pharmaxis

**Chief Executive Officer** 

Dr Alan Robertson

Annual General Meeting
October 2010

# **Company Overview**

Objective	The development of products for respiratory and inflammatory diseases					
Lead products	Aridol: management of asthma and COPD					
	Bronchitol: therapeutic for cystic fibrosis and COPD					
	ASM8: therapeutic for asthma					
Discovery	PXS25 (M6P receptor blocker); PXS4206 (VAP1 inhibitor)					
Listing	ASX (Nov 2003): PXS					
Locations	Sydney, Australia • Exton, USA • Slough, UK • Montreal, Canada					
Facility	GMP Manufacture of Aridol & Bronchitol					
Employees	137					
Cash (30/9/10)	A\$76 million					
Shares & Options	Shares outstanding: 226m; Options outstanding: 13m					
Key patents	Bronchitol & Aridol: granted in USA, Australia, Asia, Canada & Europe. Aridol: granted in Japan					
/	PXS25 and ASM8: base patents granted US and Europe +					
Analyst coverage	CREDIT SUISSE  KRBS Morgans  WilsonHTM  CREDIT SUISSE					

### **Development Pipeline**

-----Clinical Trial Phases-----

Aridol – asthma (Aus/EU/Korea)

Aridol – asthma (US)

Bronchitol – cystic fibrosis (EU/Aust)

Bronchitol – cystic fibrosis (US)

Bronchitol – bronchiectasis (US/EU)

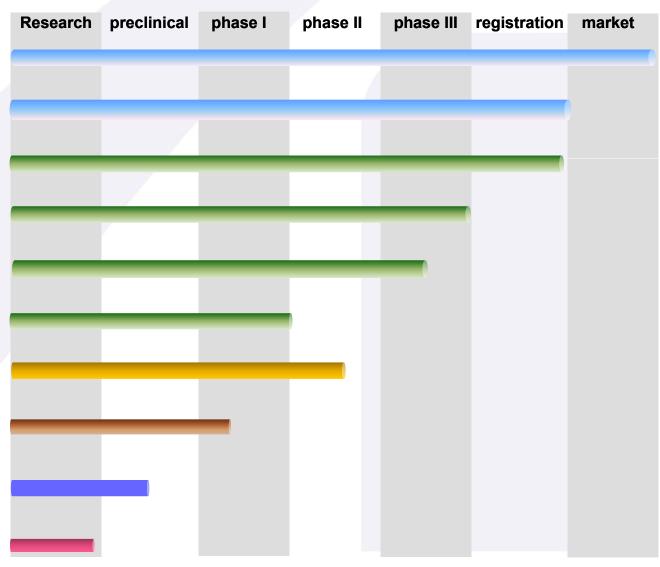
Bronchitol - other

ASM8 - asthma

PXS25 – lung fibrosis

PXS4206 – lung disease

PXS TPI1100 - COPD



# **Pharmaxis Global Operations 2010**



### Year in review - milestones passed



1. European and Australian filing of marketing applications for Bronchitol to treat cystic fibrosis



- 2. Bronchitol data shows sustained benefit for cystic fibrosis patients following 12 months of treatment
- 3. Acquisition of ASM8 and ASM1100 (Topigen)



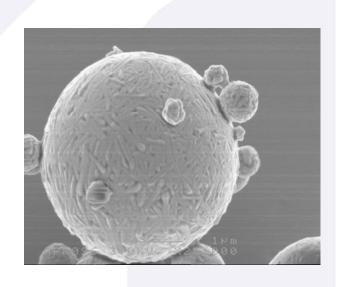
- 4. ASM8 successful results in Phase II trial of asthma patients
- 5. PXS25 successfully completes Phase 1 clinical trial
- CF302 result confirms efficacy and safety of Bronchitol in cystic fibrosis



7. New facility receives initial accreditation by TGA

# **Bronchitol**



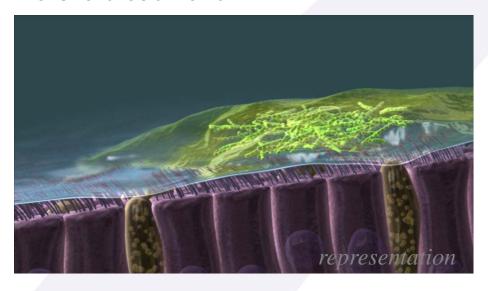


Mucus clearance:

