Drug Repositioning on Rare Inflammatory Skin Diseases

安成生物科技股份有限公司
TWi Biotechnology, Inc

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BIO Asia-Taiwan 2024
Investment Summit

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Company Overview

TWi Biotechnology, Inc

TWi Biotechnology, Inc. ("TWIB") is a clinical-stage biopharmaceutical company based in Taipei, Taiwan, specialized in the development of repositioned drugs for unmet medical needs, especially in **rare diseases** and **dermatologic diseases** associated with inflammation.

- ✓ **Platform:** Proprietary topical formulations and drug delivery technologies
- ✓ **Pipeline:** Multi-product candidate pipelines from pre-clinical to IND, phase 1, to phase 2/3 clinical study stage
- ✓ **Business model:** Flexible business models including out-licensing and co-development with partners to balance return and risk
- ✓ **People:** Experienced core team and senior consultants with strong credentials in developing new drugs and executing clinical studies for treating rare diseases and dermal diseases
- ✓ **Shareholders:** Our founder and controlling shareholder, Dr. Chih-Ming Chen, is an industry veteran and serial entrepreneur in the pharmaceutical industry with an unrivalled track record.
- ✓ **Value for investors:** We offer a unique opportunity for investors to invest in a company developing a late-stage orphan drug to address the unmet medical need of a patient group to improve the quality of their lives.

Pipeline of Innovative Drugs under Development

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Indications		RD	Clinical Development			
		Pre-Clinical	Phase 1	Phase 2	Phase 3	Note
AC-203 Topical diacerein	Epidermolysis Bullosa Simplex					Phase 2/3 study ongoing
	Bullous Pemphigoid					Completed phase 2
AC-1101 Topical JAK inhibitor	Atopic Dermatitis					IND approval
	Granuloma Annulare					Completed phase 1b and proved the safety
	Vitiligo					Completed phase 1 and proved the safety

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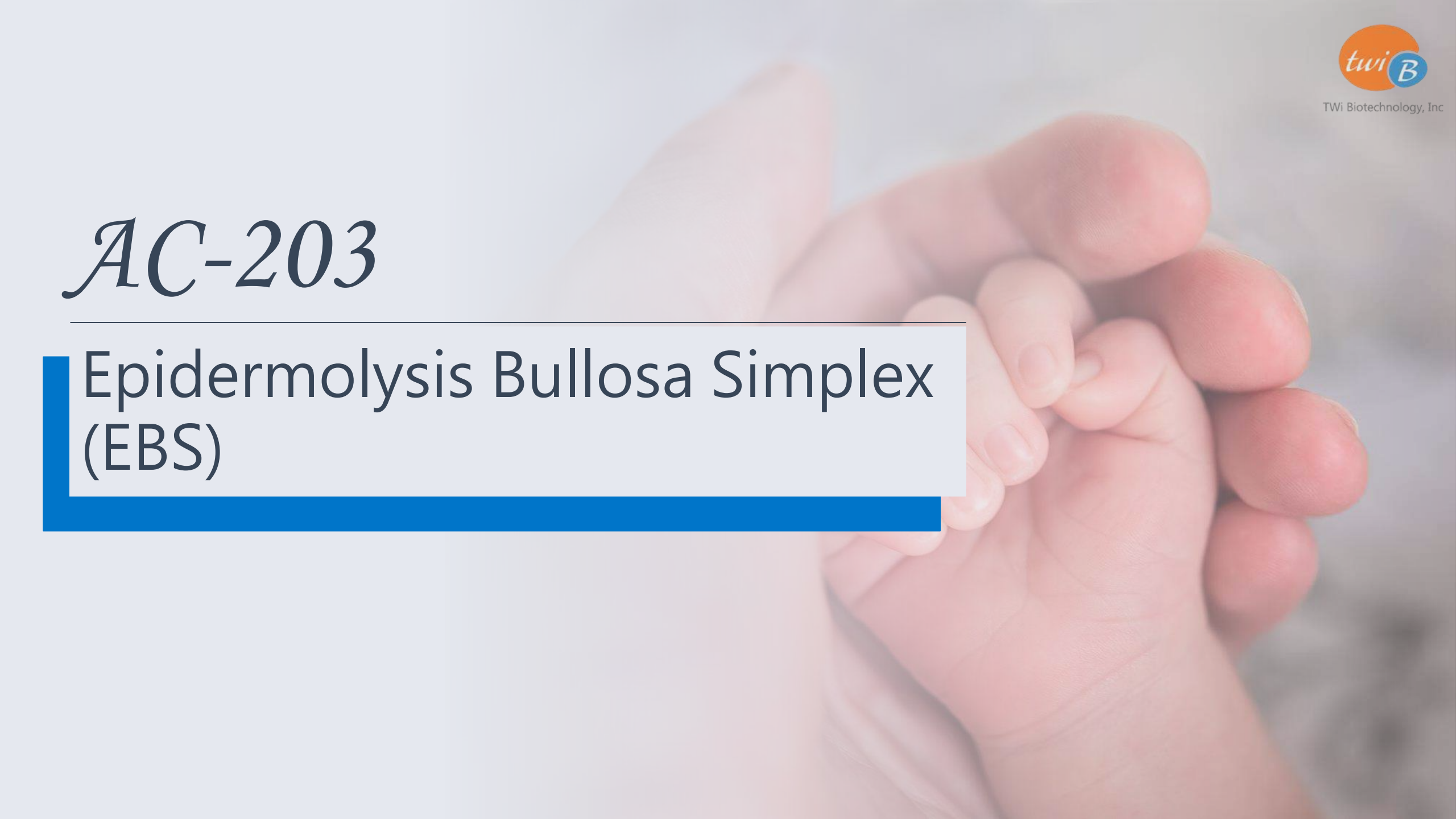
AC-203

Epidermolysis Bullosa Simplex (EBS)



AC-203: Diacerein 1% Ointment

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API / Formulation

Diacerein*
Topical Ointment

Oral dosage forms have been used in humans for **over 30 years**, and their safety has been established.

