

**EXCERPTS**

Spread the word your way  
Informing your tax preparer...

Dr. Mel Kavanaugh-Lynch,  
Dir. UCBCRF

800+ Researchers  
Use our funding...

- Need to work SMARTER
- Focus where others don't
- Understand ...
- Strive to reduce inequities
- Eradicate BC through primary intervention

**INSPIRATION, THOUGHT PROVOKING**

Sharima Rasanayagam

**GIVE US YOUR ALL!**

Jump in w/ both feet even if your eyes are closed!

Robert A. Hiatt  
UC San Francisco

One Day MODEL

TODAY'S FDG is a great metaphor: there will be more clarity as the day goes on...

Goals of Project  
to develop a MODEL of the CAUSES of breast cancer...

- illustrate pathways
- illustrate relationships + networks
- prediction models
- Complex models
- Simulation models



OBESITY  
The FORESIGHT MODEL

Another MODEL

Committee of Experts on breast cancer + complex systems modeling

**OUR MODEL...**  
A POPULATION (of California) MODEL  
Not a Gail Model.

\*CROSS-DISCIPLINARY

**NEW PARADIGM of BREAST CANCER CAUSATION**

Include causes at multiple levels  
to Capture black boxes in gail model...



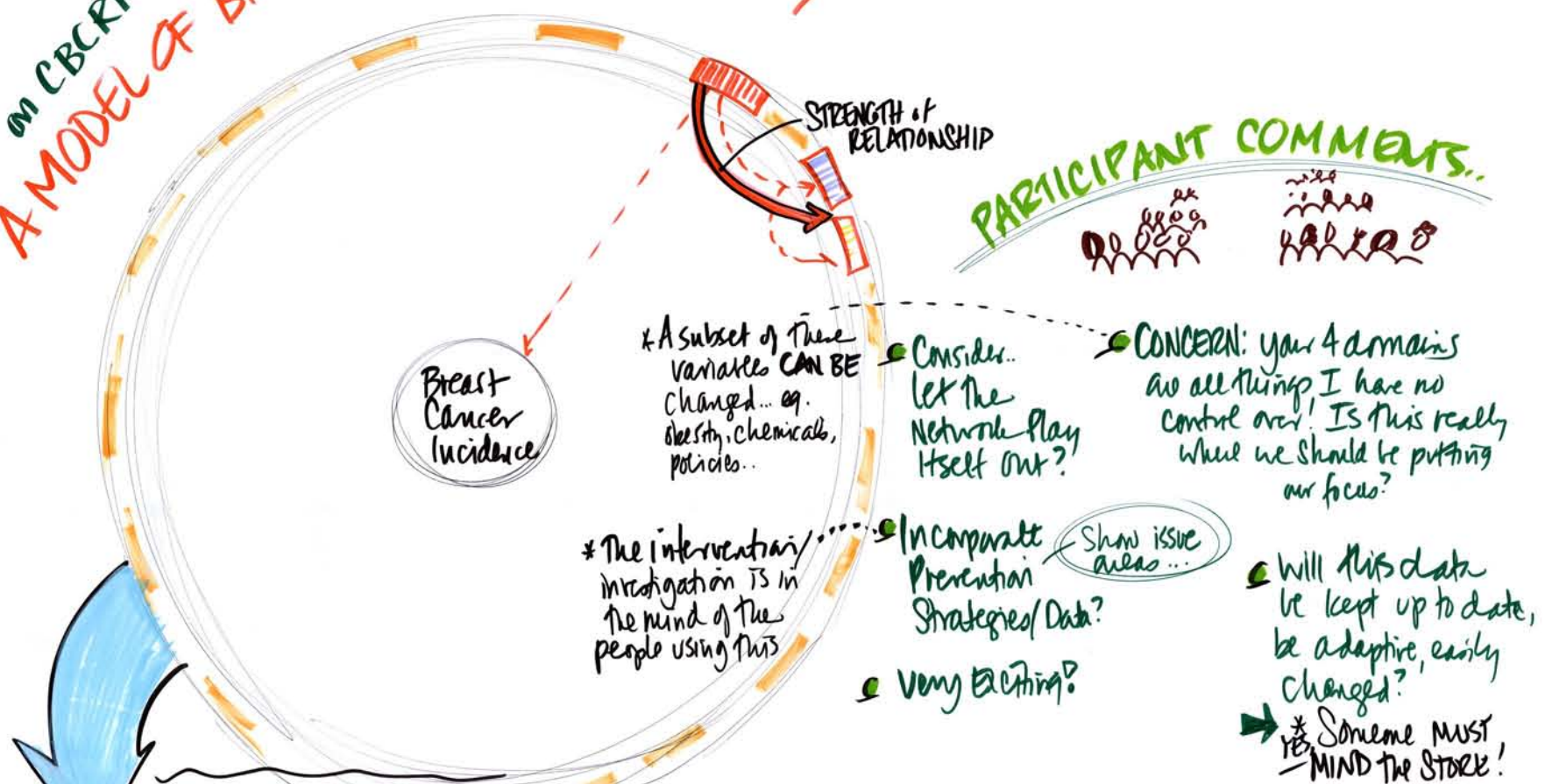
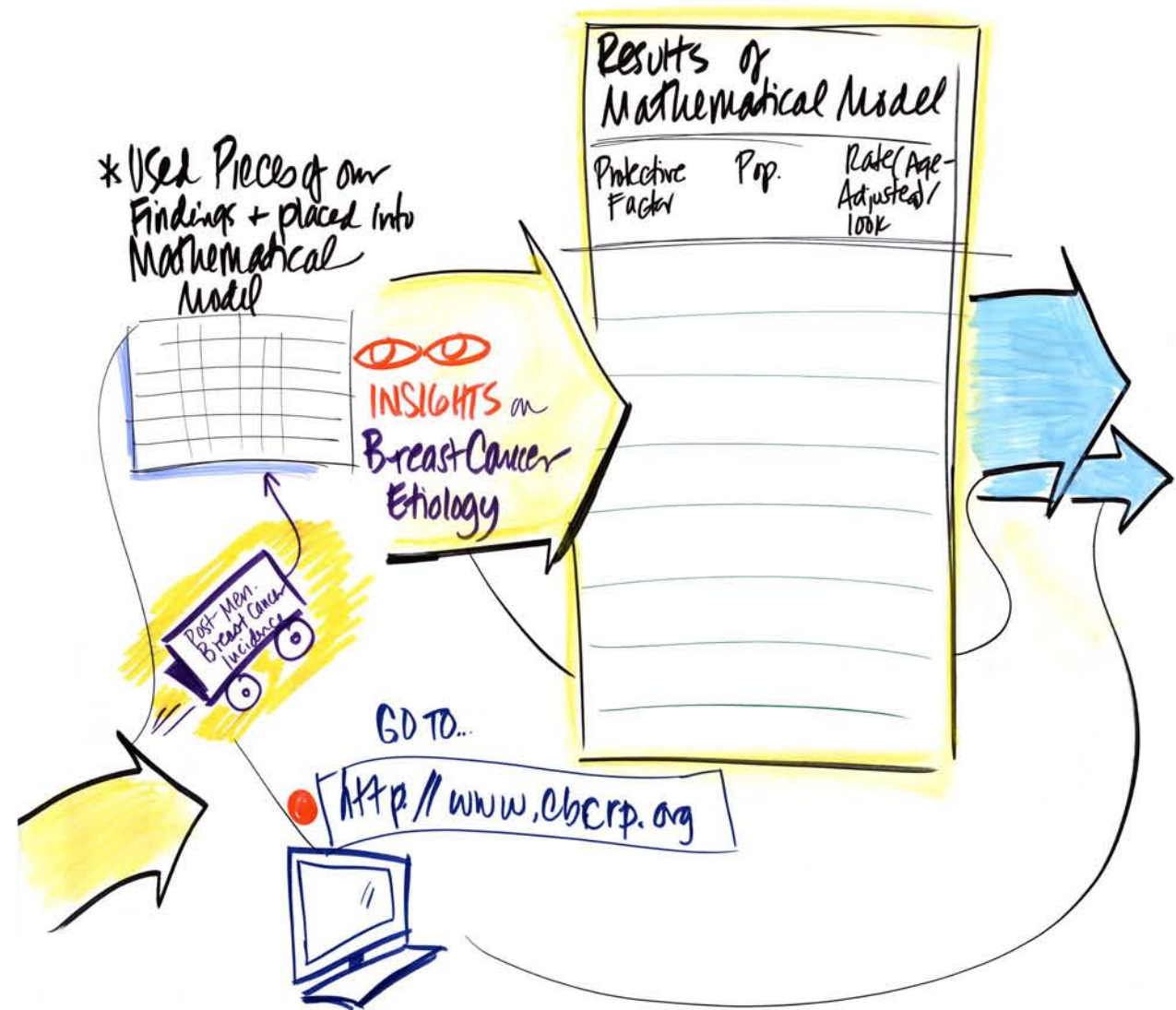
☆ (THICK ARROWS = strongest relationship)  
☆ ETIOLOGY - family history

