

Healios

FY2018 Q3 Financial Results

November, 8 2018

HEALIOS K.K.

（TSE：4593）

https://www.healios.co.jp/en

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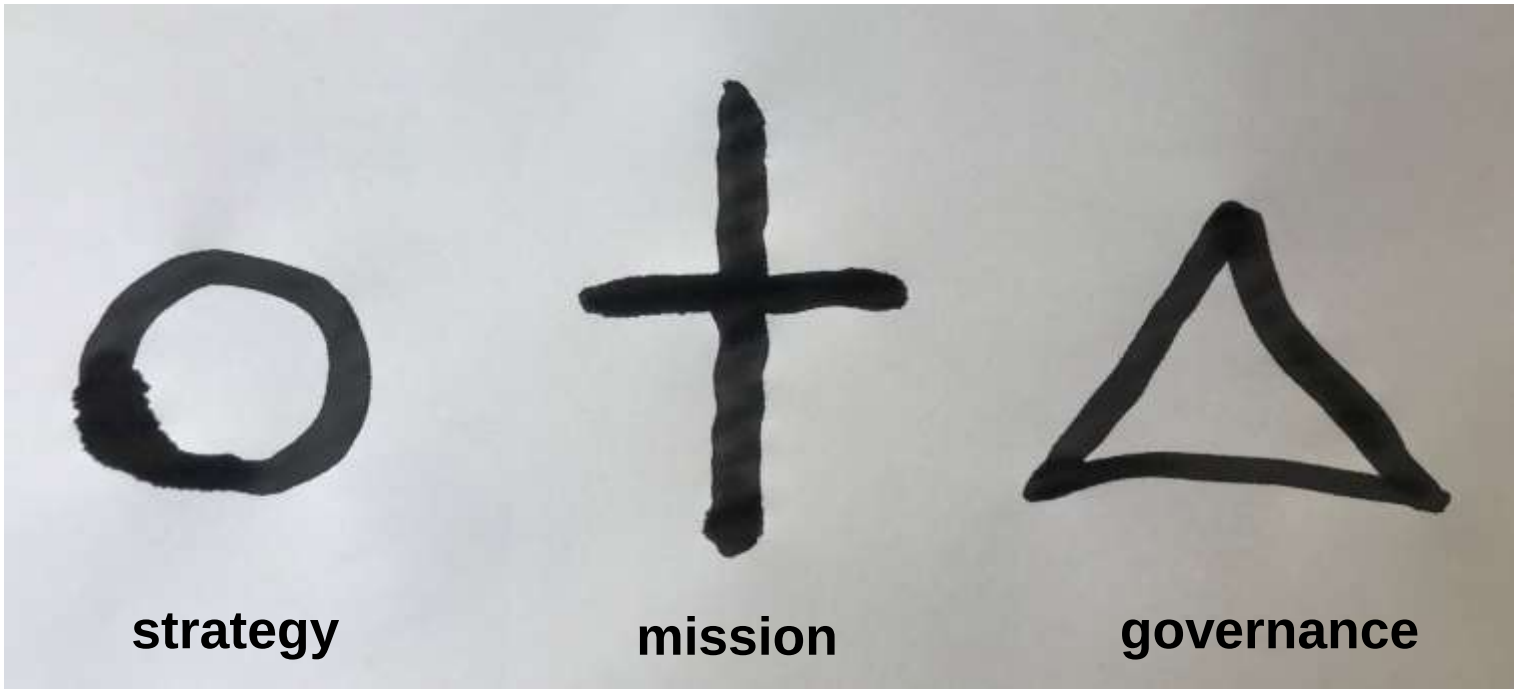
Healios

3 elements



algorithm

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Founding
Mission Statement

(February 24, 2011)

We established the company Healios on February 24, the day when the Gregorian calendar was enacted, with the goal of developing next generation medicine, drug and instruments.

” Delivering happiness(Gospel) to the people in the world by bringing iPSC treatments into clinic” – this is a huge responsibility.
However, we are not afraid of this huge responsibility.

The road to the goal will be full of difficulties.
No footprints, maps, nor signs

There is no fast track to achieve this goal, and it may take 10 or 20 years.
However, no one can stop us starting the first step toward the goal today.
No one can stop us assembling a team and make efforts toward the goal.
We will start with a small dot, the dots will form a line, then a line will form a large road.
This large road will be filled with joy of patients who benefit from the iPSC treatments.
You do not need to hesitate.

Let’s start.

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Mission

To foster a
“Life Explosion”
that enriches the lives of people around the world

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Vision

By making use of the regenerative powers of iPSC therapies, we will heal and bring hope to those worldwide who are suffering.

We will create a global infrastructure to develop, manufacture and promote our therapies from within the Healios family of businesses.

We will build a biotechnology company founded on solid principles in which every individual can trust.

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Values

1. Patients

2. Path Finder

3. Jump in 60

4. Team Work

5. Look straight, Think straight, Talk straight

6. There is no bad weather, only bad clothing

7. Shining 100

8. Snowball

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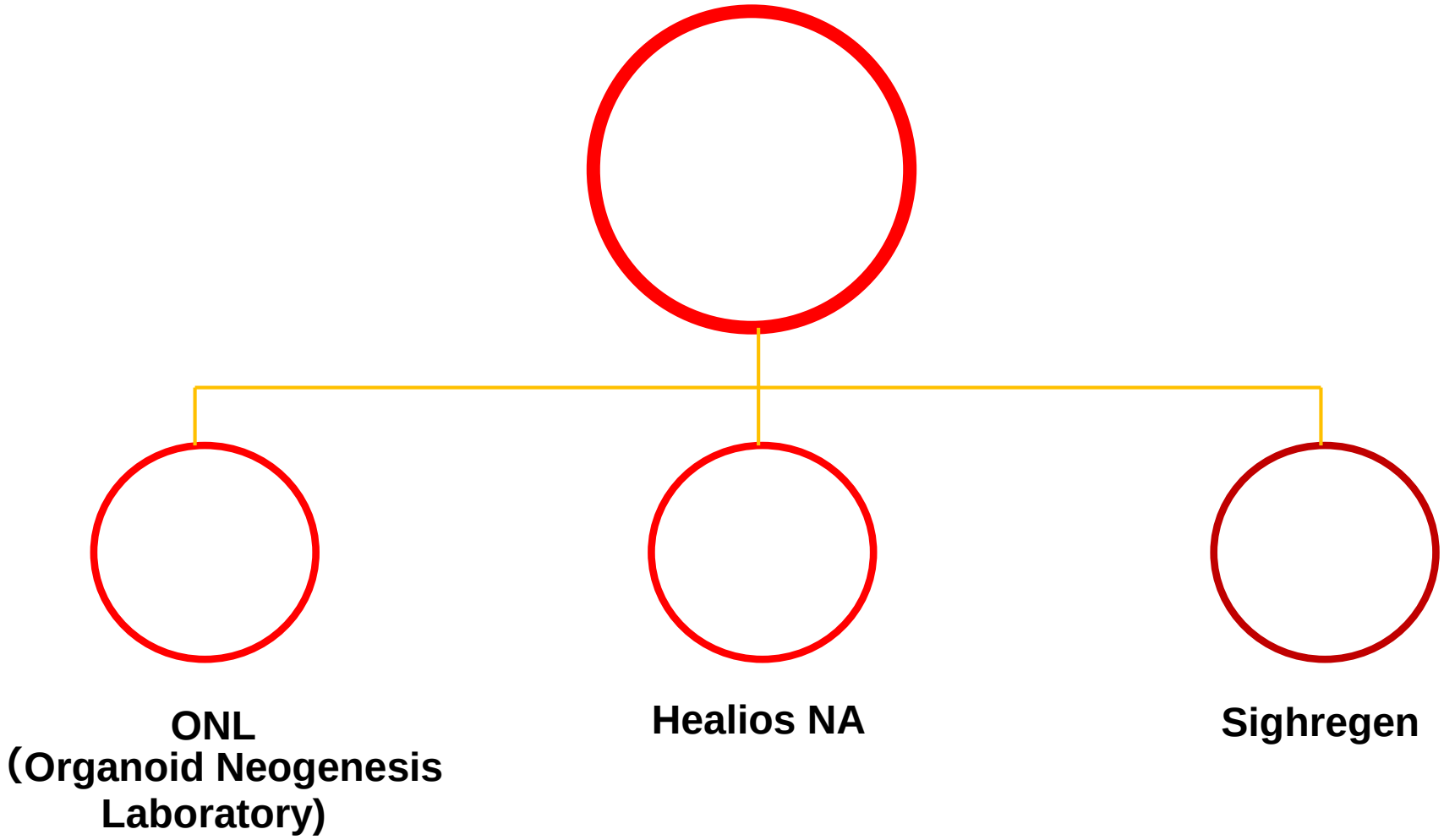
governance



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UPDATE

Healios Leadership

Board of Directors



External
Gregory Bonfiglio
Investing in RM venture
Chairman of the Board of CCRM

External
Michael Alfant
Healios' external director since 2013

Yoshinari Matsuda
Attorney-at-Law

External
Jun Narimatsu
Supporting various venture companies

External
Seigo Kashii
Ex-corporate auditor of Astellas Pharma

External
Richard Kincaid
Managing hedge fund

David Smith
Experience in cell manufacturing

Executive Officers



Ken Ishikawa
Administrative field / Director



Kouichi Tamura
Research and Manufacturing



Hardy TS Kagimoto
Chairman and CEO



Masanori Sawada
Chief Medical Officer



Michihisa Nishiyama
Development

Healios NA



David Smith
Chief Commercial Officer

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UPDATE

Organoid Neogenesis Laboratory (ONL)

Professors Hideki Taniguchi and Takanori Takebe have taken on the role of directors of ONL

■ ONL's plans to promote the practical use of OrganBud technology

- Conducting pre-clinical studies to establish proof of concept for currently planned pipeline organs and diseases;
- Working towards the discovery of new pipeline candidates for additional organs and diseases;
- Performing leading research in the field of drug screening;
- Seeking new inventions through discovery research.

Dr. Hideki Taniguchi



1995 **MD, PhD**, University of Tsukuba Graduate School of Medical Sciences
University of Tsukuba Hospital
2002 **Professor**, Yokohama City University School of Medicine
2003-2008
Research Unit Leader
RIKEN Center for Developmental Biology
2003 **Professor**, Department of Regenerative Medicine, Yokohama City University Graduate School of Medicine
2018-**Senior Professor**, Department of Regenerative Medicine, Yokohama City University,
Professor, Division of Regenerative Medicine, The institute of Medical Science, The University of Tokyo

Dr. Takanori Takebe



2011 **MD**, Yokohama City University School of Medicine
Research Associate, Department of Regenerative Medicine, Yokohama City University
2013 **Associate Professor,** Department of Regenerative Medicine, Yokohama City University
2015 **Associate Professor** Cincinnati Children's Hospital Medical Center
2017 **Associate Director**, Center for Stem Cell and Organoid Medicine, Cincinnati Children's Hospital Medical Center
2018-**Professor**, Advanced Medical Research Center, Yokohama City University
Professor, Institute of Research, Tokyo Medical Dental University

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UPDATE

Healios NA

- ✓ **Opened a new office in Silicon Valley to strengthen partnerships and alliances with firms and for local gathering and sharing of information**
- ✓ **Mr. David Smith, who established Lonza's cell manufacturing business, assumed the position of Chief Commercial Officer**

Sighregen

- ✓ **iPSC derived RPE cell manufacturing**
- ✓ **Sales promotion of RPE cell products in Japan post approval**

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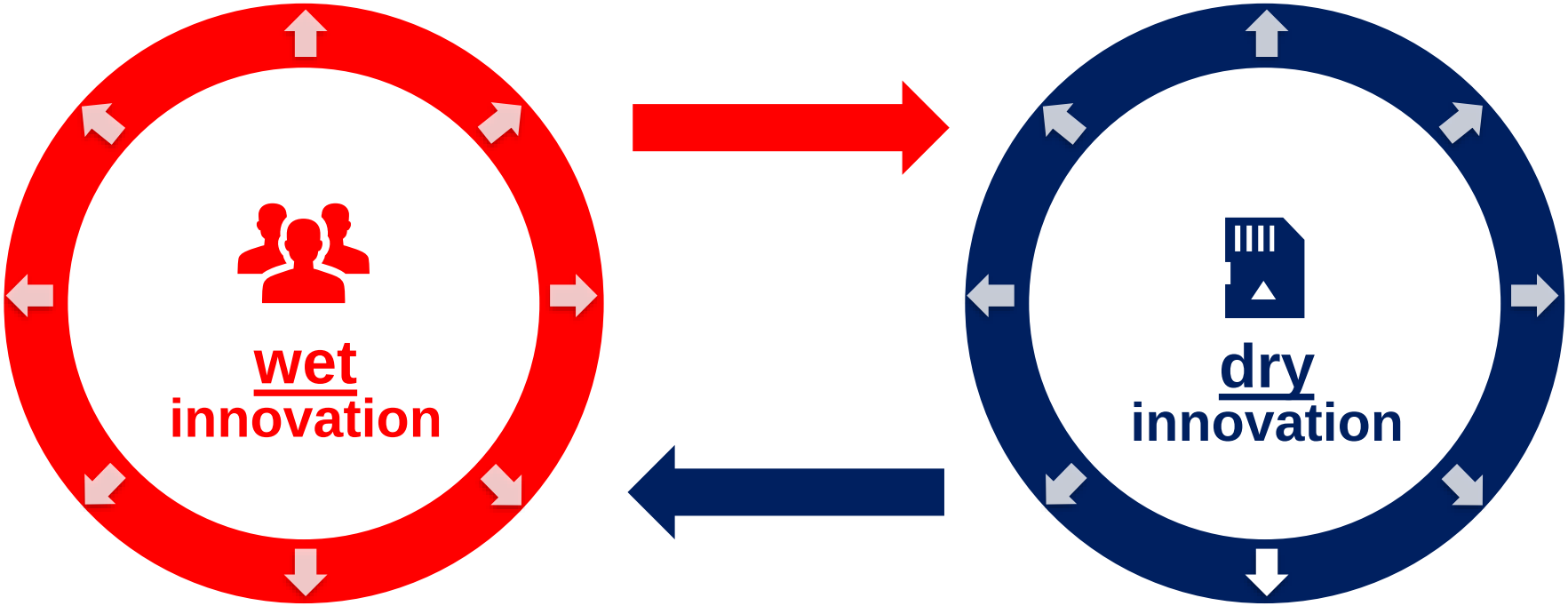

