

## ASX/Media Release

23 May 2018

### **Presentation to Advisory Board on atopic dermatitis market opportunity**

#### Key highlights

- **Botanix convened an Advisory Board meeting to review a presentation on opportunities in the atopic dermatitis market**
- **The global atopic dermatitis market is larger than for acne, and is projected to reach US\$24bn in 2027, growing at a CAGR of 12.8% between 2017-2027**
- **A topically applied product with a benign safety profile and multiple mechanisms of action, which improves efficacy as compared to current standard of care, has the potential to generate significant revenues**
- **BTX 1204 is a new atopic dermatitis therapeutic that has significant potential to address this market opportunity, with first patient data is expected to be available in June 2018**

**Philadelphia PA and Sydney Australia, 23 May 2018:** Medical dermatology company Botanix Pharmaceuticals Limited (ASX:BOT, “Botanix” or the “Company”) is pleased to release a presentation made at its Advisory Board meeting held on 22 May 2018. The presentation focused on the dynamics of the growing atopic dermatitis market, the positioning of the Company’s BTX 1204 product and sought feedback from key advisers, ahead of the completion of data processing and release from the recently completed Phase 1b BTX 1204 study.

Botanix Executive Director Matt Callahan stated “the updated view on the global atopic dermatitis market underpins the compelling potential of BTX 1204. There is a significant market opportunity for an atopic dermatitis treatment which has an improved safety profile, improves lesion resolution and has the ability to be utilised in the long term.”

Botanix has successfully completed the treatment phase of all patients enrolled in the BTX 1204 Phase 1b study and is actively processing the study data and is on track to release the results in June 2018.

#### **About Atopic Dermatitis**

Atopic dermatitis is a common, relapsing, chronic inflammatory skin disorder. Patients display a chronic rash characterised by inflammation and itching, which often occurs in folds of the skin with symptoms lasting up to 14 days or more. Approximately 25m people in the US suffer from this condition, including between 8% to 18% of infants and children. Atopic dermatitis has been considerably under-diagnosed due to the lack of approved effective systemic agents, and limitations of current topical agents.

Before the recent approval of Eucrisa® (*crisaborole*), there had been no new drugs approved for atopic dermatitis for more than 15 years and based on successful Phase 3 studies, Pfizer acquired the company that developed Eucrisa® (Anacor Pharmaceuticals Inc.) for US\$5.2bn in May 2016. Clinical studies showed that Eucrisa® had little to no impact on itch, which remains a key unmet need for atopic dermatitis patients.

### **About Botanix Pharmaceuticals**

Botanix Pharmaceuticals Limited (ASX:BOT) is a clinical stage medical dermatology company based in Perth, Australia and Philadelphia, PA. The Company's focus is the development of safe and effective topical treatments for acne, psoriasis, atopic dermatitis and other skin conditions. The active ingredient contained in Botanix products is a synthetic form of a widely studied natural compound. Treatment targets include inflammation, deterioration of the of the skin barrier, skin cell proliferation, pruritus (itch), excess sebum production and bacterial infection.

Botanix has an exclusive license to use a proprietary drug delivery system (Permetrex™) for direct skin delivery of active pharmaceuticals in all skin diseases. Botanix is working with multiple parties to test the application of Permetrex™ on both a fee-for-service and traditional license basis.

Botanix pursues a rapid clinical development strategy aimed at accelerating product commercialisation. The patient treatment duration of clinical studies is generally completed within a 4 to 12 week timeframe.

The Company completed its first acne patient studies with BTX 1503 in January and is preparing for a 360 patient, Phase 2 study commencing mid-2018 with completion expected in mid-2019. A Phase 1b BTX 1204 atopic dermatitis patient study is underway with initial results expected in June 2018. A further Phase 1b patient study for pipeline product BTX 1308 for psoriasis is also scheduled to commence in 3Q CY2018.

To learn more please visit: <https://www.botanixpharma.com/>

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# Atopic dermatitis market review

Advisory Board meeting

22 May 2018

Botanix Pharmaceuticals Limited (ASX:BOT)

**botanix**  
PHARMACEUTICALS  
RESTORING HEALTHY SKIN

# Agenda

1. Overview
2. Disease overview and unmet medical needs
3. Market dynamics
4. Conclusion



# 1. Overview



# Executive summary

This presentation provides an update on the global dermatology and atopic dermatitis markets, and the significant market opportunity that exists for BTX 1204

- Botanix Pharmaceuticals (Botanix) is a leading dermatology focused company with rapidly advancing products underpinned by a deep product portfolio – its lead products target acne and atopic dermatitis (AD)
- The global AD market is projected to reach US\$24bn in 2027, growing at a CAGR of 12.8% between 2017-2027<sup>1</sup>
- Until the recent approval of 2 new therapies (Dupixent<sup>®</sup> in March 2017 and Eucrisa<sup>®</sup> in late 2016), there had been no new drugs approved for AD in 15 years
- In 2016, the top 2 leading AD generic products (Protopic<sup>®</sup> and Elidel<sup>®</sup>) generated ~US\$290m of sales in the US<sup>2</sup>
- Recent pipeline failures (Menlo Therapeutics and Vanda Pharmaceuticals) highlight the lack of late stage products in the AD pipeline with novel mechanisms of action

**A topically applied product with a benign safety profile and multiple mechanisms of action, which improves efficacy as compared to the current standard of care, has the potential to generate significantly higher revenues than currently marketed products**

***BTX 1204 has significant potential to address this market opportunity and first patient data is expected to be available in 2Q CY2018***

1. Future Market Insights 2017

2. Destum Partners Third Party Research

# Overview

Botanix is an emerging global dermatology company with rapidly advancing products and one of the deepest pipeline of opportunities in the industry



Dermatology  
focused

- Targeting a **multi-billion dollar markets for acne and AD**
- Successful patient study data in **acne with Phase 2 commencement planned for mid CY2018**
- Patient study data for **AD planned for 2Q CY2018**



Novel  
approach

- Lead products based on synthetic form of a widely studied natural product which **greatly enhances the probability of clinical and regulatory success**
- **Exclusive global rights to use Permetrex™** delivery technology for all skin diseases, with potential to deliver near term partnerships and revenues



