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4th Asia Pacific Nurigenomics Conference 21-24 February 2010, Auckland, NZ conference report

Deborah Nolan

University of Wollongong, djn297@uow.edu.au

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4TH ASIA PACIFIC NUTRIGENOMICS CONFERENCE: 21–24 FEBRUARY 2010, AUCKLAND, NEW ZEALAND

The 4th Asia Pacific Nutrigenomics Conference was held in Auckland, New Zealand by Nutrigenomics New Zealand, a collaborative group inclusive of The University of Auckland, AgResearch Ltd and Plant and Food Research Ltd. The Theme for this event was 'genes-diet and gut health'. This broad theme formed a sound platform for both advancing knowledge in the area of gastrointestinal health and the identification of the many complexities associated with the rapidly advancing field of nutrigenomics. While most conference delegates were from fields of basic science, biochemistry, genetics and biology, representatives from nutrition and dietetics presented innovative research and reflected a growing interest in nutrigenomics amongst dietetics professionals.

In the Young Investigators session, Dr Iwona Rudowka (Institute of Nutraceuticals and Functional Foods, Canada) reported that individuals with a polymorphism (L162V) of the peroxisome proliferator-activated receptor α (which regulates cytokine gene expression¹) had higher plasma CRP levels than individuals without this polymorphism following four weeks of dietetic intervention during which subjects consumed either a high PUFA (P : S ratio 1.0) or a low PUFA (P : S ratio 0.3) diet. Dr Rudowka's research is particularly pertinent as it reflects the role of gene–nutrient interactions on obesity-related risk factors in the context of dietary fat manipulation.

Dr Nathan O'Callaghan (CSIRO, Australia) reported that weight loss due to caloric restriction in a group of obese men was associated with an increase in telomere length in the rectal mucosa. These results indicate that weight loss may play a protective role in preventing the shortening of telomeres, a phenomenon that is associated with genome instability and carcinogenesis.²

Professor Paul Enck (University Hospital Tübingen, Germany) presented some interesting research relating to 'food, mood, genes and gender', with specific reference to the gender differences, which may affect responses to short-term dietary depletion of tryptophan (the metabolic precursor of serotonin³). Professor Enck reported that genetic differences in serotonin metabolism and utilisation predominantly result in mood disorders such as depression in women rather than men following acute tryptophan depletion.

In general terms, these and other nutrigenomic findings may have a profound impact on future dietetic practice as genetic factors that may affect response to dietary intake are identified. However, the importance of a thorough and robust approach to identifying the science behind nutrigenomics was discussed by Professor Lynn Ferguson (Nutrigenomics New Zealand, New Zealand). Professor Ferguson provided examples of the premature marketing of genetic testing kits and personalised nutritional advice that may threaten the credibility of future nutrigenomics initiatives.

Dr John Milner (National Cancer Institute, USA) presented a public lecture as part of the conference proceedings,

and discussed the importance of ensuring that the general public are well informed regarding strengths and limitations of nutrigenomics, in its current state. Dr Milner argued that nutrigenomic derived benefits to public health are only achievable if individuals can make informed decisions regarding their utilisation of this science.

The need for further research to address some fundamental issues in the area of nutrigenomics before practical personalised nutrition advice may be administered was highlighted repeatedly throughout the conference by speakers and within the panel discussion session. Dr Clare Wall (The University of Auckland, New Zealand) discussed the difficulties in acquiring accurate dietary data for nutrigenomics studies, given the limitations of standard tools for measuring dietary intake. While Dr Jim Kaput (FDA, USA) discussed some of the limitations of utilising case–control methodologies in genome-wide association studies, citing the degree of biological diversity that may exist between individuals with a genotype of interest and controls as a fundamental flaw in many nutrigenomic studies. The complexities associated with the interpretation of nutrigenomics research including the need for adequate bioinformatics and statistical methodologies to analyse data acquired were also discussed by Dr Helge Dzierzon (Plant and Food Research, New Zealand) and Mingshu Cao (AgResearch Ltd, New Zealand), respectively.

Overall, the 4th Asia Pacific Nutrigenomics conference was very informative and the high calibre of presentations demonstrated both how far this field of research has advanced in recent years and the many complex issues that must be addressed before the widespread clinical application of this science. From a dietetics perspective, our expertise in dietary methodology and counselling will ensure that nutrition professionals are well positioned to make valuable contributions to this area in the future.

The next Asia Pacific Nutrigenomics Conference will be held in Korea in late 2011. Further details regarding specific location and dates will be available from the Nutrigenomics New Zealand website (<http://www.nutrigenomics.org.nz/>) once finalised. Attendance at this event will provide an important opportunity to gain an understanding of this field of science, which may significantly impact dietetic practice in future years.

Deborah Nolan, BND, APD
PhD Candidate, Smart Foods Centre
University of Wollongong
Wollongong, New South Wales, Australia

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