Pruritus in pediatric patients with atopic dermatitis: multidisciplinary approach

Iride Dello Iacono

PEDIATRIA ED ALLERGOLOGIA

Ospedale Fatebenefratelli Benevento

In press

Summary document of an italian expert group.

May El Hachem *, Giuseppe Di Mauro * *, Roberta Rotunno*, Simona Giancristoforo*, Cristiana De Ranieri*, Carla Maria Carlevaris*, Maria Carmen Verga **, Dello Iacono Iride**

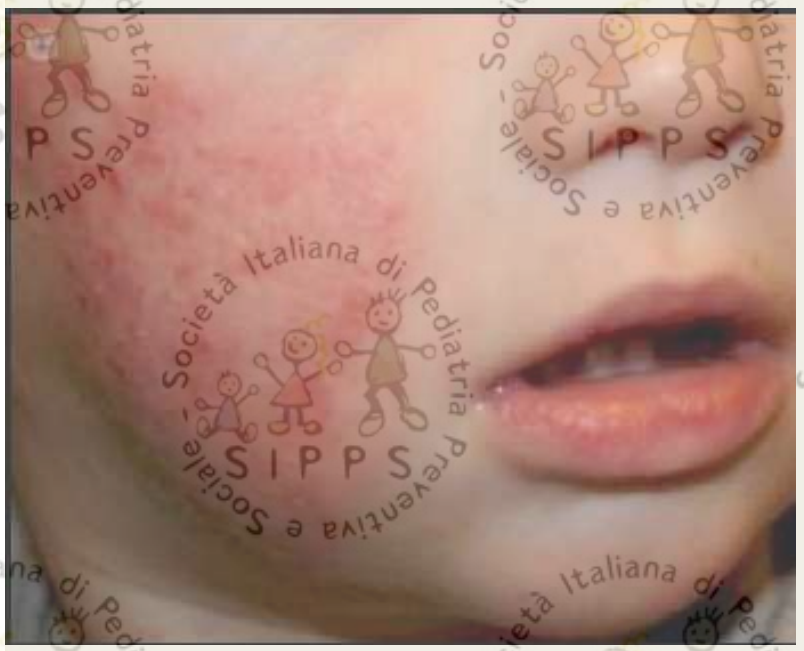
***Ospedale Pediatrico B. Gesù**

**** SIPPS**

In press

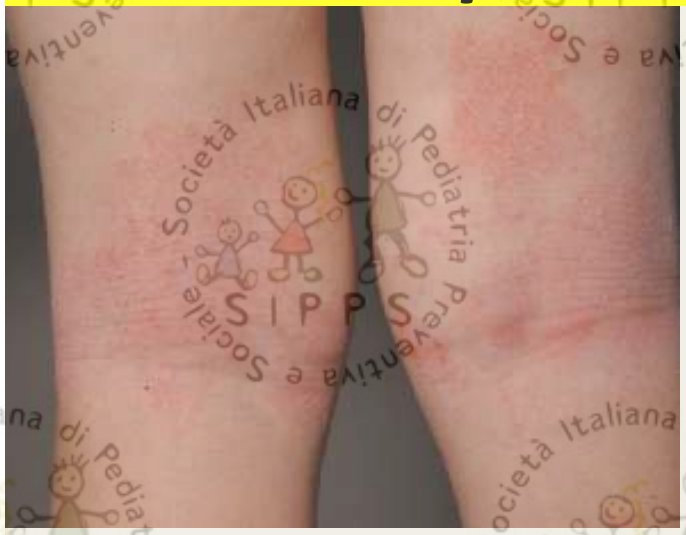
ETIOPATHOGENETICALLY ASPECTS

Atopic dermatitis (AD) is a chronic multifactorial disorder that requires multidisciplinary management and affecting 2-20% of the general population with age and ethnic differences.



M. Furue et al. Allergology International XXX (2016) 1-6

Approximately 80% of AD patients exhibit elevated levels of serum IgE.In contrast to normo-IgE and non allergic intrinsic AD patients, extrinsic AD patients with hyper IgE levels are associated with increased disease severity, mutation in the FLG gene and impaired skin barrier function.



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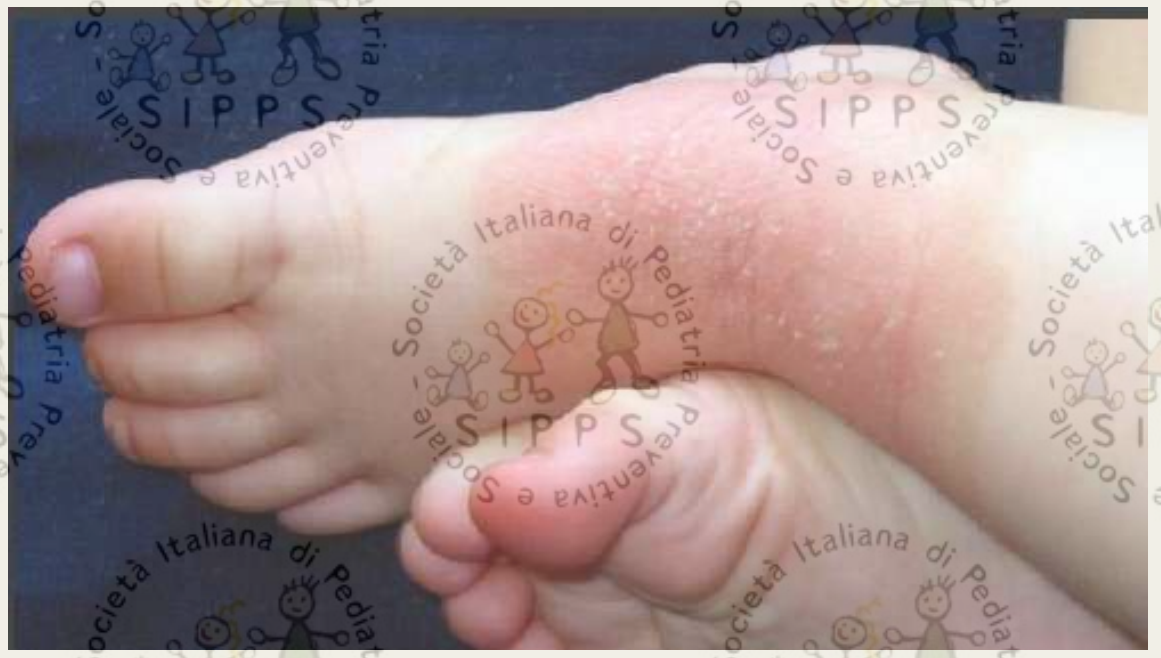
With regards to immune abnormalities, AD is currently considered as a biphasic T cell-mediated disease. A Th2 signal predominates in the acute phase, whereas a Th2 to Th1 switch promotes disease chronicity.



