THE UNIVERSITY OF NEW MEXICO
COMPREHENSIVE CANCER CENTER

Year in Review

COMPREHENSIVE CANCER CENTER

TABLE OF CONTENTS

Newly discovered behavior could turn chemical into potent breast cancer drugs.

RESEARCH

Discovery Could Lead to New Breast Cancer Drugs

Newly discovered behavior of known chemical compound might lead to breast cancer drugs that keep tumors from coming back

Eric Prossnitz, PhD, hopes to help many of the 12% of American women who are projected to be diagnosed with breast cancer in their lifetimes. He and his team have recently completed studies on a compound that they think could be made to attack breast cancer cells differently than current drugs. Their work is reported in the November online issue of Cell Chemical Biology.

Prossnitz understands firsthand the long path between discovery and U.S. Food and Drug Administration approval. A professor and cancer scientist at The University of New Mexico Comprehensive Cancer Center, he has studied breast cancer for the past 15 years. One of the compounds that he and his team discovered in 2006 has been licensed to Linnaeus Therapeutics for the treatment of melanoma and other cancers. Phase I clinical trials began at the UNM Comprehensive Cancer Center in 2019.

Prossnitz remains cautiously optimistic that the compound he and his team are now studying could help thousands of women. According to the National Cancer Institute's Surveillance, Epidemiology and End Results program, more than 80% of women with breast cancer have estrogen receptor-positive (ER+) breast cancer.

The anti-hormonal breast cancer drugs available — drugs like tamoxifen and fulvestrant — work very well, but they work in only about two-thirds of the women with ER+ breast cancers. And, some of these women initially respond but then their breast cancer comes back in a form that resists the drug.

"It's a huge number of women," Prossnitz says. In 2019 alone, more than 60,000 women could face a new or recurrent ER+ breast cancer that won't respond to anti-hormonal therapy.

Prossnitz and his team discovered some years ago that another cell receptor responds to anti-hormonal drugs. They named it GPER, for G protein-coupled estrogen receptor. While the primary estrogen receptor, ER-alpha, resides primarily inside the nucleus of a cell, GPER sits within cell membranes.

Eric Prossnitz, PhD

Tamoxifen, and drugs like it, block the ER-alpha receptor, while fulvestrant and similar drugs induce the cell to degrade it. By blocking or degrading the ER-alpha receptor, these anti-hormonal drugs greatly reduce the signal for the cancer cell to grow and reproduce. But, as Prossnitz and his team have previously shown, they also activate GPER, and GPER signals the cell to keep growing and reproducing.

"ER-alpha is the one [receptor] that plays an important role in ER+ breast cancer," Prossnitz says.

Most breast cancer cells follow the ER-alpha signal and die on schedule when ER-alpha is blocked or degraded. But a very small number of breast cancer cells may follow the GPER signal and survive. And those cells can grow into aggressive tumors that no longer respond to anti-hormonal drugs.

Prossnitz and his team discovered a compound some years ago called AB-1 that binds to ER-alpha but does not activate GPER, thereby avoiding the undesirable side effect of current anti-hormonal drugs. In their Cell Chemical Biology paper, they report their studies that describe AB-1's unique binding and activity behavior.

As they've done previously, Prossnitz and his team are working to change the structure of AB-1 to control its properties more tightly, before they progress to preclinical studies. Prossnitz is familiar with the path, and again, he hopes to develop a drug that will benefit many women with breast cancer.

Prossnitz remains cautiously optimistic that the compound he and his team are now studying could help thousands of women

"A Selective Ligand for Estrogen Receptor Proteins Discriminates Rapid and Genomic Signaling" was published online on November 6, 2019, and will be published in the December 19 print edition of Cell Chemical Biology. Authors are: Chetana M. Revankar, Cristian G. Bologa, Richard A. Pepermans, Geetanjali Sharma, Whitney K. Petrie, Sara N. Alcon, Angela S. Field, Chinnasamy Ramesh, Matthew A. Parker, Nikolay P. Savchuk, Larry A. Sklar, Helen J. Hathaway, Jeffrey B. Arterburn, Tudor I. Oprea, and Eric R. Prossnitz.

Eric Prossnitz, PhD, is a Distinguished Professor and Chief of the Division of Molecular Medicine, in the Department of Internal Medicine, at The University of New Mexico School of Medicine. He co-leads the Cancer Therapeutics research program at the UNM Comprehensive Cancer Center.

A Menu of Brain Cancer Treatments

UNM Cancer Center Scientist developing a new personalized approach to treating glioblastoma using Gianni Bonadonna prize

UNM researcher cataloging therapy combinations to personalize glioblastoma treatments

Sara Piccirillo, PhD, is passionate about finding a way to beat glioblastoma, the most aggressive type of brain cancer. Although the median survival time has doubled since the 1990s, only 6% of those with glioblastoma survive five years or more after their diagnosis. Piccirillo thinks the way to fight glioblastoma lies in what makes it different from most cancers: the extreme differences among its tumor cells.

"Glioblastoma is the most aggressive brain tumor that we know about," she says. "There is very little in terms of effective treatment."

Glioblastoma rarely spreads beyond the brain but it can spread rapidly within the brain. Even if it initially responds to current therapies, Piccirillo says, it usually comes back and is often resistant to those therapies when it returns.

Sara Piccirillo, PhD

Originally from Milan, Italy, Piccirillo came to The University of New Mexico after a multi-year stop at the University of Cambridge. She joined the UNM Department of Cell Biology & Physiology and the UNM Comprehensive Cancer Center in early August 2019. The month before, Piccirillo had won the Gianni Bonadonna prize for new drug development, which is among Italy's most prestigious awards for young scientists. She will use the award to fund her research on glioblastoma treatment.

Piccirillo's research focuses on a feature of glioblastoma tumors that appears to be the source of their strength. As she explains, "They are extremely heterogeneous."

The cells in these tumors arise from multiple genetic changes, she says. Some cells may have different DNA mutations. Other cells may have extra copies of a gene. Still others may have chromosomes that have traded sections with each other. There are other types of changes as well, each of which may respond to a different treatment.

This mosaic of cells within glioblastoma tumors makes destroying them very difficult because some cells will respond to a given therapy but others won't. And those surviving cells, Piccirillo and her team believe, can restart the tumor. Even more troubling, some therapies can make cells resistant, so that when the tumor reforms, it is even more difficult to treat.

Piccirillo wants to first develop a catalog of cellular changes and the treatments that are most effective against each one. She then wants to turn that catalog into a menu that suggests combinations of glioblastoma treatments for different combinations of changes.

The menu idea is similar to a restaurant menu that suggests having broccoli with your steak but not with your chocolate dessert; some combinations are permitted, others won't be effective. Similarly, different people with glioblastoma might benefit from different combinations of treatments based on the changes found in their tumor cells. The menu would allow doctors to customize glioblastoma treatment to each person.

"You need to have a smart way to combine therapies," Piccirillo says, "so that you can tackle the tumor but also avoid creating resistance."

Piccirillo has amassed a collection of tumor samples and has begun compiling the many different cellular changes she finds within them. Once she and her team complete an initial version of the catalog, they will try different treatment combinations to find those that kill all the cancer cells. Although the treatment menu seems a long way off, Piccirillo is determined to improve the odds of beating glioblastoma.

Sara Piccirillo, PhD, is an Assistant Professor in the Department of Cell Biology & Physiology, and holds a secondary appointment in the Department of Neurosurgery, at the UNM School of Medicine. She is a full member of the Cellular and Molecular Oncology Research Group at the UNM Comprehensive Cancer Center.

Vegetable gardening study to help cancer survivors improve their health

Vegetable Gardening to Grow Health

Study to help cancer survivors improve their health by helping them to grow their own vegetables

Most gardeners say that homegrown vegetables taste better than any found in a store. And gardening, they know, requires modest amounts of outdoor work. Since cancer survivors need vegetables, fresh air and exercise, Cindy Blair, PhD, is bringing a new vegetable gardening study called Harvest for Health to New Mexico.

"Vegetable gardening is a holistic approach to promote a healthful diet and physical activity, and improve quality of life," she says.

Blair is a cancer epidemiologist at The University of New Mexico Comprehensive Cancer Center and UNM School of Medicine. Prior to joining UNM as an assistant professor, Blair spent two years working with Wendy Demark-Wahnefried, PhD, RD, on the initial research conducted at the University of Alabama at Birmingham in collaboration with the Alabama Cooperative Extension Office.

Cindy Blair, PhD

The pilot study in Alabama paired cancer survivors with local master gardeners who visited the survivors at their homes and taught them how to start and care for their gardens. The study found that survivors who grew their own vegetables ate more vegetables and increased their physical activity, too. At the end of the study, all survivors said they would "do it again," and 86 percent of the survivors were still gardening one year later.

Blair now wants to adapt the Harvest for Health program for New Mexico's unique culture and environment. To do that, she and her UNM team have partnered with Eduardo Servin, PhD, state manager for Master Gardeners at New Mexico State University, and the Albuquerque Area Extension Master Gardener Program.

In the New Mexico pilot study, each cancer survivor will be paired with a local master gardener who has been trained in gardening techniques that address New Mexico's growing challenges. The pair will create a vegetable garden at the survivor's home using gardening supplies, plants and seeds provided by the study. The gardener will visit each month to answer questions and troubleshoot gardening problems; the survivor will maintain the garden and, of course, enjoy the harvest.

