LAY ABSTRACT

TITLE: Pubertally Initiated High-Fat Diet Promotes Mammary Tumorigenesis in Obesity-Prone FVB Mice Similarly to Obesity-Resistant BALB/c Mice

JOURNAL: Translational Oncology. 2017. 10(6): 928-935.

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This is attributed to the BCERP grant: U01ES019434

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There is concern that red meat may be a risk factor for breast cancer. Previous research from this same laboratory shows that mice who were fed a high fat diet from red meat and were given a chemical that causes cancer were more likely to develop breast cancer. These studies were done in mice that did not become overweight, even when fed a high fat diet. The mice in these studies were chosen because researchers wanted to study the effects of diet, but not weight gain or obesity, on breast cancer risk. While this study showed that high fat diet did increase risk of breast cancer among mice exposed to chemicals that cause cancer, several questions were still unanswered. This study asked the question: if you fed a high fat diet from red meat during puberty to mice that gain weight, do they also develop breast cancer? This research also asked the question about when the breast cancer would occur. Researchers wanted to see if the mice got breast cancer before or after the mice gained weight. This allowed them to see if the cancer was caused by eating a high fat diet or from being overweight from a high fat diet. A final question was what type of cancer did the mice get? Results showed that the new mice did get breast cancer. It was also found that the mice got breast cancer before they become overweight. Finally, the mice were more likely to get triple negative breast cancer, an aggressive type of breast cancer that is difficult to treat. There was also an increase in cells that are known to promote cancer risk. Results of these studies suggest that diets high in saturated fat found in red meat can increase risk of breast cancer, even if mice are not overweight. These studies have important implications for breast cancer prevention in a broad segment of the population who consume diets high in saturated fats from red meat, including those who may not be overweight.