



A valued research partner during COVID-19

The pandemic heightened the awareness and importance of clinical trials. Research to develop effective treatments and vaccines is critical and must be done safely, efficiently and with great scientific rigor. With our expertise, we quickly became a valued partner across HealthPartners. Our staff performed Serious Adverse Event (SAE) reporting for the Remdesivir emergency use authorization trial. Employees were also deployed to partner with the Critical Care Research Center to consent, enroll and manage patients onto therapeutic intent trials to treat COVID-19, as well as a COVID-19 vaccine trial. Bringing many research partners together to collaborate on a global public health crisis generated knowledge and offered options to patients.

Staying connected during a pandemic

COVID-19 affected our research program in ways we couldn't have imagined. Along with challenges, however, came opportunities. We identified several strategies to ensure critical studies continued. Remote consenting was significant as it allowed us to continue enrolling patients on trials even as face-to-face visits were suspended. And mailing of investigational drugs to participants eliminated the need for clinic visits — reducing risks. We also connected with patients remotely. Using phone or video, we were able to conduct study visits in a safe and effective way. We have learned that flexibility and adaptability are key, as is close partnership with our patients and providers. Moving forward, we will prepare for a restart of full hospital and clinic patient loads while we build on the lessons learned from the pandemic.

Cancer Research Center

Highlights of 2020

Despite the challenges of the COVID-19 pandemic, the Cancer Research Center continued to grow and thrive in 2020. We also created a strategic plan that will help ensure ongoing growth and success for years to come.

Our early-phase therapeutics program expanded trial opportunities and enrolled more patients than ever before, even when many other cancer research programs paused enrollment. We are excited to be leading a new trial in melanoma that will help patients across the country.

Our research expertise with medical cannabis helped create national and international partnerships this past year. We launched a new cannabis education and research clinic to help patients safely and effectively incorporate cannabis into their treatment plans.

Rising to the challenge

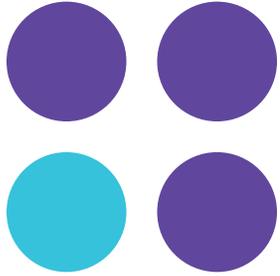
These accomplishments came during a year when our research staff went above and beyond to assist with important COVID-19 related research across HealthPartners. We are proud of our staff and grateful for the difference they made for patients battling both cancer and COVID-19.



Dylan Zylla, MD, MS
Medical Director



Michele Lacy, RN, BSN, OCN
Administrative Director



National leadership in cannabis research

How does cannabis impact patients with cancer? Can it ease symptoms or impact tumors? How are patients using it? We are studying these questions and sharing our findings with the scientific community and patients. Through our publications and studies, we are becoming a national leader in this field.

We know from prior studies that cannabis improves pain, nausea and anxiety – symptoms patients with cancer often experience. In addition, research from lab experiments and animal models suggest cannabis may have anti-tumor effects. In collaboration with HealthPartners Institute's Center for Evaluation and Survey Research, our team is conducting a national survey called "Cannabis as an Anti-Tumor Agent (CATA)". It is designed to help us better understand how and why patients with cancer use cannabis. What can patients who believe cannabis has helped to control their cancer teach us? To date, more than 1,000 patients from around the world have completed the survey.

Our team received a \$125,000 grant from the National Cancer Institute to understand how patients with cancer across Minnesota use cannabis. We partnered with colleagues from the University of Minnesota and the Minnesota Department of Health. Final results are expected in late 2021.

As our cannabis research portfolio grows, so does the need for additional education and patient support. Dylan Zylla, MD, is piloting a Cannabis in Cancer Research and Education (CanCaRE) clinic to guide patients interested in incorporating cannabis into their cancer treatment plan. Education on safe and effective use of cannabis is key to maximizing quality of life. Patients will also be offered research opportunities when available.

Controlling growth of ovarian cancer cells with KY-Hemp extracts

Arkadiusz Dudek, MD, and Kaoru Terai, PhD, from our Early Phase Therapeutics Program, set out to show that KY-Hemp extract has anti-cancer effects in ovarian cancer. This study was based on laboratory research conducted by investigators at Sullivan University, who found that KY-Hemp extract slowed the growth of cancer. Cannabidiol, or CBD, is a main component of KY-Hemp and has already been shown to have anti-cancer effects in the laboratory setting in both acute lymphoblastic leukemia (ALL) and glioma (a type of brain cancer). In their study, Drs. Dudek and Terai treated two different types of human ovarian cancer cell lines with three different extracts of KY-Hemp. Compared to two common ovarian cancer chemotherapy drugs (carboplatin and paclitaxel), they found that all three KY-Hemp extracts at high doses controlled the growth of ovarian cancer cells. There are further plans to study the effect of lower doses of KY-Hemp on the immune system. These are exciting steps in studying alternative ovarian cancer treatments, especially since CBD may have fewer side effects than chemotherapy treatments.

This study was made possible by the generous support of Robert and Diana Carter.

Opioids and cancer

Patients with advanced cancer are often treated with opioids to manage pain. Our research aims to understand the impact of opioid use on survival and quality of life. Studies show signaling through the mu-opioid receptor (MOP-R) may lead to increased growth and spread of cancer. A grant from Regions Hospital supported internal collaboration with our pathology team to develop and validate a novel MOP-R immunohistochemical (IHC) assay to easily assess the expression of MOP-R on cancer cells. Ongoing efforts will enhance our assay with plans to analyze additional tumor types.

Bringing treatment for rare form of melanoma to the Midwest

Currently, there are only 19 clinical trials for uveal melanoma available in the United States, with almost all of them at health care systems on the coasts. Uveal melanoma is a type of melanoma found in the iris, ciliary body, or choroid of the eye (collectively referred to as the uvea). It is a relatively rare disease that is always fatal when it becomes metastatic (spreads to other parts of the body).

