

Student scientific society of Anatomic Pathology

Autoimmune disease of the skin

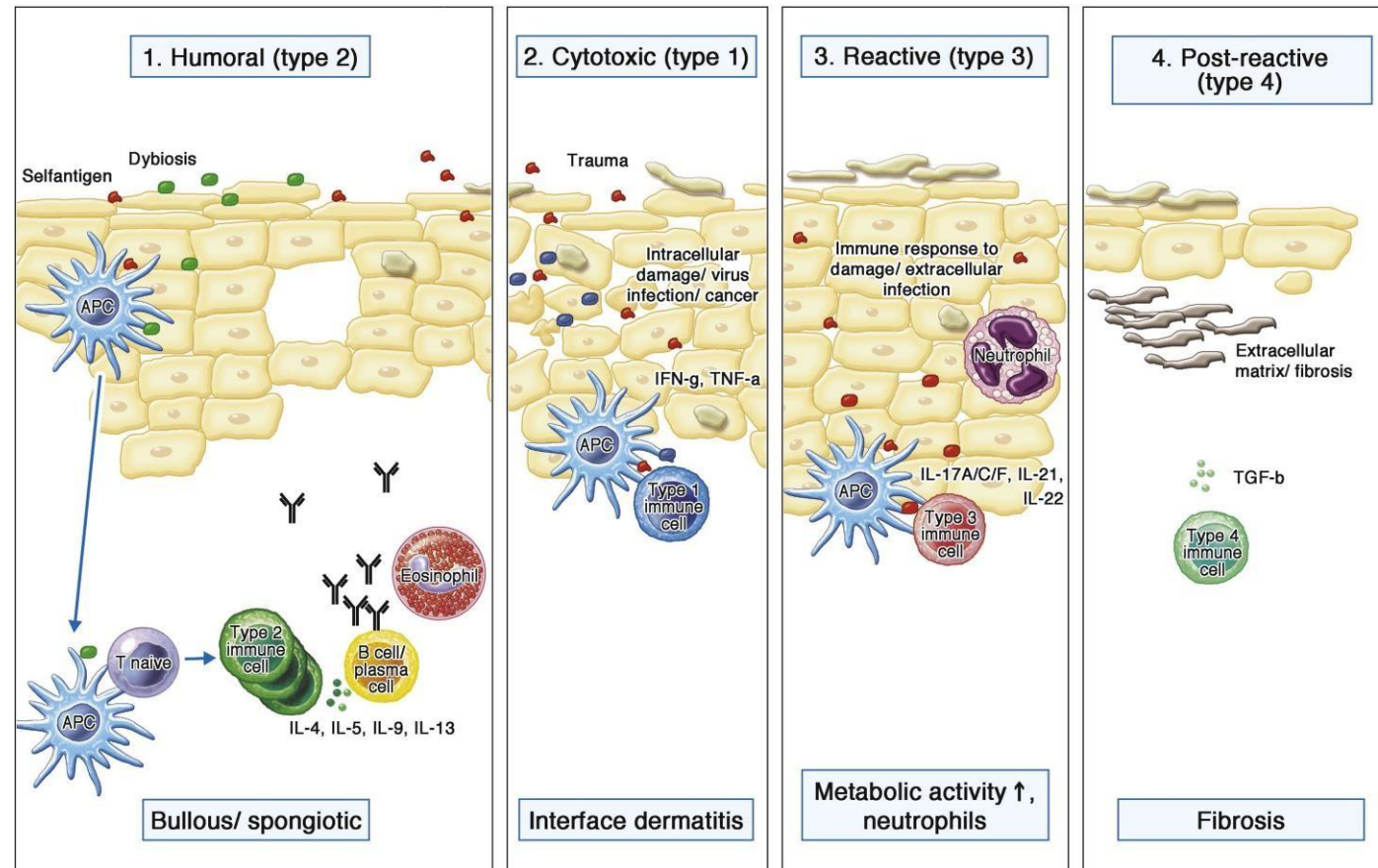
**Report of the fifth-year student
of the Sklifosovsky Institute of Clinical Medicine**

Ekaterina Melnikova

Types of autoimmune skin diseases

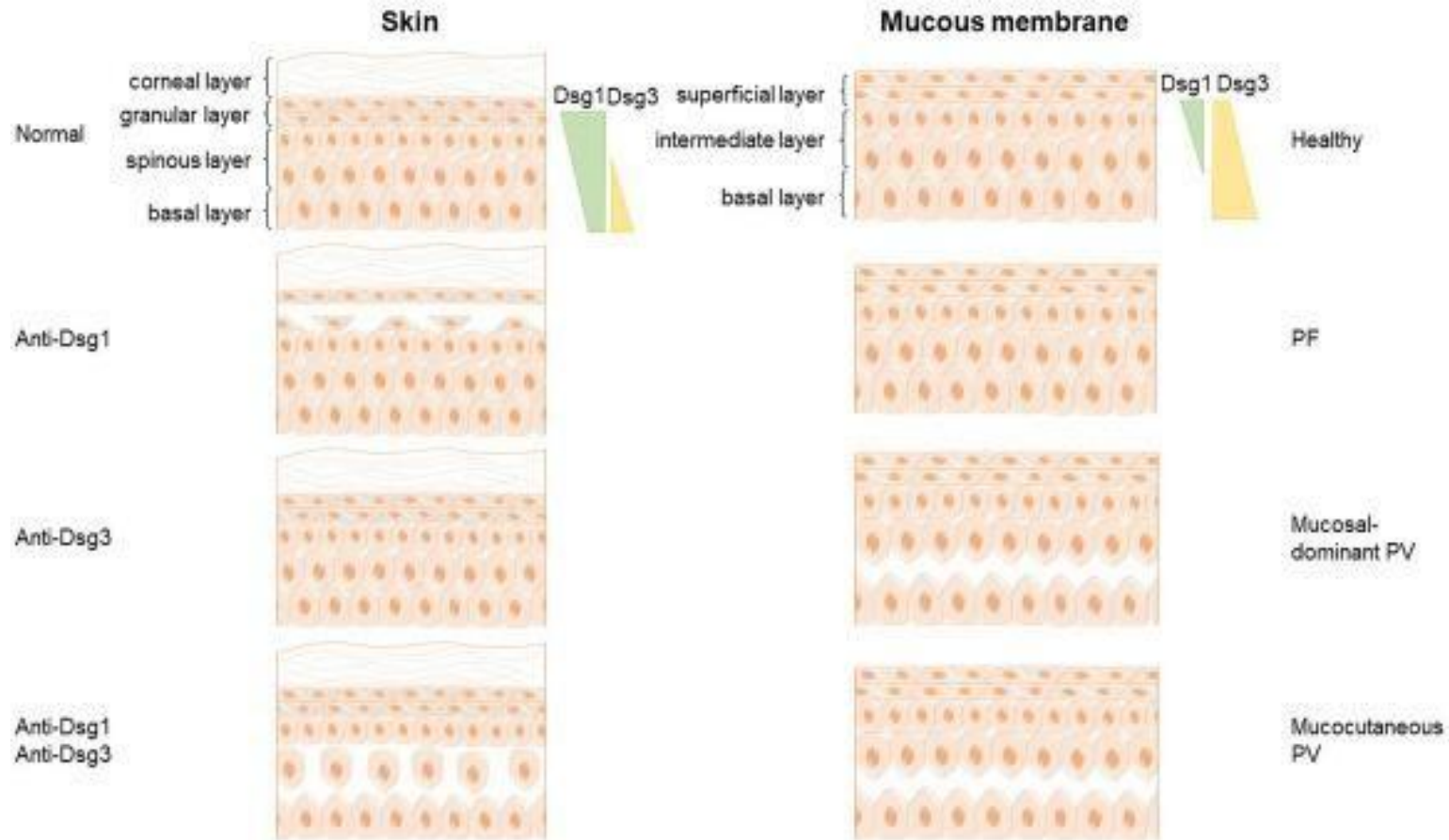
- Pemphigus
- Bullous pemphigoid
- Dermatitis herpetiformis
- Epidermolysis bullosa acquisita
- Vitiligo
- Psoriasis
- Lichen Planus and Lichenoid Eruptions
- Localized and progressive systemic scleroderma
- Dermatomyositis
- Sjögren's Syndrome
- Cutaneous Graft-Versus-Host-Reaction

Mechanisms of skin autoimmunity



Johann E Gudjonsson, Kenji Kabashima, Kilian Eyerich. Mechanisms of skin autoimmunity: Cellular and soluble immune components of the skin. *J Allergy Clin Immunol.* 2020 Jul;146(1):8-16.
doi: 10.1016/j.jaci.2020.05.009. PMID: 32631499

Pathogenesis of pemphigus

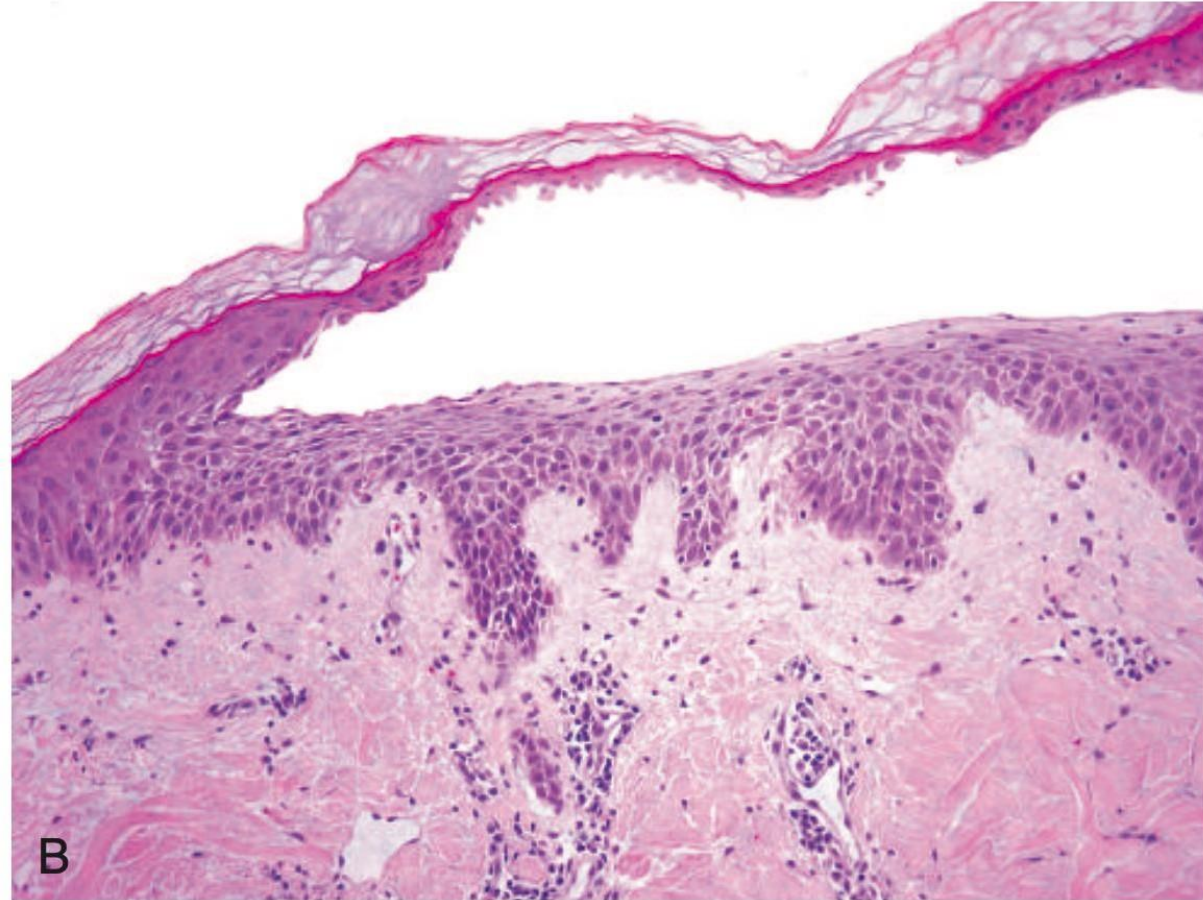
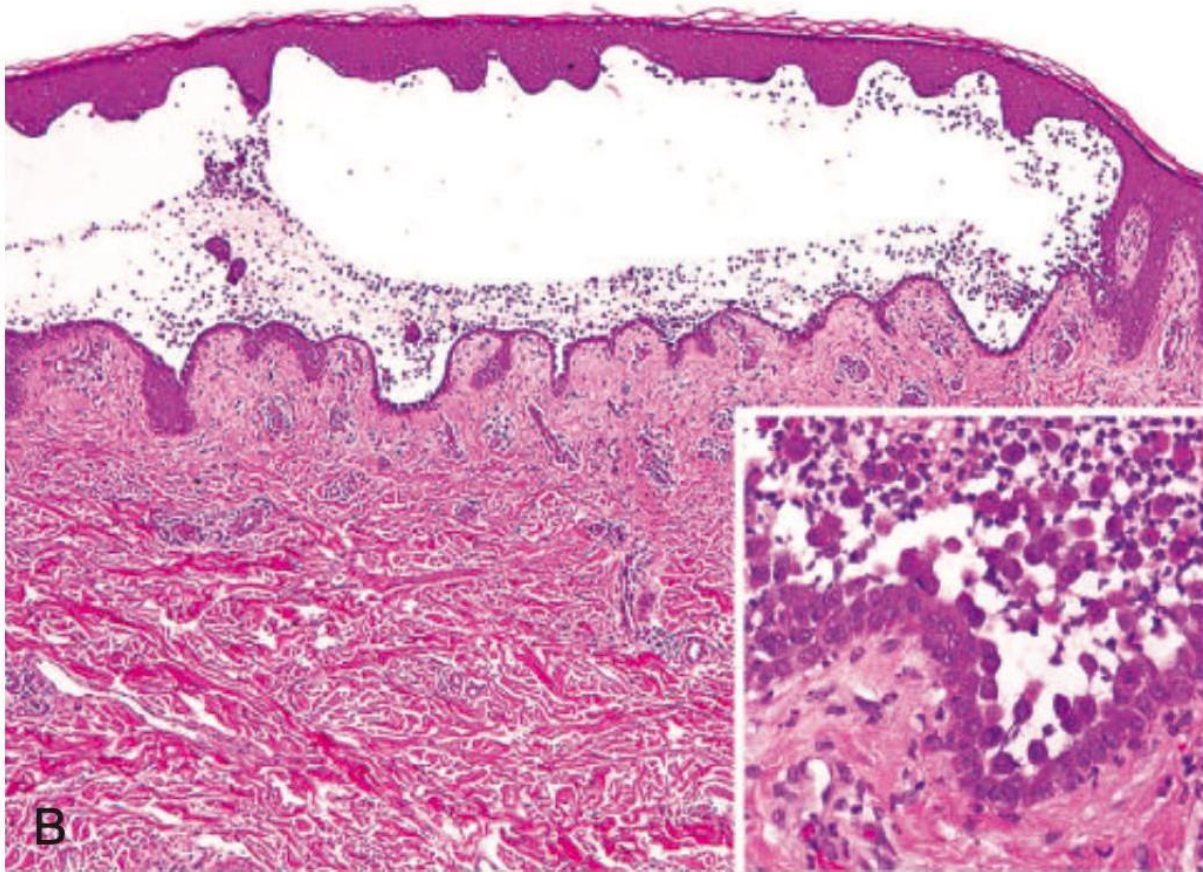


