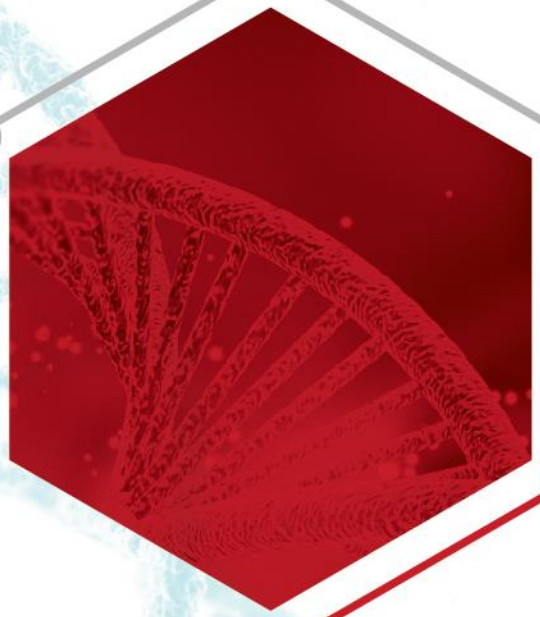

Accelerate Drug Development using Oligonucleotides

OliX Pharmaceuticals

Investor Relations 2021

Forward-looking Statements

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OliX Pharmaceuticals

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Chapter 1. Company Overview

Chapter 2. Core Technology

Chapter 3. Growth Potential

Chapter 4. Core Programs

Appendix

OliX Pharmaceuticals

01 Company Overview

1. Company Overview
2. History
3. Management Team
4. Scientific Advisory Board

1. Company Overview

Developing novel therapeutics based on proprietary RNAi platform technology

Status

Company Name	OliX Pharmaceuticals, Inc.
CEO & Founder	Dong Ki Lee
Date of Establishment	Feb. 26, 2010
Headquarters	Ace Gwanggyo Tower1, Suite 1014, 17, Daehak 4-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16226, Republic of Korea
Number of Employees	87 (62 in R&D, 16 in OliX US) (Doctorate holders: 29, Master's degree holders: 29)
Major Business	Development of next-generation nucleic acid therapeutics based on RNAi technology

Shareholders

(Dec. 2020)

Shareholder name	No. of shares (common stock)	Share (%)
Major shareholder etc.	4,002,514	29.56%
Hugel, Inc.	355,592	2.62%
Etc.	9,183,954	67.82%
Total	**13,542,060**	**100.00%**

Corporate Philosophy

Our Mission

Contribute to the Health and Happiness of Mankind Using Cutting-Edge Technology

Our Vision

- Become one of the world's top three nucleic acid companies
- Become a world-class biomedical technology research center

Subsidiaries

OliX US Boston	Preclinical development & pharmacology, CMC, clinical, regulatory, QA
OliX US San Diego	RNAi research through chemical modification of siRNA & development of analytical method for siRNA
mCureX Therapeutics, Inc.	Development of nucleic acid therapeutics and vaccines based on mRNA technology

2. History

Establishing Platform Technology

2010
02 BMT, Inc. is established
03 Exclusive license on asymmetric siRNA is obtained
09 **C**ertified as a venture company (Kibo Technology Fund)

2011
06 Exclusive license for asymmetric lasiRNA is obtained
10 Company affiliated research center is certified
12 cp-asiRNA platform development is initiated

2012
11 Company moves to Gasan Digital Complex

2013
05 A patent application for cp-asiRNA platform is filed
11 Out-License Agreement for OLX101A with Hugel is made (Asia)

Expanding Pipelines

2014
08 Series A funding is completed
09 OLX201A is selected as 'Korea- Singapore R&D project' (Ministry of Health and Welfare)
10 Renamed to OliX, Inc.
11 OLX101A is selected as a 'KOREA Drug Development Fund' project (preclinical)

2015
04 OLX103 is selected as a Technology Development Support Project (SME Business Administration)
06 Hugel Inc. makes a strategic investment in OliX

2016
07 Hypertrophic scar therapeutics data published in Journal of Investigative Dermatology
12 CEO receives the Minister of Health & Welfare Award

Entering into Clinical Stage

2017
01 Company moves to Suwon
01 Clinical trials for OLX101A approved by MFDS
05 Asymmetric lasiRNA platform is patented in the US
10 OliX passes technology evaluation (A,A) for IPO

2018
05 Phase 1 trial for OLX101A is completed in Korea
05 Phase 1 trial for OLX101A is approved in UK
07 Listed on the KOSDAQ
10 OLX101A is selected as a 'KOREA Drug Development Fund' project (IND for Phase 2, FDA)
10 Established OliX US, Inc. in Cambridge, US
11 Phase 2 trial for OLX101A is approved in KOREA

Initiating a Global Clinical Trial

2019
01 Established R&D Lab in San Diego
03 Out-Licensing Agreement for OLX301A with Théa (EU, MEA, Africa)
11 Phase 1 trial for OLX101A is successfully completed in the UK

2020
03 GalNAc Conjugation Technology from AM Chemicals is introduced
06 R&D Supply Contract on GalNAc-siRNA platform is signed
10 Expanded Out-Licensing Agreement for OLX301A,301D, two optional pipeline with Théa (Worldwide excl. Asia-Pacific)
12 Certified as a Family –friendly and an Innovative pharmaceutical company

2021
01 Established mCureX Therapeutics, Inc.
02 Received KNDA (Korea New Drug Award)

Research History on OliX's Core Technology

2015 Cell-Penetrating asymmetric siRNA (cp-asiRNA) is patented
2013 Long Asymmetric siRNA (lasiRNA) is patented
2010 Asymmetric siRNA (asiRNA) structure technology is patented
2009 Paper on asymmetric siRNA structure technology is published (Molecular Therapy)
2004 Research on RNAi technology is conducted (POSTECH, Sungkyunkwan Univ.)

3. Management Team

In-house expertise covering from R&D, clinical trials to commercialization

CEO

Dong Ki Lee

Makes strategic decisions for the overall R&D process

- B.S. in Chemistry, KAIST
- Ph.D. in Biochemistry, Cornell University
- Assistant Professor, Chemistry Dept., POSTECH
- Professor, Chemistry Dept., Sungkyunkwan Univ.

Development

Shin Young Park
EVP

- Ph.D. in Pharmacy, Seoul Nat'l Univ.
- Preclinical toxicology expert
- Nonclinical toxicology project manager for Ionis, KIT
- Toxicologist, DABT

Management

Chung Gil Kang
Vice President

- B.S. & M.S. in Management Science, KAIST
- Director, Kumho, Powerlogics
- Director, L&S Venture Capital

Chemistry

Dongwon Shin
Senior Director (OliX US)

- Ph.D. in Organic Chemistry, University of California, Riverside
- Senior Staff Scientist, TriLink Biotechnologies, LLC
- Synthesis specialist

Research

Sun Woo Hong
Vice President

- Ph.D. in Chemistry, POSTECH
- Research Professor, Dongguk Univ.
- Improves platform technology & supervises research
- CEO of mCureX

Legal Affairs

Young Hye Baek
Senior Director

- B.S. & M.S. in Biology, KAIST
- Patent lawyer
- FirstLaw P.C.
- Y.P. Lee, Mock & Partners
- Legal Dept., LG Household & Health Care

4. Scientific Advisory Board

Scientific Advisory Board advising on R&D, clinical trial development, and technology commercialization.

■ Platform Technology

John Lis

Gene Expression, Oligotherapeutics

- Distinguished Professor, Cornell University
- Member, National Academy of Sciences

■ Ophthalmology

Demetrios Vavvas

Ophthalmology (AMD, Retina, Diabetic, Glaucoma)

- Associate Professor of Ophthalmology at Harvard Medical School
- Monte J Wallace Ophthalmology Chair in Retina at Mass Eye & Ear Infirmary (MEEI)

Hye-Won Chung

Ophthalmology (AMD, Retina, Retinitis pigmentosa)

- Associate Professor of Ophthalmology at Konkuk University
- Member, The Macular Society

■ Hepatology

Yury V. Popov

Hepatology

- Assistant Professor of Medicine, Beth Israel Deaconess Medical Center, Harvard Medical School

Gordon Jiang

Hepatology

- Transplant hepatologist and physician-scientist at Beth Israel Deaconess Medical Center, Harvard Medical School

Aaron Hakim

Hepatology

- Clinical Fellow in Medicine (EXT) Beth Israel Deaconess Medical Center, Harvard Medical School

