annual report 2012

INSTITUTO DE TECNOLOGIA QUÍMICA E BIOLÓGICA /UNL

Knowledge Creation

2012 Snapshots

8954 Citations in 2012

300 Communications to International Conferences (approx.)

Articles in 2012 (peer-reviewed) 259

PhD holders 198

Ongoing, financed projects 139

PhD students 150

55 % Articles ranked as Q1 (WoS 2011)

PhD theses awarded 44

37 Highly Cited Papers (world top 1%)

Index

Appendix

What is ITQB

The *Instituto de Tecnologia Química e Biológica* (ITQB) is an academic research centre of the Universidade Nova de Lisboa. Its mission is to carry out scientific research and post-graduate 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.
ITQB's highly multidisciplinary nature makes it a leading centre for advanced training of researchers in Portugal. With 54 independent teams in 2012, ITQB hosts over 465 researchers, including 150 PhD students, with different backgrounds and research interests, who benefit from outstanding research facilities, equipment, and scientific support services, some of which unique in the country.
ITQB further coordinates the largest *Laboratório Associado*, a status attributed by the Portuguese Government in recognition of scientific excellence, as determined by international evaluation panels. This consortium includes the *Instituto Gulbenkian de Ciência* (IGC), the *Instituto de Biologia Experimental e Tecnológica* (IBET), and the *Centro de Estudos de Doenças Crónicas* (CEDOC), and has competencies and expertise ranging from the molecule to clinical trials.

Research

The quality of the research at ITQB is reflected in its contribution to the overall national publications in Nature and Science as leading instituion (20% in 2006-2010), in the number of papers annually published in WoS journals and in the impact of research (251 papers and over 8954 citations in 2012).
Research at ITQB is mainly supported by contracted projects (upon evaluation) with national and international R&D funding agencies such as *Fundação para a Ciência e Tecnologia* and the European Commission.
Opportunities for industrial applications sometimes arise from research developed at ITQB. Collaboration with industry, patent submissions or the creation of start-up companies are the paths to follow from lab to business. This competence is mainly carried out by ITQB´s association with IBET, the largest private, non-profit biotechnology research organization in Portugal.
ITQB Research Groups are organized into five Research Divisions - Chemistry, Biological Chemistry, Biology, Plant Sciences, and Technology. Collaboration between divisions is strongly encouraged.
All scientific matters at ITQB are overseen by the Scientific Council, formed by elected PhD holders, and the Scientific Advisory Board.

Education

ITQB's highly multidisciplinary nature makes it a leading centre for the advanced training of researchers in Portugal. Education at ITQB is thus strongly embedded in its research activities. The Pedagogical Council oversees the educational activities at ITQB.

ITQB PhD Program
The focus of research education at ITQB is the PhD Program, with a strong component of research complemented by seven curricular units to which students should commit a tenth of their time. The PhD course reflects the highly multidisciplinary nature of the institute and aims to provide a broad perspective of Chemistry, Life Sciences and Bioengineering, and prepare students for their future careers.

- Advances in Chemistry and Structural Biology (4 ECTS)
- Trends in Microbial and Cell Biology (4 ECTS)
- Frontiers in Biotechnology (3 ECTS)
- Research Training (9 ECTS)
- Free Option (4 ECTS)
- Bioentrepeneurship (3 ECTS)
- Science, Culture and Society (3 ECTS)
- Thesis (270 ECTS)

Director
Luís Paulo N. Rebelo
Vice-directors
Cláudio M. Soares
M. Margarida Oliveira

Institute Council
Francisco Murteira Nabo (chair)
Júlio Pedrosa de Jesus
Peter Villax
Carlos Crispim Romão
Helena Santos
Adriano O. Henriques
Júlia Costa
Sérgio Filipe
Pedro Matos Pereira

Management Council
Luís Paulo N. Rebelo (chair)
Cláudio M. Soares
M. Margarida Oliveira
Margarida Senna-Martinez
Fernando Jorge Tavares

Scientific Advisory Board
Peter J. Sadler (coordinator)
Charles L. Cooney
Staffan Normark
Joel L. Sussman
Paul Christou
Bonnie L. Bassler

Scientific Council
Luís Paulo N. Rebelo (chair)
Rita Delgado
Carlos Romão (Olga Iranzo)
Inês A. Cardoso Pereira
Maria Arménia Carrondo (Pedro Matias)
Adriano O. Henriques
Helena Santos (Sérgio Filipe)
Cândido Pinto Ricardo
Manuela Chaves (Nelson Saibo)
Manuel Carrondo
Cristina Silva Pereira (Paula Alves)

Pedagogical Council
Luís Paulo N. Rebelo (chair)
Adriano O. Henriques
Inês Cardoso Pereira
Fábio Silva (student)
Joana Lamego (student)

Teaching Quality Committee
Mário Nuno Berberan e Santos (chair)
M. Manuela Chaves
(+ pedagogical committee)

Coordinator of PhD Program
Inês A. Cardoso Pereira

Coordinators of PhD Curricular Units
Beatriz Royo / Manuela Pereira
Célia Miguel / Jaime Mota
Júlia Costa / Cristina S. Pereira / Ana S. Coroadinha
Ricardo Louro / Cláudio M. Soares
Paula Alves / Raquel Sá-Leão
Lígia O. Martins / Ana M. Sanchez

Master Research Projects
ITQB welcomes master's students who wish to develop their research at the institute; students then defend their theses at their host universities. Every year, in March, ITQB laboratories announce the available research projects for the coming curricular year. Potential students are invited to visit the labs and talk directly with the researchers and other students.

Master's Degree Programs
ITQB participates in two master's degree programs in collaboration with other units from *Universidade NOVA de Lisboa*.
Master's Course in Medical Microbiology with the *Instituto de Higiene e Medicina Tropical*, *Faculdade de Ciências Médicas*, and *Faculdade de Ciências e Tecnologia*, aims to train specialists in microbiology skilled in the application of advanced laboratory techniques for diagnoses, for microbiological research, and for quality control and certification of microbiology laboratories.
Master's Course in Science Communication with the *Faculdade de Ciências Sociais e Humanas* focuses on the particularities of communicating science to different audiences, be this via media, via formal and informal education, or directly from research institutions.

Research Training
Training can take different formats, ranging from a small regular participation in the lab activities to a one- year research project.

Post-Graduation Courses
- Scientific Research Training A - 60 ECTS

University Extension Courses
- Scientific Research Training B (Graduates / Masters) - 40 ECTS
- Scientific Research Training C (Graduates / Masters) - 30 ECTS
- Scientific Research Training D (Graduates / Masters / Undergraduates) - 15 ECTS
- Research Integration (Undergraduates) - 16 ECTS

PhD Program Scientific Committee
M. Margarida Oliveira
Adriano O. Henriques
Júlia Costa
Lígia Saraiva

Coordination of MSc Medical Microbiology at ITQB
Hermínia de Lencastre (chair)
Adriano O. Henriques
Cecília Arraiano

Coordination of MSc in Science Communication at ITQB
Ana M. Sanchez

Coordinators of Research Training Courses
Célia Miguel
Cláudio Gomes

Support Services

Researchers at ITQB are supported by technical and administrative staff in a number of areas (see organizational flowchart). These support services include:
Science Management collaborates with researchers in identifying potential funding sources and in the application process.
Projects Office supports researchers in applying for and managing projects.
Academics Office centralizes information regarding advanced education at ITQB.
Accounting and Treasury offers accounting support to all financed projects, manages all purchases and payroll processing, and is responsible for the inventory and property.
Lab Management coordinates the purchase and maintenance of scientific equipment for the institute and supervises common scientific equipment .
Washing Room conducts washing and sterilization of material and culture media.
Industry Liaison Office offers support in the management of intellectual property and technology transfer, and contracts with industry.
Information Technology (IT) Support offers computational support
Storages handles the purchase, storage, and supply of materials and reagents.
Maintenance support oversees the maintenance of the building and all infrastructures.
Communication office manages institutional and scientific communication.
Additionally, some scientific support services are also available to outside researchers and companies.
Analytical Services Unit ITQB/IBET analytical development, validation and testing of chemicals and biologicals and studies on candidate pharmaceutical products according to OECD Good Laboratory Practices Principles.
Centro de Ressonância Magnética António Xavier **(CERMAX)** with several NMR spectrometers (300, 400, 500 and 800 MHz), including the highest field NMR spectrometer in Portugal. It is part of the National NMR Facility.
Library maintains ITQB publication records and manages bibliographic databases.
Teaching Laboratory designed and equipped to support the teaching activities in areas ranging from Biochemistry to Genetics.
Greenhouses manages the cultivation of plants for research purposes.

See full list of staff in the appendix (page iii)

Infrastructure and Support Committee
Luís Paulo N. Rebelo (chair)
Cláudio M. Soares
Margarida Oliveira
Margarida Martinez
Fernando Jorge Tavares
Maria Cristina Pinto
Maria de Lurdes Conceição
Ana M. Sanchez
João Rodrigues
Susana Lopes
Teresa Baptista da Silva
Teresa Crespo
Cláudia Almeida
Daniel F. Branco / Carlos Cordeiro / Carlos Frazão
Henrique Campas Nunes / Nuno Monteiro
Pedro Domingos
Rita Ventura

Health and Safety Committee
Margarida Oliveira (chair)
Luís Paulo N. Rebelo
Helena Matias
Henrique Campas Nunes, (Alexandre Maia)
Fernando Jorge Tavares (Cristina Afonso)
Cláudio M. Gomes (Ricardo Louro)
Abel Oliva (Júlia Costa)
Mariana Pinho (Ana Rute Neves)
Cândido Pinto Ricardo (Nelson Saibo)
Rita Delgado (Margarida Archer)
Jaime Mota (Pedro Domingos)
António Cunha (João Clemente)
Christopher Maycock (Rita Ventura)
Beatriz Royo
Sérgio Filipe
Cecília M. Arraiano
Teresa Baptista da Silva
Helena Santos MD

Research Groups

Chemistry

Bioorganic Chemistry
Rita Ventura

Coordination and Supramolecular Chemistry
Rita Delgado

Homogeneous Catalysis
Beatriz Royo Cantabrana

Micro-Heterogeneous Systems
Eurico de Melo

Organic Synthesis
Christopher Maycock

Organometallic Chemistry
Carlos C. Romão

Collaborators
António Lopes - Colloids Polymers & Surfaces
James Yates - Single Molecule Processes
Olga Iranzo - Bio. Chem. and Peptide Design

Biological Chemistry

Bacterial Energy Metabolism
Inês Cardoso Pereira

Metalloproteins and Bioenergetics Unit
Biological Energy Transduction
Manuela M. Pereira
Metalloenzymes and Molecular Bioenergetics
Miguel Teixeira

Biomolecular NMR
Manolis Matzapetakis

Genomics and Stress
Claudina Rodrigues-Pousada

Macromolecular Crystallography Unit
Structural Biology
Carlos Maria Franco Frazão
Industry and Medicine Applied Crystallography
Pedro Manuel Marques Matias
Membrane Protein Crystallography
Margarida Archer Frazão
Structural Genomics
Maria Arménia Carrondo

Inorganic Biochemistry and NMR
Ricardo Saraiva L. Oliveira Louro

Microbial & Enzyme Technology
Lígia O. Martins

Molecular Genetics of Microbial Resistance
Lígia M. Saraiva

Molecular Interactions and NMR
Patrick Groves

Molecular Simulation
António Baptista

Protein Biochemistry Folding & Stability
Cláudio M. Gomes

Protein Modelling
Cláudio M. Soares

Raman Spectroscopy
Smilja Todorovic

Collaborators
Filipe T. de Oliveira - Mössbauer Spectroscopy

Biology

Bacterial Cell Biology
Mariana G. Pinho

Bacterial Cell Surfaces and Pathogenesis
Sérgio R. Filipe

Bacterial Signaling
Karina B. Xavier

Cell Physiology and NMR
Helena Santos

Cell Signaling in *Drosophila*
Pedro Domingos

Control of Gene Expression
Cecília M. Arraiano

Glycobiology
Júlia Costa

Infection Biology
Luís Jaime Mota

Lactic Acid Bacteria & In Vivo NMR
Ana Rute Ramos Neves

Microbial Development
Adriano O. Henriques

Microbiology of Human Pathogens Unit
Molecular Genetics
Hermínia de Lencastre
Molecular Microbiology of Human Pathogens
Raquel Sá-Leão

Plant Sciences

Disease and Stress Biology
Ricardo Boavida Ferreira

Forest Biotech
Célia Miguel

Genomics of Plant Stress
Margarida Oliveira

Plant Biochemistry
Cândido Pinto Ricardo

Plant Cell Biology
Rita Abranches

Plant Cell Biotechnology
Pedro Fevereiro

Plant Molecular Ecophysiology
Manuela Chaves

Collaborators
Philip Jackson - Plant Cell Wall
Jorge Almeida - Plant Developmental Genetics

Technology

Antibiotic Stress and Virulence of Enterococci
Fátima Lopes

Applied and Environmental Mycology
Cristina Silva Pereira

Biomolecular Diagnostic
Abel Oliva

Animal Cell Technology Unit
Cell Bioprocesses
Ana Sofia Coroadinha
Cell Line Development and Molecular Biotechnology
Paula M. Alves
Engineering Cellular Applications
Manuel J.T. Carrondo

Mass Spectrometry
Ana V. Coelho

Microbiology of Man-Made Environments
Teresa Crespo

Molecular Thermodynamics
Luís Paulo N. Rebelo

Nutraceuticals and Delivery
Catarina Duarte

Pharmacokinetics and Biopharmaceutical Analysis
Ana L. Simplício

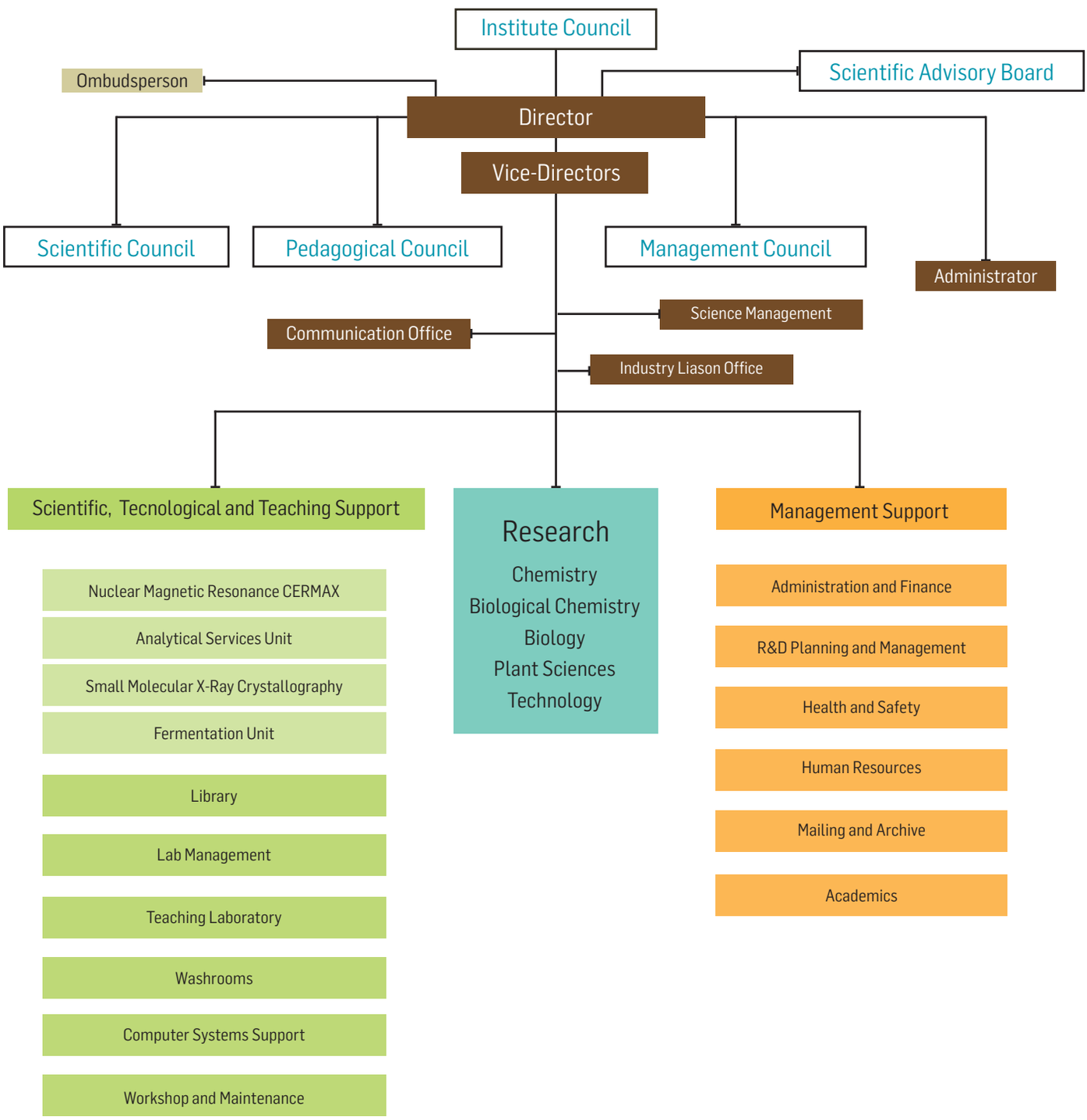
Phys. of Environm. Conditioned Microbiota
Vitória San Romão

Systems Biodynamics
Andreas Bohn

Collaborators
Luís Vilas Boas - Analytical Chemistry
Maria do Rosário Bronze - Analytical Chemistry
Cidália Peres - Food Microbial Technology

Invited and Visiting Professors

Alessandro Giuffrè | Fast Kinetics
Alexander A. Konstantinov | Bioenergetics
Alexander Tomasz | Microbiology
Daniel H. Murgida | Raman Spectroscopy
David Edward Onions | Virology / Vectorology
David L. Turner | Biology
Hansjörg Hauser | Eukaryotic Molecular Biology
John G. Aunins | Bioprocess Engineering
Jonas Almeida | Biomathematics
José Artur Martinho Simões | Chemistry
José Canongia Lopes | Molecular Simulation
Maria Teresa N. Duarte | Crystallography
Kenneth R. Seddon | Ionic Liquids
Peter Alfred Donner | Biotechnology
Peter F. Lindley | Structural Biology
Peter G. Hildebrandt | Raman Spectroscopy
Robert Archibald Samson | Plant Pathology

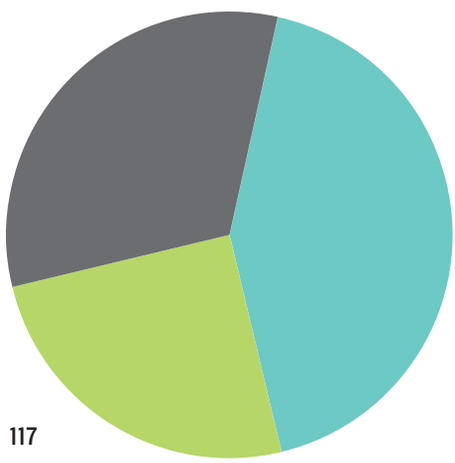

Institute Council
Ombudsperson
Scientific Advisory Board
Director
Vice-Directors
Scientific Council
Pedagogical Council
Management Council
Administrator
Science Management
Communication Office
Industry Liason Office
Scientific, Tecnological and Teaching Support
Research
Chemistry
Biological Chemistry
Biology
Plant Sciences
Technology
Management Support
Nuclear Magnetic Resonance CERMAX
Analytical Services Unit
Small Molecular X-Ray Crystallography
Fermentation Unit
Library
Lab Management
Teaching Laboratory
Washrooms
Computer Systems Support
Workshop and Maintenance
Administration and Finance
R&D Planning and Management
Health and Safety
Human Resources
Mailing and Archive
Academics

Statistics 2012

54 Research Groups

465 Researchers
(plus 47 trainees)

PhD students 150
integrated into research groups

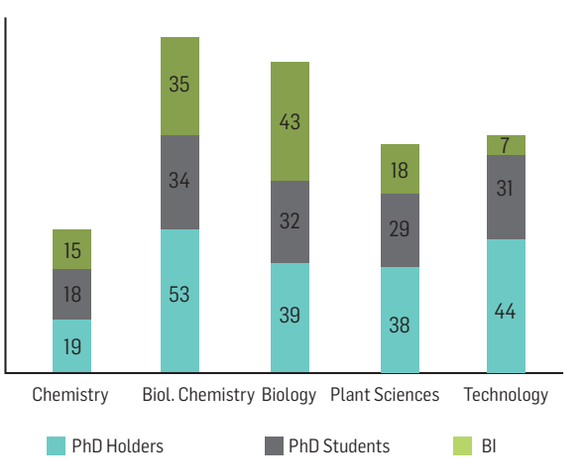


BI fellows 117

PhD holders 198

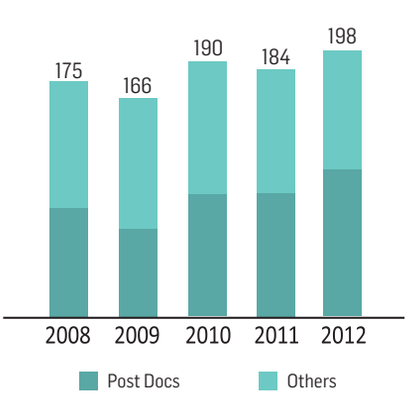
Permanent staff	25
Other institutions	27
Laboratorio Associado	17
Ciencia 2007	16
Ciencia 2008	6
MIT-Portugal	3
Post Doctoral Fellows	104

Researchers by divison

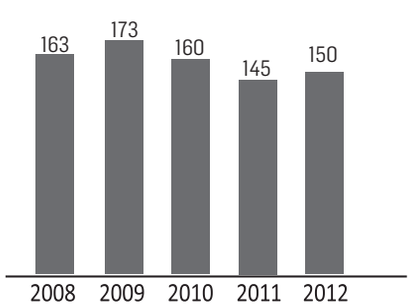


Average group size	8.6 researchers
Group leaders by gender	31 female / 23 male
Group leaders by nationality	46 Portuguese / 8 other
PhD holders by gender	131 female / 67male
PhD holders by nationality	166 Portuguese / 32 other
PhD students by gender	106 female / 38 male
PhD students by nationality	129 Portuguese / 15 other

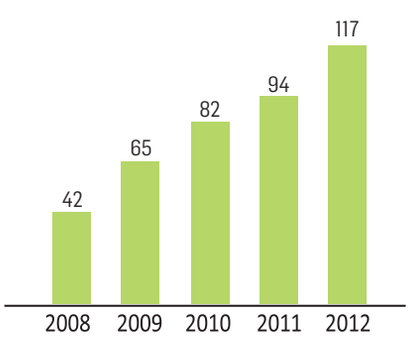
PhD holders in the last five years



PhD students in the last five years



BI fellows in the last five years



259 Research Articles

ISI journals **251**
Other peer review articles **8**
Book chapters **29**
(see full list in the Research Output Section)

Average number of papers per group 4.8
Average number of papers per PhD holder 2.8
(excluding post-docs)

Citations **8 954**

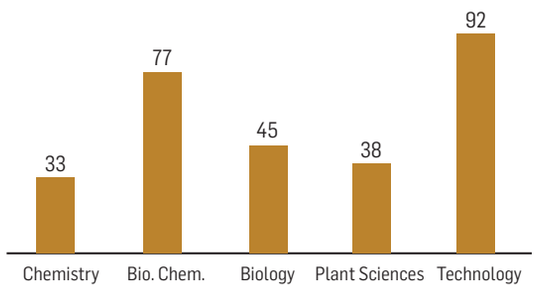
Total ITQB papers (1990-2012) **2 885**
Total ITQB citations (1990-2012) **63 493**

h-index 91

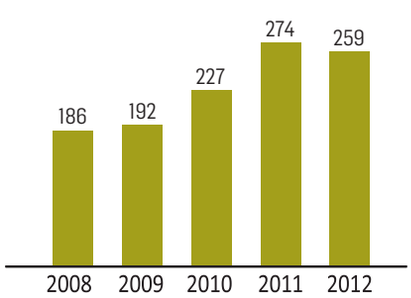
Average citations per paper **27.4**
Considering a paper's maturation time of three years (includes all ITQB papers until 2008 and the corresponding total citations to date)

Highly Cited Papers **37**
Papers included in the Highly Cited Papers list by Essential Science Indicators SM (Thompson Reuters): top 1% of articles by total citations in each annual cohort from each of the 22 disciplines (updated as of March 1, 2013 to cover an 11-year period, January 1, 2002-December 31, 2012)

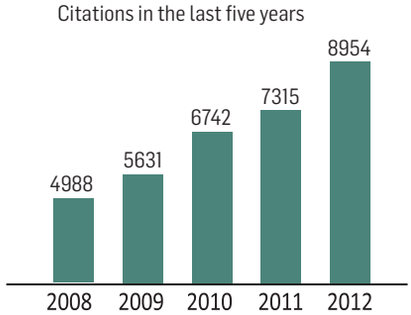
Articles by division



Publications in peer review journals in the last five years



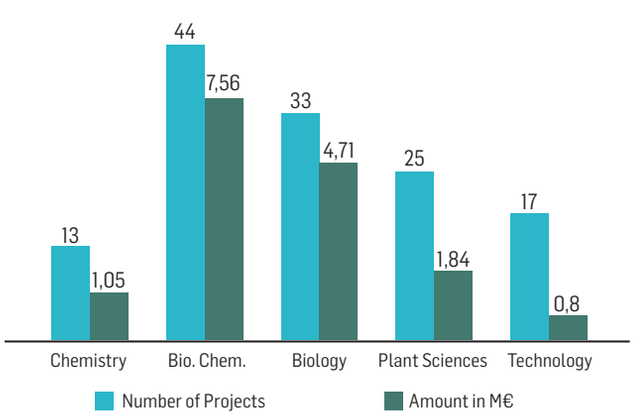
Citations in the last five years



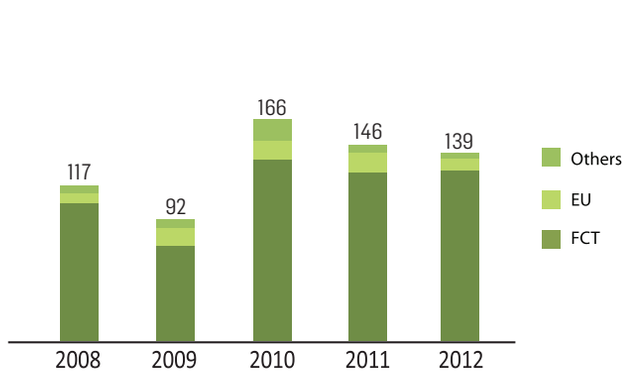
139 Research Projects

125 Fundação para a Ciência e a Tecnologia | **5** European Commission | **5** European Commission (individual grants)
1 Ministério da Defesa | **3** Pfizer Contract

Projects by division (number and amount in M€)



Projects in the last five years



* Projects funded via IBET are not accounted for here.

44 PhD Theses

PhD Theses distribution

32 Biology
10 Biochemistry
2 Technological and Engineering Sciences

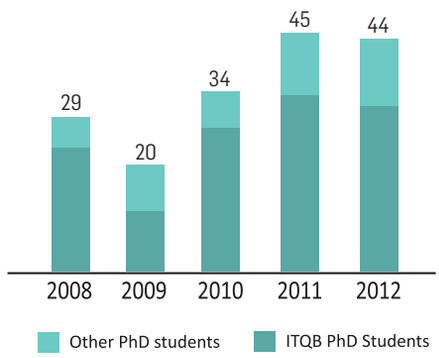
PhD Theses since 1995 **312**

Registered PhD students **243**
including 107 PhD students from IGC (as of 31 December 2012)

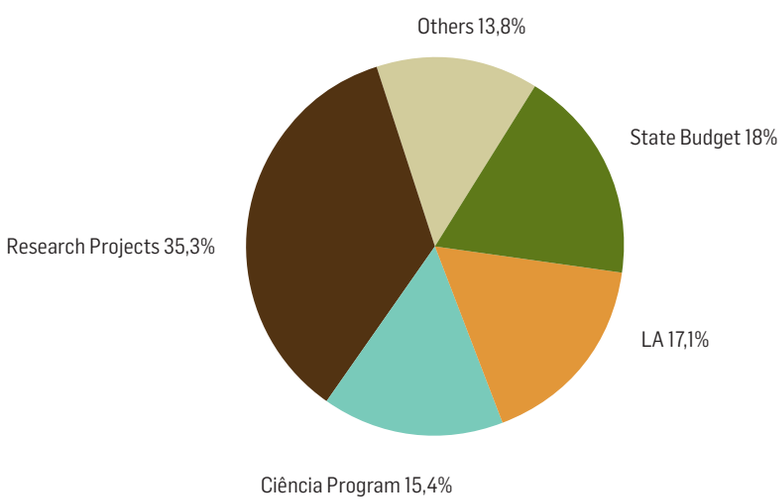
New PhD students in 2012 **52**

Concluded Post-graduation Courses **18**

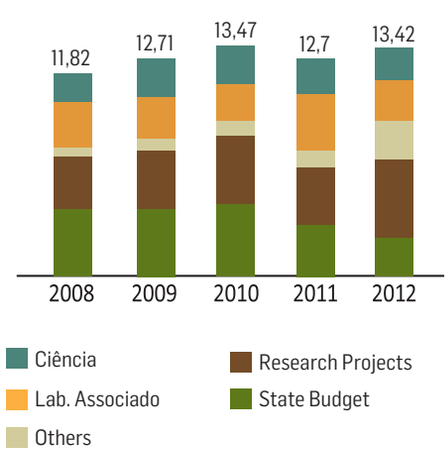
PhD theses in the last five years



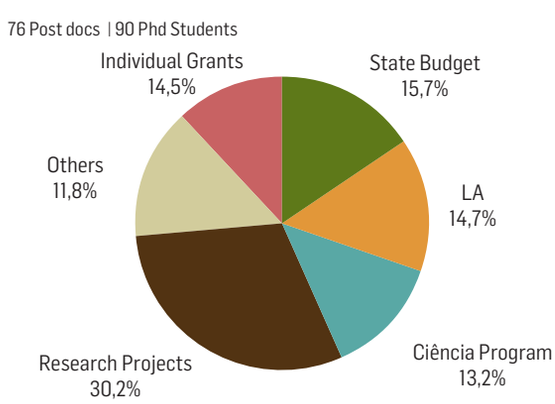
Overall budget 13.42 M€



Funding sources in the last five years (in M€)



Most ITQB PhD students and post-docs are financed directly through FCT fellowships. The chart below depicts ITQB's budget including this figure (2,2 M€).



News 2012

Prizes and Awards

Individual distinctions

Cecília Maria Arraiano
Elected President of the Portuguese Genetics Society (May 2012)
Elected Ambassador of American Society for Microbiology in Portugal (Summer 2012)
Nominated Chair of the FEBS Working Group on Women in Science (September 2012)

Research distinctions

Catarina Duarte
1st Honorable Mention in the 3rd Edition of the "Nutrition Awards", 2012, in the category of " Research and Development" with the project "Bravo de Esmolfe – an apple with a beneficial effect in cardiovascular health"

Karina Xavier
Howard Hughes Medical Institute International Early Career Scientist Award

Mariana G. Pinho
ERC starting grant

Ricardo Ferreira
2012- Nutriton awards- 2nd Honorable Mention by « Associação Portuguesa dos Nutricionistas » (APN) for the work "Amoras silvestres portuguesas, uma aposta como alimentos funcionais para o cérebro".

Rute Matos
Best ITQB PhD Thesis 2011 entitled "Functional and Structural Characterization of the RNase II-family of enzymes" Supervisors: Cecília Arraiano; Co-supervisor: Ana Barbas (awarded in 2012).

In scientific meetings

L.C. Tomé, D. Mercerreyes, C.S.R. Freire, L.P.N. Rebelo, I.M. Marrucho
"Composite membranes based on pyrrolidinium ionic materials: new perspectives for gas separation"
Best Poster Award in XXIX EMS Summer School on Membranes, 10-13 of July 2012, Nancy, France.

Sofia Venceslau and Inês Cardoso Pereira
"Qrc, a new membrane-bound complex involved in the respiratory chain of deltaproteobacterial sulfate reducers"
Best Poster prize in EMBO Workshop on Microbial Sulfur Metabolism, 15-18 April 2012, Noordwijkerhout, The Netherlands

Ana P. Batista. Batista A. P., Salewski, J., Sena, F. V., Paulo, L., Almeida, P., Zebger, I., Hildebrandt, P. and Pereira, M. M.
"*Studies on protein/substrate interaction of Type II NADH:quinone oxidoreductase from Escherichia coli."*
Best poster award in 17th European Bioenergetics Conference, EBEC2012, Freiburg, Germany.

Morgado R, Branco D, Fevereiro PS, Araújo SS
Best Poster Award for presenting the poster entitled "Could an extra shot of TPS confer better tolerance to water deficit stress in Medicago truncatula?" in VI International Conference on Legume Genomics and Genetics (VI ICLGG) held during 2-7 October 2012 at Hyderabad, India

Lígia Nobre and Lígia Saraiva
Influence of stress conditions on iron homeostasis of Staphylococcus aureus. Best poster award at Biometals 2012. Brussels, Belgium (July 2012)

Marta C Justino, Ivo G. Boneca, and Lígia M. Saraiva
NorH, The First Nitric Oxide Reductase of Helicobacter pylori. Best Presentation Overall Prize at 10th International Workshop on Pathogenesis and Host Response in Helicobacter Infections. Helsingor, Denmark (July 2012).

Smilja Todorovic
an award ´presented in appreciation of the lecture at the 23ed Conference on Raman Spectroscopy, August 12-17 2012, Bangalore, India

Bruno Correia
PhD student, was selected as the best poster at the FEBS Practical Course: Advanced methods on macromolecular crystallization V Academic and University Center Nove Hrady, Czech Republic

In Scientific Journals

In 2012, 37 research papers were included in the Highly Cited Papers list by Essential Science Indicators (top 1% within their fields). The full list is available in the Research Output Section. Other distinctions in scientific journals are listed here.

Luis Paulo N. Rebelo
Journal Chemical Thermodynamics (2012) 46, 2–28
- Ranked 1st in the Top-25 of JCT in the July-Sept 2011 and Oct-Dec 2011 and ranked 2nd and 3rd in full year 2011 and 2012 respectively.

Journal Chemical Thermodynamics (2011) 43, 1565-1572
- Ranked 3rd in the Top-25 of JCT in the July-Sept 2012 period JCT, (2012), 55, 29-36
- Ranked 2nd in the Top-25 of JCT in the Oct-Dec 2011 period Fluid Phase Equil., (2011), 301, 22–32

JCED (2010), 55, 3 – 12
- Ranked 1st in the Most Read Articles of JCED 2012, in the entire year of 2011

Chem. Commun. (2012) 48, 3656-3658
- 2nd Best Ionic Liquids Articles from Chem. Comm. – Royal Society of Chemistry, July 2012

Green Chem., 2011, 13, 1536-1545
3rd Best Ionic Liquids Articles from Green Chem. – Royal Society of Chemistry, July 2012

Cryst. Eng. Comm., (2012), 14, 4912–4921
- Selected as High-Impact Research from Cryst. Eng. Comm. – Royal Society of Chemistry, July 2012

Paula M. Alves
Trends in Biotechnology 30, 350-9.
- Selected for a Trends Limited Edition focusing on reviews in Technological Advances. IF= 9.644 http://dx.doi.org/10.1016/j.tibtech.2012.03.003

Members of scientific committees

Adriano Henriques
Member of Scientific Committee, "Jornadas Portuguesas de Genética". Lisbon, Portugal, May 28-30

Cecilia M. Arraiano
Member of the Scientific Committee of the 22nd IUBMB 37th FEBS "From Single Molecules to Systems Biology" 4-9 September , Seville, Spain 2012

Member of the Scientific Committee of XXXVII Jornadas Portuguesas de Genética" 28-30 May 2012 Lisboa, Portugal

Evaluator of the 2013 Meeting of INTERMODS consolider. Interacciones entre Módulos Plasmídicos y los Genomas de Bacterias Patógenas" Rascafria Madrid. 3-5 Oct 2012

Cláudia Nunes dos Santos
Member of SC of the IV Colóquio Nacional da Produção de Pequenos Frutos, Faro, Portugal, 20-21 April 2012

Cláudio M. Gomes
Member of the Interbio scientific comittee
Coordinator of the Interbio Technological Platforms Commitee

Cláudio M. Soares
In the organising and scientific committees of the "Jornadas de Bioinformática" 2012. 23-25 January 2012, Barcelona, Spain

Chaiman of the session "Structural Bioinformatics" in the "Jornadas de Bioinformática" 2012. 23-25 January 2012, Barcelona, Spain

Chairman of the session "Single Molecules; Engineering and Design" in the 22nd IUBMB & 27th FEBS Congress. 4-9 September 2012. Seville, Spain

Claudina Rodrigues Pousada
Chairman of the EMBO Plenary Lecture in IUBMB-FEBS Congress, 4-9 September 2012. Seville, Spain

Member of the Scientific Committee of the IUBMB-FEBS Congress, 4-9 September 2012. Seville, Spain

Cristina Silva Pereira
Member of the Executive committee of the Congress on Ionic Liquids 2015

Helena Santos
VI GERMN Bienal Meeting - III Iberian NMR Meeting" (25-28th, September, 2012), Aveiro, Portugal. (H. Santos, member of the Scientific Advisory Committee)

H. de Lencastre
Member of the Scientific Committee, 8th International Symposium on Pneumococci & Pneumococcal Diseases (ISPPD-8). Iguaçu Falls, Brazil

Inês A. Cardoso Pereira
Member of Scientific committee of EMBO Workshop on Microbial Sulfur Metabolism, Noordwijkerhout, The Netherlands, 15-18 April 2012

Manuela Chaves
Member of the Scientific Committee of the INTERDROUGHT IV Conference to take place in Brisbane, Australia. September 2013

Margarida Archer
National delegate of the European Crystallographic Association, ECA

Margarida Oliveira
Member of Scientific Committee, NutriPLANTA 2012 - XIV Simposio Hispano-Luso de Nutrición Mineral de las Plantas, Madrid, Spain

Ligia O. Martins
Member of the Scientific and Organizing Committee: Oxizymes in Marseille – 5t European Meeting of OXIZYMES Marseille, France, September 16-19

Luis Paulo N. Rebelo
Member Scientific Committee das Faraday Discussions dedicado ao tema "Ionic Liquids"

Member of Council of Chairs do International Congresses on Ionic Liquids

Patrick Groves
Financial Rapporteur and Portuguese representative on the management committee of COST Action "MP802: Self-assembled Guanosine Structures for Molecular Electronic Devices"

Paula M. Alves
Vaccine Technology IV, May 2012, Albufeira, Portugal (Paula M. Alves)

Scale-Up and Manufacturing of Cell-Based Therapies I, January 2012, San Diego, California, USA (Manuel J. T. Carrondo)

Ricardo O. Louro
Young Scientists Program of the 37th FEBS/22nd IUBMB congress, Sevilla, Spain

Rita Ventura
Member of the Management Committee of the COST CM 0905-ORCA

Raquel Sa-Leão
Invited Session Leader of Symposium 3, "Advanced Epidemiology of pneumococcal infections and antimicrobial resistance in developing countries" of ISPPD-8, 8th International Symposium on Pneumococci and Pneumococcal Diseases. Iguaçu Falls, Brazil. March 11 - 15, 2012.

Others

Antonio M. Baptista
Portuguese member of the Managing Committee of the COST Action nº CM1102, "Multivalent Glycosystems for Nanoscience - MultiGlycoNano".

Cecília M. Arraiano
Evaluator of the European Research Council (LS2 Panel)
Member of the EMBO Fellowship Committee- Cecília M. Arraiano

Claudina R. Pousada
FEBS Executive Committee and Financial and policy committee of the International Conference in Yeast Genetics and Molecular Biology

Inês A. Cardoso Pereira
Member of Scientific committee of PCISBIO - Portuguese Centre for Integrated Structural Biology, an Affiliate Centre of Instruct.

Manuela Chaves
Member of the scientific committee for the Italian Evaluation of Research Quality (VQR 2004-2010).

Member of the Advisory board of the EU Project 'Improving the resistance of legume crops to combined abiotic and biotic stress (ABSTRESS)'. Project ID: 289562 FP7-KBBE-2011-5.

Ricardo O. Louro
Member of COST CM1003 Management Committte

Raquel Sa-Leão
Elected member of the Executive Committee of the ESGEM (ESCMID Study Group on Epidemiological Markers) for 2011-2013 from the European Society of Clinical Microbiology and Infectious Diseases.

Expert Consultant of the European Center for Disease Control (ECDC) on Systematic Review of Public Health effectiveness of Molecular typing of Bacteria and Viruses, ECDC, Sweden, May 21-22, 2012.

Expert Consultant of World Health Organization on "Review of Core Consensus Methods for S. pneumoniae carriage", World Health Organization (WHO), Switzerland, May 29-30, 2012.

Happenings

Happenings at ITQB in 2012
For a full list of seminars at ITBQ in 2012, see appendix

Open Labs
The Open Labs initiative is targeted to university students wishing to explore research opportunities at ITQB

PhD in Molecular Biosciences
Approval of the new ITQB PhD Program
14 February

Interbio Workshop: Two faces of science communication
this workshop covers the practical aspects of science communication and includes presentation of successful outreach examples within the Interbio region.

January February March May

ITQB PhD Course '12
The 2012 ITQB PhD course started in January 12 with an informal opening session presenting the structure and the contents of the curricular units

Fascination of Plants Day
Joining other international institutions, ITQB and other Institutes in Oeiras Campus celebrated the first "Fascination of Plants Day".

Workshop Health Claims
Workshop about The Nutrition and Health Claims Regulation

MSc Medical Microbiology
Módulo III - Biologia Molecular e Epidemiologia de Bactérias Patogénicas Gram-Positivas
May 9-24, 2012
Hermínia de Lencastre, chair

ITQB Day
Celebrating ITQB's integration in UNL
July 2012

Awarded Best PhD Thesis Prize 2012
Thesis on biology
by Rute Matos

5th CERMAX practical course on basic NMR
2 - 5 July 2012, ITQB, Oeiras, Portugal
Helena Matias, Manolis Matzapetakis, Patrick Groves, Pedro Lamosa

Forest Genomic Meeting
Second edition of Forest Genomics Meeting "Transgenic Forest Trees: time to harvest?" to discuss the state of art on genetically modified forest trees.

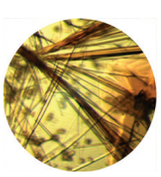
Science & Technology Week
During the Science & Technology Week, researchers went to schools to talk with students about what is like to be a researcher at ITQB.

July

October

November

3nd ITQB PhD Students Meeting starts
Young scientists discuss ongoing research projects



Biocrys2012
a FEBS Practical & Lecture Course "Fundamentals of Modern Methods in Biocrystallography"
October 20-27, 2012, ITQB, Oeiras, Portugal
Maria Arménia Carrondo, Organizer.
Pedro Matias, Margarida Archer, Carlos Frazão, Célia Romão, Isabel Bento as speakers.

Other Meetings and Courses organized by ITQB Researchers

"Jornadas de Bioinformática"
January 23-25, 2012, Barcelona, Spain
Cláudio M. Soares, member of organizing and scientific committees

International Workshop on Ionic Liquids–Seeds for New Engineering Applications
February 2-3, 2012, FC-UL, Lisbon, Portugal
Luís Paulo N. Rebelo, member of the organizing committee

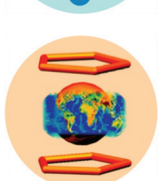
Workshop on "Secretory Pathways and resistance in TB"
May 2012, IGC, Oeiras, Portugal
Patrick Groves, co-chair and member of the organizing committee

Ionic Liquids no 18th Symposium on Thermophysical Properties
July 24-29, 2012, Boulder, Colorado, USA
Luís Paulo N. Rebelo, organizer and chair of the 8 sessions

FEBS/IUBMB 12th Young Scientist Forum
September 1-4, 2012, Seville, Spain
Claudina R. Pousada, member of the organizing committee

Young Scientists Program of the 37th FEBS/22nd IUBMB congress
September 1-4, 2012, Sevilla, Spain
Ricardo O. Louro, co-chair

FEBS International workshop "New Developments in RNA Biology"
September 1-4, 2012, Tavira, Portugal
Cecilia Arraiano, co-organizer



XV International Conference on Organometallic Chemistry
September 2-7, 2012, Lisbon, Portugal
Beatriz Royo, member of the organizing committee

9th International Congress on Extremophiles
September 10-13, 2012, Seville, Spain
Helena Santos, member of the International Organizing Committee

C

Bioorganic Chemistry

Rita Ventura rventura@itqb.unl.pt

The term "organocatalysis" describes the acceleration of chemical reactions through the addition of a substoichiometric quantity of a small organic molecule, not involving a metal atom. An example of an organocatalyst is the aminoacid proline. The interest in this field has increased very rapidly in the last few years as a result of the novelty of the concept. The efficiency and selectivity of organocatalytic reactions meet the standards of established organic reactions, providing an alternative or a complement to organometallic and enzymatic catalysis, with a strong potential for green chemistry and industrial applications. In 2012, our group synthesised several new pyrrolidine based asymmetric organocatalysts with general structure 1 derived from tartaric and glyceric acids and studied their application to the development of enantioselective aldol reactions. D- and L- tartrates provide inexpensive sources of chirality and the presence of the rigid bis-acetal imposes conformational rigidity. The influence of a different proton donor group such as a primary hydroxyl or a carboxylic acid group, or their absence, on the efficiency of the organocatalyst was studied. We could conclude that the configuration of the tartrate had a relevant influence on the stereochemistry of the aldol reaction and the presence of the proton donor group was also important for the stereocontrol. None of the catalysts were generally applicable but they were very good catalysts for particular aldol reactions although highly dependent on the substrate structure, and we think this is a consequence of the conformational rigidity conferred by the chiral dioxane acetal. This can be an important feature for the development of new selective organocatalysts requiring precise tuning of the configuration of the substituents on the tartrate, the choice of the proton donor group and the configuration of the proline.

C

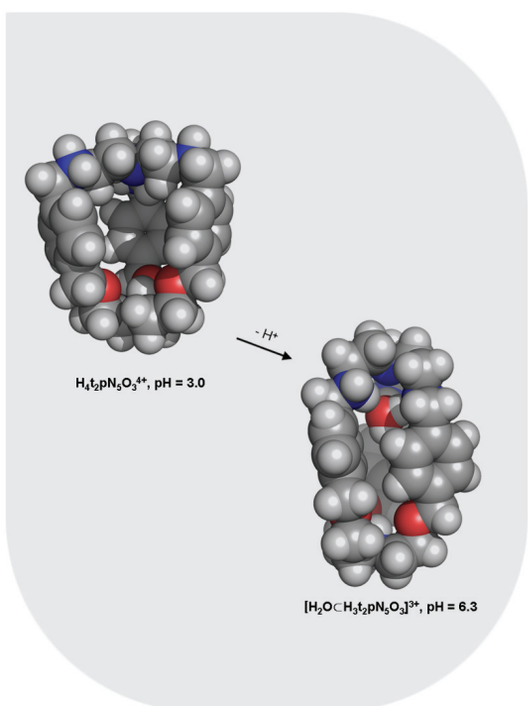
Coordination and Supramolecular Chemistry

Rita Delgado delgado@itqb.unl.pt

It is widely recognized that water–protein interactions are not only fundamental in folding, conformational stability and internal dynamics of proteins, but also they are important as modulators of recognition, assembling and catalysis. However, the role of buried water molecules in protein stability and function is difficult to estimate experimentally, consequently it is useful to resort to model systems to investigate the modulation of physicochemical properties of host molecules by included water.

Accordingly, we have prepared a new heteroditopic macrobicyclic compound whose X-ray crystal structure revealed an encapsulated water molecule strongly bound within the molecular cavity. A large set of experiments performed in aqueous solution, using methods as different as potentiometric measurements, NMR titration, NOESY, DOSY and molecular dynamics, confirmed the presence of the encapsulated water molecule also in solution.

The studies revealed that water encapsulation and the concomitant formation of a trifurcated hydrogen bond at the polyether compartment of the compound causes a conformational rearrangement that leads to a highly stable, tightly closed and compact conformation which severely affects its acid–base properties.



Mateus, P. et al. J. Org. Chem. (2012) 77, 6816–6824

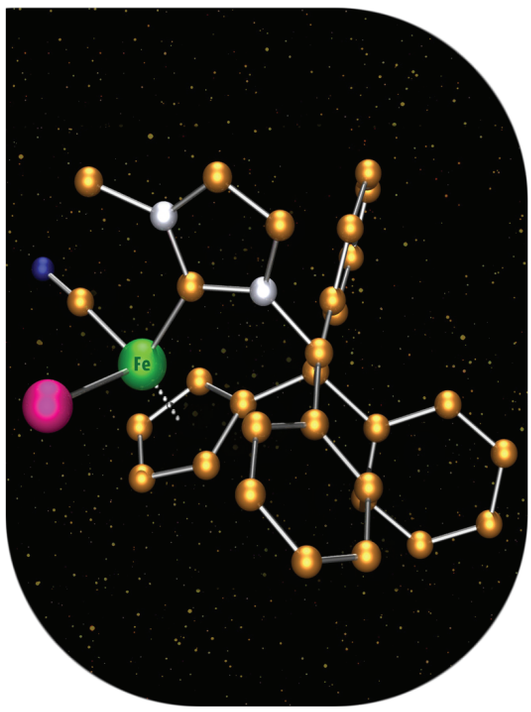
C

Homogeneous Catalysis

Beatriz Royo broyo@itqb.unl.pt

The majority of the catalysts capable to perform the reduction of organic functional groups are based on precious metals such as palladium, rhodium, iridium, and ruthenium. Due to global efforts in sustainability, coupled with increasing prices and limited availability of precious metals, there is an increasing interest to replace such catalysts by readily available biocompatible metals. In particular, the use of iron is especially attractive because is an abundant, cheap and environmentally friendly metal. Iron takes part in a multitude of biological systems as an essential element that is found in many enzymes, and thus constitutes an attractive metal for man-made synthetic transformations.

The introduction of N-heterocyclic carbene ligands (NHCs) in the coordination sphere of iron might afford stable, efficient and selective catalytic systems. However, Fe-NHC complexes have to be prepared via free carbenes, which are extremely reactive molecules difficult to handle. We have found an unprecedented synthesis of iron(II)-NHC complexes by direct reaction of commercially available $Fe_3(CO)_{12}$ with an imidazolium salt via C-H activation. This advance precludes the requirement for the strong bases traditionally employed in the synthesis of similar complexes. The combination of these iron(II) species with silver salt and a silane affords a mild and efficient catalytic system for reducing sulfoxides.



