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**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, D.C. 20549**

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**FORM 8-K**

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**CURRENT REPORT  
Pursuant to Section 13 or 15(d)  
of the Securities Exchange Act of 1934**

**Date of Report (Date of earliest event reported): October 3, 2013 (October 3, 2013)**

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**REGENERON PHARMACEUTICALS, INC.**

(Exact Name of Registrant as Specified in Charter)

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**New York**  
(State or other jurisdiction  
of Incorporation)

**000-19034**  
(Commission  
File No.)

**13-3444607**  
(IRS Employer  
Identification No.)

**777 Old Saw Mill River Road,  
Tarrytown, New York 10591-6707**  
(Address of principal executive offices, including zip code)

**(914) 847-7000**  
(Registrant's telephone number, including area code)

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Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
  - Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
  - Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
  - Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))
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**Item 7.01. Regulation FD Disclosure.**

On October 3, 2013, at the 22<sup>nd</sup> Congress of the European Academy of Dermatology and Venereology held in Istanbul, Turkey, data from a Phase 2 trial evaluating dupilumab, a human monoclonal antibody, in patients with atopic dermatitis were presented at an oral session by Prof. Diamant Thaçi, University of Lübeck, Germany. A copy of the slides that were presented is furnished as Exhibit 99.1 to this Current Report on Form 8-K and is incorporated herein by reference.

**Item 9.01. Financial Statements and Exhibits.**

(d) Exhibits.

99.1 Presentation entitled "Safety and efficacy of dupilumab for moderate-to-severe atopic dermatitis in patients using topical corticosteroids (TCS): Greater efficacy observed with combination therapy compared to TCS alone."

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

Date: October 3, 2013

REGENERON PHARMACEUTICALS, INC.

By: /s/ Joseph J. LaRosa

Name: Joseph J. LaRosa

Title: Senior Vice President, General Counsel and Secretary

Exhibit Index

Number

Description

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99.1

Presentation entitled "Safety and efficacy of dupilumab for moderate-to-severe atopic dermatitis in patients using topical corticosteroids (TCS): Greater efficacy observed with combination therapy compared to TCS alone."

# **Safety and efficacy of dupilumab for moderate-to-severe atopic dermatitis in patients using topical corticosteroids (TCS): Greater efficacy observed with combination therapy compared to TCS alone**

Diamant Thaçi,<sup>1</sup> Margitta Worm,<sup>2</sup> Haobo Ren,<sup>3</sup> Steven Weinstein,<sup>3</sup> Neil Graham,<sup>3</sup> Gianluca Pirozzi,<sup>4</sup> Franck Skobieranda,<sup>4</sup> Marius Ardeleanu<sup>3</sup>

<sup>1</sup>Universität zu Lübeck, Lübeck, Germany; <sup>2</sup>Charite-Universitätsmedizin Berlin, Berlin, Germany; <sup>3</sup>Regeneron Pharmaceuticals, Inc., Tarrytown, USA; <sup>4</sup>Sanofi, Bridgewater, USA

