

Jolanda van Leeuwen, PhD

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EMPLOYMENT & EDUCATION

- 2018-present **Tenure-track Assistant Professor**
University of Lausanne, Switzerland
- 2011-2018 **Postdoctoral fellow & Research associate in Functional Genomics**
University of Toronto, Canada
Advisors: Drs. Charlie Boone & Brenda Andrews
- 2006-2011 **PhD in Molecular Toxicology**
VU University Amsterdam, the Netherlands
Advisor: Dr. Nico Vermeulen
- 2004-2006 **MSc in Chemistry (*cum laude*)**
Leiden University, the Netherlands & Trieste University, Italy
Advisors: Drs. Jan Reedijk & Gianni Sava
- 2001-2004 **BSc in Chemistry (*cum laude*)**
Leiden University, the Netherlands

GRANTS, FELLOWSHIPS & AWARDS

- 2023-2025 Swiss Cancer Research foundation, research grant, CHF 374'860.
- 2023 GenScript, collaborative research agreement, CHF 50'000 (estimation).
- 2022 Fondation pour la lutte contre le cancer, CHF 20'000.
- 2022 Fondation Herbette, University of Lausanne, grant for organization of the CIG symposium, CHF 7'200.
- 2022 Commission Egalité Diversité Intégration, University of Lausanne, grant for organization of the CIG symposium, CHF 3'500.
- 2020 Swiss National Science Foundation, Open Access grant, CHF 4'146.
- 2019-2024 Swiss National Science Foundation, Eccellenza grant, CHF 1'500'000.
- 2013-2016 Canadian Institutes of Health Research, postdoctoral fellowship.
- 2010 Travel award, Organization for the advancement of biochemical research.
- 2009 2nd prize, national PhD student competition, FIGON Dutch Medicine Days.
- 2009 Travel award, Organization for the advancement of biochemical research.
- 2008 Travel award, Royal Dutch Chemistry Society.
- 2005-2006 European Cooperation in Science and Technology, short-term scientific mission grant.

INVITED SEMINARS

- 2023 Donnelly Centre for Cellular and Biomolecular Research, University of Toronto, Toronto, Canada.
- 2023 Centre for Applied Synthetic Biology, Concordia University, Montreal, Canada.
- 2023 Institute for Bioengineering of Catalonia, Barcelona, Spain.
- 2022 Institute of Molecular Biology, Mainz, Germany.
- 2021 Goethe University Frankfurt, Frankfurt, Germany.

- 2020 Center for Genomic Regulation, Barcelona, Spain.
- 2020 Friedrich Miescher Institute for Biomedical Research, Basel, Switzerland.
- 2019 Dementia Research Institute, Cardiff University, Cardiff, UK.
- 2017 Gurdon Institute, University of Cambridge, Cambridge, UK.
- 2017 Institute for Systems Genetics, NYU Langone Medical Center, New York, USA.
- 2016 Institute for Research in Biomedicine, Barcelona, Spain.
- 2016 Wellcome Trust Sanger Institute, Hinxton, UK.
- 2016 Amsterdam Institute for Molecules, Medicines, and Systems, VU University Amsterdam, the Netherlands.

