

BIOGRAPHICAL SKETCH

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NAME: Hu, Frank

eRA COMMONS USER NAME (credential, e.g., agency login): fhu123

POSITION TITLE: Professor of Nutrition and Epidemiology

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Tongji Medical University, Wuhan, China	MD	06/1988	Preventive Medicine
University of Illinois at Chicago School of Public Health	MPH	09/1994	Epidemiology
University of Illinois at Chicago School of Public Health	PHD	07/1996	Epidemiology
Harvard School T.H. Chan of Public Health, Boston	Postdoctoral Fellow	06/1999	Nutritional Epidemiology

A. Personal Statement

I am Chair of Department of Nutrition, Professor of Nutrition and Epidemiology at Harvard T.H. Chan School of Public Health and Professor of Medicine at Harvard Medical School and Brigham and Women's Hospital. The main area of my research is focused on epidemiology and prevention of chronic diseases, especially type 2 diabetes, obesity and cardiovascular disease (CVD). I am internationally recognized researcher in obesity and nutrition epidemiology and have played a leadership role in the analyses of diabetes-related nutritional factors, biomarkers and genetic markers in Nurses' Health Study (NHS), NHS II and Health Professional Follow-up Study (HPFS).

In addition to my seminal contributions to nutritional epidemiology, my research has broken new ground in linking novel biomarkers (e.g., adipokines and nutrient metabolites) and gene-environment interactions to risk of obesity and metabolic diseases. My research has also contributed substantially to current public health policies for global chronic disease prevention. I have published >800 original research papers and reviews (H-index = 205). I also published a textbook on Obesity Epidemiology (Oxford Univ. Press, 2008), which is widely used in graduate courses. I have served on the Obesity Guideline Expert Panel at NHLBI and the 2015 U.S. Dietary Guidelines Advisory Committee. I was the receipt of the 2010 Kelly West Award in Outstanding Achievement in Diabetes Epidemiology by the American Diabetes Association.

1. Qi Q, Chu AY, Kang JH, Jensen MK, Curhan GC, Pasquale LR, Ridker PM, Hunter DJ, Willett WC, Rimm EB, Chasman DI, Hu FB, Qi L. Sugar-sweetened beverages and genetic risk of obesity. *N Engl J Med.* 2012 Oct 11;367(15):1387-96. PubMed PMID: [22998338](#); PubMed Central PMCID: [PMC3518794](#).
2. Heidemann C, Schulze MB, Franco OH, van Dam RM, Mantzoros CS, Hu FB. Dietary patterns and risk of mortality from cardiovascular disease, cancer, and all causes in a prospective cohort of women. *Circulation.* 2008 Jul 15;118(3):230-7. PubMed PMID: [18574045](#); PubMed Central PMCID: [PMC2748772](#).
3. Hu FB, Willett WC, Li T, Stampfer MJ, Colditz GA, Manson JE. Adiposity as compared with physical activity in predicting mortality among women. *N Engl J Med.* 2004 Dec 23;351(26):2694-703. PubMed PMID: [15616204](#).
4. Hu FB, Stampfer MJ, Manson JE, Grodstein F, Colditz GA, Speizer FE, Willett WC. Trends in the incidence of coronary heart disease and changes in diet and lifestyle in women. *N Engl J Med.* 2000 Aug 24;343(8):530-7. PubMed PMID: [10954760](#).

B. Positions and Honors

Positions and Employment

1995 - 1996	Research Associate, School of Public Health, University of Illinois at Chicago
1996 - 1998	Research Fellow, Dept. of Nutrition, Harvard T.H. Chan School of Public Health
1999 - 2002	Assistant Professor of Nutrition and Epidemiology, Harvard T.H. Chan School of Public Health
2001 - 2004	Assistant Professor of Medicine, Harvard Medical School
2002 - 2008	Associate Professor of Nutrition and Epidemiology, Harvard T.H. Chan School of Public Health
2003 -	Director, Boston Nutrition and Obesity Research Center Epidemiology and Genetics Core
2005 - 2008	Associate Professor of Medicine, Harvard Medical School
2008 -	Professor of Nutrition and Epidemiology, Harvard T.H. Chan School of Public Health
2009 -	Professor of Medicine, Harvard Medical School
2011-	Director, Harvard Transdisciplinary Research in Energetics and Cancer (TREC) Center
2017-	Chair, Department of Nutrition, Harvard T.H. Chan School of Public Health

Other Experience and Professional Memberships

1996-	Member, American Diabetes Association, American Heart Association, The Obesity Society, American Society of Nutrition
2008 - 2013	Member, AHA/ACC Expert Panel on Obesity Treatment and Prevention Guidelines
2009 - 2010	Member, IOM Committee on Prevention of Global Epidemic of Cardiovascular Disease
2013 - 2015	Member, 2015 Dietary Guidelines Advisory Committee, USDA/HHS