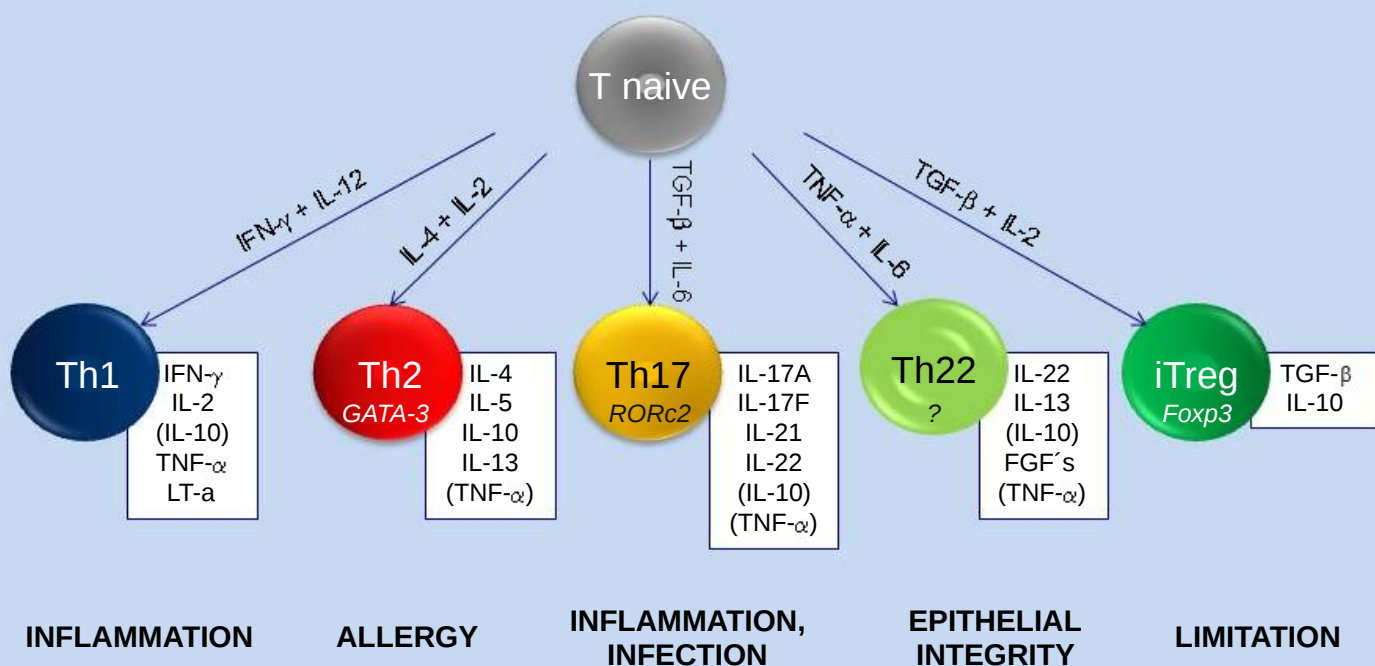
# Disclosures

- D Thaçi is a consultant for Astellas, Novartis, Regeneron, Celgene, Abbott, Pfizer, Janssen-Cilag, MSD, Leo-Pharma
- M Worm has nothing to disclose
- H Ren, S Weinstein, N Graham, and M Ardeleanu are employees and shareholders of Regeneron
- G Pirozzi is an employee and shareholder of Sanofi
- F Skobieranda was an employee of Sanofi when the study was conducted
- Study (NCT01639040) funded by Regeneron Pharmaceuticals, Inc. and Sanofi

# Introduction

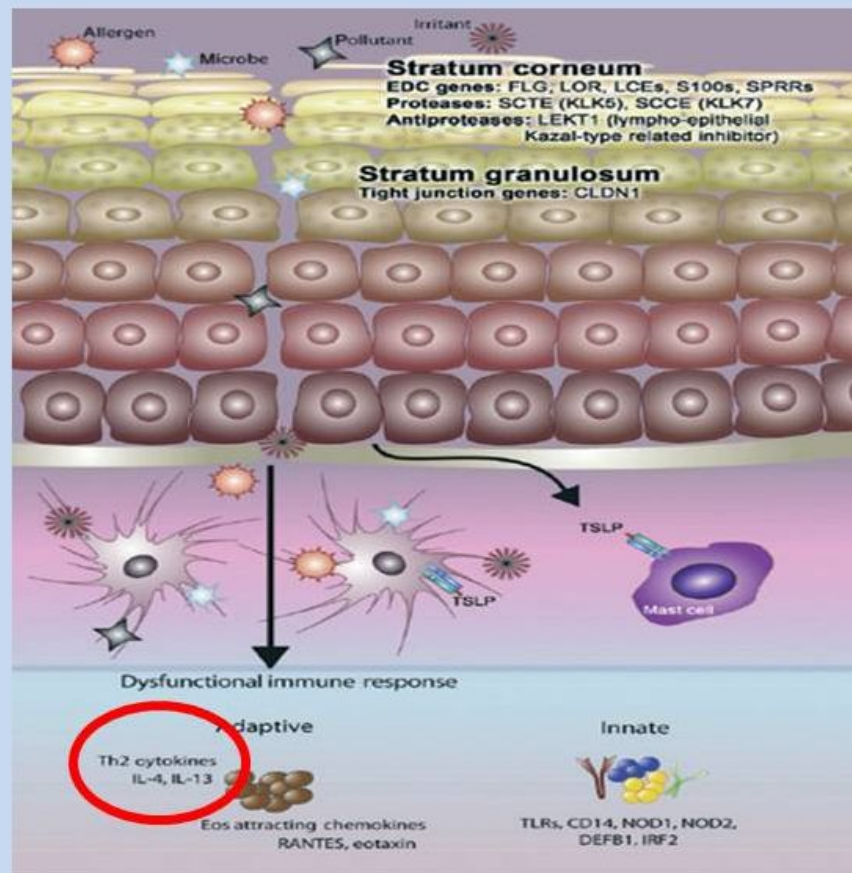
- Moderate-to-severe atopic dermatitis (AD) is characterized by eczematous dermatitis with intractable pruritus associated with sleep disturbance and lower quality-of-life
- For many patients, current therapies are inadequate and can be associated with unwanted side effects
- IL-4 and IL-13 are thought to be central to T-helper 2 (Th2) inflammation, which mediates many features of AD
- Dupilumab is a fully human monoclonal antibody targeting the IL-4 receptor alpha subunit (IL-4R $\alpha$ ), thus blocking the intracellular signaling of both IL-4 and IL-13
- Earlier clinical trials indicated that dupilumab monotherapy had an acceptable safety profile and was efficacious in patients with moderate to severe AD who cannot be adequately controlled with topical medications
- Since topical corticosteroids (TCS) are commonly used in AD, we assessed the safety and efficacy of dupilumab co-administered with TCS