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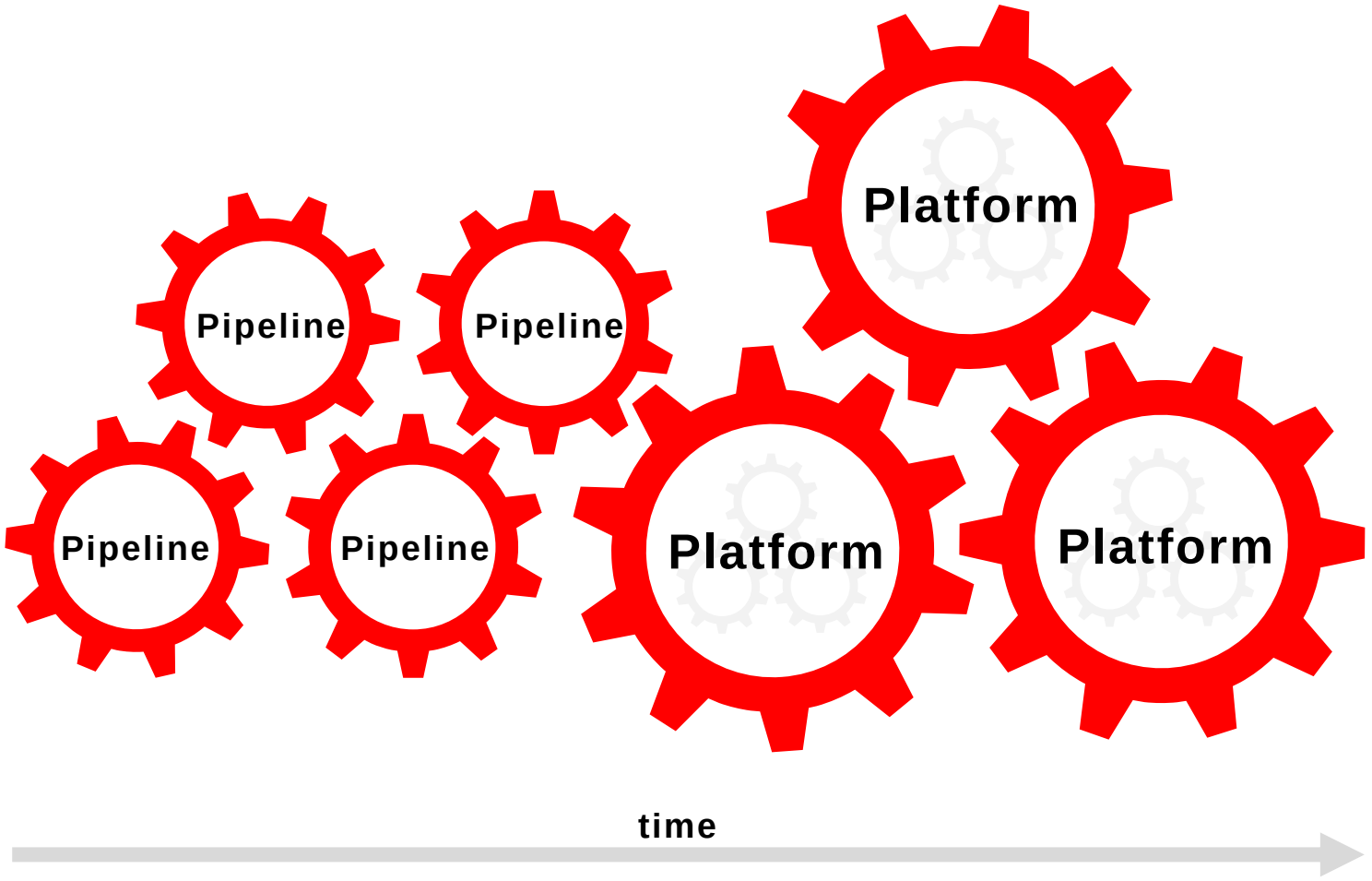

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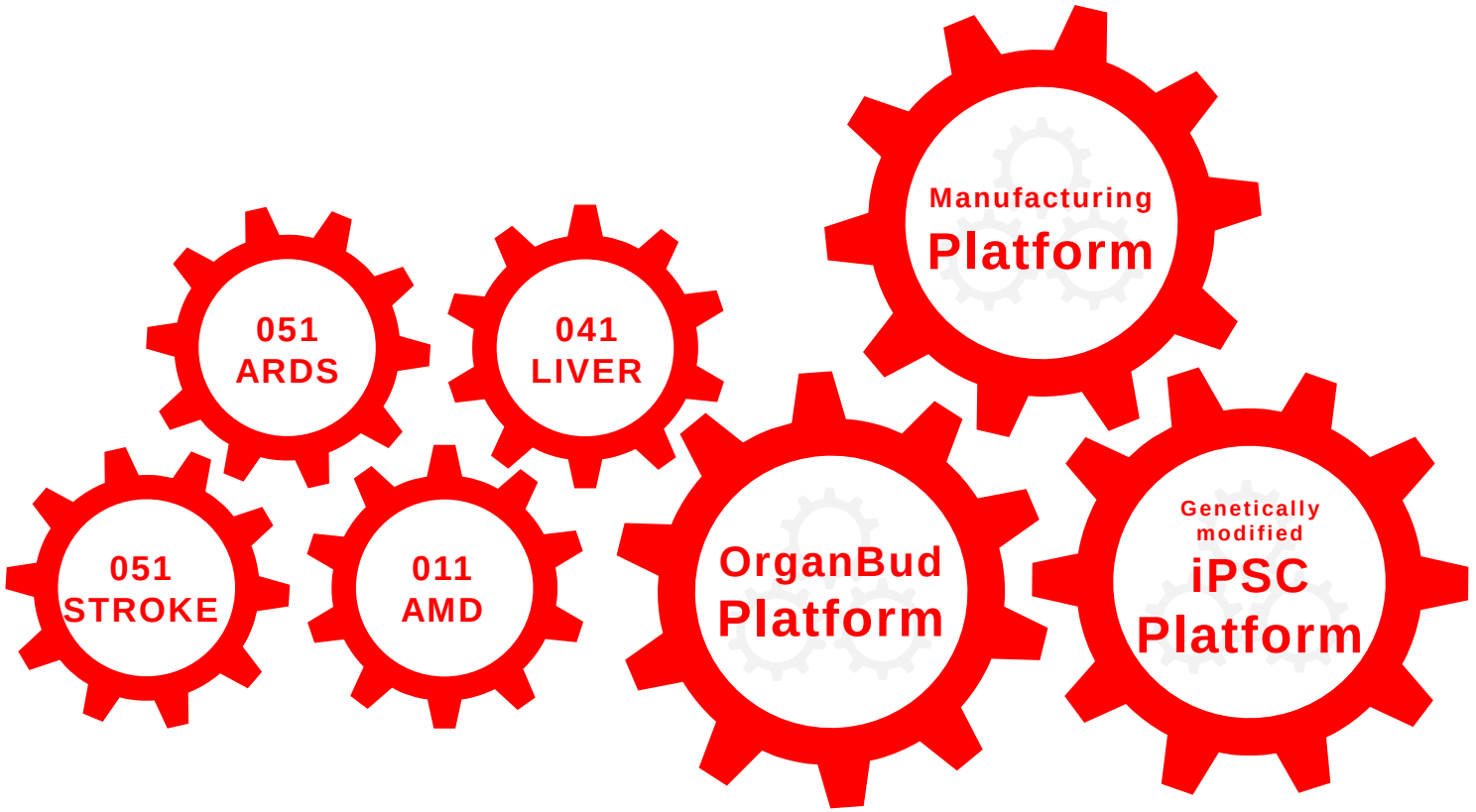

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UPDATE

Market	Field	Development Code	Indication	Pre-clinical test	Clinical trial	Apply-approve	On Market	Progress status
Japan	Somatic Stem Cell Regenerative Medicine	**HLCM051**	Ischemic Stroke	→				**Clinical trial ongoing**
			ARDS	→				**Undergoing preparation for administration**
	iPSC Regenerative Medicine	**HLCR011**	Wet AMD	→	⇢ Transplantation conducted under Clinical research(*1)			**Undergoing preparation for clinical trial**
		HLCL041	Metabolic Liver Disease	→				**ONL established**

Market	Field	Development Code	Indication	Pre-clinical test	Phase 1 trial	Phase 2 trial	Phase 3 trial	Apply-approve	On Market	Progress status
US	**iPSC Regenerative Medicine**	**HLCR012**	**Dry AMD**	→						CRADA with NEI
EU		**HLCR012**	**Dry AMD**	→						Global trial under consideration based on US phase III trial

* 1 “Clinical research of transplantation of induced pluripotent stem cells – derived retinal pigment epithelium (RPE) cells for exudative age-related macular degeneration (AMD)” conducted by RIKEN etc.

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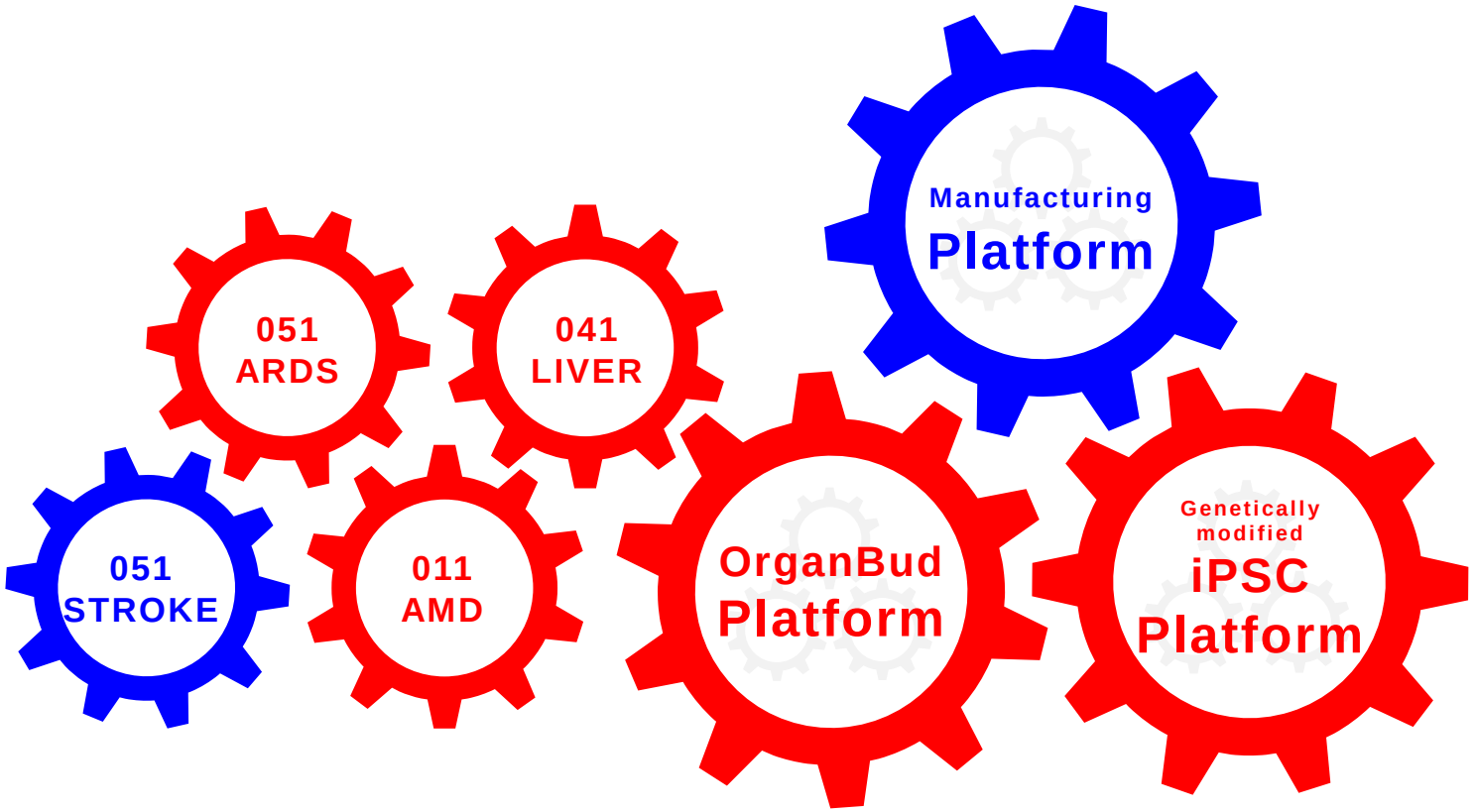

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HLCM051 Outline of ischemic stroke in Japan

Ischemic stroke

Ischemic stroke, which represents the most common form of stroke (70 - 75% of cases in Japan), is caused by a blockage of blood flow in the brain that cuts off the supply of oxygen and nutrients, resulting in tissue loss.

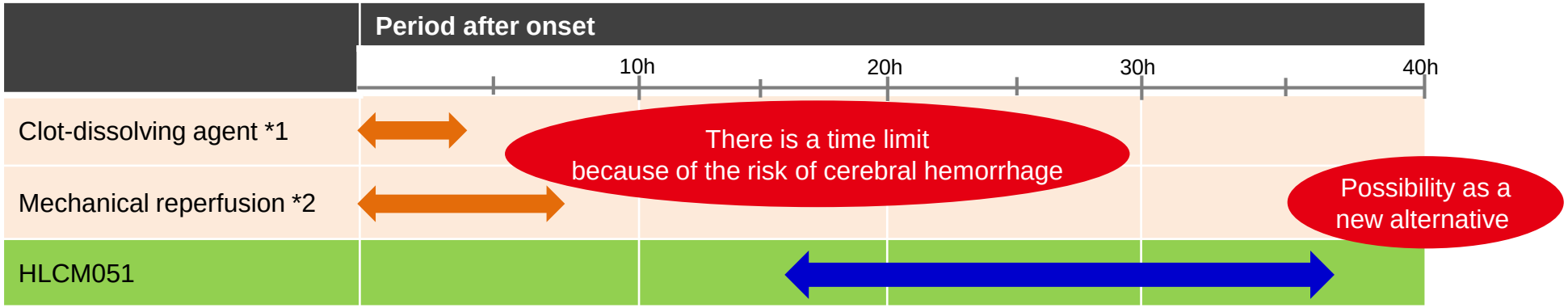
It is estimated that 37.9% of bedridden patients and 21.7% of persons who were in need of care were affected by ischemic stroke.



