

# **Broker Presentation Starpharma Holdings Limited**

ASX:SPL OTCQX:SPHRY

Dr Jackie Fairley October 2007



This document contains certain forward-looking statements, relating to Starpharma's business, which can be identified by the use of forward-looking terminology such as "promising", "plans", "anticipated", "will", "project", "believe", "forecast", "expected", "estimated", "targeting", "aiming", "set to", "potential", "seeking to", "goal", "could provide", "intends", "is being developed", "could be", "on track", or similar expressions, or by express or implied discussions regarding potential filings or marketing approvals, or potential future sales of product candidates. Such forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause actual results to be materially different from any future results, performance or achievements expressed or implied by such statements. There can be no assurance that any existing or future regulatory filings will satisfy the FDA's and other health authorities' requirements regarding any one or more product candidates nor can there be any assurance that such product candidates will be approved by any health authorities for sale in any market or that they will reach any particular level of sales. In particular, management's expectations regarding the approval and commercialization of the product candidates could be affected by, among other things, unexpected clinical trial results, including additional analysis of existing clinical data, and new clinical data; unexpected regulatory actions or delays, or government regulation generally; our ability to obtain or maintain patent or other proprietary intellectual property protection; competition in general; government, industry, and general public pricing pressures; and additional factors that involve significant risks and uncertainties about our products, product candidates, financial results and business prospects. Should one or more of these risks or uncertainties materialize, or should underlying assumptions prove incorrect, actual results may vary materially from those described herein as anticipated, believed, estimated or expected. Starpharma is providing this information as of the date of this presentation and does not assume any obligation to update any forward-looking statements contained in this document as a result of new information, future events or developments or otherwise.



## **Company Overview**

- World leader in nanomedicine developing dendrimer products for pharmaceutical and lifescience applications
- Lead product VivaGel<sup>™</sup> is being developed under IND as a topical microbicide to prevent HIV and Genital Herpes
- Deep pipeline of programs drug delivery, siRNA delivery and drug optimisation
- Wholly-owned US subsidiary DNT (Dendritic Nanotechnologies Inc.) – a leader in the development of advanced dendrimers for life science and industrial applications

Starpharma Holdings Limited (19/10/07)		
ASX Code	SPL	
Level 1 ADR (OTCQX)	SPHRY	
Share Price SPL AUD	47c	
12 Month High/Low AUD	64c / 29c	
Shares on Issue	179.7M	
Market Capitalisation AUD	~ \$85M	
Average Mthly Volume: ASX	4M shares	
Average Mthly Volume: OTCQX	2M shares#	
Cash on Hand (June07) AUD	\$10.1M^	

# 1SPHRY=10 shares

pre-August 2007 financing

Starpharma is a world leader in the development of dendrimer products for pharmaceutical, life-science and other applications



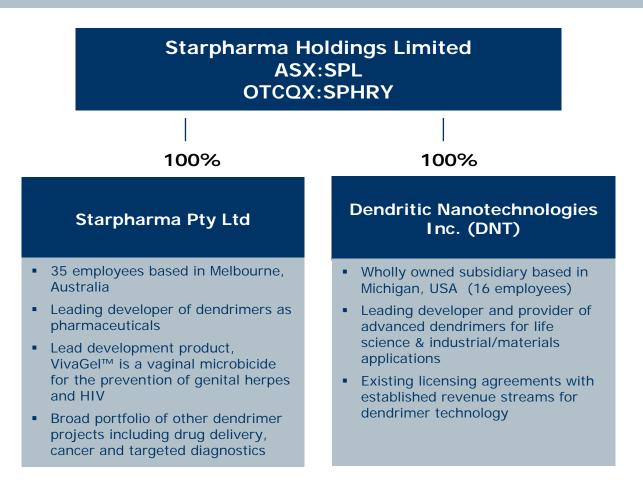
## **Investment Summary**

- Starpharma has a leading topical microbicide (VivaGel<sup>™</sup>) in development for prevention of sexually transmitted infections (STIs), HIV and genital herpes
- Topical microbicides have strong consumer demand and funding support
- VivaGel<sup>™</sup> "first in class" for herpes prevention
- VivaGel<sup>™</sup> has already achieved significant milestones and support:
  - FDA Fast track status granted for HIV
  - >US\$26M of NIH funding for microbicide development
  - Only microbicide with NIH funding for genital herpes indication
- Commercially attractive condom coating (line extension) opportunity 2 deals in place
- Deep pipeline of drug delivery, siRNA delivery and life science programs
- Generating revenue through existing royalties with launch of further licensed products due 2007/08
- Significant US shareholder base, US operations and increasing profile