Miao Yang, Haijing Wu, Ming Zhao, Christopher Chang, Qianjin Lu.

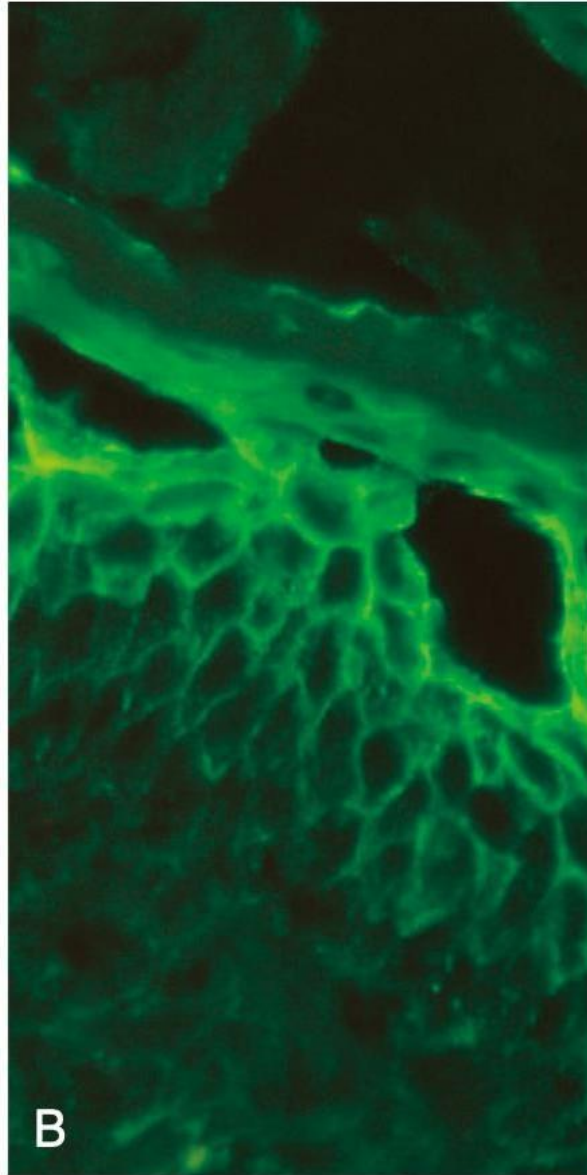
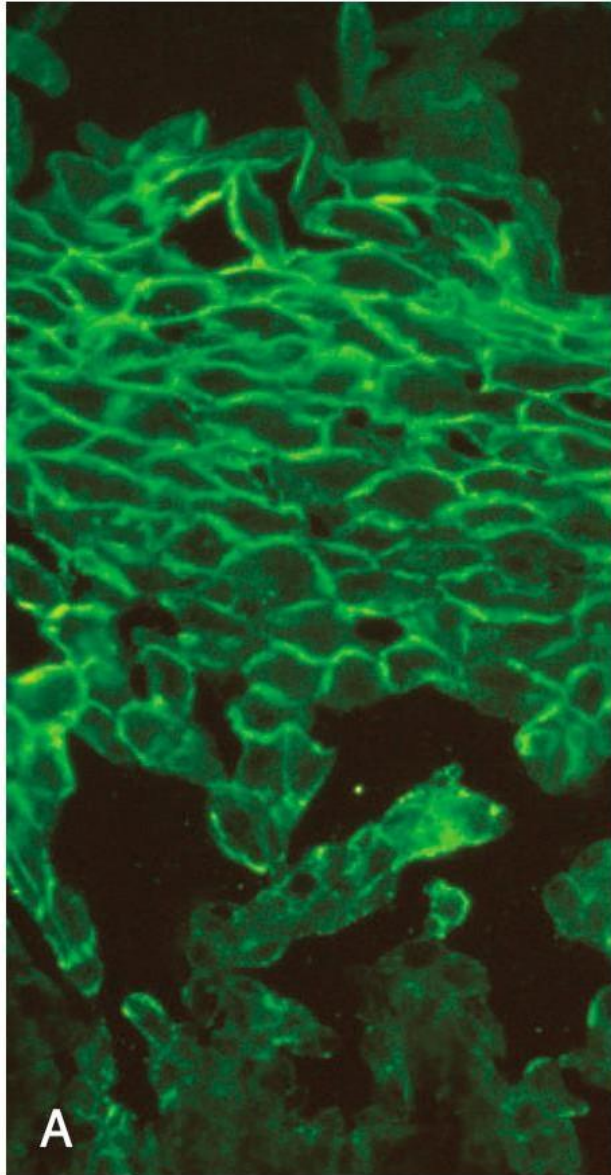
The pathogenesis of bullous skin diseases. *Journal of Translational Autoimmunity*.

2019 Aug 26;2:100014. doi: 10.1016/j.jtauto.2019.100014. PMID: 32743502; PMCID: PMC7388362

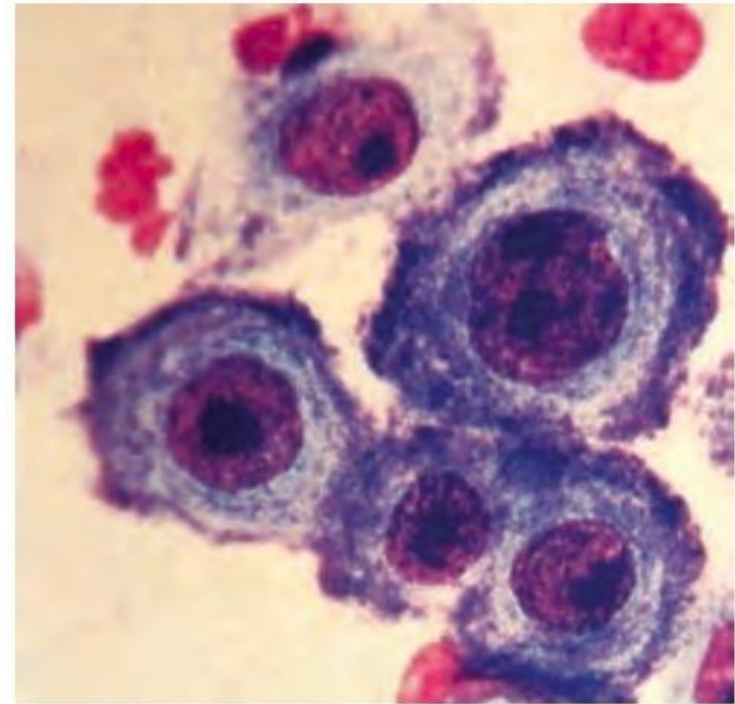
Pemphigus vulgaris and foliaceus

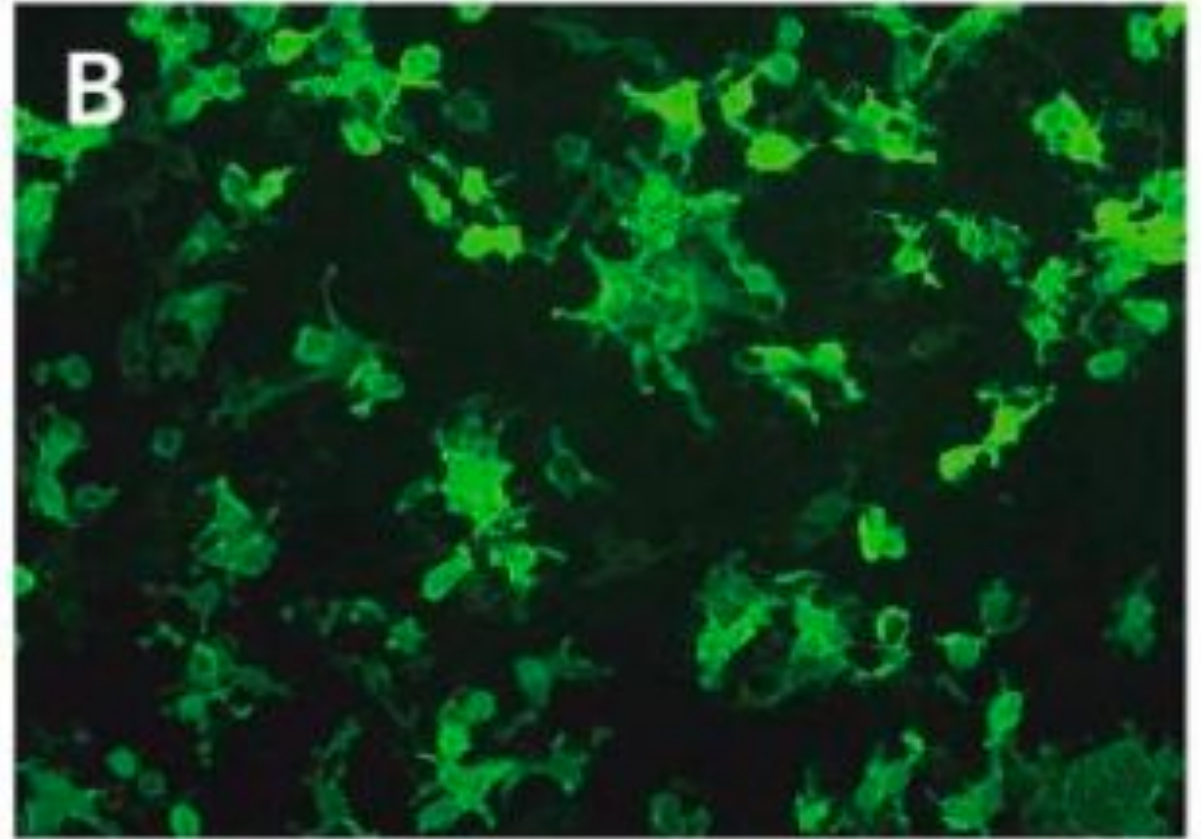
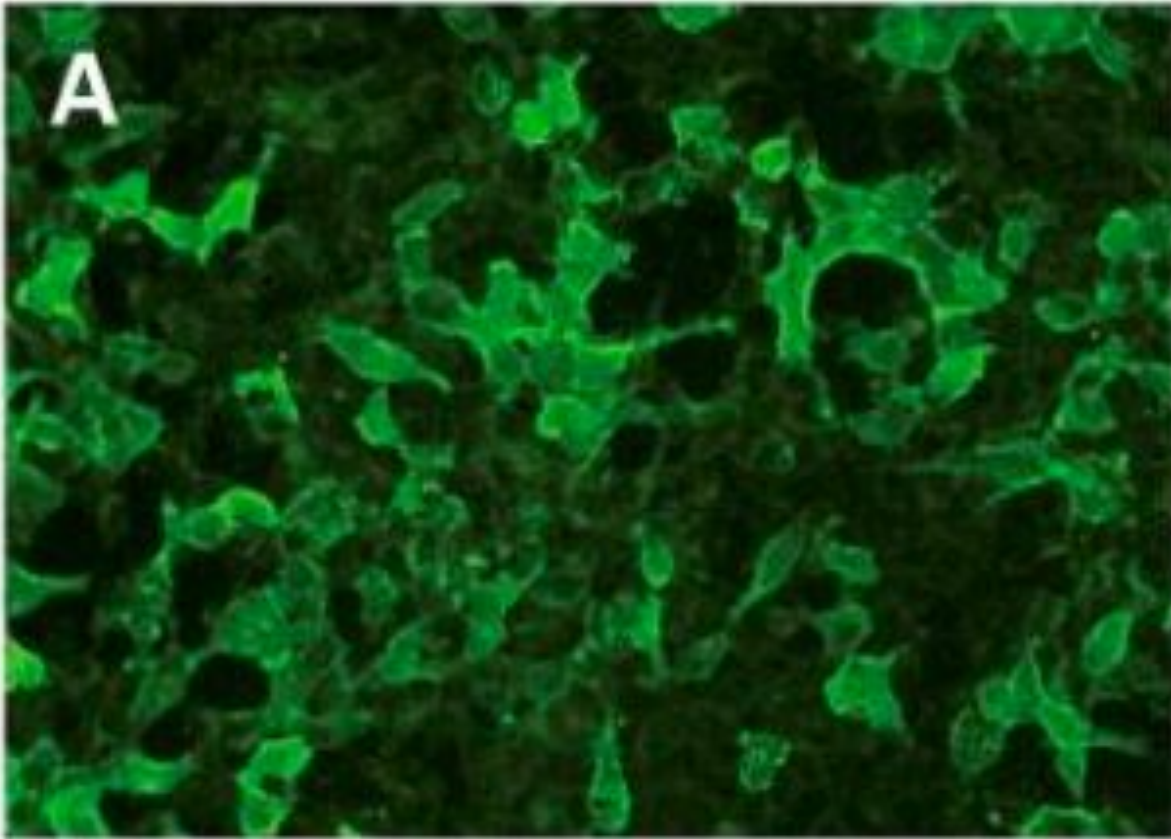


