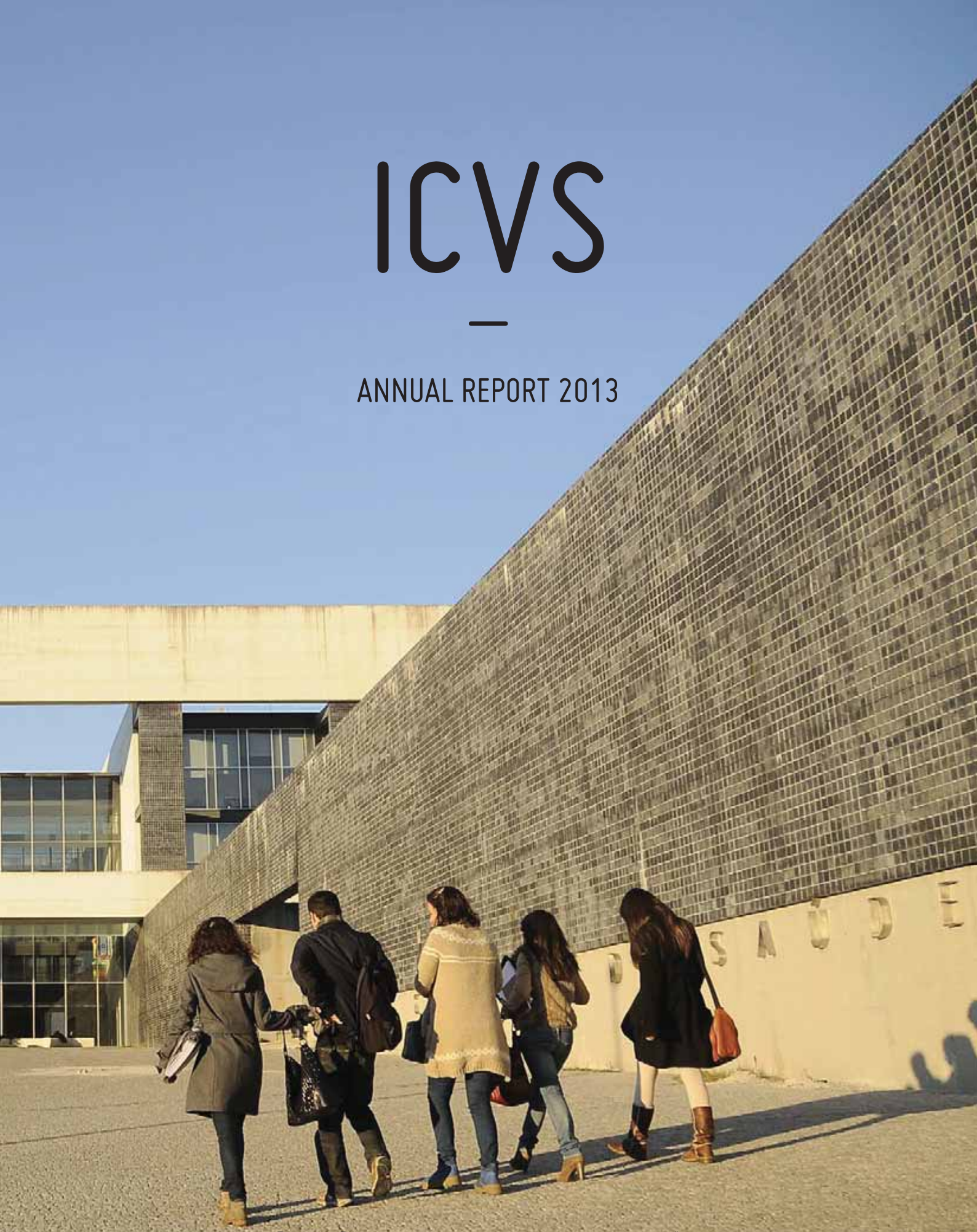
ICVS

ANNUAL REPORT 2013



ICVS
Life and Health Sciences Research Institute
Instituto de Investigação em Ciências da Vida e Saúde

Universidade do Minho
Escola de Ciências da Saúde

ICVS/3B's
Associate Laboratory

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INTRODUCTION

ICVS/3B'S – ASSOCIATE LABORATORY

The ICVS/3B's Associate Laboratory (AL) was created in the University of Minho in 2011 as a result of the partnership established over the years between:
- the ICVS (School of Health Sciences) - a group on Biomedicine and Clinical Sciences, focusing its activities on Microbiology and Infection, Neurosciences and Surgical Sciences, associated with the Clinical Academic Center, Braga (CCAB);
- and the 3B's (School of Engineering) - a group on Materials Science and Engineering, mainly focusing on Technologies Applied to Regenerative Medicine, including Biomaterials, Stem Cells, Tissue Engineering and Nanomedicine, leader of the European Institute of Excellence on Tissue Engineering and Regenerative Medicine (EXPERTISSUES EEIG).

The ICVS/3B's AL centers its activities in the Health Sciences, namely in Biomedical and Clinical Sciences, and in Engineering/Materials Science and Biomaterials. This interface Health-Sciences/Technologies fosters the generation of value through the development of innovative products and services, resulting from internationally highly competitive research.
The creation of the ICVS/3B's AL potentiated:
- Scientific and technological research in the interface Health Sciences/Technology;
- Advanced education and training, providing research and training activities to undergraduate/postgraduate students and health professionals;
- Services, consulting and technology transfer, by taking into consideration the vital importance of industrial/clinical partners;
- Dissemination and fostering of public and scientific awareness of science.

The collaboration and complementarities between the groups ICVS and the 3B's also benefit from the:
- Clinical know-how and resources centered at the Clinical Academic Center (CCAB), as well as within the network of Health institutions affiliated with the ICVS;
- European Institute of Excellence on Tissue Engineering and Regenerative Medicine, coordinated by the 3B's.

New technologies, therapies and medical products are being developed at the ICVS/3B's AL, including in the context of vaccination, diagnosis, regenerative medicine, minimally invasive therapeutic procedures, personalized treatments and nanomedicine. Such solutions are investigated in collaboration with companies and research partners.

The ICVS/3B's AL has, therefore, the potential to cross the complete development pipeline, from the more fundamental *in vitro* research, testing in animal models and pre-clinical validation, to the clinical trial phase, transposing to the market innovative therapeutic solutions.

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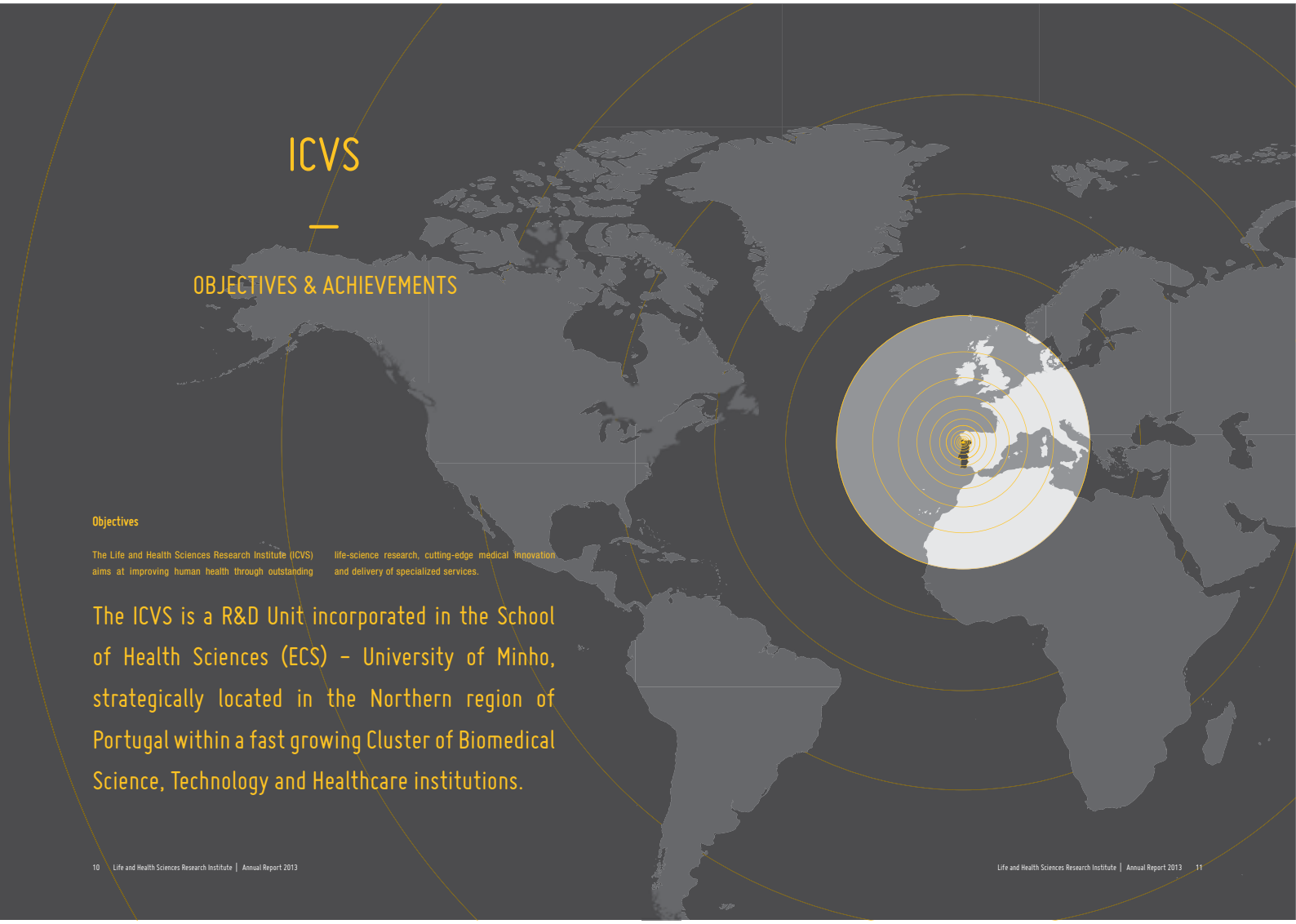
OBJECTIVES & ACHIEVEMENTS



Objectives

The Life and Health Sciences Research Institute (ICVS) aims at improving human health through outstanding life-science research, cutting-edge medical innovation and delivery of specialized services.

The ICVS is a R&D Unit incorporated in the School of Health Sciences (ECS) – University of Minho, strategically located in the Northern region of Portugal within a fast growing Cluster of Biomedical Science, Technology and Healthcare institutions.

The ICVS is organized around three interdisciplinary *Research Domains* with high critical mass: *Microbiology and Infection*, *Neurosciences* and *Surgical Sciences*. Furthermore, the strategy for the ICVS development has been centred in:

- Establishing a research unit within an innovative Medical School, guided by international standards of excellence;
- Creating a consortium with the research group 3B's - Biomaterials, Biodegradables and Biomimetics -, a leading research group in Health Technology;
- Fostering a strategic partnership with the Clinical Academic Centre – Braga, Association (CCAB) and the affiliated Healthcare Institutions in the Minho region.

