



**24th  
March 2017**  
Brussels

# The moment for plant-based eating is now

**New scientific insights  
on sustaining ourselves  
& our planet**

# Alpro Foundation Timeline

## Facts and figures

15 research grants • 10 satellite symposia at international conferences • 26 symposia for students in nutrition and dietetics • 45 Awards for students (bachelors, masters and PhD) • 40 newsletters in Dutch, French, English and German • 2 scientific books • 1 Online program to nudge population to plant-based eating (available in 4 languages)

1996



**FIRST CHAIR**  
**Prof. Johan Auwerx**  
(Belgium)



2004

**SECOND CHAIR**  
**Prof. Nathalie Delzenne**  
(Belgium)

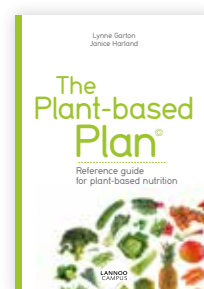


2008



ALPRO FOUNDATION

2011



**BOOK**  
**First edition**  
The plant-based plan

2012



**www.plantbasedeating.eu**  
An online dietary program to help people move to eating more plant-based foods.

2013

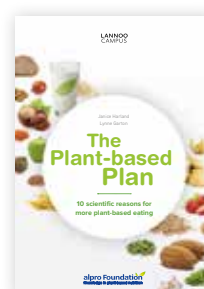
**THIRD CHAIR**  
**Prof. Ian Rowland**  
(UK)



2014

**alpro Foundation**  
Knowledge in plant-based nutrition

2015



**BOOK**  
The plant-based plan

**20**  
**alpro Foundation**  
Knowledge in plant-based nutrition

The moment for plant-based eating is now





**At Alpro Foundation we are passionate about supporting and promoting scientific knowledge and research in the areas of plant-based nutrition, its impact on human health and the sustainability of the planet.**

**Our primary focus is to provide scientific resources on plant-based nutrition. We support academics, researchers, health professionals and students by:**

- Organizing conferences and student symposia on emerging science in relation to plant-based nutrition;
- Funding research to encourage greater understanding of plant-based nutrition in human health by awarding Alpro Foundation Research Grants to academics;
- Giving prestigious awards to young scientists for a paper relating to the impact of plant-based eating on health or the environment;
- Providing topical, scientific updates on plant-based nutrition and sustainability.

## The Scientific Advisory Committee of Alpro Foundation is an international group of experts in the field of nutrition.

They advise about research grants, symposia and awards.



### Prof. Dr. Harry Aiking

*Emeritus Professor of Chemistry & Food at VU University Amsterdam (The Netherlands)*

"I'm a member of the Alpro Foundation because I believe biodiversity, food security, climate and ... our own health will benefit from plant-based eating."



### Prof. Dr. Anna Arnoldi

*Professor of food Chemistry and Functional Foods at the University of Milan (Italy)*

"Being a member of the scientific board of Alpro Foundation, I have had the honor of participating to great activities. This has permitted me to develop a better awareness and consciousness about the importance of education in nutrition."



### Prof. Dr. Peter Clarys

*Peter Clarys is full Professor at the Faculty of Physical Education and Physiotherapy of the Free University of Brussels (Belgium)*

"Plant-based eating: the easiest way to work on the environment and your health."



### Dr. André Franck

*General Practitioner (Belgium)*

"Being a representative of the Flemish general practitioners (WVVH), I became a member of Alpro Foundation almost 20 years ago. As a member, I have always been committed to promote the importance of a healthy diet for maintaining a good health.

Even though the topic "Nutrition" remains a stepchild in the curriculum of medical doctors, Alpro Foundation has always supported me in my efforts to improve the knowledge of nutrition amongst the GPs."



### Prof. Dr. Helmut Heseke

*Professor of Human Nutrition at the university of Paderborn in Germany*

"Eating less meat, less meat products and less other foodstuff from animal origin are important food-based recommendations for health as well as for sustainability reasons.

Research in this field is generally underrepresented. It is the great merit of the Alpro Foundation to support good research in the area of a more plant-based nutrition and at the same time to support young scientists in their early career."



### Prof. Dr. Sander Kersten

*Professor of Molecular Nutrition at Wageningen University (The Netherlands) and adjunct Professor at division of Nutritional Sciences at Cornell University (USA)*

"I'm a member of the Alpro Foundation because I believe that more widespread adoption of plant-based eating is environmentally more sustainable than the status-quo and can help improve the health of our population.

As a member of the foundation, I can contribute to making sure that plant-based is also science-based."



### Prof. Dr. Ian Rowland

*Emeritus Professor at Human Nutrition at the University of Reading (UK)*

"Alpro Foundation is addressing two important and highly topical issues related to food, namely the environmental unsustainability of animal-based diets and the potential health benefits of a plant-based diet.

The Foundation is dedicated to improve the knowledge base in these areas by funding research and at the same time by providing practical advice for consumers to help them make the shift to a plant-based diet."





### Prof. Dr. Cesare Sirtori

*Professor at Clinical Pharmacology at the University of Milan (Italy)*

"Being a member of the Alpro Foundation is a crowning achievement after 40 years of dedication to dietary plant proteins. I recall that, as a boy, I was impressed to hear that the Australian swimmer Murray Rose, who won gold at the 1960 Olympics in Rome, was a 100% vegetarian. The idea of the "seaweed steak" has stayed with me very long.

Peptides (from ACE inhibitors, to LDL-R activators to PCSK9 antagonists) probably explain most of the cardiovascular benefits of plant proteins, but there is a lot to find in other areas as well, e.g. cancer, neurodegenerative diseases, etc. Thus, research on plant-based eating is most relevant today."



