

Creating Futures

UNIVERSITY OF COLORADO ANSCHUTZ MEDICAL CAMPUS



Casting Light On Melanoma
University of Colorado Cancer Center



Rays of Hope in **Attacking Melanoma**



Rene Gonzalez, MD, director of the Melanoma Clinic, examines a patient. The cutaneous oncology clinic has about 450 new patients each year—and the highest five-year survival rates for melanoma in Colorado.

A Deadly Problem

The incidence of melanoma is rising, and it is striking ever-younger victims.

The most common skin cancers, basal cell and squamous cell, are seldom considered life-threatening. They form clearly visible tumors that are detectable in the early stages when they can most successfully be treated, and they rarely metastasize.

Not melanoma, a highly aggressive mutation of the pigment cells that provide color in skin, hair and eyes. Often arising in pre-existing moles, it is less obvious. If treated early it can be cured with surgery. Too often it is not detected before it has spread to regional lymph nodes or internal organs such as the lung and brain.

Once melanoma has metastasized, even the latest therapies are likely to be ineffective. Although comprising only 5 percent of new diagnoses, it causes 75 percent of all skin cancer deaths.

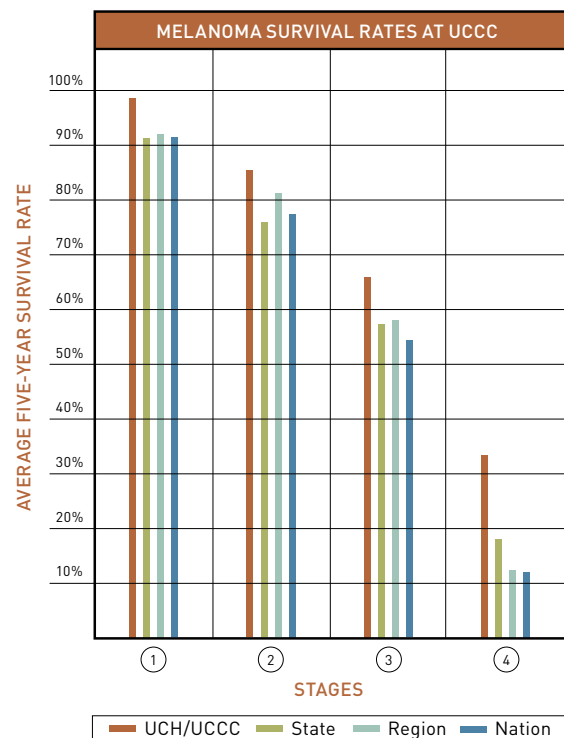
After years of progress in treating most cancers, the question is inevitable: Why can we not yet cure melanoma?

One answer is that in many cases we can and do. In the past 20 years the incidence has nearly tripled, yet the mortality rate has remained level. Awareness and early diagnosis are saving lives. But we do not yet know enough about how the disease arises and progresses.

Much remains to be done, and the University of Colorado Cancer Center is the place to do it.

Building on Hope

Because the incidence of melanoma in Colorado is among the highest in the world, the Cancer Center has a specialized and long-standing focus on the disease. We have one of the largest treatment clinics in the nation, with more than 400 new patients each year. Our faculty are



recognized leaders in research, therapeutics and cancer prevention and control. Consequently, we have the highest survival rates in the state and region, even while serving many patients with advanced disease that have resisted other treatment.

Our Cancer Center is one of just 41 in the country—and the only one within a 900-mile radius of Denver—to have earned designated recognition by the National Cancer Institute as a Comprehensive Center, with equal expertise in patient care, research, education and outreach.

The quality of the Cancer Center’s work is demonstrated by the nearly \$1 billion in extramural funding received since its NCI designation in 1987. The impact is demonstrated by the 21,000 people we have treated since 1987. Key to the performance is an exceptional confluence of resources and commitment.

We are located at the Anschutz Medical Campus, the West’s largest and newest research, clinical and education complex. **The campus is among only a few in the world with the personnel and technology capable of deciphering the cascade of damage that follows when a cell undergoes malignant transformation.** Our faculty, representing a broad range of specialties in cancer biology and treatment, work in interdisciplinary collaborations to further scientific discovery and translate discoveries into clinical applications and public information about cancer awareness and prevention.

