

# UC Office of the President

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UNIVERSITY  
OF  
CALIFORNIA

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# Supporting Research, Partnerships, Solutions

Research Grants Program Office

**2015**





Discoveries  
that change lives  
start here.



We fund research  
that directly benefits  
the people of California.  
From the food we eat,  
to the air we breathe,  
to the decisions we make,  
this research has a  
profound impact on  
our daily lives.





# Research for California and the World



At the Research Grants Program Office (RGPO), we provide the grantmaking infrastructure to ensure that research funding is allocated to the investigators, students and community partners who are best equipped to examine today's toughest problems and seek solutions. We fund projects that examine issues critical to California, with results that can be applied around the world.

We ensure that valuable research dollars make a genuine difference. Over the past four years RGPO has awarded over \$240 million in grants to researchers at UC campuses, our national laboratories, and other institutions throughout California. And, we work with our community partners and thought leaders throughout California to design new research initiatives.

Combining best practices and streamlined administrative processes to achieve low overhead costs, our grantmaking infrastructure is designed to maximize the money spent on California's most promising research. From a rigorous peer review selection process, to diligent award monitoring, the staff at RGPO ensure taxpayer research dollars are wisely spent.

Our excellence in grantmaking continues to gain recognition and inspire new research investment. On behalf of UC President Janet Napolitano, RGPO oversaw the launch of the new President's Research Catalyst Awards this past year, a \$10 million initiative. Likewise, in 2015, RGPO will become the new home of the Cancer Research Coordinating Committee, a systemwide opportunity funded by income from earmarked endowments to the University. Importantly, support from across the UC system resulted in a \$2 million increase in the annual budget for UCRI's Multicampus Research Programs and Initiatives.

This 2015 RGPO Annual Report tells the stories of how our funded projects will have a lasting impact throughout California and the world. I hope you enjoy it.

Sincerely,

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

“We make sure that valuable research dollars make a genuine difference.”

# UC's Research Grants Program Office

We oversee a grants portfolio of over \$240 million, funding over 800 projects and thousands of researchers throughout the state.

Our grant-awarding process is as thorough as any in the country, involving peer reviewers who are leaders in their fields. Our research programs build teams across campuses and with communities closest to the problems we're working to solve.

## Our programs...

Seed **Discovery**  
Spur the **Economy**  
Pioneer **Initiatives**  
Promote **Collaborations**  
Shape **Policy**

### CBCRP

California Breast Cancer Research Program fights to end breast cancer through innovative science and community participation.

### CHRP

California HIV/AIDS Research Program supports groundbreaking research that speeds progress toward the prevention and cure for HIV/AIDS.

### TRDRP

Tobacco-Related Disease Research Program helps protect Californians from the harmful effects of tobacco.