Cystic fibrosis Chronic Obstructive Pulmonary Disease Bronchiectasis

### Osmotic clearance of abnormal mucus

#### Before treatment

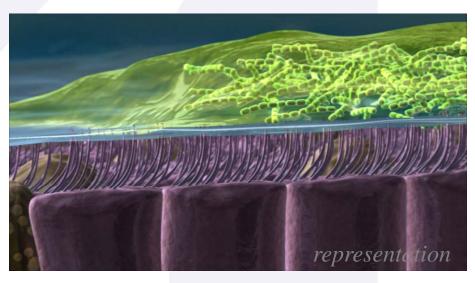


Lung surface dehydrated

Airway surface fluid layer impaired

Lung defense and hygiene compromised

After Bronchitol administration



Lung hydrated

Airway surface liquid restored

Normal lung clearance

### Bronchitol – cystic fibrosis



### Background

- Genetic disorder affecting 75,000 worldwide (30,000 in US)
- Poorly hydrated, tenacious, thick mucus
- Life expectancy is 37 years (US)

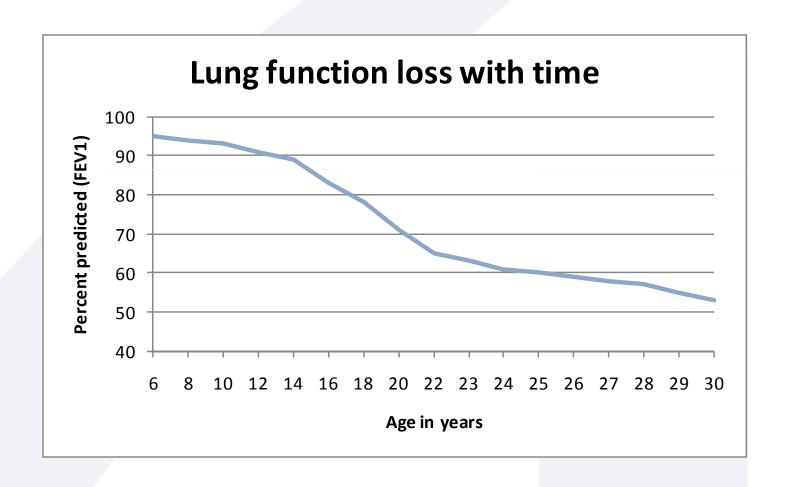


#### Current treatments

- Delivered by nebulizer (preparation, sterilization)
- rhDNase (Pulmozyme<sup>®</sup>): global sales US\$460mm (2009)
- Tobramycin (Tobi<sup>®</sup>): global sales US\$233mm (2007)
- Aztreonam (Cayston®): approved EU: 9/09; US: 02/10



# Average lung function decline in CF patients



Source: Cystic Fibrosis Foundation Patient registry, 2004

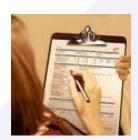
### Bronchitol – cystic fibrosis clinical program

#### Two Pivotal Phase III trials – same design

- Multicentre, double blind, placebo controlled
- Approx 300 subjects greater than 6 years old per trial
- 6 month treatment, 400mg twice per day followed by 6 month open
- Primary endpoint:
  - lung function (FEV<sub>1</sub>)
- Secondary endpoints:
  - Other lung function measures
  - Lung function (FEV<sub>1</sub>) in patients on rhDNase
  - exacerbations
  - antibiotic use
  - QOL and safety
- CF301: 40 centres in UK, Ireland, Australia & New Zealand
- CF302: 53 centres in US, Canada, Argentina, Germany, France, Belgium & Netherlands
- Subjects remain on existing background therapies