# T cells in immune mediated diseases



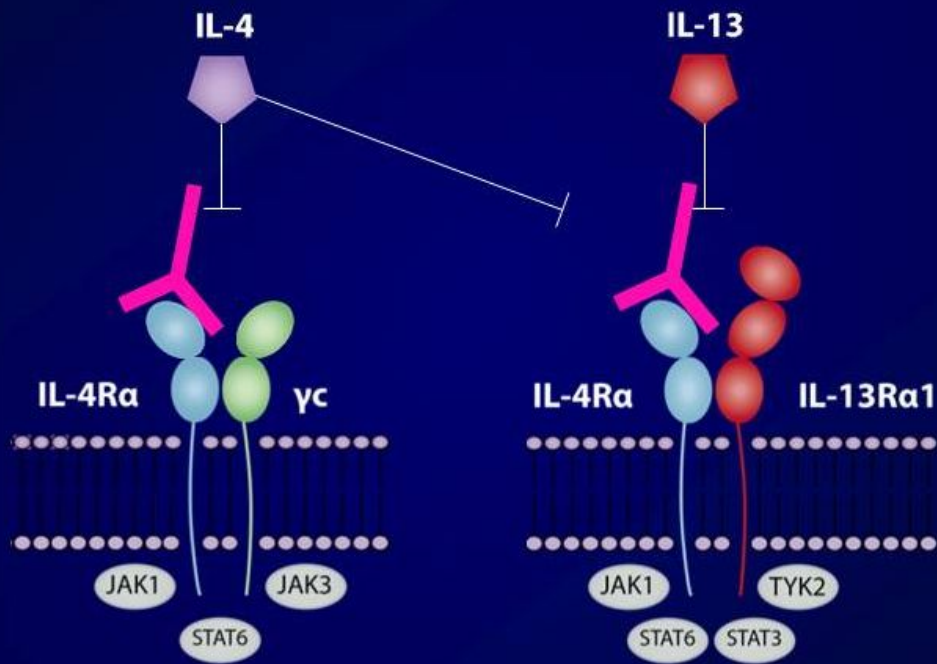


# Atopic dermatitis: a disease of altered skin barrier and immune dysregulation



Boguniewicz M, Leung DM. Immunol Rev. 2011 Jul;242(1):233-46.