Indication

Epidermolysis Bullosa Simplex (EBS)

MOA

- IL-1β inhibitor
- Inflammasome inhibitor

Dosage

Once daily

Development Status

International, multicenter, randomized, double-blind, parallel group, vehicle-controlled, phase 2/3 study

Core Advantages

First-in-class
No approved drug for EBS

FIRST

As the fastest-developing EBS drug, it has entered a phase 2/3 clinical trial.

FASTEST

Rapid onset: improving lesions within 2 months

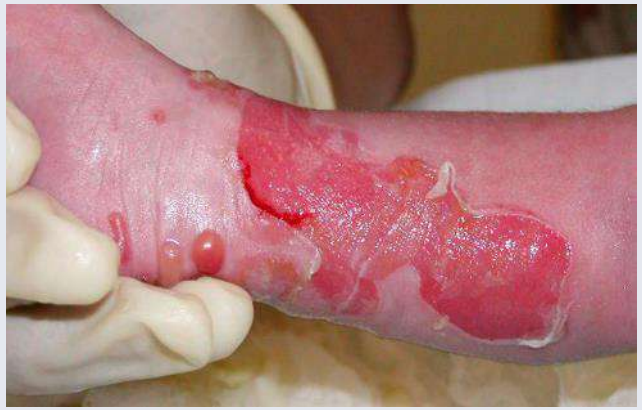
RAPID

*口服 Artrodar®（主成分為 diacerein），歐盟核准用於治療**骨關節炎**，人體使用經驗**逾 30 年**，安全性已確立

EBS, epidermolysis bullosa simplex; **IL,** interleukin

Epidermolysis Bullosa (EB):

A Congenital Genetic Blistering Disorder



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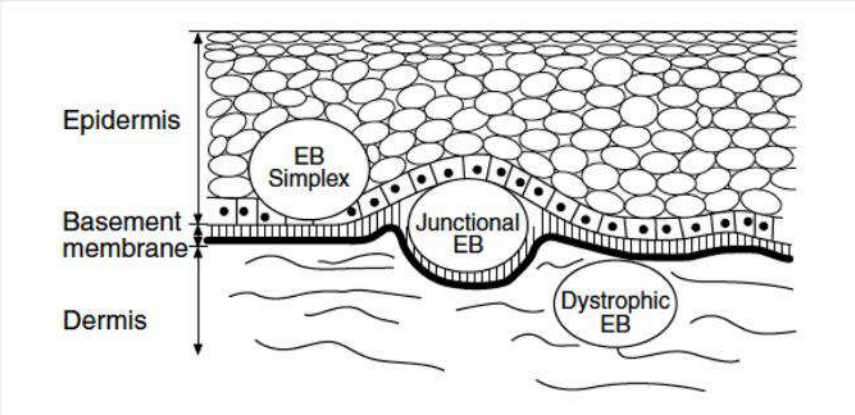
Level of blisters in different types of EB



- Junctional EB (5%)
- **EBS (70%)**
  - **Generalized Severe (Dowling-Meara, 25%)**
  - **Generalized Intermediate (Koebner, 15%)**
  - Localized (Weber-Cockayne, 60%)
- Dystrophic EB (25%)
- Kindler (1%)

https://www.ncbi.nlm.nih.gov/books/NBK1369/

EBS: Low Life Quality Because of Disease Burden

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(Icons collected from icons8.com)

