Conference on
Human Variability in
Response to Food and
Nutrients
Building the Bridge to Personalised Nutrition – Challenges and Opportunities for Industry, Public Health and Academia

May 15, 2019
Stamford Plaza Sydney Airport
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Human Variability in Response to Food and Nutrients
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Program

08:45 – 09:15 hr  |  Registration
09:15 – 09:25 hr  |  Introduction and Welcome
Emeritus Prof. Richard Head, University of South Australia
09:25 – 10:05 hr  |  Human Variability: Scientific Basis for Personalised Nutrition
Prof. John Mothers, Newcastle University, UK
10:05 – 10:25 hr  |  Personalised Nutrition to Precision Health – A New Approach to Build Health
Dr. Nathan O’Callaghan, Precision Health Future Science Platform, CSIRO
10:25 – 10:40 hr  |  It’s in Our Capacity to Adapt – Explanation of Human Variability from the Perspectives of Phenotypic Flexibility
Dr. Susan Wopereis, TNO, The Netherlands

10:40 – 11:00 hr  |  Morning Tea Break
11:00 – 11:40 hr  |  Personalised Nutrition: Can Our Microbes Tell Us What to Eat?
Dr. David Zeevi, The Rockefeller University, USA
11:40 – 12:10 hr  |  Understanding the Variable Responses of Gut Microbiome to Dietary Interventions
Dr. Meera Esvaran, University of New South Wales
12:15 – 12:45 hr  |  Human Variation – Are Our Measurement Tools Reliable Enough to Provide Personalised Nutrition for Health and Performance?
Prof. David Bishop, Victoria University

12:45 – 13:45 hr  |  Lunch and Networking
13:45 – 14:15 hr  |  With the New Knowledge, How Will Clinical Nutrition Respond?
Prof. David Cameron-Smith, University of Auckland, New Zealand
14:15 – 14:45 hr  |  Lifting the Lid on Nutrigenomics: Current Applications and the Future of Nutrition
Dr. Ravia Fayel-Moore, Nutrition Research Australia
14:45 – 15:15 hr  |  Creating Consumer Access to Personalised Nutrition: Risks and Opportunities
Dr. Femke Hannes, DSM Nutritional Products Asia Pacific, Singapore

15:15 – 15:35 hr  |  Afternoon Tea Break
15:35 – 16:05 hr  |  There and Back Again: A Return to Personalised Nutrition Advice
Prof. Sandra Capra, A.M., The University of Queensland
16:05 – 17:00 hr  |  Regulatory issues – introduced by Dr Dorothy Mackerras, FSANZ
Panel Discussion
17:00 hr  |  Close

Organizers

Co-organizer

Collaborator
Human Variability: Scientific Basis for Personalised Nutrition

Biography

Prof. John Mathers is Professor of Human Nutrition and Director of the Human Nutrition Research Centre in the Institute of Cellular Medicine at Newcastle University, United Kingdom. He was also a founding member, and Chair of the European Nutrigenomics Organisation (NuGO). His research includes the use of genomic and epigenomics tools to understand the mechanisms through which nutrition influences cell function and, ultimately, health. In addition, in collaboration with colleagues in the University of Aberystwyth and Imperial College London, he has developed novel metabolomics-based methods for assessing dietary intake. Prior to his current position, Prof. Mathers was previously the President of the Nutrition Society and former Scientific Director of the Institute for Ageing and Health, Newcastle University. He was a Postdoc in Cambridge University and a Research Fellow in Edinburgh University before being appointed to Newcastle University. His major research interests are in understanding how eating patterns influence risks of common age-related diseases such as heart disease, diabetes, dementia and bowel cancer. He completed his undergraduate studies in Newcastle University and received his Ph.D. in Nutrition at Cambridge University.