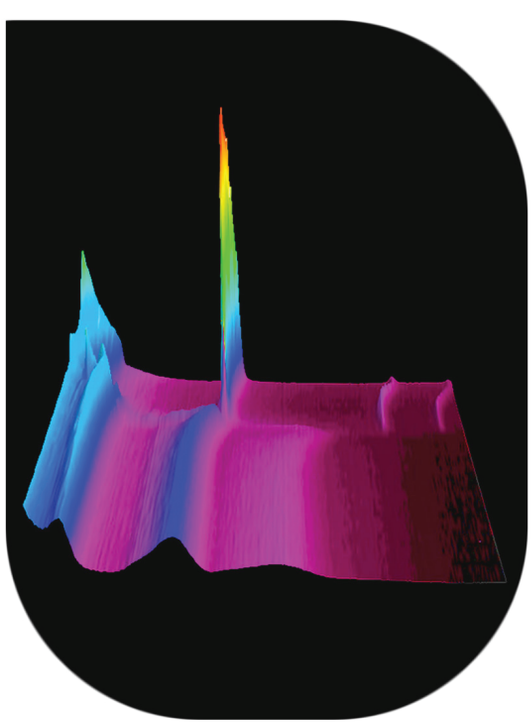
C

Micro-heterogeneous Systems

Eurico Melo eurico@itqb.unl.pt

In mammals the main barrier toward transepidermal water loss and external xenobiotic aggression is the lipid-filled extracellular space of the cornified part of the epidermis, the stratum corneum. Several skin diseases seem to be associated with changes of its chemical composition, impairing its capacity to control the chemical exchanges between the body and the exterior. Much has also been speculated about the possibility of chemically tuning its permeation properties in benefit of the transcutaneous penetration of topically applied substances.

Along this year we studied the molecular architecture spontaneously developed by ceramides, the main lipid components of the stratum corneum, and how this supramolecular structure is modified when fatty acids and cholesterol assemble together with the ceramides in an aqueous environment. We have also studied the prototropism and ionotropism of this lipid system. This is important because the pH and salt concentration do not have the same value in the inner side of the stratum corneum, directly layered over the live epidermal tissue, and in the outer region, exposed to the atmosphere. A more thoughtful understanding of the properties of the lipids will in the future allow designing model systems adequate for the study in the laboratory of the mechanism of partition and permeation of water, drugs or aggressive chemical agents to and through the skin.



C

Organic Synthesis

Chris Maycock maycock@itqb.unl.pt

The N-arylation of amines is a useful process for the synthesis of compounds with potential medicinal properties. It is difficult to do and normally requires expensive metals such as Palladium. The group has found various methods of carrying out this process without the use of metals but by using aliphatic compounds and a non-metal catalyst such as an acid or iodine. A wide range of substrates both, amine and arylating agent, can be used to create libraries of compounds otherwise difficult to obtain.

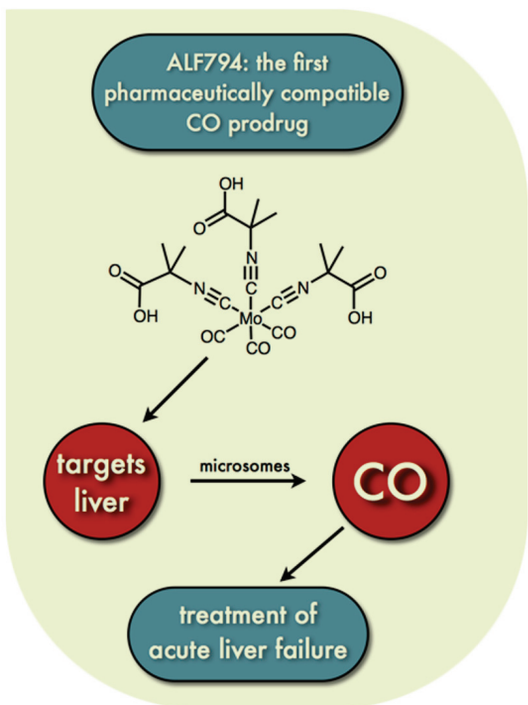
C

Organometallic Chemistry

Carlos Romão ccr@itqb.unl.pt

The discovery of the biological effects of carbon monoxide (CO) in recent years strongly suggests that CO could find applications as a therapeutic agent. CO is a highly toxic gas when used at industrial doses, due in part to its binding affinity to hemoglobin. Since hemoglobin binds CO with the highest affinity in vivo, it also constitutes a major barrier to the delivery of CO to tissues in need of therapy. A method of delivering CO that can bypass hemoglobin is the use of CO carriers, called CO-releasing molecules (CORMs) that become activated and release CO in tissues in need of treatment. Organometallic carbonyl complexes are best suited to play the role of CO carriers, and indeed the natural CO carrier molecules hemoglobin and myoglobin belong to this class of chemical compounds.

ALF794 is the first CORMs that presents chemical and biological properties compliant with pharmacological requirements. It is a liver specific CO carrier highly effective in rescuing the life and liver function of mice poisoned by lethal doses of paracetamol.

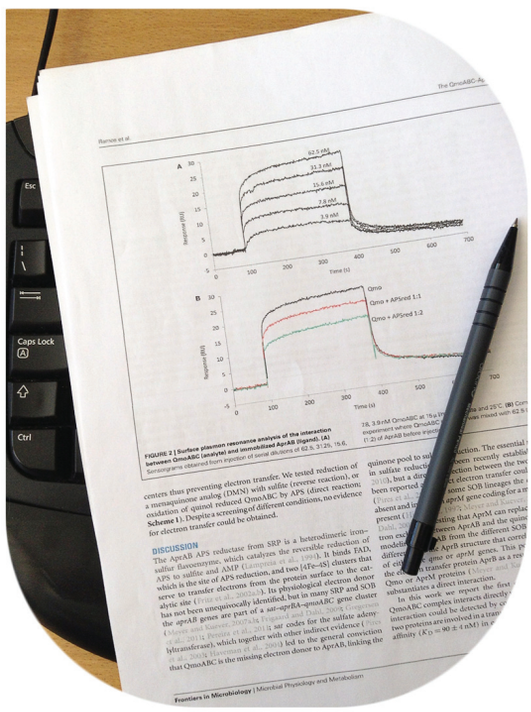


BC

Bacterial Energy Metabolism

Inês A. Cardoso Pereira ipereira@itqb.unl.pt

The BEM lab is interested in studying Energy Metabolism in environmentally important bacteria to explore their biotechnological applications. We have been focused in a very widespread group of organisms that respire sulfur compounds (in particular sulfate), which play a key role in the biogeochemical cycles of sulfur and carbon in anaerobic habitats, and are important players in Environmental Biotechnology. In 2012 we made an important contribution to understanding the physiology of these organisms, by clarifying a key step in the energy metabolism pathway: using several complementary techniques we showed that the QmoABC membrane complex interacts directly with the APS reductase, one of the key enzymes of sulfate respiration. This is the first direct evidence linking the soluble process of sulfate reduction with membrane-bound respiratory complexes. Based on these results we proposed a new mechanism of reverse electron bifurcation process, i.e. electron confurcation, for the reduction of APS. This mechanism allows the coupling of sulfate reduction with chemiosmotic energy conservation, a process long known to occur in sulfate reducing organisms, but for which the molecular basis has been hard to identify. This study allows a deeper understanding of the physiology of this group of organisms and provides a roadmap for their future engineering to enhance technological applications.



Ramos A. R. et al. (2012) Frontiers in Microbiology 3, 137

BC

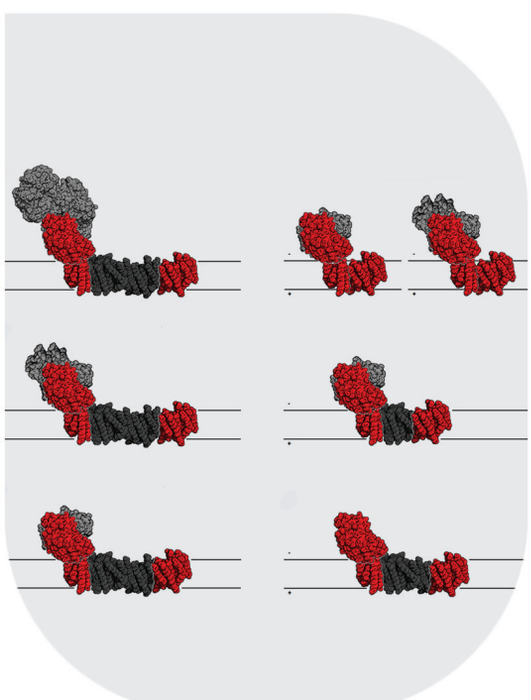
Metalloproteins and Bioenergetics Unit

Biological Energy Transduction

Manuela M. Pereira mpereira@itqb.unl.pt

Energy transduction is the basis of life. Cells utilize different forms of energy, ATP or electrochemical membrane potentials, for growing, nutrient import and waste export as well as motility. In living cells most energy is transduced by membrane proteins of the electron transfer chains during the processes of cellular respiration or photosynthesis. Complex I of respiratory chains catalyses NADH:quinone oxidoreduction, coupled to cation translocation across the membrane, being one of the biggest respiratory contributors to energy conservation. Complex I deficiencies have been implicated in several pathologies, namely neurodegenerative diseases such as Parkinson disorder.

We have contributed to the understanding of the structural/functional mechanism of complex I by investigating its constituents and related complexes. We performed a thorough study of prokaryotic complexes I and related enzymes, which led to the recognition of a structural/functional denominator. The identification of such denominator allowed us to put forward an original perspective on the evolution, function and mechanism of respiratory complex I. The Na^+/H^+ antiporter-like subunits of Complex I seem to be one of the most primitive membrane proteins, associated with the first bioenergetic processes.



BC

Biomolecular NMR Laboratory

Manolis Matzapetakis matzman@itqb.unl.pt

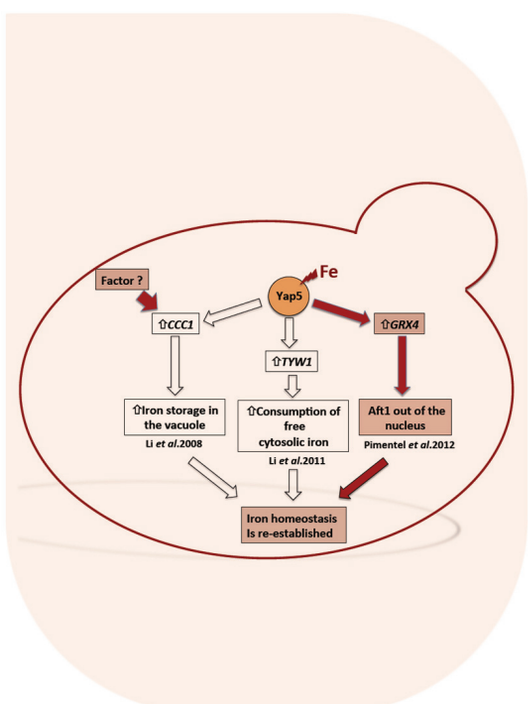
Our group is studying structure and function of proteins in solution using NMR. In 2012, we determined two protein structures in collaboration with the groups of Microbial Development and Cell Physiology and NMR. The first, RodZ, is a multi-domain protein, involved in morphogenesis and is widely conserved in both gram negative and gram positive bacteria. Its N-terminal domain (RodZ-N), located in the cytoplasm, has been shown to interact with Actin by functional and crystallographic studies in *Thermotoga maritima*. The *Bacillus subtilis* RodZ-N, has low homology (<30%) compared to its *Thermotoga maritima* homologue. Recent data on *Bacillus subtilis* suggest a potentially different cellular function for it with the possibility of it being involved in DNA organization. Our structural studies have revealed that the region of RodZ-N that is potentially interacting with DNA is more flexible than usual, a feature that is consistent with the potential for interaction.
The second study was on the structure of a triple mutant of the staphylococcal nuclease, a protein that has been used as a model for protein folding and stability by many groups, however the specific mutant that is of particular interest was not characterized in solution at high temperatures. The structure of that mutant was used as a basis for an extensive study of the dynamics behavior of the protein and the influence of compatible solutes on the mobility of the protein. [1]

BC

Genomics and Stress Laboratory

Claudina R. Pousada claudina@itqb.unl.pt

Disturbances of iron homeostasis affect the pathogenesis of infectious diseases and have severe clinical consequences like Fe-deficiency anemia, *Friedreich's* ataxia and hereditary hemochromatosis - being the latter the most common genetic disorder among Caucasians. *Saccharomyces cerevisiae* is an attractive organism to study the mechanisms that, on one hand avoid the drastic consequences of iron scarcity and on the other hand circumvent the toxic effects of iron overload. It represents a simple working model to eliminate the complexity of higher eukaryotic cells being able to grow under a wide variety of Fe accessible environments and surviving large fluctuations in Fe bioavailability. Unlike vertebrates, but similar to plants, the yeast cell vacuoles function as iron reservoirs. Ccc1 is the vacuolar transporter that mediates iron storage in yeast. In a high-Fe milieu, *CCC1* deletion is lethal and Yap5 - a member of the AP-1 likes protein family - regulates its expression. We showed that besides the iron vacuolar transporter *CCC1*, Yap5 also directly controls the expression of glutaredoxin *GRX4*, known to be involved in the regulation of Aft1 nuclear localization, the major transcriptional activator in Fe deficiency. Consistently, we showed that in the absence of Yap5, Aft1 nuclear exclusion is impaired (Fig.1). We also observed that Yap5-mediated regulation of *CCC1* is not essential for cells to overcome iron overload. This new finding brings forward the hypothesis that another yet unidentified factor is regulating iron storage in yeast.



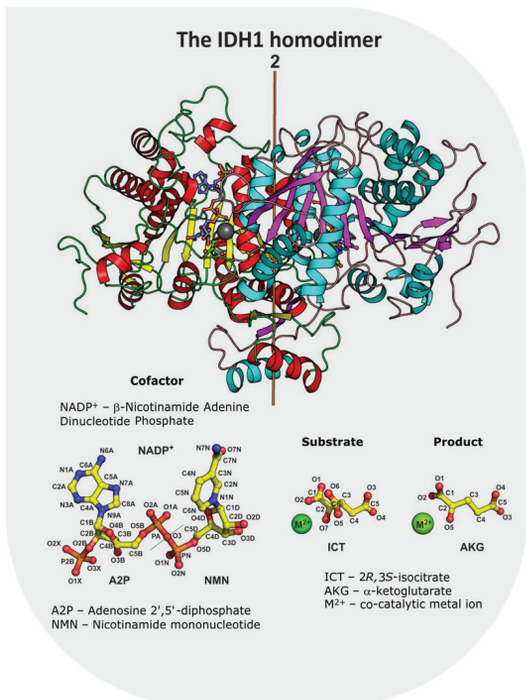
BC

Macromolecular Crystallography Unit

Industry and Medicine Applied Crystallography

Pedro Matias matias@itqb.unl.pt

Type I $NADP^+$ dependent isocitrate dehydrogenase (IDH1; EC 1.1.1.42) is involved in the citric acid (Krebs) cycle and converts 2*R*,3*S*-isocitrate into α-ketoglutarate. The citric acid cycle is a key component of the metabolic pathway by which all aerobic organisms generate energy. IDH1 belongs to a large family of enzymes that catalyze similar reactions and several members of this family including *Escherichia coli* IDH1 have been studied by X-ray crystallography in order to identify the aminoacid residues important for catalysis. However, this work was only partially successful because IDH1 undergoes substantial conformational changes upon substrate binding and none to date were representative of an active enzyme.
In 2012 we published the first crystal structures of two *Escherichia coli* IDH1 complexes representing fully active enzyme conformations, with its substrate and co-factor (*pseudo*-Michaelis complex) and products, providing a comprehensive view of the induced fit needed for catalysis by comparison with previously obtained crystal structures. Our structural results also provided structural evidence to support the catalytic aminoacid residues proposed in 2009 by Aktas & Cook: Lys230* (from the second monomer in the biological and crystallographic dimer of IDH1) and Tyr160. A chain of water molecules from the catalytic triad Tyr140-Asp307-Lys230* connects the α-hydroxyl of both isocitrate and α-ketoglutarate to the bulk solvent to complete the picture of the catalytic mechanism.



BC

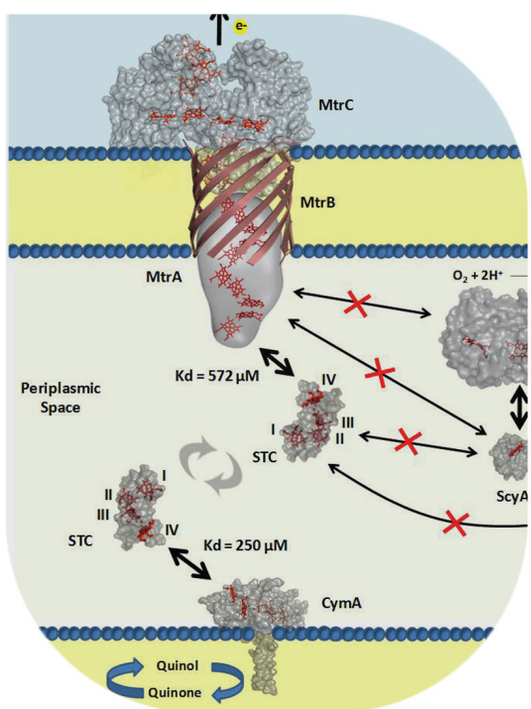
Inorganic Biochemistry and NMR

Ricardo O. Louro louro@itqb.unl.pt

Mind the Gap
Molecular routes for extracellular electron delivery identified

Some bacteria are able to produce electrical currents, a trait which is being exploited for electricity production in a technology known as bioelectrochemical systems. But how these bacteria manage to link intracellular metabolism with extracellular electron delivery has been one of the last standing mysteries of their metabolic routes. Research conducted in the context of a project funded by the MIT-Portugal program revealed the co-existence of two independent pathways that enable electrons to cross the gap between the bacteria inner and outer membranes.

Respiration in electrochemically active bacteria is peculiar in the sense that the production of ATP, the molecular currency for energy in all living organisms, takes place in the inner membrane but the terminal electron acceptor of the respiratory chain is found outside the cells. We have shown that in Gram negative bacteria two molecular routes reach across the periplasmic gap to deliver electrons to the cell surface. In both routes, electrons travel via transient protein-protein interactions but, even though proteins share the same cell compartment, the two routes do not exchange electrons. This result reveals exquisite discrimination in the recognition of protein partners and the molecular bases for this discrimination were identified.



BC

Macromolecular Crystallography Unit

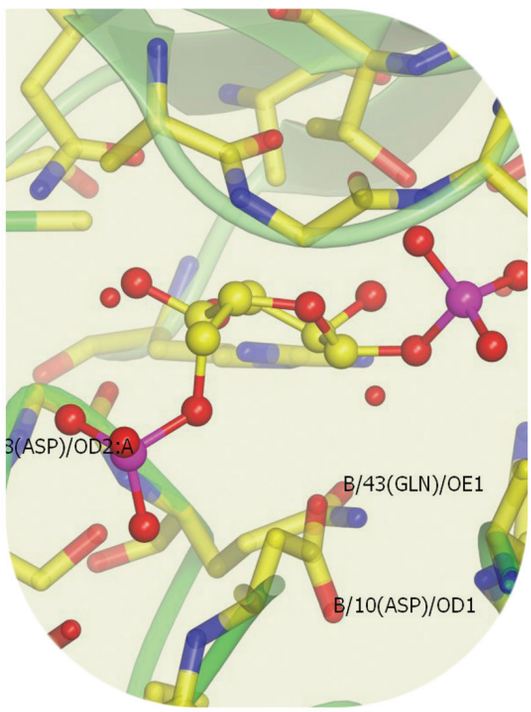
Membrane Protein Crystallography

Margarida Archer archer@itqb.unl.pt

We have done the structural characterization of α-Phosphoglucomutase (α-PGM) from *Lactococcus lactis,* an enzyme that catalyzes the interconversion of α-glucose 1 phosphate to glucose 6 phosphate. α-PGM is present in all organisms from bacteria to animals and plants and plays distinct roles among the different organisms. In animals and plants, α-PGM is mainly involved in the synthesis and utilization of storage carbohydrates like glycogen and starch. In bacteria, α-PGM is involved in sugar utilization and in the synthesis of precursors for cell wall polysaccharides and exopolysaccharides. In the last decade, a high number of studies associated the virulence of several pathogenic bacteria to the presence of α-PGM.

Lactococcus lactis is a lactic acid bacterium widely used in starter cultures for the manufacture of fermented dairy products, such as cheese and buttermilk. Its enormous economical value has rendered this typical homofermentative bacterium as one of the most extensively studied members of the lactic acid bacteria.

The structure of α-PGM from *L. lactis* is composed of two domains: the core and cap domains. The core domain contains most of the conserved catalytic residues, while the cap domain acts as a lid over the core domain and differentiates according to specific substrates and catalytic reaction. The structure elucidation in our laboratory allowed comparison with other members of the same family and identification of the specific features of this enzyme with impact on substrate specificity and catalytic mechanism (submitted manuscript).



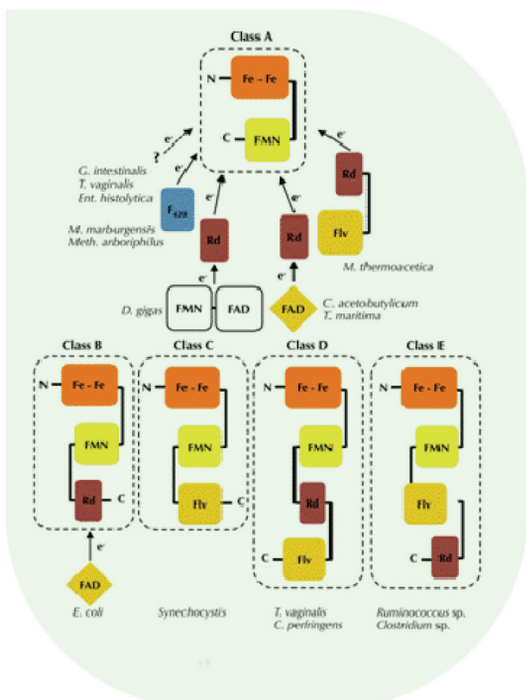
BC

Metalloproteins and Bioenergetics Unit

Metalloenzymes and Molecular Bioenergetics

Miguel Teixeira miguel@itqb.unl.pt

Oxygen and nitric oxide are paradoxical small molecules that are both beneficial and toxic to living organisms, depending on their concentration and controlled metabolism, and on the type of species they may originate, globally called Reactive Oxygen Species and Reactive Nitrogen Species. In particular, the toxicity of NO is used by the innate immune systems to combat pathogens. Therefore, all organisms have enzymes that have evolved to protect against those species by transforming them into harmless molecules. A particularly interesting example that emerged more recently are the Flavodiiron Proteins (FDPs) which reduce directly oxygen to water and/or nitric oxide to nitrous oxide, therefore eliminating the possible sources of ROS and RNS. FDPs are widespread among the three life kingdoms, including higher eukaryotes. It has been one of the aims of this Laboratory to understand the molecular mechanisms of these challenging enzymes and, specifically, to unravel the specificity towards oxygen or NO as substrates. Towards this goal, two prototypical enzymes are under study: the FDP from Escherichia coli, a specific NO reducing enzyme, and the FDP from the pathogenic protozoan Entamoeba histolytica, a specific oxygen reductase. The determination of the 3D structures of these enzymes and a detailed comparison of them, followed by site directed mutagenesis, allowed to propose structural features close to the metal center that affect substrate specificity.



Vicente et al. (2012) Eukaryotic Cell. 11: 1112-1118

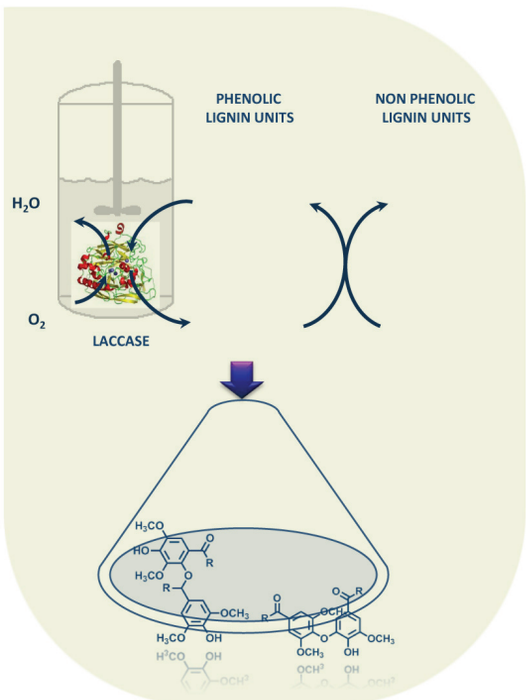
BC

Microbial & Enzyme Technology

Ligia O. Martins lmartins@itqb.unl.pt

Methyl syringate
an Efficient Phenolic Mediator for Laccases

Industrial exploitation of plant biomass for future sustainable development is limited by the lignin recalcitrance towards chemical and biological degradation. Biocatalysis offers an environmentally friendly alternative for lignin degradation, representing additionally the key approach for the successful valorisation of lignin bio-wastes. Laccases together with peroxidases and a few auxiliary enzymes act synergistically in this process. Laccases action is restricted to the oxidation of phenolic lignin moiety that comprises less than 20% of the lignin polymer. This limitation is overcome through the addition of redox-mediators that allow for the oxidation of the non-phenolic units. However, the industrial use of synthetic mediators is strongly impeded by its high cost and generation of toxic species leading to biocatalyst inactivation.
We assessed the efficiency of natural phenolics as redox mediators of laccases. We achieved high conversion oxidation yields of non-phenolic lignin units and concluded that those are 1) dependent on the reactivity and stability of the phenoxy radical products, highlighting the importance of the chemical nature of and 2) independent of the redox potential, catalytic efficiency or other properties of the enzymes used. Finally, we show that phenoxy radical formed are involved in three different competitive routes, including a radical coupling with formation of C-O dimeric or trimeric products, explaining the need of a high mediator: non-phenolics ratio in the reaction mixtures.



Rosado et al. (2012) Bioresource Technol. 124:371-378

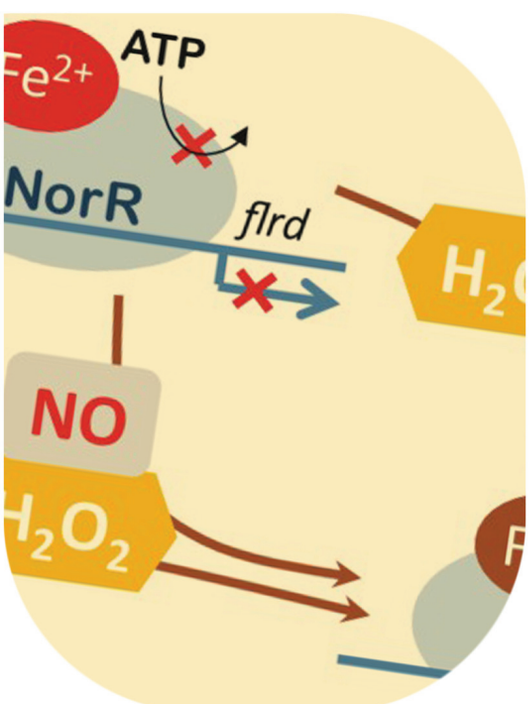
BC

Molecular Genetics of Microbial Resistance

Ligia M. Saraiva lst@itqb.unl.pt

E. coli **and macrophages**
An Intricate Choreography

In their quest to control infection, mammalian phagocytes produce nitric oxide and hydrogen peroxide. The microbes, in turn, use an array of enzymes to detoxify these and other reactive oxygen species, such as flavorubredoxin, a nitric oxide reductase. Now Ligia M. Saraiva of the Universidade Nova de Lisboa, Oeiras, Portugal, et al. show in fascinating detail that unlike under nitrosative stress by itself, exposure to both nitrosative and oxidative stresses prevents *E. coli* from expressing flavorubredoxin by blocking the transcription mechanism for this gene. This team shows further the unfolding choreography of the battle between bacterium and host immune system, with one and then the other gaining the advantage. "We propose that the time-dependent activation of flavorubredoxin contributes to the adaptation of *E. coli* to the different fluxes of hydrogen peroxide and nitric oxide to which the bacterium is subjected during the course of macrophage infection," the investigators write. "The research may ultimately lead to development of novel therapeutic drugs that successfully eradicate antibiotic-resistant pathogens," says Saraiva. » (From Microbe Magazine Highlights of the American Society of Microbiology, July 2012)



Baptista J.M. et al. (2012) J. Bacteriol. 194(14) 3611-3617

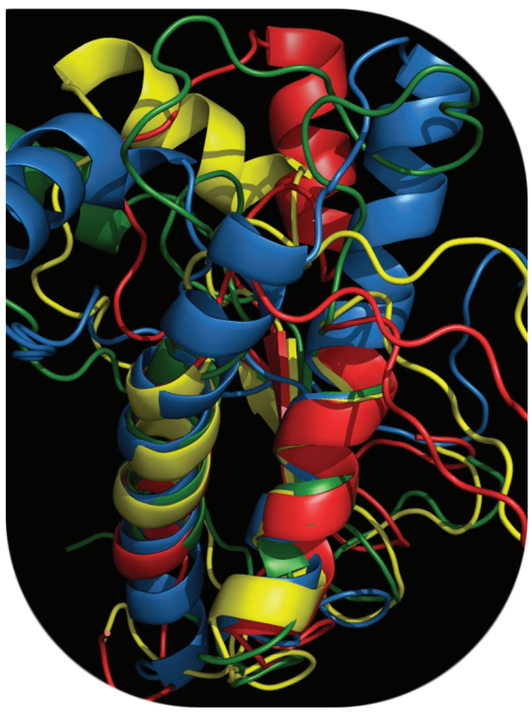
BC

Molecular Simulation

António M. Baptista baptista@itqb.unl.pt

Prion diseases are rare and fatal neurodegenerative diseases which include Creutzfeldt-Jakob disease in humans, mad cow disease in cattle, etc. The agent responsible for this class of pathologies is the prion, a protein that can undergo a conformational transition (misfolding) from its normal form into a pathogenic one. The misfolded prion tends to aggregate and form large amyloid deposits in the brain, acting by itself as an infectious agent through propagation of the misfolding process. The misfolding mechanism remains elusive, partly due to experimental limitations in obtaining detailed structural data, but evidences indicate that the conformational transition may be triggered by the low pH found in cell endocytic compartments.

As an alternative route to obtain structural information, we have recently studied the effect of pH on prion misfolding using computational simulation methods developed at ITQB. We started by investigating the detailed structural features induced by pH changes, successfully explaining the available experimental data and identifying clear misfolding transitions at low pH. More recently, together with the Inorganic and Theoretical Chemistry Group of the University of Lisbon, and in order to better understand the mechanism, we investigated to which extent those misfolding transitions can be reversed and found that such is possible in mildly misfolded forms, in agreement with experimental data.



Vila-Viçosa D. et al. (2012) J Phys Chem B, 116(30) 8812

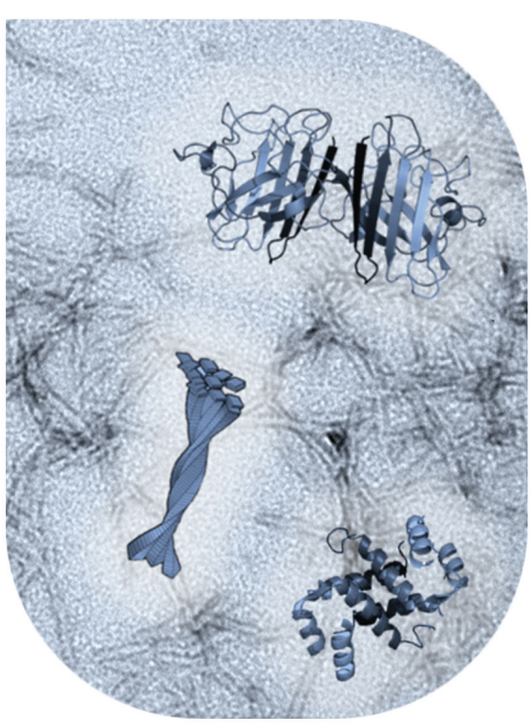
BC

Protein Biochemistry Folding & Stability

Cláudio M. Gomes gomes@itqb.unl.pt

The laboratory investigates the biology and biophysics of protein folding, an essential cellular process through which proteins acquire a functional conformation. Protein misfolding is a hallmark in several human diseases, and in recent years we have been investigating this process in different perspectives: protein misfolding in metabolic disease (loss of function) and protein aggregation in neurodegeneration (toxic gain of function). The former include defects in fatty acid oxidation, a group of rare diseases affecting key metabolic enzymes, impairing their biogenesis, stability and degradation. The latter relate to the understanding of how proteins form insoluble aggregates in neurons affected in diseases such as Alzheimer's, Parkinson's and Amyotrophic Lateral Sclerosis (ALS).

From the 8 papers published in 2012, we highlight those reporting studies on amyloid formation in neurodegenerative diseases. We were particularly interested in investigating two aspects: the role of metal ions in brain protein aggregation processes, and interactions between amyloidogenic proteins. For example we have established that metal ion imbalance observed in neurodegeneration influences protein folding leading to aggregation conformations. This was evident in S100A6, a brain protein upregulated in ALS whose aggregation is influenced by calcium. Our studies have also uncovered that this protein enhances the aggregation of SOD1, a key player in ALS aggregation, suggesting that yet unknown interactions may influence the ALS protein deposition phenomena. Overall, by reproducing in the test tube the chemical biology of the synaptic environment we seek to understand how protein aggregates are formed in disease conditions.



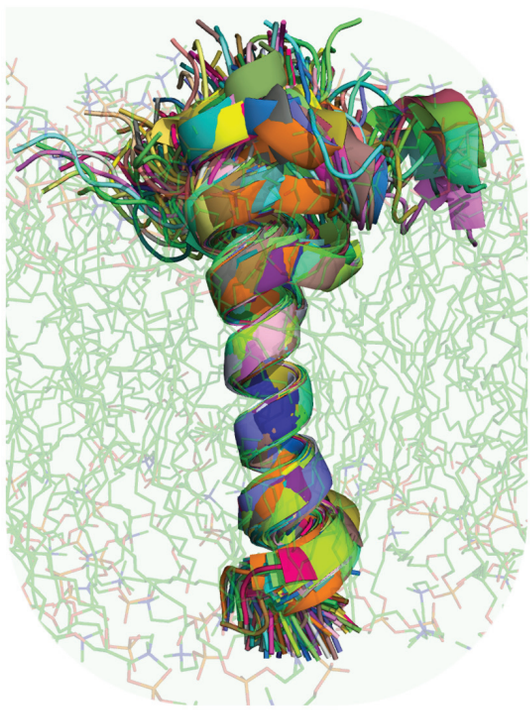
Botelho et al (2012) J. Biol. Chem. 287(50):42233-42
Leal et al (2012) Coordination Chemistry Reviews 256(19-20): 2253-2270

BC

Protein Modeling

Cláudio M. Soares claudio@itqb.unl.pt

Membrane fusion is a process involved in a high range of biological functions, going from viral infections to neurotransmitter release. Fusogenic proteins, like Hemagglutinin, increase the slow rate of fusion. Hemagglutinin promotes the fusion of the membrane of the influenza virus with the membrane of the target cell. The N-terminus of the HA2 subunit of this protein contains a fusion domain described to act as a destabilizer of the target membrane bilayers, leading eventually to a full fusion of the two membranes. On the other hand, the C-terminus of the same subunit contains a helical transmembrane domain which anchors the protein to the membrane of the virus, but recent studies also suggests that it is also related with the membrane fusion process. In this work, we present a study of this transmembrane peptide domain in the presence of DMPC membrane bilayers, and we evaluate the effect of several mutations, and the effect of peptide oligomerization in this interaction process. Our results allowed us to identify and confirm amino acid residue motifs that seem to regulate the interaction between the segment peptide and membrane bilayers. We could also conclude that three independent TM peptide segments arrange themselves in a parallel arrangement, very similarly to what is observed for the C-terminal regions of the hemagglutinin crystallographic structure of the protein, to where the segments are attached.



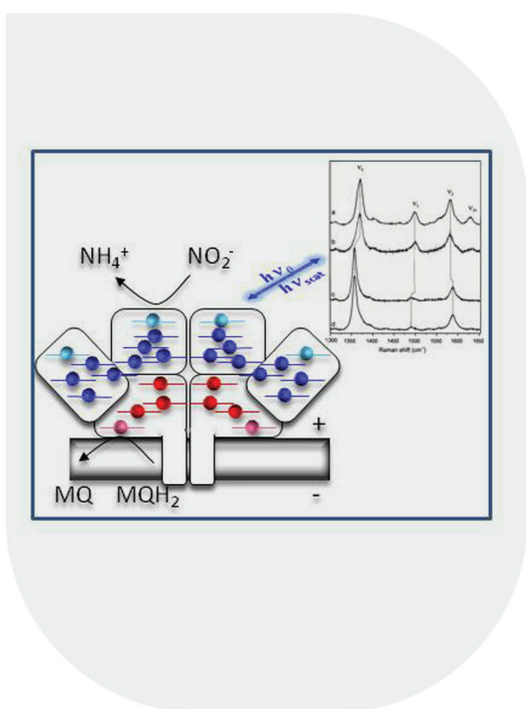
Victor et al. (2012) Journal of Chemical Information and Modeling 52(11): 3001-3012

BC

Raman Spectroscopy of Metalloproteins

Smilja Todorovic smilja@itqb.unl.pt

We have reported a surface enhanced resonance Raman spectroelectrochemical study of NrfHA nitrite reductase. The enzyme catalyzes the 6-electron reduction of nitrite to ammonia, the last step in prokaryotic nitrite ammonification, which is a key process in the biogeochemical cycling of nitrogen. The enzyme is a tight, membrane anchored complex that houses 28 c-type heme groups, representing a challenge for every experimental approach. The electron entry and electron exit sites of the complex comprise high spin heme groups. They possess characteristic vibrational fingerprint in the background of 22 low spin hemes, allowing for selective and unambiguous determination of their redox properties employing surface enhanced resonance Raman spectroelectrochemistry. We have shown that the electron entry point has a substantially lower redox potential than the catalytic heme, ensuring the downhill biological electron flow in the complex. The present work provides the first solid experimental evidence for the redox behavior of the integral NrfHA, therefore contributing to disentangling of the complex ET pathway in this large enzyme.

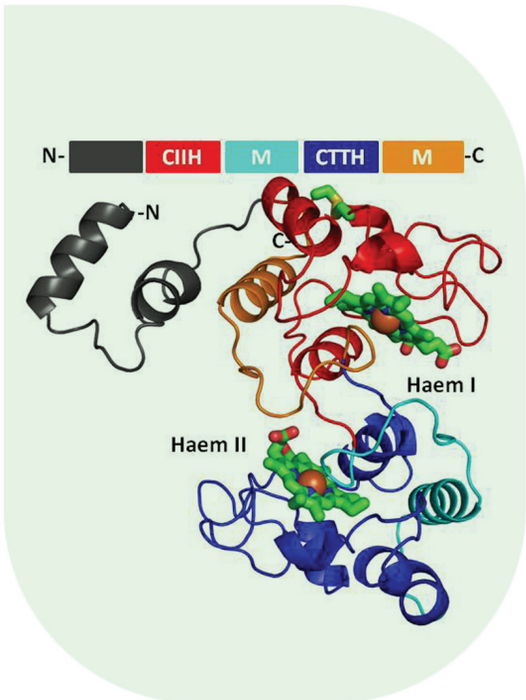


BC

Macromolecular Crystallography Unit
Structural Biology

Carlos Frazão frazao@itqb.unl.pt

Billions of years ago global deposition of massive sedimentary ores were produced by microbial iron metabolisms. Such microbial metabolisms still remain relevant in environments like deep see, anaerobic aquifers or acid mines. Previously to the appearance of oxygenic photosynthesis, with O_2 and H_2O cycling between respiration and photosynthesis, redox cycles on other elements were used to sustain microbial metabolism. The common ancestor of all photosynthetic organisms is thought to have used reduced sulfur compounds, and later ferrous iron, as source of electrons. Rhodobacter ferrooxidans SW2 is a bacterium capable of photoferrotrophy, a metabolic strategy that utilizes ferrous oxidation as the sole source of electrons in anoxygenic photosynthesis. The resulting ferric iron precipitates as (hydr)oxides at the neutral pH where the organism grows. It contains an operon (*fox*EYZ) that confers enhanced light-dependent ferrous oxidation activity. *fox*E encodes a cytochrome believed to reside in the periplasm and that stimulates ferrous oxidation. In order to understand the molecular mechanisms behind anoxygenic photosynthesis we determined FoxE 3D structure: a di-haemic cytochrome where each haem is surrounded by a similar whole-α folding motif, as yet not found in any other known protein. The study of such class of organism is important because of their contribution to modern biogeochemical cycles and to their potential usefulness in bioremediation and biotechnology.



BC

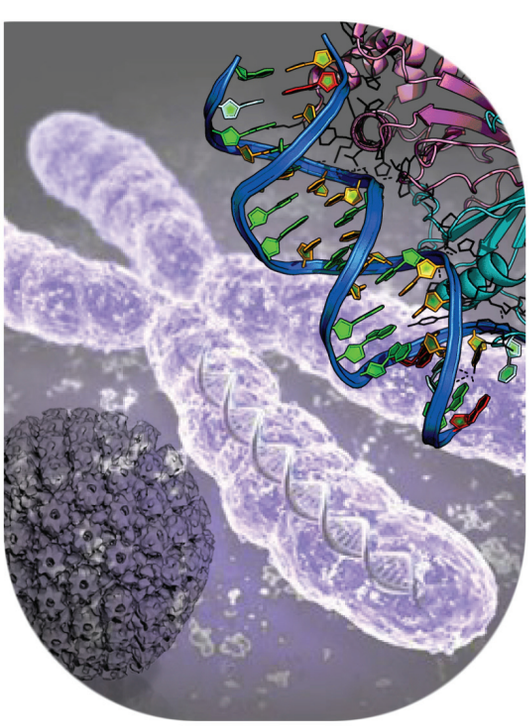
Macromolecular Crystallography Unit
Structural Genomics

Maria Arménia Carrondo carrondo@itqb.unl.pt

Herpesviruses are large DNA viruses and are a leading cause of human viral disease. The name herpes comes from the Greek word *herpein* which means to creep. This reflects the creeping or spreading nature of the skin lesions caused by many herpesvirus types.

We are studying proteins involved in herpesvirus viral episomal 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. We are studying LANA, a multifunctional protein that is critical for the establishment and maintenance of latent infection. It is a DNA binding protein that mediates segregation and replication of episomes. The prevailing model for episomal maintenance is that the viral genome is tethered to the mitotic chromosome in a piggy back-like fashion. This function is provided by LANA in which the N-terminal domain tethers to histone H2B as well as other chromatin factors while the C-terminal DNA binding domain binds the viral terminal repeat DNA. The latent phase of infection is associated with the different malignancies caused by the herpesviruses.

One milestone achieved in 2012 has been the X-ray structure determination of the C-terminal domain of mLANA. We have determined the X-ray structure of the C-terminal LANA DBD to 2.2 Å resolution. Our structural characterization of this protein has revealed the site of viral DNA tethering and revealed a possible site necessary for chromatin association.

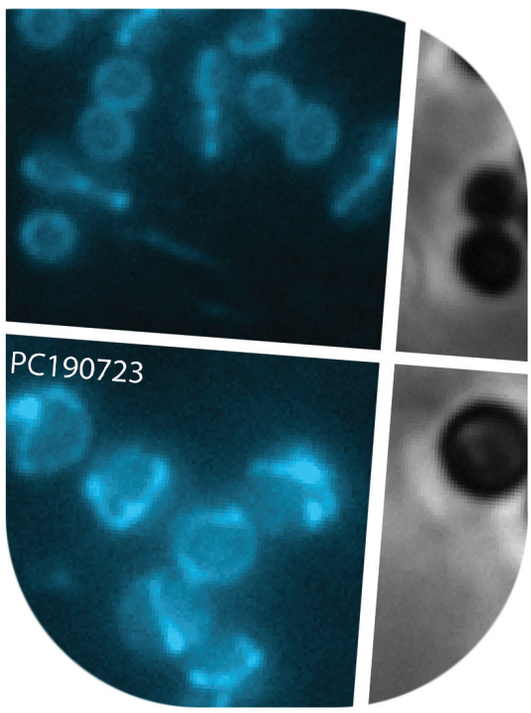


B

Bacterial Cell Biology

Mariana G. Pinho mgpinho@itqb.unl.pt

S. aureus is an extremely versatile pathogen capable of causing from minor infections to life threatening ones, such as bacteremia or endocarditis, with high morbidity and mortality rates. Last year it was estimated that it caused more deaths than AIDS in the USA. Besides its virulence, *S. aureus* is well known due to its increasing resistance to antibiotics. Methicillin Resistant *S. aureus* (MRSA) strains are among the most important causes of antibiotic-resistant hospital infections worldwide and have emerged also in the community. An alternative to current antibiotic therapies is the use of two agents which act synergistically to kill bacteria. In collaboration with a team from Merck, we have elucidated the mechanism by which a cell division inhibitor, PC190723, acts synergistically with α-lactam antibiotics (which inhibit cell wall synthesis) *in vitro* and . Through fluorescence microscopy localization studies we have determined that synergy between these agents is likely to be caused by the concomitant delocalization of their cognate drug targets (FtsZ and PBP2) in MRSA cells. Compounds which are synergistic with α-lactams have the potential to be used as combination agents to restore α-lactam efficacy against MRSA.



B

Bacterial Cell Surfaces and Pathogenesis

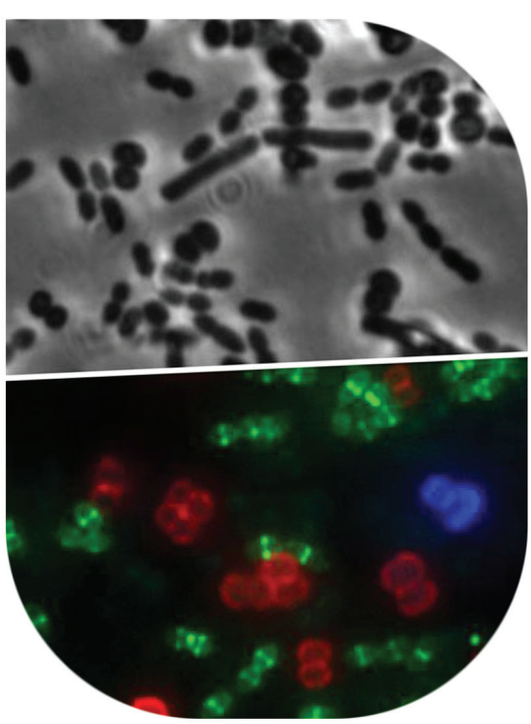
Sérgio R. Filipe sfilipe@itqb.unl.pt

Staphylococcus aureus is a proficient bacterial pathogen, known for its ability to cause lethal infections and to resist different classes of antibiotics. We have previously reported than synthesis of teichoic acids (WTAs), phosphate rich glycopolymers that are present at the bacterial cell surface, takes place in a manner coordinated with the assembly of the other components of the bacterial cell surface.

TagO, the first enzyme committed to the synthesis of WTAs, localizes at the division septum, through an unknown mechanism, and initiates the synthesis of WTA, which is required to correctly localize specific enzymes involved with the maturation of peptidoglycan.

More recently, we have shown that the absence of wall teichoic acids, leads to increased binding of a peptidoglycan receptor produced by Drosophila flies and in the inability of bacteria to infect flies. We have proposed that WTAs fully encapsulate the bacterial surface to limit the access of innate immune receptors to peptidoglycan, which allow bacteria to evade detection by the host.

During the last year we have been inquiring whether WTAs are the major factor responsible for hiding peptidoglycan from the infected host or whether other proteins, involved in the assembly of the bacterial cell surface, are also important.

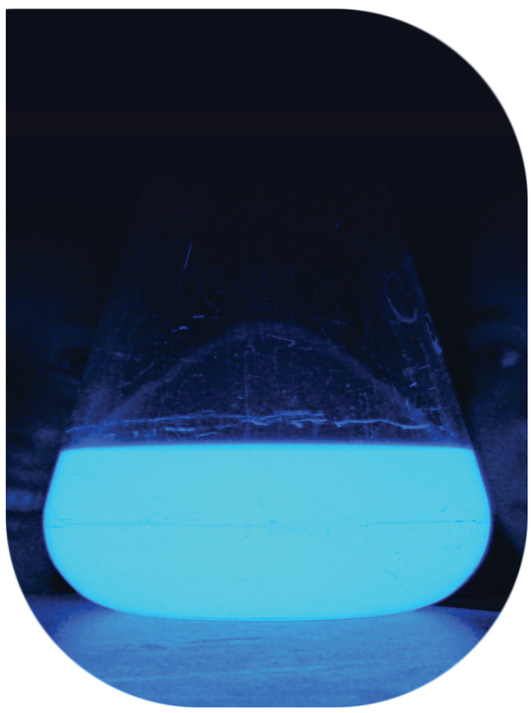


B

Bacterial Signaling

Karina Xavier karina@itqb.unl.pt

Advances in molecular microbiology throughout the past decade have shown that cell-cell communication is the norm in the bacterial world and that bacteria use sophisticated cell-cell signaling mechanisms to regulate gene expression on a population-wide scale. This phenomenon, termed quorum sensing, regulates a wide range of activities in diverse bacteria enabling these organisms to form communities that can benefit from group behaviors similar to higher organisms. Hundreds of species of bacteria have been shown to use quorum sensing systems to regulate processes including antibiotic production, virulence gene expression, and biofilm formation.



We have previously shown that certain bacteria like Escherichia coli have a mechanism to degrade the quorum sensing signals produced by others and thus can interfere with group behaviors of neighboring species. Here we showed that the regulation of this mechanism that enables E. coli to quench the quorum sensing of other species is tightly coupled to a mechanism that senses the internal metabolic status of the cell. This signal integration ensures that interference with quorum sensing only occurs in potentially competitive, nutrient-poor environments sub-optimal for fast proliferation of the population. This study provides an example of how bacteria have means to finely regulate behaviors according to both internal metabolic state, and external community signals, such that certain behaviors are only switched on when needed.

