California Breast Cancer Research Program

Jointly Sponsored by the
California Breast Cancer Research Program,
University of California
Office of the President
and the University of California
Irvine School of Medicine

May 17-18, 2013
Hilton Orange County/Costa Mesa

# From Research to Action: Two Decades of Change


Funding for this conference was made possible (in part) by 1R13 ES022921-01 from the National Institute of Environmental Health Sciences and the National Cancer Institute. The views expressed in written conference materials or publications and by speakers and moderators do not necessarily reflect the official policies of the Department of Health and Human Services; nor does mention by trade names, commercial practices, or organizations imply endorsement by the U.S. Government.

# Executive Director Research Grant Program Office Welcome

Dear Symposium Attendees:

On behalf of the University of California, I would like to welcome you to the California Breast Cancer Research Program's "From Research to Action: Two Decades of Change" symposium. The University has administered this program with pride for 20 years, and it is with equal pride that we look forward to what the program will achieve in the future with your help.

In the past 20 years, the California Breast Cancer Research Program has awarded over $230 million in research funds to more than 100 research institutions and community groups across the state. The numbers alone do not tell the whole story, though. Through this funding, the CBCRP has supported translational projects to move scientific discoveries from bench to bedside and into the community, fostered collaborative projects between community-based organizations and researchers, as well as sponsored innovative approaches for detecting, treating and preventing breast cancer that might not otherwise have been funded.

The CBCRP staff and the Breast Cancer Research Council have worked hard to bring you this exciting symposium. I want to thank them for their passion and dedication to breast cancer research.

I hope you enjoy the symposium sessions, as well as the opportunity to meet with current and future colleagues and friends.

Mary Croughan, Ph.D.
Executive Director
Research Grants Program Office
University of California

# Director California Breast Cancer Research Program Welcome

I am delighted to welcome you to “From Research to Action: Two Decades of Change.” This symposium marks the 20th year since the passage of the legislation that created the California Breast Cancer Research Program. The women and men who fought for our creation envisioned a dynamic, responsive and highly innovative research agenda, and we have never forgotten them. We are determined to keep the program nimble and responsive to the changing research landscape and to fill critical gaps in knowledge that will help us understand and eradicate breast cancer.

The key to our success has been integrating all of our stakeholders in the strategic development of the CBCRP. This philosophy is reflected in the symposium program. We want to ensure that the voices of people who are affected by breast cancer are integrated into the discussion of how research is conducted and how the results of that research are applied. Sessions will explore advocacy contributions to research, present the most recent progress in breast cancer research and demonstrate tools for engaging in breast cancer research and advocacy. Training sessions will prepare attendees to conduct community-based participatory research and incorporate advocates in research studies. I hope that you will join us at the interactive breakout session on developing a good advocate-researcher partnership, and I encourage you to enroll in our database that links qualified advocates and potential community research partners with researchers.

In the past 20 years, we have witnessed improvements in breast cancer mortality, but we have far to go. Our first keynote speaker, Dr. Susan Love, will share her journey in breast cancer research and CBCRP’s role in “pushing the envelope.” Our second keynote speaker, Dr. Dennis Slamon, will describe how our advancements have driven down mortality and how we can move farther and faster in the future. Two sessions, “The Role of Research in Setting Breast Cancer Policy” and “Changing Federal Priorities for Breast Cancer Research,” demonstrate how we are on the verge of a sea change in how we approach research in the  coming years.

I also encourage you to take advantage of the non-scientific features of the symposium. Start your day with an energizing yoga or aerobic workout. Strengthen your commitment to ending breast cancer by visiting the art exhibition that conveys the stories of lives affected by breast cancer. Share your experiences with us and other symposium attendees at the “CBCRP Listens” session and at the 20 year reception. We welcome your input now and always.

The CBCRP and breast cancer research landscape has changed in the 20 years since we began, but we remain fundamentally dedicated to the vision of the founders of the program. We honor their dreams and share their sense of urgency, and we adapt to make the greatest impact against breast cancer. It is my hope that the symposium sparks new collaborations and new directions in research, and leaves everyone more informed and invigorated in our quest to reduce breast cancer incidence and mortality.

Mhel Kavanaugh-Lynch
Director, California Breast Cancer Research Program

# Continuing Medical Education Credits

## Continuing Medical Education Credits

### PURPOSE/NEED FOR ACTIVITY

The purpose of this activity is to increase knowledge about the areas of research that have the potential to improve how breast cancer is prevented, detected and treated as well as to provide the means to optimize breast cancer survivorship, quality of life and health service delivery in diverse populations.

### TARGET AUDIENCE

This activity was developed for physicians, nurses, therapists and other professionals who provide care for breast cancer patients, research the disease and/or set breast cancer-related public health policies.

### OBJECTIVES

At the conclusion of this symposium, the participants should be able to:

- Interpret the latest advances in understanding factors that influence the life course of breast cancer and their role in developing new and improved strategies to prevent and treat breast cancer;
- Describe to colleagues and patients the steps involved in translating the results of research into health services and/or health policy applications;
- Apply strategies for providing culturally appropriate breast cancer care to underserved populations including racial/ethnic minorities, geographically isolated and/or disabled people;
- Collaborate with breast cancer researchers and advocates to design and implement breast cancer research studies.

### ACCREDITATION STATEMENT

This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education through the joint sponsorship of the University of California, Irvine School of Medicine and the University of California Office of the President. The University of California, Irvine School of Medicine is accredited by the ACCME to provide continuing medical education for physicians.

### DESIGNATION STATEMENT

The University of California, Irvine School of Medicine designates this live activity for a maximum of 19.5 *AMA PRA Category 1 Credits*™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

### GENERAL DISCLOSURE STATEMENT

It is the policy of the University of California, Irvine School of Medicine and the University of California CME Consortium to ensure balance, independence, objectivity and scientific rigor in all CME activities. Full disclosure of conflicts and conflict resolutions will be made prior to the activity in writing via handout materials, insert, or syllabus.

### CALIFORNIA ASSEMBLY BILL 1195

This activity is in compliance with California Assembly Bill 1195, which requires continuing medical education activities with patient care components to include curriculum in the subjects of cultural and linguistic competency. For specific information regarding Bill 1195 and definitions of cultural and linguistic competency, please visit the CME website at www.cme.uci.edu.

### AMERICANS WITH DISABILITIES (ADA)

This conference is ADA compliant. Please see the Registration Desk for assistance.

### ACKNOWLEDGEMENT OF COMMERCIAL SUPPORT

The University of California, Irvine School of Medicine and the California Breast Cancer Research Program, University of California Office of the President, thank the following for their support to this educational activity: **National Institute of Environmental Health Sciences.**

UCI OCME requires that the content of CME activities and related materials provide balance, independence, objectivity, and scientific rigor. Planning must be free of the influence or control of a commercial entity, and promote improvements or quality in healthcare. It is the policy of the UCI Office of Continuing Medical Education to insure balance, independence, objectivity, and scientific rigor in all its educational activities. All

# Continuing Medical Education Credits

faculty participating in UCI sponsored CME programs are expected to disclose to the activity participants any real or apparent conflict(s) of interest that may have a direct bearing on the subject matter of the continuing medical education activity. This pertains to relationships with pharmaceutical companies, biomedical device manufacturers, or other corporations whose products or services are related to the activity content. The intent of this policy is identifying potential conflicts of interest so participants can form their own judgments with full disclosure of the facts. It remains for the participants to determine whether the speaker's outside interests reflect a possible bias in either the exposition or the conclusions presented.

## These speakers/planners have provided the following disclosures regarding relevant financial relationships:

| Speaker Planner Name | Name of Commercial Interest | Nature of Relevant Relationship | Conflict Resolution Method |
|---|---|---|---|
| **Mark Pegram** M.D., Ph.D. | Roche/ Genentech | Advisory Board member, travel reimbursement | 1. I will submit my presentation for peer review PRIOR to the activity.<br>2. I will support my presentation and clinical recommendations with the "best available evidence" from the medical literature. *See suggested sources of best evidence at www.aafp.org/x3139.xml.*<br>3. I will refrain from making recommendations regarding products or services, e.g., limit presentation to pathophysiology, diagnosis, and/or research findings. |
| **Michael Press,** M.D., Ph.D. | Genentech | Advisory Board member, Travel reimbursement | 1. I will submit my presentation for peer review PRIOR to the activity.<br>2. I will support my presentation and clinical recommendations with the "best available evidence" from the medical literature. See suggested sources of best evidence at www.aafp.org/x3139.xml.<br>3. I will refrain from making recommendations regarding products or services, e.g., limit presentation to pathophysiology, diagnosis, and/or research findings. |
| **Michael Press,** M.D., Ph.D. | Roche | Consultant, travel reimbursement | |
| **Michael Press,** M.D., Ph.D. | Ventana, Inc | Consultant, grant/ research support recipient/travel reimbursement | |



## The following speakers/planners have indicated they have no relevant financial relationships to disclose:

Kimlin Ashing-Giwa, Ph.D.
Janice Barlow
Cynthia Barnes-Boyd, Ph.D., F.A.A.N.
Leslie Bernstein, Ph.D.
Nancy Buermeyer, Ph.D.
Terri Burgess, Ph.D.
Maria Caprio
Shiuan Chen, Ph.D.
Diana Chingos
Susan E. Clare, M.D., Ph.D.
Phyllis Clark
Elly Cohen, Ph.D.
Barbara Cohn, Ph.D., M.P.H., M.C.P.
Gwen Collman, Ph.D.
Janna Cordeiro, M.P.H.
Shanaz Dairkee, Ph.D.
Kay Deeney
Michael Dennison, Ph.D.
Brenda Dixon-Coby
Ysabel Duron
Brunie Felding, Ph.D.
Laura Esserman, M.D., M.B.A.
David Feldman, M.D.
Senaida Fernandez, Ph.D.
Jim Ford, M.D.
Karren Ganstwig
Sarah Gehlert, Ph.D.
Andrei Goga, M.D., Ph.D.
L. Elizabeth Goldman, M.D.
Cynthia A. Gómez, Ph.D.
Scarlett Lin Gomez, Ph.D.
Claudia Gottstein, M.D.
Jon Greif, D.O., F.A.C.S.
Kim Harley, Ph.D.
Susan Hurley, M.P.H.
Karuna Jaggar
Cacilia Kaplan, M.A., Dr.P.H.
Marion Kavanaugh-Lynch, M.D., M.P.H.
J. Cacilia Kim, J.D., Ph.D.
Cheryl Koopman, Ph.D.
Mary Anne Kreshka, M.A.
Allison Kurian, M.D.
Marilyn Kwan, Ph.D.
Susan Love, Ph.D., M.B.A.
Melanie Marty, Ph.D.
Musa Mayer
M. Ellen Mahoney, M.D., F.A.C.S.
Kommah McDowell, M.S.L.M.
Katherine McKenzie, Ph.D.
John Peterson Myers, Ph.D.
Paul Mills, Ph.D.
Mark Moasser, M.D.
Rita Mukhtar, M.D.
John Peterson Myers, Ph.D.
Arash Naeim, M.D., Ph.D.
Anna Napoles, Ph.D.
Marta Nichols
Susan Neuhausen, Ph.D.
Carmen Ortiz, Ph.D.
Kimberly Parra
Shobita Parthasarathy, Ph.D.
Dana Peacher
Marj Plumb, Dr.P.H., M.N.A.
Michele Rakoff
Sharima Rasanayagam, Ph.D.
David Rehkopf, Sc.D, M.P.H.
Peggy Reynolds, Ph.D.
Jeanne Rizzo
Eric Roberts, M.D., Ph.D.
Rudy Rull, Ph.D.
Ted Schettler, M.D., M.P.H.
Dennis Slamon, M.D., Ph.D.
Naz Sykes
Sora Tanjasiri, Dr.P.H.
Catherine Thomsen, M.P.H.
Thea Tlsty, Ph.D.
Chris Vulpe, Ph.D.
Emily Wang
Zena Werb, Ph.D.
Deborah Winn, Ph.D.
Anna Wu, Ph.D.
Paul Yaswen, Ph.D.
Lei Zhang, Ph.D.

# Continuing Medical Education Credits

**This educational activity may contain discussion of unlabeled and/or investigational uses of agents that are not approved by the FDA. Please consult the prescribing information for each product.**

| Speaker Planner Name | Name of Commercial Interest | Nature of Relevant Relationship |
|---|---|---|
| **David Feldman, M.D., Ph.D.** | Vitamin D | Use of vitamin D to improve the risk and course of breast cancer. |
| **Mark Moasser, M.D.** | Lapatinib | I will be discussing our clinical study which involved using the approved drug Lapatinib at doses that are higher than the approved dose. |
| **Mark Pegram, M.D., Ph.D.** | Temozo-lomide | To the best of my ability, I will ensure that any speakers or content I suggest is free of commercial bias.<br><br>I will excuse myself from planning activity content in which I have a conflict of interest. |
| **Dennis Slamon, M.D., Ph.D.** | | I will discuss pre-clinical data about new potential clinical research strategies. |

The views and opinions expressed in this activity are those of the faculty and do not necessarily reflect the views of the University of California, Irvine School of Medicine and the California Breast Cancer Research Program.

# Making the Symposium Green

The CBCRP is working to make this event healthy and environmentally friendly.

### WHAT THE CBCRP IS DOING:

- Sponsoring free yoga and exercise classes on Friday and Saturday;
- Making the symposium a non-smoking event;
- Providing healthy food options at every meal and food break (fruit and vegetables, water);
- Serving organic produce when possible (based on market availability and cost);
- Reducing use of the plastic products in our food service;
- Minimizing the use of individual food and beverage containers;
- Producing all symposium materials on recycled chlorine-free paper using soy-based ink;
- Encouraging a fragrance free symposium;
- Providing symposium materials on a voluntary rather than automatic basis. You want one, you take one.

### WHAT THE HILTON ORANGE COUNTY/COSTA MESA IS DOING:

- Recycling newspaper, boxes, cardboard and glass bottles;
- Eliminating hotel deliveries on Green Wednesday and Saturday;
- Energy-saving by using compact fluorescent lighting throughout the hotel;
- Replacing sheets and towels in guest rooms upon request;
- Using carpet shampoo and odor neutralizer that are green standard;
- Using linen-less tables to minimize the use of chemicals and energy needed for cleaning banquet linen;
- Turning off convention escalators, lights and heat/air during “down” time;
- Upgrading guestrooms with low flow shower heads and toilets.

### WHAT YOU CAN DO:

- Use refillable containers for water and coffee;
- Join us at the yoga and exercise classes;
- Take full advantage of recycling receptacles;
- Remember to recycle your name badge;
- Consider attending meetings “fragrance-free;”
- If you’re staying at the Hilton Orange County/Costa Mesa, conserve water and energy by not having your sheets and towels serviced every day.

# Symposium at a Glance

## Symposium at a Glance: Friday

| FRIDAY MAY 17, 2013 | TIME | LOCATION |
|---|---|---|
| **AM Yoga** | 6:00am – 7:00am | Newport Beach |
| **Wellness Work-Out** | 6:00am – 7:00am | Bristol |
| **Poster Set-up** | 7:00am – 12:00pm | Laguna Beach |
| **Registration** | 7:00am – 6:00pm | Banquet 2 Level |
| **Continental Breakfast** | 7:00am – 9:00am | Banquet 2 Level |
| **Art Exhibition** | 8:00am – 9:00pm | Balboa Bay |
| **Exhibitor Showcase** | 8:00am – 6:00pm | Emerald Bay |
| **Welcome and Keynote Address** | 8:00am – 8:45am | Pacific Ballroom |
| **Advocacy and Research** | 8:45am – 10:15am | Pacific Ballroom |
| **Break** | 10:15am – 10:30am | Banquet 1 & 2 Levels |
| **Early Life Exposures to the Breast** | 10:30am – 12:00pm | Catalina 1 |
| **Breast Cancer 101 Workshop** | 10:30am – 12:00pm | Newport Beach |
| **Chemicals Testing Workgroup** | 10:30am – 12:00pm | Catalina 2 |
| **No Host Lunch (box lunches available for purchase)** | 12:00pm–1:30pm | Catalina, Banquet 2 Level |
| **Exhibits and Poster Viewing (unattended)** | 12:00pm – 1:30pm | |
| **Changing Federal Priorities for Breast Cancer Research** | 12:15pm – 1:15pm | Catalina 1 |
| **What We're Learning from You** | 1:30pm – 3:00pm | Catalina 1 |
| **Early Stage Breast Cancer** | 1:30pm – 3:00pm | Catalina 2 |
| **Aggressive Breast Cancer** | 1:30pm – 3:00pm | Newport Beach |
| **New Tools for Research and Advocacy** | 3:00pm – 4:30pm | Pacific Ballroom |
| **How to Develop a Good Advocate-Researcher Partnership** | 3:00pm – 4:00pm | Newport Beach |
| **Exhibitor Showcase** | 3:00pm – 4:30pm | Emerald Bay |
| **Poster Discussion** | 4:30pm – 6:00pm | Catalina 1 |
| **Community Research Collaboration Workshop** | 4:30pm – 6:00pm | Newport Beach |
| **Breast Cancer Risk and Survival** | 4:30pm – 6:00pm | Catalina 2 |
| **CBCRP Listens** | 6:00pm – 7:00pm | Catalina 2 |
| **20 Year Reception** | 7:00pm – 10:00pm | Fountain Terrace and Garden Terrace Patio |

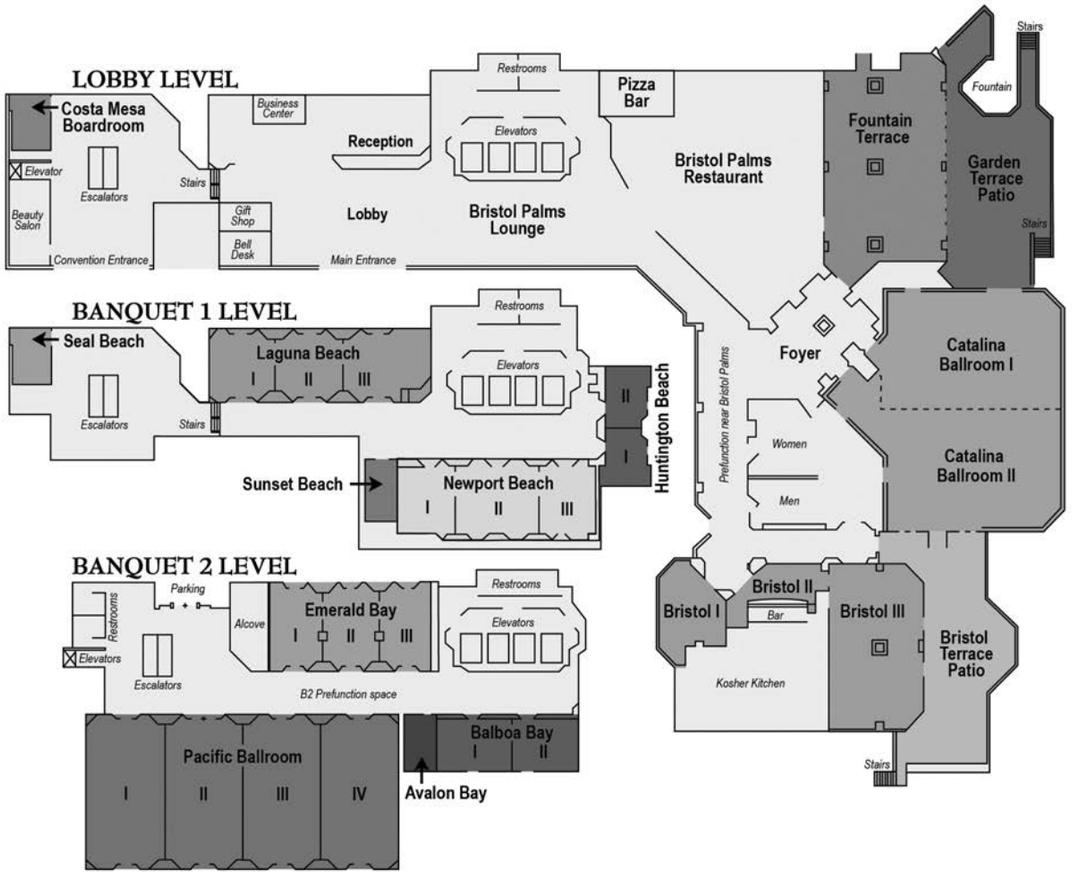
# Symposium at a Glance: Saturday

| SATURDAY MAY 18, 2013 | TIME | LOCATION |
|---|---|---|
| **AM Yoga** | 6:00am – 7:00am | Newport Beach |
| **Wellness Work-Out** | 6:00am – 7:00am | Bristol |
| **Registration** | 7:00am – 12:00pm | Banquet 2 Level |
| **Breakfast** | 7:00am – 9:00am | Pacific Ballroom |
| **Advocate/Scientist Collaboration Breakfast** | 7:00am – 8:30 am | Pacific Ballroom |
| **Art Exhibition** | 8:00am – 5:00pm | Balboa Bay |
| **Exhibitor Showcase** | 8:00am – 5:00pm | Emerald Bay |
| **Welcome** | 8:30am – 8:45am | Pacific Ballroom |
| **Role of Research in Setting Breast Cancer Policy** | 8:45am – 10:30am | Pacific Ballroom |
| **Break** | 10:30am – 11:00am | Banquet 1 & 2 Levels |
| **Addressing Breast Cancer Disparities** | 11:00am – 12:30pm | Catalina 1 |
| **Breast Cancer Cause and Prevention** | 11:00am – 12:30pm | Catalina 2 |
| **Lunch (Keynote Address and Poster Awards)** | 12:30pm – 2:000pm | Pacific Ballroom |
| **Environment and Breast Cancer** | 2:00pm – 3:30pm | Catalina 1 |
| **Translating Research for Impact** | 2:00pm – 3:30pm | Catalina 2 |
| **Poster Presentation** | 3:30pm – 4:30pm | Laguna Beach |
| **Closing Session (raffle)** | 4:30pm – 5:00pm | Newport Beach |



# Floor Plan

## HILTON ORANGE COUNTY/COSTA MESA



# Program Schedule **Friday**

## Program Schedule: Friday

### 6:00am –7:00am

**Location: Newport Beach and Bristol**

### Yoga

This class will be a beginner yoga vinyasa (flow) practice. Proper alignment is explained and demonstrated. The instructor introduces foundational postures, breath and the connection of breath to movement so that you move toward linking the poses together into a continuous flow.