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ETIOPATHOGENESIS OF ATOPIC DERMATITIS

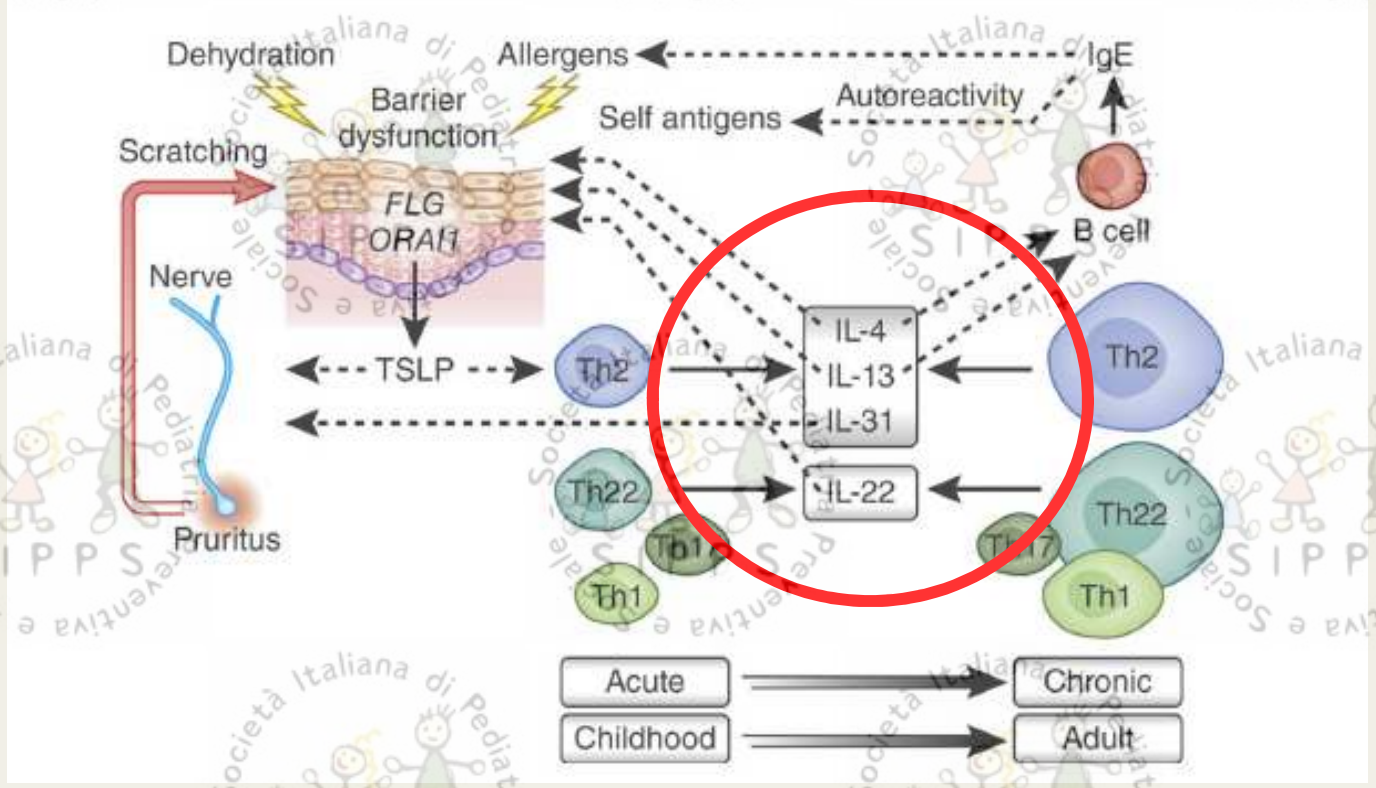
1) **Immune deviation towards Th2 and T22 expansion in AD**

