Supplementary Materials and Methods

Primate housing and immunosuppression

Nonhuman Primates (*Macaca fascicularis*) were obtained from Noveprim-Camarney or Cynologics-Silabe and were aged 5-6 years. 6 animals were transplanted in one eye with the hESC-RPE sheet and followed up for 7 weeks. Primates were housed in pairs or in groups in cages according to the European guidelines, with adjacent cages including tactile and visual contact devices to maintain a visual, sound and tactile community. They were daily observed and trained with habituation and positive reinforcement with the experimenters through manipulation and rewards to limit stress impact on physiological parameters during the experimentation. Diet was supplemented with fresh vegetables and fruits. Animals were immunosuppressed by a combination of cyclosporine (Neoral vials, Novartis: dose of 5-10 mg/kg/day) and mycophenolate mofetyl (Cell Cept®: 20 mg/kg/day). Treatment began for the week (cyclosporine) and the day (Mycophenolate mofetyl) prior to the hESC-RPE sheet transplantation and until euthanasia. Cyclosporine level was dosed twice a week in blood and the administration was adapted every week (target level in blood stream between 250 and 400 ng/mL). Cyclosporine was stopped the last week due to body weight loss indicating a low tolerance to the treatment.

Enucleated pig eyes

Enucleated eyes were obtained from a local slaughterhouse and the anterior segment was removed for the surgical implantation of the hESC-RPE sheet. Eyes were attached to a fixed support and the open-sky implantation was realized. The graft was colored with an ophthalmic blue dye (Membrane Blue Dual, DORC) for an easier visualization. Three hESC-RPE sheets implantations were performed in 2 eyes.

Transplantation procedure in rats

Nude rats were anesthetized with intraperitoneal injection of 100mg/kg of ketamine and 10mg/kg of xylazine. Two drops of a local anesthetic (oxybuprocain, Thea) and tropicamide (for mydriasis,

Mydriaticum 0.5%; Thea) were applied to the eye to be transplanted. A subretinal detachment through the injection of air after a scleral incision was induced under an operating microscope (Leica). The intraocular pressure was reduced by opening a hole into the cornea. The head of the injector (Viscoject, Medicel) was then introduced into the first incision in the sclera to deliver the hESC-RPE sheet, which was prepared with MD1 and MD2 (graft size of 3.49mm^2). The graft was delivered into the subretinal space and the incision was then carefully closed using a 10-0 suture (Peters Surgical). Control operated animals received the same protocol with an injection of a saline solution (3µL). For the cell suspension group, hESC-RPE cells (3 µL; 150 000 cells in saline solution) were injected in the subretinal space using a Hamilton syringe just after the formation of retinal detachment. After the surgery, a vitamin A ointment (Allergan) was placed on each eye. Animals were kept on a recovery cage until awakening.

VEGF ELISA assay

hESC-RPE cells were grown on amniotic membranes for at least four weeks and embedded in gelatin using the medical device MD1. After the defined stability period at 4°C (24h, 48h or 72h), hESC-RPE sheets were removed from MD1 and placed for one week in culture (with culture medium and within an incubator at 37°C and 5% CO_2). VEGF measurements were done in triplicate using the human VEGF Quantikine ELISA kit (R&D System) according to manufacturer's instruction.

Viability and cell density evaluations

hESC-RPE sheets were grown on amniotic membranes for four weeks and embedded in gelatin using the medical device MD1. After the defined stability period at 4°C (24h, 48h or 72h), sheets were washed with a culture medium at 37°C, placed into an incubator overnight (37°C, 5% CO2) and washed again using a warmed culture medium. NucBlue live (Hoescht 33342) and Propidium iodide (both from Thermo Fisher Scientific) were used according to manufacturer's instruction to stain cells. Images were taken using a fluorescence microscope (Zeiss) and cells were counted using ImageJ software.

Electroretinography

Full field ERGs for photopic conditions (RETImap; Roland Consult) were realized on anesthetized monkeys two weeks before patch administration and at week 6 post-surgery. Amplitudes and implicit time of the photopic ERG for a- and b-waves were measured with the associated software. A multifocal ERG (mfERG) to evaluate local retinal function was also performed. 37 hexagons (30°) were measured per eye. Mean retinal responses of the 3 hexagons before and six weeks after surgery in the transplanted area were compared. In addition, mean retinal responses of the non-transplanted and non-detached retinal area before and six weeks after surgery were also compared. One animal was excluded from the analysis due to vitreous opacification. Another animal was excluded from mfERG analysis as the area of the mfERG recorded at the baseline was different from the transplanted area.

