

Global Challenge to Prevent Breast Cancer

Summaries of Ideas Submitted

California Breast Cancer Research Program

May 23, 2019

This document includes summaries of the ideas submitted to the Global Challenge to Prevent Breast Cancer. Submissions by the challenge winners appear first, followed by the remaining finalists, and then the remaining submitted ideas are presented in alphabetical order by submitter last name.

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1. (GRAND PRIZE, RESEARCHER) Breast cancer prevention: awareness, avoid, advocacy

Young women are exposed to carcinogens during puberty; here we will create awareness, help young women avoid exposure, and create advocacy.

Summary:

During puberty, a woman's breasts are vulnerable to environmental damage ("window of vulnerability"). Early exposure to heavy metals, carcinogens, and unhealthy foods (refined sugar, processed fats, food additives) are thought to promote molecular damage that increases breast cancer risk.

It is difficult to prevent exposures during puberty; young women are repeatedly exposed to media messaging that promotes unhealthy foods. Young women living in disadvantaged neighborhoods experience additional challenges including lack of access to healthy food (food-deserts) and contaminated water and soil (neighborhood red-lining).

Through our K-12 STEM programs, we will engage elementary/middle-school girls in community-science. Students will measure environmental toxins in their tap water, read food labels, and identify food additives; we will work with students to develop strategies to reduce exposures. With our STEM team students will 1) test water and soil, 2) teach about diet, and 3) work with government to develop an action plan.

Submitted by:

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Chris Sistrunk
Mayra Serrano
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John Tucker
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Applicant category:

Researcher/Scientist

2. (GRAND PRIZE, ADVOCATE) California Ports: Air pollution interventions and breast cancer risk in local communities

Biomonitoring residents living near California ports before and after implementation of pollution reduction policies will provide evidence of their effectiveness at reducing exposures to chemicals linked to breast cancer.

Summary:

California houses the two largest ports in the U.S. and overall, California ports account for more than 40% of the containerized imports into the country. Goods shipped into our 8 major ports must be transported by truck and railway from those locations across the U.S. Emissions from all aspects of this transportation system have a major impact on the communities living around the port – most often communities of color and low-income communities. We propose biomonitoring residents living at various distances from five of those ports – Los Angeles, Long Beach, San Diego, Oakland and Richmond – both before and after specific diesel emissions mitigation strategies. Biomonitoring will provide direct evidence on how much of the emissions community members are absorbing into their bodies and whether emission reduction strategies are improving air quality and/or impacting the level of pollution in people's bodies.

Submitted by:

Nancy Buermeyer

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San Francisco, California, United States

Janet Nudelman

Applicant category:

Advocate/Non-Researcher

3. (AUDIENCE CHOICE AWARD) Spice it Up: A New Way to Use Curcumin

Imagine being able to repurpose an inexpensive and abundant natural ingredient to prevent breast cancer, while also enhancing skin health.

Summary:

Curcumin is an herbal supplement proven to have remarkable antioxidant, anti-inflammatory and antitumoral properties that can be harnessed for breast cancer prevention. It has been found to help regulate the cell division and self-renewal of breast cells. However, when taken orally, poor bioavailability and limited solubility have hampered curcumin's efficiency in disease prevention. Advances in biotextile research have permitted scientists to envision innovative transdermal delivery systems, no longer requiring adhesives to penetrate the skin barrier. I believe that a bra pad or insert engineered from curcumin-loaded fibers could be a safe, natural and targeted tool for breast cancer prevention. Curcumin is readily available and affordable, presenting a preventative option that would be cost-effective for women from all socio-economic backgrounds. By also incorporating skin-enhancing beauty supplements within the disposable bra inserts, such as green tea or honey, healthy women of all ages might be encouraged to wear these daily.

Submitted by:

Michele Atlan

Vice-president, Breast Cancer Care & Research Fund
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Applicant category:

Advocate/Non-Researcher

4. (FINALIST) Mapping the human exposome to uncover the causes of breast cancer

Exposome-wide association studies that measure a rich set of molecular information in biospecimens can discover unknown causes of breast cancer

Summary:

A significant proportion of variation in individual breast cancer (BC) risk is unexplained. It is reasonable to infer that unexplained BC risks are caused by a myriad of exposures and their interactions with genetic factors. Most epidemiological studies investigating environmental contribution to BC risk have focused on a limited set of exposures and outcomes based on a priori knowledge and, as a result, are likely to miss important relationships. We hypothesize that by measuring a rich set of molecular information with omics (e.g. metabolomics, adductomics, and transcriptomics) and using a case-control design where cases are women with BC or phenotypic measures associated with BC (e.g. high breast density, chronic inflammation), exposome-wide association studies (EWAS) can pinpoint novel environmental risk factors associated with these outcomes. This will further our understanding of how environmental exposures interact with genetics and impact women's health, and provide evidence to support new BC prevention strategies.

Submitted by:

Vincent Bessonneau

Research Scientist, Silent Spring Institute
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Applicant category:

Researcher/Scientist

5. (FINALIST) To Prevent Breast Cancer, Eradicate Bovine Leukemia Virus (BLV) in Cattle

Since about 60% of US breast cancers are caused by bovine leukemia virus (BLV), eradicating BLV from cattle could dramatically reduce future breast cancer incidence.

Summary:

Those of us who consume beef and dairy products frequently, are consuming a likely cause of breast cancer. 84% of dairy herds and 39% of beef herds are infected with bovine leukemia virus (BLV), shown by 3 studies in the USA to be significantly associated with breast cancer (BC) and perhaps responsible for about 50% of all BC cases. The most logical way to prevent human consumption of BLV is to eliminate it from the cattle. This has been successfully achieved in Europe and Australia/New Zealand. Why not in the USA? Of course, it's expensive for ranchers to change their money saving practices that, unfortunately, help spread BLV among cattle, so it becomes a policy issue: How can we persuade 1) beef and dairy industry to voluntarily take the initiative to make their herds BLV-free, or 2) a governmental agency to mandate BLV eradication from herds? I propose to first survey California beef/dairy ranchers to educate them about the issue and collect their opinions about and suggestions for the best strategy for BLV eradication.

