

**Report on 2010 Tobacco-Related Disease Research Program**

December 2010

Legislative Report

**An investment in UC pays  
dividends far beyond what  
can be measured in dollars.  
An educated, high-achieving  
citizenry is priceless.**



**Annual Report  
2010**

From the University of California to the  
California State Legislature on the progress of the  
Tobacco-Related Disease Research Program,  
established and administered by the University of California  
pursuant to Proposition 99, The Tobacco Tax and Health Protection Act of 1988,  
Senate Bill 1613 of 1989 and reauthorized pursuant to Assembly Bill 3487 of 1996

*Bart Aoki, Ph.D.*

Acting Director – Tobacco-Related Disease Research Program

*Mary Croughan, Ph.D.*

Executive Director – Research Grants Program Office

*Steve Beckwith, Ph.D.*

Vice President for Research and Graduate Studies – Office of Research and Graduate Studies

Tobacco-Related Disease Research Program  
University of California, Office of the President  
300 Lakeside Drive, 6<sup>th</sup> Floor  
Oakland, CA 94612-3550

Phone: 510-987-9870

Fax: 510-835-4740

e-mail: [trdrp@ucop.edu](mailto:trdrp@ucop.edu)

[www.trdrp.org](http://www.trdrp.org)

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# UNIVERSITY OF CALIFORNIA

## Report on 2010 Tobacco-Related Disease Research Program

### Annual Report

#### EXECUTIVE SUMMARY

The Tobacco-Related Disease Research program (TRDRP) is one of three elements that constitute California's program to control tobacco consumption and alleviate the economic and public health burden of tobacco-related disease. This landmark effort was initiated by Proposition 99, "The Tobacco Tax and Health Protection Act of 1988" which mandated that the Department of Health Services, the Department of Education and the University of California be allocated a portion of the tobacco tax revenue collected to address issues of tobacco consumption and tobacco-related disease in the state. It specifies that 5% of the revenue collected be placed in a Research Account and used to fund research on the prevention and treatment of tobacco-related disease in California, including research in the biomedical sciences, nicotine dependence, epidemiology, social behavioral science, and policy. The Legislature asked the University of California to establish and administer the TRDRP, using revenues from the Research Account and modeling the program after the National Institutes of Health. TRDRP's mission is to support research which facilitates the elimination of smoking and tobacco use & mitigates the human and economic costs of tobacco use in California.

Since the passage of Proposition 99, smoking prevention and cessation efforts in California have been phenomenally successful; however this sanguine picture may not remain so for long. The decline in US smoking rates has stalled. The burden of smoking continues to be high especially among persons living below the poverty line and with minimal education. In California in 2008, for the first time, both cigarette price and tobacco control expenditures were lower in California than the rest of the nation, suggesting that the gap in smoking behavior between California and the rest of the country will start to narrow. The cost of smoking continues to be disproportionately high for African Americans in California. And the future health care costs of present and past smoking, particularly for lung cancer, remain. Coupled with these ongoing problems are the inroads that the tobacco industry continues to make in its marketing practices and political influence. The industry has changed with the times and is now targeting young adult users on internet social sites and YouTube. This is not the time to be complacent about tobacco control or tobacco-related disease.

TRDRP is meeting the challenge of this changing research and policy landscape by launching a strategic planning process that began in 2010 and that will continue into 2011. We expect the re-structured program to align more closely with California's current needs, the program's declining budget, and its reduced staffing level. In addition to its regular Call for Applications the program also launched two new initiatives to address emerging and long-standing issues surrounding tobacco and health: one on thirdhand smoke and environmental waste and a second on early lung cancer detection. Planning is also underway for an initiative on health disparities in African Americans. Finally, the program was recognized again as an approved peer-reviewed research funding agency by the National Cancer Institute, a designation that will help our funded cancer investigators obtain NCI Cancer Center grants.

As part of its regular 2010 funding cycle, The Scientific Advisory Committee recommended, and TRDRP awarded \$12.7 million in 46 new grants at California non-profit research institutions.

The largest number of grant awards addressed the following Primary Research Areas:

- Cardiovascular and Cerebrovascular Disease
- Chronic Obstructive Pulmonary Disease
- Development of Nicotine Dependence Treatments
- Lung Cancer
- Prevention and Cessation of Tobacco Use and Tobacco-Related Health Disparities in California's Diverse Populations
- Public Policy and Economics of Tobacco Use
- Secondhand Smoke and Outdoor Tobacco Smoke

Career Development grants were awarded in all areas relevant to tobacco-related disease and tobacco control.

In addition, TRDRP funded eight Cornelius Hopper Diversity Award Supplements for a total of \$173,625, two Policy Initiative grant extensions on the cost of smoking for a total of \$150,000, four Special Project Awards for a total of \$26,035, and two conference grants for a total of \$4,300.

In 2010, 25 research grants were completed, representing cutting-edge science on tobacco-related disease and tobacco control policy and programs, particularly in those groups at highest risk for tobacco use and exposure to secondhand smoke. They include 3 on nicotine dependence, 5 on tobacco use prevention and cessation, 4 on tobacco control policy, 7 on cancer, and 6 on heart and lung disease.

Among the research highlights of these completed grants were the following findings:

