Symposium on Breast Cancer Prevention: Nutrition, Communication, and Public Policy

international breast cancer & nutrition

working together for prevention

http://www.purdue.edu/dp/oncological/ibcn.php

October 18-19, 2010
Purdue University
West Lafayette
Indiana
USA

PURDUE UNIVERSITY
Discovery Park

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The International Breast Cancer and Nutrition project is administered by the Oncological Sciences Center in Discovery Park at Purdue University.

PURDUE
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OFFICE OF THE PRESIDENT

October 18, 2010

Welcome to Purdue University and the first International Symposium on Breast Cancer Prevention — and thank you for helping Purdue foster international communication and research on breast cancer prevention. It is a true honor to be host to such a distinguished group of health care professionals, advocates and researchers from around the world.

This symposium is one of many examples of Purdue's mission to collaborate across disciplines and borders to develop transformative solutions to global challenges. Purdue's role in the fight against cancer is a strong one. Our research centers and programs are advancing scientific innovation and ensuring quality care globally. Our centers are dedicated to the improvement of cancer diagnosis and treatment through interdisciplinary collaboration.

We are home to the Center for Cancer Research, a highly successful National Cancer Institute-funded center; the Oncological Sciences Center; and the Bindley Bioscience Center, all of which are sponsors of this symposium.

Among our facilities and faculty committed to cancer research, Purdue's focus on breast cancer in particular is also significant. The Breast Cancer Discovery Group, made up of faculty from across campus, facilitates cutting-edge research across the cancer continuum.

Students also participate in Purdue's fight against cancer. The Cancer Prevention Internship Program (CPIP) is funded by a $1.5 million NIH grant and provides undergraduate and graduate students with the opportunity to participate in an innovative interdisciplinary program in cancer prevention.

Those of you gathered here for this important symposium represent an international working group of the best minds in the fields of oncological health research and communication. This symposium presents a unique opportunity to establish international research partnerships, encourage interdisciplinary education, and create a community of scholars dedicated to a sustained international effort in the prevention and treatment of breast cancer.

Thank you for all of your efforts. I applaud your good work in addressing this global challenge and to improving human life.

Sincerely,

France A. Córdova

France A. Córdova
President

Hovde Hall, Room 200 ■ 610 Purdue Mall ■ West Lafayette, IN 47907-2040 ■ (765) 494-9708 ■ Fax: (765) 494-7875

International Breast Cancer and Nutrition Program

VISION

The international breast cancer and nutrition (IBCN) project is focused on breast cancer prevention research to inform health communication, interventions, and public policy. This project benefits from a global perspective through the establishment of culturally aware multidisciplinary and international collaborations.

The development of breast cancer prevention strategies will be facilitated by a better knowledge of the epigenetic regulation of DNA (i.e, a series of mechanisms resulting in the reorganization of chromatin, in particular, via posttranslational histone modifications and DNA methylation, and that control the expression and silencing of genes). One way to identify epigenetic factors that influence breast cancer development in response to the environment is to focus on nutrition since dietary patterns have been associated with breast cancer and nutrients are known to impact gene expression (nutrigenomics). Once the diet-epigenetic interactions that protect or weaken the breast epithelium have been identified, it will be possible to develop breast cancer prevention strategies.

MISSION

The mission of the IBCN project is to develop an international multidisciplinary collaborative program to identify the impact of nutrition on breast cancer development and recurrence and to elucidate the cellular and molecular mechanisms, including genomics (genetic and epigenetic influence), involved in nutrients-induced breast tissue alterations and cancer development. The anticipated outcomes of this program are the development of strategies to diminish breast cancer incidence and/or incidence of aggressive forms of breast cancer based on epidemiological and biological findings related to nutrition and an impact on public policies via information of the public and health authorities.

GOALS

1. Assemble an international collaborative breast cancer prevention research network that takes into account ethnic and cultural backgrounds;
2. Work with experts involved in all aspects of breast cancer control, including cancer biologists, epigeneticists and geneticists, epidemiologists, nutrition experts, clinicians, bioengineers, statisticians, communication experts, law and public policy experts, anthropologists, education experts, healthcare professionals, and economists;
3. Collaborate with national and international organizations that focus on breast cancer control and environmental impact issues;
4. Identify the links between dietary patterns, epigenomic characteristics and aggressive forms of breast cancer;
5. Develop research projects aimed at identifying targets and directions to prevent breast cancer development and translate the findings into projects for the design of prevention strategies and
6. Develop an integrated training program in breast cancer prevention research and applications that promotes transcontinental and cross-disciplinary learning.

The International breast cancer and nutrition project: Reducing cancer incidence through epigenetic prevention research

The problem: Breast cancer incidence is rising all over the world, at different rates. Of particular concern is the rapid rise of incidence in low to middle income countries where aggressive forms of the disease in young women. The diversity in types of breast cancers can be largely explained by the heterogeneity of gene expression profiles. Gene expression is controlled by the heritage and the environment. Effective lifestyle factors and targeted therapies are practical interventions for disease prevention but have not been developed for breast cancer. A recent report by the World Cancer Research Fund has confirmed the link between two nutrition-related exposures, obesity and alcohol consumption, with breast cancer incidence. However, developing countries could not be included in the compiled research due to the lack of data, nor could the rise of premenopausal breast cancer incidence be captured in the studies given their large focus in postmenopausal breast cancer. Existing epidemiological data of the relationship between diet and breast cancer poorly address the mechanisms of breast cancer initiation.

The priority: Globally, breast cancer is ranked second in terms of incidence after lung cancer. It is known that lung cancer is largely preventable. Knowing the main cause of lung cancer enabled the WHO to accomplish the unprecedented step of having an international treaty on restricting tobacco use ratified by many countries. Breast cancer is usually the number one cause of mortality of all cancers in women, and is often the number one or two cause of mortality over all diseases in women on a per country basis. Unfortunately, even though the WHO labeled cancer prevention an urgent priority, especially in light of the fast rise of cancer in developing countries, noncommunicable diseases (a category to which most forms of cancer belong) continue to receive far less attention than communicable diseases. Breast cancer, a top priority noncommunicable disease, has now reached a similar level of urgency and likely is largely preventable with appropriate interventions.

The gap: The mechanisms that transition normal breast epithelium into neoplastic tissue are not understood. Only recently, have tools become available to study the breadth of epigenetic variability associated with the control of gene expression and it has not yet been applied to the relationship between environment and breast cancer. The link between diet and risk of breast cancer has not been studied in populations that encompass the diversity of diet, lifestyle affecting energy balance and breast cancer incidence observed around the world. The link may largely relate to the impact of diet on the epigenome. Biomarkers to assess prevention strategies are lacking. The whole infrastructure to do global research is underdeveloped.

The solution: Global interdisciplinary partnerships are needed to frame the questions; to study the relationship between diet, the epigenome, and breast cancer development; to describe the epidemiology of breast cancer in LMI countries; to develop and assess breast cancer prevention strategies; to develop and evaluate public health communication strategies; to create and implement appropriate cancer prevention policies. The international breast cancer and nutrition (IBCN) program initiated by Purdue University aims at promoting coordinated, yet country-tailored, breast cancer prevention research all over the world (see website for mission, goals, and infrastructure: http://www.purdue.edu/dp/oncological/ibcn.php). This will be achieved notably through a program focused initially on the impact of nutrition on the epigenome, with the possibility to extend to other environmental factors.

(1) ***Sophie Lelièvre*** *DVM, LLM (public Health), PhD, Leader, Breast Cancer Discovery Group of the Purdue Center for Cancer Research, and* ***Connie Weaver,*** *PhD, Head, Department of Foods and Nutrition, and Deputy Director, Indiana Clinical and Translational Sciences Institute; International Breast Cancer and Nutrition Project, Purdue University, West Lafayette, IN, USA*

(2) ***Isabelle Romieu****, MD, MPH, ScD, Head, Section of Nutrition and Metabolism, International Agency for Research on Cancer, Lyon, France,*

(3) ***Francesco Branca****, PhD, Director, Nutrition for Health and Development, and* ***Cecilia Sepulveda,*** *MD, MPH, Senior Adviser, Programme Cancer Control, World Health Organization, Geneva, Switzerland*

Agenda

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working together for prevention
http://www.purdue.edu/dp/oncological/ibcn.php

Symposium on Breast Cancer Prevention:
Nutrition, Communication and Public Policy
October 18 and 19, 2010
Purdue University
West Lafayette, Indiana, USA

Monday, October 18

East Foyer, Stewart Center

7:00-9:00 a.m.	Registration, East Foyer, Stewart Center
7:00 a.m.	Shuttle pick up at Holiday Inn then proceed to Hilton to pick up individuals for the conference. Drop off at the Purdue Memorial Union Club.

Stewart Center Rooms 302-306

7:00-8:00 a.m.	Continental Breakfast
8:00-8:30 a.m.	Welcome by **Provost Timothy Sands** and the **IBCN Leadership**

Session on Breast Cancer Prevention and Communication

Chair: **Erin Donovan-Kicken**
Communication Studies, University of Texas at Austin

Co-chair: **Mohan Dutta**
Communication, Purdue University, USA

8:30-9:30 a.m.	Keynote: **Kami Silk** Breast Cancer and Environment Research Center, Michigan State University, USA *The Breast Cancer and Environment Research Centers: Communicating to Lay Audiences about Breast Cancer Risk Reduction*
9:30-10.00 a.m.	**Laurie Hoffman-Goetz** Faculty of Applied Health Sciences, University of Waterloo, Waterloo, Ontario, Canada *Communicating about Breast Cancer in Canada: Challenges and Opportunities*
10:00-10:20 a.m.	Break

10:20-10:50 a.m. **Beatrice Wiafe-Addai**
Peace and Love Hospital and Breast Care International, Kumasi, Ghana
The Role of Awareness in Early Detection

10:50-11:20 a.m. **Seiichiro Yamamoto**
Center for Cancer Control and Information Services, National Cancer Center, Japan
Informing the Public about Breast Cancer: Communication and Prevention in Japan

11:20-11:50 a.m. **Jakob Jensen**
Department of Communication, Purdue University, USA
A Multi-National Content Analysis of Cancer News Coverage: Representations of Cancer on a Global Scale

11:50-12:20 p.m. Break

Purdue Memorial Union, North Ballroom

12:30-1:45 p.m. Lunch

Introduction by **Arden Bement**
Director, Global Policy Research Institute, Purdue University, USA

Joe Harford
International Affairs, National Cancer Institute, NIH, USA
Early Detection of Breast Cancer in Low-Resource Countries: The Math and the Myths

Stewart Center Rooms 302-306

Session on Breast Cancer Prevention and Public Policy

Chair: **Temeika Fairley**
Centers for Disease Control and Prevention, USA

Co-chair: **Sandra Liu**
Department of Consumer Sciences & Retailing, Purdue University, USA

2:00-3:00 p.m. Keynote: **Cecilia Sepúlveda**
Cancer Control Programme, World Health Organization, Geneva, Switzerland
WHO's Perspective on Breast Cancer Control in Low- and Middle-Income Countries

3:00-3:30 p.m. **Marie-Laure Moquet-Anger**
College of Law and Political Science, University of Rennes 1, France
The Role of the Law in an International Program of Disease Prevention Research

3:30-3:50 p.m. Break

Stewart Center Room 206

Session on Breast Cancer Prevention and Public Policy *continued*

3:50-4:20 p.m. **Temeika Fairley**
Center for Disease Control and Prevention, USA
Addressing the Breast Health of Women in the United States: Public Health's Role in Breast Cancer Prevention

4:20-4:50 p.m. **Kofi Nyarko**
National Cancer Control, Disease Control and Prevention Department, Ghana Health Service**,** Ghana
Breast Cancer Prevention and Policy in Africa - A Case of Ghana

4:50-5:20 p.m. **Martine Bellanger**
Public Health Policy Analysis Center, National School of Public Health, France
Economics and Politics of Breast Cancer Prevention in Some European Countries

Stewart Center Room 314

5:30-6:30 p.m. **Panel Discussion**
International Communication and Influence on Public Health Policy

Discussion Leaders:
Martine Bellanger
Public Health Policy Analysis Center, National School of Public Health, France

Jakob Jensen
Department of Communication, Purdue University, USA

Stewart Center Room 206

5:30-6:30 p.m. **Educational Session**
Current Status of Breast Cancer Treatment

George Sledge, Jr .
Department of Medicine, Division of Hematology/Oncology, Indiana University Melvin and Bren Simon Cancer Center, Indianapolis, Indiana, USA

Introduction by **Wael Harb**
Medical Director, Horizon Oncology Center and Clarian Arnett Cancer Care, Lafayette, Indiana, USA

Dauch Alumni Center, 403 West Wood Street, Purdue University

Reception and Poster Session

7:00 p.m. Shuttle pick up at conference hotels for transportation to reception

7:30-10:00 p.m. Reception with buffet and Poster Session

10:00 p.m. Shuttle pick up at Dauch Alumni Center for Union Club, Hilton Garden Inn and Holiday Inn

Tuesday, October 19

7:30 a.m. Shuttle pick up at Holiday Inn and proceed to Hilton to conference site.