2) **Disruption of barrier proteins by Il-4, IL-13 and IL-22**

3) **Central neural circuit**

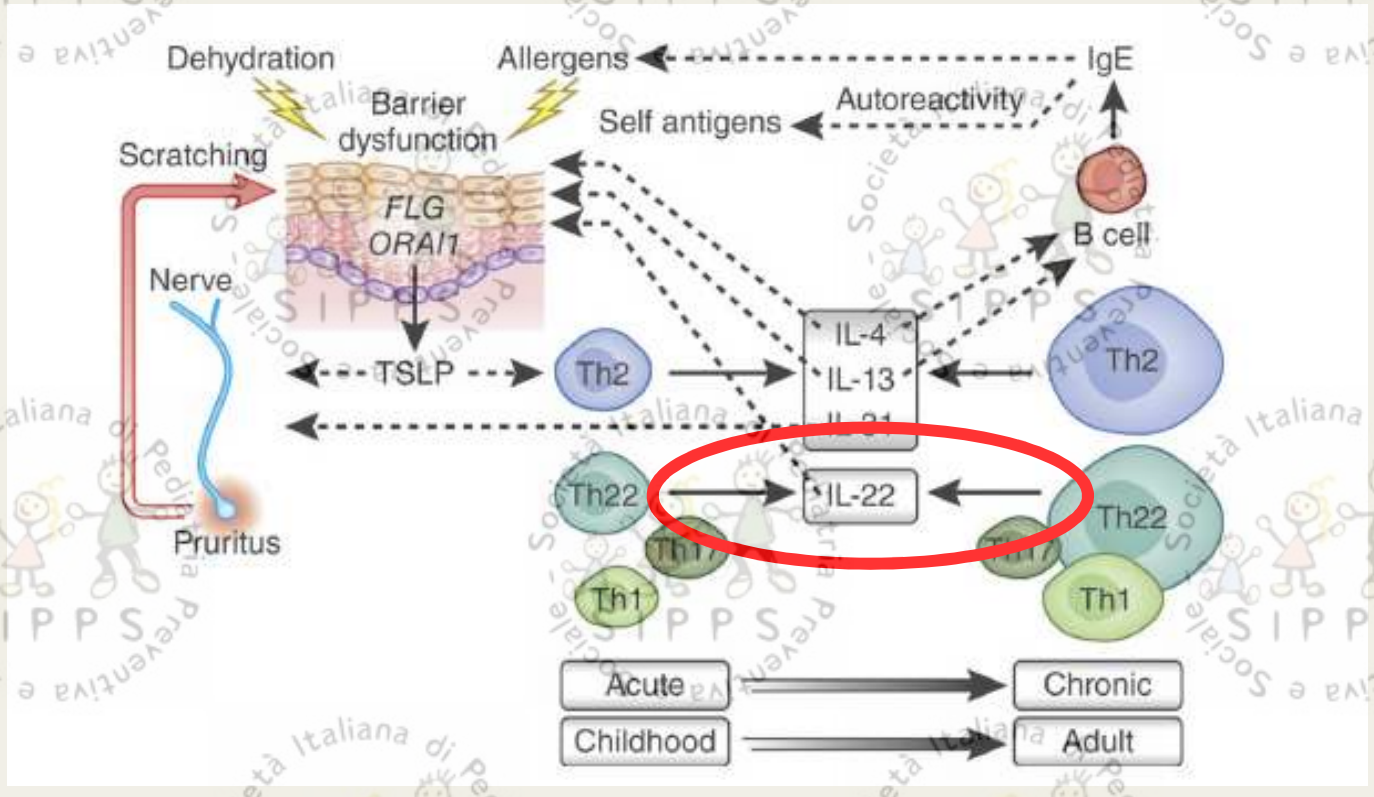
ETIOPATHOGENESIS OF ATOPIC DERMATITIS

Immune deviation towards Th2 and T22 expansion in AD



PATHOGENESIS OF ATOPIC DERMATITIS

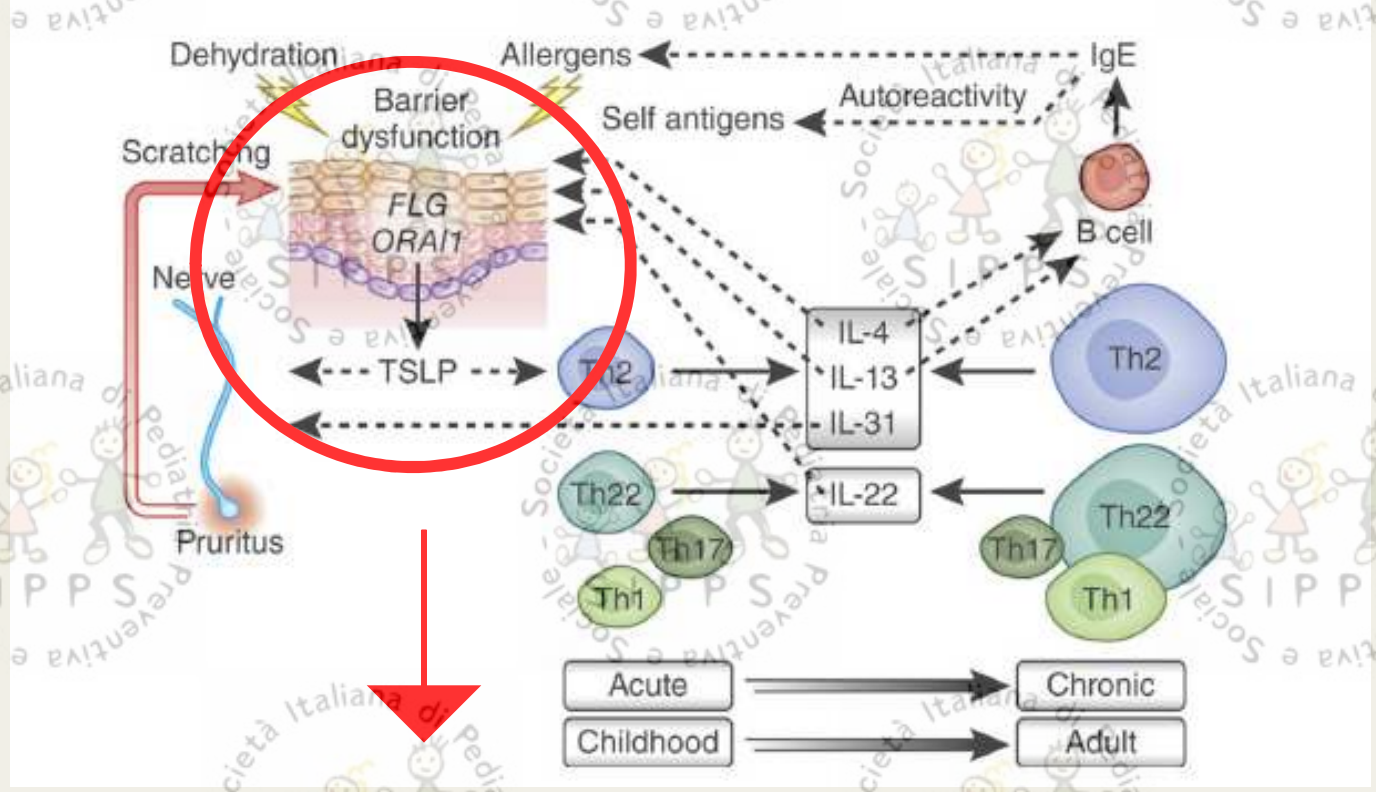
Immune deviation towards Th2 and T22 expansion in AD