EBS: High Demand in a Monopolistic Market

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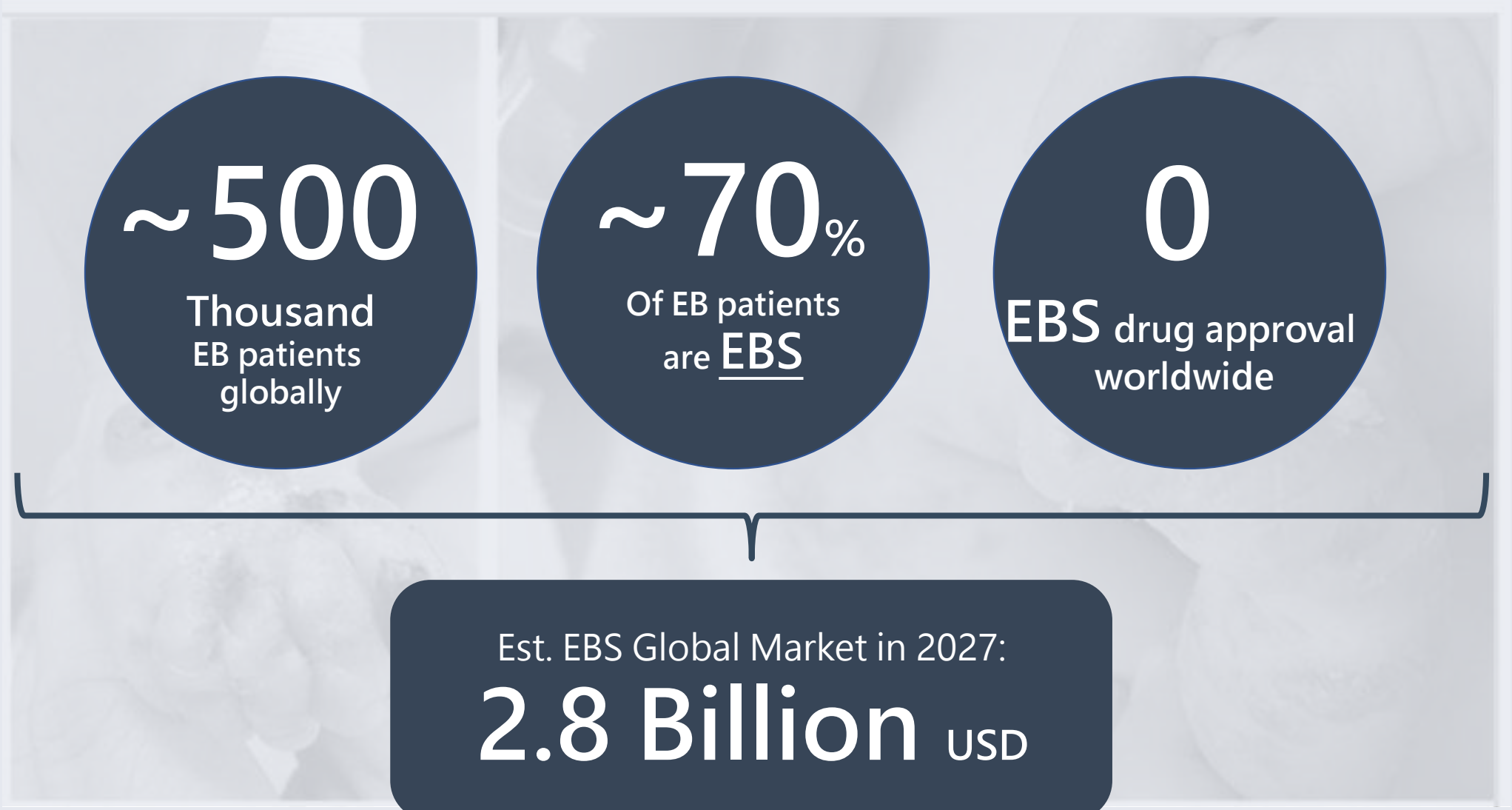

Source: Coherent Market Insights 2023, CMI Analysis

Competitive Landscape

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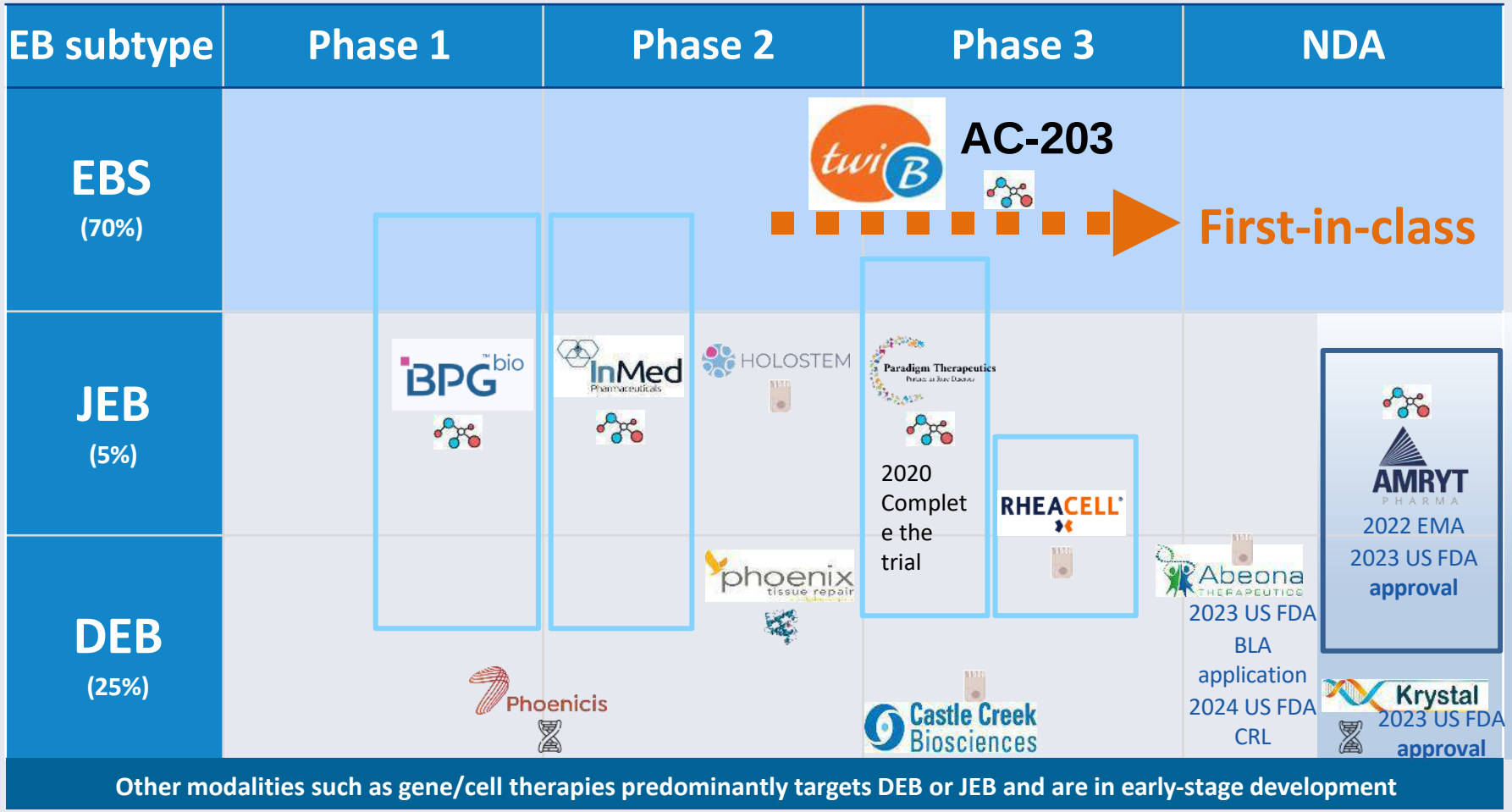

