EMPOWERING PATIENTS THROUGH
REVELATIONARY
SCIENCE

Company Overview

Dr. Neal Walker
President and CEO
April 2019

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Cautionary Note Regarding Forward-Looking Statements

Any statements contained in this presentation that do not describe historical facts may constitute forward-looking statements as that term is defined in the Private Securities Litigation Reform Act of 1995. These statements may be identified by words such as "believe", "expect", "may", "plan," "potential," "will," and similar expressions, and are based on Aclaris' current beliefs and expectations. These forward-looking statements include expectations regarding Aclaris' development of its drug candidates, including the timing for initiation and completion of clinical trials, the availability of data from these trials and the timing of its regulatory submissions related to these trials, and the growth opportunity for ESKATA and RHOFADE. These statements involve risks and uncertainties that could cause actual results to differ materially from those reflected in such statements. Risks and uncertainties that may cause actual results to differ materially include uncertainties inherent in the conduct of clinical trials, Aclaris' reliance on third parties over which it may not always have full control, and other risks and uncertainties that are described in the Risk Factors section of Aclaris' Annual Report on Form 10-K for the year ended December 31, 2018, and other filings Aclaris makes with the U.S. Securities and Exchange Commission from time to time. These documents are available under the "SEC filings" section of the Investors page of Aclaris' website at http://www.aclaristx.com. Any forward-looking statements speak only as of the date of this presentation and are based on information available to Aclaris as of the date of this presentation, and Aclaris assumes no obligation to, and does not intend to, update any forward-looking statements, whether as a result of new information, future events or otherwise

This presentation also contains estimates and other statistical data made by independent parties and by us relating to market size and other data about our industry. This data involves a number of assumptions and limitations, and you are cautioned not to give undue weight to such estimates. In addition, projections, assumptions and estimates of our future performance and the future performance of the markets in which we operate are necessarily subject to a high degree of uncertainty and risk.

Corporate Strategy: Building a Fully-Integrated Biopharmaceutical Company

LEADERSHIP

- Physician-founded
- Key leadership with track record of executing across multiple development and commercial stage companies
- Kinome experts - chemists and biologists; combined 300+ years of drug discovery experience

Leverage core expertise in drug development and kinase inhibition to develop small molecule therapeutics

12 ACTIVE CLINICAL TRIALS

2 FDA-APPROVED MEDICINES

KINect™ PLATFORM

Proprietary discovery engine

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Pipeline

Program	Indication(s)	Preclinical	Phase 1	Phase 2	Phase 3
A-101(45%) *Topical*	Common Warts				
ATI-502 JAK1/JAK3 Inhibitor *Topical*	Alopecia Areata				
	Vitiligo				
	Androgenetic Alopecia				
	Atopic Dermatitis				
ATI-501 JAK1/JAK3 Inhibitor *Oral*	Alopecia Areata				
ATI-450 MK2 Pathway Inhibitor *Oral*	RA, Psoriasis, Hidradenitis Suppurativa, CAPS, Pyoderma Gangrenosum, Other				
ATI-1777 JAK1/JAK3 Inhibitor *Soft Topical*	Atopic dermatitis, Vitiligo, Alopecia Areata				
ITK/JAK3 Inhibitor *Soft Topical*	Psoriasis, Inflammatory Dermatoses				
ITK/JAK3 Inhibitor *Oral*	Psoriasis, Inflammatory Dermatoses				
ITK/JAK3 Inhibitor *Oral, gut-restricted*	Ulcerative colitis / Crohn's Disease				
MK2 Pathway Inhibitor *Oral*	Oncology				

RA = rheumatoid arthritis, CAPS = cryopyrin-associated periodic syndromes

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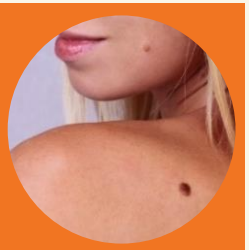
Conditions with Significant Treatment Gaps

SEBORRHEIC KERATOSIS (SK)



83+MM people in U.S.*[1]

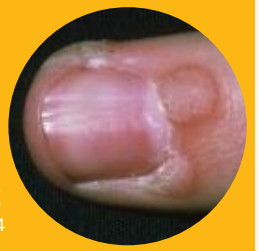
ESKATA® (hydrogen peroxide) topical solution, 40% (w/w), first FDA-approved topical treatment for raised SKs in adults

ALOPECIA AREATA (AA)

5-7MM people in U.S.

have or will develop AA[2,7]
Currently available Rx treatment options often used off-label and have significant limitations[7]

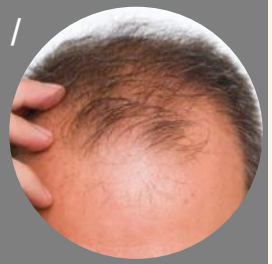
VERRUCA VULGARIS (COMMON WARTS)



19-22MM people in U.S.[2,3]

Currently available treatments have modest therapeutic effect and significant limitations[4]

ANDROGENETIC ALOPECIA (MALE / FEMALE PATTERN HAIR LOSS)



~50MM men / ~30MM women

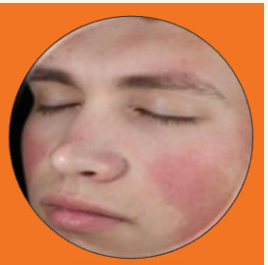
in U.S. affected by AGA hair loss[8]

VITILIGO

1-2% of global population impacted[5]

No FDA-approved medication to repigment the skin[6]

ROSACEA



16+MM people in U.S.[9]

RHOFADE® (oxymetazoline hydrochloride) cream, 1% FDA-approved for the topical treatment of persistent facial erythema (redness) associated with rosacea in adults, a symptom experienced in about 71% of patients with rosacea[9]

*Includes all types of SKs [1]Bickers et al. The Burden of Skin Disease. *J Am Acad Dermatology*. 2006;55:490-500.[2]Data on file, Aclaris Therapeutics, Inc. [3]Nguyen et al. Laser Treatment of Nongenital Verrucae A Systematic Review. *JAMA Dermatology*. 2016;152(9):1025-1033.[4]Kwok et al. Topical treatments for cutaneous warts (Review). Cochrane Database of Systematic Reviews.2012. Art. No.: CD001781. [5]Fitzpatrick T, et al. http://www.avrf.org/facts/frequently-asked-questions.html. Last accessed March 30, 2019.[6]https://www.asdreports.com/news-217/vitiligo-therapeutics-market-expected-show-moderate-growth-up-2019. Last accessed March 30, 2019. [7]National Alopecia Areata Foundation. https://www.naaf.org/alopecia-areata. Last accessed March 30, 2019.[8]National Institute of Health Androgenetic Alopecia. https://ghr.nlm.nih.gov/condition/androgenetic-alopecia#statistics. Last accessed March 30, 2019. [9]National Rosacea Society, https://www.rosacea.org/rosacea-review/2010/summer/new-survey-uncovers-wide-range-of-potential-signs-and-symptoms. Last accessed on March 30, 2019.

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COMMERCIAL PORTFOLIO

RHOFADE® (oxymetazoline HCl) cream, 1%
ESKATA® (hydrogen peroxide) topical solution, 40% (w/w)

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RHOFADE Cream

- National Rosacea Society estimates more than 16 million Americans are affected by rosacea[1]
- Persistent facial redness is the most common sign or symptom of rosacea, experienced in about 71% of rosacea patients according to a survey conducted by this same Society[1]
- RHOFADE Growth Opportunity:
  - Increase prescribing by current RHOFADE prescribers
  - Recapture lost share from HCPs who decreased their prescribing in 2018
  - Capitalize on untapped potential within rosacea-treating HCPs who are not yet prescribing a medication to treat PFE

INDICATION
RHOFADE cream is indicated for the topical treatment of persistent facial erythema associated with rosacea in adults.

IMPORTANT SAFETY INFORMATION AND WARNINGS

WARNINGS AND PRECAUTIONS

Potential Impacts on Cardiovascular Disease

Alpha-adrenergic agonists may impact blood pressure. RHOFADE cream should be used with caution in patients with severe or unstable or uncontrolled cardiovascular disease, orthostatic hypotension, and uncontrolled hypertension or hypotension. Advise patients with cardiovascular disease, orthostatic hypotension, and/or uncontrolled hypertension/hypotension to seek immediate medical care if their condition worsens.

[1]National Rosacea Society, https://www.rosacea.org/rosacea-review/2010/summer/new-survey-uncovers-wide-range-of-potential-signs-and-symptoms. Last accessed on March 30, 2019.

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ESKATA

83+MM People in the US with SK*[1]

18+MM visits to Derm for SK[2]

8+MM SK treatments[2]

Reasons for Not Removing SKs Include[3]:

- High risk of **scarring**
- High risk of **hypopigmentation**
- Want to avoid **cutting, freezing** or **burning**

- Moved to second position in the detail schedule
- Sales team focused on top 10 ESKATA accounts based on productivity in each territory, with the objective of increasing utilization
- Received recent European approvals for ESKATA / ESKERIELE and in active discussions with potential commercial partners

*Includes all types of SKs [1]Bickers et al. The Burden of Skin Disease. *J Am Acad Dermatology*. 2006;55:490-500. [2]Data on File. Aclaris Therapeutics, Inc. Burke Screener of 594 dermatologists. 2014. [3]Data on File. Aclaris Therapeutics, Inc. In-Office SK Treatment Study. Final Report. 2016.