Diagnostics



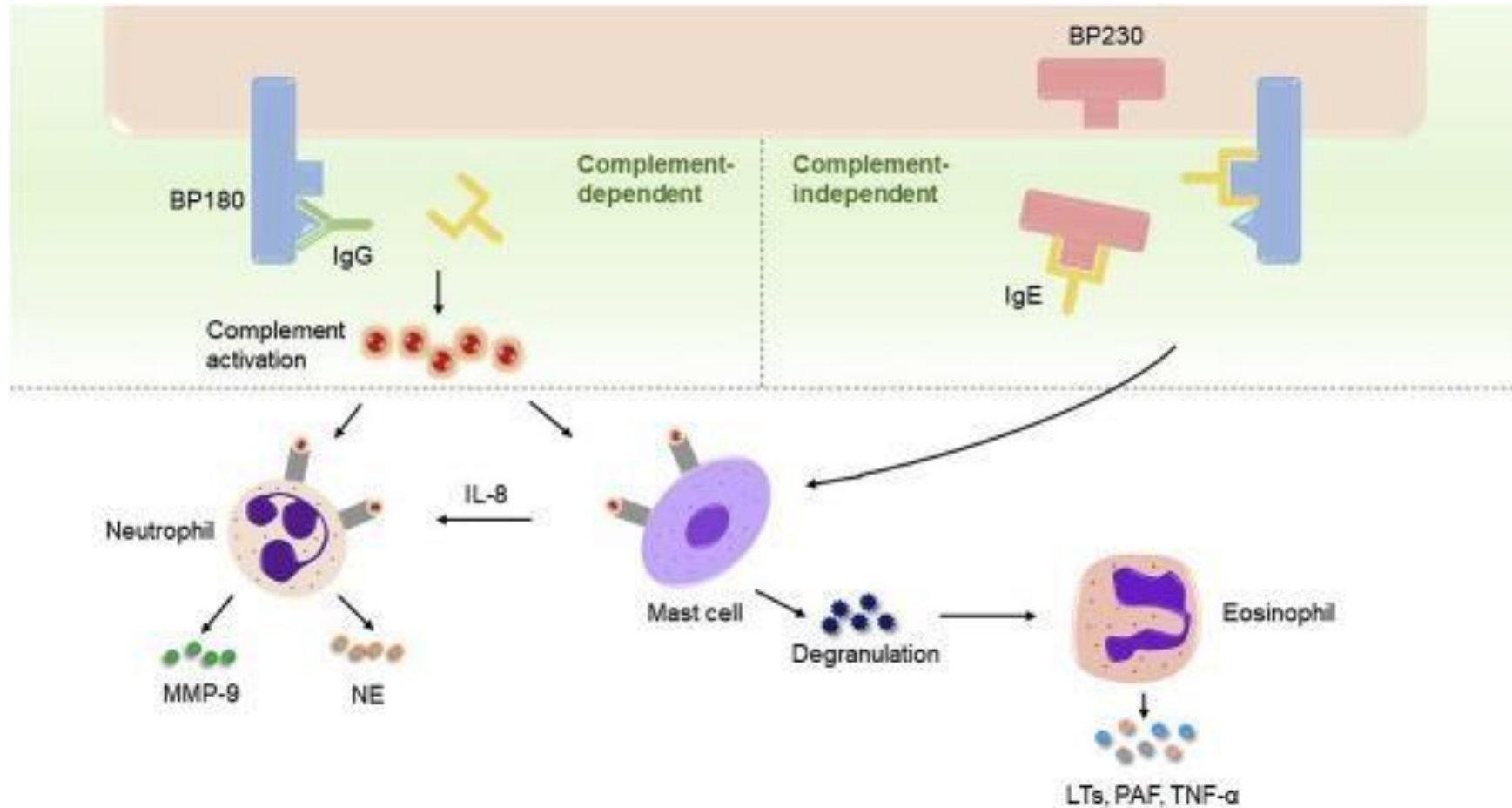
1. Clinical characteristics
2. Histopathology
3. Direct immunofluorescence (DIF) - intercellular deposition of IgG
4. Indirect immunofluorescence (IIF)
5. BIOCHIP - recombinant IIF - Dsg1 and Dsg3
6. Enzyme-linked immunosorbent assays (ELISA)



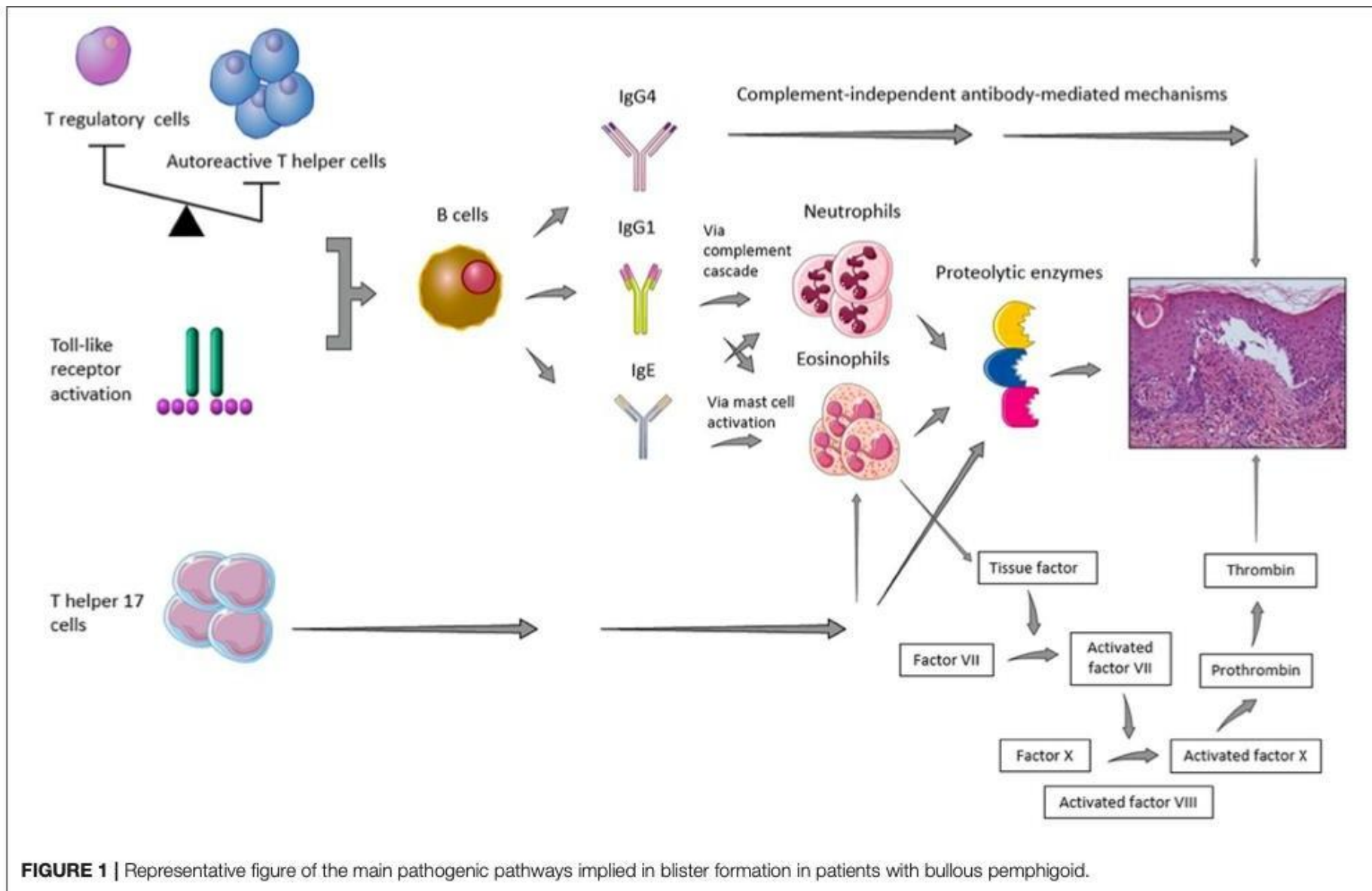


Sandra Saschenbrecker, Ingolf Karl, Lars Komorowski. Serological Diagnosis of Autoimmune Bullous Skin Diseases. *Front Immunol.* 2019; 10: 1974. doi: 10.3389/fimmu.2019.01974. PMID: 31552014; PMCID: PMC6736620

