

Full name Dr. Rike Bahati Stelkens
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Education, Work and Academic Positions

2021 - now Associate Professor, Dept. of Zoology, Stockholm University (SU), Sweden
 Feb 2020 Docent (Habilitation) in Population Genetics, Dept. of Zoology, SU
 2017 - 2021 Assistant Professor, Wallenberg Academy Fellow, Dept. of Zoology, SU
 2014 – 2016 Postdoctoral Fellow, Experimental Evolution Group, Max-Planck Institute for Evolutionary Biology, Plön, Germany: *Genetics of adaptation with gene flow in yeast*
 2012 – 2014 Marie Skłodowska-Curie Fellow, Department of Evolution, Ecology and Behaviour, University of Liverpool, UK: *Hybridization and adaptive evolution in yeast*
 2008 – 2011 Postdoctoral Fellow, Department of Ecology and Evolution, University of Lausanne, Switzerland: *Population and quantitative genetics of salmonids*
 2005 – 2009 PhD in Biology, University of Bern and EAWAG (Swiss Federal Institute of Aquatic Science and Technology), Switzerland, Thesis: *Hybridization in adaptive evolution*
 1998 – 2004 MSc Biology, Christian-Albrechts-University, Kiel, Germany

Parental Leave

05/2011 – 1/2012 Parental leave for first child, born 29 May 2011
 10/2013 – 05/2014 Parental leave for second child, born 30 Oct 2013

Research Interests

I use the power of yeast genetics, experimental evolution and comparative genomics to answer fundamental questions in evolutionary biology. I study the selective and stochastic forces generating and maintaining biodiversity with a special focus on the effects of environmental change and hybridization on adaptation. For this, I use the microbial model system Baker's yeast and its wild relatives to understand the effects of genetic variation, recombination, trait architecture, and structural genetic variation on adaptation dynamics and population fitness in changing environments.

Funding and Grants

I have received fellowships and competitive grants as main applicant (i.e. I conceived and wrote the application) totaling > SEK 22.5M since 2012

2022 Swedish Research Council Project Grant; 3 900 000 SEK
 2022 Royal Physiographic Society of Lund; 64 000 SEK
 2022 Konstnärnsnämnden grant for art-science interface project; 195 000 SEK
 2020 SU Faculty of Science, PhD student funding paired with Mathematics Department
 2018 Wenner Gren Stiftelselese funding to host postdoc; 780 000 SEK
 2017 Wallenberg Academy Fellowship Grant; 10 000 000 SEK
 2017 Swedish Research Council Starting Grant; 4 200 000 SEK
 2017 Carl Tryggers Stiftelselese funding to host postdoc; 552 000 SEK
 2017 Eric Philip Sörensen Stiftelse Project Grant; 240 000 SEK
 2017 Swedish Science for Life Laboratories Project Grant; 272 000 SEK
 2012 Marie Skłodowska-Curie FP7-intra-European fellowship; 2 000 000 SEK

Member of Expert Panels and Editorial Boards

- Member of the Swedish Research Council (VR) NT11 review panel, 2020 – 2021
- Fellow of the Young Academy of Europe (YAE), 2021 - now
- Election Committee member Swedish Microbiological Society 2020 – 2022
- Associate Editor for *Evolution* (2022 – now)
- Associate Editor for *Genome Biology and Evolution* (2022 – now)
- Associate Editor for *Yeast* (Wiley) 2020 - now
- External evaluator of application for Associate Professor position in Evolutionary Genetics, Uppsala University (2021)
- Member of 11 PhD, 5 Licentiate and 7 MSc evaluation committees at Stockholm University, Uppsala University, Lund University, and Gothenburg University (2017-now).
- Reviewer for UK Natural Environment Research Council (NERC), The Netherlands Organisation for Scientific Research (NWO) and >50 manuscripts for peer reviewed journals including *Nature Microbiology*, *Nature Communications*, *PLOS Genetics*, *G3*, *Evolution*, *Molecular Biology and Evolution*, *Molecular Ecology*, *Heredity*, *Biology Letters*, *Philosophical Transactions of the Royal Society*, *Proceedings of the Royal Society B*, *Science Advances*, *American Naturalist*, *Biology Letters*, *The ISME Journal*, *Royal Society Open Access*, *BMC Evolutionary Biology*, *Yeast*

