

The logo for TTV Biopharm, featuring the letters 'TTV' in a bold, red, italicized font, followed by 'BIOPHARM' in a white, italicized font with a registered trademark symbol. The logo is set against a black diamond-shaped background.

**TTV** BIOPHARM®

台灣東洋藥品

**WELCOME TO JOIN US**

March, 2020

# Safe Harbor Statement

## This presentation contains certain forward-looking statements.

These forward-looking statements may be identified by words such as 'believes', 'expects', 'anticipates', 'projects', 'intends', 'should', 'seeks', 'estimates', 'future' or similar expressions or by discussion of, among other things, strategy, goals, plans or intentions. Various factors may cause actual results to differ materially in the future from those reflected in forward-looking statements contained in this presentation, among others:

1. pricing and product initiatives of competitors;
2. legislative and regulatory developments and economic conditions;
3. delay or inability in obtaining regulatory approvals or bringing products to market;
4. fluctuations in currency exchange rates and general financial market conditions;
5. uncertainties in the discovery, development or marketing of new products or new uses of existing products, including without limitation negative results of clinical trials or research projects, unexpected side-effects of pipeline or marketed products;

6. increased government pricing pressures;
7. interruptions in production
8. loss of or inability to obtain adequate protection for intellectual property rights;
9. litigation;
10. loss of key executives or other employees; and
11. adverse publicity and news coverage.

TTY Biopharm cautions that this foregoing list of factors is not exhaustive. There may also be other risks that management is unable to predict at this time that may cause actual results to differ materially from those in forward-looking statements.

**You are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date on which they are made. TTY Biopharm undertakes no obligation to update publicly or revise any forward-looking statements.** Any statements regarding earnings growth is not a profit forecast and should not be interpreted to mean that TTY Biopharm's earnings or earnings per share for this year or any subsequent period will necessarily match or exceed published earnings or earnings per share forecasts of TTY Biopharm Company Limited.

# Our Mission

We have been striving to extend liposomal & microsphere depot platform technologies for treatment of various diseases.

**Our Target is to improve health and quality of life through innovative, cost-effective therapeutics and specialty drugs.**

Our focus is on the **“Unmet Medical Needs”** in challenging diseases throughout the world, such as Cancer, CNS, Autoimmune, Diabetes Mellitus & Infectious Diseases.



