CURRICULUM VITAE - 07/15/2017

Name: Helmut Zarbl

Place of Birth: Schärding, Austria

Citizenship: United States of America

Address: Department of Environmental & Occupational Health
School of Public Health
Environmental and Occupational Health Sciences Institute
Rutgers, The State University of New Jersey
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Education:

Ph.D., McGill University, Montreal, Canada, 1983. Biochemistry
(*The Structure and Function of Reovirus Late mRNA)*

B.Sc., McGill University,
Montreal, Canada, 1978. Major in Biochemistry (with Honors)

D.C.S., Marianopolis College,
Montreal, Canada, 1975. Major in Health Sciences

Research and/or Professional Experience:

Professor, Department of Environmental and Occupational Health
Rutgers School of Public Health
Rutgers, The State University of New Jersey 2015-

Adjunct Professor, Department of Chemical Biology
Department of Chemical Biology
Ernest Mario School of Pharmacy
Rutgers, The State University of New Jersey 2016-

Director, Center for Environmental Exposures and Disease
The NIEHS sponsored Research Center for
Environmental Health Sciences at Rutgers University 2007-

Associate Director for Public Health Sciences,
The Rutgers Cancer Institute of New Jersey 2008 - 2013

Member, Rutgers Cancer Institute of New Jersey
Rutgers, The State University of New Jersey 2007-

Affiliate Professor of Toxicology 1996 -
Department of Environmental Health, University of Washington,
Seattle, Washington

Professor, Department of Environmental and Occupational Medicine

Robert Wood Johnson Medical School Rutgers, The State University of New Jersey (*formerly University of Medicine and Dentistry of New Jersey*).	2006-2015
Member, Scientific Council, The Rutgers Cancer Institute of New Jersey	2007 - 2013
Member & Director's Cabinet Environmental and Occupational Health Sciences Institute Rutgers, The State University of New Jersey	2006-
Full Member, Fred Hutchinson Cancer Research Center, Seattle Washington	1998 - 2006
Visiting Professor of Genetic China Medical University, Shenyang, P. R. China	2000 –
Director, Environmental Functional Genomics Core Center for Ecogenetics and Environmental Health University of Washington, Seattle, Washington	2003 - 2006
Faculty Member, Molecular and Cellular Biology Program University of Washington and Fred Hutchinson Cancer Research Center Seattle, Washington	1996 - 2006
Affiliate Professor of Pathology, Department of Pathology University of Washington, Seattle, Washington	1996 - 2006
Faculty Member, Center for Ecogenetics and Environmental Health University of Washington, Seattle, Washington	1994 - 2006
Director, Environmental Carcinogenesis Research Core Center for Ecogenetics and Environmental Health University of Washington, Seattle, Washington	1998 - 2003
Scientific Director, DNA Microarray Shared Resource Fred Hutchinson Cancer Research Center, Seattle, WA	1998 - 2002
Scientific Director, Public Health Sciences Core Lab Fred Hutchinson Cancer Research Center, Seattle, WA	1998 - 2002
Associate Member, Fred Hutchinson Cancer Research Center, Seattle Washington	1994 -1998
Visiting Associate Professor of Toxicology, Whitaker College of Health Sciences and Technology, M.I.T., Cambridge, Massachusetts	1994
Associate Director, M.I.T. Center for Environmental Health Sciences, Cambridge, Massachusetts	1993 -1994
Associate Professor of Toxicology, Whitaker College of Health Sciences and Technology, M.I.T., Cambridge, Massachusetts	1992 -1994

Faculty Member, M.I.T. Center for Environmental Health Sciences, Cambridge, Massachusetts 1989 -1994

Assistant Professor of Toxicology, Whitaker College of Health Sciences and Technology, M.I.T., Cambridge, Massachusetts 1988 -1992

Assistant Professor of Applied Biological Sciences, Department of Applied Biology, M.I.T., Cambridge, Massachusetts 1987-1988

Postdoctoral Fellow, Laboratory of Molecular Biology, Clinical Research Institute of Montreal, Quebec, Canada 1985 -1987

Postdoctoral Fellow, Developmental Oncology Section, NCI-Frederick Cancer Research Facility, Frederick, Maryland 1984 -1985

Postdoctoral Fellow, Laboratory of Cellular and Molecular Biology, National Cancer Institute, Bethesda, Maryland 1983 -1984

Honors, Awards, Professional Recognition:

Fellow of the Academy of Toxicological Sciences 2008-

Excellence in Research Award. New Jersey Health Foundation, Inc. 2014-2015.

Women in Toxicology Mentoring Award, Society of Toxicology 2012

Vice President (elect), Vice President and President, Carcinogenesis Specialty Section
Society for Toxicology 2010-2013

NIH Study, NCI Study Section for K Training Awards 2016 -

Outstanding Paper Award. International Conference on Food and Nutrition Science. Asian Pacific Chemical Biological and Environmental Engineering Society.
Bangkok, Thailand. 2015

NIEHS Extramural Paper of the Month. 2011
"Urinary mycoestrogens, body size and breast development in New Jersey girls. by Bandera EV, Chandran U, Buckley B, Lin Y, Isukapalli S, Marshall I, King M, Zarbl H. (Sci Total Environ 409(24):5221-5227, 2011)
(http://www.niehs.nih.gov/news/newsletter/2011/december/science-extramural/).

Founding Chair,
Society of Toxicology Disease Prevention Task Force 2008 - 2010

Nominated For: Fourth Annual Pharmaceutical Achievement Awards:
Academic Scientist of the Year Award 2003/2005

Member, Study Section for SBIR Grants from NIH 2004-2012

Chaired the National Institute of Environmental Health Sciences Special Emphasis Panel, NIEHS ZES1 RAM-D (CX). 02/2007

U.S. Environmental Protection Agency Fellowship:
Biochemistry, Molecular Biology, Cell Biology,

Developmental Biology & Genetics (D6 & D1) Peer Review Panel	02/2007
Reviewer, EPA Centers on Computational Toxicology	2005
Ad Hoc Member, Study Section for SBIR Grants from NIH	2002-
Reviewer, U.S. Civilian Research and Development Foundation Grants	2003
NCI-C Parent Committee (ad hoc)	2001
InterSPORE Biologic/Pre-Clinical Committee	2000
Visiting Professor of Genetics, China Medical University Shenyang, Liaoning Province, P.R. China.	2000-
Reviewer for Pacific Ovarian Cancer Research Consortium Pilot Studies	1999, 2000
Reviewer for U.S. Army Medical R&D Command Breast Cancer Research Program, Molecular Biology Study Sections.	Feb. 1994 Nov. 1995 Sept. 1996 Sept. 1997 Sept. 1998
Special Reviewer for American Cancer Society Molecular Biology Study Section	Jan. 1997
Invited Discussant for the 6th Charles Heidelberger Conference. Control of Cell Proliferation and Differentiation: Molecular Targets in Carcinogenesis and Cancer Therapy. Essen, Germany.	July 1995
Special Reviewer for National Cancer Institute (N.I.H.) Pathology B Study Section Associate Director, M.I.T. Center for Environmental Health Sciences.	Jan. 1994 Oct. 1993 Jan. 1993
Chaired session at NCI Workshop on Early Detection of Cancer: Challenges for Molecular Biology.	1992
Robert A. Swanson Assistant Professor of Life Sciences.	1988-1989
M.I.T. Committee on Assessment of Biohazards.	1988-1992
Postdoctoral Fellowship; Medical Research Council of Canada	1986-1987
Prix Roger Boucher pour etudiants post-doctoraux; Clinical Research Institute of Montreal.	1986
Postdoctoral Fellowship from Fonds de la Recherche en Sante du Quebec.	1983-1986
Gordon Phillips Scholarship; McGill University.	1983
Studentship; Fonds de la Recherche en Sante du Quebec.	1982
Studentship : Fonds F.C.A.C. pour l'Aide et le Soutien a la Recherche (Quebec)	1981-1982

Studentship : Direction Generale de l'Enseignement Superieur (Quebec). 1980

NATO Fellowship to attend Summer Conference 1980
Aqua Freda di Maratea, Italy.

Darryl Lopez-Perieira Memorial Scholarship. 1973
Outstanding Science Student Award.

Advisory Boards, Panels and Committees

Member the National Academy of Sciences, 2009-2016
National Research Council Standing Committee on
"Emerging Science for Environmental Health Decisions"

Summary Presentation for Microbiome meeting:
https://www.youtube.com/watch?v=GPqbrI3N-nc&index=18&list=PLzsdEyVNFvgyIeQTgTeqf0mUzpnuRulWG

External Scientific Advisory Board,
NIEHS Center, Emory University
Atlanta, GA 2015-

External Scientific Advisory Board,
NIEHS Center, University of Cincinnati 2015-

External Scientific Advisory Board 2009-2016
Superfund Basic Research Program
University of North Carolina.

