

Thies Gehrmanⁿ PhD Curriculum Vitæ

(email): thiesgehrmann@gmail.com
(https): thiesgehrmann.github.io
(tel NL): +31 (0)640 175 860

D.O.B. April 8th 1989
Nationality: German

Private address:

Morskade 14
2332 GB Leiden
The Netherlands

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Personal profile

Currently, I am a Postdoc in the department of Molecular Epidemiology at the Leiden University Medical Centre, working on translational research of healthy ageing in familial genetic studies, and longitudinal intervention data.

In this position, I am a bioinformatician, a field which, through the constant evolution of techniques available in biology, must constantly adapt by developing and applying novel methods and methodology. It also requires the practitioner to develop multidisciplinary skills from the statistical, computational and biological domains. I am excited to be part of a field in which my knowledge and competences are constantly challenged, humbled and developed. The distinction between bioinformatician and biologist is deteriorating, and increasingly, it is biological questions that drive me. Beyond the technical aspects, I am interested in the broader social consequences of the methods, technologies and results which we as a scientific community produce. I am looking for a position where challenging problems, involving many different skills and team work, allow me to contribute positively to society, and further develop my skills.

Employment

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| Jan. 2018 - Present | Postdoc at Department of Molecular Epidemiology, Leiden University Medical Centre <i>Bioinformatician on healthy ageing, together with Max Plank Institute of Biological Ageing. Within the ERC funded "Geroprotect" project.</i> |
| Nov. 2016 - 2017 | Postdoc at KNAW/Westerdijk Institute of Fungal Biodiversity <i>Embedded bioinformatician.</i> |
| Nov. 2012 - 2016 | PhD Candidate <i>Conducted research and performed teaching. Within the STW funded "Push the white button" project.</i> |

Education

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| 2012-2018 | Pattern Recognition and Bioinformatics group, TU Delft, The Netherlands <i>PhD in Bioinformatics.</i> <i>Bioinformatic Analysis of Genetic and Transcriptomic Variation in Fungi.</i> |
| 2010-2012 | Leiden University, Leiden, The Netherlands (In cooperation with TU Delft) <i>MSc Computer Science Track Bioinformatics.</i> <i>Thesis on protein function prediction using Conditional Random Fields.</i> |
| 2008-2010 | Heriot Watt University, Edinburgh, Scotland <i>BSc (Ord) Computer Science</i> <i>Graduated with distinction.</i> |
| 2007-2008 | Napier University, Edinburgh, Scotland <i>Certificate of Higher Education</i> <i>Completed year 1 of Computer Studies, then transferred to Heriot Watt University.</i> |

Skills

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| Analytical | Machine learning and statistics; " <i>Data Science</i> ". Analysis of Sanger, NGS and long-read sequencing data (genomic, transcriptomic, epigenomic). Genetic/Genomic analysis (Genome assembly, Linkage analysis, *-WAS & *-QTL, |
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| | Comparative genomics, Phylogenetic analysis, Variant calling) Transcriptomic analysis (Differential expression, Alternative splicing, Variant calling, eQTL analysis, Time-series analysis). Epigenetic analysis (Methylation), and Metabolomic data analysis. |
| Technical | Python, Scala, C/C++, Java, Shell, Matlab, R, waiting for an excuse to learn Julia. SQL, XML (and related technologies), L ^A T _E X. Vector image editing (Inkscape, Affinity Designer). Pipeline development and management (Snakemake, Workflow Description Language, Anaconda, Jupyter Notebook). Experience with schedulers (SLURM, PDB) and version control software, (Git, Gitlab, SVN). Experienced with Unix environments (Linux, MacOS). |
| Languages | Native speaker, English, Norwegian and German. High level Dutch (Have taught courses in dutch). Beginners French. |

Teaching

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| MSc Courses | <i>Frontiers of Science - Short Research Project</i> Teaching assistant. Fall 2019, and 2020 at Leiden University Medical Center. <i>Functional Genomics and Systems Biology</i> Lecturer and teaching assistant. Fall 2014, 2015, and 2016 at TU Delft <i>Computational Molecular Biology</i> Teaching assistant. Spring 2012 at Leiden University |
| BSc Courses | <i>Biomedical Informatics</i> Lecturer. Fall 2019 at Leiden University Medical Center. <i>Clinical Research in Practice</i> Lecturer. Fall 2019, and 2020 at Leiden University Medical Center. <i>Clinical Biotechnology: Bioinformatics</i> Teaching assistant. Fall 2018, 2019 at TU Delft. <i>Molecular Data Science</i> Teaching assistant. Spring 2018 at Leiden University Medical Center <i>Life Science and Technology Bioinformatics</i> Teaching assistant. Spring 2016 at TU Delft. <i>Genome Scale Data Analysis</i> Lecturer and teaching assistant. Fall 2014 at TU Delft |
| External Courses | <i>Quantitative biology summer school</i> Lectured on computational aspects of synteny and alternative splicing in fungi. Summer 2015 at Utrecht University. |

