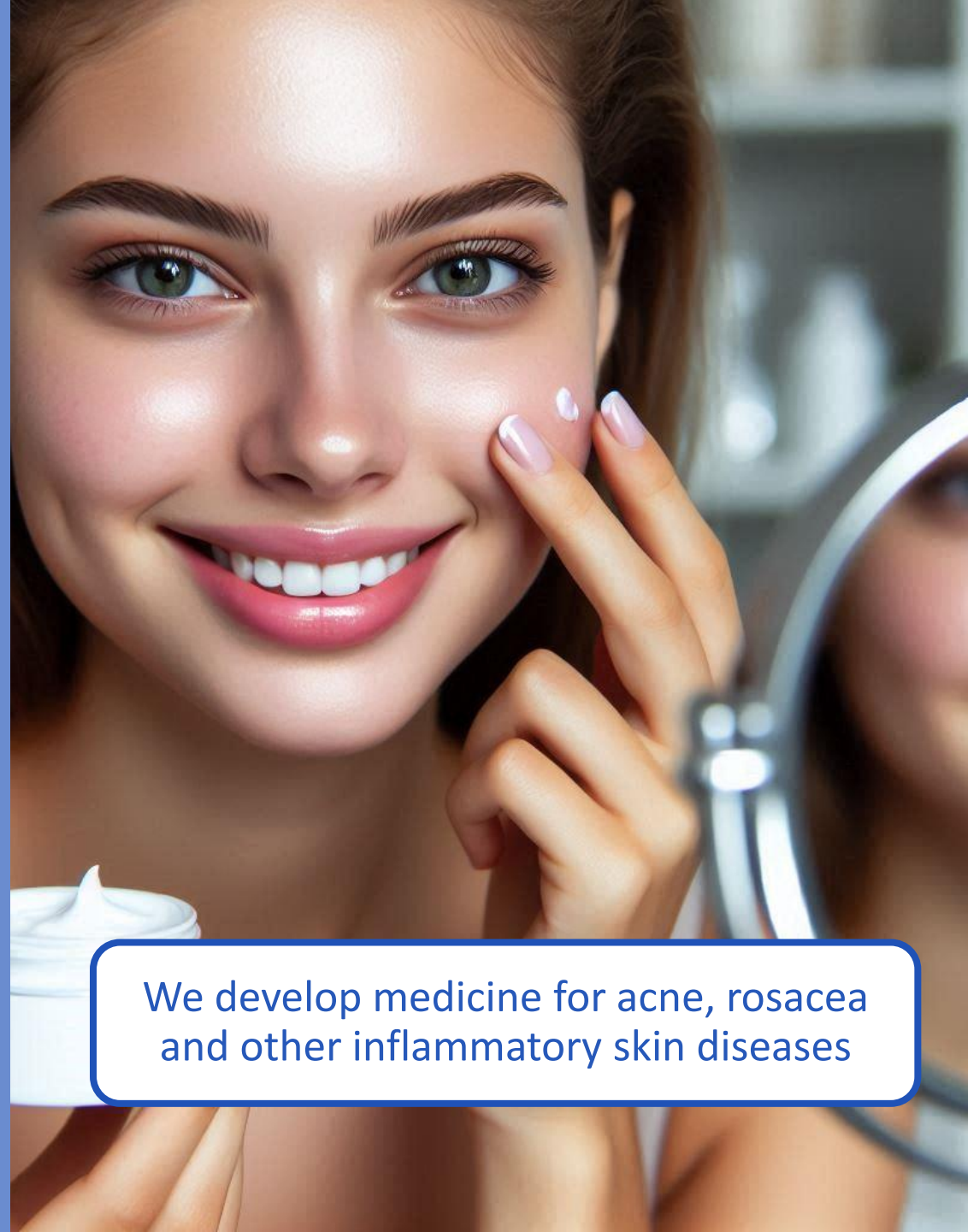
Samdolite Pharmaceuticals



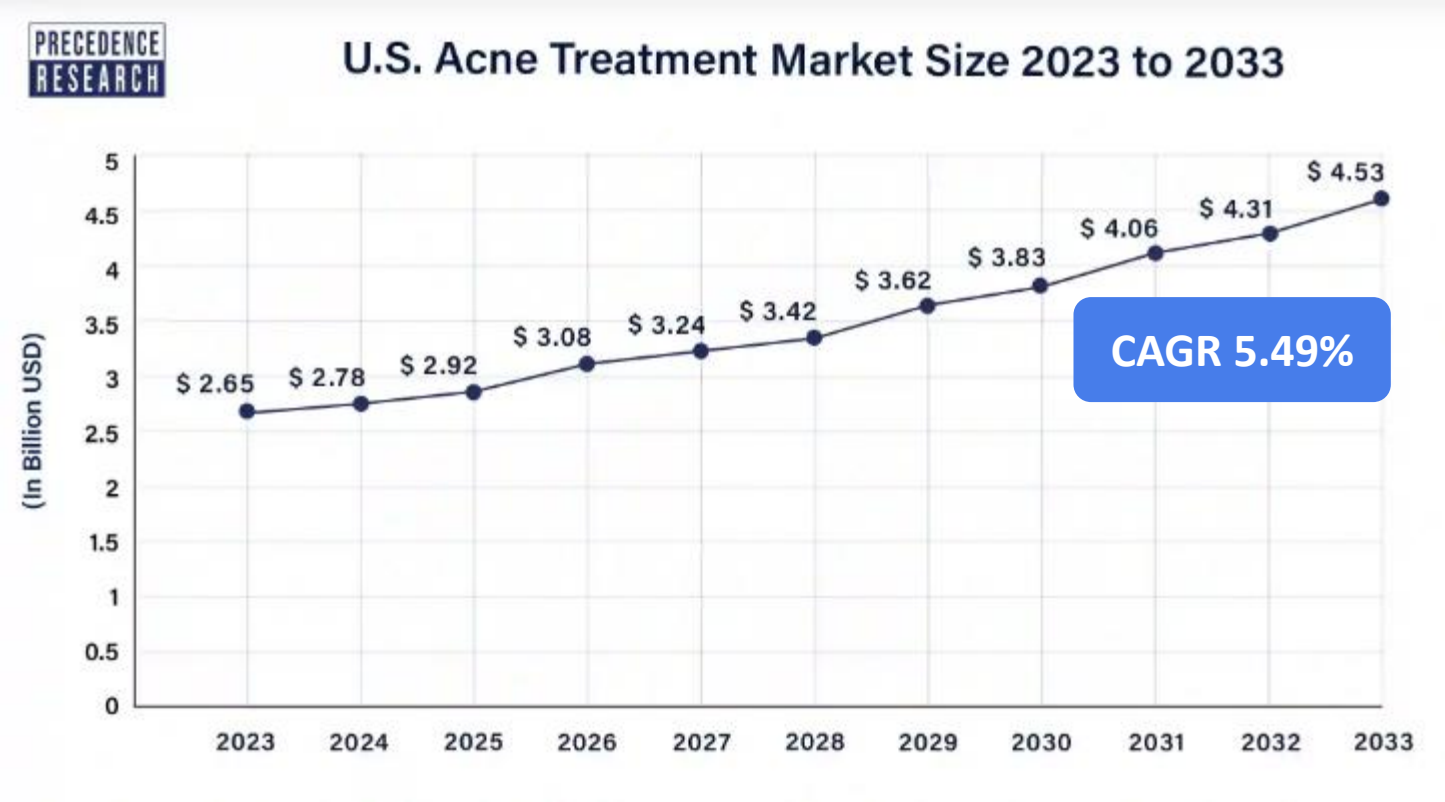
We develop medicine for acne, rosacea and other inflammatory skin diseases

www.samdolite.com

Acne affects 80% of people at some point in their lives. There are currently 50 million patients in the US. Nearly 20 million Americans suffer from severe acne (IGA grade 4). Our co-founder Andrey Samsonov's son had severe acne and tried many drugs with little success. This inspired Andrey to make a better acne drug.

