# Ana Cristina Leandro, PhD

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## Education & Training

1996-1999 – B.S. Biomedical Science, Rio de Janeiro University, Brazil.
2001-2002 – M.S. Parasitology Biology – Infectious diseases, Oswaldo Cruz Foundation, Brazil.
2003-2009 – Ph.D. Infectious Diseases Clinical Research – Immunogenetics, Oswaldo Cruz Foundation, Brazil.
2009- 2014 – Post doctorate in Vaccine Development, Texas Biomedical Research Institute, San Antonio, USA.

## Research Focus

I am an Immunologist with more than 15 years of experience in the clinical research of infectious diseases, predominantly in *Mycobacterium tuberculosis*. My research focused on the immunopathogenesis of tuberculosis, and I was interested in the identification and characterization of susceptibility genes for this disease with the ultimate objective of gaining an insight into the biological pathways involved in disease pathogenesis. I have extensive experience in several immunological, pathological and microbiological technologies and most recently in high-throughput genomic technologies and applying these to help understand the genetic underpinnings of disease. As a Co-I on a several projects, I have continued to significantly enhance my expertise in several other immunological and molecular techniques predominantly using high-throughput omics.

In 2006, I immigrated to the United States to work on the development of a DNA vaccine against tuberculosis in non-human primates at Texas Biomedical Research Institute. I assisted the PI with compiling an NIH R01 grant entitled "TB vaccine development in Nonhuman Primate Model" which was awarded $3.8 million. I oversaw and worked on all laboratory aspects of this project. I was able to gain insight and expertise in several project aspects: technological

experience, project management and data analysis.

Recently, my research efforts and expertise are in the molecular and functional aspects of gene identification for complex diseases. I am involved in several projects where I manage the molecular components, being responsible for the phenotyping and sequencing of sample from several complex diseases such as cardiovascular disease, type 2 diabetes, bipolar disease and Alzheimer's disease. I have also played a major role in a few large-scale human genetic projects in the STDOI. I generated quality data for several studies trying to understand the influence of host genetics in susceptibility to complex diseases. I am also working with epigenetic influences on Alzheimer's disease. My role as a PI on this project was being responsible for the overall project including bisulfite conversion of the DNA, running the methylation arrays and performing the statistical analyses.

For the last two and a half years, I have been working with exposome, lipidomics, metabolomics and metallomics. I am focused on the directly measured pollutome component of the Major Depressive disorder **(**MDD) exposome. Our goal is to use a novel genomic approach to improve the search for environmental determinants of MDD to provide a more complete conceptualization of the illness, facilitating treatment and prevention. We will use our extended Mexican American pedigrees, high-throughput pollutomics/metallomics, and novel statistical analyses for the possible identification and understanding of the pollutant-influenced pathways and mechanisms contributing to MDD risk in Mexican Americans.

# Publications


1. **Leandro AC**, Rocha MA, Cardoso CS, Bonecini-Almeida MG (2009) Genetic polymorphisms in vitamin D receptor, vitamin D-binding protein, Toll-like receptor 2, nitric oxide synthase 2, and interferon-gamma genes and its association with susceptibility to tuberculosis. *Braz J Med Res* 42(4): 312 - 322. doi: 10.1590/s0100-879x2009000400002. PMID: 19330258.

2. Albuquerque MC, Aleixo AL, Benchimol EI, **Leandro AC**, das Neves LB, Vicente RT, Bonecini-Almeida Mda G, Amendoeira MR (2009) The IFN-gamma +874T/A gene polymorphism is associated with retinochoroiditis toxoplasmosis susceptibility. *Mem Inst Oswaldo Cruz* 104 (3): 451 - 455. doi: 10.1590/s0074-02762009000300009. PMID: 19547871.

3. Martineau AR, **Leandro AC***, Anderson ST, Newton SM, Wilkinson KA, Nicol MP, Pienaar SM, Skolimowska KH, Rocha MA, Rolla VC, Levin M, Davidson RN, Bremner SA, Griffiths CJ, Eley BS, Bonecini-Almeida MG, Wilkinson RJ (2010) Association between Gc genotype and susceptibility to TB is dependent on vitamin D status. *Eur Respir J* 35(5): 1106 - 1112. PMCID: PMC2864196 *** co-first author.** doi: 10.1183/09031936.00087009. PMID: 19797128; PMCID: PMC2864196.

4. **Leandro AC**, Rocha MA, Lamoglia-Souza A, VandeBerg JL, Rolla VC, Bonecini-Almeida Mda G (2013) No association of IFNG+874T/A SNP and NOS2A-954G/C

SNP variants with nitric oxide radical serum levels or susceptibility to tuberculosis in a Brazilian population subset. *Biomed Res Int* 2013: 901740. doi: 10.1155/2013/901740. PMID: 24024215; PMCID: PMC3759278.

5. Cepeda M, Salas M, Folwarczny J, **Leandro AC**, Hodara VL, de la Garza MA, Dick EJ Jr, Owston M, Armitige LY, Gauduin MC (2013) Establishment of a neonatal rhesus macaque model to study Mycobacterium tuberculosis infection. *Tuberculosis (Edinb)* 93 Suppl: S51 - S59. doi: 10.1016/S1472-9792(13)70011-8. PMID: 24388650; PMCID: PMC4051704.

