Making a Difference

The 2nd annual “Mad-City Pond Hockey Championships” was held the weekend of Jan. 25-26 at Vilas Park Pond in Madison. The event brought together more than 100 people participating in men’s, women’s and co-ed divisions in the tournament. Proceeds of $5,000 from a raffle, silent auction and concessions went to benefit UMCRC’s pancreatic cancer research fund. The event’s co-organizers, Brad Mastenbrook and Rich Kenny, already have begun planning for the 2016 event.

Grounds for Celebration: A Unique Coffee Fundraiser That is Percolating

Peggy Zimber, breast cancer survivor, has “grounds for celebration” and she hopes to encourage others to brew up needed support for the UW Carbone Cancer Center.

“I was diagnosed with breast cancer in 2005. In less than a week, I went from hearing I had a perfect mammogram, to my physician wondering if she fell into a spell, to waking up from surgery and seeing my diagnosis,” said Peggy. “My surgery was at another facility so I did not receive any cancer information until the day I began chemotherapy at the UWCCC. Airing with many questions and concerns, I was reassured by the oncology team who listened, answered our questions, and with concern for each family member, helped us adjust to a new ‘normal’ with both quality care and concern for me as an individual.”

Peggy and her husband, John, thought 10 years since diagnosis was “Grounds for Celebration,” which made them think of coffee, which led to how they wanted to celebrate.

According to Peggy, “Our goal is to purchase up to 1000 coffee pillows from Door County Coffee for the UWCCC. If each person who receives a coffee pillow would host coffee for 10 friends who each donated $10, then $100,000 could be raised. If 100 cancer survivors could engage 10 people who need to work as a team and we are treating the patient,’’ says Bassetti, assistant professor of human oncology. Physicians at UW Carbone Cancer Center effective April 1, 2015.

In fact, the physicians are amazed by what they have seen.

“For the first time we are able to see a patient’s tumors and internal organs in real time, as we are treating the patient,” says Bassetti, assistant professor of human oncology. Physicians at UW Carbone Cancer Center effective April 1, 2015.

“As Dennis, and people like him who are living longer and better with their cancer, we need to work as a team and apply tools like these where they are best used,” Lubner says. “Dennis has had multiple invasive treatments to his liver. A precise, non-invasive treatment is exactly what we needed for Dennis, and I was thrilled that Dr. Bassetti and his colleagues brought it up as an option.”

The real-time technology gives clinicians the ability to clearly see the target tumor and monitor where the radiation dose is being delivered. During treatment, the system scans the patient’s anatomy and adjusts for motion in real time, delivering the radiation dose only when the tumor is located exactly where it should be. If the tumor moves beyond the pre-defined area, the beam automatically pauses, resuming when the target moves back into the area.

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“They make it world, says Lubner. “For Dennis and people like him, we are just beginning to imagine the questions we can ask.”

“Some patients are not able to receive these state- and nationwide clinical research networks. But Bassetti says the physicians are excited by what they have seen.

“For the first time we are able to see a patient’s tumors and internal organs in real time, as we are treating the patient,” says Bassetti, assistant professor of human oncology. Physicians at UW Carbone Cancer Center effective April 1, 2015.

“We are pulling up the blinds on some things we have never seen before,” says Hanari. “We’re seeing dynamic motion in anatomic structures that we did not previously envision to have motion.”

“The technology has tremendous potential,” he says. “As researchers, we’re only beginning to imagine the questions we can ask.”

It’s still early days for the ViewRay system, which had its third system recently go online at UW Carbone. But Bassetti says the UW Carbone is developing clinical protocols to track data from patients like Dennis to see how their outcomes compare with conventional non-MRI based treatments.


**UW Second in Nation to Introduce New Radiation Oncology Technology**

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Basic Cancer Research at UW-Madison: The Next 75 Years

It was easy to speculate that had the McArdle Laboratory’s Howard Temner worked today, his lab would be struggling. After all, the Nobel Prize-winning work focused on a coronavirus that caused cancer not in people, but in chickens.

This year UW-Madison’s McArdle Laboratory for Cancer Research celebrates its 75th anniversary, reflecting on a rich history as one of the first and most influential cancer research institutes in the world. Breakthroughs from McArdle include Elizabeth and Jim Miller’s finding that many chemicals cause cancer through mutating genes; Charles Heidelberger’s discovery of SV40, a wildly successful and still heavily used chemotherapeutic drug; and Howard Temner’s 1975 discovery of reverse transcriptase, a finding that led to a profound sea change in scientific dogma and, ultimately, the development of potent anti-HIV drugs that have saved millions of lives across the globe.

But more importantly, we look forward to the next 75 years of basic research progress that will yield the next generation of cancer cures and therapeutic strategies. Moreover, the recent relocation of McArdle from central campus to the Wisconsin Institutes for Medical Research provides additional impetus toward moving basic advances more quickly from the bench to the bedside.