Experienced  
team

- Predominantly US based leadership team with **20+ FDA approvals** between them and extensive dermatology industry experience
- Advance lead acne product from **formulation to successful clinical trial within 12 months and advanced 2nd product into the clinic within 18 months of commencement**

# Rapidly advancing clinical programs

Two advanced clinical programs in acne and atopic dermatitis, with follow on program in psoriasis – all leveraging a synthetic form of the natural product cannabidiol

Product candidate	Indication	Pre-Clin.	Ph. 1	Ph. 1b	Ph. 2	Next milestones
Synthetic form of natural product cannabidiol	BTX 1503	Moderate to severe acne				Phase 2 study start Mid-2018
	BTX 1204	Atopic dermatitis				Phase 1b patient data available 2Q CY2018
	BTX 1308	Psoriasis				Phase 1b study start 3Q CY2018

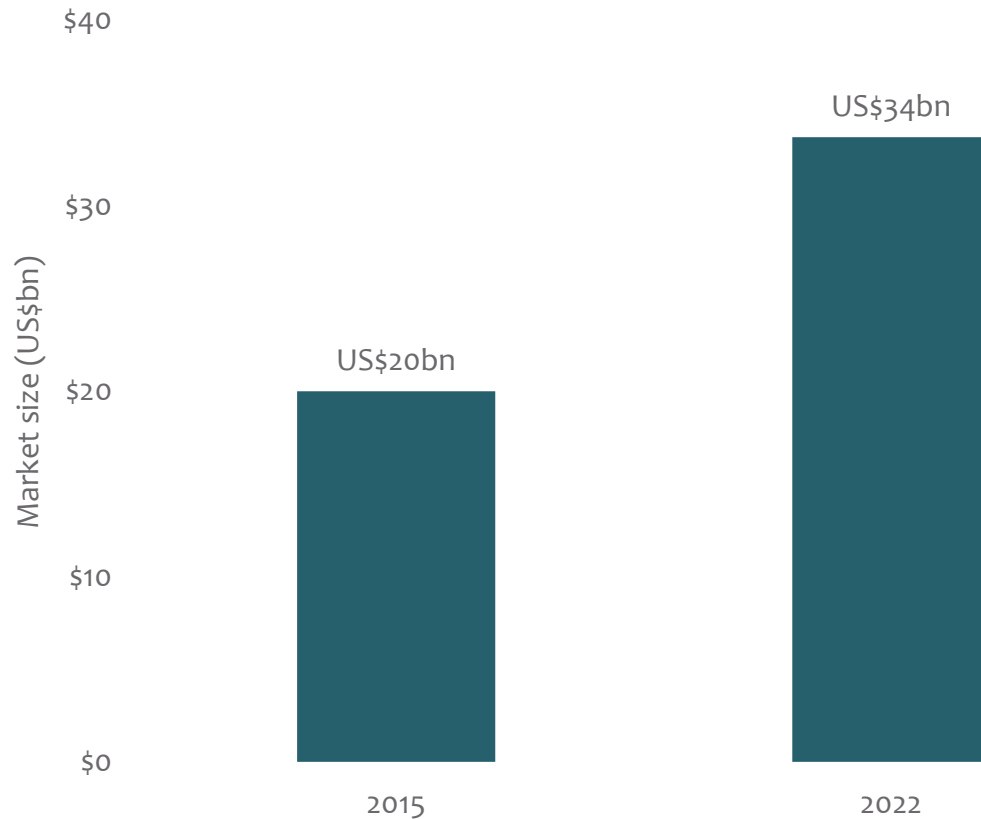
- Cannabidiol is a molecule found in nature, which is being studied in more than 100 clinical studies in other therapeutic areas
- No adverse side effects have been identified for cannabidiol and Botanix’s own studies have confirmed that no significant irritation or safety issues are present with the BTX topical products



# Dermatology market overview

The global dermatology market is estimated to grow to US\$33.7bn in 2022

## Global dermatology market (US\$bn)



Source: RnR Market Research: Dermatology Market 2016

- **More than 3,000 types of dermatological conditions exist**, ranging in severity and clinical presentation
- Approximately **one third of the US population suffers** from an active skin condition
- The global dermatology market is estimated to be **worth US\$33.7bn by 2022**, representing an increase of >65% from 2015 (US\$20.0bn)
  - Market growth expected to be driven by strong late-stage products in development
- **Significant unmet medical need** for treatment options that:
  - improve patient compliance
  - have improved safety/tolerability profiles
  - allow for long-term use