We are ideally positioned for breakthroughs in melanoma research and care.

Imagine a day when

- We will be able to identify cancer mutations in cells before the cells multiply and spread

- We will be able to overcome the processes that allow melanoma cells to escape death and reproduce uncontrollably
- We will be able to move beyond “one-size-for-most” treatments and create personalized therapies designed to eradicate each patient’s particular melanoma cells

With your help, we can reach that day.

The Power of Teamwork

The foundation of the melanoma program is our comprehensive approach to the disease. Our faculty members bring knowledge from the laboratory to the bedside and insights from patient outcomes back to the laboratory. They are innovators, exchanging ideas and translating research and clinical results into the therapeutic advances that ensure our patients have access to the newest treatments. They are resources for other professionals and for the public, influencing science and practice locally, nationally and internationally.

The linchpin of the program is our multidisciplinary team—medical, surgical and radiation oncologists, dermatologists and dermatologic surgeons, dermatopathologists, oncology nurses—in constant collaboration and communication to evaluate patients and to develop, manage and support personalized treatment plans.

The strength of the program is its size—one of the largest in the United States—which means experience with all stages of melanoma, from early to advanced, with rare variants found in eyes and mucous membranes, and in patients of all ages.

We have the region’s premier surgical oncology service with faculty having specialty training in melanoma and plastic reconstructive surgery. We also offer Mohs surgery, a highly sophisticated procedure requiring extensive training, headed by one of the nation’s pre-eminent practitioners and educators.



Members of the melanoma team meet once a week to discuss patients, their treatment options and their progress. Seated left to right, Krista Treichel, RN, Maude Becker, RN and Cindy Braden, RN. Standing left to right, Rene Gonzalez, MD, and Karl Lewis, MD.

“Every patient’s condition is unique. That’s why the best outcomes can only be achieved when the best minds are brought together at our weekly cutaneous oncology conference to discuss and decide on the optimal treatment for each individual patient.”

Martin McCarter, MD
Associate Professor of Surgery



Transforming Our Strengths into Solutions

Lynn Bemis, PhD, works to identify genetic biomarkers that can help diagnose cancer earlier and that can help doctors create individualized treatment plans to target deadly tumors.

We have developed one of the most extensive collections of tumor tissue samples in the country, an open source repository that is an incomparable diagnostic and scientific database. Molecular analysis of tissue is now an important step, both in diagnosing the type and stage of a patient's cancer and in assessing treatment options. As important, such analysis is the basis for investigating the processes of cancerous mutation and for testing drugs that might halt the processes.

We can accelerate the pace of discovery and accomplishment of our melanoma program by:

Searching for origins. Every melanocyte contains thousands of genes encoding the instructions for its construction and function. Some genes indicate an elevated risk for melanoma. For example, a defect in the MDM2 gene in young women increases by four times the likelihood that they will develop melanoma before age 50.

There is more to learn about these genes, and there are more genes to be examined to clarify the genetic links to cancer formation.

Investigating causes. Mutations affect many of a cell's structures and processes. The changes provide clues to the factors involved in tumor formation and metastasis. For example, a mutation of the B-RAF gene that disrupts its regulation of cell growth permits the uncontrolled proliferation that characterizes tumors. This knowledge has already led to a new "pinpoint" therapy with striking results.

There is more to be understood about when and why

mutations are triggered, and the ways in which they take control of cellular mechanisms.

Developing interventions. Melanoma is an accumulation of errors in genetic and cellular processes. By studying the errors we are finding ways both to recognize and to overcome them. For example, experiments with specific drugs applied to specific malfunctions in melanoma cells can lead to therapies that precisely target each patient's particular tumor.

There are more techniques to test, in the laboratory and in clinical trials, on this path to better diagnosis and treatment.

Furthering prevention. A high percentage of melanoma is caused by exposure to ultraviolet light—from the sun or from tanning beds and sunlamps—meaning that a high percentage of melanoma is actually preventable. We are leading efforts to promote awareness and attention among people of all ages, especially young people. For example, Sun Safe Colorado, a collaboration with the Colorado Department of Public Health & Environment and the Colorado Department of Education, provides resource kits containing personal risk-assessment forms along with materials illustrating melanoma lesions and demonstrating self-examination procedures, for use in schools, workplaces and homes.

