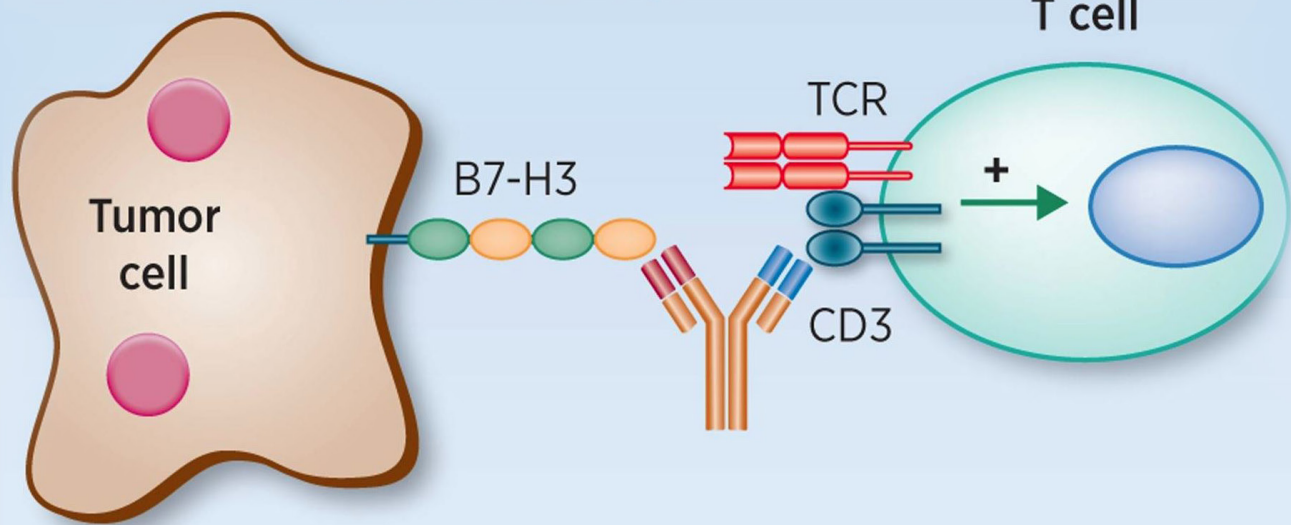


B7-H3/CD3 bispecific antibody



Picarda, Ohaegbulam, and Zang. Clin Cancer Res 2016; 22:3425

Immune Therapies and Bi-Specific Antibodies

Checkpoint inhibitor antibodies have been the major development in immune therapy for cancer in recent years. These drugs work by counteracting a signal that suppresses the immune reaction to a tumor. There are now five drugs in this class that are approved by the FDA and in use. *Several studies at Mary Crowley during the past 10 years involved the early use of these drugs.* The checkpoint inhibitor antibodies produce major tumor regression in some cases. A very active area of research now is the question of why are some tumors resistant to immune therapy.

Lymphocytes, the cells that make up the immune system, must be present in the tumor for checkpoint immunotherapy drugs to take effect. It has been noted that in some tumors there are few, if any, lymphocytes. There is a need to develop ways to get lymphocytes into a tumor.

Three new studies at Mary Crowley are testing the concept of bi-specific antibodies as a way of bringing lymphocytes into the tumor and activating them. Antibodies are the specialized proteins made by the immune system for defense. Each antibody molecule has two binding sites that are identical and have the same specificity. These new studies use synthetic antibodies engineered with two different binding sites in each molecule.

These synthetic antibodies use one binding site to attach to a lymphocyte and the other binding site to attach to a tumor cell. The specific attachment to the lymphocyte also is an activation signal. The result should be that lymphocytes are activated and physically attached to tumor cells, thus starting an immune attack on the tumor.

There are, however, risks in this treatment. As with other immune therapies, there is the possibility that the immune system will be too active in response to this treatment. Such a response could cause fever and chills, drop in blood pressure, shortness of breath, and other signs of immune reaction within the first few hours after treatment. There are treatments available to suppress these reactions if they occur. There is also a drug that was developed for rheumatoid arthritis that can be used to block these responses of the immune system if they are becoming too strong.

We hope that these new studies will extend the benefits of immune therapy to more patients.

James Strauss, M.D. (2017)

SPECIAL ANNOUNCEMENTS:

Mary Crowley Cancer Research is pleased to announce that **James Strauss M.D.** and **Minal Barve, M.D.**, have assumed new positions as Associate Clinical Research Director and Clinic Medical Director, respectively. Beloved by patients and staff alike, Dr. Strauss and Dr. Barve bring a combined 16 years of experience as physician investigators at Mary Crowley.

Ashley Ross, M.D., Physician Investigator

Dr. Ashley E. Ross is a clinician-scientist who specializes in urology and urological oncology. Dr. Ross received his doctorate of philosophy in biochemistry and molecular biology and his medical degree from the Johns Hopkins University School of Medicine in Bethesda, MD. He completed a general surgery internship and urology residency at the Johns Hopkins Medical Institution, where he then remained on faculty and rose to the rank of associate professor of Urology and Oncology. There he additionally led the Urology Prostate Cancer Program and was co-director of the Prostate Cancer Multi-Disciplinary Clinic.