Source: https://www.precedenceresearch.com/acne-treatment-market

The US acne market is at about $3 billion and growing at a compound annual growth rate of 5.49%.



Source: https://www.precedenceresearch.com/acne-treatment-market

Acne is more than a cosmetic ailment.

	Quality of life	"Acne can have a significant impact on a patient's quality of life, leading to a high rate of morbidity, comparable to disabling diseases such as asthma, epilepsy, diabetes, back pain, and arthritis.“ -- *Journal of Clinical and Aesthetic Dermatology, 2016*
	Systemic implications	"Acne is not just a cosmetic problem but a chronic, systemic inflammatory disease.“ -- *Dr. Hilary Baldwin, Medical Director of the Acne Treatment and Research Center*
	Mental health	"Acne is associated with increased risk of developing major depression“ -- *British Journal of Dermatology, 2018*
	Economic burden	"The estimated total cost of treating acne in the US exceeds $3 billion per year.“ --*American Academy of Dermatology, 2021*
	Long-term effects	"Acne scarring is a frequent occurrence and can lead to long-term psychological and social ramifications.“ -- *Journal of Clinical and Aesthetic Dermatology, 2017*

According to FDA requirements acne treatment is considered successful if the patient's acne severity improves by at least two grades and the final grade is either 0 or 1.

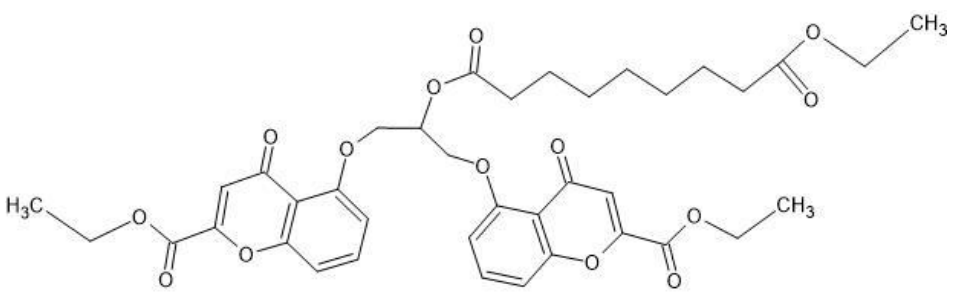
There are many topical treatments, but the response is low (<40% of patients). The oral drug isotretinoin is effective in 80% of patients, but can cause dry skin, damage to the liver and pancreas, and birth defects.

Acne Drug Categories		
Drug Category	Topical Drugs	Oral Drugs
Retinoids	Tretinoin Adapalene	Isotretinoin
Antimicrobials	Clindamycin Nadifloxacin	Azithromycin Doxycycline Minocycline
Corticosteroids	Mometasone	Prednisolone
Miscellaneous	Azelaic acid Benzoyl peroxide Glycolic acid Hydroquinone	Antihistaminics
Combinations	Adapalene+Clindamycin	Amoxicillin+Clavulanic acid

Source: Journal of Basic and Clinical Pharmacy

We invented CromAzol™ cream – a first-in-class drug.

Secret sauce



Azelaic acid
(impedes bacterial growth, anti-inflammation)

Cromoglicic acid
(blocks immune cell activity, anti-inflammation)

Major advantages

- Combines two approved, well characterized compounds
- Reduced pharmaceutical development effort
- Penetrates skin effectively for topical delivery
- Activated by enzymes after penetration, acts on target

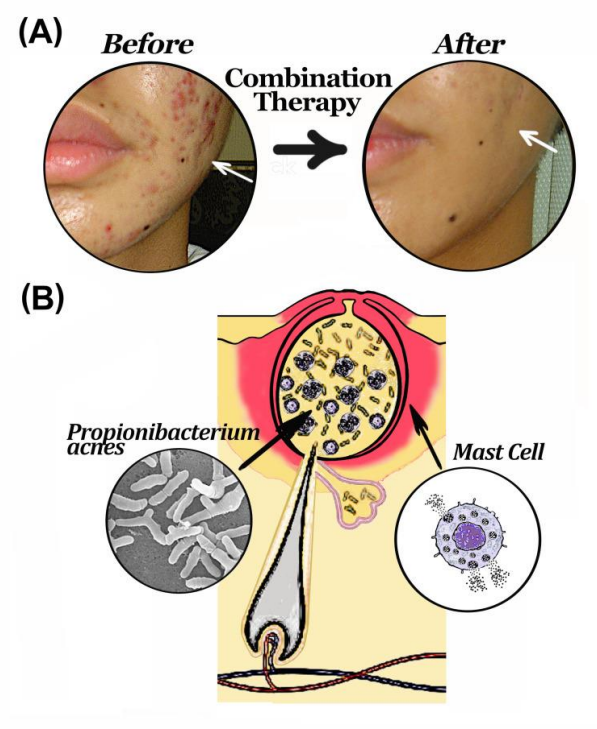
Mast cell inhibition is a novel mechanism of action and has been proven.

Importance of Mast Cell Activation Control for Preventing Scar Formation in Severe Acne

by YASUHIRO HORIUCHI, MD
Dr. Horiuchi is with the Division of Dermatology at Tsuruse Orthopedic Clinic in Saitama, Japan.

J Clin Aesthet Dermatol. 2023;16(3):30–31.

Post-acne scarring in severe acne is a major aesthetic problem that can impair a patient's quality of life. It has been pointed out that blocking mast cell function with tranilast can prevent or minimize scarring and can be a satisfactory therapeutic strategy. Mast cells are prominent in acne lesions, and their involvement in scar formation has also been specified. Here, we discuss the importance of mast cell control in suppressing post-acne scar formation. **KEYWORDS:** Severe acne, scar formation, mast cells, tranilast



