

LegoChem Biosciences

(141080 KQ/Not Rated)

Biopharmaceutical company with robust milestone potential

- A biopharmaceutical company specializing in the development of ADCs
- Competitive strength in both ADC linkers and toxins
- Chemical drug also lands W1.5tr licensing deal

A biopharmaceutical company specializing in the development of ADCs

LegoChem Biosciences specializes in the development of antibody-drug conjugates (ADC). ADCs are treatments that link antibodies with drugs (toxins) through linkers. Because of their high specificity, ADCs combine the advantages of both antibodies (few side effects) and drugs (strong efficacy). Roche's (ROG SWX/CP: CHF281.55) breast cancer treatment Kadcylla and Takeda's (4502 TYO/CP: JPY3,767) lymphoma treatment Adcetris are two of the most well-known ADCs. The area continues to attract interest from multinational drug companies.

Among key ADC components, LegoChem Biosciences has a competitive strength in linkers. The company's proprietary platform, ConjuALL, allows the linker to be safe in circulation and release toxins (linkers and toxins are separated) specifically in cancer cells. It has licensed out the technology to Japan's Takeda and China's Fosun Pharma (600196 SHA/CP: CNY27.28), and is currently discussing out-licensing deals with a number of drugmakers after signing material transfer agreements (MTA). At last year's World ADC Summit, the firm received the Best ADC platform technology award for its strong technology.

Competitive strength in both ADC linkers and toxins

1) Recognized by the industry's leading expert

In March 2019, LegoChem Biosciences signed a W454.8bn out-licensing deal with Millennium Pharmaceuticals, Takeda's oncology subsidiary. The deal was meaningful, as Takeda is one of the leading multinational drug companies in the ADC field and is already jointly developing ADCs with leading ADC firms such as Seattle Genetics (SGEN NASDAQ/CP: US\$72.83), ImmunoGen (IMGN NASDAQ/CP: US\$3.15), and Mersana Therapeutics (MRSN NASDAQ/CP: US\$1.82). The ADC being developed by LegoChem Biosciences and Takeda is expected to be more competitive than existing ADCs, as it focuses on the mechanism of immuno-oncology.

2) Herceptin ADC begins phase 1 trials

The HER2-specific ADC for breast cancer licensed out to Fosun Pharma has entered phase 1 trials. The ADC is the most advanced candidate in the company's ADC pipeline and showed superior results in preclinical trials compared with blockbuster drugs Herceptin and Kadcylla (Herceptin's follow-up). The ADC is also expected to be effective in treating stomach cancer and breast cancer with low HER2 gene expressions.

3) Improvement in PBD toxins enhances competitiveness

Among chemical cancer drugs, pyrrolobenzodiazepine (PBD) is highly potent, but many ADC firms have failed to develop PBD-based ADCs due to their significant side effects. LegoChem Biosciences has developed a way to combine PBD with compounds that keep the toxin inactive in circulation and normal cells and active in cancer cells. As a result, the company has secured competitive strengths in both linkers and toxins and is currently working on out-licensing deals with a number of companies.

FY (Dec.)	12/16	12/17	12/18	12/19F
Revenue (Wbn)	16	21	23	60
OP (Wbn)	-9	-8	-14	14
OP margin (%)	-56.3	-38.1	-60.9	23.3
NP (Wbn)	-14	-8	-25	13
EPS (W)	-1,499	-833	-2,329	1,049
ROE (%)	-27.2	-14.6	-31.4	11.2
P/E (x)	-	-	-	45.9
P/B (x)	5.8	7.5	6.4	4.9
Dividend yield (%)	0.0	0.0	0.0	0.0

Note: All figures are based on consolidated K-IFRS; NP refers to net profit attributable to controlling interests

Source: Company data, Mirae Asset Daewoo Research estimates

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Chemical drug also lands W1.5tr licensing deal

