

## ***CURRICULUM VITAE***

### **M. Cristina L. Martins**

Nationality: Portuguese



### **CONTACT**

**INEB** - *Instituto de Engenharia Biomédica, Universidade do Porto* (<http://www.ineb.up.pt/>)  
**i3S** - *Instituto de Investigação e Inovação em Saúde, Universidade do Porto*  
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### **ACADEMIC QUALIFICATIONS**

- PhD in Engineering Sciences. *Faculdade de Engenharia da Universidade do Porto* (FEUP), 2003.
- Post-Graduation in Oenology at Biotechnology School, Portuguese Catholic University, Porto, Portugal and Charles Sturt University, New South Wales, Australia, 1994.
- Graduation in Food Engineering at the Biotechnology School, Portuguese Catholic University, Porto, 1989.

### **PRESENT POSITIONS**

- Assistant Investigator at INEB, since 2005.
- Leader of the NanoBiomaterials to Control Infection and Thrombus Formation team (nBTT-Nanobiomaterials for Targeted Therapies group)
- Affiliated Professor at *Instituto de Ciências Biomédicas Abel Salazar* (ICBAS), *University of Porto*, since January 2012.

### **AREA OF SCIENTIFIC ACTIVITY**

- Molecularly design biomaterials for blood, bone and gastric environment.
- Interactions between proteins and bacterial, platelets and leukocytes with biomaterials designed at molecular level, namely self-assembled monolayers (SAMs) and polymers.

### **DOMAIN OF SPECIALIZATION**

- SAMs of alkanethiols in gold;
- Surface immobilization of peptides/proteins and polysaccharides;
- Surface modification of polymers;
- Surface characterization techniques:
  - X-ray photoelectron spectroscopy (XPS),
  - Infrared spectroscopy,

- Ellipsometry,
- Contact angles measurements,
- Atomic force microscopy (AFM),
- Fluorescent microscopy,
- Quartz crystal microbalance with dissipation – QCM-D
- Protein adsorption (radiolabelling of proteins/ellipsometry/QCM-D)
- Protein conformation (Infrared Spectroscopy)
- Platelet and leukocyte interactions with surfaces
- Bacterial adhesion to biomaterials

## PRESENT RESEARCH INTERESTS

Bioengineering surfaces for:

- Selective adsorption of biomolecules (to increase the hemocompatibility of cardiovascular devices)
- Selective binding/elimination of bacterial (*Helicobacter pylori* to avoid gastric infection or *Staphylococcus aureus* to avoid osteomyelitis)

Bioengineering surfaces involving the immobilization of proteins, peptides and glycosylated compounds onto molecularly designed surfaces (self-assembled monolayers) and polymeric biomaterials.

## HONORS AND AWARDS

### CO-AUTHORSHIP OF AWARDED WORKS

- Prize for Best Poster Award (Fabiola Costa). Enhancement of chitosan antibacterial properties by antimicrobial peptide grafting. EUCHIS 2013 - International Conference of the European Chitin Society, May 5-8, 2013 Porto, Portugal. Costa F, Maia S, Gomes P, Martins MCL.
- Costa F, Carvalho IF, Montelaro RC, Gomes P, Martins MCL. Covalent immobilization of antimicrobial peptides (AMPs) onto biomaterial surfaces. *Acta Bioamaterialia*. 2011; 7 (4): 1431-1440. Considered one of the 6 high quality articles selected by the *Acta Bioamaterialia* Editor-in-Chief.
- Prize for the Best Paper published in *Journal of Materials Science-Materials in Medicine*, in 2011. "Gonçalves IC, Martins MCL, Barbosa JN, Oliveira P, Barbosa MA, Ratner BD. Platelet and Leukocyte Adhesion to Albumin Binding Self-assembled Monolayers. *Journal of Materials Science: Materials in Medicine*. 2011; 22:2053-2063. "
- Prize for Best Poster Award (Sidónio Freitas). Immobilization of thrombin inhibitors on self-assembled monolayers (SAMs): Effect on the adsorption and activity of thrombin. 22nd European Conference on Biomaterials. September 07-11, 2009, Lausanne, CH. Freitas SC, Barbosa MA, Martins MCL.
- Prize for Best Poster Award (Raquel Gonçalves). Development of Nanostructured Surfaces to Induce Apoptosis of Leukemic Cells, 9th Advanced Summer Course in Cell-Material Interactions, 16-20 June, 2008, Porto, Portugal. Gonçalves R, Martins MCL, Almeida-Porada G, Barbosa MA.
- Prize for Best Oral presentation (Inês Gonçalves). Molecularly designed surfaces for albumin selective adsorption. European Society for Biomaterials Conference, 11-15 September 2005, Sorrento, Italy. Gonçalves IC, Martins MCL, Barbosa MA, Naeemi E, Ratner BD.

- Prize “Pulido Valente Ciência 2006” (Inês Gonçalves) – best research work published in the area “Physics and Engineering – Applications to the study of disease and medical practice”, whose first author is under 35 years old. The awarded paper was “Protein adsorption on 18-alkyl chains immobilized on hydroxyl-terminated self-assembled monolayers”. Biomaterials 2005; 26: 3891-3899. Gonçalves IC, Martins MCL, Barbosa MA and Ratner BD.