There is more to be done to meet the challenge of changing people's behaviors.

With Donor Investment We Will...

Accelerate the pace of basic and translational research

Our focus on understanding the genetic and cellular mechanisms of melanoma is yielding results in speeding the progress from discovery to testing to clinical application.

Your investment will help us intensify our efforts to

- study the regulatory pathways that influence tumor growth and suppression
- investigate melanoma progenitor cells that are highly resistant to current therapies and that increase the risk of recurrence
- develop new diagnostic and therapeutic techniques and test the techniques in the laboratory and in clinical trials



Rene Gonzalez follows up on a patient's progress



Karl Lewis, MD, with a patient

Increase our capacity to serve patients

Our comprehensive, personalized treatment protocols require an unusual commitment of time and space. However, they ensure better experiences and outcomes for our patients, so our clinic volume has grown steadily to nearly 20 percent of Colorado's melanoma patients and many patients from out of state.

Your investment will help us to add

- clinic space and personnel so as to serve greater numbers of patients without compromising our quality of care
- faculty and fellowship positions to accommodate further growth in patient volume
- patient support positions to ensure thorough assistance with system access and navigation, patient and family counseling, and post-treatment follow up
- technical support positions to maintain our high standards of efficiency in diagnostic analysis, case consultation, and treatment assessment, supervision, and follow up

Our doctors are combining drug therapies to combat melanomas triggered by multiple gene activity, and we are the only site in Rocky Mountain region routinely matching drug therapies to the molecular profile of individual tumors.

Reduce the incidence and impact of melanoma

Our five-year survival rate for early-stage melanoma patients is 99 percent. Our five-year survival rate for late-stage melanoma patients is twice the national average, yet it is only 33 percent. As we strive to improve diagnosis and treatment, we also manage one of the most complete and comprehensive programs in the nation addressing issues of prevention and control.

Your investment will help us to expand

- our Pigmented Lesions/Mole Mapping Clinic, the region's only such resource for people whose personal or family profiles indicate high risk of developing melanoma
- our education programming to ensure that health professionals statewide have adequate support and resources for incorporating skin checks into their patient services
- our community awareness activities to inform and advise the public

Educate the next generation of innovators

The University of Colorado is noted for its exemplary training of health professionals and basic scientists. The Cancer Center professionals are among the best in the world, and top students dedicated to careers in cancer care and research are attracted by the prospect of learning from them.

Your investment will help us to increase the scholarships and fellowships available to recruit and train the best and brightest to our melanoma program.

The Return on Your Investments

Our ability to reach our fullest potential depends upon growth—in the clinics and in the laboratories—that will be achieved with investments in:

People. Money is time, and current and endowment funds will enable additions to staff to multiply the time available for all our pursuits.

Progress. Time is knowledge, and current and endowment funds will enable ongoing discovery and analysis of information about melanoma causes and treatment.

Patient care. Knowledge is capability, and current and endowment funds will enable advancement in translating discovery into clinical applications.

Infrastructure. Capability requires resources, and current and endowment funds will ensure the places, equipment and materials essential to furthering the enterprise.

Help Us Realize the Hope

Thanks to past support, our many successes have helped generate significant momentum in the fight against melanoma.

The convergence of exceptional expertise and assets at the University of Colorado Cancer Center allows us to be bold and ambitious in maximizing our opportunities for improving diagnosis, treatment, survival and prevention.

Your investment at this time, in this place, will bring the future closer.



Shannon Clark's Story



Sitting around the dinner table each night, Shannon Clark and her three children play a game they call “High Low,” in which each person shares the high point and the low point of their day.

On Jan. 26, Clark’s high and low points came in one phone call. Her oncologist, Karl Lewis, MD, at the University of Colorado Cancer Center, had phoned her with bad news. Her stage IV melanoma had progressed and she had a large stomach tumor that was blocking one kidney from functioning.

