

ISABEL MARIA SANTANA RAMOS DE FREITAS AMARAL

CONTACT

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ACADEMIC QUALIFICATIONS

- PhD in Engineering Sciences (Doctoral Program in Biomedical Engineering), Faculty of Engineering of the University of Porto (FEUP), 14th February 2006.
- Graduation in *Ciências do Meio Aquático*. Instituto de Ciências Biomédicas Abel Salazar, University of Porto, September 1987.

PRESENT POSITIONS

- Assistant investigator at the *Instituto de Engenharia Biomédica* (INEB), Institute for Research and Innovation in Health (I3S, *Instituto de Investigação e Inovação em Saúde*), University of Porto, since July 2013
- Invited Assistant Professor at FEUP, since 2009.

AREA OF SCIENTIFIC ACTIVITY

Recent advances in the field of Regenerative Medicine, particularly of Tissue Engineering, promise to change profoundly medical practice. The development of 3-D matrices in the form of gels or porous scaffolds, able to be used as temporary support structures for *in situ* tissue ingrowth, cell transplantation, and/or delivery of signaling molecules, is contributing to make the regeneration of injured or diseased tissues a more attainable challenge. I Amaral current research activity is focused on the development of cell instructive 3-D matrices designed at the molecular level to elicit specific biological responses for application in the regeneration of the nervous system.

PRESENT RESEARCH INTERESTS

In the challenging field of central nervous system (CNS) regeneration, transplantation of neural stem/progenitor cells (NSPCs) derived from ES or iPS cells holds much promise. Still, despite their ability to survive and integrate into the host neural circuitry, leading often to functional benefits, neural progenitors injected as suspensions directly into the lesion site of chronic injuries show low survival and/or poor integration of grafted cells. In an effort to provide cells with a more permissive environment for cell survival, anchorage, migration, and differentiation, Isabel Amaral main research interest is the design of 3-D polymeric matrices in the form of versatile hydrogels to be used as delivery vehicles of pluripotent stem cell-derived NSPCs into the injured CNS. She is particularly interested in developing matrices tailored at the molecular level with cell adhesive motifs and/or biological signaling molecules to induce survival, migration and differentiation of neural progenitors along the neuronal/oligodendrocyte lineages following transplantation, and to guide axonal regeneration in the spinal cord.

The incorporation of cell-targeted molecules able to overcome the effect of neurite outgrowth inhibitors is also being explored. The combination of complementary and synergistic therapeutic approaches integrating guidance matrices, cells and localized delivery of therapeutic molecules is expected to provide a more permissible environment for axonal regeneration ultimately leading to improved functional recovery.

HONORS AND AWARDS

- 2005 Best Poster Award, 6th Advanced Course in Cell-Material Interactions at Molecular Level, Porto, June, 20-24.
- 2003 ISCM Special Oral Award, 16th International Symposium on Ceramics in Medicine - Bioceramics 16, Porto, November, 6-9, 2003.

FELLOWSHIPS

- 01/03/06 to 20/06/09: Post-Doc scholarship, from the Portuguese Foundation for Science and Technology (FCT SFRH/BPD/24377/2005).
- 1998-2002: PhD scholarship, from the Portuguese Foundation for Science and Technology (FCT Praxis XXI BD/16159/98).

ACADEMIC AND PROFESSIONAL EXPERIENCE

- 2009-2013: Assistant Investigator at INEB, in the framework of *Ciência 2008*.
- 2007 (Oct): Visiting scientist at Fabiana Paim's Lab, *Instituto de Ciências da Saúde, Universidade Federal da Bahia* (UFBA), Salvador, Bahia, Brasil.
- 2006-2009: Joint Post-doctoral Fellow supported by the Portuguese Foundation for Science and Technology (FCT) at the NEWTherapies Group of INEB (with Ana P. Pêgo) and at the Institute of Pathology, Johannes Gutenberg University, Mainz, Germany (with Prof. C James Kirkpatrick).
- 1998-2006: Ph.D. Researcher at INEB, supervised by Prof. Mário A. Barbosa.
- 1991-1995: Biologist in charge at A. Coelho & Castro Lda. (*Piscicultura do Rio Alto*, turbot hatchery, nursery and growth-out).
- 1990-1991: Post-graduated research trainee at the *Instituto de Ciências Biomédicas Abel Salazar* (ICBAS), Dep. of Applied Fisiology, University of Porto (with Prof. Jorge Coimbra).
- 1988-1990: Post-graduated research trainee at ICBAS, Dep. of Aquatic Engineering, University of Porto (with José Fernando Gonçalves).
- 1988 (Nov/Dec): Research trainee at *Association Pêche Aquaculture de Sud Bretagne, Écloserie d'huîtres et palourdes, Viviers du Pérello*, France.
- 1988 (Sep/Nov): Research trainee at *Centre d'étude et valorization des algues - CEVA, Pleubian*, France.

