

Spring 2022

*Little device,  
big impact*

**Using cranial  
electrotherapy  
stimulation to care  
for Roswell Park  
patients and staff**



Patricia Chapin with CES device

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**R**oswell Park is on top of the latest science, the newest technology and the best treatment options. But another big priority is ensuring quality of life for our patients and staff.

The Quality-of-Life Programs at Roswell Park benefit patients and staff, improving their day-to-day lives in the enduring fight against cancer. These programs are funded by grants made possible by generous donors who see the value in comfort and care right here and now in addition to the value of research that can shape the future.

Through a recent Quality-of-Life grant, Roswell Park purchased 35 devices — one for each inpatient and outpatient clinic — that will help to ease the anxiety, insomnia, depression and pain for patients and staff through something called cranial electrotherapy stimulation (CES).

Through these past couple of years especially, there has been great cause for increased stress. After seeing the success of CES in the Palliative Care Clinic and Radiation Oncology, it was determined that this tool would be invaluable for Staff Resilience efforts. Leading that charge is Amy Case, MD, FAAHPM, Lee Foundation Endowed Chair of the Department of Palliative and Supportive Care.

“For staff resiliency, it’s an intervention that shows our staff that we care,” Dr. Case said, adding it was much like the practice of making sure your own oxygen mask is on in an airplane before assisting someone else. “You can’t take care of sick people if you don’t first make sure you’re taking care of yourself. That’s a big passion of mine. With COVID and things being stressful and short-staffed, the burnout has been ever greater.”

## Cranial Electrotherapy Stimulation

The science for these Alpha-Stim CES devices has been around since the 1980s. This technology uses a very small and safe amount of electricity to bring the user’s brainwaves back into balance. After a 20-minute session, people usually feel refreshed, focused and calm. The sessions help relieve tension and stress and experience better sleep without the use of drugs.

Another champion of CES at Roswell Park is Senior Radiation Therapist Patricia Chapin.

“The important thing here is that it’s helping people with their anxiety and with their sleep — including staff members — and it’s not giving them drugs or alcohol to do so,” she said. Chapin, who uses the technology herself on a regular basis, said the nontoxic treatment has “dramatically improved” her sleep.

Relief for anxiety and pain can come almost instantly when using CES treatment. Help from insomnia might take a few repeated sessions while some relief from depression can take several weeks of repeated use, depending on other simultaneous treatment.

Encouraging the use of the device is a no brainer. “In our palliative population, we look at multiple symptoms including pain, anxiety, depression and insomnia,” Dr. Case said. “So you have a treatment that manages anxiety, depression, insomnia and chronic pain and it’s something that you just put on for 20 minutes a day that doesn’t have any side effects and it’s not the same as taking a pill that has drug interactions and adverse effects.”

*(story continued on back page)*

Roswell Park donors fuel groundbreaking research, exclusive clinical trials, innovative technology and compassionate patient care programs.





# Setting the stage for the *future*

# of cancer treatment



Dr. Brentjens and his colleague Ryan McDowell, PhD, advance their research.

**A**t Roswell Park, we're continuously looking to the future. To new data and findings, game-changing discoveries and the best available treatment options for our patients. That's why we're dedicated to pursuing not only innovative researchers and clinicians, but also top technology and facilities.

Renier Brentjens, MD, PhD, serves as Deputy Director, The Katherine Anne Gioia Endowed Chair in Cancer Medicine, Chair of the Department of Medicine and Professor of Oncology in the Departments of Medicine and Immunology. He joined the Roswell Park team in 2021 and is already making plans to expand what Roswell Park can do for our patients.

## Looking to the future

Dr. Brentjens' plans are centered around cellular therapies. This type of treatment is a type of immunotherapy which uses reengineered cells to help a patient's immune system identify and attack cancer cells. He has his sights on two clinical trials currently which will improve CAR T-cell therapy for lymphomas and for other B cell cancers. Those trials are in very early stages, but it takes forward thinking and thoughtful planning to bring about changes this groundbreaking. This work would not be possible without donor support. Thanks entirely to the generosity of donors, the Roswell Park Alliance Foundation was able to promise the necessary funding for each of those two trials and an additional third trial that will focus on multiple types of solid tumor cancers such as breast and colon cancers. "Part of the trials lies in the preparation," he said. "You have to first build the foundation before you can build the house, and that's what this is."

