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NORTE 2020 · PORTUGAL 2020 · FCT · COMPETE 2020

Biosciences Screening

The Biosciences Screening platform provides state-of-the-art technology and expertise to solve challenging questions with high throughput and high content technologies.

Highly qualified scientists with experience on project evaluation, assay and development, liquid handling, automated microscopy, multimode microplate readers, image and data analysis, work with project teams to successfully run medium-to-high throughput screens. Examples are genetic and chemical screens for the purpose of target and/or drug discovery. The platform facilitates access to genetic and compound screening libraries and is actively establishing collaborations in order to receive and expand its own libraries. Training is provided to all users and regular courses are organized for the general scientific community.

The Biosciences Screening platform is part of the PPBI - Portuguese Platform of BioImaging, and participates in the COST Actions NEUBIAS – Network of European BioImage Analysts and the GENiE - Collaborative European Network of C.elegans early-stage researchers and young investigators.

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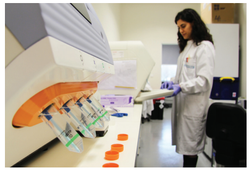
Genomics

The Genomics platform was established in 2006 at Ipatimup. Since then, the facility has been steadily growing, both in human resources and equipment.



Today, it is a full service facility dedicated to providing researchers state-of-the-art technological solutions in the field of genomics and high throughput analysis. The platform offers technical expertise and support to experimental design, protocol development, and data analysis guidance, as well as training.
Due to the very dynamic and rapidly evolving field of genomics, the platform's team actively collaborate with different companies in developing NGS-related products both for sample preparation and for bioinformatics data analysis.

The Genomics Platform is part of the GenomePT consortium and an Ion Torrent certified service provider.

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Cell Culture & Genotyping

The Cell Culture and Genotyping Service (CCGen) intends to facilitate the implementation of state-of-the-art advances in cell culture, genotyping and gene expression technology, by providing researchers with selected services, expert consultation and training in cell culture, genotyping and gene expression techniques. At the CCGen Cell Culture Lab we make available tailor-made conditions for a variety of cell lines, primary cells and virus culture, including lentivirus-based transfection service. The training we provide is mandatory.
We also collaborate with interested groups in the implementation and optimization of mouse genotyping protocols includes DNA extraction, DNA fragment amplification, detection, analysis and interpretation of results.
Through the Animal Facility researchers may access our online ordering of mouse genotyping service request. In addition, we offer urgent genotyping results for all investigators requiring it to do a select primary culture or in need of a specific time point. A service 3 qPCR equipment, with thermal validation and quality control, is available for Gene Expression. We also support the analysis of RNA integrity by automated electrophoresis and collaboration in all interpretation data.

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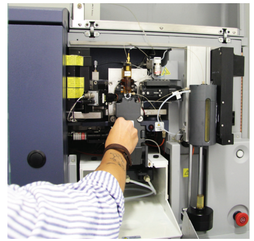
Translational Cytometry

The mission of the Translational Cytometry Scientific Platform in i3S is to offer efficient and reliable flow cytometry services with the highest standards of quality control and productivity.



Translational Cytometry provides equipment and support for acquisition and analysis of flow cytometry data and cell sorting (separation) from single cell suspension using fluorescence. Also, the platform organizes hands-on training for researchers who intend to use the flow cytometry in their projects.
Furthermore, we offer consulting in analyzing and interpreting data with the FlowJo software.

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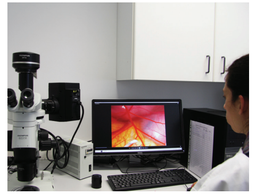
In vivo CAM assays

The *In vivo* CAM assays platform provides scientific expertise and services using the chick embryo model, more specifically, assays based on the chorioallantoic membrane – the CAM. Created in 2012, the platform offers researchers additional or alternative *in vivo* tools (complying with the 3Rs policy) that are reliable, as well as cost and time efficient.