# **Cystic Fibrosis Trial Demographics**



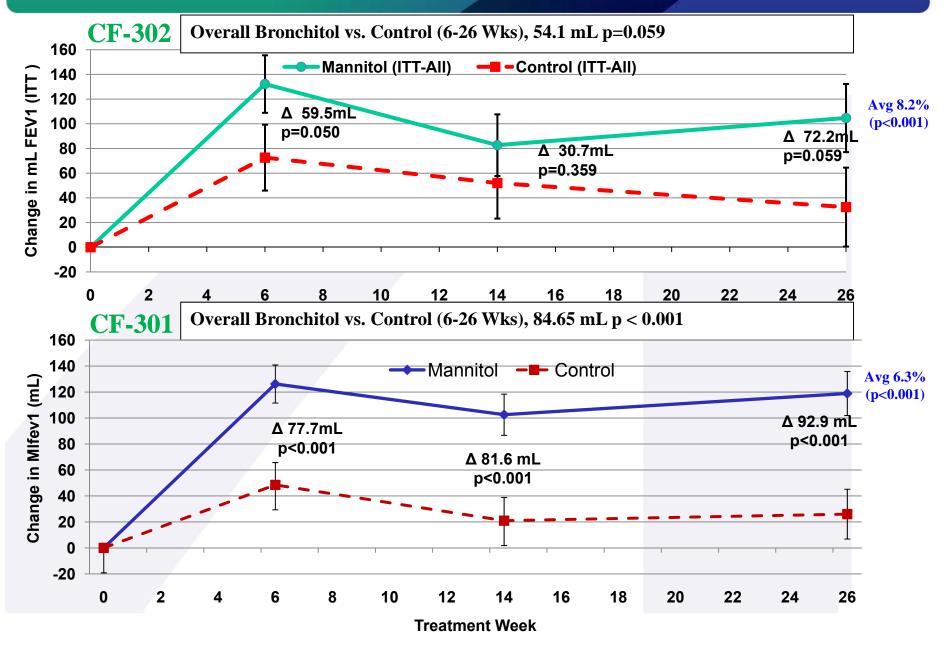




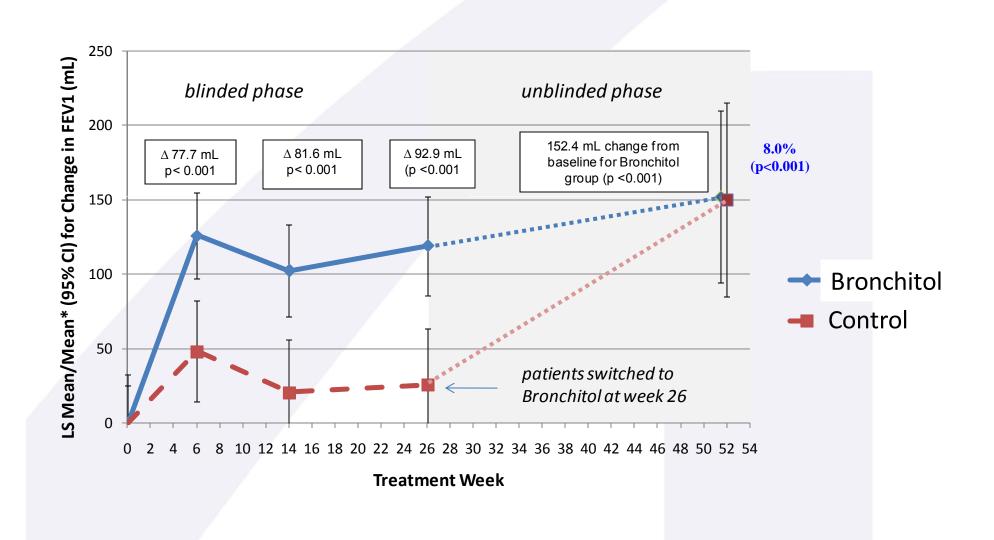
Criteria	CF301	CF302
Patients failing mannitol	7%	7%
tolerance test		
Patients randomised	324	318
Received treatment	295	305
Withdrawal rate	33%	14.8%
Average age	23	20
Age range	6 - 56	6 - 53
Mean predicted FEV <sub>1</sub> on entry	62%	65%
Predicted FEV <sub>1</sub> range	26% - 94%	34% - 96%
% patients on dornase alfa	55%	75.1%

