

# Curriculum vitae - José B. Pereira Leal

## Personal Data

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Name	José Bártholo Pereira Leal
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## Personal Statement

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I am a scientist with an interest in translating basic research into the solution of society's problems. My focus is on Biotechnology, in particular genomics and bioinformatics, and their application for a better healthcare and a better, more sustainable use of natural resources. I am a firm believer in basic science, but also that at the heart of any excellent science, there is a potential business model to be developed - I enjoy creating the conditions for this value generation.

My **company** develops R&D towards omics-based diagnostic solutions in support of precision oncology, within the context of a large clinical pathology group in Portugal. Its where we transform theory into practical solutions to improve people's lives. I helped other do the same as part of a dedicated **start up incubator** for companies acting within the health domain, and am current Vice-President of the **BioIndustries association** of Portugal. I am the coordinator of a national scientific infrastructure - **BioData.pt**, now integrated into the national roadmap and fully funded for a three year implementation phase to support scientific research and value generation from biological data via bioinformatics.

## Present Situation

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- **2015 – present – Executive Director** and Founder of the Start up Company Ophiomics (Lisbon, Portugal)

## Professional Experience

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- **2016 – 2018 (Dec) – Scientific Director** - Healthcare City Startup Incubator (Lisbon, Portugal)

- **2006 – 2014 (Feb.)** – Head of the Bioinformatics and Computational Biology Unit of the Instituto Gulbenkian de Ciência (Oeiras, Portugal)
- **2004-2005** - Career Development Fellow at the MRC-Laboratory of Molecular Biology, sponsored by Dr. Sarah.A.Teichmann (UK).
- **2004** – Post doc at the MRC Laboratory of Molecular Biology, in the Computational Genomics Group with Dr. Sarah A.Teichmann (UK).
- **2002-2003** – Post doc at the EMBL-European Bioinformatics Institute, in the Computational Genomics Group with Dr. Christos A. Ouzounis (UK).

## **Education**

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- **2012-2013** – Advanced Management Program for Executives - Entrepreneurs at **Católica Lisbon School of Business & Economics**.
- **2001** – PhD (“Programa Gulbenkian de Doutoramento em Biologia e Medicina”) in Biomedical Sciences from **Universidade do Porto** (Portugal) supervised by Prof. Miguel C. Seabra – all the work took place at the **University of Texas Southwestern Medical Center at Dallas** (USA) and **Imperial College School of Medicine** (UK)
- **1996** - BSc (Licenciatura) in Biochemistry from **Universidade de Lisboa** (PT).

## **Other activities**

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### **Present**

- President of the Board of [BioData.pt](http://BioData.pt), the Portuguese Biological Information Infrastructure that is now integrated into the national roadmap for scientific infrastructures and funded for a three year implementation phase.
- Vice President of the Portuguese Bio-Industries Association
- Founding member of the movement “Ciência Portugal” that emerged to defend Portuguese investment in basic science

### **Past**

- Coordinator of the Science and Technology Council of the Municipality of Oeiras, Portugal
- Member of Scientific Advisory Board of the Portuguese Biological and Chemical Defence Laboratory
- Founding member and first Head of the Portuguese ELIXIR Node, part of the ELIXIR European Bioinformatics Network
- Associate Editor of the journal *Genome Biology and Evolution*, published by the Society for Molecular Biology and Evolution
- Editorial Board Member of the journal *Biology Direct*
- Member of Scientific and Technological Board of TagusPark - a technology park in Oeiras, Portugal.

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## Mentorship

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7 PhD students, six already graduated\*, including two MDs (Yoann Diekmann\*, Sofia Braga\*, Marc Gouw\*, Jaroslaw Surkont\*, Madalena Carneiro\*, Hugo Pinto Marques\*, Ana Paula Aguiar)  
3 MSc students (André Mendonça\*, Filipe Cadete\*, Beatriz Gomes\*)

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## Selected Teaching Experience

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### Coordination of modules in MSc and PhD programs.

