Luiz Max Carvalho

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*Assistant Professor at the School of Applied Mathematics (EMAp), Getulio Vargas Foundation, Brazil.**

Last update: December 2025

Summary

Natural biological processes emit signals, which are often too "high" or too "low" for us to "hear". My goal as a scientist is to develop and apply statistical and mathematical tools to decode and quantify these biological signals. I hope a better understanding of these entities can lead to a progressive reduction of the world's disease burden. Bringing state-of-the-art statistical practice to the Life Sciences has been a major focus of my career in recent years. My interests lie in **Biostatistics**, ranging from complex networks to spatial analysis to statistical phylogenetics.

As you will notice if you continue reading, I am a big fan of collaboration, interacting with colleagues around Brazil and abroad. My current interests are:

- Bayesian inference of deterministic models;
- Combining (pooling) probability distributions;
- Learning from historical data under model misspecification;
- Phylogeny estimation: MCMC exploration of time-tree space – characterising time-tree space, new transition kernels;
- Coupling mathematical models to coalescent-based population reconstructions;

Please feel free to contact me if your interests lie anywhere near these topics.

Google Scholar: `https://scholar.google.com/citations?user=y2mxpbcAAAAJ&hl=en`

Currículo Lattes : `http://lattes.cnpq.br/7282202947621572`

*I also hold a an Adjunct Assistant Professor at the Biostatistics Department at the University of North Carolina, Chapel Hill `https://sph.unc.edu/adv_profile/luiz-carvalho/`

PDFs of my publications can be found at `https://github.com/maxbiostat/papers/tree/master/PAPERS`

Publications

Published/Accepted – peer reviewed

[1] F. P. Camara, A. L. Gomes, Carvalho, L. M., and L. G. Castello, "Dynamic behavior of sylvatic yellow fever in Brazil (1954-2008)," *Rev. Soc. Bras. Med. Trop.*, vol. 44, no. 3, pp. 297–299, 2011.

[2] Carvalho, L. M. and F. P. Camara, "Epidemiological aspects of acquired immunodeficiency syndrome in older Brazilians: a comparative approach," *Braz J Infect Dis*, vol. 16, no. 1, pp. 34–37, 2012.

[3] F. P. Camara, Carvalho, L. M., and A. L. Gomes, "Demographic profile of sylvatic yellow fever in Brazil from 1973 to 2008," *Trans. R. Soc. Trop. Med. Hyg.*, vol. 107, pp. 324–327, May 2013.

[4] Carvalho, L. M., L. B. Santos, N. R. Faria, and W. de Castro Silveira, "Phylogeography of foot-and-mouth disease virus serotype O in Ecuador," *Infect. Genet. Evol.*, vol. 13, pp. 76–88, Jan 2013.

[5] F. Bielejec, P. Lemey, Carvalho, L. M., G. Baele, A. Rambaut, and M. A. Suchard, "$\pi-$BUSS: a parallel BEAST/BEAGLE utility for sequence simulation under complex evolutionary scenarios," *BMC Bioinformatics*, vol. 15, p. 133, 2014.

[6] D. Mir, H. Romero, Carvalho, L. M., and G. Bello, "Spatiotemporal dynamics of DENV-2 Asian-American genotype lineages in the Americas," *PLoS ONE*, vol. 9, no. 6, p. e98519, 2014.

[7] F. C. Coelho and Carvalho, L. M., "Estimating the attack ratio of dengue epidemics under time-varying force of infection using aggregated notification data," *Scientific reports*, vol. 5, 2015.

[8] A. Rambaut, T. T. Lam, Carvalho, L. M., and O. G. Pybus, "Exploring the temporal structure of heterochronous sequences using tempest (formerly Path-O-Gen)," *Virus Evolution*, vol. 2, no. 1, p. vew007, 2016.

