Edesa Biotech™

CxCL10 as Target for Treatment of Vitiligo

Forward Looking Statements

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November 2024

Edesa Highlights

Advancing First-in-Class Therapeutics for Immuno-Inflammatory Diseases

First-in-Class Targets

Toll-like Receptor 4 (TLR4)

C-X-C motif chemokine ligand 10 (CXCL10)

Secretory phospholipase A2 (sPLA2)

Clinical Stage Pipeline and Data

EB05: Ph2 data in critically ill ARDS suggest potential to be standard of care

EB06: Phase 2 CTA in vitiligo approved, and IND in progress

EB01: Phase 2b data in chronic ACD with potential to be first labelled treatment

Demonstrated Track Record

Successfully executing clinical programs

Entrepreneurial team with strong record of partnering and exits

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First-in-Class Development Pipeline

Advancing First-in-Class Therapeutics for Immuno-Inflammatory Conditions

Franchise	Asset	Program	Indication	Pre-Clinical	Phase 1	Phase 2	Phase 3	Status	Comments
 Dermatology	**Anti-CXCL10** (mAb)	**EB06**	Vitiligo					CTA granted; IND in progress	Ph2 PoC and drug manufacturing plans in progress
	sPLA2 Inhibitor (Small Molecule)	**EB01** Daniluromer	Allergic Contact Dermatitis (ACD)					Ph3-ready	Partnering stage
 Respiratory	**Anti-TLR4** (mAb)	**EB05** Paridiprubart	ARDS - General					BARDA platform study	U.S. govt-funded
								To be informed by BARDA results	Canada govt funding; Refocusing Covid project to general ARDS
		EB07 Paridiprubart	Pulmonary Fibrosis					Ph2-ready	Ph2 study prep and IND in progress

ARDS: Acute Respiratory Distress Syndrome. CTA: Clinical Trial Application (Canada). IND: Investigational New Drug Application (US)

EB06 - Vitiligo

First-in-Class Anti-CXCL10 mAb

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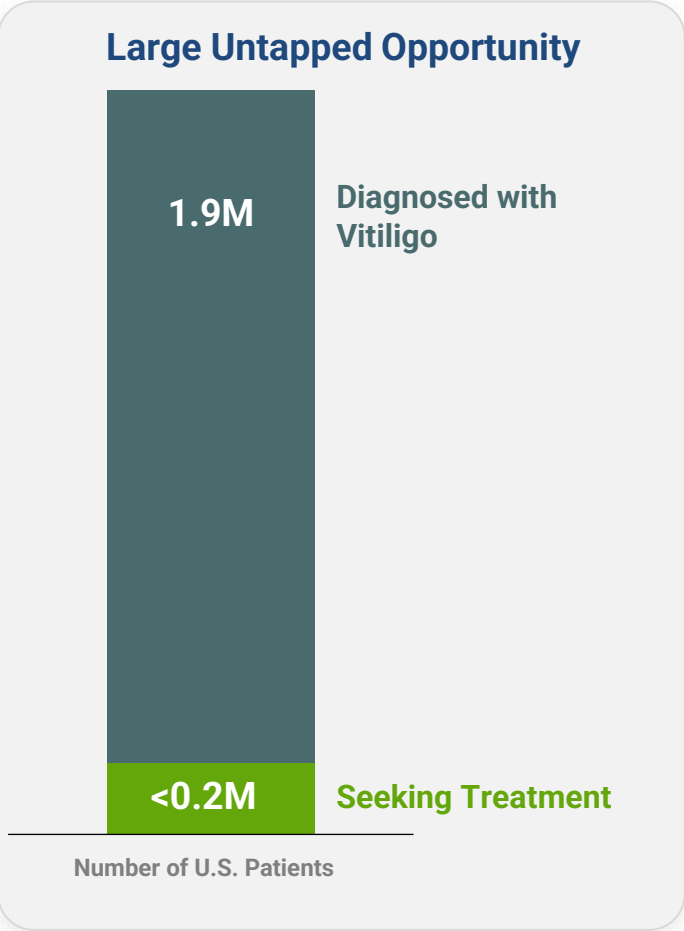
A Significant Unaddressed Market

Latent Market Comprised of Patients Waiting for Better Treatment Options



Large population but low proportion of patients seeking treatment due to **lack of effective and safe treatments**

New therapies likely to drive market growth

Opzelura is the only approved product and is poised to realize net sales of >$100M within 3 quarters of launch despite topical formulation and potential safety concerns

Need for new options underscored by recent M&A activity

Villaris was acquired by Incyte in late 2022 for up to $1.36B, including $70M upfront

Villaris was developing auremolimab (Ab that blocks IL15R), which was preclinical at the time of acquisition

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Sources: National Institute of Health and public reports

Vitiligo and Psoriasis: Parallels in Treatment Development

Evolution of the Psoriasis market towards multiple drugs with an increased emphasis on downstream targets

Prevalence

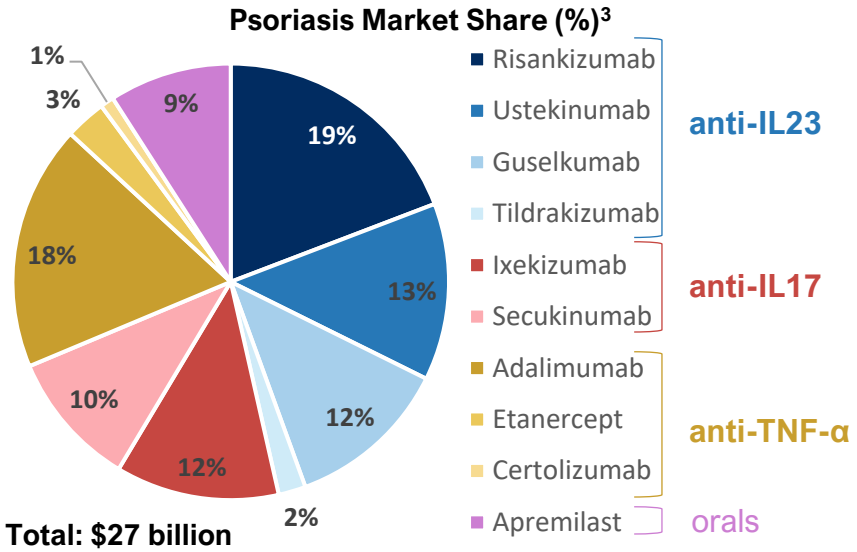
Vitiligo ~1%[1] vs Psoriasis ~3%[2]

