AWESOME stories

Insulin - A Life-Saving Discovery

In the early 20th century, people who had diabetes would usually die within a few years following their diagnosis. Dr. Frederick Banting - a young Canadian physician with not much of a medical practice and hardly any experience at all - wanted to change that pattern.

Worried about his own future, and his lack of patients, Banting had an idea during the middle of the night. While he was working-up a lecture he'd been asked to give, the twenty-eight-year-old doctor wrote these misspelled words on a piece of paper:

> *Diabetus. Ligate pancreatic ducts of dog. Keep dogs alive till acini degenerate leaving Islets. Try to isolate the internal secretion of these to relieve glucosurea.* (Banting's note, written on 31 October 1920, quoted by Stephen Eaton Hume in *Frederick Banting: Hero, Healer, Artist* at page 8.)

Banting's intuition would soon lead to a monumental medical breakthrough.

Expanding on the work of earlier scientists, the young doctor believed he might have discovered a way which could also *treat* - not just diagnose - the "sugar disease."

He shared his thoughts with Dr. John J.R. Macleod (then head of physiology at the University of Toronto). On the 8th of March, 1921, Banting asked Macleod for lab space to further research his idea.

What prior research had led Banting to his breakthrough? We learn the answer to that question from "A Science Odyssey," at PBS:

> *Late in the nineteenth century, scientists had realized there was a connection between the pancreas and diabetes. The connection was further narrowed down to the islets of Langerhans, a part of the pancreas. From 1910 to 1920, Oscar Minkowski and others tried unsuccessfully to find and extract the active ingredient from the islets of Langerhans.*
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> *While reading a paper on the subject in 1920, Banting had an inspiration. He realized that the pancreas' digestive juice was destroying the islets of Langerhans hormone before it could be isolated. If he could stop the pancreas from working, but keep the islets of Langerhans going, he should be able to find the stuff!*
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> *He presented this idea to Macleod, who at first scoffed at it. Banting badgered him until finally Macleod gave him lab space, 10 experimental dogs, and a medical student assistant.*

That medical assistant/student was Charles Best. On the 27th of July, 1921 - while working in their lab at the University of Toronto - Banting and Best isolated insulin.

Later, Banting also asked Macleod if James Bertram ("J.B.") Collip - a biochemist from the University of Alberta (at Edmonton) - could join the research team. Collip, who was on sabbatical at the time, ultimately played a significant role in purifying insulin so that it could be used by humans.

When this interview with Dr. Best took place, in July of 1959, Dr. Banting was already dead. While flying to England, during World War II, his plane crashed over Newfoundland.

Although he was mortally wounded, Banting treated the pilot's injuries. When he died, as a result of the plane crash, Banting - a Nobel Laureate and medical-research pioneer - was 49 years old.

In this clip, "From the Film Library - British Medical Association and British Life Assurance Trust for Health Education," we also meet Dr. Liston (the interviewer) and Dr. R.D. (Robert Daniel) Lawrence (a physician and diabetic).

Dr. Lawrence says that he was diagnosed with diabetes at the age of 27. So ill he thought he was dying, Lawrence was ecstatic to learn about artificial insulin. After only a few days of treatment, he felt much better.

Also in this interview, Dr. Best relates the moment when he and Dr. Banting first realized their treatment of a diabetic dog had been successful.

The incredible impact of Dr. Banting's insight continues to this day. The World Health Organization estimates that about 422 million people, throughout the world, have diabetes. Of that number, at least 10 million individudals have "Type 1" (which means they are insulin-dependent).

There is still no-known cure for Type 1 diabetes.

Years later, putting his life in perspective, Dr. Banting realized something profound. What he had once perceived as a failure led to his scientific breakthrough:

> *Had I not failed in my one year at London* (Ontario)*, I might never have started my research work...yet it was there that I obtained the idea that was to alter every plan that I had ever made, the idea which was to change my future and possibly the future.*

See, also:

Insulin - Effective Treatment for Type 1 Diabetes (part 2 of this interview)

Credits:

Part 1 of Dr. Liston's interview - "Talk about Insulin" - with Dr. Charles Best and Dr. R.D. Lawrence.

"From the Film Library - British Medical Association and British Life Assurance Trust for Health Education," online via YouTube. Filmed in July 1959; funded by the British Insulin Manufacturers Association. Online, courtesy Archive.org.

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