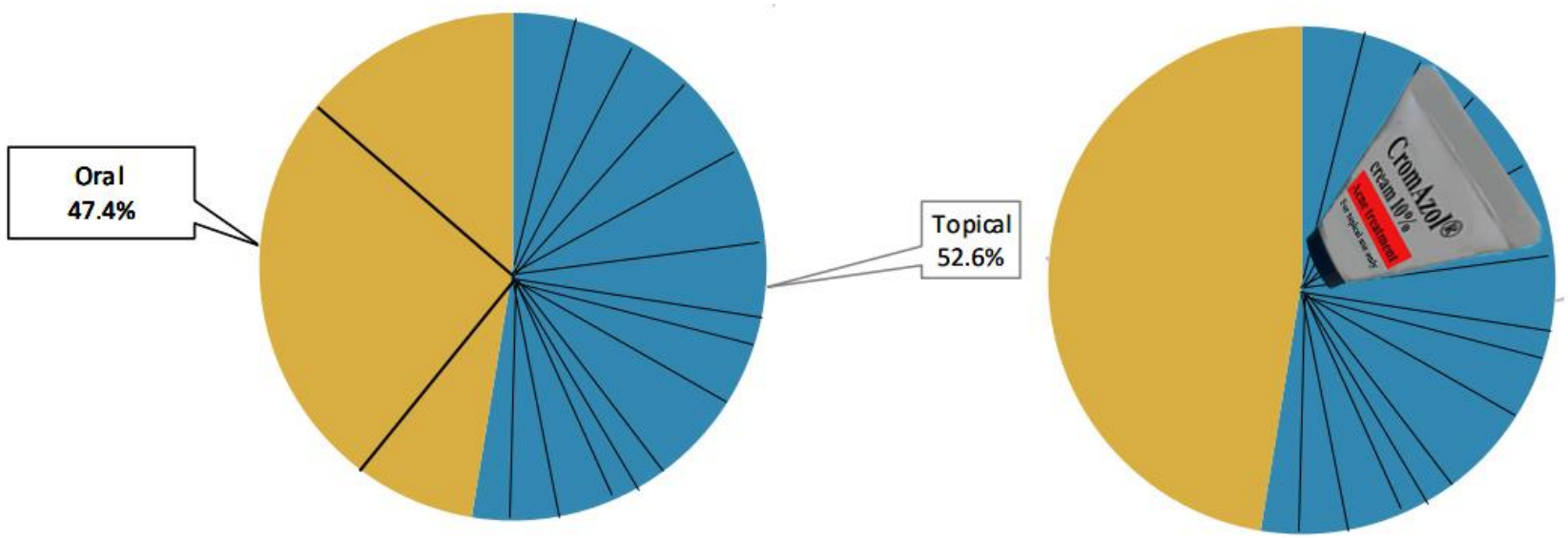
- In this study, **oral** mast cell inhibitor tranilast and oral antibiotic minocycline were used.
- **All patients** showed healing of most lesions without newly developed scars.

Note: our approach is topical application, which is superior to oral delivery.

Our prediction for CromAzol™ cream efficacy - >60% of patients will get a decrease of IGA score by 2-3 grades after 3 months treatment.

The $3 billion US market is split between topical and oral acne drugs. Since current topicals are <40% effective, if CromAzol™ is >60% effective, we could take 25% of the topical market in the first year (~$380 million).

Topical Acne Drugs



IP position provides broad protection.

Patent content

Our IP covers topical and oral compositions of mutual prodrugs of cromoglicic acid, and derivatives and analogs of cromoglicic acid.
https://patentscope.wipo.int/search/en/detail.jsf?docId=WO2023230418&_cid=P11-M3ENLE-63188-1

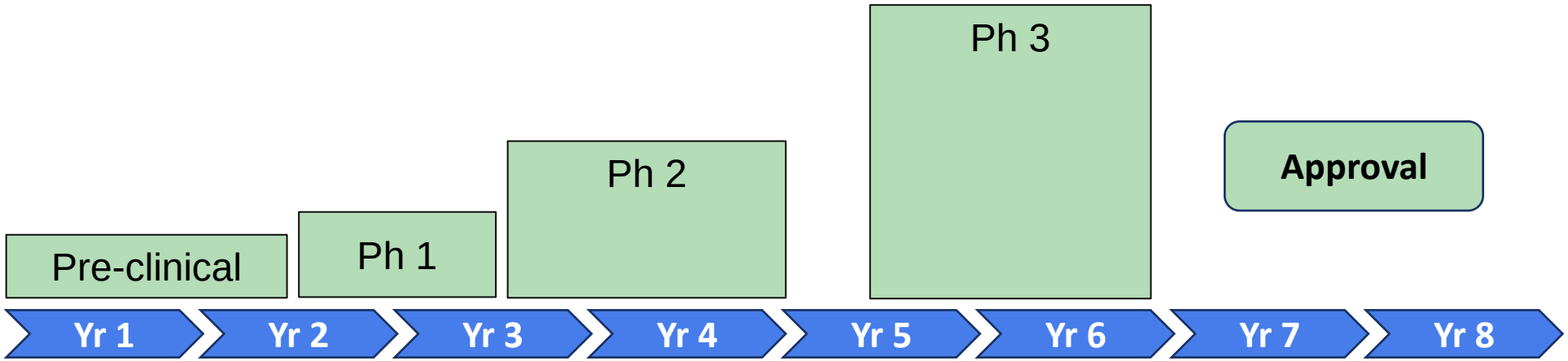
Expiration and Location

Provisional PCT application allows exclusivity until 2041 in US and Europe.

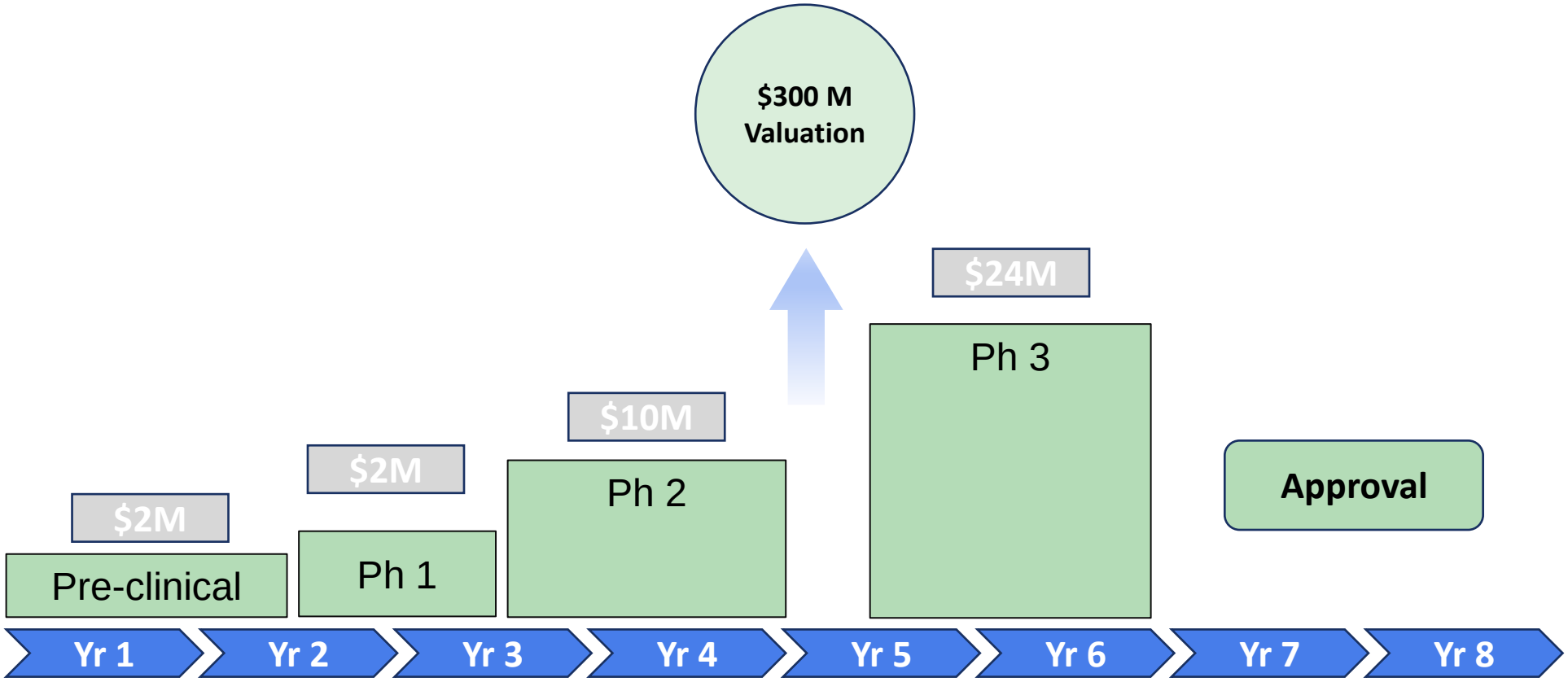
Status

US patent office review shows claims are likely allowable.