Stewart Center Rooms 302-306

7:30-8:30 a.m. Continental Breakfast

8:30 a.m. Welcome by **Timothy Ratliff**
Director Purdue Center for Cancer Research, Purdue University, USA

Session on Nutrition, Populations and Breast Cancer

Chair: **Suzanne Murphy,**
Office of Public Health Studies, Hawaii, USA

Co-chair: **George McCabe**
Department of Statistics, Purdue University, USA

8:30-9:30 a.m. *Keynote:* **Ricard Uauy**
Public Health Nutrition, London School of Hygiene and Tropical Medicine, University of London, UK
Life Course Approach to Cancer Prevention: How Early

9:30-10:00 a.m. **Chisato Nagata**
Department of Epidemiology and Preventive Medicine, Gifu University, Japan
Soy Intake and Breast Cancer Risk in Japanese Women

10:00-10:20 a.m. Break

10:20-10:50 a.m. **Philippe Autier**
International Prevention Research Institute (iPRI), Lyon, France
How Much of the Breast Cancer Burden Can We Explain Now and How Much Primary Prevention Could Control?

10:50-11:20 a.m. **Susan Hankinson**
Dept. of Epidemiology, Harvard School of Public Health, USA
Endogenous Hormones and Breast Cancer Risk: Current Status, Challenges, and Opportunities

11:20-11:50 a.m. **Elio Riboli**
Cancer Epidemiology and Prevention Dept., Imperial College, London, UK
The Role of Metabolic and Nutritional Factors in Breast Cancer Causes and Prevention: Results from EPIC

11:50-12:20 p.m. **Ebenezer Asibey-Berko**
Department of Nutrition and Food Science, University of Ghana, Legon, Ghana
Past and Present Breast Cancer Activities in Ghana and Future Nutrition Studies

12:30-1:30 p.m. Lunch
Catherine Peachey Oral Presentations Awards
Introduction by **Marietta Harrison**
Associate Vice-President for Research, Purdue University, USA

1:30-2:00 p.m. Break

2:00-2:30 p.m. **Laurence Kolonel**
Epidemiology Program, Cancer Research Center, University of Hawaii, HI, USA
The Multiethnic Cohort Study: A Unique Resource for the Study of Breast Cancer Etiology and Prevention

Stewart Center Rooms 302-306

Session on Nutrition Research and Breast Cancer

Chair: **Eilsa Welch**
Nutritional Epidemiology, University of East Anglia, UK

Co-chair: **Carol Boushey**
Foods and Nutrition, Purdue University, USA

2:30-3:30 p.m. Keynote: **John Milner**
Nutrition and Cancer Prevention Branch, NIH, USA
Genetics, Diet and Breast Cancer Prevention

3:30-4:00 p.m. **Teresa Norat**
Division of Epidemiology, Public Health and Primary Care, Imperial College, London
WCRF/AICR Continuous Update Project: Food, Nutrition and Physical Activity and the Risk of Breast Cancer

4:00-4:15 p.m. Break

4:15-4:45 p.m. **Joan Lappe**
Creighton University, Omaha Nebraska**,** USA
Vitamin D3 and Calcium Supplementation Dramatically Decreases Cancer Risk: Results of a Randomized Clinical Trial

4:45-5:15 p.m. **Dorothy Teegarden**
Purdue University, Cancer Control and Prevention Program, USA
Vitamin D in Breast Cancer Prevention: Research Approaches from Bench to Translation

5:15-5:30 p.m. Break

Stewart Center Room 314

5:30-6:30 p.m. **Panel Discussion**
Progress and Gaps in Understanding Diet and Breast Cancer Relationship

Discussion Leaders:
Ricardo Uauy
Public Health Nutrition, London School of Hygiene and Tropical Medicine, University of London, UK

John Milner
Nutrition and Cancer Prevention Branch, NIH, USA

Stewart Center Rooms 302-306

Session on Education

5:30-6:30 p.m. **Educational Session**
The Role of Breast Cancer Research Advocacy in Breast Cancer Prevention

Session Chair, **Anna-Maria Storniolo,** Department of Medicine, Indiana University Melvin and Bren Simon Cancer Center

Panel
Connie Rufenbarger,Catherine Peachey Fund, Inc. - Warsaw, IN

Susan Clare, Department of Surgery, Indiana University Melvin and Bren Simon Cancer Center

Evening

6:45 p.m. Shuttle pick up at the Union Club, drop off at the Hilton Garden Inn and Holiday Inn

7:10 p.m. Shuttle pick up at Union Club, Hilton Garden Inn, and Holiday Inn to reception site.

7:30-11:00 p.m. **PARTY with Entertainment by the Purdue Musical Organization**

Purdue Musical Organizations

Onyx Uzomah, *Alto*
Grad student in physiology from Owerri, Nigeria and the ***Flashbacks***

11:00 p.m. Shuttle pick up at reception site and drop off at Holiday Inn, Hilton Garden Inn and the Union Club

External Advisory Board

Marie-Laure Moquet-Anger, Ph.D
Professor of Public Law
University of Rennes 1
France

Cecilia Sepúlveda, M.D., MPH
Cancer Control Programme
World Health Organization
Geneva
Switzerland

George W. Sledge, Jr., M.D.
Ballve Lantero Professor of Oncology
Indiana University School of Medicine
Co-director Breast Cancer Program
Indiana University Melvin and Bren Simon Cancer Center
Indianapolis, Indiana
USA

Ricardo Uauy, M.D. Ph.D
Professor of Public Health Nutrition,
London School of Hygiene and Tropical Medicine
University of London
UK

Speaker Biographies
Symposium on Breast Cancer Prevention

Philippe AUTIER, MD, MPH
Director, International Prevention Research Institute (iPRI)
Lyon, France

Philippe Autier received his medical degree from the Free University of Brussels in 1982. In 1989, he received a Master of Public Health from the Harvard School of Public Health. He began his scientific career as expert in international health, mainly in disaster medicine, working with the WHO and the World Bank. In 1989 he joined the Jules Bordet Institute (a main cancer centre in Belgium) in Brussels where he became head of the Epidemiology and Prevention department. From 1990 to 1995, he coordinated the pilot project for implementation of organized mammography screening in Brussels. From 1995 to 2000, he was deputy director of the Epidemiology and Biostatistics department of the European Institute of Oncology in Milan (Italy). From 2000 to 2003, he worked as consultant for epidemiological programmes in the Grand Duchy of Luxemburg, and from 2003 to 2005, he joined back the Jules Bordet Institute in Brussels for taking care of first translational works on new ultrasound-based cancer detection technologies. From 2005 to 2009, he was head of the Prevention group at the IARC. Since December 2009, he is Director at the newly created International Prevention Research Institute (iPRI).

Philippe Autier has broad scientific and international experience and has published high profile articles in all areas in which he has been involved. His early scientific activity concerned disaster related health issues and chronic diseases like osteoporosis. Since 1989, his main research area is the epidemiology of skin cancer and photoprotection, for which he has coordinated major research activities within the Melanoma Group of the European Organization for Research on Cancer (EORTC). He has also been involved in the organization of screening programmes and evaluation of screening methods for cervix cancer, colorectal cancer, and breast cancer. At IARC, Philippe Autier has conducted innovative research programme for the evaluation of the impact of screening activities on cancer mortality, using data on the incidence of advanced cancers as well as cancer mortality data. In last years, Philippe Autier has taken the lead of an IARC Working Group on vitamin D and cancer, with main focus on eventual prevention properties of vitamin D.

End of 2009, after joining the iPRI, scientific activities of Philippe Autier are about epidemiological methods for testing the efficacy of innovative ultrasound-based methods for detection of cancer in solid organs and about studies on the identification of risk factors specific to the occurrence of aggressive or of slow progressing cancer with particular attention to breast cancer. Philippe Autier also pursues his

works on melanoma aetiology, and is much involved in efforts (like e.g., those developed by the World Health Organization) aiming at controlling the use of artificial ultraviolet tanning devices.

Martine BELLANGER, Ph.D
Professor of Health Economics
EHESP – French School of Public Health in Rennes
Paris, France

Martine M. Bellanger has been a professor of Health Economics at the EHESP French School of Public health in Rennes, France, since 1998. Previously, she taught micro-economics and mathematics for economics at the University of Nantes, in which she wrote her PhD on decision theory and elderly policies in France from 1960 to 1990. She is deputy director of the research centre for Analysis of public health policy (CAPPS – Sciences – Po Paris & EHESP).

Her main interests for both research and teaching are in economic analysis of health care reform in E.U member states, and economic evaluation. Currently, her particular focus is comparative analysis addressing questions related to funding health care and measuring, health inequalities and evaluation of public health programmes. Measuring efficiency in health care is becoming a growing research interest, with a particular attention to hospital services.

She has been involved in European research groups linked to the London School of Economics (LSE) and to the European Health Management Association (EHMA) and has contributed in four European projects from 1999: The scientific evaluation of market forces in European Health systems (1999-2000), Analysing the impact of health system change in the EU member States (2001-2002), Mapping health services access -National and Cross-border Issues (2004-2006) and Health Benefits and Service Costs in Europe – Health *BASKET*(2003-2007). She is currently working on a project related to efficiency measurement of hospital services in Europe: EURO-DRG project (2009 & 2010).

Temeika FAIRLEY, **Ph.D**
Epidemiologist
Centers for Disease Control and Prevention;
National Center for Chronic Disease Prevention and Health Promotion;
Division of Cancer Prevention and Control
Comprehensive Cancer Control Branch;
Clinical Translation and

Dr. Temeika L. Fairley is an epidemiologist with the Centers for Disease Control and Prevention's Division of Cancer Prevention and Control (DCPC). She obtained a PhD in biology from the University of Vermont and joined CDC as an Epidemic Intelligence Service Officer in 2001. During the early part of her tenure at CDC, Dr. Fairley developed expertise in public health surveillance, working with several surveillance systems including, the Behavioral Risk Factor Surveillance System (BRFSS), the National Immunization Survey (NIS), and the National Program of Cancer Registries Cancer Surveillance System (NPCR-CSS). In her current position as Epidemiologist in the Comprehensive Cancer Control Branch, Dr. Fairley works closely with funded programs to address surveillance data needs and promote more comprehensive use of public health surveillance data for programmatic purposes.

Scientific Support Team
USA

Dr. Fairley's research interests include breast cancer, cancer survivorship, and health disparities. Dr. Fairley's breast cancer interests and expertise are primarily in the area of cancer survivorship among women diagnosed before the age of 40.

Susan HANKINSON, Sc.D.
Professor of Medicine,
Epidemiologist
Harvard School of Public Health
USA

Dr. Hankinson is a Professor of Medicine at Harvard Medical School and Professor of Epidemiology at the Harvard School of Public Health. Her primary scientific interest has been in determining the role of exogenous and endogenous hormones to risk of breast and ovarian cancers and in the innovative use of biomarkers in epidemiologic research.

Dr. Hankinson has been a long-term investigator with both the Nurses' Health Study (NHS) and Nurses' Health Study II cohorts and currently serves as the Principal Investigator of the NHS. Further, she is the Principal Investigator of several other large NIH grants funded to assess hormones and risk of breast cancer in both the NHS and NHSII. Dr. Hankinson leads the Cancer Epidemiology Program of the Dana Farber/Harvard Comprehensive Cancer Center, has served on a variety of NIH grant review study sections, National Academy of Science committees and scientific advisory committees for the American Cancer Society, MD Anderson Cancer Center, and the Da Costa Foundation among others.

Joe B. HARFORD, Ph.D
Director, Office of International Affairs
National Cancer Institute, National Institutes of Health
Bethesda, MD
USA

Dr. Joe Harford received a Ph.D. in Biochemistry from the University of Maryland Medical School and conducted basic research in molecular biology and cell biology. Dr. Harford has published over 100 scientific papers. Dr. Harford is one of the founding editors for *Current Protocols in Cell Biology*.

In 1993, Dr. Harford became the chief scientist for RiboGene, Inc., a biotechnology company where he managed four drug discovery programs in infectious diseases. From 1996 to1999, Dr. Harford served as Chairman of the Scientific Advisory Board of RiboGene, Inc, and served in a similar capacity for SynerGene Therapeutics, Inc., an early-stage biopharmaceutical company that focuses on molecular therapeutics for cancer. Dr. Harford is a co-inventor on two issued U.S. patents related to drug discovery. In 1996, Dr. Harford returned to the NIH where he served as Associate Director of the NCI and Chief of Staff of the Office of the Director.