EDUCATIONAL ACTIVITIES

TEACHING IN UNDERGRADUATE AND POST-GRADUATE PROGRAMMES

- Since 2009: Invited Assistant Professor at FEUP, University of Porto, in the Framework of the Integrated MSc Course in Bioengineering (*componente laboratorial da disciplina de Reparação e Regeneração de Tecidos*).
- 1992 to 1995: Lecturer at ICBAS, University of Porto (*Cultura de microalgas, zooplankton e de peixes chatos, disciplina de Engenharia Aquática e Sistemas de produção* of the graduation in Ciências do Meio Aquático).
- 1992-1995: Lecturer at the course *Aquacultura* at *Centro de Formação Profissional para o Sector das Pescas*, Matosinhos.
- 1988 (Jan/Sep): Teacher of *Aquacultura* at *Escola Secundária de José Régio*, Vila do Conde.
- 1987 (Jul/Dec): Teacher of "Fish processing", at *Fábrica de conservas "Madrugada"*, Póvoa de Varzim.

COMMITTEES, BOARDS AND OTHER RELEVANT SCIENTIFIC ACTIVITIES

EXPERT

- Portuguese funding agency FCT/CAPES
- Czech Science Foundation

REFEREE

- ACS Biomaterials Science & Engineering
- Acta Biomaterialia
- Biomacromolecules
- Biomaterials
- Carbohydrate Polymers
- Carbohydrate Research
- European Polymer Journal
- International Journal of Biological Macromolecules
- Journal of Applied Polymer Science
- Journal of Biomaterials Materials Research Part A
- Journal of Biomaterials Materials Research Part B
- Journal of Materials Science: Materials in Medicine
- Journal of Molecular Structure
- Journal of Tissue Engineering and Regenerative Medicine
- Journal of Nanomedicine
- Langmuir
- Materials Science Forum
- PLOS ONE

MEMBERSHIP OF SCIENTIFIC SOCIETIES

- European Peptide Society, since 2016
- Tissue Engineering and Regenerative Medicine International Society (TERMIS).
- Sociedade Portuguesa de Neurociências (SPN), since 2011
- European Society for Biomaterials (ESB), MN 200230
- Sociedade Portuguesa de Células Estaminais (SPCE), since 2009

PARTICIPATION IN SCIENTIFIC PROJECTS

- Combine - Combinatorial regenerative strategy to potentiate axon regeneration and improve functional recovery after spinal cord injury (2015-2018). Funded by Santa Casa da Misericórdia de Lisboa – Prémio Melo e Castro (Team member).
- Functionalized hydrogels for neural stem cell-based regenerative therapies of the spinal cord (2012-2013), Funded by Universidade do Porto (PI).
- NeurON - Molecularly-designed hydrogels for neural stem cell transplantation: a combinatorial approach for successful regeneration and functional recovery in spinal cord injury (2012-2015). Funded by FCT. (PI).
- Characterization of cell-intrinsic axonal regeneration determinants and their use to promote repair after CNS injury (2011-2014). Funded by FCT, within the Harvard Medical School - Portugal Program. (Team member).
- GIANTCELL - The modulation of macrophages to resolve inflammatory reactions to biomaterials through the induction of the M2 phenotype (2011-2014). Funded by FCT. (Task coordinator).
- HYBRID - Sr-Releasing injectable system for vertebroplasty (2010–2013). Funded by FCT (Task coordinator).
- DISC REGENERATION - Novel biofunctional highly porous polymer scaffolds and techniques controlling angiogenesis for the regeneration and repair of the degenerated intervertebral disc (2008-2012). Funded by the European Commission. (Team member)