（Source）Athersys

Treatment in accordance with the period after onset

■ Expected development of a new therapy that can be applied in a longer treatment widow period following the onset of ischemic stroke (ability to help more patients)



*1: Dissolves blood clots in the brain vessels. *2: Insertion of the catheter into a blood vessel and recovery of the thrombus directly with a wire.

(Note) This material was prepared to explicitly describe the major therapeutic options for ischemic stroke and their treatment window periods after onset. Appropriate treatments are conducted according to patients' conditions and classification of their symptoms. Experimental or investigational treatments not included in the above are also performed.

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HLCM051 Annual number of new patients with ischemic stroke in Japan

Target population

	Japan	Note
Number of patients (yearly)	**230,000 – 330,000**	Annual medical costs for ischemic stroke estimated at 1,070.7 billion yen（2009）
Severe patients（atherothrombotic and cardiogenic cerebral infarction)	**130,000**	
patients within 36 h after onset	**62,000**	

(Source) Healios estimated the annual number of new patients with ischemic stroke in Japan according to materials issued by the Fire and Disaster Management Agency, the Ministry of Internal Affairs and Communication, and the Ministry of Health, Labour and Welfare – DATAMONITOR epidemiological estimates also shown as upper end of range.
(Source) Healios estimated the percentage of patients who reach the hospital within 36 hours after onset at 47% according to the results of its market research.

(Note) Calculated using 2013 and 2014 fiscal year-end exchange rates.

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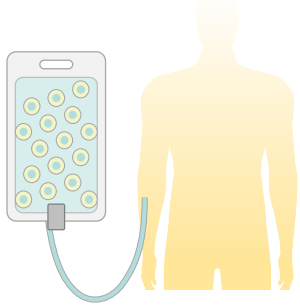
HLCM051 Mechanism of HLCM051 treatment

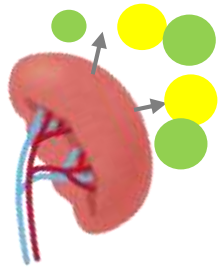
- Following intravenous administration after acute neurological injury, HLCM051 distributes to the spleen, downregulating hyperinflammatory response.
- HLCM051 promotes the neuroprotective effect by releasing various cytokines and growth factors.



Stroke-induced neuronal damage (Primary)

With HLCM051

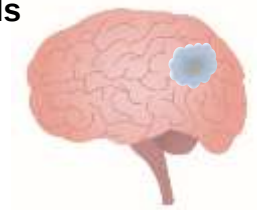




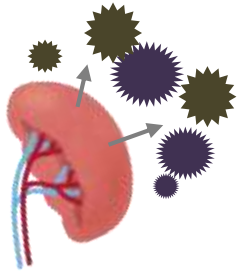
HLCM051

- **Suppress the mobilization/ release of inflammatory cells (lymphocytes, cytokines)**
- **Activate the mobilization/ release of anti-inflammatory cells**

Attenuate neuronal damage in the acute phase of stroke caused by inflammatory cells



Without HLCM051



Mobilization / release of inflammatory cells (lymphocytes, cytokines) in the spleen is activated



Neuronal damage exacerbated by inflammatory chemokines/cytokines (Secondary)

Inflammatory cells are released from the spleen and exacerbate the neuronal damage of the ischemic site.

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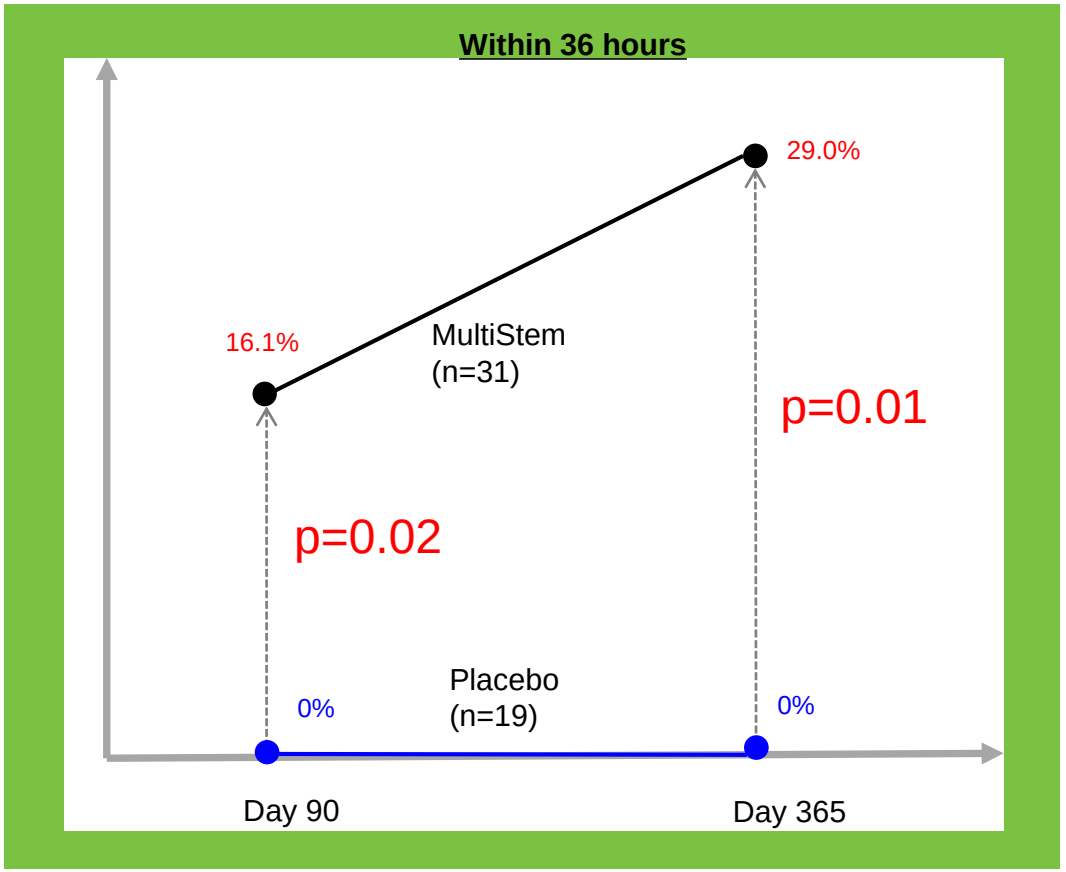
HLCM051 Clinical trials conducted by Athersys in the US and Europe



The proportion of patients who achieved Excellent Outcome was statistically significant (compared with the placebo group) both at Day 90 and Day 365 in the group of patients who received MultiStem within 36 hours of the onset of cerebral infarction.



Athersys starts conducting Phase 3 study (MASTERS-2)

*Patients will receive clinical product or placebo within 18-36 hours of stroke onset
* A total of 300 patients will be enrolled

First patient enrolled in July 2018.
Study Period: Approximately 3 years

(Source) Prepared by Healios based on the data provided by Athersys.

(Note) Excellent outcome = All of the following: mRS ≤ 1, NIHSS ≤ 1, and BI ≥ 95)

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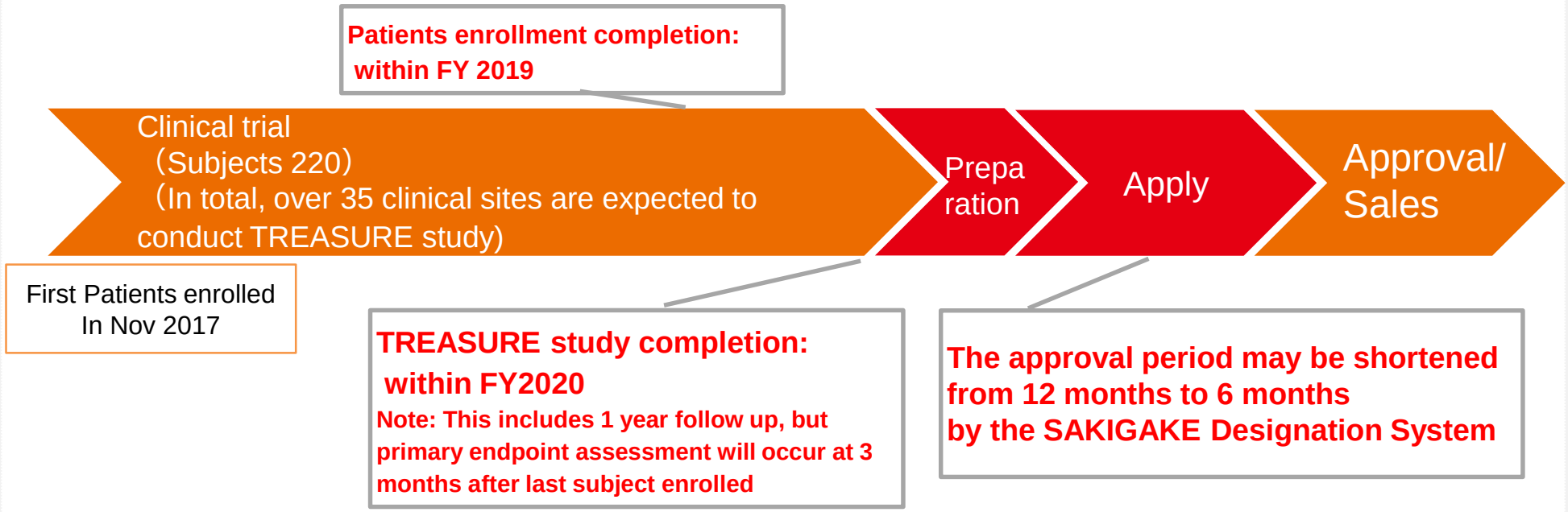
HLCM051 Clinical trial status

"Placebo-Controlled, Double-Blind, Phase 2/3 Efficacy and Safety Trial of HLCM051 (MultiStem®) in Patients With Ischemic Stroke" (**TREASURE study)**

The first patient was enrolled on November 15, 2017.
Enrollment continues to make progress.
It will take about 2 years for the inclusion of subjects as originally estimated.



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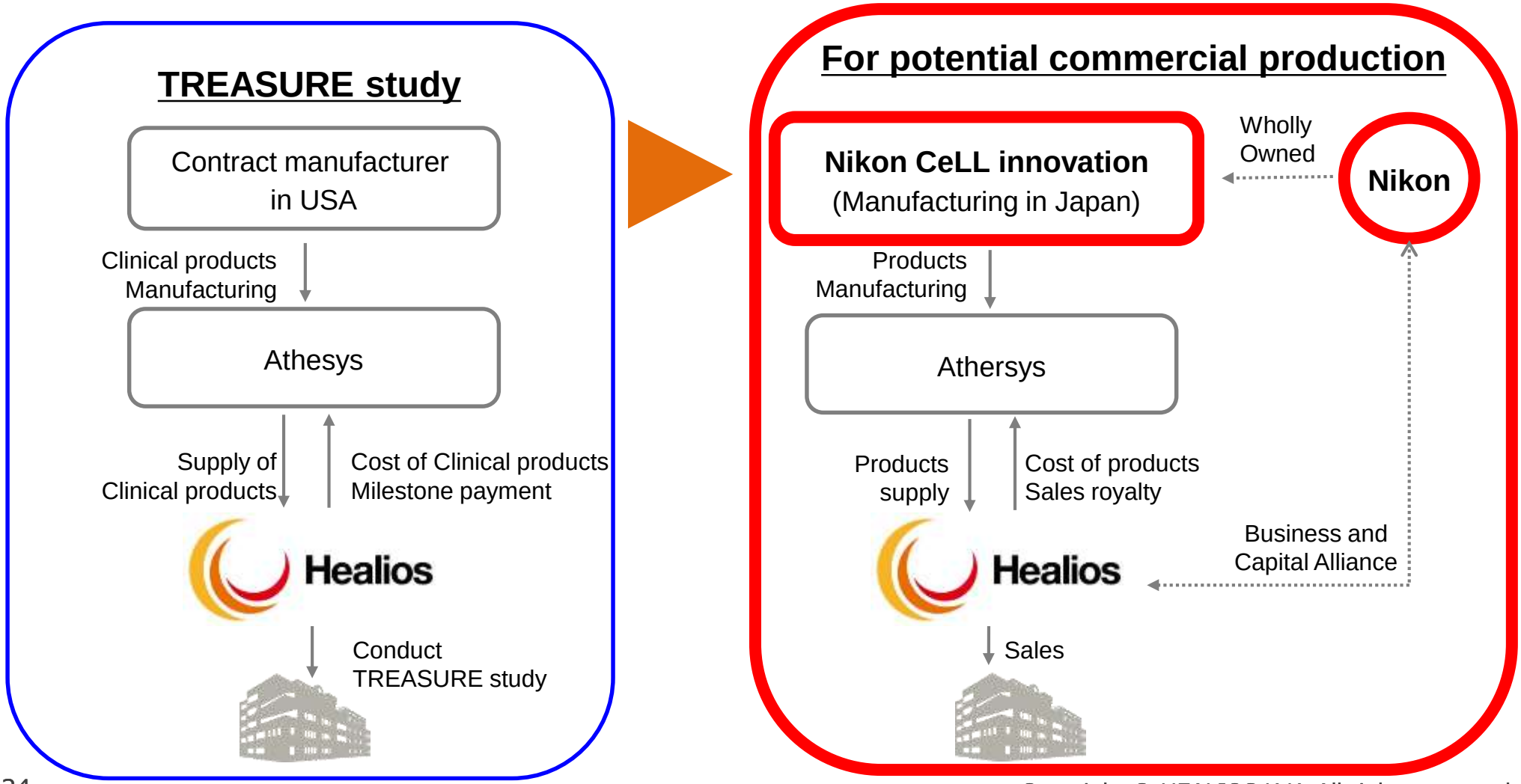
HLCM051 Business Partners

