Call for Expressions of Interest

Arla Foods Dairy Health and Nutrition Excellence Center

September 2015
2016 Call

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Inside This Call

Deadline for submission of expressions of interest

Monday 2nd Nov. 2015

Introduction

Arla Foods Dairy Health and Nutrition Excellence Center invites expressions of interest for research projects on the basis of the overlying focus areas

- **Prevent/Remedy Metabolic Syndrome**
- **Prevent/Remedy Malnutrition**
- **Enhance Immune Defense/Response**

This second call welcomes particular applications within the areas of ***satiety***, ***catch-up growth*** and ***gastrointestinal inflammation*** in relation to the above given overlying focus areas.

The Center aims to explore the basic mechanisms caused by intake of dairy and milk components and include all aspects in the milk value chain i.e. identification/characterization of active milk components, isolation and scaling up of these, *in vitro* and *in vivo* documentation of effects and finally validation in intervention studies, education, and knowledge sharing at all levels.

Deadline for submission of expressions of interest is Monday, November 2nd 2015. Please follow the application guidelines given on page 5.

Role of the Center

The Arla Foods Dairy Health and Nutrition Excellence Center is a consortium between Arla Foods amba, Arla Foods Ingredients Group P/S, Aarhus University and University of Copenhagen. The Center is founded in the spirit of exploring the competences between the four stakeholders. Consequently, the activities have to tap into the high potential in the synergies found between the university world and the industries and ensure cutting edge research, education at PhD and Post Doc level combined with mutual knowledge sharing within the areas of focus.

Project activities should preferably be developed in close collaboration between co-workers of all four stakeholders of the center to ensure the widest scientific in-put and contributions together with needed business relevance.

Moreover, project activities within the center will be considered as a project portfolio. This means that the project activities should rather aim of reaching proof-of-concept in relation to set hypotheses for the activities than being too ambitious, as validation and exploration of proof-of-concept will have priority in subsequent grant handouts within the center.

"Is objective registration of satiation and satiety possible?"

The Center started in 2015 and has initially a lifetime of five years. During this period Arla is supporting the center with 12.5 mill. DDK p.a. and each of the universities is supporting the Center with 2.1 mill DDK p.a. in in-kind. Considering that the management of the center represent 2.5 mill DKK p.a. the active for projects p.a. resemble 14.2 mill DDK p.a. of which 4.1 mill DDK p.a. is university in-kind and 1.67 mill DDK is project overhead allocated to the universities. The center endeavors to initiate 2-4 project activities annually.

Prevent/Remedy Metabolic Syndrome - *Satiety*

Obesity, in particular excess visceral adiposity, is associated with insulin resistance, hyperglycaemia, dyslipidaemia and hypertension, which together are termed "metabolic syndrome". These metabolic disorders increase the risk of development of type 2 diabetes mellitus (T2DM) and cardiovascular diseases and contribute to high rates of mortality and morbidity [1]. Consequently, preventing metabolic syndrome would aim to identify solutions, which can attenuate the obesity epidemic.

From sensation to objective registration.

Obesity is increasing worldwide, with the number of those affected nearly doubling from 1980 to 2008. Around 3.4 million adults die each year as a result of being overweight or obese. The obesity epidemic is known to be multifactorial and calls for immediate solutions. Food pattern/composition is known to be one of the main factors to control weight management. Consequently, proper meal solutions become an essential factor in the elucidation of the obesity epidemic. Especially, foods/meals that make people feel fuller faster, and for longer, are believed to have potential in helping obese people control their weight. Unfortunately, there are at present no objective methodology to register satiety by which it is possible to recommend existing foods or develop a new range of foods/meals with healthier nutritional profiles and added functionality, that can help consumers control their appetites by feeling fuller faster and/or for longer.

The present call prioritize research initiatives, which can provide a basis for the development of an objective method to measure satiety.

[1] Alberti et al. (2009) Circulation 120, pp. 1640–1645

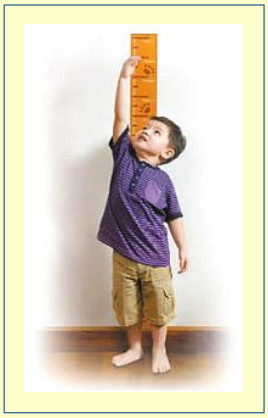
Prevent/Remedy Malnutrition
- Catch-Up Growth

Malnutrition is considered a leading cause of growth attenuation in children. Adequate and optimal nutrition during childhood is fundamental to the development of each child's full potential and to prevent illness and risk of diseases and functional disabilities. The risks presented by sub-optimal diets can start both during pregnancy and in childhood and build up throughout life, but nutritional strategies at the right time during childhood can improve the outcome. When food is replenished, spontaneous catch-up (CU) growth usually occurs, bringing the child back to its original growth trajectory.

