

COLORADO TOBACCO RESEARCH PROGRAM

2001 Annual Report

to the

Colorado Department of Public Health and Environment

November 30, 2001

To: Janell Little
Tobacco Oversight Program Manager
Colorado Department of Public Health and Environment

From: Jay A. Gershen, D.D.S., Ph.D.
Interim Vice President for Academic Affairs and Research
University of Colorado

The University of Colorado (CU) has been charged with administering the research program established in Senate Bill 00-071. Pertinent to the reporting requirements detailed in SB 00-071, this second Annual Report consists of an Introduction and six categories:

- (a) Award allocation (the number and dollar amounts of research grants received through the Research Program, including the amount allocated to indirect costs)
- (b) Grants by academic discipline (the subjects of research grants by academic discipline)
- (c) The relationship between state and federal funding for tobacco- and substance-abuse-related research
- (d) The relationship between each project and the overall strategy of the research program
- (e) A summary of research findings
- (f) Recommendations for future Program directions

Any questions or recommendations concerning the content of this Annual Report should be directed to Jeff Cheek, Director of the Colorado Tobacco Research Program, at (303) 492-5955 or via email at jeff.cheek@cu.edu.

CC: Elizabeth Hoffman, Ph.D.
President
University of Colorado

Jeffrey Cheek, Ph.D.
Director
Colorado Tobacco Research Program

Leonard Dinegar
Director of Public Affairs
University of Colorado

Introduction

This is the second Annual Report of the Colorado Tobacco Research Program's grant awards to the Colorado Department of Public Health and Environment, covering the period of July 1, 2001 through June 30, 2002 as mandated in Senate Bill 00-071, section 11, 23-20-208.

By creating the tobacco research fund, the Colorado State Legislature made optimal use of newly available monies to benefit Colorado citizens. Senate Bill 00-071 determined how the State of Colorado's share of the national tobacco settlement funds would be spent. The bill allocated up to 8% of the monies received annually for the establishment of a comprehensive clinical, basic science, mental health, and evaluative research grant program that would serve Colorado's tobacco- and substance-abuse-related health care needs. SB 00-071 ensures that the research grant program supports the people of Colorado by directly addressing the mental health, educational, cessation, prevention and illness-related needs caused by tobacco and substance abuse within the state.

To implement the research program, the State Legislature assigned the Office of the President of the University of Colorado (CU) the duty of administering the Colorado Tobacco Research Program (CTRP). Within the CU Office of the President, the Vice President for Academic Affairs and Research thus created CTRP, with the charge to award research grants based on scientific merit and relevance to the Program's mission in an open, competitive manner. SB 00-071 also directed the Governor to establish a Scientific Advisory Committee to assist the University in administering CTRP. Comprised of members of voluntary health organizations dedicated to the reduction of tobacco use, experts in the fields of biomedical or social/behavioral research, representatives from research universities and institutions focused on tobacco-related issues affecting children and youth, and members of medical or health organizations, the Scientific Advisory Committee primarily develops the strategic objectives and priorities of CTRP, and facilitates coordinated efforts between the Program and other stakeholder entities focused on reducing tobacco use and tobacco-related disease in Colorado.

For its inaugural funding cycle, CTRP is pleased to announce the initiation of 14 research projects, and a Baseline Study Award, that will lead to more knowledge about the etiology, pathogenesis, diagnosis and treatment of tobacco- and addiction-related diseases and the development, implementation, evaluation, and dissemination of existing or novel approaches to tobacco control and substance abuse education. Individual investigators from six institutions from across the state, including Colorado affiliated colleges, universities (e.g., Colorado State University and the University of Colorado campuses), public, private & non-profit organizations (e.g., AMC Cancer Research Center), and non-profit hospitals (e.g., National Jewish Research & Medical Center) are embarking on research that will reduce the morbidity and mortality associated with tobacco use. By providing more than \$6.1 million to fund these new awards, the State of Colorado has pledged its commitment to reducing the physical and mental health impact, and the corresponding economic burden, of tobacco-related diseases within the state.