Student Supervision

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| Myrthe de Haan | B.Sc student 2019-2020 <i>Using the drug-protein interactome to predict intervention-mimicing drugs.</i> |
| Jet Beekwilder | B.Sc Student 2017-2018 <i>Comparison of DNA extraction methods from fungi for Nanopore sequencing.</i> |
| André Vollering | M.Sc Student 2014-2015 <i>Heterosis: Finding Associated Genomic Regions. (Under embargo)</i> |
| Valerie Pourquie | B.Sc Student 2015 <i>Conservation of polarization proteins in yeast and fungi.</i> |
| Dimitris Palachanis | M.Sc Student 2013-2014 <i>Using the Multiple Instance Learning framework to address differential regulation.</i> |

Publications

Journal

[Google Scholar profile](#)

- [1] Francine J. Boonekamp, Sofia Dashko, Donna Duiker, Thies Gehrman, Marcel van den Broek, Maxime den Ridder, Martin Pabst, Vincent Robert, Thomas Abeel, Eline D. Postma, Jean-Marc Daran, and Pascale Daran-Lapujade. Design and Experimental Evaluation of a Minimal, Innocuous Watermarking Strategy to Distinguish Near-Identical DNA and RNA Sequences. *ACS Synthetic Biology*, 2020
- [2] Vladimiro Guarnaccia, Thies Gehrman, Geraldo J. Silvia-Junior, Paul H. Fourie, Sajeet Haridas, Duong Vu, Joseph Spatafora, Francis M Martin, Vincent Robert, Igor V. Grigoriev, Johannes Z. Groenewald, and Pedro W. Crous. *Phyllosticta citricarpa* and sister species of global importance to citrus. *Molecular Plant Pathology*, 2019
- [3] D Vu, Marizeth Groenewald, M De Vries, T Gehrman, B Stielow, U Eberhardt, A Al-Hatmi, JZ Groenewald, G Cardinali, J Houbraken, et al. Large-scale generation and analysis of filamentous fungal dna barcodes boosts coverage for kingdom fungi and reveals thresholds for fungal species and higher taxon delimitation. *Studies in mycology*, 92:135–154, 2019
- [4] Eveline T Diepeveen, Thies Gehrman, Valérie Pourquié, Thomas Abeel, and Liedewij Laan. Patterns of conservation and diversification in the fungal polarization network. *Genome biology and evolution*, 10(7):1765–1782, 2018
- [5] Thies Gehrman, Jordi F Pelkmans, Robin A Ohm, Aurin M Vos, Anton SM Sonnenberg, Johan JP Baars, Han AB Wösten, Marcel JT Reinders, and Thomas Abeel. Nucleus-specific expression in the multinuclear mushroom-forming fungus *agaricus bisporus* reveals different nuclear regulatory programs. *Proceedings of the National Academy of Sciences*, 115(17):4429–4434, 2018
- [6] Francine Boonekamp, Sofia Dashko, Marcel Van den Broek, Thies Gehrman, Jean-Marc Daran, and Pascale Daran-Lapujade. The genetic makeup and expression of the glycolytic and fermentative pathways are highly conserved within the *saccharomyces* genus. *Frontiers in genetics*, 9:504, 2018
- [7] Abigail L Manson, Thomas Abeel, James E Galagan, Jagadish Chandrabose Sundaramurthi, Alex Salazar, Thies Gehrman, Siva Kumar Shanmugam, Kannan Palaniyandi, Sujatha Narayanan, Soumya Swaminathan, et al. *Mycobacterium tuberculosis* whole genome sequences from southern india suggest novel resistance mechanisms and the need for region-specific diagnostics. *Clinical Infectious Diseases*, 64(11):1494–1501, 2017
- [8] Jordi F Pelkmans, Mohini B Patil, Thies Gehrman, Marcel JT Reinders, Han AB Wösten, and Luis G Lugones. Transcription factors of *schizophyllum commune* involved in mushroom formation and modulation of vegetative growth. *Scientific reports*, 7(1):310, 2017
- [9] Thies Gehrman, Jordi F Pelkmans, Luis G Lugones, Han AB Wösten, Thomas Abeel, and Marcel JT Reinders. Variants in rna-seq data show a continued mutation rate during strain preservation of *schizophyllum commune*. *BioRxiv*, page 201012, 2017
- [10] Jordi F Pelkmans, Aurin M Vos, Karin Scholtmeijer, Ed Hendrix, Johan JP Baars, Thies Gehrman, Marcel JT Reinders, Luis G Lugones, and Han AB Wösten. The transcriptional regulator *c2h2* accelerates mushroom formation in *agaricus bisporus*. *Applied microbiology and biotechnology*, 100(16):7151–7159,

