Kathryn Hughes Barry, Ph.D., M.P.H.
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Contact Information

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Education

2003 **B.S., Biology and Community Health, Tufts University**, Medford, MA (*cum laude*)

2005 **M.P.H., Chronic Disease Epidemiology, Yale University**, New Haven, CT
Thesis: The relationship between plasma carotenoids and biomarkers of lipid peroxidation in a population of head and neck cancer patients
Thesis advisors: Drs. Brenda Cartmel and Susan Mayne

2009 **M.Phil., Chronic Disease Epidemiology, Yale University**, New Haven, CT

2011 **Ph.D., Chronic Disease Epidemiology, Yale University**, New Haven, CT
Thesis: A prospective study of pesticide exposures, polymorphisms in DNA repair genes and cancer risk among pesticide applicators in Iowa and North Carolina
Dissertation Advisory Committee members: Dr. Tongzhang Zheng (Chair), Dr. Xiaomei Ma, Dr. Michael Alavanja and Dr. Jay Lubin

Post Graduate Education and Training

2011-2016 **Postdoctoral Fellow, National Cancer Institute,** Occupational and Environmental Epidemiology Branch (OEEB), Division of Cancer Epidemiology and Genetics (DCEG), Rockville, MD (*mentors: Drs. Michael Alavanja and Sonja Berndt*)

Led epidemiological analyses evaluating occupational and environmental risk factors for cancer (e.g., pesticides) and the role of genetic susceptibility in the U.S. Agricultural Health Study (AHS) and other studies. Designed, led and collaborated on molecular epidemiology studies to identify epigenetic markers of cancer risk and their relationship with occupational and environmental exposures using biological specimens in the AHS and the Prostate, Lung, Colorectal and Ovarian Cancer Screening Trial.

Other Employment

2001 **Assistant Researcher, Tufts University,** Medford, MA
Used targeted transposition to facilitate study of *roX1* expression, important in dosage compensation in male *Drosophila*.

2002 **Research Intern, Jean Mayer USDA Human Nutrition Research Center on Aging,** Boston, MA
Participated in the collection of baseline data and study site monitoring for Beat Osteoporosis: Nourish and Exercise Skeletons (The BONES Project).

2002-2003 **Assistant Researcher/Lab Technician, Cambria Biosciences,** Woburn, MA
Completed behavioral assays of mutant *Drosophila melanogaster* lines to screen for novel neurological mutations and conducted mapping experiments.

2004 **Research Fellow, Yale Cancer Center,** New Haven, CT
Conducted molecular biology experiments (e.g., Western blots) in preparation for animal studies testing the impact of binding away an early protein of the cottontail rabbit papilloma virus from host DNA on papilloma development.

2005-2007 **CDC/CSTE Applied Epidemiology Fellow, Washington State Department of Health,** Tumwater, WA
Led and participated in cluster investigations of non-infectious conditions, including various cancers. Led analyses to evaluate patterns of cancer incidence/mortality and screening in Washington State using large databases of state survey and cancer registry data. Pilot-tested questionnaires and participated in protocol development and field team training and monitoring for the Washington Adult Health Survey, a statewide survey of cardiovascular disease and related health conditions. Conducted literature reviews and communicated epidemiologic findings to a variety of audiences, including other public health professionals, the media and the public.

2008 **Research Assistant, Yale University,** New Haven, CT
Assisted with participant contact and quality control for a study on quality of life among testicular cancer survivors in the U.S. Servicemen's Testicular Tumor Environmental and Endocrine Determinants (STEED) study. Collaborated on several study manuscripts.

2009-2011 **Pre-Doctoral Fellow, National Cancer Institute,** OEEB, DCEG, Rockville, MD
Led analyses evaluating pesticide exposures in relation to cancer risk and the modifying role of inherited genetic variation in DNA repair genes in the AHS. Collaborated on other analyses of occupational/environmental exposures, cancer risk and the role of genetic susceptibility in the AHS and the Yale-NHL Study.