### UCRI

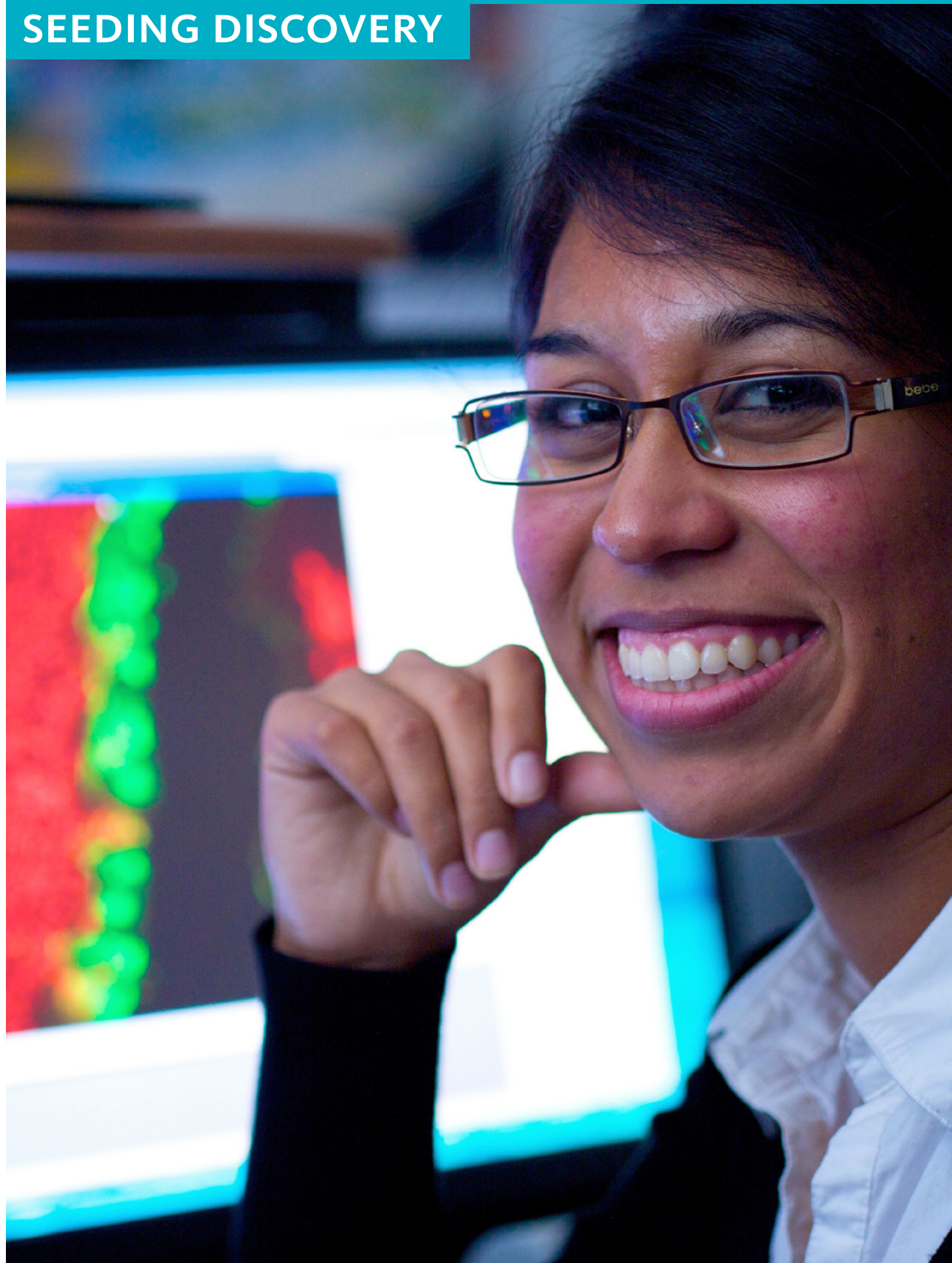
UC Research Initiatives supports multicampus research teams, partners UC and national laboratory scientists, and advances innovations that benefit California.



The stories behind  
our research are the  
stories of discovery,  
collaboration  
and innovation.







## Integrating data for novel solutions

Innovative study finds link between light-at-night exposure and breast cancer

Women in urban areas may be more likely to get breast cancer than women who live in rural areas. With so many potential reasons, no one knows exactly why.

But researchers at the Cancer Prevention Institute of California had an idea. If light-at-night (LAN) exposure in rodents causes circadian disruption and promotes cancer growth, could the same be true in humans? And if so, how would you test that?

With funding from the California Breast Cancer Research Program, these researchers tested their idea by overlapping three seemingly unlikely data sources: enhanced satellite data on nighttime illumination, biomarkers of melatonin, and existing survey data from the California Teachers Study (CTS) on indoor indicators of LAN exposure.

By cross-referencing these different data sources, the researchers found that women living in areas with very high levels of outdoor LAN had about a 10% increased risk of breast cancer compared to women who lived in the areas of low LAN exposure.

This potential link calls for further investigation, especially for workers with direct and repeated exposure to LAN. It's an important finding for breast cancer prevention, fueled by linking data sources in creative ways.

