台灣微脂體
創新控制疼痛之解決方案

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tlc™

Delivering Hope for Life™

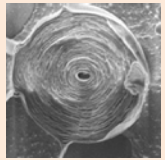
台微體獨家脂質藥物傳遞平台
塑造創新奈米藥物堅實的基礎

TLC is soundly positioned to fulfill unmet medical needs:

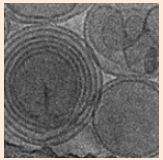
- ✓ Dedicated & experienced management team with extensive drug development know-how
- ✓ Proprietary lipid technology platforms: BioSeizer® & NanoX™
- ✓ Robust & diverse late-stage pipeline in pain management, ophthalmology & oncology
- ✓ Strong global IP protection with 122 patents worldwide
- ✓ Ranked Top 5% by the exchange *every year* in corporate governance evaluation

BioSeizer® - sustained release

- Controlled release from days to months
- Can deliver biologics or small molecules
- Fully biodegradable components
- Economical manufacturing process
- Scale-up capabilities



TLC590
Post-op pain
Ph2

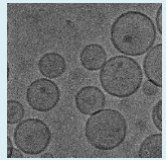


TLC599
OA pain
Ph3 2H19

TLC399
Macular edema
Ph2

NanoX™ - tissue-targeted delivery

- More options for payload selection
- Efficient particle size for enhanced delivery
- Reduced dose frequency
- Robust, scalable & replicable manufacturing
- Applicable to our library of 80+ compounds

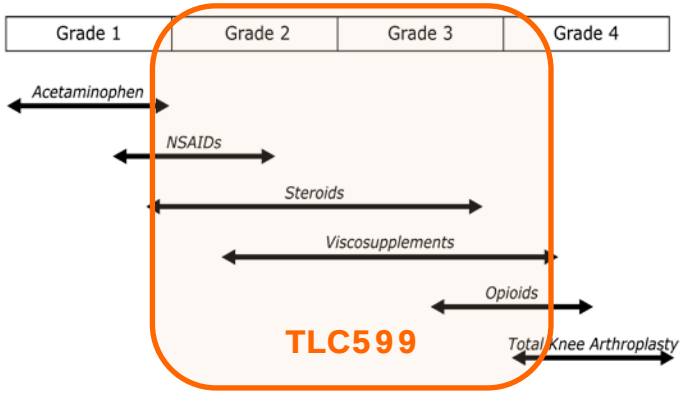


TLC178
STS, pRMS
Ph1/2

TLC599控制關節炎疼痛之長效緩釋、低毒性、非鴉片類藥物

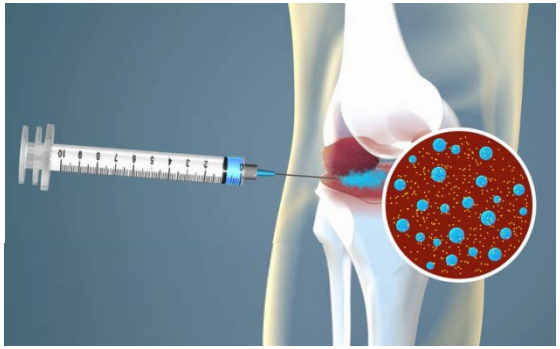
Current treatment landscape

- **30.8 million OA patients** in US[1]
- **20%** of people >65 years **at risk for OA** by 2030[2]
- Current treatment for moderate OA: NSAIDs, steroids, hyaluronic acid (HA), opioids