- Native American adolescents have the highest smoking prevalence of any ethnic or racial group in the United States. Surveys were conducted to identify the general and culturally specific risk and protective factors for tobacco use in California Native American adolescents. Many use tobacco for ceremonial reasons. Having friends or siblings who smoke or being in the same room or car with a smoker was associated with recent smoking in the respondents. The results will be used to make recommendations for smoking prevention efforts in Native American adolescents. (Baezconde-Garbanati, *University of Southern California*)
- In 2006, 4,072 Californians died as a result of second-hand smoke (SHS) exposure. The largest number of deaths were for whites (3006) followed by Hispanics (464), Asians (304), and African Americans (254). These deaths represented a loss of over 53,000 years of life, and \$308.6 million in lost productivity. SHS exposure resulted in \$280.4 million in healthcare costs in California in 2006 (Max, *University of California, San Francisco*).
- One half to two thirds of rental cars were polluted with residual tobacco smoke contaminants so existing voluntary smoking restrictions imposed by rental car companies are insufficient to prevent smokers from using tobacco in rental cars and to protect nonsmokers from renting cars polluted with residual tobacco smoke contaminants (Matt, *San Diego State University Research Foundation*).
- College students who smoke frequently attempt to change this behavior, suggesting the value of developing interventions to help them quit smoking (Myers, *Veterans Medical Research Foundation*).
- The restrictions imposed by the 1998 Master Settlement Agreement, including the dissolution of industry trade associations, have done little to reduce the tobacco industry's ability to present biased research and limit its political power have had limited success; the tobacco industry continues to prevent the passage of effective tobacco control policies, building new alliances with government and public health groups unaware of industry intentions (Apollonio, *University of California, San Francisco*).
- Tobacco cessation treatment guidelines advocate that clinicians discourage their patients from dieting when quitting smoking out of concern that the competing demands may lead to smoking relapse. Positive emotions can replenish self-control resources and thus counteract the effect of self-control depletion, a result that has important implications for the design of successful cessation interventions. This could be particularly important for individuals who would normally refuse to quit smoking because they are worried about gaining weight (Shmueli, *University of California, San Francisco*).
- Stress associated with emerging adulthood was positively associated with cigarette smoking among highly acculturated Latino adolescents; among less acculturated Latino teens, perceived stress was positively associated with smoking (Grana, *University of Southern California*).
- In the first ever study to address the environmental impact of cigarette butt waste, a scholarly review of policy options that drew on existing literature as well as consultations with individuals from the fields of tobacco control, environmental health law, behavioral science, social marketing, and economics resulted in a special issue of the journal, *Tobacco Control* dedicated to cigarette butt waste in the environment. A research agenda was developed to

determine the potential environmental, behavioral, and health effects of various policy approaches to reducing cigarette butt waste (Novotny, *San Diego State University Research Foundation*).

- Insights were gained into the control of integrin activation, a family of proteins controlling platelet aggregation, a process which causes blood vessel blockage in the tobacco-associated maladies heart attack and stroke (Banno, *University of California, San Diego*).
- A novel biomarker for oral squamous cell carcinoma (SCC) was discovered that is suitable for stratifying patients with little or no risk for lymph node metastasis prior to surgery. Identification of patients with low risk for metastasis would spare them additional major surgery with its risks and morbidity, as well as reduce medical costs (Bhattacharya, *University of California, San Francisco*).
- The development and refinement of optical coherence tomography (OCT) has shown that this technology can provide valuable information about different types of airway lesions in a non-invasive manner. The results set the stage for the development of a new method for diagnosing and staging airway pathologies without the need for surgical removal of a suspicious lesion (Brenner, *University of California at Irvine*).
- Major advances were made in mapping out the molecular interactions between nicotine and its target cellular receptors and provided proved new insights into how nicotine and related compounds bind to these targets. The results will prove highly valuable to efforts to develop new smoking cessation strategies (Dougherty, *California Institute of Technology*).
- A specific pharmacological inhibitor of a pathway commonly activated in lung cancer was developed that suppressed tumor growth by 95%, was well-tolerated in an animal model and can offer immediate clinical benefit to lung cancer patients (Lee, *The Scripps Research Institute*).
- Chronic nicotine exposure has a large net negative impact on adult neurogenesis in the hippocampus. Fewer cells survive and those that do survive fail to do so in the correct location (Campbell, *University of California, San Diego*).
- COPD exacerbations (worsening of COPD symptoms) are frequently accompanied by hospitalization. In work that challenges conventional thinking about exacerbations it was found that there are dynamic changes in the bacterial communities that exist in the airways of COPD patients leading up to exacerbations the severity of which may in part be determined by the specific bacterial communities members involved. The results may yield new approaches for managing bacterial colonization and infection in COPD (Huang, *University of California, San Francisco*).

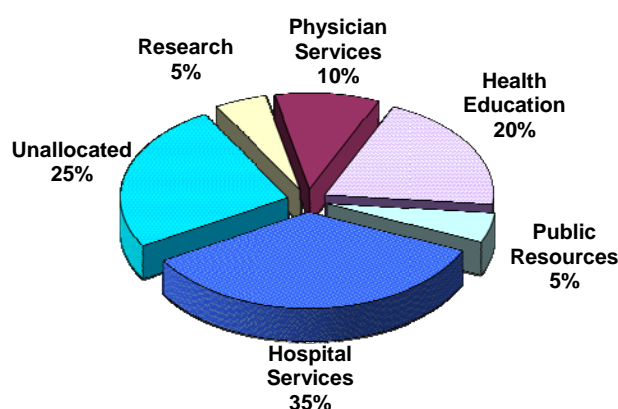
Full abstracts of all grants that ended in 2010 can be found on-line at <http://www.trdrp.org/>

## INTRODUCTION

### History and Mission

The Tobacco-Related Disease Research Program (TRDRP) is one of three elements of California’s program to control tobacco consumption and alleviate the economic and public health burden of tobacco-related disease. This landmark effort was initiated by Proposition 99, “The Tobacco Tax and Health Protection Act of 1988” which mandated that the Department of Health Services, the Department of Education and the University of California be allocated a portion of the tobacco tax revenue collected to address issues of tobacco consumption and tobacco-related disease in the state. The Cigarette and Tobacco Products Surtax Fund, consists of six accounts in which specific percentages of the revenue are deposited annually (see Figure 1): the Research Account (5 percent), the Health Education Account (20 percent), the Hospital Services Account (35 percent), the Physician Services Account (10 percent), the Public Resources Account (5 percent), and the Unallocated (or General Purposes) Account (25 percent). Collection of the tax began on January 1, 1989

**Figure 1. Distribution of Tobacco Tax Revenue Specified by Proposition 99**



Research Account funds are to be used solely to fund research on the prevention and treatment of tobacco-related disease in California, including research in the biomedical sciences, nicotine dependence, epidemiology, social behavioral science, and policy. The Legislature asked the University of California to establish and administer the TRDRP, using revenues from the Research Account and modeling the program after the National Institutes of Health. TRDRP’s mission is to support outstanding research which facilitates the elimination of smoking and tobacco use & mitigates the human and economic costs of tobacco use in California; to widely disseminate the research findings through a variety of media; to encourage and support new scientific infrastructure and networks critical for a comprehensive approach to tobacco control; and to serve as an information resource for those interested in issues of tobacco control and tobacco-related disease.

### Smoking and Tobacco-Related Disease in California Today

Since the passage of Proposition 99, smoking prevention and cessation efforts in California have been phenomenally successful. A recent TRDRP-funded study shows that Californians initially smoked more than the rest of the nation, but cigarette consumption declined earlier, dropping lower in 1971 with an ever widening gap over time. Lung cancer mortality followed a similar pattern, after a lag of 16 years<sup>1</sup>. An auxiliary benefit is that smoking cessation is cost-effective, especially in California: the return on investment for California is among the highest in the country at \$1.40 – a 40% positive return<sup>2</sup>.

