



*ASX Limited  
Market Announcements Office*

## **Updated Non-Confidential Presentation for CEO USA Roadshow starting 13 August 2018**

13 August 2018, Melbourne: Australian drug delivery company, Phosphagenics Limited (ASX: POH; OTCQX: PPGNY), released today an updated non-confidential presentation to accompany the USA Broker/Investor roadshow to be undertaken by Dr Ross Murdoch, CEO & Managing Director, from 13th to 17th August. In addition to a number of business meetings Dr Murdoch will have 4 days of meetings with brokers, investment bankers and other potential investors in New York, USA.

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### **About Phosphagenics**

Phosphagenics Limited is focused on developing and commercialising innovative Human Health, Animal Health and Personal Care products using its proprietary drug delivery system called TPM<sup>®</sup> (Targeted Penetration Matrix). TPM<sup>®</sup> is derived from Vitamin E using a unique, proprietary and patented processes and has been proven to enhance the solubility and oral, dermal and transdermal absorption of drugs and nutrients.

Amongst its major projects, Phosphagenics' is delivering TPM<sup>®</sup> enhanced patches, gels and injectable products for the human health market and is also developing TPM<sup>®</sup> to enhance the feed efficiency and health of livestock.

Phosphagenics' shares are listed on the Australian Securities Exchange (POH) and its ADR – Level 1 program in the US is with The Bank of New York Mellon (PPGNY).

### **Inherent Risks of Investment in Biotechnology Companies**

There are a number of inherent risks associated with the development of pharmaceutical products to a marketable stage. The lengthy clinical trial process is designed to assess the safety and efficacy of a drug prior to commercialisation and a significant proportion of drugs fail one or both of these criteria. Other risks include uncertainty of patent protection and proprietary rights, whether patent applications and issued patents will offer adequate protection to enable product development, the obtaining of necessary drug regulatory authority approvals and difficulties caused by the rapid advancements in technology.

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## **Forward-looking Statements**

Certain statements in this announcement may contain forward-looking statements regarding Company business and the therapeutic and commercial potential of its technologies and products in development. Any statement describing Company goals, expectations, intentions or beliefs is a forward-looking statement and should be considered an at-risk statement. Such statements are subject to certain risks and uncertainties, particularly those risks or uncertainties inherent in the process of developing technology and in the process of discovering, developing and commercialising drugs that can be proven to be safe and effective for use as human therapeutics, and in the endeavour of building a business around such products and services.

[www.phosphagenics.com](http://www.phosphagenics.com)



August 2018

# Phosphagenics: Non-confidential Presentation

[www.phosphagenics.com](http://www.phosphagenics.com)  
(ASX : POH)



# Safe Harbour Statement

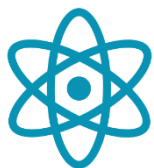
*This presentation, and any representations made before, during or after the presentation, may include forward-looking statements regarding Phosphagenics' intent, belief or expectations that are inherently subject to risks and uncertainties. These statements may be indicated by the words "may", "will", "would", "anticipate", "expect" or other phrases about future events, results or outcomes. While management believes reasonable assumptions have been made in respect of such statements, actual results may vary in a material and adverse manner and nothing in this document is a guarantee of future performance. These statements relate to, but are not limited to: (1) the safety or efficacy of, or potential applications for, Phosphagenics' TPM® platform technology; (2) the strength of Phosphagenics' intellectual property; (3) the timelines for Phosphagenics' clinical trials and regulatory processes for its different products; (4) the scalability and efficiency of manufacturing processes; (5) revenue projections, market share expectations, share price expectations and capital requirements. Actual results may differ from the expectations expressed in these forward-looking statements, and the differences may be material (whether positive or negative). The risks that may cause Phosphagenics' actual results, performance or achievements to be materially different from those expressed or implied by such forward-looking statements, include but are not limited to: (1) risks inherent in the development, approval and commercialization of potential products; (2) uncertainty of clinical trial results or regulatory approvals or clearances; (3) changes to market trends or government laws or regulations; (4) the potential need for future capital; (5) dependence upon collaborators; and (6) protection of intellectual property rights, among others. Accordingly, you should not place undue reliance on these forward-looking statements.*

*While Phosphagenics has taken efforts to ensure that the information in this document is accurate, reliable and complete, this cannot be assured and Phosphagenics makes no warranties in respect of such matters. To the maximum extent permitted by law, Phosphagenics, its officers, employees and agents disclaim any liability for any error or omission or for any loss suffered as a result of others acting on the basis of the information contained in this document. This document is not an offer to sell securities. The information in this document is provided as general information only and does not constitute financial product advice. It does not take into account your investment objectives, financial situation or particular needs.*



# A snapshot of Phosphagenics

Innovative biopharmaceutical company headquartered in Australia



- **TPM<sup>®</sup>** is a proprietary solubilisation / drug delivery technology combining multiple forms of Vitamin E (protected by **13+ patent Families**)
- Result of 15+ years R&D and over **\$100M investment**