### Wellness Workout

This will be a fun and energizing boot camp-like class. You will move through a circuit-like class doing exercises using body weight to strengthen the body. The instructor will lead you through a warm-up, circuit training, core work and a cooldown.

### Equipment

Yoga mat and towel for yoga class. Hand towel and tennis shoes for exercise class.

**INSTRUCTOR:**

**Yoga Class led by Jenny Vande Hei**

**Wellness Workout led by Aileen Pham**

**RA YOGA STUDIO**

Ra Yoga Studio is the collaborative dream of Robert Kittleman, Jenny Vande Hei and Aileen Pham. Founded in the belief that yoga should be "by the people, for the people," we are not owned by or affiliated with a larger entity. At Ra Yoga, we are creating a calm, nurturing, non-superficial, DIY environment where you will learn the importance of centering, refocusing and creating points of stillness inside yourself. It is our vision that this studio be a sanctuary to which our students can escape the chaos of their daily lives, connect with like-minded people in the community and achieve proper balance within themselves through the practice of yoga. For those interested in practicing at Ra Yoga, we offer a free week to try out our various classes. Please check out our website at www.rayoga.com for more details.

### 8:00am – 8:15am

**Location: Pacific Ballroom**

### Welcome

**SPEAKER**

**Teresa Burgess, PH.D.**
*Vice-Chair*
*California Breast Cancer Research Council*

**Marion Kavanaugh-Lynch, M.D., M.P.H.**
*Director*
*California Breast Cancer Research Program*

# Program Schedule: Friday

**8:15am – 8:45am**

**Location: Pacific Ballroom**

## Keynote Address
## Susan Love, M.D., M.B.A.

**Pushing the Envelope:**
**20 Years of Pioneering Breast Cancer Research in California**

*President*
*Dr. Susan Love*
*Research Foundation*

Susan M Love, M.D., M.B.A. has dedicated her professional life to the eradication of breast cancer. As President of the Dr. Susan Love Research Foundation, she focuses on finding the cause of breast cancer by democratizing, inspiring, conducting and facilitating research.

Dr. Love received her medical degree from SUNY Downstate Medical Center in New York and did her surgical training at Boston's Beth Israel Hospital. She founded the Faulkner Breast Center in Boston and the Revlon UCLA Breast Center in Los Angeles. She has a business degree from the Executive MBA program at UCLA's Anderson School of Business and is a Clinical Professor of Surgery at UCLA's David Geffen School of Medicine. In 1996, she retired from the active practice of surgery to dedicate her time to the urgent pursuit of finding the cause and prevention of breast cancer. She served on the National Cancer Advisory Board from 1998 to 2004 as an appointment of President Clinton.

Dr. Susan Love is best known as a trusted guide to women world-wide through her books and the Foundation website. The completely revised fifth edition of Dr. Susan Love's Breast Book termed "the bible for women with breast cancer" by The New York Times was released October in 2010. Her reputation as an activist comes from her role as one of the "founding mothers" of the breast cancer advocacy movement in the early 1990s.

The Dr. Susan Love Research Foundation is focused on visionary projects such as the Love/Avon Army of Women, a creative Internet solution partnering women and scientists to accelerate basic translational research. This novel initiative seeks to move research from animals to women, democratizing the scientific process. In October 2012, the Dr. Susan Love Research Foundation launched the Health of Women Study (HOW), a first of its kind, global, online cohort study focused on identifying new risk factors and the cause of breast cancer.



**8:45am – 10:00am**

**Location: Pacific Ballroom**

## Plenary Session
## Advocacy and Research

Advocates made breast cancer research a priority in California and can make a very real contribution to all studies. This panel of researchers and advocates will describe how including breast cancer and community advocates in identifying research questions, designing and implementing studies and disseminating results has contributed to the advancement of our knowledge in this field.

**MODERATOR**

**J. Cacilia Kim,** J.D., PH.D.
*California Women's Law Center*

**SPEAKERS**

**Cynthia Barnes-Boyd,** M.S.N., PH.D., F.A.A.N.
*University of Illinois at Chicago*

**Diana Chingos**
*University of Southern California Cancer Survivorship Advisory Council*

**Musa Mayer**
*AdvancedBC.org*

**Michael Press,** M.D., PH.D.
*University of Southern California*

# Program Schedule: Friday

**Plenary Session Presenters**

## Cynthia (Cee) Boyd, M.S.N., Ph.D., F.A.A.N.

*Board Member*
*Community Campus*
*Partnerships for Health*
*University of Illinois at Chicago*

Dr. Cynthia (Cee) Boyd is the director of the Community Engagement and Neighborhood Health Partnerships for the University of Illinois at Chicago, Office of the Vice President for Health Affairs. She is a Clinical Associate Professor, in the Community Health Sciences Division of the UIC School of Public Health and holds a similar appointment in the UIC College of Nursing. Dr. Boyd is the co-leader for the Community Engagement and Research Core of the UIC Center for Clinical Translational Science where she facilitates community engagement.

In her role as director of Community Engagement and Neighborhood Health Partnerships, Dr. Boyd facilitates community engagement from a framework of partnership principles developed with community and university stakeholders. These partnerships include administering federally-qualified health centers that provide health care in school based settings serving vulnerable populations. Her responsibilities include working with stakeholders to create and promote a community-driven research agenda to support community/university research partnerships.

Dr. Boyd is the chair of the Board of Directors for the Community Campus Partnerships for Health, an international organization focused on community/university partnerships, community scholarship, community service and community based participatory research. She serves on numerous community focused boards and committees, including the National Assembly of School Based Health Care and the Center for Population Health and Health Disparities. She is an active researcher and co-directs the Center of Excellence for Eliminating Disparities, a UIC Center seeded by the Center for Disease Control.

Dr. Boyd has received numerous honors and awards including the:

- Chancellor's Award for Community Based Participatory Research, University of California Irvine;
- UIC Alumni City Partner Award;
- Renacer West Side Community Network, "Outstanding Community Commitment Award;"
- Power of Nursing Leadership Illinois Nurse Leader of the Year;
- Women Health Executives Network, "Annual Achievement in Health Care Management Award;"
- American Academy of Pediatrics "Bronze Award" for Clinical Research;
- Metropolitan Health Care Council "Outstanding Woman Health Care Manager;"

Dr. Boyd is a Robert Wood Johnson Executive Nurse Fellow Alumni and a fellow in the American Academy of Nursing and the Chicago Institute of Medicine.



**Plenary Session Presenters**

## Diana Chingos

*Council Chair*
*University of Southern California*
*Cancer Survivorship*
*Advisory Council*

Diana Chingos began her involvement with the Women's Cancers Research Program at USC in 1999, after her third breast cancer diagnosis. "I knew that I could not control my breast cancer but I could control my knowledge of this disease and use it to educate and empower others. Interacting with breast cancer researchers at USC has given me great insight into the conduct of many different types of research and how yesterday's hypothesis can become today's standard of care."

She chairs the Survivorship Advisory Council at the Kenneth Norris Comprehensive Cancer Center, a patient and caregiver group that brings the patient's perspective to research and care at this major academic medical center. She represents patients on the Cancer Center's Executive Committee and serves with USC scientists on the SU2C Epigenetics Dream Team.

The National Breast Cancer Coalition's Project LEAD courses provided a necessary introduction to the world of breast cancer research for her. The courses filled a huge knowledge gap, "I knew what I wanted to do but didn't know how I would get there." She serves on NCI Steering Committees for Investigational Drugs and Patient Advocacy and has had a decade long role on the Working Group for the NCI/NIEHS Breast Cancer Environmental Research Centers Program. A former member of the California Breast Cancer Research Council, she performs Data & Safety Monitoring for the California Cancer Consortium and is an IRB member.

Chingos specializes in oncology patient navigation She is currently working on patient educational modules for the Cancer Information and Support Network and is mentoring new reviewers for the Patient Centered Outcomes Research Institute in Washington D.C.

# Program Schedule: Friday

## Plenary Session Presenters

### J. Cacilia Kim, J.D., Ph.D.

*Senior Staff Attorney*
*California Women's Law Center*

J. Cacilia Kim is the senior staff attorney at the California Women's Law Center (CWLC). CWLC is the first law center in California solely dedicated to addressing the comprehensive and unique legal needs of women and girls. Since its founding in 1989, CWLC has worked to protect, secure and advance the civil rights of women and girls, with an emphasis on issues pertaining to women's health, gender discrimination and violence against women. As an attorney at CWLC, Ms. Kim has litigated cases addressing systemic discrimination against women with various health issues, including women with breast cancer, and works with national and state legal advocacy organizations to develop and influence legislation that supports and protects these women. Ms. Kim has also written policy briefs, legal resource guides and amicus briefs concerning various health issues that substantially impact women. Ms. Kim received her J.D. and Ph.D. in Developmental Child Psychology from UCLA. She graduated with honors from both programs in 2001.

### Musa Mayer

*Founder*
*AdvancedBC.org*

Musa Mayer is a 24-year survivor, advocate and author of three books on breast cancer. Known for her long-time patient advocacy on behalf of women with metastatic and advanced disease, her articles on breast cancer and advocacy frequently appear in magazines, newsletters, websites and scientific journals. As a research advocate, she serves on steering committees and data safety monitoring boards for several clinical trials and registries, and on a Department of Defense funded Center of Excellence studying brain metastasis, for which she co-developed www.BrainMetsBC.org, the only resource of its kind.

In November 2011, she was keynote speaker at the First Consensus Conference on Advanced Breast Cancer, in Lisbon, Portugal. Drawing from a decade of work with the Food and Drug Administration, the United States drug regulatory agency, she recently contributed a chapter to the book, "Communicating Risks and Benefits: An Evidence-Based User's Guide." She has added a new module on the FDA to her online course "Understanding Evidence-Based Healthcare: A Foundation for Action," co-developed with epidemiologist Kay Dickersin, director of the U.S. Cochrane Center at Johns Hopkins Bloomberg School of Public Health. Accessible through www.Cochrane.us, this free course has been completed by thousands of advocates and health care workers around the world. Her web resource for women with metastatic breast cancer can be found at www.AdvancedBC.org.



## Plenary Session Presenters

### Michael Press, M.D., Ph.D.

*Professor*
*University of Southern California*

Dr. Michael F. Press is a board certified pathologist who has authored or co-authored more than 180 papers and is recognized for his work in characterizing molecular genetic alterations of breast cancer. He is the co-leader of the Women's Cancers Program at the USC/Norris Comprehensive Cancer Center. He is a surgical pathologist at the USC+L.A. County Hospital and the USC Norris Comprehensive Cancer Center where he is a Professor of Pathology and holds the Harold E. Lee Chair in Cancer Research. He received both his M.D., and Ph.D. degrees at the University of Chicago.

Dr. Press is the director of a reference laboratory (USC Breast Cancer Analysis Laboratory) engaged in private practice pathology on a referral basis (1988-present). In this laboratory, he evaluates prognostic markers and predictive markers as well as histopathology used in making treatment decisions for women with breast cancer. He is the director of the central laboratory for the Cancer International Research Group (CIRG), a clinical trials organization that evaluates new therapies in predominantly breast cancer patients but also conducts trials in several other cancers, including gastric cancer.

His particular area of research interest is in molecular alterations of breast and gynecologic cancers, especially those that have the potential to be important in either diagnostic or therapeutic decision-making for patient management. The most prominent area of activity for his laboratory has been in the study of the human epidermal growth factor receptor type 2 (HER-2) in breast and other cancers. He published his first paper in this area in 1989 (Science 244: 707-712, 1989) and his laboratory is still actively contributing to this area as well as to the conduct of clinical trials evaluating HER-2 as a target for therapy.

He is active in teaching medical students, graduate students, postdoctoral fellows and resident physicians.

# Program Schedule: Friday

**10:30am – 12:00pm**

## Early Life Exposures to the Breast

Factors influencing the maturing breast can affect the risk of developing breast cancer later in life. The speakers in this session will discuss the biological, environmental and social exposures that can be contributing to breast cancer risk.

**Location: Catalina 1**

**MODERATOR**

**Melanie Marty,** PH.D.
*California State Office of Environmental Health Hazard Assessment*

**SPEAKERS**

BIOLOGICAL WINDOWS OF BREAST SUSCEPTIBILITY
**Gwen Collman,** PH.D.
*National Institute of Environmental Health Sciences*

ENVIRONMENTAL CAUSES OF BREAST CANCER ACROSS GENERATIONS
**Barbara Cohn,** PH.D., M.P.H., M.C.P.
*Public Health Institute*

SOCIAL AND CULTURAL INFLUENCES ON BREAST CANCER RISK
**Sarah Gehlert,** PH.D.
*Washington University*

**10:30am – 12:00pm**

## Breast Cancer 101

The workshop will teach the fundamentals of breast cancer basic science and clinical outcomes to symposium attendees who do not have a background in scientific research.

**Location: Newport Beach**

**LEADER**

**M. Ellen Mahoney,** M.D., F.A.C.S.
*St. Joseph's Hospital Eureka*



**10:30am – 12:00pm**

## Chemicals Testing Workgroup

Investigators funded to develop new assays to determine how chemicals may affect the risk of breast cancer will discuss the science and policy issues surrounding their work. They will present perspectives of their work trying to measure the ways that BPA (bisphenol A), as an example of a chemical of concern, may affect the breast. Then we will open up a discussion of the future of testing chemicals for their impact on breast cancer risk.

**Location: Catalina 2**

**FACILITATOR**

**Catherine Thomsen,** M.P.H.
*California Breast Cancer Research Program*

**PANEL MEMBERS**

**Ruthann Rudel**
*Silent Spring Institute*

**Chris Vulpe,** PH.D.
*University of California, Berkeley*

**Michael Denison,** PH.D.
*University of California, Davis*

**Zena Werb,** PH.D.
*University of California, San Francisco*

**Shiuan Chen,** PH.D.
*Beckman Research Institute of City of Hope*

**Shanaz Dairkee,** PH.D.
*California Pacific Medical Center*

**John Peterson Myers,** PH.D.
*Environmental Health Sciences*

# Program Schedule: Friday

**12:15pm – 1:15pm**

## Changing Federal Priorities for Breast Cancer Research

The Interagency Breast Cancer and Environment Research Coordinating Committee (IBCERCC) released a seminal report in January 2013 that outlined a new path for breast cancer prevention research. This session will report the IBCERCC's findings and recommendations, and chart the future directions of breast cancer research at the state and federal levels.

**Location: Catalina 1**

INTERAGENCY BREAST CANCER AND ENVIRONMENT RESEARCH COORDINATING COMMITTEE CHARGE AND REPORT

**Jeanne Rizzo, R.N.**
*Co-Chair*
*Interagency Breast Cancer and Environment Research Coordinating Committee*

THE IMPACT OF THE REPORT ON COMMUNITIES

**Ysabel Duron**
*Member*
*Interagency Breast Cancer and Environment Research Coordinating Committee*

NIH RESPONDS
NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES

**Gwen Collman, PH.D.**
*Director*
*Division of Extramural Research & Training*

NATIONAL CANCER INSTITUTE

**Debbie Winn, PH.D.**
*Deputy Director*
*Division of Cancer Control and Population Sciences*

CALIFORNIA BREAST CANCER RESEARCH PROGRAM – LEADER AND FOLLOWER

**Marion Kavanaugh-Lynch, M.D., M.P.H.**
*Director*
*California Breast Cancer Research Program*



**1:30pm – 3:00pm**

## What We're Learning from You

Large population studies are critical tools in understanding how breast cancer develops and determining what we can do to prevent it. The speakers will discuss ongoing studies for understanding the origins of breast cancer and ways attendees can get involved to further our knowledge.

**Location: Catalina 1**

**MODERATOR**

**Naz Sykes**
*Dr. Susan Love Research Foundation*

**SPEAKERS**

PERSISTENT ORGANIC POLLUTANTS & BREAST CANCER RISK

**Peggy Reynolds, PH.D.**
*Cancer Prevention Institute of California*

USING KOMEN TISSUE BANK SPECIMENS TO REDEFINE NORMAL

**Susan E. Clare, M.D., PH.D.**
*Indiana University*

**1:30pm – 3:00pm**

## Early Stage Disease

Defining early breast cancer has proved to be more complicated than simply identifying the tumor when it is small. This session will explore the biology and emerging technology that will help us recognize and manage early stage breast disease.

**Location: Catalina 2**

**MODERATOR**

**Terri Burgess, PH.D.**
*University of California, Santa Barbara*

**Marta Nichols**
*Breast Cancer Connections*

**SPEAKERS**

CELLULAR CONVERSATIONS THAT CONTROL CANCER

**Thea Tlsty, PH.D.**
*University of California, San Francisco*

ANTIBODY-BASED TARGETING OF BREAST CANCER STEM CELLS

**Claudia Gottstein, M.D.**
*University of California, Santa Barbara*

EARLY DETECTION OF BREAST CANCER POWERED BY NEXT GENERATION SEQUENCING TECHNOLOGIES

**Lei Zhang, PH.D.**
*UCLA*

# Program Schedule: Friday

**1:30pm – 3:00pm**

**Location: Newport Beach**

## Aggressive Breast Cancer

The options for treating aggressive breast cancer have expanded through the past decade, but we still have much to learn about how to cure it. This session will explore the biology of and clinical approaches for treating advanced breast cancer and metastatic disease.

**MODERATOR**

**Mark Pegram, M.D.**
*Stanford University*

**SPEAKERS**

IDENTIFYING NOVEL DRUGABLE TARGETS AGAINST TRIPLE NEGATIVE BREAST CANCER
**Andrei Goga, M.D., PH.D.**
*University of California, San Francisco*

TOWARDS HIGHLY EFFECTIVE INACTIVATION OF HER2-HER3 SIGNALING
**Mark Moasser, M.D.**
*University of California, San Francisco*

BREAST CANCER METASTASIS TO THE BRAIN
**Brunie Felding, PH.D.**
*The Scripps Research Institute*



**3:00pm – 4:30pm**

**Location: Pacific Ballroom**

## Hands-on Demonstration of Tools for Research and Advocacy

In this session, attendees will learn about tools available to support research and advocacy efforts and get practical training for using them. Each tool presenter will start a new demonstration at 3:00pm, 3:30pm and 4:00pm.

**Tools Include:**

***A Tool for Understanding Multi-Level Breast Cancer Causes and Prevention***
David Rehkopf, Sc.D., M.P.H.

Breast cancer like many diseases has a complex etiology with multi-level determinants from social, physical, behavioral and biologic factors. Etiologic factors are usually studied in isolation with models to adjust for confounding, mediating and moderating effects of other factors. Complex systems models hold promise in presenting a more accurate picture of the multi-factorial etiology of breast cancer. We constructed a model of the etiology of post-menopausal breast cancer with the input of multiple experts taking a trans-disciplinary approach to this common problem. A subset of key variables, namely, age, self-identified race/ethnicity, age at menarche, age at first birth, age at menopause, body mass index (BMI), alcohol consumption, income, tobacco use, of hormone therapy (HT) and BRCA1 genotype, formed a mathematical model that simulated the incidence of postmenopausal breast cancer in California in 2000. The resulting mathematical model can be subsequently used as a tool for understanding the potential impacts of policies and programs to prevent breast cancer. This novel effort also revealed areas of challenge in the methodology and additional areas for further study.