For the 2001-2002 funding cycle, the Scientific Advisory Committee has recommended that the research areas to be considered include etiology, pathogenesis, diagnosis and treatment of tobacco- and addiction-related diseases and the development, implementation, evaluation, and dissemination of existing or novel approaches to tobacco control and tobacco education. All proposals will be subjected to careful peer review, with final funding judgments determined in conjunction with the Scientific Advisory Committee's assessment of the scientific relevance to the needs of the citizens of Colorado. Details of the current research priorities, award types and application procedures are provided in the 2001-2002 Call for Applications (*Attachment 1*).

2001 Annual Report

(a) Award Allocation

In 2001, the first year of grant distribution for the Colorado Tobacco Research Program (CTRP), \$6,136,452 has been allocated to 15 awardees. Following are the allocation details for the 15 awards, listed by project title, recipient institution, and principal and co-investigators, with direct vs. indirect costs listed separately:

- 1. Baseline Study Award to provide statistical accuracy of tobacco-related healthcare problems in Colorado, \$1,499,000 (Direct: \$1,098,168; Indirect: \$400,832).** The Baseline Study Award was made to Arnold Levinson, Ph.D., from the Center for Research Methodology and Biometry, AMC Cancer Research. The legislatively mandated study will gather information about tobacco related behavior and attitudes of children/adults in Colorado.
- 2. Colorado Anti-Tobacco PSA Message Sensation Value Project, Research Grant, \$885,740 – (Direct: \$524,107; Indirect: \$361,633)** - Will test the effectiveness of a brief media-based tobacco prevention program on producing changes in adolescents' attitudes toward smoking. Principal Investigator - Donald W. Helme, Jr., Ph.D., Assistant Scientist, Center for Health Communication, AMC Cancer Research Center. Co-Investigators- Robert Lewis Donohew, Ph.D., Collaborating Scientist, Center for Health Communication, AMC Cancer Research Center; Arnold Levinson, Ph.D., Assistant Scientist, Center for Methodology and Biometry, AMC Cancer Research Center; Walter (Snip) Young, M.A., Scientist, Center for Health Communication, AMC Cancer Research Center.
- 3. ETS Reduction Counseling for Families of Asthmatic Children, Research Grant, \$795,859 (Direct: \$524,944; Indirect: \$270,915)** - Will implement an environmental tobacco smoke reduction program with the families of inner city asthmatic children. Principal Investigator - Mary Dorothy Klinnert, Ph.D., Assistant Professor, Department of Pediatrics, National Jewish Medical & Research Center. Co-Investigators - Mark Anderson, M.D., Assistant Professor, Staff Pediatrician, Denver Health and Hospital Authority; Melborne F. Hovell, Ph.D., MPH, Associate Faculty Member, Center for Behavioral Epidemiology and Community Health, San Diego State University; Andrew Liu, M.D., Assistant Professor, National Jewish Medical & Research Center.
- 4. CO₂ Assisted Nebulization for Drugs for Lung Ailments, Research Grant, \$733,539 (Direct: \$524,752; Indirect: \$208,787)** - Will focus on two major tobacco-related diseases, lung cancer and emphysema, and will provide guidelines that allow formulations of new treatment compounds to be delivered into the lungs. Principal Investigator - Robert E. Sievers, Ph.D., Professor, Department of Chemistry and Biochemistry, University of Colorado at Boulder. Co-Investigators - John E. Carpenter, Ph.D. Associate Professor, School of Pharmaceutical Science, University of Colorado Health Sciences Center; Edward T.S. Huang, Ph.D., Research Associate, CIRES, University of Colorado at Boulder.
- 5. Telomerase Expression in Tobacco Associated Oral Cancer, Research Grant, \$718,007 (Direct: \$494,530; Indirect: \$223,477)** - Will evaluate a host of tobacco associated pre-cancerous and cancerous oral lesions in order to assess potential malignant risk. Principal Investigator - Robert O. Greer, D.D.S., Professor and Chair, Department of Diagnostic and Biological Sciences and Professor of Pathology and Medicine, University of Colorado Health Sciences Center. Co-Investigator - Kenneth R. Shroyer, M.D., Ph.D., Associate Professor, Department of Pathology, School of Medicine, University of Colorado Health Sciences Center.

