

## **MSCA - Initial Training Network FOODENGINE**

### **Vacancy for recruitment of 13 early-stage researchers (ESR)**

#### General description of FOODENGINE:

**FOODENGINE** offers a research-based training programme for 13 young food scientists and technologists on the transformation of fruits, vegetables and legumes (FVL) in high-quality, multi-functional ingredients and foods appealing to consumers. The research-based training programme will be based on two new ways of thinking:

- **FOODENGINE** will introduce an enginomics approach for food quality design. It connects an omics approach combined with chemometrics to instrumentally quantify quality changes of FVL-based food systems and an advanced engineering approach using multi-response kinetics to model quality changes during processing and storage;
- **FOODENGINE** will develop models linking the enginomics-based instrumental food quality design with sensory properties, consumer acceptability and consumer preferences to create new products appealing to consumers.

**FOODENGINE** combines the interdisciplinary expertise and infrastructure of three highly-ranked European Universities/Research institutes (KU Leuven (BE), UCPH (DK), INRA (FR)), three large-turnover, multinational, R&D-based food (ingredient) companies (Döhler (DE), Cargill (BE), Unilever (NL)), two medium-sized food (ingredient) companies (GNT (DE), Greenyard (BE)) and an international market and consumer research company (Haystack (BE)) into a synergistic consortium to establish an international, interdisciplinary and intersectoral pioneering European food training programme for 13 young researchers, each for 36 months.

Each research project is a joint project between at least two partners within FOODENGINE. During the duration of the project, each recruited fellow is expected to go on one or more secondments (weeks up to months) to another partner to be exposed both to the academic and the private sector. Besides the research-based training, recruited young researchers will receive local and network-wide training in complementary skills (management, communication, valorization) via workshops, winter schools and conferences.

**FOODENGINE** alumni will master this beyond the state-of-the-art new way of thinking for future food products and process design, complemented with the extensive transferable skills development, they will largely enhance their employability/career perspectives in various professional roles.

#### Job offer:

- Attractive 3-year full-time employment contract in accordance with the MSCA regulations for early stage researchers of the European Commission - continuation after the first year is dependent upon a positive evaluation
- Enrollment in a PhD program whereby PhD tuition fee is paid by project
- Supervision by recognized experts and access to (beyond) state-of-the-art research and pilot-scale infrastructure
- Training in complementary skills via participation at workshops, winter schools and conferences

#### Requirements:

- Outstanding, self-motivated researcher with willingness to travel/be seconded on a regular basis in order to perform top-notch research in leading academic institutions, R&D divisions, and industries.
- Holding a Masters Degree in Food Science & Technology or related discipline with excellent study results (typically minimum "distinction", "70%" or "second class upper").
- Solid written and oral communication skills in English are prerequisites of any successful application (typically IELTS min. 7, TOEFL internet-based min. 90 or similar level as proven by other tests).

Eligibility criteria:

- Less than 4 years full-time research experience (starting from the date of obtaining the degree which would entitle to embark on a doctorate) and not have a doctoral degree yet
- Less than 12 months spent in country of the host (see table) in the 3 years prior to the recruitment

Application procedure:

Applications **in English** should include:

- Motivational letter describing research career goals, skills and experience
- CV (contact details, education, work experience, prizes/awards, language skills, etc....)
- Official academic transcript of Bsc. and Msc. studies
- Documentation of English language qualifications
- 2-page research project related to the topic of choice
- Full contact details of two reference persons

Application in a **single pdf-file** should be sent by e-mail to [ann.vanloey@kuleuven.be](mailto:ann.vanloey@kuleuven.be) with indication of **FOODENGINE and the ESR number** you are applying for in the subject line. Candidates who wish to apply for multiple ESR positions within FOODENGINE should apply for each position separately. Equal consideration will be given to female or male applicants.