## ACADEMIC AND PROFESSIONAL EXPERIENCE

- 2010-2013: Invited Professor at FEUP
- 2004-2005: Post-Doctoral Investigator (INEB - FCT scholarships)
- 2003-2004: Researcher (INEB - contract from EPARIMED Project)
- Nov-1999: Visiting Scientist at Prof. Ji Jian’s Lab (Department of Polymer Science, Zhejiang University, Hangzhou, China)
- 1998-1999: Visiting Scientist at Prof. Buddy D. Ratner’s Lab (UWEB, University of Washington Engineered Biomaterials, Seattle, Washington, USA)
- 1996-2003: PhD Student (INEB/FEUP - *Faculdade de Engenharia da Universidade do Porto*)
- 1994-1996: Quality Control Director (J.C. Ribeiro, Lda, Lourosa, Portugal)
- 1992-1994: Researcher (*Escola Superior de Biotecnologia, Universidade Católica Portuguesa*)
- 1990-1991: Quality Control Director (*Fábrica de Conservas Madrugada, Lda - Póvoa de Varzim, Portugal*)
- 1988-1989: Research trainee (Gist-Brocades, Delft, Netherland)

## PARTICIPATION IN SCIENTIFIC PROJECTS

### AS PROJECT LEADER:

#### Ongoing:

- **Junho 2016 – May 2019**  
PYLORIBINDERS - *Helicobacter pylori* specific biomaterials for antibiotic-free treatment/diagnostic of gastric infection, financed by FCT (PTDC/CTM-BIO/4043/2014). Teams: INEB; IPATIMUP; IFIMUP; UCIBIO@REQUIMTE; Institute Pasteur, Paris, France

#### Finished:

- **April 2014 – March 2016**  
Project: Biofunctional coatings for cardiovascular interventional devices, financed by Portugal-China Joint Innovation Centre for Advanced Materials (JICAM2013). Portuguese Teams: INEB; IPATIMUP; Matera, Lda  
Chinese Teams: Zhejiang University; Zhejiang Zylox Medical Device Co., LTD
- **March 2012 – August 2015**  
Project: PYLORICIDAL - Engineered biomaterials with *Helicobacter* PYLORI bacteriCIDAL effect, financed by FCT (Portuguese Foundation for Science and Technology) (PTDC/CTM-BPC/121149/2010)  
Teams: INEB; IPATIMUP; Institute Pasteur, Paris, France
- **March 2010 – August 2013:** Principal investigator of the INEB team.  
Project: CHITOSAMP - CHITOSan-AntiMicrobial Peptide-based biomaterials for the treatment of osteomyelitis, financed by FCT (PTDC/CTM/101484/2008).  
Teams: INEB; IBMC; Faculdade de Ciências UP (Coordinator Institution)

- **March 2008 – August 2011**

Project: A strategy for preventing H. pylori-associated gastric cancer based on materials with specific receptors to the bacteria - from SAMs to Gly-R chitosan microsphere, financed by FCT (PTDC/CTM/65330/2006).

Teams: INEB; IPATIMUP; Faculdade de Ciências UP (FCUP)

## **AS RESEARCHER:**

### **Ongoing:**

- **January 2017 – January 2018**

AntiBioCat -Improving antimicrobial properties of catheters through biopolymer coating, financed by RESOLVE Program funded by Norte 2020 Programme under the reference NORTE-01-0246-FEDER-000018

Teams: INEB/i3S; IBMC/i3S

- **January 2016 – December 2018**

NewCat - New biomaterials to prevent infection associated with dialysis catheters, financed by FCT (PTDC/CTM-BIO/4033/2014).

Teams: INEB; Faculdade de Engenharia, Universidade do Porto (Laboratório de Engenharia de Processos, Ambiente, Biotecnologia e Energia (LEPABE/FEUP)

### **Finished:**

- **June 2015 – May 2017**

Project: Design of an antiadhesive nanosurface on cp-Titanium: effect on bacterial adhesion and biofilm formation. CONADI 1527.

Teams: INEB; Universidad Cooperativa de Colombia, Medellin, Colombia

- **June 2015 – May 2017**

Project: Self-assembled monolayer as a nanoengineering strategy to decrease bacterial adhesion and biofilm formation on stainless steel used in orthodontic appliances. CONADI 1514

Teams: INEB; Universidad Cooperativa de Colombia, Medellin, Colombia

- **March 2014 – August 2015**

Project: SweetMic – Helicobacter pylori entrapment using “sweet” microsponges: a new alternative for gastric infection treatment, financed by FCT (Portuguese Foundation for Science and Technology) (EXPL/CTM-BIO/0762/2013).

Teams: INEB; IPATIMUP

- **January 2013 – December 2015**

“IB2 - Industrial Biological Biomaterials Doctorate”, Marie Curie Initial Training Networks: European Industrial Doctorates, FP7-PEOPLE-2012-ITN (317052).

- **May 2011 – June 2013**

Sub-contracted member of the NanoValor Project: Creation and Promotion of a Competitiveness Pole in Nanotechnology for the capitalization of R&D potential in the North of Portugal-Galicia Euroregion. Project co-funded by ERDF through the Operational Programme for Cross-border Cooperation Spain-Portugal 2007-2013 (POCTEP).

- **September 2009 – August 2013**

Project: Incorporation of inflammatory signals in the development of biomaterials for bone repair/regeneration: an integrated approach, financed by FCT (PTDC/SAU-BEB/099954/2008).

- **May 2005 - May 2008**  
Project: PROTEIN - Immobilization of ligands to albumin and thrombin on self-assembled monolayers - influence on thrombus formation and inflammatory reactions, financed by FCT (POCTI/CTM/55644/2004).
- **2003-2004**  
Project: EPARIMED - Development of a new bio-compatible material which can be able to bind heparin from blood of patients undergoing haemodialysis, supported by Agência de Inovação.
- **1997-2001**  
Project: Blood Contact Materials and Tailoring of Biomaterials at Nanoscale: Applications in Bone Surgery and Haemotherapy, supported by Portugal-China Scientific Agreement.
- **1998-2000**  
Project: CARE - Medical devices for collecting, processing and storing blood and blood constituents, supported by PEDIP program.
- **1990-1992**  
Project: Effect of the interactions between yeast strains and the chemical composition of the grapes at the organoleptic properties of the wine, at Escola Superior de Biotecnologia – UCP; financed by PEDIP program.

