

Catarina Brito
Curriculum Vitae
February 2019

PERSONAL DATA

Name: Ana Catarina Maurício Brito Ataíde Montes
Date of birth: September 8, 1976
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EDUCATION

Diploma in Biochemistry, Faculdade de Ciências da Universidade de Lisboa, Portugal, October 2001.
Ph.D. in Biochemistry, Instituto de Tecnologia Química e Biológica (ITQB), Universidade Nova de Lisboa, Portugal, October 2007.

SCIENTIFIC ACTIVITY

2000 - 2001: Undergraduate student, Laboratory of Glycobiology, ITQB, Portugal.
2001 - 2003: Research fellow, Laboratory of Glycobiology, ITQB, Portugal.
2003 - 2007: Ph.D. student, Laboratory of Glycobiology, ITQB, Portugal.
2006: Visiting Ph.D. student, Membrane Traffic in Neuronal & Epithelial Morphogenesis Laboratory, Institut Jacques Monod, Paris, France.
2007 - 2009: Post-doctoral fellow, Animal Cell Technology Unit, iBET, Portugal.
2009 –2014: Research Associate - Investigador Auxiliar Ciência 2008, Head of the Bioassay Development Team, Cell Bioprocesses Laboratory, Animal Cell Technology Unit, iBET and ITQB-UNL, Portugal.
2013: Visiting Researcher, Lieberman Lab, Harvard Medical School, Boston, USA.
Since 2014: Head of the [Advanced Cell Models Laboratory](#), [Animal Cell Technology Unit](#), [iBET](#) and [ITQB-NOVA](#), Portugal.
Since 2015: Senior Researcher, [iNOVA4Health](#)
Since 2018: Principal Researcher, [The Discoveries Centre for Regenerative and Precision Medicine](#) (Discoveries CTR)

Research Interests

My research is mostly translational and focused on development of advanced human cell models (employing induced pluripotent stem cells and other patient-derived cells) to study deregulation of cellular microenvironment in disease progression and therapeutic response. Currently, our main research targets are Central Nervous System diseases and Cancer (solid tumours). I also contribute to projects focusing on neural and hepatic toxicology and stem cell-based therapeutic approaches. Complementary to my research, I have been providing contract research services to the pharmaceutical & biotechnology industry in the areas of drug development and pre-clinical research.

Main Keywords: cell microenvironment; cell-cell interactions; disease modelling; 3D cell culture; human stem cells.

Other keywords: glycosylation; intracellular trafficking and exocytosis; biomarkers.

Participation in Funded Projects - FCT and EU

- **Principal Investigator** of 10 projects, since 2011, including:

1. 2011-2014: “3D *in vitro* models for reducing animal experimentation in pharmaceutical development: integrative approaches for prediction of hepatic drug metabolism and neurotoxicity”, PTDC/EEB-BIO/112786/2009, funded by FCT, Portugal.
2. 2012-2015: “Human central nervous system *in vitro* models for preclinical research: new tools for studying viral vector-mediated gene delivery in a 3D cellular context”, PTDC/EEB-BIO/119243/2010, funded by FCT, Portugal.
3. 2011-2016: “PREDECT - New Models for preclinical evaluation of drug efficacy in common solid tumors”, funded by Innovative Medicines Initiative Joint Undertaking

4. 2017-2019: “The effect of dual HER2 blockade on anti-tumor immune cells”, funded by iNOVA4Health, Portugal (co-PI with Inês Silva, IPOLFG).
5. 2018-2021: “AstroReact - Unravelling the role of astrocyte-induced neural microenvironment remodelling in traumatic brain injury pathobiology”, funded by FCT, Portugal (co-PI with Daniel Simão, iBET).

- **Team Member** of 24 projects funded by FCT, EC and iNOVA4Health, since 2001.

Participation in Funded Projects - Industry and Companies

- **Project Manager** (Since 2009):

1. 2009-2010: *Micromet*, Germany, “Development of cell-based assays for assessment of cell-mediated cytotoxicity induced by cancer drugs candidates”.
2. 2010-2013: *Tecnimede*, Portugal, “Development of complex neural *in vitro* models for pharmacological development”.
3. 2013-2015: *Tecnimede*, Portugal, “PROiNEURO”.
4. 2014: *Merck*, Germany, “Cancer Stem Cells”.
5. Since 2015: *Merck*, Germany, “Cell models of Liver-stage *Plasmodium* infection”.
6. Since 2016: *Abbvie*, Chicago, USA “Patient-derived *ex vivo* Cancer Models”.