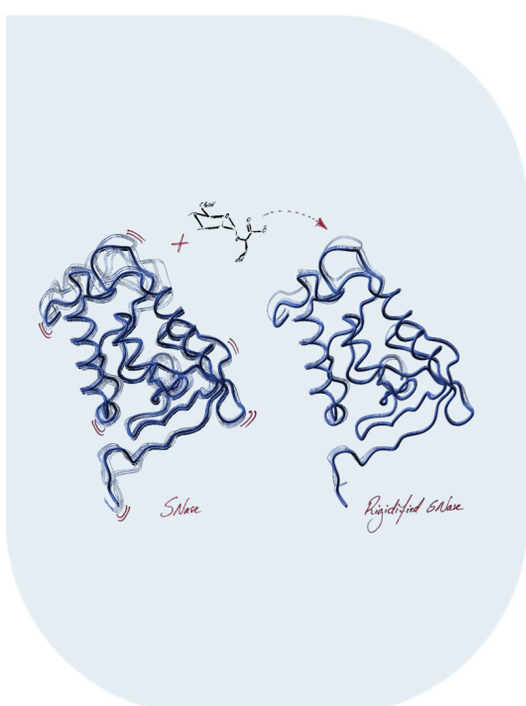
Pereira CS et al. (2012) Mol Microbiol. 84(1):93-104

B

Cell Physiology and NMR

Helena Santos santos@itqb.unl.pt

Marine organisms that thrive at high temperatures accumulate specific solutes which usually bear a negative charge. For several years, we studied solutes of organisms adapted to hot environments. In particular, we are interested in the mechanisms underlying protein stabilization by mannosylglycerate (MG), a solute remarkably efficient in the stabilization of proteins. Understanding the molecular mechanisms that govern protein stabilization by osmolytes became a subject of great interest, not only because of the biotechnological significance but also because of the medical relevance of finding effective suppressors of protein misfolding and aggregation.
To understand how MG confers protection, we used NMR to study its influence on a wide range of internal motions of staphylococcal nuclease. A correlation between the magnitude of protein stabilization and the restriction of fast backbone motions was found, while side-chain motions were little affected. Moreover, MG restricts local motions in addition to the global motions of the protein. The protein unfolding/folding pathway remained undisturbed but the solute showed a specific effect on the local motions of β-sheet residues. This work reveals a link between solute-induced stabilization and restriction of protein motions at different timescales. Specific structural elements of SNase are preferentially restricted which is an important clue to explain the variability in the degree of stabilization conferred on different proteins.



Pais et al. (2012) Protein Science, 21: 1126-1137

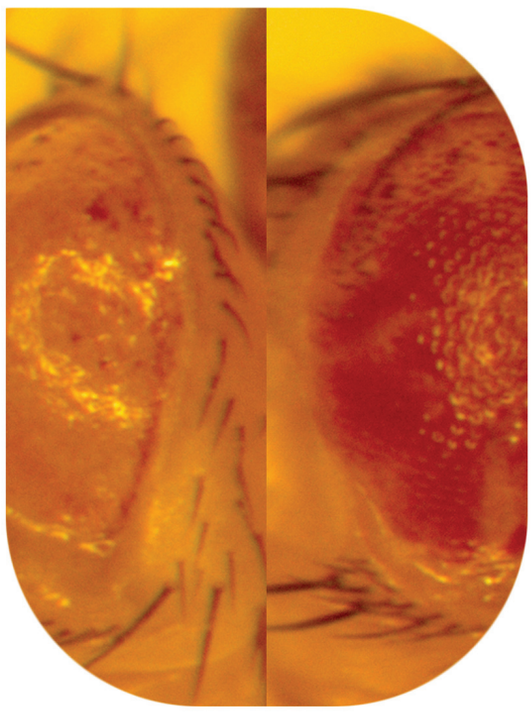
B

Cell Signaling in Drosophila

Pedro Domingos domingp@itqb.unl.pt

The aim of our research is to understand the molecular mechanisms that regulate degeneration of the photoreceptors, the cells that sense light in the visual system, using Drosophila as our biological model. Our most recent work focuses on the role of the Unfolded Protein Response (UPR), a cellular signaling pathway activated by the presence of unfolded proteins in the Endoplamic Reticulum (ER), during photoreceptor degeneration in a Drosophila model for Autossomal Dominant Retinitis Pigmentosa. We use the tools of modern genetics, cell biology and imaging to pursue the signaling mechanisms that regulate cell death/cell protection in our biological model system.

We performed a screen to identify modulators of UPR induced cell death in the Drosophila eye. Over-activation of the UPR induces a "glossy" eye phenotype , caused by the death of the exterior cell types of the eye. This "glossy" eye phenotype is used as an assay to identify suppressors or enhancers of UPR-induced cell death. During the last year we identified 3 novel genes, which are important for UPR induced cell death and that we are presently characterizing.

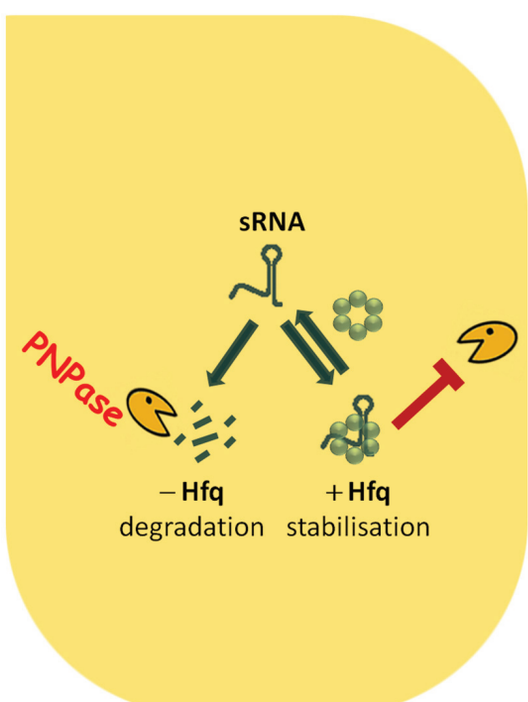


B

Control of Gene Expression

Cecilia Arraiano cecilia@itqb.unl.pt

Small RNAs (sRNAs) affect virtually all genetic pathways in both prokaryotic and eukaryotic cells. Most of the bacterial sRNAs need the presence of the RNA chaperone Hfq to bind to the mRNA targets. However, the transient existence of sRNAs free of Hfq is part of the normal dynamic lifecycle of a sRNA. Small RNAs are extremely labile when are not associated with Hfq. Our group showed that polynucleotide phosphorylase (PNPase) is the major factor involved in the rapid degradation of small RNAs, especially those that are free of binding to Hfq. One of the works published by our group in 2012 demonstrated that the levels of MicA, GlmY, RyhB and SgrS sRNAs are drastically increased upon PNPase inactivation in Hfq$^-$ cells. Moreover, in the absence of Hfq, all sRNAs are slightly shorter than their full-length species as result of 3'-end trimming. We also showed that the turnover of Hfq-free small RNAs is growth phase regulated and that PNPase activity is particularly important in stationary-phase. Indeed, PNPase makes a greater contribution than RNase E, which is commonly believed to be the main enzyme in the decay of small RNAs. We also found that when the sRNA is not associated with Hfq, the degradation occurs mainly in a target-independent pathway in which RNase III has a reduced impact. Overall, our work highlighted the impact of 3'-exonucleolytic RNA decay pathways and re-evaluated the degradation mechanisms of Hfq-free small RNAs.



Andrade et al. (2012) RNA, 18: 844-855.

B

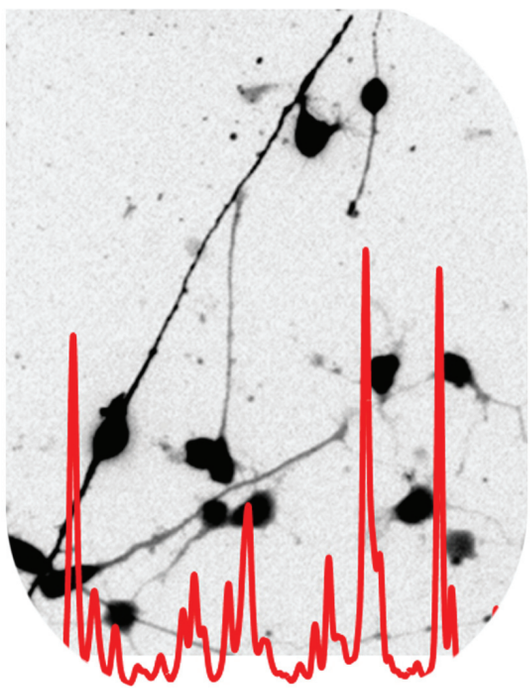
Glycobiology

Júlia Costa jcosta@itqb.unl.pt

Glycosylation is a common post-translational modification of proteins, and glycans are also constituents of glycolipids and proteoglycans. Specific glycans from the neuronal tissue are implicated in diverse functions such as neuron and glial cell migration, neurite outgrowth and fasciculation, synapse formation and plasticity. Functionally relevant structures in the central nervous system include the Lewis^x structure (Galβ4(Fucα3)GlcNAc), polysialic acid, the HNK-1 epitope, bisecting GlcNAc, O-mannosylation, and peripheral α2-linked fucose.

We have used Glycomics technologies to investigate the impact of glycosylation in neuron differentiation and neurite outgrowth from human NT2N neurons in culture. Increasing levels of the Lewis^x, polysialic acid and HNK-1 structures have been observed during neuron differentiation. Lewis^x was detected covalently bound to human neural cell adhesion molecule 1. Furthermore, Lewis^x was found to be involved in neurite outgrowth from differentiated human neurons since downregulation of the corresponding biosynthetic enzyme, FUT9, led to decreases in neurite formation and outgrowth.

The knowledge about the structures and biological roles of glycans during neuron differentiation and neurite outgrowth provides the basis to further explore their potential in neuron regeneration.



Gouveia et al. (2012) Biochimica Biophysica Acta - General subjects 1820: 2007–2019.

B

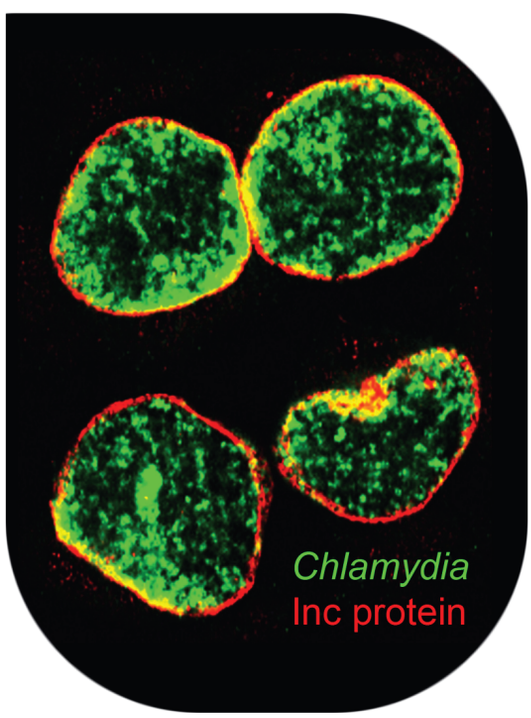
Infection Biology

Jaime Mota jmota@itqb.unl.pt

Chlamydia trachomatis is an obligate intracellular bacterium that causes ocular and genital infections in humans. These infections affect millions of people worldwide. The ocular infections can lead to blinding trachoma and the genital infections can result in infertility or ectopic pregnancy.

C. trachomatis infections can be restricted to epithelial cells (non-invasive infections) or result in spreading of the bacteria to lymphoid tissues (invasive infections). However, *C. trachomatis* strains with different tropism or invasiveness show >98% of identity at a DNA level and the molecular and cellular mechanisms underlying the different types of infection are unclear. An important group of *C. trachomatis* virulence factors are proteins, known as Incs, which localize to the membrane of the vacuole where intracellular *Chlamydia* resides and multiplies.

We used bioinformatics and molecular biology approaches to determine whether Inc proteins could affect the type of infection and tissue tropism associated with *C. trachomatis*. These studies suggested that subtle variations in the amino acids of a subset of Inc proteins and in the expression of inc genes may contribute to the unique properties of the more invasive *C. trachomatis* strains. We are currently further testing this hypothesis through the analysis of the molecular and cellular mode of action of some of the identified Inc proteins.

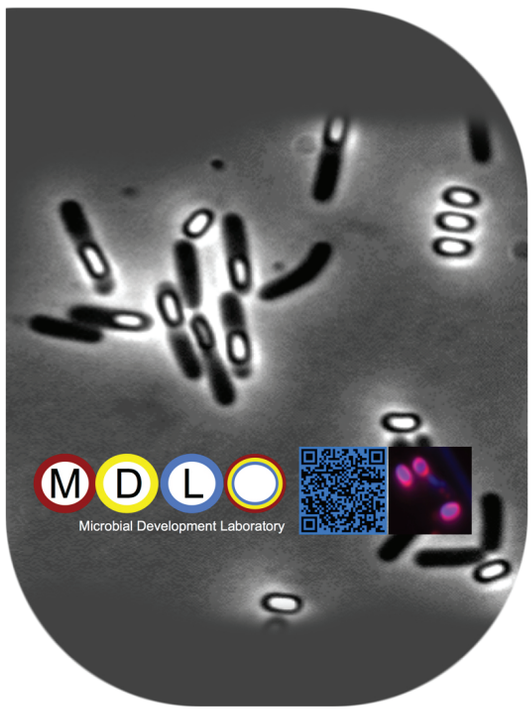


B

Microbial Development

Adriano O. Henriques aoh@itqb.unl.pt

A key structure that is formed during spore differentiation by the bacterium Bacillus subtilis is a protective coat, composed of over 70 different proteins. These are organized into an inner and an outer layer. The coat forms the surface of the spore, and mediates many of the environmental interactions of spores, including with the surface of host cells. The coat proteins are synthesized in the mother cell chamber of the developing cell, and guided to the spore surface by a group of so called morphogenetic proteins.
Two main stages in spore coat assembly can be recognized. The first involves the recruitment of proteins to the spore surfasse. This step is dependent on morphogenetic protein SpoIVA. The second step, known as encasement, involves the migration of the coat proteins around the developing spore. This step requires morphogenetic protein SpoVID.
We have shown before that SpoVID interacts with SpoIVA and the inner coat morphogenetic protein, SafA. We have now shown that SpoVID interacts directly with the outer coat morphogenetic protein, CotE. The results lead us to propose a model in which encasement is driven by direct interactions between the main coat morphogenetic proteins. The model has implications for the inactivation of spores of pathogenic organisms such as Clostridium difficile. It also has implications for uses of spores as platforms for the display of enzymes or antigens in biotechnology or biomedicine applications.



B

Microbiology of Human Pathogens Unit

Molecular Genetics

Hermínia de Lencastre hml@itqb.unl.pt

The emergence of infections caused by community-associated methicillin-resistant *Staphylococcus aureus* (CA-MRSA) in healthy individuals is a worldwide concern and represents a new challenge to infection control. In the United States, wherein CA-MRSA is epidemic, a single clone (USA300) is responsible for the overwhelming majority of the MRSA infections in the community, whereas the epidemiology of CA-MRSA in Europe is much less clear. To unravel the population structure of CA-MRSA in Europe, we participated in a European project involving 16 countries. We found that most isolates - characterized by state-of-the-art typing techniques - were related to epidemic clones that are currently spread worldwide, including USA300. Surprisingly, we found a high genetic diversity among CA-MRSA clones. In particular, about half of the isolates showed new associations between genetic background and the presence of specific mobile genetic elements, associated to antibiotic resistance and virulence. The conditions, that favored the polyclonal nature of CA-MRSA remain to be clarified, but might be related to the wide variation in infection control and antibiotic prescription policies in the different European countries. The finding of highly diverse CA-MRSA clones poses additional clinical challenges to European healthcare providers, particularly in diagnostics.

Rolo et al. (2012) PloS ONE 7:e34768
Figueiredo et al. (2012) PLoS Pathog, 8(1) : e1002508

B

Microbiology of Human Pathogens Unit

Molecular Microbiology of Human Pathogens

Raquel Sá-Leão rsaleao@itqb.unl.pt

In our group we are studying the nasopharyngeal ecosystem, a niche frequently inhabited by potentially pathogenic bacteria such as *Streptococcus pneumoniae* (or pneumococcus). Colonization by pneumococci is frequent among children and is mostly asymptomatic. However, the burden of pneumococcal disease worldwide is substantial. In recent years, multivalent pneumococcal conjugate vaccines have been introduced in several countries. The study of pneumococcal colonization is important for a number of reason reasons being one of them the fact that colonization is essential for evolution. In pneumococci, evolution occurs mainly through horizontal gene transfer, which can occur when simultaneous carriage of multiple strains happens. This phenomenon, also known as co-colonization, remains poorly understood. In 2012, we conducted a study to gain insights on the prevalence of pneumococcal co-colonization and evaluate if vaccination had changed it. We found that approximately one-fifth of the non-vaccinated individuals, were co-colonized; this number was significantly lower (less than one-tenth) among vaccinated individuals. These findings may have important implications. A decrease in co-colonization is expected to translate in decreased opportunities for horizontal gene transfer, hindering evolution events such as acquisition of antibiotic resistance determinants or capsular switch. This might represent a novel potential benefit of conjugate vaccines.

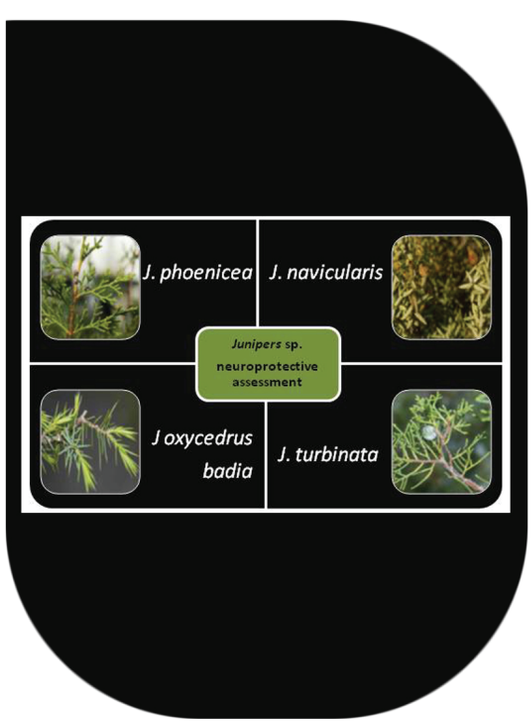
P

Disease and Stress Biology

Ricardo Ferreira rbferreira@itqb.unl.pt

After the discovery of Portuguese wild blackberries as exhibiting neuroprotective potential in 2011, during 2012 it was time for junipers (*Juniperus* sp.) leaves revealing its potential. The work developed by in collaborartion with The James Hutton Institute (Dundee, UK) showed that juniper species growing in Portugal, in particular *J. oxycedrus badia*, constitute potential sources of neuroprotective natural products. In this work Portuguese juniper phenolic enriched fractions were evaluated for acetylcholine esterase inhibitory activity and also for intracellular antioxidant capacity in neuronal cells and they were considered candidates to be tested in a neurodegeneration cell model. The four juniper species evaluated (*J. navicularis*, *J. oxycedrus badia*, *J. phoenicea* and *J. turbinata*) are rich sources of phenolic compounds and contain molecules previously described with neuroprotective potentialities. Phenolic compounds from these species caused effective intracellular radical scavenging in neurons submitted to oxidative injury. Moreover, *J. navicularis* and *J. oxycedrus badia* phenolic enriched fractions induced mechanisms that reduced ROS formation induced by an oxidative insult. Finally, *J. oxycedrus badia* phenolic enriched fraction was highlighted as exhibiting a protective effect in the neurodegeneration cell model.

Results of this work are very promising for the natural products industry. Enriched phenolic extracts could be in the future used in dietary-based neuroprotection strategies such as functional foods and/or functional food ingredients or in the development of new pharmaceuticals.



P

Forest Biotech

Célia Miguel cmiguel@itqb.unl.pt

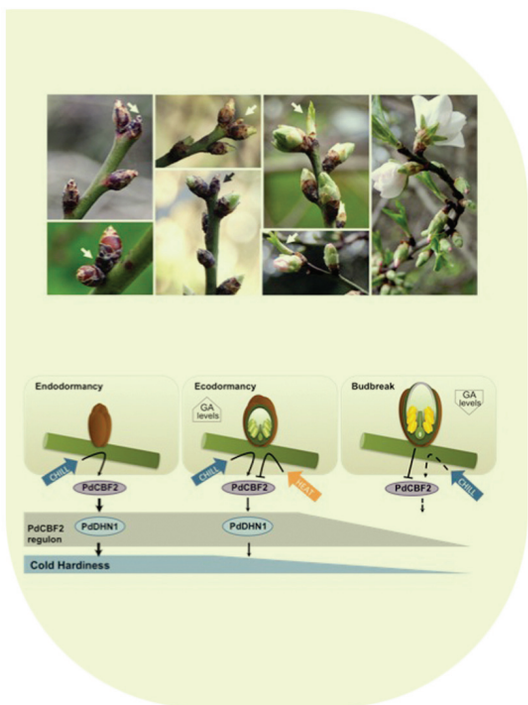
Due to the ecological and socio-economic significance of cork oak (Quercus suber), large scale transcriptomic projects have been recently launched, targeting stress tolerance mechanisms and developmental processes such as cork differentiation. Therefore, the need for quantitative PCR (qPCR) approaches to determine, as accurately as possible, the transcript abundance of specific genes is evident. Currently, the use of multiple internal control genes, with a constant level of expression in a given tissue under defined experimental conditions, is considered an essential approach for an accurate normalization of data.
In order to select the most suitable reference genes (RG) for gene expression quantification by qPCR, we analysed several tissues of cork oak including leaves, reproduction cork and periderm from branches at different developmental stages or collected in alternate seasons. Ten potential RG involved in different biological roles, such as cytoskeleton structure, carbohydrate metabolism, chromosome organization, chloroplast constitution and vesicle trafficking, among others, were assessed using three statistical approaches (geNorm, NormFinder, and CV method) for the normalization of data. We concluded that Actin (Act) and a Clathrin adaptor complexes medium subunit family gene (CACs) were the most stable genes even when considering heterogeneous sample sets, and these were further validated in the transcript quantification of a gene of interest (glycerol-3-phosphate acyltransferase 5, GPAT5). These results should be a solid starting point to analyse the expression levels of genes of interest in cork oak or even in other oaks for which large transcriptomics and genomics programs are being developed.

Marum L. et al. (2012) PLoS ONE 7(4): e35113

P

Genomics of Plant Stress (GPlantS)

Margarida Oliveira mmolive@itqb.unl.pt



The Rosaceae family includes some of the most widely produced edible fruit species in the world (e.g. apple, pear, peach, plum and almond). These species undergo a period of winter dormancy, arresting the development of flower bud primordia up until the fulfillment of specific temperature requirements, which, in turn, will lead to dormancy break and blooming. This temperature control of flower bud development can lead to unpredictable changes in blooming time in different years, affecting pollination and fruit production.
In 2012 we have reported the first evidence for the role of CBF-mediated cold signaling pathway during flower bud development, also indicating putative markers to study the complex network of events occurring before bloom. We have used almond as a model for this study since it is the earliest tree to bloom during winter/spring.
The CBF gene family encodes a group of transcription factors induced after low temperature perception, which are upstream regulators of target-genes involved in cold acclimation and tolerance. Seasonal gene expression studies in flower buds from field grown almond trees showed the presence of CBF transcripts during fall and early winter, in agreement with temperature decline. However, when blooming occurred the expression of these CBFs was repressed, remaining at very low levels even under low temperatures. These results indicated that damping of CBF-mediated cold signaling could be a pre-requisite to allow flower bud break in Rosaceae.

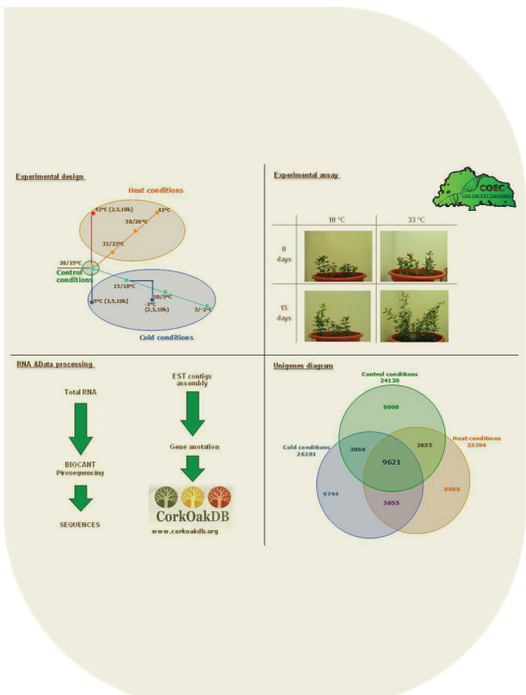
Barros et al. (2012) J. Exp. Botany, 63 (12) 4585

P

Plant Biochemistry

Cândido Pinto Ricardo ricardo@itqb.unl.pt

Cork oak (*Quercus suber)* is a typical evergreen tree of Western Mediterranean woodlands and agroforestry systems of great ecological and human usefulness. It can survive adverse environmental conditions, like drought and extreme temperature, but is less tolerant to frost and drought than holm oak. Low winter temperature and dry summer air appear to limit cork oak geographic distribution. As climate change brings colder winters and hotter summers it is important to analyze cork oak vulnerability to such scenario.
In previous work (1) we showed that temperatures of 28ºC and 10ºC had quite distinct effects on cork oak leaf metabolites and the expression of certain genes. We thus carried out a deeper analysis of the effects of more extreme temperatures (42ºC to -2ºC) on leaf performance, through the analysis of the expressed sequence tags (ESTs). This was a study integrated in a coherent cork oak ESTs initiative (COEC Consortium) that looked at several tissues, physiological processes and stress conditions (submitted work). The cork oak leaf transcriptome has about 45 000 unigenes, some of them specifically associated with extreme temperatures. Cold and heat over-expressed genes and related metabolic sequences are being evaluated, in order to pin point the physiological processes most vulnerable to stress.



Chaves et al. (2011) J Plant Physiol 168:1729-1734

P

Plant Cell Biology

Rita Abranches ritaa@itqb.unl.pt

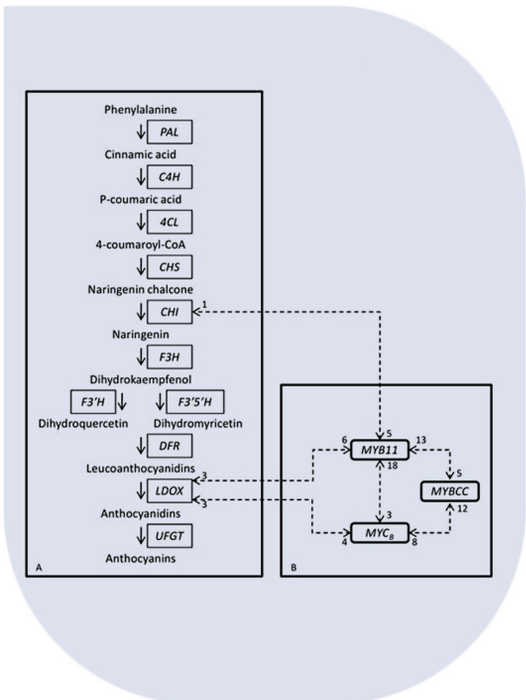
Our laboratory is currently working on plant based platforms as alternative systems for the production of recombinant proteins. We are using both whole plants and plant cell suspension cultures. We use different plant species, with a special emphasis on *Medicago truncatula* - the model plant for the legume family. We have shown that this species is a promising system for production of valuable molecules. Our cell cultures are able to produce recombinant proteins from foreign origin, allowing for the safe and cost effective manufacturing of complex molecules for a vast number of applications, ranging from industrial enzymes to biopharmaceuticals. In addition, we have used Medicago cells and plants to investigate the structure and organization of the cell nucleus. Studying nuclear structure and organization is important not only for increasing our knowledge of fundamental aspects of the genome but also for taking the greatest advantage of inserting foreign genes and controlling their expression in biotechnological applications. We have provided evidence that Medicago is amenable to this kind of studies, which will in turn contribute to a better exploitation of biotechnology applications for this important plant family.

Pires, A.S. et al. (2012) Plant Cell Tiss Org. 110, 171-181

P Plant Cell Biotechnology

Pedro Fevereiro psalema@itqb.unl.pt

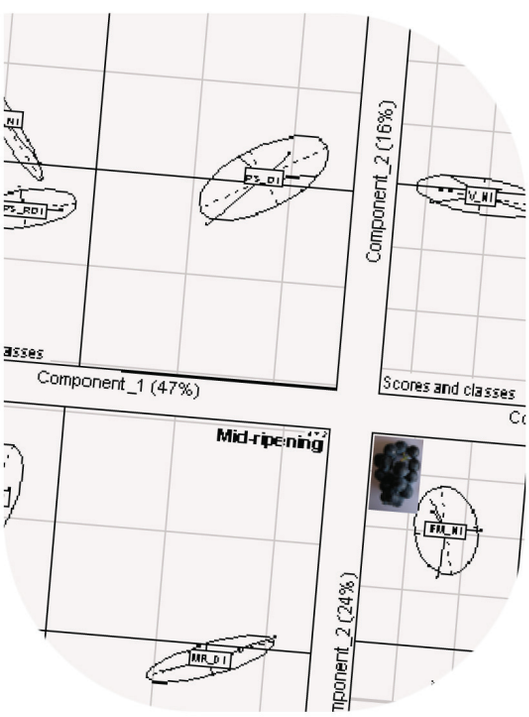
Anthocyanin content is a trait of major interest in *Vitis vinifera* L. These compounds affect grape and wine quality, and have beneficial effects on human health. A candidate-gene approach was used to identify genetic variants associated with anthocyanin content in grape berries. A total of 445 polymorphisms were identified in 5 genes encoding transcription factors and 10 genes involved in either the biosynthetic pathway or transport of anthocyanins. A total of 124 SNPs were selected to examine association with a wide range of phenotypes based on RP-HPLC analysis and visual characterization. The phenotypes were total skin anthocyanin (TSA) concentration but also specific types of anthocyanins and relative abundance. The visual assessment was based on OIV (*Organisation Internationale de la Vigne et du Vin*) descriptors for berry and skin colour. The genes encoding the transcription factors *MYB11*, *MYBCC* and *MYCB* were significantly associated with TSA concentration. UFGT and MRP were associated with several different types of anthocyanins. Skin and pulp colour were associated with nine genes (*MYB11, MYBCC, MYCB, UFGT, MRP, DFR, LDOX, CHI and GST*). Pulp colour was associated with a similar group of 11 genes (*MYB11, MYBCC, MYCB, MYCA, UFGT, MRP, GST, DFR, LDOX, CHI* and *CHSA*). Statistical interactions were observed between SNPs within the transcription factors *MYB11, MYBCC* and *MYCB*. SNPs within *LDOX* interacted with *MYB11* and *MYCB*, while SNPs within *CHI* interacted with *MYB11* only. Together, these findings suggest the involvement of these genes in anthocyanin content and on the regulation of anthocyanin biosynthesis. This work forms a benchmark for replication and functional studies.



P Plant Molecular Ecophysiology

Manuela Chaves mchaves@itqb.unl.pt

Different irrigation systems are being used to maintain winegrape yield under water stress conditions, but the effects of the irrigation system on berry ripening (mechanisms and final composition) are still largely unknown. An integrative study was performed in grape berry skin tissues (at four phenological stages - pea size, *véraison*, mid-ripening and full maturation) from plants of the variety Aragonez subjected to different irrigation systems during two successive years. We showed that climatic conditions, namely temperature, play an important role in the ripening process of grape berries. This was clearly observed in non irrigated (NI) vines, in which a decrease in anthocyanins is presumably related to high temperature and excessive cluster sunlight exposition. We demonstrated that the accumulation of abscisic acid (ABA) with impact on berry metabolism is regulated by the intensity of water stress ever since early stages of berry development. Principal component analysis followed by a between group analysis (PCA-BGA), considering different data set of metabolic compounds of grape skins from both years and the four phenological stages, showed a clear separation between the three treatments already at early stages of grape berry development. These results showed that PCA-BGA is a valuable tool to determine the irrigation effects in field experiments where several factors either than irrigation could be responsible for differences in the accumulation of secondary compounds and hormones.



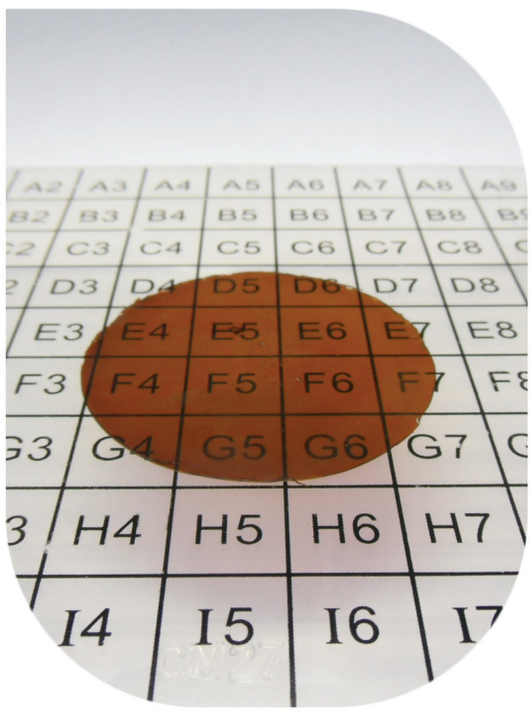
Zarrouk et al. (2012) Agricultural Water Management 114: 18– 29

T

Applied and Environmental Mycology

Cristina Silva Pereira spereira@itqb.unl.pt

Suberin is a naturally-occurring polymer, found in significant amounts in cork, in the outer bark of the birch tree and in potato skin. In planta, it induces unique properties, including elasticity and hydrophobicity, acting as a protective barrier. Suberin is also a very rare example of a heterogeneous biopolymer; its structural diversity permits very versatile applications. The conventional isolation methods of suberin from natural sources usually result in severe degradation of the biopolymer and loss of the cross-linked fraction. These extracts do not retain many of the native suberin properties, and thus cannot be easily reconstituted into the native three-dimensional polymer.
We have achieved the first demonstration that "green" and truly biocompatible ionic liquids (viz. cholinium alkanoates which were designed to be both non toxic and biodegradable, as well as being recyclable and reusable) are well adapted for the isolation of native suberin from its natural sources in high purity [1-3]. The ionic liquid promoted the depolymerisation of suberin via the cleavage of ester linkages, with the concomitant release of glycerol. We have overcome the main limitations of the conventional methods isolating a highly polymerised and cross-linked suberin [2,3] which could be cast as semi-transparent moderately hydrophobic film. This opens an opportunity to control the physical and mechanical properties of the suberin-based materials and tune them for specific biomedical applications. We have now obtained proof-of-principle that our isolated suberin led to growth inhibition of bacteria and we are using microarray profiling to better understand its biodegradability and antifungal activity.



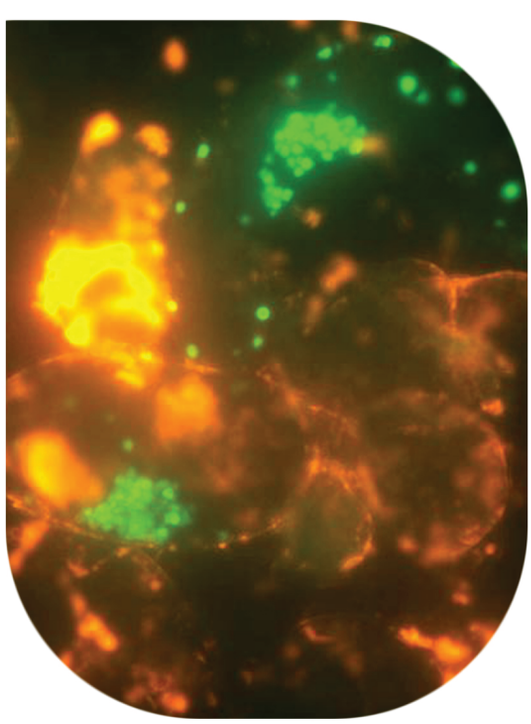
Garcia et al. Green Chem. (2010) 12: 367-369.
Garcia et al. New J. Chem. (2012) 36(10): 2014-2024.

T

Biomolecular Diagnostics

Abel Gonzalez Oliva oliva@itqb.unl.pt

Like most of new technologies designed to interact with biological systems, the applications of nanomaterials needs a proper assessment for their potential impacts. It is only through addressing the issues raised by toxicological studies that nanotechnology will be able to acquire its full potential. In an interdisciplinary work performed during the last years between ITQB groups (Organic Chemistry, Plant Cell Biotechnology and Biomolecular Diagnostic Laboratory) CdSe/ZnS quantum dots (QDS) have been developed towards biological application. These nanoparticles offer improved alternative to the standard fluorophores in imaging and transport studies in cells and organisms.
The synthesis, functionalization and conjugation of these fluorescent nanoparticles allowed the tailored application in plants (*Medicago spp*), evaluating their interaction with the cells. We have performed a detailed description of protocols to study the responses of plant cells to the exposure to quantum dots (QDS), including studies of viability, oxidative stress detection and ROS enzymatic detoxification, as well as particle uptake.

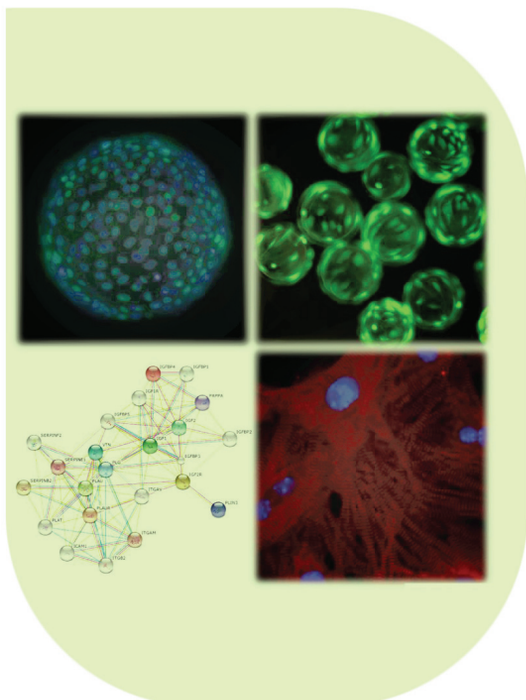


Santos et al. (2012) In Nanoparticles in Biology and Medicine : Methods and Protocols, pp 435-49

Animal Cell Technology Unit

Ana S. Coroadinha avalente@itqb.unl.pt | Paula M. Alves marques@itqb.unl.pt | Manuel J. T. Carrondo mjtc@itqb.unl.pt

Despite Heart Failure being a major cause of mortality, the available pharmacological therapies are only symptomatic and unable to prevent disease progression. Stem cell (SC) transplantation for cardiac repair has emerged as an exciting treatment option for patients with Heart Failure and Acute Myocardial Infarction. The major challenges in this field include the lack of expertise in product development/characterization and specialized cell manufacturing which are imperative to bring SC-based products to the market. The ACTU has been focusing on the production and characterization of two challenging SC-based products: i) cardiomyocytes derived from induced pluripotent SC, which are capable to regenerate myocardium and ii) adult cardiac SC, which trigger paracrine mechanisms that activate endogenous SC to promote regeneration. Our SC production strategy consists in engineering culturing approaches allowing for 3D cell organization in a bioreactor-based system. Moreover, mass spectrometry tools have been applied to obtain a complete qualitative characterization of the Secretome and Receptome of cardiac SC. Up to now, > 2000 proteins were identified, some involved in cardiac function. This work is integrated in the Cardio Repair European Multidisciplinary Initiative (CARE-MI, http://www.caremiproject.eu), a large-scale project aiming at developing novel myocardial regenerative therapies against Ischemic Heart Disease produced after Acute Myocardial Infarction.

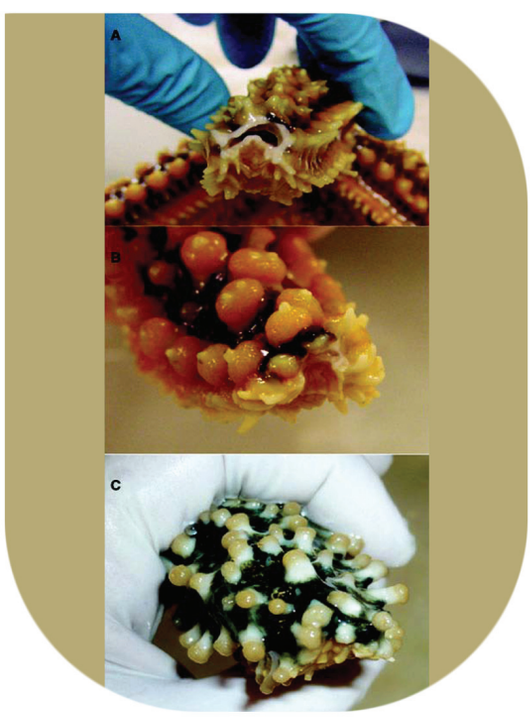


Serra M. et al. (2012) Trends in Biotechnology, 30(6):350-9

Mass Spectrometry

Ana Coelho varela@itqb.unl.pt

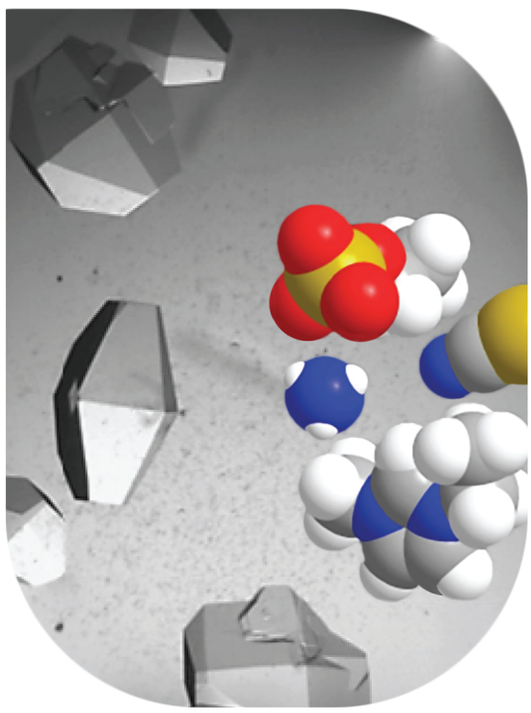
Echinoderms, as invertebrate deuterostomes, have amazing neuronal intrinsic growth aptitude triggered at any time point during the animal lifespan leading to successful functional tissue regrowth. This trait is known to be in opposition to their mammal close phylogenic relatives that have lost the ability to regenerate their central nervous system. Despite the promising nature of this intrinsic echinoderm trait, it was only recently that this complex biological event started to be unveiled. In the present study, it was investigate changes in starfish neuronal protein phosphorylation states at two different wound healing time-graded events following arm tip amputation, 48 h and 13 days.
Altogether, several intervening proteins of important injury-signaling pathways that seem to be modulated through phosphorylation, were identified for the first time in starfish radial nerve cord early regeneration events. These include cytoskeleton re-organization toward the formation of the neuronal growth cones; cell membrane rearrangements, actin filaments, and microtubules dynamics; mRNA binding and transport; lipid signaling; Notch pathway; and neuropeptide processing.



Molecular Thermodynamics

Luís Paulo N. Rebelo lrebelo@itqb.unl.pt

The Development of High Ionicity Ionic Liquids (HIILs)
Ionic liquids may be designed and engineered in such a fashion that all chemical tools already known to exist in all other chemicals may be present. In the ionic liquid world, the trend has been to decrease the degree of their ionic character but we have now demonstrated that simply adding common inorganic salts is an excellent cheap alternative to move in the opposite direction. The resulting mixtures, HILLs, are solely made up of ions, and are liquid at a wide range of temperatures and concentrations. This new strategy offers extra flexibility to the use of these extraordinary compounds in all known applications, in particular in those which require higher electrical conductivity.



Hofmeister effects of ionic liquids in protein crystallization
Analysing protein crystals is a way to determine their structure and infer their function. However, forming crystals out of proteins is still a complex mix of empiricism and art. Now ionic liquids have entered into protein chemistry as helpers for their crystallization. In this study we have identified the variables and mechanisms behind the effect of twelve different ionic liquids on the crystallization of two positively charged proteins. We found, for example, that bulkier anions with a greatly dispersed distribution of negative charge were more suitable for the crystallization of the tested proteins. We believe that this work may save a lot of future experimental work. The next step is to test the ability of those ionic liquids in the crystallization of difficult proteins.

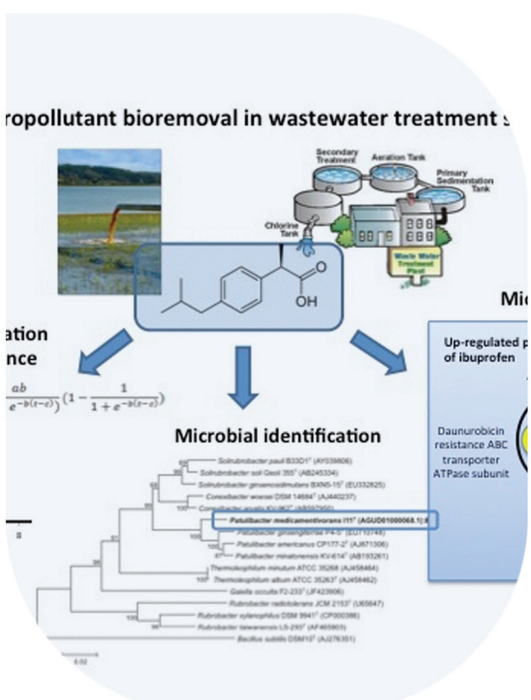
A.B. Pereiro et. al. (2012) Chem. Commun., 48, 3656-3658
M. Kowacz et. al. (2012) CrystEngComm, 14, 4912-4921, 2012

Microbiology of Man-made Environments

Teresa Crespo tcrespo@itqb.unl.pt

Micropollutant bioremoval in wastewater treatment systems: from microbial population structure to function.

The microbial populations involved in the degradation of micropollutants in wastewater systems are vastly unknown. The work focused on the performance, metabolism and identity of microorganisms responsible for the biodegradation of target pharmaceuticals.
The biodegradation of ibuprofen and ketoprofen by activated sludge and by a pure culture were described using mathematical models [1]. Several ibuprofen and ketoprofen degrading microorganisms were isolated, one of which showed unique phenotypic and molecular characteristics, and was classified by the team as a new species, *Patulibacter medicamentivorans* [2]. The metabolic aspects of ibuprofen degradation by *Patulibacter medicamentivorans* were investigated through quantitative proteomics [3]. This work represents an important step towards a better understanding of the microbial communities involved in the degradation of relevant micropollutants.



Almeida, B. et al. (2013) Biores. Technol. 133, 31-37.

T

Nutraceuticals and Delivery

Catarina Duarte cduarte@itqb.unl.pt

The development of new drugs alone is not sufficient to ensure progress in drug therapy. One of the main activities of our group is related with the development of adequate systems to overcome barriers to drug's usefulness, involving particle formation (micro and nano-scale), and incorporation of the active principles in biocompatible and biodegradable matrixes. The work developed is planned to have application in the pharmaceutical industry, as potential solutions to real problems or as alternatives to conventional methodologies.

In 2011, we were able to successfully produce, for the first time, Gas-filled Porous microParticles (GPPs), using a supercritical fluid based technology. Low molecular weight perfluorcabon (PFC) gases, C_4F_8 and C_3F_8, have been encapsulated into one lipid-based carrier (Gelucire ® 50/13), using PGSS® technique. Gas-filled microparticles have great potential for ultrasound-assisted drug delivery for small molecules, nucleic acids, proteins and genes. GPPs can be destroyed precisely on the target site upon ultrasound triggering. Moreover ultrasound frequencies showed to be able to transiently enhance permeability of several biological barriers, such as the blood-brain barrier, small blood vessels, or cell membranes and thereby facilitate the delivery of bioactive substances into tissues and cells . Clinically, gas-filled bubbles can be used as drug vehicles or co-administrated separately but simultaneously with other delivery formulations.

T

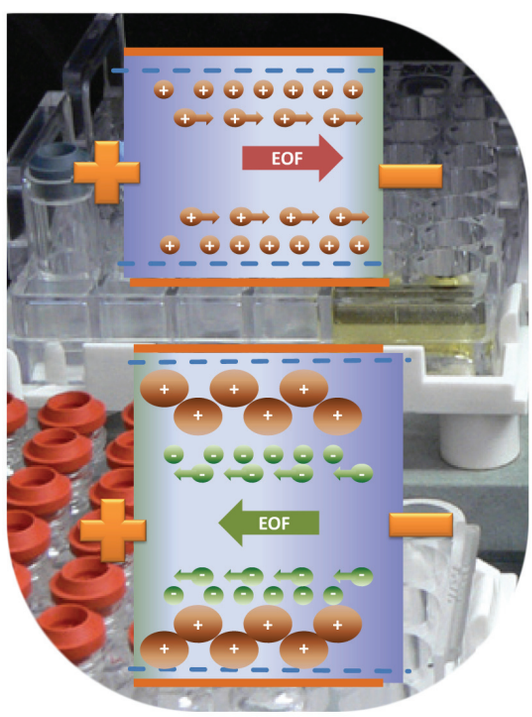
Pharmacokinetics and Biopharmaceutical Analysis

Ana Luísa Simplicio anas@itqb.unl.pt

Separation of bioactive compounds in natural products or pharmaceutical forms is a common problem in analytical chemistry and drug development. Separation is usually accomplished by chromatography or capillary electrophoresis (CE) with the help of chemical modifiers in the separation phase.

Ionic liquids (ILs) are organic salts that remain liquids at temperatures under 100ºC and have many interesting physical and chemical properties. In addition to other research fields, they have found application as modulators in separation science were the usually large organic cations can be usefull for enhancing resolution. In CE, this ability of ILs for improving resolution is derived from the capacity of the cation to bond with the silanol groups and coat the capillary wals, thus modulating electroosmotic flow (EOF).