Evaluation process and timing:

**Deadline for application: April 30, 2018**

The recruitment is done on a competitive basis across all applicants for each project. After a first selection based on all application files, a second selection round will involve skype interviews and will be held on **May 17, 2018**. Envisaged job starting date: between June and December 2018

## Overview of 13 vacant positions within FOODENGINE

N°	Title	Objectives	Secondments	PhD @
<b>HOST: KU Leuven (Belgium) – Laboratory of Food Technology: <a href="https://www.biw.kuleuven.be/m2s/clmt/lmt/">https://www.biw.kuleuven.be/m2s/clmt/lmt/</a></b> <b>Contact person: <a href="mailto:ann.vanloey@kuleuven.be">ann.vanloey@kuleuven.be</a></b>				
<b>ESR1</b>	Impact of thermal processing and storage on the flavor, rheology and nutritional aspects of vegetable-based soups/sauces	To design healthy and tasteful shelf-stable vegetable-based soups/sauces with different product formulations (e.g. oil addition, vegetables pieces); To investigate and quantify flavour, nutritional and rheological changes during thermal processing and shelf-life of these vegetable-based soups/sauces.	Unilever (NL)	KU Leuven
<b>ESR2</b>	Carotenoid stability throughout the food chain	To investigate the impact of different extraction methods on carotenoid location and state in different plant-based sources; To investigate the stability of the extracted carotenoid fractions during (accelerated) storage in presence of anti-oxidants; To study the functionality of the natural colorant in a final application.	GNT (DE)	KU Leuven
<b>ESR3</b>	Impact of pectin structural characteristics on emulsifying and anti-oxidative properties	To relate pectin structural characteristics to emulsifying and anti-oxidative properties; To investigate if specific endogenous pectin characteristics of different raw materials (whether or not pre-treated) can be exploited to create multifunctional ingredients; To establish kinetic models to predict storage stability of these multifunctional ingredients.	INRA (FR), Cargill (BE)	KU Leuven
<b>ESR4</b>	Impact of thermal processing and storage on the texture, flavour and digestibility of legumes, taking into account consumer perspectives	To investigate how processing can be used to tailor the texture, flavour and digestibility of legumes; To study the influence of storage parameters (temperature; packaging material) on these quality parameters; To investigate whether and how the typical processed flavour of legumes can be masked by quality design to increase consumer liking.	Greenyard (BE), UCPH (DK)	KU Leuven
<b>HOST: UCPH (Denmark) – <a href="http://food.ku.dk/english/about/sections/design-and-consumer-behavior/">http://food.ku.dk/english/about/sections/design-and-consumer-behavior/</a></b> <b>Contact persons: <a href="mailto:ko@food.ku.dk">ko@food.ku.dk</a> (ESR5); <a href="mailto:map@food.ku.dk">map@food.ku.dk</a> (ESR6); <a href="mailto:vor@food.ku.dk">vor@food.ku.dk</a> (ESR7); <a href="mailto:wb@food.ku.dk">wb@food.ku.dk</a> (ESR8)</b>				
<b>ESR5</b>	Colloidal stability of fruit-based liquid foods during storage	To develop spectroscopic methods based on advanced multivariate data analysis for characterizing colloidal status of fruit-based juices; To investigate the colloidal stability during processing and storage and linking to sensory quality; To study the effects of conventional and emerging processing of juices in order to control essential quality parameters during storage.	Döhler (DE), KU Leuven (BE)	UCPH
<b>ESR6</b>	The chemistry behind changes in flavour of fruit-, vegetable- and legume-based food systems – linking instrumental and sensory measurements	To implement sensitive methods for sampling volatiles, efficient multivariate data analytical tools (such as PARAFAC2) and methods to identify compounds with high impact on sensory quality; to apply the in-depth analysis of volatiles to explain/predict changes in sensory quality during processing and storage.	Döhler (DE), Unilever (NL), Greenyard (BE)	UCPH
<b>ESR7</b>	Linking consumer acceptance to instrumental quality changes of vegetable-based foods during shelf life	To develop an effective multivariate modelling approach integrating instrumental analysis and sensory quality together with consumer acceptance for food quality assessment; To explain changes in sensory quality during processing and storage of vegetable-based foods; To establish models for prediction of consumer acceptance based on instrumental and sensory measures.	Unilever (NL)	UCPH

