



India-Scotland Partnership for  
pPrecision mEdicine in Diabetes

The INSPIRED Project is funded by the NIHR Global Health Research Programme

The University of Dundee has been awarded a £7million grant from the National Institute of Health Research Global Health programme to establish a major new Scotland-India clinical partnership to combat diabetes.

## The Aim of the Project

Diabetes in India and Scotland will be compared and contrasted to determine the common and specific problems in both countries, with the aim of providing an improvement in health and reduction in health inequalities in India and Scotland.

## The Project

INSPIRED is a collaboration between the University of Dundee and the Madras Diabetes Research Foundation. The partnership is focused on using this extensive infrastructure to deliver precision medicine to improve outcomes in patients with diabetes in India and the UK. Both groups are studying the molecular and clinical causes of major complications of type 2 diabetes such as heart disease, blindness, kidney failure and amputations. The UK investigators pioneered the concept of personalised medicine through the use of genetics to determine who will and will not respond to commonly used drugs in diabetes. They have also shown that using computers and the internet to summarise and communicate the patient's medical details to the doctor leads to better health outcomes; and have made substantial inroads in the use of artificial intelligence to analyse digital pictures of patient retinas to find features that reveal a patient's current disease status. It is INSPIRED's ambition to advance knowledge in the field by combining clinical, retinal image and molecular information to build predictive models of complications for personalised diabetes treatment in the UK and India. In particular to provide a low cost, agile and sustainable solution supported by telemedicine for outreach to the poorest populations in rural India, the urban slums and potentially other low- and medium-income countries.

### Dr V. Mohan

Dr. Mohan is Chairman and Chief of Diabetology at Dr. Mohan's Diabetes Specialties Centre, Chennai, South India, a World Health Organization Collaborating



Centre for Noncommunicable Diseases Prevention and Control. He also serves as Director of the Madras Diabetes Research Foundation (MDRF). Dr Mohan has several productive international research collaborations, and has contributed to more than 700 original publications. His remarkable reach in training health care providers includes efforts supported by the World Diabetes Foundation (Denmark) and Public Health Foundation of India, through which he has trained more than 20,000 providers in India, Kenya, Tanzania, Nigeria, Uganda, Cambodia, Vietnam, Bhutan, Sri Lanka and Nepal. He also provides lifelong, free treatment to thousands of patients.

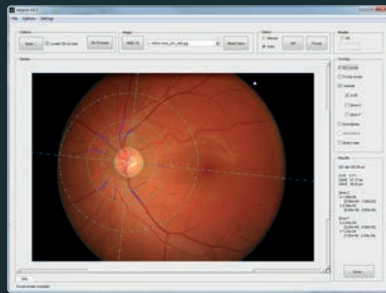
“ We in India are excited about the Indo-Scottish Collaboration on diabetes as it will help us to understand the responses to treatment in type 2 diabetes better. It will also help us to take specialise diabetes prevention and care to remote rural areas of India using technology. ”

Dr V. Mohan

## VAMPIRE Software Introduced

**INSPIRED** is using imaging technology that measures blood vessels in the retina with the aim of identifying biomarkers for risk and progress of a wide range of diseases.

The software – known as VAMPIRE (Vessel Assessment and Measurement Platform for Images of the REtina) – allows scientists to analyse the shape of blood vessels in thousands of images at a time and can identify candidate indicators of disease.



Professor Emanuele Trucco, of the University of Dundee's School of Computing, believes the VAMPIRE software, designed to assess the morphometry of vessels in the retina and developed in collaboration with the University of Edinburgh (Dr Tom MacGillivray), may help scientists spot the early signs of heart disease, diabetes and dementia as it is known that changes to the retina are often a sign of sickness elsewhere in the body. Professor Trucco added, "The ultimate aim is to develop a practical software tool that will support efficient and accurate measurement and analysis of large collections of retinal images. The potential for research and clinical impact is huge".

## Dr Mohan receives American Diabetes Association's® 2018 Harold Rifkin Award for Distinguished International Service in the Cause of Diabetes

Dr Mohan was selected to receive the American Diabetes Association's® (ADA's) 2018 Harold Rifkin Award for Distinguished International Service in the Cause of Diabetes at the ADA's 78th Scientific Sessions, June 22-26, 2018.

“ People in Scotland can contribute directly to this research by signing up to SHARE at [www.registerforshare.org](http://www.registerforshare.org) Nearly 200,000 people have already signed up to SHARE to date and are helping diabetes research in Scotland. ”



Dr Mohan receiving the Harold Rifkin Award from Dr. Jane Reusch, President of the American Diabetes Association

## Go DARTS is celebrating its 20th Anniversary!

GoDARTS is an electronic database of recruited volunteers who have provided a blood sample for DNA extraction, for research purposes. At the same time, they were invited to provide phenotypic data (clinical and lifestyle factors), through questionnaires and clinical examination. This valuable resource is helping us to identify the relative contribution of specific genetic and environmental factors that are associated with disease onset, progression and response to treatment.

The Scottish Health Research Register (**SHARE**) is another unique initiative, created to establish a database of people interested in participating in health research, making it easier for doctors and researchers to carry out ground breaking research, such as the INSPIRED project.

**GoDARTS**  
GENETICS OF DIABETES AUDIT AND RESEARCH  
TAYSIDE AND SCOTLAND



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