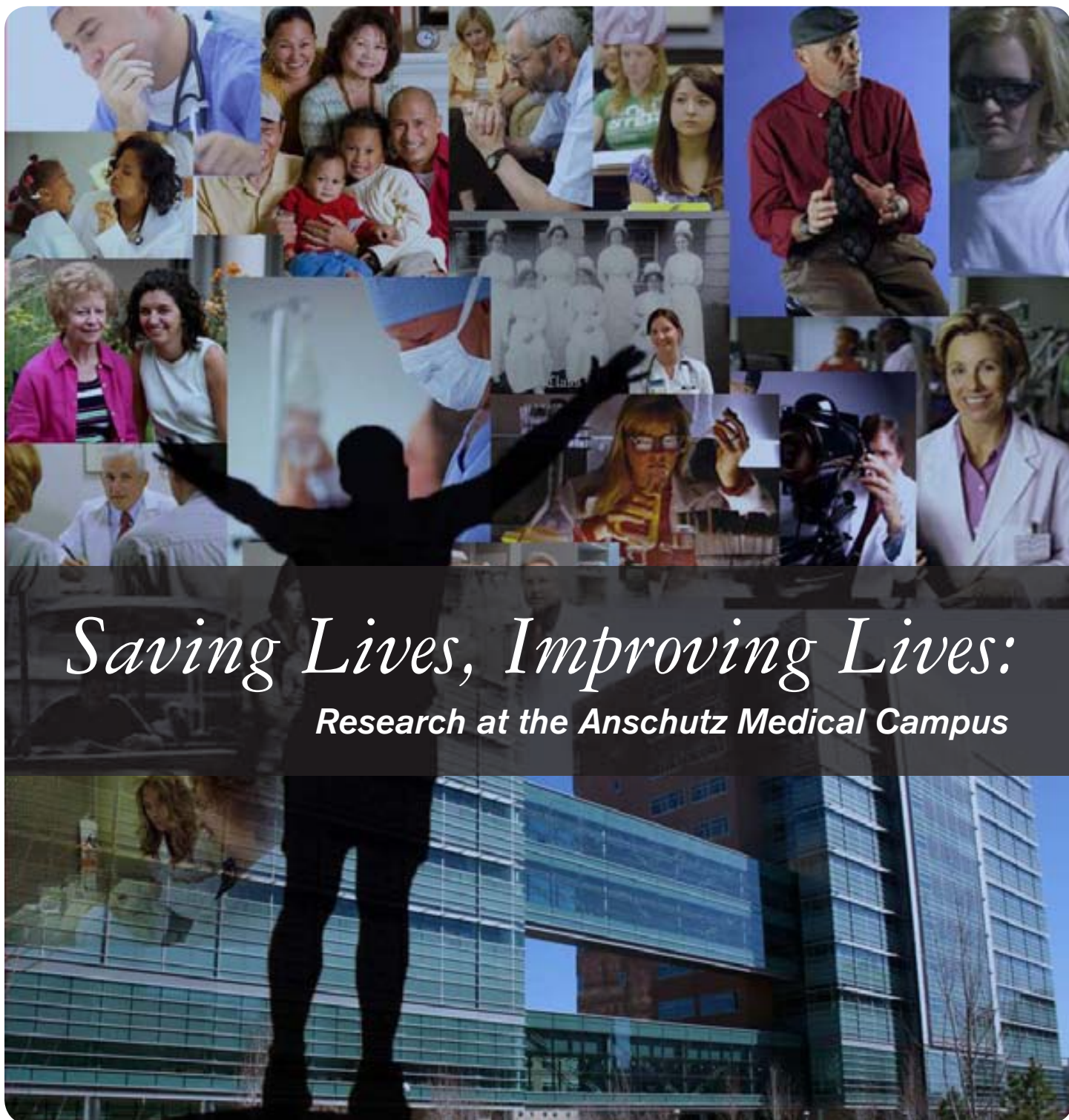


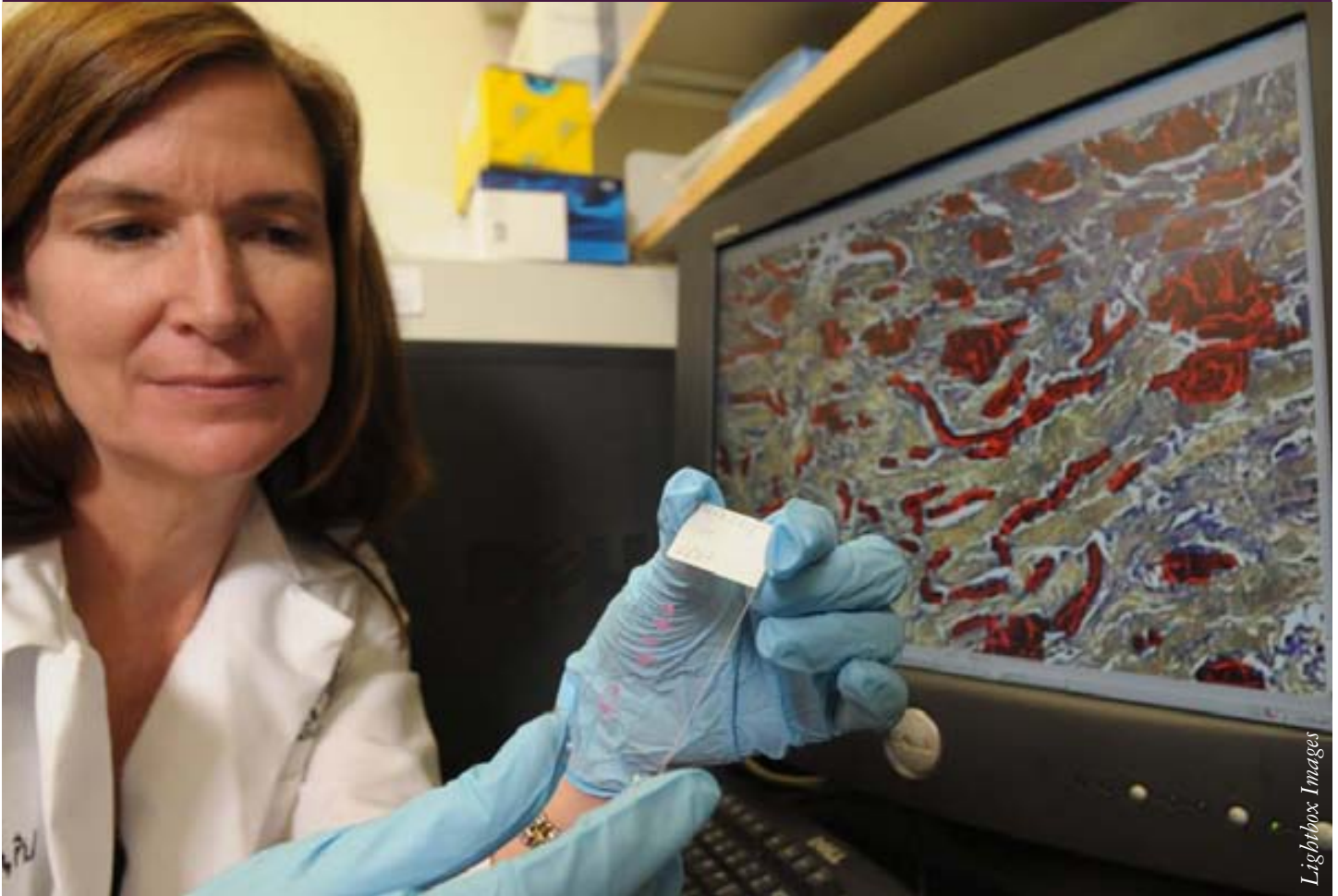
Creating Futures

University of Colorado *Denver*



Saving Lives, Improving Lives:

Research at the Anschutz Medical Campus



Jennifer Richer, PhD, associate professor of pathology at UC Denver and member of the Hormone Related Malignancies Program, examines cancer cells that are part of her renowned work in breast cancer research.