> "Vegetable gardening is a holistic approach to promote a healthful diet and physical activity, and improve quality of life."
>
> — *Cindy Blair, PhD*

The New Mexico pilot study will be limited to Bernalillo and South Sandoval counties so that the research team can assess the cancer survivors' health and the program's needs. After the pilot study is completed, Blair plans to expand the program to other counties, and eventually, make it available statewide.

If you would like to join the Southwest Harvest for Health Study as a cancer survivor or master gardener, please contact Elizabeth Harding, PhD, by email at Harvest4Health@salud.unm.edu or by phone at 505-272-2274.

A Fat-Fighting Drug Discovery

UNM-led scientific team finds that their cancer-fighting compound fights obesity and diabetes, too

Cancer-fighting compound fights obesity and diabetes

Eric Prossnitz, PhD, and his team hope to help 93 million obese Americans fight their fat. In a paper published in Science Translational Medicine, they reported that G-1, a cancer-fighting compound they discovered some years ago, reduces fat in obese mice. Although G-1 is currently in phase 1 clinical trials for cancer, Prossnitz and his team are planning preclinical studies to use G-1 to fight fat in obese people.

Eric Prossnitz, PhD

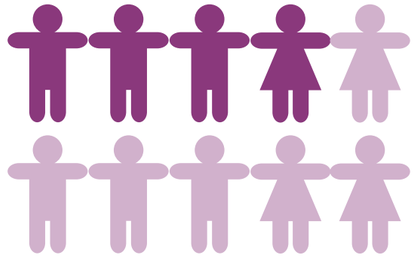
Obesity affects 40% of adults in the United States, resulting in health conditions that include heart disease, high blood pressure, type 2 diabetes and some cancers. According to the U.S. Centers for Disease Control and Prevention, obesity and its related conditions far outweigh other causes of death. Current drugs for obesity don't effectively reduce it or have undesirable side effects.

Prossnitz and his team have been studying GPER, the G protein-coupled estrogen receptor that G-1 activates, because GPER affects certain breast cancer cells. When breast cancer drugs like tamoxifen and fulvestrant block estrogen receptors in a cell's nucleus, they also activate GPER, which is found in cell membranes. Prossnitz's previous studies showed that GPER may play a role in resistance to tamoxifen and similar drugs, and that led him to wonder how G-1 affects non-cancerous cells when estrogen is lacking.

Estrogen is considered a female hormone, although men produce it at low levels. Low estrogen in women is a hallmark of menopause, and postmenopausal women also have higher rates of heart disease, high blood pressure, obesity and diabetes. So to understand whether G-1 might affect metabolism in postmenopausal women, Prossnitz and his team studied mice with low estrogen levels.

In their studies, low-estrogen female mice gained weight rapidly, even on a normal diet, and quickly became obese and diabetic. When the researchers treated these obese female mice with G-1, the mice lost weight and their diabetes went away. The researchers determined that the weight loss wasn't due to the mice eating less or moving around more; it resulted from what their bodies did with the calories they ate. Instead of storing calories as fat, the mice used them as fuel.

"Their metabolism changed," Prossnitz says. "The mice showed an increased energy expenditure."



Obesity affects 40%
of adults in the United States

Prossnitz's team also studied male mice, which have naturally low levels of estrogen. The male mice were fed a high-fat diet, which made them obese and diabetic, and then some were treated with G-1. Although the treated mice did not lose weight, they did not gain additional weight either, like the untreated mice. More importantly, their diabetes improved.

"This result suggests that G-1 has separate effects on obesity and diabetes," Prossnitz says. "The G-1-treated male mice were metabolically healthier, even though they were still obese."

Finally, the team also fed a high-fat diet to low-estrogen female mice. These mice became obese very quickly, but just like their sisters on a normal mouse diet, they lost weight and their diabetes improved when they were treated with G-1. These results, says Prossnitz, could point to a sex difference in the effects of the drug or in the way GPER signals in the cells of males and females.

To learn about how G-1 increases energy expenditure, the team studied brown fat cells, which generate heat instead of storing excess calories as fat. What they found surprised them: when treated with G-1, the cells expended more energy.

"This fits nicely with what we saw in mice," Prossnitz says, "and suggests that G-1 may reduce obesity by targeting brown fat cells that burn extra calories."

In a future series of experiments, Prossnitz plans to study how signals from GPER induce the cellular changes that cause more energy to be used. He hopes that one day soon G-1 could revolutionize the treatment of metabolic disorders. In the meantime, he and his team are starting the long path toward clinical trials that will test the ability G-1 to fight obesity and diabetes in people.

"Preclinical efficacy of the GPER-selective agonist G-1 in mouse models of obesity and diabetes" was published in the January 29, 2020, issue of Science Translational Medicine. Authors are: Geetanjali Sharma, Chelin Hu, Daniela I. Staquicini, Jonathan L. Brigman, Meilian Liu, Franck Mauvais-Jarvis, Renata Pasqualini, Wadih Arap, Jeffrey B. Arterburn, Helen J. Hathaway and Eric R. Prossnitz.

Eric Prossnitz, PhD, is a Distinguished Professor and Chief of the Division of Molecular Medicine, in the Department of Internal Medicine, at The University of New Mexico School of Medicine. He co-leads the Cancer Therapeutics research program at the UNM Comprehensive Cancer Center.

Cervical Cancer Screening Saves Lives

UNM study shows 3-year screening interval protective against cervical cancer

On-time screening can prevent cervical cancer

Cervical cancer is the third most common cancer in women worldwide, but most American women can prevent it by being screened with tests that detect human papillomaviruses (HPV).

A new study led University of New Mexico Comprehensive Cancer Center scientists shows that screening every three years instead of annually prevents most cervical cancers. And of the cancers that are found during routine screenings, most are caught before they've had a chance to spread, making them far easier to treat.

The results of the study were published ahead of the print version, in the December online edition of the International Journal of Cancer. UNM Regents' Professor Cosette Wheeler, PhD, led the study and says, "Cancer screening works and the vast majority of women who get cervical cancer simply don't get screened at all, or instead wait too long between screens."

Wheeler and her team worked with the New Mexico Tumor Registry to link their information with that of the New Mexico HPV Pap Registry. The state's Tumor Registry records all cases of cancer and all deaths due to cancer in the state. The HPV Pap Registry records all cervical cancer screening results, which include Pap and HPV tests, and all procedures to diagnose and treat cervical precancers – abnormalities that have not yet turned cancerous.

Combining data from the two statewide public health information systems provided a unique ability to understand the screening histories of women who developed cervical cancer throughout New Mexico. "This capacity is not available elsewhere," Wheeler says. "It serves as a model information system for cancer prevention in the United States."

Previous studies, Wheeler says, have used data from a single health care system, and often from the same insurer. The New Mexico data, however, include all information from the entire state, regardless of the women's insurance provider, insurance coverage, health care provider and location.

Wheeler's team included national and international experts and postdoctoral, graduate and undergraduate students who study health care delivery to improve cancer prevention across New Mexico. In this study, the screening records of each woman who was diagnosed with cervical cancer were compared with those of a control group of five New Mexican women without cervical cancer. The diagnosed women and the women in the control groups were matched on age, race, ethnicity and rural or urban geographic area.

Cosette Wheeler, PhD

Wheeler's team found that 61% of women in the control groups had been screened within the previous three years, but only 38% of the women with cervical cancer had been screened in the same period prior to their cancer diagnosis.

The researchers also compared the medical histories of women diagnosed with cervical cancer. Those who had been screened in the three years prior to diagnosis were half as likely to be diagnosed with localized cervical cancer as those who hadn't been screened. They were also 83% less likely to be diagnosed with cervical cancer that had spread.

"Screening is super important for catching cancers before they have spread," Wheeler says.

The team also showed that women who receive a negative screening test were very unlikely to be diagnosed with cervical cancer in the following three-and-a-half to five years. Many HPV infections will resolve naturally, Wheeler says, but the immune system needs time to act. She and her team found that more frequent screening offered no additional benefit.

"The value of a negative screen is huge," Wheeler says. "If you screen, we can show that screening prevents more than 80% of distant cancer and about 50% of local cancer. And the local cancer is easily treatable."

This study, she says, gives real-world evidence to assure New Mexican women and their health care providers that screening for cervical cancer every three years safely finds cancer early and that screening more frequently has no additional benefit.

In the end, the biggest problem Wheeler sees is that the United States has no organized way to remind women when the time comes for their three-year screening. "We need to fix this [lack of a central reminder system]," Wheeler says. "New Mexico can take the lead."

"Impact of screening on cervical cancer incidence: A population-based case-control study in the United States" was published in the December 13, 2019, online edition of International Journal of Cancer. The authors are: Rebecca Landy, Peter D. Sasieni, Christopher Mathews, Charles L. Wiggins, Michael Robertson, Yolanda J. McDonald, Daniel W. Goldberg, Isabel C. Scarinci, Jack Cuzick, Cosette M. Wheeler and the New Mexico HPV Pap Registry Steering Committee.

