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## ARCHIVED - Famous Canadian Physicians

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### Sir Frederick Banting

Sir Frederick Banting was one of the twentieth century's most celebrated medical heroes. His discovery of insulin, made with his assistant Charles Best and other colleagues, was one of the most important medical breakthroughs of the century. Since its discovery, insulin has saved or transformed the lives of millions of people with diabetes.

Frederick Banting was born on November 14, 1891, in the town of Alliston, 60 km north of Toronto. He was the youngest of five children in a hard-working middle-class farm family that practised a strong Methodist faith. Young Fred was only a mediocre student; he struggled to finish high school, then failed first year Arts at the University of Toronto. But he dreamed of becoming a doctor and so he persevered through university until finally, in September 1912, he was admitted to the University of Toronto's Faculty of Medicine. One of his classmates was Norman Bethune, who would later achieve success as a surgeon.

### War service

Frederick Banting graduated from medical school in 1916 while the First World War was raging in Europe. He was anxious to take part in the war effort but was rejected twice because of poor eyesight. Undaunted, he tried again and was accepted into the Canadian Army Medical Corps. He left for France the next year and served first as a medical officer in the Amiens-Arras sector and later as medical officer with the 4th Canadian Division near Cambrai. In late September 1918, just weeks before Armistice, he was wounded in the right arm by an exploding German shell. Nonetheless, he continued treating other wounded patients. For his bravery and determination under fire, he was awarded the Military Cross.

Banting returned to Canada in February 1919. He completed his training as an orthopedic surgeon and, in July 1920, he began to practise medicine and surgery in London, Ontario. It was a struggle for this unknown doctor. He had only a few patients and was burdened with serious financial problems and a girlfriend who threatened to leave him. To earn extra cash, he took a part-time job lecturing in surgery and anatomy at the University of Western Ontario's medical school. His wage was two dollars an hour.

In his spare time, Dr. Banting began to paint simple watercolours, copying



**Source**  
Dr. Frederick Banting, circa 1920-1925, Toronto, Ontario



**Source**  
Dr. Frederick Banting and Marion Robertson Banting on their wedding day, June 4, 1924

pictures from magazines. He hoped to sell some of them to help pay his bills, but no one was interested.



Source  
Dr. Frederick Banting

## Birth of an idea

Dr. Banting was working as a part-time instructor at the university when, during a sleepless night on October 31, 1920, something he was reading in a medical journal suddenly clicked. He immediately jotted down an idea for research.

His idea was aimed at isolating the internal secretion of the pancreas, a jelly-like gland behind the stomach. He recalled from his lectures at medical school that this secretion supposedly regulated sugar in the bloodstream. If he could isolate this secretion, it might hold the key in the treatment of diabetes.



Source  
Sir Frederick Banting with his second wife Henrietta (Lady Banting), 1939

## Permission to proceed

Dr. Banting was excited about his idea and traveled to Toronto to discuss it with J.J.R. Macleod, professor of physiology, in his office at the University of Toronto. A skeptical Macleod listened as the shy and hesitant Banting described his plan, but he was not impressed. He wanted to know why Banting thought he could succeed when so many had failed.

The next year, in May 1921, the University granted Dr. Banting permission to proceed with his project. He would work under the direction of Professor Macleod, who gave him a small laboratory on the top floor of the university's medical building. He also loaned him one of his student research assistants, Charles Best, a recent graduate. The two began work on May 17, 1921.

## Work begins



Source  
Dr. Frederick Banting (right) and Dr. Charles Best, discoverers of insulin

Banting and Best conducted their experiment in the most dreary surroundings and for months, they failed to substantiate Dr. Banting's hypothesis. They persevered, testing their extract on dogs. It was long and arduous work and few believed they would succeed. But eventually, their diligence paid off.

The principal symptom of diabetes is a high level of sugar in the blood. To Dr. Banting's delight, injections of the extract, which he would later call "insulin," lowered the level of sugar in the blood of several diabetic dogs. These favorable results encouraged more research and, in the winter of 1921, they were able to announce that insulin had successfully treated the dogs' diabetes.

## Life-saving discovery

In December 1921, Macleod invited J.B. Collip, a trained biochemist, to join the research team. The team had yet to try this extract on a human. Their chance came on January 23, 1922, when Banting and Best took their extract to the Toronto General Hospital where a 14-year-old boy lay dying of diabetes. They injected the patient with an extract that Collip had made and purified from an ox pancreas. The boy was the first human diabetic to be injected with the

extract. The fact that he recovered was convincing proof that the Toronto team had made a remarkable discovery.

They had proved that insulin could be effective as a life-saving therapy for diabetes sufferers. As a result, Dr. Banting was named Canada's first Professor of Medical Research. By 1923, Frederick Banting, then thirty-two years old, was the most famous man in Canada. He received letters and gifts from hundreds of