OliX Pharmaceuticals

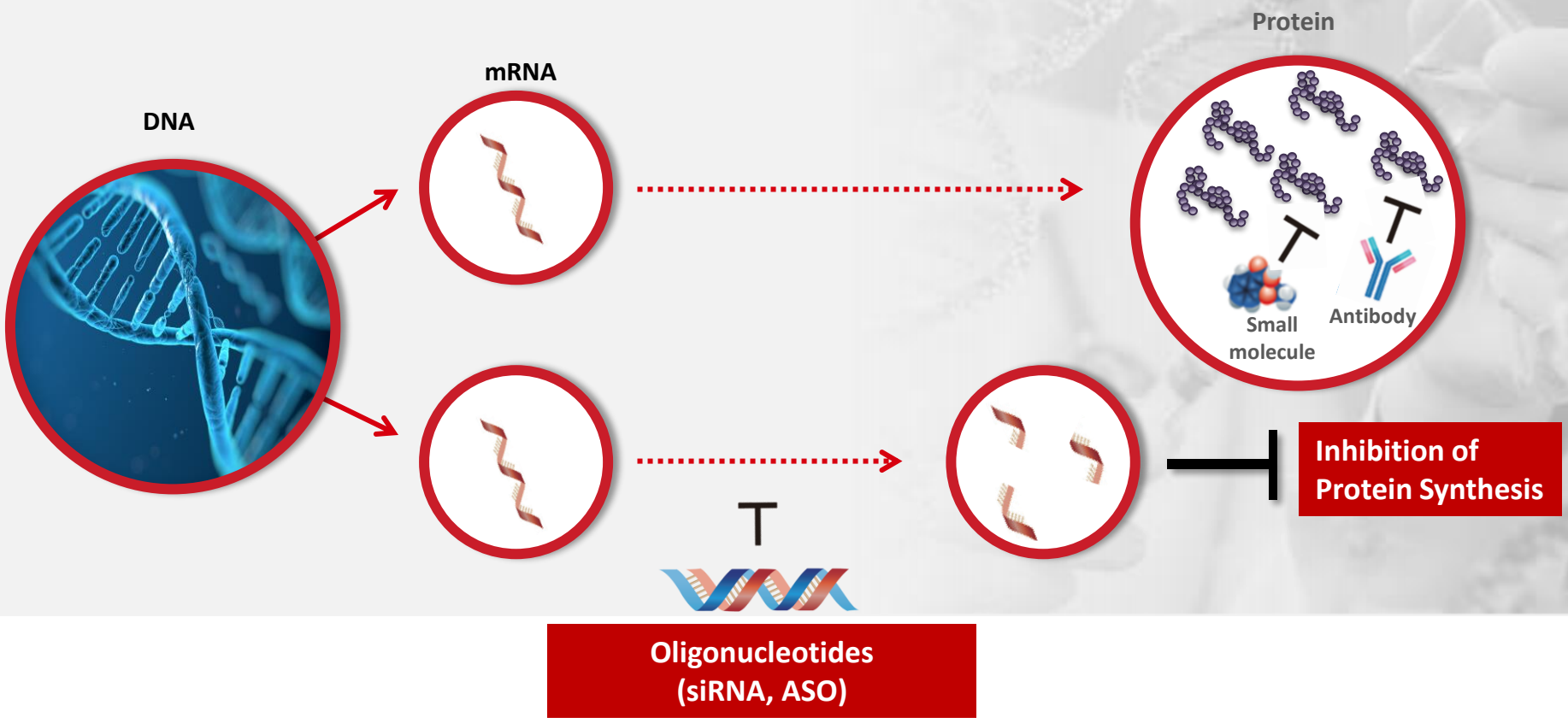
02 Core Technology

1. What is RNA interference (RNAi) ?
2. Limitations of Existing RNAi Technology
3. asiRNA
4. cp-asiRNA
5. GalNAc-asiRNA
6. Status of Global siRNA Deals

1. What is RNA interference (RNAi)?

Small molecule (1st generation) & antibody (2nd generation) drugs inhibit protein activities

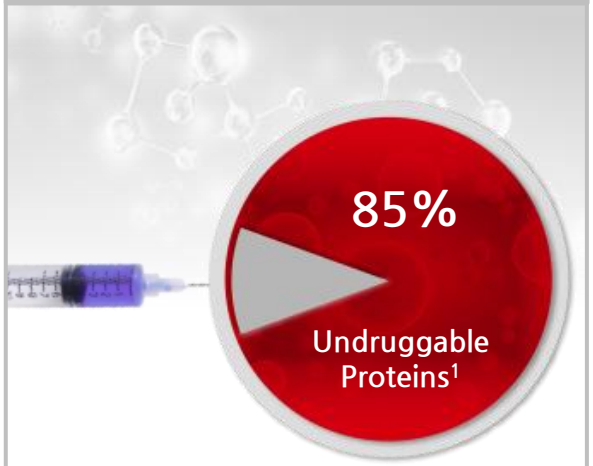
Oligonucleotide (3rd generation) drugs inhibit protein synthesis



1. What is RNA interference (RNAi)?

RNAi therapeutics is the third-generation drug development platform that can efficiently target and theoretically silence all disease-causing genes

1st and 2nd Generation Drug Development Platform



- Act on disease-related proteins that are already produced
- Unable to target the majority of cellular proteins due to their shape or location
- Average time needed to identify potential drug candidates: **3-5 years**

3rd Drug Development Platform - Oligonucleotides

- Use oligonucleotides (such as chemically synthesized DNA or RNA) as drugs
- Act on mRNA[2] before protein synthesis
- Can target genes known to be "undruggable" by small molecules or antibodies
- One platform technology can quickly develop novel therapeutics against a variety of diseases (3-5 months)

RNAi Technology

siRNA (RNAi-triggering molecule)

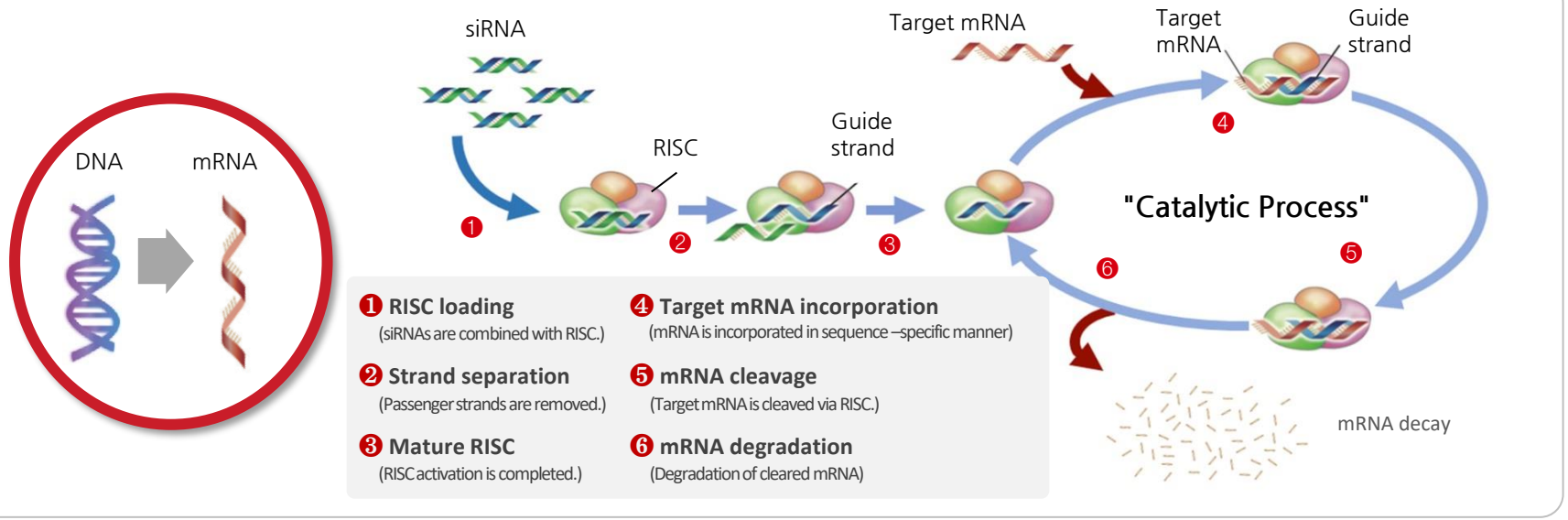
(double-stranded small interfering RNA)

- Silence target genes more efficiently than other oligonucleotide technologies
- Develop RNAi-based therapeutics with patented delivery technology
- The FDA approves the first RNAi therapeutics in Aug. 2018

Note 1) Source: Pharmacol Ther. 2017 Jun;174:138-144
Undruggable Target: Disease sites undruggable with existing or new drugs
Note 2) mRNA (Messenger RNA): It is created using DNA as a template and produces a protein through translation based on sequencing.

1. What is RNA interference (RNAi)?

RNA interference technology: The most powerful oligonucleotide technology



First RNA interference mechanism discovered in 1998
Wins a Nobel Prize in Physiology or Medicine in 2006

Opens the door to drug development for "undruggable targets"

RNAi therapeutics in market

(Alnylam l ONPATTRO, Aug. 2018, FDA)
(Alnylam l GIVLAARI, Nov. 2019, FDA)
(Alnylam l OXLUMO, Nov. 2020, FDA)
(Novartis l Leqvio, Dec. 2020 EMA)

Rapid production of new siRNA drug candidates is possible

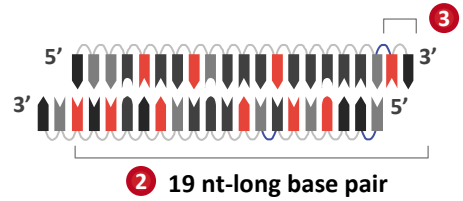
Note 1) The RNA-induced silencing complex or RISC is a multiprotein complex which incorporates double-stranded small interfering RNA (siRNA) to recognize mRNA and cleaves the mRNA.

2. Limitations of Existing RNAi Technology

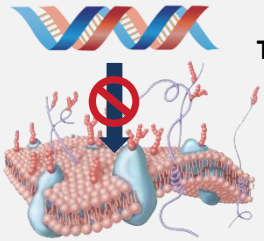
The structure of siRNA causes adverse events & delivery problems

Structural properties of siRNA

1. Symmetric structure
2. 19 nt-long base pair
3. 2 nt overhang



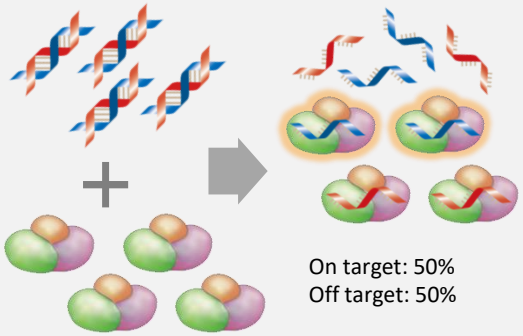
Delivery problem



The negative charge of siRNA prevents them from crossing cell membranes easily.