Evolution of Psoriasis Market

- ~20 years ago, key systemic treatments were molecules targeting broad immunosuppression such as methotrexate, cyclosporine and retinoids[3]
- Market has seen novel targeted oral and biologics being developed for moderate to severe patients
- Early biologics targeted TNF-α
- Continued development towards more targeted therapies
  - modulation of downstream to IL-17A and IL-23
- Anti-TNF-α not as effective and less safe than anti-IL17A and anti-IL-23
- Novel Biologics >> Novel Oral Therapies

Billion Dollar Market with Multiple Validated Targets

- Psoriasis market evolution accommodated various targets (IL-23, IL-17A, PDE4) and multiple treatment options (Oral small molecule, Biologics).
- Market leaders biologics targeting IL-23 and IL-17A.



Vitiligo market at a similar juncture as early Psoriasis:

– Topical JAK inhibitors first approved therapy. Oral systemic Jak inhibitors in development with new safer and more targeted options being developed (e.g. anti-CXCL10 and anti-IL5 etc.).

1. *JAMA Dermatol.* 2022;158(1):43-50. doi:10.1001/jamadermatol.2021.4724
2. *JAMA Dermatol.* 2021;157(8):940-946. doi:10.1001/jamadermatol.2021.2007
3. Treatment of Psoriasis: An Algorithm-Based Approach for Primary Care Physicians | AAFP
4. Discovery of the IL-23/IL-17 Signaling Pathway and the Treatment of Psoriasis - PMC (nih.gov)
5. The pipeline and market for psoriasis drugs (nature.com)

Vitiligo

A Life-Altering Autoimmune Disease

High Prevalence – 1% Global Population

50% Onset Before Age 20; Must be Managed for Decades

Associated with Type 1 Diabetes and Lupus, among others

Severe Quality of Life Impacts

Same or Worse than Atopic Dermatitis/Psoriasis

Interferon IFNγ-CXCL10-CXCR3 Chemokine Axis

CXCL10 is an IFN-γ induced chemokine and is is elevated in serum of patients with vitiligo

Its receptor CXCR3, is upregulated on autoreactive T cells in the blood and skin of patients with vitiligo

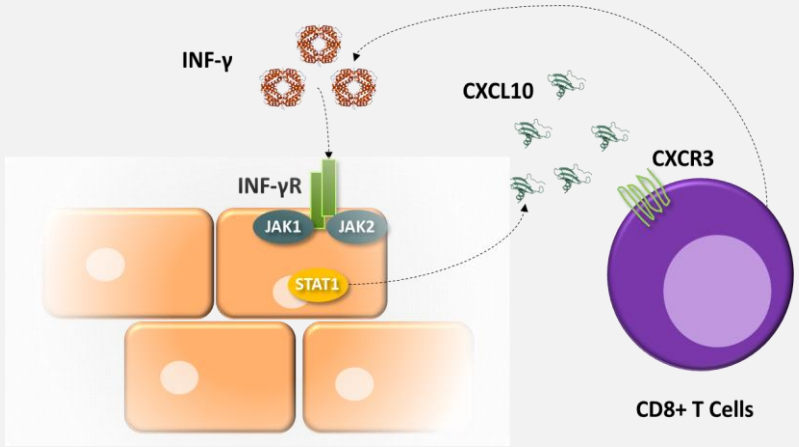
Therapies for Atopic Derm (Th2) or Psoriasis (Th17) are Largely Ineffective or Can Make Symptoms Worse

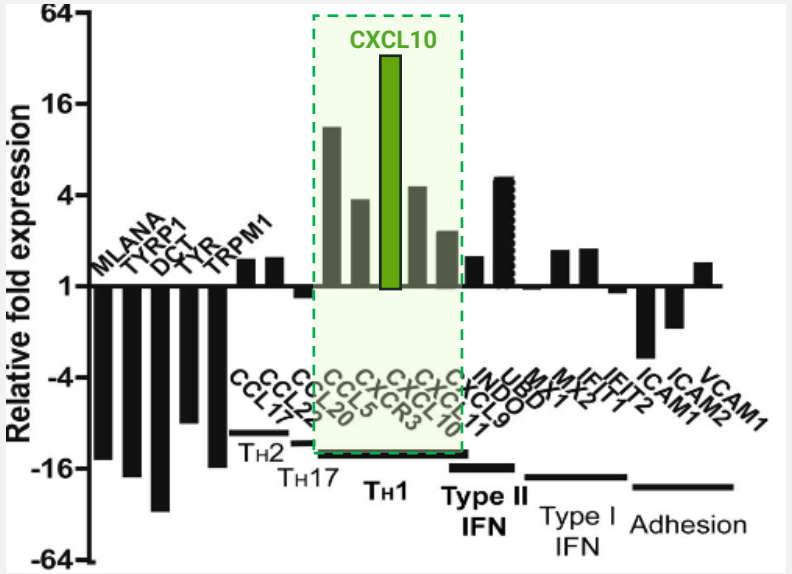
No Systematic Drugs Approved by FDA to Repigment Skin

Topical and Phototherapies Limited Effectiveness

Targeted Immunotherapies are Needed

IFNγ-CXCL10-CXCR3 Chemokine Axis Play a Key Role in the Pathogenesis of Vitiligo





Rashighi M et al. Sci Transl Med. 2014 Feb 12;6(223):223ra23

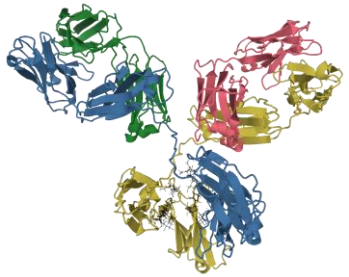
EB06 Positioning – Target Product Profile