Abstract

Since each individual person differs in multiple ways, it is a beguiling idea that the nutritional needs of each person are also different. In support of this idea, findings from well-conducted nutritional intervention studies have provided ample evidence demonstrating a considerable inter-individual variation in response to the same dietary exposure. To date, we have limited understanding of the physiological mechanisms responsible for this variation but following the sequencing of the human genome, there has been much excitement about the role of genes in explaining inter-individual differences.

Eating patterns play a major influence on health. Over the years, there have been various public health advice given to improve our diet with the aim of reducing the risk of common complex diseases. However, most dietary interventions are relatively ineffective. As such, personalized approaches which tailor the intervention to the individual may offer a more acceptable and effective route to dietary behavioral change. This idea was tested in the pan-European Food4Me Study in which adults from 7 countries were randomized to one of four treatment groups in an internet-delivered dietary intervention. Compared with the control (standardized healthy eating advice), subjects who were randomized to a personalized nutrition intervention has bigger, sustained changes in eating behavior after 6 months. However, more complex phenotypic and/or genotypic information in developing personalized nutrition advice did not contribute to added benefits.


Biography

Dr. Nathan O’Callaghan is Director of Precision Health Future Science Platform at Commonwealth Scientific and Research Industrial Organisation (CSIRO), Australia. Since 2012, he has held various senior R&D Management roles within CSIRO and accumulated a broad portfolio experience including oversight of the Nutrition and Health Research Clinic located at South Australian Health and Medical Research Institute (SAHMRI) which undertakes industry-funded clinical substantiation trials to demonstrate the health effects of foods, diets and lifestyle programs. He has also developed a broad experience in nutrition and health science, with a focus on developing (bio)markers to improve health through nutrition. A keen focus throughout his career has been developing cutting edge and robust molecular-based assays for assessing (metabolic) health and dietary exposure to better target and personalize the delivery of health advice.

Abstract

The potential for transforming nutritional and health research through the application and implementation of non-invasive markers of metabolic status is profound. Integration of genetics, (epi)genomics, proteins and metabolites from physiological process provides a “window into the body” and are transforming how we measure health, how we identify and monitor people who are most at risk of disease and the way we monitor food intake. Coupled with tools utilizing sensor technology to enable ecological momentary assessment, a new horizon of research in which indicators of metabolic risk and indicators of dietary intake could be collected at a population level with unprecedented simplicity and low cost. Through the validation of state-of-the-art molecular tools for measuring health synergistically identifying how nutrients supplements or dietary patterns impact these markers, we can optimize the health of individuals from diverse genetic backgrounds.

In this symposium, I will present the outcomes from a study designed to understand the influence of amylase copy number (an enzyme involved in starch metabolism, AMY1) on weight trajectories and glycaemic control. This study highlights some of the challenges associated with a Personalized Nutrition approach. I will then introduce CSIRO’s Precision Health Future Science Platform and discuss how Precision Health will transform the way we manage our health by:

- changing the emphasis from treating illness to keeping people healthy by better predicting, and delaying the onset of chronic disease
- adopting a wider view of health to include other key influencers of health (genomics, gut microbiome, environmental, behavioral and social factors)
- integrating data to deliver insights through predictive data platforms that capture, integrate and analyze data sets to build personal health profiles
- moving from a ‘one-size-fits-all’ trial and error to more effective, personalized solutions to keep people healthy
• shifting from a provider-centric to consumer-centric model supported by digital tools to help people track their health status and make better decisions.
It's In Our Capacity to Adapt - Explanation of Human Variability from the Perspectives of Phenotypic Flexibility