# Agenda

## Company Overview

Product Strategy

Product Pipeline

Manufacture Facilities

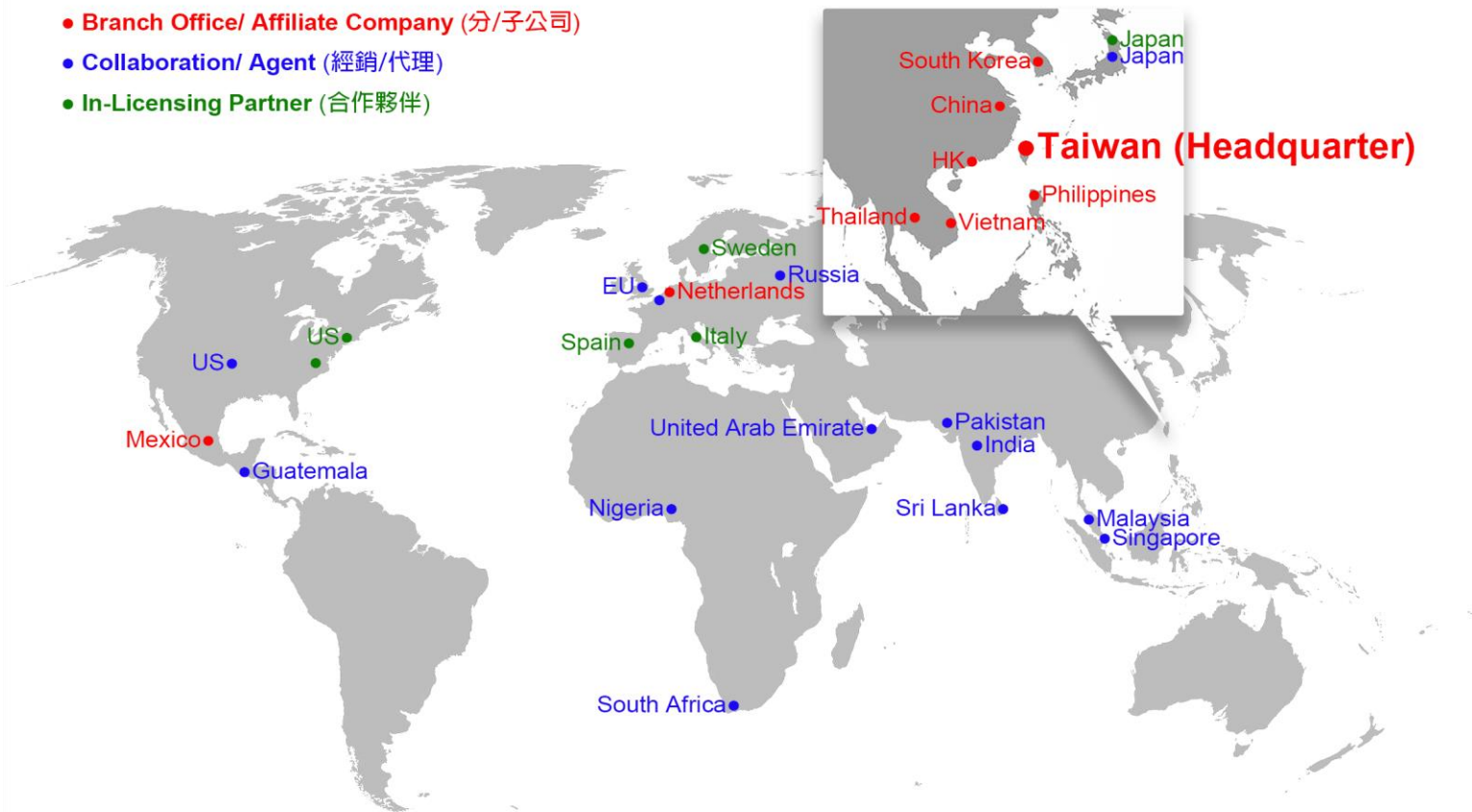
Successful Product Categories

In Progress Status

Biotech Success

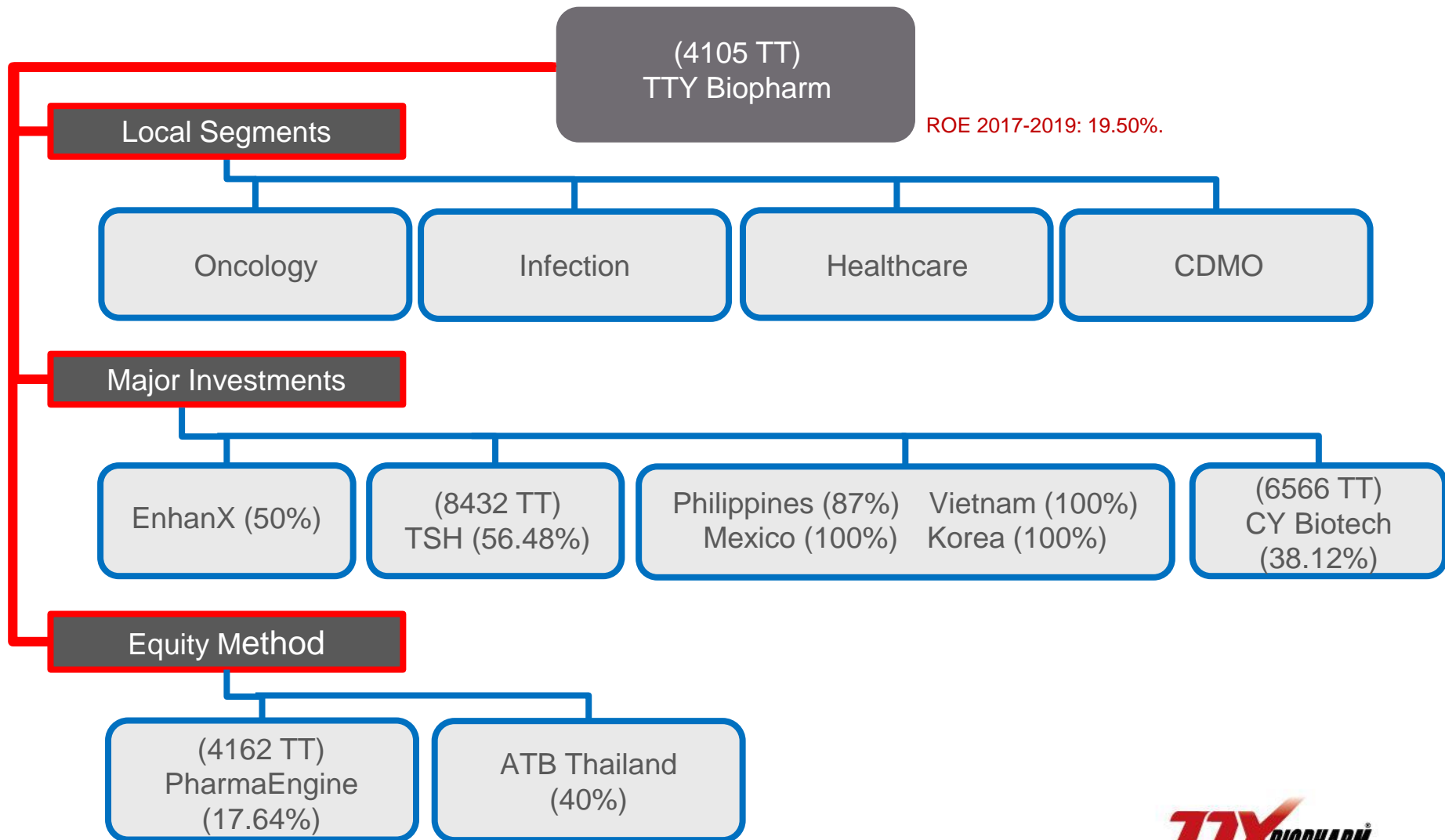
# Company Overview

- Branch Office/ Affiliate Company (分/子公司)
- Collaboration/ Agent (經銷/代理)
- In-Licensing Partner (合作夥伴)



- Founded in 1960, restructured in 1996
- Traded in the Taiwan TPEX (2001, Code: 4105);
- Shares outstanding: 248.65 Million Shares (June, 2019)

- TTY Biopharm consolidated sales as of  
2019- NTD 4.44B (USD 148M)  
2018- NTD 4.04B (USD 131M)
- Headquarter: Taipei, Taiwan  
Number of employees: 554