Inflammation monitoring of the eye

Eye evaluation was assessed on anaesthetized monkeys. Pupils were dilated (0.5 % tropicamide eye drops, Mydriaticum). Slit lamp biomicroscopy (SL-130; Zeiss), retinography (Smartscope Pro M5, Module EY4; OPTOMED) and indirect ophthalmoscopy (Indirect Binocular Ophthalmoscope; Heine) were conducted before the transplantation (baseline) and on week 1, 2, 5 and 7. Scanning Laser Ophthalmoscopy (SLO) and Optical Coherence Tomography (OCT; Spectralis OCT/SLO combined system) examinations were performed before patch administration to obtain the baseline, and then on week 2, 5 and 7. Slit lamp Biomicroscopy was used to obtain a stereoscopic magnified view of the eye structures (the anterior and posterior segments of the eye: the eyelid, sclera, conjunctiva, cornea, anterior chamber, iris, lens and vitreous). Both eyes were analyzed. Indirect ophthalmoscopy was performed using indirect binocular ophthalmoscope to monitor inflammation degree and to examine the eye fundus. The level of inflammation according to the international nomenclatures were evaluated based on the Standardization of Uveitis Nomenclature (SUN) working group for

grading inflammation in the anterior part of the eye (*1*) to score anterior chamber cells, flare, and the level of vitreous haze and the Nussenblatt's grading system based on vitreous haze evaluation (*2*).

Histology and Immunostaining

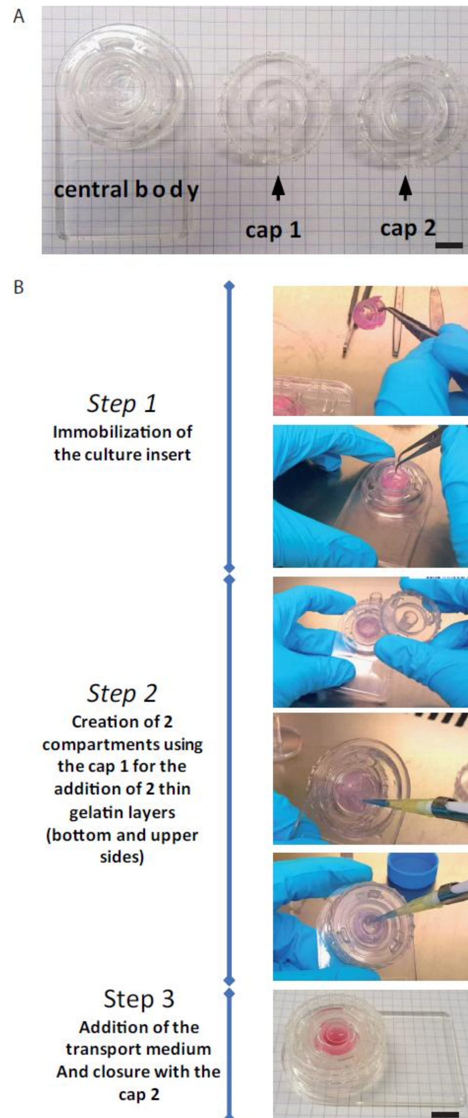
Monkeys were sacrificed with a barbiturate (Dolethal, 180mg/kg) followed by an intracardiac perfusion of 4% paraformaldehyde into the right ventricle. Animals were evaluated by an anatomo-pathologist before the collection of the operated eye. Lens and vitreous were removed under a binocular microscope and incubated in PBS with 10% sucrose for at least one day. Then eyes were placed in a solution of PBS with 30% sucrose. Samples were embedded in PBS with 10% sucrose and 7.5% of gelatin and frozen at -50°C in isopentane. Serial cryosections of 10-15 µm were collected around the grafted areas and immunofluorescence stainings were performed with an overnight incubation of primary antibodies (see **supplementary table S5**) in a blocking solution composed of PBS with 0.2% gelatin and 0.1% triton X100. After washing with PBS, incubation was performed for 2 hours with secondary antibodies in the blocking solution. After this last incubation, slides were counterstained with 1:1000 diamidino-phenyl-indole (DAPI) and washed with PBS. Slides were mounted with Fluoromount G (Southern Biotech). Images were acquired with either an inverted confocal microscope (Zeiss) or an inverted phase-contrast fluorescence microscope (Zeiss).