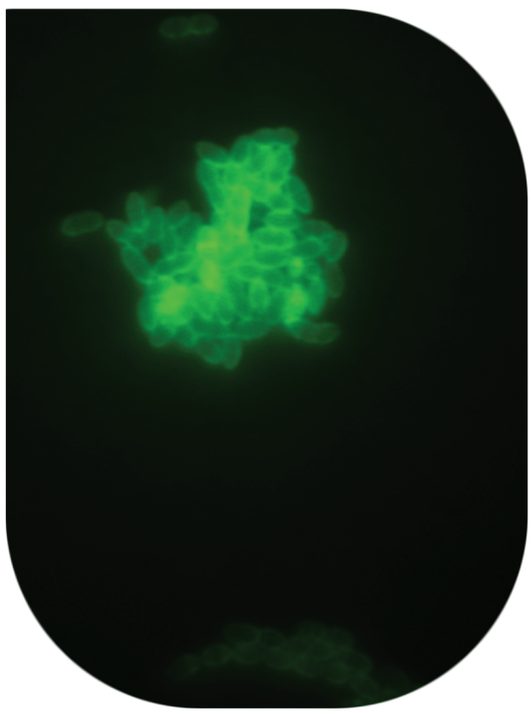
In this paper we have evaluated the ability of several IL's (based on phosphonium, sulfonium, cysteinium, ammonium, and guanidinium cations) for EOF modulation. The synergistic effect of these compounds in cyclodextrin based chiral separation was also evaluated. Phosphonium-based ILs and tri-octyl methylammonium chloride had the strongest ability to reverse EOF. EOF modulation ability of phosphonium cations contributed to the improvement of chiral separation of DL-propranolol by hydroxypropyl-β-cyclodextrin at lower concentrations in comparison with more commonly used EOF modulators.



Stress by Antibiotics and Virulence of Enterococci

Maria de Fatima Silva Lopes flopes@itqb.unl.pt

Some strains of the pathogen *Enterococcus faecalis* are able to make a call for war against the host immune system. In a process known as quorum-sensing bacteria are able to side up with each other, behaving as a single entity. *Enterococcus faecalis* uses this ability to trigger the production of proteases that are able to degrade antimicrobial peptides produced by the host. A few strains, however, produce the quorum-sensing molecule but do not respond with the concomitant protease production, even though the corresponding genes (operon fsr) are present. For several years, people have wondered why certain *E. faecalis* strains carry the entire fsr operon, and yet they were not able to produce any of the proteases. We found that a single mutation renders one of the fsr proteins (histidne kinase FsrC) inactive, thus causing the deafness to the population's call. These cells, although able to produce the quorum-sensing molecule, are not able to respond to it, and are thus called "cheaters". Why some *E. faecalis* genomes evolve to a state of blindness/deafness to quorum-sensing is yet to be determined, but it is clear that some benefit for these strains comes from turning the majority of the population into cheaters.



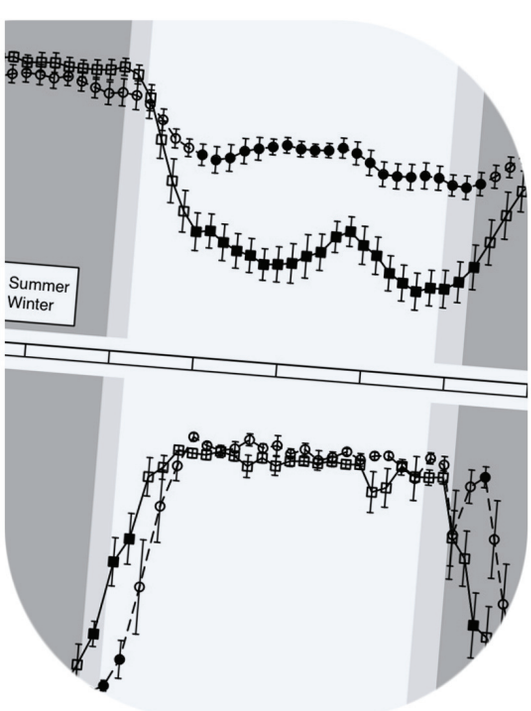
Systems Biodynamics

Andreas Bohn abohn@itqb.unl.pt

The research at the Systems Biodynamics Group is rooted in the study of dynamical processes in light-driven biosystems, using biostatistical and computational tools. In 2012, we contributed to a study of the response of daily rhythms of body temperature and rest-activity to seasonal variations in the natural day-night cycle. Due to the usual interference by electrical light in urban environments, this study was performed in a native settlement without access to electricity, located in the rainforest of Southeastern Brazil.

In spite of the challenges caused by the limited number of participants, and the large individual variability of their daily rhythms, the data analyses performed at the Systems Biodynamics Group showed that the measured wrist temperature was influenced by the light-dark cycle and the age of the participants, while rest-activity cycles were mostly affected by seasonal differences in the social environment, e.g. the performance of religious acts after sunset in summer time.

At a time where the asynchrony between the "inner clock" and the actual rest-activity cycle is pinpointed as a possible promotor of diseases like cancer, or diabetes, this study shows that understanding the synchrony of humans with their periodic environment requires the integration of all possible signals, other than light intensity, that can reset and tune the inner timekeeping system.



Wey et al. (2012) Physiology & Behavior 105: 613-620.

annual report 2012

INSTITUTO DE TECNOLOGIA QUÍMICA E BIOLÓGICA /UNL

Knowledge Creation

appendix

Appendix

Full List of Staff

as per December 31st 2012

Director

Luís Paulo N. Rebelo

Vice-Directors

M. Margarida Oliveira
Cláudio M. Soares

Administrator

Margarida Martinez

Secretariat to the Direction

Rosina Gadit

Ombudsperson

Manuela Chaves

Science Management

Alexandra Veiga

Industry Liaison Office

Francisco Pereira do Valle

Communication Office

Head: Ana M. Sanchez
Cláudia Lopes Pinheiro
Luís Morgado

Management Support

Administration and Finance

Head: Fernando Jorge Tavares

Accounting

Ana Almada
Ana Cristina Afonso Silva
Mónica Adriano Vieira
Helena Cordeiro
Isabel Mestre
Nuno Lopes
Sónia Ermida

Treasury Section

Ana Freire
Anabela Bernardo Costa

Storages

Ana Isabel Santos
Bruno Gouveia
Carlos Martins
João Rodrigues
Ricardo Pinto

Human Resources

Head: Maria Cristina Pinto
Ana Luísa Cruz
Goretti Rocha
Maria Madalena Pereira

Mailing and Archives

Artur Freitas

R&D Planning and Management

Head: Maria de Lurdes Conceição
Cristina Amaral
Cristina Lopes
Cristina Oliveira
Isabel Murta

Legal Advisor

Anabela Simões

Academics

Ana Portocarrero
Fátima Madeira

Scientific, Technological and Teaching Support

Scientific Services

Nuclear Magnetic Resonance CERMAX
Coordinator: Helena Santos
Manager: Pedro Miguel Lamosa
Helena Pereira Matias
João Pires

Analytical Services Unit
Coordinator: Teresa Crespo
Vice-coordinator: Rosário Bronze
Quality Assurance Unit: Ana Luísa Simplício

Analytical Team
Ana Maria Varela Coelho
Elizabete Pires
Maria da Conceição Almeida
Kamila Kocci
Renata Soares
Rui Palhinhas
António Ferreira
Sandra Silva
Mário Patrício
Paula Chicau
António Pires
Fernanda Spínola Rodrigues
Cristina Pereira
Ana Fulgêncio
Paula Isabel Alves

Archive
Paula Neves
Isabel Ribeiro

Small Molecule X-Ray Crystallography
Isabel Bento

Fermentation Unit
Coordinator: Miguel S. Teixeira
João Carita

Lab Manager
Cláudia Almeida

Teaching Laboratory
Coordinator: Adriano O. Henriques
Teresa Baptista da Silva

Library
Librarian: Susana Lopes
Library Advisory Committee
Chairman: Miguel Teixeira
Carlos C. Romão
Adriano O. Henriques
Margarida Oliveira

Washrooms
Coordinator: Teresa B. da Silva
Ana Cristina Barreiros
Carmen Fernandes
Helena Vilaranda
Lúcia David
Maria Alice Ferreira
Maria Eugénia Santos
Pilar Campos
Sónia Serrano
Sónia Moita

Workshop and Maintenance
Head: Henrique Campas Nunes
Alexandre Maia
Aníbal Ribeiro
António Ramalho
Miguel Rodrigues
João Carlos Zanão Simões
José Luís Liberato
Luís Gonçalves
Nuno Soares
Nuno Monteiro
Rómulo Correia
Tiago Escóbar

Computer Systems Support
Coordinator: Carlos Frazão
Executive coord.: Daniel F. Branco
Carlos Manuel Cordeiro
Hugo Gonçalo Cordeiro
José Miguel Loureiro
Maria Manuel Rato

Research Divisions

Chemistry

Bioinorganic Chemistry and Peptide Design

Olga Iranzo, Investigador Auxiliar

Bioorganic Chemistry

Rita Ventura, Investigador Auxiliar

Ana Sofia Miguel	Post Doc
Eva Correia Lourenço	PhD Student
Osvaldo Ascenso	BI
Adrián Nogueira	Leonardo da Vinci Int.
João Cascão	3rd Biochemistry Stu.
Raquel Araújo	Trainee
Carina Clamote	Trainee

Coordination and Supramolecular Chemistry

Rita Delgado, Professor Associado com Agregação IST

Luís Miguel Barroso Pereira Lima	Post Doc
Pedro Mateus	Post Doc
Catarina Alexandra Veríssimo Esteves	MSc Student

Homogeneous Catalysis

Beatriz Royo Cantabrana, Investigador Auxiliar

Lorena Postigo Galindo	Post Doc
Srinivas Pottabathula	Post Doc
João Martinho Silva Ramalho Cardoso	PhD Student
Rita Isabel Lourenço da Silva Lopes	BI
Svenja Warrantz	Leonardo da Vinci Int.
Lourdes Benitez	PhD Student

Micro-Heterogeneous Systems

Eurico de Melo, Professor Auxiliar IST

Joana Rita Ripado Valério	BI

Organic Synthesis

Chris Maycook, Professor Associado FCUL

Sofia Miguel	Post Doc
Vanessa Miranda	MSc Student
Saul Silva	MSc Student
Mohit Lal Deb	Post Doc

Organometallic Chemistry

Carlos C. Romão, Professor Catedrático

Carla Alexandra Gamelas Reis	Post Doc
Ana Catarina Martins Coelho	Post Doc

Collaborators

António Lopes, Colloids Polymers & Surfaces

James Yates, Single Molecule Process

Biological Chemistry

Bacterial Energy Metabolism

Inês Cardoso Pereira, Investigador Principal

Sofia Venceslau	Post Doc
Mónica Sofia Martins Neves	Post Doc
Ana Raquel Martinho Ramos	PhD Student
Marta Marques (cosup. Pedro Matias)	PhD Student
André Fernando Anastácio dos Santos	PhD Student
Fábio Silva (cosup. C. Rodrigues-Pousada)	PhD Student
Cláudia Mourato	Graduate Student
Gonçalo Oliveira	Master Student

Metalloproteins and Bioenergetics Unit

Biological Energy Transduction

Manuela M. Pereira, Investigador Auxiliar

Ana Patricia Refojo (cosup. Miguel Teixeira)	Post Doc
Ana Paula Batista (cosup. Miguel Teixeira)	Post Doc
Afonso M. Duarte	Post Doc
Bruno Marreiros	BI
Filipa Sena	BI
Filipa Calisto	BI
Rute Correia	Trainee
Guilherme Benedito	Trainee

Biomolecular NMR

Manolis Matzapetakis, Investigador Auxiliar

Ivo Saraiva	Post Doc
Meire Coelho de Almeida	PhD Student
Mariana Palma	PhD Student
Ana Catarina Silva Pereira	MSc Student

Genomics and Stress

Claudina Rodrigues-Pousada, Prof. Catedrático Convidado

Regina Andrade Menezes	Post Doc
Catarina Isabel Ribeiro Pimentel	Post Doc
Catarina Sá Almeida Amaral	Post Doc
Sofia Isabel Marques da Silva	Post Doc
Fábio de Oliveira	PhD Student
Ana Rita Tomé Ferreira	PhD Student
Soraia Vicente	PhD Student
Ana Rita Ladeira Courelas da Silva	BI
Ana Catarina Varela Raposo	BI
Cátia Inês Baptista Santos	BI
Cristina Maria Teixeira Vicente	Trainee
Ana Filipa Nunes Leitão Alegre	Master Student

Macromolecular Crystallography Unit

Industry and Medicine Applied Crystallography

Pedro Manuel Marques Matias, Investigador Principal

Tiago Bandeiras	Invest. Auxiliar
Marta C. Marques (cosup. Inês C. Pereira)	PhD Student
Sara Teresa Silva	PhD Student

Inorganic Biochemistry and NMR

Ricardo Saraiva L. Oliveira Louro, Investigador Auxiliar

Catarina Morais Vaz Paquete	Post Doc
Luís Rosa	Post Doc
Bruno Miguel Oliveira Maia da Fonseca	PhD Student
Ivo Miguel Henriques Saraiva	PhD Student
Maria Alexandra Alves	PhD Student
Diego Hartman (shared Applied Env. Micology)	PhD Student
Sónia Estevão Neto	BI
Nazua Lima Costa	BI
Ana Fernandes	BI
Isabel Pacheco (shared Bac. Energy Metabolism)	Technician

Macromolecular Crystallography Unit

Membrane Protein Crystallography

Margarida Archer Frazão, Investigador Auxiliar

Tânia Oliveira	Post Doc
Miguel Pedro Januário Pessanha	Post Doc
Pik Yee Ma	Post Doc
José Artur Alves de Brito	Post Doc
Przemyslaw Nogly	PhD Student
Ana Lúcia Rebelo do Rosário	PhD Student
Ana Filipa Valente	Graduate Student
Malgorzata Magoch	Graduate Student

Metalloproteins and Bioenergetics Unit

Metalloenzymes and Molecular Bioenergetics

Miguel Teixeira, Professor Catedrático

Célia Romão (colab. Mª Arménia Carrondo)	Investigador Auxiliar
Vera Lúcia Gonçalves	Post Doc
Sandra Isabel dos Santos	PhD Student
Miguel Ribeiro	BI
Cecilia Sá de Miranda	BI
Joana Carrilho	BI
Liliana Pinto	BI
Rodrigo David	Master Student
Diana Vaz	Master Student

Microbial & Enzyme Technology

Lígia O. Martins, Professor Auxiliar Convidado

Vânia Sofia Brissos	Post Doc
Zhenjia Chen	Post Doc
Bruno Patrick Reynolds	Post Doc
Sónia Alexandra Gonçalves Mendes	PhD Student
Pedro Ribeiro Bernardo	BI
Ana Filipa dos Santos	MSc Student
Catarina Rodrigues	Trainee
Susana Proença	Trainee
Tiago Pinto	Trainee

Molecular Genetics of Microbial Resistance

Lígia M. Saraiva, Investigador Principal

Marta Sofia Guedes de Campos Justino	Post Doc
Susana André Lima Lobo	Post Doc
Lígia Isabel Santos Nobre	Post Doc
Adelina Parente	PhD Student
Joana Morais Baptista	PhD Student
Ana Filipa Nogueira Tavares	PhD Student
André Filipe Grácio Fernandes	BI
Sara Sousa	BI
Fábio Pereira	MSc Student
Luís Miguel Sobral	MSc Student
Catarina Godinho	MSc Student

Molecular Interactions and NMR

Patrick Groves, Investigador Auxiliar

Malgorzata Palczewska-Groves	Post Doc
Magdalena Komiazyk	BI

Molecular Simulation

António M. Baptista, Investigador Auxiliar

Dragana Popovic de Barros	Post Doc
Sara Isabel Rasteiro Campos	Post Doc
Pedro Rafael Silva Álvaro Magalhães	PhD Student
Luís Carlos Santos Filipe	PhD Student
Catarina Azevedo Carvalheda dos Santos	BI

Protein Biochemistry Folding & Stability

Cláudio M. Gomes, Investigador Auxiliar

Sónia Cristina Alves Dickson Leal Solano	Post Doc
Bárbara Joana de Almeida Henriques	Post Doc
Tânia Gomes Lucas	BI
Joana Margarida Cristovão	MsC Student
Sofia Baptista de Carvalho	BI
Ana M. Nunes	Lab Manager

Protein Modelling

Cláudio M. Soares, Professor Associado

Bruno Lourenço da Silva Victor	Post Doc
Ana Sofia Fernandes de Oliveira	Post Doc
Diana Andreia Pereira Lousa	PhD Student
João Miguel Marques Martins Damas	PhD Student
Carla Baltazar	PhD Student
Jorge Miguel Antunes	PhD Student
Carlos Fernández Rodríguez	Eramus Student
Emanuel Lopes	Summer Student

Raman Spectroscopy

Smilja Todorovic, Investigador Auxiliar

Murat Sezer	Post Doc
Célia Silveira	Poat Doc
Zélia Licínia Ferreira Gouveia	PhD Student
Daniela Presa	BI

Macromolecular Crystallography Unit

Structural Biology

Carlos Maria Franco Frazão, Investigador Principal

Patrícia Alexandra Teixeira Borges	BI

Macromolecular Crystallography Unit

Structural Genomics

Maria Arménia Carrondo, Professor Catedrático

Isabel Maria Almeida de Jesus Bento	Investigador Auxiliar
Colin Edward McVey	Investigador Auxiliar
Célia Romão (colab. Miguel Teixeira)	Investigador Auxiliar
Elie Moe	Marie Curie Fellow
Rajesh Ponnusamy	Post Doc
Ana Maria Gonçalves	Post Doc
Ana Teresa da Silva Gonçalves	PhD Student
Ricardo Emanuel Sirgado Miranda Coelho	Technician
Bruno Manuel Castelões Gonçalves Correia	PhD Student
Sara Brandão	BI
Célia Miranda	Master Student
Patrícia Borges (colab. Miguel Teixeira)	BI
Ana Margarida Borges (colab. Isabel Abreu)	BI
Cristiana Sousa (colab. Tiago Bandeiras)	BI
Samarpita Lahiri (colab. Isabel Bento)	BI

Collaborators

Filipe Tiago de Oliveira, Mössbauer Spectroscopy

Biology

Bacterial Cell Biology

Mariana G. Pinho, Investigador Auxiliar

Patrícia Reed	Post Doc
Helena Maria Pinto Veiga	PhD Student
Pedro Matos Pereira	PhD Student
João Miguel da Silva Queiroga Monteiro	PhD Student
Maria Teresa Ferreira	PhD Student
Ana Raquel Ramos Pereira	BI
Bernardino Pereira	BI
Gabriela Henriques	Master Student
Pedro Escada Fernandes	Master Student

Bacterial Cell Surfaces and Pathogenesis

Sérgio R. Filipe, Investigador Auxiliar

Maria João Catalão	Post Doc
Mafalda Soeiro Xavier Henriques	PhD Student
Filipa Baltazar da Costa Vaz	PhD Student
Vânia Dias	MSc Student
Gonçalo Covas	BI
Ana Rita Narciso	BI
Joana Silva Figueiredo	Trainee
Sara Ramalhete	Trainee

Bacterial Signaling

Karina B. Xavier, Investigador Auxiliar

Jessica Thompson	Post Doc
Pol Nadal	Post Doc
Rita Valente	PhD Student
Ozhan Ozkaya	PhD Student
Paulo J. Correia	BI
Ana Rita Oliveira	BI
Jorge André Pereira	Master Student

Cell Physiology and NMR

Helena Santos, Professor Catedrático

Teresa Catarino	Professor Auxiliar
Nuno Miguel Formiga Borges	Investigador Auxiliar
Pedro Miguel Lamosa António	Investigador Auxiliar
Luís Pedro Gafeira Gonçalves	Post Doc
Carla Jorge	Post Doc
Marta Viseu Rodrigues	Post Doc
Ana Lúcia Carvalho	Post Doc
Ana Maria da Silva Esteves	PhD Student
Pedro Oliveira Quintas	PhD Student
Dušica Radoš	PhD Student
Cristiana da Silva Faria	PhD Student
Andreia Filipa Cepeda	BI
Ana Isabel Mingote	BI

Cell Signaling in *Drosophila*

Pedro Domingos, Investigador Auxiliar

Maria de Fátima Afonso Cairrão	Post Doc
Vanya Ivanova Rasheva	Post Doc
Dina Coelho	PhD Student
Gonçalo Poças	PhD Student
Nadine Simone Schweizer	PhD Student

Control of Gene Expression

Cecília M. Arraiano, Investigador Principal com Agregação

Sandra Cristina de Oliveira Viegas	Post Doc
Susana Margarida L. Martins Domingues	Post Doc
José Eduardo Marques Andrade	Post Doc
Ricardo António Neves Moreira	Post Doc
Michal Malecki	Post Doc
Rute Margarida Gonçalves Matos	Post Doc
Ana Filipa de Melo Tadeu Pereira dos Reis	PhD Student
Inês de Jesus de Almeida e Silva	PhD Student
Vânia Sofia Fidalgo Pobre	PhD Student
Ana Margarida Teixeira Saramago	PhD Student
Joana da Silva Pissarra	BI
Andreia Aires	Technician
Cátia Cláudia Bárria da Silva	BI
Tânia Raquel Santos	BI
Teres Pinto	BI
Ricardo Santos	MSc Student
Susana Barahona	MSc Student

Glycobiology

Júlia Costa, Investigador Principal

Joana Batista	BI
Susana Jorge	BI
Patricia Apura	MSc Student

Infection Biology

Luís Jaime Mota, Investigador Auxiliar

Irina Franco	Post Doc
Nuno Charro	Post Doc
Maria Raposo da Cunha	PhD Student
Lia Dora David Domingues	PhD Student
Filipe Manuel Baeta da Silva Almeida	PhD Student
Sara Raquel Vilela Pais	BI
Ana Catarina Milho	BI

Microbial Development

Adriano O. Henriques, Professor Associado

Mónica Paula Fernandes Serrano Miranda	Post Doc
Teresa Parente M. Vasconcelos Costa	Post Doc
Catarina Alexandra Gonçalves Fernandes	PhD Student
Patricia Amaral	PhD Student
Maria de Fátima Cardoso Pereira	PhD Student
Wilson David Antunes	PhD Student
Filipa Nunes	PhD Student
Ana Margarida Oliveira Paiva	BI
Maria Teresa Maio	BI
Carolina Freitas	Trainee

Microbiology of Human Pathogens Unit

Molecular Genetics

Hermínia de Lencastre, Professor Catedrático

Ana Madalena de Drummond Ludovice	Professor Auxiliar
Maria Leopoldina Amorim Miragaia Ryder	Investigador Auxiliar
Rita Sobral	Investigador Auxiliar
Susana Maria Lavado de Oliveira Gardete	Post Doc
Catarina Isabel Catarino Milheiriço	Post Doc
Nuno Alexandre Gomes Faria	Post Doc
Nelson Emanuel da Silva Frazão	Post Doc
Teresa Margarida Gomes da Conceição	Post Doc
Ons Bouchami	Post Doc
Ana Lopes Tavares	PhD Student
Teresa Carla de Almeida Figueiredo	PhD Student
Maria Inês Ramos Grilo	PhD Student
Joana Rita Gonçalves Araújo Rolo	PhD Student
Inês Grilo	PhD Student
Céline Catherine Coelho	BI
Diana Sofia Pereira E. de Oliveira Costa	BI
Raquel Pereira Portela	BI
Isilda Gueifão	Lab Assistant
Manuela Nogueira	Administrative Assist.

Microbiology of Human Pathogens Unit

Molecular Microbiology of Human Pathogens

Raquel de Sá Leão, Investigador Auxiliar

Ana Cristina Almeida Paulo	Post Doc
Alexandra Sofia Oliveira Simões	Post Doc
Débora Tavares	PhD Student
Carina Alexandra Pereira Valente	PhD Student
Sónia Nunes	PhD Student
Sofia Félix Fernandes	BI
Sónia Margarida Tavares Matos Almeida	BI
Luis Mendes	BI

Plant Sciences

Disease and Stress Biology

Ricardo Boavida Ferreira, Professor Catedrático ISA-UTL

Maria Paula Marinho Pinto	Invited Researcher
Maria Cláudia Godinho Nunes Santos	Post Doc
Marta Alexandra Marques Alves	Post Doc
Lucélia Rodrigues Tavares	PhD Student
Rui Carlos Soares Pimpão	PhD Student
Diana Leonor Constantino Macedo	PhD Student
Andreia Filipa Gomes	BI
Inês Margarida Lourenço Figueira	BI
Carolina Emanuel Jardim	BI
Rita Ramos	MSc Student

Forest Biotech

Célia Miguel, Investigador Auxiliar

Liliana Maria Bota Marum	Post Doc
José Javier de Vega-Bartol	Post Doc
Inês Chaves (col. C. Pinto Ricardo)	Post Doc
Andreia Miguel	PhD Student
Ana Filipa Gonçalves Milhinhos	PhD Student
Andreia Sofia Santos Rodrigues	PhD Student
Andreia Patrícia Valentim de Matos	BI
Ilanit Salmoski	BI

Plant Biochemistry

Cândido Pinto Ricardo, Prof. Catedrático Jubilado ISA-UTL

Carla Maria Alexandre Pinheiro	Investigador Auxiliar
José António Pires Passarinho	Investigador INRB
Inês Chaves (colab. Célia Miguel)	Post Doc
Isa Catarina Monteiro Brás Ribeiro	PhD Student
Adelaide João Machado	BI

Plant Cell Biology

Rita Abranches, Investigador Auxiliar

Ana Sofia Pires	Post Doc
Sílvia Andreia Godinho Barquinha Tavares	Post Doc
Ana Rita Basílio Santos	MSc Student
Sara Ramalhete	BI
Mafalda Arrábida	BI

Plant Cell Biotechnology

Pedro Fevereiro, Professor Auxiliar FCUL com Agregação ITQB

Maria Carlota Morais Cunha Vaz Patto	Investigador Auxiliar
Jorge Almiro Caldeira Pinto Paiva	Invited Researcher
Susana de Sousa Araújo	Invited Researcher
Ana Maria Ferreira	Post Doc
Jorge Cunha	Post Doc
Susana Maria Neves	Post Doc
Sofia Amaral Duque	Post Doc
Cátia Maria de Jesus Nunes	PhD Student
Diana Branco	PhD Student
Mara Lisa Vieira Alves	PhD Student
Matilde Cordeiro	PhD Student
Nuno Felipe Alves de Almeida	PhD Student
Pedro Manuel Reis Mendes Moreira	PhD Student
Victor João Taveira Carocha	PhD Student
Susana Rodrigues Ribeiro	Master Student
Ana Catarina Afonso	BI
Clara Susana Marques Graça	BI
Jorge Oliveira	BI
José Salvado	BI
Maria Assunção	BI
Priscila Pereira	BI
Ana Rita Morgado	BI
Susana Pera	BI
Susana Leitão	BI

Plant Molecular Ecophysiology

Manuela Chaves, Professor Catedrático Aposentado ISA-UTL

Alla Schvaleva	Post Doc
Olfa Zarrouk	Post Doc
Marta Pintó Marijuan	Post Doc
Joaquim Miguel Costa	Post Doc
Rita Maria de Brito Francisco	Post Doc
Maria Catarina Bicho	BI
Tânia Genebra	BI
Alexandra Correia	BT

Technology

Genomics of Plant Stress

Margarida Oliveira, Professor Associado com Agregação

Isabel Alexandra Aguiar de Abreu	Invited Researcher
Nelson José Madeira Saibo	Investigador Auxiliar
Ana Paula Leitão dos Santos	Post Doc
Ana Paula Farinha	Post Doc
Sónia Sandra Cabrita Negrão	Post Doc
Tiago Filipe dos Santos Lourenço	Post Doc
Pedro Miguel Rodrigues de Barros	Post Doc
Tânia Sofia Lobato Paulo Serra	Post Doc
Inês Silva Pires	PhD Student
Liliana de Jesus Duarte Ferreira	PhD Student
André Miguel Henriques Cordeiro	PhD Student
Diego Melo Almeida	PhD Student
Mafalda Rodrigues	BI
Nuno Gonçalves	BI
Natacha Vieira	BI
Helena Pires Sapeta	BI
Margarida Rosa	BI
Alicja Marta Góvska	BI
João Manuel Fradique	MSc Student
João Guilherme Cortes	MSc Student
Rebeca Souto	MSc Student

Collaborators

Phil Jackson, Plant Cell Wall

Jorge Almeida, Plant Development Genetics

Applied and Environmental Mycology

Cristina Silva Pereira, Investigador Auxiliar

Tiago Lopes Martins	Post Doc
Marija Petkovic	Post Doc
M. Cristina Leitão	Technician
Mariana Boavida Lopes Carvalho	PhD Student
Isabel Martins (cosup. Luís Paulo N . Rebelo)	PhD Student
Adélia Varela Castro	PhD Student
Helga Garcia (cosup. Luís Paulo N . Rebelo)	PhD Student
Rui Ferreira	PhD Student
Paula Cristina de Azevedo Alves	PhD Student
Diego de Oliveira Hartmann	PhD Student
Marina Guerreiro	BI
Celso Martins	BI

Biomolecular Diagnostic

Abel Oliva, Investigador Auxiliar

Carmo Barreto	Post Doc
Sara Horta Iracema Martinho	BI
Fábio Pereira	MSc Student

Animal Cell Technology Unit

Cell Bioprocesses

Paula M. Alves, Investigador Principal

Catarina Brito	Investigador Auxiliar
Margarida Serra	Investigador Auxiliar
Gonçalo Real	Investigador Auxiliar
Marco Patrone	Post Doc
Patricia Isabel Alves	Post Doc
Carina Silva	PhD Student
Sofia Almeida	PhD Student
Fabiana Fernandes	PhD Student
Francisca Monteiro	PhD Student
Paulo Fernandes	PhD Student
Sofia Raquel Rebelo	PhD Student
Daniel Filipe Mestre Simão	PhD Student
Claúdia Correia	PhD Student
Tiago Duarte	PhD Student
Barbara Cunha	PhD Student
Mafalda Dias	PhD Student
Marcos Sousa	Graduate Technician
Marta Estrada	MSc Student
Marta Silva	MSc Student
Raquel Cunha	MSc Student

Rita Costa	MSc Student
Ana Terrasso	MSc Student
Ana Catarina Pinto	MSc Student
Nuno Espinha	MSc Student
Carina Vieira Brilha	Lab Manager

Animal Cell Technology Unit

Cell Line Development and Molecular Biology

Ana Sofia Coroadinha, Investigador Auxiliar

Rute Castro	Post Doc
Ana Filipa Rodrigues	PhD Student
Paulo Fernandes	PhD Student
Hélio Antunes Tomás	PhD Student
Hugo Soares	PhD Student
Miguel Ricardo Guerreiro	PhD Student
Ana Sofia Oliveira	MSc Student
Ana Isabel Almeida	BI
Tanja Laske	MSc Student
Vanessa Bandeira	BI

Animal Cell Technology Unit

Engineering Cellular Applications

Manuel J. T. Carrondo, Professor Catedrático FCT-UNL

Ana Margarida Palma Teixeira	Investigador Auxiliar
Gonçalo Real	Investigador Auxiliar
Ana Barbas	Investigador Auxiliar
Nuno Carinhas	Post Doc
Cristina Peixoto	Post Doc
Ricardo Perdigão	PhD Student
Piergiuseppe Nestola	PhD Student
João Vidigal	PhD Student
João Sá	MSc Student
Duarte Martins	MSc Student
Carina Brilha	Lab Manager

Food Microbial Technology

Cidália Peres, Investigador Principal INRB

Cátia Maria Morgado Peres	Invited Researcher
Mohamed Abdel-Hamid Rabie	Post Doc
Adrian Hernandez Mendoza	Post Doc
Luís Filipe Duarte Catulo	Technician INRB
Cláudia Lima Neves	Trainee
Liliana de Pinho Pinhal Ferraz Moreira	Technician
Marta Sofia Alves	Trainee
Maria José Carvalho	Trainee

Mass Spectrometry

Ana V. Coelho, Professor Auxiliar Convidado

André Martinho de Almeida	Invited Researcher
Renata Filipe Soares	Investigador Auxiliar
Kamila Koci	Post Doc
Catarina de Matos Ferraz Franco	Post Doc
Natacha Couto	PhD Student
Silvia Mercurio	PhD Student
Amal Moumene	PhD Student
Miguel Ventosa	BI
Rita Laires	MSc Student
Luis Domingues	MSc Student
Joana Martins	MSc Student
Vinicius Kuffer	Trainee
Filipa Lopes	Trainee
Conceição Almeida	Trainee
Elisabete Andrade Alves Pires	Technician

Microbiology of Man-Made Environments

Teresa Crespo, Investigador Principal IBET

Maria Dulce de Azevedo Carneiro de Brito	Invited Researcher
Vanessa Ranhada Pinto Jorge Pereira	Post Doc
Gilda Sousa de Carvalho	Post Doc
Patrícia Rodrigues Noronha da Costa	Post Doc
Paula Isabel Loução Lopes Alves	Technician
Bárbara Fonseca de Almeida	PhD Student
Sandra Sanches	PhD Student
Ana Filipa Correia Silva	PhD Student
Catarina Sousa	PhD Student
Sara Craveiro	MSc Student
Beatriz Oliveira	BI
Ana Catarina Mendonça Dourado	BI
Sara do Carmo da Kruz	Trainee

Molecular Thermodynamics

Luís Paulo N. Rebelo, Professor Catedrático

Isabel Maria Delgado Jana M. Ferreira	Investigador Auxiliar
José Manuel da Silva Simões Esperança	Investigador Auxiliar
Mara Guadalupe Freire Martins	Post Doc
Mohammad Tariq	Post Doc
Magdalena Kowacz	Post Doc
Ana Belén Pereiro Estévez	Post Doc
João Miguel Mendes de Araújo	Post Doc
Helena Veiga	Post Doc
Patricia Reis	Post Doc
Rui Ferreira	PhD Student
Sowmiah Subbiah	PhD Student
Diana Carolina Vaz Ruivo de Oliveira	PhD Student
Liliana Sofia Tomé	PhD Student
Filipe Serrão Santos Oliveira	PhD Student
Isabel Martins	PhD Student
Helga Garcia	PhD Student
Magdalena Bober	PhD Student
Paulina Papis	PhD Student
Mário Rui Costa Soromenho	BI
Anabela de Jesus Lobo da Costa	BI
Filipa Cristina Alves	BI
David Patinha	BI
Susana Martinho	BI
Catarina Isabel Florindo	Trainee
Marita Cardoso	Trainee
Rita Leones	Trainee

Nutraceuticals and Delivery

Catarina Duarte, Investigador Auxiliar

Ana Alexandra Figueiredo Matias	Post Doc
Ana Teresa de Carvalho Negrão Serra	Post Doc
Vanessa Santos Gonçalves	PhD Student
Cátia Carmo	PhD Student
Sara Alexandra Luís Nunes	PhD Student
Rita Pais	MSc Student
Daniel Deodato Lopes	MSc Student
Rita João Ramos	MSc Student
Ana Coimbra	MSc Student
Mário Bordalo	MSc Student
Inês Silva	MSc Student
Agostinho Alexandre	BI
Ana Nunes Nunes	BI

Pharmacokinetics and Biopharmaceutical Analysis

Ana L. Simplício, Investigador Auxiliar

Hélder João Vilareal	Post Doc
Catarina Correira	MSc Student
Helena Coelho	MSc Student
Márcia Alves	MSc Student
Rui Traquete	BI
Raquel Monteiro	Trainee

Physiology of Environmental Conditioned Microbiota

Vitória San Romão, Investigador Coordenador INRB

Ana Paula Gomes Marques	PhD Student
Maria do Carmo Barreto Baptista Basílio	PhD Student
Beatriz Reis Oliveira	BI

Stress by Antibiotics and Virulence of Enterococci

Fátima Lopes, Investigador Auxiliar

Renata Matos	PhD Student
Neuza Teixeira	PhD Student

Systems Biodynamics

Andreas Bohn, Investigador Auxiliar

Daniel Santa Cruz Damineli	PhD Student

Collaborators

Luis Filipe Vilas Boas, Analytical Chemistry
Maria Rosário Bronze, Analytical Chemistry
Cidália Peres, Food Microbial Technology

Research Output

Project Coordination and Publications (WoS) by Group

please refer to full list of publications and projects / (projects submitted via IBET)

Institutional Projects

MIT - Bioengineering Systems
Ref. 17
Coordinator: Cláudio Soares

Rede Nacional de NMR
Ref. 131 (also included in group)
Coordinator: Helena Santos

Research Projects by Division

Chemistry

Bioorganic Chemistry
Head: Rita Ventura
Project Refs: 84
Publications Refs: 129; 185

Coordination and Supramolecular Chemistry
Head: Rita Delgado
Project Refs: 2
Publications Refs: 22; 107; 108; 109; 129; 185; 242

Homogeneous Catalysis
Head: Beatriz Royo
Project Refs: 11; 59; 76
Publications Refs: 34; 42; 114; 157; 158; 184; 241

Microheterogeneous Systems
Head: Eurico Melo
Project Refs: 96
Publications Refs: 121; 237

Organic Synthesis
Head: Christopher Maycock
Project Refs: 73
Publications Refs: 14; 15; 93; 129; 153; 185; Book Chapter 18

Organometallic Chemistry
Head: Carlos C. Romão
Project Refs: 119
Publications Refs: 30; 57; 78; 79; 120; 141; 182; 190; 217

Collaborators
Olga Iranzo
Project Refs: 9; 51; 67; 131
Publications Refs: 43, 249

Biological Chemistry

Bacterial Energy Metabolism
Head: Inês A. Cardoso Pereira
Project Refs: 27; 43 ; 140
Publications Refs: 32; 55; 210; 218; 219; 230; (7); Book Chapter 23

Biological Energy Transduction
Metalloproteins and Bioenergetics Unit
Head: Manuela M. Pereira
Project Refs: 21; 22; 114
Publications Refs: 18; 19; 168; 214

Biomolecular NMR Laboratory
Head: Manolis Matzapetakis
Project Refs: 118
Publications Refs: 115

Genomics and Stress
Head: Claudina R. Pousada
Project Refs: 3; 52
Publications Refs: 20; 66; 151; 152

Industry and Medicine Applied Crystallography
Macromolecular Crystallography Unit
Head: Pedro Matias
Project Refs: (17; 19)
Publications Refs: 39; 86; Book Chapters 23; 24

Inorganic Biochemistry and NMR
Head: Ricardo O. Louro
Project Refs: 6; 105; 107
Publications Refs: 18; 53; 70; 143; 111; 193; Book Chapter 23

Membrane Protein Crystallography
Macromolecular Crystallography Unit
Head: Margarida Archer
Project Refs: 41; 42; 112
Publications Refs: 135; 243; Book Chapters 21; 23

Metalloenzymes and Molecular Bioenergetics
Metalloproteins and Bioenergetics Unit
Head: Miguel Teixeira
Project Refs: 40; 91; 92; 95; 135
Publications Refs: 12; 106; 166; 192; 214; 215; Book Chapter 23

Microbial and Enzyme Technology
Head: Ligia O. Martins
Project Refs: 72
Publications Refs: 28; 58; 183; 199; 203; 204

Molecular Genetics of Microbial Resistance
Head: Lígia M. Saraiva
Project Refs: 5; 7
Publications Refs: 12; 68; 97; 222; Book Chapters 11; 23

Molecular Interactions and NMR
Head: Patrick Groves
Project Refs: 87; 103
Publications Refs: 126; (1)

Molecular Simulation
Head: António M. Baptista
Project Refs: 24; 45; 49
Publications Refs: 112; 113; 126; 211; 244; 246

Protein Biochemistry Folding and Stability
Head: Cláudio M. Gomes
Project Refs: 109 ; 110; 124
Publications Refs: 6; 25; 82; 101; 176; 177; 205; 240; Book Chapters 2; 9

Protein Modelling Laboratory
Head: Cláudio M. Soares
Project Refs: 4; 82; 85
Publications Refs: 9; 10; 33; 112; 156; 203; 196; 211; 244

Raman spectroscopy of Metalloproteins
Head: Smilja Todorovic
Project Refs: 30
Publications Refs: 156; 199; 230; 233

Structural Biology
Macromolecular Crystallography Unit
Head: Carlos Frazão
Project Refs: 53; 75; 93
Publications Refs: 143

Structural Genomics
Macromolecular Crystallography Unit
Head: Maria Arménia Carrondo
Project Refs: 20; 23; 81; 98; 129; 134
Publications Refs: 33; 84; 86; 192; 203; 204; Book Chapter 23

Collaborators

Filipe Tiago de Oliveira
Project Refs: 34

Biology

Bacterial Cell Biology
Head: Mariana G. Pinho
Project Refs: 12; 13
Publications Refs: 24; 220; (8)

Bacterial Cell Surfaces and Pathogenesis
Head: Sérgio R. Filipe
Project Refs: 29; 79; 99

Bacterial Signalling
Head: Karina Xavier
Project Refs: 12; 13
Publications Refs: 96; 142; 185

Cell Physiology & NMR
Head: Helena Santos
Project Refs: 1; 62; 64; 86; 125; 139
Publications Refs: 64; 85; 133, 135; 138; 139; 175; 232

Cell Signaling in Drosophila
Head: Pedro Domingos
Project Refs: 46; 48; 132

Control of Gene Expression Laboratory
Head: Cecília M. Arraiano
Project Refs: 25; 26; 36; 99; 128 (18)
Publications Refs: 7; 92; 127; 128; 132; 194; (3)

Glycobiology
Head: Júlia Costa
Project Refs: 28; 101
Publications Refs: 89; 137; 247

Infection Biology
Head: Jaime Mota
Project Refs: 16; 100; 102
Publications Refs: 5; 195

Lactic Acid Bacteria & in vivo NMR
Head: Ana Rute Neves
Project Refs: 19; 31; 83
Publications Refs: 213

Microbial Development
Head: Adriano O. Henriques
Project Refs: 10
Publications Refs: 72; 251

Molecular Genetics
Microbiology of Human Pathogens Unit
Head: Hermínia de Lencastre
Project Refs: 32; 122
Publications Refs: 8; 26; 45; 62; 69; 80; 88; 94; 95; 98; 134; 180; 181; 235; 236; Book Chapter 19

Molecular Microbiology of Human Pathogens
Microbiology of Human Pathogens Unit
Head: Raquel Sa-Leão
Project Refs: 8; 137; 138
Publications Refs: 235; 236

Plant Sciences

Disease and Stress Biology
Head: Ricardo Ferreira
Project Refs: 77 (33)
Publications Refs: 41; 65; 91; 169; 189; 223; 224; 225; (2); Book Chapter 13

Forest Biotechnology
Head: Célia Miguel
Project Refs: 74 (2; 11; 24; 30)
Publications Refs: 50; 123; 61; 128; 152

Genomics of Plant Stress Lab (GPlantS Lab)
Head: Margarida Oliveira
Project Refs: 17; 33; 44; 56; 65; 78; 111
Publications Refs: 16; 17; 38; 52; 67; 71; 188

Plant Biochemistry
Head: Cândido Pinto Ricardo
Project Refs: 61; 69; 89
Publications Refs: 3; 123; 250

Plant Cell Biology
Head: Rita Abranches
Project Refs: 14; 97
Publications Refs: 154; 155; 191

Plant Cell Biotechnology
Head: Pedro Fevereiro
Project Refs: 2; 15; 35; 39; 40; 90; 120; 126 (22)
Publications Refs: 3; 35; 155; Book Chapter 26

Plant Molecular Ecophysiology Laboratory (LEM)
Head: Manuela Chaves
Project Refs: 57; 58; 60; 63; 130
Publications Refs: 3; 46; 49; 239; 250; Book Chapters 4; 5; 17; 29

Collaborators

Jorge Almeida
Project Refs: 55

Phil Jackson
Publications Refs: 101; 173; 233

Technology

Applied and Environmental Mycology
Head: Cristina Silva Pereira
Project Refs: 115
Publications Refs: 64; 150; 48; 67; 173; 175

Animal Cell Technology Unit
Head: Paula M. Alves
(Cell Bioprocesses + Cell Line Development and Molecular Biotechnology + Engineering Cellular Applications)
Project Refs: (3; 6; 8; 9; 10; 12; 16; 20; 26; 27; 28; 29; 34; 35; 36; 40; 41)
Publications Refs: 4; 6; 11; 29; 36; 37; 59; 61; 102; 116; 117; 161; 174; 179; 198; 231; (4); Book Chapters 1; 6

Biomolecular diagnostic
Head: Abel Gonzalez Oliva
Project Refs: 35 (31)
Publications Refs: 38; 87; 93; 106; 225; Book Chapters 18; 26

Mass Spectrometry
Head: Ana V. Coelho
Project Refs: 44; 54; 68; 94; 121 (21)
Publications Refs: 3; 31; 73; 83; 90; 117; 118; 170; 183; 202; 212; Book Chapters 7; 28

Microbiology of Man-made Environments
Head: Teresa Crespo
Project Refs: (4; 7; 14; 23; 32; 37; 38; 39)
Publications Refs: 81; 144; 187; 201; 202; Book Chapters 10; 14; 15; 25

Molecular Thermodynamics
Head: Luís Paulo N. Rebelo
Project Refs: 47; 66; 70; 71; 88; 104; 113 ; 116; 117 ; 133
Publications Refs: 1; 21; 23; 47; 48; 54; 56; 63; 64; 74; 75; 76; 77; 99; 100; 103; 104; 105, 110; 136; 140; 145; 146; 147; 148; 150; 178; 186; 200; 221

Nutraceuticals and Controlled Delivery
Head: Catarina Duarte
Project Refs: (1; 5; 13; 25)
Publications Refs: 51; 56; 197; 215; 224; Book Chapter 16

Pharmacokinetics and Biopharmaceutical Analysis
Head: Ana Luísa Simplício
Project Refs: (15)
Publications Refs: 130, 238

Stress by Antibiotics and Virulence of Enterococci
Head: Maria de Fatima Lopes
Publications Refs: 81; 160; 162; 229, (5); Book Chapters 12

Systems Biodynamics
Head: Andreas Bohn
Project Refs: 123
Publications Refs: 45; 69; 216; 248

Collaborators

Cidalia Peres
Publications Refs: 149; Book Chapters 3; 8; 20; 22; 27

Maria Rosario Bronze
Publications Refs: 159; 171; 172; 234

Not assigned to any group

Project Refs: 37 (Isabel Sá Nogueira); 50 (Jonas Almeida); 127 (Mara Almeida); 38, 108 (Francisco Malcata); 106 (Leopoldina Ryder)

Publications Refs: 119 (Vitória S. Romão); 131, 163, 164, 165, 167, 173, 206, 207, 208, 209, 226, 227, 228 (Francisco Malcata); 27 (Martina Bradic); 60,245 (Hugo L. Fernandes);

Internationalization

International collaborations in 2012

115 publications with international teams

Countries with more than 20 papers
USA

Between 10 and 20 papers
France, Germany, Spain, England

Between 3 and 9 papers
Brazil, Italy, Netherlands, Sweden, Denmark, Scotland, North Ireland, Switzerland

With two papers or less
Belgium, Canada, Czech Republic, Guadeloupe, India, Luxembourg, Mexico, Romania, Tunisia, Finland, Greece, Israel, Japan, Morocco, Norway, Peoples R China, Poland, Russia, Serbia, Slovenia, Taiwan

103 international collaboration within projects

Through FCT projects
Argentina (1), Brasil (1), France (4), Germany (3), Spain (5), The Netherlands (2), UK (2), USA (2)

Through EU projects
Austria (3), Belgium (3), Bulgaria (1), Czech Republic (1), China (1),Denmark (3), Estonia (1), Ethiopia (1), Filipines (1), Finland (1), France (8), Germany (12), Hungary (3), Iceland (1), Ireland (1), Israel (1), Italy (7), Mali (1), Netherlands (1), Norway (1), Spain (8), Sweden (1), Switzerland (7), Syria (1), Turkey (1), UK (13)

32 foreign PhD holder researchers

EU countries: 19
Bulgaria, France, Germany, Greece, Ireland, Italy, Poland, Spain, UK

Rest of the world: 13
Brazil, China, Egypt, India, Marrocos, Mexico, Norway, Russia, Tunisia, Yugoslavia

Publications

Top 5 most cited papers (last 10 years)

(Times cited from Web of Science as per September 2013)

1. Plechkova N. V. and Seddon K. R. (2008). "Applications of ionic liquids in the chemical industry." Chemical Society Reviews 37(1): 123-150.**Times Cited:** 1,072

2. Earle M. J., Esperanca J. M. S. S., Gilea M. A., Canongia Lopes J. N., Rebelo L. P. N., Magee J. W., Seddon K. R. and Widegren J. A. (2006). "The distillation and volatility of ionic liquids." Nature 439(7078): 831-834. **Times Cited:** 722

3. Chaves, M. M., J. P. Maroco and J. S. Pereira (2003). "Understanding plant responses to drought - from genes to the whole plant." Functional Plant Biology 30(3): 239-264. **Times Cited:** 590

4. Grundmann H., Aires-De-Sousa M., Boyce J. and Tiemersma E. (2006). "Emergence and resurgence of meticillin-resistant Staphylococcus aureus as a public-health threat." Lancet 368(9538): 874-885. **Times Cited:** 344

5. Harris S. R., Feil E. J., Holden M. T. G., Quail M. A., Nickerson E. K., Chantratita N., Gardete S., Tavares A., Day N., Lindsay J. A., Edgeworth J. D., de Lencastre H., Parkhill J., Peacock S. J. and Bentley S. D. (2010). "Evolution of mrsa during hospital transmission and intercontinental spread." Science 327(5964): 469-474.
Times Cited: 264

Highly cited papers *

* Papers included in the Highly Cited Papers list by Essential Science Indicators SM (Thompson Reuters): top 1% of articles by total citations in each annual cohort from each of the 22 disciplines (updated as of Jul 1, 2012 to cover a 10-year plus 4-month period, Jan1, 2002-Apr 30, 2012)

1. Plechkova N. V. and Seddon K. R. (2008). "Applications of ionic liquids in the chemical industry." Chemical Society Reviews 37(1): 123-150.

2. Oliveira D. C. and de Lencastre H. (2002). "Multiplex PCR strategy for rapid identifi cation of structural types and variants of the mec element in methicillin-resistant Staphylococcus aureus." Antimicrobial Agents and Chemotherapy 46(7): 2155-2161.

3. Earle M. J., Esperanca J. M. S. S., Gilea M. A., Canongia Lopes J. N., Rebelo L. P. N., Magee J. W., Seddon K. R. and Widegren J. A. (2006). "The distillation and volatility of ionic liquids." Nature 439(7078): 831-834.

4. Chaves, M. M., J. P. Maroco and J. S. Pereira (2003). "Understanding plant responses to drought - from genes to the whole plant." Functional Plant Biology 30(3): 239-264.