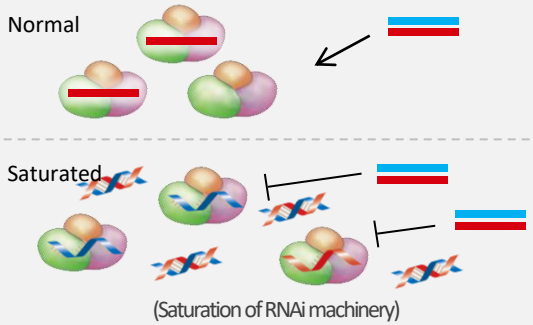
Adverse events

Unintended gene repression



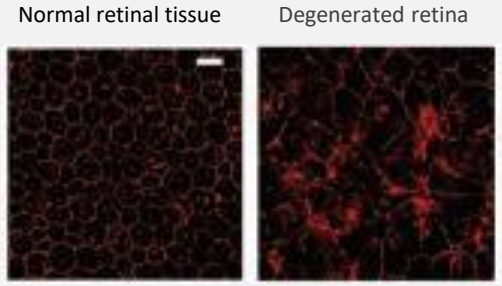
- Passenger strand can be incorporated into RISC due to symmetric siRNA structure.
- Off-target gene silencing can occur.

Saturation of endogenous RNAi machinery



- Endogenous RNAi machinery can be saturated when an excess amount of siRNA is introduced.
- Normal gene expression regulated by endogenous RNAi pathways can be compromised.

Retinal degeneration by Immune toxicity



※ Source: Mol Ther. 2009 Apr;17(4):725-32 Mol Cells. 2011 Dec;32(6):543-8

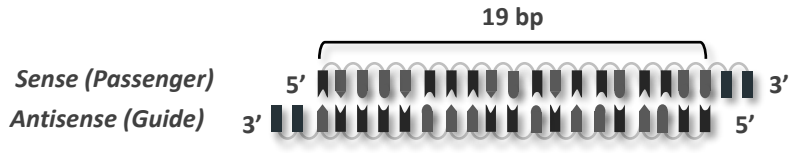
※ Source: Biochem Biophys Res Commun.'08 Feb 29;367(1):78-83 Biochem Biophys Res Commun.2010 Jul 16;398(1):92-7

※ Source: Nature. 2008 Apr 3;452(7187):591-7 Mol Ther. 2012 Jan;20(1):101-8

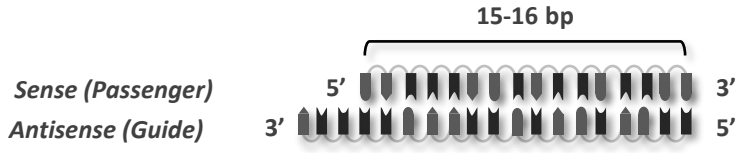
3. Asymmetric siRNA (asiRNA)

Asymmetric siRNA (asiRNA) is a unique gene silencing technology developed by OliX

■ **Conventional siRNA**



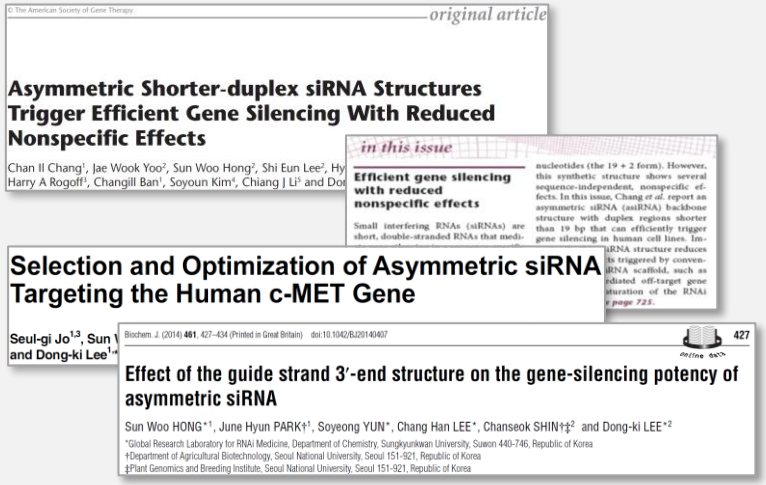
■ **OliX's Asymmetric siRNA (asiRNA)**



Secured 'Freedom to Operate'

Asymmetric siRNA patent registered

- "Novel siRNA structure for minimizing off-target effects and relaxing saturation of RNAi machinery and the use thereof" (Priority Claimed, 2007-12-18)
- **Patent granted in Korea, China, Japan, Europe, Australia**


original article

Asymmetric Shorter-duplex siRNA Structures Trigger Efficient Gene Silencing With Reduced Nonspecific Effects

in this issue

Efficient gene silencing with reduced nonspecific effects

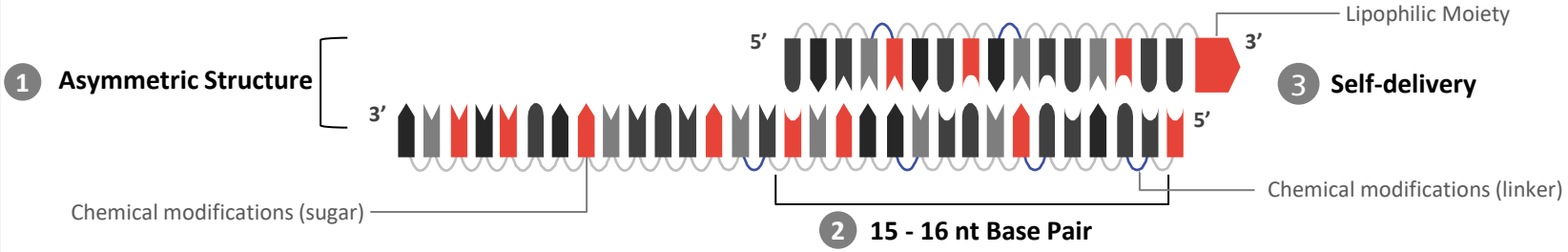
Selection and Optimization of Asymmetric siRNA Targeting the Human c-MET Gene

Effect of the guide strand 3′-end structure on the gene-silencing potency of asymmetric siRNA

4. Cell-penetrating Asymmetric siRNA (cp-asiRNA)

Solves delivery problems and reduces adverse events of existing siRNA technology

Cell-penetrating asymmetric siRNA



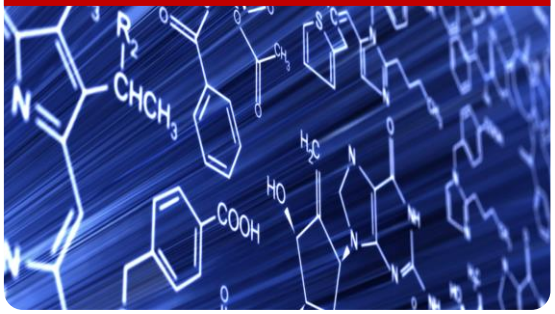
Asymmetric, short base pair (15-16nt)

Reduces the side effects of conventional siRNA

Self-delivering

Eliminates the risk of toxicity caused by delivery vehicles

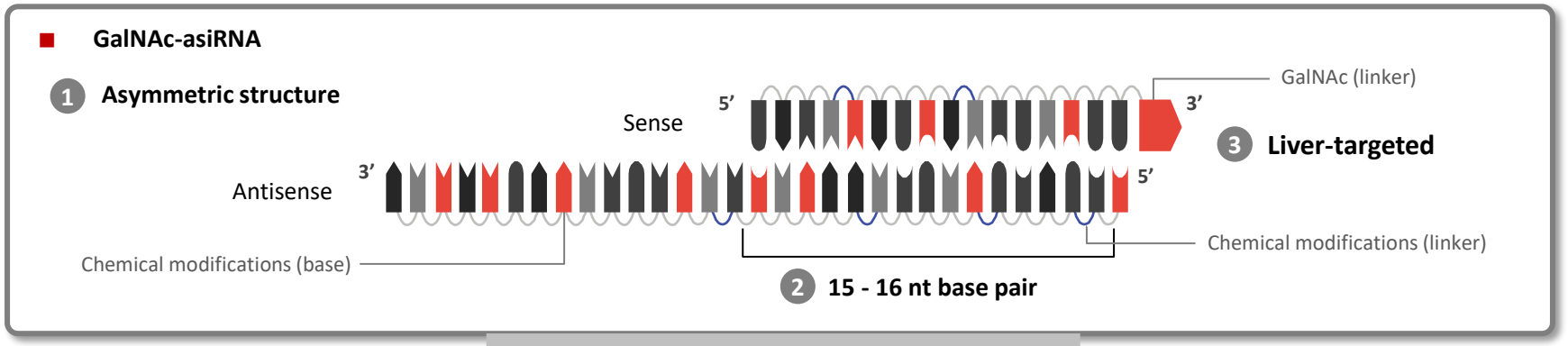
Simple chemical modification

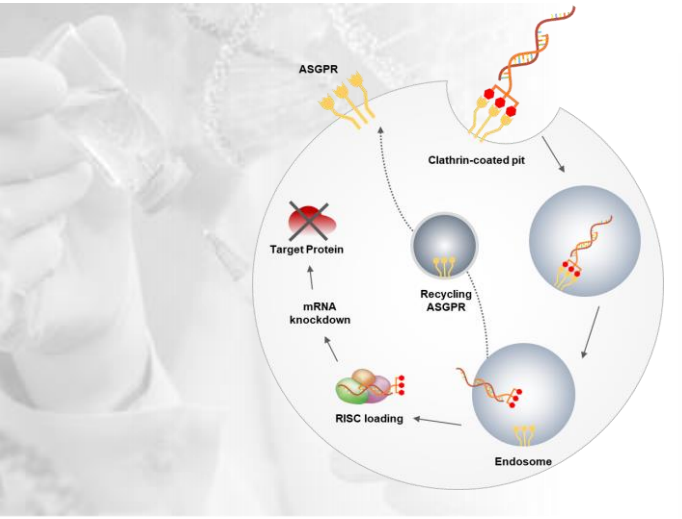


Amenable to large-scale synthesis and analysis

5. GalNAc-asiRNA

Secured asymmetric GalNAc platform for liver-targeted delivery





1. Specifically & effectively targeting liver hepatocytes
2. Long duration of action
3. Patient-friendly via subcutaneous injection
4. Clinically validated technology