- Pipeline of **TPM<sup>®</sup> injectables** with enhanced usability characteristics
- TPM<sup>®</sup> patch & gel products with enhanced delivery characteristics
- Additional products targeting **lucrative markets** beyond Human Health



- **\$3.3M cash** (30 June 18), **no debt** and **\$100M+ tax losses**
- **Recurring annual revenues** (from manufacturing): \$1M+/year
- Benefit of Australia's R&D incentive (**43% rebate**) for applicable R&D
- **Potential upside** from international arbitration with decision expected 1H 2018 (claims lodged of ~US\$300M)

- **Experienced** international management team and Board of Directors
- Global **partnerships** providing additional funding and expertise



# Experienced Management & Board with strong track record of success

**Greg Collier, Chairman & Independent Director**

- 20+ yrs experience; current CEO Invion (ASX: IVX)
- Previous: CEO of ChemGenex (sold to Cephalon for \$200M+)
- 150 peer reviewed publications, 33 patents, Roche Award for Excellence

**Ross Murdoch, CEO & Managing Director**

- 25+ yrs experience; joined Phosphagenics in 2015
- Previous: SVP Shire Pharmaceuticals, President & COO Prana Biotechnology
- PhD in Clinical Pharmacology, University of Melbourne

**David Segal, Non-Independent Director**

- 30+ yrs experience as a stockbroker
- Shareholder of Phosphagenics since 1999 (when known as Vital Capital)
- Previous: Investor Relations manager of Phosphagenics

**Anna Legg, CFO & Company Secretary**

- 20+ yrs financial experience; joined Phosphagenics in 2013
- Experience with establishment of international entities, statutory reporting, system development and financial modeling

**Paul Gavin, CSO**

- 15+ yrs with Phosphagenics; an inventor of the TPM® platform technology
- Responsible for all Research & Development at Phosphagenics
- PhD in Biochemistry & Molecular Biology, Monash University

**Alex Stojanovic, VP Bus. Dev. & Commercial**

- 14 yrs experience; joined Phosphagenics in 2014
- Previous: Sr Director of Grunenthal, Strategy Consultant of ZS Associates
- PhD in Pharmacology & Toxicology, Dartmouth College

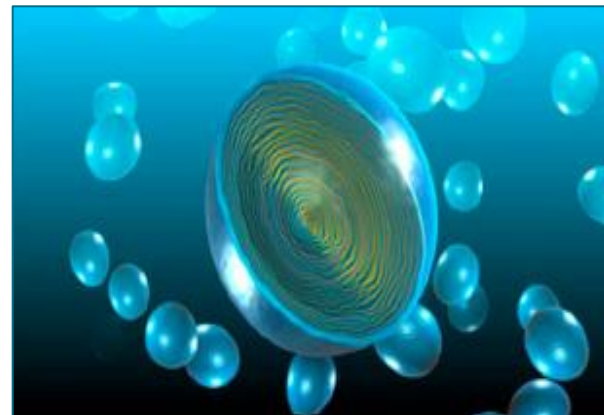
**Roksan Libinaki, GM Animal Health & Nutrition**

- 15+ yrs with Phosphagenics, managing R&D programs focused on improved oral bioavailability and/or efficacy of nutrients and drugs
- PhD in Biochemistry & Molecular Biology, Monash University



# TPM<sup>®</sup> is at the core of Phosphagenics

*“...Phosphagenics invented, developed, patented and is the sole global manufacturer and supplier of TPM<sup>®</sup> ...”*