Submitted by:

Gertrude C. Buehring

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Applicant category:

Researcher/Scientist

6. (FINALIST) Environmental Breast Density: The Clue to Preventing Breast Cancer

CBCRP can put to use valuable but overlooked California resources to find and reduce environmental determinants of breast density to prevent breast cancer

Summary:

Researchers say that the next step to reduce breast cancer is to control breast density. Why? ...Because high density accounts for many cases. And at least half the time density is due to factors other than genetics. Environmental chemical exposures are likely a large part of the picture. The problem is that there is no substantial effort to link density information on mammogram reports with exposures during times of chemical susceptibility like in utero, puberty, pregnancy, postpartum, and peri-menopause. Now, with density scoring being reported routinely for mammograms, it is possible to find out, especially in California where there are study populations that can link exposures in early life to density. The opportunity is here. The hold-up is lack of focus and funding to use existing resources. Results could reduce early breast cancer by 39% or more via advocacy to reduce deleterious population-wide exposures.

Submitted by:

Barbara Adler Cohn

Research Director, Child Health and Development Studies, Public Health Institute
Berkeley, California, United States

Applicant category:

Researcher/Scientist

7. (FINALIST) Keeping abreast of prevention in chemical safety testing

Make knowledge linking breast cancer risk and chemical exposures accessible and measurable, using the rodent mammary gland, to prioritize prevention in safety testing.

Summary:

Chemical safety testing is the only way to catch dangerous drugs and chemicals before they are put into use. Unfortunately, current methods don't capture if a chemical alters breast development and increases susceptibility to cancer. This is a concern because common consumer product chemicals, pollutants, and pesticides with endocrine disrupting activity alter mammary gland development, producing changes that indicate they could also increase breast cancer risk. This research program will address two important barriers by 1) documenting the biological steps linking endocrine disruptor exposure early in life with changes in mammary gland development and subsequently with increased tumors, and 2) developing standard methods to measure altered mammary development and intermediate endpoints that can be linked to tumors. By involving multiple laboratories in creating standardized methods and submitting these to government agencies, this project will facilitate worldwide adoption of mammary gland assessment in chemical safety screening.

Submitted by:

Andrea R. Hindman

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Newton, MA, Massachusetts, United States

Jessica Helm

Applicant category:

Researcher/Scientist

8. (FINALIST) Low Dose Naltrexone (LDN): The New Breast Cancer Prevention

Using Low Dose Naltrexone (LDN) as a low cost, broad range, new method to prevent breast cancer and cell mutations.

Summary:

The idea of using LDN in cancer patients has been around since the early 1980's as a complimentary medication used in stage 4 patients. Because the FDA will not approve an official clinical trial, there have been only a few independent studies conducted. All have shown success in preventing tumor growth. Evidence suggests that when endorphins bind to the cancer cells, this triggers apoptosis and stimulates natural killer cells and helper T cells. Studies suggest a 75% decrease in tumor size using LDN. Because of the success of LDN in other autoimmune diseases, especially in cancerous tumors, the logical thought is that LDN could be used as a form of prevention. To my knowledge, there have been no studies that have been conducted concerning this topic. This innovative step in prevention could be immediate for BRCA+ individuals and current breast cancer survivors.

Submitted by:

Laura Markuly

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Derby, Kansas, United States

Applicant category:

Advocate/Non-Researcher

9. (FINALIST) In utero and pre-conception determinants of breast cancer risk

Multi-generational epigenetics studies are needed to understand how we can prevent breast cancer not only in ourselves but also in future generations by modifying our lifestyle factors and environmental exposures.

Summary:

Epidemiological studies clearly implicate environmental/lifestyle factors in breast cancer etiology; however, the associations are generally weak and ill-defined. Exceptions include the increased risk among women whose mothers took diethylstilbestrol (DES) or exhibited high levels of DDT while pregnant with them. These examples show that in utero exposures to chemicals can significantly increase breast cancer risk and support the developmental origins of breast cancer. Animal studies suggest that parental nutritional experiences during pre-conception can also influence female offsprings' susceptibility to breast carcinogenesis, possibly through epigenetic mechanisms. Identification of additional in utero or pre-conception factors associated with breast cancer risk in humans, understanding the molecular mechanisms mediating these effects, and establishing causality would present opportunities for breast cancer prevention focusing on improving parental environmental exposures and lifestyle during pregnancy and pre-conception.

Submitted by:

Hannah Lui Park

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Irvine, California, United States

Applicant category:

Researcher/Scientist

10. (FINALIST) The Mother of All Primary Prevention Assays

Just as blood pressure is used to monitor risks of cardiovascular disease, monitoring key facilitators of cancer, chronic inflammation, can be used to monitor risk of breast cancer.

Summary:

Primary prevention is a difficult area of medicine because people are often unmotivated until experiencing actual disease. Also, any assessment of, or intervention for, risk must cause no harm to healthy people, be inexpensive, easy to administer and accessible to all. Monitoring blood pressure for primary prevention of cardiovascular disease has been effective. I propose that a similar test be developed for breast cancer risk. It is well known that chronic inflammation (CI) is the common denominator in many events that initiate or facilitate cancer. Lifestyle events such as depression, obesity, no exercise, exposure to pollutants, carcinogens, smoking or endocrine disruptors all incite CI and have been cited as contributing to breast cancer risk. Developing a non-invasive assay to monitor individual CI levels would identify those whose cumulative exposure to these factors put them at greater risk for breast cancer. Interventions to lower this index would allow development of prevention tactics where success is gauged in real-time.

Submitted by:

Thea D. Tlsty

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Applicant category:

Researcher/Scientist

11. Comprehensive Health Literacy: A Tool for Primary Prevention

This idea empowers women and their community to identify and address individual modifiable risk factors which could result in reduced incidence rates in 5-10 years.