No treatment

2 treatments

Source: GlobalData; ClinicalTrials.gov; Company websites

Small molecule | Recombinant Protein | Gene Therapy | Cell Therapy

Development Status: Phase 2/3 Study Ongoing

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Clinical Trial studies

Global Phase 2/3 EBShield Study

- International, multicenter, randomized, double-blind, parallel group, vehicle-controlled, phase 2/3 study with open-label extension evaluating the efficacy and safety of diacerein 1% ointment for the treatment of generalized EBS (NCT06073132)

Designation list

US FDA

- Orphan drug designation
- Fast track designation
- Rare pediatric disease designation

EU EMA

- Orphan drug designation

Taiwan FDA

- Orphan drug designation

(Source: https://classic.clinicaltrials.gov/ct2/show/NCT06073132)

Phase 2b: Blister Numbers Reduced in EBS Patients After Diacerein Treatment

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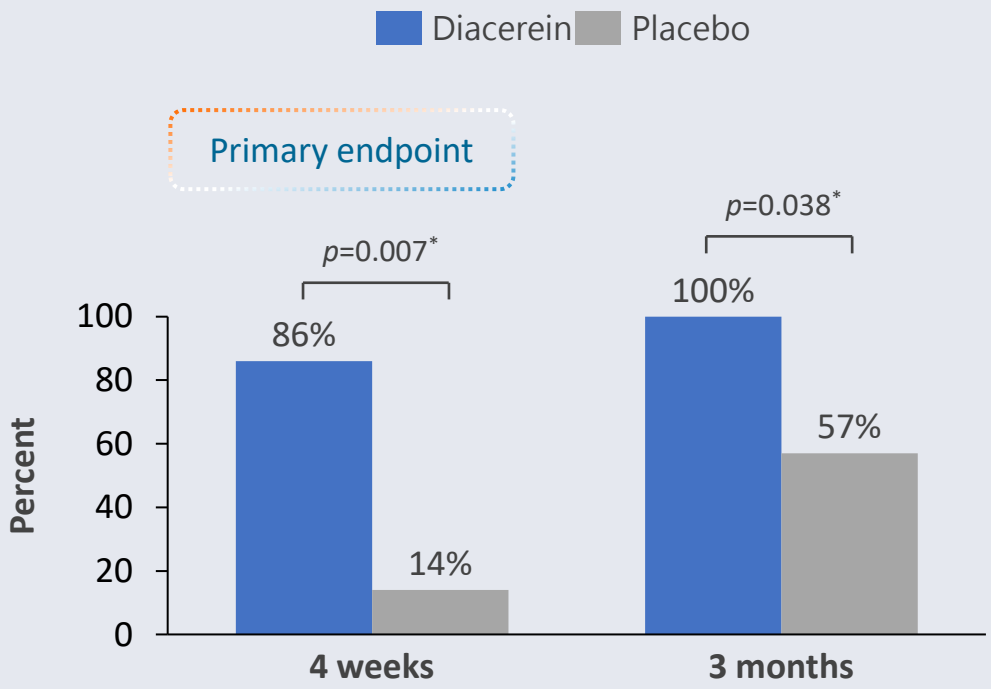
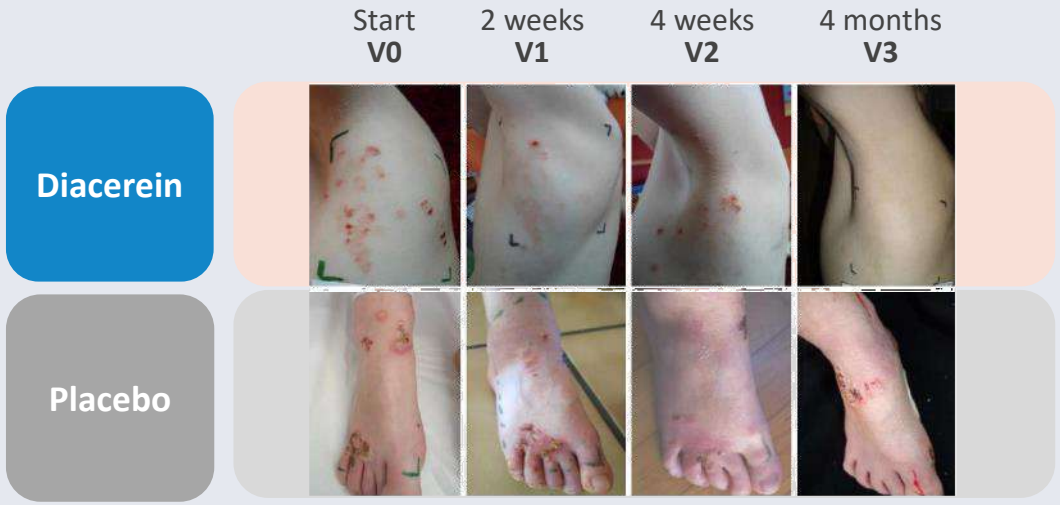
Severe EBS with *KRT5/14* mutation
N=17, 4-19 y/o