Development should be faster because the drug is a topical in dermatology and the two compounds that make up CromAzol are already approved.

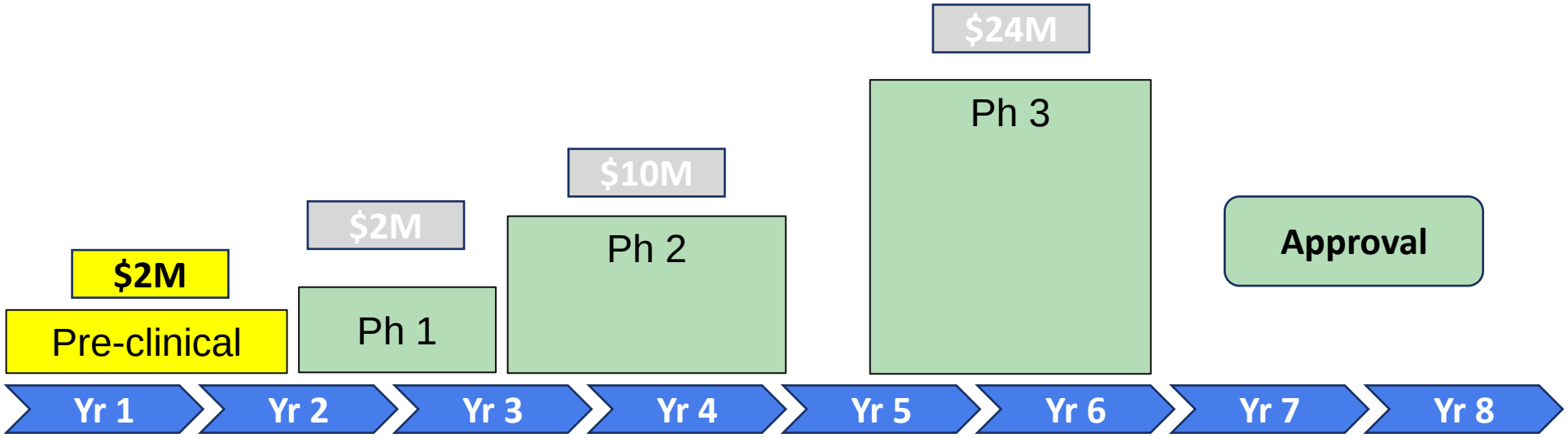


An investment of $14M will allow a $300M valuation before phase 3 trials (21X return).



**Valuation is based on market comparable: Dermira and Dermata Therapeutics*

We have received advice from the FDA on running the pre-clinical studies. We are currently raising $2M as seed funding for these studies.



**Valuation is based on market comparable: Dermira and Dermata Therapeutics*

Our team has many years of experience in drug discovery and development. We have published papers, patents, and received awards for innovation.

John Fetter, PhD
CEO

- 25 years of experience in drug discovery
- 8 years of product management experience
- Winner of eight company awards for innovation

Andrey Samsonov, PhD,
CSO

- 25 years of experience in drug discovery
- **21 challenges solved at InnoCentive (World rank #12)**
- Drug molecule inventor

Liza Tarakanova
CSO

- 8 years of experience with startups
- 3 years of corporate experience in financial analytics, competitive analysis and market research

Vladimir Razinkov, PhD
CDO

- 25 years of experience in analytical, drug product and formulation development
- 70+ peer-reviewed publications

Zongxing Wang, PhD MBA
CBO

- 6 years in drug delivery R&D
- 15 peer-reviewed publications and patents
- 5 years of Venture Capital and business development

SmithKline Beecham
Taxolog
CELLPATHWAYS
SIGMA-ALDRICH
RUSH
UIC
Emisphere
SIGMA-ALDRICH
innocentive
a Wazoku brand
MERCY UNIVERSITY
conEdison
neu crew
CapitalOne
RUSH
Wyeth
MedImmune
AMGEN
Lundbeck
Spark THERAPEUTICS
THE UNIVERSITY OF TEXAS AT AUSTIN
CHICAGO BOOTH
The University of Chicago Booth School of Business
Magic Leap
ARCH VENTURE PARTNERS
Alumni Ventures
CONE HEALTH Ventures
BIOGENERATOR VENTURES

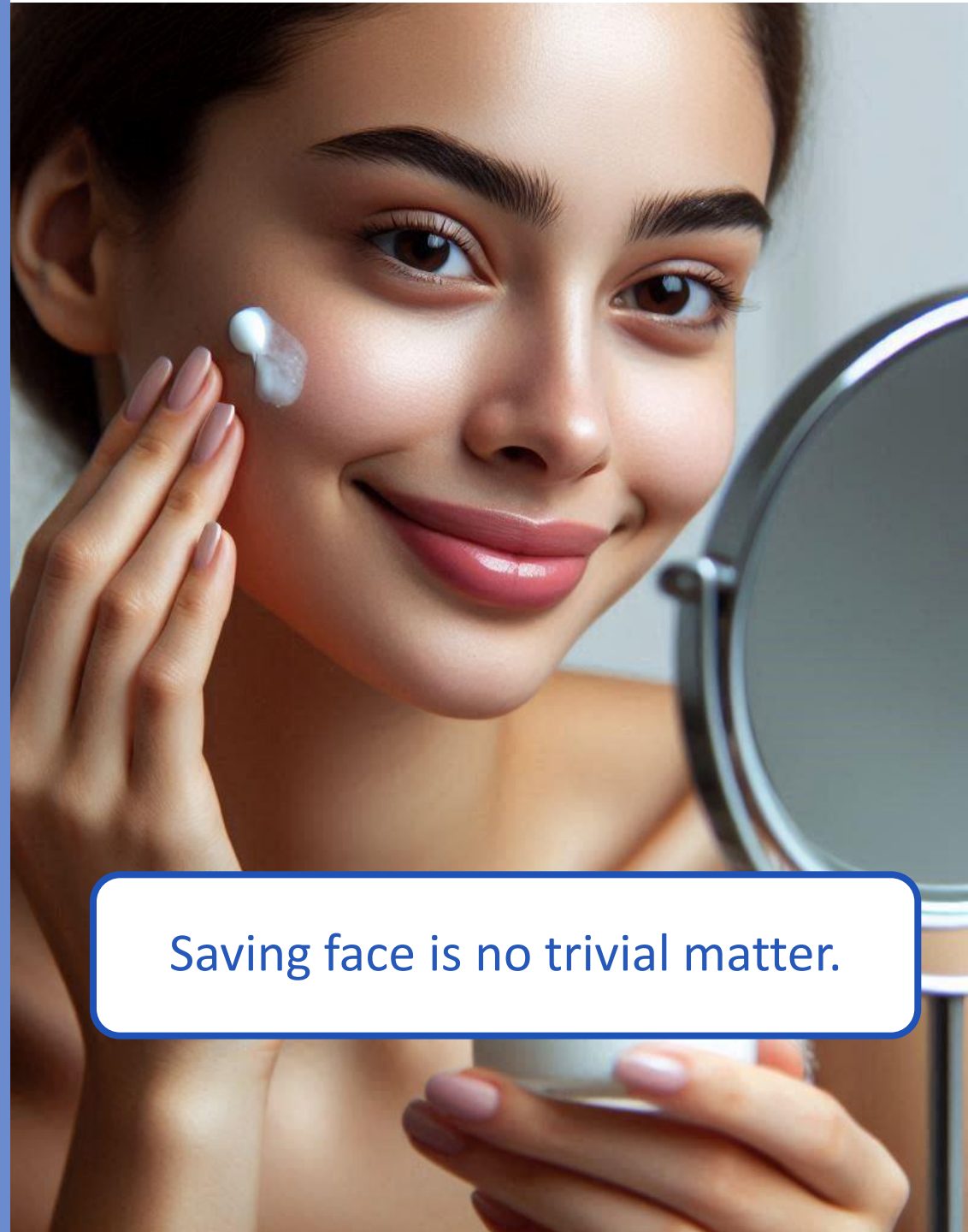
We also have a renowned clinician and researcher on our advisory board.