The platform ensures protocol design, experimental execution, analysis of the results and data interpretation and is fully equipped to address new challenges and widen the model applications in a wide range of research topics. The *In vivo* CAM assays platform's work is validated by our publication track record, and by the national and international network of collaborators and clients, both from academia and industry.

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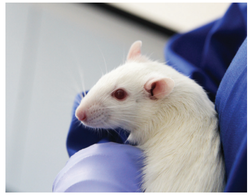
Animal Facility

The i3S animal facility is an AAALAC accredited facility dedicated to the production and maintenance of laboratory animals. The facility provides care and veterinary advice on laboratory animals, mainly mice, rats and rabbits and holds approximately 2500 cages in SPF conditions.



Zebrafish and seabass models are also available (associated with specific research groups). The aim of the facility is to support scientific projects with animal experimentation ensuring high animal welfare standards by encouraging the application of the 3R's. The development of new models (both surgical and genetically modified – CrisprCas9) is supported by the facility team. Biocontainment areas for microbiological risk agents (level 2 and 3) are also available. The facility participates in the training of researchers, users and staff on laboratory animal science and promotes animal welfare practices.

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INSTITUTO DE INVESTIGAÇÃO E INOVAÇÃO EM SAÚDE
UNIVERSIDADE DO PORTO

SCIENTIFIC PLATFORMS

beyond the walls

Scientific Platforms

With cutting-edge equipment and highly qualified professionals, i3S Scientific Platforms are in the forefront of technology to promote and sustain high standard scientific research and development.

Experienced and accomplished specialists coordinate and manage these Scientific Platforms and are available to provide personalized guidance, as well as to help in the processes of experiment design and implementation. Resorting to our platforms means gaining access to expert support and to a range of specialized equipment.

While the i3S community is sure to benefit from the Platforms the most, these technological resources are open to the entire scientific community, the industry sector, health services and the entrepreneurial tissue, entities that are strongly encouraged to discover them and make the most of the services they offer.

The Scientific Platforms' facilities and their quality are internationally recognized and the majority of them integrate national and international networks and nodes.

Biointerfaces & Nanotechnology

The Biointerfaces and Nanotechnology platform aims to study materials, surfaces and interfaces of materials with cells and tissues, going down to the micrometric and nanometric level through the development and the improvement of advanced physical, chemical, mechanical

and structural characterization techniques. The platform focuses particularly on the fields of Biomaterials and Nano- and Regenerative Medicine. Expert technical staff provides advanced training and education in specialized areas and support to all users. Academic researchers and industry can use the platform on a fee-for-service basis.

A Quality System is implemented at the Biointerfaces and Nanotechnology platform, according to ISO standards and Good Laboratory Practices. This platform is part of the Association of Resources for Biophysical Research in Europe (ARBRE)-Molecular Biophysics in Europe (MOBIEU).

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Biochemical & Biophysical Technologies

The Biochemical & Biophysical Technologies platform provides expertise and access to state-of-the-art technologies in Protein Production and Molecular Biophysics. The platform's team implements methodologies and manages resources in the production of proteins for R&D, the structural analysis of biomolecules and their stability and the characterization of molecular interactions. All resources are available to the entire scientific community, health services and industry, at the local, national and international level. The team applies off-the-shelf methods and designs customized solutions, building on top of the experience and know-how accumulated since 2005.

The Biochemical & Biophysical Technologies platform is part of the P4EU network – Protein Production and Purification Partnership in Europe and the Association of Resources for Biophysical Research in Europe-Molecular Biophysics in Europe (ARBRE-MOBIEU), in which Frederico Silva coordinates the section on training and human capacity development.

Frederico Silva

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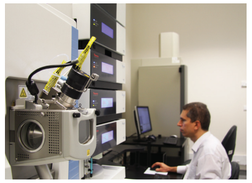
Proteomics

i3S Proteomics platform provides access to mass spectrometry analysis of protein samples from extracts, solutions and gel bands.
The Proteomics platform is prepared to work in a variety of experimental workflows in order to provide answers to scientific questions and to address researchers' needs.