Topical AC-203
(1% diacerein cream, QD for 4 weeks)

Proportion of patients with >40% reduction in blister numbers



Representative images of improvements in lesions



*p-value were calculated using a one sided, Bernard's test for superiority.
EBS, epidermolysis bullosa simplex; **KRT,** keratin; **QD,** once daily; **V,** visit

1. Wally et al. *Orphanet J Rare Dise*. 2013;8:69. **2.** Wally et al. *J Am Acad Dermatol*. 2018;78:892-901.

Sponsor: EB House, Austria

Phase 2 DELIVERS Study:
Marked Efficacy Trend in Severe EBS Patients

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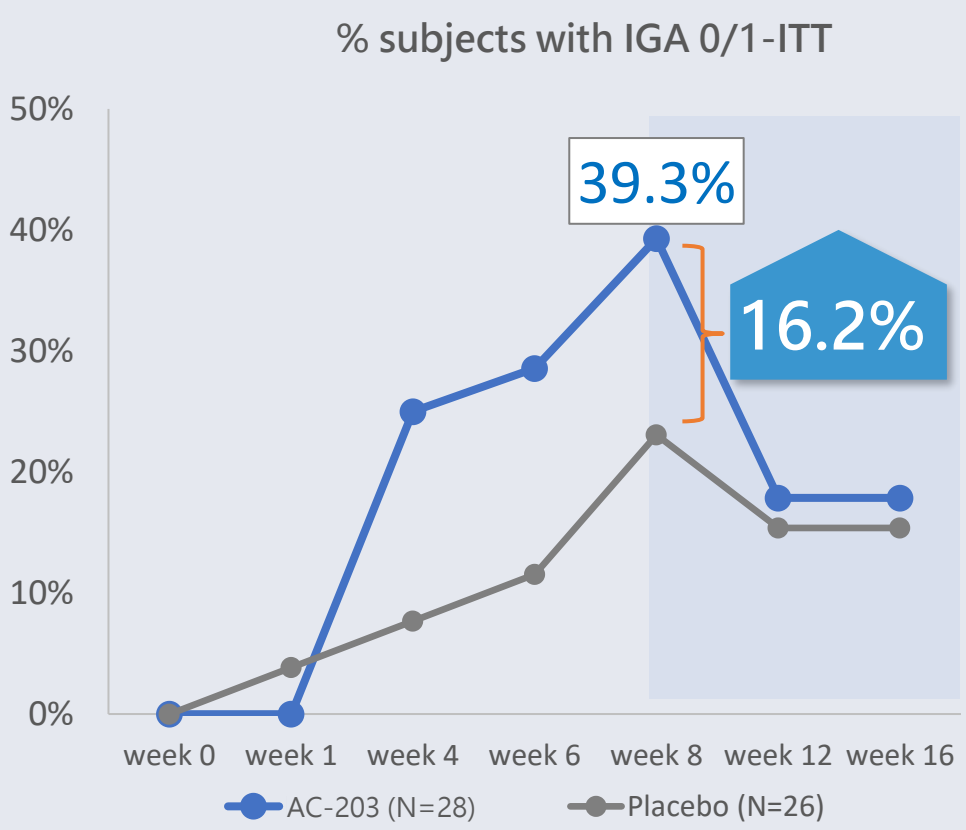
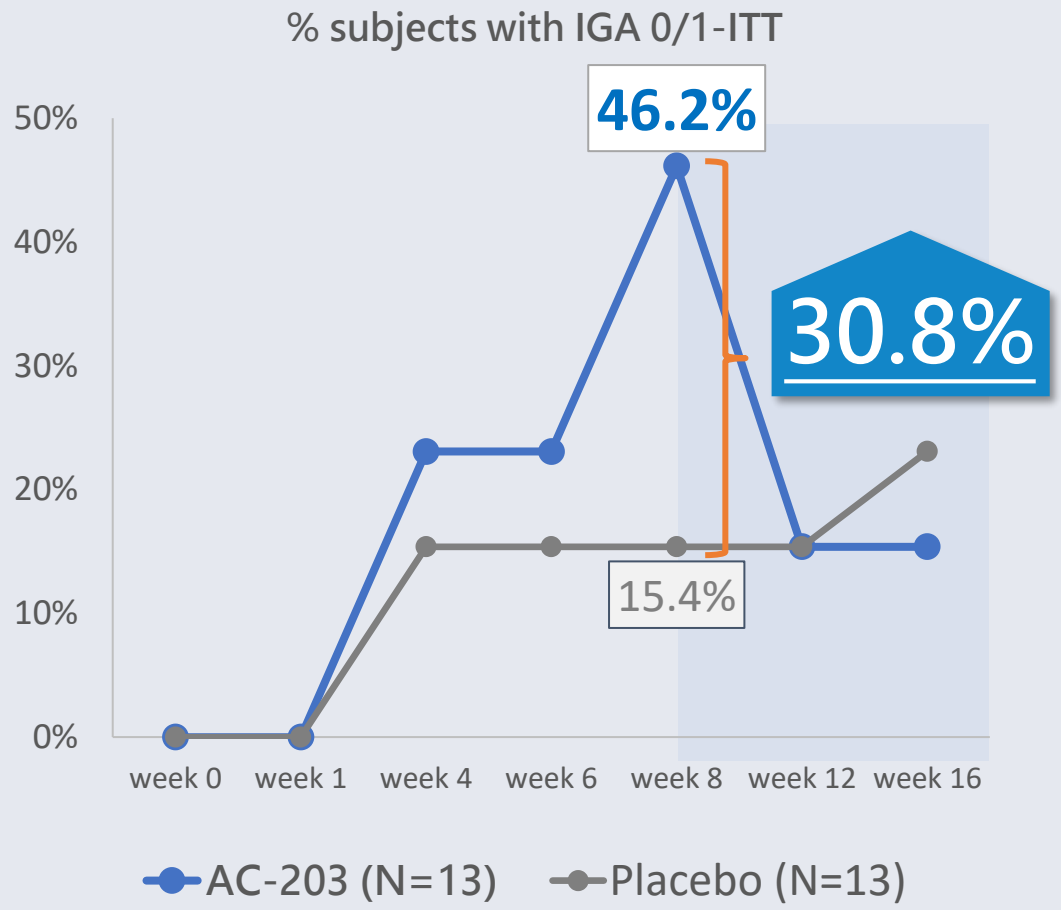
All EBS subtypes



