

COLORADO SUPPORTS THE BIOSCIENCE INDUSTRY, THE INDUSTRY SUPPORTS COLORADO

The Bioscience Discovery Evaluation Grant Program (BDEGP) was created in 2006 by the Colorado legislature to foster development of the industry in Colorado, supporting both new business development and quality jobs for Coloradans. Grants have been available to develop technologies coming out of Colorado's research institutions over the last three years.

In 2008, the state legislature and the Colorado Governor's Office of Economic Development and International Trade decided to continue the program for another five years. Sponsored by Rep. Jim Riesberg and Sen. Bacon, House Bill 1001 expands the program for another five years with an average of five million dollars each year. The program continues to support technology transfer operations from Colorado's research institutions, but now grants can be made directly to companies developing these new technologies. Strategic funds are also supporting the development of new infrastructure that will support Colorado's growing bioscience industry.

Since the inception of the BDEGP, the state's technology transfer has grown exponentially and has streamlined the commercialization process. Between 2002 and 2007, Colorado State University has created 13 new bioscience companies and the University of Colorado has formed 38 new bioscience companies. Through the support of the BDEGP, Colorado is guaranteed to see many more companies spin out of the innovation of research institutions and early-stage companies in the state.

The following research projects received funding through House Bill 1001.

COLORADO SCHOOL OF MINES

Stephen G. Boyes, PhD and Misty D. Rowe, PhD - Nanoscale Theragnostic Devices for Targeted Treatment and Imaging of Cancer

DISCOVERY: Novel surface modification technique allows the production of multifunctional gadolinium nanoparticles for the targeted imaging and treatment of cancer.

GRANT FUNDED RESEARCH: Development and in vivo testing of a nanoscale theragnostic device based on gadolinium nanoparticles (GdNPs) which have been surface modified with multifunctional polymers.

PRODUCT POSSIBILITIES: The novel polymer modified-nanoparticle platform technology will allow for the development of a targeted diagnostic imaging agent for MRI, coupled with molecular imaging and therapeutic capabilities.

IMPACT: Nanoscale theragnostic devices have the ability to impact nearly all areas of cancer detection, diagnosis, and therapy and, ultimately, improve the quality of life for patients and reduce mortality rates due to cancer.