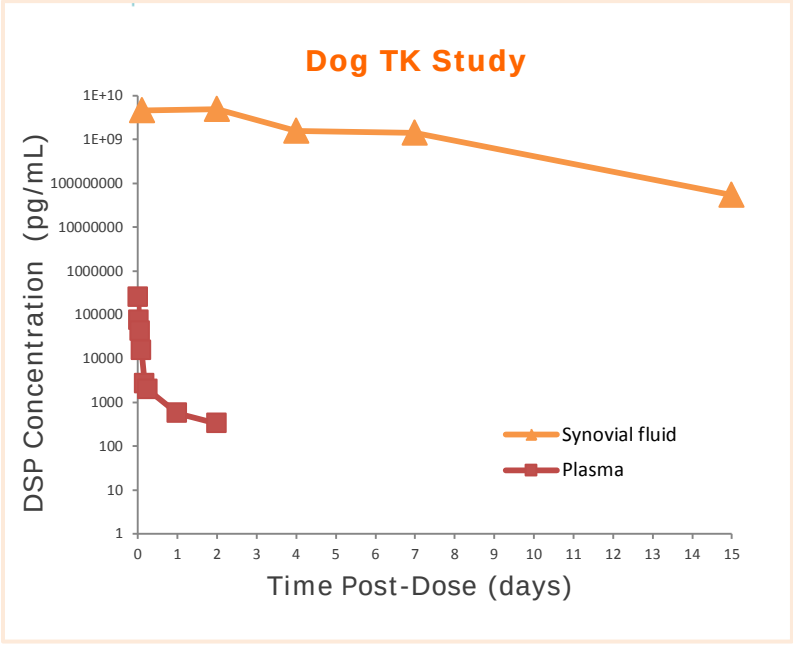


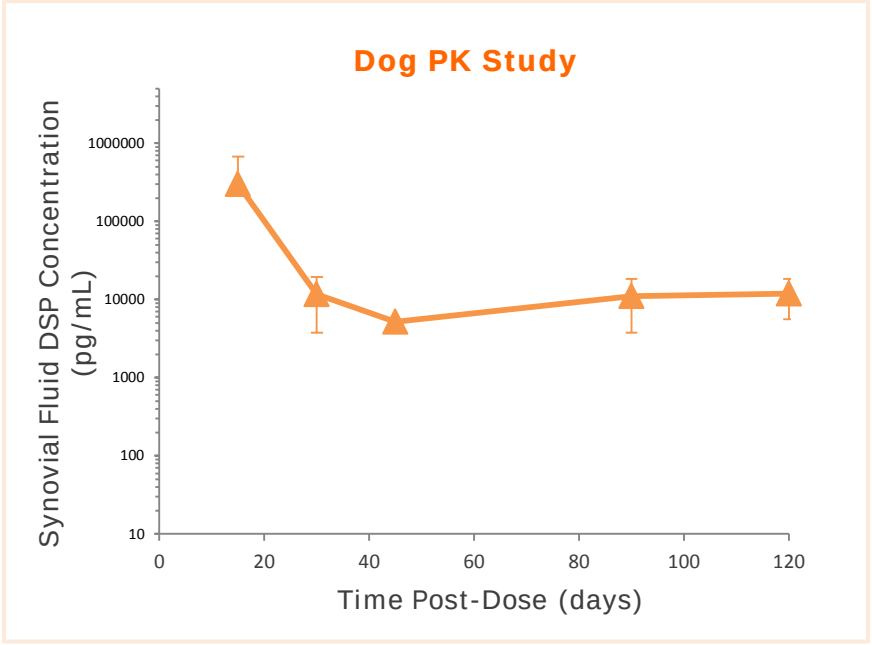
Our strategic solution: TLC599

- **Target for 6-month efficacy**
  Phase II data significantly better than placebo in pain reduction thru 6 months
- **Minimized cartilage damage & toxicity**
  Preclinical & Phase II MRI data indicated minimum cartilage toxicity & slow down of cartilage deterioration
- **Improved drug retention in joint**
  Contrived formulation & particle size ~400nm
- **Needle size flexibility for future expanded indications into small joints**



