of two main axes: on the one hand, the biomedicine and biotechnology area of the CEI UAM+CSIC campus and on the other, the privileged biomedical hub in the north of Madrid. This initiative also opens up ample scope to interact with the pharmaceutical industry.

### **Description of initiatives to be undertaken**

- Engage independent consultants to analyse the strengths, weaknesses, opportunities and threats that exist for research into biomedicine and biotechnology in the geographical area covered by the BUC, in order to determine the specific activities, agents and timeframes that should be used to create the Biomedicine Park of North Madrid.

### **Planned use of human, material and economic resources**

In 2011, some 100,000€ will be spent on consultancy and related activities.

## **8. Supercomputing Node (Phase 2)**

### **Area:**

Scientific improvement

### **Objectives:**

- Finish work begun in 2010 at the Scientific Computing Centre (CCC), to increase server capacity and thereby centralise the vast majority of CEI UAM+CSIC computing services in one single space.
- Implement a management model at the CCC that ensures it is a scientific, effective, transparent and sustainable platform.
- Adhere the CCC to the Spanish Supercomputing Network (RES).

### **Most significant results sought**

- Deploy the computing resources required for the CCC to take part in the RES.
- Install two new UPS units with a power of 250KVA and a maximum autonomy of 1 hour.
- Install a second downflow cooling unit of 104.5kW that drives air through the false floor inside a cool aisle, in order to increase cooling capacity and efficiency.
- Improve electric access points and data lines to provide service to the new racks.
- Increase equipment and data security, install a fire protection system complete with detectors and deploy a Novec 1230 fire extinction system.

### **Planned use of human, material and economic resources**

- Investment planned in 2011 amounts to 500,000 Euros.

## **9. Docentia Program**

### **Area:**

- Teaching improvement

### **Objectives:**

- Give the finishing touches to the design of an integrated model to evaluate teaching practices amongst UAM teaching staff.
- Obtain definitive ANECA accreditation in the framework of its DOCENTIA program.

### **Most significant results sought**

- Make a final decision on the evaluation model for UAM teaching, which will reflect information gathered from the self-assessment reports made by teachers, the report drafted by their academic supervisors, the opinions of students and institutional data regarding teaching performance and participation in coordination activities or teaching innovation.
- Introduction of IT applications that will make it easier to take part in the program and make the evaluation process more agile.

- Compile information that can be used in the Title Evaluation and Monitoring System and the reports required for accreditation processes.
- Generate added value for the University by identifying and recognising the best teaching practices, thereby paving the way to academic excellence.

**Planned use of human, material and economic resources**

Although this initiative does not receive funding from the CEI, it could not take place without the invaluable contribution of the human resources that sit on the Centres’ academic management teams, the Institutional Assessment and Studies Cabinet of the University, the Information Technology service and the UAM’s Analysis and Planning Office.

**10. New “Plaza Mayor” UAM Building**

**Area:**

- Campus transformation.

**Objectives:**

- Provide the Campus with a central services building, for the benefit of the University Community in general, those working at the Centres and Institutes belonging to the Spanish National Research Council located on Campus, and the staff at the Madrid Science Park and IMDEA personnel.
- Give the new Cantoblanco Campus a centre and rebalance it in terms of urban planning. Over 2,000 people live there on a permanent basis and in excess of 30,000 more visit it each day.

**Most significant results sought**

- Construction of a building with a total surface area of over 17,000m<sup>2</sup>, spread over a basement and two floors, with restaurant-cafeteria services, a library and multipurpose rooms, where the majority of the support services for teaching staff, researchers and students (whether from the CEI UAM+CSIC or elsewhere) will be concentrated.
- Development and landscaping of an adjacent area of over 21,000m<sup>2</sup>, plus the regulation and total refurbishment of all access points to the building plot.

**Planned use of human, material and economic resources**

This project is scheduled to be carried out largely in 2010 and 2011, so that the building can be put into operation in the first half of 2012.

The budget for the building itself amounts to 14,100,021 Euros, to which the cost of land development should be added (estimated at 2,928,957 Euros). 2010 investment reached 9,187,487 Euros (which included donations from the CSIC, the Banco Santander and the Caja Madrid). The UAM contribution in 2011 is budgeted at 5,892,000 Euros.

CEI funding stands at 4,000,000 Euros in 2010 and 2,800,000 Euros in 2011.