Nikon CeLL innovation executed a manufacturing service agreement with Athersys in preparation for the commercialization of HLCM051



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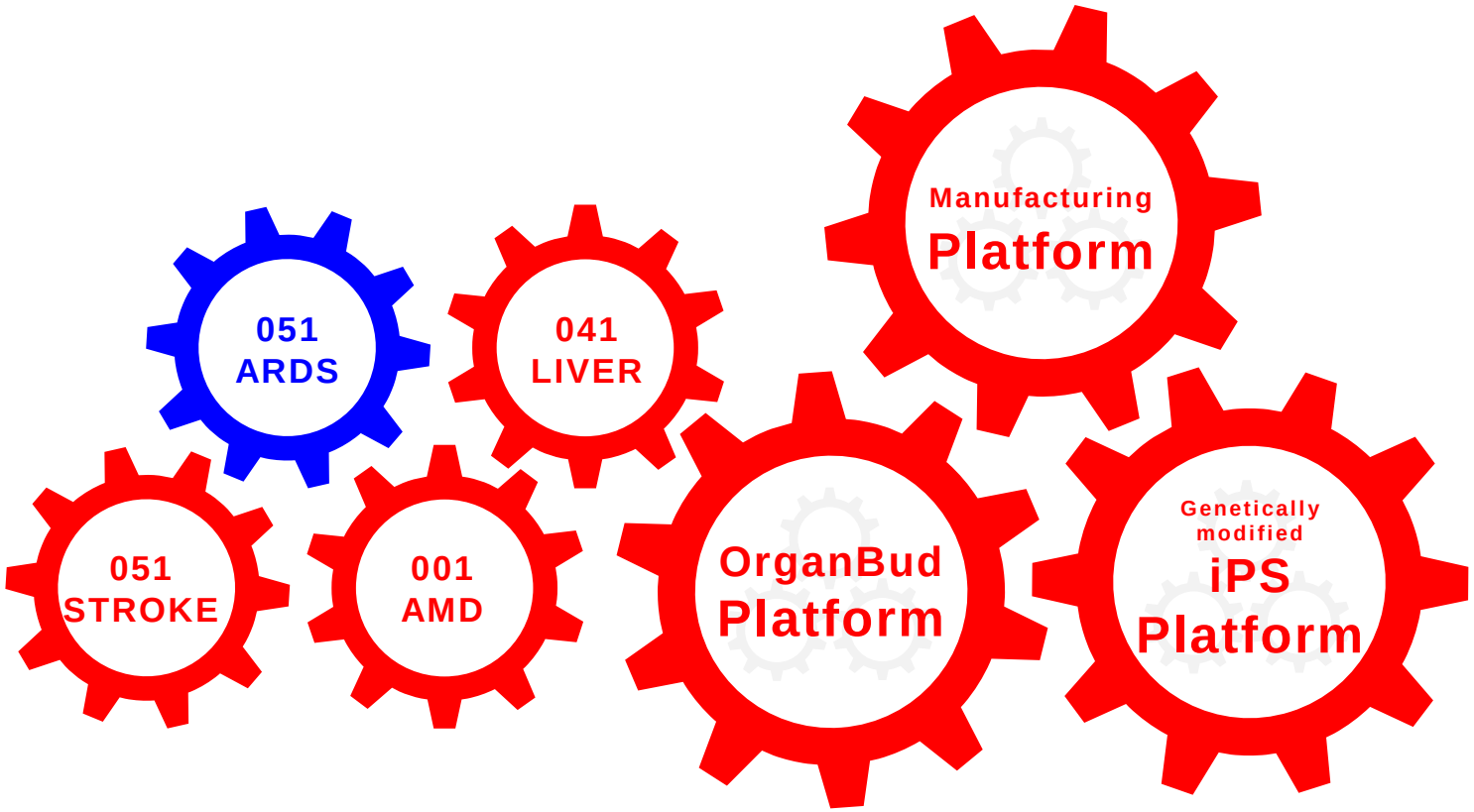

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UPDATE

HLCM051 ARDS Clinical trial

Study Design

✓ Open-label trial

✓ Standard therapy used as a control

Subjects : Patients with pneumonia induced ARDS
Enrollment : 30
Study Period : Approximately 2 years
Primary Endpoint : The number of days out of 28 in which a ventilator was not used for the patient (i.e. ventilator free days)

Development Schedule

Healios has started all necessary procedures, including the examinations by the Institutional Review Board of each medical institution where the trial will be conducted.

➡ **Administration of HLCM051 to the patients is expected to commence in the first half of 2019 at the earliest.**

Field	Development Code	Indication	Market	Pre-clinical test	Clinical Trial	Apply-approve	On the Market	Progress Status
Somatic Stem Cell Regenerative Medicine	HLCM051	ARDS	Japan	→				Undergoing preparation for clinical trial

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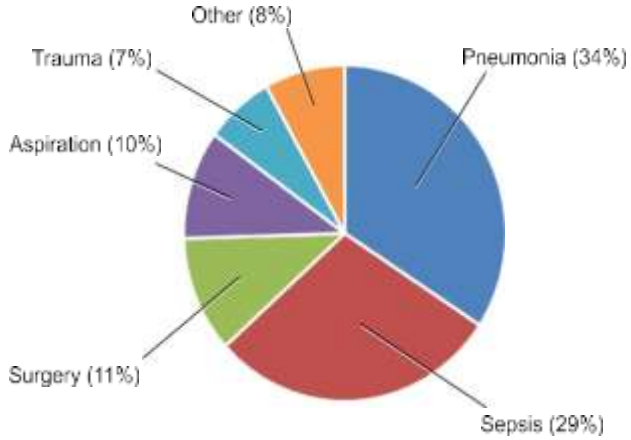
UPDATE

HLCM051 ARDS Number of ARDS patients

Epidemiological data	Incidence rate	The estimated number of ARDS patients in Japan
Epidemiology, Patterns of Care, and Mortality for Patients With Acute Respiratory Distress Syndrome in Intensive Care Units in 50 Countries. Source: JAMA.2016; 315(8): 788-800	・0.42 cases per ICU bed ・10.4% of ICU admissions ・23.4% of patients requiring mechanical ventilation	**11,937**
Epidemiology of Acute Lung Injury (ALI)/ Acute Respiratory Distress Syndrome (ARDS) in Chiba Prefecture Source: Journal of Japanese Association for Acute Medicine 2007; 18(6): 219-228	6.1 per 100,000 persons	**7,320**

The number of ARDS patients in Japan is estimated by Healios based on the incidence rate of epidemiological data and the total demographical population in Japan.

Underlying diseases of ARDS



Approximately 1/3 of ARDS patients were caused by pneumonia

Source：Respiratory Investigation; 55(4): 257-263

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HLCM051 ARDS About Acute Respiratory Distress Syndrome (ARDS)

ARDS

Acute Respiratory Distress Syndrome (ARDS) is a general term for the symptoms of acute respiratory failure suddenly occurring in all seriously ill patients.
The major causes are severe pneumonia, septicemia, trauma etc.
Inflammatory cells are activated in response to these diseases or injuries, causing damage to the tissue of the lungs. As a result, water accumulates in the lungs, leading to acute respiratory failure.

Typically, ARDS is said to occur within 24 to 48 hours of the onset of the illness or injury that caused it. The mortality rate is approximately 30 to 58%*.



(Source) Athersys

(* ARDS treatment guideline 2016)

Treatment

Artificial respiration using an endotracheal tube or mask is used to treat for respiratory failure in an intensive care unit. However, it is known that prolonged use of a ventilator worsens a patient's prognosis.

At present, there are no therapeutic drugs that can make a direct improvement to a patient's vital prognosis when ARDS develops. There is a demand for new treatments for ARDS that will lead to improvements in patients' symptoms and prognosis.

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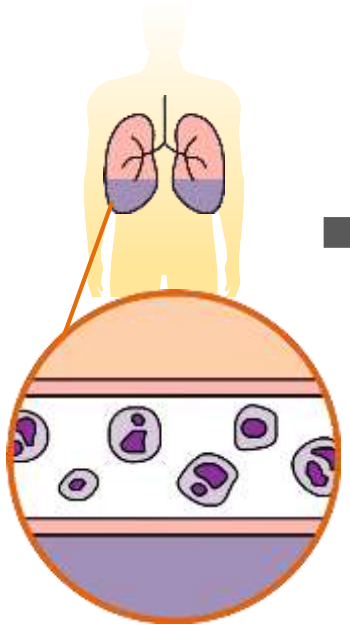
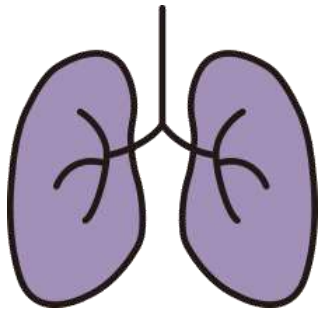
ARDS Pathological Process and HLCM051 Expected Mechanism of Action

- Following intravenous administration after ARDS, HLCM051 accumulates in the lungs and controls excessive inflammation.
- HLCM051 protects damaged tissue and promotes restoration.

・Underlying disease (pneumonia, etc.)
・Injury (Traffic accident, etc.)



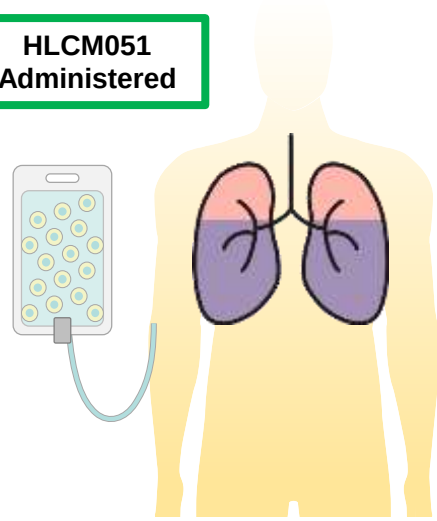
When the tissue is damaged, inflammatory cells are released in large quantities.



The inflammatory cells attack the lungs.

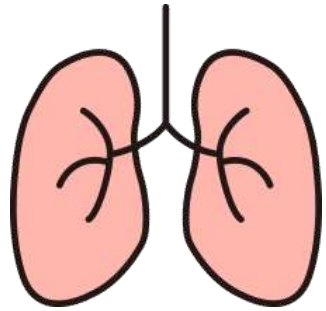
As a result, hypoxia develops and the patient falls into severe respiratory failure.

HLCM051 Administered



HLCM051 accumulates in the lungs as a result of intravenous administration.

・It suppresses excessive inflammation in the lungs.
・It protects damaged tissue and facilitates healing.



Lung function improves.

We can anticipate earlier ventilator removal and a lower mortality rate.

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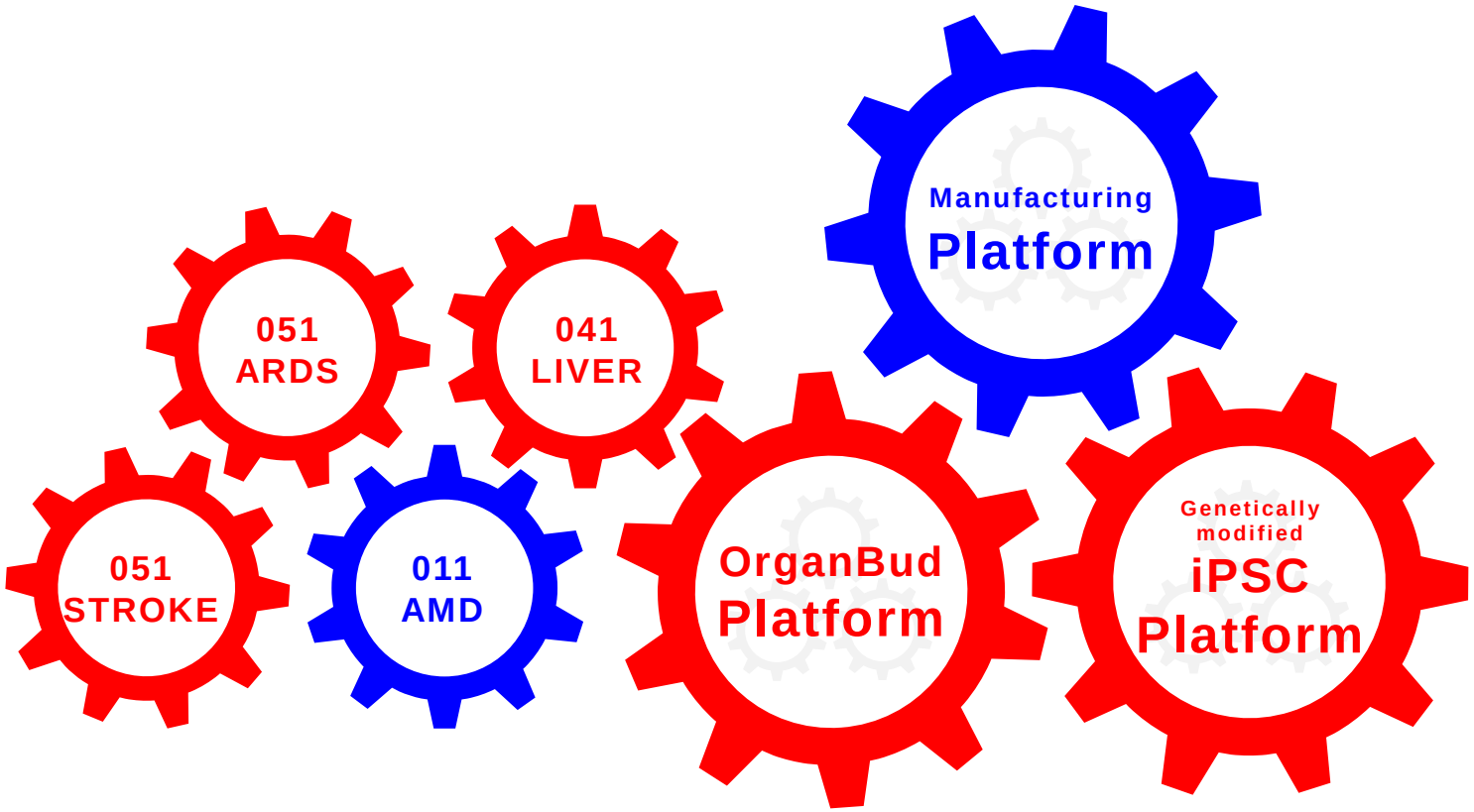

