Department of Human Health & Nutritional Sciences

College of Biological Science

Research in Functional Foods & Nutraceuticals for Health Promotion and Disease Prevention

The Department of Human Health and Nutritional Sciences conducts innovative, world-class research exploring the biological aspects of human health. We aim to advance our understanding of aging and chronic disease, with an emphasis on the impact of sensory contributions, nutrition, physical activity, and biomechanics as powerful determinants of human health.

University of Guelph

Changing Lives Improving Life

Research in functional foods, nutraceuticals, and natural health products in the Department of Human Health and Nutritional Sciences goes beyond the view of nutrition simply as a balance of essential nutrients to explore the potential pharmacological effects that many nutrients possess. This has extensive implications for overall human health as well as the prevention and treatment of chronic diseases. Diverse areas of expertise allow us to uniquely approach research from multiple perspectives, resulting in significant collaboration among faculty members.

Alison M. Duncan, PhD, RD

Biological effects of functional foods in relation to chronic disease risk; Associate Director of Research, Human Nutraceutical Research Unit

Functional foods have widespread applications for the prevention and management of chronic disease, and they fit in the continuum of agriculture, food, nutrition and human health. My research program focuses on the biological effects of functional foods in humans with a focus on the bioactives in agricultural crops such as soybeans and pulses. I am also interested in how these biological effects relate to healthy aging and how knowledge translation and transfer can facilitate change. Another research interest is the prevalence and attitudes of functional food and natural health product use in both healthy and clinical populations.

Duncan AM, Dunn HA, Stratton LM, Vella MN. Translating Knowledge into Dietetic Practice: A Functional Foods for Healthy Aging Toolkit. Applied Physiology, Nutrition and Metabolism. 2014; 39(5):600-3.

Vella MN, Stratton LM, Sheeshka J, Duncan AM. Exploration of functional food consumption in older adults in relation to food matrices, bioactive ingredients, and health. J Nutr Gerontol Geriatr. 2013; 32(2):122-44.

For more information, please visit www.uoguelph.ca/hhns/People/ADuncan.html

William Bettger, PhD

Knowledge translation and transfer of functional foods and nutraceuticals

I have been involved with the research, development and practice of functional foods and nutraceuticals as a branch of lifestyle medicine since its inception in Canada in 1993. My current interests and expertise focus on creative conceptualization of functional food and natural health products and on health marketing of functional foods, natural health products and non-prescription drugs. Health marketing includes regulatory affairs and government policy among other areas of knowledge translation and transfer; for example, my research group is currently producing an educational tool for government officials and healthcare practitioners on the "Food Avoidances, Nutrition and Natural Health Product Labeling and Regulatory Affairs".

For more information, please visit www.uoguelph.ca/hhns/People/WBettger.html

Amanda Wright, PhD

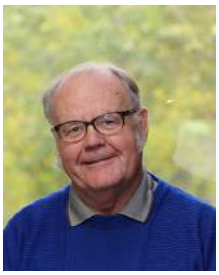
Structure and physical properties of food materials; functional foods and nutraceuticals in human health; Director, Human Nutraceutical Research Unit

My initial interests in food science have evolved into a desire to explore how food structure and physical properties influence the nutritional value of foods. My interdisciplinary food-nutrition program examines how the physical properties of food materials affects the bioavailability of bioactive compounds, with particular emphasis on dietary lipids. My team also aims to elucidate the effects of diverse functional foods on a variety of health outcomes.

Wright A, Pinto C, Tulk H, McCluskey J, Goldstein, A, Husckha B, Marangoni A, Seetharaman K. Monoacylglycerol gel offers improved lipid profiles in high and low moisture baked products but does not influence postprandial lipid and glucose responses. Food Funct. 2014; 5(5):882-93.

Tulk HM, Blonski DC, Murch LA, Duncan AM, Wright AJ. Daily consumption of synbiotic yogurt decreases energy intake but does not improve gastrointestinal transit time: a double-blind randomized, crossover study in healthy adults. Nutr J. 2013; 12(1):87.