6. Status of Global siRNA Deals

Licensing deals driving the RNAi industry

[Major licensing deals from global RNA therapeutics companies for the past four years]

Licensor	Licensee	Year	Deal Size (USD)	License Target	Stage
OliX	Théa	2020 /2019	**0.81B**	Ophthalmic Diseases (4 targets)	R&D
	Undisclosed	2020	**Single-digit m research funding ▶ Mega deal**	Liver Diseases (GalNAc)	Discovery and R&D
Alnylam	Regeneron	2019	**>1B**	Ophthalmic, CNS Diseases	R&D
	Sanofi	2018	**>1B**	Hemophilia	Phase 2
	Vir	2017	**>1B**	HBV, Infectious Diseases	Phase 2
Dicerna	Roche	2019	**>1.7B**	HBV	Phase 1
	Novo Nordisk	2019	**0.36B/target ▶ Mega deal**	Liver Disease, NASH, etc. (30 targets)	R&D
	Eli Lilly	2018	**0.35B/target ▶ Mega deal**	Cardiometabolic Disease, etc. (10 targets)	Phase 1
	Alexion	2018	**>0.64B**	Complement-mediated Diseases	R&D
	Boehringer Ingelheim	2017	**>0.2B**	NASH	R&D
Arrowhead	Takeda	2020	**>1B**	Liver Disease (AATLD)	Phase 2
	Janssen	2018	**>3.7B**	HBV	Phase 1
Silence	Takeda	2020	**Single-digit m research funding ▶ Mega deal**	Undisclosed	Discovery and R&D
	AstraZeneca	2020	**>4.2B**	Cardiovascular, Metabolic Diseases, etc.	R&D
	Mallinckrodt	2019	**>2.1B**	Complement-mediated Diseases	Phase 1

OliX Pharmaceuticals

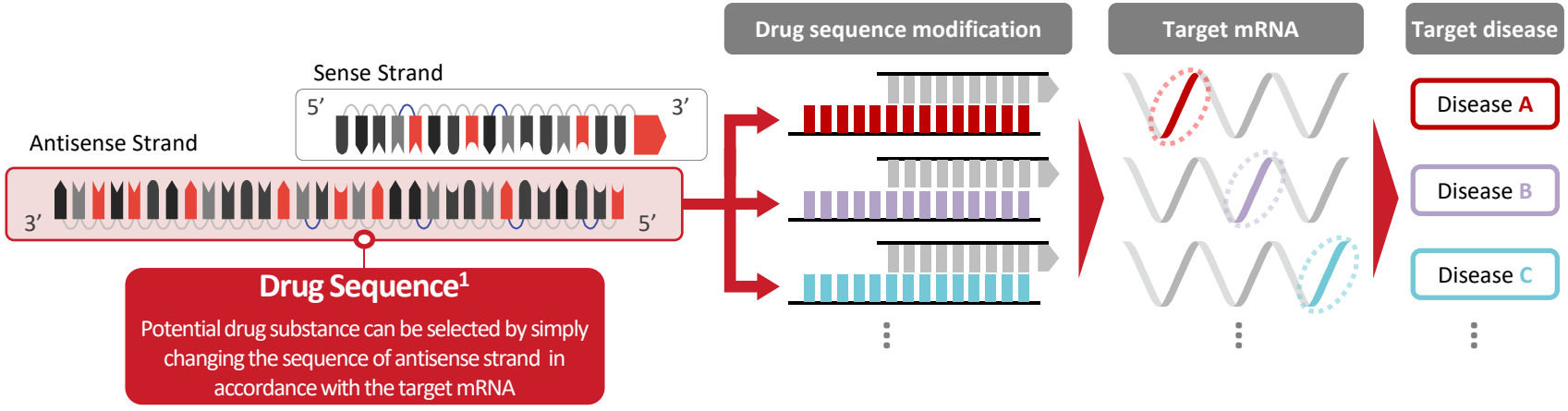
03 Growth Potential

1. Generality and Expandability of OliX Platform
2. Development Strategy

1. Generality and Expandability of OliX Platform

Rapid selection of drug candidates based on OliX platform technology
Theoretically, all genes can be inhibited at high efficiency

■ Expandability of the cp-asiRNA platform



Drug Sequence[1]

Potential drug substance can be selected by simply changing the sequence of antisense strand in accordance with the target mRNA

Selection time for drug candidates drastically reduced

Selection time for final drug candidates - about 3 months

Drug selection time significantly reduced compared to 1st & 2nd generation platform

All genes druggable

Multiple pipeline programs with reduced cost and shorter time

Flexible business strategy
Early stage Out-Licensing & Development of various subsequent pipeline

Note 1) Drug sequence: binds the complementary sequence of the target mRNA to induce degradation of the target. (= Antisense RNA, Guide strand)

2. Development Strategy

RNAi-based therapeutics targeting incurable diseases

Indication Area	Program	Indication	R&D	Animal POC	Preclinical	Clinical	Remarks
SKIN	OLX101A	Hypertrophic Scar					Hugel (Asia)
	OLX104C	Androgenic Alopecia					
EYE	OLX301A	Dry & Wet AMD					Théa (Worldwide Excl. Asia-Pacific)
	OLX301D	Subretinal Fibrosis					Théa (Worldwide Excl. Asia-Pacific)
	OLX301E	Wet AMD					
	OLX304A	Retinitis Pigmentosa					
LIVER	OLX701	Liver Fibrosis					
	OLX702	Liver Disease (NASH, Diabetes etc.)					
	OLX703	HBV					
LUNG	OLX201A	Idiopathic Pulmonary Fibrosis					
	OLX204A	COVID-19					
CNS & Oncology	OLX401A	Neuropathic Pain					
	OLX801A	Cancer Immunotherapy					

(Korea) Currently in Phase 2
(US) Currently in Phase 2

OliX Pharmaceuticals

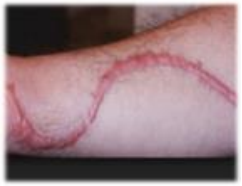
04 Core Programs

1. Hypertrophic Scar (OLX101A)
2. Androgenic Alopecia (OLX104C)
3. Age-related Macular Degeneration (AMD)
   - Wet & Dry AMD (OLX301A)
   - Subretinal Fibrosis & Wet AMD (OLX301D)
4. Respiratory Diseases (OLX20X)
5. Liver Diseases (OLX70X)
6. License and Collaboration Status

1-1. OLX101A: Hypertrophic Scar

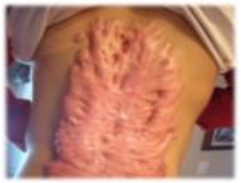
High rate of hypertrophic scar formation due to surgery or accident - Unmet medical needs due to limitations of existing therapy

What is hypertrophic scar?



Hypertrophic Scar

- Skin abnormalities that are characterized by excessive deposition of collagen in the dermis after surgery or injury
- Caused mainly due to the imbalance of synthesis and degradation of collagen
- Occurs in 39-68% of patients after surgery



Keloid Scar

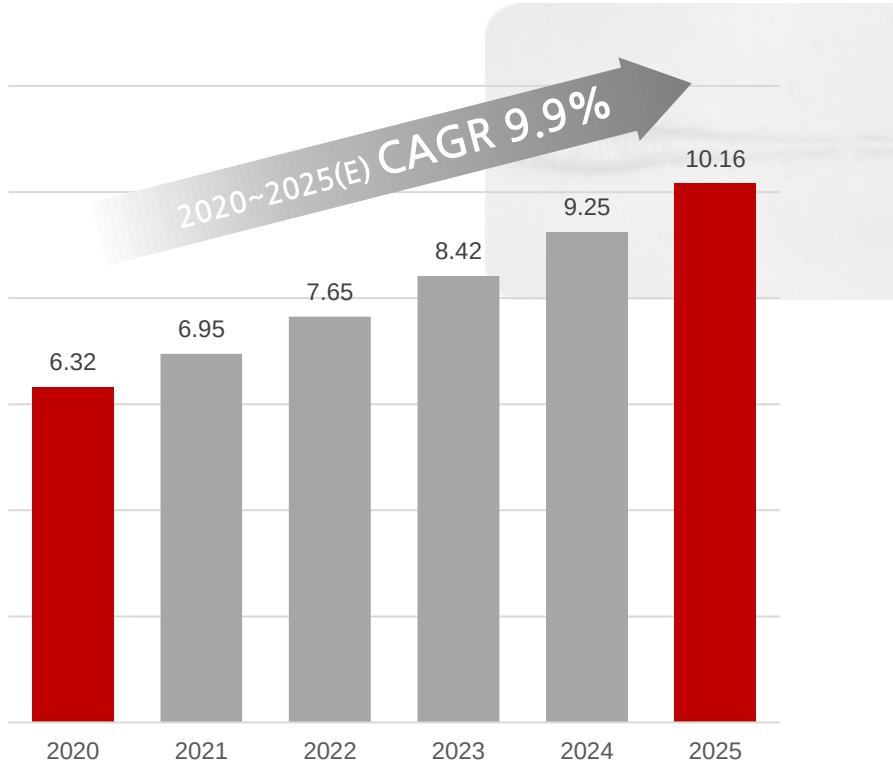
- Abnormal proliferation of scar tissue
- Caused mainly due to the imbalance of synthesis and degradation of collagen

Limitations of current treatment

Existing drugs	Limitations and Unmet Needs
Silicone sheets	· Unclear efficacy and compliance issue · Long-term treatment (6 months to 1 year) necessary
Physical compression therapy	· Unclear mechanism of action and efficacy · Long-term treatment (6 months to 1 year) necessary
Steroid injection	· High risk of recurrence (9~50%), risk of whole-body toxicity
Surgery	· High risk of recurrence (>50%), accompanied by pain

