BIOGRAPHICAL SKETCH

NAME: **Allison W. Kurian, M.D., M.Sc.**

eRA COMMONS USER NAME: Kurian.Allison

POSITION TITLE: Associate Professor of Medicine and of Health Research and Policy

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	Completion Date	FIELD OF STUDY
Stanford University, Stanford, CA	B.A.	06/1995	Human Biology, Honors
Harvard Medical School, Boston, MA	M.D.	06/1999	Medicine
Massachusetts General Hospital, Boston, MA	Residency	06/2002	Internal Medicine
Harvard School of Public Health, Boston, MA		08/2000	Clinical Effectiveness
Stanford University School of Medicine, Stanford, CA	Fellowship	06/2005	Medical Oncology
Stanford University School of Medicine, Stanford, CA	M.Sc.	12/2006	Epidemiology

A. Personal Statement:

My professional goal is to improve breast and gynecologic cancer outcomes through clinically-oriented research on the genetic epidemiology, prevention, and treatment of these cancers. My research has been supported by National Institutes of Health, foundation, and institutional grants and published widely in peer-reviewed journals. As Director of the Stanford Women's Clinical Cancer Genetics Program, I maintain an active practice caring for women diagnosed with, and at high risk for, breast and gynecologic cancers. I serve on the National Comprehensive Cancer Network Panels for Genetic Risk of Breast/Ovarian Cancer and Breast Cancer Risk Reduction, developing evidence-based practice guidelines. I have led several decision analyses of strategies to optimize breast and gynecologic cancer outcomes, culminating in an online decision tool that helps patients manage their cancer risks (http://brcatool.stanford.edu; Kurian et al., J Clin Oncol 2012). I have led many high-impact studies using Surveillance, Epidemiology and End Results (SEER) registry data, including one providing definitive evidence that bilateral mastectomy does not improve survival for most breast cancer patients (Kurian et al., JAMA 2014). I have expertise in evaluating the impact of novel diagnostic technologies in breast cancer care and I led the first clinical study of germline next-generation sequencing among breast cancer patients (Kurian et al., J Clin Oncol 2014). I am Principal Investigator of the Stanford Oncoshare project, a breast cancer outcomes research initiative that integrates data from electronic medical records and the population-based SEER registry (http://med.stanford.edu/oncoshare.html). I work closely with the Cancer Surveillance and Outcomes Research Team (http://cansort.med.umich.edu/) as PI of "Individualization of Systemic Therapy in Patients with Estrogen Receptor-Positive Breast Cancer", a component of the National Cancer Institute-funded Program Project Grant, "The Challenge of Individualizing Treatments for Patients with Breast Cancer" (P01 3003080504, S. Katz, PI; Kurian et al., JAMA 2017).

1. **Kurian, A.W.**, Munoz, D.F., Rust, P., et al. (2012). Online tool to guide decisions for BRCA1/2 mutation carriers. Journal of Clinical Oncology, 30(5), 497-506. PMCID: PMC3295552.
2. **Kurian, A.W.**, Lichtensztajn, D.Y., Keegan, T. H., et al. (2014). Use of and mortality after bilateral mastectomy compared with other surgical treatments for breast cancer in California, 1998-2011. JAMA, 312(9), 902-914. PMID: 25182099.
3. **Kurian, A.W.**, Hare, E.E., Mills, M.A., et al. (2014). Clinical evaluation of a multiple-gene sequencing panel for hereditary cancer risk assessment. Journal of Clinical Oncology, 32(19), 2001-2009. PMCID: PMC4067941.
4. **Kurian A.W.**, Griffith K.A., Hamilton .A.S., et al. (2017). Genetic testing and counseling among patients with breast cancer. JAMA, 317(5), 531-534. PMID: 28170472

