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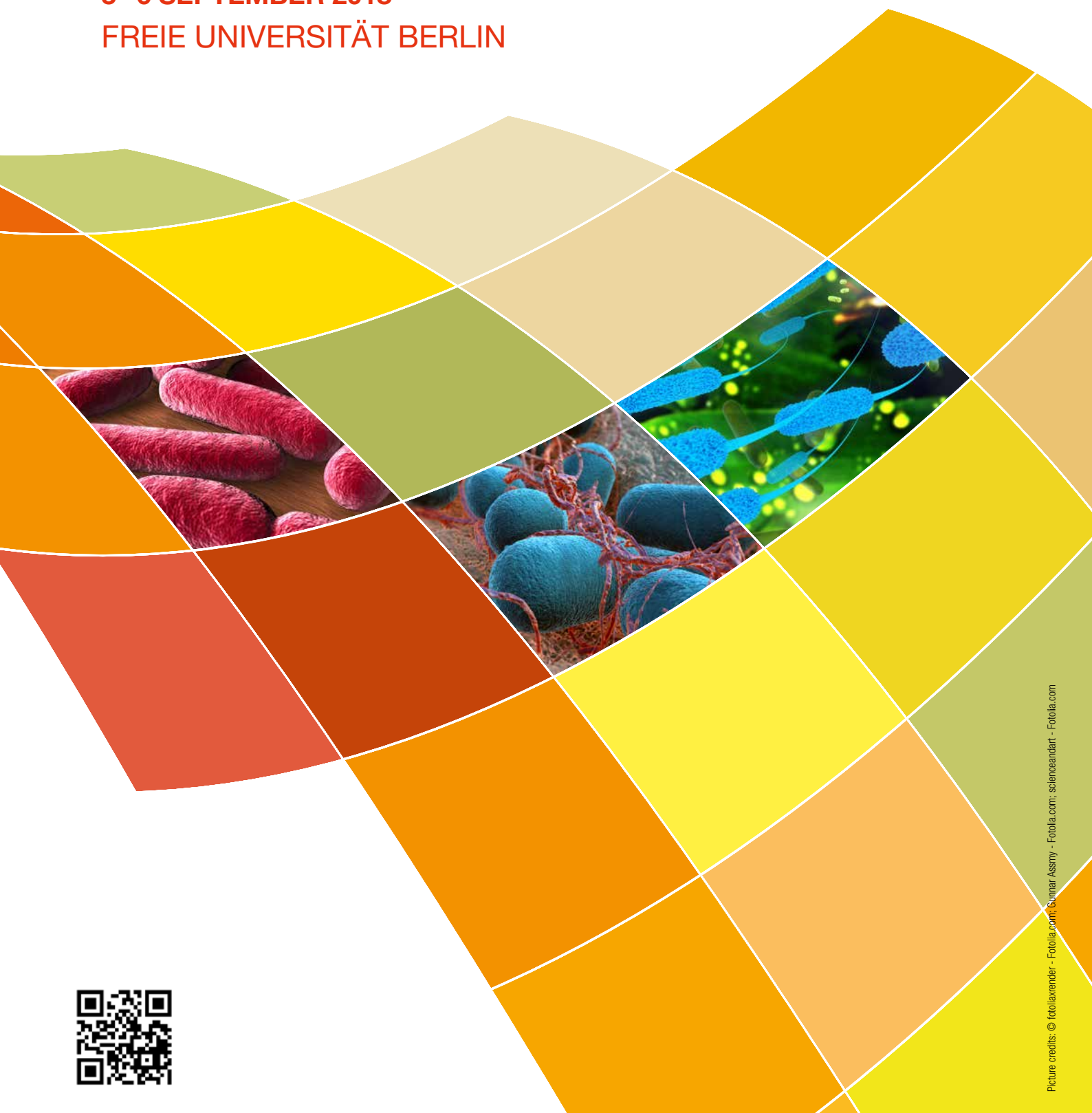


FoodMicro

26th International ICFMH Conference

3-6 SEPTEMBER 2018

FREIE UNIVERSITÄT BERLIN



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Conference Theme: "Biodiversity of Foodborne Microbes"

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Welcome Letters

Dear Delegate,

welcome to the FoodMicro 2018 conference in the Henry Ford Building of the Freie Universität Berlin, Germany! It is now 25 years ago that the FoodMicro conference was organized for the last time in Germany, and for us, this is a happy anniversary. The efforts to host the current FoodMicro 2018 conference in Berlin started approximately six years ago, and we are now very excited that this great scientific conference is taking place in Germany's capital.

