

Spain 02/06/1993

Rubén GONZÁLEZ

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I investigate virus evolution and host-pathogen interactions across diverse biological systems, with particular emphasis on how environmental factors and microbial communities shape infection outcomes. Using plant (*Arabidopsis thaliana*) and animal (nematode *Caenorhabditis elegans* and fly *Drosophila melanogaster*) model systems, my research integrates experimental evolution, molecular virology, and systems biology approaches to address three fundamental questions:

- (i)** How do different factors drive viral evolution and alter virus-host relationships, including transitions from parasitism to mutualism?
- (ii)** How do host genetics, viral strain variation, environmental conditions, and host-associated microbial communities modulate viral pathology and infection dynamics?
- (iii)** What are the physiological consequences of viral infections on host fitness, development, and aging?

Education

- 04/2017 – 11/2021 **Ph.D. Biotechnology** w/ Santiago F. Elena
Polytechnic University of Valencia (Valencia, Spain). Honours: *cum laude*
- 01/2021 – 04/2021 **Visiting PhD student** w/ Marie-Anne Félix
IBENS, Institut de Biologie de l'École normale supérieure (Paris, France).
- 09/2015 – 01/2017 **M.S. Plant Molecular and Cellular Biotechnology** w/ Santiago F. Elena
Polytechnic University of Valencia (Valencia, Spain)
- 09/2011 – 07/2015 **B.S. Biology** University of Vigo (Vigo, Spain)
- 09/2014 – 01/2015 **Exchange student** University of Coimbra (Coimbra, Portugal)

Research experience

- 01/2024 – ongoing **Postdoctoral researcher** Institut Pasteur (Paris, France) w/ Carla Saleh
- 11/2021 – 11/2023 **Postdoctoral researcher** IBENS (Paris, France) w/ Marie-Anne Félix
- 04/2017 – 09/2021 **Predoctoral researcher** w/ Santiago F. Elena
- 09/2018 – 09/2021 Institute for Integrative Systems Biology (Paterna, Spain)
- 04/2017 – 09/2018 Institute for Plant Molecular and Cell Biology (Valencia, Spain)
- 05/2016 – 12/2016 **Research Internship** ADM Biopolis (Valencia, Spain)
- 01/2015 – 07/2015 **Department research assistant** University of Vigo (Vigo, Spain)
- 06/2013 – 07/2013 **Volunteer Research Assistant** University of Vigo (Vigo, Spain)

Funding and awards

Year	Award	Details	Quantity
2024	Research grant	Pasteur-Roux-Cantarini Postdoctoral Fellowship	2-year salary
2023	Seal of Excellence	Marie Skłodowska-Curie Actions Postdoctoral Fellowship	–
2021	Research grant	European Molecular Biology Organization Postdoctoral Fellowship (ALTF 311-2021)	143 000 €
2021	Research grant	European Space Agency Co-lead author: Santiago F Elena	180 682 €
2020	Exchange grant	European Molecular Biology Organization Short-Term Fellowship	4 450 €
2020	Exchange grant	FISABIO-Valencia University Chair for financing research stays	4 000 €
2020	Honourable mention	GBE Best Student paper published in 2019 Awards	500 €
2020	Membership	AAAS/Science Program for Excellence in Science	–
2020	Travel Grant	Wellcome Genome Campus Conference bursary	170 €
2017	Research grant	MINECO-FEDER FPI Scholarship for Research Training (BES-2016-077078)	92 750 €
2015	Research grant	MINECO-FEDER Department collaboration (BOE-A-2015-700)	2 000 €
2014	Exchange grant	Xunta de Galicia ERASMUS+ exchange grant complement	1 100 €
2014	Exchange grant	European Commission ERASMUS+ Fellowship	1 700 €

Service

>EDITORIAL AND PEER REVIEW

Editorial Board Member *npj Viruses* (2023-ongoing)

Reviewer for *Peer Community in Evolutionary Biology*, *Journal of General Virology*, *Journal of Virology*, *Plants*, *PLoS Pathogens*, *Evolution Letters*, and *Virology*.