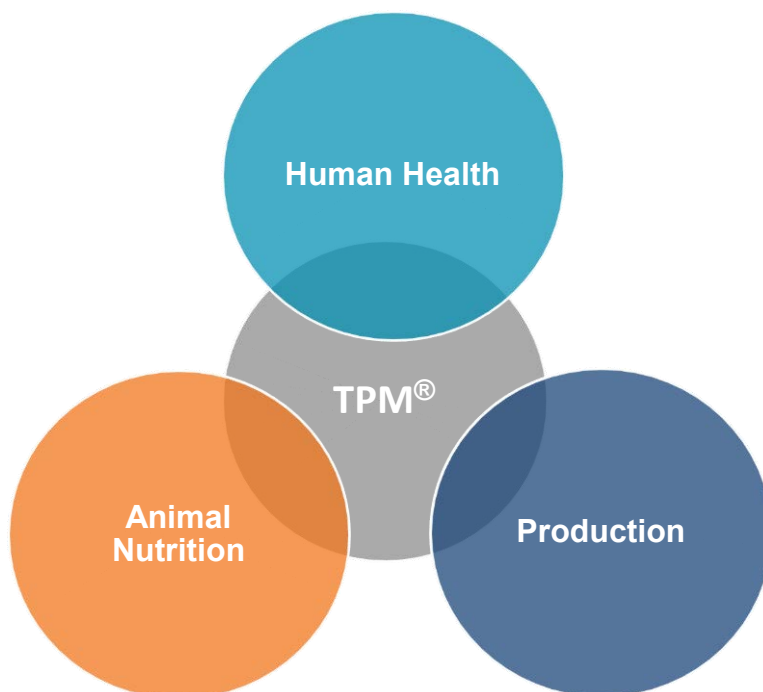


## TPM<sup>®</sup> :

- proprietary combination of 2 forms of phosphorylated Vitamin E (in specific ratio)
- highly flexible technology with excellent safety profile
- improves drug solubility and stability to enhance injectable products
- enhances transdermal drug delivery and oral bioavailability
- protected by over 100 patents across 14+ families

# TPM<sup>®</sup> is flexible and has broad applicability

**Phosphagenics leverages TPM<sup>®</sup>'s flexibility and unique properties, data and broad patent portfolio across multiple lucrative markets**



Highly versatile with an excellent stability and safety profile



Enhances injectable drug solubility, stability & utility characteristics



Enhances transdermal drug delivery and oral bioavailability





# Phosphagenics TPM® Portfolio is growing across 3 Businesses:

## Human Health Business

Product	Partner	Res'	Dev'	Market
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### Injectable Portfolio

Daptomycin



Propofol



Azithromycin



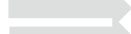
Melphalan



Tacrolimus



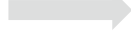
Cyclosporin



Vitamin K



Clopidogrel



### Pain Portfolio

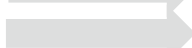
Diclofenac Gel



Oxycodone Patch



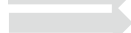
Oxymorphone Patch



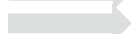
Lidocaine gel



ropivacaine gel



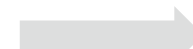
others not disclosed



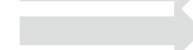
## Animal Health & Nutrition Business

Product	Partner	Res'	Dev'	Market
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Pig, Poultry, Feed efficiency



Cattle mastitis & fertility



Veterinary



Aquaculture



Companion animal



## Production & Personal Care Business

Product	Partner	Res'	Dev'	Market
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Vital ET®



TPM®



Partnered

Yet to Partner



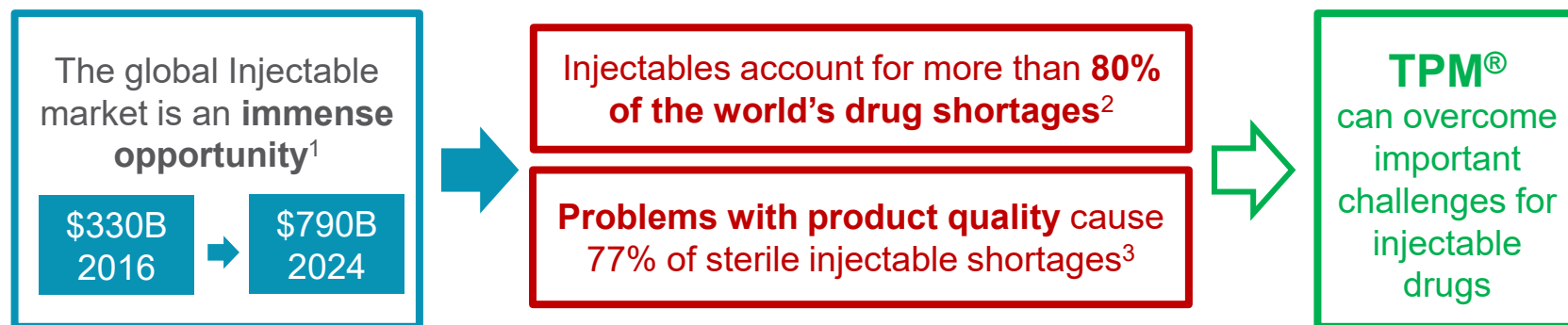
## ***Injectable Portfolio***

*Pain Portfolio*

*Animal Health*

*Personal Care*

# TPM<sup>®</sup> can overcome key challenges for injectable drugs



## CHALLENGES FOR INJECTABLES

### Manufacturing

- Complex, toxic or allergenic excipients
- Unstable formulation needing lyophilisation
- Drugs too unstable to be an injectable

### Supply Chain

- Need for 'Cold chain' to maintain stability
- Reconstitution of lyophilised powders

### Clinical Use

- Allergenic or toxic excipients
- Post reconstitution stability, single use only
- Incompatibility with injectable formulations