## **SUPERVISION OF SCIENTIFIC WORKS**

### **VISITING SCIENTIST**

- Tejesvi Mysore Vishakante Gowda, PhD, Senior Research Fellow, University of Oulu, Finland.  
Project: Antimicrobial activity of an AMP immobilized on EG4 self-assembled monolayers (SAMs) (1st to 29th of Feb 2016)

## **POST-DOCTORAL RESEARCHERS**

### **Ongoing:**

- Fabíola Moutinho. Development of antimicrobial coatings. Project: NORTE-01-0145-FEDER-000012, (May2016-present).
- Claudia Monteiro. Antimicrobial coatings based on chitosan-antimicrobial peptides for the prevention of bone implant-associated infection. FCT Fellow (Nov2011-present).

### **Concluded:**

- Helena Felgueiras. Biofunctional Coatings for Cardiovascular Interventional Devices. Project JICAM2013 (Oct2014-March2016).
- Joana Gomes. Engineered biomaterials with *Helicobacter* PYLORI bacteriCIDAL effect: Antimicrobial peptides chitosan microspheres (AMPs-ChMic). Project: PTDC/CTM-BPC/121149/2010 (Febr-Dec2013).
- Inês Castro Gonçalves. Glycosylation of mucoadhesive microspheres to eliminate *Helicobacter pylori* gastric colonization. FCT Fellow (Jan2010-May2013).

## PhD STUDENTS

### Ongoing:

- Maura Cimino. Effect of adsorbed PDBs on hMSC behavior. "IB2 - Industrial Biological Biomaterials Doctorate", Marie Curie Initial Training Networks: European Industrial Doctorates, FP7-PEOPLE-2012-ITN (317052) (Dec2012-present).
- Mariana Alves Barbosa. CLAMP – CClick chemistry as a tool to create AntiMicrobial Peptide based materials. Co-supervisor, Doctoral Programme in Biomedical Engineering, FEUP, Portugal. FCT Fellow (Sep2013-present).
- Catarina Seabra. pH sensitive biomaterials designed for gastric *Helicobacter pylori* eradication. Doctoral Programme in Biomedical Sciences, ICBAS, Portugal. FCT Fellow (Jan2013-present).

### Concluded:

- Fabíola Moutinho. Surface-immobilized Antimicrobial Peptides (AMPs) for prevention of implanted-related osteomyelitis. Doctoral Programme in Biomedical Engineering, FEUP, Portugal. FCT Fellow (2010-2015).
- Paula Parreira. Engineering surfaces to enhance *Helicobacter pylori* specific binding. Doctoral Programme in Biomedical Engineering, FEUP, Portugal. FCT Fellow (2007-2013).
- Sidónio Freitas. Molecular design of surfaces towards more effective anticoagulation strategies for blood-contacting medical devices. Doctoral Programme in Biomedical Engineering, FEUP, Portugal. FCT Fellow (2006-2012).
- Inês Gonçalves. Molecularly engineered materials for selective albumin binding to reduce the risk of thrombus formation. Co-supervisor, Doctoral Programme in Biomedical Engineering, FEUP, Portugal. FCT Fellow (2003-2009).

## MSc STUDENTS

### Ongoing:

- Hélia Fernandes. "Development of antimicrobial coatings based on the covalent immobilization of antimicrobial peptides on chitosan ultrathin films". Co-supervisor, Integrated Master in Bioengineering, ICBAS/FEUP, Portugal (Sept2016-July2017)

### Concluded:

- Micaela Querido. "Prevention of intravascular catheter-related infections". MSc in Biomedical Engineering, FEUP, Portugal (Feb2015-July2016).
- Diana Oliveira. "Coatings based on antimicrobial peptides for prevention of bone implant associated infections". Co-supervisor, MSc in Biomedical Engineering, FEUP, Portugal (Feb2015-Out2016).
- Vanessa Graça. "Antimicrobial Peptides against *Helicobacter pylori*". FEUP, Portugal. MSc in Biomedical Engineering, FEUP, Portugal (Feb2011-Oct2013).
- Catarina Baptista. Blood compatibility of albumin-binding poly(2-hydroxyethyl methacrylate). MSc in Biomedical Engineering, FEUP, Portugal (2009-2011).
- Frederico Nogueira. Ultrathin films as a platform to study *Helicobacter pylori* adhesion to chitosan. MSc in Biomedical Engineering, FEUP, Portugal (2009-2011).
- João Galante. Development of Notch Signaling Biomaterials as a tool to control stem cell behavior. Co-supervisor, Master in biomedical engineering, IST, Lisboa, Portugal (March-Nov2010)
- Rui Azevedo. Application of ellipsometry to study the interactions between proteins and surface thin films. Co-supervisor, MSc in Biomedical Engineering, FEUP, Portugal (2005-2008).
- Sofia Rodrigues. Effect of surface chemical modification on hydrophilicity, protein

adsorption and platelet adhesion. Co-supervisor, MSc in Biomedical Engineering, FEUP, Portugal (2003–2005).

