Betting on a Cure

Yung S. Lie, PhD, is the president and CEO of the Damon Runyon Cancer Research Foundation.

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The Damon Runyon Cancer Research Foundation has been behind an extraordinary number of breakthroughs in the prevention, detection and treatment of cancer. It funds about 200 investigators a year—about 3,750 since it was founded in 1946. Many have been elected to the National Academy of Sciences, and 12 have been awarded Nobel Prizes. To learn about the foundation's unique approach to developing cancer cures by supporting young scientists with what it considers "brave and bold" ideas, we spoke with its president and CEO, Yung S. Lie, PhD.

What excites you about going to work?

I'm the first scientist to run this organization. It's an extraordinary and exciting opportunity to make a difference by accelerating progress in cancer research. Scientists are at the heart of everything that we do. I'm constantly inspired by them.

The foundation has an extraordinary track record, including funding scientists who have gone on to win Nobel Prizes. How do you identify revolutionary work?

It all comes down to our very rigorous selection process. We work closely with leaders in cancer research in all different fields across the country who give their time to help us identify the next generation of leaders. One of our fundamental beliefs is that we need to enable young people to take risks, be bold and pursue innovative new ideas.

Why is supporting basic science so important?

Basic biology is at the heart of all of the treatments that we have today. Immunotherapy is a perfect example.

How has Damon Runyon supported immunotherapy work?

One example is checkpoint inhibitors, and another is CAR-T cell therapy. In the '70s, we supported basic research that led to identifying checkpoint pathways that help cancer cells hide from the immune system. Today's checkpoint inhibitor drugs release the immune system to attack and kill cancer cells and, in many cases, put patients who respond into long-term remission. Still, fewer than 15% of patients respond, and for many who do, the cancer ultimately develops means to bypass them. So we're funding research to understand how to predict who responds, develop ways to overcome resistance and increase effectiveness.

Tell us about CAR-T therapy.

This therapy involves extracting immune system T cells from a patient's body, genetically engineering them to identify and attack cancer cells, growing them and then infusing them back into the patient. Called a "living drug," CAR-T cells continue to grow and patrol the body for cancer. We took a risk in funding this research nearly 15 years ago, and it turned out to be really successful—a bet well worth placing. But each therapy is created for an individual patient, so it's extraordinarily expensive. Our scientists are working on making these therapies more specific and longer-lasting—and also on creating an off-the-shelf version, which would give many more patients access and reduce costs. And we support research on targeted therapies; for patients who have specific mutations in their tumors, these drugs can be very effective with far fewer side effects than chemotherapy.

Your scientists contributed to the human papillomavirus (HPV) vaccine, which helps prevent cervical, anal, oral, and head and neck cancers. But you also support work on vaccines for people with cancer, right?

Yes, these vaccines go into the cancer patient and into the tumor, triggering an immune response to a specific protein on the surface of a cancer cell. We supported one cancer vaccine trial that was successful for lymphoma; now, our scientists are developing vaccines for many different cancers.

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Are you supporting research into the effects of lifestyle on cancer prevention and treatment?

Our researchers are working on the effects of diet and the microbiome (all the bacteria that live in a person's gut) on susceptibility to cancer and responsiveness to treatment, on the effects of exercise, and on stress, which can contribute to the development and progression of cancer.

What about work on minimizing side effects?

One researcher is looking at very severe side effects that some patients have with checkpoint immunotherapy. Others are working on pain, which can lead to discontinuation of treatment—and thus cancer recurrence. We're funding research on nausea and on chemo brain. One researcher is applying genetic profiling to better understand which patients will respond to specific chemotherapies; if we can avoid giving patients drugs that their cancers are unlikely to respond to, we can limit unnecessary side effects—and also minimize the appropriate dose.

How can our readers take advantage of the latest research?

We're huge advocates of encouraging patients to speak to their oncologists and patient advocacy organizations about the available clinical trials that might be appropriate for them. Modern clinical trials are now structured in such a way that patients enroll only in studies in which they have the best chance of responding.

What advice would you give to someone newly diagnosed with cancer?

Be your own advocate. Ask questions of your oncologist. We have a much better understanding of the genetic basis underlying many different cancers, so I encourage patients to have their tumors genetically profiled. It's personalized medicine. The goal is to apply that information to design a cocktail of existing Food and Drug Administration–approved therapies or experimental therapies that will be most effective for a very specific cancer with the fewest side effects.

If you had a crystal ball, what would you predict in the next 10 years?

There are going to be improved and new targeted therapies, immunotherapies and chemotherapies that will enable precise, effective combinations of treatment for each patient. We've made significant progress against cancer—the cancer death rate has dropped 27% in the last 25 years—but our goal is to make all cancers treatable diseases.

We're excited about working with the Damon Runyon Cancer Research Foundation. How do you see our collaboration unfolding?

In the months ahead, the Damon Runyon Cancer Research Foundation and Cancer Health will collaborate to bring to your audience content about the latest advances in cancer research. We'll highlight our scientists, their innovative research—past and present—and the positive changes this work has brought to the real-life journeys of patients, families and caregivers.
