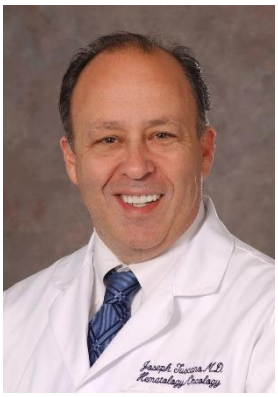
UC DAVIS HEALTH | COMPREHENSIVE CANCER CENTER

Joseph M. Tuscano, M.D.
deLeuze Endowed Professor of Medicine

Advances in Non-Toxic Cancer Treatment



Dr. Tuscano and the UC Davis Comprehensive Cancer Center began exploring non-toxic cancer treatment methods after European scientists demonstrated anti-cancer activity using non-toxic fermented wheat germ products (FWGP). Thanks to the generosity of many supporters over the years, we have enhanced the FWGP and developed a more potent form of **Fermented Wheat Germ Extract (FWGE)** that produced more anti-cancer activity than the European version. While research has focused primarily on treatment options for blood cancers, much of our effort is also being successfully applied to other cancers, primarily breast, lung, bladder and colon.

While enormous advances in cancer therapeutics are being made, many patients with advanced-stage cancer still die from the disease. Many patients are not able to complete treatment due to the oftentimes intolerable and severe side effects. There remains an unmet medical need for less toxic therapeutics that can be given in conjunction with the current treatment options. When treatment is less toxic yet potent to kill the cancer cells, the patient's quality of life improves, and they begin to feel hope. While Dr. Tuscano and his team have made tremendous strides, additional research is critical to generate the data required to qualify for larger federal government grants or private industry investment.

Research methods

Non-toxic therapeutics can reduce toxicity, enhance the patient's quality of life throughout the daunting cancer treatment process, and improve patient outcomes. Two methods used to evaluate the impact of non-toxic therapeutics are:

IMMUNOTHERAPY uses the body's immune system and innate defense mechanisms (barriers, proteins, natural killer cells) and adaptive defenses (T Cells, B Cells, and immunological memory) to activate the body's immune system to attack cancer naturally.

TARGETED THERAPIES use drugs or other substances to identify and attack cancer cells precisely. This is used independently or in combination with other treatments, like traditional or standard immunotherapy, chemotherapy, surgery, or radiation.

Research project #1

Through **IMMUNOTHERAPY**, Dr. Tuscano's team analyzes how the human body responds to FWGE when combined with standard cancer treatment. **Incredible generosity from supporters led to a significant milestone, where, in 2021, Dr. Tuscano and his team received a patent for using FWGE in treating cancer.** We are now in Stage II of a trial that involves patients with advanced malignancies treated at the UC Davis Comprehensive Cancer Center. The purpose of the trial is to study:

1. How does FWGE affect human T cells (natural killer cells) and impact the gestational tract microbiome (the bacteria that live in our gut and regulate the immune system)?
2. Does FWGE reduce the toxicity of other agents and improve quality of life?
3. Is there a tumor reduction?

It costs **$20,000** to enroll **1 patient** in this trial. **Generous donations from our steadfast supporters led to the patent and subsequent trial development, then its advancement to Stage II.** Future support will help our team increase the patient pool to bolster the results of this trial and advance to Stage III.

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94% of each tax-deductible gift advances research that will reduce traditional therapeutic toxicity.

All donations help produce the preliminary data required to qualify for long-term grant funding from the National Institutes of Health or other private investment companies.

For more information on how your gift can make a difference, please contact:

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Research project #2

Through **TARGETED THERAPIES,** genetically engineered proteins and T cells recruit and activate immune system components (bi-specific or tri-specific antibodies) to target and kill cancer cells. More specifically, the patient's blood is removed to extract their T cells. Then, a gene from a special receptor called a chimeric antigen receptor (CAR) is reinserted into the T cells, where millions of CAR T cells are grown in our laboratory. **These products are developed on-site and not outsourced, which saves money and expedites the results.** Once the cells are put back into the patient's body by intravenous infusion, the CAR T cells bind to the antigens on the cancer cells and kill them repeatedly. While CAR T cells work initially, **60%** of patients relapse because the CAR T cells eventually break down after becoming exhausted from the process of having to kill the tumor repeatedly.

Donor support has advanced our research to successfully modify the CAR T cells to live longer, multiply more, and remain strong to kill cancer cells continually. There has been significant cancer-killing activity without toxicity and a complete cure for leukemia in mice.

Additional research is needed to continue refining the development of these "serial killer" CAR T cells and bi- and tri-specific antibodies and analyze how they recruit key immune system components throughout cancer treatment.

Individual donations are critical to test this non-toxic approach because pharmaceutical drug companies do not finance these trials, as they typically sponsor clinical trials tied to each respective drug tied to our current and standard treatment protocol. Once there is enough data to translate that into a viable product for human patients, patents are planned for two additional products.

THANK YOU for supporting this crucial research. YOU have financed the science that led to these groundbreaking discoveries.

We hope that using non-toxic therapeutics will eventually transform how cancer patients are treated. Your commitment to giving back to our life-changing, life-saving work is genuinely appreciated.