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With support from UCRI, UC Riverside and Los Alamos National Laboratory are developing inexpensive materials that store vast amounts of energy—a key to expanding the power we get from renewable sources.





# Reducing the toll on health

New study exposes the true cost of smoking in CA

A recent study has shown the unfiltered truth about the cost of smoking in California: \$18.1 billion annually, with cigarette tax revenue simply not keeping up. Smoking costs \$21 for every \$1 of cigarette tax revenue generated, leaving a significant financial gap to fill.

Two professors from the UCSF School of Nursing’s Institute for Health & Aging, Wendy Max and Hai-Yen Sung, developed a county-by-county picture of smoking’s financial and health impacts. Funded by a grant from the Tobacco-Related Disease Research Program, their study illustrates the considerable strain smaller counties in particular face.

Max and Sung used 2009 data to create snapshots of smoking’s cost in each of California’s 58 counties, and the numbers are not pretty. The cost spectrum ranges from \$374 per Orange County resident to \$1,002 per Lake County resident.

“These data are useful for local governments and policy makers to develop more effective tobacco control policies at the local level,” said Sung. Rarely are such impactful studies performed at the local level. More often, local policies are derived from data generated from statewide or nationwide studies.

Max was pleased to discover, for example, that San Luis Obispo County has created an anti-smoking poster based on study results. “The data are useful to try to keep future generations from smoking,” she noted.

By raising awareness of the true cost of tobacco, studies like this have a direct impact on the health and wellness of all Californians.

UCRI provided \$3.5 million to launch the multicampus Water Security and Sustainability Research Initiative to provide critical information for managing this vital resource.

CBCRP funded a computerized decision-making tool that enables policymakers to directly estimate the impact of their choices related to breast cancer prevention, screening, and treatment.





## Creating a living laboratory

Studying the impact of climate change on CA

California redwoods. Residents and visitors alike assume that these iconic trees always will stand tall in their unique, sublime way. UC Santa Cruz biologist Barry Sinervo, however, wonders whether climate change will harm these trees, and California's natural environment, sooner than we think.

With a \$1.9 million grant from the President's Research Catalyst Award, a new initiative launched in 2014 by President Napolitano, Sinervo is leading the UC-wide Institute for the Study of Ecological and Evolutionary Climate Impacts—a climate change living laboratory.

The Institute uses the 39-site UC Natural Reserve system, which spans California's diverse landscape, as an observatory to measure the effects of climate change and forecast future impacts.

Local residents are a critical part of this effort. The Institute's Citizen Science Program includes community members as scientists. For example, they log flowering events, the timing of which is one indicator of how climate might be changing.

This coordinated approach is ideal. As Sinervo points out, "The insights that can be gained will transform our understanding of climate change." Once the impacts are better understood, the Institute's findings will inform public policy and help policymakers figure out how to protect California's species.

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CHRP's strategic research initiatives have resulted in clinical interventions used to treat nearly 40 percent of Californians who receive care for HIV infection.

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As reported in national news, Child Health and Development Studies, funded by CBCRP, measured chemical exposures in the womb and discovered a four-fold increase in breast cancer linked to a mother's blood level of DDT.



## Exploring environmental exposures

Unique study pairs community and UC researchers to test chemical exposure links to breast cancer

Women in the San Francisco Fire Department (SFFD) began to notice premenopausal breast cancer among their co-workers. Was there something about their occupation that was causing this? With more women joining SFFD's ranks (13% vs. 4% nationally), this was a question that needed an answer, quickly.

Health advocates at the SF Firefighters Cancer Prevention Foundation and the United Fire Service Women reached out to environmental health researchers at UC Berkeley and UCSF. With California Breast Cancer Research Program funding, the Women Firefighters Biomonitoring Collaborative was formed.

The collaborative's first-of-its-kind study is looking at carcinogen levels among women firefighters compared to non-firefighter women, exploring other chemical exposures they experience, and examining the effects of chronic night shift work on early health biomarkers.