Professional Society Memberships

2005-present Council of State and Territorial Epidemiologists, Associate Member
2007-present Society for Epidemiologic Research, Student/Postdoctoral Fellow Member
2009-present American Association for Cancer Research (AACR), Associate Member
2011-present AACR Molecular Epidemiology Group, Associate Member

Honors and Awards

2012 NIH Fellows Award for Research Excellence (FARE), $1,000
Title: "Genetic Variation in DNA Repair Genes, Pesticide Exposure and Prostate Cancer Risk"

2013 NCI Director's Innovation Award (competitive intramural research funding award), $10,000
Title: "Environmentally-induced DNA methylation sites at chromosome 8q24"

2014 AACR Scholar-in-Training Award, $1,500
Title: "DNA methylation patterns in peripheral blood and the relationship with cancer susceptibility loci at chromosome 8q24"

Administrative Service

Institutional Service

2011 Member, DCEG Fellows Awards for Research Excellence (DFARE) Review Committee
2012 Chief Judge, Prognosis and Response Predictions section, FARE Review Committee

Local and National Service

2010-present Reviewer for *Environmental and Molecular Mutagenesis*
2011-present Reviewer for *Journal of Investigative Medicine*, *Leukemia and Lymphoma, Pharmacogenomics and Personalized Medicine* and *PLoS One*
2012 Abstract Reviewer, 45th Annual Society for Epidemiologic Research Meeting
2012-present Reviewer for *BMC Cancer* and *Environmental Health Perspectives*
2013-present Reviewer for *Cancer Epidemiology, Biomarkers & Prevention*
2014-present Reviewer for *American Journal of Epidemiology* and *Cancer Epidemiology*
2015-present Reviewer for *BMJ Open*
2016-present Reviewer for *Oncotarget*

Teaching Service

Teaching Assistant, Yale University, New Haven, CT

2004 Principles of Epidemiology I (class size ~115 M.P.H./M.S. students)
Graded homework assignments and exams, held office hours ~4 h/wk, led discussion sections (two sections of ~10-15 students/week, ~2 h/wk)

2007 Principles of Epidemiology I (class size ~115 M.P.H./M.S. students)
Graded homework assignments and exams, held office hours ~4 h/wk, led discussion sections (two sections of ~10-15 students/week, ~2 hr/wk)

2008 Principles of Epidemiology II (class size ~30 M.P.H./M.S. students)
Graded homework assignments and exams, held office hours ~2 h/wk, led review sessions

2008 Accelerated Epidemiology (class size ~15 students in Advanced Professional M.P.H. program)
Graded homework assignments and exams

2008 Advanced Epidemiology (class size ~6 Ph.D. students)
Graded homework assignments, led discussion sections every other week (1 hr/session)

Mentorship

2013-present Co-mentorship of Carol Christensen, Ph.D., M.P.H., formerly at EPA (now FDA)
Provided guidance related to data analysis / presentation of findings and manuscript preparation.

Grant Support

Ongoing Research Support

09/09/2015 – 09/15/2016
"Characterizing monoclonal gammopathy of undetermined significance (MGUS) in pre-diagnostic serum" (Role: PI; no salary support)
NCI Intramural Funding
Total Direct Costs: $24,999.00

Completed Research Support

07/05/2012 – 07/12/2013
"Pilot study of DNA methylation at chromosome 8q24" (Role: PI; no salary support)
NCI Intramural Funding
Total Direct Costs: $22,154.70

Completed Research Support cont'd

06/27/2013 – 06/30/2014
"Environmentally-induced DNA methylation sites at 8q24" (Role: PI; no salary support)
NCI Intramural Funding (covered in part by NCI Director's Innovation Award)
Total Direct Costs: $15,332.02

08/19/2013 – 08/30/2014
"Pilot study of DNA methylation in cancer susceptibility regions" (Role: PI; no salary support)
NCI Intramural Funding
Total Direct Costs: $18,969.58

09/01/2013 – 09/30/2015
"Prospective study of DNA methylation at chromosome 8q24 in peripheral blood and prostate cancer risk" (Role: PI; no salary support)
NCI Intramural Funding
Total Direct Costs: $96,974.40

Invited Speeches

1. Patterns of colorectal cancer screening in Washington State. Western Regional Epidemiology Network (WREN), Ashland, OR, 2006.

2. Patterns of colorectal cancer screening among men and women aged 50 and older in Washington State. Washington State Joint Conference on Health, Yakima, WA, 2006.

3. Case study: Investigation of aplastic anemia in Cowlitz County, Washington and Columbia County, Oregon, 2006. Environmental and Occupational Health Seminar, University of Washington, Seattle, WA, 2006.