[9] A. Rambaut, G. Dudas, Carvalho, L. M., D. J. Park, N. L. Yozwiak, E. C. Holmes, and K. G. Andersen, "Comment on "Mutation rate and genotype variation of Ebola virus from Mali case sequences"," *Science*, vol. 353, no. 6300, pp. 658–658, 2016.

[10] C. Codeço, D. Villela, M. F. Gomes, L. Bastos, O. Cruz, C. Struchiner, Carvalho, L. M., and F. Coelho, "Zika is not a reason for missing the Olympic Games in Rio de Janeiro: response to the open letter of Dr Attaran and colleagues to Dr Margaret Chan, director-general, WHO, on the Zika threat to the Olympic and Paralympic Games," *Memórias do Instituto Oswaldo Cruz*, vol. 111, no. 6, pp. 414–415, 2016.

[11] W. E. Diehl, A. E. Lin, N. D. Grubaugh, Carvalho, L. M., K. Kim, P. P. Kyawe, S. M. McCauley, E. Donnard, A. Kucukural, P. McDonel, *et al.*, "Ebola virus glycoprotein with increased infectivity dominated the 2013–2016 epidemic," *Cell*, vol. 167, no. 4, pp. 1088–1098, 2016.

[12] F. C. Coelho, B. Durovni, V. Saraceni, C. Lemos, C. T. Codeco, S. Camargo, Carvalho, L. M., L. Bastos, D. Arduini, D. A. Villela, *et al.*, "Higher incidence of Zika in adult women than adult men in Rio de Janeiro suggests a significant contribution of sexual transmission from men to women," *International Journal of Infectious Diseases*, vol. 51, pp. 128–132, 2016.

[13] D. A. Villela, L. Bastos, Carvalho, L. M., O. G. Cruz, M. F. Gomes, B. Durovni, M. C. Lemos, V. Saraceni, F. C. Coelho, and C. T. Codeco, "Zika in Rio de Janeiro: Assessment of basic reproduction number and comparison with dengue outbreaks," *Epidemiology and Infection*, pp. 1–9, 2017.

[14] G. Dudas, Carvalho, L. M., T. Bedford, A. J. Tatem, G. Baele, N. R. Faria, D. J. Park, J. T. Ladner, A. Arias, D. Asogun, *et al.*, "Virus genomes reveal factors that spread and sustained the Ebola epidemic," *Nature*, vol. 544, no. 7650, pp. 309–315, 2017.

[15] G. Dudas, Carvalho, L. M., A. Rambaut, and T. Bedford, "MERS-CoV spillover at the camel-human interface," *eLife*, vol. 7, p. e31257, 2018.

[16] L. R. Vasconcellos, Carvalho, L. M., I. Gonçalves, F. Coelho, F. Silveira, T. A. Silva, L. S. Bastos, M. Sorgine, L. Reis, F. Dias, C. J. Struchiner, F. Gazos-Lopes, and A. Hampshire, "Natural infection by the protozoan leptomonas wallacei impacts the morphology, physiology, reproduction, and lifespan of the insect oncopeltus fasciatus," *Scientific Reports*, 2019.

[17] L. B. L. Santos, Carvalho, Luiz Max, W. Seron, F. C. Coelho, E. E. Macau, M. G. Quiles, and A. M. Monteiro, "How do urban mobility (geo) graph's topological properties fill a map?," *Applied Network Science*, vol. 4, no. 1, pp. 1–14, 2019.