# TTY Core Competences



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| Products                            | World Market USD/M | Core Technology                      | Advantages   |
|-------------------------------------|--------------------|--------------------------------------|--|
| <b>Caelyx/Doxil</b>                 | 600                | Pegylated Liposome Technology        | Worldwide Manufacturing Patent                               |
| <b>Pegylipo</b>                     |                    |                                      |  |
| <b>Lipo-AB</b>                      | 440                | Liposome Technology                  | Worldwide Manufacturing Patent                               |
| <b>Octreotide</b>                   | 1,500              | Microsphere Formulation              | PLGA, Star Polymers Synthesized by TTY.                      |
| <b>Colimycin</b>                    | 150                | Formulation                          | First Choice Irreplaceable Options, TWNIH                    |
| <b>ENX-201</b>                      | 1,700              | Liposome Technology                  | Penetrating Blood-Brain-Barrier (BBB) capability             |
| <b>Leuprolide Acetate Injection</b> | 1,240              | Lupron Depot Microsphere Formulation | Worldwide Manufacturing Patent                               |
| <b>Risperidone Injection</b>        | 960                | Microsphere Formulation              | Worldwide Manufacturing Patent                               |
| <b>LGIA10</b>                       | 910                | Microsphere Formulation              | Worldwide Manufacturing Patent<br>Microsphere Depot Platform |

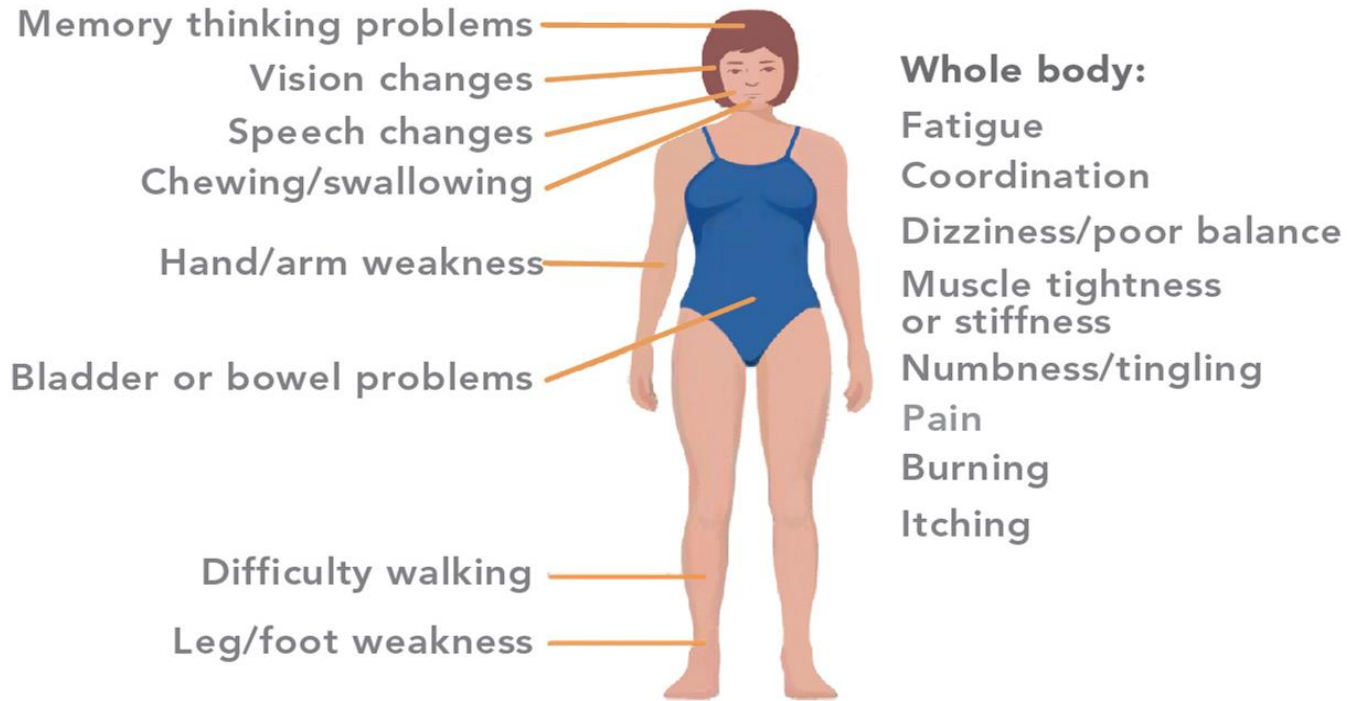


# Introduction of MS

## MS: a chronic, autoimmune & neurodegenerative disorder

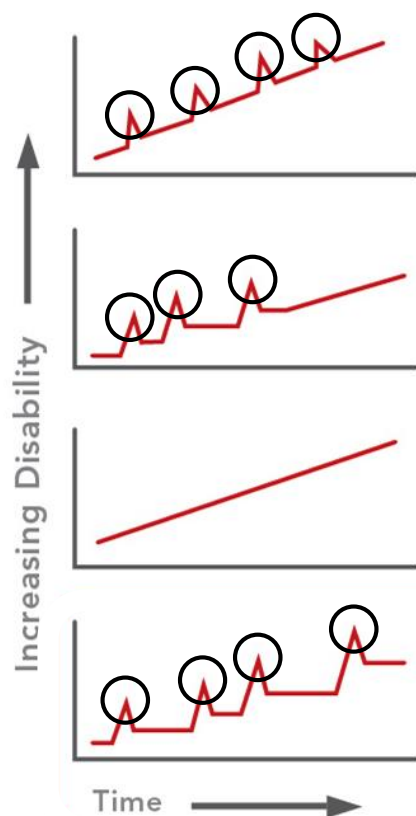
### Body's own defensive system attacks myelin

- Inflammatory damage in the brain and spinal cord
- Loss of myelin and axons (scars at multiple sites)
- Neurologic disability



# Introduction of MS

## Four Classifications of MS



**PRMS** Progressive Relapsing MS  
Steady decline since onset with super-imposed attacks.

**SPMS** Secondary Progressive MS  
Initial RRMS that suddenly begins to decline without periods of remission and relapses.