Honors

1998	Charles A. King Trust Research Fellowship, The Medical Foundation, Boston
1998	Elizabeth Barrett-Connor Research Award Finalist, 71st American Heart Association Scientific Sessions
2002	Established Investigator Award, American Heart Association
2005	The Gerald J. and Dorothy R. Friedman Visiting Professor in Diabetes, Tufts University/New England Medical Center
2010	Kelly West Award in Outstanding Achievement in Diabetes Epidemiology, American Diabetes Association
2012	Taubman Distinguished Lecture, University of Michigan, Ann Arbor
2014	Distinguished Lecture, Stanford Center for Population Health Sciences, Stanford University
2014	Jacob Brody Epidemiology and Biostatistics Achievement Award, University of Illinois at Chicago
2015	Elected member, National Academy of Medicine (formerly the Institute of Medicine)
2015	Madras Diabetes Research Foundation Gold Medal Oration, India

C. Contribution to Science

1. Dr. Hu has made seminal contributions to nutritional epidemiology of obesity, diabetes, and CVD. His early research found that higher intake of trans fat was significantly associated with risk of coronary heart disease in the Nurses' Health Study cohort (Hu et al. NEJM 1997), providing epidemiological evidence for policies to reduce trans fat, such as nutrition facts labeling and bans. In addition, he published the first study to quantify the preventability of type 2 diabetes through diet and lifestyle (Hu et al. NEJM 2001), showing that the majority of diabetes cases can be avoided through maintaining a normal weight, consuming a healthy diet, not smoking, and regular physical activity. His group has conducted detailed analyses of numerous other dietary and lifestyle factors and risk of diabetes, including coffee, iron, magnesium, red meat intake, and dietary patterns. These findings have contributed to current dietary recommendations and policies for prevention of chronic diseases.
 - a. Li Y, Hruby A, Bernstein AM, Ley SH, Wang DD, Chiuve SE, Sampson L, Rexrode KM, Rimm EB, Willett WC, Hu FB. Saturated Fats Compared With Unsaturated Fats and Sources of Carbohydrates in

Relation to Risk of Coronary Heart Disease: A Prospective Cohort Study. *J Am Coll Cardiol*. 2015 Oct 6;66(14):1538-48. PubMed PMID: [26429077](#); PubMed Central PMCID: [PMC4593072](#).

- b. Mozaffarian D, Hao T, Rimm EB, Willett WC, Hu FB. Changes in diet and lifestyle and long-term weight gain in women and men. *N Engl J Med*. 2011 Jun 23;364(25):2392-404. PubMed PMID: [21696306](#); PubMed Central PMCID: [PMC3151731](#).
 - c. Hu FB, Manson JE, Stampfer MJ, Colditz G, Liu S, Solomon CG, Willett WC. Diet, lifestyle, and the risk of type 2 diabetes mellitus in women. *N Engl J Med*. 2001 Sep 13;345(11):790-7. PubMed PMID: [11556298](#).
 - d. Hu FB, Stampfer MJ, Manson JE, Rimm E, Colditz GA, Rosner BA, Hennekens CH, Willett WC. Dietary fat intake and the risk of coronary heart disease in women. *N Engl J Med*. 1997 Nov 20;337(21):1491-9. PubMed PMID: [9366580](#).
2. Dr. Hu has led a number of studies on identifying novel biomarkers of type 2 diabetes and CVD, including inflammatory cytokines, adipokines, and gene-diet interactions. These studies have contributed to our understanding of the pathophysiology of chronic diseases and may help in the prediction and prevention of these conditions.
- a. Malik VS, Chiuve SE, Campos H, Rimm EB, Mozaffarian D, Hu FB, Sun Q. Circulating Very-Long-Chain Saturated Fatty Acids and Incident Coronary Heart Disease in US Men and Women. *Circulation*. 2015 Jul 28;132(4):260-8. PubMed PMID: [26048094](#); PubMed Central PMCID: [PMC4519378](#).
 - b. Ley SH, Sun Q, Willett WC, Eliassen AH, Wu K, Pan A, Grodstein F, Hu FB. Associations between red meat intake and biomarkers of inflammation and glucose metabolism in women. *Am J Clin Nutr*. 2014 Feb;99(2):352-60. PubMed PMID: [24284436](#); PubMed Central PMCID: [PMC3893727](#).
 - c. Sun Q, Wedick NM, Pan A, Townsend MK, Cassidy A, Franke AA, Rimm EB, Hu FB, van Dam RM. Gut microbiota metabolites of dietary lignans and risk of type 2 diabetes: a prospective investigation in two cohorts of U.S. women. *Diabetes Care*. 2014;37(5):1287-95. PubMed PMID: [24550220](#); PubMed Central PMCID: [PMC3994932](#).
 - d. Qi Q, Chu AY, Kang JH, Jensen MK, Curhan GC, Pasquale LR, Ridker PM, Hunter DJ, Willett WC, Rimm EB, Chasman DI, Hu FB, Qi L. Sugar-sweetened beverages and genetic risk of obesity. *N Engl J Med*. 2012 Oct 11;367(15):1387-96. PubMed PMID: [22998338](#); PubMed Central PMCID: [PMC3518794](#).
3. Dr. Hu has led several studies on diet, plasma metabolites, and risk of type 2 diabetes and CVD. His research has integrated cutting-edge omics techniques into large cohort studies and randomized clinical trials by examining metabolic pathways linking dietary and lifestyle factors and risk of chronic diseases.
- a. Guasch-Ferré M, Zheng Y, Ruiz-Canela M, Hruby A, Martínez-González MA, Clish CB, Corella D, Estruch R, Ros E, Fitó M, Dennis C, Morales-Gil IM, Arós F, Fiol M, Lapetra J, Serra-Majem L, Hu FB, Salas-Salvadó J. Plasma acylcarnitines and risk of cardiovascular disease: effect of Mediterranean diet interventions. *Am J Clin Nutr*. 2016 Jun;103(6):1408-16. PubMed PMID: [27099249](#); PubMed Central PMCID: [PMC4881000](#).
 - b. Guasch-Ferré M, Hruby A, Toledo E, Clish CB, Martínez-González MA, Salas-Salvadó J, Hu FB. Metabolomics in Prediabetes and Diabetes: A Systematic Review and Meta-analysis. *Diabetes Care*. 2016 May;39(5):833-46. PubMed PMID: [27208380](#); PubMed Central PMCID: [PMC4839172](#).
 - c. Ruiz-Canela M, Toledo E, Clish CB, Hruby A, Liang L, Salas-Salvadó J, Razquin C, Corella D, Estruch R, Ros E, Fitó M, Gómez-Gracia E, Arós F, Fiol M, Lapetra J, Serra-Majem L, Martínez-González MA, Hu FB. Plasma Branched-Chain Amino Acids and Incident Cardiovascular Disease in the PREDIMED Trial. *Clin Chem*. 2016 Apr;62(4):582-92. PubMed PMID: [26888892](#); PubMed Central PMCID: [PMC4896732](#).
 - d. Martínez-González MÁ, Ruiz-Canela M, Hruby A, Liang L, Trichopoulou A, Hu FB. Intervention Trials with the Mediterranean Diet in Cardiovascular Prevention: Understanding Potential Mechanisms through Metabolomic Profiling. *J Nutr*. 2016 Mar 9; PubMed PMID: [26962184](#); PubMed Central PMCID: [PMC4807639](#).