5. Oliveira D. C., Tomasz A. and de Lencastre H. (2002). "Secrets of success of a human pathogen: molecular evolution of pandemic clones of meticillin-resistant Staphylocloccus aureus." Lancet Infectious Diseases 2(3): 180-189.

6. Chaves M. M., Pereira J. S., Maroco J., Rodrigues M. L., Ricardo C. P. P., Osorio M. L., Carvalho I., Faria T. and Pinheiro C. (2002).“How plants cope with water stress in the fi eld. Photosynthesis and growth.” Annals of Botany 89: 907-916.

7. Grundmann H., Aires-De-Sousa M., Boyce J. and Tiemersma E. (2006). “Emergence and resurgence of meticillin-resistant Staphylococcus aureus as a public-health threat.” Lancet 368(9538): 874-885.

8. Rebelo, L. P. N., V. Najdanovic-Visak, Z. P. Visak, M. N. da Ponte, J. Szydlowski, C. A. Cerdeirina, J. Troncoso, L. Romani, J. M. S. S. Esperanca, H. J. R. Guedes and H. C. de Sousa (2004). “A detailed thermodynamic analysis of [C(4)mim][BF4] plus water as a case study to model ionic liquid aqueous solutions.” Green Chemistry 6(8): 369-381.

9. Chaves, M. M. and M. M. Oliveira (2004). “Mechanisms underlying plant resilience to water deficits: prospects for water-saving agriculture.” Journal of Experimental Botany 55(407): 2365-2384.

10. Pina, C., F. Pinto, J. A. Feijo and J. D. Becker (2005). “Gene family analysis of the Arabidopsis pollen transcriptome reveals biological implications for cell growth, division control, and gene expression regulation.” Plant Physiology 138(2): 744-756.

11. Harris S. R., Feil E. J., Holden M. T. G., Quail M. A., Nickerson E. K., Chantratita N., Gardete S., Tavares A., Day N., Lindsay J. A., Edgeworth J. D., de Lencastre H., Parkhill J., Peacock S. J. and Bentley S. D. (2010). “Evolution of mrsa during hospital transmission and intercontinental spread.” Science 327(5964): 469-474.

12. Chaves M. M., Flexas J. and Pinheiro C. (2009). “Photosynthesis under drought and salt stress: regulation mechanisms from whole plant to cell.” Annals of Botany 103(4): 551-560.

13.Vinga, S. and J. Almeida (2003). “Alignment-free sequence comparison - a review.” Bioinformatics 19(4): 513-523.

14. Santos L., Lopes J. N. C., Coutinho J. A. P., Esperanca J., Gomes L. R., Marrucho I. M. and Rebelo L. P. N. (2007) Ionic liquids: First direct determination of their cohesive energy, Journal of the American Chemical Society 129(2): 284-285.

15. Mwangi M. M., Wu S. W., Zhou Y. J., Sieradzki K., de Lencastre H., Richardson P., Bruce D., Rubin E., Myers E., Siggia E. D. and Tomasz A. (2007) Tracking the in vivo evolution of multidrug resistance in Staphylococcus aureus by whole-genome sequencing, Proceedings of the National Academy of Sciences of the United States of America104(22): 9451-9456.

16. Lopes J. N. C., Gomes M. F. C. and Padua A. A. H. (2006). “Nonpolar, polar, and associating solutes in ionic liquids.” Journal of Physical Chemistry B 110(34): 16816-16818.

17. Blesic M., Marques M. H., Plechkova N. V., Seddon K. R., Rebelo L. P. N. and Lopes A. (2007) Self-aggregation of ionic liquids: micelle formation in aqueous solution, Green Chemistry 9(5): 481-490.

18. Milheirico C., Oliveira D. C. and de Lencastre H. (2007) Update to the multiplex PCR strategy for assignment of mec element types in Staphylococcus aureus, Antimicrobial Agents and Chemotherapy 51(9): 3374-3377.

19. Henriques A. O. and Moran C. P. (2007) Structure, assembly, and function of the spore surface layers, Annual Review of Microbiology 61: 555-588.

20. Hilty M., Burke C., Pedro H., Cardenas P., Bush A., Bossley C., Davies J., Ervine A., Poulter L., Pachter L., Moffatt M. F. and Cookson W. O. C. (2010). “Disordered microbial communities in asthmatic airways.” PLoS ONE 5(1).

21. Schaeffer D., Tsanova B., Barbas A., Reis F. P., Dastidar E. G., Sanchez-Rotunno M., Arraiano C. M. and van Hoof A. (2009). “The exosome contains domains with specific endoribonuclease, exoribonuclease and cytoplasmic mRNA decay activities.” Nature Structural & Molecular Biology 16(1): 56-62.

22. Esperança J. M. S. S., Lopes J. N. C., Tariq M., Santos L., Magee J. W. and Rebelo L. P. N. (2010). “Volatility of aprotic ionic liquids - a review.” Journal of Chemical and Engineering Data 55(1): 3-12.

23. Petkovic, M., Seddon, K. R., Rebelo, L. P. N., and Pereira, C. S. (2011) Ionic liquids: a pathway to environmental acceptability, Chemical Society Reviews 40(3): 1383-1403

24. Branco-Price C., Kaiser K. A., Jang C. J. H., Larive C. K. and Bailey-Serres J. (2008). “Selective mRNA translation coordinates energetic and metabolic adjustments to cellular oxygen deprivation and reoxygenation in Arabidopsis thaliana.” Plant Journal 56(5): 743-755

25. Saibo N. J. M., Lourenco T. and Oliveira M. M. (2009). “Transcription factors and regulation of photosynthetic and related metabolism under environmental stresses.” Annals of Botany 103(4): 609-623.

26. Adler, S., Basketter, D., Creton, S., Pelkonen, O., van Benthem, J., Zuang, V., Andersen, K. E., Angers-Loustau, A., Aptula, A., Bal-Price, A., Benfenati, E., Bernauer, U., Bessems, J., Bois, F. Y., Boobis, A., Brandon, E., Bremer, S., Broschard, T., Casati, S., Coecke, S., Corvi, R., Cronin, M., Daston, G., Dekant, W., Felter, S., Grignard, E., Gundert-Remy, U., Heinonen, T., Kimber, I., Kleinjans, J., Komulainen, H., Kreiling, R., Kreysa, J., Leite, S. B., Loizou, G., Maxwell, G., Mazzatorta, P., Munn, S., Pfuhler, S., Phrakonkham, P., Piersma, A., Poth, A., Prieto, P., Repetto, G., Rogiers, V., Schoeters, G., Schwarz, M., Serafimova, R., Tahti, H., Testai, E., van Delft, J., van Loveren, H., Vinken, M., Worth, A., and Zaldivar, J. M. (2011) Alternative (non-animal) methods for cosmetics testing: current status and future prospects-2010, Archives of Toxicology 85(5): 367-485

27. Pinheiro, C., and Chaves, M. M. (2011) Photosynthesis and drought: can we make metabolic connections from available data?, Journal of Experimental Botany 62(3): 869-882

28. Chaves M. M., Zarrouk O., Francisco R., Costa J. M., Santos T., Regalado A. P., Rodrigues M. L. and Lopes C. M. (2010). “Grapevine under deficit irrigation: hints from physiological and molecular data.” Annals of Botany 105(5): 661-676.

29. Trindade I., Capitao C., Dalmay T., Fevereiro M. P. and dos Santos D. M. (2010). “Mir398 and mir408 are up-regulated in response to water deficit in Medicago truncatula.” Planta 231(3): 705-716.

30. Amaro, H. M., Guedes, A. C., and Malcata, F. X. (2011) Advances and perspectives in using microalgae to produce biodiesel, Applied Energy 88(10): 3402-3410

31. Pereiro A. B., Araujo J. M. M., Esperanca J. M. S. S., Marrucho I. M. and Rebelo L. P. N. (2012) Ionic liquids in separations of azeotropic systems - a review, Journal of Chemical Thermodynamics 46: 2-28.

32. Tariq M., Freire M. G., Saramago B., Coutinho J. A. P., Lopes J. N. C. and Rebelo L. P. N. (2012) Surface tension of ionic liquids and ionic liquid solutions, Chemical Society Reviews 41(2): 829-868.

33. Freire M. G., Pereira J. F. B., Francisco M., Rodriguez H., Rebelo L. P. N., Rogers R. D. and Coutinho J. A. P. (2012) Insight into the interactions that control the phase behaviour of new aqueous biphasic systems composed of polyethylene glycol polymers and ionic liquids, Chemistry-a European Journal 18(6): 1831-1839.

34. Romao C. C., Blattler W. A., Seixas J. D. and Bernardes G. J. L. (2012) Developing drug molecules for therapy with carbon monoxide, Chemical Society Reviews 41(9): 3571-3583.

35. Alexov, E., Mehler, E. L., Baker, N., Baptista, A. M., Huang, Y., Milletti, F., Nielsen, J. E., Farrell, D., Carstensen, T., Olsson, M. H. M., Shen, J. K., Warwicker, J., Williams, S., and Word, J. M. (2011) Progress in the prediction of pK(a) values in proteins, Proteins-Structure Function and Bioinformatics 79(12): 3260-3275

36. Fortalezas S., Tavares L., Pimpão R., Tyagi M., Pontes V., Alves P., McDougall G., Stewart D., Ferreira R. and Santos C. (2010). "Antioxidant properties and neuroprotective capacity of strawberry tree fruit (Arbutus unedo)." Nutrients 2(2): 214-229.

37. Ramos O. L., Fernandes J. C., Silva S. I., Pintado M. E. and Malcata F. X. (2012) Edible films and coatings from whey proteins: a review on formulation, and on mechanical and bioactive properties, Critical Reviews in Food Science and Nutrition 52(6): 533-552.

Publication Facts 2012

Journal Impact factor (IF) according to the 2012 Journal Citation Report, Science Edition (Thomson Reuters) released in June 2012.

Top 10 journals: number of articles

# papers	Journal	IF
16	PLoS ONE	4.092
7	Journal of Physical Chemistry B	3.696
6	Separation and Purification Technology	2.921
5	Journal of Proteomics	4.878
5	European Journal of Inorganic Chemistry	3.049
4	Food Chemistry	3.655
4	Journal of Bacteriology	3.825
4	Journal of Biological Chemistry	4.773
4	Microbial Drug Resistance	2.153
4	Tetrahedron	3.025

Top 10 journals: impact factor

IF	Journal	# papers
28.760	Chemical Society Reviews	3
14.030	Developmental Cell	1
13.018	Microbiology and Molecular Biology Reviews	1
12.619	Acta Crystallographica Section D	2
12.110	Coordination Chemistry Reviews	1
11.665	Hepatology	1
9.907	Journal of the American Chemical Society	3
9.875	Advances in Bacterial Respiratory Physiology	1
9.647	Current Biology	1
9.148	Trends in Biotechnology	2

Publication List 2012

Articles indexed in Web of Science

1. Adamova G., Gardas R. L., Nieuwenhuyzen M., Puga A. V., Rebelo L. P. N., Robertson A. J. and Seddon K. R. (2012) Alkyltributylphosphonium chloride ionic liquids: synthesis, physicochemical properties and crystal structure, Dalton Transactions 41(27): 8316-8332. http://dx.doi.org/10.1039/c1dt10466g

2. de Almeida A. M. and Bendixen E. (2012) Pig proteomics: a review of a species in the crossroad between biomedical and food sciences, Journal of Proteomics 75(14): 4296-4314. http://dx.doi.org/10.1016/j.jprot.2012.04.010

3. Almeida A. M., Parreira J. R., Santos R., Duque A. S., Francisco R., Tome D. F., Ricardo C. P., Coelho A. V. and Fevereiro P. (2012) A proteomics study of the induction of somatic embryogenesis in Medicago truncatula using 2DE and MALDI-TOF/TOF, Physiologia Plantarum 146(2): 236-249. http://dx.doi.org/10.1111/j.1399-3054.2012.01633.x

4. Almeida A. S., Queiroga C. S. F., Sousa M. F. Q., Alves P. M. and Vieira H. L. A. (2012) Carbon monoxide modulates apoptosis by reinforcing oxidative metabolism in astrocytes ROLE OF Bcl-2, Journal of Biological Chemistry 287(14): 10761-10770. http://dx.doi.org/10.1074/jbc.M111.306738

5. Almeida F., Borges V., Ferreira R., Borrego M. J., Gomes J. P. and Mota L. J. (2012) Polymorphisms in inc proteins and differential expression of inc genes among Chlamydia trachomatis strains correlate with invasiveness and tropism of lymphogranuloma venereum isolates, Journal of Bacteriology 194(23): 6574-6585. http://dx.doi.org/10.1128/jb.01428-12

6. Alves E., Henriques B. J., Rodrigues J. V., Prudencio P., Rocha H., Vilarinho L., Martinho R. G. and Gomes C. M. (2012) Mutations at the flavin binding site of ETF:QO yield a MADD-like severe phenotype in Drosophila, Biochimica Et Biophysica Acta-Molecular Basis of Disease 1822(8): 1284-1292. http://dx.doi.org/10.1016/j.bbadis.2012.05.003

7. Andrade J. M., Pobre V., Matos A. M. and Arraiano C. M. (2012) The crucial role of PNPase in the degradation of small RNAs that are not associated with Hfq, Rna-a Publication of the Rna Society 18(4): 844-855. http://dx.doi.org/10.1261/rna.029413.111

8. Arede P., Milheirico C., de Lencastre H. and Oliveira D. C. (2012) The anti-repressor MecR2 promotes the proteolysis of the mecA repressor and enables optimal expression of beta-lactam resistance in MRSA, Plos Pathogens 8(7): e1002816. http://dx.doi.org/10.1371/journal.ppat.1002816

9. Azoia N. G., Fernandes M. M., Micaelo N. M., Soares C. M. and Cavaco-Paulo A. (2012) Molecular modeling of hair keratin/peptide complex: using MM-PBSA calculations to describe experimental binding results, Proteins-Structure Function and Bioinformatics 80(5): 1409-1417. http://dx.doi.org/10.1002/prot.24037

10. Baltazar C. S. A., Teixeira V. H. and Soares C. M. (2012) Structural features of NiFeSe and NiFe hydrogenases determining their different properties: a computational approach, Journal of Biological Inorganic Chemistry 17(4): 543-555. http://dx.doi.org/10.1007/s00775-012-0875-2

11. Bandeira V., Peixoto C., Rodrigues A. F., Cruz P. E., Alves P. M., Coroadinha A. S. and Carrondo M. J. T. (2012) Downstream processing of lentiviral vectors: releasing bottlenecks, Human Gene Therapy Methods 23(4): 255-263. http://dx.doi.org/10.1089/hgtb.2012.059

12. Baptista J. M., Justino M. C., Melo A. M. P., Teixeira M. and Saraiva L. M. (2012) Oxidative stress modulates the nitric oxide defense promoted by Escherichia coli flavorubredoxin, Journal of Bacteriology 194(14): 3611-3617. http://dx.doi.org/10.1128/jb.00140-12

13. Barreto M. C., Houbraken J., Samson R. A., Brito D., Gadanho M. and San Romao M. V. (2012) Unveiling the fungal mycobiota present throughout the cork stopper manufacturing process, FEMS Microbiology Ecology 82(1): 202-214. http://dx.doi.org/10.1111/j.1574-6941.2012.01419.x

14. Barros M. T., Dey S. S., Maycock C. D. and Rodrigues P. (2012) Metal-free direct amination/aromatization of 2-cyclohexenones to iodo-N-arylanilines and N-arylanilines promoted by iodine, Chemical Communications 48(88): 10901-10903. http://dx.doi.org/10.1039/c2cc35801h

15. Barros M. T., Dey S. S., Maycock C. D. and Rodrigues P. (2012) Preparation of N-arylamines from 2-oxo-7-azobicyclo 4.1.0 heptanes, Tetrahedron 68(31): 6263-6268. http://dx.doi.org/10.1016/j.tet.2012.05.054

16. Barros P. M., Goncalves N., Saibo N. J. M. and Oliveira M. M. (2012) Cold acclimation and floral development in almond bud break: insights into the regulatory pathways, Journal of Experimental Botany 63(12): 4585-4596. http://dx.doi.org/10.1093/jxb/ers144

17. Barros P. M., Goncalves N., Saibo N. J. M. and Oliveira M. M. (2012) Functional characterization of two almond C-repeat-binding factors involved in cold response, Tree Physiology 32(9): 1113-1128. http://dx.doi.org/10.1093/treephys/tps067

18. Batista A. P., Marreiros B. C., Louro R. O. and Pereira M. M. (2012) Study of ion translocation by respiratory complex I. A new insight using Na-23 NMR spectroscopy, Biochimica Et Biophysica Acta-Bioenergetics 1817(10): 1810-1816. http://dx.doi.org/10.1016/j.bbabio.2012.03.009

19. Batista A. P., Marreiros B. C. and Pereira M. M. (2012) The role of proton and sodium ions in energy transduction by respiratory complex I, Iubmb Life 64(6): 492-498. http://dx.doi.org/10.1002/iub.1050

20. Batista-Nascimento L., Pimentel C., Menezes R. A. and Rodrigues-Pousada C. (2012) Iron and neurodegeneration: from cellular homeostasis to disease, Oxidative Medicine and Cellular Longevity 2012: Article ID 128647. http://dx.doi.org/10.1155/2012/128647

21. Bernardes C. E. S., da Piedade M. E. M. and Lopes J. N. C. (2012) Polymorphism in 4 '-Hydroxyacetophenone: a molecular dynamics simulation study, Journal of Physical Chemistry B 116(17): 5179-5184. http://dx.doi.org/10.1021/jp300341f

22. Bernier N., Esteves C. V. and Delgado R. (2012) Heteroditopic receptor based on crown ether and cyclen units for the recognition of zwitterionic amino acids, Tetrahedron 68(24): 4860-4868. http://dx.doi.org/10.1016/j.tet.2012.03.110

23. Bhattacharjee A., Varanda C., Freire M. G., Matted S., Santos L. M. N. B. F., Marrucho I. M. and Coutinho J. A. P. (2012) Density and viscosity data for binary mixtures of 1-Alkyl-3-methylimidazolium alkylsulfates plus water, Journal of Chemical and Engineering Data 57(12): 3473-3482. http://dx.doi.org/10.1021/je300622r

24. Bonifacio V. D. B., Correia V. G., Pinho M. G., Lima J. C. and Aguiar-Ricardo A. (2012) Blue emission of carbamic acid oligooxazoline biotags, Materials Letters 81: 205-208. http://dx.doi.org/10.1016/j.matlet.2012.04.134

25. Botelho H. M., Leal S. S., Cardoso I., Yanamandra K., Morozova-Roche L. A., Fritz G. and Gomes C. M. (2012) S100A6 amyloid fibril formation is calcium-modulated and enhances superoxide dismutase-1 (SOD1) aggregation, Journal of Biological Chemistry 287(50): 42233-42242. http://dx.doi.org/10.1074/jbc.M112.396416

26. Bouchami O., Ben Hassen A., de Lencastre H. and Miragaia M. (2012) High prevalence of mec complex C and ccrC is independent of SCCmec type V in Staphylococcus haemolyticus, European Journal of Clinical Microbiology & Infectious Diseases 31(4): 605-614. http://dx.doi.org/10.1007/s10096-011-1354-3

27. Bradic M., Beerli P., Garcia-de Leon F. J., Esquivel-Bobadilla S. and Borowsky R. L. (2012) Gene flow and population structure in the Mexican blind cavefish complex (Astyanax mexicanus), Bmc Evolutionary Biology 12: ART9. http://dx.doi.org/10.1186/1471-2148-12-9

28. Brissos V., Chen Z. J. and Martins L. O. (2012) The kinetic role of carboxylate residues in the proximity of the trinuclear centre in the O-2 reactivity of CotA-laccase, Dalton Transactions 41(20): 6247-6255. http://dx.doi.org/10.1039/c2dt12067d

29. Brito C., Simao D., Costa I., Malpique R., Pereira C. I., Fernandes P., Serra M., Schwarz S. C., Schwarz J., Kremer E. J. and Alves P. M. (2012) Generation and genetic modification of 3D cultures of human dopaminergic neurons derived from neural progenitor cells, Methods 56(3): 452-460. http://dx.doi.org/10.1016/j.ymeth.2012.03.005

30. Bruno S. M., Gamelas C. A., Gomes A. C., Valente A. A., Pillinger M., Romao C. C. and Goncalves I. S. (2012) Isomerisation of alpha-pinene oxide in the presence of indenyl allyl dicarbonyl molybdenum(II) and tungsten(II) complexes, Catalysis Communications 23: 58-61. http://dx.doi.org/10.1016/j.catcom.2012.03.006

31. Cal P. M. S. D., Vicente J. B., Pires E., Coelho A. V., Veiros L. F., Cordeiro C. and Gois P. M. P. (2012) Iminoboronates: a new strategy for reversible protein modification, Journal of the American Chemical Society 134(24): 10299-10305. http://dx.doi.org/10.1021/ja303436y

32. Callaghan A. V., Morris B. E. L., Pereira I. A. C., McInerney M. J., Austin R. N., Groves J. T., Kukor J. J., Suflita J. M., Young L. Y., Zylstra G. J. and Wawrik B. (2012) The genome sequence of Desulfatibacillum alkenivorans AK-01: a blueprint for anaerobic alkane oxidation, Environmental Microbiology 14(1): 101-113. http://dx.doi.org/10.1111/j.1462-2920.2011.02516.x

33. Campos E., Asandei A., McVey C. E., Dias J. C., Oliveira A. S. F., Soares C. M., Luchian T. and Astier Y. (2012) The role of Lys147 in the interaction between MPSA-gold nanoparticles and the alpha-hemolysin nanopore, Langmuir 28(44): 15643-15650. http://dx.doi.org/10.1021/la302613g

34. Cardoso J. M. S. and Royo B. (2012) Unprecedented synthesis of iron-NHC complexes by C-H activation of imidazolium salts. Mild catalysts for reduction of sulfoxides, Chemical Communications 48(41): 4944-4946. http://dx.doi.org/10.1039/c2cc31564e

35. Cardoso S., Lau W., Dias J. E., Fevereiro P. and Maniatis N. (2012) A candidate-gene association study for berry colour and anthocyanin content in Vitis vinifera L, PLoS ONE 7(9): e46021. http://dx.doi.org/10.1371/journal.pone.0046021

36. Carinhas N., Oliveira R., Alves P. M., Carrondo M. J. T. and Teixeira A. P. (2012) Systems biotechnology of animal cells: the road to prediction, Trends in Biotechnology 30(7): 377-385. http://dx.doi.org/10.1016/j.tibtech.2012.03.004

37. Carrondo M. J. T., Alves P. M., Carinhas N., Glassey J., Hesse F., Merten O. W., Micheletti M., Noll T., Oliveira R., Reichl U., Staby A., Teixeira A. P., Weichert H. and Mandenius C. F. (2012) How can measurement, monitoring, modeling and control advance cell culture in industrial biotechnology?, Biotechnology Journal 7(12): 1522-1529. http://dx.doi.org/10.1016/10.1002/biot.201200226

38. Carvalho S. D., Saraiva R., Maia T. M., Abreu I. A. and Duque P. (2012) XBAT35, a novel arabidopsis RING E3 ligase exhibiting dual targeting of its splice isoforms, is involved in ethyllene-mediated regulation of apical hook curvature, Molecular Plant 5(6): 1295-1309. http://dx.doi.org/10.1093/mp/sss048

39. Carvalho-Santos Z., Machado P., Alvarez-Martins I., Gouveia S. M., Jana S. C., Duarte P., Amado T., Branco P., Freitas M. C., Silva S. T. N., Antony C., Bandeiras T. M. and Bettencourt-Dias M. (2012) BLD10/CEP135 is a microtubule-associated protein that controls the formation of the flagellum central microtubule pair, Developmental Cell 23(2): 412-424. http://dx.doi.org/10.1016/j.devcel.2012.06.001

40. Cassan-Wang H., Soler M., Yu H., Camargo E. L. O., Carocha V., Ladouce N., Savelli B., Paiva J. A. P., Leple J. C. and Grima-Pettenati J. (2012) Reference genes for high-throughput quantitative reverse transcription-PCR analysis of gene expression in organs and tissues of Eucalyptus grown in various environmental conditions, Plant and Cell Physiology 53(12): 2101-2116. http://dx.doi.org/10.1093/pcp/pcs152

41. Chagas R., Monteiro S. and Ferreira R. B. (2012) Assessment of potential effects of common fining agents used for white wine protein stabilization, American Journal of Enology and Viticulture 63(4): 574-578. http://dx.doi.org/10.5344/ajev.2012.12016

42. Chahboun G., Brito J. A., Royo B., El Amrani M. A., Gomez-Bengoa E., Mosquera M. E. G., Cuenca T. and Royo E. (2012) Olefin epoxidation catalyzed by cis-Dioxdomolybdenum(VI) complexes containing chiral alkoxo-imino ligands derived from (+)-alpha-pinene, European Journal of Inorganic Chemistry 2012(17): 2940-2949. http://dx.doi.org/10.1002/ejic.201200144

43. Chakraborty S., Iranzo O., Zuiderweg E. R. P. and Pecoraro V. L. (2012) Experimental and theoretical evaluation of multisite Cadmium(II) exchange in designed three-stranded coiled-coil peptides, Journal of the American Chemical Society 134(14): 6191-6203. http://dx.doi.org/10.1021/ja210510g

44. Cherian S., Weyens N., Lindberg S. and Vangronsveld J. (2012) Phytoremediation of trace element-contaminated environments and the potential of endophytic bacteria for improving this process, Critical Reviews in Environmental Science and Technology 42(21): 2215-2260. http://dx.doi.org/10.1080/10643389.2011.574106

45. Conceicao T., de Sousa M. A., Miragaia M., Paulino E., Barroso R., Brito M. J., Sardinha T., Sancho L., Carreiro H., de Sousa G., Machado M. D. and de Lencastre H. (2012) Staphylococcus aureus reservoirs and transmission routes in a Portuguese neonatal intensive care unit: a 30-month surveillance study, Microbial Drug Resistance 18(2): 116-124. http://dx.doi.org/10.1089/mdr.2011.0182

46. Correia A. C., Minunno F., Caldeira M. C., Banza J., Mateus J., Carneiro M., Wingate L., Shvaleva A., Ramos A., Jongen M., Bugalho M. N., Nogueira C., Lecomte X. and Pereira J. S. (2012) Soil water availability strongly modulates soil CO2 efflux in different Mediterranean ecosystems: Model calibration using the Bayesian approach, Agriculture Ecosystems & Environment 161: 88-100. http://dx.doi.org/10.1016/j.agee.2012.07.025

47. Costa A. J. L., Soromenho M. R. C., Shimizu K., Marrucho I. M., Esperanca J. M. S. S., Lopes J. N. C. and Rebelo L. P. N. (2012) Density, thermal expansion and viscosity of cholinium-derived ionic liquids, Chemphyschem 13(7): 1902-1909. http://dx.doi.org/10.1002/cphc.201100852

48. Costa A. J. L., Soromenho M. R. C., Shimizu K., Marrucho I. M., Esperanca J. M. S. S., Lopes J. N. C. and Rebelo L. P. N. (2012) Liquid-liquid equilibrium of cholinium-derived bistriflimide ionic liquids with water and octanol, Journal of Physical Chemistry B 116(30): 9186-9195. http://dx.doi.org/10.1021/jp3053168

49. Costa J. M., Ortuno M. F., Lopes C. M. and Chaves M. M. (2012) Grapevine varieties exhibiting differences in stomatal response to water deficit, Functional Plant Biology 39(3): 179-189. http://dx.doi.org/10.1071/fp11156

50. Costa P. M., Milhinhos A., Simoes M., Marum L., Oliveira A. M., Costa M. H. and Miguel C. (2012) Determining DNA strand breakage from embryogenic cell cultures of a conifer species using the single-cell gel electrophoresis assay, Tree Genetics & Genomes 8(2): 425-430. http://dx.doi.org/10.1007/s11295-011-0434-y

51. da Costa S. B., Duarte C., Bourbon A. I., Pinheiro A. C., Serra A. T., Martins M. M., Januario M. I. N., Vicente A. A., Delgadillo I. and da Costa M. L. B. (2012) Effect of the matrix system in the delivery and in vitro bioactivity of microencapsulated Oregano essential oil, Journal of Food Engineering 110(2): 190-199. http://dx.doi.org/10.1016/j.jfoodeng.2011.05.043

52. Courtois B., Frouin J., Greco R., Bruschi G., Droc G., Hamelin C., Ruiz M., Clement G., Evrard J. C., van Coppenole S., Katsantonis D., Oliveira M., Negrao S., Matos C., Cavigiolo S., Lupotto E., Piffanelli P. and Ahmadi N. (2012) Genetic diversity and population structure in a european collection of rice, Crop Science 52(4): 1663-1675. http://dx.doi.org/10.2135/cropsci2011.11.0588

53. Dantas J. M., Morgado L., Londer Y. Y., Fernandes A. P., Louro R. O., Pokkuluri P. R., Schiffer M. and Salgueiro C. A. (2012) Pivotal role of the strictly conserved aromatic residue F15 in the cytochrome c(7) family, Journal of Biological Inorganic Chemistry 17(1): 11-24. http://dx.doi.org/10.1007/s00775-011-0821-8

54. Deive F. J., Rodriguez A., Rebelo L. P. N. and Marrucho I. M. (2012) Extraction of Candida antarctica lipase A from aqueous solutions using imidazolium-based ionic liquids, Separation and Purification Technology 97: 205-210. http://dx.doi.org/10.1016/j.seppur.2011.12.013

55. Denkmann K., Grein F., Zigann R., Siemen A., Bergmann J., van Helmont S., Nicolai A., Pereira I. A. C. and Dahl C. (2012) Thiosulfate dehydrogenase: a widespread unusual acidophilic c-type cytochrome, Environmental Microbiology 14(10): 2673-2688. http://dx.doi.org/10.1111/j.1462-2920.2012.02820.x

56. Dias A. M. A., Marceneiro S., Braga M. E. M., Coelho J. F. J., Ferreira A. G. M., Simoes P. N., Veiga H. I. M., Tome L. C., Marrucho I. M., Esperanca J. M. S. S., Matias A. A., Duarte C. M. M., Rebelo L. P. N. and de Sousa H. C. (2012) Phosphonium-based ionic liquids as modifiers for biomedical grade poly(vinyl chloride), Acta Biomaterialia 8(3): 1366-1379. http://dx.doi.org/10.1016/j.actbio.2011.10.034

57. Fagone P., Mangano K., Coco M., Perciavalle V., Garotta G., Romao C. C. and Nicoletti F. (2012) Therapeutic potential of carbon monoxide in multiple sclerosis, Clinical and Experimental Immunology 167(2): 179-187. http://dx.doi.org/10.1111/j.1365-2249.2011.04491.x

58. Fernandes A. T., Lopes C., Martins L. O. and Melo E. P. (2012) Unfolding pathway of CotA-laccase and the role of copper on the prevention of refolding through aggregation of the unfolded state, Biochemical and Biophysical Research Communications 422(3): 442-446. http://dx.doi.org/10.1016/j.bbrc.2012.05.011

59. Fernandes F., Vidigal J., Dias M. M., Prather K. L. J., Coroadinha A. S., Teixeira A. P. and Alves P. M. (2012) Flipase-mediated cassette exchange in Sf9 insect cells for stable gene expression, Biotechnology and Bioengineering 109(11): 2836-2844. http://dx.doi.org/10.1002/bit.24542

60. Fernandes H. L., Stevenson I. H. and Kording K. P. (2012) Generalization of stochastic visuomotor rotations, PLoS ONE 7(8): e43016. http://dx.doi.org/10.1371/journal.pone.0043016

61. Fernandes L., Centeno M., Belas A., Nunes T., Alves P. L., Couto N. and Pomba C. (2012) Immediate after birth transmission of epidemic Salmonella enterica Typhimurium monophasic strains in pigs is a likely event, Journal of Antimicrobial Chemotherapy 67(12): 3012-3014. http://dx.doi.org/10.1093/jac/dks334

62. Fernandes S., Proenca D., Cantante C., Silva F. A., Leandro C., Lourenco S., Milheirico C., de Lencastre H., Cavaco-Silva P., Pimentel M. and Sao-Jose C. (2012) Novel chimerical endolysins with broad antimicrobial activity against methicillin-resistant Staphylococcus aureus, Microbial Drug Resistance 18(3): 333-343. http://dx.doi.org/10.1089/mdr.2012.0025

63. Ferraz R., Branco L. C., Marrucho I. M., Araujo J. M. M., Rebelo L. P. N., da Ponte M. N., Prudencio C., Noronha J. P. and Petrovski Z. (2012) Development of novel ionic liquids based on ampicillin, Medchemcomm 3(4): 494-497. http://dx.doi.org/10.1039/c2md00269h

64. Ferreira R., Garcia H., Sousa A. F., Petkovic M., Lamosa P., Freire C. S. R., Silvestre A. J. D., Rebelo L. P. N. and Pereira C. S. (2012) Suberin isolation from cork using ionic liquids: characterisation of ensuing products, New Journal of Chemistry 36(10): 2014-2024. http://dx.doi.org/10.1039/c2nj40433h

65. Ferreira R. B., Freitas R. F. L. and Monteiro S. (2012) Targeting carbohydrates: a novel paradigm for fungal control, European Journal of Plant Pathology 133(1): 117-140. http://dx.doi.org/10.1007/s10658-011-9867-2

66. Ferreira R. T., Silva A. R. C., Pimentel C., Batista-Nascimento L., Rodrigues-Pousada C. and Menezes R. A. (2012) Arsenic stress elicits cytosolic Ca2+ bursts and Crz1 activation in Saccharomyces cerevisiae, Microbiology-Sgm 158: 2293-2302. http://dx.doi.org/10.1099/mic.0.059170-0

67. Figueiredo D. D., Barros P. M., Cordeiro A. M., Serra T. S., Lourenco T., Chander S., Oliveira M. M. and Saibo N. J. M. (2012) Seven zinc-finger transcription factors are novel regulators of the stress responsive gene OsDREB1B, Journal of Experimental Botany 63(10): 3643-3656. http://dx.doi.org/10.1093/jxb/ers035

68. Figueiredo M. C. O., Lobo S. A. L., Carita J. N., Nobre L. S. and Saraiva L. M. (2012) Bacterioferritin protects the anaerobe Desulfovibrio vulgaris Hildenborough against oxygen, Anaerobe 18(4): 454-458. http://dx.doi.org/10.1016/j.anaerobe.2012.06.001

69. Figueiredo T. A., Sobral R. G., Ludovice A. M., de Almeida J. M. F., Bui N. K., Vollmer W., de Lencastre H. and Tomasz A. (2012) Identification of genetic determinants and enzymes involved with the amidation of glutamic acid residues in the Peptidoglycan of Staphylococcus aureus, Plos Pathogens 8(1): e1002508. http://dx.doi.org/10.1371/journal.ppat.1002508

70. Fonseca B. M., Paquete C. M., Salgueiro C. A. and Louro R. O. (2012) The role of intramolecular interactions in the functional control of multiheme cytochromes c, Febs Letters 586(5): 504-509. http://dx.doi.org/10.1016/j.febslet.2011.08.019

71. Fonseca C., Planchon S., Renaut J., Oliveira M. M. and Batista R. (2012) Characterization of maize allergens-MON810 vs. its non-transgenic counterpart, Journal of Proteomics 75(7): 2027-2037. http://dx.doi.org/10.1016/j.jprot.2012.01.005

72. de Francesco M., Jacobs J. Z., Nunes F., Serrano M., McKenney P. T., Chua M. H., Henriques A. O. and Eichenberger P. (2012) Physical interaction between coat morphogenetic proteins SpoVID and CotE is necessary for spore encasement in Bacillus subtilis, Journal of Bacteriology 194(18): 4941-4950. http://dx.doi.org/10.1128/jb.00914-12

73. Franco C. F., Soares R., Pires E., Santos R. and Coelho A. V. (2012) Radial nerve cord protein phosphorylation dynamics during starfish arm tip wound healing events, Electrophoresis 33(24): 3764-3778. http://dx.doi.org/10.1002/elps.201200274

74. Freire M. G., Claudio A. F. M., Araujo J. M. M., Coutinho J. A. P., Marrucho I. M., Lopes J. N. C. and Rebelo L. P. N. (2012) Aqueous biphasic systems: a boost brought about by using ionic liquids, Chemical Society Reviews 41(14): 4966-4995. http://dx.doi.org/10.1039/c2cs35151j

75. Freire M. G., Neves C. M. S. S., Lopes J. N. C., Marrucho I. M., Coutinho J. A. P. and Rebelo L. P. N. (2012) Impact of self-aggregation on the formation of ionic-liquid-based aqueous biphasic systems, Journal of Physical Chemistry B 116(26): 7660-7668. http://dx.doi.org/10.1021/jp211132z

76. Freire M. G., Pereira J. F. B., Francisco M., Rodriguez H., Rebelo L. P. N., Rogers R. D. and Coutinho J. A. P. (2012) Insight into the interactions that control the phase behaviour of new aqueous biphasic systems composed of polyethylene glycol polymers and ionic liquids, Chemistry-a European Journal 18(6): 1831-1839. http://dx.doi.org/10.1002/chem.201101780

77. Freire M. G., Teles A. R. R., Lopes J. N. C., Rebelo L. P. N., Marrucho I. M. and Coutinho J. A. P. (2012) Partition coefficients of alkaloids in biphasic ionic-liquid-aqueous systems and their dependence on the hofmeister series, Separation Science and Technology 47(2): 284-291. http://dx.doi.org/10.1080/01496395.2011.620585

78. Gamelas C. A., Gomes A. C., Bruno S. M., Paz F. A. A., Valente A. A., Pillinger M., Romao C. C. and Goncalves I. S. (2012) Molybdenum(VI) catalysts obtained from eta(3)-allyl dicarbonyl precursors: Synthesis, characterization and catalytic performance in cyclooctene epoxidation, Dalton Transactions 41(12): 3474-3484. http://dx.doi.org/10.1039/c2dt11751g

79. Gamelas C. A., Neves P., Gomes A. C., Valente A. A., Romao C. C., Goncalves I. S. and Pillinger M. (2012) Molybdenum(II) diiodo-tricarbonyl complexes containing nitrogen donor ligands as catalyst precursors for the epoxidation of methyl oleate, Catalysis Letters 142(10): 1218-1224. http://dx.doi.org/10.1007/s10562-012-0890-5

80. Gardete S., Kim C., Hartmann B. M., Mwangi M., Roux C. M., Dunman P. M., Chambers H. F. and Tomasz A. (2012) Genetic pathway in acquisition and loss of vancomycin resistance in a methicillin resistant Staphylococcus aureus (MRSA) strain of clonal type USA300, Plos Pathogens 8(2): e1002505. http://dx.doi.org/10.1371/journal.ppat.1002505

81. Gaspar F. B., Montero N., Akary E., Teixeira N., Matos R., Gonzalez-Zorn B., Crespo M. T. B., Serror P. and Lopes M. D. S. (2012) Incongruence between the cps type 2 genotype and host-related phenotypes of an Enterococcus faecalis food isolate, International Journal of Food Microbiology 158(2): 120-125. http://dx.doi.org/10.1016/j.ijfoodmicro.2012.07.006

82. Gomes C. M. (2012) Protein misfolding in disease and small molecule therapies, Current Topics in Medicinal Chemistry12(22): 2460-2469

83. Gomes R. A., Franco C., Da Costa G., Planchon S., Renaut J., Ribeiro R. M., Pinto F., Silva M. S., Coelho A. V., Freire A. P. and Cordeiro C. (2012) The proteome response to amyloid protein expression in vivo, PLoS ONE 7(11): ARTe50123. http://dx.doi.org/10.1371/journal.pone.0050123

84. Goncalves A. M. D., Silva C. S., Madeira T. I., Coelho R., de Sanctis D., San Romao M. V. and Bento I. (2012) Endo-beta-D-1,4-mannanase from Chrysonilia sitophila displays a novel loop arrangement for substrate selectivity, Acta Crystallographica Section D-Biological Crystallography 68: 1468-1478. http://dx.doi.org/10.1107/s0907444912034646

85. Goncalves L. G., Borges N., Serra F., Fernandes P. L., Dopazo H. and Santos H. (2012) Evolution of the biosynthesis of di-myo-inositol phosphate, a marker of adaptation to hot marine environments, Environmental Microbiology 14(3): 691-701. http://dx.doi.org/10.1111/j.1462-2920.2011.02621.x

86. Goncalves S., Miller S. P., Carrondo M. A., Dean A. M. and Matias P. M. (2012) Induced fit and the catalytic mechanism of isocitrate dehydrogenase, Biochemistry 51(36): 7098-7115. http://dx.doi.org/10.1021/bi300483w

87. Gordo J., Maximo P., Cabrita E., Lourenco A., Oliva A., Almeida J., Filipe M., Cruz P., Barcia R., Santos M. and Cruz H. (2012) Thymus mastichina: chemical constituents and their anti-cancer activity, Natural Product Communications 7(11): 1491-1494.

88. Gordon R. J., Miragaia M., Weinberg A. D., Lee C. J., Rolo J., Giacalone J. C., Slaughter M. S., Pappas P., Naka Y., Tector A. J., de Lencastre H. and Lowy F. D. (2012) Staphylococcus epidermidis colonization is highly clonal across US cardiac centers, Journal of Infectious Diseases 205(9): 1391-1398. http://dx.doi.org/10.1093/infdis/jis218

89. Gouveia R., Schaffer L., Papp S., Grammel N., Kandzia S., Head S. R., Kleene R., Schachner M., Conradt H. S. and Costa J. (2012) Expression of glycogenes in differentiating human NT2N neurons. Downregulation of fucosyltransferase 9 leads to decreased Lewis(x) levels and impaired neurite outgrowth, Biochimica Et Biophysica Acta-General Subjects 1820(12): 2007-2019. http://dx.doi.org/10.1016/j.bbagen.2012.09.004

90. Guerreiro A., da Costa G., Gomes R. A., Ribeiro-Silva C., Gilberto S., Mateus E., Monteiro E., Barroso E., Coelho A. V., Freire A. P. and Cordeiro C. (2012) alpha-Synuclein aggregation in the saliva of familial transthyretin amyloidosis: a potential biomarker, Amyloid-Journal of Protein Folding Disorders 19(2): 74-80. http://dx.doi.org/10.3109/13506129.2012.668500

91. Guerreiro I., Casaca A., Nunes A., Monteiro S., Novoa A., Ferreira R. B., Bom J. and Mallo M. (2012) Regulatory role for a conserved motif adjacent to the homeodomain of Hox10 proteins, Development 139(15): 2703-2710. http://dx.doi.org/10.1242/dev.081448

92. Guinote I. B., Moreira R. N., Freire P. and Arraiano C. M. (2012) Characterization of the BolA homolog IbaG: a new gene involved in acid resistance, Journal of Microbiology and Biotechnology 22(4): 484-493. http://dx.doi.org/10.4014/jmb.1107.07037

93. Gyorgy E., del Pino A. P., Roqueta J., Ballesteros B., Miguel A. S., Maycock C. and Oliva A. G. (2012) Synthesis and characterization of CdSe/ZnS core-shell quantum dots immobilized on solid substrates through laser irradiation, Physica Status Solidi a-Applications and Materials Science 209(11): 2201-2207. http://dx.doi.org/10.1002/pssa.201127749

94. Hu F. Z., Eutsey R., Ahmed A., Frazao N., Powell E., Hiller N. L., Hillman T., Buchinsky F. J., Boissy R., Janto B., Kress-Bennett J., Longwell M., Ezzo S., Post J. C., Nesin M., Tomasz A. and Ehrlich G. D. (2012) In Vivo Capsular Switch in Streptococcus pneumoniae - Analysis by Whole Genome Sequencing, PLoS ONE 7(11): ARTe47983. http://dx.doi.org/10.1371/journal.pone.0047983

95. Ito T., Hiramatsu K., Tomasz A., de Lencastre H., Perreten V., Holden M. T. G., Coleman D. C., Goering R., Giffard P. M., Skov R. L., Zhang K. Y., Westh H., O'Brien F., Tenover F. C., Oliveira D. C., Boyle-Vavra S., Laurent F., Kearns A. M., Kreiswirth B., Ko K. S., Grundmann H., Sollid J. E., John J. F., Daum R., Soderquist B., Buist G. and Int Working Grp Classification S. (2012) Guidelines for reporting novel mecA gene homologues, Antimicrobial Agents and Chemotherapy 56(10): 4997-4999. http://dx.doi.org/10.1128/aac.01199-12

96. Jimenez P. N., Koch G., Thompson J. A., Xavier K. B., Cool R. H. and Quax W. J. (2012) The multiple signaling systems regulating virulence in Pseudomonas aeruginosa, Microbiology and Molecular Biology Reviews 76(1): 46-65. http://dx.doi.org/10.1128/mmbr.05007-11

97. Justino M. C., Ecobichon C., Fernandes A. F., Boneca I. G. and Saraiva L. M. (2012) Helicobacter pylori has an unprecedented nitric oxide detoxifying system, Antioxidants & Redox Signaling 17(9): 1190-1200. http://dx.doi.org/10.1089/ars.2011.4304

98. Kim C., Milheirico C., Gardete S., Holmes M. A., Holden M. T. G., de Lencastre H. and Tomasz A. (2012) Properties of a novel PBP2A protein homolog from Staphylococcus aureus strain LGA251 and its contribution to the beta-Lactam-resistant phenotype, Journal of Biological Chemistry 287(44): 36854-36863. http://dx.doi.org/10.1074/jbc.M112.395962

99. Kowacz M., Lopes J. N. C., Esperanca J. M. S. S. and Rebelo L. P. N. (2012) Hollow calcite rhombohedra at ionic liquid-stabilized bubbles, Crystengcomm 14(18): 5723-5726. http://dx.doi.org/10.1039/c2ce25975c

100. Kowacz M., Mukhopadhyay A., Carvalho A. L., Esperanca J. M. S. S., Romao M. J. and Rebelo L. P. N. (2012) Hofmeister effects of ionic liquids in protein crystallization: Direct and water-mediated interactions, Crystengcomm 14(15): 4912-4921. http://dx.doi.org/10.1039/c2ce25129a

101. Leal S. S., Botelho H. M. and Gomes C. M. (2012) Metal ions as modulators of protein conformation and misfolding in neurodegeneration, Coordination Chemistry Reviews 256(19-20): 2253-2270. http://dx.doi.org/10.1016/j.ccr.2012.04.004

102. Leite S. B., Wilk-Zasadna I., Zaldivar J. M., Airola E., Reis-Fernandes M. A., Mennecozzi M., Guguen-Guillouzo C., Chesne C., Guillou C., Alves P. M. and Coecke S. (2012) Three-dimensional hepaRG model as an attractive tool for toxicity testing, Toxicological Sciences 130(1): 106-116. http://dx.doi.org/10.1093/toxsci/kfs232

103. Leones R., Rodrigues L. C., Pawlicka A., Esperanca J. M. S. S. and Silva M. M. (2012) Characterization of flexible DNA films, Electrochemistry Communications 22: 189-192. http://dx.doi.org/10.1016/j.elecom.2012.06.022

104. Leones R., Sentanin F., Rodrigues L. C., Ferreira R. A. S., Marrucho I. M., Esperanca J. M. S. S., Pawlicka A., Carlos L. D. and Silva M. M. (2012) Novel polymer electrolytes based on gelatin and ionic liquids, Optical Materials 35(2): 187-195. http://dx.doi.org/10.1016/j.optmat.2012.07.027

105. Leones R., Sentanin F., Rodrigues L. C., Marrucho I. M., Esperanca J., Pawlicka A. and Silva M. M. (2012) Investigation of polymer electrolytes based on agar and ionic liquids, Express Polymer Letters 6(12): 1007-1016. http://dx.doi.org/10.3144/expresspolymlett.2012.106

106. Lidon F. J. C., Teixeira M. and Ramalho J. C. (2012) Decay of the chloroplast pool of ascorbate switches on the oxidative burst in UV-B-irradiated rice, Journal of Agronomy and Crop Science 198(2): 130-144. http://dx.doi.org/10.1111/j.1439-037X.2011.00489.x

107. Lima L. M. P., Delgado R., Hermann P., Sevcik R., Lubal P., Carvalho H. F., Martins A. F., Toth E. and Geraldes C. (2012) Tris(phosphonomethyl)cyclen derivatives: thermodynamic stability, kinetics, solution structure, and relaxivity of Ln(3+) complexes, European Journal of Inorganic Chemistry(15): 2548-2559. http://dx.doi.org/10.1002/ejic.201101335

108. Lima L. M. P., Esteban-Gomez D., Delgado R., Platas-Iglesias C. and Tripier R. (2012) Monopicolinate cyclen and cyclam derivatives for stable copper(II) complexation, Inorganic Chemistry 51(12): 6916-6927. http://dx.doi.org/10.1021/ic300784v

109. Lima L. M. P., Esteves C. V., Delgado R., Hermann P., Kotek J., Sevcikova R. and Lubal P. (2012) Tris(phosphonomethyl) cyclen derivatives: synthesis, acid-base properties and complexation studies with Cu2+ and Zn2+ Ions, European Journal of Inorganic Chemistry(15): 2533-2547. http://dx.doi.org/10.1002/ejic.201101334

110. Lopes J. N. C. and Padua A. A. H. (2012) CL&P: A generic and systematic force field for ionic liquids modeling, Theoretical Chemistry Accounts 131(3): 1129. http://dx.doi.org/10.1007/s00214-012-1129-7

111. Louro R. O. and Paquete C. M. (2012) The quest to achieve the detailed structural and functional characterization of CymA, Biochemical Society Transactions 40: 1291-1294. http://dx.doi.org/10.1042/bst20120114

112. Lousa D., Baptista A. M. and Soares C. M. (2012) Analyzing the molecular basis of enzyme stability in ethanol/water mixtures using molecular dynamics simulations, Journal of Chemical Information and Modeling 52(2): 465-473. http://dx.doi.org/10.1021/ci200455z

113. Lousa D., Cianci M., Helliwell J. R., Halling P. J., Baptista A. M. and Soares C. M. (2012) Interaction of counterions with subtilisin in acetonitrile: insights from molecular dynamics simulations, Journal of Physical Chemistry B 116(20): 5838-5848. http://dx.doi.org/10.1021/jp303008g

114. Madeira F., Barroso S., Namorado S., Reis P. M., Royo B. and Martins A. M. (2012) Epoxidation of cis-cyclooctene using diamine bis(phenolate) vanadium, molybdenum and tungsten complexes as catalysts, Inorganica Chimica Acta 383: 152-156. http://dx.doi.org/10.1016/j.ica.2011.10.071