Addressing Unmet Needs in Vitiligo

	Topical JAK Inhibitors (e.g. Ruxolitinib)	**Oral JAK Inhibitors** (e.g. ritlecitinib, povorcitinib)	**Topical BET Inhibitors** (e.g. VYN201)	**Biologics** (e.g. EB06, auremolimab)
Treats lesional and non-lesional skin	✗	✓	✗	✓
Viable for patients with >10% BSA	✗	✓	✗	✓
No Expected Safety Precaution (Black Box)	✗	✗	✓	✓
No Daily Dosing required	✗	✗	✗	✓

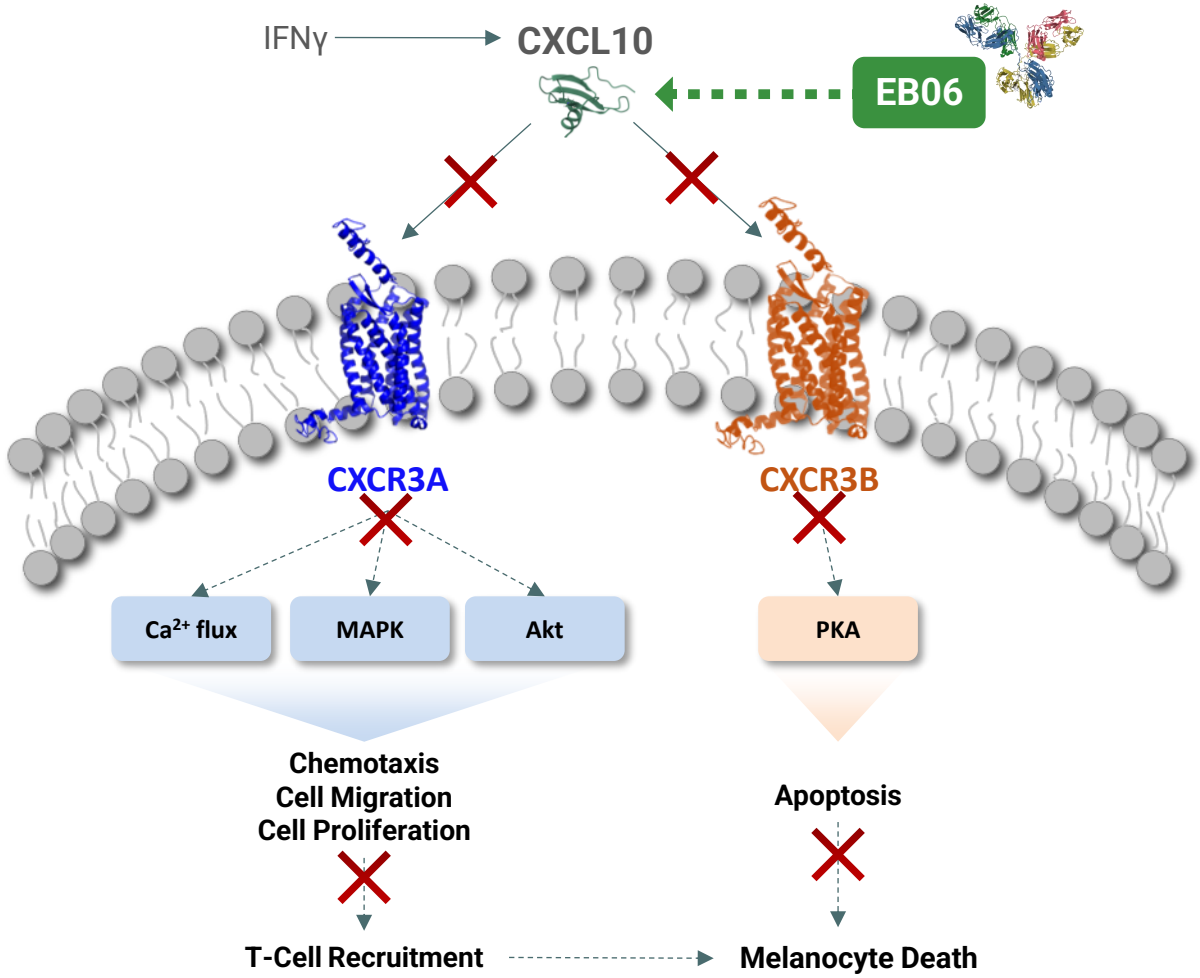
EB06 – Targeting the Chemokine CXCL10

Monoclonal Antibody that Directly Binds CXCL10 with High Affinity and Blocks it from Binding to CXCR3



Drug Profile

- A fully human IgG1λ2 monoclonal antibody
- Binds specifically to CXCL10 with high affinity
- Sequesters and renders CXCL10 inactive
- 65 patients dosed
- Multiple manuf. runs by a leading CDMO; IV formulation; future subcutaneous



EB06 - Vitiligo

Preclinical Evidence

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Vitiligo Progression - IFNγ-CXCL10-CXCR3 Chemokine Axis