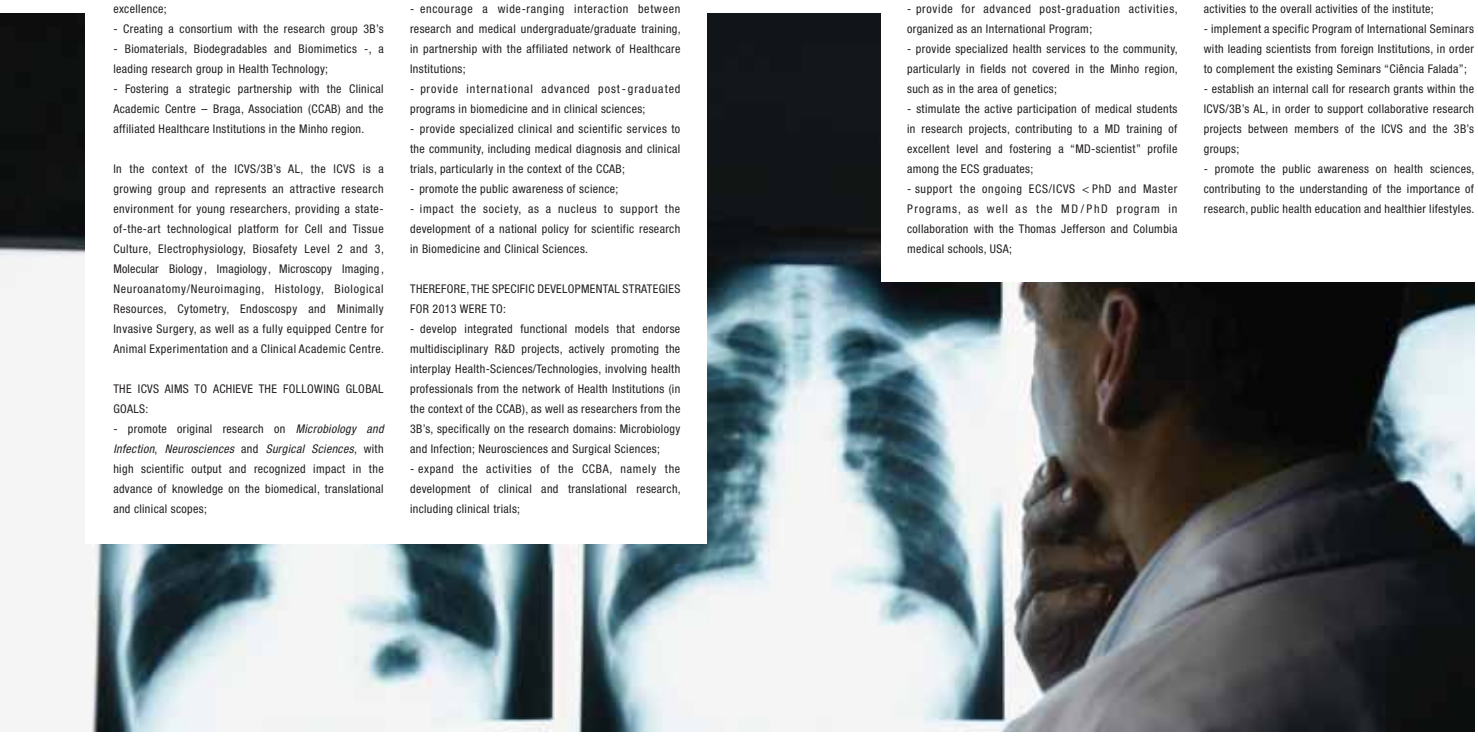
In the context of the ICVS/3B's AL, the ICVS is a growing group and represents an attractive research environment for young researchers, providing a state-of-the-art technological platform for Cell and Tissue Culture, Electrophysiology, Biosafety Level 2 and 3, Molecular Biology, Imagiology, Microscopy Imaging, Neuroanatomy/Neuroimaging, Histology, Biological Resources, Cytometry, Endoscospy and Minimally Invasive Surgery, as well as a fully equipped Centre for Animal Experimentation and a Clinical Academic Centre.

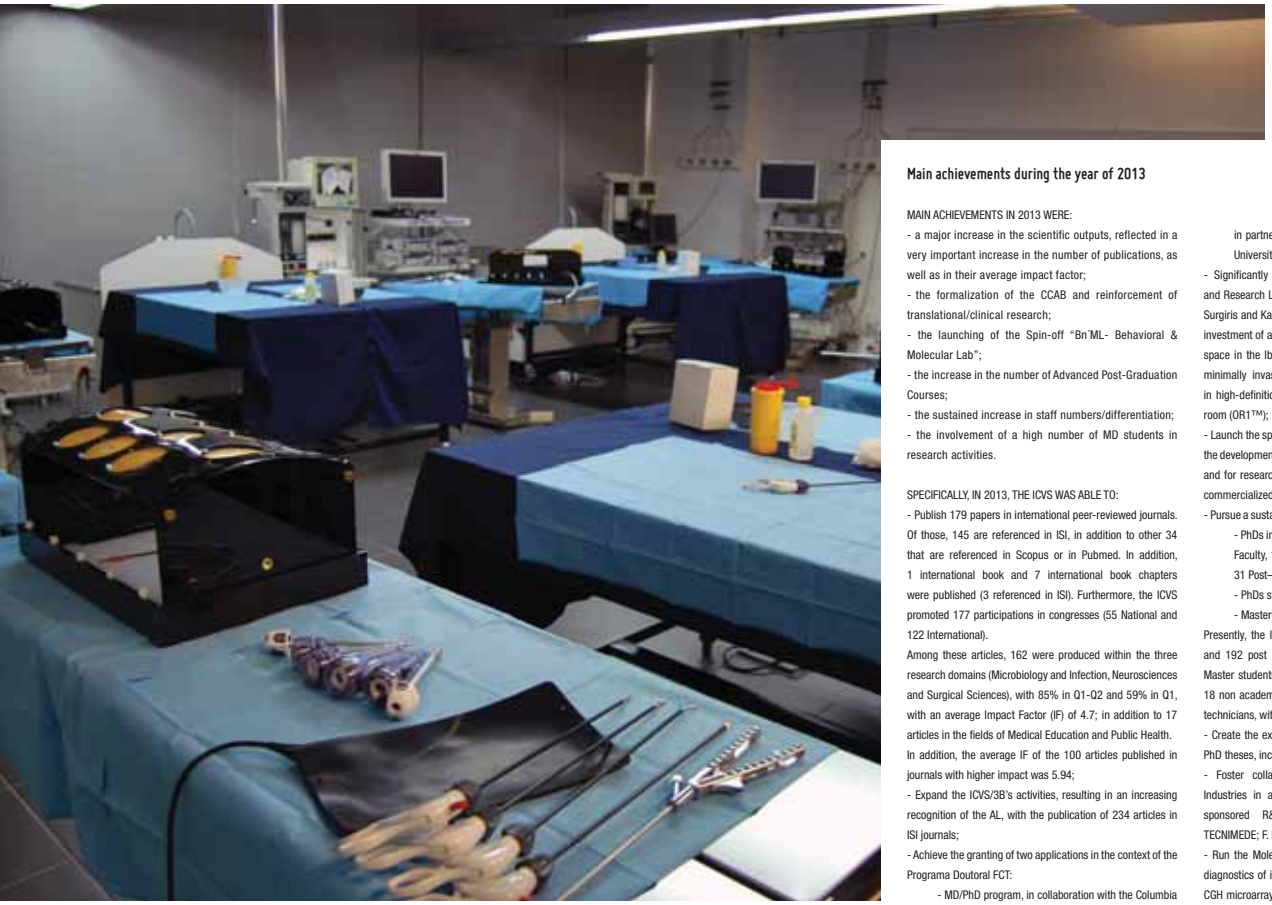
THE ICVS AIMS TO ACHIEVE THE FOLLOWING GLOBAL GOALS:

- promote original research on *Microbiology and Infection*, *Neurosciences* and *Surgical Sciences*, with high scientific output and recognized impact in the advance of knowledge on the biomedical, translational and clinical scopes;
- participate in the development of novel products with medical relevance, collaborating with other research groups and industrial partners, boosting the development of novel prophylactic approaches, diagnostic systems and innovative therapies;
- promote the registration of Patents and the creation of Spin-Offs on innovative medical products;
- encourage a wide-ranging interaction between research and medical undergraduate/graduate training, in partnership with the affiliated network of Healthcare Institutions;
- provide international advanced post-graduated programs in biomedicine and in clinical sciences;
- provide specialized clinical and scientific services to the community, including medical diagnosis and clinical trials, particularly in the context of the CCAB;
- promote the public awareness of science;
- impact the society, as a nucleus to support the development of a national policy for scientific research in Biomedicine and Clinical Sciences.

THEREFORE, THE SPECIFIC DEVELOPMENTAL STRATEGIES FOR 2013 WERE TO:

- develop integrated functional models that endorse multidisciplinary R&D projects, actively promoting the interplay Health-Sciences/Technologies, involving health professionals from the network of Health Institutions (in the context of the CCAB), as well as researchers from the 3B's, specifically on the research domains: Microbiology and Infection; Neurosciences and Surgical Sciences;
- expand the activities of the CCBA, namely the development of clinical and translational research, including clinical trials;
- increase the staff differentiation, including the nº of PhD researchers by a minimum of 10%;
- promote international post-graduate courses on Medicine and Health Sciences, fostering and strengthening existing international collaborations, with a strong recruitment of foreign students (graduate, undergraduate and MDs);
- provide for advanced post-graduation activities, organized as an International Program;
- provide specialized health services to the community, particularly in fields not covered in the Minho region, such as in the area of genetics;
- stimulate the active participation of medical students in research projects, contributing to a MD training of excellent level and fostering a "MD-scientist" profile among the ECS graduates;
- support the ongoing ECS/ICVS < PhD and Master Programs, as well as the MD/PhD program in collaboration with the Thomas Jefferson and Columbia medical schools, USA;
- diversify the funding sources, particularly in projects on clinical sciences and at the international level (e.g. Health Cluster Portugal and EU FP7);
- apply to the FCT call of Doctoral Programs, and obtain funding for, at least, one of the ECS/ICVS programs;
- expand the process of certification/accreditation of procedures within the ICVS, from the animal facility activities to the overall activities of the institute;
- implement a specific Program of International Seminars with leading scientists from foreign Institutions, in order to complement the existing Seminars "Ciência Falada";
- establish an internal call for research grants within the ICVS/3B's AL, in order to support collaborative research projects between members of the ICVS and the 3B's groups;
- promote the public awareness on health sciences, contributing to the understanding of the importance of research, public health education and healthier lifestyles.





