# DECODING THE "PINK VIRUS"

FOR DECADES, RESEARCHERS HAVE BEEN STUDYING THE POSSIBILITY THAT A VIRUS MIGHT CAUSE SOME BREAST CANCERS. N.J. BREAST CANCER SURGEON ***Kathleen T. Ruddy, M.D.,*** A DOCTOR ON THE FOREFRONT OF THIS RESEARCH, EXPLORES THE POSSIBILITY THAT A VACCINE CURRENTLY IN DEVELOPMENT COULD REVOLUTIONIZE BREAST CANCER PREVENTION.

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*Watch Dr. Kathleen T. Ruddy and leading researchers discuss the human mammary virus on njlhb.com.*

**THE CONCEPT THAT BREAST CANCER COULD** be caused by a virus is not a new idea. Though not yet widely reported in the mainstream media, it is a field of research gaining increased acceptance in the medical community.

The idea originated in 1936 when John Joseph Bittner, a geneticist and cancer biologist, bred a strain of mice that developed breast cancer 95 percent of the time. To test why these mice got cancer at such a high rate, he allowed mice pups from a low-risk strain to breastfeed from the high-risk females. He discovered that the incidence of breast cancer in the low-risk pups skyrocketed from 2 percent to 40 percent when they breastfed from mothers of the high-risk strain. Likewise, he discovered that pups from mothers who carried the virus that breastfeed from low-risk mice saw their incidence of breast cancer decline. Bittner's conclusion: This was a milk-transmitted virus.

It was given the name "mouse mammary tumor virus" (MMTV), and the question then became: Did the MMTV have a human equivalent? Over the next 40 years, researchers around the globe did discover a virus that was 95 percent similar to the MMTV in human breast milk and in blood samples of women who had breast cancer. Since the 1990s, Beatriz Pogo, M.D., professor of medicine, hematology, and medical oncology at Mount Sinai Medical Center, and Polly Etkind, a virologist at New York Medical College's Department of Microbiology and Immunology, have been among the many researchers delving into the possibility of a human mammary virus. Almost 40 percent of breast cancer specimens that Pogo and Etkind have separately examined show evidence of a virus similar to the MMTV.

Their research uncovered another intriguing link between the MMTV and a possible human virus: Many of the breast cancer patients who had the virus in their breast tumors also had it in their lymphoma tissue and had been diagnosed with non-Hodgkins lymphoma. This commonality is extremely interesting because the MMTV that has been shown to cause breast cancer in female mice also causes lymphoma in males. From this research, it appears that the human strain, in being linked to the same diseases, follows a similar pattern to the mice strain.

Currently, researchers are following two missions simultaneously: To prove whether or not the human mammary virus actually

causes breast cancer in women and if a vaccine works to prevent breast cancer.

In June, Cleveland Clinic immunologist Vincent Tuohy made headlines with a vaccine he developed to target breast cancer. For the past eight years, Tuohy and his team at the Lerner Research Institute have been testing this vaccine on mice predisposed to breast cancer. In his studies, the vaccine has proven successful at both preventing new breast cancer tumors from developing and also at blocking the growth of new breast cancer tumors. In a 10-month period, none of the immunized mice developed tumors, but 100 percent of the non-immunized mice did. Tuohy's vaccine is different from other breast cancer vaccines that attempt to kill or prevent the spread of breast cancer once it has formed. The vaccine that Tuohy created is preventive: It targets *alpha-lactalbumin*, a protein found in the majority of breast cancers, without compromising healthy breast tissue. Since this protein is only found in healthy women when they are lactating, the vaccine would be only given to women over 40 when their risk for cancer is higher and their chance of pregnancy is lower.

Tuohy is now seeking funding to test whether his vaccine is safe in humans. This should take about another two years. If the vaccine is proven safe, then trials can begin to test its effectiveness in humans. The medical community remains cautiously optimistic that Tuohy's discovery may pave the way to both protect women against breast cancer and shed light on the virus that may be causing a portion of it. ✳

*For more information on the latest research being done on the human mammary virus, visit breasthealthandhealing.com.*

*Dr. Kathleen T. Ruddy founded the Breast Health & Healing Foundation in Belleville in 2008 with this mission: To discover the causes of breast cancer and to use that knowledge to prevent the disease. Last year, she created the Pink Virus Project, which was launched with a summit of leading researchers and scientists on Capitol Hill to answer the question: Does a virus cause breast cancer in women?*