ACADEMIC ACTIVITY

Supervision Activity: PhD - 13, 6 concluded; MSc – 12, 10 concluded; post-doctoral researchers - 8, 6 concluded.

PhD Thesis Committees: 7, 6 concluded.

Thesis Juries: MSc - 3; PhD - 5, 2 as main opponent.

Teaching Activity: Coordinator of the Biopharmaceutical Technology Profile and of the curricular unit “Tools for Discovery and Preclinical Research” of [MolBioS: PhD program in Molecular Biosciences](#); Lecturer in the PhD Program in [Bioengineering – Cell Therapies and Regenerative Medicine](#); Regular Invited lecturer in several MSc and PhD programs in Biological and Biomedical Sciences from the Universities of the Lisbon area (NOVA Medical School; Faculty of Science and Technology - NOVA; Faculty of Sciences of the University of Lisbon).

20 SELECTED PUBLICATIONS (out of 57)

* Corresponding author

† Co-senior author

1. Sousa V, **Brito C**, Costa T, Lanoix J, Nilsson T, Costa J (2003) “Importance of Cys, Gln and Tyr from the transmembrane domain of human (3/4 fucosyltransferase III for its localization and sorting in the Golgi of baby hamster kidney cells”, *Journal of Biological Chemistry* 278, 7624-762. <http://dx.doi.org/10.1074/jbc.M209325200>
2. Escrevente C/Machado E, **Brito C**, Reis CA, Stoeck A, Runz S, Marmé A, Altevogt P, Costa J (2006) “Different expression levels of (3/4 fucosyltransferases and Lewis determinants in ovarian carcinoma tissues and cell lines”, *International Journal of Oncology* 29, 557-66. <http://dx.doi.org/10.3892/ijo.29.3.557>
3. **Brito C**, Escrevente C, Reis CA, Lee VM-Y, Trojanowski, JQ, Costa J (2007) “Increased levels of fucosyltransferase IX and carbohydrate Lewis^x adhesion determinant in human NT2N neurons”, *Journal of Neuroscience Research* 85, 1260-1270. <http://dx.doi.org/10.1002/jnr.21230>
4. **Brito C**, Kandzia S, Graça T, Conradt H, Costa J (2008) “Human fucosyltransferase IX: Specificity towards N-linked glycoproteins and relevance of the cytoplasmic domain in intra-Golgi localization”, *Biochimie* 90, 1279-90. **Chosen by editors as cover image of *Biochimie*, Vol 90, Issue 9.** <http://dx.doi.org/10.1016/j.biochi.2008.03.002>
5. Tostões R, Leite S, Serra M, Jensen J, Björquist P, Carrondo MJT, **Brito C**, Alves PM (2012) “Human liver cell spheroids in extended perfusion bioreactor culture for repeated dose drug testing”, *Hepatology* 55, 1227-1236. <http://dx.doi.org/10.1002/hep.24760>
6. **Brito C**, Simão D, Costa I, Malpique R, Pereira CI, Fernandes P, Serra M, Schwarz S, Schwarz J, Kremer EJ, Alves PM (2012), “3D cultures of human neural progenitor cells: dopaminergic differentiation and genetic modification”, *Methods* 56, 452–460. <http://dx.doi.org/10.1016/j.ymeth.2012.03.005>
7. Serra M, **Brito C**, Correia C, Alves PM (2012) “Process engineering of human pluripotent stem cells for clinical application”, *Trends in Biotechnology* 30, 350-9. <http://dx.doi.org/10.1016/j.tibtech.2012.03.003>
8. Gualda EJ, Simão D, Pinto C, Alves PM, **Brito C*** (2014) “Imaging of human differentiated 3D neural aggregates using Light Sheet Fluorescence Microscopy”, *Frontiers in Cellular Neuroscience* 8, 221. <http://dx.doi.org/10.3389/fncel.2014.00221>