Cosette M. Wheeler, PhD, is a Regents' Professor in the Department of Pathology and the Department of Obstetrics & Gynecology at the UNM School of Medicine. She is a Senior Staff Investigator for Population Sciences and holds the Victor and Ruby Hansen Surface Endowed Chair in Translational Medicine and Public Health Sciences at the UNM Comprehensive Cancer Center. She also served as Director of the NCI NM HOPES-Cervical PROSPR Research Center and as Director of the NIAID EPIC-STI Center (Epidemiology and Prevention Interdisciplinary Center for Sexually Transmitted Infections).

Grounded in Science

Dr. Sarah Adams uses a $1.2 million grant for ovarian cancer research to better understand how her clinical trial's drug combination works

Grant could help to get more from current arsenal of cancer drugs

Doctors face a difficult decision when they must choose a drug combination that will benefit the person sitting before them in an exam room. Statistics can't show how any one person will respond to a treatment. And in treating ovarian cancer, Sarah Adams, MD, knows that such treatment decisions can have high stakes; she routinely makes these decisions.

A physician-scientist at The University of New Mexico Comprehensive Cancer Center, Adams wants to find better ways to treat ovarian cancer. Her research has uncovered a drug combination, now in clinical trials, that's showing promise. Using a five-year $1.2 million grant from the National Cancer Institute, she hopes to find better ways to predict which women will benefit from this drug combination.

"We're trying to decide who is a good candidate for the immune therapies," Adams says. "Being able to identify factors that predict success for a particular patient would be extremely helpful."

The drug combination that Adams discovered pairs a PARP inhibitor with an immune antibody. Both drugs have been approved by the U.S. Food and Drug Administration. The PARP inhibitor kills ovarian tumor cells, while the immune antibody spurs healthy immune cells to clear the dead tumor cells.

Adams' studies showed that this drug combination was highly effective in cancer models, and those results enabled her to launch the clinical trial for people. The clinical trial opened at the UNM Comprehensive Cancer Center and is currently open in Ohio, Virginia and Florida through the Oncology Research Information Exchange Network. "This clinical trial wouldn't have been possible," Adams says, "without the [financial] support from the Oxnard Foundation and the Surface family."

Based on early results from the clinical trial at UNM, the National Cancer Institute is testing this combination in a larger group of women with recurrent ovarian cancer. In October 2019, the NCI opened this second follow-up clinical trial across the country through the NRG Clinical Research Consortium and Adams is serving as the national study chair.

Adams' UNM clinical trial was also one of the first to be selected for additional scientific study. Her grant from the NCI was awarded through the Cancer Immune Monitoring and Analysis Centers program, one of the NCI's Cancer Moonshot Initiatives. She will work with MD Anderson Cancer Center to better understand how the drugs in her combination work together.

Sara Adams, MD

Adams suspects that the PARP inhibitor may behave differently when used with the immune antibody and hopes to discover the chemical reactions in ovarian tumor cells that are affected by the drugs. "If we can understand how to leverage these alternate mechanisms of action," she says, "we can get more out of the drugs we already have."

Ultimately, she hopes to find a predictive biomarker – a pattern of proteins that would tell a doctor whether the tumor would respond more strongly to the drug combination. "This grant will drive the science in parallel with the clinical trial," Adams says. "And it's important to me to make sure that we're making clinical decisions based on evidence, that we're grounded in science."

Sarah Adams, MD, is an Associate Professor in the Department of Obstetrics & Gynecology, Division of Gynecologic Oncology, at the UNM School of Medicine, and holds The Victor and Ruby Hansen Surface Endowed Professorship in Ovarian Cancer Research.

The National Cancer Institute of the National Institutes of Health supported the research reported in this publication under Award Number 1R37CA229221-01A1, Principal Investigator: Sarah Foster Adams, MD. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Creating a Vaccine against COVID-19

UNM scientists apply their virus-like particles, which use interchangeable parts, to combat the virus that causes COVID-19

Virus-like particles may rouse the immune system into combatting COVID-19

David Peabody, PhD, and Bryce Chackerian, PhD, are creating vaccines from particles that are the opposite of Trojan Horses: they look deadly on the outside but are harmless on the inside.

David Peabody, PhD

The idea, says Peabody, is to trick the body into believing it's been infected with a microscopic foe. The body's reaction to the supposed infection prepares it for an assault by the real foe.

Scientists at The University of New Mexico, Peabody and Chackerian are using a one-year $250,000 grant to make a vaccine to protect against COVID-19 using the virus-like particles that they developed.

The spherical particles are produced by bacteria and can be made to look like anything dangerous: a parasite, a cancer cell, a virus. Peabody can genetically engineer the particles to display a part of the parasite's, cell's or virus' surface proteins — the part is called an epitope — on the outside. The repeating epitope pattern incites the immune system to react strongly and form antibodies against the epitope.

Decorating the outside of virus-like particles with epitopes isn't enough to ward off disease, though. Antibodies are as uniquely shaped as the epitopes to which they bind. Chackerian explains that not all antibodies will stop a virus.

"For viral vaccines, the goal is to produce neutralizing antibodies," he says. "This is an antibody that can attach to the virus and then effectively prevent the virus from infecting a cell."

To make a vaccine against COVID-19, Chackerian and Peabody are using knowledge of the genome of the SARS-CoV-2 virus, which causes the respiratory disease.

Peabody summarizes, "We make a virus-like particle that displays on its surface bits of SARS-CoV-2. And if those bits of SARS-CoV-2 elicit antibodies that neutralize the virus, that's a vaccine."

Peabody and Chackerian say they can make vaccine candidates quickly and they have a system that can direct the immune system to respond to specific epitopes. Previously, their virus-like particles have been used to make vaccines to target human papillomavirus, malaria, and even metastatic breast cancer cells.

"The goal," says Chackerian, "would be to develop a vaccine that would develop strong and long-lasting responses to the parts of the virus that are critical for its function."

Bryce Chackerian, PhD

Peabody and Chackerian don't know the specific parts of the SARS-CoV-2 virus to target, but they can make educated guesses. In addition to the genome sequence of the SARS-CoV-2 virus, they have information about how people's immune systems responded to a similar virus during the SARS outbreak in 2003. Peabody says that the two viruses are structurally similar enough that they likely share critical epitopes.

But each vaccine candidate will need to be tested for its ability to elicit antibodies that block virus entry into a cell. Testing requires time and a scientific team. Peabody and Chackerian's team includes Steven Bradfute, PhD, at the UNM Center for Global Health, and Kathryn Frietze, PhD, and Alison Kell, PhD, at UNM's Department of Molecular Genetics and Microbiology.

To make a pipeline of possible vaccines, Peabody and Frietze select potential epitope targets and engineer the virus-like particles. Chackerian vaccinates test animals and collects blood samples from them. He and Kell are also conducting studies to confirm that the vaccines actually bind to their intended cellular targets. And, Bradfute is testing blood samples from the animals to verify that their antibodies block infection.

This work and these tests take place before clinical trials. Once a vaccine candidate is successful in a clinical trial, though, Peabody and Chackerian plan to work with a partner and expect to produce large amounts of vaccine in a short time.

Clinical trials, however, can take years to ensure safety and efficacy. But Peabody and Chackerian see another advantage the virus-like particles can offer.

"We imagine a world in which there's a platform technology that's pre-approved for use [in humans], with interchangeable parts that you trade out to correspond to whatever threat you're trying to address," says Peabody. "[So] that adding another epitope from a different agent will be approved more quickly than if you have to start entirely from scratch."

David Peabody, PhD, is a Professor in the Department Molecular Genetics and Microbiology at the UNM School of Medicine and a member-at-large of the UNM Comprehensive Cancer Center.

Bryce Chackerian, PhD, is a Professor and the Vice Chair of the Department of Molecular Genetics and Microbiology at the UNM School of Medicine and a full member of the UNM Comprehensive Cancer Center.

The National Cancer Institute of the National Institutes of Health is supporting the research reported in this publication under Award Number P30CA118100-15S5. Principal Investigator: David Peabody, PhD. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Food for Thought

UNM researcher studying potential connection between food insecurity and cancer diagnoses

Every day in New Mexico, some people must make the difficult decision whether to put food on the table or spend money on other necessities, such as a utility bill or rent.

"Food insecurity is an early indicator of financial trouble," said Jean McDougall, PhD, an assistant professor in The University of New Mexico Department of Internal Medicine and a member of the Cancer Control and Population Science Program at the UNM Comprehensive Cancer Center.

Cancer-related financial hardship has been an interest of McDougall's for much of her career. Recently she published a paper surveying nearly 400 patients identified from the New Mexico Tumor Registry, in which her team assessed patients' level of food security before and after their cancer diagnosis.

36% of cancer survivors surveyed were food insecure a year after their diagnosis

McDougall and her team measured the food insecurity in 394 patients between the ages of 21 and 64 who had been diagnosed with cancer between 2008 and 2016.

The findings showed that 26 percent of the patients were food insecure both before and after their cancer diagnosis, while 10 percent of the patients were food secure prior to diagnosis and became newly food insecure after diagnosis.

Participants were asked to rate how true the following statements were:

- "Within the past 12 months, we worried whether our food would run out before we got money to buy more."
- "Within the past 12 months, the food we bought just didn't last and we didn't have money to get more."

Patients who responded that these statements were often true or sometimes true were categorized as food insecure.

