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1.1 Who we are

A foundation from the public sector

The Research Center for Neurological Diseases Foundation is a non-profit foundation from the public sector within the scope and competence of the State, depending on the Ministry of Science and Innovation through the Carlos III Institute of Health.

It was established by resolution of the Council of Ministers on December 27, 2002 in order to support, promote and coordinate research into neurological diseases, with special emphasis on neurodegenerative diseases, joining and coordinating efforts of Spanish leading research groups.

Working closely with the Queen Sophia Foundation

The CIEN Foundation represents the success of the “public-private” management model. Since its foundation, it works closely with the Queen Sophia Foundation coordinating and managing the research carried out in the Alzheimer Center of the Queen Sophia Foundation articulated through the UIPA (Alzheimer Project Research Unit).

CIEN Foundation headquarters have been located in the offices of the Alzheimer Center of the Queen Sophia Foundation since April 2007, according to an agreement signed with this Foundation, dated on January 18, 2006. Under this agreement, the Queen Sophia Foundation donated the complex built in Vallecas for the development of the Alzheimer’s Project, a social and healthcare approach aimed at facing the consequences of Alzheimer’s Disease on patients and their families.

Experts in global management of research into neurodegenerative diseases

Among the CIEN Foundation tasks, several actions are taken to facilitate the impact of scientific advances on clinical practice and, consequently, on patients welfare. These actions include promoting the implementation of coordinated research projects on neurological diseases; participating in calls from national and international funding agencies; and developing education programs through specific actions such as seminars, training programs for fellows, doctoral theses and any other action that may contribute to training.

In addition to these actions and UIPA management, the CIEN Foundation is also in charge of managing the CIBERNED (Center for Networked Biomedical Research on Neurodegenerative Diseases), although the activities of the CIEN Foundation regarding CIBERNED are not the subject of this report.
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An innovative, integrated vision of the fight against AD

The CIEN Foundation shares an innovative approach to the fight against Alzheimer’s Disease in which research is one of the mainstays. Such integrated model, which aims to face the disease from different angles, materialized through the Alzheimer’s Project with the building of the Alzheimer Center of the Queen Sophia Foundation where the following four key areas come together:

1. A live-in residence for 156 Alzheimer’s patients.
2. A day-care outpatient center for 40 Alzheimer’s patients.
3. An Alzheimer’s research center: the so-called Alzheimer’s Disease Research Unit (UIPA), managed by the CIEN Foundation.
4. A training center for healthcare staff, relatives and volunteers.

UIPA management has been entrusted to the CIEN Foundation and the work related to healthcare and training, to the Council of Family and Social Affairs of the Community of Madrid. This model has constantly tried to bring wills together and combine the interests of all the sectors involved: (Central, Regional and Local) Government and the Civil Society.

Center of Reference in Alzheimer’s Disease Research in Spain. Integrated into the International Network of Centers of Excellence in Neurodegenerative Disease Research

Currently, the CIEN Foundation is positioned as a reference institution in research on Alzheimer’s disease and related neurodegenerative dementias. In 2011 the Research Unit of the Alzheimer Center of the Queen Sophia Foundation and CIBERNED, both managed by the CIEN Foundation and ISCIII, were designated as Centers of Excellence in neurodegenerative disease research by the European Union. They are the only two Spanish institutions with this qualification participating in the Joint Programming for Neurodegenerative Diseases (JPND), an European initiative launched to join forces and boost research on these diseases. This means being integrated into the International Network of Centers of Excellence in Neurodegenerative Disease Research (CoEN). Both entities, equipped with the latest technology, will make their excellent facilities available to the European program. In addition, CIBERNED brings its critical mass of research: more than 500 researchers.
1.2 The CIEN Foundation in 2011

Key figures

► The budget devoted to research and managed by the CIEN Foundation increased by 18% up to nearly €4 million.

► 31% of the Foundation budget comes from the General State Budget through the ISCIII.

► Private funding for research projects increased through agreements with sponsors, representing 20% of revenues compared to 15% in 2010.

► The continued financial commitment of the Queen Sophia has allowed contributions exceeding €2.1 million, which will be executed over the next four years.

Scientific activity

► Publications in scientific journals: 44. 19% increase compared to 2010.

► Book Publications: 14. 180% increase compared to 2010.

► Research projects: 43. 23% increase compared to 2010.

► Participation in conferences: 108. 104% Increase compared to 2010.

► Participation in courses: 85. 67% increase compared to 2010.
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Highlighted events

► The CIEN Foundation has been entrusted with the administrative and economic management of three new initiatives: the ISCIII European Project Office, the Center of Reference for Control of Endemic Diseases in Equatorial Guinea Project and the National School of Health-ISCIII International Cooperation Fellowships for postgraduate studies.

► The CIEN Foundation and the CIBERNED are integrated into the International Network of Centers of Excellence in Neurodegenerative Disease Research (CoEN), being the only two Spanish institutions to take part in the Joint Programming for Neurodegenerative Diseases (JPND).

► Pablo Martínez Martín, Scientific Director of the UIPA, represented Spain at the Scientific Research Agenda Healthcare Workshop, held in London in March 2011, from the Joint Programming in Neurodegenerative Diseases of the European Commission.

► The number of research projects resulting from external funding and the research activity conducted through internal projects from the different departments has increased remarkably compared to 2010.

► The implementation of the Vallecas Project will mean a major economic, scientific boost for the present and future of the CIEN Foundation.

► The total number of brain tissue donors to BT-CIEN increased by 35% and reached 547 on December 31, 2011.

► The BT-CIEN received 99 brain donations in 2011, representing an increase in the activity of 55% compared to 2010.

► Over 5,700 studies on Magnetic Resonance Imaging have been carried out in the UIPA Neuroimaging Unit.

► The UIPA Neuroimaging Unit has conducted 24 research projects and 2 clinical trials.
Dear benefactors, contributors and friends of the CIEN Foundation.

As Managing Director of the Research Center for Neurological Disease Foundation (CIEN Foundation), an institution in charge of managing and coordinating the Alzheimer’s Project Research Unit (UIPA) promoted by the Queen Sophia Foundation, I am addressing you to assess our activity over the year 2011. It is my duty to begin this letter underlining that the CIEN Foundation has significantly increased its research activity and performance has been highly satisfactory.

Among the initiatives, the definitive launch of the “Vallecas Project” deserves a special mention; around 1,200 volunteers will get involved in the project. This work is addressed from an integrated perspective by developing a social awareness and fundraising campaign: the “Christmas Tree of Memories” ("Árbol de Navidad de los Recuerdos"). This project has been implemented in collaboration with the Queen Sophia Foundation and the Caja Madrid Social Project as hundreds of citizens have contributed with their “Christmas memories”. For the recruitment of volunteers, associations and senior centers within the field of our activity have been involved in the research project which, in our opinion, is an exemplary model of public-private participation and social significance.

In addition, we have kept encouraging cohesion among groups of researchers in the field of neurodegenerative diseases to promote excellence in research on these pathologies. Joint work and combined efforts between the CIEN Foundation and the CIBERNED have allowed both institutions to be incorporated into the International Network of Centers of Excellence in Neurodegenerative Disease Research (CoEN). With this incorporation, our leadership and research excellence stand out while, in the mid term, it will result in opening new ways of funding research projects.

In this respect, 2011 has been characterized by the optimization of economic resources and the search for new sponsors and benefactors. Overall managed funds increased by 18% with a budget of €4 million in 2011. The funding
allocated within the General State Budget, received as official grants from the Ministry of Science and Innovation through the Carlos III Institute, has remained at similar levels to those from previous years, but our competences in economic and administrative management have increased. Specifically, three new initiatives show the confidence, transparency and effectiveness of our management model: we have taken on the duties as Carlos III Institute of Health European Project Office, we lead the Center of Reference for the Control of Endemic Diseases in Equatorial Guinea Project and, finally, we coordinate the National School of Health-ISCIII International Cooperation Fellowships for postgraduate studies.

These new areas of activity enhance our international scope, top priority that we expect to keep actively promoting. The development and participation in several training programs also show such internationalization. Among others, the M+VISION Program is highlighted, a training program on biomedical imaging between the Massachusetts Institute of Technology (MIT) and the Community of Madrid.

In budgetary terms, I must emphasize the continued commitment of the Queen Sophia Foundation, whose contribution is critical to our research activity, as well as the increase in other resources from contributions, donations and endowments, which in 2011 have represented around 20% of our annual budget. In addition to the important social significance achieved by the “Vallecas Project”, the Tissue Bank BT-CIEN has also been highly relevant to strengthen and encourage relations with patients and family associations. We have fostered our relations with media, with the dual purpose of contributing to disseminate scientific knowledge and raise public awareness about the relevance of research.

I would like to express my most sincere gratitude to the Queen Sophia Foundation and to all institutions, partner companies, associations and ordinary citizens, whose commitment and involvement are still of great significance, not to mention the daily teamwork carried out by all researchers, administrative and support staff as well as volunteers at the CIEN Foundation. The success of our institution is the result of their work and we will continue supporting their training and promoting grants and fellowships in prestigious international centers.

María Ángeles Pérez Muñoz
Managing Director of the CIEN Foundation
1.4 Letter from the Scientific Director of the UIPA

Dear benefactors, collaborators and friends of the CIEN Foundation.

As Scientific Director of the Alzheimer’s Project Research Unit (UIPA), managed by the CIEN Foundation and promoted by the Queen Sophia Foundation, I am addressing you, once again, to evaluate our activity during 2011. It has certainly been a difficult year in which the economic crisis has called into question the future of research and researchers in Spain. However, in the UIPA we have carried on with our research activities, optimizing resources and ensuring, as far as possible, the implementation of initiatives. We have consolidated ongoing projects and launched new ones, some of them pioneers in our country. We have also set up structures for our research staff and boosted our international influence and spirit of leadership. In this sense, until the end of 2011, our activity has resulted in 43 ongoing research projects and a significant increase in scientific productivity: we have published 44 articles in scientific journals and 14 book chapters; we have also participated in conferences (108 papers and communications) and 85 courses (as organizers or invited lecturers).

Our constant effort has been acknowledged by the European Union with the designation of our Foundation, together with the CIBERNED, as “Center of Excellence” of the European Network in Neurodegenerative Disease Research (CoEN) in 2011. Such designation enables us to be part of the Joint Programming for Neurodegenerative Diseases and be integrated into the CoEN together with leading national and international research groups. In May 2011, this participation materialized in the first call for projects from the JPND (Research) with the granting of a project for the optimization of biomarkers and the harmonization of their use in research and subsequent application in hospitals and health centers, an initiative that involves the participation of several Spanish researchers.

Among our milestones, at research level the expansion and consolidation of the “Vallecas Project” must be highlighted. After the pilot study conducted in 2010 with the help of 200 volunteers, in 2011 the project was launched with the purpose of including 1,200 volunteers thanks to the support of the Queen Sophia
1. OVERVIEW

Foundation, AFALContigo National Association and Caja Madrid Social Project. Currently, it is one of the most ambitious studies about dementia in our country and aims to identify individuals at risk of developing Alzheimer’s disease prior to disease onset.

Regarding the projects already developed and completed in the UIPA, let me point out the presentation in 2011 of the research results from the first DEMCAM study, carried out in our Department of Neuroimaging. This project, aimed at determining more efficiently which individuals with cognitive mild impairment may develop some sort of dementia, including AD, has received funding from the Queen Sophia Foundation, GE Healthcare and the EULEN Foundation. This contribution proves our sponsors’ confidence in the CIEN Foundation research teams. This innovative study, based on the combination of the 3-Tesla Magnetic Resonance Imaging and artificial intelligence, also reflects our commitment to be a link between research and society.

Besides these projects, I am honored to confirm the positive activity carried out by our Tissue Bank: BT-CIEN. One year after being inaugurated, the total number of brain tissue donors has increased up to 547 on December 31, 2011, a figure 15% higher than last year. Likewise, the activity of collection and preservation of brain tissue and other biological samples for use in research, as well as the important work on social awareness and involvement, make it a reference bank in Spain. This is also corroborated by the increased institutional participation and collaboration with other similar centers and tissue banks.