# CF-302 and CF-301 Mean change (mL) in FEV<sub>1</sub>

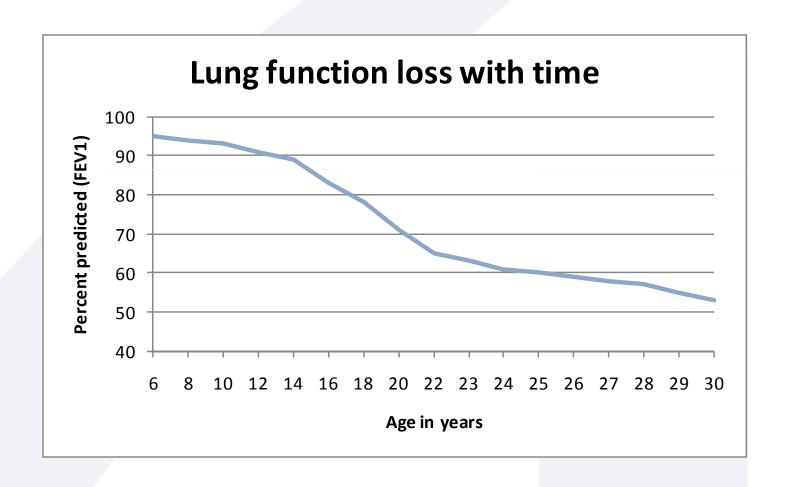
Similar pattern of Improvement



# CF301 – lung function changes at 12 months



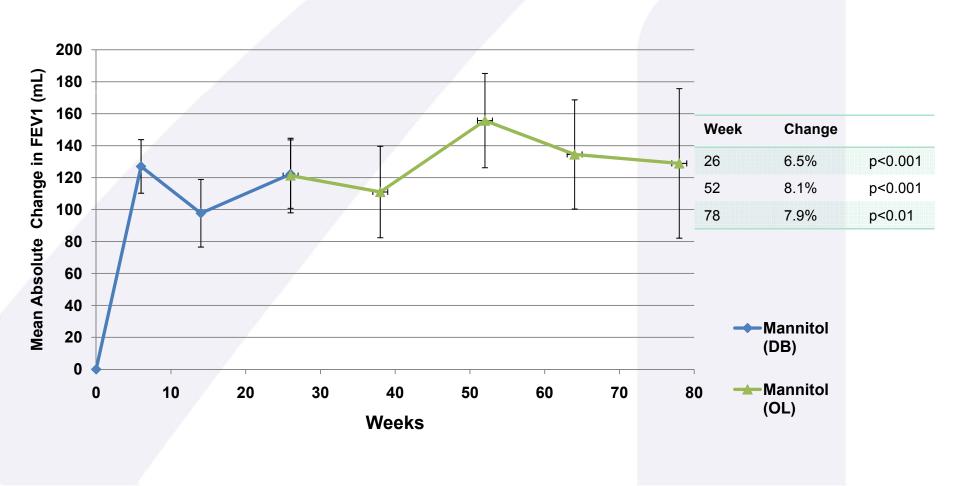
# Average lung function decline in CF patients



Source: Cystic Fibrosis Foundation Patient registry, 2004

### CF301 Bronchitol Arm (DB and OL for 18 months)





### **Clinical Summary**



- Trials conducted across the CF world in subjects receiving best standard of care
- Two confirmatory pivotal Phase III studies
- Lung function improvement of over baseline of 6.3% (CF301) and 8.2% (CF302)



- Early and sustained lung function improvement over baseline
- Well-tolerated and safe
- Secondary endpoints analysis of pooled data underway



- Compelling body of evidence
- North American Cystic Fibrosis Meeting (Oct 2010)

### Bronchitol – the first CF specific dry powder









- Increased efficacy without fuss
- Treatment burden a significant issue to patients with CF
- 2 5 minutes delivery time



- Convenient and portable
- No power source
- No cleaning / maintenance/ sterilisation

# Bronchitol – cystic fibrosis registration

### **Europe**

•	Orphan	drug	designation
---	--------	------	-------------

<ul> <li>EMA submission</li> </ul>	Oct 2009
------------------------------------	----------

•	EMA response anticipated	Q4 2010
		4

• First sales 1H 2011



### **USA**

Orphan drug designation

•	Headline data	June 2010
	IIOGGIIIIO GGEG	

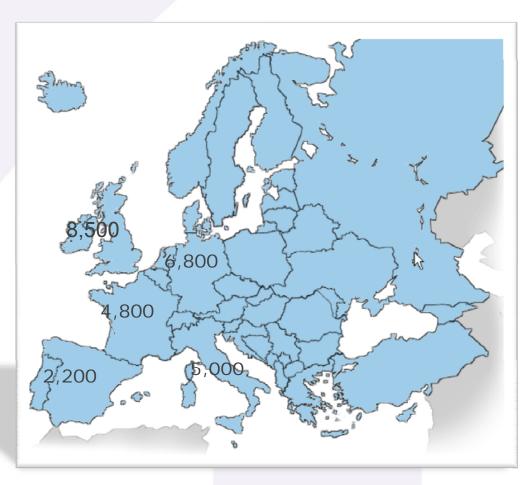
NDA submission
 1H 2011

FDA response anticipated
 1H 2012



### **Bronchitol – commercialisation in EU**

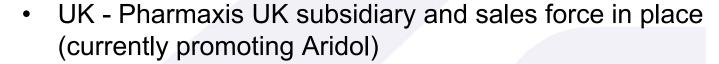
- Orphan drug up to 12 years exclusivity
- Promotion by Pharmaxis in Western Europe (14 countries)
- Distributor for Central / Eastern Europe
- Launch Top 5 2011
- First launch UK / Germany
  - Q1 2011
  - Immediate launch national pricing approval not required



