

INGEMAR

VON OSSOWSKI

PhD, Docent



CONTACT | PERSONAL DETAILS

Department of Bioproducts and Biosystems
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Place of Birth: Winnipeg, Manitoba, CANADA

Nationality: Canadian and German dual citizenship

Family Status: Wife (Lotta *née* Söderholm; Finnish citizen), daughter (Sofia), and dogs (Luna and Stina)

Hobbies: Hobby fishing, listening to 70s era music, walking our dogs, and reading biographies and cold war spy novels

EDUCATION | TRAINING

PhD in Microbiology | Oct. 1993

Department of Microbiology, University of Manitoba, Winnipeg, Manitoba, CANADA

Dissertation: Characterization of *katE* and its product, catalase HP11, from *Escherichia coli* by sequence analysis and site-directed mutagenesis (4 peer-reviewed published articles and 2 poster presentation co-authorships). Under the supervision of Prof. Peter C. Loewen (retired).

MSc in Microbiology | Oct. 1986

Department of Microbiology, University of Manitoba, Winnipeg, Manitoba, CANADA

Dissertation: An attempt to isolate and purify development-specific surface proteins from developing cells of *Myxococcus xanthus*. Under the supervision of Prof. Peter Y. Maeba (retired).

BSc First Class Honors in Microbiology | May 1984

Department of Microbiology, University of Manitoba, Winnipeg, Manitoba, CANADA

Other Course Studies

Pedagogy Course 570045: (Sept.-Dec. 2012)

Five-credit course in curriculum design and assessment of learning and teaching offered at the University of Helsinki (Grade: 5/5)

CV SUMMARY

Presently, I am a research project scientist at Aalto University working on a fixed-term contract. I also hold an honorary position as Docent (Adjunct Professor) in Molecular Microbiology from the Faculty of Veterinary Medicine at the University of Helsinki. I had majored in microbiology, earning undergraduate and graduate degrees from the Department of Microbiology at the University of Manitoba in Winnipeg, Canada. My prior research positions were in both academia and industry, and as well internationally for extended periods. My intellectual drive is fueled by a scientific and creative curiosity to study research topics in the areas of molecular microbiology, protein chemistry, and microbial genomics, along with a particular interest to take on protein engineering and structural-related projects. Aside from research, I have also provided *ad hoc* lecturing and training support for course topics in molecular microbiology and biochemistry.

RESEARCH POSITIONS | MOBILITY

Employment History

Sept. 2020 to Present

Research Project Scientist (Department of Bioproducts and Biosystems, School of Chemical Engineering, Aalto University, Espoo, FINLAND)

Details: A three-member consortium project to convert carbon dioxide and hydrogen to formic acid using next-generation formate dehydrogenases, and with an overall aim to discover, produce, and engineer highly acid-tolerant variants. In the biochemistry research group of Prof. Silvan Scheller.

Sept. 2018 to Mar. 2019

Senior University Researcher & University Docent (Adjunct Professor) in Molecular Microbiology (Veterinary Microbiology and Epidemiology, Department of Veterinary Biosciences, Faculty of Veterinary Medicine, University of Helsinki, Helsinki, FINLAND)

Details: A pre-grant study utilizing the reverse vaccinology approach for the *in-silico* identification, design, and characterization of protective vaccine candidates against an emerging animal pathogen. In the research group of Prof. Olli Vapalahti.

Mar. 2007 to Aug. 2018

Senior University Researcher & University Docent (Adjunct Professor) in Molecular Microbiology (Veterinary Microbiology and Epidemiology, Department of Veterinary Biosciences, Faculty of Veterinary Medicine, University of Helsinki, Helsinki, FINLAND)

Details: A long-term study into understanding the molecular phenotypes that underlie the adhesive interactions between gut-adapted lactobacilli and their animal and human hosts, and which was focused on the genomic identification and functional/structural characterization of surface-exposed proteins, such as sortase-dependent pili (33 peer-reviewed and 5 non-peer-reviewed published articles, one patent, 18 poster presentation co-authorships, other research manuscripts pending, and authored the Academy of Finland-funded research grant proposal No. 277362). In the research group of Prof. Airi Palva (retired).