Pathogenesis of bullous pemphigoid

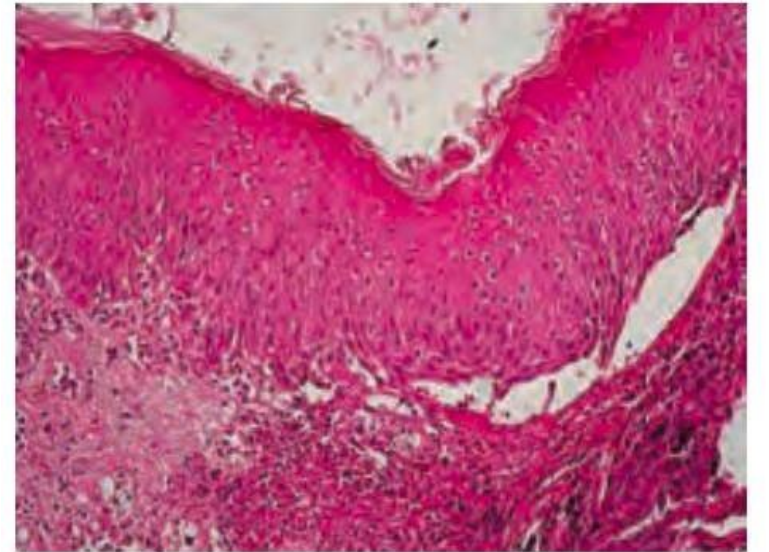
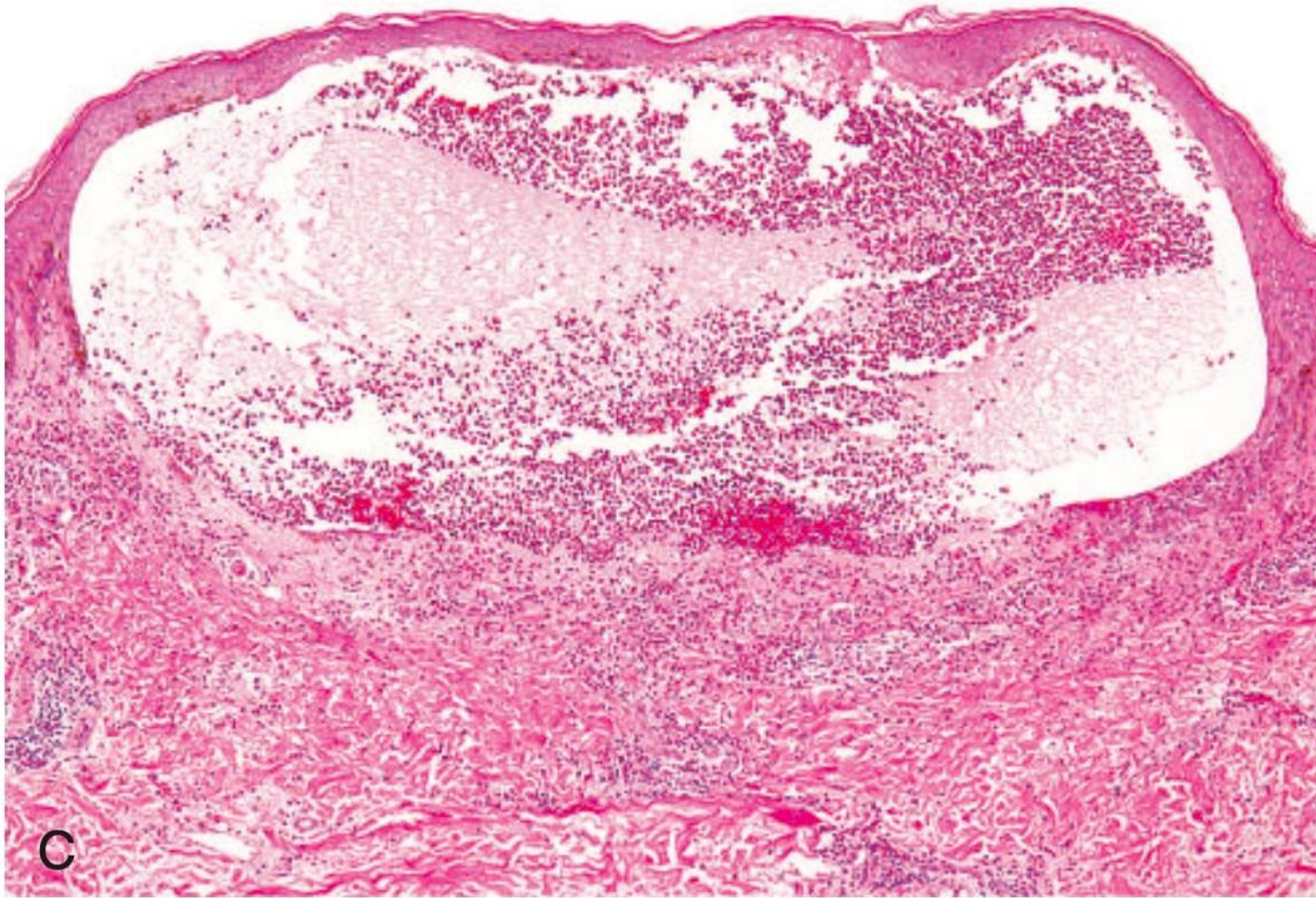


Miao Yang, Haijing Wu, Ming Zhao, Christopher Chang, Qianjin Lu.
The pathogenesis of bullous skin diseases. *Journal of Translational Autoimmunity*.
2019 Aug 26;2:100014. doi: 10.1016/j.jtauto.2019.100014. PMID: 32743502; PMCID: PMC7388362

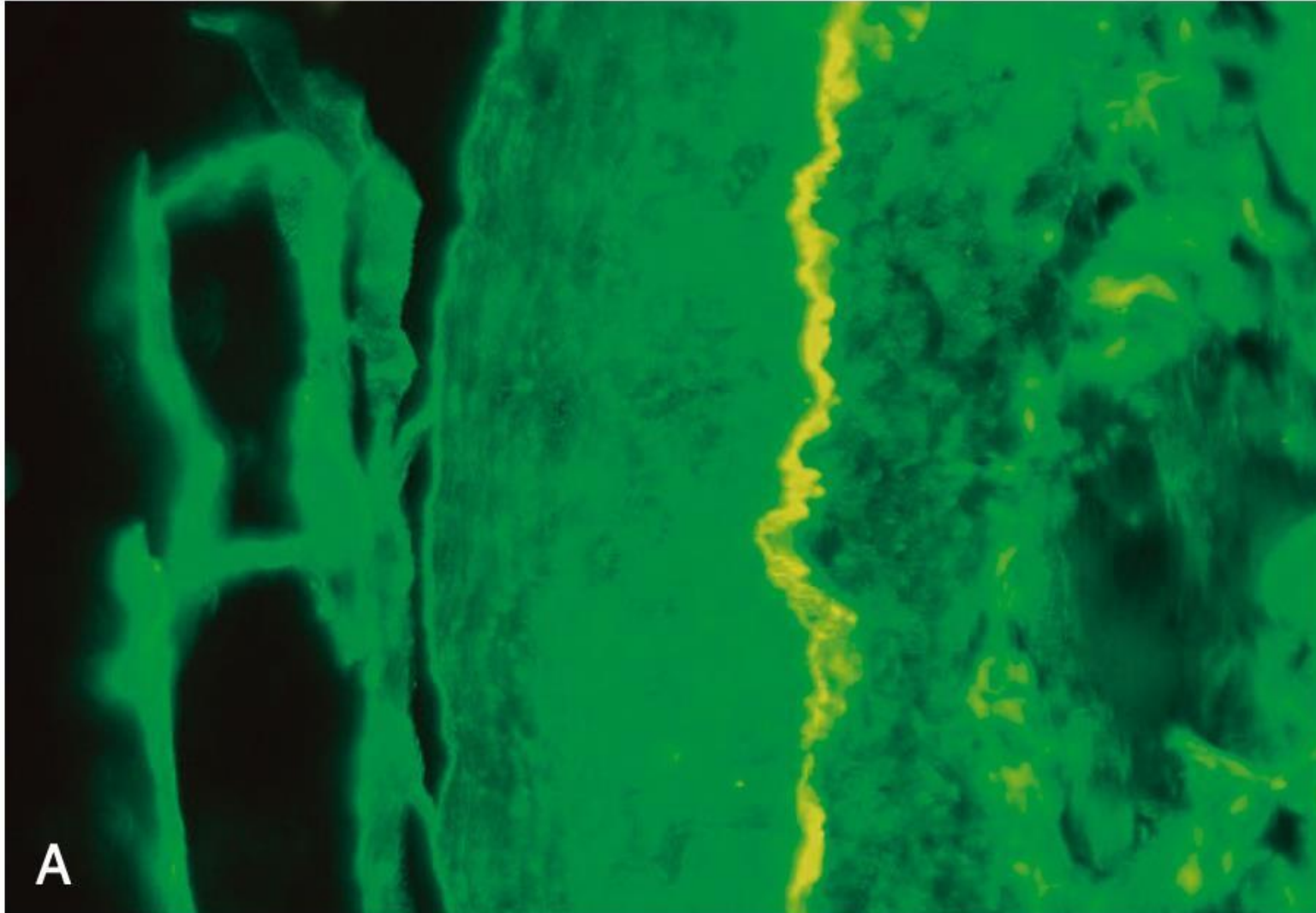


Genovese G., Zenzo G., Cozzani E. New insights into the pathogenesis of bullous pemphigoid: 2019 update. *Front Immunol.* 2019 Jul 2;10:1506. doi: 10.3389/fimmu.2019.01506. PMID: 31312206; PMCID: PMC6614376

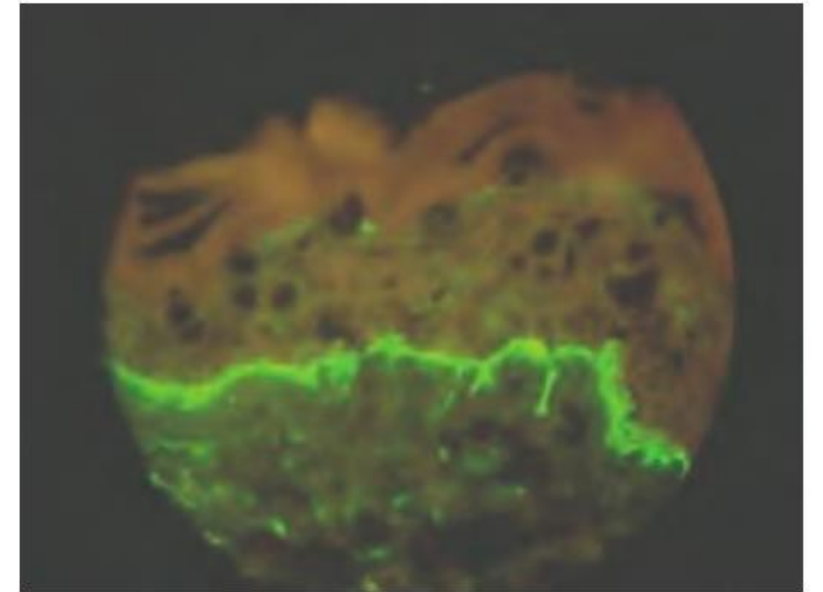
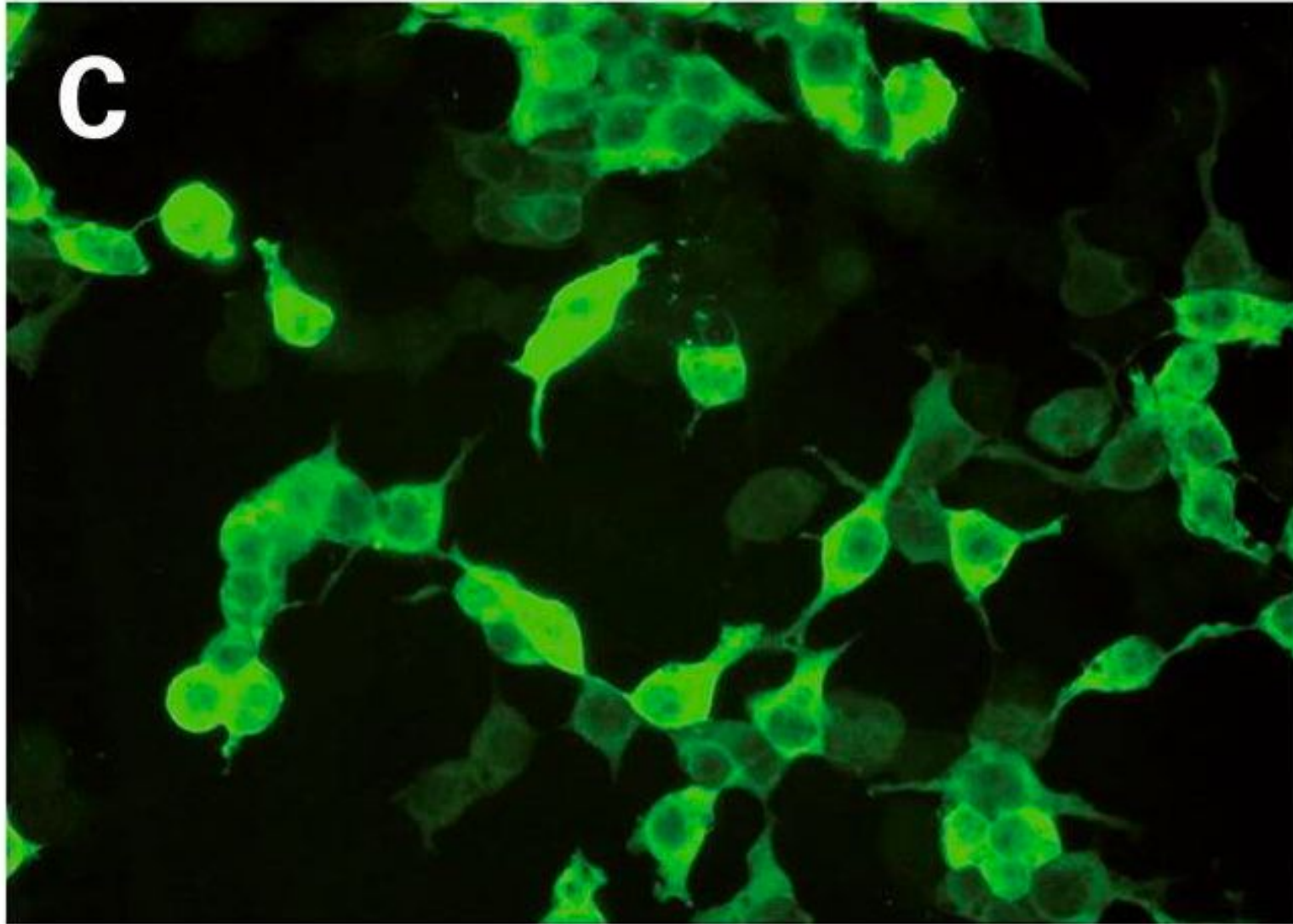
Bullous pemphigoid



