In reflecting on who deserved the credit for bringing useful insulin to the world, Professor Michael Bliss of Toronto concluded in his definitive 1982 history, ‘The Discovery of Insulin’, that Banting, Best, Collip and Macleod all deserved a share of the credit. It was true that previous researchers had found pancreatic extracts that lowered glucose, mostly in diabetic dogs, but none had produced anything reliably suitable for treating diabetes. The labours of Banting and Best on their dogs through the hot summer of 1921 had undoubtedly driven the work forward and led to the production of a crude extract – but this barely matched the achievements of Zuelzer in Berlin in 1908. The input of Macleod – the internationally renowned expert on experimental physiology and diabetes – was central from the outset in advising and planning the research, in ensuring its proven scientific value, in evaluating the properties of insulin and in giving it to the world. Undoubtedly, the skill and industry of Collip in producing a purified version of the extract was a critical step in yielding a usable treatment.

At the time – and in subsequent decades, however, circumstances saw variable outcomes for the four participants. Banting continued to lobby against Macleod as having made virtually no contribution yet attempting to steal the glory. The legend grew of the Canadian farm boy having a great idea (which was neither original nor ultimately relevant) beating all the odds and making a great medical discovery despite the oppression of the professor. Banting was given a generous annuity by the Canadian Government and a Professorship with annual funds by the University of Toronto all designed to promote further research. After treating patients with insulin for about 2 years, Banting left diabetes to focus on research but made no major contributions to science. Best and Collip, who received no such acclaim – or funding - each made numerous scientific discoveries in their future work.

**The Nobel Prize 1923**

The Nobel Committee recognised the major breakthrough made by the discovery of usable insulin and in 1923, unusually quickly after the discovery, jointly awarded the Nobel Prize for Medicine or Physiology to Banting and Macleod. Banting was furious at Macleod’s inclusion and almost refused to accept. Neither Best nor Collip had been nominated; the rules allow a maximum of 3 scientists sharing an award. Banting shared his prize money with Best; Macleod shared his with Collip. Banting, still totally (and misguidedly) convinced that his idea and work was all-important, continued to complain about the trivial contribution of Macleod, the world famous professor who had allowed him facilities in his laboratory.

**Professor Macleod’s Return to Aberdeen**

Macleod continued his work as a teacher and administrator in the University, as an author and as a productive physiologist, including further research on insulin action and the potential of using fish insulin. However by 1928, perhaps having tolerated as much as he could of Banting’s jibes, he was pleased to return to his first university to take over the Regius Chair in Physiology in Aberdeen, replacing his own teacher, J A MacWilliam on his retirement. The return of a famous Nobel prize winner to his old university was hailed in the local press. He was involved in developments in physiology teaching and further research in his own department, with the Rowett Institute and the Torry Fishery Research Station on glycogen in liver and muscle, control of insulin secretion, absorption of nutrients and effects of temperature on metabolism in fish. He gave numerous lectures – including on a 2 month sabbatical in Baltimore as visiting professor of physiology at Johns Hopkins University in 1933. He welcomed many visiting researchers to his Aberdeen department