

EATRIS, the European Research Infrastructure for Translational Medicine and A_IATRIS, its Italian node

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Translational medicine aims at transferring scientific discoveries to the clinical practice, and converting them into novel preventive, diagnostic, and therapeutic tools against diseases representing serious threats for humans. One major problem in translational medicine is the long time-frame that is generally needed for the full development of new products before they can be used in clinical practice.

As a consequence, patients suffering from severe pathologies for which effective treatments are not yet available cannot benefit from potentially effective diagnostic and therapeutic tools. Therefore, the slowness of the entire process represents a major problem that the competent authorities, governments, and industry are requested to face and solve.

The creation of infrastructures dedicated to high-quality services for translational medicine is of fundamental importance for promoting and supporting the translation of scientific discoveries into clinical practice, recognized as a national and European priority.

In 2004, the European Strategy Forum on Research Infrastructures (ESFRI) received the mandate by the Competitiveness Council to develop a European Strategic Roadmap for Research Infrastructure. The aims were to describe the scientific infrastructural needs for the next 10 to 20 years.

In 2006 ESFRI published its first report, the “European Roadmap for Research Infrastructure,” identifying for the first time a major need for research infrastructures in

the field of Biological and Medical Sciences, and in particular the one dedicated to translational research, the European Advanced Translational Research Infrastructure in Medicine, EATRIS. In 2013 EATRIS received from the European Commission the ERIC legal status (“European Research Infrastructure Consortium” 723/2009/EC) and from January 2014 EATRIS formally started operations as an ERIC.

EATRIS was conceived to overcome research fragmentation and to fill the gaps registered in the landscape of European translational medicine and acts as a “distributed infrastructure” with the headquarters located in Amsterdam. EATRIS is based on the cooperation of several centers across Europe, each endowed with advanced technologies for translational research. The strategy is to use and upgrade available facilities that are dedicated to *in vitro* and *in vivo* validation of new therapeutic agents and to the identification of novel diagnostic procedures.

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The specific aims of EATRIS are:

- to support a faster and more efficient translation of research findings into the development of innovative strategies for the prevention, diagnosis, and treatment of diseases, which are of particular relevance for European member States and that have a high medical and economic burden;
- to build a European research area where the flow of information between basic research and clinical observations is bi-directional.

At present, 12 European countries are Members of EATRIS: Bulgaria, Czech Republic, Luxembourg, Norway, Portugal, Slovenia, France, Italy, the Netherlands, Finland, Sweden, and Spain. Latvia participates as an observer.

Each country participates as a national node and allows a full integration of the various components involved in the biomedical research community.

EATRIS is organized into five Product Platforms (PPs) reflecting the five product types covered in EATRIS (molecular imaging and tracing, vaccines, biomarkers, small molecules, and advanced therapeutic medicinal products). PPs cover the range of applications from preventive agents via diagnostics to therapeutics; they also reflect the areas of greatest potential in translational research. This organization is far from being rigid as cross interaction and cross fertilization between platforms is crucial to create an effective translational medicine ecosystem.

In Italy, the Istituto Superiore di Sanità (ISS) was delegated by the Italian Ministry of Health in agreement with the Italian Ministry of Education, University, and Research, to participate in the EATRIS preparation and transition phases and to represent Italy in signing the formal participation to EATRIS-ERIC as Italy is one of the founding countries of the ERIC. The ISS also promoted the participation of several Italian institutions in EATRIS strengthening the Italian presence and creating the national node of EATRIS, named A_IATRIS (Italian Advanced Translational Research Infrastructures in Medicine) (www.aiatris.it).

Italian participation in EATRIS has always been very active and Italian researchers hold key roles in EATRIS, being chair and co-chair in three PPs.

A_IATRIS is a network of 21 institutions of excellence in the national landscape, which is coordinated by the ISS and regulated by an inter-institutional agreement. The institutions participating in A_IATRIS have specific skills and expertise complementing each other and mirroring the EATRIS organization. They operate in five PPs: molecular imaging and tracing, vaccines, biomarkers, small molecules, and advanced therapeutic medicinal products. Furthermore, answering an important need of the scientific community, A_IATRIS created a focal point specifically dedicated to intellectual property and technology transfer focused on the exploitation and

valorization of results obtained in the projects of the A_IATRIS Network, and to fostering partnerships and relationships with industry.

In A_IATRIS, education and training activities have been considered crucial in order to create a fertile ecosystem for the growth of a new generation of translational scientists and for the development of translational medicine.

As part of the training activities, the Biomarkers and Imaging & Tracer Platforms of the A_IATRIS Association promoted the organization of the course entitled “Biomarkers and Diagnostic Techniques for Imaging Inflammation in Oncology” held on February 22, 2019 at the ISS.

The course, integrating the knowledge and skills of the two platforms, highlighted the state of the art of the most advanced technologies available today, the prospects of biomarkers in oncology, and the contribution of imaging diagnostics in improving the diagnostic pathway and therapeutic follow-up.

The aim of the course was to provide researchers with (a) the knowledge of the main oncological biomarkers and their development perspectives; (b) the capacity to evaluate the methodologies and the diagnostic performance of the markers in relation to the characteristics of the pathology; and (c) finally, the knowledge related to advanced imaging techniques.

The course dealt with all these aspects by merging two different approaches—biomarkers and imaging—thus leading to broader visions and perspectives in the personalized treatment of cancer.

This approach was very much appreciated by the participants and the topics dealt with were judged of great importance for the training of the national health service personnel. (The analysis of the satisfaction questionnaires reports a 97% approval rate.) At the same time, the course responded to the training objectives set by the A_IATRIS Association, and it was decided to organize the second edition of the course, which will be held at the Oncological Reference Center of Aviano on February 20, 2020.

The success achieved led us to propose this special issue of IJBM in which the contributions of the scientists involved in the course are collected for the use of the readers of IJBM.

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