Robert A. Weinberg, Ph.D.

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“If we understand the root cause of a disease, we will gain great insight into how to treat it.”

Dr. Weinberg remembers when he discovered a new gene that would eventually revolutionize our understanding of breast cancer. “We studied that gene and the protein it made and five years later it was discovered to be over-expressed... and that became the HER2 gene.” This basic discovery led others to further study the gene and the development of Herceptin (trastuzumab). The first drug of its kind, Herceptin works by attaching to the HER2 proteins on cancer cells, turning off their growth signals and making the cancer cells more vulnerable to chemotherapy. Most importantly, HER2-targeted therapies have significantly improved survival for women with HER2-positive breast cancer, which accounts for approximately 25% of all new cases.

Today, Dr. Weinberg is seeking to understand the cellular and molecular processes of the ‘invasion-metastasis’ cascade, the series of steps that allow cancer cells to spread throughout the body and seed new cancers. Dr. Weinberg reveals that the next steps of his research will “focus on cancer stem cells, how they arise and how we can eliminate them... We can see a clear path of experimental advance and I’m anxious to move forward.”

Dr. Weinberg is a firm believer in sustaining the field of basic breast cancer research. “Without understanding the basic mechanisms that cause breast cancer,” he says, “our ability to develop innovative treatments for the disease in the future will be limited.” One important way to do this is by cultivating young, new scientists to continue to search for the cures. Dr. Weinberg spends a significant amount of time mentoring trainees, many of whom have been supported by Komen grants.

Dr. Weinberg’s enthusiasm for his work is nearly palpable and he credits Susan G. Komen for the Cure with sharing in his passion saying, “Komen has been very understanding, saying to us in effect ‘we want you to work in this general area but if you find something new and exciting, then please go and pursue it in the context of breast cancer research with our blessing’.”