Invited talks (selection)

I have presented my research as invited or selected speaker at over 50 conferences and departmental seminars, including:

- 2022 University of **Konstanz, Germany**, *How do hybrids cope with environmental change?*
 2021 University of **California Berkeley, USA**, *Introgression and speciation mechanisms in yeast*
 2021 **Vetenskapsens hus, Stockholm, Sweden** outreach talk for highschool teachers and students:
Hybrid yeasts teaching us new tricks to adapt to stress
 2020 University of **Edinburgh, Scotland** *Understanding Adaptation using Experimental Evolution*
 2020 University of **Munich, Germany** *Merging and Diverging: Studying Adaptation using Experimental Evolution*
 2018 **Gulbenkian Institute, Lisbon, Portugal** *Hybridization promotes colonization of new environments*
 2018 European Society for Evolutionary Biology conference **Montpellier, France** *Recombining your way out of trouble*

Publication Summary (Google Scholar; 24. November 2022)

- 33 journal articles (including 18 as first author, 10 as senior author)
- Total number of citations (Google Scholar): 3331
- *h*-index: 19 (number of publications with ≥ 19 citations)
- *i*10-index = 23 (number of publications with ≥ 10 citations)
- ORCID iD: 0000-0002-8530-0656

Publications

1. Ament-Velázquez* L, C Gilchrist*, A Rêgo, DP Bendixsen, C Brice, J Grosse-Sommer, N Rafati, R Stelkens. The dynamics of adaptation to stress from standing genetic variation and *de novo* mutations. **Molecular Biology and Evolution**, 2022, <https://doi.org/10.1093/molbev/msac242>, *authors contributed equally
2. Stelkens R, DP Bendixsen: The evolutionary and ecological potential of yeast hybrids. **Current Opinion in Genetics & Development** 2022, 76:101958, doi.org/10.1016/j.gde.2022.101958