Each member of the collaborative has a unique role to play. Firefighter advocates recruit volunteers. Researchers identify the chemicals with analytical tools. Firefighters give context and insight into the study. Breast cancer survivors participate with their perspectives.

Together, the collaborative pursues answers that would not be found if the groups weren't working together. Rachel Morello-Frosch, co-principal investigator on the study, sums it up, "This kind of study simply would not be possible without a team approach."

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RGPO stimulates multi-sector research, bringing together leading experts, local leaders, and respected community advocates to address critical issues facing California.

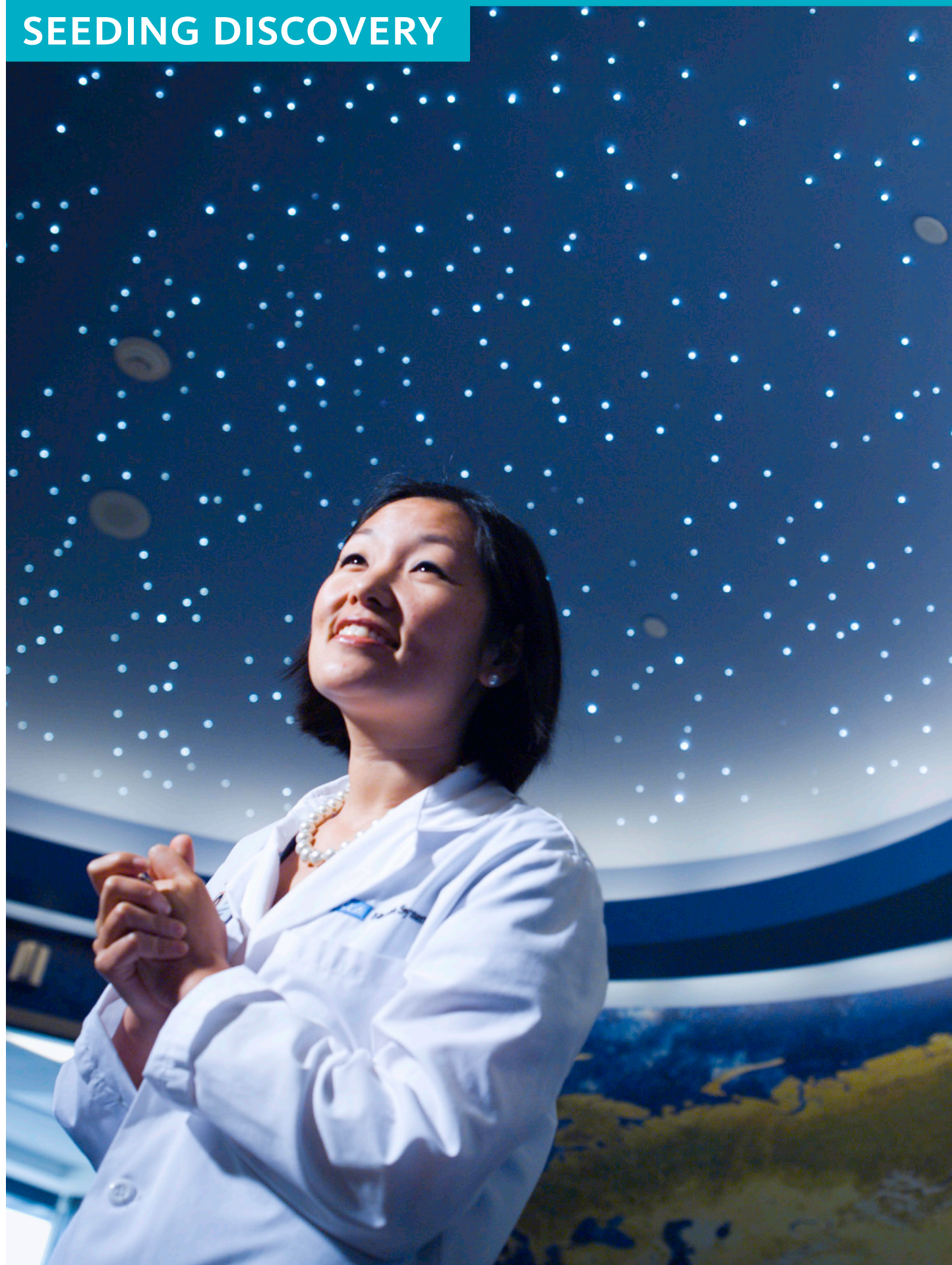
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Research investments by RGPO fund collaborations that engage the public and bring problem solving into communities.