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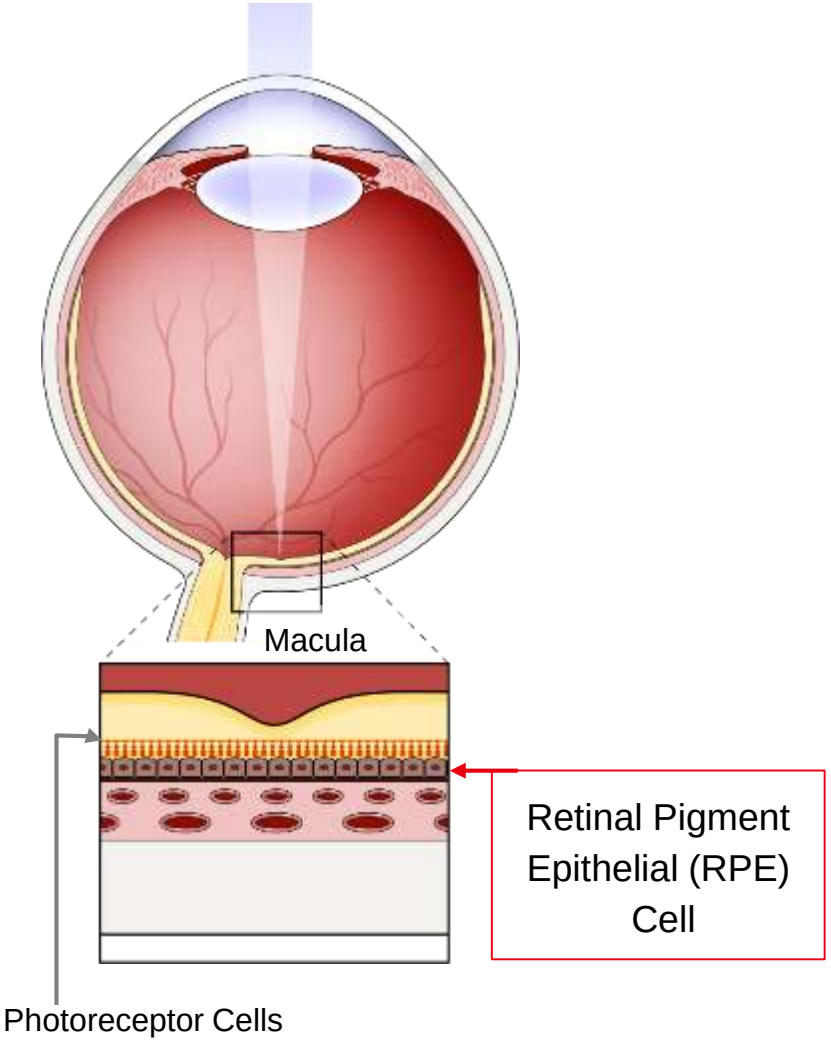
HLCR011 AMD Explanation of AMD pathological condition

AMD causes RPE cells to degenerate, which damages function.



Regular Macular Part

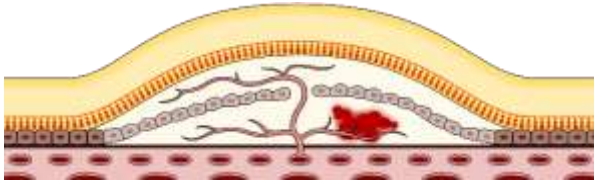
Developed Dry AMD

Immunity barrier maintained
→ Degeneration of photoreceptor→ Dry AMD



Wet AMD

Destruction of immunity barrier → Invasion of immune cells → Inflammation → Wet AMD



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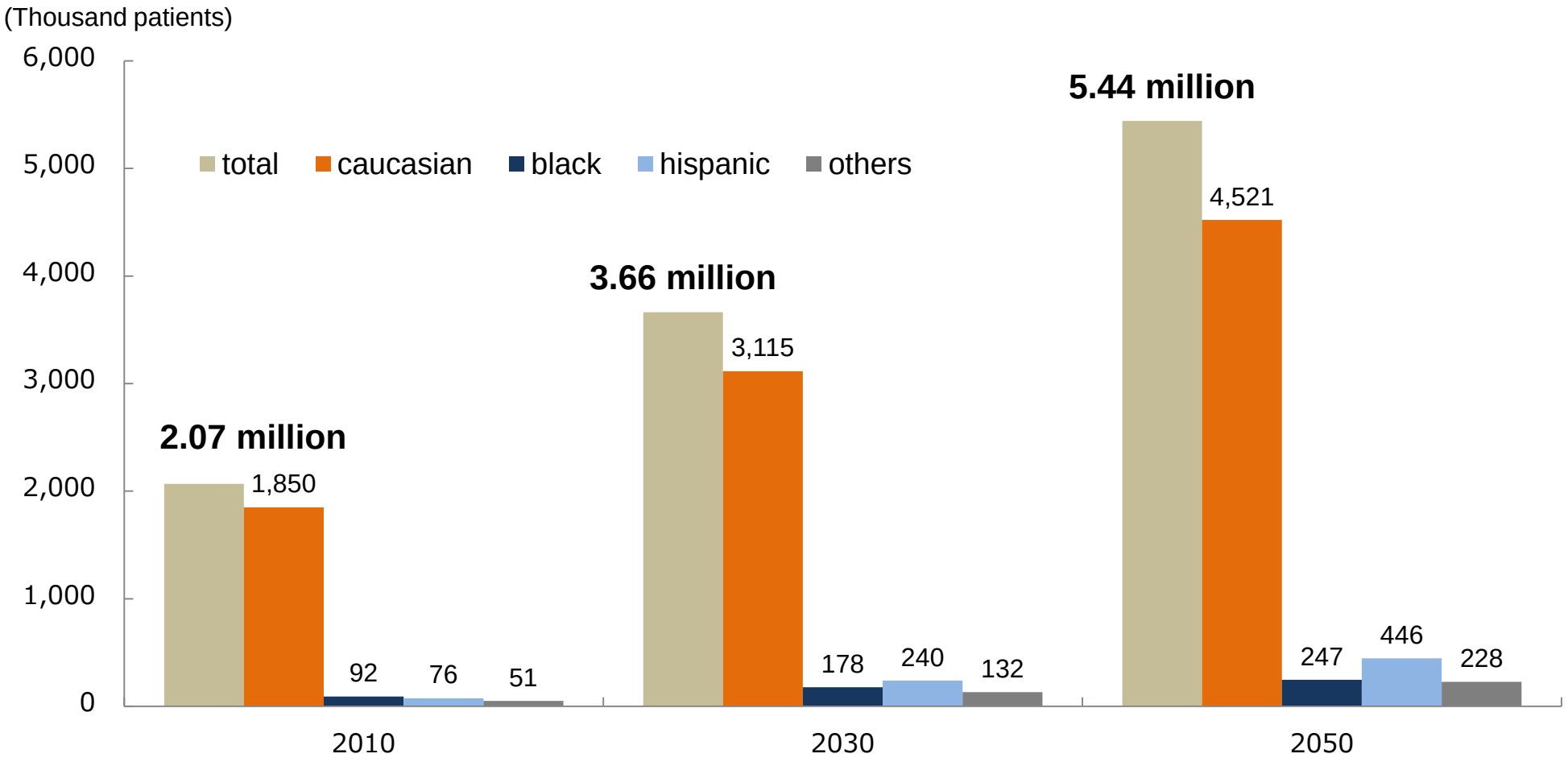
HLCR011 AMD Estimated number of future serious case AMD patients in the US

Expected to increase over medium- to long-term as society ages



(source) National Eye Institute

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HLCR011 AMD Number of AMD patients

Number of both Wet and Dry patients (including mild cases)

（Thousand patients）

	America	Japan	Others
Number of AMD Patients	**10,000**	**9,230**	**13,000**
Number of AMD Patients in Serious Cases	**2,000**	**690**	**2,600-3,220**
Wet-patients in serious cases	**1,000-1,500**	**630**	**1,300-1,950**
Dry-patients in serious cases	**850-900**	**60**	**1,100-1,170**

※According to research by Hisayama Kyushu University Graduate School of Medicine in Fukuoka (based on a comprehensive study), the total number of patients in Japan is calculated, estimating the total number of first-stage age-related macular degeneration and latter stage of age-related macular degeneration based on population statistics (2007). Also, the Disease Information Center announced that the number of patients suffering serious cases is approximately 690,000. The total number of patients in the US, which the National Eye Institute reports, includes the total number of age-related macular degeneration patients in mild cases and patients with visual field defects. Also, our company calculated the total number of Dry/Wet patients based on the incidence rates presented by AMDF (2010). Our company calculated the total number of patients in Europe based on incidence rates in each grade of European population statistics （2010)

※source: Prevalence of age-related maculopathy in older Europeans: the European Eye Study (EUREYE).Source: Arch Ophthalmol. 2006 Apr;124(4):529-35

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HLCR011 AMD Market scale of anti-VEGF treatment

Sales of anti-VEGF treatment are increasing every year. No medicine for Dry AMD.

Indication	Medicine / Effect	year	America	Japan	Others	Total
WetAMD and Other 3 diseases	Anti-VEGF treatment/ Restraint of New Blood Vessels	2015	3,853 million USD	496 million USD	2,661 million USD	7,010 million USD
		2016	4,729 million USD	580 million USD	3,127 million USD	8,436 million USD
		2017	5,116 million USD	632 million USD	3,483 million USD	9,231 million USD
DryAMD	No Medicine					

(Source) Market scale was calculated using official materials from drug companies (Roche Diagnostic, Novartis, Regeneron, Bayer HealthCare, Santen Pharmaceutical Co., Ltd). Calculated using 2015,2016,2017 fiscal year-average exchange rates. (FY2015:$1=¥121, FY2016: $1=¥110, FY2017: $1=¥112)

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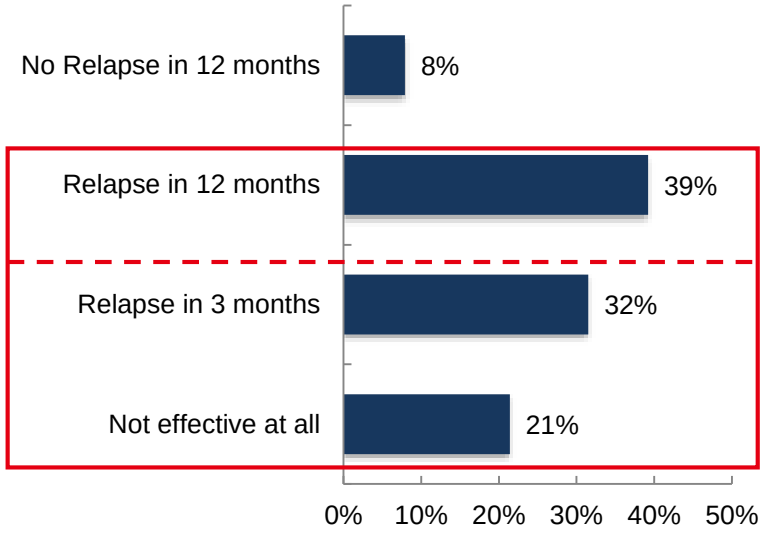
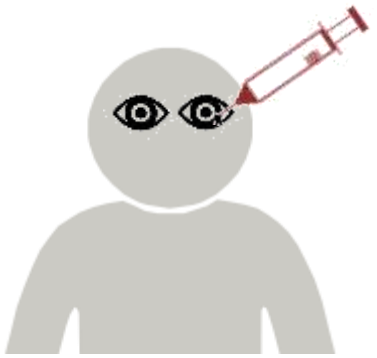
HLCR011 AMD Treatment subjects for Wet AMD

Recurrence frequency after receiving anti-VEGF medication



92% of patients
recur within 1 year

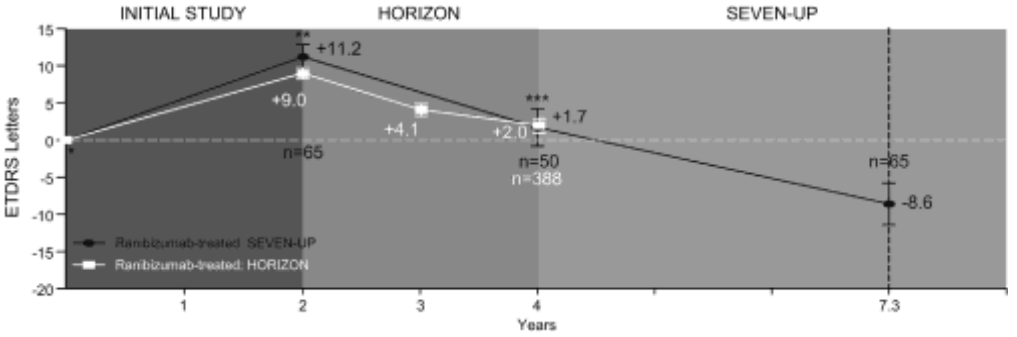


(Source) 13th Annual Meeting of The Japanese Society for Regenerative Medicine March 19th 2014, Thurs, 12:00～12:50 Approach to Clinical Application of iPS cells Institute of Physical and Chemical Research, Mandai Michiko

Changes in vision after receiving anti VEGF medication for long term

Seven-Year Outcomes in Ranibizumab-Treated Patients in ANCHOR, MARINA, and HORIZON *A Multicenter Cohort Study (SEVEN-UP)*

Receiving anti-VEGF medication for long term remains at risk for substantial visual decline