Main achievements during the year of 2013

MAIN ACHIEVEMENTS IN 2013 WERE:

- a major increase in the scientific outputs, reflected in a very important increase in the number of publications, as well as in their average impact factor;
- the formalization of the CCAB and reinforcement of translational/clinical research;
- the launching of the Spin-off "Bn˜ML- Behavioral & Molecular Lab";
- the increase in the number of Advanced Post-Graduation Courses;
- the sustained increase in staff numbers/differentiation;
- the involvement of a high number of MD students in research activities.

SPECIFICALLY, IN 2013, THE ICVS WAS ABLE TO:

- Publish 179 papers in international peer-reviewed journals. Of those, 145 are referenced in ISI, in addition to other 34 that are referenced in Scopus or in Pubmed. In addition, 1 international book and 7 international book chapters were published (3 referenced in ISI). Furthermore, the ICVS promoted 177 participations in congresses (55 National and 122 International).

Among these articles, 162 were produced within the three research domains (Microbiology and Infection, Neurosciences and Surgical Sciences), with 85% in Q1-Q2 and 59% in Q1, with an average Impact Factor (IF) of 4.7; in addition to 17 articles in the fields of Medical Education and Public Health. In addition, the average IF of the 100 articles published in journals with higher impact was 5.94;

- Expand the ICVS/3B's activities, resulting in an increasing recognition of the AL, with the publication of 234 articles in ISI journals;
- Achieve the granting of two applications in the context of the Programa Doutoral FCT:
    - MD/PhD program, in collaboration with the Columbia and the Thomas Jefferson medical schools, USA;
    - Doctoral Program in Aging and Chronic Diseases, in partnership with the University of Coimbra and the University Nova of Lisbon;
- Significantly expand the "Endoscopic Surgery Teaching and Research Laboratory", resulting from a consortium with Surgiris and Karl Storz, GmbH and corresponding to a global investment of around 2 million €. This structure is the largest space in the Iberian Peninsula for training and research on minimally invasive surgery: 10 surgical tables of training in high-definition and 3D, including an intelligent operating room (OR1™);
- Launch the spin-off iCognitus - IT Solutions, Ltd., devoted to the development of software for computer based assessments and for research activities. The first solution developed and commercialized was the software medQuizz®;
- Pursue a sustained increase in staff numbers/differentiation:
    - PhDs increasing from 66 (2012) to 83 (2013): 36 ECS Faculty, 15 Assistant Researchers, 1 Marie Currie and 31 Post–Docs;
    - PhDs students reaching 100 in 2013;
    - Masters students reaching 29 in 2013;

Presently, the ICVS counts with 275 researchers [83 PhDs and 192 post graduation students (100 PhD students, 29 Master students and 63 research assistants)], supported by 18 non academic staff (7 administrative and 11 specialized technicians, with salaries supported by the ECS);

- Create the experimental conditions for the conclusion of 9 PhD theses, including from 3 MDs;
- Foster collaborations with partners from Biomedical Industries in areas of mutual interest. In 2013, industry sponsored R&D involved the following companies: TECNIMEDE; F. BIAL; and BIOGEN;
- Run the Molecular Diagnostics Service, providing genetic diagnostics of intellectual disability related disorders, with a CGH microarrays service for the screening of microdeletions and duplications of chromosome regions;
- Develop clinical research in the Clinical Academic Centre

– Braga, Association (CCAB), including clinical trials in collaboration with international industrial leading partners. The CCAB combines a team of researchers, physicians and other health professionals, to which is associated a team of project managers and coordinators/monitors, ensuring:

- 5 clinical research projects (funded by the European Commission - FP7 - or nationally, by the FCT);
- 16 clinical trials (ongoing or under analyses);
- 6 observational studies (ongoing or under analyses);
- 1 validation study of medical devices;

- Get a total of 22 new fellowships granted by the FCT: 3 BPD and 19 BD;
- Increase the competitive funding of ongoing projects (3 years average): 11.2 million € (from 9.7 in 2013), of which 2.4 million corresponded to 2013 activities;
- Increase the competitive funding with new research projects granted, including:
  - 7 projects approved in the context of the last FCT call (0.61 million €);
  - 3 projects in the context of the QREN Integrated Program (2.48 million €);
  - 2 projects from Private Foundations and Industry: BIAL – 40.000 €; and BIOGEN – 25.460 €;
  - Involve a high number of MD students in research, including 33 MD/PhD Lab Rotations (from 25 in 2012) and 56 Option Projects (from 54 in 2012);
- Organize an increasing number of Advanced Post-Graduation Courses/Workshops (from 37 in 2012 to 40 in 2013), involving 722 participants (including 66% MDs, 26% of researchers from Biological Sciences fields and 3% of other Health Professionals).

Importantly, 50% of the participants rated the attended courses as "Excellent" and 43% as "Very Good" and some of the courses were part of training activities of European schools or within European training actions.

- Obtain 12 National and 3 International scientific awards, including: Prize Melo e Castro – Santa Casa da Misericórdia de Lisboa; Bolsa D. Manuel de Mello; Young Entrepreneur 2013 – ANJE Award; Grünenthal Pain Award; Travel Grant United European Gastroenterology Week 2013; National Scholar Award United European Gastroenterology 2013.

ICVS PRODUCTIVITY

Publications in peer review journals

In 2013, the ICVS published 179 papers in international peer-reviewed journals. Of those, 145 are referenced in ISI, in addition to other 34 that are referenced in Scopus or in Pubmed. In addition, 1 international book and 7 international book chapters were published (3 are referenced in ISI). Furthermore, the ICVS promoted 177 participations in congresses (55 National and 122 International).

Among the articles published in 2013, 162 were produced within the three research domains (Microbiology and Infection, Neurosciences and Surgical Sciences), with 85% in Q1-Q2 and 59% in Q1, with an average Impact Factor (IF) of 4.7; in addition to 17 articles in the fields of Medical Education and Public Health.

In addition, the average IF of the 100 articles published in the journals with higher impact was 5.94.

30 SELECTED PAPERS IN PEER REVIEW JOURNALS

Nogueira-Silva C, Leitão TP, Osório F. Bladder Endometriosis: a Diagnostic Challenge. *BMJ*, 2013; 346: f3513 (2013). (IF=17,215)

Batalha VL, Pego JM, Fontinha BM, Costenla AR, Valadas JS, Baqi Y, Radjainia H, Müller CE, Sebastião AM, Lopes LV. Adenosine A(2A) receptor blockade reverts hippocampal stress-induced deficits and restores corticosterone circadian oscillation. *Mol Psychiatry*, 18:320-331 (2013). (IF=14,897)

Mateus-Pinheiro A, Patricio P, Bessa J, Sousa N, Pinto L. Cell genesis and dendritic plasticity: a neuroplastic pas de deux in the onset and remission from depression. *Mol Psychiatry*, 18:748-750 (2013). (IF=14,897)

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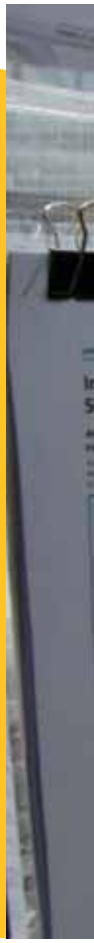
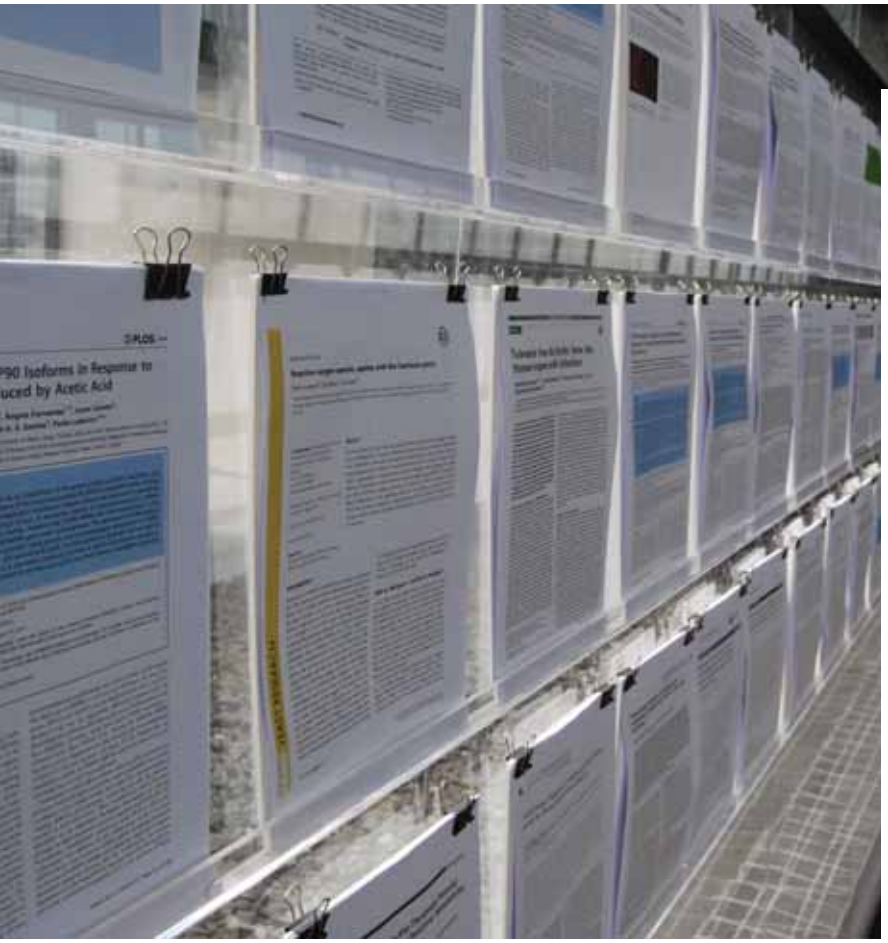
Caetano AC; Gonçalves B; Rolanda C. Rare complication - what kind of colitis? *Gastroenterology* 145(4): e7-8. (2013). (IF=12,835)

Iannitti RG, Carvalho A, Cunha C, De Luca A, Giovannini G, Casagrande A, Zelante T, Vacca C, Fallarino F, Puccetti P, Massi-Benedetti C, Defilippi G, Russo M, Porcaro L, Colombo C, Ratclif L, De Benedictis FM, Romani L. Th17/Treg imbalance in murine cystic fibrosis is linked to indoleamine 2,3-dioxygenase deficiency but corrected by kynurenines. *Am J Respir Crit Care Med.* 187(6):609-20 (2013). (IF=11,041)