**BEHAVIORAL DOMAIN!**

**BIO DOMAIN**

A general approach

# on CBCRP Website! A MODEL OF BREAST CANCER CAUSALITY



- ### NEXT PHASE PARADIGM III
- ▶ Premenopausal Women
  - ▶ Include interactions - Agent-based Model
  - ▶ Integrate animal study results
  - ▶ New Expert Team
- Woman is agent
- pop. frame is CA.
- Lifecourse approach
- Building simple model based on known risk factors + biology
- Key Questions relate to: OBESITY, ENV'T. CHEMS, DISPARITIES
-

# DISSECTING BREAST CANCER CAUSATION

**Joan Venter**  
 ✓ Envmil + Biological  
 ✓ Risks

**Dr. Sarah Gehlbach**,  
 Wash. Univ. in St. Louis

Psychosocial, Contextual, + Biological  
 ... Causation...  
**MODEL**

**SOCIAL STRESSORS** +  
**CHEMICAL**



## EPIGENOMICS

The ENVIRONMENT may SHAPE the Genome by modifying the Epigenome

- \* Social Exposures
- \* Chemicals

Epigenetics may play a ROLE in BC Subtype.

- FUNDAMENTAL CAUSES
- PATTERN of SOCIAL ORIGIN
- INDIVID. CHARACTERISTICS
- BIOLOGY

Early life Events Related to Adult Breast Cancer.

Maternal death in childhood contributed significantly to risk of BC after controlling for...

Subtypes Vary by **RACE**

Breast Cancer Mortality Rise by Hormone Receptor Status + Race.

Map of Main Chain Grocery Stores Chicago

## SPEAKERS

Pathway from SOCIAL ISOLATION to BREAST CANCER

The organism tries to DEAL WITH ONGOING STRESSORS

Increasing Social Isolation - Need to Belong

Available Social Tib...

FOOD INSECURITY for WOMEN

- Skip meals
- give best food to kids
- et.

Socioeconomic Status is associated w/ tumor subtype...  
 ea. Hispanic women...  
 lowest socioec. status associated w/ highest risk

RISK is ASSOCIATED w/ INCOME



BC Mortality 70% higher in low-ecan/ poverty areas.



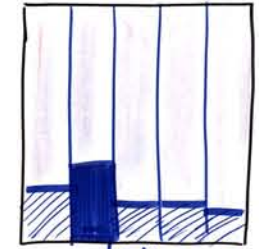
**Dr. Scarlett Lim Gomez**, Cancer Prev. Institute of CA

## BREAST CANCER DISPARITIES: Factors That Contribute to Causation:

CURRENT EVIDENCE



For Black women, the gap has closed



Cancer Incidence Trends by Asian Amer. Ethnicity, US, 1990-2008.



Continued

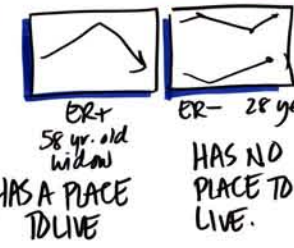
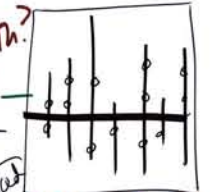
## BC DISPARITIES continue to EXIST! SOCIO-CULTURAL DOMAINS!