4. Patterns of cancer screening in Washington State: 1995-2006. 2007 CSTE Annual Conference, Atlantic City, NJ, 2007.

5. Pesticides, polymorphisms and prostate cancer. Environmental Health Sciences Divisional Seminar, Yale School of Public Health, New Haven, CT, 2009.

6. Genetic variation in metabolic genes, occupational solvent exposure and risk of non-Hodgkin lymphoma. Environmental Health Sciences Divisional Seminar, Yale School of Public Health, New Haven, CT, 2010.

7. Genetic variation in base excision repair genes, pesticide exposure and prostate cancer risk. 2011 Congress of Epidemiology, Montreal, Canada, 2011.

8. Pilot study of DNA methylation at chromosome 8q24. Epigenetics Epidemiology Interest Group, DCEG, NCI, Rockville, MD, 2013.

Invited Speeches cont'd

9. Prospective study of DNA methylation at *LINE-1* and *Alu* in peripheral blood and the risk of prostate cancer. Epigenetics Epidemiology Interest Group, DCEG, NCI, Rockville, MD, 2014.

10. Epigenetic markers of cancer risk and occupational and environmental exposures. Environmental Epidemiology course, Yale School of Public Health, New Haven, CT, 2014.

11. Prospective study of DNA methylation at chromosome 8q24 in peripheral blood and the risk of prostate cancer. Epigenetics Epidemiology Interest Group, DCEG, NCI, Rockville, MD, 2015.

12. Epigenetic alterations: mediating genes, environment and cancer risk. UC Berkeley School of Public Health, Berkeley, CA, 2015.

13. Epigenetic markers of prostate cancer risk and prognosis. University of Maryland School of Medicine, Baltimore, MD, 2015.

Proffered Communications

1. Smallpox: pestilence of the past and scars of the present. Ancient Medicine Seminar Lecture, Tufts University, Medford, MA, 2003.

2. The relationship between plasma carotenoid levels and biomarkers of lipid peroxidation in a population of head and neck cancer patients. Yale School of Public Health, New Haven, CT (Master's thesis presentation), 2005.

3. Melanoma and tanning booths and youth access laws. Skin Cancer Initiative (subgroup of Washington Comprehensive Cancer Control Partnership), Children's Hospital, Seattle, WA, 2005.

4. An evaluation of the Washington State Cancer Registry. 2006 CSTE Annual Conference, Anaheim, CA (poster), 2006.

5. The relationship between patient-provider discussions about prostate cancer screening and screening behavior in Washington State. 2006 Congress of Epidemiology, Seattle, WA (poster), 2006.

6. Enumeration for the Washington Adult Health Survey (WAHS). WAHS field staff training, Kent, WA, 2006.

7. Investigation of aplastic anemia near a chemical plant in Cowlitz County, Washington and Columbia County, Oregon. 2007 CSTE Annual Conference, Atlantic City, NJ (poster), 2007.

8. Bias analysis. Advanced Epidemiology course lecture, Yale School of Public Health, New Haven, CT (shared with other TA for course), 2008.

Proffered Communications cont'd

9. Cancer incidence among pesticide applicators exposed to methyl bromide in the U.S. Agricultural Health Study. 2009 ACE Annual Meeting, Silver Spring, MD (poster), 2009.

10. Genetic variation in metabolic genes, occupational solvent exposure and risk of non-Hodgkin lymphoma. 2010 SER Annual Meeting, Seattle, WA (poster), 2010.

11. A prospective study of pesticide exposures, polymorphisms in DNA repair genes and cancer risk among pesticide applicators in Iowa and North Carolina. Yale School of Public Health, New Haven, CT (doctoral dissertation defense), 2011.

12. Genetic variation in DNA repair genes, pesticide exposure and prostate cancer risk. NIH Research Festival, Bethesda, MD (poster), 2011.

13. Genetic variation in nucleotide excision repair genes, pesticide exposure and prostate cancer risk. Tenth Annual AACR International Conference on Frontiers in Cancer Prevention Research, Boston, MA (poster), 2011.

14. DNA methylation patterns in peripheral blood and the relationship with cancer susceptibility loci at chromosome 8q24. AACR Annual Meeting, San Diego, CA (poster), 2014.

15. DNA methylation at chromosome 8q24 in peripheral blood and prostate cancer risk. AACR Annual Meeting, Philadelphia, PA (poster), 2015.

