

annual report 2014

INSTITUTO
DE TECNOLOGIA
QUÍMICA E BIOLÓGICA
ANTÓNIO XAVIER /UNL

Knowledge Creation



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ABOUT ITQB

Instituto de Tecnologia Química e Biológica António Xavier (ITQB) is a scientific research and advanced training institute of the Universidade NOVA de Lisboa.

The ITQB is located in the Town of Oeiras, at the Tagus river mouth, just outside Lisbon.

The mission of the ITQB is to carry out scientific research and postgraduate teaching in chemistry, life sciences, and associated technologies, while also serving the community and performing university extension activities for the promotion of science and technology.

Brief account of ITQB's history

The origins of ITQB go back to 1986 when the concept of a new research centre was developed and took shape through a process led by Professor António V. Xavier (1943-2006), culminating in the launch of CTQB (Centro de Tecnologia Química e Biológica) in 1989. This research centre became Instituto de Tecnologia Química e Biológica in 1993, when it was integrated in Universidade Nova de Lisboa.

Since its foundation, and to the present date, ITQB works closely with its partner institution IBET (Instituto de Biologia Experimental e Tecnológica) – a private, not-for-profit biotechnology institution, which works close to the industrial sector.

In 1996, ITQB started to operate in the present site, in the campus of Estação Agronómica Nacional, in Oeiras. The main building hosts most of the research groups and all administrative and support services; a few groups have remained in the previous location at Instituto Gulbenkian de Ciência or otherwise use laboratory space from the Instituto Nacional de Investigação Agrária e Veterinária (INIAV).

ITQB was one of the first research institutions to be awarded the status of Laboratório Associado (LA) by the Minister of Science and Technology, in 2001. Under the LA programme the

Institute established a partnership with IGC and IBET, and later with CEDOC, to maximize its research and development potential.

In 2015, a new funding mechanism determined the organization of ITQB research activities within research units. In line with its research strategy, ITQB coordinates two research units (MOSTMICRO and GREEN-IT) and participates in a third one (INOVA4Health).

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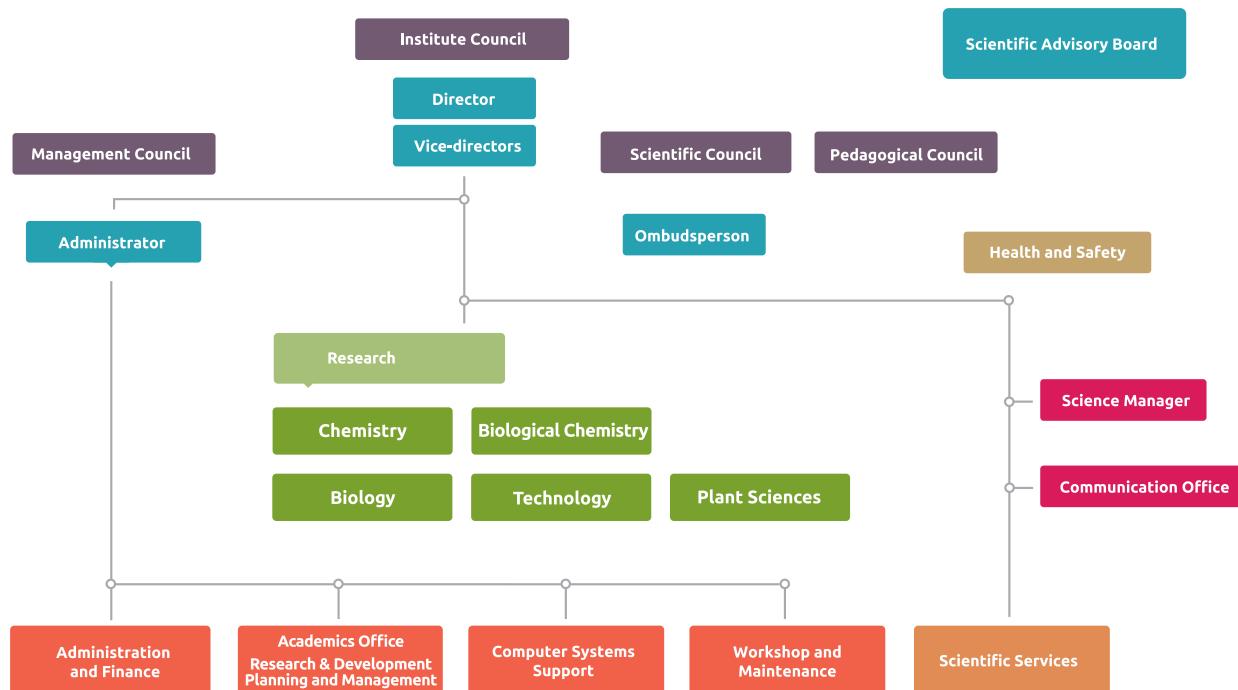
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Ana Luisa Simplicio

Isabel Abreu

Bioimaging Unit

Adriano O. Henriques

Small Molecule X-Ray Crystallography

Isabel Bento

Library

Isabel Murta

Teaching Laboratory

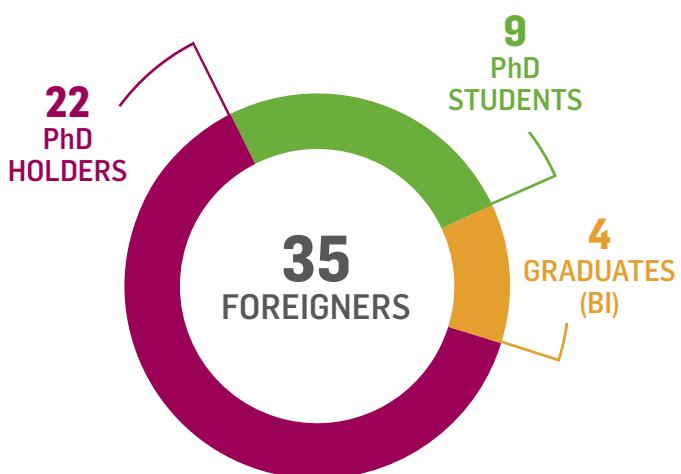
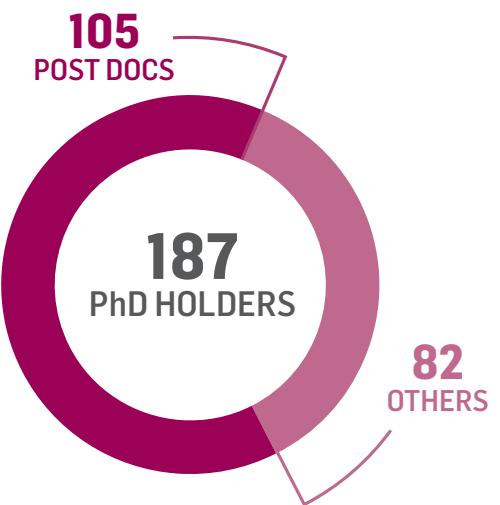
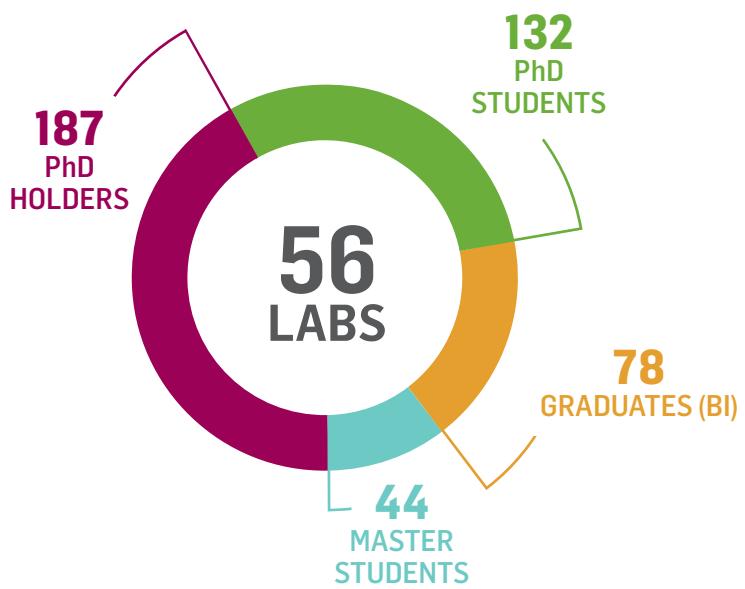
Teresa Baptista da Silva

Technology transfer

Francisco Pereira do Valle

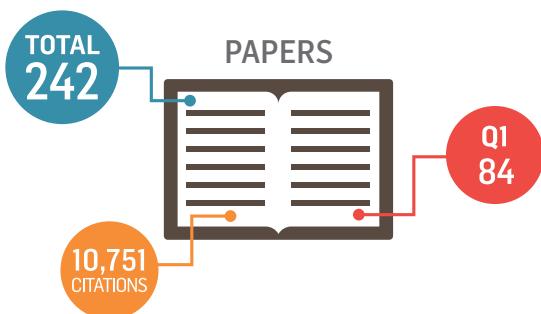


PEOPLE





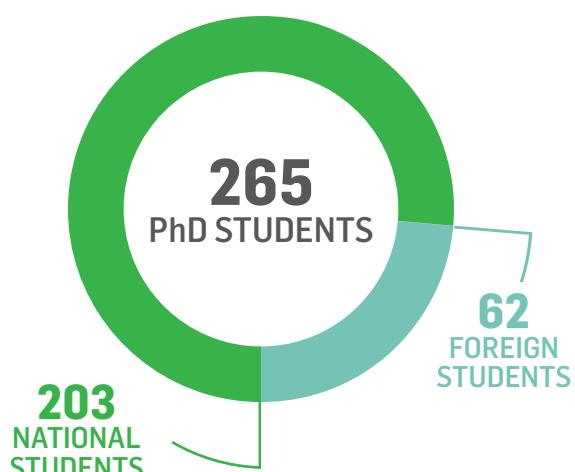
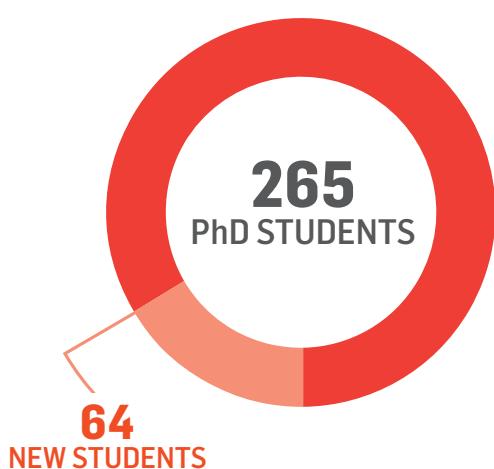
RESEARCH