[18] D. S. Candido, I. M. Claro, J. G. de Jesus, W. M. Souza, F. R. R. Moreira, S. Dellicour, T. A. Mellan, L. du Plessis, R. H. M. Pereira, F. C. S. Sales, E. R. Manuli, J. Thézé, L. Almeida, M. T. Menezes, C. M. Voloch, M. J. Fumagalli, T. M. Coletti, C. A. M. da Silva, M. S. Ramundo, M. R. Amorim, H. H. Hoeltgebaum, S. Mishra, M. S. Gill, Luiz M. Carvalho, L. F. Buss, C. A. Prete, J. Ashworth, H. I. Nakaya, P. S. Peixoto, O. J. Brady, S. M. Nicholls, A. Tanuri, Átila D. Rossi, C. K. V. Braga, A. L. Gerber, A. P. de C. Guimarães, N. Gaburo, C. S. Alencar, A. C. S. Ferreira, C. X. Lima, J. E. Levi, C. Granato, G. M. Ferreira, R. S. Francisco, F. Granja, M. T. Garcia, M. L. Moretti, M. W. Perroud, T. M. P. P. Castiñeiras, C. S. Lazari, S. C. Hill, A. A. de Souza Santos, C. L. Simeoni, J. Forato, A. C. Sposito, A. Z. Schreiber, M. N. N. Santos, C. Z. de Sá, R. P. Souza, L. C. Resende-Moreira, M. M. Teixeira, J. Hubner, P. A. F. Leme, R. G. Moreira, M. L. Nogueira, G. Brazil-UK Centre for Arbovirus Discovery, Diagnosis, E. C. G. Network, N. M. Ferguson, S. F. Costa, J. L. Proenca-Modena, A. T. R. Vasconcelos, S. Bhatt, P. Lemey, C.-H. Wu, A. Rambaut, N. J. Loman, R. S. Aguiar, O. G. Pybus, E. C. Sabino, and N. R. Faria, "Evolution and epidemic spread of SARS-CoV-2 in Brazil," *Science*, vol. 369, no. 6508, pp. 1255–1260, 2020.

[19] M. Karcher, M. A. Suchard, G. Dudas, Carvalho, L. M., and V. Minin, "Estimating effective population size changes from preferentially sampled genetic sequences," *PLoS Computational Biology*, 2020.

[20] R. P. Niquini, R. M. Lana, A. G. Pacheco, O. G. Cruz, F. C. Coelho, Carvalho, Luiz Max, D. A. M. Villela, M. F. d. C. Gomes, and L. S. Bastos, "Description and comparison of demographic characteristics and comorbidities in SARI from COVID-19, SARI from Influenza, and the Brazilian general population," *Cadernos de Saúde Pública*, vol. 36, p. e00149420, 2020.

[21] Carvalho, Luiz M. and J. G. Ibrahim, "On the normalized power prior," *Statistics in Medicine*, vol. 40, no. 24, pp. 5251–5275, 2021.

[22] R. M. Lana, L. P. Freitas, C. T. Codeço, A. G. Pacheco, Carvalho, Luiz M., D. A. M. Villela, F. C. Coelho, O. G. Cruz, R. P. Niquini, V. B. G. Porto, *et al.*, "Identification of priority groups for COVID-19 vaccination in Brazil," *Cadernos de Saúde Pública*, vol. 37, 2021.

[23] Carvalho, Luiz M., D. A. Villela, F. C. Coelho, and L. S. Bastos, "Bayesian inference for the weights in logarithmic pooling," *Bayesian Analysis*, vol. 1, no. 1, pp. 1–29, 2022.

[24] C. V. B. d. Santos, N. C. M. Valiati, T. G. d. Noronha, V. B. G. Porto, A. G. Pacheco, L. P. Freitas, F. C. Coelho, M. F. d. C. Gomes, L. S. Bastos, O. G. Cruz, R. M. Lana, P. M. Luz, L. M. Carvalho, G. L. Werneck, C. J. Struchiner, and D. A. M. Villela, "The effectiveness of COVID-19 vaccines against severe cases and deaths in Brazil from 2021 to 2022: a registry-based study," *The Lancet Regional Health – Americas*, vol. 20, Apr 2023.

[25] M. Brusselmans, Carvalho, Luiz Max, S. L. Hong, J. Gao, F. A. Matsen Iv, A. Rambaut, P. Lemey, M. A. Suchard, G. Dudas, and G. Baele, "On the importance of assessing topological convergence in bayesian phylogenetic inference," *Virus Evolution*, vol. 10, no. 1, p. veae081, 2024.