TLC599 於狗的試驗中顯示極低全身性暴露量並滯留於關節腔長達120天

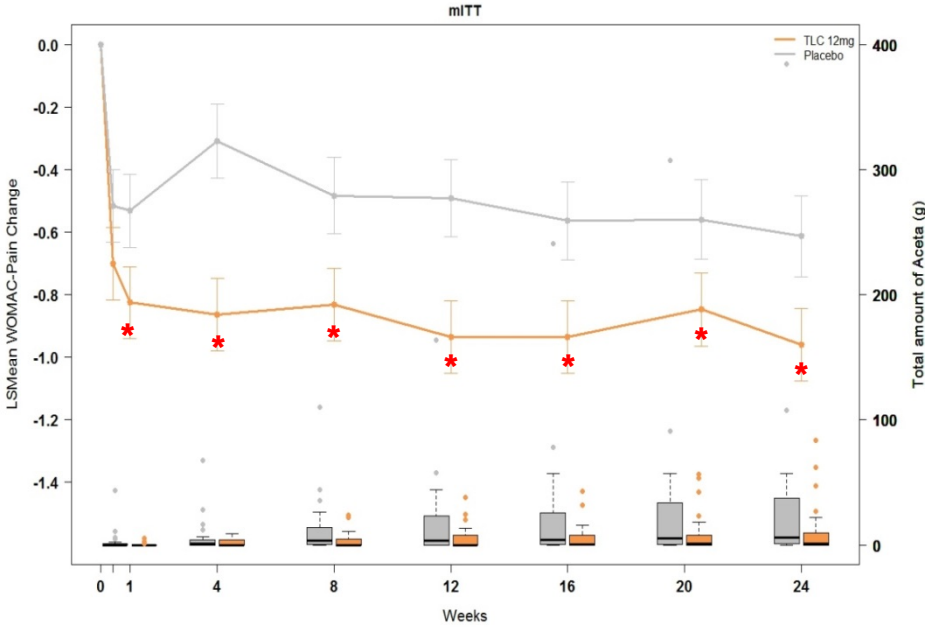




- TLC599 demonstrated minimal systemic exposure
- TLC599 demonstrated sustained drug levels in the joint space for 120 days

TLC599持續24周均顯示出相對於對照組在統計上皆具有顯著意義的疼痛抑制療效

WOMAC Pain Change (0-4)



- TLC599 showed **statistical significance** against placebo at every scheduled visit in WOMAC Pain, VAS Pain & Durable Response (maintain >30% reduction)
- WOMAC Function & WOMAC Stiffness also showed same pain reduction pattern
- **50% of patients** in TLC599 12mg group did not take any acetaminophen during the first 12 weeks
- After 12 weeks, median acetaminophen consumption in placebo group was **5-8 times** that of TLC599 12mg group
- Most adverse events were mild to moderate

TLC599 明確的全球性三期臨床試驗設計和藥證路徑

- **One** global pivotal Phase III trial of ~500 patients sufficient to support an NDA submission
- Consensus to evaluation of the **safety** and **efficacy** of **single <u>and</u> repeated doses** in patients with knee osteoarthritis
  - 3 arms in 2:1:1 randomization ratio, single IA injection at Day 1
    - TLC599 12 mg (n=250)
    - Placebo (n=125)
    - DSP (n=125)
  - Optional TLC599 IA injection at week 24
- Primary & key secondary endpoints are acceptable
- Size of proposed safety database is adequate
- Phase III trial initiation in 2H2019

