

Research Results Accomplished by METAvivor's First Research Grant, A report by Dr. Danny Welch

Funds from the generous METAvivor research grant supported graduate students who are developing the tools that will allow us to test whether the KISS1 metastasis suppressor can impact the outgrowth of breast (and melanoma) tumor cells that have seeded vital organs, like the lung. The seeding of vital organs is a relatively common early step in the process of metastasis in a new location. The distinguishing factor between development of metastases and the presence of innocuous cells that simply move around within the body is the ability of disseminated tumor cells to grow once they have reached other vital organs, including bones. Our laboratory recently showed that KISS1 prevented the seeded cancer cells from growing into full blown metastases.

From a clinical perspective, it is important to ask whether KISS1 can reverse metastases that have already started to grow. Although a conceptually simple question, this has been more technically challenging than we had initially expected. In order to test this, we need to make tumor cells that will allow us to turn KISS1 on and off according to our desires. In this way, we will be able to explore hundreds of questions related to how KISS1 works. This in turn will set the stage for creating drugs that mimic KISS1 activity and determining how to administer those drugs at the most opportune times to optimize the benefits to patients with metastases.

During the course of making these engineered cancer cells, we made an unexpected and remarkable discovery. KISS1 made by the tumor cells does not impose its action on the tumor cell directly. Rather, the KISS1 that is secreted by the tumor cells activate a specific class of immune cells, known as macrophages. Once activated, the macrophages then secrete proteins that inhibit tumor cell growth. Our preliminary findings suggest that therapies based upon KISS1 may in fact be altering how the immune system controls a tumor.

On behalf of my graduate students and other members of the laboratory, we thank METAvivor for its generous support. We also wish to acknowledge the inspiration given us by members of the organization who are battling metastatic breast cancer. We are working tirelessly to help you. For those who donated to METAvivor, we thank you as well for your sacrifice, especially in these difficult economic times. Basic research and metastasis are both long and arduous journeys. Our original proposal seemed more straightforward than it became when we moved deeper into the trenches. Nonetheless, your contributions have initiated a series of studies that bring us one step closer to the effective treatment (and prevention) of metastatic breast cancer.