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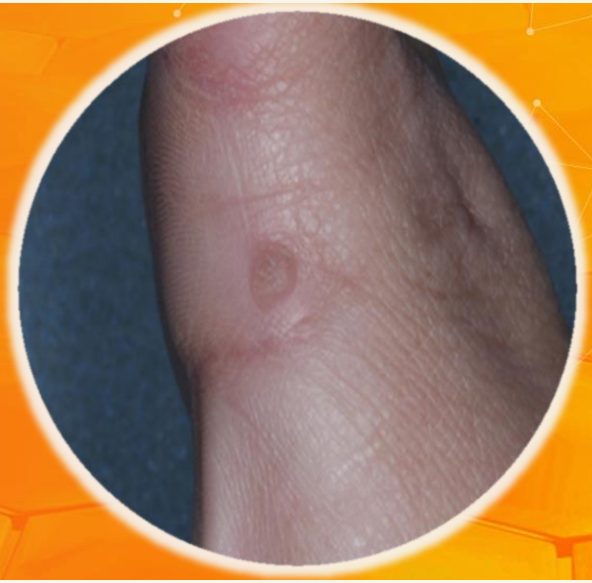
A-101 (hydrogen peroxide) 45% Topical Solution Phase 3 Candidate For Common Warts



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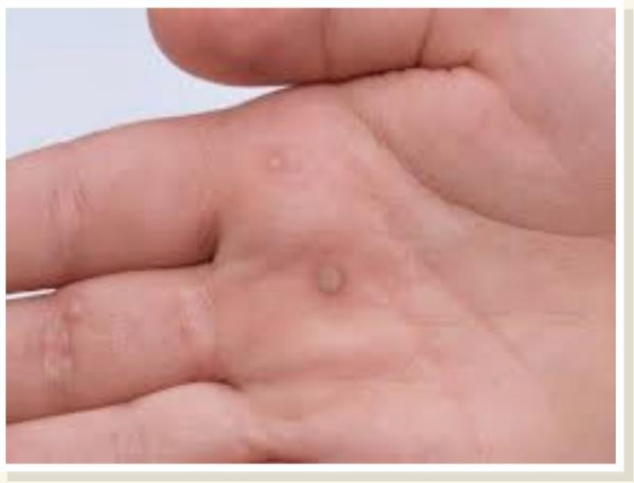
Common Warts - Patient/Physician Surveys

People with Common Warts in the US

19–22 M[1,2]



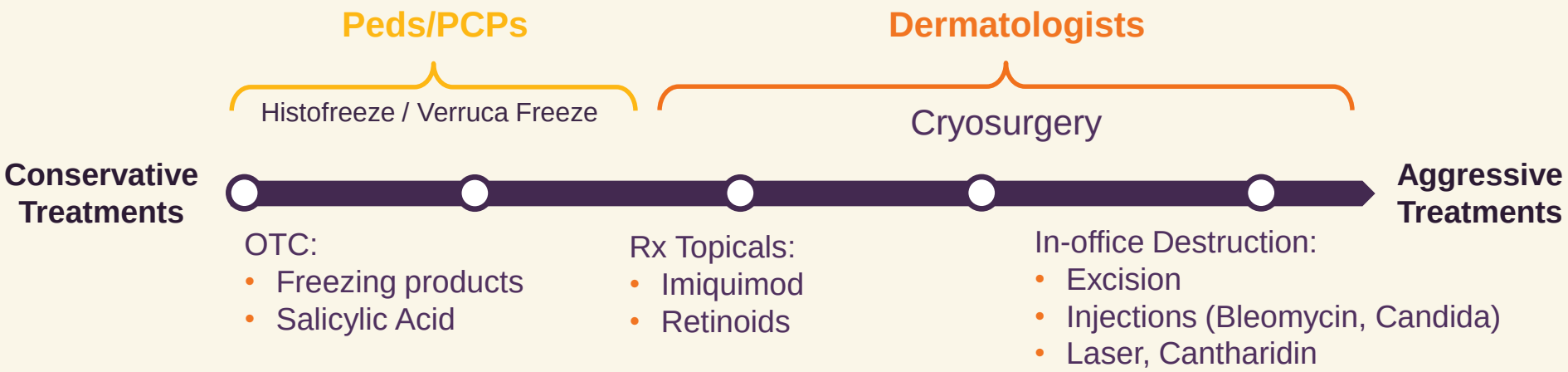
61% treated by **Primary Care Physicians** (2.5 avg. visits)[1]

39% treated by **Dermatologists** (2.6 avg. visits) 31% of pts are referrals[1]

- 50% of all patient visits for warts are for common warts[3]
- 3x more patient visits than genital warts[3]
- 50% of patients report moderate to extreme discomfort[4]
- 39% of patients say warts impact social/leisure activities[4]
- Unmet Needs[1]:
  - Would prefer pain-free treatments which work faster and do not have unwanted side effects

[1]Data on file, Aclaris Therapeutics, Inc.
[2]Nguyen et al. Laser Treatment of Nongenital Verrucae A Systematic Review. *JAMA Dermatology*. 2016;152(9):1025-1033.
[3] IMS National Disease and Therapeutic Index 2016.
[4] Lipke M., An Armamentarium of Wart Treatments, *Clinical Medicine & Research*,4:4, 2006; 273–293.

Common Warts: Treatment Paradigm



Peds/PCPs:

- Difficult and recalcitrant cases are typically referred to dermatologists
- Less likely to utilize in-office procedures but more likely to utilize take-home Rx/OTC

Dermatologists:

- Viewed as the specialists in the treatment of warts; other specialties follow dermatologists' lead
- More likely to utilize both in-office procedures and take-home Rx/OTC

- Patient burden comes from the duration of treatment, time commitment, pain and discomfort, as well as the cost of treatments
- Opportunity to position A-101 45% as Rx treatment with convenience of home use

Source: Burke Market Research, January 2016

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Summary of WART-203 Phase 2 Trial Results

Trial	Trial Design	Trial Outcome
WART–203 (N=159)	• A randomized, double-blind, vehicle-controlled, parallel-group study of investigational drug A-101 45% topical solution in subjects with 1-6 common warts • Self-treated twice weekly for a total of 16 treatments	• Efficacy: Statistically significant results on all primary and secondary endpoints • Favorable safety profile

Primary Endpoint:

- Mean change from baseline in the Physician's Wart Assessment (PWA)™ score on target wart at day 56 (visit 10) using an analysis of covariance.

Secondary Endpoints:

- The proportion of subjects whose target wart is judged to be clear (PWA=0) at day 56.
- The proportion of subjects with all treated wart(s) clear, stratified by baseline number of warts at day 56.
- The percentage of all treated warts that were clear at day 56.

Current Status

- Phase 3 Data expected 2H19.