6. **Prediction of Tobacco-Using Groups in Pre-Adolescent Youth, *Research Grant, \$671,861 (Direct: \$480,244; Indirect: \$191,617)*** - Will help determine how prevention programs should be developed and have important implications for the design of culturally appropriate prevention programs. Principal Investigator - Randall C. Swaim, Ph.D., Research Scientist, Psychology, Colorado State University. Co-Investigator - Patricia A. Aloise-Young, Ph.D., Assistant Professor, Psychology, Colorado State University.
7. **Inflammation, Oxidative Stress and Dysphasia in COPD, *Research Grant, \$248,843 (Direct: \$173,879; Indirect: \$74,964)*** - Will identify subjects at high risk for lung cancer by examining phlegm for pre-malignant and malignant cells. Principal Investigator - Philip E. Silkoff, M.D., Assistant Faculty Member, Department of Medicine, National Jewish Medical & Research Center. Co-Investigator - Esther Langmack, M.D., Assistant Faculty Member, Department of Medicine, National Jewish Medical & Research Center.
8. **Study of the Effect of the Tobacco Carcinogen Benzo(a)pyrene in *Saccharomyces Cerevisiae*, *IDEA Grant, \$113,250 (Direct: \$74,515; Indirect: \$38,735)*** - The study will use budding yeast as an experimental model to investigate the consequences of exposure to the major carcinogen in tobacco, benzo(a)pyrene. This will help our understanding of similar processes in human cells. It is the goal of this study to contribute to the discovery and design of the drugs for tobacco-related diseases including lung cancer. Principal Investigator - Mingxia Huang, Ph.D., Assistant Professor, Department of Biochemistry and Molecular Genetics, University of Colorado Health Sciences Center.
9. **Tobacco and Schizophrenia Affect Prenatal Brain Development, *IDEA Grant, \$113,250 (Direct: \$75,000; Indirect: 38,250)*** - Will lead to greater understanding of both the negative health effects of tobacco on early brain development and on the genetically-mediated prenatal brain development in those most at risk for later tobacco use. Principal Investigator - Randal G. Ross, M.D., Associate Professor, Department of Psychiatry, University of Colorado Health Sciences Center.
10. **Tobacco Use by Foster Care Youth and Professional Responses, *IDEA Grant, \$104,866 (Direct: \$74,958; Indirect: \$29,908)*** - This study will examine the role of tobacco use among foster children and youth, aged 10-17. Additionally, this study will examine how a respondent group of professional workers and foster parents help these foster children with smoking cessation and smoking prevention. Principal Investigator - Mona C. Struhsaker Schatz, D.S.W., Professor, Department of Social Work, Director, Education and Research Institute for Fostering Families, Colorado State University.
11. **Chronic Nicotine Effects in Mouse Hippocampal CA3 Region, *Postdoctoral Fellowship, \$80,000 (Direct: \$80,000)*** - Will investigate chronic nicotine effects in the CA3 region of the hippocampus from inbred mice. Principal Investigator - Peter Dobelis, Ph.D., Post Doctoral Fellow, Pharmacology, University of Colorado Health Sciences Center. Research Advisor - Thomas V. Dunwiddle, Ph.D., Professor, Pharmacology, University of Colorado Health Sciences Center.
12. **Epithelial Injury by Cigarette Smoke: Sulfur Metabolism, *Dissertation Grant, \$59,928 (Direct: \$59,928)*** - Will study how smoking may affect the DNA of lung cells so as to predispose a person to lung cancer and possibly cause depletion of vital nutrients to lung cells. Principal Investigator - Michail I. Panagiotidis, M.S., graduate student at National Jewish Medical & Research Center. Mentor - Carl W. White, M.D., Senior Faculty Member, National Jewish Medical & Research Center, and Professor of Pediatrics at the University of Colorado Health Sciences Center.
13. **Nicotinic Signal Transduction in the Central Nervous System, *Dissertation Grant, \$46,720 (Direct: 46,720)*** - Will determine a mechanism by which nicotine can result in long-term changes in the brain and provide insights into the origins of nicotine addiction. Principal Investigator - Mr. Liam J. Breeze, Doctoral Candidate, University of Colorado Health Sciences Center, Department of Physiology & Biophysics. Mentor - S. Vijayaraghavan, Ph.D., Assistant Professor, Department of Physiology & Biophysics, University of Colorado Health Sciences Center.

