

# **Curriculum vitae (Resume)**

## **JOAQUIM MANUEL SAMPAIO CABRAL**

### **Personal Data**

Place of Birth: Porto

Date of Birth: 12<sup>th</sup> November 1953

Nationality: Portuguese

### **Address**

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### **Academic Positions**

Professor (“Professor Catedrático”) of Bioengineering and Chemical Engineering, Instituto Superior Técnico (1992-present)

Associate Professor (“Professor Associado”), Instituto Superior Técnico (1987-1991)

Assistant Professor (“Professor Auxiliar”), Instituto Superior Técnico (1983-1986)

### **Academic Background**

Diploma (“Licenciatura”) in Chemical Engineering, Instituto Superior Técnico, Technical University of Lisbon (1976)

Ph.D. (“Doutoramento”), Instituto Superior Técnico, Technical University of Lisbon, (1983)

Post-Doctoral Fellow (“Pós-Doutoramento”), Massachusetts Institute of Technology, U.S.A. (1983-84)

“Agregação”, Instituto Superior Técnico, Technical University of Lisbon, (1989)

### **Membership and Scientific Positions**

- Director, Associated Laboratory – Institute for Biotechnology and Bioengineering (2006 – present)

- Head of Department of Chemical and Biological Engineering, Instituto Superior Técnico, Technical University of Lisbon (2002-2009)

- Head of the BioEngineering Research Group of Instituto Superior Técnico, Technical University of Lisbon (1990-present)

- Director of the Doctoral Programme on Bioengineering, IST (collaboration with MIT) (2007 – present)

- Co-Coordinator of MIT-Portugal Program – Bioengineering Systems Focus Area (2006 – present)

- Member of the Working Party/Section on Applied Biocatalysis of European Federation of Biotechnology (1986-present) (Chairman 1991-1996)

- Honorary Member of the Section on Applied Biocatalysis of European Federation of Biotechnology (2005)

- Member and Chairman of the Task Group on Biotransformation of the European Federation of Biotechnology Section on Biochemical Engineering Science (1996-2004)

- Member of the Executive Committee of Process Integration in Biochemical Engineering Programme of European Science Foundation (1992-1997)

- Member of the Executive Committee of the European Biochemical Engineering Network (1993-1996)

- Member of the Executive Committee of the EFB Section on European Biochemical Engineering Science (1999-2001-2002-2004)

### **Advisory Boards and Peer-Review Activities**

- President of the Exact Sciences and Engineering Scientific Council of the Portuguese Foundation for Science and Technology (2009-present)
- Member of the Biotechnology Strategy Group of the European Academies' Science Advisory Council (EASAC) – Executive Secretary, The Royal Society (2002-2005)
- Member of the Biotechnology and Biological Sciences Research Council Review Committee of “The Advanced Centre for Biochemical Engineering” “University College London”, March 1995, September 1997, January 2005
- Member of the Engineering and Physical Sciences Research Council Review Committee of “The Advanced Centre for Biochemical Engineering” “University College London”, January 2005
- Member of the Expert Panel of the Engineering and Physical Sciences Research Council, UK (2006 – 2009)
- Member of the International Peer Review Committee of the B-Basic Programme, Advanced Chemical Technologies for Sustainability, NWO, The Netherlands, September 2004, October 2005, May 2007
- Member of the Peer Review Committee of the “Biotechnology Delft-Leiden - Graduate Research School”, December 1998
- Coordinator of the Research Coordination Committee of the Portuguese Biotechnology Programme (1995-1997)
- Member of the Peer Review Committee for Research Grants of the Portuguese Biochemical Engineering and Biotechnology area (since 1990)