Starpharma represents a significant value proposition for investors



## **Company Structure**





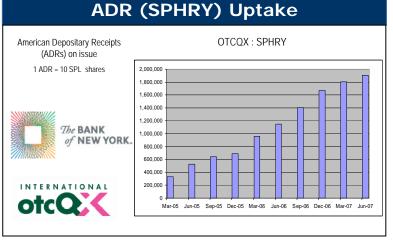
## Shareholding and OTCQX:SPHRY

- Major shareholders include:
  - The Dow Chemical Company (NASDQ: DOW)
  - Acorn Capital
  - Platinum Partners LLC
  - Queensland Investment Corporation
  - Irrewarra/ GoldmanSachs-JBW
- "Exceptional" Level 1 ADR program (as judged by Bank of NY)
  - ~11% of issued capital
  - Monthly volumes 1.5-2M shares\*
  - Most heavily traded Australian biotech Level-1 ADR
- OTCQX launched March 2007
  - Premium market tier for Level 1 ADRs
  - Daily volumes increased (+~55%)
  - Merriman Curhan Ford initiates coverage June 2007
  - Active brokers include Merrill, Merriman, UBS, Jefferies, NITE

#### Ongoing program to build liquidity and US interest in SPL/SPHRY

\* 1 ADR = 10 SPL shares

# US Shareholding ~ 25% Retail 48% ADRs 11%



#### Shareholder breakdown:



## Starpharma's existing commercial agreements for dendrimers

Stratus CS® : Cardiac marker diagnostic licensed to Dade Behring

SuperFect® :

Gene transfection technology licensed to Qiagen

## **STARBURST**®

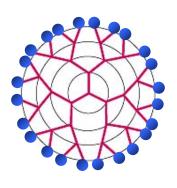
Dendrimers commercially available via Sigma Aldrich

**Priofect**®

siRNA & DNA transfection reagents

VivaGel® Co-development deal for Condom Coating





DADE BEHRING

실 ALDRICH





Pipeline				
Pharmaceutical & Medical Products	Proof of Concept	Lead	Clinical Trials	Sales
VivaGel™				
HSV-2 prevention				
<ul> <li>HIV prevention</li> </ul>				
Condom coating & other line extensions				
ADME Engineering™				
Therapeutic protein PK optimization	$\rightarrow$			
Drug Delivery – Small Molecules				
<ul> <li>Cancer therapeutic</li> </ul>				
Drug Optimization				
Enhanced solublisation				
In-vivo and in vitro Diagnostics				
Stratus CS® (Cardiac Diagnostic)				
MRI imaging				
(Ovarian cancer & cardiovascular disease)				
Life-science Products	Proof of Concept	Prototype	Pre-launch	Sales
Gene Transfection Reagents				
<ul> <li>SuperFect®</li> </ul>				
siRNA/DNA Transfection Reagents				
■ PrioFect <sup>™</sup>				



## VivaGel<sup>™</sup> – Lead Product for Prevention of Sexually Transmitted Infections (STIs)

- VivaGel<sup>™</sup> is a topical vaginal microbicide being developed to prevent STIs in women
- Being developed under two INDs for the prevention of HIV and genital herpes (HSV-2) in women
- Gel-based formulation with a nanotech dendrimer active (SPL7013), delivered via a vaginal applicator
- Dendrimer inactivates HIV and HSV-2 by binding to the virus preventing it attaching to the host
- Significant and growing recognition that microbicides offer the best alternative for prevention
- Potent contraceptive activity in animal models



## HIV

- Major health burden in both developed and developing countries
- 39 million people living with HIV; every day 7,000 women are newly infected
- No cure more than 50 HIV vaccines have failed and estimates are that an effective vaccine is many years away

#### **Genital Herpes**

- Recurrent, lifelong viral infection
- Estimated to infect between 15-25% of adults in developed countries, growing to between 40-50% women in the US by 2025
- Existing prevention methods have proven ineffective and developmental vaccines disappointing



## **Commercial Opportunity for Microbicides**

## Large, addressable markets

- > HIV more common in developing countries
- HSV-2 common in both developing and developed countries

## Increasing market support for products

- US government committed to development of safe and effective microbicides
- US opinion leaders now calling for National Herpes control Program