115. Maiti B. K., Aviles T., Matzapetakis M., Moura I., Pauleta S. R. and Moura J. J. G. (2012) Synthesis of MoS4 (2-)-M (M=Cu and Cd) clusters: potential NMR spectroscopic structural probes for the orange protein, European Journal of Inorganic Chemistry 2012(26): 4159-4166. http://dx.doi.org/10.1002/ejic.201200551

116. Malpique R., Tostoes R., Beier A. F. J., Serra M., Brito C., Schulz J. C., Bjorquist P., Zimmermann H. and Alves P. M. (2012) Surface-based cryopreservation strategies for human embryonic stem cells: a comparative study, Biotechnology Progress 28(4): 1079-1087. http://dx.doi.org/10.1002/btpr.1572

117. Marcelino I., de Almeida A. M., Brito C., Meyer D. F., Barreto M., Sheikboudou C., Franco C. F., Martinez D., Lefrancois T., Vachiery N., Carrondo M. J. T., Coelho A. V. and Alves P. M. (2012) Proteomic analyses of Ehrlichia ruminantium highlight differential expression of MAP1-family proteins, Veterinary Microbiology 156(3-4): 305-314. http://dx.doi.org/10.1016/j.vetmic.2011.11.022

118. Marcelino I., de Almeida A. M., Ventosa M., Pruneau L., Meyer D. F., Martinez D., Lefrancois T., Vachiery N. and Coelho A. V. (2012) Tick-borne diseases in cattle: applications of proteomics to develop new generation vaccines, Journal of Proteomics 75(14): 4232-4250. http://dx.doi.org/10.1016/j.jprot.2012.03.026

119. Marques A. P., San Romao M. V. and Tenreiro R. (2012) RNA fingerprinting analysis of Oenococcus oeni strains under wine conditions, Food Microbiology 31(2): 238-245. http://dx.doi.org/10.1016/j.fm.2012.02.006

120. Marques A. R., Kromer L., Gallo D. J., Penacho N., Rodrigues S. S., Seixas J. D., Bernardes G. J. L., Reis P. M., Otterbein S. L., Ruggieri R. A., Goncalves A. S. G., Goncalves A. M. L., De Matos M. N., Bento I., Otterbein L. E., Blattler W. A. and Romao C. C. (2012) Generation of carbon monoxide releasing molecules (CO-RMs) as drug candidates for the treatment of acute liver injury: targeting of CO-RMs to the liver, Organometallics 31(16): 5810-5822. http://dx.doi.org/10.1021/om300360c

121. Martins P. T., Velazquez-Campoy A., Vaz W. L. C., Cardoso R. M. S., Valerio J. and Moreno M. J. (2012) Kinetics and thermodynamics of chlorpromazine interaction with lipid bilayers: effect of charge and cholesterol, Journal of the American Chemical Society 134(9): 4184-4195. http://dx.doi.org/10.1021/ja209917q

122. Martins T. M., do Rosario V. E. and Domingos A. (2012) Expression and characterization of the Babesia bigemina cysteine protease BbiCPL1, Acta Tropica 121(1): 1-5. http://dx.doi.org/10.1016/j.actatropica.2011.09.008

123. Marum L., Miguel A., Ricardo C. P. and Miguel C. (2012) Reference gene selection for quantitative real-time PCR normalization in Quercus suber, PLoS ONE 7(4): e35113. http://dx.doi.org/10.1371/journal.pone.0035113

124. Mateus P., Delgado R., Brandao P. and Felix V. (2012) Dicarboxylate recognition by two macrobicyclic receptors: selectivity for fumarate over maleate, Journal of Organic Chemistry 77(10): 4611-4621. http://dx.doi.org/10.1021/jo300320w

125. Mateus P., Delgado R., Brandao P. and Felix V. (2012) A polyoxapolyaza macrobicyclic receptor for the recognition of zwitterions, Organic & Biomolecular Chemistry 10(29): 5529-5532. http://dx.doi.org/10.1039/c2ob25725d

126. Mateus P., Delgado R., Groves P., Campos S. R. R., Baptista A. M., Brandao P. and Felix V. (2012) Water encapsulation in a polyoxapolyaza macrobicyclic compound, Journal of Organic Chemistry 77(16): 6816-6824. http://dx.doi.org/10.1021/jo300799s

127. Matos R. G., Fialho A. M., Giloh M., Schuster G. and Arraiano C. M. (2012) The rnb gene of synechocystis PCC6803 encodes a RNA hydrolase displaying RNase II and not RNase R enzymatic properties, PLoS ONE 7(3): e32690. http://dx.doi.org/10.1371/journal.pone.0032690

128. Matos R. G., Lopez-Vinas E., Gomez-Puertas P. and Arraiano C. M. (2012) The only exoribonuclease present in Haloferax volcanii has an unique response to temperature changes, Biochimica Et Biophysica Acta-General Subjects 1820(10): 1543-1552. http://dx.doi.org/10.1016/j.bbagen.2012.06.009

129. Maycock C. D. and Ventura M. R. (2012) New organocatalysts derived from tartaric and glyceric acids for direct aldol reactions, Tetrahedron-Asymmetry 23(17): 1262-1271. http://dx.doi.org/10.1016/j.tetasy.2012.08.008

130. Mendes A., Branco L. C., Morais C. and Simplicio A. L. (2012) Electroosmotic flow modulation in capillary electrophoresis by organic cations from ionic liquids, Electrophoresis 33(7): 1182-1190. http://dx.doi.org/10.1002/elps.201100486

131. Monteiro C. M., Castro P. M. L. and Malcata F. X. (2012) Metal uptake by microalgae: underlying mechanisms and practical applications, Biotechnology Progress 28(2): 299-311. http://dx.doi.org/10.1002/btpr.1504

132. Moreira R. N., Domingues S., Viegas S. C., Amblar M. and Arraiano C. M. (2012) Synergies between RNA degradation and trans-translation in Streptococcus pneumoniae: cross regulation and co-transcription of RNase R and SmpB, Bmc Microbiology 12: ART268. http://dx.doi.org/10.1186/1471-2180-12-268

133. Morgado L., Paixao V. B., Schiffer M., Pokkuluri P. R., Bruix M. and Salgueiro C. A. (2012) Revealing the structural origin of the redox-Bohr effect: the first solution structure of a cytochrome from Geobacter sulfurreducens, Biochemical Journal 441: 179-187. http://dx.doi.org/10.1042/bj20111103

134. Nazareth R., Goncalves-Pereira J., Tavares A., Miragaia M., de Lencastre H., Silvestre J., Freitas P., Goncalves E., Martins F., Mendes V., Tapadinhas C. and Povoa P. (2012) Community-associated methicillin-resistant Staphylococcus aureus infection in Portugal, Revista Portuguesa de Pneumologia 18(1): 34-38. http://dx.doi.org/10.1016/j.rppneu.2011.05.007

135. Nogly P., Castro R., de Rosa M., Neves A. R., Santos H. and Archer M. (2012) Production and crystallization of alpha-phosphoglucomutase from Lactococcus lactis, Acta Crystallographica Section F-Structural Biology and Crystallization Communications 68: 1113-1115. http://dx.doi.org/10.1107/s1744309112032629

136. Oliveira F. S., Araujo J. M. M., Ferreira R., Rebelo L. P. N. and Marrucho I. M. (2012) Extraction of L-lactic, L-malic, and succinic acids using phosphonium-based ionic liquids, Separation and Purification Technology 85: 137-146. http://dx.doi.org/10.1016/j.seppur.2011.10.002

137. Otto M., Bowser R., Turner M., Berry J., Brettschneider J., Connor J., Costa J., Cudkowicz M., Glass J., Jahn O., Lehnert S., Malaspina A., Parnetti L., Petzold A., Shaw P., Sherman A., Steinacker P., Sussmuth S., Teunissen C., Tumani H., Wuolikainen A., Ludolph A. and Volcano G. (2012) Roadmap and standard operating procedures for biobanking and discovery of neurochemical markers in ALS, Amyotrophic Lateral Sclerosis 13(1): 1-10. http://dx.doi.org/10.3109/17482968.2011.627589

138. Pais T. M., Lamosa P., Matzapetakis M., Turner D. L. and Santos H. (2012) Mannosylglycerate stabilizes staphylococcal nuclease with restriction of slow beta-sheet motions, Protein Science 21(8): 1126-1137. http://dx.doi.org/10.1002/pro.2100

139. Paredi G., Raboni S., Bendixen E., de Almeida A. M. and Mozzarelli A. (2012) "Muscle to meat" molecular events and technological transformations: the proteomics insight, Journal of Proteomics 75(14): 4275-4289. http://dx.doi.org/10.1016/j.jprot.2012.04.011

140. Passos H., Sousa A. C. A., Pastorinho M. R., Nogueira A. J. A., Rebelo L. P. N., Coutinho J. A. P. and Freire M. G. (2012) Ionic-liquid-based aqueous biphasic systems for improved detection of bisphenol A in human fluids, Analytical Methods 4(9): 2664-2667. http://dx.doi.org/10.1039/c2ay25536g

141. Pena A. C., Penacho N., Mancio-Silva L., Neres R., Seixas J. D., Fernandes A. C., Romao C. C., Mota M. M., Bernardes G. J. L. and Pamplona A. (2012) A novel carbon monoxide-releasing molecule fully protects mice from severe malaria, Antimicrobial Agents and Chemotherapy 56(3): 1281-1290. http://dx.doi.org/10.1128/aac.05571-11

142. Pereira C. S., Santos A. J. M., Bejerano-Sagie M., Correia P. B., Marques J. C. and Xavier K. B. (2012) Phosphoenolpyruvate phosphotransferase system regulates detection and processing of the quorum sensing signal autoinducer-2, Molecular Microbiology 84(1): 93-104. http://dx.doi.org/10.1111/j.1365-2958.2012.08010.x

143. Pereira L., Saraiva I. H., Coelho R., Newman D. K., Louro R. O. and Frazao C. (2012) Crystallization and preliminary crystallographic studies of FoxE from Rhodobacter ferrooxidans SW2, an FeII oxidoreductase involved in photoferrotrophy, Acta Crystallographica Section F-Structural Biology and Crystallization Communications 68: 1106-1108. http://dx.doi.org/10.1107/s174430911203271x

144. Pereira V. J., Galinha J., Crespo M. T. B., Matos C. T. and Crespo J. G. (2012) Integration of nanofiltration, UV photolysis, and advanced oxidation processes for the removal of hormones from surface water sources, Separation and Purification Technology 95: 89-96. http://dx.doi.org/10.1016/j.seppur.2012.04.013

145. Pereiro A. B., Araujo J. M. M., Esperanca J. M. S. S., Marrucho I. M. and Rebelo L. P. N. (2012) Ionic liquids in separations of azeotropic systems - a review, Journal of Chemical Thermodynamics 46: 2-28. http://dx.doi.org/10.1016/j.jct.2011.05.026

146. Pereiro A. B., Araujo J. M. M., Oliveira F. S., Bernardes C. E. S., Esperanca J. M. S. S., Lopes J. N. C., Marrucho I. M. and Rebelo L. P. N. (2012) Inorganic salts in purely ionic liquid media: the development of high ionicity ionic liquids (HIILs), Chemical Communications 48(30): 3656-3658. http://dx.doi.org/10.1039/c2cc30374d

147. Pereiro A. B., Araujo J. M. M., Oliveira F. S., Esperanca J. M. S. S., Lopes J. N. C., Marrucho I. M. and Rebelo L. P. N. (2012) Solubility of inorganic salts in pure ionic liquids, Journal of Chemical Thermodynamics 55: 29-36. http://dx.doi.org/10.1016/j.jct.2012.06.007

148. Pereiro A. B., Deive F. J. and Rodriguez A. (2012) On the use of ionic liquids to separate aromatic hydrocarbons from a model soil, Separation Science and Technology 47(2): 377-385. http://dx.doi.org/10.1080/01496395.2011.606258

149. Peres C. M., Peres C., Hernandez-Mendoza A. and Malcata F. X. (2012) Review on fermented plant materials as carriers and sources of potentially probiotic lactic acid bacteria - with an emphasis on table olives, Trends in Food Science & Technology 26(1): 31-42. http://dx.doi.org/10.1016/j.tifs.2012.01.006

150. Petkovic M., Hartmann D. O., Adamova G., Seddon K. R., Rebelo L. P. N. and Pereira C. S. (2012) Unravelling the mechanism of toxicity of alkyltributylphosphonium chlorides in Aspergillus nidulans conidia, New Journal of Chemistry 36(1): 56-63. http://dx.doi.org/10.1039/c1nj20470j

151. Pimentel C., Batista-Nascimento L., Rodrigues-Pousada C. and Menezes R. A. (2012) Oxidative stress in Alzheimer's and Parkinson's diseases: insights from the yeast Saccharomyces cerevisiae, Oxidative Medicine and Cellular Longevity 2012: ART132146. http://dx.doi.org/10.1155/2012/132146

152. Pimentel C., Vicente C., Menezes R. A., Caetano S., Carreto L. and Rodrigues-Pousada C. (2012) The role of the Yap5 transcription factor in remodeling gene expression in response to Fe bioavailability, PLoS ONE 7(5). http://dx.doi.org/10.1371/journal.pone.0037434

153. Pinto R. M., Dias A. A., Levita G., Rodrigues P., Barros M. T., Dyke J. M. and Costa M. L. (2012) Pyrolysis of 3-azidopropionitrile studied by UV photoelectron and matrix-isolation IR spectroscopies: formation of ketenimine H2C=C=NH, Journal of Molecular Structure 1025: 151-159. http://dx.doi.org/10.1016/j.molstruc.2012.04.055

154. Pires A. S., Geraldo N., Cerqueira T. and Abranches R. (2012) Integrated approaches to studying Medicago truncatula genome structure and function and their applications in biotechnology, Molecular Breeding 30(3): 1431-1442. http://dx.doi.org/10.1007/s11032-012-9729-4

155. Pires A. S., Rosa S., Castanheira S., Fevereiro P. and Abranches R. (2012) Expression of a recombinant human erythropoietin in suspension cell cultures of Arabidopsis, tobacco and Medicago, Plant Cell Tissue and Organ Culture 110(1): 171-181. http://dx.doi.org/10.1007/s11240-012-0141-x

156. Pires S., Habjanic J., Sezer M., Soares C. M., Hemmingsen L. and Iranzo O. (2012) Design of a peptidic turn with high affinity for Hg-II, Inorganic Chemistry 51(21): 11339-11348. http://dx.doi.org/10.1021/ic3008014

157. Postigo L. and Royo B. (2012) N-heterocyclic carbene complexes of nickel as efficient catalysts for hydrosilylation of carbonyl derivatives, Advanced Synthesis & Catalysis 354(14-15): 2613-2618. http://dx.doi.org/10.1002/adsc.201200389

158. Pottabathula S. and Royo B. (2012) First iron-catalyzed guanylation of amines: a simple and highly efficient protocol to guanidines, Tetrahedron Letters 53(38): 5156-5158. http://dx.doi.org/10.1016/j.tetlet.2012.07.065

159. Prigol M., Nogueira C. W., Zeni G., Bronze M. R. and Constantino L. (2012) In vitro metabolism of diphenyl diselenide in rat liver fractions. Conjugation with GSH and binding to thiol groups, Chemico-Biological Interactions 200(2-3): 65-72. http://dx.doi.org/10.1016/j.cbi.2012.09.007

160. Proenca D., Fernandes S., Leandro C., Silva F. A., Santos S., Lopes F., Mato R., Cavaco-Silva P., Pimente M. and Sao-Jose C. (2012) Phage endolysins with broad antimicrobial activity against Enterococcus faecalis clinical strains, Microbial Drug Resistance 18(3): 322-332. http://dx.doi.org/10.1089/mdr.2012.0024

161. Queiroga C. S. F., Tomasi S., Wideroe M., Alves P. M., Vercelli A. and Vieira H. L. A. (2012) Preconditioning triggered by carbon monoxide (CO) provides neuronal protection following perinatal hypoxia-ischemia, PLoS ONE 7(8): e42632. http://dx.doi.org/10.1371/journal.pone.0042632

162. Ramos A. I., Braga T. M. and Braga S. S. (2012) Ru(II)-based antimicrobials: looking beyond organic drugs, Mini-Reviews in Medicinal Chemistry 12(3): 227-235.

163. Ramos O. L., Fernandes J. C., Silva S. I., Pintado M. E. and Malcata F. X. (2012) Edible films and coatings from whey proteins: a review on formulation, and on mechanical and bioactive properties, Critical Reviews in Food Science and Nutrition 52(6): 533-552. http://dx.doi.org/10.1080/10408398.2010.500528

164. Ramos O. L., Pereira J. O., Silva S. I., Amorim M. M., Fernandes J. C., Lopes-da-Silva J. A., Pintado M. E. and Malcata F. X. (2012) Effect of composition of commercial whey protein preparations upon gelation at various pH values, Food Research International 48(2): 681-689. http://dx.doi.org/10.1016/j.foodres.2012.06.004

165. Ramos O. L., Pereira J. O., Silva S. I., Fernandes J. C., Franco M. I., Lopes-da-Silva J. A., Pintado M. E. and Malcata F. X. (2012) Evaluation of antimicrobial edible coatings from a whey protein isolate base to improve the shelf life of cheese, Journal of Dairy Science 95(11): 6282-6292. http://dx.doi.org/10.3168/jds.2012-5478

166. Ramos O. L., Santos A. C., Leao M. V., Pereira J. O., Silva S. I., Fernandes J. C., Franco M. I., Pintado M. E. and Malcata F. X. (2012) Antimicrobial activity of edible coatings prepared from whey protein isolate and formulated with various antimicrobial agents, International Dairy Journal 25(2): 132-141. http://dx.doi.org/10.1016/j.idairyj.2012.02.008

167. Ramos O. L., Silva S. I., Soares J. C., Fernandes J. C., Pocas M. F., Pintado M. E. and Malcata F. X. (2012) Features and performance of edible films, obtained from whey protein isolate formulated with antimicrobial compounds, Food Research International 45(1): 351-361. http://dx.doi.org/10.1016/j.foodres.2011.09.016

168. Refojo P. N., Teixeira M. and Pereira M. M. (2012) The alternative complex III: properties and possible mechanisms for electron transfer and energy conservation, Biochimica Et Biophysica Acta-Bioenergetics 1817(10): 1852-1859. http://dx.doi.org/10.1016/j.bbabio.2012.05.003

169. Ribeiro A., Catarino S. and Ferreira R. B. (2012) Multiple lectin detection by cell membrane affinity binding, Carbohydrate Research 352: 206-210. http://dx.doi.org/10.1016/j.carres.2012.01.024

170. Ribeiro A. R., Barbaglio A., Oliveira M. J., Santos R., Coelho A. V., Ribeiro C. C., Wilkie I. C., Carnevali M. D. C. and Barbosa M. A. (2012) Correlations between the biochemistry and mechanical states of a sea-urchin ligament: a mutable collagenous structure, Biointerphases 7(1-4): ART38. http://dx.doi.org/10.1007/s13758-012-0038-6

171. Ribeiro I. A., Bronze M. R., Castro M. F. and Ribeiro M. H. L. (2012) Design of selective production of sophorolipids by Rhodotorula bogoriensis through nutritional requirements, Journal of Molecular Recognition 25(11): 630-640. http://dx.doi.org/10.1002/jmr.2188

172. Ribeiro I. A., Bronze M. R., Castro M. F. and Ribeiro M. H. L. (2012) Optimization and correlation of HPLC-ELSD and HPLC-MS/MS methods for identification and characterization of sophorolipids, Journal of Chromatography B-Analytical Technologies in the Biomedical and Life Sciences 899: 72-80. http://dx.doi.org/10.1016/j.jchromb.2012.04.037

173. Rocha J. M., Kalo P. J. and Malcata F. X. (2012) Composition of neutral lipid classes and content of fatty acids throughout sourdough breadmaking, European Journal of Lipid Science and Technology 114(3): 294-305. http://dx.doi.org/10.1002/ejlt.201100208

174. Rodrigues A. F., Amaral A. I., Verissimo V., Alves P. M. and Coroadinha A. S. (2012) Adaptation of retrovirus producer cells to serum deprivation: Implications in lipid biosynthesis and vector production, Biotechnology and Bioengineering 109(5): 1269-1279. http://dx.doi.org/10.1002/bit.24410

175. Rodrigues F., Sousa M. J., Ludovico P., Santos H., Corte-Real M. and Leao C. (2012) The fate of acetic acid during glucose cometabolism by the spoilage yeast zygosaccharomyces bailii, PLoS ONE 7(12): ARTe52402. http://dx.doi.org/10.1371/journal.pone.0052402

176. Rodrigues J. V. and Gomes C. M. (2012) Mechanism of superoxide and hydrogen peroxide generation by human electron-transfer flavoprotein and pathological variants, Free Radical Biology and Medicine 53(1): 12-19. http://dx.doi.org/10.1016/j.freeradbiomed.2012.04.016

177. Rodrigues J. V., Henriques B. J., Lucas T. G. and Gomes C. M.(2012) Cofactors and metabolites as protein folding helpers in metabolic diseases, Current Topics in Medicinal Chemistry 12(22): 2546-2559

178. Rodrigues L. C., Silva M. M., Veiga H. I. M., Esperanca J. M. S. S., Costa M. and Smith M. J. (2012) Synthesis and electrochemical characterization of aPEO-based polymer electrolytes, Journal of Solid State Electrochemistry 16(4): 1623-1629. http://dx.doi.org/10.1007/s10008-011-1569-3

179. Roldao A., Mellado M. C. M., Lima J. C., Carrondo M. J. T., Alves P. M. and Oliveira R. (2012) On the effect of thermodynamic equilibrium on the assembly efficiency of complex multi-layered virus-like particles (VLP): the case of rotavirus VLP, Plos Computational Biology 8(2): e1002367. http://dx.doi.org/10.1371/journal.pcbi.1002367

180. Rolo J., de Lencastre H. and Miragaia M. (2012) Strategies of adaptation of Staphylococcus epidermidis to hospital and community: amplification and diversification of SCCmec, Journal of Antimicrobial Chemotherapy 67(6): 1333-1341. http://dx.doi.org/10.1093/jac/dks068

181. Rolo J., Miragaia M., Turlej-Rogacka A., Empel J., Bouchami O., Faria N. A., Tavares A., Hryniewicz W., Fluit A. C., de Lencastre H. and Concord Working Group (2012) High genetic diversity among community-associated Staphylococcus aureus in Europe: results from a multicenter study, PLoS ONE 7(4): e34768. http://dx.doi.org/10.1371/journal.pone.0034768

182. Romao C. C., Blattler W. A., Seixas J. D. and Bernardes G. J. L. (2012) Developing drug molecules for therapy with carbon monoxide, Chemical Society Reviews 41(9): 3571-3583. http://dx.doi.org/10.1039/c2cs15317c

183. Rosado T., Bernardo P., Koci K., Coelho A. V., Robalo M. P. and Martins L. O. (2012) Methyl syringate: an efficient phenolic mediator for bacterial and fungal laccases, Bioresource Technology 124: 371-378. http://dx.doi.org/10.1016/j.biortech.2012.08.023

184. Royo B. and Peris E. (2012) Cyclopentadienyl-, indenyl- and fluorenyl-functionalized N-heterocyclic carbene metal complexes: synthesis and catalytic applications, European Journal of Inorganic Chemistry 2012(9): 1309-1318. http://dx.doi.org/10.1002/ejic.201100990

185. Rui F., Marques J. C., Miller S. T., Maycock C. D., Xavier K. B. and Ventura M. R. (2012) Stereochemical diversity of AI-2 analogs modulates quorum sensing in Vibrio harveyi and Escherichia coli, Bioorganic and Medicinal Chemistry 20(1): 249-256. http://dx.doi.org/10.1016/j.bmc.2011.11.007

186. Ruiz-Agudo E., Putnis C. V., Kowacz M., Ortega-Huertas M. and Putnis A. (2012) Boron incorporation into calcite during growth: implications for the use of boron in carbonates as a pH proxy, Earth and Planetary Science Letters 345: 9-17. http://dx.doi.org/10.1016/j.epsl.2012.06.032

187. Sanches S., Penetra A., Rodrigues A., Ferreira E., Cardoso V. V., Benoliel M. J., Crespo M. T. B., Pereira V. J. and Crespo J. G. (2012) Nanofiltration of hormones and pesticides in different real drinking water sources, Separation and Purification Technology 94: 44-53. http://dx.doi.org/10.1016/j.seppur.2012.04.003

188. Santos A. M., Oliver M. J., Sanchez A. M. and Oliveira M. M. (2012) Expression of almond Knotted1 homologue (PdKn1) anticipates adventitious shoot initiation, In Vitro Cellular & Developmental Biology-Plant 48(1): 40-49. http://dx.doi.org/10.1007/s11627-011-9388-x

189. Santos C. N., Alves M. M., Bento I. T. and Ferreira R. B. (2012) Missing pieces in protein deposition and mobilization inside legume seed storage vacuoles: calcium and magnesium ions, Seed Science Research 22(4): 249-258. http://dx.doi.org/10.1017/s0960258512000177

190. Santos M. F. A., Seixas J. D., Coelho A. C., Mukhopadhyay A., Reis P. M., Romao M. J., Romao C. C. and Santos-Silva T. (2012) New insights into the chemistry of fac- Ru(CO)(3) (2+) fragments in biologically relevant conditions: the CO releasing activity of Ru(CO)(3)Cl-2(1,3-thiazole) , and the X-ray crystal structure of its adduct with lysozyme, Journal of Inorganic Biochemistry 117: 285-291. http://dx.doi.org/10.1016/j.jinorgbio.2012.06.018

191. Santos R. B., Pires A. S., Silva H. S. and Abranches R. (2012) Assessment of Medicago based systems for the production of human proteins: microscopy analysis of the subcellular deposition patterns of the recombinant product, Microscopy and Microanalysis 18: 11-12. http://dx.doi.org/10.1017/s1431927612012718

192. Santos S. P., Bandeiras T. M., Pinto A. F., Teixeira M., Carrondo M. A. and Romao C. V. (2012) Thermofluor-based optimization strategy for the stabilization and crystallization of Campylobacter jejuni desulforubrerythrin, Protein Expression and Purification 81(2): 193-200. http://dx.doi.org/10.1016/j.pep.2011.10.001

193. Saraiva I. H., Newman D. K. and Louro R. O. (2012) Functional characterization of the FoxE iron oxidoreductase from the photoferrotroph rhodobacter ferrooxidans SW2, Journal of Biological Chemistry 287(30): 25541-25548. http://dx.doi.org/10.1074/jbc.M112.360636

194. Schaeffer D., Reis F. P., Johnson S. J., Arraiano C. M. and van Hoof A. (2012) The CR3 motif of Rrp44p is important for interaction with the core exosome and exosome function, Nucleic Acids Research 40(18): 9298-9307. http://dx.doi.org/10.1093/nar/gks693

195. Seixas E., Ramalho J. S., Mota L. J., Barral D. C. and Seabra M. C. (2012) Bacteria and protozoa differentially modulate the expression of Rab proteins, PLoS ONE 7(7): e39858. http://dx.doi.org/10.1371/journal.pone.0039858

196. Seixas S., Ivanova N., Ferreira Z., Rocha J. and Victor B. L. (2012) Loss and gain of function in SERPINB11: an example of a gene under selection on standing variation, with implications for host-pathogen interactions, PLoS ONE 7(2): e32518. http://dx.doi.org/10.1371/journal.pone.0032518

197. Serra A. T., Rocha J., Sepodes B., Matias A. A., Feliciano R. P., de Carvalho A., Bronze M. R., Duarte C. M. M. and Figueira M. E. (2012) Evaluation of cardiovascular protective effect of different apple varieties - correlation of response with composition, Food Chemistry 135(4): 2378-2386. http://dx.doi.org/10.1016/j.foodchem.2012.07.067

198. Serra M., Brito C., Correia C. and Alves P. M. (2012) Process engineering of human pluripotent stem cells for clinical application, Trends in Biotechnology 30(6): 350-359. http://dx.doi.org/10.1016/j.tibtech.2012.03.003

199. Sezer M., Genebra T., Mendes S., Martins L. O. and Todorovic S. (2012) A DyP-type peroxidase at a bio-compatible interface: structural and mechanistic insights, Soft Matter 8(40): 10314-10321. http://dx.doi.org/10.1039/c2sm26310f

200. Shimizu K., Pensado A., Malfreyt P., Padua A. A. H. and Lopes J. N. C. (2012) 2D or not 2D: structural and charge ordering at the solid-liquid interface of the 1-(2-hydroxyethyl)-3-methylimidazolium tetrafluoroborate ionic liquid, Faraday Discussions 154: 155-169. http://dx.doi.org/10.1039/c1fd00043h

201. Silva A. F., Carvalho G., Oehmen A., Lousada-Ferreira M., van Nieuwenhuijzen A., Reis M. A. M. and Crespo M. T. B. (2012) Microbial population analysis of nutrient removal-related organisms in membrane bioreactors, Applied Microbiology and Biotechnology 93(5): 2171-2180. http://dx.doi.org/10.1007/s00253-011-3499-5

202. Silva A. F., Carvalho G., Soares R., Coelho A. V. and Crespo M. T. B. (2012) Step-by-step strategy for protein enrichment and proteome characterisation of extracellular polymeric substances in wastewater treatment systems, Applied Microbiology and Biotechnology 95(3): 767-776. http://dx.doi.org/10.1007/s00253-012-4157-2

203. Silva C. S., Damas J. M., Chen Z. J., Brissos V., Martins L. O., Soares C. M., Lindley P. F. and Bento I. (2012) The role of Asp116 in the reductive cleavage of dioxygen to water in CotA laccase: assistance during the proton-transfer mechanism, Acta Crystallographica Section D-Biological Crystallography 68: 186-193. http://dx.doi.org/10.1107/s0907444911054503

204. Silva C. S., Durao P., Fillat A., Lindley P. F., Martins L. O. and Bento I. (2012) Crystal structure of the multicopper oxidase from the pathogenic bacterium Campylobacter jejuni CGUG11284: characterization of a metallo-oxidase, Metallomics 4(1): 37-47. http://dx.doi.org/10.1039/c1mt00156f

205. Silva M. A., Lucas T. G., Salgueiro C. A. and Gomes C. M. (2012) Protein Folding Modulates the Swapped Dimerization Mechanism of Methyl-Accepting Chemotaxis Heme Sensors, PLoS ONE 7(9): e46328. http://dx.doi.org/10.1371/journal.pone.0046328

206. Silva S., Frazao O., Santos J. L. and Malcata F. X. (2012) A reflective optical fiber refractometer based on multimode interference, Sensors and Actuators B-Chemical 161(1): 88-92. http://dx.doi.org/10.1016/j.snb.2011.09.045

207. Silva S., Pachon E. G. P., Franco M. A. R., Hayashi J. G., Malcata F. X., Frazao O., Jorge P. and Cordeiro C. M. B. (2012) Ultrahigh-sensitivity temperature fiber sensor based on multimode interference, Applied Optics 51(16): 3236-3242. http://dx.doi.org/10.1364/AO.51.003236

208. Silva S., Pachon E. G. P., Franco M. A. R., Jorge P., Santos J. L., Malcata F. X., Cordeiro C. M. B. and Frazao O. (2012) Curvature and temperature discrimination using multimode interference fiber optic structures-a proof of concept, Journal of Lightwave Technology 30(23): 3569-3575. http://dx.doi.org/10.1109/jlt.2012.2222865

209. Silva S. F., Coelho L., Frazao O., Santos J. L. and Malcata F. X. (2012) A Review of palladium-based fiber-optic sensors for molecular hydrogen detection, Ieee Sensors Journal 12(1): 93-102. http://dx.doi.org/10.1109/jsen.2011.2138130

210. da Silva S. M., Pacheco I. and Pereira I. A. C. (2012) Electron transfer between periplasmic formate dehydrogenase and cytochromes c in Desulfovibrio desulfuricans ATCC 27774, Journal of Biological Inorganic Chemistry 17(5): 831-838. http://dx.doi.org/10.1007/s00775-012-0900-5

211. Soares C. M. and Baptista A. M. (2012) Simulation of multihaem cytochromes, Febs Letters 586(5): 510-518. http://dx.doi.org/10.1016/j.febslet.2011.10.019

212. Soares R., Franco C., Pires E., Ventosa M., Palhinhas R., Koci K., de Almeida A. M. and Coelho A. V. (2012) Mass spectrometry and animal science: protein identification strategies and particularities of farm animal species, Journal of Proteomics 75(14): 4190-4206. http://dx.doi.org/10.1016/j.jprot.2012.04.009

213. Solopova A., Bachmann H., Teusink B., Kok J., Neves A. R. and Kuipers O. P. (2012) A specific mutation in the promoter region of the silent cel cluster accounts for the appearance of lactose-utilizing Lactococcus lactis MG1363, Applied and Environmental Microbiology 78(16): 5612-5621. http://dx.doi.org/10.1128/aem.00455-12

214. Sousa F. L., Alves R. J., Ribeiro M. A., Pereira-Leal J. B., Teixeira M. and Pereira M. M. (2012) The superfamily of heme-copper oxygen reductases: types and evolutionary considerations, Biochimica Et Biophysica Acta-Bioenergetics 1817(4): 629-637. http://dx.doi.org/10.1016/j.bbabio.2011.09.020

215. de Sousa H. C., Costa M. S., Coimbra P., Matias A. A. and Duarte C. M. M. (2012) Experimental determination and correlation of meloxicam sodium salt solubility in supercritical carbon dioxide, Journal of Supercritical Fluids 63: 40-45. http://dx.doi.org/10.1016/j.supflu.2011.12.004

216. Sousa P. M. F., Videira M. A. M., Bohn A., Hood B. L., Conrads T. P., Goulao L. F. and Melo A. M. P. (2012) The aerobic respiratory chain of Escherichia coli: from genes to supercomplexes, Microbiology-Sgm 158: 2408-2418. http://dx.doi.org/10.1099/mic.0.056531-0

217. Sousa S. C. A., Bernardo J. R., Romao C. C. and Fernandes A. C. (2012) Highly efficient rhenium-catalyzed deoxygenation of sulfoxides without adding any reducing agent, Tetrahedron 68(39): 8194-8197. http://dx.doi.org/10.1016/j.tet.2012.07.071

218. Spring S., Visser M., Lu M., Copeland A., Lapidus A., Lucas S., Cheng J. F., Han C., Tapia R., Goodwin L. A., Pitluck S., Ivanova N., Land M., Hauser L., Larimer F., Rohde M., Goker M., Detter J. C., Kyrpides N. C., Woyke T., Schaap P. J., Plugge C. M., Muyzer G., Kuever J., Pereira I. A., Parshina S. N., Bernier-Latmani R., Stams A. J. and Klenk H. P. (2012) Complete genome sequence of the sulfate-reducing firmicute Desulfotomaculum ruminis type strain (DL(T)), Standards in Genomic Science 7(2): 304-19. http://dx.doi.org/10.4056/sigs.3226659

219. Stockdreher Y., Venceslau S. S., Josten M., Sahl H. G., Pereira I. A. C. and Dahl C. (2012) Cytoplasmic sulfurtransferases in the purple sulfur bacterium Allochromatium vinosum: evidence for sulfur transfer from DsrEFH to DsrC, PLoS ONE 7(7): e40785. http://dx.doi.org/10.1371/journal.pone.0040785

220. Tan C. M., Therien A. G., Lu J., Lee S. H., Caron A., Gill C. J., Lebeau-Jacob C., Benton-Perdomo L., Monteiro J. M., Pereira P. M., Elsen N. L., Wu J., Deschamps K., Petcu M., Wong S., Daigneault E., Kramer S., Liang L. Z., Maxwell E., Claveau D., Vaillancourt J., Skorey K., Tam J., Wang H., Meredith T. C., Sillaots S., Wang-Jarantow L., Ramtohul Y., Langlois E., Landry F., Reid J. C., Parthasarathy G., Sharma S., Baryshnikova A., Lumb K. J., Pinho M. G., Soisson S. M. and Roemer T. (2012) Restoring methicillin-resistant Staphylococcus aureus susceptibility to beta-lactam antibiotics, Science Translational Medicine 4(126). http://dx.doi.org/10.1126/scitranslmed.3003592

221. Tariq M., Freire M. G., Saramago B., Coutinho J. A. P., Lopes J. N. C. and Rebelo L. P. N. (2012) Surface tension of ionic liquids and ionic liquid solutions, Chemical Society Reviews 41(2): 829-868. http://dx.doi.org/10.1039/c1cs15146k

222. Tavares A. F. N., Nobre L. S. and Saraiva L. M. (2012) A role for reactive oxygen species in the antibacterial properties of carbon monoxide-releasing molecules, Fems Microbiology Letters 336(1): 1-10. http://dx.doi.org/10.1111/j.1574-6968.2012.02633.x

223. Tavares L., Figueira I., Macedo D., McDougall G. J., Leitao M. C., Vieira H. L. A., Stewart D., Alves P. M., Ferreira R. B. and Santos C. N. (2012) Neuroprotective effect of blackberry (Rubus sp.) polyphenols is potentiated after simulated gastrointestinal digestion, Food Chemistry 131(4): 1443-1452. http://dx.doi.org/10.1016/j.foodchem.2011.10.025

224. Tavares L., Fortalezas S., Tyagi M., Barata D., Serra A. T., Maria C., Duarte M., Duarte R. O., Feliciano R. P., Bronze M. R., Espirito-Santo M. D., Ferreira R. B. and Santos C. N. (2012) Bioactive compounds from endemic plants of Southwest Portugal: Inhibition of acetylcholinesterase and radical scavenging activities, Pharmaceutical Biology 50(2): 239-246. http://dx.doi.org/10.3109/13880209.2011.596209

225. Tavares L., McDougall G. J., Fortalezas S., Stewart D., Ferreira R. B. and Santos C. N. (2012) The neuroprotective potential of phenolic-enriched fractions from four juniperus species found in Portugal, Food Chemistry 135(2): 562-570. http://dx.doi.org/10.1016/j.foodchem.2012.05.023

226. Tavares T., Sevilla M. A., Montero M. J., Carron R. and Malcata F. X. (2012) Acute effect of whey peptides upon blood pressure of hypertensive rats, and relationship with their angiotensin-converting enzyme inhibitory activity, Molecular Nutrition & Food Research 56(2): 316-324. http://dx.doi.org/10.1002/mnfr.201100381

227. Tavares T. G., Amorim M., Comes D., Pintado M. E., Pereira C. D. and Malcata F. X. (2012) Manufacture of bioactive peptide-rich concentrates from whey: characterization of pilot process, Journal of Food Engineering 110(4): 547-552. http://dx.doi.org/10.1016/j.jfoodeng.2012.01.009

228. Tavares T. G. and Malcata F. X. (2012) The Portuguese paradox: why do some inhabitants of Portugal appear to live so long when their diet is based on whey cheese?, Food Chemistry 131(3): 727-729. http://dx.doi.org/10.1016/j.foodchem.2011.09.052

229. Teixeira N., Santos S., Marujo P., Yokohata R., Iyer V. S., Nakayama J., Hancock L. E., Serror P. and Lopes M. D. S. (2012) The incongruent gelatinase genotype and phenotype in Enterococcus faecalis are due to shutting off the ability to respond to the gelatinase biosynthesis-activating pheromone (GBAP) quorum-sensing signal, Microbiology-Sgm 158: 519-528. http://dx.doi.org/10.1099/mic.0.055574-0

230. Todorovic S., Rodrigues M. L., Matos D. and Pereira I. A. C. (2012) Redox properties of lysine- and methionine-coordinated hemes ensure downhill electron transfer in NrfH(2)A(4) nitrite reductase, Journal of Physical Chemistry B 116(19): 5637-5643. http://dx.doi.org/10.1021/jp301356m

231. Tostoes R. M., Leite S. B., Serra M., Jensen J., Bjorquist P., Carrondo M. J. T., Brito C. and Alves P. M. (2012) Human liver cell spheroids in extended perfusion bioreactor culture for repeated-dose drug testing, Hepatology 55(4): 1227-1236. http://dx.doi.org/10.1002/hep.24760

232. Turner D. L. and Catarino T. (2012) Homotropic and heterotropic interactions in cytochromes c(3) from sulphate reducing bacteria, Febs Letters 586(5): 494-503. http://dx.doi.org/10.1016/j.febslet.2011.07.007

233. Utesch T., Sezer M., Weidinger I. M. and Mroginski M. A. (2012) Adsorption of sulfite oxidase on self-assembled mono layers from molecular dynamics simulations, Langmuir 28(13): 5761-5769. http://dx.doi.org/10.1021/la205055g

234. Valente A., Bronze M. R., Bicho M., Duarte R. and Costa H. S. (2012) Validation and clinical application of an UHPLC method for simultaneous analysis of total homocysteine and cysteine in human plasma, Journal of Separation Science 35(24): 3427-3433. http://dx.doi.org/10.1002/jssc.201200672

235. Valente C., De Lencastre H. and Sa-Leao R. (2012) Pherotypes of co-colonizing Pneumococci among portuguese children, Microbial Drug Resistance 18(6): 550-554. http://dx.doi.org/10.1089/mdr.2011.0228

236. Valente C., Hinds J., Pinto F., Brugger S. D., Gould K., Muhlemann K., de Lencastre H. and Sa-Leao R. (2012) Decrease in Pneumococcal co-colonization following vaccination with the seven-valent Pneumococcal conjugate vaccine, PLoS ONE 7(1): e30235. http://dx.doi.org/10.1371/journal.pone.0030235

237. Valerio J., Lameiro M. H., Funari S. S., Moreno M. J. and Melo E. (2012) Temperature effect on the bilayer stacking in multilamellar lipid vesicles, Journal of Physical Chemistry B 116(1): 168-178. http://dx.doi.org/10.1021/jp206848u

238. Vapa I., Torres V. M., Djordjevic A., Vasovic V., Srdjenovic B., Simic V. D. and Popovic J. K. (2012) Effect of fullerenol C-60(OH)(24) on lipid peroxidation of kidneys, testes and lungs in rats treated with doxorubicine, European Journal of Drug Metabolism and Pharmacokinetics 37(4): 301-307. http://dx.doi.org/10.1007/s13318-012-0092-y

239. Vaz M., Cochard H., Gazarini L., Graca J., Chaves M. M. and Pereira J. S. (2012) Cork oak (Quercus suber L.) seedlings acclimate to elevated CO2 and water stress: photosynthesis, growth, wood anatomy and hydraulic conductivity, Trees-Structure and Function 26(4): 1145-1157. http://dx.doi.org/10.1007/s00468-012-0691-x

240. Veith A., Botelho H. M., Kindinger F., Gomes C. M. and Kletzin A. (2012) The sulfur oxygenase reductase from the mesophilic bacterium Halothiobacillus neapolitanus is a highly active thermozyme, Journal of Bacteriology 194(3): 677-685. http://dx.doi.org/10.1128/jb.06531-11

241. Ventura M., Mosquera M. E. G., Cuenca T., Royo B. and Jimenez G. (2012) Cyclopentadienyl-silsesquioxane titanium complexes: highly active catalysts for epoxidation of alkenes with aqueous hydrogen peroxide, Inorganic Chemistry 51(11): 6345-6349. http://dx.doi.org/10.1021/ic300583g

242. Vicente A. I., Caio J. M., Sardinha J., Moiteiro C., Delgado R. and Felix V. (2012) Evaluation of the binding ability of tetraaza 2 arene 2 triazine receptors anchoring L-alanine units for aromatic carboxylate anions, Tetrahedron 68(2): 670-680. http://dx.doi.org/10.1016/j.tet.2011.10.090

243. Vicente J. B., Tran V., Pinto L., Teixeira M. and Singh U. (2012) A detoxifying oxygen reductase in the anaerobic protozoan entamoeba histolytica, Eukaryotic Cell 11(9): 1112-1118. http://dx.doi.org/10.1128/ec.00149-12

244. Victor B. L., Baptista A. M. and Soares C. M. (2012) Structural determinants for the membrane insertion of the transmembrane peptide of hemagglutinin from influenza virus, Journal of Chemical Information and Modeling 52(11): 3001-3012. http://dx.doi.org/10.1021/ci3003396

245. Vilares I., Howard J. D., Fernandes H. L., Gottfried J. A. and Kording K. P. (2012) Differential representations of prior and likelihood uncertainty in the human brain, Current Biology 22(18): 1641-1648. http://dx.doi.org/10.1016/j.cub.2012.07.010

246. Vila-Vicosa D., Campos S. R. R., Baptista A. M. and Machuqueiro M. (2012) Reversibility of prion misfolding: insights from constant-pH molecular dynamics simulations, Journal of Physical Chemistry B 116(30): 8812-8821. http://dx.doi.org/10.1021/jp3034837

247. Wang Y., Loers G., Pan H. C., Gouveia R., Zhao W. J., Shen Y. Q., Kleene R., Costa J. and Schachner M. (2012) Antibody fragments directed against different portions of the human neural cell adhesion molecule L1 act as inhibitors or activators of L1 function, PLoS ONE 7(12): ARTe52404. http://dx.doi.org/10.1371/journal.pone.0052404

248. Wey D., Bohn A. and Menna-Barreto L. (2012) Daily rhythms of native Brazilians in summer and winter, Physiology & Behavior 105(3): 613-620. http://dx.doi.org/10.1016/j.physbeh.2011.10.006

249. Yata P. K., Shilpa M., Nagababu P., Reddy M. R., Kotha L. R., Gabra N. M. and Satyanarayana S. (2012) Study of DNA light switch Ru(II) complexes: synthesis, characterization, photocleavage and antimicrobial activity, Journal of Fluorescence 22(3): 835-847. http://dx.doi.org/10.1007/s10895-011-1018-9

250. Zarrouk O., Francisco R., Pinto-Marijuan M., Brossa R., Santos R. R., Pinheiro C., Costa J. M., Lopes C. and Chaves M. M. (2012) Impact of irrigation regime on berry development and flavonoids composition in Aragonez (Syn. Tempranillo) grapevine, Agricultural Water Management 114: 18-29. http://dx.doi.org/10.1016/j.agwat.2012.06.018

251. Zidaric V., Pardon B., dos Vultos T., Deprez P., Brouwer M. S. M., Roberts A. P., Henriques A. O. and Rupnik M. (2012) Different antibiotic resistance and sporulation properties within multiclonal clostridium difficile PCR ribotypes 078, 126, and 033 in a single calf farm, Applied and Environmental Microbiology 78(24): 8515-8522. http://dx.doi.org/10.1128/aem.02185-12

Articles not indexed in ISI-WoS

1. Cmoch, P. Groves, M. Palczewska and S Pikuła (2012) S100A proteins in propagation of a calcium signal in norm and pathology, Postepy Biochemii, 58(4): 429-436.

2. Ferreira, R.B., Monteiro, S. (2012) Tanino polimerase – Apenas mais um exemplo da necessidade de entendimento entre investigadores e empresários para a resolução de problemas da nossa sociedade, Revista da Associação Portuguesa de Horticultura,pp 32-35, Enovitis

3. Matos R. G., Barria C., Pobre V., Andrade J. M. and Arraiano C. M. (2012) Exoribonucleases as modulators of virulence in pathogenic bacteria, Frontiers in Cellular and Infection Microbiology 2: 65. http://dx.doi.org/10.3389/fcimb.2012.00065

4. Monteiro F., Carinhas N., Carrondo M. J. T., Bernal V. and Alves P. M. (2012) Towards system-level understanding of baculovirus host cell interactions: from molecular fundamental studies to large-scale proteomics approaches, Frontiers in Microbiology 3: ART391. http://dx.doi.org/10.3389/fmicb.2012.00391

5. Pinto D., Ruivo M., Vandamme P. and Lopes M. F. S. (2012)Hospital-adapted clonal complex 17 Enterococcus Faecium found among sand Enterococcal isolates, Journal of Environmental Protection 3(1): 74-82. http://dx.doi.org/10.4236/jep.2012.31010

6. Queiroga C. S. F., Almeida A. S. and Vieira H. L. A. (2012)Carbon monoxide targeting mitochondria, Biochemistry Research International 2012: ART749845. http://dx.doi.org/10.1155/2012/749845

7. Ramos A. R., Keller K. L., Wall J. D. and Pereira I. A. C.(2012) The membrane QmoABC complex interacts directly with the dissimilatory adenosine 5´-phosphosulfate reductase in sulfate reducing bacteria, Frontiers in Microbiology 3: ART137. http://dx.doi.org/10.3389/fmicb.2012.00137

8. Veiga H. and Pinho M. G. (2012) Bacterial cell division: what it takes to divide a prokaryotic cell, Canal BQ9: 18-26.

