

**SUMMER CONFERENCE 2017:  
IMPROVING NUTRITION IN METROPOLITAN AREAS**



**10 – 12 JULY 2017**  
**KING'S COLLEGE LONDON, UK**

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## DEAR COLLEAGUE,

Welcome to the Nutrition Society Summer conference 2017: Improving nutrition in metropolitan areas. King's College London is hosting this year's conference on its campus by the river Thames in the cultural centre of London.

The conference theme recognises that much of the world's population now lives in large conurbations. London is a prime example of an ethnically diverse global city making it a very appropriate place to hold this conference. The demographic drift towards cities impacts on what people eat, how it affects their health.

The vision for the conference was framed before the Brexit vote, and the recent election underscores how political opinion is polarised between the large metropolitan areas and the shires. We believe this conference is particularly timely and provides a fresh look at the nutritionally related health problems facing urban areas in both developed and emerging economies.

We have an exciting line-up of national and international speakers. The symposia are designed to guide you through the challenges of feeding an ethnically diverse urban population with a safe and sustainable food supply. We focus on the impact that this shift in urban living has on food choice and diet related disease. A discussion on how disruption of our body clocks caused by commuting and shift-working may contribute to diet related metabolic disorders has been incorporated into the conference programme.

From the second day of the conference, we consider the effectiveness of dietary interventions, including food banks, and the policies being considered to improve nutrition, including the impact of Brexit on food supply and sustainability.

You are encouraged to actively participate in the Original Communication sessions. Those presenting during these sessions benefit from interest in their work and feedback.

During the conference there are two social functions. The first is a welcome reception which takes place on Monday evening on the terrace in front of Somerset House, overlooking the Thames. For those that have pre-registered, the conference dinner will take place on Tuesday in the County Hall building, the former home of the London County Council, with stunning views across the river to the Houses of Parliament. In addition, there are plenty of opportunities throughout the conference to network with colleagues.

Your certificate of attendance for Continuing Professional Development is at the back of this booklet. If you have any queries, please contact the Society's Conference Coordinator, Jade Mitchell ([j.mitchell@nutrition society.org](mailto:j.mitchell@nutrition society.org)).

We are confident that you will find this a stimulating event and look forward to meeting you.

Yours sincerely

**Professor Peter Emery and Professor Tom Sanders**

King's College London

*Scientific Programme Organisers*

**SCIENTIFIC PROGRAMME ORGANISERS**

Peter Emery, Professor of Nutrition and Metabolism, and Tom Sanders, Emeritus Professor of Nutrition & Dietetics, King's College London.

E: [peter.emery@kcl.ac.uk](mailto:peter.emery@kcl.ac.uk) / [tom.sanders@kcl.ac.uk](mailto:tom.sanders@kcl.ac.uk)

**CONFERENCE DETAILS:****REGISTRATION**

The conference registration desk will be situated in the entrance hall opposite the Great Hall of the Strand Campus. Location of the registration desk is detailed within the campus map on page 7 and will open at the following times:

Monday 10 July: 09:00- 17:45  
 Tuesday 11 July: 08:30- 17:35  
 Wednesday 12 July: 08:30- 17:00

At registration, you will be issued a badge. Please ensure you continue wearing this badge, to be allowed access into the sessions and for security around campus.

**LOCATION OF PLENARY AND SYMPOSIA SESSIONS**

Sessions will be held in the S-2.18 Arthur and Paula Lucas Lecture Theatre (Basement Floor -2) and Edmond J.Safra Lecture Theatre (Ground Floor). See the daily programme for the exact location of each session. The location map on page 6-7 highlights the building where the sessions will be held.

**LUNCH AND REFRESHMENTS DETAILS**

Lunches and refreshments are provided as part of the registration fee and will be served in the Great Hall on the ground floor of the King's Building, where the exhibition stands will also be held. You will also have the opportunity to meet the Nutrition Society Advisory Council during the breaks. Please see 'Meet your Nutrition Society Advisory Council member' section for more information.

**ORIGINAL COMMUNICATION SESSION DETAILS**

For those presenting an oral presentation, please ensure that you upload your presentation in the room that you are presenting in. It is strongly advised that you do so during registration on the day of your presentation. Your presentation should be uploaded no later than the refreshment or lunch break before the session commences. A local helper will be in each room to assist with this upload.

For those presenting a poster, please ensure that you have displayed your poster in the room that you are presenting on the poster board which matches your OC#, no later than the break before the session commences. Your OC# can be found within this programme booklet. All posters will need to be removed at the end of each day.

Locations and timings of Original Communication sessions are listed within the programme.

**THEME HIGHLIGHT SESSIONS -****TUESDAY 11 JULY: 12:00 - 13:00**

These sessions will highlight research from each of the Nutrition Society's three themes; Cellular and Molecular Nutrition, Public

Health Nutrition and Whole Body Metabolism. Each Theme highlight has been chosen by the Nutrition Society Theme Leaders and will give a 20 minute oral presentation.

**PRESENTATION FORMAT, UPLOADING AND PREVIEW**

Facilities will be available for standard PowerPoint presentations using Windows format; the University uses PowerPoint 2010 and can only accept memory sticks. Facilities will be available for preview prior to presentations. Speakers are requested to hand their presentations to the staff in the room in which they are presenting (S-2.18 Arthur and Paula Lucas Lecture, Edmond J.Safra Lecture Theatre, Council room K2.29, Geography room/K4U.12) following registration on the day of presentation. **LOADING OF PRESENTATIONS FROM LAPTOPS AND USB DURING THE SESSION WILL NOT BE PERMITTED.**

**OPPORTUNITIES:****THE NUTRITION SOCIETY ANNUAL CHARITY MEETING - TUESDAY 11 JULY: 13:15-14:00**

On Tuesday 11 July at 13:15, the Society's Annual Charity Meeting will take place. The meeting is open to all Nutrition Society members. The Society's President, Professor Philip Calder and the Trustees (traditionally known as Honorary Officers) will provide an update on the Society. The meeting will formally announce new Trustee members and provide an opportunity for members to ask the Trustees questions.

**MEET YOUR NUTRITION SOCIETY ADVISORY COUNCIL MEMBER**

Members of the Nutrition Society Advisory Council will be available throughout the conference to meet attendees. Each member of the Advisory Council specialises in an area of nutrition, or an area which influences nutrition, such as policy. The Advisory Council member is available to discuss topics within the area they represent, discuss ideas which could influence the Society's future. The following members of the Advisory Council will be available to meet attendees during the following times in the Great Hall (King's Building, ground floor).

**Monday 10 July**

- Industry Advisory Council Member: meet Kate Halliwell, Nutrition and Health Manager, Food and Drink Federation from 12:45 – 13:45
- Academia Advisory Council Member: meet Dr Shauna Cunningham, Robert Gordon University from 15:45 – 16:15

**Tuesday 11 July**

- Clinical/Medical Advisory Council Member: meet Dr Bernadette Moore, Associate Professor of Obesity, University of Leeds from 15:00 – 15:20

**Wednesday 12 July**

- Policy Advisory Council member: meet Sam Montel, Registered Public Health Nutritionist, Obesity and Healthy Weight Team, Public Health England from 10:40 – 11:10
- Public Health Advisory Council member: meet Dr Carrie Ruxton, consultant, health-writer and journalist, Nutrition Communications from 13:15 – 14:15

### OPPORTUNITY FOR DEVELOPMENT: CAREER ADVICE AND SUPPORT

**On Monday 10 July** during registration, the refreshment breaks and lunch, attendees will have the opportunity to meet with British Dietetics Association (BDA), Association for Nutrition (AfN) and British Nutrition Foundation (BNF) who will offer information about their organisation, plus career advice and support. Meet and network with each organisation during the first day in the Great Hall (King's Building, ground floor).

### EVENING AND SOCIAL FUNCTIONS

**On Monday 10 July**, 17:45 – 20:00, a complimentary Welcome Drinks Reception will take place in the Great Hall and in the adjacent terrace area. All conference attendees are welcome. Drinks and finger food will be provided.

**On Tuesday 11 July** from 19:30 until late the Conference Dinner will take place at The County Hall, Riverside Building, Belvedere Road, London, SE1 7PB.

Entry to the evening function on Tuesday 11 July will be open to those that have booked. If you have not booked your place in advance, please inform a member of the conference team at the registration desk who will try to accommodate you. Please note that registrations for evening functions are offered on a first come first served basis and places are limited.

## IMPORTANT INFORMATION:

### EMERGENCY CONTACT

The university security service is committed to ensuring a safe and secure environment for all persons working, studying and visiting the university campus. Security staff are on duty across the university 24 hours a day, 7 days a week. In an emergency the appropriate emergency services will be notified by conference personnel. If you have any safety concerns, please contact the registration desk or any of the local helpers who are wearing conference t-shirts.

### GENERAL ADVICE

It is easy to enjoy the sights and activities during your stay in London, but as in any major city, it is important to be aware of your surroundings.

In light of recent events, enhanced security measures are currently in place across London and you are reminded to follow up to date advice which can be found at [www.met.police.uk/advice-and-information/terrorism-in-the-uk/](http://www.met.police.uk/advice-and-information/terrorism-in-the-uk/).

For further information and for the latest news and activities in London, visit [www.visitlondon.com](http://www.visitlondon.com). Visit [www.tfl.gov.uk/plan-a-journey/](http://www.tfl.gov.uk/plan-a-journey/) to plan your journey around London. Download the London tube, bus, boat, tourist maps and others from [www.tfl.gov.uk/maps](http://www.tfl.gov.uk/maps).

### CAR PARKING

There is no car parking available on campus.

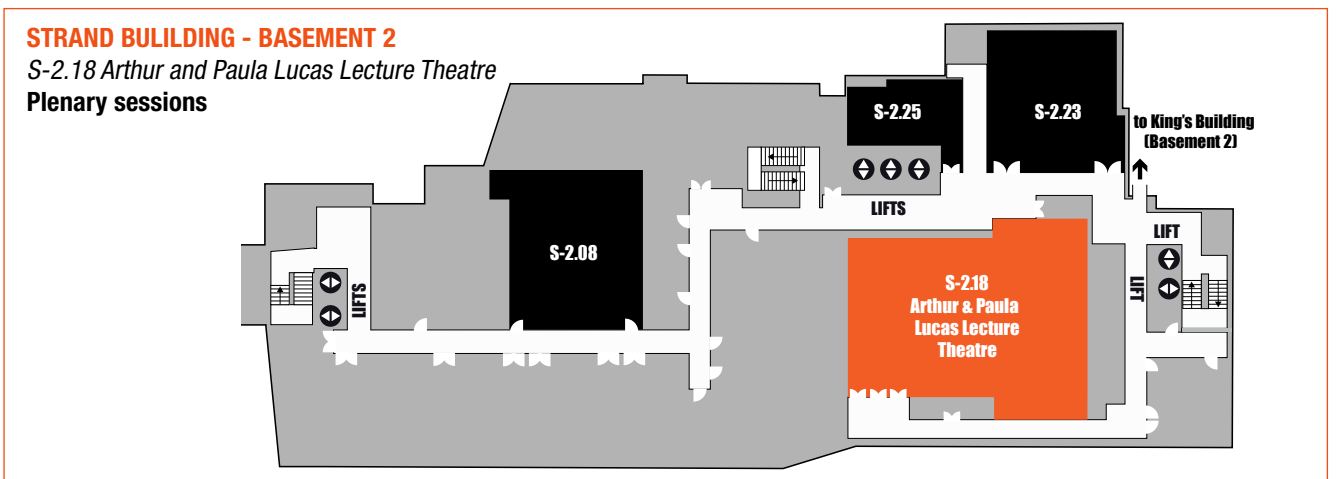
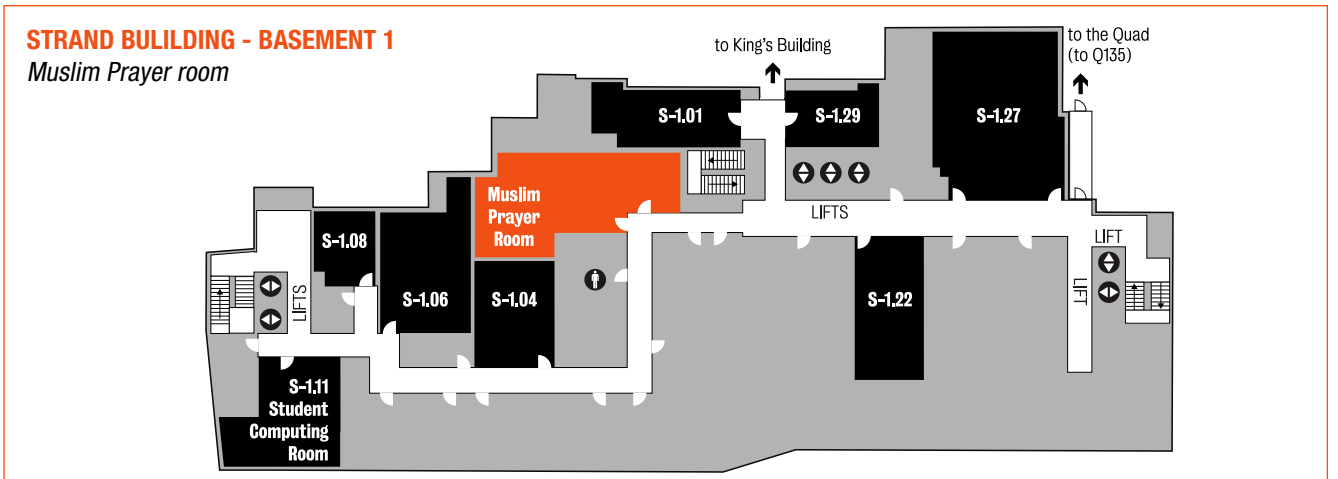
### INTERNET ACCESS

Free wi-fi is available for all at the conference venue.

Attendees should select the Cloud within their device and follow the instructions to create an account. Plus, access details are given at the registration desk.

### CONTINUING PROFESSIONAL DEVELOPMENT (CPD)

This meeting is endorsed for CPD by the Association for Nutrition and the British Dietetics Association. Your certificate of attendance can be found at the back of this booklet. You can use this certificate to claim your CPD points. If you have any queries, please contact the Society's Conference Coordinator, Jade Mitchell.



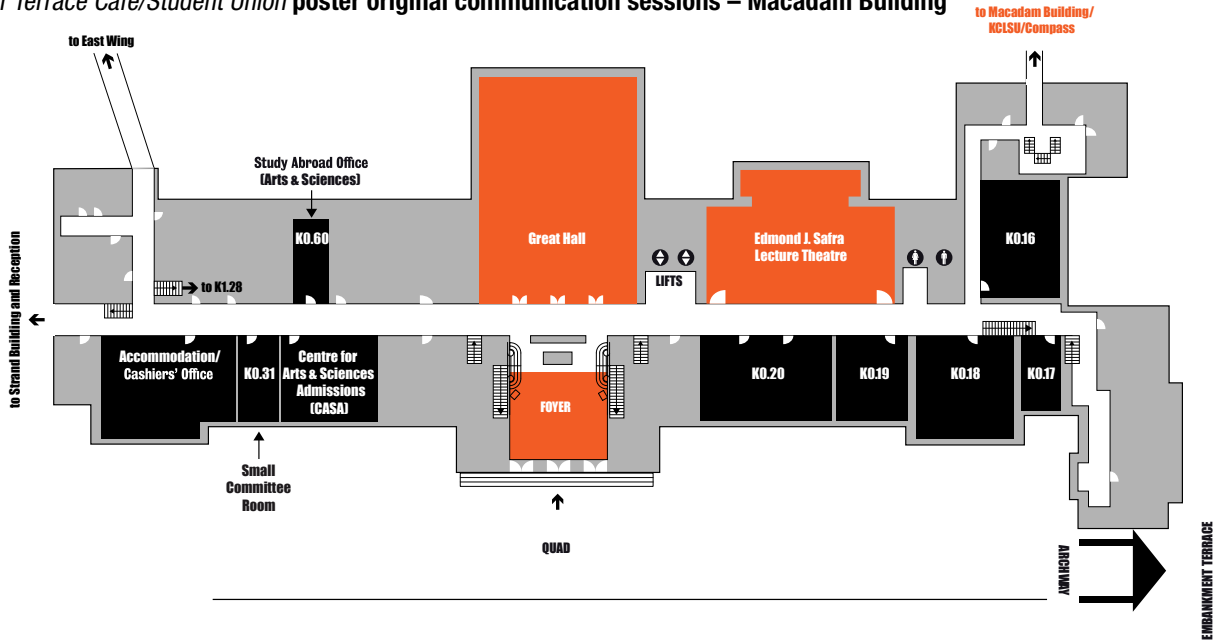
**KING'S BULILDING - GROUND FLOOR**

Foyer main entrance and registration

Edmond J.Safra Lecture Theatre Symposium Three sessions and oral original communication sessions

Great Hall Catering and exhibition space

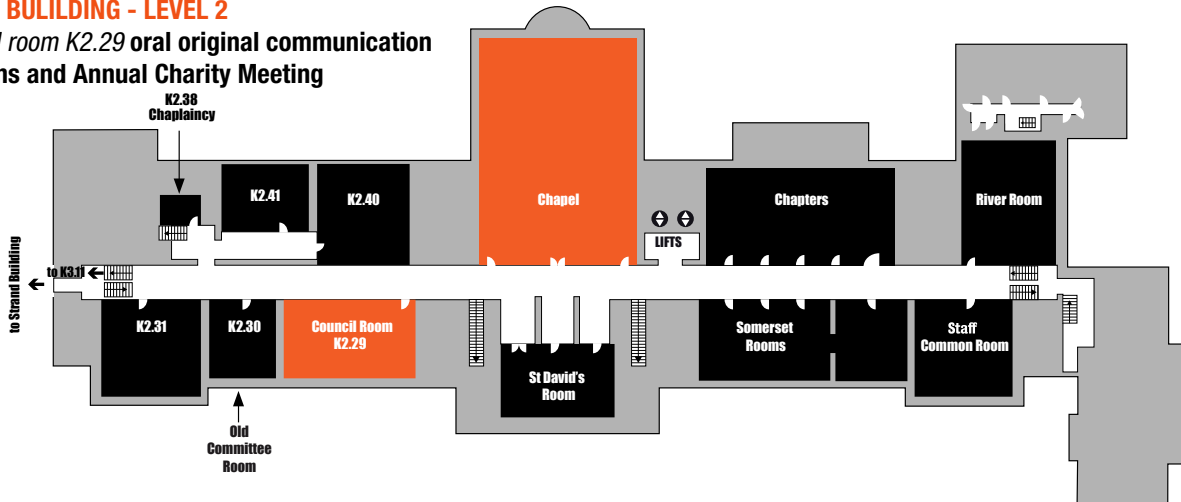
River Terrace Cafe/Student Union poster original communication sessions – Macadam Building



**KING'S BULILDING - LEVEL 2**

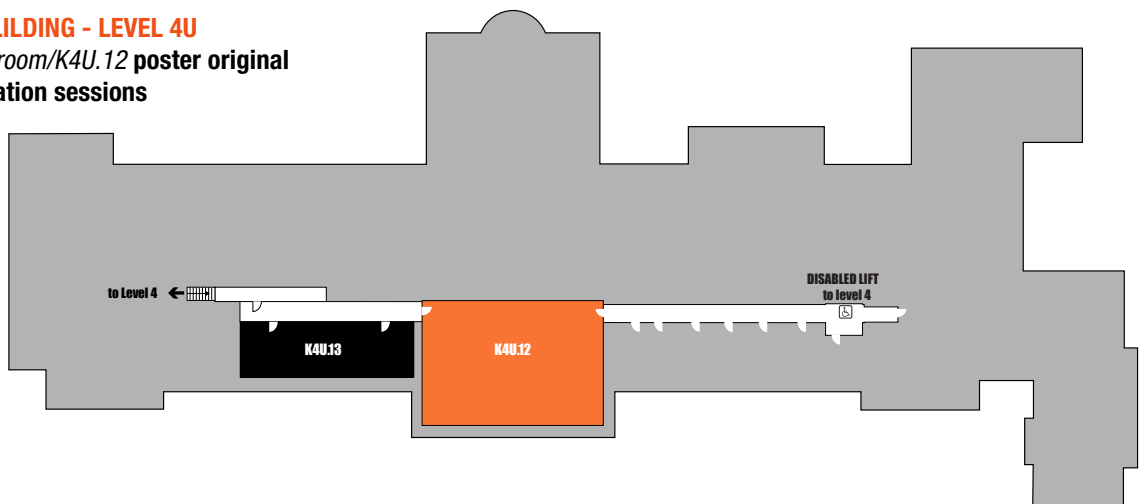
Council room K2.29 oral original communication sessions and Annual Charity Meeting

Chapel



**KING'S BULILDING - LEVEL 4U**

Geography room/K4U.12 poster original communication sessions







# 13<sup>th</sup> European Nutrition Conference

*Malnutrition in an Obese World:  
European Perspectives*

Hosted by  
**Federation of European  
Nutrition Societies (FENS)  
and The Nutrition Society**

**15 - 18 October 2019**  
Dublin, Ireland



[www.fens2019.org](http://www.fens2019.org)



# DAY 1

## MONDAY 10 JULY 2017

- 09:00**      **Registration and Refreshments**
- 10:45**      **Welcome**
- Symposium One: The global impact of urbanisation**  
Chair: Professor Tom Sanders, King's College London, UK  
*S-2.18 Arthur and Paula Lucas Lecture Theatre, Strand Building, Basement -2*
- 11:00**      **Health challenges of urban living**  
Professor Martin Wiseman, University of Southampton and WCRF International, UK
- 11:30**      **Global cities and everyday cultural diversity: opportunities for childhood nutrition**  
Professor Seeromanie Harding, King's College London, UK
- 12:00**      **Our daily bread- the logistic of the humble loaf**  
David Webster, Associated British Foods, UK
- 12:30**      **Panel Discussion: The global impact of urbanisation**
- 12:45**      **Lunch** and meet Industry Advisory Council Member, Kate Halliwell. Read more on page 4
- 13:45**      **Rank Prize Lecture**  
Chair: Professor John Mathers, Newcastle University, UK  
*S-2.18 Arthur and Paula Lucas Lecture Theatre, Strand Building, Basement -2*
- Evidence from nutritional epidemiology in framing dietary guidelines**  
Professor Daan Kromhout, University of Groningen, The Netherlands
- 14:30**      **Original communication session**  
**Oral original communication sessions:**  
*OC01-OC05: Edmond J.Safra Lecture Theatre, King's Building, Ground floor*  
*OC06-OC10: Council room K2.29, King's Building, Level 2*
- Poster original communication sessions:**  
*OC11-OC22: River Terrace Cafe/Student Union, Macadam Building, Ground floor*  
*OC23-OC31: Geography room/K4U.12, King's Building, Level 4U*
- 15:45**      **Refreshments** and meet Academia Advisory Council Member, Dr Shauna Cunningham. Read more on page 4
- 16:15**      **Original communication session**  
**Oral original communication sessions:**  
*OC32-OC36: Edmond J.Safra Lecture Theatre, King's Building, Ground floor*  
*OC37-OC42: Council room K2.29, King's Building, Level 2*
- Poster original communication sessions:**  
*OC43-OC53: River Terrace Cafe/Student Union, Macadam Building, Ground floor*  
*OC54-OC63: Geography room/K4U.12, King's Building, Level 4U*
- 17:45**      **Welcome Drinks Reception, Great Hall and River Terrace, King's College London**



Throughout the conference, participants are respectfully asked not to record or take photographs of slides given during presentations. Apart from being disruptive, it can compromise future publication in refereed journals, discourage presenters from showing original data, and disturb the flow of the presentation.

