

# Lack of Social Interaction Affects Health Outcomes of Breast Cancer

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(PhysOrg.com) -- Social environment can play an important role in the biology of disease, including breast cancer, and lead to significant differences in health outcome, according to results of a study published in *Cancer Prevention Research*, a journal of the American Association for Cancer Research.

“This study uses an elegant preclinical model and shows that [social isolation](#) alters expression of genes important in mammary gland [tumor growth](#),” said the journal’s Deputy Editor Caryn Lerman, Ph.D. “It further elucidates the molecular mechanisms linking environmental stress with breast [cancer](#) development and progression.”

These findings suggest novel targets for chemoprevention, and future studies should evaluate whether these molecular processes can be reversed by chemopreventive agents, according to Lerman, who is the Mary W. Calkins professor of psychiatry and scientific director of the Abramson Cancer Center at the University of Pennsylvania, Philadelphia.

Previous results from clinical studies have indicated that social support can improve the health outcome of patients with breast cancer. Epidemiological studies have suggested that social isolation increases the [mortality risk](#) from several chronic diseases.

Suzanne D. Conzen, M.D., associate professor in the department of medicine and the Ben May department for cancer research at the

University of Chicago, along with colleagues from the Institute of Mind and Biology at the University of Chicago, evaluated whether an unfavorable social environment could influence tumor growth in mice that are genetically predisposed to mammary gland cancer.

They found that female mice that were chronically stressed because of social isolation (from the time they were first separated from their mothers) developed significantly larger mammary gland tumors compared to those mice that were group-housed.

Additionally, the isolated mice developed a heightened corticosterone stress hormone response.

“Despite the [genetic similarity](#) of the mice assigned to grouped versus isolated housing, living in the stressful environment was associated with greater tumor size, suggesting that the social environment may in fact alter the biology of cancer growth...then, of course, the question becomes how,” she said.

The researchers studied [gene expression](#) in the mouse mammary tissues and found that alterations in the expression levels of metabolic pathway genes, which are expected to favor increased tumor growth, had occurred in the isolated mice even before tumor size differences were measurable. These gene expression patterns suggest potential molecular biomarkers and/or targets for preventive intervention in breast cancer.

Further research is needed to focus on which specific cell types the changes in gene expression are taking place, according to Conzen. This knowledge could potentially lead to interventions that block similar pathways favoring the growth of human [breast cancer](#).

“Given the increased knowledge of the human genome we can begin to objectively identify and dissect the specific alterations that take place in

cancer-prone tissues of individuals in at-risk environments and that will help us to better understand and implement cancer prevention strategies,” she concluded.

Provided by American Association for Cancer Research ([news](#) : [web](#))

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