Supplementary Figures

Supplementary Figure S1: Quality controls performed on the hESC-RPE sheet to release a batch suitable for human transplantation

<table>
<tr><th>Parameter</th><th>Test Method</th><th>Acceptance Criteria (AC) or For Information Only (FIO)</th></tr>
<tr><td colspan="3">Results available prior administration</td></tr>
<tr><td>Cell morphology</td><td rowspan="4">Optical Microscopy</td><td>some pavimented areas AC > 90%</td></tr>
<tr><td>Cell density</td><td>cell confluence AC > 90%</td></tr>
<tr><td>Cell pigmentation</td><td>some pigmented areas FIO</td></tr>
<tr><td>Microbial contamination</td><td>AC No microbial contamination</td></tr>
<tr><td>Cell Density</td><td rowspan="2">Live/Dead assay (propidium iodide and Hoescht)</td><td>Viable cell count AC ≥ 4800 cell/mm^2</td></tr>
<tr><td>Viability</td><td>Viability AC ≥ 85%</td></tr>
<tr><td>Endotoxins</td><td>EP 2.6.14</td><td>AC < 2 EU / mL</td></tr>
<tr><td colspan="3">Results available post administration</td></tr>
<tr><td>Identity, phenotypic analysis: RPE65</td><td rowspan="3">RT-qPCR (ratio to hESC)
EP 2.6.21</td><td>RPE65 AC (>10)</td></tr>
<tr><td>Identity, phenotypic analysis: CRALBP</td><td>CRALBP AC (>10)</td></tr>
<tr><td>Purity, phenotypic analysis: NANOG</td><td>NANOG AC (< 10^{-1})</td></tr>
<tr><td>Potency: VEGF secretion</td><td>Elisa assay
EP 2.7.1</td><td>AC ≥ 500 pg/mL</td></tr>
<tr><td>Mycoplasma</td><td>EP 2.6.7</td><td>AC Negative</td></tr>
<tr><td>Sterility</td><td>EP 2.6.1</td><td>AC Negative</td></tr>
</table>