16. Occupation and the risk of early- and later-onset prostate cancer in five Nordic countries. AACR Annual Meeting, New Orleans, LA (poster), 2016.

Publications

Peer-reviewed journal articles

1. **Hughes KJ**, Mayne ST, Blumberg JB, Ribaya-Mercado JD, Johnson EJ, Cartmel B. Plasma carotenoids and biomarkers of oxidative stress in patients with prior head and neck cancer. *Biomark Insights* 2009;4:17-26. PMCID: 2700759.

2. Zhang Y, **Hughes KJ**, Zahm SH, Zhang Y, Holford TR, Dai L, Bai Y, Han X, Qin Q, Lan Q, Rothman N, Zhu Y, Leaderer B, Zheng T. Genetic variations in xenobiotic metabolic pathway genes, personal hair dye use and risk of non-Hodgkin lymphoma. *Am J Epidemiol* 2009;170(10):1222-30. PMCID: 2781758.

3. Kim C, McGlynn KA, McCorkle R, Zheng T, Erickson RL, Niebuhr DW, Ma S, Zhang Y, Bai Y, Dai L, Graubard BI, Kilfoy B, **Barry KH**, Zhang Y. Fertility among testicular cancer survivors: A case-control study in the U.S. *J Cancer Surviv* 2010;4(3):266-73. PMCID: 3057887.

Peer-reviewed journal articles cont'd

4. **Barry KH**, Zhang Y, Lan Q, Zahm SH, Holford TR, Leaderer B, Boyle P, Hosgood HD 3rd, Chanock S, Yeager M, Rothman N, Zheng T. Genetic variation in metabolic genes, occupational solvent exposure and risk of non-Hodgkin lymphoma. *Am J Epidemiol* 2011;173(4):404-13. PMCID: 3032803.

5. Kim C, McGlynn KA, McCorkle R, Erickson RL, Niebuhr DW, Ma S, Graubard B, Aschebrook-Kilfoy B, **Barry KH**, Zhang Y. Quality of life among testicular cancer survivors: A case-control study in the United States. *Qual Life Res* 2011;20(10):1629-37. PMCID: 3149776.

6. Koutros S, Andreotti G, Berndt SI, **Hughes Barry K**, Lubin JH, Hoppin JA, Kamel F, Sandler DP, Burdette LA, Yuenger J, Yeager M, Alavanja MC, Freeman LE. Xenobiotic-metabolizing gene variants, pesticide use and the risk of prostate cancer. *Pharmacogenet Genomics* 2011;21(10):615-623. PMCID: 3172373.

7. **Barry KH**, Koutros S, Berndt SI, Andreotti G, Hoppin JA, Sandler DP, Burdette LA, Yeager M, Beane Freeman LE, Lubin JH, Ma X, Zheng T, Alavanja MC. Genetic variation in base excision repair pathway genes, pesticide exposure and prostate cancer risk. *Environ Health Perspect* 2011;119(12):1726-1732. PMCID: 3261977.

8. **Barry KH**, Koutros S, Andreotti G, Sandler DP, Burdette LA, Yeager M, Beane Freeman LE, Lubin JH, Ma X, Zheng T, Alavanja MCR, Berndt SI. Genetic variation in nucleotide excision repair pathway genes, pesticide exposure and prostate cancer risk. *Carcinogenesis* 2012;33(2):331-337. PMCID: 3271261.

9. **Barry KH**, Koutros S, Lubin JH, Coble JB, Barone-Adesi F, Beane Freeman LE, Sandler DP, Hoppin JA, Ma X, Zheng T, Alavanja MCR. Methyl bromide exposure and cancer risk in the Agricultural Health Study. *Cancer Causes Control* 2012;23(6):807-818. PMCID: 3430844.

10. Kim C, McGlynn KA, McCorkle R, Li Y, Erickson RL, Ma S, Zhang G, Han X, Zhang Y, Bai Y, Dai L, Graubard B, Zheng T, Kilfoy B, **Barry KH**, Zhang Y. Sexual functioning among testicular cancer survivors: A case-control study in the U.S. *J Psychosom Res* 2012;73(1):68-73. PMCID: 3374934.