Diagnostics

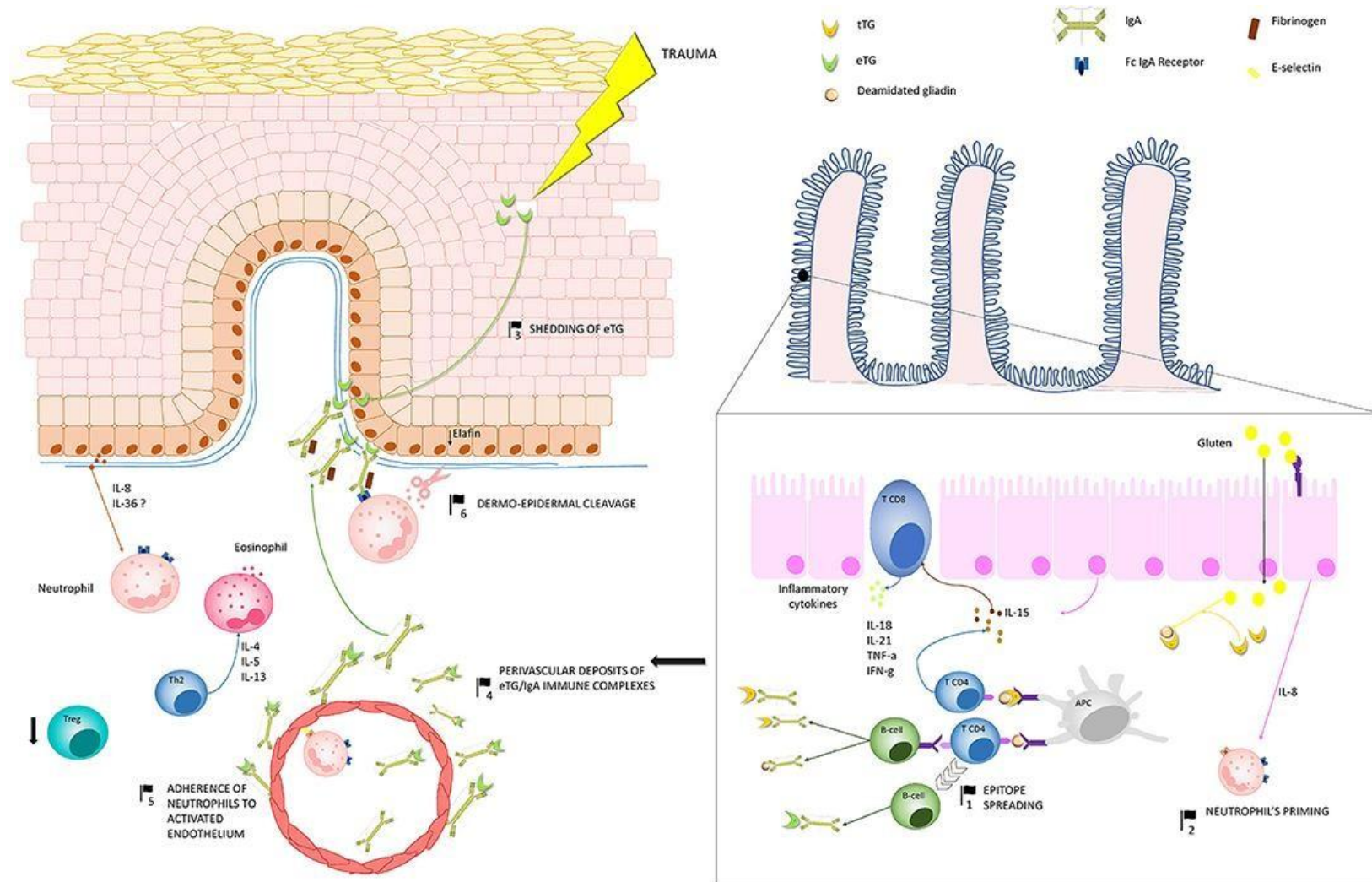


1. Clinical characteristics
2. Histopathology
3. Direct immunofluorescence (DIF) - linear binding of IgG at the dermal-epidermal junction
4. Indirect immunofluorescence (IIF)
5. BIOCHIP - BP230gC (globular C-terminal domain)
6. Enzyme-linked immunosorbent assays (ELISA)



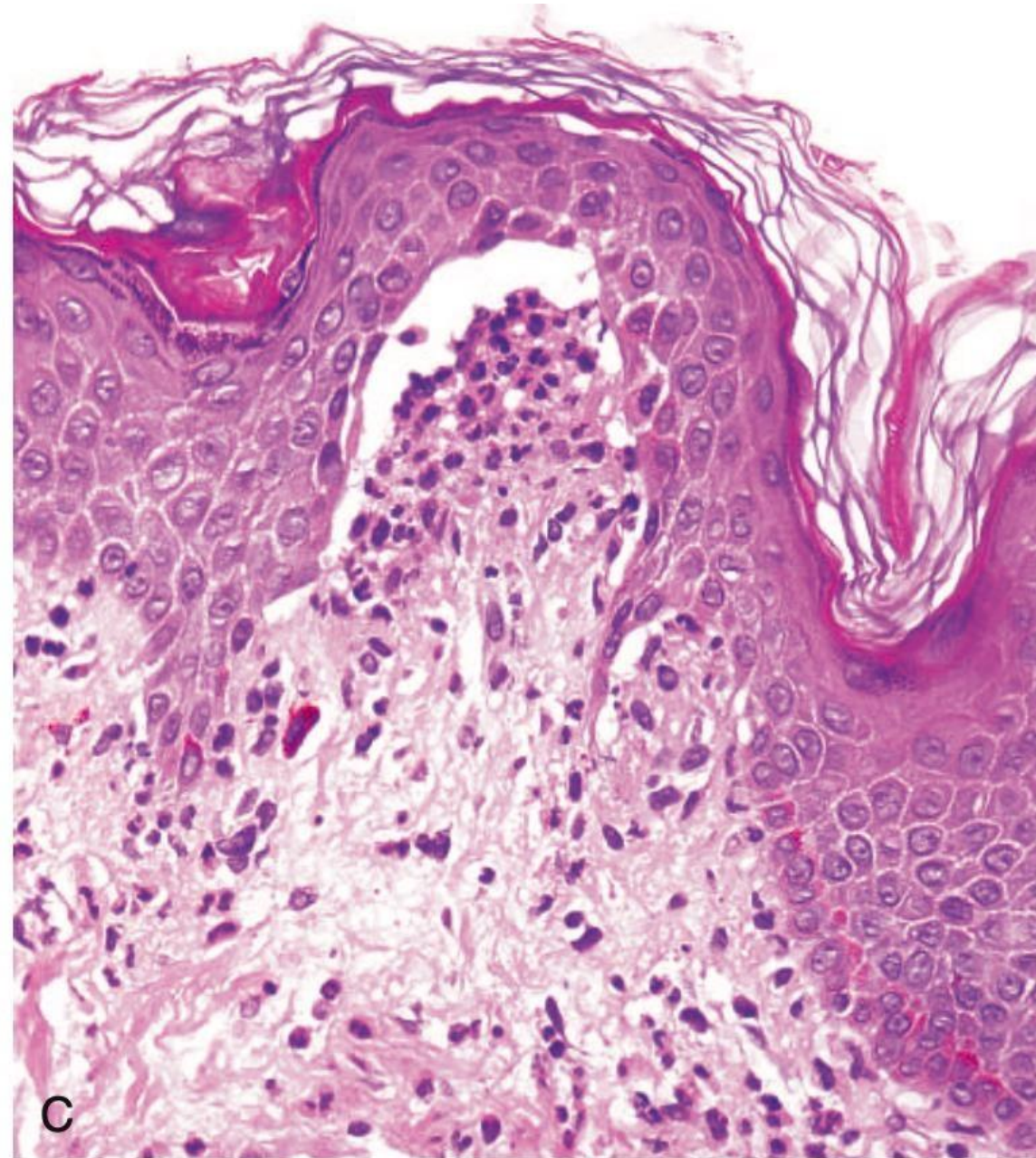
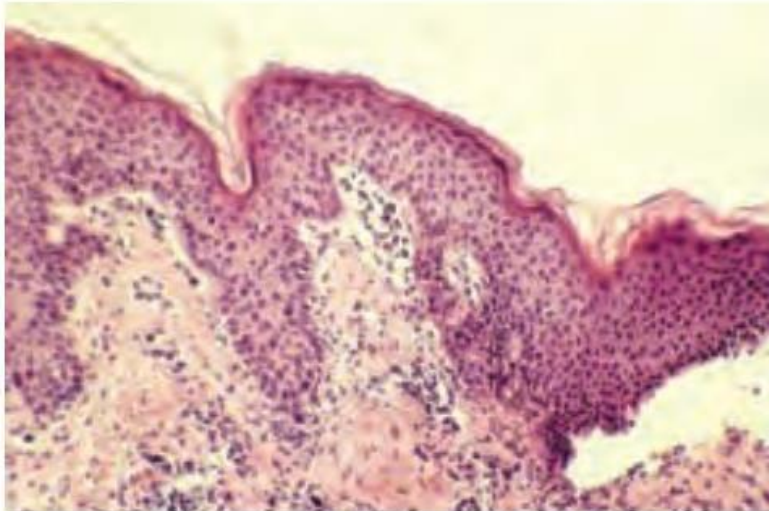
Sandra Saschenbrecker, Ingolf Karl, Lars Komorowski. Serological Diagnosis of Autoimmune Bullous Skin Diseases. *Front Immunol.* 2019; 10: 1974. doi: 10.3389/fimmu.2019.01974. PMID: 31552014; PMCID: PMC6736620

Pathogenesis of dermatitis herpetiformis

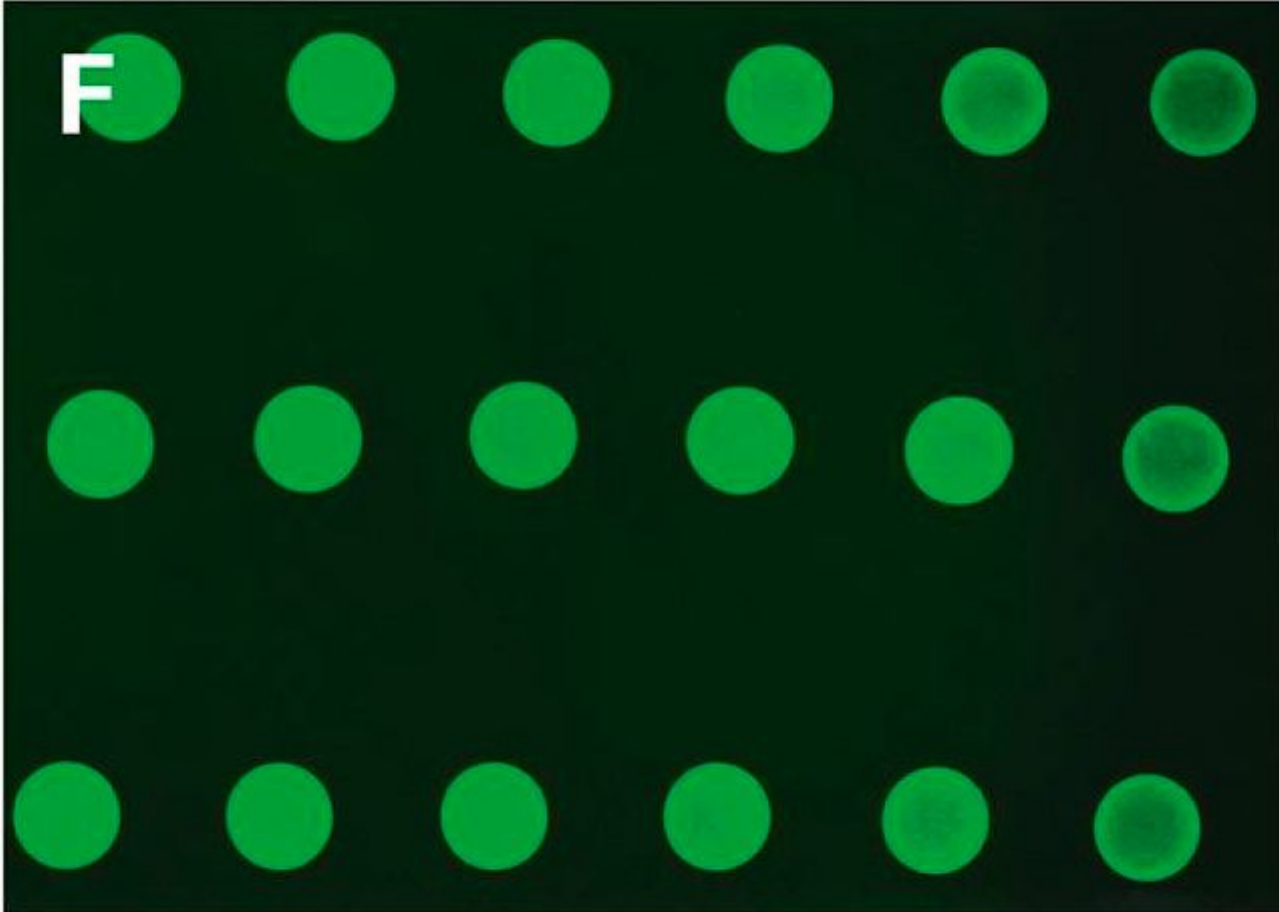


Emiliano Antiga, Roberto Maglie, Lavinia Quintarelli et al. Dermatitis Herpetiformis: Novel Perspectives. Front Immunol. 2019 Jun 11;10:1290. doi: 10.3389/fimmu.2019.01290. PMID: 31244841; PMCID: PMC6579917

