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COVER IMAGE
Histone, neurofilament H and glial fibrillary acidic protein staining of rat brain.

Courtesy of Zeiss Microscopy and Michael W. Davidson, Florida State University, US
EDITORIAL

Dear Network Members, Colleagues and Friends,

It is my great pleasure to introduce the 2015 Annual Scientific Report of the European Institute for Biomedical Imaging Research (EIBIR). This year has been an especially successful and productive one, and I hope you will enjoy reading more about the year’s events in this report.

March 2015 marked my first year as Scientific Director of EIBIR, during which we continued our work on the EU-funded projects Euro-BioImaging, VPH-PRISM, MITIGATE and VPH-DARE@IT. Of course, we also continued to support proposals for further calls under Horizon 2020, and I am pleased to say that the second year of my tenure as Scientific Director has been exceptionally fruitful so far, with the grant agreements for four new Horizon 2020 projects signed, all of which benefitted from EIBIR’s proposal preparation services and expertise. This is a major achievement considering the low success rate for Horizon 2020 proposals and proves just how valuable EIBIR’s work has become to the field of biomedical imaging research. We look forward to taking up our new roles in these projects and I hope you will read more about them in this report.

I am honoured to lead EIBIR as we reach its tenth year of supporting research with a large portfolio of EU-funded research projects, all of which depend on biomedical imaging research. Despite having a busy time ahead of us, we are determined to continue to offer our full support to our more than 150 Network Members from 22 countries. There are still many opportunities available for European research funding with many upcoming calls of relevance to the biomedical imaging community. Given the invaluable experience and success EIBIR has gained within Horizon 2020 so far, we aim to have even more projects in our portfolio in next year’s Annual Report.

I am also grateful to our industry members for their continuing support which has certainly contributed to our success and allowed us to submit research proposals that address the European Commission’s strong focus on innovation and growth. Our SME platform has proven to be an especially valuable asset in this regard, as a great deal of Horizon 2020 funding is earmarked for small-to-medium sized enterprises.

Along with our success, we have also taken steps to increase and enhance the services EIBIR offers to researchers. EIBIR’s new Virtual Clinical Trial Unit, coordinated by Prof. Myriam Hunink from Erasmus Medical Center Rotterdam, the Netherlands, was launched in order to ease the administrative burden and complexity inherent in setting up a clinical study. I have no doubt that this new service will prove highly popular as it is precisely the kind of service that makes EIBIR so valuable, taking care of day-to-day management and red tape so scientists can focus on the science.

Creating new opportunities for partnership and finding new ways to boost biomedical imaging research remain key priorities for EIBIR. With that in mind, we expect to collaborate with the European Imaging Biomarkers Alliance (EIBALL) and lend our expertise and services to open up new opportunities for research in the field of imaging biomarkers.
Because we support researchers from all over the world, communication is vital to our success. This year EIBIR took further steps to enhance communication within the organisation and with the wider scientific community. We now have a dedicated online forum, where members of our international Scientific Advisory Board can exchange ideas and contribute their expertise, allowing us to respond quickly to queries concerning potential research ideas and ensure that our scientific experts are constantly involved in and informed of the latest European research developments. EIBIR now also uses social media channels to reach out to a wider scientific community and inform them about the services we offer. This is important given the emphasis placed on multidisciplinary research by the European Commission and EIBIR’s presence on Twitter, LinkedIn and Facebook is yet another way of connecting with other disciplines.

I would like to thank all of EIBIR’s shareholder organisations for their continued support and all the Network Members for their active involvement in EIBIR’s activities. I strongly encourage EIBIR Members to take full advantage of the benefits of being in the EIBIR Network; bring us your research ideas and work with us to make them a reality.

Yours sincerely,

Gabriel Krestin
THE EIBIR NETWORK

The EIBIR network has established itself as a vital link for the participating organisations. Our network is open to institutions from all disciplines with an interest in biomedical imaging and welcomes bottom-up initiatives and active involvement.

Our 157 network members represent a variety of different imaging fields from 22 countries. There are three types of network membership – active, regular and associate – with varying services included.

<table>
<thead>
<tr>
<th>Membership fee per calendar year</th>
<th>Active €1000</th>
<th>Regular €200</th>
<th>Associate €100</th>
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<tr>
<td>Free proposal writing support</td>
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<td>Assistance in consortium building</td>
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<td>Meeting organisation</td>
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<tr>
<td>Participation in EIBIR Joint Initiatives</td>
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<td>Publish in the EIBIR newsletter</td>
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<td>Use of EIBIR umbrella and label for your activities</td>
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<tr>
<td>Eligibility for the EIBIR Scientific Advisory Board</td>
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<td>Quarterly EIBIR newsletters with updates on funding</td>
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<tr>
<td>Access to the EIBIR Members Network</td>
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<td>Post job openings on the EIBIR Career Forum</td>
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<tr>
<td>Access to/post research events in the EIBIR calendar</td>
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The EIBIR network is built upon the strength of its members, and we would like to thank all organisations and individuals who have recognised the importance of becoming involved.

Network Members as of Q4 2015

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<tr>
<th>Service Package</th>
<th>87</th>
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<tbody>
<tr>
<td>Active Service Package</td>
<td>87</td>
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<tr>
<td>Regular Service Package</td>
<td>64</td>
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<tr>
<td>Associate Service Package</td>
<td>6</td>
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<tr>
<td>Total</td>
<td>157</td>
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ORGANISATION

Combining the expertise of our Scientific Advisory Board, advice from our multi-disciplinary shareholder groups, input from the European Society of Radiology Research Committee and recommendations from the Industry Panel, EIBIR benefits from the guidance and support of a multi-faceted organisational structure that ensures EIBIR and biomedical imaging are at the forefront of research activities in Europe.
JOINT INITIATIVES

EIBIR’s six joint initiatives represent interdisciplinary groups working towards a common bioimaging-focused research goal. Each initiative undertakes activities best suited to realising their individual objectives.