Guttman-Yassky E. J Am Acad Dermatol. 2018

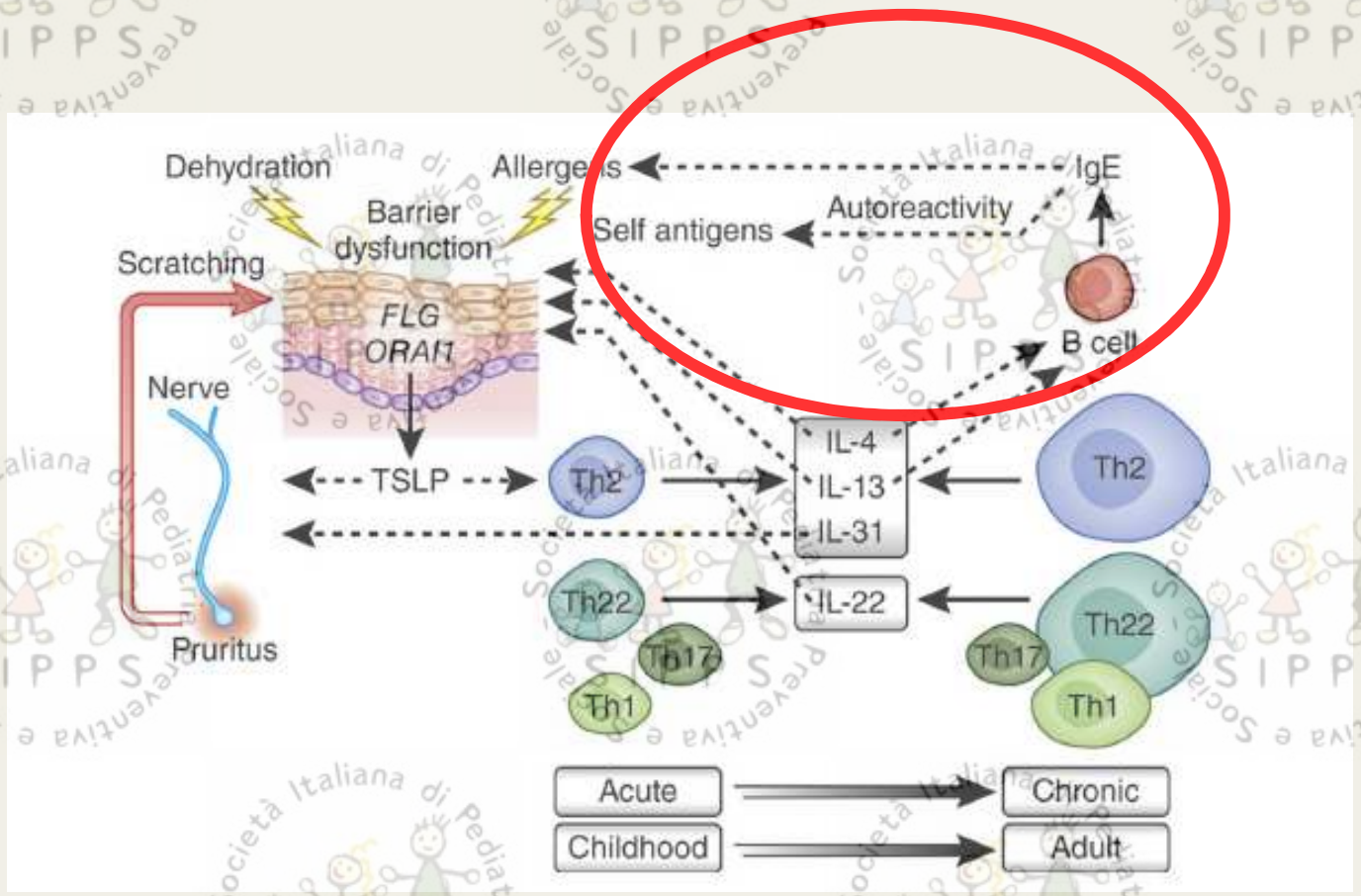
ETIOPATHOGENESIS OF ATOPIC DERMATITIS

Disruption of barrier proteins by IL-4, IL-13 and IL-22



"Epidermal Differentiation Complex"

PATHOGENESIS OF ATOPIC DERMATITIS



New pathways for itching in patients with atopic dermatitis?

Jennifer Heimall, MD, and Jonathan M. Spergel, MD, PhD *Philadelphia, Pa*

J ALLERGY CLIN IMMUNOL
AUGUST 2017

Atopic dermatitis has been described **as the itch that rashes**. Indeed, the itching associated with the condition is often considered to be the most challenging feature of the disease to control. In addition, itching has been cited as the symptom most associated with effect on quality of life in patients with atopic dermatitis.

