

Director's Overview

Don't Waste Your Cancer...

by Ross Camidge, PhD, MD

That phrase, "Don't waste your cancer," was one of many memorable things said by Kirk Smith, the new President of the ALK+ Patient Group, when the group organized an 800-patient ALK+ lung cancer summit in Denver in July 2022. Several CU Faculty members, including myself, were lucky enough to be invited to the summit. Talking with this group that's how I first got to enjoy Kirk's magic phrases. The reason this one stuck with me is it can mean so many different things to so many different people, but almost all of them are positive.

"Don't waste your cancer," could mean – go do those things you were putting off. It could mean re-establish, celebrate or even fix some past relationships. It could mean take stock of things – then decide what is of value to you that you want to spend more time on and what you don't want to spend more time on. It could just mean recognize that you are now part of a community that is facing all the same thoughts and feelings and decisions as you. It could mean tell someone you love them or that you love something about them. What have you got to lose? Some of those wide-ranging options are exemplified in this year's Lung Cancer Colorado Fund (LCCF) newsletter. You'll see patients, physicians and scientists – people in the broadest sense – motivated by lung cancer to do something—research it, treat it, fund it, fight it, take advantage of it in many different ways and to not waste the motivation it givesthem. Some of that motivation also resulted in generating funds to keep the CU Thoracic Oncology Program one of the best in the world.

Help us to deliver the resources to keep CU at the cutting edge. If you are reading this and you or someone you know has a thoracic cancer - please support the LCCF and help change the world for the better. Our LCCF website includes an archive of all the past newsletters and details of where every dollar has gone. What will the future hold for those affected by thoracic cancers?

You.... Get.... To... Decide....

<https://medschool.cuanschutz.edu/lccf>

P.S. Kirk's other super memorable phrase was, "If you are going through Hell, act as if you own the place." Although I couldn't figure out how to incorporate that one sensibly in this overview, I liked it so much I wanted to share it with you too!



Lung Cancer Survivor Saila Consalvi with her son Enzo off on their way to Paris exemplifying a 'Don't waste your cancer' attitude.

CUAnschutz Researchers Create New MAX Method to More Accurately Measure Cancer Lesions' Response to Treatment

By Kelsea Pieters

Researchers from the University of Colorado Cancer Center on the University of Colorado Anschutz Medical Campus have created a new way of measuring cancer lesions' response to treatment that could better inform the development of new cancer drugs.

Measurement of cancer lesions and their changes with therapy are conducted using a validated, ubiquitous method worldwide, called RECIST, which relies on assessment of only the largest dimension of the lesion. RECIST stands for 'Response Evaluation Criteria in Solid Tumors' and relies on defining before and after measurements of a tumor's longest diameter as the method used to calculate the tumor's percentage change in size on therapy. However, in a study published in Clinical Lung Cancer, CU researchers investigated how the location of a lesion in the chest of a patient and whether lesions shrank more in the long versus the shortest dimensions could impact assessments of the effectiveness of the effectiveness of a treatment. Lesions in the outer lining tissues of the lung or around the heart tended to reduce in width rather than shrink in measured maximum length, underestimating treatment effectiveness. As different subtypes of lung cancer have previously been shown by CU Anschutz researchers to be associated with different rates of involvement of these lining tissues, this could introduce response rate differences, independent from any true differences in a drug's effectiveness.

To address this, the researchers created a novel method which they called MAX that utilizes

two measurements of the lesions and picks the diameter (either long or short) that has the greatest percentage change to be the one captured as representative of benefit.

"While RECIST is a reliable, validated and time-tested way of assessing lesion scope and informing care options for cancer patients, we wanted to see if these varying lesion features affect response rates," said CU Cancer Center member, Tami Bang, MD, a thoracic radiologist at the University of Colorado School of Medicine and the lead author of the study. "We found that we are more consistent with our new MAX method and believe we are more accurately measuring disease."



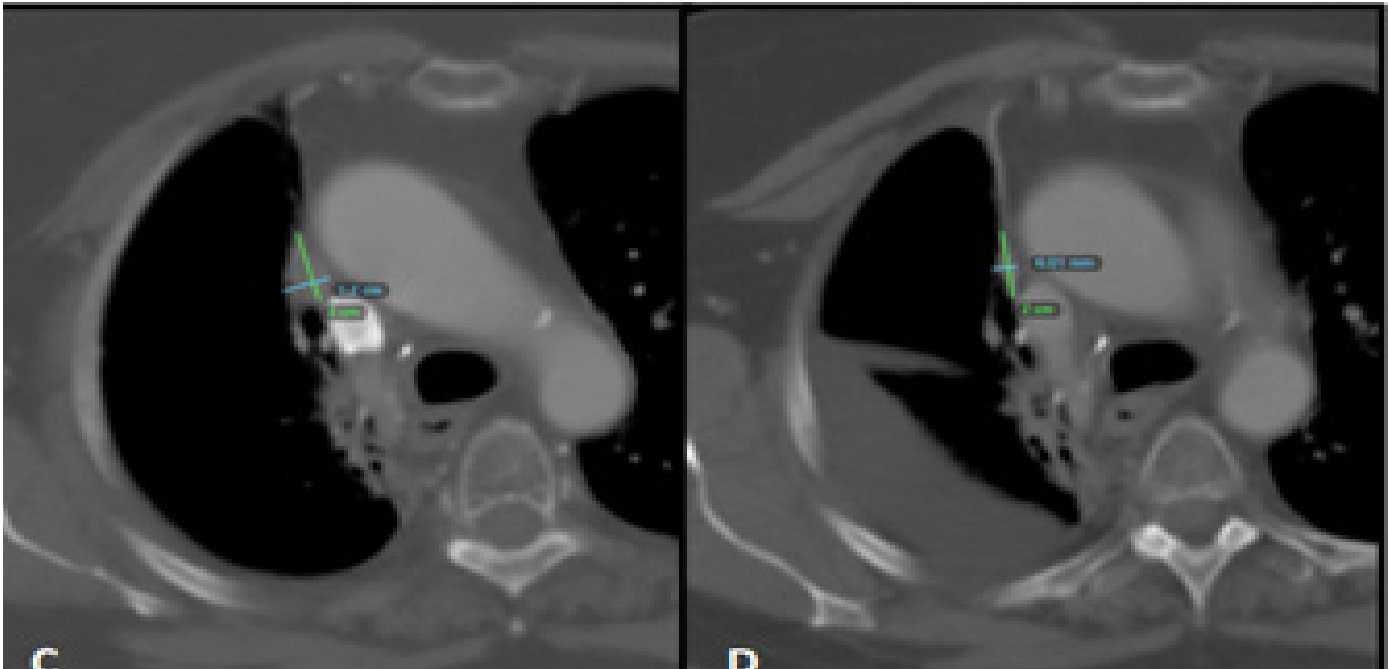
Some cancers shrink or grow like balloons – so the diameter you choose to measure to assess treatment response doesn't matter. But some stay the same length and just get thinner or fatter like a sausage. Just measuring the longest diameter would minimize the apparent change in these tumors. Balloons tend to occur in the substance of the lung, sausages tend to occur on the outeron the outer edge of the lung or the pleura.



More than 300 lung cancer patients with 446 separately measured lesions were included in the study for RECIST analysis, while 249 lung cancer patients with 386 lesions were assessed using MAX. The MAX method significantly reduced the impact of lesion location in the chest on apparent effectiveness of targeted therapies for lung cancer and also increased the observed response rate overall.

Researchers examined a specific population with lung cancer treated with highly active targeted therapies for this study, opening the door for more work to be done assessing the effectiveness of MAX in measuring lesions in patients with different cancers and in lung cancers treated with different agents.

"These results are promising in potentially providing a different way to assess and better develop new treatments for cancer patients," said Ross Camidge, MD, Joyce Zeff Chair in Lung Cancer Research at the CU Cancer Center and the senior author of the study. "We believe this method can better reflect a patient's response to therapy. We are hopeful it will be widely explored in the future."



Pleural 'sausage' getting thinner but staying same length on therapy



Dealing with Cancer One Step at a Time

by Rachel Sauer

Duane Cerniglia has navigated lung cancer for seven years with support from family and a multidisciplinary CU Cancer Center team.

It was just a cough – a nagging one, sure, but nothing too serious, Duane Cerniglia thought. Give it some time and it will go away.

It didn't go away, though, but got worse, to the point that Duane's wife, Dana, couldn't sleep through it. She recommended a visit to their family physician, who took an x-ray of Duane's chest and saw a mass about the size of a tangerine at the top of his right lung.

His mother had died from lung cancer four years previously, at age 72, but still "a part of you just clings to this hope that you're not going to hear those words," Duane says.

Duane and Dana had just welcomed their first grandchild, a beautiful boy named Kobe. They were celebrating 17 years together and 13 years married, both having come to their relationship wiser and a little wary from previous marriages. And they'd already weathered one of the worst experiences a person can, the 2003 murder of Duane's 16-year-old son, Shawn. Duane was just 56, and it didn't seem fair. But in June 2014, after initial appointments with a multidisciplinary team at the University of Colorado Cancer Center, biopsy results showed lung cancer. It would have been easy to buckle under the weight of that burden – "and there were many times I was

sobbing on our bedroom floor, begging God for help," Dana says – but ultimately Duane put one foot in front of the other, step after step, miles stretching through years with Dana by his side.

"All I could do was keep going," Duane says, and he racked up miracle of survival after miracle of survival, until today "I'm a cancer patient, but I don't have any cancer. I don't wake up in the morning and say, 'I'm sick', I just feel grateful that I have a new day with my family."