<sup>1</sup> Pierce JP, Messer KS, White MM, Kealey S, Cowling DW. 2010. Forty Years of Faster Decline in Cigarette Smoking in California Explains Current Lower Lung Cancer Rates. *Cancer Epidemiology, Biomarkers & Prevention*. In Press (funded by TRDRP).

<sup>2</sup> Rumberger JS, Hollenbeak CS, Kline D. 2010. Potential costs and benefits of smoking cessation in the United States. American Lung Association <http://www.lungusa.org/stop-smoking/tobacco-control-advocacy/reports-resources/cessation-economic-benefits/states/united-states.html>

This sanguine picture may not remain so for long. The CDC recently reported that the decline in US smoking rates has stalled<sup>3</sup>. The burden of smoking continues to be high especially among persons living below the poverty line and with minimal education. In California in 2008, for the first time, both cigarette price and tobacco control expenditures were lower in California than the rest of the nation, suggesting that the gap in smoking behavior between California and the rest of the country will start to narrow<sup>4</sup>. The cost of smoking continues to be disproportionately high for African Americans in California<sup>5</sup>. And the future health care costs of present-day and past smoking remain. Mortality and prevalence of many smoking-related diseases remain high and, given the long lag time to the clinical manifestation of disease, will continue to exact a human and economic toll for years to come. Lung cancer, for example, is still the top-ranked cancer killer and California can expect the second highest number of estimated new cases (18,490) in the US, only slightly fewer than Florida (18,390).<sup>6</sup> The prognosis remains grim especially among the majority of patients diagnosed late in disease progression<sup>7</sup>. The health risks of secondhand smoke have long been recognized<sup>8</sup> but awareness is growing about potential health risks associated with residue from tobacco smoke that clings to virtually all surfaces long after a cigarette has been extinguished in the form of so-called “thirdhand smoke”. Thirdhand smoke has recently been found by TRDRP-funded investigators to contain carcinogens more potent than those found in cigarette smoke or secondhand smoke<sup>9</sup>. Finally the ever-vigilant tobacco industry has found new ways to promote their products on such popular internet sites as YouTube and Facebook<sup>10</sup>. Clearly, this is not the time to be complacent about tobacco control or tobacco-related disease.

## REPORT ON 2010 ACTIVITIES

### Strategic Planning Process

TRDRP is meeting the challenge of the changing research and policy landscape of tobacco-related disease and tobacco control by launching a strategic planning process in 2010 that will continue into 2011. The process will begin with solicitation of input from all TRDRP stakeholders by a variety of methods including a web-based survey and either webinars or in-person Town Hall-type meetings. The Scientific Advisory Committee has formed three subcommittees to advise and facilitate the strategic planning process. These include one for each of the following areas: 1) grants and priorities; 2) dissemination, translation, and

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<sup>3</sup> Dube SR, McClave A, James C, Caraballo R, Kaufmann R, Pechacek T. 2010 Vital signs: Current cigarette smoking among adults >18 years – United States 2009. *MMWR* 59;1135-1140.

<sup>4</sup> Pierce JP, Messer KS, White MM, Kealey S, Cowling DW. 2010. Forty Years of Faster Decline in Cigarette Smoking in California Explains Current Lower Lung Cancer Rates. *Cancer Epidemiol, Biomarkers & Prev.* <http://www.ncbi.nlm.nih.gov/pubmed/20852009> (funded by TRDRP)

<sup>5</sup> Max W, Sung HY, Tucker LY, Stark B. 2010. The disproportionate cost of smoking for African Americans in California. *Am J Public Health.* 100:152-8 (funded by TRDRP).

<sup>6</sup> American Cancer Society. *Cancer Facts & Figures 2010*. Atlanta: American Cancer Society; 2010 <http://www.cancer.org/research/cancerfactsfigures/cancerfactsfigures/cancer-facts-and-figures-2010>

<sup>7</sup> [http://www.cancermonthly.com/cancer\\_basics/lung.asp](http://www.cancermonthly.com/cancer_basics/lung.asp)

<sup>8</sup> U.S. Department of Health and Human Services. 2006. *The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Coordinating Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health.

<sup>9</sup> Sleiman M, Gundel LA, Pankow JF, Jacob P 3<sup>rd</sup>, Singer BC, Destailats H. 2010. Formation of carcinogens indoors by surface-mediated reactions of nicotine with nitrous acid, leading potential thirdhand smoke hazards. *PNAS USA.* 107: 6576-6581 (funded by TRDRP).

<sup>10</sup> Elkin L, Thomson G, Wilson N. 2010. Connecting world youth with tobacco brands: YouTube and the internet policy vacuum on Web 2.0. *Tobacco Control.* 19:361-366.



education strategies; and 3) emerging issues and stakeholder input. The re-structuring of the program will be reflected in the 2012 Call for Applications. We expect the re-structured program to align more closely with California's current tobacco control and research needs, the program's declining budget, and its reduced staffing level.

#### **Special Initiative: The Cost of Smoking in California**

During 2010, TRDRP extended the Special Policy Research Initiative at a cost of \$150,000. Specific deliverables on the cost of smoking in California including estimates of the impact of smoking and decrements in tobacco control funding on health care costs; models of the cost of smoking and the effect of tobacco control funding on African Americans and Hispanics; per capita tobacco consumption in California as compared to the rest of the US and its impact on lung cancer incidence are due in early 2011. Three papers were published or were in press in 2010 as a result of this special initiative funding:

Miller LS, Max W, Sung HY, Rice D, Zaretsky M. 2010. [Evaluation of the economic impact of California's Tobacco Control Program: a dynamic model approach](#). *Tobacco Control*. 2010 Apr;19 Suppl 1:i68-76.

Pierce JP, Messer KS, White MM, Kealey S, Cowling DW. In press. Forty Years of Faster Decline in Cigarette Smoking in California Explains Current Lower Lung Cancer Rates. *Cancer Epidemiology, Biomarkers & Prevention*.

Max W, Sung HY, Tucker LY, Stark B. 2010. [The disproportionate cost of smoking for African Americans in California](#). *Am J Public Health* 100(1):152-8.