Biomedical Image Analysis Platform

The Biomedical Image Analysis Platform represents biomedical image analysis research on a European and international level and aims to establish educational activities in this field.

Through training, collaborative projects, and the creation of a roadmap focusing on the improved interoperability of, and access to, biomedical image analysis tools, EIBIR’s Biomedical Image Analysis Platform plays an active role in shaping the future of biomedical imaging research.

The initiative further plans to build on the success of its imaging summer schools and has initiated preparations for two schools on oncology imaging biomarkers in Valencia, Spain, in 2016 and on neurology imaging in Dubrovnik, Croatia in 2017, respectively. The platform is also actively involved contributing to the European infrastructure project Euro-BioImaging – see page 12 for more info.

Cell Imaging Network

The mission of the Cell Imaging Network is to create an integrated network of chemists, biologists, physicists, computer scientists and physicians who are dedicated to the development and validation of robust imaging tools for in vivo cell imaging. This Joint Initiative aims to promote exchange of knowledge and expertise, along with collaboration between research institutes, universities, medical centres and industries involved in cell therapy and cell imaging research.

The Cell Imaging Network creates synergies to advance in vivo cell imaging. Cell-based therapies have become a major strategy in modern medicine: living cells are transplanted into a patient and are used to fulfil a variety of different purposes, including as an active drug, to replace damaged or degenerated tissue, or as a drug delivery vehicle.

EuroAIM

In response to a need for evidence for the rational use of imaging technology, EIBIR established the European Network for the Assessment of Imaging in Medicine (EuroAIM) to systematically assess radiological technology and seek evidence for its best use in clinical practice.

Recent activities include the publication of 4 systematic reviews and discussions of a potential long-term project on evaluation of existing guidelines on imaging and image-guided procedures.

This Working Group has also been instrumental in the work of the MIPA Study, financially supported by Bayer AG, which is led by EIBIR and Prof. Francesco Sardanelli, director of the EuroAIM Joint Initiative, and has recently reached mid-term enrolment.
**Chemistry Platform**

The Chemistry Platform focuses on the development of imaging probes. The consortium is formed by a core group of five top-class European research teams from Belgium, Italy, the Netherlands, Switzerland and the United Kingdom. The platform devotes special attention to developing initiatives alongside European companies engaged in the production of diagnostic probes for medical imaging.

Pre-clinical collaborations will sharpen the focus of this initiative in order to explore new applications in the field of physico-chemical probes. The key goals of the platform are to contribute to the design and fabrication of innovative imaging probes, and to implement contacts between chemistry groups active in the synthesis of new tracers/contrast agents and biomedical research teams interested in their pre-clinical assessment.

In 2015, the initiative successfully concluded its COST Action TD1004 on theranostics imaging and therapy and is currently working on a new COST application focusing on the design and testing of an imaging probe.

**Paediatric Radiology**

The Joint Initiative for Paediatric Radiology will initiate, facilitate and enhance multi-institutional and multinational research in paediatric imaging, image-guided interventions and radiation protection. It will place a particular emphasis on prospective multi-institutional clinical trials with their origins in paediatric radiology.

**Image Guided Radiotherapy**

Radiotherapy plays an important part in the multidisciplinary treatment of cancer, and treatment modalities in radiotherapy are becoming increasingly sophisticated. In order to increase understanding and improve the benefits of radiotherapy for the patient, there is great need to jointly enhance research activities with specialists in the field of imaging.

The new Initiative for Image Guided Radiotherapy will focus on theranostic imaging in radiation oncology and expects to have its first operative meeting at the ESTRO meeting in April 2016.
**OUR SERVICES**

The European Institute for Biomedical Imaging Research (EIBIR) is a non-profit research organisation founded by the European Society of Radiology and operates in collaboration with other European scientific organisations involved in the field of imaging research. EIBIR supports researchers and industry partners in the coordination of biomedical imaging research throughout Europe and beyond. We offer expert advice, professional project management and coordination, dissemination and exploitation services for international collaborative research projects and clinical studies.

Navigating the rules and regulations of Horizon 2020 while carrying out innovative, first-rate research with partners from across Europe can be challenging. Multidisciplinary and multinational consortia require professional project management to ensure the successful accomplishment of the project’s goals.

By providing non-scientific coordination and management services as a full partner in your consortium, EIBIR relieves you of the administrative burden, allowing you to focus on the scientific aspects, ensuring the best possible outcome for your project.

**EIBIR’s project management services include:**

- Liaising with the European Commission
- Contractual management
- Financial management
- Setting up project governance and administration
- Quality assurance and risk management
- Coordinating the reporting process
- Day-to-day administrative tasks
- Internal consortium communication
- Contact point for consortium partners
- Organising meetings

You can trust us to know when to make minor changes without having to trouble you, but also to know when changes require your consultation.

**Supporting your application and project**

EIBIR can also support the application phase of your project. As a first step, our Scientific Advisory Board with over 30 international experts can provide critical and valuable feedback on the project outline and idea. In this phase, we can advise you on suitable funding opportunities and support you in identifying consortium partners. After consolidation of your consortium and project idea, the EIBIR team can offer the following services:

- Call-specific templates with detailed descriptions and input requirements
- Advice on project governance, management and work package structures
- Depending on EIBIR’s role, we can complete the project governance and management sections, financial sections, and dissemination sections
- Support in defining and writing the impact of your project
- Critical reading and feedback from a team of experienced scientific writers with knowledge of the European Commission’s requirements and the European research landscape

During the project’s lifetime EIBIR can act as project coordinator, or as a consortium partner. In our role we will coordinate the project, lead the project management and/or handle dissemination efforts. We will provide documentation and guidelines to facilitate a smooth and efficient start to the project. In addition to its project management services, EIBIR will act as the central contact point for all project partners for administrative matters.
Communication
A large part of any international research project is good internal and external communication. We can facilitate smooth internal communication by organising meetings (electronic or face-to-face) or by setting up an online communication platform. For external communication purposes we can develop the project’s visual identity and online presence, including frequent news updates to engage with various target audiences and a strong representation in social media. More importantly, EIBIR can assist in defining a well-structured, comprehensive and effective communication strategy. Such a strategy will outline all dissemination activities and ensure that the audience is listening and engaged.