Undoubtedly, these are some of the most significant events that have marked the year 2011, although you will find more detailed information about each of the 4 departments that make up the UIPA in the current report.

I would not like to conclude these lines without acknowledging the support of our sponsors and institutions that rely on us, enabling us to offer our researchers the tools to carry out their work. I would also like to thank each and every one of the professionals working at the CIEN Foundation, without whom we could not meet the goals we have set: to gain further insight into neurodegenerative diseases and make these advances offer alternatives for diagnosis, new therapies, improvements in patient care and in the life quality of those patients suffering from any neurodegenerative disease causing dementia.

Dr. Pablo Martínez Martín
Scientific Director of the UIPA
1.5 Organizational Chart

CIEN Foundation Board of Trustees:
The Board of Trustees is responsible for the government and representation of the CIEN Foundation as well as for the fulfillment of the Foundation objectives, administration and management of its capital assets. Board members represent all sectors involved in neurological diseases research: public institutions related to the field of health, research, social and industrial policy, technology, business and education.

Chartered as a collegiate body, the Board of Trustees is composed of the following members:

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<tr>
<th>Position</th>
<th>Title</th>
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<tr>
<td>Honorary Chair</td>
<td>Chief of the MICINN</td>
<td>Cristina Garmendia Mendizábal</td>
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<td>Chair</td>
<td>Secretary of State for Research</td>
<td>Felipe Pétriz Calvo</td>
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<td>Foundation Advisors</td>
<td>Research Secretary’s Advisors</td>
<td>Tomás Fraile Santos Agustín Larrañaga Elorriaga</td>
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<tr>
<td>Vice Chair</td>
<td>Director of the Carlos III Institute of Health</td>
<td>José Jerónimo Navas Palacios</td>
</tr>
<tr>
<td>Ex officio member</td>
<td>General Manager of Research and Management for the I+D National Plan</td>
<td>Montserrat Torné i Escasany</td>
</tr>
<tr>
<td>Ex officio member</td>
<td>Secretary General of Health from the Ministry of Health</td>
<td>Alfonso Jiménez Palacios 1*</td>
</tr>
<tr>
<td>Ex officio member</td>
<td>Head of Social and Industrial Policy from the Economic Office of the Prime Minister</td>
<td>Xosé Antón García Díaz</td>
</tr>
<tr>
<td>Ex officio member</td>
<td>General Manager of the Quality Agency from the National Health System, Ministry of Health</td>
<td>Carmen Moya García</td>
</tr>
<tr>
<td>Representing Ex officio member</td>
<td>Chair of the CSIC State Agency</td>
<td>Rafael Rodrigo Montero</td>
</tr>
<tr>
<td>Ex officio member</td>
<td>Deputy Director of Evaluation and Research Promotion, ISCIII</td>
<td>Joaquín Arenas Barbero</td>
</tr>
<tr>
<td>Elected member, Andalusia</td>
<td>General Manager of Research, Technology and Enterprise</td>
<td>María Sol Calzado García</td>
</tr>
<tr>
<td>Elected member, Community of Valencia</td>
<td>General Manager of Planning, Evaluation and Health Research from the Conselleria Sanidad, Generalitat Valenciana</td>
<td>Pilar Viedma Gil de Vergara</td>
</tr>
<tr>
<td>Elected member, Canary Islands</td>
<td>General Manager of Welfare Programs from the Canary Health Service</td>
<td>Hilda Sánchez Janáriz 2*</td>
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Changes produced in 2011
1* In November 2011, replacing José Martínez Olmos
2* In November 2011, replacing Juana María Reyes Melián

Steering Committee:
The Steering Committee is the body responsible for the supervision, planning and daily execution of activities in the CIEN Foundation. It consists of a Chair, two members and one member secretary representing the three public institutions that make up the CIEN Foundation: the Carlos III Institute of Health, the Queen Sophia Foundation, the Scientific Director of the Alzheimer’s Project Research Unit (UIPA, for its acronym in Spanish) and the Managing Director of the CIEN Foundation.

This Committee is composed by the following members:

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<tr>
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<tr>
<td>Member</td>
<td>Secretary of the Queen Sophia Foundation</td>
<td>Arturo Coello Villarroya</td>
</tr>
<tr>
<td>Member</td>
<td>Scientific Director of the Alzheimer’s Project Research Unit (UIPA)</td>
<td>Pablo Martínez Martín</td>
</tr>
<tr>
<td>Member - Secretary</td>
<td>Managing Director of the CIEN Foundation</td>
<td>María Ángeles Pérez Muñoz</td>
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1. **OVERVIEW**

**Scientific Committee**
Its work involves proposing research projects, advising researchers and research groups as well as project monitoring.

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<tr>
<td>Member</td>
<td>Scientific Director of the UIPA - CIEN Foundation</td>
<td>Pablo Martínez Martín</td>
</tr>
<tr>
<td>Member</td>
<td>Representing the CIEN Foundation</td>
<td>Jesús Ávila de Graco</td>
</tr>
<tr>
<td>Member</td>
<td>Representing researchers from the UIPA - CIEN Foundation</td>
<td>Miguel Calero Lara</td>
</tr>
<tr>
<td>Member</td>
<td>Representing the ISCIII</td>
<td>Jesús de Pedro Cuesta</td>
</tr>
<tr>
<td>Secretary</td>
<td>Managing Director of the CIEN Foundation</td>
<td>Mª Ángeles Pérez Muñoz</td>
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**Ethics Committee**
Since June 2010 the research activity of the CIEN Foundation, both for clinical projects and for the Tissue Bank activity, is supervised by the ISCIII Ethics Committee Research for and Animal Welfare. The Carlos III Institute of Health Ethics Committee for Research and Animal Welfare is a collegiate body as described in Article 12 of the July 3, 1412007 Law about Biomedical Research and in Articles 22, 23 and 24 of the October 10, 1201/2005 Royal Decree about the protection of the animals used for experimental and other scientific purposes.

Regarding the competences described in the 14/2007 Law on Biomedical Research, the Committee provides service to the Carlos III Institute of Health centers and units of, foundations promoted by the Institute itself and joint or associated centers recognized by the Carlos III Institute of Health.
1.6 The CIEN Foundation in our society

A priority for the CIEN Foundation is to convey the scope of our ongoing investigations on neurodegenerative diseases, especially AD, to citizens and society. In this sense, activities are focused on promoting social involvement, including citizen participation in specific research programs as volunteers, and stimulating brain tissue donation to BT-CIEN. Furthermore, the implementation of forums and informative, non-specialized symposia are key points to bring research closer and enabling patients and relatives’ needs to be known.

Some of the most significant initiatives in 2011 are the following:

“Alzheimer International 2011, Alzheimer’s Research Year”

This initiative, promoted by the Queen Sophia Foundation and the Pasqual Maragall Foundation, has counted with the participation of the CIEN Foundation. The activities carried out to celebrate the Alzheimer’s Research Year culminated in Madrid on September 22-23 at the Global Alzheimer’s Research Summit, a scientific meeting where Spanish and international researchers shared information about new research lines and recent advances in Alzheimer’s Disease.

“Árbol de Navidad de los Recuerdos” (Christmas Tree of Memories)

This initiative has been launched by the Queen Sophia Foundation, CIEN Foundation and Caja Madrid to promote cooperation in Alzheimer’s research among citizens. Specifically, from December 12, 2011 to January 6, 2012, Madrid citizens could leave their “best Christmas memory” on the tree located at the Queen Sophia Foundation Alzheimer’s Center. For each memory, Caja Madrid Social Project destinated €1 to the “Vallecas Project”. Moreover, Twitter users could donate €1 to the project by writing their favourite memory related to Christmas on #recuerdosolidario. The thousands of messages received were hung on the tree, which was inaugurated by the journalist and presenter, Irma Soriano.

Presence on social networks

During 2011, the CIEN Foundation has promoted its presence on social networks with the objective of boosting scientific knowledge and the scope of the ongoing research activities as well as building new bridges among researchers and society.
During 2011 and subsequent years, the UIPA-CIEN Foundation will continue boosting its recognized, consolidated research activities that place it as a center of reference in Spain.

Likewise, the international projection of its activity is one of the main objectives in the mid-term both with regards to its participation in international research projects as well as the implementation of its own initiatives or those entrusted by the ISCIII outside our borders. In this sense, its integration into the CoEN international network and the three new actions being coordinated (the ISCIII European Project Office, the Center of Reference for Endemic Disease Control Project in Equatorial Guinea and the National School of Health-ISCIII International Cooperation Fellowships for postgraduate studies) lay the foundation for its internationalization.

However, from a forward-looking approach, the CIEN Foundation remains focused on 3 key areas: management, training and social awareness. The three areas are directed at promoting responsible research that contributes to innovation and improvements in the life quality of patients and their families.

A sustainable management:
- Wherever funding is shared by The State and private institutions.
- Advocating optimization of both human and material resources for research.

Training as the basis for excellence:
- Through the implementation of specific training initiatives in and outside Spain.
- Through collaboration agreements, fellowships and other training programs with other international research centers and/or pharmaceutical and biotechnology companies.

Information and social awareness:
- Key point to convey society and citizens the value of research on neurodegenerative diseases in general and AD in particular.
- Helping to raise awareness of patients and families’ needs and promoting their participation whenever required.
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   2.4.2. Fellowships and grants
2.5 Quality Policy
In 2011 the budget managed by the CIEN Foundation increased by 18% mainly due to the consolidation of a successful policy of raising private funds which, together with the maintenance of public resources allocated within the General State Budget, ensure the viability of ongoing projects, the implementation of new initiatives and the continuity of researchers.

The CIEN Foundation has pursued a policy of austerity and careful control of expenditure to optimize the management of funds, which exceeded 4 million euros.

During 2011, part of our management has focused on internationalization, which has materialized with the allocation of new competences, such as acting as the ISCIII European Projects Office, as Center of Reference for the Control of Endemic Diseases in Equatorial Guinea and as coordinator of the National School of Health-ISCIII International Cooperation Fellowships for postgraduate studies, among others.

2.1 General management

During 2011, the CIEN Foundation has continued promoting research to consolidate its leadership as a reference model in Spain. In this sense, in terms of management, revenue optimization and expense rationalization have remained being key points to guarantee the continuity of ongoing research projects, initiating new ones, and ensure long-term permanence of researchers. This commitment to human capital, which includes volunteers as well as administrative and support staff, has taken shape with the increase in the number of seminars and training programs at international level. In particular, we must highlight the implementation of the M+VISION Program, a program of biomedical imaging from the Massachusetts Institute of Technology (MIT) and the Community of Madrid currently undertaken by various CIEN Foundation professionals, whose collaboration will continue in 2012.

Thus, internationalization has been another pillar on which CIEN Foundation management has revolved around. In the long run this will translate into greater external visibility as a consequence of a trustworthy, transparent, effective proven management model. The scope of this model has been expanded to new economic and administrative competences.

In 2011, the projects managed by the CIEN Foundation are the following:

- The Center for Networked Biomedical Research in Neurodegenerative Diseases (CIBERNED).
- The ISCIII European Project Office (OPE).
- The Center of Reference for the Control of Endemic Diseases in Equatorial Guinea (CRCE).
- The Project for Strengthening the Health System and Prevention to fight against infectious diseases prevalent in the Amhara Region, Ethiopia Project (Amhara-Eth Project).
- Coordination of the National School Health-ISCIII International Cooperation Fellowships for postgraduate studies.
Consolidated management has enabled the designation of the CIEN Foundation and CIBERNED as Centers of Excellence by the European Union.

This designation has allowed both institutions to become part of the Joint Programming for Neurodegenerative Diseases and be integrated into the International Network of Centers of Excellence in Neurodegenerative Disease Research (CoEN), which, in the mid-term, will result in opening new ways of funding research projects. In May 2011 this participation materialized in the first call for projects from the JPND (Research) with the acquisition of a project for the optimization of biomarkers and harmonization of their use in health centers and hospitals, an initiative with a Spanish contribution.
of one million euros, which is expected to fund up to 8 three-years research projects.