In July 2002, Dr. Joe Harford was named Director of the Office of International Affairs of the National Cancer Institute. In this capacity, he has responsibility for a number of bilateral and multilateral interactions between the NCI and foreign cancer research institutions

and other foreign entities. Dr. Harford serves as the Chair of the Strategic Advisory Group of the Ireland-Northern Ireland-NCI Cancer Consortium and as NCI liaison to the Middle East Cancer Consortium, the US-Japan Cooperative Cancer Research Program, the African Organization for Research and Training in Cancer, the American-Russian Cancer Alliance, and the International Network for Cancer Treatment and Research. Dr. Harford has represented the United States to the Governing Council of the WHO's International Agency for Research on Cancer and represented NIH for two years as a member of the Board of Trustees of the Human Frontier Science Program, an international non-governmental, nonprofit association devoted to the promotion of basic research. In July 2006, Dr. Harford was named as Strategic Leader for Knowledge Transfer by the International Union Against Cancer (UICC). In 2008, UICC altered its committee structure, and Dr. Harford was named to the UICC Board of Directors (NCI Liaison), the Solidarity Fund Taskforce, the Childhood Cancer Taskforce, and the Strategic Coordinating Committee. Dr. Harford has been appointed by the Irish Minister for Health and Children to the National Expert Group on Cancer Biobanking.

In 2007, Dr. Harford was recognized by the Arab Medical Association Against Cancer with an award, the citation which reads "In recognition for his significant contribution to enhance the status of cancer care and cancer research in the region and for his unwavering efforts to support needed infrastructure and create opportunities in cancer education, training and capacity building to help cancer patients and their families throughout the Arab world."

Laurie HOFFMAN-GOETZ, Ph.D
Professor, Department of Health Studies and Gerontology
University of Waterloo
Ontario, Canada

She received her Ph.D. from the University of Michigan and a M.P.H. from the George Washington University School of Public Health and Health Services. Her expertise can be described as eclectic with academic training and research in anthropology, health communication, physiology, immunology, preventive oncology, and public health. From 1995-1997, she was a Cancer Prevention Fellow at the National Cancer Institute (U.S.A.).

Her main research interests are on the impact of health literacy and numeracy on consumer understanding of cancer information, identification of best formats and practices to improve comprehension of cancer information for underserved populations, the influence of culture, acculturation, and language on cancer information comprehension, and mass media framing of cancer risks.

The Social Sciences and Humanities Research Council of Canada and the Canadian Institutes for Health Research support the work of Dr. Hoffman-Goetz and her students. She is a member of a multinational (Canada, New Zealand, Australia) team with research focused on

reducing the burden of disease and inequities in health arising from chronic disease in indigenous peoples.

She enjoys teaching health and risk communication in public health for the M.P.H. students at the University of Waterloo and is an editorial board member for journals in health communication and cancer education.

Jakob JENSEN, Ph.D
Assistant Professor of Communications
Purdue University
USA

Jakob Jensen is the recipient of the Kontos Faculty Fellowship for 2009-2010. Jensen earned his doctorate in communication from the University of Illinois in 2007. He is currently an Assistant Professor in the Department of Communication at Purdue University and a faculty affiliate of the Center for Families, the Oncological Sciences Center, and the Regenstrief Center for Healthcare Engineering.

In his time at Purdue, Jensen has founded the Health Interventions and Cancer Communication (HICC) lab, received the Distinguished Article in Health Communication award from the National Communication Association, and been a co-investigator on a $1.5 million R25 NIH grant that launched a cancer prevention training program for undergraduate and graduate students. Jensen's research focuses on improving the communication of health information, especially for the poor and underserved.

Laurence KOLONEL M.D., Ph.D.
Research Professor and Professor of Public Health
University of Hawaii
USA

Dr. Kolonel is a Research Professor in the Cancer Research Center, and a Professor of Public Health at the University of Hawaii. His research focuses on the epidemiology of nutrition and cancer in diverse ethnic populations, migrant studies, and other associations of lifestyle and genetic susceptibility to cancer risk. He was one of the earliest epidemiologists to undertake the study of diet and nutrition in the etiology of cancer, and to explore changing patterns of cancer incidence in migrant populations. Dr. Kolonel has been appointed to many national committees, including the Food and Nutrition Board and other committees of the U.S. National Academies of Science, the Board of Scientific Counselors of the U.S. National Cancer Institute (NCI), several committees of the American Association for Cancer Research, and others. He has served on advisory boards for several cancer centers, non-profit organizations, and university research programs in the U.S., and has been a member of the editorial boards of a number of journals, including the *American Journal of Epidemiology*, *Cancer Research*, *Cancer Causes and Control*, *Nutrition and Cancer*, and *Cancer Epidemiology, Biomarkers and Prevention*. He was a member of the expert panel that produced the recent WCRF/AICR Report on *Food Nutrition, Physical Activity and the Prevention of Cancer: a Global Perspective* (2007), and the companion report on *Policy and Action for Cancer Prevention* (2009). In 2002, he received a MERIT award from the NCI. He is an author on more than 375 peer-reviewed publications.

John MILNER, Ph.D.
Chief, Nutritional Science Research Group
Division of Cancer Prevention
National Cancer Institute
National Institutes of Health
Bethesda, MD
USA

From 1989 to 2000, John Milner was Head of and a Professor in the Department of Nutrition at The Pennsylvania State University, where he also served as Director of the Graduate Program in Nutrition. Before joining Penn State, he was a faculty member for 13 years in the Food Science Department and in the Division of Nutritional Sciences at the University of Illinois-Urbana-Champaign. While at the University of Illinois he served as the Director of the Division of Nutritional Sciences and as an Assistant Director of the Agricultural Experiment Station.

Dr. Milner earned a Ph.D. from Cornell University in nutrition, with a minor in biochemistry and physiology and a B.S. in Animal Sciences from Oklahoma State University. Dr. Milner is a member of several professional organizations, including the American Society for Nutrition, American Association of Cancer Research, American Chemical Society's Food and Chemistry Division, the Institute of Food Technology and the International Society of Nutrigenetics/Nutrigenomics. He is a fellow in the American Association for the Advancement of Science and an Honorary Member of the American Dietetic Association.

He has served in an advisory capacity as a member of the U.S. Department of Agriculture's Human Nutrition Board of Scientific Counselors, Joint USDA/HHS Dietary Guidelines Committee, and for the Food, Nutrition and Safety Committee within the International Life Sciences Institute (ILSI). Dr. Milner has served as president of the American Society for Nutrition (formerly the American Institute of Nutrition) and has testified before the Subcommittee on Appropriations in Washington, D.C. and the Presidential Commission on Dietary Supplement Labels in Baltimore, Maryland. He has served as a member of the National Academy of Sciences Committee on Military Nutrition Research, the U.S. Olympic Committee Dietary Guidelines Task Force, the External Advisory Board for the Pennington Biomedical Research Center, as a member and Vice-Chair for the Counsel of Experts of United States Pharmacopeia Committee on Bioavailability and Nutrient Absorption, a member of the External Advisory Board for the European Commission SeaFood Plus initiative and as the chair of the World Cancer Research Fund/American Institute for Cancer Research Mechanisms Working Group. He is currently a member of the Global Board of Trustees for ILSI, liaison to the International Food Information Council (IFIC), member of the Danone Institute's International Functional Foods and Health Claims Knowledge Center Committee, a member of the Board for the McCormick Science Institute and a member of the Mushroom Research Board. In 2008 he received the David A. Kritchevsky Career Achievement Award in Nutrition from the American Society for Nutrition.

Dr. Milner has published more than 200 book chapters, monographs

and journal articles. He serves on the editorial boards for *Cancer Prevention Research*, *Food and Nutrition Research, Nutrition and Cancer, Nutrfood, Journal of Nutritional Biochemistry, Journal of Alternative and Complementary Medicine, Journal of Ovarian Research, and The Journal of Medical Foods*. In his current position he promotes research that deals with the physiological importance of dietary bioactive compounds as modifiers of cancer risk and tumor behavior. Much of his own current research focuses on the anticancer properties of garlic and associated allyl sulfur compounds. In addition to presentations about nutrition and genomics he has been an invited to speak about garlic and health, selenium nutriture, antioxidants and health, functional foods and health promotion, and nutrition for cancer prevention.

Marie-Laure MOQUET-ANGER, Ph.D
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Professor Marie-Laure Moquet-Anger obtained her PhD Law (State doctorate) in public law from the University of Rennes 1. She is currently a Professor of Public Law in the College of Law and Political Science, University of Rennes 1, France. She is the former Vice Dean of the College of Law and Political Science. Dr. Moquet-Anger is also the Program Director of the Erasmus Mundus Master of the Laws "Law, Health, Ethics" and of University professional specialization programs "ethics and decision in public health" and "patients' rights and medical responsibility." This Master's program fosters the training of law students as well as health and law professionals from all over the world.

Dr. Moquet-Anger teaches in topics related to government intervention in health issues, administrative law, patients' rights, and health law at the University of Rennes and the University of Paris. Her expertise in public health policy, health and education, health systems, patients' rights, health and information, and health and responsibility has led her to serve as member of the Ethics Committee of the University Hospital of Rennes, qualified member of the regional committee for conciliation and indemnification of victims of medical accidents (CRCI), and qualified member of the regional committee of the national observatory on health professionals' demographics.

She has dedicated her research work to studying the involvement of the State in health protection and the relationship between citizens and public health services. She is the former Director of the Public Law Laboratory (UPRES-EA) of the University of Rennes and current member of the board of the French Association of Health Law (AFDS). She is in charge of chronicles in health law and hospital responsibility for the Law journal "la semaine juridique." In addition to regular publications in journals focused on health and law, she has been the editor of several books on emerging topics in health law, like health education and health territories, and is also the author of books on the place of medical doctors in the French health system, and 'Hospital Law' (in press).

Chisato Nagata is a Professor of the Department of Epidemiology & Preventive Medicine, Gifu University Graduate School of Medicine, Japan. She was on the faculty of the Department of Public Health, Gifu University School of Medicine as an Assistant professor from 1996 to 2000 and as an Associate professor from 2000 to 2005. She received her M.D. in 1988 and her Ph.D. in 1994, both from Gifu University School of Medicine. She has conducted research on breast cancer since 1996. Her research interest focuses on breast cancer risk, particularly in relation to nutrition and hormone levels.

Chisato NAGATA, MD, Ph.D
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Dr. Norat is a Principal Research Fellow at the Department of Epidemiology and Biostatistics at Imperial College London. Her primary scientific interests have been in determining the role of nutritional factors to the risk of cancers and the study of nutritional and lifestyle determinants of weight gain.

Dr. Norat has been a long-term investigator with the European Prospective Investigation into Cancer and Nutrition (EPIC). She is the Coordinator of the Continuous Update Project (WCRF/AICR), which aims to provide a comprehensive and up to date depiction of scientific developments on the relationship between diet, physical activity, obesity and cancer as a basis for the formulation for cancer prevention recommendations.

Teresa NORAT, Ph.D
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Dr. Nyarko is a public health physician and an epidemiologist in the Disease Control and Prevention Department of the Ghana Health service. He is head of the cancer control program of the Ghana Health Service, Ghana.

He also teaches as a part-time lecturer at the School of Public Health, University of Ghana in the Department of Epidemiology and Disease Control. His area of interest is Epidemiology and Disease Surveillance in the area of cancers and other non-communicable diseases. He is also involved in Health Systems and Policy in Ghana. He is currently a member of the National Cancer Steering Committee in Ghana.

Dr. Nyarko has worked across the various levels of the health delivery system in Ghana. He was the medical director of a 70 bed capacity district hospital in Ghana, where he championed Buruli Ulcer control in the district among other things.

He has published in both local and international peer review journals. On-going relevant studies are:

- Breast Cancer Cost Effectiveness Study in Ghana
- Risk factors for Breast Cancer in Ghana.

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Prof Riboli is Director of the School of Public Health at Imperial College London, rated one of the top two epidemiology and public health submissions to the UK's Research Assessment Exercise (RAE) in 2009.

He holds an M.D. degree (1977, State University of Milan), a Master of Public Health (1980, Milan) and a Master of Science in Epidemiology (1982, Harvard University). Professor Riboli is a Registered Physician (General Medical Council, UK, 2005) and an Honorary Fellow of the Royal College of Physicians (2008).

From 1983 to 2005 Professor Riboli was based at Lyon's the International Agency for Research on Cancer (IARC), where he developed new research projects in the areas of nutrition, nutritional status and cancer.

In 1989 he initiated the European Prospective Investigation into Cancer and Nutrition (EPIC), which sampled data from 500,000 subjects across 26 centres in ten countries.

He was Head of the Nutrition and Hormones Group of IARC from 2004 to 2005.

Professor Riboli has co-authored over 310 peer-reviewed publications and over 100 book chapters and books and serves on editorial boards of major journals on nutrition, cancer and epidemiology.

In 2005 he joined Imperial College London as Professor of Cancer Epidemiology; in 2006 he was appointed Divisional Head of Epidemiology, Public Health and Primary Care, and became Director when the School of Public Health was established in January 2010.

Cecilia SEPÚLVEDA, MD, MPH
Cancer Control Programme
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Dr Sepúlveda is a public health specialist with over 20 years' experience working in cancer prevention and control. During these years she has played key strategic roles, both nationally and internationally.

