This report provides an update on the following programs: the Bioscience Discovery Evaluation Grant Program, the Colorado Job Creation Performance Incentive Fund and the Film Incentives Cash Fund.

BIOSCIENCE DISCOVERY EVALUATION GRANT (BDEG) PROGRAM

This program was created by the Colorado legislature in 2006 with the purpose being to improve and expand the evaluation of new bioscience discoveries at research institutions with the intent of accelerating the development of new products and services—essentially a proof of concept program. The legislature approved a $2,000,000 appropriation for this program, of which $1,960,000 has been awarded to 6 Offices of Technology Transfer at Colorado universities and research institutions as follows:

- $1,029,000 to the University of Colorado's Technology Transfer Office for 13 projects;
- $441,000 to the Colorado State University's Research Foundation Technology Transfer Office for 5 projects;
- $196,000 to the National Jewish Medical and Research Center's Intellectual Property & Technology Commercialization Program for 5 projects;
- $78,275 for the Bonfils Blood Center Foundation's Office of Technology Transfer for 1 project;
- $162,465 to the University of Denver's Department of Intellectual Property and Technology Transfer for 2 projects; and
- $53,260 to the University of Northern Colorado's Office of Technology Transfer for 1 project.

The legislation also authorized the remaining $40,000 (or 2%) or to be used for administrative costs.

Up to $150,000 could have been requested for each specific project; however, each project was required to have one dollar in matching funds for every dollar requested from the BDEG Program. A list of specific projects receiving approval follows:

University of Colorado

- $91,832 - New treatment for ineffectively treated schizophrenia patients: This project proposes to reformulate clozapine, a highly effective medication for schizophrenia, for central administration. Direct administration of clozapine will require substantially lower doses relative to oral administration to achieve a therapeutic effect and thereby reducing likelihood of side effects.
- $68,632 - Suppression of irradiation –induced salivary gland dysfunctionby IGF – 1: Standard therapy for head and neck cancer involves irradiation.

A major side effect is destruction of the salivary gland resulting in dry mouth. Researchers propose to: (1) determine the therapeutic index of IGF-1 pretreatment for radiation therapy, (2) investigate alternative delivery, (3) determine long-term efficacy, and (4) explore other models.

- $46,883 - Device for laser fusion of septal tissue: A prototype device will be created, tested and optimized for joining tissue in surgical procedures involving the nasal septum (the internal, mid-line of the nose). Tailoring a device for the particular application of septal laser fusion permits us to overcome barriers that have prevented others from creating an economical solution.
- $90,382 - Validation of SARS coronavirus antibody technology of influenza virus: Researchers have developed a unique strategy that prepares antibodies to recognize the native helical conformation of the SARS coronavirus fusion protein and block virus entry into cells. This project proposes to use this same technology to develop a similar antibody to the influenza A virus fusion protein.
- $89,744 - Hydroquinone ansamysin prodrugs as novel anticancer Hsp90 inhibitors: It is the researchers' hypothesis that prodrugs yielding hydroquinone ansamycins intracellularly may be effective Hsp90 inhibitors. This approach can be expanded to include other derivatives as the project proceeds and as the hypothesis is refined.
- $45,916 - Infusion of alpha-1-antitrypsin (ATT) to suppress Human Immunodeficiency Virus Type 1 (HIV) replication in patients: Current antiretroviral therapy for HIV is subject to the mutation-induced escape of drug resistant HIV strains. Researchers plan to infuse AAT into volunteers infected with uncontrolled HIV in an attempt to suppress viral replication. These studies may lead to novel HIV treatment options and other uses.
- $91,832 - In vivo analysis of a cardiac and skeletal muscle stem cell activator: Researchers have identified a compound that induces cardiac stem cell activation in vitro. Preliminary studies indicate the compound will signal cardiac stem cell activation leading to heart and skeletal muscle growth and repair in vivo. The project proposes testing the compound therapeutically to induce stem cell-mediated growth and repair of damaged heart muscle.
- $78,916 - Biomarker Enabled Development of PARP Inhibitors for Cancer Therapy: Reseachers believe their phosphospecific antibody test can become the preferred and perhaps only practical method for identifying responders to PARP inhibitors. The plan is to use this biomarker to enable drug development and facilitate FDA approval of PARP inhibitor therapy for cancers, including breast and ovarian cancer, and possibly prostate, pancreatic, melanoma, or throat cancers.
- $91,832 - A Novel biology targeted agent for the treatment of non-small cell lung cancer: This project will examine the potential of a new Axl inhibitor to increase apoptosis and decrease the invasive potential of lung cancer cells in vitro and to improve survival and/or tumor regression in an animal model of non-small cell lung cancer.