#### **Special Initiative: Early Lung Cancer Detection**

The earlier that lung cancer is detected, the better the chances of survival and cure and the more cost-effective the treatment. While advances in radiographic techniques have made the early detection of lung cancer more realistic than in the past, the risks associated with such technologies (over-diagnosis and radiation overdose), the cost, and the potential for overuse, makes the need for improved diagnostics for early lung cancer detection a pressing one especially for particularly hard-hit groups such as African-American males. Lung cancer in general is underfunded at the federal level as compared to other cancers and diseases and most of the research is focused on therapeutics.

The goal of this initiative is the development of 1) non-invasive, cost-effective early detection methodologies that are 2) widely available not just to smokers and former smokers but everyone, and 3) that would be part of standard preventive medical practice. As a preliminary step, a survey was sent to researchers and clinicians in the field of lung cancer diagnosis and treatment. The results confirmed the assumptions underlying the initiative and suggested new avenues of approach to the problem of early lung cancer detection.

In February 2010 an input meeting was convened which brought together health policy professionals, lung cancer patient advocates, researchers and clinicians from both within and outside of California. Representatives from the Lung Cancer Alliance, the American Lung Association, and the American Cancer Society were represented. The objective of the meeting was to identify the most effective ways that TRDRP can deploy the limited funds it has available to address the problem of early lung cancer detection. The outcome of this meeting resulted in a special integrated research project initiative entitled Innovative Technologies for the Early Detection of Lung Cancer: Validation in Human Cohorts. The announcement was part of the regular Call for Application and proposals are due in January 2011. The TRDRP set aside \$1,250,000 per year for this special initiative and anticipates funding up to four awards at this time.

#### **Special Initiative: Thirdhand Smoke and Cigarettes in the Environment**

Concern regarding the health and environmental effects of cigarette butts and cigarette smoke has recently escalated. Thirdhand smoke, a new term coined to describe the lingering effects of aged secondhand smoke deposited on indoor surfaces such as furniture, wall and floor coverings, clothing, and automobile upholstery, has recently been described as a potential health hazard due to the formation of irritant aerosols and carcinogenic adsorbed compounds<sup>9</sup>. The 360 billion cigarettes smoked in the United States in 2007 translate to a total of 135,000,000 pounds of discarded butts in one year in the United States alone<sup>11</sup>. During the 2009 California Coastal Clean-up 40% percent of all debris items picked up were cigarette butts – volunteers picked up over 394,000 of them in only three hours; this was the 25<sup>th</sup> straight year in which cigarette butts were the

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<sup>11</sup> <http://www.longwood.edu/cleanva/cigbutthowmany.htm>

most numerous debris item collected<sup>12</sup>. Yet the health and environmental effects of this waste are unknown and unexplored. As a result of an expert input meeting on thirdhand smoke and cigarette butt waste held in October 2009 a request for proposals for this initiative was distributed in June 2010 calling for applications in the following areas: (1) the impact of thirdhand tobacco smoke exposure from indoor surfaces and air quality on public health, and (2) the effects of water and soil contamination by cigarette butts on organisms and humans. Two proposals were received: one on thirdhand smoke exposure and health effects (consisting of 10 sub-projects) and one on cigarette butt pollution (consisting of 4 sub-projects). Funding recommendations are pending at the time of this report.

**Special Initiative: African American Health Disparities**

California has made great strides in tobacco control over the past 20 years; however, like other health indicators, tobacco use and tobacco-related diseases have disproportionately affected the African American community. To begin to address these inequities, an expert input meeting was convened in November on African American Health Disparities. The panel offered their recommendations on what research to fund in this area. A Request for Proposals will be issued as part of the 2011 Call for Applications.

**Designation of TRDRP as an Approved Research Funding Agency by the NCI**

The TRDRP requested and received re-certification as a funding organization with an approved peer review and funding system by the National Cancer Institute. The program’s review policy was found to conform to the general NIH standards of peer review and funding and the program was recognized as providing substantial funding for research that is clearly cancer-relevant. All award mechanisms except Postdoctoral Fellowships, Dissertation Research Awards, and the Participatory Pilot Awards meet the eligibility criteria for application or inclusion in formal scientific Research Programs as defined by the NCI. This designation helps eligible California institutions with TRDRP-funded cancer investigators obtain NCI Cancer Center grants.

**Dissemination of Research Findings**

In accordance with state statutes, TRDRP regularly disseminates the findings of funded research in a number of ways. The knowledge gained from TRDRP-funded studies is helping to improve the effectiveness of the tobacco control programs supported by the Proposition 99 Health Education Account that are administered by the California Department of Public Health and the California Department of Education. Results of research on tobacco-related disease are also enhancing scientists’ understanding of biological mechanisms underlying the cause of tobacco-related disease and pointing the direction to technologies for the earlier detection and more effective treatment of lung disease, heart disease, and cancer.

- **Conference Support**

TRDRP provided support totaling \$4,300 to the following conferences judged to fall within its mission:

<i>Grant ID</i>	<i>Principal Investigator</i>	<i>Institution</i>	<i>Project Title</i>	<i>Subject Area</i>
19ST-0179	Talbot, Prue	UC Riverside	Second Annual Meeting Tobacco-Related Disease Research at UCR	Conference
19ST-0182	Mukherjea, Arnab	UCSF	Asian Americans and Pacific Islanders Working Group	Public Health, Public Policy, and Economics

- **Scientific Publications**

TRDRP-funded investigators have continued to actively disseminate findings from their research in scholarly publications and at scientific conferences. In 2009, funded investigators continued to publish their findings in a wide range of peer-reviewed journals.

<sup>12</sup> <http://www.coastal.ca.gov/publiced/ccd/9.25.10.pressrelease.pdf>

- **Web site**

Visitors to TRDRP's Web site ([www.trdrp.org](http://www.trdrp.org)) can search research grants, as well as view all program publications and announcements.

## GRANTS AWARDED IN 2010

- **Research Grants Awarded**

As part of its regular 2010 funding cycle, The Scientific Advisory Committee recommended and TRDRP awarded \$12.7 million in 49 new grants to scientists at California non-profit research institutions. Funds available for grants included the appropriation for that year as well as accumulated reserves that included funds recovered from grants that terminated early. Details of 2009 awards, including abstracts, can be found the TRDRP website: <http://www.trdrp.org/>.

