

New study aims to use stem cells to help save sight of diabetes sufferers

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Scientists at Queen's University Belfast are hoping to develop a novel approach that could save the sight of millions of diabetes sufferers using adult stem cells.

Currently millions of diabetics worldwide are at risk of sight loss due to a condition called Diabetic Retinopathy. This is when [high blood sugar](#) causes the blood vessels in the eye to become blocked or to leak. Failed blood flow harms the [retina](#) and leads to [vision impairment](#) and if left untreated can lead to blindness.

The novel REDDSTAR study (Repair of Diabetic Damage by Stromal Cell Administration) involving researchers from Queen's Centre for Vision and Vascular Science in the School of Medicine, Dentistry and Biomedical Sciences, will see them isolating stem cells from donors, expanding them in a laboratory setting and re-delivering them to a patient where they help to repair the blood vessels in the eye. This is especially relevant to patients with diabetes where the vessels of the retina become damaged.

At present there are very few treatments available to control the progression of [diabetic complications](#). There are no treatments which will improve [glucose levels](#) and simultaneously treat the diabetic complication.

The €6 million EU funded research is being carried out with NUI Galway and brings together experts from Northern Ireland, Ireland,

Germany, the Netherlands, Denmark, Portugal and the US.

Professor Alan Stitt, Director of the Centre for Vision and Vascular Science in Queen's and lead scientist for the project said: "The Queen's component of the REDDSTAR study involves investigating the potential of a unique stem [cell population](#) to promote repair of damaged blood vessels in the retina during diabetes. The impact could be profound for patients, because regeneration of damaged retina could prevent progression of diabetic retinopathy and reduce the risk of [vision loss](#).

"Currently available treatments for diabetic retinopathy are not always satisfactory. They focus on end-stages of the disease, carry many side effects and fail to address the root causes of the condition. A novel, alternative therapeutic approach is to harness adult stem cells to promote regeneration of the damaged retinal blood vessels and thereby prevent and/or reverse retinopathy."

"This new research project is one of several regenerative medicine approaches ongoing in the centre. The approach is quite simple: we plan to isolate a very defined population of stem cells and then deliver them to sites in the body that have been damaged by diabetes. In the case of some patients with diabetes, they may gain enormous benefit from stem cell-mediated repair of damaged blood vessels in their retina. This is the first step towards an exciting new therapy in an area where it is desperately needed."

The research focuses on specific [adult stem-cells](#) derived from bone-marrow. Which are being provided by Orbsen Therapeutics, a spin-out from the Science Foundation Ireland-funded Regenerative Medicine Institute (REMEDI) at NUI Galway.

The project will develop ways to grow the bone-marrow-derived [stem cells](#). They will be tested in several preclinical models of diabetic

complications at centres in Belfast, Galway, Munich, Berlin and Porto before human trials take place in Denmark.

Provided by Queen's University Belfast

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