Lumosa Therapeutics Co., Ltd. (TPEX:6535)

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Presenter: June Kuo

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Overview of Lumosa

Founding Date	Nov, 2000
Paid-in capital	US$ 52 million
Major shareholders	Center Laboratories Group (34%)
Chairman and CEO	Mr. Rong-chin Lin
Listing date (TWO.6535)	Sep, 2016
First merger (2014)	Expanded pipeline (acquired late-stage asset)
Second merger (2018)	Acquired biologics and oncology assets

Providing innovative medical solutions for the neuroscience field, aiming to become a global leader in stroke, nurturing innovative treatment challenges.

2000
SunTen Phytotech Founded with focus on the development of botanical new drugs

2011
Received an investment from Center Laboratories and reposition its focus on the development of small molecule drugs

2014
Merger between Cheng Pang Biopharma and BroadChan Biopharm, name change to Lumosa Therapeutics. Focus development on pain, stroke and oncology pipeline

2016
Publicly listed on the Taipei Exchange, code: 6535.TWO

2018
Merger with TPG Biologics and acquired biologics and oncology assets

2023
Committed to the development of novel stroke therapy. Building new pipeline focusing on neuroscience

Innovation-driven Drug Development Company with Commercial Focus

In → Market-oriented → Innovative → Licensing → Out

LT6001 exosome asset

Proof of concept

- Expands innovative technology in neuroscience
- Propels Lumosa as a leader in neuroscience

Cytoengine
Founded by Lumosa in 2022/01
Paid-in-capital US$ 4 million (2022/10/25 completed capital injection)

Lumosa licensed the ***"stemcell exosome technology"*** from NHRI and transferred to ***Cytoengine***, which is jointly invested by Lumosa and Center Laboratories. Cytoengine will be responsible for the development of subsequent technologies

LT3001, novel therapy for acute ischemic stroke

Successful licensing:

- Brings sufficient resources to develop next-gen drugs
- Propels Lumosa to unicorn status

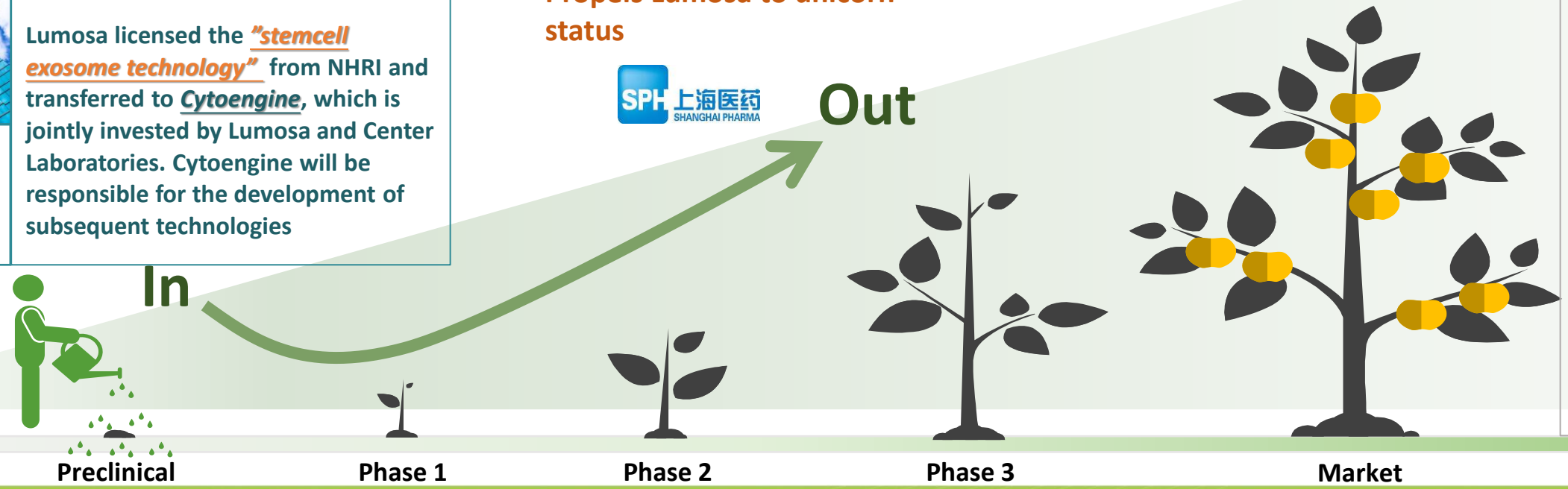
SPH 上海医药 SHANGHAI PHARMA

LT1001, ER analgesic injection

- Provide stable cash flow

Jemincare 济民可信 · A+med advanced medication · DARNITSA · GUFIC BIOSCIENCES LIMITED · DONGWHA PHARM · SKYLINE VET PHARMA · LOM LAND OF MEDICINE

