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New EU-funded project to develop innovative technology for thyroid cancer screening

The project Laser and Ultrasound Co-Analyzer for Thyroid Nodules (LUCA) is one of four successful project proposals supported by the European Institute for Biomedical Imaging Research (EIBIR) to receive funding under the EU Research and Innovation programme Horizon 2020. LUCA started in February 2016 and aims to develop a novel imaging technique for thyroid nodules.



LUCA tackles the growing societal need for sustainable healthcare by producing a novel, point-of-care, low-cost device for the screening of thyroid nodules. The device will combine two photonics systems, near-infrared diffuse correlation spectroscopy and time-resolved spectroscopy, with a multi-modal ultrasound system and a probe that enables multimodal data acquisition for the screening of thyroid nodules for thyroid cancer.

The project, which is an initiative of the Photonics Public Private Partnership (www.photonics21.org), is led by ICFO – The Institute of Photonic Sciences, Barcelona, Spain. The European Institute for Biomedical Imaging Research (EIBIR), Vienna, Austria supported LUCA in the proposal preparation phase and is now involved in LUCA as a partner for management and dissemination. Throughout the

project, EIBIR will be responsible for dissemination activities targeted at the relevant academic and industrial stakeholders to ensure outreach to the scientific and industry communities, an essential prerequisite for the development of the business strategy and exploitation plan within the project.

LUCA brings together eight partner organisations from five different European countries. It is a multidisciplinary project with clinical endocrinologists, radiologists (both end-users), physicists, engineers and industry joining forces. Together with EIBIR, the partners from distinguished research organisations and small and medium-sized enterprises (SMEs) are enthusiastically pursuing their goal of improving the sensitivity and specificity of the screening process for thyroid nodules in malignant cancers making it superior to

the conventional ultrasound-based workflow.

Thyroid nodules are a common pathology having a prevalence of palpable nodules of around 5% in women and 1% in men, which increases to 19–76% with the use of neck ultrasound. To exclude thyroid cancer when screening thyroid nodules, which occurs in 5–15% of thyroid nodules, the first step is ultrasound followed by fine-needle aspiration biopsy of suspicious nodules. In thyroid cancer, the sensitivity and specificity of this process are limited, with a large number of non-diagnostic and false positive results that lead to unnecessary surgery.

A reduction in the number of surgical procedures with a point-of-care diagnostic procedure would have an important socio-economic impact, diminishing the number of thyroidectomies and the associated comorbidities. This implies

savings of millions of euros per year. Evidence shows that multimodal approaches that include haemodynamic information lead to better specificity while each modality on its own fails. The LUCA partners are convinced that a new optical-ultrasound probe and integrated system enabled by the development of novel, key enabling photonic components and sub-systems to provide synergistic information on tissue morphology, composition and function will have a large impact in this field.

Phase 1 of the project, with a duration of 18 months, will be focused on the development and construction of components and subsystems, with activities ranging from hardware and software development to the preparation of project structures, protocols, dissemination and exploitation materials and studies to the clinical protocols.

LUCA is directed by end-users who are also participating in the project and LUCA's results will be exploited by the industrial partners who cover the whole value-chain.

This ambitious four-year project officially commenced on February 1, 2016 and the consortium met at the kick-off meeting in Vienna, Austria, on February 22, 2016. The meeting and the first few weeks of the project were successfully used to define the first steps of the project, as well as the specifications for the development of each project component. Further details on the project will become available soon.

Please have a look at our website www.eibir.org for updates on LUCA and other EIBIR projects and pay a visit to the EIBIR booth in the entrance hall.

Breast imaging society welcomes young radiologists

The aim of specialist societies is to promote quality, create unique medical and scientific standards and to further research in diagnostic and therapeutic interventions.

Do young doctors support these goals? Most likely, they do. But are they then interested in joining a society? In the case of the European Society of Breast Imaging (EUSOBI), the answer was mostly no. In 2014, the total number of members was 564 with an average age of 48, with only 57 members under the age of 35 (10.1%). Therefore the obvious question to ask was, how to can we improve this?

There are several considerations. First, it is often the case that residents and young radiologists cannot easily be interested in breast imaging as not many institutions are able to provide a proper overview, introduction and preparation in breast imaging. The issue of breast disease is not limited to the diagnostic and therapeutic aspect and comes with a series of related issues that go far beyond medicine, towards

epidemiology, risk assessment and, most importantly, a sensitive and empathic approach to the patients. Although at first glance this can be intimidating, breast imaging is an interesting as well as challenging field of work and research for young people, who get to know and appreciate its complexity.

Secondly, many young radiologists interested in the topic are not aware of the presence of a society, or they are not well aware of the activities promoted. It is the responsibility of the society to make its existence known and to get people involved and interested.

With this in mind the EUSOBI launched the **EUSOBI Young Club (EYC)**. The EYC is an international interest group that aims to create connections and foster collaboration between young researchers so that they can share experiences while exchanging ideas, knowledge and educational information.



EUSOBI Young Club meeting at ECR 2015.

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