Osório NS, Rodrigues F, Gagneux S, Pedrosa J, Pinto-Carbó M, Castro AG, Young D, Comas I, Saraiva M. Evidence for diversifying selection in a set of Mycobacterium tuberculosis genes in response to antibiotic and non-antibiotic related pressure. *Mol Biol Evol.* 30(6):1326-36 (2013). (IF=10,353)

Bjerke L, Mackay A, Nandhabalan M, Burford A, Jury A, Popov S, Bax DA, Carvalho D, Taylor K, Bajrami I, McGonnell IM, Lord CJ, Reis RM, Hargrave D, Ashworth A, Workman P, Jones C. Histone H3.3 mutations drive paediatric glioblastoma through upregulation of MYCN. *Cancer Discovery* 3:512-519 (2013). (IF=10,143)

Vinagre J, Almeida A, Populo H, Batista R, Lyra J, Pinto V, Coelho R, Celestino R, Prazeres H, Lima L, Melo M, Rocha A, Preto A, Castro P, Castro P, Pardal F, Lopes JM, Lara Santos L, Reis RM, Cameselle-Teijeiro J, Sobrinho-Simões M, Lima J, Máximo V, Soares P. Frequency of TERT promoter mutations in human cancers. *Nat Commun.* 4:2185 (2013) (IF=10,015)

Nunes-Alves C, Nobrega C, Behar SM, Correia-Neves M. Tolerance has its limits: how the thymus copes with infection. *Trends Immunol.* 34(10):502-10 (2013). (IF=9,486)

Borges S, Coimbra B, Soares-Cunha C, Pego JM, Sousa N, Rodrigues AJ. Dopaminergic modulation of affective and social deficits induced by prenatal glucocorticoid exposure. *Neuropsychopharmacology* 38(10):2068-2079 (2013) (IF=8,678)

Paugh BS, Zhu X, Qu C, Endersby R, Diaz AK, Zhang J, Bax DA, Carvalho D, Reis RM, Onar-Thomas A, Broniscer A, Wetmore C, Zhang J, Jones C, Ellison DW, Baker SJ. Novel Oncogenic PDGFRA Mutations in Pediatric High-Grade Gliomas. *Cancer Res.* 73(20):6219-6229 (2013). (IF=8,65)

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Sampaio A, Bouix S, Sousa N, Vasconcelos C, Férnandez M, Shenton ME, Gonçalves OF. Morphometry of corpus callosum in Williams syndrome: shape as an index of neural development. *Brain Struct Funct.* 218:711-720 (2013). (IF=7,837)

Cerqueira SR, Oliveira JM, Silva NA, Leite-Almeida H, Ribeiro-Samy S, Almeida A, Mano JF, Sousa N, Salgado AJ, Reis RL. Microglia Response and In vivo Therapeutic Potential of Methylprednisolone-Loaded Dendrimer Nanoparticles in Spinal Cord Injury. *Small* 9(5):738-749 (2013). (IF=7,823)

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Moniz S, Martinho O, Pinto F, Sousa B, Loureiro C, Oliveira MJ, Moita LF, Honavar M, Pinheiro C, Pires M, Lopes JM, Jones C, Costello JF, Paredes J, Reis RM, Jordan P. Loss of WNK2 expression by promoter gene methylation occurs in adult gliomas and triggers Rac1-mediated tumour cell invasiveness. *Hum Mol Genet.* 22(1):84-95(2013). (IF=7,692)

Haastert-Talini K, Geuna S., Dahlin LB, Meyer C, Stenberg S, Freier T, Heimann H., Barwig C, Pinto LFV, Raimondo S, Gambarotta G., Ribeiro Samy S, Sousa N, Salgado AJ, Ratzka A, Wrobel S, Grothe C. Chitosan tubes of varying degrees of acetylation for bridging peripheral nerve defects. *Biomaterials* 34(38):9886-904 (2013). (IF=7,604)

Morinha F, Travassos P, Seixas F, Santos N, Sargo R, Sousa L, Magalhães P, Cabral JA, Bastos E. High-resolution melting analysis for bird sexing: a successful approach to molecular sex identification using different biological samples. *Molecular Ecology Resources* 13(3):473-83 (2013). (IF=7,432)

Miranda-Gonçalves V, Honavar M, Pinheiro C, Martinho O, Cordeiro M, Bebiano G, Costa P, Reis RM, Baltazar F. Monocarboxylate transporters (MCTs) in gliomas: Expression and exploitation as therapeutic target. Neuro-Oncology 15(2):172-88 (2013). (IF= 6,18)

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Teixeira FG, Carvalho MM, Sousa N, Salgado AJ. Mesenchymal Stem Cells Secretome: a new paradigm for Central Nervous System Regeneration? *Cell Mol Life* Sci. 70:3871-3882 (2013). (IF=5,615)

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Andrade EB, Alves J, Madureira P, Oliveira L, Ribeiro A, Cordeiro-da-Silva A, Correia-Neves M, Trieu-Cuot P, Ferreira P. TLR2-induced IL-10 production impairs neutrophil recruitment to infected tissues during neonatal bacterial sepsis. *J Immunol.* 191(9):4759-4768 (2013). (IF=5,52)

Nobrega C, Nunes-Alves C, Cerqueira-Rodrigues B, Roque S, Barreira-Silva P, Behar SM, Correia-Neves M. T Cells Home to the Thymus and Control Infection. *J Immunol.* 190(4):1646-58. (2013). (IF=5,52)

Pereira VH, Cerqueira JJ, Palha JA, Sousa N. Stressed brain, diseased heart: A review on the pathophysiologic mechanisms of neurocardiology. *Int J Cardiol*. 166:30-37 (2013). (IF=5,509)

Pereira VH, Cerqueira JJ, Palha JA, Sousa N. The relevance of the brain in the diseased heart: Authors' response. I*nt J Cardiol.* 168(5):5095 (2013). (IF=5,509)

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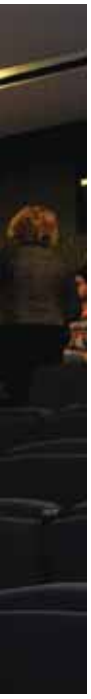
Patrício P, Mateus-Pinheiro A, Sousa N, Pinto L. Re-cycling Paradigms: Cell Cycle Regulation in Adult Hippocampal Neurogenesis and Implications for Depression. *Mol Neurobiol*, 48:84-96 (2013). (IF=5,471)

PhD thesis completed

1.
Student: Alexandre Vladimirov Patchev
Institution: Universidade do Minho
Year of the PhD conclusion: 2013
Scientific Area: Medicine
Title: Programming of stress-related behavioral and neuroendocrine functions during early life
Supervisor: Nuno Sousa

2.
Student: Ashley Novais
Institution: Universidade do Minho
Year of the PhD conclusion: 2013
Scientific Area: Health Sciences
Title: Unraveling the biological role of neudesin, a novel neurotrophic factor
Supervisor: João Carlos Sousa



3.
Student: Cláudio Alves
Institution: Universidade do Minho
Year of the PhD conclusion: 2013
Scientific Area: Health Sciences
Title: T cell immunity to mycobacteria: the problem of thymic infection and new mouse models to study CD8+ T cell responses to tuberculosis
Supervisor: Margarida Correia Neves

4.
Student: Jenny Carmona
Institution: Universidade do Minho
Year of the PhD conclusion: 2013
Scientific Area: Health Sciences
Title: Influence of the variability of Mycobacterium tuberculosis strains on the host immune response
Supervisor: Gil Castro

5.
Student: João Filipe Menino
Institution: Universidade do Minho
Year of the PhD conclusion: 2013
Scientific Area: Health Sciences
Title: Paracoccidioides brasiliensis: virulence factors and host susceptibility
Supervisor: Fernando Rodrigues

6.
Student: Julieta Afonso
Institution: Universidade do Minho
Year of the PhD conclusion: 2013
Scientific Area: Health Sciences
Title: Translating Biology into Clinic: New insights on prognostic and predictive biomarkers for urothelial bladder carcinoma
Supervisor: Adhemar Longatto

7.
Student: Pedro Morgado
Institution: Universidade do Minho
Year of the PhD conclusion: 2013
Scientific Area: Medicine
Title: The impact of stress in the risk-based decision-making processes: insights from the lab and the clinics
Supervisor: João Cerqueira

8.
Student: Rui Filipe Oliveira Miguelote
Institution: Universidade do Minho
Year of the PhD conclusion: 2013
Scientific Area: Medicine
Title: Prenatal "isolated" mild ventriculomegaly: looking for sonographic markers of prognosis and differential diagnosis
Supervisor: Nuno Sousa

9.
Student: Sara Granja
Institution: Universidade do Minho
Year of the PhD conclusion: 2013
Scientific Area: Health Sciences
Title: Role of Monocarboxylate transporter in lung development and lung cancer
Supervisor: Fátima Baltazar

Organization of courses/workshops

1.FUNDAMENTALS OF GENETICS, DEVELOPMENT AND NEOPLASIA (4th Edition)
Fátima Baltazar, Raquel Andrade - January 14-25, 2013

2. ASTIGMATISM MANAGEMENT IN CATARACT SURGERY *a comprehensive approach*
Fernando Silva - January 19, 2013

3. TEACHING LARGE (OR SMALL) CLASSES ACCORDING TO BOLOGNA
Manuel João Costa - February 15, 2013

4. AN INTEGRATIVE APPROACH TO CELL ANALYSIS (5th Edition) *cell and tissue culture, flow cytometry and microscopy*
António Salgado, Margarida Saraiva, Margarida Correia-Neves, Paula Ludovico - February 25 - March 8, 2013

5. STEM CELLS GET PRACTICAL (3rd Edition) *approaches on stem cell isolation, characterization and differentiation*
António Salgado, Luisa Pinto - March 11-15, 2013

6. METHODS FOR GROUPING VARIABLES WITH IBM SPSS STATISTICS (2nd Edition)
Patrício Costa - April 3-4, 2013

7.FETAL AND NEONATAL ENDOSCOPIC SURGERY (5th Edition)
Tiago Henriques-Coelho, João Moreira-Pinto, Jorge Correia-Pinto - April 4-6, 2013

