

## Editorial

# Nutrition Science for the new millennium

The new nutrition, presented in plenary session at the 18<sup>th</sup> International Conference on Nutrition held at Durban in September 2005<sup>1,2</sup>, is a biological, and also a social and environmental science. Consequently, it is concerned with personal, population and also planetary health; and so with the human, and also the living and physical worlds.

Those responsible for formulating this three-dimensional approach<sup>3</sup>, propose that the science now needs to confront the unique and unprecedented opportunities and challenges of the twenty-first century. These are very different from those of the mid-nineteenth century when the science was first devised in its modern form<sup>4</sup>.

The new nutrition is designed to face and effectively address a continued rising human population, the persistence of malnutrition, the rise of obesity and diabetes in early life, increased inequality within and between nations and populations, rapid changes in global and local food supplies, and the diminution and draining of natural resources. It is proposed that only by combining biological, social and environmental approaches, can nutrition science feasibly and effectively fulfil its potential to preserve, maintain, develop and sustain life on earth.

Furthermore, and as stated in *The New Nutrition Science project founding Declaration*<sup>5</sup>: 'The human species has now moved from a time in history when the science of nutrition, and food and nutrition policy, have been principally concerned with personal and population health and with the exploitation, production and consumption of food and associated resources, to a new period. Now all relevant sciences, including that of nutrition, should and will be principally concerned with the cultivation, conservation and sustenance of human, living and physical resources all together; and so with the health of the biosphere'.

### Beginnings in Australia

We are particularly pleased to be invited to write this editorial, because a foundation of the project was the 2<sup>nd</sup> Sanitarium International Nutrition Symposium held in Melbourne and also in Auckland in April 2002, whose papers are published in this journal.<sup>6</sup> The project remains a joint Initiative of the International Union of Nutritional Sciences (as invited by Mark Wahlqvist, then IUNS president, and now Ricardo Uauy, current IUNS president), and the World Health Policy Forum. All have also been made possible by the generosity of the Danonia Foundation and the Baroness Mariuccia Zerilli-Marimò. The new nutrition science was first formulated in outline at a workshop meeting held at Schloss Rauischholzhausen, a facility of the Justus Liebig University in

Giessen, Germany. The resultant *Giessen Declaration*<sup>5</sup> was agreed and signed by all participants. They shared the view that we are now living in a world revolutionised by recent and current interrelated electronic and genomic discoveries and linked and sequential demographic, nutritional and epidemiological shifts, taking place in the context of associated and also inter-linked global social, cultural, environmental, economic and political developments.<sup>7-10</sup>

### Ethical, evolutionary and ecological principles

For these and other reasons our world is transformed from that mapped by nineteenth and early twentieth century theories and principles. All disciplines including that of nutrition science need to make comparably radical responses, to work well in the world now. Such responses start with general principles. And so, as stated in *The Giessen Declaration*<sup>5</sup>: 'All sciences and all organised human activities are and should be guided by general principles. These should enable information and evidence to be translated into relevant, useful, sustainable and beneficial policies and programmes'. And: 'The overall principles that should guide nutrition science are ethical in nature... [and it should]... also be guided by the philosophies of co-responsibility and sustainability, by the life-course and human rights approaches, and by understanding of evolution, history and ecology'.

The case for the new nutrition science is made by Ricardo Uauy, in his paper contributed to the special issue of *Public Health Nutrition* that includes the papers submitted for discussion at the Giessen workshop.<sup>11</sup> He writes: 'The chemical and biological sciences have provided a strong base for nutrition and have been essential in establishing nutrition as a science with public health relevance. However, these approaches are clearly insufficient to address the main challenges that confront nutrition science now in the twenty-first century. There is a pressing need to include the social, economic and human rights aspects within an ethical framework, in order to define future policies that will secure the right to safe and nutritious food for all'.

Mark Wahlqvist, in his paper in the same special issue<sup>12</sup>, writes: 'Nutrition science has made giant strides in the last century. But the human population continues to increase; and the global climate is changing, with vast implications. Our science has been good in specific ways, but has ignored and overlooked planetary welfare and thus the basic determinants of human health and well-being. We must now ensure that the practice of our science supports sustainable eco-systems and healthy environments'.

### Confluences of teaching and practice

Towards the end of the twentieth century an increasing number of professionals working in nutrition science, food and nutrition policy, and allied fields, became increasingly concerned to emphasise the public and social aspects and implications of their work. A substantial number of professionals now describe themselves as public health nutritionists, or more broadly as public nutritionists<sup>13</sup>, for such reasons.

