LAY ABSTRACT

TITLE: Gene Expression Signature of Atypical Breast Hyperplasia and Regulation by SFRP1


AUTHORS: Kelly J. Gregory1, Amy L. Roberts2, Erin M. Conlon3, Jacob A. Mayfield9, Mary J. Hagen2, Giovanna M. Crisi4, Brooke A. Bentley4, Jeffrey J. Kane1,2, Grace Makari-Judson5, Holly S. Mason6, Jun Yu7, Lihua Julie Zhu7, Karl Simin7, Ashraf Khan8, Ben R. Schneider1, Sallie S. Schneider1,2,10, D. Joseph Jerry1,2,10

INSTITUTIONS:
1Pioneer Valley Life Sciences Institute, Springfield, MA 01199, USA.
2Department of Veterinary and Animal Sciences, University of Massachusetts-Amherst, Amherst, MA 01003, USA.
3Department of Mathematics and Statistics, University of Massachusetts, Amherst, MA 01003, USA.
4Department of Pathology, University of Massachusetts Medical School/Baystate, Springfield, MA 01199, USA.
5Division of Hematology-Oncology, University of Massachusetts Medical School/Baystate, Springfield, MA 01107, USA.
6Department of Surgery, University of Massachusetts Medical School/Baystate, Springfield, MA 01199, USA. 7University of Massachusetts Medical School, Molecular, Cell, and Cancer Biology, Worcester, MA 01605, USA.
8Department of Pathology, University of Massachusetts Medical School, Worcester, MA 01605, USA. 9Division of Rheumatology, Immunology and Allergy, Brigham and Women’s Hospital, Harvard Medical School, Boston, MA, USA.

This is attributed to the BCERP grant: U01ES026140

LAY ABSTRACT

Often breast imaging and subsequent biopsies result in a diagnosis of atypical breast hyperplasia (AH). This diagnosis describes what the doctor sees when the cells of the breast milk duct overgrow and look abnormal. This diagnosis is not cancer, but it can be a source of stress for the general public because women diagnosed with AH have an increased risk of developing breast cancer. This study sought to examine the differences between the cells that overgrow and the cells that don’t, in hopes of identifying critical changes that might cause the increased susceptibility to cancer development.

Results: The level of 99 genes (pieces of your genetic material which code for proteins) were identified that were significantly different between the normal and abnormal tissues. Furthermore, we found that the level of a particular tumor suppressor was...
consistently lower in the abnormal areas and that the level could affect 13 other genes. Many of those genes control the growth and cell accumulation. This research is important because it highlights a target which could possibly reverse or prevent the susceptibility to cancer.