- **2014-2016** - Co-coordinator of the module “Hypothesis-driven research” in the PhD Program in Integrative Biosciences of the Instituto Gulbenkian de Ciência, Portugal
- **2010 - 2015**— Coordinator of the Module “Research in Bioinformatics” of the MSc Program in Bioinformatics and Computational Biology at the the University of Lisbon, Portugal
- **2012 - 2014** - Coordinator of the Module “Bioinformatics” of the PhD Program Science for Development, in Cabo Verde
- **2008 - 2011** - Coordinator of the Module “Genomics and Bioinformatics” of the Advanced Medical Education Program (a PhD program for clinicians) of the Gulbenkian and Champalimaud Foundations, Portugal
- **2010 - 2011** - Coordinator of the Module “Structural Biology” of the Advanced Medical Education Program (a PhD program for clinicians) of the Gulbenkian and Champalimaud Foundations, Portugal
- **2005-2008** - Coordinator of the Module “Protein interaction networks” in the PhD Program in Computational Biology at the Instituto Gulbenkian de Ciência, Portugal

### International Summer Schools

- **2015** - Faculty of the Summer Program in Evolutionary Cell Biology, part of the Quantitative Biology Program of the Kavli Institute In Theoretical Physics, Santa Bárbara, USA
- **2013** - Faculty of the Physiology Course at the Marine Biological Laboratory in Woods -Hole, USA
- **2011** - Co-organizer of the International Summer School in Genome Biology and Evolution at the Instituto Gulbenkian de Ciência, Oeiras, Portugal

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## Publications

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Google Scholar: citations = 5906; i10=41; H index = 30;

( September 2019)

### Papers in Peer Reviewed Journals

- (60) Sousa AGG; Tomasino MP; Duarte; Fernández-Méndez M; Assmy P; Ribeiro H; Surkont J; Leite R; Pereira- Leal, J; Torgo L; Magalhães, C (2017) Pelagic microbial communities below drifting Arctic sea-ice during the late winter to early summer transition. Submitted
- (59) Leite RB, Afonso R, Cancela L, Pereira-Leal JB (2017) A basal dinoflagellate with a chitinous coat. Submitted

- (58) Leite RB; Silva A, Pereira-Leal JB (2017) Evaluating new and old detection methods for harmful algal blooms (HAB): The Portuguese coastal monitoring example. Submitted
- (57) Ito D, Zitouni S, Jana SC, Duarte P, Surkont J, Carvalho-Santos Z, Pereira-Leal JB, Ferreira MG, Bettencourt-Dias M. (2019) Pericentrin-mediated SAS-6 recruitment promotes centriole assembly. *Elife*. Jun 11;8. pii: e41418.
- (56) Hamblin KA, Flick-Smith H, Barnes KB, Pereira-Leal JB, Surkont J, Hampson R, Atkins HS, Harding SV. (2019) Disulfiram, an alcohol dependence therapy, can inhibit the in vitro growth of *Francisella tularensis*. *Int J Antimicrob Agents*. Jul;54(1):85-88.
- (55) de Sousa AGG, Tomasino MP, Duarte P, Fernández-Méndez M, Assmy P, Ribeiro H, Surkont J, Leite RB, Pereira-Leal JB, Torgo L, Magalhães C. (2019) Diversity and Composition of Pelagic Prokaryotic and Protist Communities in a Thin Arctic Sea-Ice Regime. *Microb Ecol*. 78(2):388-408.
- (54) Carla Lopes, Marta Mesquita, Ana Cunha, Joana Cardoso, Sara Carapeta, Cátia Laranjeira, António Pinto, José Pereira-Leal, António Dias-Pereira, Monica Bettencourt-Dias, and Paula Chaves (2018) Centrosome amplification arises before transformation and increases upon p53 loss in human cancer. *J Cell Biol*. 2;217(7):2353-2363
- (53) Semedo-Aguiar A, Pereira-Leal J, and Leite R (2018) Microbial communities survey and toxin risk potential in recent African freshwater reservoirs. *Toxins*. 5;10(5). pii: E186
- (52) Paulo Rocha P; Silva AD; Godinho L; Dane W; Estrela P, Pereira-Leal JB; de Leeuw DM; Leite R (2018) Collective electrical oscillations of a diatom population induced by dark stress. *Scientific Reports* 8(1) 5484
- (51) Brito PH, Chevreux B, Serra CR, Schyns G, Henriques AO, Pereira-Leal JB. (2018) Genetic competence drives genome diversity in *Bacillus subtilis*. *Genome Biol Evol*. 10(1): 108-124
- (50) Tavares S, Vieira AF, Taubenberger AV, Araújo M, Martins NP, Brás-Pereira C, Polónia A, Herbig M, Barreto C, Otto O, Cardoso J, Pereira-Leal JB, Guck J, Paredes J, Janody F. (2017) Actin stress fiber organization promotes cell stiffening and proliferation of pre-invasive breast cancer cells. *Nat Commun*. 8:15237.
- (49) Passagem-Santos D, Bonnet M, Sobral D, Trancoso I, Silva JG, Barreto VM, Athanasiadis A, Demengeot J, Pereira-Leal JB. (2016) RAG Recombinase as a Selective Pressure for Genome Evolution. *Genome Biol Evol*. 14;8(11):3364-3376.
- (48) Surkont J, Diekmann Y, Pereira-Leal JB. (2016) Rabifier2: an improved bioinformatic classifier of Rab GTPases. *Bioinformatics*. 33(4):568-570.
- (47) Braga S, Cardoso J, Andre S, Brito M, Sanchez P, Orvalho L, Salgado L, Dias S, Pereira-Leal JB, Passos-Coelho JL. (2016) Does Hypoxic Response Mediate Primary Resistance to Sunitinib in Untreated Locally Advanced Breast Cancer? *Curr Cancer Drug Targets*. 7(1):62-73
- (46) Cardoso J, Mesquita M, Dias Pereira A, Bettencourt-Dias M, Chaves P, Pereira-Leal JB. (2016) CYR61 and TAZ Upregulation and Focal Epithelial to Mesenchymal Transition May Be Early Predictors of Barrett's Esophagus Malignant Progression. *PLoS One*. 11(9):e0161967
- (45) Diekmann Y, Pereira-Leal JB. (2016) Gene Tree Affects Inference of Sites Under Selection by the Branch-Site Test of Positive Selection. *Evol Bioinform Online*. 11(Suppl 2):11-7
- (44) Surkont J & Pereira-Leal (2016) Are there Rabs in Archaea? *Mol. Bio. Evol*. 33(7):1833-42
- (43) Surkont J, Diekmann Y, Ryder PV, Pereira-Leal JB. (2015) Coiled-coil length: Size does matter. *Proteins*. 83 (12), 2162-2169