Summary:

Breast cancer is caused by an interaction of multiple risk factors including but not limited to genetic factors. Hence, our research model proposes an interventional study using a multifaceted approach that addresses risk factor prevention at multiple ecological levels. The central premise of this research proposal is two-fold: 1) to educate women ages 25-40 years on their environmental risks (e.g. endocrine disruptors), behavioral risks (e.g. diet, physical exercise), and occupational risks (e.g. operating medical imaging equipment) of developing breast cancer and 2) develop and disseminate a holistic health literacy and referral system via a collaborative effort of insurance companies and healthcare providers. This initiative will create policies that require 1) health insurance companies to provide preventive care coverage and 2) healthcare providers deliver holistic risk assessments at intervals that address behavioral factors, environmental and occupational exposures, in addition to genetic factors.

Submitted by:

Faith Ajayi

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Applicant category:

Researcher/Scientist

12. An app to track daily factors that might have role in causing breast cancer

My idea basically is to make a genotyping for females then track their daily life style and what others factors they are exposed through an app.

Summary:

Breast cancer is a complex disease that needs both genetic and environmental factors in order to happen. If genotyping for susceptible genes is done, besides tracking the daily environmental factors this could help researchers to see what and how factors help in developing breast cancer and could set a future plan according to the derived algorithms from this app that records all the daily activities.

Submitted by:

Tasnim Isam Abdel Rahman Al Rashaideh

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Applicant category:

Researcher/Scientist

13. Scalable educational platforms to reduce environmental breast cancer risk

Projects will develop and test educational platforms that engage all women in reducing personal and population-level exposure to environmental breast carcinogens.

Summary:

This program supports the development and evaluation of scalable educational platforms that lower personal and population-level exposure to environmental breast carcinogens. While two-thirds of breast cancer risk is attributable to the environment, women still consider family history the primary risk factor for the disease. This program will improve primary prevention by creating platforms that educate women about environmental risk factors and empower them to lower exposures for themselves and others. Interventions should be accessible to demographically diverse women and address a broad suite of exposures in air, food, water, building materials, and consumer products. Innovative platforms will engage participants using strategies like gamification, emotional appeal, and community building. Ultimately, platforms that effectively change behavior have the potential to lower individual breast cancer risk, and also contribute to changing market demand and increasing support for chemicals legislation.

Submitted by:

Katherine Boronow

Staff Scientist, Silent Spring Institute
Newton, Massachusetts, United States

Applicant category:

Researcher/Scientist

14. Advancing breast cancer prevention through intergenerational interventions

Intergenerational interventions aimed at women living in underserved communities may improve primary breast cancer prevention by modifying lifestyle and behavioral factors.

Summary:

Women living in underserved communities have poor access to breast health information, which represents an important barrier for primary prevention. These women are disproportionately affected by advanced breast cancer, mainly because they seek help later and struggle to overcome access barriers. Current strategies are limited because underserved women at risk for breast cancer have limited educational opportunities. On the other hand, children and adolescents have continuous access to educational forums, representing an extraordinary opportunity for the dissemination of primary prevention interventions. Improving cancer awareness in adolescents could equip them with knowledge and help-seeking behaviors, and favor intergenerational transmission of this information to older female relatives, thus having an amplifying effect. We propose for CBCRP to fund research aimed at developing and testing intergenerational interventions targeted towards primary prevention, including changes in lifestyle, behavior, social and cultural practices.

Submitted by:

Yanin Chavarri Guerra

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Mexico City, Mexico

Enrique Soto Perez de Celis

Applicant category:

Researcher/Scientist

15. Breast cancer in postmenopausal women is preventable

Breast cancer in postmenopausal women can be prevented by the elimination of the exposure to estrogen and chemicals with estrogen-like activity.

Summary:

While the incidence of breast cancer increases with age in postmenopausal women in the U.S., it peaks around the stage of menopause in many countries. We hypothesize that estrogen is a key driver of breast cancer incidence in postmenopausal women, as 70% of postmenopausal breast cancers are estrogen-dependent. Estrogen levels drop drastically after menopause, explaining why the incidence of breast cancer declines around this period. In the U.S. and many western countries, the elevated rate of breast cancer in older women is thought to be due to non-physiological exposure of estrogen and its mimics in the environment. Therefore, the risk of breast cancer in postmenopausal women may be reduced by modifying life style (e.g., diet, body mass index), lowering exposures to drugs that enhance estrogen, and eliminating the contact to endocrine disrupting chemicals (EDCs) acting like estrogen or inducer of in situ estrogen production.

Submitted by:

Shiuan Chen

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Reina Haque

Yen-Shen Lu

Ching-Hung Lin

Michele Rakoff

Applicant category:

Researcher/Scientist

16. Pink Blue

With over 2.1 billion smartphones, we have a great opportunity to change the world. Pink Blue mobile app will self-navigate people to breast cancer care centres.

Summary:

Global inequity to access to breast cancer prevention is on the rise, as several communities, have limited access to knowledge, diagnostic and treatment centres. Hence, there is a need for the use of technology to educate, empower and enrich communities to know what they need to do to prevent and reduce the burden of breast cancer.

Submitted by:

Runcie Chikeruba Wilson Chidebe
Executive Director, Project PINK BLUE
Abuja, Nigeria

Applicant category:

Advocate/Non-Researcher

17. Why Everyone Does Not Get Breast Cancer

We can find out why most women never get breast cancer, so we can learn how to safe guard their advantage and protect the rest.

Summary:

Pregnancy is an immunological wonder that requires maternal acceptance of the placenta. Evolutionary biologists say that human vulnerability to cancer is linked to evolution of the placenta which must invade maternal tissues and avoid destruction by maternal immune response. These features of human reproduction require invasive cells of fetal origin (trophoblast cells of the placenta) in combination with immune modulation of maternal origin in the uterus. Trophoblast cells have characteristics that enable proliferation, migration, and invasion, features that are hallmarks of cancer cells. However, in normal pregnancy the local environment of trophoblast cells differs markedly from the local environment of tumor cells. In pregnancy there is tight control of the invasion. But, women do not all respond the same way to pregnancy. Some have vigorous placentas despite threats like smoking. These women may be more vulnerable to tumors. If we find out how, we might learn to prevent breast cancer.

Submitted by:

Barbara Adler Cohn

Research Director, Dr.