B. Positions and Honors

Positions and Employment

1999-2002 Intern and Resident in Internal Medicine, Massachusetts General Hospital
2002-05 Post-Doctoral Fellow, Division of Oncology, Stanford University School of Medicine
2006-07 Instructor in Medicine, Division of Oncology, Stanford University School of Medicine
2007- Director, Stanford Women's Clinical Cancer Genetics Program
2007- Member, Stanford University Cancer Institute, Cancer Epidemiology and Control Programs
2008-2015 Assistant Professor of Medicine and Health Research & Policy, Stanford University Medical Center
2015- Associate Professor of Medicine and Health Research & Policy, Stanford University Medical Center

Professional Certification

2002 Certified, Internal Medicine, American Board of Internal Medicine
2005 Certified, Medical Oncology, American Board of Internal Medicine
2015 Maintenance of Certification, Medical Oncology, American Board of Internal Medicine

Other Professional Activities and Experience

2004- Manuscript Reviewer, Annals of Internal Medicine, Breast Cancer Research, Breast Cancer Research and Treatment, Cancer, Cancer Epidemiology Biomarkers and Prevention, Cancer Investigation, Cancer Prevention Research, Cancer Research, Carcinogenesis, Clinical Cancer Research, European Journal of Cancer, International Journal of Cancer, JAMA, Journal of Clinical Oncology, Nature Biotechnology, PLoS Genetics, Value in Health
2008-11 Career Development Subcommittee, American Society of Clinical Oncology (ASCO)
2008 Data Relevance Working Group, Surveillance Epidemiology and End Results (SEER) Registry
2009- Guidelines Panel on Breast/Ovarian Genetics, National Comprehensive Cancer Network
2011- Board of Directors, American Cancer Society, Santa Clara County
2011- Scientific Advisory Board, FORCE Advocacy Group for Hereditary Breast and Ovarian Cancer
2011-14 Scientific Program Committee, Cancer Prevention and Epidemiology, ASCO
2011- Scientific Program Committee, Epidemiology Section, American Association for Cancer Research
2012-15 Scientific Program Committee, ASCO Quality Care Symposium
2012- Advisory Committee, California Health Care Foundation
2013- Member, California Breast Density Information Group
2013- Advisor on Cancer Genetics, San Francisco Bay Area Biotechnology Education Consortium
2013- Guidelines Panel on Breast Cancer Risk Reduction, National Comprehensive Cancer Network
2013-14 Track Leader, Cancer Prevention and Epidemiology, ASCO Scientific Program Committee
2014- Oncology Consultant, National Cancer Institute (NCI)-funded Cancer Intervention and Surveillance Modeling Network (CISNET) Breast Working Group
2014- Lead Medical Oncology Investigator, Cancer Surveillance and Outcomes Research Team (CanSORT), University of Michigan School of Medicine
2014- Co-Investigator, Prospective Registry of MultiPlex Genetic Testing (PROMPT) Study
2015 External Advisory Board, Princess Margaret Hospital Cancer Genomics Program, Toronto, Canada
2015- Board of Directors, FORCE Advocacy Group for Hereditary Breast and Ovarian Cancer
2015- Editorial Board, ASCO Cancer.Net; Special Editor for Hereditary Breast Cancer Syndromes
2016- Specialty Editor, Breast Cancer Advisory Panel, ASCO
2016- Member, ClinGen Hereditary Cancer Clinical Domain Working Group

Honors and Awards

1995 Phi Beta Kappa, Stanford University
2003 Award for best research abstract, Division of Oncology, Stanford University
2004 American Society of Clinical Oncology Merit Award for Research Abstract
2005 American Society of Clinical Oncology Young Investigator Award
2005 Cancer Research and Prevention Foundation Post-Doctoral Fellowship Award
2005 California Breast Cancer Research Program Post-Doctoral Fellowship Award
2006 NIH Building Interdisciplinary Research Careers in Women's Health K12 Award
2007 Cornelius L. Hopper Research Impact Award, California Breast Cancer Research Program
2008 Robert Wood Johnson Foundation Physician Faculty Scholars Award