**PPMS** Primary Progressive MS  
Gradual progression of the disease from its onset with no relapses or remissions

**RRMS** Relapsing/Remitting MS **85%~90% patients**  
Unpredictable attacks which may or may not leave permanent deficits followed by periods of remission

Either one of the four classifications occurs in acute is the target patient pool of ENX-201.  
不管屬於哪一個發病類型，只要是急性復發，就是ENX-201的target病患。

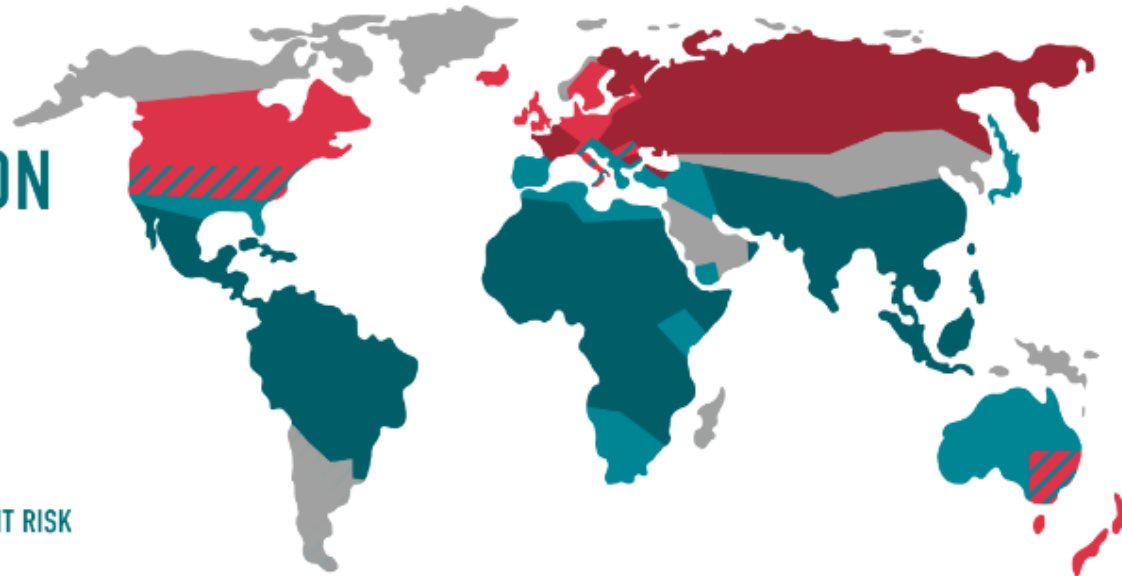


# Introduction of MS

**World distribution of multiple sclerosis: greater prevalence in higher northern and southern latitudes**

## GLOBAL DISTRIBUTION OF MS

-  HIGH RISK
-  PROBABLE HIGH RISK
-  LOW RISK
-  PROBABLE LOW RISK
-  NORTH-SOUTH GRADIENT RISK
-  OTHER RISK

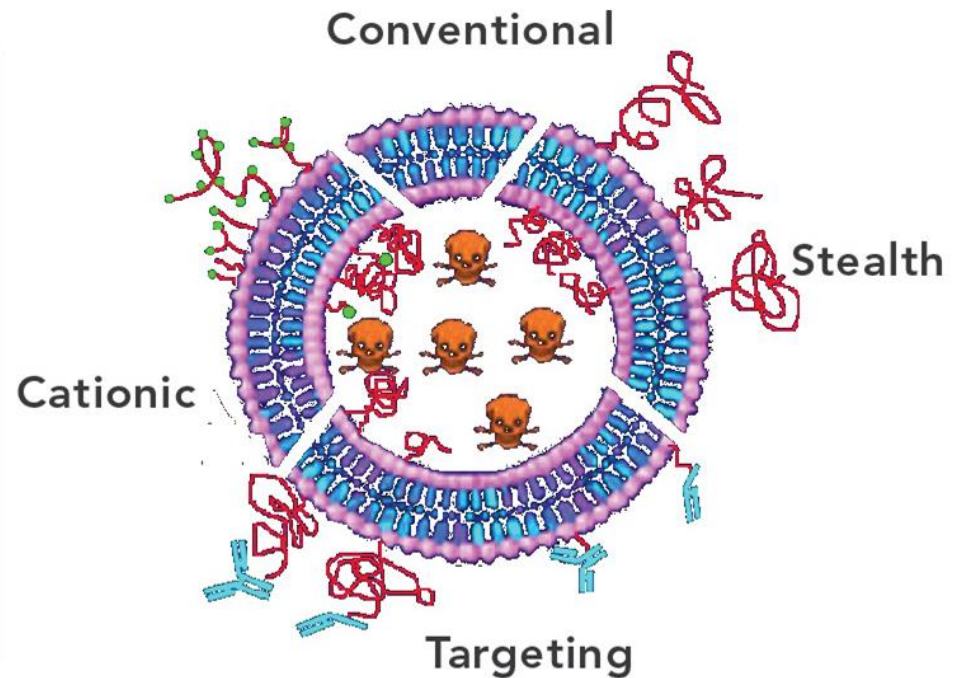
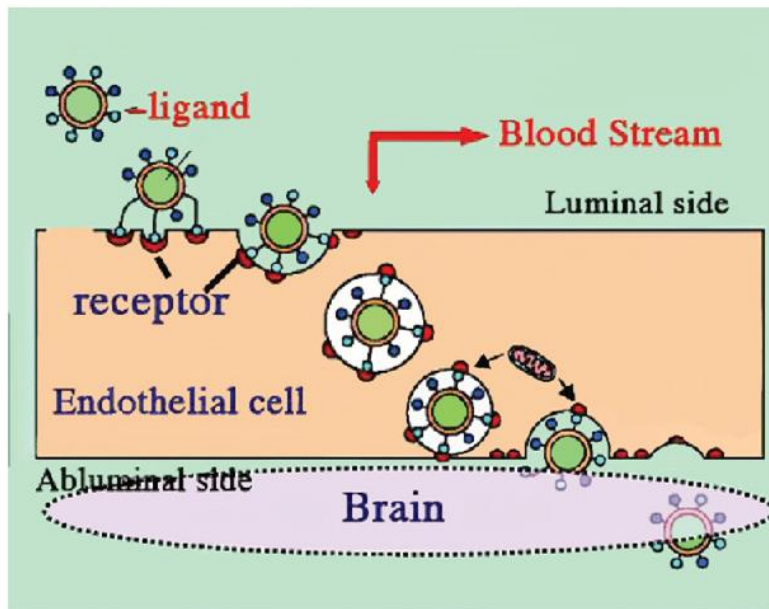