Receiving a lung cancer diagnosis

Lung cancer is still a disease associated with a lot of stigma. It's generally misperceived as a disease always caused by smoking that's almost always fatal. If someone who gets lung cancer either was or was not a smoker, in addition to the disease they often have to contend with a lot of social stigma and prejudice. Duane doesn't hide the fact that he was a half-pack-a-day smoker for almost 40 years, but can cite to the day when he had his last cigarette: June 17, 2014. It was fewer than three weeks after getting the x-ray that showed the shadow in his right lung and Dana beginning an intensive research process that would lead them to the CU Cancer Center.

"My concern was that we were going to have eight different doctors and eight different locations," Dana recalls. "I found the inspire.com website and started chatting with some of the people on there that were currently dealing with lung cancer or a loved one with lung cancer, and that's where I first heard about Dr. Camidge. This was Memorial Day weekend, but I found his email and sent him a message and he got right back to us, even though it was a holiday weekend." Duane's first appointment was on May 28, 2014, to have the bronchoscopy – a procedure in which a long, thin tube called a bronchoscope was inserted down Duane's trachea to see inside his lungs – that showed Duane not only had a tumor at the top of his right lung, but the cancer had spread to some of the lymph nodes in the middle of his chest.

On June 12, Duane first went to the multidisciplinary clinic, where his treatment team decided that "even though this was a big old tumor, we were going to try everything we could to cure him," Camidge says. "So, we basically threw the kitchen sink at him."

Duane received chemotherapy and radiation treatments, with the expectation that these therapies would deal with any microscopic cancer that may have migrated to other parts of Duane's body. He also worked with the clinic's smoking cessation team to get support in quitting smoking. It was a rough transition from the physical strength always required of him in the construction industry to an unexpected physical vulnerability. He couldn't walk far without gulping for air, he was exhausted much of the time, his face became very swollen, and he didn't respond well to the treatments, Camidge says.

On Sept. 10, Robert Meguid, MD, an associate professor of cardiothoracic surgery, performed a pneumonectomy, the surgery to remove part or all of a lung. Duane recalls consulting with Meguid before the surgery and learning that, depending on what was found, at least part of the lung would be removed, if not the whole lung. Ultimately, Duane's entire right lung was removed. Despite the significance of the surgery, though, four days later he was home.

"There was some pain, but I don't think it was as bad as it could have been," Duane remembers. "He seemed to be doing well," Dana adds. "But then things went south." Four days after being discharged, Duane was in the intensive care unit with a fistula, or abnormal communication with the left lung, in the cavity where his right lung had been. He stayed there for more than four months.

"We were losing him," Dana says. "He was taking steps backward each day."

Duane had a tracheostomy placed in his throat to help him breathe, but he couldn't drink for months and couldn't speak. The cavity where his right lung had become filled with fluid, and his organs began shutting down. He was in and out of comas and experienced intense hallucinations.

"No matter what, they got me out of bed every day, even if I could only take two steps," Duane says. "I'll tell you what, I would be exhausted after those two steps. I remember how painful it was to not be able to catch my breath for an hour after, like somebody running a marathon and then can't breathe."

"It was so hard on him," Dana says. "He couldn't write, he couldn't speak, he could barely point to

things."

"I couldn't tell Dana anything," Duane adds. "She would stand there with a paper trying to get me to write what do I want, what do I need, but I couldn't write. My brain was still working but my hands wouldn't work."

Duane's brother, Randy Rutenbeck, had been staying with him almost constantly at the hospital, and one late night, after several months of decline in the ICU, Rutenbeck called Dana on her way home from the hospital. "and I remember him saying, 'Duane's got the team here, we're going to pull the plug'," Dana remembers.



*Dr. Robert Meguid, MD
University of Colorado Hospital*

"At that moment I was intubated, it had been months, I was miserable and it hurt so bad, and I thought if this is how it's going to be, let's just not do it anymore," Duane says. "But we cleared the room and I told him, 'You can make it through this, but I need you to make a decision right now and tell me honestly what to do'. At the time we had a brand new grandson, our first and only grandchild, so that was a motivator, and I told him, 'Keep your eyes on the prize. You're coming home'."

Duane weathered that dark night, and others that followed, including when he developed an infection in the fluid in his right chest cavity. In addition to the team giving him more and more antibiotics, Meguid performed an Eloesser flap, another operation that created a one-way flap in the side of Duane's torso that allowed the infected fluids to drain from his chest cavity. Inch by excruciating inch, he progressed in tiny steps and was back home in early January 2015.

Duane and Dana began reconfiguring their life together to accommodate necessary changes that would guide Duane back to the life he wanted to live. When he returned to construction management at the building company whose owner and team had wholeheartedly supported him through his journey, he was honest with clients and contractors about his health and why he was using oxygen. But a scan in April showed cancerous deposits in his brain and the adrenal gland on his right side. “Imagine the psychological stress on Duane and Dana,” Camidge says. “After those four months in the ICU, he went home and we were thinking, ‘OK, we’re just going to see how you do, we’re not going to stir the pot’.



Dr. Brian Kavanaugh, MD,
Radiation Oncologist,
University of Colorado Hospital

To go through all that and still not be cured because a little seed of cancer escaped, and we just didn’t know it.” “I think the term Dr. Camidge uses is ‘weeding the garden’,” Dana says with a laugh. “You find the weed and pull it. I just can’t express how blessed we’ve been to have Dr. Camidge and Dr. Meguid and every other person who’d been part of the team through this.” Two years following that recurrence, scans showed one more cancerous spot in Duane’s brain, which Kavanaugh treated with radiotherapy once again. Duane hasn’t had a cancer recurrence since. In September 2020 he did experience brain inflammation in the dead tissue resulting from the radiotherapy, which Ryan Ormond, MD, PhD, an associate professor of neurosurgery, removed. “At this point, I’m starting to think of Duane as the multiple miracle man,” Camidge says. “His

attitude has been so steady; he’s been so chill and determined to stay in the game. We try not to panic and to put these things in context, but his attitude – his and Dana’s – has played such an important role.”

Grateful for a Different Approach

Now, Duane says, each new day brings a reason to feel joy. Last year, he and Dana adopted their granddaughter Remington, who they call Remy and who just turned 4. She keeps them on their toes, and delights in things like going fishing and afternoon trips to the park.

Dana’s 26-year-old son from her first marriage lives with the family and helps with things like lawn mowing, while Duane’s son who lives in Nevada checks in frequently.

Duane exercises most days to build up his stamina, and Dana stays in touch with people she met through support groups. It isn’t perfect, they say, but when is life ever perfect? It’s happy, and it’s theirs. “I think about everything I read about lung cancer when I first got on the internet,” Dana recalls, “just these depressing statistics. Luckily, we met Dr. Camidge and he had this whole different approach.”

“I’ve had years I might not have had otherwise,” Duane adds, “and every day I’m grateful.”

Colorado C-Stories: Life after a Cancer Diagnosis



Lung Cancer Survivor Caroline Kacer dressed up for Halloween with her husband Kurt and daughter Grace (adopted after Caroline’s diagnosis).

Send your pictures and a line or two to ross.camidge@cuanschutz.edu and each newsletter going forward we’ll aim to show others what ‘hope’ really looks like. Look for more images scattered throughout this newsletter.

Under New Guidelines, Millions More Quality Screenings

By Kate Kerwin McCrimmon



Lung cancer is by far the deadliest type of cancer, and newly expanded lung cancer screenings are critical to saving lives.

Lung cancer is the second most common type of cancer, but the leading cause of cancer-related death in the country according to the American Cancer Society. Lung cancer accounts for about one out of every four cancer deaths, killing more people than colon, breast and prostate cancers combined.

Who qualifies now under the new guidelines for lung cancer screenings, and why get screened?

Starting in 2022, millions more people can qualify for lung cancer screening to help detect and treat lung cancer early. Early detection and treatment dramatically boost survival rates.

To provide answers to your questions about lung cancer screenings, we consulted with Dr. Nina Thomas, the director of the lung cancer screening program at UCH Health University of Colorado Hospital on the Anschutz Medical

campus. Under new guidelines, patients ages 50 to 77 who currently smoke or quit within the last 15 years and have at least a 20 pack-year smoking history should be screened for lung cancer, Thomas said.

A pack-year is defined by the average amount a person smokes per day multiplied by the total duration of smoking in years. For example, 20 pack-years can be either one pack per day for 20 years or half a pack per day for 40 years. The new guidelines reduced the age of eligibility to start lung cancer screenings from 55 to 50, and decreased the total smoking history from 30 pack-years to 20 pack-years. Studies have found that African Americans and women can develop lung cancer at younger ages and with less smoking exposure, Thomas said.

These findings led to the changes in screening guidelines published last year by the U.S. Preventive Services Task Force, to help bridge that gap in screening for these at-risk populations.

This year, health experts at the Centers for Medicare and Medicaid Services adopted new recommendations, which means screenings are now mostly covered through both private and government-funded health insurance.

Thomas and her team at University of Colorado Hospital are passionate about reaching more people whose lives they could save.

“This could have a huge impact,” Thomas said of the updated screening guidelines. “About 6.5 million more people in the United States will be eligible for screening now. If they are screened appropriately, we can save an estimated 10,000 to 20,000 more people every year.”

Many people who should be screened for lung cancer are not being screened, Thomas said. There are multiple complex barriers to screening. Unlike mammograms and colonoscopies, with which most people are familiar, lung cancer screening is not as well-known.

