

Curriculum Vitae

Nicolás G. Sarute
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Education

- 2012-2014 Ph.D. in Genetics. Universidad de la República (UdelaR) School of Sciences. Co-advisors: Dr. Yanina Panzera (UdelaR) and Dr. Marco Vignuzzi (Institut Pasteur Paris).
- 2008-2011 M.S. in Genetics. UdelaR School of Sciences. Co-advisors: Dr. Yanina Panzera and Dr. Ruben Perez (UdelaR).
- 2003-2008 B.S. in Genetics. UdelaR School of Sciences.

Professional Experience

- 2021-to date Head of the Virus-Cell interactions lab, Institut Pasteur de Montevideo (IP Montevideo).
- 2020-2021 Research Scientist, Department of Microbiology and Immunology, University of Illinois at Chicago College of Medicine (UIC COM).
- 2016-2020 Postdoctoral Research Associate, Department of Microbiology and Immunology, UIC COM.
- 2015-2016 Postdoctoral Research Fellow, Department of Microbiology, Perelman School of Medicine, University of Pennsylvania.
- 2014-to date Assistant 2. Evolutionary Genetics Department, UdelaR School of Sciences. Position obtained by competitive examination and merit.
- 2010-2013 Assistant 1. Evolutionary Genetics Department, UdelaR School of Sciences. Position obtained by competitive examination and merit.

Research

Res. Scientist

- 2020-2021 Project "Analysis of signal-regulatory protein alpha (SIRPA) antiviral activity".
Advisor: Susan R. Ross.

Postdoctoral

- 2015-2020 Project "Mammalian host factors involved in New World hemorrhagic fever arenaviruses entry".
Advisor: Susan R. Ross.

Graduate

- 2012-2014 Project "Analysis of canine distemper virus population dynamics by ultra-deep sequencing".
Co-advisors: Dr. Yanina Panzera and Dr. Marco Vignuzzi.
- 2008-2011 Project "Molecular characterization of canine distemper virus isolates circulating in South America".
Co-advisors: Dr. Yanina Panzera and Dr. Ruben Perez.

Undergraduate

- 2006-2008 Project "Development of molecular techniques for diagnosis of viral diseases in domestic animals".
Principal Investigator: Dr Ruben Perez.

Other

- 2010-2012 Project: "Tumoral expression of BRCA1 gene as a predictive marker of the Docetaxel efficiency in patients with sporadic and metastatic breast cancer".
Principal Investigator: Dr Lucia Delgado.
- 2008-2012 Project "Study of the hereditary predisposition to breast cancer in Uruguayan families".
Principal Investigator: Dr Lucia Delgado.

Grant Support

- 2023-2025 Project "Role of non-muscle myosin IIA in viral entry". Source: European Society of Clinical Microbiology and Infectious Diseases (ESCMID; Switzerland). Role: Principal Investigator.
- 2023-2025 Project "Modulation of virus entry by host cellular proteins". Source: Sectorial Commission for Scientific Research (CSIC; Uruguay). Role: Principal Investigator.
- 2023-2024 Project "Exploiting signal-regulatory protein alpha (SIRPA) signaling to control virus-mediated inflammation". Source: Inter-Pasteurian Concerted Actions (ACIP), Pasteur Network (France). Role: Principal Investigator and Coordinator.
- 2022-2024 Project "Role of integrins in virus uptake". Source: Max Planck Society (Germany) and National Research Agency (ANII; Uruguay). Role: Principal Investigator.