### Prof. Dr. Greet Vansant

*Professor of Nutrition and Health at the University of Leuven (Belgium)*

"I am a member of Alpro Foundation, because I want to support and stimulate scientific research in an independent way."



### Prof. Dr. Kurt Wildham

*Professor for Clinical Nutrition and Head of Department of Nutrition and Metabolism at the University of Vienna (Austria)*

"The Alpro Foundation is engaged to bring the relevant scientific data to the public, to contribute to a healthier lifestyle and to decrease the high number of non-communicable diseases. From my point of view - being a pediatrician - those efforts should start already with children and adolescents to ensure true prevention. This is an outstanding task!"



## The moment for plant-based eating is now

### New scientific insights on sustaining ourselves & our planet

#### Alpro Foundation 20 years celebration symposium

#### Program

- |              |  |              |  |
|--------------|--|--------------|--|
| <b>8h30</b>  | <b>Welcome plant-based breakfast</b>   | <b>12h30</b> | <b>Soy improves cardiovascular and metabolic risk factors</b><br>Prof. Dr. Paolo Magni, University of Milano (Italy)   |
| <b>9h15</b>  | <b>Looking back at 20 years of Alpro Foundation</b><br>Bernard Deryckere (board of directors Alpro Foundation)<br>Welcome by the chair of Alpro Foundation<br>Em. Prof. Dr. Ian Rowland, Reading University (UK) | <b>12h45</b> | <b>Lunch</b>   |
| <b>9h30</b>  | <b>Plant-based Eating – should we believe the hype?</b><br>Mrs. Lynne Garton, Registered Dietitian and nutritionist (UK)   | <b>14h00</b> | <b>Economic impact of plant-based food patterns in Belgium and the UK</b><br>Prof. Dr. Lieven Annemans, Ghent University (Belgium)   |
| <b>10h00</b> | <b>Current food habits in Europe, far from plant-based eating</b><br>Prof. Dr. Stefaan De Henauw, Ghent University (Belgium)   | <b>14h30</b> | <b>Sustainability of plant-based eating patterns</b><br>Em. Prof. Dr. Harry Aiking, VU Amsterdam (The Netherlands)   |
| <b>10h15</b> | <b>Plant-based eating and health outcome: findings from the Adventist Health Study – US perspective</b><br>Prof. Dr. Gary Fraser (Loma Linda University, USA)  | <b>15h00</b> | <b>Sustainable food habits and its potential effect on public health</b><br>Prof. Dr. Katarina Bälter, Karolinska Institutet / Mälardalen University (Denmark)               |
| <b>10h45</b> | <b>Break</b>   | <b>15h30</b> | <b>Break</b>   |
| <b>11h15</b> | <b>Plant-based eating and health outcome: findings from the EPIC Study – European perspective</b><br>Prof. Dr. Heiner Boeing, German Institute of Human Nutrition Potsdam (Germany)                              | <b>16h00</b> | <b>Nudging healthier food choices: what works in labs and what is promising in real settings</b><br>Assoc. Prof. Dr. Armando Perez-Cueto, University of Copenhagen (Denmark) |
| <b>11h45</b> | <b>Proven and Proposed Cardiovascular Benefits of Soyfoods</b><br>Assoc. Prof. Dr. Mark Messina, associate professor at Loma Linda University (USA)  | <b>16h30</b> | <b>Nudging adolescents towards plant-based food choices</b><br>Dr. Ensaff Hannah, University of Leeds (UK)   |
| <b>12h15</b> | <b>Soy in the metabolic syndrome: obesity and diabetes</b><br>Dr. Marco Mensink, Wageningen University (The Netherlands)   | <b>16h45</b> | <b>Opportunities for plant-based diets as a sustainable and healthy food choice</b><br>Prof. Dr. Wim Verbeke, Ghent University (Belgium)                                     |
|              |  | <b>17h00</b> | <b>Closing remarks &amp; plans for the future</b><br>Em. Prof. Dr. Ian Rowland, Reading University (UK)  |
|              |  | <b>17h15</b> | <b>Drinks &amp; networking</b>   |



## Plant-based Eating - should we believe the hype?

Mrs Lynne Garton, Registered Dietitian and nutritionist (UK)

Lynne is a registered dietitian and a qualified nutritionist. She has appeared on the BBC's 'The Truth About Food', Channel 4's 'Secret Eaters' and more recently on ITV's 'Good Morning Britain' and 'Save Money; Lose Weight'. Lynne graduated from King's College in London with a degree in Nutrition and Postgraduate Diploma in Dietetics. She has worked in the health service as well as industry, and now runs her own unique nutrition consultancy, Alimenta, which provides consultancy services to the media, organizations, associations, and individuals.

Lynne is specifically interested in weight management and the role of plant foods, including phytonutrients, in health and disease. The growing body of evidence supporting plant-based eating, has led her to co-author the book "The Plant-Based Plan: 10 scientific reasons for more plant-based eating". This provides a thorough review of the scientific evidence supporting plant-based eating, as well as detailing practical suggestions to encourage greater consumption of these foods.

### Abstract

There's been increasing interest in the concept of plant-based eating, partly because this way of eating is featured heavily in many 'popular' diets. However lately there's been a backlash against some of these diets, including the Alkaline diet and the concept of clean eating, with critics expressing concern about their nutritional adequacy. Does this mean the evidence for plant-based eating is being brought into question? The purpose of this session is to address this question.

The presentation will cover what we mean by plant-based eating. Why we need to consider increasing our intake of plant foods based on our current nutritional status. How plant-based eating compares with current nutritional and dietary guidelines to support good health. Why various food-based dietary guidelines

used to promote a healthy balanced diet are placing more emphasis on plant foods.