Book Chapters

1. Bandeira, V., Peixoto, C., Coroadinha, A.S., Cruz, P.E., Carrondo, M.J.T., Merten, O.-W., Alves, PA. (2012) Facing the challenges of downstream processing of lentiviral vectors In The CliniBook: Clinical gene transfer (Odile Cohen-HaguenauerEd) EDK, Paris

2. Botelho, H, M. Fritz, G., and Gomes, C. M. (2012) Analysis of S100 Oligomers and Amyloids. in Amyloid Proteins: Methods and Protocols (Sigurdsson, E. M., Calero, M., and Gasset, M. Eds.) pp 373-386 ,Springer Science+Business Media, USA; New York, http://dx.doi.org/10.1007/978-1-61779-551-0_25

3. Brito D., Serrano C., Peres C., Peres F., Oleastro M. and Monteiro L. (2012) Lactobacilli from fermented portuguese table-olives are able to inhibit the human pathogen Helicobacter pylori, In Acta Horticulturae (E. M. Sampaio and A. C. Pinheiro, Eds.), pp 463-468, International Society for Horticultural Science, Évora

4. Chaves MM, Zarrouk O. (2012) Crop Responses to Available Soil Water in Encyclopedia of Sustainability Science and Technology, (Robert A. Meyers Ed),Springer Science http://dx.doi.org/10.1007/978-1-4419-0851-3

5. Chaves, MM, Flexas J, Gulías J, Loreto F and Medrano H. (2012) Photosynthesis under water deficits, flooding and salinity In Ecophysiology of photosynthesis in terrestrial higher plants, (J Flexas, F Loreto & H Medrano Eds.), pp 299-311, Cambridge University Press. Cambridge. UK http://dx.doi.org/10.1017/CBO9781139051477.024

6. Coroadinha, A.S., Wirth, D., Rodrigues, A.F., Gama-Norton, L., Duros, C., Cohen-Haguenauer, O., Alves, P.A., Cruz, P.E., Carrondo, M.J.T., Hauser, H. (2012) Modular retroviral producer cell lines in The CliniBook: Clinical gene transfer, (Odile Cohen-Haguenauer Eds)– EDK, Paris France

7. Cunha C. and Coelho A. V. (2012) Comparative proteome analysis of a human liver cell line stably transfected with Hepatitis D virus full-length cDNA, In Liver proteomics: methods and protocols (D. Josic and D. C. Hixxon, Eds.), Humana Press

8. Ghabbour N., Lamzira A. Z., Thonart P., Peres C. M., Markaoui M. and Asehraou A. (2012) Oleuropein biodegradation by lactic acid bacteria isolated from table olives, In Acta Horticulturae (E. M. Sampaio and A. C. Pinheiro, Eds.), pp 533-536, International Society for Horticultural Science, Évora

9. Henriques. B, J.Rodrigues, J. V., and Gomes, C. M. (2012) Riboflavin and beta-oxidation Flavoenzymes In B Vitamins and Folate: Chemistry, Analysis, Function and Effects, (Victor R Preedy Ed) pp 611-632, The Royal Society of Chemistry http://dx.doi.org/10.1039/9781849734714-00611

10. L.L. Pimentel, M.E. Pintado, F.X. Malcata, R. Tenreiro, T. Semedo-Lemsaddek and M.T. Barreto Crespo. (2012) Introduction: a journey to the world of Enterococcu In Enterococcus and safety, (T. Semedo-Lemsaddek, M.T. Barreto-Crespo and R. Tenreiro Eds.), pp 1-4, Series Advances in Food Safety and Food Microbiology, Nova Science Publishers, NY, USA

11. Lobo S. A. L., Warren M. J. and Saraiva L. M. (2012) Sulfate-reducing bacteria reveal a new branch of tetrapyrrole metabolism, In Advances in Bacterial Respiratory Physiology, pp 267-95, Academic Press (Advances in Microbial Physiology 61) http://dx.doi.org/10.1016/B978-0-12-394423-8.00007-X

12. Lopes, MFS, Carrilero, L, Gonzalez-Zorn, B (2012) Post-genomic strategies towards evaluation of pathogenicity potential, in Enterococcus and Safety, (T Semedo-Lemsaddek, T Crespo and R Tenreiro Eds.), Nova Science Publishers

13. Loureiro V, Ferreira MM, Monteiro S and Ferreira RB (2012) The Microbial Community of Grape Berry in The Biochemistry of the Grape Berry,(Gerós H, Chaves MM and Delrot S Eds.), pp. 241-268, Bentham Science Publishers

14. M.T. Barreto Crespo and P.I. Alves. (2012) Enterococci in food in Enterococcus and safety, (T. Semedo-Lemsaddek, M.T. Barreto-Crespo and R. Tenreiro Eds), pp 389-405, Series Advances in Food Safety and Food Microbiology, Nova Science Publishers, NY, USA

15. M.T. Barreto Crespo, R. Tenreiro and T. Semedo-Lemsaddek. (2012) Closing remarks: potential risks of enterococci to food safety regarding the 21ST century challenges in Enterococcus and safety, (T. Semedo-Lemsaddek, M.T. Barreto-Crespo and R. Tenreiro Eds.), 509-511, Series Advances in Food Safety and Food Microbiology, Nova Science Publishers, NY, USA.

16. Maria Rosário Bronze, Catarina M. M. Duarte, Ana Matias.(2012) Stilbenes and Resveratrol in Handbook of Analysis of Active Compounds in Functional Foods,(Leo M. L. Nollet and Fidel Toldrá Eds.), CRC Press, http://dx.doi.org/10.1201/b11653-22

17. Medrano, H, Gulías, J, Chaves, MM, Galmés, J, Flexas J. (2012), Photosynthetic water use efficiency In Ecophysiology of photosynthesis in terrestrial higher plants ,(J Flexas, F Loreto & H Medrano Eds) pp 523-545, Cambridge University Press. Cambridge. UK, http://dx.doi.org/10.1017/CBO9781139051477.04

18. Miguel A. S., Maycock C. D. and Oliva A. G. (2012) Synthesis and functionalization of CdSe/ZnS QDs using the successive ion layer adsorption reaction and mercaptopropionic acid phase transfer methods, In Nanoparticles in Biology and Medicine : Methods and Protocols (M. Soloviev, Ed.), pp 143-55, Humana Press, Clifton, N.J (Methods in molecular biology 906) http://dx.doi.org/10.1007/978-1-61779-953-2_1

19. Oliveira, D. C., H. de Lencastre and A. Tomasz. (2012) Evolution of Molecular Techniques for the Characterization of MRSA Clones in Antibiotic Discovery and Development (T. Dougherty and M. Puci Eds.) pp. 571- 592, Springer Verlag

20. Peres C. M., Peres C. and Malcata F. X. (2012) Table olives in Mediterranean regions: economics, sustainability and environmental considerations focused on a traditional food supply chain, In Food supply: economics, sustainability and environmental effects (B. P. Hendriks, Ed.), Nova Science Publishers, Hauppauge NY, USA (Agricultural Research Updates)

21. Pessanha, M. and Archer, M. (2012) Membranas biológicas, In Biologia Celular e Molecular (Sunkel,C. and Azevedo, C. Eds.), pp 43-57, Lidel, Portugal

22. Pintado C. J. M., Catulo L., Peres C. and Peres F. (2012) Oleuropein biodegradation by lactic acid bacteria isolated from table olives, In Acta Horticulturae (E. M. Sampaio and A. C. Pinheiro, Eds.), pp 469-473, International Society for Horticultural Science, Évora

23. Romão C. V., Archer M., Lobo S. A., Louro R. O., Pereira I. A. C., Saraiva L. M., Teixeira M. and Matias P. M. (2012) Diversity of heme proteins in sulfate reducing bacteria, In Handbook of porphyrin science: with applications to chemistry, physics, materials Science, engineering, biology and medicine (K. M. Kadish et al., Eds.), pp 139-230, World Scientific Publishing Co. Pte. Ltd., Singapore

24. S. Gorynia, T. M. Bandeiras, P. M. Matias, F. G. Pinho, C. E. McVey, P. Donner and M. A. Carrondo. (2012) RuvBL1 and RuvBL2 and Their Complex Proteins Implicated in Many Cellular Pathways in Macromolecular Crystallography,(M. A. Carrondo and P. Spadon, Eds.), pp 55-63, Springer, Dordrecht, The Netherlands

25. S. Sanches, J. Ricardo, M.C. Leitão, M.T. Barreto Crespo, V.J. Pereira. 2012. Determination of Polycyclic Aromatic Hydrocarbons in Drinking Water Sources in Handbook of Polycyclic Aromatic Hydrocarbons: Chemistry, Occurrence and Health Issues, (G.C. Bandeira and H.E. Meneses Eds.), Nova Science Publishers, NY, USA

26. Santos A. R., Miguel A. S., Fevereiro P. and Oliva A. G. (2012) Evaluation of cytotoxicity of 3-mercaptopropionic acid-modified quantum dots on Medicago sativa cells and tissues, In Nanoparticles in Biology and Medicine : Methods and Protocols (M. Soloviev, Ed.), pp 435-49, Humana Press, Clifton, N.J. (Methods in molecular biology 906) http://dx.doi.org/10.1007/978-1-61779-953-2_36

27. Santos F. L., F. M.-R., Cordeiro A. M. and Peres C. (2012) Following olive footprints in Portugal, In Following olive footprints (Olea europaea L.) - cultivation and culture, folklore and history, tradition and uses (M. EL-KHOLY, Ed.), pp 320-330, International Society for Horticultural Science (Scripta Horticulturae 13)

28. Soares R, Pires E, Almeida AM, Santos R, Gomes R, Koči K, Franco CF, Coelho AV.(2012) Tandem Mass Spectrometry of peptides, In Applications of Tandem Mass Spectrometry- its Principles and Applications, (Jeevan K. Prasain Ed.), InTech

29. Tyrman SD, Chaves M, Barrieu F. (2012), Water Relations of the grape berry and aquaporins In The Biochemistry of the Grape Berry (H. Gerós, M. Chaves, S. Delrot Eds.), pp 3-22, Bentham Science Publishers,http://dx.doi.org/10.2174/97816080536051120101

Books Editors

Present and Future of Cork Oak in Portugal
Sociedade Portuguesa de Fisiologia Vegetal, Oeiras, Portugal
(144 pages)
Oliveira MM, Matos JA, Saibo N, Miguel CM, Gil L (editors) (2012)

Running Projects 2012

Projects coordinated by ITQB Researchers/ Projects where ITQB Researcheres participate

Projects funded by the FCT

	Title	Project reference	Principal Investigator	Amout €		Period
1	Investigation of redox-state-specific protein-protein interactions and energy transduction in the electron transfer chains of sulfate reducing bacteria	PTDC/QUI/65640/2006	David Turner	79.085,00	1 Jan 09	31 Dez 12
2	Development of new macrocyclic bifunctional chelators for metalloradiopharmaceuticals	PTDC/QUI/67175/2006	Rita Delgado	101.227,00	1 Jan 09	31 Dez 12
3	Transcriptional regulation of the genes encoding the flavodiiron protein ROO and the cytochrome BD respectively of the anaerobe bacterium Desulfovibrio gigas upon nitrosative stress	PTDC/BIA-MIC/70650/2006	Claudina Rodrigues Pousada	189.400,00	1 Jan 09	31 Dez 12
4	MIT – Bioengineering Systems	MIT-PT/BS/0004/2006	Claudio Soares	862.957,73	1 Set 06	31 Dez 12
5	Unraveling the mechanisms of nitrosative stress resistance of Helicobacter pylori: relevance for immune subversion and infectiousness	PTDC/SAU-MII/098086/2008	Marta Justino	153.144,00	1 Jan 10	30 Jun 13
6	Mind the gap: How extracellular respiration is linked across the periplasmic space to the cytoplasmic oxidation of substrates. A key step in bioenergy harvesting	PTDC/BIA-PRO/098158/2008	Ricardo Louro	148.320,00	1 Fev 10	28 Fev 13
7	Functional study of a diiron protein with the unique role of repairing iron-sulphur clusters	PTDC/BIA-PRO/098224/2008	Lígia Saraiva	199.980,00	1 Jan 10	30 Jun 13
8	Unravelling pneumococcal interactions in the nasopharyngeal niche	PTDC/BIA-BEC/098289/2008	Raquel Sá Leão	144.185,00	1 Jan 10	30 Jun 13
9	Engineering mini Superoxide Dismutases with tunable redox properties	PTDC/QUI-BIQ/098406	Olga Iranzo	162.888,00	1 Jan 10	30 Jun 13
10	Proteomics of Bacterial Cell Division	PTDC/BIA-MIC/098637/2008	Adriano O. Henriques	190.991,00	1 Jan 10	30 Jun 13
11	Development of imidazolium and oxazoline derivatized cyclopentadienyl compounds for biphasic catalysis and asymmetric processes	PTDC/QUI-QUI/098682/2008	Beatriz Royo	62.992,00	1 Jan 10	31 Dez 12
12	The cell wall synthetic machinery of Staphylococcus aureus and its response to the presence of antibiotics	PTDC/BIA-MIC/099151/2008	Mariana Pinho	198.420,00	1 Fev 10	30 Jun 13
13	Single cell studies of the action of antibiotics	PTDC/BIA-BCM/099152/2008	Mariana Pinho	180.000,00	1 Mar 10	28 Fev 13
14	Breeding for salinity tolerance in rice and identification of key genes/proteins affecting seed set under salt stress	PTDC/AGR-AAM/099234/2008	Sónia Negrão	114.996,00	1 Abr 10	29 Set 13
15	Exploiting antioxidants, flavours and aromas diversity on 'broa' bread maize breeding	PTDC/AGR-ALI/099285/2008	Carlota Vaz Patto	103.992,00	1 Abr 10	30 Set 13
16	Functional analyses of inclusion membrane proteins of Chlamydia trachomatis	PTDC/SAU-MII/099623/2008	Jaime Mota	159.702,00	1 Fev 10	31 Jul 13
17	Functional analysis of new transcriptional regulators involved in abiotic stress responses in rice	PTDC/BIA-BCM/099836/2008	Nelson Saibo	140.760,00	1 Jan 10	31 Jul 13
18	Integration of transcriptomic, proteomic and metabolomics profiles to understand the role of T6P in the water deficit response and recovery in Medicago truncatula	PTDC/AGR-GPL/099866/2008	Susana Araújo	150.806,00	1 Abr 10	30 Set 13
19	PneumoCaPTS - Regulation of virulence factors by glucose-dependent catabolite repression	PTDC/BIA-MIC/099963/2008	Ana Rute Neves	198.804,00	1 Jan 10	31 Dez 12
20	Oxidative stress response mechanisms in Deinococcus radiodruans	PTDC/QUI-BIQ/100007/2008	Célia Romão	88.488,00	1 Jan 10	30 Jun 13
21	Structural and functional investigation of type II NADH:quinone oxidoreductases	PTDC/BIA-PRO/100288/2008	Manuela Pereira	124.620,00	1 Jan 10	30 Jun 13

22	Energy Transduction by respiratory Complex I	PTDC/QUI-BIQ/100302/2008	Manuela Pereira	124.620,00	1 Jan 10	31 Dez 12
23	Small Scale Structural Metallomics Project in Deinococcus radiodurans	PTDC/BIA-PRO/100365/2008	Célia Romão	132.888,00	1 Jan 10	31 Out 13
24	Understanding structure-activity relationships in peptide dendrimers using a molecular modelling approach	PTDC/QUI-QUI/100416/2008	António Baptista	131.220,00	1 Jan 10	30 Jun 13
25	Lost in Septation: Characterization of a novel regulatory pathway of cell division and morphology centered on the bolA gene	PTDC/EBB-BIO/100507/2008	Cecília Arraiano	149.000,00	1 Jan 10	31 Mar 13
26	Examining a Multifunctional RNA Degrading Machine: the Arabidopsis Catalytic subunit of the Exosome	PTDC/AGR-GPL/100509/2008	Cecília Arraiano	163.491,00	1 Jan 10	30 Abr 13
27	Study of an ancient mode of energy metabolism: the dissimilatory reduction of sulfite	PTDC/QUI-BIQ/100591/2008	Inês C. Pereira	173.736,00	1 Abr 10	30 Set 13
28	Glycosylation and Lewis X motif in neuronal tissue	PTDC/SAU-NEU/100724/2008	Júlia Costa	100.000,00	1 Fev 10	31 Jul 13
29	Tracking the synthesis of the Chlamydia cell wall - a biological paradox in intracellular and evasive bacteria	PTDC/BIA-MIC/100747/2008	Sérgio Filipe	127.513,00	1 Jan 10	31 Mar 13
30	Disentangling single electron transfer steps in an enzyme: experimental and theoretical approach	PTDC/BIA-PRO/100791/2008	Smilja Todorovic	120.756,00	5 Jan 10	4 Set 13
31	PneumoSyS - A systems biology approach to the role of pneumococcal carbon metabolism in colonization and invasive disease.	PTDC/SAU-MII/100964/2008	Ana Rute Neves	144.750,00	1 Abr 10	30 Set 13
32	Metabolic circuits in inflicted bacterial cell death	PTDC/BIA-MIC/101375/2008	Rita Sobral	120.255,00	1 Jan 10	30 Jun 13
33	Identification of genes responsible for drought tolerance in Jatropha curcas, an emerging biodiesel plant	PTDC/AGR-GPL/101435/2008	Margarida Oliveira	129.696,00	1 Jan 10	30 Jun 13
34	Mössbauer spectroscopy and density functional theory studies of NO and O2 reductases	PTDC/BIA-PRO/101837/2008	Filipe Oliveira	148.452,00	1 Fev 10	31 Jan 14
35	Hybrid electro-optical microfluidic device for single cell analysis	PTDC/SAU-BEB/102247/2008	Abel Oliva	82.731,00	1 Mar 10	31 Ago 13
36	Innovative Strategies to Combat Foodborne Pathogens: Examining the Role of RNases and Small RNAs	PTDC/CVT/102293/2008	Cecília Arraiano	175.588,00	1 Jan 10	30 Abr 13
37	Breaking Down The Wall - Microbial Hemicellulases for saccharification	PTDC/AGR-AAM/102345/2008	Isabel Sá Nogueira	125.328,00	1 Jan 10	30 Jun 13
38	MICROPHYTE: Metabolic engIneering of Chlamydomonas and enviRonmental OPtimization for HYdrogen producTion and rElease	PTDC/EBB-EBI/102728/2008	Francisco Malcata	71.380,00	15 Jan 10	14 Jan 13
39	Exploiting transcriptional variation to identify genes underlying quantitative resistance to major grain legume pathogens	PTDC/AGR-GPL/103285/2008	Carlota Vaz Patto	199.668,00	1 Abr 10	30 Set 13
40	Molecular mechanisms of energy transduction	PTDC/BIA-PRO/103310/2008	Miguel Teixeira	199.400,00	1 Jan 10	30 Jun 13
41	Structural biology of membrane transporters from Archaea	PTDC/BIA-PRO/103718/2008	Margarida Archer	151.800,00	1 Jan 10	30 Jun 13
42	Regulation of synaptogenesis by kinase Cdk5 and Shank3: Biochemical and Structural Studies	PTDC/SAU-NEU/103720/2008	Margarida Archer	120.000,00	1 Abr 10	30 Set 13
43	Metabolic engineering of an anaerobic bacterium for biological hydrogen production	PTDC/BIA-MIC/104030/2008	Inês C. Pereira	176.484,00	1 Jan 10	30 Jun 13
44	Molecular characterization of organ regeneration in starfish - a proteomic approach toward the discovery of new regeneration factors	PTDC/MAR/104058/2008	Ana Coelho	64.800,00	1 Jan 10	31 Jul 13

45	Including protonation effects in the simulation of peptides and proteins in membrane environments	PTDC/BIA-PRO/104378/2008	António Baptista	126.240,00	1 Jan 10	30 Jun 13
46	Developmental role of the IRE1/Xbp1 signaling pathway during photoreceptor differentiation in Drosophila melanogaster	PTDC/SAU-OBD/104399/2008	Pedro Domingos	120.000,00	1 Fev 10	31 Jan 13
47	The best of two worlds: Ionic liquids as Active Pharmaceutical Ingredients	PTDC/EQU-EPR/104554/2008	Isabel Marrucho	51.216,00	1 Jan 10	31 Jul 13
48	Mechanisms of post-transcriptional regulation in the Drosophila Unfolded Protein Response	PTDC/BIA-BCM/105217/2008	Pedro Domingos	199.152,00	1 Fev 10	31 Jul 13
49	Study of pH-dependent protein misfolding using state-of-the-art molecular modeling methods	PTDC/QUI-BIQ/105238/2008	António Baptista	151.188,00	1 Jan 10	31 Mar 13
50	Integrative Bioinformatics for Molecular Epidemiology of gram-positive pathogens	PTDC/EIA-EIA/105245/2008	Jonas Almeida	110.000,00	1 Jan 10	31 Jan 13
51	Metallo Beta-hairpins: in search of new recyclable catalysts for greener chemistry	PTDC/QUI-QUI/105504/2008	Olga Iranzo	137.928,00	1 Abr 10	30 Set 13
52	Control of Iron Homeostasis by the Yeast Activator proteins (Yaps) in eukaryotic cells	PTDC/BIA-MIC/108747/2008	Claudina R. Pousada	183.648,00	1 Mar 10	31 Jul 13
53	Exploiting the type II phosphomannose isomerase BceAJ as a new target for the development of new antimicrobials and for biotechnological applications	PTDC/EBB-BIO/098352/2008	Carlos Frazão	48.432,00	1 Jan 10	30 Jun 13
54	Sustainable membrane bioreactors for advanced wastewater treatment: a molecular approach	PTDC/EBB-EBI/098862/2008	Ana Coelho	18.320,00	1 Mar 10	31 Ago 13
55	AsyFlower - Evolution of the gene regulatory network controlling flower dorsoventral asymmetry	PTDC/AGR-GPL/098873/2008	Jorge Almeida	17.340,00	1 Jan 10	31 Out 13
56	Transgeneration evaluation of rice transcriptomic/proteomic alterations caused by genetic modifications and other stresses	PTDC/EBB-BIO/098983/2008	Margarida Oliveira	18.572,00	1 Abr 10	30 Set 13
57	AQUAVITIS - Understanding water transport in Vitis vinifera: biochemical characterization of aquaporins upon their heterologous expression in yeast	PTDC/AGR-AAM/099154/2008	Rita Francisco/Manuela Chaves	13.200,00	1 Jan 10	30 Set 13
58	Spheres of Ecosystem Response to Nitrogen (SERN): A case study in a Mediterranean-type ecosystem in southern Portugal	PTDC/BIA-BEC/099323/2008	Alla Shvaleva	53.136,00	1 Abr 10	30 Jun 13
59	Please MOC it! - Metal-Organo-Catalysis an emerging concept	PTDC/QUI-QUI/099389/2008	Beatriz Royo	12.000,00	1 Jan 10	31 Jul 13
60	Phenotypic plasticity of maritime pine to climate change	PTDC/AGR-CFL/099614/2008	Manuela Chaves	9.000,00	1 Jan 10	31 Mar 14
61	Genetic analysis of suber differentiation in Quercus suber L	PTDC/AGR-AAM/100465/2008	Cândido Pinto Ricardo	21.600,00	1 Jan 10	31 Mai 13
62	Nitrogen-fixing biofertilizers for gramineous crops	PTDC/AGR-AAM/100577/2008	Nuno Borges	21.600,00	1 Mar 10	31 Ago 13
63	GrapeBerryFactory - Sugars, acids, phenolics and water on grape berry development and ripening	PTDC/AGR-ALI/100636/2008	Manuela Chaves	30.000,00	1 Jan 10	31 Out 13
64	Microbial contribution to the valorization of waste/by-products from biofuels production	PTDC/AAC-AMB/100790/2008	Helena Santos	12.000,00	1 Fev 10	31 Jul 13
65	T.caespititius chemotypes: molecular, genetic and biotechnological approaches to understand chemical polymorphism	PTDC/AGR-GPL/101334/2008	Margarida Oliveira	25.040,00	1 Jan 10	31 Mar 13
66	Molecular Modeling of Ionic Liquids: from Structure to Thermodynamics	PTDC/QUI-QUI/101794/2008	Luís Paulo Rebelo	33.600,00	1 Jan 10	31 Dez 12
67	Engineered biomimetics for large-scale enrichment of phosphoproteins	PTDC/EBB-BIO/102163/2008	Olga Iranzo	27.720,00	1 Fev 10	31 Jan 14

68	Plant responses to trace element toxicity: cellular mechanisms for detoxification and tolerance	PTDC/AGR-AAM/102821/2008	Ana Coelho	36.000,00	1 Jan 10	30 Jun 13
69	IMPROVIRON: IMproved PROductiVity and IRON nutrition in legume grains	PTDC/AGR-GPL/102861/2008	Cândido Pinto Ricardo	27.741,00	1 Mar 10	31 Ago 13
70	Separation of aromatic/aliphatic hydrocarbon mixtures by simulated countercurrent adsorption using nonvolatile solvents	PTDC/EQU-EQU/102949/2008	José Esperança	28.728,00	1 Jan 10	30 Jun 13
71	Development of Novel Organic Energetic Materials based on Ionic Liquids	PTDC/CTM/103664/2008	Luís Paulo Rebelo	42.427,00	1 Jan 10	30 Jun 13
72	Valorization of the Mediterranean energy crops giant reed and cardoon by integrated bio-chemical conversion to dissolving grade pulps, fuel ethanol, xylitol and lignin-based products - a complex LCF biorefinery concept	PTDC/AGR-CFL/103840/2008	Lígia Martins	27.956,00	1 Jan 10	31 Ago 13
73	The Development and Rationalization of Stereoselective Reactions in Some Chiral Systems. A mixed experimental and theoretical approach	PTDC/QUI-QUI/104056/2008	Christopher Maycock	40.900,00	1 Jan 10	30 Jun 13
74	Assessment of genetic and genomic resources of Cork Oak: the basis towards a prospective management	PTDC/AGR-GPL/104966/2008	Célia Miguel	21.748,00	1 Abr 10	30 Set 13
75	BIOMYR: Towards the metabolic engineering of beta-myrcene pathway of Pseudomonas sp. M1: functional genomics and structural biochemistry approaches	PTDC/EBB-BIO/104980/2008	Carlos Frazão	32.242,00	1 Jan 10	30 Set 13
76	Sustainable catalysis based on N-heterocyclic carbene metal complexes	PTDC/QUI-QUI/110349/2009	Beatriz Royo	105.000,00	1 Mar 11	28 Fev 14
77	Polyphenols as protective agents in cellular models of alpha-synucleinopaties, in particular Parkinson's diseases.	PTDC/BIA-BCM/111617/2009	Ricardo B. Ferreira	121.979,00	1 Fev 11	31 Jan 14
78	Effect of environmental stresses on rice epigenome.	PTDC/BIA-BCM/111645/2009	Ana Paula Santos	79.613,00	1 Abr 11	31 Mar 14
79	Small immunoactive peptidoglycan (siPGN) derivates to modulate an host inflammatory response.	PTDC/SAU-IMU/111806/2009	Sérgio Filipe	123.954,00	1 Abr 11	31 Mar 14
80	Synthesis of peptidoglycan in Streptococcus pneumoniae - where, when and why is it necessary to branch?	PTDC/BIA-MIC/111817/2009	Sérgio Filipe	173.138,00	1 Abr 11	31 Mar 14
81	GRIM-19, a novel protein involved in cell apoptosis: struture-function characterization.	PTDC/BIA-PRO/113064/2009	Isabel Bento	95.441,00	1 Mar 11	28 Fev 14
82	Proton transfer and proton pumping in haem-copper oxidases. Methodological dvelopments and their application to unravel the molecular mechanism.	PTDC/QUI-BIQ/113446/2009	Cláudio Soares	130.000,00	1 Mar 11	28 Fev 14
83	PhytoLac- Engineered Lactococcus lactics for the optimizes production of nutraceutical plant-derived polyphenols	PTDC/EBB-EBI/113727/2009	Ana Rute Neves	159.024,00	1 Mar 11	28 Fev 14
84	Studies on the struture/activity relationship of AI-2, a bacterial signalling molecule for inter-species communication.	PTDC/QUI-BIQ/113880/2009	Rita Ventura	137.000,00	1 Mar 11	28 Fev 14
85	Membrane fusion mechanism of Influenza Hemagglutinin: a simulation and biophysical approach.	PTDC/QUI-BIQ/114774/2009	Cláudio Soares	75.814,00	1 Mar 11	28 Fev 14
86	Solution struture and mode of action of the dimeric bacteriocin Lcn972	PTDC/QUI-BIQ/114904/2009	David Turner	78.000,00	1 Mar 11	28 Fev 14

87	Identification of plants extracts with protective action against bacterial enterotoxins belonging to AB5 group: cholera toxin, heat labile toxin from Escherichia coli and Shiga toxin (dysentery).	PTDC/QUI-BIQ/115298/2009	Patrick Groves	73.000,00	1 Fev 11	31 Jan 14
88	Playing with the ionic character of ionic liquids	PTDC/QUE-FTT/116015/2009	Luís Paulo Rebelo	88.240,00	1 Mar 11	28 Fev 14
89	Search for candidate protein biomarkers of Coffea arabica resistance to Hemileia vastatrix (leaf rust)	PTDC/AGR-GPL/109990/2009	Cândido Pinto Ricardo	70.473,00	12 Fev 11	13 Fev 14
90	Deciphering grain filling mechanisms in Phaseolus vulgaris L. under water deficit.	PTDC/AGR-GPL/110244/2009	Pedro Fevereiro	41.400,00	1 Abr 11	31 Mar 14
91	Detoxification of nitric ixide and/or oxygen in pathogenic (anaerobic) microbes: exploring the molecular determinants of substrate selectivity	QUI-BIQ/111080/2009	Miguel Teixeira	47.160,00	1 Mar 11	28 Fev 14
92	Response to oxidative and nitrosative stress by Entamoeba histolytca: searching for new virlence factors.	SAU-MIC/111447/2009	Miguel Teixeira	12.000,00	1 Set 11	31 Ago 14
93	hCE- expression and characterization in in vitro and in silico models.	PTDC/EBB-BIO/111530/2009	Carlos Frazão	8.400,00	1 Jan 11	31 Dez 13
94	Hepatic toxicity in HIV-infected individuals exposed to nevirapine.	PTDC/SAU-TOX/111663/2009	Ana Coelho	19.200,00	15 Mar 11	14 Mar 14
95	Structural determinants of superoxide reduction- A detoxification system essential for life.	PTDC/BIA-PRO/111940/2009	Miguel Teixeira	22.200,00	1 Mar 11	28 Fev 14
96	On characterization polarity within phospholipid/ cholesterol lipid bilayers and its effects in membrane enzymology.	PTDC/QUI-BIQ/112943/2009	Eurico de Melo	6.000,00	14 Fev 11	13 Fev 14
97	The pathogen's perspective of molecular plant-microbe-interactions: genes expressed during the infection process of coffee leaf rust- Hemileia vastarix.	PTDC/AGR-GPL/114949/2009	Rita Abranches	24.000,00	1 Jan 11	31 Dez 13
98	Patogenia da protína LANA do herpesvírus do sarcoma de Kaposi	HMSP-ICP/0021/2010	Mª Armenia Carrondo	304.238,00	1 Nov 11	31 Out 14
99	Global analysis of antisense regulatory mechanisms in Staphylococcus aureus: ARMS	ERA-PTG/0002/2010	Susana Domingues	88.275,00	1 Mar 11	28 Fev 14
100	Characterisation of host cell pathways altered by effectors of Brucella, Chlamydia, and Coxiella: identification of novel therapeutic targets“	ERA-PT/0005/2010	Jaime Mota	120.000,00	1 Mar 11	28 Fev 14
101	Sampling and biomarker optimization and harmonization in ALS and other motor neuron diseases	JPND/0003/2011	Júlia Costa	60.000,00	1 Jun 12	31 Mai 15
102	Analysis of the molecular function of SteA, a Salmonella virulence protein	PTDC/BIA-MIC/116780/2010	Jaime Mota	173.000,00	1 Mar 12	28 Fev 15
103	The effect of divalent cations on G-Quadruplex formation and stability in genes related to neurodegenerative processes	PTDC/QUI-QUI/117105/2010	Patrick Groves	78.114,00	1 Fev 12	31 Jan 15
104	Ionic Liquids under tension	PTDC/QUI-QUI/117340/2010	Jose Esperanca	81.236,00	1 Mar 12	28 Fev 15
105	Redox necklaces:functional characterization of a multidomain polyheme cytochrome	PTDC/QUI-BIQ/117440/2010	Catarina Paquete	53.844,00	1 Mar 12	28 Fev 15
106	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	Leopoldina Ryder	172.790,00	1 Mar 12	28 Fev 15
107	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	138.156,00	1 Mar 12	28 Fev 15

108	NEW PROTECTION: NativE, Wild PRObiotic sTrain EffecCT In Olives in briNe	PTDC/AGR-ALI/117658/2010	Francisco Malcata	131.746,00	1 Fev 12	31 Jan 15
109	Mechanisms of SOD1 toxic aggregation in neurodegenerative processes	PTDC/QUI-BIQ/117789/2010	Claudio Gomes	75.000,00	1 Fev 12	31 Jan 15
110	Recovery of misfolded and aggregated proteins using biological nanoreactors and small molecules	PTDC/EBB-BIO/117793/2010	Claudio Gomes	80.000,00	1 Fev 12	31 Jan 15
111	Na integrated approach to identify stress-realted regulatory genes in cork oak(SuberStress)	PTDC/AGR-GPL/118505/2010	Margarida Oliveira	121.047,00	21 Mar 12	20 Mar 15
112	Structural biology of Histidine Kinases: a new target for novel antibacterial drugs	PTDC/BIA-PRO/118535/2010	Margarida Archer	157,458,00	1 Mar 12	28 Fev 15
113	Development of New Oxygen Therapeitics using Fluorinated Ionic Liquids	PTDC/EQU-FTT/118800/2010	Ana Belen	93.540,00	1 Mar 12	28 Fev 15
114	A molecular insight into the respiratory alternative complex III	PTDC/BIA-PRO/120949/2010	Manuela Pereira	144.098,00	1 Mar 12	28 Fev 15
115	Creating value from bio-wastes:suberin extraction and biotransformation in biocompatibel ionic liquids aimig on novel biomaterials and compounds	PTDC/QUI-QUI/120982/2010	Cristina Silva Pereira	50.631,00	1 Mar 12	28 Fev 15
116	On the termophysical caraterizatiosn of new room temperature ionic liquids	PTDC/CTM-NAN/121274/2010	Jose Esperanca	58.376,00	1 Mar 12	28 Fev 15
117	Ionic Liquids as Promoters of Aqueous Biphasic Systems: The Role of van der Waals and Coulomb Interactions	PTDC/QUI-QUI/121520/2010	Mara Guadalupe	67.080,00	1 Jan 12	31 Dez 14
118	Lactation and milk production in Goat (Capra hircus): identifying molecular markers underlying adaptation to seasonal weight loss	PTDC/CVT/116499/2010	Manolis Matzapetakis	39.816,00	1 Mar 12	28 Fev 15
119	Protein interaction with CO Releasing Molecules (CORM)	PTDC/QUI-BIQ/117799/2010	Carlos Romão	65.818,00	1 Mar 12	28 Fev 15
120	On characterization polarity within phospholipid/cholesterol lipid bilayers and its effects in membrane enzymology.	PTDC/AGR-PRO/118081/2010	Pedro Fevereiro	57.000,00	1 Mar 12	28 Fev 15
121	hCE- expression and characterization in in vitro and in silico models.	PTDC/QUI-QUI/118315/2010	Ana Coelho	8.116,00	1 Fev 12	31 Jan 15
122	Strutural determinants of superoxide reduction- A detoxification system essential for life.	PTDC/SAU-SAP/118813/2010	Hermínia Lencastre/T. Conceição	96.847,00	1 Fev 11	31 Jan 15
123	Soil function profiling during fungal bioremediation: integrated bio-geochemical and meta-proteomics assessment	PTDC/AAC-CLI/119100/2010	Andreas Bohn	30.286,00	1 Jan 12	31 Dez 14
124	Characterization of ER-quality control for the F508del-CFTR protein: potential therapeutic targets for cystic fibrosis	PTDC/SAU-GMG/12299/2010	Cláudio Gomes	30.127,00	1 Mar 12	28 Fev 14

Projects funded by FCT, under the Re-Equipment call

125	National Facility for High-Field Nuclear Magnetic Resonance	REDE/1517/RMN/2005	Helena Santos	371.894,00	1 Jan 10	31 Dez 12

Projects funded by European Comission

126	Strategies for organic and low-input integrated breeding and management (SOLIBAM)	245058	Carlota Vaz Pato	199.999,60	1 Mar 10	31 Ago 14
127	Parliaments and Civil Society in Technology Assessment (PACITA)	SIS-CT-2011-266649	Mara Almeida	206.254,00	1 Abr 11	30 Mar 15

128	Standarization and orthogonsalization of teh gene expression flow for robust engineering of NTN (new-to-nature) biologival properties (ST-FLOW)	289326	Cecília Arraiano	281.730,00	1 Dez 11	30 Nov 15
129	Transnational access and enhancement of integrated Biological Structure determination at synchrotron X-ray radiation facilities (BioStruct-X)	283570	Mª Armenia Carrondo	49.814,92	1 Set 11	31 Ago 15
130	3 to 4: Converting C3 to C4 ptotosynthesis for sustainable agriculture (3 to 4)	289582	Manuela Chaves	51.200,00	1 Jan 12	31 Dez 16
	Individual Fellowships By European Commission					
131	Designing metallopeptides for the removal of superoxide radicals (MFRosPep)	PIRG03-GA-2008-230896	Olga Iranzo	100.000,00	1 Abr 09	31 Mar 13
132	ER Stress and Photoreceptor Degeneration in Drosophila (DROSOERSTRESS)	PIRG03-GA-2008-230935	Pedro Domingos	100.000,00	1 Dez 08	31 Mar 14
133	Crystallization in ionic liquid solutions (CRYSTILS)	PERG-GA-2009-249182	Magdalena Kowacz	36.000,00	1 Abr 10	30 Mar 13
134	The role of Base Excision Repair (BER) for extreme radiation and desiccation resistance of Deinococcus radiodurans	PIEF-GA-2011-301202	Elin Moe	208.672,40	1 Abr 12	30 Mar 14
135	Ion Transport at atomic level	PCIG11-GA-2012-322346	Afonso Duarte	62.500,00	1 Ago 12	31 Dez 13
	Project Funded By Ministry Of National Defence					
136	Chemical and Biological Single Molecule Detection Roaming Robot (SENTINEL)		Yann Astier	160.000,00	1 Out 10	30 Set 14
	Project Funded By Pfizer					
137	Pneumo Y – Pneumococcal colonization patterns in young children living in urban and rural areas of Portugal in the era of the 13-valent conjugate vaccine.	WS857151	Raquel Sá Leão	225.000,00	1 Jan 10	31 Dez 12
138	Pneumococcal colonization patterns in the elderly living urban and rural areas of Portugal	0887X1-4629	Raquel Sá Leão	151.000,00	1 Jan 10	31 Dez 12
	Subcontracting Parties - Gerorgia Institute of Technology (amount USD)					
139	Assessment of pathway design through multi-NSF level modeling and experiments		Helena Santos	30.000,00	1 Jul 10	30 Jun 13
	Subcontracting Parties - Harvard University					
140	Directly quantifying the isotopic fractionation associated with the key enzymes in microbial sulfate reduction	NSF grant nº 060531391-01	David T. Johnston (Harvard Univ.), co-PI: Inês A. C. Pereira.	$ 39.588 for BEM group	Sep 12	Aug 15

Research Projects by ITQB researchers submitted via IBET (not accounted for in the statistics)

Projects funded by the FCT

	Title	Project reference	Principal Investigator	Amout €	Period
1	Beleza e significado da cor na iluminura medieval portuguesa	PTDC/EAT-EAT/104930/2008	Catarina Duarte	6000	2010/2012
2	Redes de regulação de expressão génica associadas à actividade do felogéneo	PTDC/AGR-GPL/098369/2008	Célia Miguel	115431	2010/2013
3	Precondicionamento induzido por monóxido de carbono: novas estratégias na prevenção de lesão cerebral devido à hipóxia-esquémia e reperfusão	PTDC/SAL-NEU/098747/2008	Helena Vieira	100000	2010/2013
4	Bioreactores de membranas para tratamento avançado de águas residuais: uma abordagem molecular	PTDC/EBB-EBI/098862/2008	Gilda Carvalho	94434	2010/2013
5	Bio-NIO Ingredientes bioactivos extraídos de Opuntia spp. Valorização das plantas do Alentejo	PTDC/AGR-AAM/099645/2008	Catarina Duarte	129900	2010/2013
6	Aplicação da genómica funcional no melhoramento de células de mamifero para a produção de biofármacos virais	PTDC/EBB-BIO/100491/2008	Ana Coroadinha	195000	2010/2013
7	Biofertilizantes fixadores de azoto para culturas de gramíneas	PTDC/AGR-AAM/100577/2008	Teresa Crespo	61620	2010/2013
8	Biologia sintética no desenvolvimento de linhas celulares para produção biofármacos multiproteicos com estequiometria optimizada	PTDC/EBB-EBI/102266/2008	Paula Alves	190000	2010/2013
9	Melhoramento do potencial de particulas idênticas a retrovirus como vacinas para Hepatite C	PTC/EBB-BIO/102649/2008	Manuel Carrondo	156000	2010/2013
10	Aplicação de Fluorimetria 2D para melhorar o desenvolvimento de bioprocessos de células de mamifero	PTDC/EBB-EBI/102750/2008	Ana Teixeira	140000	2010/2013
11	Transcriptómica da embriogénese no pinheiro bravo	PTDC/AGR-GPL/102877/2008	Célia Miguel	111495	2010/2013
12	Baculome - Optimização de bioprocessos baseada na manipulação do estado energético celular: modelação metabólica para produção eficiente de vacinas	PTDC/EBB-EBI/103359/2008	Manuel Carrondo	179000	2010/2013
13	Desenvolvimento de novos sistemas de libertação de fármacos a partir de biomateriais de gelatina utilizando tecnologia supercrítica	PTDC/QUE-QUE/104552/2008	Ana Nunes	85428	2010/2013
14	Beneficios e desvantagens associados com a presença de fungos em captações de água para consumo humano	PTDC/AAC-AMB/108303/2008	Vanessa Pereira	131309	2010/2013
15	hCEI-2 - expressão e caracterização em modelos in vitro e in silico	PTDC/EBB-BIO/111530/2009	Ana Luísa Simplicio	89856	2011/2013
16	Desenvolvimento e manipulação de células estaminais usando a tecnologia de transferência génica mediada por nanoparticular para aplicação clinica de células modificadas geneticamente	ENMED/0001/2010	Manuel Carrondo	71600	2011/2014
17	Resposta de Entamoeba histolytiva aos stresses pxodativo e nitrosativo: em busca de novos factores de virulência	PTDC/SAL-MIC/111447/2009	Tiago Bandeiras	12000	2011/2014
18	Estudos bioquímicos e funcionais de exoribonucleades focando no seu papel determinante no controlo da expressão génica	PTDC/QUI-BIQ/111757/2009	Cecilia Arraiano	130000	2011/2014
19	Structural determinants of superoxide reduction - A detoxification system essential for life	PTDC/BIA-PRO/111940/2009	Tiago Bandeiras	88586	2011/2014
20	3D in vitro models for reducing animal experimentation in pharmaceutical development: integrative approaches for prediction of hepatic drug metabolism and neurotoxicity	PTDC/EBB-BIO/112786/2009	Catarina Brito	169968	2011/2014
21	Análise do proteoma de Ehrlichia ruminantium: uma análise complementar à transcriptómica para o estudo da patogenese e desenvolvimento de vacinas para a Cowdriose	PTDC/CVT/114118/2009	Isabel Marcelino	155947	2011/2014
22	A lactação e a lactopoiese em caprinos: identificação de marcadores moleculares à perda de peso sazonal	PTDC/CVT/116499/2010	André Almeida	81.379,00	2012/2015
23	BIOTEXTILE - Sequencing batch reactor biothechnology toward effective textile wastewater treatmemt	PTDC/EBB-EBI/120624/2010	Gilda Oheme	17.400,00	2012/2014

24	Population genomics of virulence adaptation in coffee leaf rust (Hemileia vastatrix)	PTDC/AGR-GPL/119943/2010	Célia Miguel	29.280,00	2012/2015
25	Development of New Oxygen Therapeutics using Fluorinated Ionic Liquids	PTDC/QUE-FTT/118800/2010	Ana Matias	3.000,00	2012/2015

Projects funded by the European Comission

26	European Network for the Advancement of Clinical Gene Transfer and Therapy	LSHB-CT-2006-018933	Manuel Carrondo	779095	2006/2011
27	Nonhuman Adenovirus vectors for gene transfer to the brain	HEALTH-F5-2008-222992	Manuel Carrondo	379200	2008/2012
28	High yield and performance stem cell lab	F5-2009-223011	Manuel Carrondo	532600	2009/2012
29	Cardio Repair European Multidisciplinary Initiative	HEALTH - F5-2010-242039	Manuel Carrondo	505120	2010/2012
30	Ferramentas genómicas em pinheiro bravo para aumento da produção de biomassa e gestão florestal sustentável (SUSTAINPINE)	P-KBBE/AGR-GPL/0001/2010	Célia Miguel	198600	2010/2013
31	Improvement of current and development of new vaccines for theileriosis and babesios of small ruminants	KBBE-3-245145-PIROVAC	Abel Oliva	173334	2010/2014
32	Towards a Latin America & Caribbean Knowledge Based Bio-Economy (KBBE) in partnership with Europe	KBBE-2010-264266	Teresa Crespo	50290	2011/2013
33	The sustainable improvement of European berry production, quality and nutritional value in a changing environment: Strawberries, Currants, Bkackberries, Blueberries and Raspberries	KBBE-2010-4-265942	Cláudia Santos	197608	2011/2014
34	New Technologies and Production Tools for Complex Protein Biologics	HEALTH-F5-2012-279039	Paula Alves	1412440	2011/2015
35	New Models for Preclinical Evaluation of Deug Efficacy in Common Solid Tumours	115188	Catarina Brito	254600	2011/2016
36	New Technologies and Production Tools for Complex Protein Biologics	FP7-HEALTH-2011-279039	Manuel Carrondo		2011/2015
37	Towards sustainable global food safety collaboration	311611	Teresa Crespo	80.250,00	2012/2013
38	Safe, Chemical-Free, Cleaning of Hospital Ward Surfaces	FP7-SME-2012315488	Teresa Crespo	227.000,00	2012/2014
39	Early detection and bio-control of mushroom pests and diseases in na Integrated Pest Management approach to comply with the European Directive 2009/128/EU	314241	Teresa Crespo	242.485,00	2012/2015
40	Specialised Cell Carrier Components	FP7-SME-2012-315717	Paula Alves	239.400,00	2012/2014
41	from Brain Gene Transfer towards Gene Therapy: Pharmacological Assessment of AAV, CAV-2 and LVV	286071	Manuel Carrondo	44.684,00	2012/2013

Additionaly, ITQB researchers have established a number of contracts with national and international companies via IBET. In 2012 contracts were estabished with the following companies: Merck Serono (Alemanha), Merck Millipore (Alemanha), Bayer Healthcare (Alemanha), Redbiotec (Suiça), Naturasin (Portugal), Biosurfit (Portugal), Apceth (Alemanha), Janson (Usa) , Astra-zeneca (Usa), Helmholtz Centre For Infection Research (Alemanha), Max Planck Institute For Dynamics Of Complex Technical Systems (Alemanha), Cellectis (Suécia), Inscreenx (Alemanha), Altimax (Uk), Dtl Biotechnology (Irlanda), Corning (França), Ge (França), Lonza Biologics (Slough, Reino Unido), Ibmt-fraunhofer (Alemanha), Coretherapix (Espanha), Crelux (Alemanha), Tecnimede (Portugal), Bia Separations (Eslovénia), Asahi Kasei (Japão), Multigene Vascular Systems (Israel), Genethon (França), Genibet Biopharmaceuticals, S.A. (Portugal), Sartorius-stedim Biotech (Alemanha), Pall Life Sciences (Usa), Pbs Biotech (Usa), Alloksys (Holanda), Cellon (Luxemburgo), Abbvie (Usa), Sumol-compal (Portugal), Nutrinveste (Portugal), Sovena Portugal - Consumer Goods, S.A. (Portugal), Comtemp (Portugal), Sparos (Portugal), Vitacress (Grupo Rar), 3p Biopharmaceuticals (Espanha) ,Corticeira Amorim (Portugal), Cebal (Portugal), Edp (Portugal), Basf Crop Science (Alemanha) and Simtejo (Portugal).

Participation in scientific meetings

ITQB researchers presented their work (**about 300 communications**) in the following meetings

100 years of Lewy Bodies – "Where are we now?", Munich, Germany

112th General Meeting of the American Society for Microbiology, San Francisco, USA

11th Encontro Química dos Alimentos, Bragança, Portugal

12th Conselho Consultivo da Cortiça e Floresta Mediterrânica, Coruche, Portugal

12th International Conference on Functional Foods Ingredients and Nutraceuticals in Chronic Disease: Science and Practice, Dallas, USA

12th Inter. Public Communication of Science and Technology Conf.: Quality, Honesty and Beauty in Science Communication, Florence, Italy

13th Trends in Nanotechnology International Conference, Madrid, Spain.

14th International Symposium on Microbial Ecology, Copenhagen, Denmark

16th World Congress of Food Science and Technology, Foz do Iguaçu, Brazil

17th European Bioenergetics Conference (EBEC), Freiburg, Germany

1st EU-ISMET meeting, Ghent, Belgium

1st International Conference on Food Digestion, Cesena, Italy

1st International Symposium in Applied Bioimaging Bridging Development and Application, Porto, Portugal.

1st Meeting of Synchrotron Radiation Users from Portugal – FCT-UNL Monte da Caparica, Portugal

1st SEURAT Summer School, Oeiras, Portugal

1st Whole Action Meeting, COST CM1105, Granada, Espanha

Meeting of INTERMODS consolider. "Interacciones entre Módulos Plasmídicos y los Genomas de Bacterias Patógenas" Rascafria Madrid, Spain

20th Congress of the European Society for Gene and Cell Therapy – ESGCT, Versailles, France

221st ECS Meeting - Seattle, Washington, USA

22nd ESRF Users Meeting, Grenoble, França

22nd Biennial Congress of the European Association for Cancer Research , Barcelona, Spain

22nd IUBMB 37th FEBS "From Single Molecules to Systems Biology", Seville, Spain

23rd Conference on Raman Spectroscopy, Bangalore, India

24th International Conference on Coffee Science (ASIC), San José, Costa Rica

25th International Conference on Organometallic Chemistry, Lisboa

2nd COST ORCA Meeting, Marseille, France.

2nd Laupheimer Zelltage - Rentschler Biotechnologie, Schloss Großlaupheim, Germany

2nd Mol Micro Meeting, Germany

2nd PTNMR Meeting - NMR in Portugal: an overview. Caparica, Portugal

2nd Workshop on Gasotransmitters, COST BM1005, Budapest

30th Annual Meeting of the European Society for Paediatric infectious Diseases. Thessaloniki, Greece.

32nd European Peptide Symposium, Athens, Greece

37th FEBS Congress, Sevilla, Spain

3º Encontro Nacional de Química Terapêutica, Aveiro, Portugal

3PYCheM 2012, Faculty of Sciences of Oporto University, Portugal

3rd COST ORCA Meeting, Athens, Greece

3rd Management Committee & Working Groups Meeting of INFOGEST, Leatherhead, UK

4eme Rencontres du Groupe d'Etude des Polyamines Cycliques et Linéaires, GPOL, Toulouse, France

4th EMBO Meeting, Nice, France

4th International Clostridium difficile Symposium, ICDS. Bled, Slovenja

4th International IUPAC conference on Green Chemistry, Foz do Iguaçu, Brazil

5ª Reunião Anual PortFIR, INSA, Lisboa, Portugal

5th EUPA Metting, Glasgow, UK

5th European Spores Conference. London, UK

63rd Annual Meeting of the European Federation of Animal Science, Bratislava, Slovakia

6th International Congress on Biocatalysis, Hamburg, Germany

6th International Crop Science Congress, Bento Gonçalves, Brazil

6th International Symposium of Bioorganometallic Chemistry, Toronto, Canada

6th Spanish Portuguese Japanese Organic Chemistry Symposium, FCUL, Lisbon

7th Annual Congress of the Portuguese Society of Stem Cells and Cell Therapies, Porto, Portugal

7th Danish Conf. on Biotechnology and Molecular Biology: Microbial Communities in Biotechnology, Health and Biomedicine, Vejle, Denmark.