Fu-Tong Liu, M.D., Ph.D.
Scientific Advisor

- Distinguished Professor and Chair Emeritus, Department of Dermatology, University of California, Davis, California
- Internationally known as a pioneer and leading investigator in the studies of the galectin family of animal lectins

UCDAVIS HEALTH

Samdolite Pharmaceuticals



www.samdolite.com andrey.samsonov@samdolite.com

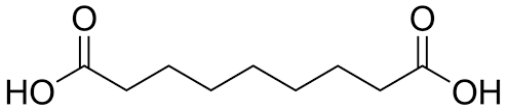
Appendix

Summary

- Large market: acne
- Unique approach: a combination of two drugs
- Safe and effective components: two FDA approved drugs
- Proven mechanism: paper by Dr. Horiuchi
- Solid IP position: for skin inflammatory diseases
- Strong team: worldclass inventors

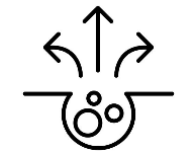
Azelaic acid is a potent skincare ingredient for acne.

Azelaic Acid



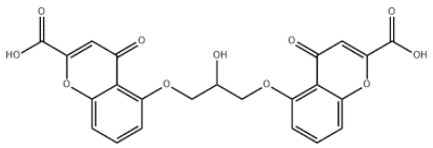
Azelaic Acid Benefits

- **Kills bacteria that cause acne.** Experts aren't exactly sure how this happens, but using a cream with 15%-20% azelaic acid has been found to be effective.
- **Protects your skin.** Free radicals can damage cells, leading to skin inflammation and acne. Because azelaic acid is an antioxidant, it can defend your body against the harmful effects of these toxins.
- **Keeps your pores from getting clogged.** Acne is caused by a buildup of dead skin cells and sebum (oil). Azelaic acid can help keep your pores open, making your skin less inflamed and new pimples less likely to form.
- **Prevent dark patches.** Certain skin cells make pigment when you expose your skin to sunlight. That pigment may show up as dark patches, called hyperpigmentation, on your skin. Azelaic acid can block this process.
- **Reduce redness**. Azelaic acid can also help prevent the widening of your blood vessels, thereby minimizing the redness of your skin.



Cromoglicic acid deactivates mast cells and reduces inflammatory mediators.

Cromoglicic Acid



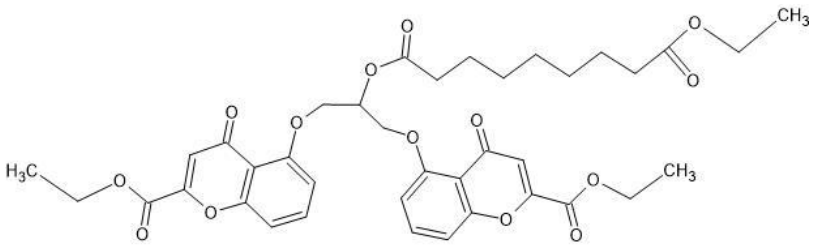
Cromoglicic Acid Benefits
•**Reduces itching.** A randomized controlled trial found that topical SCG can significantly reduce itching caused by allergens and histamines. •**Treats atopic dermatitis.** Cromolyn sodium can be used topically to treat the symptoms of atopic dermatitis, an allergic skin condition that causes an itchy, painful rash. •**Treats mastocytosis.** Cromolyn is used to treat mastocytosis, a rare condition caused by too many mast cells in the body. Mast cells release substances that cause symptoms like itching, rash, and flushing. Cromolyn prevents mast cells from releasing these substances. •**Stabilizing mast cell membranes.** This action inhibits the release of histamine and other substances.

Br J Dermatol. 2010 Mar;162(3):674-6.

Improved permeability of the prodrug increases topical efficacy.

- Prodrug is highly lipophilic
  - Combination of two drugs
  - Masking of polar acids

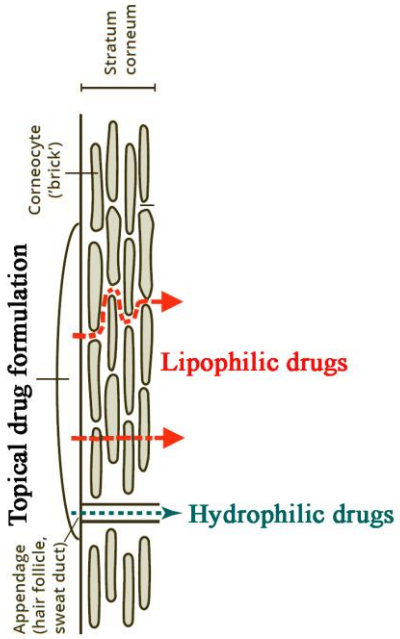
Azelaic acid



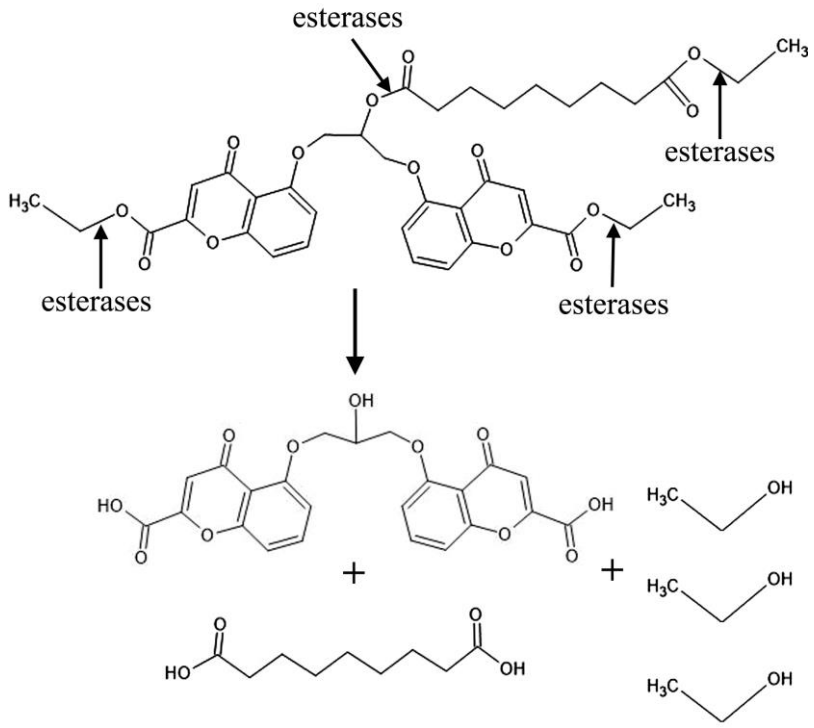
Cromoglicic acid

Triethyl Cromoglicate Azelate
Brand name: CromAzol™

Improved penetration of skin



Esterases in skin release active drugs



Enzyme activation in the skin gives azelaic acid and cromoglycic acid that inhibit bacteria and inflammation.