## PROMOTING COLLABORATIONS







## Discovering new worlds

UC and National Lab collaborators fuel search for Earth-like planets

How unique is Earth? How many potentially life-sustaining worlds are out there? Figuring out how planets form is the key to unlocking a part of our universe that has so far been hidden.

Over the last decade, with the help of the Kepler space telescope, astronomers have found hundreds of planets outside our solar system—exoplanets. Most don't look like what they expected and don't fit the existing ideas of how planets were created.

To help guide the search for Earth-like planets, Professor Doug Lin of UC Santa Cruz put forth a novel and compelling theory of planetary formation. With funding from UCRI's Lab Fees Research Program and a partnership with scientists at Lawrence Livermore and Los Alamos National Labs, Lin explored the possibility that planets form in the disk around a new star and then migrate to their final positions. His new model accurately explains what we see in the sky.

Using Lin's groundbreaking work, astronomers have already discovered several Earth-sized planets that may be habitable. By seeding the science behind these amazing discoveries, UCRI hopes to better understand our universe and gain deeper knowledge about the origins of our own planet.

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TRDRP has invested in the development of new technologies that use a person's saliva or blood to detect lung and oral cancers at an early stage when they are most treatable.

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UCRI has invested more than \$15 million over the past 5 years in arts and humanities projects across our campuses, helping position UC as the nation's leading public university in these fields.





# New strides in HIV prevention

Expanding PrEP prevention to new populations

Exciting new additions to the HIV prevention tool kit are changing the way people think about reducing new infections.

Pre-Exposure Prophylaxis (PrEP) is a novel HIV prevention method where at-risk populations who do not have the virus take a daily pill to stave off infection.

As part of its support of groundbreaking research that speeds progress toward preventing and curing HIV/AIDS, the California HIV/AIDS Research Program is funding an expansion of its existing PrEP demonstration projects to new populations, namely women and transgender persons.

The HIV prevention pill has the potential to change the course of the HIV epidemic in California, but is often underutilized by populations that are most at risk, including women and transgender persons. Because there are currently no other PrEP projects uniquely designed for women and transgender persons in the United States, these studies will provide critical data for these populations.

CHRP is funding research to explore issues related to uptake and adherence in these groups and is dedicating \$9.3 million to these new PrEP projects. CHRP will continue its partnership with Gilead Sciences, Inc. Gilead will provide Truvada, the HIV prevention pill, at no cost for the demonstration projects, at an estimated value of \$7.8 million.

RGPO provides more funding for health research than any California-based foundation.

CBCRP, with a grant from the National Cancer Institute, conducts innovative face-to-face and online training to stimulate Community Based Participatory Research that addresses environmental causes and social disparities in breast cancer.





## Planning for smart growth

Simulation enables long-term economic forecasting

How would the California economy react if gas prices go up? What environmental impact would lifting building height restrictions have?

These are among the city planning and policy questions that can be answered confidently and accurately thanks to a project funded through UCRI's Multicampus Research Programs and Initiatives.

The core of the project is a complex computational model of the Los Angeles regional economy, RELU-TRAN L.A., developed by UC Riverside faculty in collaboration with planning departments. The model integrates data from multiple sectors: regional economic indicators, transportation, land use, and the environment.

