

Miguel Viveiros
Full Professor
Instituto de Higiene e Medicina Tropical (IHMT)
Global Health and Tropical Medicine (GHTM)
TB, HIV and opportunistic diseases and pathogens (THOP)
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Research interests

Profile: Full Professor in Biomedical Sciences - Medical Microbiology and Vice-Director of the Institute of Hygiene and Tropical Medicine of the New University of Lisbon. Professor in Biomedical Sciences, International Health and Tropical Medicine - Early diagnosis of active or latent TB and new therapeutics for MDRTB and XDRTB. Devoted to the study and development of new diagnostic tools and alternative therapies to treat drug resistant infectious diseases such as multidrug resistant tuberculosis and methicillin-vancomycin resistant staphylococcal infections, using new biotechnologies and new therapies incorporating non-antibiotic adjuvants of chemotherapy. Specialist in the laboratory diagnosis and characterization of the determinants for resistance by phenotypic and genotypic assays, using new technical approaches such as Whole genome sequencing and real-time phenotypic assays. These studies also demonstrated the public health implications associated with these findings and contributed to the improvement of the currently recommended first and second line multi-drug anti-TB treatments. Scientific Coordinator of the Foundation of Science and Technology Research Center – Global Health and Tropical Medicine (UID/04413/2020) since 2020. Founding member and Treasurer, currently management committee member of the Study Group for Mycobacterial Infections (ESGMYC) of the European Society of Clinical Microbiology and Infectious Diseases (ESCMID) (<https://www.escmid.org/index.php?id=897>). General Director and Scientific Coordinator of the “Ciência LP - International Center for Advanced Training in Fundamental Sciences for Scientists from Portuguese-speaking Countries” (UNESCO Category 2 Center) (<https://www.ciencialp.pt/centro-ciencia-lp/>) and Vice-President of the Portuguese Society for Microbiology (<https://spmicrobiologia.wordpress.com/orgaos-sociais/>). Vice-Chair (2017) and Chair (2019) of the Gordon Research Conference - Multi-Drug Efflux Systems - <https://www.grc.org/multi-drug-efflux-systems-conference/2019/>). Member of the National Council for Health appointed by The Board of Biologists of Portugal (<http://www.cns.min-saude.pt/2017/09/27/membros/>). Member of the evaluation panel of Fundação para a Ciência e a Tecnologia of Portugal and expert Evaluator for the MRC South Africa and UK (area Tuberculosis), Wellcome Trust Awards, The Research Foundation – Flanders (FWO), Belgium, Dutch Research Council (NWO), Holland, Haut Conseil de l'Évaluation de la Recherche et de l'Enseignement Supérieur (HCERES) and National Agency for Scientific Evaluation (ANEP), Spain. Author/co-author of over 200 scientific papers in peer review national and international journals, books and book-chapters in mycobacteriology, tuberculosis, bacteriology, resistance to antibiotics, microbial genetics, molecular epidemiology and immunology.
<http://orcid.org/0000-0001-9676-6251>
<https://www.cienciavita.pt/DF17-B4BF-8756>

Research: Expert in the early diagnosis of active or latent TB and new therapeutics for MDRTB and XDRTB. Devoted to the study and development of new diagnostic tools and alternative therapies to treat drug resistant diseases such as multidrug resistant tuberculosis and methicillin-vancomycin resistant staphylococcal infections, using new biotechnologies and new therapies incorporating non-antibiotic adjuvants of chemotherapy. Studied, in the last 15 years, the contribution of the efflux-pumps and membrane transporters to bacterial multidrug resistant phenotypes and how we can prevent, reverse or reduce the level of resistance and recover the effectiveness of the antibiotics to which the bacteria became resistant. With an international team of collaborators, documented the mutations in drug targets and the corresponding associated minimal inhibitory concentrations for the majority of the anti-TB drug targets in *M. tuberculosis* and well as the effectiveness of various new inhibitors on many of the MDR bacteria in particular M/XDRTB. Conducted the laboratory diagnosis and the characterization of the determinants for resistance by phenotypic and genotypic assays, using new technical approaches such as Whole genome sequencing and real-time phenotypic assays. These studies also demonstrated the public health implications associated with these findings and contributed to the improvement of the currently recommended first and second line multi-drug anti-TB treatments. Involved in the design and conduction of several multicenter studies in the field of mycobacteriology and laboratory diagnosis of tuberculosis involving, Becton & Dickinson, EUCAST, ESGMYC and TB Alliance, and pharmaceutical companies like Janssen, Otsuka and Tecmede. Participated in the validation of the SIRE KIT Nitratase for *M. tuberculosis* DST with the Brazilian TB lab-network. Deeply involved in the development of TB nanodiagnosics in collaboration with the Nanotheranostics Group FCT/UNL (PI - Pedro V. Baptista).

