

# BETTENCOURT-DIAS, MÓNICA

Date of birth: 18/4/1973; Married; One Child (6 yrs); Portuguese  
Lab URL: <http://sites.igc.gulbenkian.pt/ccr/>



## EDUCATION AND TRAINING

- 2002-2004 **Diploma in Science Communication**, Birkbeck College London, UK  
Action-research thesis on “Training scientists to communicate”.
- 1996-2001 **PhD in Biochemistry and Molecular Biology**, University College London, UK & Instituto Gulbenkian de Ciência (IGC), Portugal. Advisor: Jeremy Brockes

## CURRENT AND PAST POSITIONS

- 2018- **Director of Instituto Gulbenkian de Ciência**, Oeiras, Portugal
- 2006-2018 **Principal Investigator (PI)** Instituto Gulbenkian de Ciência, Oeiras, Portugal  
2014- Full Professor (Investigator FCT & Fundação Calouste Gulbenkian),  
2012-2014-LA Associate Professor;  
2008-2012 *Ciência* Assistant Professor;  
2006-2008 FCT Fellowship
- 2002-2006 **Research Associate**, University of Cambridge, UK. Advisor: David Glover

## PRIZES AND AWARDS AS PI (since started my research group)

<u>International</u>	<u>Portugal</u>
2015-EMBO membership	
2012-Keith Porter Fellowship (Philadelphia Foundation and American Society for Cell Biology)	2007 & 2012-Pfizer Award for Basic research
2009-EMBO Young Investigator Programme	2007-Seeds of Science Award- Science website
2007-Eppendorf European Young Investigator	2007-Prémio Metro - Elected by the lay public

## RESEARCH FUNDING AS PI

<u>International</u>	<u>EUROS</u>
2017-2021 ERC Consolidator Grant - Centriole Birth and Death	2.000.000
2011-2016 ERC Starting Grant FP7-ERC - Control of Centriole Structure and Number	1.500.000
2009-2012 Schlumberger Grant (France) –Centriole Biogenesis	60.000
2007-2012 EMBO Installation Grant (EMBO) - Centriole Biogenesis	250.000
<u>National</u>	
2007 to 2018, 6 FCT (each 3yr ) Grants - To Study Cilia and Centriole Biogenesis	1.000.000
2010-2013 <u>Consortium Grant</u> :- Harvard Medical School-FCT- J Pereira-Leal (IGC), P Chaves (IPO) and D Pellman (HMS); Centrosome Changes in Tumorigenesis (I was coordinator)	150.000 (for my lab)
2007 Crioestaminal award & Doutor António Xavier Installation Grant	50.000

## ORGANISATION OF SCIENTIFIC MEETINGS (selected)

- 2017 CSHL Cilia and Centrosomes Meeting, CSHL China
- 2016 EMBO Young Investigator Forum, Fundação Calouste Gulbenkian (PT)
- 2014 EMBO Centrosome and Spindle Pole Bodies conference, Fundação Calouste Gulbenkian (PT)
- 2014 Bayer Workshop “Centrosome Function: Opportunities for Cancer Treatment”, Berlin, DE
- 2012 EMBO YIP Meeting, Instituto Gulbenkian de Ciência, PT
- 2010 EMBO YIP Polarity meeting, Instituto Gulbenkian de Ciência, PT

## SELECTED INVITED PRESENTATIONS (more than 100 since 2006)

CYTOSKELETON AND CELL CYCLE: 2018 Salk Institute Cell Cycle Meeting, 2018 EMBO Microtubule Conference, 2017 EMBO Centrosome and SPB conference, 2017 Cilia & Mucus Gordon Conference, 2016 EMBO workshop on Nuclear function and Cell Fate, 2008, 2011, 2014, 2017 EMBO centrosome and SPB conference;

EVOLUTIONARY-CELL BIOLOGY: 2015 Janelia Farm Meeting on Evolutionary Cell Biology (Keynote speaker)

**CANCER/CILIA DISEASE:** 2016 CANCER MODELS (Seville, SP), 2016 Cilia, Cytoskeleton and Cancer, Edinburgh, 2013 Boehringer Aneuploidy Mtg (Germany);

## MENTORING AND TRAINING

As a postdoc I supervised 7 graduate technicians, three of which came to work in my laboratory.

