News From

FIGHTING CHANCE

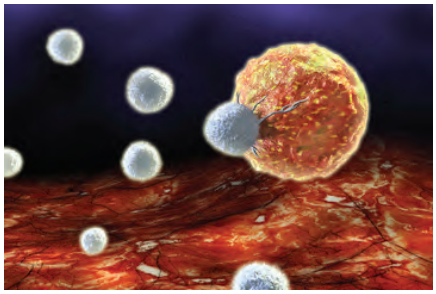
SEPTEMBER 2015

New Treatment Options for Cancer Patients are Emerging

At Fighting Chance (www.fightingchance.org) a very important part of our job is giving newly-diagnosed cancer patients a sense of empowerment. That includes guiding patients towards educational materials about therapeutic choices and being sure they ask their doctors the right questions.

The rapid pace of anti-cancer drug development – drugs recently approved by the FDA as well as those in advance testing – make it challenging for patients to decide upon the best treatment for them.

From our recent experience at Fighting Chance, we offer these insights about the advances against cancer that seem, at this time, most promising and important.



A gang of T-cells attacking a cancer cell . . . the essence of "Immunotherapy."

Immunotherapy

Unleashing the Immune System with Checkpoint Blockades

When the immune system mobilizes to attack cancer cells it can encounter "checkpoints" that inhibit its work. It is as if the checkpoints are saying: "Do not attack this abnormal-looking cell, even though your instincts say you should."

Within the last two years science has started to perfect ways to inhibit the messages from these checkpoints – using new drugs known as "Checkpoint Blockades."

Once the checkpoint is disabled the immune system is unleashed to begin cancer cell destruction.

One very promising drug that acts as checkpoint blockade is commonly known as Opdivo. Every cancer drug has a common name and then a name used for medical purposes. Hence Opdivo is also referred to by doctors as Nivolumab. This is the first immunotherapy agent that has been approved by the FDA for the treatment of lung cancer.

Making T-Cells a More Deadly Antagonist

How do T-cells– the backbone of our immune system – actually kill tumor cells? Well, they can attach to a tumor cell and inject a poisonous substance.

But tumor cells have what you might think of as a very slippery surface, so T-cells find it hard to get a good grip from which to assassinate the tumor cell. However, science has learned, that tumor cells are also pockmarked with what look like stubby telephone polls . . . called "antigens."

What if T-cells could be temporarily removed from a cancer patient and endowed with new properties that would make them receptive to antigens, and thus able to gain a perch from which to inject their poison into a tumor cell? Science has made great progress in perfecting this tactic and the therapy is now known as "CAR T-cells."

Surface of the Cell – New Combat Zone for Anti-Cancer Drugs

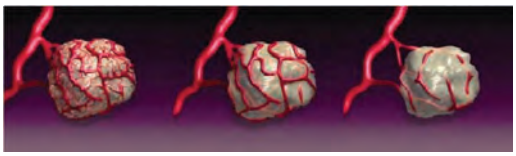
Chemotherapy is the most commonly used treatment for many forms of cancer and has been since about 1955.

There are several versions of "chemo" but all of them are referred to as a "small molecule" drug –which means the drug is capable of permeating the surface of a cancer cell, entering its interior domain and then destroying the cell from the inside out.

Some 20 years ago a new generation of drugs was approved – "large molecules." They operate on the surface of the cancer cell – killing it from the outside in -- and indeed they are too sizable to permeate the cell surface.

Most of these drugs utilized advances made in biotechnology and were known as "monoclonal antibodies." Avastin and Herceptin are two examples -- and both attack cancer from the surface of the cell.

Avastin – the Power of Anti-Angiogenesis



A tumor's blood vessels seen shrinking under the effects of Avastin.

One of the reasons that a cancerous tumor expands is because of a process known as "angiogenesis." This occurs on the surface of the cell and refers to a buildup of an extensive network of blood vessels that command a vigorous blood supply to fuel tumor growth.

An antagonist, however, is a drug that triggers the process of "anti-angiogenesis"– which shrivels up the tumor's blood vessel network, choking off the blood supply. The most commonly prescribed version of this drug is "Avastin." Also known as Bevacizumab, the drug ranks #2, in worldwide sales, as among all other anti-cancer drugs now on the marketplace.

Herceptin - Hope Continues for "HER2 +" Breast Cancer Patients

About 20% of breast cancer patients have a distinctive biomarker referred to as "over expression of the HER2 Protein." These patients often see their cancer placed into remission by taking the drug Herceptin, usually prescribed along with chemotherapy. The "cocktail" is also effective even in breast cancer that has spread or become "metastatic."

While Herceptin is the common name of the drug, doctors refer to it as Trastuzumab. Herceptin is another example of how science found the surface of the cell to hold the key for a new anti-cancer drug intervention.

Under a high-powered microscope, HER2 resembles fuzzy stakes that seem to be pounded into the cell surface; but the base of the stake has penetrated into the cell's interior.

