

Topic Page: [Bishop, J. Michael, 1936-](#)

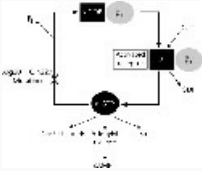


Image from: [Effect of stimulatory G protein- \$\alpha\$ \(Gs \$\alpha\$ \) mutations... in Encyclopedia of the Human Genome](#)

Summary Article: **Bishop, (John) Michael (1936–)**

From *The Hutchinson Unabridged Encyclopedia with Atlas and Weather Guide*

US virologist and molecular biologist who was awarded a Nobel Prize in Physiology or Medicine in 1989 with Harold Varmus for their discovery of oncogenes (cancer-causing genes), which, when over-activated or damaged, trigger a normal cell to divide in an uncontrolled fashion.

Together with Varmus, Bishop demonstrated that a gene (called the *src* gene) which is present in some viruses could transform mammalian cells into cells resembling cancer cells. The *src* gene was the first oncogene to be identified.

This gene is present, for example, in the avian sarcoma virus, which produces highly malignant tumours when injected into chickens.

He also demonstrated that the viral *src* gene is present naturally in the nucleus of some mammalian cells (under these circumstances it is called the cellular gene, *c-src*), where it plays a part in the normal growth and differentiation (specialization) of cells. When *c-src* genes become overactive or faulty, as in the presence of a virus, they produce an enzyme (called tyrosine kinase) that stimulates a cascade of growth signals to be produced by the cell, causing it to divide rapidly.

Bishop was born in York, Pennsylvania and studied at Gettysburg College and Harvard Medical School. Since his discovery of the *src* gene many more oncogenes have been found and it is hoped that cancer specialists will be able to use knowledge of these proto-oncogenes to develop drugs which will stop them being switched on, thus preventing cancer in the future.

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Bishop, (John) Michael (1936--). (2018). In Helicon (Ed.), *The Hutchinson unabridged encyclopedia with atlas and weather guide*. Abington, UK: Helicon. Retrieved from https://search.credoreference.com/content/topic/bishop_john_1936



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Chicago

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https://search.credoreference.com/content/topic/bishop_john_1936 [Accessed 23 October 2019].

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