

Thies Gehrmanⁿ PhD Curriculum Vitæ

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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 degrading, and increasingly, it is biological questions that drive me. Beyond the technical aspects, I am interested in the broader social consequences of the methods and technologies which we as a scientific community develop and use. 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

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

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

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 SQL, XML (and related technologies), \LaTeX . 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, SVN). Experienced with Unix environments (Linux, MacOS).
Languages	Native speaker, English, Norwegian and German. High level Dutch. Beginners French.

Referees

Upon request	Contact Thies for referee contact details.
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Teaching

MSc Courses	<i>Frontiers of Science - Short Research Project</i> Teaching assistant. Fall 2019 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 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

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, 2016

Conference publications

Under Review

In Progress

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

Talks

Conference talks

2019

DUSRA 2019: Presenter
A combined lifestyle intervention induces a sex-specific sensitization of the blood transcriptomic response to a nutrient challenge

LANDac 2019: Panel organizer and presenter
Uniting Global and Hyper-Local Data for Land: The use of global and local data for land grabbing risk prediction

European Dialogue on Internet Governance, EuroDIG 2019: Panel organizer and presenter
Digital cooperation in action - A collaborative case study: Predicting Land Grabbing

BioSB 2019: Presenter
Nutrient challenge exposes transcriptomic shift by lifestyle intervention in healthy participants

2016

ECCB Student Symposium 2016: Presenter
Karyollele specific expression in Agaricus bisporus

2015

BBC Student Symposium 2015: Presenter
Alternative Splicing in mushrooms from RNA-Seq

2013

Pattern Recognition in Bioinformatics 2013: Presenter
Conditional Random Fields for protein function prediction

Invited talks

2014

Heriot Watt University, Computer Science Seminar Series
Detecting and visualizing statistically significant clusters of conserved genes of diverged genomes.

Conference Organization

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>

Other activities/skills/information

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. Set construction and management. 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 Lang-grabbing challenge