Scholarships and awards

2023	UdelaR travel award for the American Society for Virology (ASV) Annual Meeting. Athens, USA.
2023	CSIC travel award for the Viruses and Cells Gordon Research Conference. Castelldefels, Spain.
2022	ASV Global Scholar Travel Award for the ASV Annual Meeting. Madison, USA.
2019	UIC Postdoctoral Fellow Travel Award for the ASV Annual Meeting. Minneapolis, USA.
2016	Travel award for the Keystone Symposia Hemorrhagic Fever Viruses conference. Santa Fe, USA.
2014	Travel award for the 11th HKU-Pasteur Virology Course, Pasteur Research Centre, Hong Kong.
2012-2014	CSIC Doctoral Fellowship. Montevideo, Uruguay.
2012	CSIC travel award for the ASV Annual Meeting. Madison, USA.
2011-2013	Fellow of the AMSUD-Pasteur program "Research internships at the Institut Pasteur". Viral Populations and Pathogenesis Unit, Institut Pasteur, Paris, France.
2011	Travel award for the Bioinformatics for Phylogenetic Reconstruction in Virology graduate course. Hospital Garrahan, Buenos Aires, Argentina.
2010	Travel award for the EMBO Course: Virus – Host partners in pathogenicity. Universidad de Costa Rica, San José, Costa Rica.
2010	Fellow of the AMSUD-Pasteur program "Regional research internships". Animal Virology Lab, Instituto Milstein, Buenos Aires, Argentina.
2010	CSIC travel award for the XII Argentinean Microbiology Congress. Buenos Aires, Argentina.
2009-2010	National Agency for Research and Innovation (ANII) research fellowship.

Mentoring and training

2023-to date	Postdoctoral research supervisor, Dr. Kathia Guardado, IP Montevideo
2023-to date	Undergraduate thesis advisor, María Paz García, IP Montevideo
2023	Research internship supervisor, BS Emma Condon, IP Montevideo
2022-2023	Undergraduate thesis advisor, Matías Ponce, IP Montevideo
2021-to date	Master thesis advisor, B.S. Natalia Ansin, IP Montevideo
2020-2021	Lab instructor, B.S. Max Yan, Graduate student, UIC COM
2018-2019	Lab instructor, B.S. Guliz Otkiran-Clare, Graduate student, UIC COM
2017-2018	Lab instructor, B.S. Bani Medegan-Fagla, Research Technician at the Ross Lab, UIC COM
2013	Research internship supervisor, Dr. Natielle Wajima, Universidad Estadual Paulista, Sao Paulo
2013-2014	Undergraduate thesis advisor, Jessika Llanes, UdelaR
2013-2014	Undergraduate thesis advisor, Noelia Garracini, UdelaR

Teaching and outreach

2023	Scientific organizer, lecturer, and instructor of the international graduate course "Biology of emerging and neglected viral infections in Latin America", IP Montevideo. Funded by Pasteur Network, Institut Pasteur and Embassy of France in Uruguay.
2023	Lecturer graduate course "Molecular Virology", Department of Biological Sciences, UdelaR CENUR Litoral Norte.
2022	Lecturer graduate course "One Health", Department of Bacteriology and Virology, UdelaR School of Medicine.
2022	Lecturer graduate course "Infectious clones: a valuable tool to study viruses by reverse genetics, IP Montevideo. Funded by the Latin-American Center for Biotechnology (CABBIO).
2019-2020	Lecturer graduate course "GEMS 505 - Immunological Methods", UIC COM.
2017-2019	Poster judge UIC Graduate Education in Biomedical Sciences (GEMS) program annual symposium.
2014-to date	Lecturer "Molecular Genetics I", Evolutionary Genetics Department, UdelaR School of Sciences.
2011-2013	Instructor Graduate Course "Analysis of the genetic variability of microorganisms" Evolutionary Genetics Department, UdelaR School of Sciences.
2010-to date	Instructor "Molecular Genetics I", Evolutionary Genetics Department, UdelaR School of Sciences.