During the same period of time others have linked nutrition with its environmental aspects and implications. Nutrition ecology, and then the discipline of *Vollwert-Ernährung* ('wholesome nutrition') became taught at the University of Giessen<sup>14</sup>, and Mark Wahlqvist and others began to develop the concept of 'eco-nutrition'.<sup>15</sup> Other integrated approaches have been developed at the Institute of Nutrition of Central America and Panama, the London School of Hygiene and Tropical Medicine, Cornell University, the University of Vienna, and elsewhere.

### Definition and purpose

Such confluences have made it possible to propose a new conceptual framework for the science of nutrition as a whole, including a new definition and stated purpose, as well as expanded dimensions and appropriate principles. As stated in the *Declaration*: 'Nutrition science is defined as the study of food systems, foods and drinks, and their nutrients and other constituents; and of their interactions within and between all relevant biological, social and environmental systems'. Further: 'The purpose of nutrition science is to contribute to a world in which present and future generations fulfil their human potential, live in the best of health, and develop, sustain and enjoy an increasingly diverse human, living and physical environment'.

And then: 'Nutrition science should be the basis for food and nutrition policies. These should be designed to identify, create, conserve and protect rational, sustainable and equitable communal, national and global food systems, in order to sustain the health, well-being and integrity of humankind and also that of the living and physical worlds'.

The project is work in progress. At the Durban congress, the plenary presentations were followed by a symposium. Those present were asked if they were willing and able to help form new nutrition science networks, and almost 100 responses then and later have come from Argentina, Belgium, Cameroon, Canada, Chile, France, Greece, India, Iran, Italy, Kenya, Morocco, Nigeria, Norway, Senegal, Serbia, South Africa, Switzerland, Tanzania, Thailand, the UK, the USA and Zambia – and from Australia, China, Micronesia, New Zealand and South Korea.

Immediate plans are to continue to develop the principles of the new nutrition; to establish global networks to develop its thinking and to discover and explore three-dimensional science and policy in action; and to inform, empower and build capacity in the South and among young professionals. We, who remain the convenors of the Initiative and the project, will be very glad to hear from readers who want to join in.

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## 新世纪对营养学的展望

新营养学是一门生物学、也是一门社会学以及环境科学是在 2005 年 9 月德班举行的第 18 届国际营养学会议上提出的。所以它关心的是人、人群、还有地球的健康。

科学家们为了系统阐述这个三维方法认为新营养学研究需要迎接二十一世纪特有的、空前的机遇和挑战。这些机遇和挑战与 19 世纪中期在确立传统的营养学后所面临的完全不同。

新营养学将能有效地解决许多人类在新世纪面临的严峻问题：持续的人口增长，长期的营养不良，年轻人患肥胖症和糖尿病的几率日益增加，国家以及民族之间的不平等差距拉大，全球对粮食需求的增加以及自然资源的日益减少和流失。面对这些问题，传统的营养学研究就束手无策了，所以有人提出只有将传统的营养学与生物学、社会和环境科学结合起来研究，营养学才能合理并有效地发挥其保护、维护并发展地球上的生命的作用。

正如由 *The New Nutrition Science project* 所报道的那样：以前人们研究营养学以及食品和营养方针时，主要是针对个人和群体的健康以及对食品以及相关资源的开发、生产和消费，现在这个时代将一去不返，营养学在新世纪将向新的阶段。在这个新阶段中，所有相关的学科（包括营养学）将注重对人类、生物和物质资源进行开发、保护和维持以及对整个生物圈的稳定等方面的研究。

## 源起澳洲

我们非常高兴受邀写这篇评论，因为项目的根据是 2002 年 4 月份，在墨尔本和奥克兰举行了第二届疗养院国际营养学会议（会议文章均被此杂志收录）。

项目保持了国际营养联盟（受当时 IUNS 主席 Mark Wahlqvist 的邀请，现任主席为 Ricardo Uauy）和世界卫生政策论坛的联合首创精神。当然我们要感谢 Danonia 和 Baroness Mariuccia Zerilli-Marimò 基金会的赞助，没有他们慷慨的帮助，这种合作是不可能实现的。

新营养学的雏形是在 Schloss Rauischholzhausen（位于德国 Giessen 州的 Justus Liebig 大学的一个学院）举行的一次研讨会上形成的。所有的与会者都同意签署了这次研讨会的成果—Giessen 公告。他们一致认为：现在人类生活的世界，是一个由电子学和基因组学相结合产生的成果所变革过的世界，是一个将连续变化的人口统计、营养学以及流行病学相互联系的世界，是一个以全球社会、环境、经济和政治发展相互联系为背景的世界。