## TPM<sup>®</sup>

- A **safer** and more natural excipient
- **Improve stability** reducing need to lyophilise
- Allows previously unsuitable drugs to be **injectable**
- **Reduce 'cold chain'** by improving RT\* stability
- **Speed up reconstitution** of lyophilised drugs
- **Replace problem** excipients
- **Increase stability** of reconstituted drugs – potentially allowing multi-use products
- **Enable injectable formulation**

1 [www.researchandmarkets.com](http://www.researchandmarkets.com); "Global Injectable Drug Delivery Market Analysis, Companies Profiles, Size, Share, Growth, Trends and Forecast to 2024"

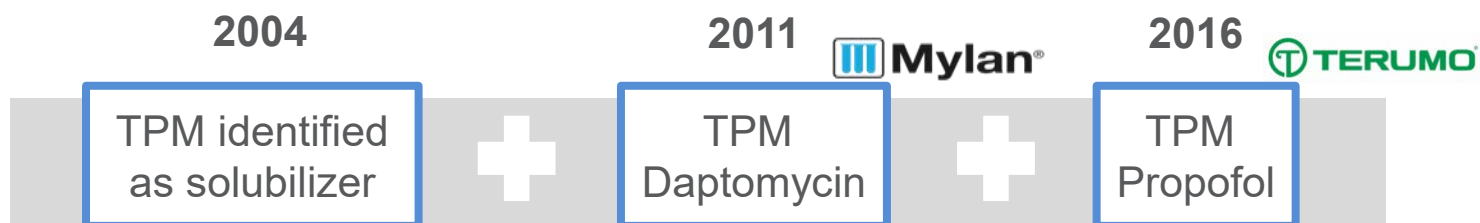
2 IMS Study Reveals Drug Shortages in U.S. Disruptive Yet Narrowly Concentrated, IMS Institute for Healthcare Informatics, Nov. 14, 2011

3 [www.ncsl.org/research/health/drug-shortages-preserving-the-drug-supply.aspx](http://www.ncsl.org/research/health/drug-shortages-preserving-the-drug-supply.aspx)

\* RT: room temperature



Our “**Injectable**” portfolio is the product of over 14 years research, \$100M investment and multiple global partnerships



TPM improves: **formulation safety, clarity, tolerability, stability, reconstitution.**





Product	TPM Advantage	Territory	Partner	Research	Development	Marketed
<b>Injectable Products</b>						
Daptomycin	Reconstitution speed & Stability	Global	Mylan®	→		
Propofol	Clarity & Excipient toxicity	Global	TERUMO®	→		
Azithromycin	Lyophilized to Liquid	Global	Available	→		
Melphalan	Lyophilized to Liquid					
Tacrolimus	Remove toxic excipients					
Cyclosporin	Remove toxic excipients					
Vitamin K	Remove toxic excipients					
Clopidogrel	1 <sup>st</sup> feasible injectable form					
Others*	Various					

