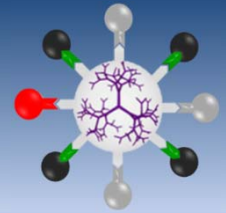


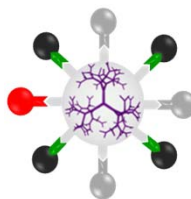
# Starpharma Pty. Ltd. – DEP™ drug delivery



## About Starpharma

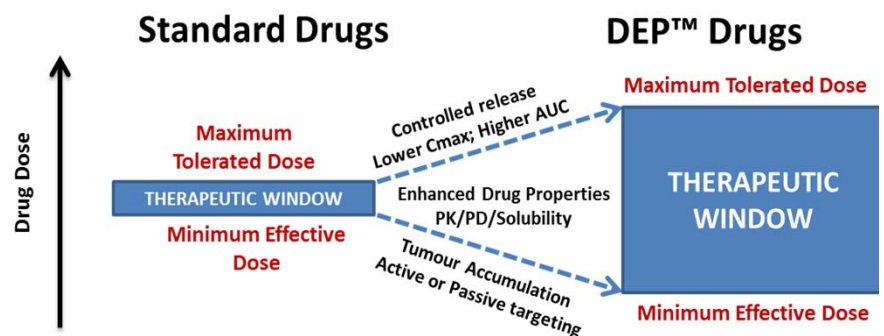
- **ASX300 company (ASX:SPL) and (OTCQX:SPHRY)**
- **Three business areas: DEP™ drug delivery platform, VivaGel® and Agrochemicals** supporting a deep portfolio of products under development or on market
- **DEP™ drug delivery platform** has the potential to produce a portfolio of new DEP™ products with multiple revenue streams
- Multi product DEP™ license with AstraZeneca valued up to US\$126M in milestones plus royalties (first product) and up to US\$93M plus royalties for subsequent products
- DEP™ docetaxel and internal DEP™ pipeline has potential to deliver multiple and high value additional deals
- DEP™ based partnered programs in place and under discussion with multiple leading pharmaceutical companies including new program for a product in AZ's portfolio
- **VivaGel® portfolio** focused on women's and sexual health
  - VivaGel® condom launched in Australia with further approvals and launches to follow
  - VivaGel® BV - Two products for Bacterial Vaginosis – first approved in Europe, second in phase 3 clinical trial
- **Agrochemical program** based on SPL's novel dendrimer technology with extensive commercial partnerships plus internal programs

## Starpharmas DEP™ platform: polylysine dendrimers



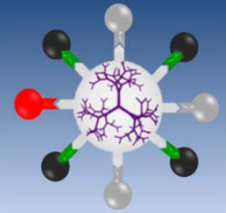
<b>DEP™ dendrimer</b>
<ul style="list-style-type: none"> <li>• Precisely manufactured poly-lysine dendrimer</li> <li>• Manufactured using standard chemistry</li> <li>• Dendrimer size easily scalable to deliver desired payload number</li> </ul>
<b>PEG</b>
<ul style="list-style-type: none"> <li>• PEG length variable to meet requirements</li> <li>• Provides stealth; control clearance</li> </ul>
<b>Drug/Payload</b>
<ul style="list-style-type: none"> <li>• Can deliver any type of payload</li> <li>• Cytotoxic or Ultratoxic                             <ul style="list-style-type: none"> <li>• payload number per DEP™ molecule easily scaled</li> </ul> </li> </ul>
<b>Linkers</b>
<ul style="list-style-type: none"> <li>• Linker strategy tailored to meet drug release requirements</li> <li>• Enzymatic; protease; pH; reducing; stable etc</li> </ul>
<b>Targeting</b>
<ul style="list-style-type: none"> <li>• Flexibility in targeting molecule                             <ul style="list-style-type: none"> <li>• Ab; Ab fragment; Non-Ab ligand; Small molecule</li> </ul> </li> <li>• Site Specific attachment of DEP™ (single/multiple) on targeting moiety</li> </ul>

