

Bruce A. Watkins, Ph.D.
Professor and Director

Lipid Chemistry & Molecular Biology Laboratory
745 Agriculture Mall Drive
Purdue University
West Lafayette, Indiana, 47907
Phone (765)-494-5802
E-mail: baw@purdue.edu

Education

Ph.D., Nutrition and Physiological Chemistry, University of California, Davis
M.S., Nutrition and Bacteriology, Colorado State University
B.S., Biological Sciences, Colorado State University

Appointments

Acting Director, International Omega-3 Learning and Education Consortium for Health and Medicine, 2007
Director and founder, Center for Enhancing Foods to Protect Health, 2000-2007
University Faculty Scholar, 1999-2004
Professor, 2005-pres., Dept. of Basic Medical Sciences, School of Veterinary Medicine, Purdue University
Professor, adjunct, 1997-pres., Dept. of Anatomy & Cell Biology, School of Medicine, IUPUI
Professor, 1997-pres., Dept. of Food Science, Purdue University
Associate Professor, 1991-97 (tenure 1993), Dept. of Food Science, Purdue University
Assistant Professor 1987-1991, School of Ag., Virginia Polytechnic Inst. & State University
Assistant Professor, 1985-1987, Dept. of Animal Science & Dept. of Human Nutrition, Washington State University
Adjunct Assistant Professor, 1986-1987, Dept. of Poultry Sci., Oregon State University

Industry Appointments & Consulting

Mobility Advisory Board & Research Consortium, The Iams Company, P&G Company, December 2006
Natreon Oil Panel, Dow AgroSciences, March 2006.
Technical Advisor, Mead Johnson Nutritionals (Bristol-Myers Squibb), 2005-2006
Science and Technology Advisor, Egglund's Best, December 2004-2006
Scientific Advisory Board, Standard Foods Taiwan Limited, Taipei, Taiwan, R.O.C. since 2001
Scientific Advisory Board, OmegaTech Inc., Boulder, CO (Martek Biosciences Corp.), 1999-2001
Industry Consultant (nutrients, antioxidants, fortified foods and vitamins), 1995-pres.
Chr. Hansens, Milwaukee, WI, Consultant for probiotics research and applications, 1981-1984
Fermented Products, Inc., Mason City, IA, Food Products & Nutritionist, 1979-1980

Professional Societies

American Oil Chemists' Society (AOCS)
American Society for Nutritional Sciences (ASNS)
American Society for Bone and Mineral Research (ASBMR)
Faculty American College of Nutrition (FACN)
Institute of Food Technologists (IFT)
Society for Experimental Biology and Medicine
Honor societies: Gamma Sigma Delta, Phi Tau Sigma, and Sigma Xi

Bruce A. Watkins, Ph.D.

Awards and Honors

Faculty

Babcock-Hart Award, (national award in nutritional biochemistry) IFT and International Life Sciences Institute, July, 2004
Frank Annunzio Awards National Finalist, Multimedia Education (The Pizza Explorer CD-ROM, The National Health Museum in Washington DC), 2002
University Faculty Scholar (first award for excellence in research and teaching), Purdue University, April 1999-2004.
Research and Development Award (national award for research on lipids and growth factors in bone), IFT, 1999
Outstanding Paper Presentation, AOCS, 1999, 1996
Bio-Serv Award (national young investigator in nutritional biochemistry), ASNS (formerly AIN), 1994
Alberta Heritage Foundation for Medical Research Visiting Lecturer, 1994
PSA National Research Award (national young investigator award in bone metabolism), 1990
American Heart Association, Research Awardee, 1989-1991

Graduate Student

Certificate of Excellence, presentation of outstanding research, PSA, 1982, 1978
Dan Peterson Award, academic scholarship, University of California, Davis, 1981
Hubbard Scholarship, academic scholarship, University of California, Davis, 1980
Pacific Egg and Poultry Association Scholarship, University of California, Davis, 1980
John L. Robbins Award, outstanding achievement in research with gnotobiotic chickens, Colorado State University, 1979
National Feed Ingredients Association Scholarship, 1979
Pacific Egg and Poultry Association Scholarship, Colorado State University, 1977
Jake Kellogg Memorial Scholarship, outstanding research achievement in avian sciences, Colorado State University, 1977

Administrative, Research, Teaching, and Engagement Activities

Administrative:

Present: 2007: Consortium on Diet and Medicine and Acting Director of Omega-3 Education Consortium.

