

Select Cancer Research Achievements 2022 SNAPSHOT

Accelerating research. Conquering cancer.

Collaboration is a bedrock principle of NFCR. It is how we can accelerate research advancements to realize an end to this terrible disease - through better prevention, diagnosis, and treatment. A future without cancer is possible.

Progress in Triple-Negative Breast Cancer

Lisa Coussens, M.D. (hc), Ph.D. and Dr. Elana Fertig, Ph.D., from Oregon Health & Science University and Johns Hopkins University, respectively, have teamed up to tackle the persistent challenge of Triple-Negative Breast Cancer (the most difficult-to-treat breast cancer). They are hoping to predict patients' responses to four different therapies and to understand ahead of time if patients will be resistant to those therapies. This will allow for a more guided and precise delivery of immunotherapy.



Combating Brain Metastasis

Dr. Kornelia Polyak and Dr. Valerie Weaver (Dana Farber Cancer Institute, and University of California, San Francisco, respectively) are pioneers in researching the tumor microenvironment. Addressing brain metastasis, they explore how stress factors, such as low oxygen, affect metastatic cancer cells and weaken the ability of how those cells respond to treatment. This will impact the development of combination cancer therapies to more effectively kill cancer cells.



Oral Cancer & Immune Resistance

It has long been a mystery why many cancers cause the loss of specific chromosomes. Dr. Teresa Davoli (New York University School of Medicine) and J. Silvio Gutkind, Ph.D. (University of California, San Diego) specialize in cancer genetics. Their collaboration will show why patients with oral cancer and who have a loss of chromosome 9p are more resistant to certain immunotherapies. Their research will identify more effective treatment options and prevention strategies.



NFCR's Global Summit & Award Ceremonies for Cancer Research & Entrepreneurship



(from l-r) Dr. Doug Lowy (Principal Deputy Director, National Cancer Institute), Dr. Rakesh Jain (2022 Awardee), Dr. Sujuan Ba, (NFCR CEO)

Each year, NFCR's Albert Szent-Györgyi Prize for Progress in Cancer Research honors scientists whose pioneering research has had a lasting impact on cancer prevention, diagnosis, or treatment, holding the promise of improving or saving lives of cancer patients. This fall, we awarded Rakesh K. Jain, Ph.D., Professor of Tumor Biology at Harvard Medical School, and Director of the Edwin L. Steele Laboratory for Tumor Biology.

Dr. Jain has pioneered research and made breakthrough discoveries on the barriers of the tumor microenvironment. For example, he discovered that an imbalance of vessel growth in tumors results in leaky blood vessels that causes edema, lack of oxygen, and immunosuppression. By overcoming these barriers, his work has led to improved drug delivery, treatment efficacy, and patient survival.

The all-day Summit, held in Washington, D.C. at the National Press Club on October 22nd, brought together the nation and world's leading cancer researchers to discuss their research and their vision for the continued development of the most promising new therapies.

By converging in the same space, researchers learn from each other and form collaborations - the surest way to foster progress in the fight against cancer. NFCR is leading the way in bridging the gap between laboratory discoveries and advancing them to reach patients in clinical trials.

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Your year-end gift is critical for researchers in the lab fighting for cures, as well as for the millions of patients who seek hope for their recovery.

What NFCR is Doing to Advance New Brain Cancer Treatments



The fatal brain cancer, glioblastoma (known as GBM) takes the lives of most patients after 8-15 months after their diagnosis. Sadly, there have been no new effective treatments in several decades to change this dismal outcome.

To address this unmet need, NFCR funded and supported the paradigm-shifting clinical trial system, GBM AGILE, for GBM patients that efficiently tests new treatments, advancing

effective ones faster and rejecting ineffective ones quickly.

Now that GBM AGILE is launched and operational with multiple arms of drugs being tested simultaneously, NFCR is now focusing on supporting more candidate treatments to get through pre-clinical research and Phase I clinical trials so that they can enter GBM AGILE, and ultimately, benefit GBM patients.

Pre-clinical Research Includes:

- Demonstrate in cancer models that the drug has the intended anti-cancer effect
- Monitor in cancer models any adverse side effects
- Determine how the drug will be metabolized in patients
- Conduct toxicity profiles
- Validate methods in drug manufacturing
- Develop step-by-step plan of how the new drug will be evaluated in patients
- Prepare and submit Initial New Drug Application (IND) to the FDA (U.S. Food and Drug Administration)

This is NFCR's goal — to advance more new potential treatments through pre-clinical research and Phase I clinical trials. NFCR's most dedicated and talented scientists in our network are working on several lead drug candidates, but they are still in the pre-clinical research stage. We need more support from people like you to help us generate urgently needed funding and catapult more innovative drug candidates in order to give patients a better chance of survival in the future.

How & Why Metastasis Occurs



Metastasis is responsible for over 90% of deaths and loss of quality of life. It means that the cancer originating in one part of the body has spread to a different part of the body.



To understand how and why metastasis occurs (and what can be done to prevent it) requires understanding the genetic and environment-influenced processes that impact the expression of genes.

With NFCR's support, Dan Welch, Ph.D, University of Kansas Cancer Center (top), and his collaborator, Isidore Rigoutsos, Ph.D., Thomas Jefferson University (bottom), are studying mitochondrial DNA and tRNA fragments.

Their research will lead to the development of new metastatic cancer markers to determine a patient's likelihood of developing metastasis, and to the development of unique anti-metastasis therapies.

Global Summit (cont.)

NFCR-funded and other leading scientists discussed how their research is making great strides. Topics included molecular approaches to understanding lung, oral, blood, and other cancers, as well as best approaches to treat head and neck, pancreatic, and breast cancer.

NFCR has always championed its long-term philosophy of taking risks and striving for new frontiers. When others fear failure and are hesitant to fund discoveries that hold great potential, NFCR takes that risk, believing that high-risk will lead to high-reward, and lead us to a future without cancer.



The Summit also showcased several technology platforms and the advancements being made in cell therapy, immunotherapy, artificial intelligence-based drug discovery, and early cancer diagnoses by leading oncology innovators. New effective therapies will emerge from their critical and impressive work. Thanks to the support of our donor community, we are bridging the gap.

A little goes a LONG WAY...

Please take a moment to consider how you may be able to **maximize your impact!**

Your donation may be eligible for a **corporate match** from your employer. Reach out to your HR or access our handy tool to find out more! www.nfcr.org/matchtool

Create a Legacy by naming NFCR in your **will or living trust.**

Feel empowered & satisfied knowing that a portion of your property will continue to fund your charitable priorities in the future.