Based on the evidence to date, both epidemiological and clinical, plant-based eating, that incorporates a wide variety of plant foods, makes a valuable contribution to good nutrition. Thus, plant-based foods remain at the core of dietary recommendations throughout the world and should be considered a real solution to the current nutritional crisis and not just another fad.

- Is the evidence for plant-based eating brought into question by new featured 'popular' diets?
- What is plant-based eating and why is it being promoted for a healthy balanced diet?
- Plant-based foods remain at the core of updated dietary recommendations.



## Current food habits in Europe, far from plantbased eating

Prof. Dr. Stefaan De Henauw, Ghent University (Belgium)

Dr. De Henauw is a professor of Public Health and Nutrition in the Department of Public Health at Ghent University in Belgium, where he chairs the department's nutrition and food safety unit. He is a medical doctor (graduated in 1987 at the Catholic University of Louvain) and had further training in Public Health (KUL 1988) and Human Nutrition (Sheffield University 2006).

He coordinates a team of researchers who work on diverse Belgian and European projects concerning diet, nutrition, and public health. They study topics ranging from determinants of childhood obesity to bone health and the impact of stress on eating behavior. Stefaan is a member of the Belgian Health Council, Vice President of the Belgian Nutrition Society, and the Secretary of the FENS board.

### Abstract

One of the major achievements of nutrition epidemiology research over the past decades is the gradual development and fine tuning of a set of validated methodologies for measuring dietary intake in individuals and in populations and the increasing harmonization of food consumption surveys across Europe, allowing to reliably analyze and compare dietary habits across populations. In addition, several large European research projects like EPIC, HELENA and IDEFICS, have invested not only in describing dietary habits but also in studying associations between dietary intake and indicators of chronic diseases in different stages of the life cycle.

The major common observation of practically all available literature data on dietary habits at the population level points towards the same overall conclusion that there is a strong imbalance between - too much - energy coming from animal food versus - a lack of - energy derived from plant-based foods.

All European food consumption surveys conclude that the major plant-based food groups like fruits, vegetables, whole grains, nuts and seeds are on

average consumed in proportions that are far below the recommendations.

An important general observation is that consumption patterns are slightly, but consistently better in higher educated and more affluent segments of the population.

These dietary habits are already seen at a young age. In the HELENA study (2007), including over 3000 adolescents from 10 European cities, the average consumption of fruit and vegetables was less than half of the recommended values. Likewise, the IDEFICS project (2008) has examined over 16,000 children aged 3-9 years from 8 European countries and concluded that the majority of this very young population has a low to very low intake of plant-based foods. This study also showed that dietary patterns rich in vegetables, whole-meal cereals and fruit are associated with a lowered risk of overweight and obesity.

In conclusion, there is a high need for more intensified efforts to increase the consumption of non-processed and unrefined products, especially from vegetable origin. These efforts should particularly also focus on the early phases of life and on socio-economic differences in dietary patterns.

- Literature data shows that there is a strong imbalance between – too much energy coming from animal foods versus – a lack of energy derived from plant-based foods.
- Fruits, vegetables, whole grains, nuts and seeds are on average consumed in proportions that are far below the recommendations, which can already be observed in children and adolescents across Europe.
- There is a high need for more intensified efforts, focused in particular on the early phases of life, to increase the consumption of foods from vegetable origin.



## Plant-based eating and health outcome: findings from the Adventist Health Study - US perspective

Prof. Dr. Gary Fraser, Loma Linda University (USA)

*Dr. Fraser received his medical degree in 1969 from the University of Otago, New Zealand. In 1977 he began a post-doctoral fellowship at the well-known Laboratory of Physiological Hygiene (started by Dr Ancel Keys) at the University of Minnesota. He joined the faculty at Loma Linda University in 1979. Over the last 30 years Dr. Fraser has served on many ad hoc NIH review panels and has been awarded 7 separate large federal grants that have in total contributed approximately \$30M toward the research effort at Loma Linda University. In 2001 Fraser was awarded a major grant from the National Cancer Institute to establish a new nation-wide cohort of Seventh-day Adventists, which is now a reality with 96,000 members nation-wide. He has authored or co-authored about nearly 200 peer-reviewed articles and published two well-reviewed books with Oxford University Press.*

*The other part of Fraser's professional life has been clinical cardiology. During his many years at Loma Linda he has worked about 40% of his time as a consultant cardiologist at the Loma Linda University Medical Center, being at present the attending physician on a busy cardiac intensive care unit about one week each month.*

### Abstract

There are many reasons to prefer a plant-based diet. Here I focus on indications that such a diet is associated with, and probably causes, better health.

The health of the U.S. Adventist population has been studied for 60+ years, as most U.S. Adventists prefer a plant-based diet and about half are vegetarian. Evidence of substantially lower rates of all-cause mortality and of incident cancers, as compared to a U.S. census population, is clear. This is true for cardiovascular disease also and for many specific cancers.

The question is why? Adventists are also religious people, but internal evidence does not suggest that this, although beneficial for mental health, is the cause.

Among Adventists there are lower rates of hypertension, diabetes, lower levels of blood insulin, blood lipids, and CRP.

We are looking closely at possible effects of particular dietary components that by their presence or absence characterize vegetarian diets, e.g. meats, dairy, soy, tomatoes, whole grains. There is consistency in this evidence: comparison between all Adventists and non-Adventists; comparisons between vegetarians and non-vegetarian (low meat) Adventists; associations between certain dietary components characterizing vegetarianism and disease risk.

Much remains to be learned about mechanisms whereby such diets may change pathophysiology. We plan to study the apparent effects of plant-based diets on gene expression, the metabolome, and the gut microbiome. Changing complex habits, such as diet, in a population, is very difficult, and is perhaps easier among young people who nevertheless feel less motivated by the threat of ill-health in the far future. Despite this, over decades the dietary habits of populations can and do slowly change.