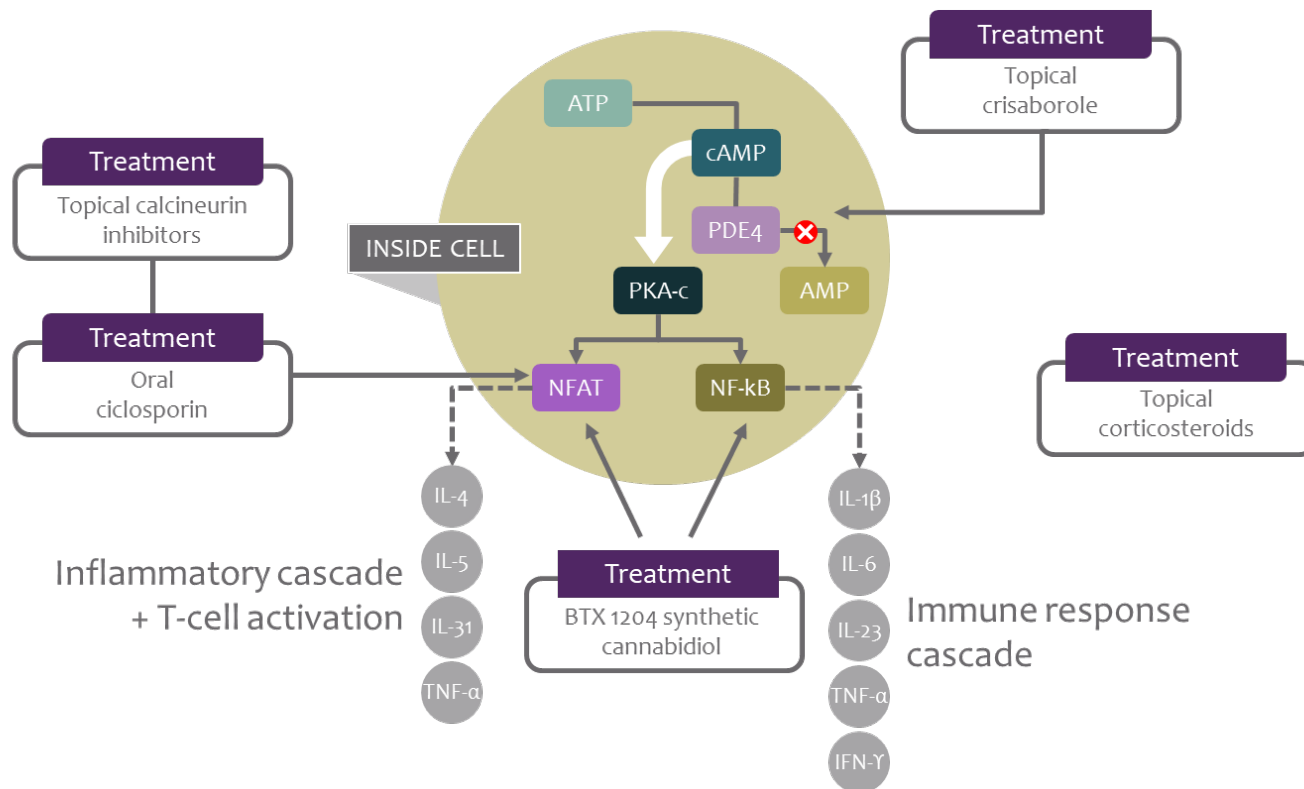
## 2. Disease overview and unmet medical needs



# Atopic dermatitis disease overview

Atopic dermatitis is a chronically relapsing skin disorder with an immunologic basis, but for which environmental factors (allergens, stress, food and skin flora) all play a part

## Disease pathology and common treatments

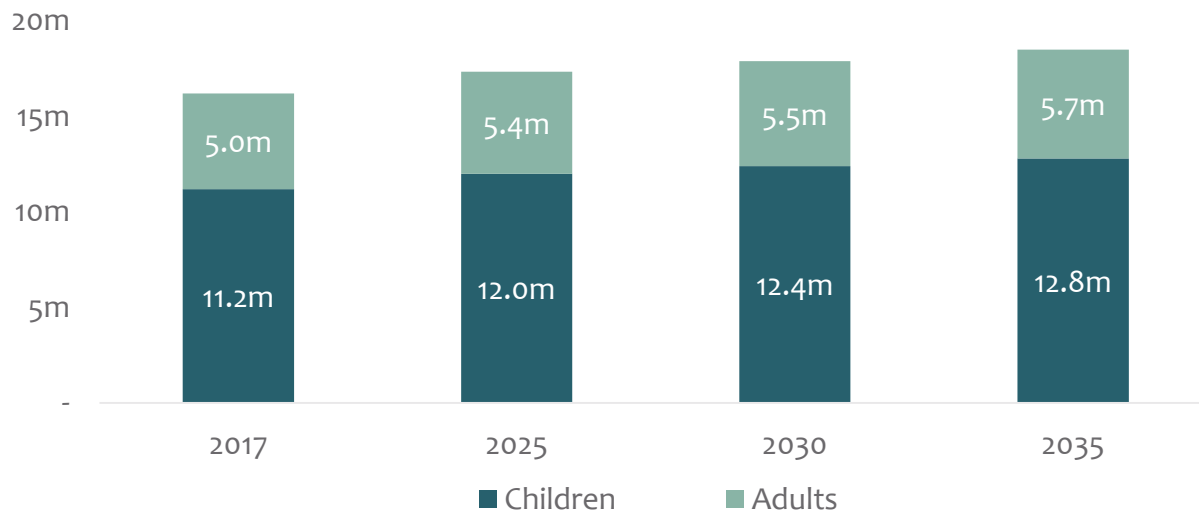


- The exact cause of AD is unknown but likely a combination of genetic and environmental factors
- AD can begin later in life, but 60% of patients develop the condition in the first year of life, and 90% develop it prior to 5 years of age
- Most commonly reported symptoms are itch, eczematous lesions, xerosis (dry skin) and lichenification (thickening of the skin)
- Patients who develop AD are more likely to develop other atopic diseases including asthma, allergic rhinitis and food allergies (commonly known as the “atopic march”)

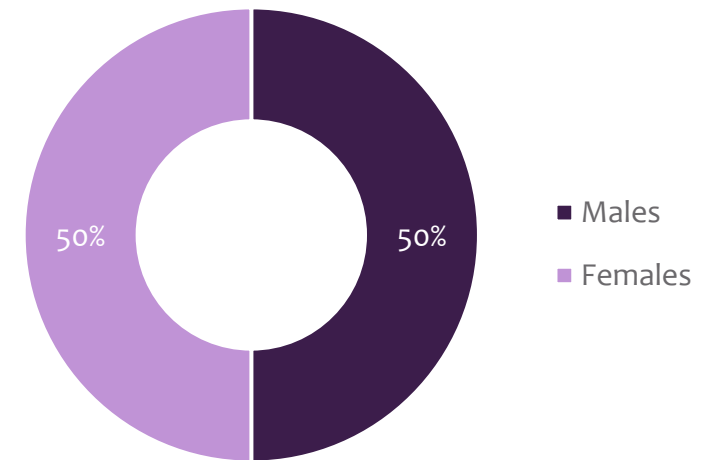
# Atopic dermatitis epidemiology

More than 40m patients in the seven major markets, with higher prevalence in large metropolitan cities and dry climates

### Current and projected US AD patient population by age (m)



### Frequency of AD by gender (%)



- AD affects approximately 13.7m people in the US
- ~10-20% of children and ~1-3% of adults will suffer from AD
- AD has a significant impact on patients' quality of life and more than 7 million health care provider visits annually have a significant economic impact