PATHOGENESIS OF PRURITUS IN ATOPIC DERMATITIS

1) **Disruption of barrier proteins by Il-4, IL-13 and IL-22**

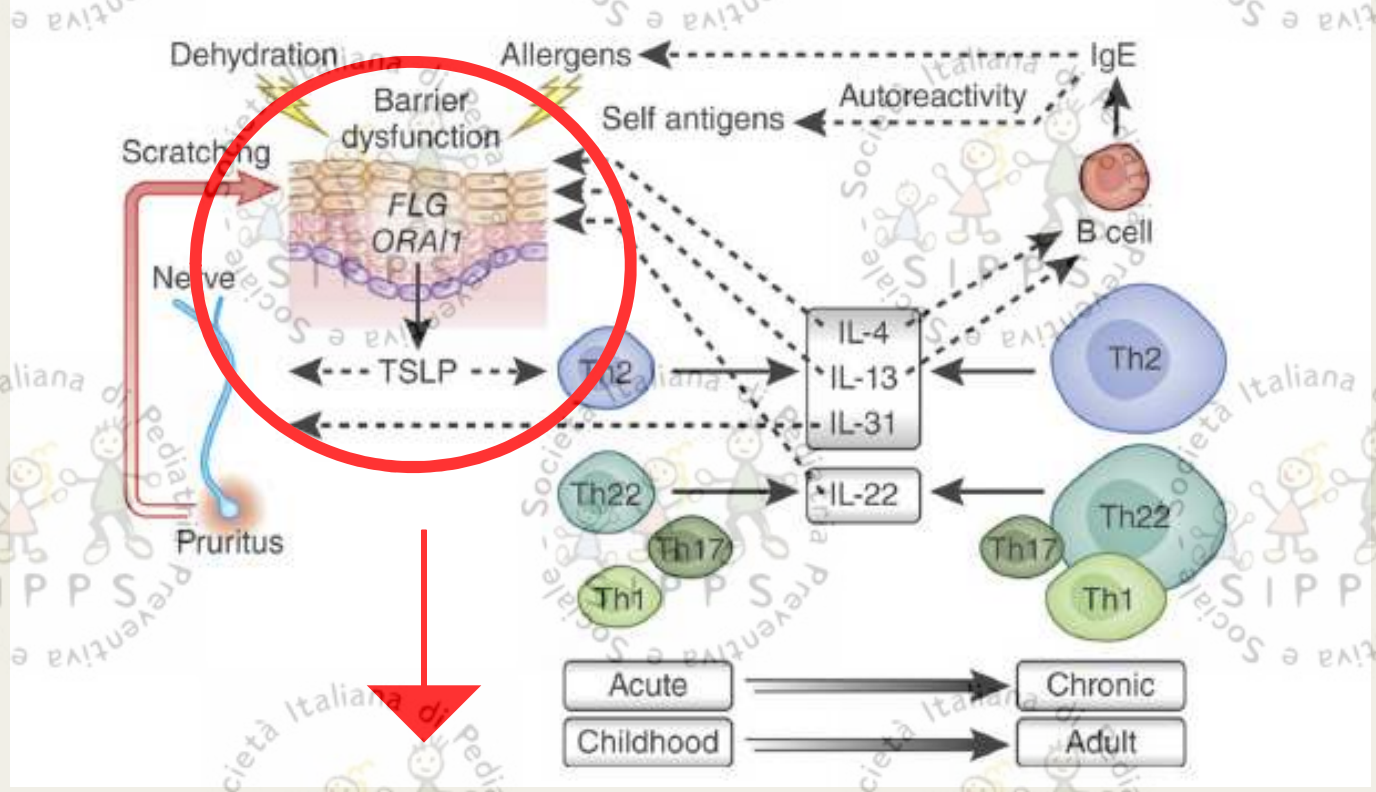
2) **Immune deviation towards Th2 and T22 expansion in AD**

3) **Central neural circuit for itch sensation**

4) **Pruritogenic mediators**

ETIOPATHOGENESIS OF PRURITUS IN ATOPIC DERMATITIS

Disruption of barrier proteins by IL-4, IL-13 and IL-22



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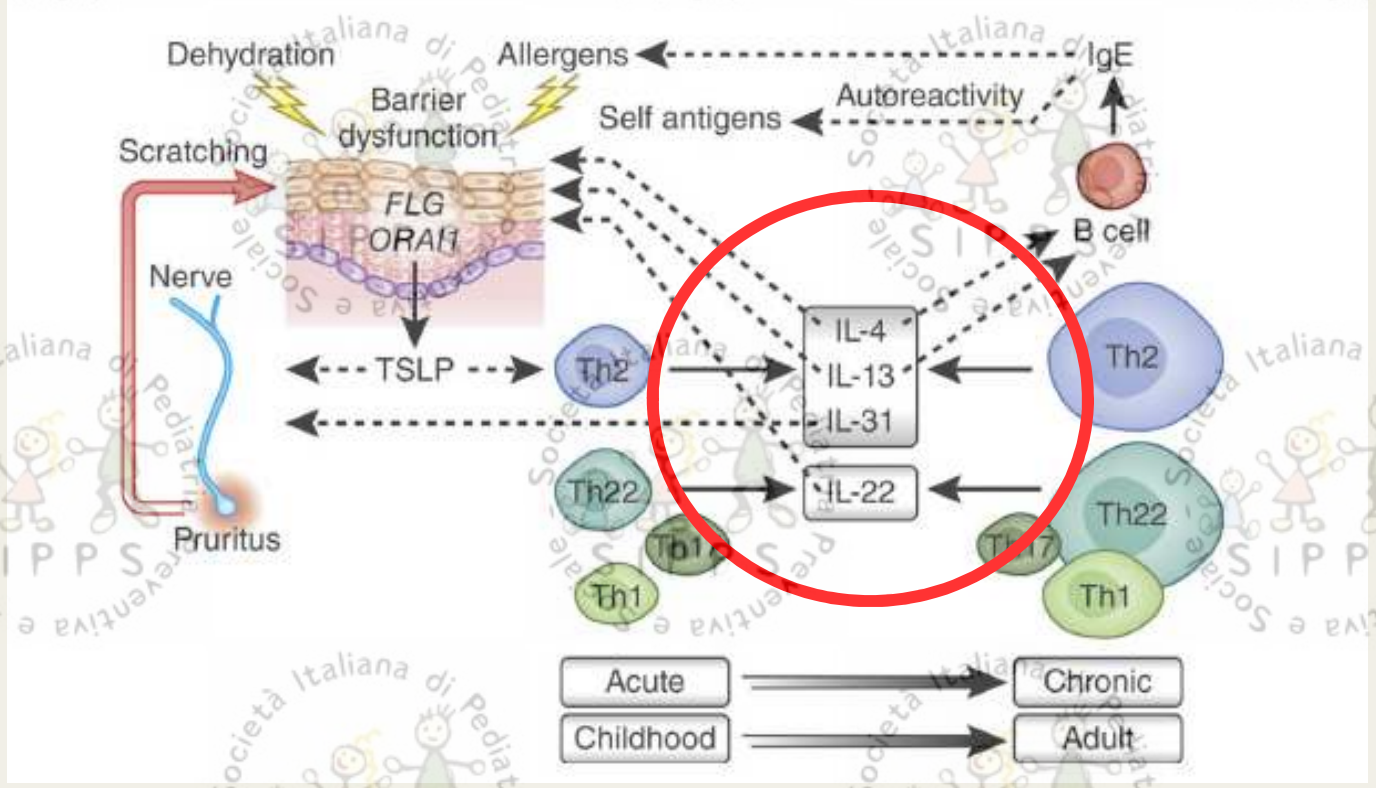
ETIOPATHOGENESIS OF PRURITUS IN ATOPIC DERMATITIS