Employment

Full Professor
Instituto de Higiene e Medicina Tropical (IHMT)
Universidade NOVA de Lisboa
Lisboa, Portugal
1 Jul 2013 → present

Presidente do Conselho Pedagógico

Full Professor
Global Health and Tropical Medicine (GHTM)
Universidade NOVA de Lisboa
11 Aug 1973 → present

TB, HIV and opportunistic diseases and pathogens (THOP)

Universidade NOVA de Lisboa
1 Jul 2013 → present

Researcher

Centro de Malária e outras Doenças Tropicais (CMDT)
Universidade NOVA de Lisboa
11 Aug 1973 → 31 Mar 2015

invited professor at the Faculdade de Medicina do Rio de Janeiro (Brasil).

1 Oct 2014 → 1 Jan 2018

Research output

Schön T, Werngren J, Machado D, Borroni E, Wijkander M, Lina G et al. **Multicentre testing of the EUCAST broth microdilution reference method for MIC determination on Mycobacterium tuberculosis.** Clinical Microbiology And Infection. 2021 Feb;27(2):288.e1-288.e4. <https://doi.org/10.1016/j.cmi.2020.10.019>

Tavares AM, Pingarilho M, Batista J, Viveiros M, Dias S, Toscano C et al. **HIV and tuberculosis co-infection among migrants in Portugal: a brief study on their sociodemographic, clinical, and genomic characteristics.** AIDS Research and Human Retroviruses. 2021;37(1):34-37. <https://doi.org/10.1089/AID.2020.0119>

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Verza M, Scheffer MC, Salvato RS, Schorner MA, Barazzetti FH, de Melo Machado H et al. **Author Correction: Genomic epidemiology of Mycobacterium tuberculosis in Santa Catarina, Southern Brazil (Scientific Reports, (2020), 10, 1, (12891), 10.1038/s41598-020-69755-9).** Scientific Reports. 2020 Nov 2;10(1):19250. 19250. <https://doi.org/10.1038/s41598-020-76386-7>

Schön T, Köser CU, Werngren J, Viveiros M, Georghiou S, Kahlmeter G et al. **What is the role of the EUCAST reference method for MIC testing of the Mycobacterium tuberculosis complex?** Clinical Microbiology And Infection. 2020 Nov 1;26(11):1453-1455. <https://doi.org/10.1016/j.cmi.2020.07.037>

ESGMYC group. **Management of tuberculosis: are the practices homogeneous in high-income countries?** Frontiers in public health. 2020 Sep 4;8:443-454. 443. <https://doi.org/10.3389/fpubh.2020.00443>

Rodrigues L, Cravo P, Viveiros M. **Efflux pump inhibitors as a promising adjunct therapy against drug resistant tuberculosis: a new strategy to revisit mycobacterial targets and repurpose old drugs.** Expert Review of Anti-Infective Therapy. 2020 Aug 2;18(8):741-757. <https://doi.org/10.1080/14787210.2020.1760845>

Schön T, Werngren J, Machado D, Borroni E, Wijkander M, Lina G et al. **Antimicrobial susceptibility testing of Mycobacterium tuberculosis complex isolates: the EUCAST broth microdilution reference method for MIC determination.** Clin. Microbiol. Infect. 2020 Aug 1;Suppl. 1198-743x(20):30444-30465. <https://doi.org/10.1016/j.cmi.2020.07.036>

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Min Ong CW, Migliori GB, Raviglione M, MacGregor-Skinner G, Sotgiu G, Alffenaar JW et al. **Epidemic and pandemic viral infections: impact on tuberculosis and the lung. A consensus by the World Association for Infectious Diseases and Immunological Disorders (WAidid), Global Tuberculosis Network (GTN) and members[#] of ESCMID Study Group for Mycobacterial Infections (ESGMYC).** The European respiratory journal. 2020 Jul 2;56(1):2001727-2001782. <https://doi.org/10.1183/13993003.01727-2020>