TLC590: 非鴉片類術後止痛藥物，藥效長達168小時

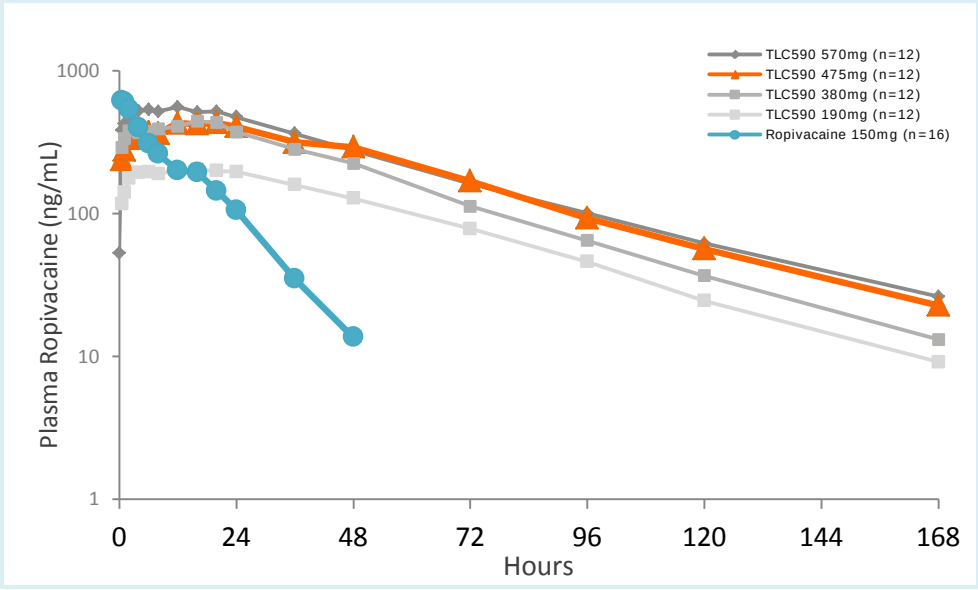
Current local anesthetic landscape

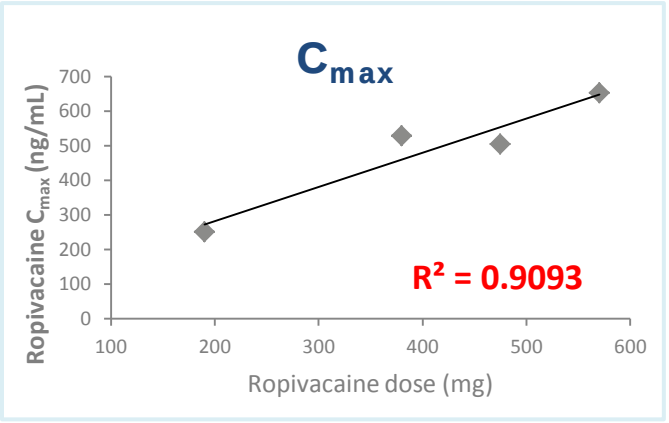
- **96 million surgical procedures** performed in the US in 2012[1]
- Local anesthetics play a major role in the management of post-surgical pain[2]
- Long acting agents have modestly expanded duration, but API in current marketed liposomal formulation of bupivacaine has higher toxicities[3]

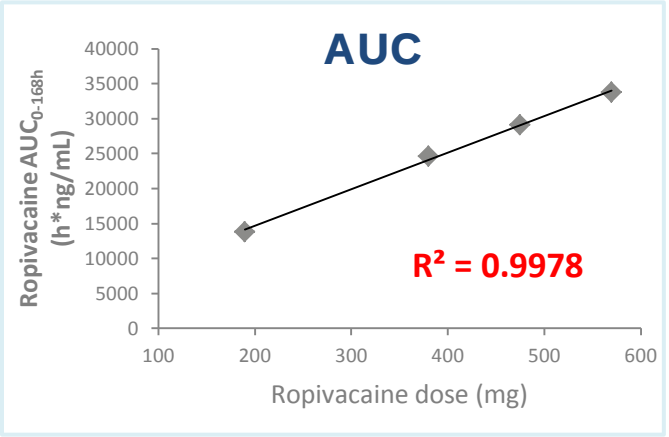
Our strategic solution: TLC590

- **Target for 4-7 days duration with immediate onset**
  Supported by Phase I/II hernia repair trial
- **Unchanged clinical practice during post-op surgery**
  Same administration as unformulated products
- **Potential for lower COGS allows for monetization of hospital opportunity**