CONFERENCE TALKS

- 2023 Invited talk, *Life Sciences Switzerland (LS2) Systems Biology* symposium, Zäziwil, Switzerland.
- 2023 Invited talk, *European Cancer Dependency Map* workshop, Milan, Italy.
- 2023 Invited talk, *Network Biology* meeting, Cold Spring Harbor, USA.
- 2022 Invited talk (canceled due to COVID-19), *Life Sciences Switzerland (LS2)* conference, Zurich, Switzerland.
- 2021 Invited talk, *CRISPR and beyond - perturbations at scale to understand genomes*, Hinxton, UK.
- 2021 Talk, *Levures, Modèles et Outils*, Strasbourg, France.
- 2021 Talk, *International Congress on Yeasts and International Conference on Yeast Genetics and Molecular Biology*, Vienna, Austria.
- 2021 Invited talk, Workshop “*Mapping the Landscape of Genetic Dependencies in Cancer*”, Frankfurt, Germany.
- 2020 Invited talk (canceled due to COVID-19), Canadian Institute for Advanced Research *Genetic Networks* meeting, Santa Cruz, USA.
- 2020 Invited talk (canceled due to COVID-19), *European Network Biology Conference: From Networks to Modeling*, Hinxton, UK.
- 2019 Talk, *International Conference on Yeast Genetics and Molecular Biology*, Gothenburg, Sweden.
- 2019 Invited talk, *European Society of Human Genetics Conference*, Gothenburg, Sweden.
- 2019 Talk, *Network Biology* meeting, Cold Spring Harbor, USA.
- 2018 Invited talk, iGenolevure meeting “*High-Throughput Technologies Applied to Yeasts*”, Strasbourg, France.
- 2018 Invited talk, *Levures, Modèles et Outils*, Rheinau, Switzerland.
- 2017 Talk, Canadian Institute for Advanced Research *Genetic Networks* meeting, Toronto, Canada.
- 2017 Talk, *Systems Biology: Networks* meeting, Cold Spring Harbor, USA.
- 2016 Talk, *International Conference on Systems Biology*, Barcelona, Spain.
- 2016 Talk, *Yeast Genetics and Molecular Biology Meeting*, Orlando, USA.
- 2016 Talk, *North East Regional Yeast Meeting*, Buffalo, USA.
- 2016 Talk, Breast Cancer Informatics Group *Genetic Networks* meeting, McGill-Bellairs research institute, Barbados.
- 2015 Talk, *OMICs in Biomedical Research* meeting, Split, Croatia.
- 2015 Talk, Canadian Institute for Advanced Research *Genetic Networks* meeting, Toronto, Canada.
- 2014 Talk, *Yeast Genetics and Molecular Biology meeting*, Seattle, USA.

- 2010 Talk, *Yeasterday*, Leuven, Belgium.
 2009 Talk, *FIGON Dutch Medicine Days*, Lunteren, the Netherlands.

ORGANIZATION OF CONFERENCES

- 2024- Co-organizer, *Network Biology* meeting, Cold Spring Harbor, USA.
 2022-present Founder and co-organizer, *Fungi & Friends*, Lausanne, Switzerland.
 2022-present Program committee member, *GSA Yeast Genetics Meeting*, UCLA, USA.
 2022 Program committee member, Systems Track, *European Conference on Computational Biology*, Sitges, Spain.
 2022 Co-organizer, CIG symposium "*Interactions in Biology*", Lausanne, Switzerland.
 2019-2022 Founder and co-organizer, *CRISPR and beyond - perturbations at scale to understand genomes*, Hinxton, UK.
 2013-2016 Co-organizer, Annual postdoc symposium and biweekly seminars, University of Toronto, Canada.

CONFERENCE TALKS BY TRAINEES

- 2023 Linh Ho, *Network Biology* meeting, Cold Spring Harbor, USA.
 2023 Sabine van Schie, *Network Biology* meeting, Cold Spring Harbor, USA.
 2022 Linh Ho, *CRISPR and beyond - perturbations at scale to understand genomes*, Hinxton, UK.
 2022 Betül Ünlü, *Swiss Society for Microbiology Annual Meeting*, EPFL, Switzerland.
 2022 Núria Bosch, *GSA Yeast Genetics Meeting*, UCLA, USA.
 2022 Linh Ho, *Talents de la génétique*, Société Française de Génétique, France.
 2022 Núria Bosch, *Fungi & Friends*, Lausanne, Switzerland.
 2021 Núria Bosch, *International Congress on Yeasts and International Conference on Yeast Genetics and Molecular Biology*, Vienna, Austria.