# SYMPOSIUM ONE: THE GLOBAL IMPACT OF URBANISATION

## HEALTH CHALLENGES OF URBAN LIVING

*Professor Martin Wiseman, University of Southampton, World Cancer Research Fund (WCRF) International, UK*

### PRESENTATION SUMMARY

Humans have evolved in a setting of relative food scarcity, requiring a physically active life to acquire the variety of foods and drinks needed to provide the energy and nutrients necessary for normal growth and development. In high income countries, most of the population now lives in urban environments far removed from those experienced over the majority of human existence, and in low and middle income countries there is an increasing move from rural to urban ways of life. Such urban living is characterised by ready access to food and drink, much of which is highly processed, nutrient poor and energy rich, and a decreasing need for physical activity as part of everyday life.

In the UK, national surveys provide evidence for changes in the energy, macronutrient and micronutrient content of the diet over time. In addition, more recent data provide information on prevailing levels of physical activity, while longer term measures offer proxies that would be expected to mirror changes in physical activity over time. Robust metabolic studies predict the impact of such changes on appetite and food and energy consumption, and they have been accompanied by a striking increase in overweight and obesity in children and adults, as well as in associated comorbidities including diabetes, cardiovascular disease and some cancers.

The determinants of these ways of life lie in complex interactions between personal factors (such as knowledge, attitudes and beliefs) and forces outside personal control including national and international policies in social, political and economic domains. Evidence indicates that the population impact on changing behaviours of individually focused interventions is constrained unless the dominant structural factors are also addressed.

### SPEAKER BIOGRAPHY

Professor Martin Wiseman is currently an independent nutrition consultant, and Medical and Scientific Adviser at the World Cancer Research Fund International (WCRF). In addition, he is a visiting professor in human nutrition at University of Southampton. He was project director for the 2007 WCRF/American Institute for Cancer Research (AICR) expert report Food, Nutrition, Physical Activity, and the Prevention of Cancer: a Global Perspective, and its 2009 companion Policy and Action for Cancer Prevention.

Until 1999 Professor Wiseman was head of the Nutrition Unit at the Department of Health, where he had responsibility for

nutrition science, including the work of COMA, the Committee on Medical Aspects of Food and Nutrition Policy; for nutrition surveys; and for advising on and implementing nutrition policy.

Professor Wiseman qualified from Guy's Hospital in London in 1975. He became a member of the Royal College of Physicians in 1977 and followed a traditional career path as a general physician until 1981 when he developed an interest in clinical research. He has published papers on diabetes and kidney function and the effects of nutrition on them. Professor Wiseman moved to the Department of Health in 1986 but still retains an appointment within the NHS, where he continues with clinical activities in a diabetes clinic.

He was Honorary External Relations Officer of the Nutrition Society from 2001 to 2006, and was Honorary Treasurer of the Association for Nutrition until 2014. He is Chair of the Management Team of the Intercollegiate Group on Nutrition of the Academy of Medical Royal Colleges, and is a Fellow of the Royal College of Physicians, of the Royal College of Pathologists, and of the Association for Nutrition.

## GLOBAL CITIES AND EVERYDAY CULTURAL DIVERSITY: OPPORTUNITIES FOR CHILDHOOD NUTRITION

*Professor Seeromanie Harding, King's College London, UK*

### PRESENTATION SUMMARY

Childhood obesity is a common concern across global cities and threatens sustainable urban development. Initiatives to improve nutrition and encourage physical exercise are promising but are yet to exert significant influence on childhood obesity. The level of child obesity in London, now on par with that of New York, is associated with distinct ethnic and socio-economic patterns. Ethnic inequalities in health are deep and enduring in London, underpinned by inequalities in employment, housing, access to welfare services, and discrimination. This presentation will explore the implications of everyday diversity for asset based approaches to nutritional health and well-being of children, with a particular focus on London's children.

London's children grow up in a rich cultural mix. Determinants of young Adult Social well-being and Health study (DASH), a longitudinal study of 6,500 of London's young people, demonstrated the positive impact of cultural diversity on young Londoners' lives. Born to parents born in more than 100 countries and exposed to multi-lingual/religion environments, they exhibited strong psychological resilience and sense of pride from 'cultural straddling', despite more material disadvantage in their childhood. London is a global city with local streets characterised by diversity in ethnicities, languages, religions,

foods and dress, a prominent marker of its outward facing identities. Growing up with everyday cultural diversity enhances the quality of life for London's children, and builds social capital. Rich community assets such as trust, cooperation, a sense of belonging and shared values, result from participating in social networks which work synergistically to build resilience and health among young people.

Interventions that neglect this socio-cultural infrastructure goes against widely shared values of social justice, equitable and sustainable development. Community engagement and multisectoral partnerships, involving for example schools and faith based organisations, provide promising leverage points for population-based nutrition interventions with equitable reach and access. Lessons learnt from current studies will be discussed particularly in relation to strategies, such as trust building and programme adaptability needed for innovative community based interventions to improve the nutrition of London's children.

### **SPEAKER BIOGRAPHY**

Seeromanie Harding is Professor of Social Epidemiology and Nutrition at King's College London. Her research focuses on social and ethnic inequalities in health, child and adolescent health, implementation science and global health. She is the Principal Investigator of the Determinants of Adolescents Social Well-being and Health study (DASH), which involves extensive collaboration with local communities. DASH has been instrumental in the understanding of the natural history from childhood to early adult life how young people in multicultural London develop cardiovascular risk but also psychosocial resilience to multiple challenges they face. Professor Harding also leads the CONgregations Taking ACTION against non-communicable diseases study in South America and the Caribbean which is evaluating the integration of places of worship into the primary care system to prevent and control non-communicable diseases, in collaboration with the Ministries of Health and Pan American Health Organisation. This innovative programme exploits the social connectivism of places of worship and their embeddedness in the wider society, to increase the reach to primary care to those most at risk.

# RANK PRIZE LECTURE

## EVIDENCE FROM NUTRITIONAL EPIDEMIOLOGY IN FRAMING DIETARY GUIDELINES

*Professor Daan Kromhout, University of Groningen, The Netherlands*

### PRESENTATION SUMMARY

Nutritional epidemiology deals with diet and the occurrence of major diseases in populations. Classic nutritional research deals with molecular biology, biochemistry, animal experimentation and metabolic studies in humans but does not directly address the occurrence of human disease. That is the domain of nutritional epidemiology, an occurrence science in which associations (observational studies) and effects (experimental studies) are investigated concerning different aspects of diet (nutrients, foods and dietary patterns) and the incidence of chronic diseases. Worldwide research on nutritional epidemiology provides the science base for Dietary Guidelines.

The intent of Dietary Guidelines is to summarise and synthesise knowledge regarding individual nutrients and foods into recommendations for a pattern of eating that can be adopted by the public. The first Guidelines for the Dutch population were published in 1986 and solely based on recommendations for nutrients. Twenty years later the Guidelines were formulated in terms of both nutrients and foods and the 2015 Guidelines were completely food-based. Another development is that the original Guidelines were based on evaluation of individual studies and the most recent one on systematic reviews and meta-analyses. The Guidelines develop more and more into integrated evidence-based messages to promote health and reduce risk of chronic diseases through diet.

In The Netherlands, the 2015 Dietary Guidelines were prepared by a multidisciplinary committee of the Health Council, an independent scientific advisory body of the Minister of Public Health. First a methodology document was prepared. The committee evaluated the peer-reviewed literature on the relationships among nutrients, foods, dietary patterns and the risk of 10 diet-related major chronic diseases e.g. cardiovascular diseases, type 2 diabetes, various types of cancer etc. The committee also selected three risk factors - systolic blood pressure, LDL-cholesterol and body weight that are causally related to cardiovascular diseases or diabetes. The Guidelines are based on the results of prospective cohort studies and randomised controlled trials. Judgements were made on the totality of evidence of the selected findings. Convincing evidence was based on strong effects of trial data in combination with strong associations of prospective cohort studies. Plausible evidence was based on strong associations of prospective studies only.

The first Guideline is a general one: Eat more plant-based food and less animal-based food. There are eight guidelines with

convincing evidence for increased consumption of vegetables and fruit, legumes, nuts, whole-grain products, fish, vegetable oils, tea and filtered coffee, three convincing guidelines for a limited consumption of refined cereal products, hard fats and sugar-containing beverages and two plausible guidelines: one for a limited intake of red and processed meat and another one for a few portions of milk and yogurt. Finally, there are also convincing guidelines for a reduced salt intake and supplementation of vitamin D, folic acid and vitamin B12 for specific groups.

In The Netherlands, the task of the Health Council is to update the Dietary Guidelines at intervals of approximately ten years. The recommended healthful foods and dietary patterns described by the Health Council are translated into public information on healthy eating by the Nutrition Centre.

### SPEAKER BIOGRAPHY

Daan Kromhout is Professor of Diet, Lifestyle and Healthy Ageing at the University of Groningen, The Netherlands, and Adjunct Professor of the University of Minnesota, Minneapolis, USA. He was Professor of Public Health Research at Wageningen University from 1994-2015 and Nutrition Foundation Professor of Nutrition and Epidemiology at the University of Leiden from 1984-1994. He was Academy Professor of the Royal Netherlands Academy of Arts and Sciences from 2010-2015 and Vice-President of the Health Council of the Netherlands, from 2005-2015.

Professor Kromhout was trained in Human Nutrition at Wageningen University (MSc in 1974 and PhD in 1978) and in Epidemiology and Public Health at the University of Minnesota, Minneapolis (MPH in 1981). He joined the Institute of Social Medicine at the University of Leiden from 1977-1988. He served the National Institute for Public Health (RIVM) in Bilthoven from 1988-2005 as Head of the Department of Epidemiology and as Division Director.

Professor Kromhout's research is focused on diet, lifestyle, cardiovascular diseases and healthy ageing. He is principal investigator of the Zutphen Study, the Dutch contribution to the Seven Countries Study of which he is co-chair, the Healthy Ageing Longitudinal study in Europe (HALE project) and the Alpha Omega Trial on omega-3 fatty acids and cardiovascular diseases.

Professor Kromhout (co-)authored more than 400 peer-reviewed research articles, was awarded several international prizes for his research and was knighted in the Order of the Dutch Lion in 2015.

# ORAL SESSION ONE

## THEME: PUBLIC HEALTH NUTRITION

14:30-15:45

Location: Edmond J.Safra Lecture Theatre

Chairs: Professor Basma Ellahi and Dr Carrie Ruxton

- OC01 **14:30** **Bone health in Gambian women: impact and implications of rural-to-urban migration and the nutrition transition.** By S.E. Dalzell<sup>1</sup>, L.M.A. Jarjou<sup>2</sup>; A. Prentice<sup>1,2</sup>; K. Ward<sup>1</sup> and G.R. Goldberg<sup>1,2</sup>.  
*<sup>1</sup>Medical Research Council Elsie Widdowson Laboratory, Cambridge CB1 9NL, UK; <sup>2</sup>Medical Research Council Unit The Gambia, The Gambia*  
Student Competition
- OC02 **14:45** **Bone health and dietary, lifestyle and anthropometric factors in urban dwelling South Asians (n 2438): data from the UK Biobank cohort** By A.L. Darling, D.J. Blackburn, K.R Ahmadi and S.A. Lanham-New. *School of Biosciences and Medicine, Faculty of Health and Medical Sciences, University of Surrey, Guildford, GU2 7XH*
- OC03 **15:00** **Dietary and age influences on bone health indices in pre-menopausal Brazilian women: preliminary results of the D-SOL Study.** By M.M. Mendes<sup>1</sup>, K.Hart<sup>1</sup>, P.B.Botelho,<sup>2</sup> L.Tripkovic<sup>1</sup>, S.L.Wilson-Barnes<sup>1</sup>, P.S. Gibson<sup>1</sup>, R.J.Manders<sup>1</sup>, J.Wainwright<sup>1</sup> and S.A.Lanham-New<sup>1</sup>. *<sup>1</sup>Department of Nutritional Sciences, Faculty of Health and Medical Sciences, University of Surrey, Guildford, Surrey, UK, GU2 7XH. <sup>2</sup>Faculty of Nutrition, Federal University of Goiás, GO, Brazil*  
Student Competition
- OC04 **15:15** **Dietary fatty acid profiles and percentage fat-free mass: Cross-sectional associations in the EPIC-Norfolk cohort.** By R.P.G. Hayhoe<sup>1</sup>, M.A.H. Lentjes<sup>2</sup>, A.A. Mulligan<sup>2</sup>, R.N. Luben<sup>2</sup>, K-T. Khaw<sup>2</sup> and A.A. Welch<sup>1</sup>, *<sup>1</sup>Population Health and Primary Care, Norwich Medical School, University of East Anglia, Norwich, Norfolk NR4 7TJ, <sup>2</sup>Public Health and Primary Care, University of Cambridge, Cambridgeshire CB1 8RN*
- OC05 **15:30** **Plasma  $\alpha$ -tocopherol concentration and associations with measures of skeletal muscle mass.** By A.A. Mulligan<sup>1</sup>, M.A.H. Lentjes<sup>1</sup>, R.P.G Hayhoe<sup>2</sup>, K-T. Khaw<sup>3</sup> and A.A. Welch<sup>2</sup>, *<sup>1</sup> Department of Public Health and Primary Care, University of Cambridge, Cambridgeshire CB1 8RN, <sup>2</sup> Department of Population Health and Primary Care, Norwich Medical School, University of East Anglia, Norwich, Norfolk NR4 7TJ and <sup>3</sup>Clinical Gerontology Unit, University of Cambridge, Cambridgeshire CB2 2QQ*

# ORAL SESSION TWO

## THEME: PUBLIC HEALTH NUTRITION

14:30-15:45

Location: Council Room K2.29

Chairs: Dr Gerda Pot and Professor Kevin Whelan

- OC06      **14:30**      **An investigation of the association between foods consumed and time-of-day in UK adolescents using the NDNS Rolling Programme (2008-2012).** By L. Palla<sup>1</sup>, A.N. Chapman<sup>1</sup>, J.D. Johnston<sup>2</sup> and S. Almoosawi<sup>3</sup>, <sup>1</sup>Dept Medical Statistics, London School of Hygiene and Tropical Medicine, London, WC1E 7HT, UK <sup>2</sup>University of Surrey, Guildford, Surrey, GU2 7XH, UK and <sup>3</sup>NNedPro Global Centre for Nutrition and Health, Cambridge, CB4 0WS, UK
- OC07      **14:45**      **Cross-sectional associations of Meal size and Meal timing with Lipid biomarkers in a UK population-based cohort,** By MAH Lentjes<sup>1</sup>, LM Oude Griep<sup>2</sup>, RH Keogh<sup>3</sup>, AA Mulligan<sup>1</sup>, and KT Khaw<sup>4</sup>, <sup>1</sup>University of Cambridge, Dept of Public Health & Primary Care, Cambridge CB1 8RN, <sup>2</sup>Imperial College London, Dept of Epidemiology and Biostatistics, London W2 1PG, London School of Hygiene and Tropical Medicine, London WC1E 7HT, <sup>4</sup>University of Cambridge, Clinical Gerontology Unit, Cambridge CB2 2QQ
- OC08      **15:00**      **Development of a meal coding system for the identification of meal-based dietary patterns in Japan.** By K. Murakami<sup>1</sup>, M.B.E. Livingstone<sup>2</sup> and S. Sasaki<sup>3</sup>, <sup>1</sup>Interfaculty Initiative in Information Studies, University of Tokyo, Tokyo 113 0033, Japan, <sup>2</sup>Northern Ireland Centre for Food and Health, Ulster University, Coleraine BT52 1SA, UK and <sup>3</sup>School of Public Health, University of Tokyo, Tokyo 113 0033, Japan
- OC09      **15:15**      **Sleep duration is associated with daily consumption of fruits and vegetables in British women from The UK Women's Cohort Study.** By E. A. Noorwali<sup>1,2</sup>, J. E. Cade<sup>1</sup>, V.J. Burley<sup>1</sup> and L. J. Hardie<sup>3</sup>, <sup>1</sup>Nutritional Epidemiology Group, School of Food Science and Nutrition, University of Leeds, Leeds LS2 9JT, UK, <sup>2</sup>Department of Clinical Nutrition, Umm Al-Qura University, Saudi Arabia <sup>3</sup>Division of Epidemiology and Biostatistics, School of Medicine, University of Leeds, Leeds, LS2 9JT, UK
- OC10      **15:30**      **The feasibility of lengthening sleep in habitually short sleepers and its effect on dietary intake, energy balance, and metabolic risk factors: A randomised controlled trial.** By H. K. Al Khatib<sup>1</sup>, W. L. Hall<sup>1</sup>, A. Creedon<sup>1</sup>, E. Ooi<sup>1</sup>, T. Masri<sup>1</sup>, S. V. Harding<sup>1</sup>, L. McGowan<sup>2</sup>, J. Darzi<sup>1\*</sup> and G. K. Pot<sup>1,3\*</sup> \*contributed equally, <sup>1</sup>Diabetes & Nutritional Sciences Division, Faculty of Life Sciences & Medicine, King's College London, London SE1 9NH, U.K. <sup>2</sup>Centre for Public Health, School of Medicine, Dentistry and Biomedical Sciences, Queens University Belfast, Belfast BT12 6BA, U.K. <sup>3</sup>Department of Health and Life, Virje Universiteit Amsterdam, Faculty of Earth and Life Sciences, Amsterdam, The Netherlands  
Student Competition