The evidence for large benefits of a plant-based diet, while incomplete, is already compelling. Remember that most of us will die while waiting, if we demand final, unequivocal proof before making reasonable lifestyle changes!

- One of the many reasons to prefer a plant-based diet is that it is associated with better health.
- U.S. Adventists, of which most prefer a plant-based diet, have lower rates of mortality, cancers, diabetes, hypertension, ...
- There is consistent evidence that dietary components typical for a vegetarian diet are related to a lower disease risk.



## Plant-based eating and health outcome: findings from the EPIC Study - European perspective

Prof. Dr. Heiner Boeing, German Institute of Human Nutrition Potsdam (Germany)

*Prof. Dr. Boeing holds a PhD from Justus-Liebig University Giessen and a MPH in Epidemiology from the University of California, Los Angeles. He is currently the Head of the Department of Epidemiology at the German Institute of Human Nutrition in Potsdam-Rehbrücke as well as an Adjunct Professor in Institute of Nutritional Sciences at the University of Potsdam. He is interested in the role of foods in disease prevention and the dietary guidelines of plant-based eating.*

*He is the principal investigator of the EPIC Potsdam Study and participated in many national and EU projects including those centered on knowledge sharing such as recent projects from JPI-HDHL.*

*His expertise draws on over 25 years of research in nutritional epidemiology.*

### Abstract

Prospective cohort data, analyzing the relation between dietary intake and subsequent disease occurrence, are now the scientific basis of the evidence regarding food-disease relationships.

The European Prospective Investigation into Cancer and Nutrition (EPIC) has largely contributed to the body of observational evidence. This cohort study has been established in the 1990ies and included initially more than 500,000 study participants from 23 centers in Europe. The primary aim of EPIC was directed to elucidate the role of diet in the etiology of cancer and other chronic diseases including CVD and type 2 diabetes.

Information about food habits were obtained with food frequency questionnaires and 24-h-recalls at baseline. Food habits are related to disease incidence. More than 900 manuscripts had been published from the EPIC-study and many of them addressed food-disease or nutrient/compound-disease relationships. Some of

the manuscripts refer to local study populations such as the EPIC-Potsdam study.

In the EPIC study, several plant-based foods, particularly fruits and vegetables or dietary fibre-rich foods, have been linked with decreased risks across many disease endpoints. Also, ingredients of those foods, either calculated from dietary data or taken from blood analyses such as secondary plant compounds, showed inverse associations.

- The EPIC-study is a prospective cohort with more than 500,000 study participants enrolled from 23 centers in Europe.
- Dietary intake and its relation to disease risk was of main interest in this cohort.
- Over the past 20 years of research in this cohort, several food groups could be identified that are linked with increased or decreased disease risks.





## Proven and Proposed Cardiovascular Benefits of Soyfoods

**Assoc. Prof. Dr. Mark Messina, associate professor at Loma Linda University (USA)**

*Internationally recognized as an expert on soy, Dr. Messina is the co-owner of Nutrition Matters Inc, an adjunct professor at Loma Linda University, and the Executive Director of the Soy Nutrition Institute. He previously worked at the National Cancer Institute (USA), where he initiated a research program on the potential anti-cancer effects of soy. He has published more than 80 articles and book chapters for health professionals on the impact of soy consumption on health.*

*Dr. Messina is the Chair of the Editorial Board of The Soy Connection, a quarterly newsletter, that is sent to 250,000 health professionals. He co-authored three books: 'The Simple Soybean and Your Health', 'The Vegetarian Way', and 'The Dietitian's Guide to Vegetarian Diets: Issues and Applications'.*

### Abstract

Observational and clinical evidence suggests that multiple components of soy foods can lower risk of cardiovascular disease in multiple ways.

Clinical studies show that soy protein modestly lowers LDL-cholesterol levels and possibly also blood pressure. More specifically, meta-analyses show that soy protein lowers LDL-cholesterol approximately 4 to 5% and systolic and diastolic blood pressure by approximately 2.5 and 1.5 mmHg, respectively.

In addition, the high polyunsaturated fat content of many soy foods can, by displacing foods high in saturated fat, reduce coronary heart disease incidence and mortality.

Soy foods are uniquely-rich sources of isoflavones: diphenolic molecules classified as phytoestrogens and selective estrogen receptor modulators. Isoflavones have been shown to reduce inflammation (C-reactive protein) and arterial stiffness and improve endothelial

function, although the data are inconsistent. It may be that these latter three risk factors are primarily favorably affected in postmenopausal women at risk of coronary heart disease. The observational data shows that higher soy consumption is associated with a lower risk of both stroke and heart disease although protective effects are seen primarily in case-control rather than cohort studies. Sub-analysis of the data suggests protective effects are greater in Asian studies compared to non-Asian studies and in female compared to male participants. The greater effect in Asian studies is not surprising because of the low soy intake among Western populations. Collectively, the evidence indicates that soy foods can make an important contribution to heart-healthy diets.

- Clinical studies show that soy foods can lower risk of cardiovascular disease in multiple ways:
  - Soy protein modestly lowers LDL-cholesterol levels and possibly also blood pressure
  - Displacing foods high in saturated fat with soy foods (high in PUFA) can reduce coronary heart disease incidence and mortality
  - Isoflavones have been shown to reduce inflammation and arterial stiffness
- Collectively, the evidence indicates that soy foods can make an important contribution to heart-healthy diets.



