**Project Title**
Barriers, facilitators and strategies to increasing protein status in older adults through increasing egg intakes

**Project Summary**
Approximately 20% of older people in the UK are currently thought to suffer from protein-specific under-nutrition, as a result, at least in part, of under-eating (1). Research on eating suggests that food consumption is highly influenced by various factors, including individual characteristics, e.g. demographics, ability, and characteristics of foods, e.g. taste, texture (1,2). Furthermore, our recent work suggests specific barriers to the consumption of high protein foods by older people (3). Concerns include the texture and perishability of these foods, difficulties involved in food preparation, and difficulties involved in consumption (3). The work conducted so far, however, has considered a range of high protein foods, yet many concerns apply differently to different foods (3). Notably, eggs are a high protein food, of soft texture, long shelf-life, and easy cooking compared to many high protein foods (2,4,5,6). Eggs, however, are not highly consumed by the older population (7), and increased consumption may benefit protein intakes and status (4,5,6).

This work will investigate the barriers and facilitators to increasing egg intakes, in a representative sample of the UK older population, and in relation to existing egg intakes. Secondly, based on the barriers and facilitators identified, the work will develop and test an intervention aiming to increase egg intakes and protein status in this population. No other work is currently available describing the reasons for consumption and non-consumption of eggs in older adults, nor investigating possible strategies for increasing intakes.

The work will involve three studies using qualitative, experimental and questionnaire methodologies. All work will be completed in community dwelling adults over the age of 55 years, an age group of known poor protein nutrition, who are also responsible for their own food provision and consumption, and may be open to dietary change.

**Study 1:** Focus Group Study to investigate possible barriers and facilitators to increasing intakes of eggs. Focus groups will explore all reasons for consumption or non-consumption, in 30-40 males and females, of a range of ages and from a variety of economic backgrounds.

**Study 2:** Questionnaire Study to investigate barriers and facilitators to increasing egg intakes, as identified in the focus group study, in a wider and representative population of approx. 1000 adults of 55 years and above, using a telephone questionnaire. Habitual egg intakes and habitual protein consumption will also be investigated to allow investigation dependent on particularly low intakes.

**Study 3:** Intervention Study to investigate the impact of a novel intervention for increasing egg intakes, on egg intakes, protein intakes and protein status. This study will be a field study, using an intervention based on the barriers/facilitators identified in Study 2 as those of greatest impact on individuals with low egg intakes.

Three outcomes will be achieved: Understanding of egg consumption, and the reasons for consumption and non-consumption of eggs in the target population; Development and testing of a novel intervention for increasing egg intakes based on empirically-derived population-wide research evidence; Evidence of the impact of this intervention on egg and protein intakes and protein status.

**References:**
Academic Impact

The proposed work will elucidate the perceived barriers and facilitators of egg consumption in the UK older population (55 years plus), and investigate a novel intervention for increasing intakes in this group. The work will be based on existing theories and explanations of food consumption and food choice, and will be conducted using well-established scientific methods. The work goes beyond existing work by focussing specifically on eggs - a high-protein food and a specific population group - those over the age of 55 years. It is well recognised that protein-specific under-nutrition is a common health concern in this population group, and recent evidence suggests that increased egg consumption may improve protein intakes and health in this group. No other work is available focussing specifically on this population, and specifically on egg consumption. The work will be undertaken in three studies, resulting in the publication of two or three peer-reviewed academic publications, aimed for Nutrition, Public Health or Psychology journals.

Societal Impact

The work is important to all those with an interest in improved population health. The project has clear potential to improve the health and quality of life of the older population, with potential impacts also on the social environment and economy. Poor nutrition and poor health are known to impact not just on the individual suffering, and not just on their health care requirements, but also on their family and immediate society, and also on wellbeing, abilities to contribute to society and abilities to contribute to the economy. The Government, a wide variety of health professionals and professional bodies, and the population as a whole will benefit from increased protein intakes in this population group. The findings of the project could also result in the development, manufacture, marketing and consumption of a number of food products, food strategies, or food related products, such as recipe cards or information booklets, that are not currently well consumed or well used by the older market. This will impact positively on the UK egg industry, improving economic success. Non academic outputs include the novel intervention developed, and the evidence demonstrating the benefit of that invention.

Training Opportunities

Standard training, as provided by Bournemouth University Graduate School will be provided for the student. Additional training opportunities will also be available via the work to be completed and the environment in which the work will be undertaken. The 3-year programme of work has been specifically designed to include a range of methodologies - focus groups, laboratory based studies and field studies, requiring use of experimental design, questionnaire design, field-based considerations and qualitative and quantitative analyses. The student will benefit from the expertise of the supervisors and direct experience of all these methodologies. The student will also be encouraged to attend group meetings of the Psychology Health and Wellbeing group, the Lifelong Health and Wellbeing research theme, and the Food and Drink research group, and present their work at conferences, e.g. the Annual Meeting of the UK Nutrition Society, and at public engagement events. Each of the three studies will be undertaken as separate stand-alone studies, to be disseminated at conferences and published throughout the project, as possible. Training in Research Methods and Advanced Research Methods will be undertaken in Year 1. Training in research discussion and dissemination will be undertaken throughout the project.
**SUPERVISORY TEAM & RESEARCH ENVIRONMENT**

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<tr>
<th>First supervisor</th>
<th>Dr Katherine Appleton</th>
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<td>Additional supervisors</td>
<td>Dr Jane Murphy</td>
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**Recent publications by supervisors relevant to this project**

- Appleton KM. (2009) Increases in energy, protein and fat intake following the addition of sauce to an older person’s meal, *Appetite*, 52, 161-165
- Best RL, Appleton KM. (2011) Comparable increases in energy, protein and fat intakes following the addition of seasonings and sauces to an older person’s meal. *Appetite*, 56, 179-182

**INFORMAL ENQUIRIES**

To discuss this opportunity further, please contact either Dr Katherine Appleton via email: k.appleton@bournemouth.ac.uk

**ELIGIBILITY CRITERIA**

All Candidates must satisfy the University's minimum doctoral entry criteria for studentships of an honours degree at Upper Second Class (2:1) and/or an appropriate Masters degree. We consider appropriate degrees to fall within disciplines of Psychology, Nutrition, and other Biological or Medical Sciences. An IELTS (Academic) score of 6.5 minimum (or equivalent) is essential for candidates for whom English is not their first language.

**HOW TO APPLY**

Please complete the BU Research Degree Application 2014 and submit it via email to the School Research Administrator – Naomi Bailey - scitechresearch@bournemouth.ac.uk by 5 pm on Monday 16 June 2014. Further information on the application process can be found at www.bournemouth.ac.uk/phd2014