ONGOING RESEARCH
PROJECTS



EDUCATION

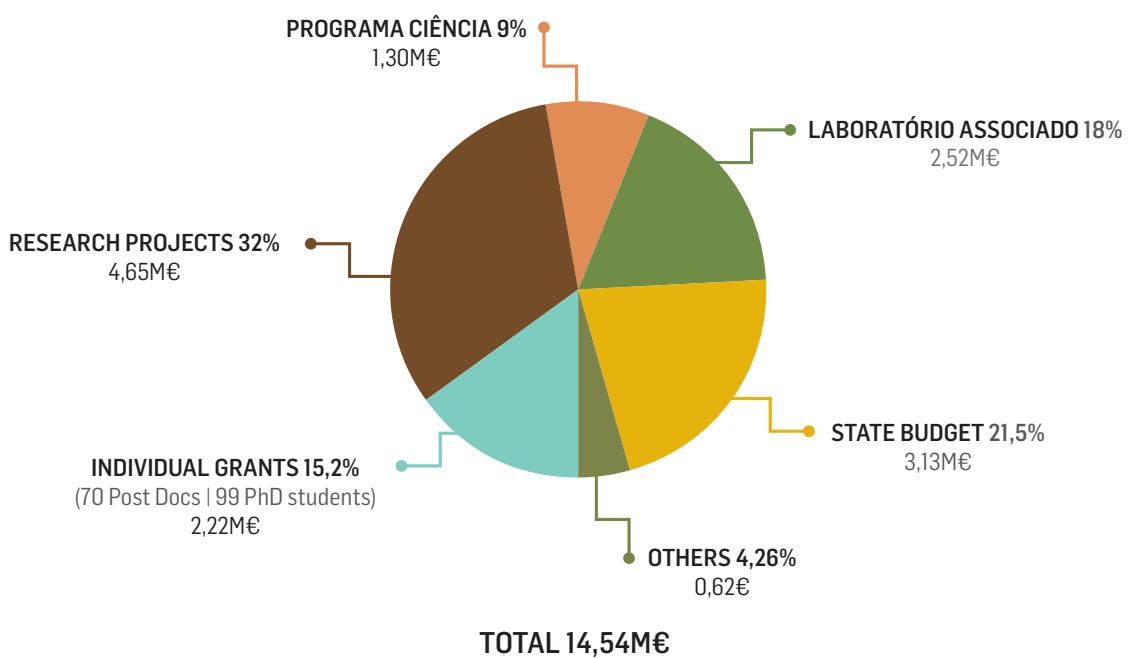




EDUCATION



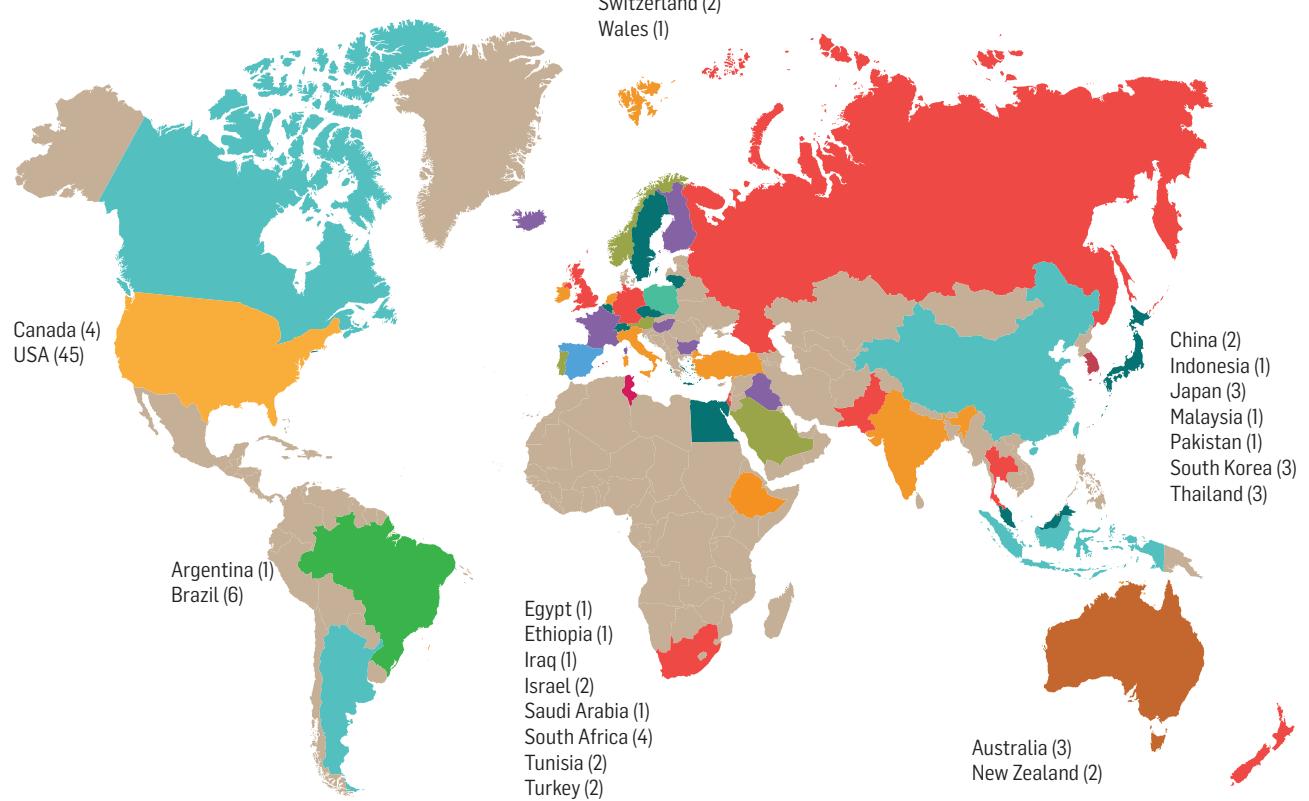
FUNDING





INTERNATIONALIZATION

Austria (4)
Belgium (9)
Bulgaria (1)
Czech republic (1)
Denmark (7)
England (24)
Finland (3)
France (25)
Germany (35)
Hungary (1)
Iceland (1)
Ireland (8)
Italy (10)
Lithuania (1)
Luxembourg (6)
Netherlands (8)
North ireland (1)
Norway (4)
Poland (5)
Russia(3)
Scotland (5)
Spain (26)
Sweden (3)
Switzerland (2)
Wales (1)





RESEARCH

RESEARCH AREAS

ITQB has a strong expertise in **Molecular Biosciences**, covered by four broad scientific disciplines: Cellular and Molecular Biology, Molecular and Structural Biology, Biotechnology and Systems Biology, and Chemical Biology. These scientific disciplines drive ITQB research, contributing to strategic Societal Challenges focused on the well-being of human societies (Molecular Basis of Health and Disease) and on the environment (Biological Resources and Sustainable Development).

Molecular basis of health and disease is directed to the well-being of humans and animals. ITQB aims to understand **the biological questions at the molecular and cellular scale** exploiting complementary expertise within the Institute. Epidemiology, molecular basis of infection, and antimicrobials and resistance are areas where research is being pursued towards this goal. Our molecular expertise allows us to unveil the mechanisms of disease and drug action, while opening the way for the design of new drugs, including biopharmaceuticals and ATMPs. In summary, ITQB addresses, at several levels of depth (from the atomic level, to organism biology), **the molecular mechanisms that sustain life**.

Biological resources and sustainable development deals mainly with the environment at large. The expertise of ITQB in Plant Sciences has a strong molecular edge and obvious impact on agriculture and the environment, placing the Institute on a very competitive position to make a difference at national and international level. Additionally, ITQB contributes substantially to the topics of food safety and security, which are strategic in our over-crowded planet.

Furthermore, ITQB expertise in clean production of useful products through (bio)catalysis (including bioenergy production), and microbiotechnology, can pave the way to a more sustainable development, while maintaining and improving the quality of life of advanced societies.

Research activities are currently integrated in **Research Units**, which involve researchers from other institutions. ITQB coordinates two Research Units – **MOSTMICRO** and **GREEN-IT** - and is further involved in a third one – **iNOVA4Health**. MOSTMICRO and iNOVA4Health operate in the area of Health and GREEN-IT operates in the area of Sustainability.

MOSTMICRO

Molecular, Structural and Cellular Microbiology

Green-it

Bioresources 4 Sustainability

iNOVA4Health

The **Molecular, Structural and Cellular Microbiology Unit** (MOSTMICRO) aims to advance the fundamental knowledge of living organisms, with emphasis on important bacterial pathogens, towards improving human health.

Research is focused on selected microorganisms from all the three life domains, Bacteria, Archaea and Eukarya, for the study of basic biological questions, to improve our understanding of pathogens, and to contribute to the identification and design of novel systems/proteins/compounds with therapeutic potential.

The unit is coordinated by ITQB.

The mission of the **BioResources 4 Sustainability Unit** (GREEN-IT) is to develop or design more sustainable biological and synthetic systems with application in food, feed, energy and the environment through the study of biological resources, ranging from complex systems like plants, bacteria and fungi, down to the level of proteins and molecules

GREEN-IT explores biological resources, using chemical and biological strategies, to address key societal challenges in agriculture, forestry and energy, ensuring environmental protection and supporting a bio-based economy.

The unit is coordinated by ITQB and also involves research groups from iBET and IGC.

iNOVA4Health is a translational medicine programme organizing the efforts of biomedical researchers involved in biological understanding of disease, lead compounds and biopharmaceuticals "pre-discovery", technological scientists involved in "preclinical development", and clinicians involved in "early clinical and first in man clinical trials" from institutions within NOVA University of Lisbon. The programme has a strong emphasis on developing therapies to promote healthy ageing and in targeting chronic diseases that are responsible for two thirds of deaths worldwide and a major burden on healthcare systems for the future.

The unit is managed by iBET and also includes ITQB, CEDOC and the IPOLFG, Portuguese Oncology Institute.