Balanced Asset Allocation



LT1001 (Naldebain®)

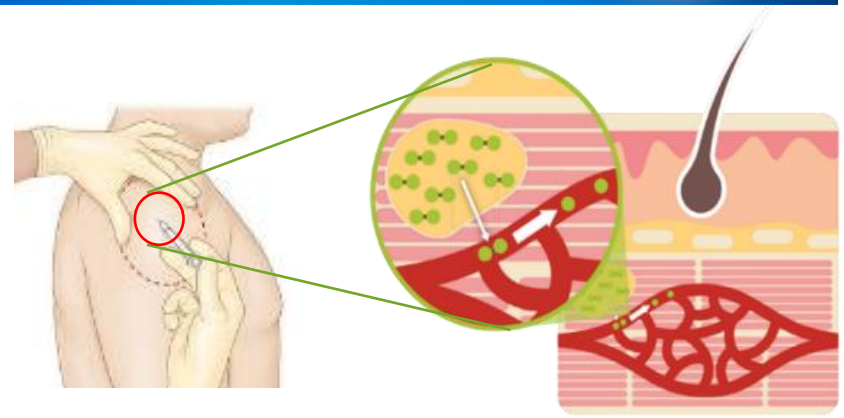
Week-long Extended-release Analgesic Injection

Approved in: Taiwan, Singapore, Thailand, Malaysia, Ukraine and Brunei

LT1001 (Naldebain®): World's First Week-long Extended-release Analgesic Injection

Patented compound + patented release formulation

- **Indications: Relief of moderate to severe postoperative pain**
  - **Patented compound**
    - ✓ Active ingredient: Dinalbuphine sebacate
    - ✓ Prodrug of nalbuphine
    - ✓ Analgesic effect comparable to that of morphine
    - ✓ Excellent safety profile, low addiction potential, no respiratory depression
  - **Patented release formulation**
    - ✓ Special formulation with intramuscular injection
    - ✓ Extended-release analgesic with effective concentration for up to 7 days



Unmet medical need	Effective	Safe	Convenient
	Analgesic effect comparable to that of morphine	No opioid-related side effects (respiratory depression, addiction risk)	Single dose administration, reduced hospital stay, better pharmacoeconomics

The opioid crisis has led to a strong demand for non-addictive and safer postoperative analgesics

LT1001 (Naldebain®): World's First Week-long Extended-release Analgesic Injection

Global strategic planning

Approved

Taiwan	(2017)
Singapore	(2020)
Thailand	(2021)
Malaysia	(2022)
Ukraine, Brunei	(2023)

Stable cashflow

Registration

Korea

Jordan

Robust growth momentum

Clinical Trial

China
(Planning)

India
(Ongoing)

Animal drug
(Pivotal trial ongoing)

Maximizing product value

Approved in six countries:

Taiwan, Singapore, Malaysia, Thailand, Ukraine, Brunei

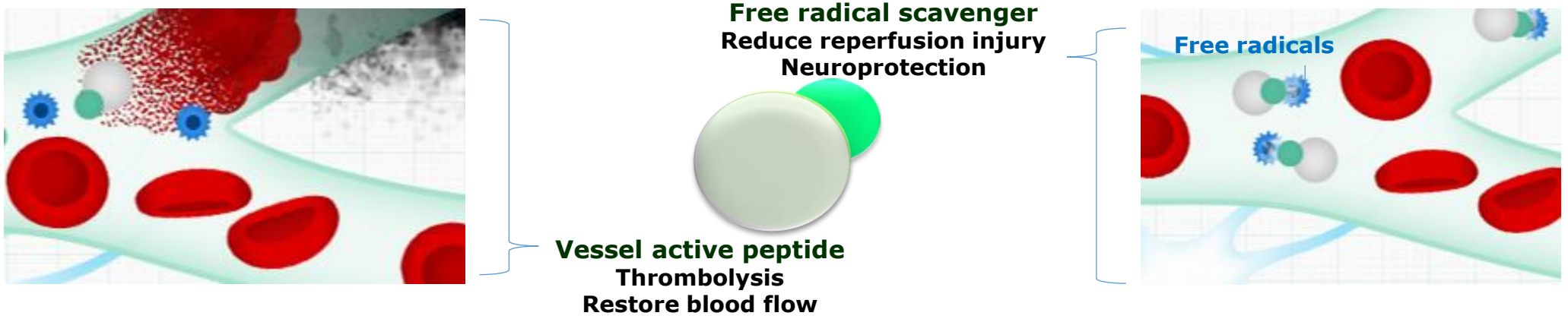
- **Continuous market expansion**
  Licensing or drug approval application using existing data; Korea, Jordan and India in progress.
- **Regulatory approval in China**
  Held discussions with Chinese regulatory agencies and licensed companies to reach a development consensus.
- **Animal drug**
  Pivotal study ongoing in 2023.