[26] L. E. Coelho, P. M. Luz, D. C. Pires, E. M. Jalil, H. Perazzo, T. S. Torres, S. W. Cardoso, E. M. Peixoto, S. Nazer, E. Massad, Carvalho, Luiz Max, *et al.*, "SARS-CoV-2 transmission in a highly vulnerable population of Brazil: a household cohort study," *The Lancet Regional Health–Americas*, vol. 36, 2024.

[27] L. P. Freitas, C. T. Codeço, L. S. Bastos, D. A. M. Villela, O. G. Cruz, A. G. Pacheco, F. C. Coelho, R. M. Lana, Carvalho, Luiz Max, R. P. Niquini, *et al.*, "Evaluation of the design of the Influenza-like illness sentinel surveillance system in Brazil," *Cadernos de Saúde Pública*, vol. 40, p. e00028823, 2024.

[28] R. Moreira, L. S. Bastos, Carvalho, Luiz Max, L. P. Freitas, and A. G. Pacheco, "Persistent high mortality rates for diabetes mellitus and hypertension after excluding deaths associated with COVID-19 in Brazil, 2020–2022," *PLOS Global Public Health*, vol. 4, no. 5, p. e0002576, 2024.

[29] R. Kubinec, Carvalho, Luiz Max, J. Barceló, C. Cheng, L. Messerschmidt, and M. S. Cottrell, "A bayesian latent variable model for the optimal identification of disease incidence rates given information constraints," *Journal of the Royal Statistical Society Series A: Statistics in Society*, vol. 188, pp. 287–312, 05 2024.

[30] R. D. F. Medina, de Carvalho, Luiz Max, F. C. Coelho, C. J. Struchiner, and E. Massad, "Health impacts associated with the Fundão tailings dam disaster in Mariana, Minas Gerais, Brazil," *American Journal of Disaster Medicine*, vol. 19, no. 4, pp. A1–A12, 2024.

[31] Y. Shen, Carvalho, Luiz M, M. A. Psioda, and J. G. Ibrahim, "Optimal priors for the discounting parameter of the normalized power prior," *Statistica Sinica*, 2024.

[32] E. C. Araujo, C. T. Codeço, S. Loch, L. B. Vacaro, L. P. Freitas, R. M. Lana, L. S. Bastos, I. F. de Almeida, F. Valente, Carvalho, Luiz M, *et al.*, "Large-scale epidemiological modeling: Scanning for mosquito-borne diseases spatio-temporal patterns in Brazil," *Royal Society Open Science. Accepted.*, 2025.

[33] G. Baele, Carvalho, Luiz M, M. Brusselmans, G. Dudas, X. Ji, J. T. McCrone, P. Lemey, M. A. Suchard, and A. Rambaut, "HIPSTR: highest independent posterior subtree reconstruction in Treeannotator X," *Bioinformatics*, vol. 41, no. 10, p. btaf488, 2025.

[34] J. Gao, M. Brusselmans, Carvalho, Luiz M, M. A. Suchard, G. Baele, and F. A. Matsen IV, "Biological causes and impacts of rugged tree landscapes in phylodynamic inference," *Proceedings of the National Academy of Sciences*, 2025. Accepted.

[35] F. K. Mendes, R. Bouckaert, Carvalho, Luiz M, and A. J. Drummond, "How to validate a Bayesian evolutionary model," *Systematic Biology*, vol. 74, no. 1, pp. 158–175, 2025.

[36] R. K. A. d. Neves, L. S. Bastos, D. A. M. Villela, M. F. d. C. Gomes, Carvalho, Luiz Max, and A. G. F. Pacheco, "Hospital readmission rates and factors due to COVID-19 reinfections: a registry-based cohort study in Brazil (2020–2022)," *BMC Public Health*, vol. 25, no. 1, p. 4054, 2025.

[37] A. Oliveira, Carvalho, Luiz Max, and R. Fernandes, "The expression of the manner of motion in Portuguese and other languages: a Bayesian statistical analysis of oral narratives," *Journal of Speech Sciences*, vol. 14, no. 00, p. e025013, 2025.