NATIONAL JEWISH HEALTH

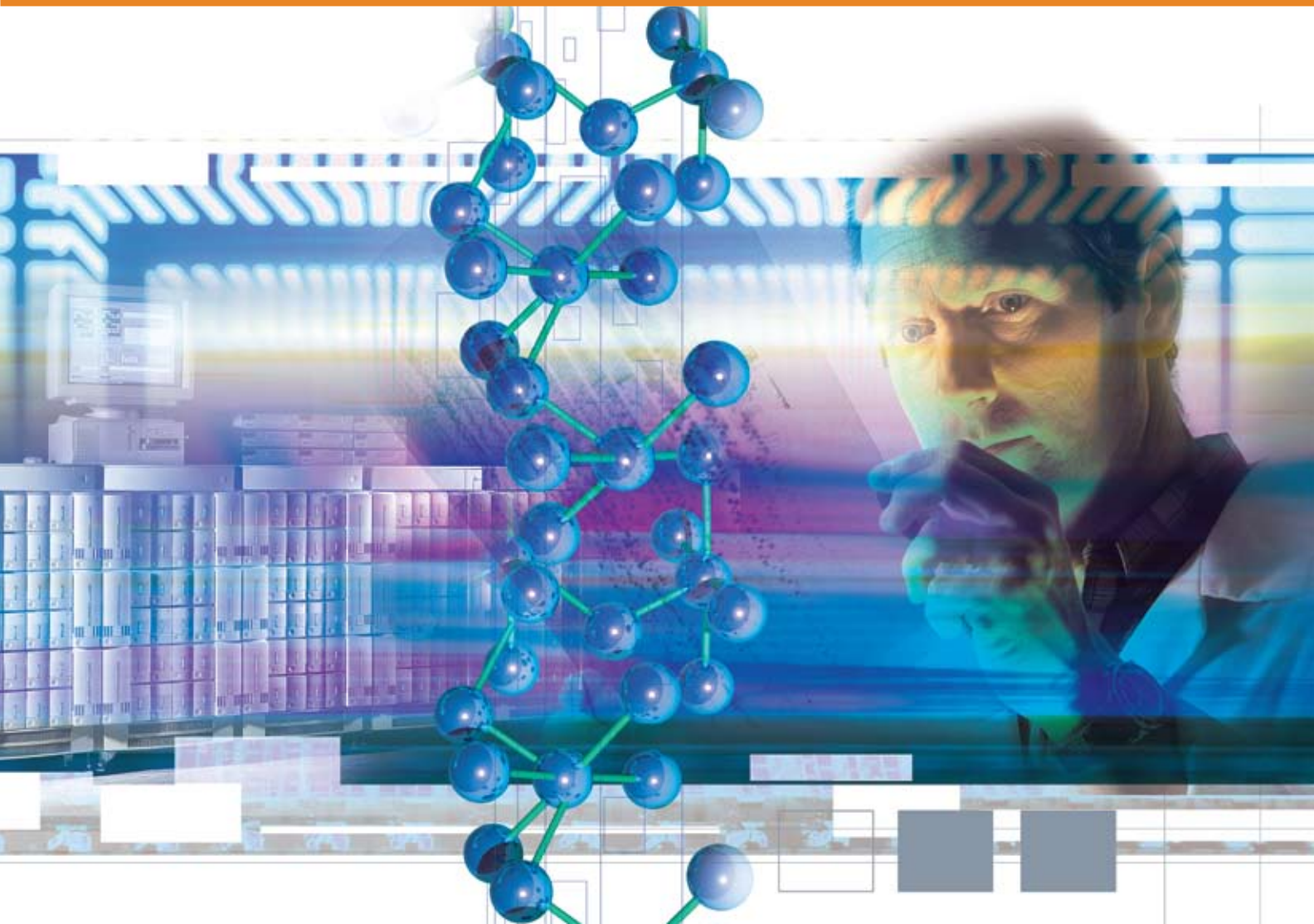
John Cambier, Ph.D. - Anti-CD79 antibody as a novel approach to therapy in autoimmune disease

DISCOVERY: Discovered that certain monoclonal antibodies against CD79a/b disable BCR signaling and suppress B cell function in the immune response. They believe that such anti-CD79 mAbs may be useful therapeutics, mediating reversible inhibition of BCR signaling and thus B cell function.

GRANT FUNDED RESEARCH: To test an improved therapeutic approach to treatment of the spectrum of conditions that respond to Rituxan (and perhaps others). This approach targets receptors for antigen (BCR) that are expressed by all B lymphocytes and must transduce signals for cell participation in autoimmunity. Rituxan reacts with CD20, a signal transducer expressed only by B cells, causing cell destruction by phagocytes.

PRODUCT POSSIBILITIES: Proof of concept generated in these studies will lead to production of anti-human CD79a/b mAbs that will be developed for therapeutic use in autoimmunity and lymphoma.

IMPACT: Market should approximate that for Rituxan; ~\$2.4 billion/year.



Dennis R. Voelker, Ph.D. - Suppression of Respiratory Syncytial Virus infection by pulmonary surfactant phospholipids

DISCOVERY: Discovered that specific lipid components of pulmonary surfactant have potent anti-viral effects that can prevent and arrest the progress of Respiratory Syncytial Virus infections.

GRANT FUNDED RESEARCH: Determine the safety, dosing and efficacy of POPG as an anti-viral agent capable of either preventing RSV infection, or alleviating the deleterious effects of an established RSV infection. The goals of this project are to establish a therapeutic framework for use of POPG.

PRODUCT POSSIBILITIES: The long-term goals are to provide an inexpensive and effective new pharmaceutical to prevent RSV infections in the major vulnerable populations consisting of newborns, individuals with chronic asthma, and individuals with COPD.

