



Australian Academy of Science

PROGRAM

26–28 JULY 2017

PAN PACIFIC HOTEL PERTH

Rethinking food and nutrition science

*Aspirations, obstacles and
strategies for the future*

Theo Murphy
High Flyers
Think Tank
2017

Contents

Foreword	1
Program of events	2
The process	4
Introduction	5
Breakout groups	6
Group 1—Critical evaluation of nutrition science	6
Group 2—Key control points for healthy, equitable and sustainable food and nutrition.	7
Group 3—Essential goals for achieving effective solutions	9
Group 4—Tools for Change	10
Group SP—Systems perspective: bringing it all together to identify solutions	11
Presentation abstracts	13
Human nutrition: where have we gone wrong and how can we do better?	13
Opportunities for nutrition in the precision health era	13
Steering committee and invited experts	14
Professor Stephen Simpson AC FAA FRS	14
Professor Jennie Brand-Miller AM.	14
Professor Frank Dunshea	14
Professor Mike Gidley	14
Professor Anne-Marie Grisogono	15
Dr Brooke Harcourt.	15
Professor Ian Hume AO FAA	15
Professor Amanda Lee	15
Professor Manny Noakes	16
Professor David Raubenheimer	16
Dr Gyorgy Scrinis	16
Professor Helen Truby	16
Opening address Professor Peter Klinken	17
Dinner address Mr Rex Milligan.	17
Participants	18
Previous Think Tanks	31
Steering committee members	32
Find out more and connect	33

Australian Academy of Science events support and promote diversity, participation and intellectual freedom and excellence. As a condition of participating in this event all delegates, speakers and committee members agree to treat all other participants with courtesy and respect.



Foreword

The Australian Academy of Science has been hosting annual High Flyers Think Tanks on nationally important topics since 2002. These events bring together outstanding early- and mid-career researchers with expertise in a broad range of disciplines to discuss novel applications of science and technology, and to identify gaps in knowledge that need to be addressed.

This year, the Academy has chosen 60 of the brightest early- and mid-career researchers from around Australia and neighbouring countries and from a variety of fields with an interest in nutrition. Together they will rethink our relationship with food.

The Academy's National Committee for Nutrition are beginning a long-term strategic planning process for the research discipline of nutrition in Australia. This Think Tank provides an ideal way to begin the process by bringing together the future leaders of the discipline to provide their insight. We will encourage them to remain engaged throughout the development of a 10-year plan over the next eighteen months.

The Think Tank participants will examine nutrition from four different perspectives:

- Critical evaluation of nutrition science
- Key control points for healthy, equitable and sustainable food and nutrition
- Essential goals for achieving effective solutions
- Tools for change

Overlaying this will be a fifth group providing a systems perspective. The aim of this approach is to bring together the findings of all the groups to identify themes and solutions. In addition, this group also aims to provide a mechanism by which information can flow back to the four main groups so that they can incorporate it into their own deliberations.

For the participants, the Think Tank will be an outstanding opportunity to develop expertise in operating in a multi-disciplinary context and in understanding the contribution of science to evidence-based policy formulation. The event will be a unique networking and career development opportunity for the nation's next generation of science leaders.

The 2017 Think Tank is generously supported by the Theo Murphy (Australia) Fund, which is administered by the UK Royal Society. The Academy is delighted to have this funding available to enable some of Australia's brightest young scientists to engage in fresh thinking about fundamental issues for our nation's future, and to develop networks that will enrich their careers.

Professor Andrew Holmes AC PresAA FRS FTSE
President, Australian Academy of Science

Program of events

Day 1 Wednesday 26 July

12.00 pm	Registration
Session 1: Welcome session and lunch Goldsworthy/Hamersley room	
12.30 pm	Welcome Professor Ian Hume, Member of Council of the Australian Academy of Science
12.35 pm	Opening address Professor Peter Klinken—Chief Scientist of Western Australia
Session 2: Introductory presentations Chair: Professor Helen Truby Goldsworthy/Hamersley room	
1.30 pm	What is a Think Tank? What is a decadal plan? How can they work together? Professor Steve Simpson and Professor Mike Gidley
1.40 pm	Human nutrition: where have we gone wrong and how can we do better? Professor David Raubenheimer
2.40 pm	Opportunities for nutrition in the precision health era Professor Manny Noakes
3.10 pm	Introduction to the subgroups
3.10 pm	Group 1 Critical evaluation of nutrition science Professor David Raubenheimer and Professor Helen Truby
3.15 pm	Group 2 Key control points for healthy, equitable and sustainable food and nutrition Professor Jennie Brand-Miller and Professor Amanda Lee
3.20 pm	Group 3 Essential goals for achieving effective solutions Professor Ian Hume and Professor Manny Noakes

3.25 pm	Group 4 Tools for change Dr Brooke Harcourt
3.30 pm	SP Systems perspective: bringing it all together to identify solutions Professor Anne-Marie Grisogono and Professor Stephen Simpson
3.35 pm	General question time
3.45 pm	AFTERNOON TEA
Session 3 (part 1): Breakout groups	
4.15 pm – 6.00 pm	Group 1 Critical evaluation of nutrition science Pilbara Room
	Group 2 Key control points for healthy, equitable and sustainable food and nutrition Swan River Room
	Group 3 Essential goals for achieving effective solutions Murchison Room
	Group 4 Tools for change Mt Newman Room
5.45 pm	SP Systems Perspectives group meeting Goldsworthy/Hamersley room
6.00 pm	End of breakout sessions (part 1) Free evening

Day 2 Thursday 27 July

8.00 am	COFFEE AVAILABLE
Session 3 (part 2): Breakout groups	
8.30 am	Return to breakout groups 1 2 3 4
9.45 am	SP Systems perspective group meeting Hamersley South room
10.00 am	MORNING TEA
	Closed session to discuss progress of group work (Steering committee, rapporteurs, systems perspective group, Academy secretariat) Goldsworthy room
10.30 am	Return to breakout groups 1 2 3 4
12.15 pm	SP Systems perspective group meeting Hamersley South room
12.30 pm	LUNCH
1.30 pm	Return to breakout groups 1 2 3 4
1.30 pm	Meeting of the National Committee for Nutrition Hamersley North room
2.45 pm	SP Systems perspective group meeting Hamersley South room
3.00 pm	AFTERNOON TEA
3.30 pm	Return to breakout groups 1 2 3 4
5.15 pm	SP Systems perspective group meeting Hamersley South room
5.30 pm	Conclude
6.15 pm	Coach departs for dinner venue
6.30 pm	Dinner
10.00 pm	Coach returns to hotel

Day 3 Friday 28 July

8.00 am	COFFEE AVAILABLE
Session 4: Rapporteurs' presentations Goldsworthy/Hamersley room	
8.30 am	Introduction to group presentations Chair: Professor Steve Simpson
8.40 am	Group 1 Critical evaluation of nutrition science
9.00 am	Group 2 Key control points for healthy, equitable and sustainable food and nutrition
9.20 am	Group 3 Essential goals for achieving effective solutions
9.40 am	Group 4 Tools for change
10.00 am	MORNING TEA
10.30 am	SP Systems perspective: bringing it all together to identify solutions
10.50 am	Open discussion and forward planning Chair: Professor Mike Gidley
11.30 am	Wrap up Professor Steve Simpson
11.40 am	End of Think Tank for general participants
11.40 am	TAKEAWAY LUNCH SNACK AVAILABLE
11.40 am – 12.00 pm	Closed session (Steering committee, rapporteurs, systems perspective group, Academy secretariat) Goldsworthy/Hamersley room
12.15 pm	Coach to airport

Breakout groups colour coding: Group **1** Group **2** Group **3** Group **4** Systems perspective group **SP**

The process

Session 1: Welcome session

Opening address and social event

Session 2: Introductory presentation session

The plenary presentations are aimed at stimulating lateral thought in the discussions during the Think Tank, rather than providing comprehensive coverage of the theme or any of the four specialist topics. This session also includes information about the process of the Think Tanks and the expected output.

Session 3: Breakout groups

Begins afternoon of day 1 extends through day 2

Each participant is assigned to one of four breakout groups and each group will be chaired by one or two members of the steering committee. Members of the steering committee and invited experts will move between groups throughout the Think Tank. Each group is made up of 15 researchers from across Australia and neighbouring countries with a mix of skills and experience, to stimulate lateral thinking and challenge the participants to extend themselves and think outside the box.

Two participants are preselected to act as the group's rapporteurs. The role of the rapporteurs is to collate the group's discussion and distil the discourse into a 15-minute presentation. The groups are asked to examine and address their discussion questions but are also encouraged to move beyond these questions to other topics identified during the discourse.

The systems perspective group is composed of two members from each of the four main groups. These members will meet periodically throughout the Think Tank to bring together the ideas and themes which are emerging from each group. They will work together to develop a conceptual map encompassing all the relevant perspectives, which will assist the entire Think Tank in developing adaptive solutions. Importantly their role will be one of two-way

information exchange—bringing ideas and themes raised in the system perspective group meetings back to the breakout groups to be incorporated into the ongoing discussion.

Session 4: Rapporteurs' presentations

The final half-day of the Think Tank will enable the group rapporteurs to synthesise the discussions and present a series of themes, ideas and recommendations from each breakout group. There will be opportunities for questions and discussion after each presentation. This will be followed by an open discussion and forward planning session to allow the whole group to discuss the findings of the Think Tank and plan how it will contribute to the development of a decadal plan for nutrition.

At the end of the afternoon a closed session with the Steering Committee, experts, rapporteurs, systems perspective group and Academy representatives will summarise the outcomes of the meeting and develop some logistics to support the forward plan.

Outputs

The output of the Think Tank is expected to be a series of discussion papers. The Academy's National Committee for Nutrition is beginning the process of developing a decadal plan for the discipline. This ten-year strategic plan aims to assess the current state of knowledge, identify and set priority research areas for the next decade, and outline strategies to achieve these priorities and goals. Development of the decadal plan will involve broad consultation with the sector and it is likely that the discussion papers produced by the Think Tank will contribute to the consultation process. The rapporteurs, in consultation with their group, will be responsible for drafting these papers. It is likely that the Think Tank process will also identify other mechanisms by which Think Tank participants can stay engaged with and contribute to the development of the decadal plan for nutrition.

Introduction

The nutrition transition to industrialised food systems has provided the most affordable, secure and safe food supply in the history of humanity, but has been accompanied by a pandemic of chronic disease. The biological mechanisms that direct dietary choices in the modern food environment have been overridden by general food abundance and sedentary lifestyles, with individual diet choice unduly influenced by taste, cost and convenience with substantial negative consequences for health, the environment and nutritional equity.

There is now widespread recognition of the issue but the complex interplay of diverse social, cultural, political and economic factors has proved a major barrier to understanding how to effect change. Nutrition science has a crucial role to play in partnership with other relevant disciplines as part of an integrated strategy of research, education and practice that spans nutrients, foods, health and environment, and which engages researchers, practitioners, the food industries, government, the law, and the general populace.

Fundamental changes are needed to the way we practise and apply nutrition science. Nutrition science needs to:

1. be better integrated across nutrients, foods, meals, diets, and dietary patterns and focus on total diet rather than on single nutrients or commodities
2. be more outward looking to examine the broader context in which food and nutrition issues play out—from individuals to communities to nations and globally
3. operate within a framework that is well founded in theory and encompasses individual biology and relevant aspects of the physical, social and biological environment.

A decadal plan for nutrition science should set out to achieve this integrative platform. It should allow nutritional systems to be disentangled, aligning health, environmental and dietary equity objectives and delivering a clear and unbiased flow of information between researchers and all those involved in implementation. Aims would include:

1. better mapping associations between diet and health outcomes and establishing their underlying mechanisms
2. using existing and new knowledge and technologies to educate and inform individuals, communities, industries and governments
3. triggering a long-term cultural change in which dietary practices are illuminated through science, transparency and accountability.