**As a PI I supervised: 11 PhDs** -5 currently in the lab; 7 finished and are: PostDocs (5), work in pharma (1) or teaching (1). 5 of those students are co-supervised with other laboratories to promote multidisciplinary **10 PostDocs**- 8 in lab, 4 left (1 started lab in Mexico, other Uruguay, 1 in Pharma). Most self-funded (FCT, EMBO, M Curie, HFSP) **16 MSc or assistants**- most continued for MSc/PhD in PT and abroad (IMM, Curie, EMBL, NIMR, ETH)

**I served on several national and European thesis committees**

8 MSc and 8 PhD defenses (FCUL, FMUP, FCT, IST, Portugal and ETH, EMBL, U. of Cambridge).

## TEACHING EXPERIENCE (selected activities)

COURSE CO-ORGANIZATION	FACULTY IN INTERNATIONAL SUMMER COURSES	LECTURES IN COURSES
<b>2008-2018</b> Annual Cell Biology Week @ Gulbenkian PhD & MD PhD Programs <b>2010-11</b> EMBO YIP PhD Student Course at EMBL	<b>2015</b> -Course of Cellular Evolution @ Santa Barbara Advanced School of Quantitative Biology, USA (1 month) <b>2013</b> -Physiology: Modern Cell Biology @ MBL, USA (2 weeks) <b>2013</b> -FEBS Signalling and Cancer, Spetzes, GR (1 week)	<b>PhD courses:</b> GABBA-Porto (PT), ITQB-Lisbon (PT), HBIGS Summer School (GR), Chromosome Segregation course (CGDB, NL), ETH (CH), EMBO - Current Methods in Cell Biology, EMBL.

## PROMOTING SCIENCE IN SOCIETY (selected activities)

**I strongly believe in a knowledge-based society; I am very committed to promoting science across audiences and in developing countries. I was an organizer of two associations: Comunicar Ciência & Science4development**

### Outreach activities (examples)

2018-COGITO SHOW (300 lay people)  
 2014-CREATIVITY SHOW (800 school students)  
 2014-Tedex TALK  
 2009-GENE MACHINE THEATRE PLAY  
 2010-2011-SPEED-DATING @ music festivals

### Developing Countries (Organizer)

2014/2017-Cell Biology Week PhD-programme in Cape Verde (CV)  
 2013-EMBO summer fellowships for CV students  
 2012-EMBO Course On Life Sciences in CV  
 2001,2002-Course On Life Sciences in Mozambique,

### Training scientists in communication skills (Organizer)

2006-BOOKLET-How to communicate (being translated to En & Fr);  
 2003-2008; 5 WORKSHOPS to train scientists (Portugal; Spain; Belgium)

## COMMISSIONS OF TRUST & INSTITUTIONAL RESPONSIBILITIES (since 2006)

### EDITORIAL BOARDS:

2012- Present: Journal of Cell Biology;  
 2010-15 Journal of the American Society for Cell Biology (MBoC);  
 2009-2016: F1000

### POLICY:

2018- Co-headed a movement to rethink science in Portugal, called Movimento Ciência Portugal, signed by more than 5000 researchers and that was discussed by the Government  
 2015/6-Part of group selected by Minister of Higher Education, Science & Technology to rethink the Portuguese Foundation for Science & technology  
 2012- 2015 National Council for Science and Technology headed by the Prime Minister of PT  
 2011- Co-headed a movement to rethink science in Portugal, called Movimento Ciência Portugal, signed by more than 2500 researchers and that was discussed in parliament

### JURIES:

2017- Chair of Evaluation (HCERES) of CNRS Unit; 2015/2016-European Research Council Panel Member  
 2013-2016- Prémio Gulbenkian; 2013- 2015- Laço Grant (Cancer)

## PUBLICATIONS

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### In Press:

Gouveia SM, Zitouni S, Kong D, Duarte P, Gomes BF, Sousa AL, Tranfield EM, Hyman A, Loncarek J, Bettencourt-Dias M. PLK4 is a microtubule-associated protein that self assembles promoting de novo MTOC formation. **J Cell Sci.** 2018 Sep 20.