From 1985 to 1998 she was head of the National Cancer Control Programme at the Ministry of Health of Chile. Under her leadership a comprehensive national strategy was developed in the mid 80's which defined priority interventions from prevention to end of life care, based on WHO's framework. She was directly responsible for the reorganization of the national cervical cancer screening programme, and setting up the national breast cancer and palliative care programmes. One of her most outstanding achievements during this period is the transformation of the cervical cytology screening programme. This is one of the few in the developing world that has been able to demonstrate success in reducing mortality thanks to an

improved organization and more efficient use of resources.

Based on her expertise and experience Dr Sepúlveda was recruited coordinator of the WHO Headquarters Programme on Cancer Control in 2000, in an open international selection process. Her work in WHO as coordinator of cancer control resulted in the adoption of the World Health Assembly Cancer Prevention and Control Resolution in May 2005 for the first time in WHO's history. At Present she is Senior Adviser Cancer Control in the Unit of Chronic Diseases Prevention and Management. She is mainly responsible for promoting national cancer control policies, plans and programmes, particularly in low-, middle-income countries in the context of the *Action Plan for the implementation of the global strategy on noncommunicable Diseases.* Within this broad framework, her specific tasks include the promotion of breast cancer prevention and control and palliative care.

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Dr. Kami Silk is an Associate Professor in the Department of Communication, Michigan State University, and has an appointment with the Michigan Agricultural Experiment Station. Dr. Silk's research interests are in the broad area of health communication, with a specific interest in developing effective health messages for the lay public and diverse audiences that are sensitive to health literacy issues. Dr. Silk currently works with the Breast Cancer and Environment Research Centers, funded by the National Cancer Institute and National Institute for Environmental Health Sciences, to investigate the links between the environment and breast cancer. She is part of the Communication Outreach and Translation Core that is designing health messages for mothers and adolescent girls that focus on adolescent lifestyle factors [nutrition and exercise] as a strategy for breast cancer risk reduction. Dr. Silk is currently the principal investigator (PI) for a nutrition evaluation project designed to assess the effectiveness of the state-wide Grow Your Kids nutrition program and the PI for a risk communication project that examines lay public risk perceptions of bioeconomy initiatives in Michigan. Dr. Silk has also conducted other nutrition related projects, working with research teams to develop a curriculum for low income mothers to delay the introduction of solid foods and to evaluate a nutrition game called the *Fantastic Food Challenge*. Dr. Silk is the graduate director of a college-wide Masters program in Health Communication, where she teaches on topics such as health communication campaigns and designing effective health messages.

George SLEDGE, Jr., MD
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Dr. Sledge is the Ballve-Lantero Professor of Oncology and co-director of the breast cancer program at the Indiana University Simon Cancer Center, and a Professor of Medicine and Pathology at Indiana University School of Medicine.

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He specializes in the study and treatment of breast cancer and directed the first large, nationwide study on the use of paclitaxel to treat advanced breast cancer. His recent research focuses on novel biologic treatments for breast cancer, particularly the development of anti-angiogenic therapy. He has published numerous articles in medical journals about breast cancer and chaired several nationwide clinical trials involving new breast cancer treatments.

Recently, his research has focused on novel biologic therapies. Dr Sledge serves as Editor-in-Chief of the Journal Clinical Breast Cancer, served as chairman of the Breast Committee of the Eastern Cooperative Oncology Group 2007 – 2010. He has been a member of the ASCO (American Society of Clinical Oncology) Board of Directors for many years, and has been recently named ASCO President-Elect.

He was named the recipient of the 2006 Komen Foundation Brinker Award for Scientific Distinction, the 2007 Breast Cancer Research Foundation's Jill Rose award and was the recipient of the Individual Lifetime Achievement Award – 2009 given by Susan G. Komen for the Cure – Indianapolis Affiliate. He has been a long-time supporter of the Pink Ribbon Connection (formerly known as the Y-Me Organization), among several others.

Dorothy TEEGARDEN, Ph.D
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Dr. Teegarden is a Professor in the Department of Foods and Nutrition at Purdue University. She received her doctorate in Human Nutrition and Nutritional Biology from the University of Chicago.

Dr. Teegarden is the lead for the Cancer Prevention and Control Program of the Purdue Oncological Sciences Center. She is also a member of the executive committee for the Breast Cancer Discovery Group of the NIH-designated Purdue Center for Cancer Research. Dr. Teegarden is the Principal Investigator and Director of the NIH-funded Cancer Prevention Internship Program. A primary research focus for her laboratory is the effect of vitamin D in breast cancer progression, using cell, animal and human model systems.

Ricardo UAUY, MD Ph.D
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Ricardo Uauy, born Dec/29/1948, received his Medical Doctor University of Chile/1972, Ph.D. Nutritional Biochemistry MIT/1977. Trained in Pediatrics Harvard Children's Hospital/Boston and Neonatology Yale New-Haven Hospital; Board Certified in Pediatrics and Neonatal-Perinatal Medicine (USA). Past-President of the International Union of Nutrition Sciences (IUNS) 2005-09. Director of INTA University of Chile 1994-2002. Presently, Professor of Public Health Nutrition at Institute of Nutrition (INTA) University of Chile and London School of Hygiene and Tropical Medicine, U.K.

Has participated as expert in multiple WHO/FAO expert committees (Protein Energy 81, Fats and Oils 93, FBDGs 95, Vitamin and Minerals 98, Nutrition in the Elderly 98, Human Energy needs 01, chair WHO/FAO Nutrition Diet and Chronic Disease 02, and Global Strategy WHO/03; WHO/FAO Scientific Update on CHO 06 and on Trans Fats 07, chair FAO/WHO Expert Consultation on Fats and Fatty Acids in Human Nutrition in 08. McCollum Lecture award ASN (USA) 2000, member Chilean Academy of Medicine 2002. Lawton Chiles International Lecturer Award NIH 2003, Spanish Nutrition Society Award and PAHO/WHO Abraham Horwitz award for Leadership in Inter-American Health 2005; in 2006 received the Kellog's International Nutrition Award from the American Nutrition Society ASN; in 2008 the Rank Lecture Award/UK Nutrition Society and the 2009 British Nutrition Foundation Prize. Member of the Scientific Panel and executive committee of the WCRF World Cancer Research Foundation: Diet Nutrition and Physical Activity Prevention of Cancer Publications 2007 and the corresponding Policy Report 2008; over 337 scholarly peer reviewed scientific publications.

Beatrice WIAFE ADDAI, MD, Ph.D
CEO, Peace and Love Hospital,
President, Breast Care International
Kumasi, Ghana

I am a breast surgeon, a consultant in breast cancer management, and the Chief Executive Officer of the Peace and Love Hospitals in Accra and Kumasi. I am also the President of Breast Care International (A Non Governmental Institution in – Ghana). These Institutions were established in 2002.

My organization and the hospital have been involved in creating awareness about breast cancer in Ghana, especially in the deprived communities. We are teaching women how to do their own breast self examination, clinical screening, diagnosis, counseling, treatment and rehabilitation of patients as far as breast cancer is concerned.

Breast cancer in Ghana is shrouded with myths and misconceptions, preventing women from seeking early medical treatment. We have so far been trying to demystify breast cancer among the population especially women and disabuse their minds of the misconceptions. We are trying to empower them with some basic knowledge, all aimed at early detection to reduce mortality and morbidity of breast cancer patients.

Since its inception, the team has screened more than 400 thousand women for breast cancer. A lot is still needed to be done in a country where most of our women live in deprived communities and are not educated, with little knowledge about several diseases including breast cancer.

Seiichiro YAMAMOTO
Ph.D
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Dr. Yamamoto is a section head of Epidemiology and Statistics section, Cancer Information Services and Surveillance Division, Center for Cancer Control and Information Services, National Cancer Center, Tokyo.

He obtained his B.S., M.S, and Ph.D. in Health Sciences from University of Tokyo. He then took a staff position for epidemiology and biostatistics research in National Cancer Center. He was a visiting researcher of the National Cancer Institute in the United States during 2003-2004.

His main research field is cancer epidemiology and clinical trial methodology. He is involved in the several large scale epidemiological studies in Japan such as Japan Public Health Center-based prospective Study. He is also a chief biostatistician of JCOG (Japan Clinical Oncology Group), which is a multicenter clinical trial cooperative groups conducting more than 70 trials at present. He is an editorial board member of the Japanese Journal of Clinical Oncology and a councilor of several academic associations including the Japanese Society of Medical Oncology, Japanese Cancer Association and Japanese Epidemiology Association.

Abstracts

Breast Cancer Prevention and Communication

Boa Viagem: Education in Health in Early Prevention and Diagnosis of Breast Cancer.

Cláudia Belém Moura, Cândida Otíla Braga Silva, Priscila Carmelita Paiva Dias Mendes Carneiro, Karine Peixoto Rego, Centro Regional Integrado de Oncologia – Fortaleza – CE, Brasil

Breast cancer is the most common cancer among women and the diagnosis frequently occurs in advanced stages. The mortality caused by breast cancer remains high in Brazil. In health, as a whole, and in cancer, particularly, information has been a fundamental prevention strategy, because, apart from the high incidence, the cancer is still unknown and this ignorance leads to risk factors, prejudice and late diagnosis. Thus, the "Boa Viagem" is an Education project on Health for the promotion of education by aiming for early prevention and detection of breast cancer in local authorities from the interior of State of Ceara. It has begun in 2007 and continues today. Its methodology utilizes courses for Health – ACS, informative lectures for people and participation in local radio programs about breast cancer. The results were: 10 local authorities chosen, 1000 ACS trained, participation in 8 radio stations, 600 participant people in lectures, further knowledge post-course by the ACS, referred patients to medical appointments after local visits by the ACS. Thus, educational actions have proven effective to detect the early onset of breast cancer: 10 local authorities chosen, 1000 ACS trained, participation in 8 radio stations, 600 participant people in lectures, further knowledge post-course by the ACS, referred patients to medical appointments post local visiting by the ACS. Thus, it is established that educational programs are an effective and important step in the early detection of breast cancer.

Breast Cancer Awareness and Prevention through Localism in Communication

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Breast cancer is one of the major health challenges affecting women in African countries, the magnitude of the threat posed by breast cancer to women's health in developing countries could be damaging, if not curtailed. Breast cancer is usually diagnosed at a more advanced stage in developing countries. Consequently, developing countries have higher mortality ratio for breast cancer than the United States (Sandelin et al, 2002:45). In Nigeria, breast cancer is one of the leading causes of death in women aged 30 years and above. It reduces the life expectancy of the population at risk, especially those between 31 and 50 years of age. This paper explores localism in communication as a tool for health development in African countries. The paper draws attention to the various localized channels in creating the awareness and knowledge of breast cancer as well as serve as a communication tool to prevent breast cancer in African countries.

Breast Cancer Screening and Mammography in Women

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Because the breasts are a common site of potentially fatal malignancy in women. Breast cancer is a malignant proliferation of epithelial cells lining the ducts or lobules of the breast and according for about one — third of all cancer in women. A women living to age 80 in North America has one chance in nine of developing invasive breast cancer. Asian women have one- fifth to one — tenth the risk of breast cancer of women in North America or Western Europe. Routine use of screening mammography in women age 50 years and older reduces mortality from breast cancer by 33%.

This study was cross-sectional descriptive. The statistical population included all of the women's refered to towhid hospital who were examined by an obstetrician…. acceptance of samples. Mammography and X-ray were obtained. Data was collected by questionnaire and positive diagnosis was based on standard definition of the disease with survey of the mammography, X-ray and physical examination.

The mammography was done on 759 women; the results of this showed that age of 40/44% of samples was between 41-50. Breast pain was the most common chief complaint (39/78%). 72/2 % don't have history of breast disease. At the past (54/54%) had breast infected excretion. 89/72% don't have family history of breast disease. 10/28% had family history of breast disease with malignant tumor that half of these were undertaken surgery operation 85/5% don't have breast surgery operation 42/02 % were (3-5 time) pregnant 65/61% had consumption of ocp , 39/13% don't have other surgery operation survey of the graphy showed 67/85% done have any west age , and 23/18% had high density , 4/21% benign tumore 0/39% malignant tumore 1/44% mastitis 1/05% cyst 1/05% fibro adenoma.

The results of this study demonstrate the need to consider the woman's education and implementing screening programs. Mammography and ultrasongraphy are the most reliable and common imaging techniques for early detection of breast lesions. Because the breasts are a common site of potentially fatal malignancy in women and because they frequently provide clues to underlining systemic diseases in both men and women examination of the breast is an essential part of the physical examination.

Breast Survivorship Follow-up Care Plan for Post Treatment Care

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In this qualitative study women shared the impact of breast cancer post treatment and explored their preferences for survivorship care follow-up plan. Focus groups were conducted with 18 women with non-metastatic breast cancer, 3-36 months post-completion of last surgery, chemotherapy or radiation. Groups were stratified by age. Data was subjected to thematic analysis by age group (life stage).