Source: National Eczema Foundation and CHP Group Survey

# Prescribed treatment paradigm by severity

Despite their general effectiveness, topical steroids cannot be used long term nor can they be used on sensitive areas of the body (e.g. face, groin etc)

- The Key Opinion Leaders (KOLs) preferred treatments for mild, moderate, and severe AD are in agreement with the AAD treatment guidelines, which recommend topical steroids as first line therapy

## American Academy of Dermatology (AAD) Association AD treatment guidelines<sup>1</sup>

	1st line treatment	2nd line treatment	3rd line treatment
<b>Mild AD</b>	Topical steroids	Topical steroids and/or Topical Calcineurin Inhibitor	Phototherapy
<b>Moderate AD</b>	Topical steroids	Topical calcineurin inhibitor or topical steroids + topical calcineurin inhibitor	Oral immunosuppressants or DUPIXENT®
<b>Severe AD</b>	Topical steroids	Topical calcineurin inhibitor	Oral immunosuppressants, DUPIXENT®, Phototherapy

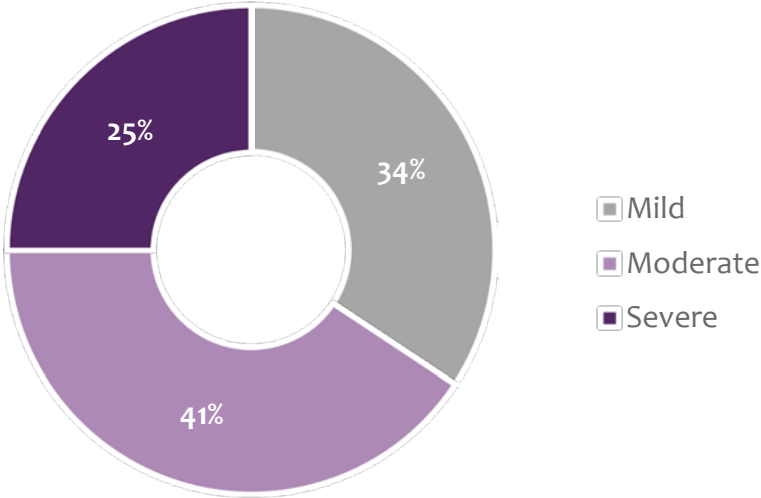
- For second line treatment, patients are either prescribed a more potent topical steroid and/or a topical calcineurin inhibitor
- If patients are prescribed a topical calcineurin inhibitor, mild to moderate patients are prescribed ELIDEL® and moderate to severe patients are prescribed PROTOPIC®
- In the event a patient is recalcitrant to topical steroids and/or TCIs, phototherapy, oral immunosuppressants, or DUPIXENT® may be utilised

1. Eichenfield et al. J AM Acad Dermatol. 2014 Jul;71(1):116-32  
Source: KOL Survey Destum Partners 2017

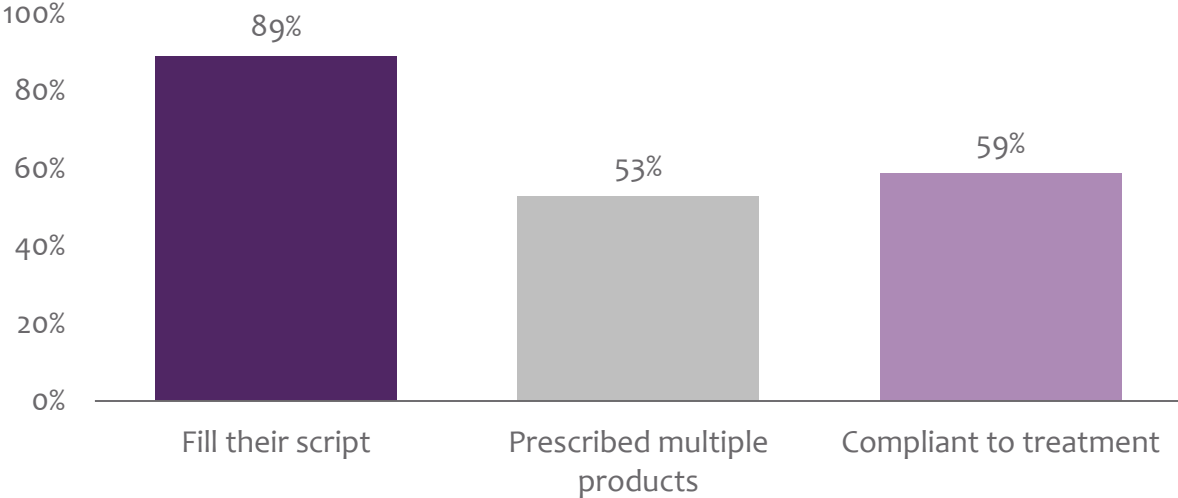
# Disease distribution and prescribing

Mild and moderate disease dominates and itch drives patients to seek a medical diagnosis when OTC treatments fail

Average distribution of AD by disease severity



Dynamics and estimated usage of prescription products



- On average, US dermatologists treat 95 AD patients per month of which 34% have mild disease, 41% have moderate disease and 25% have severe disease
- Despite attempts to control AD with OTC treatment options, the lack of efficacy on itch is what ultimately drives patients to seek a medical diagnosis
- Interestingly, while 89% of patients fill their script, only 59% are compliant to the recommended dose regimen

# Current unmet needs in atopic dermatitis

## Address underlying inflammatory origin

### Unmet need

- Current treatment options are focused on addressing the resultant symptoms of AD and not the inflammatory origin of the disease

### Gap fill

- Non-steroidal treatment option which addresses the underlying inflammatory disease resulting from skin barrier dysfunction

## Increased efficacy on secondary symptoms

### Unmet need

- Current treatment options have only a moderate effect on secondary symptoms, most important of which is reducing itch as it has the greatest impact on patients' quality of life

### Gap fill

- Non-steroidal treatment option which addresses the underlying inflammatory disease **and** significantly reduces itch in a rapid manner

## Current areas unmet medical needs

### Unmet need

- AD is a chronic, life long, disease; however, long term use of current treatment options is not recommended as such use can result in a myriad of side effects