Jana SW, Mendonça S, Machado P, Werner S, Rocha J, Pereira A, Maiato H, Bettencourt-Dias M Differential Regulation of Transition Zone and Centriole Proteins Contributes to Ciliary Base Diversity, **Nature Cell Biology**, online on 9<sup>th</sup> July 2018

### In Print

1. Lopes, C.A.M., M. Mesquita, A.I. Cunha, J. Cardoso, S. Carapeta, C. Laranjeira, A.E. Pinto, J.B. Pereira-Leal, A. Dias-Pereira, M. Bettencourt-Dias, and P. Chaves, Centrosome amplification arises before neoplasia and increases upon p53 loss in tumorigenesis. **J Cell Biol**, 2018.
2. Nabais, C., S.G. Pereira, and M. Bettencourt-Dias, Noncanonical Biogenesis of Centrioles and Basal Bodies. **Cold Spring Harb Symp Quant Biol**, 2018.
3. Marteil, G., A. Guerrero, A.F. Vieira, B.P. de Almeida, P. Machado, S. Mendonca, M. Mesquita, B. Villarreal, I. Fonseca, M.E. Francia, K. Dores, N.P. Martins, S.C. Jana, E.M. Tranfield, N.L. Barbosa-Morais, J. Paredes, D. Pellman, S.A. Godinho, and M. Bettencourt-Dias, Over-elongation of centrioles in cancer promotes centriole amplification and chromosome missegregation. **Nat Commun**, 2018. 9(1): p. 1258.
4. Loncarek, J. and M. Bettencourt-Dias, Building the right centriole for each cell type. **J Cell Biol**, 2018. 217(3): p. 823-835.
5. Werner, S., A. Pimenta-Marques, and M. Bettencourt-Dias, Maintaining centrosomes and cilia. **J Cell Sci**, 2017. 130(22): p. 3789-3800.
6. Marteil, G., M.A. Dias Louro, and M. Bettencourt-Dias, Centrosome Assembly: Reconstructing the Core Cartwheel Structure In Vitro. **Curr Biol**, 2017. 27(12): p. R606-R609.
7. Cardoso, J., M. Mesquita, A. Dias Pereira, M. Bettencourt-Dias, P. Chaves, and J.B. Pereira-Leal, CYR61 and TAZ Upregulation and Focal Epithelial to Mesenchymal Transition May Be Early Predictors of Barrett's Esophagus Malignant Progression. **PLoS One**, 2016. 11(9): p. e0161967.
8. Jana, S.C., S. Mendonca, S. Werner, and M. Bettencourt-Dias, Methods to Study Centrosomes and Cilia in Drosophila. **Methods Mol Biol**, 2016. 1454: p. 215-36.
9. Jana, S.C., M. Bettencourt-Dias, B. Durand, and T.L. Megraw, Drosophila melanogaster as a model for basal body research. **Cilia**, 2016. 5: p. 22.
10. Pimenta-Marques, A., I. Bento, C.A. Lopes, P. Duarte, S.C. Jana, and M. Bettencourt-Dias, A mechanism for the elimination of the female gamete centrosome in Drosophila melanogaster. **Science**, 2016. 353(6294): p. aaf4866.
11. Zitouni, S., M.E. Francia, F. Leal, S. Montenegro Gouveia, C. Nabais, P. Duarte, S. Gilberto, D. Brito, T. Moyer, S. Kandels-Lewis, M. Ohta, D. Kitagawa, A.J. Holland, E. Karsenti, T. Lorca, M. Lince-Faria, and M. Bettencourt-Dias, CDK1 Prevents Unscheduled PLK4-STIL Complex Assembly in Centriole Biogenesis. **Curr Biol**, 2016. 26(9): p. 1127-37.
12. Borrego-Pinto, J., K. Somogyi, M.A. Karreman, J. Konig, T. Muller-Reichert, M. Bettencourt-Dias, P. Gonczy, Y. Schwab, and P. Lenart, Distinct mechanisms eliminate mother and daughter centrioles in meiosis of starfish oocytes. **J Cell Biol**, 2016. 212(7): p. 815-27.
13. Chen, J.V., L.R. Kao, S.C. Jana, E. Sivan-Loukianova, S. Mendonca, O.A. Cabrera, P. Singh, C. Cabernard, D.F. Eberl, M. Bettencourt-Dias, and T.L. Megraw, Rootletin organizes the ciliary rootlet to achieve neuron sensory function in Drosophila. **J Cell Biol**, 2015. 211(2): p. 435-53.
14. Lopes, C.A., S.C. Jana, I. Cunha-Ferreira, S. Zitouni, I. Bento, P. Duarte, S. Gilberto, F.