"I was surprised to learn that 36 percent of cancer survivors surveyed were food insecure in the year after their cancer diagnosis," McDougall said.

McDougall said the study didn't look specifically at what caused the food insecurity, particularly among the 10 percent of patients who slipped from secure to insecure.

Jean McDougall, PhD

"I think people don't really realize how quickly food insecurity can happen," she said. "It doesn't take much for a person to become food insecure."

Factors can include a loss of income from having to take time off from work and travel expenses if the cancer treatment facility is far away.

"One of the biggest challenges for people in the study was the loss of income, either for the patient or their partner," she said.

That timing, accompanied by new medical expenses, can be financially challenging. The cost of treatment itself is tougher to pin down because of complexities in insurance coverages and reimbursements, McDougall said.

Food insecurity was more common among younger patients. A number of factors could account for that, McDougall said, including the tendency for younger patients to have less savings, more debt and children in the home.

Food insecurity can lead to difficult decisions for recovering patients. Food usually is something that people buy week by week. Not being able to pay for food can lead to harder choices down the line, including forgoing utility bills or refilling prescriptions and delaying other medical care.

The study is just the first step for McDougall.

"Now that we're talking about it and it's such a big problem, the question is: how do you identify and empower the people who are food insecure?" she said.

That will take more study and more research.

She said she wants to look deeper into how a system of screening questions could be implemented at clinics that would check for patients experiencing food security and then match them with appropriate resources, be they grocery vouchers, food banks or the Supplemental Nutrition Assistance Program (SNAP).

"Because I'm a researcher, I want to know how best to implement screening and food resource referral into the clinic," McDougall said. "We need to figure out how to get patients and providers talking about food security and how to address it in our health care system."

"Food Insecurity and Forgone Medical Care Among Cancer Survivors" was published in the May 8, 2020, online edition of JCO Oncology Practice. Authors are:Jean A. McDougall, PhD, MPH; Jessica Anderson, MS; Shoshana Adler Jaffe, MPH; Dolores D. Guest, PhD, RD; Andrew L. Sussman, PhD; Angela L. W. Meisner, MPH; Charles L. Wiggins, PhD; Elizabeth Yakes Jimenez, PhD, RDN; and V. Shane Pankratz, PhD

Food insecurity can force difficult decisions for some cancer survivors

Developing A Blood Test for Breast Cancer

UNM Cancer Center researchers find “liquid biopsy” can spot breast cancer cells before a tumor spreads

Liquid biopsies hold promise of finding cancer in blood before they can form new tumors

Catching breast cancer early can give women the best chance of beating the disease. Mammograms help to catch breast cancer in its early stages – usually before a woman even feels any symptoms – and can afford women the most treatment choices.

But Dario Marchetti, PhD, thinks mammograms can’t find cancer soon enough. He and his team are developing tools to find cancer cells in the blood, before the primary tumor grows large enough to see on a mammogram, and before tumors can grow in other parts of the body. Their work was reported in the June 19, 2020, edition of Cancers.

Marchetti is a professor of Molecular Medicine and Pathology at The University of New Mexico School of Medicine. At the UNM Comprehensive Cancer Center, he studies how cancer tumors spread.

Tumors return in about one third of the 275,000 women in the United States who are diagnosed with breast cancer each year, Marchetti says. Only about 20% of these women live for more than five years after the tumors reappear. “When cancer recurs,” Marchetti says, “it recurs with a vengeance.”

Breast cancer tumors, like most solid tumors, shed cells into the blood stream. When these cells reach other parts of the body, they can start new tumors there. Marchetti says that this process, called metastatic seeding, starts two to four years before diagnosis — before the primary tumor gets large enough to be seen on a mammogram.

Because the primary tumor grows twice as fast as the seeded tumors, Marchetti and his team want to look for tumor cells in the blood before new tumors can start. When they perform a procedure called a liquid biopsy, finding tumor cells in blood is far from easy. Circulating tumor cells, Marchetti says, “are incredibly rare – just one tumor cell for every billion normal cells in the blood.”

Most circulating tumor cells die within 24 hours of entering the blood stream, Marchetti says. “They are also far more fragile than normal cells.”

Dario Marchetti, PhD

Tumor cells don’t look or behave like each other, either. “Cancer is heterogeneous,” Marchetti says. So just because a cell doesn’t look or behave like the billion other cells doesn’t mean that it’s a cancer cell capable of starting a new tumor.

To identify cancer cells that would eventually lead to tumors in other organs, Marchetti and his team developed a way to test each cell in a blood sample. In their work, the scientists took cells from women with breast cancer and grew them in mice that had no immune systems. Then, they collected cell samples from many different organs within each mouse’s body.

After separating the human tumor cells from the mouse cells, Marchetti and his team compared the cancer cells from all of their organ samples. What they found was that some tumor cells hid within the body. These dormant cells found places where they could live peacefully, and they didn’t start new tumors. Others, the team found, started tumors that quickly grew.

Marchetti and his team compared the genes and proteins within the different tumor cells. They found that the genes in the dormant cells differed greatly from the genes in the cells that spawned new tumors.

“Our work has clinical implications to personalize drugs, define inhibitors – or both – for precise clinical interventions,” he says.

But Marchetti cautions that blood tests for breast cancers – and personalized treatments based on these tests – are still a long way off. This research, he says, only further proves the validity of liquid biopsies.

Before liquid biopsies can be used routinely, more research is needed in animals with working immune cells, and then in many people, over a period of several years and with several types of cancer. And, liquid biopsies must be able to tell doctors where the cancer is in the body.

Still, Marchetti hopes that cancers may one day be found, and treatments personalized, before the first tumor can even be seen.

Molecular Interplay between Dormant Bone Marrow-Resident Cells (BMRCs) and CTCs in Breast Cancer was published in the June 19 edition of Cancers. Authors include Debasish Boral, Haowen N. Liu, S. Ray Kenney and Dario Marchetti.

Dario Marchetti, PhD, is a Professor in the Department of Internal Medicine, Division of Molecular Medicine, and in the Department of Pathology at The University of New Mexico. He is a full member of the Cellular and Molecular Oncology Research Program at the UNM Comprehensive Cancer Center. His lecture at the American Association of Cancer Research 2020 annual meeting, held virtually on June 22, 23 and 24, was attended by more than 1,000 attendees worldwide.

Molecular Shape Shifters

UNM team finds that proteins can go from reading DNA to repairing it, pointing the way toward new cancer treatments

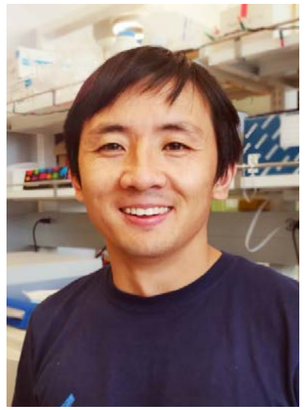
Transformer proteins switch from reading DNA to repairing it

Residing inside each of our cells, our DNA acts like a book of recipes for making proteins. But if a recipe is wrong, what does a cell do?

Peng Mao, PhD, and his team discovered an intricate series of events that cells use to repair our DNA as the recipes are being read. The team published their study in the July 20 online edition of the Proceedings of the National Academy of Sciences. Their findings could lead to improved cancer treatments.

Mao, an assistant professor in the UNM Division of Molecular Medicine, explains that each of our cells has proteins that enable it to carry out its tasks. DNA encodes the recipes for all of these proteins in the rungs of its ladder-like structure.

But, Mao says, "DNA is not as stable as people originally thought. It can be damaged – in other words, chemically modified."



Peng Mao, PhD

Cells employ several different methods to repair damage. Mao and his team, which includes scientists at UNM and at his former lab at Washington State University, studied one of these methods, called transcription-coupled DNA repair.

Transcription is the first step in a process that cells use to translate the DNA code into proteins. Inside the tiny space of a cell nucleus, DNA winds intricately on itself. To make a protein, the cell must unravel and separate the section of DNA that contains the gene sequence — the recipe — for that protein.

In transcription, a group of proteins called RNA polymerases travel along the unraveled and separated DNA, decoding the genes and building corresponding molecules called messenger RNA. Messenger RNA then travels to the cell's protein-making structures.

During transcription, RNA polymerase will stop if it encounters a damaged section of DNA. "[It] is like a train moving on the tracks," says Mao. "If you have damage, that's going to block the movement of the train."

Mao's team discovered a choreographed sequence of cellular events that repairs the gene damage to get the RNA polymerase train moving again.

A protein called CSB goes to the stopped RNA polymerase and binds to it, dislodging a pair of proteins called SPT4/SPT5. These proteins, when bound to RNA polymerase, help it to move along the DNA during normal gene transcription. When they're dislodged, RNA polymerase stops.

The SPT4/SPT5 release changes the shape of RNA polymerase, allowing DNA repair proteins to bind to it. With the DNA repair proteins, RNA polymerase switches from transcription to repair. Once the DNA is fixed, RNA polymerase can resume its transcription.

Mao is careful to point out that scientists don't yet know how RNA polymerase changes back from gene-repair mode to transcribing mode. That's an area he and his team would like to study. But, knowing more about this dance of cellular proteins, Mao says, can help make our existing cancer drug arsenal more potent.

Mao explains that by inhibiting transcription-coupled DNA repair, it is possible to sensitize cancer cells to chemotherapy and radiation therapy, which work by inducing large amounts of toxic gene damage.