Breakout groups

Group 1—Critical evaluation of nutrition science

Co-chairs: Professor David Raubenheimer and Professor Helen Truby

Malnutrition—including under-nutrition, over-nutrition and imbalanced nutrition—is responsible for more deaths worldwide than any other modifiable factor. To what extent must the responsibility for this be borne by nutrition science? This question requires a critical evaluation of what are the responsibilities of nutrition science, how well the field has met these, and where and how it can be improved and equipped to adapt to a rapidly changing future.

The numerous general issues for consideration in addressing these questions include the following: Does the field pay sufficient respect to the complexity of nutrition, and has its engagement been sufficiently inter-disciplinary and multi-sectorial to enable it to deal with this complexity? In the age of rapid access to information via social media and the internet but with little scientific filter on quality, how do we compete to influence individual consumers to adopt evidence-based advice and the behaviour necessary for healthy eating? Where and what are the key influences of nutrition science in Australia, and what could we accomplish in collaboration with each other and with international contributions? What role, if any, can the fundamental biological sciences, evolutionary biology and ecology, play in informing nutrition science? To what extent should nutrition science be concerned exclusively with health, versus broader issues such as environmental sustainability?

Through addressing such issues, the task for this discussion group is to critically evaluate nutrition science and consider ways that the field can be improved to reduce the burden of premature nutrition-related deaths and other adverse outcomes associated with human food systems.

Questions to get you thinking

1. Are there any doors that are yet to be opened or should we close some doors in our current thinking about nutrition science?
2. Can we forecast (or recommend) a new paradigm of nutrition science that may inform curricula in schools and universities?
3. Is there a role of the food and beverage industry in influencing food and nutrition science across Australia?
4. Is there a need to re-position our research workforce to engage the future scientific endeavour in nutrition e.g. building new and different expertise, establishing infrastructure for analysis of big data?
5. In the era of restrained research funding what research areas could be prioritised in the national interest?
6. What do we think the 'best bets' may be in achieving a substantial reduction in the obesity epidemic and diet-related disease?
7. How do we engage and communicate with the public in its understanding of nutrition science?
8. Is understanding and evidence-based information sufficient to change behaviour, or does nutrition science need to aim for different levels of engagement with the public?

Recommended reading

- Raubenheimer D, Gosby AK, Simpson SJ 2015, 'Integrating nutrients, foods, diets, and appetites with obesity and cardiometabolic health' *Obesity* 23(9):1741-2. doi: 10.1002/oby.21214.
- Scrinis, G. 2013. The nutritionism paradigm: Reductive approaches to nutrient, food and the body. In *Nutritionism: The science and politics of dietary advice* Columbia University Press.
- Allison DB, Bassaganya-Riera J, Burlingame B, Brown AW, le Coutre J, Dickson SL, van Eden W, Garssen J, Hontecillas R, Khoo CS, Knorr D, Kussmann M, Magistretti PJ, Mehta T, Meule A, Rychlik M, Vögele C 2015, 'Goals in Nutrition Science 2015–2020', *Frontiers of Nutrition* 2:26. doi: 10.3389/fnut.2015.00026.
- Mozaffarian D 2017 'Conflict of Interest and the Role of the Food Industry in Nutrition Research', *JAMA* 317(17):1755-1756. doi: 10.1001/jama.2017.3456.
- Raubenheimer D, Simpson SJ 2016 'Nutritional Ecology and Human Health', *Annual Review of Nutrition* 36:603–26 doi: 10.1146/annurev-nutr-071715-051118

Group 1 participants (*rapporteurs)

- Associate Professor Eleanor Beck*
- Dr Emma Beckett
- Dr Kim Bell-Anderson
- Dr Jane Bowen
- Dr Karin Clark
- Dr Jorja Collins
- Dr Zoe Davidson
- Dr Kacie Dickinson
- Dr Laura Downie
- Dr Asgar Farahnaky
- Dr Catherine Huggins*
- Dr Katherine Kent

Professor Mark Lawrence

Dr Carly Rosewarne

Dr Claudia Strugnell

Group 2 —Key control points for healthy, equitable and sustainable food and nutrition

Co-chairs: Professor Jennie Brand-Miller and Professor Amanda Lee

Poor diet is now the major preventable risk factor contributing to burden of disease, globally and in Australia. According to the Australian Health Survey 2011–13, only 4% of Australians consume diets consistent with recommendations of the National Health and Medical Research Council's Australian Dietary Guidelines. At least 35% of the energy intake of adults and at least 39% of the energy intake of children are now derived from 'discretionary' choices i.e. foods and drinks high in saturated fat, added sugar, salt and/or alcohol that are not required for health.

Further, dietary risks are not distributed equally. People who experience greater social disadvantage through relative lack of opportunities in education, employment, income and location have poorer diets, and suffer increased risk of malnutrition, obesity and diet-related chronic disease. Aboriginal and Torres Strait Islanders suffer particularly high rates of diet-related conditions compared to other Australians. Most of the social and economic determinants of healthy eating (including availability, affordability, accessibility and acceptability of healthy choices) lie outside the health system.

In Australia and other high-income countries, rising rates of obesity and chronic disease have coincided with a rise in general food abundance (including the cheapest food in history relative to income), sedentary lifestyles, and insufficient physical activity. In Australian women, rates of obesity and overweight are highest in the lowest socioeconomic group (63%) compared to the highest socioeconomic group (47%) but there is little difference among men (ranging from 68% to 71%). The lack of difference suggests that we need to understand the changes in the environment that affect all groups, not just differences between subgroups.

Environmental sustainability is also critical to human diet and health, as the foods consumed affect the environment, and the environment in turn affects aspects of food production and supply, hence the food available for consumption. There is increasing evidence that the types of foods that minimise environmental impacts, including greenhouse gas emissions, use of natural resources such as water, and pressure on biodiversity, tend to be those associated with health benefits. The synergy between dietary patterns for health

and those that have minimal environmental impact is fortuitous. A healthy and sustainable diet can be based on guiding principles including:

- i. wastage at all stages of the food chain represents an avoidable environmental burden
- ii. any food or drink consumed above an individual's optimal energy requirement represents an avoidable environmental burden
- iii. reducing the consumption of discretionary foods reduces the use of environmental resources and health risks
- iv. a diet comprising less animal- and more plant-derived foods delivers ecological and potential health benefits
- v. eating should be a source of pleasure. Dietary patterns that are not enjoyable and/or involve too much discipline or self-sacrifice are unlikely to be sustained.

What are the critical control points? Research has highlighted the important role of local food environments in influencing diets. These are the products of the broader food and nutrition system, and are influenced by political, economic, environmental, social and cultural drivers. This system is complex, but contains many potential leverage points for intervention. Action on the determinants of healthy, equitable and sustainable eating involves a diversity of sectors including agriculture (plant breeding, animal foods, fish stocks), trade, food manufacturing (including fortification and supplementation), wholesaling and retailing, employment, education, social protection, health, housing, transport, and planning.

Internationally and in Australia, many effective nutrition policy actions have been identified (such as fluoridation of water supplies, iodisation of salt, food labelling and healthy food supply strategies in school and other public sector settings). While there are vested interests throughout the food and nutrition system which can make intervention in the current system challenging, the growing and selling of healthy food must be profitable.

There is an urgent need for global and national food and nutrition policies, strategies and action plans that address critical control points and help shift the current intake of the whole population towards healthy, equitable and sustainable diets.

Questions to get you thinking

1. Interpretation of the scientific evidence base on effective strategies to prevent diet-related ill health is underscored by two diverse philosophical views: one is that this requires improving food environments (so that consuming a healthy diet is easy irrespective of education, income, culture etc); the other is that healthy eating is a personal responsibility and if we teach people how to eat well, they'll comply. How can these different philosophical views be reconciled?

2. With respect to economic drivers, are food taxes the way to go? Should we increase the GST on all discretionary foods and drinks or just some (for example, a 'sugary drink' tax or a saturated fat tax), and/or ensure that nutritious foods in the five food groups remain GST free? Should we consider subsidies for agriculture and transport, and/or voucher systems targeted to high-risk groups?
3. How do we compare/balance the three components of healthy, equitable and sustainable diets? Are any aspects more important than the others?
4. In the face of limited resources, should we focus attention on improving the diet of the majority of the population rather than vulnerable groups? Or should we focus just on high-risk groups such as pregnant women and/or Aboriginal and Torres Strait Islanders? Why/why not?
5. What vested interests and potential conflicts of interest are most problematic in efforts to improve the Australian diet? How should these be managed to produce an effective, evidence-based food and nutrition policy/strategy/action plan in Australia?
6. Is plant breeding the answer? Can we solve important nutrition problems by ensuring that staple crops contain sufficient macronutrients and micronutrients for optimum health?
7. Can Planet Earth cope with providing the recommended 7 serves of fruit and vegetables every day for 7 billion people, and counting?
8. Currently breakfast cereals are fortified under voluntary industry practice and contribute important micronutrients to the diet. Should we legislate vitamin and mineral fortification of *all* packaged foods (for example, in proportion to energy per serve)?
9. Globally, regulatory and legislative reforms (such as fiscal measures, mandatory advertising restrictions on discretionary food and drinks, and mandatory interpretive front-of-pack food labelling systems) have been shown consistently to be among the most cost-effective interventions to improve diets. However there is little political appetite for such approaches. Is there a role for scientists in advocating for such evidence-based interventions, and if so, what would this look like?

Recommended reading

Lee A, Baker P, Stanton R, Friel S, O'Dea K, Weightman A. *Scoping Study to Inform the Development of the new National Nutrition Policy*, 2013. QUT, Australian Department of Health and Ageing (RFT 028/1213). Released under FOI, March 2016; Available at: [http://www.health.gov.au/internet/main/publishing.nsf/Content/D309AF86C0D09DBDCA257F7F0077E0CE/\\$File/1%20-%20Final%20Report%20-%20National%20Nutrition%20Policy%20Scoping%20Study%20%28Report%20and%20Appendices%29.PDF](http://www.health.gov.au/internet/main/publishing.nsf/Content/D309AF86C0D09DBDCA257F7F0077E0CE/$File/1%20-%20Final%20Report%20-%20National%20Nutrition%20Policy%20Scoping%20Study%20%28Report%20and%20Appendices%29.PDF)

Sachs G et al 2017, *Policies for tackling obesity and creating healthier food environments, Scorecard and priority recommendations for Australian governments*, Available at: <http://www.opc.org.au/food-policy-index.aspx>

Sturm R, Ruopeng A 2014, 'Obesity and economic environments', *Cancer J Clin* 64 (5): 337-350 doi: 10.3322/caac.21237

Center for Agriculture and Food Systems at Vermont Law School and Harvard Law School Food Law and Policy Clinic (2017) *The Blueprint for a National Food Strategy (USA)*, available at: <http://foodstrategyblueprint.org/>

National Health and Medical Research Council. *Australian Dietary Guidelines: providing the scientific evidence for healthier Australian diets*. Canberra: National Health and Medical Research Council, Canberra: NHMRC, 2013. Available from: <https://www.eatforhealth.gov.au/>

Food and Agriculture Organization of the United Nations (FAO). *Climate change and food systems: global assessments and implications for food security and trade*. Rome: FAO; 2015. <http://www.fao.org/publications/card/en/c/2d309fca-89be-481f-859e-72b27a3ea5dc/>

Food and Agriculture Organization. *Sustainable diets and biodiversity directions and solutions for policy, research and action*. Rome: FAO; 2012. <http://www.fao.org/publications/card/en/c/9b923bb5-ba2e-5827-86f1-d87cc8913f87/>

World Health Organization. *Global action plan for the prevention and control of non-communicable diseases 2013–2020*. Geneva: WHO; 2013. http://apps.who.int/iris/bitstream/10665/94384/1/9789241506236_eng.pdf?ua=1

Lawrence M, Friel S, Wingrove K, James, SW, Candy, S 2015, 'Formulating policy activities to promote healthy and sustainable diets', *Public Health Nutr.* 18:2333-40 doi: 10.1017/S1368980015002529.