[38] L. Picinini Freitas, D. A. da Cruz Ferreira, R. M. Lana, D. C. P. Câmara, T. P. Portella, M. S. Carvalho, A. S. Gouveia, I. F. de Almeida, E. C. Araujo, L. B. Vacaro, F. Ganem, O. G. Cruz, F. C. Coelho, C. T. Codeço, Luiz Max Carvalho, and L. S. Bastos, "A statistical model for forecasting probabilistic epidemic bands for dengue cases in Brazil," *Infectious Disease Modelling*, vol. 10, no. 4, pp. 1479–1487, 2025.

Under review

[39] L. M. Moschen and Carvalho, Luiz Max, "Bivariate Beta distribution: parameter inference and diagnostics," *arXiv preprint arXiv:2303.01271*, 2023.

[40] R. B. Alves, Y. F. Saporito, and Carvalho, Luiz M, "On the lumpability of tree-valued Markov chains," *arXiv preprint arXiv:2410.17919*, 2024.

[41] M. M. Bastos, Carvalho, Luiz Max, E. C. Araujo, and F. C. Coelho, "Long-term predictive models for mosquito borne diseases: a narrative review," *arXiv preprint arXiv:2411.13680*, 2024.

[42] F. Ganem, L. B. Vacaro, E. C. Araujo, L. D. Alves, L. Bastos, Carvalho, Luiz Max, I. Almeida, A. M. de Sá, and F. C. Coelho, "Mosqlimate: a platform to providing automatable access to data and forecasting models for arbovirus disease," *arXiv preprint arXiv:2410.18945*, 2024.

[43] Y. Shen, M. A. Psioda, Carvalho, Luiz M, and J. G. Ibrahim, "Exploring the connection between the normalized power prior and Bayesian hierarchical models," *arXiv preprint arXiv:2404.02453*, 2024.

[44] R. de Abreu, I. Perez Fernandez, S. Mishra, B. Gutierrez, R. P. Inward, C. Mills, E. Lopez Ortiz, L. S. Bastos, L. Picinini Freitas, Max Carvalho, Luiz, *et al.*, "The role of climate change in the expansion of dengue," *medRxiv*, pp. 2025–10, 2025.

[45] E. C. Araujo, Carvalho, Luiz Max, F. Ganem, L. B. Vacaro, L. S. Bastos, L. P. Freitas, M. Bastos, R. Alencar, L. Bianchi, R. Capellán, *et al.*, "Leveraging probabilistic forecasts for dengue preparedness and control: the 2024 dengue forecasting sprint in Brazil," *medRxiv*, pp. 2025–05, 2025.

Conference papers

[46] Carvalho, L.M., L. Santos, P. Pereira, and W. Silveira, "Phylodynamics of foot-and-mouth disease virus: a complex network approach," in *Proceedings of the 10th Brazilian Conference on Dynamics, Control and Their Applications*, Brazilian Society for Applied and Computational Mathematics, 2011.

[47] Y. Yao, Carvalho, Luiz Max, and D. Mesquita, "Locking and quacking: Stacking Bayesian models predictions by log-pooling and superposition," in *NeurIPS 2022 Workshop on Score-Based Methods*, 2022.

[48] T. da Silva, Carvalho, Luiz Max, A. Souza, S. Kaski, and D. Mesquita, "Embarrassingly parallel GFlowNets," *International Conference on Machine Learning*, 2024.

Book chapters

[49] F. Camara and Carvalho, L. M., "Febres Hemorrágicas virais [Viral hemorrhagic fevers]," in *Introdução à Virologia Humana* (N. Santos, M. T. Romanos, and M. D. Wigg, eds.), Rio de Janeiro: Guanabara Koogan, 3rd ed., 2014.