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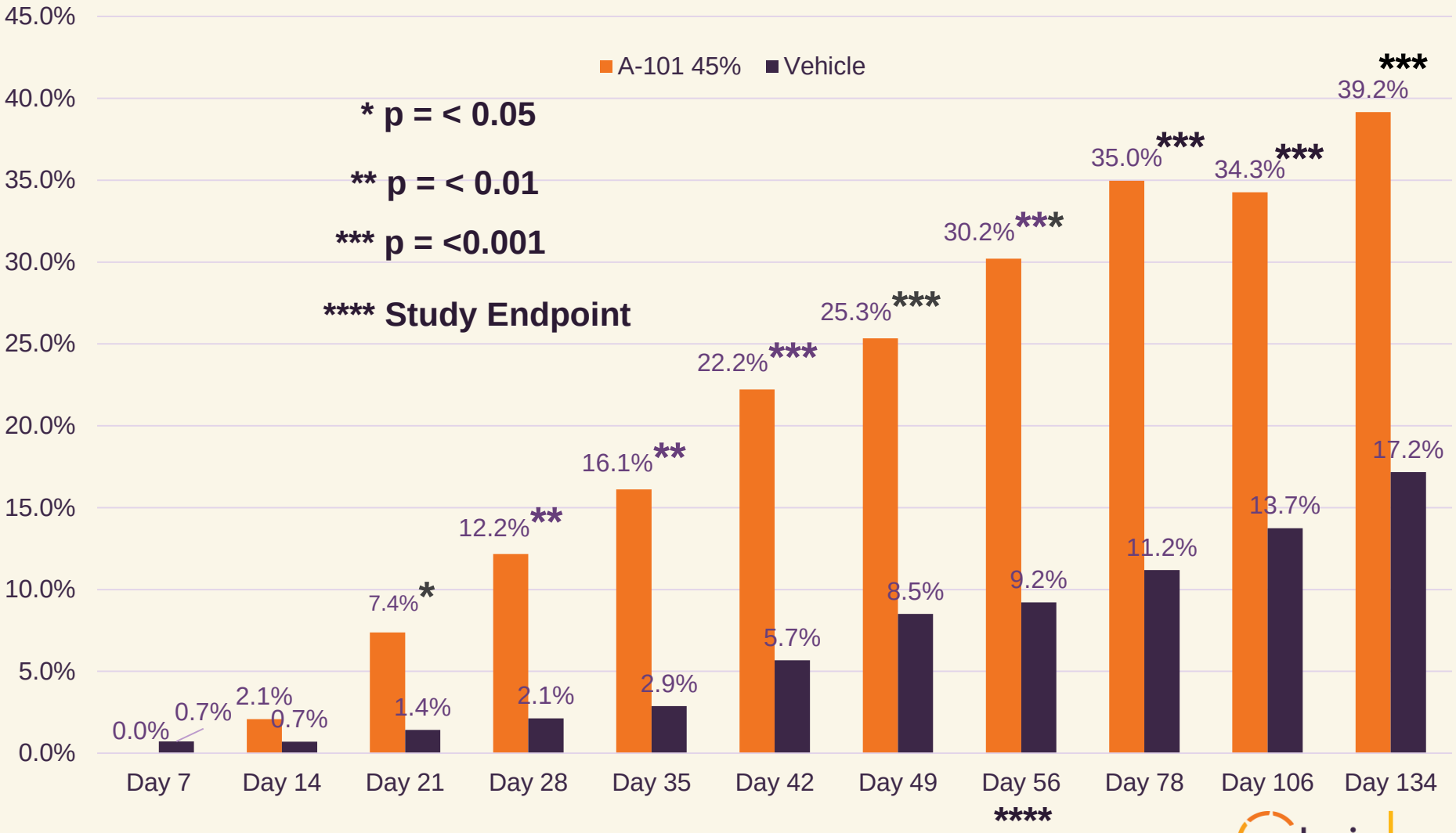
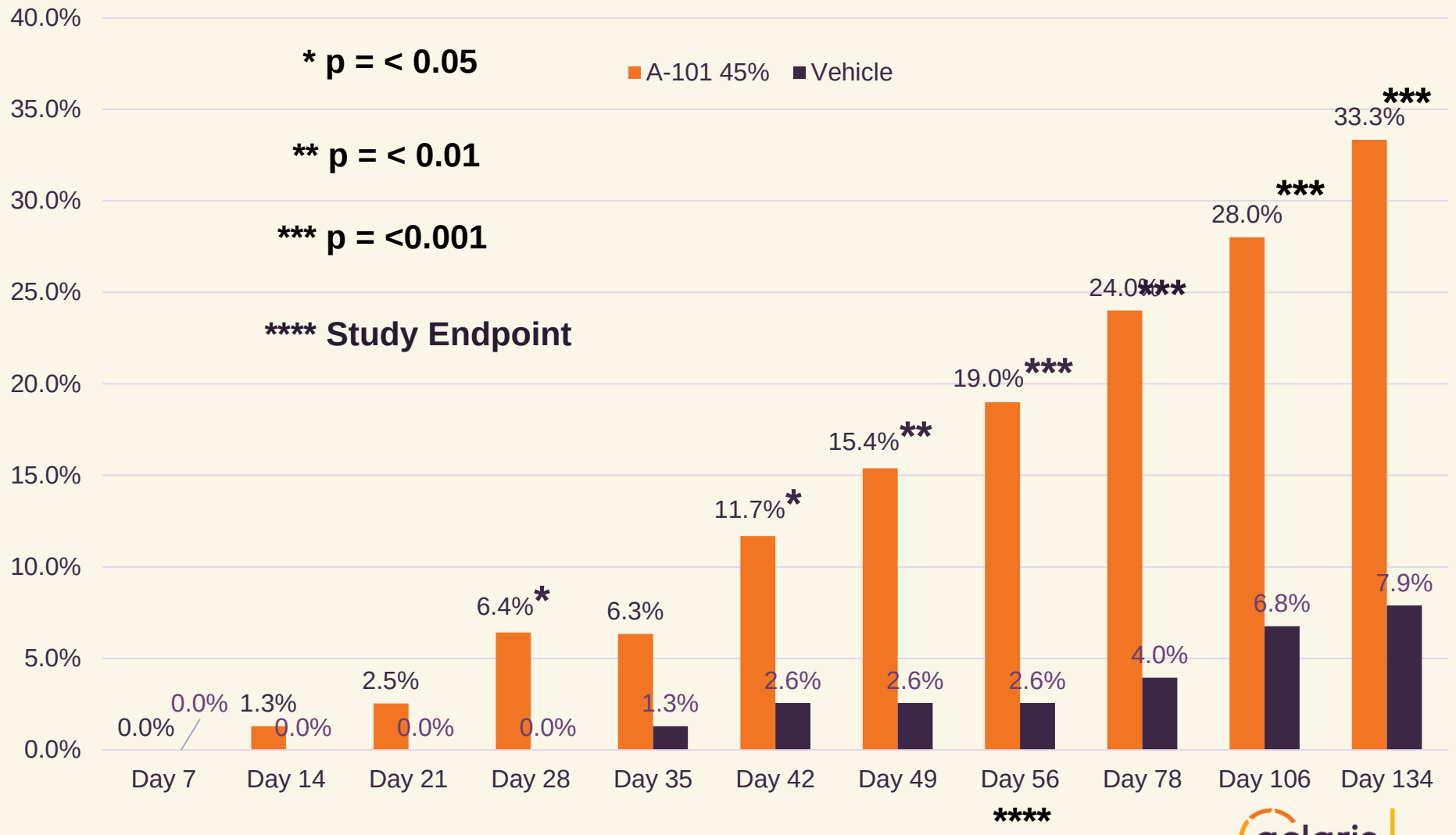
WART-203: The Percentage of All Treated Warts that are Clear on the PWA for Each Post-baseline Visit (N=159)



WART-203: Proportion of Subjects with all treated Wart(s) (1-6) Clear, Stratified by Baseline Number of Warts, at each Post-Baseline Visit (N=159)

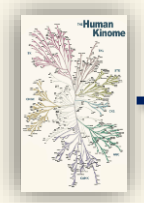


Inflammation and Immunology Platform

KINect™ Platform – *Developing Better Kinase Drug Candidates Rapidly & Efficiently*

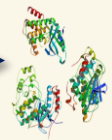
TARGET SELECTION & VALIDATION | **KINect™ Platform – LEAD GENERATION** | **ASSET GENERATION**

500+ Kinases



>300 Cysteine Kinases

Select Cysteine Kinases



w/Published Crystal Structures

Assess Target Confidence

- Disease
- Genetics
- Safety
- Distribution

Custom Kinase Assays

Proprietary Chemical Library

ANALYSIS → MODELING → DESIGN → SYNTHESIS

Schrödinger® Enabled Drug Design

Proprietary Portfolio
- Project 1
- Project 2
- Project 3

Strategic Partner(s)
- Project 1
- Project 2
- Project 3

Leveraging key opinion leaders, data in public domain and internal validation

High affinity/selective drug scaffolds more rapid target to candidate selection

PEOPLE

- Co-inventors of tofacitinib and former leaders of Pfizer kinase program (including JAK inhibitors)
- Kinome experts - chemists and biologists; combined 300+ years of drug discovery experience
- Significant experience in small molecule drug discovery through Phase 2

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The Kinase Opportunity: Rational Targeted Drug Discovery

Creating New Medicines Targeting Previously Inaccessible Parts of the Kinome

KINect™ Technology Platform

Proprietary chemical library and integrated capabilities for interrogating the Kinome

- Solves challenges encountered in the class
  - Selectivity
  - Biochemical efficiency
- Validity of targeting kinases is commercially established
- Plethora of validated kinase targets are inadequately drugged
- KINect™ platform allows rational targeting of validated kinase targets

Kinase Drugs Represented $240B in Aggregate Global Sales from 2011-2015[1]

500 member class, representing 2% of the human genome

[1] https://www.nature.com/nrd/posters/druggablegenome/nrd_druggablegenome.pdf. Last Accessed March 30, 2019

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Investigational Selective JAK 1/3 Inhibitors

Portfolio and IP Estate:

ATI-501 (oral) and ATI-502 (topical) – Selective JAK 1/3 inhibitor

Additional topical JAK inhibitors in development

- Known MOA and observed biological response in humans
- Promoted hair regrowth in mouse model[1]
- Broad IP estate - Methods of use covering JAK inhibitors for the treatment of:
  - Alopecia areata
  - Androgenetic alopecia (male and female pattern hair loss)

ATI-501 JAK1/JAK3 inhibitors

Oral treatment for alopecia totalis and alopecia universalis

ATI-502 JAK1/JAK3 inhibitors

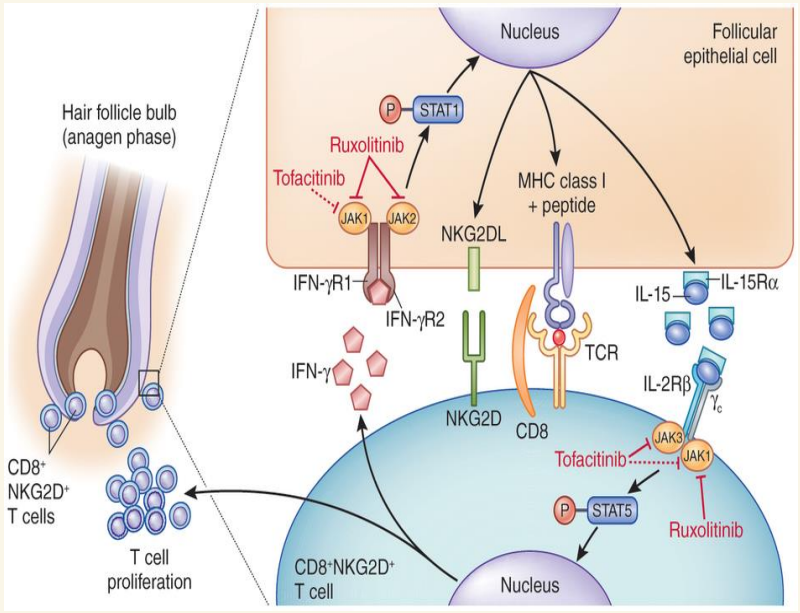
Topical treatment for hair loss disorders: patchy alopecia areata and androgenetic alopecia