***BreastCancerTrials.org***
Elly Cohen, Ph.D.

BreastCancerTrials.org (BCT) is a non-profit, online resource dedicated to helping breast cancer patients, those at risk and post-treatment survivors consider clinical trials as an option for care. On BCT, users can learn about trials and match to those personalized to their situation. Alternatively, they can use our QuickView Browser to find studies sorted by either subject (e.g., vaccine therapy) or tumor type (e.g., triple negative breast cancer). BCT lists over 531 studies taking place across the country, each accompanied by a patient-friendly summary and site contact information; listings include those for treatment, prevention, supportive care, epidemiology and screening. BCT adds studies on a weekly basis and offers a Trial Alert Service for users who want to stay informed of newly listed studies that match their profile. New to BCT is our Navigator Portal, designed to help navigators create and manage BCT profiles on behalf of clients.

BCT was piloted by the UCSF Carol Franc Buck Breast Care Center and NCI with research support from the California Breast Cancer Research Program. Launched as a nationwide service in 2008, it operates as a program of Quantum Leap Healthcare Collaborative, a non-profit organization affiliated with UCSF with operational support from the Safeway Foundation.

# Program Schedule: Friday

## Hands-on Demonstration of Tools for Research and Advocacy (continued)

***Community Level Breast Cancer Mapping***
Eric Roberts, M.D., Ph.D.

Many of us are familiar with maps that show which counties have the highest breast cancer rates in our state, but what if we could use data from state cancer registries to show the highest rates in areas that were smaller than counties, or that crossed county boundaries? Would it produce useful information or just confuse people? How could we use the information for patient care or advocacy? And if such maps would be useful, how could we choose among the many statistical approaches at our disposal?

Over 2010-2012, the California Breast Cancer Research Program funded the California Breast Cancer Mapping Project, in which community organizers, patient care providers and local health officials from around California wrestled with these questions. We will discuss how they promoted communication within their group and tailored statistical tools to meet the communication needs of diverse stakeholders, culminating in a practical report describing the geography of invasive breast cancer in California.

***Dr. Susan Love Research Foundation's Love/Avon Army of Women***
Naz Sykes

The Love/Avon Army of Women (AOW) has existed for more than four years. It was designed to facilitate the recruitment of women to participate in research aimed at identifying the cause of breast cancer. The AOW is particularly interested in studies directed at breast cancer prevention, testing markers and those with a focus on healthy women. A secondary goal of the AOW is to help researchers new to research with human subjects. This workshop will focus on helping researchers learn what it takes to transition their research from animal models to human subjects and the need for the public to take part in research.

***PhotoVoice***
Sora Tanjasiri, Dr.P.H.

Photovoice represents a powerful process to capture community-level information through the eyes of its residents. Photovoice provides cameras and intensive training to community residents to document their own issues and concerns. Developed by Wang and Burris (1994), Photovoice is the innovative combination of several theoretical perspectives that emphasize community participation for social action, including empowerment education and documentary photography. These theoretical perspectives appreciate the value of participants defining and determining the subjects that are documented, with the emphasis on uncovering underlying root causes and identifying policy-oriented actions to address injustices. Three specific aims of Photovoice are: 1) to empower and engage community residents to freely share their concerns through taking photographs within their own communities; 2) to use the photographs as the focal point of group discussions and dialogue about community issues; and 3) to share their photographs with policy makers and other community residents to create positive community changes (Wang, 1999). Photovoice has grown in popularity and has been implemented by various communities to develop needs assessments, conduct evaluations, and catalyze awareness for policy change. Thus, Photovoice recognizes participants' power and control over agenda setting, facilitates action and reflection concerning their surroundings, fosters the development of skills, and informs policy-makers' agendas and decisions.



***Socio-Demographic Questions for Breast Cancer Research***
Scarlett Lin Gomez, Ph.D.

Dr. Scarlett Lin Gomez and her team at the Cancer Prevention Institute of California and their collaborator, Dr. Nancy Krieger at Harvard University, worked closely with scientific and community experts to develop survey tools to gather data associated with breast cancer disparities more consistently. Standardizing the way data are collected is a critical step in understanding breast cancer disparities and what can be done about them. The standards for data collection that are developed through this study will help to ensure that scientists can effectively interpret and compare information they use to study breast cancer. These include an individual's race, ethnicity, birthplace, migration history, language, community characteristics, disability status, socioeconomic status, gender and sexual orientation.

The survey tool developed in this study has been translated into Spanish, Chinese, Tagalog, and Vietnamese, reviewed by a wide range of experts, and tested among breast cancer patients and survivors, making it applicable to gathering data for research within many different populations. With uniformly gathered data, scientists can more effectively compare their results regarding why and how breast cancer affects some women more than others, leading to new knowledge about the unequal burden of breast cancer.

***TOXNET and Tools from the National Library of Medicine***
Kay Deeney

TOXNET (Toxicology Data Network) is a web-based integrated system of databases of toxicology, environmental-health, hazardous chemicals, toxic releases, chemical nomenclature and specialty areas. The goal of this session is to present information on toxicological databases from NLM that will support research and advocacy for breast cancer. The session will instruct attendees on the following activities. Find strategies for effectively searching TOXLINE to find research articles related to breast cancer and chemical or toxicological issues. Discover the dictionary of chemicals from ChemIDplus and locate comprehensive, peer-reviewed toxicology data from the Hazardous Substances Data Bank (HSDB) database including human exposure, industrial hygiene, emergency handling procedures, environmental fate, and regulatory requirements. Explore LactMed, a peer-reviewed and fully referenced database of drugs to which breastfeeding mothers may be exposed. Consider Household Products Database which links over 12,000 consumer brands to health effects from Material Safety Data Sheets (MSDS), provided by manufacturers and which allows scientists and consumers to research products based on chemical ingredients.

We will also highlight guides, tutorials and learning tools for more information about toxicology resources from the National Library of Medicine.

# Program Schedule: Friday

**3:00pm – 4:00pm**

**Location: Newport Beach**

## How to Develop a Good Advocate — Researcher Partnership

In this interactive session, an advocate, a researcher and a scientific/programmatic reviewer will tell their stories of including advocates in applying for and carrying out research. The session will include a conversation about the opportunities, barriers and best practices for including community voices in CBCRP-funded research.

**FACILITATOR**

**Marj Plumb,** DR.P.H., M.N.A
*Plumbline Associates*

**DISCUSSANTS**

**Cynthia A. Gómez,** PH.D.
*Health Equity Institute, San Francisco State University*

**Michele Rakoff**
*Breast Cancer Care and Research Fund*

**Paul Yaswen,** PH.D.
*Lawrence Berkeley National Laboratory*

**4:30pm – 6:00pm**

**Location: Catalina 1**

## Poster Discussion

Selected CBCRP investigators will give oral presentations of their posters.

**MODERATORS**

**Jon Greif,** D.O., F.A.C.S.
*Bay Area Breast Surgeons, Inc.*

**Marta Nichols**
*Breast Cancer Connections*

**SPEAKERS**

ABSTRACT 25 - FACTORS INFLUENCING THE REQUIREMENT FOR BREAST CANCER SUSCEPTIBILITY GENE BRCA1 DURING HOMOLOGOUS RECOMBINATION

**Jeremy Stark,** PH.D.
*Beckman Research Institute of the City of Hope*

**ABSTRACT 20** - DEVELOPING THE CAPACITY FOR COMMUNITY-DRIVEN RESEARCH TO ELIMINATE DISPARITIES IN MAMMOGRAPHY FOR LATINAS

**Stergio Roussos,** PH.D., M.P.H.
**Felicia Batts,** M.P.H.
*University of California, Merced and Alliance for Community Research and Development*

**ABSTRACT 03** - A DRIVER OF MAMMARY STEM CELL BEHAVIOR DURING PREGNANCY PLAYS A ROLE IN AGGRESSIVE BREAST CANCER

**Jay Desgrosellier,** PH.D.
*University of California, San Diego*

**ABSTRACT 32** - SECRETED CIRCULATING MICRORNAS PREDICT BREAST CANCER OUTCOMES

**Emily Wang,** PH.D.
*Beckman Research Institute of the City of Hope*

**ABSTRACT 10** - CLINICAL TRIALS INFORMATION AND ACCESS FOR UNDERSERVED WOMEN

**Galen Joseph,** PH.D.
**Alyssa Nickell,** PH.D.
*University of California, San Francisco and the Shanti Project*

# Program Schedule: Friday

**4:30pm – 6:00pm**

**Location: Newport Beach**

## Community Research Collaboration Informational Session

This session will provide an overview of community-based participatory research (CBPR) information about applying for Community Research Collaboration awards, as well as perspectives on CBPR trainings and partnerships.

**LEADER**

**Senaida Fernandez, PH.D.**
*California Breast Cancer Research Program*

**SPEAKERS**

**Phyllis Clark**
*The Healthy Heritage Movement, Inc*

**Kimberly Parra**
*Clinica de Salud del Valle de Salinas*

**Kim Harley, PH.D.**
*University of California, Berkeley*

**4:30pm – 6:00pm**

**Location: Catalina 2**

## Breast Cancer Risk and Survival

One major area of investigation is exploring why some groups are more successful at surviving breast cancer than others. This session will present research on clinical and socio-cultural survivorship issues.

**MODERATORS**

**Sora Tanjasiri, DR.P.H.**
*California State University, Fullerton*

**Janice Barlow**
*Zero Breast Cancer*

**SPEAKERS**

A MULTIETHNIC STUDY OF COMORBIDITIES AND BREAST CANCER SURVIVAL

**Anna Wu, PH.D.**
*University of Southern California*

INFLUENCE OF BODY SIZE ON BREAST CANCER SURVIVAL IN A MULTIETHNIC STUDY

**Marilyn Kwan, PH.D.**
*Kaiser Permanente, Northern California*

SISTER SURVIVOR, BUILDING THE AFRICAN AMERICAN CANCER COALITION PROCESS AND RESEARCH OUTCOMES

**Kimlin Ashing-Giwa, PH.D.**
**Kommah McDowell, M.S.L.M.**
*City of Hope National Medical Center and Kommah Seray Inflammatory Breast Cancer Foundation*



**6:00pm – 7:00pm**

**Location: Catalina 2**

## CBCRP Listens

Learn about the new funding direction that the CBCRP is taking and share your thoughts with members of the CBCRP council. Participants are invited to get to know the people who are charting the future of the CBCRP.

**7:00pm – 10:00pm**

**Location: Fountain & Garden Terrace**

## 20 Year Reception

Join the CBCRP for food, music and dancing as we commemorate 20 years of innovative research. Connect with other attendees as well as the CBCRP council and staff in an informal, festive atmosphere, while enjoying the musical stylings of Music F/X.

*Music F/X*

# Program Schedule **Saturday**

## Program Schedule: Saturday

**6:00am – 7:00am** | **Location: Newport Beach and Bristol**

### Yoga
### Wellness Workout

(See page 21 for more information)

**7:00am – 8:30am** | **Location: Pacific Ballroom**

### Advocate/Scientist Collaboration Breakfast

Attendees will be able to join informal small group discussions led by teams of advocates and researchers on critical topics and important gaps in breast cancer research.

**Discussion Topics:**
***How Advocates Can Improve Funding Chances and Research Outcomes***
Michele Rakoff, Breast Cancer Care and Research Fund
Paul Yaswen, Ph.D., Lawrence Berkeley National Laboratory

Michele Rakoff, a 24-year breast cancer survivor and patient advocate, is Executive Director of the Breast Cancer Care & Research Fund, Vice President of the California Breast Cancer Organizations (CABCO) and Board member of the National Breast Cancer Coalition (NBCC). Ms Rakoff served on the California Breast Cancer Research Program's (CBCRP) Advisory Council and was the recipient of a CBCRP community research collaborative grant upon completion of her service. She has participated as a peer reviewer for the Department of Defense Breast Cancer Research Program. Currently, Ms. Rakoff holds an advisory seat on the California Teacher's Study Scientific Task Force, is a member of the Love/Avon Army of Women Scientific Advisory Committee and an advocate advisor on a CBCRP research initiative "Racial and Ethnic Differences in Stage-Specific Breast Cancer Survival." Because public policy issues and legislation have an impact on patients and health care, Ms Rakoff travels to Washington, D.C. to represent the patient's voice. She continues to lobby for federal funding for research, access to quality care for all, and ensuring that advocates have a seat at the table everywhere health care decisions are being made. Ms Rakoff collaborates with scientists on research grants, believes that the advocate voice is vitally important and that well educated, trained advocates must be included in every aspect of research, clinical decision-making and public policy issues.

Paul Yaswen is a staff scientist in the Life Sciences Division of Lawrence Berkeley National Laboratory. He studies the molecular defects (both genetic and epigenetic) that contribute to the initiation and maintenance of malignancy in human breast cancer cells and the developmental pathways that govern proliferative potential in human epithelial stem and progenitor cells. He is currently a co-investigator on the NCI/NIEHS sponsored Bay Area Breast Cancer and the Environment Research Program project, "Environmental Effects on the Molecular Architecture and Function of the Mammary Gland across the Lifespan," and the CBCRP Special Research Initiative Project, "Building on National Initiatives for New Chemicals Screening." Dr. Yaswen has a history of productive and rewarding interactions with breast cancer advocates, both as an instructor for the National Breast Cancer Coalition Project Lead and as a participant in the Bay Area Breast Cancer and the Environment Research Center, where he helped organize conferences, participated in public town halls and helped create multimedia presentations for lay audiences. In 2011, he was a recipient of an Honor Thy Healer Award for Community Breast Cancer Research from Zero Breast Cancer — a Northern California advocacy group.

# Program Schedule: Saturday

## Advocate/Scientist Collaboration Breakfast (continued)

***Conducting Research that Drives Health Policy***
Nancy Buermeyer, The Breast Cancer Fund
Melanie Marty, Ph.D., California State Office of Environmental Health Hazard Assessment

Nancy Buermeyer is the Senior Policy Strategist for the Breast Cancer Fund. Nancy has 25 years of experience as a policy strategist and lobbyist, and has played a key role in shifting the landscape on crucial public health and civil rights issues including chemicals policy reform, gay rights and women in the military. As a leading figure in the movement to strengthen laws governing synthetic chemicals, Nancy lobbied for one of the Breast Cancer Fund's biggest victories: a federal ban on phthalates in children's toys in 2008. She has also successfully advocated for increased federal funding of biomonitoring and health tracking programs. As a member of the Safer Chemicals, Healthy Families Steering Committee, she works with stakeholders in the environmental, health and business communities to shape comprehensive chemicals policy that protects public health and the environment. She holds a master's degree in biological oceanography from the University of Connecticut and graduated magna cum laude from the University of Pittsburgh with a bachelor's degree in Biology.

Melanie Marty is Assistant Deputy Director for Scientific Affairs, Office of Environmental Health Hazard Assessment, California Environmental Protection Agency. Dr. Marty received her Ph.D. from the University of California, Davis in Pharmacology and Toxicology. OEHHA is responsible for assessing risk of adverse health outcomes from environmental pollution. These assessments feed into regulatory programs for cleaner air and drinking water and safer consumer products. Dr. Marty has authored or co-authored numerous articles and publications relating to environmental risk assessment, including evaluation of children's health risks. She has served on a number of EPA peer review committees and was Chair of the U.S. EPA's Children's Health Protection Advisory Committee from 2001-2009. Dr. Marty is also an Adjunct Assistant Professor at the University of California, Davis, Department of Environmental Toxicology.

***Cultural Considerations when Researching Access to Care***
Kimlin Ashing-Giwa, Ph.D., Beckman Research Institute, City of Hope
Mary Anne Kreshka, M.A., Sierra Streams Institute

Kimlin Tam Ashing-Giwa is Professor and Director of the Center of Community Alliance for Research and Education at City of Hope. She received her doctorate in clinical psychology from the University of Colorado-Boulder. Previous to her appointment at City of Hope, she spent 12 years conducting research at the UCLA, advancing theoretical and methodological approaches as behavioral scientist and psycho-oncologist. She is active in several cancer related organizations; she serves on the Executive council of Los Angeles American Cancer Society (ACS) and is the scientific leader for the African American Cancer Coalition (this comprises eight community advocacy organizations within Southern California). Dr. Ashing-Giwa is a notable leader in examining cancer disparities, quality of life and survivorship and has published over 52 articles and book chapters. Her work in this area is significant and innovative and guides much of the diversity and cross-cultural research. Currently, she is developing and implementing community participatory interventions to reduce the risk and burden of chronic illness, in particular cancer. Dr. Ashing-Giwa examines relevant historical and cultural contexts as it relates to providing culturally competent health care. She proposes that the understanding of ethnic, social, economic and political status can inform the health care system and improve health outcomes.



Mary Anne Kreshka is a community based advocate dedicated to providing information and resources to women who have experienced breast cancer. As a breast cancer survivor and resident of a small Northern California town, she is particularly focused on increasing available medical and educational resources to women residing in rural and underserved communities. Mary Anne has served as co-PI on five CBCRP CRC grants studying the effectiveness of psychosocial support groups to rural and underserved women. She is Adjunct Professor of Child Development at Sierra College in Grass Valley, CA and is particularly interested in the dissemination of the recent evidence-based research on the environmental influences and risks of breast cancer during pregnancy, early childhood, pre-puberty and adolescence. Mary Anne is President and Co-founder of a non-profit environmental organization, Sierra Streams Institute located in Nevada City, CA. She is author of "One in Eight: Women Speaking to Women A Breast Cancer Workbook-Journal.

***Developing Community Research Collaborations***
Maria Caprio, Shanti Project, Inc.
Senaida Fernandez, Ph.D., California Breast Cancer Research Program
Diana Peacher, Cancer Resource Center of the Desert

Maria Caprio has been the Director of the Breast Cancer Program at the Shanti Project, Inc since 2008. Based in San Francisco, she leads a multilingual/cultural staff in providing free one-on-one patient navigation (case management), psychosocial support and health education to over 500 low-income women annually. Prior to joining Shanti's staff, Maria was a long time Volunteer Caregiver, providing emotional and practical support to Shanti clients and facilitating volunteer trainings. Before transitioning to the non-profit arena, she spent several years working in investment banking and private equity in the U.S. and in the U.K. She holds a B.A. from Scripps College, Claremont, CA in International Relations.

Senaida Fernandez is Program Officer for Community Initiatives and Public Health Sciences at the California Breast Cancer Research Program (CBCRP). She is a clinical psychologist with a specialization in behavioral medicine. In her role with the CBCRP, she focuses on working with community-academic research partnerships to build capacity for community-based participatory research through technical assistance and outreach efforts. Prior to her work with the CBCRP, she was an Assistant Professor of Medicine in the Division of General Internal Medicine at New York University School of Medicine, where she utilized both qualitative and quantitative research methodologies to implement lifestyle interventions for reducing health disparities among ethnic minority older adults. She completed her graduate work at the University of California, San Diego and San Diego State University Joint Doctoral Program in Clinical Psychology and her clinical internship in behavioral medicine at the VA Palo Alto Health Care System. She completed her postdoctoral training at Columbia University.

Diana Peacher is the CEO and co-founder of the Cancer Resource Center of the Desert (CRCD), a non-profit community based organization, formed for the purpose of removing barriers to cancer care through patient navigation services. To date, CRCD has served over 1,500 cancer patients from the Imperial County communities. She holds a Bachelor of Science Degree and Patient Navigation Certification from Harold P. Freeman Patient Navigation Institute.

## Advocate/Scientist Collaboration Breakfast (continued)

***Socially Responsible Drug Development***
Terri Burgess, Ph.D., University of California, Santa Barbara
Karuna Jaggar, Breast Cancer Action

Terri Burgess is an Associate Adjunct Professor at UC Santa Barbara where she is currently exploring teaching and mentoring young scientists as an encore career. She spent most of her professional life at Amgen Inc. where she rose to Director of Oncology Research during her 20 years there. Her research investigations led to numerous peer reviewed research publications relevant to diabetes, osteoporosis, cardiovascular and Alzheimer's disease. In 2001, Dr. Burgess joined Oncology Research at Amgen where she focused on oncology drug development and guiding numerous research programs spanning from basic discovery to Phase 3 clinical trials. Terri has been working with the CBCRP program as a council member, vice chair and chair and ad hoc participant since 1999.

Karuna Jaggar is the Executive Director of Breast Cancer Action, a trusted voice for women's health and the national watchdog of the breast cancer movement. Through independent education and advocacy, BCAction works to address the needs of women living with breast cancer and to stop cancer before it starts. Karuna brings a professional expertise in applied research and policy advocacy to her understanding of the breast cancer epidemic. Before joining BCAction, Karuna's work focused on women's rights and on eliminating socio-economic inequities. Karuna began her career working with women's microenterprises internationally and in the US, providing self-employment and business training, funding and support for low income women. Karuna was the first East Bay Executive Director for Women's Initiative for Self Employment, where she worked to reverse economic inequities among low-income women and women of color. Karuna holds a master's degree in Economic Geography from UC Berkeley, with a special emphasis on Women, Gender, and Sexuality, and received her BA from Smith College. Karuna is an alumna of the Women's Policy Institute, a program of the Women's Foundation of California.