Berkeley, California, United States

Dean Jones

Applicant category:

Researcher/Scientist

18. Reducing exposure to breast cancer-related chemicals through interventions

Identify new breast cancer-related chemicals, prioritize sources of exposure, and test methods for reducing exposure to the target chemicals.

Summary:

To lower the risk of breast cancer, many women want to reduce chemical exposures. However, the most important chemicals, exposure pathways, and behaviors to target are not well-known. This Idea supports primary prevention of breast cancer by identifying chemicals relevant to breast cancer and new, evidence-based strategies for reducing exposure. Newly-available toxicity data and exposure predictions will be used to identify priority breast cancer-related chemicals that provide immediate opportunities for advocacy and to design and test novel intervention strategies to reduce exposures. Chemicals will include pharmaceuticals, food and consumer product chemicals, and environmental pollutants. Exposure reduction will be assessed with biomonitoring and associated with changes in behavior. Responsive projects prioritize novel breast carcinogens, identify exposure pathways, and systematically evaluate the efficacy of exposure reduction strategies, which can then be scaled broadly to reduce breast cancer risk for women across California.

Submitted by:

Robin E. Dodson

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Ruthan Rudel

Applicant category:

Researcher/Scientist

19. Breast Cancer Risk Factors and Incidence among incarcerated women in CA

We know surprisingly little about harmful exposures, health care access, and health outcomes of women in prison, and this study will help fill that gap.

Summary:

Incarceration of women in California is a growing problem and disproportionately impacts women of color, particularly African American women who also face increased risk of and mortality from breast cancer. While we know health services in both jails and prisons are deeply inadequate, we know next to nothing about how that impacts breast cancer specifically. Due to this disturbing lack of research, little is known about incarcerated women's unique risk factors, screening access, treatment options once diagnosed, and long-term outcomes. This is true for both currently and formerly incarcerated women. Information from this study would be foundational for advocacy to address both increased risk factors and lack of services, affecting not only breast cancer but potentially many other health impacts in this highly vulnerable population.

Submitted by:

Connie L Engel

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Sharima Rasanayagam

Applicant category:

Researcher/Scientist

20. Grass Root Preventative Initiative

Breast Cancer awareness detection methods improved statistically, however educating young girls how to be aware of bodily change and development is key to prevention

Summary:

Alcohol, birth control pills, smoking, irregular physical exercise and unhealthy diets all contribute to the eventual risk of breast cancer. The promotional schools programme at Grass root level of mutual bodily respect for one another's bodies, an Alcohol and smoking awareness programme to educate youth the dangers and benefits thereof. Birth control pills have both risks and benefits while it prevents unwanted pregnancies it can risk possible start of breast cancer. Regular physical exercise should be promoted at schools for at least 30 min per day. Healthy eating habits and diets should be offered at schools especially in the poverty stricken countries. "Meals on Wheels" projects should include vegetables and fruits to schools. Schools should be encouraged to start fruit and veggie gardens to promote healthy eating. Kids should have a routine of the number of water to drink per day (with the a medical guide) instead of fizzy drinks.

Submitted by:

Amina A Gamielien

Financial Accountant, scormore online store
Cape Town, South Africa

Applicant category:

Advocate/Non-Researcher

21. Forecasting Breast Cancer Incidence in California: A Complex Systems Model

The complexity of breast cancer etiology requires the innovative application of systems models to inform prevention at the population level.

Summary:

Breast cancer is related to genetic, lifestyle, environmental and social risk factors that play out over the lifespan in complex ways. Factors at multiple levels of organization, including socio-cultural, environmental, behavioral and biologic influences, all interact and play a role in its etiology across the lifecourse. Previous work, supported by the CBCRP, has allowed us to build an agent-based microsimulation model (The Paradigm II Model) of the physiology and demographic distribution of breast cancer, connecting patterns across scales from the gradual transformation of human tissue to statewide incidence patterns. We developed the Paradigm II model to study (1) health inequities (including the effect of the earned income tax credit), (2) the effect of obesity-related interventions, and (3) the effect of environmental exposures. However, past mechanistic modeling efforts have been lacking in validation studies. The study we propose is to subject our model to falsification through empirical prediction.

Submitted by:

Robert Allan Hiatt

Professor, Associate Director of Helen Diller Family Comprehensive Cancer Center for Population Sciences, UCSF

San Francisco,, California, United States

Travis Porco

David Rehkopf

Applicant category:

Researcher/Scientist

22. A cure is found not in the world of medicine but in the world around you.

I strongly believe that the natural world can provide a cure for breast cancer. My wife was diagnosed with bc twice and we are now journeying on a Vegan diet to find a cure.

Summary:

Breast Cancer - my wife was presented with chemotherapy and radiation as her treatments. These were the options available to us - we did not know to consider an alternative - food. I asked several times how could I help my wife - how could I help her recover from her treatment, how could I prevent this from happening again, how could I look after her at home. Again and again the answer is there is nothing really that you could do. After the second bout of chemotherapy she was left with blood clots on both sides of her lungs and heart failure. What can we do tell help Sandra - take the medication. For the cancer? There is no preventable medication as she has had triple negative breast cancer she can not take tamoxifen - chemotherapy would now no doubt harm her body further and could perhaps be fatal. IS THERE ANYTHING ELSE THAT I CAN DO TO HELP MY WIFE. NO. My wife is now taking heart medication - strong medication - damaging medication - perhaps for the rest of her life. This is NOT our way forward, our journey now a Vegan Lifestyle.

Submitted by:

Michelle Allison Holborn

Individual, Individual

Durham, United Kingdom

Applicant category:

Advocate/Non-Researcher

23. Parabens, reproductive factors, and the primary prevention of breast cancer

Parabens are ubiquitous- their connection to breast cancer is an enigma. Examining them with reproductive factors that increase estrogen exposure tackles primary prevention.