40,000 people in EU with CF, 70% in top 5 countries

### Bronchitol – European commercial infrastructure





- Remainder Western Europe (13 countries) Quintiles:
  - Recruit and manage dedicated Pharmaxis sales force
  - Local market knowledge to speed access
  - Full back office support
  - Satellite model leveraging Top 5 management structure
- European CF market support Pharmaxis UK subsidiary
  - Marketing
  - Pricing
  - Medical information, regulatory and pharmacovigilence
- Build to ~40 people





### Bronchitol – commercialisation in the U.S.



#### Clinical....

- Two pivotal Phase 3 trials completed
  - data consistent between the two trials

#### Regulatory....

- trial design agreed with FDA
- NDA to be submitted as soon as possible
- opportunity for priority review
- response from FDA on NDA expected mid 2012
- orphan drug provides 7 years market exclusivity



#### Marketing....

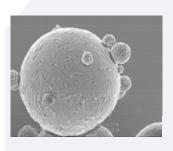
- promotion by PXS out of existing Philadelphia office
- unified approach to pricing and reimbursement
- 150 CF centres requires 15 person field force
- 30,000 people in the US with CF
- addressable market >\$400 million



### **Bronchitol - bronchiectasis**







- Abnormal, irreversible dilation of the lower airways
- Daily mucus production, constant coughing, breathlessness, recurrent acute bronchitis with infective exacerbations: low quality of life
- In 30-50% of cases, the cause is unknown
- Normal lung clearance impaired
- Current treatments: bronchodilators, antibiotics
- No drugs proven effective to clear mucus
- Affects 600,000 people worldwide

### Bronchitol – bronchiectasis registration

#### 1st Pivotal Phase III trial



 363 patient, placebo controlled, double blind, randomised 12 week treatment (twice per day) + 12 month open label extension

#### Primary endpoints

- quality of life validated Patient Reported Outcome
- mucus clearance 24hr sputum volume



### Primary Analysis

•	quality of L	ife	SGRQ.	p<0.001	versus	baseline
	quality of L	-110	$\mathbf{CC}_{\mathbf{I}}$	P 10.00 I	V CI OGO	

SGRQ, p<0.05 versus placebo

mucus clearance ↑30%, p<0.001 versus placebo</li>

antibiotic use reduction p<0.05 versus placebo</li>

adverse events (52 wks) cough 9%, sore throat 5%

no SAE attributed to treatment

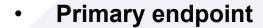


### Bronchitol – bronchiectasis registration



#### 2<sup>nd</sup> Phase III trial

- 475 patient, placebo controlled, double blind, randomised, 52 week treatment, 89 sites in US, Europe, South America
- 400mg twice a day



Reduction in number of exacerbations



- Exercise, mucus clearance, antibiotic use
- Quality of life

#### Status

Special Protocol Assessment concluded with U.S. FDA

Orphan Drug designation USA

First patient enrolment
 October 2009

Complete recruitment H1 2011

• Data 2012





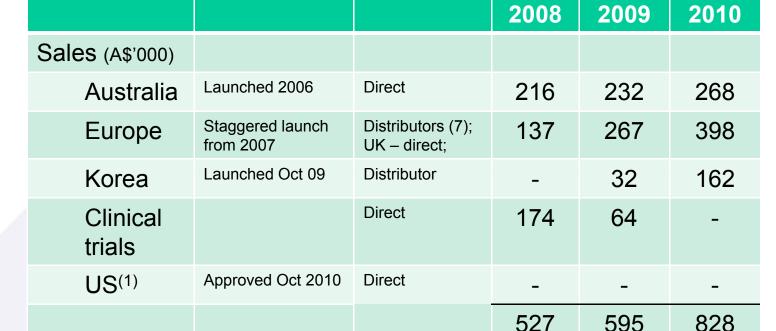
### **Aridol™**

- Identifies airway hyperresponsiveness which helps physicians in the overall assessment of asthma
- An easy-to-use test kit provides rapid results and doesn't require specialized equipment