## RESEARCH TRAINING

- Ricardo Emanuel Silva Carvalho: “Engineered biomaterials with *Helicobacter pylori* bactericidal effect: Antimicrobial peptides immobilized on Chitosan Micro/Nanoparticles”. (INEB Project: PTDC/CTM-BPC/121149/2010 (June2014-Nov2015)).
- Vanessa Graça. “Engineered biomaterials with *Helicobacter pylori* bactericidal effect: Antimicrobial peptides immobilized on self assembled monolayers (AMPs-SAMs)”. (INEB Project: PTDC/CTM-BPC/121149/2010 (Febr2014-Agoust2014)).
- Mariana Fernandes. *Helicobacter pylori* adhesion to chitosan microspheres in the presence and absence of gastric mucins (INEB Project: PTDC/CTM/65330/2006 (2010-2011)) and The effect of small antimicrobial peptides (AMP) before and after chitosan immobilization onto *Staphylococcus aureus* (INEB Project: PTDC/CTM/101484/2008 (2011-2012)).
- José Ricardo Oliveira. Immobilization of glycosylated compounds on chitosan. (INEB Project: PTDC/CTM/65330/2006 (2009-2010)).
- Gisela Ferreira. Adhesion studies of *Helicobacter pylori* to nanostructured surfaces. INEB (March-July 2008).
- Vanessa Ochoa-Mendes. Leukocyte and platelet adhesion o heparin-binding nanostructured surfaces. INEB (March-July 2008)
- Stefania Nardecchia. Development of crosslinked chitosan microspheres with capacity to resist to the stomach acidic conditions and release antibodies for *Helicobacter pylori*. INEB (Nov07-Jun2008).
- Pedro Salgueiro. Heparin binding surfaces. INEB (2006-2007).

## PUBLICATIONS

### THESES

- Martins MCL. Interaction between Blood Proteins and Surfaces: Self-Assembled Monolayers (SAMs) and Biomedical Polymers. PhD Thesis. Faculdade de Engenharia da Universidade do Porto (FEUP), Porto, 2003

### BOOK CHAPTERS

6. Lopes D, Nunes C, Martins MCL, Sarmento B, Reis S. Targeting Strategies for the treatment of *Helicobacter pylori* infections, in Nano Based Drug Delivery, edited by Jitendra Naik, Published by: IAPC Publishing, Zagreb, Croatia, 2015.
5. Martins MCL, Sousa SR, Antunes JC and Barbosa MA. Protein Adsorption Characterization. In Methods in Molecular Biology, “Nanotechnology in Regenerative Medicine: Methods and Protocols” edited by Josep A. Planell and Melba Navarro. Human Press (Springer Science & Business Media) USA Academic Press Inc., San Diego, CA, USA. 2012 (DOI: 10.1007/978-1-61779-388-2\_10).
4. Barbosa MA, Martins MCL, Barbosa JN. Cellular response to the surface chemistry of nanostructured biomaterials. In: Cellular Response to Biomaterials, edited by Dr Lucy Di Silvio. Woodhead Publishing Limited, Abington Hall, Abington, Cambridge, CB21 6AH, England. 2009.
3. Martins MCL. Properties of soft materials (Appendix B). In: Biomaterials Science – An Introduction to Materials in Medicine (Buddy Ratner, Allan Hoffman, Frederick Schoen & Jack Lemons) on behalf of the Society for Biomaterials. Elsevier Academic Press Inc.,

San Diego, CA, USA, 2ed (2004; p. 819) and 3rd (2013; p. 1483).

2. Amaral IF, Barbosa MA, Barrias CC, Cavaleiro J, Ferraz MP, Granja PL, Lopes MA, Martins CL, Monteiro FJ, Ribeiro CC, Santos JD, Sousa SR, Queiroz AC. Biomateriais (Chap. 18). In: Biotecnologia: Fundamentos e Aplicações (Lima N and Mota M, editors). Lisbon, Portugal: Lidel – Edições Técnicas; p. 377-397. 2003
1. Barbosa MA, Jian J, Granja PL, Martins CL. Engenharia de biomateriais à escala molecular. In: Materiais 2000 (Ferreira PJ and Fortes A, editors). Lisbon, Portugal: IST Press; p. 391-399. 2003.

## PAPERS IN INTERNATIONAL REFEREED JOURNALS

To date author of 53 publications in international refereed journals (h-index = 17; total number of citations = 1107 – source: SCOPUS, Nov2016), 6 book chapters, 1 PCT patent filled and 1 PPP filled.

53. Oliveira M; Pinto ML, Gonçalves RM, Martins MCL, Santos SG, Barbosa MA. Adsorbed Fibrinogen Stimulates TLR-4 on Monocytes and Induces BMP-2 Expression. *Acta Biomaterialia*. *Accepted*. (Q1; IF:6.008)
52. Coelho L, De Almeida JMMM, Santos JL, Da Silva Jorge PA, Martins MCL, Viegas D, Queirós RB. Aptamer-based fiber sensor for thrombin detection. *Journal of Biomedical Optics*. 21(8), 087005 (Aug 18, 2016). doi:10.1117/1.JBO.21.8.087005 (Q2; IF:2.556).
51. Chen XC, Ren KF, Lei WX, Zhang JH, Martins MCL, Barbosa MA, Ji J. Self-Healing Spongy Coating for Drug "cocktail" Delivery. *ACS Applied Materials and Interfaces*. 2016. 8 (7) 4309-4313 (Q1; IF:7.145; CIT:1).
50. Parreira P, Fátima Duarte M, Reis CA, Martins MCL. *Helicobacter pylori* infection: A brief overview on alternative natural treatments to conventional therapy. *Critical Reviews in Microbiology*. 2016. 42(1):94-105 (Q1; IF:8.182; CIT:1).
49. Gonçalves IC, Magalhães A, Costa AMS, Oliveira JR, Henriques PC, Gomes P, Reis CA, Martins MCL. Bacteria-targeted biomaterials: glycan-coated microspheres to bind *Helicobacter pylori*. *Acta Biomaterialia*. 2016. 33:40-50 (Q1; IF:6.008; CIT:0).
48. Wang LM, Chang H, Zhang H, Ren KF, Li H, Hu M, Li BC, Martins MCL, Barbosa MA, Ji J. Dynamic stiffness of polyelectrolyte multilayer films based on disulfide bonds for in situ control of cell adhesion. *Journal of Materials Chemistry B*. 2015. 3 (38): 7546-7553 (Q1; IF:4.847; CIT:2).
47. Zhang, He; Chang, Hao; Wang, Limei; Ren, Kefeng; Martins, M. Cristina; Barbosa, Mário; Ji, Jian. Effect of polyelectrolyte film stiffness on endothelial cells during endothelial-to-mesenchymal transition. *Biomacromolecules*. 2015. 16: 3584-3593 (Q1; IF:5.583; CIT:5).
46. Barbosa M, Martins MCL, Gomes P. "Click" chemistry towards production of peptide-tethered hydrogels, a novel class of materials with biomedical interest. *Gels*. 2015. 1, 194-218; doi:10.3390/gels1020194 (CIT:19).
45. Monteiro C, Pinheiro M, Fernandes F, Maia M, Seabra C, Ferreira da Silva F, Reis S, Gomes P, Martins MCL. A 17-mer membrane-active MSI-78 derivative with improved selectivity towards bacterial cells. *Molecular Pharmaceutics*. 2015. Aug; 12 (8):2904-11 (Q1; IF:4.342; CIT:0).
44. Costa F, Maia S, Gomes J, Gomes P and Martins MCL. Dhvar5 antimicrobial peptide



