TOMMI MÄKLIN

tommi@maklin.fi
https://maklin.fi

Education

2022 **PhD, computer science**
University of Helsinki,
Helsinki, Finland

2017 **MSc, statistical machine learning**
University of Helsinki,
Helsinki, Finland

2016 **BSc, statistics**
University of Helsinki,
Helsinki, Finland

Skills and strengths

People skills
- Creative problem solving.
- Communication.
- Data presentation
- Project and time management.
- Collaboration as part of a team.

Technical skills
- Probabilistic modelling.
- Bioinformatics.
- C++, shell scripting, R.

Experience

Jan 2023 — ongoing **Postdoctoral researcher**
Department of Mathematics and Statistics, University of Helsinki, Helsinki, Finland
- My postdoctoral research is on investigating the link between colonisation & competition dynamics and epidemiology of opportunistic pathogens from metagenomic sequencing data.

Feb 2023 — July 2023 **Visiting postdoctoral fellow**
EMBL-EBI, Hinxton, Cambridgeshire, UK.
- I visited the Pathogen Informatics and Modelling group led by Dr John Lees through the Theory@EMBL program.

Jan 2018 — Dec 2022 **Doctoral researcher**
Helsinki Institute for Information Technology, University of Helsinki
Helsinki, Finland
- Developed probabilistic models for analysing DNA sequencing data from bacterial pathogens.
- Provided efficient open source implementations of said models and various libraries, and distributed these on GitHub.
- Collaborated with microbiologists in applying the models to answer epidemiological questions.
- Communicated the results by presenting at international conferences and publishing in academic journals.

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June 2018 — Dec 2022	**Founder / part-time entrepreneur** *Heldata Oy* Helsinki, Finland • Planned, organised, and hosted a 250-person Data Science networking and recruiting event in 2019 and 2021. • Ran the day-to-day affairs of the business.
May 2016 — Nov 2018	**Independent consultant** • Consulted businesses and organizations in small matters. • Designed and taught a 3-day statistics crash-course for the Finnish Tax Administration's tax avoidance unit.
May 2016 — Dec 2017	**Research assistant** • Designed and implemented a probabilistic model for identifying bacterial strains from DNA sequencing data.

Academic publications

Peer-reviewed articles

Themisto: a scalable colored k-mer index for sensitive pseudoalignment against hundreds of thousands of bacterial genomes
J. N. Alanko, J. Vuohtoniemi, **T. Mäklin**, Simon J. Puglisi.
Bioinformatics (2023), doi: 10.1093/bioinformatics/btad233.

Strong pathogen competition in neonatal gut colonisation
T. Mäklin, H. A. Thorpe, A. K. Pöntinen, R. A. Gladstone, Y. Shao, M. Pesonen, A. McNally, P. J. Johnsen, Ø. Samuelsen, T. D. Lawley, A. Honkela, and J. Corander.
Nature Communications (2022), doi: 10.1038/s41467-022-35178-5.

Genomic and phenotypic characterization of Clostridium botulinum isolates from an infant botulism case suggests adaptation signatures to the gut
F. P. Douillard, Y. Derman, C. Woudstra, K. Selby, **T. Mäklin**, M. B. Dorner, H. Saxén, B. G. Dorner, H. Korkeala, and M. Lindström.
mBio (2022), doi: 10.1128/mbio.02384-21.

Bacterial genomic epidemiology with mixed samples
T. Mäklin, T. Kallonen, J. Alanko, Ø. Samuelsen, K. Hegstad, V. Mäkinen, J. Corander, E. Heinz, and A. Honkela.
Microbial Genomics (2021), doi: 10.1099/mgen.0.000691.

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High-resolution sweep metagenomics using ultrafast read mapping and inference
T. Mäklin, T. Kallonen, S. David, C. J. Boinett, B. Pascoe, G. Méric, D. M. Aanensen, E. J. Feil, S. Baker, J. Parkhill, S. K. Sheppard, J. Corander, and A. Honkela.
Wellcome Open Research (2021), doi: 10.12688/wellcomeopenres.15639.2.

Closing Clostridium botulinum Group III Genomes Using Long-Read Sequencing
C. Woudstra, **T. Mäklin**, Y. Derman, L. Bano, H. Skarin, C. Mazuet, A. Honkela, and M. Lindström.
Microbiology Resource Announcements (2021), doi: 10.1128/MRA.01364-20.