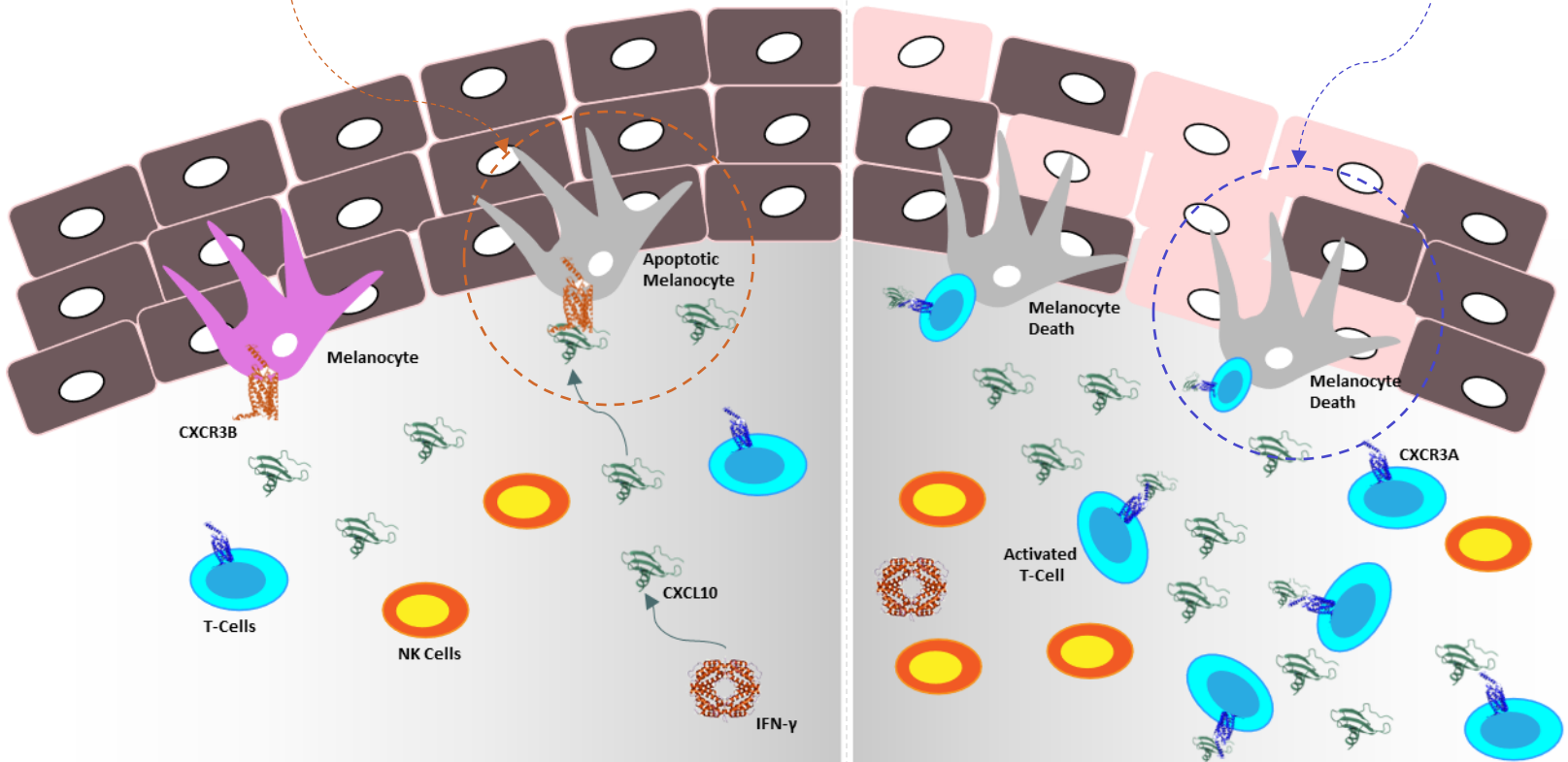
CXCL10 is Crucial in the Multiple Stages of Vitiligo Disease Progression

Non-Lesional (Innate)

- Increased NK cells and CXC3B expression
- INF-γ induced production of CXCL10
- **CXCL10/CXCR3-B mediated melanocyte apoptosis** and antigen presentation

Lesional (Adaptive)

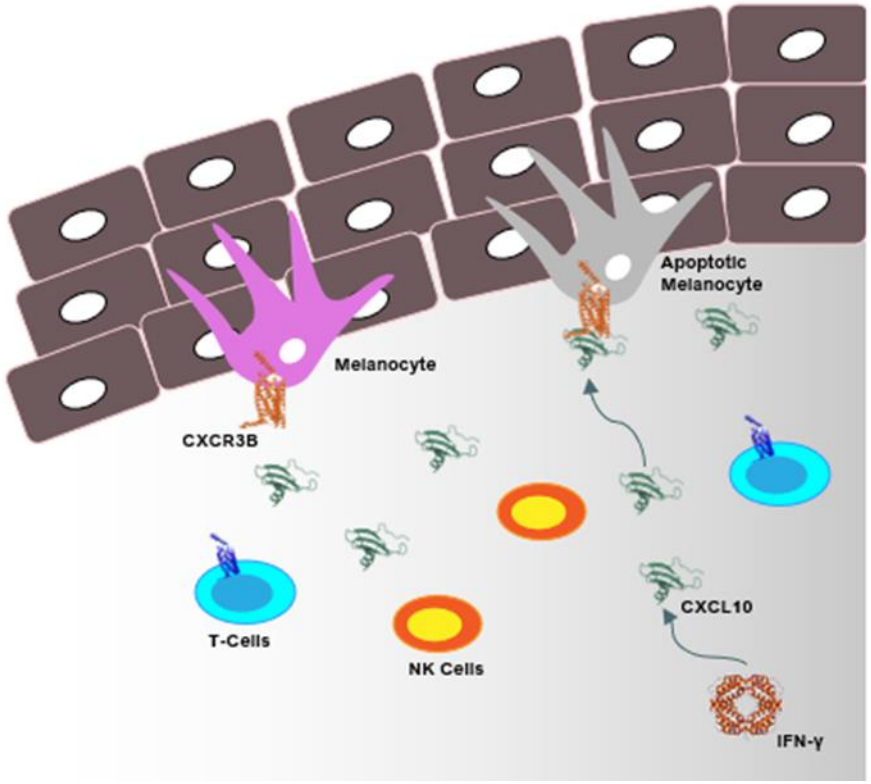
- **CXCL10 creates chemotactic gradient and recruits melanocyte-specific T-Cells through CXCL10-CXCR3A**
- CD8+ T-cell activation results in melanocyte death
- T-cells/chemokines levels prevent re-pigmentation