2008 Jan Weimer Faculty Chair for Breast Oncology, Stanford Cancer Institute
2010 California Breast Cancer Research Program Translational Research Award
2011 New Clinical Investigator Award, Stanford Cancer Institute
2012 One of the 12 best publications funded by the NCI's Epidemiology and Genomics Program (Kurian et al., Journal of Clinical Oncology 2011; 29(34), 4505-9. PMCID: PMC3236651)
2013 Suzanne Pride Bryan Breast Cancer Research Award, Stanford Cancer Institute
2014 Stanford University Oncology Division Teaching Award
2017 Elizabeth Mayers Award for Outstanding Research, BRCA Foundation

C. Contributions to Science

1. **Characterizing hereditary breast cancer risk across diverse populations.** My work has contributed significantly to the understanding of inherited breast cancer risk, with a special focus on diverse populations. In early work, I studied the performance of models that predict carriage of inherited *BRCA1* and *BRCA2* (*BRCA1/2*) gene mutations across different racial/ethnic groups; these articles demonstrated substantial differences in the performance of clinical risk prediction tools across racial / ethnic groups, with significant implications for patient care (Kurian et al., J Clin Oncol 2008). Using the SEER registry and together with colleagues from the Cancer Prevention Institute of California (CPIC), I led a study to quantify the risks of second primary breast cancers among breast cancer survivors, and found that survivors of a first hormone receptor-negative breast cancer have a 10-fold increased risk of developing a second such cancer, compared to the general population (Kurian et al., J Natl Cancer Inst 2009). I built on this work with a study of lifetime breast cancer risks according to molecular subtype and race/ethnicity among 40,936 participants of the California Cancer Registry (Kurian et al., Breast Cancer Res 2010). In collaboration with the multi-national Breast Cancer Family Registry (BCFR), I led a study that estimated breast cancer risks among women who tested negative for an identified familial mutation in *BRCA1*/2. We discovered that there is no significant increase in breast cancer risk among non-carriers of a familial *BRCA1/2* mutation; this publication was highlighted by an editorial and news release, and it was selected as one of the 12 best publications funded by the National Cancer Institute's Epidemiology and Genomics Research Program (Kurian et al., J Clin Oncol 2011). Therefore, my research has substantially enhanced our knowledge of hereditary cancer risk among diverse patient populations and families.
    a. **Kurian, A.W.**, Gong, G.D., Chun, N.M., et al. (2008). Performance of BRCA1/2 mutation prediction models in Asian Americans. Journal of Clinical Oncology, 26(29), 4752-8. PMCID: PMC2653135
    b. **Kurian, A.W.**, McClure, L.A., John, E.M., et al. (2009). Second primary breast cancer occurrence according to hormone receptor status. Journal of the National Cancer Institute, 101(15), 1058-65. PMCID: PMC2720990
    c. **Kurian, A.W.**, Fish, K., Shema, S.J., & Clarke, C.A. (2010). Lifetime risks of specific breast cancer subtypes among women in four racial/ethnic groups. Breast Cancer Research, 12(6), R99. PMCID: PMC3046442
    d. **Kurian, A.W.**, Gong, G.D., John, E.M., et al. (2011). Breast cancer risk for non-carriers of family-specific BRCA1 and BRCA2 mutations: findings from the Breast Cancer Family Registry. Journal of Clinical Oncology, 29(34), 4505-9. PMCID: PMC3236651

2. **Informing decisions about the prevention and treatment of women's cancers.** I have conducted many studies that aim to inform and facilitate the difficult choices that women face about managing their cancer risks. Together with colleagues in the NCI-funded Cancer Intervention and Surveillance Modeling Network (CISNET), I have led decision analyses of cancer risk reduction options for high-risk women. We first estimated the cost-effectiveness of screening breast magnetic resonance imaging (MRI) for *BRCA1/*2 mutation carriers, a publication that was cited by the practice guidelines of the American Cancer Society, and honored by the 2007 Research Impact Award of the California Breast Cancer Research Program. We built on this work to compare the survival of *BRCA1/2* mutation carriers after various available options for cancer risk reduction, using a computer simulation model. Notably, we discovered that intensive breast screening incorporating MRI offers comparable survival probability to that of prophylactic mastectomy, an invasive procedure that many patients wish to avoid. This work resulted in a high-impact publication that was cited in statements by the American and Canadian Colleges of Surgeons (Kurian et al., J Clin Oncol 2010). We subsequently provided the simulation model online for clinical use as a decision support tool, and it is publicly available to patients and doctors at http://brcatool.stanford.edu (Kurian et al., J Clin Oncol 2012). I later collaborated with NCI-funded surveillance researchers on SEER-based study of the surgical

