



# Diabetes research – a bright future

**Professor Noel Morgan** highlights key developments in the immunology and genetics of diabetes and praises the commitment of Diabetes UK and its partners in promoting the research agenda

**A**s you are undoubtedly aware, diabetes is on the increase and currently affects 3.3 million people in the UK, with many more remaining undiagnosed. Hence, the research community is faced with the huge challenge of understanding the causes of this rising tide and of finding effective means to stem it and to treat those who live with the condition. Remarkably, for a condition with such a wide reach among the British population (and elsewhere), the amount of investment in new research is very modest in comparison with the costs associated with treating diabetes and its complications. Most estimates suggest that some 10 per cent of total healthcare spending in Britain is consumed in the treatment of diabetes and its complications, whereas the nation's investment in research lags far behind this figure.

Against this background, it is important that Diabetes UK continues to champion the cause of people with diabetes and to raise funds for innovative research. This is a critical mission and they are using their influence and expertise to lobby and leverage funds from partners who can contribute to the goal. Among these, the huge success of the recent collaboration with Tesco is a prime example. This partnership has clearly struck a chord with members of the public, who have responded generously, which, as you will read on page 24, has enabled the establishment of an entirely new network of centres across the country to study Type 1 diabetes. These will collaborate to evaluate the possibility that selective targeting of the immune system may help to slow the progression of the condition in newly diagnosed patients. This is a truly exciting development.

## Diabetes & the immune system

Targeting of the immune system may well open up new avenues for the treatment of Type 1 diabetes but there is also a school of thought which considers that the beta cells within the pancreas are, themselves, complicit in the illness. This emphasises the importance of gaining a more holistic understanding of the many factors involved in causing diabetes, as we consider how best to treat it. For example, it may come as a real surprise to learn that the number of people newly diagnosed with Type 1 diabetes in whom the disease process has been studied at the level of the pancreas is incredibly small. In fact, this has been achieved in fewer than 200 people worldwide over the last century. Therefore, another important objective is to increase our understanding of the cellular events causing beta cell death. A number of initiatives are

ongoing across the world to assist in this objective and, when pieced together with the new data arising from Diabetes UK's Tesco-supported collaboration, this should truly enhance our understanding. In particular, we may learn more about the popular idea that viral infection could be a triggering factor that causes Type 1 diabetes, which will enable more effective protection of the beta cells in future.

## Diabetes & genetics

Another critical aspect of the research mission relates to the genetics of diabetes. It is inappropriate to attempt to completely separate genetic and environmental influences, since these almost certainly work together to cause the condition. This is true both for Type 1 diabetes, where one overriding genetic factor predominates, and for Type 2 diabetes, where a multitude of more subtle influences may be at work. Impressive strides have been taken in recent years to understand the genetics of diabetes (in all its forms) and, as you will read on page 30, researchers in the UK have been at the forefront of these studies. The outcomes have revealed a complex matrix of genetic factors, which influence the likelihood that any individual may develop Type 2 diabetes and have helped to set us on the road to a more 'tailored' approach to treatment. This is likely to

be the focus of even more intense scrutiny moving forward and may herald a day when patients receive an individualised programme of therapy that takes account of their genetic make-up, as well as their lifestyle and circumstances.

## The value of small steps

Importantly, the improved understanding and new treatment options highlighted here have come from painstaking research undertaken at a fundamental level. Often it is impossible to predict exactly what the outcomes will be when a piece of research is conceived, but it is from these small acorns that great oak trees grow. So, a final plea would be to remember that funds must continue to be made available to support basic research. The headline-grabbing breakthrough is extremely rare.

Collaborative efforts, where a small step taken by one team undertaking basic research is combined with a modest advance made by another, often produce a much bigger (and unexpected) prize than either would have achieved alone. Diabetes UK is to be applauded for championing this approach, as it will ensure that real benefits for people with diabetes will continue to emerge from the UK's world-leading research endeavours.

### BIOGRAPHY PROFESSOR NOEL MORGAN

Noel Morgan is Professor of Endocrine Pharmacology at the University of Exeter Medical School, where he leads a team studying the cell and molecular changes in the pancreas that cause Type 1 and Type 2 diabetes. He has chaired Diabetes UK's Science and Research Advisory Group since 2009 and completes his term in 2015.