## Several industry surveys have confirmed strong consumer demand

- 30-40% female US college students would buy a microbicide - 70% with contraceptive properties
- Over 20 million women in US would use a microbicide
- Microbicide market estimates > \$1.5-3 Billion

# Estimated Market for microbicides in *Developed* Countries

Market Penetration	Average Frequency of Use Per Annum		
	25x US\$M	50x US\$M	100x US\$M
2.5%	365	730	1,460
5.0%	725	1,450	2,900
10.0%	1,450	2,900	5,800

#### **Key assumptions**

291m women of reproductive age (15-49) in developed countries Unit sale price circa US\$2 Usage rates according to published data

## "If I had a magic bullet to accelerate something it would be the microbicide..."

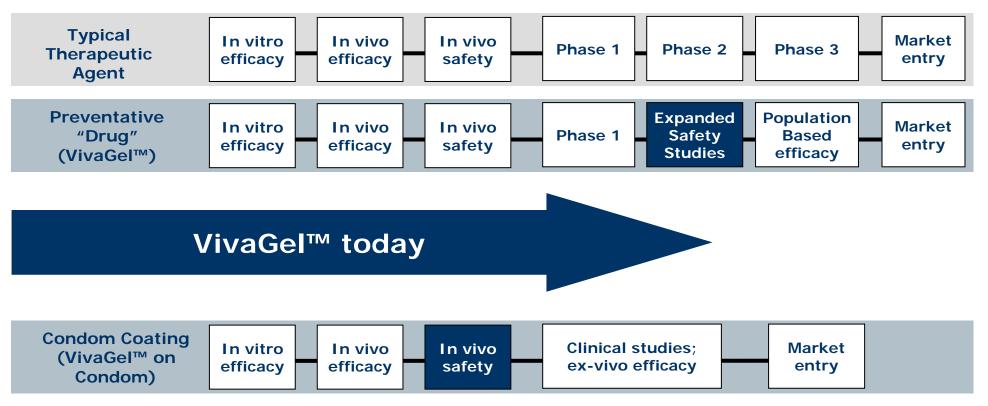
#### Bill Gates, July 2006

Source: World Bank; UNAIDs; EC AIDS survey; BCG analysis and various microbicide publications



## VivaGel<sup>™</sup> - Development stage and plan

#### **PRODUCT TYPE**

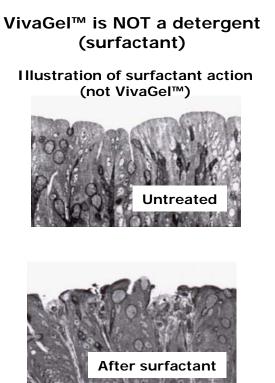




## VivaGel<sup>™</sup> – The Condom Coating Opportunity

#### The Reason for the Opportunity

- Condom manufacturers have long recognised a demand for premium condoms with added protection
- Historically N9 (a surfactant) has been used
- N9 is no longer considered appropriate as it has been shown to increase risk of HIV and HPV
- N9 is thought to disrupt the vaginal wall, allowing entry to these viruses.
- Condom manufacturers and regulators are actively seeking an N9 replacement
- VivaGel<sup>™</sup> may be the replacement of choice given it is not cytotoxic and its activity: antiviral (HSV-2/HIV) and contraceptive



Contraception 1998;57:341-348

### Condom Market at a Glance US\$3.26B (2006) Total Sales: Top 4 sales: 70% of total Sales Growth: 4-5% annually Chief Factor in growth: awareness of AIDS and STIs others SSL 30% 35% Okamoto 9% Ansell Church & 15% Dwight 11% source: "Condoms - a global strategic business report 2005"

Condoms represent a US\$3.26B market; VivaGel<sup>™</sup> offers a potential premium product



VivaGel<sup>™</sup> – The Condom Coating Opportunity

- Co-development Agreement signed in October 2007 with SSL Plc (LSE:SSL) the market leading condom company
- Retail condom sales are estimated as \$3.2Bi USD growing at 4-5% annually
- SSL holds ~ 30% market share globally#
- Durex have an extensive range of condom types including other coated condoms and a range of lubricants marketed under the Play brand
- Agreement includes undisclosed milestone payments and sets out a co-development program for VivaGel<sup>™</sup> coated Durex condoms including regulatory and market development activities
- SSL agreement is the second condom-coating deal that Starpharma has announced in the past 3 months