***Research Funding from CBCRP: Upcoming Opportunities and Feedback on Forms***
Marion Kavanaugh-Lynch, M.D., M.P.H. , California Breast Cancer Research Program
Katherine McKenzie, Ph.D., California Breast Cancer Research Program

Marion (Mhel) Kavanaugh-Lynch is the Director of the California Breast Cancer Research Program. In this position, she develops strategies and guides priorities for the $8 million per year that California invests in research to bring an end to the disease. Her accomplishments include championing the role of advocates and survivors in the peer review process, developing a successful model for funding community-based participatory research and developing rigorous evaluations of the program. In recent years, she led a national panel that developed research strategies to explore the role of environmental contaminants in breast cancer and now is implementing those research strategies through the California Breast Cancer Research Program.

Katie McKenzie is the Clinical and Prevention Sciences Program Officer for the California Breast Cancer Research Program. Katie earned her A.B. degree at Bryn Mawr College and her Ph.D. at the University of California, Berkeley. She has worked in the breast cancer research field for over 25 years and in breast cancer research funding for over 15 years. She has overseen application review and grant administration for the program, covering subject areas spanning biological, clinical and epidemiological sciences.



**8:15am – 8:45am**

**Location: Pacific Ballroom**

## Welcome

**MISTRESS OF CEREMONIES**

**Holly J. Mitchell**

**Marion Kavanaugh-Lynch, M.D., M.P.H.**
*Director, California Breast Cancer Research Program*

**Mary Croughan, PH.D.**
*Executive Director, University of California Research Grants Program Office*

**Naz Sykes**
*Chair, California Breast Cancer Research Council*

## Holly J. Mitchell
## Mistress of Ceremonies

*Assembly Member*
*California State Assembly*
*54th District*

Assembly member Holly J. Mitchell was first elected in 2010 to represent the 47th (now 54th) Assembly District in Los Angeles, which includes the Crenshaw District, Culver City, Westwood/UCLA, Cheviot Hills, Mar Vista, Holmby Hills, the Fairfax District, Ladera Heights and parts of South Los Angeles. She chairs the Assembly's Budget Subcommittee on Health & Human Services and is a member of the Committees on Budget, Health, Insurance and Public Safety. She also chairs the Select Committee on Foster Youth and California's Legislative Black Caucus (CLBC), and is a member of the Women's Legislative Caucus.

As the Chief Executive Officer of Crystal Stairs for seven years prior to taking public office, she championed statewide family-focused policy-making, while assuring access to quality affordable child care for 25,000 children and meeting a monthly payroll for hundreds of employees.

Previously, Mitchell worked in the Los Angeles district office of State Senator Diane Watson. As a policy analyst for the California Senate's Health and Human Services Committee, she sought fiscally sound ways to expand health care and other vital services. As the legislative advocate of the Western Center for Law and Poverty she helped develop the ground-breaking Healthy Families program, later serving as executive director of the Black Women's Health Project in Los Angeles.

As mother of a middle schooler, Holly Mitchell understands the concerns of working families and advocates legislative policy to meet their needs. In the Assembly, she seeks to improve the quality and accessibility of the state's health and education systems. She focuses on job creation and balancing business, human and environmental needs to expand economic opportunity while protecting natural resources.

Mitchell was the Mistress of Ceremonies for the CBCRP's inaugural symposium and has served this role in every symposium since.

# Program Schedule: Saturday

**8:45am – 10:30am**

## Role of Research in Setting Breast Cancer Policy

Research and public health policy have an integral relationship that affects how research questions can be asked and how research results can be applied. The panelists in this session will discuss how laws on genetic patents, privacy, breast cancer screening guidelines, and health care reform will shape how research is conducted and health care is provided in the decades ahead.

**Location: Pacific Ballroom**

**MODERATOR**

**Jeanne Rizzo,** R.N.
*The Breast Cancer Fund*

**SPEAKERS**

**Laura Esserman,** M.D., M.B.A.
*University of California, San Francisco*

**Shobita Parthasarathy,** PH.D.
*University of Michigan*

**Terri Thorfinnson,** J.D.
*California State Office of Women's Health (retired)*

**Plenary Session Presenters**

## Laura Esserman, M.D., M.B.A.

*Director*
*Carol Franc Buck Breast Care Center and Professor of Surgery and Radiology*
*University of California, San Francisco*

Dr. Esserman is a surgeon and breast cancer oncology specialist and is the Director of the Carol Franc Buck Breast Care Center at the University of California, San Francisco (UCSF). In 1996, she started the Center of Excellence for Breast Cancer Care at UCSF to integrate clinical care and research, automate tools for the capture of patient and clinical data, and develop systems to tailor care to biology, patient preference and performance.

Dr. Esserman is nationally and internationally known as a leader in the field of breast cancer and has published over 150 articles. She was a member of a task force for President Obama's Council of Advisors on Science and Technology (PCAST) Working Group on Advancing Innovation in Drug Development and Evaluation which is studying how the federal government can best support science-based innovation in the process of drug development and regulatory evaluation.

She is the principal investigator of the I-SPY TRIAL program, a multi-site neoadjuvant clinical trial that has evolved into a model for translational research and innovation in clinical trial design. Dr. Esserman has recently launched a University of California-wide breast cancer initiative called the Athena Breast Health Network, a project designed to follow 150,000 women from screening through treatment and outcomes, incorporating the latest in molecular testing and web-based tools into the course of care.

# Program Schedule: Saturday

## Plenary Session Presenters

### Shobita Parthasarathy, Ph.D.

*Associate Professor*
*Ford School of Public Policy at the University of Michigan*

Shobita Parthasarathy is Associate Professor in the Ford School of Public Policy at the University of Michigan. Her research explores the challenges of developing and governing technologies to maximize societal benefit, particularly in cross-national and global perspective. She is the author of numerous articles and a book, "Building Genetic Medicine: Breast Cancer, Technology, and the Comparative Politics of Health Care," (MIT Press, 2007), that compared the development of genetic testing for breast cancer in the United States and Great Britain. Research findings from this book have been used to support the ongoing litigation against gene patents in the United States. She is currently working on her second book, which compares the politics of patenting life forms in the United States and Europe. She holds a bachelor's degree in Biology from the University of Chicago and masters and Ph.D. degrees in Science and Technology Studies from Cornell University. She has held fellowships at University of Cambridge, UCLA, Northwestern University, American Council of Learned Societies, Woodrow Wilson International Center for Scholars, Max Planck Institute for Intellectual Property, Competition, and Tax Law, and the American Bar Foundation. From 2005-2011, she developed and co-directed the Science, Technology, and Public Policy Program at the University of Michigan.

### Jeanne Rizzo, R.N.

*President and CEO*
*The Breast Cancer Fund*

Jeanne Rizzo's vision guided the Breast Cancer Fund to adopt its bold mission of working to prevent breast cancer by eliminating exposure to toxic chemicals and radiation linked to the disease. Under her leadership the organization continues its commitment to strong science, smart public policy and consumer education. Ms. Rizzo is past chair of the California Breast Cancer Research Program Council and is a steering-committee member of the program's Prevention Initiative. She is also an appointed member of the National Institutes of Health's Interagency Breast Cancer and Environmental Research Coordinating Committee and a recipient of the Environmental Protection Agency Region 9 Green Chemistry Environmental Leader Award. A nurse, then an award-winning music, theater and film producer, she produced the documentary "Climb Against the Odds: Mt. McKinley," which chronicles the Breast Cancer Fund's 1998 expedition.



## Plenary Session Presenters

### Terri Thorfinnson. J.D.

*Chief (retired)*
*California State Office of Women's Health*

Ms. Terri Thorfinnson is a leading women's health policy expert in health reform. She was the former Chief of the Office of Women's Health within the California Department of Health Care Services and the California Department of Public Health, appointed by Governor Schwarzenegger to serve as the senior level policy advisor for the both directors and departments on women's health issues. Chosen as California Public Health Association North's 2012 winner of the prestigious Helen Rodriguez-Trias Award, she emerged as a leader on the implementation of the Affordable Care Act and its impact on women's health, submitting joint department comments to the Institute of Medicine's Committee on Preventive Services for Women. She also directed women's health research and publications. Under her leadership, the Office of Women's Health published the award winning California Adolescent Health 2009 and the California Women's Health 2007 reports. She also published the California Women's Health Survey reports 2006-2007, 2005, 2004, 1997-2003. She is a popular speaker on a wide range of women's health policy issues.

She is a well-respected health policy advisor and strategist. She has served in numerous senior level health policy positions, including for her own consulting firm. Her policy work with Federally Qualified Health Centers produced landmark legislation for clinics including the Cedillo-Alarcon Community Clinic Investment Act of 2000, which has become the model for capital infrastructure funding for community clinics. Prior to her state level health policy work, she worked in senior level policy positions for Planned Parenthood in both New York and California winning Planned Parenthood's national excellence award for her reproductive health advocacy work in California.

She received her J. D. degree from Franklin Pierce Law Center in Concord, New Hampshire and her B. A. degree from University of Wisconsin, Madison in political science and anthropology. She is a member of the New York bar.

# Program Schedule: Saturday

**11:00am – 12:30pm**

## Addressing Breast Cancer Disparities

Researchers will present the results from the CBCRP-funded projects investigating the reasons for and solution to disparities in clinical and psychosocial health.

**Location: Catalina 1**

**MODERATORS**

**Cynthia A. Gómez,** PH.D.
*Health Equity Institute,*
*San Francisco State University*

**Ysabel Duron**
*Latinas Contra Cancer*

**SPEAKERS**

NUEVO AMANECER: PROMOTING THE PSYCHOSOCIAL HEALTH OF LATINAS
**Anna Napoles,** PH.D.
**Carmen Ortiz,** PH.D.
*University of California, San Francisco and Circulo de Vida Cancer Support and Resource Center*

QUALITY OF MAMMOGRAPHY FACILITIES SERVING VULNERABLE WOMEN
**L. Elizabeth Goldman,** M.D.
*University of California, San Francisco*

MACROPHAGES IN BREAST CANCER PATIENTS OF AFRICAN DESCENT
**Rita Mukhtar,** M.D.
*University of California, San Francisco*

**11:00am – 12:30pm**

## Breast Cancer Cause and Prevention

CBCRP-funded researchers will present their investigations into the causes of breast cancer and approaches for preventing it.

**Location: Catalina 2**

**MODERATORS**

**Jim Ford,** M.D.
*Stanford University*

**Sharima Rasanayagam,** PH.D.
*The Breast Cancer Fund*

**SPEAKERS**

EPIGENETIC CHANGES AS MODIFIERS OF BRCA1/BRCA2 CANCER RISK
**Susan Neuhausen,** PH.D.
*Beckman Research Institute of City of Hope*

IMMIGRANT EXPERIENCE & BREAST CANCER RISK IN ASIANS
**Scarlett Lin Gomez,** PH.D.
*Cancer Prevention Institute of California*

VITAMIN D AND BREAST CANCER
**David Feldman,** M.D.
*Stanford University*


CALIFORNIA BREAST CANCER RESEARCH SYMPOSIUM

# Program Schedule: Saturday

## 11:00am – 12:30pm

### Keynote Luncheon

**Location: Pacific Ballroom**

**MISTRESS OF CEREMONIES**

**Holly J. Mitchell**
*California State Assembly-54th District*

**CORNELIUS L. HOPPER POSTER AWARD PRESENTATIONS**

**Cornelius L. Hopper, M.D.**
*Vice President for Health Affairs, Emeritus*
*University of California System-wide*

**Marion Kavanaugh-Lynch, M.D., M.P.H.**
*Director*
*California Breast Cancer Research Program*

### Keynote Address
### Dennis J. Slamon, M.D., Ph.D.

**Molecular Diversity of Human Breast Cancer: Clinical and Therapeutic Implications**

Dr. Dennis J. Slamon is a well-known and highly respected cancer researcher whose work resulted in a breakthrough treatment for breast cancer, the molecularly targeted therapy Herceptin. Slamon conducted the laboratory and clinical research that led to Herceptin, which targets a specific genetic alteration found in about 25 percent of breast cancer patients. Dr. Slamon is Director of the Revlon/UCLA Women's Cancer Research Program at UCLA's Jonsson Cancer Center and Chief of the Division of Hematology/Oncology at UCLA. In the last decade, Dr. Slamon has won a dozen national research awards honoring his scientific endeavors including the Medal of Honor, the highest honor bestowed by the American Cancer Society.

*Chief of the Division on Hematology/Oncology*
*The David Geffen School of Medicine at UCLA*

## 2:00pm – 3:30pm

### Environment and Breast Cancer

CBCRP-funded researchers will present their investigations into the role of environmental factors in the risk of developing breast cancer.

**Location: Catalina 1**

**MODERATORS**

**Ted Schettler, M.D., M.P.H.**
*Science and Environment Health Network*

**Karuna Jaggar**
*Breast Cancer Action*

**SPEAKERS**

LIGHT AT NIGHT AND BREAST CANCER RISK IN CALIFORNIA TEACHERS
**Susan Hurley, M.P.H.**
*Cancer Prevention Institute of California*

PESTICIDE AND GENE INTERACTIONS IN LATINA FARM WORKERS
**Paul Mills, PH.D.**
*University of California, San Francisco*

CADMIUM AND THE TIMING OF MENARCHE AND PUBERTAL DEVELOPMENT IN GIRLS
**Rudy Rull, PH.D.**
*University of Nevada, Reno*

# Program Schedule: Saturday

**2:00pm – 3:30pm**

**Location: Catalina 1**

## Translating Research for Impact

CBCRP-funded investigators will describe how they are translating their research findings into real-world applications.

**MODERATORS**

**Arash Naeim,** M.D., PH.D.
*UCLA*

**Karren Ganstwig**
*Los Angeles Breast Cancer Alliance*

**SPEAKERS**

MEASURING REAL-WORLD BREAST CANCER OUTCOMES
**Allison Kurian,** M.D.
*Stanford University*

BREAST CANCER RISK REDUCTION:
A PATIENT-DOCTOR INTERVENTION
**Celia Kaplan,** M.A., DR.P.H.
*University of California, San Francisco*

AT-HOME GROUP VIDEO CALLING
TO SUPPORT RURAL WOMEN
**Mary Anne Kreshka,** M.A.
**Cheryl Koopman,** PH.D.
*Sierra Streams Institute and Stanford University*



**3:30 pm – 4:30 pm**

**Location: Laguna Beach**

## Poster Presentations

CBCRP investigators will display their research results in the form of posters. Posters will be available for viewing all day, and will be attended by researchers from 3:30 pm – 4:30 pm.

**POSTER 01**

**Compounds Blocking LRH-1 Assembly in Breast Cancer**
Principal Investigator: Cindy C Benod

**POSTER 02**

**Establishing Cell Lifespans in Cancer and Normal Breast**
Principal Investigator: Alexander Borowsky
Poster Presenter: Sandy Borowsky

**POSTER 03**

**A Driver of Mammary Stem Cell Behavior During Pregnancy Plays a Dual Role in Aggressive Breast Cancer**
Principal Investigator: Jay Desgrosellier

**POSTER 04**

**Chemerin is a Novel Tumor Suppressive Cytokine**
Principal Investigator: Russell Pachynski

**POSTER 05**

**Spatiotemporal Regulation of Epithelial-Mesenchymal Transitionis Essential for Carcinoma Metastasis**
Principal Investigator: Jeff Tsai

**POSTER 06**

**Antimaia: First in a New Class of Breast Cancer Therapeutics**
Principal Investigator: Ameae Walker

**POSTER 08**

**Telephone-Based Decision Support for Rural Patients**
Principal Investigators: Jeff Belkora and Sara O'Donnell
Presenter: Lauren Stupar

**POSTER 09**

**Tamoxifen & Antidepressant Drug Interactions in a Large Cohort of Breast Cancer Survivors**
Principal Investigator: Reina Haque

**POSTER 10**

**Clinical Trials Information and Access for Underserved Women**
Principal Investigators: Galen Joseph and Maria Caprio
Presenter: Alyssa Nickell

**POSTER 11**

**Early Development of E-Messages for Abnormal Mammogram Follow-Up in Latinas**
Principal Investigators: Ingrid Oakley-Girvan and Claudia Del Rio

**POSTER 12**

**The Breast Cancer Clinical Trials Education Program**
Principal Investigators: Natasha Riley, Vanessa Malcarne and Georgia Sadler

**POSTER 13**

**Impact of Race/Ethnicity, Education and Neighborhood Socioeconomic Status on Survival after Breast Cancer**
Principal Investigator: Scarlett Lin Gomez
Poster Presenter: Salma Shariff-Marco

## Poster Presentations

**POSTER 20**

**Developing the Capacity for Community-Driven Research to Eliminate Disparities on Mammography for Latinas**
Principal Investigators: Stergios Roussos, Felicia Batts and Christine Noguera

**POSTER 21**

**Recreational Physical Activity and Breast Cancer Survival: The California Breast Cancer Survivorship Consortium**
Principal Investigator: Yani Lu

**POSTER 22**

**The Effects of in Utero and Post-Natal Exposure to Excess Folic Acid on Mammary Gland Development and Tumorigenesis**
Principal Investigator: Russell C. Hovey
Poster Presenter: Susan Miszewski

**POSTER 23**

**Local Adipocytes Enable Estrogen-Dependent Breast Cancer Growth: Role of Leptin and Aromatase**
Principal Investigator: Barbara Mueller

**POSTER 24**

**Chemical Screening to Identify Potential Breast Carcinogens Using Human Breast Cell Cultures: Genotoxicity**
Principal Investigator: Chris Vulpe
Poster Presenter: Ruthann Rudel

**POSTER 25**

**Factors Influencing the Requirement for the Breast Cancer Susceptibility Gene BRCA1 During Homologous Recombination**
Principal Investigator: Jeremy Stark

**POSTER 26**

**Bioassays for the Detection of Inducers of Breast Cancer-Relevant Aromatase Gene Promoters**
Principal Investigator: Michael Denison
Poster Presenters: Elyse Caron-Beaudoin, Thomas Sanderson

**POSTER 27**

**Sub-Millimeter PET for improving Outcomes in Breast Cancer**
Principal Investigator: Abhijit Chaudhari

**POSTER 28**

**Cell-Free Production of Functional ERBB2 for Mechanistic and Screening Studies**
Principal Investigator: Paul Henderson

**POSTER 29**

**Cross-Talk Between HER2 Agonists and Xenoestrogens Lead to a Synergistic Proliferation of Breast Cancer Cells**
Principal Investigator: Dale Leitman

**POSTER 30**

**Radiation-Induced Reprogramming of Breast Cancer Cells**
Principal Investigator: Frank Pajonk



## Poster Presentations

**POSTER 31**

**Improving the Diagnostic Accuracy of Mammograms by Providing Protein, Lipid, and Water Tissue Characteristics to Areas Suspect of Being Invasive Cancer**
Principal Investigator: John Shepherd

**POSTER 32**

**Cancer-Secreted Circulating Micrornas Predict Breast Cancer Outcomes**
Principal Investigator: Emily Wang

**POSTER 35**

**New Clinical Targets for Triple-Negative Breast Cancer**
Principal Investigator: Richard Pietras

**4:30 pm – 5:30 pm** | **Location: Newport Beach**

## Closing Ceremonies

Raffle (Must be present to win)

## We would like to thank the following companies and individuals for their donations:

**Best Buy,** Livermore
**Blue World Travel**
**Claremont Hotel,** Berkeley
**Kinkos,** Corporate Office
**Hilton Orange County/Costa Mesa**
**Regina's Rags to Riches,** San Leandro
**Safeway Stores, Inc,** San Leandro
**V-Cube Web Broadcasting,** Torrance

# Exhibitor Showcase

## Exhibitor Showcase

Nonprofit groups from around California will share practical knowledge about what you can do to confront breast cancer in your community.

### THE ALFRED E. MANN INSTITUTE FOR BIOMEDICAL ENGINEERING

The Alfred E. Mann Institute for Biomedical Engineering at the University of Southern California (USC), is a nonprofit institute with a mission to accelerate medical innovations. Professor Marmarelis will feature a novel mammography ultrasound system.

### AMERICAN CANCER SOCIETY

The American Cancer Society is the nationwide, community-based, voluntary health organization dedicated to eliminating cancer as a major health problem by preventing cancer, saving lives and diminishing suffering from cancer, through research, education, advocacy and service.

### ASIAN & PACIFIC ISLANDER AMERICAN HEALTH FORUM

The Asian & Pacific Islander American Health Forum (APIAF) influences policy, mobilizes communities and strengthens programs and organizations to improve the health of Asian Americans, native Hawaiians and Pacific Islanders.

### BREAST CANCER ACTION

Breast Cancer Action (BCAction) is a national, feminist grassroots education and advocacy organization working to end the breast cancer epidemic.

### BREASTLINK MEDICAL

Our doctors have treated thousands of patients with breast cancer. Our doctors understand that evidence-based breast cancer research is leading the way to better treatment decisions today and into the future. We also understand the need to listen — and engage — with our patients in the decision-making process.

### CALIFORNIA BREAST CANCER ORGANIZATIONS (CABCO)

CABCO is a grassroots organization with nine board member organizations, whose mission is the eradication of breast cancer through education and advocacy. CABCO has been a moving force in obtaining passage of breast cancer legislation in the state of California.