## Building the foundation

Roswell Park has done incredible work using redirected CAR T-cells in research and patient care, exploring its potential and innovating its uses. Its facilities, however, have not previously had the infrastructure to create their own CAR T-cells. Donor funding will be invested into installing the platform and equipment necessary to bring this side of the work in-house.

Setting the stage for these upcoming trials of Dr. Brentjens' will not only advance these particular projects, but it will also help this whole area of investigation surge forward right here in Buffalo. This expansion will expedite research and more efficiently bring about new trials and therefore new treatment options for the patients who turn to Roswell Park for hope.

**"The foundation that we lay now will help us more rapidly open the subsequent trials," Dr. Brentjens said. "Everything that we're doing now is to gear up our institution, our facility, to run those trials."**

## Taking it to the next step

"Roswell Park donors in the WNY area — and outside the WNY area — have made it possible for me to do this work," Dr. Brentjens said. He also credits the forward thinking of Roswell Park's leadership and his predecessors with preparing the way for continual advancement, particularly in the realm of cellular therapies. "At best there is a handful of institutions that are equally well set to move this technology forward, which was a remarkable discovery for me when I first came."

On the topic of moving the technology forward, it is no secret that Dr. Brentjens is laser focused on drastically expanding the number of patients and the types of cancer Roswell Park can impact through cellular therapies. Though the initial trials coming down the pipeline will improve on options for patients with lymphomas and B cell cancers, he is eager to advance this technology to be available to patients with solid tumors, as well.

With the passionate drive of our researchers and the sustained dedication of our donors, these advances are just around the corner. Roswell Park continues to urgently seek the next and best options for our loved ones and neighbors battling cancers of all kinds.



# Navigating risk with the Cancer Genetics team



When Sheila Carson learned she had breast cancer at the age of 32, she was ready to do everything in her power to beat it. She had her whole life ahead of her, a husband and 5-year-old son, a life in Maryland they had built together.

Sheila's cancer brought her back to Western New York where she grew up and where she still has family. Since she was so young when her cancer appeared, there was a question of whether Sheila was perhaps genetically at risk; that this could have been passed down in her family. That's what brought her to Roswell Park and, in turn, the Cancer Genetics team.

"Finding out to have cancer, you're going to follow up and do anything necessary," she explained of her experience. "If that means doing the genetics, then we're going to do that. If that means doing any exams to give you the best possible outcome, we're going to do whatever we need to do."

## Finding answers in Cancer Genetics

At Roswell Park, there's a team dedicated to helping patients determine whether their cancer is hereditary: the Cancer Genetics team. They help patients who have inherited cancer risk and their respective care teams to plan the best course of action based on their specific hereditary cancer. Even beyond that, they offer strategic testing for family members to see who else could be at risk of this same cancer.

Joseph Maher, MD, Director of Clinical Genetics, explained there are a number of criteria someone would need to meet to qualify for genetic testing: a strong family history of certain types of cancers like prostate, colorectal, breast, ovarian or pancreas cancer, a cancer diagnosis at a young age or a diagnosis of a rare cancer type. Testing is available outside of those criteria out of pocket.

Finding out if one's cancer is inherited can be crucial, Dr. Maher said.

"For those patients who have these hereditary cancer syndromes, it is the major factor in their cancer risk," Dr. Maher explained. "That allows us to focus in on optimal screening for patients who do have an increased risk and, in some cases, preventative measures."

As is the case with any disease, the more information available about the illness, the better the care team can treat it. With cancer, knowing whether or not the disease is hereditary can affect medical and surgical management for that patient. Moreover, if a patient's cancer proves to be hereditary, understanding family members' risks before they fall ill could be lifesaving. They would then be armed with the foresight to participate in early screenings, education and possible other preemptive avenues.