The CIEN Foundation approaches research projects from a global perspective, involving researchers, volunteers and society in general.

In 2011, the implementation of global projects has been especially relevant since researchers, volunteers, media and society in general have joined forces to reach one single goal. Our first initiative with social projection is the outstanding “Vallecas Project”, socially backed by the launch of the “Christmas Tree of Memories” campaign. This Christmas event with highly successful participation had the cooperation of the Queen Sophia Foundation and the Caja Madrid Social Project.

MISSION AND ROLES OF THE CIEN FOUNDATION

Our mission is clear: becoming a center of national and international reference for research on Alzheimer’s disease

The aim of the CIEN Foundation-UIPA is to become a center of national and international reference in research on Alzheimer’s disease and related dementias, as well as support qualified researchers and facilitate the impact of scientific advances on the health system and, therefore, on patients welfare.

To achieve these goals, the CIEN Foundation:

- Favors the implementation of coordinated research projects in neurological diseases.
- Participates in calls promoted by national and international funding agencies.
- Develops training programs through specific actions: seminars, training programs for fellows, doctoral theses and any other action that may contribute to training.
2.2 Management of economic and financial resources

In 2011, the rough estimate managed by the CIEN Foundation was 4 million euros, representing an 18% increase compared to 2010. As the Foundation depends on the Ministry of Science and Innovation, 31% of the budget comes from the ISCIII official grant. Thus, the CIEN Foundation budget allocated for 2011 within the General State Budget has amounted to 825,280 euros, distributed as current (€ 655,940) and capital (€ 169,340) expenses. Therefore, it remains at similar levels to those of previous years. These resources have a clear objective of promoting research activities.

In 2011 the CIEN Foundation has been responsible for the administrative and economic management of three new initiatives:

- The Carlos III Institute of Health European Project Office, with a budget of € 514,981 under agreement, to be added to those projects EU-funded brought together by this Office.
- The project as Center of Reference for the Control of Endemic Diseases in Equatorial Guinea, with a budget for 2011 of € 370,584 under agreement.
- The National School of Health-ISCIII International Cooperation Fellowships for postgraduate studies, with a budget for 2011 of € 143,360.

In budgetary terms, the continued commitment of the Queen Sophia Foundation, providing over 17% of the total resources, deserves special mention. On the part of the CIEN Foundation, the measures taken in order to increase the resources available for...
research through private funding have enabled the
generation of 20% of the annual budget, which has
come from sponsors and benefactors.

As far as expenditure is concerned, the main
budgetary items include staff costs, operating costs
and depreciations. Expenditure restraint measures
taken throughout the year 2011 have been aimed
at maintaining the quality level of our management
while restraining costs. The number of research
projects funded by external sources, as well as the
research activity developed internally through
projects assigned to each department, has
increased compared to the previous year. Emphasis
should be placed on the implementation of the
“Vallecas Project”, which has meant a very
important economic, scientific driver for the present
and future of the CIEN Foundation. Consequently,
staff costs have increased due to the implementa-
tion of new projects and the assumption of
management responsibilities on the ISCIII European
Project Office and the Control of Endemic Diseases
in Equatorial Guinea, projects requiring temporary
recruitments to meet the requirements for
competitive, efficient and high-quality activity. Overall expenditure on this item has increased by
55% approximately compared to 2010.

In addition, expenses on other items (supplies and
other operating expenses) also grew around 40%
driven by increased assignation of duties, although
staff costs underwent a larger increase.

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<td>Money</td>
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<td>Supplies</td>
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<td>Staff costs</td>
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<td>Operating expenses</td>
</tr>
<tr>
<td>Depreciation</td>
</tr>
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</table>

**Expenses distribution in 2011**

- Monetary aid: 21%
- Supplies: 5%
- Staff costs: 29%
- Operating expenses: 24%
- Depreciation: 21%
One of the aims of the CIEN Foundation is to generate valuable knowledge for society and contribute, in an effective way, to their development and welfare through the results and progress derived from our research and projects. However, the true distinguishing feature and success builder is provided by the professionals that make up our organization. We are well aware that the CIEN Foundation staff constitutes our most important resource. So, through the selection process for our job offers, we intend to bring together a highly qualified team, whose levels of technical and ethical competences meet the qualitative parameters supported by the CIEN Foundation at all times. We guarantee our professionals a solid job future and long-term commitment. In 2011 staff costs increased, if compared to 2010, as a result of the Foundation’s commitment to recruit and retain the best research talent.

In this sense, the good development of research projects depends on key elements such as personal effectiveness, leadership and management skills. In the Department of Human Resources we work on integrated talent management, focusing efforts on offering qualified support to the most valuable professionals. For us it is essential to create value for the employee by rewarding performance and getting involved in the constant development of all our professionals.

Therefore, as for its policy of human resources, the CIEN Foundation pursues the following priority goals:

### Talent management

- Recruiting and retaining talent. The leadership of our researchers is key to our talent management strategy, and that is the reason why professional and personal growth is supported and encouraged through the development of Personal Development Plan.

### Equality Plans

- Implementing policies to improve working conditions for women on equal terms as men, facilitating access to employment, training and promotion, equal wages, reconciliation of personal and working life, and improvements in occupational health and safety.

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2.3 Management of Human Resources

One of the aims of the CIEN Foundation is to generate valuable knowledge for society and contribute, in an effective way, to their development and welfare through the results and progress derived from our research and projects. However, the true distinguishing feature and success builder is provided by the professionals that make up our organization.

We are well aware that the CIEN Foundation staff constitutes our most important resource. So, through the selection process for our job offers, we intend to bring together a highly qualified team, whose levels of technical and ethical competences meet the qualitative parameters supported by the CIEN Foundation.
2. MANAGEMENT REPORT

Work-Life Reconciliation

- Continuing the occupational and family reconciliation policy for all the groups within the organization.

Diversity Management

- Discarding any discriminatory practice in the incorporation of candidates.

Occupational Health and Safety

- Improving health and safety conditions in the course of our activity and projecting the image of a Foundation committed to the prevention of occupational hazards.

According to the policy pursued from the beginning of its activities, the CIEN Foundation internal and external selection processes are aimed at achieving highly qualified staff, whose levels of technical and behavioral competences meet the job profiles required.

As in previous years, the professionals who have joined the CIEN Foundation during 2011 have done so under employment or collaboration agreements with organizations and institutions, related to both research and teaching. These joining efforts and resources translate into a large number of highly qualified professionals with a minimum staff cost, resulting in effective, sustainable management.

All the positions offered by the CIEN Foundation have been filled through open competition and have been published on the CIEN Foundation, ISCIII and CIBERNED websites of, abiding by the principle of free competition and objective assessment of the applicants’ merits.

CIEN Foundation Staff

During 2011, the CIEN Foundation has counted on a total of 75 professionals, including 28 hired from competitive grants, 4 fellows, 9 volunteers who have collaborated selflessly with the CIEN Foundation, 1 in-training Resident Medical Intern (MIR for its acronym in Spanish) and 33 professionals who developed activity thanks to collaboration agreements.

To ensure that the skills of our professionals and of our medical, research and management staff meet the requirements of the activity, the CIEN Foundation is divided into the following departments:

- Department of Management and Administration
- Multidisciplinary Support Unit (UMA for its acronym in Spanish)
- Department of Neuropathology
- Department of Neuroimaging
- Department of Laboratory
### MANAGEMENT
1. Managing Director
1. UIPA Scientific Director

### MEDICAL AND RESEARCH PERSONNEL BY DEPARTMENT
- **1** Neuropathologist
- **4** Pathological Anatomy Technicians
- **3** Neuroimaging Technicians
- **2** Training Fellows (teaching agreement I.E.S.)
- **2** Neuroradiologists (DIM Foundation collaboration agreement)
- **3** Physicists (URJC collaboration agreements)
- **11** Engineers (URJC collaboration agreements)
- **1** PhD in Mathematics (URJC collaboration agreements)
- **3** Neuropsychologists (Research Projects)
- **1** Biologist (CIBERNED)
- **2** Laboratory Technicians (industry collaboration agreement)
- **2** Fellows (URJC collaboration agreements)
- **2** Psychiatrists
- **5** Neurologists
- **1** Sociologist
- **5** Psychologist
- **1** M.I.R.
- **1** D.U.E. (Research Projects)

### MANAGEMENT AND ADMINISTRATION
- **1** Attorney
- **1** Managing Director Secretary
- **1** Administrative Officer
- **6** Administrative Assistants
- **2** Graduates (CIBERNED)
- **3** Administrative Assistants (CIBERNED)

### OTHER STAFF
9 Volunteers

**Total staff employed by the CIEN Foundation from Grants and Projects: 28**
2. MANAGEMENT REPORT

2.3.1 Training Program 2011

The CIEN Foundation has set up the Training Program 2011, key to meet the requirements of competitiveness, efficiency and quality as well as the employees’ aspirations for professional and personal development. In this way, our intention is to provide our employees the necessary competences for searching, analyzing and systematizing knowledge, including techniques, methods and protocols specific of the research activity.

In 2011, the CIEN Foundation increased the number of plenary talks and training activities specifically aimed at its professionals.

For the CIEN Foundation the training of professionals working on health research is key to the development of their full potential, regardless of category, level or professional expertise.

In addition, staff distribution is planned every year so that those professionals ready to be promoted can...
be identified. This process is governed by equality criteria by means of which applicants are assessed in terms of ability and merits regardless of their condition.

Regarding the development of our professionals’ skills, the ultimate goal of the training is to achieve improved processes of our research projects bearing in mind training needs, relevance, assessment or impact. Effective training on the development of skills to meet the job requirements is a process of continuous improvement and advance.

The professionals in charge of the training courses are renowned in their area of expertise. In 2011 the following courses were taught:

- 16 training courses on Neuroimaging.
- 1 workshop on imaging lab.
- 6 training seminars on various topics.
2. MANAGEMENT REPORT

- Supervision of 2 doctoral theses.
- 7 continuing training courses at AMU.
- 2 multidisciplinary training courses at the Alzheimer Center of the Queen Sophia Foundation.
- 2 seminars on clinical cases in Neuropathology.
- 2 continuing education courses of the Alzheimer’s Project Research Unit.
- 2 continuing education courses on Laboratory.
- 1 Resident Medical Intern.

2.3.2 Prevention of occupational hazards

Under the principles set out in the Policy of Occupational Health and Safety of the CIEN Foundation, which promotes respect for occupational health and safety in the course of our activity, the organization’s commitment is expressed in the following terms:

- To comply with applicable current regulations on occupational health and safety within the European, national, regional and local regulatory framework.
- To advance continuous improvements in our behavior towards health and safety at work.
- To ensure the employees’ protection regarding health and safety.
- To promote both internal and external training and communication.

An annual schedule of activities has been arranged to be undertaken by the Prevention Service. Among them, it is important to point out the risk assessment of the different groups’ positions, the specific assessment of pregnant employees, the planning of preventive actions and the implementation of emergency measures and risk sheets by position.

As in previous years, specific courses on prevention of occupational hazards have been specifically aimed at the different positions within the Foundation: lab staff, research staff, administrative officers, health and management staff.

As for occupational health monitoring, a total of 21 medical examinations have been carried out. Health screenings have included a work history with detailed description of the job, duration of service, identification of risks in the analysis of working conditions and the adoption of preventive measures, anamnesis data, clinical exploration, biological control and complementary studies monitored and chosen according to inherent risks in work performance.

Additionally, information is provided to new staff, related to occupational hazards related to the position, adoption of preventive measures, performance standards in case of emergency and first aids.

Finally, we would like to underline that, once again, the CIEN Foundation has met the objectives in terms of occupational safety: no accidents within the workday.

2.4 Research projects, fellowships and grants

The research projects, fellowships and grants managed by the CIEN Foundation aim to support and promote research and study on Alzheimer’s and related diseases, enhance researchers’ mobility by facilitating some part of their training in renowned research centers, and promote clinical research as well as research into health outcomes and translational research.
2.4.1 Research projects

During 2011 the CIEN Foundation has continued conducting the research projects promoted since 2008. These research projects are primarily focused on the characterization of the pathology, early diagnosis and clinical and psychosociological aspects in Alzheimer’s and related diseases, as well as on finding new pharmacological targets.