SUPERVISION OF TRAINEES

Postdocs

- 2021-present Sabine van Schie
 2021-present Núria Bosch
 2019-present Amandine Batté
 2018-present Betül Ünlü

PhD students

- 2022-present Claire Paltenghi
 2021-present Erfan Heidari
 2019-present Uyen Linh Ho

MSc students (1 year, thesis project)

- 2022-2023 Camille Schmidt currently stagiaire with us
 2021-2022 Jade Nicolet currently PhD student with Niko Geldner, UNIL
 2021-2022 Claire Paltenghi currently PhD student with us
 2019-2020 Romane Mizeret (co-advisor) currently PhD student with David Suter, EPFL

MSc students (3 months, “first-step” project)

2022	Loïc Zen-Ruffinen	currently finishing Master’s degree
2021	Karunnya Tharmakulasinkam	currently finishing Master’s degree
2020	Christopher Forbes-Jaeger	currently at military/civilian service
2020	Elise Eray	currently laboratory manager with Aleksandar Antanasijevic, CHUV
2019	Jessica Burnier	currently PhD student with Jan-Willem Veening, UNIL

Other

2023-present	Jana Brenner	research assistant (~4h/week)
2023-present	Camille Schmidt	stagiaire
2022-present	Nadine Eliasson	research assistant (~4h/week)
2022	Claire Paltenghi	stagiaire (6 months)
2021	Eve Mangin	research assistant (~4h/week, 9 months)
2020-2021	Jonas Barraud	technician apprentice (3 months)
2006-2018	Daily supervisor of 10 MSc and 24 BSc students.	

SERVICE ON THESIS COMMITTEES

2023	Member, PhD exam committee, Mireia Seuma Bolognesi lab, Institute for Bioengineering of Catalonia, Spain
2020-present	Member, PhD committee, Anastasiia Semenova Gambetta lab, University of Lausanne, Switzerland
2020	President, PhD exam committee, Júlia Domingo Lehner lab, Center for Genomic Regulation, Spain
2019-present	Member, PhD committee, Alexandra Bendel Diss lab, Friedrich Miescher Institute for Biomedical Research, Switzerland
2019	Member, PhD committee, Terry Mara Martin and Pelet labs, University of Lausanne, Switzerland

TEACHING

2022-present	Tutor and lecturer, <i>Reviews in Quantitative Biology</i> , ~8 hours, course for PhD students, University of Lausanne, Switzerland.
2020-present	Course organizer and lecturer, <i>CRISPR-Cas9 genome editing</i> , 14 hours, course for MSc students, University of Lausanne, Switzerland.
2019-present	Tutor, <i>Write-a-review</i> , ~8 hours, course for MSc students, University of Lausanne, Switzerland.
2019-present	Course organizer and lecturer, <i>Epistasis, Oligogenicity, Pleiotropy and beyond</i> , 6 hours, course for 3rd year BSc students, University of Lausanne, Switzerland.
2007-2011	Teaching assistant, 7 lab courses in life sciences, VU University Amsterdam, the Netherlands.

OTHER ACADEMIC RESPONSIBILITIES (University of Lausanne)

2023-present	Equity, Diversity, and Inclusion committee, Center for Integrative Genomics
2023	Faculty search committee cell biology, Department of Fundamental Microbiology
2022-present	Safety committee, Center for Integrative Genomics
2020-present	Equipment committee, Center for Integrative Genomics

- 2020-present Mentor, PhD student Chiara Auwerx (Reymond lab), Center for Integrative Genomics
- 2020 Faculty search committee microbial biotechnology, Department of Fundamental Microbiology
- 2020 Prix Guenin selection committee, Center for Integrative Genomics
- 2019-present Mentor, PhD student Nina Dukanovic (Franken lab), Center for Integrative Genomics
- 2018 Mentor, PROWD program, advising female postdocs on academic careers

OTHER ACADEMIC RESPONSIBILITIES (External)

- Ad hoc manuscript reviewer for Biological Reviews; Cell Genomics; Cell Systems; Current Genetics; eLIFE; EMBO Journal; G3: Genes, Genomes, Genetics; Genome Biology and Evolution; Genome Research; Journal of Molecular Biology; Nature Biotechnology; Nature Communications; Molecular Systems Biology; mSystems; PLOS Genetics; PNAS; and Review Commons.
- Ad hoc grant reviewer for DevelopMed (Marie Skłodowska-Curie COFUND action, Ireland), the Icelandic Research Fund, the Swiss Cancer Research foundation, and the Swiss National Science Foundation.
- 2022 External expert, Faculty search committee CRISPR technology in human reproduction, Department of Endocrinology, Diabetology and Clinical Nutrition, University of Zurich, Switzerland.