Dermatitis herpetiformis

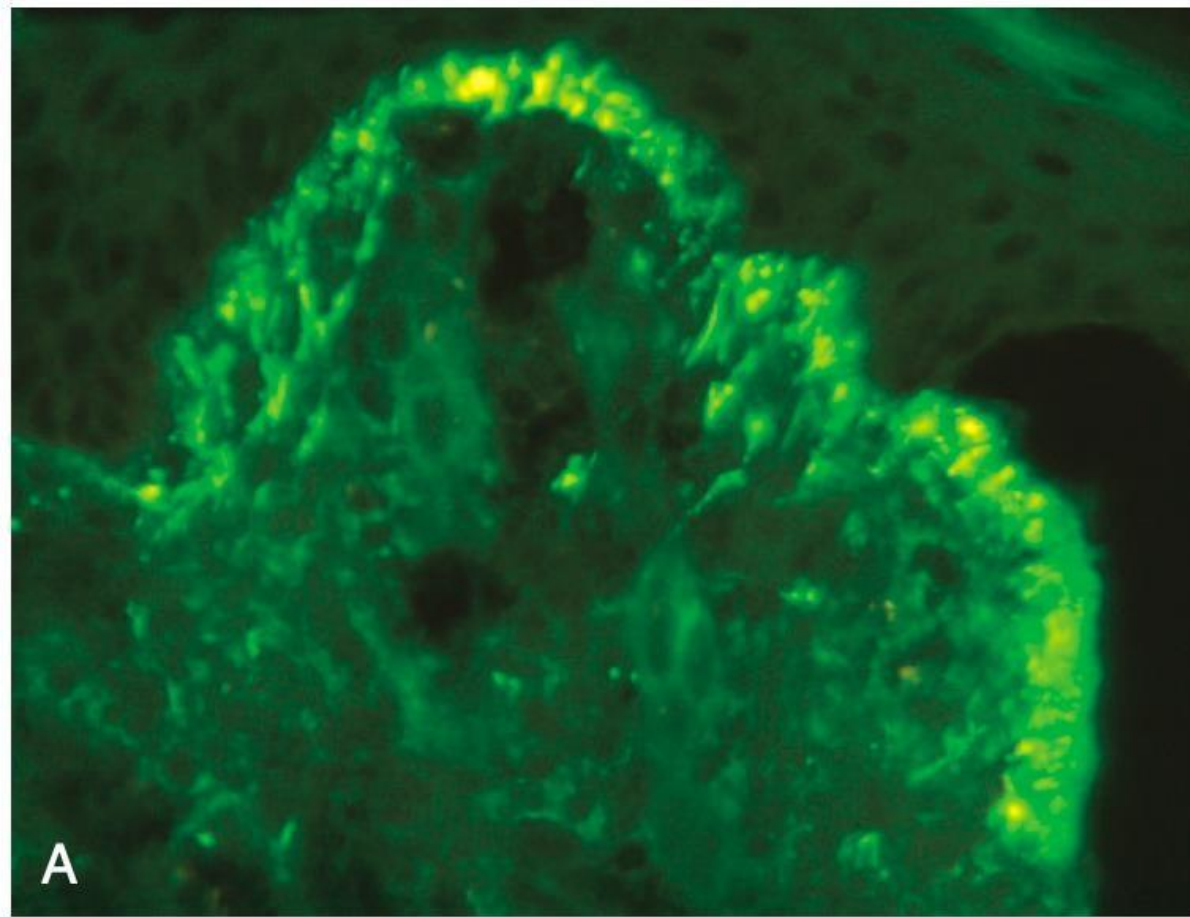
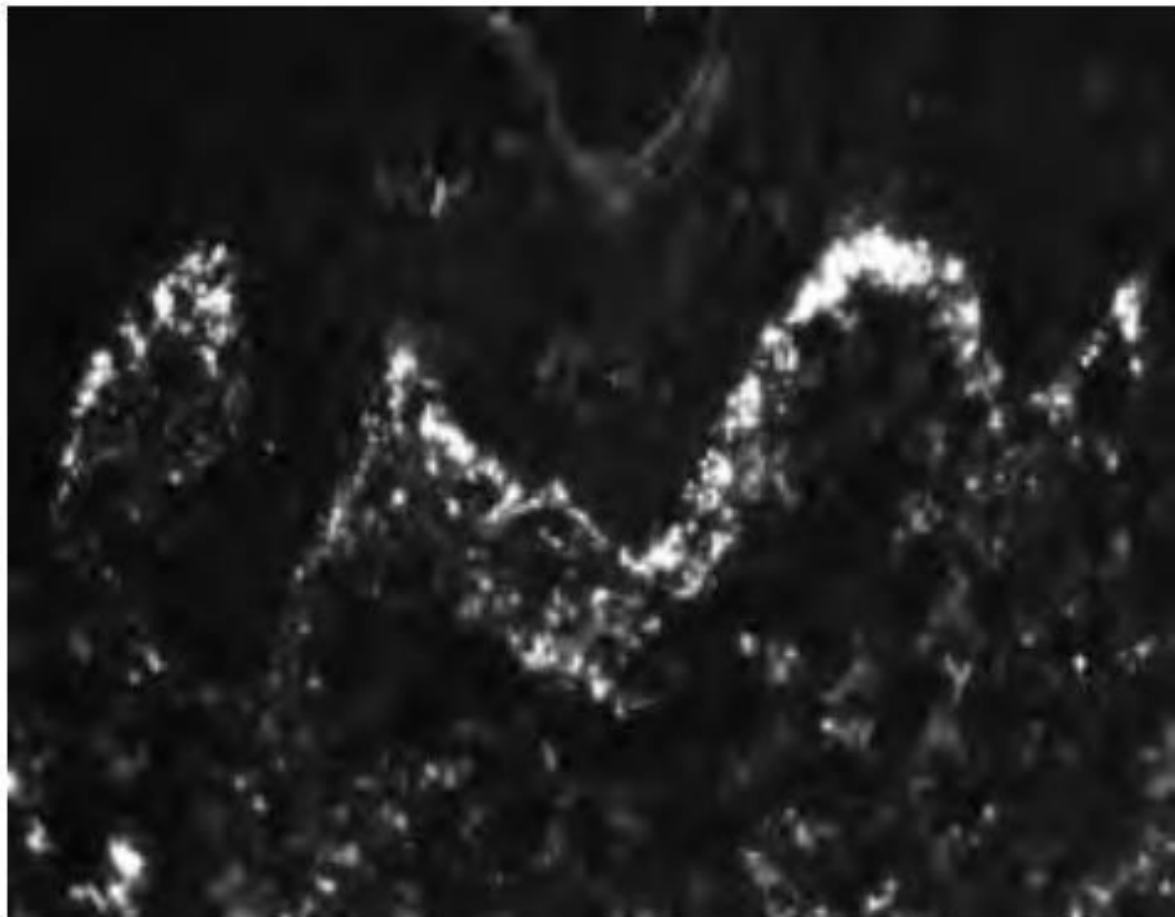


Diagnostics

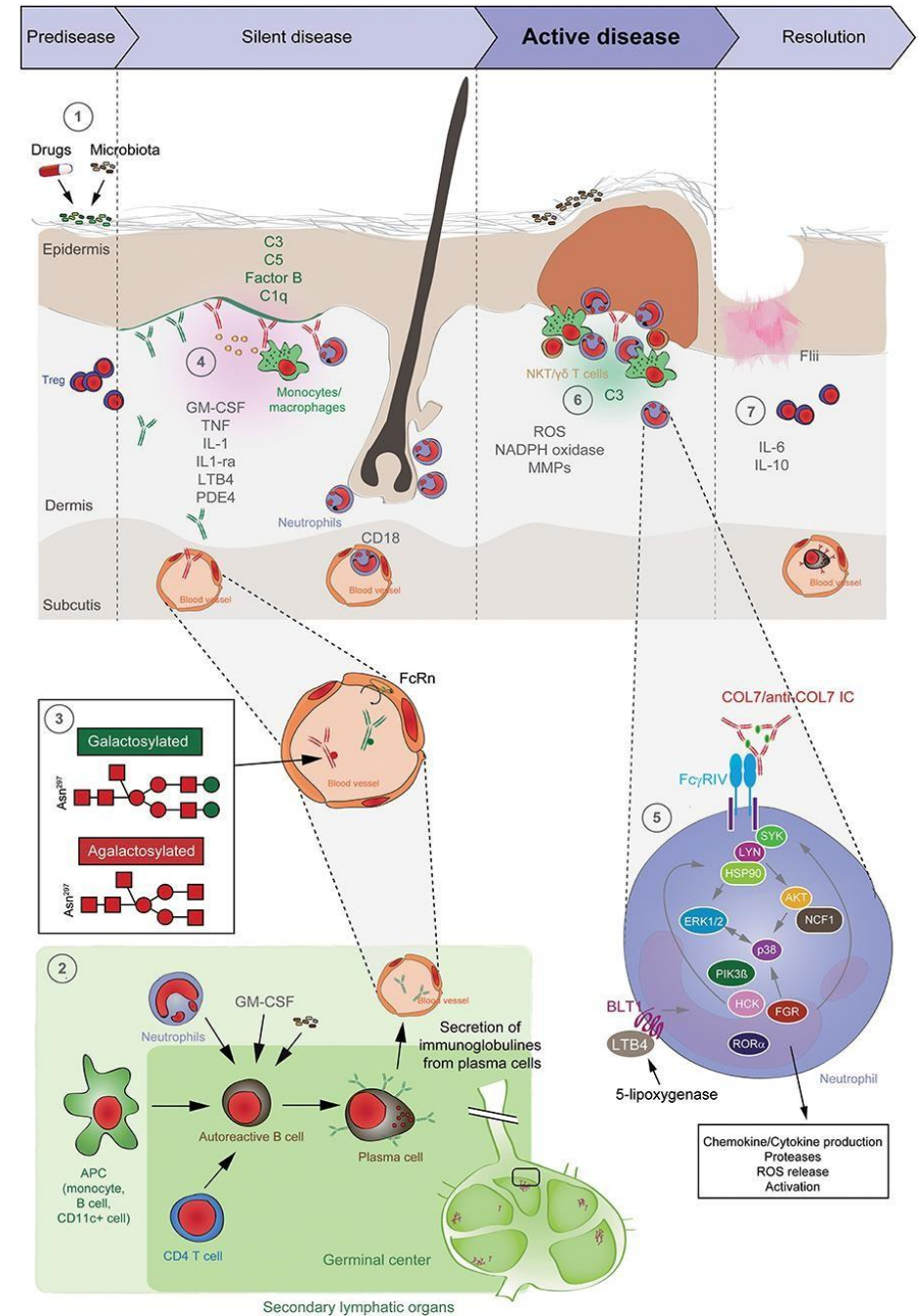


1. Clinical characteristics
2. Histopathology
3. Direct immunofluorescence (DIF) - Granular IgA deposits along the basement membrane zone
4. Indirect immunofluorescence (IIF)
5. BIOCHIP - GAF-3X (trimeric deamidated gliadin-analogous fusion peptide).