**Females : Males = 2 ~ 3 : 1**

**Around  
2.5 millions**

# ENX-201 Introduction

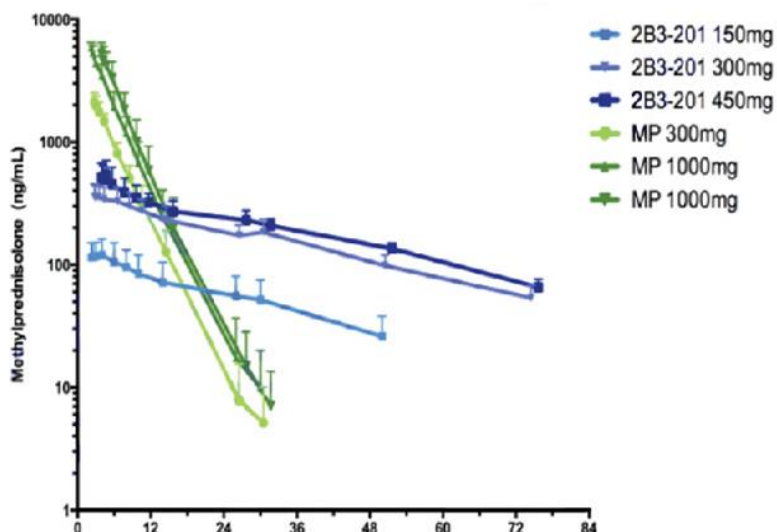
## Effective drug delivery to across the blood-brain barrier (BBB)



# Phase I Study (Solution)

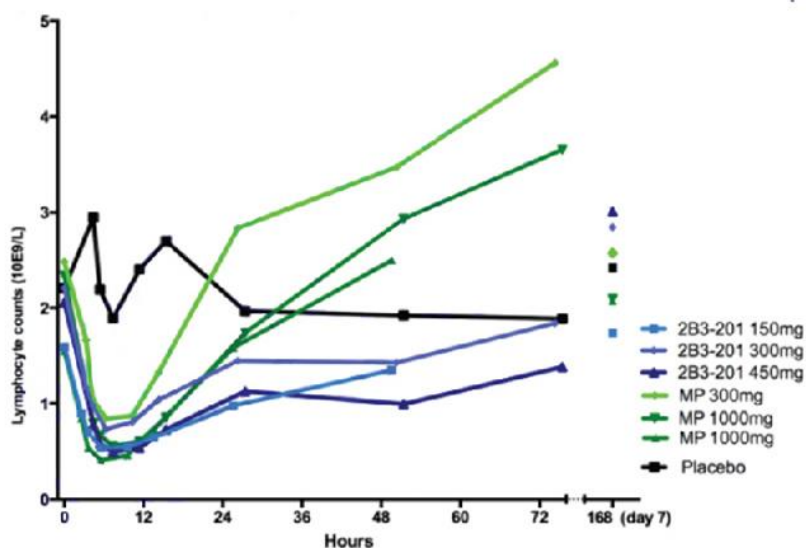
## Phase I dose-escalation results Pharmacokinetics

- Long circulation half-life of ENX-201 (23~28 hrs) vs. MP (2.5 hrs)
- Reduced high peak exposure