## DEP™ platform: Benefits

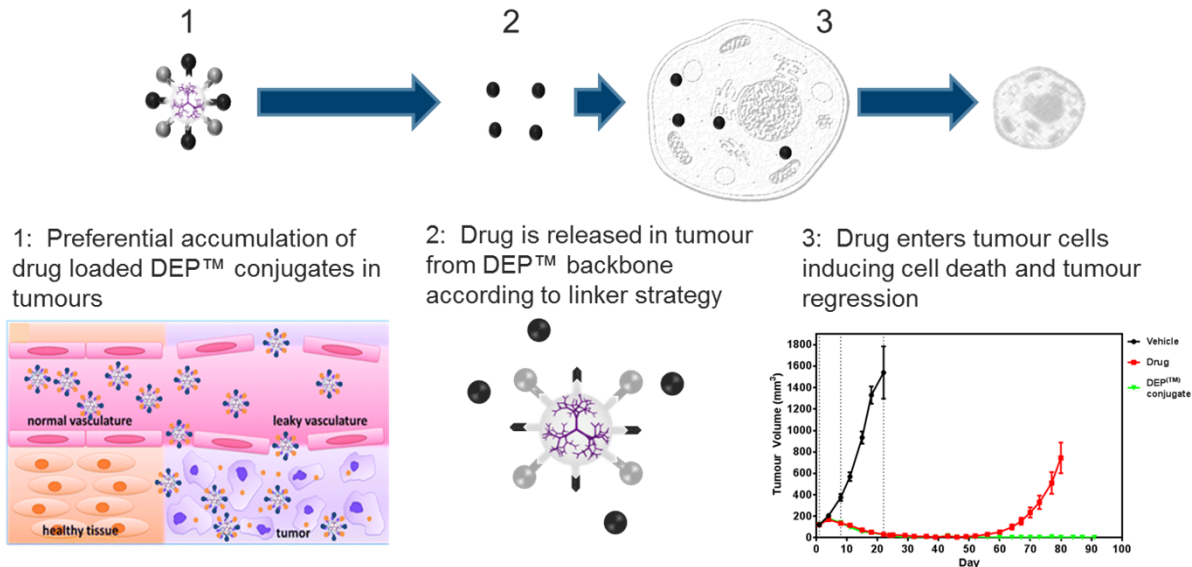


- Expanded therapeutic window by:
  - Improved efficacy
  - Tumour targeting and reduction/elimination of dose related toxicities
  - Extended plasma half life reduces drug elimination and provides greater exposure to drug – may also provide opportunity for less frequent dosing
- Simplified handling and dosing due to increase in solubility with no excipients (e.g. Polysorbate 80) required
- Product lifecycle management

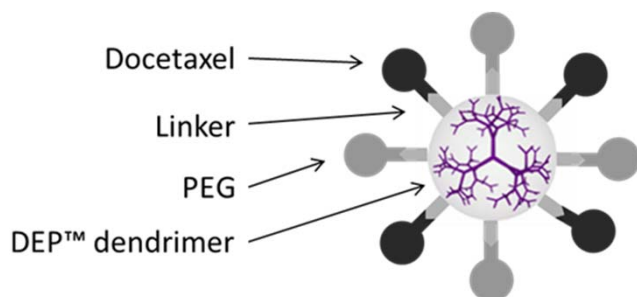
# Starpharma Pty. Ltd. – DEP™ drug delivery