Sandra Saschenbrecker, Ingolf Karl, Lars Komorowski. Serological Diagnosis of Autoimmune Bullous Skin Diseases. *Front Immunol.* 2019; 10: 1974. doi: 10.3389/fimmu.2019.01974. PMID: 31552014; PMCID: PMC6736620



Pathogenesis of epidermolysis bullosa acquisita



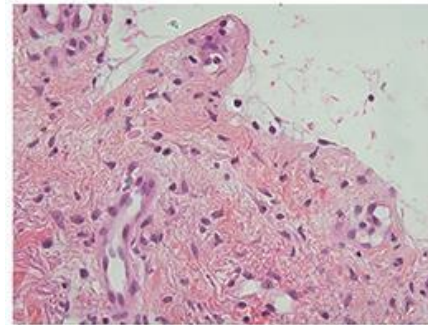
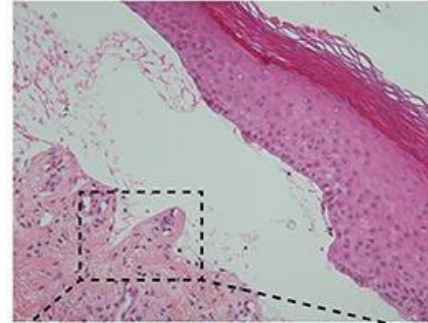
Hiroshi Koga, Catherine Prost-Squarcioni, Hiroaki Iwata et al. Epidermolysis Bullosa Acquisita: The 2019 Update. 2019 Jan 10;5:362. doi: 10.3389/fmed.2018.00362. PMID: 30687710; PMCID: PMC6335340

Epidermolysis bullosa acquisita

Hiroshi Koga, Catherine Prost-Squarcioni, Hiroaki Iwata et al.
Epidermolysis Bullosa Acquisita: The 2019 Update. 2019 Jan 10;5:362.
doi: 10.3389/fmed.2018.00362.
PMID: 30687710; PMCID: PMC6335340

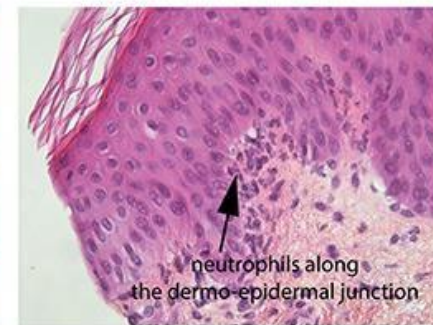
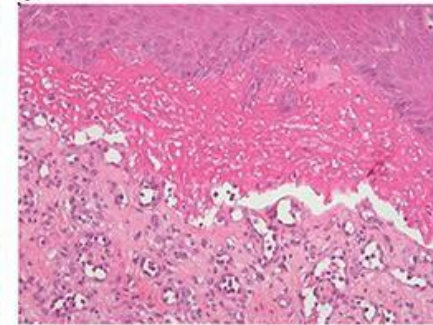
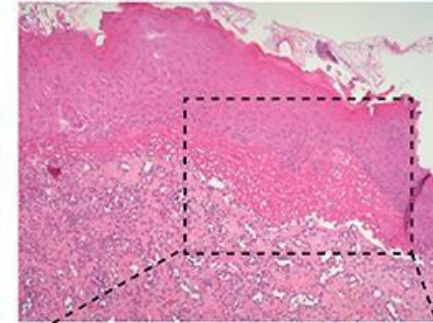
Classical/
mechano-bullous EBA

subepidermal cleavage
without dermal infiltrate

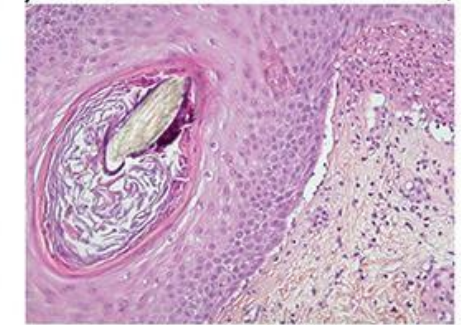
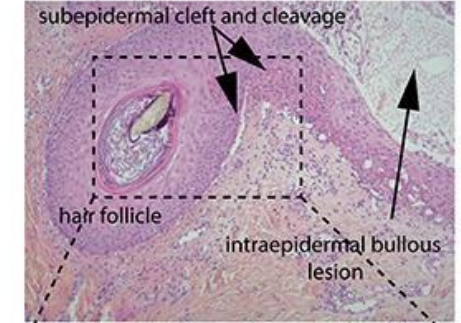


BP-like EBA

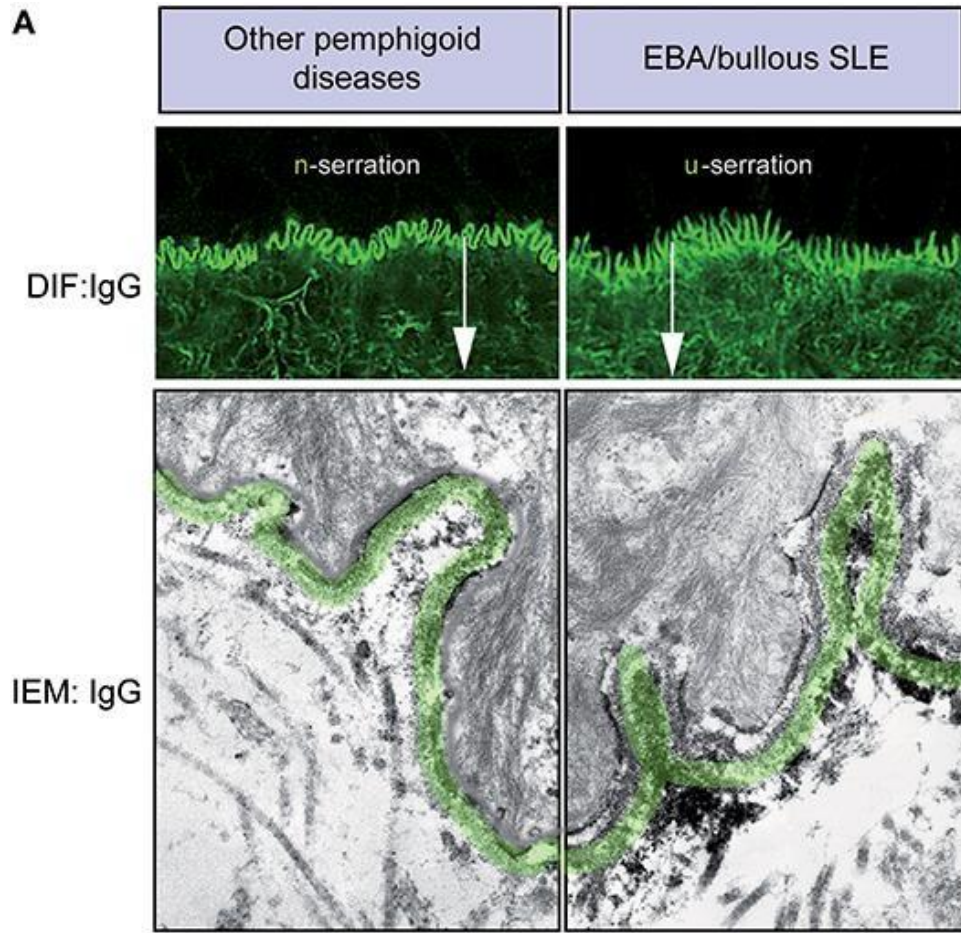
subepidermal cleavage with fibrin
and mild dermal infiltrate



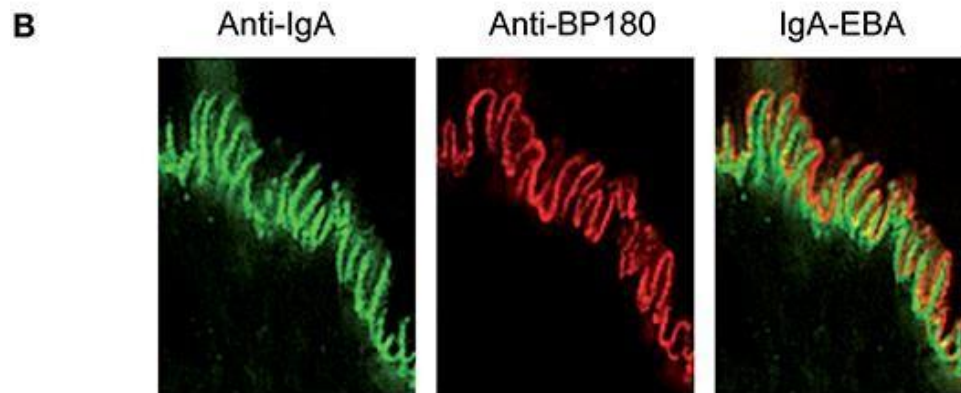
dense infiltrate in its cavity prolonged
by a cleft in the hair follicle



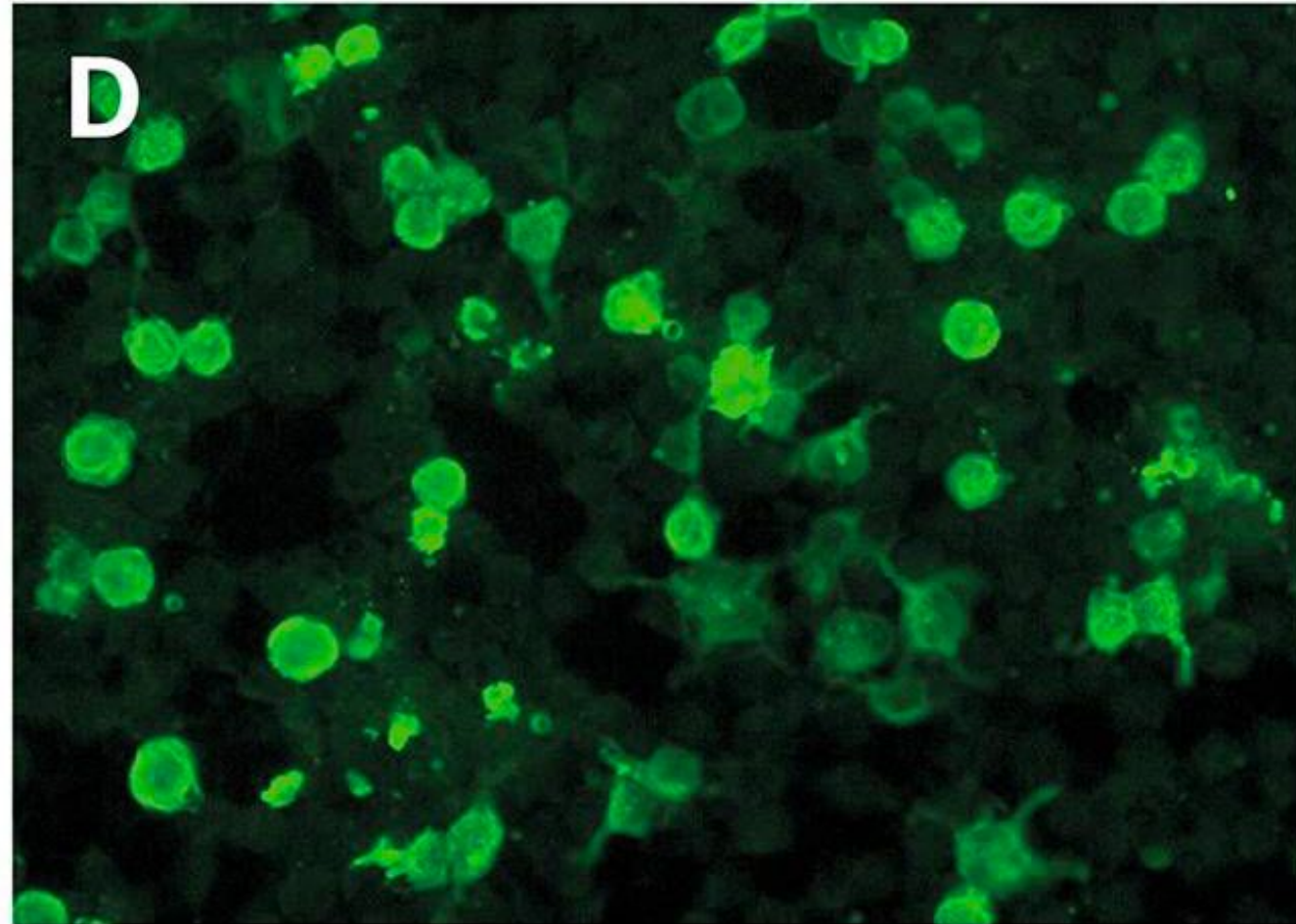
Diagnostics



1. Clinical characteristics
2. Histopathology
3. Direct immunofluorescence (DIF)
4. Indirect immunofluorescence (IIF)
5. BIOCHIP - type VII collagen (NC1 domain)
6. Enzyme-linked immunosorbent assays (ELISA)