7th European Conference on Pesticides and Related Organic Micropollutants in the Environment, Porto, Portugal.

13th Symposium on Chemistry and Fate of Modern Pesticides, Porto, Portugal

7th European Meeting on Solar Chemistry and Photocatalysis - Environmental Applications, Porto, Portugal.

7th Meeting of the European Society for Chlamydia Research, Amsterdam, The Netherlands.

7th SPCE-TC International meeting – Portuguese Society for Stem cells and Cellular Therapies, Porto, Portugal

8th International Symposium on Glycosyltransferases, Hannover, Germany

8th International Symposium on Pneumococci & Pneumococcal Diseases (ISPPD-8). Iguaçu Falls, Brazil

8th Pneumopath Meeting. Lisbon, Portugal

9th International Conference on Nanosciences & Nanotechnologies (NN12), Thessaloniki, Greece.

9th International Conference on Protein Stabilization, Lisboa, Portugal

9th International Congress on Extremophiles (10-13 September 2012) Seville, Spain

ACTIP Meeting, Rotterdam,

Belgirate (VB), Maggiore Lake, Italy

Bio & Green Economy 2012, Bologna, Italy

Biochemical society focused meeting: Electron transfer at the microbe-mineral interface, Norwich, UK

Bioimaging 2012 - 1st International Symposium in Applied Bioimaging, Porto, Portugal

Bioinformatics Open Days, Braga, Portugal

Biological & Pharmaceutical Complex Fluids: New Trends in Characterizing Microstructure, Interactions & Properties
An ECI Conference, Tomar, Portugal

Biometals 2012 (8th International Biometals Symposium) Brussels, Belgium

Bioprocessing and Stem Cells Europe, Single Use Technologies Track, London, UK

Catalysis: from the Active Site to the Process, IST, Lisbon, Portugal

CBS symposium One Fungus Which Name, Utrecht, The Netherlands

Cell Culture Engineering XIII, April 22nd -27th 2012, Arizona, USA

Cell Line Development and Engineering 2012, Cologne, Germany

Cell Symposia Human Immunity August 19 - 21, 2012, Lisbon, Portugal

Challenges in Organic Chemistry and Chemical Biology (ISACS7), Edinburgh, UK

Conference on Bioproduction (BICB), SFAX, TUNISIA

Conference on Integrative Biology in Plants, Microorganisms and the Environment (SysBioLux), Luxembourg

Congresso Brasileiro de Engenharia Química, Búzios, Brazil

Congresso Investigação e Desenvolvimento no IPS, ESAS, Santarém, Portugal

COST Action MP802 final conference: Conformational diversity and applications of G-quadruplexes, Sitges, Barcelona, Spain,

Dechema 3D Cell Culture 2012, Zurich, Switzerland

Desy Workshop - A2 achievements and Future Perspectives at Petra III, Hamburg

E "Stereoselective 1,2-cis Glycosylations of 2-Azido-2-deoxyglucosyl Donors", Challenges in Organic Chemistry and Chemical Biology (ISACS7), Edinburgh, UK.

EBEC Satellite Meeting Evolution of Bioenergetics, Freiburg Germany

EBSA Biophysics Course on: Membrane Biophysics & Lipid/Protein Interaction, Lacanau, France

ECCO XXXI, 31st annual meeting of the European Culture Collections' Organization. Braga, Portugal.

Ecophysiology Techniques Workshop, Bristish Ecological Society and the Society of Experimental Biology. Sobreda da Caparica, Portugal

Ecophysiology Techniques Workshop, Plant Enviroment Physiology Group (SEBiology.org), Lisbon, Portugal

EIGHTEENTH SYMPOSIUM ON THERMOPHYSICAL PROPERTIES, Boulder, CO, USA

EMBL Conference - Stem Cells in Cancer and Regenerative Medicine, Heidelberg, Germany

EMBO Conference - Plant Development and Environmental Interaction, Matera, Italy

EMBO Workshop on Microbial Sulfur Metabolism, Noordwijkerhout, The Netherlands

ERA-NET PathoGenoMics Meeting, Tenerife, Canary Islands, Spain

Erice 2012 - International School of Crystallography, Erice, Italy

ESBES + ISPPP 2012: 9th European Symposium on Biochemical Engineering Science + 32th International Symposium on the Separation of Proteins, Peptides and Polynucleotides, Istanbul, Turkey

ESCMID/TROCAR 2012. Barcelona, Spain

ESTIV (European Society of Toxicology in Vitro), Lisbon, Portugal

EUCHEM 2012, Newport, Wales, UK

Euromembrane Conference, London, UK

European Project on Synthetic Blology. St-Flow , Brussels, Belgium

Europtrode XI, Barcelona, Spain

FARADAY DISCUSSION 160, Oxford, England, UK

FASEB Science Research Conferences "Post-Transcripitional Control of Gene Expression: Mechanisms of mRNA decay", Steamboat Springs, US 2012

FCM-CEDOC Symposium on Rare Diseases of the metabolism - Lisbon, Portugal

FEBS International workshop "New Developments in RNA Biology", Tavira, Portugal

Final Meeting of Marie Curie Integrated Training Network- Structural Biology of Membrane Proteins (SBMP), Maratea, Italy

Final Meeting of Project TROCAR. Barcelona, Spain

First International Meeting on Reptin and Pontin, Bordéus, France

Genetics of Fagaceae and Nothofagaceae , IUFRO Agora - University of Bordeaux, Talence, France

Gordon Graduate Research Seminar Bioinorganic Chemistry, Ventura, California, EUA

Gordon Research Conference "Membrane Transport Proteins", Les Diablerets, Switzerland

Gordon Research Conference Metals in Biology, Ventura, California, EUA

Gordon Research Conference on Bacterial Cell Surfaces, Vermont, USA

Gordon Research Conference on Drug Metabolism, Holderness, NH – USA

Gordon Research Conference on Protons & Membrane Reactions, Ventura CA, USA

Gordon Research Conference. Microbial Stress Response. Mount Holyoke College South Hadley, USA

Hasylab Users´ Meeting, 2012-01 Hamburg, Germany

HHMI Science Meeting on Evolution and development. Maryland, USA

I Neurosciences Seminar Series Annual Symposium at IMM, Lisbon, Portugal

ICAP - 2nd International Congress on Analytical Proteomics, Ourense, Spain

ICCE-ANQUE 2012, Sevilla, Spain

II International Conference on Antimicrobial Research. Lisbon, Portugal

II Latin American Federation of Biophysical Societies (LAFeBS) Congress, XXXVII Brazilian Biophysical Society Congress, Búzios, Brazil.

International Conference on Biobased Polymers and Composites (BiCoPo 2012), Lake Balaton, Hungary

International Symposia on Metal Complexes, ISMEC2012, Lisbon Portugal

International Symposium on Plum and Sweet Cherry, Madrid, Spain

International Workshop on Pathogenesis Host Response in Helicobacter Infections. Helsingor, Denmark

IRENE Conference – In Silico Enzyme Design and Screening, Trieste, Italy

IUFRO Conference Genetics of Fagaceae & Nothofagaceae, Talence, France

IV Colóquio Nacional da Produção de Pequenos Frutos". Faro, Portugal

IV Ibero-American NMR Meeting - VI GERMN Bienal Meeting - III Iberian NMR Meeting, Aveiro, Portugal

Joint Conference on Emerging and Re-emerging Epidemics Affecting Global Health 2012. Orvieto, Italy

Jornadas de Bioinformática 2012. Barcelona, Spain

Jornadas Portuguesas de Genética. Lisbon Portugal

Metabolic Engineering IX, Biarritz, France

Microbial Stress: from Molecules to Systems, Belgirate, Italy

MSDG CHRISTMAS MEETING, London, England, UK

NAD2012- Natural Anticancer Drugs, Olomouc, Czech Republic

NEGATIVE PRESSURE WORKSHOP, Swansea, Wales, UK

Neurofly 2012, European Fly Neurobiology Meeting, Padua, Italy

NutriPLANTA 2012 - XIV Simposio Hispano-Luso de Nutrición Mineral de las Plantas, Madrid, Spain

OFS 2012, 22nd International Conference on Optical Fiber Sensors, Beijing China

Organocatalysts Derived from Tartaric and Glyceric Acids", 3rd COST ORCA Meeting, Athens, Greece

Oxizymes in Marseille, France

Palm Beach Infectious Disease Symposium. Florida, USA

Pels Family Chemical and Structural Biology Retreat. Briarcliff Manor, NY, USA

Plant and Animal Genome XX Conference, San Diego, California, USA

Plant Biology Congress 2012. Freiburg, Germany

PLANT-KBBE Conference 2012, Barcelona, Spain

Polish-German Biochemical Societies Joint Meeting: Biochemistry for health and environment, Poznan, Poland

Proceedings of the 24th ASIC International Conference on Coffee Science, Costa Rica

Proteomic Workshop, Aveiro, Portugal

Proteomics Meeting, Vilamoura, Portugal

RNA 2012 Portuguese RNA meeting, Lisbon, Portugal

São Paulo School of Advanced Science Advanced Topics in Computational Biology – Agrochemical and Drug Design, Campinas (São Paulo), Brazil

SBE's 3rd International Conference on Stem Cell Engineering, Seattle, USA

Scale-Up and Manufacturing of Cell-Based Therapies I, San Diego, California, , USA

Science in the tropics: glimpsing the past, projecting the future, Lisbon, Portugal

SEB Annual main meeting, Salzburg, Austria

Second International Conference of the IUFRO Working Party, Czech Republic

Second Mol Micro Meeting Würzburg. Würzburg, Germany

Seurat-1 Cluster meeting, Oeiras, Portugal

SIMONE BOVIO MINI-SYMPOSIUM, Milano, Italy

Stem Cell Engineering III, Seattle, USA

SUSTAINPINE Annual Meeting (Transnational Cooperation Project), Berlin, Germany

Symposium in Honor of Ramôa Ribeiro, Instituto Superior Técnico, Lisbon, Portugal

Symposium on Bio-based Production of Organic Acids, Frankfurt/Main, Germany

Synthesis of AI-2 analogues, the signalling molecule for inter-species quorum sensing", Challenges in Organic Chemistry and Chemical Biology (ISACS7), Edinburgh, UK.

Systems Biology 2012 – From Archaic to Synthetic Genomes, Melbourne, Australia

TERM STEM 2012 November 2012, Guimarães, Portugal

The 27th European Crystallographic Meeting – ECM27, Bergen, Norway

Vaccine Technology IV, May 2012, Albufeira, Portugal

Vaccines Manufacturing & Novel Production Technologies, Brussels, Belgium

VI International Conference on Legume Genomics and Genetics (VI ICLGG) , Hyderabad, India

Water stress in the viticulture of hot climates. Escola Superior de Biotecnologia da Universidade Católica Portuguesa (ESB-UCP). Porto, Portugal

WHO Meeting on Review of Core Consensus Methods for S. pneumoniae carriage. Genéve, Switzerland

WILS 2012, Lisbon, Portugal

World Gene Therapy Congress Europe, London, England

X Girona Seminar on theoretical and computational chemistry for the modelling of biochemical systems: from theory to applications. Girona, Spain.

XI Jornadas Ibéricas de Bioinformática. Barcelona, Spain

XI Simpósio Hispano-Portugués de Relaciones Hídricas en las Plantas, Sevilla, Spain

XIX Jornadas de Biologia de Levedura, Caparica, Portugal

XXIX EMS Summer School on Membranes, Nancy, France

XXV International Conference on Organometallic Chemistry, Lisbon, Portugal

XXX Reunión del Grupo Especializado de Química Organometálica (GEQO), Sociedad Española de Químicos, Castellón, Spain.

XXXVII Jornadas Portuguesas de Genética , Lisbon, Portugal.

Young Scientist Forum" of 22nd IUBMB 37th FEBS "From Single Molecules to Systems Biology", Seville, Spain

Young Scientists Program (YSP)/12th YSF, Cadiz, Spain

Education Output

PhD Theses 2012

Sara Nunes Lança de Carvalho
"Adaptation from standing genetic variation and from mutation: experimental evolution of populations of Caenorhabditis elegans"
Supervisor: **Henrique Teotónio**

Olga Carina de Oliveira Fernando (PGDB)
"Intron evolution in primates"
Supervisor: **Isabel Gordo**

Duarte Dionísio Figueiredo
"Novel Transcription Factors Regulating the Expression of the Rice Gene OsDREB1B"
Supervisor: **Nelson Saibo**

Nadja Pejanovic
"Identification of mechanisms controlling the transcriptional activity of nuclear factor kappa B (NF-κB) p65/RelA"
Supervisor: **Miguel Soares**

Ana Lúcia Serafim de Carvalho
"Metabolic Engineering of Lactococcus lactis for Improved Tolerance to Acid Stress: guidelines from in vivo NMR analysis of glucose metabolism"
Supervisor: **Helena Santos**

Helena Maria dos Santos Costa
"Mechanism of Interleukin-8 induction by Human Cytomegalovirus UL76 protein"
Supervisor: **Michael Parkhouse**

Ana Rita Rodrigues Rasteiro de Campos
"Neolithic transitions: can genetic data help us understand a major demographic event in human prehistory?"
Supervisor: **José Pereira-Leal**

Ana Paula Gomes Marques
"Biogenic amines in wine: Gene transcription as a tool for selection of Oenococcus oeni starter strains"
Supervisor: **Vitória San Romão**

Inês Manuel Bento Mendes Pinto - GABBA
"Spatiotemporal mechanisms for actomyosin ring assembly and contraction in budding yeast cell division"
Supervisor: **Eurico de Melo/David Pellman**

Sofia Margarida Batista Leite
"Novel Approaches for Culturing Hepatocytes for Drug Testing Applications"
Supervisor: **Paula Alves**

Ana Maria Rodrigues Jorge
"Insights into cell wall synthesis and cell division in Staphylococcus aureus"
Supervisor: **Mariana Gomes Pinho**

Mariana Coelho Correia da Silva
"Epigenetic and Cell Cycle Control of Centromere Inheritance"
Supervisor: **Lars Jansen**

Barbara Zofia Jezowska
"The role of Actin Capping Protein and Src signalling in tissue growth and apoptosis during Drosophila wing development"
Supervisor: **Florence Janody**

Andreia Cristina Marques da Cunha (IGC-PD)
"Regulation of autoimmune neuroinflammation by stress-responsive genes"
Supervisor: **Miguel Soares**
Pedro Miguel Rodrigues de Barros
"Insights into the role of almond CBF transcription factors in the environmental control of cold acclimation and dormancy break"
Supervisor: **Margarida Oliveira**

Susana Margarida Pires Gonçalves
"Structure-function relationships in a glycosyltransferase, a phosphatase and an oxidorreductase"
Supervisor: **Pedro Matias**

José Manuel Menino Ventura Antão
"Compositional and Functional Analysis of Polycomb Target Chromatin"
Supervisor: **Robert E. Kindston**

Sofia Domingues de Carvalho
"Insights into the biological significance of alternative splicing in Arabidopsis: Functional characterization of a dual-targeted E3 ligase and the SCL30a SR protein"
Supervisor: **Paula Duque Magalhães**

Magda Luciana Dias Pereira Atilano
"Bacterial peptidoglycan biosynthesis and recognition by the innate immune system"
Supervisor: **Sérgio Filipe**

Sónia Cristina F.S. Sequeira Ventura (transf.)
"Strategies of the African Swine Fever Virus to manipulate innate immunity"
Supervisor: **Michael Parkhouse**

Liliana Sofia Batista do Nascimento
"Yeast as a model system to study genetic and post-translational regulation of metabolic pathways in mammals"
Supervisor: **Claudina R. Pousada**

Frédéric Bustos Gaspar
"Non-clinical isolates bring new findings on enterococcal virulence"
Supervisor: **Teresa Crespo/MªFátima Lopes**

Marta Maria Coelho dos Santos Abrantes
"Precious transition metals: The importance of Zn2+, Mn2+ and Cu2+ for the human pathogen Enterococcus faecalis"
Supervisor: **Mª. Fátima Lopes**

Tânia Sofia Lobato Paulo Serra
"Regulation of the rice gene OsRMC under salt stress: identification and functional characterization of novel transcription factors"
Supervisor**: Nelson Saibo**

Ana Filipa Carapinha Pinto
"Reductive scavenging of reactive oxygen species in prokaryotes: Rubrerythrin and Superoxide Reductase"
Supervisor: **Miguel Teixeira**

Joana Morais Baptista
"The role of di-iron proteins in pathogen resistance"
Supervisor: **Lígia Saraiva**

Ana Sofia da Cunha Miguel
"Quantum Dots: Synthesis, Functionalization and Bioconjugation for Biological Applications"
Supervisor: **Christopher Maycock**

Sandra Margarida da Costa Carvalho
"Understanding the relationship between central metabolismo and virulence in the human pathogen Streptococcus pneumonia"
Supervisor: **Ana Rute Neves**

Sónia das Neves Nicolau Nunes Leitão
"Epidemiological studies of Streptococcus pneumoniae carriage in the post-vaccination era among two risk groups: children and the elderly"
Supervisor: Raquel Sá-Leão

Ana Teresa dos Santos Avelar
"Chromosome structure: a selectable trait for evolution"
Supervisor: **Miguel Godinho Ferreira**

Lucélia Rodrigues Tavares
"Evaluation of neuroprotective potential of polyphenols derived from Portuguese native plants: Juniperus sp. and Rubus sp."
Supervisor: **Ricardo Boavida Ferreira**

Vera Lúcia Faria Viola Gonçalves
"Cyanobacterial and Protozoan Flavodiiron Proteins are Nitric Oxide and/or Dioxygen Reductases"
Supervisor: **Miguel Teixeira**

Patrícia Alexandra de Sousa Barros
"The role of Rac1-modulated gene transcription in tumorigenesis"
Supervisor: **Peter Jordan**

Inês Fernandes Bento
"Centriole elimination in Drosophila oogenesis"
Supervisor: **Mónica Bettencourt Dias**

Barbara Maria Irene Vreede
"The origin and diversification of na evolutionary novelty: lessons from Drosophila oogenesis"
Supervisor: **Élio Sucena**

Ivo Miguel Henriques Saraiva
"Structural and functional characterization of the gene products responsible for phototrophic iron oxidation by purple bacteria"
Supervisor: **Ricardo Louro**

Cláudia Susana Fernandes Queiroga
"Disclosing Carbon Monoxide Protection in Cerebral Ischemia: insight into the celular mechanisms"
Supervisor: **Paula Alves**

Ana Filipa de Melo Tadeu Pereira dos Reis
"Biological and biochemical characterization of mutants of the RNase II family of enzymes"
Supervisor: **Cecília Arraiano**

Joana Catarina Rocha Lamego
"Understanding Human Carboxylesterase 2 and the feasibility of a more relevant cell model for intestinal metabolism"
Supervisor: **Ana Luísa Simplício**

Inês de Jesus de Almeida e Silva
"The role of small RNAs and ribonucleases in the control of gene expression in Salmonella Typhimurium"
Supervisor: **Cecília Arraiano**

Helena Maria Pinto Veiga
"Cell division and chromossome segregation in Staphylococcus aureus"
Supervisor: **Mariana Gomes Pinho**

Mafalda Soeiro Xavier Henriques
"Studies of the assembly of the Streptococcus pneumonia capsular polysaccharide"
Supervisor: **Sérgio Filipe**

Vânia Sofia Fidalgo Pobre
"Interplay of exoribonucleases, Hfq and small RNAs structural determinants in the control of gene expression"
Supervisor: **Cecília Arraiano**

Inês Garcia de Oliveira Trindade
"MicroRNAs as modulators of water deficit responses in Medicago truncatula"
Supervisor: **Manuel Pedro Fevereiro**

Master Theses

No degrees awarded in 2012.

University Extension Courses

Guilherme Remane Benedito
Summer Training/Introduction to the Research Lab
M. and Bioenergetics Unit; Supervisor Afonso Duarte/Manuela Pereira

Susana Isabel Henriques Pera
University Extension Courses/Scientific Research Training C
Plant Cell Biotechnology; Supervisor Jorge Paiva

Priscila Miriam Santos Pereira
University Extension Courses/Scientific Research Training C
Plant Cell Biotechnology; Supervisor Jorge Paiva

Joana Lucia Pereira Carrilho
University Extension Courses/Scientific Research Training C
Metalloproteins and Bioenergetics Unit; Supervisor Miguel Teixeira

Maria Rita de Jesus Palricas de Paiva Pessoa
University Extension Courses/Scientific Research Training D
Cell Signaling in Drosophila; Supervisor Pedro Domingos

Jorge Andre Matias Pereira
Post-Graduation Course/Scientific Research Training A
Bacterial Signalling; Supervisor Karina Xavier

Maria Carlos CortegraÃ§a da Cruz Nunes
University Extension Courses/Scientific Research Training D
Cell Physiology and NMR; Supervisor Carla Jorge

Rute Maria dos Santos Pinto
University Extension Courses/Scientific Research Training D
Cell Physiology and NMR; Supervisor Nuno Borges

Marta Dorota Wisniewska
University Extension Courses/Scientific Research Training D
Molecular Interactions and NMR; Supervisor Patrick Groves

Svenja Warratz
University Extension Courses/Scientific Research Training B
Homogeneous Catalysis; Supervisor Beatriz Royo

Andreia Patricia Valentim de Matos
Post-Graduation Course/Scientific Research Training A
Forest Biotech; Supervisor Celia Miguel

Andreia Sofia Santos Rodrigues
Post-Graduation Course/Scientific Research Training A
Forest Biotech; Supervisor Celia Miguel

Rafaela Pulquerio Simoes Santos
University Extension Courses/Scientific Research Training D
Inorganic Biochemistry and NMR; Supervisor Catarina Paquete

Andre Nunes dos Santos Nascimento
University Extension Courses/Research Integration
Genomics and Stress Lab; Supervisor Claudina R. Pousada/Catarina Pimentel

Ana Sofia Geadas Joaquim
University Extension Courses/Scientific Research Training D
Nutraceuticals and Delivery; Supervisor Catarina Duarte

Helena Pires Sapeta
Post-Graduation Course/Scientific Research Training A
Genomics of Plant Stress; Supervisor Margarida Oliveira

Maria Joana Amado Teixeira Pinto
Post-Graduation Course/Scientific Research Training A
Plant Cell Biotechnology; Supervisor Jorge Paiva

Carolina Cassona
University Extension Courses/Scientific Research Training C
Microbial Development; Supervisor Adriano Henriques

Teaching Activities | lecturing

ITQB PhD Program in Chemical and Biological Sciences & Engineering

Abel Gonzalez Oliva | Biosensors (1,5h)
Ana Coelho | Introduction to MS, MS aplications - identification of proteins, Case-studies (11h)
Antonio M. Baptista | Molecular visualisation practical (2 h); Structure prediction pratical (2h)
Carlos Romão | Coordination Chemistry Tutorials (8h); Metals in Medicine (1,5h)
Célia Miguel | Trends in Microbial and Cell Biology (17h); Frontiers in Biotechnology (4h)
Chris Maycock | Tutorial on Natural Products (4h)
Claudina R. Pousada | Yeast as a model system (2.5h)
Cláudio M. Gomes | ' Protein Folding, misfolding and Disease' and journal club in the 'Advances in Chemistry and Structural Biology' (6h)
Cláudio M. Soares | Molecular modelling methodologies (14h)
Cristina Silva Pereira | "Biocatalysis" (6 h), Biotechnology (5h).
Pedro Lamosa | "Nuclear Magnetic Resonance in Structural Biology" (3.5h)
Inês A. Cardoso Pereira | ITQB PhD Program (13h)
Jaime Mota | Trends in Microbial and Cell Biology (19h)
Júlia Costa | "Basic organization of the eukaryotic cell" (1.5h); "Protein glycosylation" (3h; tutorial) ; "Glycoproteomic technology for biomarker discovery" (1h)
Karina Xavier | "Microbial Physiology and Pathogenesis" (2h); Tutorials in "The role of quorom sensing in the regulation of bacterial pathogenesis" (6h)
Ligia O. Martins | Tutorial: "Case-studies in Structural Biology (5h); "Integrating protein science and technology: the laccase case-study" (1h)
Luis Paulo N. Rebelo | Ionic Liquids (5 h); Ionic Liquids (3 h)
Manuela Chaves | Tutorial (4h)
Margarida Oliveira | Main strategies and achievements in Plant Genetic Engineering (2h); What makes plants so special? A molecular perspective (1.5h)
Mariana G. Pinho | "Cell and Developmental Biology" (1.5h)
Pedro Matias | Structural Biology Tutorial (3h); Case Studies in Advances in Chemistry and Structural Biology (8h)
Raquel Sá Leão | The Human Microbiome Tutorials (4h)
Ricardo O. Louro | ITQB PhD program (31.5h)
Rita Abranches | Plant Biology (6h)
Rita Ventura | Chemistry tutotials Carbohydrate Chemistry and Organocatalysis (12h)
Sergio R. Filipe | "Trends in Microbial and Cell Biology" (4.5h)
Smilja Todorovic | Tutorial on Vibrational spectroscopy (3h); case studies (6h)
Teresa Crespo | Different types and aspects of quality systems (1h)

Other courses at ITQB

BioCrys2012

Carlos Frazão | Twinning (1.5h)
Pedro Matias | MIR structure solution with SHARP (1.5h); Model Refinement and Completion (1.5h)

Master Course in Medical Microbiology | ITQB

Nuno Faria | Tipagem molecular de Staphylococcus aureus: evolução dos métodos utilizados – 1st Part
Hermínia de Lencastre | Epidemiologia molecular de Staphylococcus aureus.
Ludovice, A. M. | Different approaches to the study of the mechanism of beta-lactam antibiotics resistance in Staphylococcus aureus – 1st Part.
Mariana G. Pinho | Biologia Molecular e Epidemiologia de Bacterias Patogénicas Gram-Positivas (4.5h)
Maria Miragaia | The molecular epidemiology and evolution of Staphylococcus epidermidis
Catarina Milheiriço | Tipagem molecular de Staphylococcus aureus: evolução dos métodos utilizados – 2nd Part
Raquel Sá Leão | "Molecular Biology and Epidemiology of Gram Positive Pathogens" (7h)
Rita Sobral | Vancomycin resistance mechanisms in methicillin resistant Staphylococcus aureus; Different approaches to the study of the mechanism of beta-lactam antibiotics resistance in Staphylococcus aureus – 2ndPart.

Courses at other institutions

FCUL - Faculdade de Ciências da Universidade de Lisboa; FCT-UNL – Faculdade de Ciências e Tecnológica da Universidade NOVA de Lisboa; UAlg - Universidade do Algarve; UA – Universidade de Aveiro; FF-UL – Faculdade de Farmácia da Universidade de Lisboa; ISA-UTL Instituto Superior de Agronomia da Universidade Técnica de Lisboa; IST-UTL – Instituto Superior Técnico da Universidade Técnica de Lisboa.

Abel Gonzalez Oliva
"Biosensors" (20 h)
Licenciatura em Bioquímica; Licenciatura em Biologia Celular e Molecular; Mestrado em Biotecnologia; Mestrado em Bioquimica; Mestrado e PhD em Micro e Nanotecnologias e Mestrado em Eng. Quimica e Bioquimica | FCT-UNL
"Nanobiotechnology" (1,5h)
Biotechnology MSc program | FC-UL

Ana Coelho
"Analytical Methods for the Characterization of Recombinant Proteins" (2h)
Master Course on Regulation and Evaluation of Pharmaceuthicals and Health Products | FF/UL
"Protein identification and characterization by Mass Spectrometry" (4h)
Master Course on Molecular Biology and Genetics | FC/UL
"MS applications/Protein identification" (8h)
Proteomic Workshop | UAlg
"De novo sequencing" (1h)
Proteomic Workshop | UA
"ABC of Proteomics" (1h)
Workshop Proteomics in Biology | UAlg

Carla Pinheiro
Adjunct Professor at FCT/UNL (Departamento de Ciências da Vida) (20% collaboration) lecturing Plant Biology

Célia Miguel
Master Course in Biotechnology (14 h) | FCT-UNL/ITQB

Chris Maycock
Organic Synthesis (4h/week contact)
Masters Courses DQB/FC/UL
Organic chemistry 1 (4h/week contact) ; Organic chemistry 2 (3h/week contact)
undergraduate course, DQB/FC/UL

Cláudio M. Gomes
'Principles of protein structure and folding', 'Protein misfolding Diseases and the amyloid state', 'Methods for protein folding', and journal club on 'Diseases of protein Folding' in the course Course 'From Gene to Function – Molecular Analysis of Disease Genes' (12h)
Translational Molecular Medicine Graduate PhD Program | Aarhus University Hospital and Aarhus University (Denmark)

Cláudio M. Soares
Biomolecular modelling techniques (5h)
Master degree of Biological Engineering | IST-UTL
Molecular mechanics/dynamics, Molecular Visualization and Protein Structure Prediction (10h)
Master degree of Biomedical Sciences | UAlg
Molecular modelling methodologies (3h)
MIT-Portugal Bioengineering PhD program

Helena Santos
"Introduction to NMR Spectroscopy" (3.5h) (P. Lamosa)
MSc course on "Biologia Funcional" | ISA-UTL

Jaime Mota
Cell Biology C (90h)
FCT-UNL
Microbiology and Infection (1.5h)
GABBA PhD Program | IBMC-UP

J. M. Costa
Lecture and the support in practical demonstration sessions (5h)
Ecophysiology Techniques Workshop | Portugal

Júlia Costa
"Aspectos biológicos e estruturais da glicosilação de proteínas" (1 h)
"Estrutura e Função de Proteínas" | FC-UL

Karina Xavier
"In Between Cells" (6 h)
IGC PhD Program | IGC
"Animal Models in Biomedical Research" (2 h)
Master in Evolutionary Biology | FC-UL

Manuela Chaves
Respiration in Plants (3h)
Master Course in Biology | ISA-UTL

Manuela M. Pereira
Energy transduction in respiratory systems (8 h)
Initiation course to Biochemistry and molecular biology research | University of Seville (Spain)

Margarida Archer
X-ray Crystallography (3 h)
Biomolecular Methods | FC-UL
Proteins secondary and tertiary structure in curricular unit of tissues, cells and molecules (1 h) | FCM-UNL
Tiny world of proteins conquered by X-ray diffraction (1 h)
National Training Site on Modern Methods of Structure Elucidation | IST-UTL

M. Margarida Oliveira
"Biotecnological Tools to Improve Plants for Abiotic Stress Tolerance" (50h)
Masters Course in Agronomy – Plant Production", Universidade Federal do Paraná (Brasil)
"Biotecnologia Vegetal e de Células Animais"
Master Courses on "Biotechnology" and "Biochemistry" | FCT-UNL

Pedro Fevereiro
Plant Biotechnology (26T; 76 P) | FCUL
Genetic Engineering (Plants) (8T; 72P) | FCUL
Molecular Biotechnology (26T; 19,5 TP) | FCUL
Bioetics (15T) | Universidade Eduardo Mondelane (Mozambique)
Ethics (15T) | Escola Superior de Saúde Cruz Vermelha

Ricardo O. Louro
Erasmus Masters Mundus in Membrane Technology (1.5h)

Rita Abranches
Plant Genetic Transformation (72h)
Master in Biotechnology |Universidade Eduardo Mondlane (Mozambique)
Plant Biotechnology (12h)
Master in Biotechnology | FCT-UNL
Molecular Farming (2h) | BSc, FCT-UNL
Molecular Farming (2h) | BSc, FCUL
Plant Biotechnology (2h) | BSc, ISPA

Sergio R. Filipe
Microbiology and Infection (2h)
GABBA PhD Program

Teresa Crespo
Transgenic Food (3h),
Master Controlo de Qualidade e Toxicologia dos Alimentos | FF-UL

Other Activities

Presence in Editorial Boards

In 2012, ITQB researchers sat on the editorial boards of the following international journals.

Acta Crystallographica Section F
Margarida Archer, Member of Review Panel

Bioinorganic Chemistry and Applications
Cláudio M. Gomes, Member of Editorial Board

BioMed Research International (old J. of Biomedicine and Biotechnology)
Cláudio M. Soares, Associate Editor

Biophysical Reviews
Cláudio M. Soares, Member of Editorial Board

BMC Biotechnology
Paula M. Alves, Member of Editorial Board

BMC Microbiology
Inês A. Cardoso Pereira, Associate Editor

Biotechnology Letters
Manuel J.T. Carrondo, Member of Editorial Board

Biotechnology and Bioengineering
Manuel J.T. Carrondo, Member of Editorial Board

CHemistryOpen
Pedro Matias, Member of Editorial Advisory Board

Current Gene Therapy
Manuel J.T. Carrondo, Member of Editorial Board

Current Topics in Medicinal Chemistry
Cláudio M. Gomes, Guest Editor, Special issue on 'Protein misfolding in conformational Disorders'
Cláudio M. Gomes, Guest Editor, Special issue on 'Neurodegeneration, Neurogenesis, and Oxidative Stress', Oxidative Medicine and Cellular Longevity

Dataset Papers in Biology - Biochemistry section
Cláudio M. Gomes, Member of Editorial Board

European Journal of Clinical Microbiology & Infectious Diseases
Hermínia de Lencastre, Member of Editorial Board

FEBS Letters
Miguel S.Teixeira, Guest Editor
Ricardo Louro, Guest Editor

FEMS Microbiology Letters
Ligia M. Saraiva, Member of Editorial Board

FEMS Microbiology Reviews
Cecília M. Arraiano Editor

Frontiers in Fatty Acid and Lipid Physiology
Cláudio M. Gomes, Member of Editorial Board

Frontiers in Microbiology
Inês A. Cardoso Pereira, Associate Editor
Manuela M. Pereira, member of editorial board

Functional Plant Biology, Australia
Manuela Chaves, Associate Editor (since 2008)

Journal of Berry Research
Ricardo Boavida Ferreira, Member of Editorial Board

Journal Biological Inorganic Chemistry
Inês A. Cardoso Pereira, Member of Editorial Board
Maria Arménia Carrondo, member of the Editorial Board

Journal of Biophysics
Cláudio M. Soares, Associate Editor

Journal of Biotechnology
Paula M. Alves, Member of Editorial Board
Manuel J.T. Carrondo, Associate Editor

Journal of Chemistry
Beatriz Royo, member of editorial board

Journal of Chemical Thermodynamics
Luis Paulo N. Rebelo, guest Editor (special issue on Ionic Liquids)

Journal of Crystallography
Pedro Matias, Member of Editorial Board

Journal of Experimental Botany
Manuela Chaves, Member of Editorial board (1998-2012)

Journal of Integrated-OIMICS
Cândido Pinto Ricardo, Associated Editor
Carla Pinheiro, Associated Editor

Microbiologia (journal of the Portuguese Society of Microbiology)
Sergio R. Filipe, member of editorial board

Microbial Drug Resistance
Hermínia de Lencastre, Member of Editorial Board

MicrobiologyOne
Ligia M. Saraiva, Member of Editorial Board

Plant Cell Tissue and Organ Culture (Springer Journal)
M. Margarida Oliveira is Associate Editor

Plos One
Inês A. Cardoso Pereira, Member of Editorial Board
Ligia M. Saraiva, Member of Editorial Board
Cláudio M. Gomes, Member of Editorial Board
Cláudio M. Soares, Member of Editorial Board
Hermínia de Lencastre, Member of Editorial Board

PeerJ
Manuela Chaves, Member of Editorial board (since 2012)
Maria Miragaia, Member of Editorial Board

Yeast and Compte Rendus de l' Académie des Sciences
Claudina R. Pousada, Member of editorial board

The Scientific World Journal
Ana Sofia Coroadinha Member of Edit. Board, Biotechnology Panel

Tree Physiology
Célia Miguel, Member of Editorial Review Board

WIRES RNA | Wiley | Blackwell Reviews RNA
Cecília M. Arraiano Editor

Seminars at ITQB 2012

Frontier Leaders Seminars

Chlamydia: a prokaryote playing by the eukaryotic rules
Agathe Subtil, Institut Pasteur, Centre National de la Recherche Scientifique (CNRS), France

The Human-Bacterial arms race for iron
Ken Raymond, University of California, Berkeley

Design of solid catalysts with well defined single and multisites
Avelino Corma, Instituto de Tecnología Química (UPV-CSIC), Universidad Politécnica de Valencia

AVX Seminars

Maintaining chromosome stability through cell division
Cláudio Sunkel, IBMC, Universidade do Porto

Epithelial wound repair: How does the cytoskeleton respond to a crisis?
António Jacinto, CEDOC, UNL

Systems-based understanding of chemical stress defense mechanisms in Yeast
Isabel Sá Correia, IST, UTL

The NMR toolbox and the study of molecular interactions
Eurico Cabrita, REQUIMTE/CQFB, UNL

Molecular control of T lymphocyte differentiation and tumor cell recognition
Bruno Silva-Santos, IMM, Universidade de Lisboa

Playing around with ionic liquid based aqueous biphasic systems for the purification of biomolecules
João Coutinho, Universidade de Aveiro

Membrane transport & plant-environment interactions
Hernâni Gerós, Universidade do Minho

Comparative Thyroid Endocrinology
Deborah Power, CCMAR, Universidade do Algarve

Structural diversity and mode of action of three lactoferrin antimicrobial peptides active against Candida albicans
Margarida Bastos, Faculdade de Ciências, Universidade do Porto

The role of E-cadherin in cancer
Raquel Seruca, IPATIMUP, Universidade do Porto

SCAN

Evolution of the biosynthesis of di-myo-inositol phosphate, a marker of adaptation to hot marine environments
Luís Gafeira Gonçalves Post-Doc at Cell Physiology and NMR Laboratory

Spectro-Electrochmistry of Heme Proteins – Towards Bio-technological Application Murat Sezer
Post-Doctoral Fellow at Raman Spectroscopy of Metalloproteins Laboratory

The bacterial cytoskeleton and the control of cell shape and cell division
Teresa Costa Post-Doc at Microbial Development Laboratory

Control of gene expression during development in Bacillus subtilis
Mónica Serrano Post-Doctoral Fellow at Microbial Development Laboratory

Phage display as a useful tool for drug discovery
Ana Barbas From Bayer Healthcare satellite laboratory @IBET

Legionella pneumophila effector VipA: an actin nucleator that interferes with host cell organelle trafficking
Irina Franco Assistant Researcher at Infection Biology Laboratory

Novel players in plant responses to adverse environmental conditions
Nelson Saibo from Genomics of Plant Stress Laboratory

Protein Dysfunction Accounts for Oxidative Stress Burden in a Rare Metabolic Disease
João Rodrigues Post-Doctoral fellow at Protein Biochemistry Folding and Stability Laboratory

Serendipity and The Ups and Downs of Synthesis
Cristopher Maycock Head of Organic Synthesis Laboratory

Novel human central nervous system in vitro models for preclinical research
Catarina Brito from Cell Bioprocesses Laboratory, Animal Cell Technology Unit, ITQB-UNL & IBET

Strategies used by yeast to overcome iron overload
Catarina Pimentel Post-Doc at Genomics and Stress Laboratory

Spore morphodynamics in relation to the infectious cycle of the human pathogen Clostridium difficile
Fátima Pereira PhD student at Microbial Development Laboratory

Challenges and opportunities for LAO within Horizon 2020 – the EU framework program for R&I (2014-2020)
Maria João Fernandes- Assistant to the Board European and International Scientific Affairs, IBET FP7 National Contact Point for themes Health & KBBE

Human Cytomegalovirus full length virion fusion protein for vaccine and drug target development
Marco Patrone PhD at Animal Technology Unit

Secretion and function of virulence proteins of Chlamydia trachomatis
Jaime Mota Infection Biology Laboratory
Important factors in small RNA degradation: contrasting roles of PNPase and Hfq in the regulation of non-coding RNAs
José Andrade Post-Doctoral fellow at Control of Gene Expression Laboratory

Insights into the interaction between the fungal pathogen Hemileia vastatrix and its host Coffea arabica
Sílvia Tavares Post-Doc Fellow at Plant Cell Biology Laboratory

CEDOC - your new biomedical partner
António Jacinto Director of CEDOC

Zalpha-domains: at the intersection between RNA editing and innate immunity
Alekos Athanasiadis Protein – Nucleic Acids Interactions Group, Instituto Gulbenkian de Ciência

Are you talking to me? - Looking for new ways to speak "science"
Joana Lobo Antunes Post-Doc at Science Communication Unit

When rice doesn't need salt...
Sónia Negrão Post-Doc Researcher

Biomolecular NMR applications
Manolis Matzapetakis Head of Biomolecular NMR Lab.

Colloidal Domain - Coloids, Polymers and Surfaces @ ITQB CoPoS
António Lopes Head of Colloids, Polymers and Surfaces Lab.

Carbon monoxide and cerebral ischemia: challenging cell signaling
Helena Vieira CEDOC

How to build a Cell´s Antenna
Mónica Bettencourt-Dias Cell Cycle Regulation Lab Instituto Gulbenkian de Ciência (IGC)

Induced Fit and the Catalytic Mechanism of Isocitrate Dehydrogenase
Pedro Matias Head of Industry and Medicine Applied Crystallography Lab.

Structure of a Membrane Protein: The Ktrab Potassium Transporter
João Cabral IBMC

Cilia length and motility dictate left-right position of internal organs
Susana Lopes CEDOC

Re-designing virus and cells for the development of complex biopharmaceuticals: vaccines and gene therapy vectors
Ana S. Coroadinha Head of Cell Line Development and Molecular Biotechnology Lab

Other Seminars

Health properties and potential novel food applications of pulse flours and proteins
Joyce Boye, Food Research and Development Centre, Agriculture and Agri-Food Canada

Next Generation Sequencing: A Turbo for Plant Science and Breeding
Peter Winter, GenXPro GmbH, Frankfurt, Germany

Rethinking Respiratory Infections: Pathogens, Synergens and the Airway Microbiome
Michael G Surette, Faculty of Health Sciences, McMaster University

The structural basis of interspecies bacterial quorum sensing
Stephen T. Miller from Swarthmore College

Membrane Proteins: Molecular Mechanisms of Signal Transduction and Ion Transport
Valentin Gordeliy Institute of Structural Biology J.P. Ebel, Grenoble, France and Institute of Complex Systems -5, Research Centre Juelich, Juelich, University of Aachen (RWTH), Germany

The role of water deficit in the onset of ripening in red wine grapes
Mark Matthews, University of California, Davis

Not all chemicals are created equal: The potential of bio-based processes and products
Joachim Klein, Technische Universität Braunschweig, Braunschweig Academy of Sciences

Synthesis and biological applications of peptide dendrimers
Tamis Darbre from University of Bern, Switzerland

An individualized system medicine platform to guide treatment decisions for therapy-resistant Acute Myeloid Leukemia
Muntasir Mamun Majumder FIMM, Institute for Molecular Medicine Finland

Can molecular microbiology and pathogenesis studies help develop novel antimicrobial strategies?
Staffan Normark, Karolinska Institute, Sweden

E-learning na U.N.L.
Lactococcus lactis, a bug with a bite.
Jan Kok University of Groningen

New Catalytic Reactions for Synthesis and Functionalization of Complex Molecules
John Montgomery from Department of Chemistry, University of Michigan, USA

Metal Nanoparticles in Ionic Liquids: Hydrogenation in Biphasic Systems
Martin Prechtl from University of Cologne Faculty of Mathematics and Natural Sciences Department of Chemistry

Lessening epigenetic constraints in desert plant species: a possible adaptive trait for extreme environments
Gideon Grafi from French Associates Institute of Agriculture and Biotechnology of Drylands; Jacob Blaustein Institutes for Desert Research; Ben-Gurion University, Israel

Fagaceae Genomics – A foundation for international cooperation in forest genetics
John Carlson ,Professor of Molecular Genetics from School of Forest Resources and the Huck Institutes of the Life Sciences Pennsylvania State University, University Park, PA, USA

Iron control in E. coli
Simon C Andrews, The University of Reading, UK
Two short stories about cell division and cell wall growth
Dirk-Jan Scheffers, University of Groningen, Netherlands

Reduction of ferredoxins via flavin-based electron bifurcation
Wolfgang Buckel, University of Marburg, Germany

The Institute of Plant Physiology and Ecology in Shangai
Hongwei Xue, Institute of Plant Physiology and Ecology, Chinese Academy of Sciences

New applications for Taguspark's Incubator
Inês Martins, Tagus Park

Food safety: a global urgent challenge for biotechnology
Seminar organized by ITQB and IBET at INIAV - Auditório do Centro de Atualização Propedêutica
Albert Sasson, European Commission

Oligopeptidases in peptide processing, memory disorders and pathogen virulence
V. Fülöp School of Life Sciences University of Warwick,UK

Crystallographic studies of membrane proteins - Challenges and advantages
Poul Nissen University of Aarhus Denmark

Structural Biology with X-ray free electron lasers
Adrian Mancuso European XFEL GmbH, Hamburg, Germany

Modulation of oxidative stress in plants - a transgenic approach
Baishnab Tripathy Jawaharlal Nehru University, New Delhi

From proteomes to pathways to biosignature
Christopher Turk, Max Planck Institute of Psychiatry

Improving the Direct Electron Transfer Efficiency in Laccase Electrodes for Biofuel Cell Cathodic Reactions
Marcos Pita, Instituto de Catalisis y Petroleoquimica, CSIC, Madrid, Spain

Interaction of Food Polyphenols with Gut Microbiota
Francisco A. Tomas-Barberan, CEBAS-CSIC, Spain

An overview of bioactive molecules in wild mushrooms
Isabel C.F.R. Ferreira, Mountain Research Centre, Polytechnic Institute of Bragança
COHiTEC Program 2013
Presentation Roadshow

Giardia intestinalis: antioxidant defense strategies of the 'smiling parasite
Alessandro Giuffrè Institute of Molecular Biology and Pathology, (CNR)- Rome

Structural and dynamic studies on Pore Forming Toxins by NMR
Marta Bruix, Instituto de Quimica Fisica "Rocasolano", Spain

Divide and Conquer; Genetic Dissection of the ß-barrel Assembly Machine
Thomas J. Silhavy, Princeton University

Host-pathogen interactions: insights at atomic level
Paula S. Salgado, Faculty of Medical Sciences

Computational methods in high throughput MS-based proteomics
Rune Matthiesen ,IPATIMUP - University of Porto

Science and Society 2012

Open Labs
114 visits | 59 students

Visited Labs
Microbial & Enzyme Technology (17x)
Plant Cell Biotechnology (14x)
Bacterial Energy Metabolism (12x)
Biomolecular Diagnostics (10x)
Protein Modelling (10x)
Bacterial Cell Surfaces and Pathogenesis (9x)
Molecular Genetics of Microbial Resistance (7x)
Bacterial Cell Biology (6x)
Cell Physiology & NMR (5x)
Protein Biochemistry Folding & Stability (5x)
GPlantS (4x)
Bioorganic Chemistry (3x)
Biological Energy Transduction (2x)
Forest Biotechnology (2x)
Glycobiology (2x)
Metalloenzymes and Molecular Bioenergetics (2x)
Disease and Stress Biology
Homogeneous Catalysis
MX Unit
Plant Cell Biology

School Visits
12 Visits| 317 students

Visited Schools
Agrupamento de Escolas General Humberto Delgado
E S Cartaxo (2x)
Esc Sec Alvide
Escola Secundária com 3ºciclo do Entroncamento (2x)
Escola Secundária de Fonseca de Benevides
Escola Secundária/3 Padre Alberto Neto (2x)
Externato Cooperativo da Benedita
Universidade Sénior Oeiras

Visited Labs
Antibiotic Stress and Virulence of Enterococci
Applied and Environmental Mycology
Bacterial Cell Biology
Biomolecular Diagnostic
Bioorganic Chemistry
Cell Signaling in Drosophila
Coordination and Supramolecular Chemistry
Gplants
Homogeneous Catalysis
Infection Biology
Lactic Acid Bacteria & In Vivo NMR
Mass Spectrometry
Microbial & Enzyme Technology
Microbiology of Man-Made Environments
Micro-heterogeneous Systems
Molecular Microbiology of Human Pathogens
Molecular Simulation
Organometallic Chemistry
Plant Biochemistry
Plant Cell Biotechnology
Plant Molecular Ecophysiology
Protein Biochemistry Folding & Stability
Protein Modelling
Structural Genomics
Heart of ITQB (workshop and Maintenance)

Fascination of Plants Day
46 individual visits
9 schools | 495 Students
Organizing commitee: Ana Sanchez ; Carla Pinheiro; Cláudia Pinheiro; Cláudia Santos; Cristina Oliveira; Joana Lobo Antunes; Luis Morgado; Miguel Costa; Nelson Saibo; Patrick Groves; Sara Nunes ; Sónia Negrão

Summer Training
Memórias de Stress nas plantas
Ana Paula Santos

No mundo das proteínas: obter a sua estrutura para entender como funcionam
Carlos Frazão

Viagem ao mundo microscópico das proteínas
Margarida Archer

Evolução laboratorial de Lactococcus lactis com vista a resistência a stress ácido: caracterização das estirpes melhoradas
Helena Santos

Vida a temperaturas próximas de 100 ºC: qual a função dos solutos compatíveis em organismos hipertermófilos?
Helena Santos

Science and Technology Week

Visiting Researchers
Ana Oliveira
Carlos Romão
Carlota Vaz Patto
Catarina Pimentel
Claudina Rodrigues-Pousada
Fátima Lopes
Filipe Almeida
Inês Cardoso Pereira
Joana Lobo Antunes
Joana Pissarra
Luís Gonçalves
Maria Cunha
Mónica Serrano
Ricardo O. Louro
Rosário Bronze
Tânia Raquel Martins Santos
Zélia Gouveia

Visited Schools
Agrupamento de Escola cardoso Lopes, Amadora
CED Nossa Senhora da Conceição, Casa Pia de Lisboa
Colégio da Bafureira, Parede
Colégio da Torre, Paço de Arcos
Dr. Joaquim de Barros, Paço de Arcos
EB1/JI Manuel Beça Múrias, Oeiras
EB2,3 S. Julião Barra, Oeiras
Escola Secundária Quinta do Marquês, Oeiras
Escola Secundária Vergílio Ferreira, Lisboa
Externato Papião, Estoril
Instituto Español Giner de los Ríos de Lisboa (Dafundo)

2012 Curiosities

Research groups	54
% Female PhD students	73
Invited speakers	45
% Female PhD holders	66
44	% articles with international teams
12	% Foreign PhD holders
4,7	M€ in Research Projects