9. Hickman J, Graeser R, De Hoogt R, Vidic S, **Brito C**, Gutekunst M, Van der Kuip H (2014) "Capturing tumor complexity in vitro: three dimensional models of cancer for pharmacology and cell biology", *Biotechnology Journal* 9, 1115-28. <http://dx.doi.org/10.1002/biot.201300492>
10. Simão D, Pinto C, Piersanti S, Weston A, Peddie CJ, Bastos AEP, Licursi V, Schwarz SC, Collison LM, Salinas S, Serra M, Teixeira AP, Saggio I, Lima PA, Kremer EJ, Schiavo G, **Brito C***, Alves PM (2015) "Modelling human neural functionality in vitro: 3D culture for dopaminergic differentiation", *Tissue Engineering – Part A* 21, 654-68. <http://dx.doi.org/10.1089/ten.TEA.2014.0079>
11. Suter-Dick L, Alves PM, Blaauboer BJ, Bremm KD, **Brito C**, Coecke S, Flick B, Fowler P, Hescheler J, Ingelman-Sundberg M, Jennings P, Kelm JM, Manou I, Mistry P, Moretto A, Roth A, Stedman D, van de Water B, Beilmann M. (2015) "Stem cell derived (SCD) systems in toxicology assessment", *Stem Cells and Development* 24, 1284-96. <http://dx.doi.org/10.1089/scd.2014.0540>
12. Estrada MF, Rebelo SP, Davies EJ, Pinto MT, Pereira H, Santo VE, Smalley MJ, Barry ST, Gualda EJ, Alves PM Anderson E, **Brito C*** (2016) Modelling the tumour microenvironment on long-term microencapsulation 3D co-cultures recapitulates phenotypic features of disease progression, *Biomaterials* 78, 50-61. <http://dx.doi.org/10.1016/j.biomaterials.2015.11.030>
13. Santo VE, Estrada MF, Rebelo SP, Abreu S, Silva IM, Pinto C, Veloso SC, Serra T, Boghaert E, Alves PM, **Brito C*** (2016) "Adaptable stirred-tank culture strategies for large scale production of multicellular spheroid-based tumor cell models", *Journal of Biotechnology* 221, 118-12. <http://dx.doi.org/10.1016/j.jbiotec.2016.01.031>
14. Santo VE, Rebelo SP, Estrada MF, Alves PM, Boghaert E, **Brito C*** (2017) "Drug screening in 3D in vitro tumor models: overcoming current pitfalls of efficacy read-outs", *Biotechnology Journal* 12, 1600505. <http://dx.doi.org/10.1002/biot.201600505>
15. Boghaert ER, Lu X, Hessler PE, McGonigal TP, Oleksijew A, Mitten MJ, Foster-Duke K, Hickson JA, Santo VE, **Brito C**, Uziel T, Vaidya KS (2017) "The volume of three-dimensional cultures of cancer cells in vitro influences transcriptional profile differences and similarities with monolayer cultures and xenografted tumors" *Neoplasia* 19, 695-706. <http://dx.doi.org/10.1016/j.neo.2017.06.004>
16. Rebelo S, Pinto C, Martins TR, Harrer N, Estrada MF, Loza-Alvarez P, Cabeçadas J, Alves PM, Gualda E, Sommergruber W, **Brito C*** (2018) "3D-3-culture: a tool to unveil macrophage plasticity in the tumour microenvironment", *Biomaterials*, 163, 185-197. <https://doi.org/10.1016/j.biomaterials.2018.02.030>.
17. Nunes SC, Ramos C, Lopes-Coelho F, Sequeira C, Silva F, Gouveia-Fernandes S, Rodrigues A, Guimarães A, Silveira M, Abreu S, Santo VE, **Brito C**, Félix A, Pereira SA, Serpa J (2018) "Cysteine allows ovarian cancer cells to adapt to hypoxia and to escape from carboplatin cytotoxicity", *Scientific Reports* 8, 9513. <https://doi.org/10.1038/s41598-018-27753-y>
18. Coelho R, Marcos-Silva L, Mendes N, Pereira D, **Brito C**, Jacob F, Steentoft C, Mandel U, Clausen H, David L, Ricardo S (2018) "Mucins and Truncated O-Glycans Unveil Phenotypic Discrepancies between Serous Ovarian Cancer Cell Lines and Primary Tumours" *International Journal of Molecular Sciences* 19, 2045 <https://doi.org/10.3390/ijms19072045>
19. Bayó-Puxan N, Terrasso AP, Creyssels S, Lory P, Cuervo AM, Simão D, Pescia C, Bernex F, Salinas S, Lavigne M, Vellard M, Levade T, Consiglio A[‡], **Brito C^{*,*}** & Kremer EJ[‡] (2018) "Lysosomal and network alterations in human mucopolysaccharidosis type VII iPSC-derived neural cells", *Scientific Reports*, 8: 16644 <https://doi.org/10.1038/s41598-018-34523-3>
20. Simão D, Silva MM, Terrasso AP, Arez F, Sousa MFQ, Mehrjardi NZ, Šarić T, Gomes-Alves P, Raimundo N, Alves PM, **Brito C*** (2018) "Human neural microenvironment specific features are promoted by 3D differentiation of iPSC-derived NPC", *Stem Cell Reports*, 11, 552-564. <https://doi.org/10.1016/j.stemcr.2018.06.020>