The model has received international recognition, with the project team adapting their work to a very different metropolitan area: Paris. "The same model can be used for both cities because human and economic behaviors are the same even if the circumstances of each city are different," the team explains.

Richard Arnott, an economist at UC Riverside and the project's principal investigator, notes that the program "can show the economic effects of transportation policies, land use policies, and environmental policies." And, through an intuitive graphical user interface, the team is making it easy for lawmakers to use the information to foster smart, sustainable economic growth.

The model will soon simulate all of California, informing important policy decisions that affect the quality of life for our entire population.

California has the world's fourth largest immigrant population. The California Immigration Research Initiative, funded by UCRI, analyzes immigrants' contributions and integration into the economy.





# Rethinking healthcare

Study puts patients at the center of care

Gone are the days when healthcare was provided in silos. Today, one initiative is proving that integrated, patient-centered care could change the face of the entire healthcare system.

Amy Sitapati, primary care physician and clinical professor of medicine at the UC San Diego Medical Center, explains, “We are able to show that if we focus on putting the right people together, we can actually make a significant difference in patient care.”

In fact, CHRP’s Patient-Centered Medical Homes (PCMH) initiative, which funds an integrated model of HIV care and treatment, has resulted in a 44 percent reduction in mean HIV viral load. HIV positive patients with a low viral load have better health outcomes and are much less likely to transmit HIV to others.

The impact of CHRP’s PCMH initiative goes beyond just HIV. As the initiative’s principal investigator, Sitapati notes that, “The demonstration project has helped promote cultural change throughout the entire healthcare system. These tools can have an impact for other complex diseases.”

Dedicated teams of social workers, psychologists, medical specialists, and pharmacists ensure that each patient makes appointments, takes medications, and receives proper care.

“This has been a career-changing opportunity as the investment has had really deep impact. The beauty of the grant from CHRP is that it allowed innovation to happen at the right pace, enabling us to be creative enough to build a sustainable solution.”

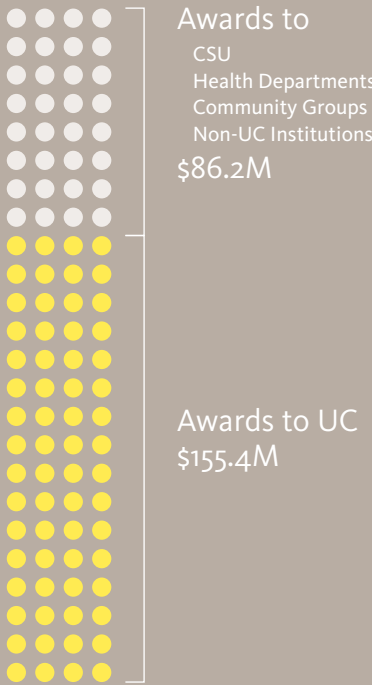
TRDRP-funded research informed the passage of a California law that prohibits third-hand smoke in home daycare centers.