Major projects funded in 2011:

- 11 research projects funded by the CIEN Foundation in 2011 belonging to the third and second annual payments from the call for projects 2008 and 2009. Funding: €561,000
- 43 ongoing research projects in collaboration with external institutions at national and international level.

In addition, in late 2010 the CIEN Foundation, in collaboration with the Queen Sophia Foundation, implemented an ambitious research project called "Vallecas Project", which aims at the early detection of Alzheimer's disease. With an expected 5-year duration, the project results will report a set of clinical, biochemical and neuroimaging data. Such data will enable assessment on whether any of the parameters analyzed could be a reliable marker in the development of Alzheimer's disease, essential for the development of future treatments. This study is carried out on volunteers aware of the problems of the disease with an altruistic spirit and in full collaboration with the research.

2.4.2 Fellowships and grants

During 2011 the CIEN Foundation, in collaboration with government agencies, the Queen Sophia Foundation, the Mapfre Foundation and the National School of Health, has awarded the following fellowships and grants:

- The CIEN Foundation, in collaboration with the Carlos III Institute of Health and the National School of Health, the National University of Distance Education (UNED for its acronym in Spanish) and the University of Alcalá, has offered a fellowship for the 2nd edition of the Master Course "Direction and Management of R&D in Health Sciences".
- The Queen Sophia Foundation and the Mapfre Foundation have offered a fellowship to hire a specialist in neurology for the CIEN Foundation. This fellowship, apart from being an excellent career opportunity for young neurologists, also offers a special setting for research on Alzheimer’s disease and related pathologies.
- The ISCIII National School of Health has entrusted the CIEN Foundation the management of fellowships for postgraduate studies specializing in "International Public Health" and "Health Promotion".

2.5 Quality Policy

In 2011, satisfaction questionnaires conducted by each department maintain the successful results from previous years, being rated at levels between good and excellent. The Foundation has actually initiated the establishment of a System of Quality Management in the Tissue Bank Management.

The CIEN Foundation works under the System of Quality Management according to ISO 9001:2008, certified by TÜV Rheinland, with the goal of ensuring
2. MANAGEMENT REPORT

and optimizing the management area of the Foundation.

Quality Objectives are annually set in order to achieve continuous improvements and higher levels of customer satisfaction (for researchers and staff from various departments of the UIPA). Thus, the implementation of the System of Quality Management of the CIEN Foundation ensures optimal performance in the purchase of materials.
and services, in staff hiring and management as well as in documentation filing. This system has been developed with a focus on process-based management. To achieve improvements, the basic processes of the organization have undergone continuous analysis so as to be able to meet customers’ requirements, comply with applicable current regulations and optimize its resources.

The Quality Policy of the CIEN Foundation seeks to ensure and optimize processes related to:

- External and internal customer orientation.
- Leadership
- Staff involvement
- Process-based approach
- Continuous improvements

The tools used to carry out the review of the System of Quality Management are the following:

- Reports of internal and external audits.
- Evaluation of suppliers.
- Complaints, suggestions and information to customers.
- Results of Studies on Customer Satisfaction.
- Evaluation of corrective, preventive actions.
- Indicators of the quality of the processes.
- Quality objectives.
- Internal or external changes affecting the Quality System.

The CIEN Foundation, aware of the influence of human resources on the development of the System of Quality Management, has taken special care to improve the selection process, training and role adaptation of our professionals, including motivation and competence to perform their work. Our performance has been focused on:

- Analyzing the activities to be carried out and establishing personal requirements.
- Selecting the most suitable professionals within the organization to perform each activity.
- Identifying training needs required to effectively cover all the activities.
- Providing necessary, adequate training to meet specific needs, evaluating the effectiveness of the actions and establishing appropriate records.
- Making our staff aware of the importance of achieving objectives.
2. MANAGEMENT REPORT
Scientific activity of the UIPA

3.1 Overview
3.2 Evolution of the research by departmental areas
   3.2.1 UMA (Multidisciplinary Support Unit)
   3.2.2 Department of Neuropathology
   3.2.3 Department of Neuroimaging
   3.2.4 Department of Laboratory
The CIEN Foundation manages the Alzheimer’s Project Research Unit (UIPA), which is developed under the Alzheimer’s Project sponsored by the Queen Sophia Foundation and focuses on research into Alzheimer’s disease and related disorders. It is located in the Queen Sophia Foundation Alzheimer Center (Vallecas, Madrid), nearby the Area of Geriatric Care of the Center, which is managed by the Autonomous Community of Madrid through its Department of Family and Social Affairs. It assists to 156 patients admitted in residential regime and other 40 over the Day Center. This close proximity between the area of care and the UIPA reflects the intention of the promoter (Queen Sophia Foundation) to bring the research closer to the patient.

3. SCIENTIFIC ACTIVITY OF THE UIPA

3.1. Overview

CIEN Foundation - UIPA Research Areas

The research conducted at the UIPA is primarily focused on Alzheimer’s disease and other dementias, but also provides a complementary approach to other neurodegenerative diseases. The research program priorities are set by the Scientific Committee of the UIPA. The research priorities established until the year 2012 are the following:

1. Early diagnosis of AD - MRI, Biomarkers.
2. Neuropathology of AD.
4. Aging and risk factors for AD.
5. Methodology and management of biobanks.
6. Resource allocation and quality of care of patients with AD.

Main indicators of the research activity carried out:

- 43 research projects with partial or full involvement of UIPA.
- Enlargement of the Vallecas Project, which involves the entire UIPA, to assess up to 1,200 subjects.
- Completion and presentation of DEMCAM project results for the determination by 3Tesla MRI and Artificial Intelligence, which individuals are cognitively healthy and who could suffer mild cognitive impairment or some form of dementia, such as AD.
- Publication of 44 articles and 14 book chapters.
- 108 participations in Conferences and Symposia.
- Participation in Courses: 85 lectures.
- Participation in the International Year of Alzheimer’s Disease 2011.
- Award: the Tissue Bank CIEN Foundation (BT-CIEN) was recognized as “Best Idea” in the category of Health by the magazine Actualidad Económica.
The UIPA is structured around four departments:

- Multidisciplinary Support Unit (UMA): composed by members of the UIPA itself (specialists in neurology, psychiatry and sociology) and members of the Healthcare Area (specialists in geriatrics, psychology, physical and occupational therapy).

- Department of Neuroimaging: Equipped with a 3T MRI scanner for advanced research.

- Department of Neuropathology for diagnosis and preservation of brains, along with other biological samples properly classified, constitute a biobank for research purposes: BT-CIEN.

- Department of Laboratory, with capacity to process and store biological samples as well as to perform in-house research.
3. SCIENTIFIC ACTIVITY OF THE UIPA

3.2. Evolution of the activity by departmental areas

3.2.1 UMA (Multidisciplinary Support Unit)

Among the priorities of the UMA is the advancement of knowledge on neurodegenerative diseases, particularly Alzheimer’s disease from a primarily clinical perspective. Furthermore, it reviews the syndromic and etiological diagnosis of patients that, either in a residence scheme (live units) or day care (Day Center), attend the Queen Sophia Foundation Alzheimer Center (CAFRS) and regularly monitors their progress.

The UMA, thanks to all these efforts, builds on the knowledge of clinical progression of dementia and stands as a link between basic and clinical as well as social science fields related to Health.

In 2011 the UMA has continued its research activity as a research department devoted to capture and provide data, with the vocation of translating them to investigators from CAFRS and other institutions. Its multidisciplinary assessments allow CIEN Foundation professionals to achieve a series of data that, employed in future research, will assist in the research on neurodegenerative diseases. These data, obtained after signing an informed consent, are also available to other institutions dedicated research on neurodegenerative disorders with which collaboration agreements exist. Thus, UMA constitutes itself as a reference research institution in the sector.

These assessments, based on a rigorous protocol and subject to an appropriate time control, allow to establish relationships between areas of brain damage, degree of impairment, functional impact and relationship with other evaluation methods and causal disease markers. Reviews every six months, allow for sustained and continuous monitoring of each patient by checking his/her neurological status as well as their mental, affective and functional behavior.

Thus, the work of investigators at the UMA can be summarized in two key aspects:

1. To add value to the routine care of patients institutionalized in CAFRS. Furthermore, this direct and regular contact with the patients offers alternatives to advance in new research lines.
2. To obtain clinical data of great utility for the other Departments of the CIEN Foundation and other institutions.

Results in 2011

In 2011, UMA staff has conducted 258 semiannual evaluations on 135 patients with informed consent. In addition, baseline evaluations were performed on 30 new patients admitted in the Center.

The CAFRS has 156 available positions in an internship scheme (living units) and other extra 40 in the Day Center. In 2011, 30 (14 interns and 16 in the Day Center) new consents were obtained for patient participation in multidisciplinary semiannual program evaluations carried out by the UMA. The UMA personnel conducted 258 of these semiannual evaluations in 2011, including protocolized contributions of geriatrics, neurology, psychiatry, neuropsychology, sociology of health, physical and occupational therapy.

In addition, most of the consents extend to donation of blood samples for research (taking
The advantage of sample drawing for routine analysis and to perform Magnetic Resonance Imaging (MRI). Finally, a very high proportion of consents (70% of the last 14 obtained) is also accompanied by postmortem brain donation for research purposes.

This systematic program of activities enables the CIEN Foundation researchers to incorporate data from CAFRS-admitted patients to a computerized database complemented with databases from other laboratory areas, such as neuroimaging and neuropathology, facilitating research on dementia underlying diseases, especially due to neurodegeneration, which constitutes the main research focus of the CIEN Foundation.

**Other activities**

Besides the systematic evaluation of CAFRS patients, 270 assessments were conducted within the framework of specific research projects and the UIPA Continuing Education Program continued ahead, now in its fourth year of progress.

**2011 Research projects**

The UMA continues to conduct various research projects, among which the "Vallecas Project" stands out for its size and scope, taking on the efforts of most CIEN Foundation and UMA personnel.

**Vallecas Project: early detection of Alzheimer's disease**

In June 2010, the UIPA-CIEN Foundation and the Queen Sophia Foundation launched the pilot phase of the Vallecas Project. This project, with a time frame of five years, focuses its research on the analysis of human brain activity before the onset of Alzheimer's disease. It is aimed at providing a range of clinical, biological and neuroimaging markers that could help identify reliable disease progression makers.

The Vallecas Project received additional co-financing from the National Alzheimer's Association, AFALContigo, for the pilot phase. At this stage, 200 volunteers aged between 70 and 85 years and normal mental function were studied. The main objectives of this pilot phase were response calibration, calculate the proportion of volunteers valid among all who intended to participate, protocol and test acceptance, calculate completion times or estimate fluency itinerary, among others.

In 2011, the Caja Madrid Social Project joined in and the main study was launched during the month of October. It is intended to assess up to 1,200 people with the characteristics expressed in the pilot phase. This sample size should allow meaningful data on the pre-dementia stage in at least 75 individuals (adverse scenario).
105 volunteers had already been enrolled in the study by late 2011.

Participants are included in the study once they have signed the Informed Consent (IC) and will be evaluated once a year for five years, through a protocol covering socio-sanitary issues, anamnesis, medical and neuropsychological examinations, brain MRI (with no contrast) and blood testing. From all this, researchers will get information about:

- Sociodemographic and clinical data. Age, family history, education, occupation, vascular risk factors, neurological and psychiatric history.
- General clinical and neurological examination.
- Motor function examination. Walking scale and timed tests.
- Neuropsychological examination by "screening" tests (MMST and FAQ), cognitive complaints questionnaire, learning test,
visuospatial skills, key numbers test, test category, etc.

- Cranial Neuroimaging, including volumetrics, spectroscopy, diffusion tensor, FLAIR, T2 and T2*, 3D SPGR.

- Blood biomarkers. Determinations of predisposing genetic risk factors (APOE, SORL1, and CTS3 PRNP) and β-amyloid peptide will be made.