OUTREACH & MEDIA COVERAGE

- 2022 Nature Biotechnology, *Adrestia Therapeutics — Gene networks to the rescue* ([link](#)).
- 2022 RTS (Swiss radio station), CQFD, radio interview on CRISPR technology ([link](#)).
- 2021 Science Daily, *'Rescue mutations' that suppress harmful DNA changes could shed light on genetic disorders* ([link](#)).
- 2021 Biomedical Picture of the Day, *Rescue Me* ([link](#)).
- 2017 University of Toronto, Interview on the academic job search ([link](#)).
- 2017 Outreach video, *Why study interaction networks?* ([link](#)).
- 2016 Quanta magazine, *Why some genetic miscues are helpful* ([link](#)).
- 2016 The Scientist, *Mutation vs. Mutation* ([link](#)).
- 2016 Trouw (Dutch newspaper), *Zoeken naar de rem op het gen dat ons ziek maakt*.
- 2011 NTR Radio 5 (Dutch radio station), *Hoe?Zo!*, radio interview on PhD thesis.
- 2011 RTL news (Dutch news agency), *Proefdieren mogelijk overbodig dankzij gist*.
- 2011 AT5 news (Dutch news agency), *Gist verlost proefdieren van onderzoek*.

PUBLICATIONS

Van Leeuwen lab

28. C Pons, P Aloy, and **J van Leeuwen** (2022) *Co-occurrence of essential gene dispensability and bypass suppressor mutations across species* [bioRxiv](#).
27. B Ünlü, C Pons, UL Ho, P Aloy, and **J van Leeuwen** (2022) *Global analysis of suppressor mutations that rescue human genetic defects* [bioRxiv](#).
26. N Bosch-Guiteras and **J van Leeuwen** (2022) *Exploring conditional gene essentiality through systems genetics approaches in yeast* [Curr Opin Genet Dev](#), 76, 101963.
25. A Pallaseni, EM Peets, J Koepfel, J Weller, T Vanderstichele, UL Ho, L Crepaldi, **J van Leeuwen**, F Allen, and L Parts (2022) *Predicting base editing outcomes using position-specific sequence determinants* [Nucleic Acids Res](#), gkac161.

24. A Batté, SC van der Horst, M Tittel-Elmer, SM Sun, S Sharma, **J van Leeuwen**, A Chabes, and H van Attikum (2022) *Chl1 helicase controls replication fork progression by regulating dNTP pools* Life Sci Alliance, 5, e202101153.
23. L Parts, A Batté, M Lopes, MW Yuen, M Laver, BJ San Luis, JX Yue, C Pons, E Eray, P Aloy, G Liti, and **J van Leeuwen** (2021) *Natural variants suppress mutations in hundreds of essential genes* Mol Syst Biol, 17, e10138.
22. **J van Leeuwen***, C Pons, G Tan, JZ Wang, J Hou, J Weile, M Gebbia, W Liang, E Shuteriqi, Z Li, M Lopes, M Ušaj, A Dos Santos Lopes, N van Lieshout, CL Myers, FP Roth, P Aloy, BJ Andrews*, and C Boone* (2020) *Systematic analysis of bypass suppression of essential genes*, Mol Syst Biol, 16, e9828 (* co-corresponding authors).
21. M Costanzo, E Kuzmin, **J van Leeuwen**, B Mair, J Moffat, C Boone, and BJ Andrews (2019) *Global genetic networks and the genotype to phenotype relationship*. Cell, 177, 85-100.

