

# New ovarian cancer drug Lynparza one step closer

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Ovarian cancer patients throughout Europe and the United States could soon be treated with a new drug discovered through pioneering research at the University of Sheffield funded by Yorkshire Cancer Research.

Lynparza has become the first of a new class of drugs called PARP inhibitors to be granted approval by the European Commission and the US Food and Drug Administration (FDA).

The National Institute for Health and Care Excellence (NICE) will now assess the drug to see whether it should become widely available on the NHS, with a decision expected in September 2015.

In 2005, Professor Thomas Helleday and his team of researchers at the University of Sheffield demonstrated how PARP inhibitors could be used as a tailored treatment for patients with BRCA2 mutations, which are seen in both hereditary ovarian and breast [cancer](#).

The discovery was patent protected and licensed to pharmaceutical company Astra-Zeneca who continued the development process and undertook successful clinical trials.

Professor Helleday said: "I am delighted that after all the hard work carried out since 2005 when we made the original discovery, Lynparza has now been licenced by the European Commission and the FDA. 150,000 women in the European Union suffer from [ovarian cancer](#). Last year, 21,980 women were diagnosed with ovarian cancer in the United States. Many of these patients will benefit from this new therapy.

"This could not have been achieved without the support of Yorkshire Cancer Research and the University of Sheffield. It is a fantastic example of academic institutions and charities collaborating to fund pioneering research."

Dr Helen Bryant, from the University of Sheffield's Department of Oncology and lead author of the research paper that was published in journal *Nature* in 2005, added: "The fundamental science idea and innovation came from Sheffield and has been taken forward to become a world first in this type of therapy, offering hope for patients worldwide.

"This type of innovation in basic research has increased the visibility of cancer research in Yorkshire and attracted other world leading researchers to the area. It shows what funding novel laboratory ideas at the grass roots level can do to change the treatment options available to patients."

PARP inhibitors work by blocking the cancer cell's ability to repair damage. Healthy cells reproduce by dividing DNA into two strands and copying each strand. Before they do this, they repair damage in the DNA using the PARP protein.

If PARP is suppressed, [normal cells](#) use a second mechanism for DNA repair. Some cancers cannot undergo this second process because they have a mutation in a BRCA gene. These cancer cells rely completely on PARP to fix the damage and so when PARP is suppressed the BRCA mutated cell is unable to grow and eventually dies. Normal cells of the patient with a functioning BRCA are not affected.

The novel element of the treatment is the fact that it is the mutation causing cancer that is exploited to specifically kill the cancer; this reduces the side effects often experienced with traditional anti-cancer treatments.

Clinical trials showed that Lynparza extends the length of time during and after the treatment of cancer that a patient lives with the disease without the disease getting worse.

Further [clinical trials](#) are currently taking place to see whether Lynparza could be used to treat other cancers.

The approval of Lynparza means that both the University of Sheffield and Yorkshire Cancer Research will continue to benefit financially from the work in which they invested in the early 2000s.

Valuable funds could be received by the charity, which will be invested to help cancer patients in Yorkshire.

Charles Rowett, Chief Executive Officer at Yorkshire Cancer Research, said: "We are incredibly proud that a treatment discovered in Yorkshire

with funding from our charity, then developed with the help of Big Pharma, is now one step closer to the patient. It's extremely rewarding to know that we have made a difference to the lives of people not only in Yorkshire, but across the world.

"We have been supporting innovative research at our region's universities and teaching hospitals for 90 years. The journey from lab to patient can be long, complicated and uncertain, so a successful outcome is a very exciting achievement. Not only this, but the financial benefits which flow from our original investment will undoubtedly have a huge benefit to our future mission to help more people avoid, survive and cope with cancer."

**More information:** "Specific killing of BRCA2-deficient tumours with inhibitors of poly(ADP-ribose) polymerase." *Nature* 434, 913-917 (14 April 2005) , [DOI: 10.1038/nature03443](https://doi.org/10.1038/nature03443) ; Received 14 October 2004; Accepted 9 February 2005

Provided by University of Sheffield

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