"If you have robust transcription-coupled repair mechanisms and also other DNA repair pathways," Mao says. "That will give cancer cells an advantage to survive." So restraining cancer cells from using transcription-coupled DNA repair could make them more susceptible to the drugs and radiation.

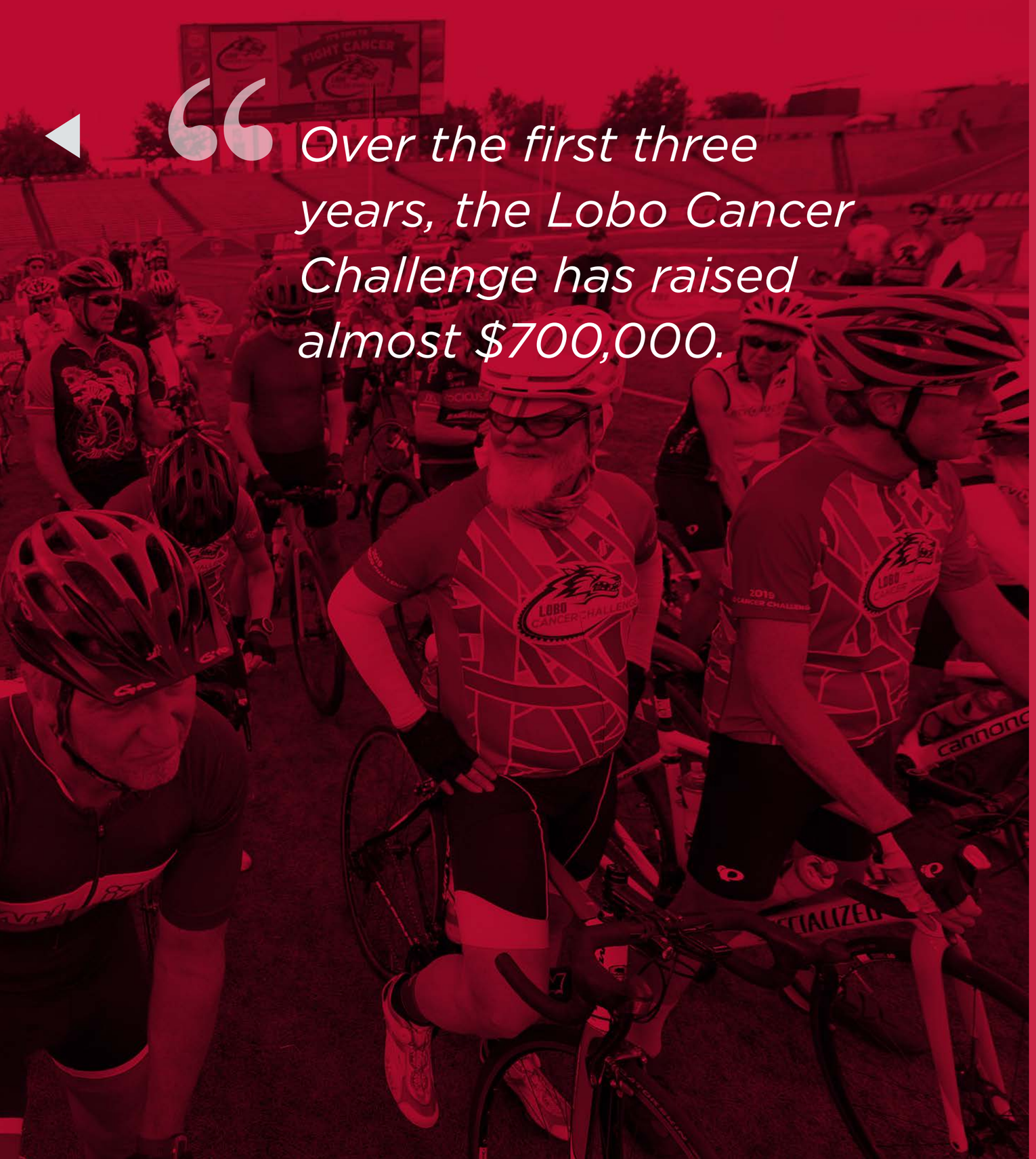
Mao says that understanding how different proteins help or hinder this DNA repair process will help to control how cancer cells respond to chemotherapy and radiation therapy.

"We're quite excited," Mao says of his team's discovery. "This gives us a lot of encouragement. There are still a lot of unanswered questions, even in this specific pathway."

Peng Mao, PhD, is an assistant professor in the Department of Internal Medicine, Division of Molecular Medicine, at The University of New Mexico School of Medicine.

"Genome-wide Role of Rad26 in Promoting Transcription-coupled Nucleotide Excision Repair in Yeast Chromatin" was published in the July 20, 2020, online edition of the Proceedings of the National Academy of Sciences. This work is a collaboration between the School of Molecular Biosciences and the Center for Reproductive Biology at Washington State University and the Department of Internal Medicine, Program in Cellular and Molecular Oncology, at The University of New Mexico Comprehensive Cancer Center. The authors are: Mingrui Duan, PhD; Kathiresan Selvam, PhD; John J. Wyrick, PhD; and Peng Mao, PhD.

The National Cancer Institute of the National Institutes of Health supported the research reported in this publication under Award Number P30CA118100, Principal Investigator: Cheryl Willman, MD. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.



“Over the first three years, the Lobo Cancer Challenge has raised almost $700,000.

EVENTS

- Basketball Game Blurs Party Lines
- Skin Cancer Screening in Taos
- Lobos Love Pink Basketball Games
- Lobo Cancer Challenge Goes Virtual

Hoops 4 Hope pits House against Senate to support state's cancer patients

Basketball Game Blurs Party Lines

New Mexico House plays Senate in Hoops 4 Hope game to benefit cancer patients at the UNM Comprehensive Cancer Center

At the end of each legislative session, New Mexico's senators and representatives lace up to play a hotly-contested basketball game. No one officially tracks how many games each team has won — or any other statistics — because, in the end, the real winners are New Mexicans who face cancer.

The Hoops 4 Hope game pits the New Mexico Senate "Lobos" against the House of Representatives "Aggies" instead of dividing the legislature along party lines. A longstanding tradition, the game evolved into a fundraiser for New Mexico's cancer patients when Representative Ray Ruiz died of lung cancer in 2004.

This year's Hoops 4 Hope game will take place February 11 at 7 pm in the Santa Fe Indian School gymnasium.

"The proceeds from the Hoops 4 Hope game help us to deliver the compassionate comprehensive cancer care that all New Mexicans deserve," says Cheryl Willman, MD, Director and CEO of The University of New Mexico Comprehensive Cancer Center since 1999. "It is an important source of support for the UNM Comprehensive Cancer Center and we are deeply grateful to New Mexico's legislators for their commitment to fighting cancer in our state."

HOOPS 4 hope

Proceeds from the Hoops 4 Hope game support patients going through treatment. Last year's game raised more than $33,000 and since 2007, the annual game has raised more than $200,000.

Traditionally, the teams are coached by UNM and New Mexico State University coaches, mimicking the state rivalry. NMSU has not yet named the House Aggies coach for this year's game. UNM, in a break with tradition, has announced that UNM Athletics Director Eddie Nunez will coach the Senate Lobos.

The Hoops 4 Hope game is free and open to the public. Donations will be accepted and greatly appreciated. The Santa Fe Indian School is located at 1501 Cerrillos Road, Santa Fe, NM, 87505.

Skin Cancer Screening in Taos

UNM Dermatology holds free skin cancer screening clinics in New Mexico to address dermatologist shortage; Taos clinic is Feb. 29.

The University of New Mexico Department of Dermatology and the UNM Comprehensive Cancer Center are hosting free skin cancer screenings around the state. The next screening clinic will take place in Taos, N.M., on Feb. 29.

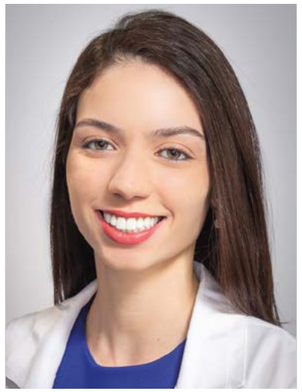
"New Mexico has fewer than half of the dermatologists it really needs," says Dermatology chair Aimee Smidt, MD, FAAD, FAAP. The state has just 33 dermatologists for a population that requires about 80 of them.

Melanoma is the most aggressive type of skin cancer and can be deadly. It can affect young adults and people of all skin types. According to the American Cancer Society, its symptoms include unusual-looking moles, growing moles and moles that change in the way they look or feel.

"Knowing what your skin looks like at baseline and noticing any changes," Smidt says, "is the best way to know if something is different or worrisome."

Ninety percent of skin cancers are caused by ultraviolet rays from the sun, Smidt says, and New Mexicans receive very high to extreme levels of solar UV exposure for six months of the year. The American Cancer Society estimates that 610 New Mexicans will receive a melanoma diagnosis this year.

John Durkin, MD, FAAD



Naiara Barbosa, MD, FAAD

UNM dermatologist John Durkin, MD, FAAD, adds that getting any suspicious skin sores, bumps, markings and blemishes checked regularly can help to catch melanoma in its earliest stages. Early detection offers the best chance of beating skin — or any type — of cancer.