Friel S, Barosh L, Lawrence M 2014, 'Towards healthy and sustainable food consumption: an Australian case study', *Public Health Nutr.* 17:1156-66 doi: 10.1017/S1368980013001523

Lee AJ, Kane S, Ramsey R, Good E, Dick M 2016, 'Testing the price and affordability of healthy and current (unhealthy) diets and the potential impacts of policy change in Australia', *BMC Public Health* 2016, 16:315 doi: 10.1186/s12889-016-2996-y

Monteiro C, Cannon, Moubarac, Martins AP, Martins CA, Garzillo J, Canella DS, Baraldi LG, Barciotte M, Louzada ML, Levy RB, Claro RM, Jaime PC 2015 'Dietary guidelines to nourish humanity and the planet in the twenty-first century. A blueprint from Brazil', *Public Health Nutr.* 18:2311-22 doi: 10.1017/S1368980015002165

Mozaffarian D 2017, 'Foods, nutrients, and health: when will our policies catch up with nutrition science?', *The Lancet Diabetes & Endocrinology* 5(2):85-88. doi: 10.1016/S2213-8587(16)30265-0

Roberto, Swinburn B, Hawkes C, Huang T, Costa SA, Ashe M, Zwicker L, Cawley JH, Brownell KD 2015, 'Patchy progress on obesity prevention: emerging examples, entrenched barriers, and new thinking', *Lancet*. 385:2400-9 doi: 10.1016/S0140-6736(14)61744-X

Moodie R, Stuckler D, Monteiro C, Sheron N, Neal B, Thamarangsi T, Lincoln P, Casswell S; Lancet NCD Action Group. 2013, 'Profits and pandemics: prevention of harmful effects of tobacco, alcohol, and ultra-processed food and drink industries', *Lancet*. 381(9867):670-9 doi: 10.1016/S0140-6736(12)62089-3

Group 2 participants (*rapporteurs)

Associate Professor Gina Ambrosini

Dr Kathryn Backholer*

Dr Andrea Begley

Dr Lucinda Black

Dr Martin Boland

Dr Seona Candy

Dr Adrian Carter

Dr Shelley Gorman

Dr Rebecca Lindberg

Associate Professor Sarah McNaughton*

Dr Philipp Reineck

Dr Lukar Thornton

Dr Jason Wong

Dr Vanessa Wong

Group 3 — Essential goals for achieving effective solutions

Co-chairs: Professor Ian Hume and Professor Manny Noakes

Nutrition science is a foundation for food and nutrition policies and practice. This science as well as our society is shifting rapidly. We need not only to keep pace and adapt, but we also need new solutions for nutrition to be relevant in this environment. Understanding nutrition in the broader context of society and the political, technological, cultural and natural environment is key. The technological revolution is transforming both nutrition science as well as communication.

Technology is making an enormous array of information on many topics available direct to the consumer. Further to that, social media is becoming an organic medium that shapes popular opinion in unprecedented ways. Food, nutraceuticals and pharmaceuticals are being purchased more and more outside the conventional means of the supermarket and pharmacy—purchased online from anywhere in the world.

This group must first ask the question: solutions to what? What is the real problem? Is it the poor health status of many Australians related largely to poor nutrition despite the abundance of high-quality foodstuffs in our country? Or is the real problem elsewhere?

How do we combat the problem and achieve innovative solutions that are sustainable, equitable and rational?

In addition, many planetary environmental indicators are deteriorating, suggesting the burden of human activity may soon exceed the capacity of the planet. How can we incorporate environmental considerations into our solutions?

Questions to get you thinking

Essential goals for achieving effective solutions might include, but not be limited to, such things as:

1. A national nutrition policy for Australia. Who would produce such a policy?
2. A national body to provide consistent nutritional advice from one credible source. What would such a national body look like?
3. What is the core of the issue and what are solutions that might be outside the box?
4. Uniformity and clarity in nutritional information on food packaging. Is knowledge really the real issue?
5. Clear information on the source(s) and treatment of foods. For example, "organic" should be rigorously defined and its use strictly regulated. Which body should do this? Should there be a national policy on GM foods? What information should be provided on the sustainable use of natural resources (land, water) in the production of foodstuffs? Should food manufacturers and food processors be encouraged to take ownership of these issues?
6. Better understanding of new science (new information on metabolic diseases, gut microbiomes, immunity) that might lead to different solutions to what we may have proposed in the past.
7. Do we need a new innovative approach to nutrition education? Think about pre-school, primary, secondary, tertiary, general community, Indigenous, ante-natal and post-natal (community health centres). Or do we need less of a science-only push but rather strategies that engage the community and citizen science in some way?

Recommended reading

Cannon, G and Leitzmann, C 2006, 'The New Nutrition Science Project' *Scandinavian Journal of Food and Nutrition* 50: 5-12. dx.doi.org/10.1080/11026480600624762

Eric Topol 2015. *The patient will see you now: The future of medicine is in your hands*. Basic Books, New York, NY.

Lowe, M 2014. 'Obesity and Climate Change Mitigation in Australia: overview and analysis of policies with co-benefits' *Australian and New Zealand Journal of Public Health* 338(1): 19-24. doi: 10.1111/1753-6405.12150

Examine how new technologies and citizen science are changing nutrition practice by looking at relevant websites:

Crohnology website <https://crohnology.com/>

23 and Me website <https://www.23andme.com/en-int/howitworks/>

Group 3 participants (*rapporteurs)

Dr Jose A Caparrós-Martín

Dr Konsta Duesing

Professor Danielle Gallegos

Dr Nadeem Kaakoush

Dr Annie Lassemillante

Dr Deana Leahy

Dr Jessica Loyer

Dr Laurence Macia*

Dr Lenka Malek

Dr Emma McMahon

Dr Merryn Netting

Dr Amy Reichelt

Dr Zenobia Talati

Associate Professor Jacqui Webster*

Dr Jane Willcox

Group 4 —Tools for Change

Chair: Dr Brooke Harcourt

People have a right to access good nutrition and have a say in their health care. But is the digital age that we live in working for or against people's health? Rapid dissemination to the public of peer reviewed or even preliminary research is now possible via media outlets and social media forums. Weekly, there is information circulating about a new diet, a food that is bad for you, a miraculous 'superfood', the time of the day food should or should not be eaten. Sources of information are at people's fingertips, empowering them to have a say in their health and medical care. But are we healthier for it?

Billions of dollars in Australia are spent on the diet industry and unchecked multivitamin industry as consumers strive for healthier bodies, yet overweight and obesity rates continue to increase.

Food beliefs challenge scientific knowledge and the ability to be a voice in Australia's food environment is more significantly based on celebrity rather than experience in the recent decade.

Food wastage is at an all-time high and food travels more distance than it ever has before to reach our plates.

Agriculture and industry have developed ways to grow food with minimal water out of season and in an abundance, yet we still have areas of Australia where people don't have access to fresh produce due to unavailability and cost.

Going forward, what if any role should government and policy have in the way in which people access information and how do we assist the public to access information that will benefit their health?

Questions to get you thinking;

1. What are the positive and negative attributes of Australia's current methods of relaying nutrition information?
2. Who should we target nutritional messages towards to make them most effective?
3. How can we make nutritional messages clearer?
4. Is the nutrition industry in Australia transparent?
5. What factors motivate key stakeholders; government, industry, communities and the individual, to achieve nutritional change/outcomes in Australia?
6. What are the barriers against achieving nutritional adequacy in Australia?
7. What mechanisms could we use (or create) to alter nutrition culture?

Recommended reading

Eric Topol 2015. *The patient will see you now: The future of medicine is in your hands*. Basic Books, New York, NY.

Or if you're running short on time the concept is described in this book review:

https://www.nytimes.com/2015/02/15/books/review/the-patient-will-see-you-now-by-eric-topol.html?_r=1

Examine how new technologies and citizen science are changing nutrition practice by looking at relevant websites e.g. <https://www.crohnology.com/>

National Health and Medical Research Council. *Australian Dietary Guidelines: providing the scientific evidence for healthier Australian diets*. Canberra: National Health and Medical Research Council, Canberra: NHMRC, 2013. Available from: <https://www.eatforhealth.gov.au/>

'The findings of medical research are disseminated too slowly' *The Economist* 25 March 2017 <http://www.economist.com/news/science-and-technology/21719438-about-change-findings-medical-research-are-disseminated-too>

Group 4 participants (*rapporteurs)

Dr Lucy Carter

Dr Jillian Garvey

Dr Gilly Hendrie

Dr Trina Hinkley

Dr Jenna Hollis
 Dr Karen Klassen
 Dr Smriti Krishna
 Dr Joshua Lewis
 Dr Merryn McKinnon
 Dr Elizabeth Neale*
 Dr Christina Pollard*
 Dr Tracy Schumacher
 Dr Carlene Starck
 Dr Shelley Wilkinson
 Dr Gal Winter

Group ^{SP} — Systems perspective: bringing it all together to identify solutions

Co-chairs: Professor Anne-Marie Grisogono and Professor Stephen Simpson

Improving the health of the Australian population through better nutrition is an important but complex and challenging goal, worthy of the Theo Murphy High Flyers Think Tank. Many disciplines and areas of specialised expertise are relevant and can contribute unique perspectives and ideas, but how are we to distil coherent and cost-effective strategy recommendations from such diversity? How are we to resolve opposing views and assess relative merits and feasibility of proposals?

This is where a systems approach is needed. Taking a systems view of a complex problem means working together to develop a conceptual map encompassing all the relevant perspectives, and exploring and understanding how they relate to each other. Where might the separately identified action proposals work in tandem and reinforce each other? What does it take to implement an innovative idea in a practical way? How might different groups of people react, and what consequences might follow? How can interest groups who might be disadvantaged by some proposals become part of the solution instead of identified as part of the problem?

Because there are so many different stakeholders and interests, and so many channels of communication and interaction, one cannot expect to predict all the answers, but having explored the possibilities means that more adaptive strategies can be developed, including feedbacks to enable learning as they are implemented.

The goal of the systems group will be to facilitate these conversations throughout the workshop, so that the recommendations that are developed are as robust, effective and practical as possible.

Questions to get you thinking

Goals

1. In what dimensions should we consider overall goals? e.g. health outcomes, cost of health services, more general economic measures, export potential of innovations, sustainability and environmental impacts? Other?
2. What are the measures of success and of failure in each goal dimension? And how do they interact? Goals in different dimensions are often conflicted. Which are the primary essential goals? Which are negotiable?
3. What is the goal structure? i.e. what do you aim to achieve in order to achieve your primary goal? There may be several layers of decomposition of goals—this is one way of describing your strategy—we aim to achieve X, in order to cause Y, in order to enable Z, etc. The point of doing this is to know what assumptions the strategy rests on and to know what indicators to monitor, to learn whether it's working as expected—or not (often the case!)

What's in or out

It's very hard to draw a line around a problem area because there is such a dense network of interactions in the real world that there always remain important connections to factors beyond the current boundary. So when should one stop pulling the spaghetti and just cut it? A good litmus test is to include all the elements that have a strong impact on the outcomes that matter, since this is where one finds levers of influence as well as risks to be managed.

4. What aspects of individual health and nutrition need to be included? And how do they relate?
5. What aspects of the situation need to be included in the conceptual map and in the discussions? Food industry? Entertainment and media? Education (schools? adult? health professions?) Agriculture? Politics? etc

Stakeholders

6. Who are the players? What are their interests? How could they help or benefit? How could they impede or be disadvantaged?
7. What are their sources of information? Who do they trust? How might they be influenced?

Levers of influence

8. What are the options for action? What is the desired impact and what other impacts might also be produced? How can these be managed?
9. How likely is the desired impact? What could go wrong? How can the risk be managed?
10. What other ways might the desired impact be produced? Are there better options?
11. What are the possible interactions between the actions being considered? e.g. reinforcing, risk reducing, leveraging, or antagonistic?

Learning from others' experience

12. What has been tried elsewhere? What were the outcomes? Why did it work or not work? What lessons can be drawn for our goals?

Recommended reading

There are many books on systems thinking and systems approaches. Most of them are targeted at leadership and management of organisations or enterprises, or at systems engineering. Nevertheless, they can be useful. Some of the classics include:

Senge, P.M. 2006, *The Fifth Discipline: The Art and Practice of the Learning Organization*, 2nd ed. New York, NY, USA: Doubleday Currency.