ATI-1777 JAK1/JAK3 inhibitors

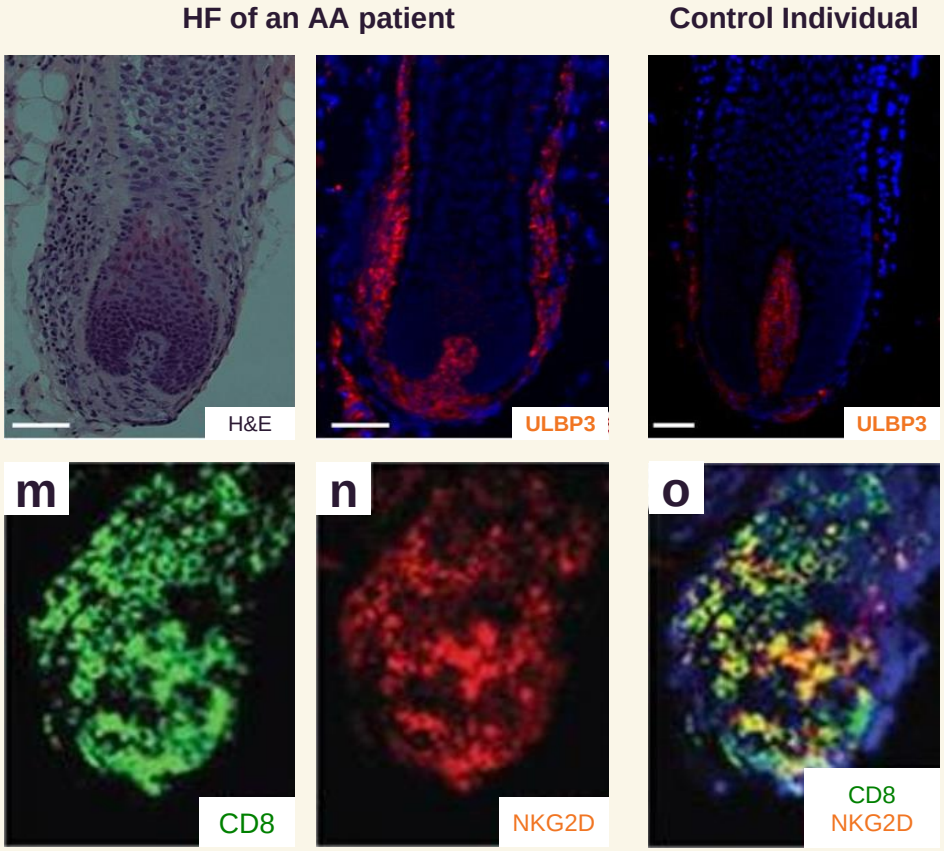
“Soft Topical” treatment for atopic dermatitis, alopecia areata, and vitiligo

[1] Data on File. Aclaris Therapeutics, Inc.

Mechanism of JAK Inhibitors in Alopecia Areata

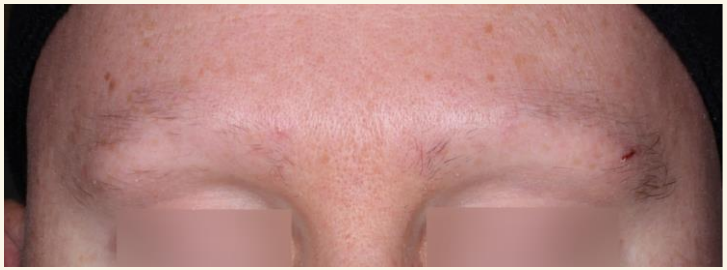
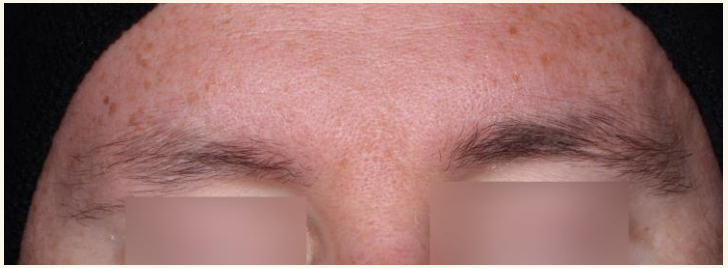
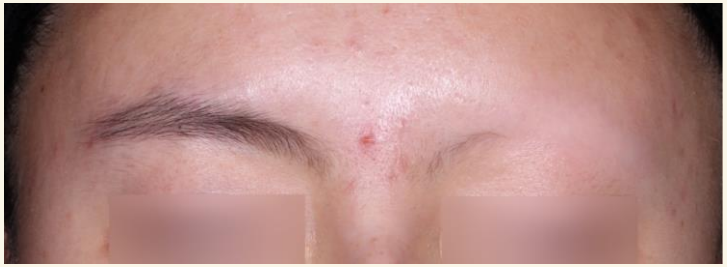
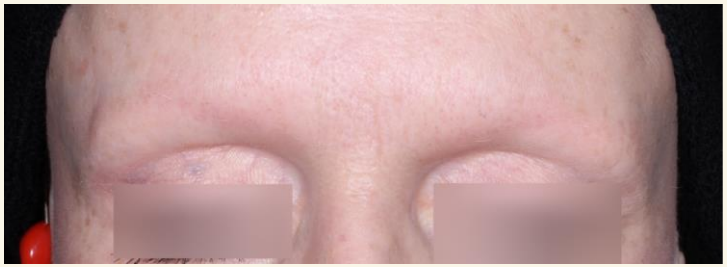
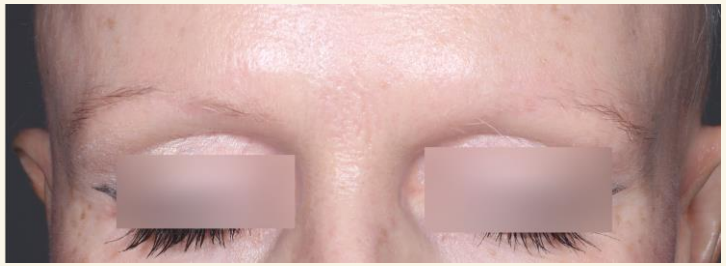


Divito & Kupper, Nature Medicine 20, 989–990 (2014).



Christiano Laboratory, Columbia University

ATI-502-AUATB-201 – Topical Proof of Concept

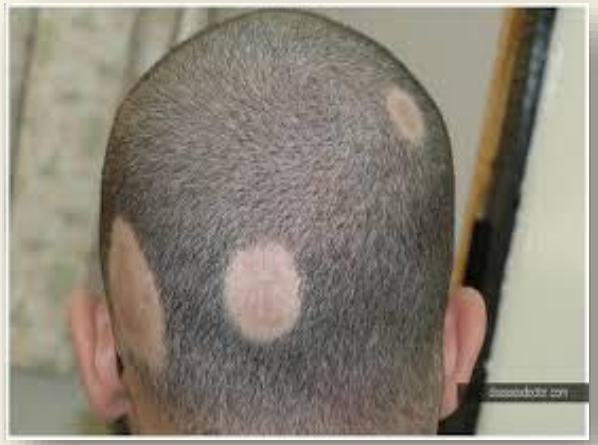
	Baseline	Follow up
33/M		 (250 Days on Drug)
23/F		 (268 Days on Drug)
45/F		 (250 Days on Drug with a 47 day gap)

*Hair regrowth continues in 3 of the 5 patients who were on drug longer than 6 months

Alopecia Areata - Patient/Physician Surveys

Patients with Alopecia Areata in the US

5–7 M[1,2]



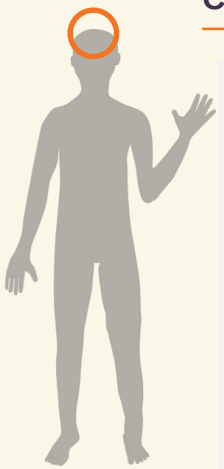
42%

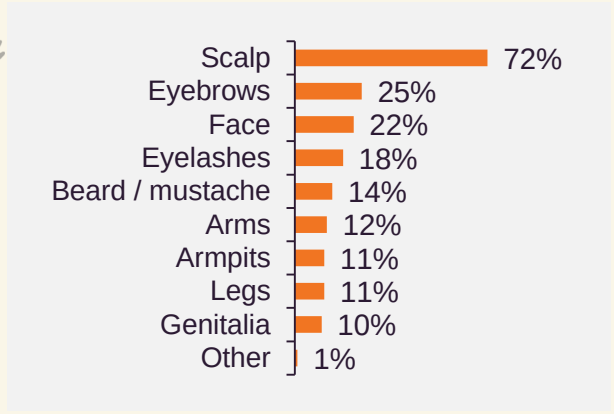
treated by **Primary Care Physicians** (6.7 avg. visits)[1]

54%

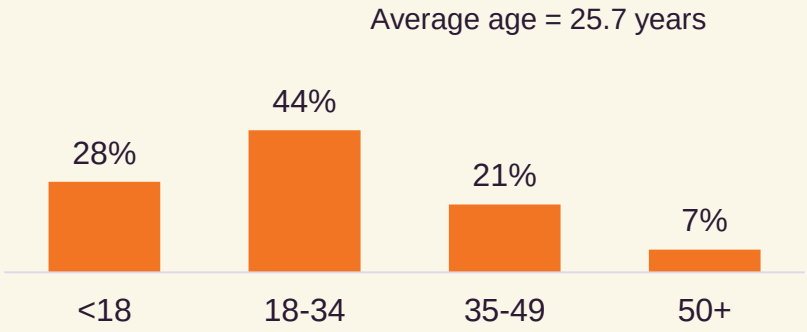
treated by **Dermatologists** (7.1 avg. visits)
43% of pts are referrals[1]

COMMON BODY LOCATIONS[1]





AGE & OTHER DEMOGRAPHICS[1]



[1]Data on file, Aclaris Therapeutics, Inc.
[2]National Alopecia Areata Foundation. https://www.naaf.org/alopecia-areata.

