

**Rubén GONZÁLEZ**

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**Education**

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- 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**

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- 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**

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- **Session chair** Institut Pasteur *Journées Départementales de Virologie* (2024)
- **Scientific Committee** 2nd PhD Meeting in Plant Science (Online).
- **Journal Reviewer** *Peer Community in Evolutionary Biology*, *Plants*, *Journal of General Virology*, *Microbiome*, *PLoS Pathogens*.
- **Thesis reviewer** Joan Márquez Molins: “Novel insights of viroid biology and host responses to their infection”
- **Organization** IBENS Ecology and Evolution Biology department Seminars (2022/23), Institut Pasteur *Journées Départementales de Virologie* (2024), and Paris Postdoc Seminars (2024 - present).
- **Editorial Board** *npj Viruses*
- **Grant evaluation committee** ANR - AAPG 2024 (panel “CE15 – Immunologie, Infectiologie et Inflammation”), UK Research and Innovation Funding Service (panel OPP490: BBSRC Responsive Mode: 24RM2)

**Funding and awards**

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- 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. **González R†**, Félix M.-A.† (2024) Natural monobacterial environments modulate viral infection in *Caenorhabditis elegans*. PLoS Pathogens. 20, e1011947,
2. **González R†**, Félix M.-A. (2024) *Caenorhabditis elegans* immune responses to intracellular pathogens. Developmental & Comparative Immunology 154, 105148.
3. **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.
4. 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
5. 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
6. 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.
7. 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
8. 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.
9. Butkovic A\*†, **González R\*†** (2022) A brief view on factors that affect plant virus evolution. Frontiers in Virology. 2:994057.
10. 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.
11. **González R†**, Elena SF. (2021) The interplay between the host microbiome and pathogenic viral infections. mBio. 12: e02496-21.
12. **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.
13. 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.
14. **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.
15. 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.

16. **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.
17. 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
18. **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.
19. **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.
20. 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

- Institut Pasteur *Journées Départementales de Virologie (Le Touquet, France)* Bacteriome modulation of viral infections in *Drosophila melanogaster*. (2024) **González R**, Nigg J, Romoli O, Blanc H, Saleh M-C. Talk
- 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, Bélicard 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.
- [10<sup>th</sup> 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.
- [24<sup>th</sup> 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**, [Míguez C](#), [Garrido J](#). Poster.

## Courses

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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

## **Supervision**

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### **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