(Source) Rofagha S, et al. Ophthalmology 2013; 120: 2292-2299

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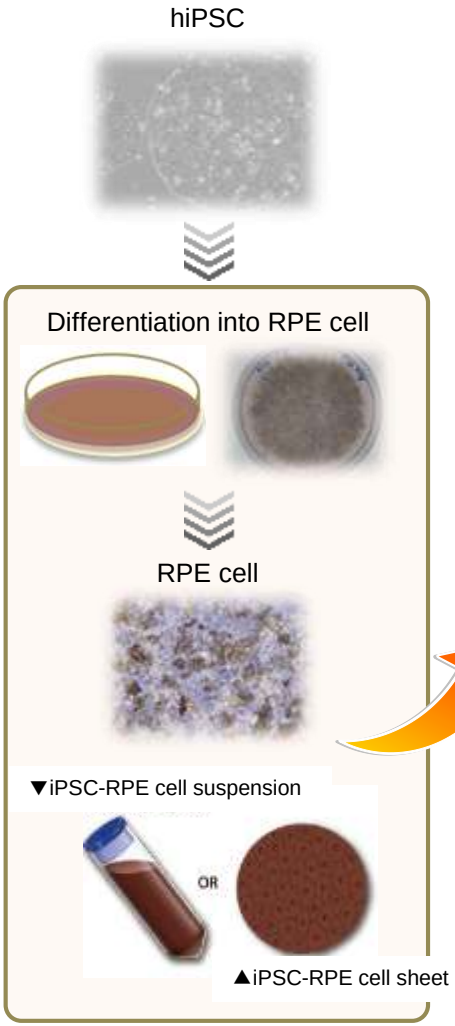
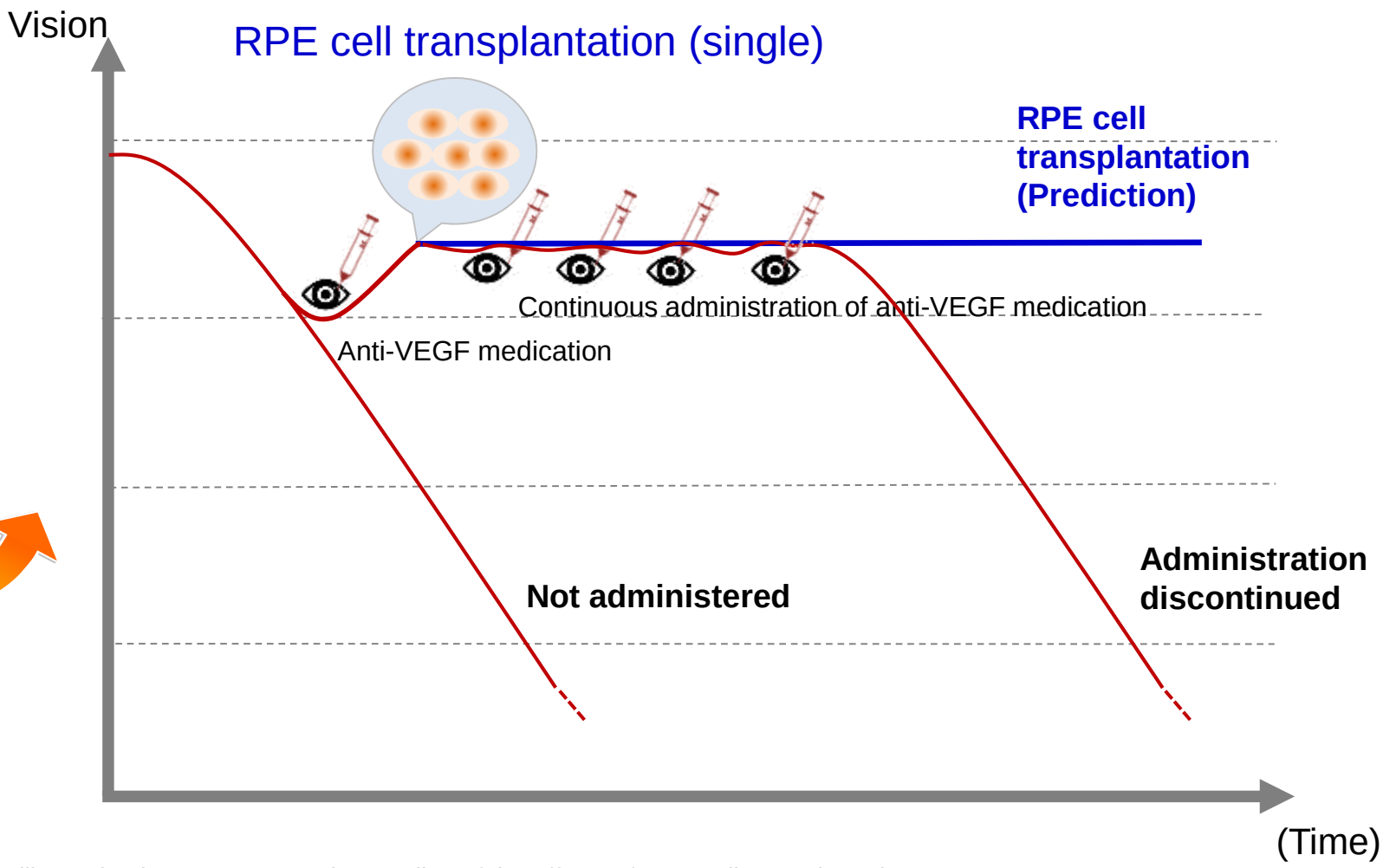
HLCR011 AMD Image of changes in vision with iPSC-RPE cell products treatment

Good vision can be maintained with early treatment





* The purpose of this illustration is to promote understanding of the effects of RPE cell transplantation.
Changes in vision with the administration of anti-VEGF medication vary according to patient symptoms and administration frequency.

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HLCR011 AMD Guide to medicine price
– Approach based on the cost of existing treatment

Anti-VEGF medicine mostly continues from the beginning of treatment until death

Annual Medical Expense

Unit Price of Anti-VEGF + Treatment Price **160,000 yen** × Annual Recommended Medication Protocol **6 Times** = Annual Medical Expense **1,000,000 yen**

Estimate of Lifetime Medical Expense

On the Assumption of Average Life Span (Japan): 80years old (Male) / 86 years old (female)

		Estimate of Lifetime Medical Expense
Continuous Treatment for **50-year old Patient Onset** = approx. **30years**	× **1.02 million yen** =	**Approx. 30 million yen**
60-year old Patient Onset = approx. **20years**	× **1.02 million yen** =	**Approx. 20 million yen**

(source) Onset Data: National Eye Institute; Average Life Span: The Ministry of Health, Labor and Welfare; Annual Recommended Medication Protocol: Materials Presented by Institute of Physical and Chemical Research

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HLCR011 AMD Status of clinical research by RIKEN etc.

"Clinical research of transplantation of allogeneic induced pluripotent stem cells – derived retinal pigment epithelium (RPE) cells for exudative age-related macular degeneration (AMD)"

March 2017:
Operation on first subject in clinical research using allogeneic iPSC-derived RPE cell suspension.
November 2017:
Operations using allogeneic iPSC-derived RPE cell suspension completed on 5 subjects. Continuing follow-up observation for one year.

	Sheet	**Suspension**
Autologous cells	Operation on 1 subject (in 2014)	To be determined.
Allogeneic cells	To be determined	Operations on 5 subjects (in 2017)

January 2018:
In one case an epiretinal membrane, deemed to be one of the causes of retinal edema, was removed to improve symptoms during the clinical research.

Dr. Takahashi from RIKEN explained that "The adverse effect was not imminent or urgent in nature. This event will not have any impact to our clinical studies in the future."

(Sources) Created by Healios
from the data at a press conference by RIKEN

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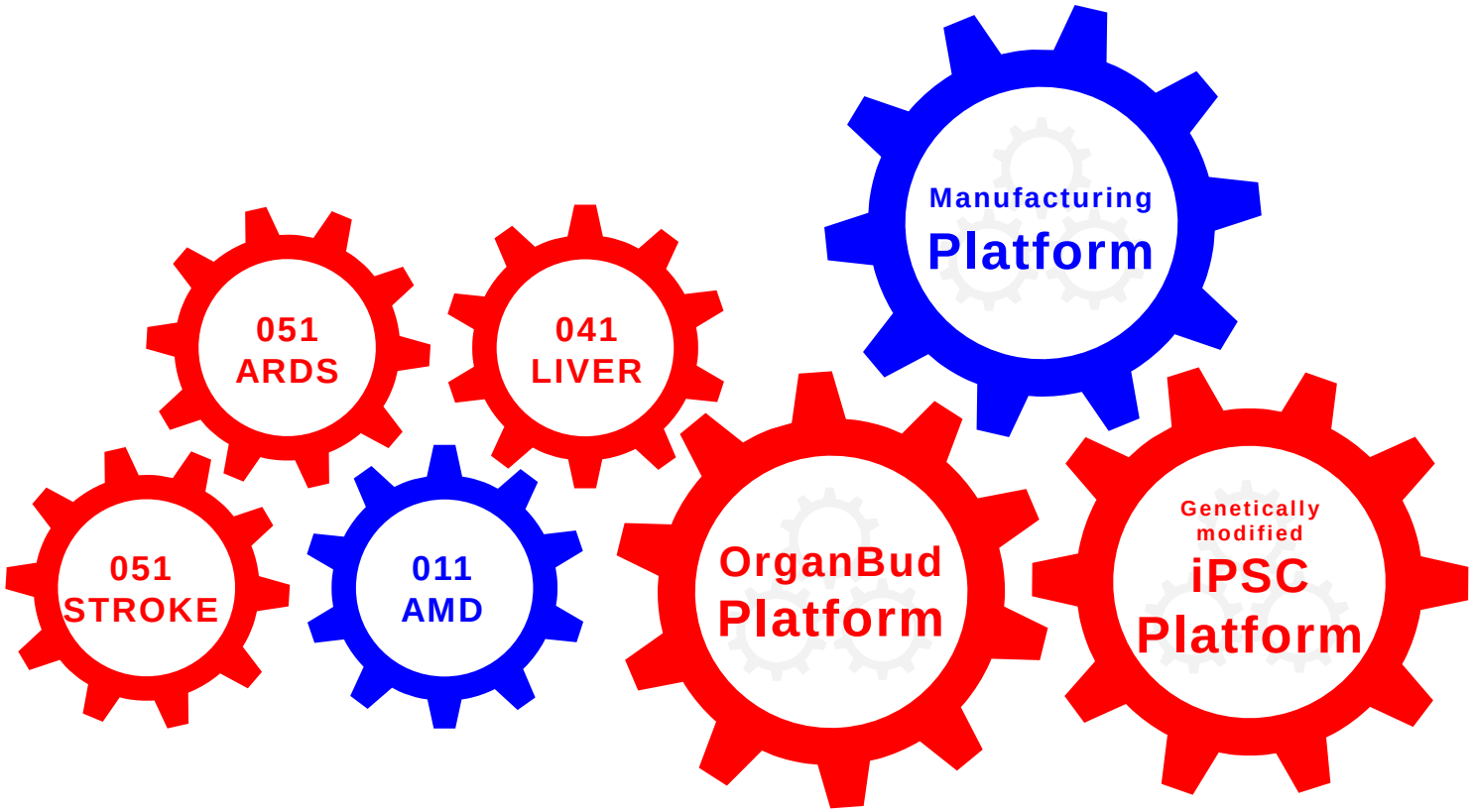

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HLCR011 AMD Manufacturing for iPSC-derived RPE products

Sighregen (our joint venture with Sumitomo Dainippon Pharma) is establishing a manufacturing facility in “SMaRT”, the Manufacturing Plant for Regenerative Medicine & Cell Therapy by Sumitomo Dainippon Pharma.



Sumitomo Dainippon Pharma completed the new manufacturing plant for regenerative medicine & cell therapy “SMaRT” in Osaka in March 2018.

Sighregen rents the facility in SMaRT and is establishing the iPSC-RPE manufacturing system.



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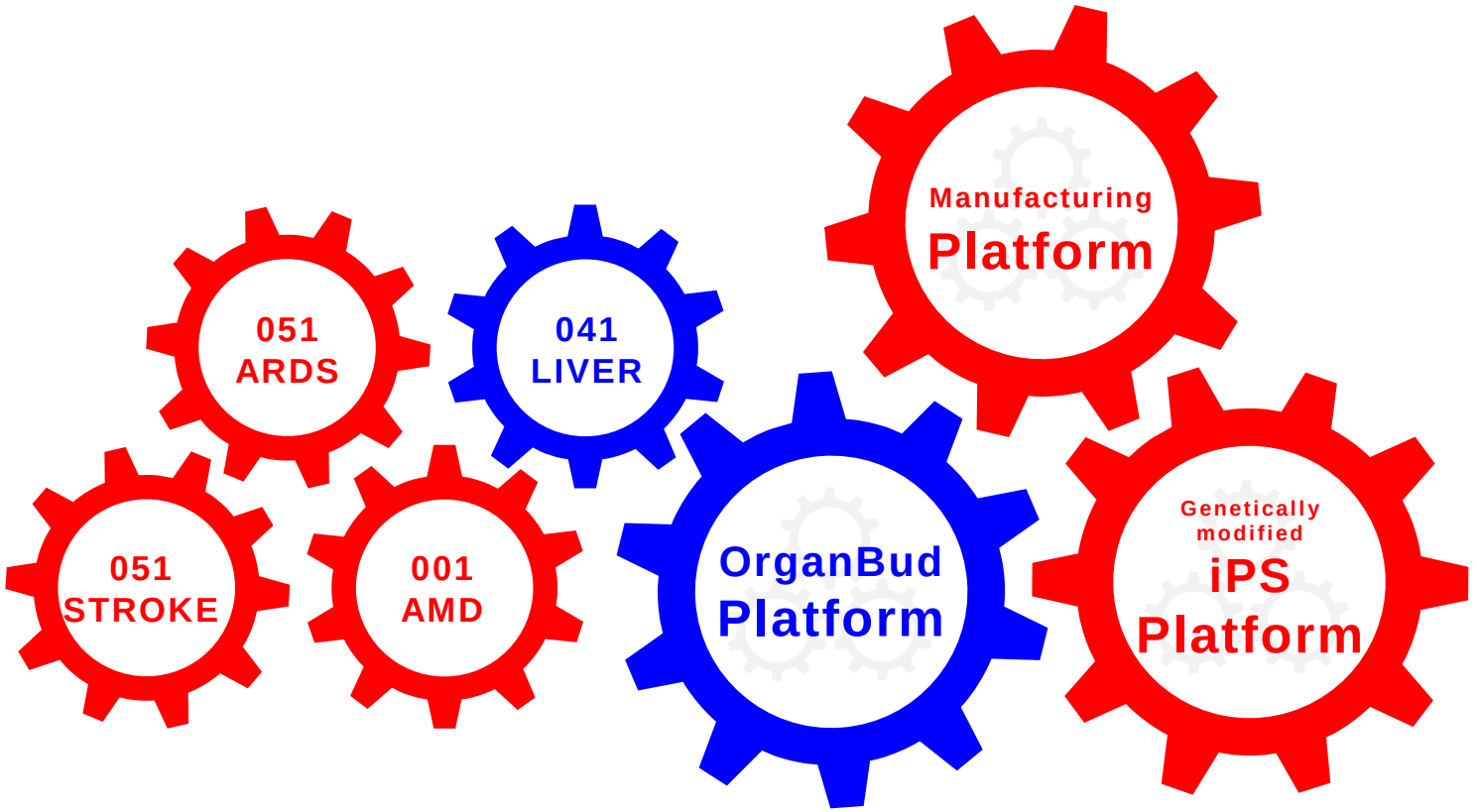