## Soy in the metabolic syndrome: obesity and diabetes

**Dr. Marco Mensink, Wageningen University (The Netherlands)**

*Dr. Mensink holds a Master in Health Sciences – Specialization Movement Sciences, a medical degree and a PhD from Maastricht University in the Netherlands. His research has focused on energy metabolism, nutrition, and sports. He collaborates closely with colleagues across Western Europe to further research dietary strategies and interventions to improve recovery, performance and health.*

*He is currently serving as an Assistant Professor in the Division of Human Nutrition at the Wageningen University in the Netherlands.*

### Abstract

The metabolic syndrome (MetS) is a clustering of clinical features associated with an increased risk for type 2 diabetes and cardiovascular disease. So called 'ectopic lipid' accumulation and low grade inflammation are key factors in the development of the syndrome. Diet can play an important role in the pathogenesis, treatment and prevention of the metabolic syndrome.

Observational data from the EPIC-Interact cohort indicated that total and animal protein consumption, not plant protein, are associated with an increased diabetes risk. Increasing soy protein intake is a promising approach to fight the MetS, as soy protein has the potential to affect different features like blood lipids, inflammation, insulin action and glycemic control.

In a 4-week strictly controlled dietary intervention with a weight-maintaining moderate high-protein diet rich in soy, changes in insulin sensitivity and other cardio-metabolic risk factors in 15 postmenopausal women with abdominal obesity were assessed and compared to a moderate high-protein diet containing protein of mixed origin (mainly meat, dairy and bread). On the short-term, both high-protein diets induced

beneficial changes in some features of the metabolic syndrome. However, compared with the mixed-protein diet, the soy-protein diet resulted in greater insulin sensitivity and lower total and LDL cholesterol levels. Changes in intrahepatic lipid accumulation and individual inflammatory markers were not different between diets, although partly replacing meat with soy improved the total level of low-grade inflammation.

So, partly replacing meat by soy in a moderate high-protein diet has clear advantages regarding insulin sensitivity and total and LDL cholesterol. Therefore, exchanging meat products for soy products, could be important in fighting the metabolic syndrome and reducing the risk for type 2 diabetes mellitus and cardiovascular disease.

- Diet has an important role in the pathogenesis, treatment and prevention of the metabolic syndrome.
- Increasing soy protein intake is a promising approach to fight the metabolic syndrome.
- In this intervention study a soy-protein diet resulted in greater insulin sensitivity and lowered total and LDL cholesterol levels versus a mixed high protein diet (containing mainly meat, dairy and bread).
- Exchanging meat products for soy products, could be important in fighting the metabolic syndrome and reducing the risk for type 2 diabetes mellitus and cardiovascular disease.





## Soy improves cardiovascular and metabolic risk factors

Prof. Dr. Paolo Magni, University of Milano (Italy)

*Dr. Magni is an endocrinologist and currently Assistant Professor of Pathology at the University of Milan, Italy. He received his PhD in Endocrinology and Metabolic Sciences from the University of Milan in 1996, having also completed his specialization in Endocrinology at the University of Pavia.*

*Since finishing his studies, Dr. Magni has worked in the University of Milan's Scientific Committee of Endocrinology, Center on Neurodegenerative Diseases, and School of Endocrinology. Since 2011, Dr. Magni has been carrying out clinical and research activities on dyslipidemia at the Niguarda Hospital in Milan.*

### Abstract

Nutritional approaches for the primary prevention of cardiovascular diseases, currently the commonest cause of death worldwide, is, generally-speaking, a well-established strategy. Different food products, like plant-based foods and especially soy foods appear to be appropriate to contribute to this goal.

The aim of this 12-week intervention study was to assess the cardio-metabolic effects of a diet with whole soy foods corresponding to 30g soy protein per day. Soy foods corresponding to 30g of soy protein per day were given to individuals with moderate metabolic syndrome (n=26) in substitution of animal foods containing the same protein amount. A parallel control group (n=27) followed a standard a lipid-lowering diet.

Soy intervention resulted in a reduction in several metabolic syndrome features. Moreover, in the soy group we observed a significant improvement of median percentage changes for body weight (-1.5 %) and body mass index (-1.5 %), and for atherogenic lipid markers, like total cholesterol (-4.85 %), LDL-cholesterol (-5.25 %),

non-HDL-cholesterol (-7.14 %) and apolipoprotein B (-14.8 %).

In conclusion, 30g soy protein per day in a lipid-lowering diet significantly improved a relevant set of biomarkers associated with cardiovascular and metabolic risk.

- In this intervention study, 30g soy protein per day as part of lipid-lowering diet significantly improved atherogenic lipid markers, like total cholesterol, LDL-cholesterol, non-HDL-cholesterol and apolipoprotein B.
- Increasing intake of soy products (within a lipid-lowering diet) could be important to improve cardiovascular and metabolic risk factors.



## Economic impact of plant-based food patterns in Belgium and the UK

Prof. Dr. Lieven Annemans, Ghent University (Belgium)

*Dr. Lieven Annemans is a Professor of Health Economics at the medical faculty of Ghent University in Belgium. He previously served as the President of the Flemish Health Council and as a cabinet member for the Belgian Minister of Social Affairs and Pensions Frank Vandenbroucke. In 2004, he was also elected as President of the International Society for Pharmacoeconomics and Outcomes Research (ISPOR).*

*Prof. Annemans is the author of 'Health Economics for Non-Economists', 'The Price of Health – Is Our Health Insurance in Danger?', and 'Your Money or Your Life in Healthcare'. This is in addition to the over 300 academic papers and articles concerning Health Economics in which he has written or helped writing over the course of his career.*

### Abstract

Nutritional patterns and their relation to general health and wellbeing are receiving broad attention worldwide. Policy makers increasingly require scientific evidence on the health and economic consequences of different nutritional patterns.

The purpose of this study is to assess the health and economic effects of a plant-based diet and a soy-containing diet. Selected countries were Belgium and the UK.