- NEURAL TALK - Scaffold-driven stem-cell regenerative therapy for the spinal cord injury. Biomimetic neurogenesis in the CNS (2007-Dec 2010). Funded by FCT. (Team member)
- Identification of the mechanisms allowing central nervous system regeneration after a pre-conditioning injury to the peripheral nervous system (2007-2010). Funded by FCT. (Team member)
- Preparation and characterization of porous microspheres based on a naturally-occurring polymer, for minimally-invasive bone regenerative therapies (2007). Funded by University of Porto. (Team member)
- GAUCHER II - An injectable enzyme delivery system based on apatite nanoparticles and natural hydrogel microspheres for bone regeneration (2002-2005). Funded by FCT. (Team member)
- Bioactive Biomaterials as Supports for the Immobilisation and Subsequent In Vivo Release of Imiglucerase: A New Therapeutic Approach for the Treatment of Gaucher Disease (1999-2001). Funded by FCT. (Team member)
- *Fontes proteicas alternativas para enguias de vidro* (1990-1991). (Team member)
- *Formação Técnica Básica em Piscicultura e Apoio Logístico a Pisciculturas de Pequena Escala* (1988-1990). Funded by Comissão de Coordenação da Região Norte (CCRN). (Team member)

SUPERVISION OF SCIENTIFIC WORKS

Ph.D. STUDENTS

- Daniela Filipa dos Santos Barros. Self-assembled biomimetic hybrid hydrogel for cell delivery to the central nervous system". Co-supervisor, Biotech Health Cluster (since 05/14).
- Ana Rita das Neves Lagarto Bento. Bio-inspired hydrogels for neural stem cell transplantation: a combinatorial therapeutic approach to promote regeneration in the spinal cord. Supervisor, FEUP (since 11/12).

MSc STUDENTS

- Joana Catarina Cunha Dias Soares Loureiro. Functionalization of fibrin-based hydrogel matrices with angiogenic physical cues as a strategy to promote the vascularization of tissue-engineered implants Supervisor, ICBAS (12/10/16).
- Joana Leite. Effect of immobilized $\alpha\beta 1$ synthetic ligands on the behavior of oligodendrocyte progenitor cells (OPCs) cultured in 3D fibrin hydrogels. Supervisor, FEUP (since 01/2015).
- Silvia da Conceição Neto Bessa. Evaluation of radial outgrowth/migration from neurospheres in functionalized 3D hydrogels. Supervisor, FEUP (since 09/12).
- Tiago Laundos Santos. Establishment of a controlled cell culture system to obtain neurospheres of embryonic stem cell (ESC)-derived neural progenitors. Supervisor, FEUP (21/10/13).
- Joana Silva. Evaluation of different synthetic ligands ability to promote cell migration of ES-derived neural stem cells: a step forward to the development of molecularly-designed hydrogels for neural stem cell transplantation. Supervisor, FEUP (24/07/12).
- Rita Catarina Silva. Evaluation of the proliferation of mouse embryonic stem cell-derived neural stem cells in a fibrin-based hydrogel. Co-supervisor, FEUP (23/10/12).
- Ana Rita Ferreira. Cross-talk of ES-derived neural stem cells with endothelial cells in a fibrin-based hydrogel: Optimization of a co-culture system. Co-supervisor, ICBAS (22/11/11).
- Francisco A. F. Ferro de Beça. Co-culture of microvascular endothelial cells and neural stem cells in a fibrin-based hydrogel towards the development of novel stem-cells therapies. Supervisor, FMUP (09/08-09/09).

GRADUATION PROJECTS

- Ismael Neiva. Surface modification of chitosan porous scaffolds with recombinant fragments of

fibronectin to promote endothelial cell adhesion. Supervisor. ICBAS, Universidade do Porto (04/09 to 07/09).

- Lara P. M. da Silva. Culture of human microvasculature endothelial cells within modified chitosan porous scaffolds. Co-supervisor. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa (03/07 to 07/07).
- Ana Isabel N. Silva. Development and characterization of natural materials for biomedical applications. Co-supervisor. New University of Lisbon (01-07/03).