*# source: Condoms - a global strategic business report 2005* 



### Portfolio: siRNA Delivery – PrioFect™

# Concept: Overcome the principal obstacle to the development of RNAi-based drugs ... delivery

"RNAi-based therapies have so far failed to take off because of the difficulty of getting the therapeutic molecules into target cells"

## Merck buys Sirna Therapeutics

By Bioperform Web Watch Posted 10/31/2006 11:01:00 AM

**The Associated Press** reports that Merck & Co. ha agreed to pay \$1.1 billion to buy Sirna Therapeutics Inc. Merck's \$13-per-share offer for the San

## Commercial opportunities for PrioFect™:

- 1. Research reagent market(\$200 million)
  - Licensed globally to EMD Biosciences
  - Agreement includes royalties, supply and milestones
  - First products to market in 2007

## 2. In vivo Applications

- Rights retained, significant interest
- Opportunity for multiple deals



EMD Biosciences, Inc. is part of the Performance and Life Science Chemicals (PLS) division of Merck KGaA, Darmstadt, Germany. EMD markets brands including Calbiochem®, Novabiochem®, and Novagen®.

Merck KGaA, Darmstadt, Germany is a global pharmaceutical and chemical company with sales of EUR 6.3 billion in 2006.

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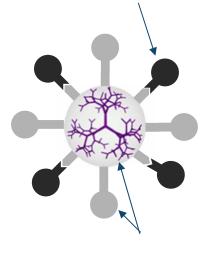


## Portfolio: Drug Optimization or Therapeutic Protein PK (pharmacokinetic) modification

## **Concept:** increase half life of drugs by attaching to dendrimer

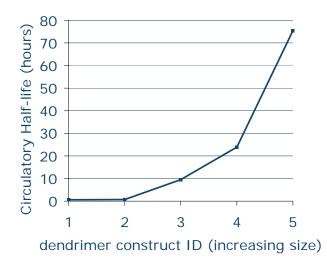
## **Technology**





Dendrimer construct

# Extending Drug Half Life



## Significance

Potential for

- less frequent dosing
- Reduced cost of therapy
- Improved compliance

Especially valuable for protein therapeutics

- Very short half life
- Expensive compounds, therefore want to reduce amount needed

Opportunity for multiple deals

Significant interest from potential pharmaceutical partners

The global protein therapeutics market was valued at US\$57 billion in 2005.

Sector	Current Discussions with	Application	Market Size USD /Region
Research Reagents	Major Reagent manufacturers Major Reagent manufacturers	Fluorescent dye conjugate Dyes for <i>in vitro</i> diagnostics	\$100M /US \$2.5B /US
Automotive Lubricants	"Top 5" US Oil Company	Lubricant additive	\$1.7B /US
Specialty Additives	Large Construction Material Supplier	Plastics additive	\$5.5B /US
Manufacturing	Major Technology Company	Medical and dental adhesives and sealants	\$1.3B /US
	Multiple avenues of exploration	Specialty Adhesives	\$2.2B /US
	"Top 5" European electronics manufacturer	Electronics chemicals	\$3.7B /US
Pharmaceutical	Global Healthcare Company	Solublisation/Excipient	\$1.4B /Europe
Cosmetic Ingredients	Cosmetic Ingredient Suppliers	Solubilisation	\$6.2B /US
Water Treatment Chemicals	Water quality specialists	Water filtering/ remediation	\$3.1B /US



## Starpharma: 06/07 Highlights **Acquisition of DNT** SPL acquires US company DNT Dow becomes SPL's largest holder Integration of SPL and DNT complete Retired Dow Corning Chairman/CEO appointed to SPL Board **Richard Hazleton appointment** VivaGel<sup>™</sup> clinical trial progress Expanded safety trial initiated in United States (UCSF) and Kenya Expanded safety trial in men completed Male data presented at International AIDS Society 2007 Further NIH/MTN support Additional support for VivaGel<sup>™</sup> clinical development Safety/acceptability trial commenced Florida and Puerto Rico siRNA deal with EMD Biosciences Worldwide exclusive license and supply agreement for PrioFect<sup>™</sup> Launch on OTCOX SPL appointed to international OTCQX - premium ADR exchange Merriam Curhan Ford initiates coverage New commercial opportunity DNT's Priostar<sup>™</sup> shown to improve performance of fluorescent for Priostar<sup>™</sup> laboratory reagents **Condom Coating Deals** 2 commercial deals for condom coatings