# Dupilumab blocks the IL-4/IL-13 receptor/ligand system



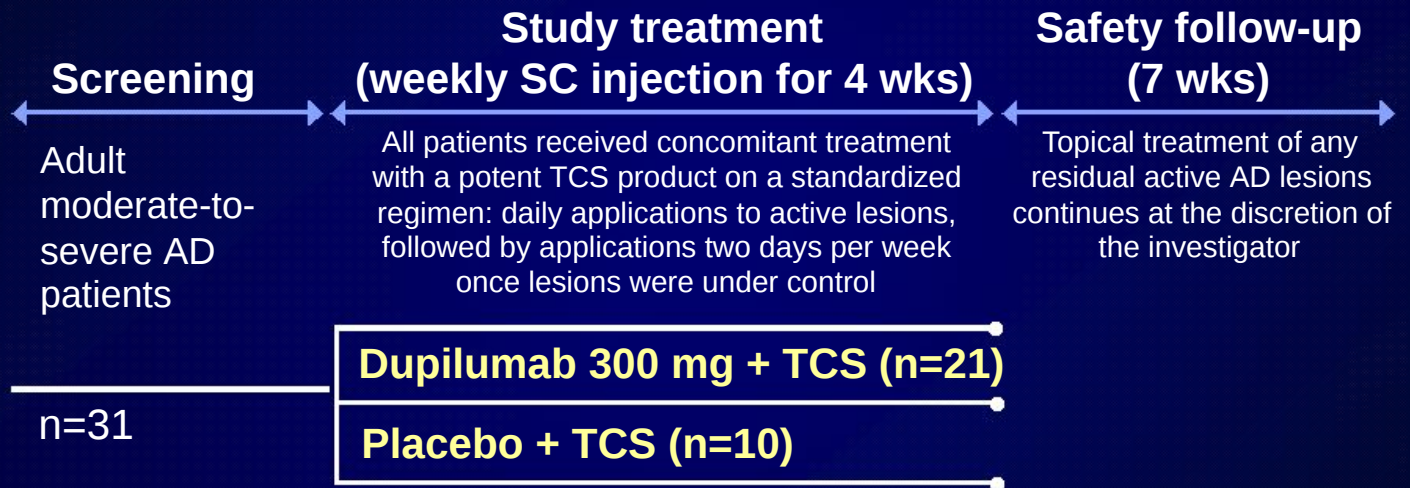
## Type I Receptor

B cells, T cells, Monocytes,  
Eosinophils, Fibroblasts

## Type II Receptor

Epithelial cells, Smooth muscle  
cells, Fibroblasts, Monocytes,  
Activated B cells

# Randomized, double-blind, parallel-group, placebo-controlled study (NCT01639040) conducted in EU



Study endpoints:

- Primary endpoint was incidence and severity of adverse events (AEs)
- Exploratory efficacy endpoints included EASI-50, IGA  $\leq 1$ , SCORAD score

# Key inclusion/exclusion criteria

## Inclusion

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- Male or female  $\geq 18$  yrs
- Chronic AD  $> 2$  yrs
- IGA  $\geq 3$
- SCORAD  $> 20$
- $\geq 10\%$  BSA of AD involvement
- Active AD lesion(s) for which treatment with potent TCS is indicated

## Exclusion

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- Hypersensitivity to TCS
- $\geq 50\%$  of the cumulative lesional surface located on face, flexural, or genital areas (generally unsuitable for treatment with potent TCS)
- Acute or chronic infections
- Recent treatment with immunosuppressive/immunomodulating drugs
- Significant co-morbidities or lab abnormalities

# Baseline demographics

	Placebo + TCS (n=10)	Dupilumab SC 300 mg +TCS (n=21)
<b>Mean age, yrs (SD)</b>	37.8 (16.7)	36.0 (11.3)
<b>Race, n (%)</b>		
Caucasian	10 (100%)	20 (95.2%)
Non-Caucasian	0	1 (4.8%)
<b>Gender, n (%)</b>		
Male	5 (50.0%)	8 (38.1%)
Female	5 (50.0%)	13 (61.9%)
<b>Mean BMI, kg/m<sup>2</sup> (SD)</b>	23.92 (3.47)	25.26 (3.26)

# Baseline disease characteristics

[mean (SD)]