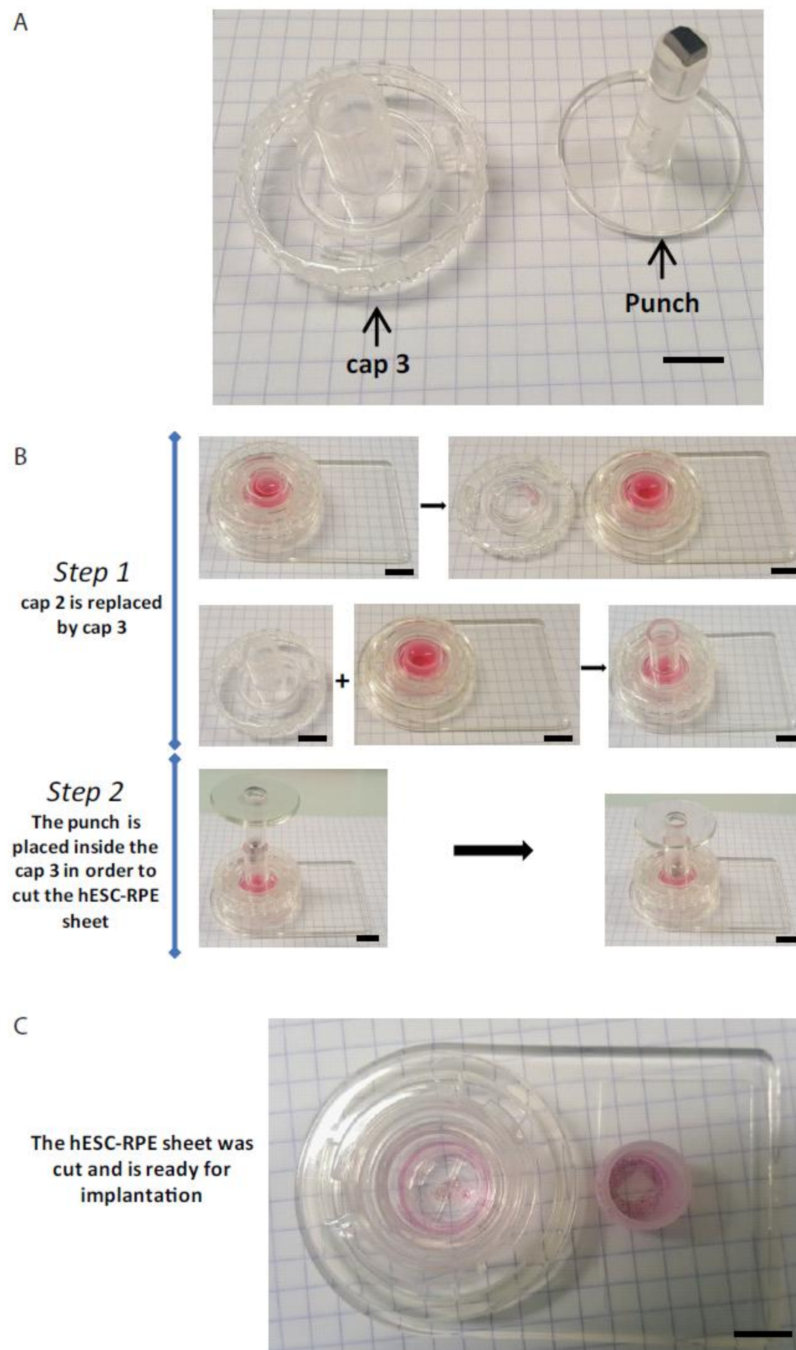
Supplementary Figure S2



Supplementary Figure S2: Description of the sequential steps for the use of MD1

A. Picture showing the different components of the medical device 1 (MD1). **B.** Description of the different steps for the preparation of the hESC-RPE sheet using the MD1. The step 1 corresponds to the placement of the culture insert containing the hESC-RPE sheet into the central body. The step 2 corresponds to the positioning of the cap 1 on top of the central body and the addition of the two gelatin solutions on both sides (the gelatin is colored in blue to facilitate its visualization). The step 3 corresponds to the replacement of the cap 1 with the cap 2 used for the conservation and transport of the hESC-RPE sheet. Scale bar = 1cm.

Supplementary Figure S3

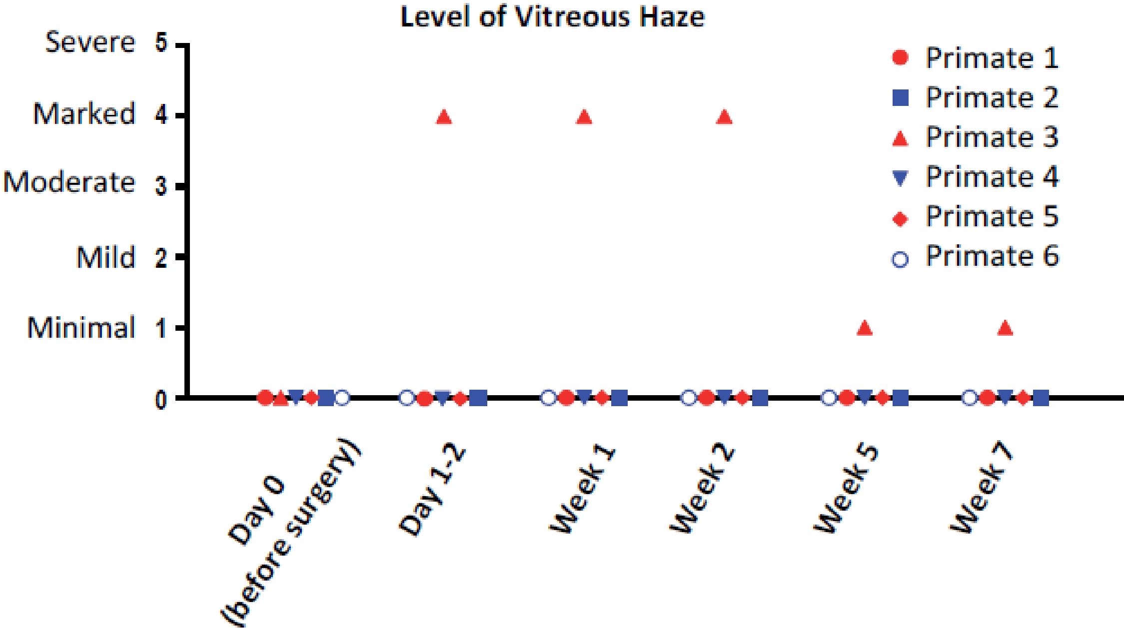


Supplementary figure S3: Description of the sequential steps for the use of MD2

A. Picture showing the different components of the medical device 2 (MD2). **B.** Description of the different steps for the size adjustment of the hESC-RPE sheet using the MD2. The step 1 corresponds to the replacement of the cap 2 with the cap 3 used to guide the punch. The step 2 corresponds to