# POSTER SESSION ONE

## THEME: CELLULAR AND MOLECULAR NUTRITION AND WHOLE BODY METABOLISM

14:30-15:54

Location: Geography room/K4U.12

Chairs: Professor David Bender and Professor Harry McArdle

- OC11 **14:30** **Effect of vitamin D supplementation on the induction of pro-inflammatory cytokines (il-8) from hepatocytes** By O. A. Akinyemi<sup>1</sup>, J. Mendis<sup>2</sup>, S. Lanham-New<sup>1</sup> and R. Simmonds<sup>3,1</sup>, *Department of Nutritional Sciences, 2 Clinical research Centre 3 Department of Microbial Sciences, <sup>1,2,3</sup> Faculty of Health and Medical Sciences, University of Surrey, Guildford, GU2 7XH*  
Student Competition
- OC12 **14:37** **Non-alcoholic compounds in beer have protective effects in Caco-2 cells by increasing the expression of genes in the *Keap1-Nrf2* pathway.** By R. Watts, H. Lu, M. Arno M, V.R. Preedy and P.A. Sharp, *Diabetes & Nutritional Sciences Division, King's College London, UK*
- OC13 **14:44** **Ferulic acid and its derivatives modulate nitric oxide balance in HUVEC cells** By M. Le Sayec<sup>1</sup>, G. Serreli<sup>1</sup>, E. Thou<sup>1</sup>, C. Lacour<sup>1</sup>, J.P.E. Spencer<sup>2</sup> and G. Corona<sup>1</sup>, *Health Sciences Research Centre, Life Sciences Department, Whitelands College, University of Roehampton, London, UK and <sup>2</sup>Molecular Nutrition Group, School of Chemistry, Food and Pharmacy, University of Reading, Reading RG6 6AP, UK*
- OC14 **14:51** **Interaction between lipoprotein lipase and apolipoprotein E gene polymorphisms and dietary factors on lipid traits.** By I. Shatwan<sup>1,2</sup>, B. Ellahi<sup>3</sup>, K.H. Winther<sup>4</sup>, Y. Ben-Shlomo<sup>5</sup>, P.C. Elwood<sup>6</sup>, I. Givens<sup>7</sup>, M. Rayman<sup>8</sup>, J.A. Lovegrove<sup>1</sup>, K.S. Vimalaswaran<sup>1</sup>, *<sup>1</sup> Hugh Sinclair Unit of Human Nutrition, University of Reading, Whiteknights, Reading, UK, RG6 6AP, UK, <sup>2</sup> Food and Nutrition Department, Faculty of Home Economics, King Abdulaziz University, Jeddah, Saudi Arabia, <sup>3</sup> Faculty of Health and Social Care, University of Chester, Chester, CH1 1SL, UK, <sup>4</sup> EFE – Endocrine Elite Research Centre Department of Endocrinology and Metabolism Odense University Hospital Denmark, <sup>5</sup> Department of Social Medicine, University of Bristol, Bristol, BS8 1TH, UK, <sup>6</sup> Department of Epidemiology, Statistics and Public Health, Cardiff University, University Hospital of Wales, Heath Park, Cardiff, CF14 4XW, UK, <sup>7</sup> Centre for Food, Nutrition and Health, University of Reading, Arley Gate, Reading RG6 6AR, UK, <sup>8</sup> Department of Nutritional Sciences Faculty of Health and Medical Sciences, University of Surrey Guildford, GU2 7XH, UK*  
Student Competition
- OC15 **14:58** **Determination of the antioxidant activity and polyphenol content of different types of *Rhus coriaria* Linn (sumac) from different regions.** By N.Soleymani Majd, S. Coe, S. Thondre and H. Lightowler, *Functional Food Centre, Department of Sport and Health Sciences, Oxford Brookes University, Gipsy Lane, Headington, Oxford OX3 0BP*  
Student Competition
- OC16 **15:05** **Antioxidant intake among maladapted highlanders: link to vascular function.** By T. Filippini<sup>1</sup>, C.J. Marley<sup>1</sup>, J.V. Brugniaux<sup>1,2</sup>, C. Murillo Jauregui<sup>3</sup>, M. Villena<sup>3</sup>, C. Sartori<sup>4</sup>, S.F. Rimoldi<sup>5</sup>, U. Scherrer<sup>6</sup> and D.M. Bailey<sup>1</sup>. *<sup>1</sup> University of South Wales, CF37 4BD, UK, <sup>2</sup> Western Sydney University, Australia<sup>3</sup>, <sup>5</sup> Instituto Boliviano de Biología de Altura, Bolivia, <sup>4</sup> Centre Hospitalier Universitaire Vaudois, Switzerland and <sup>5</sup> University Hospital of Bern, Switzerland*
- OC17 **15:12** **DNA methylation regulates expression of the iron regulatory peptide hepcidin in hepatic cell lines.** By A. Hussain<sup>1</sup>, R. Clarkson<sup>1</sup>, I. Morison<sup>2</sup> and P.A. Sharp<sup>1</sup>, *<sup>1</sup> Diabetes & Nutritional Sciences Division, King's College London, UK and <sup>2</sup> Department of Pathology, University of Otago, New Zealand*
- OC18 **15:19** **Association between hepatic iron sensing genes and hepcidin expression in liver cell lines.** By R. Clarkson<sup>1</sup>, A. Hussain<sup>1</sup>, I. Morison<sup>2</sup> and P.A. Sharp<sup>1</sup>, *<sup>1</sup> Diabetes & Nutritional Sciences Division, King's College London, UK and <sup>2</sup> Department of Pathology, University of Otago, New Zealand*



- OC19      **15:26**      **Effects of carrot powder intake after weaning on tumours in APC<sup>Min</sup> mice.** By M. Almqbel, C.J. Seal and K. Brandt, Human Nutrition Research Centre, *School of Agriculture, Food and Rural Development, Newcastle University, Newcastle upon Tyne, NE1 7RU, UK*  
Student Competition
- OC20      **15:33**      **The effects of restricted feeding on the ultradian rhythm of corticosterone secretion and steroidogenesis in the rat adrenal.** By V. Pyc, F. Spiga and S. Lightman. *School of Clinical Sciences, University of Bristol, Dorothy Hodgkin Building, BS1 3NY, UK*  
Student Competition
- OC21      **15:40**      **The comparative effects of intermittent versus continuous energy restriction on anthropometry and cardiometabolic disease risk markers in obese patients utilizing weight loss support services provided by an NHS tier 3 weight management service.** By R.Antoni<sup>1</sup>, K.L.Johnston<sup>3</sup>, C.Steele<sup>2</sup>, D.Carter<sup>2</sup>, M.D.Robertson<sup>1</sup> and M.Capehorn<sup>2</sup> <sup>1</sup>*Nutrition, Metabolism and Diabetes Research Group, Faculty of Health and Medical Sciences, University of Surrey, Guildford, GU2 7WG*, <sup>2</sup>*Rotherham Institute for Obesity, Clifton Medical Centre, The Health Village, Doncaster Gate, Rotherham, S651DA* and <sup>3</sup>*Lighterlife UK Ltd, Cavendish House, Parkway, Harlow Business Park, Essex, CM19 5QF*
- OC22      **15:47**      **Deriving whole body skeletal muscle mass from magnetic resonance imaging in type 2 diabetic men of White and Black ethnicity.** By O. Hakim<sup>1,2</sup>, G. Charles-Edwards<sup>2</sup> and L.M. Goff<sup>1</sup>, <sup>1</sup>*Division of Diabetes and Nutritional Sciences*, <sup>2</sup>*Department of Biomedical Engineering, King's College London, SE1 1UL, UK*

# POSTER SESSION TWO

## THEME: PUBLIC HEALTH NUTRITION

14:30-15:33

Location: River Terrace Café/Student Union

Chairs: Dr Eirini Dimidi and Dr Bernadette Moore

- OC23 **14:30** **Traditional food practices in village settings remembered by older Singaporeans.** By C.D.X Xiong and I. A. Brownlee. *Newcastle University (Singapore), Human Nutrition Research Centre, 172A Ang Mo Kio Ave 8, Singapore*
- OC24 **14:37** **A cross-sectional study investigating the impact of cultural heritage on cardiovascular risk factors in Greek-Cypriot adults living the UK** By C. Andronikou, L. O'Connor, and T.J Butler, *Department of Health Professions, Manchester Metropolitan University, Manchester, M15 6BG*
- OC25 **14:44** **Dietary quality of adults in a large metropolitan area of the Kurdistan Region, Iraq.** By J.S. Ismail, L. O'Connor and S. Patel. *Department of Health Professions, Manchester Metropolitan University, Manchester, M15 6BG*
- OC26 **14:51** **The sociocultural aspects of takeaway food consumption in a low-socio-economic ward in the large metropolitan city of Manchester: A grounded theory study.** By J. Blow, S. Patel and R. Gregg, *Department of Health Professions, Manchester Metropolitan University, Manchester, M15 6BG*
- OC27 **14:58** **Understanding underutilisation of locally grown tropical fruit and vegetables – why are imported apples preferred in Malaysia?** By K.H. Ng<sup>1</sup>, M. Maqbool<sup>2,3</sup>, F.S. Ong<sup>1</sup> and B. A. Graf<sup>1,4</sup>. <sup>1</sup>*University of Nottingham Malaysia Campus, Semenyih, Selangor, Malaysia.* <sup>2</sup>*Crops for the Future Research Centre, Semenyih, Selangor, Malaysia.* <sup>3</sup>*Department of Horticulture, The University of Poonch, Pakistan.* <sup>4</sup>*Department of Health Professions, Manchester Metropolitan University, M15 6BG Manchester, UK*
- OC28 **15:05** **British and Spanish Youths: How different are their eating habits?** By M. P. Vílchez<sup>1</sup> and L. Santos-Merx<sup>2</sup>, <sup>1</sup>*Department of Education, Faculty of Social Sciences and Communication, Catholic University of Murcia, Spain and* <sup>2</sup>*Food and Human Nutrition, Newcastle University Singapore, Singapore*
- OC29 **15:12** **Perceptions of Saudi Arabian adults towards food and health: careless or clueless?** By M.M. Alkhalaf, C.A. Edwards, E. Combet, *Human Nutrition, New Lister Building, School of Medicine, College of Medical, Veterinary and Life Sciences, University of Glasgow, Glasgow G31 2ER, UK*  
Student Competition
- OC30 **15:19** **The effect of freedom of choice in increasing vegetable consumption in Greek pre-school children: The HabEat Study.** By V. Costarelli<sup>1</sup>, G. Moschonis<sup>2</sup>, A. Yiannopoulou<sup>2</sup> and Y. Manios<sup>2</sup>, *Human Ecology Laboratory, Department of Home Economics and Ecology, Harokopio University<sup>1</sup>, Department of Nutrition & Dietetics Harokopio University, 70 El. Venizelou Ave, 176 71 Kallithea, Athens, Greece<sup>2</sup>*
- OC31 **15:26** **Nutritional status and health profile among single mothers in Malaysia.** By H. Sakinah<sup>1</sup>, M.Y. Noor Aini<sup>1</sup>, A.R. Shariza<sup>2</sup>, and C.M. Teoh<sup>2</sup>, <sup>1</sup>*School of Nutrition and Dietetics, Faculty of Health Sciences, Universiti Sultan Zainal Abidin, Malaysia and* <sup>2</sup>*Nutrition and Dietetics Programme, School of Health Sciences, Universiti Sains Malaysia, Malaysia*

# ORAL SESSION THREE

## THEME: WHOLE BODY METABOLISM

16:15-17:30

Location: Council Room K2.29

Chair: Professor Bruce Griffin and Dr Yemisi Latunde-Dada

- OC32      **16:15**      **Different methods of cooking starchy-carbohydrate food and its impact on postprandial lipid metabolism.** By R. Oraee, A. Alzaabi, M.D.Robertson, B.A. Fielding, *Department of Nutritional Sciences, Faculty of Health and Medical Sciences, University of Surrey, Guildford, GU2 7WG, UK.*  
Student Competition
- OC33      **16:30**      **Meal fat composition has differential effects on biomarkers of postprandial endothelial function in postmenopausal women.** By Kumari M. Rathnayake<sup>1</sup>, Michelle Weech<sup>1</sup>, Kim G. Jackson<sup>1</sup> and Julie A. Lovegrove<sup>1</sup>, <sup>1</sup>*Hugh Sinclair Unit of Human Nutrition and Institute for Cardiovascular and Metabolic Research, Department of Food & Nutritional Sciences, University of Reading, Reading, UK, RG6 6AP.*  
Student Competition
- OC34      **16:45**      **Volatile organic compounds predict response to both low FODMAP diet and probiotics in irritable bowel syndrome: a randomised controlled trial.** By M. Rossi<sup>\*1</sup>, R. Aggio<sup>\*2</sup>, H. Staudacher, M.Lomer, J.O. Lindsay, P. Irving, C. Probert<sup>\*\*</sup>, and K. Whelan<sup>\*\*1</sup>, <sup>1</sup>*Diabetes and Nutritional Sciences, King's College London, SE1 9NH*, <sup>2</sup>*Guy's and St Thomas' NHS Foundation Trust, SE1 7EH*, <sup>3</sup>*University of Liverpool, L69 3BX* and <sup>4</sup>*Bart's Health NHS Trust, E1 2ES* <sup>\*</sup>*Authors contributed equal parts*
- OC35      **17:00**      **Fermentable carbohydrates (FODMAPs) as triggers of functional gastrointestinal symptoms in patients with inflammatory bowel disease: a randomised, double-blind, placebo-controlled, cross-over, re-challenge trial.** By S. Cox<sup>1</sup>, A. Prince<sup>1</sup>, C. Myers<sup>1</sup>, P.M. Irving<sup>1,2</sup>, J.O. Lindsay<sup>3</sup>, M.C. Lomer<sup>1,2</sup> and K. Whelan<sup>1</sup>, <sup>1</sup>*Diabetes and Nutritional Sciences Division, King's College London, London, UK*, <sup>2</sup>*Department of Gastroenterology, Guy's and St Thomas' NHS Foundation Trust, London, UK* and <sup>3</sup>*Department of Gastroenterology, Barts Health NHS Trust, London, UK*  
Student Competition
- OC36      **17:15**      **Prebiotic B-Galacto-oligosaccharide supplementation of the low FODMAP diet improves symptoms but does not prevent diet induced decline in bifidobacteria: a randomised controlled trial.** By B Wilson<sup>1</sup>, M Rossi<sup>1</sup>, G Parkes<sup>2</sup>, Q Aziz<sup>2</sup>, S Anderson, P Irving<sup>3</sup>, M Lomer<sup>1,3</sup> and K Whelan<sup>1</sup>, <sup>1</sup>*King's College London, Diabetes and Nutritional Sciences Division, London, UK*; <sup>2</sup>*Barts Health NHS Trust, Department of Gastroenterology, London, UK*; <sup>3</sup>*Guy's and St Thomas' NHS Foundation Trust, Department of Gastroenterology, London, UK*

# ORAL SESSION FOUR

## PUBLIC HEALTH NUTRITION

16:15-17:45

Location: Edmond J.Safra Lecture Theatre

Chair: Professor Philip Calder and Dr Charlotte Mills

- OC37 **16:15** **Mediterranean diet adherence and cardiovascular risk factors in a South Asian population: A cross-sectional study** By I. Saeid, L. O'Connor, and T.J. Butler, *Department of Health Professions, Manchester Metropolitan University, Manchester, M15 6BG*
- OC38 **16:30** **Variability of food and nutrient composition measured through adherence to the Mediterranean diet in Mediterranean and non-Mediterranean regions.** By, V.E. Awuzudike<sup>1</sup>, A. Jennings<sup>2</sup>, J.V. Craig<sup>3</sup> and A. A. Welch<sup>3</sup>, <sup>1</sup>School of Biological Sciences, <sup>2</sup>Department of Nutrition, and <sup>3</sup>Department of Public Health & Primary Care, Norwich Medical School, University of East Anglia NR4 7TJ, UK  
Student Competition
- OC39 **16:45** **Associations between tree nut consumption and diet quality in the UK adult population based on National Diet and Nutrition Survey (NDNS) rolling programme 2008-2014.** By V. Dikariyanto<sup>1</sup>, W. L. Hall<sup>1</sup>, S. E. E. Berry<sup>1</sup> and G. K. Pot<sup>1,2</sup>. <sup>1</sup>Diet and Cardiometabolic Disease Research Group, Faculty of Life Science and Medicine, King's College London, London SE1 9NH, UK and <sup>2</sup>Vrije Universiteit Amsterdam, The Netherlands  
Student Competition
- OC40 **17:00** **A comparison of chronic consumption of dairy products varying in fatty acid composition on postprandial biomarkers of endothelial function: Results from the RESET study.** By D. Vasilopoulou<sup>1,2,0</sup>, Markey<sup>1,2,5</sup>, C.C. Fagan<sup>2</sup>, K.E. Kliem<sup>3</sup>, S.Todd<sup>4</sup> D.J. Humphries<sup>3</sup>, K.G. Jackson<sup>1,2</sup>, D.I. Givens<sup>3</sup> and J.A. Lovegrove<sup>1,2</sup>, <sup>1</sup>Hugh Sinclair Unit of Human Nutrition and Institute for Cardiovascular and Metabolic Research, <sup>2</sup>Department of Food and Nutritional Sciences, <sup>3</sup>Institute for Food, Nutrition and Health, <sup>4</sup>Department of Mathematics and Statistics, University of Reading, Reading, RG6 6AP and <sup>5</sup>School of Sport, Exercise and Health Sciences, Loughborough University, Loughborough, LE11 3TU  
Student Competition
- OC41 **17:15** **Co-design of a culturally-tailored diet & lifestyle intervention for diabetes management in the UK African-Caribbean community.** By A.P. Moore<sup>1</sup>, S.H. Stanton-Fay<sup>2</sup>, C.A. Rivas<sup>3</sup>, S. Harding<sup>1</sup>, L.M. Goff<sup>1</sup>. <sup>1</sup>Diabetes & Nutritional Sciences Division, King's College London. <sup>2</sup>Research Dept. of Clinical, Education & Health Psychology, University College London. <sup>3</sup>Social Sciences Research Unit, University College London
- OC42 **17:30** **A new approach for developing food frequency questionnaires: the Food Questionnaire Creator.** By J. Hooson<sup>1</sup>, M. Warthon-Medina<sup>1</sup>, N. Hancock<sup>1</sup> and J. E. Cade<sup>1\*</sup>, on behalf of the DIET@NET consortium<sup>1</sup> *Nutritional Epidemiology Group, School of Food Science and Nutrition, University of Leeds, Leeds LS2 9JT, UK*

# POSTER SESSION THREE

## THEME: PUBLIC HEALTH NUTRITION

16:15-17:32

Location: Geography room K4U.12

Chair: Dr Kelly Johnston and Professor Chris Seal

- OC43      **16:15**      **Nutrition knowledge of Irish Dancers.** By J. Challis<sup>1</sup>, R. Cahalan<sup>2</sup>, L. Cronin<sup>1</sup>, S. Reeves<sup>1</sup> and O. NiBhriain<sup>2</sup>, <sup>1</sup>University of Roehampton, London, SW15 4JD, <sup>2</sup>University of Limerick, Sreelane, Castletroy, Co. Limerick, Ireland  
Student Competition
- OC44      **16:22**      **Breakfast habits, wellbeing and health of parkrunners.** By S. Reeves<sup>1</sup>, E. Grandy<sup>2</sup>, L. Halsey<sup>1</sup>, T. Mayan<sup>1</sup> and J. Huber<sup>3</sup>, <sup>1</sup>University of Roehampton, London, SW15 4JD, <sup>2</sup>Cleveland Clinic, Cleveland, OH 44195, USA, <sup>3</sup>University of Brighton, Falmer, Brighton, BN1 9PH
- OC45      **16:29**      **Delaying breakfast: Impact on breakfast and subsequent meal quality among young Singaporeans.** By L. Santos-Merx<sup>1</sup>, S. Firdaus<sup>1</sup>, M.E. Tay<sup>2</sup> and I. A. Brownlee<sup>1</sup>, <sup>1</sup>Food and Human Nutrition, Newcastle University Singapore, Singapore and <sup>2</sup>School of Chemical and Life Sciences, Nanyang Polytechnic, Singapore
- OC46      **16:36**      **Longitudinal associations of skipping breakfast with ethnicity and cardiometabolic risk: the Determinants of Adolescence, now young Adults, Social well-being and Health Study (DASH)** By Goff LM<sup>1</sup>, Silva MJ<sup>1</sup>, Bordoli C<sup>1</sup>, Enayat ZE<sup>1</sup>, Cassidy A<sup>1</sup>, Maynard M<sup>2</sup>, Harding S<sup>1</sup>. <sup>1</sup>Division of Diabetes & Nutritional Sciences, King's College London, UK; <sup>2</sup>School of Health & Well-Being, Leeds Beckett University, UK
- OC47      **16:43**      **The effects of takeaway (fast) food consumption on UK adolescent's diet quality.** By A. Taher<sup>1</sup> and C.E.L.Evans<sup>1</sup>, <sup>1</sup>Nutritional epidemiology group, School of Food Science and Nutrition, University of Leeds, Leeds, LS2 9JT, UK  
Student Competition
- OC48      **16:50**      **The hospital foodscape: characterisation of the hospital food fringe across London.** By A. Knight<sup>1</sup> and M. O'Keeffe<sup>1</sup>. <sup>1</sup>Division of Diabetes & Nutritional Sciences, King's College London, London, SE1 9NH, UK
- OC49      **16:57**      **Cross-sectional associations between Eating Occasions, Meals, and Snacks with blood lipids in a UK population-based cohort.** By MAH Lentjes<sup>1</sup>, LM Oude Griep<sup>2</sup>, RH Keogh<sup>3</sup>, AA Mulligan<sup>1</sup>, and KT Khaw<sup>4</sup>, <sup>1</sup>University of Cambridge, Dept of Public Health & Primary Care, Cambridge CB1 8RN, <sup>2</sup>Imperial College London, Dept of Epidemiology and Biostatistics, London W2 1PG, London School of Hygiene and Tropical Medicine, London WC1E 7HT, <sup>4</sup>University of Cambridge, Clinical Gerontology Unit, Cambridge CB2 2QQ
- OC50      **17:04**      **Family meals to fast food: findings from a systematic review of childhood and adolescent cohorts which measure whole diet and subsequent adiposity.** By C.E. Rycroft, C.E.L. Evans and J.E. Cade, *Nutritional Epidemiology Group, School of Food Science and Nutrition, University of Leeds, Leeds, LS2 9JT*  
Student Competition
- OC51      **17:11**      **"I don't need supporting, me, I just do it." A qualitative study of the social influences in male weight loss behaviours.** By K. A. Harcourt<sup>1</sup>, M. E. Clegg<sup>1</sup>, J. V. Appleton<sup>2</sup>, L. Hunter<sup>2</sup>, <sup>1</sup>Department of Sport and Health Sciences, Oxford Brookes University, Oxford, OX3 0BP, UK and <sup>2</sup>Department of Social Work and Public Health, Oxford Brookes University, Oxford, OX3 0FL, UK  
Student Competition
- OC52      **17:18**      **Estimation of the average nutrient profile of UK snacks and development of a control snack intervention for utilisation in dietary intervention studies.** By L Smith, V Dikariyanto, L Francis, M Rokib, W L Hall and S E Berry, *Diet and Cardiometabolic Health Research Group, Faculty of Life Sciences & Medicine, King's College London, Franklin Wilkins Building, 150 Stamford Street, London, SE1 9NH*
- OC53      **17:25**      **Calculating nutritional quality per 100g or per serve.** By M. Gressier, P. Gómez Alvarez, A. Vlassopoulos, G. Masset *Nutrient Profiling, Consumer Science & Applied Nutrition, Institute of Material Sciences, Nestlé Research Center, Vers-chez-les-Blanc, 1000 Lausanne 26, Switzerland*