Role of Social Determinants of Health?

Intersectional

Effects of Race/Ethnicity, Education + neighborhood SES.

RISK of DEATH  
 Unusual findings...



Breast Cancer is Heterogeneous...



TRIPLE NEGATIVE  
 Socio-Econ. Status

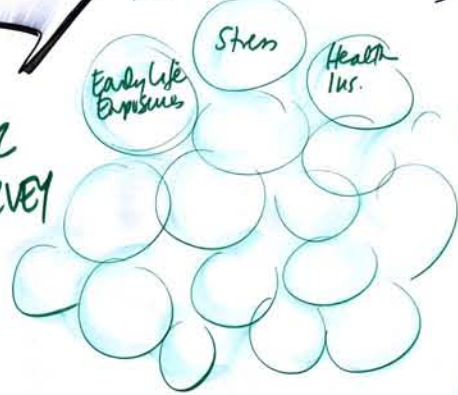
# Pilot studies

**FOCUSING ON** Immigrant Experience + breast Cancer Risks...

ASIAN CHI Study...  
• AAs + NHPs -  
• Nordic Hypotheses

Continued

★ OUR SURVEY



Neighborhood Stressors

Early Life Exposures...

The greater exposure = REDUCED RISK of BC.

- Body Mass Index - Increased BMI = decreased BC Risk
- Physical Activity - almost no BC Risk.

→ The Future

➊ Towards IMPROVED MEASURES of SOCIAL DETERMINANTS

➋ aim for CONSISTENCY ACROSS DATA.

➌ Relevance

➍ granularity

➎ Intersectional Effects

POPULATION-BASED CONTROLS...

eg. Race + Ethnicity...

SES...

Immigrant Nationality...

Language... Disability Status...

Sexuality, Gender...

STARS STUDY

Core Questions...

➋ Minimal set of questions that

➌ EXPANDED QUESTIONS

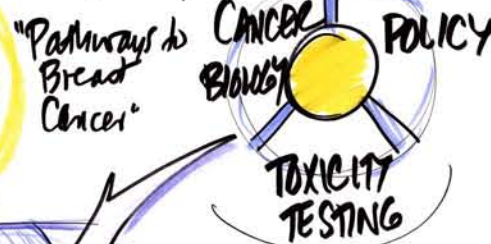
for research in which the domain is a major exposure or outcome of interest.

GO TO: [www.epic.org/stars](http://www.epic.org/stars)

Dr. Lauren Zeise, CA. office of Env. Hlth. Haz. Assess.

## ENVIRON'L HLTH. - CAUSAL PATHWAYS

Breast Cancer + Chemicals Policy Project



"Pathways to Breast Cancer"



LACK of RELEVANT TOXICITY DATA



NEG. Correlation between

➋ Biomonitoring

CHEMS in WOMEN

WE ALL NOW KNOW:

• Chemicals in wide use are FOUND in US!

➋ Just Tip off! Iceberg!



Interaction works, but watch for regrettable substitutions, eg.

- PBBs (vs) • PBDEs: A substitute
- flame retardant Standards
- Ban started in 2006 - levels now coming DOWN...

? What will reassure us that the social situation of lab. animals does not influence our findings?

That is a concern.

eg. "if male animals are in the cage, we get slightly different results!"

TOXICITY ASSAYS PROCESS:



Matrix...

- \* Not propose Specific Assays...
- \* Test for key biological events...

Created a VIRTUAL PILOT...

- 11 Chemicals - looked for assays that fit into proposed structure...
- "Chemicals, Carcinogenic Findings, Mechanisms"
- TAKE CARE WHEN WE PUT LABELS on CHEMS.

Worry - False Positive + Negatives

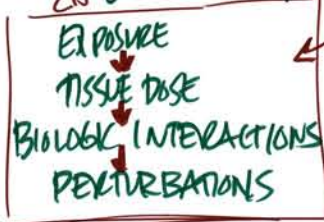
Stressors produce physiological stress.

we have MILES TO GO in UNDERSTANDING STRESSORS + STRESS!