choices and outcomes of nearly 190,000 Californian breast cancer patients. Despite a dramatic rise in the use of double mastectomy over time, no patient subgroup gained any survival benefit from this highly invasive procedure. This definitive observational study answered an urgent clinical question – do women gain any better survival if they remove both breasts – which patients and physicians consider unethical to address with a randomized clinical trial (Kurian et al., JAMA 2014). Working with the Cancer Surveillance and Outcomes Research Team (http://cansort.med.umich.edu/) on NCI P01 3003080504, I recently led an analysis of the impact of second opinions on breast cancer care (Kurian et al., JAMA Oncol 2016). My work has thus provided essential data to guide clinical decision-making.

a. **Kurian, A.W.**, Sigal, B.M., & Plevritis, S.K. (2010). Survival analysis of cancer risk reduction strategies for BRCA1/2 mutation carriers. Journal of Clinical Oncology, 28(2), 222-31. PMCID: PMC2815712
b. **Kurian, A.W.**, Munoz, D.M., Rust, P., et al. (2012). Online tool to guide decisions for BRCA1/2 mutation carriers. Journal of Clinical Oncology. 30(5), 497-506. PMCID: PMC3295552
c. **Kurian, A.W.**, Lichtensztajn, D.Y., Keegan, T. H., et al. (2014). Use of and mortality after bilateral mastectomy compared with other surgical treatments for breast cancer in California, 1998-2011. JAMA, 312(9), 902-914. PMID: 25182099
d. **Kurian, A.W.**, Friese, C.R., Bondarenko I., et al. (2017). Second opinions from medical oncologists for early-stage breast cancer: prevalence and consequences. JAMA Oncology, 3(3), 391-397. PMID: 28033448

3. **Clinical translation of emerging genomic technologies**. I have contributed substantially to the translation of genomic technologies for cancer diagnosis and treatment. My early work included the first cost-effectiveness analysis of a molecularly targeted therapy for early breast cancer, trastuzumab. I subsequently led an innovative data linkage project that integrated SEER and electronic medical records and studied the use of genetic testing and targeted therapy across healthcare settings (Afghahi et al., J Oncol Pract 2016). I have recently focused on translating next-generation sequencing panels of multiple cancer-risk associated genes into clinical practice: in 2014 I led the first clinical study of next-generation sequencing for breast cancer risk assessment. We found that a substantial proportion of high-risk women carry mutations in genes other than *BRCA1/2*, a discovery that enabled early cancer detection and offers evidence of benefit from this new genetic technology. This innovative study was published as a rapid communication due to its clinical relevance, was chosen by ASCO as one of the best original articles of 2014, and informed the NCCN practice guidelines (Kurian et al., J Clin Oncol 2014). Working with the Cancer Surveillance and Outcomes Research Team on NCI P01 3003080504, I am now leading analyses of the use and outcomes of genetic testing in a large, population-based sample of breast cancer patients from the California and Georgia SEER registries (Kurian et al., JAMA 2017; Kurian et al., J Clin Oncol 2017). Thus my work has contributed significantly to the evaluation and implementation of precision oncology.