Grant evaluation committee ANR - AAPG 2024 (panel “CE15 – Immunologie, Infectiologie et Inflammation”), UK Research and Innovation Funding Service (panel OPP490: BBSRC Responsive Mode: 24RM2)

External examiner for the PhD thesis of Joan Márquez Molins (2022) and Adrián Pedreira Bar (2024).

>REPRESENTATION AND ORGANIZATION

Postdoc association representative of IBENS (2022/23) and Pasteur (2024-ongoing).

Organization team member Institut Pasteur departmental Virology days (2024), Paris Postdocs Seminar (2024), IBENS Ecology and Evolution Biology department Seminars (2022/23).

Scientific Committee member of the 2nd PhD Meeting in Plant Science.

Session chair Institut Pasteur Journées Départementales de Virologie (2024), EMBO Fellows Meeting (2025), GRS Biology of Aging (2025).

Invited talks

12/2025 **When Viruses Stay: How Persistent Infections Drive Viral Evolution and Shape Host Biology.** Ecology and Evolutionary Biology cluster seminar series University of Sheffield (Sheffield, UK).

04/2023 **Monobacterial environments regulate *Caenorhabditis elegans* resistance to viral infection.** Verena Institute seminar series ONLINE (Washington, USA).

01/2023 **Impact of host developmental stage on virus evolution.** Key note talk at French National Plant Virus Symposium (Aussois, France).

03/2021 **A plant virus evolves under drought conditions to promote host survival.** Department seminar at CMESS (Vienna, Austria).

07/2020 **Virus evolution under drought conditions.** Ecology and Evolution of Infectious Disease Seminar, UC Berkeley (Berkeley, USA).

Supervision

PhD student

2020-2024 Izan Melero (University of Valencia, Spain) *MCIU Fellow @ I2SysBio (Spain)*

PhD student [Scientific supervision]

2023/2024 Mauro Castelló-Sanjuan (Université Pais Cité, France) *@ Institut Pasteur (France)*

PhD student [Internship supervision]

08-09/2024 Hiroko Kobayashi (Hokkaido University, Japan) *WISE Fellow @ Institut Pasteur (France)*

Research internships

06-12/2018 Javier Martínez-Latorre *IAE-Intro Fellow @ I2SysBio (Spain)*

02-04/2019 Izan Melero *ADEIT/Universitat de València Practicum @ I2SysBio (Spain)*

05-07/2019 Enric Pérez *ADEIT/Universitat de València Practicum @ I2SysBio (Spain)*

Publications

* co-authorship

† corresponding author

1. **González R†**, Castelló-Sanjuán M, Romoli O, Blanc H, Kobayashi H, Nigg J, Saleh MC† (2025) Microbiome composition modulates the lethal outcome of *Drosophila* A virus infection. *bioRxiv* [preprint] 2025.10.16.682821
2. **González R†**, Castelló-Sanjuán M, Saleh MC† (2025) Enteric viral infections promote systemic accelerated aging in *Drosophila*. *bioRxiv* [preprint] 2025.03.13.643076
3. Castelló-Sanjuán M, **González R**, Bergman A, Blanc H, Frangeul L, Nigg J, Saleh MC† (2025) The pupal stage is a developmental window for RNA virus persistence in *Drosophila*. *bioRxiv* [preprint] 2025.11.07.687216
4. Melero I†, Castiglioni VG, Olmo-Uceda MJ, Olmedo M, **González R†**, Elena SF† (2025) The interplay between *Caenorhabditis elegans* larval development and Orsay virus infection. *iScience* 28:114193.
5. Castelló-Sanjuán M, **González R**, Romoli O, Blanc H, Nigg J, Saleh MC† (2025) Persistent viral infections impact key biological traits in *Drosophila melanogaster*. *PLoS Biology* 23:e3003437
6. **González R***, Koh C*, Virlon B*, Merklings SH†, Vartanian JP † (2025) A look back at the departmental Virology Days of the Institut Pasteur (Le Touquet, May 13-15, 2024). *Journal of Molecular Cell Biology*. mjae052
7. Villena-Giménez A, Castiglioni VG, Legarda EG, Muñoz-Sánchez JC, **González R**, Elena SF† (2024) Microgravity and low muon radiation affect viral pathogenesis and physiology in *Caenorhabditis elegans*. *bioRxiv* [preprint] 2024.10.03.616447