RESEARCH DIVISIONS

At ITQB, **Research Laboratories** are organized into **five Research Divisions** - Chemistry, Biology, Biological Chemistry, Plant Sciences, and Technology. Collaboration between Divisions is strongly encouraged. The diversity of expertise present at ITQB contributes to the **multidisciplinary atmosphere** that makes this Institute unique in the country.

CHEMISTRY DIVISION

Ana Petronilho Lab

Bioorganometallic Chemistry

Research in our group is centred in the synthesis of biologically relevant N-heterocyclic carbenes (NHCs), and on their applications as pharmaceuticals and catalysts.

Beatriz Royo Lab

Homogeneous Catalysis

The homogeneous catalysis group works on the synthesis of novel catalyst based on organometallic species. Our final goal is to develop sustainable, efficient and selective organic transformations.

Carlos Romão Lab

Organometallic Chemistry

The Laboratory of Organometallic Chemistry is presently studying new metal derivatives of carbon monoxide (CO) to be used for the production of renewable energy and as a new class of drugs based on the therapeutic activity of CO.

Chris Maycock Lab

Organic Synthesis

Natural product syntheses are a great challenge since the product gross structure and stereochemistry are rigorously defined. Any synthesis is a test of the viability of the strategy and of the compatibility of the reagents. The organic synthesis group is dedicated to the synthesis of compounds which have a relatively complex three dimensional structure and which may not necessarily be related to the gross structure.

Eurico Melo Lab

Micro-heterogeneous Systems

This group focus on the study of how the small volumes, the limited dimensions and the topology of the compartments in which biological reactions take place influence their kinetics and equilibrium.

Isabel M. Marrucho Lab

Separation and Extraction Technologies

The Separation and Extraction Technologies group uses engineering tools to develop sustainable chemicals, materials and processes. Research ranges from fundamental studies on phase equilibria to applications in separation and extraction processes.

Luis Paulo N. Rebelo Lab

Molecular Thermodynamics

Molecular thermodynamics of liquids and liquid solutions, in particular, studies of ionic liquids and ionic liquid-containing systems constitute the main activity of this group. Other research topics include isotope effects, polymer solutions, and metastable liquids.

Rita Delgado Lab

Coordination and Supramolecular Chemistry

The Coordination and Supramolecular Chemistry group designs and synthesizes new molecules for the selective uptake of anions, neutral molecules or metal ions for environmental and medical applications.

Rita Ventura Lab

Bioorganic Chemistry

Bioorganic Chemistry is the interface of organic chemistry and biology. Research in this lab uses the principles and techniques of organic chemistry to solve problems of relevance to biology, like designing synthetic derivatives of natural products that improve on nature.



BIOLOGICAL CHEMISTRY DIVISION

Antonio M. Baptista Lab

Molecular Simulation

The Molecular Simulation Laboratory develops and applies theoretical/computational methods to study the atomic-level determinants of the behavior of (bio)molecules.

Carlos Frazão Lab

Structural Biology

Macromolecular Crystallography Unit

The Structural Biology Laboratory works on the 3D structural determination of biological macromolecules aiming to understand biological processes at atomic and molecular level.

Claudina R. Pousada Lab

Genomics and Stress Laboratory

The genomics and stress laboratory works in the mechanisms involved in homeostasis control when yeast cells are exposed to different environmental cues. The function of Yap transcription factors in stress response is investigated.

Cláudio M. Soares Lab

Protein Modeling

The Protein Modelling Laboratory works on molecular modelling of proteins using physical methods. Our areas of work range from basic research in modelling methodologies to applications with biotechnological and biomedical interest.

Colin McVey Lab

Structural Virology

Macromolecular Crystallography Unit

Our research is focused on gammaherpesvirus viral modulation and the study of proteins encoded by herpesvirus to understand their structural and functional role in viral latency. Viral latency is the ability of a pathogenic virus to lie dormant within a cell. One of the most essential tasks during latency is to maintain the viral episome through cycles of mitotic cell divisions. The focal point of our research is LANA, a multifunctional protein that is critical for the establishment and maintenance of viral latency. My lab combines both biophysical (EMSA, ITC & ThermoFluor) and structural methods (BioSAXS & X-ray crystallography) to understand protein interactions involved in viral latency and modulation of its host.

Inês A. Cardoso Pereira Lab

Bacterial Energy Metabolism

The Bacterial Energy Metabolism laboratory investigates the molecular basis of metabolic pathways for energy production, in microorganisms that are biotechnologically and environmentally important.

Ligia M. Saraiva Lab

Molecular Mechanisms of Pathogen Resistance

The Molecular Mechanisms of Pathogen Resistance Laboratory mainly focus on understanding the survival mechanisms of human pathogens that relate to oxidative and nitrosative stress imposed by the human immune system.

Ligia O. Martins Lab

Microbial & Enzyme Technology

The research activities are in the field of Molecular Biotechnology aiming at the eco-efficient use of natural resources, the set-up of new bioremediation processes, and the production of bio-based products.

Manolis Matzapetakis Lab

Biomolecular NMR

Our focus is the application of NMR to various biomolecular problems. We are interested in protein structure determination - dynamics, protein-protein interactions including the study of metalloproteins and large proteins.

Manuela M. Pereira Lab

Biological Energy Transduction

Metalloproteins and Bioenergetics Unit

The Biological Energy Transduction Group addresses a fundamental process for all living organisms: energy conservation. A wide range of biochemical and biophysical techniques is used to investigate the mechanisms of energy transduction by membrane respiratory chains.

Margarida Archer Lab

Membrane Protein Crystallography

Macromolecular Crystallography Unit

In the Membrane Protein Crystallography Laboratory, we determine the three-dimensional structure of biological macromolecules. The laboratory is integrated in the Macromolecular Crystallography Unit.

Maria Arménia Carrondo Lab

Structural Genomics

Macromolecular Crystallography Unit

The Structural Genomic Group develops structural studies by X-ray diffraction of proteins and protein interactions involved in the innate immune response and a number of different prokaryote proteins that are targets for health and biotechnological applications, using a structural genomic approach.



Miguel Teixeira Lab

Metalloenzymes and Molecular Bioenergetics

Metalloproteins and Bioenergetics Unit

The main research themes of the Laboratory are the study at the molecular level of the structure and functional mechanisms of soluble and membrane-bound metalloenzymes, namely those involved in oxygen and nitric oxide metabolisms.

Pedro Matias Lab

Industry and Medicine Applied Crystallography

Macromolecular Crystallography Unit

Many proteins in nature have either industrial and/or medicinal applications. Knowledge of their three-dimensional structure is essential to understanding their function at the atomic level, and can be used to control or improve their functional activity by the production of small molecules to act as substrates or ligands with specific purposes (e.g., drugs to fight disease) or by engineering selected mutants with enhanced biological activity. Our research program is dedicated to doing just that: determining the 3D structure of selected proteins, and using that knowledge, in combination with other studies (biochemical, spectroscopic, etc.) to understand how these molecules work.

Ricardo O. Louro Lab

Inorganic Biochemistry and NMR

The Inorganic Biochemistry and NMR Laboratory is devoted to the structural and functional characterization of redox proteins that participate in the anaerobic bioenergetic metabolism of microorganisms, using biophysical methods.

Smilja Todorovic Lab

Raman Spectroscopy of Metalloproteins

Research in the Laboratory for Raman spectroscopy of metalloproteins is focused on structural and functional characterization of redox proteins that perform diverse functions in cells, including electron transport, detoxification and enzymatic catalysis.



BIOLOGY DIVISION

Adriano O. Henriques Lab

Microbial Development

Bacterial spores are encased in a protein shield (or coat) that confers resistance against noxious chemicals and predation, protects the underlying cortex peptidoglycan layer from the action of lytic enzymes, and is a key sensor of the environment. The spore surface proteins are synthesized in the mother cell, one of the two compartments of the sporulating cell.

Cecilia Arraiano Lab

Control of Gene Expression

Our studies focus on the control of gene expression. We have studied RNA degradation and characterized enzymes that mediate decay. Other interests are stress and microbial growth. This work has many applications in Biotechnology and Health.

Federico Herrera Lab

Cell Structure and Dynamics

The overall aim of my laboratory is to lay the groundwork for the application of regenerative medicine in central nervous system (CNS) disorders involving neuronal loss, such as neurodegenerative disorders, spinal cord injury or stroke.

Helena Santos Lab

Cell Physiology and NMR

Research at the Cell Physiology & NMR Lab is focused on beneficial microbes, i.e., microorganisms that promote human health or well-being, or are sources of new metabolites and enzymes with potential application in biotechnology.

Hermínia de Lencastre Lab

Molecular Genetics

Microbiology of Human Pathogens Unit

The long-range interest of the laboratory is in the epidemiology, genetics, evolutionary and biochemical mechanisms of antibiotic resistant pathogens, specifically, staphylococci, Streptococcus pneumoniae, and enterococci.

Júlia Costa Lab

Glycobiology

Most mammalian proteins contain oligosaccharides covalently linked. We are studying the glycosylation of neuronal tissue.

Karina Xavier Lab

Bacterial Signaling

In our laboratory we study a process called Quorum Sensing which enables bacteria to synchronize their behaviour and act in group to regulate important processes such as virulence, biofilm formation and antibiotics production.

Maria Miragaia Lab

Bacterial Evolution and Molecular Epidemiology

Microbiology of Human Pathogens Unit

The Laboratory of Bacterial Evolution and Molecular Epidemiology aims to understand the molecular basis of bacterial evolution with focus on the evolution of antimicrobial resistance determinants and antimicrobial resistant clones in coagulase-negative staphylococci (CoNS).

Mariana G. Pinho Lab

Bacterial Cell Biology

In the Bacterial Cell Biology laboratory we use the Gram positive pathogen *Staphylococcus aureus* to study the mechanisms of cell division and of antibiotic resistance to cell wall targeting antibiotics.

Pedro Domingos Lab

Cell Signaling in Drosophila

We use *Drosophila* as a model system to study the molecular and cellular signaling mechanisms involved in the degeneration of the photoreceptors, the cells that sense light in the visual system.

Raquel Sa-Leão Lab

Molecular Microbiology of Human Pathogens

Microbiology of Human

Pathogens Unit

In our group we are studying how human interventions, such as the use of vaccines and antibiotics, impact on the nasopharyngeal ecosystem, a rich niche frequently inhabited by potentially pathogenic bacteria such as *Streptococcus pneumoniae*.