Immune deviation towards Th2 and T22 expansion in AD



ETIOPATHOGENESIS OF PRURITUS IN ATOPIC DERMATITIS

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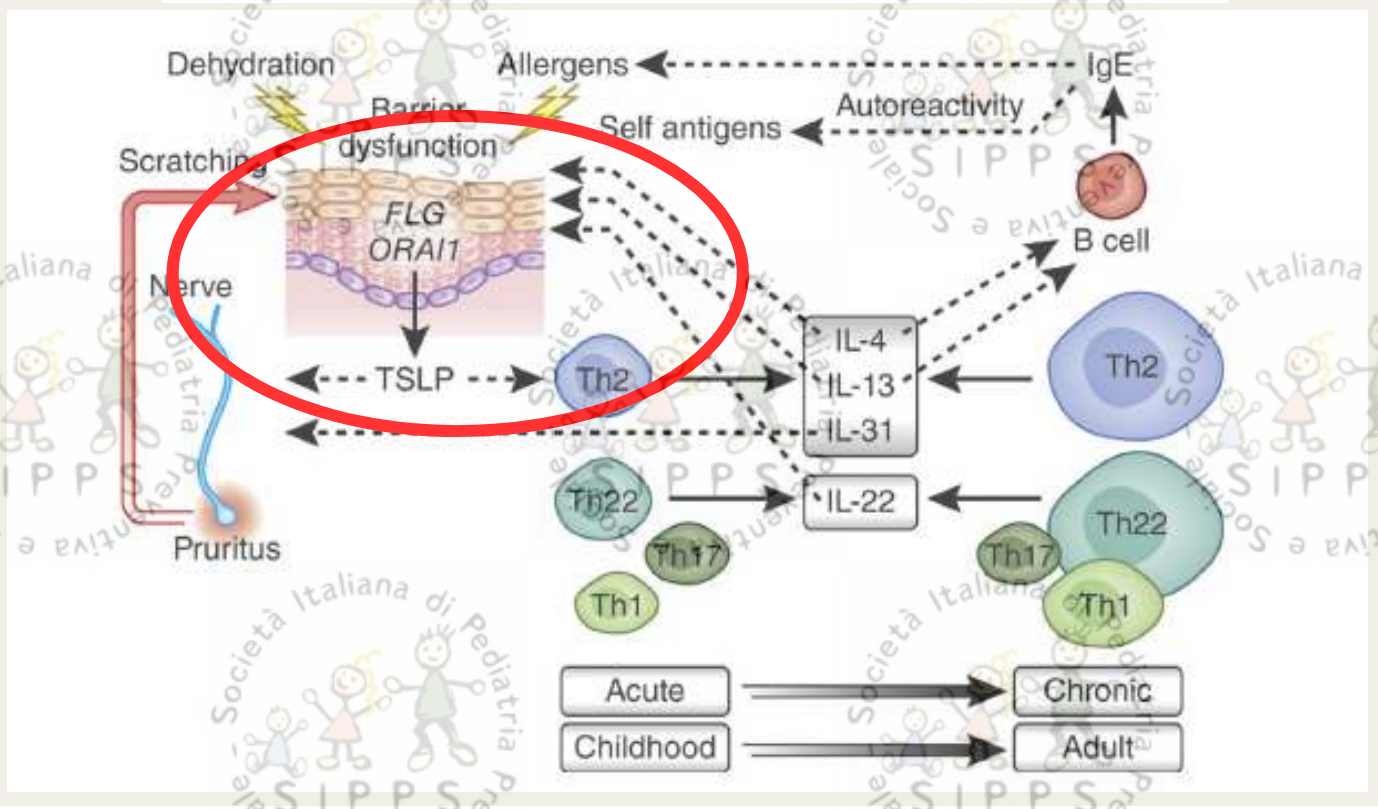
Skin thymic stromal lymphopoietin initiates Th2 responses through an orchestrated immune cascade

Juan Manuel Leyva-Castillo[1], Pierre Hener[1], Paula Michea[2,3], Hajime Karasuyama[4,5], Susan Chan[1], Vassili Soumelis[2,3] & Mei Li[1,6,7]