8. Melero I, Gómez-Cadenas A, **González R†**, Elena SF† (2024). Transcriptional and hormonal profiling uncovers the interactions between plant developmental stages and RNA virus infection. *Journal of General Virology*. 105, 002023.
9. **González R†**, Félix M.-A.† (2024) Natural monobacterial environments modulate viral infection in *Caenorhabditis elegans*. *PLoS Pathogens*. 20, e1011947,
10. **González R†**, Félix M.-A. (2024) *Caenorhabditis elegans* immune responses to intracellular pathogens. *Developmental & Comparative Immunology* 154, 105148.
11. **González R†**, Félix M.-A.†. (2024) *Caenorhabditis elegans* defective-pharynx and constipated mutants are resistant to Orsay virus infection. *microPublication Biology*, 2024: 10.17912/micropub.biology.001166.
12. Castiglioni VG, Olmo-Uceda MJ, Martín S, Félix M.-A, **González R†**, Elena SF† (2024) Experimental evolution of an RNA virus in *Caenorhabditis elegans*. *Infection, Genetics and Evolution*. 123, 105623
13. Melero I, Elena SF, **González R†** (2023) Viral strain-dependent impact of plant developmental stages on the nestedness and modularity of plant-virus interaction matrices. *microPublication Biology*. 10.17912/micropub.biology.000943.
14. Butkovic A*, Ellis TJ*, **González R***, Jaegle B, Nordborg M†, Elena SF† (2023) Genetic basis of *Arabidopsis thaliana* responses to infection by naïve and adapted isolates of turnip mosaic virus. *eLife*, 12:RP89749
15. Melero I, **González R†**, Elena SF† (2023) Host developmental stages shape the evolution of a plant RNA virus. *Philosophical Transactions of the Royal Society B*. 378:20220005.
16. Butkovic A*†, **González R*†** (2022) A brief view on factors that affect plant virus evolution. *Frontiers in Virology*. 2:994057.
17. Navarro R, Ambrós S, Butković A, Carrasco JL, **González R**, Martínez F, Wu B, Elena SF†. (2022) Defects in plant immunity modulate the rates and patterns of RNA virus evolution. *Virus Evolution*, veac059.
18. **González R†**, Elena SF. (2021) The interplay between the host microbiome and pathogenic viral infections. *mBio*. 12: e02496-21.
19. **González R**, Butković A, Escaray F, Martínez-Latorre J, Melero I, Pérez-Parets E, Gómez-Cadenas A, Carrasco P, Elena SF†. (2021) Plant virus evolution under strong drought conditions results in a transition from parasitism to mutualism. *PNAS*. 118, e2020990118.
 >> [Commentary](#): Dolja, V.V. † (2021) Rapid emergence of virus–host mutualism under stress. *PNAS*. 118, e2100936118.
20. Butković A, **González R**, Elena SF†. (2021) Revisiting *Orthotospovirus* phylogeny using full-genome data and testing the contribution of selection, recombination and segments reassortment in the origin of new species. *Archives of Virology*. 166, 491–499.
21. **González R*†**, Butković A*, Elena SF†. (2020) From foes to friends: viral infections expand the limits of host phenotypic plasticity. *Advances in Virus Research*, 106: 85-121.
22. Butković A, **González R**, Rivarez MPS, Elena SF†. (2020) A genome-wide association study identifies *Arabidopsis thaliana* genes that contribute to differences in the outcome of infection with two Turnip

mosaic potyvirus strains that differ in their evolutionary history and degree of host specialization. *Virus Evolution*, veab063.