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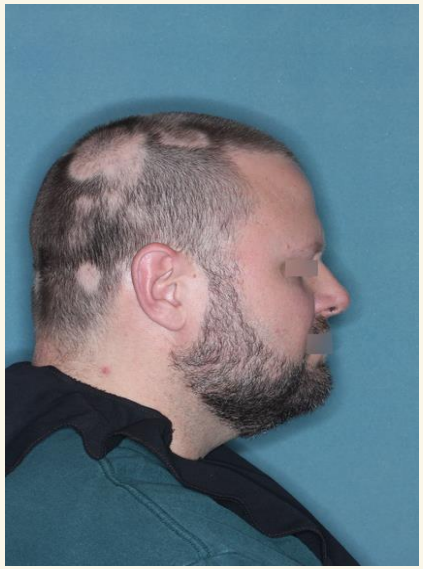
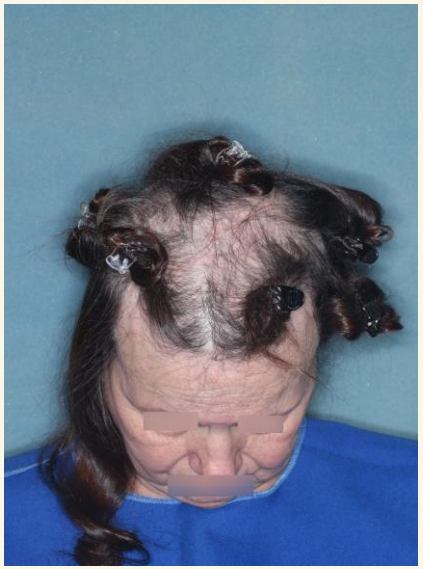
Spectrum of Hair Loss

24%

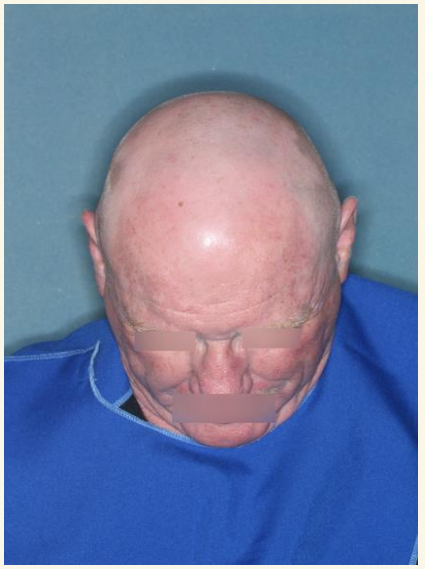
34%

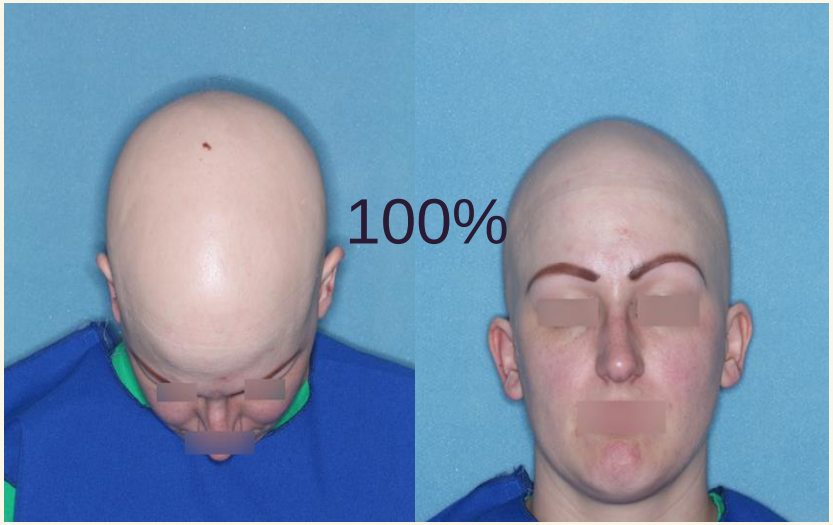


43%



51%

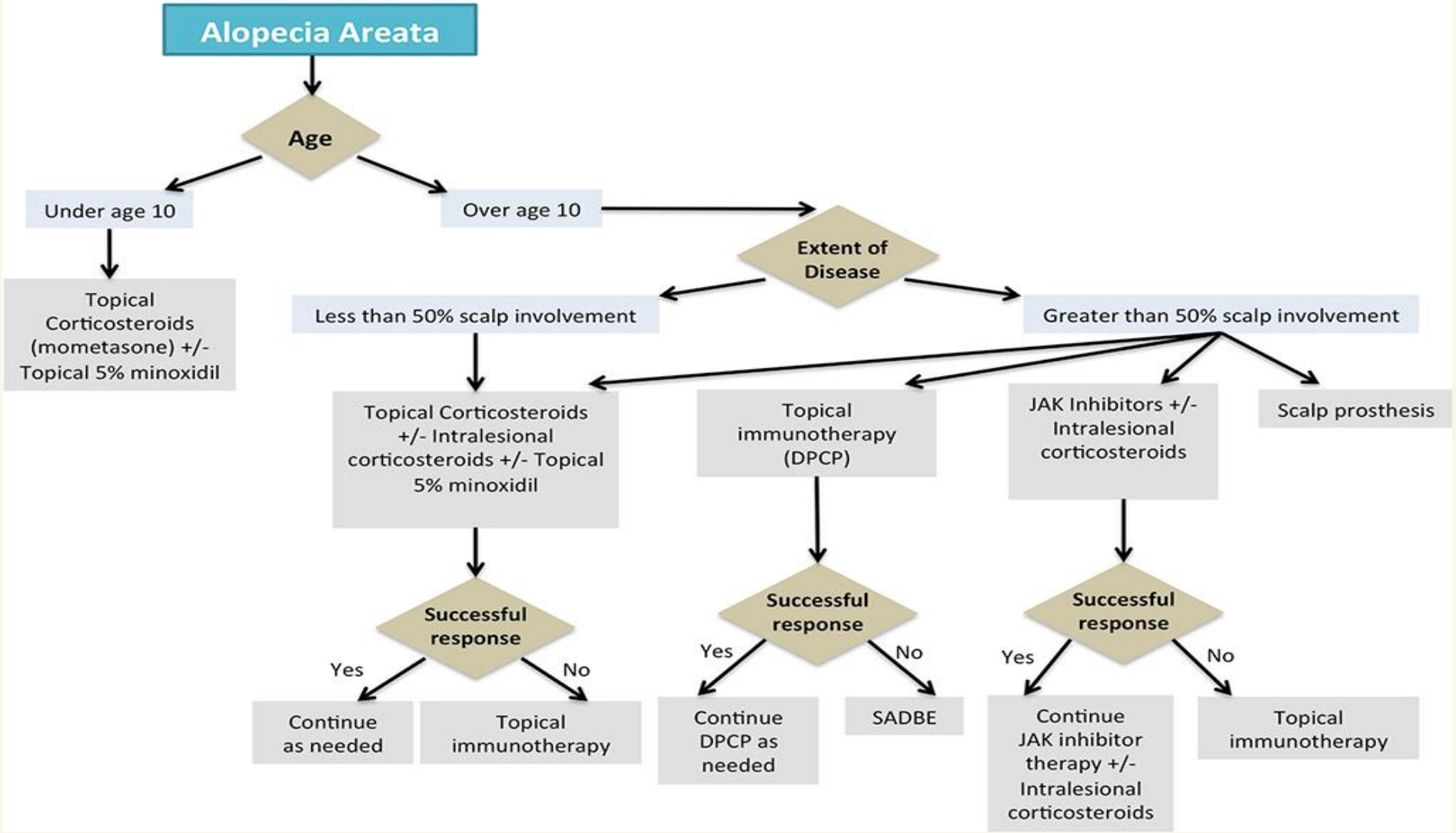




- 25-52% of patients have persistent patchy AA[1]
- 14-25% of patients progress to alopecia totalis or universalis[1]