Dissemination and exploitation
EIBIR offers effective dissemination activities and exploitation support to maximise the impact of research projects. Our experience will increase your project’s visibility and reach.

We have an established, extensive network for dissemination. Through the broad landscape of our Network Members, Shareholder Organisations, including the European Society of Radiology, Joint Initiatives, industry partners, patient advisory groups and media contacts, your research will be widely and rapidly communicated. Our dissemination services include:

- We can interact with the scientific community and the general public
- EIBIR can organise seminars, meetings and workshops
- Our staff can represent your project at relevant scientific meetings and public events
- We can prepare dissemination materials including flyers, posters and press releases presenting project results
- EIBIR can organise capacity building tasks, such as end-user training or summer schools

Planning and carrying out dissemination
During the preparation of your project proposal, EIBIR can take on the development of a dedicated work package on dissemination detailing the dissemination plan and all upcoming dissemination activities with specific target audiences.

From the beginning of the project, EIBIR will carry out all dissemination activities. We will develop dissemination methods and material targeting specific audiences, for instance a brochure for patients or a dedicated workshop for scientists or physicians. All activities are carried out in consultation with you. We are aware of the sensitive nature of scientific intellectual property and no information will be released without prior consultation.

Joint Initiatives
EIBIR currently supports seven Joint Initiatives which represent interdisciplinary groups working towards a common bioimaging-focused research goal.

Specific activities within the Joint Initiatives include the initiation and coordination of collaborative research efforts, organisation of workshops and symposia, training and education of young scientists through exchange programmes and summer schools, and sharing of state-of-the-art equipment. EIBIR Network members are welcome to join and actively participate in the Joint Initiatives and even to start their own Joint Initiative. See page 6 for more information about EIBIR’s Joint Initiatives.

Build your communication strategy
- Ensure good management Allocate sufficient resources
- Define your goals & objectives What is the intended impact?
- Pick your audience Define your audience and their needs
- Choose your message Connect with your audience
- Use the right medium & means One-way or two-way? Global or local?
- Time your activities Ensure information reaches your audience at the right time
- Evaluate your efforts Define and check performance
I am actually impressed by the quality of the contribution that EIBIR have done so far to the project, and how they are working in close collaboration with the coordinator and the project partners to help us to increase the quality and the scope of our dissemination activities across the project, in fact this has been one of those areas that have been most appreciated by the European Commission reviewers so far.

Alejandro Frangi, professor of biomedical image computing, University of Sheffield and scientific coordinator of the VPH-DARE@IT project.

The multicenter SPECIFIC trial has given us the great opportunity of experiencing EIBIR’s contractual management and management support. They did an amazing job in reconciling contracts between four different countries on three different continents.

Koen Nieman, associate professor of cardiovascular imaging at Erasmus Medical Center, Rotterdam, the Netherlands, and co-principle investigator of the SPECIFIC trial.

We wholeheartedly recommend the EIBIR team, full of cutting-edge talent, dedication, and passion, to colleagues worldwide.

Fabian Bamberg, professor of radiology at the University Hospital Tübingen, Germany, and co-principle investigator of the SPECIFIC trial.

Since October 2013, I am involved in the MITIGATE project as leader of a translational clinical work package. Additionally we have cooperated with partners from academia and industry in the preclinical radiopharmaceutical development. Already in the project development phase and even more since the project started we had intensive cooperation with the project management team at EIBIR, in particular Pamela Zolda. Their input was essential in planning and submitting, but also in the implementation and conduct of the project. This contributed to the goals achieved so far and has been an enjoyable and stimulating experience.

Clemens Decristoforo, associate professor of radiopharmacy at Medical University of Innsbruck’s Department of Nuclear Medicine and leader of work package 6 in the MITIGATE project.

Looking back at this and past projects managed by EIBIR we have been involved in, what I appreciated most is the dedication of everyone at EIBIR with their tasks — and beyond! Wherever I needed support, I was sure to have answers swiftly and on the spot. Their professionalism and flexibility, combined with the respectful and open communication style make me hope to have many more projects with EIBIR in the future.

Markus Harz, scientific project manager VPH-PRISM, Fraunhofer MEVIS.
EVENTS IN 2015

ECR 2015

A special EIBIR session entitled ‘What’s new in biomedical imaging research: an update of EIBIR activities’ was held at the European Congress Radiology 2015 on March 3, 2015. The session included a presentation from the European Commission along with presentations covering some of EIBIR’s joint initiatives.

European Cancer Congress 2015

The European Cancer Congress 2015 took place in Vienna, Austria from September 25 to 28, 2015 and EIBIR was there to inform oncologists and other medical professionals about the services it offers to researchers. EIBIR staff also provided information about two of its ongoing FP7 research projects related to cancer, VPH-PRISM and MITIGATE.

Virtual Clinical Trial Unit

Setting up and conducting a clinical trial is a complex task that often involves a great deal of administrative and bureaucratic work. With that in mind, EIBIR launched its new Virtual Clinical Trial Unit in 2015, which can provide a range of services to researchers, allowing them to focus on their research.

Social Media

In order to reach out to a wider group of researchers and organisations interested in research funding, EIBIR has taken to Twitter, Facebook and LinkedIn. This also allows EIBIR to keep its followers up to date on the latest funding calls of interest to the biomedical imaging community and provide information on the support it can provide to researchers.