"There are several ways by which a positive genetic test result can affect management," Dr. Maher said. "It can affect how we screen for cancers and what cancers to screen for based on the gene, and it also can relieve the burden of excessive cancer screening in those who do not inherit a given mutation."

## Getting results

At Roswell Park, Sheila found out she carries a variant of the BRCA 2 gene mutation. That alone wouldn't make her more likely to have breast cancer, she explained, but being tested brought a certain amount of peace of mind.

"I'm more of a rare circumstance where I have cancer, but I don't have family history," she explained. Her variant does not mean the same for her that the BRCA 2 gene mutation would. "There was a very low percent chance that I would even have developed breast cancer, but I did."

She was surprised by her result, saying she figured she would have carried the mutation. She was young, healthy, active and took good care of her health. But the decision to go through genetic testing remained the right choice for her.

"Whether it's a variant or not, it's good to get it done because it would have given my sister information for more of an active approach for her," Sheila said. Though it wasn't ultimately necessary for her sister or other close relatives to also go through genetic testing, they did take a closer look at their health and made sure to keep themselves up-to-date with cancer screenings.

## How it works

An important aspect after identifying an inherited cancer is testing the relatives of the patient. Cascading — testing closest relatives first in a logical manner — follows what the Roswell Park Cancer Genetics team knows about inheritance patterns and available family members to test.

This allows family members of the patient to discover if they have the same genetic cancer risk. If they do, they can receive guidance in how best to reduce risk and how to best monitor their health. Not everyone with an inherited risk will develop cancer, however.

"One of the problems in genetics, especially cancer genetics, is something we call reduced penetrance," Dr. Maher explained. Some patients may have a mutation and go their entire lives without developing the cancer for which they were at risk. Other patients with the same mutation can develop cancer at a very young age. "We don't know why that is. Some of it may be chance, but some of it may be modifiers."

## Signs of growth

As the number of patients continues to grow and the technology and science available continues to advance, the Cancer Genetics team must expand, as well.

One of the most exciting new additions coming to the team will be state-of-the-art testing panels that will reach a whole new group of cancer patients. Testing for hematological malignancies hasn't been around for as long as testing for breast or colon cancers, for example. This new genetic testing tool coming to Roswell Park from the University of Chicago is top-of-the-line and one of only a few options available for the same purpose.

The other anticipated expansions will bring new personnel to the team: an assistant for the counselors and a navigator. The assistant role will bring much-needed administrative assistance to allow the counselors to become more deeply involved in relevant research studies. The navigator position will help with the cascade

genetic testing process, efficiently coordinating family members of the patient for their own testing where necessary, ensuring patients' privacy along the way. This work is all critical. Having professionals dedicated to these assignments will ensure the health of the program as it continues to grow.

## All thanks to you

These new opportunities to better serve a growing number of patients are made possible by the generosity of Roswell Park donors. Through sustained charitable giving, even more could be on the horizon.

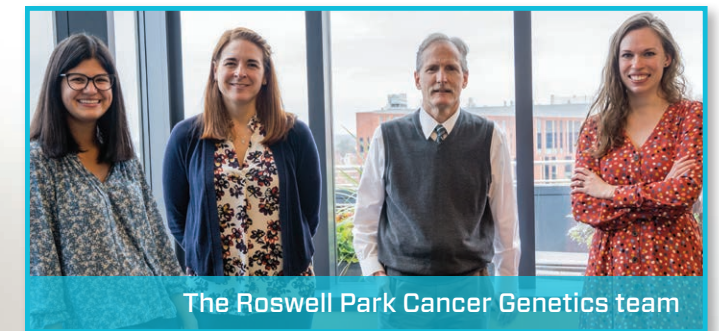
Genetic testing is becoming more common for many types of cancers due to dedicated research.

"A lot of the research looks promising, and it's only going to be through research that we're able to develop clinically validated, effective screening methods," said Dr. Maher.

It's of great benefit to catch someone's cancer in an early stage. It's even better to be ready for it before it even starts. The Cancer Genetics team is dedicated to identifying patients who are at higher risk of hereditary cancers, giving them their very best chance. They also give patients like Sheila confidence and peace of mind as they take on their cancer journey.