The team offers scientific and technical expertise with protocol design, experimental strategy, results/data interpretation and consultancy including assistance in grant proposals and project setup. We also provide training in workshops and pre-/ post-graduate courses.

The Proteomics platform is integrated at RNEM, the Portuguese Mass Spectrometry Network. RNEM is included in the FCT's Research Infrastructures Roadmap.

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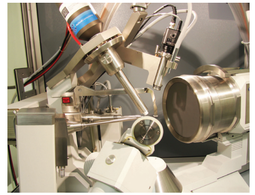
X-ray crystallography



The X-ray Crystallography platform provides access to state-of-the-art facilities and instrumentation for crystallization and crystallographic data collection of small molecules and macromolecules. The platform has an open-access policy and its resources are available to both the scientific community and the industry (pay-per-use or contract services).

We have two dedicated temperature-controlled walk-in crystallization chambers, an automated workstation for crystallization in sub-microliter format, including lipid cubic phase (Douglas Instruments), and a dual-wavelength (Mo and Cu) four-circle goniostat CCD-equipped single-crystal diffractometer (Rigaku) with multi-layer optics and sample temperature control.

While specialized training is required for access, it can be provided on demand.

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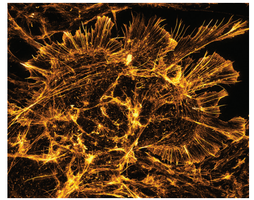
Advanced Light Microscopy

The Advanced Light Microscopy (ALM) platform specializes in biological imaging technologies to study cellular systems in all biosciences research areas.



The platform provides scientific guiding in project development including experimental planning and data analysis, training, access to equipment, technical support in image acquisition and analysis, and development of new technologies or applications. The ALM is accessible to academy, research institutes and industry on a fee basis open-access policy.

The Advanced Light Microscopy platform integrates the PPBI-Portuguese Platform of BioImaging, a member of the ELMI-European Light Microscopy Initiative, and participates in COST actions NEUBIAS – Network of European BioImage Analysts and COMULIS - Correlated Multimodal Imaging in Life Sciences.

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Bioimaging

Bioimaging brings together a set of solutions for *in vitro* and *in vivo* imaging in order to advance in the development, improvement, integration and use of bioimaging solutions through research, technology development, training and education with focus on the fields of Biomaterials, Nano- and Regenerative Medicine, in biology and medical science. The Bioimaging operates on the bases of core

projects and programmes at the bioimaging/ biomaterials and/or regeneration interface. It is open to all academic researchers and industry on a fee-for-service basis, with specialized technical staff supporting its daily activities. In particular, we provide support to our users on project planning, experimental design, sample preparation, equipment operation and optimization, and image analysis. Besides training for the users in operating the systems for their scientific goal, the Bioimaging also offers advanced workshops and participates in different outreach activities.

Bioimaging is a node of the PPBI-Portuguese Platform of BioImaging.

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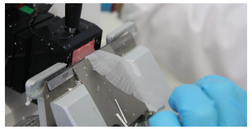
Histology & Electron Microscopy



The Histology and Electron Microscopy platform is focused on Electronic Microscopy and Optical Microscopy. The Histopathology service, integrated in the platform, offers a full range of macroscopic and histopathology services, able to support research groups using animal models or human tissues in histopathology studies. The unit provides the equipment, technical support and guidelines to researchers looking for high level electron and optical microscopy to tackle studies either of cells, tissues or material sciences, not only for i3S and the University of Porto, but also for outside institutions, industry and companies. The platform can help to define optimal experimental conditions for the research, while also taking part in the projects. Besides organizing training courses for researchers, Master's and PhD programs, the unit also offers internships for higher education students, and engages in workshops and exhibitions for the general public in collaboration with the i3S Communication Unit.

The Histology and Electron Microscopy platform is a node of the Portuguese Platform of BioImaging.

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