Diet and medicine is focused on the following clinical areas:

Dietary intervention for dialysis patients

Anti-inflammatory properties of omega-3 fatty acids and flavonoids

Lipidomics of muscle atrophy and osteopenia

Hepatic disease

Past 1999-2007: My chief administrative responsibility through 2007 was director of the Center for Enhancing Foods to Protect Health (EFPH). The Purdue University Board of Trustees approved the center that I created with faculty support from the SVM and School of Pharmacy, and Colleges of Agriculture, CFS, and Liberal Arts. The Dean of the College of Agriculture appointed me as director in 2000. Competitive grants awarded to the director and faculty included Indiana's 21st Century Funds, industry and federal agencies (\$5 M). The mission of EFPH was to conduct research on nutraceuticals, plant phytochemicals, and delivery systems for developing food products that reduce chronic disease risk and improve health. This mission changed over the past 6 years to focus on improving human and

Bruce A. Watkins, Ph.D.

companion animal health. Past support included numerous partners (The Procter & Gamble Company, Mead Johnson Nutritionals of Bristol-Myers Squibb, Eli Lilly and Company, Kraft Foods, and The Iams Company). The center evolved into discovery cluster groups that led to a focus on nutrition and biosciences to address research needs in human medicine and companion animal health not consistent with the EFPH mission. Hence a new consortium on diet and medicine is being formed with faculty in the Indiana School of Medicine and the School of Veterinary Medicine at Purdue University.

Research:

My research is organized into two areas of nutrition focused on molecular biosciences in medicine. The first area is on bone and muscle biology associated with muscle atrophy and osteopenia. The first goal of the laboratory is to understand the interactions of flavonoids and fatty acids on prostanoids and growth factors on muscle and bone metabolism for optimal musculoskeletal health. The research is directed at characterizing how specific fatty acids and phytochemicals impact bone modeling and remodeling, and muscle development. These experiments investigate actions of nutrients on transcription factors (PPARs) and genes (COX, osteocalcin, alkaline phosphatase, BMP) in bone cell cultures and various animal models. The second goal is a paradigm that examines how flavonoids and fatty acids alter genes of osteoblast differentiation (Cbfa1) and osteoclastogenesis (osteoprotegerin OPG/OPGL). The third goal is to describe the actions of nutrients on the actions of agonists on endocannabinoid receptors in muscle and bone. The second area of research is on diet and inflammation. The research aim is to determine the efficacy and safety of phytochemicals and nutraceuticals in the diet. Research is conducted on the biochemistry and physiological actions of flavonoids in biological systems of inflammation.

Teaching: My principle teaching responsibilities include courses on nutrition, lipid chemistry, biochemistry, and physiological functions of phytochemicals. My teaching materials for primary courses and supporting courses are Internet-based. The following courses can be viewed at the EFPH website: FS 476/590/690 Functional Foods, FS 609 Lipids, FS 652 Nutritional Sciences, and FS 690W/F&N 590F Phytochemicals: Biochemistry and Physiology.

The use of multidisciplinary efforts to advance food and health education is one program that I have established to improve the learning capacity in post-secondary institutions. Our focus has been on using CD-ROM and Internet-based educational tools for K-16 (examples include The Pizza Explorer and the Phytochemical Learning Resource). My team approach in science education is called "Science Visualization", a method that applies multimedia tools utilizing the Internet and CD-ROM platforms to teach food science, nutrition, and health. The educational product The Pizza Explorer CD-ROM is distributed by the Institute of Food Technologists (www.ift.org) and Purdue University to students and teachers, and the Internet version is featured at websites for The National Health Museum (www.accessexcellence.com). The Pizza Explorer (and Food Chemistry Experiment Book) is a paradigm that exemplifies science visualization to improve learning in the United States.

Publications

115 Refereed Journal Publications

4 Patents

5 Books, Manuals and CD-ROMs

24 Book Chapters

21 Proceedings, Bulletins, and Technical Publications

150 Research Abstracts

120 Invited Lectures Presented at International, National, and Regional Society Meetings