Today the mechanisms regulating nutrition and growth are known to include systemic factors, such as insulin, growth hormone, insulin-like growth factor-1, vitamin D, fibroblast growth factor-21, etc. and local mechanisms, including autophagy, as well as regulators of transcription, protein synthesis, miRNA's and epigenetics [2].

The protein and energy ratios are essential to obtain the most efficient CU growth [3]. Moreover, enteral nutrition requirements depend on the efficiency of digestion and absorption of protein (amino acids) and non-protein energy. Dairy proteins are known to be high quality proteins with high bioavailability compared to several other protein sources. A basic understanding of different protein sources ability to stimulate CU growth most optimally is pivotal to be able to recommend the most affordable meals in the treatment of malnutrition.

The present call prioritize research initiatives, which can provide a basis for further understanding of protein quality and milk proteins potential to trigger mechanisms of importance for efficient catch-up growth including insulin, growth factors, epigenetics etc.



Proper nutrition for children can offset the reduced growth due to malnutrition through the pregnancy period or early childhood.

[2] Gat-Yablonski & Phillip (2015). Nutrients 7, 517-51

[3] Pencharz (2010). Eur. J. Clin. Nutr. 64, S5–S7

"Is diet induced epigenetic changes the key in understanding catch-up growth?"

Enhance Immune Defense/Response
- Gastrointestinal Inflammation

"Estimated 0.3% of the European population suffers from IBD with a direct healthcare cost of 4.6–5.6 bn Euros/year."

Inflammatory bowel disease (IBD) and irritable bowel syndrome (IBS) are until now considered two separate, yet both frequent gastro-intestinal conditions associated with impairments of the patient's quality of life and represents a marked socioeconomic burden.

IBD, encompassing two main clinical conditions, Ulcerative Colitis (UC) and Crohn's Disease (CD), is a group of disorders that cause inflammation and deep ulcer formation in the lining of any region of the gastrointestinal tract. This condition is a chronic, inflammatory, abnormality of the bowel showing overlapping clinical, epidemiologic, and pathologic findings. IBS is a common functional gastrointestinal disorder with symptoms attributable to the mid or lower gastro-intestinal tract not explained by identifiable structural or biochemical abnormalities. People with IBS suffer abdominal pain/discomfort and disordered defecation. IBS affect up to 20% of the population in US and Europe.

As mentioned above IBD is perceived as a typical organic disease, and the IBS is regarded as a disorder of gut function driven by mood. However, recent research identified some shared contributing factors [4].

IBD may be treated with nutrition counseling, digestive products, pharmacologic agents, surgery or a combination of all.

Unlike IBD it is nearly impossibly to make a clear diagnosis for IBS due to the high and heterogeneous number of symptoms. This has so far made it impossible to set up valid clinical studies that could validate the potential of nutrition-based solutions. With the new knowledge in mind nutrition-based solutions that can prove mitigation or even curing of IBD may be obvious solutions to subsequently look into with regard to alleviate or treat IBS, which represents the biggest socioeconomic burden of the two, by nutrition-based solutions.

Bovine milk constituents (glycoproteins/-peptides, oligosaccharides, MFGM and/or its elements) have shown potential as intestinal anti-inflammatory nutraceuticals [5], why nutrition-based solutions containing milk derived constituents appear to be an obvious route to mitigate or even cure gastrointestinal conditions like IBD and IBS.

The present call prioritize research initiatives, which provide basic understanding of possible milk constituents and their characteristics in relation to their potential to mitigate or prevent damage caused by IBD including the effect on the microbiota.

[4] Barbara et al. (2014). Curr Opin Gastroenterol 30(4), 352–358
[5] Otega-Gonzalez et al. (2014). Br J Nutr 111, 1202-1212
[6] Hill &Newburg (2015). Nutrition Reviews. DOI: http://dx.doi.org/10.1093/nutrit/nuv009

Guidelines for Pre-Proposal Submission

Please assure that all guidelines are followed and that all appropriate fields are included.