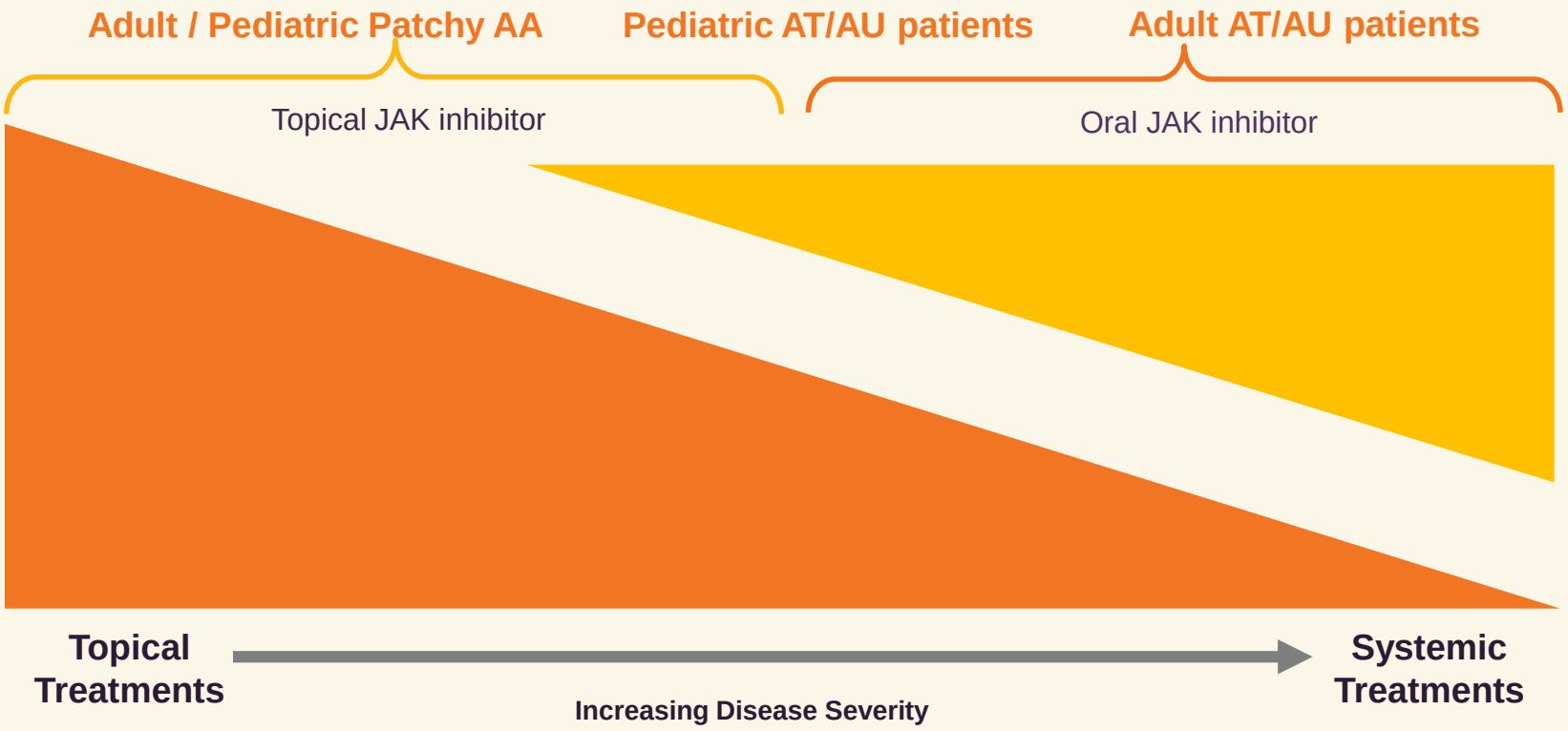
[1]MacDonald, et al. Guidelines for the Management of Alopecia Areata. *Brit J Derm*. 2003

Current treatment paradigm



https://www.naaf.org/alopecia-areata/alopecia-areata-treatments. Last accessed March 30, 2019.

Alopecia Areata: Potential Treatment Paradigms



INDUCTION:

Topical JAK inhibitor may be efficacious in patients with less severe patchy AA

Oral JAK inhibitor may be best option in patients with more severe AT/AU phenotypes

MAINTENANCE:

AT/AU patients may be able to maintain hair with topical JAK inhibitor

Concomitant topical therapy may decrease reliance on longer term oral therapy in some patients

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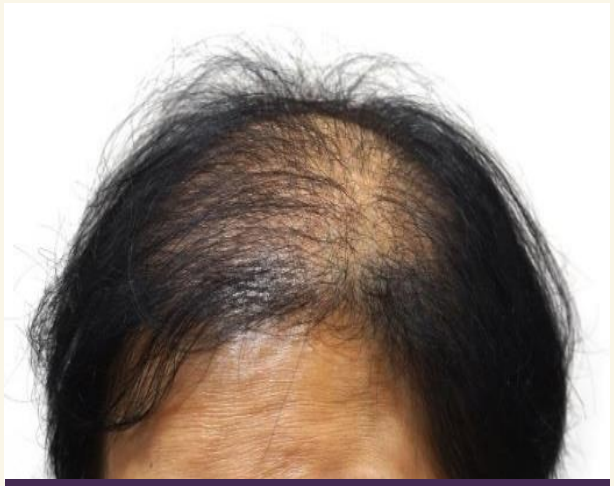
Androgenetic Alopecia (AGA)

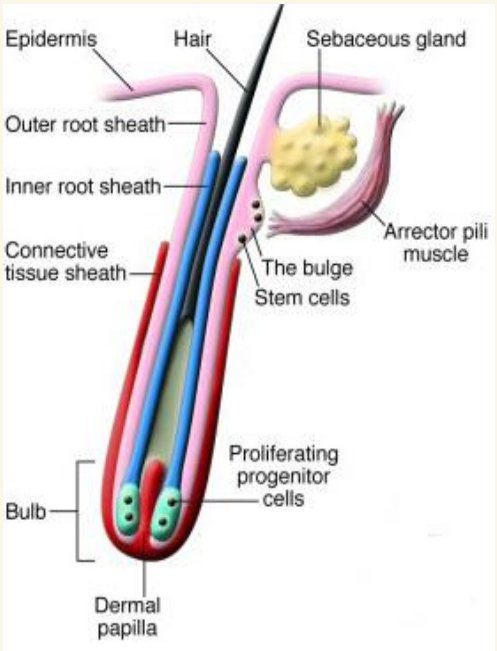
Androgenetic Alopecia (AGA): Male/Female pattern hair loss

- AGA is a genetic disorder and the most common cause of hair loss[1]
- Experienced by 70% of men and 40% of women at some point in their lives[1]; affects ~50 million men and ~30 million women in the US[2]
- Affected individuals highly motivated to seek treatment[1]
- Potential benefits of topical JAK inhibitor in AGA:
  - ✓ New mechanism of action
  - ✓ Minimal systemic side effects
  - ✓ Non-hormonal
  - ✓ Novel option women with AGA

Male with AGA



Female with AGA



Cotsarelis , J Clin Invest. 2006;116(1):19-22.

[1] McElwee J., et al. Promising Therapies for Treating and/or Preventing Androgenic Alopecia. Medscape. 2012
[2] National Institute of Health Androgenetic Alopecia. https://ghr.nlm.nih.gov/condition/androgenetic-alopecia#statistics. Last accessed March 30, 2019.

ATI-450 (MK2 Inhibitor)

MK2 Pathway Inhibitor (MK2 PI) ATI-450

- Pharmacologically unique MOA
- MK2 pathway inhibitors target the production and activity of key inflammatory cytokines including TNFα, IL-1α, IL-1β and IL-6
- ATI-450 inhibits the cytokine targets of established biologics:
  - Anti-TNFs: Humira®, Enbrel®, Remicade®
    - *RA, psoriasis, psoriatic arthritis, IBD, ankylosing spondylitis*
  - Anti-IL1s: Kineret®, Ilaris®, Arcalyst®
    - *CAPS, Still's disease, SJIA, cardiovascular disease*
  - Anti-IL6: Kevzara®, Actemra®
    - *RA, Castleman's disease*
- Aclaris is developing MK2 pathway inhibitors for chronic inflammatory disease and autoimmune disease

MK2 = mitogen-activated protein kinase-activated protein kinase 2 (MAPKAPK2)
RA = rheumatoid arthritis; IBD = inflammatory bowel disease; SJIA = systemic juvenile idiopathic arthritis

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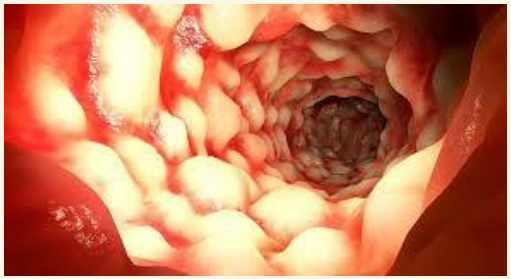
MK2-driven cytokines are central to many diseases

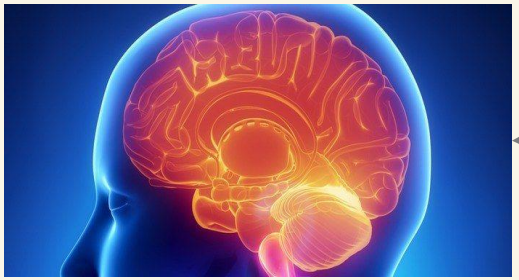
Inflammatory bowel disease



Rheumatoid arthritis / Juvenile idiopathic arthritis

Cancer

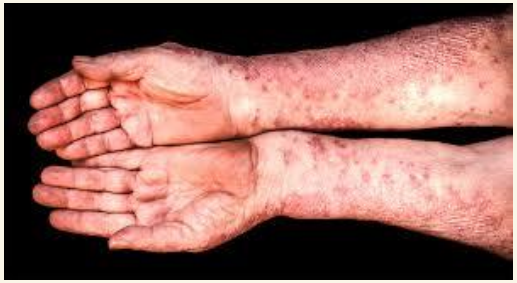
Neuroinflammation



TNFα, IL1β, IL6

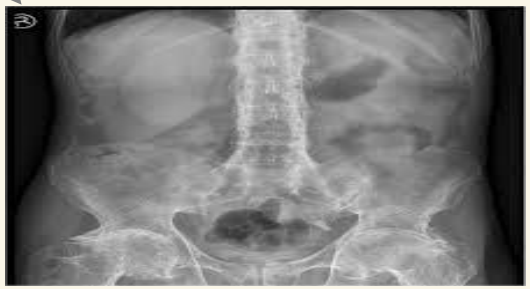
Cardiovascular / cerebrovascular disease