D. Additional Information: Research Support and/or Scholastic Performance

Ongoing Research Support

R01 HL118264-03

HU, FRANK B (Contact PI)

07/15/13-06/30/17

Mediterranean diet, Metabolites, and Cardiovascular Disease

We proposed to examine the effects of Mediterranean dietary interventions on changes in plasma levels of metabolites and subsequent risk of CVD in the PREDIMED trial.

Role: MPI

R01 HL060712-13

HU, FRANK B (PI)

08/01/98-03/31/17

Dietary Patterns and Risk of Cardiovascular Disease

We proposed to examine the relationship of major dietary patterns and diet quality indices with biomarkers of energy balance and inflammation, as well as risk of CVD in the Nurses' Health Study and Health Professionals' Follow-up Study.

Role: PI

R01 DK102896

HU, FRANK B (Contact PI)

09/01/14-08/31/18

Dietary Interventions, Metabolites, and Risk of Type 2 Diabetes

We proposed to examine the effects of Mediterranean dietary interventions with extra virgin olive oil or mixed nuts as compared to a low-fat control diet on changes in plasma levels of metabolites and incident type 2 diabetes among non-diabetic individuals in the PREDIMED trial.

Role: MPI

P30 DK46200 (PI: Fried)

NIH/NIDDK

4/1/2008-3/31/2018

Boston Obesity Nutrition Research Center

The Primary goal of the BONRC Epidemiology/Biostatistics Core is to provide expertise through consultation on the design, implementation, and analysis of obesity related research studies.

Role: Subcontract PI

R01 HD041702 (Contact PI: Xiaobin Wang)

NIH/HICHD

5/1/2016-3/31/2021

Preterm Birth, Maternal and Cord Blood Metabolome, and Child Metabolic Risk

Using a life-course framework, we proposed to conduct a comprehensive and systemic investigation of preterm birth and maternal and fetal metabolic characteristics in relation to development of adverse metabolic outcomes among children in the Boston Birth Cohort.

Role: MPI

U54 CA155626-02

HU, FRANK B (PI)

07/28/11-05/31/17 (No cost extension)

Harvard Transdisciplinary Research in Energetics and Cancer Center

We proposed to establish a TREC Center that draws on the multidisciplinary expertise of faculty at Harvard University, the Harvard T.H. Chan School of Public Health, Harvard Medical School, and the Harvard-affiliated Brigham and Women's Hospital, Boston Children's Hospital, Dana-Farber/Harvard Cancer Center, Harvard Pilgrim Health Care Institute, and the Harvard Center for Population and Development Studies. We have developed four complementary and interrelated research projects which are supported by four cores and additional existing resources at the participating institutions.

Role: PI

Completed Research Support

R01 CA095589-09

HU, FRANK B (PI)

04/01/02-02/28/13

Dietary Patterns, Diet Quality, and Cancer Risk

The major goal of this project was to identify novel dietary patterns and examine whether they are associated with risk of major cancers.

Role: PI