LT3001

Novel Dual-function Molecule for the Treatment of Acute Ischemic Stroke

- The safety, pharmacokinetics, and drug-drug interactions confirmed by three Phase 1 trials
- Safety confirmed and efficacy trend observed in the Phase 2a trial
- Three Phase 2b trials ongoing, targeting enrollment completion and initiate out-licensing activities in 2024

LT3001: The World's First Novel Dual-function Molecule



Targeted indication	Acute ischemic stroke (AIS)
Administration route	Short infusion
Patent protecvtion	**2034** (Composition patent), **2040** (Formulation), **2042** (Method of use)
Development status	1) Phase 2a (single-dose) – completed 2) **Phase 2b – Three Phase 2b trials ongoing**
Primary targeted population	1) AIS patients < 24 hours after stroke symptoms 2) Concomitant use with endovascular thrombectomy in AIS patients
Forecast (worldwide)	US$ 6.4 ~ 9.6 billion

The Unmet Needs of Acute Ischemic Stroke and Product Positioning of LT3001

Treatment time window	Large vessel occlusion	Small vessel occlusion	Lacunar infarction
< 4.5 hr		IV tPA	
4.5 - **24** hr	**IA endovascular thrombectomy**		

Only apply on large vessel occlusion:
<30% patients can be treated

Further improvements needed:
<50% patients retore autonomy

+

Safety issues:
~6% intracranial hemorrhage

Limited treatment time window (<4.5 hr): <10% patients can be treated

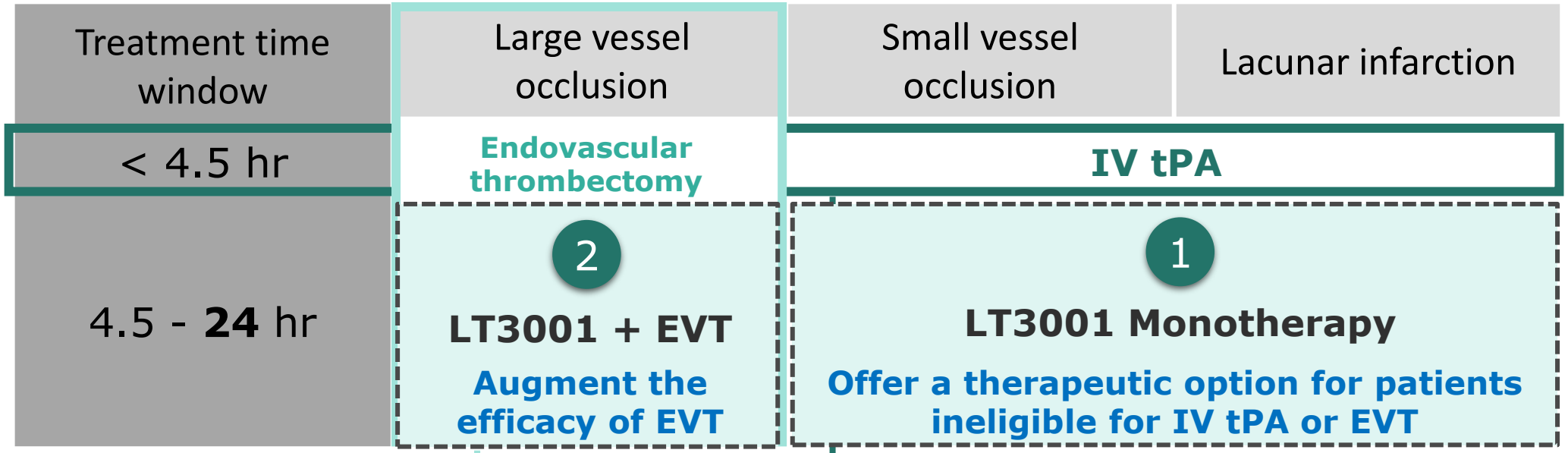
Further improvements needed :
<30% patients restore autonomy