# POSTER SESSION FOUR

## THEME: PUBLIC HEALTH NUTRITION

16:15-17:32

Location: River Terrace Café/Student Union

Chair: Professor Alison Gallagher and Dr Anne Mullen

- OC54 **16:15** **Dietary intakes of Gambian women: impact of the nutrition transition.** By S.E. Dalzell<sup>1</sup>, L.M.A. Jarjou<sup>2</sup>; A. Prentice<sup>1,2</sup>; K. Ward<sup>1</sup> and G.R. Goldberg<sup>1,2</sup>. <sup>1</sup>Medical Research Council Elsie Widdowson Laboratory, Cambridge CB1 9NL, UK; <sup>2</sup>Medical Research Council Unit The Gambia, The Gambia Student Competition
- OC55 **16:22** **Maternal bone mineral changes during pregnancy as measured by peripheral QCT in rural Gambian women with a habitually low calcium intake.** By M. Ó Breasail<sup>1</sup>, S. Schoenbuchner<sup>1</sup>, L. Jarjou<sup>2</sup>, S.E. Moore<sup>2</sup>, A. Prentice<sup>1,2</sup>, and K.A. Ward<sup>1,4</sup>. <sup>1</sup>MRC EWL, 120 Fulbourn Road, Cambridge, CB1 9NL, UK; <sup>2</sup>MRC Keneba, MRC The Gambia Unit, The Gambia; <sup>3</sup>Division of Women's Health, Kings College London SE1 7EH, 4MRC Lifecourse Epidemiology, University of Southampton, Tremona Rd, Southampton SO16 6YD Student Competition
- OC56 **16:29** **Dietary potential renal acid load and net acid excretion in rural and urban pre-menopausal Gambian women.** By G.R. Goldberg<sup>1,2</sup>, S.E. Dalzell<sup>1</sup>, L.M.A. Jarjou<sup>2</sup>, K. Ward<sup>1</sup> and A. Prentice<sup>1,2</sup>. <sup>1</sup>Medical Research Council Elsie Widdowson Laboratory, Cambridge CB1 9NL, UK and <sup>2</sup>Medical Research Council Unit The Gambia, The Gambia
- OC57 **16:36** **The effect of vitamin D supplementation on serum 25(OH)D concentration in Royal Navy submariners.** By F. Gunner<sup>1</sup>, M. Lindsay<sup>1</sup>, P.E.H. Brown<sup>1</sup>, A.M. Shaw<sup>1</sup>, S.E. Britland<sup>1</sup>, T. Davey<sup>1</sup>, S.A. Lanham-New<sup>2</sup>, B.A. Griffin<sup>2</sup> and J.L. Fallowfield<sup>1</sup>. <sup>1</sup>Environmental and Medicine Sciences, The Institute of Naval Medicine, Gosport, Hampshire, UK, PO12 2DL. <sup>2</sup>Department of Nutritional Sciences, School of Biosciences and Medicine, Faculty of Health and Medical Sciences, University of Surrey, Guildford, Surrey, UK, GU2 7XH
- OC58 **16:43** **Vitamin D2 fortification of bread with 3 varieties of sunlight exposed mushrooms.** By J. De Caro, L. P. Quintino, T. M. Tomé, S.A. Lanham-New and J.E. Brown, Department of Nutritional Sciences, Faculty of Health and Medical Sciences, University of Surrey, GU2 7XH, Guildford, Surrey, England
- OC59 **16:50** **Ethnic differences in vitamin D and Interleukin-6 levels in healthy South Asian and Caucasian women revealed by the D2-D3 study.** By A.L. Salter, J. Elliott, J. Sier, O.A. Akinyemi, J. Hunt, S.A. Lanham-New and D.J. Blackbourn, School of Biosciences and Medicine, Faculty of Health and Medical Sciences, University of Surrey, Guildford, Surrey, UK, GU2 7XH
- OC60 **16:57** **The Regulation of Dietary Iron Bioavailability by Vitamin C: A Systematic Review and Meta-Analysis.** By A. Heffernan, C. Evans, M. Holmes and J.B. Moore: School of Food Science and Nutrition, University of Leeds, Leeds, West Yorkshire, LS2 9JT, UK
- OC61 **17:04** **Effect of agronomically biofortified zinc flour on zinc and selenium status in resource poor settings; a randomised control trial** By M. J. Khan<sup>1</sup>, U. Ullah<sup>1</sup>, Usama<sup>1</sup>, N. Lowe<sup>2</sup>, M. Broadley<sup>3</sup>, M. Z. Afridi<sup>4</sup>, M. Zia<sup>5</sup>, H. J. McArdle<sup>6</sup> and S. Young<sup>3</sup>. <sup>1</sup>Institute of Basic Medical Sciences, Khyber Medical University Peshawar Pakistan, <sup>2</sup> Faculty of Health and Wellbeing, University of Central Lancashire Preston PR1 2HE, UK <sup>3</sup>University of Nottingham, Sutton Bonington Campus Loughborough LE12 5RD, UK, <sup>4</sup>Lady Reading Hospital Peshawar Pakistan, <sup>5</sup> Research and Development office, Fauji Fertilizers Pakistan, <sup>6</sup>The Rowett Institute University of Aberdeen AB25 2ZD, UK
- OC62 **17:11** **Identifying a potential tool to measure household food insecurity in the UK: a systematic review.** By G. Nguyen<sup>1</sup>, L. Aucott<sup>1</sup>, G. McNeill<sup>1</sup> and F. Douglas<sup>2</sup>. <sup>1</sup>The Institute of Applied Health Sciences and <sup>2</sup>The Rowett Institute, University of Aberdeen, Scotland, AB25 2ZD, UK. Student Competition

- OC63      **17:18**      **Does dietary intake affect age at natural menopause in the UK Women's Cohort Study?** By Y. Dunneram<sup>1</sup>, J.E. Cade<sup>1</sup>, D.C. Greenwood<sup>2</sup> and V.J. Burley<sup>1</sup>, <sup>1</sup>*Nutritional Epidemiology Group, School of Food Science & Nutrition, and 2*Division of Biostatistics, University of Leeds, Leeds LS2 9JT, UK  
Student Competition
- OC110      **17:25**      **Sunshine exposure and serum 25OHD concentrations during a 12 month randomized control trial with high dose vitamin D supplementation: results from the Vitamin D Supplementation in Older People (VDOP) study<sup>(1)</sup>.** By RMTK Ranathunga<sup>1,2</sup>, TR Hill<sup>1,2</sup>, JC Mathers<sup>2,3</sup>, I Schoenmakers<sup>4</sup> and TA Aspray<sup>3,5</sup> *on behalf of the VDOP study team*  
Student Competition



## THE NUTRITION SOCIETY OFFERS A VARIETY OF EVENTS INCLUDING CONFERENCES AND TRAINING ON AN ANNUAL BASIS.

Each Society conference takes place in various locations throughout UK and Ireland, providing members, and non-members of the Society access to up to date nutrition science research, opportunities to network, and to present research abstracts, which will be published in *Proceedings of the Nutrition Society* (PNS).

The Society's training programme offers members and non-members opportunities to develop new and existing skills and enhance knowledge. From gaining transferrable skills, such as how to write a successful paper for publication, to understanding complex techniques, such as statistics and dietary assessment methods, the annual programme offers a variety of opportunities.

### UPCOMING EVENTS INCLUDE:

#### **Student Conference 2017**

7 – 8 September 2017

University of Reading

Call for abstract deadline: 23 July 2017

#### **Advanced Statistics for Nutrition Research course**

14 September 2017

The Nutrition Society training room, London

Early bird registration deadline: 13 August 2017

#### **Nutritional Genomics: essential basics for nutrition and health professionals webinar**

26 September 2017

#### **Dietary Assessment Methods workshop**

4 October 2017

The Nutrition Society training room, London

Early bird registration deadline: 4 September 2017

#### **Introduction to Food Policy workshop**

31 October 2017

The Nutrition Society training room, London

Early bird registration deadline: 1 October 2017

#### **Winter Conference 2017:**

##### **Diet, nutrition and the changing face of cancer survivorship**

5 – 6 December 2017

Royal Society of Medicine, London

Call for abstract deadline: 3 September 2017

Early bird registration deadline: 5 November 2017

#### **Nutritional Genomics: essential basics for nutrition and health professionals webinar**

25 January 2018

#### **Irish Section Postgraduate Conference 2018**

15 - 16 February 2018

Queen's University Belfast, Northern Ireland

#### **Scientific publishing success: from research to publication workshop**

February 2018

#### **Spring Conference 2018: Nutrient-nutrient interaction**

(exact title tbc)

March 2018

University of Glasgow, Scotland

Call for abstract deadline: January 2018

#### **Statistics for Nutrition Research course**

March 2018

The Nutrition Society training room, London

#### **Interpreting and using systematic reviews workshop**

April 2018

The Nutrition Society training room, London

#### **Irish Section Conference 2018:**

##### **Targeting approaches for tackling nutrition issues**

(exact title tbc)

20 – 22 June 2018

University of Ulster

Call for abstract deadline: March 2018

#### **Summer Conference 2018: Getting the energy balance right**

10 – 12 July 2018

University of Leeds

Call for abstract deadline: April 2018

For further information and for regular updates, please visit [www.nutrition society.org/events](http://www.nutrition society.org/events)

Please note, Nutrition Society members receive a discount to register to attend all Nutrition Society events.

## DAY 2

TUESDAY 11 JULY 2017

08:30 Registration and Refreshments

09:00 Welcome

**Symposium Two: Chrono-Nutrition in the urban environment**

Chair: Dr Wendy Hall, King's College London, UK  
*Edmond J. Safra Lecture Theatre, King's Building, Ground floor*

09:05 Sleep and dietary habits in the urban environment

Dr Gerda Pot, King's College London, UK, and  
 University of Vrije Amsterdam, The Netherlands

09:35 Shift work, timing of eating and metabolic health: evidence from animal models

Professor Carolina Escobar, University of Mexico,  
 Mexico

10:05 Refreshments

10:35 Circadian rhythms, nutrition and implications for longevity in urban environments

Professor Oren Froy, The Hebrew University of  
 Jerusalem, Israel

11:05 Dark matters: Effects of light at night on metabolism

Professor Randy Nelson, The Ohio State University,  
 Wexner Medical Centre, USA

11:35 Panel Discussion: Chrono-Nutrition in the urban environment

12:00 Theme Highlights

*S-2.18 Arthur and Paula Lucas Lecture Theatre – Strand Building – Basement -2*

**Public Health Nutrition Theme Highlight**

Dr Caroline Taylor, University of Bristol, UK

**Diet at age 10 and 13 years in children identified as picky eaters at age 3 years in a longitudinal birth cohort study.** By C.M. Taylor and P.M. Emmett, *Centre for Child and Adolescent Health, School of Social and Community Medicine, University of Bristol, UK*

12:20 Cellular and Molecular Nutrition Theme Highlight

Catherine Graham, St Mary's University, UK

**The effects of genetic profiling on eating behaviour.** By C.A-M, Graham<sup>1</sup>, L. Pilic<sup>1</sup> and Y. Mavrommatis<sup>1</sup>, <sup>1</sup>School of sport, health and applied science, St Mary's University Twickenham TW1 4SX, UK

12:40 Whole Body Metabolism Theme Highlight

Olah Hakim, King's College London, UK

**Intramyocellular lipid and its relationship with insulin sensitivity and fat in type 2 diabetic men of White and Black ethnicity.** By O. Hakim<sup>1,2</sup>, G. Charles-Edwards<sup>2</sup>, B. Whitcher<sup>3</sup>, H. Shuaib<sup>3</sup>, and L.M. Goff<sup>1</sup>, <sup>1</sup>Division of Diabetes and Nutritional Sciences, <sup>2</sup>Department of Biomedical Engineering, King's College London, SE1 1UL, UK, <sup>3</sup>Klarismo Ltd.

**Symposium Three: Building a healthier environment**

Chair: Professor Judith Buttriss, British Nutrition  
 Foundation, UK

*S-2.18 Arthur and Paula Lucas Lecture Theatre, Strand  
 Building, Basement -2*

**The role of low-calorie sweeteners in the prevention and management of overweight and obesity: evidence versus conjecture**

Professor Peter J. Rogers, University of Bristol, UK

**Nutrition implications of rapidly expanding urban populations in low and middle income countries**

Professor Lawrence Haddad, Global Alliance for Improved  
 Nutrition (GAIN), UK

Refreshments

**Encouraging healthier drinking patterns in younger people**

Dr Emma Derbyshire, Nutritional Insight Ltd, UK

**Designing in health: creating supportive built environments**

Dr Amelia Lake, Durham University, UK, Newcastle  
 University, UK and FUSE, UK

**Panel Discussion: Building a healthier environment**

- 13:00**      **Lunch**
- 13:15**      **The Nutrition Society Annual Charity Meeting**  
Council room K2.29, King's Building, Level 2
- 14:00**      **Original Communications Session**  
**Oral original communication sessions:**  
*OC64-OC67: Edmond J.Safra Lecture Theatre, King's Building, Ground floor*  
*OC68-OC71: Council room K2.29, King's Building, Level 2*
- Poster original communication sessions:**  
*OC72-OC79: River Terrace Cafe/Student Union, Macadam Building, Ground floor*  
*OC80-OC87: Geography room/K4U.12, King's Building, Level 4U*
- 15:00**      **Refreshments** and meet Clinical/Medical Advisory Council Member, Dr Bernadette Moore. Read more on page 4
- Symposium Four: Interventions to improve nutrition in urban areas**  
Chair: Professor Seeromanie Harding, King's College London, UK  
*S-2.18 Arthur and Paula Lucas Lecture Theatre, Strand Building – Basement -2*
- 15:20**      **Prevention of overweight and obesity in preschool children**  
Dr Julie Lanigan, University College London, Great Ormond Street Institute of Child Health, UK
- 15:50**      **Interventions to improve nutrition to promote healthy ageing**  
Professor Siân Robinson, University of Southampton, UK
- 16:20**      **Nutritional intervention among frail home-dwelling old people**  
Dr Anne Marie Beck, Metropolitan University College, The Netherlands
- 16:50**      **Interventions to address household food insecurity: how much does place matter?**  
Dr Rachel Loopstra, King's College London, UK
- 17:20**      **Panel Discussion: Interventions to improve nutrition in urban areas**
- 17:35**      **Close of Day Two**
- 19:30**      **Conference Dinner**  
*The County Hall*



Throughout the conference, participants are respectfully asked not to record or take photographs of slides given during presentations. Apart from being disruptive, it can compromise future publication in refereed journals, discourage presenters from showing original data, and disturb the flow of the presentation.

# SYMPOSIUM TWO: CHRONO-NUTRITION IN THE URBAN ENVIRONMENT

## SLEEP AND DIETARY HABITS IN THE URBAN ENVIRONMENT

*Dr Gerda Pot, King's College London, UK, and University of Vrije Amsterdam, The Netherlands*

### PRESENTATION SUMMARY

This presentation will report on findings and insights into sleep and dietary habits in the urban environment, and focus on secular trends on both sleeping and dietary habits and how this may impact our health. The urban environment has changed vastly over the past decades, which has also had an impact on our sleep and dietary patterns and possibly health outcomes. Some studies have shown sleep duration and sleep quality has declined over the past decades, especially in children<sup>1</sup>. In parallel, our lifestyle and dietary patterns have also changed including more shift-work, more meals outside the home or family setting and more irregular eating patterns, including skipping breakfast and late night eating<sup>2</sup>. This new area of research in nutritional sciences studying the impact of the timing of eating on health outcomes is called chrono-nutrition<sup>3</sup>, and combines elements from nutritional research with chrono-biology (biological studies focused on biological rhythms and sleep).

The objectives of this talk will be to introduce basic concepts and mechanisms of chrono-nutrition, discuss secular trends in sleep patterns and related dietary patterns, and discuss the evidence for the importance sleep and chrono-nutrition in relation to health outcomes.

### References

1. Matricciani, L., Olds, T. & Petkov, J. In search of lost sleep: Secular trends in the sleep time of school-aged children and adolescents. *Sleep Med. Rev.* 16, 203–211 (2012).
2. Berteus Forslund, H., Torgerson, J. S., Sjostrom, L. & Lindroos, A. K. Snacking frequency in relation to energy intake and food choices in obese men and women compared to a reference population. *Int J Obes* 29, 711–719 (2005).
3. Pot, G. K., Almoosawi, S. & Stephen, A. M. Meal irregularity and cardiometabolic consequences: results from observational and intervention studies. *Proc. Nutr. Soc.* 1–12 (2016).

### SPEAKER BIOGRAPHY

Dr Gerda Pot is an Assistant Professor in Health and Life Sciences at the Vrije University in Amsterdam (the Netherlands) and a visiting Lecturer in Nutritional Sciences at King's College London, UK. Dr Pot previously worked at the Medical Research Council Human Nutrition Research Institute in Cambridge, UK, where she was a major contributor to the National Diet and Nutrition Survey (NDNS). She also contributed to the National Health and Development Survey (NSHD) and Diet and Nutrition Survey of Infants and Young Children (DNSIYC).

Dr Pot's main research interests are dietary and meal patterns in relation to chronic disease risk including cardio-metabolic risk and cancer, and more specifically to study the impact of when people eat in relation to disease risk at a population level (chrono-nutrition). This is closely related to the biological clock and therefore she also studies the impact of sleep on health. Her vision is to advance the understanding of the effects of the timing of eating and sleep on chronic disease risk at the population level, and establish chrono-nutrition as a new and important area of nutritional research.

Dr Pot is a member of the Editorial Board of the *British Journal of Nutrition* and the *British Nutrition Foundation (BNF) Nutrition Bulletin*; she is a member of the *Nutrition Society*, the *Dutch Academy of Nutritional Sciences (NAV)*, and the *European Nutrition Leadership Platform (ENLP)*. She has published over 28 peer-reviewed articles and received three research prizes for her advancing work on chrono-nutrition.

## SHIFT WORK, TIMING OF EATING AND METABOLIC HEALTH: EVIDENCE FROM ANIMAL MODELS

*Professor Carolina Escobar, University of Mexico, Mexico*

### PRESENTATION SUMMARY

Shift-work, frequent trans-meridional travelling and constant sleep time shifts are conditions that lead to circadian disruption and loss of behavioural and physiological homeostasis. Individuals constantly exposed to such disruption are at risk of becoming overweight and developing metabolic disturbance.

We have developed experimental models with rodents trying to mimic such disrupting conditions of modern life style. With our models, we try to better understand the mechanisms that lead to the loss of homeostatic balance. We have observed that animals exposed to protocols of circadian disruption shift their feeding schedules to the hours when they are forced to be awake, even when this timing is in conflict with the light-dark cycle. We have exposed animals to restricted feeding schedules and have observed that when food is ingested out of phase from the normal light-dark cycle, food timing can have deleterious effects on metabolism and body weight. Moreover, the time of eating can have beneficial effects for the circadian system and for metabolism when it is well synchronised to the light-dark cycle.

In this presentation, the organisation of the circadian system and the contribution of food elicited signals as internal synchronising factors will be discussed. Using our experimental models of circadian disruption, experimental evidence of the relevance of the timing of food intake using regular and palatable food will also be reviewed. Further, there will be discussion on the benefits and limitations of feeding schedules to ameliorate the

metabolic burden in shift workers and other individuals affected by circadian disruption.

The group is supported by grants PAPIIT IG-200417 and CONACyT 239403.

### SPEAKER BIOGRAPHY

Carolina Escobar is a Senior Professor in the Department of Anatomy at the Faculty of Medicine, National Autonomous University in Mexico. She studied Physiological Psychology followed by a masters and PhD in Physiological Sciences. Professor Escobar's main line of research is aimed at understanding the contribution of feeding schedules in the circadian function. In this field she has published more than 80 scientific articles, two books and more than 25 book chapters. Since 2010 she has been Chief of the research section in the Anatomy Department. She is member of the Mexican Academy of Sciences and of the Mexican Academy of Medicine.

## CIRCADIAN RHYTHMS, NUTRITION AND IMPLICATIONS FOR LONGEVITY IN URBAN ENVIRONMENTS

*Professor Oren Froy, The Hebrew University of Jerusalem, Israel*

### PRESENTATION SUMMARY

Currently, about 12% of the population is 65 years or older, and by the year 2030 that figure is expected to reach 21%. In order to promote the well-being of the elderly and to reduce the costs associated with health care demands, increased longevity should be accompanied by ageing attenuation. Caloric restriction (CR), which limits the amount of calories consumed to 60–70% of the daily intake, and intermittent fasting (IF), which allows the food to be available ad libitum every other day, extends the life span of mammals and prevents or delays the onset of major age-related diseases, such as cancer, diabetes and cataracts. Recently, we have shown that well-being can be achieved by resetting the biological clock and the induction of robust catabolic circadian rhythms via time-restricted feeding.