3. Tavakolian N, JG Frazão, DP Bendixsen, R Stelkens, CB Li: Shepherd: accurate clustering for correcting DNA barcode errors. **Bioinformatics** 2022, 38:3710-3716, doi.org/10.1093/bioinformatics/btac395
4. Gettle N, B Gallone, K Verstrepen, R Stelkens. 2022. Harnessing the power of technical and natural variation in 116 yeast datasets to benchmark long read assembly pipelines. **bioRxiv**, 2022, doi.org/10.1101/2022.03.17.484703
5. Boynton PJ, KR Patil, I Stefanini, R Stelkens, FA Cubillos, Yeast ecology and communities. **Yeast**, 2022, 39(1-2):3. DOI: 10.1002/yea.3691
6. Bendixsen DP, JG Frazão, R Stelkens, *Saccharomyces* yeast hybrids on the rise, **Yeast**, 2021, doi.org/10.1002/yea.3684
7. Bendixsen DP, D Peris, R Stelkens, Patterns of genomic instability in interspecific yeast hybrids with diverse ancestries, **Frontiers in Fungal Biology**, 2021, doi.org/10.3389/ffunb.2021.742894
8. Brice C, Z Zhang, DP Bendixsen, R Stelkens. 2021. Hybridization outcomes have strong genomic and environmental contingencies. **The American Naturalist**, 2021, doi.org/10.1086/715356
9. Bendixsen DP, N Gettle, C Gilchrist, Z Zhang, R Stelkens, Genomic evidence of an ancient East Asian divergence event in wild *Saccharomyces cerevisiae*, **Genome Biology and Evolution**, 2021, doi.org/10.1093/gbe/evab001
10. Meier, J, R Stelkens, D Joyce, S Mwaiko, N Phiri, U Schliewen, OM Selz, C Katongo, CE Wagner, O Seehausen, The coincidence of ecological opportunity with hybridization explains rapid adaptive radiation in Lake Mweru cichlids, **Nature Communications**, 2019, 10 (5391), doi.org/10.1038/s41467-019-13278-z
11. Gilchrist C, R Stelkens, Aneuploidy in Yeast: Segregation Error or Adaptation Mechanism? **Yeast**, 2019, doi:10.1002/yea.3427
12. Zhang Z, DP Bendixsen, T Janzen, AW Nolte, D Greig, R Stelkens, Recombining your way out of trouble: The genetic architecture of hybrid fitness under environmental stress, **Molecular Biology and Evolution**, 2019, doi:10.1093/molbev/msz211
13. Bernardes J, R Stelkens, D Greig, Heterosis in hybrids within and between yeast species, **Journal of Evolutionary Biology**, 2017, 30 (3): 538–548 doi:10.1111/jeb.13023
14. Stelkens R, D Greig, Fungal evolution: On the origin of yeast species, **Nature Microbiology** 2016, 1 (1): 15017, doi: 10.1038/nmicrobiol2015.17
15. Boynton P, R Stelkens, V Kowallik, D Greig, Measuring microbial fitness in a field reciprocal transplant experiment, **Molecular Ecology Resources**, 2016, doi:10.1111/1755-0998.12562
16. Stelkens R, EL Miller, D Greig, Asynchronous spore germination in isogenic, natural isolates of *Saccharomyces paradoxus*, **FEMS Yeast Research**, 2016, 16 (3), doi: 10.1093/femsyr/fow012
17. Stelkens R, K King, J Webster, D Smith, M Brockhurst, Hybridization in parasites: Consequences for adaptive evolution, pathogenesis, and public health in a changing world, **PLOS Pathogens**, 2015, 11(9): e1005098, doi: 10.1371/journal.ppat.1005098
18. Stelkens R, C. Schmid, O Seehausen, Hybrid breakdown in cichlid fish, **Plos ONE**, 2015, 10(5): e0127207, doi.org/10.1371/journal.pone.0127207
19. Stelkens R, M Brockhurst, G Hurst, E Miller, D Greig, The effect of hybrid transgression on environmental tolerance in experimental yeast crosses. **Journal of Evolutionary Biology**, 2014, 27(11): 2507-2519, doi.org/10.1111/jeb.12494
20. Stelkens R, M Brockhurst, G Hurst, D Greig, Hybridization facilitates evolutionary rescue, **Evolutionary Applications**, 2014, 7(10): 1209-1217, doi: 10.1111/eva.12214
21. Stelkens R, M Pompini, C Wedekind, Testing the effects of genetic crossing distance on embryo survival within a metapopulation of brown trout (*Salmo trutta*). **Conservation Genetics**, 2014, 15: 375-386, doi.org/10.1007/s10592-013-0545-0
22. Stelkens R, ES Clark, C Wedekind, Parental influences on pathogen resistance in brown trout embryos and effects of outcrossing within a river network, **Plos ONE**, 2013, 8: e57832, doi.org/10.1371/journal.pone.0057832