May 2010 to Dec. 2013

Administrative Research Project Coordinator for the Academy of Finland-funded (2008-2013) Center of Excellence in Microbial Food Safety research program (Department of Veterinary Biosciences, Faculty of Veterinary Medicine, University of Helsinki, Helsinki, FINLAND)

Details: Activities included organizing and coordinating guest speaker and troubleshooting seminar programs, journal clubs, and seminar symposia, compiling and writing yearly reports, and establishing internal and scientific

Language Skills

English as a mother tongue

Some basic comprehension of German and Swedish

Completed Finnish for foreigners language training courses (Suomi 1-3) at the University of Helsinki

GENERAL RESEARCH INTERESTS

Protein engineering: enzyme/protein structure-function relationships, variant construction with improved or novel properties, and proteins with industrial and therapeutic applications

Molecular microbiology: recombinant protein expression using various host systems

Protein chemistry: protein crystallization screening and structural studies

Microbial genomics: pan-genomic analysis of bacterial strains, with a focused emphasis on surface-exposed proteins

advisory board meetings. As a main achievement, I also compiled and wrote the report on behalf of the Extended Center of Excellence in Microbiology and Food Safety Research community that was submitted (2011) to the University of Helsinki for evaluation of research and doctoral training during the period of 2005-2010, and where an all-round score of 24/25 was given by an international panel of experts. Reporting to CoE team leaders: Prof. Airi Palva (retired), Prof. Johanna Björkroth, Prof. Hannu Korkeala (retired), Prof. Marja-Liisa Hänninen (retired), and Prof. Willem M. de Vos.

Aug. 2003 to Feb. 2007

Postdoctoral Scientist (Division of Biochemistry and Biotechnology, Department of Biosciences, Faculty of Biological and Environmental Sciences, University of Helsinki, Helsinki, FINLAND)

Details: A structural and mutational study of the AMPA-glutamate receptor (GluR) channel proteins and their associated domain (PDZ) proteins, and the development of a Fab antibody methodology for the isolation of native AMPA-GluRs and associated proteins (2 peer-reviewed published articles). In the research group of Prof. Kari Keinänen.

Jan. 2003 to Feb. 2003

Research Scientist (Carbozyme Oy, Espoo, FINLAND)

Details: A short-term contracted protein-engineering project aimed at improving the existing properties of an industrially utilized enzyme. Supervised by Dr. Fred Fenel.

May 2000 to Dec. 2002

Postdoctoral Scientist (Macromolecular Structures Group, Institute of Biotechnology, University of Helsinki, Helsinki, FINLAND)

Details: A structural investigation of the expansin-like domain of a novel three-domained cellulase produced by the plant pathogen *Clavibacter michiganensis* ssp. *sepedonicus*, a study that involved the engineered cloning, soluble expression, and purification of recombinant protein in amounts suitable for undertaking crystallization screening. In the research groups of Prof. Adrian Goldman and Docent Mary C. Metzler.

Mar. 1998 to Feb. 2000

Postdoctoral Scientist (Enzyme Design Department, Novozymes A/S, Bagsværd, DENMARK)

Details: An industry project involving the construction and screening of cellulase variants (*Humicola insolens* Cel6A, Cel6B, Cel7B, and Cel45) and having a target to adjust and modify their enzymatic capacity as active ingredients in laundry detergent powders (3 peer-reviewed published articles, one patent, and 2 poster presentation co-authorships). Supervised by Dr. Martin Schülein (deceased).

Nov. 1997 to Feb. 1998

Postdoctoral Scientist (Department of Pharmacology and Pharmacotherapy, Faculty of Pharmaceutical Sciences, Royal Danish School of Pharmacy (now called University of Copenhagen), Copenhagen, DENMARK)

Details: The generation and isolation of Fab antibodies with specificity to the AMPA-glutamate receptor (GluR) channel protein using phage-display technology. In the research group of Prof. Jan Engberg (deceased).

