



# LACTATE AND CANCER: AN ODD COUPLE

Cancer research is based on some fundamental questions: How does a cancer start? And what does it need to survive?

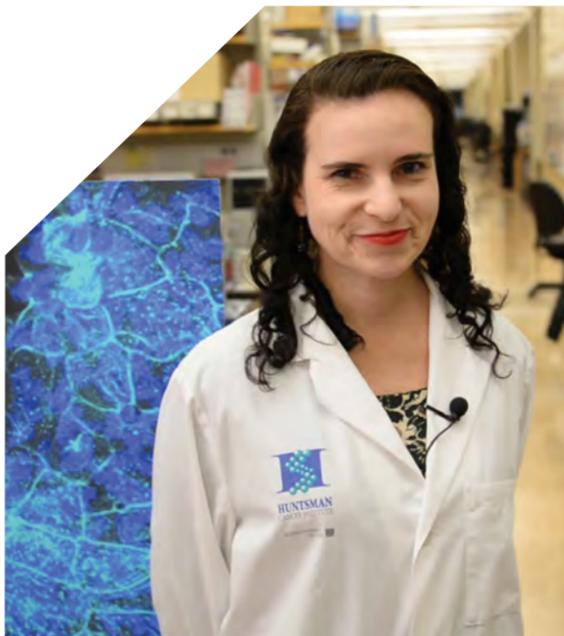
Researchers in the lab of HCI investigator **KEVIN JONES, MD**, set out to study a rare sarcoma, and the answers they found to these questions may help redefine how it's treated.

# COLLABORATING FOR A CURE

Clinical trials and collaboration are pivotal to the war on cancer. In 2014, the two had a big win. An effort led by **DAVID GAFFNEY, MD, PHD**, got HCI nearly \$3.6MM from the National Institutes of Health to subsidize efforts in advancing cancer treatment studies and expanding the network of collaborating researchers. This offers cancer patients across the country more access to the most progressive care and boosts research potential.



# COMBATING WAYWARD CELLS



HCI researcher **JODY ROSENBLATT, PHD**, and her lab found a potential way to reverse the invasive effects of some of the most treatment-resistant cancers, including pancreatic cancer. They discovered that when a signaling factor that prevents cells from overcrowding is significantly reduced, cell masses and abnormal cell movements occur. They've also shown that restoring normal levels of the signaling factor eliminated the cell masses and returned cell movements to normal.

# A MESSAGE

FROM OUR  
**CEO/DIRECTOR AND  
PRINCIPAL BENEFACTORS**



Cancer is the greatest challenge of our generation.

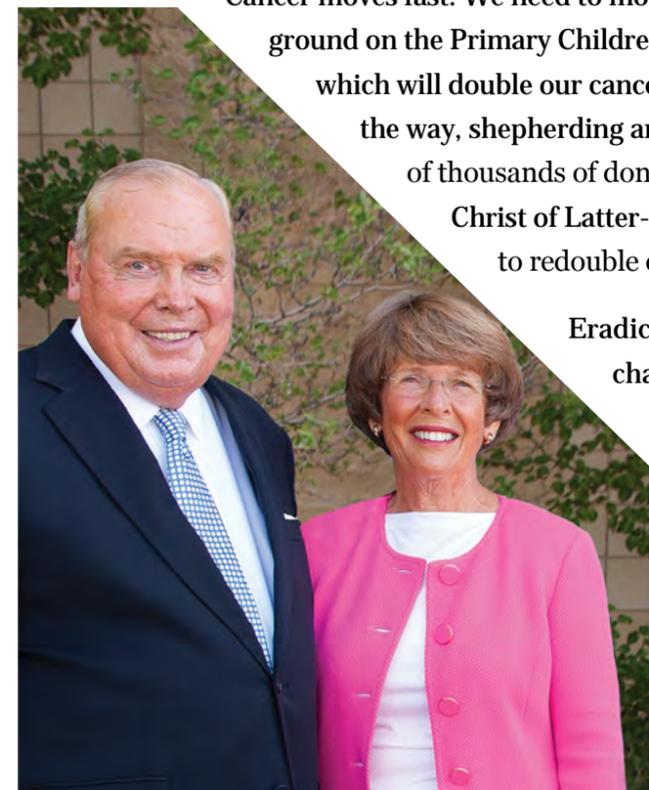
No strangers to challenges, Jon and Karen Huntsman and their family have made eradicating cancer their life's work. It is an audacious goal, on par with the vision of curing polio, walking on the moon, or mapping the human genome. The people who took on those challenges were called unrealistic and perhaps even crazy. But we live in a world where polio is eradicated, Neil Armstrong walked on the moon, and mapping the human genome has ushered in a new era of precision medicine.