### **Aridol – commercialisation status**









#### Marketing via education, key opinion leaders:

- Investigator initiated studies, > 70 peer reviewed articles
- US ACRN study: Aridol utility in asthma management report H1 2011
- UK investigator: steroid management in asthma report Q4 2011
- Swiss investigator: steroid management in COPD report H1 2011

### ASM8: A new approach for uncontrolled asthma



- · Targeting severe asthma
  - affects ~6 million people
  - major cause of ER visits
  - · limited treatment options
  - Current treatment Xolair



- Once daily by inhalation
- Improved side effect profile
  - Low systemic exposure
- Improved effectiveness
  - Targets multiple inflammatory proteins
- Inhibits protein synthesis



Combined in one product

Topical
Delivery
Direct to site of action



Multi-Target Knockdown Blocking multiple pathways



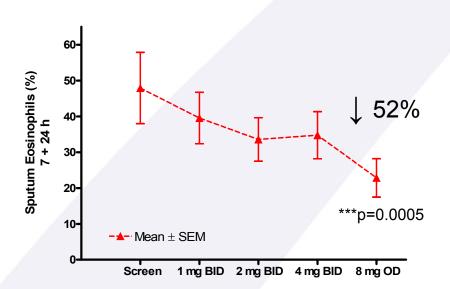


There exists an unmet medical need in patients with severe asthma

### ASM8: Results of Phase 2a dose profiling study

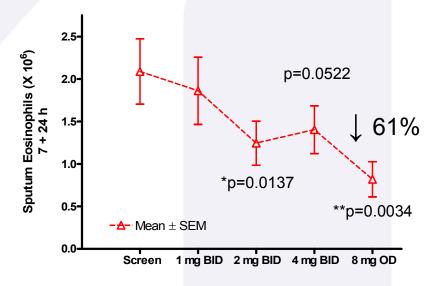
(Sputum Eosinophils (sum of 7h and 24h))

#### % Eosinophils



- 4 day treatment sequential escalating dose
- 12 subjects mild allergic asthma
- Primary endpoints sputum eosinophils & safety
- Secondary endpoints LAR, EAR, Target mRNA

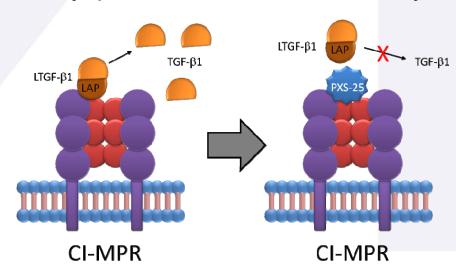
#### Absolute # Eosinophils



- Next study
  - 14 day allergen challenge
  - commence Q4 2010

### **PXS25** for fibrosis

- $\Box$  Inhibits cleavage of latent TGF $\beta$  to active TGF $\beta$ 
  - Targeting Idiopathic Pulmonary Fibrosis
    - > Affects >500,000 people worldwide
  - Small molecule with robust pharmaceutical profile
- Phase I trial completed
  - Safety, pharmacokinetics in healthy subjects









### **Manufacturing Capacity**









- Facility No 1 Frenchs Forest Australia
  - GMP manufacture of Aridol for sale in EU, Asia & Australia
  - Manufacture of Bronchitol for clinical trials and compassionate use
  - Inspected by FDA in review of Aridol NDA
- Facility No 2 Frenchs Forest Australia
  - Construction completed May 2009
  - TGA licence for clinical trials and compassionate use
  - Equipment installation & validation complete
  - Complete process validation 2010
  - Capacity
    - Initial capacity 1 spray drier: 40,000 patients p.a.
    - Expanded capacity 2nd spray drier: 80,000 patients p.a.