Checkland, P. 1999, *Systems Thinking, Systems Practice*, New York, NY, USA: John Wiley & Sons.

If you don't have time to read the whole books, there are good online summaries such as:

https://en.wikipedia.org/wiki/Soft_systems_methodology

and this one summarises a systems approach to engineering—but much of it also relevant to designing strategies to deal with complex problems:

http://sebokwiki.org/wiki/Overview_of_the_Systems_Approach

Effective strategies have to be cognisant of how people can be persuaded to change their behaviour, and of some cognitive traps that lead to poor decisions. Dörner's little paperback is an easy to read classic, but full of rich insights as well as a good dose of humour. And Nobel-prizewinner Kahneman's best-seller overview of his and Tversky's lifetime career achievements in understanding bias and heuristics is also a great read.

Dörner, D., 1997, *The Logic of Failure: Recognizing and Avoiding Error in Complex Situations*, Perseus Books Group.

Kahneman, D. 2011, *Thinking, Fast and Slow*, Farrar, Straus and Giroux

Systems thinking is a practical approach to dealing with high levels of complexity—i.e. situations where there are many interactions between the elements—so there is also much of value in the complexity science literature. These are nice introductions:

Waldrop, M 1993, *Complexity: the emerging science at the edge of order and chaos*, Simon & Schuster

Mitchell, M 2011, *Complexity: a Guided Tour*, Oxford University Press

Meadows, DH and Wright, D 2008, *Thinking in Systems: A Primer*, Chelsea Green.

Systems perspective group participants (group of origin)

Dr Kim Bell-Anderson (Critical evaluation of nutrition science)

Dr Claudia Strugnell (Critical evaluation of nutrition science)

Dr Rebecca Lindberg (Key control points for healthy, equitable and sustainable food and nutrition)

Dr Philipp Reineck (Key control points for healthy, equitable and sustainable food and nutrition)

Dr Jessica Loyer (Essential goals for achieving effective solutions)

Dr Zenobia Talati (Essential goals for achieving effective solutions)

Dr Lucy Carter (Tools for change)

Dr Shelley Wilkinson (Tools for change)

Presentation abstracts

Human nutrition: where have we gone wrong and how can we do better?

Professor David Raubenheimer



Globally, the leading causes of preventable deaths are nutrition-related. Why has nutrition science not done a better job of improving this situation? One reason is that nutrition is a massively complex problem, driven by many 'moving parts' that interact in complex ways to influence consumer

behaviour and health. To deal with this complexity, new approaches are needed that help identify the most important parts of the system, the roles they play in influencing health and disease, and ways to manage them for positive outcomes. David will show how nutritional ecology, the branch of biology that applies evolutionary and ecological theory to the study of animal nutrition, provides powerful tools for unravelling and managing the complex human nutrition system. He will illustrate the argument using nutritional ecology studies of non-human animals, as well as studies that have applied the same approach to human nutrition.

Opportunities for nutrition in the precision health era

Professor Manny Noakes



Self health and wellness and direct-to-consumer wellness products and services are a burgeoning global industry, in part fuelled by our increasing aging population wishing to maintain and optimise their health and reduce morbidity. The global wellness

industry is estimated as a \$3.4 trillion market, or 3.4 times larger than the worldwide pharmaceutical industry. Within that sector, preventive and personalised services, nutrition and weight loss, complementary medicine and nutraceuticals encompass almost one third of this economic value.

While the health system is under economic pressure, there is an opportunity for Australia's food and healthcare sectors to become more effective as well as to be major export industries and make a positive contribution to the economy. Nutrition has a key role to play in these areas.

Technology is making available an enormous array of information on many topics available direct to the consumer. Further to that, social media is becoming an organic medium which shapes popular opinion in unprecedented ways. Food, nutraceuticals and pharmaceuticals are being purchased more and more outside the conventional means of the supermarket and pharmacy—purchased online from anywhere in the world. Genetic information and services are proliferating and their costs are declining. Nutrition, diet and lifestyle are not independent from these developments and we need to understand and embrace the new science of precision health, which allows the individual to be more empowered and to have more precise information about how to best manage their health and wellbeing.

Nutrition science is a foundation for food and nutrition policies and practice. This science as well as our society is shifting rapidly. Understanding nutrition in the broader context of society and the political, technological, cultural and natural environment is key. The technological revolution is transforming both nutrition science as well as communication. We need not only to keep pace and adapt, but we also need new solutions for nutrition to be relevant in this environment.

Steering committee and invited experts

Professor Stephen Simpson AC FAA FRS

Academic Director

Charles Perkins Centre, University of Sydney



Steve Simpson is Academic Director of the Charles Perkins Centre and Professor in the School of Life and Environmental Sciences at the University of Sydney. After graduating as a biologist from the University of Queensland, Steve undertook his PhD at the University of London, then spent

22 years at Oxford before returning to Australia in 2005 as an Australian Research Council Federation Fellow, then ARC Laureate Fellow. He developed an integrative modelling framework for nutrition (the Geometric Framework), which was devised and tested using insects. This has since been applied to a wide range of organisms, from slime moulds to humans, and problems, from aquaculture and conservation biology to the dietary causes of human obesity and ageing. He has also revolutionised understanding of swarming in locusts, with research spanning neurochemical events within the brains of individual locusts to continental-scale mass migration.

In 2007 Steve was elected a Fellow of the Australian Academy of Science, in 2008 he won the Eureka Prize for Scientific Research, in 2009 he was NSW Scientist of the Year, in 2013 he was elected a Fellow of the Royal Society of London and in 2015 was made a Companion of the Order of Australia. Steve has also been prominent in the media, including presenting a four-part documentary series for ABC TV, 'Great Southern Land'.

Professor Jennie Brand-Miller AM

Professor of Human Nutrition

University of Sydney



Jennie Brand-Miller holds a Personal Chair in Human Nutrition in the Charles Perkins Centre at the University of Sydney. She is recognised around the world for her work on carbohydrates and the glycemic index (or GI) of foods. Her research interests focus on diet and diabetes, weight loss, insulin resistance, and carbohydrate intake throughout human evolution. In 2011, she was appointed a member of the Order

of Australia for her services to education and hearing health. She is the proud recipient of two Nucleus cochlear implants and chairs the University of Sydney's Disability Action Plan.

Professor Frank Dunshea

Professor

Faculty of Veterinary and Agricultural Sciences, University of Melbourne



Frank Dunshea has an extensive research career spanning 30 years in functional food and nutrition research, sensory and other quality characteristics of meat. He is a Fellow of the Nutrition Society of Australia and former Chair of the Australian Academy of Science's

National Committee for Nutrition. Frank's research has an impressive breadth and quality with over 700 published journals, conferences, books, and patents/technical articles.

Professor Mike Gidley

Director

Centre for Nutrition and Food Sciences, University of Queensland



Mike Gidley is Director of the Centre for Nutrition and Food Sciences (CNAFS) at the University of Queensland. His career includes 22 years in food R&D in the private sector before joining UQ in 2003. Research themes within CNAFS include 'Smart Selections' (how to identify the right

combinations of raw materials and processing to deliver consumer-preferred foods), 'Naturally Nutritious' (maximising the intrinsic nutritional properties of agricultural products in foods and ingredients) and 'Uniquely Australian' (identifying and validating opportunities for elite products from foods and ingredients that can only have come from Australia). Mike's own research is focused on structure–function–nutrition relationships in plant-based foods and ingredients. This has led to the detailed characterisation of starch and dietary fibre digestion/fermentation in vitro and in vivo, with the understanding generated leading to opportunities for optimising nutritional value of foods and feeds.

Professor Anne-Marie Grisogono

Adjunct Professor
Flinders University



Anne-Marie Grisogono is a complex systems scientist with a PhD in mathematical physics. She has worked in experimental and theoretical atomic and molecular physics, and lasers and nonlinear optics in various universities, followed by 20 years of applied R&D in the Defence Science and Technology

Organisation (now DST Group), working on systems design, modelling and simulation, and future concept development and experimentation. Presently she is an Adjunct Professor in the Faculty of Science and Engineering at Flinders University, and a Visiting Fellow in ANU's National Security College. She has held several national and international leadership roles within DSTO, in NATO and in The Technical Cooperation Program, in the fields of simulation, systems engineering and systems science, human sciences and complexity science, and was appointed to the Australian Research Council's College of Experts in 2013. Her current research interests include fundamental questions of complexity science, and improving the methodologies and tools that can be applied to dealing with complex problems.

Dr Brooke Harcourt

Senior Research Officer
Murdoch Childrens Research Institute



Brooke Harcourt is a senior research fellow at the Murdoch Childrens Research Institute and Royal Children's Hospital, Melbourne, Australia. She received her PhD (medicine) from Monash University in 2011, and is currently the recipient of a National Health and Medical Research Council

Early Career Fellowship. In 2015, Brooke was appointed as an Early-Career Intern on the Australian Academy of Science's National Committee for Nutrition, and in 2017 was made a full member of the committee. She is a qualified nutritionist and by the end of 2017 will have completed a Bachelor of Nutrition and Dietetics (Hons) at Monash University. She currently supervises two PhD students. Her research interests include public health, childhood obesity and early childhood nutrition, diabetic and obesity-related nephropathy, cardiovascular disease, and food modifications as mediators of chronic disease—specifically the formation of advanced glycation end products.

Professor Ian Hume AO FAA

Emeritus Professor
University of Sydney



Ian Hume is a comparative physiologist/nutritionist, interested in the interplay between the metabolic needs of free-living wild animals, their digestive physiology, and their nutritional ecology. A strong motivation for him is the conservation of native species, especially marsupials. His

publications include the books 'Marsupial Nutrition', 'Comparative Physiology of the Vertebrate Digestive System' with CE Stevens, and 'Integrative Wildlife Nutrition' with PS Barboza and KL Parker. Ian has held positions at the University of California Davis, the University of New England, and the University of Sydney (as Challis Professor of Biology). Currently he works as an academic advisor in the University of Sydney's Research Office, working particularly with EMCRs on their proposals for research grants and nominations for honorific awards and prizes, as part of their career development.

Professor Amanda Lee

Senior Advisor
Australian Prevention Partnership Centre, Sax Institute



Amanda Lee is Senior Advisor at the Australian Prevention Partnership Centre at the Sax Institute. She is a public health nutritionist with experience in chronic disease prevention, Indigenous health, and food, nutrition and public health policy. Amanda was Chair of the National

Health and Medical Research Council's Dietary Guidelines Working Committee. She serves on several national committees including as Chair of Food Standards Australian and New Zealand's Consumer and Public Health Dialogue, Co-convenor of the Food and Nutrition Special Interest Group of the Public Health Association of Australia, and as a member of the Australian Academy of Science's National Committee of Nutrition. Amongst recent projects, Amanda led the scoping of a new national nutrition policy and developed the Healthy Diets ASAP (Australian Standardised Affordability and Pricing) methods. Globally, she leads the food price and affordability domain of the International Network for Food and Obesity/Non-communicable Diseases Research, Monitoring and Action Support (INFORMAS), amongst other consultancies.