Success steps to tackle acne:

① Enhance delivery

Improved hydrophobic molecule to penetrate skin more efficiently, absorbs faster

② Release drug on target

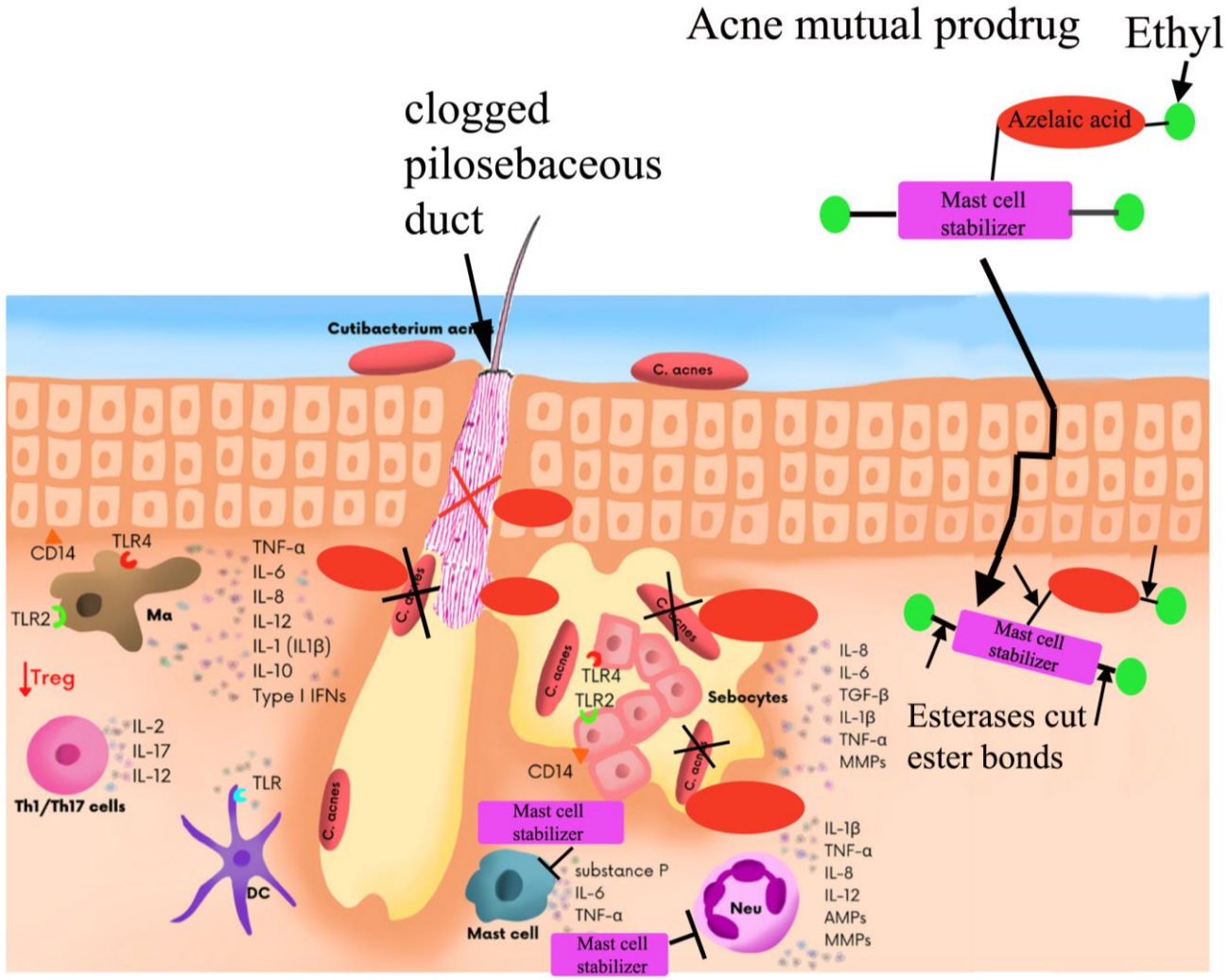
Skin enzymes release active ingredients

③ Activate azelaic acid

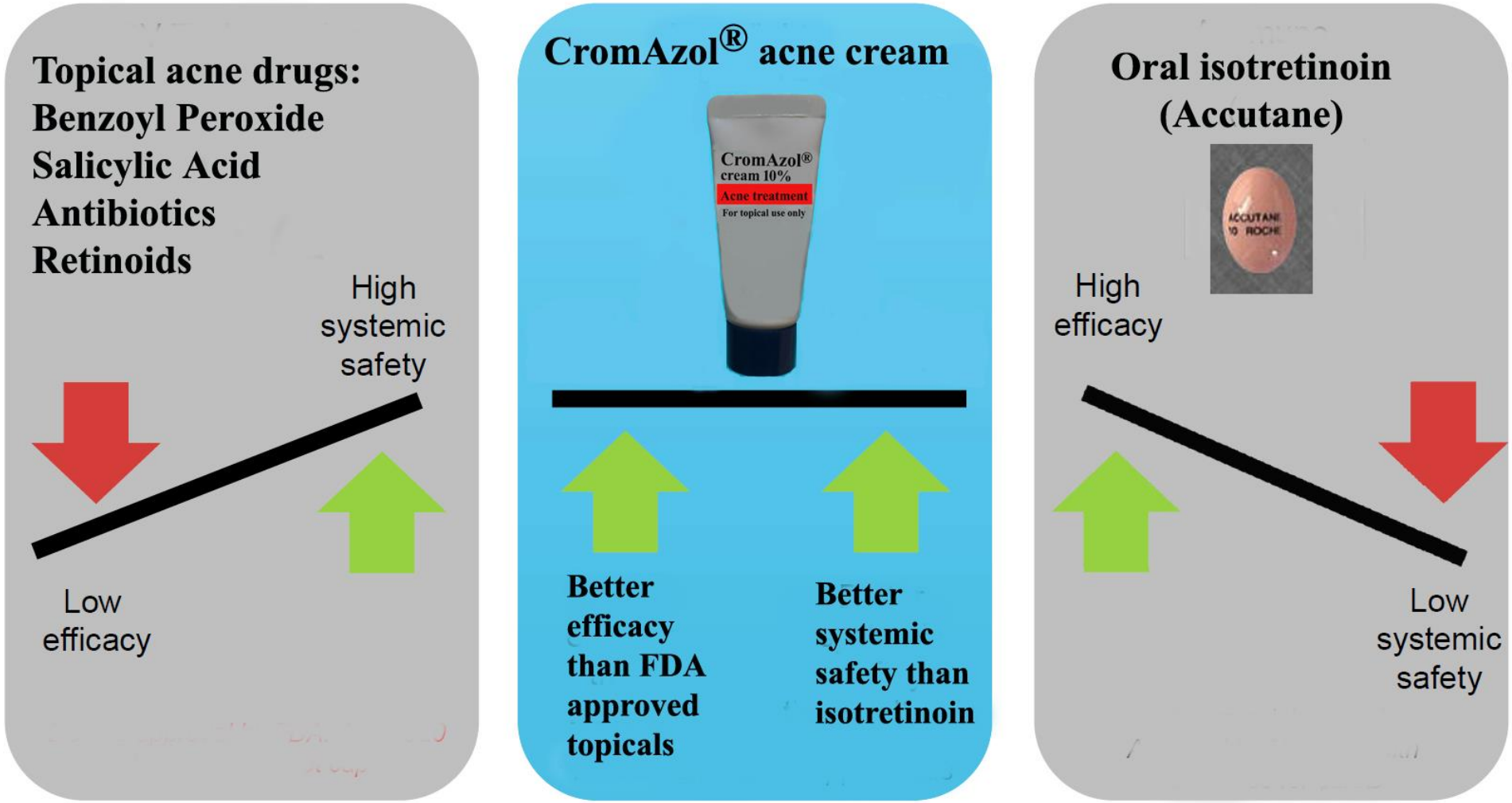
Impedes bacteria growth; improves skin cell orderly growth in follicles; evens skin tone

④ Release cromoglicic acid

Inhibits mast cells and neutrophils, reduces inflammatory effects



CromAzol™ cream optimizes safety and efficacy to obtain a balanced therapeutic profile.