Consistent with the critical need to develop new researchers with an interest in tobacco-related diseases and issues, 28 (57%) of the new grant awards support new investigators, postdoctoral fellows and dissertation students. Consistent with the program's mandate to support a broad range of innovative research in tobacco-related disease research, TRDRP awarded grants to study cancer, particularly lung cancer (14), cardiovascular diseases (7), pulmonary diseases (4), general biomedical research (6), nicotine dependence (7), policy (4), epidemiology (1), and tobacco use prevention and cessation (6).

### California Research Awards

<i>Grant ID</i>	<i>Principal Investigator</i>	<i>Institution</i>	<i>Project Title</i>	<i>Subject Area</i>
19CA-0122	Friedman, Theodore	Charles R. Drew University	Insulin Resistance in Smokers Undergoing Smoking Cessation	Cardiovascular Disease
19CA-0164	Matt, Georg	San Diego State University Research Foundation	Thirdhand Smoke Pollution and Exposure in Ex-Smokers' Homes	Epidemiology
19CA-0106	Lipperman-Kreda, Sharon	HBSA, Inc.	Retail Access to Tobacco and Youth Smoking Behavior	Public Health, Public Policy, and Economics
19CA-0123	Hildemann, Lynn	Stanford University	Identifying and Measuring SHS in Multi-Unit Dwellings	Public Health, Public Policy, and Economics

### Participatory Research Awards

<i>Grant ID</i>	<i>Principal Investigator</i>	<i>Institution</i>	<i>Project Title</i>	<i>Subject Area</i>
19BT-0041/0043	Palmer, Paula/ Surani, Zul	Claremont Graduate University/ Saath USA	Determinants of Tobacco Use Among Young Adult South Asians	Tobacco-Use Prevention and Cessation
19BT-0044/0039	Sun, Angela/ Tsoh, Janice	Chinese Community Health Resource Center/UCSF	The Chinese Community Internet Stop Smoking Project	Tobacco-Use Prevention and Cessation

### Exploratory Developmental Research Awards

<i>Grant ID</i>	<i>Principal</i>	<i>Institution</i>	<i>Project Title</i>	<i>Subject Area</i>
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	<i>Investigator</i>			
19XT-0149	Du Bois, Justin	Stanford University	Dynamic Imaging of Sodium Channels in Metastatic Lung Cancer	Cancer
19XT-0084	Lee, Jiing-Dwan	Scripps Research Institute	Enhancing mTOR-Targeted Lung Cancer Therapy	Cancer
19XT-0147	Spruck, Charles	The Burnham Institute for Medical Research	Fbxo2 in ECM and Integrin Control and Lung Tumor Metastasis	Cancer
19XT-0124	Morrison, Ashby	Stanford University	Novel Susceptibility Factors in Lung Cancer Evolution	Cancer
19XT-0051	Reisfeld, Ralph	Scripps Research Institute	SOX-2 Knockdown in Stem Cells Prevents Lung Tumor Recurrence	Cancer
*19XT-0055	Quertermous, Thomas	Stanford University	Chromosome 9p21.3 in Tobacco Related Vascular Diseases	Cardiovascular Disease
19XT-0166	Martins-Green, Manuela	UC Riverside	Effects of Thirdhand Smoke on Cell and Molecular Mechanisms of Healing	General Biomedical Science
19XT-0070	Hang, Bo	Lawrence Berkeley National Laboratory	Genotoxicity of Thirdhand Smoke and Aged Secondhand Smoke	General Biomedical Science
19XT-0151	Talbot, Prue	UC Riverside	Secondhand Smoke and Human Prenatal Development	General Biomedical Science
19XT-0135	Brody, Arthur	Brentwood Biomedical Research Institute	Menthol Cigarette Smokers: nAChR Levels and Treatment Effects	Nicotine Dependence
19XT-0102	Dougherty, Dennis	California Institute of Technology	Understanding Nicotinic Receptor Subtype Specificity	Nicotine Dependence
19XT-0072	Berg, Darwin	UCSD	Using Adult born Neurons to Combat Nicotine Relapse	Nicotine Dependence
19XT-0079	Silverman, Gregg	UCSD	Apoptotic Cell Clearance and Tobacco Induced COPD	Pulmonary Disease
19XT-0152	Schnitzer, Jan	Proteomics Research Institute for Systems Medicine	Targeted Nanodelivery of Anti-inflammatory Drugs	Pulmonary Disease
19XT-0083	Tsoh, Janice	UCSF	A Family Intervention to Reduce Smoking in Vietnamese Men	Tobacco-Use Prevention and Cessation

**New Investigator Awards**

<i>Grant ID</i>	<i>Principal Investigator</i>	<i>Institution</i>	<i>Project Title</i>	<i>Subject Area</i>
19KT-0034	Zhang, Jun	Beckman Laser Institute	High Resolution Imaging and Ablation for Smoke Induced Cancer	Cancer
19KT-0016	Zhang , Lei	UCLA	Multiple Salivary Biomarkers for Lung Cancer Detection	Cancer
19KT-0028	Roberts, Christian	UCLA	Effects of Resistance Training on Tobacco-Related CVD Risk	Cardiovascular Disease
19KT-0030	Khasawneh, Fadi	Western University of Health Sciences	Characterization of Platelet Thromboxane A2 Receptors	Cardiovascular Disease
19KT-0017	Zur Nieden, Nicole	UC Riverside	Prenatal Toxicity of Tradition and Harm Reduction Tobacco	General Biomedical Science
19KT-0032	Miwa, Julie	California Institute of Technology	Nicotinic Receptor-lynx Interactions	Nicotine Dependence
19KT-0014	Soler, Xavier	UCSD	Pulmonary Rehabilitation in Sleep Disorders affecting COPD	Pulmonary Disease
19KT-0026	Galvan, Adriana	UCLA	Neurobiology of Cigarette Craving in Adolescent Smokers	Tobacco-Use Prevention and Cessation

**Postdoctoral Fellowship Awards**

<i>Grant ID</i>	<i>Principal Investigator</i>	<i>Institution</i>	<i>Project Title</i>	<i>Subject Area</i>
19FT-0091	Krishnan, Shyam	UCSF	Reversible Covalent Kinase Inhibitors to Combat Metastasis	Cancer
19FT-0046	Ooi, Aik	UCLA	Smoking-Related Lung Repair and Early Stage Lung Cancer	Cancer
19FT-0105	Hargrove, Amanda	California Institute of Technology	Inhibiting Lung cancer with DNA-Binding Polyamides	Cancer
19FT-0069	Peters, Ulf	UCSF	Switching Off a Lung Cancer Oncogene Using Small Molecules	Cancer