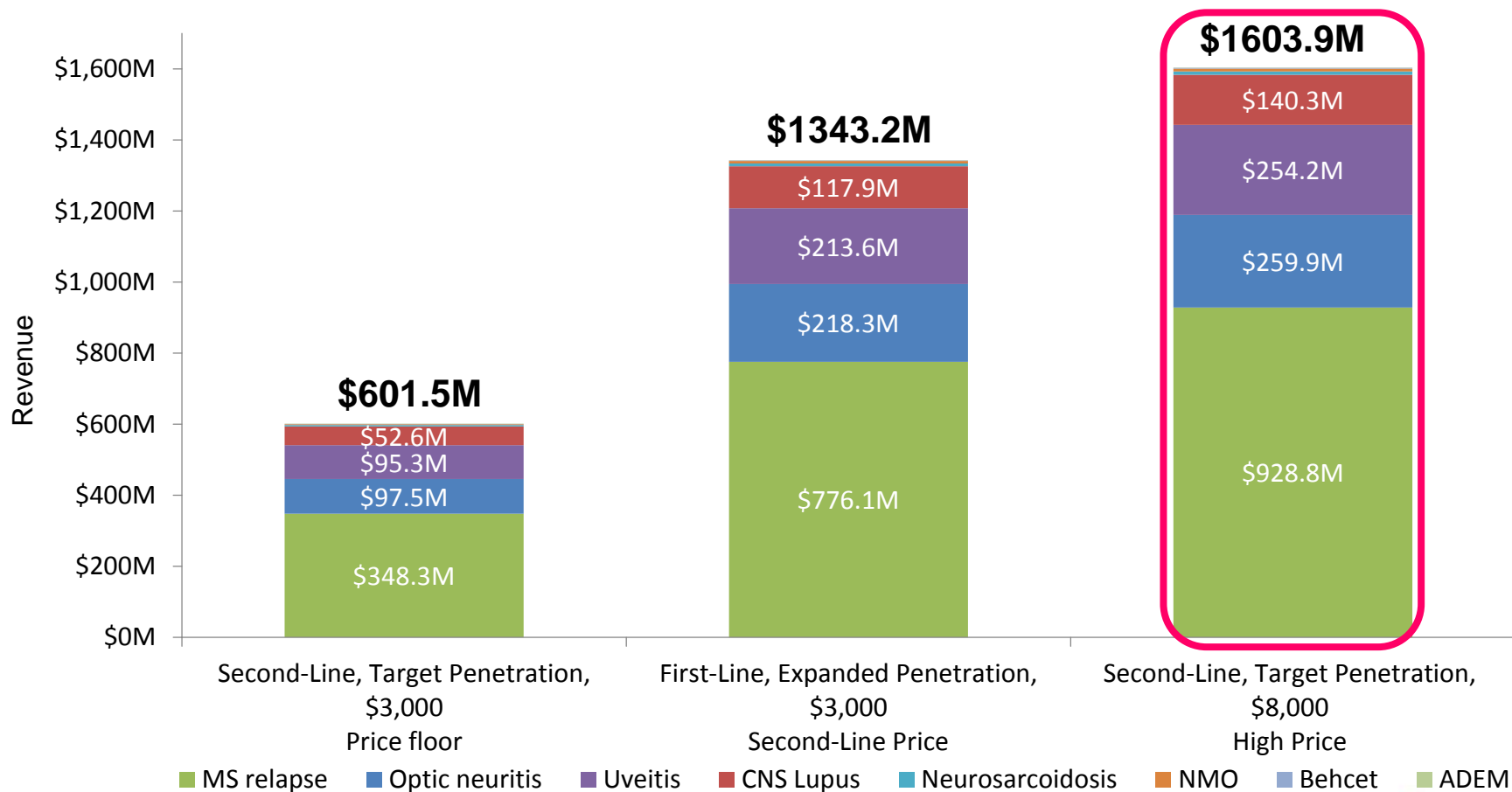
## Phase I dose-escalation results Effect on lymphocytes

- Rapid and sustained immunosuppressive effect
- Lymphocyte count crossed baseline within 7 days in all groups



# Potential Market Size

## ENX-201 US Peak Year Revenue – MS & Other Inflammatory Indications





# ENX-201 Development Strategies

## ■ ENX-201's strengths

- *ENX-201 is a pegylated liposome which glutathione is attached on its lipid, while methylprednisolone as the main substance is encapsulated inside.*
- *Compared with the standard of care, i.e., a free methylprednisolone, ENX-201 is an **one-shot** intravenous injection which brings **home-care convenience** and **better tolerance** to patients suffering acute multiple sclerosis relapses.*

# Multiple Indications to Go (Pipeline)

|   | Indications to Develop                        | Market Potential Size            | Competitors   |
|---|---|----------------------------------|---|
| 1 | Multiple Sclerosis (多發性硬化症)                   | >21.5B                           | Teva (2014)<br>Biogen<br><b>EMDSerono</b><br><b>Novartis</b>  |
| 2 | Uveitis (葡萄膜炎) (眼睛發炎)                         | >0.531B                          | Humira (2016)   |
| 3 | Neuropathic Pain (神經性疼痛)                      | >5.7B                            | Pfizer (2011)   |
| 4 | Osteoarthritis (骨關節炎)                         | >5.335B                          | Anika (2014)  |
| 5 | ALS (漸凍人—肌萎縮性脊髓側索硬化症)                         | >25M (a negative CAGR of 16.10%) | Biogen Idec Inc.<br>Avanir Pharmaceuticals Inc.<br>Isis Pharmaceuticals Inc.<br>Sanofi<br>Bristol-Meyers Squibb Co. |
| 6 | Mucopolysaccharidoses (MPS, 黏多糖症)             | >300M                            | Vimizim   |
| 7 | Metachromatic leukodystrophy (MLD, 異染性腦白質失養症) | 1B                               | Shire Plc<br>Nuo Therapeutics<br>GlaxoSmithKline Plc<br>Zymenex A/S<br>RegenxBio Inc.<br>Novartis AG                |

Unit: USD/Billion

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**Company Overview**

**Product Strategy**

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**Manufacture Facilities**

**Successful Product Categories**

**In Progress Status**

**Biotech Success**

# Successful Oncology Products

UFUR  
(友復膠囊)



Lipo-Dox  
(力得微脂體  
注射劑)



TS-1  
(愛斯萬膠囊)



Lonsurf  
(朗斯弗膜衣錠)



Thado  
(賽得膠囊)



Gemmis  
(建仕注射劑)



Zobonic  
(抑骨凍晶靜脈  
注射劑)



Ivic  
(癌微可膜衣錠)



Asadin  
(伸定注射劑)



Pexeda Inj.  
(派癌休注射劑)



Epicin  
(益彼欣注射液)



Painkyl  
(平舒疼口頰溶片)



Oxalip  
(歐力普注射劑)



Anazo  
(安納柔膜衣錠)



Irino  
(益立諾)



Tynen  
(汰能注射劑)



Megest  
(麥格斯口服  
懸液劑)



Otril  
(嘔速停靜脈  
注射劑)



Folina  
(芙琳亞錠)