IMPACT: The potential impact of this project is to have the first inexpensive and effective treatment for Respiratory Syncytial Virus. The virus is responsible for 300,000 hospitalizations each year, and the most vulnerable populations amount to about 40 million people.

Nichole Reisdorph, Ph.D. and Nathan Rabinovitch, M.D. - Validation and optimization of leukotriene E4 (LTE4) assay for asthma diagnosis and therapy

DISCOVERY: The measurement of leukotriene E4 (LTE4), a molecule targeted for asthma therapy, can potentially be used to identify likely responders to leukotriene modifying medications and to predict disease worsening.

GRANT FUNDED RESEARCH: The measurement of leukotriene E4 (LTE4), a molecule targeted for asthma therapy, can potentially be used to identify likely responders to leukotriene modifying medications and to predict disease worsening.

PRODUCT POSSIBILITIES: The measurement of leukotriene E4 (LTE4), a molecule targeted for asthma therapy, can potentially be used to identify likely responders to leukotriene modifying medications and to predict disease worsening.

IMPACT: The measurement of leukotriene E4 (LTE4), a molecule targeted for asthma therapy, can potentially be used to identify likely responders to leukotriene modifying medications and to predict disease worsening.

Milene Saavedra, M.D. - A Method to Track Cystic Fibrosis Inflammation from Whole Blood

DISCOVERY: TLR2 protein is highly expressed in both blood and lung lymphocytes of cystic fibrosis (CF) patients, suggesting its utility as a potential circulating biomarker of inflammatory events in the lung. Variations in blood levels of this protein appear to correlate with therapeutic response.

GRANT FUNDED RESEARCH: TLR2 protein is highly expressed in both blood and lung lymphocytes of cystic fibrosis (CF) patients, suggesting its utility as a potential circulating biomarker of inflammatory events in the lung. Variations in blood levels of this protein appear to correlate with therapeutic response.

PRODUCT POSSIBILITIES: TLR2 protein is highly expressed in both blood and lung lymphocytes of cystic fibrosis (CF) patients, suggesting its utility as a potential circulating biomarker of inflammatory events in the lung. Variations in blood levels of this protein appear to correlate with therapeutic response.

IMPACT: TLR2 protein is highly expressed in both blood and lung lymphocytes of cystic fibrosis (CF) patients, suggesting its utility as a potential circulating biomarker of inflammatory events in the lung. Variations in blood levels of this protein appear to correlate with therapeutic response.

UNIVERSITY OF DENVER

Rahmat Shoureshi, PhD - Direct Brain Control of Prosthesis

DISCOVERY: The research team has developed a way to use brain imaging technology that will interact with the neural activities of the brain to control muscle function.

GRANT FUNDED RESEARCH: This project aims to use a hybrid, non-invasive sensory and control system (the Brain Imager) that integrates Functional Near Infrared (fNIR) imaging, with electromyography (EMG) and electroencephalography (EEG) of the motor cortex to develop a non-invasive brain imaging technology that correlates neural activity to functions of muscle groups in limbs.

PRODUCT POSSIBILITIES: This project will enable those with artificial limbs to directly and more naturally control their prosthesis movements from their brain.

IMPACT: Provide prosthetic patients with the ability to have a more natural way to control the movement of their prosthetics.

COLORADO INSTITUTE OF MOLECULAR BIOLOGY

Bradley Olwin, Ph.D. - Stem Cell Repair of Skeletal Muscle [CU1687B]

DISCOVERY: This research team has developed a new procedure for transplantation of skeletal muscle stem cells and skeletal muscle satellite cells, enabling high-efficiency engraftment of cells into the muscle tissue.

GRANT FUNDED RESEARCH: Provide proof of principle that human muscle stem cells are capable of repairing skeletal muscle tissue to ameliorate muscular dystrophy.

PRODUCT POSSIBILITIES: Develop a successful therapy for replacing pathological loss of muscle function.