External Scientific Advisory Board,
NIEHS Center, University of Michigan. 2009-

Chair, External Scientific Advisory Board Member,
Center for Cancer Research and Therapeutic Development,
Clark Atlanta University, Atlanta, GA 2005-

External Scientific Advisory Board Member, Research Center for
Minority Institutions, Clark Atlanta University, Atlanta, GA 1999-

National Academies, National Research Council
Committee on Applications of Toxicogenomics to Predictive Toxicology 2004-2006

NIEHS Superfund Basic Research Program, 2009
External Advisory Panel

EPA-IRIS Peer Review Panel:
Toxicological Review of 1,2,3-Trichlropropane (CAS No. 96-18-4) 2008

NIEHS Superfund Basic Research Program External Advisory Board 2008

National Research Council: Committee on Applications
of Toxicogenomics to Predictive Toxicology 2004 -2005

External Scientific Advisory Board of Arcturus Engineering, Inc.	2001 - 2002
AACR Program Selection Committee, Gene Regulation and Transcriptional Control of the Cancer Phenotype Section	2000
FHCRC Liaison to the Scientific Advisory Board of Rosetta Inpharmatics, ex officio member,	1998 - 2001
Molecular Genetics and Biotechnology Committee of the Genetics Society of Canada.	1985-1986

Editorial Boards

Editorial Board, Toxicological Sciences Associate Editor for Carcinogenesis	2017 -
Editorial Board, Toxicology and Applied Pharmacology	2010 -
Editorial Board, Frontiers in Toxicogenomics	2011 -
Editor-In Chief, Biological Procedures Online	2006 - 2008
Editorial Board of The Open Toxicology Journal	2008-
Associate Editor, Environmental Health Perspectives: Toxicogenomics	2002 – 2004
Associate Editor, Cancer Research (AACR)	2000 – 2002

Faculty Mentoring:

Mentor for NCI K25 grant to Ka Yee Yeung, University of Washington	2004-2009
Mentoring Committee for Xuefeng Ren. University of Buffalo	2013-

Thesis Preceptor for:

John Van Amsterdam	1987-1993 (Ph.D.)
Caroline Hoemann	1988-1991 (Ph.D.)
Choon Joo Kho	1988-1992 (Ph.D.)
Jen-Tsun Lin	1990-1991 (S.M.)
Richard Bornstein	1990-1991 (S.M.)
Victoria Afshani	1989-1993 (S.M. while also attending Medical School)
Joanne Kang	1992-1994 (S.M. while also attending Medical School)
Yan Wang	1991-1996 (Ph.D.)
Maria Athanassiou	1991-1996 (Ph.D.)
Zheng Zheng	1999-2000 (Ph.D. Rotation)
Xun Zhang	2001- 2006 (Ph.D.)
Xuefeng Ren	2002-2007 (Ph.D.)
Jessica Graham	2008 - 2011 (Ph.D.)
Nashmia Malik	2011 - 2012 (M.Sc.)

Jennifer Barrett	2009 - 2015 (Ph.D.)
Crystal Lewis	2009 - 2016 (Ph.D,)
Brian Estrella	2010 - 2017 (projected Ph.D)

Joint Thesis Preceptor:

Rita Cha	1989-1992 (Ph.D.)
Lichen Jing	1997-2000 (Ph.D.)
Ying Ying Gou	1999-2004 (Ph.D.)
Daniel Roberts	2014 - (Ph.D. candidate)

Organizations:

American Association for Cancer Research	Member
Society of Toxicology	Member
American Association for the Advancement of Science	Member
American Society for Microbiology	Member
Genetic Society of Canada	Past Member
New York Academy of Sciences	Past Member

Reviewer for

Journals:

- *Science*
- *Nature Genetics*
- *Nature Medicine*
- *Nature Methods*
- *Pharmacogenomics*
- *Proceedings of the National Academy of Science, U.S.A.*
- *Molecular and Cellular Biology*
- *Journal of Biological Chemistry*
- *Journal of Cellular Biochemistry*
- *Journal of Cell Science*
- *Carcinogenesis*
- *Oncogene*
- *Molecular Carcinogenesis*
- *Cancer Research*
- *PLoS ONE*
- *European Urology*
- *European Journal of Obstetrics & Gynecology and Reproductive Medicine*
- *Pharmacogenetics and Genomics*
- *Cell Growth and Differentiation*
- *Cancer*
- *Journal of Mammary Gland Biology and Neoplasia*
- *Journal of Cancer Research and Clinical Oncology*
- *Toxicology and Applied Pharmacology*
- *Fundamental and Applied Toxicology*
- *Toxicological Sciences*
- *Cancer Epidemiology, Biomarkers and Prevention*
- *Cancer Letters*
- *Gene*
- *BioTechnique*
- *Laboratory Animal Science*
- *Comparative Medicine*

- *Advances in Cancer Research*
- *African Journal of Biotechnology*
- *Journal of Agriculture and Food Chemistry*

Granting Agencies:

- National Institutes of Health - National Cancer Institute (Study Section, Special Review Panels, SBIR Reviews, PO1 Reviews, and Program Project Site Visits)
- National Institutes of Environmental Health Sciences (Study Section)
- NCI-C Parent Committee Meeting (ad hoc)
- U.S. Army Medical R&D Command Breast Cancer Research Program (Study Section)
- Special reviewer for NIH Pathology B Study Section
- Medical Research Council, U.K.
- UK's National Centre for the Replacement, Refinement and Reduction of Animals in Research (NC3Rs).
- American Cancer Society (Grants)
- Agency for Science, Research & Technology (A*STAR) in Singapore
- National Academy of Sciences (NRC Reports)
- Ohio Cancer Research Associates (grants)
- Canadian Foundation for Innovation, Infrastructure Grants.
- Pacific Ovarian Cancer Research Consortium Pilot Studies
- The Cancer Research Society (Canada)
- Medical Research Council of Canada (Grants)
- Natural Sciences and Engineering Research Council of Canada (Grants)
- Health Effects Institute (Grants and Programs)
- Netherlands Organization for Scientific Research. NWO MEEVOUD grants for Women in Science
- The University of Washington Center for Ecogenetics and Environment Health (Pilot projects)
- The Geriatrics Center, University of Michigan (pilot studies)
- New York Academy of Sciences (Meeting Proposal)
- US Civilian Research and Development Foundation (Cooperative Research Grants Program)
- Royalty Research Fund Scholar Grants. University of Washington
- RCMI Translational Research Network (RTRN) Research Grants
- Indo-US Science & Technology Forum
- Monash University Early Career Development Fellowships

Current Grant Funding:

1. P30ES005022 Zarbl (PI) 07/29/2014-03/31/2019 NIEHS $1,100,000 annual direct
   Center for Environmental Exposure and Disease (CEED) at EOHSI
   Major goals: Understand, detect, prevent and solve environmental health problems through collaborative research.
   Role: PI

2. R21
   Title: Altered NAD+-dependent Sirt1 as a biomarker of Circadian disruption by shift work
   Direct Costs (2 years): $275,000
   Total Costs (2 years): $437,250
   Zarbl Effort: 1% (0.12 Calendar Months)
   Zarbl Role: Co-I

3. GeneAssess, Inc. Service Contract Zarbl (PI) 01/08/2013 - 12/31/2017 (NCE)
Analysis of FRY gene expression and mutation as biomarkers of breast and prostate cancer progression.

4. EOHSI Pilot Grant Helmut Zarbl, P.I.
10/31/16/ - 06/30/17 1% In KIND
Effect of the Gut Microbiome on Susceptibility to Mammary Carcinogenesis

Pending Grant Applications (or to be resubmitted):

1. **1R01ES029175-01** **Mingzhu Fang/Helmut Zarbl, Dual PIs**
04/01/2018 - 03/31/2023
NIEHS/NIH 1.8 months (15%)
Title: Uncoupling of Stress Responses from Circadian Control and Cancer Susceptibility
Direct Costs (5 years): 2,009,772
Total Costs (5 years): 3,179,147
Zarbl Effort: 15% (1.8 Calendar Months)
Zarbl Role: Dual P.I.

Pending Resubmission

1. **1 R01 ES025758-01** **Helmut Zarbl. P.I**
07/01/15 – 6/30/20 20%
NIH/NIEHS $2,996,165.00 (Total costs)
Transgenerational Effects of Low Dose, Developmental Exposure to Dietary Zeranol
Zeranol is a semi-synthetic derivative of zearalenone, a potent environmental mycoestrogen that contaminates grain, and is deliberately introduced into livestock in the USA to enhance meat production. We recently showed that exposure of prepubescent girls to low doses of these mycoestrogens by consumption of contaminated beef or popcorn alters growth and the onset of puberty and that exposure of pregnant rats to zeranol at levels that are three-fold below the USFDA's Acceptable Daily Intake (ADI) affects sexual development and reproduction not only in the animals exposed in utero, but also in subsequent generations. The proposed studies will identify the organ systems targeted and investigate the epigenetic mechanisms underlying the transgenerational inheritance of these phenotypes.

2. **1 RO1** (AN:3363012) **Helmut Zarbl, P.I.**
07/01/2014 – 06/30/01/2019 10%
NIH/NCI $1,832,850.00 (total costs)
Epigenetic Silencing of the FRY Carcinoma Susceptibility Gene in Breast Cancer

Understanding the genetic and epigenetic mechanisms underlying individual variability in breast cancer susceptibility can enhance cancer diagnosis, help predict clinical outcomes and guide therapy. Using quantitative trait locus mapping we identified Fry, the rat ortholog of the Drosophila melanogaster furry gene, as a new mammary carcinoma susceptibility (Mcs) gene. Our studies showed that Fry inhibits in vitro and in vivo tumorigenesis of human breast carcinoma cells by inducing differentiation and reversing epithelial
mesenchymal transition. Comparison of FRY protein levels in normal human breast tissue to those in ~400 intraductal carcinomas (IDC) and 200 cases of ductal carcinoma in situ (DCIS) demonstrated that decreased
expression of FRY mRNA and protein, especially nuclear expression is strongly correlated with aggressive tumor histopathology, loss of hormone receptors and Elston tumor grade. Decreased FRY expression was also correlated with histological progression, and in some cases metastasis, of other human carcinomas, including ovary, prostate, and lung, and is a critical early event in

carcinogenesis. We hypothesize that specific epigenetic and/or posttranscriptional mechanisms are responsible for decreased expression of FRY in tumor cells and propose three aims to elucidate the molecular mechanisms by which: i) the FRY gene expression is silenced, and ii) nuclear expression of FRY protein is inhibited during carcinogenesis. 1. Assess the role of epigenetic silencing in the regulation of FRY expression during progression of breast cancer in vitro and in vivo. To elucidate the mechanisms that lead to decreased FRY expression we will: a) treat tumor cells expressing low levels of FRY with DNA methyltransferase (DMNT) inhibitors and assess effects on DNA
methylation and mRNA levels; b) compare expression of DNA methyltransferase enzymes in cells with and without reactivated FRY expression, and ectopically express DNMT genes in cells that express normal levels of FRY; and c) investigate the role of the long noncoding Anti-sense FRY-AS1 transcripts by specifically inducing their degradation in the nucleus or cytoplasm using anti-sense, locked nucleic and GapmeR oligonucleotides and shRNA, respectively. 2. Elucidate the molecular basis for loss of nuclear FRY in tumor cells versus normal cells by: a) comparing rates of nuclear import and export; b) testing the
hypothesis that binding of FRY-AS1 lncRNA to the FRY protein alters nuclear transport of FRY; and c) determine how posttranslational modification of FRY affects nuclear localization. 3. Determine the effect of epigenetic regulation of FRY and/or FRY-AS1 expression on the phenotype of mammary epithelial and
breast cancer cell lines. Using cell lines generated in Aims 1 and 2, we will determine if a) reactivation of FRY expression and b) nuclear localization are necessary and sufficient to reverse carcinogenesis. The ultimate goal is to identify signaling networks that can be specifically targeted to restore reduced FRY mediated signaling in cancer cells to inhibit carcinogenesis.