Partnered

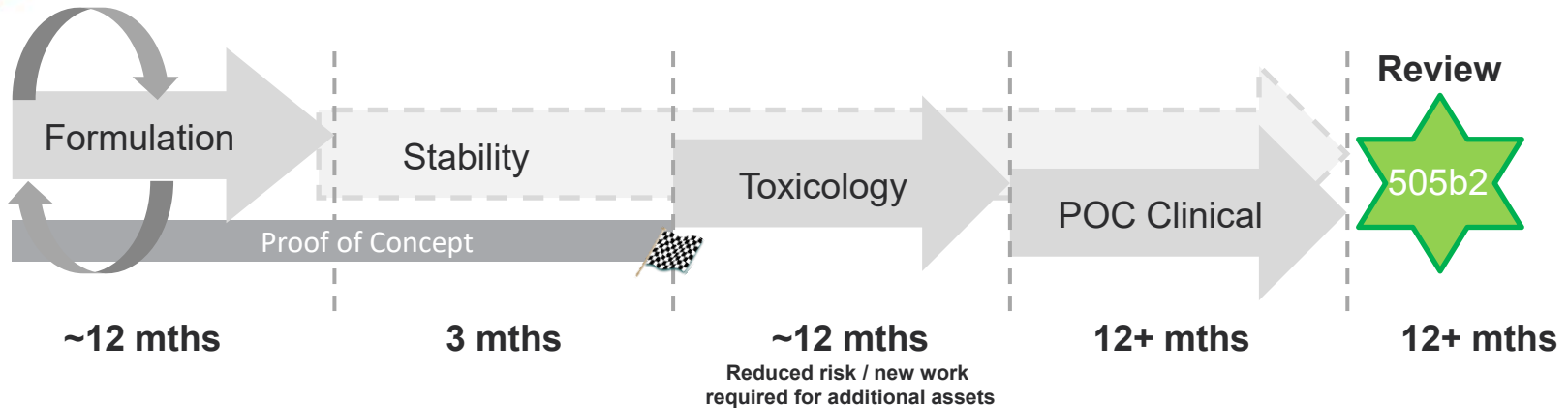
Yet to Partner

\* Not yet disclosed

# TPM<sup>®</sup> is proven to enhance the solubility and stability in lead injectable formulations

Product	Benefits	Status
TPM <sup>®</sup> / Daptomycin	<ul style="list-style-type: none"><li>• TPM<sup>®</sup> reduces reconstitution time <i>by more than half</i></li><li>• TPM<sup>®</sup> doubles the shelf life <i>at room temperature,</i></li><li>• TPM<sup>®</sup> potentially transforms the present single use product into a world first <b>multi-use product</b></li></ul>	<ul style="list-style-type: none"><li>• Later Phase Dev. (TBC)</li><li>• Arbitration Outcome pending</li></ul> 
TPM <sup>®</sup> / Propofol	<ul style="list-style-type: none"><li>• TPM<sup>®</sup> solubilises propofol <i>without excipients that can be allergenic or promote bacterial growth</i></li><li>• TPM<sup>®</sup> creates a completely clear solution, <i>a world first</i></li></ul>	<ul style="list-style-type: none"><li>• Formulation complete</li><li>• Early Dev. Tox. Initiated</li></ul> 

# “Injectable” assets are fast and profitable



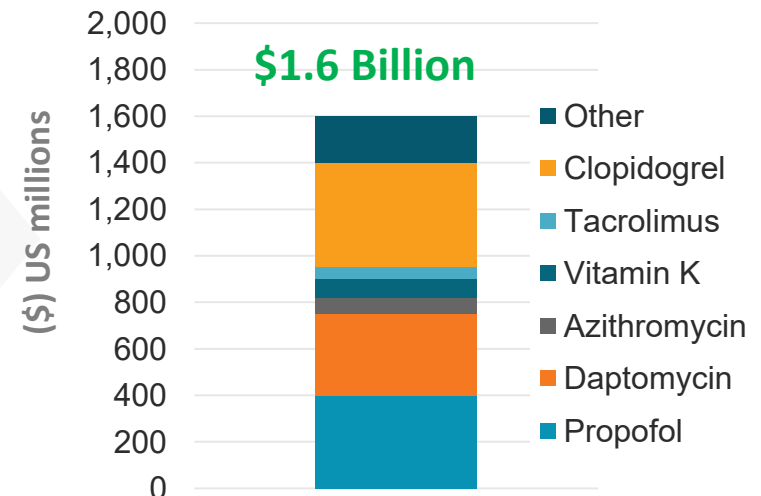
## Estimated 2030 US Market for Current TPM/Injectable Pipeline

### TPM allows:

- Lyophilized to Liquid
- Replacement of toxic excipients
- Improved stability
- 1<sup>st</sup>/novel Injectable forms

### TPM COGS allows:

- improved / reformulated 505b2 products at Generic pricing
- Competitive pricing that capturing large volume / market share





# Phosphagenics' arbitration with Mylan is over TPM<sup>®</sup>/Daptomycin



\*Phosphagenics' independent experts opinion if successful on all claims and causes of action, aggregate of all claims, recognising a probability of success from zero to maximum calculated by the experts



## Board of Directors recommends shareholder return\*

### Calculation:

If Phosphagenics is successful and receives a material payment from Mylan, the Board intends to recommend a return of capital\* (after costs):

30% of net cash  
proceeds  
up to  
**\$50M**

+

50% of net cash  
proceeds  
between  
**\$50M - \$100M**

+

70% of net cash  
proceeds  
greater than  
**\$100M**

### Illustrative Example

Net Award* Aus\$
<b>\$30M</b>
<b>\$60M</b>
or <b>\$120M</b>



Return to Shareholders*
\$9M
\$20M
\$54M



Shareholder Return Per 1% Held #
\$90,000
\$200,000
\$540,000

\* Actual amount and timing of shareholders return will be dependent on (i) financial position of the company at the time of decision, (ii) Actual Cash Award received by POH less estimated costs, (iii) number of shares on issue and (iv) Board and shareholder approval