The HER2 protein gets activated through a complex process which begins on the cell surface – although the net result is that the portion of the protein within the cell interior begins a signaling program that leads to cancer.

Herceptin beams in on the stake-like structures protruding from the cell surface and marks them for destruction by the immune system. As a result, the signaling process – which says to the cell "become cancer now"– is no longer transmitted.

Herceptin was approved in the late 1990s and has become a workhorse drug in the battle against cancer. Based on world-wide sales, it ranks #3 among all anti-cancer drugs.

Drug Conjugates

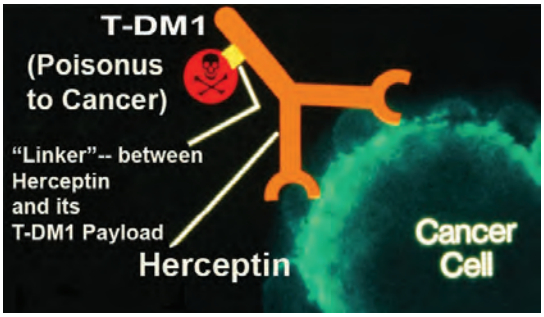
Improving Herceptin with a New Payload Called "T-DM1"

There are some 60 versions of chemotherapy drugs and several of them usually are mixed together into a "cocktail" that is given to the patient once every few weeks over a period of several months.

Scientists have also developed some forms of chemotherapy which seemed promising but were simply too toxic to give to a cancer patient on any regular basis.

But what if one of these highly toxic chemo drugs – in a minuscule dose – could be connected to a drug like Herceptin and then delivered with exquisite precision to breast cancer cells?

It is this hypothesis which led to the use of a "linker" that connected an exceptionally lethal chemo drug – known as "T-DM1" – to Herceptin. The result was a "one-two punch" to breast cancer cells, as they were rocked by Herceptin and, in their weakened state, then eliminated by T-DM1.



This new category of anti-cancer drugs, which links together two very different therapeutics is known as "drug conjugates." To date only two anti-cancer drug conjugates have been approved for widespread use by the FDA, but there are many other promising drugs in the pipeline.

Biomarkers

Some of the 25,000, seen here perched on the arm of a chromosome . . . all 25,000 are distinctive in every human and found in every cell of that human being.

When you hear the phrase "genetic testing" it means that a laboratory is going to take a closer look at someone's genes. We all have about 25,000 genes in every cell of our body.

Over the past few years science has identified a few hundred genes whose imperfections – also called mutations – are relevant to cancer for two reasons.

First, some imperfections can tell us if a healthy individual is at a much higher risk of getting cancer some day because of gene mutations they have inherited.

Second, for those already diagnosed with cancer, their doctor can call for genetic testing to see if the patient has gene imperfections from which science can predict the effectiveness of a specific anticancer drug. These predicted mutations generally are referred to as "biomarkers."

As just one example, the so-called "KRAS Mutation" is found in 40% of all colon cancer cases; and in those instances, the workhorse drug known as "Erbitux" will not work. While the common name for the drug is Erbitux, doctors refer to it as Cetuximab.

This newsletter has been reviewed by Mark Pasmantier, MD, a member of the medical advisory committee of Fighting Chance. Dr. Pasmantier is an oncologist who has been on the faculty of Weill-Cornell Medical School for over 30 years. He is also affiliated with New York-Presbyterian Hospital.

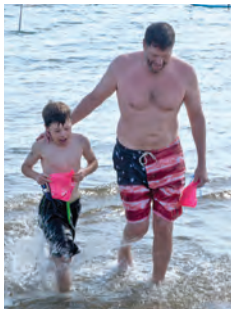
6th Annual Hamptons Swim Against Cancer Benefits Fighting Chance

On July 11, 2015 approximately100 swimmers ventured into the waters of Gardiner's Bay and set off on distances ranging from 1/2 mile for many participants to 5 miles for a hardy few. Every swimmer asked friends and family to support their efforts through a tax-deductible charitable contribution.

At the end of the event – which took place for the 6th year in a row – $80,000 was raised to support Fighting Chance and its free-of-charge counseling clinic for newly-diagnosed cancer patients on the East End.

The event was organized by Swim Across America are which oversees similar open water swims in locations across the country. Water safety was provided by the volunteers from East Hampton Ocean Rescue. Our heartfelt thanks to both organizations.

(L to R): the Chairman of Fighting Chance with Susan Scanlon who organized many swimmers and Don Regan a leader of Swim Across America.



Photos: CB Grubb

The Sag Harbor Express

THE SHORT SHORT STORY

Saturday, 7 A.M.

A beautiful blue sky day.
From eight to eighty they
gathered and they swam,
with passion, strength and
determination, making
waves to fight cancer.

- Nancy Greenberg

FIGHTING CHANCE

Free Cancer Counseling Center Serving the East End . . . since 2002

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Or for information, please call our Sag Harbor office at 631 725 4646

www.fightingchance.org