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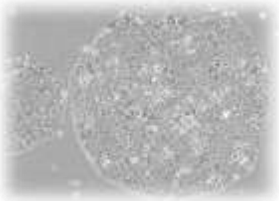
HLCL041 LIVER OrganBud Platform 3D organ generation mechanism

Generating “Organ bud” by co-culturing 3 types of cells

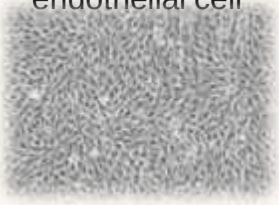
Human iPS cell



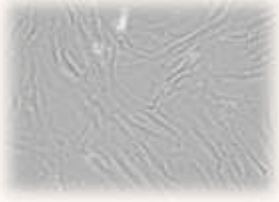
Precursor cell



Vascular endothelial cell



MSC



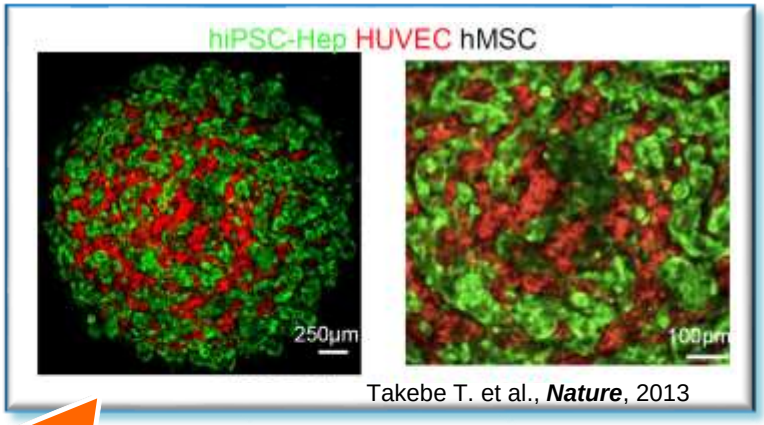
Organ bud*



Organ bud=
Origin of organ

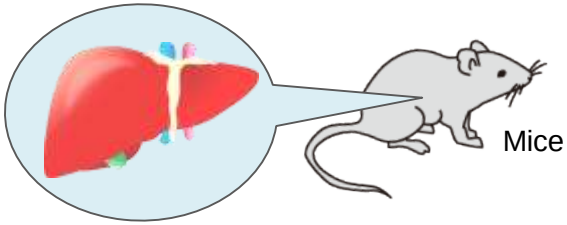


“Elplasia” from Kuraray Co., Ltd.
(http://www.elplasia.com/products/round_bottom/)

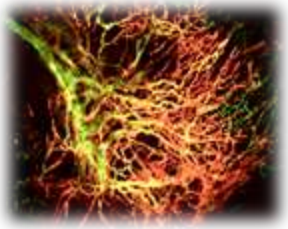


Takebe T. et al., ***Nature***, 2013

Cell Transplantation



Mice



Containing blood vessels and human liver

Takebe T. et al., ***Nature Protocols***, 2014

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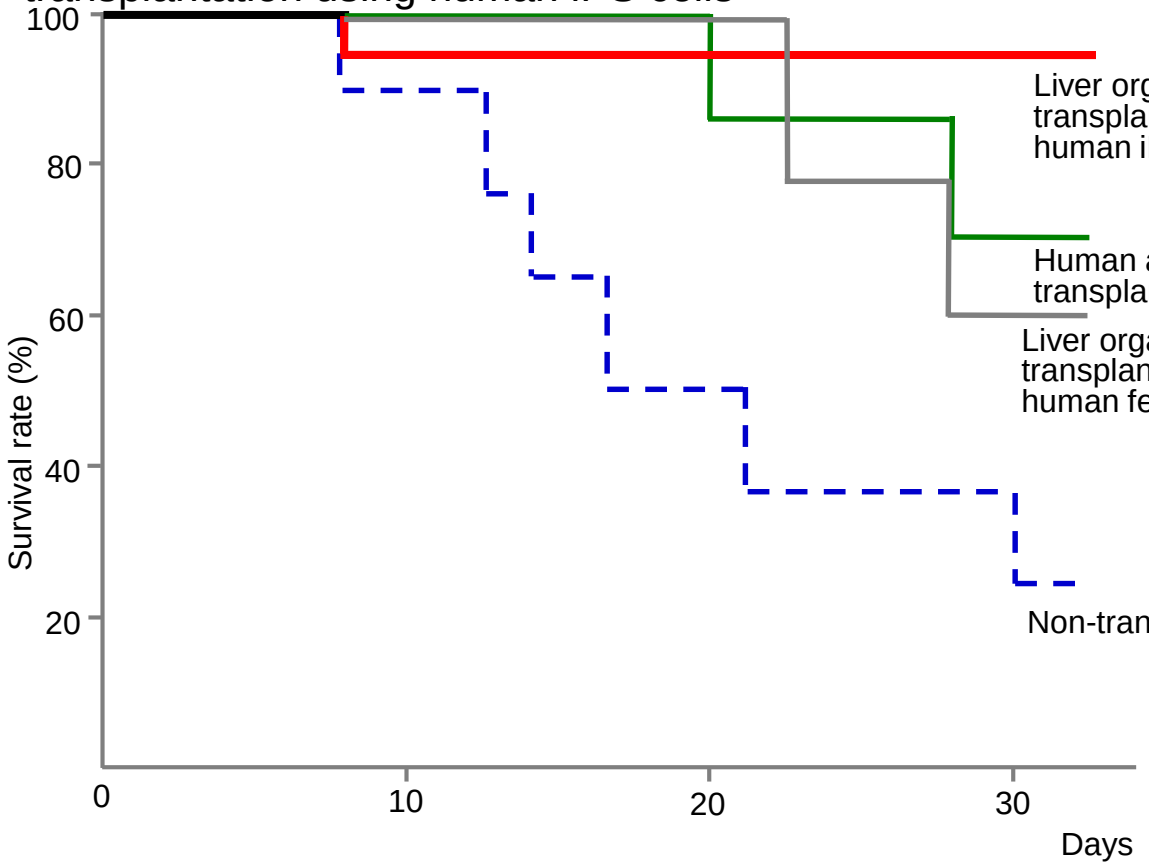
HLCL041 LIVER OrganBud Platform Survival rate of liver failure in mouse model

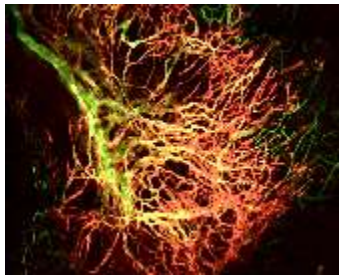
Survival rate improves significantly in transplantation experiments

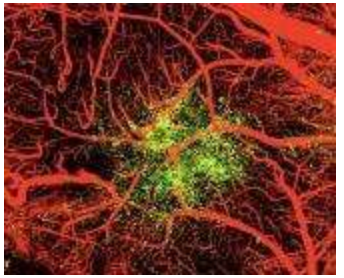
Treatment effects of liver organ bud transplantation using human iPS cells



(Source) Adapted by Healios from Takebe. T, et al. Nature, 499 (7459),（2013)

Process by which organ forms from organ bud links mouse‘s vascular network autonomously





(Source) Takebe,T., et al.
Nature Protocols, 9, 396–409 (2014)

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HLCL041 LIVER OrganBud Platform Metabolic liver disease in newborns

Yokohama City University planning to start clinical study in 2019

Urea cycle defect

Disease caused by congenital abnormality of enzyme functioning in metabolic pathway (urea cycle), which detoxifies ammonia in the liver and produces urea. Presently, the only definitive treatment available is liver transplantation.

* Even patients with minor conditions require treatment combining food treatment and medication to lower ammonia levels throughout their lives.

Estimated market size of metabolic liver disease in newborns

	US	Japan	Europe	Total
Number of patients (yearly)	**Approx. 160**	**Approx. 30**	**Approx. 230**	**Approx. 420**
Treatment costs (annual) Enzyme replacement therapy	**30 million yen – 50 million yen**			
Estimated annual market scale	**5 - 8 billion yen**	**1 - 1.5 billion yen**	**6 - 11.5 billion yen**	**12 - 21 billion yen**

∗ Number of patients and market size are estimated by Healios based on number of newborns and incidence rate.

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HLCL041 LIVER OrganBud Platform Expansion of marketability

Prospecting R&D for alternative treatment for liver transplantation

	Liver transplantation			Total
	US	Japan	Europe	
Number of patients undergoing treatment (Annual)	**Approx. 6,000**	**Approx. 400**	**Approx. 4,000**	**Approx. 10,000**
Number of patients on waiting list (Annual)	**Approx. 15,000**	**Approx. 400**	**Approx. 4,000**	**Approx. 20,000**

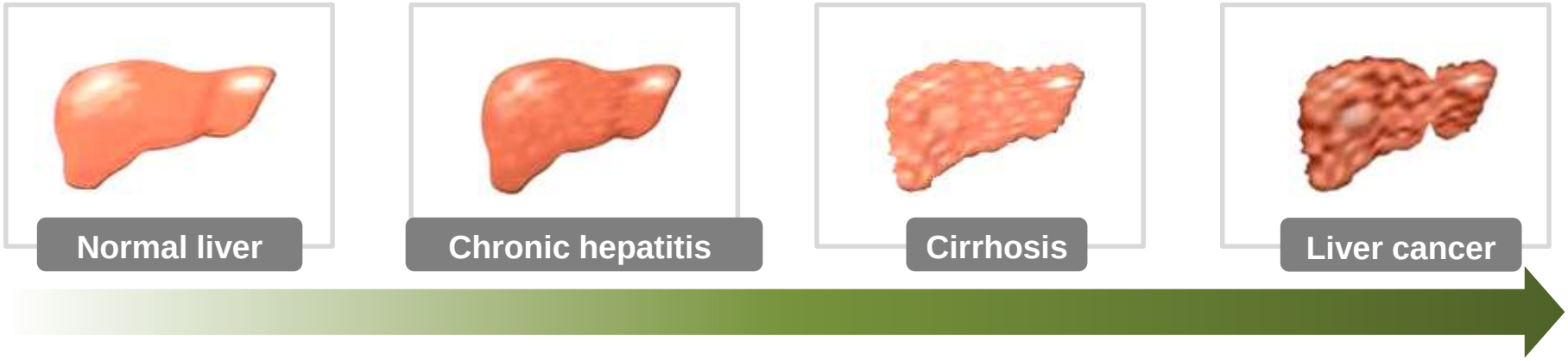
（Source）Compiled by Healios based on materials disclosed by Japanese Liver Transplantation Society, UNOS, Eurotransplan, UK Transplant, Agence de la biomédecine, and Scandia Transplant.

Liver disease drawing attention in the future is cirrhosis

Estimated patients with cirrhosis in Japan: 400,000 to 500,000. About 56,000 receive treatment at medical facilities.
Annual deaths in Japan: 17,000 patients.