We believe the next, greatest accomplishment of humankind is within reach: to cure cancer. What's more, we believe Huntsman Cancer Institute (HCI) will lead the way.

Our mission is to understand cancer from its beginnings—from the first anomaly in a cell all the way to risk assessment and prevention through treatment and survivorship. Years before it was widely understood that cancer is a genetic disease, our predecessors at HCI boldly developed the Utah Population Database, linking genealogies of families to medical records, revealing patterns of cancers across generations. Cancer researchers in Utah were among the first to identify genes that are now known to be implicated in a number of common cancers, including colon, breast, ovarian, and melanoma. Now families ravaged by cancer for generations have tools to detect it at its earliest, most treatable stage, or to prevent the disease outright.

Cancer is a complex collection of more than 200 genetically distinct diseases. Treating these diseases requires teams of experts matched with state-of-the-art technology. This all comes together at HCI, where our world-class facilities link cancer labs with cancer clinics, and cancer prevention strategies with the largest population database for genetic research in the world.

Cancer moves fast. We need to move faster—and we are. In 2014, we broke ground on the Primary Children's and Families' Cancer Research Center, which will double our cancer research space. The Huntsman family led the way, shepherding an unprecedented partnership of hundreds of thousands of donors, the state of Utah, The Church of Jesus Christ of Latter-day Saints, and Intermountain Healthcare to redouble our efforts to defeat cancer.



Eradicating cancer requires a fundamental change to the way we approach this disease, a new way of thinking.

At HCI, we are **CHANGING THE DNA OF CANCER CARE.**

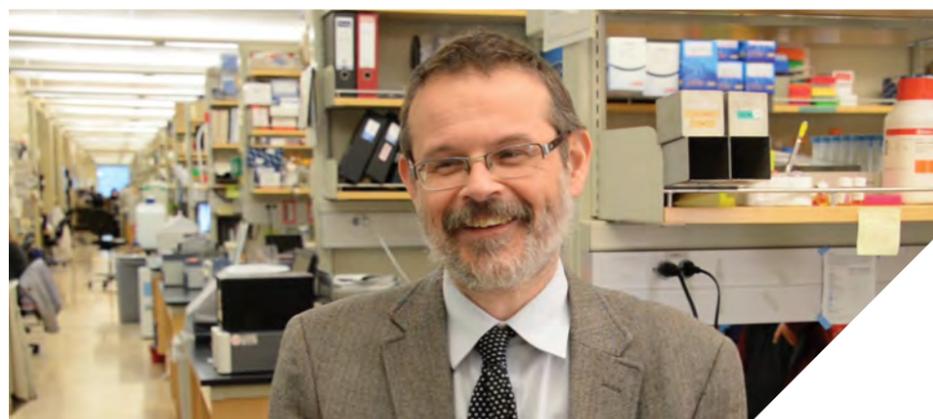
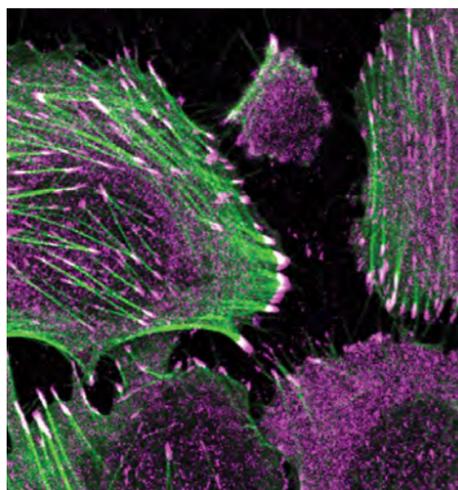


## PRECISION MEDICINE: PROMISING THERAPY TARGETS LUNG CANCER

Cancer treatment sometimes involves targeting a patient's specific genetic mutations that may be fueling cancer growth. A worldwide phase I clinical trial in which HCI participated studied a new targeted therapy for non-small cell lung cancer. The study reported a very promising response rate of 80% in patients whose disease had progressed during treatment with the standard targeted therapy or who were intolerant to it. The new treatment also received Breakthrough Therapy status from the U.S. Food and Drug Administration. "This opens a new avenue of targeted therapies and illustrates the promise of precision medicine," says **SUNIL SHARMA, MD**, HCI Senior Director of Clinical Research.