Sergio R. Filipe Lab

Bacterial Cell Surfaces and Pathogenesis

We study how bacteria synthesize a major component of their cell surface, the peptidoglycan, while simultaneously preventing the infected host from detecting this inflammatory macromolecule that can trigger an innate immune response.



PLANT SCIENCES DIVISION

Cândido Pinto Ricardo Lab

Plant Biochemistry

The Plant Biochemistry Laboratory applies transcriptomics, proteomics and metabolomics to study plant development and stress response. Cellular processes of model plants and molecular plasticity of plant genetic resources are areas of research.

Carla António Lab

Plant Metabolomics

At the Plant Metabolomics Lab we use Analytical Chemistry and Mass Spectrometry-based strategies to study Plant Development and Stress Biology. We aim to elucidate primary metabolite accumulation patterns in plants present in a defined developmental period and abiotic stress condition.

Célia Miguel Lab

Forest Biotech

Forest trees have a huge ecological and socio-economic impact. They provide the biomaterials for highly competitive forest industries. Efficient strategies for tree selection, improvement and clonal propagation are required in order to meet the increasing demand for forest products better suited for industry applications. However, the establishment of such strategies depends on a better knowledge of the biological processes underlying the traits of interest.

Isabel Abreu Lab

Proteome Regulation in Plants

GPlants Unit

At the Proteome Regulation Lab, we study the fast regulation of the cell proteome by post-translational occurring when plants are exposed to changes in their environment.

Margarida Oliveira Lab

Plant Functional Genomics

GPlants Unit

At GPlantS lab we study the effect of environmental factors on the regulation of gene expression and plant development, with special focus on salt, drought and temperature stresses, using a number of different genomics approaches.

Maria Carlota Vaz Patto Lab

Genetics and Genomics of Plant Complex Traits (PlantX)

At the PlantX Lab we unveil the genetic and genomic basis of plant Complex traits, such as nutritional or organoleptic quality or biotic/abiotic stress resistance, using different statistical genetic and genomic approaches.

Manuela Chaves Lab

Plant Molecular Ecophysiology

Our general interests concern the understanding of physiological and molecular mechanisms underlying plant responses to environmental stresses as well as the differences among genotypes in the capacity to utilize external resources.

Nelson Saibo Lab

Plant Gene Regulation

GPlantS Unit

In the Plant Gene Regulation Laboratory we use model and crop plants to study gene regulatory mechanisms underlying plant growth and plant responses to adverse environmental conditions

Pedro Fevereiro Lab

Plant Cell Biotechnology

Our aim is to develop molecular strategies to support plant selection and breeding programs, to apply biotechnology to the development of company's strategies and to train researchers in plant biotechnology and plant molecular biology.

Rita Abranches Lab

Plant Cell Biology

The Plant Cell Biology Laboratory works on several aspects of the biology of the plant cell, including the functional organization of the cell nucleus and protein processing within the plant secretory pathway.



TECHNOLOGY DIVISION

Abel Gonzalez Oliva Lab

Biomolecular Diagnostics

This multidisciplinary research team is committed to develop new biomolecular tools, such as nanoparticles (CdSe@ZnS quantum dots) and biosensors, for practical applications like disease diagnostic and bioprocess monitoring..

Ana Coelho Lab

Mass Spectrometry

The information obtained with the powerful Mass Spectrometry techniques is fundamental for the structural characterization of chemical and biochemical species.

Ana Luisa Simplicio Lab

Pharmacokinetics and Biopharmaceutical Analysis

The PABA group develops in vitro models to study pharmacokinetics and metabolism. Those models are applied to dietary supplements or prospective drugs.

Ana Sofia Coroadinha Lab

Cell Line Development and Molecular Biotechnology

Animal Cell Technology Unit

The primary research activity is centered in development and improvement of animal cell lines for the manufacturing of complex biopharmaceuticals, as recombinant proteins and recombinant virus for vaccines and gene therapy.

Ana Teixeira Lab

Bioengineering and Systems Biology

Animal Cell Technology Unit

Our research is primarily focused on studying the systems level metabolism of animal cells, combining computational and experimental tools to identify key regulatory mechanisms that control cell metabolic phenotypes (target biological systems include biopharmaceutical cell factories, stem cells used in expansion and differentiation protocols, as well as brain and cancer cell models). We also develop monitoring and control tools to support bioprocess optimization and batch-to-batch consistency.

Andreas Bohn Lab

Systems Biodynamics

The Systems Biodynamics Laboratory uses computational and mathematical methods to analyze and predict the response of biological systems like plant leaves or microbial biofilms to dynamical variations of environmental conditions.

Catarina Duarte Lab

Nutraceuticals and Delivery

This laboratory uses clean technologies for isolation and development of health promoting products. High pressure methodologies are applied for the extraction of bioactive compounds and preparation of new delivery systems.

Catarina Brito Lab

Advanced Cell Models

Animal Cell Technology Unit

Our research is mostly translational and focused on the study of cellular microenvironment in disease onset and progression. To address these questions we develop and employ advanced cell-based disease models using stem cells and other patient-derived cell and exploring three-dimensional culture strategies, along with cell biological and biochemical approaches. Our main research targets are Central Nervous System diseases and Cancer.

Cristina Silva Pereira Lab

Applied and Environmental Mycology

The Applied and Environmental Mycology group aims to enlarge filamentous fungi biotechnological potential. Research ranges from fundamental studies on fungal biology to applications in bioremediation and biocatalysis, also highlighting ionic liquids higher interest.

Manuel J. T. Carrondo Lab

Engineering Cellular Applications

Animal Cell Technology Unit

Our research is centered on integrative development of bioprocesses for complex biopharmaceuticals namely vaccines, recombinant proteins and viral vectors for gene therapy .

Paula M. Alves Lab

Cell Bioprocesses

Animal Cell Technology Unit

Our research is centered on the development of bioprocesses for complex biopharmaceuticals namely vaccines, recombinant proteins and viral vectors for gene therapy. Current efforts include also the development of tools and methodologies for cell therapy applications and pre-clinical research (novel 3D in vitro models for toxicology namely the use of Stem Cells (hESC, iPSC and Adult Stem Cells) and primary cultures of human hepatocytes. Our main research areas are liver, cardiac and brain cell 3D in vitro models.

Teresa Crespo Lab

Microbiology of Man-made Environments

The main aim of the laboratory is the study of isolated microbial strains and of microbial populations and in natural environments and mostly in environments created by man like food products, polluted waters or microbial/host pairs.



SCIENTIFIC SERVICES

CERMAX

Centro de Ressonância Magnética António Xavier

CERMAX is one of the centers of the Rede Nacional de Ressonância Magnética and aims to facilitate the access and use of Nuclear Magnetic Resonance by the Portuguese scientific community, as well as to disseminate the possibilities of this technique. CERMAX accepts project proposals from scientists and researchers from other academic institutions or from the industry, in Portugal and abroad.

CERMAX hosts the highest field spectrometer in Portugal (Bruker AvanceLL 800MHz equipped for experiments with solids as well as liquids), two 500 MHz spectrometers (one of which is also equipped for the acquisition of spectra of solids), and one 400 MHz spectrometer. These instruments support a wide range of applications, such as structure determination of proteins and small molecules, metabolic studies, science of materials, and *in vivo* NMR. CERMAX is located on the 1st floor of the ITQB main building.

UniMS (ITQB/iBET)

The goal of UniMS is to guarantee the continuing increase of Mass Spectrometry know-how and infrastructures at ITQB and iBET in order to provide the appropriate support of MS services to the scientific community and to the industry.

iBET/ITQB Mass Spectrometry Unit (UniMS) is equipped with five mass spectrometers: a time-of-flight MS/MS system (MALDI TOF-TOF 4800Plus, ABSciex), two ion traps coupled to HPLC systems (nano and conventional flows, Thermo Finnigan), one linear ion trap; and has recently acquired a top performing Triple-TOF mass spectrometer (ABSciex TripleTOF® 6600) combined with SWATH acquisition 2.0 and equipped with Ion Mobility Technology. UniMS is also one of the Nodes of the Portuguese National Mass Spectrometry Network (RNEM) – recently integrated in the National Roadmap of Research Infrastructures of Strategic Relevance (evaluated by FCT).

ASU (ITQB/iBET)

The Analytical Services Unit (ASU) has a track record of over twenty years targeting chemical, pharmaceutical, biopharmaceutical and agro-industrial markets, offering analytical development, validation and testing services for chemicals and biologicals.

The Unit is GMP certified by INFARMED (the Portuguese medicines authority) and by DGAV (the Portuguese veterinary authority) for quality control and batch release of human and veterinary pharmaceuticals, biopharmaceuticals as well as experimental new drugs.

Bacterial Imaging Cluster

The Bacterial Imaging Cluster comprises light microscopy instrumentation optimized for imaging of fixed or live bacterial cells. The type of work possible includes, but is not restricted to, the following examples: i) cell shape analysis and how it varies using culturing conditions and upon genetic lesions; ii) the analysis of gene expression at the single cell and population levels, cell type-specific gene

expression, or transcriptional cascades, through the localization and quantification of the signal from fluorescent reporters, auto-fluorescent proteins or through the direct localization of mRNAs; iii) studies of protein sub-cellular localization, co-localization, dynamics, and interactions during the cell cycle and differentiation processes, which have also been extended to the assembly of supra-molecular structures and bacterial organelles; iv) localization and dynamics of bacterial chromosome replication and segregation. The BIC has a laser micropoint system coupled to a high-end camera, which allows fluorescence resonance after photobleaching (FRAP) experiments to be implemented. Appropriate filter combinations allow the implementation of fluorescence resonance energy transfer (or FRET) applications. Image acquisition uses the Metamorph software suite. Off-site licenses are installed for image analysis and processing. Charges for external uses may be applied. BIC is located on the 5ft floor of the ITQB main building.

RESEARCH FUNDING

Research at ITQB is mainly supported by contracted projects (awarded competitively) with national and international R&D funding agencies such as Fundação para a Ciência e Tecnologia or the European Commission.

ITQB has a Research Management office dedicated to finding funding opportunities, supporting the institution and researchers in applications for external funding, and strengthening ties with other stakeholders, namely helping to find a common language with non-academic partners. The Research Management provides pre-award support by identifying, advising and assisting in the preparation and submission of grant proposals, and post-award support through contract negotiation and project management.

