

Rubén GONZÁLEZ

Personal information

Birthplace and date: Vigo (Galicia, Spain) 02/06/1993
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Education

04/2017 – 11/2021 **Ph.D. Biotechnology** Mentor: Prof. Santiago F. Elena
 Polytechnic University of Valencia (Valencia, Spain). Honours: *cum laude*
 01/2021 – 04/2021 **Visiting PhD student** Mentor: Prof. Marie-Anne Félix
 Institut de Biologie de l'École normale supérieure (Paris, France).
 09/2015 – 01/2017 **M.S. Plant Molecular and Cellular Biotechnology** Mentor: Prof. 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)
 11/2021 – 11/2023 **Postdoctoral researcher** Institut de Biologie de l'ENS (Paris, France)
 04/2017 - 09/2021 **Predoctoral researcher**
 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)

Service

- **Seminar organizer** of the IBENS Ecology and Evolution Biology department.
- **Scientific Committee** of the 2nd PhD Meeting in Plant Science (Online).
- **Reviewer** for Peer Community in Evolutionary Biology, Plants, and Journal of General Virology.
- **External examiner** for the PhD thesis of Joan Márquez Molins: “Novel insights of viroid biology and host responses to their infection”

Funding and awards

2023 **Seal of Excellence**. Marie Skłodowska-Curie Actions Postdoctoral Fellowships.
 2021 **Postdoctoral Fellowship**. European Molecular Biology Organization (EMBO) “Microbiome impact on *Caenorhabditis elegans* viral infection and evolution of Orsay virus” (140.000€).
 2021 **Research grant** “Dynamics of viral infection in simulated microgravity conditions”. Co-lead authors: Santiago F. Elena and Rubén González. Co-funded by European Space Agency and Spanish Research Council (180.682€).
 2020 **Short-Term Fellowship**. European Molecular Biology Organization (EMBO) “Implementation of *Caenorhabditis elegans* as a model host system in virology research” (4.450€).
 2020 **Exchange grant** FISABIO-Valencia University Chair for financing research stays (4.000€).
 2020 **Honourable mention** Best Student paper published in GBE 2019 Awards. (500€).
 2020 **Membership** AAAS/Science Program for Excellence in Science.
 2020 **Conference bursary** Wellcome Genome Campus (170€).
 2017 **Research grant** FPI for Research Training (BES-2016-077078). MINECO-FEDER (92.750€).
 2015 **Research grant** Department collaboration (BOE-A-2015-700). MINECO-FEDER (2.000€).

2014 **Exchange grant** ERASMUS+ exchange grant Xunta de Galicia's Complement (1.100€).

2014 **Exchange grant** European Commission's ERASMUS+ Fellowship (1.700€).

Publications

* co-authorship

† corresponding author

1. Melero I, Gómez-Cadenas A, **González R**†, Elena SF† (2023). Within-host virus spreading and tolerance to infection are key factors of the *Arabidopsis thaliana* age-dependent susceptibility to viral infections. PREPRINT [bioRxiv]. doi.org/10.1101/2023.11.21.568017
2. 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.
3. Butkovic A*, Ellis TJ*, **González R***, Jaegle B, Nordborg M†, Elena SF† (2022) Genetic basis of *Arabidopsis thaliana* responses to infection by naïve and adapted isolates of turnip mosaic virus. eLife, 12:RP89749
4. **González R**†, Félix M.-A†. (2023) Natural monobacterial environments modulate viral infection in *Caenorhabditis elegans*. PREPRINT [bioRxiv]. doi.org/10.1101/2023.06.13.544807.
5. **González R**†, Félix M.-A. (2023) *Caenorhabditis elegans* immune responses to intracellular pathogens. Developmental & Comparative Immunology. UNDER REVIEW (Minor revisions).
6. 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.
7. Butkovic A*†, **González R***† (2022) A brief view on factors that affect plant virus evolution. Frontiers in Virology. 2:994057.
8. 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.
9. **González R**†, Elena SF. (2021) The interplay between the host microbiome and pathogenic viral infections. mBio. 12: e02496-21.
10. **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.
11. Butković A, **González R**, Elena SF†. (2021) Revisiting *Orthospovirus* 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.
12. **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.
13. 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.
14. **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.
15. 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
16. **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.

17. **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.
18. 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.

Invited talks

- 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).