11. Andreotti G, Koutros S, Berndt S, **Hughes Barry K**, Hou L, Hoppin JA, Sandler DP, Lubin JH, Burdette LA, Yuenger J, Yeager M, Beane Freeman LE, Alavanja MCR. The interaction between pesticide use and genetic variants involved in lipid metabolism on prostate cancer risk. *J Cancer Epidemiol* 2012;2012:358076. PMCID: 3419400.

12. Koutros S, Beane Freeman LE, Lubin JH, Heltshe SL, Andreotti G, **Barry KH**, DellaValle CT, Hoppin JA, Sandler DP, Lynch CF, Blair A, Alavanja MC. Risk of total and aggressive prostate cancer and pesticide use in the Agricultural Health Study. *Am J Epidemiol* 2013;177(1):59-74. PMCID: 3590039.

Peer-reviewed journal articles cont'd

13. Koutros S, Berndt SI, **Hughes Barry K**, Andreotti G, Hoppin JA, Sandler DP, Yeager M, Burdett LA, Yuenger J, Alavanja MC, Beane Freeman LE. Genetic susceptibility loci, pesticide exposure and prostate cancer risk. *PLoS One* 2013;8(4):e58195. PMCID: 3617165.

14. Karami S, Andreotti G, Koutros S, **Barry KH**, Moore LE, Han SS, Hoppin JA, Sandler DP, Lubin JH, Burdette L, Yuenger J, Yeager M, Beane Freeman L, Blair A, Alavanja MC. Pesticide exposure and inherited variants in vitamin D pathway genes in relation to prostate cancer. *Cancer Epidemiol Biomark Prev* 2013;22(9):1557-1566. PMCID: 3773544.

15. Apte MS, Moran VA, Menon DU, Rattner BP, **Barry KH**, Zunder RM, Kelley R, Meller VH. Generation of a useful *roX1* allele by targeted gene conversion. *G3 (Bethesda)* 2014;4(1):155-162. PMCID: 3887531.

16. **Barry KH**, Moore LE, Sampson J, Yan L, Meyer A, Oler AJ, Chung CC, Yeager M, Amundadottir L, Berndt SI. DNA methylation levels at chromosome 8q24 in peripheral blood are associated with 8q24 cancer susceptibility loci. *Cancer Prev Res (Phila)* 2014;7(12):1282-1292. PMCID: 4256110.

17. Alavanja MC, Hofmann JN, Lynch CF, Hines CJ, **Barry KH**, Barker J, Buckman DW, Thomas K, Sandler DP, Hoppin JA, Koutros S, Andreotti G, Lubin JH, Blair A, Beane Freeman LE. Non-Hodgkin Lymphoma risk and insecticide, fungicide and fumigant use in the Agricultural Health Study. *PLoS One* 2014;9(10):e109332. PMCID: 4206281.

18. **Barry KH**, Moore LE, Liao LM, Huang WY, Andreotti G, Poulin M, Berndt SI. Prospective study of DNA methylation at *LINE-1* and *Alu* in peripheral blood and the risk of prostate cancer. *Prostate* 2015;75(15):1718-1725. PMCID: 4535169.

Technical Reports

1. **Hughes K**. Summary of literature review on melanoma and tanning booth use and youth access laws. Washington State Department of Health, Olympia, WA, Aug 2005.

2. **Hughes K**. Lung cancer. *Health of Washington State*. Washington State Department of Health, Olympia, WA, Dec 2007. Available at http://www.doh.wa.gov/Portals/1/Documents/5500/CD-LCN2007.pdf.

3. (authors in alphabetical order) Gillette-Walch H, Heumann M, **Hughes KJ**, Leman RF, Macdonald SC, Stone D, VanEenwyk J. Investigation of aplastic anemia in relation to concerns about exposure to benzene from a chemical plant, Cowlitz County, Washington and Columbia County, Oregon. Portland: Oregon State Public Health Division; Olympia: Washington State Department of Health, 2008. Available at https://public.health.oregon.gov/HealthyEnvironments/TrackingAssessment/EnvironmentalHealthAssessment/Documents/aplastic_anemia_report_0308_final.pdf.

Book Chapters

1. **Hughes KJ**. Chemical pesticides. Robbins P, Ogunseitan O, Golson JG, eds. *Green Health: An A to Z Guide, SAGE Series on Green Society*, vol. 9, SAGE Publications, 2011.

**some publications are listed under Hughes (maiden name)*