IMPACT: Reverse, or stabilize, the progress of muscular dystrophy and other muscle injuries and disorders.

Daniel Schwartz, Ph.D. - Liquid Crystal Read-out for DNA Microarrays [CU1915B]

DISCOVERY: This research group has developed methods for detecting hybridization of nucleic acids using liquid crystals (LC) without the need for complex diagnostic equipment.

GRANT FUNDED RESEARCH: Develop an industrial-quality prototype of a DNA microarray device using liquid crystals that respond to DNA hybridization and the transmission of polarized light to detect the liquid crystal response.

PRODUCT POSSIBILITIES: Develop inexpensive DNA microarray device suitable for home, point-of-care or in the field.

IMPACT: Low-cost lab-on-a-chip for disease diagnosis.

Timothy F. Scott, Ph.D. - Photodegradable shape memory polymers [CU2193B]

DISCOVERY: This research group is exploring the use of photodegradation as a mechanism for on-demand degradation of shape memory polymers for biomedical devices and implants.

GRANT FUNDED RESEARCH: Develop photo-degradable shape memory polymer (SMP) materials suitable for a reversible trans-cervical sterilization device (TCD).

PRODUCT POSSIBILITIES: Development of a reversible trans-cervical sterilization device.

IMPACT: Reversible, non-hormone-based birth control.

Dawn Duval, Ph.D. - Generation of Caninized Monoclonal Antibodies for Cancer Treatment

DISCOVERY: Develop strategies for “canonizing” monoclonal antibodies developed in mice for use in the treatment of canine cancers.

GRANT FUNDED RESEARCH: The goal is to develop a canonized antibody targeting the canine IGF-1 receptor. The IGF-1 receptor is over expressed in a variety of human and canine cancers and stimulation of these receptors can contribute to cellular proliferation, invasion, resistance to apoptotic pathways, as well as promoting tumor angiogenesis.

PRODUCT POSSIBILITIES: 1) generating monoclonal antibodies targeting the extracellular domains of canine IGF-1R, 2) validating the ability of these antibodies to bind to canine cancer cells to inhibit the growth of cells in culture or tumor xenografts, and 3) caninizing the antibody by the chimerization of the variable regions of the active monoclonal antibody with canine antibody constant regions.

IMPACT: 1) develop strategies for “caninizing” monoclonal antibodies developed in mice for use in the treatment of canine cancers. 2) reduce the immune stimulatory character of these mouse antibodies by making them more closely resemble endogenous human antibodies. 3) goal is to develop a caninized antibody targeting the canine IGF-1 receptor.

Susan James, Ph. D. - Drug Eluting Osseointegrative Coatings for Reconstruction Implants

DISCOVERY: Develop new phospholipid (phosphatidylserine) and calcium coating systems for metallic orthopedic implants.

GRANT FUNDED RESEARCH: Project will improve the clinical outcomes for total joint replacement patients and cancer patients by developing a combined healing/bone attachment coating system for orthopedic implants. The proposed approach contemplates a two-layer application of specialized, novel biomaterials that are known to aid in bone healing and localized drug delivery.

PRODUCT POSSIBILITIES: Coating metallic orthopedic implants with new phospholipid and calcium will enhance bone integration into the implant and locally deliver antibiotics or chemotherapeutics.

IMPACT: Develop new phospholipid (phosphatidylserine) and calcium coating systems for metallic orthopedic implants that will enhance bone integration into the implant and locally deliver antibiotics or chemotherapeutics.



Kevin Lear, Ph.D. and Ric Slaydon, Ph.D. - Miniature Silicon Immunosensor for Tuberculosis Disease State Analysis

DISCOVERY: Demonstrate the ability of CSU-invented local evanescent array coupled (LEAC) immunosensor technology to rapidly and simultaneously detect clinically relevant levels of multiple selected TB related antibodies useful for disease state analysis on a prototype chip.

GRANT FUNDED RESEARCH: The hope is to develop a low-cost TB test.