“We’re going to have the right scientists doing the right research on the diseases that are important to the people of Colorado. We plan to convert discoveries into treatment, prevention, lifestyle changes and education.”

Ronald Sokol, MD

Director, Colorado Clinical and Translational Sciences Institute

right scientists doing the right research



Research that Changes Lives

Have you benefited from a recent flu vaccine? Used an MRI to diagnose an injury? Do you know someone who survived a heart attack, thanks to lifesaving angioplasty treatment? If the answer to any of these questions is “yes,” then you are already invested in the ever-changing and quickly evolving field of medical research.

Where does exciting research like this happen? Right here at the University of Colorado Denver Anschutz Medical Campus. In this unique health care city, hundreds of the brightest minds from around the world—postdoctoral fellows, distinguished professors, basic laboratory researchers, physicians, nurses and more—are working together to bring new discoveries to light that will save and improve lives.

Though we may not realize it, every day we rely upon major research universities, in collaboration with academic health centers, to heal what ails us and to investigate the next, best way to treat devastating diseases and traumatic injuries.

Whether it was the development of targeted chemotherapy, noninvasive arthroscopic surgery, cardiac catheterizations or life-extending treatments for young adults with cystic fibrosis, it all started in labs, classrooms and at the bedsides of patients in hospitals associated with institutions of higher learning.

Major universities, however, require major funding. You can play a part to ensure that the University of Colorado Denver continues to innovate and bring discoveries to patients when they need them most. UC Denver has been extremely successful in attracting funds from the National Institutes of Health. However, in the midst of this dire economic environment, private support is more essential than ever, as it gives us the opportunity to understand diseases, accelerate research and find cures.

- **Picture** a future when researchers develop additional flu vaccines to eradicate pandemic flu virus threats.
- **Envision** the day when researchers discover how to heal spinal cord injuries, changing the lives of paraplegic and quadriplegic individuals forever.
- **Imagine** a time when researchers can bioengineer human, living tissues, including a heart valve replacement.

It's all closer than you think. Insightful and generous individuals like you can make a difference. You can give the researchers at the Anschutz Medical Campus the tools they need to investigate, discover and improve the quality of our lives here and around the globe.

The Place to Discover New Solutions

University of Colorado Denver is uniquely positioned to speed research discoveries from laboratories to the lives of citizens. Our location on the Anschutz Medical Campus offers an unmatched resource as the world's only completely new education, research and patient care facility, providing the infrastructure to achieve every stage of biomedical innovation—from basic research through clinical and pharmaceutical development and commercialization—all in one place. With access to a substantial patient population through five affiliated hospitals, our researchers can facilitate the movement of basic research into clinical trials and speedy delivery into the community.

Collaboration is key to the research of the future. Professors, researchers and doctors do not and cannot work in silos. Here at the Anschutz Medical Campus, they work together with the aim of providing world-class medical research and treatment for people in Colorado and around the world.



Pediatric Endocrinologist Kristen Nadeau, MD, performs research and treats young patients like Tyler Trevarton, illustrating UC Denver's bench-to-bedside approach. Nadeau is a co-investigator on a large multi-center study of Type 2 diabetes treatment.

Unparalleled Resources

The University of Colorado Denver was recently awarded a \$76 million grant from the National Institutes of Health to establish the Colorado Clinical and Translational Sciences Institute, an unprecedented statewide network of research, health care and community facilities. The ultimate goal of the Institute will be to turn biomedical findings into improved patient and community health. In addition, our Technology Transfer Office is a further resource, with demonstrated success in moving discoveries quickly from our laboratories to the clinical setting. Colorado's burgeoning biotech industry completes the picture for an ideal environment in which to implement a bench-to-bedside strategy that is the most efficient and effective it can be.