Postdoctoral research

20. E Kuzmin, B VanderSluis, AN Nguyen Ba, W Wang, EN Koch, M Usaj, A Khmelinskii, M Mattiazzi Usaj, **J van Leeuwen**, O Kraus, A Tresenrider, M Pryszyk, MC Hu, B Varriano, M Costanzo, M Knop, A Moses, CL Myers, BJ Andrews, and C Boone (2020) *Exploring whole-genome duplicate gene retention with complex genetic interaction analysis*. Science, 368, 1446.
19. J Hou, **J van Leeuwen**, BJ Andrews, and C Boone (2018) *Genetic network complexity shapes background-dependent phenotypic expression*. Trends Genet, 34, 578-586.
18. E Kuzmin, B VanderSluis, W Wang, G Tan, R Deshpande, Y Chen, M Usaj, A Balint, M Mattiazzi Usaj, **J van Leeuwen**, EN Koch, C Pons, AJ Dagilis, M Pryszyk, Z Wang, J Hanchard, M Riggi, K Xu, H Heydari, BJ San Luis, E Shuteriqi, H Zhu, N Van Dyk, S Sharifpoor, M Costanzo, R Loewith, A Caudy, D Bolnick, GW Brown, BJ Andrews, C Boone, and CL Myers (2018) *Systematic analysis of complex genetic interactions*. Science, 360, 283.
17. M Shin, **J van Leeuwen**, C Boone, and A Bretscher (2018) *Yeast Aim21/Tda2 both regulates free actin by reducing barbed end assembly and forms a complex with Cap1/Cap2 to balance actin assembly between patches and cables*. Mol Biol Cell, 29, 923-936.
16. **J van Leeuwen**, C Boone, and BJ Andrews (2017) *Mapping a diversity of genetic interactions in yeast*. Curr Opin Syst Biol, 6, 14-21.
15. T Hart, AHY Tong, K Chan, **J van Leeuwen**, A Seetharaman, M Aregger, M Chandrashekar, N Hustedt, S Seth, A Noonan, A Habsid, O Sizova, L Nedyalkova, R Climie, L Tworzanski, K Lawson, MA Sartori, S Alibeh, D Tieu, S Masud, P Mero, A Weiss, KR Brown, M Ušaj, M Billmann, M Rahman, M Costanzo, CL Myers, BJ Andrews, C Boone, D Durocher, and J Moffat (2017) *Evaluation and design of genome-wide CRISPR/Cas9 knockout screens*. G3 (Bethesda), 7, 2719-2727.
14. JS Piotrowski, SC Li, R Deshpande, SW Simpkins, J Nelson, Y Yashiroda, JM Barber, H Safizadeh, E Wilson, H Okada, AA Gebre, K Kubo, NP Torres, MA LeBlanc, K Andrusiak, R Okamoto, M Yoshimura, E DeRango-Adem, **J van Leeuwen**, K Shirahige, A Baryshnikova, GW Brown, H Hirano, M Costanzo, B Andrews, Y Ohya, H Osada, M Yoshida, CL Myers, and C Boone (2017) *Functional annotation of chemical libraries across diverse biological processes*. Nat Chem Biol, 13, 982-993.
13. **J van Leeuwen**, C Pons, C Boone, and BJ Andrews (2017) *Mechanisms of suppression: the wiring of genetic resilience*. BioEssays, 39, 1700042.
12. A Huseinovic, **J van Leeuwen**, T van Welsem, F van Leeuwen, NPE Vermeulen, JM Kooter, and JC Vos (2017) *The effect of acetaminophen on ubiquitin homeostasis in Saccharomyces cerevisiae* PLoS One 12, e017357.
11. **J van Leeuwen**, C Pons, JC Mellor, TN Yamaguchi, H Friesen, J Koschwanez, M Mattiazzi Ušaj, M Pechlaner, M Takar, M Ušaj, B VanderSluis, K Andrusiak, P Bansal, A Baryshnikova, C Boone, J Cao, A Cote, M Gebbia, G Horecka, I Horecka, E Kuzmin, N Legro, W Liang, N van Lieshout, M McNee, BJ San Luis, F Shaeri, E Shuteriqi, S Sun, L Yang, JY Youn, M Yuen, M Costanzo, AC Gingras, P Aloy, C Oostenbrink, A Murray, TR Graham, CL Myers, BJ Andrews,