Book chapters

Identifying bacterial strains from sequencing data
T. Mäklin, J. Corander, and A. Honkela.
Data Mining for Systems Biology (2018), doi: 10.1007/978-1-4939-8561-6_1.

Acquired funding

Feb 2023	Theory@EMBL visitor fellowship	5000 GBP
Feb 2023	EMBL Corporate Partnership Programme fellowship	2000 GBP (ineligible to claim due to receiving the above funding)
Nov 2021	DONASCI thesis finalization grant	6 months salary

Research visits

Feb 2023 — July 2023	John Lees' Pathogen Informatics and Modelling group, EMBL-EBI, Cambridge, UK.

Other research affiliations

Oct 2022 — Dec 2024	External Postdoctoral Fellow (contingent worker), Pathogens and microbes programme, Wellcome Sanger Institute, Hinxton, Cambridgeshire, UK.

Positions of trust

Jan 2023 — ongoing	**Shop steward (2023 - 2024)** Faculty of science, University of Helsinki.
Jan 2023 — ongoing	**Deputy board member (2023)** Finnish union of university researchers and teachers FUURT.

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Jan 2020 — ongoing	**Vice chair (2023), Board member (2022 - 2023), Deputy board member (2020-2021)** Helsinki university researchers and teachers association HUART.
Jan 2020 — Dec 2022	**Secretary (2022), Chair of the board (2020 - 2021)** University of Helsinki PhD Students association HYVÄT.
Feb 2017 — Feb 2022	**Deputy board member (2022), Secretary (2017 - 2022)** Finnish statistical society.
Jan 2015 — Dec 2016	**Chair of the board (2016), Board member (2015)** Statistics students' association Moodi ry.

Service

Boards and committees

Jan 2020 — Dec 2021	**Board member** Doctoral school in natural sciences, University of Helsinki
Jan 2020 — Dec 2021	**Board member** Doctoral programme in computer Science, University of Helsinki
June 2016 — Dec 2016	**Student representative** Temporary board of master's programme in mathematics and statistics, University of Helsinki.
Jan 2015 — Dec 2015	**Student representative** Teaching improvement group, Department of Mathematics and Statistics, University of Helsinki.

Peer review

Genome Biology, 2023

Nature Communications, 2023.

Scientific Reports, 2023.

Microbiome, 2023.

BMC Microbiology, 2022.

International conference on machine learning (ICML), 2021, 2019.

Presentations and talks

Contributed talk, 21 July 2023, *Microbial (Gen)omics meeting*, Wellcome Sanger Institute, Cambridge, UK

Contributed talk, 3 July, 2023, *EBI Research Retreat*, EMBL-EBI, Cambridge, UK

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Invited talk, 19 June 2023, *Lawley group meeting*, Wellcome Sanger Institute, Cambridge, UK

Invited talk, 16 June 2023, *Theory@EMBL Seminar*, EMBL-EBI, Cambridge, UK

Session chair, 6 March 2023, *Probabilistic modelling in microbial ecology workshop*, Kellogg College, University of Oxford, Oxford, UK

Invited talk (remote), 28 February 2023, *Heinz group meeting*, Liverpool School of Tropical Medicine, Liverpool, UK

Invited talk, 17 January 2023, *Lahti group meeting*, University of Turku, Turku, Finland.

Invited talk, 13 June 2022, *AMR-Bridge annual meeting*, Tromsø, Norway.

Invited talk (remote), 25 June 2020, *Thomson group meeting*, Wellcome Sanger Institute, Cambridge, UK.

Invited talk, 29 November 2019, *CompLifeSci 4th Annual Meeting*, Turku, Finland.

Contributed talk, July 2019, *ISMB/ECCB 2019*, Basel, Switzerland.

Contributed talk, 23-24 May 2019, *BREW 2019*, Berlin, Germany.

Flash talk, 25-26 April 2019, *MASAMB 2019*, European Bioinformatics Institute, Cambridge, UK.

Contributed talk, 4-7 November 2018, *PROBGEN 2018*, Cold Spring Harbor, NY, US.

Contributed talk, 29-31 October 2018, *RWEYS*, Paris, France.

Contributed talk, 19-20 March 2018, *MASAMB 2018*, St Andrews, UK.

Media coverage

| 8 February 2023 | Sairaalabakteeri ei tartu terveisiin vastasyntyneisiin, kertoo tutkimus | Helsingin Sanomat, Finland. |