Results indicated that the impacts of breast cancer after completion of treatment are broad and vary by age group. Study showed that physical, emotional and social effects are more intense in younger patients who underwent surgery, chemotherapy, radiation and were on hormone therapy. Patients in the middle age group indicated that fatigue and fear of recurrence were most common, especially when women had to change their life plans.

Preferred content of survivorship care plans echoes the wide variation in impacts of breast cancer. Patients want individualized, yet comprehensive, information. While preferred content varies by life stage, preferred format is similar. The ideal time for information varied from initial diagnosis to just before completion or at completion of treatment, or shortly after. Patients identified that an oncologist or a health-care professional such as an oncology nurse as the best person to deliver survivorship information. Preferred medium is in-person consultation, with adjunct written materials in lay language, telephone follow-up and electronic bulletins. Qualitative information on the effects of breast cancer at different life stages can be used to help individualize the content of care plans.

Does It Pay to Pay People to Share Information? Using Financial Incentives to Identify Social Networks and Promote Mammography among the Underinsured

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Efforts to screen women with inadequate health insurance for breast cancer face special challenges in actually identifying and communicating with desired audiences. While direct mail campaigns can persuade women to take advantage of free mammogram offers, for example, the success of such efforts depends on having (typically unavailable) lists of eligible women, e.g., Slater et al. (2005). One method of obtaining names (and building an audience) is peer referral, through which staff use viral marketing to reach previously unreachable women.

What is the best way to solicit nominations of friends, family, and peers? We conducted an experimental study with participants in a free mammography program in Minnesota comparing various incentive methods to determine the impact of financial incentive on peer nomination. We randomly assigned 2,968 recent participants to one of three conditions: women in one group were offered a $20 incentive each time someone they nominated was screened through the program, women in a second condition received a $5 incentive for each name and valid address or phone number (regardless of eventual screening completion), and in a third condition women received no financial incentive for nominations.

What we found was somewhat surprising. Financial incentive increased total nominations, $p < .05$, and yet simply asking people to refer others without direct financial incentive ultimately yielded as many completed mammograms as any other approach. Such results are noteworthy in an era of health care reform as we seek ways to encourage people to participate in newly available and affordable screening.

Reference

Slater, J. S., Henly, G. A., Ha, C. N., Malone, M. E., Nyman, J. A., Diaz, S., & McGovern, P. G. (2005). Effect of direct mail as a population-based strategy to increase mammography use among low-income underinsured women ages 40 to 64 years. Cancer Epidemiology, Biomarkers & Prevention, 14(10), 2346-2352.

Effects of Pink Ribbon Campaign at Cognitive, Attitudinal and Behavioral levels

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Researcher aimed to investigate the effects of Pink Ribbon campaign, launched to create awareness on breast cancer in women. Study examined the three integrated levels — knowledge, attitude, practice — of the effects process. Discrimination at all three levels of effects process on the basis of demographic variables like age, education and employment status were studied. In Pakistan due to lack of education and other information poor environment, health sector is badly suffering and it is a common observation that issues like breast cancer are taken as social taboos, especially when it comes to women. According to a report every ninth woman in Pakistan is suffering from breast cancer. Study helps find out how this campaign is effective in helping women to fight against this disease and to what extent the information needs more propagation. Stratified method for specification of the demographic characteristics was adopted while convenience method was used for collection of ! data from the target population of 350 women. A 28 items questionnaire of closed-ended questions was distributed amongst

the drawn sample. Hypothesis such as; 1) The campaign is effective in enhancing the awareness level about breast cancer amongst women. 2) Effects at attitudinal and behavioral levels are discriminated on the basis of age, education and job in women regarding breast cancer, were tested.

SPSS was used to analyze the data on univariate and bivariate basis. Results show that there is a significant change at cognitive level but a very low percentage of women have developed positive attitude towards this phenomenon. Similarly, the campaign has not achieved the desired level of success at behavioral level and the relationship among the components of the effects process is inconsistent.

Emerging Burden of Cancer in Developing Countries: The Convergence of Breast Cancer Prevention, Public Health, and Health Communication

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The global trend of cancer incidence as well as mortality has been gradually shifted from high-resource countries (HRCs) to low-resource countries (LRCs). More than 80 % of human population resides in LRCs, and a majority of these countries currently have insufficient infrastructures for cancer prevention and treatment. Without any effort to address a medical disparity between HRCs and LRCs, more than five million people in low socioeconomic class would be subject to diagnosis with late-stage cancers. In particular, Africa is one of the leading developing continents that will most likely encounter rising number of cancer cases, and breast cancer in especially Western and Northern Africa regions is a leading cancer with the highest incidence rate. In this article, potential causes and risk factors for cancer in LRCs are examined, such as increasing life expectancy, adoption of Western lifestyle, inadequate healthcare service, and cultural barriers. Furthermore, future approaches to breast cancer prevention with emphasis on health communication are presented in order to proactively address the rising burden of breast cancer in Africa, and randomized trials should be conducted to constantly evaluate and analyze the efficacy of each approach.

Identification of Age Dependent Biomarkers for Early Breast Cancer Detection Using Metabolite Profiling: A Multisite Study

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We report on our progress towards developing a test for early breast cancer detection using metabolite profiling methods. Using a combination of nuclear magnetic resonance (NMR) and multivariate statistical methods principal component analysis (PCA), partial least squares-discriminant analysis (PLS-DA) and orthogonal signal correction-partial least squares-discriminant analysis (O-PLS-DA) to analyzed the metabolite profiles of 142 breast cancer patients and 272 healthy control from 4 different sites. PCA and PLS-DA analysis was able to distinguish cancer patients from controls. From the analysis of the corresponding loading plots, 17 metabolites that were altered in concentration between cancer and controls were identified and tested individually and collectively using all samples. From a variable selection analysis, 9 metabolite markers were shortlisted from analysis of samples from two of the locations using 10-fold cross validation. A PL! S-DA model built using these markers with leave one out cross validation provided a sensitivity of 84% and a specificity of 98% (AUROC >0.95). Strikingly, when this model was used to test samples from the other two locations we achieved a sensitivity of 82% and specificity of 93% (AUROC >90%). Analysis of the samples after randomly assigning them into testing and

training sets also performed well (AUROC >0.90). While additional work needs to be carried out on a broader range of normals and cancer patients, to the best of our knowledge, this is the first multisite study to identify and pre-validate a prediction model for early detection of breast cancer based on a metabolic profile. In particular, the combination of NMR and advanced multivariate analysis is a powerful approach for the early detection of breast cancer.

Knowledge and Information Needs of Women Interested in Genetic Testing for Breast Cancer

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Genetic testing is a relatively new procedure in which an individual's genome is tested for specific markers of certain disease. In particular, genetic testing for breast and ovarian cancer has increased in prevalence over the last several years due in part to a controversial large scale direct to consumer advertising campaign initiated in 2002 (Gollust, Hull, & Wilfond, 2002). However, the clinical validity of the test remains to be determined as the test went on the market before enough meaningful data had been collected (Gray et. al, 2009). Similar to recent concerns regarding overuse of traditional breast cancer screening (mammography), the potential for overuse of the genetic tests is high (Bowen, Battuello, & Ratts, 2006). Because companies continue to increase consumer awareness (read: demand) for genetic testing, it is important to assess current knowledge and information needs of potential consumers.

As a precondition to providing informed consent for participation in screening, and a potential mechanism to combat overuse of screening, it is necessary for the individual to have information related to the testing process, potential outcomes, and the disease for which the screening is occurring (Gigerenzer, Mata, & Frank, 2009). As such, our study seeks to extend previous research from traditional breast cancer screening (mammography) studies by analyzing current knowledge of women (N=150) related to both the disease and genetic screening risks and benefits (Gigerenzer, Mata, & Frank, 2009). In this way we hope to identify information gaps and needs of women considering genetic testing for breast cancer.

Knowledge and Practices of Breast Cancer Prevention among Women with Family History of Breast Cancer in Ede Metropolis, Osun State, Nigeria

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Breast cancer is the commonest malignancy in women comprising 18 % of cancers diagnosed and the second commonest cause of cancer death in women. Preventive knowledge and practice have been documented to be lacking among women. Women with family history of breast cancer have a relative risk greater than 4. This study was therefore designed to assess preventive knowledge and practice of women with family history of breast cancer in Ede Metropolis, Osun State, Nigeria.

The study was a cross sectional study. A three-stage sampling technique was used to select 187 women with family history of breast cancer. A validated semi-structured questionnaire was used to obtained data from the respondents. Knowledge of breast cancer prevention was assessed on a 15-point scale. Descriptive and t-test statistics were used to analyse the data.
The mean age of the respondents was 28.5Â±7.1 years. Majority (81.9%) were married. More than half (57.8%) have no education. Sixty-five percent were not aware that they were at risk of breast cancer.

Overall mean knowledge score of the respondents was 6.2Â±3.1. The prevalence of alcohol consumption, physical inactivity, early menarche (age < 11 years) and Nulliparity were 7.2%, 58.7%, 42.8% and 30.7% respectively. Preventive practices among respondents included breastfeeding for longer than 1 year (70.5%), breast self examination (28%) and mammography (7%). Educational level of the respondents positively influenced their knowledge and practices.

Knowledge and practices of breast cancer prevention are low. Information, education and communication programme on breast cancer prevention should be intensified for these women.

Media's Role in Fighting Breast Cancer in PNG

Paeope Ovasuru, Journalist, Papua New Guinea

In Papua New Guinea (PNG), a small island nation in the Pacific, just at the north of Australia, breast cancer has become one of the highest killers. The spread of breast cancer is most likely associated with the change of lifestyle that the local people are adapting to. The media in PNG is at the helm of educating and creating awareness on this deadly disease that is fast becoming rampant in the female population. Apart from advertisements in the local TV and radio stations and newspapers, the media fraternity takes it as a responsibility to cover events that carry out the breast cancer prevention message.

MRI and Breast Conservative Therapy

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Randomized controlled trials have shown equivalent survival for women with early stage breast cancer who are treated with breast-conservation therapy (local excision and radiotherapy) or mastectomy . imaging Magnetic resonance imaging (MRI) has been introduced in preoperative staging of the affected breast in women with newly diagnosed breast cancer because it detects additional foci of cancer that are occult on conventional.

Despite the MRI\'s moderate specificity for distinguishing between benign and malignant lesions, it is superior to conventional imaging (such as mammography or ultrasound) for evaluating tumor size in invasive lobular carcinoma or Paget\'s disease owing to their multi-focal, multi-centric nature. These findings will provide a better identification of those for whom breast-conserving therapy (BCT) is more appropriate. Mastectomy may not be adequate for every additional occult tumor deposit visible and detected by MRI because systemic therapy is able to deal with them. That is, radiotherapy and neoadjuvant chemotherapy rather than MRI-detected cancers are biologically and clinically irrelevant for the patient. Although the presumption that pre-operative MRI will potentially reduce in-breast recurrence has not been confirmed, some research demonstrates that local recurrence does have an impact both on disease-free survival and on overall survival. For this reason, avoiding early diagnosis of recurrence is considered to have the same value as early diagnosis of the primary cancer Several factors can ensure the application of breast MRI without unnecessarily increasing the rate of mastectomy. The first one is selection of patients. Screening patients who have a low pretest probability of undetected foci of disease (ie, fatty, easy to mammographic ally image breast tissue with unifocal invasive ductal carcinoma) will lead to a higher proportion of false-positive findings and these should be excluded. The second is strict histological assessment of additional suspected lesions detected on MRI. Pathological assessment of MRI-detected lesions is mandatory before a change of surgical or medical

treatment is considered. Nowadays, MR-guided vacuum-assisted breast biopsy (VAB), which is a minimally invasive, simple, and a quick alternative to surgical biopsy for evaluation of breast foci detected by MRI alone, has become widespread. Recently, more and more studies have reported that the accuracy of MR-guided VAB appears as consistent as that of surgical excis ion biopsy under MR-guided wire localization in diagnosing MR-detected lesions. Further improvements will be made, including software support, improvement of patient comfort, and reduction of procedure time. The median incremental (additional) detection for MRI has been estimated as 16% in meta-analysis. In the absence of consensus on the role of preoperative MRI, , namely that it will improve surgical planning and will lead to a reduction in re-excision surgery and in local recurrences, Emerging data indicate that MRI does not reduce re-excision rates and that it causes false positives in terms of detection and unnecessary surgery; overall there is little high-quality evidence at present to support the routine use of preoperative MRI. Randomized controlled trials are needed to establish the clinical, psychosocial, and long-term effects of MRI and to show a related change in treatment from standard care in women newly affected by breast cancer.