23. **González R†**, Butković A, Rivarez MPS, Elena SF. (2020) Natural variation in *Arabidopsis thaliana* rosette area unveils new genes involved in plant development. *Scientific Reports*, 10,17600.
24. Butkovic A, **González R**, Cobo I, Elena SF†. (2020) Adaptation of turnip mosaic potyvirus to a specific niche reduces its genetic and environmental robustness *Virus Evolution*, 6: veaa041
25. **González R**, Butković A, Elena SF†. (2019) Role of host genetic diversity for susceptibility-to-infection in the evolution of virulence of a plant virus. *Virus Evolution*, 5: vez024.
26. **González R***, Wu B*, Li X*, Martínez F†, Elena SF†. (2019) Mutagenesis scanning uncovers evolutionary constraints on tobacco etch potyvirus membrane-associated 6K2 protein. *Genome Biology and Evolution*, 11: 1207–1222.
27. Rolán-Alvarez† E, Carvajal-Rodríguez A, de Coo A, Cortés B, Estévez D, Ferreira M, **González R**, Briscoe AD. (2015) The scale-of-choice effect and how estimates of assortative mating in the wild can be biased due to heterogeneous samples *Evolution*, 69: 1845–1857.

Contributed presentations

- EMBO Fellows Meeting (Heidelberg, Germany) Viral infections reduce *Drosophila* lifespan through accelerated aging. (2025) Talk.
- LABEX IBEID International Conference (Paris, France) Bacteriome composition modulates viral infections in *Drosophila melanogaster* (2024). Poster
- Institut Pasteur *Journées Départementales de Virologie* (Le Touquet, France) Bacteriome modulation of viral infections in *Drosophila melanogaster*. (2024). Talk
- 24th International C. elegans Conference (Glasgow, UK) *Caenorhabditis elegans* susceptibility to virus infection is modulated by its naturally associated bacteria. (2023). Talk
- EMBL - The organism and its environment (Heidelberg, Germany) *Caenorhabditis elegans* susceptibility to virus infection is modulated by its naturally associated bacteria. (2023). Talk
- VerMidi XXIV (Paris, France) *Caenorhabditis elegans* susceptibility to virus infection is modulated by its naturally associated bacteria. (2023). Talk
- VIP&DIF (Paris, France) (2023) Natural monobacterial environments modulate viral infection in *Caenorhabditis elegans*. Talk and Poster
- Evolutionary Biology of *Caenorhabditis* and Other Nematodes (Hamilton, Canada) Sensitivity of *C. elegans* to Orsay virus is suppressed by some bacteria and by a *haao-1* reduction-of-function polymorphism. (2022). Talk.
- Wellcome Genome Campus Evolutionary Systems Biology (2022). Attended.
- Wellcome Genome Campus Virus Genomics and Evolution virtual conference (Hixton, UK) Plant aging increases susceptibility to Turnip mosaic potyvirus infection and influences virus evolution. (2021). Poster.
- Wellcome Genome Campus Single Cell Biology (2020). Attended.

- Wellcome Genome Campus 3rd meeting on Evolutionary Systems Biology (Hixton, UK) Virus evolution in the pathosystem turnip mosaic potyvirus – *Arabidopsis thaliana* under drought conditions selects for viruses who enhance the host tolerance to water deficiency. (2020). Poster.
- Experimental Evolution Workshop (Biar, Spain) Evolving towards mutualism: an experimental study on the virus-host interactions changes induced by the environment. (2019). Talk.
- 10th Workshop in Virus Evolution (State College Pennsylvania, USA) Evolving in drought conditions: consequences in the interaction between a potyvirus and *Arabidopsis thaliana*. (2019). Poster.
- 24th European Meeting of PhD Students in Evolutionary Biology (Bubi3n, Espa3a) Evolution of RNA viruses in hosts with variable susceptibility. (2018). Talk.
- VI Spanish Worm Meeting (Valencia, Spain) Evaluation of *Caenorhabditis elegans* as experimental host for a thrip-transmitted plant RNA virus. (2017). Talk.

Courses

2024 **EMBO Laboratory Leadership for Postdocs** EMBO Solutions GmbH

2021 **Research Integrity** Epigeum

2021 **YIP PhD course** EMBO Solutions GmbH

2020 **Program certificate in Data Analysis for Life Science** HarvardX

2017 **Ethics in research** Polytechnic University of Valencia (UPV)

2017 **Statistics and mathematical methods for Research** Polytechnic University of Valencia

2017 **Rewriting science: Avoiding mistakes in written and spoken scientific English** UPV