Professor Manny Noakes

Research Director

Nutrition and Health Program, CSIRO



Manny Noakes is currently the Research Director for the Nutrition and Health Program at CSIRO. She leads a multidisciplinary research program in translational science, developing effective nutritional programs and strategies for lifestyle management for community uptake. She has over

25 years' experience in understanding the metabolic impact of dietary change and has conducted numerous clinical dietary intervention trials in weight management, body composition and cardiovascular health. Manny has also led the development of methodologies to ensure compliance to dietary protocols. In particular her laboratory has established well-developed protocols for the study of dietary patterns and conducted many intervention trials in free-living target groups for durations of up to three years. Manny has authored over 200 peer-reviewed publications that have been cited over 9000 times, and has an H index of 52. Over the past 10 years her research focus has extended to understanding how to deliver effective lifestyle programs in the community through the use of information and communication technologies as well as understanding the environmental impacts of dietary patterns

Professor David Raubenheimer

Leonard P Ullmann Chair in Nutritional Ecology

Charles Perkins Centre, University of Sydney



David Raubenheimer is a nutritional ecologist, with experience in applying ecological and evolutionary theory to the nutritional biology of animals. His work includes both laboratory and field studies, on insects, reptiles, fish, birds, and several mammals including dogs, cats, giant pandas, monkeys, gorillas

and orang-utans. Over the past decade, he has extended his work to apply the perspectives of nutritional ecology to understand health problems developed by humans in modern environments. David obtained his PhD in zoology at Oxford University in 1992, where he remained as lecturer until he moved to the University of Auckland in 2002. In 2013 he took up his current position as Chair in Nutritional Ecology at the University of Sydney. He is co-author with Steve Simpson of 'The Nature of Nutrition: a unifying Framework from Animal Adaptation to Human Obesity', and has published over 270 scientific papers and book chapters.

Dr Gyorgy Scrinis

Senior Lecturer

University of Melbourne



Gyorgy Scrinis is Senior Lecturer in Food Politics and Policy in the School of Agriculture and Food at the University of Melbourne, and leads the Food Policy Research Group. He has a PhD in social theory and science and technology studies from the University of Melbourne. His research examines

the politics, policies and philosophy of food and nutrition, with a focus on paradigms in nutrition science, processed foods, functional foods, nutrition policy, agricultural technologies, food and nutrition labelling, animal welfare and food corporations. Gyorgy is the author of 'Nutritionism: The Science and Politics of Dietary Advice', which examines nutritional reductionism, or nutritionism, in nutrition research, dietary guidelines, food marketing and the public understanding of nutrition. He is also chief investigator on the ARC Discovery project 'Regulating food labels: The case of free-range products in Australia.'

Professor Helen Truby

Professor of Nutrition and Dietetics

Monash University



Helen is the Professor of Nutrition and Dietetics at Monash University and as its inaugural head of department she leads a large team of nutrition scientists, academic dietitians and public health nutritionists. She originally trained as a paediatric dietitian and brings her clinical

expertise to her research work which has the overarching aim to improve the evidence base for treatment and management of chronic diseases in both children and adults. She has published over 100 research papers and currently holds \$4.2 million in competitive research grants. Her interests also include communication of health messages to the public and understanding how to engage the public in lifestyle change. In pursuing this aim she is the Lead Educator for the Food as Medicine MOOC (massive open online course), which was delivered to more than 84,000 learners globally during 2016.

Opening address

Professor Peter Klinken

Chief Scientist of Western Australia

Peter Klinken is a leading Western Australian medical research scientist, highly regarded for his work in advancing the understanding of genes involved in leukaemia, cancer and anaemia. His many research achievements include the discovery of a gene that suppresses the growth of tumours.

After obtaining his PhD from the University of Western Australia, he undertook research at the US National Institutes of Health in Washington and the Walter and Eliza Hall Institute in Melbourne. His previous roles have included Professor in Clinical Biochemistry at the University of Western Australia, Director of Research at the Royal Perth Hospital, and Director of the Harry Perkins Institute of Medical Research.

Under his stewardship, the Perkins Institute attracted national and international researchers and made numerous medical discoveries. He also spear-headed the development of two new medical research facilities, Perkins North in Nedlands (QEII Medical Centre) and Perkins South in Murdoch (Fiona Stanley Hospital).

Professor Klinken brings a wealth of knowledge and expertise to the role of WA Chief Scientist. His input will support the West Australian Government in growing the state's science industries to achieve future prosperity for Western Australians.



Dinner address

Mr Rex Milligan

Healthy Food for All Manager
Foodbank WA



Rex Milligan started his working life as a physical education teacher. Although he has had a long list of jobs since then, Rex has regularly been drawn back to working with schools. Rex gained a Master of public health, majoring in nutrition in 1994 and has worked for the WA departments of education, health and police; in the university sector; and is now at the NGO Foodbank WA. He has worked on health promotion projects, research and evaluation, policy development and management.

Participants

Associate Professor Gina Ambrosini **2**

University of Western Australia
gina.ambrosini@uwa.edu.au



Gina Ambrosini (PhD, MPH) is an experienced nutrition epidemiologist who has worked in public health research in Australia and the United Kingdom. She is based at the University of Western Australia, in the School of Population and Global Health. Gina's research takes a 'whole

of diet' approach by identifying overall patterns in dietary intake that can be translated into simple public health advice. Gina has published widely on the dietary determinants of obesity and cardio-metabolic health in children and young people. She is increasingly interested in the social and environmental factors that lead to poor dietary choices, and identifying ways to make healthy food choices easier.

Dr Kathryn Backholer **2**

Deakin University
kathryn.backholer@deakin.edu.au



Kathryn Backholer is a Senior Research Fellow and leads the equity research program within the Global Obesity Centre at Deakin University. Her research aims to build the evidence base to support the equitable prevention of diet-related ill health through policy and practice, with a particular focus on price manipulation for healthy eating.

Associate Professor Eleanor Beck **1**

University of Wollongong
eleanor@uow.edu.au



Eleanor Beck is Discipline Leader in Nutrition and Dietetics at the University of Wollongong. Eleanor has more than 25 years' experience in clinical practice and dietetics education. She was part of the expert working group for review of the National Competency Standards for

Dietitians and the Advanced Accrediting Practising Dietitian competency standards. Her clinical research includes close links with dietetics service delivery in hospitals, while working

with industry partners and international collaborators in grains research. Current projects include review of both individual grains and fibres, as well as cereal fibre and whole grains generally, and their effects on metabolic health. Eleanor is also Deputy Chair of the Council of Deans of Nutrition and Dietetics (ANZ) and the Chair of the ANZ Need for Nutrition Education/Innovation Programme (NNEdPro) group, which is part of a global network to promote nutrition teaching and research in health professions, especially medicine.

Dr Emma Beckett **1**

University of Newcastle
emma.beckett@newcastle.edu.au



Emma Beckett is an NHMRC ECR Fellow working in Molecular Nutrition at the University of Newcastle. She studies gene–nutrient–environment interactions. Her fellowship work focuses on the interactions between taste receptors, diet and the gastrointestinal microbiota. Emma is

also interesting in photosensitive vitamins and nutritional epigenetics. She is a keen science communicator who strives to equip everyday people with the tools needed to critically assess the mass of nutritional information that they receive from the media, marketers and friends and family. Emma received her PhD in 2016, studying the nutritional epigenetics of folate and vitamin D in aging and colorectal cancer. Her PhD was conducted at the University of Newcastle in collaboration with CSIRO Food and Nutrition, and included a visiting fellowship to the National Institutes of Environmental and Health Sciences, a division of the NIH. She currently teaches 'Introduction to Food and Nutrients' at the university.

Dr Andrea Begley **2**

Curtin University
a.begley@curtin.edu.au



Andrea Begley is an advanced accredited practising dietitian who is interested in public health nutrition. Her PhD in public health investigated cooking skills and their conceptualisation in health. Andrea currently is a Senior Lecturer in the School of Public Health at Curtin

University and has teaching and research responsibilities in dietetics and public health. She has developed the curriculum and is the current course coordinator for Curtin's

new Master of Dietetics. Andrea's research is currently directed at evaluating effective food literacy programs. She was awarded as a Fellow of the Public Health Association of Australia in 2012 in recognition of a significant contribution to the field of public health through her role as national co-convenor of the food and nutrition special interest group whose primary purpose is advocacy and capacity building initiatives for the workforce. In her roles she often reflects on how to improve traction at various levels of government for public health nutrition action.

Dr Kim Bell-Anderson **1** **SP**

University of Sydney

kim.bellanderson@sydney.edu.au



Kim Bell-Anderson is a Senior Lecturer at the University of Sydney and has taught undergraduate food and nutrition science for over 10 years. Her teaching seeks to inform and inspire students to embrace an interdisciplinary approach to learning and appreciate the value of big data,

coding and statistics. Kim's research sits at the nutrition-physiology interface with a focus on the investigation of how macronutrients regulate glucose homeostasis and insulin sensitivity. She is Chair of the Nutrition Society Australia, Sydney group and is part of the founding committee of the Oceanic Nutrition Leadership Program which ran for the first time in 2016 and is held biannually. Gender equity is important to Kim, and she was selected for the Athena Swan SAGE Self Assessment Team for the University of Sydney. Kim is also a mother with two sons and acutely aware of the barriers to success in science for women.

Dr Lucinda Black **2**

Curtin University

lucinda.black@curtin.edu.au



Lucinda Black is a Curtin Research Fellow with expertise in vitamin D, food composition and nutritional epidemiology. Her research is focused on the dietary supply of vitamin D in Australia in order to support the development of food-based strategies to increase vitamin D status at the

population level. She is also investigating the potential of diet and nutrients to reduce the risk and early disease progression of multiple sclerosis.

Dr Martin Boland **2**

Charles Darwin University

martin.boland@cdu.edu.au



Martin Boland is a Senior Lecturer in medicinal and pharmaceutical chemistry at Charles Darwin University and coordinator of the nutrition stream of the Bachelor of Science. He graduated from Manchester Metropolitan University with a BSc in chemistry before being awarded a PhD

from the University of Manchester for solid-state NMR studies of the interactions of pharmaceuticals with membrane proteins. He worked as a research officer at the University of Melbourne supporting projects investigating antibacterial peptides and the molecular basis for prion diseases. His current research focus is on the role of natural materials as anti-infectives in indigenous medicine.

Dr Jane Bowen **1**

CSIRO

jane.bowen@csiro.au



Jane Bowen is a Research Scientist/Research Dietitian within CSIRO's Nutrition and Health Program which aims to deliver innovation to Australia's food and health industries, resulting in significant health and economic benefits for Australians. She leads clinical and translational nutrition

research with a focus on food and dietary patterns for metabolic health and weight management. Jane has also worked in partnership with the food industry, state and federal governments, community organisations and NGOs. She has co-authored a number of significant health resources used extensively across the Australian health system, such as the Get Set 4 Life booklet, which is distributed at all 4-year-old health checks, to help establish healthy lifestyle habits from a young age. She is an author of the CSIRO Wellbeing Plan for Kids, and contributing author of the CSIRO Healthy Heart Diet and the CSIRO Total Wellbeing Diet, which has now been translated into 17 languages and sold over 1 million copies in Australia. Jane was also project manager of the 2007 Australian National Children's Nutrition and Physical Activity Survey.

Dr Seona Candy 2

Victorian Eco-innovation Lab (VEIL),
University of Melbourne
candys@unimelb.edu.au



Seona Candy's research focuses on modelling future food system scenarios and quantifying interactions between food availability and resource use. She has a background in engineering, international development and participatory design. She was joint chief-investigator of the Foodprint

Melbourne project, investigating the sustainability and resilience of Melbourne's food supply. She also worked on the Australian Food Supply Scenarios project in collaboration with Deakin University and Australian National University investigating the intersection of health and sustainability in the Australian food system. Seona is currently working on two projects funded by the Cooperative Research Centre for Low Carbon Living: Visions and Pathways 2040 and the Future Cities Node project. Both are collaborative, multi-stakeholder projects developing scenarios and strategies for transitioning to low-carbon Australian cities across the energy, food, transport and waste sectors. She has also worked with Engineers Without Borders and CoDesign Studio, on food security and nutrition projects in developing countries.

Dr Jose A Caparrós-Martín 3

Curtin University
jose.caparros-martin@curtin.edu.au



Jose A Caparrós-Martín completed his PhD at the Institute for Plant Molecular and Cell Biology (Valencia, Spain). Later he took advantage of different state-of-the-art genetic techniques and bioinformatics, to find causative genes of different rare genetic disorders in humans. In 2015 he joined the WA

Department of Health-funded Human Microbiome Research Centre at Curtin University. His main interest is in using the 'system medicine' approach of integrating omics and bioinformatics approaches to understand functional microbiomes and metagenomes and how they shape health and disease. His current work aims to explore the role of the gut microbiota in the metabolic and health benefits associated with the consumption of nutritional prebiotics.