A systematic literature review revealed that the investigated plant-based food patterns have a preventive effect on the development of type 2 Diabetes Mellitus, coronary heart disease, stroke, and some cancers.

The cost-effectiveness of these plant-based food patterns was assessed in comparison with a 'conventional' food pattern using an age- and gender dependent epidemiological prediction model. The

model allowed to predict health outcomes and related health care costs for the plant-based food patterns over a time horizon of 20 years. A societal perspective was applied for the calculation of costs (direct medical costs related to the selected diseases plus costs related to labor productivity loss) and the health outcomes were expressed in quality-adjusted-life-years (QALYs). All the costs were calculated for the year 2015.

The preliminary results of these analyses demonstrated that a plant-based and a soy-containing food pattern lead to large net economic gains for society and lead to additional health gain.

Further results should also consider the efforts needed to move more people towards following these nutritional patterns.

- Systematic literature reveals that a plant-based and a soy-containing diet have a preventive effect on the development of several diseases.
- Preliminary results of an analyses regarding the cost-effectiveness of a plant-based food pattern compared to a 'conventional' food pattern showed that the plant-based food pattern lead to large net economic gains for society and lead to additional health gain.



## Sustainability of plant-based eating patterns

Em. Prof. Dr. Harry Aiking, VU Amsterdam (The Netherlands)

*Prof. Dr. Aiking graduated with an MSc degree in biochemistry and a PhD in microbiology from the University of Amsterdam. Before retiring in 2014, Dr. Aiking was an Associate Professor in Chemistry and Food at the Free University of Amsterdam. He has led dozens of projects on topics within the fields of Environmental Studies, Environmental Toxicology, and Environmental Resource Management.*

*Dr. Aiking led the Protein Foods, Environment, Technology, And Society (PROFETAS) program funded by the Netherlands Organization for Scientific Research from 1999 – 2005. He has been a long-standing member of the Working Group Sustainable Food Production of 'Food For Life', a European Technology Platform.*

### Abstract

To define sustainability in terms of the “carrying capacity” of planet Earth, Rockström et al. identified and quantified the most important environmental issues. To date, mankind has transgressed 3 of the “planetary boundaries” these authors defined. In fact, the current rate of biodiversity loss is over 10 times beyond its sustainable limit, nitrogen cycle disruption almost 3.5 times, carbon cycle disruption (climate change) 1.1-1.5 times, with others (phosphate cycle disruption, ocean acidification, land-use change, freshwater use) in hot pursuit. Food production is an important driver underlying all of these impacts.

More importantly, protein production strongly interlinks the top three of environmental impacts indicated above (Aiking). The main underlying cause is animal production in concentrated animal feeding operations, wasting natural resources such as land, energy and water, and leading to considerable pollution. Thus, animal protein production has a disproportionate share in biodiversity loss and climate change (Westhoek et al). Already, the total body weight of livestock animals accounts for ca. 65% of all terrestrial vertebrates, humans for ca. 30%,

and animals living in the wild for 5% or less (Zalasiewicz). Due to population and income growth, both meat and dairy production are projected to double between 2000-2050 (Steinfeld et al.), which would be catastrophic for biodiversity and climate. In contrast, optimizing diets for sustainability, health and costs yields primarily plant-based eating patterns (van Dooren et al). In developed countries, a dietary transition back to plant foods seems inevitable. The good news is that such a transition would benefit several Sustainable Development Goals simultaneously: biodiversity, climate, equity and human health.

- Aiking, H., 2014. Protein production: planet, profit, plus people? American Journal of Clinical Nutrition 100 (suppl), 483S-489S.
- Rockström, J. et al., 2009. A safe operating space for humanity. Nature 461 (7263), 472-475.
- Steinfeld, H. et al., 2006. Livestock's long shadow: Environmental issues and options. FAO, Rome, Italy.
- van Dooren, C. et al., 2015. Combining low price, low climate impact and high nutritional value in one shopping basket through diet optimization by linear programming. Sustainability 7, 12837-12855.
- Westhoek, H. et al., 2016. Food Systems and Natural Resources. A Report of the Working Group on Food Systems of the International Resource Panel. UNEP, Nairobi, Kenya.
- Zalasiewicz, J., 2016. A history of layers: What mark will we leave on the planet? Scientific American 315 (3), 31-37.

- The food sector is a major contributor to greenhouse gas emissions (GHGE).
- Especially animal protein production has a disproportionate share in biodiversity loss and climate change.
- Optimizing diets for sustainability, health and costs yields primarily plant-based eating patterns.



## Sustainable food habits and its potential effect on public health

Prof. Dr. Katarina Bälter, Karolinska Institutet / Mälardalen University (Sweden)

*Dr. Bälter is currently a Professor in Public Health at Mälardalen University as well as an Associate Professor in the Department of Medical Epidemiology and Biostatistics at the Karolinska Institute in Sweden. She served as a Visiting Professor at Williams College and more recently as a Visiting Scholar at Stanford University, both in the United States. Having begun her studies in nutrition at the University of Stockholm, she completed her PhD in Oncology-Pathology at the Karolinska Institute. She has also completed post-doc work at Harvard University and Boston University.*

*The focus of her work is sustainable lifestyles. She has completed studies on the short and long term effects of various lifestyle factors on health in large population-based studies. This work is supported by her background in nutritional epidemiology.*

### Abstract

Climate change is an urgent global issue and the food sector is a major contributor to greenhouse gas emissions (GHGE).

The primary aim was to study diet-related GHGE and its relation to nutrient intake and iron status in the Swedish cohort study LifeGene.

The environmental impact of foods from Life Cycle Assessment (LCA) data was linked to a web-based food frequency questionnaire (FFQ) filled out by 5364 participants. Thereafter, we calculated the daily emission of CO<sub>2</sub> equivalents (CO<sub>2</sub>e) as well as the intake of selected nutrients associated with vegetables, fruits, meat and dairy products and analyzed hemoglobin in blood.

