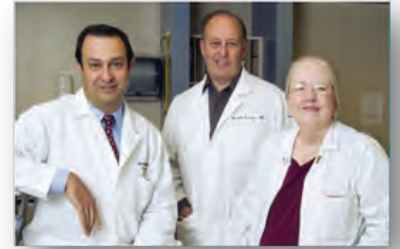


TUSCANO RESEARCH FUND

at UC Davis Comprehensive Cancer Center

UC Davis Comprehensive Cancer Center physicians are among the most respected in their fields. As faculty members of a major university medical center, they have been entrusted to train the next generation of cancer specialists. These physicians also conduct clinical and translational research, as well as collaborate closely with laboratory scientists, ensuring that new drugs and other treatments developed in the lab can move quickly to the clinic to benefit the patients who desperately need them.



Blood Cancer Facts

According to the Leukemia and Lymphoma Society (LLS), approximately every 3 minutes one person in the United States (US) is diagnosed with a blood cancer. New cases of leukemia, lymphoma and myeloma account for 10% of the estimated 1.9 million new cancer cases that were diagnosed in the US in 2021. Furthermore, over 1.5 million people in the US are living with, or are in remission from, blood cancers.

While progress is being made with treatments, an estimated 58,000 people die of these malignancies annually. These deadly malignancies often strike indiscriminately -- independent of risk/lifestyle/age factors. While treatments are getting better and more targeted, they are often very toxic and this toxicity limits effectiveness and impairs quality of life, especially in vulnerable populations such as the elderly. Research is essential to finding more effective and less toxic approaches to treat these cancers. Much of this research is done at well-funded institutions with large staffs, and the results from these centers of research are certainly impressive. In the northern California region, Dr. Joseph Tuscano leads a small research team that is performing innovative, grass-roots work with the goal to uncover new treatment protocols.

Tuscano Research Fund

Dr. Joseph Tuscano is the interim director of the UC Davis Comprehensive Cancer Center Stem Cell and Bone Marrow Transplantation team. Dr. Tuscano and his small research team have an amazing track record of hunting for novel antibody and other immune-based therapies to treat lymphoma and leukemia, many of which can be used for other cancers such as multiple myeloma, lung and colon cancers. The team is driven by an intense passion and unbridled commitment to developing less toxic and more effective treatments that utilize the patient's own immune system.



Better Life Foundation Supports Tuscano Research Fund

Better Life Foundation, a Sacramento-based non-profit, is a significant benefactor of the Tuscano Research Fund at UC Davis Comprehensive Cancer Center. Better Life Foundation was formed in 2014 by Loel Heupel, President. Loel was diagnosed with non-Hodgkin's lymphoma in 2006, and under the guidance of Dr. Tuscano, had a successful stem cell transplant in 2012. During his recovery, Loel committed to giving back to the people and the community that helped him beat cancer.

Since 2014, the non-profit has raised more than \$340,000 to directly fund the blood cancer research programs led by Dr. Tuscano. The organization continues to seek ways to increase the awareness of treatments and to help improve the lives of those affected by blood cancers. By supporting the fundraising activities of the Better Life Foundation, for example through events such as *Sunday on the Green*, you can feel confident that your donation goes directly to research programs that can result in innovative treatments.



Research Studies Led by Dr. Tuscano

Following are a few research programs under Dr. Tuscano's leadership and guidance.

Non-toxic alternatives: More than 10 years ago, Dr. Tuscano treated a lymphoma patient who was taking a natural product, made from fermented wheat germ extract, which had shown promising results in laboratory tests. Research and testing ensued. Fast forward to 2018: the team submitted and received a patent for a composition of 17 proteins from fermented wheat germ extract ("FWGE") that are active in reducing, inhibiting or preventing the proliferation of cancer cells and/or tumors. The team published a paper demonstrating that this treatment also works on lung and colon cancers, and might even prevent colon cancer (proven in lab studies of animals). This led to the receipt of a 4-year grant to continue this ground-breaking research. Based on this support, the team is close to identifying the active and non-toxic components that could be used to create a new drug for cancer patients

Tumor-specific cell-mediated inhibition: The research lab environment obviously brings knowledge and continuous learning. In Dr. Tuscano's lab, a student researcher found a protein which had the ability to create a 'blanket' over cancer cells—making them invisible to, and allowing them to evade, the immune system. Using that knowledge, Tuscano's research team developed a bispecific monoclonal antibody, or a 2-arm protein. With this antibody, one protein binds to the immune system and uncovers the 'protective' shell to enable the cancer cell to be killed, and the other redirects it, meanwhile protecting other organs from toxicity that could be caused by the system. The team is creating the proteins in the lab; testing them in cultures; and as is frequently done, testing in animals with cancer to assess success rates.

Pediatrics collaboration: Leukemia is highly prevalent in children, and has much in common to lymphoma. Together with a Pediatric researcher, Dr. Tuscano is looking at treatment protocols for both cancers that can follow the message of "Go here and fix this." In many of these blood cancer cases, there are abnormal genes which need to be 'corrected'. Part of the challenge is getting the treatment technique to the abnormal cell only, without disruption of the normal genes. They are investigating antisense nucleosides (ASO), which attach to a protein (an antibody which serves as a vehicle) and direct the treatment to the cancer cell. Using Dr. Tuscano's expertise in 'delivery vehicles' and the pediatrician's expertise on ASOs, to date this team of collaborators has seen success in tissue cultures and animals.

Partners with the UC Davis Veterinary School: Like humans, dogs are also susceptible to cancers such as lymphoma. In collaboration with a team at the UC Davis School of Veterinary Medicine, Tuscano's team tests treatments with the animals as a precursor to new treatment protocols for humans. Studying the dogs' immune systems also provides knowledge that can be used to help patients with cancer. Proving once again: a dog is man's best friend.

Research projects such as these can lead to effective treatments for blood cancers, **as well as other cancers and diseases.** **Funding these projects has a large impact on the overall fight against cancer as these serve as an "investment" into promising concepts that are yet unfunded.** Once preliminary data is generated, it can then be used as evidence of the potential of these novel agents to treat cancer. This evidence is then presented as grants to corporations or the Federal Government to garner additional support for larger, more transformative studies that may have a greater impact on the overall fight against cancer.

Donations for the Tuscano Research Fund at UC Davis Comprehensive Cancer Center are accepted by the Better Life Foundation. Better Life Foundation is a 501(c)3 non-profit organization (#37-1820255) focused on improving the lives of blood cancer patients.

For more information:

Visit betterlifefoundation-ca.org to learn more about the organization
Visit sundayonthegreen.com to learn more about our annual fundraising event

Contact Loel Heupel at (916) 743-3546, theheupels@comcast.net
or Nicki Heupel at (916) 365-3482, nicki.heupel@yahoo.com