PRODUCT POSSIBILITIES: 1) Optimize pulsed-pressure aerosol deposition of phosphatidylserine (PS) and PS-drug* coatings on implant surfaces by measuring the effects of process variables on coating characteristics; and 2) Characterize the in vitro cytotoxicity, in vitro osteocompatibility, and in vivo biocompatibility of the implant surfaces.

IMPACT: Design, simulate, fabricate, and test improved optoelectronic chips that allow electronic real-time readout of immobilized protein array based immunoassays.

Kevin Lear, Ph.D. and Douglas Thamm, Ph. D. - Microfluidic Cytometry for Detecting Circulating Cancer Cells in Biofluids

DISCOVERY: Further the development of a diagnostic technique, optofluidic intracavity spectroscopy (OFIS), for the detection of individual cancer cells in biofluids to permit early cancer detection. This technique relies on spectral analysis which looks for enlargement and increased protein density of the nucleus in cells as a sign of cancer.

GRANT FUNDED RESEARCH: The proposal focuses on using the technique to detect canine cancers, as a way to prove the technology for a lower cost and a market with lower regulatory hurdles. The specific objective of the project is to demonstrate that OFIS can accurately detect cells from a canine cancer, hemangiosarcoma (HSA) as a model of abnormal cells relative to peripheral blood mononuclear cells (PBMCs).

PRODUCT POSSIBILITIES: 1) Optimize the experimental apparatus using OFIS sensor chips with integral dielectrophoresis (DEP) traps and a custom optical microscope system that is capable of capturing repeatable data on hundreds to thousands of cells; revise the electrode design on OFIS sensor chips, and modify the fabrication to enhance the spectral distinctiveness of HSA. 2) Collect spectra from statistically significant pure samples of two HSA cell lines as well as the principal types of normal PBMCs; investigate the correlation between cell elasticity and its optical signature, i.e., spectra collected with OFIS sensor chip. 3) Numerically evaluate the ability of spectral analysis algorithms to detect HAS cells in the distribution of normal canine blood based on the spectra collected from HSA cell lines and PBMCs. 4) Experimentally validate the limit of detection for HSA in cell-by-cell binary classification and counting runs on samples of healthy canine blood spiked with varying concentrations of HSA.

IMPACT: The specific objective of the project is to demonstrate that OFIS can accurately detect cells from a canine cancer, hemangiosarcoma (HSA) as a model of abnormal cells relative to peripheral blood mononuclear cells (PBMCs).

Christopher Orton, Ph.D. - Solid-Phase Tissue Electrophoresis for Bioscaffold Decellularization

DISCOVERY: Develop biocompatible scaffolds upon which engineered replacement tissue constructs can be built. The technology under study here has application for a wide range of tissue or organ replacements.

GRANT FUNDED RESEARCH: The goal of this research is the development of a living tissue-engineered heart valve.

PRODUCT POSSIBILITIES: This provides an advancement on current heart valve replacement in that the replacement will have the ability to regenerate and repair itself. The technology proposed has potential application for any tissue-engineered construct that begins with an animal bioscaffold (the physical structure for a tissue or organ).

IMPACT: Potential application for any tissue-engineered construct that begins with an animal bioscaffold (the physical structure for a tissue or organ) in that the replacement will have the ability to regenerate and repair itself.

Ketul Papat, Ph. D. - Multifunctional Nanostructured Interfaces for Orthopedic Implants

DISCOVERY: Design implants that induce controlled and guided growth around the implant, as well as rapid healing [1-12]. In addition to the acceleration of normal wound healing, these implants should result in formation of a characteristic interfacial layer with adequate biomechanical properties.

GRANT FUNDED RESEARCH: This project aims to improve orthopedic implants by improving the tissue-material interface for better integration of the implant and allowing for the delivery of drugs at the site of implantation.