## 伦理、进化及生态之间关系的原則

或这或那个原因，现在的世界正从那个打着 19 世纪和 20 世纪早期的理论和原则烙印的世界中蜕换出来，正在逐渐地改变自己的角色。为了促进世界更好的发展，包括营养学在内的所有学科需要作些比较激进的改革。当然这些改革必须以一些基本原则为前提。正如 Giessen 公告上所述的那样：所有的科学研究和所有有组织的人类活动应该在基本原则的指导下进行，这些基本原则应该能使信息和证据转化成相关的、有用的、持续的并对人类有益的方针和规划。并且公告还指出：所有能指导营养学的原则本身应该是合乎社会伦理的…并且这些原则应该以相互依存的哲学、通过对生存和人权关系的处理、以及对进化、历史和生态之间关系的理解来指导。

Ricardo Uauy 的一篇发表在 *Public Health Nutrition* 的特刊 (将 Giessen 研讨会上讨论的文章全部收录) 上的文章中提到: 化学和生物学的发展为营养学的建立和发展奠定了扎实的基础, 并且在将营养学建立成公共卫生健康领域中的一部分学科方面起到非常重要的作用。尽管如此, 这些学科的发展还不能肩负起 21 世纪新营养学所面临的重大的挑战。目前当务之急是把伦理学作为社会、经济和人权方面研究的一方面, 以便在不久的将来能够制订一些能确保为人类提供安全营养的食品的权力的法规。

Mark Wahlqvist 在一篇与 Ricardo Uauy 发表在同一杂志的文章中指出: 尽管营养学在上个世纪有较大的发展, 但是人口仍在持续增长; 全球气候在不断变化, 进而引起许多灾难。营养学研究方向虽然在某种程度上是对的, 但其却忽略了我们地球的健康以及决定人类健康和幸福的最基本的因素。所以当代营养学的研究必须朝有利于维持生态平衡和创造良好环境的方向发展。

### 教学与实践的结合

自二十世纪末起, 从事营养科学、食品与营养政策以及相关学科的专业人员越来越多, 这些专业人员越来越注重强调他们工作的社会性和公共性方面, 以及与两者相关的问题。基于这些原因许多专家已习惯称自己为公共健康营养学家或者更多地称自己为公共营养学家。

同期还有一部分营养学家将其研究领域拓宽到环境科学方面, 将营养学与环境科学结合起来研究。营养生态学以及后来的 *Vollwert-Ernährung* 课程 (保健营养学) 已成为 Giessen 大学的正式学科, 而且 Mark Wahlqvist 以及其他相关专家已着手创立生态营养学这门新型的交叉学科。当然将营养学与其他学科交叉研究不仅仅局限于以上两方面, 中美和巴拿马营养研究所、伦敦卫生和热带医学学院、康莱尔大学、维也纳大学等众多高校和科研机构正为将传统营养学与其它各个领域进行交叉研究而努力着。

### 新营养学的定义和目的

将营养学与其它领域结合起来的举措将会给新世纪营养科学的发展铺好一个全新的概念框架。这种结合将营养科学作为一个整体来看待, 包括对全新的营养科学的定义和研究目的, 以及对拓展的部分领域和较为合理的原理将会有有一个全新的、整体的认识。Giessen 公告对新营养科学的定义和研究目的进行了详细地阐述: 营养学是一门研究食品体系、食品和饮品、和它们的营养成分及其它组分、和它们在生物体内以及其它所有相关生物体、社会和环境系统之间的相互作用的一门学科。营养科学研究的目的是为了促进世界的可持续发展, 为保证我们全人类的健康而奋斗, 并帮助人类形成、维持和享受多元化程度逐渐提高的居住和自然环境。

公告还指出: 食品营养方针的制订应以营养科学理论为前提和依据。为了维持人类居住和自然世界的健康、幸福和完整性这些方针的制订应以发现、创造和保护我们社会、国家和全球食品体系的合理性、可持续性以及公平性为目标。

新营养科学课题还在继续进行着。在德班会议的专题讨论会, 有大量的报告是关于这方面研究的。当问及他们是否愿意并有能力帮助创立一个新型营养学网络时, 这些来自世界各地专家的回答几乎 100% 的肯定 (主要来自阿根廷、比利时、喀麦隆、加拿大、智利、法国、希腊、印度、伊朗、意大利、肯尼亚、摩洛哥、尼日利亚、挪威、塞内加尔、塞尔维亚、南非、瑞士、坦桑尼亚、泰国、英国、美国、赞比亚、澳大利亚、中国、密克罗尼西亚、新西兰以及韩国)。

目前我们的工作重心主要是继续发展新营养学的原则; 建立全球营养学网络系统发展新营养学的思想、发现和探索三维科学和在实施中的政策。帮助南半球以及年轻的专家及时得到最新的研究信息, 帮助他们, 使其具备条件发挥出他们的才能。我们这些新营养科学的发起和课题的召集人很高兴期待收到想从事这方面研究工作的读者的回音。