RESEARCH ASSISTANTS

- Marisa Sofia de Oliveira Assunção. Development and biological characterization of a neuron specific non-viral delivery system for anti-Rho-kinase 1 and 2 short interfering RNA (siRNA-ROCK1/2). Supervisor. INEB (03/14 to 07/15).
- Joana Silva. Preparation and characterization of fibrin hydrogels with immobilized peptides for transplantation of ES-derived neural stem cells into the spinal cord. Supervisor. INEB (12/12 to 03/15).
- Patrick Kennedy. Development and biological characterization of a neuron specific non-viral delivery system. Co-supervisor. INEB (since 01/13).
- Daniela N. Rocha. Preparation of a biomimetic hydrogel based on fibrin functionalized with VEGF and laminin fragments for the treatment of Spinal Cord Lesions. Co-supervisor. INEB (12/09 to 08/10).
- Diana A. D. Veiga. Evaluation of the behavior of mouse ES-derived neural stem cells in a fibrin-based hydrogel cultured in the presence of endothelial cells (ECs) or EC-conditioned media. Co-supervisor. INEB (12/09 to 08/10).
- Ana Margarida Piloto. Preparation of 3D porous tubular scaffolds functionalized with cell adhesion peptides for the treatment of spinal cord injury. Co-supervisor. INEB (05/08 to 04/09).

RESEARCH TRAINING

- Silvia da C. N. Bessa. Evaluation of five different synthetic $\alpha\beta 1$ ligands ability to promote cell migration of ES-derived neural stem cells (ES-derived NSCs): a step forward to the development of molecularly-designed hydrogels for neural stem cell transplantation. Supervisor. INEB (10/11 to 07/12).
- Tiago Santos. Evaluation of four different synthetic $\alpha\beta 1$ ligands ability to promote cell adhesion of ES-derived neural stem cells (ES-derived NSCs): a step forward to the development of molecularly-designed hydrogels for neural stem cell transplantation. Supervisor. INEB (03/11 to 02/12).
- Thomas van Berkel. Evaluation of the behaviour of mouse ES-derived neural stem cells in a fibrin-based hydrogel. Co-supervisor. Traineeship, University of Twente (09/10 to 11/10).
- Francisco A. F. Ferro de Beça. In vitro recreation of the neural stem niches found in the adult CNS towards the development of novel stem-cells therapies for the treatment of spinal cord injuries - Co-culture of microvascular endothelial cells and neural stem cells in a fibrin-based hydrogel. INEB (03/08 to 07/08).
- Rhyna C. da Cunha Costa. In vivo evaluation of the osteogenic potencial of 3D chitosan matrices with two different degrees of acetylation. Supervisor of PhD studies, INEB, (02/08 to 04/08).
- Stefania Nardecchia. Development of crosslinked chitosan microspheres with capacity to resist to the stomach acidic conditions and release antibodies for H. pylori. Co-supervisor of the graduated research trainee, INEB (11/07 to 05/08).
- Daniel F. M. de Vasconcelos. Preparation and characterization of porous microspheres based on a naturally-occurring polymer for minimally-invasive bone regenerative therapies. Co-supervisor, FEUP (02/07-02/08).
- Ismael Neiva. Design of 3-D chitosan porous scaffolds for cell-based regenerative therapies of the central nervous system. INEB (11/07 to 02/08).
- Ismael Neiva. Design of 3-D chitosan porous scaffolds for cell-based regenerative therapies. INEB, (02/0 to 07/07).
- Rhyna C. da Cunha Costa. Rat bone marrow stromal cell culture in 3D porous chitosan scaffolds envisaging cell-based bone regenerative therapies. PhD studies, INEB (02/07 to 03/07).

PUBLICATIONS AND COMMUNICATIONS

THESES

- I.F. Amaral, Chitosan Matrices for Cell-based Bone Regenerative Therapies, Ph.D. thesis, Faculdade de Engenharia da Universidade do Porto (FEUP), Porto, 2006.

BOOKS

- I.F. Amaral, J.F. Gonçalves and A.A. Coelho e Castro. Manual para cultura de trutas. Porto: Gabinete de Desenho e Reprografia e Fotografia do ICBAS, 1990. 79 p.

BOOK CHAPTERS

- D. Mosqueira, I.F. Amaral, P.L. Granja, and P. Pinto-do-Ó, Química Física da Vida. In António Barbedo de Magalhães, Abel D. Santos, João Falcão e Cunha eds, Introdução à Engenharia Mecânica – Sua relevância na sociedade e na vida contemporânea, Publindústria - Edições Técnicas, 2015, 620 p.
- P.L. Granja, C.C. Barrias, I.F. Amaral and M.A. Barbosa, *Biomateriais Poliméricos Naturais* (Chap. 2). In J. P. Sardinha and M. H. Gil editors. Biomateriais; Conceitos e Aplicações, Lidel - Edições Técnicas Lda, 2011. (*in press*).
- M.A. Barbosa, A.P. Pêgo, I.F. Amaral, Chitosan. In P. Ducheyne, E. Healy, D. W. Hutmacher, D. W. Grainger, and C. J. Kirkpatrick eds. Comprehensive Biomaterials, Elsevier Ltd, 2011, vol. 2, p. 221-237. Elsevier Ltd.
- M. Barbosa, I.F. Amaral, C.C. Barrias, J. Cavalheiro, M.P. Ferraz, P.L. Granja, M.A. Lopes, M.C. Martins, F.J. Monteiro, C.C. Ribeiro, J.D. Santos, S.R. Sousa, and A.C. Queiroz, Biomateriais. In N. Lima and M. Mota eds. Biotecnologia - Fundamentos e Aplicações: Lidel - Edições Técnicas Lda, 2003. p. 377-398.