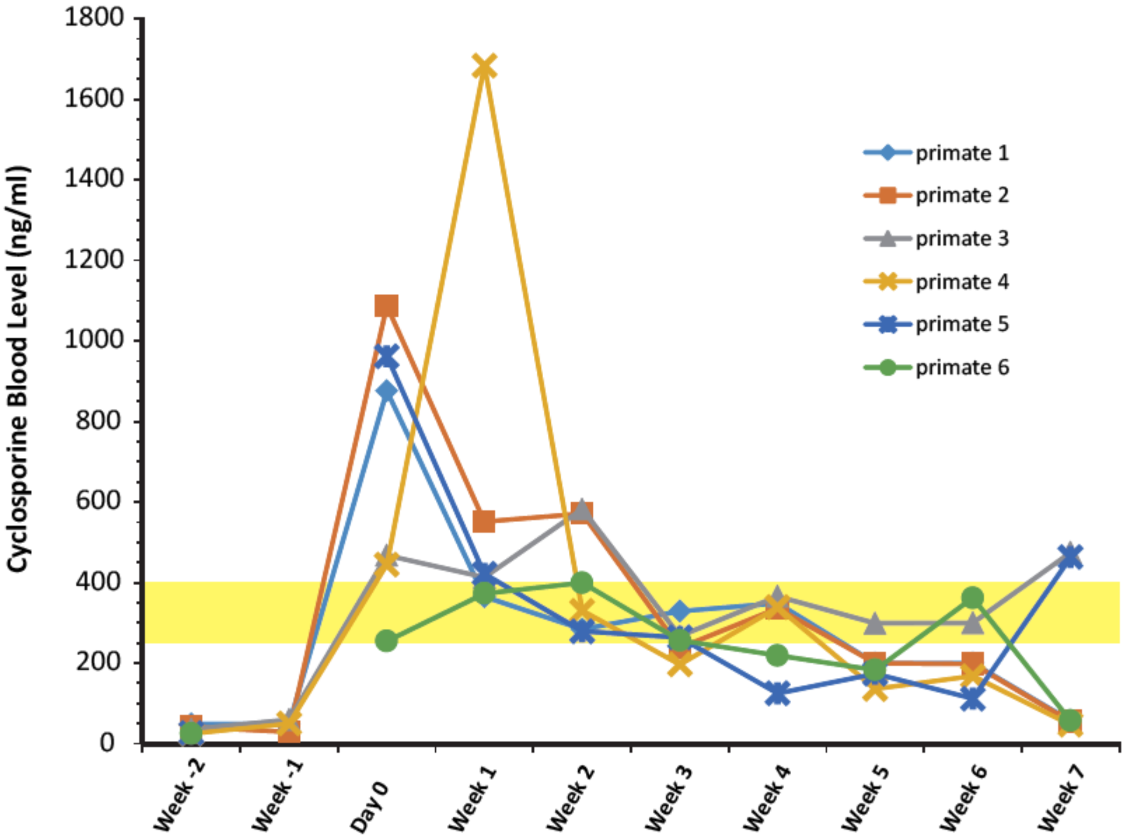
the positioning of the punch inside the cap 3 and to the cutting of the hESC-RPE sheet. C. The picture shown the hESC-RPE sheet that was cut with the MD2. Scale bar = 1cm.

Supplementary Figure S4



Supplementary Figure S4: Inflammation grade of the eye anterior segment: level of vitreous haze. Graph showing the level of vitreous haze according to the Nussenblatt's grading system before surgery and until week 7. Each primate is represented independently.

Supplementary Figure S5



Supplementary Figure S5: Cyclosporine blood level during the course of the experiment.

The graph represents the level (ng/ml) of cyclosporine in the blood starting from 2 weeks before the surgery to the end of the follow up (week 7). Each monkey is represented independently. The yellow box delimitates the targeted range of cyclosporine. When values were out of this range (250 to 400 ng/ml), the delivered cyclosporine dose was adjusted.

Supplementary Movie S1:

Movie showing a 3-D representation of the medical device MD1 in a transversal view. The body is colored in yellow and the CAP1 in grey.

Supplementary Movie S2:

Movie showing a 3-D representation of the medical device MD1 combined to the MD2 in a transversal view. The body is colored in yellow, the CAP3 in grey and the punch in green.

Supplementary Movie S3:

Movie illustrating the preparation of the hESC-RPE sheet just before implantation. The hESC-RPE sheet already cut with the MD1, was colored with a blue dye. The graft is collected and loaded in the lens injector for its folding. Then the patch in transferred to a longer beveled cannula. The cannula is kept at 4°C until transplantation.