Key Investment Highlights	
VivaGel™: A Unique Lead Product	<ul> <li>Compelling competitive advantages</li> <li>Clinical candidate with significant support from NIH (&gt;US\$20M)</li> <li>First in class for genital herpes; condom coating line extension</li> </ul>
Significant Commercial Opportunity	<ul> <li>HIV and genital herpes at epidemic proportions (Genital herpes: US 22% adults &amp; Europe 15-20%)</li> <li>Strong consumer awareness and government demand</li> </ul>
Diversified Pipeline of Opportunities	<ul> <li>Near term commercial opportunities e.g. siRNA, life science and industrial balance risk &amp; timeframes of pharmaceutical application</li> <li>Versatile technology with significant commercial potential</li> </ul>
	~25% of stock held in US; Dow significant shareholder
Increasing US Profile	<ul> <li>US subsidiary with marketed products and extensive commercial relationships</li> <li>US based ex CEO/Chairman Dow Corning on the SPL Board</li> </ul>

Starpharma represents a significant value proposition for investors



**Starpharma Holdings Limited** ASX: SPL OTCQX: SPHRY

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Further information: www.starpharma.com info@starpharma.com





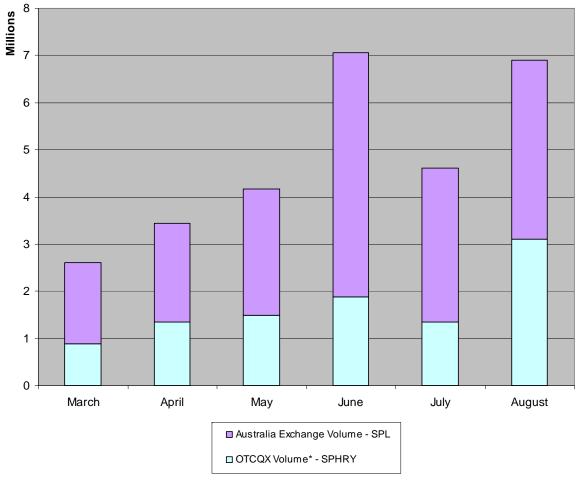
# Supplementary Information



Key Management	
Dr Jackie Fairley, President and CEO	<ul> <li>Over 15 years international business development and general management experience in pharmaceuticals and biotechnology</li> <li>Former senior roles with CSL and Faulding (Mayne Pharma)</li> </ul>
Dr Paul Barrett, VP Business Development	<ul> <li>Significant experience in marketing and business development in Australia and UK</li> <li>Broad life-science experience; competitive intelligence</li> </ul>
Dr David Owen, VP Research	<ul> <li>Extensive experience in medicinal chemistry and biochemistry</li> <li>Managing teams focussed on commercially directed drug discovery</li> </ul>
Dr Jeremy Paull, VP Development & Reg. Affairs	<ul> <li>Integral role to advancement of VivaGel clinical program</li> <li>Extensive NIH liaison, regulatory and product development experience</li> </ul>
Dr Robert Berry, President, DNT Inc.	<ul> <li>Founder of four technology companies and consortia</li> <li>Previously President and CEO of CMU Research Corporation</li> </ul>
Ben Rogers, Company Secretary & CFO	<ul> <li>Extensive experience in finance, corporate governance and HR management</li> <li>Member of Starpharma's start-up/IPO management team</li> </ul>
Nigel Baade, Financial Controller	<ul> <li>CPA qualified accountant</li> <li>Experience in the pharmaceutical and biotechnology industries.</li> </ul>



# Monthly Trading Data (2007) ASX: SPL and OTCQX : SPHRY



\* Converted to shares : 1SPHRY = 10 SPL



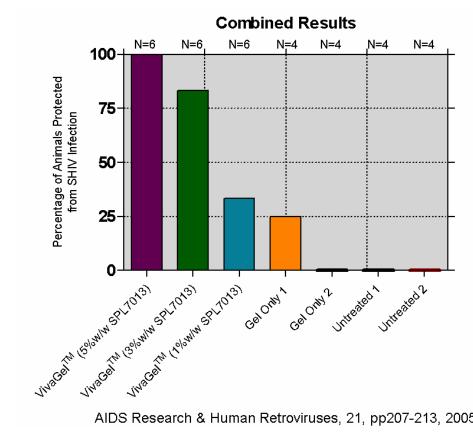
## VivaGel<sup>™</sup> – Product Features and Performance