Biography

Dr. Suzan Wopereis is Senior Scientist in the Department of Microbiology and Systems Biology at TNO, The Netherlands. She works with a bioinformatics research group active in the field of nutrigenomics and nutritional systems biology, focused upon the biological effects of nutrition on health and disease. She has more than 40 peer-reviewed scientific publications on this topic. Dr. Wopereis acts as a principal investigator in several public-private partnerships focusing on personalised health (PPP Personalised nutrition and health, PPP PhenFlex) and phenotypic flexibility (PPP Resilience, PPP Probe). Furthermore, she coordinated the evidence-based scientific advice system that has been implemented by the American personalisation start-up company ‘Habit’ (https://habit.com/). Moreover, she is responsible for contents in the TNO program on (personal) diagnostic biomarkers for metabolic health and lifestyle advice systems. She is Board Member of the Netherlands Innovation Center on Lifestyle Medicine (www.NILG.eu) which started in 2018 with the mission the reduce the economic and social burden of metabolic diseases such as type 2 diabetes by combining scientific research with implementation of personalized systems based solutions integrating medication, behaviour and e-health with lifestyle. In 2016, she was awarded the ‘Excellent researcher of 2015’ for her work on personalised nutrition. She received her Ph.D. in Medical Sciences from Radboud University Nijmegen Medical Center in 2006.

Abstract

Health can be seen as a dynamic state in which the ability to adapt can be an indicator of health status. In daily life, people cope continuously and subconsciously with changes in their environment, including the intake of suboptimal foods or levels of physical exercise. Their ability to adapt can act as an indicator for maintenance or improvement of physiological function. The term ‘phenotypic flexibility’ expresses the cumulative ability of overarching physiological processes (e.g. metabolism, inflammation, oxidation) to return to homeostatic levels after short term perturbations.

This presentation will outline research, focused on quantifying health from the perspective of phenotypic flexibility as methodology to assess health effects from food and nutrition. Our research started with phenotypic flexibility evaluations on group level, towards the differentiation between responders and non-responders based on baseline phenotypic flexibility status, towards personalised nutrition from the perspectives of phenotypic flexibility.
Biography

Dr. David Zeevi is a James S. McDonnell Foundation Researcher at The Rockefeller University, United States. He develops computational methods for studying the gut microbiome and its contribution to health and disease. His research focuses on designing tools for the analysis of gut microbiome and applying these tools for the understanding of relationship between nutrition, health, and gut microbes in human individuals, with the aim of achieving personalized nutrition as personalized preventive medicine. In recent work, Dr. Zeevi, along with his researchers have shown that small differences in the genome of gut microbes are associated with significant differences in the metabolism and weight of the human host. He also co-authored several key publications in the field of microbiome research including linking the microbiome to the effects of artificial sweeteners and host circadian rhythm, modeling bacterial growth dynamics and taking the first step towards personalized nutrition by predicting the glycemic responses of individuals to complex meals.

Abstract

The past decades have witnessed a surge in the prevalence of obesity, diabetes and metabolic syndrome. Many of these disorders are associated with high post-meal blood glucose responses, but common dietary methods for controlling these responses have limited efficacy, mainly due to high interpersonal variability in the responses to even the same meal. One of the factors underlying this variability is the gut microbiome: a huge ecosystem of bacteria, archaea, viruses and eukaryotes with vast potential metabolic capacity. In our work, we developed new tools for the analysis of the gut microbiome and used these tools, along with blood parameters, dietary habits, anthropometrics and physical activity to accurately predict post-meal blood glucose responses to real-life meals. These predictions were then used to design personalized diets which successfully reduced hyperglycemia. Our results suggest that personalized diets can successfully lower post-meal blood glucose and its grave metabolic consequences.

In a recent study, we show that differences in the presence of even a few genes between otherwise identical bacterial strains are associated with critical phenotypic differences in the host. In this study, we uncover several possible mechanistic links between the microbiome and its host, including a region in Anaerostipes hadrus that encodes a composite inositol catabolism-butyrate biosynthesis pathway, the presence of which is associated with lower host metabolic disease risk. Overall, our results uncover a nascent layer of variability in the microbiome associated with microbial adaptation and host health.

Personalised Nutrition: Can Our Microbes Tell Us What To Eat?


