

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

Ferreira C, Abrantes P, Costa SS, Viveiros M, Couto I. **Occurrence and Variability of the Efflux Pump Gene *norA* across the *Staphylococcus* Genus.** International Journal of Molecular Sciences. 2022 Dec 4;23(23). 15306. <https://doi.org/10.3390/ijms232315306>

Marquês JT, Frazão De Faria C, Reis M, Machado D, Santos S, Santos MDS et al. **In vitro Evaluation of Isoniazid Derivatives as Potential Agents Against Drug-Resistant Tuberculosis.** Frontiers in Pharmacology. 2022 May 4;13. 868545. <https://doi.org/10.3389/fphar.2022.868545>

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Kritski AL, Viveiros M, Carvalho ACC. **Rapid molecular diagnostics to detect resistance to second-line anti-TB drugs.** International Journal of Tuberculosis and Lung Disease. 2022 May 1;26(5):385-387. <https://doi.org/10.5588/ijtld.22.0121>

Antimycobacterial Susceptibility Testing Group.; Machado D, Viveiros M. **Updating the approaches to define susceptibility and resistance to anti-tuberculosis agents: implications for diagnosis and treatment.** The European respiratory journal. 2022 Apr 1;59(4). 2200166. <https://doi.org/10.1183/13993003.00166-2022>

Bateson A, Canseco JO, McHugh TD, Witney AA, Feuerriegel S, Merker M et al. **Ancient and recent differences in the intrinsic susceptibility of *Mycobacterium tuberculosis* complex to pretomanid.** Journal of Antimicrobial Chemotherapy. 2022 Mar 9. <https://doi.org/10.1093/jac/dkac070>

Ferreira C, Costa SS, Abrantes P, Viveiros M, Couto I. **Rapid screening of *norA* alleles among *Staphylococcus aureus* strains causing SSTIs in different hosts.** 2022. Poster session presented at 32nd European COngress of Clinical Microbiology and Infectious Diseases, Lisbon, Portugal.

Ortiz M, Jauset-Rubio M, Skouridou V, Machado D, Viveiros M, Clark TG et al. **Electrochemical Detection of Single-Nucleotide Polymorphism Associated with Rifampicin Resistance in *Mycobacterium tuberculosis* Using Solid-Phase Primer Elongation with Ferrocene-Linked Redox-Labeled Nucleotides.** ACS Sensors. 2021 Dec 24;6(12):4398–4407. <https://doi.org/10.1021/acssensors.1c01710>

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de Faria CF, Moreira T, Lopes P, Costa H, Krewall JR, Barton CM et al. **Designing new antitubercular isoniazid derivatives with improved reactivity and membrane trafficking abilities.** *Biomedicine and Pharmacotherapy.* 2021 Dec;144:1-9. 112362. <https://doi.org/10.1016/j.biopha.2021.112362>

de Lourdes do Carmo Guimarães Diniz J, von Groll A, Unis G, Dalla-Costa ER, Rosa Rossetti ML, Vianna JS et al. **Whole-genome sequencing as a tool for studying the microevolution of drug-resistant serial *Mycobacterium tuberculosis* isolates.** *Tuberculosis.* 2021 Dec;131:1-9. 102137. <https://doi.org/10.1016/j.tube.2021.102137>

Opota O, Mazza-Stalder J, Viveiros M, Cambau E, Santin M, Goletti D. **Editorial: Tuberculosis and Non-tuberculous Mycobacteria Infections: Control, Diagnosis and Treatment.** *Frontiers in public health.* 2021 Oct 28;9:1-2. 666187. <https://doi.org/10.3389/fpubh.2021.666187>

Salvato RS, Reis AJ, Schiefelbein SH, Gómez MAA, Salvato SS, da Silva LV et al. **Genomic-based surveillance reveals high ongoing transmission of multi-drug-resistant *Mycobacterium tuberculosis* in Southern Brazil.** *International Journal Of Antimicrobial Agents.* 2021 Oct. 106401. <https://doi.org/10.1016/j.ijantimicag.2021.106401>

Gómez-González PJ, Perdigão J, Gomes P, Puyen ZM, Santos-Lazaro D, Napier G et al. **Genetic diversity of candidate loci linked to *Mycobacterium tuberculosis* resistance to bedaquiline, delamanid and pretomanid.** *Scientific Reports.* 2021 Sep 30;11(1):1-13. 19431. <https://doi.org/10.1038/s41598-021-98862-4>

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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>

Rodrigues L, Aínsa JA, Viveiros M. **Measuring Efflux and Permeability in Mycobacteria.** In *Methods in Molecular Biology.* Vol. 2314. Humana Press. 2021. p. 231-245. (Methods in Molecular Biology). https://doi.org/10.1007/978-1-0716-1460-0_9

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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>

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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 Nov;26(11):1488-1492. <https://doi.org/10.1016/j.cmi.2020.07.036>

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Verza M, Scheffer MC, Salvato RS, Schorner MA, Barazzetti FH, Machado HDM et al. **Genomic epidemiology of *Mycobacterium tuberculosis* in Santa Catarina, Southern Brazil.** *Scientific Reports*. 2020 Jul 30;10(1):12891-12902. 12891. <https://doi.org/10.1038/s41598-020-69755-9>

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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>

Machado D, Pieroni M, Viveiros M. **Development of lipophilic efflux inhibitors as adjuvants of *Mycobacterium tuberculosis* chemotherapy.** 2020. Abstract from II Simpósio de Investigação em Tuberculose e Micobactérias Não Tuberculosas em Portugal., Lisbon, Portugal.

Schön T, Chryssanthou E, Florian Maurer HB, Boarbi S, Keller P, Viveiros M et al.. **ECOFFs for non-tuberculous mycobacteria: towards a EUCAST reference method and clinical breakpoints for antimicrobial susceptibility testing.** 2020. Abstract from 30th European Congress of Clinical Microbiology and Infectious Diseases, Paris, France.

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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Pereira C, Gomes P, Taveira R, Silva C, Maltez F, Macedo R et al. **Insights on the Mycobacterium tuberculosis population structure associated with migrants from Portuguese-speaking countries over a three-year period in greater Lisbon, Portugal: implications at the public health level.** Infection, Genetics and Evolution. 2019 Jul;71:159-165. <https://doi.org/10.1016/j.meegid.2019.03.025>

Phelan JE, O'Sullivan DM, Machado D, Ramos J, Opong YEA, Campino S et al. **Integrating informatics tools and portable sequencing technology for rapid detection of resistance to anti-tuberculous drugs.** Genome Medicine. 2019 Jun 24;11(1):41-48. <https://doi.org/10.1186/s13073-019-0650-x>

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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 AFDMD, 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.

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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.

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