Prospect for global hypertrophic / keloid scar market

(USD Billion)



※ Source: Grand View Research 2020

1-2. OLX101A: Anti-fibrotic Effect in Clinical Studies

Effective anti-fibrotic activity through OliX RNAi platform acting on a validated target gene

Overview

Target protein	Administration route	Status
CTGF [1)]	Intradermal injection	Phase 2 clinical trial in progress (Korea) Phase 2 clinical trial in progress (US)

Selection criteria

▶ Patients with hypertrophic scars from surgery such as C-section or plastic surgery, or trauma

Note 1) Connective Tissue Growth Factor (CTGF): A major factor that promotes development of fibrosis

Development Status

- Verified effective fibrosis suppression in animal models
- Published in the Journal of Investigative Dermatology
- Nonclinical study and Phase 1 clinical trial in the UK: Supported by 'KOREA Drug Development Fund' Project
- Phase 2 clinical trial in progress

Phase 2 in Korea (Hugel)

Summary of Design

- Sponsor: Hugel Inc.
- Design: Independent Evaluator-Blind, Dose-Escalation, Untreated -Controlled, Within-Subject, Phase 2a Therapeutic Exploratory Clinical Trial
- Purpose: Effectiveness and safety
- No. of participants: 30
- Status: Technology out-licensed to Hugel

Phase 2 in US (OliX)

Summary of Design

- Sponsor: OliX Pharmaceuticals, Inc.
- Design: Prospective, Randomized, Double-blind, Intra-subject, Placebo-controlled, Proof of Concept Study
- Purpose: Preliminary efficacy and safety
- No. of participants: 20~30
- Status: Phase 2 clinical trial in progress

2. OLX104C: Androgenic Alopecia (AGA)

Novel hair loss treatment minimizing side effects with local administration

Overview

Target protein	Administration Route	Status
AR	Intradermal Injection	Pharmacology Study

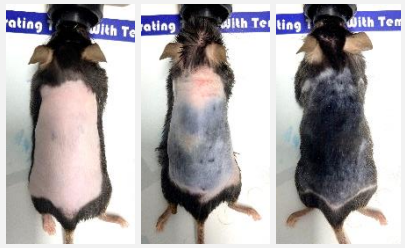
- ▶ Global Market Forecast [1] : 8.4B USD (2018) → 13.6B USD (2027), CAGR 5.51%
- ▶ For patients suffering from side effects due to systemic drug therapy
- ▶ Minimizes medical risks for female AGA patients
- ▶ Alleviates inconvenience caused by frequent administration

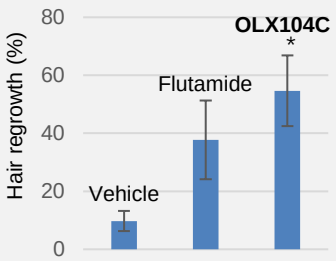
Development Status

- Verified hair regrowth in alopecia mouse model
- Verified inhibition of telogen transition in AGA patient's hair follicle (ex vivo)
- Three-week duration of AR knock-down efficacy with a single injection
  → Solution to unmet needs for systemic side effects and inconvenience of daily administration
- Plan to enter clinical trial by 2022

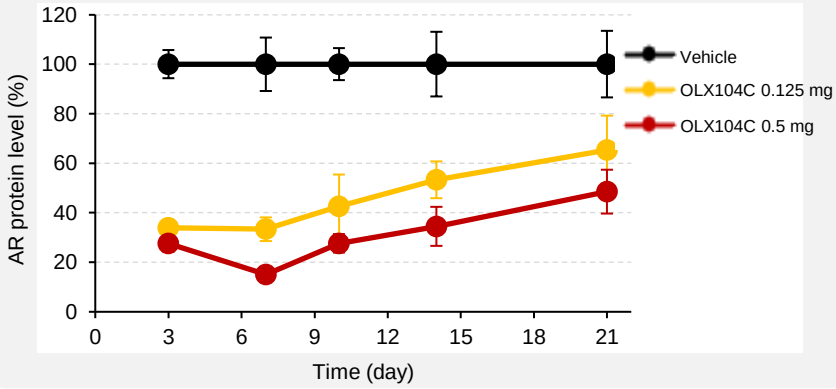
Nonclinical Pharmacology Data

Hair regrowth in alopecia mouse model





Duration of AR knock-down with single injection



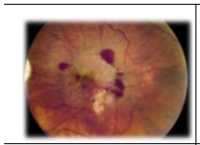
[1] Inkwood Research (2019), End-use and Sales Channel Outlook (Homecare, clinics, prescriptions, OTC, etc)

3-1. OLX301A/D: Age-related Macular Degeneration

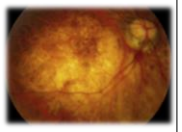
No treatment available for subretinal fibrosis and dry AMD (GA) → high unmet medical needs

What is Age-related Macular Degeneration?

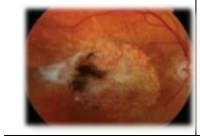
▶ Leading cause of severe vision loss in elderly persons (> age 50)
▶ One-third of cases of untreatable vision loss



Wet AMD
- 66% of late-stage AMD patients
- Can lead to dry AMD / Subretinal Fibrosis



Dry AMD (GA)
- 34% of late-stage AMD patients
- 15% of the patients develop wet AMD



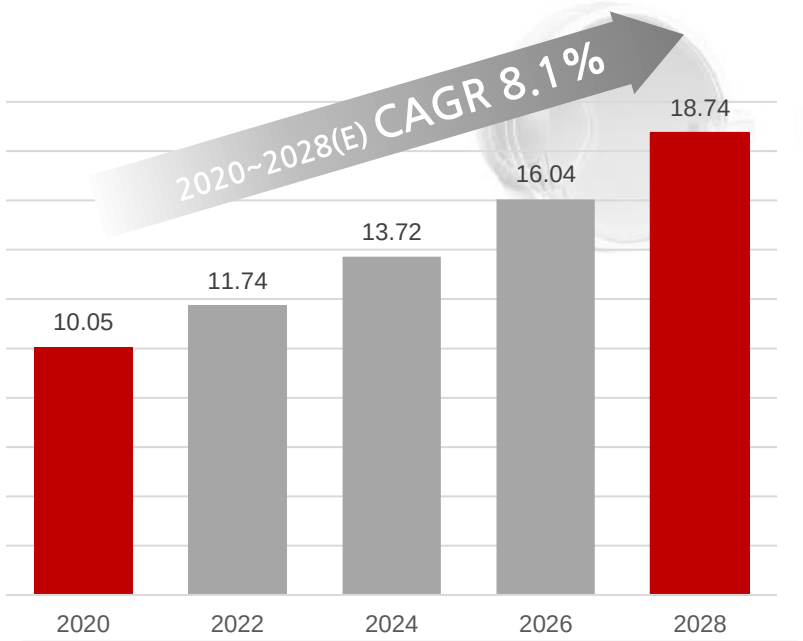
Subretinal Fibrosis
- An excessive wound healing response to CNV in wet AMD
- Can destroy the eye morphology, leading to permanent dysfunction of the macular visual system.

Limitations of current treatment

Type	Existing drugs	Limitations and Unmet Needs
Wet AMD	Eylea	• More than 30% of AMD patients have poor or no response to the treatment. • Develops advanced macular scarring and subretinal fibrosis within 2 years. • Ineffective to subretinal fibrosis and dry AMD
	Lucentis	
	Beovu	
Dry AMD (GA)	No treatment	Unmet Medical Needs
Subretinal fibrosis		

Prospects for the global AMD drug market

(USD Billion)



Full Year 2020 Product Sales (Net Sales):

Lucentis: $1,933m + Eylea: $7,908m= $9,841m

※ Source : GlobalData 2020

3-2. OLX301A: Efficacy in Animal Model

First-in-class drug for both wet and dry AMD

Overview

Target protein	Administration Route	Status
Undisclosed	Intravitreal Injection	Nonclinical Tox Study

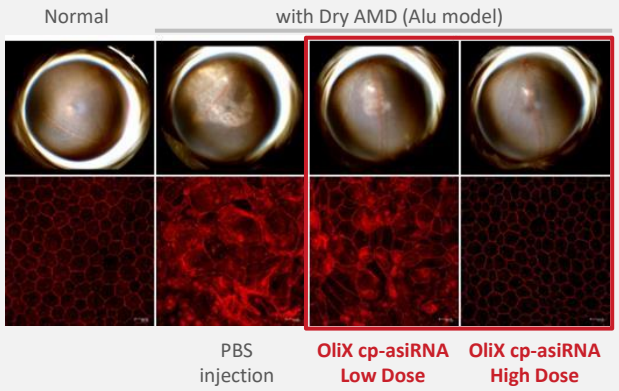
- Special target indication: Geographic atrophy (GA), late-stage of dry AMD
- Available for the VEGF therapy-resistant wet AMD patients
- A potential first-in-class drug that can treat patients with both wet and dry AMD

Development Status

- A novel therapeutic for advanced dry AMD (GA)
- Undruggable target gene discovered by Prof. J Ambati and his team: first-in-class
- Excellent effectiveness verified in multiple animal models with wet AMD (CNV) and dry AMD (GA)
  → Works on both wet AMD and dry AMD (GA)
- Nonclinical toxicity study in progress with global CRO