19FT-0090	Rumpf, Julia	UCSF	Oncogenic Activation Mechanisms of Phosphoinositol-3-Kinase	Cancer
*19FT-0150	Gaborit , Nathalie	J. David Gladstone Institutes	Irx3 and Irx5 in Mouse Heart Development and Function	Cardiovascular Disease
19FT-0157	Dores, Michael	UCSD	Regulation of APC-Mediated PAR1 Signaling	Cardiovascular Disease
19FT-0078	Yi , Wen	California Institute of Technology	O-GlcNAc Glycosylation in Lung Cancer	General Biomedical Science
19FT-0045	Dsouza, Manoranjan	UCSD	AMPA Receptors and Extinction of Nicotine-Seeking Behavior	Nicotine Dependence
19FT-0116	Wang, Xulong	UCSD	Nicotinic Control of Glutamate Synapse Formation	Nicotine Dependence
*19FT-0077	Yao, Li-Chin	UCSF	Role of Lymphatic Junctions in Chronic Airway Inflammation	Pulmonary Disease
19FT-0089	Huh, Jimi	USC	Cessation and Environmental Smoking among Korean Americans	Tobacco-Use Prevention and Cessation
19FT-0175	Mukherjea, Arnab	UCSF	Enhancing Validity of a South Asian Tobacco Survey Module	Tobacco-Use Prevention and Cessation

### Dissertation Research Awards

<i>Grant ID</i>	<i>Principal Investigator</i>	<i>Institution</i>	<i>Project Title</i>	<i>Subject Area</i>
19DT-0008	Horn, Evan	UC Irvine	Synthesis of the Anti-Cancer Norcembranoid Inelegnolide	Cancer
19DT-0009	Andersen, Nisana	UC Riverside	Replication Studies of Minor-Groove DNA Adducts	Cancer
19DT-0007	Kim, Tyson	UCSF	Notch Enhances Shear-Mediated Arteriogenesis in Cerebrum	Cardiovascular Disease
19DT-0011	Kieslich, Chris	UC Riverside	In Search of a Complement System Inhibitor Targeting C5aR	General Biomedical Science
19DT-0003	Harder, Laura	Alliant International University	HRQoL in Veterans with Chronic PTSD and Tobacco Dependence	Nicotine Dependence

19DT-0002	Gunning, Melissa	University of Southern California	Adoption of Tobacco Programs in California Schools	Public Health, Public Policy, and Economics
19DT-0005	Rego, Brianna	Stanford University	Investigating Tobacco Industry Research on Polonium-210	Public Health, Public Policy, and Economics

\*declined

TRDRP provided support totaling \$180,335 to the following special projects judged to fall within its mission:

<i>Grant ID</i>	<i>Principal Investigator</i>	<i>Institution</i>	<i>Project Title</i>	<i>Subject Area</i>
19ST-0180	Glantz, Stanton	UCSF	Cost of Smoking II	Public Health, Public Policy, and Economics
19ST-0181	Pierce, John	UCSD	Cost of Smoking II	Public Health, Public Policy, and Economics
19ST-0177	Novotny, Thomas	San Diego State University Research Foundation	The Cigarette Butt Pollution Project TC journal supplement	Public Health, Public Policy, and Economics
19ST-0176	Guthmann, Debra Sue	California School for the Deaf	Hands Off Tobacco! An Anti-Tobacco Program for Deaf Youth	Tobacco-Use Prevention and Cessation
19ST-0175	Berman, Barbara	UCLA	Hands off Tobacco! An Anti-Tobacco Program for Deaf Youth	Tobacco-Use Prevention and Cessation

- **Award Types**

- **California Research Awards** are designed to support research projects that address questions specific to tobacco-related disease or tobacco control issues in California.
- **Participatory Research Awards: Community-Academic Research Awards (CARA)** are intended to stimulate and support collaborations between community-based organizations and university-based investigators to perform scientifically rigorous research into tobacco control issues important to California's diverse communities. **School-Academic Research Awards (SARA)** are intended to stimulate and support collaborations between schools and university-based investigators to perform scientifically rigorous research into tobacco control issues that: 1) are identified as important to schools in the state; 2) are likely to produce results that are meaningful to school-based prevention and intervention efforts; and 3) use methods that are relevant, culturally appropriate, and appropriate in terms defined and accepted by the schools. SARAs are jointly funded by the California Department of Education (CDE) and TRDRP.
- **Exploratory Developmental Research Awards.** The purpose of these grants is to gather preliminary data or demonstrate proof-of-principle (i.e., pilot projects), or to conduct a research project within the specified limits of money and time. The ultimate goal of these awards is to provide the foundation for proposals for fully-developed research project awards from other funding programs.

- **Research Career Development Awards.** TRDRP offers three award types that are aimed at enhancing the scientific infrastructure for **tobacco-related research in California** by supporting the development of careers in research. **New Investigator Awards** are aimed at encouraging newly independent investigators to conduct research on tobacco-related issues. **Postdoctoral Fellowship Awards** allow researchers early in their careers to receive training in tobacco-relevant disciplines. **Dissertation Research Awards** provide support for the dissertation research of doctoral candidates who wish to pursue tobacco-related research.
  
- **Special Project Awards** are given for conference support or unique research initiatives deemed particularly important to TRDRP's mission. In order to qualify for funding, the planned activities must be directly related to one or more of TRDRP's Priority Research Areas. The activity must take place primarily in California, involve California investigators, and include, where applicable, discussants and speakers funded by TRDRP. Unsolicited requests may be submitted at any time. Requests are evaluated expeditiously by ad-hoc peer review when appropriate. The TRDRP Scientific Advisory Committee makes recommendations regarding funding. These opportunities are limited in number, scope, cost, and duration.

● **Cornelius Hopper Diversity Award Supplements**

The Cornelius Hopper Diversity Award Supplements (CHDAS) are designed to encourage TRDRP-funded principal investigators to mentor individuals who wish to pursue careers in research on tobacco use and tobacco-related disease. Qualified applicants for the CHDAS are from groups that are underrepresented among researchers who investigate tobacco use or tobacco-related disease, and/or individuals who wish to work directly with underrepresented groups that are disproportionately impacted by tobacco use. In 2010, a total of \$173,625 was awarded to 8 funded investigators to support such deserving individuals (Table 1).