Dec. 1996 to Oct. 1997 & May 1995 to Nov. 1996

Postdoctoral Scientist (Department of Cell and Molecular Biology, Uppsala University, Biomedical Center, Uppsala, SWEDEN & VTT Biotechnology, Espoo, FINLAND)

Details: A collaborative investigation into the structure-function relationship of the active site loops for the Cel7A cellobiohydrolase from *Trichoderma reesei* (2 peer-reviewed and one non-peer-reviewed published articles and 2 poster presentation co-authorships). In the research groups of Prof. Tuula T. Teeri (Finland) and Prof. T. Alwyn Jones (Sweden).

KEY WORK COMPETENCIES

- proven research skills and know-how from academia and industry experience (upwards of 30 years)
- published author of several scientific research articles (44 peer reviewed and 6 non-peer reviewed) and co-inventor of two patents
- personal work ethic based on professionalism and diligence
- takes on a reliable, self-motivated, proactive, and organized approach to completing assigned tasks
- supportive and flexible team player with an eye on achieving targeted goals and results
- effective communicator, both verbal and written
- creative/critical thinker with innovative problem-solving skills
- able to take the lead on projects and manage their outcome
- understanding and communicating scientific theory at a senior scholar level
- independent problem-solving experimentation in my field of expertise
- carrying out research tasks independently
- planning, organizing, and publishing scientific research
- collaborating on research projects with other scientific colleagues, both locally and internationally
- scientific writing and editing as an author of published manuscripts on various research topics
- grant writing
- peer-reviewing research manuscripts for publication
- supervising and advising technicians, laboratory assistants, and students (undergraduate and doctoral)
- *ad hoc* lecturing and training support
- giving invited speaking and teaching presentations
- revising and improving the scientific text written by my students and other research colleagues (as my mother tongue is English)

May 1993 to Dec. 1993

Research Scientist (Rh Pharmaceuticals Inc., Biotechnology Division (formerly Cangene Corp., now called Emergent BioSolutions Inc.), Winnipeg, Manitoba, CANADA)

Details: The engineered optimization of expression vectors for the high-level production of recombinant erythropoietin in mammalian cells. Supervised by Dr. Genevieve P. Delcuve.

Nov. 1986 to Aug. 1989

Junior Research Scientist (ABI Biotechnology Inc. (now called Apotex Fermentation Inc.), Winnipeg, Manitoba, CANADA)

Details: An R&D project that sought to achieve the high-level expression, purification, and functional characterization of recombinant yeast-derived human Cu/Zn superoxide dismutase (2 poster presentation co-authorships). Supervised by Dr. John M. Langstaff (retired).

International Mobility

Relocated from Canada to Finland (~24 years in total) and spent working research visits of extended lengths in Sweden (~1 year) and Denmark (~2.5 years).

PROFESSIONAL ACTIVITIES | ACHIEVEMENTS

Peer-review tasks

- Frontiers in Microbiology (2022)
- Infection & Immunity (2017)
- Food & Function (2015)
- BMC Microbiology (2015)
- BMC Microbiology (2014); *on two occasions*
- Journal of Applied Microbiology (2014); *on two occasions*
- Antonie van Leeuwenhoek Journal of Microbiology (2014); *on two occasions*
- BMC Microbiology (2013)
- Applied and Environmental Microbiology (2010); *proxy reviewer*

Editorial roles

- Guest Associate Topic Editor (2022) in Microbial Physiology and Metabolism at Frontiers in Microbiology: Functional Insights into the Probiotic Mechanisms of Surface Protein Action (<https://www.frontiersin.org/research-topics/33465/functional-insights-into-the-probiotic-mechanisms-of-surface-protein-action>)

Student and thesis supervision

- One supervised MSc student (MSc thesis research project work) at the Department of Bioproducts and Biosystems, School of Chemical Engineering, Aalto University (during 2022)
- Two supervised/advised BSc students (BSc thesis; CHEM3048.kand course) at the Department of Bioproducts and Biosystems, School of Chemical Engineering, Aalto University (during 2021 and 2022)
- Two co-supervised doctoral students at the Department of Veterinary Biosciences, University of Helsinki (during 2013-2017 and 2013-2018)
- Two co-supervised MSc students (MSc thesis research project work) at the Department of Veterinary Biosciences, University of Helsinki (during 2008 and 2012)
- Two co-supervised MSc students (Research project course in biochemistry or biotechnology: 529212) at the Division of Biochemistry and Biotechnology, Department of Biosciences, University of Helsinki (during 2003-2006)

