Giulio Valentino Dalla Riva

Biomathematician; mountain lover, metal head, with a taste for complexity.
I'm fascinated by the interaction between evolution and ecology.
gvd16@uclive.ac.nz

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Education

2013-2015 **PhD, Biomathematics**; University of Canterbury (Christchurch, NZ)
Planned submission: December 2015.
Thesis title: *The Evolving Web of Life: exploring the interplay of ecological and evolutionary processes*
Supervisors: *Mike Steel*, *Daniel B. Stouffer* and *Charles Semple*
Grant: Allan Wilson Centre for Molecular Ecology and Evolution

2010-2012 **Laurea specialistica (MSc.), Mathematics**; Università di Trento (Trento, IT);
Thesis title: *Information Spreading in Complex Networks*; Magna cum Laude

2008-2009 **Erasmus Program, Mathematics**; Université Pierre et Marie Curie (Paris VI, FR)

2004-2009 **Laurea (BSc.), Mathematics**; Università di Trento (Trento, IT)
Grant: INdAM (Italian National Institute for Advanced Mathematics)

Research Interests:

EcoEvo **Food webs**; Food webs assembly and dynamics; their response to anthropic pressure; the role of species interactions in ecosystems and their drivers.

Phylogenetics; Evolutionary models and their possible extension to handle the effects of species interaction: ecology-aware phylogenetics analysis.

Network evolution The origin, evolution and dismantling of ecological networks; the effect of speciation/extinction events on ecosystems.

Networks **Local/Global properties**; The connection between local and global network properties, such as centralities, motifs, dynamical stability.

Maths Phylogenetic Comparative Methods; Dynamical processes on and of Complex Networks; Networks statistical modelling and analysis; Random Matrices.

Skills

Maths and Stats
Modelling and investigation of **random networks** models;
Nonlinear **Dynamical Systems**;
Data Analysis for biology;
Evolutionary **Game Theory**;
Probability; Stochastic **Differential Equations**.

Programming **Julia**, **Python**, **R**: Major research activity, advanced skills.
C, **C++**, **Java**, **Fortran**, **Pascal**: Minor research or study experience, basic skills.
Matlab: Three years as tutor for a course in mathematical modelling.
HTML, **CSS**, **LaTeX**, **markdown**, etc. .

Outreach 5+ years working experience as science communicator, journalist, and event organizer; two years as marketing and project manager.

Languages Italian, native; English, full working proficiency; French, working proficiency.

Teaching Tutor and teaching assistant for the undergraduate courses in *Engineering Mathematics*, *Mathematical Modelling and Computation*, *Regression Modelling* (UC, 3 years). Mentor for first year students (Dept. of Mathematics, UniTrento, 2 years).

Publications

- Published:
  - (2015, accepted) - **gvdr**, Daniel B. Stouffer, *Exploring the evolutionary signature of food webs' backbones using functional traits* - Oikos.
- In Preparation/Submitted:
  - (2015, expected) - **gvdr**, Arne Mooers, Mike Steel, *Assessing network connectivity through random walks* - target journal: Journal of Complex Networks
  - (2015, expected) - **gvdr**, *Evolutionary distinctiviness and network stress centrality* - target journal: Evolution
  - (working) - Alyssa R. Cirtwill, Nick J. Baker, **gvdr**, Josh Thia, Christie Webber, Daniel B. Stouffer, *Phylogenetic conservation of species roles in bipartite ecological networks: the case of mutualistic and antagonistic food webs*

Selected Presentations

- 2015
  - *The (evolving) web of life*
    New Zealand Phylogenomics Meeting (Portobello, NZ).
- 2014
  - *The Web and the Tree*
    Greifswald Phylogenetics Meeting (Greifswald, DE).
  - *Some ideas for including ecology in phylogenetic comparative methods*
    Theoretical Biology group, ETH Zürich (Zürich, CH).
  - *The Web Traits and the Tree*
    Mathematical and Computational Evolutionary Biology (Hameau de l'Etoile, FR).
  - *The Web Traits and the Tree*
    New Zealand Phylogenomics Meeting (Waiheke, NZ).
  - *To Build a Web You Need a Tree, and Vice Versa*
    Primer series, University of Canterbury (Christchurch, NZ).
- 2012
  - *Infograph: toward the modelling of communication dependent ecological networks*
    Intl. Workshop on Network Models in Statistics, Economics and Social Sciences (Trento, IT).

References

Mike Steel (supervisor)
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Director for Biomathematics Research Centre
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Daniel Stouffer (supervisor)
Senior Lecturer, Complex Systems Ecology
Rutherford Discovery Fellow
School of Biological Sciences
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Jason Tylianakis
Professor in Terrestrial ecology
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and
Chair in Ecology and Biodiversity
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(Tylianakis's group meets jointly with Daniel Stouffer's lab group)

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