a. Afghahi, A., Mathur, M., et al. and **Kurian, A.W**. (2016). Use of gene expression profiling and chemotherapy in early-stage breast cancer: a study of linked electronic medical record, cancer registry and genomic data across two healthcare systems. Journal of Oncology Practice, 12, e697-709. PMID: 27221993
b. **Kurian, A.W.**, Hare, E.E., Mills, M.A., et al. (2014). Clinical evaluation of a multiple-gene sequencing panel for hereditary cancer risk assessment. Journal of Clinical Oncology, 32(19), 2001-2009. PMCID: PMC4067941
c. **Kurian A.W.**, Griffith K.A., Hamilton A.S., et al. (2017). Genetic testing and counseling among patients with breast cancer. JAMA, 317(5), 531-534. PMID: 28170472
d. **Kurian A.W.**, Li Y., Hamilton A.S., et al. (2017). Gaps in incorporating germline genetic testing into treatment decision-making for early-stage breast cancer. Journal of Clinical Oncology, 35 (20), 2232-2239. PMID: 28402748

Complete List of Published Work in MyBibliography (from a total of **113** peer-reviewed publications): **http://www.ncbi.nlm.nih.gov/sites/myncbi/1smniWZI_dAM/bibliography/47806390/public/?sort=date&direction=ascending**

D. Research Support

Ongoing Research Support

Breast Cancer Research Foundation Sledge/Kurian (co-PIs) 10/1/13-9/30/17
The changing face of metastatic breast cancer: using informatics to understand and improve outcomes
The major goals of this proposal are to identify metastatic breast cancer recurrence in electronic medical record data using natural language processing, and to analyze survival outcomes after metastatic recurrence.
Role: Co-PI

4P01 CA163233-05, National Cancer Institute Kurian (PI) 5/1/14-8/31/17
Individualization of systemic therapy in patients with estrogen receptor-positive breast cancer
The major goal of this program is to improve population health by helping clinicians and their patients address the challenges of individualizing treatment of breast cancer for patients with favorable prognosis.
Component of P01 3003080504 “The challenge of individualizing treatment for patients with breast cancer”
Role: PI

U01 CA197282, National Cancer Institute Spiegel (PI) 9/1/15-8/31/20
The impact of affect reactivity and regulation on breast cancer treatment decisions
The goal of this study is to examine the relationship between affect reactivity and regulation and women’s decisions regarding bilateral mastectomy after an initial diagnosis of unilateral breast cancer, and thereby to identify future opportunities for new interventions
Role: Co-Investigator

1U54MD010724-01, National Institute on Minority Health and Health Disparities Cullen (PI) 4/11/16-3/31/21
Stanford Precision Health for Ethnic and Racial Equality (SPHERE)
The goal of this project is to develop analytical tools for precision health, datasets and outreach programs that help accelerate the integration of treatments and interventions within target communities
Role: Co-Investigator

R01 CA193694, National Cancer Institute Beck (PI) 4/1/16-3/31/21
Genomic and morphologic predictor of high-risk DCIS
The goal of this project is to use breast cancer genotypic and phenotypic data to better refine our current risk classification system of DCIS.
Role: Co-Investigator

HHSN268201600003C, National Cancer Institute Stefanick (PI) 9/1/16-12/31/18
Women's Health Initiative - Regional Centers 2015-2020
This project is a long-term national health study that focuses on strategies for preventing heart disease, breast and colorectal cancer, and osteoporotic fractures in postmenopausal women.
Role: Co-Investigator

Selected Completed Research Support *(*from a total of **20** completed awards*)*
16OB-0149, California Breast Cancer Research Program Kurian (PI) 7/1/10-6/30/13
Measuring real-world breast cancer care
The goal of this project is to translate electronic health records into a breast cancer outcomes research tool.
Role: PI

Translational Medicine Research Grant, Stanford University Kurian/Fan (co-PIs) 9/1/14-3/31/16
The Oncoshare triple-negative breast cancer project
The goal of this study is to determine clinical and molecular variables linked to survival in a poor prognosis breast cancer cohort using a real-world, population-based approach
Role: Co-PI

5 R01 EB 00905507, National Cancer Institute Hargreaves (PI) 1/1/13-12/31/16
High resolution whole-breast MRI at 3.0T
The major goals of this proposal are to develop much higher resolution magnetic resonance imaging (MRI) to better classify lesions, to reduce biopsies, and to find cancer earlier.
Role: Co-Investigator