**Ingra M. Claro, Ph.D.**

Department of Microbiology, Immunology, and Molecular Genetics

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**Research Interests**

My research focuses on viral genomics and epidemiology to study emerging viruses, aiming to develop and improve strategies for detection, preparedness, and response to viral outbreaks that affect humans and animals.

**Education**

May 2017 – Oct 2021 **Ph.D. in Science**

Department of Infectious and Parasitic Diseases - Faculty of Medicine, University of São Paulo, Brazil.

Internship: University of Birmingham, UK (2018-2019)

Scholarship: São Paulo Research Foundation.

Feb 2016 – Feb 2017 **Specialization in Diagnostic Methods and Investigation of Hemoglobinopathies and Tropical Hematology**

Hospital das Clínicas - Faculty of Medicine, University of São Paulo, Brazil.

Scholarship: Hospital das Clínicas, Faculty of Medicine, University of São Paulo.

Mar 2011 – Dec 2015 **B.Sc. in Biomedical Sciences**

Federal University of Alfenas, Minas Gerais, Brazil.

**Professional Experience**

May 2024 – present **Postdoctoral Scholar**

Department of Microbiology, Immunology, and Molecular Genetics,

College of Medicine, University of Kentucky, Lexington, Kentucky, USA.

Supervisor: Dr. William M. de Souza

Oct 2023 – Apr 2024 **Postdoctoral Research Fellowship**

Department of Virology, Faculty of Medicine, University of São Paulo, Brazil.

Supervisor: Dr. Camila M. Romano

Oct 2021 – Sept 2023 **Postdoctoral Research Fellowship**

Department of Infectious Disease Epidemiology, School of Public Health, Imperial College London, UK.

Supervisor: Dr. Nuno R. Faria

**Fellowships and scholarships**

Oct 2023 – Apr 2024 **Postdoctoral Research Fellowship**

São Paulo Research Foundation, Brazil.

Budget: BRL70,000.00

Role: Fellowship awardee

Jul 2022 – Sept 2023 **Postdoctoral Research Fellowship**

Bill Melinda Gates Foundation.

Budget: £60,000.00

Role: Fellowship awardee

May 2017 – Oct 2021 May 2017 – Oct 2021 **Ph.D. Degree & Scholarship Abroad at the UK**

São Paulo Research Foundation, Brazil.

Budget: BRL165,000.00 and £20,000.00

Role: Scholarship awardee

Feb 2016 – Feb 2017 **Specialization**

Faculty of Medicine, University of São Paulo, Brazil.

Budget: BRL15,000.00

Role: Scholarship awardee

**Selected Peer-Reviewed Publications**

**53 publications** | **11 first author** | **Google Scholar: 6,899 citations, h-index: 29, i10-index: 45**

(\* denotes shared first authorship)

1. Caleiro GS, **Claro IM\***, Hua X, et al. Molecular Epidemiology of St. Louis Encephalitis Virus, São Paulo State, Brazil, 2016-2018. ***Emerging Infectious Diseases***. 2025;31(5):1052-1054. doi:10.3201/eid3105.250158.

2. de Lima STS, Hua X, **Claro IM\***, et al. Molecular Epidemiology of Oropouche Virus, Ceará State, Brazil, 2024. ***Emerging Infectious Diseases***. 2025;31(4):838-842. doi:10.3201/eid3104.241471.

3. Scachetti GC, Forato J, **Claro IM\*,** Hua X, Salgado BB, Vieira A, et al. Re-emergence of Oropouche virus between 2023 and 2024 in Brazil: an observational epidemiological study. ***The Lancet Infectious Diseases****.* 2024;S1473-3099(24)00619-4. doi:10.1016/S1473-3099(24)00619-4. (Cited 14 times).

4. Forato J, Meira CA, **Claro IM,** Amorim MR, de Souza GF, Muraro SP, et al. Molecular epidemiology of Mayaro virus among febrile patients, Roraima State, Brazil, 2018–2021. ***Emerging Infectious Diseases****.* 2024;30(5):1013–1016. doi:10.3201/eid3005.231406. (Cited 6 times).

5. Carrera JP, Araúz D, Rojas A, Cardozo F, Stittleburg V, **Claro IM**, et al. Real-time RT-PCR for Venezuelan equine encephalitis complex, Madariaga, and Eastern equine encephalitis viruses: application in human and mosquito public health surveillance in Panama. ***Journal of Clinical Microbiology****.* 2023;61:e0015223. doi:10.1128/jcm.00152-23. (Cited 3 times).

6. Duarte-Neto AN, Gonçalves AM, Eliodoro RHA, Martins WD, **Claro IM**, et al. Main autopsy findings of visceral involvement by fatal mpox in patients with AIDS: necrotising nodular pneumonia, nodular ulcerative colitis, and diffuse vasculopathy. ***The Lancet Infectious Diseases****.* 2023;S1473-3099(23)00574-1. doi:10.1016/S1473-3099(23)00574-1. (Cited 9 times).

