2026-07-29

Personal details

Surname: Karkman
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https://researchportal.helsinki.fi/en/persons/antti-karkman
https://www.microbiology.fi

Degrees

PhD, Microbiology, University of Helsinki, Finland, 2015.
Thesis title: 'Antibiotic resistance in human impacted environments'
Grade: **Pass with distinction**

MSc, Microbiology, University of Helsinki, Finland, 2008.
Major: microbiology, Minors: biochemistry, genetics
Thesis title: 'Tetracycline resistance and bacterial diversity in aquaculture sediments in the Baltic Sea'

Title of Docent. Microbiology. University of Helsinki, Finland. 24.8.2021.

Current employment

8/2023- University of Helsinki, Department of Microbiology, University lecturer
2019- Aluke Oy, co-founder and shareholder

Previous work experience

3/2022–7/2023 University of Helsinki, Department of Microbiology, University researcher
1/2019–3/2022 University of Helsinki, Department of Microbiology, Postdoctoral position
1/2017–1/2019 University of Gothenburg, Department of Infectious Diseases, Postdoctoral position
9/2015–12/2016 University of Helsinki, Department of Biosciences, Metapopulation Research Center, Postdoctoral position
7/2008–9/2015 University of Helsinki, Department of Food and Environmental Sciences, PhD student
9/2007–6/2008 University of Helsinki, Department of Applied Chemistry and Microbiology, Research assistant (part-time)
1/2007–8/2007 University of Helsinki, Department of Applied Chemistry and Microbiology, Research assistant
6/2006–11/2006 Forest Research Institute, Finland, Assistant researcher
2004–2008 Alimetrics Ltd, Finland, part-time research assistant
5/2005–7/2005 University of Helsinki, Institute of Biotechnology, Finland, Research assistant

Career breaks

11/2020–1/2021 & 7/2018–12/2018 Family leave

Research funding and grants

2026-2030 Research Council of Finland, Academy Project, 599 795 €
2026 University of Helsinki, Africa Seed Funding, 3 000 €
2026-2027 HiLIFE Interdisciplinary Initiatives Program (HiINIT) funding 152 161 €
4/2021-12/2021 Faculty of Agriculture and Forestry, Proof-of-concept funding 13 000 €
1/2019–3/2022 Research Council of Finland, Postdoctoral Researcher. 288 637 €
5/2018 The Royal Society of Arts and Sciences in Gothenburg, travel grant. 20 000 SEK
1/2009-12-2012 EnSTe graduate school, 4-year graduate school position

Research exchange

9/2011 (4 weeks) group of Tanel Tenson, Institute of Technology, University of Tarto.
6/2013 (4 weeks) group of Thomas Berendonk, Institute of Hydrobiology, TUD, Dresden

1/2015 (6 weeks) group of Marco Bazzicalupo, Department of Biology, University of Florence.
1/2022 (22 months) visiting researcher. Department of Biology. University of Turku.

Research output

Total number of publications: 44

Most relevant publications

Fondi, M.*, **Karkman, A.***, Tamminen, M., Bosi, E., Virta, M., Fani, R., Alm, E., McInerney, J. 2016. Every gene is everywhere but the environment selects: Global geo-localization of gene sharing in environmental samples through network analysis. Genome Biology and Evolution 8(5).

Karkman, A., Lehtimäki, J., Ruokolainen, L. 2017. The ecology of human microbiota: dynamics and diversity in health and disease. Annals of the New York Academy of Sciences 3/2017.

Karkman, A., Do, T.T., Walsh, F., Virta, M. 2018. Antibiotic resistance genes in waste water. Trends in Microbiology 26(3): 220–228.

Pärnänen K., **Karkman, A.**, Hultman, J., Lyra, C., Bengtsson-Palme, J., Larsson, D.G.J., Rautava, S., Isolauri, E., Salminen, S., Kumar, H., Satokari, R., Virta, M. 2018. Maternal gut and breast milk microbiota affect infant gut antibiotic resistome and mobile genetic elements. Nature Communications 9(1):3891.

Karkman, A., Pärnänen, K., Larsson, D.G.J. 2019. Fecal pollution can explain antibiotic resistance gene abundances in anthropogenically impacted environments. Nature Communications 10(1):80.