CoSTREAM Project

In November 2015, the grant agreement was signed for the Common Mechanisms and Pathways in Stoke and Alzheimer’s disease (CoSTREAM) Project. EIBIR played a key role in coordinating the proposal for this Horizon 2020 project, earning the maximum score of 15 from the European Commission’s evaluators.

EIBIR will support the coordinator Erasmus Medical Center, Rotterdam, the Netherlands, throughout its five-year duration and will be responsible for project management and dissemination of project results. The kick-off meeting took place in the Netherlands at Erasmus Medical Center, where the partners had productive and enthusiastic discussion on the work ahead.
Interim Board and EuBI-ERIC

In 2015, Bulgaria and Portugal joined the Euro-BioImaging (EuBI) Interim Board, the decision-making body of Euro-BioImaging. Altogether 14 European countries and European Molecular Biology Laboratory (EMBL) are now collaborating on the establishment of the research infrastructure. The Interim Board members acknowledged EIBIR’s efforts by renewing their support for EIBIR’s work for the board in 2016. Euro-BioImaging will be set up as a European Research Infrastructure Consortium (ERIC). The ERIC will have its own governance structure comprising decision-making, executive and advisory bodies. In 2015, the Interim Board supported by legal advisors from Member States, EIBIR and EMBL was close to finalising the EuBI-ERIC statutes that will constitute the legal personality of the research infrastructure.

EuBI Hub and Nodes

The Hub will be the central coordination unit of the research infrastructure. It will support user access, coordinate and promote training activities for users and facility staff as well as manage solutions for image data storage and analysis. In summer 2015, the call for the Hub hosting county was launched, and Interim Board Members were invited to submit their application. After an independent evaluation, the Interim Board approved a physically distributed Hub structure in October 2015. The Hub will include the EuBI-ERIC statutory seat and two community specific sections, one for medical and one for biological imaging. The Med-Hub and the Bio-Hub will support the ERIC statutory seat in the tasks as far as they require community-specific implementation.

Italy will host the community specific site for medical imaging (Med-Hub) at the University of Torino (UNITO). UNITO’s extensive experience, knowledge and established relationships with European partners will be of paramount importance in the scientific/administrative management of the Hub, particularly in regard to the users’ access management and Node evaluation. EIBIR is pleased to announce that collaboration between the EuBI Med-Hub and EIBIR is envisaged in the future.

In July 2015, countries that submitted Node applications in the first Call and that serve on the Euro-BioImaging Interim Board were invited to nominate Nodes for ratification by the Interim Board. Selected Nodes can already operate during the Interim Phase. From the in vivo/medical imaging domain, 7 Nodes offering molecular imaging, population imaging and phase contrast imaging technologies, as well as a challenges framework, were nominated for ratification. A 2nd Open Call for Nodes will be launched once Euro-BioImaging is operational.

Horizon 2020 Funding

In the scope of the EC Horizon 2020 call for scientific infrastructure development (INFRADEV), Euro-BioImaging was granted €1.5 million for its two-year preparatory phase-II project, to take the final steps needed to start full operation for open user access by 2017. EIBIR will be involved in the project and collaborate, in particular, with partner UNITO in the implementation of project tasks related to medical imaging.
Eight research partners from Europe and the United States, coordinated by EIBIR, are developing new technology to improve breast cancer diagnosis, therapy selection and outcome prediction, as well as surgery planning.

VPH-PRISM is translating image data into a data storage framework, where an interdisciplinary link between the broad range of medical imaging technologies such as mammography, ultrasound, MRI, as well as tissue histology, is made possible through automated image analysis tools and interactive web-based image annotation. This interdisciplinary link is the first step towards removing the barriers specialists face when systematically analysing their joint findings, while a computational online-offline image analysis framework will enable more objective and reproducible tumour phenotyping and therapy planning. The project has to this end developed a database containing clinical, imaging, pathological and molecular data - the first of its kind in the world - to link these data types both spatially and semantically, and thus facilitate more accurate tumour modelling, resulting in a multi-disciplinary breast cancer phenotype. The VPH-PRISM consortium is also working together to extend access to this unique database after the project’s conclusion to other researchers.

The project looks set to deliver several innovations into the field of breast cancer care, including tools for improved breast surgery planning based on predictive information derived from the clinical data collection. A surgery planning tool is currently in development which will allow surgeons to view vital parameters, lesion size, location volume etc., in the patient’s breast through an augmented reality app that works with a mobile device’s camera. A solution for multi-site large volume database hosting has also been developed as a direct result of the of VPH-PRISM database. This has the potential to have a major impact on the way collaborative research projects are conducted in the future.

The project will conclude in February 2016 after 36 months of research and is on track to achieve its objectives. In order to disseminate the project’s important results, a joint scientific session with the FP7-funded ASSURE project, which aims to develop new breast cancer screening methods, has been organised and will take place in March 2016 at the European Congress of Radiology in Vienna, Austria.
This major FP7 integrated project, with 20 partner institutions from across Europe, aims to provide a systematic, multifactorial and multiscale modelling approach to understanding dementia onset and progression while enabling more objective, earlier, predictive and individualised diagnoses and prognoses of dementias to cope with the challenge of an ageing European society.

The project will influence the scientific, clinical and industrial communities across Europe and internationally to improve the healthcare of dementia patients. EIBIR supports the project coordinator, University of Sheffield, with dissemination and exploitation tasks, which have been carried out successfully and evaluated very favourably by the European Commission so far.

The project partners are currently working towards integrating the various types of data collected during the early stages of the project and combining the many milestones and achievements accomplished to create a personalised approach to improved and early dementia diagnosis. This will lead to a citizen platform that will allow people to take memory tests and play cognitive games to assess if they are at risk of developing dementia and advise them to seek medical advice. In addition, the patient care platform will allow clinicians to diagnose dementia earlier by evaluating cognitive and motor skills, as well as lifestyle and environmental factors. The data from this patient care platform will continue to be fed into a clinical research platform, which will give researchers invaluable information with which they can develop further improvements, the new knowledge generated in the research platform will then feed back to the patient care platform contributing to a better diagnosis and accelerating the translation from research to clinical practice.