Gomes BC, Honrado M, Armada A, Viveiros M, Rueff J, Rodrigues AS. **ABC Efflux Transporters and the Circuitry of miRNAs: Kinetics of Expression in Cancer Drug Resistance.** International Journal Of Molecular Sciences. 2020 Apr 23;21(8). 2985. <https://doi.org/10.3390/ijms21082985>

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Neves CP, Costa AG, Safe IP, de Souza Brito A, Jesus JS, Kritski AL et al. **The role of mini-bronchoalveolar lavage fluid in the diagnosis of pulmonary tuberculosis in critically ill patients.** BMC Infectious Diseases. 2020 Mar 18;20(1):229-237. 229. <https://doi.org/10.1186/s12879-020-04954-3>

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Machado D, Gothe S, Martins M, Pacheco T, Batista J, Toscano C et al. **Colistin heteroresistance in carbapenemase-producing Acinetobacter baumannii.** 2020. Abstract from 30th European Congress of Clinical Microbiology and Infectious Diseases , Paris, France.

de Miranda SS, de Almeida IN, de Fátima Filardi Oliveira Mansur M, de Assis Figueredo LJ, da Silva Carvalho W, Hadaad JPA et al. **Detection of drug resistant mycobacterium tuberculosis strains using kit SIRE nitratase®: a multicenter study.** Brazilian Archives Of Biology And Technology. 2020;63:e20190179-e20190188. <https://doi.org/10.1590/1678-4324-2020190179>

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Rodrigues L, Cravo PVL, Viveiros M. **Targeting membrane transporters and energy metabolism in Mycobacterium tuberculosis through in silico drug repurposing.** 2020. Poster session presented at 30th European Congress of Clinical Microbiology and Infectious Diseases , Paris, France.

Costa SS, Abrantes P, Morais C, Viveiros M, Rosato AE, Couto I. **Exploring the efflux-mediated multidrug resistance in staphylococci.** 2019. Poster session presented at National Congress of Microbiology and Biotechnology 2019, Coimbra, Portugal.

ML V, Rodrigues L, Almeida F, Fortes F, Germano de S, Sandra M et al. **O contributo dos serviços de diagnóstico laboratorial para o acesso universal à saúde nos países da Comunidade de Língua Portuguesa.** Anais do Instituto de Higiene e Medicina Tropical. 2019 Dec 5;18:42-51. <https://doi.org/10.25761/anaisihmt.337>

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Tavares AM, Garcia AC, Gama A, Abecasis AB, Viveiros M, Dias S. **Tuberculosis care for migrant patients in Portugal: a mixed methods study with primary healthcare providers**. BMC Health Services Research. 2019 Apr 18;19(1). 233. <https://doi.org/10.1186/s12913-019-4050-0>

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Bouceiro-Mendes R, Ortins-Pina A, Marques T, Viveiros M, Machado D, Lito L et al. **A case report of multibacillary leprosy presenting with multiple outbreaks of erythema nodosum leprosum**. Journal of the Portuguese Society of Dermatology and Venereology. 2019;77(1):67-72.

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Perdigão J, Silva C, Diniz J, Pereira C, Machado D, Ramos J et al. **CPLP-TB: uma nova ferramenta de vigilância transnacional da tuberculose no espaço lusófono**. Anais Do Instituto De Higiene E Medicina Tropical. 2019;17:87-90. <https://doi.org/10.25761/anaisihmt.278>

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Cá B, Fonseca KL, Sousa J, Maceiras AR, Machado D, Sanca L et al. **Experimental evidence for limited in vivo virulence of Mycobacterium africanum**. Frontiers in Microbiology. 2019;10:2102-2111. 2102. <https://doi.org/10.3389/fmicb.2019.02102>

Machado D, Perdigão J, Ramos J, Tavares AM, Abecasis A, Dias S et al. **Exploring the phenotypic and genetic basis of drug-resistant Mycobacterium tuberculosis strains in Lisbon, Portugal**. 2019. Abstract from 29th European Congress of Clinical Microbiology and Infectious Diseases (ECCMID), Amsterdam, Netherlands.