## Passive Drug delivery



## DEP™ docetaxel - Preclinical



### DEP™ docetaxel vs. Taxotere®

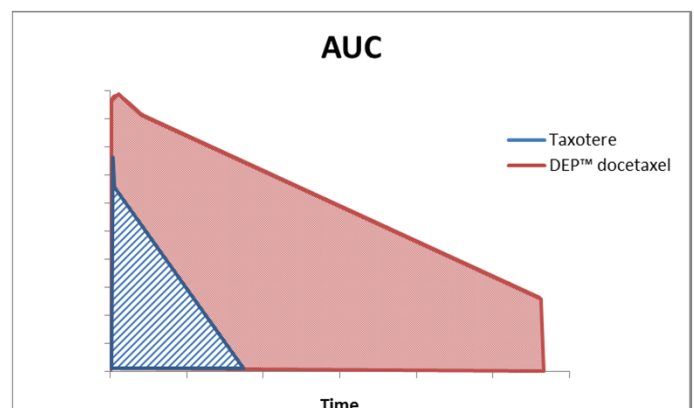
1. Elimination of major dose-limiting side effect (neutropenia)
2. Detergent-free formulation (less toxic)
3. Tumour-targeting (40-70x more)
4. Extended duration (half-life)
5. Improved efficacy (breast, ovarian, prostate)

Note: Similar results have been observed in pre-clinical models with other cytotoxic drugs including cabazitaxel and others

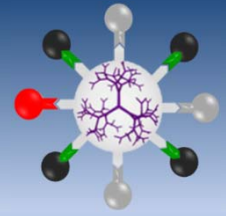
## DEP™ docetaxel clinical

### Phase 1:

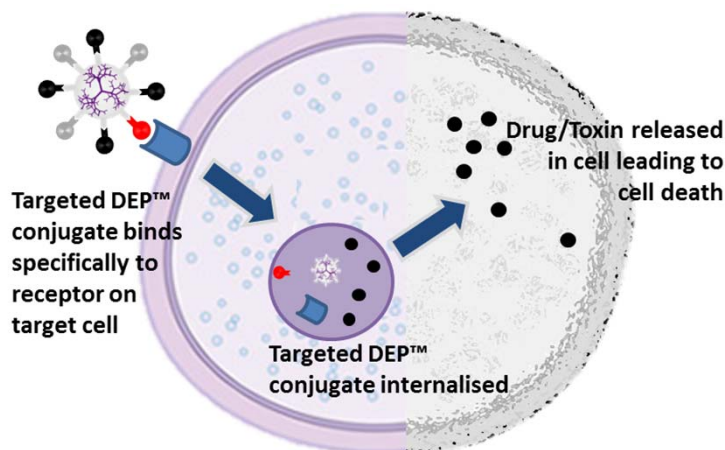
- Open label study, 25-30 cancer patients
- DEP™ docetaxel administered intravenously (*no steroid pre-treatment is required*)
- No neutropenia (docetaxel DLT) or alopecia reported compared to severe neutropenia suffered by 75% of patients given Taxotere®
- A significant proportion of DEP™ docetaxel patients have exhibited efficacy signals/anticancer activity including at relatively low doses (20mg/m<sup>2</sup>) in tumours incl. prostate, lung, H&N, gastro-oesophageal, glioblastoma
- Enhanced pharmacokinetics (longer half-life, higher AUC and lower Cmax)



# Starpharma Pty. Ltd. – DEP™ drug delivery



## Targeted DEP™ Drug Delivery



Starpharma's targeted DEP™ conjugates provide;

- Greater homogeneity
- High affinity
- Site specific attachment of drug conjugate
- Attachment of multiple drug loaded dendrimers
- The delivery of significantly higher payload levels than conventional ADC's