Summary:

The incidence of pre and post-menopausal breast cancer continues to rise, propelling it to the number one cause of cancer in women, resulting in a major public health crisis. It would be remarkable to identify and conquer another contributor to this multifactorial disease that women are exposed to throughout their lives. One such common chemical is parabens- preservatives used to inhibit microbial growth and extend shelf life of cosmetics, drugs and food. The European Commission prohibited isopropyl, isobutyl, and benzyl parabens, whereas the US is far more tolerant. Parabens' estrogenic activity, measurement in human breast tissue, and ability to drive proliferation of estrogen-responsive breast cancer cells thrust paraben into the limelight of influencing breast cancer development. To date, no researcher has considered the synergistic effects between parabens and modifiable reproductive factors increasing estrogen exposure (breastfeeding, birth control pills). Ultimately, this approach could improve breast cancer primary prevention.

Submitted by:

Hillary S Klonoff-Cohen

Professor Emerita, University of California San Diego
Champaign, Illinois, United States

Applicant category:

Researcher/Scientist

24. Estrogen-Responsive Plant for Monitoring Carcinogens in the Environment

A genetically-modified plant can continuously monitor the level of hormones in soil and water and act as an alarm to prevent further exposure to these cancer-causing chemicals

Summary:

Long-term exposure to high levels of estrogen and its structurally-similar analogs increase the risk of breast cancer. However, continuous monitoring of these hormones in the environment using conventional tests is expensive, labor-intensive, and time-consuming. Moreover, in order to prevent the exposure to hazardous levels of these carcinogenic agents, they must be measured continuously even before they reach detectable levels. Thus, an ideal device for preventive monitoring must be passive (i.e., no extra work must be done), non-consumable, and sensitive to the analyte(s) being detected. Since the sources of estrogen are typically found in soil and water, a plant that is genetically modified to change its leaf color as a response to these hormones would be a suitable bio-device. The presence of such bio-device in key agricultural areas and bodies of water can allow authorities to issue "hormone level warnings" and decide appropriate interventions to lower the exposure of citizens to these harmful chemicals.

Submitted by:

Henson Lim Lee Yu

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Kowloon, Hong Kong

Applicant category:

Researcher/Scientist

25. Breast cancer risk factor info, aid for prevention or the status quo?

Are women given the full picture by the breast cancer charities when it comes to making informed decisions about environmental and occupational risk factors for breast cancer?

Summary:

Do we ever question the information that's given to women and men about their risk of breast cancer? Or why, for the last 50 years, that only prevention strategy has been to focus solely on diet, exercise and alcohol? Why is this reinforced in any media coverage of potential new environmentally or occupational linked risk factors, yet new treatments are welcomed and reported with no such caveat? Combined lifestyle risk and genetic factors only account for up to 40% of breast cancer, leaving 60% unexplained? The information provided by breast cancer charities and the media on risk factors and prevention needs to be fully referenced and media sources need to be published. This project would research the information provided and do a literature review of the media coverage for the last 10 years. It would call for full disclosure for such information, publicly available references and a list of media sources. Accurate information on risk factors to make informed decisions about health inclusive of where and how people live and work.

Submitted by:

Helen Maria Lynn

Campaigner and Researcher, Alliance for Cancer Prevention and From pink to Prevention
London, United Kingdom

Applicant category:

Advocate/Non-Researcher

26. Role of androgen receptor (AR) in breast cancer metastasis

Understanding whether AR promotes metastasis by inducing ER binding to promoters of genes involved in metastasis in ER+ breast tumors

Summary:

A majority (~70%) of breast tumors found to express ER α and a significant portion (~90%) of ER α -positive (ER α +) breast tumors are androgen receptor positive (AR+) (4). Although ER α regulates the transcription of genes which promote breast cancer cell proliferation, invasion, and survival (5), the role of AR in these processes remains controversial. So, the goal of this project is to understand whether AR promotes metastasis by inducing ER α binding to promoters of genes involved in metastasis in ER α + breast tumors.

Submitted by:

Avisek Majumder

Postdoctoral Scholar-Employee, University of Louisville
Oakland, California, United States

Applicant category:

Researcher/Scientist

27. Hope for people living with breast cancer

Building a global movement by doctors and direct stakeholders as advocates for breast cancer early detection as well as prevention through cancer advocacy organization.

Summary:

We believe that if we are able to continue our program for a long enough period the suffering of the breast cancer patient and their families might be resolved to a large extent over time. Try to remove social taboo, remove shyness, improve knowledge about cancer, spread awareness to every corner of rural areas.

Submitted by:

Aditya Manna

Chief caregiver, Narikeldaha Prayas
EAST MEDINIPUR, India

Shyamal Kumar Sarkar
Nabanita Mandal

Applicant category:

Advocate/Non-Researcher

28. Pathway to Prevention: Environmental Health Literacy as Prevention Strategy

The burden of environmental breast cancers can be prevented moving through environmental health literacy, to development of primary prevention strategies, to implementation.

Summary:

With 1 in 8 North American women facing a breast cancer diagnosis and increasing research suggesting 70% of these are likely related to environmental exposures, the opportunity to prevent future breast cancer cases is tremendous. Using the emerging Environmental Health Literacy framework, the research works with women in communities with high levels of exposure to breast carcinogens, first in assessing their knowledge of environmental risks for breast cancer, then building on and facilitating community collaborations for strategy development and finally in beginning to implement strategies for risk mitigation and disease prevention at the level of the community and up to various levels of government. It is time to shift the traditional focus from the individual, rooted in genetic and lifestyle arguments, to primary prevention and the broader environment and the conditions producing breast cancers beyond the individual.

Submitted by:

JANE Elizabeth MCARTHUR

Doctoral Fellow, University of Windsor
TECUMSEH, Ontario, Canada

Applicant category:

Researcher/Scientist

29. Breast Cancer Lifestyle App- prevention and data monitoring tool

Combine smart wearable device (watch, fitbit), and a free app to collect data on lifestyle,(exercise, diet etc) and provide information on breast cancer early detection.

Summary:

Exercise and a health lifestyle can minimise lifestyle factors contributing to breast cancer in non-hereditary incidences. Introducing a specific breast cancer prevention app, combined with data collected from a smart wearable device (smart watch or fit for purpose device) to track large populations over time to further consider if there is a strong link between lifestyle and the onset of breast cancer. This can be combined with information and reminders on early detection. This could become a world wide study with large data sets.