“Even before the guidelines changed, fewer than 6% of people who qualified for a lung cancer screening were getting it, even though the benefits are great,” said Thomas, who is also an Assistant Professor of Medicine-Pulmonary Sciences and Critical Care at the University of Colorado School of Medicine.



Dr. Nina Thomas, Pulmonologist

The benefits of lung cancer screening are even greater than for more commonly accepted screenings like breast and colon cancer, she said.

“To save one life through lung cancer screening, you need to screen 300 people. In comparison, to save one life from breast cancer or colon cancer, you have to screen over 1,000 people,” Dr. Thomas said.

Why aren’t people getting screened for lung cancer? Medical experts believe that one of the reasons that fewer eligible people are getting screened for lung cancer is that the lung cancer screening guidelines are a little more complex than recommendations for other common screenings.

Mammograms and colonoscopies are recommended based solely on age. In addition to age, lung cancer screening guidelines are also based on risk factors, specifically smoking history.

Most forms of health insurance cover lung cancer screening, but access to care and socioeconomic status still play a major role in preventing appropriate screening.

Stigma can also be a barrier to lung cancer screening given the association with smoking.

“The UCHHealth lung cancer screening program prides itself on being non-judgmental,” Thomas said. “We understand the difficulties of quitting smoking and partner with patients to help them. We have dedicated smoking cessation counselors who work with us in our clinics.”

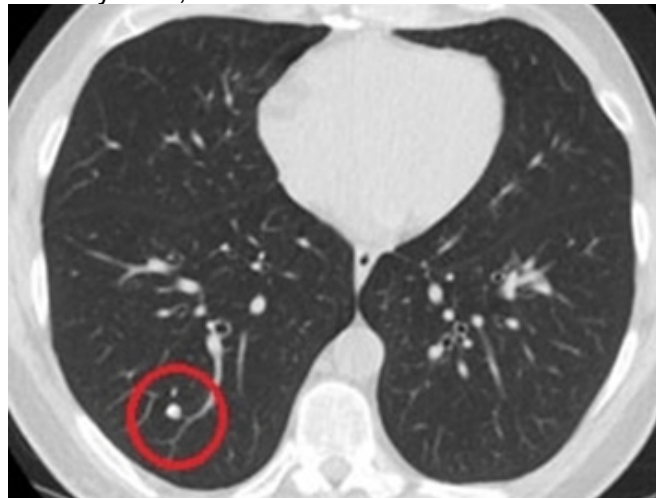
It’s easy for patients to get help and find out if they qualify for screenings.

“To keep things simple, if you’re over age 50 and either you’re still smoking or you quit within the last 15 years, then you may qualify for lung cancer screening,”

Thomas said. “You can either call the UCHHealth lung cancer screening program in your region or talk with your primary care doctor to learn more about lung cancer screening and if you could benefit from it.”

Annual lung cancer screenings are easy, quick and painless. It simply involves a yearly low dose CT scan which can be done at many different medical facilities. The scan involves lying on an exam table, fully clothed, and traveling through the CT scanner. The scan takes a total of about 10 minutes.

“The greatest benefit comes from following up and getting your scan every year. If done consistently, the likelihood that you will die from lung cancer goes down by 20%,” Thomas said.



CT screening scan showing small right lung nodule (on left in image)

If doctors find evidence of cancer, the patient gets referred to a multidisciplinary team of specialized surgeons, oncologists, radiation oncologists and pathologists who come up with a personalized treatment plan. In one day, you will get a treatment plan and meet with all the providers who will be involved in your care. “The care is tailored to each patient according to the latest research available,” Thomas said. “And patients are given opportunities to enroll in the newest clinical trials.” Early diagnosis can make a huge difference for patients, Thomas said.

“A patient’s entire trajectory can be different if they get diagnosed early.

Early diagnosis can make a huge difference for patients, Thomas said.

“A patient’s entire trajectory can be different if they get diagnosed early. Early stage cancers have a higher chance of cure,” she said. “Unfortunately, most patients do not have any symptoms when they first develop lung cancer. They only develop symptoms at later stages of cancer, which is more difficult to treat. That is why screening is so important.”

Thomas said new, advanced treatments are making a big difference in lung cancer survival rates.

“Treatment for lung cancer has evolved dramatically over the last 10 years, giving us hope even for those with late-stage cancers. Lung cancer is no longer a death sentence,” she said.

“At our cancer center, not only do we have advanced treatments, we also have numerous dedicated resources like case managers, social workers, nurse navigators, nutritionists and psychologists to help guide you through the stress of being diagnosed with lung cancer.”

The current guidelines do not include people who smoke marijuana. That being said, Thomas said people who smoke marijuana heavily can be at greater risk for lung cancer too. The carcinogens from cigarette smoking come from the tar in the cigarettes rather than the nicotine. Marijuana has similar carcinogens when smoked.

“I usually counsel my patients that if you are smoking anything, then you’re likely increasing your risk for lung disease and for lung cancer.”

Vaping “is not 100% safe either,” Thomas said.

“There are other lung diseases associated with vaping, and we don’t know the long-term effects of vaping because it hasn’t been around long enough for adequate studies. In the future, we may learn that vaping increases your risk of lung cancer too.”

Many smokers or former smokers feel ashamed and may avoid medical care. What do you tell these people about the importance of seeing their doctor and getting screenings for lung cancer?

Thomas reminds people that it’s not their fault that they’re addicted to cigarettes.

“There is a long history of the tobacco industry targeting people to get them addicted to their products,” “Smoking cessation counseling is a part of lung cancer screening, so that shouldn’t prevent people from getting screened. We just want to help people quit so they can live longer.”

**Do you want free help to quit smoking?
UCHHealth offers free nicotine cessation programs.**

Patients can get medications to assist them. These medications include nicotine replacement products like patches, gum, lozenges, inhalers and nasal sprays.

Cognitive counseling is also available.

How to get help:

Contact your primary care or specialty care provider to get a referral to speak with a tobacco treatment specialist.

Or call the patient lines in the Denver area:

720-553-0311 Southern Colorado

719-444-CARE (2273) Northern Colorado

970-224-5209 - Health District of Northern Larimer County smoking cessation program.

Programs are free for patients.

LCCF Distributions 2022

By D. Ross Camidge, MD, PhD

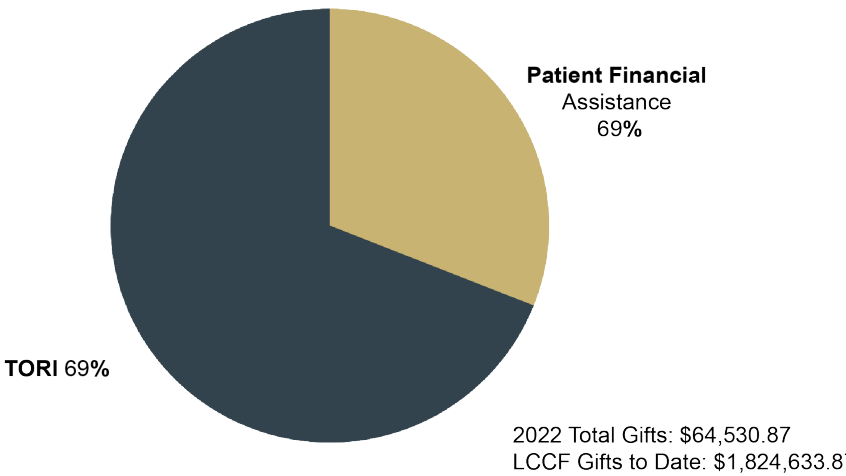
By November 2022, when the LCCF committee met to review the distribution of the funds raised for the LCCF in the year, the annual amount raised from the last meeting in 2021 was \$64,530.87. We also did some accounting tidying up with the University Foundation, together with endowment market corrections and totals below are accurate as of this work in November 2022. No specific infrastructure projects were identified for support. We agreed to give \$20,000 to support patient welfare through our social work department. We agreed to give \$44,530.87 to fund research pilot projects across the full range of research fields within the CU Thoracic Oncology Research Initiative (TORI). We agreed to halt additional donations to our first permanent quasi-endowment (to help support the salary of trainees in any aspect of the program in the future). We hope that a single donor/group will take over the additional funding required to complete this permanent Fellowship fund. The current total is \$519,478.43 and we are looking for someone to add at least 1-2M to have the Fellowship named by them if they so wish. Contact ross.camidge@cuanschutz.edu if interested. Equally, we agreed to halt additional donations to crowd-source our new Thoracic Oncology Program Support 'Innovation Fund', with the same goal re a single donor/group taking it over to complete the fund. The current total is \$380,307.21 and we are looking for someone to add at least 1-2M to have this fund named by them if they so wish. Contact ross.camidge@cuanschutz.edu if interested.

LCCF Overview

By D. Ross Camidge, MD, PhD

Since its inception in May 2011, the total direct donations to the LCCF through the University Foundation has reached \$1,359,614.05. For several years there were also donations from the Hospital side through an identically named fund (which has since been discontinued to lessen confusion). Overall, the combined LCCF has taken in and distributed \$1,824,633.87 since its creation. Listing the total down to one cent may seem silly, but it is not. It many senses it embodies the funds' founding principle - everyone working together, in no matter how large or small a way, will change the world for the better. However, the value of the LCCF can also be measured indirectly. Quasi-endowments and other large funds are invested to earn interest until their dollars are needed. The environment of the LCCF also encourages philanthropy through other avenues. The LCCF's transparency and its commitment to help support all aspects of the program has led to multiple other donations separate from the general LCCF. These include endowed professorships for retaining and recruiting the best faculty, project specific funds focused on this or that subtype of a disease, and general program development funds. Sometimes, major donor's names are attached to specific projects, sometimes they are not. It is entirely up to the donor. Sometimes donors give all at once, sometimes they stagger their donations. A gift of 200,000 a year for five years is a million dollars. If you decided to make a difference and gave what you could, when you could, whether it was 10M\$ or 1c, we are grateful to you either way.