Severe EBS only



Teng et al. *J Drugs Dermatol* 2023;22:599–604.

Global Phase 2/3 Pivotal Study in Progress

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Where we conduct the global trial:

30+sites in US, Europe, UK, Australia, and Asia

What we focus on:

- Severe and intermediate EBS
- *KRT5* or *KRT14* mutation
- Age ≥ 6 months
- IGA as the primary endpoint

Timeline for AC-203

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Summary and Value Proposition for AC-203

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Drug designations
(ODD, fast track, RPDD, etc.)

Effects in the nonclinical studies
(Chemokine and aggregate reduction)

Safety and efficacy confirmation in clinical trials
(esp. in severe EBS)

High-demand market
(No drug approval for EBS)

Partnership

Licensing-out

- China √
- Japan & Korea √
- Looking for partners for global rights

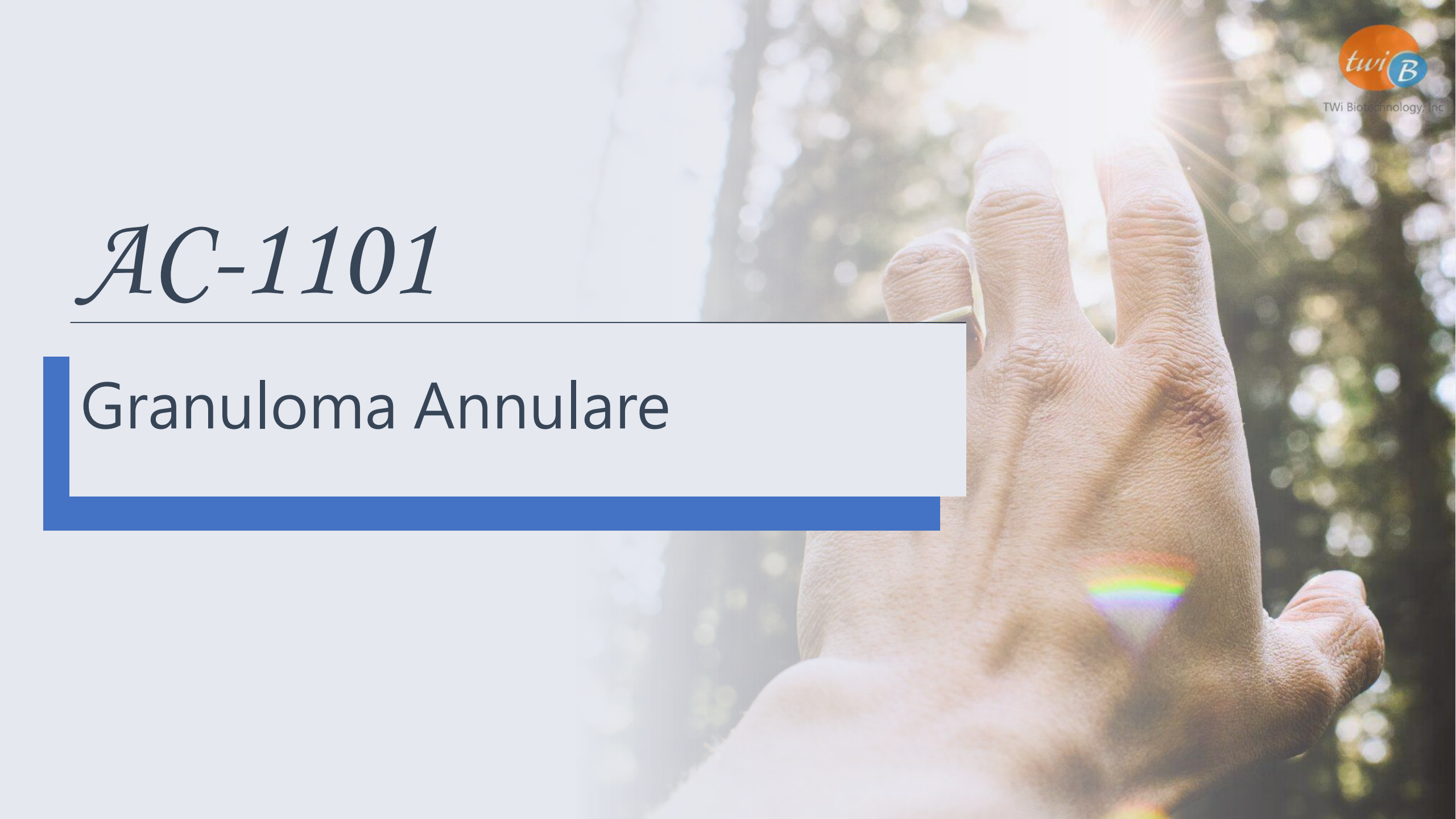
Investment

- An Emerging Market stock
- 2024 fund-raising plan

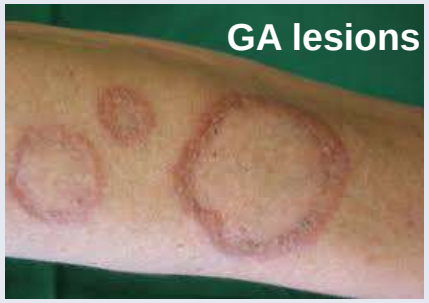
(Icons collected from icons8.com)

AC-1101

Granuloma Annulare



Granuloma Annulare



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Skin disease

Common in adults

Twice as common in women

Inflammation

Pink or purple ring patches

Lifelong Impact

No Treatments

(Icons collected from icons8.com)