6. Knowles EEM, Curran JE, Göring HHH, Mathias SR, Mollon J, Rodrigue A, Olvera RL, **Leandro AC**, Duggirala R, Almasy L, Blangero J, Glahn DC. Family-based analyses reveal novel genetic overlap between interleukin-8 and risk for suicide attempt. Brain Behav Immun. 2019 Aug; 80:292-299. doi: 10.1016/j.bbi.2019.04.004. PMID: 30953777; PMCID: PMC7168352.

7. Rodrigue AL, Knowles EEM, Mollon J, Mathias SR, Koenis M, Peralta JM, **Leandro AC**, Fox PT, Sprooten E, Kochunov P, Olvera RL, Duggirala R, Almasy L, Curran JE, Blangero J, Glahn DC (nd) Evidence for pleiotropy between human cerebral white matter microstructure and inflammation. Hum Brain Mapp. 2019 Oct 1;40(14):4180-4191. doi: 10.1002/hbm.24694. PMID: 31187567; PMCID: PMC6707845.
8. Blackburn NB, Michael LF, Meikle PJ, Peralta JM, Mosior M, McAhren S, Bui HH, Bellinger M, Giles C, Kumar S, **Leandro AC**, Almeida M, Weir JM, Nestel PJ, Simes J, Sullivan DR, Tonkin AM, Mahaney MC, Dyer TD, Almasy L, VandeBerg JL, Williams-Blangero S, Glahn DC, Duggirala R, Kowala M, Blangero J, Curran JE (nd) A rare variant in DEGS1 with major effects on the de novo ceramide synthesis pathway. J Lipid Res. 2019 Sep;60(9):1630-1639. doi: 10.1194/jlr.P094433. PMID: 31227640; PMCID: PMC6718439.
9. Kumar S, Espinosa EC, **Leandro AC**, Curran JE, Blangero J. microRNA and mRNA interactions in induced pluripotent stem cell reprogramming of lymphoblastoid cell lines. Am J Stem Cells. 2019 Aug 15;8(2):28-37. eCollection 2019. PMID: 31523484; PMCID: PMC6737382.

10. Satish Kumar, Joanne E. Curran, Erica DeLeon, **Ana C. Leandro**, Tom E. Howard, Donna M. Lehman, Sarah Williams-Blangero, David C. Glahn, John Blangero. Role of miRNA-mRNA interaction in neural stem cell differentiation of induced pluripotent stem cells. Int J Mol Sci. 2020 Sep 23;21(19). doi: 10.3390/ijms21196980.PMID: 32977388; PMCID: PMC7582477.

11. Yetsko K, Farrell JA, Blackburn NB, Whitmore L, Stammnitz MR, Whilde J,

Eastman CB, Ramia DR, Thomas R, Krstic A, Linser P, Creer S, Carvalho G, Devlin MA, Nahvi N, **Leandro AC**, deMaar TW, Burkhalter B, Murchison EP, Schnitzler C, Duffy DJ. Molecular characterization of a marine turtle tumor epizootic, profiling external, internal, and postsurgical regrowth tumors. Commun Biol. 2021 Feb 1;4(1):152. doi: 10.1038/s42003-021-01656-7.PMID: 33526843; PMCID: PMC7851172.

12. Blackburn NB, **Leandro AC**, Nahvi N, Devlin MA, Leandro M, Martinez Escobedo I, Peralta JM, George J, Stacy BA, deMaar TW, Blangero J, Keniry M, Curran JE. Transcriptomic Profiling of Fibropapillomatosis in Green Sea Turtles (*Chelonia mydas*) From South Texas. Front Immunol. 2021; 12:630988. doi: 10.3389/fimmu.2021.630988. eCollection 2021. PMID: 33717164; PMCID: PMC7943941.

13. Kumar S, Curran JE, Kumar K, DeLeon E, **Leandro AC**, Peralta J, Williams-Blangero S, Blangero J. Disease Modeling and Disease Gene Discovery in Cardiomyopathies: A Molecular Study of Induced Pluripotent Stem Cell Generated Cardiomyocytes. Int J Mol Sci. 2021 Mar 24;22(7). doi: 10.3390/ijms22073311. PMID: 33805011; PMCID: PMC8037452.

14. Blackburn NB, Meikle PJ, Peralta JM, Kumar S, **Leandro AC**, Bellinger MA, Giles C, Huynh K, Mahaney MC, Göring HHH, VandeBerg JL, Williams-Blangero S, Glahn DC, Duggirala R, Blangero J, Michael LF, Curran JE. Identifying the Lipidomic Effects of a Rare Loss-of-Function Deletion in *ANGPTL3*. Circ Genom Precis Med. 2021 Jun;14(3): e003232. doi: 10.1161/CIRCGEN.120.003232. Epub 2021 Apr 22. PMID: 33887960; PMCID: PMC8206021.

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Coelho, J.M.C.O.; et al. Safety and Immunogenicity of an *In Vivo* Muscle Electroporation Delivery System for DNA-*hsp65* Tuberculosis Vaccine in Cynomolgus Monkeys. Vaccines (Basel). 2023 Dec 18;11(12):1863. doi: 10.3390/vaccines11121863. PMID: 38140266; PMCID: PMC10747856. † These authors contributed equally to this work.

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19. Yifan Huang, Katarzyna M Dziegielewska, Mark D Habgood, Fiona Qiu, **Ana CC Leandro**, Paul D Callaghan, Joanne E Curran, John L VandeBerg, Norman R Saunders. ABC efflux transporters and SLC solute carriers in the early developing brain of a marsupial Monodelphis domestica (South American grey short-tailed opossum). The Journal of Comparative neurology, Submitted 12/14/2023.

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