Exciting Projects Currently Underway

Right now, hundreds of researchers, physicians and nurses are engaged in thousands of research projects on the Anschutz Medical Campus. Whether you want to support work in cardiology, cancer, Down syndrome, Parkinson's disease or surgical innovation, you can find a project to match your interest. A list of a number of current research projects is available.

Following are just a few examples of some of the exciting work that is taking place at the University of Colorado Denver.

Breakthrough Could Help Heal Spinal Cord Injuries Without Pain

Researchers at the University of Colorado Denver have discovered that manipulating stem cells prior to transplanting holds the key to using stem cell technologies to repair spinal cord injuries in humans.

In the online *Journal of Biology*, Dr. Stephen Davies, associate professor of neurosurgery, reports his research team has for the first time produced two types of spinal cord support cells called astrocytes ("star" cells.) Derived from the same embryo stem cell-like cells called Glial Restricted Precursors (GRPs), they have remarkably different effects on the injured spinal cord.

As astrocytes constitute the majority of cells in the brain and spinal cord, and play important roles in supporting normal nervous system function, there is a great deal of interest in using stem cell technologies to replace astrocytes lost after brain and spinal cord injury.

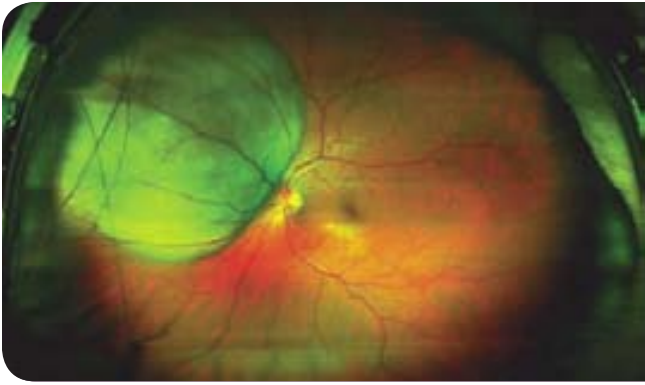
By giving the right signaling molecules to the GRP cells, Davies and co-workers were able to turn them into a type of astrocyte called GDAsBMP that promoted robust nerve fiber regeneration and functional recovery when transplanted into spinal cord injured rats. However transplanting the stem cell-like GRP cells alone or another type of GRP derived astrocyte called GDAsCNTF into spinal cord injuries failed to provide any benefits and instead promoted pain syndromes.

Davies and his team consider their discoveries of a type of astrocyte that is highly beneficial for spinal cord repair, and that transplantation of stem cells or the wrong type of



astrocytes such as GDAsCNTF can be highly detrimental, are major breakthroughs that will change the way stem cell technologies are used to promote repair of the injured spinal cord.

To that end, Davies and his collaborators are developing a safe, efficient and cost-effective way to make human GDAsBMP from either embryonic or preferably adult stem cells with an eye toward testing this new cell replacement technology in humans. The eventual result of all his research, Davies hopes, will be a fast and pain-free spinal cord recovery process that paves the way for victims of paralysis to recover the use of their bodies.



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Life-threatening ocular melanoma can be treated on the Anschutz Medical Campus as a result of research.

Breakthroughs in Cancer Research

Can cancer become a chronic disease people live with? As one of 40 National Cancer Institute–designated Comprehensive Cancer Centers, the University of Colorado Cancer Center (UCCC) is part of an elite network of scientists and physicians working to answer this and other pressing questions about cancer. We are personalizing cancer treatment for the exact genetic type of the tumor. And we are creating services for the growing number of people who survive cancer each year. No organization does more laboratory, clinical and population-based cancer research in the Rocky Mountain region than UCCC.