AC-1101, a Topical JAK Inhibitor

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AC-1101 (Tofacitinib Gel)

MoA JAK 1/3 Inhibitor

NDA 505(b)2
From Pfizer's tofacitinib

CT Clinical Phase 1b completed
Safety proven

IP Expire in the year 2039

AC-1101 Indications

- Granuloma Annulare
- Atopic Dermatitis
- Vitiligo

AC-1101: Nonclinical Studies

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Pharmacokinetic (PK)

Repeat dose toxicity:
Negative

Acute Ocular
Irritation Study:
No ocular irritation

Dermal Toxicity /
Skin Sensitization
No skin sensitization

Phototoxicity:
No phototoxicity

(Icons collected from icons8.com)

AC-1101: Clinical Studies

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Healthy Subjects

Clinical Phase 1a, AC-1101 gel	
Healthy Subjects	**Measurements:** • Safety • Pharmacokinetics (PK)

Granuloma Annulare (GA)

Clinical Phase 1b, AC-1101 gel	
GA Patients (Localized and Generalized)	**Locations:** TBD **Measurements:** • Safety • Tolerability • PK and Efficacy (Dermal Rating Scale, BSA*, GASMI* etc.)

BSA*: Body surface area; GASMI*: Granuloma Annulare Severity and Morphology Instrument

Previous Evidence of Oral Tofacitinib Treatment in GA

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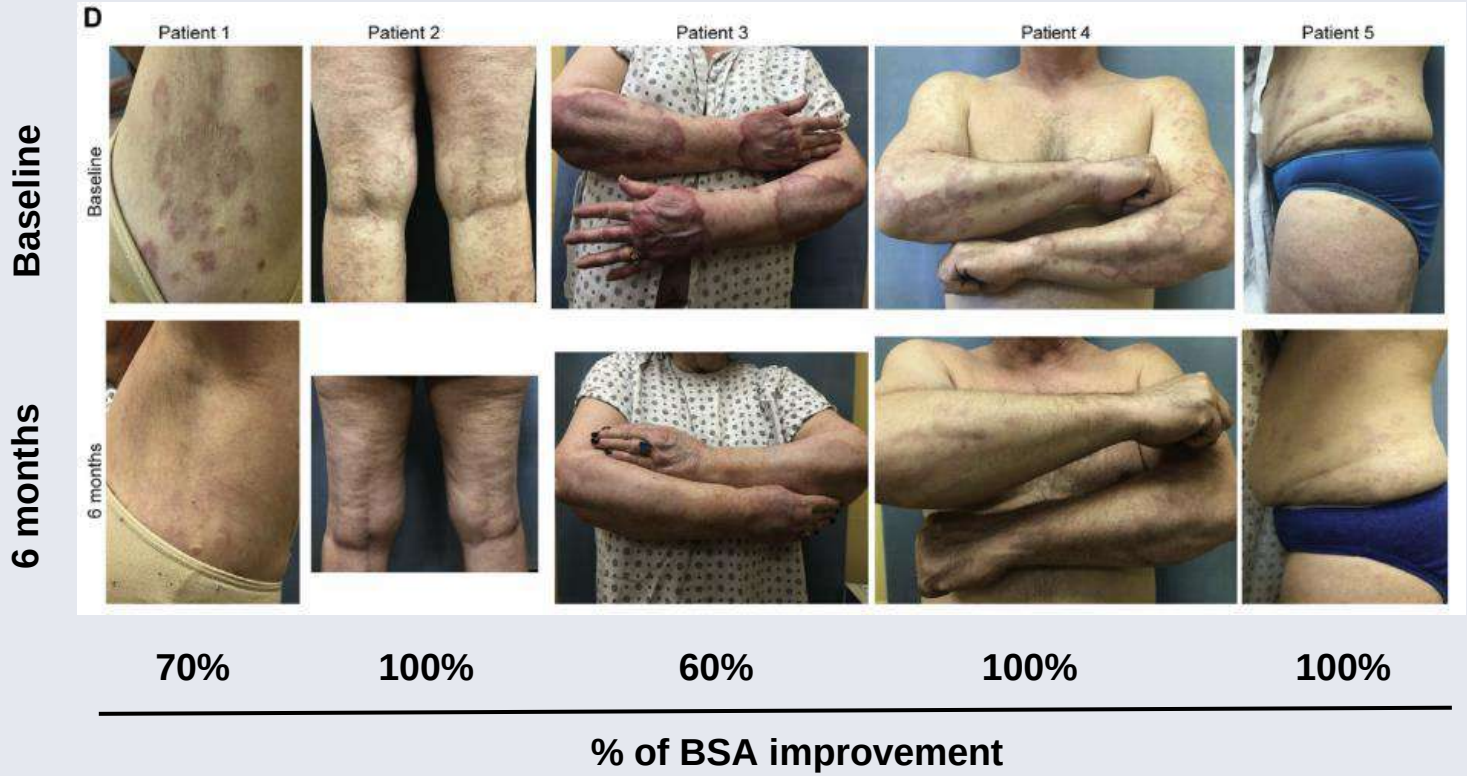
William Damsky, MD, PhD