EXAMPLES OF ACQUIRED RESEARCH SKILLS

Experimentation in an anaerobic glove box chamber | Microbial genome mining and molecular analysis | Lactococcal cloning and expression of Gram-positive pili | Immunogold-labeling for electron microscopy | Purification of pilus fibers by antibody-affinity chromatography | Production and purification of pilin-specific polyclonal antibodies | Bacterial cloning, expression, and purification of histidine-tagged pilin subunit and other sortase-anchored proteins from *Lactobacillus rhamnosus* GG | Bacterial cloning, expression, and purification of histidine-tagged human-derived domain proteins (PDZs, GluRs, expansin) | Crystallization screening and production of X-ray diffracting protein crystals | Routine use of protein structure viewing programs (PyMol) | Microtiter plate binding assay development (PDZs) | Bacterial expression and purification of GFP-tagged domain proteins (GluRA) | Bacterial cloning, periplasmic expression, and purification of soluble Fab fragments (histidine-tagged) | Intracellular expression of Fab fragments in the Origami *E.coli* strain (histidine-tagged, biotin-tagged) | Use of phage display technology to generate antibody fragments | Cloning and expression in *E. coli*, yeast, *Trichoderma reesei*, *Aspergillus oryzae* (cellulases) | Protein variant construction by rational design or directed evolution | Cellulase variant purification and kinetic analysis | Fungal transformation and cloning techniques (*Trichoderma reesei*, *Aspergillus oryzae*) | Insect cell-baculovirus recombinant protein expression (fungal cellulase) | Mammalian cell culturing and DNA transfection methodologies | Fermenter-scale (20-L) yeast cultivation (recombinant protein expression studies) | Scale-up purification studies (copper chelating chromatography and HPLC) | General biochemical characterization (one- and two-dimensional SDS-PAGE | Immunoblotting, autoradiography, analytical IEF, activity and binding assays, etc.) | Generation of hybridoma monoclonal antibodies | Large-scale purification of polyclonal antibodies | Routine bacterial cloning, DNA sequencing, PCR, *in vitro* mutagenesis | Production and kinetic characterization of amino acid-substituted catalase variants | Use of sequence analysis programs for phylogenetic reconstructions | Purification of native myxococcal membrane proteins | Iodination (¹²⁵I) of membrane proteins | Cultivation of developmentally regulated bacterial cells

Laboratory personnel supervision

- Two laboratory technicians (university & industry)
- Several temporary/summer laboratory assistants (university & industry)

Teaching, coordinating, and organizing assignments

- Instructor/advisor for JOIN-E3000 Life Science Technologies project course (three students) at the Department of Bioproducts and Biosystems, School of Chemical Engineering, Aalto University (during 2022)
- *Ad hoc* lecturing for the second-year veterinary course 90092-Yleinen Bakteriologia (or General Bacteriology/Microbiology) offered during the autumn 2012-2016 sessions by the Department of Veterinary Biosciences (Veterinary Microbiology and Epidemiology), University of Helsinki
- Member of organizing committee for the CoE-MiFoSa Closing Seminar Meeting (Nov. 22/2013), Hotel Arthur, Helsinki
- Co-organizer of the Applied Bioscience (ABS) graduate school lecture course 'Molecular biology of intestinal microbiota and food chain bacteria' (Nov. 26-28/2012), University of Helsinki
- Member of organizing committee for the CoE-MiFoSa Tallinn Seminar Meeting (Dec. 09-10/2010), Tallink City Hotel, Tallinn, ESTONIA
- Coordinator for Veterinary Microbiology and Epidemiology journal club (2008 to 2010), and as well CoE-MiFoSa journal club and troubleshooting seminar series (2010 to 2013) at the Department of Veterinary Biosciences (Veterinary Microbiology and Epidemiology), University of Helsinki
- Coordinator for the CoE-MiFoSa special guest speaker seminar series (2010 to 2013) at the Department of Veterinary Biosciences (Veterinary Microbiology and Epidemiology), University of Helsinki
- Teaching and instruction of the biochemistry laboratory course 51046-Proteiniitutkimuksen Menetelmiä (or Methods in Protein Research) offered in 2004 by the Department of Biosciences (Division of Biochemistry and Biotechnology), University of Helsinki
- Student-teaching assistant (STA) (1982-1983, 1984-1986, and 1989-1991) of laboratory courses (Ecological Microbiology A & B, Environmental Microbiology, Membrane and Cellular Biochemistry, Microbial Physiology, and General Microbiology) offered within the undergraduate program at the Department of Microbiology, University of Manitoba (Winnipeg, CANADA)