Submitted by:

Nicole M McMahon

General Manager 1800RESPECT, Medibank
Jerrabomberra, Australia

Applicant category:

Advocate/Non-Researcher

30. Increasing public awareness of genetic cancer risk using The Two/Too Rule.

Applying the "Two/Too Rule" (two or more cancers in same person, two or more generations, too young, too many, too rare) can help the public identify genetic cancer risk.

Summary:

The proposed project would work with genetic counselors, television script writers and the general public to develop print, graphic and narrative materials to increase awareness of the "Two/Too Rule" (two or more cancers in same person, two or more generations with the same cancer, too young (experiencing cancer much younger than average, too many (two or more relatives with the same cancer), too rare (e.g., male breast cancer)) can help individuals and families identify elevated genetic cancer risk in their own family health history.

Submitted by:

Sheila Murphy

Full Professor, Annenberg School for Communication at the University of Southern California
Marina del Rey, California, United States

Applicant category:

Researcher/Scientist

31. Hereditary Estrogen Positive Breast Cancer

Does hereditary high estrogen lead to generational breast cancer?

Summary:

It came to my attention that my own high estrogen seemed to create a craving for sugar. I have asked women for three years, whom I know were diagnosed with ER-positive breast cancer, did they too have an insatiable craving for refined sugar. Their answers are always yes. I also noticed that my 90-year-old grandmother who had breast cancer in the 60's seemed to eat mostly refined sugar. My father too had problems generating too much estrogen. I believe that testing generations of both men and women, with a primary relative diagnosed with ER-positive breast cancer, would be able to prove high estrogen was hereditary. This research might also prove useful in helping understand obesity as well as breast cancer. Early scans for high estrogen would help patients learn ways of managing the symptoms as well as taking precautionary measures such as preventive mastectomies and diet change.

Submitted by:

Stori Nagel

Founder, Haus of Volta

Murrieta, California, United States

Applicant category:

Researcher/Scientist

32. Why do women with dense breast have a higher breast cancer risk?

I want to know what key factors involved in the extracellular matrix (ECM) of a tissue that is considered to be highly mammographically dense contributes to breast cancer

Summary:

An important risk factor that is understudied and is now gaining attention in the media is the presence of mammographic dense tissue in the breast. 50% of women in the US have high mammographic density (MD). Women with dense breasts are 4-6 times more likely to develop breast cancer during their lifetime compared to women with low MD. Wolfe was the first researcher to observe and publish the association between the presence of dense breast tissue and the occurrence of breast cancer. Since then, several studies have confirmed this positive correlation. However, the mechanisms underlying the initiation and progression of breast cancer associated with MD remains largely unknown. My research aims and interests focus on this major problem. For my dissertation project, I am investigating the underlying cellular mechanisms and the cell-ECM interactions that play a role in developing breast cancer.

Submitted by:

Shayan Nazari

PhD student, UNC Charlotte

Rockville, Maryland, United States

Pinku Mukherjee

Applicant category:

Researcher/Scientist

33. Exploring New Strategies to Improve Breast Cancer Early Detection in Kenya

My idea looks at how we can effectively utilise existing resources at the primary care setting where the patients are to improve screening and early diagnosis of breast cancer

Summary:

Breast cancer incidence is increasing in Kenya with more than 64% of patients presenting late yet breast health programs are largely non-existent and screening rates are low. A shortage of doctors exists and currently only a few specialists provide screening and early diagnosis services. There is an urgent need to look at the most feasible and efficient way to utilize existing resources to improve early detection of breast cancer. Studies have shown that there is a general lack of awareness and knowledge on breast cancer among primary health care workers and the community. This implementation research program seeks to bridge the existing knowledge and skills gap and through task-shifting, utilise existing primary health care workers and mobile clinics infrastructure to avail screening services closer to the patient. Ongoing consultation with specialists and relevant policy makers will provide quality assurance. Appropriate screening registers and referral algorithms will be developed, validated and used during the research program.

Submitted by:

Mary Flaviane Nyangasi

PROGRAM OFFICER/ CONSULTANT, HECTA LIMITED

Nairobi, Kenya

Applicant category:

Researcher/Scientist

34. How Joining the Circus Can Prevent Breast Cancer

The circus and aerial arts provide an accessible exercise routine that may reduce the incidence of breast cancer by 20 to 80 percent through increased physical activity.

Summary:

Physical activity has been shown to be a primary prevention for breast cancer with previous research finding between a 20 to 80 percent decrease in risk of breast cancer in postmenopausal women and a 15 to 20 percent reduction in premenopausal women. Unfortunately, most exercise programs suffer from high attrition rates, especially since many programs may feel burdensome to participants. The circus and aerial arts (CAR) provide a fun, but still challenging and highly modifiable exercise program for all abilities which may allow participants to remain engaged. The aerial arts community also includes many role models of all sizes, abilities, and backgrounds that many participants may find inspiring. This type of community is critical to provide people who may be uncomfortable or possess low self-image the encouragement to consistently participate. CBCRP should fund research that makes this type of exercise accessible to all those at risk of breast cancer.

Submitted by:

Kelly A O'Shea

PhD / Senior Research Specialist, University of Illinois at Chicago
Chicago, Illinois, United States

Applicant category:

Researcher/Scientist

35. Process to Minimize Premature Cell Division and Maintain a Cell Colony

As the cells keep dividing on the tissue. The aim is to provide a cell colony environment that minimizes the premature dividing of the cell

Summary:

Cells dividing prematurely are likely to develop into cancer tumors. Targeting the tissue cells. This will provide the cell colony elements needed to prevent the premature dividing. This process allows the cell to divide at the stage where the cell can develop and divide without lacking any elements (ie. Proteins) that may trigger a premature division. This process is geared towards the lymph node tissue. The process is to extract mature cells from the tissue and culture the cells. After culturing the cells, the mature cells can be introduced into the tissue and the cells can re-inforce themselves. The cells have proteins that send messages amongst the cells to let them know to stop growing and to become senescent. The new mature cells will allow the tissue to repair itself from any deficiencies and prevent the cells from dividing prematurely. Therefore minimizing the breast to develop cancerous cells.