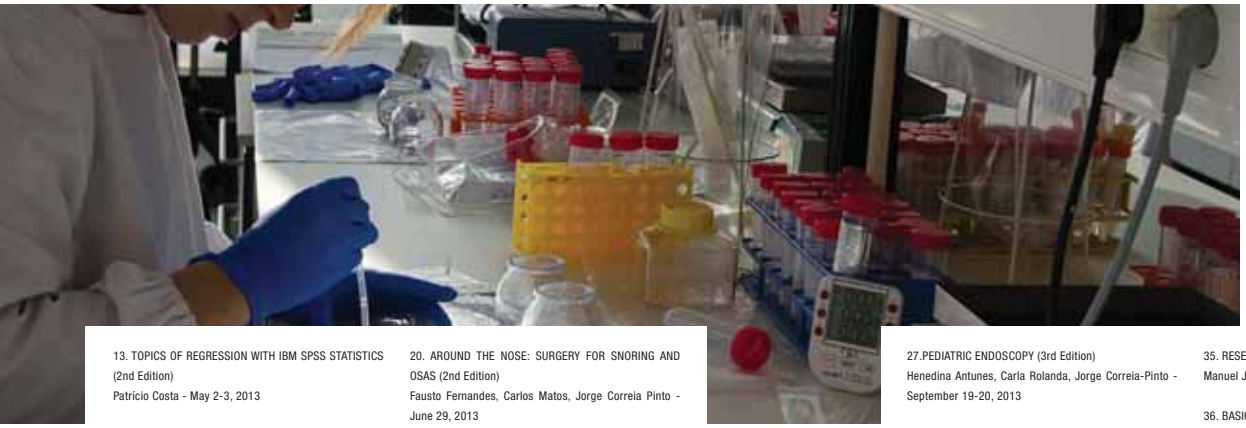
8. LAPAROSCOPIC RADICAL CYSTOPROSTATECTOMY
Estêvão Lima, Jorge Correia-Pinto - April 9, 2013

9. EXTRAPERITONEAL LAPAROSCOPIC RADICAL PROSTATECTOMY (2nd Edition)
Estêvão Lima, Jorge Correia-Pinto - April 10-11, 2013

10. MASTER CLASS IN 3D SCARLESS UROLOGY (4th Edition)
Estêvão Lima, Riccardo Autorino, Jorge Correia-Pinto - April 12-13, 2013

11. BASIC LAPAROSCOPY FOR RESIDENTS (4th Edition)
Cristina Nogueira-Silva, Emanuel Dias, Paulo Mota, Jorge Correia-Pinto - April 15-16, 2013

12. GYNECOLOGICAL LAPAROSCOPIC SURGERY (5th Edition) *comprehensive hands-on course with live surgery*
Hélder Ferreira, João Bernardes, Fátima Faustino, Jorge Correia-Pinto - April 18-20, 2013



13. TOPICS OF REGRESSION WITH IBM SPSS STATISTICS (2nd Edition)
Patrício Costa - May 2-3, 2013

14. FUNDAMENTALS OF ASSESSMENTS IN HIGHER EDUCATION
Manuel João Costa - May 9, 2013

15. PHARMACOLOGICAL BASIS OF RATIONAL THERAPEUTICS: ANTIBIOTICS (3rd Edition)
Fátima Baltazar, Hélder Novais e Bastos, Carlos Capela - May 31 - June 1, 2013

16. UNDAMENTALS IN ARTHROSCOPY (4th Edition)
Rui Duarte, Nuno Ferreira, Espregueira-Mendes, Vieira da Silva - June 13-14, 2013

17. NEXT GENERATION SEQUENCING: APPROACHES AND APPLICATIONS
Patrícia Maciel, Jorge Pinto Basto, José Luís Costa - June 17-21, 2013

18. AROUND THE NOSE: ENDOSCOPIC SINUS SURGERY (2nd Edition)
Fausto Fernandes, Francisco Moreira da Silva, Jorge Correia Pinto - June 27, 2013

19. AROUND THE NOSE: FUNDAMENTALS IN RHINOSEPTOPLASTY (2nd Edition)
Fausto Fernandes, Francisco Moreira da Silva, Jorge Correia Pinto - June 28, 2013

20. AROUND THE NOSE: SURGERY FOR SNORING AND OSAS (2nd Edition)
Fausto Fernandes, Carlos Matos, Jorge Correia Pinto - June 29, 2013

21. INTELLECTUAL DISABILITY: FROM CLINIC TO GENE AND BACK (3rd Edition)
Patrícia Maciel, Mafalda Barbosa - July 1-5

22. EFFECTIVE TEACHING OF BIOMOLECULAR SCIENCES *organized in collaboration with the Portuguese Biochemical Society (SPB)*
Manuel João Costa - July 8, 201

23. THE NEMATODE C. ELEGANS: A MODEL FOR BIOMEDICAL RESEARCH
Patrícia Maciel, Ana João Rodrigues - July 8-10, 2013

24. TEACHING LARGE (OR SMALL) CLASSES ACCORDING TO BOLOGNA
Manuel João Costa - September 12, 2013

25. FUNDAMENTALS OF ASSESSMENTS IN HIGHER EDUCATION
Manuel João Costa - September 13, 201

26. FUNDAMENTALS IN NEUROSCIENCE (6th Edition)
João Carlos Sousa, João Cerqueira, José Miguel Pêgo - September 16-27, 2013

27.PEDIATRIC ENDOSCOPY (3rd Edition)
Henedina Antunes, Carla Rolanda, Jorge Correia-Pinto - September 19-20, 2013

28. MICROSURGICAL ANASTOMOSIS (5th Edition)
Nuno Sevivas, Pedro Leão, Espregueira-Mendes, Vieira da Silva - September 19-21, 2013

29. SULCI, GYRI, VENTRICLES AND DISSECTING FIBERS (11th Edition)
Nuno Sousa, Carlos Alegria - September 23-27, 2013

30. FUNDAMENTALS IN IMMUNOLOGY AND INFECTION (5th Edition)
Gil Castro September 30 - October 11, 2013

31. THERAPEUTIC ENDOSCOPY (6th Edition)
Carla Rolanda, Jorge Correia-Pinto - October 3-4, 2013

32. DIGESTIVE LAPAROSCOPY AND LESS SURGERY (7th Edition)
Novo de Matos, Pedro Leão, Jorge Correia-Pinto - October 7-9, 2013

33. BILIARY LAPAROSCOPY (5th Edition)
Jaime Vilaça, Daniela Sá Leão, Jorge Correia-Pinto - October 14-16, 2013

34. FUNDAMENTALS OF GENETICS, DEVELOPMENT AND NEOPLASIA (5th Edition)
Fátima Baltazar, Raquel P. Andrade - October 14-25, 201

35. RESEARCH METHODOLOGIES (5th Edition)
Manuel João Costa October 28 - November 8, 2013

36. BASIC LAPAROSCOPY FOR RESIDENTS (5th Edition)
Cristina Nogueira-Silva, Emanuel Dias, Paulo Mota, Jorge Correia-Pinto - November 4-5, 2013

37. LABORATORY ANIMAL SCIENCE (9th Edition) based on FELASA category C recommendations Magda Castelhano-Carlos, Margarida Correia Neves - November 11-22, 2013

38. MINIMALLY INVASIVE SPINE SURGERY (2nd Edition)
Pedro Varanda, Paulo Cibrão Coutinho, Espregueira-Mendes, Vieira da Silva - November 15-16, 2013

39. MASSIVE ROTATOR CUFF TEAR: FROM BASIC SCIENCE TO CLINICS
Nuno Sevivas, António Salgado, Espregueira-Mendes, Vieira da Silva - November 22-23, 2013

40. BIOINFORMATICS IN HEALTH SCIENCES (5th Edition)
Raquel P. Andrade, Bruno M. Costa - December 2-13, 2013

Industry contract research

In 2013, the ICVS has had the following Research Contracts ongoing:

1. TECNIMEDE - Sociedade Técnico Medeicinal, SA: the studies are designed to characterize the pharmacological activity of drugs in the control of pain in animals with traumatic neuropathy. Armando Almeida (coordinator);

2. FUNDAÇÃO BIAL: the studies are designed to analyze the neuro-glia interactions in complex cognitive functions. João Oliveira (coordinator);

3. FUNDAÇÃO BIAL: the studies are designed to analyze the temporal modulation of the subventricular zone neural stem cell niche by choroid plexus-cerebrospinal fluid derived factors. João Sousa (coordinator);

4. Biogen Idec Portugal: the studies are designed to develop a pre-clinical research study. João Cerqueira (coordinator).

Internationalization

Reflecting the high level of the ICVS internationalization, researchers from 16 foreign countries were part of the Institute team in 2013.

Among the ICVS papers published in international peer-reviewed journals during 2013, more than 50% resulted from partnerships involving research teams from leading foreign research institutions. In addition, ICVS members were involved in 122 conferences and seminars in the context of international meetings outside Portugal during 2013.

In 2013, the ICVS was involved in international networks with specific funding, including:
- 6 European FP7 research projects (4 Cooperation grants and 2 Marie Curie);
- 2 grants funded by other international institutions.

Globally, in 2013, the ongoing projects funded by international sources corresponded to a total amount of 2.23 million €. These collaborative networks involved the participation of institutions from the following countries: Belgium, Benin, Congo, Denmark, France, Germany, Ghana, Hungary, Israel, Italy, Mali, Morocco, Mozambique, Netherlands, Nigeria, Norway, South Africa, Spain, Sweden, Switzerland, Tanzania, Uganda, United Kingdom and Zambia.

The Post-graduation program of the ICVS/ECS promoted 40 international post-graduation courses that included the participation of 74 foreign students and 76 foreign Professors.

OUTREACH ACTIVITIES

The program of outreach activities implemented by the ICVS and the School of Health Sciences represents a joint strategy to promote scientific awareness in the surrounding community on:

- the importance of research on life and health sciences;
- advanced technologies in biomedicine;
- health education and healthier lifestyles.

The younger population was a crucial target in the context of a network comprising over 38 schools, since the first year of the basic school to the pre-university stage.

Overall, these activities counted with more than 1800 participants, up to 60 researchers in turn of 6 major events:

- "International Brain Awareness Week";
- "Science Outbreak Week";
- Program "Do you want to be an ECS student for a day";
- "Summer in the Campus";
- "Science and Technology Week";
- Scientific initiative "10th Anniversary of the ICVS".

These initiatives included experimental activities at the ICVS laboratories, exhibitions, guided tours to the ICVS facilities, seminars and interactive talks in schools.

Additionally, the ICVS activities were highly publicized in a variety of media vehicles, including in most of the main Portuguese journals, radio stations, information websites, several magazines and different TV programs.

OTHER ACTIVITIES

INTERNAL SERVICES AND RESOURCES

At the ICVS facilities, all the scientific equipment from the installed technological platform is shared amongst Research Domains. Indeed, the ICVS promotes an active policy of equipment purchase based on the perspective of shared usage. In addition, this technological platform is also available under request to the other research units of the University of Minho and to the Portuguese scientific community.

A laboratory management organizational plot is setup, including both Functional Core facilities - equipment with a team of dedicated technical staff that provides services for researchers in the ICVS - and Shared Technical facilities - equipment and infrastructures organized into dedicated spaces on the basis of a particular usage/technique.

Specifically, the ICVS provides: fully operational Functional Core facilities for Animal Housing, Microscopy, Histology, Molecular Biology and Endoscopy/Minimally Invasive Surgery, and Shared Technical Facilities for Cytometry, Cell and Tissue Culture, Bio Banking, Electrophysiology and Biosafety Level 2 and 3. Some of this Functional Cores, such as histology, microscopy and animal housing also provide external services.