Invited speaking and teaching presentations

- Team A (Intestinal Microbiota and Host-Microbe Interaction): An Overview. CoE-MiFoSa Closing Seminar Meeting. (Nov. 22/2013) Hotel Arthur, Helsinki, FINLAND
- MolMecGG research project summary (From secretome to interactome: molecular analysis of probiotic mechanisms of *Lactobacillus rhamnosus* GG). Annual Seminar of ELVIRA (Research Program on Nutrition, Food, and Health). (Mar. 07/2011) Hotelli Crowne Plaza, Helsinki, FINLAND; *proxy speaker*
- Functional characterization of *Lactobacillus rhamnosus* GG mucus-binding proteins. 4th Finnish Gut Day. (Nov. 12/2010) Biomedicum, Helsinki, FINLAND
- Comparative genomics brings to light a pilated probiotic *Lactobacillus* strain. Advanced PhD-training Course: Next Generation Genomics. (Jan. 14-15/2010) University of Helsinki, Helsinki, FINLAND
- Characterization of *Lactobacillus rhamnosus* GG as a pilated probiotic isolate. The University of Helsinki Center of Excellence in Microbial Food Safety Research (MiFoSa) Seminar and Retreat. (Aug. 25-26/2009) Lammi Biological Station, Lammi, FINLAND

NUMBER OF RESEARCH PUBLICATIONS*

- Peer reviewed: **44**
- Non-peer reviewed: **6**
- Patents: **2**

CITATION STATISTICS (calculated according to Google Scholar on Dec 08/2022)

- Number of citations: **3809**
- h-index: **27**
- i10-index: **37**

* publication details: see Google Scholar link (<https://scholar.google.com/citations?user=f4ORctYAAAAJ&hl=en&oi=sra>) or attached Appendix I

- From sctome to interactome: molecular analysis of probiotic mechanisms of *Lactobacillus rhamnosus* GG (LGG). The ELVIRA (Nutrition, Food, and Health Research Program) Annual Seminar on Nutrigenomics and Utilizing Postgenomic and Related Technologies in Nutrition and Food Studies. (Mar. 19/2009) Sokos Hotel Vantaa, Vantaa, FINLAND

Conference/symposium participation (with presented poster or as public seminar speaker)

- **2011:** Annual Seminar of ELVIRA (Research Program on Nutrition, Food, and Health), Hotelli Crowne Plaza, Helsinki, FINLAND (*poster and speaker*)
- **2010:** 4th Finnish Gut Day, Biomedicum, Helsinki, FINLAND (*poster and speaker*)
- **2009:** The ELVIRA (Nutrition, Food, and Health Research Program) Annual Seminar on Nutrigenomics and Utilizing Postgenomic and Related Technologies in Nutrition and Food Studies, Sokos Hotel Vantaa, Vantaa, FINLAND (*poster and speaker*)
- **2008:** 9th Symposium on Lactic Acid Bacteria, Hotel Zuiderduin, Egmond aan Zee, NETHERLANDS (*poster*)
- **2008:** The ELVIRA (Nutrition, Food, and Health Research Program) Annual Seminar, Hotel Presidentti Auditorium, Helsinki, FINLAND (*poster*)
- **1999:** 3rd Carbohydrate Bioengineering Meeting, University of Newcastle Upon Tyne, Newcastle, UNITED KINGDOM (*poster*)
- **1997:** 1st Annual Conference of the Swedish Structural Biology Network (SBNNet), Tällberg, SWEDEN (*poster*)
- **1990:** 40th Annual Canadian Society of Microbiology Meeting, University of Calgary, Calgary, Alberta, CANADA (*poster*)
- **1988:** 31st Annual Meeting for the Canadian Federation of Biological Societies, University of Laval, Quebec City, Quebec, CANADA (*poster*)
- **1987:** International Symposium on Free Radicals in Health and Disease, St. Boniface General Hospital Research Center, Winnipeg, Manitoba, CANADA (*poster*)