Submitted by:

Edgar Pavon

Self, Self

Ontario, California, United States

Applicant category:

Advocate/Non-Researcher

36. The Women's Wellness App For Life (WAFL)

WAFL is a lifestyle app focusing on eight personalized behavioral changes that can improve health and reduce ones risk of getting breast cancer.

Summary:

Studies show that an inherited predisposition accounts for only 5-10% of breast cancer cases. The other 90% is determined by our lifestyle choices. Compiling healthy lifestyle research into an easy to use, personalized app will create long-term sustainable changes that will dramatically decrease the odds of getting breast cancer.

Imagine a virtual coach that will guide you through eight of the key areas that have been linked with breast cancer: smoking, weight, nutrition, stress, exercise, sleep, environment exposures and alcohol usage. A coach that will raise awareness of the major factors that impact health, and provide scientific research about these health habits as well as proven tools on how to change bad lifestyle habits.

CBCRP has the opportunity to collaborate with great existing platforms to implement this app. We currently have apps for exercise, meditation, nutrition, sleep, and more. But no one has combined these key lifestyle elements in one accessible app. This is WAFL.

Submitted by:

Lori J Petitti

Advocate, Breast Cancer Care & Research Fund
Santa Monica, California, United States

Applicant category:

Advocate/Non-Researcher

37. Ensuring Access to, and Delivery of, Innovative Interventions on Breast Cancer

To engage targeting women to access to care by delivering health promotion & health literacy interventions plus eHealth on breast cancer prevention

Summary:

Systematic reviews about health promotion intervention have reported an association among health educations, BSE, physical activity, and breast cancer risk reduction. Health literacy includes the person's ability to read and interpret the necessary information about health so that they can take appropriate decisions for their health conditions. In addition, some useful suggestions from previous studies on how to collaboratively redesign and optimize existing eHealth tools may empower women to participate in preventive behaviors such as screening, able to access and interact with healthcare systems. To improve health outcome and reduce the incidence of developing breast cancer. We aimed to evaluate the acceptability of health promotion and health literacy interventions focused on health education, lifestyle modification, and avoidance of risk factors for use in breast cancer prevention in all regions of Thailand.

Submitted by:

Warunee Phligbua

Lecturer, Faculty of Nursing, Mahidol University
Bangkoknoi, Bangkok, Thailand

Kanaungnit Pongthavornkamol

Applicant category:

Researcher/Scientist

38. Breast cancer prevention based on naturally occurring resistance mechanisms

To design and implement a breast cancer prevention strategy based on the natural resistance observed in women with very low breast cancer risk

Summary:

Our suggestion utilizes the simple premise that a breast cancer prevention strategy can be developed by reproducing or simulating the natural breast cancer protective mechanisms identified in women who never develop breast cancer.

As one key example, our research in two population cohorts has shown that women who carry a common functional IGF1R gene variant and experience a hypertensive disorder of pregnancy (HDP) have levels of breast cancer protection that reach 90% when the episode of HDP occurs before the age of 30.

More on this specific example is provided below, but newer, bigger and more diverse population cohorts are validating these observations and creating the opportunity for additional similar discoveries. The availability of normal breast tissue from women with these characteristics and modern tissue analytical techniques enable determination of the underlying breast cancer protective mechanisms, creating new prevention approaches applicable to all women.

Submitted by:

Mark J Powell

Director, Breast Cancer Prevention Project
Greenbrae, California, United States

Christopher Benz
Christina Yau

Applicant category:

Researcher/Scientist

39. Relation Between Former Endocrine Therapies and Breast Cancer

Retrospective Cohort Study as a previous research of RCT; Former Endocrine Therapies and Breast Cancer

Summary:

This study is a retrospective cohort study using a national database of treatments. There is concern about health damage due to intervention because there is not enough prior research to make a randomized controlled trial with oral contraceptive. Moreover, in a randomized controlled trial using foods etc., many participants are required and it is difficult to secure the quality of the data. We believe that if randomized controlled trials with oral contraceptive can be conducted in subsequent studies, we will help many women out of breast cancer.

Submitted by:

Yoko Narikawa Shiono

Research Fellow, Tohoku University Hospital
Sendai, Miyagi, Japan

Applicant category:

Researcher/Scientist

40. Inhibiting the immortalization step in progression to prevent breast cancer

Breast cancer development requires prior immortalization; preventing immortalization would prevent malignancy, so study the human cancer-associated immortalization process.

Summary:

Development of human breast cancer requires immortalization of the initiated normal finite cell. If the immortalization step could be inhibited, progression to malignancy would be prevented. However, little is known about the human cancer-associated immortalization process due to lack of accurate models. The immortalization barrier does not exist in small short-lived animals like mice, so they cannot model this process. Likewise, an already immortal cell line, even if non-malignant, cannot be a model. It has been difficult to immortalize normal human cells, contributing to this knowledge gap. We have developed an experimentally tractable model of cultured human mammary epithelial cell (HMEC) immortalization that resembles what occurs in vivo. We have also shown that HMEC immortalization involves a process not present in any normal cell, but the underlying mechanism is not understood. We propose elucidating this cancer-unique process in order to develop therapeutics that inhibit immortalization, with little or no collateral damage.

Submitted by:

Martha Ruskin Stampfer

Senior Scientist, Lawrence Berkeley National Lab
Berkeley, California, United States

Applicant category:

Researcher/Scientist

41. Toilet Paper as Breast Health Campaign Canvas:A Cost-effective Intervention

Toilet paper is perfect for delivering campaign messages, it is cost-effective and sustainable, as the audiences' attention is guaranteed like the call of nature.