### CALIFORNIA BREAST CANCER RESEARCH PROGRAM

The mission of the California Breast Cancer Research Program is to eliminate breast cancer by leading innovation in research, communication and collaboration in the California scientific and lay communities.

### THE DR. SUSAN LOVE RESEARCH FOUNDATION

The Dr. Susan Love Research Foundation, an accredited 501(c)(3) public charity, is working to eradicate breast cancer and improve the quality of women's health through innovative research, education, and advocacy. It is our mission to move breast cancer beyond a cure by understanding the causes and ways to prevent it. At the Dr. Susan Love Research Foundation, we are conducting and facilitating research that is focused on getting to the root of this disease and ending it once and for all.

### FEDERAL DRUG AND FOOD ADMINISTRATION - OFFICE OF WOMEN'S HEALTH

The FDA is a federal public health protection agency, and focuses on foods, medical products, biologics and dietary supplements. The FDA's Office of Women's Health has materials on various women's health issues, and offers them for free to the public and health care professionals.

### GLOBAL CHINESE BREAST CANCER ORGANIZATIONS ALLIANCE - AFRICAN AMERICAN BREAST CANCER COALITION

In 2012, the 4th Global Chinese Breast Cancer Alliance (GCBCA) Conference was funded by CBCRP. It is a joint collaboration among City of Hope, Herald Cancer Association and the GCBCA, aimed to increase California's capacity in breast cancer research.

# Exhibitor Showcase

### THE G.R.E.E.N. FOUNDATION

The Foundation's mission is to uncover new opportunities, encourage growth and ultimately effect positive change within those institutions that best reflect our core focus areas and the communities they serve.

### HOPE WELLNESS CENTER

We are a (501)c 3 whose mission is to educate and support cancer patients and their families. We offer Patient Support Groups, Cancer Education Classes, Workshops, Supportive Counseling Services, Patient Navigation and Survivorship Planning. We have trained Peer counselings to help women who are Newly Diagnosed with Breast Cancer or those who are experiencing recurrence.

### PROTECT OUR BREASTS

Protect Our Breasts is an interdisciplinary project of marketing, public health and biology from UMass Amherst with college and university chapters emerging across the country. Our mission is to share the conversation about chemicals in everyday products found on the grocery shelves that contribute to breast cancer; empowering women to make safer choices to protect their breasts during the most vulnerable periods of their lives.

### RESEARCH GRANTS PROGRAM OFFICE

Housed in the UC Office of the President, the Research Grants Program Office (RGPO) oversees a broad portfolio of research programs and grants, representing nearly $65 million a year in funded research. With a diverse set of missions and approaches, these programs seek to: advance research in areas of importance to California, the nation and the world; enhance research capacity and excellence, making it easier to attract the best faculty, graduate students, government funding and companies to the State; and create opportunities for undergraduate, graduate and postdoctoral researchers to develop their research and advance their careers.

### THE TABAR BREAST CANCER RESEARCH AND EDUCATION FOUNDATION

The Tabar Breast Cancer Research and Education Foundation exists to continue the research and educational initiatives started by Dr. Tabar. The primary focus will be to reduce death and suffering from breast cancer by advancing our knowledge of the subtypes of breast cancer and their effective treatments. Translation of our improved early detection and treatment of breast cancer will be accomplished through the training of physicians and teams of healthcare professionals in the lessons learned from research.

### WOMEN OF COLOR BREAST CANCER SURVIVORS SUPPORT PROJECT

A nonprofit providing breast health education, health advocacy and psychosocial support to African American breast cancer survivors in their community.

### A VISION OF HEALTH

A Vision of Health provides mobile digital mammography screening and breast health to all women, regardless of ability to pay, with the priority of serving uninsured and underserved women in a mobile coach/clinic right in their own neighborhoods.

### ZERO BREAST CANCER

Zero Breast Cancer is a community based organization dedicated to prevention and finding the causes of breast cancer through local participation in the scientific research process. We focus on identifying environmental factors and the role they play in breast cancer at all stages of life and across generations.



# 2013-2014 Funding Opportunities

## The CBCRP funding cycle is starting early this year.

## The Cycle 20 application deadlines will come as early as August, 2013.

**We are offering investigator initiated grant funding for:**

- Innovative Developmental and Exploratory Awards (IDEA)
- Translational Research Awards
- Community Research Collaboration Awards
- Conference Awards

The IDEA, Translational Research Award, and IDEA–competitive renewal applications require a "letter of intent" (LOI) that must be approved prior to submitting a full application.

The Community Research Collaboration Award applications have an optional pre-application research plan review

| Award Type | Application Item | Submission Deadlines |
|---|---|---|
| **Community Research Collaborations (CRC):** Pilot and Full Awards | Pre-application research plan (optional) | September 5, 2013 |
| | Full application | December 2, 2013 |
| **IDEA and Translational Research Award** | LOI (required) | August 29, 2013 |
| | Full application | December 12, 2013 |
| **Conference Awards** | Full application | November 7, 2013 |

# Art Exhibition



**Friday – Saturday**

**Location: Balboa Bay**

## Message from the Curator

### The Key of the Cellular Song is the Key to the Cell

**CURATOR**

**Liesa Lietzke**

Art can touch us from many angles. My goal with this exhibition was to include artwork that confronts an array of issues raised by breast cancer survivorship, research, and treatment. The work reflects diverse concerns, from accessibly representing the science of drug development to using art itself as a radical self-healing practice. In naming the exhibition The Key of the Cellular Song is the Key to the Cell. I had in mind the insight that art can bring to the concerns it addresses. The song is the one the body sings. Its key opens insight into its healing.

These artists touch grief and loss as well as dignity, triumph, and beauty. Some use abstraction or metaphor to pull us through the firsthand experience of the pain and limitations of the body. Some tell their own personal stories, and some work in empathy with loved ones who struggle. Some are survivors, or have family who are, and some arrived at these same concerns though entirely different sets of life experiences and aesthetic inquiries.

My intention was for the artwork to participate in the symposium, rather than simply adorn it. The breadth of the material makes this possible. With performance and interactive experiences offered by several artists, with content that comments on the discourse of breast cancer and how it might expand, I sense the possibility for that participation.

# Artists

## Toni Barca

"When I was ten years old, I overheard my mother talking to a friend about a famous model returning to her lover after undergoing a double mastectomy. Her lover was so turned off that he left her. In that moment, my young mind believed that to be imperfect made a man not love you. During that same period, I was fascinated by Amazons. I'd heard that they cut off their left breast in order to become better archers." Thirty years later, these themes came together in Barca's Breast Cancer Series, An Erotic Love Story. "It occurred to me that women who traverse the rocky road of breast cancer are warriors!"

Barca was born in Paris, France in 1962. Her father was African American and her mother, French. By age 14 she had lived in Africa, Asia, Europe and North America. She has had pieces commissioned by patrons from the USA to Austria. Her works are in the permanent collection of The Kinsey Institute for Research in Sex, Gender, and Reproduction.

*My Soul is Intact, 2006*

## Sarah Barnard

Sarah Barnard is a multidisciplinary artist and filmmaker. Her work has been shown at Gallery 825 in West Hollywood, the Harriet & Charles Luckman Gallery in Los Angeles, the Pete & Susan Barrett Gallery in Santa Monica and others across the US. Barnard's film "I Heart Boys" was recognized by Australia's Queer Fruits Film Festival as 2012's winner of Outstanding Experimental Short.

"Intrigued by the undeniable relationship between biology and culture, I am exploring the potential and limits of these two forces. My art practice examines the ways in which gender performance, desire and objectification are interrelated through power structures. I am interested in the ways in which identity is crafted and regulated by repetitive language and how realities are shaped through social ideologies. The subjects in my work are people, places and heavily coded objects. I recognize that gender is complicated and expanding, and my work does not attempt to provide simple answers or promote any variety of new essentialism."



## Joice Cail

"One of my strongest influences with this particular body of work is the power of one woman wanting desperately to cope with breast cancer. This series represents a friend's life-changing experience coinciding with the inevitability of her existence." Through this work, Cail "reached out to a dear friend and helped her realize that she is still beautiful and her life has meaning."

Cail was born in Seattle, Washington and grew up in Houston, Texas. She received her B.F.A. in 1998 from Texas Woman's University in Denton, Texas. Her photography and paintings have been exhibited extensively in Texas and the San Francisco Bay Area. Her current interests are digital photography, mixed media and painting.

*Poppy Flowers, 2011*

## The Art of Healing Breast Cancer: A Union of Science and Design, courtesy of CBCRP

The artists whose works are in this exhibit accepted an invitation to make sculptures in the form of breast prostheses. Some of the artists are women who have experienced breast cancer; others have been touched by the disease in other ways. No matter who they were, the artists took an interest and used the very thing that conceals the effects of breast cancer and its treatments to reveal things that can guide our collective response to this complex disease.

Art and design pick up where science leaves off and delivers knowledge directly to our hearts. The Art of Healing Breast Cancer: A Union of Science and Design shows us what a mastectomy can be like when the veils of shame and fear are pulled aside. We are shown how to look at breasts and their absence with a new kind of interest, without fear or pity. We are given an opportunity to look at the devastation of breast cancer and mastectomy straight on and we are offered the inspiring knowledge that a woman who has lost a breast to breast cancer is likely to feel that she is more of a woman afterwards, not less. Denise Dalton co-curated the first exhibition of the Breast Art collection in 1997 in order to offer routes of expression for women who have had mastectomies. "After 15 years of wearing a prosthesis, I realized I wanted to wear something that would be more expressive of the many ways I feel and that would convey this message: It's okay to look; this is not shaming; this is me and I am more than a body. I am spirit and this art celebrates my spirit. It is as unique as I am unique. Art is my catalyst for change — a reminder that I have choices and that my "completeness' comes in many forms."

*Sunrise,*
*Carole Koblick*
*and Mark Synarski*

# Artists

## Donna Ciobanu

Donna Ciobanu is a local Southern California painter. She is the mother of two young girls, and her own mother-in-law is a breast cancer survivor. Ciobanu has volunteered and been involved for the past three years with the Susan G. Komen Race for The Cure Foundation. Her paintings in this show are of local trails in the surrounding mountains, where the artist hikes in search of peace of mind and to meditate.

"'Serenity' is from of a series of images of the Cleveland National Forest done in 2012. 'Snow,' a Vermont landscape, suggests the harshness of winter but also the hope for renewal, healing, and the change of the seasons." These contrasting landscapes suggest the "winter" of chemotherapy and the "spring" that follows as a survivor begins to tend the garden of her new life.

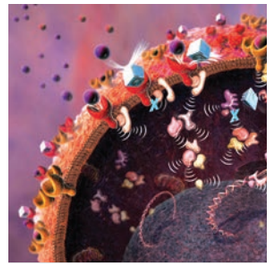
## Crystal De La Torre

Crystal De La Torre was born in Los Angeles and received her Bachelor of Fine Arts in 2007 from California State University, Fullerton, and her Master of Fine Arts in 2011 from the California College of the Arts, San Francisco. She is currently exhibiting in Los Angeles, San Diego and San Francisco.

Though her work is narrative, De La Torre's paintings also echo children's illustrations from a post-war era. The work is nostalgic and evokes distant memories of childhood with a veil of fantasy. "My paintings and collages are colorful narratives that explore childhood. Frustration and desire become visible in the characters of my mischievous and curious little girls. They exist in scenes that are uncomfortable, revealing tension and vulnerability. Through them, I am exposing my desires and experiencing my childhood fantasy."



## Nicole Rager Fuller



*Drug Design, 2011*

Nicole Rager Fuller earned a BA in biochemistry from Lewis and Clark College. She completed the University of California Santa Cruz, graduate program in Science Illustration, where her dual interests in art and science finally came together. Fuller has worked at the Stanford Linear Accelerator and the National Science Foundation, illustrated the Graphic Adaptation of Charles Darwin's on the Origin of Species, and now works full-time running Sayo-Art LLC.

"Science is a daily part of our lives: new medical therapies, environmental issues, emerging knowledge about our universe. I strive to find compelling ways to visualize these topics, create accurate illustrations to pull the viewer in, and visually describe complex ideas and topics. I have worked with foundations and researchers to communicate emerging science in an accessible format for the general public."

## Vesna Jovanovic

*Ventricles Apart, 2007*

Vesna Jovanovic is a visual artist with interests in science, the body, and perceptual phenomena. She usually works within well-established visual languages such as scientific illustration, while at the same time including chance occurrences in her process. This experimental approach results in a strange mixture of chaos and order reminiscent of mad science or alchemy. Jovanovic received undergraduate degrees in ceramics, chemistry, and studio art, and an MFA in photography. Her work has been featured in numerous exhibitions, including solo shows at the International Museum of Surgical Science and the Gordon Center for Integrative Science at the University of Chicago.

"Pareidolia is the phenomenon of recognizing an image in something otherwise random, like clouds or wood grain. I began this series by spilling ink on paper and drawing what I saw in the inkblots. The imagery gradually shifted from laboratory equipment and glassware to human organs, eventually becoming strange depictions of the human body. This series contains the visual tradition of scientific illustration, but I approach it from an experimental angle — raising questions in place of accurate representation. Ultimately, this series grows out of a confusing mixture of curiosity, fear, mystery, and beauty surrounding scientific research and progress."

# Artists

## Pat Kanzler

"I have lived alone all my life. My parents died when I was a teenager, and with no other real family, I learned to get used to it. I was totally independent and refused to rely on anyone. In keeping with this extreme self-reliance, I was also a single mom.

"After undergoing treatment for inflammatory breast cancer, I had a breakdown. I took disability leave from May 2011 to May 2012, during which I made this work. The feeling of 'aloneness' from not having any support during the treatments revealed to me that I am a delicate, frail, fallible human. I realized that it is not weak to ask for help. I used my art to work out the turmoil within me that couldn't or wouldn't say, "I need help."

Originally from New York, Kanzler now lives in Eureka, California. She has been drawing from the time she could first hold a pencil, but has never had any formal artistic training. She has been working as a self-taught artist since 2005.

## Carol Koffel

Carol Koffel is an entrepreneur, creative connector, ceramic artist and educator who co-founded New Lief Design Center in 2005 to integrate her practice of art, design and craft. The center was launched during a residency at the European Ceramic Work Center that culminated with an exhibition at Dutch Design Week of Ceramic Skins; Transforming Light and Space. Koffel is a graduate of California College of Art and Art Center College of Design.

"I make metaphoric and utilitarian vessels in clay to explore beauty as a human nutrient. The discovery of how art opens others to share intimate or never disclosed stories motivated me to launch Mindfulness and Making workshops as healing venues. Breast Dialogues is a mindfulness and making workshop for individuals, caregivers, researchers or medical staff who have or have had contact with breast cancer, since cancer brings its own trauma and needs to heal."

**Carol Koffel will be conducting her interactive work in the Balboa Bay Room on Saturday, May 18. Symposium attendees are invited to participate. Please check in with her on site for details and to sign up for a time slot.**



## Nicole Lampl

"How could something this tragic be so picturesque? That is the question I sought to explore. This body of work investigates the cellular geography and psychology of an insidious disease. I work from medical diagrams of breast cancer cells magnified under microscopes and translate my emotional response into imaginary cellular landscapes. My intention is to give corporality to something that seemed so impossibly intangible, incoherent and overwhelming. I deliberately created work that would be both menacingly and alluring, and would simultaneously attract and repulse the eye, mirroring my own ambiguous relationship with the subject matter.

"My mother, who is currently dealing with the realities of breast cancer, is almost 3,000 miles away, so my paintings have become an avenue to stay emotionally connected to her while being physically apart."

Lampl currently lives and works in San Francisco. Originally from Los Angeles, she moved to the Bay Area to attend UC Berkeley. She received a dual bachelor's degree in Art History and Art Practice in 2009 and spent a semester studying art in Paris.

## Cara Levine

Cara Levine will be performing an interactive piece titled "One Limb Less", which looks more deeply into the physical and emotional pain from breast cancer or other bodily trauma. "I use a one-on-one guided meditation process to find the emotional essence of a specific pain held in the participant's physical body, and then work to remove it. The removal of the pain consists of looking deep into its source."

Coming out of meditation, the participant may then choose to construct an object, with materials provided. "The piece is held in a spirit of exploration and discovery — despite the fact that what we are looking at may be a source of discomfort, we look openly, with love and curiosity."

Levine's photographic series "The Trouble with Building a Hole in the Floor" will also be included in the exhibition. "Living for 10 years with chronic pain informs both my perception of spatial experience and my investment in the prosthetic. This work comes from an exploration of this bodily pain and the impractical desire to escape into another physical reality."

Levine is an artist and yoga practitioner living and working in San Francisco. She completed her Masters in Fine Arts from California College of the Arts in 2012 and has shown in various spaces including the Wattis Center for the Arts in San Francisco, ArtSpace in New Haven, CT and The Orange County Center for Contemporary Art in Santa Ana, CA.

*The Trouble with Building a Hole in the Floor, 2011*

# Artists

## Aqueila M. Lewis

"These poems are a very emotional and personal for me and are dedicated to my mom. All of my life, I remember hearing my mom cry. Life was very hard and challenging for us. I don't think she's ever really been truly happy or free from lurking tragedy.

"As I wrote "Breathe and Live Again", I had three visions. The first vision was of myself talking to her as a five year old and she as an adult. And then I had a vision of my five-year old self, talking to her five-year old self. I told her, 'Let me watch over you and protect you.' My name, Aqueila, means eagle; in the next vision, I saw my own eagle's wings spread. I wrapped my wings around my mom as she was at five years old and as an adult."

Lewis has served as Entertainment Chair for the annual Empowering Women of Color Conference (EWOCC) at the University of California, Berkeley and is a graduate of 94.1 FM KPFA Radio's First Voice Media Apprenticeship Program. She debuted her spoken-word performance work in 2010.

## Grace Francesca Oldani

"I began weaving again after returning from the cosmos, after a near death experience and experiencing several strokes. I choose the path of nontraditional self-healing: I went to live in a tent in the woods to let nature help me heal myself. My Medicine Baskets are my prayers, my stories, my songs of creation, my vessels for alchemical healing, for medicine, wisdom, love, courage and hope. I claim, untangle and weave my thread of consciousness back into the fabric of the universe, the tapestry of this precious life on earth.

"I use pine needles, natural fibers, plants, feathers, fur and found objects to reweave the strands of my soul, psyche, brain and flesh into a new life story. I am happy to share with you the labor of my love and the gifts that life has offered me."

*Medicine Baskets, 2012*



## Tanya Rivas

Tanya Rivas, teaching artist, and Shaney Jo Darden, CEO of the Keep a Breast Foundation, joined forces to bring this art project to Rivas's high school students and to raise funds for the foundation. Students learned about breast cancer, then made and painted these plaster casts of torsos—some resembling superhero breastplates — as an expression of support.

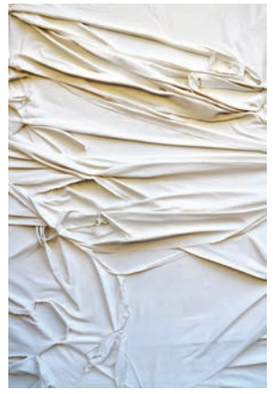
"Just hearing people's stories about cancer and how they overcame their fight, helps me to understand how to appreciate life more and realize how precious our bodies are. Also knowing that taking care of our bodies is a very important factor," said a student. Students were stunned to hear that men can get breast cancer as well as women. One commented, "This project meant that I am a part of something that is bigger than just me. Raising awareness for something affecting a number of individuals, males and females, helps me realize that there is more in the world than the little bubble I'm living in limits me to."

## Stella Zhang

Stella Zhang's abstractions are monochromatic, but have a rich texture of torn, tied and creased material. The work seems simple at a first glance, but feels raw and physical at proximity. It resonates with damage, pain and vulnerability, hidden and subdued under the plain color.

"We are consistently being challenged by feelings of confusion and lucidity, loss and hope...We often struggle and seek out a space in which to escape and find balance. I hope my artworks interact with viewers as an invitation to the place where we reside in greater compassion."

Zhang was born in Beijing, China. She learned painting from her father, the acclaimed brush painter Ping Zhang, who was a professor at the Central Academy of Fine Arts. She matriculated to the Central Academy of Fine Arts where she received her BFA in Chinese Brush Painting in 1989. She moved to Japan in 1990 where she studied Japanese painting at Tama Fine Art University and later at Tokyo Art University, where she earned her MFA in Japanese Painting in 1996. Zhang has lived in the United States since 2003. In the past 20 years, her work has been exhibited in Chinese, Japanese and American galleries and museums. She has published five books, and her work has been included in fine arts collections in many countries.