- (AMP) immobilization strategy has a high impact on the decrease of surface bacterial colonization. *Biomaterials*. 2015. 52:531-538 (Q1; IF:8.387; CIT:2).
43. Monteiro C, Fernandes F, Pinheiro M, Maia M, Seabra C, Ferreira da Silva F, Costa F, Reis S, Gomes P, Martins MCL. Antimicrobial properties of membrane-active dodecapeptides derived from MSI-78. *Biochimica et Biophysica Acta*. 2015. 1848 (5); 1139–1146 (IF: ; CIT: 4).
  42. Parreira P, Shi Q, Magalhães A, Reis CA, Bugaytsova J, Borén T, Leckband D, Martins MCL. Atomic force microscopy measurements reveal multiple bonds between H. pylori blood group antigen binding adhesin and Lewis b ligand. *Journal of the Royal Society Interface*. 2014. Dec 6;11(101). pii: 20141040. doi: 10.1098/rsif.2014.1040 (Q1; IF:3.917; CIT:2).
  41. Lopes D, Nunes C, Martins MCL, Sarmiento B, Reis S. Eradication of *Helicobacter pylori*: Past, present and future. *J Control Release*. 2014. 189; 169-186 (Q1; IF:7.705; CIT:15).
  40. Gonçalves IC, Henriques PC, Seabra CL, Martins MCL. The potential utility of chitosan micro/nanoparticles in the treatment of gastric infection. *Expert Review of Anti-infective Therapy*. 2014. 12 (8):981-992 (Q1; IF:3.461; CIT:5).
  39. Costa F, Maia S, Gomes J, Gomes P and Martins MCL. Characterization of hLF1-11 immobilization onto chitosan ultrathin films, and its effects on antimicrobial activity. *Acta Biomaterialia*. 2014. 10(8):3513-21 (Q1; IF:6.025; CIT:9).
  38. Freitas SC, Maia S, Figueiredo AC, Gomes P, Pereira PJB, Barbosa MA, Martins MCL. Selective albumin-binding surfaces modified with a thrombin inhibiting peptide. *Acta Biomaterialia*. 2014. 10:1227–1237 (Q1; IF:6.025; CIT:0).
  37. Gonçalves IC, Magalhães A, Fernandes M, Rodrigues IV, Reis CA, Martins MCL. Bacterial-binding chitosan microspheres for gastric infection treatment and prevention. *Acta Biomaterialia*. 2013; 9; 9370-9378 (Q1; IF:5.684; CIT:10).
  36. Parreira P, Magalhães A, Reis CA, Borén T, Leckband D, Martins MCL. Bioengineered surfaces promote specific protein-glycan mediated binding of the gastric pathogen *Helicobacter pylori*. *Acta Biomaterialia*. 2013; 9; 8885-8893 (Q1; IF:5.684; CIT:5).
  35. Fernandes M, Gonçalves IC, Nardecchia S, Amaral IF, Barbosa MA, Martins MCL. Modulation of stability and mucoadhesive properties of chitosan microspheres for therapeutic gastric application. *International Journal of Pharmaceutics*. 2013; 454; 116-124 (Q1; IF:3.785; CIT:19).
  34. Santos SG, Lamghari M, Almeida CR, Oliveira MI, Neves N, Ribeiro A, Barbosa J, Barros R, Maciel J, Martins MCL, Gonçalves RM, Barbosa MA. Adsorbed fibrinogen leads to improved bone regeneration and correlates with differences in the systemic immune response. *Acta Biomaterialia*. 2013; 9(7):7209-17 (Q1; IF:5.684; CIT:13).
  33. Nogueira F, Gonçalves IC, Martins MCL. Effect of Gastric Environment on *Helicobacter pylori* Adhesion to a Mucoadhesive Polymer. *Acta Biomaterialia*. 2013; 9: 5208–15 (Q1; IF:5.684; CIT:16).
  32. Freitas SC, Cereija TB, Figueiredo AC, Osório H, Pereira PJB, Barbosa MA, Martins MCL. Bioengineered surfaces to improve the blood compatibility of biomaterials through direct thrombin inactivation. *Acta Biomaterialia*. 2012; 8: 4101–4110 (Q1; IF:5.093; CIT:7).
  31. Fischer M, Baptista CP, Gonçalves IC, Ratner BD, Sperling C, Werner C, Martins MCL, Barbosa MA. The effect of Octadecyl chain immobilization on the hemocompatibility of