3. **DoD Breast Cancer Breakthrough Award** Helmut Zarbl, Co- P.I.
with Xuefeng Ren (U. Buffalo)
12/01/13-11/31/15 5%
Department of Defense
Breast Cancer Research Program $300,000 total

Tumor Suppressor FRY Gene, Tumor Aggressiveness, and Racial Differences in Breast Cancer

Breast cancer remains the most prevalent cancer among US women with over 229,060 new cases and 39,920 deaths projected to occur in 2012. Although European-American (EA) women, overall, have a higher breast cancer incidence than African-American (AA) women, AA women are more likely to be diagnosed at a younger age and to have more aggressive tumors, characterized by higher grade, higher proliferative indices, lack of expression of estrogen and progesterone receptors, and higher mortality rate. The reasons for these disparities in breast cancer remain an enigma; however, it is becoming clear that genetic risk factors contribute to an increased susceptibility for biologically aggressive disease in AA women. Thus, identifying genes that can modify the susceptibility and risk of developing early onset aggressive breast cancer will not only advance our understanding of the etiology of this disease but more importantly facilitate the development of potential novel biomarker and tools for early identification of susceptible women, and for diagnostic, prognostic, and /or new therapeutic strategies for more lethal form breast cancers, particularly in young AA women.

Through genetic linkage experiments in rats, we have identified Fry, a gene encoding a protein that suppresses tumor growth in advanced-stage triple negative human breast cancer cell lines. Decreased FRY expression in breast cancer is predictive of estrogen receptor status, histopathology, response to therapy, and relapse. In this study, we propose to use already collected extensive data and banked biospecimens from one of the largest studies of breast cancer in AA women: the Women's Circle of Health Study (WCHS), to determine whether functional genetic variants of FRY gene and altered protein levels are associated with observed breast cancer differences between a) AA and EA women and; b) early onset, aggressive breast cancer and non-aggressive tumors in the overall population.

To the best of our knowledge, this will be the first study to evaluate a putative tumor suppressor in relation to risk of specific subtypes of breast cancer. We expect that the comprehensive data and

diverse samples will allow us to determine whether altered function and expression of FRY are associated with observed breast cancer differences between a) AA and EA women and; b) early onset, aggressive breast cancer (defined as ER- and high grade), and non-aggressive tumors (defined as ER+ and low grade), in the overall population. The positive findings from this study will provide the key information for our understanding the etiology of early onset, aggressive breast cancer. The positive results can lead to develop early genetic screening tools used to identify high risk individuals, particularly in AA women. As an early screening tool, a positive test result can allow people to make informed decisions about their future, including taking steps such as special preventive checkups, tests or surgeries, to reduce their cancer risk and to diagnose early stage of cancer. It may ultimately help to develop therapeutic strategies for patients with more lethal forms of breast cancers, thus directly improve the survival of these patients.

Past Funding:

1. 1 R21 CA185841-01A1 Ren (PI) 02/01/2014 – 11/31/2016
FRY in Inhibiting EMT and Its Anti-Invasion/Metastasis Effects in Breast Cancer
Role: Consultant

2. **EOHSI Pilot Grant** **Helmut Zarbl, P.I.**
10/31/14/ - 06/30/16 1% In KIND
RWJMN/ Rutgers $15,000
Transgenerational Effects of In Utero Zeranol Exposure on Development and Cancer

3. **V Foundation Translational Grant (Helmut Zarbl, Ph.D., P.I.)**
10/01/2008 – 9/30/2015 1.80 calendar months
The V Foundation for Cancer Research $600,000. (total cost)
Chemoprevention of Breast and Prostate Cancers in Shift Workers by Dietary Methylselenocysteine: Effects on Circadian Rhythm and Estrogen Receptor- Cycling
The proposed studies will confirm that shift work disrupts circadian rhythm normal expression of the ER-beta tumor suppressor protein using blood cells. We will then determine if can restore normal rhythm and ER-beta expression with a dietary supplement. These results will then form the basis for a long term, prospective intervention trial in a large population of shift workers to determine if methylselenocysteine can actually prevent breast and prostate cancer in shift workers.

4. P30 ES005022 (Helmut Zarbl, P.I.)
04/01/2009 - 3/31/2014 3.60 calendar months
NIH/NIEHS $8,581,519 (total costs) Program Officer: Leslie J. Reinlib, reinlib@niehs.nih.gov
Research Center in Environmental Health Science.
The Center for Environmental Exposures and Disease provides core support pilot funding and career development awards to environmentally relevant studies.

5. 5P30CA072720-13 (DiPaola) 3/1/1997
03/01/2012 – 02/28/2017 **3.00 calendar months until November 2013**
NIH/NCI $3,159,662 Program Officer: Shannon M. Silkensen, silkensens@mail.nih.gov
Cancer Center Support Grant
The major goal is to provide an organization focus and stimulus for the highest quality multidisciplinary cancer search. The Cancer Institute of New Jersey (CINJ) is a matrix style, basic, clinical and population research center under the auspices of the University of Medicine and Dentistry of New Jersey-Robert Wood Johnson Medical School. The Director serves as Associate Dean for Oncology Programs and is responsible for integrating research at the medical school with the Robert Wood Johnson University Hospital, School of Public Health, and several schools and departments of Rutgers University.

6. 09-1077-CCR-EO **Helmut Zarbl, P.I.**
06/25/2009-12/31/2013 5%

New Jersey Commission on Cancer Research $235,074 (total costs) **Effect of Fetal Zearanol Exposure on Adult Disease**

The overall goal of this study is to determine the effects of *in utero* exposure to the food contaminant, zearanol, on breast cancer later in life or in subsequent generations. Although the study of other diseases is not explicitly a goal of the present proposal, the efficient nested study design will generate biological samples that can be used to assess the trans-generational effects of zearanol exposure on fertility, obesity, metabolic and the risk of developing precocious puberty.

7. 1R01CA112231-01 **Helmut Zarbl, Co-P.I**

12/01/04 – 11/31/011 20%

NIH/NCI $2,889,789 (total costs)

Relating DNA Adducts and Toxicogenomics

The program goal is to generate an integrated picture illustrating the effects of cell exposure to carcinogens by combining data from cell toxicity, mutation fraction, gene expression, genotype, and DNA adduct analyses. We aim to characterize global gene expression patterns in human cells exposed to carcinogens using DNA microarrays, and phenotypically anchor the transcriptional responses with assays of cell survival, genotypes of xenobiotic metabolizing enzymes, induced mutation frequencies, and DNA adduct levels as measured by capillary LC-MS. Three well characterized carcinogens, 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone (NNK), 4-aminobiphenyl (ABP), benzo[a]pyrene (B[a]P), - all of which have been identified as constituents of cigarette smoke and have been implicated as causative agents in lung cancer, will serve as model compounds for this study. 2-amino-3-methylimidazo[4,5-f]quinoline (IQ), an IARC category 2A carcinogen (probable human carcinogen) that is known to be derived primarily from cooked meats will be used to assess the sensitivity of our program to low level carcinogens that can be found in cigarette smoke, but which have not been directly implicated in lung cancer.

8. Developmental Research Grant **Helmut Zarbl, Co-P.I.**

07/01/09- 07/01/11 5%

Cancer Institute of New Jersey $70,000

Role of CBF-A in Regulation of Epithelial-Mesenchymal Transition and Metastasis

The overall goal of the proposed studies is to demonstrate that CArG Box Binding Factor-A (CBF-A), the master regulator of Epithelial-Mesenchymal Transition (EMT), plays a key regulatory role in metastasis. CBF-A was first implicated in the carcinogenic process by our studies of carcinogen-treated rodents. We found that CBF-A is the major protein that binds to and activates transcription of gene promoters harboring response elements that can adopt a quadruplex DNA. Our subsequent studies showed that CBF-A protein levels and binding activities were consistently elevated in chemically-induced skin and mammary tumors in rodents. DNA sequencing demonstrated that CBF-A encodes heterogeneous nuclear ribonucleoprotein A/B (hnRNP A/B), which also functions as a transcription factor. CBF-A has been implicated in the transcriptional regulation of osteopontin, suggesting a role in cell adhesion, survival, growth, migration and metastasis. The Drosophila ortholog of CBF-A was shown to have a crucial role in establishing embryonic axes by binding to, and restricting the spatial expression of mRNAs that determine germline and abdominal development. To further investigate the role of CBF-A in normal development processes and carcinogenesis, we generated CBF-A (null/null) knockout mice as well as a conditional CBF-A (flox/flox) knockout strain. The CBF-A null mice are viable but develop numerous organ abnormalities, including severe liver steatosis. More interestingly, recent studies in mammalian tumor cell lines indicated that CBF-A functions as the major regulator of EMT, suggesting that it plays a crucial role in metastasis. The goal of the present proposal is to test this hypothesis ***in vivo*** by examining the effect of CBF-A loss on carcinogenesis and metastasis.