### Gap fill

- Non-steroidal treatment option, which can be used long term as monotherapy, combination therapy, or as maintenance therapy

### Unmet need

- Select treatment options are associated with mild and moderate side effects (stinging) as well as severe side effects (cancer), while other treatment options are immunosuppressants

### Gap fill

- Treatment option which is not immunosuppressive and does not have a black box warning for potential carcinogenicity risks

## Long term usability

## Safety and tolerability improvements

### 3. Market dynamics





# Leading US branded atopic dermatitis treatments

Without curative options, therapy goals are to keep the skin moist, reduce inflammation and infection and minimise itch

## Overview

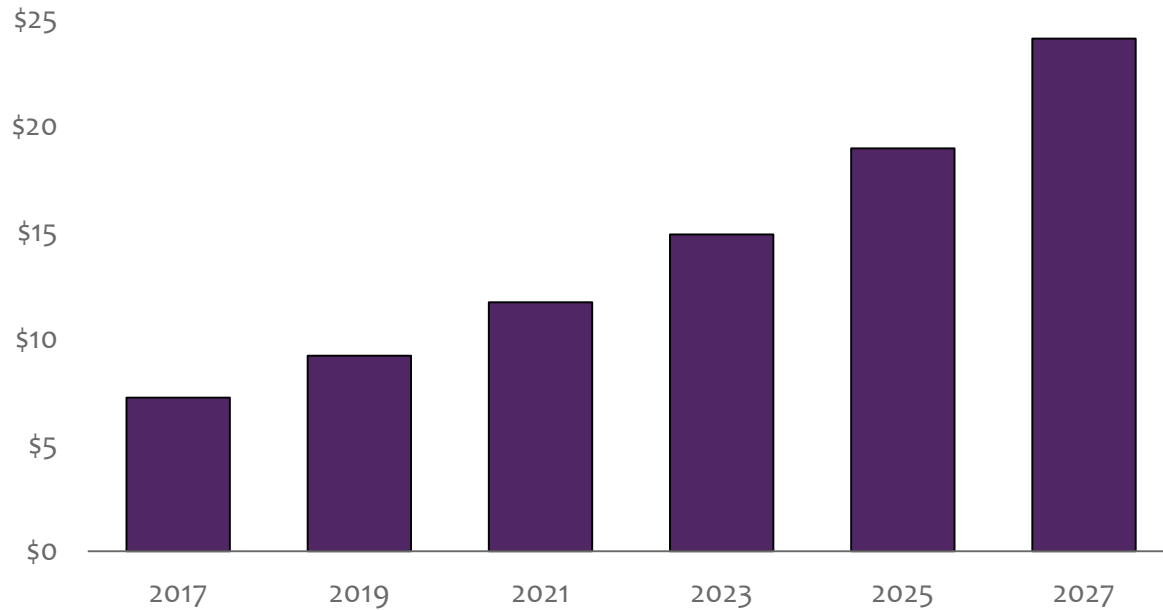
- Before Eucrisa<sup>®</sup> and Dupixent<sup>®</sup> in 2016/17, there had been no new AD products approved in 15 years
- Lack of sales indicates that Eucrisa<sup>®</sup> has been a commercial failure
- Cost and side effect profile potentially limits the wide use of Dupixent<sup>®</sup>

Drug	Company	Severity	Class	Active ingredient	Formulation	Comments
Elidel <sup>®</sup>	Valeant	Mild to moderate	Calcineurin inhibitor	Pimecrolimus	Cream	<ul style="list-style-type: none"> <li>• Moderate efficacy</li> <li>• Carries black box warning for cancer risks</li> </ul>
Protopic <sup>®</sup>	Astellas	Moderate to severe	Calcineurin inhibitor	Tacrolimus	Ointment	<ul style="list-style-type: none"> <li>• Moderate efficacy</li> <li>• Carries black box warning for cancer risks</li> </ul>
Eucrisa <sup>®</sup>	Pfizer	Mild to moderate	PDE4 inhibitor	Crisaborole	Ointment	<ul style="list-style-type: none"> <li>• Moderate efficacy</li> <li>• Limited effect on itch – serious drawback</li> </ul>
Dupixent <sup>®</sup>	Sanofi/Regeneron	Moderate to severe	Anti-IL-4/13	Dupilumab	Subcutaneous injection	<ul style="list-style-type: none"> <li>• Good efficacy</li> <li>• Requires quarterly injection and is very expensive (US\$37k per annum)</li> </ul>