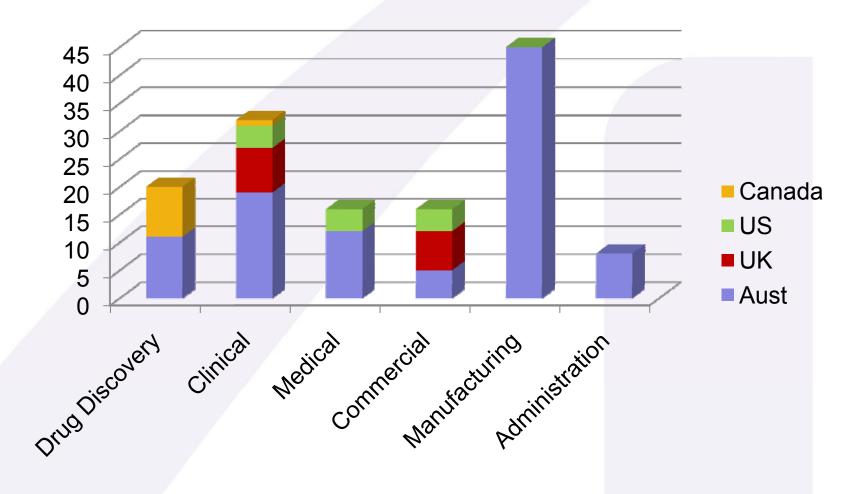
pharmaxis

**Chief Financial Officer** 

**David McGarvey** 

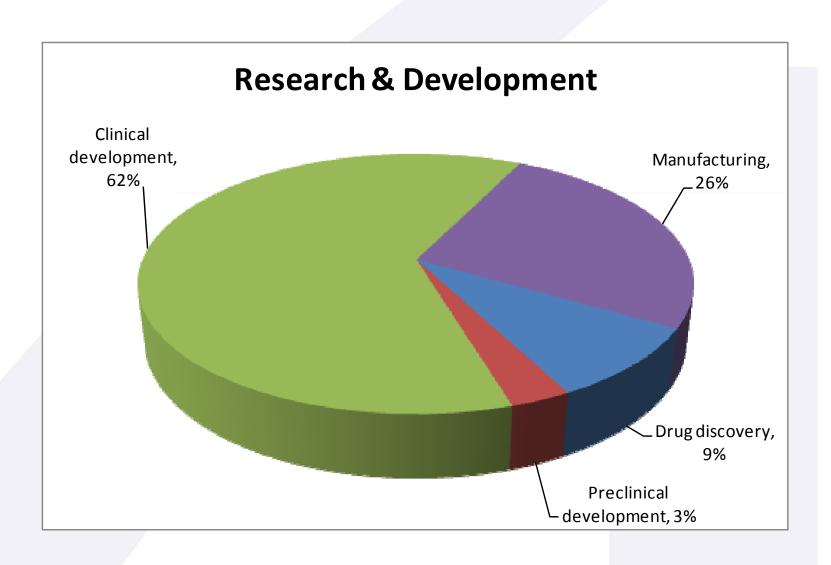
Annual General Meeting
October 2010

# **Employee Headcount at September 2010**



Australia	UK	USA	Canada	China	Total
99	15	12	10	1	137

# Research & Development 2010 - \$35m



# **Financial Statements**

Year ended 30 June	<u>2010</u>	2009	2008	2007	2006
	A\$	A\$	A\$	A\$	A\$
Income Statements					
Revenue from sale of goods	828	595	527	205	8
Gross profit	521	442	398	156	6
Interest	3,935	5,347	7,402	5,278	4,282
Other income	616	523	1,576	2,152	1,299
Expenses					
Research & development	(35,140)	(29,308)	(19,996)	(23,840)	(16,978)
Commercial	(5,657)	(6,202)	(4,557)	(3,240)	(1,946)
Administration	(9,715)	(5,800)	(5,231)	(4,666)	(4,391)
Finance expenses	(854)	(122)	-	-	-
Total expenses	(51,366)	(41,432)	(29,784)	(31,746)	(23,315)
Loss before income tax	(46,294)	(35,120)	(20,408)	(24,160)	(17,728)
Income tax expense	(51)	(51)	(32)	(19)	(5)
Loss for the year	(46,345)	(35,171)	(20,440)	(24,179)	(17,733)

# **Financial Statements**

As at 30 June	2010	2009	2008	2007	2006
Balance Sheet Data					
Cash and cash equivalents	85,787	124,993	111,842	76,182	97,840
Plant & equipment	32,537	32,698	3,668	3,521	3,205
Total assets	140,767	163,997	125,049	82,648	104,267
Total liabilities	(25,751)	(26,306)	(5,928)	(6,089)	(5,379)
Total shareholders' equity	115,016	137,691	119,121	76,559	98,888
Share Data					
Ordinary shares on issue	225,410	217,659	194,515	177,949	176,904
Options over ordinary shares on issue	13,155	15,075	11,536	9,836	9,692

# **Share Capital**

(including options)