WHAT CHEMS. to focus on??

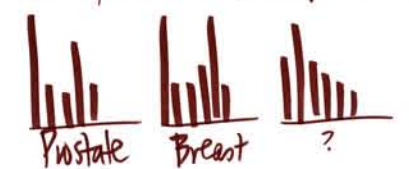
New Testing Program -

Look at exposures in perturbations.



POPULATION  
HOW EXTERNAL EXPOSURE LEADS TO BREAST CANCER

➋ BACKGROUND: Immigration changes in Cancer Incidence eg. immigrate to US/adapt our lifestyle.



➌ Background-dependent dose-response. Diet + BPA Effects on oogenesis...

➍ New Tests allow us to look at PARTS vs. "Complete" -

# Collective Conversations

## ROUND 1

"HARVEST" of ideas...

# WHAT COLLECTIVE DREAM IS EMERGING??

- EMPOWER women to make INFORMED DECISIONS
- Need for MORE Collaboration, LESS Competition
- Use the SAME SYSTEM for ALL STUDIES, to INTEGRATE DATA
- More DISSEMINATION of Knowledge... getting back to "NEW NORMAL"
- Need to SHIFT from numerous Research Studies. \$\$\$\$ spent building TEAMS (VS) Instead... EMBRACE EVERYONE in a SINGLE STUDY.
- "Zika, Zika, Zika, Drive attn. to B.C!"
- The IMPORTANCE of CLINICAL TRIALS... They HELP OTHER PEOPLE!

MAKE IT A PRIORITY END THIS Fucking SHIT! at EVERY LEVEL

HOW TO SHAPE POLICY

so that the govt. takes more responsibility in MONITORING Chems. we face daily/in our homes?

FDA etc. What is EVERY DAY EXPOSURE that cause Cancer?

STOP Cancer EARLY eg. biomarkers...

Saying "PREVENTION" is our DREAM - Stops our Conversations, it RESTRICTS ACTION

## PROVOCATIVE QUESTIONS THAT COULD BEGIN TO SHAPE the FUTURE of BREAST CANCER RESEARCH?

### ROUND 2

- WHAT CONSTITUTES ACTIONABLE TRUTH?
- WHO DECIDES WHY WHETHER TO APPLY THAT TRUTH, NOT?
- NEED MORE MEETINGS LIKE THIS? VS. JUST IN LABS
- "QUANTITIES MATTER" - need to talk more about this!
- WHO DECIDES WHAT TRUTH FACTS ARE?

A CLEARING HOUSE of QUESTIONS in EPIDEMIOLOGY

= ABILITY to KNOW WHAT CAN be DONE, NEXT LEVEL.

Things considered ACTIONABLE seem "IMPOSSIBLE"

NON: Seriously unbalanced around DRUGS BRING = POLICY + ACTION TOGETHER

"Efficiency" Problem: WOMEN are "protected" from making THEIR OWN DECISIONS

TO PARTICIPATE in as MANY different RESEARCH PROJECTS as they'd like!

We Need MORE FOCUS on metastatic Cancers: Why do some cancers metastasize while others DON'T? FOCUS on people whose tumors metastasize to learn what affects @ them?

Very LITTLE Support for DOING TRANSDISCIPLINARY COLLABORATION

MUST CHANGE THIS

Related STUDIES could be SHARED... even the SAME MICE!

your application won't be understood, = don't get \$\$\$

Use Terminology that gives Pt. a sense/more control

"Risk Reduction" vs "Prevention"

→ We CAN DO THIS (control)

→ We CAN'T DO THIS

**PART I**

**RESOURCES for Understanding Breast Cancer Causation**

Naz Sukes, Natl. Breast Cancer Coalition

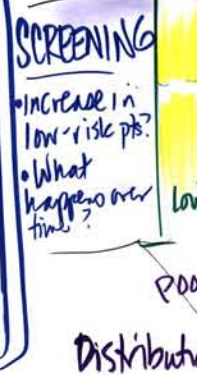
Dr. Laura Esserman, US San Francisco

Old Paradigm: inexorable progression  
 New Paradigm: Variable Progression

**ATHENA: A model for assessing breast cancer risk...**  
 Modernizing + Advancing the Art and Science of Personalized Screening