2022 Lung Cancer Colorado Fund



Quasi-endowments, current monies, endowments and all that jazz:

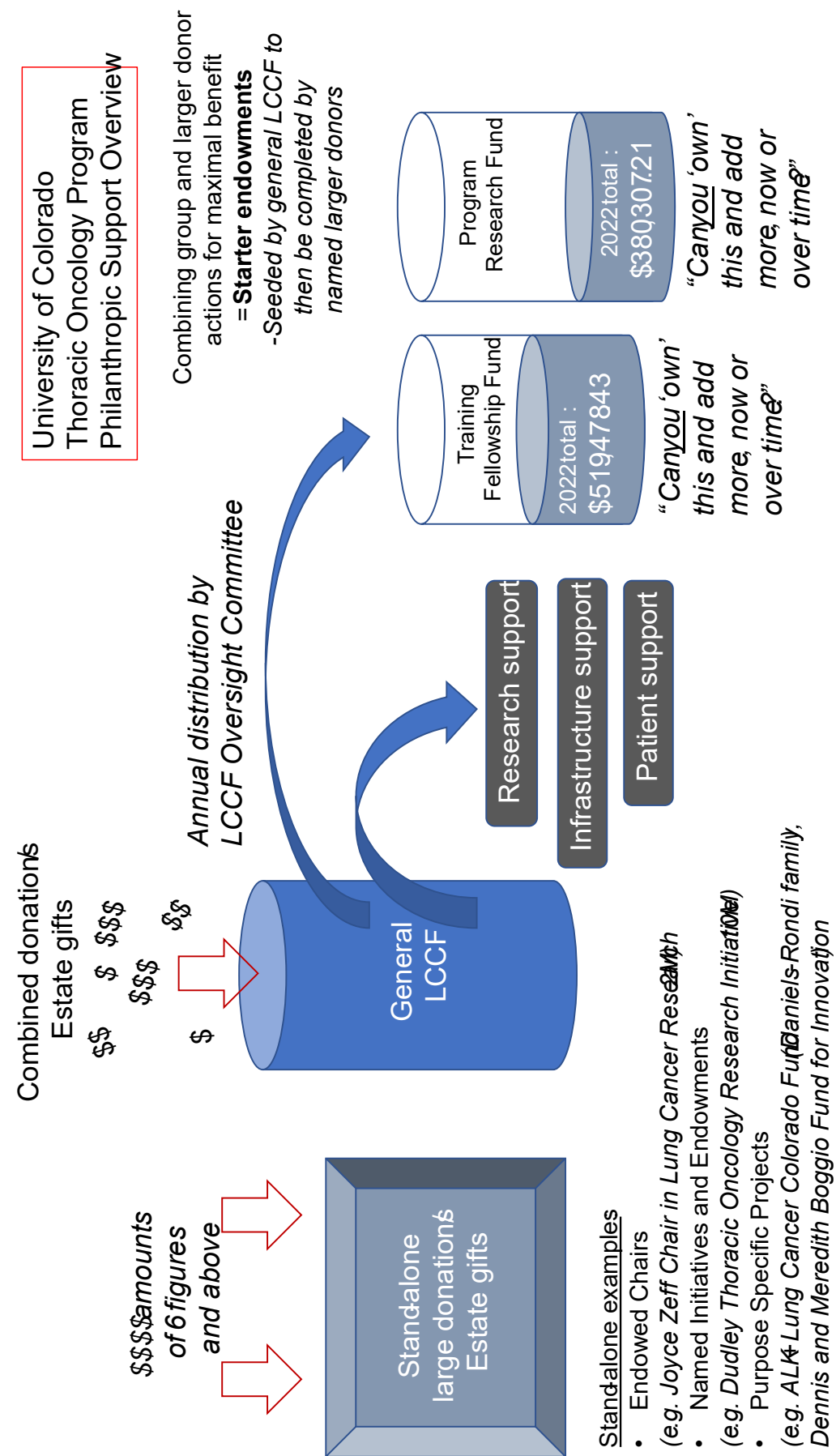
Beyond the immediate use of funds that the LCCF committee distributes annually, larger donations can sometimes have defined purposes all by themselves. Perhaps you had a windfall that you want to put to good use. Perhaps you want to plan to include support of the LCCF in your will. Perhaps you want to stagger your donations over a few years – 200,000 a year for five years is a million dollars.

The Office of Advancement at CU (contactable through 303-724-8227 or <https://medschool.cuanschutz.edu/lccf>) can help with such plans, and these are especially helpful when you work with your physician and/or the LCCF to craft something that you and the program are really passionate about together.

Sometimes the monies are for immediate use, sometimes they are permanent funds where the principal gift cannot be touched but the interest can be (endowments), or a mix of the two (quasi-endowments, that generate interest but the principal amount can also be used).

The LCCF has had a vision to prime the pump on several quasi-endowments in the hope that each fund, addressing a specific need of the program will then be completed with at least \$1-2M by a larger donor/group who would also be able to name the fund, if they so wish. Please speak to your MD or ross.camidge@cuanschutz.edu if you are interested in these or other opportunities.





**Dr Robert Meguid,
awarded endowed
Chair in Thoracic
Surgery, after
emergency operation
rescues Stan Cope.**

By Todd Neff



Stan Cope is cancer clear after esophagus surgery. He is back skiing and riding his bike. Here, he is photographed at Cheesman Park in Denver. Photo by Cyrus McCrimmon, for UCHealth.

Stan Cope had plans for his 70th birthday. They did not involve an emergency, life-saving surgery that would include, as Cope would later joke, the installation of a “stomaphagus.” But sometimes things don’t turn out quite according to plan. Rather than dining and enjoying the mountain charms of Eagle County with his wife Mary Ellen and a few friends at the Frost Creek Club on May 23, 2021, the Denver resident lay unconscious in an operating room. Cope had been, until about two days before, a picture of health over pretty much all of his 69.995 years. He had lived in the mountains – Steamboat, Breckenridge, and Vail – from 1973 until a couple of years earlier, when Mary Ellen’s trouble with altitude and a solid

offer led him to sell his Vail-based property-management business and split time between the Front Range and Scottsdale, Ariz. Prior to around golf on Friday, May 21, 2021, Cope was warming up on the Frost Creek driving range when he swung a club and collapsed to his knees. "It felt like an alligator bit my right shoulder and just dug into my chest," he said. The knifing pain subsided and a deep unease set in. He told his friends he'd catch up with them later. Back at the rental house, Cope took pain relievers and planned on waiting it out. Mary Ellen had been away; when she returned, she took one look at her husband and delivered him to urgent care. A doctor there did a workup. It was inconclusive, so the Copes returned to Frost Creek. Cope skipped dinner with friends that night, feeling no better. The next morning, the urgent care physician called and said he should get to Vail for a CT scan. By that evening, Cope was in an ambulance headed for UCH. Roughly a half gallon of fluid had collected in his chest cavity. It would take the resources of an academic medical center to understand its origins and fix it. Dr. Robert Meguid, a University of Colorado School of Medicine and UCH health thoracic surgeon, was on call on Sunday, May 23, 2021. It happened to be his wedding anniversary, but perhaps the phone wouldn't ring. At about 3 a.m., it did, and he drove through the predawn darkness to UCH.



Mary Ellen and Stan Cope with grandson Avery in January 2022. Photo courtesy of Stan Cope.

By the time Meguid started operating on Cope, the UCH team understood more about the case. An esophageal perforation – a hole in the esophagus – had been the source of all that fluid. Sepsis, the body’s extreme response to systemic infection, had also set in. Dr. Anna Duloy, a CU School of Medicine and UCHealth gastroenterologist, had investigated with an endoscope. Had Cope’s problem been a hole in the esophagus, Duloy could have done a minimally invasive procedure to place a stent and seal it. But instead, she identified an epiphrenic diverticulum, an outpouching of the esophagus just above the stomach, a rare condition. The repair would require open surgery, the possibility of which was why Meguid had been called in. The thoracic surgeons at UCH mostly operate on lung cancers but are highly trained in treating all cancers of the chest. Meguid went to work and quickly saw how serious Cope’s problems were. Food had gotten stuck in the epiphrenic diverticulum and led to a squamous cell carcinoma, the most common form of esophageal cancer. When Cope had swung that golf club, the tumor had torn loose, leaving a hole about the size of a quarter. It was, as Meguid described it later, “a one-in-a-million type of situation, one of those you read about in textbooks but no one has ever seen before.”



Robert Meguid, MD

“The hole is going to kill him immediately if we don’t fix it, and the tumor will kill him eventually if we don’t fix it,” Meguid recalled thinking.