Supplementary Movie S4:

Movie showing the different major steps of the surgery in the nonhuman primate eye. Briefly, a 3-port pars plana vitrectomy with cold vitreal perfusion is realized. Then a subretinal bleb is obtained by an injection of BSS. A scleral incision of 2mm is made to introduce the injection cannula. The retinal area where the retinotomy will be performed is coagulated and a 2mm incision is made. The graft is delivered through the retinotomy and the scleral incision is closed with a surgical suture. The hESC-RPE sheet is then positioned under the fovea.

Supplementary Table S1: Detection of human cells (Alu sequences) in Nude rats treated with an injection of saline solution at weeks 2 and 3 months

	Group	Sacrifice	Sex	Animal	Data	BR	EYE- (right)	EYE+ (left)	NO-	NO+	HE	LU	LI	SP	LN	BM	KI	OV	TE	BL D14*	BL D4	TE EYE+ D14	TE EYE+ D4	TE EYE- D14	TE EYE- D4
CONTROL	1	Day 15	M	1700612	Conclusion	-	-	-		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700613	Conclusion	-	-	-		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700614	Conclusion	-	-	-		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700615	Conclusion	-	-	-		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700616	Conclusion	-	-	-		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700617	Conclusion	-	-	-		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
			F	1700693	Conclusion	-	-	-		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700663	Conclusion	-	-	-		-	-		-	-	-	-	-	-		-	-	-	-	-	-
				1700664	Conclusion	-	-	-		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700665	Conclusion	-	-	-		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700666	Conclusion	-	-	-		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700667	Conclusion	-	-	-		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-

	Group	Sacrifice	Sex	Animal	Data	BR	EYE- (left)	EYE+ (right)	NO-	NO+	HE	LU	LI	SP	LN	BM	KI	OV	TE	BL D92	BL D4	TE EYE+ D92	TE EYE+ D4	TE EYE- D92	TE EYE- D4
CONTROL	1	Day 92	M	1700618	Conclusion	-	-	-		-	-	-	-	-		-	-		-	-	-	-	-	-	-
				1700619	Conclusion	-	-	-		-	-		-	-	-	-	-		-	-	-	-	-	-	-
				1700620	Conclusion	-	-	-		-	-	-	-	-	-	-	-			-	-	-	-	-	-
				1700621	Conclusion	-	-	-		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700622	Conclusion	-	-	-		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700623	Conclusion	-	-	-		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
			F	1700668	Conclusion	-	-	-		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700669	Conclusion	-	-	-		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700670	Conclusion	-	-	-		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700671	Conclusion	-	-	-		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700672	Conclusion	-	-	-		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700673	Conclusion	-	-	-		-	-	-	-	-	-	-	-	-		-	-	-	-	-	MD

Supplementary Table S2: Detection of human cells (Alu sequences) in Nude rats treated with an injection of hESC-RPE sheets at weeks 2 and 3 and 6 months

	Group	Sacrifice	Sex	Animal	Data	BR	EYE- (right)	EYE+ (left)	NO-	NO+	HE	LU	LI	SP	LN	BM	KI	OV	TE	BL D14	BL D4	TE EYE+ D14	TE EYE+ D4	TE EYE- D14	TE EYE- D4
hESC-RPE sheet	2	Day 15	M	1700624	Conclusion	-	-	>50		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700625	Conclusion	-	-	>50		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700626	Conclusion	-	-	>50		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700627	Conclusion	-	-	>50		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700628	Conclusion	-	-	-		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700629	Conclusion	-	-	>50		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
			F	1700674	Conclusion	-	-	>50		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700675	Conclusion	-	-	>50		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700676	Conclusion	-	-	>50		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700677	Conclusion	-	-	>50		-	-	-	-	-	-	-	-	-		-	-	-		-	-
				1700704	Conclusion	-	-	>50		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700679	Conclusion	-	-	>50		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-

	Group	Sacrifice	Sex	Animal	Data	BR	EYE- (left)	EYE+ (right)	NO-	NO+	HE	LU	LI	SP	LN	BM	KI	OV	TE	BL D92	BL D4	TE EYE+ D91	TE EYE+ D4	TE EYE- D91	TE EYE- D4
hESC-RPE sheet	2	Day 92	M	1700636	Conclusion	-	-	>50		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700637	Conclusion	-	-	>50		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700638	Conclusion	-	-	>50		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700639	Conclusion	-	-	>50		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700640	Conclusion	>50	-	>50		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700641	Conclusion	-		>50		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
			F	1700686	Conclusion	-	-	>50		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700687	Conclusion	-	-	>50		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700688	Conclusion	-	-	>50		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700689	Conclusion	-	-	>50		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700690	Conclusion	-	-	>50		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700691	Conclusion	-	-	>50		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-