**CHDAS awarded in 2010**

<i>Trainee</i>	<i>Mentor</i>	<i>Institution</i>	<i>Project Title</i>
Zenova Williams	Lara Ray	UCLA	Pharmacological Interventions for Heavy Drinking Smokers
Angelica Pritchard	Giorgio Cavigiolio	Children's Hospital Oakland	Impact of Tobacco-Smoke on Apolipoprotein Exchangeability
Isabel Canto	JoAnn Trejo	UCSD	Regulation of Biased PAR1 Signaling by Ubiquitination
Armando Larraga	Frances Leslie	UCI	Nicotine/noharmane as a Model of Tobacco Dependence
Halvor McGee	Patricia Finn	UCSD	Cigarette Smoke Exposure in Utero: Neonatal Immunity
April Ross	Kent Pinkerton	UCD	Lung Development, Tobacco Smoke and Sensitivity to Infection
Monique Williams	Prue Talbot	UCR	Use of Stem Cells to Examine Toxicity of Cigarette Smoke
Zul Surani	Bruce Allen	Charles R. Drew University	Developing a Menthol-Centric Smoking Cessation Intervention



## **GRANTS COMPLETED IN 2010**

In 2010, 25 research grants were completed, representing cutting-edge science on tobacco-related disease and tobacco control policy and programs, particularly in those groups at highest risk for tobacco use and exposure to secondhand smoke. They include 3 on nicotine dependence, 5 on tobacco use prevention and cessation, 4 on tobacco control policy, 7 on cancer, and 6 on heart and lung disease. Full abstracts can be found at <http://www.trdrp.org/>

### **Nicotine Dependence**

16RT-0160

#### **Understanding Nicotinic Receptor Subtype Specificity**

Dougherty, Dennis A.

*California Institute of Technology*

17FT-0053

#### **Nicotinic Regulation of GABAergic Inhibition/Excitation**

Gouko Natalia V,

*University of California at San Diego*

17DT-0191

#### **Nicotinic Regulation of Neurogenesis in Adult Hippocampus**

Campbell, Nolan

*University of California, San Diego*

### **Tobacco-Use Prevention and Cessation**

15RT-0111

#### **Culture and Tobacco among American Indian Adolescents**

Baezconde-Garbanati, Lourdes

*University of Southern California*

16IT-0208

#### **Investigating College Student Cigarette Smoking Self-Change**

Myers, Mark, G.

*Veterans Medical Research Foundation*

16FT-0050

#### **The Impact of Positive Mood on Self-Control Depletion in Smoking**

Shmueli, Dikla

*University of California, San Francisco*

17DT-0190

#### **Cigarette Smoking and Stress-Coping among Latino Youth**

Grana, Rachel

*University of Southern California*

15RT-0044H

#### **Sociocultural Determinants of Menthol Smoking Among Blacks**

Allen, Bruce

Charles R. Drew University of Medicine & Science

### **Tobacco Control Policy**

15RT-0160

**Smoking Policies and Secondhand Smoke in Rental Cars**

Matt, Georg E.

*San Diego State University Research Foundation*

16RT-0075

**Economic Impact of Secondhand Smoke for Communities of Color**

Max, Wendy

*University of California, San Francisco*

17IT-0014A

**Banning Butts: The Environmental Case**

Novotny, Thomas

*San Diego State University Research Foundation*

15KT-0145

**Tobacco Industry Political Strategies after the 1998 MSA**

Apollonio, Dorothy E.

*University of California, San Francisco*

**Cancer**

14RT-0065

**Role of Protein Phosphatase 2A in Lung Cancer**

Walter, Gernot F.

*University of California, San Diego*

18DT-0011

**Genomic Profiles in Tobacco Related Metastatic Oral Cancer**

Bhattacharya, Aditi

*University of California, San Francisco*

17DT-0189

**Small Molecule Gene Regulation in Lung Cancer Cells**

Farkas, Michelle E.

*California Institute of Technology*

15RT-0104

**Unraveling Lung Cancer Signaling Pathway**

Jiing-Dwan Lee

*The Scripps Research Institute*

17FT-0062

**Role of Lineage-Specific Oncogene TITF1 in Lung Cancer**

Kwei, Kevin

*Stanford University*

17DT-0188

**Synthesis of the Glaciapyrroles, New Anticancer Agents**

Steinhardt, Sarah E.

*University of California, Irvine*

17FT-0056

**Genomic Assay to Identify Targets of Anticancer Therapeutics**

Ko, Nolan

*Stanford University*

**Heart and Lung Disease**

17DT-0193

**Regulation of Integrin Activation**

Banno, Asoka

*The University of California, San Diego*

16RT-0082

**High Resolution OCT for Airway Cancer Detection**

Brenner, Matthew, M.D.