# Successful Products of Intensive Care

Brosym C+S  
(博益欣)



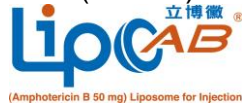
Colimycin  
(克痢黴素注射劑)



Cubicin  
(救必辛注射劑)



Lipo-AB  
(立博黴)



Flusine  
(弗路欣錠)



Maxtam  
(抑西每靈注射劑)



# Successful Healthcare Products

Algitab  
(艾胃逆服)



BIO-CAL PLUS  
(滋骨咀嚼錠)



Alginos  
(胃逆舒)



Sulfin  
(速復利錠)



METACIN  
(西腹黴素注射劑)



Cepiro  
(希比洛靜脈乾粉  
注射劑)



# R&D Investment 研究及臨床

| Year                  | 2013      | 2014      | 2015      | 2016      | 2017      | 2018      | 2019      |
|-----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Revenue (NTD,000)     | 2,307,540 | 2,384,220 | 2,738,956 | 3,344,262 | 3,672,040 | 3,555,620 | 4,044,660 |
| R&D Expense (NTD,000) | 289,530   | 283,470   | 236,398   | 230,192   | 219,126   | 230,595   | 231,026   |
| Total Staff           | 484       | 494       | 450       | 508       | 520       | 530       | 554       |
| R&D Manpower          | 111       | 105       | 97        | 105       | 98        | 98        | 106       |
| R&D Expense/ Revenue  | 12.55%    | 11.89%    | 8.63%     | 6.88%     | 5.97%     | 6.49%     | 5.70%     |
| R&D Total Staff       | 22.93%    | 21.26%    | 21.56%    | 20.67%    | 18.85%    | 18.49%    | 19.13%    |

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**Financial Disclosure**



# Financial Performance (Parent Company Only)

NTD in Thousands

| Item                              | 2016        |      | 2017        |      | 2018        |      | 2019        |      |
|-----------------------------------|-------------|------|-------------|------|-------------|------|-------------|------|
|                                   | Amount      | %    | Amount      | %    | Amount      | %    | Amount      | %    |
| Net Sales                         | 3,344,262   | 100% | 3,672,040   | 100% | 3,555,620   | 100% | 4,044,660   | 100% |
| Gross Profit                      | 2,217,286   | 66%  | 2,347,809   | 64%  | 2,308,242   | 65%  | 2,577,394   | 63%  |
| Operating Expenses                | -1,063,104  | -32% | -1,135,595  | -31% | -1,251,591  | -34% | -1,361,553  | -34% |
| Operating Profit                  | 1,154,182   | 34%  | 1,212,214   | 33%  | 1,056,651   | 31%  | 1,215,841   | 29%  |
| Non-Operating Income and Expenses | 277,855     | 9%   | 351,484     | 10%  | 611,161     | 17%  | -33,172     | -1%  |
| Income before Tax                 | 1,432,037   | 43%  | 1,563,698   | 43%  | 1,667,812   | 48%  | 1,182,669   | 28%  |
| Net Income                        | 1,193,324   | 36%  | 1,344,731   | 37%  | 1,461,381   | 42%  | 900,081     | 21%  |
| <b>EPS</b>                        | <b>4.80</b> |      | <b>5.41</b> |      | <b>5.88</b> |      | <b>3.62</b> |      |

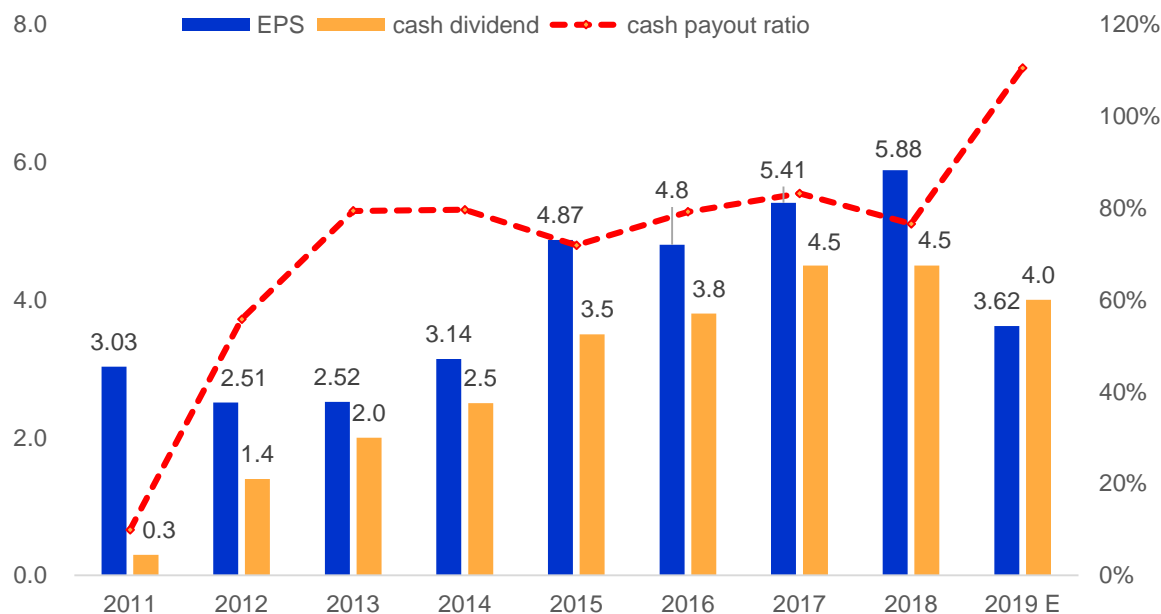
# Financial Performance (Consolidated)