The overall diet-related emission was 4.7 kg CO<sub>2</sub>e/day, corresponding to 1.7 ton CO<sub>2</sub>e/year, and the emission was lower for women, 4.4 kg CO<sub>2</sub>e/day, than for men, 5.3 kg CO<sub>2</sub>e/day. In general, there were only small differences in nutrient intake between quartiles

of CO<sub>2</sub>e, regardless if the intake was analyzed as absolute intake, energy percent or as nutrient density. Beef and ground meat was eaten 2.1 times per week among women and 3.5 per week among men. Beef is a major contributor of CO<sub>2</sub>e and a rich source of iron, a mineral of particular importance for women in child-bearing ages, but there was no correlation between CO<sub>2</sub>e and dietary iron for women. Moreover, the correlation between CO<sub>2</sub>e and iron status in terms of hemoglobin levels was weak and close to zero, regardless of use of supplements with iron, for women.

Substituting a theoretical serving of 100 grams of beef per week for tofu corresponds to a 97% reduction in CO<sub>2</sub>e per serving or a 15% reduction of the total kg CO<sub>2</sub>e per day for women and 13% for men.

In conclusion, a self-selected diet low in CO<sub>2</sub>e provides comparable intake of nutrients and hemoglobin levels as a diet high in CO<sub>2</sub>e.

- This study showed that a climate friendly diet, which is predominantly plant-based, adheres to the dietary guidelines and does provide a good iron status.
- Substituting 100 grams of beef per week for tofu could correspond to a 97% reduction in CO<sub>2</sub>e per serving.



## Nudging healthier food choice: what works in labs and what is promising in real settings

Assoc. Prof. Dr. Armando Perez-Cueto, University of Copenhagen (Denmark)

*Dr. Perez-Cueto is Associate Professor at the University of Copenhagen, Department of Food Science, Design and Consumer Behavior Section. At the time, he leads work packages within the VeggiEAT Project and the FoodSMART Project, both EU grant agreements. Previous EU funded projects where he participated include Data Food Networking (DAFNE) and EATWELL. He has been principal investigator of two binational networks (Brazil and USA) on choice architecture for public health purposes, both financed by the Danish Ministry of Higher Education and Science.*

*Dr. Perez-Cueto holds an MSc in Rural Development Economics, a diploma in Food Science and Nutrition, and a PhD in Applied Biological Sciences, all from Ghent University in Belgium. He is a visiting lecturer through Erasmus+ Programme at Porto University (Portugal) and also lectures yearly as a guest at the University of Jyväskylä (Finland). His research interests are in the promotion at consumer level of healthier and more sustainable diets using behavioral interventions.*

### Abstract

Although most EU countries have invested in large communication campaigns to promote healthier and sustainable eating, particularly foods of plant origin, actual consumption data suggests that EU citizens are far behind current recommendations. Epidemiological data shows that small changes towards healthier dietary intake have large and positive health outcomes. Hence, strategies towards healthier and sustainable eating could benefit from including small and repetitive changes as a complementary strategy.

The aim of this presentation is to summarize recent studies: systematic reviews, living lab experiments and large scale interventions, to elucidate whether behavioral interventions in the form of nudges are effective or not in achieving change, and to highlight practical issues for their implementation at large scale.

Few studies have focused on the effect of nudges on vegetable consumption, and even less have explored consumer attitudes towards such interventions. Specifically, manipulation of food product order or proximity can influence food choices. Furthermore, environmental, educational and multi-component interventions are in general successful in increasing vegetable consumption. What works in labs? Altering the order of buffet (vegetables first) combined with allowing self-composition of salad, or providing status-quo (default) servings increase vegetable intake. Reducing total intake can be achieved by priming and increased visual variety. Use of odors is unconvincing.

In conclusion, nudges can improve food behavior but quality of studies needs to be improved. Consumer perception of nudge interventions towards healthy eating is positive hence such interventions are needed. Different nudges work depending on the desired behavioral change. Status-quo bias is promising for use on a large scale.

This work has been partially funded by the European Community's Seventh Framework Programme (FP7/2007-2013) Grant Agreement No. FP7 - 612326 - VeggiEAT.

- EU citizens are far behind current recommendations regarding healthy and sustainable eating.
- Nudging strategies can help to improve food behavior.
- Nudges like manipulation of food product order combined with allowing self-composition of salad, providing status-quo servings or proximity can increase vegetable intake.

## Nudging adolescents towards plant-based food choices

Dr. Ensaff Hannah, University of Leeds (UK)

*Dr. Ensaff is a lecturer at the School of Food Science & Nutrition at the University of Leeds, where she teaches public health nutrition. Her areas of research include nutrition interventions, factors affecting food choice, and the use of food choice data to examine dietary patterns.*

*Hannah has considerable experience of leading research around food and nutrition, particularly with children and young people, as well as mixed-methodology evaluations of interventions. Her work has encompassed the development of interventions, as well as the analysis of food choice datasets, and qualitative research exploring food choice.*

### Abstract

Diets of UK adolescents has been shown to fall short of recommendations, with excessive intake of saturated fat and sugar, and low fruit and vegetable consumption. With a propensity for nutrient-poor and fast foods, this food choice behavior is mirrored in secondary schools where students typically bypass freshly prepared nutrient rich meals.

This study explored the potential of shifting adolescents' food choice towards plant-based foods, within a real world setting of a secondary school canteen. The menu already on offer to students was examined and specific foods of high plant-based content were designated as targets for the intervention [whole fruit, fruit salad, vegetarian daily specials, and sandwiches containing salad].