Durkin and his colleague, Naiara Barbosa, MD, FAAD, treat skin cancer and other cancer-related skin conditions and also offer Mohs skin cancer surgery at the UNM Comprehensive Cancer Center.

The free skin cancer screening clinic in Taos will take place at the Taos Dermatology, Breast and Plastic Surgery clinic, 330 Paseo Del Pueblo Sur, Suite H, from 11 a.m. to 1 p.m. Holy Cross Medical Center is co-hosting the event.

No appointment is needed, and anyone arriving during clinic hours will be seen. This free screening clinic is sponsored by the Shannon J. Shaw Memorial Cancer Fund, UNM Department of Dermatology, UNM Comprehensive Cancer Center and American Academy of Dermatology. Please call 505-272-6027 for more information.

UNM Dermatology offers free clinic in Taos Feb. 29 to address state dermatologist shortage

Please note: A skin cancer screening event was planned for May in Albuquerque, but was canceled due to Covid-19

Lobos Love Pink Basketball Games

UNM Basketball joins in to help raise breast cancer awareness at games on Feb. 22 and Feb. 29

To mark National Cancer Prevention Month, The University of New Mexico Men's and Women's basketball teams hope to pack the house with pink in coming weeks in honor of breast cancer survivors and fighters.

The women's game will tip off at 2 p.m. on Saturday, Feb. 22, against Boise State and the Men's game will tip off at 8 p.m. on Saturday, Feb. 29, against Utah State.

Lobos Love Pink games raise awareness about breast cancer. Sponsored by UNM Athletics and the UNM Comprehensive Cancer Center, the games help to remind members of the community to get their mammograms. Breast cancer screening is important because mammograms can detect tumors before cancer symptoms arise, says Ursa Brown-Glaberman, MD, who co-leads the breast cancer treatment team at the UNM Comprehensive Cancer Center.

The American Cancer Society estimates that 1,570 New Mexico women will receive a breast cancer diagnosis in 2020. Brown-Glaberman says that raising awareness through events like Lobo Basketball games is essential in conveying the importance of breast cancer screenings.

Both basketball games will be held in UNM's Dreamstyle Arena, 111 University Blvd. SE. Fans can purchase tickets in advance at unmtickets.com or by calling the Lobo Ticket Office at 505-925-LOBO. Fans wearing pink to the games can purchase discounted tickets at the door.

The basketball teams and the UNM Cancer Center will honor breast cancer survivors during each of the games.

"We thank the Lobo Men's and Women's Basketball teams for their support and participation. Games like this raise awareness for screening and that helps us to save lives."

— Cheryl L. Willman, MD
Director and CEO of the UNM Comprehensive Cancer Center

Raising awareness conveys the importance of breast cancer screenings

Lobo Cancer Challenge Goes Virtual

Annual event to support cancer research and patient care in New Mexico balances critical fundraising with COVID-19 orders

Elaine Fero Gronberg

Virtual event encourages cancer fighters to define their own challenge

Opportunities at the fourth annual Lobo Cancer Challenge are wide open.

And so is registration.

This year, the Lobo Cancer Challenge is meeting the challenge of a global pandemic by holding the event virtually on Saturday, Sept. 19.

Far from a limitation, a virtual event will give participants the opportunity to set new courses, find different routes, and ride along different trails, all to raise critical funds for New Mexico's fight against cancer.

"This fundraising event helps us to deliver the best cancer care in the state," says Cheryl Willman, MD, Director and CEO of The University of New Mexico Comprehensive Cancer Center. The Lobo Cancer Challenge supports cancer research and patient care at the UNM Comprehensive Cancer Center. "We are deeply grateful to our community," Willman says, "for their tremendous support in helping all New Mexicans facing cancer."

According to event director Amy Liotta, all the money that participants raise goes directly to the program they choose. "Thanks to the generosity of our community partners, every dollar raised by the participants goes to support patient care, research, community outreach or education and training at the UNM Comprehensive Cancer Center," she says.

Team Peace Train

Over the first three years, the Lobo Cancer Challenge has raised almost $700,000. The money helps to fund projects and programs that other sources of revenue may not cover.

In past events, participants chose to ride a bike for 25, 50 or 100 miles or to run or walk a 5K, and they committed to a fundraising minimum. Because of the virtual format for this year's event, participants will choose their own challenge and are encouraged to raise money. Liotta explains that their challenge this year can be anything: riding, running, walking, hiking, volunteering, or something else.

It is hoped that out-of-state friends and family of New Mexico participants will join the virtual event, too. All registered participants will receive a t-shirt and dedication bib to wear while completing their challenge on Sept. 19.

Register and learn more about the event at LoboCancerChallenge.org.

Noelle Packard

Julie and Alan Hamlin

COMMUNITY EVENTS

On the Run to Fight Pancreatic Cancer

On the Run to Fight Pancreatic Cancer

This year the 11th annual Polly's Run will take place to raise money for pancreatic cancer research benefiting the UNM Cancer Center.

Polly's Run is on a mission to end pancreatic cancer. The annual fundraiser is held each year in honor of Polly Rogers, whose best friends and three sons started the 5K run-walk event after she died in 2009.

"[My mother] taught me and my brothers that you can't just sit back, you've got to make a difference while you're here," says Josh Rogers, Polly's Run organizer and Polly's middle son. The event's goal is to raise money every year to find a cure for pancreatic cancer, celebrate survivors and honor those who have passed on.

The American Cancer Society predicts that in New Mexico this year, 340 people will be diagnosed with pancreatic cancer and 240 people will lose their battle. Pancreatic cancer is one of the most difficult cancers to treat because it is hard to diagnose in its early stages.

Polly's Run has raised $325,000 since 2009 to help fight pancreatic cancer. Last year the event raised $53,914.51 to benefit the Polly Rogers Pancreatic Cancer Research Fund at The University of New Mexico Comprehensive Cancer Center. Polly's Run organizers have set an ambitious goal of $111,111 for this, their 11th year.

This year, Polly's Run will be held virtually on May 30. Rogers says that participants will receive a t-shirt and bib by mail when they register and encourages registration by May 15 to ensure on-time delivery. Children, too, may register and will receive their t-shirt and bib with an adult registration. Participants may run anywhere and are encouraged share their photos and video on social media.

In 2020, the 11th annual Polly's Run raised nearly $55,000 for pancreatic research and a total of $325,000 since 2009. Above: Josh Rogers and Leigh Rowland, UNM Foundation.

"[My mother] taught me and my brothers that you can't just sit back, you've got to make a difference while you're here."

— Josh Rogers, Polly's Run Organizer

Polly's Run event on May 30 fights pancreatic cancer

U.S. News and World Report named The University of New Mexico Comprehensive Cancer Center the top place for cancer care in New Mexico.

OUTREACH

Expert Team Tackles Thyroid and Parathyroid Diseases

UNM experts combine their skills to tackle thyroid and parathyroid diseases

When the thyroid and parathyroid glands don't work well, the entire body feels out of balance.

"People with thyroid and parathyroid diseases can have neck masses, fatigue, kidney stones and many other symptoms," says Nathan Boyd, MD.

Boyd and his team recently launched The University of New Mexico Thyroid and Parathyroid Surgery Program, housed at the UNM Comprehensive Cancer Center, to offer state-of-the-art treatments for these diseases. This year, 360 New Mexicans are expected to receive a thyroid cancer diagnosis and many more are expected to be diagnosed with other diseases of the thyroid and parathyroid glands.

The thyroid, shaped like a butterfly, sits just below the Adam's apple at the front and middle of the neck. The tiny parathyroid glands sit behind the thyroid gland near the tip of the butterfly wings. Together, they produce important hormones that control many different body functions, from producing energy to retaining fluids to regulating electrolytes.

Boyd, a cancer surgeon in UNM's Department of Surgery, practices at UNM Cancer Center and UNM Hospital and specializes in removing tumors of the head and neck. He explains that although people with thyroid and parathyroid diseases often benefit from surgery, it often isn't enough; the body must be gently coaxed back into balance.

New thyroid and parathyroid surgery program brings experts together

Thyroid nodules are dense areas within the gland and though common, some can be cancerous. In the past, the treatment for thyroid cancer was removal of the entire gland. But, Boyd says, for people with lower-risk cancers, more doctors now consider partial gland removal or potentially even no surgery, coupled with close observation.

Nathan Boyd, MD

Symptoms of thyroid and parathyroid diseases can vary widely from person to person because the glands control hormones and electrolytes that affect many body systems. So, Boyd's team includes surgeons, endocrinologists, pathologists, radiologists and nuclear medicine doctors.

The endocrinologists prescribe medications to help people restore their delicate balance of hormones and electrolytes after surgery. Pathologists take and study samples of the thyroid and parathyroid nodules to help decide a diagnosis and to guide treatment. Radiologists are expert at imaging the thyroid and parathyroid glands with ultrasound and CT scans. And nuclear medicine doctors specialize in pinpointing the location of nodules and cancer tumors using radio-nucleotide scans.

"We draw upon the expertise of everyone on our multidisciplinary team," Boyd says. He further explains that the entire team chooses the surgical and therapeutic treatments that they think will work best for each person and decides the order in which the treatments should be given.