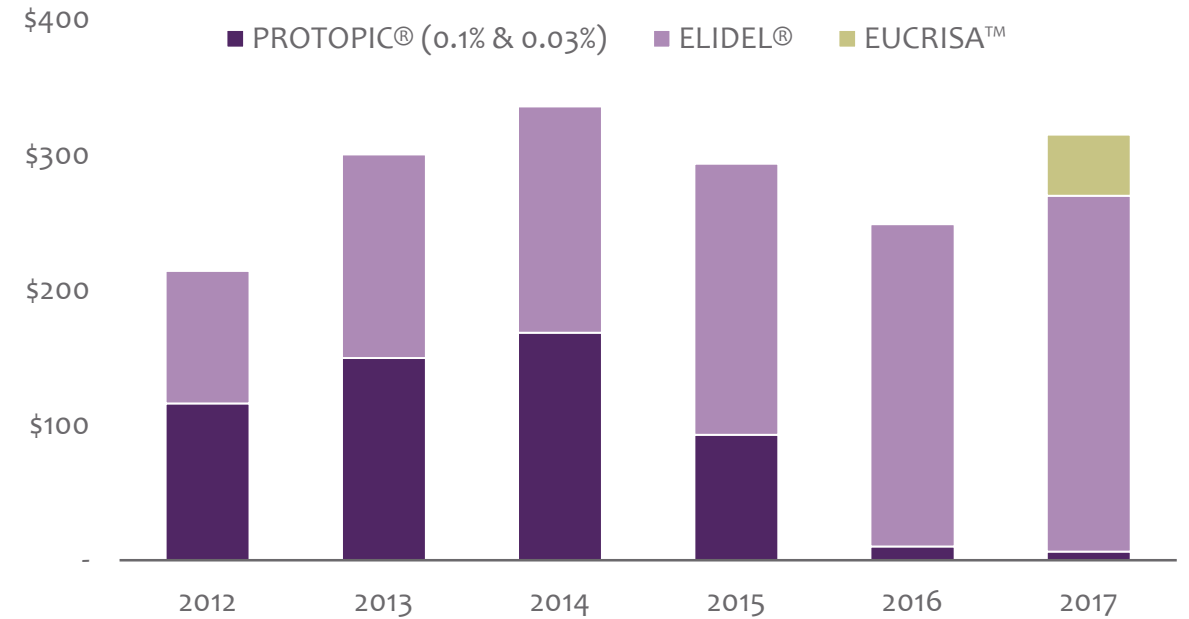
# Global atopic dermatitis market

The global atopic dermatitis market is forecasted to grow at a CAGR of 12.8% from ~US\$7bn in 2017 to ~US\$24bn by 2027

**Projected AD market by revenue (US\$bn)**



**Leading topical branded AD products by revenue (US\$m)**



**Limited innovation and significant remaining unmet needs**

Minimal innovation in AD for 15 years before the 2016 approval of Eucrisa®

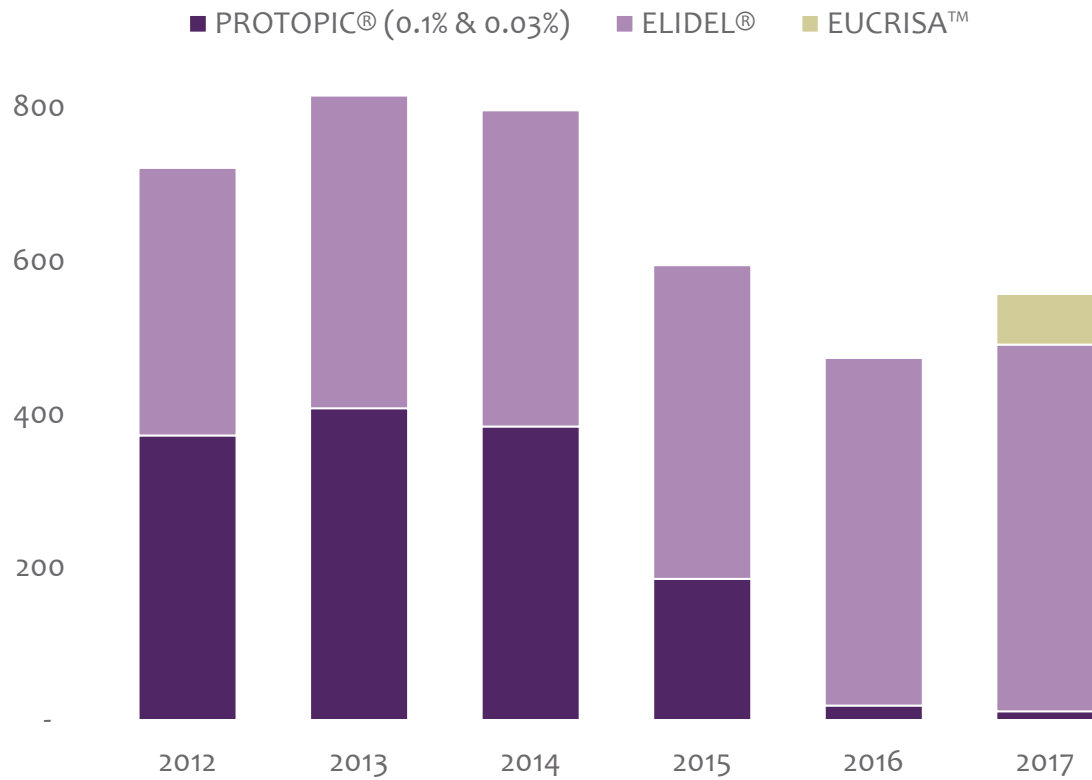
Eucrisa® does not affect itch and has been considered a launch failure

Source: Symphony Health Services (PHAST) 2017

# Leading US branded atopic dermatitis products

Leading topical branded atopic dermatitis products generated >550k prescriptions in 2017

Leading topical AD products by prescription ('000s)