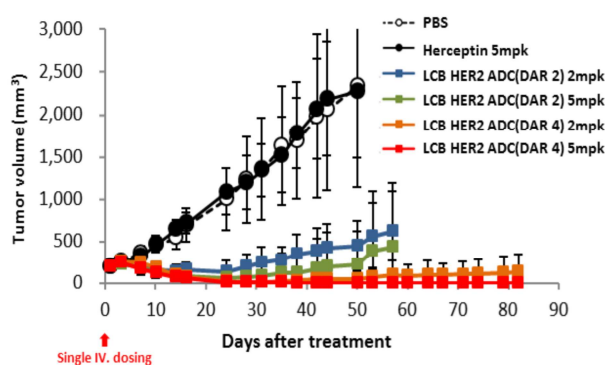
The autotaxin inhibitor LCB17-0877, which LegoChem Biosciences licensed out to Bridge Biotherapeutics (Bridge Bio) in 2017, was licensed out again to Boehringer Ingelheim in a W1.5tr deal in July 2019. Under the deal, Bridge Bio received W60bn upfront and will pay roughly half of its milestones from Boehringer Ingelheim to LegoChem Biosciences. The autotaxin inhibitor is currently in the final stages of a phase 1 study, with the phase 1 data to be presented at the European Respiratory Society (ERS) meeting on September 28th. We believe there is a strong desire to develop LCB17-0877, as Boehringer Ingelheim’s idiopathic pulmonary fibrosis drug, Ofev, is set to lose patent protection in 2024.

Table 1. LegoChem Biosciences’ ADC pipeline

Format	Project	Indication/Target	Phase	Partner	Business status	Notes
Platform	LCB69	Solid tumor/ hematologic malignancy	Discovery	Takeda	L/O (global)	Cancer Immunotherapy
	LCB85	Solid tumor/ hematologic malignancy	Discovery	US company	MTA (linker & toxin)	Global
	LCB91	Solid tumor/ hematologic malignancy	Discovery	US company	MTA (linker & toxin)	Global
	LCB91	Solid tumor/ hematologic malignancy	Discovery	European company	MTA (linker & toxin)	Global
Product	LCB14	HER2	Phase 1	Fosun Pharma	L/O (China)	-
	LCB71	ROR1	Discovery	ABL Bio	-	Collaboration
	LCB73	CD19	Discovery	NovImmune	-	Collaboration
	LCB67	DLK1	Discovery	Y-Biologics	-	Internal
	LCB76	EGFRVIII	Discovery	Samsung Hospital	-	Internal
	LCB84	Solid tumor/ hematologic malignancy	Discovery	DIATHEVA	-	Collaboration
	LCB87	Solid tumor	Discovery	Company O	-	Collaboration
	LCB88	Solid tumor/ hematologic malignancy	Discovery	Company P	-	Collaboration

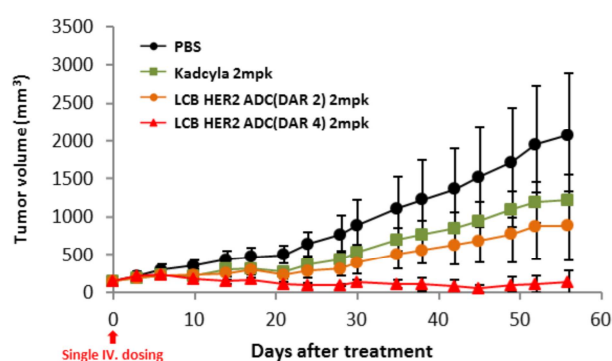
Source: Company data, Mirae Asset Daewoo Research

Figure 1. HER2 ADC for breast cancer showed better results than Herceptin in a preclinical trial



Source: Company data, Mirae Asset Daewoo Research

Figure 2. Efficacy of HER2 ADC in stomach cancer



Source: Company data, Mirae Asset Daewoo Research

Table 2. Expected milestones by year

Type	Partner	Out-licensed pipelines	Milestone payments	19	20	21	22	23	24
ADC	Fosun Pharma	LCB14 (HER2-specific ADC)	W20.8bn	●		●		●	
ADC	Takeda	LCB69 (linker for three targets)	W454.8bn	●	●	●	●	●	●
NME	Bridge Bio/Boehringer Ingelheim	BBT-877 (anti-fibrosis)	W1.5tr (profit sharing)	●	●		●		●
NME	Haihe Biopharma	Delpazolid (antibiotic)	W24bn	●	●	●	●	●	
NME	Green Cross/Lee's Pharma	Nokxaban (Anticoagulant)	-	●				●	

Source: Company data, Mirae Asset Daewoo Research

APPENDIX 1

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Equity Ratings Distribution & Investment Banking Services

	Buy	Trading Buy	Hold	Sell
Equity Ratings Distribution	83.14%	8.72%	8.14%	0.00%
Investment Banking Services	77.78%	11.11%	11.11%	0.00%

* Based on recommendations in the last 12-months (as of June 30, 2019)

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