7. de Souza WM, de Lima STS, Simões Mello LM, Candido DS, Buss L, Whittaker C, **Claro IM**, et al. Spatiotemporal dynamics and recurrence of chikungunya virus in Brazil: an epidemiological study. ***The Lancet Microbe****.* 2023;4(5):e319–e329. doi:10.1016/S2666-5247(23)00033-2. (Cited 54 times).

8. **Claro IM**, Ramundo MS, Coletti TM, da Silva CAM, Valença IN, Candido DS, et al. Rapid viral metagenomics using SMART-9N amplification and nanopore sequencing. ***Wellcome Open Research****.* 2023;6:241. doi:10.12688/wellcomeopenres.17170.2. (Cited 31 times).

9. Nastri AC, Duarte-Neto AN, Casadio LVB, Souza WM, **Claro IM\***, Manuli ER, et al. Understanding Sabiá virus infections (Brazilian mammarenavirus). ***Travel Medicine and Infectious Disease****.* 2022;48:102351. doi:10.1016/j.tmaid.2022.102351. (Cited 13 times).

10. **Claro IM**, Romano CM, Candido DDS, Lima EL, Lindoso JAL, Ramundo MS, et al. Shotgun metagenomic sequencing of the first case of monkeypox virus in Brazil, 2022. ***Revista do Instituto de Medicina Tropical de São Paul****o.* 2022;64:e48. doi:10.1590/S1678-9946202264048. (Cited 38 times).

11. Souza WM, Amorim MR, Sesti-Costa R, Coimbra LD, Brunetti NS, Toledo-Teixeira DA, **Claro IM**, et al. Neutralisation of SARS-CoV-2 lineage P.1 by antibodies elicited through natural SARS-CoV-2 infection or vaccination with an inactivated SARS-CoV-2 vaccine: an immunological study. ***The Lancet Microbe****.* 2021;2(10):e527–e535. doi:10.1016/S2666-5247(21)00129-4. (Cited 116 times).

12. Faria NR, Mellan TA, Whittaker C, **Claro IM\*,** Candido DDS, Mishra S, et al. Genomics and epidemiology of the P.1 SARS-CoV-2 lineage in Manaus, Brazil. ***Science****.* 2021;372(6544):815–821. doi:10.1126/science.abh2644. (Cited 1,625 times).

13. Vogels CBF, Breban MI, Ott IM, Alpert T, Petrone ME, Watkins AE, Kalinich CC, Earnest R, Rothman JE, de Jesus, JG, **Claro IM**, et al. Multiplex qPCR discriminates variants of concern to enhance global surveillance of SARS-CoV-2. ***PLoS Biology****.* 2021;19(5):e3001236. doi:10.1371/journal.pbio.3001236. (Cited 221 times).

14. Gräf T, Vazquez C, Giovanetti M, de Bruycker-Nogueira F, Fonseca V, **Claro IM**, et al. Epidemiologic history and genetic diversity origins of Chikungunya and Dengue viruses, Paraguay. ***Emerging Infectious Diseases****.* 2021;27(5):1393–1404. doi:10.3201/eid2705.204244. (Cited 26 times).

15. **Claro IM**, da Silva Sales FC, Ramundo MS, Candido DS, Silva CAM, de Jesus JG, et al. Local transmission of SARS-CoV-2 lineage B.1.1.7, Brazil, December 2020. ***Emerging Infectious Diseases****.* 2021;27(3):970–972. doi:10.3201/eid2703.210038. (Cited 77 times).

16. Candido DS, **Claro IM\*,** de Jesus JG, Souza WM, Moreira FRR, Dellicour S, et al. Evolution and epidemic spread of SARS-CoV-2 in Brazil. ***Science****.* 2020;369(6508):1255–1260. doi:10.1126/science.abd2161. (Cited 705 times).

17. Giovanetti M, Faria NR, Lourenço J, Goes de Jesus J, Xavier J, **Claro IM**, et al. Genomic and epidemiological surveillance of Zika virus in the Amazon Region. ***Cell Reports****.* 2020;30(7):2275–2283.e7. doi:10.1016/j.celrep.2020.01.085. (Cited 54 times).

18. Hill SC, Vasconcelos J, Neto Z, Jandondo D, Zé-Zé L, Aguiar RS, Xavier J, Thézé J, Mirandela M, Micolo Cândido AL, Vaz F, Sebastião CDS, Wu CH, Kraemer MUG, Melo A, Schamber-Reis BLF, de Azevedo GS, Tanuri A, Higa LM, Clemente C, da Silva SP, da Silva Candido D, **Claro IM**, et al. Emergence of the Asian lineage of Zika virus in Angola: an outbreak investigation. ***The Lancet Infectious Diseases****.* 2019;19(10):1138–1147. doi:10.1016/S1473-3099(19)30293-2. (Cited 95 times).