- $92,819 - Redox-Initiated Radical Chain Polymerization for the Detection and amplification of biological recognition events: This project aims to couple a nucleic acid hybridization event, which provides specificity, with radical chain polymerization, as well as signal amplification. The ability to couple polymer growth with multiple DNA hybridization events would provide clinicians a rapid, inexpensive and sensitive diagnostic assay for early-stage lung cancer.
- $85,549 - Moving Bryostatin-1 from the lab to the clinic for the treatment of pulmonary hypertension: Chronic hypoxic pulmonary hypertension (PHTN) is a major clinical problem, which afflicts millions of Americans. The proposed research will test the hypothesis that Bryostatin-1, alone or in combination with other emerging drug strategies, will exert striking protective and attenuating effects on the pulmonary circulation exposed to chronic hypoxia.
- $91,349 - New targeted drug for the treatment of lung cancer: Researchers propose to administer systemically inactive peptide-linked doxazolidine, which will be activated by plasmin release at the site of tumor metastases. Thus, normal tissue will be exposed to the inactive pro-drug, while the tumor will be exposed selectively to the released, and highly toxic, cytoxin.
- $63,314 - Protein biomarkers to differentially diagnose follicular thyroid carcinoma and follicular thyroid adenoma: Thyroid cancer is the most common endocrine malignancy. Researchers aim to develop a clinical assay that will provide sufficient diagnostic power to correctly distinguish FTC from FTA in a blood sample. Such an assay could save the healthcare system on the order of $250 million per year and prevent tens-of-thousands of unnecessary thyroidectomies.

Colorado State University

- $78,536 - Coherence-modulated molecular specific nonlinear optical microscopy: Successful application of this novel nonlinear microscope to infectious Prion detection may enable low-cost and rapid screening for Mad Cow disease, ensuring the safety of the food supply and the viability of beef exports. There are no rapid diagnostic test assays currently available.
- $99,533 - Evaluation of a dynamic external cardiac device for the treatment of functional mitral valve regurgitation: This simple device is to be surgically implanted around the heart to address tethering of the papillary muscle and left ventricular dilation, the most important causes of FMVR. If this device proves successful it may offer a minimally invasive way to correct FMVR and improve the survival prognosis for patients with this disease.
- $107,285 - A Development proposal for and instrumented cervical intervertebral disc space distractor: CSU's Dr. Christian Puttlitz has designed an improvement to the Caspar pin distractor which is used to open up the disc space during anterior cervical discectomy with fusion

(ACDF), the most commonly used procedure to treat degenerative disc disease. This improved will be tested accordingly.

- $61,646 - Evaluation of lymphactic drainage and uptake following intracavitary chemotherapy administration for mammary carcinoma: This project evaluates the sustained release of anticancer chemotherapy from a biodegradable polymer system that is placed in the surgical site during breast-sparing surgery for breast cancer. If proven successful, this may drive further development of polymer technology and be adapted to other cancers and non-cancer diseases that preferentially spread to the lymphatics.
- $94,000 - Phytodetectors: plants designed to be highly specific detectors of environmental pollutants: It is currently impractical to monitor large areas such as metropolitan areas, sports arenas, transportation hubs, shopping malls, and areas around chemical plants for threats from terrorists or the presence of environmental pollutants. Researchers have produced plants with a high specificity to sense substances such as explosives. This project proposes to evaluate this technology.

National Jewish Medical and Research Center

- $20,986 - Use of soluble gamma/delta t-cell receptors in reducing inflammatory damage: This project hypothesizes that injecting a soluble T-cell receptor into a mouse can reduce inflammatory damage caused by a bacterial infection by binding to and soaking up all the molecules that would normally activate inflammation-promoting gamma/delta T cells. The bioscience grant will allow testing of this process.
- $36,998 - Development of Novel Therapies to Treat Chronic Lung Disease: Researchers have identified two compounds that stimulate glutathione production in cultured cells. This project hypothesizes that these compounds can be used to increase glutathione levels in the lungs, which will decrease the inflammation and provide a novel therapeutic approach to treating various lung diseases. The grant will allow testing in a mouse model.
- $48,421 - Heat shock proteins modify lung allergic inflammatory responses: Allergic diseases, including asthma, are believed to be the result of an imbalanced immune response, skewed away from what is known as Th1 in favor of a Th2 response. This study proposes to show that administration of one heat shock protein can reduce allergic reactions in a mouse model of allergic asthma by shifting the immune response away from Th2 toward Th1.
- $55,093 - Inhaled and t-cell-receptor antibodies for the treatment of airway hyper-responsiveness and inflammation: Researchers have found that antibodies, which cause certain asthma related T cells to commit suicide, also function when they are inhaled. In this way, only T cells in the lungs and airways are affected, leaving an organism's disease-fighting ability intact. This grant will extend testing from mice to a nonhuman primate animal model.