*0 Viewpoint, 2008*

# Poster Abstracts



**ABSTRACT NO. 01**

**Principal Investigator: Cindy C Benod**

**Compounds Blocking LRH-1 Assembly in Breast Cancer**

Cindy Benod, Ph.D. and Robert Fletterick, Ph.D.
Macromolecular Structure Group,
Department of Biochemistry and Biophysics,
School of Medicine, UCSF

The topic of this research project concerns the nuclear receptor LRH-1 (Liver Receptor Homolog-1), expressed at high levels in breast tumor cells and surrounding adipose tissue, which recently becomes a worthy target in breast cancer research. In breast cancer cells uniquely, recent studies showed that LRH-1 powerfully enhances expression of aromatase, the enzyme that converts androgen to estrogen, stimulating tumor progression. In addition, amongst the hundreds of genes under LRH-1 control are two cyclins regulating the G to S transition in cell cycles. Enhanced expression of these may be important in tumor maintenance. We hypothesize that inhibitors of LRH-1 transcriptional activity would slow or inhibit multiple pathways associated with breast cancer progression.

Thus, the goal of this drug discovery project was to identify small molecules that inhibit LRH-1 transcriptional activity in breast cancer cells and check the potency of these inhibitors on breast cancer cells proliferation.

To identify these LRH-1 inhibitors, we used a combination of computational calculations, direct binding and cell based assays. Our project started with the screening of the entire Zinc database using virtual screening calculations (5.3 million commercially available compounds were studied). After this step, 10 molecules were purchased and tested on direct binding and cell based assays. One of those molecules named (3) could inhibit the proliferation of several breast cancer cell lines by downregulating genes involved in cell cycle progression and controlled by LRH-1. Interestingly, one of these cell lines is an ER-negative breast cancer cell line. Chemical syntheses of analogues of this promising compound lead us to identify another very potent LRH-1 inhibitor named (3d2).

We recently demonstrated that LRH-1 controls the same genes involved in cell cycle progression and important for tumor maintenance both in breast and pancreatic cancers. With that new insight, we then tested our two inhibitors (3) and (3d2) on pancreatic cancer cell lines and showed that those compounds could effectively inhibit proliferation of pancreatic cancer cells.

As a conclusion, by using small molecules to inhibit the transcriptional activity of a new therapeutic target (LRH-1) in breast cancer, we showed that we could dramatically reduce breast cancer cells proliferation. The syntheses of analogues of compounds (3) and (3d2) are ongoing and we hope to be able to test more potent inhibitors on animals. This family of inhibitors could be used as a new chemical scaffold to design drugs with a novel mechanism of action compared to the ones already on the market and could give hope to patients with treatment-resistant breast cancers.

Strikingly, with the help of compounds (3) and (3d2) as pharmacological tools we could enlarge the goal of this project and demonstrate that LRH-1 is also a key player in pancreatic cancer and that our two inhibitors could inhibit pancreatic cancer cells

# Poster Abstracts

## ABSTRACT NO. 02

**Principal Investigator: Alexander Borowsky**
**Poster Presenter: Sandy Borowsky**

### Establishing Cell Lifespans in Cancer and Normal Breast

Alexander Borowsky, Brett Chromy, Qian Jane Chen, Colleen Sweeney, and *Bruce Buccholz
UC Davis and *Lawrence Livermore National Laboratory

Despite treatment, about 40% of breast cancer patients will have disease recurrence. One explanation for this high rate of recurrence is that a subpopulation of tumor cells, referred to as cancer stem cells (CSCs), is resistant to current therapies and repopulates the tumor after treatment. CSCs in breast cancer demonstrate resistance to chemotherapy and radiation, and may also play a role in metastasis. The resistance of breast CSCs to commonly used therapies is attributed to the idea that they behave as stem cells and are quiescent or slow cycling. However this idea has not been thoroughly supported.

**Hypothesis/questions addressed:** Our objective in this study is to distinguish the CSC population from the bulk tumor in human breast tumors and compare the age of the two populations using carbon-14 bomb pulse dating with accelerator mass spectrometry (AMS). The underlying hypothesis to be tested is: Mammary stem cells and breast cancer stem cells are long-lived and slowly dividing as compared to non-stem progenitor cells, "transit amplifying" cells, or other populations of differentiated and/or neoplastic mammary epithelium.

**Objectives/specific aims:** We propose three specific aims: (1) Isolate mammary stem cell (MSC) and cancer stem cell (CSC) from amplifying and differentiated cell populations from primary human breast samples by fluorescence activated cell sorting (FACS). (2) Validate The stem cell-like behavior of isolated cell populations using *in vitro/in vivo* functional assays. (3) Determine the turnover of the isolated cancer stem cell and bulk tumor populations using $^{14}C$ bomb pulse dating with accelerator mass spectrometry.

**Methods and approaches:** Single cell suspensions of MSC/CSCs and non-SCs will be generated from primary human tumor samples using FACS and utilizing previously published methods. These samples will then be divided with some cells being used in functional assays and the others being used for $^{14}C$ bomb pulse dating. The functional assays will include tumorsphere formation, three-dimensional mammosphere culture, limited dilution xenografts and tumorsphere implantations that are commonly used to demonstrate self-renewal and validate that a population is composed of MSC/CSCs.

For $^{14}C$ bomb pulse dating, DNA will be isolated from the populations using previously validated methods that isolate pure DNA without carbon contamination. $^{14}C$ measurement by AMS, comparing the amount of $^{14}C$ present in the DNA of the populations to the record of atmospheric levels of $^{14}C$ , provides a birth date for that population. Comparing the birthdates of bulk tumor and MSC/CSC populations will allow for a definitive answer to the question of whether these MSC/CSC populations remain relatively quiescent or slow cycling compared to the rapidly dividing bulk tumor sample.

**Impact on breast cancer:** This study is the first application of $^{14}C$ bomb pulse dating in diseased tissue. New advances in our instrumentation allow for the measurement of extremely small samples that we were unable to measure previously. $^{14}C$ bomb pulse dating is the only methodology that allows for the determination of turnover of a population of cells isolated directly from a human sample without any manipulation or delivery of chemicals before the measurement. By understanding the turnover of the CSC population in breast cancer, we will answer a fundamental question in the controversial field of CSCs.

## ABSTRACT NO. 03

**Principal Investigator: Jay Desgrosellier**

### A Driver of Mammary Stem Cell Behavior During Pregnancy Plays a Dual Role in Aggressive Breast Cancer

Characteristics of adult mammary stem cells (MaSC) are associated with aggressive breast cancers, suggesting a relationship between these two disparate cell types. Here, we reveal that the molecule integrin alpha v beta 3 is abundantly expressed in breast cancer metastases relative to primary tumors and is found in cancer stem cells in human breast tumor biopsies. In fact, this molecule is important for stem-like properties in human breast tumor cells, suggesting that it may contribute to normal MaSC behavior. In mice, we observed that alpha v beta 3 levels undergo a dramatic, but transient, increase at mid-pregnancy that defines the MaSC pool at this stage. Interestingly, we found that alpha v beta 3 was specifically required for MaSC behavior and mammary gland development at mid-pregnancy, and did not influence MaSCs or mammary gland morphology in adult virgin mice. Thus, alpha v beta 3 appears to act as a switch promoting MaSC behavior during pregnancy, distinguishing these MaSCs from those present in the virgin mammary gland. These findings reveal a link between molecules driving mammary stemness during pregnancy and stem-like properties associated with aggressive human breast cancers. This suggests that molecules like alpha v beta 3 may represent relevant therapeutic targets for treating breast cancer patients with aggressive disease.

## ABSTRACT NO. 04

**Principal Investigator: Russell Pachynski**

### Chemerin is a Novel Tumor Suppressive Cytokine

Infiltration of specialized immune cells regulates the growth and survival of neoplasia. Here, in a survey of public whole genome expression datasets we found that the gene for chemerin, a widely expressed endogenous chemoattractant protein, is down-regulated in breast cancer, melanoma, and prostate cancer, as well as other human tumors. Moreover, high chemerin messenger RNA expression in several tumors correlated with improved outcome in humans. In experiments using transplantable mouse breast cancer and melanoma, tumor-expressed chemerin inhibited in vivo tumor growth without altering in vitro proliferation. Growth inhibition was associated with an altered profile of tumor-infiltrating cells with an increase in natural killer (NK) cells and a relative reduction in myeloid-derived suppressor cells and putative immune inhibitory plasmacytoid dendritic cells. Tumor inhibition was abrogated by NK cell depletion. Intratumoral injection of chemerin also inhibited tumor growth, suggesting the potential for therapeutic application. These results show that chemerin, whether expressed by tumor cells or within the tumor environment, can recruit host immune defenses that inhibit tumorigenesis and suggest that down-regulation of chemerin may be an important mechanism of tumor immune evasion.

# Poster Abstracts

## ABSTRACT NO. 05

**Principal Investigator: Jeff Tsai**

### Spatiotemporal Regulation of Epithelial-Mesenchymal Transition is Essential for Carcinoma Metastasis

J.H. Tsai[1], J.L. Donaher2 , D.A.Murphy[3] , and J. Yang[1]

[1] University of California, San Diego, USA;
[2] Whitehead Institute for Biomedical Research, USA;
[3] The Sanford Burnham Medical Research Institute, USA

The formation of secondary tumors, or metastatic tumors, is the hallmark of late stage breast cancer and is most commonly associated with poor survival rate. This unfortunate prognosis may be due to limited understanding of the metastatic process and thus few effective treatments. One model for tumor metastasis involves a cellular program called Epithelial-Mesenchymal Transition (EMT). This process is characterized by epithelial cells, which are polarized, tightly clustered, relatively immobile cells, activating genes that transform them into mesenchymal cells that are elongated, scattered, and highly motile. Twist1 is a gene that has been identified as an essential regulator of EMT in tumor cells. However, the regulation and contribution of Twist1 in tumor metastasis in human patients and relevant animal models are unknown. Using a spontaneous mouse tumor model that closely mimics the progression of human cancer, we show that Twist1 can activate EMT and promote malignant conversion of tumor cells. Activation of Twist1 and EMT is important for tumor cells to enter and exit the blood vessels, a critical process for tumor cells to metastasize. Importantly, we found that at distant sites, turning off Twist1 to allow reversion of EMT is essential for these tumor cells to form secondary tumors. Our study demonstrates the requirement of "reversible EMT" in tumor metastasis in a relevant animal tumor model. This dynamic involvement of EMT in metastasis has profound implications on how to target the EMT program for breast cancer therapeutics.

## ABSTRACT NO. 06

**Principal Investigator: Ameae Walker**

### Antimaia: First in a New Class of Breast Cancer Therapeutics

Many growth factor and hormone receptors have forms that promote cell growth and forms that do the opposite (dominant negatives). Dominant negative varieties of the prolactin receptor have been identified and, because of the generation of alternate intracellular signals, would be expected to have a greater effect on tumor growth than simple knockout or inhibition of total receptors. We have focused on prolactin because 1) elevated serum prolactin levels are associated with an increased incidence of breast cancer equivalent to that seen with estrogen; 2) prolactin receptors are expressed at higher levels in cancerous lesions versus normal tissue; 3) high circulating prolactin is correlated with high breast density, itself associated with a higher incidence of breast cancer; 4) prolactin is a survival and growth-promoting factor in breast cancer cells and is produced by mammary stromal cells; 5) increased prolactin expression in ductal epithelium leads to development of both estrogen receptor positive and estrogen receptor negative cancers; and 6) knockout of total prolactin receptors markedly slows the development of tumors induced by viral oncogene overexpression. Up to 95% of primary tumors express the prolactin receptor. Given that ~70% express the estrogen receptor, therapies targeting the prolactin receptor could have greater utility than those targeting the estrogen receptor. We have dubbed the ~10kDa molecule designed to change prolactin receptor expression, Antimaia. Analyses using cells in culture confirmed the expected activity on receptor expression in both mouse and human breast cancer cell lines. Treatment with Antimaia reduced cell number: human cells were far more sensitive than the mouse cells. In order to test Antimaia in a mouse model with an intact immune system, we began our in vivo studies using mouse breast cancer cells. These cells are very aggressive and metastatic, and recapitulate the human disease in terms of sites of metastatic spread. Because tumor stem cells have been implicated in the development of metastases, and metastases are the cause of death from the disease, we examined the effect of Antimaia on stem cells in the population. Antimaia caused a slow, but progressive loss of stem cells in the population, as judged by both stem cell-specific surface markers and the ability of the treated cells to form mammospheres. Analysis after injection of cells into the mammary fat pad showed that Antimaia treatment (2.4 nmoles/mouse/24h) reduced the number of proliferating cells, resulted in massive central tumor death (3 fold versus control), and markedly reduced metastatic spread to the lungs, with no metastases at all in 3 of 8 animals. In addition, analysis of immune cells extracted from livers of control-treated and Antimaia-treated animals showed that treatment of the mice with Antimaia stimulated a tumor-specific immune response in at least half of the animals. None showed a response in the control group. Analysis of liver enzymes and immune cells showed no evidence of toxicity up to 5 weeks of treatment. These results suggest that Antimaia treatment has the potential to clear residual tumor cells from the body, thereby effecting a true cure.

## ABSTRACT NO. 08

**Principal Investigators: Jeff Belkora and Sara O'Donnell**
**Presenter: Lauren Stupar**

### Telephone-Based Decision Support for Rural Patients

University of California, San Francisco and Cancer Resource Centers of Mendocino County

Our academic-community partnership studies the implementation of evidence-based decision support interventions in rural, community settings in Northern California. Prior to our study, the Cancer Resource Centers of Mendocino County (CRCMC) implemented Consultation Planning (CP), a question-listing service. Program evaluations showed that CP was associated with increased patient decision self-efficacy (DSE) when delivered by trained staff, in face-to-face interviews with patients. For this study, we explored the effectiveness, cost, and value of delivering CP by telephone (Tele-CP). Our study asked:

1. Is Tele-CP as effective as in-person CP?
2. Can Tele-CP be delivered at a lower cost than in-person CP?
3. What are patients willing to pay for CP and Tele-CP?

To answer these questions, we conducted a randomized, controlled trial of non-inferiority between Tele-CP and In-Person CP. From October 2007 to December 2010, we randomly assigned resource center clients with a diagnosis of breast cancer to receive Tele-CP or In-Person CP. Clients filled out short surveys describing their confidence, anxiety, quality of life and costs associated with the CP session. For the primary outcome, we compared ratings of decision self-efficacy (0 minimum to 4 maximum). This is a previously validated 11-item Likert scale measuring patients confidence in their ability to navigate decisions effectively with physicians. We also measured resource center costs and assessed patient willingness to pay.

We analyzed data from 67 participants who completed the study. Of those, 35 received Tele-CP and 32 In-Person. Average DSE score for Tele-CP recipients was 3.53 compared to 3.44 for In-Person. Our statistical analysis indicated that Tele-CP was not inferior to In-Person. For both groups, the average DSE increased significantly when measured before and after the CP. Anxiety decreased in both groups and participants in both interventions reported high and similar levels of satisfaction and preparation for decision making. Average cost associated with delivering Tele-CP was $47 compared to $78 for In-Person [95% CI: -$63 to $2]. Although the resource center offers CP free to all clients, willingness to pay for Tele-CP was $154 compared to $144 for in-person [95% CI: -$88 to $108].

We concluded that Tele-CP works as well, costs no more, and is equally valued by clients compared to In-Person CP. Organizations offering Consultation Planning, or similar question-listing interventions, should consider adopting telephone delivery. Using a community-based participatory approach our team produced rigorous, relevant research that identified an efficient way of delivering effective decision support in a rural, underserved setting.

## ABSTRACT NO. 09

**Principal Investigator: Reina Haque**

### Tamoxifen & Antidepressant Drug Interactions in a Large Cohort of Breast Cancer Survivors

Reina Haque[1], Jiaxiao Shi[2], Suzanne W Fletcher[1], Joanne Schottinger[1] Syed A Ahmed1, TC Cheetham[1], Joanie Chung[1], Chantal Avila[3], Laurel A Habel[3],

[1]Kaiser Permanente Southern California, Pasadena CA,
[2]Harvard Medical School, Boston MA,
[3]Kaiser Permanente Northern California, Oakland CA

**Background:** Considerable controversy exists on whether certain antidepressants reduce tamoxifen's effectiveness in lowering subsequent breast cancer. In particular, paroxetine (Paxil), has been postulated to lower tamoxifen's effectiveness. However, previous studies have been limited by small sample sizes, poor measurement of medication use, or inadequate statistical analysis. Therefore, our goal was to determine whether taking tamoxifen and antidepressants concomitantly is associated with an increased risk of subsequent breast cancer in survivors.

We assembled a cohort of women who were diagnosed with their first primary breast cancer (Stage 0-II) from 1996 to 2007 and treated with tamoxifen and followed through 12/31/09 at Kaiser Permanente Southern and Northern California, two large integrated healthcare delivery systems. We collected demographic, tumor, pharmacy and cancer treatment information from electronic health records, and tumor registries. The outcome measure was risk of subsequent breast cancer (recurrences in the same breast, metastases, or second primary breast tumors). The main independent variables were type of antidepressant (paroxetine, fluoxetine, other SSRIs, tricyclics, and other classes) and percent overlap when both tamoxifen and antidepressant treatments were used (categorized in quartiles each year of use). The cumulative percent overlap was summarized for each three month period, and treated as a continuous variable in the multivariate model. Adjusted hazard ratios (HR) and 95% confidence intervals (CI) were estimated using Cox regression models using time-varying medication variables, adjusted for duration of tamoxifen use; age; tumor characteristics; primary cancer treatments; race/ethnicity; comorbidity; site; and other medications (e.g., aromatase inhibitors, bisphosphonates, and others). Women were followed through subsequent breast cancer, health plan disenrollment, death (non-breast cancer related) or the study's end, whichever occurred first.

**Results:** Overall, 2,946 women developed subsequent breast cancer during the 14-year study period. Of the 16,887 total women, about half (48%) used antidepressants; 481 women (3%) used paroxetine only; 1032 (6%) fluoxetine only; 271 (2%) other SSRIs; 1163 (7%) tricyclics; 1259 (7%) other types; 3892 (23%) used multiple types; and the remaining had no exposure to antidepressants (52%). We observed a small increased risk of subsequent breast cancer in women who concurrently used paroxetine in the first year of tamoxifen therapy. For every 25% increase in percent overlap, the risk increased by 6%, but the result was not statistically significant (HR=1.06, 95% CI: 0.98-1.14). However, the risk attenuated with longer duration of tamoxifen use.

Using one of the most complete pharmacy databases of insured members in California, we observed a slight increased risk of subsequent breast cancer in women who had concurrently used paroxetine in the first year of endocrine therapy. Nevertheless, taking tamoxifen for a longer duration mitigated such risks.

## ABSTRACT NO. 10

**Principal Investigators: Galen Joseph, Maria Caprio**
**Presenter: Alyssa Nickell**

### Clinical Trials Information and Access for Underserved Women

Galen Joseph, Alyssa Nickell, Maria Caprio, Elly Cohen, Nancy Burke

The goal of our research is to assess the potential role of a trusted community based organization (CBO) as a source of culturally appropriate education and access to clinical trials in order to address disparities in clinical trials information. Although the inclusion of minorities and women in federally funded clinical research is mandated by law, many barriers including lack of appropriately delivered and framed information and access to studies, prevent minority and low-income women from participating. In this project, Shanti Lifelines Breast Cancer Program (Shanti BCP), a trusted CBO that provides critical health navigation services to ethnically diverse low-income breast cancer patients and survivors, BreastCancerTrials.org (BCT), a web-based non-profit clinical trials matching service, and UCSF researchers are collaborating to address the lack of culturally and linguistically appropriate information about health research for their underserved clients and for Shanti Care Navigators.

This pilot study utilized multiple qualitative methods including key informant interviews with breast cancer care providers, in-depth individual interviews with Shanti navigators and clients, and a pilot test of an information and access protocol developed based on interview findings. Preliminary analyses of the interviews indicated that key informants were concerned about the level and type of information navigators would be managing and communicating regarding clinical trials, and some felt that only general information, rather than specific trial information was appropriate for them to address. Key Informants also expressed concerns about the risk of disappointing clients given the institutional barriers to accessing trials where clients receive care, and the limited number of trials for which they would be eligible (local, language concordant staff). Navigator interviews suggested low comfort levels with clinical trials, more comfort with health research defined broadly, and that feasibility would be limited by existing demands on navigator time. Client interviews indicated limited knowledge of how to use, and minimal access to online resources such as BCT, as well as substantial privacy concerns about utilizing a service that requires entering detailed personal and health information. As a result, our pilot intervention focuses on equitable access to health research (e.g. post-treatment survivorship, behavioral, and quality of life studies) information. It includes an information and access protocol for post treatment survivors that addresses institutional barriers as well as the other concerns identified.

Outcomes of the pilot will determine the next steps in advancing access to culturally and literacy appropriate resources about health research. The potential impact of our work will be to decrease information disparities about health research, including clinical trials, by establishing a protocol for trusted breast cancer navigators to provide access to information and online trials matching services such as BCT that are otherwise out of reach to many underserved patients.