- (42) Reed, Patricia; Atilano, Magda L; Alves, Renato; Hoiczuk, Egbert; Sher, Xinwei; Reichmann, Nathalie T; Pereira, Pedro M; Roemer, Terry; Filipe, Sérgio R; Pereira-Leal, José B (2015) *Staphylococcus aureus* Survives with a Minimal Peptidoglycan Synthesis Machine but Sacrifices Virulence and Antibiotic Resistance. *PLoS Pathogens*, 11 (5), e1004891
- (41) Ramos-Silva, Paula; Brito, Patrícia H; Serrano, Mónica; Henriques, Adriano O; Pereira-Leal, José B (2015) Rethinking the niche of upper-atmosphere bacteria: draft genome sequences of *Bacillus aryabhattai* C765 and *Bacillus aerophilus* C772, isolated from rice fields. *Genome announcements*,3,2,e00094-15
- (40) Surkont J & Pereira-Leal JB (2014) Evolutionary patterns in coiled coils. *Genome Biology and Evolution*. evv007
- (39) Lynch M, Field MC, Goodson HV, Malik HS, Pereira-Leal JB, Roos DS, Turkewitz AP, Sazer S. (2014) Evolutionary cell biology: Two origins, one objective. *Proc Natl Acad Sci U S A*. 111 (48) 16990-16994
- (38) Correia C ,Diekmann Y,Vicente AM and Pereira- Leal JB (2013) Hope for GWAS: Relevant Risk Genes Uncovered from GWAS Statistical Noise. *Int J Mol Sci*. 15(10):17601-21.
- (37) Pereira-Leal JB et al (2014) Comprehensive assessment of the transcriptome of the cork oak *Quercus suber*) *BMC genomics*. 5:371..
- (36) Marques I, Almeida P, Alves RJ, Dias MJ, Godinho A, Pereira-Leal JB (2014) Bioinformatics projects supporting enquiry-based learning in high schools *PLoS Comp. Bio*. 10 (1), e1003404
- (35) Lopes JS, Marques I, Soares P, Nebenzahl-Guimaraes H, Costa J, Miranda A, Duarte R, Alves A, Macedo R, Fonseca-Antunes A, Duarte TA, Barbosa T, Oliveira M, Nery JS, Boechat N, Pereira SM, Barreto ML, Pereira-Leal JB, Gomes MG, Penha-Gonçalves C (2013) SNP typing reveals similarity in *Mycobacterium tuberculosis* genetic diversity between Portugal and Northeast Brazil. *Infection, Genetics and Evolution*: 18:238
- (34) Soares P, Penha-Gonçalves C, Gomes G, Pereira-Leal JB (2013) inTB - integrating clinical, demographic and molecular epidemiological data for tuberculosis *BMC Bioinformatics* 14: 264
- (33) Hochegger H, Hegarat N, Pereira-Leal JB (2013) Overlapping roles of Aurora kinases in the mitotic spindle *Open Biology* 3(3):120185
- (32) Abecasis AB, Serrano M, Alves RJ, Quintais L, Pereira-Leal JB, Henriques AO (2013) A Genomic signature and the identification of new sporulation genes *J. Bac. in press*
- (31) Schyns G, Serra CR, Lapointe T, Pereira-Leal JB, Potot S, Fickers P, Perkins JB, Wyss M, Henriques AO (2013) The genome of a gut strain of *Bacillus subtilis*. *Genome Ann*. 1(1) e00184-12
- (30) Diekmann Y & Pereira-Leal JB (2013) The Evolution of Intracellular Compartmentalization. *Biochem. J*. 449(2):319-31
- (29) Sousa FL, Alves RJ, Pereira-Leal JB, Teixeira M, Pereira MM. (2011) A bioinformatics classifier and database for heme-copper oxygen reductases. *PLoS One*. 6(4):e19117.
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- (26) Sousa FL, Alves RJ, Ribeiro MA, Pereira-Leal JB, Teixeira M, Pereira MM. (2011) The superfamily of heme-copper oxygen reductases: Types and evolutionary considerations. *Biochim Biophys Acta*. 1817(4):629-37.
- (25) Diekmann Y, Seixas E, Gouw M, Tavares-Cadete F, Seabra MC, Pereira-Leal JB. (2001) Thousands of rab GTPases for the cell biologist. *PLoS Comput Biol*. 7(10):e1002217. Epub 2011
- (24) Mendonça A, Alves, RJ, Pereira-Leal, JB (2011) Loss of genetic redundancy in reductive genome evolution. *PLoS Comp. Bio*. 7(2): e1001082
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- (21) Levy, ED & Pereira-Leal, JB (2008) Evolution of protein interactions and networks *Curr. Op. Struct. Bio*. 18(3):349-57
- (20) Pereira-Leal, JB (2008) The ypt/rab family and the evolution of trafficking in fungi *Traffic*. 9(1):29-38
- (19) Rasteiro, R & Pereira-Leal, JB (2007) Multiple domain insertions in the evolution of the Rab prenylation complex *BMC Evol. Bio*. 7:140
- (18) Pereira-Leal JB, Levy ED, Kamp C, Teichmann SA. (2007) Evolution of protein complexes by duplication of homomeric interactions. *Genome Biol.*;8(4):R51.
- (17) Pereira-Leal, JB (2007) Book Review: Modularity in natural complex systems *Acta Biotheoretica* in press
- (16) Levy, ED, Pereira-Leal, JB, Chothia, C and Teichmann (2006) 3D Complex: a structural classification of protein complexes *PLoS Comp. Bio*. 2(11):e155
- (15) Pereira-Leal, JB, Levy, ED and Teichmann (2006) The evolution and origins of modularity: lessons from protein complexes *Phyl. Trans. R. Soc London B Biol. Sci*. 361(1467):507-17
- (14) Mosedale G, Niedzwiedz W, Alpi A, Perrina F, Pereira-Leal JB, Johnson M, Langevin F, Pace P, Patel KJ. (2005) The vertebrate Hef ortholog is a component of the Fanconi anemia tumor-suppressor pathway. *Nature Struct. Mol. Biol*. 12(9):763-71
- (13) El-Sayed NM, Myler PJ, Blandin G, Berriman M, Crabtree J, Aggarwal G, Caler E, Renault H, Worthey EA, Hertz-Fowler C, Ghedin E, Peacock C, Bartholomeu DC, Haas BJ, Tran AN, Wortman JR, Alsmark UC, Angiuoli S, Anupama A, Badger J, Bringaud F, Cadag E, Carlton JM, Cerqueira GC, Creasy T, Delcher AL, Djikeng A, Embley TM, Hauser C, Ivens AC, Kummerfeld SK, Pereira-Leal JB, Nilsson D, Peterson J, Salzberg SL, Shallom J, Silva JC, Sundaram J, Westenberger S, White O, Melville SE, Donelson JE, Andersson B, Stuart KD, Hall N(2005) Comparative genomics of trypanosomatid parasitic protozoa *Science* 309(5733):404-9
- (12) Pereira-Leal, JB and Teichmann (2005) Novel specificities emerge by step-wise duplication of functional modules *Genome Res*. 15(4):552-9
- (11) Vogel, C, Teichmann, SA and Pereira-Leal, JB (2005) The relationship between domain duplication and combination *J. Mol. Bio*. 346(1): 355-65
- (10) Pereira-Leal, JB\*, Audit, B\*, Pellegrin-Alvarez, J, and Ouzounis, CA (2005) An exponential core at the heart of the yeast protein interaction network *Mol. Bio. Evol* 22(3):421-5