Perceived Visual Informativeness: The Role of Visual Information in Promoting Informed Decision Making and Behavior Change Related to Breast Cancer Screening

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There is a paucity of research on the visual components in health communication messages and intervention materials. Even though many studies suggest further investigation of visual message components, few studies provide specific assessment tools for evaluating the quality of visuals in a variety of health communication contexts. Perceived visual informativeness (PVI) is put forth as a message construct that uniquely considers the visual-text complementarity and visual information clarity of images used in printed health communication materials. The current study specifically examined PVI in the context of breast cancer screening, and the utility of the construct to predict important behavioral antecedents. To explicate the construct, a seven-item scale was created. The scale demonstrated good internal reliability, as well as convergent and divergent validity with related message constructs such as perceived message quality, perceived informativeness, and perceived attractiveness. PVI also converged with a preference for visual learning, and as expected was unrelated to a person's visual ability. Additionally, evidence suggests PVI has predictive validity for a number of important constructs including perceived message effectiveness, decisional satisfaction, and three key public health constructs: perceived benefits, perceived barriers, and self-efficacy. PVI provides a construct that can assist in the evaluation and testing of health messages and intervention materials promoting informed decision making and behavior change about breast cancer screening.

Perceptions and Practices for Breast Self Examiniation among Women with History of Cancer in One Breast in Ilorin Metropolis, Kwara State, Nigera

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Cancer of the breast is common in women and is always dangerous. Women with history of breast cancer in one breast are mostly at risk of cancer in their second breast. Breast Self Examination (BSE) can be used as a diagnosis tool for early detection. The study was therefore designed to determine the perceptions and practices of BSE among women with history of cancer in one breast in Ilorin metropolis, Nigeria.

This is a descriptive cross sectional study. Multistage sampling technique was used to select 95 women with history of cancer in one breast and a pre-tested semi-structured questionnaire was administered on the respondents. Perceptions on breast self examination was determined on a 20-point scale. Descriptive and Chi-square statistics were used to analyze the data.

The mean age of the respondents was 30.7Â±6.6 years. Almost half (48.9%) had OND/NCE. More than a third (43.7%) have had surgical removal of affected breast while 20% were on hormonal therapy. Over 80% of the respondents had positive perceptions of BSE with overall mean perception score of 10.0Â±5.2. Negative perceptions included BSE is inadequate for early detection of breast cancer (62.1%) and breast cancer is mostly caused by spiritual powers (75.1%). About one quarter (30.8%) were not practicing BSE while 13% practice BSE on monthly basis. Educational level of the respondents influenced their perception ($P<0.05$).

Practices of breast self examination is low among respondents. There is a need for public breast cancer education to increase BSE practices for early detention of breast cancer.

Regulation by Syk of the Calpain-Calpastatin System in Breast Cancer Cells

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Syk is a 72 kDa non-receptor tyrosine kinase that is primarily expressed in hematopoietic cells, but is also present in non-hematopoietic cells like normal breast epithelial cells. However, the expression of Syk is greatly reduced or even absent in highly malignant breast cancer cells. It has been proposed that Syk is a potent modulator of epithelial cell growth and can act as a tumor suppressor in human breast cancer cells. It has been found in our lab that the stable expression of Syk protects RelA from calpain-mediated proteolysis in MCF7 cells. Calpains are the most abundant calcium-dependent cysteine proteases found in mammalian tissues. The calpain system plays a number of different roles in cells and dysregulation of the calpain system has been related to a wide range of pathological situations. To investigate the mechanism by which Syk down-regulates the activity of the calpain in cells, the expression and act! ivity of calpastatin, the only specific endogenous inhibitor of calpain, were examined. It was found that the expression of calpastatin in Syk-positive MCF7 cells was elevated compared to that in Syk-negative MCF7 cells. In addition, Syk induced an accumulation of calpastatin to the cytosol where it could actively bind and inhibit calpain. Results from mass spectrometric studies indicated that calpastatin was a potential substrate of Syk. Tyrosine phosphorylation of calpastatin was observed in Syk-EGFP-reconstituted MDA-

MB-231 cells that were stimulated by pervanadate (PV). Further studies are underway to elucidate the mechanisms and the physiological relevance of this regulation in breast cancer cells.

Scientific Uncertainty un News Coverage of Cancer Research: Investigating the Effects of News Hedging on Fatalism, Medical Skepticism, Patient Trust, and Nutritional Backlash in An Adult Population

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Research continues to examine how the content and distribution of information about cancer through print or broadcast news coverage affects cancer-related perceptions and attitudes. One emerging line of research criticizes cancer news coverage for its omission of limitations, uncertainties, or other forms of discourse-based hedging in reporting scientific findings (Jensen, et al., in press; Brechman, Lee, & Cappella, 2009; Jensen, 2008). This omission is significant as past cancer control research has demonstrated that both scientists and journalists were perceived as more trustworthy when news consumers were exposed to stories with hedging attributed to scientists responsible for the research (Jensen et al., in press; Jensen, 2008). Perceptions of trustworthiness, then, may be related to support for scientific research or the adoption of scientific recommendations aimed at improving health behaviors.

However, prior research investigating the effects of hedging in cancer news has used college student samples primarily, neglecting to investigate the potential effects of such hedging in adult populations (Jensen, et al., in press). In the current project, we seek to extend this work by assessing perceptions of cancer fatalism, nutritional backlash, medical skepticism, and patient trust in the medical profession in a sample of Midwestern adults ($n \approx 300$) through manipulating both the amount of hedging and sources of uncertainty in 2 news articles about cancer research. Findings from this research may provide additional support for the inclusion of discourse-based hedging in breast cancer news coverage, considering the role of scientific uncertainty in decisions about prevention behaviors.

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Student Perspectives of Breast Cancer Advocacy Training

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Currently there is no information on the impact on students of a highly structured, breast-cancer-specific advocacy training. Our goal was to provide the student perspective of participation in the Annual National Breast Cancer Coalition Advocacy Training Conference in Washington, D.C. Both qualitative and quantitative data were collected in 3 waves: 1 month before the training, during the training, and 1 month after the training. Four themes emerged: (1) empowerment; (2) connecting with breast cancer survivors and advocates; (3) learning outside the classroom; and (4) action through advocacy and lobbying.

Tailoring breast cancer screening messages: Pilot testing an interactive tailoring algorithm

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Researchers have demonstrated that tailored messages are more effective than generic messages regarding disease prevention and detection. The present study tests a new target for tailoring efforts, visual customization. An interactive, real-time tailoring software program was developed to increase mammography screening rate! s. The program tailored on key demographic, theoretical, and visual components to increase intentions to attain a mammography. The experiment was conducted with women over 25 years of age (N = 264). After completing a brief questionnaire, participants immediately received a pamphlet describing their personal breast cancer risk and the benefits of mammography. Results suggest that pamphlets tailored to individual demographics, attitudes, self-efficacy, and readiness to get a mammography are more effective than non-tailored pamphlets at increasing intentions to utilize mammography. Further, the relationship between message tailoring and intentions to utilize mammography was mediated by personal relevance of the message. Visually tailored messages were no more effective than non-tailored messages. Additionally, this study represents the first empirical evidence suggesting that personal relevance mediates the relationship between tailored messages and intentions to screen for breast cancer.

The Relationship Between Adult Literacy and Mammography Utilization: A Survey of 73 Countries

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Adult literacy is an important predictor of mammography utilization. The few studies that have examined this relationship, however, have been limited in scope. This study expands on those previous studies by examining the relationship between adult literacy and mammography utilization on a global level. Data for seventy-three countries were analyzed using hierarchical linear regression. The results revealed that literacy predicted mammography utilization, above and beyond variance attributed to physician density (the single best predictor of utilization). The final model explained more than 90% of the variance in utilization, providing public health researchers with an efficient model for predicting mammography rates (even in countries with no formal tracking system).

The Survey About the Epidemic of Rampant Cancers in Tehran Province by Geographical Information System

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Geographical Information System is a computerized system for managing and analyzing the geographic information. It has the capability to gather, save, analyze and show the geographic information. Considering utilizing of zip codes has segregation of information in residential usage, the experts of the ministry of health and medical support this method (utilizing zip codes) as the best way to reach to their aims. Digitizing 18 sheets of the plans of Tehran considering various methods of clarification of existent information including 700 thousand informational records were analyzed and tested by different softwares like ArcGIS, Arcview, Edvisi, Ilwis and AutoCAD. These methods contain, rechecking the information by operators and clarification of information on the postal and geographical plans by mentioned soft â€“wares. As the addresses in the files of The Office of Codifying were edited in three parts (sector, penultimate pass way, last pass way) The program firstly verifies all three fields with data bank of cancer to attribute 5 digits codes to patient\'s address, and then if two fields in one record are verified with data bank , 5 digits of zip code is attributed to the patient\'s address and finally all records which have received codes are eliminated thus these records are moved out of the comparing circle. The plans show that the most aggregated zone of cancer epidemy is Bazar and south west is the second most aggregated zone.

This method can be use in several cases such as EOC GIS (Emergency Operation Center), sustainable development, health GIS, Crime GIS, Educational management, Economical cases and any other macro managements system.

Breast Cancer Prevention and Public Policy

Factors Influencing Individual and Community Participation in the Mammography Screening and Women Breast Cancer Prevention in Tehran, Iran

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Community development as a tactic for a health promotion program is an important attempt in prevention of diseases due to its role to promote positive health. Presently, many interventions and policies towards a community development perspective are driven by public health through community participation in planning and implementation of health programs. This study attempts to examine factors influencing women's mammography such as knowledge, attitude, and their barriers regarding mammography to illuminate their social, economic, and cultural diversity to determine factors that can affect the participation in mammography. Despite the limitations of this study on participation levels in any community-based program, this study has effectively highlighted the benefits of using a psychosocial framework to address women participation levels in any breast cancer prevention program whether formal or informal programs. Women with higher level participation showed more positive attitude, better knowledge and exhibited lower barrier to the program. Health care system in Iran does not have any national program for breast cancer screening. It requires healthcare professionals, primary physicians, and/or gynecologists to first attain trust from the women and then find ways to help Iranian women overcome psychological barriers such as beliefs about pain, cancer, and embarrassment. Results of this study can benefit Women Health Volunteers program which was established in 1994 by the Iranian government. Health planning needs to be decentralized and should considers vulnerable women like older, uneducated, low-income, and unemployed women as a priority in order to enhance the whole community participation through approaches of contribution/collaboration, and community control.

Risk Factors for Breast Cancer Among Young Women in Southern Iran

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Age adjusted incidence rates of breast cancer in developed countries is higher than those reported for developing countries. Iran has had one of the lowest incidence rates for breast cancer in the world, but during the last four decades breast cancer has become the most prevalent cancer in Iranian women. After adjusting for age, Iranian young women are at a higher risk for developing breast cancer than their counterparts in developed countries. The purpose of this study was to investigate some of the known risk factors for breast cancer in Iranian young women.

A case - control study was conducted, which included 521 women with histologically confirmed breast cancer, and 521 controls frequency - matched by age and province of residency. Logistic regression performed to investigate associations of reproductive and anthropometric factors with breast cancer.

In multivariate analysis, family history of breast cancer (OR: 1.57; 95% CI: 1.07 – 2.17), oral contraceptive usage (OR: 1.64; 95%CI: 1.24 – 2.17), high parity (OR: 0.44; 95%CI: 0.32 – 0.6), employment (OR: 1.73; 95% CI: 1.02 – 3.46) and longer duration of breast feeding (OR: 0.61; 95% CI: 0.45 – 0.82) were related to risk of breast cancer. The nation-wide family planning policy and its consequences; trend of decreasing parity, reduced lifetime duration of breast feeding and increased contraceptive usage might explain the recent rise of breast cancer incidence in Iranian young women.

Nutrition, Populations and Breast Cancer

Biodistribution, Persistence, Transgene Expression and Potential Toxicity of Adenoviral Vectors in a Breast Cancer Mouse Model

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To circumvent the pre-existing immunity against human adenovirus serotype 5 (HAd5), bovine adenovirus serotype 3 (BAd3) has been developed as an alternate gene delivery vector. The BAd3 vector persisted for a longer duration and efficiently transduced the heart, kidney, lung, liver and spleen following intravenous inoculation in mice. In order to explore the usefulness of the BAd3 vector for breast cancer gene therapy, an immunocompetant (FVB/N) mouse model of breast cancer was used to evaluate the biodistribution, persistence, transgene expression and potential toxicity of BAd3 and HAd5 vectors following intra-tumoral (i.t.) inoculation. Mice were sacrificed at various time points (0.25, 0.5, 1, 2, 4, 8 and 16 days) post-inoculation and the tumor tissue, liver, spleen, lung, heart and kidney were collected for various analyses. The vector biodistribution, persistence and transgene expression in tumors and other organs was determined by real-time quantitative PCR analysis, while protein expression was determined by immunohistochemistry. BAd3 vectors efficiently transduced tumors, spleen, liver, kidney, lung, and heart, and persisted comparable to HAd5 vectors. An altered biodistribution pattern of BAd3 vectors with higher persistence in the kidney and heart was evident. BAd3 and HAd5 vectors incorporating the green fluorescent protein (GFP) transgene efficiently expressed the GFP transcript within the tumor tissue and other organs. In addition, BAd vectors induced a transient rise of hepatic enzymes (AST and ALT) and mildly modulated the innate immune responses. Overall, the results support the further development and use of BAd vectors as an alternate to HAd5 vectors for breast cancer therapy.

