

Member Spotlight

Norman G. Hord, Ph.D., M.P.H., R.D.

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For this edition of The Digest, we are spotlighting RDPG member Norman G. Hord, PhD, MPH, RD. Dr. Hord is an Associate Professor at the School of Biological and Population Health Sciences at Oregon State University in Corvallis, OR. Dr. Hord has an exciting career in translational nutrition research in which he uses his broad training in dietetics, public health and molecular nutrition to study the effects of dietary nitrate and nitrite on atherosclerosis and carcinogenesis while mentoring undergraduate and graduate students. Read below to learn how a tennis injury spurred his interest in nutrition and passion for research.

Dr. Hord, how would you describe your current position as an Associate Professor?

I am a professional 'ladder'. As a faculty member, I provide knowledge and skill-building 'ladder' services as a teacher, researcher and administrator in undergraduate and graduate programs in nutrition and dietetics. Through course work, research training and professional mentoring, my colleagues and I can help students reach their goals if they are willing to exert effort and demonstrate passion for the fields of nutrition and dietetics.

Dr. Hord, please tell us about your background. How did you get to where you are now?

My interest in nutrition began with an adverse reaction to a non-steroidal anti-inflammatory drug prescribed for a wrist injury (i.e., carpal tunnel syndrome) caused by playing tennis. The investigation of non-pharmacological approaches to common conditions motivated me to study nutrition as an undergraduate. My first job was as a

food product developer for a large restaurant chain. I then received a master's degree in nutrition from Clemson University where I completed my dietetics courses and supervised practice requirements. I received my PhD in nutrition from Purdue University and performed my dissertation research in the laboratory of Dr. Gary Perdew. We published several papers detailing the subcellular localization and function of the aryl hydrocarbon receptor and its partner in transcriptional regulation called Arnt. These proteins sense and transduce signals from many dietary and diet-derived metabolites to regulate cellular detoxification reactions. After my doctoral program, I went on to complete the National Cancer Institute's (NCI) Cancer Prevention Fellowship. As a part of this fellowship, I completed a Master's in Public Health degree at Johns Hopkins University's Bloomberg School of Public Health. Additionally, I completed postdoctoral research training in the Laboratory of Nutritional and Molecular Regulation (headed by James Phang, MD) at the NCI. We demonstrated that dietary factors have genotype-dependent effects on phenotypes associated with colon cancer risk. Since then, I have held positions at several universities and taught in both coordinated (CP) and didactic (DPD) programs. At Michigan State University, I led the development of and wrote the self-study part for a new dietetic internship program. I am thankful to have had the opportunities to train in these areas and serve the profession of dietetics. I bring these perspectives to students and trainees each day.

What is your current research interest?

My research program addresses the potential mechanisms by which dietary nitrates and nitrites from plant foods modulate phenotypes associated with atherosclerosis and carcinogenesis. In my lab, we investigate the anti-inflammatory effects of dietary nitrates and nitrites in model systems and humans. We believe that current dogma and regulations concerning nitrate and nitrite are simplistic and based on the practice of poor causal inference. We believe the evidence supports our assertion that nitrates and nitrites from plant sources are nutrients that support vascular health via vasodilatory, anti-inflammatory and anti-thrombotic activities.

How did you become involved/interested in your current line of research?

I was hooked by Dr. Nathan Bryan's (University of Texas) research showing that a small concentration of nitrite in drinking water could totally reconstitute nitric oxide (NO) homeostasis in an animal model that lacked endothelial nitric oxide synthase (eNOS), the enzyme that was thought to be the major source of NO in the body. We now know that a regular sized salad made of spinach can provide the body with enough nitrate to make more NO than all forms of nitric oxide synthases combined. The most interesting part about endogenous NO synthesis from dietary nitrate and nitrite is that it works best under conditions in which eNOS cannot (i.e. low oxygen or hypoxic and acidic conditions in the body). As such, these compounds can provide an 'endocrine reserve'

for NO production under ischemic or other stressful conditions. There is much to be learned about the dietary needs for nitrate and nitrite and the specific contexts in which they may support physiological functions or produce health risks.

What advice would you give to young researchers for developing a successful line of research?

I have two pieces of advice. First, young investigators should study diet-related problems whose solutions could provide high impact in human populations. Secondly, since excellent research requires multidisciplinary collaboration, investigators should not only be experts in their specific area but be able to apply their expertise as a part of collaborative teams. I followed my own advice: my training spans from cell biology, toxicology and public health in addition to nutrition and dietetics. Diet acts through thousands of relevant metabolic processes to influence health; we must all keep this broad perspective in mind lest we lose our focus on the narrow area of our specific expertise.

What are your career goals?

It is an odd but true statement to say, "I have already achieved all of my career goals!" Of course, the process of developing and refining goals is part of a healthy professional development (and our credentialing process!). As such, I strive to continue to serve students and the profession by contributing to discoveries in nutrition that benefit public health. These difficult goals can only be met through keeping current with research findings, effective teaching, academic leadership and professional service.

How has your affiliation with the Academy impacted your career progression?

Academy members have provided mentoring for me since the beginning of my career as an RD. One example is Dr. Nancy Lewis, current Speaker-elect of the Academy House of Delegates. Since my first position as a dietetic educator, Nancy has graciously provided balanced advice and wisdom on any issue I've asked her about. I have also benefited

from Academy member invitations to speak at or organize FNCE events, to edit manuscripts or participate in position paper development. This mentoring has motivated me to want to contribute back to the profession.

If someone were to ask you to explain why research is important to the field of dietetics, what would you say?

It is our only defense against our poorly prepared competitors. There are many who would sell their advice or products to an unknowing public based upon little or no research and poor, if any, training. The 'loose' labeling laws of federal legislation in the U.S. (in contrast to Europe) allow for untrained people to sell poorly designed products that have little, if any, scientific support. While it has always been this way in the U.S., I am proud that the Academy not only supports evidence-based practice but also funds research to determine what works best. This leadership makes me proud to support the Academy in these efforts.