PAPERS IN INTERNATIONAL REFEREED JOURNALS

- J.N. Silva, A.R. Bento, D. Barros, T.L. Laundos, S.R. Sousa, P. Quelhas, M.M. Sousa, A.P. Pêgo, and I.F. Amaral, Functionalization of fibrin hydrogels with $\alpha 6 \beta 1$ integrin binding adhesive peptides for delivery of pluripotent stem cell-derived neural stem/progenitors (submitted).
- T.L. Laundos, J. Silva, M. Assunção, P. Quelhas, C. Monteiro, C. Oliveira, M.J. Oliveira, A.P. Pêgo, and I.F. Amaral, Rotary orbital suspension culture of embryonic stem cell-derived neural stem/progenitors: impact of hydrodynamic culture on aggregate yield, morphology, and cell phenotype. *Journal of Tissue Engineering and Regenerative Medicine*, 2016. DOI: 10.1002/term.2121.
- A.R. Bento, P. Quelhas, M.J. Oliveira, A.P. Pêgo, and I.F. Amaral, Three-dimensional culture of single embryonic stem-derived neural/stem progenitor cells in fibrin hydrogels: neuronal network formation and matrix remodelling. *Journal of Tissue Engineering and Regenerative Medicine*. DOI: 10.1002/term.2262.
- D.P. Vasconcelos; M. Costa; I.F. Amaral; M.A. Barbosa; A.P. Águas, and J.N. Barbosa, Development of an Immunomodulatory Biomaterial: Using Resolvin D1 to Control Inflammation. *Biomaterials*, 53, 2015, 566-573.
- D. Barros, I.F. Amaral, and A.P. Pêgo, Biomimetic Synthetic Self-Assembled Hydrogels for Cell Transplantation. *Current Topics in Medicinal Chemistry*, 15, 2015, 1209-1226. DOI:10.2174/1568026615666150330111057.

