INDEPENDENT

Cancer breakthrough as groundbreaking pill found to 'kill tumours'

Developed over the last two decades, it has shown to be effective in treating multiple cancers, including breast and prostate

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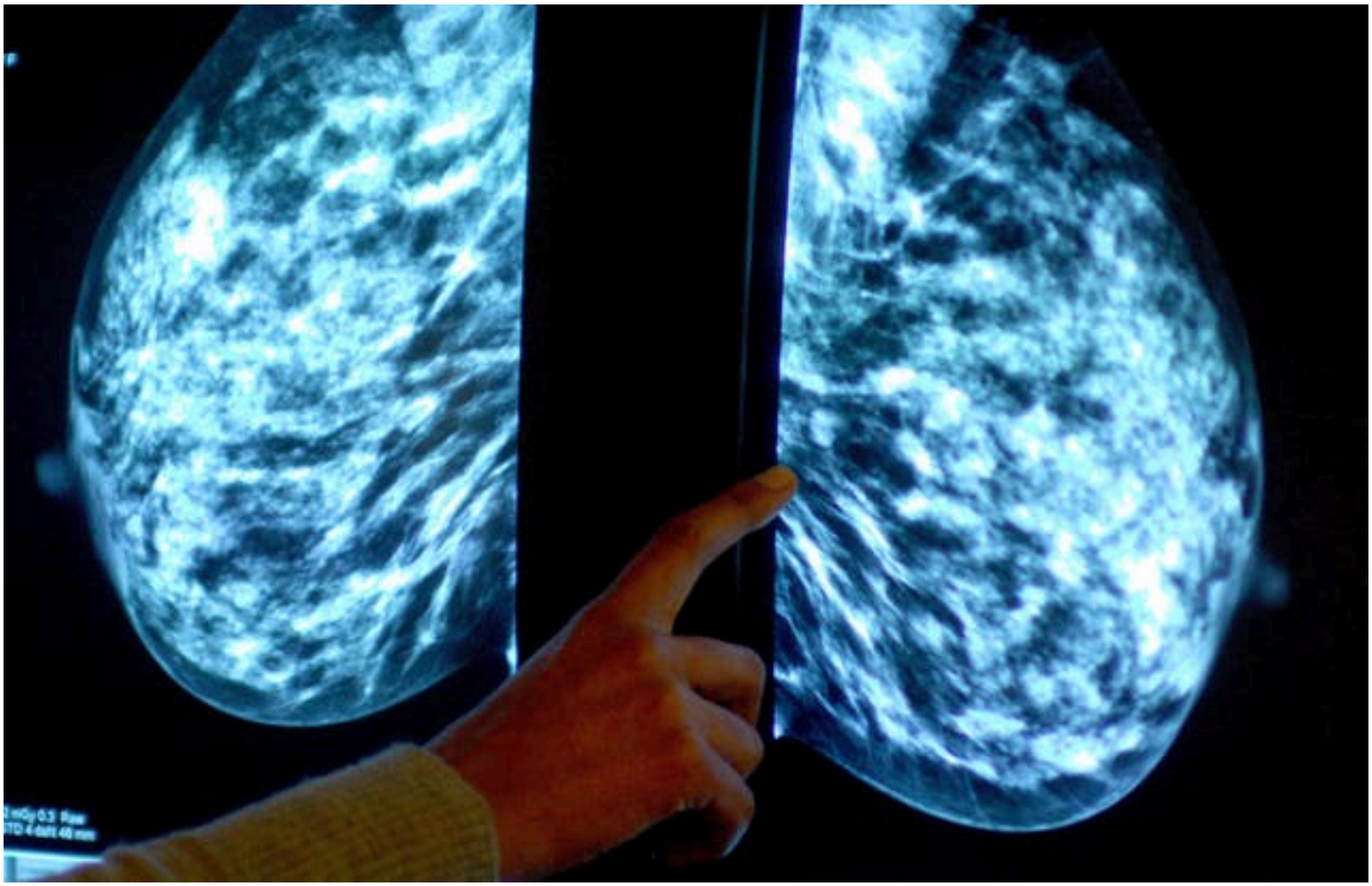
Scientists at a leading US hospital have developed a "cancer-killing pill" that kills solid tumours through "targeted chemotherapy."

Likened to a "snowstorm that closes a key airline hub, shutting down all flights in and out only in planes carrying cancer cells", the protein was developed by a research team at the City of Hope, one of the largest cancer research and treatment organisations in the US.

The AOH1996 molecule works by targeting a cancerous variant of PCNA, a protein critical to DNA replication and repair of enlarging tumours.



A mammogram shows a woman's breast being checked for breast cancer at Derby City Hospital (PA)

Developed over the last two decades, it has shown to be effective in preclinical research treating breast, prostate, brain, ovarian, cervical, skin and lung cancers.

The study, published in the journal Cell Chemical Biology, tested the protein across over 70 cancer cell lines. The results noted that AOH1996 selectively killed cancer cells by “disrupting the normal cell reproductive cycle”, with the next stage aiming to further the clinical trial in humans.

"PCNA is like a major airline terminal hub containing multiple plane gates. Data suggests PCNA is uniquely altered in cancer cells, and this fact allowed us to design a drug that targeted only the form of PCNA in cancer cells”, said Linda Malkas, Ph.D., professor in City of Hope’s Department of Molecular Diagnostics and

Experimental Therapeutics and the M.T. & B.A. Ahmadinia Professor in Molecular Oncology.

“Our cancer-killing pill is like a snowstorm that closes a key airline hub, shutting down all flights in and out only in planes carrying cancer cells.

"Results have been promising. AOH1996 can suppress tumour growth as a monotherapy or combination treatment in cell and animal models without resulting in toxicity. The investigational chemotherapeutic is currently in a Phase 1 clinical trial in humans at City of Hope."

"No one has ever targeted PCNA as a therapeutic because it was viewed as ‘undruggable,’ but clearly City of Hope was able to develop an investigational medicine for a challenging protein target," Long Gu, Ph.D., lead author of the study and an associate research professor in the Department of Molecular Diagnostics and Experimental Therapeutics at Beckman Research Institute of City of Hope, added.

"We discovered that PCNA is one of the potential causes of increased nucleic acid replication errors in cancer cells. Now that we know the problem area and can inhibit it, we will dig deeper to understand the process to develop more personalized, targeted cancer medicines."