The project is due to run until March 2017 and is set to achieve its objectives. A VPH-DARE@IT session is scheduled to take place in March 2016 at the European Congress of Radiology. The project was also represented at the European Commission’s ICT 2015 conference (October 20 -22) in Lisbon, Portugal. The VPH-DARE@IT booth gave attendees from many different IT backgrounds an opportunity to interact with the project’s citizen and clinical diagnostic platforms, as well as the gait analysis, and the project partners expect to have similar activities at other events in the near future.
Gastrointestinal stromal tumour (GIST) is a rare disease that often affects young people. Due to its high potential for metastasising, life expectancy is often less than three years. Currently there is only one class of effective medication – tyrosine-kinase inhibitors – but tumours frequently develop resistance to these drugs after a few years.

The objective of the four-year MITIGATE project is to develop and validate a targeted, personalised and integrated closed-loop process to effectively treat metastatic GIST patients resistant to medication. The innovative treatment concept combines new strategies for biopsy, inline tissue analysis, molecular tumour characterisation, theranostics by imaging technologies (PET and MRI) and accompanying radiopharmaceuticals followed by an assessment of biodistribution, dose calculation and measurement of therapeutic effectiveness. In addition, synergistic concepts of minimally-invasive treatment will be applied.

The project recently entered its third year and the consortium is proud to present several achievements:

- An integrated endoscopic biopsy and tissue dissociation system was developed. Mass spectrometry of biopsies revealed that drug responsive and non-responsive GIST cells can be distinguished and differ from other types of cancer.
- The synthesis and in vitro evaluations of precursor PET tracers targeting GIST are in progress. A reproducible procedure for radiolabelling peptides with high affinity for bombesin receptors using $^{68}$Ga was developed.
- GIST xenograft animal models, which enable the preclinical evaluation of potential new radiotracers, were successfully established.
- MRI protocols for tumour microenvironment characterisation have been set up and validated in vivo in different GIST animal models. A dedicated and optimised protocol for sequential acquisition of MRI and PET images has been validated. $^{23}$Na/$^1$H dual-tuned coils were developed and optimised.
- A clinical trial in patients with drug-resistant GIST is set to start in summer 2016. The trial will provide data on GIST tumour visualisation and characterisation as well as dosimetry of novel radiopharmaceuticals.
- A concept study for a minimally-invasive treatment for patients with metastatic GIST is being set-up, and a robotic assistance system is being developed.

In the upcoming period, the MITIGATE project will focus on:

- Metabolic MRI techniques allowing earlier detection of treatment response and tumour progression in clinical routine.
- Creation of PET probes for detecting drug-responsiveness.
- Creation and testing of companion radiopharmaceuticals applying therapeutic radionuclides with alternatives modes of action. These will not only affect tumour cells expressing their target, but also surrounding tumour cells within the range of the irradiation
- Minimally-invasive percutaneous thermal ablation and irradiation, guided by molecular PET imaging and a robotic assistance system.

The MITIGATE consortium is looking to continue its success and ultimately ensure an accelerated decision making process and improved treatment concepts patients. Together this will result in a personalised, combined multimodal treatment approach in patients with advanced disease.
COST ACTIONS
Arterial Spin Labelling Initiative in Dementia

COST Actions are interdisciplinary scientific networks that contribute to the scientific development of Europe. Rather than funding research directly, COST supports networking activities.

On December 12, 2015, the COST Action Arterial Spin Labelling in Dementia (AID), led by Prof. Xavier Golay from University College London, was brought to a successful conclusion. Tackling one of the major societal needs of an ageing Europe, the action aimed at coordinating the development of an alternative and cost-effective tool based on an MRI technique, arterial spin labelling (ASL). This technique was used to obtain reproducible brain perfusion measurements in dementia patients by bringing together scientists and clinicians from across Europe through the flexibility of the COST mechanism. The scientific programme was centered around four work packages and three working groups, which aimed at developing standards, improving the reliability of the technique and establishing it as a possible clinical trial outcome measure.

By the end of the action, which had been running since December 2011, over 180 participants from all over the globe had joined COST AID. Notable industry participation included GE Healthcare, Siemens Healthcare, Philips Healthcare, Mediri, IXICO and Olea Medical. In addition, one spin-out company, Gold Standard Phantoms Limited, was established by Prof. Golay as a direct outcome of the Action, with the aim to develop both a perfusion phantom and an online calibration service for use of ASL in clinical trials. Recent rounds of funding included collaboration on an SME instrument call from Horizon 2020 with Mediri and the Action as adjunct partners.

With a focus on networking and training, major highlights of the action were the working group meetings and the training schools organised with the help of EIBIR. The two large training schools of the Action, one with a focus on clinical aspects and one on the technical background, were both fully booked, very well received and excellently rated. The working group meetings were held periodically at different destinations across Europe with the final two meetings in Les Diablerets (CH) in March 2015 and in Edinburgh (UK) in October 2015.

The Action successfully aimed at capacity building through networking by putting a particular emphasis on the realisation of no less than 30 short-term scientific missions (STSM), which provided young researchers with the opportunity to visit and learn from institutions or laboratories in other COST countries. This led to numerous publications and an effective shift of the research power in ASL from North America to Europe in the last few meetings of the International Society for Magnetic Resonance in Medicine (ISMRM).

The most important result of the Action was the production of an expert opinion paper on ASL in 2014 on the ‘Recommended implementation of arterial spin-labeled perfusion MRI for clinical applications: A consensus of the ISMRM perfusion study group and the European consortium for Magnetic Resonance in Medicine (ISMRM).’