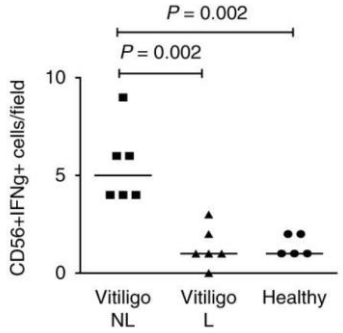


Vitiligo Progression – Innate Response in Non-Lesional Skin

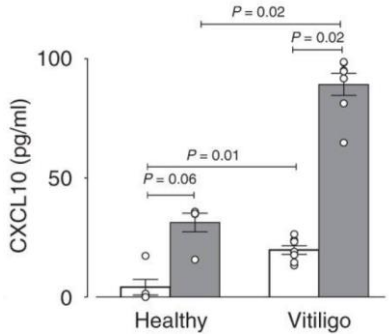
Innate cells are Important in CXCL10 Expression and Melanocyte Apoptosis Occurs via CXCL10-CXCR3B

Non-Lesional (Innate)

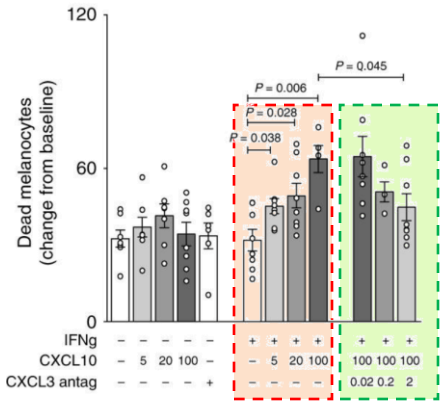




Increased levels of NK cells in non-lesional vitiligo



Increased levels of CXCL10 with and without IFN-γ in vitiligo



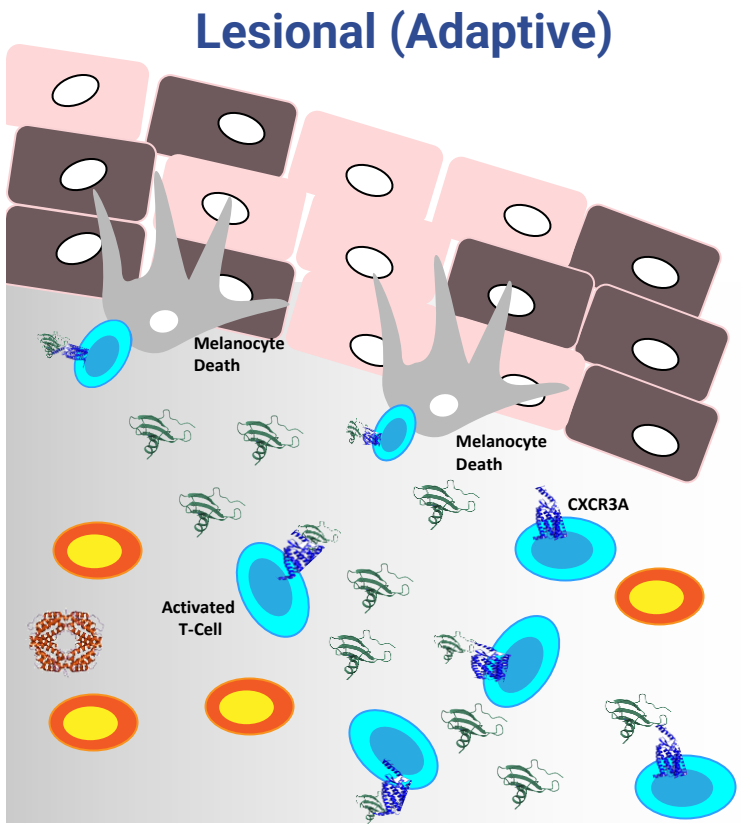
Dose dependent **melanocyte death** in response to increasing CXCL10 levels

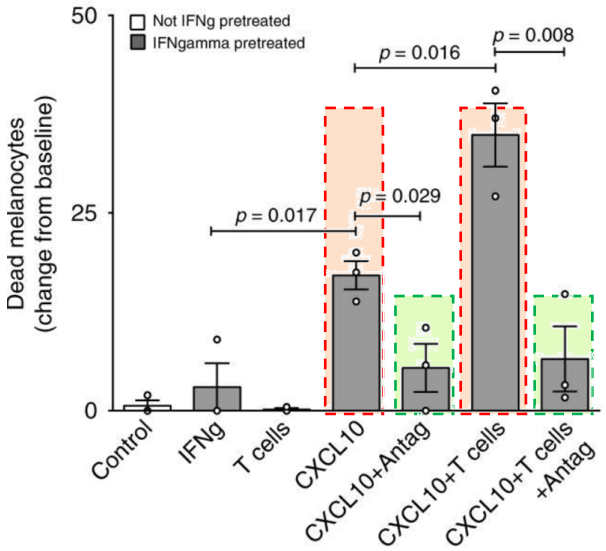
Dose dependent **melanocyte survival** in response to increasing CXCL10-CXCR3 antagonist

Tulic et al. Nat Commun. 2019 May 16;10(1):2178.

Vitiligo Progression – Transition into an Adaptive Response

Melanocytic antigens from dead melanocytes and antigen presentation by surviving melanocytes





Melanocyte death in is increased in the presence of CXCL10

Melanocyte survival increased when CXCL10 / CXCR3 is blocked

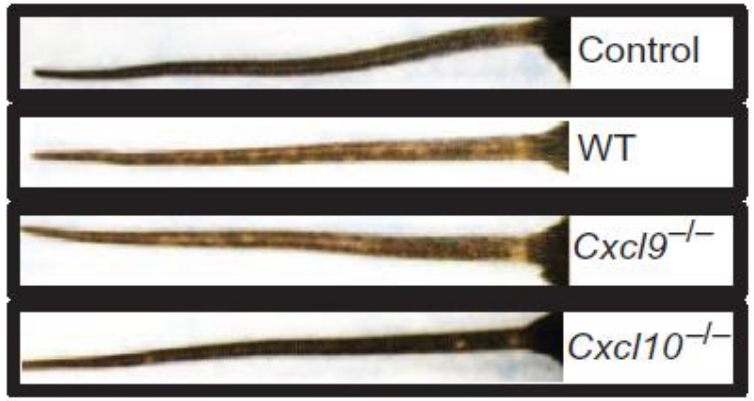
More pronounced melanocyte death when autologous T-cells are added post-CXCL10—I.e. after innate component is stimulated.