NTD in Thousands

| Item                              | 2016        |      | 2017        |      | 2018        |      | 2019        |      |
|-----------------------------------|-------------|------|-------------|------|-------------|------|-------------|------|
|                                   | Amount      | %    | Amount      | %    | Amount      | %    | Amount      | %    |
| Net Sales                         | 3,760,717   | 100% | 4,078,760   | 100% | 4,036,196   | 100% | 4,466,308   | 100% |
| Gross Profit                      | 2,559,220   | 68%  | 2,668,845   | 65%  | 2,663,179   | 65%  | 2,902,384   | 65%  |
| Operating Expenses                | -1,379,533  | -36% | -1,411,855  | 34%  | -1,603,502  | 40%  | -1,673,775  | 37%  |
| Operating Profit                  | 1,179,687   | 32%  | 1,256,990   | 31%  | 1,059,677   | 25%  | 1,228,609   | 28%  |
| Non-Operating Income and Expenses | 332,372     | 8%   | 338,077     | 8%   | 608,391     | 15%  | -25,955     | -0%  |
| Income before Tax                 | 1,512,059   | 40%  | 1,595,067   | 39%  | 1,668,068   | 40%  | 1,202,654   | 28%  |
| Net Income (Consolidated)         | 1,254,724   | 33%  | 1,368,314   | 33%  | 1,462,299   | 35%  | 907,705     | 21%  |
| Net Income (TTY)                  | 1,193,324   | 31%  | 1,344,731   | 32%  | 1,461,381   | 35%  | 900,081     | 21%  |
| <b>EPS</b>                        | <b>4.80</b> |      | <b>5.41</b> |      | <b>5.88</b> |      | <b>3.62</b> |      |

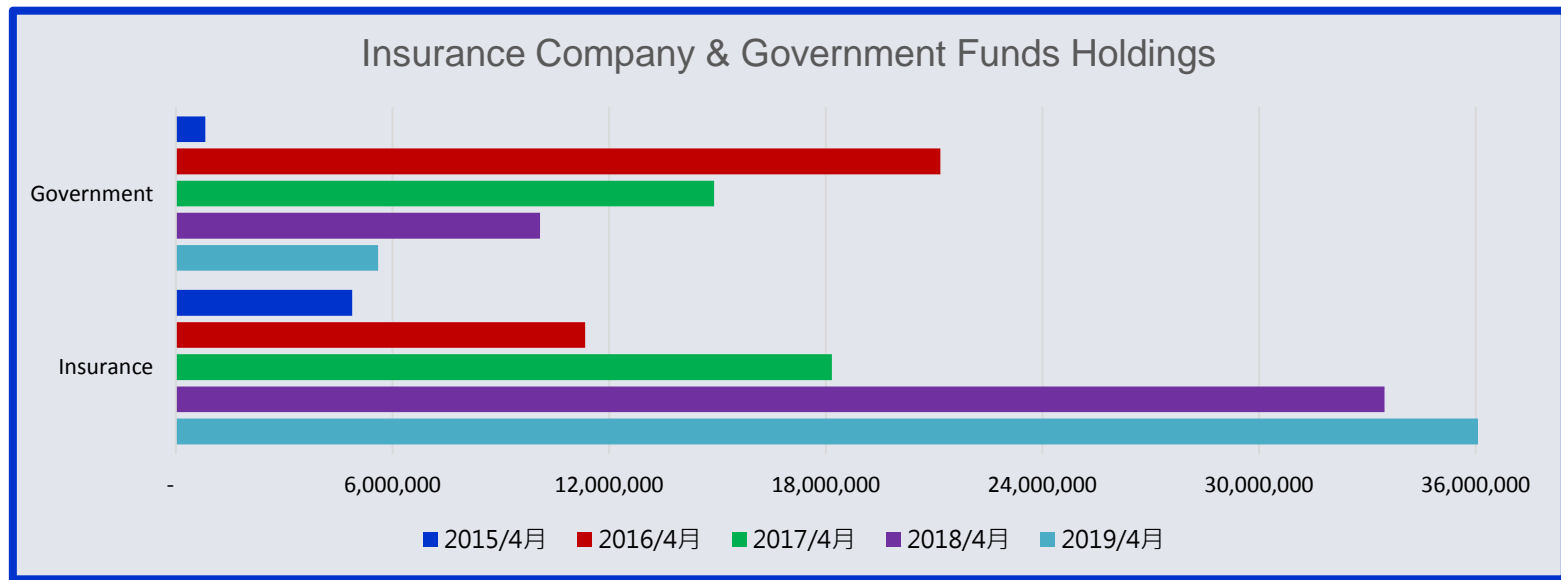
# Dividend Payout

| Item \ Year       | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  | 2019   |
|-------------------|-------|-------|-------|-------|-------|-------|--------|
| Cash Payout Ratio | 79.4% | 79.6% | 71.9% | 79.2% | 83.2% | 76.5% | 110.5% |
| Total Dividend    | 2.67  | 2.50  | 3.50  | 3.80  | 4.50  | 4.50  | 4.00   |



# Gov't Funds & Ins. Co.'s Holdings

| Holdings<br>Institution | April/2015 | April/2016 | April/2017 | April/2018 | April/2019 |
|-------------------------|------------|------------|------------|------------|------------|
| Insurance Company       | 1.96%      | 4.56%      | 7.31%      | 13.46%     | 15.45%     |
| Government Funds        | 0.33%      | 8.52%      | 5.99%      | 4.07%      | 2.26%      |
| Total                   | 2.29%      | 13.08%     | 13.30%     | 17.53%     | 17.71%     |





Let's share and grow together  
in this big family



東生華製藥  
tsh biopharm



PharmaEngine

智擎生技製藥股份有限公司