9. Pilot Grant **Mingzhu Fang, P.I.**

06/01/09-03/31/10 Co-P.I. (5%)

CEED/NIEHS $30,000

Epigenetic Mechanisms of Restoration of Circadian Rhythm by Methylselenocysteine

The objective of this proposal is to study the mechanism by which a chemopreventive dose of methylselenocysteine (MSC) is able to restore circadian rhythm in mammary cells. Our previous chemoprevention study demonstrated that exposure to a single carcinogenic dose of *N*-nitroso-*N*-methylurea (NMU) completely disrupted expression of core circadian genes and clock controlled genes (CCGs), and that MSC significantly increased the levels circadian expression of these genes at chemopreventive dose in

mammary epithelial cells. These MSC significantly increased the circadian expression of melatonin receptor 1 (MTNR1A) disrupted by NMU in mammary epithelial cells. The resulting increase in melatonin mediated circadian signaling not only increased the expression of circadian genes but also enhanced the circadian transcription of (CCGs), including Estrogen Receptor (ERβ), a growth inhibitor and differentiation inducer in mammary cells. Interestingly, most core circadian genes and CCGs including MTNR1A and ER-beta have E-box binding motif within their promoter regions. The latter elements are binding sites for the heterodimer Bmal1 and Clock or Npas2, which regulates the rhythmic transcription of these genes. Unexpectedly, neither carcinogen exposure nor dietary MSC supplementation significantly affect the transcription or levels of these genes, suggesting that restoration of circadian expression is not be mediated by altered transcription or translation of these heterodimeric transcription factors, although we cannot rule out an effect on their transcriptional transactivation activity. Our preliminary results from DNA methylation studies showed that NMU did not cause DNA hypermethylation of MTNR1A, suggesting a role for histone modifications. We propose to test the hypothesis that the effect of MSC on circadian rhythm is mediated through epigenetic modification of chromatin within promoter region of MTNR1A gene or by altering the acetylation of the Bmal1-Clock heterodimer.

10. 5P30005022 **(Helmut Zarbl, P.I.)**
04/01/2007- 3/31/2008 25%
NIH/NIEHS $1,660,896 (total costs)
Research Center in Environmental Health Sciences

11. U19-ES-011387-01 **(Helmut Zarbl, Director and P.I)**
09/01/01 – 08/31/07 20%
NIH/NCI $7,256,486. (total costs)
The FHCRC/UW Toxicogenomics Consortium

The mission of the FHCRC/UW Consortium is to participate in the development and validation of standardized methodologies for the application of the emerging technologies of DNA microarrays and proteomics to Toxicology research. To fulfill this mission, the consortium has defined several goals. The first goal is to provide scientific input to the N.I.E.H.S. Toxicogeneomics Research Consortium (TRC). To accomplish this goal the Project Leaders, Core Leader and the P.I. will be active participants of the TRC Steering Committee, and will help guide the scientific directions and methodologic standardization efforts. The FHCRC/UW investigators will openly share scientific expertise and experiences with other consortium members participate in the development and implementation of standard experimental approaches and data management protocols and analysis tools. The second goal is to develop strong cooperative interactions with other CRMs, the Resource Contractor, and the NIEHS Staff and Microarray Facility. To this end, we have proposed a strong Toxicology Research Core Project (TRCP), which will carry out experimental toxicological studies designed by the consensus process of the TRC. The TRC will, as appropriate, provide materials, protocols and data to the other TCMs, and the Resource Contractor. The TRCP will serve as the conduit for the interaction of our Facility Cores with the TRC, including but not limited to cross platforms and cross species comparisons, comparisons among methodologies developed by the other Consortium Research Members. The third goal is to support the research activities of the four Research Projects proposed by the FHCRC/UW Consortium. These hypothesis-driven projects are designed to increase our mechanistic. To this end, we have proposed three strong Facilities Cores that will provide access to state of the art gene knockout/transgenic animal facilities, high speed cell sorting, laser capture microdissection, Affymetrix GeneChip Microarray and cDNA systems, and bioinformatics/biostatistics capabilities. The Administrative Core cores will provide scientific and fiscal oversight. The fourth goal is to contribute to a public toxicology database provided by the Resource Contractor. We will deposit all gene expression data using the protocols and annotation agreed upon by the consensus of the Steering Committee.

12. P30 ES07033 **(David L. Eaton, PhD)**
04/01/06-03/31/10 5%
NIH/NIEHS $999,640 (annual direct)
Center For Ecogenetics and Environmental Health

13. U19 ES011384 **(Peter Spencer, PhD)**
STAR project: "DNA Alkylation in Neurodegenerative Disease and Cancer
09/17/02-07/31/05
P.I. of subcontract 3% effort
NIH/NIEHS $27,135 (sub only)
(Neuro) Toxicogenomics and Child Health:

14. PAR-01-105 **(Peter J. Wiktor, P.I.)**
04/01/03-03/31/07
Helmut Zarbl, Co-P.I. 10%
NIH/NCI SBIR/STTR $272,985 (subcontract)
Innovative Technologies for the Molecular Analysis of Cancer Piezoelectric Pipetting Technology for DNA Analysis

15. P30 ES07033 **(David L. Eaton, PhD)**
Core P.I 10%
04/01/06-03/31/10
NIH/NIEHS $999,640 (annual direct)

16. NCI CA77222-01 **(P.I. Helmut Zarbl)**
40% effort
Mapping Genetic Suppressors of Epigenetic Carcinogenesis
04/01/98-03/31/03. $1,150,507;

17. ES07168 **(W.G. Thilly, P.I.)**
NIH/NIEHS Project 2-P.I. Helmut Zarbl
Mutagenic Effects of Air-Borne Toxicants in Human Lungs
08/01/98-07/31/03 $7,277,427
year 01 $1,358,604.
Detection of Mutation in Human Lungs.
Year 01 $224,085. 15% effort.

18. DOD BC971045 (**Helmut Zarbl, P.I)**
30% effort
Cloning an ets-related transcription factor involved in a novel epigenetic mechanism of mammary carcinogenesis.
04/15/98- 05/14/01.
$363,300; year 01 $121,100:

19. NIH/NCI 1-U24- CA78164
Northwest Cancer Genetics Network
07/01/98-06/31/03 P.I. John D. Potter
10% effort $5, 785, 363 direct costs
year 01: $659,993:

20. NIH/NCI P30CA15704 **(**P.I. Leland Hartwell, Ph.D.)
Cancer Center Support Grant
07/01/98-06/30/03
$24,417,552 total direct
year 01 $4,464,498 direct cost requested. 5% effort.

21. 1-RO-1-CA47571-05S1 (Helmut Zarbl, P.I.)
"Cloning of Transformation Effector and Suppressor Genes"
25% academic w/o/s* 5/01/93 - 8/31/93 $40,000.

22. National Institute of Environmental Health Sciences (W.G. Thilly, P.I.)
5-PO1-ESO2109-11
"MIT Center for Environmental Health Sciences"
10% effort 04/01/89 - 03/31/92
$5,500 direct costs

23. Whitaker Health Sciences Fund (Helmut Zarbl, P.I.)
"Isolation and Molecular Characterization of Revertants From Transformed Fibroblasts and Epithelial Cells"
7/01/88 - 6/30/90 $140,000.

24. Robert A. Swanson Assistant Professorship in Life Sciences. (M.I.T)
Helmut Zarbl, P.I.
07/01/88 - 06/30/90 $10,000 year + full Salary

25. M.I.T. Center for Environmental Health Sciences (Helmut Zarbl, P.I.)
Feasibility Project 88-4. NIH-5-P30-ESO2109-10 (W.G. Thilly, P.I.)
"The Role of Chemical Mutagenesis in the Induction of a Metastatic Cancer Phenotype"
9/01/88 - 06/30/89 $25,000.

26. M.I.T. Center for Environmental Health Sciences (Helmut Zarbl. P.I.)
M.I.T. Center for Environmental Health Sciences
Feasibility Project: 5-PO1-ESO2109-11 (W.G. Thilly, P.I.)
"Isolation of Unselected, Mutant Cancer Genes from Carcinogen Treated Animals"
4/01/89 - 3/30/90 $8,637 direct costs

27. NIEHS T32 ES07020-18 Gerald N. Wogan, (P.I.)
Training Grant for Environmental Health Sciences
Helmut Zarbl, Co-PI (5% Academic Year)
7/1/90 - 6/30/95 $2,226,763 ($2,133,133 direct)
Subproject costs per year: $32,300 (direct costs)

28. ABL-Basic Research Program, NCI-FCRDC (Helmut Zarbl, P.I.)
Title: Program Grant: Screening for genetic alterations in cell lines used in the NCI-DCT drug screen.
9/1/93 - 8/30/94 $151,905 ($93,769 direct costs)
5% effort (Academic Year)

29. NIEHS ES03926-08 (PI: William G. Thilly)
Title: Program Project Grant: Genetics and Toxicology
Investigator (10%)
09/01/90 - 08/31/95 $3,325,039 ($2,561,626 direct)
Subproject costs of per year: $126,000 ($77,778 direct)

30. **NIEHS ES07168-04**
Health Effects of Air-Borne Toxicants in Human Lungs
P.I. William G. Thilly $7,141,954;
08/01/94-07/31/98 year 03 $1,392,466.
Project 4- Helmut Zarbl, P.I.
Detection of Mutation in Human Lungs.
Year 04 $53,152 (direct per year). 15% effort.

31. **NIH 1 RO 1 CA50378-04** **(Helmut Zarbl , P.I.)**
Aberrant Gene Regulation Induced by V-Fos Transformation
07/01/90 - 06/30/95
$952,472 ($604,744 total direct)

32. **NIH 1RO1-CA47571-01** **(Helmut Zarbl , P.I.)**
"Cloning of Transformation Effector and Suppressor Genes"
25% academic w/o/s*
5/01/88 - 4/30/93 $94,280; $100,563; $107,262;
$114,403; $122,014.

Industry Related Experience:

Founding President of GeneAssess, Inc. (Biotech) 2012-

Co-Founder of Impedagen, LLC (Biotech) 2006-

Founding Director, Industrial Liaison Program,
Fred Hutchinson Cancer Research Center. Seattle , WA 2004-2005

FHCRC Liason to the Scientific Advisory Board of
Rosetta Inpharmatics, ex officio member, Seattle, WA 1998 – 2001

External Scientific Advisory Board of Arcturus Engineering, Inc. 2001 – 2002

Patents/Inventions:

1. US Patent # 6,939,712
Muting Gene Activity Using a Transgenic Nucleic Acid 09/07/2005
(Invention Disclosure, 11/ 1994, Allowance 11/2004)
- *This patent had the earliest disclosure for RNAi.*

2. US Provisional Patent # 61/419,975 12/06/2010
PCT /US2011/063553 filed in 2011
Novel Method of Cancer Diagnosis and Prognosis
and Prediction of Response to Therapy.
The present invention relates to use of the FRY gene in cancer diagnosis and prognosis and prediction of response to therapy.