## Poster Abstracts

### ABSTRACT NO. 11

**Principal Investigators: Ingrid Oakley-Girvan and Claudia Del Rio**

**Early Development of E-Messages for Abnormal Mammogram Follow-Up in Latinas**

**Background:** We believe that encouraging women to go to follow-up appointments soon after they have an abnormal breast exam will reduce the number of late stage breast cancers in Latina women, and improve overall survival from this disease. We talked to breast cancer survivors and health care professionals to find out what types of messages would be acceptable and culturally appropriate.

**Methods:** We conducted one focus group with Spanish-speaking breast cancer survivors, and one with Latinas who had an abnormal mammogram but were not diagnosed with cancer. We also completed five semi-structured interviews with health care professionals at Tiburcio Vasquez Health Center (TVHC) who had referred Latina women for mammography.

**Results:** Eight breast cancer survivors attended the first group, held November 7, 2012. The average age of participants was 47.5, and the majority was monolingual Spanish speaking from Mexico. The second focus group was held on November 14 with five women. The average age was 46.3, and again the majority was monolingual Spanish speakers from Mexico. Both groups were facilitated by the CAB chair. Participants in both focus groups wanted the message to tell them that the mammogram was abnormal. Most participants wanted to meet with the doctor for further discussion about the abnormal mammogram results. Participants mentioned fear of cancer as soon as they heard about abnormal mammogram results, and mentioned the need for additional information in writing about an abnormal mammogram, including options for the next step. The semi-structured interviews were conducted in November, and included three primary care providers, medical assistant, and the supervising nurse. Four of the five respondents felt that very little information should be provided in the message, although one felt that the message could include information about the need for additional testing. Providers felt the message should include a specific phone number that patients could call to ask questions.

**Conclusions:** An electronic message telling women of the need for additional follow-up after an abnormal mammogram is feasible and acceptable.

### ABSTRACT NO. 12

**Principal Investigators: Natasha Riley, Vanessa Malcarne and Georgia Sadler**

**The Breast Cancer Clinical Trials Education Program**

Natasha Riley, MA[1] , Erin L. Merz, MA[2], Georgia Robins Sadler, BSN, MBA, PhD[3] , Vanessa L. Malcarne, PhD2,[4]

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The overall goal of this research project was to empirically evaluate the Breast Cancer Clinical Trials Education Program (BCCT), which was anticipated to help reduce the underrepresentation of African American and Hispanic American women in breast cancer research studies. We developed the BCCT in a pilot project with direction from community-based focus groups. A randomized controlled trial (RCT) was conducted in order to evaluate the impact of the BCCT. Participants in the RCT were randomly assigned to view either the BCCT (experimental) or a comparable, but different educational program about Community Safety/Neighborhood Watch (control group).

We hypothesized that African American and Hispanic American women who viewed the BCCT would demonstrate greater clinical trials knowledge, positive attitudes toward clinical trials participation, and be more willing to participate in a research study and become a clinical trials advocate than control group women. Participants (N= 422) were randomized into one of two groups. The experimental group (n= 215) viewed the BCCT, whereas the control group n= 207) viewed a program about neighborhood safety. The community sample was comprised of Hispanic American women with English as their preferred language (n = 140), Hispanic American women with Spanish as their preferred language n = 141), and African American women (n = 141). After completing baseline surveys, intervention, and post-intervention surveys, each participant was then offered the opportunity to participate in a stress/cortiol study where they were asked to give a saliva sample, which served as a proxy measure of behavioral change (i.e., willingness to participate in a clinical trial). Lastly, they were each offered the opportunity to become Clinical Trial Ambassadors (individuals willing to receive information periodically about participating in cancer and other health-related research studies and who spread the information to members of their community), as another measure of behavioral change.

The results from the RCT supported the hypotheses that African American and Hispanic American women in the experimental group would demonstrate greater clinical trials knowledge and more positive attitudes towards clinical trials participation after seeing the BCCT education program. There was a significant increase in knowledge following the intervention ($p < .001$). There was also positive changes in clinical trials attitudes related to personal benefit ($p < . 001$), trust in clinical trials and researchers ($p < 001$), familiarity with clinical trials ($p < 001$) and how to access clinical trials ($p < 001$) for the experimental, but not for the control group. Behavioral change toward breast cancer clinical trials participation and advocacy as a result of the BCCT was measured by inviting each participant to participate in a stress/cortisol study, and to become Clinical Trial Ambassadors. However, there was no difference between the experimental and control group.

The potential impact of this study would be to empower community women from traditionally underrepresented groups through an increased understanding of clinical trials and of the opportunities presented by clinical trials participation. The Health Belief Model suggests that these are critical steps in the process of promoting behavioral change related to participation in clinical trials.

### ABSTRACT NO. 13

**Principal Investigator: Scarlett Lin Gomez**
**Poster Presenter: Salma Shariff-Marco**

**Impact of Race/Ethnicity, Education and Neighborhood Socioeconomic Status on Survival After Breast Cancer**

Authors: Shariff-Marco S[1] , Yang J[1] ,John EM[1] , Keegan TH[1] , Kurian AW[2] , Cheng I[1] , Monroe KR[3] , Bernstein L[4], Lu Y[4] , Caan BJ[5] , Kwan ML[5] , Sposto R[3] , Vigen C[3] , Wu AH[3] , Gomez SL[1]

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As one of the four Projects in the California Breast Cancer Survivorship Consortium (CBCSC), our goal is to assess how the social and built environment is associated with survival after breast cancer in a diverse cohort of California residents. We present the results from one aim to understand the role of individual — and neighborhood-level socioeconomic status (SES) in explaining racial/ethnic disparities in survival after breast cancer diagnosis.

With data from five of the six studies in the CBCSC, we examined the independent and synergistic effects of race/ethnicity, education, and neighborhood SES on overall survival among non-Latina whites (n=4,477), African Americans (n=1,790), Asian Americans (n=1,304), and Latinas (n=1,797). Due to interactions

between race/ethnicity and neighborhood SES, we first assessed the independent effects of education and neighborhood SES within each racial/ethnic group and then assessed the combined effects of race/ethnicity, education and neighborhood SES. We used study — and stage-stratified Cox regression models (survival analyses) to measure these associations accounting for age at diagnosis, race/ethnicity, year of diagnosis, tumor characteristics and clustering by block group (base model). We further adjusted for treatment, behavioral factors (e.g., smoking, alcohol use), marital status, comorbidities and hospital characteristics (fully-adjusted model) to assess whether these associations remained.

Associations of education and neighborhood SES with survival varied across racial/ethnic groups. For education, non-Latina whites (HR= 1.76, 95% CI: 1.14-2.73) and Asian Americans (HR= 1.61, 95% CI: 1.08-2.41) with less than a high school education had worse overall survival compared to those with college/higher degree; no education associations were observed among African Americans and Latinas. For neighborhood SES, a trend was observed among non-Latina whites (quintile 1 (Q1)-lowest SES HR= 1.88, 95% CI: 1.37-2.59) and Latinas (Q1 HR= 1.48, 95% CI: 1.02-2.16) such that lower neighborhood SES was associated with worse overall survival; no neighborhood SES association was observed among Asian Americans. While a trend was not evident, African Americans living in lower SES neighborhoods had better survival than African Americans living in the highest SES neighborhoods (Q1 HR= 0.74, 95% CI: 0.55-0.98). To assess the synergistic effects of race/ethnicity, education, and neighborhood SES, we created a combination variable of these three measures. In the fully-adjusted model, non-Latina whites and African Americans with high education in low SES neighborhoods continued to have worse survival while Latinas with low education in high SES neighborhoods had better survival.

Our findings suggest that survival after breast cancer varies by the social status measures of race/ethnicity, education and neighborhood SES. In particular, for non-Latina whites and African Americans, discordance between education and neighborhood SES (e.g., having high education and living in a low SES neighborhood) was associated with worse survival, while discordance was associated with better survival among Latinas. Further investigation into these varying effects on survival is needed to better inform strategies to effectively reduce social inequalities in survival after breast cancer. Identifying factors that lead to poor and better survival can help us design strategies to help more women achieve optimal survival after a diagnosis of breast cancer.

## ABSTRACT NO. 20

**Principal Investigators: Stergios Roussos, Felicia Batts and Christine Noguera**

### Developing the Capacity for Community-Driven Research to Eliminate Disparities in Mammography For Latinas

Health and human service organization in communities throughout the U.S. are increasingly challenged to address disparities in preventive services for Latinas. Compared to non-Latinas, Latinas continue to experiences disproportionally lower rates of mammography and higher rates of death due to breast cancer. California has among the highest proportion of Latinas of all states in the U.S. Linguistic, cultural, social, educational, and economic barriers are among the factors known to contribute to disparities in mammography among Latinas. The California Breast Cancer Research Program (CBCRP) provided an opportunity for a community-university partnership to address these disparities within the Central Valley of California. This presentation provides a case study of Project Perlas to show how community-university collaboration can establish a productive and nurturing community-based research program to improve culturally and linguistically appropriate services (CLAS) and directly address disparities. Leaders of a major network of Federally Qualified Health Centers and a university-based team in Merced, CA have nurtured a community-driven research collaboration to address health and health care disparities in one of nations largest agricultural regions. CBCRP Pilot and Full Awards were central to developing this community-driven research infrastructure. The goal of Perlas was to establish and test the effects of an innovative intervention that takes advantage of a highly prevalent chronic illness among Latinas (diabetes) to prompt for mammography screening, a periodic preventive service. The community-academic team included administrative and clinical staff, breast cancer survivors with and without diabetes, and community health researchers. The team developed a multi-intervention program to influence patients, providers and the system of health care delivery. Interventions for patients consisted of screening prompts and breast health education. Broader service delivery interventions included system improvements to better assess behavioral risk associated with physical activity, nutrition, blood sugar testing, as well as EMR and paper prompts to clinicians to facilitate timely preventive screenings. While prior studies report that Latinas have lower mammography rates than other ethnicities, our study found the reverse. The highest mammography rate found was for Latinas in Perlas (56%) compared to non-Latinas (43%). This is still below the most currently available (2008) national rate of 61% for Latinas compared to an average of 66% for non-Latina groups. The higher Latina mammography rates in Perlas occurred despite national mammography screening guidelines de-emphasizing screening for women under age 50, complications due to organizational transition to a new EMR, and higher diabetes risk levels for Latinas. Project Perlas illustrates the value of a strong community-academic collaboration, and offers important lessons for addressing mammography disparities among Latinas. The discussion will include recommendations for research and practice regarding community-based research in underserved communities and among culturally diverse populations.

## ABSTRACT NO. 21

**Principal Investigator: Yani Lu**

### Recreational Physical Activity and Breast Cancer Survival: The California Breast Cancer Survivorship Consortium

Yani Lu[1], Esther M. John[2,3], Jane Sullivan-Halley[1], Cheryl Vigen[4], Scarlett Lin Gomez[2,3], Marilyn L. Kwan[5], Bette J. Caan[5], Valerie S. Lee[5], Janise M. Roh[5], Salma Shariff-Marco[2], Theresa H. Keegan[2,3], Allison W. Kurian[6], Kristine R. Monroe[4], Iona Cheng[2] , Richard Sposto[4], Anna H. Wu[4], Leslie Bernstein[1]

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**Background**: Recent epidemiologic evidence suggests that pre-diagnosis physical activity positively impacts survival in women diagnosed with breast cancer. Although survival experience for breast cancer patients has improved in recent years, substantial survival differences still exist between racial/ethnic groups. Here, we investigated how recreational physical activity before breast cancer diagnosis influences survival in a racially/ethnically diverse group of breast cancer patients using data from the California Breast Cancer Survivorship Consortium (CBCSC).

**Methods:** The analysis included breast cancer patients from three population-based case-control studies: 1239 non-Latina White and African American women ages 35-64 years at diagnosis (diagnosis year: 1994-1998) from the Women's Contraceptive and Reproductive Experiences (CARE) Study, 1126 Asian American women ages 26-79 years at diagnosis (diagnosis year: 1995-2001) from the Asian American Breast Cancer Study

(AABCS), and 2243 non-Latina White, African American and Latina women ages 35-79 years at diagnosis (diagnosis year: 1995-2002) from the San Francisco Bay Area Breast Cancer Study (SFBCS). Similar questionnaires were used to obtain histories of recreational physical activity before breast cancer diagnosis. Tumor characteristics and follow-up data were obtained from the California Cancer Registry. Follow-up started from the date of interview and continued through December 31, 2009 Cox proportional hazards models were used to estimate hazard ratios (HR) and 95% confidence intervals (CI) for the associations between recent recreational physical activity (defined as activity during the 10 years before diagnosis) and risk of death from all causes, from breast cancer and from causes other than breast cancer.

**Results:** Non-Latina White women had the highest level of recent recreational physical activity, followed in sequence by African Americans, Latinas and Asian Americans. After an average of 9.1 years of follow-up (standard deviation: 3.7), 1260 women died, 789 (63%) from breast cancer. Among 471 women who died from causes other than breast cancer, 146 died from cardiovascular diseases, 143 from other types of cancer, and 182 from other causes. Overall, recent recreational physical activity was not associated with all-cause mortality or breast cancer-specific mortality. Compared to those with the lowest level (0-0.5 hours/week/year) of recent activity, those with the highest level (>3.0 hours/week/year) had similar risk of death from all causes (HR=0.91, 95% CI=0.79-1.06) and from breast cancer (HR=1.13. 95% CI=0.94-1.36). These risk patterns were not significantly different across the four racial/ethnic groups, nor were they modified by pre-diagnostic body mass index (<25 vs. 25 kg/m2 ) or by estrogen receptor status (positive vs. negative). An inverse association was observed for death from causes other than breast cancer (HR=0.65, 95% CI=0.50-0.85 for the highest vs. the lowest level of physical activity, p-trend<0.01), and the decreased risk was mostly driven by cardiovascular disease deaths (HR=0.53, 95% CI=0.32-0.87.

**Conclusion:** In this large, multiethnic study of breast cancer patients, we found no associations between recent recreational physical activity (in the 10 years before breast cancer diagnosis) and overall or breast cancer-specific mortality. However, recent recreational physical activity was associated with lower risk of death due to causes other than breast cancer, especially cardiovascular diseases. The results did not differ by racial/ethnic group.

## ABSTRACT NO. 22

**Principal Investigator: Russell C. Hovey**
**Poster Presenter: Susan Miszewski**

### The Effects of in Utero and Post-Natal Exposure to Excess Folic Acid on Mammary Gland Development and Tumorigenesis

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**Introduction:** In the late 1990s the U.S. and Canadian governments mandated fortification of flour and cereal grains with the B vitamin, folic acid, to prevent spina bifida and other related birth defects. Since then, the overall rate of these birth defects in both countries has decreased dramatically. However, there are lingering questions about the effects of excess folic acid on development of other organs including the mammary glands. Previous studies suggest that folic acid exposure during fetal development may perturb development of the mammary glands and their subsequent response to chemical carcinogens.

**Goal:** The overall goal of this study is to examine the effects of exposure to folic acid in utero and postnatally on development of the mammary glands and their susceptibility to tumorigenesis.

**Description of work to date:** Female mice were fed diets containing varying levels of folic acid (deficient, adequate, excess, and super excess), prior to mating, during pregnancy, and lactation. Females were mated with transgenic males, expressing the polyoma virus middle-T (PyMT) antigen, so that half the offspring were wild type and half were transgenic. This transgenic mouse model of breast cancer models the ErbB2 mutation present in approximately 30% of human breast cancers. The offspring were necropsied on days 1, 21, and 42 of postnatal age to assess the effect of varying levels of dietary folic acid on mammary gland development as well as tumor incidence and size

**Future Work:** In addition to morphological and histological analysis, molecular analysis will be performed on the mammary glands of all female offspring. Specific attention will be directed toward epigenetic alterations, including DNA methylation, and their subsequent effects on gene expression.

**Potential impact:** Our studies of the pathological and molecular consequences of excess folic acid intake will provide insight into how folic acid may affect transgenerational breast cancer risk in humans. The information gleaned from these studies will provide insight into the safety of folic acid fortification and its potential effects on offspring and their lifetime risk for breast cancer.

## ABSTRACT NO. 23

**Principal Investigator: Barbara Mueller**

### Local Adipocytes Enable Estrogen-Dependent Breast Cancer Growth: Role of Leptin and Aromatase

Authors: Enbo Liu, Fahumiya Samad and Barbara M. Mueller

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The importance of the microenvironment in breast cancer growth and progression is becoming increasingly clear. Adipocytes are abundant in the mammary microenvironment, and studies show that adipocytes produce endocrine, inflammatory, and angiogenic factors that have tremendous potential to affect adjacent breast cancer cells. Yet, the extent to which local adipocyte function contributes to the pathogenesis of breast cancer is largely unexplored.

Here we describe a unique animal model to study interactions between adipocytes and breast cancer cells in the tumor microenvironment. This model uses F442A pre-adipocytes that spontaneously differentiate into mature adipocytes in vivo. Coinjection of F442A cells and hormone-dependent breast cancer cells (MCF-7, T47D) into SCID mice resulted in progressive tumor growth, contralateral injection resulted in well-differentiated fat pads, but no tumor growth. These results demonstrate that local interactions between adipocytes and tumor cells are necessary and sufficient to promote the growth of hormone-dependent breast cancer. While these observations argue for a role of local aromatase activity in breast cancer, the contribution and regulation of adipocyte-produced aromatase in the tumor microenvironment is not known. We determined aromatase expression in F442A pre-adipocytes and in differentiated F442A adipocytes and found that F442A pre-adipocytes express very low levels of aromatase

whereas high levels of aromatase were observed in fully differentiated F442A adipocytes. We further demonstrated that adipose hormone leptin upregulates aromatase expression in F442A adipocytes in vitro and in vivo.

Obese women have a higher risk for hormone-dependent breast cancer development, recurrence and death and obesity has been found to hinder breast cancer treatment. To address the issue of aromatase in obesity we compared aromatase expression in the adipose tissue of lean and obese mice in a model of diet-induced obesity. Aromatase mRNA was increased more than 45 fold in adipose tissues of high fat diet (HFD)-induced obese mice compared to lean control mice on a low fat diet. HFD-induced obesity is a model that closely resembles human obesity including a marked increase in circulating leptin. Therefore the increase in aromatase expression in HFD mice is potentially due to higher leptin levels. To address this question further we tested aromatase expression in leptin-deficient genetically obese ob/ob mice. Aromatase in the adipose tissue of adult obese ob/ob mice was significantly lower than in lean wild-type control mice, suggesting that leptin drives aromatase gene expression in adipose tissue. To further test this hypothesis, we injected mice with leptin and found that leptin increased aromatase expression in the adipose tissue of ob/ob mice and also in the adipose tissue of lean mice.

Together our results not only demonstrate that leptin signaling in the adipose tissues increases aromatase expression, but also suggest that leptin and aromatase in the local tumor microenvironment play a crucial role in development and growth of hormone-dependent breast cancer. They provide a foundation to understanding the regulation of aromatase in adipose tissues in general and in the tumor microenvironment specifically and can provide a rationale for targeting the leptin-aromatase axis in the prevention and/or treatment of hormone-dependent breast cancer.

## ABSTRACT NO. 24

**Principal Investigator: Chris Vulpe**
**Poster Presenter: Ruthann Rudel**

### Chemical Screening to Identify Potential Breast Carcinogens Using Human Breast Cell Cultures: Genotoxicity

Understanding how exposure to environmental chemicals may raise the risk of breast cancer could offer clues to preventing the disease. Currently, many consumer product chemicals have not been safety-tested. For those that are tested, the methods are not designed to detect effects specific to breast cancer, and they are typically too slow and expensive to screen the tens of thousands of chemicals on the market. This project addresses these concerns by developing innovative methods to rapidly screen chemicals using methods that are directly relevant to breast cancer. The project builds on major new initiatives at the US Environmental Protection Agency (EPA's ToxCast program) and the National Toxicology Program (NTP's Tox21 program) that are developing rapid chemical screening methods to fill current gaps in chemical safety evaluation. Data from the EPA ToxCast and NTP Tox21 screening programs will be used to prioritize chemicals for further evaluation and regulation, so it is important that they use breast-cancer relevant tests.

Animal and human studies suggest that DNA-damaging chemicals and certain hormone exposures increase BC risk. In this project we used the Chemical Carcinogenesis Research Information System (CCRIS) to compile information on the DNA-damaging ability of over 200 chemicals that cause mammary gland tumors in animal studies (mammary carcinogens). The DNA damage tests included tests in bacteria, mammalian cells, and short-term animal tests. We have identified the currently-used tests of DNA damage that are the best predictors of mammary carcinogens. We also compared DNA-damage profiles for the mammary carcinogens with profiles for 27 chemicals that did not produce tumors in animal tests. Data from at least one of these DNA-damage tests were available for 158 mammary carcinogens and 22 non-carcinogens. We found that most mammary carcinogens cause DNA damage: 87% were positive while 10% were consistently negative. In comparison, 59% of non-carcinogens were consistently negative. Essays that included a step to generate normal metabolic breakdown products for each chemical were important to finding a high percent of positive results for the mammary carcinogens. Without metabolic activation, the mammary carcinogens that were consistently negative for DNA damage increased from 10% to 24%. In conclusion, a high percentage of mammary carcinogens consistently show the ability to damage DNA but 10% are negative in all tests. Without metabolic activation almost 25% of the mammary carcinogens would be consistently negative.