ETIOPATHOGENESIS OF PRURITUS IN ATOPIC DERMATITIS

NEUROSCIENCE

A central neural circuit for itch sensation

Di Mu,[1,2]* Juan Deng,[1,2]* Ke-Fei Liu,[1]† Zhen-Yu Wu,[3] Yu-Feng Shi,[1] Wei-Min Guo,[1] Qun-Quan Mao,[1] Xing-Jun Liu,[1]‡ Hui Li,[3] Yan-Gang Sun[1]§

Mu *et al.*, *Science* **357**, 695–699 (2017) 18 August 2017

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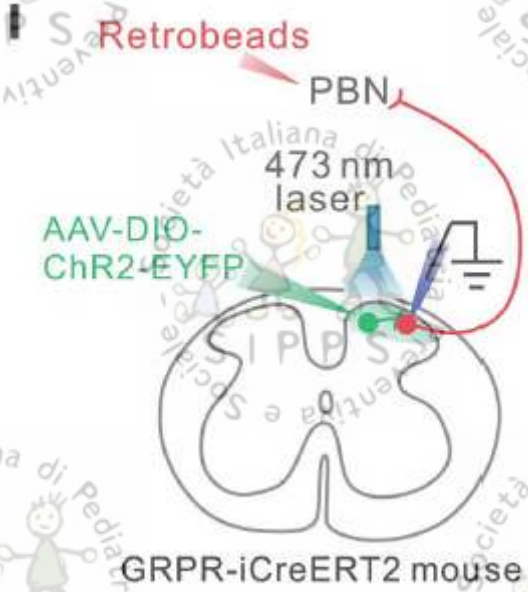

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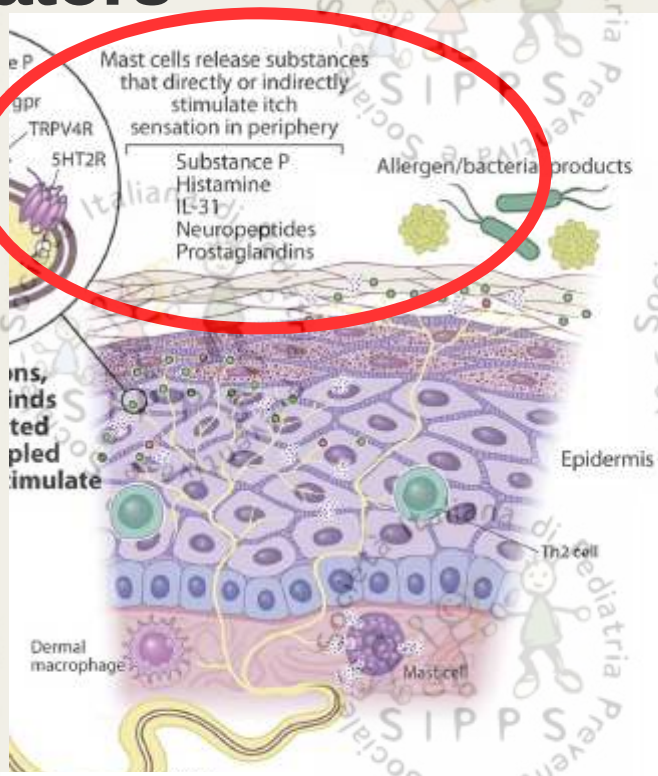
ETIOPATHOGENESIS OF PRURITUS IN ATOPIC DERMATITIS

Pruritogenic mediators

The sensation of itching is mediated by cytokines, neuropeptides, and endogenous secreted factors.



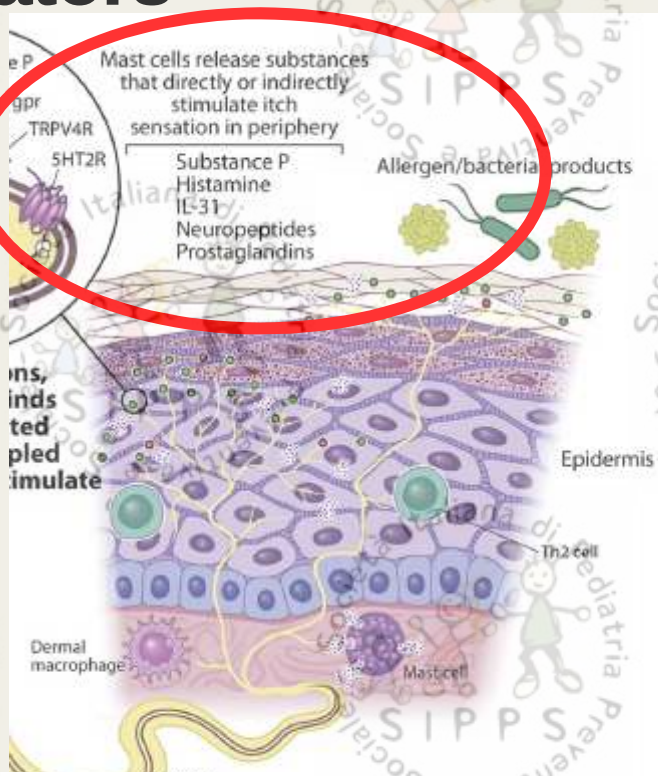
New pathways for itching in patients with atopic dermatitis?

Jennifer Heimall, MD, and Jonathan M. Spergel, MD, PhD *Philadelphia, Pa*

ETIOPATHOGENESIS OF PRURITUS IN ATOPIC DERMATITIS

Pruritogenic mediators

Histamine is one of the earliest identified pruritogens; among four receptors, H1R and H4R are potential mediators of pruritus. Others endogenous and exogenous factors produced from inflammation and xerosis result in the induction of non-histaminergic itch (i.e. protease astryptase, dust mites, *Staphylococcus aureus*, or substance P, TSLP, Notch proteins).



