Psychrotrophic bacteria in food spoilage and safety

Summary

The doctoral thesis aims to elucidate adaptation mechanisms and their regulation in psychrotrophic bacteria associated with food mostly focusing on the intraspecies variations. Data on correlation between physiological properties, genomes, transcriptomes and proteomes will be implemented into improved microbial hazard identification and prediction of microbial behavior in foods at low temperatures.

Research field:	Chemistry and biotechnology
Supervisors:	Inga Sarand Pirjo Spuul
Availability:	This position is available.
Offered by:	School of Science Department of Chemistry and Biotechnology
Application deadline:	Applications are accepted between September 01, 2020 00:00 and October 02, 2020 23:59 (Europe/Zurich)

Description

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Globalization of food trade and changes in peoples eating habits have increased a consumption of minimally processed ready to eat foods, which shelf life mainly depends on chilling conditions during storage and transport. This has increased an impact of psychrotrophic bacteria that can grow both at processing and storage conditions in food spoilage and safety (e.g. Listeria monocytogenesis). Different specific adaptation mechanisms to retain metabolic and enzymatic activities at low temperatures have been employed by psychrotrophic bacteria (e.g. regulation of cell membrane fluidity through lipid composition activities). Intraspecific variability in their expression and regulation largely determines potential of different bacteria strains to grow in refrigerated environment. More data is needed to identify genetic markers predicting psychrotrophic bacteria behavior in different foods. Different omics-based approaches in combination with phenotypical characterization and shelf-live studies will be used.

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

The applicants should fulfill the following requirements: microbiology, biochemistry.

To get more information or to apply online, visit https://taltech.glowbase.com/positions/124 or scan the the code on the left with your smartphone.