For more information, please visit www.uoguelph.ca/hhns/People/AWright.html



Bruce Holub, PhD

Functional foods and nutraceuticals enriched with omega-3 fatty acids

Our research has been directed towards the development and evaluation in human trials of agri-foods and nutraceuticals enriched in long-chain omega-3 fatty acids as DHA/EPA. These products (egg and dairy) as now distributed commercially were derived by either feeding omega-3 fatty acids to domestic animals (laying hens, dairy cows) in collaboration with colleagues in the Dept. of Animal and Poultry Science or by the direct addition of stable forms of DHA/EPA as microencapsulated preparations.

Holub BJ, Mutch DM, Pierce GN, Rodriguez-Leyva D, Aliani M, Innis S, Yan W, Lamarche B, Couture P, Ma DW. Proceedings form the 2013 Canadian Nutrition Society conference on advances in dietary fats and nutrition. Appl Physiol Nutr Metab. 2014; 39(7):754-62.

Shaikh NA, Yantha J, Shaikh S, Rowe W, Laidlaw M, Cockerline C, Ali A, Holub B, Jackowski G. Efficacy of a unique omega-3 formulation on the correction of nutritional deficiency and its effects on cardiovascular disease risk factors in a randomized controlled VASCAZEN(®) REVEAL Trial. Mol Cell Biochem. 2014; 396(1-2): 9-22.

For more information, please visit www.uoguelph.ca/hhns/People/Bholub.html

Kelly Meckling, PhD

Nutrition and diet in health and chronic disease

Nutrients, phytochemicals, and other components of food have the ability to affect a wide array of processes in normal cellular metabolism, and thus may potentially have implications for chronic diseases such as diabetes, cancer, and cardiovascular disease where cellular metabolism is altered. The goal of my research program is to understand the biological roles of nutrients at a molecular level and to use this information to improve the health and well being of the general population. Current projects include research on the health effects of vitamin D, omega-3 fatty acids, and polyphenols found in highly colored fruits and vegetables.

Haratifar S, Meckling KA, Corredig M. Antiproliferative activity of tea catechins associated with casein micelles, using HT29 colon cancer cells. J Dairy Sci. 2014; 97(2): 672-8.

Wang S, Zhu R, Meckling KA, Marcone MF. Antioxidant capacity of food mixtures is not correlated to antiproliferative activity against MCF-7 breast cancer cells. J Med Food. 2013; 16(12):1138-45.

For more information, please visit www.uoguelph.ca/hhns/People/KMeckling.html

Human Nutraceutical Research Unit

Human Nutraceutical Research Unit (HNRU)

Advancing foods and natural health products for health through human research

As the first established human nutraceutical trial unit in Canada, the HNRU is a research and educational unit that specializes in human studies of natural health products and functional foods for health promotion and disease prevention. Comprised of a multi-disciplinary team of nutritionists, dieticians, food scientists, and exercise physiologists, the HNRU offers expertise in a variety of services from consultation to conducting human clinical trials. Each year, several undergraduate and graduate students gain unique hands on experience helping to carryout human intervention studies.

For more information, please visit www.uoguelph.ca/hnru

The needs of the Department of Human Health and Nutritional Sciences are constantly evolving as we strive to produce top-level research in the health sciences. We are continually seeking collaborative partners who share our passion for human health and the promotion of a healthy lifestyle for the maintenance of health, aging, and the treatment of chronic disease.

Opportunities include:

- Contractual research partnerships

- Graduate Student Support
  PhD Student – $19,300/year (4 years)
  MSc Student – $15,300/year (2 years)

- Support in the form of research grants and awards

For more information about our research and how you can collaborate with the Department of Human Health and Nutritional Sciences, please visit www.uoguelph.ca/hhns, or contact the department Liaison Officer by phone (519-824-4120 ext. 54104) or email (hhnsliaisonofficer@uoguelph.ca).

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