Professional memberships

- LOIMU (The Union of Professionals in Natural, Environmental and Forestry Sciences)
- American Society for Microbiology
- The Docents' Association of the University of Helsinki

Appointments

- Title of Docent (Adjunct Professor) in Molecular Microbiology at the Faculty of Veterinary Medicine (University of Helsinki)

Awards and funding

- Dean of Science Honor List (1982, 1983, and 1984)
- Natural Sciences and Engineering Research Council of Canada (NSERC) Postgraduate Scholarship (1990)
- University of Manitoba Graduate Fellowship (1991)
- NSERC Industrial Postdoctoral Fellowship (1993); *declined*
- Author of the Academy of Finland-funded research grant proposal No. 277362 entitled 'Understanding the molecular mechanisms of gut commensal colonization, pathogen exclusion, and host-microbe interplay' (Sept. 01/2014 to Aug. 31/2018)

APPENDIX I

^a Corresponding author; ^b Shared first authorship

PEER-REVIEWED PUBLICATIONS (44)

- Sharma V, **von Ossowski I**, Krishnan V (2021) Exploiting pilus-mediated bacteria-host interactions for health benefits. *Mol Aspects Med* 81:100998
- Prajapati A, Palva A, **von Ossowski I**, Krishnan V (2021) LrpCBA pilus proteins of gut dwelling *Ligilactobacillus ruminis*: crystallization and X-ray diffraction analysis. *Acta Crystallogr F* 77:238-245
- Megta AK, Pratap S, Kant A, Palva A, **von Ossowski I**, Krishnan V (2020) Crystal structure of the atypically adhesive SpaB basal pilus subunit: Mechanistic insights about its incorporation in lactobacillar SpaCBA pili. *Curr Res Struct Biol* 2:229-238
- Kant A, Palva A, **von Ossowski I**, Krishnan V (2020) Crystal structure of lactobacillar SpaC reveals an atypical five-domain pilus tip adhesin: Exposing its substrate-binding and assembly in SpaCBA pili. *J Struct Biol* 211(3):107571
- Kumar Megta A, Palva A, **von Ossowski I**, Krishnan V (2019) SpaB, an atypically adhesive basal pilin from the lactobacillar SpaCBA pilus: crystallization and X-ray diffraction analysis. *Acta Crystallogr F* 75:731-737
- Megta AK, Mishra AK, Palva A, **von Ossowski I**, Krishnan V (2019) Crystal structure of basal pilin SpaE reveals the molecular basis of its incorporation in the lactobacillar SpaFED pilus. *J Struct Biol* 207:74-84
- Chaurasia P, Pratap S, Palva A, **von Ossowski I**, Krishnan V (2018) Bent conformation of a backbone pilin N-terminal domain supports a three-stage pilus assembly mechanism. *Commun Biol* 1(1):94 (**Journal editors' pick of their favorite papers from the first year of publishing**)
- von Ossowski I** (2017) Novel molecular insights about lactobacillar sortase-dependent piliation. *Int J Mol Sci* 18(7):1551
- Mishra AK, Megta AK, Palva A, **von Ossowski I**, Krishnan V (2017) Crystallization and X-ray diffraction analysis of SpaE, a basal pilus protein from gut-adapted *Lactobacillus rhamnosus* GG. *Acta Crystallogr F* 73:321-327
- Kant R, Palva A, **von Ossowski I**^a (2017) An *in silico* pan-genomic probe for the molecular traits behind *Lactobacillus ruminis* gut autochthony. *PLoS ONE* 12(4):e0175541
- Yu X, Åvall-Jääskeläinen S, Koort J, Lindholm A, Rintahaka J, **von Ossowski I**, Palva A, Hynönen U (2017) A comparative characterization of different host-sourced *Lactobacillus ruminis* strains and their adhesive, inhibitory, and immunomodulating functions. *Front Microbiol* 8:657
- Chaurasia P, Pratap S, **von Ossowski I**, Palva A, Krishnan V (2016) New insights about pilus formation in gut-adapted *Lactobacillus rhamnosus* GG from the crystal structure of the SpaA backbone-pilin subunit. *Sci Rep* 6:28664
- Kant A, **von Ossowski I**, Palva A, Krishnan V (2016) Crystallization and X-ray crystallographic analysis of the adhesive SpaC pilin subunit in the SpaCBA pilus of gut-adapted *Lactobacillus rhamnosus* GG. *Protein Pept Lett* 23:365-371
- Yu X, Jaatinen A, Rintahaka J, Hynönen U, Lyytinen O, Kant R, Åvall-Jääskeläinen S, **von Ossowski I**^a, Palva A^a (2015) Human gut-commensalic *Lactobacillus ruminis* ATCC 25644 displays sortase-assembled surface piliation: Phenotypic characterization of its fimbrial operon through *in silico* predictive analysis and recombinant expression in *Lactococcus lactis*. *PLoS ONE* 10(12):e0145718