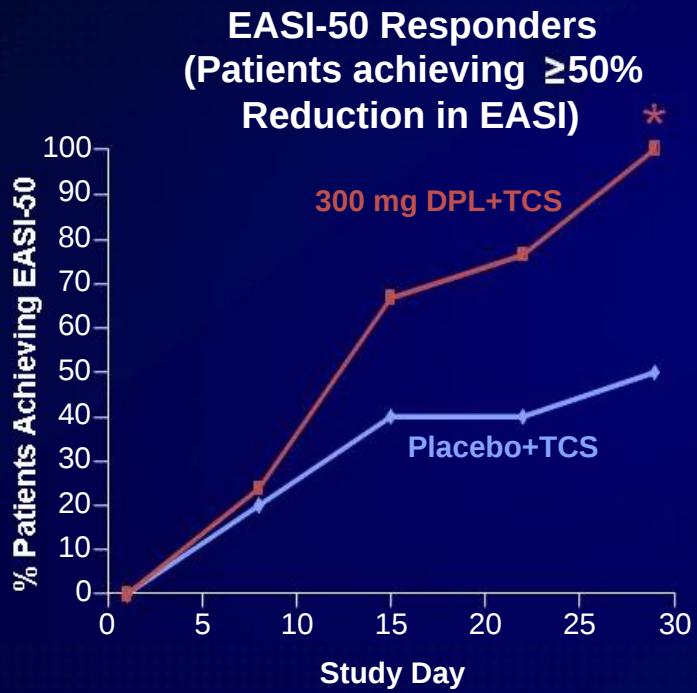
	Placebo + TCS (n=10)	Dupilumab SC 300 mg +TCS (n=21)
AD duration, yrs	32.4 (16.8)	30.9 (13.0)
EASI score (0-72)	24.10 (12.70)	23.12 (12.35)
IGA score (0-5)	3.35 (0.47)	3.43 (0.60)
SCORAD score (0-103)	58.20 (13.83)	66.31 (13.01)
% BSA of AD	38.85 (24.05)	40.43 (20.91)
Pruritus Numeric Rating Scale (NRS) score (0-10)	5.00 (1.40)	6.43 (2.00)

EASI=Eczema Area Severity Index; IGA=Investigator's Global Assessment; SCORAD=scoring of atopic dermatitis;  
BSA = baseline body surface area; NRS=numeric rating scale

# Treatment emergent adverse events

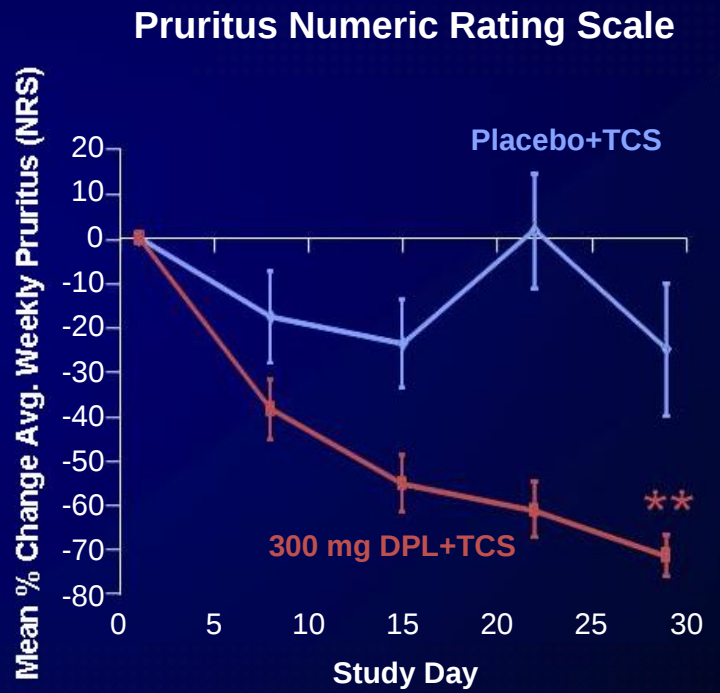
	Placebo + TCS (n = 10)	Dupilumab + TCS (n = 21)
Total number of AEs	14	41
Total number of serious AEs	1	0
Deaths	0	0
Number (%) of patients discontinued from study due to AE	1 (10.0%)	0
Number (%) of patients with:		
▪ Any AE	7 (70.0)	12 (57.1)
▪ Any serious AE	1 (10.0)	0
▪ Most common AEs ( $\geq 5\%$ in dupilumab groups)		
• Nasopharyngitis	2 (20.0)	5 (23.8)
• Headache	1 (10.0)	3 (14.3)
• Oropharyngeal pain	1 (10.0)	3 (14.3)
• Rhinitis	0	2 (9.5)
• Cough	0	2 (9.5)
• Influenza	0	2 (9.5)
• Somnolence	0	2 (9.5)