Publications:

Citation indices	All
Citations	3754
h-index	30
i10-index	46

1. **Zarbl H**, Hastings KE, Millward S. Reovirus core particles synthesize capped oligonucleotides as a result of abortive transcription. Archives of biochemistry and biophysics 1980;202:348-60.
2. **Zarbl H**, Skup D, Millward S. Reovirus progeny subviral particles synthesize uncapped mRNA. Journal of virology 1980;34:497-505.
3. Skup D, **Zarbl H**, Millward S. Regulation of translation in L-cells infected with reovirus. Journal of molecular biology 1981;151:35-55.
4. Lemieux R, **Zarbl H**, Millward S. mRNA discrimination in extracts from uninfected and reovirus-infected L-cells. Journal of virology 1984;51:215-22.
5. **Zarbl H**, Sukumar S, Arthur AV, Martin-Zanca D, Barbacid M. Direct mutagenesis of Ha-ras-1 oncogenes by N-nitroso-N-methylurea during initiation of mammary carcinogenesis in rats. Nature 1985;315:382-5.
6. **Zarbl H**, Sukumar S, Martin-Zanca D, Santos E, Barbacid M. Molecular assays for detection of ras oncogenes in human and animal tumors. Carcinogenesis; a comprehensive survey 1985;9:1-16.
7. Barbacid M, Sukumar S, **Zarbl H**. Activation of ras oncogenes by chemical carcinogens. Gene amplification and analysis 1986;4:21-38.
8. Cleveland DR, **Zarbl H**, Millward S. Reovirus guanylyltransferase is L2 gene product lambda 2. Journal of virology 1986;60:307-11.
9. Dandekar S, Sukumar S, **Zarbl H**, Young LJ, Cardiff RD. Specific activation of the cellular Harvey-ras oncogene in dimethylbenzanthracene-induced mouse mammary tumors. Molecular and cellular biology 1986;6:4104-8.
10. **Zarbl H**, Sukumar S, Arthur AL, Martin-Zanca D, Barbacid M. Activation of H-ras-1 oncogenes by chemical carcinogens. Basic life sciences 1986;38:385-97.
11. **Zarbl H**, Latreille J, Jolicoeur P. Revertants of v-fos-transformed fibroblasts have mutations in cellular genes essential for transformation by other oncogenes. Cell 1987;51:357-69.
12. Alonso T, Morgan RO, Marvizon JC, **Zarbl H**, Santos E. Malignant transformation by ras and other oncogenes produces common alterations in inositol phospholipid signaling pathways. Proceedings of the National Academy of Sciences of the United States of America 1988;85:4271-5.
13. Hoemann CD, **Zarbl H**. Use of revertant cell lines to identify targets of v-fos transformation-specific alterations in gene expression. Cell growth & differentiation : the molecular biology journal of the American Association for Cancer Research 1990;1:581-90.
14. Boylan MO, **Zarbl H**. Transformation effector and suppressor genes. Journal of cellular biochemistry 1991;46:199-205.
15. **Zarbl H**, Kho CJ, Boylan MO, Van Amsterdam J, Sullivan RC, Hoemann CD, Afshani VL. Functional in vitro assays for the isolation of cell transformation effector and suppressor genes. Environmental health perspectives 1991;93:83-9.
16. Cha RS, **Zarbl H**, Keohavong P, Thilly WG. Mismatch amplification mutation assay (MAMA): application to the c-H-ras gene. PCR methods and applications 1992;2:14-20.
17. Kho CJ, **Zarbl H**. Fte-1, a v-fos transformation effector gene, encodes the mammalian homologue of a yeast gene involved in protein import into mitochondria. Proceedings of the National Academy of Sciences of the United States of America 1992;89:2200-4.
18. Kho CJ, **Zarbl H**. A rapid and efficient protocol for sequencing plasmid DNA. BioTechniques 1992;12:228, 30.

19. Bahramian MB, **Zarbl H**. Direct gene quantitation by PCR reveals differential accumulation of ectopic enzyme in rat-1 cells, v-fos transformants, and revertants. PCR methods and applications 1994;4:145-53.

20. Cha RS, Thilly WG, **Zarbl H**. N-nitroso-N-methylurea-induced rat mammary tumors arise from cells with preexisting oncogenic Hras1 gene mutations. Proceedings of the National Academy of Sciences of the United States of America 1994;91:3749-53.

21. Van Amsterdam JR, Wang Y, Sullivan RC, **Zarbl H**. Elevated expression of the junB proto-oncogene is essential for v-fos induced transformation of Rat-1 cells. Oncogene 1994;9:2969-76.

22. Mikheev A, Cha RS, **Zarbl H**. Detection of point mutations in Ras in tumor cell lines by denaturant gradient gel electrophoresis. Methods in enzymology 1995;255:442-51.

23. Boylan MO, Athanassiou M, Houle B, Wang Y, **Zarbl H**. Activation of tumor suppressor genes in nontumorigenic revertants of the HeLa cervical carcinoma cell line. Cell growth & differentiation : the molecular biology journal of the American Association for Cancer Research 1996;7:725-35.

24. Cha RS, Guerra L, Thilly WG, **Zarbl H**. Ha-ras-1 oncogene mutations in mammary epithelial cells do not contribute to initiation of spontaneous mammary tumorigenesis in rats. Carcinogenesis 1996;17:2519-24.

25. Jin Z, Houle B, Mikheev AM, Cha RS, **Zarbl H**. Alterations in H-ras1 promoter conformation during N-nitroso-N-methylurea-induced mammary carcinogenesis and pregnancy. Cancer research 1996;56:4927-35.

26. Kho CJ, Wang Y, **Zarbl H**. Effect of decreased fte-1 gene expression on protein synthesis, cell growth, and transformation. Cell growth & differentiation : the molecular biology journal of the American Association for Cancer Research 1996;7:1157-66.

27. Koo HM, Monks A, Mikheev A, Rubinstein LV, Gray-Goodrich M, McWilliams MJ, Alvord WG, Oie HK, Gazdar AF, Paull KD, **Zarbl H**, Vande Woude GF. Enhanced sensitivity to 1-beta-D-arabinofuranosylcytosine and topoisomerase II inhibitors in tumor cell lines harboring activated ras oncogenes. Cancer research 1996;56:5211-6.

28. Chen ZY, **Zarbl H**. A nonradioactive, allele-specific polymerase chain reaction for reproducible detection of rare mutations in large amounts of genomic DNA: application to human k-ras. Analytical biochemistry 1997;244:191-4.

29. Tomita-Mitchell A, Muniappan BP, Herrero-Jimenez P, **Zarbl H**, Thilly WG. Single nucleotide polymorphism spectra in newborns and centenarians: identification of genes coding for rise of mortal disease. Gene 1998;223:381-91.

30. **Zarbl H**, Aragaki C, Zhao LP. An efficient protocol for rare mutation genotyping in a large population. Genetic testing 1998;2:315-21.

31. Athanassiou M, Hu Y, Jing L, Houle B, **Zarbl H**, Mikheev AM. Stabilization and reactivation of the p53 tumor suppressor protein in nontumorigenic revertants of HeLa cervical cancer cells. Cell growth & differentiation : the molecular biology journal of the American Association for Cancer Research 1999;10:729-37.

32. Bahramian MB, **Zarbl H**. Transcriptional and posttranscriptional silencing of rodent alpha1(I) collagen by a homologous transcriptionally self-silenced transgene. Molecular and cellular biology 1999;19:274-83.

33. Mikheev AM, Mikheev SA, Zhang Y, Aebersold R, **Zarbl H**. CArG binding factor A (CBF-A) is involved in transcriptional regulation of the rat Ha-ras promoter. Nucleic acids research 2000;28:3762-70.

34. **Zarbl H**. DNA microarrays: an overview of technologies and applications to toxicology. Current protocols in toxicology / editorial board, Mahin D Maines 2001;Chapter 1:Unit1 4.

35. Barrett MT, Yeung KY, Ruzzo WL, Hsu L, Blount PL, Sullivan R, **Zarbl H**, Delrow J, Rabinovitch PS, Reid BJ. Transcriptional analyses of Barrett's metaplasia and normal upper GI mucosae. Neoplasia 2002;4:121-8.

36. Luo W, Gurjuar R, Ozbal C, Taghizadeh K, Lafleur A, Dasari RR, **Zarbl H**, Thilly WG. Quantitative detection of benzo[alpha]pyrene diolepoxide-DNA adducts by cryogenic laser induced fluorescence. Chemical research in toxicology 2003;16:74-80.

37. Mikheev AM, Inoue A, Jing L, Mikheeva SA, Li V, Leanderson T, **Zarbl H**. Frequent activation of CArG binding factor-A expression and binding in N-methyl-N-nitrosourea-induced rat mammary carcinomas. Breast cancer research and treatment 2004;88:95-102.

38. Mikheev AM, Mikheeva SA, Liu B, Cohen P, **Zarbl H**. A functional genomics approach for the identification of putative tumor suppressor genes: Dickkopf-1 as suppressor of HeLa cell transformation. Carcinogenesis 2004;25:47-59.

39. Bahramian MB, **Zarbl H**. GENE impedance: a natural process for control of gene expression and the origin of RNA interference. Journal of theoretical biology 2005;233:301-14.

40. Bammler T, Beyer RP, Bhattacharya S, Boorman GA, Boyles A, Bradford BU, Bumgarner RE, Bushel PR, Chaturvedi K, Choi D, Cunningham ML, Deng S, Dressman HK, Fannin RD, Farin FM, Freedman JH, Fry RC, Harper A, Humble MC, Hurban P, Kavanagh TJ, Kaufmann WK, Kerr KF, Jing L, Lapidus JA, Lasarev MR, Li J, Li YJ, Lobenhofer EK, Lu X, Malek RL, Milton S, Nagalla SR, O'Malley J P, Palmer VS, Pattee P, Paules RS, Perou CM, Phillips K, Qin LX, Qiu Y, Quigley SD, Rodland M, Rusyn I, Samson LD, Schwartz DA, Shi Y, Shin JL, Sieber SO, Slifer S, Speer MC, Spencer PS, Sproles DI, Swenberg JA, Suk WA, Sullivan RC, Tian R, Tennant RW, Todd SA, Tucker CJ, Van Houten B, Weis BK, Xuan S, **Zarbl H**, Members of the Toxicogenomics Research C. Standardizing global gene expression analysis between laboratories and across platforms. Nature methods 2005;2:351-6.