VivaGel™ Offers Several Key Advantages	<ul> <li>Market research indicates significant (international) user and payor demand for microbicide gels</li> <li>VivaGel™ : "first in class" for Herpes</li> <li>Compelling HSV-2 &amp; HIV efficacy and potent contraceptive activity in animal models</li> <li>Significant NIH support for development</li> <li>Viruses appear not to develop resistance to VivaGel<sup>™</sup></li> </ul>
Excellent Results in Human and Animal trials	<ul> <li>Successfully trialled in both men and women under IND</li> <li>VivaGel<sup>™</sup> is currently in expanded safety human studies (Phasel/IIa) in USA &amp; Africa</li> <li>VivaGel<sup>™</sup> shows excellent activity in relevant HIV &amp; HSV-2 strains in very stringent animal models</li> <li>Well tolerated in male and female subjects</li> </ul>
Excellent Drug Characteristics	<ul> <li>Lower development risk : Topical gel, external to body</li> <li>Full development package; well defined chemical entity, scalable</li> <li>Affordable – Low manufacturing cost</li> <li>Excellent IP position</li> </ul>

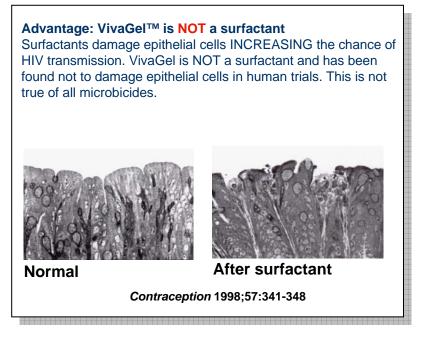


## VivaGel™: Animal Efficacy results

#### SHIV/HIV Protection



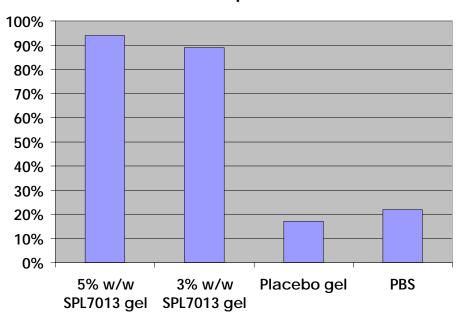
AIDS Research & Human Retroviruses, 21, pp207-213, 2005.





## VivaGel<sup>™</sup>: Animal Efficacy results (continued)

### **HSV Protection**



VivaGel<sup>™</sup>: animals protected from HSV-2

Approximately 45 million Americans (26% of women and 18% of men) are infected with HSV-2, the causative agent of genital herpes. Epidemiology of HSV in Developed Countries, HERPES, 11 Supplement 1, 2004

"Women in the United States also need HIV prevention tools like microbicides. AIDS is now the number 1 cause of death among African-American women between the ages of 25 and 34." "The Microbicide Development Act," in the Senate of the United States, 2005

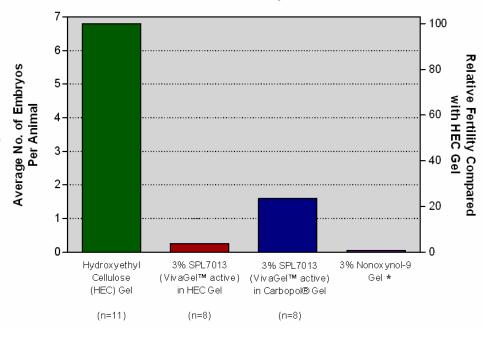


## VivaGel<sup>™</sup> : Potent Contraceptive Activity in Rabbits

- Recent study has shown that SPL7013, the active ingredient in its VivaGel<sup>™</sup>, exhibits a potent contraceptive effect in rabbits
- Independent study undertaken at Johns Hopkins University under an NIH grant
- Fertility was reduced by more than 75% by SPL7013 in a VivaGel<sup>™</sup> formulation and 95% in a HEC gel compared with an inactive gel
- If contraceptive activity is confirmed in humans it would allow for development with contraception as an additional claim
- Findings relevant to both the stand-alone gel and condom coating opportunities

# VivaGel<sup>™</sup>'s active ingredient is a potent contraceptive in animals

Average No. of Embryos Conceived Per Animal Following Application of Vaginal Gels, and % Relative Fertility in Active Gel-Treated Rabbits Compared with HEC Control



\* N-9 figure based on published historical data, Castle et al, Contraception 1998;58:51-60, and Zeitlin et al, Sexually Transmitted Diseases, 2001;28:417-23