A web platform is available and constitutes the basis of the ICVS Quality Management System. The purpose of this platform is the on-line management of all information regarding equipment, labs and consumables.

EXTERNAL SERVICES AND RESOURCES

The ICVS provides services to the general and the clinical communities. These external services were born from the knowledge developed by the ICVS researchers, with emphasis to the Molecular Diagnostics Service (SDM). The SDM includes dedicated staff and is fully equipped for molecular diagnostics. During the last years, the ICVS has been providing, to public and private Health services, genetic diagnostics of intellectual disability related disorders (a panel of genes from chromosome X including Fragile X syndrome genes) and Rett Syndrome (screening of mutations in the MECP2, CSDKL5 and FOXG1 genes), as well as a microarrays service for the screening of microdeletions and duplication of chromosome regions.

Additionally, the ICVS researchers have also directly provided, through confidential research contracts, services to the industry at the international level.

RESEARCH DOMAIN: MICROBIOLOGY AND INFECTION

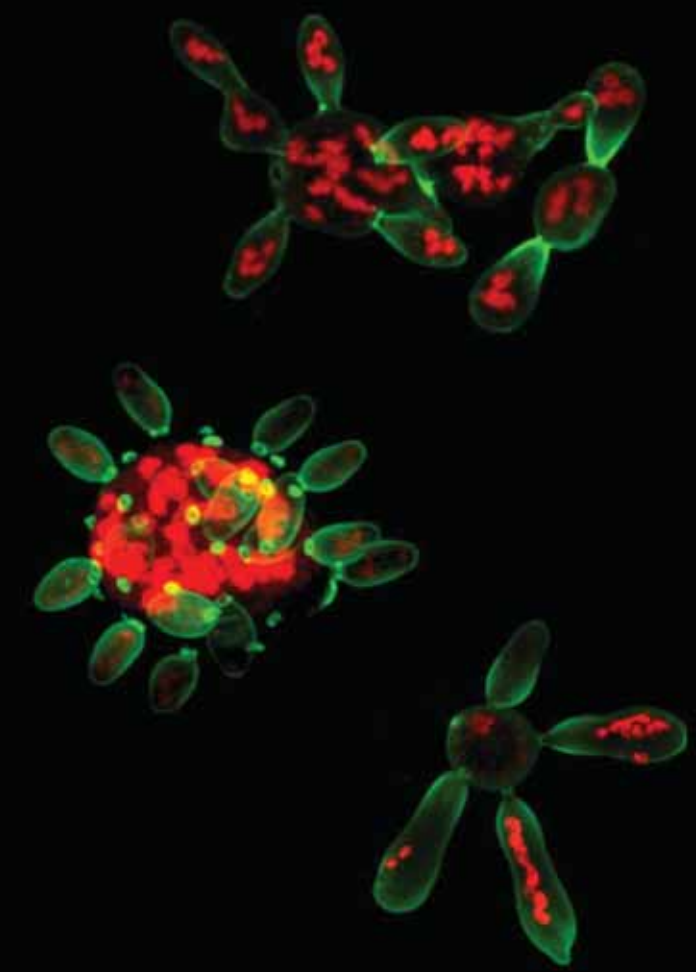
OBJECTIVES & ACHIEVEMENTS

General objectives

The "Microbiology and Infection Research Domain (MIRD)" addresses specific challenges in the prophylaxis and treatment of infectious diseases, including mycobacteriosis and systemic fungal infections. The MIRD is organized in two topics of research:

I - "Cellular and Molecular Microbiology"
Devoted to the study of microorganisms, which are etiological agents of human diseases and/or as models for other human diseases, from the integrated perspective of genetics, cell biology and biochemistry. The research focuses on microbial environmental sensing, transcriptional and posttranscriptional regulation, secretion, autophagy, programmed cell death and molecular aspects of pathogenicity/virulence of human related pathogens.

II - "Immunology and Infection"
Devoted to the study of the cellular/molecular mechanisms of immune control/pathogenesis associated to infectious diseases. Emphasis is given to those of bacterial and fungal origin, which represent a major threat to human health and against which vaccines are unavailable or inefficient.



Main achievements

The MIRD has followed a policy of staff recruitment/differentiation, counting presently more than 50 members with multidisciplinary backgrounds, including biological sciences, engineering and MDs.

Research within the MIRD was supported by 7 projects funded by FCT, 2 FP7 grants and 1 contract with industry.

During the year of 2013, researchers from MIRD published 31 papers in international peer-reviewed journals, including 25 in Q1, with an average IF of 4.9, of which 2 papers in a journal with an IF>10.

Researches within the MIRD were granted with 1 National award (Bolsa D. Manuel de Mello).

The MIRD organized 2 post-graduation courses/workshops and graduated 3 PhD-students and 5 MSc-students.

In line with the previous year, the MIRD kept reinforcing translational/clinical research on hematopoiesis, aspergillosis and mycobacteriosis, namely Tuberculosis and Buruli Ulcer, by fortifying effective collaborations with clinicians in Portugal, Italy, United States of America, Benin and Mozambique.

Research line output

Fifteen selected publications in peer review journals:

1. Osório NS, Rodrigues F, Gagneux S, Pedrosa J, Pinto-Carbó M, Castro AG, Young D, Comas I, Saraiva M. Evidence for diversifying selection in a set of Mycobacterium tuberculosis genes in response to antibiotic and non-antibiotic related pressure. Mol Biol Evol. 30(6):1326-36 (2013). (IF= 10,353)

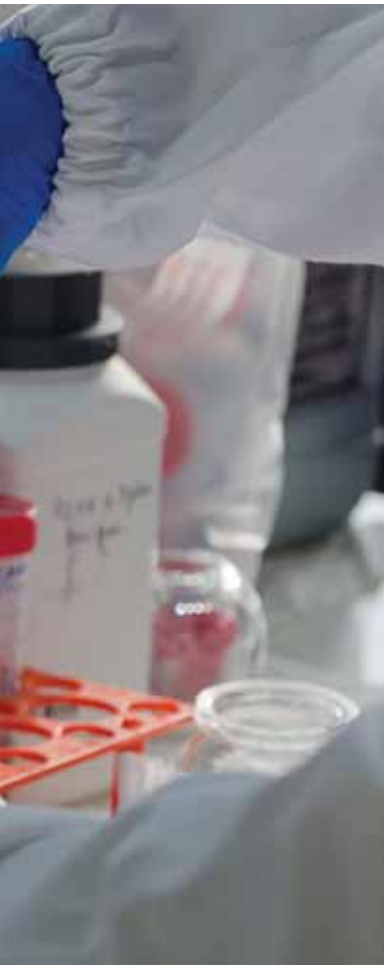
2. Nunes-Alves C, Nobrega C, Behar SM, Correia-Neves M. Tolerance has its limits: how the thymus copes with infection. Trends Immunol. 34(10):502-10 (2013). (IF= 9,486)

3. Guaragnella N, Palermo V, Burhans WC, Gourlay CW, Ludovico P, Madeo F, Giannattasio S, Mazzoni C. Yeast between life and death: a summary of the Ninth International Meeting on Yeast Apoptosis in Rome, Italy, 17-20 September 2012. Cell Death Differ. 20(9):1281-3 (2013). (IF=8,371)

4. McNab FW, Ewbank J, Rajsbaum R, Stavropoulos E, Martirosyan A, Redford PS, Wu X, Graham CM, Saraiva M, Tsichlis P, Chaussabel D, Ley SC, O'Garra A. TPL-2-ERK1/2 Signaling Promotes Host Resistance against Intracellular Bacterial Infection by Negative Regulation of Type I IFN Production. J Immunol. 191(4):1732-43 (2013). (IF=5,52)

5. Andrade EB, Alves J, Madureira P, Oliveira L, Ribeiro A, Cordeiro-da-Silva A, Correia-Neves M, Trieu-Cuot P, Ferreira P. TLR2-induced IL-10 production impairs neutrophil recruitment to infected tissues during neonatal bacterial sepsis. J Immunol. 191(9):4759-68 (2013). (IF=5,52)

6. Nóbrega C, Nunes-Alves C, Cerqueira-Rodrigues B, Roque S, Barreira-Silva P, Behar SM, Correia-Neves M. T Cells Home to the Thymus and Control Infection. J Immunol. 190(4):1646-58 (2013). (IF=5,52)



7. Weinberger M, Sampaio-Marques B, Ludovico P, Burhans WC. DNA replication stress-induced loss of reproductive capacity in S. cerevisiae and its inhibition by caloric restriction. Cell Cycle 12(8):1189-200 (2013). (IF= 5,243)

8. Afonso-Barroso A, Clark SO, Williams A, Rosa GT, Nóbrega C, Silva-Gomes S, Vale-Costa S, Ummels R, Stoker N, Movahedzadeh F, van der Ley P, Sloots A, Cot M, Appelmelk BJ, Puzo G, Nigou J, Geurtsen J, Appelberg R. Lipoarabinomannan mannose caps do not affect mycobacterial virulence or the induction of protective immunity in experimental animal models of infection and have minimal impact on in vitro inflammatory responses. Cell Microbiol. 15(4):660-674 (2013). (IF=4,811)

9. Trigo G, Martins TG, Fraga AG, Longatto-Filho A, Castro AG, Azeredo J, Pedrosa J. Phage Therapy Is Effective against Infection by Mycobacterium ulcerans in a Murine Footpad Model. PLoS Negl Trop Dis. 25;7(4):e2183 (2013). (IF=4,716)

10. Menino JF, Saraiva M, Gomes-Alves AG, Lobo-Silva D, Sturme M, Gomes-Rezende J, Saraiva AL, Goldman GH, Cunha C, Carvalho A, Romani L, Pedrosa J, Castro AG, Rodrigues F. TLR9 Activation Dampens the Early Inflammatory Response to Paracoccidioides brasiliensis, Impacting Host Survival. PLoS Negl Trop Dis. 7(7):e2317 (2013). (IF=4,569)

11. Sousa M, Duarte AM, Fernandes TR, Chaves SR, Pacheco A, Leão C, Côrte-Real M, Sousa MJ. Genome-wide identification of genes involved in the positive and negative regulation of acetic acid-induced programmed cell death in Saccharomyces cerevisiae. BMC Genomics. 14:838. (2013). (IF=4,397)

12. Carmona J, Andrea C, Moreira-Teixeira L, Sousa C, Sousa J, Osorio NS, Saraiva AL, Svenson S, Kallenius G, Pedrosa J, Rodrigues F, Castro AG, Saraiva M. Mycobacterium tuberculosis Strains Are Differentially Recognized by TLRs with an Impact on the Immune Response. PLoS One 8(6):e67277 (2013). (IF=3,73)

13. Horta A, Nobrega C, Amorim-Machado P, Coutinho-Teixeira V, Barreira-Silva P, Boavida S, Costa P, Sarmento-Castro R, Castro AG, Correia-Neves M. Poor Immune Reconstitution in HIV-Infected Patients Associates with High Percentage of Regulatory CD4(+) T Cells. PLoS One 8(2):e57336 (2013). (IF=3,73)

14. Menino JF, Saraiva M, Gomes-Rezende J, Sturme M, Pedrosa J, Castro AG, Ludovico P, Goldman GH, Rodrigues F. P. brasiliensis Virulence Is Affected by SconC, the Negative Regulator of Inorganic Sulfur Assimilation. PLoS One 8(9):e74725 (2013). (IF=3,73)

15. Pacheco A, Azevedo F, Rego A, Santos J, Chaves SR, Côrte-Real M, Sousa MJ. C2-phytoceramide perturbs lipid rafts and cell integrity in Saccharomyces cerevisiae in a sterol-dependent manner. PLoS One 8(9):e74240. (2013). (IF=3,73).