- poly (2-hydroxyethyl methacrylate). *Biomaterials*. 2012. 33 (31):7677-7685 (Q1; IF:7.604; CIT:5).
30. Martins MCL, Sousa SR, Antunes JC and Barbosa MA. Protein Adsorption Characterization. *Methods in molecular biology*. 2012; 811: 141-61(CIT:2).
  29. Oliveira JR, Martins MCL, Mafra L, Gomes P. Synthesis of an O-alkynyl-chitosan and its chemoselective conjugation with a PEG-like amino-azide through click chemistry. *Carbohydrate Polymers*. 2012; 87:240-249. (Q1; IF:3.479; CIT:35).
  28. Parreira P, Magalhães A, Gonçalves IC, Gomes J, Vidal R, Reis CA, Leckband D, Martins MCL. Effect of surface chemistry on *Helicobacter pylori* adhesion, viability and morphology. *Journal Biomedical Material Research - Part A*. 2011; 99A:344-353 (Q1; IF:2.625; CIT:13)
  27. Gonçalves IC, Martins MCL, Barbosa JN, Oliveira P, Barbosa MA, Ratner BD. Platelet and Leukocyte Adhesion to Albumin Binding Self-assembled Monolayers. *Journal of Materials Science: Materials in Medicine*. 2011; 22:2053-2063. "Best Paper published in Journal of Materials Science-Materials in Medicine, in 2011"(Q2; IF:2.316; CIT:8)
  26. Martins MCL, Ochoa-Mendes V, Ferreira G, Barbosa JN, Curtin SA, Ratner BD, Barbosa MA. Interactions of leukocytes and platelets to immobilized poly(lysine/leucine) onto tetraethylene glycol-terminated self-assembled monolayers, *Acta Biomaterialia*. 2011; 7:1949-1955 (Q1; IF:4.865; CIT:4).
  25. Costa F, Carvalho IF, Montelaro RC, Gomes P, Martins MCL. Covalent immobilization of antimicrobial peptides (AMPs) onto biomaterial surfaces. *Acta Biomaterialia*. 2011; 7: 1431-1440 (Q1; IF:4.865; CIT:175).
  24. Oliveira H, Fernandez R, Pires LR, Martins MCL, Simões S, Pêgo AP. Chitosan-based gene delivery vectors targeted to the peripheral nervous system. *Journal Biomedical Material Research - Part A*. 2010; 95A (3): 801-810 (Q1; IF:3.044; CIT:15).
  23. Oliveira H, Fernandez R, Pires LR, Martins MCL, Simoes S, Barbosa MA, Pego AP. Targeted gene delivery into peripheral sensorial neurons mediated by self-assembled vectors composed of poly(ethylene imine) and tetanus toxin fragment c. *Journal of Controlled Release*. 2010; 143 (3):350-358 (Q1; IF:7.164; CIT:25).
  22. Carapeto AP, Serro AP, Nunes BMF, Martins MCL, Todorovic S, Duarte MT, André V, Colaço R, Saramago B. Characterization of two DLC coatings for joint prosthesis: the role of albumin on the tribological behavior. *Surface and Coatings Technology*. 2010; 204 (21-22): 3451-3458 (Q1; IF:2.141; CIT:16).
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## POSTER COMMUNICATIONS