Yale University School of Medicine

Yale Medicine

- Evaluated the efficacy of **oral tofacitinib BID for 6 months** in 5 patients with severe, long-standing GA in an open-label clinical trial.
- Treatment of 5 patients with tofacitinib resulted in clinical and histologic disease remission in 3 patients and marked improvement in the other 2. (NCT03910543; Pfizer sponsored)



Ref: Wang et al. *J Allergy Clin Immunol.* 2021;147:1795-1809.

AC-1101: Phase 1b GA trial

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William Damsky, MD, PhD

An open-label, single arm, phase I study to evaluate the safety and tolerability of AC-1101 topical gel in patients with Granuloma Annulare (NCT05580042)

GA patients ≥ 18 y/0 (n ≥12)

AC-1101-GA-001 protocol

Primary endpoint

- To evaluate the safety and tolerability of AC-1101 gel

Secondary endpoint

- To assess the preliminary pharmacokinetics (PKs) of tofacitinib in patients
- To evaluate the proposed clinical assessments in as potential clinical outcome measures to support future efficacy studies

Good Safety and Tolerability

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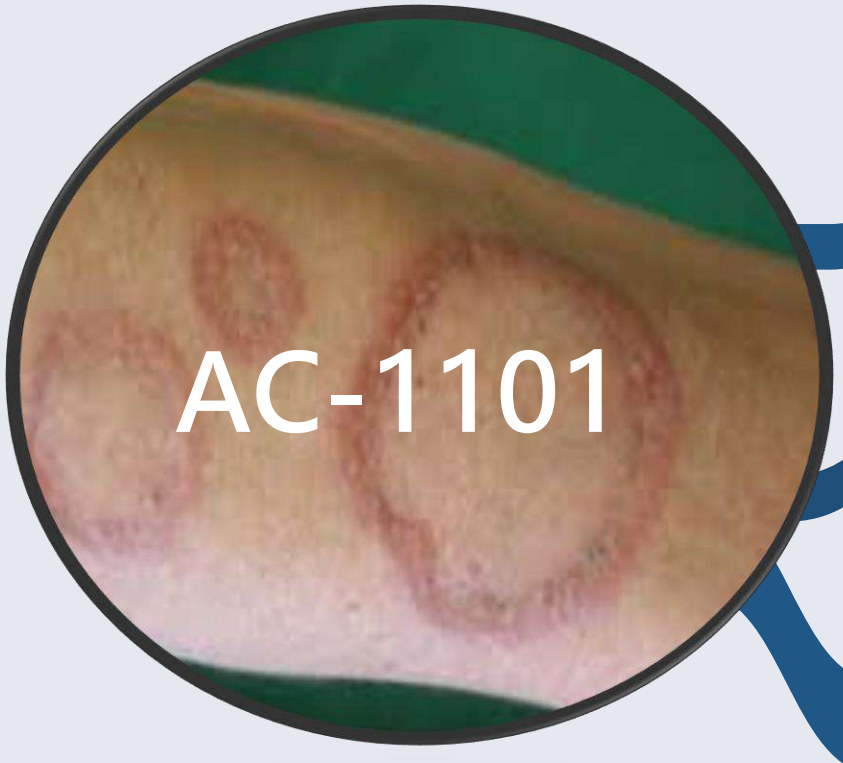
- No serious or severe AEs or TEAEs
- No subjects discontinued due to a TEAE.

Summary



- Safe and tolerable
- Minimal systemic exposure
- Potential trend of efficacy

Plan to apply the ODD

AC-1101: Summary and Value Proposition

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IP protection and 505(b)2
(IP protection for formulation)

Effects in the nonclinical studies
(Chemokine & clear MoAs)

Safety and efficacy Confirmation in clinical trials
(Phase 1a and 1b proved its safety and efficacy)

Strong Unmet Medical Needs
(No FDA-approved drug to treat GA on the market)

Partnership

co-development

Licensing-out

(Icons collected from icons8.com)

TWi Biotechnology, Inc

TWi Biotech. Inc.
Official Website

Thank You!

Q & A

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