Publications

Original research

1. Ponce N, Ansin N, Guardado K, García MP, Ross SR, **Sarute N** (2023). Tyrosine phosphorylation of the heavy chain of non-muscle myosin IIA is essential for its activity in virus entry. Submitted.
2. Fuques E, Tomás G, Grecco S, Condon E, Techera C, **Sarute N**, et al (2022). Origin and spreading of canine morbillivirus in South America. *Virus Res.* 319:198858. doi: 10.1016/j.virusres.2022.198858.
3. **Sarute N**, Cheng H, Yan Z, et al (2021). Signal-regulatory protein alpha is an anti-viral entry factor targeting viruses using endocytic pathways. *PLoS Pathog.* 17(6):e1009662.
4. **Sarute N**, Ross SR (2020). CACNA1S haploinsufficiency confers resistance to New World arenavirus infection. *Proc Natl Acad Sci USA.* 117(32): 19497-19506. <https://doi.org/10.1073/pnas.1920551117>.
5. Li* JJ, **Sarute*** N, Lancaster E, Otkiran-Clare G, et al (2020). A recessive Trim2 mutation causes an axonal neuropathy in mice. *Neurobiol Dis.* 140:104845. <https://doi.org/10.1016/j.nbd.2020.104845>. *Co-first authors.

6. **Sarute N**, Ibrahim N, Medegan Fagla B, et al (2019). TRIM2, a novel member of the antiviral family, limits new world arenavirus entry. *PLoS Biol* 17 (2): e3000137. <https://doi.org/10.1371/journal.pbio.3000137>.
7. Panzera Y, **Sarute N**, Iraola G, et al (2015). Molecular phylogeography of canine distemper virus: Geographic origin and global spreading. *Molecular Phylogenetics and Evolution*, 92: 147 – 154.
8. Pérez R, Calleros L, Marandino A, **Sarute N**, et al (2014). Phylogenetic and Genome-Wide Deep-Sequencing Analyses of Canine Parvovirus Reveal Co-Infection with Field Variants and Emergence of a Recent Recombinant Strain. *PLoS One*, 9(11): e111779.
9. **Sarute N**, Delgado MV, Carrau L, et al (2014). First genome sequence of a canine distemper virus strain from South America. *Genome Announcements*, 2(5):e01009-14.
10. **Sarute N**, Pérez R, Aldaz J, et al (2014). Molecular typing of canine distemper virus strains reveals the presence of a new genetic lineage in South America. *Virus Genes*, 48: 474 – 478.
11. **Sarute N**, Calderón MG, Pérez R, et al (2013). The Fusion Protein Signal-Peptide-Coding Region of Canine Distemper Virus: Useful Tool for Phylogenetic Reconstruction and Lineage Identification. *PLoS One* 8(5): e63595.
12. Panzera Y, Calderón MG, **Sarute N**, et al (2012). Evidence of two co-circulating genetic lineages of *Canine Distemper Virus* in South America. *Virus Research*, 163: 401 – 412.
13. **Sarute N**, Pérez R, Francia L, et al (2011). First molecular diagnosis and partial characterization of the nucleoprotein gene of Canine Distemper Virus in Uruguay. *Veterinary*, 47: 9-15.

Review articles

1. **Sarute N**, Ross SR (2021). The board is set, the pieces are moving: Modulation of New World arenavirus entry by host proteins. *PLoS Pathog.* 17(6):e1009605.
2. Duque-Valencia J, **Sarute N**, Olarte-Castillo X.A, Ruíz-Sáenz J (2019). Evolution and Interspecies Transmission of Canine Distemper Virus—An Outlook of the Diverse Evolutionary Landscapes of a Multi-Host Virus. *Viruses*, 11 (7), 582. <https://doi.org/10.3390/v11070582>.
3. **Sarute N**, Ross SR (2017). New World Arenavirus Biology. *Annual Reviews of Virology*, 4(1):141-158. doi: 10.1146/annurev-virology-101416-042001.
4. Panzera Y, **Sarute N**, Carrau L, et al (2014). Genetic Diversity of Canine Distemper Virus in South America. *British Journal of Virology*, 1(2): 48 – 53.