## VivaGel<sup>™</sup> - Clinical Trial Status

Study	No. Participants	Site(s)	IND Application	Status
Safety, tolerability and pharmacokinetic study of escalating doses of VivaGel in healthy women when administered vaginally, once daily for 7 days	37	Adelaide, Australia	Prevention of HIV	Complete
Safety and acceptability study of VivaGel when administered to the penis of healthy male volunteers once daily for 7 days	37	Melbourne, Australia	Prevention of HIV	Complete
Expanded safety and tolerability study of VivaGel in healthy young, sexually abstinent women when administered twice daily for 14 days	60	San Francisco, USA and Kisumu, Kenya	Prevention of genital herpes	Ongoing
Expanded safety and acceptability study of VivaGel in healthy young, sexually active women when administered twice daily for 14 days	40	Tampa, USA and San Juan, Puerto Rico	Prevention of HIV	Ongoing



VivaGel <sup>™</sup> – Develo	pment and Commercial Strategy
VivaGel™	<ul> <li>One of the most advanced 2<sup>nd</sup> generation microbicides</li> <li>First in class for HSV-2</li> <li>Significant non-dilutive NIH support; strong ongoing support for microbicides</li> <li>Broad application; chronic-use product</li> <li>Partnering/commercial strategies likely to differ between developed (OTC/Pharma) markets and developing (NGO/Govt.) countries</li> <li>Status: Expanded Safety human trials in US, Australia and Kenya In discussions with various potential commercial partners</li> </ul>
VivaGel™ Condom Coating opportunity	<ul> <li>Possible replacement to common spermicidal coatings e.g. nonxynol-9 (N-9)</li> <li>Likely less onerous regulatory path for VivaGel<sup>™</sup> as a condom coating - offering a line-extension with shorter path to market.</li> <li>Status: Two deals announced 2007</li> </ul>



# VivaGel<sup>™</sup> : Significant Advantages Over Competitors

	Competitor Category	Key Disadvantages	VivaGel™ Advantages		
HSV-2	VivaGel <sup>™</sup> is the only microbicide being developed to prevent genital herpes				
	Surfactants/Detergents	<ul> <li>Ulceration possible</li> <li>Potential increased risk of infection</li> </ul>	<ul> <li>No surfactant properties</li> <li>Non-irritant</li> <li>Does not increase infection risk</li> </ul>		
	Sulphated Carbohydrates	<ul> <li>Not active against clinical HIV strains</li> </ul>	<ul> <li>Highly active against all HIV strains tested</li> </ul>		
ніх	Reverse Transcript Inhibitors and other anti-viral drugs	<ul> <li>Drug resistance is an issue</li> <li>Primary mode of action requires infection process to have begun</li> <li>Not active against HIV</li> </ul>	<ul> <li>Very high barrier to development of viral resistance</li> </ul>		
	Sulphated Polymers	<ul> <li>High cost of synthesis</li> <li>Poor characterisation of the drug substance likely to present regulatory issues</li> </ul>	<ul> <li>Excellent drug characteristics</li> <li>Low manufacturing costs</li> <li>Stable, well defined entity</li> </ul>		
	Acidity Control Agents	<ul> <li>Is acidity control sufficient protection as mono-therapy?</li> </ul>	<ul> <li>Potent activity against HIV and HSV-2 in animal models</li> <li>Non-irritant</li> </ul>		
	VivaGel™ has significant competitive advantages				



## **Technology Overview**

## **Commercial Advantages of Dendrimers:**

- Key enabling nano-scale technology
- Highly versatile technology:
  - drugs e.g. VivaGel<sup>™</sup> active SPL7013
  - drug delivery
  - RNAi/DNA delivery
  - diagnostics & materials applications
- Scalable chemical manufacturing process
- can tailor features for tissue targeting
- competitive COGs
- Well tolerated

Example: dendrimer as a drug delivery vehicle



PEG: Solubilising/PK
 Small molecule drug or protein therapeutic
 Targeting agent



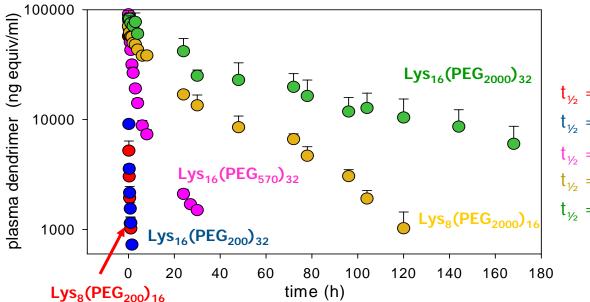
## **Pipeline: Drug Delivery & PK Modification of Protein Therapeutics**