Contributed presentations

Presenter is underlined

- [24th International C. elegans \(Glasgow, UK\)](#) *Caenorhabditis elegans* susceptibility to virus infection is modulated by its naturally associated bacteria. (2023) **González R**, Félix M-A. Talk
- [24th International C. elegans \(Glasgow, UK\)](#) Effects of microgravity and below-background radiation in *C. elegans*-Orsay virus dynamics. (2023) Villena-Giménez A, Castiglioni. VG, **González R**, Elena SF. Poster
- [EMBL Symposium - The organism and its environment \(Heidelberg, Germany\)](#) *Caenorhabditis elegans* susceptibility to virus infection is modulated by its naturally associated bacteria. (2023) **González R**, Félix M-A. Talk
- [VerMidi XXIV \(Paris, France\)](#) *Caenorhabditis elegans* susceptibility to virus infection is modulated by its naturally associated bacteria. (2023) **González R**, Félix M-A. Talk
- [MELiSSA Conference \(Toulouse, France\)](#) Dynamics of viral infection in simulated microgravity and low radiation conditions. (2022) Villena-Giménez A, **González R**, Elena SF. Talk
- [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) **González R**, Richaud A, Bêlicard T, Martynow D, Alkan C, Félix M-A. Talk.
- [Wellcome Genome Campus Evolutionary Systems Biology \(Virtual conference\) 2022.](#) Assistance.
- [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) **González R**, Melero I, de la Iglesia F, Elena SF. Poster.
- [Worm-Virus meeting \(Virtual\)](#) Setting up *C. elegans* as a host model system for experimental virus evolution, experimental epidemiology and systems virology (2020) Elena SF, **González R**. Talk.
- [Wellcome Genome Campus Single Cell Biology \(Virtual conference\) 2020.](#) Assistance.
- [Wellcome Genome Campus 3rd meeting on Evolutionary Systems Biology \(Hixton, UK\)](#) Mapping *Arabidopsis thaliana* genes involved in plant response to a turnip mosaic potyvirus (TuMV) infection. (2020) Butković A, **González R**, Elena SF. Talk.
- [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) **González R**, Butković A, Martínez-Latorre J, Melero I, Pérez-Parets E, de la Iglesia F, Elena SF. Poster.

- [Wellcome Genome Campus 3rd meeting on Evolutionary Systems Biology \(Hixton, UK\)](#) Genome-wide association studies (GWAS) to identify genes involved in differential response of *Arabidopsis thaliana* to infection with generalist and specialist strains of a potyvirus. (2020) [Butković A](#), **González R**, Rivarez MPS, de la Iglesia F, Elena SF. Poster.
- [Experimental Evolution Workshop \(Biar, Spain\)](#) Evolving towards mutualism: an experimental study on the virus-host interactions changes induced by the environment. (2019) [González R](#), Butković A, Martínez-Latorre J, Melero I, Pérez-Parets E, de la Iglesia F, Elena SF. Talk.
- [Conférences Jacques-Monod \(Roscoff, France\)](#) Environmental stress shapes the evolution of a potyvirus towards a mutualistic relationship with its host. (2019) **González R**, Butković A, Martínez-Latorre J, Melero I, de la Iglesia F, [Elena SF](#). Talk.
- [XXIes Journées Francophones de Virologie \(Lyon, France\)](#) Evolution of virulence of an emerging RNA virus in homogeneous vs heterogeneous plant populations. (2019) **González R**, de la Iglesia F, Butković A, [Elena SF](#). 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) [González R](#), Butković A, Martínez J, Melero I, Elena SF. Poster.
- [International Plant Virus Epidemiology Symposium \(Seoul, South Korea\)](#) Variability in resistance genes conditions the evolution of emerging plant RNA viruses. (2019) [Elena SF](#), Martínez F, Butković A, Carrasco JL, de la Iglesia F, **González R**, Navarro R. Talk.
- [XIII Reunión de Biología Vegetal \(Puerto Varas, Chile\)](#) Host variability in resistance genes conditions the evolution of emerging plant RNA virus. (2018) [Elena SF](#), Martínez F, Butković A, Carrasco JL, de la Iglesia F, **González R**, Navarro R. Talk.
- [24th European Meeting of PhD Students in Evolutionary Biology \(Bubión, España\)](#) Evolution of RNA viruses in hosts with variable susceptibility. (2018) [González R](#), Elena SF. Talk.
- [VI Spanish Worm Meeting \(Valencia, Spain\)](#) Evaluation of *Caenorhabditis elegans* as experimental host for a thrip-transmitted plant RNA virus. (2017) [González R](#), Martorell P, Ramón D, Elena SF, Ambrós S. Talk.
- [Iberian Congress of Entomology \(Lisbon, Portugal\)](#) Variación de las comunidades de insectos en el río Fragoso (Ourense, NO España) en relación con el impacto de las minicentrales: 2001-2015 (2016) [Álvarez-Troncoso R](#), Fernández F, **González R**, Miguez C, Garrido J. Poster.

Courses

2021 **Research Integrity** Epigeum

2021 **YIP PhD course** EMBO

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

2017 **Ethics in research** Polytechnic University of Valencia

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

2017 **Rewriting science: Avoiding mistakes in written and spoken scientific English** Polytechnic University of Valencia

Supervision

Co-supervision of PhD students

2020-ongoing Izan Melero (2020 - current)

Co-supervision of research interns

06-12/2018 Javier Martínez-Latorre

02-04/2019 Izan Melero

05-07/2019 Enric Pérez