- $34,502 - A method for the Prevention and treatment of pseudomonas biofilm infections: Infections by the bacteria Pseudomonas aeruginosa are serious and often life-threatening events. The infection becomes particularly difficult, or impossible, to treat when the bacteria forms a biofilm. Researchers have discovered a class of non-toxic compounds that appears to disrupt and even prevent the formation of Pseudomonas biofilms in the laboratory. This project will evaluate and test these compounds.

Bonfils Blood Center Foundation

- $78,275 - Transfusion related acute lung injury identification test kit (neutrophil priming activity): Increases in overall transfusions have led to an increase in adverse transfusion events, some of them fatal. This research will create a test kit used on a national and international level by physicians needing to determine if their patients are suffering from Transfusion Related Acute Lung Injury, currently the number one cause of death-related transfusions.

University of Denver

- $81,960 - Gait monitor for fall prevention business plan: Researchers are working on development of a gait monitor for commercialization in Colorado. Currently, a small, light weight and non-intrusive gait monitor for fall prevention does not exist on the market. This device is not limited to orthopedic applications, but more directly at helping elderly avoid falls and predict illness.
- $80,505 - Encoding and screening of solution phase combinatorial libraries for drug candidates: Researchers of this project have developed and demonstrated a new method of screening of solution phase combinatorial libraries (SPCL). SPCL technology creates a library of drug candidates, each of which is uniquely identified by a chemical tag. This technique has significant advantages over conventional screening techniques, with no known deficiencies.

University of Northern Colorado

- $53,260 - New compounds from snake venoms: a proteomics approach toward the development of drugs from toxins: The applications of protein drugs are rapidly growing and are projected to continue growing in the foreseeable future. Snake venoms have long been recognized as sources of actual and potential drugs and are complex mixtures consisting primarily of proteins. Through this grant, there is high probability of discovering valuable new compounds with therapeutic and/or biomedical applications.

COLORADO JOB CREATION PERFORMANCE INCENTIVE FUND

This program was created by the Colorado legislature in 2006 to provide a performance-based incentive payment to qualifying companies that have created net new jobs paying above average wages. The program is designed to support and encourage new business development, business expansions and relocations that have generated new jobs throughout the State. Employers located in a rural area must hire at least five net new full-time jobs within one calendar month and employers located in an urban area must hire at least 10 net new full-time jobs within one calendar month with an average annual wage rate of at least 110% above the county in which the new jobs are created. After maintaining the new jobs for one year, an employer has 90 days from the last day of the month in which the jobs were filled to submit an incentive application. Per the authorizing statute, the first month in which an application could be submitted was January 2007 (for jobs created in January 2006). The legislature approved a $3,000,000 annual appropriation for this program for each year through FY 2010.

In January and February of this year, five statewide training sessions were conducted in Limon, Denver, Walsenburg, Durango and Grand Junction. OEDIT has received its first application, which is under review for the creation of 15 jobs throughout the State. If the application is approved as presented, the potential incentive payout would be $22,500.

FILM INCENTIVES CASH FUND

The Colorado Film Incentives Cash Fund was created by the Colorado legislature in 2006. This program offers a performance-based incentive plan that may rebate up to 10% of the cost of producing a film, documentary or television program when that project is produced and filmed in Colorado. To qualify, a production must spend at least 75 percent of total below-the-line expenditures and 75 percent of total payroll in Colorado. Out-of-state production companies must spend at least $1 million and Colorado-based companies must spend at least $100,000 in order to be eligible for this program. A pre-application must be approved before beginning production. The 10% incentive is paid upon completion and verification of the qualifying expenditures. The legislature approved a $500,000 appropriation for this program, with $12,500 (2.5%) authorized for administrative costs. To date, $487,500 has been pre-approved for two production companies as follows:

- Mt. Evans Pictures - $26,200
- Write On Film Enterprises - $461,300

Production is anticipated to be complete by the end of this month for Mt. Evans Pictures and by mid-2007 for Write On Film Enterprises. Additionally, four more projects have submitted their applications for pre-approval. If approved, the total incentives for all four companies could be as much as $600,000.