ANNOUNCING

THE PRIMARY CHILDREN’S & FAMILIES’ CANCER RESEARCH CENTER

AT HUNTSMAN CANCER INSTITUTE
“When the ‘War On Cancer’ was launched in 1971, it was unfathomable even to imagine what’s possible today. We are poised to change cancer care for the entire planet.

Now is the time, Utah is the place.”

MARY BECKERLE, PH.D.
CEO & Director, Huntsman Cancer Institute

THE PRIMARY CHILDREN’S & FAMILIES’ CANCER RESEARCH CENTER
AT HUNTSMAN CANCER INSTITUTE

• 220,000 square foot cancer research facility
• $100MM project cost
• Children’s cancer research
• Cancers that affect our families
• Cancer genetics, risk & prevention
• Pre-clinical cancer models
• Advanced therapeutics
• Tumor imaging
• Survivorship & health disparities
• HCI Biotechnology Center
Utah is uniquely positioned to unlock critical secrets about cancer that will be key to eradicating this disease from the face of the earth. Admittedly, it sounds like something from a science fiction novel. But the opportunity is here and the time is now.

Sequencing the first genome took over a decade and cost more than $3 billion. Today, it can be done for a few thousand dollars in a matter of hours. Although this technology is employed every day in the labs at Huntsman Cancer Institute, many cancer research centers around the world now have this capability as well. So technology alone is not what gives Utah and the Huntsman Cancer Institute such a special opportunity.

The unique opportunity at Huntsman Cancer Institute is the ability to combine the power of the new sequencing technologies with the largest genetics database in the world.

Utah researchers have already used these unparalleled assets to identify genetic mutations that cause breast cancer, ovarian cancer, colon cancer, melanoma and many others. Indeed, more inherited human disease genes have been discovered in Utah than anywhere else in the world. These discoveries have saved – and continue to save – countless lives.

The next step – and it’s a critical one – is to expand the research capabilities at Huntsman Cancer Institute to capitalize on current strengths and seize the astonishing opportunities that are now available in cancer research. To that end, plans are in motion to double the size of our research facility by adding 220,000 square feet to Huntsman Cancer Institute. This expansion will allow Huntsman Cancer Institute to achieve leaps in understanding cancer that will make current accomplishments seem small by comparison.

To say that this is the opportunity of a lifetime is an understatement. This is, perhaps, the opportunity of a thousand lifetimes. It is both the right time and the right place to invest in this compelling opportunity.

Sincerely,

Edward J. Benz, Jr., MD
Chair, Huntsman Cancer Institute External Advisory Board
CANCER DIAGNOSES IN UTAH BY COUNTY • 2001-2010

Data from the Utah Cancer Registry

HUNTSMAN-INTERMOUNTAIN CANCER EDUCATION CENTER LOCATIONS IN UTAH

A free resource for all Utahns.
When the Nixon administration launched the “War on Cancer” in 1971, scientists believed that cancer was but one disease and had a single cause. The last several decades of research have revealed a much different truth: an extremely diverse set of genetic changes underlies the disease we call cancer, and literally, hundreds of types of cancer exist.

Over a lifetime, 1-in-2 men and 1-in-3 women will be diagnosed with cancer. This year, in the U.S. alone, nearly 600,000 people will succumb to its various manifestations, which means, roughly, that one person will die of cancer every minute of every day.

Perhaps the greatest tragedy of all in the cancer narrative is its toll on children. Not only is it the leading disease killer of children, but for far too many families, cancer steals parents away in the prime of their lives.
“Knowledge is power.”

“...many people find out they’re likely to get a life-threatening disease,” asks JoAnn, a participant in the Hereditary Gastrointestinal Cancer Registry at Huntsman Cancer Institute, “and then are given the knowledge to help prevent that from happening?”

JoAnn’s mother died from colon cancer at the early age of 47. Consequently, JoAnn had her first colonoscopy fifteen years before the recommended age to begin colon cancer screening. The colonoscopy revealed more than 200 precancerous polyps, which were immediately removed. After that, her doctor pushed to make sure JoAnn’s brothers and sisters also had colonoscopies right away as each of them had a 50/50 chance of having the same problems.

Some members of JoAnn’s family who chose to have genetic testing now know they have Attenuated Familial Adenomatous Polyposis, or AFAP. This inherited cancer syndrome causes precancerous polyps to form in the colon. Without treatment, the polyps can develop into deadly colon cancer.

“I don’t have children, but for my brothers and sisters, knowing they can pass AFAP to future generations means we can find out early if any of their children inherited it,” says JoAnn. “Knowledge is power.”
In the past, most cancer pathology work was performed using a microscope. Today, high-powered DNA sequencing equipment is completely revolutionizing cancer diagnostics and care. In short, what was thought impossible just five years ago is very possible today.

For example, these next generation sequencing technologies make it possible to search a patient’s entire genome for cancer-causing genetic mutations, and then create specific cancer screening and treatment protocols based on that patient’s cancer risk, and the genetic characteristics of the patient’s specific kind of cancer.

Moreover, researchers are using genetic sequencing to expedite the delivery of new cancer drugs and to prevent the disease altogether in families that are considered to be “high-risk.”