Tulic et al. Nat Commun. 2019 May 16;10(1):2178.

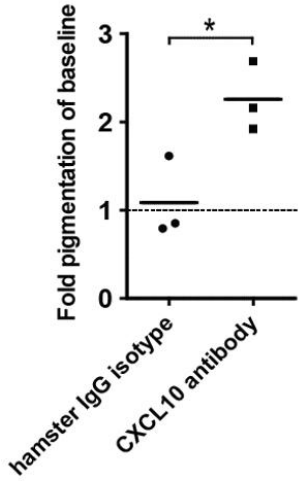
Vitiligo – Blocking IFNγ-CXCL10-CXCR3 Chemokine Axis

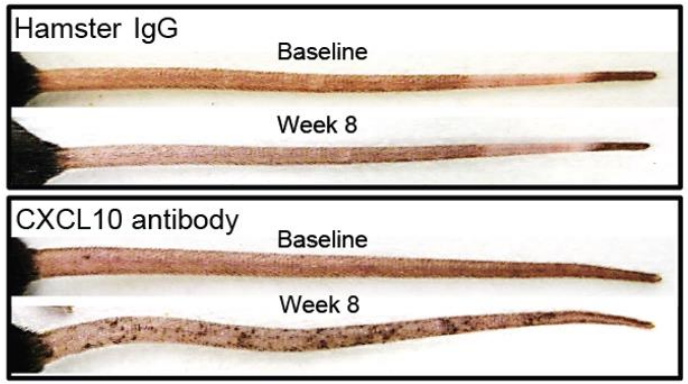
Evidence of therapeutic potential of CXCL10 as a target

Mice without CXCL10 do not develop Vitiligo



Anti-CXCL10 Antibodies Result in Re-pigmentation of Mice with Vitiligo

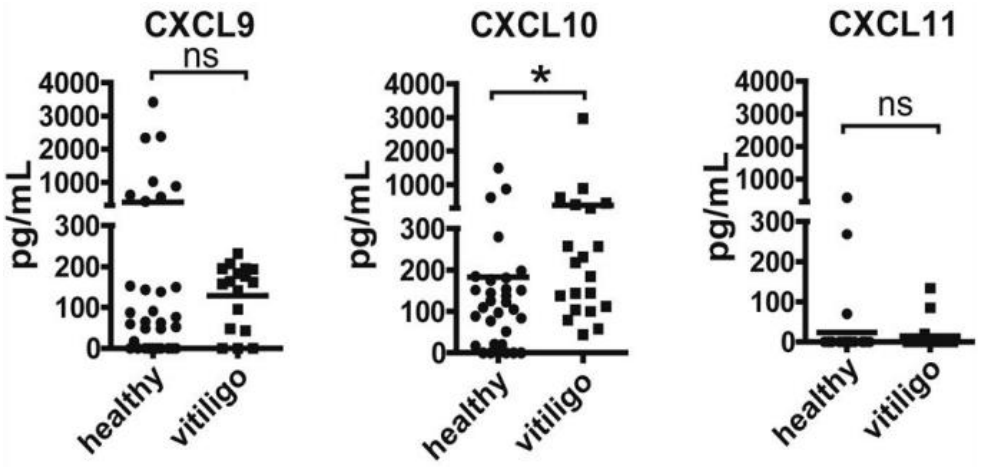


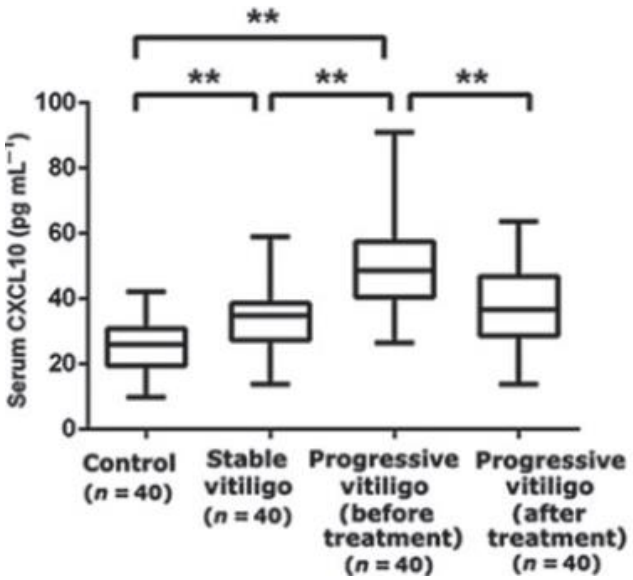


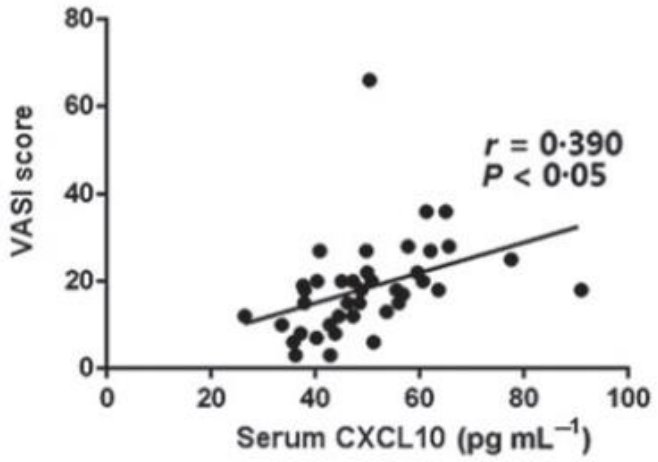
Rashigi *et al*. Science Translational Medicine, 2014

Biomarkers for Vitiligo - CXCL10 indicative of Disease and Severity

Increased levels of CXCL10 in Serum is Characteristic of Vitiligo







CXCL10 in Patient Samples → Predictors of disease progression and severity

Rashigi *et al*. Science Translational Medicine, 2014

Wang et al. British Journal of Medicine, 2016.