Understanding the Variable Responses of Gut Microbiome to Dietary Interventions

Biography

Dr Meera Esvaran is Research Fellow at the School of Biological, Earth and Environmental Sciences at the University of New South Wales (UNSW), Sydney. She has also been actively involved in basic research in immunology and gut microbiology with positions held at the University of Sydney, both at the Centenary Institute as well as Westmead Childrens’ hospital, and in the School of Medicine at the University of New South Wales, St George Hospital in the Gut Microbiome Laboratory. Her doctoral research focused on the immune modulating capacity of probiotic strains and was extended in the post-doctoral position to include studies of the gut microbiota. In addition, she had industry experience in a biotechnology company developing probiotic products with immune benefits. Her current research is looking at gut microbiome in babies and adults and how they respond to pre- and probiotic intervention.

Abstract

Today the gut microbiome has been a central focus in the minds of many researchers from a huge range of diverse fields e.g. metabolic, neurological, immunological and inflammatory associated diseases and conditions. There is an emergence of studies correlating particular gut microbiome profiles and specific microbial populations with specific conditions. These findings are possible because of the tools available that allow us to understand the microbes and what they are doing or have the capacity to do. Furthermore, there is considerable evidence that diet can contribute to alterations in the gut microbiome and hence dietary intervention offers promise as a means to improve outcomes of diseases and conditions linked to the gut microbiome. It is widely accepted that a high fat, low fibre diet results in decreased bacterial diversity, with an increase in one particular population, namely the Firmicutes. Changes in the gut microbes also leads to a change in the metabolites such as the short chain fatty acids which play an essential role in health and well-being of the individual.

Unfortunately, there are numerous research publications which have failed to show significant benefits with dietary interventions that were expected to yield positive results. Even studies using similar intervention strategies had yielded very different outcomes. While the comment is often made that the study size was inadequate to show significance, and that the study groups differ in terms of physiological aspects, it is often noted that there are responders and non-responders. An important aspect often largely ignored is the variability of the gut microbiome within and across studies and the variable responses of the gut microbiome are most probably the single most important aspect to be considered.

The gut microbiome is not a stable uniform entity/organ. It is a very diverse complex microbial community which differs from individual to individual and is successively changing as the host develops and has multiple exposures to compounding factors, medications and life style choices. In fact, even at birth, the gut microbial populations are affected by gestational age, birthing methods...
and environmental exposures. It is well established that breast-fed babies have a very different gut microbiome to formula-fed babies, and infant formula compositions are being modified to address this. As the child develops, early life exposures influence the successive development of the gut microbiome since early colonizers can be more stable than invading populations. Studies show that individuals digest and metabolise identical foods differently depending on their gut microbe composition and that there is cross talk across the population and host-microbe cross talk, an understanding of which could be used to improve our understanding of using the gut microbiome for health benefits.

In summary, each individual has a unique microbiome and hence there is a need for tailored dietary intervention strategies.
Biography

Prof. David Bishop is Research Leader at the Institute of Sport, Exercise and Active Living (ISEAL), Victoria University, Australia, and leads the skeletal muscle and training research group. He has 20 years of experience as both a researcher and an applied sport scientist working with elite athletes. His team is interested in the molecular regulation of skeletal muscle adaptation to exercise training. A focus of his research group is to examine how diet, exercise, and genes interact to regulate skeletal muscle adaptations. Prof. Bishop has more than 240 peer-reviewed articles and 8 book chapters in the area of human movement and sport science. His research is currently funded by the ARC, the NHMRC, and the Australian defence force. He is also the past President of Exercise and Sport Science Australia (ESSA), and assistant editor of Medicine and Science in Sports and Exercise (MSSE). In the three years prior to the 2000 Sydney Olympics, he worked with Australian hockey, water polo, netball, beach volleyball and kayak teams. Professor Bishop has also gained invaluable experience consulting with professional teams such as the Fremantle Football Club.