The news came 17 months after she was diagnosed—a miracle amount of time in the world of advanced melanoma where there is no cure and patients live only nine months on average. Still, a blink of time when you’re a single mother raising three children.

It was definitely a low moment. But it was what Lewis said next that Clark clung to.

“I have something for you,” he told Shannon. “We’re opening a trial that has shown some good results and there’s a spot for you.”

“It wasn’t just his words, it was the tone of his voice, the excitement in his voice, that gave me hope,” Clark, 34, of Fort Collins, says.

Breakthrough Moments

Clark was first diagnosed with melanoma in 2003 when a cancerous spot was removed from her shoulder. Like 98 percent of people diagnosed with melanoma that has not spread, Clark was considered cured. Five years later—

almost to the day—Clark felt a bump on her head. She wasn’t worried about cancer because her latest X-rays and blood tests at the oncologist were clear. Because she worked at a radiology facility, she decided to have the bump scanned just in case.

“That was the day my life as I knew it changed forever,” says Clark, a petite woman with blonde hair and fair skin who remembers getting badly burned while growing up in Estes Park. Sunburns are one of the known risk factors of skin cancer.

She first tried a holistic approach where she eliminated meats, processed foods and sugars from her diet, and added large doses of vitamins. Within two months, however, her cancer continued to grow and she decided to try biochemotherapy—a vicious regimen of five chemotherapy drugs that requires hospitalization for five days every three weeks.

Although controversial due to unreliable outcomes and severe toxicity, biochemotherapy may result in a response in some patients. Clark was one of those few—her tumors stopped growing after the second round. She received seven rounds of biochemotherapy, followed by eight months of reduced biochemotherapy maintenance before her cancer started growing again. By January, she had lived twice as long as the statistics predicted.

“It wasn’t just his words, it was the tone of his voice, the excitement in his voice, that gave me hope.”

Shannon Clark



“No one can tell me how long I have to live,” says Clark, sitting in a conference room at the Cancer Center with her children—15-year-old Shane, 10-year-old Blake and 8-year-old MacKenzie. “You don’t know; I don’t know. All we know is what we have today.”

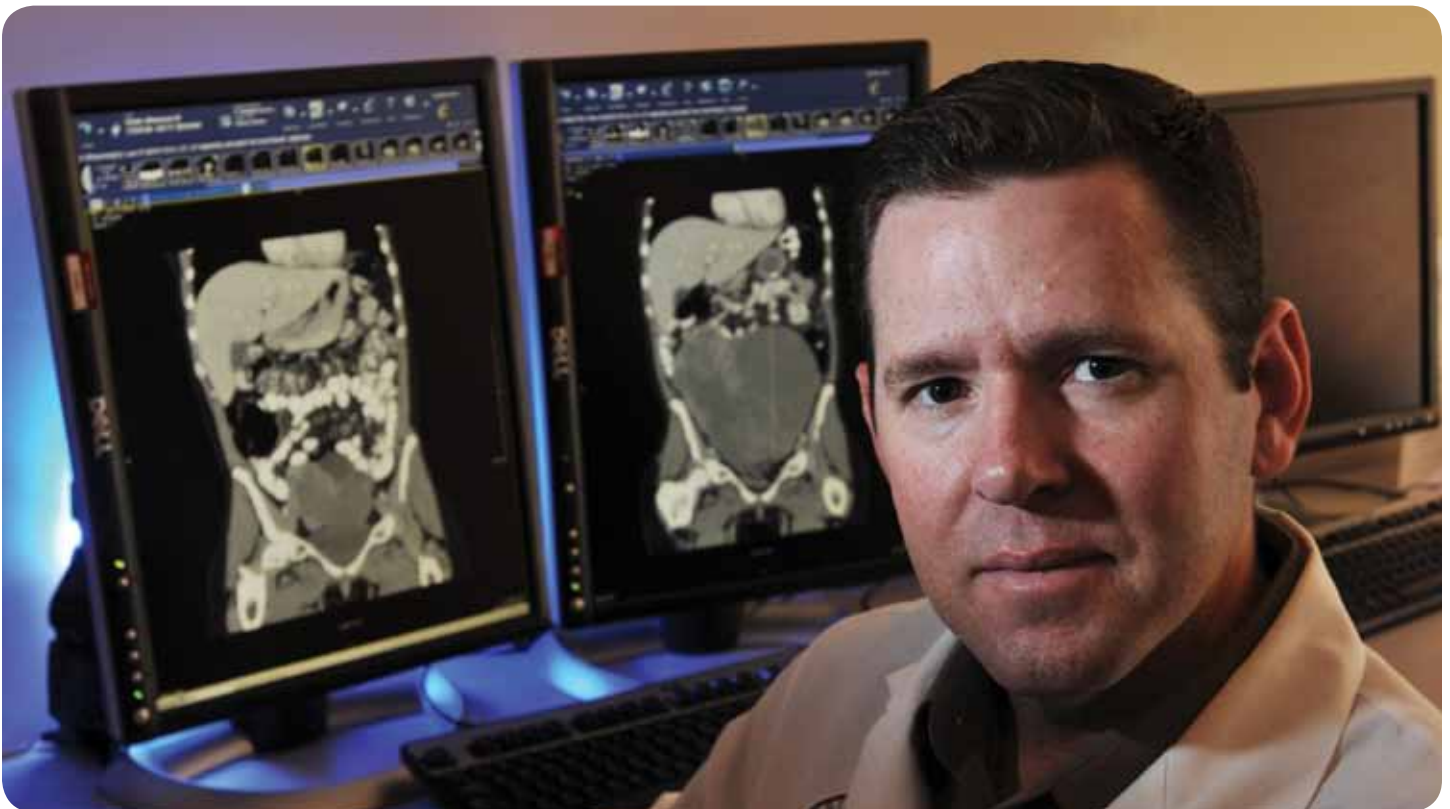
And what Clark was offered that day in January when her cancer returned was a new drug that was showing promise in other melanoma patients. “At that time, physicians were talking about seeing results in days,” Clark says. “From day one (on the trial drug), my stomach (tumor) started melting away.”