EB06 - Vitiligo

Clinical Evidence

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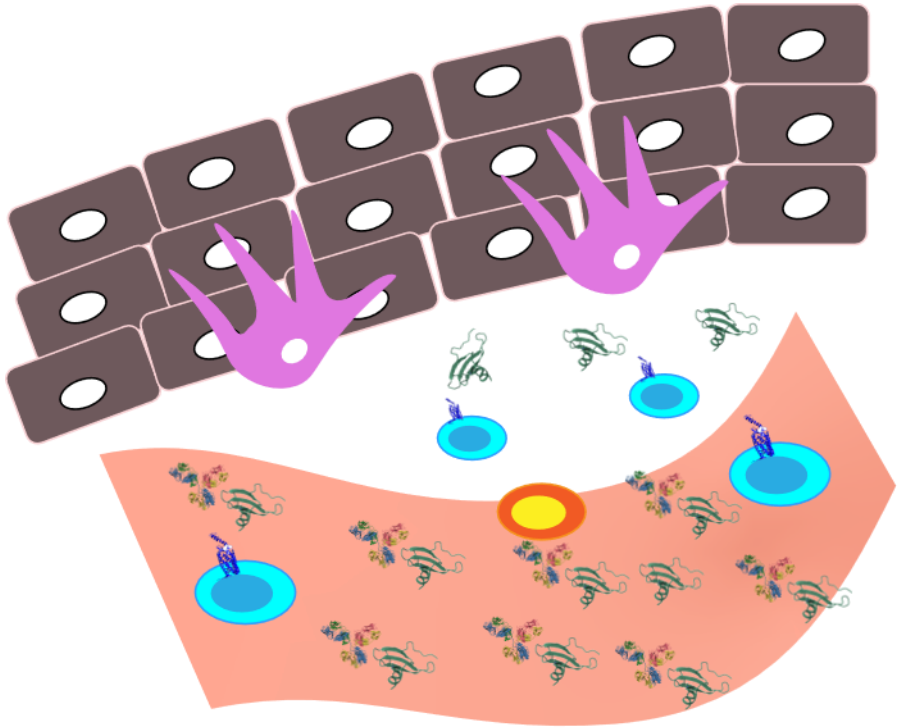
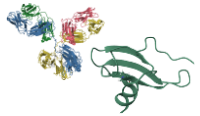
Evidence supporting EB06's Biological Activity in Humans

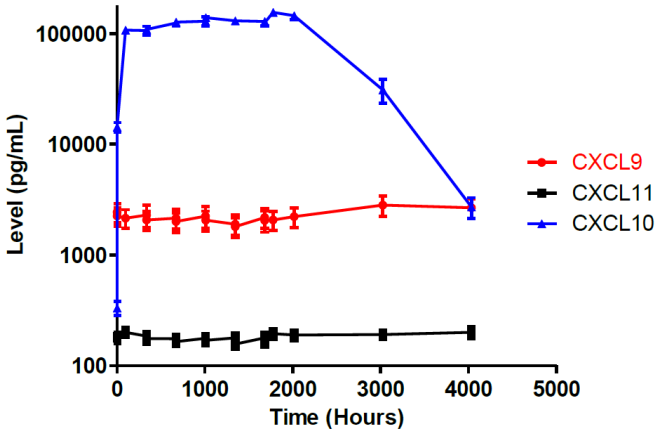
Treatment with EB06 Traps CXCL10 in the Circulatory System and Renders it Biologically Inactive