### **Editorships and Editorial Boards of Scientific Journals**

- Associate Editor of *Biotechnology and Applied Biochemistry* (2002-present)
- Associate Editor of *Biocatalysis and Biotransformation* (2001-2003)
- Review Editor of *Biocatalysis and Biotransformation* (2004 – 2007)
- Member of the Editorial Board of:
  - *Biocatalysis and Biotransformation*,
  - *Bioprocess and Biosystems Engineering*,
  - *Bioseparation*,
  - *Biotechnology Letters*,
  - *BMC Biotechnology*,
  - *Catalysis Communications*,
  - *Electronic Journal of Biotechnology*,
  - *Enzyme and Microbial Technology*,
  - *Enzyme Research*,
  - *Journal of Biotechnology*,
  - *Journal of Chemical Technology and Biotechnology*,
  - *Journal of Molecular Catalysis B: Enzymatic*,
  - *Journal of Tissue Engineering and Regenerative Medicine*,
  - *Trends in Biotechnology*

### **Research interests**

My current research and future vision aims at contributing for the development of biochemical engineering science through novel developments in **Enzyme Engineering**, **Bioprocess Engineering** and **Stem Cell Bioengineering**.

## Publications

Books – 6; Review Articles – 43; Refereed Articles - 329

### Selected Publications:

#### Books

JMS Cabral, L Boross, D Best, J Tramper (eds.) "**Applied Biocatalysis**", Harwood Academic Press, Reading, 1994, pp. 1 – 474

JMS Cabral, M Mota, J Tramper (eds.) "**Multiphase Bioreactors Design**", Taylor & Francis Books Ltd, United Kingdom, 2001, pp. 1-493

JMS Cabral "**Cell Partitioning in Aqueous Two-Phase Polymer Systems**" in Cell Separation: Fundamentals, Analytical and Preparative Methods Series: Advances in Biochemical Engineering/Biotechnology, Vol. 106 (Kumar, Ashok; Galaev, Igor Yu; Mattiasson, Bo Eds.), 2007, pp. 151 -171

#### Recent Representative Articles

- Eibes G, dos Santos F, Andrade PZ, Boura JS, Abecasis MMA, da Silva CL, Cabral JMS "Maximizing the ex vivo expansion of human mesenchymal stem cells using a microcarrier-based stirred culture system" J Biotechnol. 146, 194-197 (2010)

- Rodrigues CAV, Diogo MM, da Silva CL, Cabral JMS "Hypoxia Enhances Proliferation of Mouse Embryonic Stem Cell-Derived Neural Stem Cells" Biotechnol. Bioeng. 106, 260-270 (2010)

- Fernandes TG, Kwon SJ, Bale SS, Lee MY, Diogo MM, Clark DS, Cabral JMS, Dordick JS "Three-Dimensional Cell Culture Microarray for High-Throughput Studies of Stem Cell Fate" Biotechnol. Bioeng. 106, 106-118 (2010)

- da Silva CL, Goncalves R, dos Santos F, Andrade PZ, Almeida-Porada G, Cabral JMS "Dynamic cell-cell interactions between cord blood haematopoietic progenitors and the cellular niche are essential for the expansion of CD34(+), CD34(+)/CD38(-) and early lymphoid CD7(+) cells" J Tissue Eng Reg Med 4, 149-158 (2010)

- dos Santos F, Andrade PZ, Boura JS, Abecasis MM, da Silva CL, Cabral JMS "Ex Vivo Expansion of Human Mesenchymal Stem Cells: A More Effective Cell Proliferation Kinetics and Metabolism Under Hypoxia" J. Cellular Physiology 223, 27-35 (2010)

- Fernandes, TG, Diogo, MM, Clark, DS, Dordick, JS, Cabral, JMS, "High-Throughput Cellular Microarray Platforms: Potential Applications in Drug Discovery, Toxicology, and Stem Cell Research" Trends Biotechnology 27 (6), 342-349 (2009)

- Carvalho F, Marques MPC, de Carvalho CCCR, Cabral JMS, Fernandes P "Sitosterol bioconversion with resting cells in liquid polymer based systems" Bioresource Technol 100, 4050-4053 (2009)

- da Silva, CL, Gonçalves, R, Porada, CD, Ascensão, JL, Zanjani, ED, Cabral, JMS, Almeida Porada, G "Differences amid bone marrow and cord blood hematopoietic stem/progenitor cell division kinetics J. Cellular Physiology 220, 102-111 (2009)