With the end of the COST Action, its members will return to the original body from which it stemmed in the first place: the ASL Network (asl-network.org). As mentioned earlier, future Horizon 2020 projects will continue to be submitted by the Network and the two founding companies: Mediri, headed by Prof. Matthias Guenther, and Gold Standard Phantoms Limited, headed by Prof. Xavier Golay.

“I would like to take the opportunity to thank all members of the Action, and in particular EIBIR without which none of this would have been possible, from the writing of the grant through to the daily support of the community, for an enormously successful four years which literally changed the field of ASL forever.” Professor Xavier Golay, chair of magnetic resonance physics & translational neuroscience at University College London and chair of the COST AID Action.

Current Status
Completed December 2015
Funding
COST Action
Biomedicine and Molecular Biosciences BM1103
Website
www.aslindementia.org
Grant Holder
University College London, UK
The MIPA project, sponsored by Bayer and under the direction of EIBIR and the scientific leadership of Prof. Francesco Sardanelli, University of Milan School of Medicine/IT, is conducting a systematic evaluation of preoperative breast MRI, examining individual patient data in a transnational multicentre setting with the aim of clarifying matters regarding the ongoing uncertainty in the application of preoperative MRI in breast cancer patients. EIBIR is delighted that Bayer has been providing essential support for the MIPA study, which will be crucial in increasing knowledge about the clinical use of contrast-enhanced breast MRI.

The MIPA study aims to systematically collect data on consecutive series of women who have recently been diagnosed with breast cancer for the first time, and compare surgical outcomes for those who undergo pre-operative MRI with those who do not. To this end, data is being collected from 34 centres from Europe and beyond.

In 2015, MIPA reached a major milestone, as the number of patients enrolled in the study reached 3,500, which equals 50% of the target sample size. MIPA also entered the next stage as work has begun on feeding follow-up data into the database, which is vital for a better understanding of the effect pre-operative breast MRI has on clinical decision-making.

Furthermore, this year has seen the drafting of two highly anticipated manuscripts addressing the findings of the MIPA study, which will be published in the course of 2016. Moreover, the investigators at Italy’s Institute for Research and Cure of Cancer (IRCC) expect that the overall study will reach 75% of the sample size, i.e. 5,250 patients, by the end of next year.

The SPECIFIC trial is an industry-funded, global clinical study investigating myocardial perfusion imaging.

Cardiac computed tomography (CT) provides accurate assessment of the coronary arteries and detects significant coronary stenosis with high diagnostic accuracy. This information is highly relevant but ignores the haemodynamic relevance of such detected lesions, which is essential for clinical decision-making.

Recent technical developments, with third-generation dual-source CT, allow for assessment of myocardial perfusion and may determine the haemodynamic relevance of coronary lesions.

To date, there is only very limited evidence of the feasibility of this approach, stemming from single-centre studies with varying standards of reference. SPECIFIC will expand this evidence in a global, multi-centre study of 150 patients with recruitment in the Netherlands, Germany, Japan and the United States.

The objective of the trial is to determine the diagnostic accuracy of CT myocardial perfusion imaging for the detection of haemodynamically relevant coronary stenosis, as determined by invasive fractional flow reserve as a reference standard, in patients with suspected or known coronary artery disease who have been clinically referred for invasive angiography.

Patient recruitment for SPECIFIC is set to start in early 2016.
UPCOMING PROJECTS

HYPMED: DIGITAL HYBRID BREAST PET/MRI FOR ENHANCED DIAGNOSIS OF BREAST CANCER

This Horizon 2020 funded project will integrate an innovative fully digital MRI-transparent positron emission tomography (PET) detector into a novel multi-channel PET-transparent MRI surface coil. This new PET/radiofrequency (RF) insert will allow an unprecedented level of imaging of breast cancer with high-resolution/ultra-high sensitivity PET, combined with high-level structural and functional MRI, and allow minimal-invasive MR and PET-guided targeted biopsy. With these PET-RF inserts, any regular clinical MR-system can, when required, be turned into a hybrid system. Through improved selection of appropriate, individualised treatment, the molecular and functional PET-RF imaging developed within the HYPMED project will contribute to improved survival and improved quality of life for women with breast cancer.

Once HYPMED is successful, the project may expand this approach to other applications such as prostate cancer or cardiac hybrid imaging, and introduce a paradigm shift in the field of PET/MR hybrid imaging as a whole.

The HYPMED proposal received the highest score possible from the Horizon 2020 evaluation and the project started on January 1, 2016, with the official kick-off meeting scheduled to take place at the premises of the scientific coordinator, Universität Aachen, Germany, on January 20, 2016. The HYPMED project will run for 48 months and will be coordinated by EIBIR, which will also be responsible for project management, dissemination and exploitation.
CoSTREAM: COMMON MECHANISMS AND PATHWAYS IN STROKE AND ALZHEIMER’S DISEASE

It has long been recognised that stroke and Alzheimer’s disease (AD) often co-occur and have an overlapping pathogenesis. The Horizon 2020 project CoSTREAM aims to improve our understanding of this co-occurrence.

An essential concept of the CoSTREAM project is that stroke and AD are sequential diseases with overlapping pathophysiological mechanisms and shared risk factors. The project will particularly focus on these common mechanisms and disentangle when and how these mechanisms diverge into causing either stroke, or AD, or both.

CoSTREAM will explore and unravel novel mechanisms linking stroke and AD by exploiting and linking various available and novel large international datasets, and by incorporating new analytical strategies with emerging technologies in the field of genomics, metabolomics, and brain MR imaging.

The multidisciplinary consortium includes epidemiologists, geneticists, radiologists, neurologists with a longstanding track record in the aetiology of stroke and AD.

The project started on December 1, 2015, and a kick-off meeting was held on December 17 and 18 at Erasmus MC in Rotterdam, the Netherlands. The project will run for five years and is coordinated by Erasmus MC. EIBIR leads the project management and dissemination activities of CoSTREAM.