Summary:

Like tax and death, the call of nature has to be answered. Different from tax and death, bathroom visits happen multiple times a day, every day, with the toilet paper the only "paperwork" wanted and needed. Bathroom time often equates to away-from-screen time as well. All these factors combined make toilet paper a great campaign platform in terms of cost-effectiveness, sustainability, and scalability: no campaign materials will be unused, literally and figuratively. When people locked themselves inside a confined space for a period of time, providing them with persuasive breast health campaign messages have the potential to change personal and population attitudes and behaviors toward breast health and breast cancer, in terms of awareness, knowledge, communication, and screening activities. Reaching the target audience is also easy: only change the regular toilet paper in the ladies' restroom with message-integrated ones will do the trick, which also facilitates the evaluation process.

Submitted by:

Zhaohui Su

Assistant Professor, East Central University
Ada, Oklahoma, United States

Applicant category:

Researcher/Scientist

42. Never too young to start: Lifestyle factors & breast density in young women

Identify lifestyle factors that may reduce breast density in young women & increase their health literacy/awareness about breast cancer risks & breast density.

Summary:

Research has shown breast cancer (BC) risk increases with age and breast density is a predictor of BC in older women. Two identified factors that increase the likelihood of dense breast are being young and premenopausal. Yet to date, this population has been underserved in BC research, and as such there are missed opportunities to build the capacity of this population to proactively adopt potentially preventative measures that may reduce BC risk in later life. This proposed experimental pre- post survey study aims to investigate if specific modifiable lifestyle behaviours, namely reduction in alcohol intake, participation in daily moderate exercise, and intake of Calcium and Vitamin D can reduce breast density in younger women to ultimately help reduce BC risk. A participatory design component also will be conducted to develop a public health education campaign to increase younger women's awareness and health literacy specific to BC risks and breast density.

Submitted by:

Carmel Maria Taddeo

Lecturer (but currently on leave due to a breast cancer diagnosis), University of South Australia
Adelaide, Australia

Applicant category:

Researcher/Scientist

43. A population approach to preventing breast cancer across the life course

Promote breast cancer prevention by emphasizing normal weight and regular physical activity to adolescents and older women, while monitoring hormonal levels and biomarkers

Summary:

Breast cancer prevention has lagged behind the search for a cure. We have evidence that regular vigorous physical activity and diets that support normal weight would help prevent the disease. Birth weight and age at menarche determine who is likely to get the disease, so we need to enlist and educate women across age groups and monitor changes in their hormonal levels. We must reach women across social and economic structures, and we need to introduce and imprint terms like "breast health" in the public's consciousness, learning from successful heart disease prevention campaigns. The study design calls for a trans-disciplinary approach to population-based research that is distinct from pure scientific research. We will use social marketing strategies to reach out, enroll, and educate diverse groups in the population. In short, we are asking CBCRP to fund an innovative primary prevention intervention whose success could jump-start a breast cancer prevention movement.

Submitted by:

Nalini Visvanathan

Independent Researcher, None

Washington, Washington DC, United States

Nalini Visvanathan

Applicant category:

Researcher/Scientist

44. Protection of Breast Cancer Development via AhR Repressor (AhRR)

The primary objective of the present study is the investigation of the ability of the tumor suppressor aryl hydrocarbon receptor repressor (AhRR) to inhibit breast cancer

Summary:

There is strong evidence that environmental pollutants such as dioxins and numerous dioxin-like compounds promote malignancies including breast cancer. It has been well shown that the adverse health effects of these toxic compounds are mediated via a specific receptor protein, the so-called AhR (Aryl hydrocarbon receptor). Activation of the aryl hydrocarbon receptor (AhR) through environmental exposure to toxicants can lead to severe adverse health effects and development of breast cancer. More recently it has been found that the AhR may contribute to cancer progression by limiting the ability of our immune system to do its job, even without the exposure to toxic chemicals. AhR has emerged as an attractive target for new drugs in cancer therapy. Furthermore, the AhR's action is restricted by a specific repressor protein, the AhR Repressor (AhRR). The emphasis of this study is on the Repressor protein of the AhR (AhRR) and the mechanism of its suppressive action on breast tumor formation. With this research, we hope to lay the foundati

Submitted by:

Christoph Franz Adam Vogel

Professor of Research, UC DAVIS
Davis, California, United States

Colleen Sweeney

Applicant category:

Researcher/Scientist

45. Self-examination - making it part of a fun weekly routine

Add a catchy song (It's My Life - Bob Jovi, for example) and run a series of advertisements as fun cartoons showing how to self-examine breasts.

Summary:

A catchy tune will remind people to self-examine

Add a mini wake-up workout to it (wiggling toes, fingers, a sit up or two and shaking out) to make it a regime. Add this to longer version of cartoon

At the moment self-examination is seen as a boring thing we forget to do. Make it a wake-up routine in the short or longer version.

Like 'shit, shower, shave' let's have 'tits, tums, teeth'

Submitted by:

Linda Jane Walmesley

None, None

Dover, United Kingdom

Applicant category:

Advocate/Non-Researcher

46. Lifestyle interventions to reduce inflammation, boost immune system.

Because inflammation is broadly implicated, link primary prevention to healthy living – exercise, weight control, stress reduction, laughter, social, nutrition...

Summary:

Women are nurturers who often ignore their own needs, causing health issues.

Proposal: to establish a direct link between lifestyle and breast cancer (BC) risk reduction, by encouraging 100,000+ study women to reduce inflammation and boost their immune system for 5 years via lifestyle interventions.

Connect the dots that healthy diet, sunshine, exercise, sufficient good sleep, non-smoking, minimal alcohol, laughter, lower stress, maintaining social ties and life purpose all reduce inflammation, which may be an effective primary prevention strategy.

The key is educating people that lifestyle significantly influences health, specifically BC risk, and enable them to make good decisions most days.

Education strategies:

- Spread the message via BC screening programs and community groups/churches, billboards, schools, employers
- Doctors write prescriptions for specific healthy living strategies
- Daily laughter (See Emma Seppala Science of Laughter)
- Provide funds, identify community leaders for meetup groups re exercise, social events

Submitted by:

Martina Wood

Patient Representative, Survivor and Author - Smart Decisions about Breast Cancer; Patient Rep for Cdn Cancer Trials Group
Mississauga, Ontario, Canada

Applicant category:

Advocate/Non-Researcher