	Group	Sacrifice	Sex	Animal	Data	BR	EYE- (left)	EYE+ (right)	NO-	NO+	HE	LU	LI	SP	LN	BM	KI	OV	TE	BL D183	BL D4	TE EYE+ D182	TE EYE+ D4	TE EYE- D182	TE EYE- D4
hESC-RPE sheet	2	Week 26	M	1700630	Conclusion	-	-	>50		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700631	Conclusion	-	-	>50		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700632	Conclusion	-	-	>50		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700633	Conclusion	-	-	>50		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700634	Conclusion	-	-	-		>50	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700635	Conclusion	-	-	-		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
			F	1700680	Conclusion	-	-	-		-	-	-	-	-	-	-	-	-		-	>50	-	-	-	-
				1700681	Conclusion	-	-	>50		-	-	-	-	-	-	-	-	-		-	-	-	-	X	-
				1700682	Conclusion	-	-	<50		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700683	Conclusion	-	-	>50		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700706	Conclusion	-	-	<50		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700685	Conclusion	-	-	<50		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-

Supplementary Table S3: Detection of human cells (Alu sequences) in Nude rats treated with an injection of hESC-RPE cell suspensions at weeks 2 and 3 months

	Group	Sacrifice	Sex	Animal	Data	BR	EYE- (right)	EYE+ (left)	NO-	NO+	HE	LU	LI	SP	LN	BM	KI	OV	TE	BL D14	BL D4	TE EYE+ D14	TE EYE+ D4	TE EYE- D14	TE EYE- D4
hESC-RPE cell suspension	3	Day 15	M	1700642	Conclusion	-	-	>50		>50	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700643	Conclusion	-	-	-		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700644	Conclusion	-	-	-		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700645	Conclusion	-	-	>50		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700646	Conclusion	-	-	>50		>50	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700647	Conclusion	-	-	>50		>50	-	-	-	-	-	-	-		-	-	-	-	-	-	-
			F	1700692	Conclusion	-	-	-		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700705	Conclusion	-	-	>50		>50	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700694	Conclusion	-	-	>50		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700695	Conclusion	-	-	>50		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700696	Conclusion	-	-	>50		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700697	Conclusion	-	-	>50		>50	-	-	-	-	-	-	-	-		-	-	-	-	-	-

	Group	Sacrifice	Sex	Animal	Data	BR	EYE- (left)	EYE+ (right)	NO-	NO+	HE	LU	LI	SP	LN	BM	KI	OV	TE	BL D92	BL D4	TE EYE+ D92	TE EYE+ D4	TE EYE- D92	TE EYE- D4
hESC-RPE cell suspension	3	Day 92	M	1700648	Conclusion	-	-	>50		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700649	Conclusion	-	-	>50		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700650	Conclusion	-	-	-		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700651	Conclusion	-	-	-		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
				1700653	Conclusion	-	-	-		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
			F	1700698	Conclusion	-	-	>50		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700699	Conclusion	-	-	>50		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700700	Conclusion	-	-	>50		>50	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700701	Conclusion	-	-	-		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700702	Conclusion	-	-	>50		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
				1700703	Conclusion	-	-	-		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-

Supplementary Table S4: Tissue and fluid samples (and abbreviations) used for biodistribution analysis in Nude rats

			Day 15			Week 13			Week 26		
System		**List of tissues**	Control	ISTEM01	RPE	Control	ISTEM01	RPE	Control	ISTEM01	RPE
Nervous and visual system	1	Brain (BR)	12	12	12	12	12	11	-	12	-
	2	Eye (treated) (EYE+)	12	12	12	12	12	11	-	12	-
	3	Eye (contralateral) (EYE-)	12	12	12	12	12	11	-	12	-
	4	Optic nerves (ON)	12	12	12	12	12	11	-	12	-
Cardio-respiratory system	5	Heart (HE)	12	12	12	12	12	11	-	12	-
	6	Lung (LU)	12	12	12	12	12	11	-	12	-
Digestive system	7	Liver (LI)	12	12	12	12	12	11	-	12	-
Haemo-lymphoid system	8	Spleen (SP)	12	12	12	12	12	11	-	12	-
	9	Lymph nodes (LN)	12	12	12	12	12	11	-	12	-
	10	Bone marrow (FE)	12	12	12	12	12	11	-	12	
Urogenital system	11	Kidney left or right (KI)	12	12	12	12	12	11	-	12	-
	12	Ovary left or right (OV)	6	6	6	6	6	6	-	6	-
	13	Testis left or right (TE)	6	6	6	6	6	5	-	6	-
		Total	**144**	**144**	**144**	**144**	**144**	**132**		**144**	