PRODUCT POSSIBILITIES: 1) Produce a well-controlled and characterized, highly reproducible biocompatible nanoporous biotemplate for osteoblast growth. 2) Investigate the effect of substrate architecture (array length, wall thickness, pore diameter) on osteoblast adhesion and proliferation. 3) Measure the influence of substrate architecture on bone matrix formation by assaying alkaline phosphatase and calcium production intracellularly and extracellularly. 4) Design strategies to fill bioactive molecules into titanium nanotubes. Investigate the diffusion rates of drugs and growth factors through nanotubular surfaces.

IMPACT: Control over the nanoscale interface can prove advantageous for applications in biomaterials and tissue engineering, particularly in orthopedic implant materials. Further these nanostructured interfaces of controllable architectures can also be used to delivery drugs locally at the site of implantation. Drugs such as antibiotics, chemotherapeutic, etc., are delivered systemically in patients.



F. Andrew Ray, Ph.D. and Susan Bailey, Ph.D. - Ultrabright FISH probes for Cancer Research

DISCOVERY: New oligonucleotide probe labeling strategy, to demonstrate the utility and cost effectiveness of such probes for several diagnostic applications and to test a high throughput application that would allow the future development of 'early warning' cancer detection assays.

GRANT FUNDED RESEARCH: This project aims to validate a new oligonucleotide probe labeling strategy to demonstrate the utility and cost effectiveness of such probes for diagnostic applications.

PRODUCT POSSIBILITIES: 1) Single base mismatch discrimination using fluorescence microscopy 2) Single color detection using flow cytometry, 3) Single base mismatch discrimination using two color flow cytometry, 4) Develop prioritized list of cancer gene mutations for future marketing study.

IMPACT: This project tests a high throughput application that will allow the future development of early warning cancer detection assays.

UNIVERSITY OF COLORADO

K. Ulrich Bayer, Ph.D. (UC Denver) Development of an investigational new drug for therapy of stroke, global cerebral ischemia, and traumatic brain injury [CU1933H]

DISCOVERY: Glutamate excito-toxicity is a main cause of brain cell death after stroke, global cerebral ischemia (caused by suffocation or cardiac arrest) and traumatic brain injury. Researchers have generated a compound, tatCN21, that protects neurons from glutamate excito-toxicity, even when applied hours after insult, thus providing a clinically relevant window of therapeutic opportunity.

GRANT FUNDED RESEARCH: This project is focused on minimizing off-target effects of tatCN21 and conducting basic toxicology/safety pharmacology.

PRODUCT POSSIBILITIES: Drug to treat, or protect against, brain cell death after stroke, traumatic brain injury, or other disruption of the brain's blood supply.

IMPACT: Treatment for (and protection against) stroke, traumatic brain injury and other disruptions of the brain's blood supply.

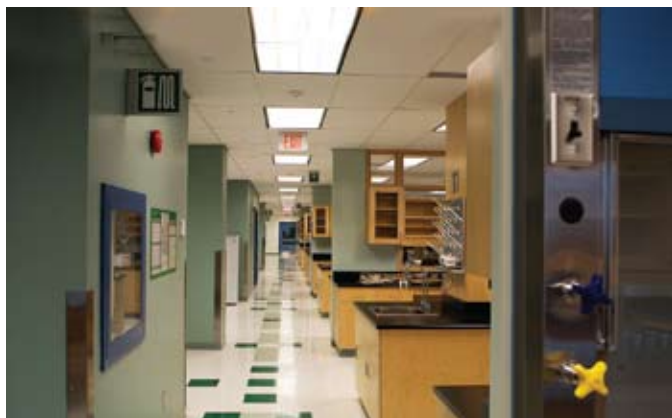
Mark W. Duncan Ph.D., Anthony D. Elias M.D., Tim Byers M.D., M.P.H. (UC Denver) - A multiplexed panel of protein biomarkers for the early detection of breast cancer [CU2200H]

DISCOVERY: This research group identified a panel of protein biomarkers that have the potential to identify early stage breast cancer.

GRANT FUNDED RESEARCH: The project aims to develop a clinical assay that will provide sufficient diagnostic power to correctly identify breast cancer based on identifying biomarkers in the analysis of a single blood sample from the patient.