23. Stelkens R, M Pompini, C Wedekind, Testing for local adaptation in brown trout using reciprocal transplants. **BMC Evolutionary Biology**, 2012, 12: 247, doi.org/10.1186/1471-2148-12-247
24. Abbott R al. (incl. R Stelkens), Hybridization and speciation. **Journal of Evolutionary Biology**, 2012, 26: 229-246, doi.org/10.1111/j.1420-9101.2012.02599.x
25. Stelkens R, G Jaffuel, M Escher, C Wedekind, Genetic and phenotypic population divergence on a microgeographic scale in brown trout. **Molecular Ecology**, 2012, 21:2896-2915, doi.org/10.1111/j.1365-294X.2012.05581.x
26. Stelkens R, C Wedekind, Environmental sex reversal, Trojan sex genes, and sex ratio adjustment: conditions and population consequences. **Molecular Ecology**, 2010, 19: 627–646, doi: 10.1111/j.1365-294X.2010.04526.x
27. Wedekind C, R Stelkens, Tackling the diversity of sex determination. **Biology Letters**, 2010, 6: 7-9, doi.org/10.1098/rsbl.2009.0573
28. Stelkens R, KA Young, O Seehausen, The accumulation of reproductive incompatibilities in African cichlid fish. **Evolution**, 2010, 64:617-633, doi: 10.1111/j.1558-5646.2009.00849.x
29. Stelkens R, C Schmid, O Selz, O Seehausen, Phenotypic novelty in experimental hybrids is predicted by the genetic distance between species of cichlid fish. **BMC Evolutionary Biology**, 2009, 9:283, doi: 10.1186/1471-2148-9-283
30. Stelkens R, O Seehausen, Genetic distance between species predicts novel trait expression in their hybrids. **Evolution**, 2009, 63:884-897, doi: 10.1111/j.1558-5646.2008.00599.x
31. Stelkens R, O Seehausen, Phenotypic divergence but not genetic distance predicts assortative mating among species of a new cichlid fish radiation. **Journal of Evolutionary Biology**, 2009, 22:1679-1694, doi: 10.1111/j.1420-9101.2009.01777.x
32. Stelkens R, MER Pierotti, DA Joyce, AM Smith, I van der Sluijs, O Seehausen, Disruptive sexual selection on male nuptial coloration in an experimental hybrid population of cichlid fish. **Philosophical Transactions of the Royal Society B-Biological Sciences**, 2008, 363:2861-2870, doi.org/10.1098/rstb.2008.0049
33. van der Sluijs I, TJM Van Dooren, KD Hofker, JJM van Alphen, R Stelkens, O Seehausen, Female mating preference functions predict sexual selection against hybrids between sibling species of cichlid fish. **Philosophical Transactions of the Royal Society B-Biological Sciences**, 2008, 363:2871-2877, doi: 10.1098/rstb.2008.0045

Teaching

I have delivered **>250 total hours of lecturing and labs** to graduate and undergraduate students at Stockholm University, the UK, and Switzerland, including the University of Hull, Bern, and Lausanne.

Undergraduate Courses, Department of Zoology, Stockholm University (2017 – now)

- *Evolutionary Biology*. Lectures on heritability, the evolution of complex traits, and speciation mechanisms.
- *Analysis and Presentation of Biological Data*. Lectures on scientific writing and communication.
- *Statistics for Biologists*. Lectures and exercises on ANOVA and non-parametric statistics.

Undergraduate Courses, University of Lausanne, CH (2009-2011)

- *Invertebrate and vertebrate morphology*. Lab practicals and dissections.
- *Scientific writing*. Lectures and exercises.
- *Conservation Biology* Lectures and data labs.
- *Tutorial group leader* for undergraduate students.

Undergraduate Courses, University of Bern, CH (2008-2009)

- *The evolution and ecology of biodiversity*. Lectures on genetic variation and genetic constraints.
- Fieldwork, fish sampling, morphological data analysis, and writing (2-week summer course).

Undergraduate Courses, University of Hull, UK (2004)

- Chemistry (lab assistant)

- Population Genetics (lab assistant)

Supervision (since 2017 at Stockholm University)

- 7 postdocs: Javier Pinto, Devin Bendixsen, Noah Gettle, Lorena Ament Velasquez, Dragan Stajic, Zebin Zhang, Claire Brice
- 3 PhD students (main supervisor): Ciaran Gilchrist, Alexandre Rego, Joao Frazao
- 3 MSc students: Sofia de Beir, Julie Grosse-Sommer, Erik Zhivkopljas
- 2 BSc students: Karin Alexandersson, Joakim Kihlberg
- 12 project students, 10 interns, and 4 lab technicians