Abstract

In 1999, Professor Francis Collins published one of the first documents outlining the promise of precision medicine entitled “Medical and Societal Consequences of the Human Genome Project” [1]. In this article, he predicted that individually tailored therapies would increasingly be used to prevent and treat disease, and to improve health. The next year, he proposed that by 2020 we would witness “a complete transformation in therapeutic medicine” [2]. These are exciting predictions, and “personalised” nutrition has since become a hot topic with researchers eagerly mining their data to try and find explanations for what appear to be between-subject difference in the response to a range of interventions (e.g., nutrition and exercise). Furthermore, it is an appealing concept as many practitioners, researchers, and members of the public, can describe observing human variability in response to food and nutrients.
However, we are rapidly approaching 2020 and it would seem fair to observe that the “complete transformation” in our approach to prescribing nutrition, exercise, or even medicine, has not occurred. One reason may relate to the imprecision of our many of our measurement tools to accurately detect and quantify individual variability. In fact, it has been suggested that the impact of within-subject random variation, which is inevitable even with ‘gold-standard’ measurement tools/protocols, is sometimes so substantial that it explains all apparent individual response differences[3]. In this presentation, I will ask whether our measurement tools are currently too variable to provide meaningful information about human variability in the response to nutrition?

With the New Knowledge, How Will Clinical Nutrition Respond?

Biography

Prof. David Cameron-Smith is Chair in Nutrition at University of Auckland, with conjoint appointments with AgResearch and the Riddet Institute. Previously, he was the Director of the National Science Challenge, High Value Nutrition and Research Director of the Liggins Institute. His molecular and clinical nutrition research focuses on the digestion, nutrient-gene interactions and cellular functions of dietary lipids and proteins, with the aim of improving the health of the ageing population. Prof. Cameron-Smith is the Principle Investigator of 19 internationally registered clinical trials and author of more than 230 scientific publications.

Abstract

Personalised nutrition aims to deliver nutritional interventions and therapies that are tailored to the unique needs of each individual. This level of tailored health delivery is increasingly possible with the gains being made with precision analyses, new technologies and opportunities presented with big data. There have been fundamental shifts in service provision questions and challenges abound. These include who will pay (and why), what will they get and is there greater likelihood of a sustained health benefit?

The scientific analysis of personalised nutrition is individuals with compromised health, due in part to personal inadequacies (unhealthy) eating habits. However, the benefits of personalised nutrition are most likely to be preferentially directed to those with the financial resources, who can make the considerable time (and emotional) investment required and who then have the motivation to adhere to the ‘evidence’ of the ‘best diet’ for their unique needs. Thus, at least for early adopters, personalised nutrition is the domain of the ‘worried well’ who will be seeking a wellness ‘edge’ that is defined by ‘feelings’ and perceptions, or miscellaneous health indicators (ie. sleep quality) that are marginally associated with variations in nutritional patterns. It is also not yet clear what health care practitioners currently understand of these current dilemmas, nor how they (and their accrediting organisations/professional bodies) will respond to this deluge of complexity and data. From this complexity, regulatory standards will be established, health care providers will adapt and opportunities for clinical specialisation will emerge.
Lifting the Lid on Nutrigenomics: 
Current Applications and the Future of Nutrition

Biography

**Dr. Flavia Fayet-Moore** is Founder and Director of Nutrition Research Australia (NRA). She is also a registered nutritionist, accredited practicing Dietitian and Honorary Associate of the University of Sydney. Dr. Flavia’s research focuses on the assessment of diet and nutritional status in large population studies and in the field of nutrigenomics. She obtained her B.Sc. (Hons) in Science (Nutritional Sciences Specialist) from the University of Toronto and M.Sc. in Nutrition and Dietetics from the University of Sydney and went on to complete a Ph.D. in Nutrition. Prior to her current position, she is also the Director of Operations at Nutrigenomix Australia and a member of the Nutrition Society of Australia, the Dietitian’s Association of Australia as well as a founding board member of the Australasian Society for Lifestyle Medicine.