Meguid figured Cope had a 50-50 chance of survival. The tumor had spread into the lower lobe of the right lung and into one of the blood vessels returning blood from that lung to the heart. Lymph nodes had blackened with infection. But the tumor didn’t seem to have spread beyond those areas – had Cope not torn the tumor loose, it surely would have. He had been lucky to avoid injury his entire life, and he had been lucky to injure himself now. For the next six hours, Meguid and CU School of Medicine surgery fellow Dr. Michael Cain removed part of Cope’s lung, repaired the blood vessel, did 23 biopsies for pathology to investigate for possible cancer, and cleaned Cope out. Rather than patching the hole in the esophagus, Meguid removed it entirely. In its stead, he stretched out and sutured into place Cope’s stomach. Meguid performs this procedure, called an esophagectomy, about 40 times a year. The stomach would function just like an esophagus, but Cope would have no stomach. For the rest of his life, he would eat multiple small meals a day and chew his food thoroughly. For the next couple of months, he would collect his calories through a feeding tube Meguid also installed. For three days Cope wasn’t allowed even to put liquid in his mouth, and for five days, he wasn’t allowed to swallow it. When the sutures were judged to have held properly, “The first swig of water was like the finest champagne you’ve ever had,” Cope said. For days, Cope judged the progress of his recovery by the number of tubes nurses removed. By the time he left UCH 12 days after surgery, he was down to the feeding tube and two PICC lines, one for an antibiotic, the other for an antifungal prescribed by Dr. Esther Benamu, a CU School of Medicine and UCHealth infectious disease specialist. Given the cancer diagnosis, Cope underwent chemotherapy under the guidance of CU School of Medicine and UCHealth oncologist Dr. Scott Kono at UCHealth Cancer Care and Hematology Clinic – Cherry Creek. When the standard fluorouracil (5FU) treatment led to painful – and, true to form, rare – blood-vessel spasms,

Kono shared his case with the weekly GI Tumor Board at the Anschutz Medical Campus, where about two-dozen specialists – radiologists, oncologists, surgeons, pathologists, and others – came up with an alternative that worked. Two months after his surgery, Cope had recovered enough to ride his bike from Cherry Creek to a bagel shop in the Lowry neighborhood and back. “I don’t think it was 10 miles. It felt like 100,” Cope said. “But it felt great to be back on my bike. To be a human being again.” Cope’s rides got longer and steeper as weeks and months passed. He has been golfing two or three times a week in Arizona. In late February, he and Mary Ellen skied Mission Ridge near Wenatchee, Washington, during a visit with his son, daughter-in-law, and first grandchild, a baby boy.



Scott Kono, Medical Oncologist at Cherry Creek Cancer Care

And the term “stomaphagus”? That portmanteau emerged in a conversation with Meguid, not long after the surgeon explained to his patient that he no longer had a stomach because it was functioning as his esophagus. It’s technically called a neoesophagus, Meguid told him. Cope said he prefers “stomaphagus.” Perhaps it will stick. “I’ve given him permission to trademark it as his own,” Cope quipped. On November 16th 2022, the CU Development Office announced that through the Copes’ generosity and support from the Division of Cardiothoracic Surgery the Stan and Mary

Ellen Cope Family Endowed Chair in Thoracic Surgery was created. Philanthropic donations to create such chairs help to retain top talent at the university by helping to protect the recipient’s salary and freeing up some of their time for additional, vital but often under-rewarded work. The Cope’s donation stipulated that the chairholder’s teaching and research should focus on thoracic surgery, and Meguid was rightly selected as the inaugural chairholder.

Colorado C-Stories: Life after a Cancer Diagnosis



Saila Consalvi, stage IV lung cancer survivor, and her husband Jay finishing the Boston Marathon April 18th 2022 (all while she was on chemo and three months after their first child was born via surrogacy).

TORI – Science in Action

By Sharon R. Pine

TORI (Thoracic Oncology Research Initiative) was established in 2015 as a part of the Lung Cancer Program at the University of Colorado. The primary purpose of TORI is to bring scientists and clinicians together from multiple departments and centers across the University of Colorado including the Colorado School of Public Health and the Cancer Center. Among TORI’s major areas of strength include early detection of lung cancer and treatment of precancerous lesions, targeted therapies against “driver mutations”, treating tumors that are resistant to targeted therapies, and immunotherapies. TORI members are nationally and internationally recognized for their chemopreventative and immunopreventative clinical trials, and for the treatment of lung cancers with identified oncogenic drivers. The cornerstone of our success has been the multidisciplinary interactions between the clinicians and basic/translational scientists.



Drs Pine and Sabaawy hiking in Colorado with their son Aiman

I had the pleasure of first meeting the team from the University of Colorado Lung Cancer Program around ten years ago while attending an annual national lung cancer conference hosted by the IASLC (International Association for the Study of Lung Cancer). The Lung Cancer Program already had a decades-long national reputation for improving the lives of lung cancer patients by translating their cutting-edge scientific research

into life-saving clinical trials. I recall telling my husband about how fortunate it would be to one day work closely with such an amazing group of accomplished and passionate researchers. Since then, I’ve been inspired by the large volume of high-impact discoveries that have come from the Lung Cancer Program as well as TORI. Fast forward to the fall of 2021, I received a call that TORI was searching for a new Director, and I high tailed it out of my home state of New Jersey to start my new journey here at the Anschutz Medical Campus in Aurora. There is nothing better than being surrounded by like-minded individuals who care so deeply about ensuring their research in the laboratory will contribute to increasing survival for lung cancer patients and enhancing their quality of life. My laboratory studies the underlying biological causes of lung cancer, examines how race and ethnicity lung cancer risk and survival, and develops novel ways to test anti-cancer drugs. This multi-factorial approach reflects the essence of TORI, which comprises a multidisciplinary team of computational biologists, epidemiologists, structural biologists, and clinicians. It is through our relationship building and combined efforts that we make the largest possible contributions by bringing what we learn at the laboratory bench and apply it to the patient’s bedside. On a personal note, I’m married to my wonderful husband, Dr. Hatim Sabaawy, M.D, Ph.D., who is a Professor in Medical Oncology, and the new Associate Director for Translational Research at the Colorado University Cancer Center. Even though I grew up in a large family of eight children, we have one son who, despite being freshman in college, is still the center of our universe. The apple doesn’t fall far from the tree; he is majoring in biology. This is not surprising given my family’s shared interests in nature and the outdoors. We’ve been enjoying exploring the seemingly infinite hiking trails in Colorado since we arrived here in the summer of 2022. TORI is committed ensuring that its members continue to lead the field in lung cancer research. As TORI Director, my vision for TORI is to expand its legacy as a research-driven hub that fosters translational research opportunities across the system providers. Our goal is to improve

outcomes in lung cancer patients by addressing current challenges and by developing the next generation of therapeutic strategies. One of our biggest metrics is to obtain the lung SPORE (Specialized Programs of Research Excellence) grant from the National Cancer Institute. This is a highly prestigious award given to only a few centers across the county, and it provides substantial support for translating new scientific discoveries into significant and durable treatment advances.



Lung cancer survivors Betty Moren and Heidi Onda spread lung cancer awareness with Dr Sharon Pine

ALK Positive Summit Focuses on Community and Survivorship

Written by Rachel Sauer

Until 2007, about 1 in 20 lung cancer patients all had the same thing in common but did not know it. In 2007, however, researchers discovered that molecular alterations in the anaplastic lymphoma kinase (ALK) gene were present in 4-5% of lung



White ribbons magically appeared outside the Fitzsimmons building on the CU Campus at the start of November

cancer cases. Since then, scientists, clinicians, and patients have united to understand and seek increasingly effective treatments for what would become known as ALK positive lung cancer. This ongoing work was a focus of the ALK Positive Summit held in Denver in July 2022. About 800 clinicians, researchers, and people living with an ALK positive diagnosis gathered in person and virtually to learn about promising research developments, highlight survivorship, and nurture communities of support that span the

globe. “Because of the discoveries we’ve made and the treatments that have been developed for ALK positive lung cancer, we’re seeing a lot more long-term survivors who are young and motivated,” says University of Colorado Cancer Center member Ross Camidge, MD, PhD, keynote speaker at ALK Positive Summit 2022 and a professor of medical oncology in the CU School of Medicine. “Because of the internet and Facebook, they know each other and form communities around the world, and are one of the driving forces in the progress we’re making in research and treatment.” For Nancee Pronsati, chair of ALK Positive Summit 2022, the summit’s aim was not only to share information and updates on ongoing research, “but to drive hope,” says Pronsati,



who lives in Golden and received her ALK positive diagnosis more than six years ago. “It’s a chance to hear patient stories and learn how people are coping, and to create these networks of support that are so important when you have this diagnosis.” An important summit focus for both clinicians and patients was learning about research and clinical trials happening around the world that are showing great progress in treating ALK positive lung cancer. “At the University of Colorado, our clinical trials have really been working to improve targeted therapy for patients with ALK positive lung cancer,” says Erin Schenk, MD, a CU Cancer Center member and featured speaker at the summit. “We’ve been involved in a number of major clinical trials focusing on certain targeted therapies that are helping patients live for a number of years following diagnosis.” Several ongoing studies either being led by or involving CU Cancer Center researchers are focused on the next generation of tyrosine kinase inhibitors (TKI) that are showing fewer

side-effects, increased efficacy, and are more easily tolerated by patients. “Targeted therapies are fantastic and a mainstay of treatment for patients with ALK positive lung cancer, but they eventually stop being effective,” Schenk says. “One of the things we’re really



Summit Organizers, Patient Advocates, and the new ALK Positive President and Vice President, respectively, Kirk Smith and Nancee Pronsati

interested in trying to understand is how we can augment those therapies specifically through the immune system. My laboratory is really interested in the ways immune cells can inhibit the effectiveness of these targeted therapies, and we’re asking fundamental questions about how the immune system interacts with this cancer. We’re trying to target these interactions or alter them in some way to make TKI therapy work even better for a broader range of patients.” A certain urgency has driven ALK positive lung cancer research since the ALK alteration was identified. “It frequently occurs in young people who were never smokers, but we don’t know what causes it, and it has a high propensity to spread to the brain,” says Camidge, who has been at the forefront of global ALK positive research since the acquired genetic change was identified. Early research demonstrated that patients who received the TKI crizotinib showed progression-

free survival of more than twice the number of months as that experienced by patients who received chemotherapy.