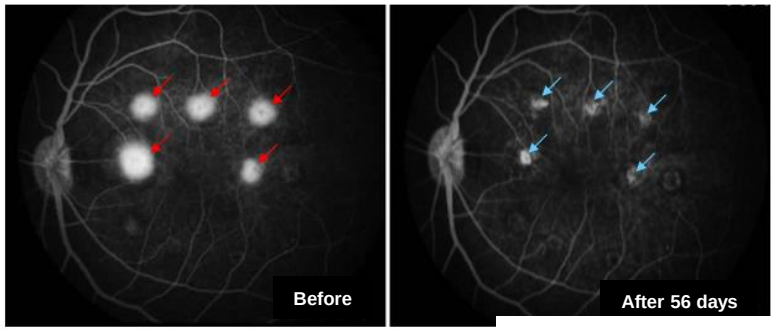
Efficacy in animal models

Effective in Dry AMD (GA) mouse



Effective in Wet AMD NHP

CNV(Choroidal Neovascularization) Model, Fundus Fluorescein Angiography (FFA)



→Fluorescein leakage from CNV

3-3. OLX301D: Efficacy in Animal Model

First-in-class drug for both subretinal fibrosis and wet AMD

Overview

Target protein	Administration Route	Status
CTGF	Intravitreal Injection	Nonclinical Tox Study

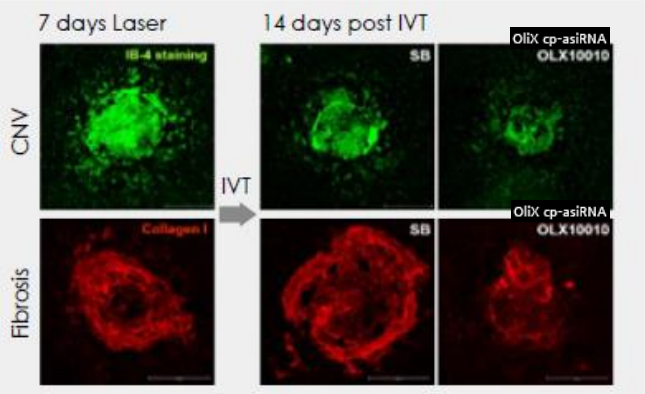
- ▶ More than 60% of patients have poor or no response to the standard anti-VEGF therapy and can develop subretinal fibrosis within 2 year-treatment, leading to vision loss
- ▶ A potential first-in-class drug which can treat patients with both wet AMD and subretinal fibrosis

Development Status

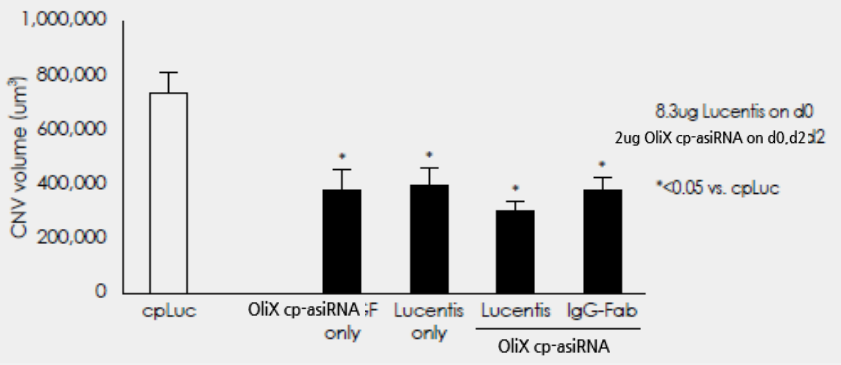
- Verified effectiveness in animal models with subretinal fibrosis
- Verified effectiveness in animal models with wet AMD
- Signed contract for active pharmaceutical ingredient (API) production for nonclinical and clinical trials: LGC Biosearch Technologies
- Nonclinical toxicity study in progress with global CRO

Efficacy in animal model

Effective in subretinal fibrosis mouse model



Effective in wet AMD mouse model



3-4. OLX301A/D: License and Collaboration Agreement

License & Collaboration Agreement signed in 2019, followed by an Expanded Agreement in Oct. 2020

Agreement Overview

1	OLX301A	Expanded territory from earlier agreement (EU, Middle East, Africa → Worldwide patent excl. Asia-Pacific)
2	OLX301D	Out-license agreement signed (Worldwide patent excl. Asia-Pacific)
3	Two ophthalmic pipeline programs	Upon exercise of option w/i 2 years (Same term as OLX301A/D)

Total Volume : Undisclosed

Upfront	€8,800,000
Milestone	Undisclosed
Royalty	Undisclosed
Territory	Worldwide excluding Asia-Pacific

4. OLX20X: Respiratory Diseases

Expanding respiratory pipeline using OliX cp-asiRNA platform technology

Overview

Active pharmaceutical ingredient (API)	Indication	Administration Route	Status
cp-asiRNA / Target undisclosed	Respiratory diseases including IPF and COVID-19	Inhalation	Looking for global partners

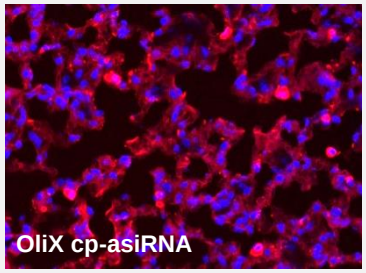
Development Status

- Animal proof of concept (POC) studies completed
- Established cp-asiRNA platform with improved efficacy and safety
- Pipeline development and drug candidate screening in progress

Nonclinical Study Results

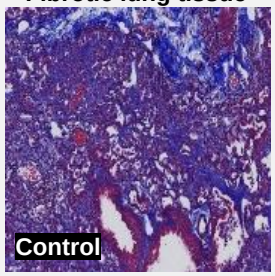
Delivery to mouse lungs

Broad distribution of siRNA

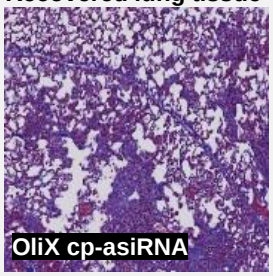


Efficacy in lung fibrosis mouse model

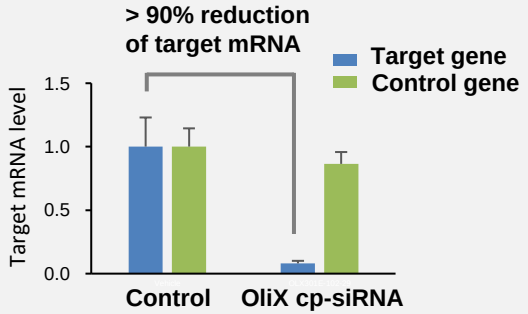
Fibrotic lung tissue



Recovered lung tissue



Target knockdown in mouse lungs



5-1. OLX70X: Liver Diseases

Expanding liver pipeline using OliX GalNAc platform technology

Overview

Active pharmaceutical ingredient (API)	Indication	Administration Route	Status
GalNAc-asiRNA / Target undisclosed	Undisclosed	Subcutaneous Injection	Looking for global partners

Development Status

- Developed OliX's proprietary GalNAc platform technology
- Lead compound discovery is ongoing for targets suggested by liver disease experts
- Nonclinical studies planned in 2021

Scientific Advisory Board (Hepatology Experts)

Beth Israel Deaconess Medical Center
HARVARD MEDICAL SCHOOL TEACHING HOSPITAL


Yury V. Popov


Gordon Jiang


Aaron Hakim

5-2. Effective Delivery of GalNAc-asiRNA

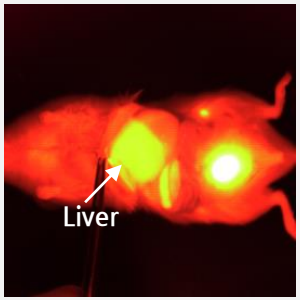
Nonclinical Delivery Test Results

- 10mg/kg of GalNAc-asiRNA subcutaneously injected into mouse model

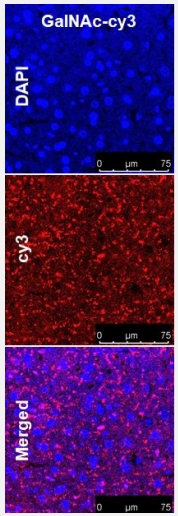
(A) Whole body, **(B)** Liver tissue distribution verified

(C) Effective hepatic delivery of OliX GalNAc-asiRNA both *in vitro* and *in vivo*