Psoriasis / psoriatic arthritis



Asthma / COPD

Ankylosing spondylitis



Singh RK, et al. *Pharmacol Reports. 2017; 69:746-756.*

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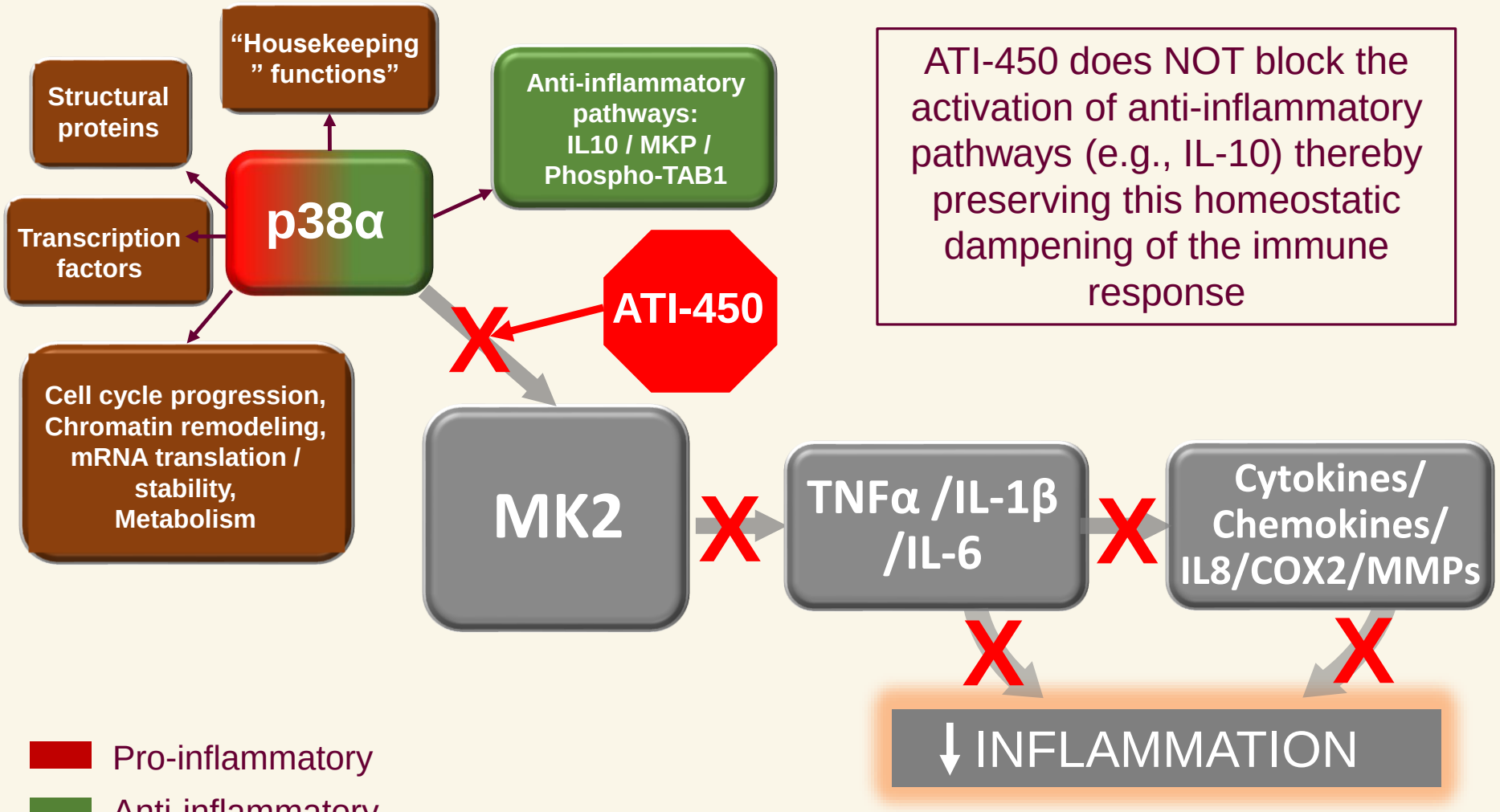
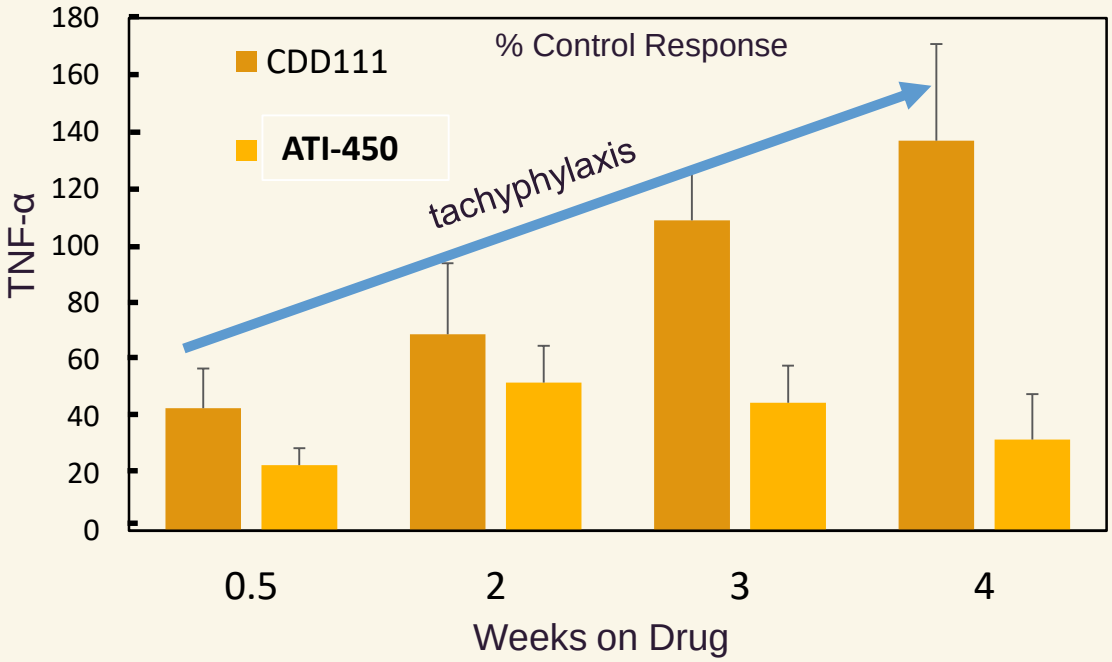
ATI-450 Inhibits the Expression of Key Inflammatory Cytokines: TNFα, IL-1β and IL-6



Mouse LPS-Induced TNFα Production
ATI-450 demonstrated durable response (no tachyphylaxis)

- Global p38 inhibitor CDD-111 lost inhibition over time
- **This investigational MK2 pathway inhibitor ATI-450 demonstrated durable responses in this model (no tachyphylaxis)**



- Conventional p38 (CDD-111) and MK2PI (ATI-450) administered to mice in feed starting day 1 and continuing through day 28
- At the time point indicated, mice were LPS challenged and blood TNFα levels determined

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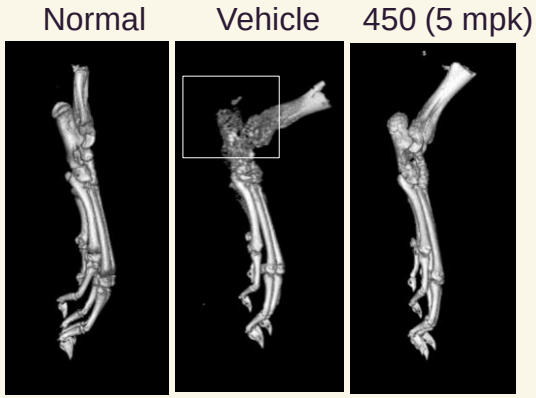
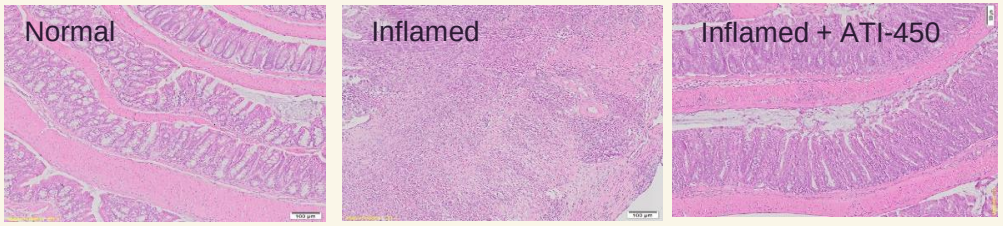
In vivo Results of MK2 Pathway Inhibitor ATI-450

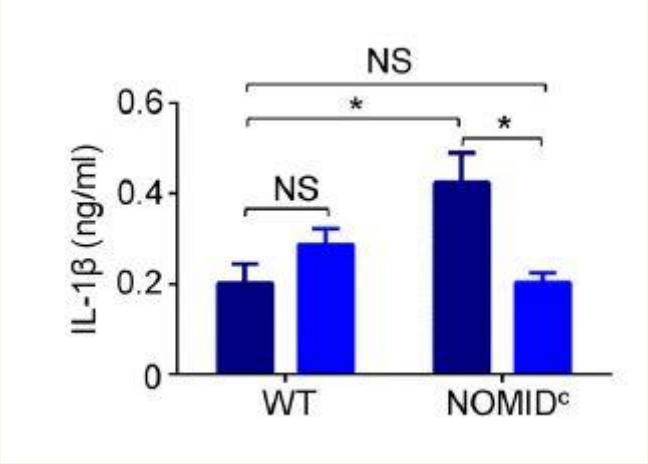
Joint Protection in Rat Arthritis Model[1]