Dr. Ross has led research efforts in basic science, translational and clinical arenas and published over 100 original articles, editorials and book chapters. His work has interrogated the molecular mechanisms that drive cancers and explored the use of small molecule agents and immunotherapies as novel therapeutics.

Currently, Dr. Ross practices as a physician with Texas Oncology Practice Associates, Texas Urology Specialists and Mary Crowley Cancer Research.

Joel Lurie, Nurse Practitioner, will work closely with our Physician Assistant Leah Plato. Joel received his Master of Science in Nursing from Baylor University Herrington School of Nursing in Dallas, TX; his Associates Degree in Nursing from the Community College of Allegheny County in Pittsburgh, PA; and his Bachelor of Science from the University of Pittsburgh in Pittsburgh, PA. Since 2008, he has been a Certified Chemotherapy Nurse and Certified Oncology Nurse. Prior to serving at Mary Crowley Cancer Research, Joel was a Registered Nurse at Medical City Dallas in Dallas, TX. His specialties include chemotherapy for solid tumor and hematological cancers; monitoring and treating for chemotherapy and biotherapy side effects/adverse reactions and oncology pain management.



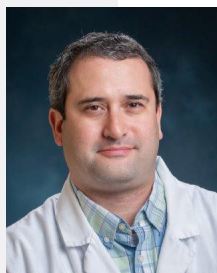
James Strauss, M.D.



Minal Barve, M.D.



Ashley Ross, M.D.



Joel G. Lurie, APRN, FNP-C

FDA Approves Test to Detect Genetic Mutations

On November 30, 2017, the U.S. Food and Drug Administration approved FoundationOne's CDx (F1CDx) test to detect mutations in 324 genes and two genomic signatures. "This approval will help doctors tailor cancer treatments to improve patient outcomes," said FDA Commissioner Scott Gottlieb, M.D. The F1CDx diagnostic test can identify which patients with any of five tumor types may benefit from 15 different FDA-approved targeted treatment options and can also determine eligibility for enrollment on a clinical trial. The FDA determined that the F1CDx test's ability to detect select mutation types (substitutions and short insertions and deletions) representative of the entire 324 gene panel is accurate approximately 94.6% of the time.

Recognizing each patient's cancer was different from another, Mary Crowley initiated a *personalized* or tailored approach for each patient participating in our cancer research program approximately 20 years ago. This led to our utilization of FoundationOne's molecular testing over the past four years.

The molecular data contained in these reports has become the basis for our alignment of patients to the most effective clinical trial. Mary Crowley CEO Dr. Merrick Reese said, "We recommend that cancer patients receive this test to determine the mutation(s) driving their particular cancer."

For more information about Mary Crowley's Molecular Registry Program and to read the FDA's press release, please visit www.marycrowley.org.



We are Growing - Expansion of Patient Center at Medical City Dallas

Mary Crowley will be expanding our center in early 2018 to accommodate the increased volume of clinical trials. With advancements toward more targeted investigational agents that correspond to very specific mutations or cancer bio-markers, it typically means that a smaller number of cancer patients are a match for a particular trial. Therefore, to meet the need of more patients, we are now offering a greater number of targeted clinical trials in our research program that require more clinical personnel, support staff, and corresponding equipment and supplies.

Mary Crowley also has the ability to contact a patient's primary oncologist when one of these highly specific targeted clinical trials is about to open, provided the patient has previously consented for housing of their mutation report in our Molecular Registry. As more patients are identified as candidates for a trial, the need for more space increases. Furthermore, Mary Crowley has become an attractive site for pharmaceutical companies having more complex agents under investigation, including more intratumoral and viral studies.



Expected occupancy of the new expanded space is March 2018.

Colorectal Cancer Alliance Undy Run/Walk 2017

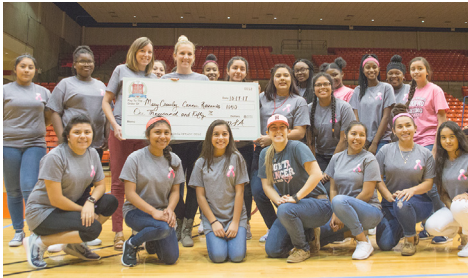
Team Mary Crowley Crawlers participated in the Undy 5k Run/Walk with the Colorectal Cancer Alliance (CCA) on Saturday, November 11. Over 45 Mary Crowley employees and their friends and family showed up to support colorectal cancer awareness. Mary Crowley Physician Assistant Leah Plato spoke about the importance of early detection and continued research. This is the tenth anniversary of the DFW Undy Run. Mary Crowley is proud to be the beneficiary and partner of the CCA.