Karkman, A., Berglund, F., Flach, CF., Kristiansson, E., Larsson, DGJ. 2020. Predicting clinical resistance prevalence using sewage metagenomic data. Communications Biology 3 (1), 1-10

Eren, A.M., Kiefl, E., Shaiber, A., Veseli, I., Miller, S.E., Schechter, M.S., Fink, I., Pan, J.N., Yousef, M., Fogarty, E.C., Trigodet, F., Watson, A.R., Esen, Ö.C., Moore, R.M., Clayssen, Q., Lee, M.D., Kivenson, V., Graham, E.D., Merrill, B.D., **Karkman, A.**, Blankenberg, D., Eppley, J.M., Sjödin, A., Scott, J.J., Vázquez-Campos, X., McKay, L.J., McDaniel, E.A., Stevens, S.L.R., Anderson, R.E., Fuessel, J., Fernandez-Guerra, A., Maignien, L., Delmont, T.O., Willis, A.D. 2021. Community-led, integrated, reproducible multi-omics with anvi'o. Nature Microbiology, 6 (1), 3-6.

Markkanen, M., Haukka, K. Pärnänen, K,. Tamegnon Dougnon, V., Bonkoungou, I., Garba, Z., Tinto, H., Sarekoski, A., **Karkman, A.**, Kantele, A. Virta, M. 2023. Metagenomic Analysis of the Abundance and Composition of Antibiotic Resistance Genes in Hospital Wastewater in Benin, Burkina Faso, and Finland. mSphere 8(1): e00538-22.

Abramova, A., **Karkman, A**., Bengtsson-Palme, J. 2024. Metagenomic assemblies tend to break around antibiotic resistance genes. BMC Genomics. 25, 1, 959.

Markkanen, M., Pezzutto, D., Virta, M., **Karkman, A.** 2025. Sulfonamide resistance gene *sul4* is hosted by common wastewater sludge bacteria and found in various newly described contexts and hosts including clinically relevant species. Microbiology Spectrum 0:e00857-25.

Research supervision

Master students:

Susanna Pussila, 2014. Co-supervisor.

Katariina Pärnänen, 2015. Co-supervisor.

Denise Pezzutto, 2019. Supervisor.

Anniina Sarekoski, 2020, Co-supervisor.

Matilda Kattilakoski, 2022. Supervisor.

Frillix Brocks, 2025. Supervisor.

PhD students:

Sirja Viitamäki, 2025. Co-supervisor.

Melina Markkanen, 2026, Supervisor

Finlay Sim, started in 2023, Co-supervisor

Maryam Qurashi, started in 2024. Co-supervisor

Teaching merits

Education:

Basic studies in university pedagogics, 25 cr. University of Helsinki, 2023

- University pedagogy 3.2, University of Helsinki, 2022
- University pedagogy 3, University of Helsinki, 2020
- University pedagogy 4, University of Helsinki, 2016
- University pedagogy for doctoral students 2, University of Helsinki, 2013
- University pedagogy for doctoral students 1, University of Helsinki, 2010

Intermediate studies in university pedagogics

- University pedagogics YA1, 5 cr. University of Helsinki, 2024
- University pedagogics YA2, 5cr. University of Helsinki. 2024
- University pedagogics YA3, 5cr. University of Helsinki. 2024

Course materials:

Open access course materials developed for microbial bioinformatic courses can be found from: www.github.com/karkman

Other academic merits

Peer review of funding applications

2026 Vetenskapsrådet, Swiss National Science Foundation
2025 Leverhulme
2024 NIHR Global Health (GH) Program, University of Montpellier: ExposUM Research call, NWO Talent Program
2023 University of Montpellier: ExposUM Research call
2022 The Wellcome Trust DBT India Alliance Fellowship application call on: Early career Fellowship.
2020 NERC-DBT (UK-India) call on: Tackling AMR in the Environment from Antimicrobial Manufacturing Waste.
2021 Austrian Science Fund (FWF) call on: Interregional Project Networks (IPN) of the European Region Tyrol-South Tyrol-Trentino (EGTC).
2019 Biodiversa call on: Effects of biodiversity status and changes on animal, human and plant health.

PhD thesis

2026 PhD opponent, Alix Vincent Thorn, DTU, Denmark
2024 Pre-examinor, Petri Vänni, UO, Finland

Reviewer for scientific publications in journals including: PNAS, Nature Microbiology, ISME Journal, Environmental Science and Technology, Environmental Microbiology, mSystems, FEMS Microbiology Ecology