Dr Adrian Carter 2

Monash University
adrian.carter@monash.edu



Adrian Carter is Senior Research Fellow and Head, Neuroethics and Public Policy Group at the School of Psychological Sciences and Monash Institute of Cognitive and Clinical Neurosciences, Monash University. He is also Director of the Neuroethics Program at the Australian Research

Council Centre of Excellence for Integrative Brain Function and Chair of the Australian Brain Alliance's Neuroethics Subcommittee. His research examines the impact of neuroscience on our understanding and treatment of addiction and other compulsive behaviours, including agency, identity, moral responsibility, and the use of emerging technologies. Adrian is currently funded by an NHMRC Career Development Fellowship (2017–2021). He has over 120 publications, including the book 'Addiction Neuroethics: The Promises and Perils of Addiction Neuroscience'. Adrian has been an advisor to the World Health Organization, the European Monitoring Centre for Drugs and Drug Addiction, the Australian Ministerial Council on Drugs Strategy, and the United Nations Office on Drugs and Crime.

Dr Lucy Carter 4 SP

CSIRO
lucy.carter@csiro.au



Lucy Carter is a philosopher and social scientist who uses systems thinking to improve livelihoods and nutrition security in developing countries. She has a background in international health, nutrition-sensitive agriculture, and applied ethics. Her work is impact-focused, participatory and

draws on transdisciplinary approaches. Strengthening institutional efforts to improve development outcomes are a focus of her current role at CSIRO. She helps to design, facilitate and learn from stakeholder engagement processes which aim to address complex problems across health and biosecurity, agricultural development and food security domains. Her recent work includes understanding social inclusion and equity considerations for marginalised groups undergoing major social transitions. Lucy has previously held roles in research and management across healthcare and biotechnology sectors. She currently works as a research scientist at CSIRO in Brisbane.

Dr Karin Clark ¹

Curtin University

k.m.clark@curtin.edu.au



Karin Clark is a Registered Nutritionist (NSA) and has significant teaching, unit and course coordination experience within Curtin University's Bachelor of Nutrition and Health Promotion/ Nutrition double degree. She is involved in curriculum design, course review and application of pedagogy.

Through her roles Karin has been involved in development and implementation of teaching and research projects that focus on innovative and sustainable teaching approaches, as well as developing student interaction and engagement.

Karin is a nutrition scientist with research experience in the biochemistry and physiology of human nutrition.

Dr Jorja Collins ¹

Monash University

jorja.collins@monash.edu



Jorja Collins is an accredited practicing dietitian and early career researcher. She currently works in a teaching and research role at Monash University and in a clinical/foodservice role at a hospital network in Melbourne. She completed her PhD in 2016, looking at malnutrition in the subacute health

care setting. This research explored the effect of food-based interventions on the nutritional status of elderly hospital patients, and on the behaviour of hospital foodservice staff. Her expertise and interest are in foodservice, nutrition assessment, dietary assessment, nutrition in elderly and hospitalised populations, and implementing change.

Dr Zoe Davidson ¹

Monash University

zoe.davidson@monash.edu



Zoe Davidson is an Advanced Accredited Practising Dietitian and Senior Lecturer in Nutrition Science at Monash University. Zoe also has a research appointment at Murdoch Childrens Research Institute. Zoe's research has focused on the nutritional management of neuromuscular

disorders, with a specific focus on energy expenditure and body composition and the use of nutraceuticals to improve function. Zoe is also coordinating the development of best

practice guidelines for the allied health and nursing assessment and management of Duchenne muscular dystrophy in Australia and New Zealand.

Dr Kacie Dickinson ¹

Flinders University

kacie.dickinson@flinders.edu.au



Kacie Dickinson is a dietitian and Associate Lecturer in Nutrition and Dietetics at Flinders University. Her research explores nutrition and eating behaviour in chronic disease prevention. Prior to joining Flinders University she completed her PhD at CSIRO in 2014 where she worked on

projects exploring the effects of modifying dietary sodium intake on risk factors for cardiovascular disease. Some of this work has been cited as supporting evidence in the statements that informed the most recent revision of the Australian Dietary Guidelines. She is now building on this work through interdisciplinary collaborative research with psychologists and cardiologists to explore the food supply, the quality of nutrition information online and the impact on diet patterns and risk factors for cardiovascular disease.

Dr Laura Downie ¹

The University of Melbourne

ldownie@unimelb.edu.au



Laura Downie is a Senior Lecturer and an NHMRC Translating Research Into Practice Fellow in the Department of Optometry and Vision Sciences, University of Melbourne. She completed her optometry degree and PhD at the University of Melbourne. In her current role, she provides didactic

and clinical training to Doctor of Optometry students, leads the specialty Cornea clinic at University of Melbourne eyecare and heads the Downie Laboratory, which undertakes research in eye disease. A major component of her research is the translation of evidence into practice for eye health, including the role of diet and nutritional supplementation as modifiable risk factors for sight-threatening conditions, such as age-related macular degeneration. In 2014, she was awarded two prestigious fellowships from the NHMRC and achieved international recognition for her research as recipient of the Irvin and Beatrice Borish Award from the American Academy of Optometry.

Dr Konsta Duesing 3

CSIRO

konsta.duesing@csiro.au



Konsta Duesing is a Research Team Leader at CSIRO investigating molecular signatures for personalised health. Trained in molecular biology, genetics and bioinformatics at Hamburg, Auckland and S*Star (Singapore), Konsta gained his PhD in Genomic Medicine from the Faculty of

Medicine at Imperial College London. Experienced across a broad range of areas from type 2 diabetes to cancer, genomics, epigenomics and nutrigenomics, he is a co-inventor of the Colvera® blood-based cancer test and has inaugurated nutri- and sensory-genomics research at CSIRO. Konsta is a member of the editorial board of Genomics and Computational Biology and inaugural EMBL Australia Faculty for next-generation sequencing training through the CSIRO/BPA/EMBL-EBI collaboration. Recently, his research vision was recognised with an Australia Awards Endeavour Executive Fellowship. Konsta welcomes the opportunity provided by this Think Tank to address concerns about the applicability of genetics in nutrition research and to contribute to shaping future directions.

Dr Asgar Farahnaky 1

Charles Sturt University

afarahnaky@csu.edu.au



After lecturing at Shiraz University in food technology, Asgar moved to the University of Nottingham (UK) and completed his PhD in food sciences involving 12 UK food industries. Asgar then worked at the University of Nottingham as a part-time lecturer and research associate managing a number

of industrial projects. He was employed by Shiraz University from 2006–13 as an academic member where he taught undergrad and postgrad subjects and supervised fundamental and industrial research projects. He was awarded as the outstanding researcher in 2011, 2012 and 2013 with publication of 130 peer-reviewed journal papers and receiving several industrial research grants. Asgar joined Charles Sturt University in 2014 and is the Subject Coordinator in Food Science and Technology. Currently he is supervising seven students with several active research projects, and has a strong interest in developing healthy and functional foods.

Professor Danielle Gallegos 3

Queensland University of Technology

danielle.gallegos@qut.edu.au



Danielle Gallegos is a Professor of Nutrition and Dietetics at Queensland University of Technology where she is the discipline leader for nutrition and dietetics and the Director for International Engagement and Recruitment. She is an Advanced Accredited Practising Dietitian and has

worked in all areas of nutrition and dietetics including acute care, foodservice, private practice and for the last 15 years in public health nutrition. She teaches public and community nutrition and undertakes research related to the nexus between nutrition and social justice. Her special areas of interest are developing nutrition and dietetics as a profession in Vietnam, food security, food literacy and supporting breastfeeding through the use of innovative technologies. She is currently supervising 12 PhD students, four of whom are from Vietnam.

Dr Jillian Garvey 4

La Trobe University

j.garvey@latrobe.edu.au



Jillian Garvey is an ARC DECRA Fellow in the Department of Archaeology and History at La Trobe University investigating human occupation and subsistence in late Quaternary Australia. She has used her background in zoology and archaeology to focus on the role of

native animals in the diet of Indigenous Australians. By studying the faunal remains in archaeological assemblages combined with ethnography and modern analyses of the quantity and nutritional quality of the meat, marrow and fat from a range of animals, she has developed an understanding of our native fauna and their place within the diet of Indigenous Australians. She believes that the results from this innovative research has implications for the modern Australian diet, specifically what native taxa we should be incorporating into our everyday lives.

Dr Shelley Gorman 2

Telethon Kids Institute

shelley.gorman@telethonkids.org.au



Shelley Gorman is a Group Leader and Senior Research Fellow at the Telethon Kids Institute. After finishing her Bachelor of Science in microbiology and molecular biology, Shelley completed Honours followed by a PhD in microbiology and immunology at the University of Western Australia. Her

research now aims to better understand the health effects of sun exposure and vitamin D. She is focused on determining how safe exposure to ultraviolet radiation modulates metabolic dysfunction, inflammation, and immunity. Shelley was awarded the Rebecca L Cooper Medical Research Foundation AI and Val Rosenstrauss Fellowship in 2016 to investigate how safe sun exposure might be harnessed to suppress the development of obesity and metabolic dysfunction.

Dr Gilly Hendrie 4

CSIRO Health And Biosecurity

gilly.hendrie@csiro.au



Gilly Hendrie is a Research Scientist at CSIRO for Health and Biosecurity. She has a PhD and expertise in diet, nutrition and obesity prevention. She has worked extensively on the development of new tools to measure dietary intake and methods to quantify dietary patterns, including the

development of the indexes to assess diet quality. Gilly has also designed many phone apps and website style interventions to change, support and monitor dietary behaviour change for health and obesity. She has published over 50 scientific journal papers in the area of nutrition.

Dr Trina Hinkley 4

Deakin University

trina.hinkley@deakin.edu.au



Trina Hinkley's passion is fuelled by a strong drive to identify ways to support healthy lives for people who may not be fortunate to have such opportunities. Specifically, identifying strategies to support the development of healthy behaviours in young children is important to her as this period of

time is crucial for establishing healthy foundations for life. Trina's current program of research focuses on physical activity and electronic media use in children and how those

behaviours affect outcomes such as psychosocial well-being and cognitive development. Her research program uses evidence-based strategies and employs a stealth approach to support healthy behaviour change. Trina is particularly interested in the role of policy in supporting health behaviours and of the need for translational research.

Dr Jenna Hollis 4

Hunter New England Population Health (NSW Health)

jenna.hollis@hnehealth.nsw.gov.au



Jenna Hollis is an early-career researcher and dietitian at Hunter New England Population Health, Newcastle, with research and health service delivery experience in dietary assessment, nutritional epidemiology and trials implementation. She recently returned to Australia from the UK

where she was a postdoctoral researcher at the Medical Research Council Lifecourse Epidemiology Unit, University of Southampton. Her research interests are in women's and children's health, specifically investigating the diet and lifestyle predictors of maternal and child health, and translating research findings to primary prevention initiatives that benefit the wider community. Jenna is currently gaining translation and implementation skills through involvement in an adolescent physical activity and nutrition intervention, and a maternal alcohol study to improve health practitioner provision of alcohol support. Her future vision is to ensure children start life on an optimal health trajectory by integrating nutrition evidence in preconception and pregnancy to health service practice and policy.

Dr Catherine Huggins 1

Monash University

kate.huggins@monash.edu



Kate Huggins works in academia to generate new knowledge, educate and communicate with a broad range of people. Through her work, she strives to positively impact the health of Australians. She gained fundamental training in systems thinking with a PhD in cardiovascular physiology. She is

using that training to identify ways in which large organisational systems (e.g. health care services, workplaces) can be adapted to improve the nutrition of people who interact within these systems. She collaborates with a broad range of nutrition scientists and dietitians to employ an integrative discipline and mixed methods approach to answering important questions related to nutrition. Two collaborative projects she is working on at Monash University are 'Better quality of life for cancer patients through early

e-health nutrition program' and 'Is timing of meal intake a modifiable risk factor for cardiovascular disease: A novel intervention in shift workers?'