**WISDOM STUDY**  
 Pragmatic Design  
 Women referred to screen depending on (highest risk)

For Both Breast + Prostate Cancer



Distribution of good/poor

WE CAN MAKE A SEA CHANGE @ privacy

**QUESTIONS/Comments**

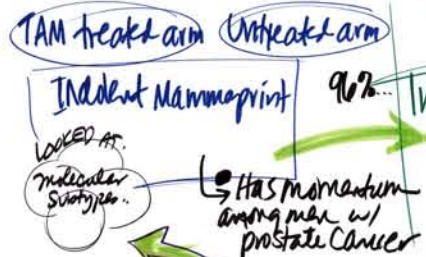
TUMOR REGISTRY must be preserved. Less Fragmentation!  
 Link these data w/ current w/ histories?

\* 115,000 in our Athena Network...  
 - Collect data - integrate environ'l. data - Microbiome needs to be a part..

IT'S DOABLE... [pay us to] put our DATA TOGETHER

THE ADVOCACY COMMUNITY needs to HELP US INTEGRATE!

Interesting! Indolent threshold...



**New terminology**

Indolent Cancer + IDLE Condition

Minimize indolent treatment

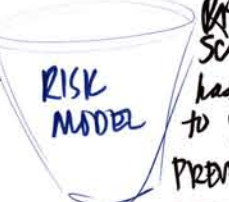
TREATMENTS HAVE CONSEQUENCES

Don't biopsy so much

MUST DCIS is overtreated



Risk-based Screening has potential to IMPROVE PREVENTION -> TREATMENT



IT'S DOABLE... [pay us to] put our DATA TOGETHER

TRANSFORMATIVE!

INTEGRATE PROCESSES OF CARE & RESEARCH

Everyone needs THE SAME DATA / RIGHT DATA

USE THE RIGHT DATA MANY TIMES!

Clinical Trial vs. Real World

U.S. only 3% treated in trials

**STUDY REAL WORLD CARE** in order to HELP REAL-WORLD PTS. The Importance of the IMMUNE SYSTEM in Therapy

STUDYING Real-world BREAST CANCER OUTCOMES

STUDY in New Ways

- Bilateral Mastectomy
- Lumpectomy w/ Radiation
- Unilateral mastectomy

Knowledge Gaps + Barriers

- Cancer data facts are fragmented
- Data sources do not span healthcare settings
- Patients perspectives are not incorporated.

**ONCOSHARE** an integrated multi-institutional database.



The Oncoshare Triple-Negative Cohort  
 Searched benign blood counts in EMR... low lymphocyte after treatment = less chance survival.

What Predicts Mastectomy?

1. Stage
2. WHERE to live/treated

HOTSPOTS of over-utilization?

Trends - group that travel between the two entities = double mastect.

Create + Share better DECISION TOOLS w/ pts.

Care should be collaborative WITH the pt./not "AT" the pt

Focus Groups on Patients' PAIN Priorities...


How is Tumor Genomic Testing Used?

22 papers published



Found 15-20% overlap (pts. who move between institutions to receive care. Interesting.)

Hard to crack over-datasets.

How to educate women about over-treatment?

Change our Classifiers

Come up w/ common DEFINITIONS "WHAT IS Breast Cancer in 2016?"

Rel. on Patient Reported Data too

P.6

# PART II

RESOURCES for Understanding Breast Cancer Causation

Unice Barlow, Zero Breast Cancer

Community Engagement in the Research Process



Community based participatory research



"a collaborative approach ... combines knowledge w/ ACTION"

HERMOSA "Beautiful" / Beauty Products Health + Environment Research on Make-up of Salinas Adolescents

- Dr. Kim Harley UCB
- Kimberly Parra - Clinica de Salud del Valle de Salinas
- Carolina Mundo - Youth researcher



Worked w/ CHAMACOS YOUTH COUNCIL

The next generation of environmental Hth. leaders...