We recently launched a new study for uveal melanoma at Regions Hospital and Fraumshuh Cancer Center. Using a combination of two experimental drugs, PAC-1 and entrectinib, we are looking to find the most effective doses with the least amount of side effects in patients who have metastatic uveal melanoma.

Our study will be one of only three available in the Midwest. Patients from the Twin Cities and surrounding areas and states now have more opportunity to receive this unique potential treatment close to home. The demand is there. Even though the study has been open only for a short time, physicians from the Mayo Clinic and the University of Minnesota are already referring patients.

Generous giving from individuals and community partners enables us to conduct research that improves health and well-being in our community and beyond. We recognize the crucial role of giving in furthering research and discovery.

We are grateful to the Carter Family Foundation, the Engdahl Family Foundation, and the many patients, families and community organizations who make this work possible.

BY THE NUMBERS

71

The Cancer Research Center currently has 71 active studies.

15

Our researchers published 15 scientific articles in 2020.

3

We collaborated with the Critical Care Research Center on three groundbreaking COVID-19 research studies, resulting in hundreds of patients receiving potentially life-saving COVID care.

186

More than 186 patients are participating in cancer research studies.

5

We collaborated with five internationally recognized research institutions.

25

25 HealthPartners doctors participated in cancer research studies and clinical trials.



Metro-Minnesota Community Oncology Research Consortium continues community collaboration

Thanks to a \$19.7 million six-year grant from the National Cancer Institute (NCI), patients with cancer across Minnesota's metro area and surrounding communities have access to clinical trials and study opportunities. These studies span new and emerging treatments, cancer prevention, symptom management and care delivery. The grant will be used over six years to fund the Metro-Minnesota Community Oncology Research Consortium (MMCORC), which is administered by HealthPartners Institute.

The consortium consists of 24 hospitals and clinics that identify and enroll patients in NCI-sponsored studies. This broad network of clinical sites allows us to obtain high-quality, scientifically validated information for patients and their providers. Because we operate in local hospitals and clinics such as Park Nicollet Frauenstuh Cancer Center, Regions Hospital Cancer Center as well with other HealthPartners entities including Lakeview Hospital and Westfields Hospital, patients have access to cutting edge treatment and prevention trials in their own communities. Visit mmcorc.org to learn more.

Leadership team

Michele Lacy, RN, BSN, OCN
Center Administrative Director

Dylan Zylla, MD, MS
Center Medical Director

Daniel Anderson, MD, MPH
MMCORC Principal Investigator

Arkadiusz Dudek, MD, PhD
Early Phase Therapeutics Program (EPTP)
Medical Director

Rachel Lerner, MD, MS
Core Investigator

Joanna Hill, MBA, CCRP
Senior Oncology Research Manager

Justin Eklund, MS, CCRP
Oncology Research Manager



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Visit healthpartnersinstitute.org to learn more.

Publications

Each year, our authors contribute to science and improvements in care by disseminating their research findings. In 2020, our authors published 15 peer-reviewed papers, books and book chapters. Here's a selection of that work.

Dudek AZ, Liu LC, Fischer JH, Wiley EL, Sachdev JC, Bleeker J, Hurley RW, Tonetti DA, Thatcher GRJ, Venuti RP, O'Regan RM. Phase 1 study of TTC-352 in patients with metastatic breast cancer progressing on endocrine and CDK4/6 inhibitor therapy. *Breast Cancer Res Treat.* 2020 Oct;183(3):617-27.

Dudek AZ, Liu LC, Gupta S, Logan TF, Singer EA, Joshi M, Zakharia YN, Lang JM, Schwarz JK, Al-Janadi A, Alva AS. Phase Ib/II clinical trial of pembrolizumab with bevacizumab for metastatic renal cell carcinoma: BTCRC-GU14-003. *J Clin Oncol.* 2020 Apr 10;38(11):1138-45. PMC7145584.

Dudek AZ, Wang X, Gu L, Duong S, Stinchcombe TE, Kratzke R, Borghaei H, Vokes EE, Kindler HL. Randomized study of maintenance pemetrexed versus observation for treatment of malignant pleural mesothelioma: CALGB 30901. *Clin Lung Cancer.* 2020 Nov;21(6):553-61. PMC7606734.

Hurley PJ, Bose N, Jha G, Gargano M, Ottoson N, Gorden K, Rathmann B, Harrison B, Qiu X, Dudek AZ. Immunoglobulin restores immune responses to BTH1677 in patients with low levels of antibodies to beta-glucan. *Anticancer Res.* 2020 Mar;40(3):1467-73.

Steele GL, Dudek AZ, Gilmore GE, Richter SA, Olson DA, Eklund JP, Zylla DM. Impact of pain, opioids, and the mu-opioid receptor on progression and survival in patients with newly diagnosed stage IV pancreatic cancer. *Am J Clin Oncol.* 2020 Aug;43(8):591-7.

Temel JS, Sloan J, Zemla T, Greer JA, Jackson VA, El-Jawahri A, Kamdar M, Kamal A, Blinderman CD, Strand J, Zylla DM, Daugherty C, Furqan M, Obel J, Razaq M, Roeland EJ, Loprinzi C. Multisite, randomized trial of early integrated palliative and oncology care in patients with advanced lung and gastrointestinal cancer: Alliance A221303. *J Palliat Med.* 2020 Jul;23(7):922-9. PMC7307668.

Zylla DM, Gilmore GE, Steele GL, Eklund JP, Wood CM, Stover AM, Shapiro AC. Collection of electronic patient-reported symptoms in patients with advanced cancer using Epic MyChart surveys. *Support Care Cancer.* 2020 Jul;28(7):3153-63.