Other ongoing projects


Future projects

Diagnostic Orientation Unit - focused on providing corroboration or second opinion to diagnosed individuals with suspected cognitive impairment or dementia in early stages, referred by institutions with collaboration agreement for this purpose. Aims to provide a service of social and health interest, providing in-depth evaluations, high quality Neuroimaging (RM3T) and diagnosis by the Unit multidisciplinary expert team. On the other hand, it also aims to facilitate the recruitment of volunteers for future research programs.

Training

During 2011 UMA staff, in collaboration with other UIPA departmental areas within the continuing education program designed by the CIEN Foundation, have actively participated by giving lectures on 13 training courses and 7 seminars.

Courses

1. II Course on Multidisciplinary training in Neurodegenerative Dementias. Organized by: Dr. P. Martínez Martín and Prof. H. Peraíta.
3. SCIENTIFIC ACTIVITY OF THE UIPA

Institution: UIPA, CIEN Foundation, Queen Sophia Foundation – Department of Basic I and CEEN Grupo, UNED. Queen Sophia Foundation Alzheimer Center, Madrid, September, 2011. [in spanish]


8. Non-pharmacological therapies for behavioral and psychological symptoms. Professor: J. Olazarán Rodríguez. Course Title: II International Conference "Use of restraints in elderly dependents." Department of Social Affairs,


Continuing Education Program


Participation in editorial boards

The UMA professionals have participated during 2011 in Editorial Boards or as reviewers of numerous scientific journals:


4. P. Martín Martínez. Member of the Editorial Board of Movement Disorders, Parkinson’s Disease, Basal Ganglia.

5. P. Martín Martínez. Reviewer of over a dozen national and international journals in the fields of Neurology and Neuroscience.

6. J. Olazarán Rodríguez. Reviewer for International Research Grant Council of Hong Kong (RGC International Referee) and the Cochrane Dementia and Cognitive Improvement Group. External Advisor for the Federal Health Care Knowledge Centre of Belgium and the University of Cádiz Publications Service.


Team

The translational approach is applied in all research projects that are developed in this UIPA Unit. This means that all the results of such investigations lead to new diagnostic and therapeutic approaches in improved care and increased quality of life for patients.

In 2011 the UMA consisted of 23 professionals, led by Dr. Pablo Martínez and coordinated by Dr. José Luis Dobato and Javier Olazarán. Dr. Pablo Martínez is also a member of the CIEN Foundation Scientific since June 2010 and was the Spanish representative in the Scientific Healthcare Research Agenda Workshop of the Joint Programming in Neurodegenerative Diseases, organized by the European Commission and held in London on March 2011.

The group of professionals that constitutes the UMA have been selected for their multidisciplinary profile and high qualifications demonstrated in the UMA research areas.

Staff

- Pablo Martínez Martín, MD, PhD (Neurology specialty) - UIPA Scientific Director.
- Jose Luis Dobato Ayuso, MD, PhD (Neurology specialty) - UMA Coordinator until mid-2011.
- Luis Agüera Ortiz, MD, PhD (Dr. Medicina, especialidad Psiquiatría).
- Beatriz León Salas, Sociologist (Demography and Sociology of Health specialty).
- Javier Olazarán Rodríguez, MD, PhD (Neurology specialty) - UMA Coordinator from mid-2011.
- Jorge López Alvarez, MD (Psychiatry specialty).
- Isabel Ramos García, MD (Psychiatry specialty).
- Meritxell Valentí Soler, MD (Neurology specialty).
- Belén Frades Payo, Psychologist (Neuropsychology specialty).
3. SCIENTIFIC ACTIVITY OF THE UIPA

Fellows

- Isabel Cruz Orduña, Psychologist (Neuropsychology especially).

Collaborators

Physical therapy
- Laura González Hervías
- Nadia Méndez Robles
- Emma Osa Ruiz

Social Work
- Cristina Martín Carmona
- Gema Melcón Borrego

Occupational Therapy
- Ana Montero Sánchez
- Elena Ortega Rojo
- Sara Sáiz Bailador

Geriatrics
- Belén González Lahera

Psychology
- Mª Cristina Valle de Juan

Training Technician
- Víctor Isidro
- Cynthia Pérez Muñano

UMA Team
3.2.2 Department of Neuropathology

The Area of Neuropathology of the CIEN Foundation is dedicated primarily to establish a definitive neuropathological diagnosis by postmortem studies. Since 2009 manages and coordinates the BT-CIEN (Tissue Bank - CIEN Foundation), which integrates the activity previously conducted by the Tissue Bank for Neurological Research in Madrid (BTIN) and the existing biobank at the Queen Sophia Foundation Alzheimer Center.

The BT-CIEN aims to promote the study of neurological diseases such as Alzheimer’s, Parkinson’s, Huntington’s and Amyotrophic Lateral Sclerosis, through the availability of human brain tissue for research. To do this it preserves cerebral tissue samples and other neurological samples in long-term optimal conditions. Research conducted with the tissues from this publicly-owned biobank, are the basis for developing new drugs and therapeutic strategies in the future, as well as for detecting potential biomarkers that will help in early diagnosis of different pathologies.
Depending on the origin of the samples, the BT-CIEN has two sample transfer programs:

- An internal program, intended for residents of the Queen Sophia Foundation Alzheimer Center, where the UIPA - CIEN Foundation is located.
- An external program, which represents the continuation of the activities conducted by the Tissue Bank for Neurological Research (BTIN) that was integrated with the UIPA biobank in late 2009 and marked the establishment of the BT-CIEN.

Services provided by the Department of Neuropathology

- Performing neuropathological autopsies on brain tissue donors.
- Management of a neurological samples biobank. Transfer of samples.
- Diagnostic Consultation of neuropathological cases.
- Performing neurohistological techniques on neurological samples from human and experimental origin.
- Collaboration with research projects from other centers.

Ongoing research areas

The Department of Neuropathology has participated in recent years in many research projects and collaborative research networks, focused on pathogenic mechanisms and biomarkers of various neurodegenerative diseases (Alzheimer, Parkinson, ALS, tauopathies, etc). Among these projects, the collaboration with Biocross S.L. and participation in the DENDRIA consortium (CENIT program), led by the company Noscira can be highlighted. Besides these collaborations, the department keeps the following research areas ongoing:

- Study of neuropathological and molecular phenotypes in Alzheimer’s disease, prion diseases and related dementias.
- Regional patterns of involvement in Alzheimer’s disease.
- Phenotypic classification of tauopathies.
- Neurodegenerative pathology associated with very old age (“oldest-old”).

Establishment of a nation-wide network of biobanks

Dr. Alberto Rábano is the Director of the UIPA - CIEN Foundation Department of Neuropathology and head of BT-CIEN. Since the beginning of its activity, the BT-CIEN has actively participated in the creation and development of new tissue banks in different Autonomous Communities.

Last year, the BT-CIEN was invited to participate as an observer member of the Network of ISCIII Hospital Biobanks. Also in 2011, the Autonomous Community of Madrid approved the draft constitution of the Neurodeglab research network in neurodegenerative disorders, of which the BT-CIEN is part of.

The BT-CIEN actively collaborates with other brain banks:

- Brain Bank of the Region of Murcia (BCRM).
- Biobank of the Alcorcon University Hospital Foundation.
- Neurological Tissue Bank of the Castilla y León Institute of Neurosciences.
- Biobank Córdoba University Queen Sophia Hospital.

Results in 2011

The activity of 2011 has been marked by growth, with an 55% increase compared to 2010. The social awareness work carried out has resulted in an increase in the number of donations of about 37%
between the internal and external programs of BT-CIEN, and almost 44% in the number of active donors.

The BT-CIEN was awarded as one of the 100 Best Ideas of the Year by the magazine Actualidad Económica in the category of Health. These awards, granted by the oldest economic magazine in Spain, recognized the commitment to innovation of business entities awarded each year.

Donations

The CIEN Foundation has several lines of communication open to resolve queries regarding donations and tissue extractions from a deceased donor. One of them is a phone number available 24 hours, 365 days a year, and another one is through the website http://bt.fundacioncien.es for people interested in becoming donors and researchers requesting tissue samples for research projects. It is noteworthy that the CIEN Foundation has the technology and resources required for achieving a postmortem interval of 5.5 hours, which is critical for obtaining high quality neurological samples.

- The BT-CIEN has accumulated in 2011 a total of 183 registered cases. These cases come from donations with premortem informed consent, since the Spanish legislation only authorizes the use of brain tissue for research when it comes from donations.
- The number of registrations has increased by 55% in 2011 compared to 2010, going from 64 to 99 cases.
- The BT-CIEN external program has produced 49 of these extractions.
- There are 41 cases coming from banks and hospitals consultations, primarily from the Brain Bank of the Region of Murcia.
- The nine remaining cases come from the UIPA and Queen Sophia Alzheimer Center.

Annual distribution of tissue donations 1995-2011
3. SCIENTIFIC ACTIVITY OF THE UIPA

Donor Registry

The BT-CIEN has 547 active donors registered, 71 of which have registered during 2011. During this year, the bank has experienced a significant increase in requests for information about brain donation due to the communication actions carried out. The social awareness campaign has been conducted consistently over time, maintaining regular contact with the media, patient and hospital medical centers. The goal has been to report on the existence of the donation program and promote the interests of citizens.

- The BT-CIEN receives a high volume of inquiries from people interested in becoming donors. In these cases, the biobank redirect potential donors living in autonomous regions with their own brain bank, such as Catalonia, Navarra, Galicia and Murcia, to the nearest bank.
- Bank staff maintains regular contact with potential donors registered in their files, both those included in the external program as well as those who are part of the Queen Sophia Alzheimer Center Foundation. Such continuous monitoring allows updating of data from those registered in the BT-CIEN and renewal of Informed Consent.

Transfer of samples

Spanish and foreign researchers regularly request supply of free brain tissue samples from the BT-CIEN. These requests are handled through the BT-CIEN website complying with the Biomedical Research Act (Act 14/2007 of July 3). A Scientific Committee, overseen by the Carlos III (ISCIII) Institute of Health Research and Animal Welfare Ethics Committee is responsible for evaluating each application.

BT-CIEN Scientific Committee

- Meritxell Valentí, secretary (UIPA).
- Estrella Gómez Tortosa, Jiménez Díaz Foundation.
- José Lucas, Center for Molecular Biology “Severo Ochoa”, CSIC.
- José Ramón Naranjo, National Center of Biotechnology, CSIC.
- José Luis Dobato, UIPA.
- Javier Olazarán, UIPA.

Thus, 12 sets of brain tissue samples were transferred during 2011 to various research centers in Madrid, Murcia, Catalonia and Valencia.

Research projects

The research being conducted on brain tissue enables the advancement of our understanding of diseases like Alzheimer’s, while in-live diagnosis of neurological disease is merely probabilistic. The research with human tissue is therefore essential to extend the search for biomarkers that help us to define Alzheimer’s disease in its early stages or the potential connection with other neuro-degenerative diseases involving accelerated disease progression.

The Department of Neuropathology participates in numerous research projects and collaborative research networks, focused on pathogenic mechanisms and different biomarkers of...
neurodegenerative diseases such as Alzheimer's, Parkinson's, amyotrophic lateral sclerosis, tauopathies... In addition, we continue our collaboration with Biocross S.L. and our participation in the DENDRIA consortium (CENIT program) for the development of new drugs for nervous system disorders.

Ongoing projects


Training: courses and seminars


3. SCIENTIFIC ACTIVITY OF THE UIPA


A. Rábano. “‘How is normal neuropathological aging?’ ‘Does normal (neurological) aging exists?’” Course organized by the SEN Neurogeriatrics Study Group Barcelona, November, 2011. [in spanish]


Other activities of interest


“Brain donation to biomedical research”. Disseminating conference at Coffee on Thursdays, organized by AFAL. November, 2011. [in spanish]

Alberto Rábano has been appointed to the Scientific Committee of the II National Congress on Prions. Madrid, December, 2011. [in spanish]
The BT-CIEN team consists of four professionals that make up the CIEN Foundation Department of Neuropathology. The team is led by Alberto Rábano, neuropathologist, a full time neuropathology technician and two part-time technicians. They all provide support to this department by also taking care of maintaining an around the clock active warning system to allow for tissue extractions, 24 hours a day, 365 days a year.