"Our goal is to provide the highest level of care to patients with surgical disorders of the thyroid and parathyroid glands," Boyd says. "We combine the most current guidelines for care with technical expertise in all stages of treatment, from diagnosis to surgery to long term surveillance."

The UNM Thyroid and Parathyroid Surgery Clinic is open at the UNM Comprehensive Cancer Center, 1201 Camino de Salud, Albuquerque. The team includes surgeons Nathan Boyd, MD; Michael Spafford, MD; Andrew Cowan, MD, PhD; Garth Olson, MD; and, Noah Syme, MD; and endocrinologists Ivan Pinon, MD; Christina Lovato, MD; Matthew Bouchonville, MD; David Schade, MD; and Mark Burge, MD. Additional team members include pathologist Shweta Agarwal, MD, radiologist Rachel Runde, MD, and nuclear medicine physicians Saeed Elojeimy, MD, and Lisa Blacklock, MD.

To learn more, visit the Thyroid and Parathyroid Surgery Team online.

"Our goal is to provide the highest level of care to patients with surgical disorders of the thyroid and parathyroid glands."

— Nathan Boyd, MD

Coming Home to Fight Cancer

Erika Maestas, MD, returns to the Land of Enchantment to help New Mexicans on their cancer journey

For Erika Maestas, MD, the journey to The University of New Mexico Comprehensive Cancer Center is a journey home.

Maestas grew up in Albuquerque, while her parents hailed from rural northern New Mexico. She sees her ties to the Land of Enchantment's roads less traveled as a pathway to greater connections to her patients at the UNM Comprehensive Cancer Center.

Maestas will begin to treat patients this summer, focusing on gastrointestinal cancers, but "doing a little bit of everything" as well.

She says she came to love the oncology profession because it combines advancements in science with the personal.

"You have that scientific side to it, but it also allows you to connect with the patient," she says. "That's very important in the sense that you're making recommendations that are changing people's lives. So building up that trust with patients and their families is very important."

Erika Maestas, MD

Maestas says she became interested in medicine as a teenager when her dad became ill and needed a kidney transplant. The process left a lasting impact.

"It was the whole process; how medicine can give people a second chance and impact their lives and families," she says.

Maestas would take that passion to UNM, where she earned bachelor's degrees in Biology and in Spanish. She would follow those achievements with a doctorate in medicine from the UNM School of Medicine before finishing her internal medicine residency at Loyola University Medical Center in Maywood, Ill.

She will complete her three-year hematology oncology fellowship at the UNM Cancer Center in June.

"I knew early on in my fellowship that I wanted to stay in New Mexico," she says.

She says she liked that the UNM Cancer Center's cutting edge research into cancer treatments gives her a chance to continue learning about the disease and new ways to fight it while continuing to do what she loves: working with patients.

"I'm a native New Mexican," she says, "and I feel a special connection to the patient population here."

Dr. Maestas chooses to help New Mexicans fight cancer

"I knew early on in my fellowship that I wanted to stay in New Mexico."

— Erika Maestas, MD

Dr. Chuck Wiggins Honored with National Award

New Mexico Tumor Registry Director recognized for long years of service, teaching, and advancing cancer surveillance

Chuck Wiggins, PhD, Director of the New Mexico Tumor Registry, was recently honored by the North American Association of Central Cancer Registries with its Calum S. Muir Memorial Award.

The prestigious award honors those who have made substantive and outstanding contributions to the field of cancer surveillance, which examines the differences in cancer rates and types between different groups of people.

Wiggins was selected "in recognition of his long-standing service to the cancer surveillance community; commitment to addressing cancer disparities; history of teaching and mentoring the next generation of cancer surveillance scientists; and his ability to ask the tough questions that challenge our thinking and move the field forward," the association said.

Chuck Wiggins, PhD

The award singled out his longstanding interest in cancer in underserved populations. He has worked extensively to understand the cancer burden among the diverse people of the Southwest.

"I am honored to receive this recognition from the North American Association of Central Cancer Registries," Wiggins said. "Truly, however, my accomplishments are readily attributable to our team at the New Mexico Tumor Registry, and to my faculty colleagues, staff and students at The University of New Mexico. This award emphasizes the importance of public health surveillance for cancer here in New Mexico, across the country and around the world."

The document also praised Wiggins' friendly demeanor and inquisitive intelligence, as well as his active participation in the NAACCR, including serving as its president from 2015-2017.

Wiggins first joined the New Mexico Tumor Registry in 1978 as an intern from The University of New Mexico. Upon receiving his bachelor's degree in health education, he joined full time as a reporting assistant.

He left to pursue his master's degree in epidemiology from the University of Alabama at Birmingham, and in 1983 he returned to the New Mexico Tumor Registry as an epidemiologist. He received his doctorate from the University of Washington in 1999 and returned to the New Mexico Tumor Registry as director in 2003.

> "This award emphasizes the importance of public health surveillance for cancer here in New Mexico, across the country and around the world."
>
> — *Chuck Wiggins, PhD*

Honored Twice Over

UNM's Angela Wandinger-Ness receives 2020 Presidential Award for excellence in Science, Mathematics and Engineering mentoring

The last out-of-town trip Angela Wandinger-Ness, PhD, took before the COVID-19 lockdown was to Seattle, where, on February 15, she received the 2020 Lifetime Mentor Award from the American Association for the Advancement of Science (AAAS).

Now Wandinger-Ness, a professor in The University of New Mexico Department of Pathology, who serves as associate director for education, training and mentoring and the Victor and Ruby Hansen Surface Endowed Professor in Cancer Cell Biology and Clinical Translation at the UNM Comprehensive Cancer Center, has received the 2020 Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring.

Wandinger-Ness was among 12 researchers who were honored with the award on August 3—this time virtually—in an online ceremony presided over by Robert Mayes, program director for Excellence Awards in Science and Engineering at the National Science Foundation.

The award, billed as "the Nation's highest honors for mentors who work with underrepresented groups to develop fully the Nation's human resources in STEM," comes with a $10,000 honorarium.

"It's incredibly humbling to be the recipient of these really prestigious awards this year," she said. "It's really with the support of the trainees and mentees who feel you've made a difference in their lives. It's deeply meaningful."

Wandinger-Ness, who joined the UNM faculty in 1998, studies GTPases, a family of enzymes that operate as molecular switches in many different cellular functions. She currently is looking for way to translate her work into potential therapies for ovarian cancer. Her research has been funded by the National Science Foundation, American Heart Association, National Institutes of Health, Department of Defense and private foundations.

She has twice been singled out by her colleagues at the UNM Health Sciences Center for the annual Excellence in Research Award and was nominated for the Presidential award by Valerie Romero-Leggott, MD, the HSC's vice chancellor for Diversity, Equity and Inclusion.

Wandinger-Ness has made mentorship a centerpiece over the course of her 33-year career, having personally mentored 74 students and fellows in her laboratory. Her trainees, from five continents, bring their diverse abilities, culture, educational opportunity, gender, race/ethnicity and socioeconomic backgrounds to solve complex problems. Her mentees encompass more than 370 students, postdoctoral fellows and junior faculty.

She has also been honored by being elected a fellow of the AAAS, the world's largest scientific society, in 2012.

"You become part of a network of people who are like-minded, and therefore you can connect more broadly across the country and have a bigger impact," she says of her membership in the organization. "You can use that capital to help your trainees more, to connect more, to learn more and bring new things to your work area."

Angela Wandinger-Ness, PhD

"You become part of a network of people who are like-minded, and therefore you can connect more broadly across the country and have a bigger impact."

— Angela Wandinger-Ness, PhD

A Quest for Excellence

Dr. Ivan Piñón joins effort to build Thyroid and Parathyroid Center of Excellence at the UNM Comprehensive Cancer Center

Ivan Piñón, MD, once thought his future would lead to the lab bench.

But a long career practicing as an endocrinologist in the Albuquerque area has led him to The University of New Mexico Comprehensive Cancer Center to serve as a crucial part of the effort to build a thyroid and parathyroid center of excellence.

Ivan Piñón,MD

"There's a significant population of patients with thyroid cancers and disease," Piñón says. "As the lead endocrinologist I will conduct the critical workup for their condition, and if indicated, I will refer patients to our surgeons for surgical consultations. Patients will follow up with me for aftercare and cancer surveillance."

Piñón says he's excited to join the new center of excellence and credits UNM Comprehensive Cancer Center surgeons Nathan Boyd, MD, and Garth Olson, MD, for championing the idea.

"The goal is to be the referral center for the state of New Mexico and the Southwest, including Arizona and Colorado," Piñón says.

In addition to his work with thyroid cancers, Piñón says his expertise will help patients with other conditions.

"A lot of patients with other types of cancers are on drugs that can cause endocrine problems," Piñón says, adding that he will be available to provide his expertise to other physicians.

Piñón, who has more than 20 years of experience as an endocrinologist, says his interest in the endocrine system developed while he was a student at Southern Methodist University.

"My dad was a pharmacist, so that got me interested in medicine and research in an indirect way," Piñón says.

While at SMU, he developed an interest in science and research, particularly in endocrinology. His budding interests led him to the University of California, Santa Cruz, where he was planning to study lactation hormones in elephant seals.

The program changed focus to mice and after a while, Piñón says, he began to think more about a career in research.