# Investing in Research and California

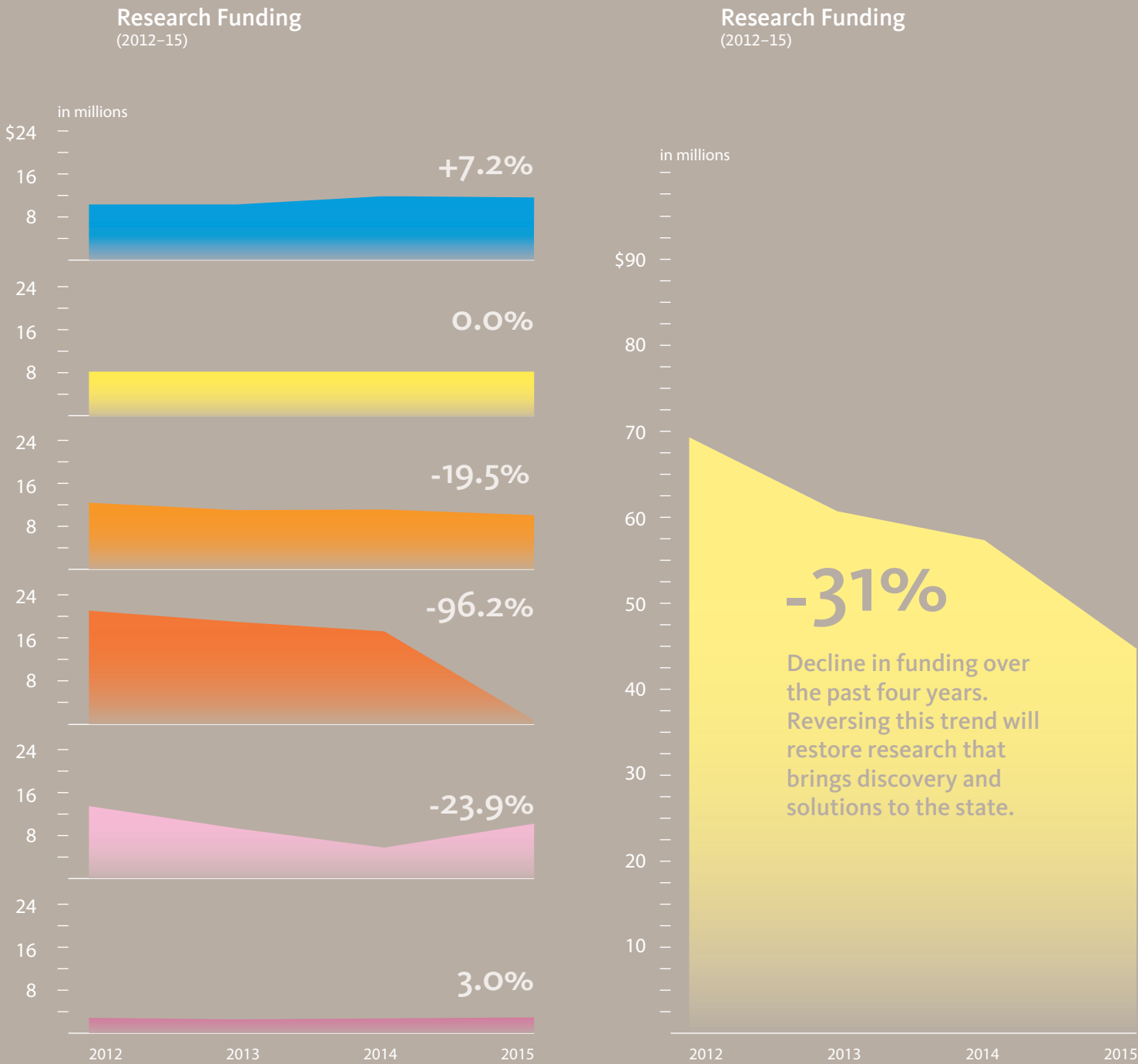
UC investments in research throughout the state were hit hard by the economic downturn and prior budget cuts. Now is the time to reinvest in UC research that will benefit the state far into the future.

Total: \$241.6M




Program	Funding	Awards (2012-15)
California Breast Cancer Research Program		\$40.5M
California HIV/AIDS Research Program		\$34.8M
Tobacco-Related Disease Research Program		\$44.2M
UCRI: Laboratory Fees Research Program*		\$53.2M
UCRI: Multicampus Research Programs and Initiatives		\$51.5M
UCRI: Special Initiatives**		\$22.2M

CA state tobacco tax   UC Office of the President   CA tax return voluntary contribution funds and individual donations



\*The Lab Fee Research Program is funded by a portion of the income UC receives for its partnership in LLNS and LANS. Program funding dropped in 2015 due to a reduction in this fee.  
\*\*Special Initiatives include Discovery Grants / Proof of Concept Commercialization Gap Grants (2012-2014) and the President's Research Catalyst Awards (2015).





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