Growth performance of Listeria monocytogenes isolates in food systems

Summary

The doctoral thesis aims to elucidate adaptation mechanisms and their regulation in Listeria monocytogenes bacteria in refrigerated environment at different cooling rates. Data on correlation between physiological properties, genomes, transcriptomes and proteomes will be implemented into improved microbial hazard identification and prediction of microbial behaviour in foods at low temperatures.

Research field:	Chemistry and biotechnology
Supervisors:	Inga Sarand Prof. Dr. Olli-Pekka Smolander
Availability:	This position is available.
Offered by:	School of Science Department of Chemistry and Biotechnology
Application deadline:	Applications are accepted between November 16, 2020 00:00 and December 16, 2020 23:59 (Europe/Zurich)

Description

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Listeria monocytogenes is considered to be one of the most important causes of food-borne diseases. It is able to survive in food-processing environment and food-processing technologies due to the resistance to different stress conditions such as low temperature, low water activity and high salt concentration. The adaptation potential of *L. monocytogenes* is highly heterogeneous between isolates. To identify the appropriate control measures that should be applied in order to guarantee food safety we are planning to evaluate adaptation and growth potential of different *L. monocytogenes* strains in refrigerated environment after cooling process with different rates. Both genetic (genome analysis, gene expression profiles) and physiological (lipids composition, specific growth rate, biofilm formation) analysis will be performed on the strains selected from different food matrixes.

Responsibilities and tasks:

- The PhD student will be responsible for planning and conducting experiments and data analysis related to the topic of the current thesis.
- At least three papers will be published in the peer-reviewed journals by the end of nominal studies time.
- He/she will participate in preparation of publications (in at least one of which being the first author).

Qualifications:

- microbiology or biochemistry or molecular biology.
- skills in bioinformatics are recommended.

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