PRODUCT POSSIBILITIES: The ultimate goal is to deliver a panel of biomarkers that offers high sensitivity and specificity in the early detection of breast cancer.

IMPACT: Early, accurate and low-cost detection of breast cancer, enabling earlier treatment and greater survival rates.



Heide L. Ford, Ph.D., Rui Zhao, Ph.D. - Targeting the Six1/Eya transcriptional complex for anti-breast cancer drug design [CU1748H]

DISCOVERY: Studies have demonstrated that Six1 induces tumorigenesis and metastasis in sites relevant to human breast cancer. Targeting the Six1 transcriptional complex offers significant

GRANT FUNDED RESEARCH: Develop novel, tumor-specific chemotherapeutic agents for breast cancer by targeting the Eya2 phosphatase (an enzyme is a member of the Six1 transcriptional complex).

PRODUCT POSSIBILITIES: Targeted compounds for use in chemotherapy to treat breast cancer.

IMPACT: Improved chemotherapeutic treatment of breast cancer, with reduced side effects.

Emily A. Gibson, Ph.D., Tim C. Lei Ph.D. (UC Denver)- A microfluidic cell sorter integrated with Coherent anti-Stokes Raman Spectroscopy for medical diagnostics [CU2192H]

DISCOVERY: This research group has developed a technique for the integration of nonlinear optical spectroscopy with microfluidic devices.

GRANT FUNDED RESEARCH: Develop a novel high-throughput cell sorter based upon microfluidics technology and nonlinear optical spectroscopy.

PRODUCT POSSIBILITIES: This device would have commercial potential for clinical diagnostics and as a commercial research laboratory instrument.

IMPACT: Enhanced bioscience research; improved and inexpensive medical diagnostics.

Robin Shandas Ph.D. (UC Denver; CU-Boulder) - Shape Memory Polymer-Based Prosthetic Venous Valves [CU2196H]

DISCOVERY: This project proposes to use the latest research in prosthetic heart valves and shape memory polymers to develop a next generation, minimally invasive solution to the problem of venous valve incompetence.

GRANT FUNDED RESEARCH: Create a gently self-expanding conduit that contains the valve without the risk of dissecting through the fragile vein, the ability of the conduit to conform to the typically large changes in vein size and shape that occur due to leg movement, the need for a fully hemocompatible valve material that will not clot, and the ability to deliver the valve using small catheters.

PRODUCT POSSIBILITIES: Improved prosthetic venous valves.

IMPACT: Improved treatment of venous diseases.



Wei Tan, Ph.D. (CU-Boulder) - Multilayer Bionanocomposite Vascular Graft: Early and Long-term Access for Dialysis Patients [CU2194B]

DISCOVERY: This research group has developed a new technique to create bio-inspired nanofiber woven textures.

GRANT FUNDED RESEARCH: Develop multilayer bionanocomposite material, as an enabling technology, to construct early and long-term vascular access for hemodialysis patients. The eventual goal of the device is that cells in vivo will replace graft material over time, and form natural vessels—meaning there will be no need for graft replacement.

PRODUCT POSSIBILITIES: Provides advancement to expanded polytetrafluoroethylene (ePTFE) arteriovenous (A/V) grafts which are the norm for hemodialysis patients.

IMPACT: Enhanced quality of life for patients on long-term dialysis.

Linda R. Watkins Ph.D. (CU-Boulder) - A unique approach for treating chronic pain & increasing the clinical efficacy of opioid analgesics [CU1869B]

DISCOVERY: Opioids are used in treatment of chronic pain, but fail to help 60-80% of patients. While opioids target neurons, the researchers have discovered that non-neuronal cells, called “glia”, are critical in both chronic pain and decreasing opioid pain control.

GRANT FUNDED RESEARCH: The research team has discovered a receptor, TLR4, which can be targeted by compounds that can selectively block the glial activation receptor, and have no effect on neurons. The compounds of focus are analogs of naloxone as well as novel small molecule TLR4 inhibitors.

PRODUCT POSSIBILITIES: Development of targeted and effective drugs for chronic pain.