- D. Vasconcelos, A.C. Fonseca, M. Costa, I.F. Amaral, M.A. Barbosa, and A.P. Águas, Modulation of the Inflammatory Response to Chitosan through M2 Macrophage Polarization Using Pro-resolution Mediators, *Biomaterials*, 37, 2015, 116-123. DOI:10.1016/j.biomaterials.2014.10.035.
- M. Fernandes, I.C. Gonçalves, S. Nardecchia, I.F. Amaral, M.A. Barbosa, and M.C.L. Martins, Modulation of stability and mucoadhesive properties of chitosan microspheres for therapeutic gastric application, *International Journal of Pharmaceutics*, 454, 2013, p. 116-124.
- I.F. Amaral, S.R. Sousa, I. Neiva, L. Marcos-Silva, C.J. Kirkpatrick, M.A. Barbosa, and A.P. Pêgo, Fibronectin adsorption to chitosan scaffolds assessed by radiolabelling and correlation with cell behaviour, *Biomatter*, Volume 3, Issue 2 April/May/June 2013, e24791 1-11.
- I.F. Amaral, I. Neiva, F. Ferreira da Silva, S.R. Sousa, A.M. Piloto, C.D.F. Lopes, M.A. Barbosa, C.J. Kirkpatrick, and A.P. Pêgo, Endothelialisation of chitosan porous conduits via immobilization of a recombinant fibronectin fragment (rhFNIII₇₋₁₀), *Acta Biomaterialia*, *Acta Biomaterialia*, 9, 2013, 5643–5652.
- J.N. Barbosa, I.F. Amaral, A.P. Águas, and M.A. Barbosa, Evaluation of the Effect of the Degree of Acetylation on the Inflammatory Response to 3D Porous Chitosan Scaffolds, *Journal of Biomedical Materials Research Part A*, 93A, 2010, 20–28.
- I.F. Amaral, R. Unger, S. Fuchs, A.M. Mendonça, S.R. Sousa, M.A. Barbosa, A.P. Pêgo, C.J. Kirkpatrick, Fibronectin-mediated endothelialization of chitosan porous matrices, *Biomaterials* 30, 2009, p. 5465–5475.
- S.M. Oliveira, I.F. Amaral, M.A. Barbosa, and C.C. Teixeira, Engineering endochondral bone: In vitro studies, *Tissue Engineering* 15(3), 2009, p. 625-634.
- S.M. Oliveira, D. Mijares, G. Turner, I.F. Amaral, M.A. Barbosa, C.C. Teixeira, Engineering endochondral bone: In vivo studies, *Tissue Engineering* 15(3), 2009, p. 635-643.
- M. Navarro, E. Engel, J.A. Planell, I.F. Amaral, M.A. Barbosa, and M.P. Ginebra, Surface characterization and cell response of a PLA/CaP glass biodegradable composite material, *Journal of Biomedical Materials Research Part A*, Vol 85A(2), 2008, p. 477-486.
- I.F. Amaral, A.L. Cordeiro, P. Sampaio and M.A. Barbosa, Attachment, spreading and short-term proliferation of human osteoblastic cells cultured on chitosan films with different degrees of acetylation, *Journal of Biomaterials Science: Polymer Edition*, Vol 18(4), 2007, p. 469-485.
- I.F. Amaral, P.L. Granja, Luís V. Melo, B. Saramago and M.A. Barbosa, Functionalization of chitosan membranes through phosphorylation: AFM, wettability and cytotoxicity studies, *Journal of Applied Polymer Science*, Vol 102, 2006, p. 276-284.
- I.F. Amaral, P. Sampaio and M.A. Barbosa, Three-dimensional culture of human osteoblastic cells in chitosan sponges: The effect of the degree of acetylation, *Journal of Biomedical Materials Research Part A*, Vol 76A(2), 2006, p. 335-346.
- I.F. Amaral, P.L. Granja and M.A. Barbosa, Chemical modification of chitosan via phosphorylation. An XPS, FTIR and SEM study, *Journal of Biomaterials Science: Polymer Edition*, Vol 16(12), 2005, p. 1575-1593.
- I.F. Amaral, M. Lamghari, S.R. Sousa, P. Sampaio and M.A. Barbosa, Rat bone marrow stromal cells osteogenic differentiation and fibronectin adsorption on chitosan membranes: The effect of the degree of acetylation, *Journal of Biomedical Materials Research Part A*, Vol 75A(2), 2005, p. 387-397.
- I.F. Amaral, P.L. Granja and M.A. Barbosa, In vitro mineralisation of chitosan membranes carrying phosphate functionalities, *Key Engineering Materials*, Vols. 254-256, 2004, p. 577-580.

- P.L. Granja, A.I.N. Silva, J.P. Borges, C.C. Barrias, and I.F. Amaral, Preparation and characterization of injectable chitosan-hydroxyapatite microspheres, *Key Engineering Materials*, Vols. 254-256, 2004, p. 573-576.
- M.A. Barbosa, P.L. Granja, C.C. Barrias and I.F. Amaral, Polysaccharides as scaffolds for bone regeneration, *Innovation et technologie en biologie et médecine (ITBM-RBM)*, Vol 26, 2005, p. 212-217.

