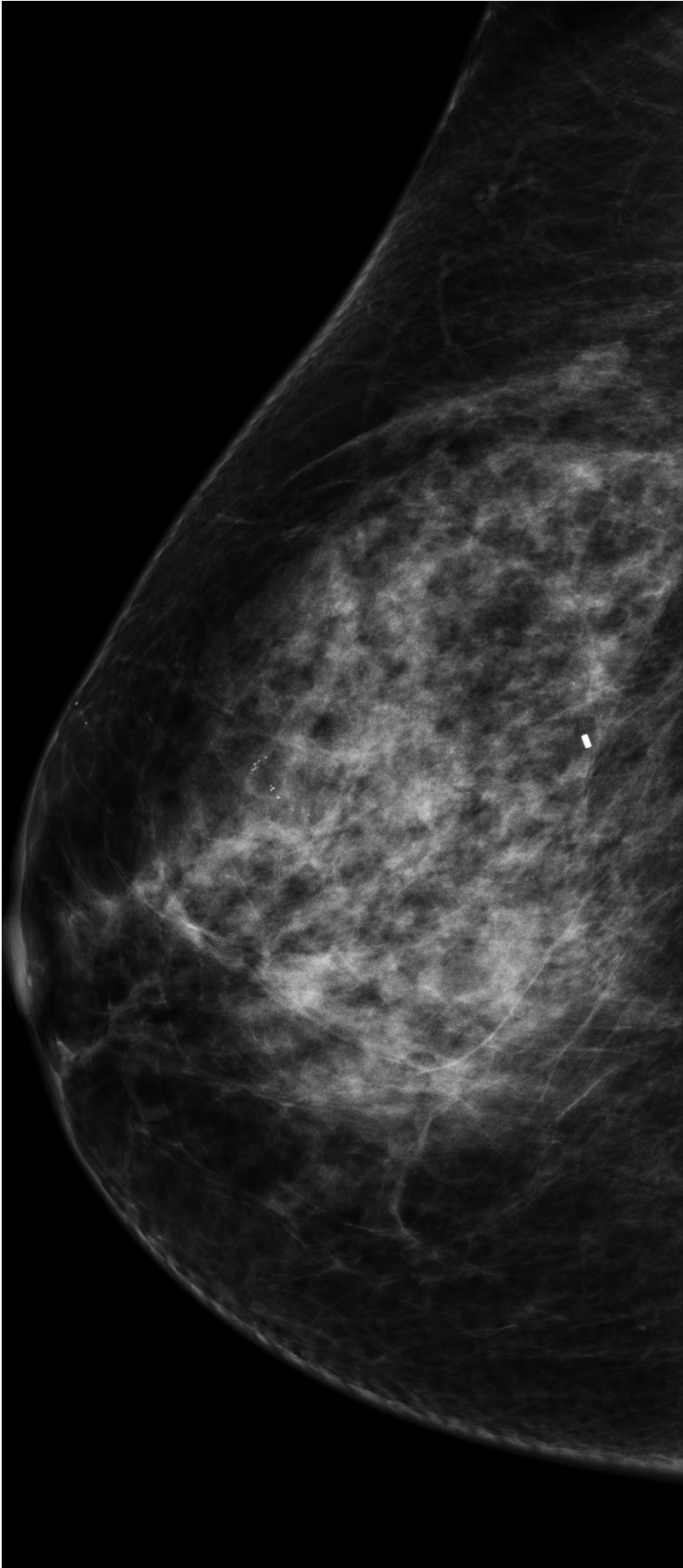


Artificial intelligence expedites breast cancer risk prediction

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This mammogram depicts breast bearing malignant tumor. Credit: Houston Methodist

Researchers at Houston Methodist have developed an artificial intelligence (AI) software that reliably interprets mammograms, assisting doctors with a quick and accurate prediction of breast cancer risk. According to a new study published in *Cancer* (early online Aug. 29), the computer software intuitively translates patient charts into diagnostic information at 30 times human speed and with 99 percent accuracy.

"This software intelligently reviews millions of records in a short amount of time, enabling us to determine [breast cancer](#) risk more efficiently using a patient's mammogram. This has the potential to decrease unnecessary biopsies," says Stephen T. Wong, Ph.D., P.E., chair of the Department of Systems Medicine and Bioengineering at Houston Methodist Research Institute.

The team led by Wong and Jenny C. Chang, M.D., director of the Houston Methodist Cancer Center used the AI software to evaluate mammograms and pathology reports of 500 [breast cancer patients](#). The software scanned patient charts, collected diagnostic features and correlated mammogram findings with breast cancer subtype. Clinicians used results, like the expression of tumor proteins, to accurately predict each patient's probability of breast cancer diagnosis.

In the United States, 12.1 million mammograms are performed annually, according to the Centers for Disease Control and Prevention (CDC). Fifty percent yield false positive results, according to the American Cancer Society (ACS), resulting in one in every two healthy women told

they have cancer.

Currently, when mammograms fall into the suspicious category, a broad range of 3 to 95 percent [cancer risk](#), patients are recommended for biopsies.

Over 1.6 million breast biopsies are performed annually nationwide, and about 20 percent are unnecessarily performed due to false-positive mammogram results of cancer free breasts, estimates the ACS.

The Houston Methodist team hopes this artificial intelligence [software](#) will help physicians better define the percent risk requiring a biopsy, equipping doctors with a tool to decrease unnecessary breast biopsies.

Manual review of 50 charts took two clinicians 50-70 hours. AI reviewed 500 charts in a few hours, saving over 500 physician hours.

"Accurate review of this many [charts](#) would be practically impossible without AI," says Wong.

More information: Tejal A. Patel et al, Correlating mammographic and pathologic findings in clinical decision support using natural language processing and data mining methods, *Cancer* (2016). [DOI: 10.1002/cncr.30245](#)

Provided by Houston Methodist

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