- 14. Household Factors and Passive Smoke Exposure of Preschool Children, *Dissertation Grant, \$44,766 (Direct: \$44,766)*** - Will explore the factors that families identify as being important in developing rules about smoking in their homes and cars. Principal Investigator - Yvonne Kay Yousey, Doctoral Candidate, University of Colorado at Denver, MS, CPNP, Senior Instructor, School of Nursing, University of Colorado Health Sciences Center. Mentor - Kitty Corbett, Ph.D., MPH, Associate Professor, Health & Behavioral Sciences, Anthropology, University of Colorado at Denver.
- 15. Theory and Research Confounds in Anti-Substance PSA Study, *Dissertation Grant, \$20,823 (Direct: \$20,823)*** - Will delineate the contemporary history of anti-substance PSA research and conduct empirical studies on their theoretical and methodological weaknesses toward highlighting areas in need of improvement. Principal Investigator - Carson Brandt Wagner, M.A., Doctoral Candidate, University of Colorado at Boulder, School of Journalism and Mass Communication. Mentor - Michael Tracey, Ph.D., Professor, University of Colorado at Boulder, School of Journalism and Mass Communication.

The following chart details the allocation of funds by institution:

Allocation of CTRP Funds by Institution				
Institution	Number of Grants (%Total)	Grant Award Amount (%Total)		
		<i>Total Grant Award</i>	<i>Direct Costs</i>	<i>Indirect Costs</i>
AMC Cancer Research Center	2 (13)	\$2,384,740 (39)	\$1,622,275	\$762,465
Colorado State University	2 (13)	\$776,727 (13)	\$555,202	\$221,525
National Jewish Medical & Research Center	3 (20)	\$1,104,630 (18)	\$758,751	\$345,879
University of Colorado at Boulder	2 (13)	\$754,362 (12)	\$545,575	\$208,787
University of Colorado at Denver	1 (7)	\$44,766 (1)	\$44,766	\$0
University of Colorado Health Sciences Center	5 (34)	\$1,071,227 (17)	\$770,765	\$300,462
Totals	15	\$6,136,452 (100)	\$4,297,334	\$1,839,118

(b) Grants by Academic Discipline

The following table details the 2001 distribution of CTRP awards according to research area.

Award Distribution – by Research Area		
Research Areas	Awards (% of total)	Amount Funded (%)
Baseline Study ^a	1 (7)	\$1,499,000 (24)
Disease Diagnosis & Treatment ^b	5 (33)	\$1,873,567 (31)
Nicotine Addiction ^c	2 (13)	\$126,720 (2)
Prevention and Cessation ^d	6 (40)	\$2,523,915 (41)
Mental Health ^e	1 (7)	\$113,250 (2)
Total	15 (100)	\$6,136,452 (100)