Phd thesis completed

1.
Student: Cláudio Nunes-Alves
Institution: Universidade do Minho
Year of the PhD conclusion: 2013
Scientific Area: Health Sciences
Title: T cell immunity to mycobacteria: the problem of thymic infection and new mouse models to study CD8+ T cell responses to tuberculosis
Supervisor: Margarida Correia-Neves

2.
Student: Jenny Carmona
Institution: Universidade do Minho
Year of the PhD conclusion: 2013
Scientific Area: Health Sciences
Title: Influence of the variability of Mycobacterium tuberculosis strains on the host immune response
Supervisor: Gil Castro

3.
Student: João Filipe Menino
Institution: Universidade do Minho
Year of the PhD conclusion: 2013
Scientific Area: Health Sciences
Title: Paracoccidioides brasiliensis: virulence factors and host susceptibility
Supervisor: Fernando Rodrigues

RESEARCH DOMAIN: NEUROSCIENCES

OBJECTIVES & ACHIEVEMENTS

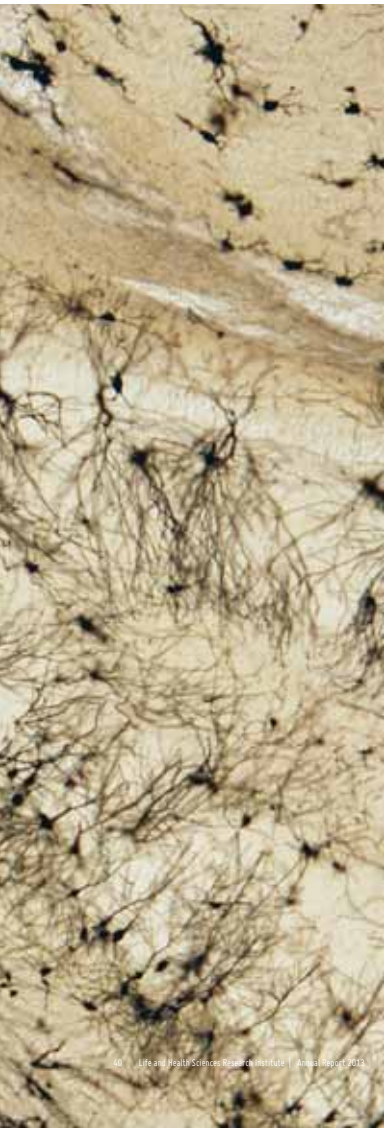
General objectives

The "Neurosciences Research Domain (NERD)" launched its activities at the ICVS in 2003 as two separate research teams, Neurosciences and Human Genetics. Since 2003, the NERD evolved into a single team with increasing internal collaborations and common research topics, profiting from the varied backgrounds of its members.

The NERD is devoted to the study of the Central Nervous System with emphasis in three main research topics: Neurodevelopment, Neurodegeneration and Neuroimmunology. Studies at the molecular, cellular and system levels are performed in physiological conditions covering from neurodevelopment to senescence, as well as in several human neuropsychiatric disorders, such as early- and late-onset degenerative diseases, neuroimmune disorders, depression, anxiety and chronic pain syndromes.

In line with the multimodal approaches of research questions, the team is composed by members with a wide spectrum of backgrounds (MDs from neurology, neuroradiology, psychiatry, internal medicine, endocrinology, urology, surgery, neonatology, pediatrics, medical genetics, biochemists, molecular biologists, statisticians, mathematicians, biomedical and electronic engineers, psychologists, veterinaries, pharmacists).

The NERD benefits from an extensive technical platform, conducting studies in parallel in humans and animal models, covering fundamental, translational and clinical research.



Main achievements

Research within the NERD was supported by 24 projects funded by FCT, 4 FP7 grants and 4 contracts with industry.

During the year of 2013, researchers from NERD published 75 papers in international peer-reviewed journals, including 41 in Q1, with an average IF of 4.7, of which 3 papers in a journal with an IF>10.

Researchers within the NERD were granted with 4 National awards (Prize Melo e Castro - Santa Casa da Misericórdia de Lisboa; Young Entrepreneur 2013 – ANJE Award; Grünenthal Pain Award; Roche Best Poster Award at XXII Port Cancer Meeting 2013).

The NERD organized 2 scientific meetings and 10 post-graduation courses / workshops and graduated 4 PhD-students and 6 MSc-students.

Research line output

Fifteen selected publications in peer review journals

1. Batalha VL, Pego JM, Fontinha BM, Costenla AR, Valadas JS, Baqi Y, Radjainia H, Müller CE, Sebastião AM, Lopes LV. Adenosine A(2A) receptor blockade reverts hippocampal stress-induced deficits and restores corticosterone circadian oscillation. Mol Psychiatry 18:320-331 (2013). (IF=14,897)

2. Mateus-Pinheiro A, Patrício P, Bessa J, Sousa N, Pinto L. Cell genesis and dendritic plasticity: a neuroplastic pas de deux in the onset and remission from depression, Mol Psychiatry 18:748-750 (2013). (IF=14,897)

3. Vinagre J, Almeida A, Populo H, Batista R, Lyra J, Pinto V, Coelho R, Celestino R, Prazeres H, Lima L, Melo M, Rocha A, Preto A, Castro P, Castro P, Pardal F, Lopes JM, Lara Santos L, Reis RM, Cameselle-Teijeiro J, Sobrinho-Simões M, Lima J, Máximo V, Soares P. Frequency of TERT promoter mutations in human cancers. Nat Commun. 4:2185 (2013). (IF=10,015)

4. Nunes-Alves C, Nobrega C, Behar SM, Correia-Neves M. Tolerance has its limits: how the thymus copes with infection. Trends Immunol. 34(10):502-10 (2013). (IF=9,486)

5. Borges S, Coimbra B, Soares-Cunha C, Pego JM, Sousa N, Rodrigues AJ. Dopaminergic modulation of affective and social deficits induced by prenatal glucocorticoid exposure. Neuropsychopharmacology 38(10):2068-2079 (2013). (IF=8,678)

6. Paugh BS, Zhu X, Qu C, Endersby R, Diaz AK, Zhang J, Bax DA, Carvalho D, Reis RM, Onar-Thomas A, Broniscer A, Wetmore C, Zhang J, Jones C, Ellison DW, Baker SJ. Novel Oncogenic PDGFRA Mutations in Pediatric High-Grade Gliomas. Cancer Res. 73(20):6219-6229 (2013). (IF=8,65)

7. Sampaio A, Bouix S, Sousa N, Vasconcelos C, Férnandez M, Shenton ME, Gonçalves OF. Morphometry of corpus callosum in Williams syndrome: shape as an index of neural development. Brain Struct Funct. 218:711-720 (2013). (IF=7,837)

8. Cerqueira SR, Oliveira JM, Silva NA, Leite-Almeida H, Ribeiro-Samy S, Almeida A, Mano JF, Sousa N, Salgado AJ, Reis RL. Microglia Response and In vivo Therapeutic Potential of Methylprednisolone-Loaded Dendrimer Nanoparticles in Spinal Cord Injury. Small 9(5):738-749 (2013). (IF=7,823)

9. Moniz S, Martinho O, Pinto F, Sousa B, Loureiro C, Oliveira MJ, Moita LF, Honavar M, Pinheiro C, Pires M, Lopes JM, Jones C, Costello JF, Paredes J, Reis RM, Jordan P. Loss of WNK2 expression by promoter gene methylation occurs in adult gliomas and triggers Rac1-mediated tumour cell invasiveness. Hum Mol Genet. 22(1):84-95 (2013). (IF=7,692)

10. Haastert-Talini K, Geuna S., Dahlin LB, Meyer C, Stenberg S, Freier T, Heimann H., Barwig C, Pinto LFV, Raimondo S, Gambarotta G., Ribeiro Samy S, Sousa N, Salgado AJ, Ratzka A, Wrobel S, Grothe C. Chitosan tubes of varying degrees of acetylation for bridging peripheral nerve defects. Biomaterials 34(38):9886-904 (2013). (IF=7,604)

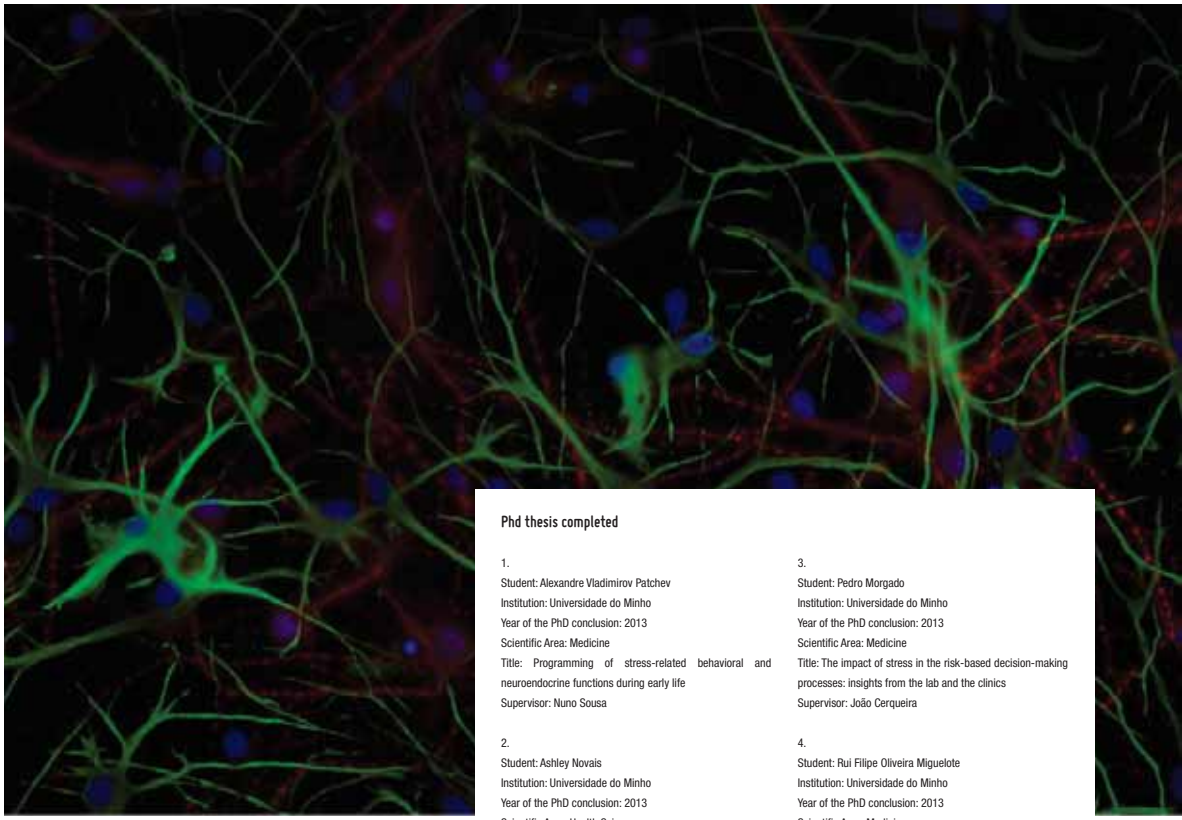
11. Miranda-Gonçalves V, Honavar M, Pinheiro C, Martinho O, Cordeiro M, Bebiano G, Costa P, Reis RM, Baltazar F. Monocarboxylate transporters (MCTs) in gliomas: Expression and exploitation as therapeutic target. Neuro-Oncology 15(2):172-88 (2013). (IF=6,18)

