Preceyes supports targeted drug delivery in the eye with robot assistance

Eindhoven, 27 December 2016 – Surgeons at Oxford's John Radcliffe Hospital used Preceyes' robot for prolonged delivery of a drug in the eye, a world's first using robotic assistance.

Robert MacLaren, Professor of Ophthalmology, used the PRECEYES Surgical System to treat a subretinal haemorrhage with a subretinal tPA injection. The procedure was successfully carried out under local anesthesia. Preceyes' robot allowed an accurate and steady instrument position within the subretinal space whilst administering the blood dissolving agent tPA. This is the first patient to undergo this procedure with robotic assistance and it is the first robot-assisted eye surgery ever to be performed under local anesthesia.

Preceyes and the team at the University of Oxford's Nuffield Laboratory of Ophthalmology have worked together to enable this clinical trial. In the first part of the trial, 12 macular peeling procedures have been carried out successfully, of which 6 using Preceyes' robotic assistance. Subretinal tPA injection is the next step in the trial. The trial targets to assess the robotic system to facilitate ocular gene therapy delivery. The trial is funded by the NIHR Oxford Biomedical Research Centre with support from Oxford University Hospitals NHS Foundation Trust, which runs the hospital, and sponsored by the University of Oxford.

Robert MacLaren said: "We have successfully entered the next phase of the robotic retinal dissection device (R2D2) clinical trial and used the robot to inject a drug slowly under the retina in a patient who suffered a retinal bleed. The operation was performed successfully under local anaesthetic without any complications. It is still early days, but we hope this milestone brings us closer to our eventual goal of using robotic surgery to deliver gene therapy and stem cell treatments for currently incurable retinal diseases."

Prof. Marc de Smet, MD, Chief Medical Officer of Preceyes said: "This new milestone is an important next step in a process of breakthrough innovation for Preceyes. We have previously shown in live animals that targeted drug delivery to the sub-retinal space as well as successful cannulation of small retinal vessels are possible using the Preceyes platform. The current surgery confirms both precision and stability of our platform for a prolonged deliberate injection under local anesthesia in humans. This demonstrates that our technology enables to perform these high-precision drug delivery treatments in the eye."

Further information

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PRECEYES Surgical System

The PRECEYES Surgical System manipulates the instrument that enters the eye and is controlled using the motion controller on the left - Copyright and courtesy of BBC.

About Preceyes B.V.

Preceyes B.V. is a medical robotics company focussed on ocular surgery in the eye care market. The company develops innovative robotic solutions to assist eye surgeons in performing the most demanding surgical tasks. The company's first target is vitreoretinal surgery, supporting the development of new, high-precision treatments and facilitating existing surgery. Preceyes is a spin-out of the Eindhoven University of Technology and is located at the TU/e Science Park in Eindhoven, the Netherlands. Preceyes leverages the mechatronics capability of the Dutch Brainport region. www.preceyes.nl

About the Oxford University Hospitals NHS Foundation Trust (OUH)

The OUH is one of the largest acute teaching trusts in the UK, with a national and international reputation for the excellence of its services and its role in patient care, teaching and research. The Trust supports world-leading research programmes in cardiovascular diseases, musculoskeletal disorders, neurological disorders such as Parkinson's and Alzheimer's through its designation as one of the UK's five comprehensive biomedical centres and units. It works in close partnership with the University of Oxford and is a leading centre for cancer, neurosciences, diabetes, genetics and many other fields. Research themes of particular strength are: cancer, cardiovascular science, diabetes, endocrinology & metabolism, infection and immunology, musculoskeletal science, neuroscience and reproduction and development. As of October 1 2015, the Trust was awarded Foundation Trust status. This decision comes after the Care Quality Commission gave OUH an overall rating of 'Good' in May 2014, and after scrutiny of the Trust's

quality, finances, service delivery and governance arrangements by the NHS Trust Development Authority and Monitor. The Trust has been designated as a major trauma centre and is one of four UK centres for craniofacial surgery and The Trust employs over 12,000 staff and consists of four hospitals: the Churchill Hospital, John Radcliffe Hospital and Nuffield Orthopaedic Centre in Oxford and the Horton General Hospital in Banbury. www.ouh.nhs.uk

About the University of Oxford's Medical Sciences Division

The University of Oxford's Medical Sciences Division is one of the largest biomedical research centres in Europe, with over 2,500 people involved in research and more than 2,800 students. The University is rated the best in the world for medicine, and it is home to the UK's top-ranked medical school. From the genetic and molecular basis of disease to the latest advances in neuroscience, Oxford is at the forefront of medical research. It has one of the largest clinical trial portfolios in the UK and great expertise in taking discoveries from the lab into the clinic. Partnerships with the local NHS Trusts enable patients to benefit from close links between medical research and healthcare delivery. A great strength of Oxford medicine is its long-standing network of clinical research units in Asia and Africa, enabling world-leading research on the most pressing global health challenges such as malaria, TB, HIV/AIDS and flu. Oxford is also renowned for its large-scale studies which examine the role of factors such as smoking, alcohol and diet on cancer, heart disease and other conditions.

About the NIHR Oxford Biomedical Research Centre

The NIHR Oxford Biomedical Research Centre is funded by the National Institute for Health Research, and is a partnership between the Oxford University Hospitals NHS Foundation Trust and the University of Oxford. The NIHR provides the NHS with the support and infrastructure it needs to conduct first-class research funded by the Government and its partners alongside high-quality patient care, education and training. Its aim is to support outstanding individuals (both leaders and collaborators), working in world class facilities (both NHS and university), and conducting leading edge research focused on the needs of patients.

About the National Institute for Health Research (NIHR)

The NIHR is funded by the Department of Health to improve the health and wealth of the nation through research. The NIHR is the research arm of the NHS. Since its establishment in April 2006, the NIHR has transformed research in the NHS. It has increased the volume of applied health research for the benefit of patients and the public, driven faster translation of basic science discoveries into tangible benefits for patients and the economy, and developed and supported the people who conduct and contribute to applied health research. The NIHR plays a key role in the Government's strategy for economic growth, attracting investment by the life-sciences industries through its world-class infrastructure for health research. Together, the NIHR people, programmes, centres of excellence and systems represent the most integrated health research system in the world. For further information, visit the NIHR website (www.nihr.ac.uk).