The professionals who are part of the team are:

- Alberto Rábano Gutiérrez, MD. Neuropathologist and Head of Department.
- Elena Gómez Blázquez. Full-time Neuropathology Technician.
- Ana Belén Rebolledo Poveda. Part-time Neuropathology Technician.
- Luis Javier Martín Lentijo. Part-time Neuropathology Technician.
### 3.2.3 Department of Neuroimaging

The CIEN Foundation - UIPA Department of Neuroimaging is managed by the DIM Foundation (Foundation for the Development of Advanced Medical Imaging), which is part of the Center for Biomedical Technology (CTB) established by the Technical University of Madrid (UPM), and encompasses multiple laboratories related to biomedical technology. To conduct its research has the most advanced equipment: a 1.5 Tesla (T) Magnetic Resonance Imaging (MRI), a 3T MRI, a 64-detector CT scanner, a SPECT and a PET chamber. Because of this equipment, the Department participates in projects like IDEA (Project for the Development of Imaging Technology in MCI and AD) through the DIM Foundation, and has initiated collaboration with prestigious centers such as LONI (Laboratory of Neuroimaging, UCLA, USA) and MNI (Montreal Neurological Institute, Canada).

The Department of Neuroimaging, formed by highly qualified professionals, mid-term objective is the development of brain imaging, with particular interest in AD, and therefore is concerned with:

- The promotion and development of research projects in the field of neurodegenerative diseases with special interest in AD and related dementias.
- The acquisition and post-processing of MR images for the development of research projects.
- Spreading knowledge of neuroimaging techniques related to neurodegenerative disorders.
- The training of professionals in the field of obtaining, post-processing or interpretation of advanced neuroimaging.

This group of experts in-house serves UIPA both by studying CAFRS Day Center patients as well as by supporting the development of research projects from other departments. Furthermore, it participates in other external research projects in two of the most relevant clinical trials related to the development of vaccines against amyloid deposition, receiving patients from Madrid most relevant Dementia Units.

Regarding the contributions generated by the technological equipment used in this Unit, the following can be highlighted:

- Development of an MRI-compatible olfactory activation system, an olfactometer for which a patent in collaboration with Rey Juan Carlos the University has been filed.
- Development of a 3-Tesla MRI-compatible EEG system that allows monitoring functional studies and getting multimodal information during the performance of functional Magnetic Resonance Imaging (fMRI).
- Development of own MRI sequences for obtaining magnetic susceptibility images that will be useful to detect micro-hemorrhages in patients with cognitive impairment, as well as maps of iron deposits that can detect early changes in Alzheimer’s disease and Parkinson’s disease.

At the same time, our effort to develop new tools that promote technical and technological improvement of the Unit remains ongoing, such as:

- An automated system (Alz-Tools) capable of handling MRI data and send them to a measurement system that allows for an automated results report that will be available to investigators through a database.
- An analysis expert system using artificial intelligence techniques (DIGNA) that allows for obtaining online the risk percentage of...
developing Alzheimer’s disease over the Internet. This Department has been a pioneer in presenting a program that employs over 50 variables across four different markers simultaneously obtained using 3T MRI: volumetry, DTI, ASL and spectroscopy. The results were presented at the European Congress in Vienna on March 2011.

**Major Achievements**

Among the major achievements of 2011 is worth mentioning the participation in 26 research projects and two clinical trials, besides the launching of the normal aging project, “Vallecas Project”, with all that entails: elaboration of a protocol for image acquisition, analysis and validation of the different acquisition techniques in post-processing laboratory.

Regarding its work in supporting other UIPA research projects, the Department of Neuroimaging has provided preliminary results of samples of 257 subjects (UIPA, Dr. Dobato), and 86 subjects (UIPA, Dr. Olazarán). Likewise, the evaluation and follow-up process of the CAFRS residents has continued successfully.

It is also noteworthy the quantification of perfusion with different Arterial Spin Labeling techniques, as well as the incorporation to the team of Adrián Martín, a computer engineer and mathematician, fellow of the University Rey Juan Carlos of Madrid.
Other relevant results

The DEMCAM project concluded in 2011 with relevant results. It was found that 3T MRI obtains better data than conventional MRI: structural studies confirm that markers of atrophy are the most efficient to assess neurodegeneration and 3T MRI produces better functional studies and spectroscopy. In addition, all groups studied have been classified correctly and it was found that the combination of multiple markers significantly increases image sensitivity and specificity.

Volumetric studies conducted on patients admitted to the CAFRS have provided significant results, despite being patients with advanced Alzheimer’s disease with its associated complications. Moreover, results obtained in another Volumetry study carried out on subjects with Mild Cognitive Impairment was awarded as the best paper at the International Congress on Controversies in Neurology held in Prague. For the purposes of number of visits, in 2011 this figure reached 1022 visits and the number of studies amounted to a total of 5738.

Research projects

In 2011 the Department of Neuroimaging participated in 26 research projects, a 24% increase over 2010, 6 of which have been already completed and 20 are still ongoing.

Projects completed in 2011 include the following:

1. “Multidisciplinary parametric study of working memory deficits in normal aging”. Education

<table>
<thead>
<tr>
<th>Number of subjects submitted to MRI in 2011</th>
</tr>
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<tbody>
<tr>
<td>FMRIN-QA</td>
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<tr>
<td>VALLECAS PROJECT</td>
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<td>WYETH</td>
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<tr>
<td>SENI-FOOD</td>
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<tr>
<td>DEMCAM LONG</td>
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<tr>
<td>FRONTOPARIETAL NETWORK</td>
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<td>HIERRO EM</td>
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<td>OLFACTOMETER</td>
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<td>IMAGING LABORATORY</td>
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<tr>
<td>ULLY</td>
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<tr>
<td>COURSE</td>
</tr>
<tr>
<td>MIGRAINES</td>
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<td>CLOZAPINA-1</td>
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<tr>
<td>EEG+RM</td>
</tr>
<tr>
<td>OPTIMISE_BRAIN</td>
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<tr>
<td>UIB_EMOCOG</td>
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<tr>
<td>ORTHOSTATIC TREMOR</td>
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<tr>
<td>MOUSE-FERRATIN</td>
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<td>PRIMING UNED</td>
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<td>CIEN</td>
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<tr>
<td>TORRES/CAJAL</td>
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<tr>
<td>MARCOS RIOS</td>
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<tr>
<td>MEC</td>
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</tbody>
</table>
3. SCIENTIFIC ACTIVITY OF THE UIPA


2. “Quantification by magnetic resonance spectroscopy of the relationship glutamate/glutamine in the occipital cortex as migraine pathogen determinant”. Principal Investigator: J. González de la Aleja.


4. “Longitudinal study of iron deposition in deep gray matter by MRI, brain atrophy and clinical progression in patients with relapsing remitting and secondary progressive multiple sclerosis”. Principal Investigator: Cristina Guijarro Castro, neurologist and Ana Ramos, neurologist. 12 de Octubre University Hospital, Madrid.


Projects that have continued running for 2011 are:

1. Project: “High Field Neuroimaging Study for detection of the pathways involved in the genesis of tremor in different pathogenic model of neurodegenerative diseases” Principal Investigator: Dr Alvaro Sánchez Ferro. 12 de Octubre University Hospital, Madrid. 2011-2012.


4. MRI studies with brain preparations, together with the Unit of Pathology. J. Alvarez- Linera y A. Rábano.

Classification of studies conducted in 2011

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>153</td>
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<tr>
<td>Functional studies</td>
<td>1024</td>
</tr>
<tr>
<td>ASL</td>
<td>398</td>
</tr>
<tr>
<td>Diffusion Tensor</td>
<td>528</td>
</tr>
<tr>
<td>Various sequences</td>
<td>1904</td>
</tr>
<tr>
<td>Spectroscopy studies</td>
<td>866</td>
</tr>
<tr>
<td>Volumetry</td>
<td>845</td>
</tr>
</tbody>
</table>
5. Project: "Dopamine - dopaminergic modulation for incorporating rules in populations with psychotic episode or risk for developing bipolar disorder or schizophrenia." Principal Investigator: Margarita García Amador. Gregorio Marañón Hospital Foundation for Biomedical Research.


Also, the Laboratory of Neuroimaging is conducting the following funded research projects:

3. SCIENTIFIC ACTIVITY OF THE UIPA


Collaboration agreements

In 2011 the Department of Neuroimaging has signed or renewed collaboration agreements with national and international universities and research centers, among which are the following:

- Department of Intelligence and Personality, UAM Faculty of Psychology.
- Department of Electronics and Communications Engineering, University of Zaragoza.
Additionally, the area of Neuroimaging has agreements with:

- LONI (Laboratory of Neuro Imaging, UCLA, USA).
- MNI (Montreal Neurological Institute, Canada).
- CTB. Development of technologies for the study of dementias.
- UCM Department of Human Anatomy: 3D Brain Atlas.
- UAM Department of Morphology / CSIC: animal models.
- UAM Department of Psychology. Brain Morphometry.
- URJ Department of Medical Imaging: image post-processing.
- Maudsley Hospital: ASL.
- Alberto Sols Institute: In vitro Spectroscopy.
- Ruber Internacional Hospital: PEC-CT, TAC 64 d.
- Doce de Octubre de Madrid Hospital: Radiology Service - training of residents.
- AFAL: volunteering for research and applications.
- GE: research support.
- Spanish Association of Technicians in Radiology: collaboration in training courses for technicians and dissemination.
3. SCIENTIFIC ACTIVITY OF THE UIPA

Future projects

Progress in the areas of research, training, streamlining and available resources are seen as key to the growth of this department in the future.

Regarding advancement in the area of research it is worth highlighting the increase in the number of publications, as well as the increasing number of collaborative research projects and partnerships with relevant institutions generated nationally and internationally.

Among the research projects to be developed in the near future are the following:

- Support to research projects from other UIPA units.
- Project with the Cajal Institute on transgenic mice.
- Project on PET-ASL correlations in Alzheimer’s disease.
- Collaboration with General Electric to develop specific techniques for protocols in dementia studies.
- Continued collaboration with the M+VISION program between MIT and CAM.

In terms of training, the Neuroimaging Unit proposes the following goals:

- New edition of the “Theoretical and Practical Course in Functional Magnetic Resonance and Spectroscopy for technicians”.
- New edition of the course “Theoretical and Practical Course in neuroimaging with MRI”
- New course on “Medical Imaging Analysis and Post-processing” for engineers, physicists and / or computer engineers.
- Continue with training in functional imaging for neuropsychologists from the laboratory and collaborators in the various projects.
- In addition, a platform to perform on-line courses it is being set up that will provide comprehensive training material to all researchers who wish so.

Finally, it is noteworthy the consolidation and growth of a working group that contributes to development in the UIPA of a Centre of Excellence that meets the requirements to participate in the Joint European Programming that will begin in 2012, which will make possible to position Spanish research on Alzheimer’s disease in the European scientific frontline.

With regards to the optimization and improvement of processes as well as technical and technological resources, the future challenges are the following:

- Consolidation of a permanent storage system, as well as the database and results of each study.
- Development and improvement of MRI procedures in brain preparations, in collaboration with the Unit of Pathology.
- Setting up a supercomputing cluster system for analysis and post-processing of medical images.
- R & D in mathematical modeling for problem-solving and post-processing medical image acquisition.
- Further development of the Olfactory Stimulation Team, as well as the procedure and protocol for functional studies.
- Development of new sequences of image acquisition for MRI equipment. EPIC environment.
- Automating post-processing tasks such as segmentation, functional studies, etc.
Creating an in-house template or cerebral model of elderly subjects for use in post-processing.

Creating a software for measurements of T2 maps.