IMPACT: Enhanced treatment of chronic pain, with reduction of side effects, dependency and withdrawal.



EARLY-STAGE COMPANY GRANT RECIPIENTS

ADVANCED MICROLABS, LLC

Advanced MicroLabs LLC is a chemical analytical instrumentation company dedicated to pioneering microchip measurement techniques. Advanced MicroLabs is currently operating as a research stage company and is anxious to partner with established organizations to accelerate the commercialization of its significant scientific developments.

APOLOGIC PHARMACEUTICALS, INC.

ApopLogic Pharmaceuticals, LLC is a startup phase biopharmaceutical company focused on the discovery, development and commercialization of therapeutic products that target apoptotic cell death pathways found in cancers, leukemias and lymphomas. The Company was formed in 2006 to capitalize on the intellectual property of its Founding Scientists and University of Colorado Cancer Center members. Put most simply, ApopLogic is inducing rapidly dividing cells to commit suicide.

BIOAMPS INTERNATIONAL

BioAMPs International is a Colorado based biotechnology company that discovers and develops proprietary, structurally guided antimicrobial peptides that are designed to target bacterial cell membranes while sparing human blood and tissue cells. The de novo peptides are structurally designed to alter hydrophobicity characteristics, thus creating a unique mechanism of action that targets the bacterial cell membrane, providing broad spectrum activity and circumventing all known routes of drug resistance experienced by traditional antibiotics.

ENDOSHAPe, INC.

EndoShape, Inc. is focused on delivering revolutionary advances in minimally invasive medical devices through its pioneering efforts in novel shape memory polymer technologies. EndoShape devices are in development for select peripheral vascular, nonvascular, and neurovascular indications that are difficult to treat with conventional metal based technologies. The company utilizes patent-protected materials and products initially developed at the University of Colorado that enable it to solve key and heretofore unsolved clinical issues in the minimally invasive medical device market.

QGENTA INC.

QGenta Inc. is a Colorado company spun out of the University of Colorado. This project involves developing lead compounds for indolequinone classes to pinpoint a promising molecule for cancer treatment. Lead indolequinones when targeted at the thioredoxin/thioredoxin reductase system will inhibit cell growth, induce cell death, and block angiogenesis. The primary focus is pancreatic cancer, but the compounds also holds promise for treating colon, melanoma and renal cancers.

HIBERNA CORPORATION

Hiberna Corporation, founded in 2007 and located in Boulder, CO, is pursuing drug development efforts based on novel model organisms that exhibit extreme metabolic regulation. Hiberna's drug development strategy is based on the work of Dr. Leslie Leinwand and colleagues at the University of Colorado. This company is looking at the potential for treating heart failure by restoring heart function. The goal is develop new drugs that enhance function in patients with cardiac enlargement (hypertrophy).

ILLUMASONIX, LLC

Illumasonix LLC is a Colorado company spun out of the University of Colorado in partnership with Allied Minds. Illumasonix will develop and commercialize a new non-invasive vascular disease detection procedure. This process will easily and non-invasively provide near real-time assessment of detailed blood flow patterns within the cardiovascular system. Our exclusive patent-pending technology will be developed and sold to doctors, hospitals, and clinics worldwide. Illumasonix's technology is being developed by Dr. Robin Shandas, a Professor in the Department of Mechanical Engineering and Pediatric Cardiology at the University of Colorado.

SIERRA NEUROPHARMACEUTICALS, INC.

SierraNeuro is a biopharmaceutical company focused on the development and commercialization of centrally administered small molecule therapeutics for the treatment of severe CNS diseases refractory to oral medications. Sierra has addressed problems with the current model through a proprietary development process that reformulates highly effective but systemically toxic oral medications, enabling placement into an implantable drug delivery pump for direct administration in the fluid around the brain. This innovative delivery approach will expand treatment options in refractory CNS diseases including Epilepsy, Schizophrenia, Bipolar Disorder, Anxiety Disorders and Major Depression.