12. Teixeira FG, Carvalho MM, Sousa N, Salgado AJ. Mesenchymal Stem Cells Secretome: a new paradigm for Central Nervous System Regeneration? Cell Mol Life Sci. 70:3871-3882 (2013). (IF=5,615)

13. Andrade EB, Alves J, Madureira P, Oliveira L, Ribeiro A, Cordeiro-da-Silva A, Correia-Neves M, Trieu-Cuot P, Ferreira P. TLR2-induced IL-10 production impairs neutrophil recruitment to infected tissues during neonatal bacterial sepsis. J Immunol. 191(9):4759-4768 (2013). (IF=5,52)

14. Nóbrega C, Nunes-Alves C, Cerqueira-Rodrigues B, Roque S, Barreira-Silva P, Behar SM, Correia-Neves M. T Cells Home to the Thymus and Control Infection. J Immunol. 190(4):1646-58 (2013). (IF=5,52)

15. Pereira VH, Cerqueira JJ, Palha JA, Sousa N. Stressed brain, diseased heart: A review on the pathophysiologic mechanisms of neurocardiology. Int J Cardiol. 166:30-37 (2013). (IF=5,509)



Phd thesis completed

1.
Student: Alexandre Vladimirov Patchev
Institution: Universidade do Minho
Year of the PhD conclusion: 2013
Scientific Area: Medicine
Title: Programming of stress-related behavioral and neuroendocrine functions during early life
Supervisor: Nuno Sousa

2.
Student: Ashley Novais
Institution: Universidade do Minho
Year of the PhD conclusion: 2013
Scientific Area: Health Sciences
Title: Unraveling the biological role of neudesin, a novel neurotrophic factor
Supervisor: João Carlos Sousa

3.
Student: Pedro Morgado
Institution: Universidade do Minho
Year of the PhD conclusion: 2013
Scientific Area: Medicine
Title: The impact of stress in the risk-based decision-making processes: insights from the lab and the clinics
Supervisor: João Cerqueira

4.
Student: Rui Filipe Oliveira Miguelote
Institution: Universidade do Minho
Year of the PhD conclusion: 2013
Scientific Area: Medicine
Title: Prenatal "isolated" mild ventriculomegaly: looking for sonographic markers of prognosis and differential diagnosis
Supervisor: Nuno Sousa

RESEARCH DOMAIN: SURGICAL SCIENCES

OBJECTIVES & ACHIEVEMENTS

General objectives

The "Surgical Sciences Research Domain (SSRD)" deals with diseases from the digestive, pulmonary and urogenital systems.

An interdisciplinary team, including biologists, engineers and MDs works together aiming to: understand the development mechanisms regulating time and space differentiation of cells/tissues (e.g. somites, limb and lung growth); evaluate genetic/molecular markers as risk and prognostic factors, as well as therapeutic strategies (e.g. congenital malformations and oncological diseases). As surgery has a strong technical dimension, in connection with industry: we explore the possibility of scarless interventions through Natural Orifices Transluminal Endoscopic Surgery (N.O.T.E.S.); using human body imaging (CT scan and laser) as a surrogate to develop three-dimensional constructs, we provide personalized prosthesis and surgical plans. As additional mission, we provide an extensive international hands-on program with courses in minimally invasive techniques.

Main achievements

Research within the SSRD was supported by 7 projects funded by FCT.

During the year of 2013, researchers from SSRD published 60 papers in international peer-reviewed journals, including 20 in Q1, with an average IF of 4.8, of which 6 papers in a journal with an IF>10.

Researchers within the SSRD were granted with 3 International and 7 National awards (Travel Grant United European Gastroenterology Week 2013; National Scholar Award United European Gastroenterology 2013; EACR Meeting Bursary 2013; Best Oral Communication of Pâncreas e Vias Biliares at the Semana Digestiva 2013; Award from the Grupo Português de Ultra-Sons em Gastrenterologia; Best Oral Communication at the XXIII Congresso Nacional de Coloproctologia; Best video at the Congresso Português de Urologia 2013; 3rd Best Oral Communication at the Congresso Português de Urologia 2013; Best Poster Award at the XXII Porto Cancer Meeting & III Porto-Bordeaux Joint Meeting 2013; 1st Prize for Best Communication at the 176ª Reunião da Sociedade Portuguesa de Ginecologia 2013).

The SSRD organized 2 scientific meetings and 20 post-graduation courses/workshops and graduated 2 PhD-students and 6 MSc-students. In addition, SSRD members were involved in 42 conferences and seminars in the context of international meetings outside Portugal (18 participations/presentations).

Research line output

Fifteen selected publications in peer review journals

1. Antunes H, Nascimento J, Peixoto P. Peutz-Jeghers syndrome: capsule endoscopy to staging disease. The Lancet 381(9864):e5 (2013). (IF=39,06)

2. Antunes H, Pereira A, Cunha I. Chediak-Higashi syndrome: pathognomonic feature. Lancet 382(9903):1514 (2013). (IF=39,06)

3. Nogueira-Silva C, Leitão TP, Osório F. Bladder Endometriosis: a Diagnostic Challenge. BMJ 346: f3513 (2013). (IF=17,215)

4. Gonçalves B, Caetano AC, Ferreira A. A rare cause of abdominal pain. Gastroenterology 145(5):e11-2 (2013). (IF=12,835)

5. Caetano AC; Gonçalves B; Rolanda C. Rare complication - what kind of colitis? Gastroenterology 145(4): e7-8 (2013). (IF=12,835)

6. Bjerke L, Mackay A, Nandhabalan M, Burford A, Jury A, Popov S, Bax DA, Carvalho D, Taylor K, Bajrami I, McGonnell IM, Lord CJ, Reis RM, Hargrave D, Ashworth A, Workman P, Jones C. Histone H3.3 mutations drive paediatric glioblastoma through upregulation of MYCN. Cancer Discovery 3:512-519 (2013). (IF=10,143)

7. Hamm A, Veschini L, Takeda Y, Costa S, Delamarre E, Squadrito ML, Henze A-T, Wenes M, Serneels J, Pucci F, Roncal C, Anisimov A, Alitalo K, DePalma M, Mazzone M. PHD2 regulates arteriogenic macrophages through TIE2 signaling. EMBO Mol Med. 5(6):843-57 (2013). (IF=7,795)

8. Gonçalves BM, Ferreira A, Caetano AC, Bastos P, Rolanda C. Endoloop restraining and SEMS removal through an esophagocolonic anastomosis' stricture - Technical video. Endoscopy 45 Suppl 2:E209. (2013). (IF=5,735)

9. Morais-Santos F, Miranda-Gonçalves V, Pinheiro S, Vieira AF, Paredes J, Schmitt F, Baltazar F, Pinheiro C. Differential sensitivities to lactate transport inhibitors of breast cancer cell lines. Endocr Relat Cancer 21(1): 27-38 (2013). (IF=5,261)

10. Martins D, Beça FF, Sousa B, Baltazar F, Paredes J, Schmitt F. Loss of caveolin-1 and gain of MCT4 expression in the tumor stroma: Key events in the progression from an in situ to an invasive breast carcinoma. Cell Cycle 12(16):2684-90 (2013). (IF=5,243)

11. Sheeba CJ, Andrade RP, Palmeirim I. Limb patterning: from signalling gradients to molecular oscillations. J Mol Biol. 426(4):780-4 (2013). (IF=3,905)

12. Pértega-Gomes N, Vizcaíno JR, Gouveia C, Jerónimo C, Henrique RM, Lopes C, Baltazar F. Monocarboxylate transporter 2 (MCT2) as putative biomarker in prostate cancer. The Prostate 73(7): 763-769 (2013). (IF=3,843)

13. Nogueira-Silva C, Piairo P, Carvalho-Dias E, Veiga C, Moura RS, Correia-Pinto J. The role of glycoprotein 130 family of cytokines in fetal rat lung development. PLoS One. 8(6):e67607. (2013) (IF=3.73)

14. Rodrigues PL, Vilaça JL, Oliveira C, Cicione A, Rassweiler J, Fonseca J, Rodrigues NF, Correia-Pinto J, Lima E. Collecting system percutaneous access using real-time tracking sensors: first pig model in vivo experience. J Urol. 190(5):1932-7 (2013). (IF=3.696)

15. Granja S, Morais-Santos F, Miranda-Gonçalves V, Viana-Ferreira M, Nogueira R, Nogueira-Silva C, Correia-Pinto J, Baltazar F. The monocarboxylate transporter inhibitor ⍺-cyano-4-hydroxycinnamic acid disrupts rat lung branching. Cell Physiol Biochem. 32(6):1845-56. (2013) (IF=3.415)

Phd thesis completed

1.
Student: Julieta Afonso
Institution: Universidade do Minho
Year of the PhD conclusion: 2013
Scientific Area: Health Sciences
Title: Translating Biology into Clinic: New insights on prognostic and predictive biomarkers for urothelial bladder carcinoma
Supervisor: Adhemar Longatto

2.
Student: Sara Granja
Institution: Universidade do Minho
Year of the PhD conclusion: 2013
Scientific Area: Health Sciences
Title: Role of Monocarboxylate transporter in lung development and lung cancer
Supervisor: Fátima Baltazar

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