- (9) Kunin, V\*, Pereira-Leal, JB\* and Ouzounis, CA (2004) Functional evolution of the yeast protein interaction networks *Mol. Bio. Evo.* 21(7): 1171-6
- (8) Pereira-Leal, JB\*, Enright, A\*. and Ouzounis (2004) Identification of Functional Modules from Protein Interaction networks. *Proteins* 54(1): 49-57.
- (7) von Mering, C, Zdobnov, E, Tsoka, S, Ciccarelli, F, Pereira-Leal, JB, Ouzounis, CA, Bork, P. (2003) Comparative genomics reveals biochemical networks and functional modules. *Proc. Natl. Acad. Sci. USA* 100(26): 15428-33
- (6) Ouzounis CA, Coulson RM, Enright AJ, Kunin V, Pereira-Leal JB. (2003) Classification schemes for protein structure and function. *Nat. Rev. Genetics* 4:508-19
- (5) Janssen P, Audit, B, Cases, I, Darzentas, N, Goldovsky, L, Kunin, V, Lopez-Bigas, N, Peregrin-Alvarez, JM, Pereira-Leal, JB, Tsoka, S, and Ouzounis, CA (2003) Beyond 100 Genomes *Genome Biol.* 4:402
- (4) Pereira-Leal, JB, Strom, M, Godfrey, RF, and Seabra, MC (2003) Structural determinants of Rab:REP binding: Rab family conserved motifs define a conserved binding surface to REP *Biochem. Biophys. Res. Commun.* 301: 92-7.
- (3) Pereira-Leal, JB and Seabra, MC (2002) Evolution of the Rab family of small GTP-binding proteins *J. Mol. Bio.* 313: 889-901
- (2) Pereira-Leal, JB, Hume, AN, and Seabra, MC (2001) Prenylation of Rab GTPases: molecular mechanisms and involvement in genetic diseases *FEBS Lett.* 498: 197-200
- (1) Pereira-Leal, JB and Seabra, MC (2000) The mammalian Rab family of small GTPases: definition of family and subfamily motifs suggests a mechanisms for functional specificity in the Ras superfamily *J. Mol. Bio.* 301: 1077-1087