Concerned @ Endocrine Disruptors: for Adolec. Girls in particular

- Phthalata
- Parabens
- Triclosan (antibact.)
- Oxybenzone

- 100 Girls
- Pre-intervention visit:
  - recent product use
  - Urine Sample
  - Educ. @ EDs in make-up

STUDY AIMS...

- \* Test for chems. that are hormone disruptors
- \* Empower local youth in Sci. research
- \* work w/ local teens to develop



Tested ALTERNATIVE PRODUCTS.

Recruiting/ Interviewing



## RESULTS

Triclosan High whomever used Colgate + Hand Soap.

Oxybenzone High

High Paraben in girls who used makeup everyday!  
 Phthalata... decreased by 35% after 3 days of less chem. products  
 Butyl paraben. 40% + increase in



- Can lower endocrine levels 25-45%
- Low chemicals help
- Empowered youth in Salinas to becoming HEALTH ADVOCATES

2016

The Peer to Peer Pesticide Study } Salinas teens' exposure to pesticides near ag. fields.

WOMEN FIREFIGHTERS BIOMONITORING COLLABORATIVE

Leif Heather Butler - United Fire Soc. Women, SF Fire Dept.

Rachel Morello Frosch, UCB

"STEP INTO YOUR FEAR"

"Mounting concern among SF firefighters about rates of premenopausal breast cancer among the women in their ranks"

SF FD has one of the largest pops. of women among its ranks in U.S. (N=225)

NYPD has less than 1%



"Advancing the rigor, relevance, reach of exposure science through community-driven research"

NO STUDY in cancer in women firefighters!

Created the WOMEN FIREFIGHTER BIOMONITORING Collab. Team.



experienced every level of the study. Helped get the SAMPLES... blood urine. Now being analyzed.



IS our job causing Breast Cancer?

Wfbc Emphasizes this

EXTINGUISHING BREAST CANCER from FIREFIGHTING SERVICE

"RIGOR RELEVANCE REACH"

**ROUND 3** To Create **Dramatic breakthrough,**

**WHAT CAN WE DO TOGETHER, THAT NONE OF US CAN DO ALONE?**

**AFFECT POLICY** More responsible ...

at all levels:  
\* FED  
\* STATE  
\* CITY

**HARVEST EXPERTISE, SKILLS**  
from ✓ Researchers  
✓ Advocates  
✓ Law people

Answer questions we didn't know we needed answering!

**PARADIGM SHIFT**  
from "PUBLISH OR PERISH" to "Collaborate to Accelerate"

Look for different **MODES** that might be transformative - do things in new ways as necessary.

**ROUND 4**

**HOW MIGHT WE COLLABORATE TO REALIZE OUR DREAMS?**

**TOGETHER**

ea. Collaboration between **RESEARCHERS + ADVOCATES**

**DATA** = Get past how it's kept now...  
↳ Pts owning their own records, slides, tumors in tumor bank

I WANT MY OWN DATA!

Work together to keep **FUNDING** coming

Break down silos



VP's Biden... "Cancer MOON SHOT"  
\*all work on it

More Avenues for us to Collaborate

Access to Data is VERY IMPORTANT so we may collaboratively answer questions

Collaborate to ensure info. is desensitized to help w/ get healthcare w/o "pre-existing penalties"

Lack of Capacity + \$\$  
- so many community agencies trying to survive, who are **DOING** this work.

Ask your hospital to release your [info., tumor, etc.] to **YOU**

**WHAT BARRIERS DO WE IMAGINE?**

**HOW ARE WE GOING TO OVERCOME THEM?**



Need Holistic Approach to Studying, researching, getting to solutions that allow **FULL ACCESS** by pt. to all their data + tumors, etc.

Funding is silo'd - given to ppl. w/ very strong research background + very real possibility of a breakthrough



**CHANGE** is like turning the **TITANIC**

100+ different languages in SF = so many challenges.

Cultural, Superstitions affect outcomes

Cancer continuum education - **not enough \$ given to MINORITY Communities + Scholars**