Mammals have developed an endogenous circadian clock located in the brains suprachiasmatic nuclei (SCN) of the anterior hypothalamus that responds to the environmental light-dark cycle. The SCN receives light information from the retina and transmits synchronisation cues via neuronal connections or circulating humoral factors to clocks in peripheral tissues, such as the liver, heart and lungs, regulating cellular and physiological functions. The clock mechanism in both SCN neurons and peripheral tissues consists of CLOCK and BMAL1 (brain-muscle-Arnt-like 1) that heterodimerise and bind to E-box sequences to mediate transcription of a large number of genes, including Periods (Per1, Per2) and Cryptochromes (Cry1, Cry2). PERs and CRYs constitute part of the negative feedback loop and when they are produced in the cytoplasm, they oligomerise and translocate to the nucleus to inhibit CLOCK:BMAL1-mediated transcription. Disruption of the coordination between the endogenous clock and the environment leads to symptoms of fatigue, disorientation, and insomnia as seen in jet lagged travellers or altered hormone profiles and high morbidity as

seen in shift workers. Longevity in hamsters is decreased with disruption of rhythmicity and is increased in older animals given fetal suprachiasmatic nuclei implants that restore high-amplitude rhythms. Even chronic reversal of the external light-dark cycle at weekly intervals results in a significant decrease in the survival time of cardiomyopathic hamsters.

Circadian rhythms change with normal ageing, including a shift in the phase and decrease in amplitude. Deficiency of the CLOCK protein significantly affects longevity, as the average lifespan of Clock<sup>-/-</sup> mice was reduced by 15% compared with wild mice, while maximum life span was reduced by more than 20%. CLOCK deficiency also resulted in the development of two age-specific pathologies, cataracts and dermatitis, at a much higher rate than in wild mice. In addition, Bmal1<sup>-/-</sup> knockout mice have reduced life span and display various symptoms of premature ageing, including cataracts and organ shrinkage. Per1,2<sup>-/-</sup> mice are morphologically indistinguishable from wild-type animals at birth, but as early as 12–14 months of age they start to develop features of premature aging, such as a faster decline in fertility, loss of soft tissues and kyphosis. Thus, disruptions in clock genes and/or circadian rhythms promote ageing and shorten life span, whereas appropriate resetting of circadian rhythms leads to well-being and increased longevity.

### SPEAKER BIOGRAPHY

Professor Oren Froy is a neurobiologist, graduating from Tel-Aviv University, Israel in 2000. From 2000–2003 he did his post-doctorate at Harvard Medical School and University of Massachusetts Medical School. Since 2003, he is an independent researcher at the Institute of Biochemistry, Food Sciences and Nutrition, the Hebrew University of Jerusalem in Israel. As a result of being an outstanding scientist, Professor Froy has won several awards amongst which is the prestigious Krill award for excellence in science from the Wolf Foundation. In recent years, he has focused on the role of the circadian clock in metabolism and obtained some important breakthroughs.

## DARK MATTERS: EFFECTS OF LIGHT AT NIGHT ON METABOLISM

*Professor Randy Nelson, The Ohio State University, Wexner Medical Centre, USA*

### PRESENTATION SUMMARY

Life on earth has evolved during the past 3–4 billion years under relatively bright days and dark night conditions. The wide spread adoption of electric lights during the past century has exposed animals, including humans, to significant light at night for the first time in their evolutionary history. Endogenous circadian clocks depend on light to entrain to the external daily environment and seasonal rhythms depend on clear nightly melatonin signals to assess time of year. Thus, light at night can derange temporal adaptations. Indeed, disruption of naturally evolved light–dark cycles results in several physiological and behavioral changes with potentially serious implications for physiology, behavior, and mood.

In this presentation, data from night-shift workers on their elevated risk for metabolic disorders will be discussed, as well as data

from animal studies that have revealed several mechanisms through which light at night may exert its effects on metabolism by disrupting circadian rhythms that are associated with inflammation, both in the brain and in the periphery. Disruption of the typical timing of food intake is a key effect of light at night and subsequent metabolic dysregulation. Strategies to avoid the effects of light at night on body mass dysregulation will also be described.

#### **SPEAKER BIOGRAPHY**

Professor Randy J. Nelson is distinguished University Professor and Chair of the Department of Neuroscience at The Ohio State University (OSU) Wexner Medical Center. He holds the Dr. John D. and E. Olive Brumbaugh Chair in Brain Research and Teaching and co-directs the Ohio State University (OSU) Neuroscience Research Institute.

Professor Nelson earned his AB degree at the University of California at Berkeley. He earned a PhD in Psychology in 1983, as well as a second PhD in Endocrinology in 1984 from Berkeley, the first to earn two PhDs simultaneously in the US and then completed a postdoctoral fellowship at the University of Texas, Austin.

Professor Nelson served on the faculty at Johns Hopkins from 1986-2000 when he moved to Ohio State. He has published >400 scientific articles and several books describing studies in biological rhythms, behavioural neuroendocrinology, stress, immune function and aggressive behaviour. His work has been continuously funded since 1984. Professor Nelson has been elected to Fellow status in several scientific associations, including the American Association for the Advancement of Science, American Psychological Association, Association for Psychological Science, and the Animal Behaviour Society. Professor Nelson has served on many federal grant panels and currently serves on the editorial boards of five scientific journals. He was awarded the Distinguished Scholar Award at OSU in 2006, as well as the University Distinguished Lecturer, and the OSU Alumni Award for Distinguished Teaching in 2009. In 2012, he was appointed as the inaugural Distinguished Professor of the College of Medicine, and in 2013 the Board of Trustees conferred the title of Distinguished University Professor upon him.



# SYMPOSIUM THREE: BUILDING A HEALTHIER ENVIRONMENT

## THE ROLE OF LOW-CALORIE SWEETENERS IN THE PREVENTION AND MANAGEMENT OF OVERWEIGHT AND OBESITY: EVIDENCE VERSUS CONJECTURE

*Professor Peter J. Rogers, University of Bristol, UK*

### PRESENTATION SUMMARY

In recent meta-analyses of intervention studies, clear evidence that consumption of low-calorie sweeteners (LCS) in place of (some) sugar in the diet reduces energy intake and body weight was found (Rogers et al., 2016, *Int J Obes* 40, 381-394). These results, together with a variety of other evidence, demonstrate that there is no precise physiological balancing of energy intake against energy expenditure – consumption of energy both in excess and in deficit of immediate energy requirements is not fully compensated for by adjustments in intake at the next or subsequent eating occasions. Despite this evidence, some of which dates back to the 1980s, claims persist that LCS hinder rather than help appetite and weight control.

One claim is that by ‘decoupling’ sweetness from drink/food energy content LCS undermine the learned control of energy intake (i.e., LCS cause sweetness to become an unreliable predictor of drink/food energy content), and thereby lead to increased risk of overeating and obesity. Widely reported results from research exposing rats intermittently to either additional food sweetened with glucose or additional food sweetened with LCS have been used to support this claim. However, the logic of this argument can be challenged on the grounds that even when LCS, and for that matter all ‘processed’ products are disregarded, sweetness does not reliably predict the energy content of different foods and drinks in the diet. There is also a question as to whether humans or rats rely much on simple taste-nutrient relationships to control energy intake. More likely, signals triggered by nutrients detected in the gut and post-absorptively dominate in influencing satiety. Furthermore, notwithstanding these difficulties, recent research has failed to replicate the effects of intermittent exposure to LCS versus glucose, finding instead that rats fed glucose supplemented food gain the most body fat.

Another claim is that exposure to sweetness encourages a ‘sweet tooth’ and therefore increased intake of sweet, energy-containing foods and drinks. This predicts that consumption of LCS drinks will increase energy intake and body weight compared with consuming water. Studies show that this does not occur, and furthermore our recent unpublished research shows that at least within a meal, consumption of a sweet drink reduces rather than increases desire for, and intake of sweet relative to non-sweet food. This latter result is consistent with findings from a 6-month

intervention study in which, compared with the consumption of water, consumption of LCS drinks led to a reduction in energy intake from desserts (and from fruits and vegetables). It is also noteworthy that in another study participants who consumed a low-sugars diet for 3 months showed an increase in perceived sweet-taste intensity (at low concentrations of sucrose) but no change in preference for sweetness in test products. Finally, randomised controlled trials have generally found no effect on body weight when consuming a diet moderately high in sugars versus a diet where most of the sugars have been replaced by non-sweet carbohydrate.

Returning then, to the question of LCS versus sugars. Because the evidence from randomised-controlled studies is clear in favouring LCS, if they do exist, any relatively minor unhelpful effects of LCS on appetite would seem to be outweighed by the benefit of the energy dilution achieved with the use of LCS which is not fully compensated for in subsequent eating.

### SPEAKER BIOGRAPHY

Peter Rogers is Professor of Biological Psychology at the University of Bristol, UK. He trained in biological sciences and experimental psychology at the University of Sussex, UK. He completed his PhD and postdoctoral work at the University of Leeds, UK, moving to the Institute of Food Research, Reading, UK in 1990. Professor Rogers moved to the University of Bristol, UK in 1999, where he teaches biological psychology and researches on nutrition and behaviour: which includes work on human appetite and weight control, food choice, dietary effects on mood and cognitive function and the psychopharmacology of caffeine. His first study on low-calorie sweeteners and appetite was published in 1988. Professor Rogers is a Chartered Psychologist, a Fellow of the British Psychological Society, and a Registered Nutritionist.

## NUTRITION IMPLICATIONS OF RAPIDLY EXPANDING URBAN POPULATIONS IN LOW AND MIDDLE INCOME COUNTRIES

*Professor Lawrence Haddad, Global Alliance for Improved Nutrition (GAIN), UK*

### PRESENTATION SUMMARY

Rapidly growing urban populations in low and middle income countries present plenty of challenges and opportunities to efforts to end malnutrition in all its forms. There are new platforms, actors and resources in urban spaces. But there are also new drivers of malnutrition. We need to identify and work with these new possibilities while moderating the drivers. This presentation outlines these issues and draws out the implications for research.



**SPEAKER BIOGRAPHY**

Professor Lawrence Haddad became the Executive Director of Global Alliance for Improved Nutrition (GAIN) in October 2016.

Prior this, Professor Haddad was Research Fellow at the International Food Policy Research Institute (IFPRI) in the Poverty, Health and Nutrition Division. From 2004-2014 he was the Director of the Institute of Development Studies (IDS). Professor Haddad was also the UK's representative on the Steering Committee of the High Level Panel of Experts (HLPE) of the United Nations Committee on World Food Security (CSF), which was established in 2009 with the aim of making the CSF more effective in research analysis. He was the President of the UK and Ireland's Development Studies Association from 2010 to 2012.

Professor Haddad completed his PhD in food research at Stanford University (USA) in 1988. Before joining IDS in 2004, he was Director of the Food Consumption and Nutrition Division at the IFPRI. Prior to this, he was a lecturer in quantitative development economics at the University of Warwick. He has also been a visiting scholar at the London School of Economics.

Professor Haddad's research focuses on a wide range of issues related to the wellbeing of the poor, including the design of policies and programmes intended to reduce poverty and malnutrition, the impact of gender differences in accessing to resources on nutrition and poverty, the role of community participation in the performance of poverty programmes and the challenges rapid urbanisation poses for the poor. Professor Haddad has published extensively on these issues.

Professor Haddad was the founding co-chair of the Global Nutrition Report from 2014 to 2016.

**ENCOURAGING HEALTHIER DRINKING PATTERNS IN YOUNGER PEOPLE**

*Dr Emma Derbyshire, Nutritional Insight Ltd, UK*

**PRESENTATION SUMMARY**

The establishment of healthy hydration habits right from the early years is central to the development of 'life-long' drinking habits. The early years is often a life-stage that is overlooked yet it is critically important to target children's beverage habits whilst they are young. The current presentation talks through European Food Safety Authority (EFSA) fluid intake guidelines from the early years, up until the teenage years. Strategies will be discussed in terms of helping children to develop a 'taste' for water, along with recent interventions that have studied how water intakes can be improved in pre-school and family settings.

Some recent Public Health campaigns have also taken place and shown signs of great success. In particular, the American 'Drink Up' and 'Drink Water' JOGG – "Youth at a Healthy Weight" Campaign in the Netherlands will be a focal point of interest which has ultimately set out to create 'hydrogenic' environments for children and young people. In the UK, data from the Liq.in7 study shows that mean daily water intakes for girls aged 4 to 9

years were 434 ml and boys 529 ml. For the older children aged 10 to 17 years mean daily water intakes were 506 ml for girls and 457 ml for boys. This data indicates that barely 3 glasses of water are drunk daily, with boys generally drinking less water as they get older.

Taken together, there is much work to be done in the continued journey to helping encourage healthier hydration habits in younger people. Certainly, the campaigns that have taken place in the USA and the Netherlands provide valuable insights into approaches that could be taken in the UK.

**SPEAKER BIOGRAPHY**

Dr Emma Derbyshire BSc, PhD, RNutr (Public Health) is an established nutritionist who has published over 100 peer reviewed publications within the field of nutrition and public health, winning several writing awards. Her areas of speciality include maternal nutrition, child nutrition, and the role of nutrition in health. She is also the author of the successful text 'Nutrition in the Childbearing Years'.

Dr Derbyshire has over 10 years' experience of working in academia as a Senior Lecturer in Human Nutrition and Physiology. She now heads up Nutritional Insight Limited, a popular consultancy offering writing, research and communications to private and public sectors and the media. Dr Derbyshire has worked with top publishing houses, established food companies, supplement manufacturers, government organisations and working groups, PR agencies and national newspapers.

**DESIGNING IN HEALTH: CREATING SUPPORTIVE BUILT ENVIRONMENTS**

*Dr Amelia Lake, Durham University, UK, Newcastle University, UK and FUSE, UK*

**PRESENTATION SUMMARY**

Due to the complex nature of environments and the multiple environments which we occupy, it is simplistic to categorise environments as either supportive of health or unsupportive of health. Although, our modern society could broadly be described to support unhealthy eating patterns and physical activity. Within our society, obesity is a significant social problem which has reached pandemic levels. Obesity prevention and treatment has focused on pharmacological, educational and behavioural interventions, with limited overall success. A novel and a sustainable approach is to address the environments that promote less healthy eating and high energy intake as well as sedentary behaviour. Approaches which modify the environment have the potential to assist in the prevention of this complex condition.

Ten years ago, the concept of obesogenic environments was relatively new and brought together evidence that linked the built and food environments in novel ways<sup>[1,2]</sup>. In the interim period, research exploring how aspects of the built environment may contribute to current obesity levels, by influencing physical activity and dietary behaviours at individual and community

level has grown. However while the basic drivers of obesity are simple (more energy consumed than expended), the aetiology is multifactorial and complex <sup>[3]</sup>.

The burden of obesity contributes to increasing health inequality and placing health care systems under huge strain. While there is an imperfect evidence base relating to the role of the built environment in the obesity crisis, planning and health professionals must work together and take action now where current evidence suggests changing policy and practice could be effective. Mechanisms to enable the two professions to work together more effectively need immediate attention, as well as the sharing of good practice. In the longer term, the training and education of both professions should facilitate inter-disciplinary cooperation and understanding.

The alignment of health concerns and planning will take time. Bringing health into urban design and planning will address certain parts of the obesity systems map <sup>[4]</sup>. However, given the generally enduring nature of the built environment, its impact should be spread over several generations. Shaping the environment to better support healthful decisions has the potential to be a key aspect of a successful obesity prevention intervention.

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#### SPEAKER BIOGRAPHY

Dr Amelia A Lake is a dietitian and public health nutritionist and works as an Assistant Professor at Durham University and Fuse (the Centre for Translational Research in Public Health <http://fuse.ac.uk/>).

Dr Lake's current work is to explore the Obesogenic Environment. She has a particular interest in the food environment, the environments of young people and the workplace environment. Her research involves transdisciplinary collaborations to examine how the environment interacts with individual's behaviours.

Dr Lake worked in the Health Service before taking up a research post with Newcastle University, where she completed a PhD and held a National Institute for Health Research (NIHR) Post-doc Fellowship. Dr Lake is an associate Editor for BMC (BioMed Central) Public Health and is a member of the fuse communications committee which includes the award winning fuse blog (<http://fuseopenscienceblog.blogspot.co.uk/>). Dr Lake has represented the British Dietetic Association (BDA) in helping to shape food related policy. She is a passionate science communicator, especially on the topic of nutrition.

Dr Lake has extensive experience of working with policy makers,

practitioners, non-specialist audiences, as well as academics has produced various training programmes and related material.

You can follow Dr Lake on: Twitter @lakenutrition, Instagram @drashwelllake

# SYMPOSIUM FOUR: INTERVENTIONS TO IMPROVE NUTRITION IN URBAN AREAS

## PREVENTION OF OVERWEIGHT AND OBESITY IN PRESCHOOL CHILDREN

*Dr Julie Lanigan, University College London, Great Ormond Street Institute of Child Health, UK*

### PRESENTATION SUMMARY

Globally ever more children are affected by overweight and obesity. The UK has one of the highest childhood obesity rates in Europe. In 2013, 1 in 5 children aged 4-5 years were overweight or obese in England rising to 1 in 3 by age 11.<sup>1</sup>

Obesity starts in early life with most excess childhood weight gained by the age of five years.<sup>2</sup> Once established it is difficult to reverse and is likely to track through childhood and into later life<sup>3</sup>. Obesity in adulthood is associated with greater risk of adverse health outcomes, including cardiovascular disease, hypertension, type 2 diabetes, obstructive sleep apnea, asthma, and some cancers. Therefore preventing obesity is of high importance. However, its development is multi-factorial and presents a complex challenge to public health.

Many factors are implicated in the causation of obesity including both genetic and environmental components. Whilst genes are recognised to influence disposition to obesity, lifestyle factors are key to its development. Amongst these, diet and physical activity are well described risk factors whereas others, such as appetite development and sleep duration, are less well researched. Understanding risk factors and how they interact is central to the development of successful interventions that aim to prevent obesity.

Socioeconomic inequalities in obesity and its risk factors are widely reported.<sup>4</sup> In the UK and other high income countries lower socioeconomic status is associated with a higher prevalence of obesity.<sup>5</sup> Children living in rural locations are worse affected than those growing up in towns and prevalence has also been shown to vary by ethnicity. For example, national data shows substantial ethnic variation in England.<sup>6</sup>

There is strong evidence to support beneficial effects of childhood obesity prevention programmes on Body Mass Index (BMI).<sup>8</sup> In the UK, the National Institute for Health and Care Excellence (NICE) recommends multi-component interventions that address diet, physical activity and behaviour change for obesity prevention in young children.<sup>7</sup> These should be of at least six months duration and include an additional family member. Interventions are complex and should undergo rigorous evaluation in randomised controlled trials to assess safety, efficacy and applicability to a range of populations.

There are relatively few obesity prevention programmes that target young children under the age of six years. In the UK only one such intervention, TrimTots, has been developed and

evaluated using the gold standard randomised controlled trial design. TrimTots was shown to be effective at reducing obesity risk in children aged 1-5 years, demonstrated by a lower BMI z-score for children completing the six month programme.<sup>9</sup> The findings of this trial are promising but further research is needed to explore the generalisability of TrimTots to varied populations and locations.

Early childhood is a pivotal period when habits, including dietary and activity related, are formed. Behaviours established here are likely to become ingrained and taken forward into adult life. Therefore, the preschool years are a target for interventions that aim to improve obesogenic behaviours. However, behaviour change interventions cannot operate in isolation but must be considered in the context of the wider environment and should take the individual needs of populations into account.

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### SPEAKER BIOGRAPHY

Dr Julie Lanigan is a paediatric dietitian specialising in research at the University College London (UCL) Great Ormond Street Institute of Child Health, London. She is a key investigator on a range of clinical trials which focus on the influence of nutrition in early life on later health. Dr Lanigan is co-founder and Director of TrimTots Community Interest Company and runs the Planet Munch Programme for obesity prevention in preschool children.

Dr Lanigan holds an honorary contract with Great Ormond Street Children's Hospital. She is Chair for the British Dietetic Association's Paediatric Specialist Group, has a wide range of knowledge and experience gained from more than 20 years working with families and practitioners in the field of paediatric nutrition and presents and publishes regularly in this area.

## INTERVENTIONS TO IMPROVE NUTRITION TO PROMOTE HEALTHY AGEING

*Professor Siân Robinson, University of Southampton, UK*

### PRESENTATION SUMMARY

Eating less may be an expected feature of older age as, alongside declining activity levels, energy needs fall. Whilst there is significant variation between individuals, an average reduction in food intake is about 25% between the ages of 40 and 70 years. The underpinning mechanisms are not fully understood, but include a range of physiological, psychological and social factors that influence appetite and food consumption. However, eating less can put older people at risk. As total food consumption declines, intakes of many nutrients are likely to fall and whilst energy requirements may be met, other nutrient needs may not. Although this highlights the importance of the quality of the diet to ensure nutrient intakes are sufficient in older age, ensuring good diet quality may be difficult at a time when food access and preparation are becoming more challenging and diets may be more monotonous. Estimates of the numbers of older adults affected by poor nutrition vary across studies, depending on definitions used and the nature and age of groups included. But a consistent message is that poor nutrition, even in developed settings, is common. For example, in the UK, current prevalence estimates are that a third of older patients are either malnourished or at risk of malnutrition when assessed on admission to hospital. Being malnourished is associated with poorer health outcomes, longer hospital stay and increased mortality. Thus, apart from the evident personal costs, the economic burden of disease-related malnutrition is significant. These data point to an urgent need for better recognition of malnutrition risk among older adults in the UK, including routine screening of nutritional status and early diagnosis.