### **Books & Chapters**

- Diekmann, Yoan; Pereira-Leal, José B (2015) Bioinformatic Approaches to Identifying and Classifying Rab Proteins in “Rab GTPases Methods and Protocols”, 17-28, 2015, Springer New York
- Rodrigues ML & Pereira-Leal, JB (2012) Novel Rabs in “Rab GTPases and Membrane Trafficking” Bentham Science Publishers.
- Career Paths and Mobility of Researchers in Europe (2005) Gabaldón, T., Horta, H., Meyer, DM and Pereira-Leal, JB. (Eds) Cuvillier Verlag Goettingen, ISBN 3-86537- 455-7; 178 pages
- Pereira-Leal, JB, Gomes, AR and Seabra, MC (2002) “ Analysis and preparation of stable complexes between Rab GTPases, Rab Escort Protein and Rab Geranylgeranyl Transferase” in “GTPase Protocols – The Ras Superfamily” ed. Manser, EJ and Leung, T. – Methods in Molecular Biology – series ed. Walker, JM.

### **Software**

- OphiDx - Clinical Genetics/Genomics LIMS, Analyses and reporting system

- [www.mtoc-explorer.org](http://www.mtoc-explorer.org) - a platform to explore cellular morphology across evolution, focused on eukaryotic cytoskeletal structures and Electron Microscopy data, including a cell biology Ontology
- [www.RabDB.org](http://www.RabDB.org) - a web tool for sequence classification and database of Rab proteins in all eukaryotic sequenced genomes
- [www.evocell.org/HCO](http://www.evocell.org/HCO) - a sequence classification tool and database of bacterial Heme-copper oxygen reductases