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| | 2016 |
| Conference publications | [11] Thies Gehrman and Marcel JT Reinders. Proteny: discovering and visualizing statistically significant syntenic clusters at the proteome level. <i>Bioinformatics</i> , 31(21):3437–3444, 2015 |
| Under Review | [12] Thies Gehrman, Marco Loog, Marcel JT Reinders, and Dick de Ridder. Conditional random fields for protein function prediction. In <i>IAPR International Conference on Pattern Recognition in Bioinformatics</i> , pages 184–195. Springer, Berlin, Heidelberg, 2013 |
| In Preparation | [13] Annick Lang, Thies Gehrman, Nils Cronberg. Genetic diversity in bryophyte population with facultative nannandry (<i>Under review in Frontiers in Plant science</i>) |
| | [14] A combined lifestyle intervention induces a sensitization of the blood transcriptomic response to a nutrient challenge (<i>In Preparation</i>) |
| | [15] Multi-tissue Transcriptomic and Metabolomic effects due to a combined lifestyle intervention. (<i>In Preparation</i>) |
| | [16] Metabolic predictions for the health response to a combined lifestyle intervention. (<i>In Preparation</i>) |
| | [17] Characterization of genetic variants in RAS/MEK/ERK Pathway in exceptionally long-lived Dutch families (<i>In Preparation</i>) |
| | [18] Characterization of genetic variants in Linkage regions identified in exceptionally long-lived Dutch families (<i>In Preparation</i>) |

Talks

Conference talks

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| 2019 | DUSRA 2019: Presenter <i>A combined lifestyle intervention induces a sex-specific sensitization of the blood transcriptomic response to a nutrient challenge</i> |
| | LANDac 2019: Panel organizer and presenter <i>Uniting Global and Hyper-Local Data for Land: The use of global and local data for land grabbing risk prediction</i> |
| | European Dialogue on Internet Governance, EuroDIG 2019: Panel organizer and presenter <i>Digital cooperation in action - A collaborative case study: Predicting Land Grabbing</i> |
| | BioSB 2019: Presenter <i>Nutrient challenge exposes transcriptomic shift by lifestyle intervention in healthy participants</i> |
| 2016 | ECCB Student Symposium 2016: Presenter <i>Karyollele specific expression in Agaricus bisporus</i> |
| 2015 | BBC Student Symposium 2015: Presenter <i>Alternative Splicing in mushrooms from RNA-Seq</i> |
| 2013 | Pattern Recognition in Bioinformatics 2013: Presenter <i>Conditional Random Fields for protein function prediction</i> |

Invited talks

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| 2014 | Heriot Watt University, Computer Science Seminar Series <i>Detecting and visualizing statistically significant clusters of conserved genes of diverged genomes.</i> |
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Conference Organization

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| 2019 | LANDac 2019: Panel organizer <i>Uniting Global and Hyper-Local Data for Land</i> European Dialogue on Internet Governance, EuroDIG 2019: Panel organizer <i>Digital cooperation in action - A collaborative case study</i> |
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Other activities/skills/information

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| Awards | Nature Ageing, Rejuvenation and Health Conference 2019, 'Best Poster' award. ECCB 2016 Student Symposium, 'Best Oral Presentation' award. Benelux Bioinformatics Conference 2015 Student Symposium, 'Best Oral presentation'. TU Delft Graduate School, 'Best poster presentation' award 2013. Scott Logic Computer Science Prize 2010. |
| Reviewing | Publons profile Nature Communications (2019) Bioinformatics (2019) Nature Scientific Reports (2019) FEMS Yeast Research (2018) Nucleic Acid Research (2016) |
| Volunteering | International Student Network (Leiden) 2013-2020. Theatre set construction and management. (Performances of summer and winter of 2020 cancelled due to COVID-19). Dutch Red Cross (Den Haag) 2014-2015. First Aid (EHBO) at events and refugee centers. |
| Hackathons | Hackathon for Good 2019, The Hague: Translators Without Borders challenge Hackathon for Good 2018, The Hague: Asser Land-grabbing challenge |
| Hobbies | Thies regularly enjoys Catamaran/Dinghy sailing (Laser, 420, Hobie16), Track & Field (Running & Throwing), Climbing/Bouldering, and Swimming. On holidays he frequently goes skiing and hiking. Theatre production and acting. Arboriculture and arborist climbing techniques. From seed-polyculture vegetable gardening. Sourdough bread baking. Guitar. Reading. |

Referees

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| Erik van den Akker | Assistant Professor at the Leiden Computational Biology Center, Leiden University Medical Center E.B.van_den_Akker@lumc.nl <i>Supervisor, Bioinformatics.</i> |
| Marcel Reinders | Group leader of the Delft Bioinformatics Lab M.J.T.Reinders@tudelft.nl <i>Doctoral promoter and supervisor.</i> |
| Eline P. Slagboom | Group leader of the Molecular Epidemiology group, Leiden University Medical Center M.J.T.Reinders@tudelft.nl <i>Supervisor, Epidemiology.</i> |
| Han Wösten | Professor in Microbiology at Utrecht University H.A.B.Wosten@uu.nl <i>Collaborator, Microbiology.</i> |