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Summary Article: **Smith, Michael**

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

British molecular biologist who received the Nobel Prize for Chemistry in 1993 for his technique **site-specific mutagenesis**, a technique that replaced the way scientists established the function of a particular protein or gene, by using single strands of viral DNA to mutate the genetic code at precise locations.

Before Smith's technique, it was difficult to pinpoint the effects of a single mutant gene, because a mutation had to be induced in the gene, and available mutagens (substances that cause mutations) – chemicals or radiation – could not be controlled. Random and multiple mutations were inevitable. Site-specific mutagenesis uses viral DNA as the mutagen.

Smith synthesized a segment of complementary DNA that differed at a single site, and allowed it to bind to the original viral DNA. In the virus, the mutated genes produced mutated proteins. When these were compared with normal proteins in the virus, the impact of the mutation, and therefore the role of the normal gene, became obvious. The technique has since been used to synthesize a range of useful new proteins.

Born in Blackpool, Smith was educated at Manchester University, where he graduated in biochemistry. After obtaining his PhD in 1956, he flew to Vancouver, Canada, where he worked as a post-doctoral fellow at the University of British Columbia. In 1961, he was offered a position on the Fisheries Research Board of Canada, but went back to work at the university in 1966. A popular man, he was later appointed professor of biochemistry, and subsequently director of the biotechnology laboratory.

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