<b>ESR8</b>	Cross-cultural understanding of consumer attitudes towards processed and stored foods	To identify determinants for consumer preferences of processed fruit-, vegetable- and legume-based foods in different European countries. The project will focus on elucidation of consumers' expected quality and experienced quality attributes as drivers for choice. These may include sensory properties, health related descriptors, processing technology (including sustainability aspects) and shelf-life descriptors (referring to acceptability and expected quality); The project will include surveys for cross-country evaluations on attitudes, expectations and situational appropriateness as well as consumer tests on experienced quality properties.	Döhler (DE), Unilever (NL), Greenyard (BE), Haystack (BE)	UCPH
<b>HOST: INRA (France) – <a href="https://www6.jouy.inra.fr/umr-genial/">https://www6.jouy.inra.fr/umr-genial/</a></b> <b>Contact person: <a href="mailto:catherine.bonazzi@agroparistech.fr">catherine.bonazzi@agroparistech.fr</a></b>				
<b>ESR9</b>	Evaluation of the use of legume-based ingredients in processed plant-based products	To investigate the impact of moisture content and temperature on flavour of heated legume-based ingredients. Physico-chemical stability, flavour profile and starch/proteins digestibility will be investigated to explore the potential use of new legume-based ingredients.	Cargill (BE), KU Leuven (BE)	AgroParisTech
<b>ESR10</b>	A multivariate approach to model nutrient degradation in fruit-based products after thermomechanical processing and storage - focus on ascorbic acid and phenolics	To study the reactivity of ascorbic acid and phenolic compounds in fruit-based products induced by thermal or thermomechanical processes and storage. The studied system will be progressively complexified (in terms of reactive molecules and structure) to approach the reactivity of a real matrix while including transfer phenomena .	Döhler (DE)	AgroParisTech
<b>HOST: Döhler (Germany) – <a href="https://www.doehler.com/">https://www.doehler.com/</a></b> <b>Contact persons: <a href="mailto:daniel.bonerz@doehler.com">daniel.bonerz@doehler.com</a> (ESR11) and <a href="mailto:jens.zotzel@doehler.com">jens.zotzel@doehler.com</a> (ESR12)</b>				
<b>ESR11</b>	Evaluation and optimization of shelf life stability of strawberry based products with special emphasize on colour and flavour retention during processing and storage	To investigate the effects of different processing steps, food additives, and fruit varieties as well as enzymatically and non-enzymatically induced adulteration processes on colour degradation and off-flavour developments in strawberry derived products.	KU Leuven (BE), Unilever (NL)	KU Leuven
<b>ESR12</b>	Evaluation of different extraction and modification processes and technologies on the stability and shelf-life of plant-based proteins in multiple food matrices	To evaluate and optimize the use and shelf-life of plant-based proteins in liquid food matrices with special emphasis on legume derived proteins. Developing a process for extraction and separation of plant-based proteins for obtaining fractions with defined physiological or technological properties.	INRA (FR) UCPH (DK)	AgroParisTech
<b>HOST: Cargill (Belgium) – Cargill R&amp;D Centre Europe <a href="https://www.cargill.be/en/home">https://www.cargill.be/en/home</a></b> <b>Contact person: <a href="mailto:katlijn_moelants@cargill.com">katlijn_moelants@cargill.com</a></b>				
<b>ESR13</b>	Evaluation of novel algae-based ingredients to stabilise the structure of vegetable-based foods during shelf-life	To screen algae-based cell wall polysaccharides for use as 'clean label' texturisers, thereby further valorising current side-streams from existing Cargill processes; To further improve the structural and sensory functionality of these ingredients by looking at alternative extraction processes; To investigate and model the stability of these algae-derived texturisers with structuring potential in vegetable-based products as a function of shelf-life	KU Leuven (BE), INRA (FR)	KU Leuven