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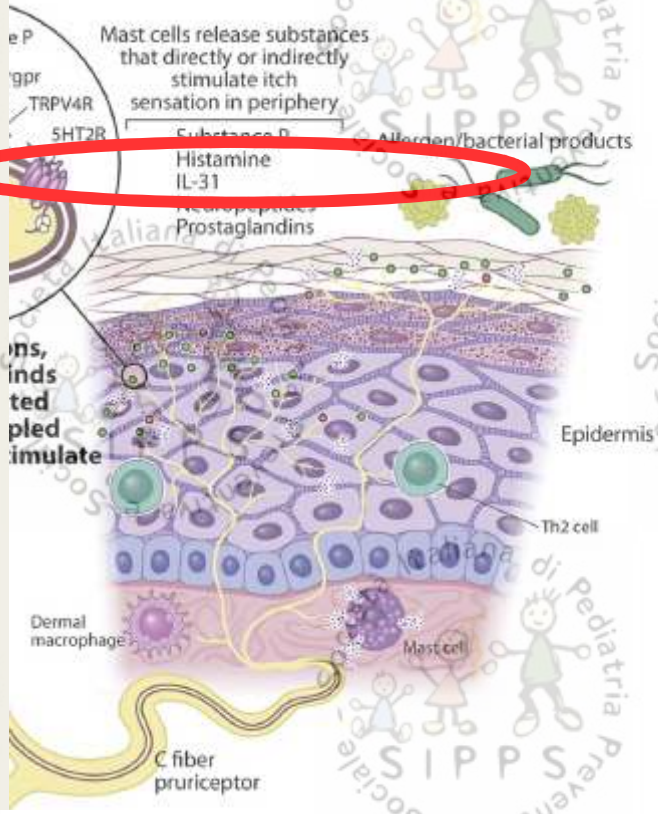
ETIOPATHOGENESIS OF PRURITUS IN ATOPIC DERMATITIS

Pruritogenic mediators

Recently, a role of IL-31 produced by Th2 cells has been recognized in inducing itch.



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CLINICAL FEATURES

AD is most common during childhood. The diagnosis of AD is generally easy and based on clinical features that vary upon patient age and disease severity.

Table 1. Characteristic features of atopic dermatitis by age. Modified from Ref. [1].

AD	Infant	Childhood	Adolescent or Adult
Lesions	Exudative erythematous weepy papules and plaques	Weepy erythematous papules and plaques intermixed with lichenified plaques, particularly in flexural areas	Erythematous papules and plaques with xerotic scale and crust Lichenified plaques in flexural areas
Distribution	Scalp, face (without perioral and periorbital involvement) trunk, extensor surfaces	Flexural surfaces, including antecubital and popliteal fossa, wrist, and neck	Hands, flexural surfaces, upper trunk

CLINICAL FEATURES

In addition, other signs and symptoms may be associated and are helpful to confirm the diagnosis in some patients.

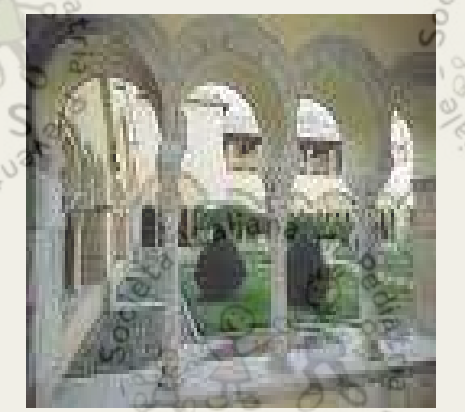
Table 2. Associated features of atopic dermatitis. Modified from Ref. [1].

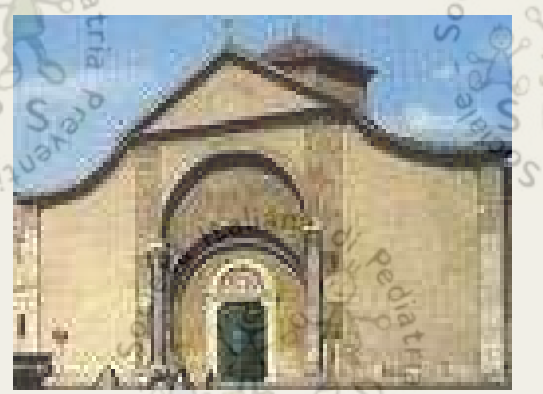
Pityriasis alba: Hypopigmented patches on face, upper trunk, upper extremities
Keratosis pilaris: Follicular hyperkeratosis of outer arms, lateral cheeks, buttocks, thighs
Dennie-Morgan fold (atopic pleat): Extra line on lower eyelid
Allergic shiners: Violaceous to gray color of infraorbital area
Hyperlinear palms: Increased and exaggerated skin markings on palms
Ichthyosis vulgaris: Scaling of extensor extremities, fish-scale appearance of extensor leg
Hertoghe sign: Loss of lateral eyebrows
White dermatographism: Blanching of skin after stroking
Circumoral pallor: Pallor of perioral area
Nummular dermatitis: Sharply circumscribed thick coin-shaped scaly plaques

Pruritus in pediatric patients with atopic dermatitis: a multidisciplinary approach, summary document from an Italian expert group

Pruritus can occur in different clinical forms depending on the age of the child, chronicity of symptoms, trigger factors, and psychological attitude. In AD, itching is the main,constantly presentsymptom, and is of variable intensity,associated with pain and/or burning, and generally worsens at night causing sleep disturbance.

The focus of the present summary document was to increase awareness of pruritus in pediatric patients with AD. In addition, the authors tried to provide a useful tool for all specialists who managed patient with this disease and pruritus.





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