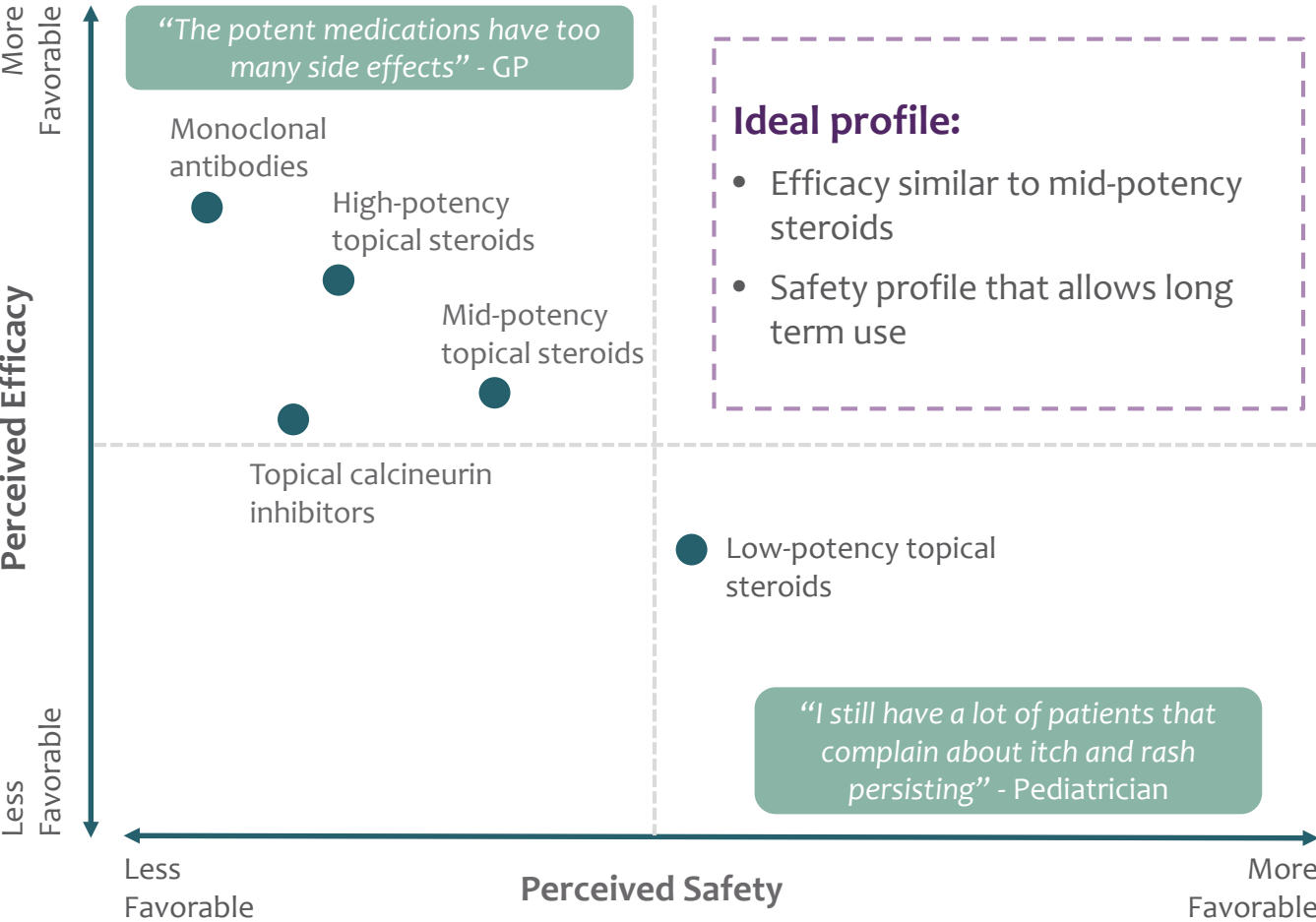
2016 list price and cost of topical AD products

Drug	List price (US\$)	Annual cost (US\$) <sup>1</sup>
Topicort®	\$540	\$9,720
Protopic®	\$850	\$10,200
Elidel®	\$275	\$3,300
Eucrisa®	\$580	\$6,955
<b>Branded / Branded Generic</b>		
Triamcinolone	\$24	\$384
Hydrocortisone	\$22	\$405
Desoximetasone	\$120	\$2,160
Clobetasol	\$170	\$3,056
<b>Generic</b>		

1. Estimated cost assuming 1 unit per month for 12 months  
 Source: Symphony Health Services (PHAST) 2017; The Medical Letter Vol. 58 (1487)

# BTX 1204 positioning and opportunity

Significant market opportunity exists for an atopic dermatitis treatment option which has an improved safety profile as compared to standard of care, significantly reduces itch, and can be used long term



## BTX 1204 has potential to meet a number of unmet needs....

- ✓ Non-steroidal treatment option
- ✓ Increased impact of itch
- ✓ Improved safety profile and elimination of severe adverse side effects
- ✓ Ability to use long term (>12 weeks)
- ✓ Address underlying inflammation
- ✓ Correct skin barrier dysfunction
- ✓ Greater cost effectiveness

## 4. Conclusion



# BTX 1204 Phase 1b atopic dermatitis study

4-week randomised, double-blind, vehicle controlled patient study – **NOW FULLY ENROLLED AND AWAITING DATA**

## Design

- ~36 subjects 18 years and older (24 active / 12 vehicle)
- 4 Australian dermatology sites
- At least 1 lesion (25 to 200 cm<sup>2</sup>), on the trunk upper or lower extremities
- Signs of AD score  $\geq 6$  and  $\leq 12$
- Investigator's Static Global Assessment (ISGA) of mild (2) or moderate (3)

## Endpoints

- Primary endpoints: safety – AEs, labs, local tolerability and signs of AD
- Exploratory endpoints:
  - ISGA
  - Target lesion size

