A summary of our recent paper:

The Transcription Factor REST is lost in Aggressive Breast Cancer

For John Newton and the Wisconsin Dual Sport Riders

We would like to thank all of the Wisconsin Dual Sport Riders for everything you've done to help us fight breast cancer. The money you've raised has made an absolutely huge impact on our lab, and helped us make discoveries that will better our understanding, and treatment, of cancer. Our first major breakthrough in breast cancer research was just accepted for publication last month, and we'd love to tell you about the discoveries that all of your hard work helped to make happen.

One of the biggest problems facing cancer treatment today is understanding which of the tens of thousands of possible genes in each cancer cells is really making the tumor cells so aggressive. There are hundreds of genes that can make a cancer aggressive by being turned on, and there are hundreds more that can make a cancer aggressive by being turned off. Every tumor has a unique "on" and "off" pattern in their genes that determines 1) how aggressive the cancer will be and 2) what treatments will effectively kill it. So if we treat two people's tumors, with different patterns of genes being on and off, as if they are exactly the same, we often get mixed results. Understanding these patterns of genes that are on and off will not only help us predict which cancers are more likely to recur, or metastasize, but it will also help us figure out which genes to target with drugs when we want to cure it.

What we have discovered is a previously unrecognized group of breast cancers with a very distinct pattern of gene expression that affects between 8,000 and 40,000 women in the United States every year. We have found exactly which protein, called REST, is responsible for the aberrant "on" and "off" gene expression pattern that sets these tumors apart. We call these 'RESTless' tumors, in part because they've lost REST, and in part because they don't like to stay put. If this one protein is lost in the tumor it becomes much more aggressive, with double the numbers of lymph node metastases and triple the disease recurrence in the first 3 years post diagnosis. With the money that the Wisconsin Dual Sport Riders have so generously donated, and so tirelessly raised, we have been able to discover how this protein is lost and make mouse models of this newly discovered RESTless breast cancer. Those mouse models are absolutely critical for testing treatments on the mice in the lab so that we can figure out how to best treat patients who have to deal with RESTless breast cancer in their lives.

Thanks again to all the Wisconsin Dual Sport Riders for everything you've done to help us in the fight against breast cancer, we really couldn't have done it without you.

We'll see you all in Wabeno!!!