41. Guo Y, Breeden LL, **Zarbl H**, Preston BD, Eaton DL. Expression of a human cytochrome p450 in yeast permits analysis of pathways for response to and repair of aflatoxin-induced DNA damage. Molecular and cellular biology 2005;25:5823-33.

42. Luo W, Fan W, Xie H, Jing L, Ricicki E, Vouros P, Zhao LP, **Zarbl H**. Phenotypic anchoring of global gene expression profiles induced by N-hydroxy-4-acetylaminobiphenyl and benzo[a]pyrene diol epoxide reveals correlations between expression profiles and mechanism of toxicity. Chemical research in toxicology 2005;18:619-29.

43. Guo Y, Breeden LL, Fan W, Zhao LP, Eaton DL, **Zarbl H**. Analysis of cellular responses to aflatoxin B(1) in yeast expressing human cytochrome P450 1A2 using cDNA microarrays. Mutation research 2006;593:121-42.

44. Ricicki EM, Luo W, Fan W, Zhao LP, **Zarbl H**, Vouros P. Quantification of N-(deoxyguanosin-8-yl)-4-aminobiphenyl adducts in human lymphoblastoid TK6 cells dosed with N-hydroxy-4-acetylaminobiphenyl and their relationship to mutation, toxicity, and gene expression profiling. Analytical chemistry 2006;78:6422-32.

45. Sudo H, Li-Sucholeiki XC, Marcelino LA, Gruhl AN, **Zarbl H**, Willey JC, Thilly WG. Distributions of five common point mutants in the human tracheal-bronchial epithelium. Mutation research 2006;596:113-27.

46. Beyer RP, Fry RC, Lasarev MR, McConnachie LA, Meira LB, Palmer VS, Powell CL, Ross PK, Bammler TK, Bradford BU, Cranson AB, Cunningham ML, Fannin RD, Higgins GM, Hurban P, Kayton RJ, Kerr KF, Kosyk O, Lobenhofer EK, Sieber SO, Vliet PA, Weis BK, Wolfinger R, Woods CG, Freedman JH, Linney E, Kaufmann WK, Kavanagh TJ, Paules RS, Rusyn I, Samson LD, Spencer PS, Suk W, Tennant RJ, **Zarbl H**, Members of the Toxicogenomics Research C. Multicenter study of acetaminophen hepatotoxicity reveals the importance of biological endpoints in genomic analyses. Toxicological sciences : an official journal of the Society of Toxicology 2007;99:326-37.

47. Mikheev AM, Mikheeva SA, Rostomily R, **Zarbl H**. Dickkopf-1 activates cell death in MDA-MB435 melanoma cells. Biochemical and biophysical research communications 2007;352:675-80.

48. Olsavsky KM, Page JL, Johnson MC, **Zarbl H**, Strom SC, Omiecinski CJ. Gene expression profiling and differentiation assessment in primary human hepatocyte cultures, established hepatoma cell lines, and human liver tissues. Toxicology and applied pharmacology 2007;222:42-56.

49. Page JL, Johnson MC, Olsavsky KM, Strom SC, **Zarbl H**, Omiecinski CJ. Gene expression profiling of extracellular matrix as an effector of human hepatocyte phenotype in primary cell culture. Toxicological sciences : an official journal of the Society of Toxicology 2007;97:384-97.

50. **Zarbl H**. Toxicogenomic analyses of genetic susceptibility to mammary gland carcinogenesis in rodents: implications for human breast cancer. Breast disease 2007;28:87-105.

51. Mikheev AM, Mikheeva SA, Maxwell JP, Rivo JV, Rostomily R, Swisshelm K, **Zarbl H**. Dickkopf-1 mediated tumor suppression in human breast carcinoma cells. Breast cancer research and treatment 2008;112:263-73.

52. Ren X, Zhang X, Kim AS, Mikheev AM, Fang M, Sullivan RC, Bumgarner RE, **Zarbl H**. Comparative genomics of susceptibility to mammary carcinogenesis among inbred rat strains: role of reduced prolactin signaling in resistance of the Copenhagen strain. Carcinogenesis 2008;29:177-85.

53. Sudo H, Li-Sucholeiki XC, Marcelino LA, Gruhl AN, Herrero-Jimenez P, **Zarbl H**, Willey JC, Furth EE, Morgenthaler S, Coller HA, Ekstrom PO, Kurzweil R, Gostjeva EV, Thilly WG. Fetal-juvenile origins of point mutations in the adult human tracheal-bronchial epithelium: absence of detectable effects of age, gender or smoking status. Mutation research 2008;646:25-40.

54. Zhang X, **Zarbl H**. Chemopreventive doses of methylselenocysteine alter circadian rhythm in rat mammary tissue. Cancer prevention research (Philadelphia, Pa) 2008;1:119-27.

55. Fang MZ, Zhang X, **Zarbl H**. Methylselenocysteine resets the rhythmic expression of circadian and growth-regulatory genes disrupted by nitrosomethylurea in vivo. Cancer prevention research (Philadelphia, Pa) 2010;3:640-52.

56. **Zarbl H**, Gallo MA, Glick J, Yeung KY, Vouros P. The vanishing zero revisited: thresholds in the age of genomics. Chemico-biological interactions 2010;184:273-8.

57. Bandera EV, Chandran U, Buckley B, Lin Y, Isukapalli S, Marshall I, King M, **Zarbl H**. Urinary mycoestrogens, body size and breast development in New Jersey girls. The Science of the total environment 2011;409:5221-7.

58. Kisby GE, Fry RC, Lasarev MR, Bammler TK, Beyer RP, Churchwell M, Doerge DR, Meira LB, Palmer VS, Ramos-Crawford AL, Ren X, Sullivan RC, Kavanagh TJ, Samson LD, **Zarbl H**, Spencer PS. The cycad genotoxin MAM modulates brain cellular pathways involved in neurodegenerative disease and cancer in a DNA damage-linked manner. PloS one 2011;6:e20911.

59. Graham JC, **Zarbl H**. Use of cell-SELEX to generate DNA aptamers as molecular probes of HPV-associated cervical cancer cells. PloS one 2012;7:e36103.

60. Ren X, Graham JC, Jing L, Mikheev AM, Gao Y, Lew JP, Xie H, Kim AS, Shang X, Friedman C, Vail G, Fang MZ, Bromberg Y, **Zarbl H**. Mapping of Mcs30, a new mammary carcinoma susceptibility quantitative trait locus (QTL30) on rat chromosome 12: identification of fry as a candidate Mcs gene. PloS one 2013;8:e70930.

61. Mukherjee D, Royce SG, Alexander JA, Buckley B, Isukapalli SS, Bandera EV, **Zarbl H**, Georgopoulos PG. Physiologically-based toxicokinetic modeling of zearalenone and its metabolites: application to the Jersey girl study. PloS one 2014;9:e113632.

62. Fang M, Guo WR, Park Y, Kang HG, **Zarbl H.** Enhancement of NAD(+)-dependent SIRT1 deacetylase activity by methylselenocysteine resets the circadian clock in carcinogen-treated mammary epithelial cells. Oncotarget 2015;6:42879-91.

63. Fang M, Guo W-R, Park Y, Kang H-G, **Zarbl H**. Enhancement of NAD + -dependent SIRT1 deacetylase activity by methylselenocysteine resets the circadian clock in carcinogen-treated mammary epithelial cells2015.

64. Fang MZ, Ohman-Strickland P, Kelly-McNeil K, Kipen H, Crabtree BF, Lew JP, **Zarbl H**. Sleep interruption associated with house staff work schedules alters circadian gene expression. Sleep medicine 2015;16:1388-94.

65. Green AL, Hossain MM, Tee SC, **Zarbl H**, Guo GL, Richardson JR. Epigenetic Regulation of Dopamine Transporter mRNA Expression in Human Neuroblastoma Cells. Neurochemical research 2015;40:1372-8.

66. Klaene JJ, Flarakos C, Glick J, Barret JT, **Zarbl H**, Vouros P. Tracking matrix effects in the analysis of DNA adducts of polycyclic aromatic hydrocarbons. Journal of chromatography A 2016;1439:112-23.

67. Fang M, Ohman Strickland PA, Kang HG, **Zarbl H**. Uncoupling genotoxic stress responses from circadian control increases susceptibility to mammary carcinogenesis. Oncotarget 2017;8:32752-68.

68. Green AL, Zhan L, Eid A, **Zarbl H**, Guo GL, Richardson JR. Valproate increases dopamine transporter expression through histone acetylation and enhanced promoter binding of Nurr1. Neuropharmacology 2017;125:189-96.

69. Sunil VR, Vayas KN, Fang M, **Zarbl H**, Massa C, Gow AJ, Cervelli JA, Kipen H, Laumbach RJ, Lioy PJ, Laskin JD, Laskin DL. World Trade Center (WTC) dust exposure in mice is associated with inflammation, oxidative stress and epigenetic changes in the lung. Experimental and molecular pathology 2017;102:50-8.

70. Mingzhu Fang, Hwan-Goo Kang, Youngil Park, and Helmut Zarbl. (2017) In Vitro Bioluminescence Assay to Determine Cellular Circadian Rhythm in Mammary Epithelial Cells. Journal of Visualized Experiments. In Press.

71. Minzhu Fang and Helmut Zarbl. (2017) Enhancement of NAD+-dependent SIRT1 Deacetylase Activity by Methylselenocysteine Resets the Circadian Clock in Carcinogen-Treated Mammary Epithelial Cells. Handbook of Nutrition, Diet and Epigenetics. In Press.