"After 3 ½ years working on a PhD, I got a little disillusioned with it," he says. "I didn't want to work behind a research bench, by myself, the whole time. So I quit my PhD program and received a master's degree."

> "The goal is to be the referral center for the state of New Mexico and the Southwest, including Arizona and Colorado."
>
> — *Ivan Piñón, MD*

The El Paso, Texas, native moved to Valhalla, N.Y., and completed his medical degree at New York Medical College.

Following graduation, Piñón came to Albuquerque for his residency and stayed. "I was originally from the Southwest, but I didn't want to go back to Texas," he says.

Piñón completed his residency at UNM and the Raymond G. Murphy Veterans Affairs Medical Center in Albuquerque, followed by a fellowship in endocrinology and metabolism with UNM's Division of Endocrinology, also at the VA Medical Center.

Piñón also taught as an assistant professor of internal medicine for the UNM Department of Internal Medicine before joining Presbyterian Hospital as a staff endocrinologist in 2004.

"The main thing about my new position is letting people know I'm here for them," Piñón says. "I've been involved in endocrinology for 20-some years. The mission of the Cancer Center is to take care of those patients, but also to teach the upcoming residents, fellows and medical students. It's a unique thing to New Mexico."

The Thyroid and Parathyroid Team at the UNM Cancer Center is a multidisciplinary clinic. It consists of surgeons Boyd, Olson, Andrew Cowan, MD, PhD; and Noah Syme, MD. In addition to Piñón, it includes endocrinologists Christina Lovato, MD, and Patricia Kapsner, MD; and pathologists Shweta Agarwal, MD, Nadja Falk, MD, Nancy Joste, MD, Corey Broehm, MD, and Samuel Reynolds, MD.

Challenges Accepted

Surgeon Vinay Rai looks forward to helping New Mexicans overcome cancer

A quintessential part of facing any kind of challenge is reaping the rewards when you've successfully met it.

It's an adage that can be applied to nearly any profession, including surgical oncology, and it's what brought Vinay Rai, MD, FACS, FASCRS, to The University of New Mexico Comprehensive Cancer Center.

"Here we get to face challenges and we get the chance to make a contribution to the community," Rai says.

Rai, an associate professor at the UNM School of Medicine, has deep domestic and international experience in general surgery and specifically in colon and rectal procedures. He spent several years at the UNM Sandoval Regional Medical Center in Rio Rancho, but moving to the UNM Cancer Center had been a goal of his.

"This is something I've always been interested in," he says. "The Cancer Center is the best provider of cancer care in the state and being a part of the Cancer Center gives me the best resources."

Those resources, Rai says, include clinical trials for patients and the work conducted at the UNM Cancer Research Facility, which advances cancer treatments and fosters a deeper understanding of the disease and its impacts.

But he also notes the importance of nurse navigators at the UNM Cancer Center who help patients make their way through their treatments, from diagnoses to follow-ups.

Along with teaching and being part of the UNM Cancer Center's surgical oncology fellowship program, Rai said he will focus on treating complex colorectal cancer.

"We are absolutely thrilled to have Dr. Rai join our colorectal cancer team at the Cancer Center. He brings a wealth of experience in treating colorectal disease to our team. As important, he is the consummate "team player" who is a pleasure to work with," said Bridget N. Fahy, MD FACS Chief, Division of Surgical Oncology. "Given the multidisciplinary nature of state-of-the-art cancer care, his ability to work seamlessly with our colleagues in medical and radiation oncology is essential. His warm disposition and genuine compassion is a real asset for patients and their families as they face the challenges associated with colon and rectal cancer."

Vinay Rai, MD, FACS, FASCRS

Rai was born in India and became interested in medicine following an injury he sustained as a boy. Getting access to treatment was a challenge, and that experience inspired him to pursue medicine and continues to inform his approach today.

The UNM Cancer Center treats patients from throughout the state, some of whom travel to Albuquerque from hundreds of miles away.

The state's diverse population and the distance between many New Mexicans is another challenge Rai is looking forward to meeting.

"I hope in the future, as the COVID situation improves, I would like to go to every part of the state," he says. "I'm very interested in telemedicine, which has been a lifesaver during these times."

Rai says he's come to love his new home.

"I just love being in New Mexico," he said. "The people are very friendly and it makes me happy in my heart when patients start to get better."

Rai completed his fellowship in colon and rectal surgery in Chicago at John H. Stroger, Jr. Hospital of Cook County in June 2012. He completed his residency in general surgery at the University of Texas Health Science Center at San Antonio in June 2011.

He received his medical education from the All India Institute of Medical Sciences, India's premier medical institute. He received a bachelor of medicine and surgery in 2001, completed a master's in general surgery in January 2004, and was a senior resident in general surgery from March to December 2004. He also served as a senior house officer in surgery at the Tameside General Hospital at Ashton-Under-Lyne, United Kingdom.

"The Cancer Center is the best provider of cancer care in the state, and being a part of the Cancer Center gives me the best resources."

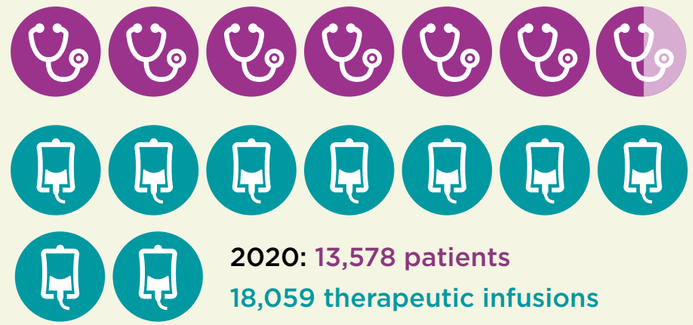
— Vinay Rai, MD, FACS,FASCRS

UNM Cancer Center Tops US News List

UNM Hospitals Comprehensive Cancer Center named the top hospital for cancer care in New Mexico

In its July 28 release, U.S. News and World Report named The University of New Mexico Comprehensive Cancer Center the top place for cancer care in New Mexico. For the report, 899 hospitals that provide cancer care were evaluated, and each hospital had to treat at least 197 Medicare inpatients in 2016, 2017 and 2018 to be included in the rankings. The UNM Comprehensive Cancer Center is the only cancer center designated by the National Cancer Institute in the state.

The UNM Comprehensive Cancer Center is the only cancer center designated by the National Cancer Center Institute in the state.



The UNM Comprehensive Cancer Center served more than **13,500 New Mexicans** and provided more than **18,000 therapeutic infusions** in 2020.

Chasing the Dream

Ala Ebaid, MD, joins UNM Comprehensive Cancer Center's fight against cancer

Growing up in Jordan, Ala Ebaid's dream was always to come to America to practice medicine.

"It is the best country to live in and practice in," he says.

Ebaid was in his first year of medical residency in Jordan when a friend told him about The University of New Mexico.

"He spoke very highly of the university," Ebaid says, "so I decided to send in my application, and that's how I got here."

He began his internal medicine residency at the UNM School of Medicine in July 2010. Now that he's been in New Mexico for a decade, Ebaid says he doesn't plan on leaving any time soon.

He says he was aware of the impact and cutting edge research happening at The UNM Comprehensive Cancer Center during his residency and wanted to be a part of the work back then.

Ala Ebaid, MD

Ebaid says he's always been fascinated by diseases of the blood, even from his early years in medical school.

"It's an area of medicine that's evolving really fast," Ebaid says. "Almost every week, there's a new discovery in the lab to transfer to the patient."

Ebaid will complete his fellowship in hematology/oncology at the UNM Cancer Center in June and is expected to begin clinical work in August.

The fellowship lasted three years. Prior to that, Ebaid was a research assistant in one of the labs at the UNM Cancer Center from June 2015 to December 2017.

Ebaid also has served as an assistant professor for the UNM School of Medicine and an adjunct professor at the UNM School of Nursing.

He also was an internist and hospitalist for Presbyterian Medical Center in downtown Albuquerque and served on the hospital's heart failure and myocardial infarction quality improvement project. While heart failure might normally be associated with cardiology, Ebaid said his focus on blood disorders was an important component of the work.

Ebaid said there are some research ideas that he wants to eventually pursue, including why the build-up of certain proteins in tissues tends to be diagnosed more often in Hispanic populations.

But for now, Ebaid said he hopes to focus on treating cancers of the blood as well as supporting clinical trials and research conducted at the UNM Cancer Center.

"I want to be in the community and focusing on treating my patients," he says. "I decided to stay in New Mexico because I fell in love with the people of New Mexico. And after spending the last 10 years here, this is my home."

"I want to be in the community and focusing on treating my patients. I decided to stay in New Mexico because I fell in love with the people of New Mexico."

— Ala Ebaid, MD

THE UNIVERSITY OF NEW MEXICO
COMPREHENSIVE CANCER CENTER

Year in Review

505.272.4946
1.800.432.6806

UNM Comprehensive Cancer Center
1201 Camino de Salud NE
1 University of New Mexico
Albuquerque, NM 87131

cancer.unm.edu
www.facebook.com/unmccc
youtube.com/unmhsc
twitter.com/unmccc
hsc.unm.edu/news/comprehensive-cancer-center

Ways to Give:
UNMfund.org

UNM COMPREHENSIVE CANCER CENTER