[50] Carvalho, L. M., "Métodos Bayesianos para inferir o padrão de dispersão de agentes patogénicos : filogeografia do vírus da febre aftosa na América do Sul como um caso de estudo [Bayesian methods to infer spread patterns for pathogens: the phylogeography of Foot-and-Mouth Disease virus in South America as a case study]," in *Abordagens Moleculares em Veterinária* (M. V. Cunha and J. Inácio, eds.), Lisbon: Lidel Editora, 1st ed., 2014.

[51] Carvalho, L. M., C. Struchiner, and L. Bastos, "Bayesian inference of deterministic population growth models," in *Interdisciplinary Bayesian Statistics* (A. Polpo de Campos, F. Neto, L. Ramos-Rifo, J. Stern, and M. Lauretto, eds.), vol. 118, pp. 217–228, Springer Verlag, 1st ed., 2015.

[52] L. S. Bastos, L. M. Carvalho, and M. F. Gomes, "Modelling misreported data," in *Building a Platform for Data-Driven Pandemic Prediction: From Data Modelling to Visualisation-The CovidLP Project* (D. Gamerman, M. O. Prates, T. Paiva, and V. D. Mayrink, eds.), ch. 7, pp. 113–131, Boca Raton, Florida: CRC Press, 2021.

Tech reports

[53] C. Codeço, D. Villela, F. Coelho, L. Bastos, Carvalho, LM, M. Gomes, O. Cruz, and R. Lana, "Risco de espalhamento da COVID-19 em populações indígenas: considerações preliminares sobre vulnerabilidade geográfica e socioeconômica [Risk of spread of COVID-19 in indigenous populations: preliminary considerations on geographic and socioeconomic vulnerability]," *Rio de Janeiro: Fiocruz: FGV*, vol. 18, 2020.

[54] F. C. Coelho, L. M. Carvalho, R. M. Lana, O. G. Cruz, L. S. Bastos, C. T. Codeco, M. F. Gomes, and D. Villela, "Modeling the post-containment elimination of transmission of COVID-19," *medRxiv*, 2020.

[55] L. M. Carvalho and G. A. Moreira, "Adaptive truncation of infinite sums: applications to statistics," *arXiv preprint arXiv:2202.06121*, 2022.

[56] J. T. McCrone, G. Baele, I. F. Omah, E. Kinganda-Lusamaki, J. A. Brew, Carvalho, Luiz M, G. Dudas, P. Mbala-Kingebeni, M. A. Suchard, and A. Rambaut, "Evidence of latency reshapes our understanding of Ebola virus reservoir dynamics," *bioRxiv*, pp. 2025–10, 2025.

[57] C. Mills, N. J. Irons, J. L.-H. Tsui, S. Sparrow, Carvalho, Luiz M, A. J. Kucharski, O. Ratmann, B. Lambert, C. A. Donnelly, and M. U. Kraemer, "From metric to action: An evaluation framework to translate infectious disease forecasts into policy decisions," *medRxiv*, pp. 2025–07, 2025.

Work in progress[1]

Carvalho, L.M., G. Baele, M.A. Suchard, A. Rambaut, "An efficient, tunable time-tree transition kernel for Bayesian phylogenetics", In preparation.

[1] Drafts in final phase of preparation

Carvalho, L.M., Dudas, G., Rambaut, A.. "Bayesian estimation of R_0 from sub-critical chains of transmission under observation error", In preparation.

Education

2009–2012	BSc (hons.) Microbiology and Immunology, Federal University of Rio de Janeiro, Brazil.
2014–2018	PhD Evolutionary Biology, University of Edinburgh, UK. Thesis committee: Richard Everitt (Reading) and Jarrod Hadfield (Edinburgh).