72. Mingzhu Fang, Hwan-Goo Kang, Pamela Ohman-Strickland and Helmut Zarbl. (2017) Uncoupling Genotoxic Stress Responses from Circadian Control Increases Susceptibility to Mammary Carcinogenesis. Oncotarget. *In Press.*

73. Ashley L. Green, Saw C. Tee, Helmut Zarbl, and Jason R. Richardson. (2017). Valproate Increases Dopamine Transporter Expression through Histone Acetylation and Enhanced Promoter Binding of Nurr1.
Neuropharmacology, *In Press.*

74. James Glick, Helmut Zarbl, Ka Yee Yeung, Qi Wang and Paul Vouros. (2017) Determining DNA Damaging Exposure Thresholds for a Foodborne Carcinogen Using LC-MS/MS and DNA Microarrays. *Submitted Toxicological Sciences. In revision.*

75. Jessica C. Graham, Xuefeng Ren, Kenneth Reuhl, Helmut Zarbl (2017) Fry Gene-Mediated Epithelial Differentiation Inhibits Tumorigenicity of Breast Cancer Cells *in vitro* and *in vivo.* BMC Cancer. *In revision.*

76. Jessica C. Graham, Norio Takizawa, Mingzhu Fang, Zhihong Gong, Brian Estrella, Yana Bromberg, Xuefeng Ren and Helmut Zarbl (2017). The Human FRY Gene Is a Novel Biomarker for Breast Cancer Progression and Prognosis. *In Revision.* Clinical Cancer Research

77. Christal A. Lewis, Jennifer Williams, Brian Estrella and H. Zarbl. (2017). Transgenerational Effects of Low Levels Dietary Zeranol During Pregnancy and Lactation on Sexual. Fecundity Development and Sensitivity to Mammary Carcinogenesis. *Toxicological Sciences. In revision*

78. Hao Zhang, Xiaojiang Tang, Xushen Chen, Zhihong Gong, Fan Fei, Jie Wang, Zi Ceng, Jinqiu Zhu, Schweser Ferdinand, Jessica C. Graham, Yan Liu, Jinming Zhao, Bing Su, Peilin Xu, Helmut Zarbl, Xuefeng Ren (2017). FRY Inhibits Breast Cancer Progression and Metastasis through Activation of the Hippo/Yap Kinase Cascade. *Cancer Cell, In Revision*

79. Jennifer Williams, Xun Zhang, MingZhu Fang, Christal A. Lewis and Helmut Zarbl. (2017). Increased susceptibility of CArG-Box Factor-A knockout mice to chemical carcinogenesis. *In preparation.*

80. Christal A. Lewis, Jennifer Williams, Brian Estrella and H. Zarbl. (2017). Transgenerational Effects of Low Levels Dietary Zeranol During Pregnancy and Lactation on Sensitivity to Mammary Carcinogenesis. *In preparation.*

Regulatory and Technical Report

1. J.V. Bruckner, R.J. Bull, D. Hattis, R.L. Kodell, H.M. Mehendale, H. Zarbl, L. Zeise. EPS-IRIS Peer Review Summary Final Report: Toxicological Review of 1,2,3-Trichlropropane (CAS No. 96-18-4) http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=186355

2. Reviewer for Health Effects Institute "Advanced Collaborative Emissions Study ACES), 2012.

3. External Peer Review of Topics Identified as the Scientific Portions of Developing a Maximum Contaminant Levels for 1,2,3-Trichloropropoane (1,2,3-Trichloropropane) for California Water Board, September 2016

Book Reviews:

1. Zarbl, H. Handbook of Toxicogenomics: Strategies and Applications. Edited by Jürgen Borlak. ChemBioChem 6(8):1464. 2005

2. Zarbl, H. Toxicogenomics: Principles and Applications. 2004. Hisham K. Hamadeh and Cynthia A. Afshari, Editors. *The Quarterly Review of Biology* 80 (3), 2005.

Symposia and Workshops Organized:

- Co-Organized National Academy Workshop:
Environment and Health: What's the Microbiome Have to Do with It?
Washington, DC, January 14-15, 2016.

- Co-Organized National Academy Workshop:
Interplay of the Microbiome, Environmental Stressors and Human Health. Washington, DC, April 27-28, 2011

- Organized and Chaired Platform Session:
Does the Clock Also Make the Poison? Influence of the Circadian Clock on Toxicological Mechanisms and Outcomes. The 50th Annual Meeting of the Society of Toxicology. Washington, DC. March 6-10, 2011.

- Organized and Chaired Platform Session:
Disease Prevention: The Next 50 Years. The 50th Annual Meeting of the Society of Toxicology. Washington, DC. March 6-10, 2011.

- Co-Organized National Academy Workshop:
Epigenetics and Environmental Health. Washington, DC, July 30-31, 2009.

- Organized and Chaired:
NIEHS Town Hall Meeting. The Environment and Child Health. New Brunswick, NJ, June 17th, 2009,

- Chaired Platform Session:
Accelerating Discoveries in Toxicology Through "Omics" Research,
The 47th Annual Meeting of the Society of Toxicology, Seattle, WA. March, 2008.

- Co-Chaired Poster Discussion Section on Skin and Mammary Carcinogenesis.
86th Annual Meeting of the American Association
for Cancer Research. Toronto, Ontario, Canada. March, 1995.

Invited Lectures, Symposia and Workshops:

- Symposium on Cell Transformation Assays: Application to Studies of Mechanisms of Carcinogenesis and to Carcinogen Testing. National Institutes of Environmental Health Sciences. Research Triangle Park, North Carolina, September 11-14, 1984.
- National Institute of Allergy and Infectious Diseases. National Institutes of Health, Bethesda, Maryland, May 8, 1985.
- Montreal Cancer Institute, Notre-Dame Hospital, Montreal, Quebec, Canada, May 23, 1985.
- Symposium on Correlations Between DNA Damage, Mutagenesis and Carcinogenesis. National Bureau of Standards Conference on DNA Damage and Repair. N.B.S., Gaithersburg, Maryland, June 2-7, 1985.
- Symposium on the Relative Importance of Point Mutations and Chromosomal Rearrangements in the Activation of Oncogenes. Canadian Congress of Biology (Genetics Society of Canada). University of Western Ontario, June 23-29, 1985.
- Department of Biochemistry, McGill University, Montreal, Quebec, November 11, 1985.
- Symposium on the Role of Mutation, Recombination and Translocation in Oncogene Activation. Seventeenth Annual Meeting of the Environmental Mutagenesis Society, Baltimore, Maryland, April 10, 1986.
- Department of Pathology, University of Massachusetts, Worcester, Massachusetts, February 4, 1987.
- Ludwig Institute for Cancer Research, Montreal, Quebec, March 5, 1987.
- Department of Applied Biological Sciences, Massachusetts Institute of Technology, Cambridge, Massachusetts, March 12, 1987.
- National Cancer Institute - Frederick Cancer Research Facility, November 6, 1987.
- Symposium on Tumor Suppressor Genes - Mechanistic Aspects. Seventy-ninth annual meeting of the American Association for Cancer Research. New Orleans, Louisiana, May 27, 1988.
- Gordon Conference on Cancer. Genetic Determinants of Cancer: Etiology, Development and Phenotype. Newport, Rhode Island, August 14-19, 1988.
- Health and Environmental Sciences, the Dow Chemical Company, Midland, Michigan, November 9, 1988.
- Department of Biology, York University, North York, Ontario, Canada, November 23, 1988.
- Ontario Cancer Institute, Toronto, Ontario, Canada, November 24, 1988.
- Banbury Center Conference on Recessive Oncogenes and Tumor Suppression. Cold Spring Harbor Laboratory, Cold Spring Harbor, New York, March 29-April 1, 1989.
- Division of Hematology, Brigham and Women's Hospital. Harvard University, Cambridge, Massachusetts. April 3, 1989.
- Cytometics Laboratories, Inc., San Diego, California, July 11, 1989.

- Salk Institute, La Jolla, California, July 15, 1989
- Symposium on Critical Target Genes in Chemical Carcinogenesis. National Institutes of Environmental Health Sciences, Research Triangle Park, North Carolina, September 10-14, 1989.
- U.C.L.A. Symposia on Molecular and Cellular Biology. Negative Controls on Cell Growth. Taos, New Mexico. March 3, 1990.
- Department of Anatomy and Cellular Biology, Tufts University, March 21, 1990.
- Departments of Medicine, Brigham and Women's and Beth Israel Hospitals, Harvard University, May 24, 1990.
- Lady Davis Research Institute. Montreal Jewish General Hospital, McGill University, Montreal, Quebec, June 12, 1990.
- Montreal Cancer Institute, Montreal, Quebec, June 13, 1990.
- New York University Medical School, New York, New York, December 18, 1990.
- The MITRE Corporation, McLean, Virginia, April 9, 1991.
- MIT Alumni of the Research Triangle Park, Durham, North Carolina, April 10, 1991.
- Clinical Research Institute of Montreal, Montreal, Quebec, Canada, June 11, 1991.
- MIT Alumni of New Jersey, Princeton, New Jersey, September 15, 1991.
- Squibb Biomedical Research Institute, Princeton, New Jersey, September 16, 1991.
- MIT Alumni of Washington, D.C., December 10, 1991.
- The American Red Cross, J.H. Holland Biomedical Research and Development Laboratory, Washington, D.C., January 15, 1992.
- MIT Alumni of Colorado, Denver, Colorado, March 26, 1992.
- NCI Roundtable on Clinical Applications of New Genetic Markers of Neoplasia, Rockville, Maryland, April 30, 1992.
- National Institute of Environmental Health Sciences. Research Triangle Park, North Carolina, September 10, 1992.
- Department of Anatomy and Cellular Biology, Tufts University, September 24, 1992.
- NCI Workshop on Early Detection of Cancer: Challenges for Molecular Biology, Gathersburg, Maryland, October 28-30, 1992.
- National Institute of Health. NCI, Laboratory of Experimental Carcinogenesis. Bethesda, Maryland, April 16, 1993.
- Molecular Oncology Group, Royal Victoria Hospital, McGill University, Montreal, Quebec, Canada, June 17, 1993.
- Gordon Conference on Genetic Toxicology. Colby-Sawyer College, New London, New Hampshire, July 26-30, 1993.
- Fred Hutchinson Cancer Research Center, Seattle, Washington, January 31, 1994.
- Department of Otolaryngology, Johns Hopkins University, Baltimore, Maryland, February 14, 1994.
- Fox Chase Cancer Center, Philadelphia, Pennsylvania, February 15, 1994.
- Southern Alberta Cancer Research Center, The University of Calgary, Alberta, March 3, 1994.
- American Health Foundation, Vallhalla, New York, April 8, 1994.
- Centre De Recherche Louis-Simard, Notre-Dame Hospital, Montreal, Quebec, Canada, April 15, 1994.
- Arkansas Cancer Research Center, Little Rock, Arkansas, April 25, 1994.
- International Agency for Cancer Research, Lyon, France, June 16, 1994.
- West German Cancer Center, Institut fur Zelbiologie (Tumorforschung), Universitat-Gesamthochschule, Essen, Germany, June 13, 1994.
- German Cancer Research Center, University of Heidelberg, Heidelberg, Germany, June 14, 1994.
- Division of Cancer Research, Department of Pathology, University of Zurich, Switzerland, June 15, 1994.
- Center in Molecular Toxicology. Vanderbilt University, Nashville, Tennessee, September 30, 1994.
- Department of Biochemistry, University of Washington, Seattle, Washington, February 2, 1995.
- Symposium on Biomarkers of Carcinogenesis. 86th annual Meeting of the American Association for Cancer Research. Toronto, Ontario, Canada. March 18-22, 1995.
- The 6th Charles Heidelberger Conference. Control of Cell Proliferation and Differentiation: Molecular Targets in Carcinogenesis and Cancer Therapy. Essen, Germany, July 9-13, 1995.
- Department of Environmental Toxicology, University of Wisconsin-Madison, September 28, 1995.
- Department of Human Oncology, University of Wisconsin-Madison, September 27, 1995.