PATENTS

- Co-Inventor in the patent "*Infected Cell Cultures*", submitted by MERCK (Germany) to the European Patent Office (PCT application number PCT/EP2018/055717, filed 08/03/2018; International Publication number: WO2018/162623, published 13/9/2018).

OTHER CV HIGHLIGHTS

- *Scientific outputs*, as in February 20, 2019 (*Scopus*) – research articles in international peer-reviewed journals: 52; reviews: 4; book chapters: 4. Total citations: 1310; *h-index*: 19.
- Invited lectures in conference cycles and international courses, academic and industrial (20); Invited lecturer in international conferences (13), of a total of over 80 oral communications and more than 150 poster communications.
- Co-coordinator of the [ESACT](#) annual “[Drug Development Course](#),” Costa Brava, Spain, since 2018.
- Member of the Scientific Committee of [iNOVA4Health](#), since 2018.
- Member of the thematic taskforce of [NOVASaúde](#), NOVA University of Lisbon, since 2018.
- Chair of the Scientific Board of the [Analytical Services Unit](#), iBET, since 2015.
- Member of the Board of the General Assembly of the [SPCE-TC - Portuguese Society for Stem Cells and Cell Therapy](#), 2013-2018.
- Member of the Executive Committee and Coordinator of the Biopharmaceutical Technology Profile of [MolBioS](#): PhD program in Molecular Biosciences (ITQB, IBET, REQUIMTE, CREM and IGC), since 2013.
- Member of the Admission Committee of PhD Program in Bioengineering – Cell Therapies and Regenerative Medicine (IST, IBET, ITQB, CEDOC, IMM, RPI), 2013-2017.
- Invited expert of European Partnership for Alternative Approaches for Animal Testing (EPAA) workgroup on Stem Cell-derived organ-like models for analysing mid and long-term dosing dynamic studies, 2013.
- Member of the Workgroup for definition of "Laboratório Associado de Oeiras" Strategic Areas, 2012.
- Evaluation Committee Member: Joint trans-national call for multinational research projects for pathway analysis (Pathways 2017), EU Joint Programme – Neurodegenerative Disease Research (JPND); Plan Cancer (Experimental Models Call 2018), AVIESAN - French National Cancer Institute- Inserm.
- Regular expert reviewer: Research Foundation Flanders (FWO), Belgium; Research Councils UK (RCUK); Technology Foundation STW, Netherlands; Breast Cancer Now, UK; ANR, France.
- Regular reviewer for Biomaterials, Scientific Reports, Biotechnology Journal, Journal of Biotechnology, Journal of Neurochemistry, Journal of Neuroscience, etc.
- *Science and Society*: Participation in the “Ciência Aberta” initiatives (organized by Ministério da Ciência and Tecnologia, Fundação para a Ciência e Tecnologia); participation in ITQB Open Day; participation in several TV and radio shows; participation in the initiative “A researcher in your school” within the “Science and Technology Week”; lectures and debates about ethical issues associated to the application of Stem Cells and about the “Three Rs Principle” (Replacement, Reduction and Refinement of Animal Experimentation) and the tools available for its implementation.