

Height protein could be cancer and diabetes treatment target

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Dr Andrew Brooks and Professor Mike Waters

University of Queensland scientists have discovered that a protein that regulates how tall you grow could be used in treating diseases including cancer and diabetes.

Growth hormone, acting through its receptor, determines whether you are struggling to reach high shelves or bumping your head on doorways.

Researchers from UQ's Institute for Molecular Bioscience, led by Professor Mike Waters, have now found it is also an untapped target for

drugs.

"People without [growth hormone receptor](#) don't die from cancer or diabetes, making it an ideal drug target," Professor Waters said.

"But we didn't know enough about how it functioned to be able to design cancer or [diabetes drugs](#) that would bind to the receptor and turn it either on or off as appropriate.

"We've now figured out how growth hormone turns on its receptor at the molecular level, and so have a clear idea of which part of the molecule to target to design drugs to combat these diseases."

This is the culmination of 45 years of work studying growth hormone for Professor Waters, who originally cloned the receptor with Genentech, one of the world's leading biotechnology companies.

The discovery was published overnight in *Science*.

Dr Andrew Brooks, who led the study with Professor Waters, said the discovery had implications beyond cancer and diabetes.

"Growth [hormone receptor](#) is one of a group of proteins known as cytokine receptors, which are important targets for therapeutics for a range of disorders, including [inflammatory bowel disease](#), blood disorders, osteoporosis and obesity," Dr Brooks said.

"Our understanding of how [growth hormone](#) receptor functions should give us insights into how the other cytokine receptors work, which in turn will inform the design of therapeutics to target these cytokine receptors and to treat many diseases."

More information: Mechanism of Activation of Protein Kinase JAK2

by the Growth Hormone Receptor, *Science*, 2014.

Provided by University of Queensland

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