ITQB secures most of its funding competitively through its three Research Units, MOSTMICRO, Green-it (both coordinated by ITQB) and iNOVA4Health (coordinated by IBET). In 2014, ITQB's researchers secured 121 grants (amounting €4.7M) from national, in particular from the Fundação para a Ciência e Tecnologia, and international agencies (13 of which corresponding to EU awards, including 1 ERC and 2 Interreg SUDOE, and institutional partnerships with MIT and Harvard Medical School).



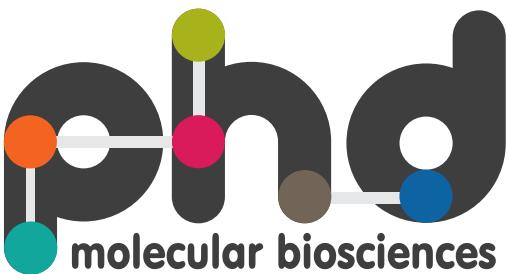
EDUCATION

PHD PROGRAMS

ITQB awards PhD degrees in Chemistry, Biochemistry, Biology and Engineering and Technological Sciences. ITQB PhD students are registered in one of the PhD Programs ongoing at the institute.

All ITQB PhD Programs are funded by Fundação para a Ciência e a Tecnologia and as such may provide PhD Fellowships; open calls are announced through all institutional channels. Students with other sources of funding may also apply

Coordinated by ITQB



The **PhD Program in Molecular Biosciences** is a flexible state-of-the-art research oriented program in life sciences. The Program trains students in molecular approaches needed to understand the mechanisms of life.



The **International PhD Program Plants for Life** aims to train a prominent body of future top researchers in plant sciences able to address key biological questions related to plant growth and development, plant responses to environmental stress, and improvement of crop varieties and plant products.

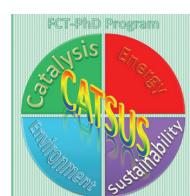
Participating institution



The **PhD in Sustainable Chemistry** is a multidisciplinary program in the central/broad area of chemistry, which will provide new focus on sustainable research strategies towards the development of new chemical, processes and products in line with current needs of the Chemical Industry and the demands of society.

Cell Therapies & Regenerative Medicine

The **International Advanced Studies Diploma in Bioengineering – Cell Therapies and Regenerative Medicine** is designed to promote the emergence of research leaders in academia, hospitals and industry, able to produce cutting-edge developments on Regenerative Medicine, translated into clinical applications, and to promote new business ventures, improving human health and economic growth.



The **PhD Programme on Catalysis and Sustainability (CATSUS)** aims to strengthen the advanced teaching and research in modern Catalysis, promoting a synergic cooperation of the different types of Catalysis, in Chemistry and Chemical Engineering, by gathering teams with complementary expertises in various institutions and favouring their interaction.



MIT Portugal BIO-E Doctoral Program

The PhD on Bioengineering Systems attracts the highest-performing students and involves exchanges with MIT faculty and their laboratories. Curriculum development as well as teaching activities involves the Portuguese institutions as well as MIT faculty.



The PhD in Advanced Integrated Microsystems provides advanced training in the design and implementation of miniaturized multifunctional devices and systems, fabricated using top-down and bottom-up micro and nanofabrication techniques, to be applied to bioprocessing, biotechnology, biomedicine, pharmaceutical sciences, biosensing for biomedical, environmental and food safety, and physical sensing.



[DP_AEM]
DOCTORAL PROGRAM IN
APPLIED AND ENVIRONMENTAL
MICROBIOLOGY

The Doctoral Program in Applied and Environmental Microbiology is an inter-university and inter-research centre program offering multidisciplinary training that includes in-depth understanding of molecular and cellular microbiology and of the contemporary view of genome-based microbiology, microbial diversity and evolution.

NUCLEAR MAGNETIC RESONANCE APPLIED TO CHEMISTRY, MATERIALS & BIOSCIENCES

Nuclear Magnetic Resonance Applied to Chemistry, Materials and Biosciences (coordinated by FCT-UNL)



The Graduate Program Science for Development is an innovative advanced training program, aiming to help prepare African and East Timorese students to pursue a scientific career and to train a new generation of University professors. The programme is funded by FCT and Fundação Calouste Gulbenkian.



NOVA DOCTORAL SCHOOL



ITQB PhD Students can access courses within the **NOVA Doctoral School**, a transdisciplinary structure within Universidade NOVA, which offers a range of complementary and transferable activities that support the personal and professional development of PhD students and supervisors.

MASTER COURSES

ITQB awards Master degrees and also hosts students registered at other academic institutions for their thesis research project.

MASTERS DEGREE IN MEDICAL MICROBIOLOGY

The **Masters Degree in Medical Microbiology**, is a collaborative Masters Course from Universidade Nova de Lisboa initiated in 2003 and involving ITQB, the Instituto de Higiene e Medicina Tropical, Faculdade de Ciências Médicas and Faculdade de Ciências e Tecnologia.

The course trains specialists in medical microbiology, providing a solid training both for professionals in laboratory and clinical settings, and for those wishing to pursue their studies in research (3rd cycle).

Biochemistry for Health

masters course

The **Masters Degree in Biochemistry for Health** is a collaborative Masters from Universidade NOVA de Lisboa, involving ITQB, Faculdade de Ciências Médicas and Faculdade de Ciências e Tecnologia. The course provides a critical and analytical perspective of Human Health from a Biochemical point of view.



The **Masters Course in Science Communication** is a collaborative project of Faculdade de Ciências Sociais e Humanas and ITQB. With an essentially practical approach, the course covers the application of different communication tools to science communication in three major domains: journalism, institutional communication and education.



Master Projects

Research laboratories at ITQB welcome Master students registered at other academic institutions to develop their research projects. In this case, the credits are awarded by the institution awarding the Master degree. Available Research Projects are regularly announced on the ITQB's webpage.

OTHER COURSES

ITQB offers several research training options each corresponding to a number of credits (ECTS) to be awarded as **University Extension or Post-Graduation Courses**. Summer students may apply to a short "Introduction to the Research Lab" course.

Selected students carry out their scientific training integrated in one of the research laboratories at ITQB (or within the Oeiras Associated Laboratory). Candidates from any nationality can apply at any time and should contact directly the PI of the lab they would like to join.

POST-GRADUATION COURSE

Scientific Research Training A
(Licenciados e/ou Mestres)
60 ECTS

University Extension Courses

Scientific Research Training B
(Licenciados ou Mestres)
40 ECTS

Scientific Research Training C
(Licenciados ou Mestres)
30 ECTS

Scientific Research Training D
(Licenciados, Mestres, Estudantes 1º ciclo)
15 ECTS

Research Integration
(Estudantes 1º ciclo)
16 ECTS

Scientific Research Training E
(Estudantes 1º ciclo/2º ciclo)
1.5 ECTS

Summer Training
Introduction to the Research Lab
(Estudantes de 1º ciclo)
6 ECTS



SOCIETY

OUTREACH ACTIVITIES

SCHOOL VISITS

Since its foundations, ITQB receives regular visits from high-schools throughout the year. In each visit, students (age 15 onwards) and their teachers meet two different research labs and have the opportunity to discuss with ITQB researchers both about the science and about research career prospects. Typically, ITQB welcomes between 150-200 students each year.

UM CIENTISTA VAI À ESCOLA

ITQB researchers are also available to visit the neighbouring schools and take some of their research outside the institute's walls. These are excellent occasions for students of all ages to contact with active scientists in different fields.

DIA ABERTO

Organized every two years, the Dia Aberto (Open Day) is a Science fair like event for the general public. On a Saturday, ITQB opens its doors and organizes a set of activities to share some of the excitement of everyday research. This event includes exhibitions, hands-on activities, demonstrations, and visits and is different every time, usually integrated in an internationally celebration, like the International Year of Light in 2015.

SEMANA DA CIÊNCIA E TECNOLOGIA

Every year, in Portugal, November 24th celebrates the day for scientific culture. In that week, the whole country – ITQB included – organizes activities to disseminate science and technology. The Science and Technology week at ITQB takes different formats, including visits to the schools, SciArt workshops, or debates.

OTHER INITIATIVES

As an associate of Ciência Viva, ITQB is often invited to participate in science outreach activities of different formats; some at the Pavilhão do Conhecimento in Lisbon. Recent examples include the Biotechnology Festival, an international initiative which included

In collaboration with the Portuguese Society of Plant Physiology, ITQB has organized the Portuguese activities of the Fascination of Plants Day, an international initiative of the European Plant Sciences Organization scheduled for May 18th and organized every two years.

Some of ITQB local outreach activities are organized with the Oeiras city council.

CENTRO CIÊNCIA VIVA DE SINTRA

Since 2014, ITQB is the scientific partner of Centro Ciência Viva de Sintra, a science center located in the neighbouring region of Sintra, one of the most populated in Portugal. As the scientific partner, ITQB provides scientific consultancy, materials, and science protocols. In 2014, ITQB contributed to the exhibition "No inicio era a semente", that is now on tours in schools around the country.

ITQB AND THE OUTSIDE WORLD

ITQB strives to maintain an active communication with the outside world. This is achieved through media releases, when justified, and making use of web 2.0. Besides the traditional website, which is regularly updated, ITQB maintains active accounts on Facebook, YouTube and Instagram.

www.itqb.unl.pt
www.facebook.com/itqb.unl.pt
instagram.com/itqb.unl
www.youtube.com/user/ITQBchannel

MAY 7-9

ITQB Director integrates national delegation visit to S. Paulo, Brasil, for bilateral collaboration FCT/FASESP

MAY 12

Applications to the Master in Science Communication 2014/2015 open

MAY 20-22

ITQB Vice-Director integrates national delegation in visit to Israel

MAY 25

ITQB participates in Programa de Pós-Graduação Ciência para o Desenvolvimento in Cabo Verde

MAY 30

RNA Workshop 2014 organized at ITQB

JULY 7

Biochemistry for Health Open Day

JULY 8

Meeting on protein electrostatics organized by ITQB member gathers 50 specialists in Lisbon

JULY 11

Over 400 participants join European Bioenergetics Conference 2014

Best Poster Award in Bioenergetics Conference

JULY 17

ITQB hosts First PCISBIO Day, a public meeting of the national centre for Structural Biology

JULY 24-27

7th CERMAX practical course on basic NMR

MAY**JUNE****JULY****JUN 2**

Applications to the Master in Biochemistry for Health open

JUN 5

Algerian delegation visits ITQB

JUN 6

Matteo Bertero Prize awarded to ITQB PhD student Catarina V. Esteves

JUN 19

Five new FCT funded PhD Programmes include ITQB: Plants for Life and Biology at the Host-Microbe Interface (both with ITQB as coordinator); Advanced Integrated Microsystems (coordinated by IST), Nuclear Magnetic Resonance Applied to Chemistry, Materials and Biosciences (coordinated by FCT-UNL), and Applied and Environmental Microbiology (coordinated by Universidade do Minho).