In addition, new preventive strategies may be needed. As a clear understanding of the personal and contextual influences that affect patterns of food choice and consumption is essential to inform successful policies and interventions to support older adults, a first step is to recognise where malnutrition occurs. Although often associated with hospital and institutional care, current estimates suggest that malnourished adults in hospitals, care homes and sheltered housing account for less than 10% of the total. Since the majority of malnourished older adults are living in the community, this is where the problem arises and the place for preventive efforts. Apart from age-related physiological changes that affect diet, recent findings, highlighting the role of psychosocial factors may be important for the design of future strategies to prevent poor nutrition in older age. Identification of the nature and timing of effective interventions to promote good nutrition among older community-dwelling adults is a focus of

current research; better definition of 'where and how' to provide support should help to inform efforts to promote good nutrition among all older adults in the future.

### SPEAKER BIOGRAPHY

Professor Siân Robinson is a Registered Nutritionist and Professor of Nutritional Epidemiology at the Medical Research Council (MRC) Life course Epidemiology Unit, University of Southampton. Her research is directed towards understanding the role and contribution of nutrition across the life course to inequalities in adult health, with a focus on early life influences on growth, development and later function, and effects on sarcopenia and ageing. Professor Robinson is Research Area Lead (Nutrition and Healthy Ageing) at the National Institute for Health Research (NIHR) Southampton Biomedical Research Centre in Nutrition.

## NUTRITIONAL INTERVENTION AMONG FRAIL HOME-DWELLING OLD PEOPLE

*Dr Anne Marie Beck, Metropolitan University College, The Netherlands*

### PRESENTATION SUMMARY

Effective and good care in the community is necessary to prevent disease, to manage chronic illness, and to keep older people independent for as long as possible. Alongside ageing comes special health challenges, such as dependency, limited mobility, frailty, and other physical or mental health problems. In addition, with the focus of care shifting from the hospital to the community, malnutrition care is to become an important issue to address in the community (de van der Schueren et al. 2016). Specifically, studies have found a high prevalence of undernutrition amongst frail old people in home-care, which increases the risk for dependency in activities of daily living and hence the need for care (Pols-Vijlbrief et al 2016, Kiesswetter et al 2013).

Recent reviews suggest multiple risk factors for weight loss and poor food and fluid intake among care-dependent old people, of which some might be amenable to nutritional or mealtime intervention, including behaviours related to dementia, such as agitation at mealtimes, staffing levels and skill for assisting with eating; interaction among staff and the old person at mealtime; eating dependency and capacity, chewing and swallowing problems; unmet cultural food and dining preferences; and poor appetite (Keller et al. 2015). Systematic reviews and meta-analysis' suggest that nutritional support may improve clinical outcome such as mortality and complication rates amongst old people with decreased nutritional status (Milne et al. 2009, Cawood et al. 2012).

However, only few of the studies included have been performed among community-dwelling frail old people and the major focus has been on oral nutritional supplements. Also, no beneficial effect on functional abilities or quality of life were documented. In support of this, it was concluded in a recent critical appraisal that "currently nutritional intervention studies for malnourished community dwelling older adults show limited effects, which may be caused by methodological shortcomings and participants not meeting treatment goals" (de van Schueren et al. 2016).



One reason for this limited effect may be that the interventions performed have not taken account of the multiple risk factors mentioned above into consideration. This presentation will give an overview of nutritional intervention studies among frail community-dwelling old people, which have attempted to deal with some of these risk factors.

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#### SPEAKER BIOGRAPHY

Dr Anne Marie Beck is a Senior Associate Professor of Nutrition and Health Education, Metropolitan University College, Copenhagen, Denmark, and holds a position as senior researcher at the Research Unit for Nutrition at Gentofte and Herlev University Hospital, Copenhagen, Denmark. Dr Beck has a background as a Registered Dietitian, has an MSc in Gerontology and holds a PhD, both from the University of Copenhagen.

Dr Beck's main research field is nutrition in old age. More specifically, the impact of undernutrition on functional abilities of frail old people and the benefits of (multifaceted) nutritional interventions. One specific area of focus is the quality of the meal service provided to old people in home-care and nursing homes. Another are systematic reviews and guidelines within the field. She is at present supervisor for five PhD students and two others, which are in progress.

## INTERVENTIONS TO ADDRESS HOUSEHOLD FOOD INSECURITY: HOW MUCH DOES PLACE MATTER?

*Dr Rachel Loopstra, King's College London, UK*

#### PRESENTATION SUMMARY

Household food insecurity, inadequate or insecure access to food arising from financial constraints affects about 8-15% of populations in high-income countries. Canada and the United States regularly monitor household food insecurity, while in other countries such as the UK, it has been the rapid rise of food bank usage that has drawn increased attention to this longstanding, but largely overlooked problem. Commonly, food insecurity is highest in principal cities (though rural areas can also have high rates). In urban areas, public health interventions often focus on 'food deserts' and try to address the problem of lack of affordable food access, for example, by introducing subsidised food markets and/or food box programmes in highly deprived urban areas. Yet, the existence of food deserts in many urban settings is contested and there is also evidence that these types of public health programmes have low uptake rates, partly because they are ill-matched to the needs of food insecure households.

Rather than focusing on physical access, there is growing interest in addressing the underlying factors of food insecurity, namely, poverty, unemployment, and high-living costs. Research on public policy interventions suggest welfare benefits and guaranteed annual income interventions reduce household food insecurity, but that reduced public spending on these can increase household food insecurity. In particular, the rise of food banks in the UK has been tied to reductions in social security and welfare reforms. Due to their rapid proliferation, food banks have now become the de facto intervention for food insecurity in the UK, with frontline care providers submitting referrals. However, these interventions are highly reliant on donations of volunteer time and food, and so are inevitably limited and geographically uneven. This presentation will close with reflections on the difficulty of trying to address household food insecurity with community-based food interventions when solutions lie upstream in social protection policy.

#### SPEAKER BIOGRAPHY

Dr Rachel Loopstra completed her PhD in the Department of Nutritional Sciences at the University of Toronto, where she studied risk factors for household food insecurity using data from a community-based survey of low-income families and the national health survey. From 2014 to 2016, she worked as a Postdoctoral Researcher in the Department of Sociology at the University of Oxford. Here, Dr Loopstra's research programme extended to examining how social welfare policy influences population health and well-being, maintaining an emphasis on household food insecurity and food bank use. In particular, she has been exploring drivers of the rapid expansion of the Trussell Trust Foodbank Network. Dr Loopstra is currently leading a nationwide survey of food bank users to better understand reasons for food bank use, and the nature of food insecurity and health problems in this population.

In December 2016, Dr Loopstra joined King's College London in the Division of Diabetes and Nutritional Sciences, where she is taking forward an ESRC-funded programme of research exploring household and policy-level determinants of food insecurity and compromised nutrition over the recent period of recession and austerity in the UK.

# ORAL SESSION FIVE

## THEME: CELLULAR AND MOLECULAR NUTRITION

14:00-15:00

Location: Edmond J.Safra Lecture Theatre

Chairs: Dr Paul Sharp

- OC64      **14:00**      **Whole miRNome profiling of the effects of non-digestible carbohydrates on microRNA expression in the healthy human colorectal epithelium: a randomised controlled trial.** By F.C. Malcomson<sup>1</sup>, N.D. Willis<sup>1</sup>, I. McCallum<sup>1</sup>, L. Xie<sup>1</sup>, B. Lagerwaard<sup>1</sup>, S. Kelly<sup>1</sup>, M. Bradburn<sup>1</sup>, N.J. Belshaw<sup>2</sup>, I.T. Johnson<sup>2</sup>, J.C. Mathers<sup>1</sup>, <sup>1</sup>*Human Nutrition Research Centre, MRC Centre for Ageing and Vitality, Institute of Cellular Medicine, Newcastle University, Newcastle upon Tyne NE4 5PL* and <sup>2</sup>*Institute of Food Research, Norwich Research Park, Norfolk NR4 7UA*
- OC65      **14:15**      **An *in vitro* investigation of the dose-dependent effects of glucose and fructose on intestinal de novo lipogenesis.** By S. Steenson<sup>1,2</sup>, B.A. Fielding<sup>1</sup>, A.M. Umpleby<sup>1</sup>, J.A. Lovegrove<sup>2</sup>, K.G. Jackson<sup>2</sup>, <sup>1</sup>*Department of Nutritional Sciences, Faculty of Health and Medical Sciences, University of Surrey, Guildford, GU2 7WG, UK*, <sup>2</sup>*Department of Food & Nutritional Sciences and Institute for Cardiovascular and Metabolic Research (ICMR), University of Reading, Reading RG6 6AP, UK*  
Student competition
- OC66      **14:30**      **Protective effect of histidine against iron-induced toxicity in HEK-293 cells.** By M. Vera-Aviles, and G.O. Latunde-Dada, *Division of Diabetes and Nutritional Sciences, King's College London, SE1 9NH, United Kingdom*  
Student Competition
- OC67      **14:45**      **Dietary intake of polyphenol and potassium in the management of Type 2 Diabetes Mellitus Subjects with Chronic Kidney Disease.** By S.A. Palma-Duran, M.E.J. Lean and E. Combet. *Human Nutrition, School of Medicine, University of Glasgow, G31 2ER, UK*  
Student Competition



# ORAL SESSION SIX

## THEME: CELLULAR AND MOLECULAR NUTRITION

14:00-15:00

Location: Council room K2.29

Chair: Professor Christine Baldwin and Professor Alfredo Martinez

- OC68      **14:00**      **Discordance between perceived body size and actual body size and psychological wellbeing in adolescence: Evidence from the multi-ethnic DASH longitudinal study.** By C. Elia<sup>1</sup>, A. Karamanos<sup>2</sup>, A.M. João Silva<sup>3</sup>, M. O'Connor<sup>4</sup>, Y. Lu<sup>3</sup>, A. Dregan<sup>1</sup> and S. Harding<sup>3</sup>, <sup>1</sup>Division of Primary Care and Public Health Research, King's College London, Guy's Campus, London SE1 1UL, UK, <sup>2</sup>ESRC International Centre for Lifecourse Studies in Society and Health, Dept. Epidemiology and Health, University College London, London WC1 6BT, <sup>3</sup>Cardiovascular Medicine & Social Epidemiology group, Division of Diabetes & Nutritional Sciences, Kings College London, Waterloo campus, London SE1 9NH, UK and <sup>4</sup>Institute of Psychiatry, Psychology and Neuroscience, Kings College London, Denmark Hill, London SE5 9RJ, UK
- OC69      **14:15**      **Culture, Food Communication and School Nutrition Policies: A portfolio for Improving Youth Dietary Patterns - Case of Beirut City.** By S. Hamadeh<sup>1</sup> and M. Marquis<sup>2</sup>, <sup>1</sup>Haigazian University, Mexique Street, Beirut, Republic of Lebanon and <sup>2</sup>Montreal University, Côte-Sainte Catherine street, Montreal, Canada
- OC70      **14:30**      **Dietary fat intake and blood pressure in 10-19 years adolescents in the United Kingdom** By Z Li, C Evans, J Cade *Nutritional Epidemiology Group, School of Food Science and Nutrition, University of Leeds, LS2 9JT, UK*  
Student Competition
- OC71      **14:45**      **Comparison of different snacking models in post-secondary students in an urban setting.** By Tay Mia Eng<sup>1</sup>, Chew Yi Chien<sup>1</sup>, Emma Foster<sup>2</sup> & Iain A Brownlee<sup>3</sup>, <sup>1</sup>School of Chemical & Life Sciences, Nanyang Polytechnic, Singapore, <sup>2</sup>Human Nutrition Research Centre, Newcastle University, NE2 4HH, <sup>3</sup>Human Nutrition Research Centre, Newcastle University, Singapore

# POSTER SESSION FIVE

## THEME: PUBLIC HEALTH NUTRITION

14:00-14:56

Location: River Terrace Cafe/Student Union

Chair: Dr Hannah Theobald and Dr Kate Younger

- OC72 **14:00** **Nutrient Content in Yoghurt: A Comprehensive Survey of the UK Yoghurt Market in Advance of Government Mandated Sugar Reduction and Reformulation.** By A. Horti<sup>1</sup>, B.A. Fielding<sup>2</sup> and J.B. Moore<sup>1</sup>. <sup>1</sup>*School of Food Science and Nutrition, University of Leeds, Leeds, West Yorkshire, LS2 9JT, UK* and <sup>2</sup>*Department of Nutritional Sciences, University of Surrey, Guildford, GU2 7XH, UK*
- OC73 **14:07** **Sugar content in soft drinks with or without a sugar content claim across Europe.** By M. Gressier, A. Orengo, A. Vlassopoulos, G. Masset, U. Lehmann Nutrient Profiling, Consumer Science & Applied Nutrition, *Institute of Material Sciences, Nestlé Research Center, Vers-chez-les-Blanc, 1000 Lausanne 26, Switzerland*
- OC74 **14:14** **Acceptability of chocolate-flavoured milk with reduced sucrose content in school children.** By E. Smith and B. Buczkowski, *Department of Health Professions, Manchester Metropolitan University, Manchester, M15 6BG*
- OC75 **14:21** **Estimation of total, added and free sugar intakes in Japanese adults using a newly developed food composition database.** By A. Fujiwara<sup>1</sup>, K. Murakami<sup>2</sup>, K. Asakura<sup>2,3</sup>, K. Uechi<sup>1,4</sup>, S. Masayasu<sup>5</sup> and S. Sasaki<sup>2</sup>, <sup>1</sup>*Graduate School of Medicine, the University of Tokyo, Tokyo, Japan*, <sup>2</sup>*School of Public Health, The University of Tokyo, Tokyo, Japan*, <sup>3</sup>*School of Medicine, Toho University, Tokyo, Japan*, <sup>4</sup>*Faculty of Health Science, Toho University, Chiba, Japan*, <sup>5</sup>*Ikurien-naka, Ibaraki, Japan*
- OC76 **14:28** **Can we use national generic databases to assess product-level policies?** By M. Gressier, A. Vlassopoulos, A. Orengo, G. Masset. *Nutrient Profiling, Consumer Science & Applied Nutrition, Institute of Material Sciences, Nestlé Research Center, Vers-chez-les-Blanc, 1000 Lausanne 26, Switzerland*
- OC77 **14:35** **Macronutrient intake and prevalence of markers of metabolic syndrome in white UK adult males in the National Diet and Nutrition Survey Rolling Programme 2008 – 2014.** By T. Harrison<sup>1</sup>, K.E. Lane<sup>1</sup>, L.M. Boddy<sup>2</sup>, F. Amirabdollahian<sup>3</sup> and I.G. Davies<sup>1</sup>, <sup>1</sup>*School of Sport Studies, Leisure and Nutrition, Liverpool John Moores University, Liverpool, L17 6BD*, <sup>2</sup>*School of Sports and Exercise Sciences, Liverpool John Moores University, Liverpool, L3 3AF* and <sup>3</sup>*School of Health Sciences, Liverpool Hope University, Liverpool, L16 9JD*  
Student Competition
- OC78 **14:42** **Associations between tree nut consumption and cardiovascular disease risk markers in the UK adult population based on National Diet and Nutrition Survey (NDNS) rolling programme 2008-2014.** By V. Dikariyanto<sup>1</sup>, S. E. E. Berry<sup>1</sup>, G. K. Pot<sup>1,2</sup> and W. L. Hall<sup>1</sup>, <sup>1</sup>*Diet and Cardiometabolic Disease Research Group, Faculty of Life Science and Medicine, King's College London, London SE1 9NH, UK* and <sup>2</sup>*Vrije Universiteit Amsterdam, The Netherlands*  
Student Competition
- OC79 **14:49** **Individual differences in protein intakes following the addition of sauce to an older persons' lunch meal, and effects at lunch are sustained over the following meal.** By KM Appleton, *Bournemouth University, Poole, BH12 5BB, UK*  
Student Competition

# POSTER SESSION SIX

## THEME: PUBLIC HEALTH NUTRITION

14:00-14:56

Location: Geography room/K4U.1

Chair: Professor Sian Robinson and Dr Annemarie Knight

- OC80      **14:00**      **Infant feeding choices: a quantitative and qualitative evaluation of expectant participant's intentions of feeding in the Community Healthcare Organisation 1 (CHO 1) in Ireland.** By C. Bradshaw<sup>1</sup>, A. Breen<sup>1</sup>, L. Doherty<sup>2</sup>, R. Lennon<sup>2</sup>, R. Lydon<sup>2</sup>, E. Mooney<sup>3</sup>, C. Moriarty<sup>2</sup>, L. Martin<sup>2</sup>, A. Mc. Cloat<sup>3</sup>, L. Stoddard<sup>2</sup>, M. Mc. Loone<sup>1</sup>, and G. McMonagle<sup>1</sup>, <sup>1</sup> *Clinical Health & Nutrition Centre (CHANCE), School of Science, Department of Life Sciences, Institute of Technology, Sligo, Ireland*, <sup>2</sup> *Health Service Executive, Ireland*, and <sup>3</sup> *Home Economics Dept., St. Angela's College, Sligo, Ireland*  
Student Competition
- OC81      **14:07**      **Family Members' Infant Feeding Preferences, Maternal Breastfeeding Exposures and Exclusive Breastfeeding Intentions.** By K.Y.W. Lok<sup>1</sup>, D.L. Bai<sup>1</sup> and M. Tarrant<sup>2</sup>, <sup>1</sup> *School of Nursing, The University of Hong Kong* and <sup>2</sup> *School of Nursing, University of British Columbia, Canada*
- OC82      **14:14**      **Breastfeeding and incidence of breast cancers in the UK Women's Cohort Study.** By F.N. Mohammed Danial<sup>1,3</sup>, J.E. Cade<sup>1</sup>, D.C. Greenwood<sup>2</sup> and V.J. Burley<sup>1</sup>. <sup>1</sup> *Nutritional Epidemiology Group, School of Food Science and Nutrition, University of Leeds, LS2 9JT United Kingdom*, <sup>2</sup> *Centre for Epidemiology and Biostatistics, University of Leeds, LS2 9JT United Kingdom* and <sup>3</sup> *Faculty of Hospitality, Tourism and Wellness, Universiti Malaysia Kelantan, Malaysia*  
Student Competition
- OC83      **14:21**      **Protein intakes and sources in diets of infants and young children aged 6-18 months in the United Kingdom.** By A Sidnell and R Long, *Nestle Nutrition, 1 City Place, Gatwick, RH6 OPA*
- OC84      **14:28**      **Can obesity in early childhood be influenced by lifestyle interventions during pregnancy? A systematic review of the literature.** By K. Dalrymple<sup>1</sup>, J. Martyni-Orenowicz<sup>1</sup>, M. O'Keeffe<sup>2</sup> and L. Poston<sup>1</sup>, <sup>1</sup> *Division of Women's Health, King's College London, St Thomas' Hospital, London, SE1 7EH, UK*. <sup>2</sup> *Division of Diabetes and Nutritional Sciences, King's College London, London, SE1 9NH, UK*  
Student Competition
- OC85      **14:35**      **Is maternal dietary macronutrient composition in pregnancy associated with offspring birthweight?** By S.S. Sharma<sup>1</sup>, D.C. Greenwood<sup>2</sup>, N.A.B. Simpson<sup>3</sup> and J.E. Cade<sup>1</sup>, <sup>1</sup> *Nutritional Epidemiology Group, School of Food Science and Nutrition, University of Leeds, Leeds LS2 9JT, UK*, <sup>2</sup> *Division of Biostatistics, University of Leeds, Leeds LS2 9JT, UK* and <sup>3</sup> *Division of Obstetrics and Gynaecology, University of Leeds, Leeds LS2 9JT, UK*  
Student Competition
- OC86      **14:42**      **Are the distribution of carbohydrates, meals and snacks associated with blood glucose control in women with gestational diabetes? A pilot study using myfood24 dietary assessment tool.** By J. Hutchinson, M. Morris, C. Gianfrancesco, J.E. Cade, *Nutritional Epidemiology Group, School of Food Science and Nutrition, University of Leeds* and <sup>2</sup> *Academic Unit of Primary Care and Population Sciences, University of Southampton*
- OC87      **14:49**      **Prevalence of overweight and obesity among children and adolescents in Saudi Arabia.** M. Almughamisi<sup>1</sup>, T. George<sup>1</sup> and S. Harding<sup>1</sup>, <sup>1</sup> *Nutritional Sciences Research Division, King's College London, London SE1 9NH, UK*

# DAY 3

WEDNESDAY 12 JULY 2017

- 08:30**      **Registration and Refreshments**
- Postgraduate Symposium**  
Chair: Professor Catherine Geissler, King's College London, UK  
*S-2.18 Arthur and Paula Lucas Lecture Theatre, Strand Building, Basement -2*
- 09:00**      **The role of eggs and dairy products as dietary sources of vitamin D**  
Jing Guo, University of Reading, UK
- 09:25**      **The use of probiotics for constipation, their recommendations by doctors, and a critical evaluation of scientific evidence**  
Eirini Dimidi, King's College London, UK
- 09:50**      **Vitamin D and adolescents: evidence-based dietary requirements and implications for health**  
Taryn Smith, University of Surrey, UK
- 10:15**      **The role of dietary choices in the mitigation of iodine insufficiency in the UK**  
Maira Bouga, University of Glasgow, Scotland
- 10:40**      **Refreshments** and meet Policy Advisory Council member, Sam Montel. Read more on page 4
- 11:10**      **Silver Medal Lecture**  
Chair: Professor Philip Calder, University of Southampton, UK  
*S-2.18 Arthur and Paula Lucas Lecture Theatre, Strand Building, Basement -2*
- Breaking Bread**  
Professor David Sanders, Royal Hallamshire Hospital and University of Sheffield
- 12:00**      **Original Communication Session**  
**Oral original communication sessions:**  
*OC88-OC91: Council room K2.29, King's Building, Level 2*  
*OC92-OC95: Edmond J.Safra Lecture Theatre, King's Building, Ground floor*
- Poster original communication sessions:**  
*OC96-OC102: Geography room/K4U.12, King's Building, Level 4U*  
*OC103-OC109: River Terrace/Student Union, Macadam Building, Ground floor*
- 13:00**      **Lunch** and meet Public Health Advisory Council member, Dr Carrie Ruxton. Read more on page 4
- Symposium Five: The role of regulation to improve nutrition**  
Chair: Professor Susan Lanham-New, University of Surrey, UK  
*S-2.18 Arthur and Paula Lucas Lecture Theatre, Strand Building, Basement -2*
- 14:00**      **Taxing on unhealthy foods**  
Professor Mike Rayner, University of Oxford, UK
- 14:30**      **Product reformulation to meet changing EU regulatory requirements for 'Foods for specific groups'**  
Dr Kelly Johnston, King's College London, and LighterLife UK Ltd, UK
- 15:00**      **Refreshments**

- 15:30**      **The role of nutritional labelling and signposting**  
Professor Judith Buttriss, British Nutrition Foundation, UK
- 16:00**      **Policies needed to promote sustainable, healthy diets post Brexit**  
Professor Timothy Lang, University of London, UK
- 16:30**      **Panel Discussion: The role of regulation to improve nutrition**
- 16:45**      **Close of Conference**



Throughout the conference, participants are respectfully asked not to record or take photographs of slides given during presentations. Apart from being disruptive, it can compromise future publication in refereed journals, discourage presenters from showing original data, and disturb the flow of the presentation.

