PALNI KUNDRA

Biotechnology, Microbiome, Food Science, Nutrition



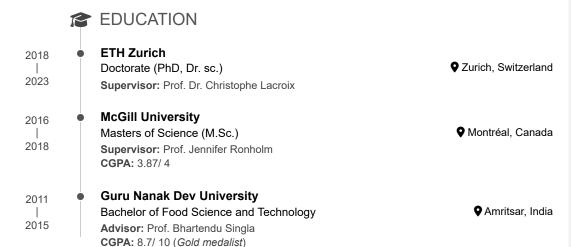
PERSONAL STATEMENT

Driven by scientific curiosity, I leverage my multidisciplinary background in biotechnology, microbiology, and food science to excel in nutritional supplements and food technology. My Ph.D. expertise in gut microbial biotechnology, focusing on dietary supplements like vitamins B9 and B12, provides deep insight into nutrition-gut health relationships. I excel in translating complex scientific concepts, designing research projects, and managing product knowledge. With a track record of peer-reviewed publications and experience mentoring junior scientists, I bring strong communication and leadership skills. My proficiency in collaborating with multidisciplinary teams and managing projects positions me to drive innovation in the nutritional supplements industry.



KEY COMPETENCIES

- Possess in-depth knowledge across various scientific disciplines, including food science, microbiology, nutrition, gastroenterology, probiotics, biotechnology and biology.
- Proficient in translating complex scientific concepts into clear, engaging content, as well as translating scientific findings into actionable next steps.
- Proficient in designing, implementing, and executing research projects, encompassing laboratory techniques, statistics and bioinformatics.
- Proven ability to collaborate effectively with internal and external teams.





WORK AND RESEARCH EXPERIENCE

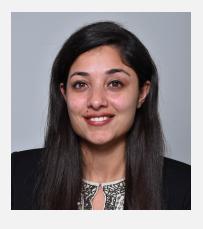
Sep 2018 | Jun 2023

Scientific Assistant

ETH Zurich

Zurich, Switzerland

- Supervisor: Prof. Dr. Christophe Lacroix
- Completed a multi-year research project investigating the modulatory potential of dietary and gut-microbially produced vitamin B9 and B12 on the complex gut microbiota, as well as on single next generation probiotic gut microbes.
- Led the planning and execution of laboratory experiments, developed experimental and analytical methods (UHPLC-UV/MS), and analyzed metagenomic and other data types.
- Completed project deliverables by preparing research findings for publication in scientific journals.
- Presented research findings at scientific conferences, effectively communicating complex scientific concepts to diverse audiences.
- Mentored Bachelor's and Master's students throughout their thesis projects, and facilitated a semester laboratory course, enhancing hands-on learning experiences.



AWARDS AND MEDALS

Gold medal (Bachelor Studies) University topper 2015

Poster presentation award
Second prize, Green tea ice cream
Presented at science exhibition
2015

COMPUTATIONAL SKILLS

Bioinformatics skills: metagenomic data analysis Programming: R, Bash Version control: git Project management: GitHub

LANGUAGES

English (Native, C1)
German (Written A2, spoken B1)
Hindi (Native)
Punjabi (Native)

CONTACT INFO

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MORE INFO

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R⁶ Palni_Kundra

pkundra

May-Sep 2017

Graduate research project

McGill University

Montréal, Canada

- Supervisor: Prof. Jennifer Ronholm
- Conducted whole-genome SNP-based analysis to identify changes under laboratory conditions in major foodborne pathogens responsible for global outbreaks.
- Provided support for preparing the manuscript for publication.

Jan-Feb 2015

Student research assistant

Guru Nanak Dev University

Amritsar, India

- · Supervisor: Prof. Pankaj Gupta
- Developed an innovative food product Green tea ice cream.
- · Performed sensory and organoleptic evaluation.
- · Presented the product at scientific conference.

Jul 2014

Student research assistant

Guru Nanak Dev University

Amritsar, India

Mar 2015

· Supervisor: Prof. Bhartendu Singla

• Developed various innovative soy-based food products to enhance gluten-free product.

May-Jun 2013

Research internship

Indian Council of Agricultural Research

Q Ludhiana, India

- · Supervisor: Dr. Pranita Jaiswal
- Applied a non-destructive quality control approach to a develop spectrophotometeric method for the detection of Soy-milk adulteration in cow milk.
- · Performed spectrophotometer analysis.

Jun 2013 & Jul 2014

Industrial internship

Markfed Canneries

Jalandhar, India

• Performed microbiological testing and applied quality control assurance techniques.

Jun-Jul 2013

Industrial internship

Verka Milk plant

Jalandhar, India

• Performed microbiological testing and applied quality control assurance techniques.