- Freixo, A. Guerrero, M. Francia, M. Lince-Faria, J. Carneiro, and M. Bettencourt-Dias, PLK4 trans-Autoactivation Controls Centriole Biogenesis in Space. **Dev Cell**, 2015. 35(2): p. 222-35.
15. Zitouni, S., C. Nabais, S.C. Jana, A. Guerrero, and M. Bettencourt-Dias, Polo-like kinases: structural variations lead to multiple functions. **Nat Rev Mol Cell Biol**, 2014. 15(7): p. 433-52.
16. Jana, S.C., G. Marteil, and M. Bettencourt-Dias, Mapping molecules to structure: unveiling secrets of centriole and cilia assembly with near-atomic resolution. **Curr Opin Cell Biol**, 2014. 26: p. 96-106.
17. Cunha-Ferreira, I., I. Bento, A. Pimenta-Marques, S.C. Jana, M. Lince-Faria, P. Duarte, J. Borrego-Pinto, S. Gilberto, T. Amado, D. Brito, A. Rodrigues-Martins, J. Debski, N. Dzhindzhev, and M. Bettencourt-Dias, Regulation of autophosphorylation controls PLK4 selfdestruction and centriole number. **Curr Biol**, 2013. 23(22): p. 2245-54.
18. Bettencourt-Dias, M., Q&A: Who needs a centrosome? **BMC Biol**, 2013. 11: p. 28.
19. Jana, S.C., J.F. Bazan, and M. Bettencourt-Dias, Polo boxes come out of the crypt: a new view of PLK function and evolution. **Structure**, 2012. 20(11): p. 1801-4.
20. Carvalho-Santos, Z., P. Machado, I. Alvarez-Martins, S.M. Gouveia, S.C. Jana, P. Duarte, T. Amado, P. Branco, M.C. Freitas, S.T. Silva, C. Antony, T.M. Bandejas, and M. Bettencourt-Dias, BLD10/CEP135 is a microtubule-associated protein that controls the formation of the flagellum central microtubule pair. **Dev Cell**, 2012. 23(2): p. 412-24.
21. Holland, A.J., D. Fachinetti, S. Da Cruz, Q. Zhu, B. Vitre, M. Lince-Faria, D. Chen, N. Parish, I.M. Verma, M. Bettencourt-Dias, and D.W. Cleveland, Polo-like kinase 4 controls centriole duplication but does not directly regulate cytokinesis. **Mol Biol Cell**, 2012. 23(10): p. 1838-45.
22. Brito, D.A., S.M. Gouveia, and M. Bettencourt-Dias, Deconstructing the centriole: structure and number control. **Curr Opin Cell Biol**, 2012. 24(1): p. 4-13.
23. Jana, S.C., P. Machado, and M. Bettencourt-Dias, A structural road map to unveil basal body composition and assembly. **EMBO J**, 2012. 31(3): p. 519-21.
24. Carvalho-Santos, Z., J. Azimzadeh, J.B. Pereira-Leal, and M. Bettencourt-Dias, Evolution: Tracing the origins of centrioles, cilia, and flagella. **J Cell Biol**, 2011. 194(2): p. 165-75.
25. Bettencourt-Dias, M., F. Hildebrandt, D. Pellman, G. Woods, and S.A. Godinho, Centrosomes and cilia in human disease. **Trends Genet**, 2011. 27(8): p. 307-15.
26. Dzhindzhev, N.S., Q.D. Yu, K. Weiskopf, G. Tzolovsky, I. Cunha-Ferreira, M. Riparbelli, A. Rodrigues-Martins, M. Bettencourt-Dias, G. Callaini, and D.M. Glover, Asterless is a scaffold for the onset of centriole assembly. **Nature**, 2010. 467(7316): p. 714-8.
27. Martins, A.R., P. Machado, G. Callaini, and M. Bettencourt-Dias, Microscopy methods for the study of centriole biogenesis and function in Drosophila. **Methods Cell Biol**, 2010. 97: p. 223-42.
28. Carvalho-Santos, Z., P. Machado, P. Branco, F. Tavares-Cadete, A. Rodrigues-Martins, J.B. Pereira-Leal, and M. Bettencourt-Dias, Stepwise evolution of the centriole-assembly pathway. **J Cell Sci**, 2010. 123(Pt 9): p. 1414-26.
29. Debec, A., W. Sullivan, and M. Bettencourt-Dias, Centrioles: active players or passengers during mitosis? **Cell Mol Life Sci**, 2010. 67(13): p. 2173-94.
30. Bettencourt-Dias, M. and G. Goshima, RNAi in Drosophila S2 cells as a tool for studying cell cycle progression. **Methods Mol Biol**, 2009. 545: p. 39-62.
31. Kuriyama, R., M. Bettencourt-Dias, I. Hoffmann, M. Arnold, and L. Sandvig, Gammatubulin-containing abnormal centrioles are induced by insufficient Plk4 in human HCT116 colorectal cancer cells. **J Cell Sci**, 2009. 122(Pt 12): p. 2014-23.
32. Cunha-Ferreira, I., I. Bento, and M. Bettencourt-Dias, From zero to many: control of centriole number in development and disease. **Traffic**, 2009. 10(5): p. 482-98.
33. Bettencourt-Dias, M. and D.M. Glover, SnapShot: centriole biogenesis. **Cell**, 2009. 136(1): p. 188-188 e1.
34. Cunha-Ferreira, I., A. Rodrigues-Martins, I. Bento, M. Riparbelli, W. Zhang, E. Laue, G.