- Seattle Breast Cancer Research Program, Symposium on: *In Vivo* and I*n Vitro* Models of Breast Carcinogenesis. Fred Hutchinson Cancer Research Center, Seattle, Washington, December 6, 1995.
- Department of Biology and RCMI Program, Clark Atlanta University, Atlanta, Georgia, February 9, 1996.
- Department of Pathology, University of Washington, Seattle, Washington, October 19, 1996.
- Department of Anatomy, University of British Columbia, Vancouver, B.C., July 11, 1997.
- Department of Environmental Sciences, The Evergreen State College, Olympia, Washington, October 14 and 16, 1997.
- The Eppley Institute for Research in Cancer and Allied Diseases, University of Nebraska Medical Center, Omaha, Nebraska. October 23, 1997.
- China Medical University, Department of Molecular Genetics, Shenyang, Liaoning Province, People's Republic of China. October 30 to November 16, 1997.
- Superfund Basic Research Program Conference. Massachusetts Institute of Technology, Cambridge, Massachusetts. March 23-25, 1998.
- Department of Environmental Sciences, The Evergreen State College, Olympia, Washington, November 13, 1998.
- Department of Pathology. University of Washington, December 9, 1998.
- Workshop on the role of tissue architecture in the development of breast cancer. National Action Plan on Breast Cancer. Washington, D.C. September 15-16, 1999.
- Epidemiology in the Twenty-first Century. N.I.E.H.S. A workshop to stimulate discussions and develop creative strategies that will advance the field of environmental epidemiology. Raleigh, North Carolina. October 31- November 2, 1999.
- Cooperative Family Registry for Colon Cancer Meeting. Honolulu, Hawaii. April 5-8, 2000.
- Symposium on Genomics, Proteomics, Bioinformatics and Developmental Toxicology in the 21st Century. The Annual Teratology Society Meeting. Palm Beach Fl, June 29-30, 2000.
- Cooperative Family Registry for Colon Cancer Meeting. Toronto, Ontario, Canada. September 13, 2000
- The American Cancer Society Schilling Research Conference Molecular Targets for Cancer Prevention. Aptos, CA. October 26-29, 2000.
- The Barnett Institute, Northeastern University, January, 2001.
- Seattle Biomedical Research Institute, Seattle, WA. March 5, 2001
- RCMI 2001 Spring Symposium. Clark-Atlanta University. Atlanta, GA, April 26-27, 2001.
- EMS Functional Genomics Meeting, Seattle, WA. October 16-18, 2001.
- Department of Biology, Northeastern University, October 26, 2001.
- Department of Biophysics-HHMI, University of Texas, Southwestern, Dallas, TX. May 15-16, 2002.
- Intel Early Disease Detection Workshop, San Francisco, California. September 23-24, 2002.
- The AACR Joint US/Japan Meeting on Environmental Genomics. Honolulu, Hawaii. January 22-25, 2004.
- Schering-Plough Research Laboratories. Kenilworth, NJ. August 03, 2004
- Rosetta InPharmatics. Seattle, WA. September, 28, 2004.
- National Institute of Allergy and Infectious Disease. Molecular Pathology Section. Rockville, MD, May 25, 2005. NIH, NIAID, Bethesda MD, May 25, 2005
- NIEHS, Research Triangle Park, NC, June 17, 2005
- American Society of Human Genetics, October 26, 2005.
- Department of Biochemistry and Molecular Biology & Epply Cancer Center, University of Nebraska, December 12, 2005.
- CCRTD Symposium. Clark Atlanta University. Atlanta, GA. March 30-31, 2006.
- Environmental and Occupational Health Sciences Institute. UMDNJ/Rutgers University, Piscataway, NJ. April 5, 2006.
- Department of Community & Environmental, Medicine, UC Irvine, June 15, 2006.
- Department of Animal Sciences, Rutgers University, Cook Campus, New Brunswick, NJ, February 2007.
- Department of Chemical Biology, Ernest Mario School of Pharmacy, Rutgers University, Piscataway, NJ. May 30, 2007.

- Louisiana Cancer Research Center, Tulane University, New Orleans, LA, September 27, 2007
- Keynote address at the Rutgers Department of Genetic Retreat, Piscataway, NJ. May 22, 2008
- CINJ Breast Cancer Program, New Brunswick, NJ, May 20, 2008.
- European Center for Ecotoxicology and Toxicology of Chemicals (ECETOC) Meeting, Cavtat, Croatia. September 24-26, 2008.
- Health Effects Institute, Boston, MA. October 31, 2008.
- NIEHS Center for Environmental Health in Northern Manhattan, Columbia University, New York, NY. November 25th, 2008.
- New York University Cancer Center and NIEHS Center, NYU Sterling Forest Campus, NY., March 27, 2009
- Benzene 2009 Meeting, Munich Germany, September 7-11, 2009
- Federal-State Toxicology and Risk Analysis Committee (FSTRAC) Conference. Princeton, NJ. October 22, 2009.
- 26th International Neurotoxicology Conference. Portland OR. June 6-8, 2010.
- Institute of Medicine. National Academies of Science. Committee on Breast Cancer and the Environment. The Scientific Evidence, Research and Future Directions. San Francisco, CA. July 7th, 2010.
- National Research Council. National Academies of Science. Workshop on Developing a New Disease Taxonomy. Washington, DC. September 7th, 2010.
- Susan Lehman Cullman Laboratory for Cancer Research Department of Biological Chemistry, Ernest Mario School of Pharmacy. Rutgers University, October 22, 2010.
- MD Anderson Cancer Center, University of Texas, Center for Research on Environmental Disease, Science Park – Research Division. Smithville, TX. November 3rd, 2010.
- Late Breaking News Session. 102nd Annual Meeting of the American Association for Cancer Research, Orlando, FL. April 2-6th, 2011.
- Clark Atlanta University. 7th Annual Prostate Cancer Symposium. Center for Cancer Research and Therapeutic Development, Atlanta, GA. May 23-24, 2011.
- Gordon Conference on Hormone Action and Development. Bryant University, NH. July 31st -August 5th, 2011
- Northern California Chapter of the Society of Toxicology/ Covance Summer Event. San Francisco, CA, August 30th, 2011.
- Laboratory for Human Carcinogenesis. National Institutes of Health, Bethesda, MD. September 22nd, 2011.
- Center for Research in Occupational Environmental Toxicology. Oregon Health Sciences University. Portland, Oregon. October 30, 2011.
- Department of Social and Preventive Medicine, the State University of New York,
- Buffalo, NY. September 21, 2012
- Department of Environmental Health, University of California at Los Angeles. December 18, 2012.
- AMGEN, Thousand Oaks, CA. December 18, 2012.
- Department of Obstetrics and Gynecology. Cooper University Hospital. Camden, NJ. September 17, 2013.
- World Congress of Sleep Medicine, Valencia Spain. September 30, 2013.
- Department of Animal Science, Rutgers, The State University of New Jersey. November 15, 2013.
- The 9th International Conference of Anticancer Research, Sithonia, Greece, October 6-10 2014.
- Animal and Plant Quarantine Agency (QIA), Ministry of Agriculture, Food and Rural Affairs. Anyang City, Republic of Korea. October 16-17, 2014.
- International Symposium of the Korean Society of Veterinary Science. Jeju Island, Republic of Korea. October 20-21, 2014.
- Genomic Institute of Singapore. A*STAR. Singapore. June 12, 2015.
- College of Public Health Sciences (CPHS), Chulalongkorn University. Bangkok Thailand. June 24, 2015.
- International Conference of Food and Nutrition Science. Asian Pacific Chemical Biological and Environmental Engineering Society. Bangkok Thailand. June 25-26, 2015.

- Session Chair and Keynote Speaker, 6th International Conference on Biology, Environment and Chemistry. CBEES, New York, NY. October 10-13, 2015
- Keynote Speaker, Annual Meeting of the Korean Society of Toxicology. Seoul, Korea. Nov 12-13, 2015.
- Session Chair and Keynote Speaker, International Conference of Food and Nutrition Science. AP Chemical Biological and Environmental Engineering Society. Despander, Indonesia. June 25-26, 2016.
- Symposium Overview and Final Summary Speaker. National Research Council National Academy of Sciences, Engineering and Medicine. Standing Committee on Application of Emerging Science for Environmental Health Decisions. "What's the Human Microbiome Have to Do with It?" Washington, D.C. January 14-15, 2016.
  Session Chair and Keynote Speaker.
- Conference Chair and Keynote Speaker. 7th International Conference on Biology, Environment, and Chemistry, Asian-Pacific Chemical, Biological and Engineering Society. San Francisco, CA. October 26-28, 2016.
- National Toxicology Program, National Institute of Environmental Health Sciences. Research Triangle Park, North Carolina. May 4th, 2017.
- Department of Occupational and Environmental Health Sciences. West Virginia University. Morgan Town. West Virginia, July12, 2017.