SCIENTIFIC PUBLICATIONS

Peer-reviewed Publications

Palni Kundra, Anna Greppi, Monica Duppenthaler, Serafina Plüss, Benoit Pugin, Christophe Lacroix, Annelies Geirnaert. Vitamin B12 analogues from gut microbes and diet differentially impact commensal propionate producers of the human gut. **2024**. *Frontiers in Nutrition*. **3**: 10.3389/fnut.2024.1360199

Palni Kundra, Annelies Geirnaert, Benoit Pugin, Paola Morales Martinez, Christophe Lacroix, Anna Greppi. Healthy adult gut microbiota sustains its own vitamin B12 requirement in an in vitro batch fermentation model. 2022. Frontiers in Nutrition. 2: 10.3389/fnut.2022.1070155

Palni Kundra, Carole Rachmühl, Christophe Lacroix, Annelies Geirnaert. Role of dietary micronutrients on gut microbial dysbiosis and modulation in inflammatory bowel disease. 2021. *Molecular Nutrition & Food Research.* ©: 10.1002/mnfr.201901271

Nicholas Petronella, **Palni Kundra**, Olivia Auclair, Karine Hébert, Mary Rao, Kyle Kingsley, Katrien De Bruyne, Swapan Banerjee, Alexander Gill, Franco Pagotto, Sandeep Tamber, Jennifer Ronholm. Changes detected in the genome sequences of Escherichia coli, Listeria monocytogenes, Vibrio parahaemolyticus, and Salmonella enterica after serial subculturing. **2019**. *Canadian Journal of Microbiology*. **3**: 10.1139/cjm-2019-0235

Palni Kundra, Annelies Geirnaert, Benoit Pugin, Serafina Plüss, Susanna Kariluoto, Christophe Lacroix, Anna Greppi. Effect of microbially-produced vitamin B9 on the growth and metabolism of human gut microbes. **2024**. submitted to *BMC microbiology*.



Jun 2023

Doctor of Sciences

Palni Kundra, 2023. Dr. sc. Thesis. The effect of exogenous and endogenous vitamin B9 and B12 on microbial growth and metabolism in the human gut. @: 10.3929/ethz-b-000641198

Jan 2018

Master of Science

Palni Kundra, 2018. M.Sc. Research project. Single Nucleotide Polymorphisms in major food-borne pathogens.



RENTORING ...

Master projects at ETH Zurich

Monica Duppenthaler Vitamin B9 and B12 driven trophic interactions in the human gut. Master in Food Science. Jul 2021 - Jan 2022 (Thesis)

Janik Mutter Vitamin B9 production and cross feeding among human gut microbial strains. Master in Biology. Mar 2021 - Jul 2021 (Research project)

Bachelor thesis projects at ETH Zurich

Sabina Galli B-vitamin bio-factory in the gut: In-vitro vitamin B9 production and utilization by human gut microbes. Bachelor in Food Science. Jul 2022 - Oct 2022

Sara De Crescenzo In-vitro Vitamin B12 Production by Human Gut Bacteria. Bachelor in Food Science. Jul 2021 - Oct 2021

Giuliano Menegon B-vitamin sharing: In-silico and in-vitro study to determine B9 and B12 cross-feeding between human gut microbial strains. Bachelor in Food Science. Jun 2020 - Nov 2020

Lucie Kuhn Give them vitamins: Impact of B9 and B12 on the acetate and butyrate production on human gut microbes. Bachelor in Food Science. Nov 2019 - Feb 2020

Blandine Genet Give them vitamins: Impact of B9 and B12 on the butyrate and propionate production on human gut microbes. Bachelor in Food Science. Jun 2019 - Sep 2019

♣ TEACHING

2019 2022 752-5004-00L: Food Biotechnology Laboratory Course

♥ Zurich, Switzerland

Main responsible for cheese practical (2019 & 2020) and sour dough bread practical (2021 & 2022).



ORAL AND POSTER PRESENTATIONS

Human Gut Microbial Strains Produce Vitamin B12

Denmark 6th International Vitamin Conference

In-Vitro Vitamin B12 Production by Human Gut Microbial Strains ANAEROBE 2021: THE MICROBIOTA AND BEYOND

Development of soy-based product and their organoleptic evaluation Advances in agricultural Science & biotechnology, DAV College Jalandhar

India

Oral & Poster

Semester course

Poster

Poster

Feb 2015

Sep 2021

Jul 2021

> "Green tea ice cream" Science exhibition, DAV College Jalandhar

India

Online

Jan 2015

♣ WORKSHOPS/ COURSES (NOT ON TRANSCRIPTS) **PMDA Summer School** 2023 Basel, Switzerland Roche Predictive modelling and data analytics summer school to solve problems in drug discovery and development. Project Management for research – for doctoral students 2022 ♀ Zurich, Switzerland ETH Zurich Project risk management, project management. Scientific poster design 2021 ♀ Zurich, Switzerland University of Zurich content structure, typography do's and don'ts, design principles, design grids, design tools, image editing, perception, color theory. Energy and stress management: How to perform in the storm 2021 University of Zurich Zurich. Switzerland Energy management, understand obstacles and overcome them, achieve targeted change. Time and self management for PhD Candidates 2021 ETH Zurich ♥ Zurich, Switzerland Assess habits, values, goals, energy, and time management techniques. Leadership skills for PhD Candidates 2021 Zurich. Switzerland University of Zurich Management, leadership, needs analysis, behavior, destructive leadership, and case studies. **Statistics for Experimental Research** 2020 ♀ Zurich, Switzerland ETH Zurich Experimental designs, statistical analyses using R, report analyses and results in a scientifically appropriate manner. Mass spectrometry-based metabolomics - from theory to practice 2018 Zurich, Switzerland Functional Genomics Center of University and ETH Zurich Metabolomics overview, and data analysis and interpretation. Introduction to genomic analysis 2017 Compute Canada & University of British Columbia (Online) Canada UNIX programming, alignment, Variant calling and annotation, data visualization, and RNA-Seq including statistical analysis. 36th Post-harvest technology - short course 2014 University of California, Davis Davis, USA Advanced Crops handling and harvesting systems.