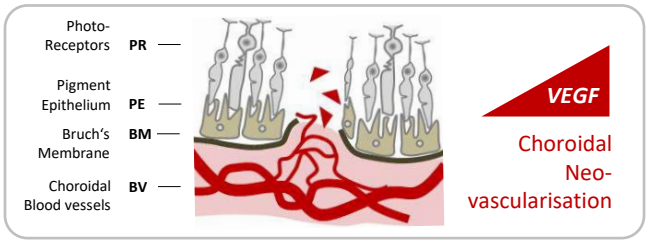
Project Target AMD

Transposon-Based, Targeted
Ex Vivo Gene Therapy
To Treat
Age-Related Macular Degeneration

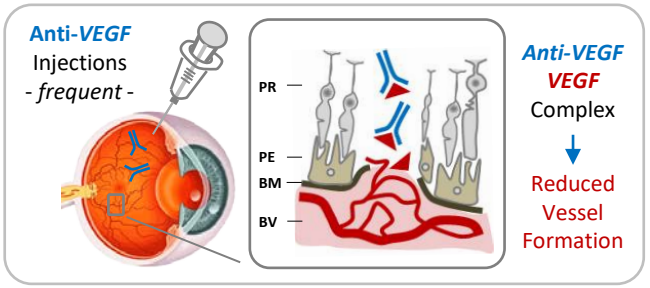
Piloting the 1st EU Study in Human
Clinical Trial Phase Ib/ IIa

Purpose

Patients with exudative age-related macular degeneration (AMD) suffer from a choroidal neovascularisation (CNV) resulting from an increased level of the pro-angiogenic *vascular endothelial growth factor* (*VEGF*).



Current treatments comprise frequent intravitreal injections of anti-*VEGF* to inhibit CNV and prevent the subsequent retinal damage.

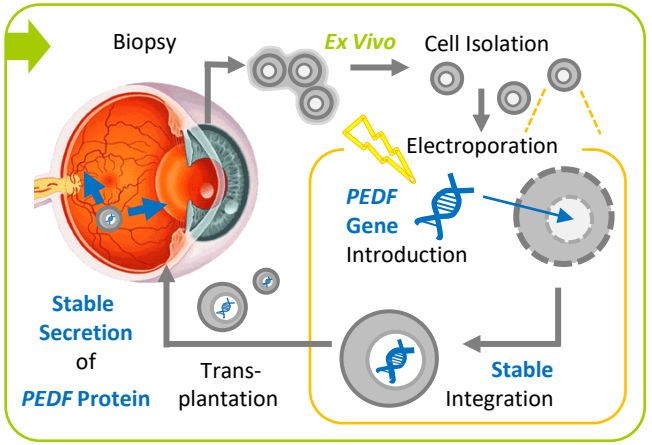


The aim of TargetAMD was the development of a non-viral gene therapeutic approach for the treatment of exudative AMD by transplanting genetically modified autologous retinal pigment epithelial (RPE) cells that express and secrete continuously the recombinant anti-angiogenic *pigment epithelium-derived factor* (*PEDF*). *PEDF* is a natural antagonist of *VEGF* that inhibits the growth of the newly formed choroidal blood vessels.

TargetAMD Approach

TargetAMD aims to accomplish the 1st European pilot study in human to evaluate the safety of the non-viral *Sleeping Beauty* (*SB100X*) transposon system in an autologous cell-based gene therapeutic approach.

- RPE cells will be isolated from biopsies from end-staged exudative AMD patients. The small number of the autologous cells will be genetically modified *ex vivo* and immediately transplanted subretinally within one surgical session.



- The human *PEDF* gene will be introduced *ex vivo* into the genome of cells isolated from a patient by electroporation using equipment (Cliniporator®) and reagents developed by the TargetAMD partners.
- The safety of the approach was enhanced by combining the *Sleeping Beauty* (*SB100X*) transposon system with the pFAR4 system, miniplasmids free of antibiotic resistance genes.
- *In vitro* and *in vivo* studies were performed to proof the safety of the pFAR4 PEDF transposon system.
- Novel plasmids and reagents are produced under GMP (Good Manufacturing Practice) specifications.

EU 7th Framework Programme

Benefits

The TargetAMD consortium enhanced the safety of transposon-based gene delivery. Newly established safety standards will facilitate translation of basic research into future clinical applications.

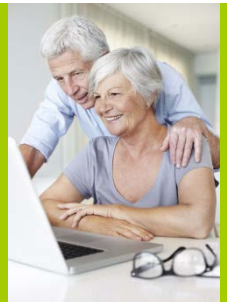
TargetAMD essential features:

Combination of the pFAR4 & *SB100X* technology	Optimisation of transfection parameters	GMP production of plasmids and reagents	Applying for approval of clinical trials based on safety studies

TargetAMD advantages:

- Establishment of a new, safe and practical approach to gene and cell therapy.
- Development of Standard Operating Procedures for a cell-based gene therapeutic approach.
- First approval for this new clinical treatment by the regulatory authorities in Europe.
- Only one surgical session will result in a long lasting and cost-efficientstar treatment for exudative AMD.
- Improvement of the patient's quality of life allowing a more active ageing.
- Market launch of novel and optimised devices and approved reagents.
- Provide information for the benefit of future patients and clinical trials.
- Transfer of protocols developed for TargetAMD to other clinical disciplines.

Cost-Efficient Non-Viral Gene Therapeutic Approach To Restore Vision In Patients With Exudative AMD



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Consortium

The TargetAMD consortium is an interdisciplinary team of 13 partners, SMEs, academic scientists and clinicians, supported by project management, from 8 European countries. TargetAMD aims to transfer a cell-based gene therapeutic approach for patients suffering from exudative AMD into a phase Ib/ IIa clinical trial.

Project Partners

- University of Geneva, CH
- RWTH Aachen University, DE
- Max Delbrück Center for Molecular Medicine in the Helmholtz Association, DE
- Paul Ehrlich Institut, DE
- Universidad de Navarra, ES
- IGEA S.p.A., IT
- UD-Genomed Medical Genomics Technologies Ltd., HU
- Centre National de la Recherche Scientifique, FR
- 3P Biopharmaceuticals, S.L., ES
- Genosafe SAS, FR
- Rudolf Foundation Hospital, AT
- Stichting Amsterdam Biotherapeutics Unit, NL
- University Hospital RWTH Aachen, DE

www.targetamd.eu

Project

TargetAMD - Transposon-based, targeted *ex vivo* gene therapy to treat age-related macular degeneration (AMD).

Duration
Start foreseen in fall 2023

Total Cost
7.73 Mio. Euro

EC Contribution
5.97 Mio. Euro

Call
FP7 Health-2012-Innovation

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