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News Release

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New cancer drugs may work best with other therapies, study finds

A class of anti-cancer drugs currently in development may work best on tumours when used with other therapies, research into dividing cells suggests.

A study of a key enzyme linked to development of some cancers suggests that it may be more complex than previously thought, and a combination of treatments may be needed to target it.

Studies in fruit flies compared two different methods of preventing the enzyme, or protein – known as Polo kinase – from functioning, which should limit tumour development.

They found that using a drug to interfere with the protein had a less damaging effect on cell development, when compared with mutations in the fly's DNA that neutralise the protein.

It was already known that the enzyme acted as a catalyst to fuel the growth of cancer cells, but the team found that it may have additional roles that support cell function, such as a structural role, or interaction with other proteins.

Some of these anti-cancer drugs, known as anti-mitotics, work by blocking the enzyme's surface at the site where it should bind to another molecule that provides energy. This stops the enzyme from functioning and leads to cell death. The study is the first of its kind to look at these processes in the cells of a whole organism – the fruit fly – rather than a lab dish.

The findings give researchers a better understanding of the workings of proteins that control cell division. This process must be carried out accurately to keep cells healthy, as when it goes out of control, it can lead to cancer. Scientists used high-resolution microscopy to view cells in 3D and determine the position of each of the proteins.

The study, published in the Royal Society journal *Open Biology*, was supported by the Wellcome Trust.

Dr Mar Carmena of the University of Edinburgh's School of Biological Sciences, who took part in the study, said: "This gives us valuable new insights into how these anti-mitotic drugs work in the dividing cells in tissues of an entire organism, and could help inform more effective strategies against certain cancers."

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