And it is an exciting time. Scientists now have the tools needed to generate a comprehensive understanding of the root causes of cancer, integrating studies of systems biology, genetics, metabolism, and protein chemistry with increasingly relevant tissue and small animal models. We can now screen millions of compounds for anticancer activity, and determine modes of action with increasing speed and precision. Non-invasive imaging methods are under development to directly monitor tumor progression in people and at high resolution. We are learning the biomarkers and gene signatures that define specific cancers, feeling a revolution in personalized, low toxicity anticancer therapeutics. And we are learning to manipulate the immune system in ways that augment the body’s natural antitumor defenses. One day we may find that the cure is, in fact, within ourselves.

But despite these advances, it’s also a time of great anxiety in science. We face crucial challenges, in particular the severe constriction to federal funding for basic cancer research. Even the most successful labs are cutting projects, in particular “high risk – high reward” endeavors; that is where we see the most promising, game-changing anticancer strategies. In lock step, we lose Wisconsin’s best and brightest young scientists for want of opportunity.

In celebrating McArdle’s 75 years, we emphasize the need to remember that “basic” means “discovery,” and that discovery requires that we support exploration of the unknown and sometimes unconventional, e.g., Temner’s chicken viruses. It is my hope that we can reinvigorate investment in basic science funding through the National Institutes of Health, the National Science Foundation, and philanthropic endeavors, and that help pave the way for 75 more years of breathtaking cancer research progress in Wisconsin.

Nathan Derix, PhD, is an assistant professor in the molecular virology and oncology at the McArdle Laboratory for Cancer Research, the basic research arm of the UW Carbone Cancer Center. He is a recent recipient of a Shaw Science Award. The annual award supports emerging investigators with innovative ideas in biochemistry, biologic sciences and cancer research. Such awards are critical for young researchers wanting to establish their careers and develop early ideals that will allow them to compete for larger nationally-funded grants.

“Progress in treating ovarian cancer over the last 30 years has been flat.”

However, ovarian cancer cells also tend to have increased or decreased copies of genes—rather than mutations in the genes themselves. “So, the proteins are all potentially there and may function in the normal way, but their relative levels are skewed,” says Kreeger. “Ovarian cancer patients have a common mutation and then a protein mess.”

As a result of this pattern, Kreeger’s hypothesis is that the genetic mutation is less of a factor in the cancer’s spread than in protein expression, which is the way in which proteins are made, regulated and moved in cells. “What the TP53 mutation sets up is the genomic instability where we see changes in the levels of proteins,” she says. “I’m trying to figure out what we can target as a result of this variation.”

Understanding How Ovarian Cancer Spreads

With approximately 22,000 diagnoses annually in the United States, ovarian cancer isn’t among the most commonly occurring cancers. Yet, the mortality rate for women who have ovarian cancer hovers above 60 percent.

For Pamela Kreeger, a University of Wisconsin-Madison assistant professor of biomedical engineering, that number is needlessly high. Kreeger is among a group of exceptionally forward-thinking researchers who received a 2014 New Innovator Award from the National Institutes of Health. And with funding of nearly $2.5 million, she is studying what factors cause ovarian cancer cells to progress from their origin in a woman’s fallopian tube through the ovaries and on to metastatic sites—where they become resistant to chemotherapy drugs.

“When we look at most cancers, we focus on gene mutations and how they impede a cell’s ability to do what’s that’s the drug target,” she says. “Cancer is somewhat clinical, so early mutations tend to replicate throughout the tumor, but some cancers don’t show this clear pattern of mutated genes for targeting.”

That’s the case with ovarian cancer, according to a 2011 study of the disease by The Cancer Genome Atlas (TCGA) Research Network. Nearly all ovarian cancers have a mutation in the gene TP53—a gene that encodes a tumor suppressor protein that normally prevents cancer development, and is very difficult to target therapeutically.

Kreeger hopes researchers can use her tools and approach in their efforts to understand progression in other cancer types, because many tumors have both genetic mutations and quantitative protein variations in their cell networks. As an engineer, she brings a unique skillset to addressing a multifaceted biological challenge. And she says that UW-Madison’s culture of transdisciplinary collaboration is key to her research. “Wisconsin is the kind of environment in which people can take on this high-risk, high-reward research because of the intellectual openness here,” says Kreeger. “People talk to each other, and they naturally want to collaborate. They want to see if there’s a way to do it better, working together. It’s just a part of our culture and what makes Wisconsin a fantastic place to do research.”

Have You Visited Our New Cancer Nutrition Website?

Make sure to visit and bookmark our new cancer nutrition website, uwarf.org/cancernutrition.

Our website offers the following:

• New, delicious, healthy recipes every month
• An opportunity to ask one of our dietitians a question
• Unique modules to learn more about nutrition and cancer
• A schedule of upcoming events
• Links to national resources

Please visit uwarf.org/cancernutrition for more details on all events.
Advances

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