Presentations

Oral

- 2023 “Dissecting the role of non-muscle myosin IIA in viral entry”, ASV Annual Meeting. Athens, GA, USA.
- 2022 “Signal-regulatory protein alpha limits internalization of viruses exploiting endocytic pathways”, ASV Annual Meeting. Madison, WI, USA.
- 2020 “Inhibition of New World arenavirus entry by the TRIM2-SIRP α protein complex”, Northwestern University Virology Club. Chicago, IL, USA.
- 2019 “TRIM2-SIRP α dependent inhibition of New World arenavirus infection: new insights into viral entry restriction”, ASV Annual Meeting. Minneapolis, MN, USA
- 2017 “Tripartite-Motif 2 protein is an antiviral host factor for New World arenaviruses”, ASV Annual Meeting. Madison, WI, USA
- 2016 “Voltage-gated calcium channels are entry receptors for New World arenavirus and druggable targets for therapeutic intervention”, Chicago Area Virologists Association Annual Meeting. Maywood, IL, USA
- 2016 “Dissecting the role of voltage-gated calcium channels in New World arenavirus infection”, ASV Annual Meeting. Blacksburg, VA, USA
- 2014 “Analysis of canine distemper virus population dynamics by ultra-deep sequencing” Genetics Society of Uruguay Meeting. Montevideo, Uruguay.
- 2013 “Genetic Diversity and Compartmentalization of Canine Distemper virus: a population approach”, Uruguayan Congress of Virology. Montevideo, Uruguay
- 2010 “Genetic characterization of Canine Distemper Virus strains from Argentina” AMSUD-Pasteur network meeting. IP Montevideo. Montevideo, Uruguay

Poster

- 2023 “Modulation of viral endocytosis by signal-regulatory protein alpha and non-muscle myosin IIA”, Viruses and Cells Gordon Research Conference. Castelldefels, Barcelona, Spain.
- 2018 “Antiviral activity of Tripartite-Motif 2 protein against New World arenaviruses” 18th International Congress on Infectious Diseases. Buenos Aires, Argentina.
- 2016 “Unveiling proviral host factors for New World arenavirus infection” Keystone Symposia Hemorrhagic Fever Viruses (S3) Santa Fe, New Mexico, USA
- 2012 “Phylogenetic analysis of the fusion protein signal-peptide of canine distemper virus strains from South America: towards a new definition of genetic lineages” American Society for Virology Annual Meeting. Madison, USA.

- 2011 "Analysis of the Fusion Protein Signal Peptide of CDV Isolates: Seeking for new genomic regions for molecular characterization" Molecular Biology of Viral Diseases course. Maldonado, Uruguay.
- 2011 "Molecular analysis of the hemagglutinin gene of canine Distemper virus in Argentinean strains" X Argentine Congress of Virology. Buenos Aires, Argentina.
- 2010 "Molecular Characterization of Canine Distemper Virus strains from Uruguay." EMBO World Lecture Course, Virus-Host: Partners in Pathogenicity. San Jose, Costa Rica.
- 2010 "Canine Distemper Virus in Uruguay: detection by Real-Time PCR and molecular characterization of circulating strains" XII Argentine Congress of Microbiology. Buenos Aires, Argentina.
- 2009 "Sequence divergence of Canine Distemper Virus in South America", 150 years of Darwin's theory of evolution: A South America Celebration. Maldonado, Uruguay
- 2008 "Characterization of the Hemagglutinin gene of Canine Distemper Virus in Uruguay", Genetics Society of Uruguay Meeting. Montevideo, Uruguay.
- 2007 "Analysis of a region of the nucleocapsid gene of Canine Distemper Virus", XII Conference of the Uruguayan Society of Biosciences. Lavalleja, Uruguay
- 2007 "Diagnosis of Canine Distemper by detection of viral genome from samples of urine", V Veterinary Technical Conference. Montevideo, Uruguay

Ad-hoc review (selected)

1. PLoS Pathogens
2. Viruses
3. Frontiers in Microbiology
4. BMC Veterinary Science
5. Microbial Pathogenesis