# Dupilumab+TCS significantly improved measures of efficacy vs TCS alone



\*  $p=0.0015$

DPL=dupilumab  
TCS=topical corticosteroids

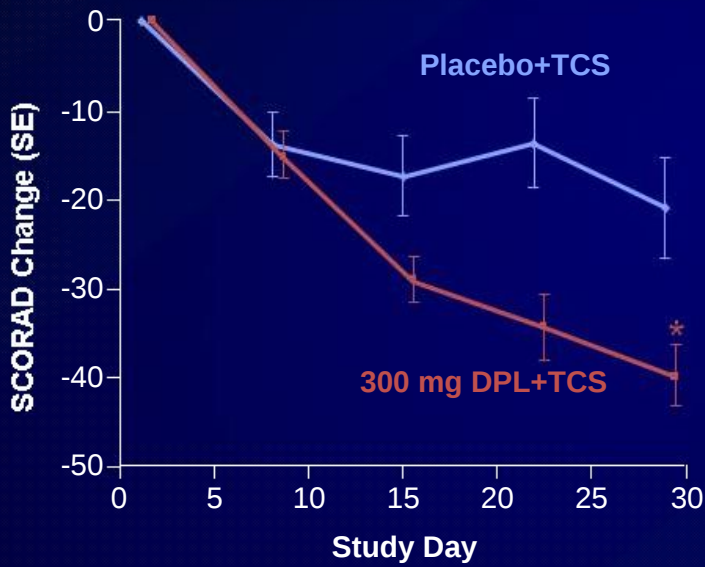


\*\*  $p=0.0051$



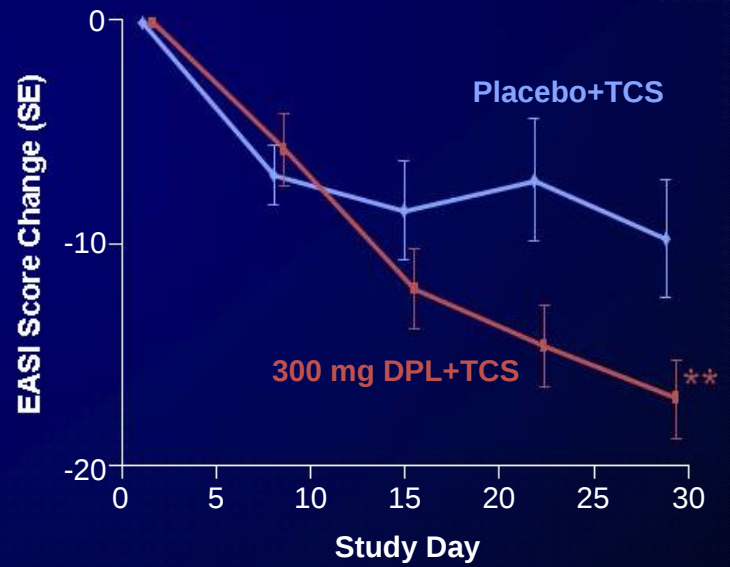
# Dupilumab+TCS significantly improved measures of efficacy vs TCS alone