# POSTGRADUATE SYMPOSIUM

## THE ROLE OF EGGS AND DAIRY PRODUCTS AS DIETARY SOURCES OF VITAMIN D

*Jing Guo, University of Reading, UK*

### PRESENTATION SUMMARY

Vitamin D is known to be essential for normal bone growth and quality, thus, the classic functions of vitamin D relate to calcium absorption, homeostasis and bone mineralisation, with deficiency leading to childhood rickets and adult osteomalacia. More recently, there is mounting evidence to show that vitamin D is involved in many additional non-skeletal functions in the body and the role of vitamin D deficiency in increasing the risk of many common and serious diseases, including cardiovascular disease, common cancers and diabetes. The UK Scientific Advisory Committee on Nutrition (SACN) reported that in the UK 22-24% of individuals of 19-64 years and 17-24% of those  $\geq 65$  years were vitamin D deficient (plasma 25(OH) D3  $< 25$  nmol/L). Humans derive vitamin D from the diet or synthesise it using ultraviolet radiation on the skin. However, a number of relatively recent lifestyle changes (e.g. increased working indoors, sunscreen use), personal characteristics (ageing, skin pigmentation) and geographic reasons (latitude), limit the ability to synthesise adequate vitamin D from sunlight. Therefore, diet has become more important for contributing to vitamin D intake and status. Unfortunately, there are only a few types of foods (e.g. egg yolk, oily fish) naturally rich in vitamin D.

During this presentation, it will be described how the role of foods as dietary sources of vitamin D, particular eggs and dairy, is investigated. 'In addition, current animal and human studies on strategies of increasing vitamin D intake from diet will be discussed.

### SPEAKER BIOGRAPHY

Jing Guo is a final year PhD student at the University of Reading, UK. She graduated from the Beijing Technology and Business University, China with a BSc in Food Science and Nutrition and from the University of Reading with a MSc in Food Science. Jing Gou's PhD, funded by the Barham Benevolent Trust UK, is investigating the role of animal-derived foods as dietary sources of vitamin D and involves both animal and human studies, and also epidemiology studies.

Jing Guo has published two papers and five papers are under review. During her PhD, she has worked on collaborative projects with Dr Sabita Soedamah-Muthu at Wageningen University, and Professor Arne Astrup at the University of Copenhagen on a comprehensive meta-analysis investigating milk and dairy consumption, and risk of cardiovascular diseases and all-cause mortality (paper is published in the European Journal of Epidemiology). Additionally, Jing Guo is working on two collaborative projects with Professor Peter Elwood and Professor

John Cockcroft at the University of Cardiff, using data from the Caerphilly Prospective Study to investigate the association between a) vitamin D and b) egg consumption and cardiovascular events. Furthermore, Jing Guo has conducted a study on cows and a human study in collaboration with DSM Ltd. on vitamin D enrichment and fortification. In 2013, she was awarded travel and attendance grants from the University of Reading's Institute for Cardiovascular and Metabolic Research to attend the conference of The Royal Society of Medicine, and a travel and training grant at the Global Dairy Platform between March and August 2015.

## THE USE OF PROBIOTICS FOR CONSTIPATION, THEIR RECOMMENDATIONS BY DOCTORS, AND A CRITICAL EVALUATION OF SCIENTIFIC EVIDENCE

*Eirini Dimidi, King's College London, UK*

### PRESENTATION SUMMARY

Constipation is a common bothersome disorder that exerts a considerable impact on patients' quality of life<sup>(1)</sup>. Although several strategies exist for its management, patients are dissatisfied with the available treatment options, mainly due to efficacy issues<sup>(2)</sup>, suggesting a need for new treatment therapies for constipation. In the past decade there has been increasing research investigating the effect of probiotics in constipation with potential beneficial effects. Indeed, probiotics seem to affect constipation and gut motility via their impact on the gut microbiota and fermentation, the central and enteric nervous system, and the immune system<sup>(3)</sup>. For example, certain probiotics seem to increase stool bifidobacteria and lactobacilli concentrations, both of which are known to be reduced in patients with constipation compared to healthy people<sup>(3)</sup>. However, there is currently no published data on the use of probiotics by people with constipation or their recommendation by doctors for the treatment of constipation.

Interestingly, in a large national survey of 2559 members of the general population, it was shown that significantly more people with self-reported constipation currently use probiotics compared to those without self-reported constipation (13% vs 3%;  $p < 0.001$ )<sup>(4)</sup>. This suggests that people with constipation believe that probiotics are effective in the management of constipation, and is in agreement with the observation that 64% of the public believes probiotics have been tested in research studies for their effectiveness in constipation. TV adverts were the most common sources of information for probiotic use. Strikingly, the strongest predictors for probiotic use for gut health in the general population was having constipation based upon any form of diagnosis (e.g. self-reported constipation: OR=3.2,  $p < 0.001$ ; Rome-defined constipation: OR=1.7,  $p < 0.001$  or; doctor-diagnosed constipation: OR=1.8,  $p < 0.001$ ). Furthermore, visiting a dietitian for the management of constipation significantly increased the odds of probiotic use (OR=2.7;  $p = 0.006$ ). However,



the same survey, which also included 411 general practitioners and 365 gastroenterology specialists, showed that the majority of the doctors did not recommend probiotics for symptoms of constipation in clinical practice and did not believe their effect on constipation has been tested in research studies. Therefore, there was an urgent need for a systematic review and meta-analysis to summarise the evidence thus far.

A systematic-review and meta-analysis was performed on 14 RCTs, which showed that probiotics significantly reduced gut transit time by 12 h ( $p=0.01$ ), increased stool frequency by 1.3 bowel movements per week ( $p<0.001$ ) and improved cardinal symptoms of constipation, such as bloating ( $p=0.03$ )<sup>(6)</sup>. Remarkably, a species- and strain-specific effect was revealed, with *Bifidobacterium lactis* species conferring a beneficial effect, while *Lactobacillus casei* Shirota did not. However, the interpretation of these results is challenging due to high heterogeneity and risk of bias of individual studies, suggesting a need for further high quality studies. This may help explain the fact that the majority of doctors do not recommend probiotics for constipation.

The increased prevalence of probiotic use by people with constipation, in combination with the lack of convincing evidence on their effectiveness highlights the need for public health strategies to inform patients about where strong evidence of probiotic effectiveness exist, and where the evidence is still weak. Health care professionals should receive education on the high prevalence of probiotic use in the public and they should be encouraged to enquire about their patients' probiotic use in clinical practice, which will provide an opportunity to update patients on current evidence and allow them to make an informed choice.

#### References

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3. Dimidi E, Christodoulides S, Scott SM et al. (2017) *Adv Nutr* (in press)
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#### SPEAKER BIOGRAPHY

Eirini Dimidi is a nutritionist and registered dietitian. She is in her final year of her PhD at King's College London, where she investigates the use and effectiveness of probiotics in people with chronic constipation. In 2016, Eirini Dimidi was appointed as a Post-Doctoral Research Associate at the Nutritional Sciences Division, King's College London, where she is undertaking research on the effect of the low Fermentable Oligosaccharides, Disaccharides, Monosaccharides and Polyols (FODMAP) diet in patients with irritable bowel syndrome, and is currently investigating new delivery methods of the diet in patients in primary care.

Eirini Dimidi's other areas of interest include the effect of fibre, prebiotics and probiotics on the gut microbiota and gut health, as well as exploring patients' perceptions of gut diseases. Eirini Dimidi has also been an invited lecturer at Queen Mary University

of London, is a representative on several boards (Faculty of Life Sciences & Medicine Research Staff Network) at King's College London and has been a reviewer for leading nutrition journals. Eirini Dimidi has published in a number of peer-reviewed nutrition and gastroenterology journals, and has presented her work at national and international conferences.

## VITAMIN D AND ADOLESCENTS: EVIDENCE-BASED DIETARY REQUIREMENTS AND IMPLICATIONS FOR HEALTH

*Taryn Smith, University of Surrey, UK*

#### PRESENTATION SUMMARY

Low vitamin D status is a worldwide public health concern and occurs across all age, sex and ethnic groups, with significant implications for human health. Prospective studies have linked vitamin D to a wide range of health outcomes beyond that of musculoskeletal health, including cardiovascular disease and cancer, although evidence from robust randomised controlled trials is currently lacking<sup>(1)</sup>. Thus, ensuring adequate vitamin D status is important for optimum health and vitamin D intake recommendations are of great public health importance in helping to avoid vitamin D deficiency, particularly during the winter months when UVB exposure is inadequate for cutaneous synthesis. Several regulatory bodies have proposed guidelines circulating 25-hydroxyvitamin D concentrations (25(OH)D; the functional biomarker of vitamin D status) and estimated the dietary vitamin D intakes needed to achieve them. This includes the Scientific Advisory Committee on Nutrition (SACN) and the Institute of Medicine (IOM) who currently recommend vitamin D intakes of 10 and 15 µg/day respectively to maintain serum 25(OH)D concentrations > 25 and > 50 nmol/l based on bone health outcomes<sup>(2,3)</sup>. However the applicability of these recommendations across age and population groups is debateable and a lack of vitamin D dose-response randomised trials in population sub-groups, particularly those vulnerable to low vitamin D status, such as adolescents and ethnic minority populations, has hindered the development of evidence-based dietary requirements for vitamin D in these population groups<sup>(4)</sup>.

This presentation will review the current dietary intake recommendations for vitamin D in adolescents and provide clear evidence that while recommendations of 10-15 µg/day will help avoid winter-time vitamin D deficiency (25(OH)D < 25-30 nmol/l), intakes of up to 30 µg/day may be required to ensure adequacy (25(OH)D > 50 nmol/l), considerably higher than that currently proposed by regulatory bodies<sup>(5)</sup>. Furthermore, this presentation will demonstrate that maintaining circulating 25(OH)D concentrations above 50 nmol/l may be beneficial for adolescent health, specifically with respect to bone mineral density and cardiometabolic risk factors. Finally, consideration will be given to the vitamin D status and prevalence of vitamin D deficiency in adolescents of African Caribbean and South Asian ethnicity, for which there is currently limited data in the UK, and highlights the need for further targeted dose-response randomised trials for the refinement of evidence-based dietary requirements for vitamin D.

## References

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2. Scientific Advisory Committee on Nutrition (2016) *Vitamin D and Health*. Public Health England.
3. Institute of Medicine (2011) *Dietary Reference Intakes for calcium and vitamin D*. Washington (DC): National Academies Press.
4. Smith TJ and Hart KH (2017) *Nutr Bull*, 42, 55-60.
5. Smith TJ, Tripkovic L, Damsgaard CT et al. (2016) *Am J Clin Nutr*, 104, 1301-1309.

## SPEAKER BIOGRAPHY

Taryn Smith recently completed her PhD in Nutritional Sciences at the University of Surrey and has since taken on a post-doctoral Research Associate position at University College London's Great Ormond Street Institute of Child Health. After graduating from the University of Leeds in 2008 with a BSc (Hons) degree in Food Studies and Nutrition, Taryn Smith was employed in the food industry in both technical and commercial roles. In 2013, she graduated from Leeds Metropolitan University with an MSc degree in Advanced Nutrition.

Funded by the European Commission's Seventh Framework Programme for the pan-European ODIN Project (Food-based solutions for optimal vitamin D nutrition and health through the life cycle), Taryn Smith's PhD research focused on estimating evidence-based dietary requirements for vitamin D in 14-18 year old adolescents and assessing the implications of vitamin D status on health outcomes in this population group. Taryn Smith has presented at national and international conferences for which she has received several Young Investigator and Travel Awards. In 2016 she also received competitive funding to spend 12 weeks at the Institute for Aging Research, Harvard Medical School (Boston, USA) working with the Musculoskeletal Research Group on the Framingham Cohort Study.

Taryn Smith's research interests include understanding the effects of nutrition on health outcomes in population groups at risk of nutritional deficiencies, particularly pregnant women, children and adolescents, and nutritional interventions targeted at these populations to improve health and nutritional status and avoid deficiencies. Her post-doctoral research will involve running a pilot intervention programme aimed at improving infant feeding practices in South Asian populations in London.

## THE ROLE OF DIETARY CHOICES IN THE MITIGATION OF IODINE INSUFFICIENCY IN THE UK

*Maira Bouga, University of Glasgow, Scotland*

### PRESENTATION SUMMARY

Iodine is essential for thyroid function. Insufficient intake during pregnancy (and lactation) can adversely affect both the thyroid health of the mother and the thyroid health and mental development of the baby. Mild iodine insufficiency in the UK is a renewed public health concern, after reported insufficient intakes in schoolgirls<sup>(1)</sup>.

The elimination of iodine deficiency and related disorders is a priority for the World Health Organisation (WHO) and the United Nations International Children's Emergency Fund (UNICEF). Universal salt iodisation has been adopted by over 120 countries globally<sup>(2)</sup>. However, meeting the increased needs for iodine in pregnancy is challenging, and consumption of fortified salt may not be a sufficient measure<sup>(3)</sup>. In the UK, iodine insufficiency remains largely overlooked. No prophylactic measures are in place, such as fortification or supplementation, and recommendations for iodine have not changed since 1991. Neglecting the problem is a potential reason for the low knowledge and awareness amongst mothers<sup>(4)</sup> and healthcare professionals<sup>(5)</sup>, who cannot name common iodine-rich foods and mistake salt as a source.

Dietary choices have the potential to largely influence iodine intake. Dairy, fish and seafood products are rich sources of iodine and their consumption varies among women. A systematic review of the literature identified a lack of intervention studies focusing on foods (rather than supplements and fortification) or educative programmes that would aim to increase iodine intake in pregnancy<sup>(6)</sup>. 48 women were interviewed (pregnant, trying to conceive or young mothers) by phone or face-to-face. Respondents were receptive to dietary changes for the benefit of their children's health, as long as guidance and support was to be provided. However, dietary guidance during antenatal care was perceived insufficient and confusing, driving women to use other sources of information, often controversial or not credible<sup>(7)</sup>.

It has been shown that milk is the main dietary source of iodine in the UK<sup>(8)</sup>, contributing towards 38% and 40% of the dietary iodine intake in lactating<sup>(9)</sup> and pregnant women, respectively. Meanwhile, iodine was also provided by other dairy (31%) and fish (24%) products in pregnancy<sup>(4)</sup>. There is a lack of diversity in the dietary sources of iodine, which is an opportunity for new products – seaweed is iodine-rich and can contribute to the iodine intake of the growing vegetarian population. However, consumption is associated with potential risk, as too much iodine can be toxic. In a retail survey, only 10% of the identified seaweed-containing products stated information regarding iodine content, and 18% allowed its estimation. A range of 26 products' consumption could lead to an intake above the tolerable adult upper level of 600 µg/day<sup>(10)</sup>. Consequently, iodine level and labeling should be acknowledged with attention.

The identification of barriers, facilitators and perceptions towards iodine-rich foods consumption is important, considering their potential input in increasing iodine intake. Taste and heartburn have been described as the main drivers for inclusion or exclusion of fish, seafood and dairy products in the diet in interviews. Fish consumption presents more difficulties, as it is only well accepted during pregnancy by less than 1/5 of the population, due to the taste and smell of fish products<sup>(7)</sup>.

Guiding women towards the right choices could potentially contribute to incrementing iodine intake in pregnancy and mitigate the public health concern of iodine insufficiency. Including food guidance as a dimension of any future intervention is a vital step before the implementation of policy and public health campaigns.

## References

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## SPEAKER BIOGRAPHY

Maira Bouga studied Food Science and Technology at the Agricultural University of Athens (Greece), from where she graduated in 2011. In 2013, she was awarded her MSc in Human Nutrition with specialisation in Public Health Nutrition at the University of Glasgow (UK). She is currently in the last year of her PhD at the University of Glasgow, funded by Glasgow Children's Hospital Charity, under the supervision of Dr Emilie Combet and Professor Mike Lean. Her research focuses on iodine insufficiency in pregnancy and specifically in the role of diet, awareness and recommendations in the prevention of iodine deficiency disorders.

Maira Bouga has a particular interest in food and nutritional sciences and their implication in public health and disease prevention. She is a member of the Nutrition Society and the Biochemical Society. She has experience as a Research Assistant and as a Graduate Teaching Assistant at the University of Glasgow.

Maira Bouga has published three peer-reviewed articles and has presented her work at various national and international conferences. She was a finalist in the Three Minute Thesis Competition (University of Glasgow), and is an ENLP alumna.

# SILVER MEDAL LECTURE

## BREAKING BREAD

*Professor David Sanders, The Royal Hallamshire Hospital and University of Sheffield, UK*

### PRESENTATION SUMMARY

Humankind has existed for 2.5 million years but only in the last 10,000 years have we have been exposed to wheat. Wheat was cultivated in the Fertile Crescent (South Western Asia) with a farming expansion that lasted from ~9000BC to 4000BC. Thus it could be considered that wheat (gluten) is a novel introduction to man's diet.

Prior to 1939 the rationing system had already been devised. This led to an imperative to try and increase agricultural production. Thus it was agreed in 1941 that there was a need to establish a Nutrition Society. The very roots of the Society were geared towards necessarily increasing the production of wheat. This goal was achieved and by the end of the 20th century, global wheat output had expanded by 5-fold.

Perhaps as a result the epidemiology of coeliac disease or gluten sensitive enteropathy has changed. Coeliac Disease is a state of heightened immunological responsiveness to ingested gluten in genetically susceptible individuals. Coeliac Disease now affects 1% or more of all adults. Despite this, delays in diagnosis are common, for every adult patient diagnosed approximately 3-4 cases are undetected. Adult patients are more frequent than paediatric (9:1). Patients may present with any gastrointestinal symptom or other protean manifestations for example, neurological symptoms or reduced bone mineral density.

The first portion of this presentation will explore humankind's relationship with gluten, wheat chemistry, the rising prevalence of modern coeliac disease and the new entity of non-coeliac gluten or wheat sensitivity. Prevalence studies and currently unanswered questions will be described. In the second section the nutritional interventions of a low Fermentable Oligosaccharides Disaccharides and Monosaccharides (FODMAP's) diet and gluten free diet for Irritable Bowel Syndrome and the evidence to support this approach (including our own published work) will be discussed.

The societal trend will then be discussed, causing concern of the rising interest in gluten free as a 'lifestyler', 'free from' or 'clean eater' choice. Novel data on the intake of gluten by the general population will be discussed and a new double blind randomised study on gluten challenge in healthy volunteers which demonstrated that symptoms were absent despite significant quantities of ingested gluten. Finally the nutritional implications of restrictive diets and their long-term consequences including effects on the microbiome will be discussed. This presentation, it is hoped, takes the concept of our relationship with bread from the bench to the clinical bedside or out-patients and ultimately to the general society with the relevant evidence base and publication steam from our own group.

### SPEAKER BIOGRAPHY

Professor David S Sanders is a Professor of Gastroenterology and a Consultant Gastroenterologist at the Royal Hallamshire Hospital and the University of Sheffield. Professor Sanders has published >300 peer reviewed papers (H-score 50). He is internationally recognised for his work in coeliac disease, gastrostomy feeding and small bowel endoscopy.