JUN 25

Best Poster awarded to Francisca Monteiro in Vaccine Technology V Conference

JUN 27

ITQB Day marks 21st anniversary within Universidade NOVA

Best PhD Thesis 2013 attributed to Pedro Matos Pereira

António Xavier prizes awarded to Gonçalo Miguel Gomes Graça (Universidade de Aveiro) and Inês Nunes de Sousa (Universidade de Lisboa)

Inauguration of the exhibits "Universus | Life is Art | Live versus Still Biopaintings" by Patricia Noronha

	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
SEP 9	Nobel prize winner Ada Yonath at ITQB to celebrate International Year of Crystallography			
SEP 11	PhD Student Marta Marques awarded poster of the day at FEBS/EMBO Conference in Paris			
SEP 12-13	First MolBioS PhD Students retreat			
SEP 20-27	Seventh edition of Biocrys CourseCe welcomes 35 participants			
SEP 24	Applications to CATSUS PhD Program 2015 open			
OCT 10	Second International Workshop on Pontin and Reptin			
OCT 13	NOVA university featured in QS World University Rankings (Chemistry)			
OCT 24	Inauguration of the exhibit "47°N 27°W Retratos de uma Expedição ao Oceano Atlântico" by Luis Gafeira			
DEC 1	Conclusions of iBET/ITQB project "Azeite+Global" (funded by Sovenal) publicly announced The American Journal of Clinical Nutrition			
DEC 5	Mini-Symposium "Two bacterial pathogens and a way to kill them" held at ITQB			
DEC 11	Twelve FCT investigator positions awarded at ITQB			
DEC 17	Christmas celebration at ITQB			

MAIN SEMINARS

INVITED SPEAKERS

Beyond the structural function of dengue virus capsid protein: the role of its interaction with lipids in viral infection cycle
 Andrea T. Da Poian, Instituto de Bioquímica Médica, Brazil

The amazing ability of continuous chromatography to adapt to a moving environment
 Roger-Marc Nicoud, NOVASEP HOLDING S.A.S., France

Cellular morphogenesis during growth and development in the filamentous fungus Aspergillus nidulans
 Steven Harris, University of Nebraska, Lincoln, USA

Quorum sensing control of phage-bacterial interactions
 Sine Lo Svenningsen, Institute of Biology, Univ. of Copenhagen

Use of the Conditional cDNA Overexpression system to identify stress regulatory genes in Arabidopsis
 László Szabados, Institute of Plant Biology, Biological Research Centre, Szeged, Hungary

The ILRI Vaccine Biosciences program and improved vaccines for the control of East Coast fever in cattle
 Vish Nene, The International Livestock Research Institute (ILRI), Nairobi, Kenya

The regulatory network coordinating natural transformation in the human pathogen *Vibrio cholerae*
 Brian Hammer, Georgia Institute of Technology, EUA

The Future of Plant Biotechnology
 Pere Puigdomenech, CSIC, Barcelona, Spain

Bioinformática aplicada ao estudo de RNAs - não codificantes
 Alexandre Rossi Paschoal, Univ. Tec. Federal do Paraná, Brasil

Transition metal complexes containing phosphine and imino-phosphorane ligands with potential as cancer chemotherapeutics
 Maria Contel, Brooklyn College and The Graduate Center, Brooklyn, New York, US

Advances in the micropropagation of tropical woody species
 Marguerite Quoirin, Univ. Federal do Paraná, Curitiba, Brazil

Linking the bioavailability of dietary polyphenols to mechanisms and physiological effects in humans
 Paul A Kroon, Institute of Food Research, Norwich, UK

Identifying small RNAs: usual and unusual points
 Rogerio Margis, Universidade Federal do Rio Grande do Sul

Building a cell wall from scratch: de novo morphogenesis in L-forms of *Escherichia coli*
 Gabriel Billings, Stanford University, California, USA

Translational Oncology – the National Center for Tumor Diseases
 Christof von Kalle, National Center for Tumor Diseases (NCT) Heidelberg, Germany

Vectors carrying heterologous RNA for designing new viral vaccines
 Carlos Augusto Pereira, Instituto Butantan, Laboratorio de Immunologia Viral, São Paulo, Brazil

Live cell super-resolution analysis of *Escherichia coli* Topoisomerase IV action
 Paweł Zawadzki, Department of Biochemistry, Univ. of Oxford

Pneumococcal cell biology in a new light
 Katrin Beilharz, Molecular Genetics Dept, Univ. of Groningen

Enhanced sampling hybrid Monte Carlo methods in GROMACS package: Multi-HMC-GROMACS
 Elena Akhmedkaya, Basque Center for Applied Mathematics (BCAM), Spain

Biochemical Characterization of Microbial and Plant Cellulose Synthesis
 Ming Tien, Penn State University

Artificial Photosynthesis with "Wired" Enzymes
 Erwin Reisner, University of Cambridge, UK

Potassium uptake by guard cells control vacuolar dynamics and stomatal movements
 José M. Pardo, Instituto de Recursos Naturales y Agrobiología de Sevilla (IRNAS), CSIC, Spain

Exploring Membrane Protein Landscape: Experience from the New York Consortium on Membrane Protein Structure (NYCOMPS)
 Filippo Mancia, Columbia University, New York, USA

Super-Resonators: über super-resolution
 Pedro Matos Pereira, MRC Lab. for Molecular Cell Biology UCL

FRONTIER LEADERS

Combatting Antibiotic's Resistance?
 Ada Yonath, Weizmann Institute, Israel

AVX SEMINARS

Between commensalism and pathogenicity: following evolution of *Escherichia coli* in real time
 Isabel Gordo, Instituto Gulbenkian de Ciência

The calpain sword and neuronal death in the ischemic brain
 Carlos Bandeira Duarte, FCT/Universidade de Coimbra

Mechanisms of Disease and Translational Medicine: what can we learn from Development
 José António Belo, Universidade do Algarve

Virulence and Subversion: the Arsenal deployed by *Listeria monocytogenes*
 Didier Cabanes, IBMC/Universidade do Porto

AVX SEMINARS (CONT)

Structural-based viral pathogenesis

Pedro Simas, FM/Universidade de Lisboa

Bioengineering platforms to modulate the activity of stem cells

Lino Ferreira, Biotec

Mónica Oleastro

Mónica Oleastro, Inst. Nac. de Saúde Doutor Ricardo Jorge (INS), Lisbon, Portugal

Nuclear Tools For Molecular Imaging And Theranostics

Isabel Santos, C de Ciências e Tecnologias Nucleares, IST & FCUL

How cells coordinate growth and shape: unravelling the complexity of ion signalling in pollen tubes

José Feijó, University of Maryland, College Park & IGC

Site-selective chemical protein modification for basic biology and drug development

Gonçalo Bernardes, IMM, Faculdade de Medicina, Universidade de Lisboa & University of Cambridge

Eucalyptus genome sequenced

International consortium involves researchers from IBET/ITQB

Nature (2014) doi:10.1038/nature13308

The genome of Desulfovibrio gigas

Complete sequence of model sulfate reducing bacterium now available

Microbiology Open DOI: 10.1002/mbo3.184

How fungi degrade cell walls

Researchers uncover pathway of suberin utilization as carbon source

A new keyplayer in acute lymphoid leukemia

Research opens door to potential novel treatment

Oncogene. 2014 Aug 18;0. doi: 10.1038/onc.2014.248

Enzymes for a greener chemistry

Laccase is efficient alternative for synthesis of heterocyclic compounds

Green Chem., 2014, 16, 4127-4136

The largest of them all

Genomes of rust fungi are on average larger than those of other fungi

How bacteria hack each other's mailing system

Researchers characterize bacterial mechanism for manipulating autoinducer-2

PNAS (2014) 111 (39): 14235–14240 DOI: 10.1073/pnas.1408691111

How will enzymes behave in ionic liquids?

A strategy for selecting ionic liquids for enzyme biotechnology

Green Chem. (2014) 16, 4520-4523 - DOI: 10.1039/c4gc01329h

Filamentous fungi biopaintings

Patricia Noronha's art work published in Leonardo

Leonardo (2014) doi:10.1162/LEON_a_00962

How oxygen gets there

Cytochrome c oxidase has alternative paths for oxygen diffusion to the active center

PLoS Computational Biology (2014) 10 (12): e1004010

RESEARCH HIGHLIGHTS

Bacterial 3'UTRs are important for mRNA stability

PLOS Genetics | DOI: 10.1371/journal.pgen.1004001

Against the crisis, invest in science

Researchers present strategy to stimulate innovation-based economy in Southern Europe

Environmental Microbiology (2014) 16 (1): 9–18

Spontaneously formed nano-sized emulsions

Researchers show yet another property of ionic liquids

Soft Matter (2014) DOI: 10.1039/C4SM00213J

The silver bullet

Researchers develop efficient membrane for gas separation

Journal of Materials Chemistry A (2014) DOI:10.1039/C4TA00178H

Inspired by nature

Researchers use plant suberin to develop new material

Biomacromolecules, Just Accepted Manuscript DOI: 10.1021/bm500201s

A CRISPR revolution: How bacteria fight their own infections

Researchers uncover new system of bacterial adaptative immunity

Plos Genetics DOI: 10.1371/journal.pgen.1004065

How shaved bacteria escape their host

Researchers identify Staphylococcus aureus strategy to avoid recognition by the host

eLife 2014;3:e02277

PHD THESES

ALVES, Alexandra S.

Functional characterization and directed engineering of redox proteins for a rational improvement of Bioelectrochemical systems/Alexandra S. Alves ; supervisor Ricardo Louro. - Dissertation presented to obtain the Ph.D degree in Biochemistry

BORGES, Alexandre Filipe Guerreiro

The grapevine defences/Alexandre Filipe Guerreiro Borges ; supervisor Ricardo Boavida Ferreira. - Oeiras : Universidade Nova de Lisboa. Instituto de Tecnologia Química e Biológica, 2014.