The intervention comprised small changes to the choice architecture, which were developed and instigated for a period of six weeks. The nudge strategies included preferential product placement and arrangement, labelling, and presentation of the designated foods. Importantly, the intervention included no changes to the foods or menu on offer and the nudges were not publicized overtly to students.

Students' food choice (>200,000 transactions) was examined for baseline [29 weeks], intervention [6 weeks] and post-intervention [3 weeks]. Selection of designated foods increased significantly (baseline, 1.4%; intervention 3.0%; post-intervention, 2.2%;  $P < 0.001$ ). During the intervention, students were 2.5 times as likely to select designated food items compared to baseline.

The study provides encouraging support for nudging strategies, and has implications for practice and policy within a school setting, where choice architecture can be designed to shift adolescents' diets towards better food choices.

- UK students in secondary schools typically skip freshly prepared nutrient rich meals.
- This intervention in a school canteen showed that nudge strategies, including preferential product placement and arrangement, labelling, and presentation of the designated foods, resulted in a shift towards better food choices.
- In the pursuit of improving adolescents' food choice, school catering practice and school food policies should reflect the place of choice architecture within schools.





## Opportunities for plant-based diets as a sustainable and healthy food choice

**Prof. Dr. Wim Verbeke, Ghent University (Belgium)**

*Dr. Verbeke is a professor in Agro-food Marketing and Consumer Behavior at Ghent University in Belgium, where he is also the chairman of the Department of Agricultural Economics. His research interests include consumer food choice and the impact of information about food production and food processing systems, food quality and safety, and food labeling.*

*His team works on several national and EU-funded research projects. Prof. Verbeke has co-authored more than 250 peer-reviewed papers on agricultural economics, consumer behavior, marketing, food science and technology, and nutrition. He has been named a Thomson Reuters Highly Cited Researcher in 2015 and 2016.*

### Abstract

Given the inseparable environmental and health impact of dietary habits, integrating health and sustainability goals have become a highly topical issue in policy development and communication to encourage consumers to adopt healthier and more sustainable diets.

Increasing evidence indicates that it is possible to develop diets that are both environmentally sustainable and healthy, but their potential success largely depends on consumers' willingness and ability to change their behavior.

This study investigates consumer perceptions of the match, or mismatch, between healthy and sustainable diets, and gives insight into consumers' motivation to eat healthily and sustainably, as measured by involvement. Data were collected in Spring 2014 through a cross-sectional quantitative online survey with samples representative for age, gender and region in four European Union countries (United Kingdom, Germany, Belgium, and the Netherlands) (n=2783).

The images of a healthy diet, a sustainable diet and a plant-based diet were found to be highly compatible based on a strongly observed match between European consumers' perceptions of these concepts. Half of the participants were highly involved in healthy eating and one third in both healthy and sustainable eating.

Based on this study, informational food policy actions targeting both healthy and sustainable food consumption behavior are recommended to address issues relevant to the target segments, considering their levels of involvement. Increasing consumers' motivation and involvement in health and sustainability emerges as a key trigger for increasing healthy and sustainable eating.

- Encouraging consumers to adopt a healthier and more sustainable diet has become a highly topical issue in policy development.
- Studies have shown that a healthy, a sustainable and a plant-based diet are very favorable and compatible with each other from a European consumers' perception.
- Therefore, informational food policy actions targeting both healthy and sustainable food consumption behavior are recommended to address issues relevant to the target segments, considering their levels of involvement.



In memoriam

**Dr. Janice Irene Harland, PhD, RNutr**  
**April 1954 - February 2017**

*Alpro Foundation was shocked and saddened by the recent premature passing of their dear colleague and friend Dr Janice Irene Harland aged 62 years. Janice passed away peacefully at home in Poulton in the UK surrounded by her family on the 11th February following a short courageous battle.*

Since graduating in 1978, Janice has worked in the field of nutrition in a European context and primarily focused on providing nutrition advice, guidance on nutrition/regulatory matters, scientific presentations, research and communications.

She has co-authored two books on plant-based eating, written a range of soft publications and presentations aimed at improving either health professionals or consumer understanding of the health benefits of plant-based eating and as well how to put it into practice. She also recently participated in a series of webinars organized by the British Nutrition Foundation (BNF).

While working in the Food Industry, she became closely involved with the newly emerging 1990 European food regulations relating to nutrition labelling, latterly nutrition, health claims and food information to consumers. The scientific technical regulatory interface was a key area of expertise, but her real passion was making nutrition science work.

One of her challenges was always to seek out and take good nutritional science to a wide audience, whether they be business, peers, health professionals or students. She firmly believed that there is always a need for good soundly based nutritional science communication.

Over the last 18 years she has worked as an independent nutrition consultant for her business HarlandHall Associates. During this time she presented at numerous national and international conferences, published widely in the scientific press and took up the position of time Lecturer in Human Nutrition, Bath Spa University.

She has also made a significant contribution to the leadership of the nutrition profession through her service on committees, panels and public bodies related to the advancement or promotion of nutrition including HEART UK, Afn, SENSE, Nutrition Society, British Nutrition Foundation, British Society Animal Science, International Life Science Institute (ILSI) Europe and Nutrition and Health Conferences. In 2012 she became a fellow of the Royal Society of Medicine.

Dr. Harland has been a long standing adviser and supporter of the Alpro Foundation amongst many other organizations. The foundation report on her not only having been an exceptional colleague, always questioning, challenging and thorough in her approach, but an innovator and crucially a real pleasure to work with. She will be sorely missed and our thoughts are with her family: her husband Simon and their children Alex and Louise.





Alpro Foundation is a non-profit organisation promoting scientific research  
in the field of plant-based nutrition and sustainability.

**More Info on [www.alprofoundation.org](http://www.alprofoundation.org)**