Professor Sanders is delighted to receive the Silver Award from the Nutrition Society. Previously in 2010 he received a European Rising Star Award and the Cuthbertson Medal in 2011. His clinical work with patients who have coeliac disease has resulted in him being awarded the Coeliac UK Healthcare Professional of the Year Award (2010) & the inaugural Complete Nutrition Coeliac Health Care Professional Award (2013).

Professor Sanders is fortunate to work as part of the Sheffield Gastroenterology Team, which has been recognised for its standards of care. The Small Bowel Endoscopy Service won one of the inaugural British Society of Gastroenterology National GI Care awards (2011) and the Medipex award (2013). In 2012, the Percutaneous Endoscopic Gastrostomy (PEG) team won both Health Service Journal primary care and integrated clinical care awards. In 2014, the Hallamshire Gastroenterology team won one of the SAGE (Shire Awards for Gastrointestinal Excellence) awards for their primary care and GI bleed unit services.

Professor Sanders has chaired both the British Society of Gastroenterology (BSG) Small Bowel and Nutrition Section (2006-2012) and the BSG Audit Committee (2010-2013). He is the current Chair of the Coeliac UK Health Advisory Council, BSG Council Member and President of the International Society for the Study of Coeliac Disease (ISSCD). For further information, please visit: <http://www.profdaidsanders.co.uk/>



# SYMPOSIUM FIVE: THE ROLE OF REGULATION TO IMPROVE NUTRITION

## PRODUCT REFORMULATION TO MEET CHANGING EU REGULATORY REQUIREMENTS FOR 'FOODS FOR SPECIFIC GROUPS'

*Dr Kelly Johnston, King's College London, and LighterLife UK Ltd, UK*

### PRESENTATION SUMMARY

The general principles of food law form a horizontal framework underpinning all European Union (EU) and national measures relating to food. They are intended to cover all stages of the production, processing and distribution of food with the general objectives being the protection of consumers' interests, to ensure the free movement of food manufactured and marketed in the EU and most importantly to guarantee a high level of protection of human life and health.

The Food for Specific Groups (FSG) regulation was introduced in 2016 because, for various reasons, previous legislation covering certain categories of these products was deemed unsuitable. As such, the intention of this new legislation is to simplify the regulatory framework applicable to the composition and marketing of specific foods intended for vulnerable groups of consumers, namely: infant formulae and follow-on formulae, processed cereal-based foods and baby foods, foods for special medical purposes, and foods intended for total diet replacement for weight control. As with all foods, these specialist foods must comply with relevant legislation covering hygiene, labelling (including nutritional labelling), additives, contaminants, weights and measures, nutrition and health claims and advertising.

Whilst this updated legislation should theoretically streamline the manufacturing and availability of these products across EU member states, in practice, the future of specific categories of these foods now looks to be uncertain; this due to impending compositional and labelling changes which will pose several challenges from a reformulation, manufacturing, sensory and marketing perspective

This presentation will detail the various provisions which apply to FSG products and describe the regulations and guidance as they have developed over time. Case studies, with a particular focus on the difficulties with macronutrient reformulation of products designed for total diet replacement for weight control will be presented and will additionally highlight both perceived and real obstacles to the successful marketing of such foods.

### SPEAKER BIOGRAPHY

Dr Kelly Johnston is a Visiting Senior Lecturer in the Department of Nutrition and Dietetics at King's College London and is also Head of Nutrition and Research at LighterLife UK Ltd. With a

background in biochemistry (BSc), nutrition (MSc), and gut physiology (PhD), her research, prior to joining LighterLife has over the years focused on a range of areas including nutrient absorption and incretin secretion, intestinal transport protein expression, flavonoid absorption and metabolism, as well as more clinically invasive work investigating the metabolism impact of diet on a range of cardiometabolic outcome measures in obese individuals.

After several years at Leatherhead Food Research where Dr Johnston was responsible for establishing the Nutrition Research Facilities, and heading up the research efforts in nutrition-related areas, she joined LighterLife UK Ltd. This is a varied role, which sees her leading the commercial research efforts investigating the impact of very low calories diets (VLCD) on a variety of clinical outcomes and general health and well-being for which she has established strong academic, NHS and commercial links. Additionally, Dr Johnston leads the business' strategic thinking around regulatory affairs at both a national and European level and is actively involved in engaging with both national and European component authorities. Dr Johnston has supervisory responsibilities for several project students and actively publishes her work in peer-reviewed literature, including a number of reviews and articles on a wide range of obesity-related subjects.

## THE ROLE OF NUTRITIONAL LABELLING AND SIGNPOSTING

*Professor Judith Buttriss, British Nutrition Foundation, UK*

### PRESENTATION SUMMARY

Over the past decade there has been a transformation in the amount of information available on food packaging about the product it contains. Information provided on food packaging, including nutrition labelling information and allergen information, is controlled by the Food Information Regulation. Since December 2016, provision of nutrition information 'back of pack' has been a legal requirement, and the regulation provides a framework for voluntarily repeating selected information on the 'front' of food packaging, to signpost the content of energy, fat, saturated fat, sugars and salt. In the UK, the government has provided guidance on a recommended approach to the provision of this information, using colour coding and comparison with Reference Intakes. Providing information on allergens is also a legal requirement and the regulation also includes some rules for foods sold loose. Another regulation controls the use of nutrition and health claims, to protect the public, and there is also legislation covering the addition of nutrients to food, novel foods and foods for specific nutritional uses/groups. As a direct result of this legislation, food and beverage packaging provides a huge amount of information about the product it contains. But is the nutrition information used by shoppers and do we know to what extent it influences product choice and behaviour?

This presentation will summarise the current legislation and consider the evidence available on the use of packaging information.

### SPEAKER BIOGRAPHY

Professor Judith Buttriss is the Director General of the British Nutrition Foundation (BNF), a position she has held for almost ten years. Prior to this she was BNF's Science Director (since 1998). Judith is a Visiting Professor at King's College London and Robert Gordon University (Aberdeen) she chairs the Diet and Health Research Industry Club (DRINC) steering committee of the Biotechnology and Biological Sciences Research Council (BBSRC); a member of the Department for Environment, Food and Rural Affairs' (DEFRA) Family Food committee and a Public Health England (PHE) expert group on nutrient profiling. She was President of the Agriculture and Food Section of the British Science Association (BSA) in 2016/17, and is an elected Fellow of the Association for Nutrition (AfN), and in the recent past a Trustee of AfN.

In her 30 years of applying nutrition science in the context of public health, Judith has worked closely with UK government departments on various initiatives and projects and has published on a diverse range of topics on diet and health, including diets in early life, healthy ageing, health claims and sustainable diets.

## POLICIES NEEDED TO PROMOTE SUSTAINABLE, HEALTHY DIETS POST BREXIT

*Professor Timothy Lang, University of London, UK*

### PRESENTATION SUMMARY

Mounting data from sector and issue specific studies have itemised major challenges facing food consumption and production. Suggesting that diet and production are key factors shaping both human and ecosystems health, is a broad conclusion from across natural, life and social sciences. Despite this, policy-makers' response to this breadth and depth of evidence is patchy and hesitant. Until the new millennium policy-makers could be excused for finding the data and evidence unconvincing, unfocussed, perplexing, or lacking in 'translation' into policy-relevant and nation-specific terms. Since the 2000s, this is no longer the case. Reviews of the global food system have added to the pressure on public policy to reorient food supply chains. Actions by some food companies show that market action is useful but would be enhanced by new frameworks and system goals, much as they were in the mid twentieth century reorientation.

This presentation reviews the various conceptions of 'sustainable diets', its history, and why it has become a policy 'code' for rethinking what is meant by a good diet. It presents different approaches to the cultural, culinary and supply chain transitions implied. It outlines the roles different policy and food system actors currently play in promoting sustainable diets as a core concept for 21st century food and nutrition policy. The presentation takes UK policy engagement as a case study, and

explores how the recent decision to leave the EU from which it derives a third of its food gives extra interest to whether UK food consumption and production will really become more sustainable.

### SPEAKER BIOGRAPHY

Tim Lang is Professor of Food Policy at City, University of London's Centre for Food Policy. He was a hill farmer in Lancashire UK in the 1970's which confirmed his interest in food as a link for health, environment, culture and political economy. This became his work from 1980, first academically, then in the public sector and civil society, and for the last quarter century, back in academia.

Professor Lang was food advisor to the European Union (EU) Environment Commissioner (1988), food commissioner on the UK Sustainable Development Commission (2006-11), and a member of UK Council of Food Policy Advisors (2008-10), and the London Food Board advising the Mayor of London (since 2009). He is author or co-author of numerous journal articles and ten books. His latest book is Sustainable Diets (with Pamela Mason), published in March 2017. He is a member of the EAT-Lancet Commission on Healthy Diets from Sustainable Food Systems (reporting early 2018). He is advisor to the European Economic and Social Council's current inquiry into a comprehensive food policy. He was elected a Fellow of the Faculty of Public Health in 2001. He was appointed to Mayor Khan's London Food Board in 2017.



# ORAL SESSION SEVEN

## THEME: WHOLE BODY METABOLISM

12:00-13:00

Location: Council Room K2.29

Chairs: Dr Sarah Berry and Professor Andrew Salter

- OC88      **12:00**      **Dietary nitrate from beetroot juice selectively reduces central blood pressure in type 2 diabetes: the randomised, controlled VaSera trial.** By C.E. Mills<sup>1</sup>, V. Govoni<sup>1</sup>, L. Faconti<sup>1</sup>, M.L. Casagrande<sup>1</sup>, P. Maskell<sup>2</sup>, A. Masani<sup>2</sup>, H. Crickmore<sup>1</sup>, F. Iqbal<sup>1</sup>, S. Morant<sup>3</sup>, A.J. Webb<sup>2</sup> and J.K. Cruickshank<sup>1</sup>, <sup>1</sup>*Diet and Cardiometabolic Health Research Group and* <sup>2</sup>*British Heart Foundation Cardiovascular Division, Faculty of Life Sciences & Medicine, King's College London, SE1 9NH and* <sup>3</sup>*Medicines Monitoring Unit (MEMO), University of Dundee, DD1 4HN*
- OC89      **12:15**      **Low density lipoprotein quality and discordance with apolipoprotein B in intensively controlled Type 1 diabetes: Any relationship with nutrition?** By R.J. Webb<sup>1</sup>, I.G. Davies<sup>1</sup>, T.S. Purewal<sup>2</sup>, P.J. Weston<sup>2</sup>, G. Morrison<sup>2</sup> and J.C. Abayomi<sup>1</sup>, <sup>1</sup>*Food, Nutrition and Health Research Group, Liverpool John Moores University, Barkhill Road, Aigburth, Liverpool, Merseyside, L17 6BD,* <sup>2</sup>*Department of Endocrinology and Diabetes, Royal Liverpool and Broadgreen University Hospital, Prescot Street, Liverpool, Merseyside, L7 8XP*
- OC90      **12:30**      **Associations between regional and whole-body fat and insulin sensitivity in type 2 diabetic men of White and Black ethnicity.** By O. Hakim<sup>1,2</sup>, G. Charles-Edwards<sup>2</sup>, B. Witcher<sup>3</sup>, H. Shuaib<sup>2,3</sup>, and L.M. Goff<sup>1</sup>, <sup>1</sup>*Division of Diabetes and Nutritional Sciences,* <sup>2</sup>*Department of Biomedical Engineering, King's College London, SE1 1UL, UK,* <sup>3</sup>*Klarismo Ltd*
- OC91      **12:45**      **Effect of specific collagen peptides with various dosages on body composition in untrained men.** By D.Zdzieblik<sup>1</sup>, S.Oesser<sup>2</sup>, P.Dressler<sup>1</sup>, A.Gollhofer<sup>1</sup> and D.König<sup>1</sup>, <sup>1</sup>*Department of Sport and Sport Science, University of Freiburg, Freiburg, Germany and* <sup>2</sup>*CRI, Collagen Research Institute GmbH Kiel, Germany*

# ORAL SESSION EIGHT

## THEME: PUBLIC HEALTH NUTRITION

12:00-13:00

Location: Edmond J.Safra Lecture Theatre

Chairs: Dr Rachel Loopstra and Dr Ann Prentice

- OC92 **12:00** **A regional comparison of dietary intakes of 7-year-old children enrolled in observational birth cohort studies on the Isle of Man and in south-west England.** By P.M. Emmett, E. Tweney, J. Golding and C.M. Taylor, *Centre for Child and Adolescent Health, School of Social and Community Medicine, University of Bristol, Bristol BS8 2BN*
- OC93 **12:15** **Obesity determinants among Malaysian schoolchildren: What is new?** By A. Aryati<sup>1</sup>, N. Zulaily<sup>1</sup>, M.R. Shahril<sup>1</sup>, N.S. Abdul Manan<sup>2</sup>, S.A. Fadzli<sup>2</sup>, S.W. Wafa<sup>1</sup>, R.M. Amin<sup>3</sup> and A. Ahmed<sup>4</sup>, <sup>1</sup>Faculty of Health Sciences, Universiti Sultan Zainal Abidin, Terengganu, Malaysia, <sup>2</sup>Faculty of Informatics & Computing, Universiti Sultan Zainal Abidin, Terengganu, Malaysia, <sup>3</sup>Faculty of Medicine, Universiti Sultan Zainal Abidin, Terengganu, Malaysia and <sup>4</sup>Institute of Engineering Mathematic, Universiti Malaysia Perlis, Malaysia
- OC94 **12:30** **Are food and drink retailers within National Health Service (NHS) venues adhering to NICE guidance on childhood obesity?** By A. James<sup>1</sup>, L. Birch<sup>2</sup>, P. Fletcher<sup>3</sup>, S. Pearson<sup>4</sup>, C. Boyce<sup>4</sup>, A.R. Ness<sup>2</sup>, J. Hamilton-Shield<sup>2</sup> and F.E. Lithander<sup>2</sup>, <sup>1</sup>Faculty of Health Sciences, University of Bristol, BS8 1TH, <sup>2</sup>NIHR Bristol Biomedical Research Centre (Nutrition Theme), BS2 8HW, <sup>3</sup>Department of General and Old Age Medicine, Cheltenham General Hospital, GL53 7AN and <sup>4</sup>Department of Clinical Strategy, Cheltenham General Hospital, GL53 7AN
- OC95 **12:45** **Geographical proximity of takeaway food outlets to schools, colleges and universities in a low-socioeconomic ward in Manchester.** By J. Blow, S. Patel and R. Gregg. *Department of Health Professions, Manchester Metropolitan University, Manchester, M15 6BG*

# POSTER SESSION SEVEN

## THEME: PUBLIC HEALTH NUTRITION

12:00-12:49

Location: Geography room K4U.12

Chairs: Dr Gail Goldberg and Dr Megan Rossi

- OC96      **12:00**      **Socio-demographic characteristics of patients referred to a National Health Service Adult Weight Management Service: a retrospective observational study.** By E.M. Di Battista<sup>1</sup>, D.A. Behrens<sup>2</sup>, and T. Filippini<sup>3</sup>, <sup>1</sup>Adult Weight Management Service, Aneurin Bevan University Health Board, Newport, Wales, <sup>2</sup>Aneurin Bevan Continuous Improvement Department, Aneurin Bevan University Health Board, Newport, Wales, and <sup>3</sup>Faculty of Life Sciences and Education, University of South Wales, Treforest, Wales
- OC97      **12:07**      **Social media use by registered dietitians and pre-registration dietetic students in the UK and Ireland.** By A. Knight<sup>1</sup>, F. Brown<sup>1</sup>, D. Reidlinger<sup>2</sup>. <sup>1</sup>Division of Diabetes & Nutritional Sciences, King's College London, London, SE1 9NH, UK. <sup>2</sup>Bond University, Faculty of Health Sciences and Medicine, Robina, Queensland, Australia
- OC98      **12:14**      **A comparison of the nutritional quality of gluten free and mixed diets in UK adults.** By Z. Sobocinska, T.J. Butler and L. O'Connor, *Department of Health Professions, Manchester Metropolitan University, Manchester, M15 6BG*
- OC99      **12:21**      **The effect of dietary phosphatidylcholine supplementation on lipid profile in mild hyperlipidaemic individuals.** By M. Jan, P.S. Thondre, A. El-Chab and H.J. Lightowler, *Functional Food Centre, Oxford Brookes University, Oxford OX3 0BP, UK*
- OC100      **12:28**      **Food stall vendors' attitudes to whole grains in Singapore.** By I. Chong Qi and I. A. Brownlee. *Newcastle University (Singapore), Human Nutrition Research Centre, 172A Ang Mo Kio Ave 8, Singapore*
- OC101      **12:35**      **Increasing dietary protein intake in community dwelling older adults: protocol for a randomised controlled trial and baseline data** By E van den Heuvel<sup>1</sup>, JL Murphy<sup>2</sup> and KM Appleton<sup>1</sup>, <sup>1</sup> *Research Centre for Behaviour Change, Department of Psychology,* <sup>2</sup>*Faculty of Health and Social Sciences, Bournemouth University, Poole, BH12 5BB*  
Student Competition
- OC102      **12:42**      **Different food choice motives predict the consumption of a high quantity and a high variety of vegetables in European older adults.** By KM Appleton<sup>1</sup>, C Dinnella<sup>2</sup>, S Spinelli<sup>2</sup>, D Morizet<sup>3</sup>, L Saulais<sup>4</sup>, A Hemingway<sup>1</sup>, E Monteleone<sup>2</sup>, L Depezay<sup>3</sup>, FJA Perez-Cueto<sup>5</sup>, and H Hartwell<sup>1</sup>, <sup>1</sup>*Bournemouth University, Poole, UK;* <sup>2</sup>*University of Firenze, Florence, Italy;* <sup>3</sup>*Bonduelle, Villeneuve D'Ascq, France;* <sup>4</sup>*Institut Paul Bocuse, Ecully, France;* <sup>5</sup>*University of Copenhagen, Copenhagen, Denmark*

# POSTER SESSION EIGHT

## THEME: PUBLIC HEALTH NUTRITION

12:00-12:49

Location: River Terrace Café/Student Union

Chairs: Professor John Mathers and Professor Ailsa Welch

- OC103 **12:00** **Full fat cheese intake and cardiovascular health: a randomised control trial** By T.J. Butler<sup>1,2</sup>, I. Davies<sup>3</sup>, S. Mushtaq<sup>2</sup>, <sup>1</sup>Department of Clinical Sciences and Nutrition, University of Chester, Chester, CH1 4BJ, <sup>2</sup>Department of Health Professions, Manchester Metropolitan University, Manchester, M15 6BG, <sup>3</sup>School of Sport Studies, Leisure and Nutrition, LJMU, Liverpool, L2 2ER
- OC104 **12:07** **Dietary sugar, fat and salt intakes in male non-dysvascular lower limb amputees are significantly higher than recommend dietary values in the UK.** By E. A. Westerkamp<sup>1</sup>, S. C. Strike<sup>1</sup> and M. Patterson<sup>1</sup>, <sup>1</sup>Department of Life Sciences, Parkstead House, University of Roehampton, London SW15 4JD
- OC105 **12:14** **Influence of varying colour intensity on the perceived sweetness in yoghurt.** By J. Giovanni, H. Al-Kateb, H. Flaherty and V. Cox. Faculty of Health and Life Sciences, Coventry University, Coventry CV1 5FB, UK
- OC106 **12:21** **Preferences for salt, sugar and fat in selected foods as determined by 6-n-propylthiouracil taster status in young adults.** By C. Gouillaud, T. Renault, E. Flipon, A. Dixon and S. Thondre, Functional Food Centre, Department of Sport and Health Sciences, Oxford Brookes University, Gipsy Lane, Headington, Oxford OX3 0BP
- OC107 **12:28** **Sensory evaluation of polyphenol-rich millet-based muffins and their effect on in vitro starch digestion** By A. Almaski, S. Coe., H. Lightowler and S. Thondre. Functional Food Centre, Department of Sport and Health Sciences, Oxford Brookes University, Gipsy Lane, Headington, Oxford OX3 0BP
- OC108 **12:35** **The thermally induced reaction of cracker-like aroma characteristic resulting from proline, glycine and valine with D-glucose and lactose.** By S. Zaini<sup>1</sup>, H. Al-Kateb<sup>1</sup>, D. Baines<sup>2</sup>, V. Cox<sup>1</sup>, <sup>1</sup>Health and Life Sciences, Coventry University, CV1 5FB, UK, <sup>2</sup>Baines Food Consultancy Ltd, Bristol, BS35 2YN, UK
- OC109 **12:42** **Self-reported perception of healthy eating behaviour through on-line tool is associated with healthy weight status and food intake.** By R. San-Cristobal<sup>1</sup>, S. Navas-Carretero<sup>1,2</sup>, John C Mathers<sup>3</sup> and J.A. Martinez<sup>1,2</sup>, on behalf of Food4Me study, <sup>1</sup>University of Navarra, Centre for Nutrition Research, Department of Nutrition, Food Science and Physiology, Pamplona, Spain. <sup>2</sup> CIBER Fisiopatología Obesidad y Nutrición (CIBERObn), Instituto de Salud Carlos III, Madrid, Spain. <sup>3</sup> Human Nutrition Research Center, Institute of Cellular Medicine, Newcastle University, Newcastle Upon Tyne, United Kingdom











Handwriting practice lines consisting of multiple horizontal lines spaced evenly down the page.

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