The field of food microbiology is important for economics, medicine, veterinary medicine, food technology, nutrition, biotechnology, and other related areas. The importance of this field is underlined by the fact that over 430 delegates from more than 57 countries are participating in the conference. The FoodMicro conferences cover the most advanced research fields and therefore we have chosen "Biodiversity of Foodborne Microbes" as the common theme for the FoodMicro 2018 conference. We are looking forward to offering you an excellent programme, both in its scientific diversity and depth.

Organizing FoodMicro requires a multifaceted approach and is only possible with the help of numerous people and organizations: The ICFMH board members placed their trust in us to manage this important international scientific event and were valuable contact persons in all respects. The DGHM as our parent microbiological society gave us key support and paved the way to work with the congress organization MCI. The international experience and excellent management of the MCI staff was greatly appreciated. Moreover, the other German microbiological societies VAAM and DVG provided their support. Lastly, without the voluntary work of all scientists from the national and international scientific committees, this conference would not have been possible.

Besides offering a space to discuss science, we hope the FoodMicro 2018 conference will also be a platform to meet old colleagues and friends and to find new ones.

We hope that you enjoy FoodMicro 2018 and find it to be scientifically as well as personally rewarding!



Herbert Schmidt



Barbara Becker



Thomas Alter

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Poster Abstract



Impact of interventions during food production on microbial biodiversity

P4.31

A meta-regression model of the growth rate of *Listeria monocytogenes* as affected by temperature**Silva B.**^{1,2,3}, **Cadavez V.**¹, **Ellouze M.**³, **Gonzales-Barron U.**¹¹CIMO Mountain Research Centre, School of Agriculture, Polytechnic Institute of Braganza, Braganza, Portugal, ²University of Minho, Braga, Portugal, ³Nestlé Research Centre, Lausanne, Switzerland

The presence of *L. monocytogenes* in naturally-contaminated foods, its ability to endure various environmental stresses and grow at low temperatures and during the shelf life of some foods are great challenges for the food industry. To overcome this issue, predictive models can be used on the decision-making process in case of presumed contamination and possible growth of pathogens as they can assess bacterial levels before a control step is applied and evaluate if the process allows the pathogen's inactivation or reduction to an acceptable level.

In this sense, Cardinal Parameters Models (CPM) have been widely used to describe the effect of environmental factors on microbial growth rates. To be used, the determination of the parameters, known as cardinal values, is needed, but since experimental estimation is a laborious task, it is proposed here that meta-analysis of literature data could be useful to perform such assessments. This statistical analysis of results from published studies aims to integrate and interpret the findings to achieve an enlarged vision about the topic's results.

Suitable scientific articles were collected through search in several databases. Following study quality checking, 88 studies remained from which 3079 growth rates were extracted.

To evaluate temperature's effect on growth rates and estimate comprehensive cardinal values, meta-analysis was performed on a set of growth rates assessed at optimal conditions of pH (6.5-8) and a_w (≥ 0.98). To appraise the share of the possible sources of variability, the CPM was also fitted on subsets of growth rates estimated using (i) distinct reading methods, (ii) distinct broth types and (iii) sub-optimal conditions of pH and a_w .

The pooled parameters from the optimal set were $T_{min} = -1.15 \pm 2.43$ °C, $T_{opt} = 37.42 \pm 2.00$ °C, $T_{max} = 45.20 \pm 0.37$ °C and $\mu_{opt} = 1.06 \pm 0.13$ h⁻¹. Regarding the possible sources of variability, it was concluded that the reading method ($R^2 = 24.8\%$) and the broth type ($R^2 = 60.1\%$) used to estimate growth rates largely affect the estimation of cardinal values. Moreover, data at sub-optimal conditions, especially in food products, were found inadequate to assess cardinal values, unlike optimal conditions, as mean estimates changed and standard errors increased.

The meta-analysis performed allowed the fitting of the CPM to growth rate data retrieved from scientific articles, showing that literature can be useful to assess cardinal values and to provide an insight on sources of variability.

Keywords: Meta-analysis, Cardinal Parameters Model, optimal conditions, broth