The drug Clark was put on, still in clinical trials, is known as PLX4032. The drug blocks the action of a gene known as B-RAF that is mutated in about half of melanoma patients. Now entering the last phase of clinical trials, the drug appears to stop the disease from progressing for about six to nine months, Lewis says.

“The reality is that this cancer will probably find a way around most drugs,” Lewis says. “Although we are always searching for a cure, it may be more realistic to turn cancer into a chronic disease, like diabetes, that you don’t cure but rather you manage.”

But for now, PLX4032 has been a success—for Clark and her family. And if that stops working? She’ll think about that when the time comes.

“I embrace what I have right now,” she says as she smiles across the table at her children.



Karl Lewis, MD, enrolled Shannon Clark in a clinical trial that so far has shown great success.



Penny Hearn with her brother Steve Norman

Donors Make a Difference Penny Hearn

Steve Norman died of melanoma at age 46. Misdiagnosed to begin with, by the time he came to the University of Colorado Cancer Center’s melanoma clinic his condition was irreversible, even after very aggressive biochemotherapy treatment.

His family was devastated, not only by their loss but—even worse—by the realization that it should not have happened. His sister Penny Hearn established the Steve Norman Memorial Melanoma Workshop with the hope that promoting awareness, prevention and early diagnosis could spare other families a similar tragedy.

At the workshop, the Cancer Center’s experts instruct health professionals about melanoma—risk factors, early signs and second-opinion referrals—and provide updates

on current treatment. The workshop also offers free skin cancer screenings to the general public and in the past two years has found 15 possible cancers, including one confirmed melanoma that was successfully treated.

And that, says Penny, is why it matters. The workshop entails time, effort and expense, but it has helped the healing. Penny, herself a nurse practitioner, is acutely aware that Steve’s case could have had a different outcome. “Health professionals need to be more proactive about recognizing and detecting melanoma. Steve was an educator, so this is the best way to honor him and to create something positive from our experience. For me, keeping Steve’s memory alive by helping others is a resolve that’s more than skin deep.”



Karl Lewis, MD, with Penny Hearn at the Steve Norman Memorial Melanoma Workshop, which Hearn established in honor of her brother

*You Can Help Solve
the Puzzle of Melanoma.*



Photos by Glenn Asakawa



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

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