- Chaurasia P, **von Ossowski I**, Palva A, Krishnan V (2015) Purification, crystallization, and preliminary X-ray diffraction analysis of SpaD, a backbone-pilin subunit encoded by the fimbrial *spaFED* operon in *Lactobacillus rhamnosus* GG. *Acta Crystallogr F71*:103-106
- Vargas García CE, Petrova M, Claes IJJ, De Boeck I, Verhoeven TLA, Dilissen E, **von Ossowski I**, Palva A, Bullens DM, Vanderleyden J, Lebeer S (2015) Piliation of *Lactobacillus rhamnosus* GG promotes adhesion, phagocytosis, and cytokine modulation in macrophages. *Appl Environ Microbiol* 81:2050-2062
- Ganguli K, Collado MC, Rautava J, Lu L, Satokari R, **von Ossowski I**, Reunanen J, de Vos WM, Palva A, Isolauri E, Salminen S, Walker WA, Rautava S (2015) *Lactobacillus rhamnosus* GG and its SpaC pilus adhesin modulate inflammatory responsiveness and TLR-related gene expression in the fetal human gut. *Pediatr Res* 77:528-535
- Rintahaka J, Yu X, Kant R, Palva A^a, **von Ossowski I**^a (2014) Phenotypical analysis of the *Lactobacillus rhamnosus* GG fimbrial *spaFED* operon: Surface expression and functional characterization of recombinant SpaFED pili in *Lactococcus lactis*. *PLoS ONE* 9(11):e113922
- Kant R, Rintahaka J, Yu X, Sigvart-Mattila P, Paulin L, Mecklin J-P, Saarela M, Palva A^a, **von Ossowski I**^a (2014) A comparative pan-genome perspective of niche-adaptable cell-surface protein phenotypes in *Lactobacillus rhamnosus*. *PLoS ONE* 9(7):e102762
- Lähteinen T, Lindholm A, Rinttilä T, Junnikkala S, Kant R, Pietilä TE, Levonen K, **von Ossowski I**, Solano-Aguilar G, Jakava-Viljanen M, Palva A (2014) Effect of *Lactobacillus brevis* ATCC 8287 as a feeding supplement on the performance and immune function of piglets. *Vet Immunol Immunopathol* 158:14-25
- Douillard FP, Rasinkangas P, **von Ossowski I**, Reunanen J, Palva A, de Vos WM (2014) Functional identification of conserved residues involved in *Lactobacillus rhamnosus* GG sortase specificity and pilus biogenesis. *J Biol Chem* 289:15764-15775
- Singh D, **von Ossowski I**, Palva A, Krishnan V (2013) Purification, crystallization and preliminary crystallographic analysis of the SpaA backbone-pilin subunit from probiotic *Lactobacillus rhamnosus* GG. *Acta Crystallogr F69*:1182-1185
- von Ossowski I**^{a,b}, Pietilä TE^b, Rintahaka J^b, Nummenmaa E, Mäkinen V-M, Reunanen J, Satokari R, de Vos WM, Palva I, Palva A^a (2013) Using recombinant lactococci as an approach to dissect the immunomodulating capacity of surface piliation in probiotic *Lactobacillus rhamnosus* GG. *PLoS ONE* 8(5):e64416
- Tripathi P, Beaussart A, Alsteens D, Dupres V, Claes I, **von Ossowski I**, de Vos W, Palva A, Lebeer S, Vanderleyden J, Dufrêne YF (2013) Adhesion and nanomechanics of pili from the probiotic *Lactobacillus rhamnosus* GG. *ACS Nano* 7:3685-3697
- Douillard FP, Ribbera A, Kant R, Pietilä TE, Järvinen HM, Messing M, Randazzo CL, Paulin L, Laine P, Ritari J, Caggia C, Lähteinen T, Brouns SJJ, Satokari R, **von Ossowski I**, Reunanen J, Palva A, de Vos WM (2013) Comparative genomic and functional analysis of 100 *Lactobacillus rhamnosus* strains and their comparison with strain GG. *PLoS Genet* 9(8):e1003683
- Douillard FP, Ribbera A, Järvinen HM, Kant R, Pietilä TE, Randazzo C, Paulin L, Laine PK, Caggia C, **von Ossowski I**, Reunanen J, Satokari R, Salminen S, Palva A, de Vos WM (2013) Comparative genomic and functional analysis of *Lactobacillus casei* and *Lactobacillus rhamnosus* strains marketed as probiotics. *Appl Environ Microbiol* 79:1923-1933
- Claes IJJ, Schoofs G, Regulski K, Courtin P, Chapot-Chartier M-P, Rolain T, Hols P, **von Ossowski I**, Reunanen J, de Vos WM, Palva A, Vanderleyden J, De Keersmaecker SCJ, Lebeer S (2012) Genetic and biochemical characterization of the cell wall hydrolase activity of the major secreted protein of *Lactobacillus rhamnosus* GG. *PLoS ONE* 7(2):e31588

