



2016 Food & Health Science Seminar No. 2

## 2016 年度 第2回 食と健康の科学セミナー

主催 生物圏科学研究科 食資源科学講座  
生物生産学部 食品科学コース  
(5研究科共同セミナー)

### 講演題目

### 精密食品加工：食品安全・食品防御・食品品質確保のための食品の 微生物学的、物理化学的特性に関する数理モデルの構築

*Precision Food Processing* : Establishment of Mathematical Models for Microbiological and Physicochemical Food Properties for Food Safety, Food Defense, and Food Quality

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とき：2016年12月8日(木) 15時 - 16時30分 Dec, 8 (Thu), 15:00 - 16:30

ところ：C-314 講義室 (School of Applied Biological Science, C-314 )

ガブリエル博士は、安全で高品質な食品製造のための殺菌予測モデルを構築するなど数々の顕著な研究成果をあげ、食品衛生分野において世界で注目されている若手研究者です。「2016年度若手外国人農林水産研究者表彰」(Japan International Award for Young Agricultural Researchers 2016)の表彰式で来日される機会に母校の広島大学を訪問されます。本セミナーでは有害微生物による食品の変質防止及び安全性の確保のための総合的な管理手法についてわかりやすく解説していただきます。

The application of the traditional yet effective and affordable thermal pasteurization process to thermosensitive raw materials such as fruit juices results in quality deterioration of the finished product. Therefore, the establishment of a thermal process schedule with the recommended lethality against disease-causing microorganisms, without the undesirable quality changes is necessary to comply with consumer demand for safety and quality. One significant limitation of thermal processing is the dependence of its efficacy on variations in the characteristics of raw materials, processes, and microorganisms. Therefore, a specific food commodity should have a unique process schedule, otherwise underprocessing might compromise food safety, while overprocessing might result in an unacceptable commodity. 'Precision Food Processing' involves the establishment of process schedules, taking into consideration the specific food-, process, and target organism characteristics. In this set of studies, a specific target microorganism was first determined, after which a predictive model for its thermal inactivation rates was established. The model-predicted inactivation rates together with food- and process-related variables were then used to establish a new set of predictive models that estimate deterioration in the Vitamin C, color, and consumer acceptability scores of heat-treated juices. These food safety and food quality models can be used simultaneously to estimate the efficacy of a thermal process schedule against the target organism, and the effect of the process schedule on the overall quality of the finished product.

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