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58. Querido MM, Rai A, Felgueiras HP, Ferreira L, Martins MCL. "Influence of Cecropin-Melittin antimicrobial coating in platelet adhesion/activation to biomaterials." 7th Symposium on Bioengineering- Faculdade de Engenharia da Universidade do Porto, 23 - 24 April, 2016, Porto-Portugal.
57. Monteiro C, Fernandes F, Pinheiro M, Maia M, Seabra C, Ferreira da Silva F, Costa F, Reis S, Gomes P, Martins MCL. A 17-mer membrane-active MSI-78 derivative with improved selectivity towards bacterial cells. 27th European Conference on Biomaterials, 30th August – 3rd September 2015, Krakow, Poland.
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55. Costa F, Maia S, Gomes P, Martins MCL. Dhvar5 Antimicrobial Peptide Immobilization for the development of an antibacterial coating. AO Research Institute Davos - Implant Infection - The eCM XVI Congress. June 24-26, 2015, Davos, Switzerland.
54. Freitas SC, Maia S, Figueiredo AC, Gomes P, Pereira PJB, Barbosa MA, Martins MCL. Creating albumin-binding nanostructured surfaces using a thrombin-inhibiting peptide. 26th European Conference on Biomaterials, 31st August – 3rd September 2014, Liverpool, UK.
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48. Costa F, Maia S, Gomes P, Martins MCL Enhancement of chitosan antibacterial properties by antimicrobial peptide grafting. EUCHIS 2013 - International Conference of the European Chitin Society, May 5-8, 2013 Porto, Portugal.
47. Nogueira F, Gonçalves IC, Martins MCL. Effect of Acidic pH on *Helicobacter pylori* Adhesion to Chitosan Films. EUCHIS 2013 - International Conference of the European Chitin Society, May 5-8, 2013 Porto, Portugal.
46. Costa F, Maia S, Gomes P, Martins MCL. hLF1-11 synthesis and immobilization onto chitosan thin films to create antimicrobial coatings. 32nd European Peptide Symposium (32EPS 2012), September 2-7, 2012. Athens, Greece.
45. Costa F, Maia S, Gomes P, Martins MCL. hLF1-11 synthesis and immobilization onto chitosan thin films to create antimicrobial coatings. 22nd International Symposium on Medicinal Chemistry(EFMC-ISM 2012) September 2 - 6, 2012, Berlin, Germany.
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43. Gonçalves IC, Parreira P, Oliveira JR, Fernandes M, Magalhães A, Reis CA, Gomes P, Leckband D, Martins MCL. Engineered biomaterials to prevent/treat gastric infection. International Forum of Biomedical Materials: Nanobiomaterials for Tissue Regeneration. May 29 – Jun 1, 2012, Hangzhou, China.
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41. Costa F, Maia S, Gomes P, Martins MCL. Covalent immobilization of Human Lactoferrin-derived peptide (hLF1-11) for the development of an antimicrobial surface. 24th European Conference on Biomaterials – September 4-9th, 2011, Dublin.
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- (2-hydroxyethyl methacrylate). Symposium hemocompatibility of Biomaterials – State of the knowledge and new developments. Dresden, Germany, 2011
38. Parreira P, Magalhaes A, Reis CA, Leckband D, Martins MCL. Immobilization of specific receptors for *Helicobacter pylori* using model surfaces. 23rd European Conference on Biomaterials. September 11-15, 2010, Tampere, Finland.
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  33. Oliveira JR, Martins MCL, Gomes P. Selective O-alkynylation of chitosan: towards "clickable" cationic chitosans. 8th International Meeting of the Portuguese Carbohydrate Group. 6-10th September, Braga, Portugal.
  32. Gonçalves IG, Martins MCL, Barbosa MA, Ratner BD. Platelet and Leukocyte Adhesion to Albumin Binding Self-Assembled Monolayers. 10th Advanced Summer Course in Cell-Materials Interactions: Self-assembly: from nature to clinics. Porto. June 22-26, 2009. Porto, Portugal.
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23. Freitas SC, Barbosa MA and Martins MCL. Immobilization of thrombin inhibitors on self-assembled monolayers (SAMs). 9th Advanced Summer Course in Cell-Material Interactions, 16-20 June, 2008, Porto, Portugal.
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21. Parreira P, Reis CA, Magalhães A, Leckband D, Martins MCL. Kinetics of *Helicobacter pylori* Adhesion to Gold and EG4-SAMs. 9th Advanced Summer Course in Cell-Material Interactions, 16-20 June, 2008, Porto, Portugal.
20. Goncalves,R, Martins MCL, Almeida-Porada G, Barbosa MA, "Functionalization of Self-Assembled Monolayers with the repeated unit of Notch ligands", 8th World Biomaterials Congress, 28th May - 2nd June 2008, Amsterdam, The Netherlands.
19. Martins MCL, Curtin S, Freitas S, Salgueiro P, Ratner BD, Barbosa MA. Immobilization of poly(lysine, leucine) on EG4-terminated SAMs: Effect of peptide concentration on blood deheparinization. 8th World Biomaterials Congress, 28th May - 2nd June, 2008, Amsterdam, The Netherlands.
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15. Azevedo R, Martins MCL and Barbosa MA. Static and dynamic protein adsorption on SAMs. 21st European Conference on Biomaterials, 09-13th September 2007, Brighton, UK.
14. Gonçalves IC, Martins MCL, Barbosa MA, Naeemi E, Ratner BD. Modulation of platelet adhesion and activation by selective adsorption of proteins to self-assembled monolayers. BioSurf VII. August 2007, Zurich, Switzerland.
13. Martins MCL,Curtin SA, Freitas SC, Salgueiro P, Ratner BD, Barbosa MA. Engineering surfaces for blood deheparinization using an heparin-binding peptide. BioSurf VII. August 2007, Zurich, Switzerland.
12. Salgueiro P, Barbosa MA, Martins MCL. Competitive adsorption studies of heparin and blood proteins on self-assembled monolayers (SAMs). 8th Advanced Summer Course in

Cell-Materials Interactions: Inflammation in tissue repair and regeneration, June 2007, Porto, Portugal.

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10. Gonçalves R, Martins MCL, Almeida-Porada G, Barbosa MA. Influence of the surface on leukemic cell behavior: preliminary work. 8th Advanced Summer Course in Cell-Materials Interactions: Inflammation in tissue repair and regeneration, June 2007, Porto, Portugal.
9. Salgueiro P, Barbosa MA, Martins MCL. Molecularly designed surfaces for selective heparin adsorption. II Encontro Nacional de Pós-Graduação em Ciências Biológicas, June 2007, Porto, Portugal.
8. Barbosa JN, Martins MCL, Freitas SF, Águas AP and Barbosa MA. Adhesion of Human Leukocytes on Mixtures of Hydroxyl- and Methyl-Terminated Self-Assembled Monolayers: Effect of Blood Protein Adsorption 20th European Conference on Biomaterials, September 27th – October 1st, 2006, Nantes - France.
7. Barrias CC, Martins MCL, Bidarra S, Almeida-Porada G, Barbosa MA, Granja PL. Mixed self-assembled monolayers as substrates for the culture of human mesenchymal stem cells. 20th European Conference on Biomaterials, September 27th – October 1st, 2006, Nantes - France.
6. Gonçalves IC, Martins MCL, Barbosa MA, Naeemi E, Ratner BD. Albumin selective and reversible adsorption to EG4-C18 SAM. 6th Advanced Course in Cell-Material Interactions at Molecular Level, 20-24 June, 2005, Portugal.
5. Cordeiro AL, Gonçalves IC, Martins MCL, Barbosa MA. Protein adsorption on polyelectrolyte multilayers. 6th Advanced Course in Cell-Material Interactions at Molecular Level, 20-24 June, 2005, Portugal.
4. Rodrigues S, Martins MCL, Barbosa M. Fibrinogen adsorption and platelet adhesion onto mixtures of methyl and hydroxyl terminated self-assembled monolayers. European Society for Biomaterials Conference, 11-15 September 2005, Sorrento, Italy.
3. Serro AP, Colaço R, Brogueira P, Martins MC, Saramago B. Influence of albumin adsorption on the tribology of UHMWPE against counterfaces of alumina and Co28Cr6Mo. European Society for Biomaterials Conference, 11-15 September 2005, Sorrento, Italy.
2. Martins MCL, Ratner BD and Barbosa MA. "Protein Adsorption on Mixtures of Hydroxyl- and Methyl-Terminated Alkanethiol Self-Assembled Monolayers", 17th European Conference on Biomaterials, September 2002, Barcelona, Spain.
1. Martins MCL, Wang D, Ji J, Feng L and Barbosa MA. "Cibacron Blue immobilisation onto HEA and HEMA surfaces in order to increase albumin adsorption", 5th Portuguese Conference on Biomedical Engineering (BioEng´ 2000), May 2000, Coimbra, Portugal.