	Sacrifice Day 15			Sacrifice Week 13			Sacrifice Week 26		
Day of collection	**Day 3 and Day 15**			**Day 3 and Week 13**			**Day 3 and Week 26**		
List of fluids	Control	ISTEM01	RPE	Control	ISTEM01	RPE	Control	ISTEM01	RPE
Whole blood (BL)	24	24	24	24	24	23	-	24	-
Tears from the treated eye (EYE+)	24	24	24	24	24	23	-	24	-
Tears from the contralateral eye (EYE-)	24	24	24	24	24	23	-	24	-
Total	**72**	**72**	**72**	**72**	**72**	**69**		**72**	

Supplementary Table S5: Primary antibodies list.

Name of targeted antigen	Identified cells	Primary Antibody		
		Reference	Provider	Species
STEM121	Specific to human cells	Y40410	Clontech	mouse
Recoverin	Photoreceptors	AB5585	Millipore	rabbit
MERTK	RPE cells	ad52968	Abcam	rabbit
Collagen IV	Human amniotic membrane	MAB3326	Millipore	mouse
Opsin Blue	Blue cones	AB5407	Millipore	rabbit
Red/Green Opsin	Red/Green cones	AB5405	Millipore	rabbit
Rhodopsin	Rods	4D2	Millipore	mouse

Complete statistical analysis

Figure 2B (cell density)

ANOVA F(4,19)=5.408; **p=0.0044
Number of replicates: t0h before gelatine =5 ; t0h after gelatine =3; t24h =5; t48h =7 ; t72h =4.

Tukey's multiple comparisons test	Mean Diff,	95% CI of diff,	Significant ?	Summary
t0 avt gel vs. t0 aprés gel	289,8	-1235 to 1814	No	ns
t0 avt gel vs. t24h	437,4	-882,7 to 1757	No	ns
t0 avt gel vs. t48h	1111	-110,8 to 2334	No	ns
t0 avt gel vs. t72h	1931	531,3 to 3332	Yes	**
t0 aprés gel vs. t24h	147,6	-1377 to 1672	No	ns
t0 aprés gel vs. t48h	821,6	-618,8 to 2262	No	ns
t0 aprés gel vs. t72h	1642	47,51 to 3236	Yes	*
t24h vs. t48h	674	-548,2 to 1896	No	ns
t24h vs. t72h	1494	93,92 to 2894	Yes	*
t48h vs. t72h	820,1	-488,2 to 2128	No	ns

Figure 2C (cell viability)

ANOVA F(4,19)=1.662; p=0.2002 ; Non-significant.
Number of replicates: t0h before gelatine =5 ; t0h after gelatine =3; t24h =5; t48h =7 ; t72h =4.
ELISA VEGF assay:
Non parametric Mann Whitney test: U=4; p=0.9 ; Non-significant.
Number of replicates: t0h before gelatine =3 ; t72h =3.

Figure 5E

Implicite time a wave
Wilcoxon matched-pairs signed rank test: p=0.25 ; Non-significant.
Number of pairs : 5

Amplitude time a wave
Wilcoxon matched-pairs signed rank test: p= 0.0625; Non-significant.
Number of pairs : 5

Figure 5F

Implicite time b wave
Wilcoxon matched-pairs signed rank test: p=0.5 ; Non-significant.

Number of pairs : 5

Amplitude time b wave

Wilcoxon matched-pairs signed rank test: p= 0.125; Non-significant.
Number of pairs : 5

Figure 5G

Implicite time P1

Nonparametric Krukal-Wallis test: H= 5.268 ; p= 0.1508 ; Non-significant.
4 primates per time points.

Amplitude time P1

Nonparametric Krukal-Wallis test: H= 4.919 ; p= 0.1834 ; Non-significant.
4 primates per time points.

Supplemental bibliography

1. D. A. Jabs, R. B. Nussenblatt, J. T. Rosenbaum, G. Standardization of Uveitis Nomenclature Working, Standardization of uveitis nomenclature for reporting clinical data. Results of the First International Workshop. *American journal of ophthalmology* 140, 509 (Sep, 2005).
2. R. B. Nussenblatt, A. G. Palestine, C. C. Chan, F. Roberge, Standardization of vitreal inflammatory activity in intermediate and posterior uveitis. *Ophthalmology* 92, 467 (Apr, 1985).