- FP Roth, and C Boone (2016) *Exploring genetic suppression interactions on a global scale*. Science 354, 599.
10. M Costanzo, B VanderSluis, EN Koch, A Baryshnikova, C Pons, G Tan, W Wang, M Ušaj, J Hanchard, SD Lee, V Pelechano, EB Styles, M Billmann, **J van Leeuwen**, N van Dyk, ZY Lin, E Kuzmin, J Nelson, JS Piotrowski, T Srikumar, S Bahr, Y Chen, R Deshpande, CF Kurat, SC Li, Z Li, M Mattiazzi Ušaj, H Okada, N Pascoe, BJ San Luis, S Sharifpoor, E Shuteriqi, SW Simpkins, J Snider, H Garadi Suresh, Y Tan, H Zhu, N Malod-Dognin, V Janjic, N Przulj, OG Troyanskaya, I Stagljar, T Xia, Y Ohya, AC Gingras, B Raught, M Boutros, LM Steinmetz, CL Moore, AP Rosebrock, AA Caudy, CL Myers, B Andrews, and C Boone (2016) *A global genetic interaction network maps a wiring diagram of cellular function*. Science 353, 1381.
 9. **J van Leeuwen**, BJ Andrews, CM Boone, and G Tan (2015) *Rapid and efficient plasmid construction by homologous recombination in yeast* (protocol). Cold Spring Harb Protoc 9, pdb.prot085100.
 8. **J van Leeuwen**, BJ Andrews, CM Boone, and Guihong Tan (2015) *Construction of multi-fragment plasmids by homologous recombination in yeast* (topic introduction). Cold Spring Harb Protoc 9, pdb.top084111.

PhD research

7. **J van Leeuwen**, NPE Vermeulen and JC Vos (2012) *Yeast as a humanized model organism for biotransformation-related toxicity*. Curr Drug Metab 13, 1464-1475.
6. **J van Leeuwen**, B Ünlü, NPE Vermeulen and JC Vos (2012) *Differential involvement of mitochondrial dysfunction, cytochrome P450 activity and active transport in the toxicity of structurally related NSAIDs*. Toxicol In Vitro 26, 197-205.
5. **J van Leeuwen** (2012) *Yeast as a model eukaryote in drug safety studies: New insights on diclofenac-induced toxicity* (in Dutch). BVLT 39, 225-230.
4. **J van Leeuwen**, NPE Vermeulen and JC Vos (2011) *Involvement of the pleiotropic drug resistance response, protein kinase C signaling, and altered zinc homeostasis in resistance of *Saccharomyces cerevisiae* to diclofenac*. Appl Environ Microbiol 77, 5973-5980.
3. J Reinen, **J van Leeuwen**, Y Li, L Sun, PDJ Grootenhuis, CJ Decker, J Saunders, NPE Vermeulen and JNM Commandeur (2011) *Efficient screening of P450 BM3 mutants for their metabolic activity and diversity towards a wide set of drug-like molecules in chemical space*. Drug Metab Dispos 39, 1568-1576.
2. **J van Leeuwen**, R Orij, M Luttik, GJ Smits, NPE Vermeulen and JC Vos (2011) *Subunits Rip1p and Cox9p of the respiratory chain contribute to diclofenac-induced mitochondrial dysfunction*. Microbiology 157, 685-694.
1. **J van Leeuwen**, G Vredenburg, S Dragovic, TFJ Tjong, JC Vos and NPE Vermeulen (2011) *Metabolism related toxicity of diclofenac in yeast as model system*. Toxicol Lett 200, 162-168.