19. Kallas, E. G., D'Elia Zanella, L. G. F. A. B., Moreira, C. H. V., Buccheri, R., Diniz, G. B. F., Castiñeiras, A. C. P., Costa, P. R., Dias, J. Z. C., Marmorato, M. P., Song, A. T. W., Maestri, A., Borges, I. C., Joelsons, D., Cerqueira, N. B., Santiago E Souza, N. C., **Claro, I.M.**, et al. Predictors of mortality in patients with yellow fever: an observational cohort study. ***The Lancet Infectious Diseases****.* 2019;19(7):750–758. doi:10.1016/S1473-3099(19)30125-2. (Cited 90 times).

20. Naveca FG, **Claro I\***, Giovanetti M, de Jesus JG, Xavier J, Iani FCM, et al. Genomic, epidemiological and digital surveillance of Chikungunya virus in the Brazilian Amazon. ***PLoS Neglected Tropical Diseases****.* 2019;13(3):e0007065. doi:10.1371/journal.pntd.0007065. (Cited 111 times).

21. Faria NR, Quick J, **Claro IM\***, Thézé J, de Jesus JG, Giovanetti M, et al. Establishment and cryptic transmission of Zika virus in Brazil and the Americas. ***Nature****.* 2017;546(7658):406–410. doi:10.1038/nature22401. (Cited 660 times).

22. Quick J, Grubaugh ND, Pullan ST**, Claro IM**, Smith AD, Gangavarapu K, et al. Multiplex PCR method for MinION and Illumina sequencing of Zika and other virus genomes directly from clinical samples. ***Nature Protocols.*** 2017;12(6):1261–1276. doi:10.1038/nprot.2017.066. (Cited 1,171 times).

**Full List:** <https://scholar.google.com/citations?user=6_4Ov5oAAAAJ&hl=pt-BR>

**Honors and awards**

Sep 2023 **Young Inspiring Researchers**

Brazilian Society for Virology, Brazil.

Aug 2022 **Nominated for Outstanding Thesis Award**

Higher Education Personnel Improvement Coordination (CAPES), Brazil.

Jul 2022 **Biomedical of the year**

Federal Council of Biomedicine, Brazil.

**Selected Conferences & Presentations**

Feb 2025 **Organization & oral presentation:** Genomic surveillance for emerging viruses   
 Portable Metagenomics for Pathogen Surveillance and outbreak prevention, Luanda,

Angola

Nov 2024 **Invited talk:** Advancing Viral Outbreak Surveillance through Rapid and Cost Efficient Nanopore Sequencing Strategies

Virus Genomics, Evolution and Bioinformatics, Hinxton, UK.

May 2024 **Organization & oral presentation:** Portable genome sequencing of Disease X

International workshop on epidemic preparedness for infectious

diseases in the Brazilian Amazon region, Amazonas, Brazil.

Sept 2023 **Invited talk:** Viral genomic surveillance programs, 34º Congresso Brasileiro de Virologia & 8ºEncontro Mercosul de Virologia.

Mar 2023 **Organization & oral presentation:** Nanopore Sequencing, walking through the protocols, tilling amplicon, metagenomic and shotgun sequencing, CADDE Workshop on Portable Metagenomics for Pathogen Surveillance, São Paulo,

Brazil.

Nov 2022 **Invited talk:** Implementing Fast, Accessible Viral Surveillance with Nanopore Sequencing, Oxford Nanopore Technologies, virtual webinar.

Nov 2022 **Oral presentation:** Sabiá virus infections in yellow fever suspected cases in São Paulo, Brazil: an outbreak investigation.

Virus, Genomics and Evolution, Cambridge, UK.

**Trainings & Field Work**

Between 2016 and 2025, I have trained over 500 early-career researchers in pathogen sequencing and genomic epidemiology through workshops, courses, and hands-on training. This training has been conducted across public health laboratories and institutions in more than 15 of 27 states in Brazil, as well as in the US, Trinidad and Tobago, Angola, Panama, Paraguay, and Portugal.

**Journal Service**

Peer Reviewer (2020 – Present): *The Lancet Infectious Diseases*, *Communications Biology*.

**Supervision & External Review**

1) Co-advised over 25 BSc and MSc students at the Institute of Tropical Medicine, University of São Paulo, Brazil.

2) **Ph.D. Co-supervisor (Nov 2021 – Present):** Mayara Bertanhe (University of São Paulo, Brazil).

3) **External Reviewer (Ph.D./M.Sc.):** University of São Paulo, Federal University of Santa Catarina, University of Campinas.

**Ongoing Research Projects**

WHO International Pathogen Surveillance Network Catalytic Grant - Developing of an offline-capable computational framework for decentralized, real-time untargeted pathogen genomic surveillance (US$ 49,922.04). **Role: Co-PI**