Dr Nadeem Kaakoush 3

UNSW Australia

n.kaakoush@unsw.edu.au



Nadeem Kaakoush completed his doctoral studies at the School of Medical Sciences, Faculty of Medicine at UNSW in 2008 in the field of medical microbiology. After a short stint at the Institut Pasteur, Paris funded through a trainee fellowship, he returned to Australia and was awarded

a four-year NHMRC Early Career Fellowship to investigate the role of gastrointestinal microbiota in disease. In 2016, Nadeem was awarded a Cancer Institute NSW Career Development fellowship to continue investigating host-microbiome interactions in disease. His research interests revolve around the dynamics of the upper and lower gastrointestinal microbiomes in disease, and how obesogenic diets contribute to the shift from a microbiome to pathobiome.

Dr Katherine Kent 1

University of Tasmania

katherine.kent@utas.edu.au



Katherine Kent (nee Caldwell) is a postdoctoral research fellow in the Centre for Rural Health at the University of Tasmania. Katherine has a background in nutrition and public health and is interested in the field of nutrition, cognition and ageing.

Specifically, Katherine is involved in

research that investigates the impact of fruit flavonoids on cognitive and physical outcomes, especially in older adults with dementia. Katherine is also interested in evaluating and improving current methods that estimate dietary flavonoid intake. Katherine's research covers the fields of nutrition, public health, psychology and basic science and has contributed to a larger wealth of knowledge regarding how dietary components can influence health. Such advances are crucial for translating clinical and population-based research into dietary messages that may improve chronic disease outcomes for all Australians.

Dr Karen Klassen 4

Monash University

karen.klassen@monash.edu



Karen Klassen became a Registered Dietitian in 2002 in Winnipeg, Canada. She moved to London and worked in clinical practice as an HIV-specialist dietitian, dabbling in research until being awarded an Imperial College research fellowship grant in 2010. This inspired her to continue developing

her research skills and she completed a PhD at the University of Melbourne, exploring vitamin D deficiency in people with HIV. She has worked as a postdoc running a large multi-centre clinical trial of an online self-management support program for people with HIV, and more recently is managing a mixed-methods project understanding how young adults use social media to talk about their health.

Dr Smriti Krishna 4

James Cook University

smriti.krishna@jcu.edu.au



Peripheral arterial disease (PAD) burden is alarmingly increasing in Australia as well as globally and currently very limited therapeutic interventions are available. Smriti Krishna's research focuses on genetic, epigenetic and pathological changes underlying PAD. She is a mid-career researcher who has

been based in North Queensland for the last eight years. She is an active researcher (38 publications), Team Leader for a preclinical group in the Queensland Research Centre for Peripheral Vascular Diseases (QRC-PVD) in James Cook University, supervisor of four PhD students and also a mentor to junior postdoctoral scientists. Smriti's long-term objective as part of the translational research program in the QRC-PVD is to develop new treatments for PAD. Her current research focuses on epigenetics and nutritional epigenomics, which is a relatively new field with a lot of potential for intervention in long-term health of individuals and populations.

Dr Annie Lassemillante 3

Swinburne University of Technology

alassemillante@swin.edu.au



Annie Lassemillante is an Accredited Practising Dietitian with experience in clinical practice and research, and a lecturer in nutrition at Swinburne University of Technology. She brings together her passion for food and her drive to help people achieve a

healthier life through evidence-based strategies. She has a strong interest in whole food approaches due to the synergistic effects of nutrients and phytonutrients, but most importantly because we eat food not nutrients. Her research expertise, dietary methodology, has led her to participate in a variety of nutrition research projects on improving the bone health of prostate cancer survivors, and managing weight gain and chronic disease burden in hepatology and nephrology patients. She has also incorporated theoretical frameworks for behaviour change in her research as she acknowledges the importance of these various constructs in sustainable dietary behaviour changes.

Professor Mark Lawrence 1

Deakin University

lawrence@deakin.edu.au



Mark Lawrence is a Professor of Public Health Nutrition at the Institute for Physical Activity and Nutrition at Deakin University. He has 33 years' experience working as a practitioner and academic in food and nutrition policy at local, state, national and international levels. Mark's research

interests focus on investigating the science and politics of evidence use in public health guideline development and nutrition policy-making, particularly in relation to dietary guidelines, nutrient reference values, food regulation and healthy and sustainable food systems. He is leading a transdisciplinary research team, funded by an Australian Research Council Linkage grant, analysing policy interventions to promote healthy and sustainable food systems. Mark teaches at postgraduate level in food policy and public health. He is Chair of the Advisory Board for the Cochrane Nutrition Field and a member of the NHMRC's Synthesis and Translation of Research Evidence committee.

Dr Deana Leahy 3

Monash University

deana.leahy@gmail.com



Deana Leahy is a Senior Lecturer in the Faculty of Education at Monash University, Australia. Her research is interdisciplinary, drawing from a range of social and cultural theories to study the intended and unintended effects of attempts to govern and educate about health. Whilst her work has a

strong school focus, she has recently begun to explore the possibilities of a number of other pedagogical spaces that seek to address health including museums and exhibits, gardens, digital media and online games. She is currently a member of 2 ARC Discovery Projects that examine health

pedagogies in different settings including schools and families. She is on the editorial team of Health Education Journal and co-convenor of CHESS (Critical Health Education Studies). Deana has been involved in health education curriculum development and was most recently involved in developing and rewriting the new Victorian Certificate of Education Food Studies Study Design and the Health and Human Development Study Design.

Dr Joshua Lewis 4

University of Sydney

joshua.lewis@sydney.edu.au



Joshua Lewis is an NHMRC Career Development Fellow with the Centre for Kidney Research, School of Public Health, University of Sydney. His research focuses on mineral bone disorders that are often seen in the elderly and those with chronic kidney disease with the aim of developing

better ways to identify and treat these diseases before the onset of clinical symptoms. Currently, he is conducting research on developing convenient, reliable and safe tests for vascular calcification as well as the identification of mechanism(s) and modifiable dietary and lifestyle factors related to vascular calcification.

Dr Rebecca Lindberg 2 SP

Victoria University

rebecca.lindberg@vu.edu.au



Rebecca Lindberg is a mixed methods public health researcher with applied and academic experience. She has expertise in not-for-profit food programs, social and health policy, nutrition inequities and chronic disease prevention. She currently works at the Australian Health Policy Collaboration.

The collaboration promotes and supports a national policy agenda for the prevention of chronic diseases that improves population health and wellbeing in Australia. Rebecca is also director of the Community Grocer and Co-Convenor of the Right to Food Coalition.

Dr Jessica Loyer **3** **SP**

University of Adelaide

jessica.loyer@adelaide.edu.au



Jessica Loyer holds a PhD in humanities/food studies and an MA in gastronomy. She currently works within the Food Values Research Group at the University of Adelaide. Her research investigates contemporary food and nutrition culture, as well as seeking to conceptually connect food production

and consumption through interdisciplinary research methods. Her current work examines 'superfoods' as global agricultural commodities, and popular discourse about food, health, and values.

Dr Laurence Macia **3**

University of Sydney

laurence.macia@sydney.edu.au

PHOTO: BILL GREEN



Laurence is leading the nutritional Immunometabolism node at the Charles Perkins Centre aiming at understanding the role of diet on the immune response and health. She spent the last six years focusing on the role of dietary fibre on gut microbiota and immune function and published in

journals such as Nature Communications, Cell Reports and Nature Reviews Immunology.

Dr Lenka Malek **3**

University of Adelaide

lenka.malek@adelaide.edu.au

PHOTO: LENKA MALEK



Lenka Malek, a qualified dietitian, was awarded a PhD in medicine from the University of Adelaide in 2015. She is currently a postdoctoral researcher at the Centre for Global Food and Resources at the University of Adelaide. With an overarching health and nutrition focus, Lenka's research

combines perspectives and methods from diverse disciplines (including nutrition, psychology, economics and behavioural economics) to investigate human decision-making behaviour related to food choice. Her research aims to produce food-related consumer behaviour insights which can be used to inform development of and improvements in food and health policy. Lenka has experience in both qualitative and quantitative research methodologies, in particular focus

group discussions, in-depth interviews and online consumer surveys. While her PhD research focused on nutrition during pregnancy and lactation, her subsequent work has focused on more diverse population groups, including the general Australian population, meat consumers, vegetarians/flexitarians, and caregivers of formula-fed infants.

Dr Merryn McKinnon **4**

Centre for the Public Awareness of Science,
Australian National University

merryn.mckinnon@anu.edu.au



Merryn McKinnon started out as a marine scientist, but she soon realised that talking to people about her science could do a lot more. She moved to science communication and has stayed there ever since in a variety of roles and countries. Merryn has slimed presidents, made children laugh

and created programs and events to change ideas, inspire interest in science and help protect the environment. She is now a lecturer and researcher in science communication at the Centre for the Public Awareness of Science at the Australian National University. Her teaching and research focuses on helping the scientists, public health workers and policy makers of tomorrow to communicate clearly and with influence, and identifying ways of creating meaningful public engagement.

Dr Emma McMahon **3**

Menzies School of Health Research

e.j.mcmahon@outlook.com



Emma McMahon is an Accredited Practising Dietitian and a joint NHMRC/Heart Foundation Early Career Research Fellow based at Menzies School of Health Research. Her PhD in nutrition focused on the effects of reducing dietary salt in people with chronic kidney disease. Her post-

doctoral research has focused on strategies for supporting dietary improvement in remote Indigenous Australian communities, and she is currently working on the capacity of providing timely feedback on diet quality and the food environment to support decision makers to improve food supply and access in remote Indigenous communities. Emma's major research interests are in population dietary assessment and monitoring, and how the food environment relates to food choice and dietary intake.

Associate Professor Sarah McNaughton 2

Deakin University

sarah.mcnaughton@deakin.edu.au



Sarah McNaughton is an Advanced Accredited Practising Dietitian, nutritional epidemiologist, and an NHMRC Career Development Fellow based at the Institute for Physical Activity and Nutrition (IPAN), Deakin University. She is also Head of Discipline for Dietetics, in the School of

Exercise and Nutrition Sciences. She leads a program of research that focuses on the assessment of dietary behaviours, diet quality and dietary patterns across the life-course, their determinants and role in health. She completed her PhD at the University of Queensland in 2003 and was subsequently appointed a Research Scientist in the Nutritional Epidemiology section of the Medical Research Council Collaborative Centre for Human Nutrition Research, Cambridge (UK). She has received research funding from ARC, NHMRC, Heart Foundation, Diabetes Australia Research Trust and the World Cancer Research Fund and is a member of the Editorial Board of the International Journal of Behavioural Nutrition and Physical Activity.

Dr Elizabeth Neale 4

University of Wollongong

PHOTO: MARK NEWSHAM



Elizabeth Neale is an Accredited Practising Dietitian. She completed her PhD in nutrition at the University of Wollongong in 2012. Elizabeth was a director at Landmark Nutrition, a nutrition consulting company from 2012–16, and currently works as a Career Development Fellow (Lecturer)

at the University of Wollongong. Elizabeth's research interests include the evidence-based framework, particularly systematic literature reviews, the health effects of foods such as fish and nuts, and food composition databases.

Dr Merryn Netting 3

South Australian Health And Medical Research Institute

merryn.netting@sahmri.com



Merryn Netting graduated from Flinders University in 1985 with a Bachelor of Science, majoring in biochemistry, followed in 1987 with a post graduate Bachelors degree in nutrition and dietetics. For the past 25 years Merryn has worked as a clinical pediatric dietitian at the Women's and

Children's Hospital, Adelaide. Merryn is a member of the Australasian Society of Clinical Immunology and Allergy and a member of the National Allergy Strategy Steering Committee. In 2011 Merryn was awarded status as an Advanced Accredited Practising Dietitian by the Dietitians Association of Australia. Her PhD was awarded in 2015. Merryn has a passion for translating the science of nutrition into the practical aspects of the food that we place on our plates. Her work with the SAHMRI Healthy Mothers, Babies and Children Theme focuses on the influence of early life nutrition on long term health, particularly infant feeding advice for prevention of food allergy.