Completing the ongoing doctoral thesis of the following lab members:


Training

Over 2011 this department has been very active in organizing and participating in various training activities, including courses and seminars. In addition, this year two PhD dissertations were presented:

- Virginia Mato Abad, “Multimodal Integration of Biomarkers in Magnetic Resonance to Aid Diagnosis of Neurodegenerative and Neurological Diseases”. European PhD Program.
3. SCIENTIFIC ACTIVITY OF THE UIPA

Supervisors: Juan Antonio Hernández Tamames, Javier Pereira. University of La Coruña. Faculty of Informatics.


The participation of UIPA researchers in collaborative projects with other public or private R&D institutions has also been relevant this year, including two visits abroad:

Investigator: Ana Beatriz Solana Sánchez. Institution: King’s College London. Type: University. Place: London, United Kingdom. Starting date: January 17, 2011, 6 months. Aim: Doctoral thesis. Tasks:

1. Development of a spiral sequence for fMRI: code and reconstruction.
2. Getting acquainted with the ASL-BOLD sequence of UCSD.
3. Simultaneous recording synchronization in EEG/fMRI in CNS - King’s College.


Three courses have been organized by the UIPA Neuroimaging Unit and its personnel has actively participated in other 20 courses held in the CIEN Foundation and 13 outside these premises. Neuroimaging-organized courses have been the following:


The following courses have been offered at the CIEN Foundation premises:


3. SCIENTIFIC ACTIVITY OF THE UIPA


The following seminars have been held outside the CIEN Foundation:


6. Hernández Tamames, J.A. Speaker. “Model and y Experience of the Medical Imaging Analysis and Biometrics Laboratory (LAIMBio) of the Rey Juan Carlos University, Madrid”. Session: Neuroimaging Platform. Marqués de Valdecilla University Hospital, April 2011. [in spanish]


### Team

During this year, 38 people have composed the CIEN Foundation Department of Neuroimaging team, 4 of which are hired directly by the Foundation, while the rest of the staff is funded by the DIM Foundation. The personnel hired by the CIEN Foundation is the following:

- Eva Alfayate Sáez. Full time Technical coordinator of the Neuroimaging Area. Advanced Technician in Diagnostisct Imaging.
- Arantza Narciso Perianes. Part-time Administrative Assistant.
- Felipe García Fernández. Part-time Advanced Technician in Diagnostisct Imaging.
- Corina Ghinea. Part-time Administrative Assistant.

The remaining staff is financed by the DIM Foundation and carry out its technical and clinical activities within the Unit facilities in the CIEN Foundation but, in order to have greater availability, in some cases it may intervene in remote mode. Here are the functional profiles of the team members with part-time involvement:

- Dr. Juan Alvarez-Linera. Radiodiagnostics specialist. Director of the Department of Neuroimaging.
- Ana Ramos González, MD. Neuroimaging clinical coordinator.
- Dr. Marcos Ríos Lago. PhD in Psychology and Head of the Functional Imaging Area in the Department of Neuroimaging.
- Julián Benito, MD. Responsible for dissemination and publications of Neuroimaging.
Personnel of the Medical Imaging Analysis Area
- Juan A. Hernández Tamames, PhD. Director of the Laboratory of Medical Imaging Analysis.
- Norberto Malpica de la Vega, PhD. Associate Professor, Rey Juan Carlos University.
- Juan F. Garamendi Bragado. Computer Engineer by the Technical University of Madrid.
- Pablo García-Polo García. Telecommunications Engineer. Research fellow on various Neuroimaging projects.
- Gonzalo Pajarés Giménez. Telecommunications Engineer involved in various Neuroimaging projects.
- Emanuele Schiavi, PhD in Applied Mathematics. Assistant Professor, Rey Juan Carlos University.
- Susana Borromeo López, PhD. Industrial Engineer by the Technical University of Madrid. Assistant Professor, Department of Electronic Technology at Rey Juan Carlos University.
- Guillermo Luna García. Industrial Engineer by UNED. Electronic Equipment for Neuroscience.
- Daniel García Frank. Computer Engineer by the Autonomous University of Madrid. DEMCAM Longitudinal Project fellow.
- José Angel Pineda. Telecommunications Engineer. Attending the Biomedical Engineering Master at CTB.
- Laura Blázquez. Telecommunications Engineer. Rey Juan Carlos University fellow.

Personnel of the Functional Imaging Area
- Jose Antonio Períañez Morales. PhD in Psychology. Lecturer at Department of Basic Psychology II (Cognitive Processes). Complutense University, Madrid. UIPA researcher.
- Genny Lubrini. BSc in Psychology by the University of Padova (Italy). MSc in Cognitive Neuropsychology by the Complutense University of Madrid.
- Luis Carrefie Aranguena. PhD in Psychology by the Autonomous University of Madrid. Professor of Psychobiology at Autonomous University, Madrid.

Personnel of the Imaging and Cognition Area
- Roberto Colom Marañón, PhD. Head of Imaging-Cognition in Neuroimaging. PhD in Psychology, Professor of Biological and Health Psychology at Autonomous University, Madrid.
- Kenia Martínez Rodríguez. FPU PhD student, Ministry of Science and Innovation, Autonomous University, Madrid. Psychology.

Other collaborators
3. SCIENTIFIC ACTIVITY OF THE UIPA

- Javier Gálvez Cervantes. Advanced technician in Medical Imaging.

**Unit advisors**

- Dr. Belén Frades. Neuropsychologist specialized in cognitive impairment and dementias.
- Dr. Sebastián Cerdán. Advisor of Spectroscopy by MRI, Director of the Alberto Sols Institute.
- Beatriz Calvo Merino. PhD in Psychology, Complutense University of Madrid.

- Department of Psychology, London City University. Institute of cognitive neuroscience (University College London). Join in 2011 as a consultant to the team.
- Dr. Francisco del Pozo Guerrero. Professor of Bioengineering, Director of the Center of Biomedical Technology (UPM). Join in 2011 as a consultant.
- José María Millán Juncos, MD. Radiodiagnóstics specialist, Associate of Neuroradiology at the Radiology Department, 12 de Octubre University Hospital, Madrid.
3.2.4 Department of Laboratory

The UIPA Department of Laboratory focuses on the study of molecular and cellular ethiopathogenic mechanisms that determine the onset of Alzheimer's disease and other neurodegenerative diseases. The main focus, within the context of a multidisciplinary unit oriented to patients such as UIPA, materializes into the study "Biomarkers and susceptibility genes for Molecular Diagnosis of Early Alzheimer's disease and related diseases." For this purpose, the Department's research is closely connected with the activities of the Departments of Neuroimaging, Neuropathology and Multidisciplinary Support Unit and the tissue bank BT-CIEN. The Department also collaborates on various external projects focused on Alzheimer's disease and other neurodegenerative disorders.

In this context, this Department is responsible for developing a bio-bank of fluids and tissues along with the Department of Neuropathology (BT-CIEN) as well as a DNA Bank. For sampling this department works closely with the Alzheimer Center Queen Sophia Foundation (CAFRS), and has the basic equipment and capacities for processing, analysis and proper storage of these samples.

Currently, the department provides the following laboratory samples:

- Plasma, serum, saliva and DNA from CAFRS patients and healthy volunteers who participated in various research projects, such as the Vallecas and the VIBRA projects.
- Samples of cerebrospinal fluid from BT-CIEN brain donors.
- Postmortem skin samples from BT-CIEN donors, under the project "Peripheral molecular alterations in Alzheimer's disease and assessment of their utility as biomarkers by skin biopsy".

Results in 2011

During 2011 a total of 475 biological samples have been collected, between blood and blood derivatives, cerebrospinal fluid (CSF) and saliva samples and buccal epithelium, which represents a 26% increase over 2010. This increase in the number of samples processed is due mainly to the addition of samples from individuals who participated in the Vallecas project and the donations made by the BT-CiEN.

Therefore, the laboratory has available:

- Samples of blood and derivatives of 198 patients from CAFRS (including 94 people subjected to multidisciplinary studies).
- Blood samples of 118 volunteers and derivatives from the Vallecas Project.
- Samples of cerebrospinal fluid (CSF) of 109 brain donors from BT-CIEN.
- Blood and derivatives of 50 volunteers from the 12 de Octubre Hospital (VIBRA project, Drs. Toledano and Carmona, CSIC).

The CIEN Foundation Laboratory Department has the adequate technology for the processes of collection, processing, storage and preservation of samples. Thus, for example, samples of blood and blood derivatives, such as lymphocytes, after completing a processing protocol are stored at -80°C to ensure its adequate preservation and be able to respond to requests for transfer of samples from different research groups. Furthermore, APOE genotype information, a risk factor for Alzheimer's disease, is available for samples of all patients who have given informed consent for genetic studies. Another element that differentiates the biological sample bank coordinated by the Laboratory Department is the availability of samples obtained from the same patient at different time points during disease progression. In the majority of
patients from CAFRS, 5-6 samples collected every six months coinciding with neuropsychological and neuroimaging evaluations carried out to inmates of the Centre are available. This comprehensive patient monitoring allows researchers to advance knowledge of Alzheimer's disease.

**Transfer of samples**

The Laboratory Department makes available to the scientific community the biological samples obtained from both patients as healthy individuals who have participated in a project at the CIEN Foundation. In addition, we also provide technical and logistical support to the scientific groups which so request it, such as Biocross, or the 12936A Lundbeck study, among others. Thus in 2011 the following samples have been transferred:

- 25 DNA samples to IRB Barcelona (Dr. E. Soriano) and 20 to the Carlos III Institute of Health (Dr. M. Calero).
- 65 samples of whole blood and derivatives to the collaborative project VIBRA (Dr. A. Toledano).
53 samples of blood and derivatives, to the project "Development of a biomarker system for Alzheimer's disease" (Collaboration Agreement Biocross SL - CIEN Foundation).

Other achievements

During 2011, the Department of Laboratory has continued to promote the collaborative network with other institutions and research groups. In particular, this year we have established an international collaboration focused on the study of various neurodegenerative diseases. In this context, a consortium of research groups in Europe and around the world coordinated by Dr. Inga Zerr (Germany) has been formed to address:

- The harmonization of protocols needed for collecting patient information, processing of biological samples, and biomarker assays.
- The standardization of a more accurate diagnosis of dementia patients by biomarker analysis.
- The establishment of uniform protocols in different Spanish clinical centers for neuroimaging studies as well as sample collection and analysis of biomarkers in Alzheimer's disease.

This project will begin during 2012 as a European coordinated project Neurodegenerative Disease Joint Programming - Transnational Call for Research Proposals 2011 ("Neurodegenerative Diseases - a call for European research projects for the optimization of biomarkers and harmonization of their use between their clinical centers").

Research projects and studies

During 2011 we have continued to carry out the three research projects previously launched relevant to Alzheimer's disease. In addition to those described below, and as stable structure within CIBERNED cooperative research, Dr. M. Calero collaborates in the UIPA-ISIIIII research team composed by the groups of Drs. Jesús de Pedro Cuesta (IP) and Pablo Martinez Matin.

Ongoing projects

- "Identification of blood markers for the multiparametric diagnosis Alzheimer's disease." Biocross S.L.
- VIBRA project for the identification of blood biomarkers by vibrational spectroscopy (FTIR and Laser Raman). CSIC, Doce de Octubre Hospital, 2009-2012.

Future projects

The Laboratory Department is scheduled to begin collaborating on the following research projects:

- Participation on the CIBERNED Collaborative Project "SIGNAL" focused on the establishment of uniform protocols in different Spanish clinical centers for neuroimaging studies as well as sample collection and analysis of biomarkers in Alzheimer's disease.
- Within the context of a European coordinated project (Joint Programming on Neurodegenerative Diseases - 2011 Transnational Call for Research Proposals ("Neurodegenerative Diseases - a call for European research projects for the optimization of biomarkers and Harmonization of use Between Their clinical centers").
3. SCIENTIFIC ACTIVITY OF THE UIPA

Other research activities

In addition to those described above, the Department of Laboratory has undertaken the following actions:


- Establishment of the association of PRNP gene as a risk factor in EA and description of their interaction with the APOE gene.

- Analysis of genetic variation in the tau phosphorylation pathway as potential risk factors for AD (Collaboration with Marqués de Valdecilla Hospital Foundation, Santander).