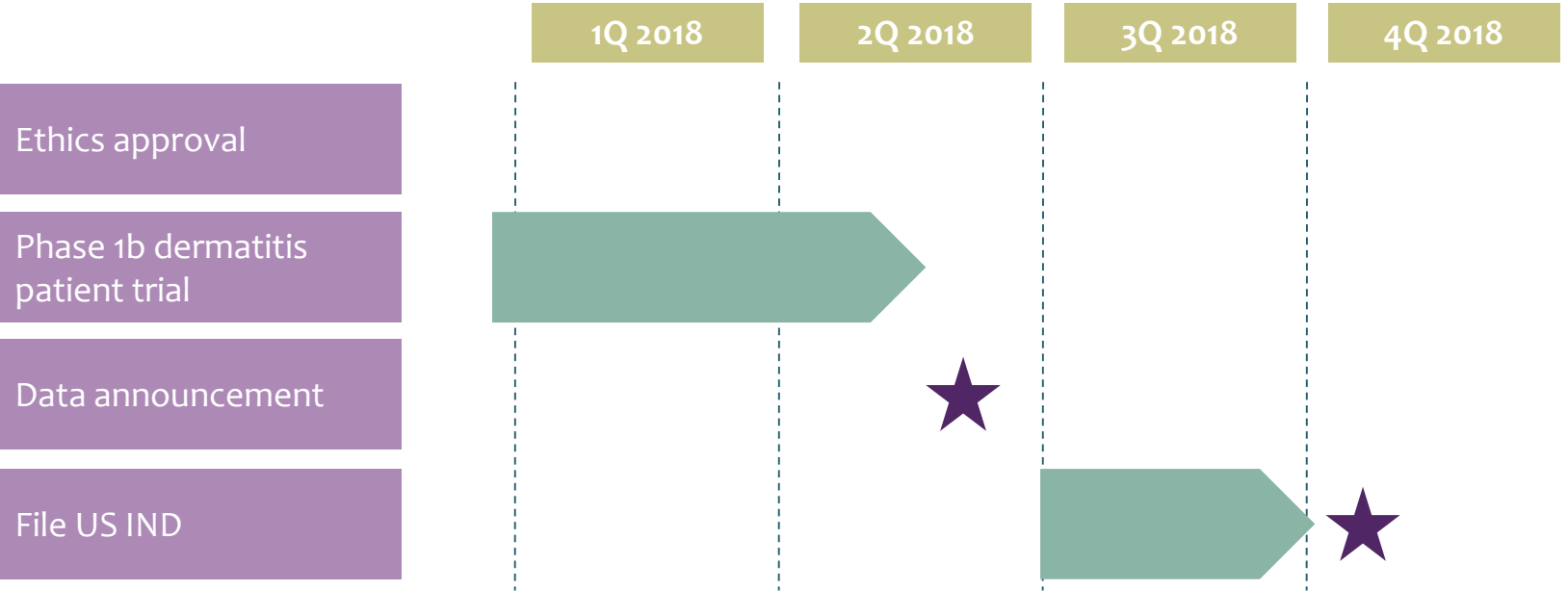


Data available in 2Q CY2018

# BTX 1204 for atopic dermatitis

Phase 1b patient study commenced in 4Q CY2017, with expected study completion and data planned for 2Q CY2018

## BTX 1204 indicative clinical timeline (CY)



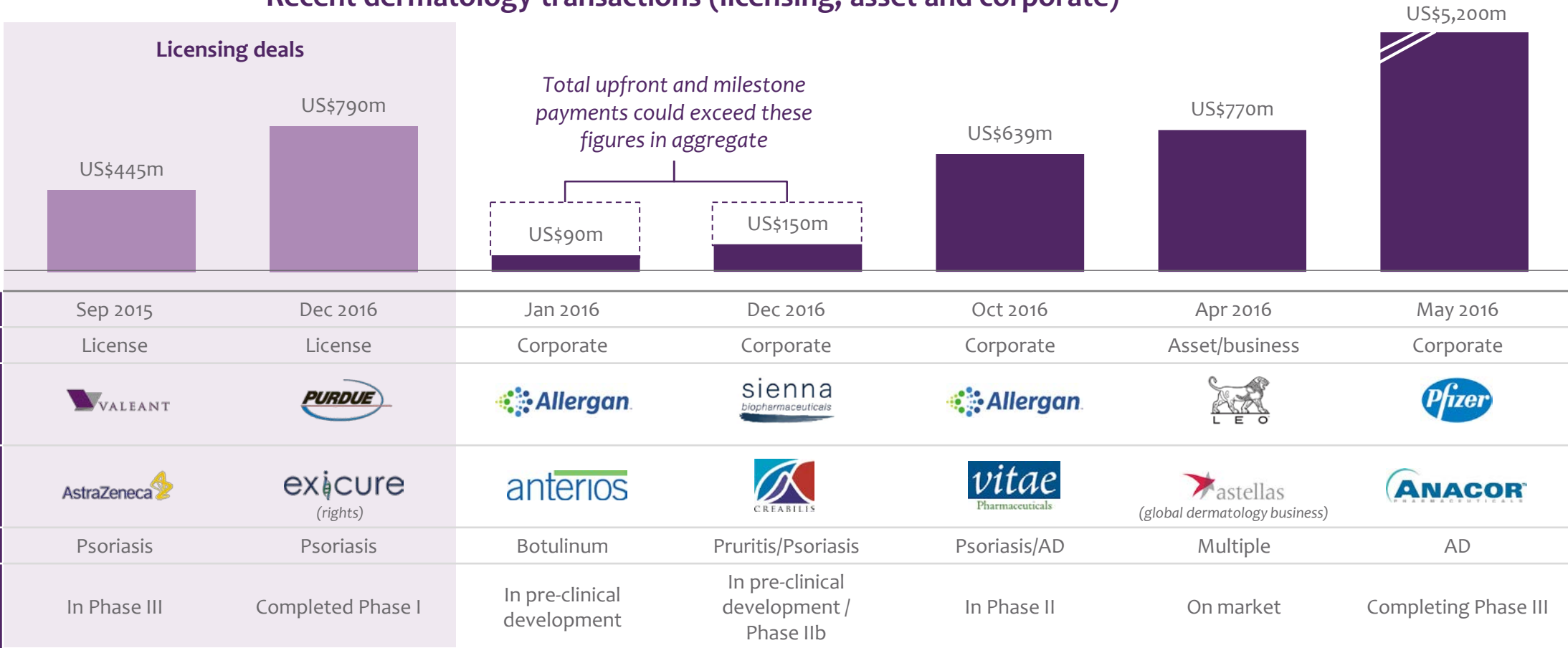
- Expected study completion and data announcement in 2Q CY2018
- Opportunity to accelerate into Phase 2 FDA regulated study in 2018

Study demonstrates Botanix’s ability to accelerate the addition of clinical programs by leveraging previous clinical data from the acne and other programs

# Recent dermatology transactions

Licensing and partnering transactions are potential monetisation options before product sales, with value increasing significantly as a product progress through the FDA process

Recent dermatology transactions (licensing, asset and corporate)





# Appendix: additional information



# Senior leadership: proven track record of success

Proven industry professionals with experience in rapid development of pharmaceuticals



**Mr Matthew Callahan**  
Executive Director

- Developed 3 products to date that have received FDA approval, 1 pending approval
- Previous investment director of 2 venture capital firms investing in life sciences



Corporate + IP



**Dr Michael Thurn**  
Chief Operating Officer

- Extensive start up life sciences experience across a range of technology platforms
- Previous MD of Spinifex Pharmaceutical, which sold to Novartis for A\$700m



Operations + Regulatory



**Mr Mark Davis**  
VP Clinical and Regulatory

- 30 years clinical experience with 19 FDA approved products across dermatology
- Former clinical lead with Medicis and Connetics and FDA experience with cannabidiol



Regulatory + Clinical



**Dr Bill Bosch**  
Executive Director

- 6 FDA approved products and inventor of the iCeutica SoluMatrix Technology
- Founder of NanoSystems and co-inventor of drug delivery technology NanoCrystal



Manufacturing + IP

20+ FDA approved products



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