**Macleod’s Visit from Banting (8th Nov 1920)**

Born on a farm in Ontario in 1892, Frederick Banting studied medicine in Toronto where his class were rushed through final year to graduate early in late 2016 so they could contribute to the war effort. Banting spent time working in military hospitals in England before being sent to the front. With the rank of Captain, he was awarded a Military Cross for bravery under fire at Cambrai and received a shrapnel wound to his arm which ended his active service. After recovering in England, he spent time in the military hospital in Toronto before being demobbed. He then had a year of surgical training but was not offered a further post in surgery and so set up a general practice in London, Ontario. Business was slow and he undertook some teaching to supplement his income. While preparing a lecture on the pancreas and studying relevant books and journals he one night came up with an idea that might allow preparation of an extract for treating diabetes. He was directed by his seniors to consult with Macleod, a world expert on the subject, in nearby Toronto – and they met in November 1920.

**Diabetes in 1920 – the background**

It is worth pointing out the situation as regards diabetes, and the search for a treatment at this time. There were no useful drugs available. Those developing the severe from of the condition (known nowadays as Type 1 diabetes) were typically children and young adults. The diagnosis was effectively a death sentence with survival mostly in terms of a few months. The only treatment, a very sparse diet amounting to near starvation, was for many worse than the disease. It had seemed likely since 1889 that a defect in the pancreas may cause some kinds of diabetes. Many groups had tried to isolate a pancreatic extract that could lower the blood sugar in experimental animals. Some – including Rennie & Fraser in Aberdeen experimenting with fish pancreas in the early 1900s – had even tried extracts on patients with diabetes. A few extracts had temporarily shown some lowering of blood sugar but all were too toxic to be tolerated for more than a day or two. Many doubted whether there would ever be a useful pancreas extract produced. Some hope for those researching in diabetes came with the recent development of techniques for measuring sugar on small amounts of blood which made repeat testing a possibility.

**The project begins (May 1921)**

Despite Banting’s lack of research experience and limited knowledge of the subject, Macleod continued his habit of encouraging young researchers and invited Banting to come to his laboratory for a few weeks the following summer where he would be given lab space, a student assistant and some dogs to work on. In May 1921, Banting arrived in Toronto and had meetings with Macleod to discuss the plan of research – and the Professor demonstrated the techniques of pancreas surgery on an anaesthetised dog. Charles Best was to be Banting’s assistant and the pair set out on a few weeks of experiments. The techniques were difficult and numerous dogs died during or shortly after surgery. Their skills improved, however, and by the end of July, they had successfully prepared an extract that was shown to lower the blood glucose in a diabetic dog. The extract was impure and not well tolerated such that most dogs receiving it did not survive for very long.

**Some success – and some difficulties (late summer 1921)**

By this stage, Banting was already totally convinced that he was the first to discover what would become known as insulin. He was apparently unaware that his big idea – of tying the pancreatic duct and waiting for the digestive part of the gland to shrivel up - had been tried many years before (and