- Establishment of analytical methods of amyloid and amyloid-related proteins through biophysical techniques (FTIR and circular dichroism).
Analysis of the potential diagnostic value of infrared spectroscopy in peripheral lymphocytes from AD patients.

Team

In 2011 the Department of Laboratory maintained its human resources structure and employment conditions of each of the three researchers who comprise this area: one researcher is hired directly by the CIEN Foundation, and two employees perform their duties as external collaborators of the department.

The team members are:

- Ana Belén Pastor, laboratory technician hired by the CIEN Foundation.
- Miguel Calero Lara, PhD, scientific collaborator at the CIEN Foundation and department coordinator.
- Olga Calero Rueda, CIEN Foundation scientific collaborator.

Training: courses and seminars

The following seminars and courses have been taught by the Department of Laboratory during 2011:

- "Molecular pathology of prion diseases: a new paradigm for neurodegenerative diseases?". A. Rábano and M. Calero. Seminars. Department of Molecular, Cellular and Developmental Neurobiology, Cajal Institute, CSIC. September 2011. [in spanish]
- "Diagnosis: Diagnostic criteria and biomarkers." M. Valenti and M. Calero. II Training Course on multidisciplinary neurodegenerative dementias. Organized by the UIPA Research Unit (Alzheimer Project, CIEN Foundation-Queen Sophia Foundation) and UNED (Department of Basic I and Group CEEN). UIPA-Queen Sophia Foundation. September 2011. [in spanish]

Besides those mentioned above, the Department of Laboratory also participates in the following activities:

- Evaluator of scientific project applications for the U.S. Alzheimer’s Association. 2005-present.
- Evaluation of project applications for ANEP.
3. SCIENTIFIC ACTIVITY OF THE UIPA
Science and social communication

4.1 Publications
4.2 Scientific meetings and conferences
4.3 Social communication and awards
4.4 Presence in Media
4.5 Presence on social networks
4. SCIENCE AND SOCIAL COMMUNICATION

One of the CIEN Foundation’s objectives is advancing research on neurological diseases, for which actively supports research on these issues through the promotion of research groups, sectorial initiatives, seminars, etc. in the UIPA. The scientific production of the Foundation is backed up by the support offered by the Ministry of Science and Innovation, through the Carlos III Institute of Health. The Foundation also encourages collaboration with other institutions and research groups so that key insights into advances in neurodegenerative diseases are exchanged. Over 2011 CIEN Foundation-UIPA professionals have generated numerous and growing contributions to the scientific community, with important inputs from collaborations with specialized equipment, media publications, books, scientific articles, conference papers and seminars.

4.1 Publications

A total of 59 articles were published during 2011. Out of these, 40 were published in international journals, 4 in national publications and 15 were books or book chapters.

International Publications

- Leentjens AF, Dujardin K, Marsh I, Richard IH, Starkstein SE, Martinez-Martin P. Anxiety rating


Reichmann H, Cooper J, Rolfe K, Martinez-Martin P. Sleep duration and “on” time during different periods of the day and night in patients with advanced Parkinson’s disease receiving adjunctive ropinirole prolonged release. Parkinson Dis 2011: 354760.


4. SCIENCE AND SOCIAL COMMUNICATION


Distribution of publications

- International
- National
- Book chapters

National Publications


Books and book chapters


Lorea Conde I, Llanero Luque M, and Rios Lago M. “Aportaciones de las técnicas de Neuroimagen a la comprensión y tratamiento de las adicciones”.


4.2 Scientific meetings and conferences

Participation in national and international conferences, exchange of medical knowledge and advances on neurodegenerative diseases with other research groups, is critical to develop research projects. For this reason, the CIEN Foundation-UIPA professionals annually participate in multiple conferences, committees and collaborative networks that allow them to stay at the forefront of the research. Scientists at the CIEN Foundation-UIPA have actively participated in various national (22 papers and communications) and international (76 papers or communications) conferences and symposia. They also attended 17 scientific meetings and were involved in a number of scientific committees, expert panels, etc.

**National Conferences and Symposia**

of processing speed, verbal skills perceptual interference, motor inhibition, cognitive flexibility and working memory”. IV Congress of the Federation of Spanish Associations of Neuropsychology (FANPSE). Valencia. October, 2011.


Dissemination activities of the CIEN Foundation-UIPA professionals

- Publications
- National Conferences
- International Conferences
- Scientific Meetings
- Scientific Committees
Martínez Martín P. Chair: Non-motor features of Parkinson’s disease cognition. 15th Congress of the Movement Disorder Society, Toronto, Canada, June 2011.

Martínez Martín P. Chair: Guided poster tour 4 – Rating scales and assessment tools. 15th Congress of the Movement Disorder Society, Toronto, Canada, June 2011.


Froufe M, Cruz I, Sierra B, Olazarán J. Deterioro de los procesos atencionales en la enfermedad de Alzheimer. XXXIII Congreso Interamericano de Psicología. Medellín, Colombia, June, 2011.
4. SCIENCE AND SOCIAL COMMUNICATION

- Martínez-Martín P. Therapy adherence in Parkinson’s Disease. 10th International Forum on Parkinson’s Disease. Viena, Austria, April 2011.


National Scientific Meetings


Scientific Committees and other positions

※ Agüera Ortiz L. Member of the Spanish Society of Psychogeriatrics Management Board, since October 2007.
※ Rábano A. Member of the Scientific Committee of the II National Congress on Prions. Madrid, December 2011.
※ Martínez Martín P. Member of the Congress Scientific Program Committee of the Movement Disorder Society (2010-2014).
※ Martínez Martín P. Founder Member and Principal Investigator of the international collaborations Non-Motor Symptoms Group and EUROPAR.
※ Martínez Martín P. Coordinator of the Movement Disorder Society Task Force for review of quality of life scale in Parkinson’s disease (2010-2011).
※ Martínez Martín P. Member of the Steering Committee of the Movement Disorder Society Task Force for rating scales in Parkinson’s disease (desde 2011).
※ León-Salas B. Expert Panel on Senior Caregivers Programs. Carlos III University, Getafe, April 2011.
※ Álvarez-Linera J. Experimental teaching collaboration at Department of Anatomy and Human Embriology UCM, Madrid, February 2, 2011.
※ Álvarez-Linera J. Director of the National Course on Neuroradiology.
※ Benito León J. Associate Editor of the Journal of Alzheimer Disease.
※ Hernández Tamames JA. y Malpica N. Biomedical imaging training program from Massachusetts Institute of Technology (MIT) and Community de Madrid.
※ Hernández Tamames JA. Member of the Management Committee of the European COST Action, “ASL in dementia”.
※ Ramos González A. Member of Neuroradiology of the VI National Congress of Radiology.
※ Ramos González A. Secretariat of the Spanish Society of Neuroradiology (SENR).
※ Ramos González A. Chairperson of the Neuro-oncology group of the Spanish Society of Neuroradiology (SENR).
※ Ramos González A. Reviewer of the Neuroradiology section in the journal “Radiología”.
※ Ramos González A. Secretariat of the Committee on New Technologies. 12 de Octubre Hospital de Madrid.
※ Ramos González A. Session moderator at XIX Neuroradiologic Symposium (European Congress associated to the World Congress on Neuroradiology). Bologna, Italy. October 4-9, 2010.
4. SOCIAL MARKETING AND AWARDS

4.3 Social marketing and awards

**International Year of Research on Alzheimer’s and Neurodegenerative Diseases**

In 2011, the Queen Sophia Foundation, the Ministry of Economy and Finance, the Ministry of Health and Social Policy, the Ministry of Science and Innovation, the Pasqual Maragall Foundation, the CIEN Foundation and the Carlos III Institute of Health (ISCIII) signed a collaboration agreement by which a Consortium was established. This enabled the promotion of the project “International Year of Research on Alzheimer’s and neurodegenerative diseases”: Alzheimer’s International 2011”.

This initiative, implemented to foster research on Alzheimer’s disease and related neurodegenerative diseases, relying on the creation of synergies and the “combined efforts” as backbones of the program, could be described as a resounding success.

Its implementation has placed Spain as one of the pioneering European countries to promote specific international initiatives and public-private partnerships where the role of research has been fundamental, according to the demands and recommendations from the European Union. All Consortium activities throughout the year 2011 have had a clear objective: to raise funds to promote research into the most prevalent neurodegenerative disease: Alzheimer’s Disease. The events culminated in the Global Alzheimer’s Research Summit, held on September 22 and 23, a scientific meeting which brought together researchers from all over the world at the Convention Centre in Madrid. The aim of the Summit was to exchange information, ongoing research lines and possible advances in research on neurodegenerative diseases in general and Alzheimer’s disease in particular.

**“Christmas Tree of Memories”, in collaboration with the Caja Madrid Social Project**

To mark the Alzheimer’s International Year 2011 and along with the “Memory Bank” campaign conducted by the Queen Sophia Foundation, in late 2011 the CIEN Foundation started the initiative called “Christmas Tree of Memories”.

This initiative, sponsored by the Caja Madrid Social Project and supported by journalist Irma Soriano, was designed with two objectives: encouraging citizens’ involvement in the “Vallecas Project”, one of the current ongoing research projects for early diagnosis of Alzheimer’s Disease in the UIPA, and raising funds for the project.

Thus, under agreement with this institution, the Caja Madrid Social Project donated 1 euro for each memory donated to the tree (either personally at Queen Sophia Foundation the Alzheimer Center or

![Image of the Christmas Tree of Memories](image-url)
by posting a message through Twitter to hashtag #recuerdo solidario).

The successful participation and involvement of Caja Madrid Social Project, whom joined Queen Sophia Foundation and AFALConfío, has expanded the number of volunteers to participate in the “Vallecas Project” from the 200 people initially foreseen in the pilot study up to over 1,000 participants. Expanding the critical mass will allow researchers to obtain more conclusive results.

**The BT-CIEN, awarded as one of 100 Top Ideas of the Year by Actualidad Económica**

The CIEN Foundation Tissue Bank was awarded by the Actualidad Económica magazine as one of the best ideas of the year 2011 within the category of Health. With these awards, Actualidad Económica, the oldest economic and business information magazine in Spain, published by Unidad Editorial, publisher of other media outlets such as El Mundo, Expansión or Marca. This award honors institutions and companies for their commitment to innovation, which translates into products or services presented in 2010 aimed at improving the quality of life of society or its customers.

The award ceremony, held on April 28, 2011 in Madrid, was attended by Dr. Alberto Rábano, neuropathologist of the CIEN Foundation and Director of BT-CIEN, and María Ángeles Pérez, Managing Director of the CIEN Foundation.
4. SCIENCE AND SOCIAL COMMUNICATION

4.4 Presence in Media

In 2011, the CIEN Foundation has increased its presence in media. The Foundation's entrenchment as a leader in the sector, is shown by an increase in the number of impacts, reflecting its growing position as a point of reference for neurological disease-related issues and, in particular, Alzheimer's.

Information about Health and Science research in Spain is released in media through the CIEN Foundation. The Communication Department works closely with journalists and focuses its activity on highlighting the importance of research to advance knowledge about neurological diseases.

During 2011 the number of media appearances has increased up to 979, by 24.1% compared to the previous year: 841 in press (paper and Internet) and 138 on radio and television.

Press Clipping in 2011

- Press: 841
- Radio: 44
- Television: 94
In the Alzheimer’s International Year, the CIEN Foundation has decided to enhance its presence on social networks by creating multiple profiles in September 2011. The impact on social networks has been as follows:

**Facebook:**
https://www.facebook.com/FundacionCIEN. In December 2011 it reached 300 "I Like". Visits to publications increased from 6,925 in October up to 18,035 in November and up to 26,736 in December 2011.

**Twitter:**
@ Fund_CIEN. In December 2011 it counted on 1,717 followers interacting and posting about 549 monthly re-tweets and mentions increasingly raised from 1,145 in October to 1,443 in November and up to 1,802 in December.

**LinkedIn:**
We have created our business profile and are currently publishing on various groups addressing a more specialized audience.