Dietary Westernization and Family Resemblance of Western Dietary Pattern (WDP) in Two Generations of Chinese Women

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Background: Dietary Westernization is suggested as a major risk factor for the increase in breast cancer incidence in Asia. However, very few studies have assessed the WDP practiced in Chinese and its association within family.
Aim: To examine WDP characteristics and its association in Chinese families.
Methods: Between May 2008 and August 2009, 103 mother-daughter pairs (aged 18-49y) recruited from an on-going community-based cohort study were interviewed using a validated diet history questionnaire to assess WDP. WDP was identified using principal components analysis. Anthropometric measurements were conducted using standard procedures.
Results: WDP was associated with intakes of meats (red, processed, poultry), fast foods (sugar drinks, French fries, pizza), cakes and snacks, high-fat dairy, added oils, cream soup, and egg; frequency of breakfast skipping and food-away-from-home. WDP was associated with smoking, central obesity, lower physical activity level, and lower frequency of family meals. In mothers, WDP was also associated with higher body mass index (highest vs. lowest quartile: 25.8±4.6kgm^{-2} vs. 23.1±3.3kgm^{-2};p=0.046) and poor weight control (52.9% vs. 17.0%;p=0.040). Daughters had a higher WDP score than their mother

(p<0.001). Age- and energy-adjusted multivariate analysis indicated daughter's WDP score was positively predicted by mother's WDP score (beta=0.107; p=0.019), daily hours spent on TV viewing (beta=0.121; p=0.010), and smoker's status (beta=0.144; p=0.004); but negatively with the frequency of family meals (beta=-0.170; p=0.001). Daughter's WDP score did not predict mother's WDP score.
Conclusion: An intergeneration transfer of WDP was apparent in Chinese families. Family meals are protective for practicing WDP in Chinese women.

Reproductive and Nutritional Risk Factors in Breast Cancer

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Objective: To Study the reproductive and nutritional risk factors associated with breast cancer Methods: A hospital based matched case-control study was undertaken. Three hundred and twenty newly diagnosed breast cancer patients attending the outpatient clinic at the All India Institute of Medical Sciences constituted the cases. Similar number of normal healthy individuals accompanying the patients constituted the control group. The subjects in the control group were matched individually with the patients for their age ± 2 yrs and socio-economic status. The sample size was calculated keeping in view 95% level of confidence, 80% power of the study and two sided test. Results: Lump was the most common (95.9%) clinical symptom reported by cases with a mean duration of 4.95 months. Pain in the breast was reported by 78.8% of the cases with a mean duration of 4.19 months. Cytopathology was used as the most common criteria for diagnosis of cancer in 67.2% of the patients. Nearly 58.4% of the patients reported history of weight loss and 55.9% had physical performance of 80 as per the Karnofsky scale. The mean age of the patients was 45.5 years. Sixty two percent of the cases were in the age group of 30-50 years. All the cases were married. There was no difference in the occupational and educational status of the patients and controls. The multivariate analysis revealed that the risk of breast cancer increased 7.31 times in those who had a history of abortion. Nearly a nine fold risk was observed in those who had duration of breast feeding >12 months. The age of <28 years at last child birth was found to increase the risk by 2.07 times. Women with a history of oral contraceptive pills were at a 15.74 times higher. Consumption of roots and tubers daily to four times per week was found to be protective. Consumption of fruits less than once per week increased the risk of breast cancer 3.12 times. Consumption of milk products <4 times per week increased the risk 3.71 times. Women who consumed coffee were at six fold increase in the risk of breast cancer. The risk of breast cancer was 5.83 and 2.96 times higher in those who consumed green leafy vegetables <4 times per week and milk <1 time per week, respectively. The per capita consumption of fat more than or equal to 1 Kg/month was positively related to the risk of breast cancer. Statistically significant difference in the mean vitamin C level in patients and controls was observed. Similar results were seen for vitamin E. There was no significant difference in the selenium levels of the patients and controls. A significant difference was also observed in the triglyceride and cholesterol levels of patients and controls.
Conclusion: The present study may have considerable public health relevance, as it is possible, to prevent an appreciable proportion of breast cancer cases by changing specific lifestyle factors.

Nutrition Research and Breast Cancer

Adherence to the Mediterranean Diet and Risk of Breast Cancer in the European Prospective Investigation into Cancer and Nutrition (EPIC)

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Background: Recent evidence points towards a possible protect role of the Mediterranean dietary pattern on breast cancer. However, larger prospective studies that include Mediterranean populations are needed to substantiate these findings. *Objective:* To assess the association between adherence to a relative Mediterranean diet (rMED) score and incident breast cancer within the European Prospective Investigation into Cancer and Nutrition (EPIC) cohort study. *Design:* 335,864 women were recruited from 10 European countries, and after a mean follow-up of 8.9 years, 7,897 primary invasive breast cancer cases were identified. Dietary and lifestyle information were collected at recruitment and adherence to the Mediterranean diet was estimated using an 18-unit rMED score, incorporating 9 key characteristics of this pattern. *Results:* After stratifying by age and EPIC centre and adjusting for recognized breast cancer risk factors, high Mediterranean diet adherence was associated with a significant reduction in breast cancer risk in the entire cohort (HR=0.92; 95% CI 0.85, 0.99 for high vs. low rMED score, p-trend=0.034). Although the negative association was not statistically significant in analyses stratified by pre- and post-menopausal status at recruitment (HR=0.90; 95% CI 0.81, 1.00 and HR=0.94; 95% CI 0.85, 1.03 respectively), there was no evidence of interaction by menopausal status (p=0.663). *Conclusion:* Adherence the Mediterranean diet was associated with a modest reduction in risk of incident breast cancer in this European population, supporting previous findings from the United States and Greece. Future analysis should take into account tumor hormone receptor status and also consider changes in menopausal status during follow-up.

A Novel 3-D Culture Model of Breast Cancer Metastasis to Evaluate the Dynamics of Bone Marrow Colonization

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Breast cancer is the most common malignancy in women, with metastatic disease being the leading cause of death from breast cancer. It has been proposed that cancer stem cells (CSCs), a rare population of tumor cells with the ability to self-renew, drive growth and spread of tumor, are responsible for the growth of metastatic lesions, but how these cells contribute to metastatic disease is not completely understood. Since most of the currently used in vitro systems do not faithfully recapitulate the complexity of the metastatic disease, we developed a 3-dimensional (3-D) tissue culture model that mimics the metastatic process (rMet system). The rMet system consists of a transwell, where ECM and media mimic the conditions within the mammary gland, inserted into a well of a tissue culture plate, where ECM and media are formulated to reconstruct the bone marrow microenvironment. In this system, a small population within non-malignant (MCF10A), pre-malignant (MCF10AneoT), malignant, but not metastatic (MCF10CA1h), and metastatic (MCF10CA1a) isogenic cell lines have migratory capacity. However, only a rare population of MCF10CA1a cells, morphologically different from their non-migratory counterparts, had the ability to survive and colonize the bone marrow ECM. Using the rMet system we are investigating the role of CSCs in the metastasis of breast cancer to bone. The rMet system represents a comprehensive in vitro model recapitulating major steps of breast cancer metastasis as they occur in vivo, providing a system for further investigation of the molecular events responsible for metastatic disease and identification of novel drug targets.

CDS1: A New Marker for Nutritional Effects on Breast Cancer Development?

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A new frontier in breast cancer prevention involves identifying genes influenced by nutritional factors that permit the assessment of breast cancer risk. Loss of apical polarity in the breast epithelium (i.e., absence of specific proteins localized near the lumen, the side with orientation that faces the outside environment) has been linked to cancer development. Therefore, the identification of genes that control apical polarity, possibly under the influence of dietary factors, is critical to help prevent breast cancer. A microarray study with a model that recreates apically polarized and nonapically polarized breast epithelia in three-dimensional cell culture revealed that the expression of CDP-diacylglycerol synthase 1 (CDS1) depends on the status of apical polarity. CDS1 codes for an enzyme that converts phosphatidic acid to CDP-diacylglycerol, the main source of phosphatidylinositol. The latter is involved in the Pi3K pathway known to be altered in breast cancer. Our hypothesis is that CDS1 plays a role in breast cancer development. CDS1 expression (mRNA) was modified in cultured breast epithelium treated with dietary fatty acids as well as in several breast cancer cell lines. Furthermore, normal-looking breast tissue with altered apical polarity from patients diagnosed with breast cancer showed significant changes in CDS1 expression. Immunohistochemistry revealed that while CDS1 protein was expressed in the “normal” looking tissue of patients with breast cancer, it appeared to be absent from high grade invasive carcinoma in the same patients. These findings suggest that CDS1 is an interesting target to pursue as an early marker of breast cancer development.

Coenzyme Q and Breast Cancer

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Introduction: Coenzyme Q10 is an antioxidant, first, divided from cow heart mitochondria and named ubiquinone, Q10 is carrier of electron and proton and inner membrane’s of mitochondria product ATP. Coenzyme Q10 stimulates the heart muscles and stimulates the immune system in different ways, mainly through higher antibody levels and greater numbers and/or activities of the cancer fighting macrophages and T-cells. There may be other ways co-Q10 aids in the fight against an antioxidant and protect natural tissue from free radicals produced by common treatment of cancer. *Background:* subsequent studies showed a statistically significant relationship between the level of plasma coenzyme Q10 deficiency and breast cancer prognosis. Low blood level of this compound have been reported in patients with malignancies other than breast cancer, including my Loma, lymphoma and cancers of the lung, prostate, pancreas, colon, kidney, and head and neck. But increased levels have been reported as well. About 126 articles wrote communication between co-Q10 and cancer, furthermore 25 articles was in human investigation. The significance of this study is that all of these patients given chemotherapy along with co-Q10. While coenzyme Q10, by itself, can cause cancer remission, virtually every study with co-Q10 involved mixing co-Q10 (which helps, the immunity system), with chemotherapy (which destroys the immunity system), thus leading to mixed, results. Investigations revealed patients with advanced high-risk breast cancer, that in addition to appropriate surgery and conventional treatment, each patient was given other vitamins, minerals, antioxidants, essential fatty acids and 90mg of co-Q10 per day, on this regimen some of the patients, showed partial tumor regressions and mammogram confirmed the disappearance of tumor. In other case increased dosage co-Q10 to 300mg, disappeared tumor and a

clinical examination revealed no evidence of the prior residual tumor, nor of distant metastases.
Conclusion: Co-Q10 dissolves in fat and there are two reasons for taking coenzyme Q10 supplements, even though our body can manufacture it. First, the body makes less of this as we age. Seconded, the B vitamins niacin (B3), folic acid and pyridoxine (B6) are required for the body manufactures this nutrient, and most people don't get enough of these B vitamins.

Difficulties with Dietary Assessment Methods and Potential Solutions for Cohort Studies

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Although, the intention of dietary assessment methodology is to obtain accurate and precise information 3 main issues exist[1,2]. Firstly, the food supply is complex with increasing numbers of foods and changes to their composition and the increased complexity of factors to be studied (bioactives, contaminants, additives) requiring more sophisticated methods and databases. Secondly, the resources involved and investigator and respondent burden can be considerable. Thirdly, measurement error occurs due to reporting, data collection and data processing errors, leading to incorrect estimates of intakes in some individuals.

Methods for estimating dietary intake range from open-ended recording methods such as weighed records to list-based methods to Food Frequency Questionnaires (FFQs), with differences influencing the data available. Although, generally, the open-ended methods are regarded as more accurate the greater respondent and investigator burden creates difficulties for large-scale studies[1,2,3].

Five main methods exist for identifying measurement error: 1) Comparison with other diet methods (relative validity) 2) Predictor reference methods or cut-points 3) 'Quantitative recovery' or 'concentration' biomarkers' 4) Comparison with disease risk biomarkers 5) Comparative prediction of disease risks. For validation it is preferable to use biomarkers (with independent error) than dietary methods[4,5]

Both measurement error and the differences in absolute intakes associated with different dietary assessment methods leads to variability in the results of studies and attenuation of findings[3,5].
More recent developments aimed improving dietary assessments and reducing investigator and respondent burden include computing, digital and web-based methods and technologies. Calibration using biomarkers or more precise assessment methods also has potential.