Dr. Erin Schenk, Medical Oncologist, University of Colorado

“What became really exciting is suddenly we have patients who could be on a treatment which worked incredibly well with very few side effects,” Camidge says. “We are now seeing patients with advanced lung cancer who are 10 years, 15 years out from diagnosis. I think the ALK positive patient population have really come to define long-term survivorship.” Even though about half of all ALK positive lung cancer diagnoses are made in people younger than 50, the continually lengthening survivorship has begun to incorporate issues and questions not often associated with cancer treatment: “If you’re a young woman of child-bearing age, you start asking whether you can have kids,” Camidge says. “The idea of long-term survivorship, even with advanced cancer, is allowing people to bring back their future planning. People are getting married, they’re starting families, they’re seeking promotions in their jobs.” As with all cancer treatment, the foundational goal in treatment for ALK positive lung cancer is “perfect control of the cancer and perfect quality of life,” Camidge says. “Maybe we don’t always achieve that, but with better treatments and everything that’s happening in research, people with an ALK positive diagnosis can expect more from life than just being alive.”

New Proposed Ban on Menthol Cigarettes Could be ‘Huge Landmark’ in Reducing Lung Cancer Deaths

By: Katie Kerwin McCrimmon

A new proposed federal ban on menthol-flavored cigarettes would be a “huge landmark” in efforts to reduce cases of lung cancer in the U.S., especially among African Americans who have been targeted by the tobacco industry with menthol cigarette advertising for decades, according to lung cancer expert, Dr. Nina Thomas.

A menthol cigarette ban will prevent lung cancer cases and deaths.



Cigarette makers have deliberately marketed menthol cigarettes to Black people. Photo: Getty Images

It could take more than a year for health experts from the U.S. Food and Drug Administration (FDA) to fully ban menthol cigarettes, but the decision is critical, said Thomas. That’s because African American men are at the greatest risk in the U.S. for developing and dying from lung cancer, according to the Centers for Disease Control and Prevention (CDC). And for decades, cigarette manufacturers have deliberately marketed menthol cigarettes to Black people. Cigarette manufacturers advertised

brands like “Kool” to African Americans as easier to inhale due to the cool sensation. “This is a really big deal,” said Thomas, who is director of the lung cancer screening program at UCHHealth University of Colorado Hospital. “It’s the first time the FDA is really hitting the tobacco industry with limitations on what they’re able to sell. Not selling menthol cigarettes is the first step in limiting their market and how they can sell dangerous cigarettes to high-risk populations. This is going to improve mortality,” said Thomas. She is also an assistant professor of Medicine, Pulmonary Sciences and Critical Care at the University of Colorado School of Medicine on the Anschutz Medical Campus. Thomas said the proposed menthol ban marks the first time that health authorities have sought a major restriction in cigarette sales or manufacturing in over a decade. The last major change came over a decade ago when cigarette manufacturers in the U.S. were forced to change their packaging to remove labels indicating “light” and “ultralight” cigarettes. Even so, people who smoke can still recognize their color labels and continue to buy preferred cigarettes, Thomas said. Like menthol cigarettes, so-called “light” cigarettes cause just as much illness and death as regular cigarettes. If successful in banning menthol cigarettes, federal health authorities may soon impose additional restrictions, Thomas said. “All cigarettes are dangerous. They increase your chances of developing and dying from lung cancer among many other diseases,” she said. Death rates related to smoking are exceptionally high, according to the CDC. Every year, one in five deaths in the U.S. is tied to cigarette smoking, with about 480,000 people dying of illnesses tied to smoking. Of those who die from cigarettes every year, about 47,000 are African American. Thomas said it’s vital to reduce the stigma surrounding smoking and for people who smoke to know that there are resources available to help them quit, get screened for lung cancer and get treatment for other smoking-related illnesses.

Cigarette manufacturers have deliberately targeted certain populations, promoting addiction to nicotine even to children and teens. In recent years, vaping also has surged in popularity with manufacturers targeting children and teens with flavored vaping products. FDA experts also are considering restrictions on vaping products, but for now, the efforts to halt sales of menthol cigarettes will not restrict sales on flavored e-cigarettes. Some studies link menthol cigarettes to an increased risk of certain types of lung cancer. These cancers may be related to the ease of inhaling the smoke from menthol-flavored cigarettes. It’s possible that menthol also encouraged people to smoke more frequently. Thomas said banning menthol cigarettes is a great first step. Since she sees the direct impact of cigarette smoking in causing lung cancer, she’d love to see health officials ban the sale of all cigarettes.

Colorado C-Stories: Life after a Cancer Diagnosis

Lung Cancer Survivor Ricardo Salgado getting some love from his wife, XX.

Colorado C-Stories: Life after a Cancer Diagnosis

Lung Cancer Survivor Melissa Turner (right) had breast cancer years beforehand and now has lung cancer – “I have a strong commitment to support both communities – the one for the cancer I now don’t have and the one for the cancer I do have”

Acknowledging the Fears of Cancer by Giving Them a Face and a Name

By Rachel Sauer



Beau Gill photographing penguins in the Antarctic

For a photographer living with cancer, directly addressing the worries that accompany his diagnoses helps him remain someone who is not defined by them.

To understand why Beau Gill built a mental cupboard for Jeff and Spike, first you must travel back with him to the small town of Catemaco in Mexico's state of Veracruz.

It was years ago and he was a bit of a lost soul. Having spent 15 years building a photo studio in London, England, that came to an unpleasant end, he was seeking a fresh start and Mexico appealed. As he wandered Catemaco's streets in the days after Christmas, he began seeing effigies by people's front doors – old men wearing straw-stuffed overalls with a liquor bottle propped in the crooks of their left arms.

On New Year's Eve, he realized that these effigies, called El Viejo, were also stuffed with fireworks as people took them into the streets and ignited them. It was a brilliant conflagration to close the old year and welcome the new.

The display meant a lot of things to Beau, perhaps most of all the importance of putting a face and name to things that matter – hopes and

fears, dreams, plans, anything that's bothering him. So, when he was diagnosed with prostate cancer, he named the unwelcome intruder Spike. And when he was diagnosed with lung cancer, he named that one Jeff.

Believing it's more important to personify medical adversaries than demonize them, Beau built a cupboard in his mind where Jeff and Spike stay. Some days he invites them out for a few minutes of reflective conversation – what they're up to that day, how they're making him feel, the things he can do to shoo them out the door. Then back in their cupboard they go so he can think about other things and enjoy the day with his wife, Barb Miller.

Because Beau has cancer – several kinds, in fact – it would be easy to define him by a chronology of diagnoses, by lists of treatments and drugs, by doses, by symptoms, by calendar dates of visits to the emergency room. It often happens to people diagnosed with cancer.

But in his occasional conversations with Jeff and Spike, in his passion for photography, in his peaceful afternoons with Barb, in his undimmed relish for life at age 84, Beau embodies a central truth of cancer treatment and care: He is a person before he is a patient, and he is so much more than a palmful of drugs or a directed beam of radiation.

It's a truth embraced by his multidisciplinary care team at the University of Colorado (CU) Cancer Center.

"Beau is such a delightful guy," says Tejas Patil, MD, CU Cancer Center member and assistant professor of medical oncology in the CU School of Medicine. "When I first met him, he was in bad shape with aggressive lung cancer. But he's having a fabulous response to his therapies and most importantly, he's been able to get back to wildlife photography and so many other things he enjoys in life."

An important thing to know about Beau: Beginning at age 9, he had a camera in his hands. At first it was a Brownie and he would do "kidnappings" around his neighborhood – knocking on the doors of people he knew and asking if he could borrow the kids to practice taking portraits.

Through travels around the world, through work and relationships, in the cabins of small aircraft

In fact, it was at a photography convention in Florida that Beau spotted a lovely woman during Photoshop seminar. He and Barb got together in 2004 and have he's flown for decades, on the decks of sailboats, there's almost always been a camera nearby. hopped the globe since then. In the richness of their experiences they have stories that begin with an elephant



Beau Gill photographing wildlife near Boulder, Colorado

sanctuary in Bali, say, or an aquarium in Manuel Noriega's former nightclub in Panama City. They lived in Half Moon Bay, California, for several years, where Beau did a lot of sailing and Barb opened a gallery and got involved with land trust projects.

The only thing slowing Beau down was breathing that was getting more labored. He doesn't hide the fact that he had a 50-year smoking habit, and in 2008 he was diagnosed with chronic obstructive pulmonary disease (COPD). Two years later, he had the unwelcome surprise of a melanoma diagnosis, which was treated with a seven-hour surgery including lymph node removal.

In 2013, after many discussions in which they admitted they loved California but it didn't feel like home, Beau and Barb were looking for a place that would feel like home. Barb's elderly parents were in Kansas and she wanted to be closer to them, so a visit to Denver led to the feeling they'd been seeking: They had come home.

Beau began working with Bill Vandivier, MD, a professor of pulmonary sciences and critical care in the CU School of Medicine, and doing

regular pulmonary rehabilitation. He also joined a support group "that really got me thinking about what it meant to have this disease," Beau says. Because of this consistent care, Beau was able to quickly get a bronchoscopy after scans showed two nodules on his lungs. The results indicated squamous cell lung cancer, and several targeted radiation treatments followed.

A few years later, and seemingly out of the blue because he'd had no symptoms, Beau's multidisciplinary care team discovered he had metastasized prostate cancer. Working with CU Cancer Center member Elaine Lam, MD, Beau's treatments included hormone therapy, to which he responded extremely well. The therapy did, however, cause hot flashes and Barb laughs remembering that she was only a little sympathetic.