Team Mary Crowley Crawlers

YWLA of Ft. Worth, TX "Pink Out"

Thank you, Young Women's Leadership Academy (YWLA)! Fort Worth's YWLA "Pink Out" raised \$1050 for breast cancer research at Mary Crowley Cancer Research. Students presented the check to Mary Crowley staff on Tuesday, October 17, at the YWLA volleyball game. Over 100 "Pink Out" t-shirts were sold. Great job YWLA!



YWLA Student Council Members presenting check to Mary Crowley Staff

Speedway Children's Charities Gives \$44,459.80 to Mary Crowley

Mary Crowley Cancer Research received a check for \$44,459.80 from the Speedway Children's Charities of Texas (SCC-TX) on November 27 at its annual Christmas tree lighting celebration at Texas Motor Speedway. The funds raised from the SCC-TX's Silver Dollar at the Ranch event will be used to enroll pediatric patients onto Ewing sarcoma trials at Mary Crowley. This marks the fourth year Mary Crowley has been the beneficiary of Silver Dollar at the Ranch and the fifth year that it has received money from the SCC-TX.



Speedway Children's Charities presenting check to Mary Crowley Staff

MARY CROWLEY CANCER RESEARCH *Gives Back!*

On Halloween, Mary Crowley staff members volunteered at the Medical City Children's Hospital fall carnival. The team dressed to the theme of Peter Pan and children played Captain Hook Ring Toss to win prizes before having their photo taken in the jaws of Tick-Tock the Crocodile.



Data Team Members with Children at Medical City Children's Hospital

Communities Foundation of Texas gifts \$20,000 to Mary Crowley

Mary Crowley Cancer Research had the honor of receiving \$20,000 from Communities Foundation of Texas to fund our Patient Molecular Consultation Program. This program allows Mary Crowley to better align patients with a clinical trial that best correlates with their personal cancer molecular profile. Each year, Communities Foundation reviews and evaluates hundreds of requests from local nonprofits to create its annual Giving Guide, which gives donors access to immediate opportunities to make a positive difference in the community. Communities Foundation then selects certain nonprofits in its Giving Guide to receive discretionary funding.



Upcoming EVENTS

Find out more at marycrowley.org

JAN
20

Charity Ride - CycleBar

Join Mary Crowley for an exciting and energetic indoor charity ride at the CycleBar on Preston Road in Dallas, TX. All proceeds for the 12pm ride will go to Mary Crowley Cancer Research.

FEB
18

Wheel to Survive - Be the Difference

Be The Difference Foundation presents Wheel to Survive - an indoor cycling fundraiser that promotes awareness of ovarian cancer, supports programs for women battling the disease, and provides research funds for a cure.

Administrative Offices
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Suite 1500
Dallas, TX 75251

Patient Research Center at Medical City
7777 Forest Lane
Building C | Suite 707
Dallas, TX 75230

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www.marycrowley.org



Patient Story: Hung Nguyen

Hung Nguyen is a proud North Texan. He cheers for both the Dallas Cowboys and the Dallas Mavericks, and he enjoys watching the games with his daughters. Born in Vietnam, Mr. Nguyen served as a soldier in the military, where he was the victim of a rocket blast that broke both legs. The difficult recovery from the explosion taught him perseverance that he would later draw upon for an even tougher battle.

In 1989, at age 37, Mr. Nguyen moved to the United States with his family and settled in North Texas. Ten years later, he began experiencing pain in his right shoulder but shrugged it off as a result of his occupation. Finally, when the pain became unbearable, he went to the doctor.

To his surprise, he was diagnosed with Stage IV thymus cancer that had spread to his lungs and heart. The thymus is a small organ located just behind the breast bone in the front part of the chest and is an important part of the body's immune system. Mr. Nguyen underwent surgery to remove a tumor the size of a fist, followed by chemotherapy and radiation. Unfortunately, the tumor grew back within one year. Radiation was no longer an

option, and chemotherapy failed to stop the tumor's rapid growth. That's when Mr. Nguyen's oncologist recommended Mary Crowley Cancer Research.

With few other options, Mr. Nguyen and his family felt that a clinical trial was his best HOPE. In September 2013, he enrolled on a targeted small molecule trial at Mary Crowley. Instead of feeling overwhelmed with exhaustion and nausea, he felt well enough to drive himself to appointments. Mr. Nguyen's cancer responded well to the therapy, and his tumor began to shrink. But then he faced a new challenge: the pharmaceutical company decided to close his clinical trial, which meant he would no longer receive life-saving doses of the trial medication. Mary Crowley staff persuaded the company to allow Mr. Nguyen to continue receiving the therapy, while covering other costs associated with his care. Thanks to those efforts, he never missed a dose.

In November 2016, Mr. Nguyen completed just over three years on the trial. Eight months later, he was delighted to learn that scans showed NO VISIBLE SIGN OF CANCER. Mr. Nguyen says Mary Crowley physician investigators and staff gave him great encouragement. "I like coming to Mary Crowley. Everyone here is very nice and welcoming." "Hy vong song o day," he says in Vietnamese. "HOPE lives here."