臨床一/二期疝氣手術
TLC590 表現高度劑量相關藥代動力學

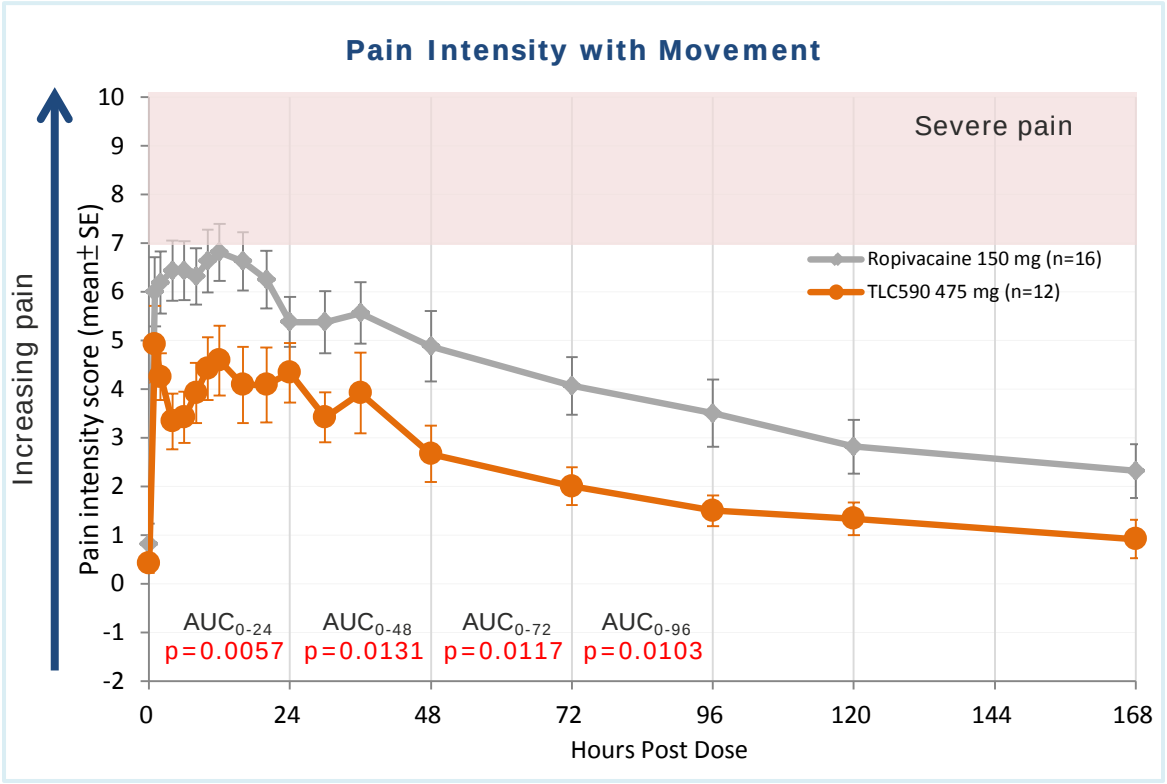






- TLC590 exhibited dose-dependent activity based on blood concentration as well as pharmacokinetic markers
- TLC590 exhibited highly dose-linear pharmacokinetics in C_{max} & AUC

臨床一/二期疝氣手術 TLC590直到168小時，其疼痛指數仍低於活性對照組



- TLC590 475mg showed **statistically significant** reductions in pain vs ropivacaine **through 96 hours**
- TLC590 reduced pain better than ropivacaine at **every 24-hour interval through 168 hours**
- **58.3%** of patients in TLC590 group remained **opioid-free** throughout the entire study
- Among those who used rescue opioids, **time to first use in TLC590 group was ~4X longer** than ropivacaine group (median 13.0 hours vs 3.3 hours)
- Mean total opioid consumption in TLC590 group was **54% less** than ropivacaine group
- TLC590 was well tolerated, with no serious or severe adverse events

TLC590臨床二期拇囊炎切除手術試驗

- Evaluate the analgesic efficacy of TLC590 for postsurgical pain management following bunionectomy

Part 1: Blinded PK study of TLC590 and ropivacaine (completed)

152mg **TLC590** n=12	190mg **TLC590** n=12	228mg **TLC590** n=12	50mg **Ropivacaine** n=12

- ✓ Dose linearity and relative bioavailability of TLC590 established
- ✓ All three doses of TLC590 were well tolerated; safety profile comparable to ropivacaine
  - Most TEAEs mild to moderate; no TRAEs or SAEs,
  - No AEs leading to withdrawal
- ✓ TLC590 228mg chosen to move forward based on maximum feasible volume

Part 2: Efficacy and safety of TLC590 vs bupivacaine and placebo

228mg **TLC590**	50mg **Bupivacaine**	Saline **Placebo**