Beau's strong response to the treatments for prostate cancer notwithstanding, in 2019 his



Tejas Patil, MD Medical Oncologist, University of Colorado

care team discovered two nodules in his lungs that were adenocarcinoma, a different type of lung cancer.

"This new lung cancer wasn't a relapse, but it was more that he had a second primary," Patil explains.

Patil initiated molecular testing to figure out if there were any mutations in the lung cancer

“He’d had a situation where he felt pressure in his abdomen and there was a concern that it was the prostate cancer spreading, but a biopsy showed it to be lung cancer. Now we had a stage 4 lung cancer, so we started doing some detective work.” that immunotherapy could target. Beau tested very high for the PD-L1 expression, so Beau and his treatment team decided on a course that included two rounds of chemotherapy and the drug pembrolizumab. After Beau’s first treatment in December 2020, a scan showed all the spots on his lungs had grown. “I got nervous that he was actually not responding,” Patil recalls. “I told Beau, ‘Look, there’s a very small possibility this could be pseudo-progression.’” Pseudo-progression is a rare response that happens sometimes in immunotherapy, in which cancer spots swell as the immune system aggressively attacks them. “I told Beau, ‘It sounds like you’re feeling better despite what the scan is showing, so let’s get another scan in one month,’” Patil says. “I was nervous doing this because I could have been wrong, but the thing that really clued me in was he was feeling better even though his scans looked worse. And his scan a month later showed rapid improvement.” Since then, Beau’s lung cancer has largely regressed and he continues taking pembrolizumab. His last eight scans have looked the same and shown no growth in the two spots on his lungs. Perhaps most importantly, the positive response that Beau has shown to immunotherapy means that he doesn’t always have to think about immunotherapy, or lung cancer, or even the next doctor’s appointment. He can think about where the birds might be. Whereas before his immunotherapy treatment Beau had been close to bed-bound, now he and Barb climb into their white Dodge van for photo expeditions. Sure, there have been adaptations – a stepping stool to get out of the van, added support for his longest and heaviest lenses, an oxygen tank on wheels that he calls R2-D2 – but these seem a minor concession compared with life’s boundless capacity to be interesting and beautiful.

Beau and Barb even moved from their previous and much-loved condo in downtown Denver to a home next to open space in Boulder, where the view out the dining room window is a stunning Rocky Mountain panorama. The walls of their home are a gallery of cherished moments, from the penguins and icebergs they saw in Antarctica to the blue herons in flight they saw closer to home. Two cats who might be just a little spoiled keep them company while they work on their various projects, and Beau only opens the cupboard door to Jeff and Spike when he decides that it’s time for a chat.



Colorado C-stories: Life after a Cancer Diagnosis



International collaboration: After Lung Cancer Survivor Miguel Ting (right) and his wife Coco (left) from the Philippines reached out for a second opinion from the University of Colorado, the CU team were able to connect him with a trial run by Dr Josh Sabari (center) at NYU to get him access to treatments not available in his own country.



Drs Ross Camidge (CU) and Eiko Browning (RMCC) catch up in the Lung Cancer Information Booth at the 2022 Colorado State Fair in Pueblo.



Lung Cancer Survivor and White Ribbon Project Founder Heidi Onda and her husband Pierre spread awareness in November 2022. <https://www.thewhiteribbonproject.org/>

Estate Planning

Consider including the Lung Cancer Colorado Fund in your estate plans

Estate Planning can make a huge difference, and can be made simple with help! Please review the Special Estate Planning LCCF Newsletter Edition ('Ben and Ellen's Adventures in Estate Planning') available in the clinic rooms or on-line at: <https://medschool.cuanschutz.edu/lccf> or call The Office of Advancement at CU on 303-724-8227.



5+ Year Cancer Survivors' Party Updates



COVID challenges all of us to not give up, but to find new ways to celebrate

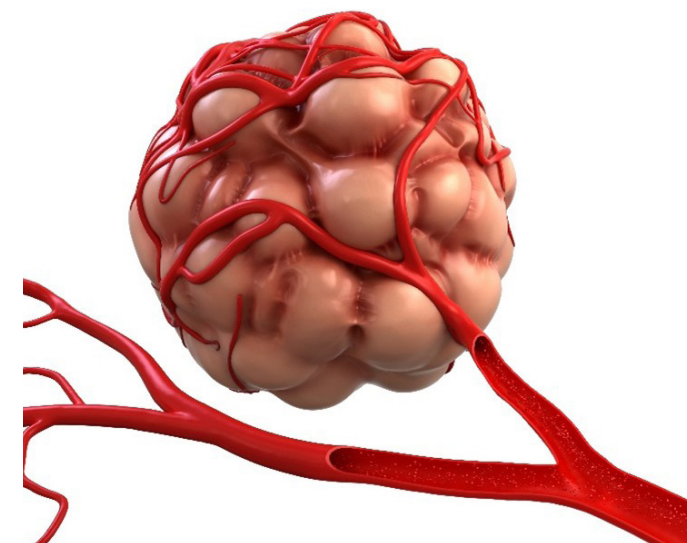
In 2018, for the first time, the CU Thoracic Oncology Program made a decision to invite all those who were at least 5 years out from their initial diagnosis of a thoracic cancer to come and celebrate. Partly, it was to have an excuse to eat birthday cake. However, it was mostly to photograph the group and to be able to show to those earlier in their diagnosis that hope had a face and that that face could look like any one of us. The second celebration took place in the Fall of 2019 and then, from 2020, COVID got in the way. Behind the scenes we continue to work on the means to bring this important celebration back. If you want to help make this happen – volunteer with Taylor Cameron, TAYLOR.2.CAMERON@CUANSCHUTZ.EDU. This year's event will take place on April 29th, 2023, at 4:00p MDT, in the Elliman Conference Center within the Anschutz Health Sciences Building.

Where is LCCF-funded research going?

By Ross Camidge and Sharon R. Pine

TORI stands for the Thoracic Oncology Research Initiative and is the collective term for the organization and infrastructure to facilitate the full range of research going on in lung cancer and other thoracic cancers at CU. During the past year, TORI has focused on using funds provided by the Cancer Center and the LCCF to support projects to strengthen the whole lung cancer research program from laboratory science to tobacco control. An Executive Committee encompassing faculty specializing in all aspects of lung cancer research meets monthly to evaluate progress on projects and identify new research directions.

Through the generosity of the LCCF, TORI has funded \$250,000 in pilot research projects in 2022 that are being conducted at the CU Cancer Center. These seed grants provide the necessary funds for researchers to explore new ideas and generate preliminary data that are fundamental to kick-starting sustained, long-term and highly productive research programs in their laboratories. The pilot projects not only help establish these programs, but they also contribute toward training the next generation of researchers who focus their careers on lung cancer. The following four pilot projects were funded in 2022, though the gracious support of



the LCCF. Below is a description of the projects that were funded this year.

\$75,000 to Emily Kleczko, PhD and Yuwen Zhu, PhD: Targeting the tumor vasculature in EGFR and ALK Driven Lung Adenocarcinoma.

The standard of care for EGFR-mutant and ALK-fusion positive lung cancer patients is to treat them with targeted therapies that are very effective when they are initially given to patients. However, most patients relapse, and when these tumors return they are often no longer sensitive to these targeted agents. In addition, the patients' tumor blood vessels are frequently atypical, further complicating our ability to treat them. Tumors often have an increased number of blood vessels, but paradoxically, these vessels often wind through the tumor in unusual ways and they leak, preventing effective blood flow to the entirety of the tumor. These atypical tumor blood vessels can make drug delivery to all parts of the tumor hard and limit the full effects of these drugs. Drs Kleczko and Zhu's research aims to correct these atypical blood vessels in order to enhance drug delivery and improve the efficacy of these targeted agents.

They have identified a protein called CD93 that is present on the surface of tumor blood vessels. They determined that CD93 contributes to the leakiness of these blood vessels. Using a drug that targets CD93 in combination with the targeted agents for EGFR-mutant and ALK-fusion positive cancers, they are attempting to improve the efficacy of these agents. This research is currently in mouse models of EGFR-mutant and ALK-positive lung cancers. Ultimately, the hope is to translate this research into a therapeutic regimen that can be used to improve the efficacy of these targeted therapies in patients, thereby improving the survival and quality of life of patients.