## SCORAD



\*p=0.0191

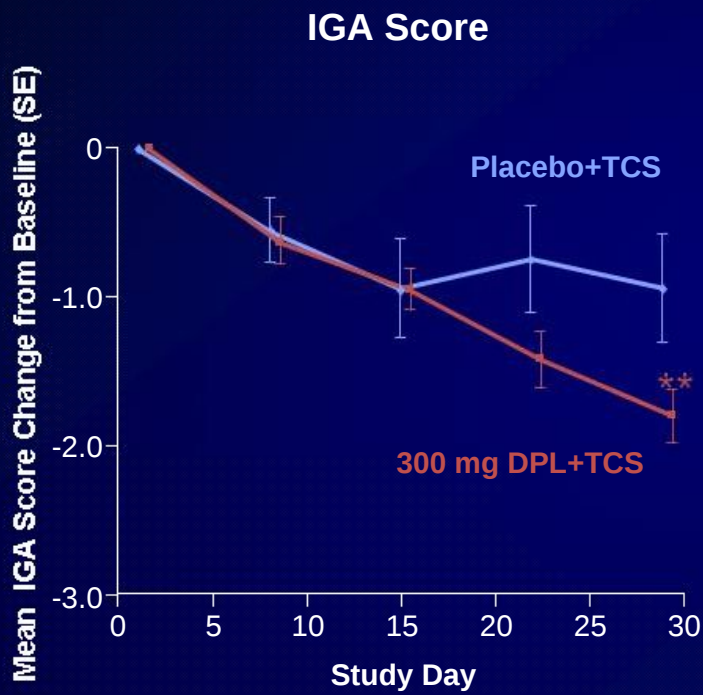
## EASI



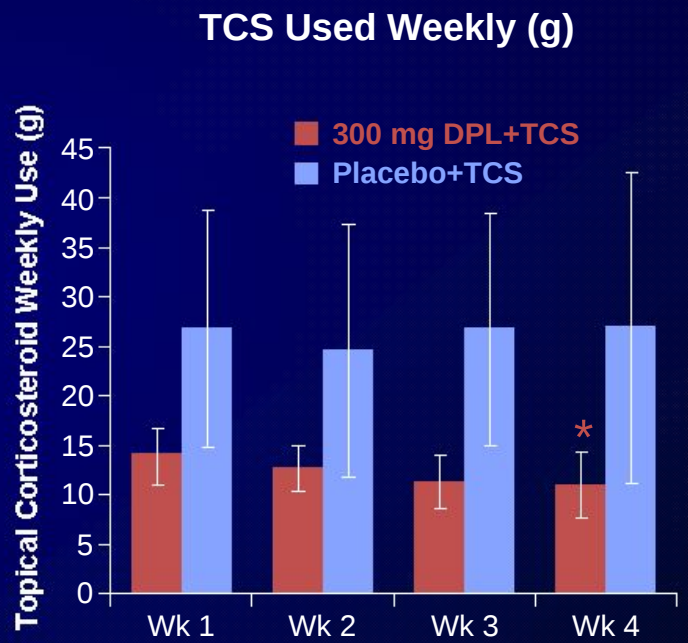
\*\*p=0.0042

DPL=dupilumab  
TCS=topical corticosteroids

# Dupilumab+TCS achieved superior clinical outcomes vs TCS alone



\*\*p=0.0281



\*p=0.1413

DPL=dupilumab  
TCS=topical corticosteroids

# Summary

- In this study of adults with moderate-to-severe AD, concomitant treatment with SC dupilumab+TCS exhibited an acceptable safety profile (primary endpoint)
  - Most common treatment-emergent AEs were nasopharyngitis (23.8% vs 20% for placebo), headache and oropharyngeal pain (both 14.3% vs 10% for placebo)
- At 4 weeks, dupilumab+TCS group achieved superior clinical outcomes compared to TCS alone (exploratory efficacy endpoints)
  - EASI-50: 100% responder rate for dupilumab +TCS, compared to 50% for placebo+TCS
  - Significantly better improvement from baseline in EASI, SCORAD, IGA, and pruritus NRS for dupilumab + TCS vs. Placebo + TCS
- Patients on dupilumab + TCS used approximately 50% less TCS during the treatment period compared with patients on placebo + TCS (48.7g vs 99.4g), associated with faster clearing of active AD lesions

# Acknowledgements

All participating patients

## Investigators

Diamant Thaci  
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Haobo Ren  
Dawn Rich  
Tara Seeliger

**BACK UP**

# The march of atopic eczema