"The reason I chose Roswell Park is because I wanted to be with the best," Sheila said. "They're not only doctors, they're scientists. I'm younger, I was diagnosed when I was 32, so I want to be around as long as I can be." She explained the thoughtfulness she put into her care decisions and was confident in the top-of-the-line equipment, staff and overall care that she found here in Buffalo.

"I want to be with the best doctors, and the best doctors are at Roswell Park."



The Roswell Park Cancer Genetics team

"I want to be with the best doctors,  
and the best doctors are at Roswell Park."

- Sheila, breast cancer patient





# Shaping the future of cancer through research

## Donors empower innovative science at Roswell Park

Every day, Roswell Park is pushing to eliminate cancer's grip on humanity. Over the years, we've seen the genesis of groundbreaking and lifesaving advances right here in Buffalo. Those new treatments and findings all have their start with new questions and ideas from Roswell Park scientists.

That's where Roswell Park's Scientific Advisory Committee (SAC) comes in. Researchers submit their project proposals, all looking to continue to learn more about cancer. Through a competitive and rigorous process, these investigators and their work have been funded. These grants are made possible by the generosity of Roswell Park donors, without whom, these projects could not get off the ground and make their marks on cancer as we know it.



### Study of the role of immune system in anti-cancer activity of novel chemicals causing unpacking of DNA in tumor cells

Led by Katerina Gurova, MD, PhD, Department of Cell Stress Biology

This investigation expands on existing work of Dr. Gurova's currently in clinical trial. She and her team developed a group of chemicals called curaxins which kill tumor cells without harming DNA; something many anti-cancer drugs unfortunately do. Curaxins are able to preserve DNA and healthy cells because they disrupt the binding of DNA into chromatin instead of the DNA itself. Since tumor cells are more susceptible to that damage, they are the cells which are destroyed.

These curaxins, in addition to actively killing cancer cells, are believed to also have the power to boost an immune response which will cause immune cells to attack tumor cells. This would unlock the maximal anti-tumor efficacy of curaxins, cutting off both mechanisms through which cancer evades the immune system.

Dr. Gurova and her team intend to study type 1 interferon responses as a potential biomarker of curaxin's efficacy in activating an anti-tumor immune response. This success of this research will help scientists give cancer patients their best chance.



### Study of a new blood test that may predict fatal cancer relapse after allogeneic blood or marrow transplantation

Led by Theresa Hahn, PhD, Department of Cancer Prevention and Control

Allogeneic blood or marrow transplantation (AlloBMT) has been used for over 60 years to cure blood cancers. The process involves collecting cells from a healthy donor and infusing them into a patient with blood cancer so those new cells can recognize the cancer cells and destroy them. Sometimes, that process doesn't work and the cancer relapses.

Dr. Hahn will study one gene that may be responsible for allowing those donor cells to attack cancer cells. That gene produces an enzyme that has a marker, which can be measured in someone's blood. When there's a high level of that marker, it acts as one "brake" on the immune system. When there's a low level, this "brake" does not seem to be activated.

Dr. Hahn and her team believe cells with this "brake" are better at killing cancer cells. They will investigate a new blood test to determine if there is an association between the amount of those markers and fatal cancer relapse.

This project will potentially directly impact the choice of donor for AlloBMT and will hopefully provide a new pathway to study how cancer cells can escape the immune system. If this study is successful, it has the potential to predict fatal cancer relapse and improve survival after this kind of transplantation.



### A "Tag Team" approach to T cell therapy in ovarian cancer. Engineering long-lived T cells that attack tumors AND instruct the T-cells already in the tumor to fight cancer.

Led by AJ Robert McGray, PhD, Departments of Translational Immuno-Oncology and Immunology

Immunotherapies have been helpful to so many cancer patients, but ovarian cancer patients have only seen modest success through immunotherapy treatment options. Dr. McGray and his team seek to meet this need for more effective options to treat ovarian cancer. One reason existing treatments might not be as effective as could be

hoped is that many of the T-cells that infiltrate ovarian cancer cannot effectively target the cancer cells.