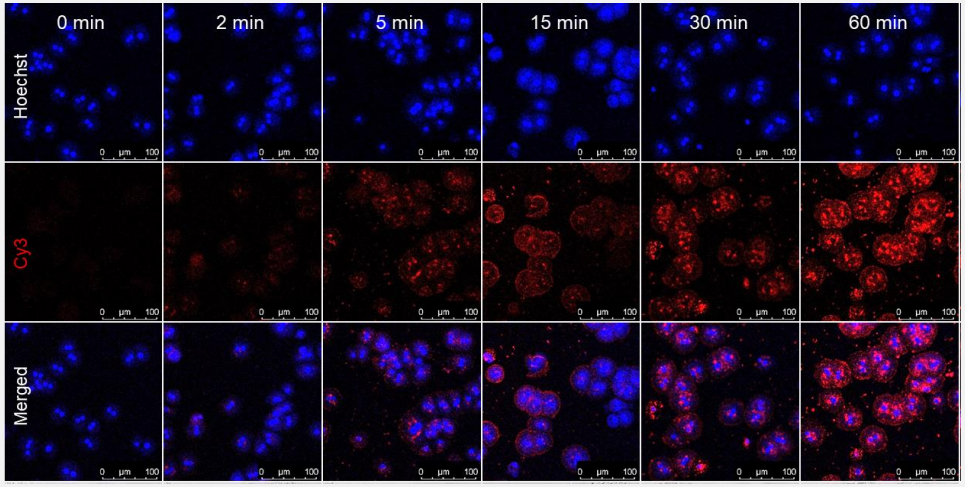
(A) Whole Body Distribution



(B) Liver Distribution

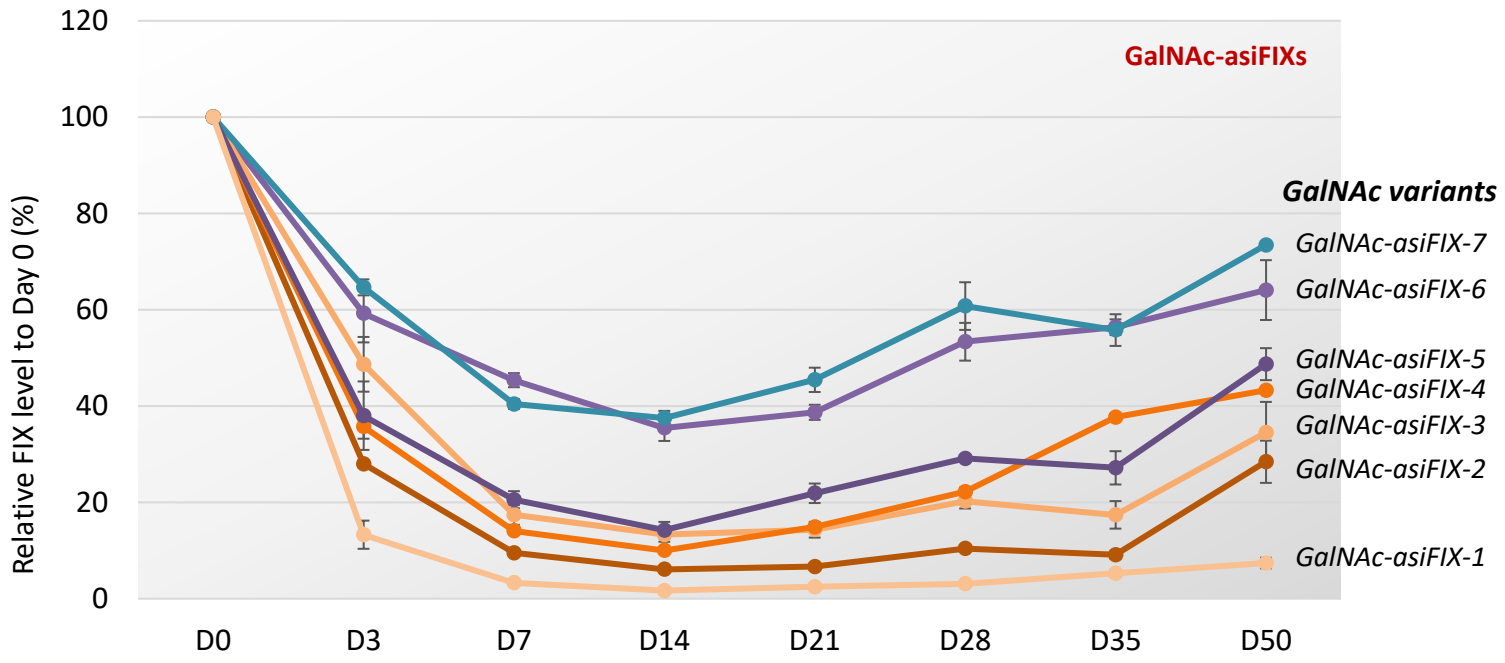


(C) Cellular uptake in mouse hepatocytes



5-3. Efficacy and Duration of Action

Competitive Potency and Duration of Action

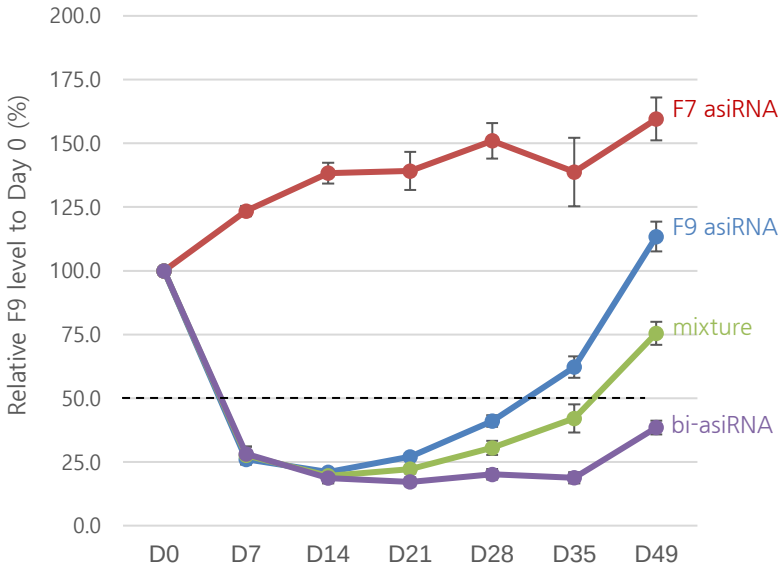


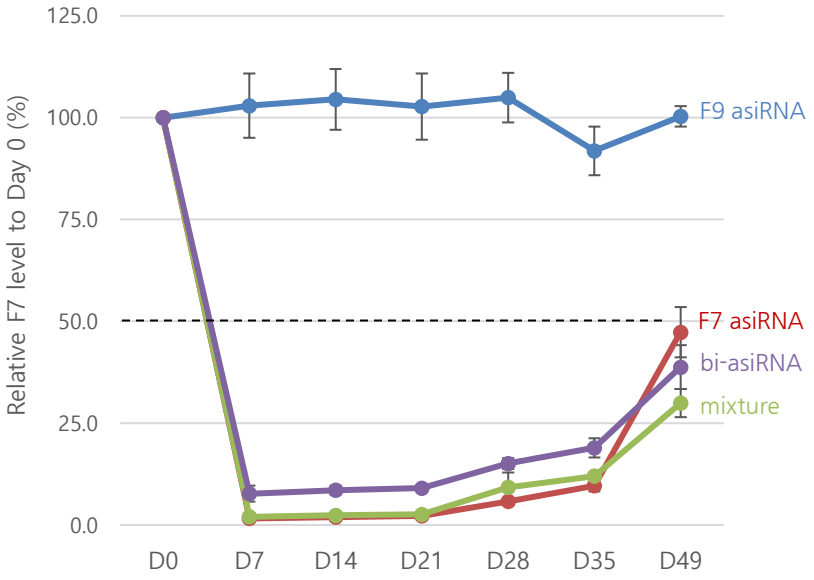
Development Status

- Chemical modification optimized for efficacy and metabolic stability
- Potent and durable silencing (>90%) achieved after a single dose (up to 50 days)
- Comparable to competitors' GalNAc platforms

5-4. Dual Targeting GalNAc Platform

Developed GalNAc platform targeting two genes simultaneously





*bi-asiRNA : Dual targeting GalNAc-asiRNA by linking F7·F9 asiRNA with linker

■ Development Status

- Optimized chemistry for stabilization & developed bi-asiRNA for linking two asiRNAs
- Confirmed comparable efficacy to the mixture of two GalNAc substances

5-5. Liver Programs Development Status

Indication	Program	Stage of the Program		
		Discovery	Preclinical	Clinical
Liver Fibrosis	OLX701C			
	OLX701D			
	OLX702A			
Obesity / Type 2 Diabetes	OLX702B			
	OLX702C			
	OLX702D			
Nonalcoholic Steatohepatitis (NASH)	OLX702E			
	OLX702F			
	OLX702G			
	OLX702H			
Hepatitis B (HBV)	OLX703A			

5-6. GalNAc-siRNA R&D Supply Contract

First in Asia to sign GalNAc-siRNA platform R&D supply contract (2020.06.24)

Confidential upon the counterparty's request

OliX Pharmaceuticals

A Biotech Company Headquartered in Europe

OliX will apply GalNAc-siRNA platform technology to test and develop lead candidates for 4 different liver targets suggested by the contracting party.

* In March 2020, OliX obtained an exclusive license on GalNAc conjugation technology from AM Chemicals, located in San Diego.

Total Volume: USD 1,500,000

Contracting Party	Biotech Company in Europe
Subject	GalNAc-siRNA: R&D Supply Contract
Contract Period	2020.06.24 – 2021.06.23
Sales / Supply Method	In-house Production