Gothe S, Machado D, Martins M, Pacheco T, Batista J, Toscano C et al. **Insights on Acinetobacter baumannii heteroresistance to colistin: what is the fate?**. 2019. Abstract from Congresso Nacional de Microbiologia e Biotecnologia (MicroBiotec19), Coimbra, Portugal.

Rodrigues L, Cravo P, Viveiros M. **In silico repurposing of approved drugs against tuberculosis: targeting membrane transporters and energy metabolism**. 2019. Abstract from MycoPorto 2019, Porto, Portugal.

Tavares AM, Garcia AC, Gama A, Abecasis AB, Viveiros M, Dias S. **Perceptions of primary care providers on TB care for migrants: a mixed methods study in Portugal.** *European Journal of Public Health.* 2019;29(Suppl4):410.

Rodrigues L, Cravo PVL, Viveiros M. **Targeting membrane transporters and energy metabolism in *Mycobacterium tuberculosis* using an in silico repurposing-chemogenomics strategy.** 2019. Poster session presented at Gordon Research Conference on Multi-Drug Efflux Systems, Lucca, Italy.

Machado D, Azzali E, Couto I, Costantino G, Pieroni M, Viveiros M. **Targeting *Mycobacterium tuberculosis* with lipophilic efflux inhibitors exploring their dual activity: dissipation of the proton motive force and efflux inhibition.** 2019. Abstract from 40th Annual Congress of the European Society of Mycobacteriology, Valencia, Spain.

Viveiros M, Machado D, Neves I, Martins M, Couto I, Pacheco T et al. **The contribution of membrane transporter proteins to extensively-drug resistant phenotypes in *Acinetobacter baumannii*.** 2019. Abstract from ASM South Australia 2019 – the Annual Scientific Meeting & Exhibition organised by the Australian Society for Microbiology, Adelaide, Australia.

Schön T, Viveiros M, Werngren J, Cirrillo D, Borroni E, Wijkander M et al. **Towards a new reference drug susceptibility testing method for *Mycobacterium tuberculosis*.** 2019. Abstract from 29th European Congress of Clinical Microbiology and Infectious Diseases (ECCMID), Amsterdam, Netherlands.

Machado D, Lecorche E, Mougari F, Cambau E, Viveiros M. **Insights on mycobacterium leprae efflux pumps and their implications in drug resistance and virulence.** *Frontiers in Microbiology.* 2018 Dec 13;9:3072-3082. 3072. <https://doi.org/10.3389/fmicb.2018.03072>

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Costa SS, Kadlec K, Viveiros M, Melo-Cristino J, Schwarz S, Couto I. **Complete sequences of two *Staphylococcus aureus* plasmids carrying genes for resistance to antibiotics, heavy-metals, biocides and/or virulence.** 2018. Poster session presented at 18th International Symposium on Staphylococci and Staphylococcal Infections, Copenhagen, Denmark.

Costa SS, Rosato AE, Viveiros M, Couto I. **Development of multidrug resistance in staphylococci driven by efflux**. 2018. Poster session presented at 18th International Symposium on Staphylococci and Staphylococcal Infections, Copenhagen, Denmark.

Costa SS, Rosa M, Holtreman F, Rodrigues AC, Viveiros M, Pomba C et al. **Emergence of non-wild-type populations towards biocides in Staphylococcus epidermidis colonizing veterinary staff**. 2018. Poster session presented at 18th International Symposium on Staphylococci and Staphylococcal Infections, Copenhagen, Denmark.

Costa SS, Santos CM, Viveiros M, Pomba C. **Frequent biofilm production by Staphylococcus epidermidis causing infection in pets or colonizing veterinary staff**. 2018. Poster session presented at 18th International Symposium on Staphylococci and Staphylococcal Infections, Copenhagen, Denmark.

Sobkowiak B, Glynn JR, Houben RMGJ, Mallard K, Phelan JE, Guerra-Assunção JA et al. **Identifying mixed Mycobacterium tuberculosis infections from whole genome sequence data**. BMC Genomics. 2018 Aug 14;19(1). 613. <https://doi.org/10.1186/s12864-018-4988-z>

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