Abstract

Nutrigenomics is a branch of nutritional sciences that aims to understand how nutrients interact with our genome to impact health and sports performance. Numerous studies have now shown that variations in certain genes can explain why some individuals respond differently from others to the same foods, beverages and supplements they consume for health. Differences in the rates of absorption, distribution, uptake, utilisation, biotransformation and excretion influence the concentration of a nutrient or bioactive phytochemical at a target site of interest, which ultimately impacts an individual’s response.

Until recently, the effects of disclosing genetic information on diet and lifestyle changes were not known. Recent findings from a randomised controlled trial showed that people who receive DNA-based personalised dietary advice have a greater understanding of their recommendations, greater motivation to change dietary behaviour, and make specific changes to their dietary intake that persist up to one-year post consultation.

There is increasing awareness among researchers, educators, healthcare professionals and consumers that the one-size-fits-all population-based approach to nutritional guidance is inefficient and sometimes ineffective. This awareness has created a growing demand for personal genetic testing services. A number of consumer genetic testing services for wellness and athletic performance are available, but their clinical utility and validity remains controversial.

With increasing consumer demand, there is a need for healthcare professionals to have sufficient knowledge to understand the science behind these innovative tests, determine their benefits and limitations and learn which ones provide clinically actionable information. Advances in the field of nutrigenomics will continue to drive the growing demand for genetic tests for personalised nutrition and healthcare professionals will need to equip themselves with the tools needed to interpret test results that provide clinically actionable information. Nutrigenomics will continue to be part of the healthcare system and may become an integral part of an individual’s health management.
Creating Consumer Access to Personalised Nutrition:
Risks and Opportunities

Biography

Dr. Femke Hannes is Regional Lead for Nutrition, Science and Advocacy at DSM Nutritional Products for the Asia Pacific Region. Clinical research and diagnostics have been an area of focus for her for many years. Currently, she is responsible for communicating scientific evidence of different health benefits and building a strong network of key influencers in the scientific, medical and clinical research communities. Through collaboration with different partners, Dr. Hannes seeks to drive science and innovation in the Asia Pacific region. She has been invited to present at several international symposiums and has co-authored several scientific publications. Dr. Hannes holds a Ph.D. in Biomedical Sciences focusing on Human Health.

Abstract

More than 500 million people around the world have been diagnosed with chronic diseases that are largely preventable by modifications to diet and lifestyle. Despite this known link, interventions to alter dietary and lifestyle behaviors have had limited impact on improving public health so far. According to the World Health Organization, chronic disease prevalence is expected to rise by 60% by the year 2020. This growth will lead to crippling healthcare costs for individuals and whole economies. Solutions are urgently needed to curb this epidemic.

In clinical research, it is now well established that every individual has a unique response to changes in their environment (diets, lifestyle factors, medication, etc). Nutrition is no longer “just how to fuel the engine” but rather exerts a much more complex physiological interaction. Similarly, rapid advances in technology have enabled the translation of complex data related to lifestyle habits, physiology, genetics and the gut microbiome into dietary advice and nutritional solutions specific to the needs of each individual, all with the purpose of maintaining health and preventing disease. These advancements have been instrumental in fuelling the interest and progress made in personalized nutrition so far. This approach has been shown to foster more effective behavior change for transitioning to a healthier lifestyle which eventually will result in people living longer, healthier lives. Personalized nutrition also holds great potential for market success. However, risks need to be managed, including data privacy, creation of a truthful and science-based value proposition, and understanding the consumer appeal. On the other hand, with the development of a sustainable business case, personalized nutrition has great potential for improvement of both individual and public health. This presentation will outlay the consumer insights and trends towards personalized nutrition, consider the evidence, and outlay the potential opportunities.
There and Back Again: A Return to Personalised Nutrition Advice