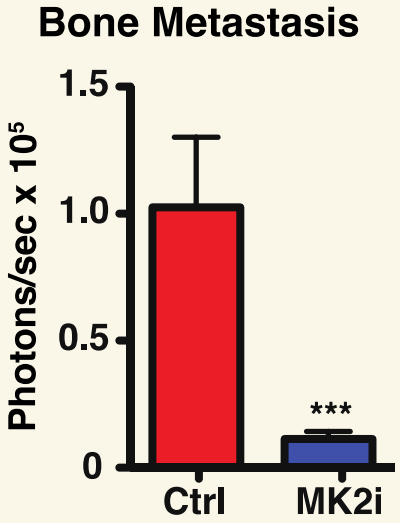
Blockade of Gut Inflammatory Infiltrate in Murine Adoptive Transfer Ulcerative Colitis Model[3]



Cytokine Modulation in Orphan Autoinflammatory Disease (CAPS)[1]

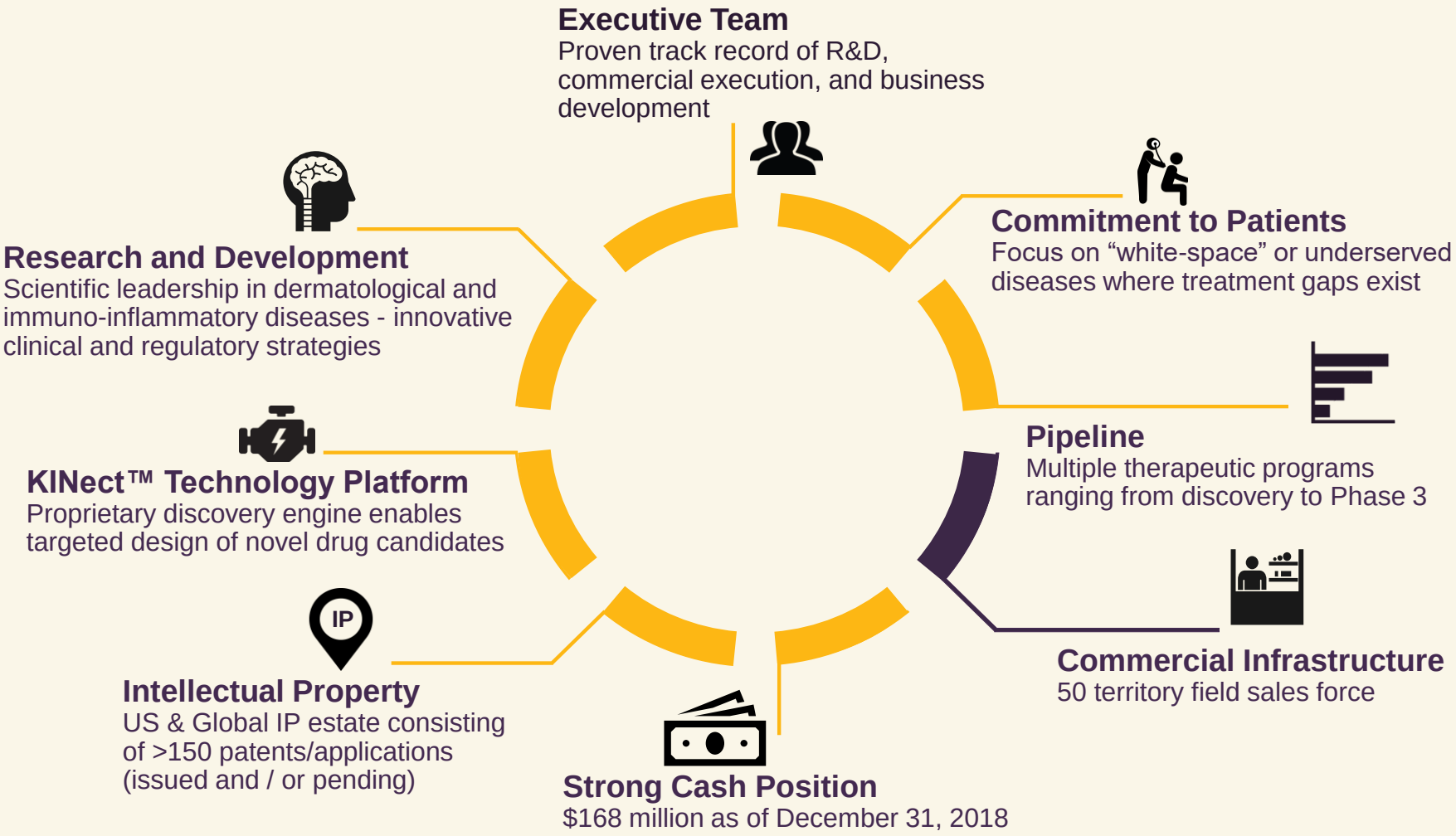


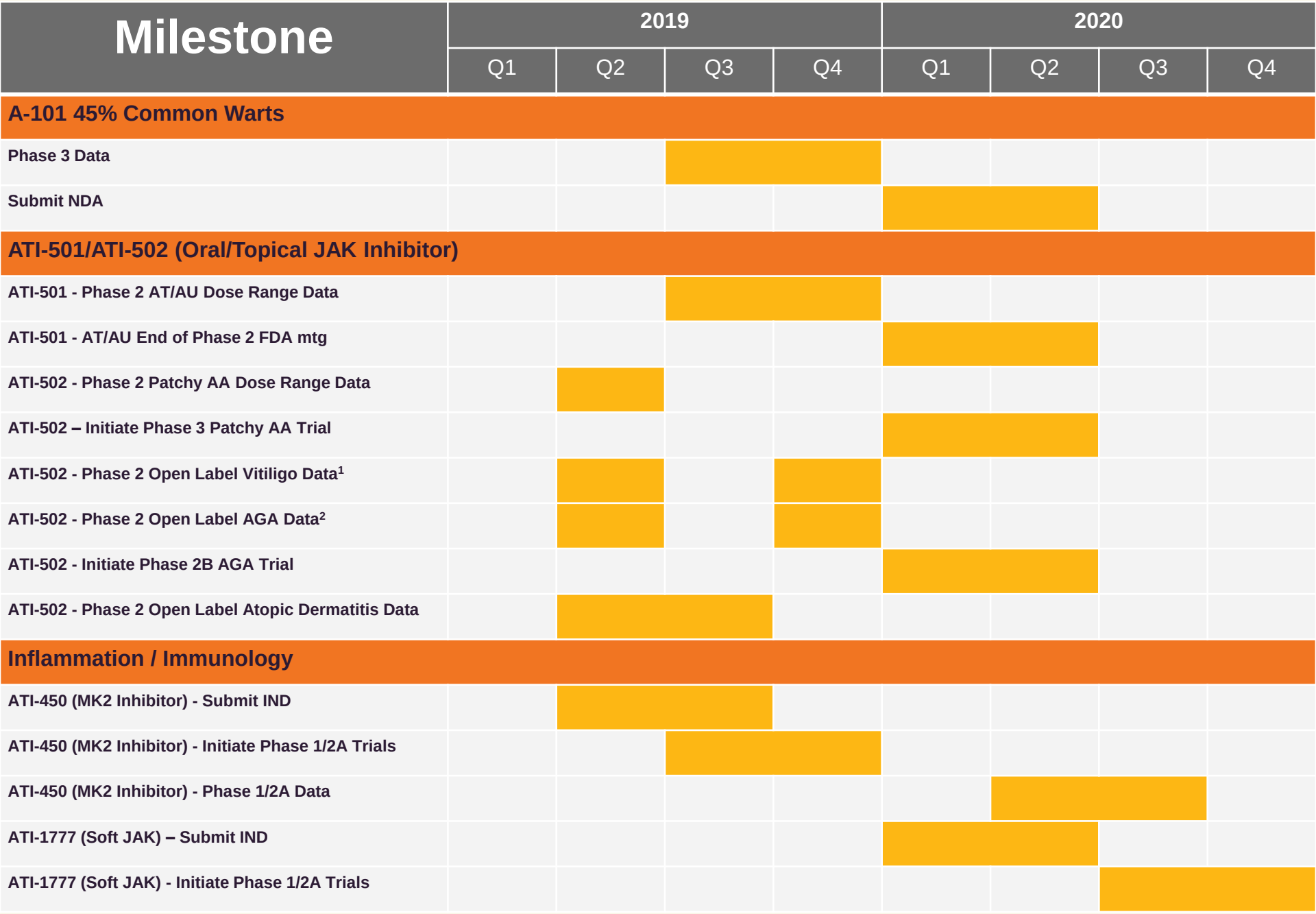
Reduction in Breast Cancer Bone Metastasis in Mice[2]



[1] Wang C, et al. J Exp Med. 2019;215(5):1315-1325.
[2] Murali B, et al. Cancer Res. 2019;78(19)5618-5630.
[3] Data on File. Aclaris Therapeutics, Inc.

Fully Integrated Biopharmaceutical Company





[1] VITI-201: 6-month data interim expected second quarter of 2019; 12-month data expected fourth quarter of 2019
[2] AGA-201: 6-month data expected second quarter of 2019; 12-month data expected fourth quarter of 2019

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THANK YOU

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