These technological advances provide insights into the complexity of cancer, which in turn, can be used to improve patient outcomes, provide more targeted treatments with less harmful side effects, and ultimately, eradicate cancer.

The Opportunity

% OF ALL WOMEN WILL GET CANCER

% OF ALL MEN WILL GET CANCER

What was thought impossible just five years ago is very possible today.
After losing his wife to breast cancer when she was only 29 years old and watching several of his in-laws develop cancer, Rick decided to take action. He brought his three young children to Huntsman Cancer Institute’s Family Cancer Assessment Clinic – one of the nation’s only clinics dedicated to pediatric genetic testing for children with inherited risk for cancer.

All three of Rick’s children tested positive for Li-Fraumeni Syndrome (LFS), an inherited genetic disorder. (Those with LFS have a 70-80% chance of developing cancer or multiple cancers in their lifetime.)

Pediatric genetic testing had been rare until that point as little could be done if a mutation was found. But Rick knew that HCI had taken part in one of the first North American trials to determine whether cancers could be detected early in children. Using rapid sequence MRI scans, the study found cancers in patients who had no symptoms whatsoever.

The study also showed that 100% of patients whose cancer was detected by full-body MRIs or by lab work were still alive after three years. Sadly, when the LFS patients who had chosen not to be screened showed symptoms of cancer, only 21% were alive after three years.

Now adults, Rick’s three children all have annual MRIs in addition to blood work, colonoscopies, mole mapping, and other cancer screenings. And it has proved to be lifesaving. The brain tumor his oldest son, Michael, developed was detected early enough to be removed successfully. Says Rick, “The screening regimen and early detection is the reason Michael is alive today.”
Huntsman Cancer Institute manages the largest population genetics database in the world. This database is an interlinkage of 18 million genealogic, birth, death, marriage, and health records, extending back centuries. (The next comparable database is the Iceland Cancer Population Database, which contains less than 100,000 such records.)

Using annotated multigenerational family histories, the database has enabled scientists to evaluate the presence of inherited disease in families. Thanks to this resource and advanced sequencing technologies, HCI has already unlocked the answers to genetic mutations that cause breast, ovarian, colon, skin, parathyroid, head and neck, and many other cancers.

Consequently, HCI is in a unique position to influence cancer prevention, screening, and treatment guidelines worldwide, and is one of only 23 members of the National Comprehensive Cancer Network (NCCN) – an organization dedicated exclusively to improving the quality and effectiveness of care provided to patients with cancer.

HCI has discovered more mutations for inherited forms of cancer than any other center in the world.

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<tr>
<th>Cancer Type</th>
<th>Gene</th>
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<tr>
<td>Neurofibromatosis</td>
<td>NF-1</td>
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<tr>
<td>Colon Cancer</td>
<td>APC</td>
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<td>Melanoma</td>
<td>p16</td>
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<tr>
<td>Breast Cancer</td>
<td>BRCA-1, BRCA-2, XRCC2</td>
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<tr>
<td>Ovarian Cancer</td>
<td>BRCA-1, BRCA-2</td>
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<tr>
<td>Paraganglioma</td>
<td>SDH5</td>
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Kate was afraid of getting cancer, and justifiably so. Cancer had stalked both her mother’s and father’s families, taking brothers and sisters, aunts, uncles, and cousins before their time. In her own immediate family two older brothers had been diagnosed. Then it was Kate’s turn.

“Being told I had breast cancer was devastating,” says Kate. “It was 1996 and there were few options for treatment besides the standard: mastectomy, radiation, and chemotherapy.” But she fought it, beat it, and put it behind her.

Imagine Kate’s dread, then, when ten years later she was diagnosed with breast cancer again.

That second cancer, though, brought her to the attention of researchers at Huntsman Cancer Institute who were enrolling women in a study focused on educating women and their families about the risk for hereditary breast and ovarian cancer.

Kate met with a genetic counselor at HCI who helped her assess her family’s cancer risk. In addition, Kate decided to participate in genetic testing. “It’s been just a year ago that I discovered I had the BRCA2 gene mutation. It was the answer to so many questions,” she says. “It’s lifted a huge weight off my shoulders. Now I don’t have to live in fear, not for me, and not for my two daughters, and not for my granddaughters. We have a pathway now to maintain our health. It’s liberating.”
To find inspiration for our future, one has but to look to the past. In a matter of a few short decades, we’ve turned a bare Utah mountainside into the fastest growing, most dynamic cancer research and treatment facility in the world.

The 220,000 square-foot expansion to the Huntsman Cancer Institute will accelerate our research capacity exponentially; providing cures for children stricken with leukemia, sarcomas, and brain cancers – and providing hope for families who have been plagued, generation after generation, by predispositions to cancer.

If historic advances are any indication, it’s not impractical, then, to envision a time when cancer is wiped from human memory for all future generations.

What’s Possible?

We envision a time when cancer is eradicated from the face of the earth.

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CHILDHOOD CANCER 5 YEAR SURVIVAL RATES

(National Cancer Institute)
“There is no more important human quality than sharing with others. There is no source of true happiness more complete than an act of charity.”

Jon M. Huntsman