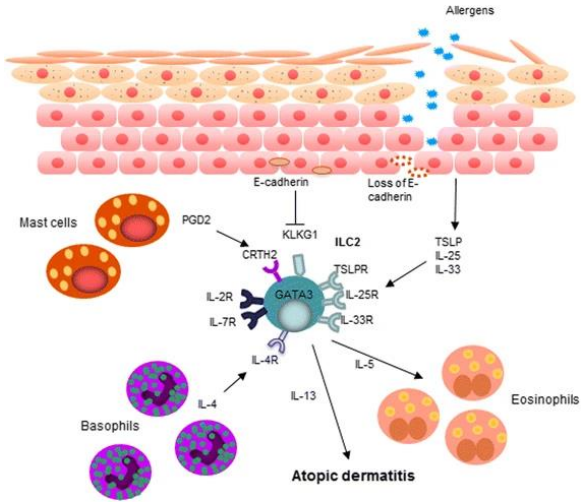
CromAzol or other derivatives could be used for other skin inflammatory diseases.

Samdolite Pharmaceuticals Inc. has a proprietary right to a portfolio of potentially best-in-class topical formulations that effectively and safely target mechanisms underlying other skin inflammatory diseases: chronic urticaria, psoriasis, atopic dermatitis, prurigo nodularis and rosacea.

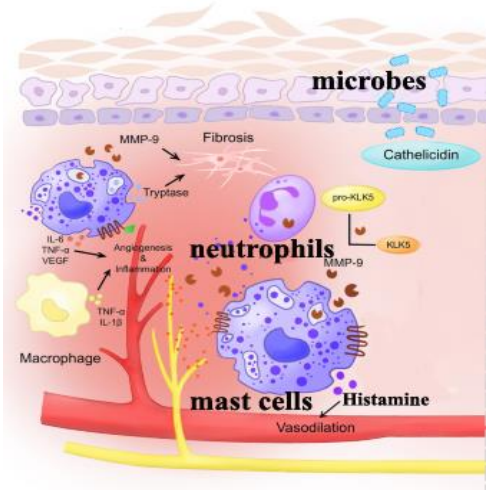
Here are other skin inflammatory diseases that our drugs could treat.

Mast cells initiate and maintain the inflammatory cascade for many skin diseases. Here are some examples: atopic dermatitis, rosacea, psoriasis and chronic urticaria.

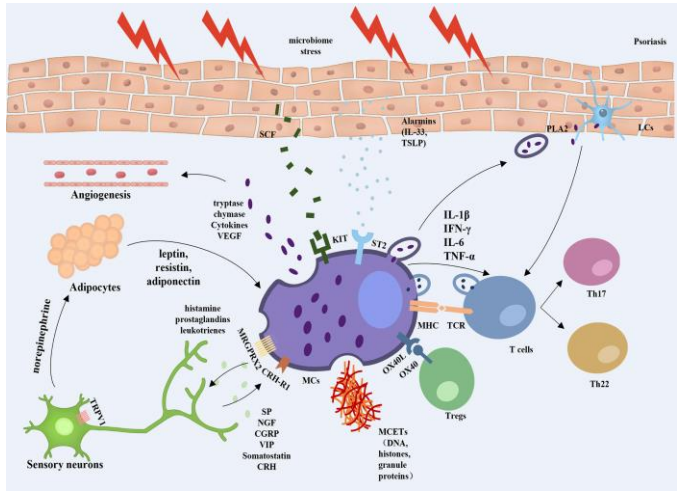
Each skin disease has a unique pathogenesis. Mutual prodrugs could be designed and optimized for each particular disease.