Current Status
Active until December 2020

Funding
Horizon 2020
Grant Agreement 667375
€5,100,372.50

Website
www.costream.eu

Consortium
Coordinated by Erasmus MC, NL
EIBIR, AT
King’s College London, UK
University of Cambridge, UK
Ludwig-Maximilians-University Munich, DE
Karolinska Institutet, SE
MIETAS, NL
Institut Pasteur de Lille, FR
Leiden University, NL
University of Geneva, CH
University of Bordeaux, FR
GLINT is a Horizon 2020 project which aims to develop, and bring to the clinic, a potentially disruptive new technology for characterising and imaging glucose delivery, uptake and metabolism in cancer.

GLINT draws from recent research revealing the sensitivity of a technique named glucose-based chemical exchange saturation transfer (glucoCEST) to detect native (D-glucose) glucose uptake in tumours and that glucose analogues, such as 3-oxy-methyl-D-glucose (3OMG), can be used as potential non-metabolisable tracers using the same technique. It is the project’s goal to bring the combination of native D-glucose and 3-O-methyl-D-glucose as a combined exam to clinical oncology practice. This will allow oncologists to assess cancer glucose uptake and metabolism in almost all cancer types, thereby providing a wide-ranging new diagnostic tool for one of the most devastating diseases in the world. A major deliverable in the GLINT project is to provide a cheap, widely available, more comprehensive, non-invasive, radiation-free alternative method to nuclear medicine techniques currently used for cancer assessment within Europe.

The project started on January 1, 2016 and will run for four years. GLINT is scientifically coordinated by University College London with EIBIR as a partner for management, dissemination and exploitation.
Under the lead of the Institute of Photonic Sciences (ICFO), Barcelona, Spain and with EIBIR as a partner for management and dissemination, the Horizon 2020 project LUCA will work on novel imaging techniques for thyroid nodules. It is the project’s objective to improve the sensitivity and specificity of the screening process of thyroid nodules for malignant cancers compared to the conventional ultrasound-based workflow.

LUCA is a multidisciplinary project with clinical endocrinologists, radiologists (both end-users), physicists, engineers and industry joining forces. Together, the partners will work towards the main goal of producing a novel, point-of-care, low-cost, screening device that combines two photonics systems (near-infrared diffuse correlation spectroscopy and time-resolved spectroscopy) with a multimodal ultrasound system and a probe that enables multimodal data acquisition for the screening of thyroid nodules for thyroid cancer.

This ambitious four-year project will officially commence on February 1, 2016 with a kick-off meeting in Vienna, Austria on February 22, 2016.

Current Status
Starting February 2016
Active until February 2020

Funding
Horizon 2020
Grant Agreement 688303
€3,628,845.75

Website
www.luca-project.eu

Consortium
Coordinated by The Institute of Photonic Sciences, ES
EIBIR, AT
Politecnico di Milano, IT
IDIBAPS, ES
HemoPhotonics, ES
VERMON, FR
Echo Control Medical, FR
University of Birmingham, UK
SCIENTIFIC ADVISORY BOARD

EIBIR’s Scientific Advisory Board (SAB) sets and guides the organisation’s long-term strategies and goals for biomedical imaging research. It also provides invaluable expert advice and feedback to researchers on their proposals.

In early 2015, this advice and feedback proved to be highly effective as a total of four EIBIR-supported Horizon 2020 proposals were accepted for funding, all of which benefitted from the SAB’s expertise. Of the course of the year, the members of the SAB met several times to discuss EIBIR’s strategy for future funding calls and to brainstorm new ideas that can better serve researchers and further promote the role of biomedical imaging in European research. Many of the SAB members are also actively involved in EIBIR’s Joint Initiatives and were busy preparing a range of scientific events such as summer schools and publishing results from studies and reviews.

Scientific Director

Gabriel P. Krestin is full professor of Radiology and Chairman of the Department of Radiology at Erasmus MC, University Medical Center Rotterdam, the Netherlands. His main areas of research are: imaging of abdominal organs and of cardiovascular diseases, molecular imaging and population imaging. His research is supported by numerous grants from European and national research organisations, charities and industry. He is a member of the recently established Scientific Panel for Health of the European Commission and member of the scientific advisory boards of Erasmus Medical Center in Rotterdam, the Netherlands Technion University in Haifa, Israel and Ludwig Maximillian University (LMU) in Munich, Germany.

Shareholder Representatives

- Philippe Pereira, Cardiovascular and Interventional Radiological Society of Europe (CIRSE)
- Casper Garos, European Coordination Committee of the Radiological, Electromedical and Healthcare IT Industry (COCIR)
- Kristoff Muylle, European Association of Nuclear Medicine (EANM)
- Stephen Evans, European Federation of Organisations in Medical Physics (EFOMP)
- Graciano Paulo, European Federation of Radiographer Societies (EFRS)
- Yan Liu, European Organisation for Research and Treatment of Cancer (EORTC)
- Fabian Kiessling, European Society of Molecular Imaging (ESMI)
- Xavier Golay, European Society for Magnetic Resonance in Medicine and Biology (ESMRMB)
- Karen Rosendahl, European Society of Paediatric Radiology (ESPR)
- Hans-Ulrich Kauczor, European Society of Radiology (ESR)
- Vincenzo Valentini, European Society for Radiotherapy and Oncology (ESTRO)
- Emanuele Neri, European Society for Medical Imaging Informatics (EuSoMII)

Joint Initiative Directors

- Michal Neeman (Cell Imaging Network)
- Wiro Niessen (Biomedical Image Analysis Platform)
- Francesco Sardanelli (EuroAIM)
- Oliver Speck (Euro-BiOImaging)
- Silvio Aime (Chemistry Platform)
- Karen Rosendahl (Paediatric Radiology)
- Vincenzo Valentini (Image Guided Radiotherapy)
- Myriam Hunink
- Luis Marti-Bonmati
- Klaas Nicolay
- Konstantin Nicolaou
- Anders Persson
- Siegfried Trattnig
- Valérie Vilgrain

Regular Members

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- Katrine Ahlström Riklund
- Carlo Catalano
- Alejandro Frangi
- Michael Fuchsänger
- Vicky Goh
- Jürgen Hennig

- Myriam Hunink
- Luis Marti-Bonmati
- Klaas Nicolay
- Konstantin Nicolaou
- Anders Persson
- Siegfried Trattnig
- Valérie Vilgrain
SHAREHOLDERS

EIBIR’s shareholder organisations exemplify the importance of a multidisciplinary approach in biomedical imaging research. Their support is vital to EIBIR’s decision making.