*University of California at Irvine*

17FT-0040

**16S rRNA PhyloChip Analysis of Bacterial Communities in COPD**

Huang, Yvonne

*University of California, San Francisco*

14KT-0091

**Skeletal Muscle Structure and Function in Mice Lacking VEGF**

Olfert, Ivan

*University of California, San Diego*

15KT-0008H

**Tobacco Gene-Environment Interactions & Minority Asthmatics**

Choudhry, Shweta

*University of California, San Francisco*

15KT-0135

**Stem Cell Regeneration of the Airway: Effects of Smoke**

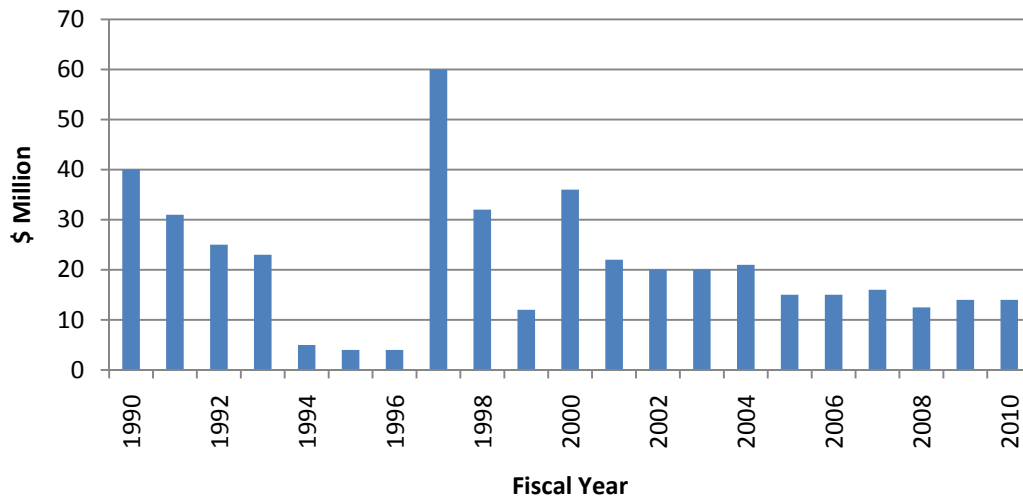
Thai, Philip

*University of California, Davis*

**APPROPRIATIONS**

The sole source of TRDRP funds is the revenue from the tobacco surtax that was established when California voters passed Proposition 99 in 1988. Proposition 99 specified that five percent of this tax revenue be deposited in the Research Account and that it be used exclusively for research on tobacco-related disease. Tobacco sales in California have steadily declined since the Proposition 99 tobacco excise surtax went into effect in 1989. Between 1990-91 and 2004-05, TRDRP resources declined from \$26.9 million to \$14.3 million annually. Appropriations from the Research Account to the University of California have shown large fluctuations – from \$40.3 million in 1990 to \$3.65 million in 1995 to \$60.4 million in 1997 (see Figure 2).

Appropriations to TRDRP from Proposition 99 Research Account, 1990-2009



Starting in 2000-2001, the amount appropriated from the Research Account to the California Department of Health Services was increased from approximately \$1.7 million to approximately \$5 million annually. During the first ten years of Prop. 99-funded programs, the annual appropriation to DHS remained at approximately 6 percent of available funds (i.e., revenue, interest, and Proposition 10 backfill), regardless of the amount appropriated to UC. For example, in 1999-2000 it was 7.5 percent. Starting in 2000-2001, however, the DHS appropriation was increased to more than \$5 million which is now 24 percent of the total available.

**PROGRAM ADMINISTRATION**

TRDRP manages all fiscal and programmatic aspects of the tobacco research funding from the Cigarette and Tobacco Products Surtax Fund. As stipulated by the legislation, funding for administrative expenses is limited to five percent of the Research Account. Within the Office of the President at the University of California, TRDRP is one of three Special Research Programs within the Research Grants Program Office in the Office of Research and Graduate Studies.

**EVALUATION OF RESEARCH GRANT APPLICATIONS**

Research grant proposals submitted in response to TRDRP’s Call for Applications are first screened for relevance to the program’s mission. Relevant proposals are assigned to a committee of peer reviewers who are experts in the scientific discipline and subject matter of the proposed research (these committees are known as “study sections”). Peer reviewers are drawn from outside California to minimize actual and apparent conflicts of interest with the applicants. Each study section evaluates applications for their scientific merit. Following state statutes, the evaluation procedure is modeled on the one used by the National Institutes of Health. The study sections’ merit ratings are transmitted to TRDRP’s Scientific Advisory Committee (see below). The committee uses the scientific merit ratings together with the degree to which a proposal is responsive to funding priorities to make funding recommendations. The awards recommended for funding by the Scientific Advisory Committee represent important and innovative research that promises to advance knowledge needed to improve tobacco control; tobacco use prevention and cessation; protection from secondhand smoke; and prevention, treatment, and diagnosis of tobacco-related disease.

**SCIENTIFIC ADVISORY COMMITTEE**

In accordance with enabling legislation, a Scientific Advisory Committee advises the University on the administration of TRDRP. Members, who represent major California organizations involved in health research, are appointed to three-year terms, are not compensated, and may not receive TRDRP funding while serving on the committee (see Table 3). The committee is charged with recommending the strategic objectives and priorities of TRDRP and with making final recommendations on grants to be funded based on the established priorities and the scientific merit of the proposals as determined by peer review.

Scientific Advisory Committee Roster, 2010

<b>CHAIR</b>	<b>REPRESENTING</b>	<b>TERM</b>
<b>Marilyn Newhoff, Ph.D.</b> Dean, College of Health and Human Services San Diego State University 5500 Campanile Drive, M/C 4124, ED-154B San Diego, CA 92182-4124	<i>Tobacco-Related Disease            Research Institute</i>	2007-2011
<b>MEMBERS</b>		
<b>Serena Chen, B.A., M.S.</b> Regional Director, Policy & Tobacco Programs, East Bay American Lung Association of California 1900 Powell Street, Suite 800 Emeryville, CA 94608	<i>American Lung Association of the East Bay</i>	2009-2012
<b>Sara Courtneidge, Ph.D.</b> Professor The Burnham Institute for Medical Research 10901 North Torrey Pines Road La Jolla, CA 92037	<i>Biomedical Research</i>	2008-2011
<b>David Cowling, Ph.D.</b> CDIC/California Tobacco Control Program MS 7206 P.O. Box 997377 Sacramento, CA 95899-7377	<i>California Department of Public Health</i>	2008-2011
<b>Frederic Grannis, M.D.</b> Associate Professor and Staff Surgeon Thoracic Surgery City of Hope National Medical Center 1500 East Duarte Road Duarte, CA 91010	<i>Lung Cancer Alliance</i>	2008-2011
<b>Fredric B. Kraemer, M.D.</b> Professor of Medicine Division of Endocrinology Stanford University Medical Center Stanford, CA 94305-5103	<i>American Heart Association,            Western States Affiliate</i>	2005-2011
<b>Paul Murata, MD, MSPH</b> Medical Institute of Little Company of Mary 20911 Earl Street, Suite 400 Torrance, CA 90503	<i>American Cancer Society, California Division</i>	2005-2011
<b>Geraldine V. Padilla, Ph.D.</b> Professor & Associate Dean for Research UCSF School of Nursing 2 Koret Way, Room N339 San Francisco, CA 94143-0604	<i>Professional medical or health organization</i>	2008-2011
<b>Randall S. Stafford, M.D., Ph.D.</b> Associate Professor of Medicine Stanford Prevention Research Center Stanford University Medical School Hoover pavilion, Room N229 211 Quarry Road Stanford, CA 94305-5705	<i>Independent research university</i>	2008-2011

<b>Stattice Wilmore, B.S.</b> Tobacco Control Program Coordinator II City of Pasadena Public Health Department Health Promotion & Policy Development Division 1845 North Fair Oaks Avenue, Room 1131 Pasadena, CA 91103	<i>Community-Based Provider</i>	2009-2012
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**Contact information:**

UCOP Budget and Capital Resources  
1111 Franklin Street, 6th Flr.  
Oakland, CA 94607-5220  
Office website: <http://budget.ucop.edu>  
Report website: <http://budget.ucop.edu/legreports/>