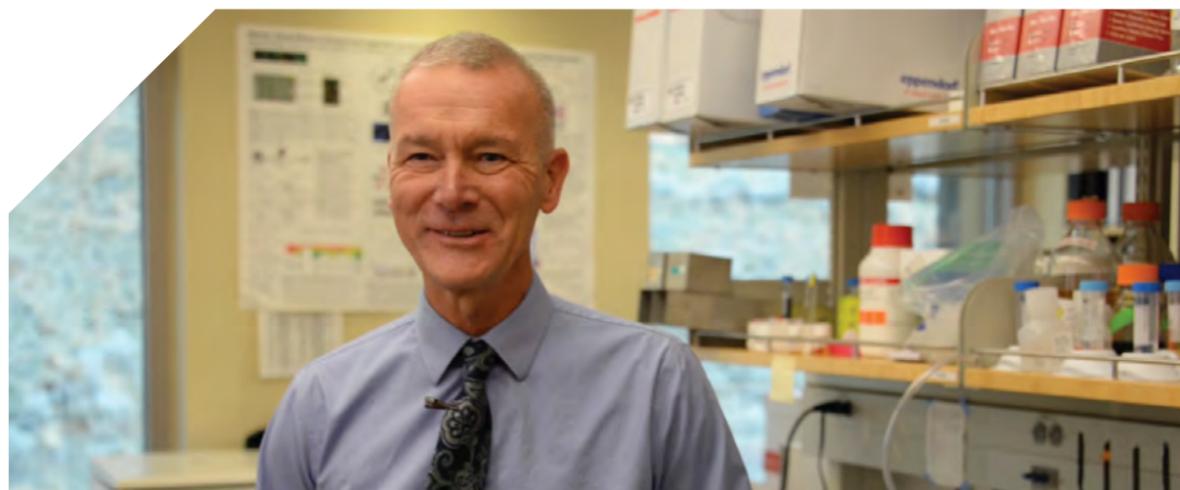
## STOPPING CANCER IN ITS TRACKS

Imagine if you could block the cancer-causing activities of a genetic defect. HCI investigators **MARY BECKERLE, PHD**, **STEPHEN LESSNICK, MD, PHD**, and **SUNIL SHARMA, MD**, may have found a way to do just that in Ewing sarcoma, a bone and soft tissue cancer of children and young adults. The results show an agent discovered at HCI called HCI2509 halts the biology of the cancer-causing protein that drives Ewing sarcoma. As a result, cancer development is shut down. Find out what this promising research means for young patients with the disease and for other cancers with similar biology.



## NEW HOPE FOR CML PATIENTS

About 6,000 people in the United States are diagnosed with the blood cancer chronic myeloid leukemia (CML) each year. Before current treatments, only about 30% of patients survived for five years after diagnosis. Now more than 95% make that mark. There's a problem, though—20-30% of CML patients become resistant to one or more of the available treatments. HCI researchers **MICHAEL DEININGER, MD, PHD**, and **THOMAS O'HARE, PHD**, and their lab weren't satisfied that any patients were left with no treatment options. They set out to challenge what's possible for CML patients and established the next steps in addressing drug resistance.



## DOES KNOWING GENETIC RISK CHANGE BEHAVIOR?



Medical recommendations about sun safety are identical whether a person carries inherited genetic risk for skin cancer or not. So HCI investigator **LISA ASPINWALL, PHD**, and her team explored whether genetic tests that identified a heightened risk for melanoma affected participants' sun safety behaviors. Read about the surprising results.

# OF MICE, MODELS, AND GENES

HCI investigator **TRUDY OLIVER, PHD**, along with a team of researchers, published a report that misregulation of two genes, *Sox2* and *Lkb1*, drives squamous cell lung cancer in mice. The discovery will help uncover new treatment strategies and provides a clinically relevant mouse model in which to test them. Oliver calls it “the most exciting thing we’ve done.”



## HITTING THE **GENE JACKPOT**



Studies led by HCI researchers **SEAN TAVTIGIAN, PHD**, and **DAVID GOLDGAR, PHD**, have added four genes to the list of breast cancer susceptibility genes. Unexpectedly, these findings have significance to more than just families with a high risk of breast cancer—*RINT1* increases the risk of other cancers as well. These discoveries may have positive implications for families that carry mutations in these genes, giving them a leg up in fighting the disease.

## HUNTSMAN CANCER **FOUNDATION**



Support. Strength. Fun. Friendship. That’s what Huntsman Hometown Heroes fundraising endurance events mean to **MARIE MURRAY**. Diagnosed with breast cancer in 2004, Marie ran past the odds of a stage IV diagnosis. In 2014, cancer returned. She stays as positive as possible through treatment and continues raising funds for cancer research—totaling more than \$54,000 to date. A true cancer hero, Marie intends to run past the odds again.

With superhero strength, **ETHAN VAN LEUVEN** battled acute lymphocytic leukemia for three years. He passed away in 2014 just before his fifth birthday. Ethan’s story spread around the world and inspired a generous anonymous donor to establish a matching gift fund that secured \$500,000 to support pediatric cancer research at HCI.