1. Research Area - the project related to one or more of the three focus areas (Prevent/Remedy Metabolic Syndrome - Prevent/Remedy Malnutrition - Enhance Immune Defense/Response)

2. Project title - As brief and concise as possible.

3. Summary - 10-15 lines

4. The project's main objective - What is the essence of the project?

5. Project duration - Expected start and end.

6. The project's total cost - Transferred from the budget (total budget and the proportion applied from the Center)

7. Applicant (s) - Name (s) and address the project manager and co.

8. Project manager - Title, name, address, phone and e-mail.

9. Banks - Name and registration and account number.

10. Accounting Contact - Name, address, phone and e-mail.

11. Project description

    i. The purpose and hypotheses for the project as well as state-of-the-art - Concise and broken down into sub-goals. Brief description of the state-of-the-art in this field.

    ii. Project content - Concise description of the project content, milestones, and requirements for equipment and research facilities.

    iii. Outcome of the project - Why is it relevant for the dairy industry? Short description of the innovative aspects, scientific and commercial perspectives.

    iv. Plans for publication.

Follow guidelines!

"Ensure all appropriate fields in the pre-proposal are included."

Guidelines for Pre-Proposal Submission - Continued

"The expression of interest should not exceed 4-5 A4 pages and must be written in English

12. Description of the main applicant - Short description of the project manager's institution and competencies.

13. Description of other applicants - Short description of the other participants and their skills.

14. External financing - Description of anticipated or granted co-financing source. If there is already substantial financing, include documentation, together with the original application.

15. Contribution to research education - Short description of the project's educational contributions.

16. CV - 2-page CV of main applicant incl. project management experience as well as one-page CV from leading co-applicant(s) from other participating institutions/companies

17. Commitment from all participants in the project.

18. Appendix List.

19. Budget - Please use the budget file found at http://www.arlafoodsingredients.com/DHNEC.

    Annual budgets to be broken down into different items. The Total budget and budget of the individual participants. Note that the maximum overhead is 20 percent of the applied amount.

The expression of interest should not exceed 4-5 A4 pages and must be written in English.

Application procedure

Arla Foods Dairy Health and Nutrition Excellence Center fund both project activities in form of newly generated projects and additional activities to ongoing project activities, if these resemble the specific focus areas of the present call. Finally, the center encourage funded projects to use these as seed money to extend the relevant project activities through public funding.

Expression of Interest should be mailed to the Director of Arla Foods Dairy Health and Nutrition Excellence Center - [hejan@arlafoods.com].

Arla Foods Dairy Health and Nutrition Excellence Center operates with a three step evaluation procedure prior to the initiation of new projects.

I. *Internal review*

To begin with all projects will solely be evaluated with regard to fulfilling requested formalities – Secretariat responsibility. Thus all projects falling outside the strategic areas and not including demanded fields asked for in the pre-evaluation will initially be excluded.

II. External peer-review

Subsequently, all projects fulfilling the formalities will be peer-reviewed by an independent international scientific board of four members to ensure the scientific quality of the project proposals. Subsequently the applications will be forwarded to the steering committee ranked according to the result of the peer-review procedure.

III. Internal review

Finally, the steering group including members from all four stakeholders of the center will evaluate the application in relation to strategic fit and business relevance. Subsequently, in combination with the scientific rating given by the external reviewers the steering group will take decision upon starting of selected project activities.

"An information meeting and workshop around the call will be arranged the 25th September 2015 at NAVITAS, Aarhus University"

In case of a positive evaluation, the applicant is invited to submit a full proposal to the center Director including amendments according to advice from the external peer-review and comments from the steering group.

Application deadline for the Expressions of Interest is Monday 2nd of November 2015. Applicants will be notified ultimo December 2015.

Information Meeting & Workshop

Due to the nature of Arla Foods Dairy Health and Nutrition Excellence Center we invite to an informal information meeting and workshop the 25th September 2015.

Beside giving brief information around the present call this event also aims of making it possible for partners from all four stakeholders to meet and initiate the opening dialogue on new initiatives.

The Center has confidence in that initiatives developed in close collaboration between co-workers of all four stakeholders of the center will ensure the widest scientific in-put and capture the business relevance at the same time, and hereby living up to the intentions of the center;

- **High quality research and knowledge of direct business relevance**

WORKSHOP
25th September 2015
NAVITAS
Inge Lehmanns Gade 10
8000 Aarhus C

Place & Time of Workshop

25th September 2015, 12.30- 15:00

NAVITAS

Inge Lehmanns Gade 10

8000 Aarhus C

Sandwich & Coffee will be served

For parking incl. more information regarding the workshop please visit; http://www.arlafoodsingredients.com/DHNEC

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