Professional Experience

2010–2013	Pan American Health Organization (PAHO) Position: Statistical Assistant Role: Developed and analysed quality control experiments for veterinary diagnostic tests; Research on Foot-and-Mouth Disease virus (FMDV) phylodynamics

Academic Experience

2009–2011	Infectious Diseases Epidemiology Division (SEDI), Institute of Microbiology, Federal University of Rio de Janeiro Position: Scientific initiation student Supervisor: Prof. Dr. Fernando Portela Câmara Role: research on the epidemiology of AIDS, sylvatic yellow fever and dengue.
2012–2013	Programme for Scientific Computing (PROCC), Oswaldo Cruz Foundation (Fiocruz) Position: Scientific initiation student Supervisor: Prof. Dr. Oswaldo Gonçalves Cruz Role: research on spatial partition methods for health areal data.
2013–2014	Programme for Scientific Computing (PROCC), Oswaldo Cruz Foundation (Fiocruz) Position: Scientific initiation student Supervisors: Prof. Dr. Claudio Struchiner and Dr. Leonardo Bastos Role: research on Bayesian inference of deterministic population growth models, multilevel binary regression and opinion pooling.
2014–2018	Institute of Evolutionary Biology (SBS), University of Edinburgh Position: PhD student Supervisors: Andrew Rambaut and Darren Obbard Role: research on statistical phylogenetics methods for RNA virus phylodynamics.
2018–2019	Programme for Scientific Computing (PROCC) and National School of Public Health (ENSP), Oswaldo Cruz Foundation Position: Postdoctoral Researcher Supervisor: Claudio Struchiner Role: research on statistical methods applied to Public Health.
2020–	School of Applied Mathematics (EMAp), Getúlio Vargas Foundation (FGV) Position: Lecturer (Assistant Professor) Role: research on Biostatistics and teaching Statistics at the graduate and undergraduate levels.

Memberships

Brazilian Statistical Association (ABE), Analytical Methods in Epidemiological Surveillance Group (MAVE).

Teaching Experience

2007–2011	**High School Chemistry and Biology for underpriviledged students** I was a voluntary teacher of whole-year high school courses on organic chemistry, general chemistry and biology.
2010–2013	**Basics of Mathematics and Statistics for Microbiology** Federal University of Rio de Janeiro Supervisor: Prof. Dr. Fernando Portela Câmara Basic calculus; descriptive statistics, Gaussian distribution and hypothesis testing.
2010	**Topics in Human Physiology** Federal University of Rio de Janeiro Supervisor: Prof. Dr. Pedro Paulo Elsas By means of seminars and group discussions, we approach particular aspects of human physiology and stimulate the students to draw general conclusions about the subjacent biological processes.
2012	**Bioinformatics** Federal University of Rio de Janeiro Supervisor: Prof. Andrew Macrae, PhD Basics on Bioinformatics: basic genome annotation, databases, alignment, phylogenetics.
2014-2017	**Molecular Evolution** University of Edinburgh Supervisor: Prof. Andrew Rambaut, PhD Molecular phylogenetics.
2017	**Statistics for Genetics** University of Edinburgh Supervisor: Ian White TA in the Bayesian module
2020–	**Statistical inference** School of Applied Mathematics (EMAp) Undegraduate and graduate (PhD) courses (60 hours).
2023–	**Statistical modelling** School of Applied Mathematics (EMAp) Undegraduate (PhD) course (60 hours).
2020–	**Computational Statistics** School of Applied Mathematics (EMAp) PhD course (60 hours).
2021–	**Bayesian Statistics** School of Applied Mathematics (EMAp) PhD course (60 hours).

Awards

2010	Honourable Mention - XVI Week of Microbiology and Immunology, Federal University of Rio de Janeiro.
2011	Honourable Mention - XVII Week of Microbiology and Immunology, Federal University of Rio de Janeiro.
2011	Selected for Oral presentation – XXII National Meeting of the Brazilian Society for Virology.
2012	Honourable Mention - XVIII Week of Microbiology and Immunology.
2014	Selected for Oral presentation – XII Brazilian Meeting on Bayesian Statistics.
2014	Principal's Career Development Scholarship, University of Edinburgh.

Languages

Portuguese	Native
English	Fluent (CAE – Grade A)
Spanish	Advanced

References

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