- European Society of Radiology
  - www.myesr.org
- Cardiovascular and Interventional Radiological Society of Europe
  - www.cirse.org
- European Coordination Committee of the Radiological, Electromedical and Healthcare IT Industry
  - www.cocir.org
- European Association of Nuclear Medicine
  - www.eanm.org
- European Federation of Organisations in Medical Physics
  - www.efomp.org
- Cardiovascular and Interventional Radiological Society of Europe
  - www.efrs.eu
- European Organisation for Research and Treatment of Cancer
  - www.eortc.org
- European Society for Molecular Imaging
  - www.e-smi.eu
- European Society for Magnetic Resonance in Medicine and Bio
  - www.esmrmb.org
- European Society of Paediatric Radiology
  - www.espr.org
- European Society for Radiotherapy and Oncology
  - www.estro.org
- European Society of Medical Imaging Informatics
  - www.eusomii.org
INDUSTRY PANEL

The Industry Panel allows EIBIR and its member industry organisations to identify shared interests and opportunities for collaboration.

The cost for membership packages range from €10,000 for Gold, €5,000 for Silver and €1,000 for SMEs. Industry Partners benefit from EIBIR services according to their varying financial commitment, which includes eligibility for participation in research projects coordinated by EIBIR, nominating a representative on the EIBIR Industry Panel for regular meetings and direct communication with key representatives of EIBIR and/or eligibility to become a member of the EIBIR Scientific Advisory Board.

The longstanding commitment of EIBIR's industry partners have allowed projects such as the MIPA study (see page 17), and EIBIR looks forward to enhanced cooperation in the coming years.

GOLD PARTNERS

GE Healthcare

Bayer HealthCare

SIEMENS

PHILIPS

SILVER PARTNERS

BRACCO
SME PARTNERS

Small and medium-sized enterprises (SMEs) are actively encouraged to participate in Horizon 2020 programmes through new dedicated SME measures. These aim to fill gaps in funding for early-stage, high-risk research and innovation by SMEs as well as stimulating breakthrough innovations.

EIBIR helps its SME members take advantage of SME-targeted funding opportunities by identifying suitable calls and connecting the right partners from within our member network.

In 2014, EIBIR introduced the SME Platform as a new feature to benefit its Network Members, SMEs and prospective consortia. EIBIR has several Small and Medium Size Enterprises (SME) Network Members in various fields of expertise.

The SME Platform enables our SME members to introduce themselves and showcase their particular expertise in order to provide specific information on what they can offer to consortia and project proposals looking for SME partners for certain tasks. SMEs can join EIBIR’s Industry Panel and benefit from proposal preparation support, regular updates on relevant funding calls and networking opportunities with partners in multi-beneficiary funding proposals, all for €1,000 per year.

With the added, and continued, emphasis on SME participation under the Horizon 2020 Framework, we are confident that our SME Platform facilitates and simplifies the search for SME partners and thereby increases the strength and diversity of consortia and their project proposal.

You can visit the SME Platform at www.eibir.org/members/industry-partners/sme-platform.
EIBIR’s activities are financed by a number of sources, including Network Member service fees, Industry Panel service package fees, support from the European Society of Radiology (ESR) and the shareholder organisations as well as EC funding for European research projects coordinated or supported by EIBIR and EIBIR project-related services provided to institutions against a fee.

The ESR continues to provide financial support to EIBIR, ensuring the maintenance of office infrastructure, allowing for the set-up of new initiatives and supporting the application and grant-writing processes for new projects.

The amount of support provided by the ESR is determined every year according to need and, in recent years, has been between €14,000 and €150,000.

A detailed annual financial report is presented to and approved by the shareholder organisations at the annual General Meeting, usually held during the European Congress of Radiology in Vienna.

At the EIBIR General Meeting 2015, held at ECR 2015, the financial report 2014 was approved;

**Approved financial report for 2014**

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<thead>
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<tbody>
<tr>
<td>Total income</td>
<td>€595,000</td>
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<tr>
<td>Total expenditure</td>
<td>€503,000</td>
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<tr>
<td>Projected profit (fiscal year 2015)</td>
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<td>Total equity (as of January 1, 2015)</td>
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PROPOSAL SUPPORT

Do you have a great idea for research and are you planning to apply for funding?

We offer expert advice on proposal preparation and our Scientific Advisory Board, with more than 30 scientists from all over Europe, can provide critical and highly valuable feedback on your research proposal.

On top of that, our proposal preparation and project management team has hands-on experience and a proven track record in applying for EU funding and managing projects, starting with FP6 all the way to today’s highly competitive Horizon 2020 programme.

EIBIR does not charge success fees. We are a non-profit organisation dedicated to helping scientists from all fields realise their research ideas while promoting the role of biomedical imaging research. In fact, Active EIBIR members can avail of our services and support for free.

Here’s how EIBIR can help:

• Call-specific templates with detailed descriptions and input requirements
• Advice on project governance, management and work package structure
• Support in defining and writing the crucial impact section of your proposal
• Critical reading and feedback from a team of experienced scientific writers with knowledge of European Commission requirements

Get in touch with the EIBIR office (office@eibir.org) to find out more about our services and how we can help make your research idea a reality.

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