

Exciting News About a Vaccine to Treat Cancer in Pets

A company called Morphogenesis has developed an exciting gene therapy technology to treat a number of different types of cancer in dogs and cats.

Reviewed by [Dr. Becker](#)

STORY AT-A-GLANCE

- Dr. Patricia Lawman is the CEO of Morphogenesis (now Tuhura Biosciences), which has developed a cancer vaccine called ImmuneFx
- ImmuneFx is designed to prompt the immune system to respond to abnormal proteins within individual tumors
- Over 1,200 doses of the vaccine have been given, with no adverse side effects to date
- ImmuneFx has been used to treat over 30 different types of cancers in dogs, cats, and horses
- Tuhura Biosciences will soon begin an ImmuneFx study on humans with indolent non-Hodgkin's lymphoma

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Dr. Patricia Lawman is the CEO of Morphogenesis (now Tuhura Biosciences), which is a cell and gene therapy company located in Tampa, Florida. The company was founded by a brilliant group of scientists from around the world who have a vision of what cell and gene therapy can do for the face of medicine.

“We all knew and felt very strongly that it would be the future of medicine,” says Dr. Lawman. “It’s exciting to see it actually happening now.”

ImmuneFx Is a Protein-Tagged Cancer Vaccine

Tuhura Biosciences is a research and development company that has grown into a clinical stage company about to launch its first human trial. Dr. Lawman and her team have developed a protein-tagged cancer vaccine for companion animals as well as humans called ImmuneFx.

Their approach to cancer is quite different from the traditional standard of care treatments, which include surgery, chemotherapy, and radiation therapy. “We believe the body’s innate intelligence is what will win the day,” says Dr. Lawman.

Cancer is an ever-changing, ever-evolving disease, which makes it very difficult to treat with traditional therapies. The Tuhura Biosciences scientists have taken the difficulties of treating cancer and turned them into an advantage.

Multiple mutations create cancer, and it was originally assumed those mutations were static. However, science is discovering that the mutations are different in different types of cancers, and they're different from individual to individual. Sometimes they're even different from tumor to tumor inside one individual.

When these genetic mutations occur, they sometimes form abnormal proteins. The ImmuneFx cancer vaccine harnesses the power of the immune system and causes it to respond to all those abnormal proteins within individual tumors and individual patients.

Over 1,200 Doses Delivered with No Adverse Side Effects

It's important to understand that ImmuneFx isn't a vaccine in the traditional sense of the word.

We're used to vaccines that are designed to protect against potential microbial invasion, in other words, preventive vaccines. ImmuneFx is different in that it is a therapeutic vaccine. "Vaccine" in this instance means the drug is designed to incite the immune system to fight something.

A very encouraging benefit of ImmuneFx is its apparent lack of side effects. Veterinarians have delivered over 1,200 doses to various breeds of cats, dogs, and horses, and have seen no adverse side effects.

How the Vaccine Works to Assist the Immune System

Dr. Lawman discussed what types of cancers ImmuneFx treats:

"It's a universal technology. The way it works is that we take a single gene that encodes a bacterial protein that is widely recognized by the immune system. That's the way the immune system protects against microbial invasions. It recognizes that the bacteria or fungi are foreign to the body, and ImmuneFx takes advantage of that intelligence."

A bacterial protein is expressed on the surface of tumor cells, and those cells can no longer hide from the immune system. Any tumor cell that expresses this bacterial antigen is now exposed to the immune system. It's like a big red flag waving."

As Dr. Lawman explains it, this triggers a cascade of events. Once the antigen-presenting cells recognize the flag, they actually chew up the tumor cells, which reveals the abnormal proteins within them.

When that happens, the adaptive immune response (the killer T cells) and the antibody response get educated about all those abnormal proteins. Their numbers expand by the millions as they flood the body, killing every tumor cell that has the antigens on them.

The ImmuneFx vaccine helps the immune system "see" cancer cells that would otherwise be hidden.

ImmuneFx Can Be Used to Treat Many Different Kinds of Cancer

ImmuneFx has been used to treat over 30 different types of cancers in dogs, cats, and horses. Just two examples are canine osteosarcoma and feline fibrosarcoma. The type of tumor really doesn't matter, because once the bacterial gene is expressed in those tumor cells, the immune system is able to see what it needs to destroy.

The ImmuneFx technology can be used in several different ways. For example, a veterinarian can take a biopsy of a tumor and send it to the Tuhura Biosciences lab. Once at the lab, the bacterial gene is placed inside the tumor cells, and the cells are irradiated so they can't divide when they're administered. The cells are shipped back to the vet, who performs a simple intradermal injection of the cells into the patient. This procedure can be done for any type of tumor sent to Dr. Lawman's team.

Another approach is to take the bacterial gene and inject it directly into a tumor lesion. Dr. Lawman is currently involved in a melanoma study in horses in which she's using this technique. The gene is introduced right into the melanoma lesion using a needleless injector. She isn't prepared to share the results of the study yet, except to say that she's very surprised and excited.

Available Vaccines and Costs

Tuhura Biosciences is also creating another type of off-the-shelf vaccine. As an example, they can extract osteosarcoma tumor cells from a biopsy sample and grow them in culture until they develop into continuously growing cell lines. By evaluating the antigen expression and perhaps combining a couple of cell lines, they can create an off-the-shelf vaccine.

The surgery to obtain a biopsy is difficult, and logistically, it can also be difficult to directly inject genes into tumor lesions. By growing cell lines in their laboratory, Tuhura Biosciences can create treatments that veterinarians can have on hand to administer to cancer patients in their practice.

At the current time, Tuhura Biosciences can make a personalized vaccine from a patient's own tumor, and that service is available throughout the US. The plan for the equine melanoma vaccine is that it will be an off-the-shelf product, hopefully available throughout the U.S. sometime next year.

The company is also working to get approval through the U.S. Department of Agriculture (USDA) for other types of projects.

As for the cost of treatments, Dr. Lawman says the veterinarians she works with set treatment costs for their individual practices, but she believes the therapy is being offered to clients at a cost that is comparable to the cost of traditional chemotherapy.

Human Vaccine Studies Are on the Horizon

Dr. Lawman and her team are in the process of filing with the FDA to test ImmuneFx in humans. The first study is planned with asymptomatic patients with indolent non-Hodgkin's lymphoma. In fact, the FDA and the Recombinant DNA Advisory Committee (RAC) have given Tuhura Biosciences the green light to be the first to test gene therapy with a cancer population in the earliest stages of the disease.

Another human study Dr. Lawman hopes to start involves an off-the-shelf, directly injectable melanoma vaccine somewhat similar to the equine melanoma product they are currently testing.

If you would like to learn more about ImmuneFx and the company, you can visit the **[Tuhura Biosciences website](#)**. You can also call the company at (813) 875-6600.

Many Thanks to Dr. Patricia Lawman!

The new gene therapy Dr. Lawman’s company is developing will be a blessing for so many of us who wish to avoid chemotherapy treatments, which can be unpredictable, ineffective, and toxic.

For people looking for more natural options to treat cancer, ImmuneFx seems like a wonderful alternative designed to work with the immune system to unlock the body’s own healing potential.