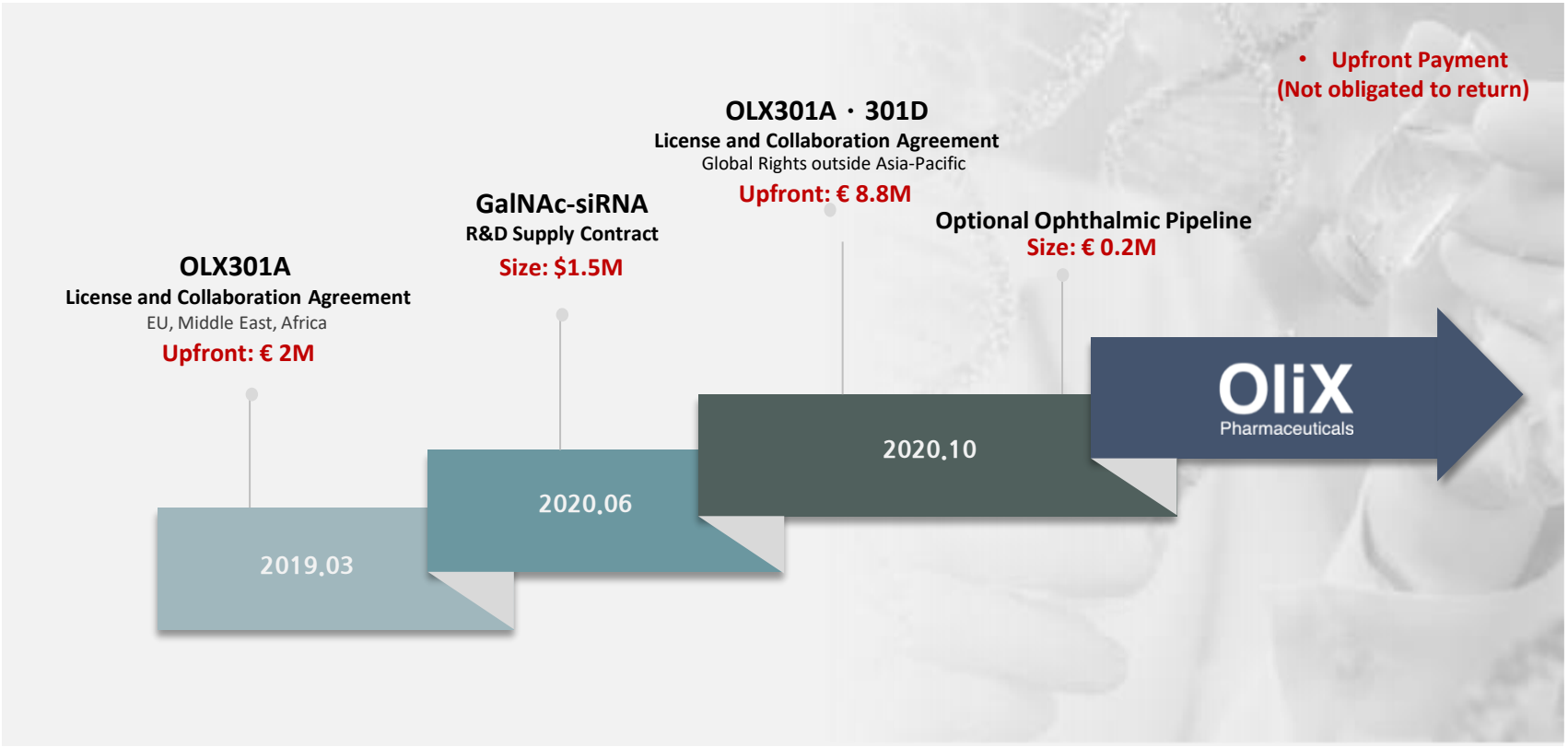
6. License and Collaboration Status

Flexible collaboration & partnership structure

(1) Partnership on **OliX's internal programs**

(2) **Providing OliX's RNAi platform** to identify siRNA lead compounds against genes of interest nominated by partnering company

■ **License and Collaboration Agreement Status** (For the past 2 years)



OliX Pharmaceuticals

Appendix

1. Summary of Financial Statements
2. Subsidiary Overview
3. Global RNA Therapeutics Development Status

1. Summary of Financial Statements

Balance Sheet Summary

(Unit: million won)

Type	2018	2019	2020
Current assets	48,698	37,440	69,047
Fixed assets	6,939	7,767	9,530
Total assets	**55,637**	**45,207**	**78,557**
Current liabilities	314	2,754	4,488
Long-term liabilities	385	645	28,738
Total liabilities	**699**	**3,399**	**33,226**
Paid-in capital	3,252	3,265	6,771
Additional paid-in capital	71,168	71,540	81,099
Other capital components	766	1,801	11,859
Retained earnings	(20,248)	(34,799)	(54,379)
Total shareholders' equity	**54,938**	**41,807**	**45,350**

Income Statement Summary

(Unit: million won)

Type	2018	2019	2020
Operating income	**302**	**1,130**	**2,474**
Operating expense	8,536	16,247	18,715
Operating profit	**(8,234)**	**(15,117)**	**(16,241)**
Before tax Net profit	(7,742)	(14,244)	(20,511)
Tax expense	-	109	(1,126)
Net income	**(7,742)**	**(14,353)**	**(19,385)**

2-1. Subsidiary Overview (mCureX Therapeutics, Inc)

Status

Company Name	mCureX Therapeutics, Inc.
CEO	Sun Woo Hong
Date of Establishment	Jan. 20, 2021
Headquarters	6F, 225-15, Pangyoyeok-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea
Major Business	Development of nucleic acid therapeutics and vaccines based on mRNA technology

CEO

Sun Woo Hong Ph.D.

- **2021 - Present, CEO of mCureX**
- **2010 - Present, Head of R&D, OliX**
- 2010 - 2013, Research Professor, Dongguk Univ.
- 2005 - 2008, Ph.D. in Chemistry, POSTECH

Key Personnel

Dongwon Shin | Head of Research

- Ph.D. in Organic Chemistry, University of California, Riverside
- Postdoc, University of California, San Diego
- Senior Staff Scientist, TriLink Biotechnologies, LLC
- Director of Chemistry, OliX US
- Developed 5'-Capping technology used in COVID-19 mRNA vaccines

Anton McCaffrey | Scientific Advisory Board

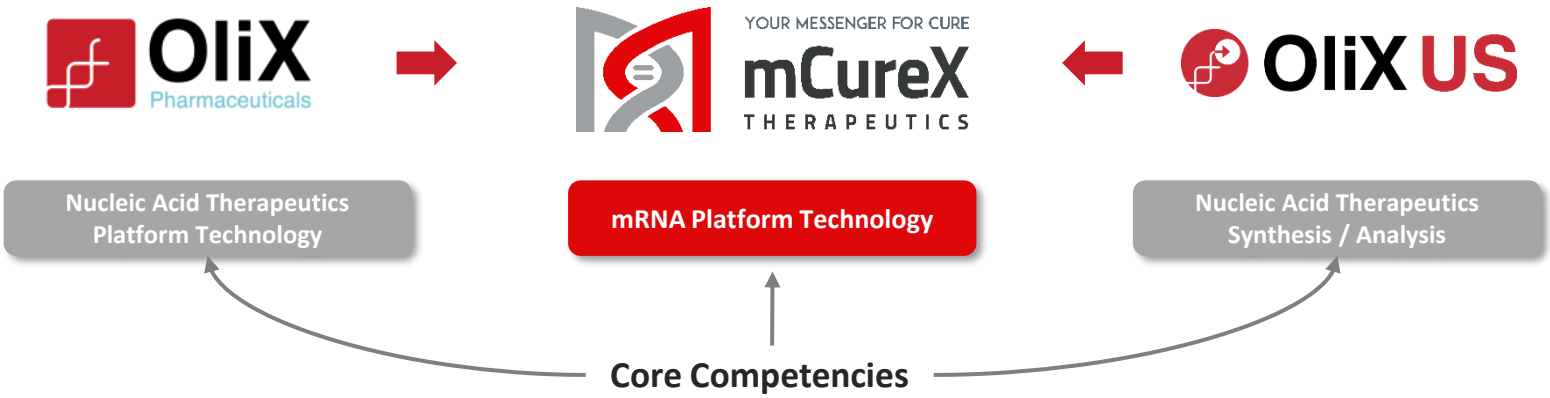
- Ph.D. in Biochemistry, University of Colorado Boulder
- Postdoc, Stanford University School of Medicine
- Assistant Professor, University of Iowa
- Senior Director, R&D Biology, TriLink Biotechnologies, LLC
- 30 years of experience in nucleic acid therapeutics (mRNA, mRNA vaccines, RNAi, antisense, etc)

2-1. Subsidiary Overview

“mRNA + Cure + X[Acce]lerating”

mCureX

- Based on messenger RNA (**mRNA**) technology
- Rapid development of vaccines and therapeutics **using proprietary mRNA platform technology**
- **In full cooperation with** OliX and OliX US for research and development



2-2. mRNA Technology

mRNA Therapeutics Technology

- Technology for '**Next Generation Therapeutics**'
- Produce disease-related proteins through in-vivo mechanism
- All proteins and antigens (vaccines) can be produced via mRNA administration

Chemically synthesized mRNA
for vaccines/therapeutics

Rapid identification of drug candidate (3~5 months)
Amenable to large-scale synthesis
Can target various diseases with a single platform

U C
A G

Can produce all proteins with
known amino acid sequence

FDA

First mRNA vaccine approved in 2020 (EUA)
Pfizer/BioNTech | BNT162b2 | Dec. 2020 by FDA
Moderna | mRNA-1273 | Dec. 2020 by FDA

Specifically induce production of
disease-related proteins

Cooperate with companies with IP
and intracellular delivery technology

2-3. mRNA Vaccine Development

mCureX-Samyang sign MOU for COVID19 Vaccine Development (2021.04.21)

mCureX-Samyang to co-develop mRNA vaccine

In April 2021, mCureX signed a memorandum of understanding (MOU) with Samyang Holdings Biopharm to develop a **local mRNA COVID19 vaccine** with **excellent efficacy and shelf life.**

With mCureX's proprietary mRNA technology and Samyang's delivery technology (DDS), rapid **development of vaccine** and **solutions to potential virus variants** are expected.

▲ Sun Woo Hong (CEO) of mCureX and Hye-Ryeon Jo (Director of Biopharmaceuticals R&D Center) of Samyang Holdings

3. Global RNA Therapeutics Development Status

Global RNA therapeutics development for various incurable diseases

[Representative programs from global RNA therapeutics companies]

Company	Product/Pipeline	Stage	Target
Alnylam	Patisiran (ONPATTRO)	Commercial	Hereditary ATTR Amyloidosis
	Givosiran (GIVLAARI)	Commercial	Acute Hepatic Porphyria
	Lumasiran (OXLUMO)	Commercial	Primary Hyperoxaluria Type 1
	Inclisiran (Leqvio)	Commercial	Hypercholesterolemia
	Fitusiran	Late Stage	Hemophilia & Rare Bleeding Disorders
	Vutrisiran	Late Stage	ATTR Amyloidosis
Arrowhead	ARO-AAT	Late Stage	Alpha-1 Liver Disease
	JNJ-1989	Late Stage	HBV
	AMG 890	Late Stage	Cardiovascular Disease
	ARO-ENaC	Early Stage	Cystic Fibrosis
Dicerna	Nedosiran	Late Stage	Primary Hyperoxaluria
	RG6346	Early Stage	HBV
	Belcesiran (DCR-A1AT)	Early Stage	AAT Liver Disease
Silence	SLN360	Early Stage	Cardiovascular Disease
	SLN124	Early Stage	Beta Thalassemia / Myelodysplastic Syndrome

Early Stage : IND or phase 2 l **Late Stage** : Phase 2b – Phase 3 l **Approved** : Phase 3 Completed