This team of researchers aims to engineer T-cells that would release bi-specific T-cell engagers (BiTEs) which would specifically target folate receptor alpha, found in ovarian cancer. The proposed study would address fundamental gaps in knowledge and potentially improve clinical outcomes for ovarian cancer patients.

This approach has the potential to be combined with and improve upon current treatments that are being evaluated in ovarian cancer, as well as other cancer types that do not routinely benefit from immunotherapy.



### How does a non-protein encoding long RNA called MEG3 function as a prostate tumor suppressor?

Led by Dean Tang, PhD, Department of Pharmacology & Therapeutics

More than 70% of human tumors have a low rate of maternally expressed gene 3 (MEG3), a gene which functions as a tumor suppressor in many cancers. Still, little is known about MEG3.

Dr. Tang and his team will study MEG3, particularly in prostate cancer. It is believed that MEG3 does its work by maintaining genome and chromosome integrity through regulating checkpoints and DNA damage repair.

They intend to learn more about the underlying tumor-suppressive abilities of MEG3 and discover how and why it is lost in prostate cancer. The ultimate goal is to fill a critical knowledge gap in the functions, mechanisms and regulation of MEG3 in prostate cancer, which will potentially shed light on the tumor suppressive powers in other cancers, as well.



### Target the nutritional interplay between cancer cells and bone cells to limit prostate cancer bone metastases

Led by Hai Wang, PhD, Department of Molecular and Cellular Biology

Most cancer patients die not because of complications from their original tumor but because of the problems arise when the tumor has metastasized to other sites. Bone is the predominant site for metastases of prostate cancer, causing skeletal complications and marked decreases in quality of life and survival rates.

Dr. Wang and his team hypothesize that prostate cancer cells that spread to bone change the way nutrients are converted into energy there. They will investigate exchanges of nutrients between cancer cells and bone-forming cells called osteoblasts, to better understand the metabolic processes and molecular signaling when prostate cancer metastasizes to the bones.

Through this work, these researchers hope to impede the progression of the metastatic disease process and expedite future clinical trials. This could potentially lead to the development of new treatments to alleviate skeletal complications for these patients and improve survival rates.

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## What we're seeing

This new tool has made a noticeable impact on the staff members who are caring for our cancer patients. It is not yet something that is generally covered by insurance so owning one personally can be pricey up front for some folks. Providing this care for our staff creates space for them to recharge and practice safe self care.

**“If we’re feeling resilient, if we’re feeling better about our work environment, then we can be more compassionate with our patients,” Dr. Case said.**

Doctors have also given more patients an opportunity to try CES if they’re anxious about their treatment. Whether nervous about radiation, anxiety concerning chemotherapy, CES has been a tool to help ease these patients and help them finding their footing to keep moving forward with their treatment.

After one patient tried the device to get through her chemotherapy, she was so moved by its impact she reached out to provide funding so 35 more of these CES devices could be purchased for patient use.

## It takes all of us to care

The steadfast generosity of Roswell Park donors moves programs like this one forward. When we continue to care for the humanity in one another, the wellness of our neighbors who are in this fight against cancer, everyone wins.



**“As a caregiver, there is a great deal of mental strain we put on ourselves to be sure we are giving our best for our patients. The pandemic has added a whole new level to that strain. I was skeptical about [the device] at first, but I was sold almost immediately with my first experience. This device gives my body the reset it needs so I can continue to give my best to those that need it most.”**

**– Lem Mogavero, RN BSN CMSRN, Clinical Nurse Manager, 6 East**

**“I’ve tried to use the CES device three to five times weekly and have had some noticeable results on the days I use it. I feel more energetic but focused — as opposed to feeling wired but anxious as I usually would.**

**My best sleep is on the nights I use the CES, but I’ve found that my sleep has improved overall when I use the device regularly. I’m grateful this tool has been provided for us!”**

**– Corrie Roeser RN BSN OCN,  
Clinical Nurse Manager  
Anesthesia Pre-Operative Clinic**