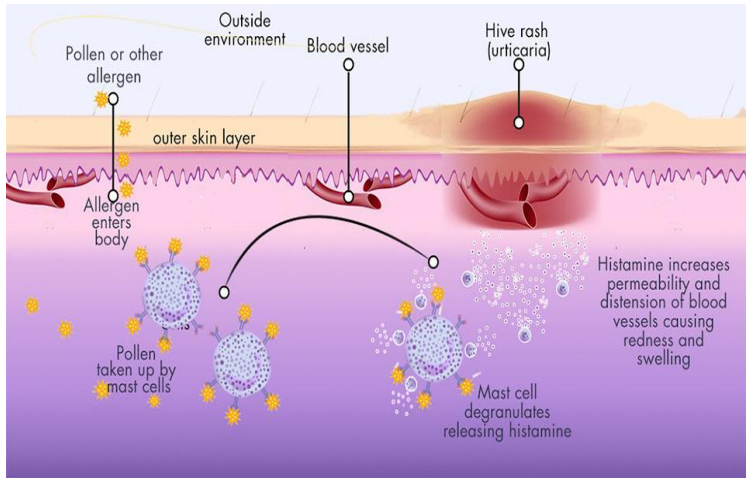
Atopic dermatitis



Rosacea



Psoriasis



Chronic urticaria

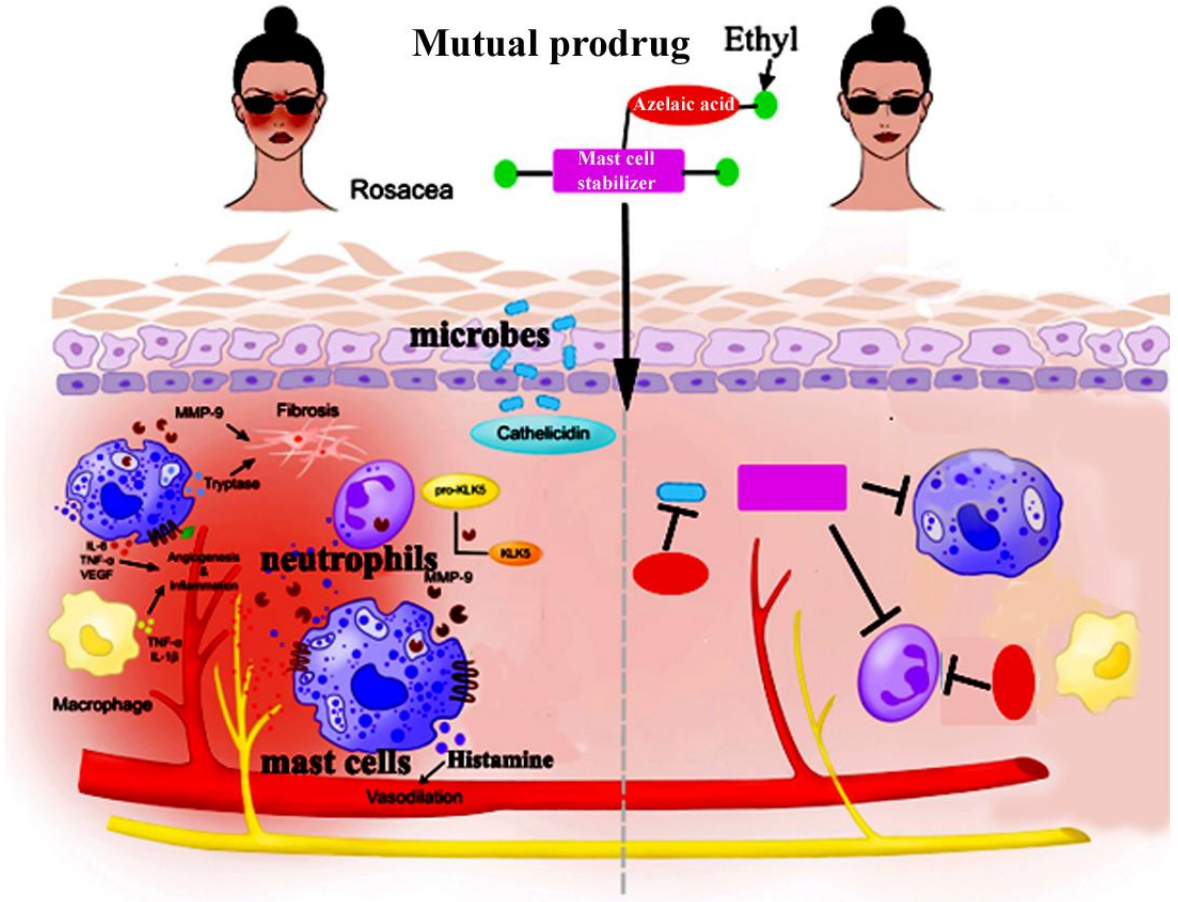
CromAzol could be used for Rosacea through mast cell stabilization and killing of microbes.

- Mast cells (MC) express cathelicidin (LL-37) antimicrobial peptides that act as broad-spectrum antibiotics and influence the immune defense of multiple epithelial surfaces. Thus, MC help protect against skin infection.

Mast cell stabilizer blocks degranulation and thus the release of LL-37, histamine and tryptase that induce skin erythema.

Azelaic acid kills microbes and reduces skin inflammation.

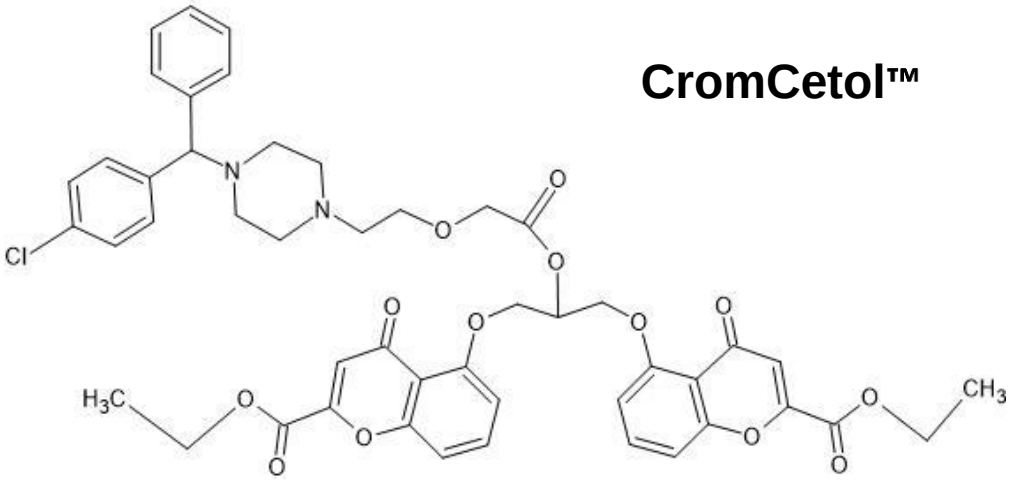
Combo treatment will have higher therapeutic effect on rosacea



It's estimated that more than **14 million** people in the United States have rosacea, The rosacea treatment market in the US is projected to grow from **$2.1 billion** in 2023 to **$3.87 billion** by 2032

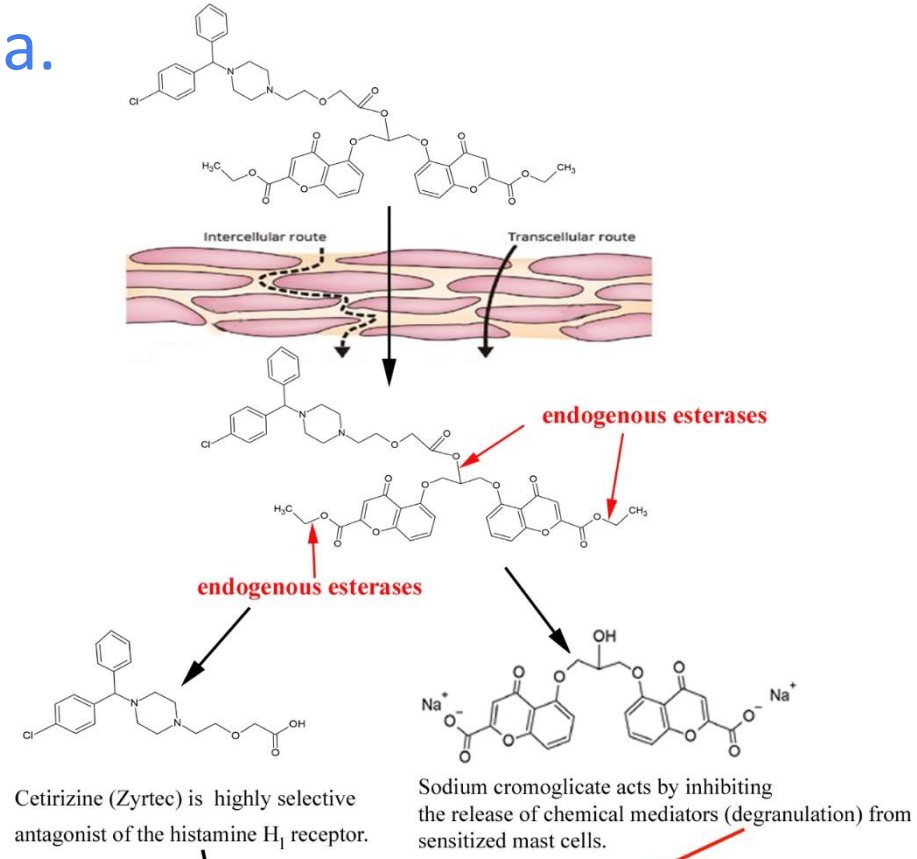
CromCetol could be used to treat chronic urticaria.

- Lipophilic compound: better penetration of skin
- Skin enzymes release active drugs
- Cetirizine hydrochloride targets histamine H_1 receptor
- Cromoglicic acid inhibits mast cells



CromCetol™

Mutual prodrug: Cetirizine (Zyrtec) diethyl cromoglicate Log 4.50 (very lipophilic)



Cetirizine (Zyrtec) is highly selective antagonist of the histamine H_1 receptor.

Sodium cromoglicate acts by inhibiting the release of chemical mediators (degranulation) from sensitized mast cells.