^a From Section (a), award number 1

^b From Section (a), award number 4,5,7,8,12

^c From Section (a), award number 11 and 13

^d From Section (a), award number 2,3,6,10,14,15

^e From Section (a), award number 9

The information provided in Table 2 can be restated in the following way: as part of its first cycle of funding, CTRP was legislatively mandated to support a baseline evaluation survey to gather information about tobacco-related behavior and attitudes of children and adults in Colorado. A separate Request for Proposals for this contract was issued; approximately one-fourth of the funds awarded by CTRP in its inaugural year went to the baseline evaluation study. Future baseline studies will be funded from tobacco settlement funds awarded to the state Department of Public Health and Environment. Of the remaining first-year monies available to CTRP, approximately 40% of the awarded funds will support six studies that center on the social and behavioral factors underlying why individuals start to smoke, how cultural and family norms influence smoking prevalence, and what factors contribute to effective anti-smoking messages. Slightly less than one-third of the award monies will fund five projects focusing on tobacco-related disease processes, ranging from basic biological studies of the molecular and cellular changes that are critical to the initiation of disease, the development of new or refined diagnostic approaches to identify disease progression, and on potential therapies and/or novel drug delivery techniques. Two projects will investigate the underlying physiological mechanisms that may predispose individual susceptibility to nicotine addiction or play key roles in its progression. Finally, one project will study what factors underlie maternal tobacco use and its effects on brain development.

(c) Other Funding: State and Federal Funding for Tobacco- and Substance-Abuse-Related Research

There are currently no data with regard to state and federal funding for tobacco- and substance-abuse-related research in correlation with CTRP funds awarded during its inaugural cycle. Progress reports from awardees, due February 1, will provide this information so that it will be included in the 2002 Annual Report.

(d) Relationship Between Each Project and the Overall Strategy of Colorado Tobacco Research Program

As detailed in the annual Call for Applications (*Attachment 1*), the types of research projects CTRP funds include Independent Investigator awards (i.e., Research Projects and Innovative Development and Exploratory Awards (IDEAs)) and career development awards (i.e., Postdoctoral Fellowships and Dissertation Research Awards). CTRP’s Research Priorities support investigations into the etiology, pathogenesis, diagnosis and treatment of tobacco- and addiction-related diseases and the development, implementation, evaluation, and dissemination of existing or novel approaches to tobacco control and substance abuse education.

While the goals of each project and their relevance to the mission of CTRP are specified in Section (a), the following table provides CTRP’s distribution of awards by type:

Table 3

Award Distribution – by Type of Award		
Type of Award	Awards (% of total)	Amount Funded (%)
<i>Baseline Study Award</i> (contract awarded in response to a specific Request for Proposals)	1 (7)	\$1,499,000 (24.3)
<i>Independent Investigator Awards</i>		
Research Projects	6 (40)	\$4,053,849 (66)
IDEA Projects	3 (20)	\$331,366 (5.4)
<i>Career Development Awards</i>		
Postdoctoral Fellowships	1 (7)	\$80,000 (1.3)
Dissertation Research Awards	4 (27)	\$172,237 (3)
Total	15 (100)	\$6,136,452

(e) Summary of Research Findings

All 2001 CTRP projects began on July 1, 2001. As awardees are only 6 months into their research projects, no summarized findings are yet available. Progress reports from awardees, due February 1, will provide this information so that it may be included in the 2002 Annual Report.

(f) Recommendations for Future Program Directions

Partnering with other state tobacco funding agencies

To better address the public health impact of tobacco and substance abuse, CTRP should evaluate the potential for partnering with state agencies (e.g., State Tobacco Education and Prevention Partnership (STEPP) within the Department of Public Health and Environment) to fund mutually beneficial research projects. This could entail, for example, requiring academic researchers (supported by CTRP funds) to collaborate with community-based organizations or school-based associations (who would be supported by CDPHE funds). In addition to facilitating translation of research in key areas relevant to tobacco control and chronic disease, this would also enhance cooperative efforts between the various programs supported by Colorado's tobacco settlement monies.

Provide information resources on tobacco research issues for both investigators and lay public

As part of the overall outreach efforts aimed at increasing CTRP's visibility among researchers and tobacco control advocates, CTRP could increase its efforts at information dissemination on both program-specific issues and tobacco-related research on a global scale. This would entail increasing and improving the Program's website content and also utilizing other media formats (e.g., Program newsletter; creation of mailing lists).