TargetAMD Press release

TargetAMD: A transposon-based, targeted *ex vivo* gene therapy EU project for the treatment of age-related macular degeneration (AMD)

AMD, a neurodegenerative disease of the retina, is a major cause of blindness in the elderly. The current treatment for the exudative form of the disease, i.e., frequent often monthly intravitreal injections of anti-VEGF antibodies, is complex, side-effect associated and expensive. The projected increase in the incidence of AMD due to the aging population has been referred to as a societal "time bomb".

In a 1st in man clinical trial TargetAMD aims to treat AMD patients during a single 60-minute surgical session.

A European team of academics, scientists and companies has developed a novel gene delivery technology, reagents and devices that will be translated into a safe gene therapeutic treatment for wet AMD. Experienced ophthalmic surgeons will perform a phase Ia/IIB clinical trial, which comprises isolation, genetic modification and implantation of PEDF-transfected patient's IPE cells into the subretinal space during a single, 60-minute surgical session. Integration of the *PEDF* gene into the host cell genome will be mediated by the non-viral Sleeping Beauty transposon system with the transposase and the *PEDF* gene encoded in Free of Antibiotic Resistance (pFAR) miniplasmids, thus combining the efficacy of transposon based gene delivery with the safety of pFAR miniplasmids.

On October 19th, 2016 the TargetAMD consortium will hold a symposium in Florence, Italy, to discuss the latest results of the EU project and special challenges in cell and gene therapy. The focus will be the translation of advanced gene therapeutic protocols to the clinic and the prerequisites of newly developed procedures required to assure the highest quality of medicinal products. Leading experts in the field of non-viral gene therapy will discuss options and obstacles.

As a silver sponsor of the ESGCT 2016 congress, Florence, Italy, taking place in parallel to the TargetAMD symposium, the consortium will present the latest project results. The modified electroporation device, the Cliniporator®, and modified cuvettes developed for the transfection of low cell numbers will be physically demonstrated at the Target AMD booth.

I*n vitro* studies have shown that using the newly developed Cliniporator®, micro-cuvettes and buffer, the *PEDF* gene can be can efficiently delivered to freshly isolated pigment epithelial cells. Deep sequencing has shown an almost random integration profile without preference of insertion into oncogenes; tumorigenicity was excluded by a soft-agar assay. *In vivo* biodistribution studies have shown that neither the transfected cells nor the plasmids migrated from the site of transplantation. Effectiveness of treatment has been demonstrated in a rat model of choroidal neovascularization.

The goals of the TargetAMD project are to bring significant improvement in the quality of life to AMD patients by providing possibly life-long improvement of vision in wet AMD patients with one intervention, by avoiding the frequent intravitreal injections, possible severe side effects, and high monetary and psychological costs for the patient and society. The project highlights the synergistic power of academic, clinical and industrial cooperation for opening new markets for transposon-based gene therapy products and clinical applications.

Meet the TargetAMD consortium and leading gene therapy experts to discuss project results and examine the challenge of what can be expressed as "Lost in translation – the long way to bring non-viral gene therapy into clinic" on 19th October 2016 at 6 pm at Grand Hotel Baglioni, Italy.

For more information please see: TargetAMD webpage

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