## **EDUCATIONAL ACTIVITIES (LECTURER IN UNDERGRADUATE AND POST-GRADUATE PROGRAMS)**

Since 2013: Molecular Biointerfaces Course, at Integrated MSc Course in Bioengineering, at ICBAS (*Instituto de Ciências Biomédicas Abel Salazar, Universidade do Porto*).

Since 2013: Advanced Experimental Techniques Course at BiotechHealth - International Doctoral Program In Molecular And Cellular Biotechnology Applied To Health



Sciences, ICBAS, UPorto.

2009-2013: Nanomedicine course and Nanostructured Materials Course, at Integrated MSc Course in Bioengineering, FEUP (*Faculdade de Engenharia da Universidade do Porto*) and ICBAS, UPorto

2009-2016: GABBA: Tissue Engineering module (*Instituto de Biologia Molecular e Celular (IBMC), UPorto*)

## OTHER SCIENTIFIC ACTIVITIES

2011, 2012: Member of the Evaluation Panel of the Portuguese Science Foundation for PhD and Post-Doc scholarship attribution in the area of "Ciências da Saúde".

2013: Member of the Evaluation Panel of the Portuguese Science Foundation for PhD and Post-Doc scholarship attribution in the area of "Bioengenharia e Biotecnologia".

2014: Member of the Evaluation Panel of the Portuguese Science Foundation for PhD and Post-Doc scholarship attribution in the area of "Nanotecnologia".

1998: Program of instruction in "Principles of Radiation Protection" at University of Washington, Seattle, USA.

## REFEREE

- Acta Biomaterialia
- Biomaterials
- Journal of Biomedical Materials Research A
- Journal of Materials Science: Materials in Medicine
- Journal of the Royal Society Interface
- Langmuir
- Biomatter
- Colloids and Surfaces B: Biointerfaces
- Drug Delivery

2003-2006: INEB coordinator of the program: Science in Summer Holidays (Ocupação Científica de Jovens nas Férias);

## External Member of Juries:

### PhD Thesis:

February 2015: Daniela Sofia Dias Ferreira; *Molecularly Designed Self-assembling Matrices for Applications in Regenerative Medicine. Programa Doutoral em Engenharia de Tecidos, Medicina Regenerativa e Células Estaminais; Universidade do Minho (UM)*.

December 2014: Alexandre Filipe Leitão; *"Development of Vascular Grafts of Bacterial Cellulose"; Programa Doutoral em Engenharia Biomédica; UM*

December 2013: Catarina de Almeida Custódio; *"Immobilization of biomolecules into biodegradable polymeric based substrates for selective recruitment and adhesion of cells for tissue engineering applications"; Programa Doutoral em Engenharia de Tecidos, Medicina Regenerativa e Células Estaminais; UM.*

April 2012: Joana Maciel Soares; *"Design of novel bone regenerative therapeutic strategies based on macrophage released factors: from model surfaces to an in vivo delivery system"; Programa Doutoral em Engenharia Biomédica; FEUP*

December 2008: Sofia de Medina Aires Martins; "Development of quantitative microparticle-based assays for DNA hybridization"; PhD in Biotechnology; *Instituto Superior Técnico; Universidade de Lisboa (ISTL)*

May 2007: Susana Sousa Mendes de Freitas; "Albumin and fibronectin adsorption and osteoblast adhesion on titanium oxides"; PhD in *Engenharia Metalúrgica e de Materiais; FEUP*.

### **MSc Thesis:**

January 2013: Mariana Moreira Barbosa; "Controlled release of tethered peptides from alginate hydrogels via enzymatic linker degradation"; *MSc em Engenharia Biomédica; Universidade Católica Portuguesa – Escola Superior de Biotecnologia, Porto*

### **ORGANIZATION OF SCIENTIFIC MEETINGS**

- 6th China-Europe Symposium on Biomaterials in Regenerative Medicine – CESB2017, May 21-24, 2017, Porto, Portugal – Symposium co-Chair
- 10<sup>th</sup> Advanced Course on Cell-Materials Interactions. Self-Assembly: from Nature to Clinics; 22-26 June 2009; Porto, Portugal – Organizing Committee;
- 9<sup>th</sup> Advanced Course on Cell-Materials Interactions. Bioinspired Matrices for Tissue Regeneration; 16-20 June 2008; Porto, Portugal – Organizing Committee;
- 8<sup>th</sup> Advanced Course on Cell-Materials Interactions. Inflammation in Tissue Repair and regeneration; 18-22 June 2007; Porto, Portugal – Organizing Committee & Coordinator of the Topic B of Lab Session (Effect of Surface Chemistry on Human Leukocyte Adhesion);
- 7<sup>th</sup> Advanced Course on Cell-Materials Interactions. Regenerative Medicine; 19-23 June 2006; Porto, Portugal – Organizing Committee;
- 6<sup>th</sup> Advanced Course on Cell-Materials Interactions at Molecular Level; 20-24 June 2005; Porto, Portugal – Organizing Committee and Principal Scientist in Charge;
- 5<sup>th</sup> Advanced Course on Cell-Materials Interactions. 5-9 July 2004; Porto, Portugal – Organizing Committee;

November, 2016