ABSTRACTS IN REFEREED JOURNALS

- D. Barros, J. Furtado, F. Ferreira-da-Silva, I.F. Amaral, A.P. Pêgo, Laminin-functionalized hydrogels for delivery of neural stem/progenitor cells, 5th i3S Annual Meeting, Póvoa de Varzim, November, 3-4, 2016. Poster communication, p.78.
- J. Silva, A.R. Bento, D. Barros, T.L. Laundos, S.R. Sousa, P. Quelhas, M.M. Sousa, A.P. Pêgo I.F. Amaral, HYD1-conjugated fibrin hydrogels promote cell migration of embryonic stem-derived neural/stem progenitor cells *in vitro* and are permissive to axonal regeneration *in vivo*, 5th i3S Annual Meeting, Póvoa de Varzim, November, 3-4, 2016. Poster communication and speed talk, p. 62-63
- J.C. Loureiro, A.L. Torres, P. Aguiar, M.T. Pinto, I.F. Amaral, Conjugation of the integrin $\alpha\beta 1$ binding domain of the angiogenic inducer CCN1 to fibrin hydrogels for therapeutic vascularization, 5th i3S Annual Meeting, Póvoa de Varzim, November, 3-4, 2016. Poster communication and speed talk, p.199-200.
- J. Silva, A.R. Bento, D. Barros, T.L. Laundos, S.R. Sousa, P. Quelhas, M.M. Sousa, A.P. Pêgo I.F. Amaral, HYD1-conjugated fibrin hydrogels promote cell migration of embryonic stem-derived neural/stem progenitor cells *in vitro* and are permissive to axonal regeneration *in vivo*, *Bioimaging 2016*, 5th International Symposium in Applied Bioimaging - Disease in Focus, Porto, October, 27-28, 2016. Oral communication. p. 37-38.
- J.C. Loureiro, A.L. Torres, P. Aguiar, M.T. Pinto, I.F. Amaral, Conjugation of the integrin $\alpha\beta 1$ binding domain of the angiogenic inducer CCN1 to fibrin hydrogels for therapeutic vascularization, *Bioimaging 2016*, 5th International Symposium in Applied Bioimaging - Disease in Focus, Porto, October, 27-28, 2016. Poster communication. p. 77-78.
- A.R. Bento, P. Quelhas, M.J. Oliveira, A.P. Pêgo, and I.F. Amaral, Three-dimensional culture of single embryonic stem-derived neural/stem progenitor cells in fibrin hydrogels: neuronal network formation and matrix remodelling, *International Society for Stem Cell Research 2016*, San Francisco, California, June 21-25, 2016. Poster communication (W4039).
- J.N. Silva, A.R. Bento, T. Laundos, P. Quelhas, A.P. Pêgo, I.F. Amaral, Fibrin hydrogels functionalized with alpha6beta1 ligands for transplantation of neural stem/progenitor cells, 10th World Biomaterials Congress, Montréal, May 17-22, 2016. Poster communication (P.2084). *Frontiers in Bioengineering and Biotechnology*, Conference Abstract: 10th World Biomaterials Congress. doi: 10.3389/conf.FBIOE.2016.01.00908.
- P. Moreno, R.Ferreira,D.Salvador, U. Tedebark, I.F. Amaral, J.Wengel, A.P. Pêgo, Local application of LNA-based antisense oligonucleotides in a strategy for spinal cord injury treatment, 10th World Biomaterials Congress, Montréal, May 17-22, 2016. Oral communication 324.2, P555.
- T.L. Laundos, J.N. Silva, M. Assunção, P. Quelhas, C. Monteiro, C. Oliveira, M.J. Oliveira, A.P. Pêgo, I.F. Amaral, Rotary orbital suspension culture of embryonic stem cell-derived neural stem/progenitor cells: impact of hydrodynamic culture on aggregate yield, morphology, and cell phenotype, *Bioimaging 2015*, 4th International Symposium in Applied Bioimaging-The pre-clinical challenge in 3D, November, 5-6, 2015. Oral communication, P45.
- T.L. Laundos, J.N. Silva, M. Assunção, P. Quelhas, C. Monteiro, C. Oliveira, M.J. Oliveira, A.P. Pêgo, I.F. Amaral, Rotary orbital suspension culture of embryonic stem cell-derived neural stem/progenitor cells: impact of hydrodynamic culture on aggregate yield, morphology, and cell phenotype, 9th International Meeting of the Portuguese Society for Stem Cells and Cell Therapies, Oeiras, October, 15-16, 2015. Poster communication.
- D.P. Vasconcelos, M. Costa, I.F. Amaral, M.A. Barbosa, A.P. Águas, and J.N. Barbosa, Modulation of the inflammatory response to chitosan through M2 macrophage polarization using pro-resolution mediators", *ESF-EMBO Conference on Interaction Between the Immune System and Nanomaterials: Safety and Medical Exploitation*, Pultusk, Poland, October 4 – 9, 2015. Oral communication.

- J.N. Silva, T. Laundos, P. Quelhas, A.P. Pêgo, I.F. Amaral, Fibrin hydrogels functionalized with $\alpha 6\beta 1$ ligands for neural stem cell-based transplantation therapies, XIV Annual Meeting of the Portuguese Society for Neurosciences, Póvoa de Varzim, June 4-5, 2015. Poster communication, P218.
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