Dr Christina Pollard 4

Department of Health, Western Australia

Christina.Pollard@health.wa.gov.au



Christina Pollard trained as a dietitian and has worked as a public health practitioner for the Western Australian Government for over 30 years to improve population nutrition through health promotion. She calls herself a 'pracademic', recognising the need to conduct and translate research

evidence for policy and practice. Christina has developed, implemented and evaluated public health nutrition, physical activity and obesity prevention interventions at national, state and local levels. She is committed to training and developing an adequately skilled public health workforce. Her Curtin University research informs public health interventions to improve the health of population groups who are vulnerable due to their social, environmental or economic circumstances. A Fellow of both the Public Health Association of Australia and the World Cancer Research Fund International she advocates to improve population health. Christina joined the Editorial Board of BMC Public Health in May 2016.

Dr Amy Reichelt 3

RMIT University
amy.reichelt@rmit.edu.au



Amy Reichelt is an ARC DECRA fellow and lecturer at RMIT University where she heads the Nutrition and Cognition Laboratory. She completed her PhD in behavioural neuroscience at Cardiff University, UK in 2011. She then undertook postdoctoral research positions at the University of

Birmingham, UK and UNSW, Sydney. Her research seeks to define how the brain controls our behaviour. A major focus of her research is how obesity-inducing modern day diets full of sugary soft drinks and fat-filled junk foods impact on our brains besides just making us overweight. The rewarding aspects of these foods encourage overconsumption, and her research has also shown that excessive consumption of these foods has a detrimental impact on brain regions critical for forming memories and behavioural control. She uses rodent models to examine the neurobiological effects of diet-induced obesity and utilises behavioural, molecular and brain imaging techniques. She has published 25 manuscripts since 2012 and received more than \$600,000 in research funding.

Dr Philipp Reineck 2 SP

ARC Centre of Excellence for Nanoscale BioPhotonics,
RMIT University
philipp.reineck@rmit.edu.au



Philipp Reineck is a research officer at the Centre for Nanoscale BioPhotonics at RMIT University in Melbourne. His main research interest is in the area of fluorescent nanomaterials and he aims to develop nanomaterials for next-generation biomedical imaging and sensing technologies. Philipp

graduated in physics from the University of Munich, Germany, and received his PhD in materials engineering from Monash University, Melbourne, in 2014. He worked at the Swinburne Centre for Micro-Photonics in Melbourne before joining the Centre for Nanoscale BioPhotonics in December 2014. His research interests span several areas including biophysics, nanotechnology and photonics.

Dr Carly Rosewarne 1

CSIRO
carly.rosewarne@csiro.au



Carly Rosewarne is a microbiologist from CSIRO in Adelaide, with research interests in the influence of diet on our gut microbiome and how this in turn affects health and disease. She is also Chair of the EMCR Forum, an advocacy group supported by the Australian Academy of Science. The

Forum aims to be the voice of Australia's future scientists and champion improvements in our national research environment to benefit all EMCRs.

Dr Tracy Schumacher 4

University of Newcastle
tracy.schumacher@newcastle.edu.au



Tracy Schumacher is a postdoctoral researcher with the Gomeri gaaynggal Centre and early-career researcher in the Faculty of Health and Medicine at the University of Newcastle. She is also a member of the Priority Research Centre for Physical Activity and Nutrition. Tracy's research

areas include nutrition for the prevention of cardiovascular disease, measuring dietary intakes in Indigenous populations and across the life span, with a specialisation in food frequency questionnaires. Her postdoctoral research is investigating the role of dietary intakes in the development of chronic diseases in Indigenous populations. She is also currently an investigator on a project translating dietetic evidence to reduce serum lipids in rural and remote populations.

Dr Carlene Starck 4

Riddet Institute, Massey University
mcquireuk@hotmail.com



Carlene Starck is a postdoctoral research fellow at the Riddet Institute, Massey University, NZ, and has a primary focus on the role of diet and metabolism, including specific food groups and bioactives, in health and disease prevention. Carlene's current research addresses the uptake of

nutrients from the diet and subsequent metabolic outcomes, using mathematical models to describe energy balance and metabolism during both weight loss and weight gain, in adult males and females. Additional interests include the sex-specific response to energy deprivation and/or overfeeding,

the role of diet in psychological function and the effective communication of key scientific data to the public.

Dr Claudia Strugnell **1** **SP**

Deakin University

claudia.strugnell@deakin.edu.au



Claudia Strugnell is a postdoctoral research fellow within the Global Obesity Centre, a World Health Organization Collaborating Centre for Obesity Prevention at Deakin University. In this role, Claudia is the Director of Monitoring and Co-stream

Monitoring stream. The coordination and optimisation of high participatory school-based childhood obesity and risk factor (physical inactivity, sedentary behaviour, poor diet quality and sleep insufficiency) monitoring is central to her role, alongside the evaluation of community-based systems interventions.

Dr Zenobia Talati **3** **SP**

Curtin University

zenobia.talati@curtin.edu.au



Zenobia Talati is currently conducting research into nutrition labelling. Her work examines how consumers process nutrition information provided on the front of food packages and how changing the way it is displayed can lead to healthier food choices. Since 2006, the Daily Intake Guide has been

used on the front of packaged food to describe its nutritional profile. However, the Australian Government is now encouraging the food industry to adopt a new, simplified Health Star Rating system. Zenobia's research, funded by the Australian Research Council, has examined how consumers process information when it is delivered through the Daily Intake Guide and the Health Star Rating systems (and also through the traffic light system which has been implemented in the UK). Additionally, she looks at how the health claims which appear on food packages (e.g. 99% fat free) affect consumers' understanding and decision making.

Dr Lukar Thornton **2**

Deakin University

lukar.thornton@deakin.edu.au



Lukar Thornton is a Senior Lecturer within the Institute of Physical Activity and Nutrition Research (IPAN) at Deakin University, Australia. His expertise spans the disciplines of geography, behavioural epidemiology and public health. Lukar's current program of research predominantly

explores associations between neighbourhood environments and health behaviours with a focus on food environments and food behaviours. He has been invited to contribute to a number of programs and policy documents aimed at the development of health-promoting built environments.

Associate Professor Jacqui Webster **3**

The George Institute for Global Health

jwebster@georgeinstitute.org.au



Jacqui Webster PhD RPHNut is Head of Advocacy and Policy Impact in the Centre for Health Systems Research and Director of the World Health Organization Collaborating Centre on Population Salt Reduction at the George Institute for Global Health. She is Associate Professor at the University

of New South Wales with an honorary position at the University of Sydney. Her primary research interests are advocacy, food policy and implementation science and for the last 10 years her main focus has been salt reduction strategies and food industry engagement. She is currently supported by a four-year co-funded NHMRC/National Heart Foundation Career Development Fellowship to support her research on international salt reduction strategies. Jacqui has previously worked for a range of non-government, government and international organisations on food policy. She grew up on a farm in Yorkshire, England and moved to Australia in 2007.

PHOTO: PETER SECHENY PHOTO

Dr Shelley Wilkinson 4 SP

Mater Health Services/Mater Research Institute,
University of Queensland



Shelley Wilkinson is an Advanced Accredited Practising Dietitian with a PhD in psychology, and is the Senior Research Dietitian in the Mater Mothers' Hospital, Brisbane. Her research through her Queensland Government Health Research Fellowship focuses on improving the nutrition knowledge, know-how, and capacity of state-wide maternity services and clinicians.

Dr Jane Willcox 3

Deakin University
janewil@deakin.edu.au



Prior to joining the fascinating world of research, Jane worked extensively in clinical dietetics and public health. After stints at the Alfred Hospital and Life Be In It, Jane joined the International Diabetes Institute moving into project management. After completing a Masters of marketing and

business, she set up a public health consultancy working with health regions and the Department of Health and Human Services around chronic disease. Living in the Philippines rekindled Jane's love of early life nutrition and on return to Australia, she completed a PhD at Deakin University where she developed an mHealth intervention promoting health nutrition, physical activity and gestational weight gain for pregnant women. Jane's research interests include nutrition communication and interventions for the first 1000 days of life.

Dr Gal Winter 4

University of New England
gal.winter@une.edu.au



Gal Winter completed her BSc and MSc degrees in food science and biochemistry at the Hebrew University of Jerusalem, Israel. She then moved to Australia to complete her PhD at the Australian Wine Research Institute through the University of Western Sydney. She worked as a postdoctoral

research fellow at the University of Queensland 2012–15, before joining the University of New England. Gal's main research interests include biomedical and food aspects of microbiology, with research projects aiming to understand

the human microbiome, including the gut–brain axis and the effects of environmental microbes on the human microbiome.

Dr Jason Wong 2

University of New South Wales
jason.wong@unsw.edu.au



Jason Wong's research is focused on understanding how mutations accumulate in different types of normal and cancer cells. Jason is currently an Australian Research Council Future Fellow and Senior Lecturer at the Prince of Wales Clinical School, UNSW and leads the

Bioinformatics and Integrative Genomics Team at the Lowy Cancer Research Centre at UNSW, Sydney. He received his BSc in bioinformatics from the University of Sydney and, as an Oxford-Australia Scholar, completed a D.Phil in bioanalytical chemistry at the University of Oxford. This was followed by an Irish Government post-doctoral fellowship at the Conway Institute of Biomolecular and Biomedical Research, University College Dublin, specialising in chemical proteomics, before he returned to Sydney to establish his current research group. He has published over 70 peer-reviewed journal articles with senior authorship in journals including Nature, Cell Reports, Genome Biology, Molecular Biology and Evolution, and Nucleic Acids Research.

Dr Vanessa Wong 2

Monash University
vanessa.wong@monash.edu



Vanessa Wong is a soil scientist and her research explores the biogeochemical interactions between soils, sediments and water. Specifically, she is interested in assessing the effects of land degradation processes such as salinity, sodicity and acidity in natural and agricultural environments,

determining the most effective methods to remediate degraded environments, and how changing environmental conditions influences these processes. In the context of this workshop, her research focuses on the upstream components of food and nutrition science in terms of increasing agricultural productivity through improving our understanding of soil biogeochemistry and cycling. Modern society, including food production systems, generates large volumes of waste. Part of Vanessa's research seeks to develop practices to re-use waste products such as compost, sewage sludge and manures to improve soil fertility for food production, and improve nutrient use efficiency in crops and pastures.

Steering committee members

The development of the 2017 Theo Murphy High Flyers Think Tank was overseen by the steering committee in conjunction with the National Committee for Nutrition.

Professor Stephen Simpson AC FAA FRS (Chair), University of Sydney

Professor Jennie Brand-Miller AM, University of Sydney

Professor Paul Griffiths, University of Sydney

Professor Anne-Marie Grisogono, Flinders University

Professor Ian Hume FAA, University of Sydney

Professor David Le Couteur, University of Sydney

Professor Amanda Lee, The Sax Institute

Professor Manny Noakes, CSIRO

Professor David Raubenheimer, University of Sydney

Professor Helen Truby, Monash University

www.science.org.au/supporting-science/national-committees-science/national-committee-nutrition

Find out more and connect

Find out more about the EMCR Forum:
www.science.org.au/emcr-forum

Follow @EMCRForum on Twitter or
Email us at emcr@science.org.au

Follow the Australian Academy of Science
on Twitter @science_academy or
Facebook [www.facebook.com/
AustralianAcademyofScience](http://www.facebook.com/AustralianAcademyofScience)

To tweet about the Think Tank during
the event, please use the hashtag
#TMThinkTank



THE ROYAL SOCIETY

THE THEO MURPHY (AUSTRALIA) FUND

The 2017 Theo Murphy High Flyers Think Tank is supported by the Royal Society of London—the national academy of science of the United Kingdom and the Commonwealth—through the Theo Murphy (Australia) Fund.

The Royal Society of London is a self-governing Fellowship of many of the world's most distinguished scientists drawn from all areas of science, engineering, and medicine. The Society's fundamental purpose, reflected in its founding Charters of the 1660s, is to recognise, promote, and support excellence in science and to encourage the development and use of science for the benefit of humanity.