# Return may vary due to tax status of recipient





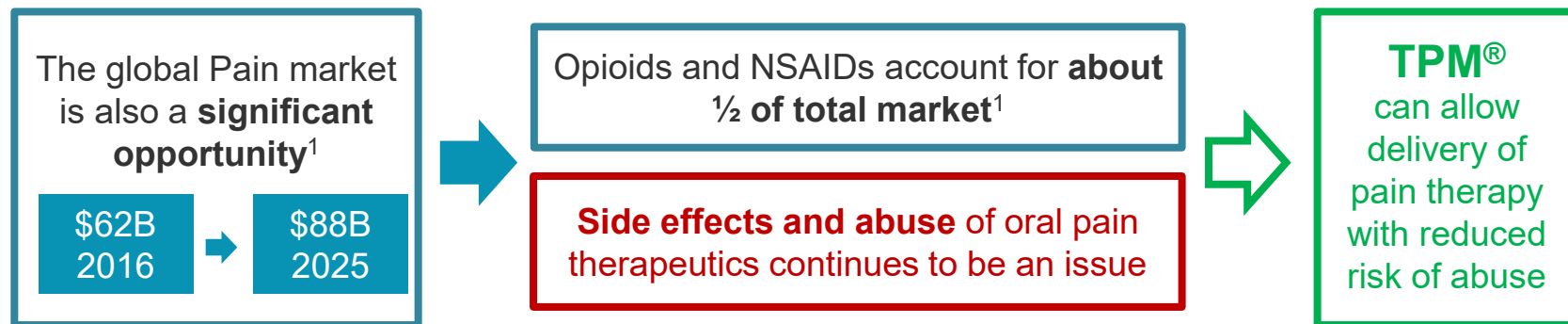
*Injectable Portfolio*

***Pain Portfolio***

*Animal Health*

*Personal Care*

# Phosphagenics' Human Health “Pain Product” portfolio is strong and benefits from global partnerships



Product	TPM Advantage	Territory	Partner	Research	Development	Marketed
<b>Pain Products</b>						
Diclofenac Gel	Enhanced delivery	India	NOVARTIS	→		
Diclofenac Gel	Enhanced delivery	16 countries	THEMIS MEDICARE	→		
Oxycodone Patch	Transdermal Delivery & reduced abusability**	Global	Available	→		
Oxymorphone Patch	Transdermal Delivery & reduced abusability**	Global	Available			
Additional Products ie: { Lidocaine gel ropivacaine gel others not disclosed	Enhanced delivery & other	Global	Available	→		

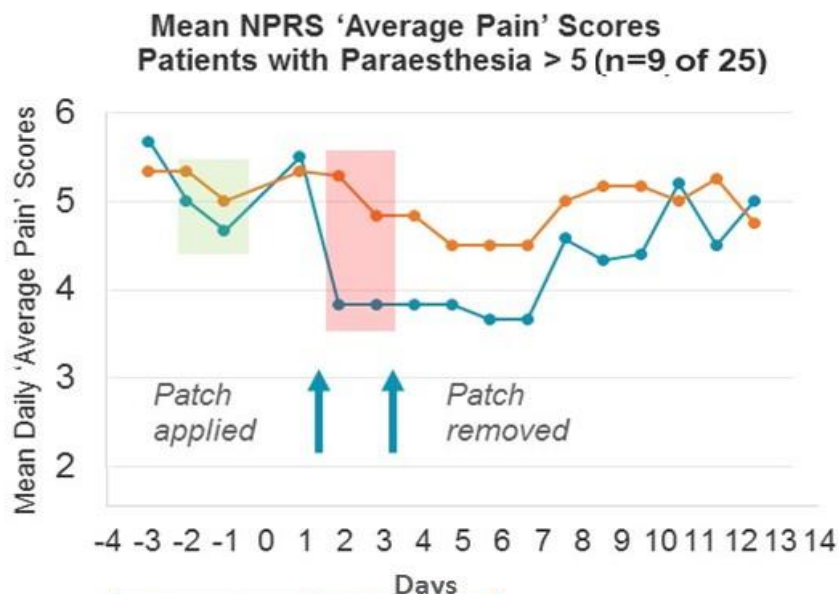
**Pre-IND Meeting  
Dec '18**

# TPM<sup>®</sup>/Oxycodone patch performance in Phase 2a PHN trial supports further development

Overall efficacy did not reach significance in total population but strong trend in specific subgroup

**Conclusion: Patch Performed well** but local oxycodone treatment is not ideal for PHN pain

## Efficacy



## Performance

- ✓ Sustained trend in major subgroup persisting over **6 days**
- ✓ Good 3 day Adhesion and Removal
- ✓ Good Tolerability/Safety
- ✓ Negligible irritation (= placebo)
- ✓ Appropriate Local Drug Delivery Profile
- ✓ No opioid related AEs or SAEs

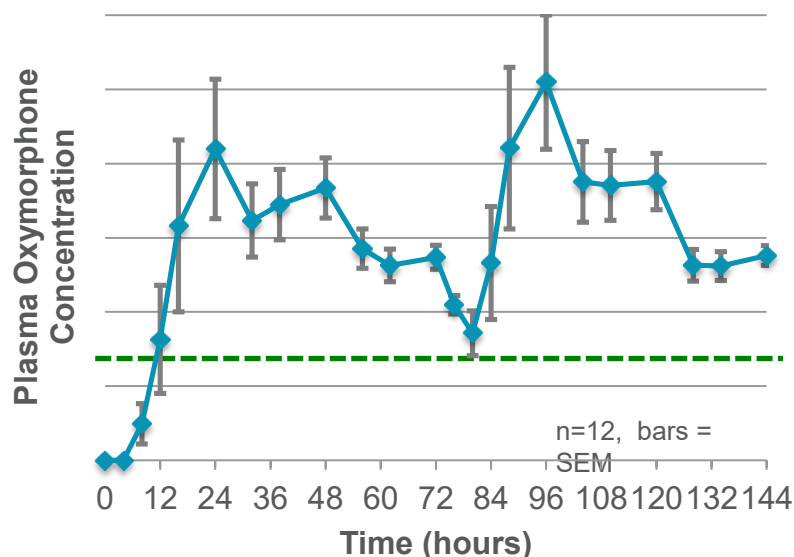
**Parameters support commercialisation in a different indication**