CHROSTEK, Ewa Anna

Genomic and environmental factors influence Wolbachia-Drosophila symbiosis/Ewa Anna Chrostek ; supervisor Luís Teixeira. - Oeiras : Universidade Nova de Lisboa. Instituto de Tecnologia Química e Biológica, 2014.

DAMINELI, Daniel Santa Cruz

Synchronization properties of multi.oscillator circadian systems/Daniel Santa Cruz Damineli ; supervisor Andreas Bohn. - Oeiras : Universidade Nova de Lisboa. Instituto de Tecnologia Química e Biológica, 2014.

DIEKMANN, Yoan

The Evolution of Function in the Rab Family of Small GTPases/Yoan Diekmann ; supervisor José Pereira-Leal. - Oeiras : Universidade Nova de Lisboa. Instituto de Tecnologia Química e Biológica, 2014.

FERNANDES, Catarina G.

Assembly and function of a protein cross-linking enzyme during bacterial spore morphogenesis/ Catarina G. Fernandes; supervisor Adriano Oliveira Henriques . - Oeiras : Universidade Nova de Lisboa. Instituto de Tecnologia Química e Biológica, 2014.

FIGUEIREDO, Teresa de Almeida

Amidation of peptidoglycan in Staphylococcus aureus/Teresa de Almeida Figueiredo ; supervisor Hermínia de Lencastre. - Oeiras : Universidade Nova de Lisboa. Instituto de Tecnologia Química e Biológica, 2014.

GONÇALVES, Lígia Antunes

Host genetic factors in mouse malaria liver stage infection/Lígia Antunes Gonçalves ; supervisor Carlos Penha Gonçalves. - Oeiras : Universidade Nova de Lisboa. Instituto de Tecnologia Química e Biológica, 2014.

HARTMANN, Diego de Oliveira

Exploring ionic liquids' unique stimuli to elucidate uncharacterised cellular and molecular mechanisms in filamentous fungi/Diego de Oliveira Hartmann ; supervisor Cristina Silva Pereira. - Oeiras : Universidade Nova de Lisboa. Instituto de Tecnologia Química e Biológica, 2014.

LEITÃO, Alexandre Castanho Barata

Hematopoiesis in the Drosophila larva: beyond the lymph gland/Alexandre Castanho Barata Leitão; supervisor Élio Sucena . - Oeiras : Universidade Nova de Lisboa. Instituto de Tecnologia Química e Biológica, 2014.

MARQUES, Marta Franco Coimbra

Structural and functional studies of a high activity NiFeSe Hydrogenase/Marta Franco Coimbra Marques ; supervisor Inês Cardoso Pereira/Pedro Matias. - Oeiras : Universidade Nova de Lisboa. Instituto de Tecnologia Química e Biológica, 2014.

MATEUS DE OLIVEIRA, Marisa

Coordinating development: uncovering the mechanisms that coordinate organ growth and patterning with the development of the whole body/Marisa Mateus de Oliveira; supervisor Christen Mirth . - Oeiras : Universidade Nova de Lisboa. Instituto de Tecnologia Química e Biológica, 2014.

MATEUS, Rita Drumond

Size-Control Regulation during Regeneration/Rita Drumond Mateus; supervisor António Jacinto . - Oeiras : Universidade Nova de Lisboa. Instituto de Tecnologia Química e Biológica, 2014.

MIGUEL, Andreia Lúcia Campos dos Santos Ferreira

Molecular regulation of secondary growth: searching for SHORT-ROOT function in cork formation/ Andreia Lúcia Campos dos Santos Ferreira Miguel; supervisor Célia Miguel . - Oeiras : Universidade Nova de Lisboa. Instituto de Tecnologia Química e Biológica, 2014.

NOORT, Sander Paul Van

Participatory Surveillance and Mathematical Models in Epidemiologic Research: Successes and Challenges/ Sander Paul van Noort; supervisor Gabriela Gomes . - Oeiras : Universidade Nova de Lisboa. Instituto de Tecnologia Química e Biológica, 2014.

NUNES, Cátia Maria de Jesus

Inhibition of SNF1-related protein kinases by trehalose 6-phosphate and other metabolites and the interrelation with plant growth/Cátia Maria de Jesus Nunes ; supervisor Pedro Fevereiro. - Oeiras : Universidade Nova de Lisboa. Instituto de Tecnologia Química e Biológica, 2014.

PEREIRA, Fátima C.

Spore differentiation in relation to the infectious cycle of the enteric pathogen Clostridium difficile/ Fátima C. Pereira; supervisor Adriano Oliveira Henriques . - Oeiras : Universidade Nova de Lisboa. Instituto de Tecnologia Química e Biológica, 2014.

PEREIRA, Jacinto Fonseca

Computational modeling of prefrontal cortex circuits/ Jacinto José Fonseca Pereira ; supervisor José Leal; Xiao-Jing Wang. - Oeiras : Universidade Nova de Lisboa. Instituto de Tecnologia Química e Biológica, 2014.

PIMPÃO, Rui Carlos Soares

Exploring the bioavailability of (poly)phenols from berries and their potential activities in humans/Rui Carlos Soares Pimpão; supervisor Ricardo Boavida Ferreira - Oeiras : Universidade Nova de Lisboa. Instituto de Tecnologia Química e Biológica, 2014.

RAMÍREZ, Carlos Humberto Ortiz

An integrated approach to Physcomitrella patens transcriptomics reveals important clues of the evolutionary development of plant organs and sexual reproduction/Carlos Humberto Ortiz Ramírez; supervisor José Feijó - Oeiras : Universidade Nova de Lisboa. Instituto de Tecnologia Química e Biológica, 2014.

RAMOS, Ana Raquel Martinho

Study of novel energy metabolism pathways in anaerobic bacteria/Ana Raquel Martinho Ramos ; supervisor Inês Cardoso Pereira. - Oeiras : Universidade Nova de Lisboa. Instituto de Tecnologia Química e Biológica, 2014.

SANTOS, Raquel Alexandra Martinho

Novel functions of the cohesin accessory factor dPDS5 uncover a new meiotic checkpoint/ Raquel Alexandra Martinho dos Santos ; supervisor Vítor Barbosa. - Oeiras : Universidade Nova de Lisboa. Instituto de Tecnologia Química e Biológica, 2014.

SHIRAI, Leila Taruko

Morphological diversification through the evolution of developmental hierarchies/ Leila Teruko Shirai ; supervisor Patrícia Bel-dade. - Oeiras : Universidade Nova de Lisboa. Instituto de Tecnologia Química e Biológica, 2014.

TAVARES, Ana Lopes

Community-associated methicillin-resistant Staphylococcus aureus (CA-MRSA) in Portugal: Origin, epidemiology and virulence/ Ana Lopes Tavares; supervisor Hermínia de Lencastre/Maria Miragaia. - Oeiras : Universidade Nova de Lisboa. Instituto de Tecnologia Química e Biológica, 2014.

TEIXEIRA, Neuza dos Prazeres Lima

FSR QUORUM SENSING: Role in Enterococcus faecalis Biology & Host Infection/ Neuza dos Prazeres Lima Teixeira ; supervisor Maria de Fátima Lopes. - Oeiras : Universidade Nova de Lisboa. Instituto de Tecnologia Química e Biológica, 2014.

TOMÉ, Liliana Sofia Carvalho

Development of new membranes based on ionic liquid materials for gas separation/ Liliana Sofia Carvalho Tomé ; supervisor Isabel Marrucho. - Oeiras : Universidade Nova de Lisboa. Instituto de Tecnologia Química e Biológica, 2014.

VALENTE, Rita S.

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3. Coelho, D. S., & Domingos, P. M. (2014). Physiological roles of regulated Ire1 dependent decay. *Frontiers in genetics*, 5, 76. doi: 10.3389/fgene.2014.00076
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Book Chapters

1. Miragaia,M. and H. de Lencastre.(2014). *Staphylococcus aureus e outros Staphylococcus*. In *Microbiologia Médica*. Part IV: *Bacteriologia Médica*. Chapter 20. 1st Edition. LIDEL, Lisbon, Portugal.
2. Päpke C, Ramirez-Aguilar S, and Antonio C (2014). Oxygen Consumption under Hypoxic Condition. In: Low Oxygen Stress in Plants. Plant Cell Monographs Vol 21, (JT van Dongen & F Licausi. Springer-Verlag Wien eds.)pp.185-208, ISBN 978-3-7091-1253-3.
3. Royo, B (2014). Cyclopentadienyl-functionalized N-Heterocyclic Carbene Complexes of Iron and Nickel: Catalysts for Reductions. In Advances in Organometallic Chemistry and Catalysis: ICOMC Silver/Gold Jubilee Book (A. J. L. Pombeiro Ed.) pp.113-144, J. Wiley.
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ONGOING PROJECTS

