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Education

Columbia University

Current Research Interests

Ms. Liang's primary collaboration is with the Women's Environment, Cancer, and Radiation Epidemiology (WECARE) study group. She has served as an informatics specialist at the coordinating center of the WECARE study since its inception. The WECARE study is a large international 22-center molecular epidemiological study of breast cancer headed by Dr. Bernstein. The primary objective of the study is to investigate gene-environment interactions in the etiology of breast cancer. The study's aims are to establish a repository of biologic specimens, epidemiologic risk factor information, radiation and treatment records, and to utilize this unique repository in order to investigate the mechanisms and nature of gene-gene and gene-environment interactions that may influence susceptibility to breast cancer. Since 1999, she has been responsible for all aspects of the informatics related activities of the study, namely centralized information system development, data management, database design and implementation, data summaries, statistics and report generation. She is responsible for keeping the WECARE data safe and generating new data sets for different analyses according to investigators' concept proposals.

Ms. Liang is also involved in other studies such as the IMAGINE (for IMAGING and Epidemiology) Study examining background parenchymal enhancement (BPE) as seen on MRI as a biomarker of breast cancer risk.

Ms. Liang's research interests lie in the design of centralized information systems for large-scale, multicenter, multidiscipline studies, data modeling, database design, data management and data analysis.

Publications

Selected peer-reviewed publications:

Reiner AS, Watt GP, John EM, Lynch CF, Brooks JD, Møller M, Boice JD, Knight JA, Concannon P, Smith SA, Liang X, Woods M, Shore R, Malone KE, Bernstein L; WECARE Study Collaborative Group, Bernstein JL. Smoking, Radiation Therapy, and Contralateral Breast Cancer Risk in Young Women. *J Natl Cancer Inst.* 2022 Apr 11;114(4):631-634. doi: 10.1093/jnci/djab047. PMID: 33779721; PMCID: PMC9002273.

Watt GP, Sung J, Morris EA, Buys SS, Bradbury AR, Brooks JD, Conant EF, Weinstein SP, Kontos D, Woods M, Colonna SV, Liang X, Stein MA, Pike MC, Bernstein JL. Association of breast cancer with MRI background parenchymal enhancement: the IMAGINE case-control study. *Breast Cancer Res.* 2020 Dec 7;22(1):138. doi: 10.1186/s13058-020-01375-7. PMID: 33287857; PMCID: PMC7722419.

Lee S, Liang X, Woods M, Reiner AS, Concannon P, Bernstein L, Lynch CF, Boice JD, Deasy JO, Bernstein JL, Oh JH. Machine learning on genome-wide association studies to predict the risk of radiation-associated contralateral breast cancer in the WECARE Study. *PLoS One.* 2020 Feb 27;15(2):e0226157. doi: 10.1371/journal.pone.0226157. PMID: 32106268; PMCID: PMC7046218.

Bernstein JL, Thomas DC, Shore RE, Robson M, Boice JD Jr, Stovall M, Andersson M, Bernstein L, Malone KE, Reiner AS, Lynch CF, Capanu M, Smith SA, Tellhed L, Teraoka SN, Begg CB, Olsen JH, Møller M, Liang X, Diep AT, Borg A, Concannon P, Haile RW; WECARE Study Collaborative Group. Contralateral breast cancer after radiotherapy among BRCA1 and BRCA2 mutation carriers: a WECARE study report. *Eur J Cancer.* 2013 Sep;49(14):2979-85. doi: 10.1016/j.ejca.2013.04.028. Epub 2013 May 21. PMID: 23706288; PMCID: PMC3755053.

Begg CB, Haile RW, Borg A, Malone KE, Concannon P, Thomas DC, Langholz B, Bernstein L, Olsen JH, Lynch CF, Anton-Culver H, Capanu M, Liang X, Hummer AJ, Sima C, Bernstein JL. Variation of breast cancer risk among BRCA1/2 carriers. *JAMA.* 2008 Jan 9;299(2):194-201. doi: 10.1001/jama.2007.55-a. PMID: 18182601; PMCID: PMC2714486.

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