\$75,000 to Meredith Tennis, PhD: Early lung cancer and chemoprevention in a bioengineered ex vivo model



Meredith Tennis (far left) and her research team Pilot funds from the LCCF have supported an exciting collaboration between Meredith Tennis, PhD, a lung cancer biologist, and a bioengineer, Chelsea Magin, PhD. Typically, studies of very early lung cancer and of drugs that could intercept progression of early lung cancer have to be done in mouse models. These are expensive, time consuming, and difficult for researchers and animals. To address these challenges, we are building a model that uses bioengineered materials and mouse lung tissue slices to investigate early lung cancer and potential interception drugs. This model, called precision cut lung slice (PCLS), removes lungs from mice and grows them in a dish. Previously this approach ended up with tissues that deteriorated after two weeks. Our model uses bioengineered material to envelop the lung tissues and foster extended growth outside the mouse. This will allow us to conduct investigations of early lung cancer and interception drugs in tissue that continues to function similar to lung tissue inside a mouse. From one mouse, we can generate 20-30 pieces of lung, allowing many more tests per mouse than a whole mouse, reducing cost and burden to staff and animals. Once hypotheses have been tested in PCLS, a more targeted investigation can be conducted in whole mouse models. In this project, we are treating mice with a chemical for 14 weeks that causes changes in the lung that are similar to very early lung cancer in humans, called premalignant tissue. We then make PCLSs that have pieces of

premalignant tissue, envelop them in our tailored bioengineered material, and support them for six weeks in a dish. Since this is the first use of this model, we began by confirming that these premalignant tissues can live and function for six weeks supported by a specific composition of our bioengineered material. We are now measuring changes in cell function and growth to determine if the premalignant tissue stayed the same or changed during its time outside the mouse. With these pilot funds, we will generate four cohorts of PCLSs from mice that developed premalignant tissue after chemical exposure. Our first and second cohorts are focused on maintaining and characterizing the PCLSs. In our third and fourth cohorts, we will test interception drugs to measure effects on the premalignant tissue. We have already shown that several interception drugs behave as expected in normal tissue PCLSs and so have the potential to alter activity and growth of premalignant tissue PCLSs. This could lead to a new technique for screening drugs for efficacy in treating very early lung cancers before introducing them to whole mouse models. This work is the first to demonstrate long-term stability of premalignant lung tissue outside a mouse and will lead to new areas of cancer biology investigations. It will also establish critical bioengineering approaches for future studies with human lung tissue. Drs. Magin and Tennis are currently working on an R01 grant application for a National Cancer Institute funding opportunity specifically requesting collaborations between cancer biologists and bioengineers and this pilot project will supply critical preliminary data for the application.

\$75,000 to Eric Clambey, PhD and Moumita Ghosh, PhD: Epithelial-immune cell interactions in human lung adenocarcinoma carcinogenesis)



Eric Clambey and Moumita Ghosh

This past year we have significantly benefited from a pilot grant from the LCCF, to fund a new collaborative study focused on how two different cell types in the lung interact during health and cancer. On the one hand, Dr. Ghosh studies epithelial progenitor cells, a type of cell that helps create a healthy, functioning lung. On the other hand, Dr Clambey's studies focus on cells of the immune system, which are critical in fighting off infection and can also recognize tumor cells. How do these two areas come together? Dr. Ghosh's studies have previously found that progenitor cells are significantly impaired in individuals who are either at-risk for lung cancer development, or have developed lung cancer. This defect in epithelial progenitors impairs the ability of the lung to function and heal properly, potentially increasing the risk for lung cancer development. Dr Clambey's group has also found that there are changes in the types of immune cells present in the lung in individuals at-risk for, or who have developed, lung cancer. The combined team's ongoing studies are testing the idea that changes in progenitor cells and immune cells are actually connected, and that the combined changes in both cell types allows lung cancer to proceed. Support from the LCCF has allowed them to work together, combining their expertise in these two different areas to

study how these cells influence each other, both in the healthy lung and how this processed is changed during lung cancer. This initial support, and their preliminary results, have also helped them obtain a new grant from the American Lung Association, to further study how epithelial progenitor cells and immune cells interact, and how future developments can potential intervene to alter the course of lung cancer. In addition, one of Dr Ghosh's postdoctoral researchers, Dr. Khosbayer Lkhagvadorj, obtained a research grant from the Cancer League of Colorado based on preliminary generated from the LCCF funding. The title of his application was "An ex-vivo organoid model to identify markers of lung adenocarcinoma premalignancy."

A photograph of a woman and two children, all smiling, in front of a 'LINKS for LUNGS' backdrop.

Lung Cancer Survivor, Emily Daniels and her two children, get all dressed up to raise funds for lung cancer research

Send your pictures and a line or two to ross.camidge@cuanschutz.edu and each newsletter going forward we'll aim to show others what 'hope' really looks like. Look for more images scattered throughout this newsletter.

\$25,000 to Lynn Heasley, PhD and Raphael Nemenoff, PhD: Development of novel mouse models for lung adenocarcinoma)



The Lynn Heasley (3rd from left) and Raphe Nemenoff (4th from left) research groups

The past decade has seen the development of novel therapeutics for lung adenocarcinoma that have dramatically improved clinical outcomes for a subset of patients. These include targeted tyrosine kinase inhibitors for patients with the oncogenic receptor tyrosine kinases, including mutations in EGFR, and fusions in ALK and ROS1. In addition, immune checkpoint inhibitors such as antibodies that block the interactions of PD-1 and PD-L1 have shown dramatic effects in patients with oncogenic mutations in KRAS. However, the majority of patients either do not respond to these agents, or, after responding, eventually develop resistance. It has also become clear from the work of many researchers that tumor progression involves interactions between the cancer cells and the surrounding tumor microenvironment, the ‘stuff’ around the cancer cells, which includes immune cells, vascular cells and fibroblasts. To identify novel therapeutic targets will therefore require a deeper understanding of these interactions. While analysis of human tumors can provide important correlations, a mechanistic understanding of tumor progression requires preclinical models that replicate the features of the human disease. The goal of this project was to develop innovative mouse models that can be used by investigators to identify new therapeutic pathways. Studies in the Nemenoff and Heasley laboratories have used an orthotopic immunocompetent mouse model to study the role of the tumor microenvironment. In this model, mouse lung cancer cells are directly implanted into the lung of other mice. The resulting tumors develop in the relevant

microenvironment and in the setting of a complete immune system. The two laboratories have used this model to examine mechanisms of therapeutic resistance. However, a major limitation has been the lack of relevant , different cell lines to be tested. This project was designed to develop and characterize a panel of mouse lung cancer cell lines in this model that represented multiple different types of human lung cancer.

With support from TORI, the teams have developed a panel of 3 ALK rearranged driven mouse lung cancer cell lines. They also generated two mouse models for EGFR driven lung cancer and developed 3 EGFR mutant cell lines, a RET-rearranged cell line, and a novel KRAS G12C dependent cell line, as well as generated two additional G12C variants of existing cell lines. For all of these cell lines they have demonstrated in vitro sensitivity to targeted agents and have shown that these all form tumors in the lungs of mice, that respond to the relevant targeted therapeutic agents. Furthermore, these cell lines show a differential response to targeted therapy, similar to the range of response seen in human patients on targeted agents. The teams have characterized the tumor microenvironment and identified potential differences in the interactions of these cancer cells with immune cells. These studies have resulted in 3 publications that are currently under review.

This work has resulted in numerous requests for these cell lines. The teams have been providing these cell lines to investigators at UT Southwestern, UCSF, Michigan, Wisconsin, Case Western, and Denmark. In addition, they have initiated collaborations with several groups on the Anschutz Medical Campus, including Drs. DeGregori and Weiser-Evans.

In summary, this project has successfully developed unique implantable mouse cell lines that can be used in immunocompetent animal settings to perform mechanistic studies leading to the identification of new therapeutic combinations for the treatment of lung adenocarcinoma. The project is continuing to develop additional cell lines that will be a resource for the lung cancer research community.

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research community.

The 2022 CU Thoracic Oncology Research Initiative (TORI) retreat of researchers, physicians, scientists pushing the research boundaries for thoracic cancers behind the scenes. In the front row, holding the white ribbon are Sharon Pine, PhD - the New TORI Director - and Ross Camidge, MD PhD - the Director of Thoracic Oncology.

New Faces and Other Changes



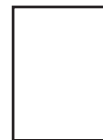
Eliza Miller, NP
Nurse Practitioner
Division of Medical Oncology

When I was a child, we lost a close family friend to cancer. Witnessing what her family went through, and especially the grace she carried herself with throughout her diagnosis inspired me to want to work with oncology patients. I went to nursing school at the University of Iowa and moved back home to Colorado following graduation, where I worked with hematology oncology patients. While working as a nurse, I decided to further my education at the University of Colorado, where I received my master’s in nursing. I am excited to now be joining the Thoracic Oncology team as a nurse practitioner. I am passionate about working with patients on symptom management while undergoing treatment. Outside of work, I enjoy all things Colorado; including skiing, hiking, and spending time with my family.

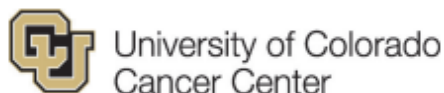


Sami Diab, MD
Medical Oncologist, Associate Professor,
Medical Director, LoneTree Oncology

Having grown up in Damascus, Syria I moved to the USA when I was 25 years old. After specialist medical oncology training in drug development at the University of Texas, San Antonio I took up a position as a general oncologist at Rocky Mountain Cancer Centers in 1999. However, I always kept my academic interest seeing patients at the University who were going on early phase clinical trials of new anti-cancer drugs. In April 2022 I moved over to the University of Colorado fulltime as the Medical Director of the LoneTree Oncology Center. Again, wanting to keep an academic presence I asked to join the lung team and do a clinic at the Anschutz Campus on Wednesdays alongside Dr Camidge. The expertise, compassion, and the contribution to the science of the lung cancer team is well recognized at the national and international level. For me, it’s a privilege and honor (and fun) to be part of this distinguished team. My philosophy of caring for cancer patients is to deliver the latest science-based cancer treatment and combine it with the art of medicine. By addressing both the mind and the body and the connection between the two, I believe the best outcome is achieved. I emphasize to my patients the importance of participating in clinical trials, since this is always the best possible option. Practicing mindfulness, breathing exercises, and meditation are tools that are very helpful during the cancer journey. At a personal level, my wife is a pediatrician and I have two sons one is graduating soon from art history major at Emory University and the oldest is in medical school at Yale University. Hiking, skiing, and playing tennis are some of our favorite activities as a family. I’m also trying to learn how to paint but that is a work in progress!!



**University of Colorado
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