# TPM<sup>®</sup>/Oxymorphone patch performance supports further development

## Multiple dose clinical trial (sequential x 72 hour applications)

- World's first patch to deliver therapeutic levels of oxymorphone transdermally
- 2 sequential patch application (in n=12), mean CMAX increases, Consistent delivery profile, Well tolerated, minimal irritation
- 75% less oxymorphone required for pain administration vs. oxymorphone ER oral tablets over the same 72 hour period

### Pharmacokinetics



**Previous formulations have already demonstrated appropriate PK Curve**

### Advantages

- ✓ Improved Drug Delivery Duration
- ✓ Decreased Frequency of Dosage
- ✓ Therapeutic Effect Stable & Consistent
- ✓ Decreased Drive for Abuse
- ✓ Bypassed First Pass Metabolism
- ✓ Reduced Total Drug Load
- ✓ Lowered Need for Supplemental Medication

**Parameters support commercialisation**



*Injectable Portfolio*

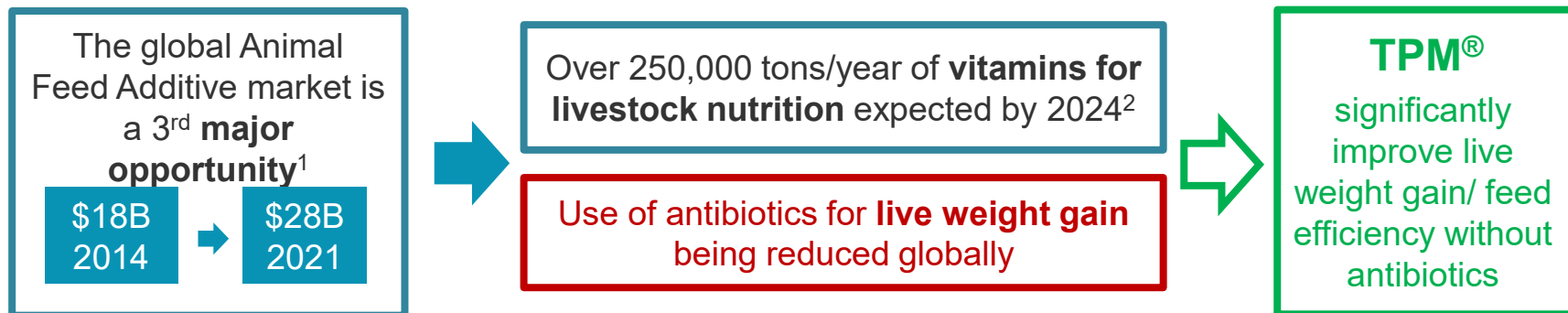
*Pain Portfolio*

***Animal Health***

***Personal Care***



# Phosphagenics has a strong “Animal Health” portfolio driven by recent strong trial data



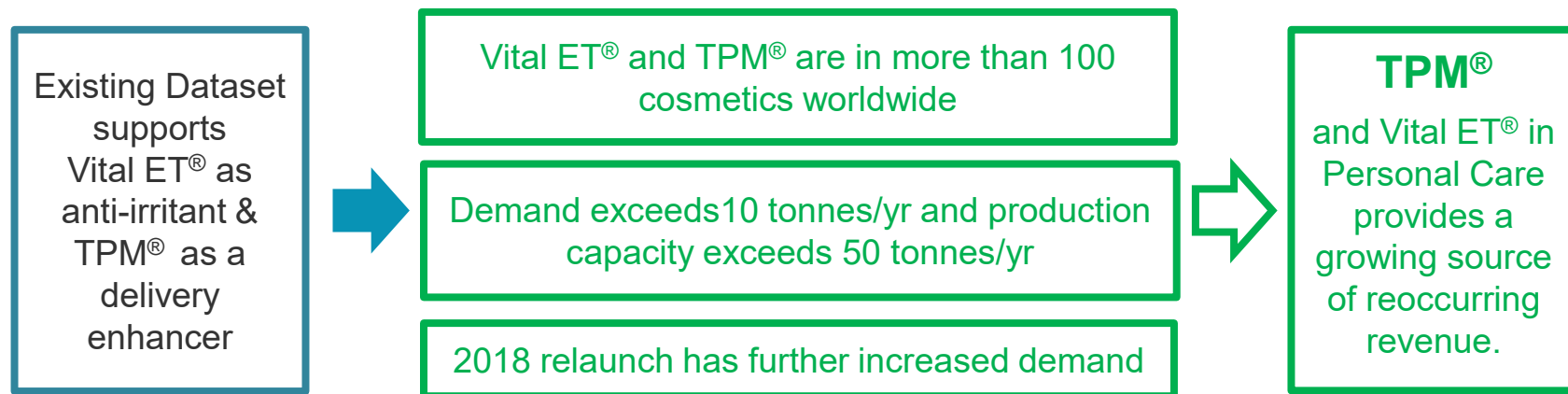
Product	TPM Advantage	Territory	Partner	Research	Development	Marketed
<b>Animal Health &amp; Nutrition Products</b>						
Pig, Poultry, Feed efficiency	3%+ increase in Feed Efficiency	Global	Available	→		
Cattle mastitis & fertility	Positive data as drench treatment, more work needed as an in-feed additive	Global	Available	→		