=

> 80%

AIS patients unable to receive treatment or achieve satisfactory treatment effect

The Unmet Needs of Acute Ischemic Stroke and Product Positioning of LT3001



World's first novel therapy for AIS with an innovative MOA

- √ Extends the treatment time window
- √ Thrombolysis and neuroprotection functions
- √ No hemorrhagic risk

LT3001 Objective

Improve the outcomes of > 80% of the 16 million global AIS patients

LT3001 Clinical Status

2017 | 2018 | 2019 | 2020 | 2021 | 2022 | **2023** | 2024 | 2025

Publication of Phase 2a results

13TH WORLD STROKE CONGRESS 28-29 OCTOBER 2021 VIRTUAL

2021 WSC

American Stroke Association. International Stroke Conference

2021 ISC

Three Phase 2b trials ongoing

Safety assessment and efficacy validation

Monotherapy

Phase 1 (US) → **Phase 2a US/TW; N=24**

- Safety endpoint achieved
- Efficacy endpoint: Improve neurological function and outcome

LT3001 received **US FDA FTD**

Treatment time window	Large vessel occlusion	Small vessel occlusion	Lacunar infarction
< 4.5 hr	Endovascular thrombectomy	IV tPA	
4.5 - 24 hr	2 LT3001 + EVT Augment the efficacy of EVT	1 LT3001 Monotherapy Offer a therapeutic option for patients ineligible for IV tPA or EVT	

American Stroke Association. International Stroke Conference

2024 ISC

Multiple-dose, single-use (3-day dosing)

Efficacy validation

SPH 上海医药 SHANGHAI PHARMA

Phase 1 (CN) → **LT3001-202 Phase 2b CN (27 sites, 161 subjects); N=300**

Phase 1 (DDI, US) → **LT3001-205 Phase 2b US (15), TW (6), EU (22); N=200**

Safety

Multiple-dose combination with EVT

LT3001-203 Phase 2 US (4), TW(3); N=66

1

2

2024

√ Complete Phase 2 clinical trial in China and obtain unblinded data;

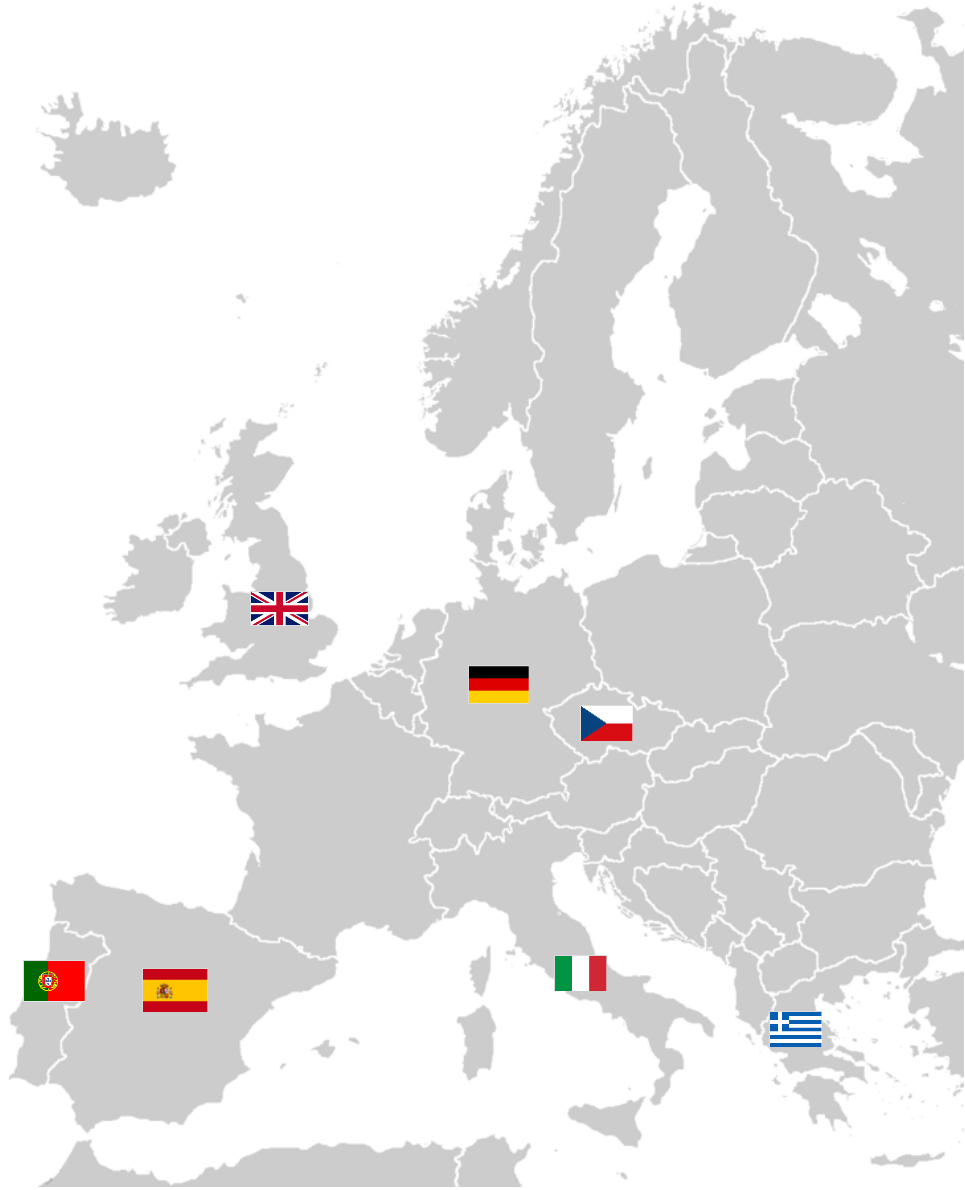
√ Complete multinational, multicenter trial in TW/US/EU