- Callaini, D.M. Glover, and M. Bettencourt-Dias, The SCF/Slimb ubiquitin ligase limits centrosome amplification through degradation of SAK/PLK4. **Curr Biol**, 2009. 19(1): p. 43-9.
35. Rodrigues-Martins, A., M. Riparbelli, G. Callaini, D.M. Glover, and M. Bettencourt-Dias, From centriole biogenesis to cellular function: centrioles are essential for cell division at critical developmental stages. **Cell Cycle**, 2008. 7(1): p. 11-6.
36. Bettencourt-Dias, M. and Z. Carvalho-Santos, Double life of centrioles: CP110 in the spotlight. **Trends Cell Biol**, 2008. 18(1): p. 8-11.
37. Rodrigues-Martins, A., M. Bettencourt-Dias, M. Riparbelli, C. Ferreira, I. Ferreira, G. Callaini, and D.M. Glover, DSAS-6 organizes a tube-like centriole precursor, and its absence suggests modularity in centriole assembly. **Curr Biol**, 2007. 17(17): p. 1465-72.
38. Bettencourt-Dias, M. and D.M. Glover, Centrosome biogenesis and function: centrosomics brings new understanding. **Nat Rev Mol Cell Biol**, 2007. 8(6): p. 451-63.
39. Rodrigues-Martins, A., M. Riparbelli, G. Callaini, D.M. Glover, and M. Bettencourt-Dias, Revisiting the role of the mother centriole in centriole biogenesis. **Science**, 2007. 316(5827): p. 1046-50.
40. Bettencourt-Dias, M., A. Rodrigues-Martins, L. Carpenter, M. Riparbelli, L. Lehmann, M.K. Gatt, N. Carmo, F. Balloux, G. Callaini, and D.M. Glover, SAK/PLK4 is required for centriole duplication and flagella development. **Curr Biol**, 2005. 15(24): p. 2199-207.
41. Bettencourt-Dias, M., R. Giet, R. Sinka, A. Mazumdar, W.G. Lock, F. Balloux, P.J. Zafiropoulos, S. Yamaguchi, S. Winter, R.W. Carthew, M. Cooper, D. Jones, L. Frenz, and D.M. Glover, Genome-wide survey of protein kinases required for cell cycle progression. **Nature**, 2004. 432(7020): p. 980-7.
42. Bettencourt-Dias, M., S. Mitnacht, and J.P. Brookes, Heterogeneous proliferative potential in regenerative adult newt cardiomyocytes. **J Cell Sci**, 2003. 116(Pt 19): p. 4001-9.