The relationship between DNA damage and cancer has been extensively discussed, but to our knowledge this is the first focus on breast cancer. The project's focus on rapid cell-based tests extends current innovation in chemical testing and will improve our ability to identify chemicals that might contribute to breast cancer. These assays can also be used to test mixtures, such as consumer products, house dust, drinking water, and even air samples. By testing many chemicals that cause mammary gland tumors in animal studies, we will also identify the specific mechanisms that cause some chemicals to affect breast cancer.

## ABSTRACT NO. 25

**Principal Investigator: Jeremy Stark**

### Factors Influencing the Requirement for the Breast Cancer Susceptibility Gene BRCA1 During Homologous Recombination

The long-term goal of this study is to improve therapeutic outcomes for patients with inherited mutations in the breast cancer susceptibility gene *BRCA1*. The BRCA1 protein promotes homologous recombination (HR), which is a cellular DNA repair process that is critical for maintaining genetic information. Accordingly, mutations in BRCA1 can cause inefficient HR, leading to accumulative loss of genetic information, which causes cancer. We propose to identify and characterize other genetic factors that influence the requirement for BRCA1 during HR, which could lead to improved treatment of breast cancer at many levels. For one, factors that are important to inhibit HR in BRCA1 deficient cells are potential therapeutic targets to rescue HR in these cells. Accordingly, mechanistic insight into such factors could lead to new therapeutic interventions to reduce breast cancer risk in BRCA1 mutation carriers, which is the primary long-term goal of this study. In addition, understanding how other factors affect the requirement for BRCA1 during HR, and hence tumor suppression, will assist in the diagnosis of breast cancer risk for individual BRCA1 mutation carriers. Similarly, since loss of the HR pathway in the tumor can affect therapeutic responses to certain chemotherapeutic agents, identifying factors that influence the requirement for BRCA1 during HR will be important to develop predictions of therapeutic response for individual patients. To identify and characterize factors that influence the requirement of BRCA1 during HR, we are using molecular and cellular biology assays that enable a quantitative measure of the frequency of HR with human cell culture model systems. We will present evidence that disrupting factors involved in the 53BP1/RNF168-signaling pathway can rescue HR in cells lacking BRCA1, and furthermore will describe our current efforts to define the mechanism by which the 53BP1/RNF168-signaling pathway affects the requirement for BRCA1 during HR.

## Poster Abstracts

### ABSTRACT NO. 26

**Principal Investigator(s): Michael Denison**
**Poster Presenters: Elyse Caron-Beaudoin, Thomas Sanderson**

**Bioassays for the Detection of Inducers of Breast Cancer-Relevant Aromatase Gene Promoters**

In hormone-dependent breast cancers, the expression of the enzyme aromatase (CYP19) is increased via the upregulation of several promoters (PII, I.3, 1.4 and I.7), some of which normally only active in other tissues. Aromatase is responsible for the biosynthesis of estrogens, which are implicated in cell division and breast growth and development. Exposures to certain environmental contaminants, such as the herbicide atrazine, are associated with increased expression of CYP19. To assess whether human chemical exposures to, for example, pesticides, brominated flame-retardants, bisphenol-A or various medications can induce CYP19 gene expression, several novel quantitative real-time PCR (qPCR) techniques were developed to measure promoter-specific expression of CYP19 in a series of human (female) cell lines, including the adrenocortical carcinoma cell line H295R. H295R cells were exposed to the herbicide atrazine (3 and 30 M), the fungicide vinclozolin (10 and 100 M) and forskolin (10 M), a known aromatase inducer, for 24h. CYP19 expression was measured by qPCR using two housekeeping genes (PBGD and UBC) as references for normalization of CYP19 gene expression. Forskolin, which is known to induce CYP19 expression via pII and I.3 promoters, induced CYP19 gene expression by 5.8 fold. Moreover, atrazine concentration-dependently increased promoter PII-mediated gene expression by 1.7 and 4.5 fold at 3 and 30 M, respectively. We are continuing to determine the effects on promoter-specific CYP19 gene expression in various human cell lines (UVEC, T-HESC, BEWO) exposed to environmentally relevant compounds such as the neonicotinoid insecticides imidacloprid, thiacloprid and thiamethoxam. Our study will identify suitable cell lines for use as screening tools to evaluate the aromatase induction potential of chemicals that activate breast cancer-relevant promoters of CYP19 gene expression. These screening tools will be helpful in assessing the risk certain chemicals may pose to the development of hormone-dependent breast cancer.

### ABSTRACT NO. 27

**Principal Investigator: Abhijit Chaudhari**

**Sub-Millimeter PET for Improving Outcomes in Breast Cancer**

The goal of our project is to develop a unique tool — a PET system with sub-millimeter resolving power — capable of accurately visualizing the molecular processes underlying breast cancer. Using funding from the CBCRP, we proposed to design and characterize the PET system, integrate the system with the 1.5 mm resolution PET/CT scanner at our institution, and perform proof-of-concept studies on five breast cancer patients who are candidates of mastectomy. Our hypothesis is that our PET scanner will provide a molecular-level assessment of breast cancer and improve our understanding how the disease originates and spreads. Currently available clinical and research tools lack the ability to perform such analyses at a sub-millimeter level.

To date, we have designed and characterized the individual PET detectors to be used in the system. We have performed computer-based simulation studies to evaluate imaging trade-offs such as the trajectories the system will follow and the sensitivity to small lesions, and optimized the performance of the system. We have used 3-D printing technology to design the C-shaped PET head of this new system and have designed mechanical components to integrate it into the PET/CT system at our institution. At the time of this writing (early January 2013), we are further optimizing the detector performance and developing improved image reconstruction method to best utilize the improved resolving power. After the system is fully functional, we will obtain approval from clinical engineering and the institutional review board to perform proof-of-principle studies in five breast cancer patients who are candidates for mastectomy. We will compare the imaging outcomes with pathology results

If successful, our novel device will be capable of performing detailed measurements of glucose utilization, hypoxia, angiogenesis or other key processes in a non-invasive, in vivo manner. This will unleash the potential to interrogate the breast tumor microenvironment in pre- and post-treatment conditions, accurately define disease extent, and produce detailed quantifiable maps of biological processes. We anticipate that physicians and scientists will use this information to evaluate early response to neoadjuvant chemotherapy (NAC), choose individualized treatment regimens based on the affected areas, and rapidly test new advanced breast cancer therapies.

### ABSTRACT NO. 28

**Principal Investigator: Paul Henderson**

**Cell-Free Production of Functional ErbB2 for Mechanistic And Screening Studies**

Overexpression of the ErbB2/HER2/neu receptor tyrosine kinase (RTK) is observed in up to a third of breast cancers, and correlates with poor patient prognosis and response to therapy. Although ErbB2 inhibitors have exhibited some clinical success, the prevalence of tumor resistance to current inhibitors prompts keen interest in better understanding structural and mechanistic features of the receptor to design better drugs. As an integral membrane protein, ErbB2 is notoriously difficult to study outside of the cell, e.g., for structural studies or drug screening, because it tends to aggregate into inactive complexes that have poor water solubility. Nanolipoprotein particles (NLPs) have been used to combat this problem as a way to study membrane proteins in their native membrane-bound state outside of the cellular environment. NLPs are disc-like nanostructures containing a lipid bilayer belted by a lipoprotein. These structures can act analogously to cell membranes by integrating membrane proteins, increasing their water solubility and three-dimensional ordering. We used a modified commercial cell-free reaction kit to synthesize ErbB2-NLP complexes. These complexes were then purified via size exclusion chromatography and characterized for identity, correct folding and enzymatic activity. We observed that ErbB2 incorporated into NLPs is enzymatically active, and we are able to synthesize sufficient ErbB2-NLP complexes for ongoing structural and drug screening studies.

### ABSTRACT NO. 29

**Principal Investigator: Dale Leitman**

**Cross-Talk Between HER2 Agonists and Xenoestrogens Lead to a Synergistic Proliferation of Breast Cancer Cells**

There are two major pathways that act on breast cells to increase proliferation, tumor formation and the risk of breast cancer. Growth factors can activate the HER2 receptor, which stimulates breast cells to proliferate. A second pathway involves the estrogen receptor. Estrogens are known to bind to estrogen receptors and cause the cells to divide and form tumors. Because these two pathways are associated with breast cancer, compounds that stimulate these pathways could increase the risk of breast cancer. One class of compounds that are particularly concerning is xenoestrogens, which are present in numerous, common household products. The ubiquitous presence of xenoestrogens in products has led to their accumulation in the bodies of nearly everyone in the US. These compounds are known to interact with estrogen receptor, but they have been generally considered to be safe because the stimulatory effects on breast cells required high doses and the levels needed to activate estrogen receptors exceed the amount present in the body. Unfortunately, the studies done to assess the potential adverse effects of xenoestrogens have tested them alone. We hypothesize that xenoestrogens can be more dangerous in the presence of factors that activate the HER2 pathway. To test our hypothesis, we examined the effects of

xenoestrogens in the presence of activators of HER2 in breast cancer cells. We found that low doses of xenoestrogens alone did not promote cell proliferation or activation of genes that are known to be involved in breast cancer development. In contrast in the presence of a HER2 activator with low doses of the xenoestrogens produced a marked increase in cell proliferation and c-myc, which is a major protein known to initiate cell proliferation of breast cancer cells. Our findings indicate that low doses of xenoestrogens are more potent at causing proliferation of breast cancer cells in the presence of activators of HER2, which could provide a potential mechanism to explain how xenoestrogens might promote breast cancer.

## ABSTRACT NO. 30

**Principal Investigator: Frank Pajonk**

### Radiation-Induced Reprogramming of Breast Cancer Cells

Breast cancers are thought to be organized hierarchically with a small number of breast cancer stem cells (BCSCs) able to regrow a tumor while their progeny lack this ability. Recently, several groups reported enrichment for BCSCs when breast cancers were subjected to classic anticancer treatment. However, the underlying mechanisms leading to this enrichment are incompletely understood. Using non-BCSCs sorted from patient samples, we found that ionizing radiation reprogrammed differentiated breast cancer cells into induced BCSCs (iBCSCs). iBCSCs showed increased mammosphere formation, increased tumorigenicity, and expressed the same stemness-related genes as BCSCs from nonirradiated samples. Reprogramming occurred in a polyploid subpopulation of cells, coincided with re-expression of the transcription factors Oct4, sex determining region Y-box 2, Nanog, and Klf4, and could be partially prevented by Notch inhibition. We conclude that radiation may induce a BCSC phenotype in differentiated breast cancer cells and that this mechanism contributes to increased BCSC numbers seen after classic anticancer treatment.

## ABSTRACT NO. 31

**Principal Investigator: John Shepherd**

### Improving the Diagnostic Accuracy of Mammograms by Providing Protein, Lipid, and WaterTissue Characteristics to Areas Suspect of Being Invasive Cancer

F Duewer[1], C Flowers[2], K Kerlikowske[1], S Eder[1], J Shepherd[1] 1-University of California at San Francisco, 2-Moffitt Cancer Center

One major goal in mammographic screening is to maximize benefits of early detection while minimizing harms. Radiologists primarily use the subjective evaluation of tissue shape and texture to recognize invasive cancer from noncancerous tissue. Even though computerized tools to objectify the radiologist's interpretation have been in use for over 15 years, up to 60% of women who are screened with mammography have abnormal results, even though no breast cancer is present, thus increasing the cost of mammographic screening by 33%.The goal of our project is to add more diagnostic information to mammography by describing the composition of the suspicious tissue in terms of its biologically-relevant components of protein, lipid (fat), and water.

We are testing a new way to acquire and analyze mammograms we call three-component breast (3CB) mammography. First, a standard screening mammogram is acquire and then followed by a second high-energy image. By combining these two images with knowledge of the breast thickness, the mass of protein, lipid, and water can be determined for any region. The protocol is dose conservative, only 10% higher than a screening mammogram alone, and can be used on any commercial digital mammography system. Regions that are suspect of being cancer are carefully isolated from the surrounding tissue by the radiologist or a computer diagnostic program. Then, the protein, lipid, water characteristics are noted for suspicious areas as well as for the surrounding tissue. By recruiting women already scheduled for biopsy, we are able to classify these suspicious areas by their actual tissue type: invasive cancer, fibroadenoma, ductal cancer in situ (DCIS), or benign tissue. To date, 50 women have been recruited and studied from a clinical setting at UCSF. A calibration object was also imaged with the breast to give a calibration reference point.

We found distinct "signatures" for different tissue types. Invasive cancers and fibroadenomas showed increased water relative to DCIS and benign tissues. The use of the calibration object improved repeatability of 3CB signatures by 50% compared to not using the object. We conclude that invasive cancer does have unique protein, lipid, and water characteristics from other tissue types and that these differences may be distinguishable from tissues that need not be biopsied using the 3CB mammography technique. Our current focus is to better describe the variety of suspicious findings and characteristics of invasive cancer by increasing the number of women in the study. The clinical impact of the 3CB method is expected to be to improve the diagnostic accuracy of mammography and reduce the number of necessary biopsies procedures.

## ABSTRACT NO. 32

**Principal Investigator: Emily Wang**

### Cancer-Secreted Circulating Micrornas Predict Breast Cancer Outcomes

MicroRNAs (miRNAs) are small RNA molecules that play crucial regulatory functions in multiple physiological mechanisms and are aberrantly expressed in cancer. They have been recently detected in the circulation of cancer patients, where they are associated with various clinical aspects of cancer disease. The goal of our project is to identify circulating miRNAs as novel blood-based biomarkers for breast cancer. Our focus is on those cancer-secreted miRNAs that are functionally related to and predict breast cancer response to chemotherapy and potential of metastasis. These miRNAs are valid candidates for blood-based biomarkers that can predict breast cancer metastasis at a non-metastatic stage. Because cancer-secreted, metastasis-related miRNAs can travel to other organs through the blood, they may invade and alter the environment (niche) in a distant healthy organ to make it favorable for the growth of cancer cells, thereby enabling breast cancer metastases to form in that organ. Therefore, blocking this function of cancer-secreted, metastasis-related miRNAs may protect the distant organ and prevent metastasis of breast cancer.

The pre-treatment serum samples of 42 stage II-III breast cancer patients who received pre-operative chemotherapy followed by surgical tumor resection were analyzed for marker identification by high-throughput deep sequencing. An independent validation cohort of 26 stage I-III breast cancer patients was used to analyze the power of identified miRNA markers. We detected more than 800 miRNAs in the circulation, and observed patterns associated with the status of estrogen receptor, progesterone receptor and HER2/ERBB2 in the tumors. The levels of selected miRNA markers were validated by PCR method, which showed good consistency with the deep sequencing method. Two circulating miRNAs, namely miR-375 and miR-122, exhibited strong correlations with clinical outcomes including chemotherapy response and relapse with metastatic disease. In the validation cohort, higher levels of circulating miR-122 specifically predicted metastatic recurrence in stage II-III breast cancer patients. Our study therefore indicates that certain miRNAs can serve as potential blood-based biomarkers for breast cancer outcomes, and that higher levels of miR-122 in the circulation predict breast cancer metastasis in early-stage patients. These results may allow optimized chemotherapy treatments and preventive anti-metastasis interventions in future clinical applications.

Our group is currently working on refining blood-based miRNA markers for breast cancer diagnosis and prognosis, and exploring the functions of cancer-secreted, circulating miRNAs such as miR-122 using established cell and animal models. Identification of blood-borne miRNA markers that reflect the potential for metastasis, which can be used as minimally invasive markers in future diagnosis and prognosis of breast

cancer, may enable accurate prediction and early diagnosis of metastasis in breast cancer patients, allowing for preventive or therapeutic early treatments to maximally benefit the patients. This study will also provide preclinical evidence for a novel strategy to prevent breast cancer metastasis by therapeutically targeting the malignant miRNA signals initiated by cancer cells. Understanding the molecular mechanisms that influence distant metastasis of breast cancer and identifying biomarkers associated with metastatic disease progression will enable miRNA-based personalized diagnostic tests, as well as personalized preventive treatment in breast cancer patients.

### ABSTRACT NO. 35

**Principal Investigator: Richard Pietras**

**New Clinical Targets for Triple-Negative Breast Cancer**

Richard Pietras, Diana Marquez-Garban, Lee Goodglick, Vei Mah, Michael Jung, Gang Deng and Janet Klein.
University of California Departments of Medicine, Pathology and Laboratory Medicine, Chemistry and UCLA Jonsson Comprehensive Cancer Center, Los Angeles, CA 90095

Breast cancer is the most common malignancy in women. Of patients with breast cancer, 70% express estrogen receptor-alpha (ERalpha). Due to the success of endocrine therapies, the mortality of patients with ERalpha-positive tumors has declined markedly in the past decade. In contrast, triple-negative breast cancers (TNBC) occur in 10-15% of patients, yet this disease subtype accounts for almost half of all breast cancer deaths. TNBCs are biologically heterogeneous, but by definition TNBCs all lack clinical expression of three receptors, namely ERalpha, progesterone receptor and HER-2 receptors, and cannot be treated with current endocrine or HER-2-targeted therapies. TNBCs often occur in younger and in African American women. Although initially responsive to aggressive chemotherapy, TNBCs tend to relapse early and metastasize to distant sites. Our highest priority is to define new biologic targets in TNBC and thereby promote development of novel therapeutics that can rapidly be translated for use in the clinic.

We predict that expression of a second estrogen receptor, termed ERbeta,that is the product of a different gene may be a promising therapeutic target in all or a subset of TNBCs. In ongoing work with TNBC biopsy specimens from African American and Caucasian women, we find that ERbeta expression correlates with a shorter disease-free interval in patients treated with standard chemotherapy, indicating early TNBC recurrence. Further, patients with high ERbeta levels also have significantly reduced 5-year overall survival. We are working to further characterize expression and clinical consequences of ERbeta in a larger cohort of TNBC patients using human breast tissue microarrays and established laboratory methods. Thus, specific levels of ERbeta isoforms, particularly ERbeta1, may be confirmed to contribute to breast cancer survival across different ethnic/racial groups (such as African American, Caucasian, Hispanic women).

In the laboratory, panels of TNBC cells also exhibit significant expression of ERbeta. To investigate the potential role of ERbeta in modulating TNBC progression and invasion, we are using specific ERbeta agonists and antagonists and TNBC cell lines with wild-type or molecularly-suppressed ERbeta expression. Our findings to date indicate that ERbeta plays an important role in modulating TNBC progression and suggest that this receptor may serve as a new therapeutic target. Hence, we are working to develop new drug-like ligands targeted to ERbeta as potent anticancer agents.

As there are currently no viable treatments for TNBC, the identification of a novel therapeutic target is important. The discovery of a second estrogen receptor form, ERbeta, and its expression in TNBC has led to re-evaluation of the role of this receptor in malignancy. Such work has raised the possibility that targeting ERbeta may offer new treatment options for TNBC patients where previously only aggressive chemotherapies were available. This exploratory project is intended to characterize ER?beta expression in individuals with TNBC, with a focus on racial/ethnic/ underserved disparities and to study the biologic activity of ERbeta in TNBC using preclinical models. Finally, using drug-like ERbeta ligands, we hope to devise strategies to effectively and safely target ERbeta among women afflicted with TNBC in order to increase their long-term survival and promote enhanced quality of life.

# About CBCRP

The mission of the CBCRP is to eliminate breast cancer by leading innovation in research, communication, and collaboration in the California scientific and lay communities.

- The CBCRP is the largest state-funded research effort in the nation and is administered by the University of California, Office of the President.
- The CBCRP is funded through the tobacco tax, voluntary tax check-off on personal income tax forms and individual contributions.
- The tax check-off, included on the personal income tax form since 1993, has drawn over $10 million for breast cancer research.
- Ninety-five percent of our revenue goes directly to funding research and education efforts.
- The revenue is used to make grants for California scientists and community researchers to find better ways to prevent, treat and cure breast cancer.
- Since 1994, the California CBCRP has awarded over $230 million for 939 grants to 107 California research institutions and community organizations. The CBCRP supports innovative breast cancer research — like cow viruses, Tibetan herbs, snake venom — that might otherwise go unfunded. With continued investment, the CBCRP will work to find better ways to prevent, treat and cure breast cancer.

## BREAST CANCER RESEARCH COUNCIL MEMBERS

To continue to fund innovative research, the California Breast Cancer Research Program (CBCRP) must rely on a committee of experts. The committee, the Breast Cancer Research Council (BCRC) is responsible for tracking the trends and opportunities for progress that arise in the breast cancer community, making funding recommendations, and planning future directions of the CBCRP. The BCRC is made up of representatives of those affected by breast cancer and the institutions that can help find a solution.

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# Thank You

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Oakland, CA 94612-3550

We encourage you to participate in events that designate the California Breast Cancer Research Program (CBCRP) as a featured beneficiary.

**The CBCRP appreciates your generous contributions!**