■ Partnered    □ Yet to Partner

**Note:** “Multiple Global Feed companies are currently undertaking Due Diligence including trials”



# Phosphagenics' “Personal Care” portfolio has multiple partnerships generating growing recurring revenues



Product	Territory	Partner	Research	Development	Marketed
<b>Personal Care</b>					
Vital ET® (100+ Products)	Global	<b>ASHLAND</b>			
TPM® Based Products	Global	LE MËTIER DE BEAUTÉ RODAN+FIELDS <i>Pure Beauty Australia</i>			

Partnered

Partnered (Non-exclusive). Available for additional Non-exclusive partners.

# Phosphagenics is a exciting investment opportunity

- ✓ ~12mth cash (A\$3.3M at 30 June 18); No Debt; **Tax losses >A\$100M**
- ✓ **Experienced Management / Board** with strong track record of success
- ✓ **Validated TPM<sup>®</sup> Technology** through all three businesses
  - Portfolio including “world first” transdermal opioid patches, gels & injectables
- ✓ **Multiple Commercialised Products** and **Consistent Annual Revenues** from partnerships and sales of TPM<sup>®</sup> & Vital ET<sup>®</sup>
- ✓ **Strong Track record** of delivering milestones with significant value-adding milestones targeted over the next 12 months
- ✓ **Attractive valuation:** Share price/value disparity. Substantial upside potential and potential capital return from any net cash received from Mylan arbitration



# We have delivered consistent substantial news flow and target valuable newsflow over the next 6 months

<i>Commercial reformulation of TPM<sup>®</sup>/Oxymorphone Patch</i>	<i>Human Health</i>	<b>Complete</b>
<i>Successful Results for Swine Feed Efficiency Program</i>	<i>Animal Health</i>	<b>Complete</b>
<i>Successful results for Poultry Feed Efficiency Program</i>	<i>Animal Health</i>	<b>Complete</b>
<i>Sale of BioElixia<sup>®</sup> brand</i>	<i>Personal Care</i>	<b>Complete</b>
<i>Terumo Agreement signed for “TPM<sup>®</sup>/Oxymorphone Patch”</i>	<i>Human Health</i>	<b>Complete</b>
<i>Credit Pharma Term Sheet for “TPM<sup>®</sup>/Diclofenac Gel”</i>	<i>Human Health</i>	<b>Complete</b>
<i>Rights Issue raised over \$3.3M (+\$1.3M Jan’18)</i>	<i>Corporate</i>	<b>Complete</b>
<i>Mylan Arbitration Formal Hearing</i>	<i>Human Health</i>	<b>Complete</b>
<i>Results of Dairy Cattle Feed additive program</i>	<i>Animal Health</i>	<b>Complete</b>
<i>Outcome of Mylan Arbitration</i>	<i>Human Health</i>	<b>Decision Pending</b>
<i>TPM<sup>®</sup> Injectable Candidates to enter development</i>	<i>Human Health</i>	2H ‘18
<i>TPM<sup>®</sup> Oxymorphone Patch Pre IND FDA Meeting</i>	<i>Human Health</i>	4Q ‘18



# Phosphagenics

Innovative Biopharmaceutical Company Headquartered in Australia

## Key Statistics:

ASX/OTCQX Code	POH/PPGNY (listed 2004)
Headquarters	Melbourne, Australia
Employees	12
Shares	~1.5 billion
Cash	~12mth Cash (\$3.3M at 30 June 2018)
Revenue	~\$1.2M (2017)
Market Cap	~\$27M (at \$.018/share)
3 Business Units	<ul style="list-style-type: none"><li>• Human Health</li><li>• Animal Health &amp; Nutrition</li><li>• Production &amp; Personal Care</li></ul>



[www.phosphagenics.com](http://www.phosphagenics.com)

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