Biography

Prof. Sandra Capra is Emeritus Professor of Nutrition at the University of Queensland, Australia. Her professional career started with 15 years in practice as a clinical dietitian, manager and dietitian-in-charge of nutrition and food services. She then ventured into her highly respected academic career at QUT, the University of Newcastle and the University of Queensland. She was appointed Emeritus Professor of Nutrition at the University of Queensland in 2019. In 2003, she was appointed a Member, Order of Australia, for her contribution to nutrition and dietetics and community health. She is a Fellow and Life Member and a Past President of the Dietitians Association of Australia and was President of the International Confederation of Dietetic Associations from 2004-2016. She is currently the Executive Director of the International Commission for Dietitian-Nutritionist Education and Accreditation. In 2014, she was named as one of the 100 Financial Review/Westpac most influential women in Australia in the “global” category. She has served on the NHMRC committees which set the nutrient reference values and the dietary guidelines for Australia and has consulted to government on nutrition and foodservice as well as being an internationally recognized expert in dietetics education and practice. She has published over 200 written works and is regularly invited to speak at national and international conferences.

Abstract

As dietitian-nutritionists we set off on a journey many decades ago, and have now come full circle in many ways - but will we live happily ever after? In the days prior to advanced technology when medicines such as insulin were less effective, when functional foods did not exist, all dietary therapy was personalised and dietetics was taught. Indeed, some of our key leaders used to classify the calculations and manipulations within individualised diets as “dietetics”. But during our adventure, something changed.

In the 1980s we adopted much more of a “one size fits all” approach, possibly in the mistaken belief of efficiency without evidence of effectiveness to cope with high workloads. This was the era of content-free managers in health. The DAA’s Quality Assurance Committee’s processes in 1988 did not mention clients, outcomes, cost effectiveness or similar. The American Dietetic Association (now the Academy of Nutrition and Dietetics) included “research” in their 1986 Standards of Practice, but only one criterion was related to outcomes while the rest were process focused. Gone were the individual “diet sheets”, replaced with standard information sheets and plans, often now on the web. Now we are coming back again to individualised and personal services for medical nutrition therapies. Person-centred care has replaced the standard care for chronic disease management and the Nutrition Care Process introduced in 2004, replaces medical diagnoses and nutrition diagnoses. Fifteen years ago, writers such as de Busk promoted the use of genetic profiles of risk to tailor messages. However the adoption by the profession has been slow, with caution and a lack of “evidence” often cited for non-adoption.
Much of the research into outcomes for individual dietary therapy focuses on altering prescriptions, format or presentation, but not challenging the fundamental paradigms in use. Students are primarily exposed to traditional approaches. Individual biological variation can account for the failure of many therapies in practice, rather than variation in motivation or understanding. We need a new paradigm as the “old” one does not uniformly work — working at the edges has not made any real difference and there is reputational risk — we need a new way of thinking. Personalisation can be seen as expensive, but the cost of inappropriate treatments is higher — it’s a matter of seizing opportunity when presented.

So now we are “back again” to tailored therapy, but this time with more tools, more understanding of nutrition science, biology, the environment, combining these with an understanding of the new foods, human behaviour to provide practical, personalised advice which is tailored so that outcomes are achieved and health and the system benefits. There is a clear benefit in understanding biological variability. We need to use tools based on biology and not just behaviour or nutrition science. The new paradigm is about understanding that biology determines responses to dietary therapy as much, or more than, the food chosen, knowledge or motivation and that this is now a critical tool for success. The challenge is to be bold in an environment of incomplete science. It is an opportunity and adventure not to be missed.
Regulatory Issues

Biography

Dr. Dorothy Mackerras is the Chief Public Health Nutrition Advisor at Food Standards Australia New Zealand (FSANZ) in Canberra, Australia for the past 13 years. After completing her Ph.D. in Epidemiology in USA, she returned to Australia and taught in the Master of Public Health program at the University of Sydney. She then spent 10 years in Darwin at the Menzies School of Health Research. One of the greatest work achievements was her work on Aboriginal Birth Cohort study which had led to the first documentation of iodine status in this group and its change following mandatory fortification.