Our 400+ members are studying cancer cells to better understand how they work at a fundamental level, then translating new knowledge into tests, treatments and therapies for children, adults and companion animals. In addition, we are working to understand cancer’s impact on our society as a whole, developing cancer prevention and screening programs, and developing the region’s most robust cancer survivorship program.

- Some of the nation’s foremost experts and most promising talent in lung cancer, melanoma, prostate cancer, breast cancer, blood cancers, colorectal and gastrointestinal cancers, ovarian cancer, childhood cancers and companion animal cancer are UCCC members.
- UCCC runs the region’s largest cancer clinical trials program. Our Phase I Trials Program brings cutting-edge treatments from laboratory trials to humans—and many people are alive well past their life expectancy because of a Phase I clinical trial at UCCC.

UCCC is poised to make many major cancer breakthroughs. With strong community support, we can have a greater impact on this disease, which will affect one in two Americans in their lifetimes.

Vision Research Center

The new Vision Research Center at Rocky Mountain Lions Eye Institute is working to find new ways to tackle blindness and restore eyesight.

Researchers at UC Denver are working with immunologists to target chemicals that shut down and even prevent macular degeneration. Our glaucoma team is using basic research techniques to find more gentle topical medicines for the long-term treatment of glaucoma to reduce harmful side effects. And perhaps most exciting, our world-class researchers and physicians are working to develop artificial vision devices to restore eyesight. In addition, the new Vision Research Center is exploring eye disease at the molecular level to open up entirely new possibilities: we have discovered promising gene therapies that may soon protect the sight of people with diabetes; and we are building an understanding of how natural compounds found in food can foster healthy eyes.



Richard Davidson, MD and Vikram Durairaj, MD, are two physician-researchers doing exciting work at the Vision Research Center.



“The amount of growth on the Anschutz Medical Campus has been phenomenal. The number of first-rate people we are recruiting has been incredible. We have done extremely well in recruitments and in retaining people. Now we need a place to house those researchers and their labs.”

Vice Chancellor for Research Richard J. Traystman

Research Complex 2 provides the space to do the important work. Eventually, campus leaders will begin to invest in a new facility, Research Complex 3.

You Can Help

Dollars from individuals, corporations and foundations are essential to supporting quality research that makes a difference. Private support can be targeted to promising young investigators and their novel ideas that may not yet have the track record to attract major investment from the National Institutes of Health. Private support can be used to help bridge the end of one grant to the start of another, ensuring that researchers don't lose any ground during a dry period of funding. And private support can make a difference to the investigation of leading-edge discoveries, which, according to Michael Bristow, MD, PhD, co-director of the Cardiovascular Institute, may be deemed too risky for government support but that often have the greatest payoff. As the founder of several biotechnology startup companies that are developing novel treatments to diagnose and treat heart disease, Dr. Bristow knows well the relationship between risks and rewards.

Development Officers from the CU Foundation can help you find the right place to reflect your passion for and support of research on the Anschutz Medical Campus.

You Can Support a Home for Research

The Anschutz Medical Campus just completed a 506,000-square-foot building, Research Complex 2. Research Complex 2 houses clinical departments and translational research—the kind that speeds discoveries to patients. The Clinical and Translational Sciences Institute grant of \$76 million from the NIH is breeding more translational research. Already, the building is at capacity and campus leaders are planning for Research Complex 3 to house additional, important researchers and their labs.

Naming opportunities are still available throughout Research Complex 2 and funding of this building must be completed before we can begin on RC3.



Veteran cancer researcher and clinician William A. Robinson, MD, works with Peter Kabos, MD, a promising young researcher and fellow in medical oncology.

To learn about the many ways you can make a gift:

Contact
Tom Schuyler

Associate Vice President
University of Colorado Foundation
Anschutz Medical Campus, Bldg. 500
13001 E. 17th Place
Aurora, CO 80045
303-724-2754
Tom.Schuyler@cufund.org

**University of
Colorado Denver**

www.cufund.org

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