FUNDED PHD OPPORTUNITY

"Modelling the shelf-life and safety of fermented and smoked foods"

Background

Fermented and smoked foods currently account for 5% of total meat consumption in Europe. Domestic demand is also increasing with a broad range of products available, produced by artisan/micro and multinational food companies, who require predictive models for accurate shelf-life and safety assessment. Fermented and smoked foods are lightly preserved products, susceptible to microbial spoilage. Moreover, as these foods are stored for extended periods and consumed without further processing, they are a potential vehicle for pathogens.

Objectives

This research aims to deliver shelf-life and safety predictive models for fermented meats, smoked fish, sauerkraut and kefir.

1. To source, collect and collate scientific data and existing predictive models relevant to the prediction of shelf-life and safety of fermented meats and smoked fish.
2. To propose, based on the existing scientific knowledge, models that can describe the competition of microbial growth in fermented products.
3. To build (where required) new mathematical models to predict the microbial shelf-life and safety of fermented foods and smoked fish based on *L. monocytogenes*, *S. aureus* and Shiga toxin-producing *E. coli* (STEC), heat resistant coliform bacteria and *C. botulinum*.
4. To contrast the data generated using the predictive models with data using bioreactors and in challenge tests with fermented foods and smoked fish assessing for accuracy and bias.
5. To analyse the microbial, virulence gene expression and physiochemical and sensory data to better inform the shelf-life and safety of fermented foods.

Requirements

- A BSc Hons in Microbiology, Food Technology/Engineering or related.
- A demonstrated interest in applied mathermatical modelling in any of the following areas: kinetics, microbial growth, fermentation, shelf life, quality.

Award

The fellowship provides a funding of €18,000 per annum for student subsistence as well as University fees of up to a maximum of €6,000 per annum and is tenable for the duration of the project (March 1st 2020-28th Feb 2024).

Further Information

This PhD is part of a joint research project coordinated by Teagasc (Ashtown) and with the collaboration of University College Cork and TU Dublin (Environmental Sustainability and Health Institute).

Application Procedure

Submit an electronic copy of your Curriculum Vitae demonstrating the requirements of the position and a motivation letter to Prof. Jesus Frias (Jesus.Frias@tudublin.ie).

Closing date

17:00 ; Jan 20, 2019

FUNDED PHD OPPORTUNITY

"Impact of packaging reduction on the safety and durability of horticultural produce"

Background

Recycling of packaging waste in Ireland has progressed over the last 20 years, increasing from 10% recycling in 1997 to a level of 68% presently. However, while Ireland has a high recycling rate of plastic packaging (36% against the EU average of 22%) sustainability development goals agreed in this area present a significant challenge to the industry that can only be achieved by significant intervention and research (Repak, 2018).

Objectives

The aim of this research project is to provide an evaluation of the impact that packaging reduction will have on the safety and shelf-life of horticultural products.

1. To define scenarios, based on previous knowledge of typical Irish transport, of horticultural products distribution (Joshi et al, 2018, Garvan, 2007).
2. To define packaging reduction interventions that may contribute to goals set by the national strategy for horticultural products.
3. To use predictive microbiology and quality models expertise to assess the spoilage, quality deterioration of horticultural export packaging reduction scenarios.
4. To contribute to the assessment of safety risks (i.e. *Listeria monocytogenes*) associated to horticultural products.
4. To estimate and experimentally validate horticultural waste produced.
5. To perform a comparative assessment with the baseline of individually packaged products and experimentally validate it.
6. To contribute towards the guidelines for durability display of horticultural products.

Requirements

- A BSc Hons in Food Science/Technology/Engineering, Horticulture or related.
- A demonstrated interest in any of the following areas: postharvest technology, packaging, shelf life, predictive modelling and/or food safety.

Award

The fellowship provides a funding of €18,000 per annum for student subsistence as well as University fees of up to a maximum of €6,000 per annum and is tenable for the duration of the project (April 1st 2020-31st March 2024).

Further Information

This PhD is part of a joint research project coordinated by Teagasc (Ashtown) and with the collaboration of University College Dublin and TU Dublin (Environmental Sustainability and Health Institute).

Application Procedure

Submit an electronic copy of your Curriculum Vitae demonstrating the requirements of the position and a motivation letter to Prof. Jesus Frias (Jesus.Frias@tudublin.ie).

Closing date

17:00 ; Feb 1, 2019