LT3001-205 Phase 2 Trial: European Site Initiation Visit (October 2023)

A total of 22 sites in 7 European countries participated LT3001-205 trial：

2023 May~Sep	2023 Oct	2024	2025
EU regulatory review and approval	Initiation visits of EU sites	Patient enrollment	Phase 3 regulatory consultation

Global out-licensing



Medical Advisors

World Stroke Organization

Dr Marc Fisher

President of World Stroke Organization
Professor of Neurology at Harvard Medical School

Stanford

Dr Gregory Albers

Director, Stanford Stroke Center,
Stanford Medical Center, US

UC Health

Dr Pooja Khatri

Director of Acute Stroke Program for the University of Cincinnati, US

台灣腦中風學會
Taiwan Stroke Society

Dr Han Hua Hu

Founding Chairman of Taiwan Stroke Society
Neurology and Cerebrovascular Center, Taipei VGH
Treatment and Research Center for Cerebrovascular Diseases, TMU

CHI Memorial Medical Group

Dr Tom Devlin

Director of CHI Memorial Stroke and Neuroscience Center, US

Dr Yongjun Wang

Deputy Superintendent, Beijing Tiantan Hospital
Director of Neurology Center
Executive Vice President, China Stroke Association

LT6001

Innovative Induced Exosomes

Drug Delivery Platform + Novel Therapy

Innovative Exosome Development Strategy: New Therapies & Platforms

Neurological therapy pioneer

Strategic out-licensing

Leveraging delivery platforms
Fostering tech transfer or co-development

Engineering targeted exosomes
Fostering tech transfer or co-development

Item	Description	2023	2024	2025	2026
Platform	Delivery platform & targeting research				
LT6001	Targeted delivery platform R&D				
LTxxxx	Neuroregenerative therapy				
LTxxxx	Neuroimmunological therapy				

Lumosa’s Future and Outlook

Becoming the Global Leader in Neuroscience

Successful LT3001 out-licensing

AIS R&D expertise

Global network of experts

LT6001 reaching clinical stage

Exosome production technology validation

AIS animal model validation

Innovative approach to ischemic stroke management

Treatment time window	Large vessel occlusion	Small vessel occlusion	Lacunar infarction
< 4.5 hr	EVT	IV tPA	
4.5 ~ 24hr	LT3001 + EVT	LT3001 Monotherapy	
> 24hr	LT6001 concomitant use		

Exosome platform

Continual process and manufacturing optimization to meet industry standards

Delivery and targeting platform development

Neurological therapy pioneer

Strategic out-licensing

Leveraging delivery platforms

Fostering tech transfer or co-development

Engineering targeted exosomes

Fostering tech transfer or co-development

Resources from LT3001 ✚ Novel exosome platform

= Innovative neurological therapies

Item	Description	2023	2024	2025	2026
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LT6001	Targeted delivery platform R&D				
LTxxxx	Neuroregenerative therapy				
LTxxxx	Neuroimmunological therapy				

Thank You