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Effect of Reishi on Adipogenesis of 3T3-L1 Murine Adipocytes and Invasive Behavior of Breast Cancer Cells with Adipocyte Conditioned Medium

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Epidemiological studies have shown a positive association between obesity and increased risk for breast cancer. Adipose tissue plays an important role in controlling the whole-body metabolism, by storing fat during feeding state, later hydrolyze and release triglycerides as FFAs and glycerol during fasting, any abnormality in fat deposition leads to obesity. However, the exact mechanism linking obesity to breast cancer is still elusive. Hence this study aimed at exploring the factors regulating lipid uptake in adipocytes by Reishi and effect of adipocyte-conditioned media on breast cancer cells. Reishi (Ganoderma lucidum) is a medicinal mushroom known to have major health benefits and has been used in the traditional Chinese medicine for thousands of years. Adipogenesis is a differentiation process by which undifferentiated pre-adipocytes (3T3-L1) are converted to fat cells (differentiated). Our results show that Reishi is able to inhibit the major transcription factors (SREBP1C, PPARÎ³ and C/EBPÎ±) involved in adipogenesis that regulate the expression of different genes controlling the synthesis, transport and storage of lipids (FABP4, FAS, ACS, FATP1, perilipin and FSP27). We also observed that Reishi treated adipocyte conditioned media was able to inhibit the migration of breast cancer cells. Taken together these results demonstrate that Reishi is able to inhibit sequestration of fatty acids within adipocytes and modulates the adipokines secreted by adipocytes, which alter the invasive behavior of cancer cells. Therefore Reishi could be utilized as a chemopreventive agent to modulate obesity and its associated disorders.

Highly Effective Screening of Breast Cancer Risk Factors by Compound Raman Analysis of 3D Culture of Human Mammary Epithelium

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There has been enough evidence to support a role for nutrition and diet in breast cancer incidence. Our hypothesis is that the effects of dietary factors on apical polarity, a tissue architectural feature shown to be critical for epithelial stability, can be measured by analyzing lipid phases with compound Raman microscopy. Our model is a human mammary epithelium that recapitulates polarized mammary acini in 3D culture. A total of 40 polarized and 40 nonpolarized acini were analyzed. We used a ratio ApM_R / BaM_R, representing the relative degree of lipid ordering of apical membrane compared with basal membrane, to distinguish polarized and nonpolarized acini with high sensitivity and specificity. Most importantly, we were able to monitor the dynamic changes in apical polarity for the same acini without fixation and staining. Thus, compound Raman microscopy could become an effective and accurate screening method to identify factors that participate in cancer formation by altering apical polarity. Our screening platform should assist in identifying dietary factors that initiate breast neoplasia or help maintain breast tissue integrity.

Mechanisms of 1α, 25-Dihydroxy Vitamin D Regulation of Hypoxia-Inducible Factor-1α in Breast Epithelial Cells and Harvey-Ras Oncogene Transfected Breast Cancer Cells

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The purpose of this study was to investigate 1α, 25-dihydroxyvitamin ($1,25(OH)_2D$) regulation of hypoxia inducible factor-1α (HIF-1α), an angiogenic transcriptional regulator, in untransformed MCF10A (10A) and H-*ras* transfected MCF10A (10A-*ras*) breast epithelial cells, a model of cancer progression. In 10A cells, $1,25(OH)_2D$ increased HIF-1α mRNA abundance (64% $\pm$ 19 greater than vehicle control, p=0.01) and protein level (137% $\pm$ 30, p<0.001) at 12 hr. In contrast, $1,25(OH)_2D$ treatment did not alter HIF-1α mRNA abundance in 10A-*ras* although, similar to 10A cells, the protein level was increased at 12 hrs (108% $\pm$ 38, p=0.05). A transcriptional inhibitor prevented the $1,25(OH)_2D$-mediated increase in HIF-1α protein expression in 10A but not in 10A-*ras* cells. In contrast, inhibition of proteasomal degradation prevented the $1,25(OH)_2D$-induced HIF-1α protein level in 10A-*ras* but not in 10A cells. Knock-down of VDR (siRNA) prevented $1,25(OH)_2D$-mediated induction of HIF-1 protein in 10A but not in 10A-*ras* cells and VDR was associated with a putative VDR response element on HIF-1α gene promoter in 10A cells (chromatin IP assay). An ERK inhibitor prevented $1,25(OH)_2D$ induced HIF-1α protein level in 10A-*ras* cells. In 10A-*ras* cells transfected with constitutively activated MEK1/2 plasmid, which increased ERK activity, $1,25(OH)_2D$-induced HIF-1α mRNA level was prevented without interrupting HIF-1α protein induction induced by $1,25(OH)_2D$ treatment. These results support that $1,25(OH)_2D$ regulates HIF-1α protein level in 10A cells via transcriptional regulation in contrast to through ERK pathway involved proteosomal degradation in 10A-*ras* cells, suggesting a differential mechanism in the two cell types.

Nutritional Breast Cancer Prevention: Epigenetic Chemoprotection of Breast Homeostasis by Conjugated Linoleic Acid

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Hope of ending breast cancer lies in prevention, the first step of which is to reduce risk. Maternal diet is known to affect the incidence of breast cancer in offspring; genetic make-up alone cannot explain which genetically susceptible individuals will develop breast cancer. Epigenetic factors are events other than DNA sequence that determine gene expression, one of which is histone methylation. Fatty acid c-9, t-11 conjugated linoleic acid (CLA), when fed during mammary gland development at puberty, later prevented mammary tumors in rats. Moreover, arachidonic acid (AA), a fatty acid associated with increased breast cancer risk, in a 10:1 ratio to CLA prevented apical polarity (AP) loss, one of the earliest changes preceding breast cancer development, in mammary glandular structures (acini) obtained in three-dimensional (3D) cell culture. We tested the hypothesis that g! iving CLA during cell proliferation induces epigenetic changes that later protect against AA-induced AP disruption. To reflect breast development, we used a two-stage model; two-dimensional (2D) culture allowing proliferation was followed by replating in 3D to enable differentiation into acini. Immunofluorescence staining of acini for AP markers ZO-1 and CAP-1 showed that CLA given during proliferation preserved AP following AP-disruptive AA treatment. Moreover, western blot analysis revealed that prior to AP protection, CLA increased methylated histones H3K9me2 and H4K20me3, proteins involved in gene silencing and heterochromatin stabilization and both altered in cancer. These results suggest that CLA might protect AP through epigenetics propagated during cell divisions accompanying the formation of acini, indicating possible inheritance of CLA-induced protection.

Nutritional Factors in Breast Cancer: First Report from Northeast of Iran

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Breast cancer is one of the main causes of cancer fatality in women. Among Iranian females, it is the most common cancer which tends to affect younger ones. Nutritional role such lipid consumption or limitation in daily diet are valuable in evaluation the clinical course, prognosis factors. However their nutritional role in Iranian women has not been explained completely. The correlation of mentioned factors with survival of breast cancer has been assessed in this study. Lipid, carbohydrates, vitamins and minerals consumption in 400 breast cancer patients diagnosed between 2008-2009 was done. All cases were matched with similar cases in control group and result was analyzed. Results showed of the 400 studied patients,53/2%,48/9%and 54/1%were meaningful difference for lipid, vitamins and minerals consumption with control group.(p=0/004 for lipids ,p=0/02 for vitamins and p=/001 for minerals)in data analysis detected no correlation between carbohydrates consumption and breast cancer. The presented pattern of nutritional role of lipids, carbohydrates, vitamins and minerals consumption is explained partly by demographic factors. Since no similar study has been conducted in this region, larger studies in basis of demographic variables are suggested.

Omega-3 Fatty Acids Reduce Mammary Terminal End Buds in Fat-1 Mice and Inhibit Tumor Development in Fat-1 x MMTV-NeuYD5 Mice

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Nutrition may play a role in influencing breast cancer (BC) risk. Studies suggest that n-3 polyunsaturated fatty acids (PUFA) may modify BC development, however direct evidence is lacking. Therefore, in this study novel transgenic mouse models were used to investigate the influence of n-3 PUFA on mammary gland development and tumourigenesis. Using the *fat-1* mouse, which is able to endogenously produce n-3 PUFA from n-6 PUFA, it was found that n-3 PUFA altered development of terminal end buds (TEB) within the mammary gland before the onset of puberty. This may be significant because TEB are the sites of tumor initiation. Further, pubertal onset in *fat-1* mice was delayed relative to wildtype controls. At 3 weeks of age (pre-puberty), *fat-1* mice had fewer TEB than wildtype littermates. Up to this age, pups have received all nutrition from their mother via *in utero* placental transfer and milk consumption. Building on these observations, we are currently investigating how early exposure to n-3 PUFA may influence cancer development. We have developed a novel mouse model, crossing *fat-1(*+/-) with MMTV-neuYD5(+/-), a breast cancer model. Preliminary results indicate that mice expressing *fat-1* and MMTV-neuYD5 (n=7) have delayed onset of tumor development, lower multiplicity and total tumor volume, relative to MMTV-neuYD5(+/-) mice (n=2), suggesting a potential tumor modifying effect of n-3 PUFA. Overall, these findings suggest a role for n-3 PUFA in the prevention of breast cancer.

Osmotin: An Adiponectin Homolog with Potential for Suppressing Tumor Progression

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Adipose tissues, through production of hormones that affect energy balance, are important regulators of growth and progression in many types of cancers. Adiponectin is one of these adipocyte-derived hormones with demonstrated anti-diabetic and anti-inflammatory effects that inhibit human breast cancer cell proliferation *in vitro.* Studies in mice support that adiponectin has significant anti-tumor potential. Correspondingly, low plasma levels of adiponectin are associated with higher incidence of breast cancer in humans. To date there is no adiponectin-based therapy available. Our group has shown that the plant protein osmotin mimics biological activities of adiponectin in mammalian cells via cell-surface adiponectin receptors. Osmotin is isolated from tobacco and osmotin-like proteins can be found in a great variety of fruits and vegetables. Their value as therapeutic agents and beneficial dietary effects are not clearly understood. Our central hypothesis is that osmotin has significant anti-tumor biological activity in breast cancer. In support of this hypothesis, data has been collected which demonstrates that osmotin, like adiponectin, can inhibit human breast cancer proliferation *in vitro.* Also, osmotin is pro-apoptotic and signals through AMPK. We demonstrated that osmotin and adiponectin are anti-migratory in breast cancer cells and U937 monocytes. Osmotin has been shown to inhibit MMP activity in U937 cells. Since osmotin and adiponectin are identical in structure, and these studies have demonstrated that they exhibit similar effects in breast cancer cell lines, it demonstrates the potential of osmotin as a novel natural agent for cancer treatment or prevention.

Preventing Breast Cancer through Modulation of Essential Fatty Acids: How ω6 Fatty Acids Are Involved in Disrupting Tissue Polarity and Priming Cells for Proliferation

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Dietary fatty acids are considered a risk factor for breast cancer. Populations with a high intake of ω6 to ω3 fatty acid ratio have a higher incidence of breast cancer and migration studies have shown that populations that adopt the high ω6 diet increase their breast cancer incidence. The mechanism underlying such observations remains to be elucidated. In our laboratory we have identified the loss of apical polarity (i.e., the location of specific lipids and proteins against the lumen) as an early alteration of the breast epithelium that is necessary for cell proliferation. Using a 3D culture model that allows non-neoplastic cells to recapitulate phenotypically normal differentiation, we show that treatment with ω6 fatty acid, arachidonic acid (AA) disrupts apical polarity without down-regulation of apical polarity core protein ZO-1, nor an accumulation of ω6 fatty acids in the cell membrane. AA treatment leads to PGE2 formation as shown by ELISA. Blockade of PGE2 receptor, EP4, and of the Pi3K pathway prevents apical polarity loss induced by AA. Finally cells treated with AA are able to respond to insulin growth factor stimulation allowing them to enter the cell cycle while those that retain apical polarity do not respond to growth factors and remain in quiescence. Therefore an excess of certain dietary fatty acids might compromise the breast epithelium by activating early on an inflammatory pathway, PGE2-Pi3K, known to be involved in breast cancer.

Vitamin D3 and Calcium Supplementation Dramatically Decreases Cancer Risk: Results of a Randomized Clinical Trial

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Strong evidence accumulated over 65 years supports the effects of vitamin D (vit D) on decreasing breast cancer incidence and mortality. Recent data highlight the important intracellular signaling role of 1,25(OH)2D, the critical importance of serum 25OHD in supporting that role, and the increased susceptibility to cancer in vit D-deficient and vit D receptor knock-out rodents. Also, studies have shown that vit D may decrease mortality in women with breast cancer. It is perplexing that these studies have not led to public policies to increase vit D status of the population. The missing "piece of the puzzle" is support from a randomized trial.

This presentation will describe the rigorous population-based, randomized, clinical trial that found vit D3 and calcium supplementation to significantly reduce the risk of all-type cancer by 60-77% in postmenopausal women. The effect of vit D3 was shown in both the intention to treat analysis and in multiple logistic regression models where both treatment and serum 25(OH)D were significant, independent predictors of cancer risk. Trend analyses for breast cancer in this cohort suggest that vit D3 and calcium could prevent 78% of breast cancers in older women. The major limitation of our study is that cancer was a secondary outcome. We are now conducting a rigorous clinical trial with cancer as the primary outcome, and that study will be described in this presentation. Vit D supplementation has the potential to have a dramatic impact on breast cancer. This presentation will clarify the current state of the science.

Notes