1. Small immunoactive peptidoglycan (siPGN) derivates to modulate an host inflammatory response.; PTDC/SAU-IMU/111806/2009; Sérgio Filipe
2. Response to oxidative and nitrosative stress by Entamoeba histolytica: searching for new virulence factors.; PTDC/SAU-MIC/111447/2009; Miguel Teixeira
3. Pathogenesis of Kaposi's sarcoma herpesvirus LANA; HMP-ICP/0021/2010; Mª Armenia Carrondo
4. Sampling and biomarker optimization and harmonization in ALS and other motor neuron diseases; JPND/0003/2011; Júlia Costa
5. The effect of divalent cations on G-Quadruplex formation and stability in genes related to neurodegenerative processes; PTDC/QUI-QUI/117105/2010 ; Patrick Groves
6. Ionic Liquids under tension; PTDC/QUI-QUI/117340/2010 ; Jose Esperanca
7. Redox necklaces: functional characterization of a multidomain polyheme cytochrome; PTDC/QUI-BIQ/117440/2010; Catarina Paquete
8. Tracking the evolution of methicillin resistance in staphylococci: stages in the evolution of the mecA determinant and the SCCmec structure; PTDC/BIA-EVF/117507/2010 ; Maria Miragaia
9. Molecular mechanisms that orchestrate a two-electron reduction step coupled with protonation in redox enzymes that contain chains of single electron redox co-factors; PTDC/BIA-PRO/117523/2010 ; Catarina Paquete
10. NEW PROTECTION: NativE, Wild PRObiotic sTrain EffecCT In Olives in briNe; PTDC/AGR-ALI/117658/2010; Francisco Malcata
11. Mechanisms of SOD1 toxic aggregation in neurodegenerative processes; PTDC/QUI-BIQ/117789/2010 ; Claudio Gomes
12. Recovery of misfolded and aggregated proteins using biological nanoreactors and small molecules; PTDC/EBB-BIO/117793/2010 ; Claudio Gomes
13. An integrated approach to identify stress-related regulatory genes in cork oak (SuberStress); PTDC/AGR-GPL/118505/2010; Margarida Oliveira
14. Structural biology of Histidine Kinases: a new target for novel antibacterial drugs; PTDC/BIA-PRO/118535/2010 ; Margarida Archer
15. Development of New Oxygen Therapeutics using Fluorinated Ionic Liquids; PTDC/EQU-FTT/118800/2010 ; Ana Belen
16. A molecular insight into the respiratory alternative complex III; PTDC/BIA-PRO/120949/2010 ; Manuela Pereira
17. Creating value from bio-wastes: suberin extraction and biotransformation in biocompatible ionic liquids aiming on novel biomaterials and compounds; PTDC/QUI-QUI/120982/2010 ; Cristina Silva Pereira
18. On the termophysical caraterizatiobs of new room temperature ionic liquids; PTDC/CTM-NAN/121274/2010; Jose Esperanca
19. Ionic Liquids as Promoters of Aqueous Biphasic Systems: The Role of van der Waals and Coulomb Interactions; PTDC/QUI-QUI/121520/2010 ; Isabel Marrucho
20. Lactation and milk production in Goat (*Capra hircus*): identifying molecular markers underlying adaptation to seasonal weight loss; PTDC/CVT/116499/2010; Manolis Matzapatakis
21. Protein interaction with CO Releasing Molecules (CORM); PTDC/QUI-BIQ/117799/2010; Carlos Romão
22. VITIS-GRAFTING: Large-scale sequencing of small RNAs and transcript profiling for characterization of grafting incompatibility in Vitis species; PTDC/AGR-PRO/118081/2010; Pedro Fevereiro
23. Borrow some Boron: New Strategies for Protein Modification; PTDC/QUI-QUI/118315/2010; Ana Coelho
24. Prevalence and characterization of *Staphylococcus aureus* in portuguese-speaking african countries and in East Timor; PTDC/SAU-SAP/118813/2010; Hermínia Lencastre/T. Conceição
25. Soil function profiling during fungal bioremediation: integrated bio-geochemical and meta-proteomics assessment; PTDC/AAC-CLI/119100/2010; Andreas Bohn
26. Characterization of ER-quality control for the F508del-CFTR protein: potential therapeutic targets for cystic fibrosis; PTDC/SAU-GMG/122299/2010; Cláudio Gomes
27. Tailor-made expression hosts depleted in protease activity for recombinant protein production ; ERA-IB/0001/2012; Rita Abrantes
28. An Omics approach for diagnosis tuberculose (Tbomics); New-Indigo/0001/2012; Ana Coelho
29. The intriguing function of cytoskeleton-associated proteins in Gram-positive bacteria; ANR/BEX-BCM/0150/2012; Mariana Pinho
30. NMR Net - National facility for nuclear magnetic resonance: from molecular structure and dynamics to protein function, cell physiology and metabolism; RECI/BBB-BQB/0230/2012; Pedro Lamosa
31. Well defined iron catalysts for challenging tasks; PTDC/SEQ-QIN/0565/2012; Beatriz Royo
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33. Structural Determinants of Oxygen Tolerance in a NiFeSe Hydrogenase; PTDC/BBB-BEP/0934/2012; Pedro Matias
34. Heme biosynthesis in *Staphylococcus aureus*: old bug new challenges; PTDC/BBB-BQB/0937/2012; Lígia Saraiva

35. Exploring rice biodiversity: a Genome-wide association (GWAS) study of salt-tolerance; EXPL/BIA-BIC/0947/2012; Sónia Negrão
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46. Development of Dinuclear Cu(II) and Zn (II) complexes as potential inhibitors of oncogenic protein-protein interactions; PTDC/QEQ-SUP/2718/2012; Rita Delgado
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48. Ionic liquid-based systems for protein crystallization; PTDC/BBB-BEP/3058/2012; Magdalena Kowacz
49. Amidation of the peptidoglycan of Gram-positive bacteria: an unexplored potential target for antibiotics; PTDC/BIA-MIC/3195/2012; Hermínia Lencastre
50. Plant strategies for detection of the inflammatory bacterial peptidoglycan molecule; PTDC/BIA-PLA/3432/2012; Sérgio Filipe
51. Salmonella Persistence in eukaryotic cell: Examining the Role of RNases and Small Functional RNAs; PTDC/BIA-MIC/4142/2012; Cecília Arraiano
52. A systems approach to understand salt stress tolerance in Casuarina glauca and its relationship with symbiotic nitrogen fixation.; PTDC/AGR-FOR/4218/2012; Ana Isabel Ribeiro
53. Exploiting Bean Genetics for food Quality and Attractiveness innovations; PTDC/AGR-TEC/3555/2012; Carlota Vaz Pato
54. Carbon Nanomaterials and Ionic Liquids; From fundamentals to sustainable technology applications.; FCT-ANR/CTM-NAN/0135/2012; L.P. Rebelo
55. Molecular and Nano Tools for Cancer Theranostics ; EXCL/QEQ-MED/0233/2012; Olga Iranzo
56. Optical fiber tweezers for single cell manipulation and analysis; EXPL/BBB-IMG/0500/2012; Abel Oliva
57. Biosynthesis of rare methylmannose polysaccharides in nontuberculous mycobacteria; PTDC/BIA-MIC/2779/2012; Rita Ventura
58. SUMODulator - Researching SUMO modulation of plant abiotic stress responses; PTDC/BIA-PLA/3850/2012; Isabel Abreu
59. Cerebrospinal fluid metabolome: an instructive niche for CNS metastasis; PTDC/BIM-ONC/1242/2012; Luis Gafeira
60. Immunogenicity of vaccine candidate antigens from *Staphylococcus pseudintermedius* in *Canis canis*; PTDC/CVT-EPI/4345/2012; Ana Coelho
61. Rethinking Bacterial Cell Wall Synthesis: a combined synthetic and enzymatic approach; PTDC/QEQ-QOR/2132/2012; Sérgio Filipe
62. Driving Mitochondrial Effectors of Apoptosis Toward Neural Differentiation; PTDC/BIM-MED/0251/2012; Ana Coelho
63. Exploration of novel molecular mechanisms involved in iron homeostasis; EXPL/BIA-MIC/2525/2013; Catarina Pimentel
64. Targets and mechanism of action of a novel enzyme involved in eukaryotic RNA degradation; EXPL/BEX-BCM/1317/2013; Sandra Veigas
65. Specific isotopic labelling of membrane proteins as a new tool to monitor structural and conformation changes; EXPL/BBB-BEP/1356/2013; Afonso Duarte
66. Discovery and characterization of ligninocellulolytic bacterial enzymes; EXPL/BBB-BIO/1932/2013; Vania Brissos
67. Nanoengineered exosomes to treat glioma; ENMed/0001/2013; Júlia Costa
68. Modulation Ire1 to prevent Parkinson's Disease; FCT-ANR/NEU-NMC/0006/2013; Pedro Domingos
69. Investigating Novel Valuable bio-therapeutics and expression systems ; ERA-IB2/0006/2013; Paula Alves
70. Implications of uncertain transgene insertion in maize: effect in protein-coding and non-coding regulatory genes; PTDC/AGR-GPL/121536/2010; Rita Abrantes

EXPLORATORY PROJECTS (IF POSITIONS)

1. IF/00376/2012/CP0165/CT0003; Carla António
2. IF/01023/2013/CP1173/CT0003; Colin Edward McVey
3. IF/00094/2013/CP1173/CT0005; Federico Herrera
4. IF/00268/2013/CP1173/CT0006; Monica Serrano

PROJECTS FUNDED BY PFIZER

1. Pneumo S-Influence of cigarette smoking in the dynamics of carriage of *Streptococcus pneumoniae*: a longitudinal study; WI183695; Raquel Sá Leão
2. PneumoY2: Evolution and adaptation of *Streptococcus pneumoniae* population in the era of expanded conjugates vaccines; WI182109; Raquel Sá Leão
3. CoPneumo - Co-colonization by pneumococci in the era of the thirteen-valent pneumococcal conjugate vaccine; WI191571; Raquel Sá Leão

PROJECTS FUNDED BY EUROPEAN COMMISSION

1. Standardization and orthogonalization of the gene expression flow for robust engineering of NTN (new-to-nature) biologival properties (ST-FLOW); FP7 (KBBE-2011-5) 289326; Cecília Arraiano
2. Transnational access and enhancement of integrated Biological Structure determination at synchrotron X-ray radiation facilities (BioStruct-X); FP7-INFRASTRUCTURES-2011- 283570; M^a Armenia Carrondo
3. 3 to 4: Converting C3 to C4 photosynthesis for sustainable agriculture (3 to 4); FP7-KBBE-2011-5 289582; Manuela Chaves
4. Combining innovation in vineyard management and genetic diversity for a sustainable European viticulture (INNOVINE); CP-TP - KBBE.2012.1.2-04 - 311775; Manuela Chaves
5. Innovative ionic polymers from natural sources for energy & environment (IONRUN); FP7-PEOPLE – 318873 - PIRSES-GA-2012-318873; Isabel Marrucho
6. Legumes for the Agriculture of tomorrow (LEGATO); CP-TP - KBBE.2013.1.2-02 - 613551; Carlota Vaz Pato
7. Parliaments and Civil Society in Technology Assessment (PACITA); SIS-CT-2011-266649; Mara Almeida

**PROJECT FUNDED BY
EUROPEAN RESEARCH COUNCIL (ERC)**

1. Finding new mechanisms for protein localization in Bacteria (ProteinLocalization); ERC-2012-StG- Grant Agreement 310987; Mariana Pinho

**INDIVIDUAL FELLOWSHIPS BY
EUROPEAN COMMISSION**

2. Ion Transport at atomic level; PCIG11-GA-2012-322346; Afonso Duarte

**PROJECT FUNDED BY
SUDOE INTERREG IV B PROGRAMME**

3. Biocluster Transnational de l'Espace Sud-Ouest Européen (TRANSBIO SUDOE); SOE4/P1/F788;



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