

Cancer

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Cancer The video demonstrated the effect of a drug called Gleevec on a particular type of leukemia known as chronic myelogenous or myeloid leukemia (CML). CML sometimes called chronic granulocytic leukemia (CGL) is one of four types of leukemia which affects the bone marrow and the blood. In the video the presenter notes that the BCR-ABL fusion protein phosphorylates a substrate or target protein which allows changes to occur in the shape of the substrate protein thereby stimulating growth of the cancer cell.

Leukemia cells increase in patients when the BCR-ABL phosphorylates a substrate protein. This phosphorylation arises when adenosine-triphosphate (ATP) binds itself to the BCR-ABL which transfers a phosphate group from the ATP to the target substrate protein. The phosphorylation causes the shape of the substrate to change thereby stimulating the growth of the cancerous cell. In other words, the BCR-ABL takes a phosphate group from the ATP which has attached itself to it and transfers this phosphate group to the substrate or target protein. The drug, Gleevec adopts the same shape as the ATP and follows a similar pattern to the action of the ATP in that Gleevec occupies the same position that ATP would have adopted in the BCR-ABL. Consequently, Gleevec stops the phosphorylation of the substrate protein by preventing ATP from attaching itself to the BCR-ABL protein. In this way Gleevec prevents the growth of the cancerous cells.

Reference

Liu, Dennis.(2003). The 2003 Holiday Lectures Series " Learning From Patients: The Science of Medicine." 2003. Web. 17 Nov. 2011.