- Marques MPC, Magalhaes S, Cabral JMS, Fernandes P "Characterization of 24-well microtiter plate reactors for a complex multistep bioconversion: From sitosterol to androstenedione" J Biotechnol 141, 174-180 (2009)

- Marques MPC, Carvalho F, Magalhaes S, Cabral JMS, Fernandes P "Screening for suitable solvents as substrate carriers for the microbial side-chain cleavage of sitosterol using microtitre plates" Process Biochem 44, 556-561 (2009)

- Costa L, Coelho A, Lemos F, Ribeiro FR, Cabral JMS "Modulating the acid strength of zeolite H-ZSM-5 to increase the selectivity in the racemization of 1-phenylethanol" Appl Catalysis A – General 354, 33-37 (2009)

- Diogo, MM, Henrique, D, Cabral, JMS "Optimization and integration of expansion and neural commitment of mouse embryonic stem cells" Biotechnol Appl Biochem. 49, 105-112 (2008)

- Fernandes, TG, Kwon, SJ, Lee, MY, Clark, DS, Cabral, JMS, Dordick, JS, "An On-Chip, Cell-Based Microarray Immunofluorescence Assay for High-Throughput Analysis of Target Proteins", *Anal. Chem.* 80, 6633-6639 (2008)
- Fernandes AM, Fernandes TG, Diogo MM, da Silva CL, Henrique D, Cabral JMS "Mouse embryonic stem cell expansion in a microcarrier-based stirred culture system" *J. Biotechnol.* 132, 227-236 (2007)
- Abranches, E, Bekman, E, Henrique, Cabral, JMS "Expansion of Mouse Embryonic Stem Cells on Microcarriers" *Biotechnol. Bioeng.* 96, 1211-1221 (2007)
- Lienqueo, ME, Salazar, O, Henriquez, K, Calado, CRC, Fonseca, LP, Cabral, JMS "Prediction of retention time of cutinases tagged with hydrophobic peptides in hydrophobic interaction chromatography" *J. Chromat. A*, 1154 460-463 (2007)
- Abranches, E, O'Neill, A, Robertson, MJ, Schaffer, DV, Cabral, JMS "Development of quantitative PCR methods to analyse neural progenitor cell culture state" *Biotechnol. Appl. Biochem.*, 44, 1-8 (2006)
- Gonçalves, R, Lobato da Silva, C, Cabral, JMS, Zanjani, ED, Almeida-Porada, G "A Stro-1<sup>+</sup> Human Universal Stromal Feeder Layer to Expand/Maintain Human Bone Marrow Hematopoietic Stem/Progenitor Cells In a Serum-Free Culture System", *Exp. Hematology*, 34, 1353-1359 (2006)
- Vojinovic V, Esteves FMF, Cabral JMS, L.P. Fonseca "Biosynthetic analytical microreactors for glucose, lactate, ethanol, galactose and l-amino acid monitoring in cell culture media" *Anal. Chim. Acta* 565, 240-249 (2006)
- Vojinovic, V, Cabral, JMS, Fonseca, LP "Real-Time Bioprocess Monitoring Part I: In-situ Sensors" *Sensors Actuators B-Chemical* 114, 1083-1091 (2006)
- da Silva, CL, Gonçalves, R, Crapnell, KB, Cabral, JMS, Zanjani, ED, Almeida-Porada, G, "A human stromal-based serum free culture system supports the *ex vivo* expansion/maintenance of bone marrow and cord blood hematopoietic stem/progenitor cells", *Exp. Hematol.*, 33, 828-835 (2005)
- Vojinovic, V, Calado, CR, Silva, AI, Mateus, M, Cabral, JMS, Fonseca, LP, "Micro-analytical GO/HRP bioreactor for glucose determination and bioprocess monitoring", *Biosens. Bioelectron.* 10, 1955-1961, (2005)