#### Starpharma's dendrimers can be designed to optimize the Pharmacokinetics (PK) of:

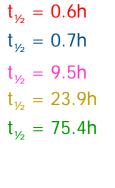
- Small molecule drugs
- Therapeutic proteins
- Peptides

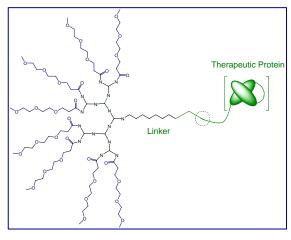
#### Plasma residence time increases with dendrimer size, but:

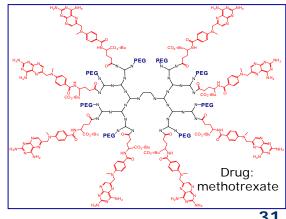
PEG MW alone not the main determinant of  $t_{1/2}$ 



#### Plasma concentration-time profile in male SD rats for PEGylated poly-L-lysine dendrimers







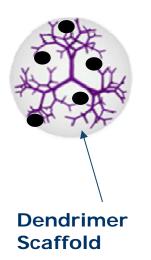


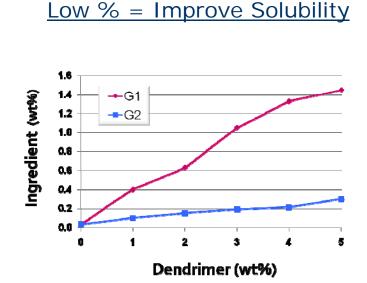
## Portfolio: Cosmetic Ingredient Solubilizer

# Concept: Use dendrimers to enhance solubility, stability, processing

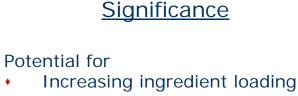
**Technology** 

Poorly Soluble Ingredient





Low generation dendrimers have big impact on solubility enhancement.



- Stabilize ingredient
- Improved processing
- Allowing new ingredients OR
- Combination Ingredients

In evaluation with leading cosmetic ingredient suppliers

Opportunity for multiple deals

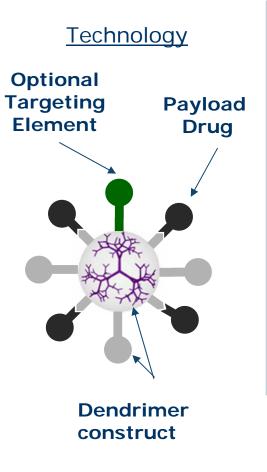
High Value-Low Volume Opportunity

US demand for cosmetic and toiletry chemicals is forecast to rise 5.4 percent per year to \$7.6 billion in 2010



## Portfolio: Drug Delivery

# **Concept:** Attach drugs to dendrimers to control and modify distribution



Der	Dendrimers can be Targeted			
	Control	VASCULATURE	LYMPHATICS	
Courtesy of M. Brechbiel, NIH				
	KIDNEY	LIVER		
	90		& the EPR effect	

# **Significance**

### Potential for

- Improved efficacy of drugs
- Reduced off-target effects
- Product lifecycle management
- Improved solubility of drugs
- Drug "rescue"

Proof of concept in cancer model

Opportunity for multiple deals

Also offers imaging opportunity

Dendrimers are concentrated in solid tumours via the EPR (enhanced permeability & retention effect)



## **RNAi therapeutics**

Company	Clinical Development	Pre-clinical development
Acuity	Ph II AMD & DME	anti-inflammatories & anti-infectives
Alnylam	Ph 1 2006 (RSV)	pandemic flu, spinal cord injury, Parkinson's, cystic fibrosis, hypercholesterolemia, neuropathic pain
Sirna	Ph II AMD (w/ Allergan)	Asthma, RSV, Huntington's, viral hepatitis, diabetes, oncology, dermatology

## siRNA deals have been numerous in recent times with many Pharmas partnering up or acquiring:

- •Merck/Sirna
- Roche/Alnylam
- •AZ/Silence

Novartis/Alnylam (flu) Merck/Alnylam (AMD & spinal cord injury) GSK/Sirna (respiratory diseases) Abbott/Dharmacon (oncology)

For RNAi therapeutics, the ultimate goal is targeted delivery. The leaders have RNA expertise but delivery vehicles to provide the targeting capability are underdeveloped and in strong demand.