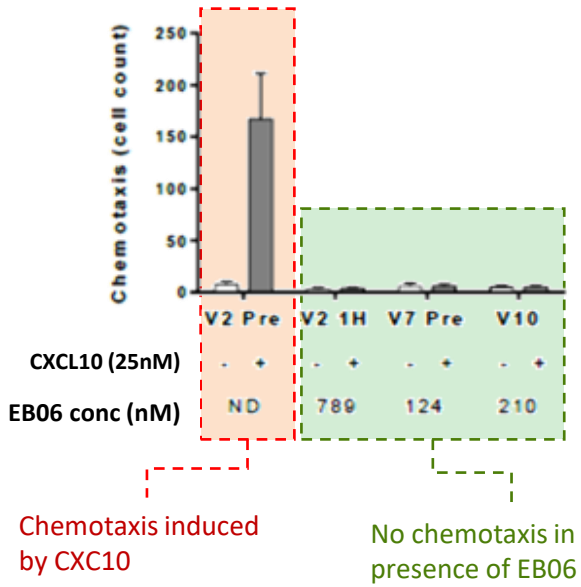




= EB06/CXCL10 Complex

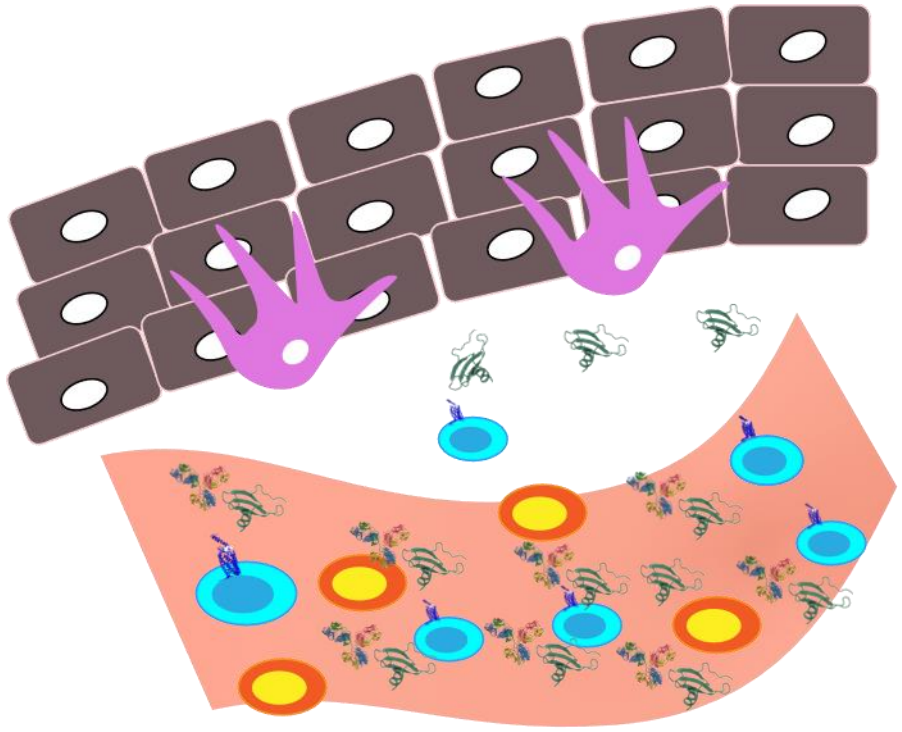
EB06 induces an increase in serum CXCL10 levels while rendering them biologically inactive



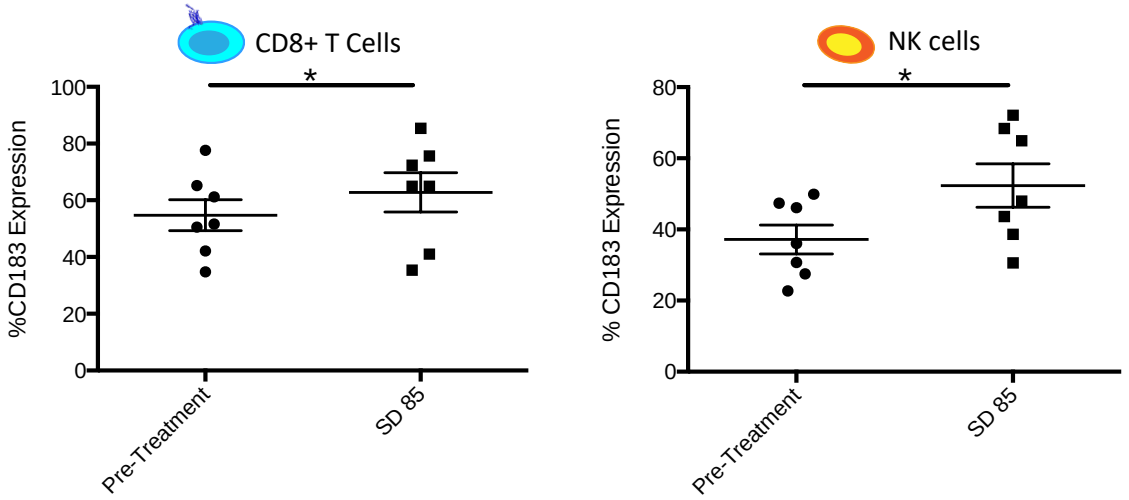


Evidence supporting EB06's Biological Activity in Humans

With Chemotactic Gradient Disrupted by EB06, CXCR3+ leukocytes are Unable to Migrate and Remain in Circulation



EB06 induces an increased proportion of CXCR3+ leukocytes in circulation



Phase 2 Proof of Concept

Moderate to Severe Non-Segmental (Generalized) Vitiligo

Status	CTA approved & IND in progress
Subjects	Total of ~160 evaluable patients randomized 1:1:1:1 (EB06, 5mg/kg, 10mg/kg: EB06, 20mg/kg: Placebo) across up to 25 study centers in US and Canada
Treatment Period	EB06 or placebo will be administered via IV every two weeks for up to 24 weeks, followed by a 12 week follow up period.
Primary Endpoint	Proportion of patients achieving F-VASI50 at week 24
Secondary Endpoints	Endpoints based on F-VASI50 and F-VASI75, mean % change in F-VASI, same for T-VASI and others Number of treatment-emergent adverse events and serious adverse events.

F-VASI = Facial Vitiligo Area Scoring Index; T-VASI = Total Vitiligo Area Scoring Index

EB06: Anti-CXCL10 Monoclonal Antibody

Summary and Next Steps

Targeted Mechanism of Action
Binds free and bound CXCL10

65 Subjects dosed
No Significant AEs

Biological Activity
Demonstrated

Phase 2 Ready
CTA Approved

Manufacturing
Leading CDMO

NEXT STEPS

IND in progress

CRO identified and ready to be initiated

Finalizing manufacturing campaign plans with a leading global manufacturer

Experienced Leadership Team

Pharmaceutical Pipelines, Corporate Development & Strategic Transactions

Executive Management Team

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CEO and Board Director

Michael Brooks, PhD
President

Stephen Lemieux, CPA
Chief Financial Officer

Gary Koppenjan
VP, Corporate Affairs

Blair Gordon, PhD
VP, Research & Development

Select Strategic Transaction Experience of Leadership Team

EXZELL PHARMA	Stellar BIOTECHNOLOGIES	MFI Medical Futures Inc.	LIGHTCHAIN BIOSCIENCE	Yissum	pharma science	MATRIVAX	ceres	PENNSAID
Acquisition by Biolab Pharma 2022	Reverse Acquisition by Edesa 2019	Acquisition by Tribute Pharma 2015	In-License 2020	In-License 2016	Development/ Out-license 2017	Out-License 2017	Tender Offer by Land O'Lakes 2016	Sold U.S. Rights 2014

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