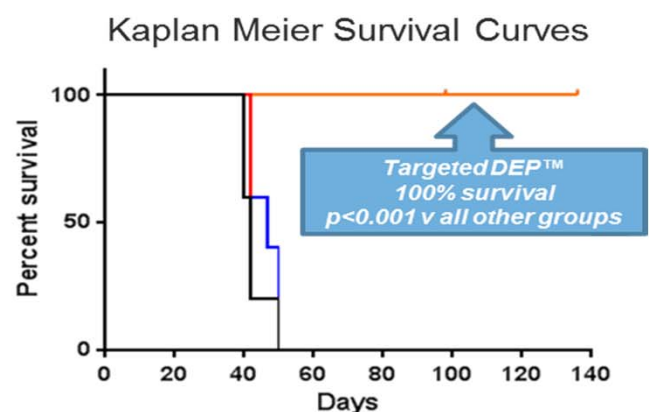
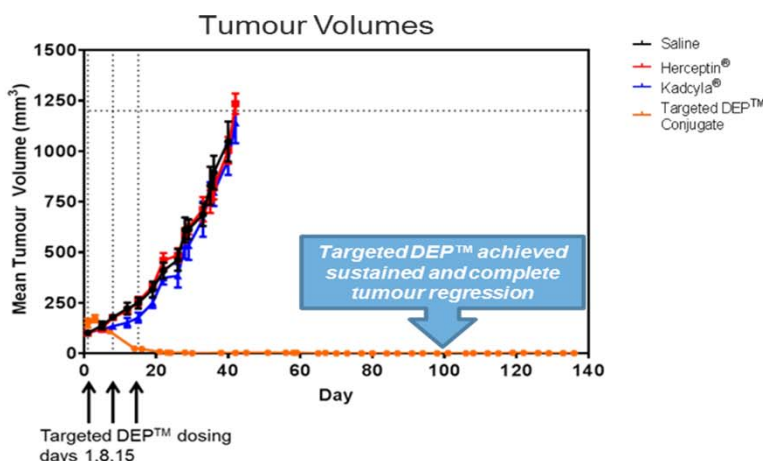
## Preclinical study to evaluate the efficacy of HER-2 targeted DEP™ conjugates against ovarian cancer xenografts

### Method:

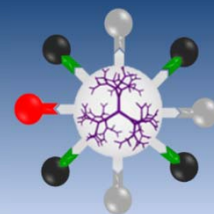
- SKOV-3 tumour model in NOD SCID mice
- s.c. implantation
- Allow tumor to grow to >100mm<sup>3</sup>
- Treatment groups
  - Vehicle\*,
  - Ab Targeted DEP™ drug conjugates
  - Kadcyla [10mg/kg\*]
  - Herceptin [30mg/kg bi-weekly for 3 weeks]
- \* Weekly (days 1, 8 and 15) via iv route for 3 weeks at 0.1ml/10g body weight
- 6 animals/group; Measurement of tumour growth 2-3 times weekly

### Results:

- SPL's novel antibody-targeted DEP™ conjugate resulted in complete tumour regression and 100% survival in an ovarian cancer model
- The antibody-targeted DEP™ conjugate (using Herceptin as the targeting group) significantly outperformed both Roche's Kadcyla® (T-DM1) and the monoclonal antibody Herceptin® (Trastuzumab) alone
- Targeted DEP™ of significant commercial interest in partnering; patent filings underway



# Starpharma Pty. Ltd. – DEP™ drug delivery



## DEP™

### Therapeutic and Commercial Proposition

Starpharma's DEP™ platform is unique in its flexibility, and it provides the ability to;

- Enhance the therapeutic utility of existing drugs or NCE's through Improved efficacy, tumour targeting , reduction/elimination of dose related toxicities, enhanced PK and solubility
- Develop targeted therapies with homogeneity in structure (easier characterisation and manufacturing) and high payload to targeting moiety ratio. The DEP™ platform is a step above conventional ADC approaches and other nanotechnologies.

The DEP™ platform is a highly versatile platform with significant commercial and therapeutic benefits

Therapeutic Benefits	Flexible platform with broad applicability in targeted therapies	✓
	Greater homogeneity with higher payload ratio than conventional ADC approaches	✓
	Enhanced drug properties – increased solubility; enhanced PK and efficacy; better side effect profile	✓
	Enhanced therapeutic window	✓
Commercial Benefits	Patent Protection	✓
	Innovative treatment options	✓
	Competitive advantages	✓
	Robust, scalable manufacturing and logistics	✓

## Patents

Starpharma holds a dominant position in the dendrimer IP landscape with a wide portfolio of patents and patent applications covering the composition and application of dendrimers in pharmaceutical, life-science and other fields.

Patents are granted or pending in major markets.

## Contacts

### Licensing and Partnerships

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