（Source）Patient Survey 2011 Liver Cancer White Paper 2015

Progress of liver disease



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HLCL041 LIVER OrganBud Platform

Potential of application for various organs

Cell derived from various organs

Vascular endothelial cell

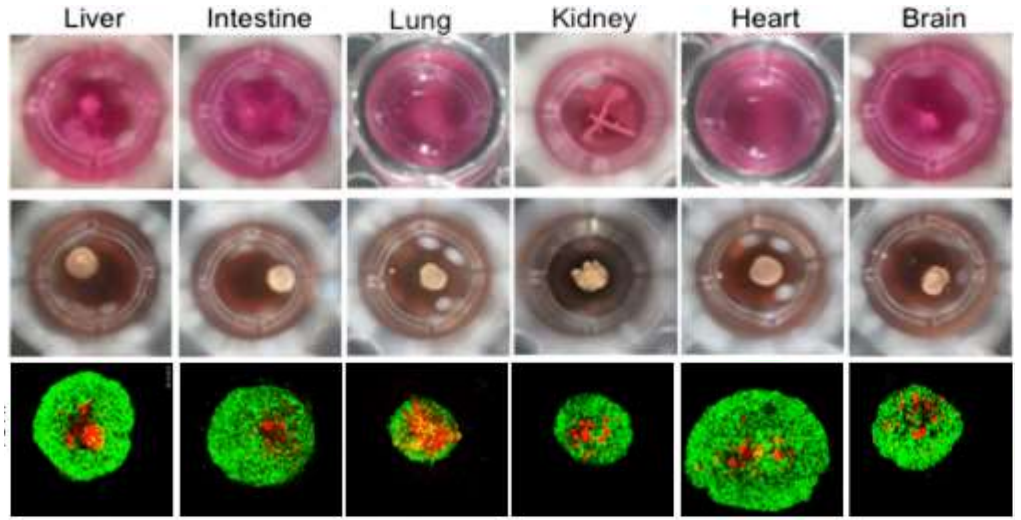
MSC



Using cells derived from various organs, vascular endothelial cells and mesenchymal stem cells, Achieved construction of vascularized 3D organization

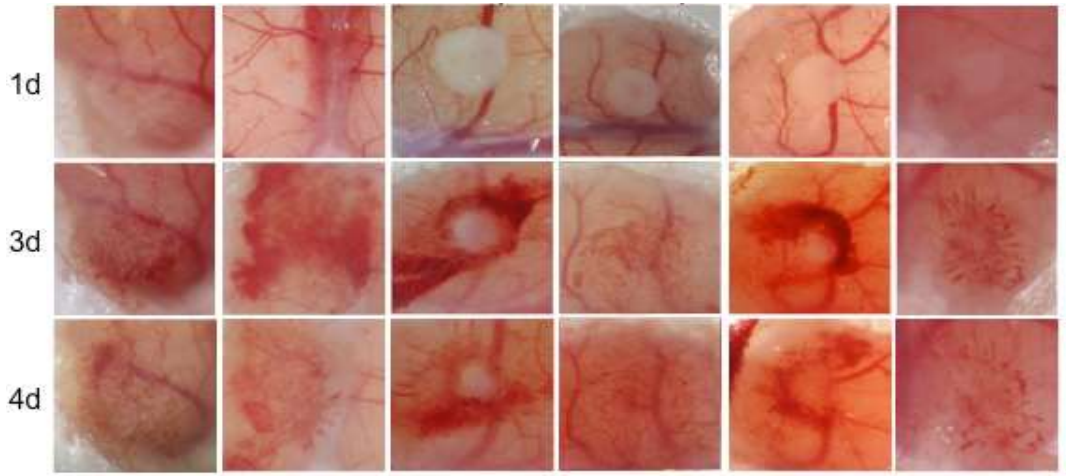
The vascularization was confirmed in vivo by transplantation to mice

Inducing progenitor cells of each organ from iPS cells will be able to expand the possibility of development to various organs



Transplanted to mice

Green：
Red：Vascular endothelial cell
Black：MSC



Modified from Takebe T. et al., ***Cell Stem Cell***, 2015

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Financial Highlights

UPDATE

Statement of income

(Million yen)

	FY 2017 3Q	FY 2018 3Q		
			YoY change	Main reasons for increase/decrease
Sales	27	—	▲27	
Operating income	▲1,797	**▲4,033**	▲2,235	Research & Development expenses increased ▲2,077
Ordinary income	▲1,846	**▲4,054**	▲2,208	
Net income	▲1,209	**▲4,058**	▲2,849	FY2017: Gain on transfer of business (▲641)

R&D expenses	1,342	**3,419**	2,077	Collaboration expansion with Athersys +2,160
Amortization of goodwill	33	**-**	▲33	
Number of employees	71	**89**	18	-

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UPDATE

Balance sheet

(Million yen / %)

		December 31, 2017	September 30, 2018	Change	Main reasons for increase/decrease
	Current assets	19,288 (97.9%)	**14,051** (80.1%)	▲5,236	Cash and deposit ▲5,533 (Cash and deposit balance 13,507)
	Non-current assets	408 (2.1%)	**3,482** (19.9%)	3,073	Investment securities ＋2,970
Total assets		19,696 (100.0%)	**17,533** (100.0%)	▲2,162	
	Current liabilities	1,300 (6.6%)	**3,160** (18.0%)	1,859	Current portion of long-term loans payable +1,000 Accounts payable +605
	Non-current liabilities	2,232 (11.3%)	**1,787** (10.2%)	▲444	Long-term loans payable ▲629
Total liabilities		3,532 (17.9%)	**4,947** (28.2%)	1,415	
Total net assets		16,163 (82.1%)	**12,585** (71.8%)	▲3,577	Earned surplus ▲4,058
Total liabilities and net assets		19,696 (100.0%)	**17,533** (100.0%)	▲2,162	

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Appendix

UPDATE

Healios overview

About Us

Company Name	HEALIOS K.K.（TSE: 4593）
Mission	To foster a “Life Explosion” that enriches the lives of people around the world
Head Office	World Trade Center Building 15F 2-4-1 Hamamatsucho Minato-ku, Tokyo Japan 105-6115
Paid in Capital	11,386 million yen (As of end of September, 2018)
Number of Employees	89 (As of end of September, 2018)
Research Institution	Kobe and Yokohama
Affiliated Company	SighRegen Co., Ltd. (Joint Venture with Sumitomo Dainippon Pharma Co., Ltd.)
Subsidiary	Healios NA, Inc. (Established in February 2018) Organoid Neogenesis Laboratory Inc. (Established in June 2018 to promote the practical use of organ bud technology)

Our Experienced Executive officers

Chairman and CEO Hardy TS Kagimoto, MD		▪ Succeeded in Developing BBG250 and Realized Sales in Europe
CMO (Chief Medical Officer)	Masanori Sawada, MD, PhD, MBA	▪ Osaka University Invited Associate Professor
In charge of Research and Manufacturing/ Head of Kobe Research Lab.	Kouichi Tamura, PhD	▪ Astellas US Director of Laboratories ▪ Well-acquainted with Immunosuppressant Research
In charge of Development	Michihisa Nishiyama	▪ Constructed network for Tacrolimus approval and sales at Astellas in the US and Europe
In charge of Administrative field	Ken Ishikawa	▪ Striving to strengthen organizational capabilities

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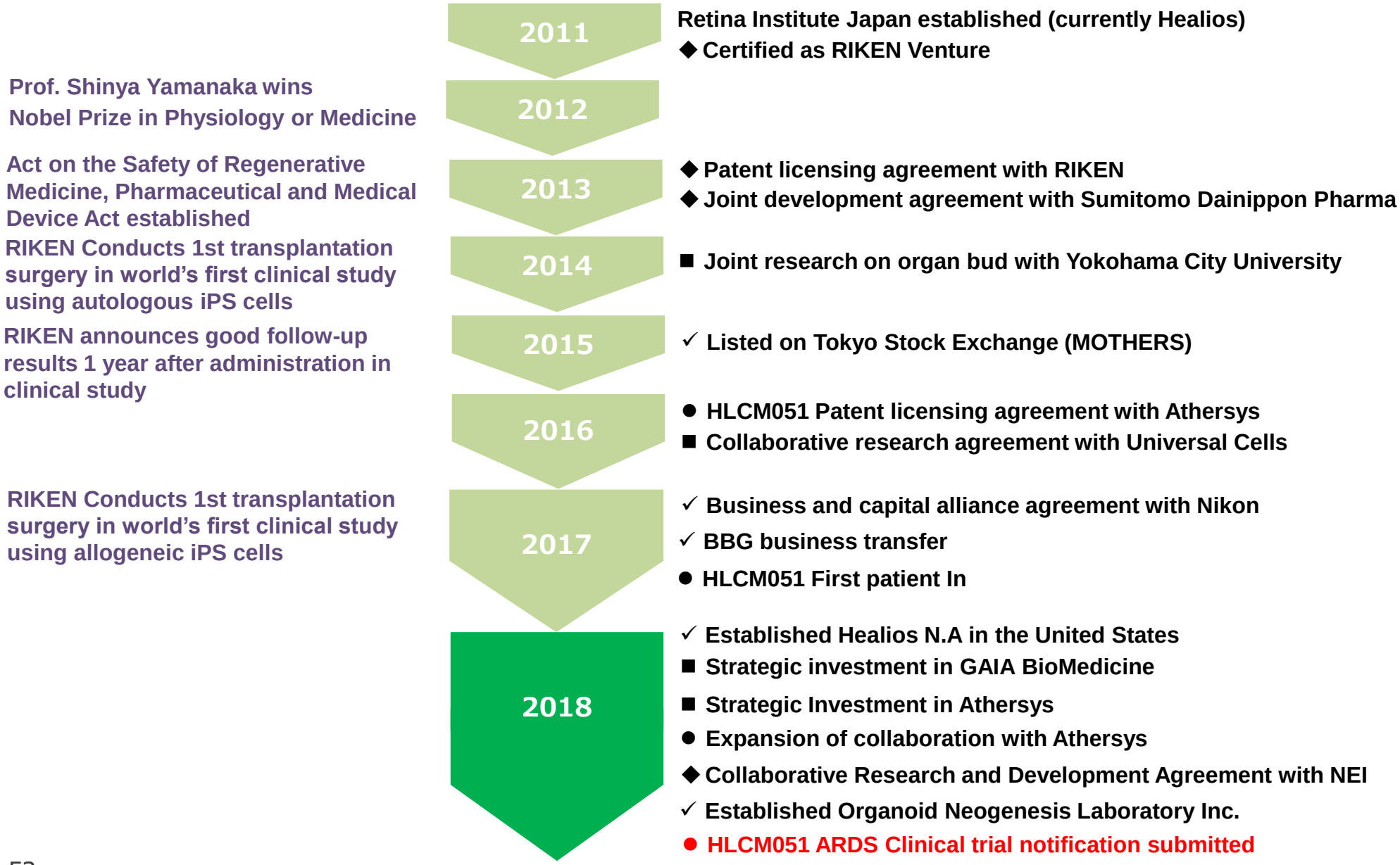
UPDATE

Company history and societal trends



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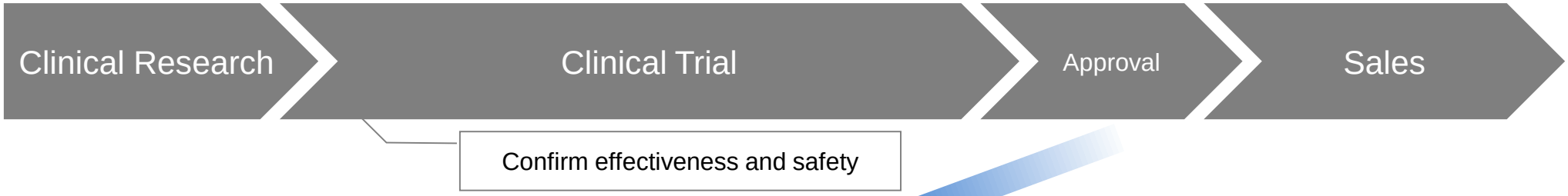
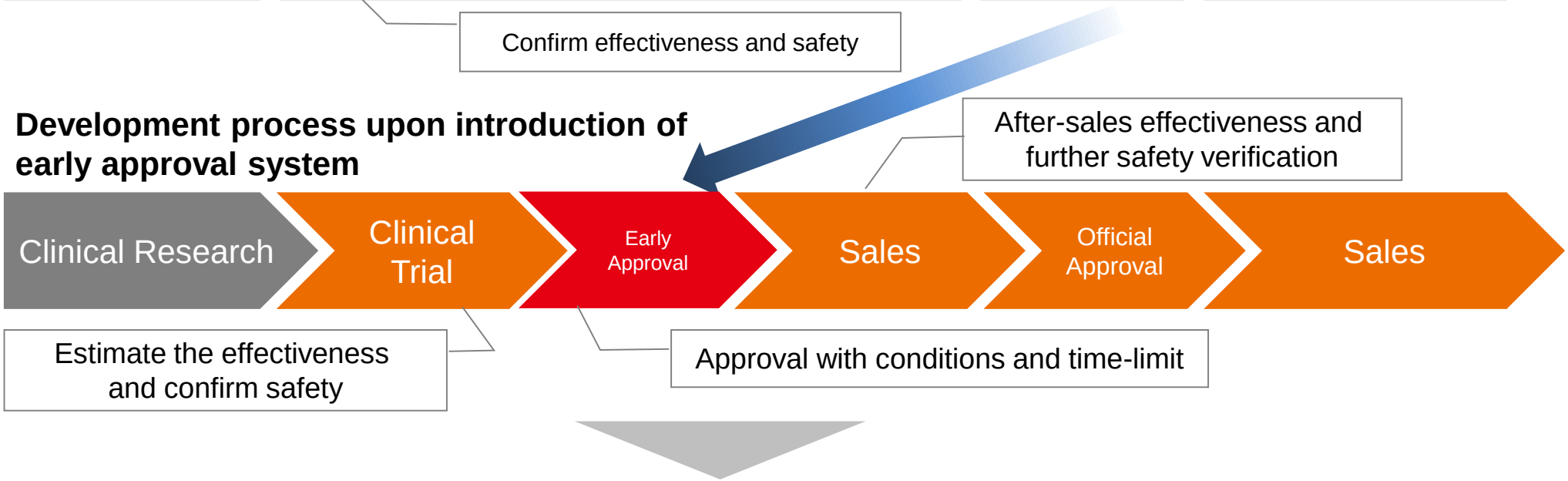
Historical relaxation of Japanese regulations

Japanese Government Revises Regulations to Put Japan at the Forefront

Traditional process of development



Development process upon introduction of early approval system



- Drastic reduction in the trial time period and number of patients with “Early Approval System”.
- Insurance is listed at ‘Early Approval’ stage.

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Rapid impact of relaxed regulations

Approval of regenerative medicine products, September 2015

Product Name	Temcell® HS Injection	Heart Sheet
Company	JCR Pharmaceuticals	Terumo
Indications	Acute GVHD after hematopoietic stem cell transplantation	Severe heart failure due to ischemic heart disease
Price	13.9 million yen	14.76 million yen
Important Point	First allogeneic cell-based regenerative product	First conditional approval

(note) Calculated using 2013 and 2014 fiscal year-end exchange rates.

Price calculation method prospects

Cost accounting system

* The price of new drugs is basically calculated according to the prices of official articles with similar efficacy (price determination by comparable drug). However, if there are no appropriate similar official articles, required costs are added in the calculation of prices (cost accounting system).

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Important note on future events, etc.

Descriptions of future events, etc. in this document include Healios' assumptions, prospects, etc. based on information which could be acquired at the time this document was presented. For this reason, actual performance, development progress, etc. may differ from those described in this document according to the outcome of R&D in the future, the actions of regulatory authorities, etc. in the future, and uncertain/pending factors as of this point.

Also, this document contains information on regenerative medicine and medical equipment that are currently under development or already on the market. Such information is not intended for promoting, advertising or providing medical advice.

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