- Lebeer S, Claes IJJ, Balog CIA, Schoofs G, Verhoeven TLA, Nys K, **von Ossowski I**, de Vos WM, Tytgat HLP, Agostinis P, Palva A, Van Damme, EJM, De Keersmaecker SCJ, Wuhrer M, Vanderleyden J (2012) The major secreted protein Msp1/p75 is O-glycosylated in *Lactobacillus rhamnosus* GG. *Microb Cell Fact* 11:15
- Reunanen J, **von Ossowski I**, Hendrickx APA, Palva A, de Vos WM (2012) Characterization of the SpaCBA pilus fibers in the probiotic *Lactobacillus rhamnosus* GG. *Appl Environ Microbiol* 78:2337-2344
- Lebeer S, Claes I, Tytgat HLP, Verhoeven TLA, Marien E, **von Ossowski I**, Reunanen J, Palva A, de Vos WM, De Keersmaecker SCJ, Vanderleyden J (2012) Functional analysis of *Lactobacillus rhamnosus* GG pili in relation to adhesion and immunomodulatory interactions with intestinal epithelial cells. *Appl Environ Microbiol* 78:185-193
- von Ossowski I^a**, Satokari R, Reunanen J, Lebeer S, De Keersmaecker SCJ, Vanderleyden J, de Vos WM, Palva A^a (2011) Functional characterization of a mucus-specific LPXTG surface adhesin from probiotic *Lactobacillus rhamnosus* GG. *Appl Environ Microbiol* 77:4465-4472
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