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Function	Professor	
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Key words	environmental microbiology, antimicrobial resistance, ecotoxicology	
Areas of expertise		
environmental microbiology, antimicrobial resistance, ecotoxicology		
Professional Background		
Education:	MSc 1997 University of Turku, Finland, Biochemistry PhD 2001 University of Turku, Biotechnology	
Main employment:	University of Helsinki, Professor, Aquatic Ecotoxicology University of Helsinki, Professor, Biochemistry and Molecular Biology Academy of Finland, Academy Research Fellow	
Selected recent projects:	<ul style="list-style-type: none"> • Optimizing Bio-based Fertilisers in Agriculture – Knowledgebase for New Policies, H2020 Programme • Occurrence, sources and prevention of antimicrobial resistance in West Africa, AoF, 2018 • Advanced biotechnology for intensive aquaculture wastewater reuse, WaterWorks2015 Call • Stopping Antibiotic Resistance Evolution, 2014, Water Joint Program Initiative (JPI) • Antibiotic resistance genes in aquaculture environment, 2012, AoF-JSPS bilateral grant 	
Selected recent activities:	<ul style="list-style-type: none"> • Co-chair of the Scientific Committee, SETAC Europe 29th Annual Meeting, Helsinki, Finland, 2019 • Keynote speaker in 8th Symposium on Antimicrobial Resistance in Animals and the Environment, 2019 Tours, France • Keynote speaker in Nordic One Health Policy and Strategic group, 23.-24.11.2016, Helsinki 	
Selected publications:	<ul style="list-style-type: none"> • Pärnänen, K., Narciso-da-Rocha, C., Kneis, D., Berendonk, T.U., ..., Virtä, M. *, Manaia, C.M.* (2019) Antibiotic resistance in European wastewater treatment plants mirrors the pattern of clinical antibiotic resistance prevalence. <i>Science Advances</i> 5: eaau9124 • Karkman, A., Thuy Do, T., Walsh F. and Virtä, M. (2018) Antibiotic Resistance Genes in Waste Water. <i>Trends in Microbiology</i> 26: 49-57 	

- Karkman, A., Johnson, T.A., Lyra, C., Stedtfeld, R.D., Tamminen, M., Tiedje, J.M. and Virta, M. (2016) High-throughput quantification of antibiotic resistance genes from an urban wastewater treatment plant. *FEMS Microbial Ecology* 92 (3): fiw014
- Tamminen, M., Karkman, A., Löhmus, A., Muziasari WI, Takasu, H., Wada, S., Suzuki, S., Virta, M. (2011) Tetracycline resistance genes persist at aquaculture farms in absence of selection pressure. *Environmental Science and Technology* 45:386-391