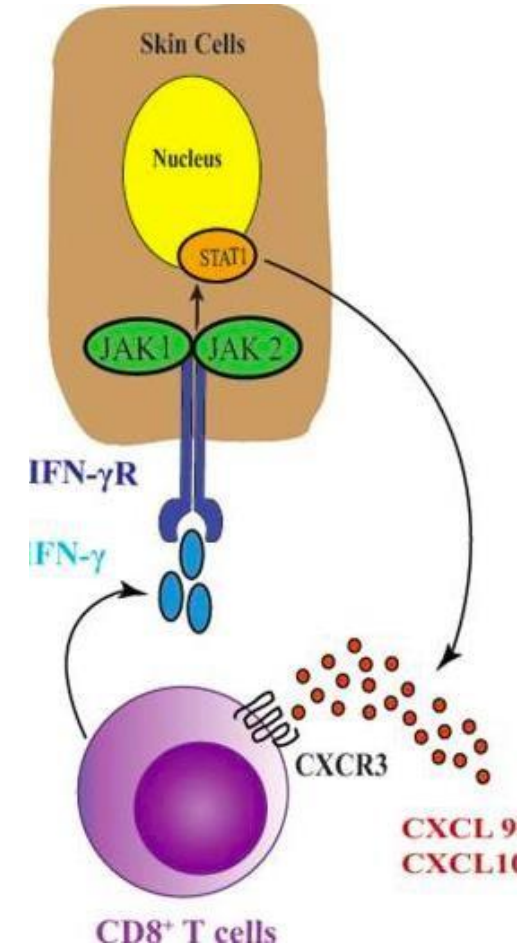
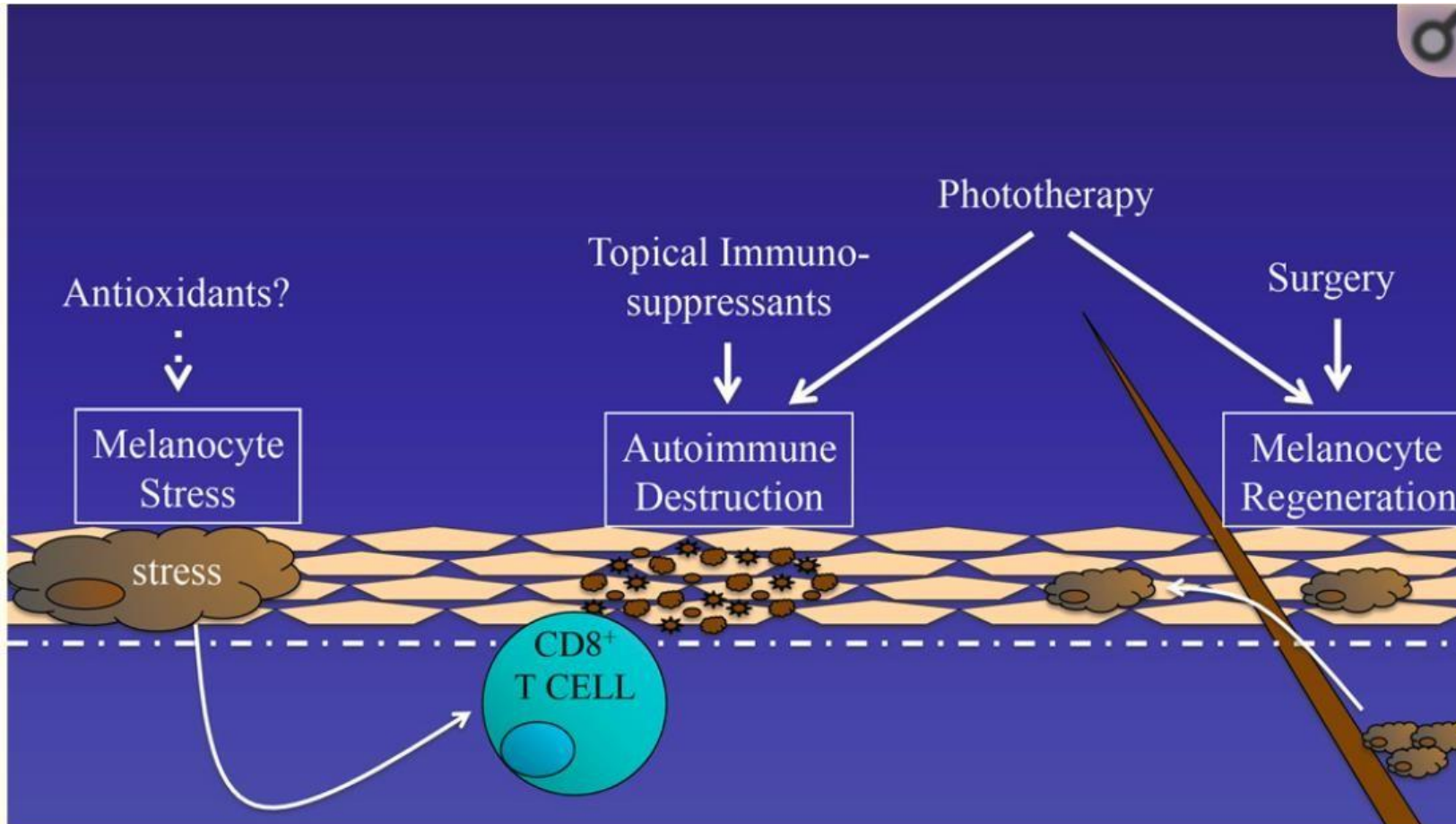


Hiroshi Koga, Catherine Prost-Squarcioni, Hiroaki Iwata et al. Epidermolysis Bullosa Acquisita: The 2019 Update. 2019 Jan 10;5:362. doi: 10.3389/fmed.2018.00362. PMID: 30687710; PMCID: PMC6335340



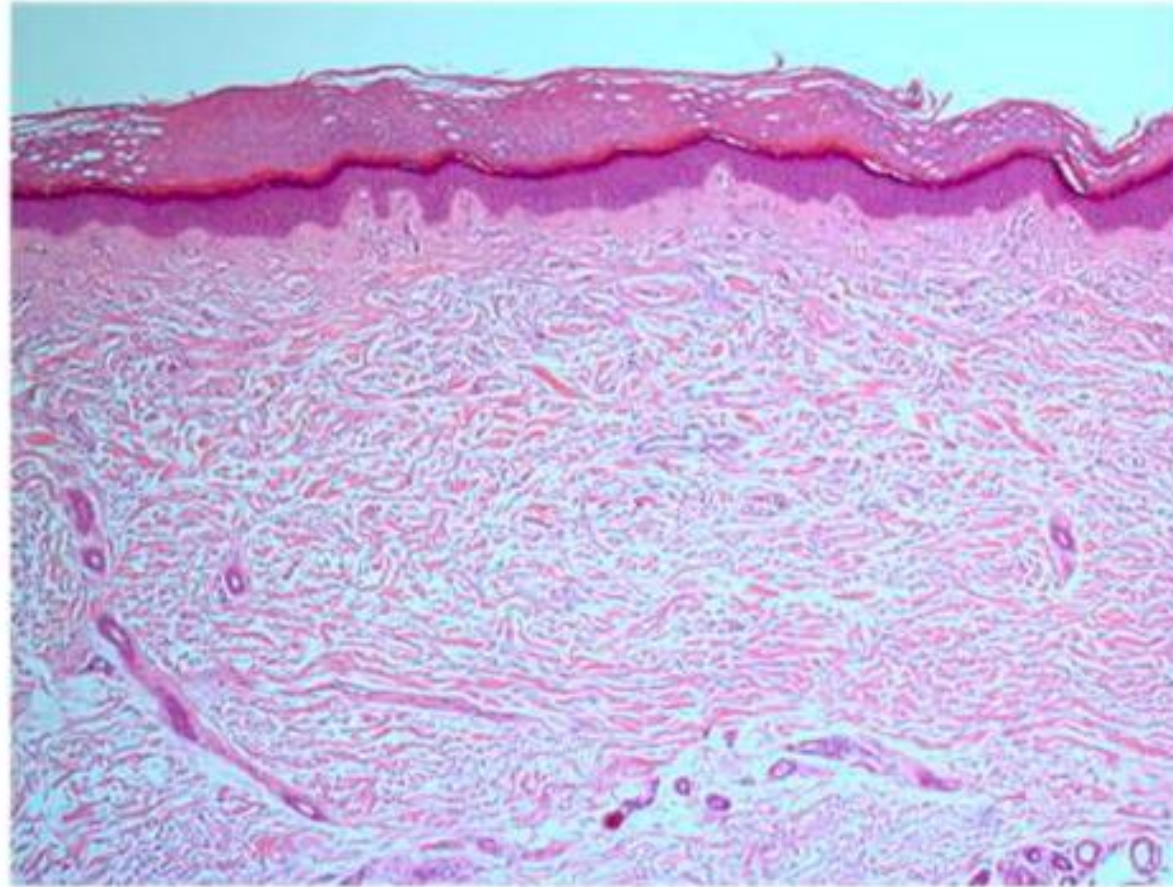
Sandra Saschenbrecker, Ingolf Karl, Lars Komorowski. Serological Diagnosis of Autoimmune Bullous Skin Diseases. *Front Immunol.* 2019; 10: 1974. doi: 10.3389/fimmu.2019.01974. PMID: 31552014; PMCID: PMC6736620

Pathogenesis of Vitiligo



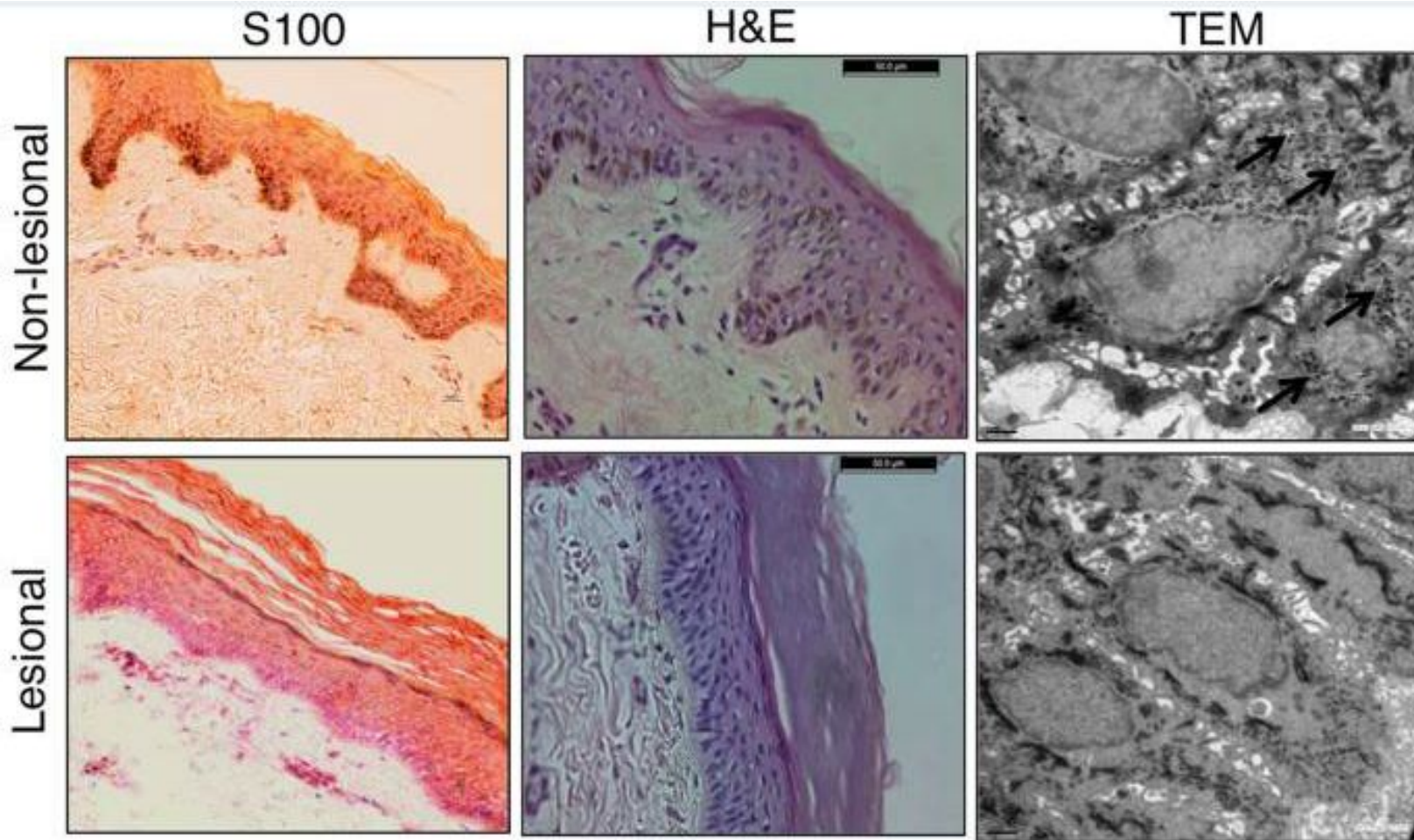
Mehdi Rashighi and John E. Harris. Vitiligo pathogenesis and emerging treatments. *Dermatol Clin.* 2017 Apr;35(2):257-265. doi: 10.1016/j.det.2016.11.014. PMID: 28317534; PMCID: PMC5362109

Vitiligo



Cristina Maria Failla, Maria Luigia Carbone, Cristina Fortes, Gianluca Pagnanelli, Stefania D'Atri. Melanoma and Vitiligo: In Good Company. *Int J Mol Sci.* 2019 Nov 15;20(22):5731. doi: 10.3390/ijms20225731. PMID: 31731645; PMCID: PMC6888090

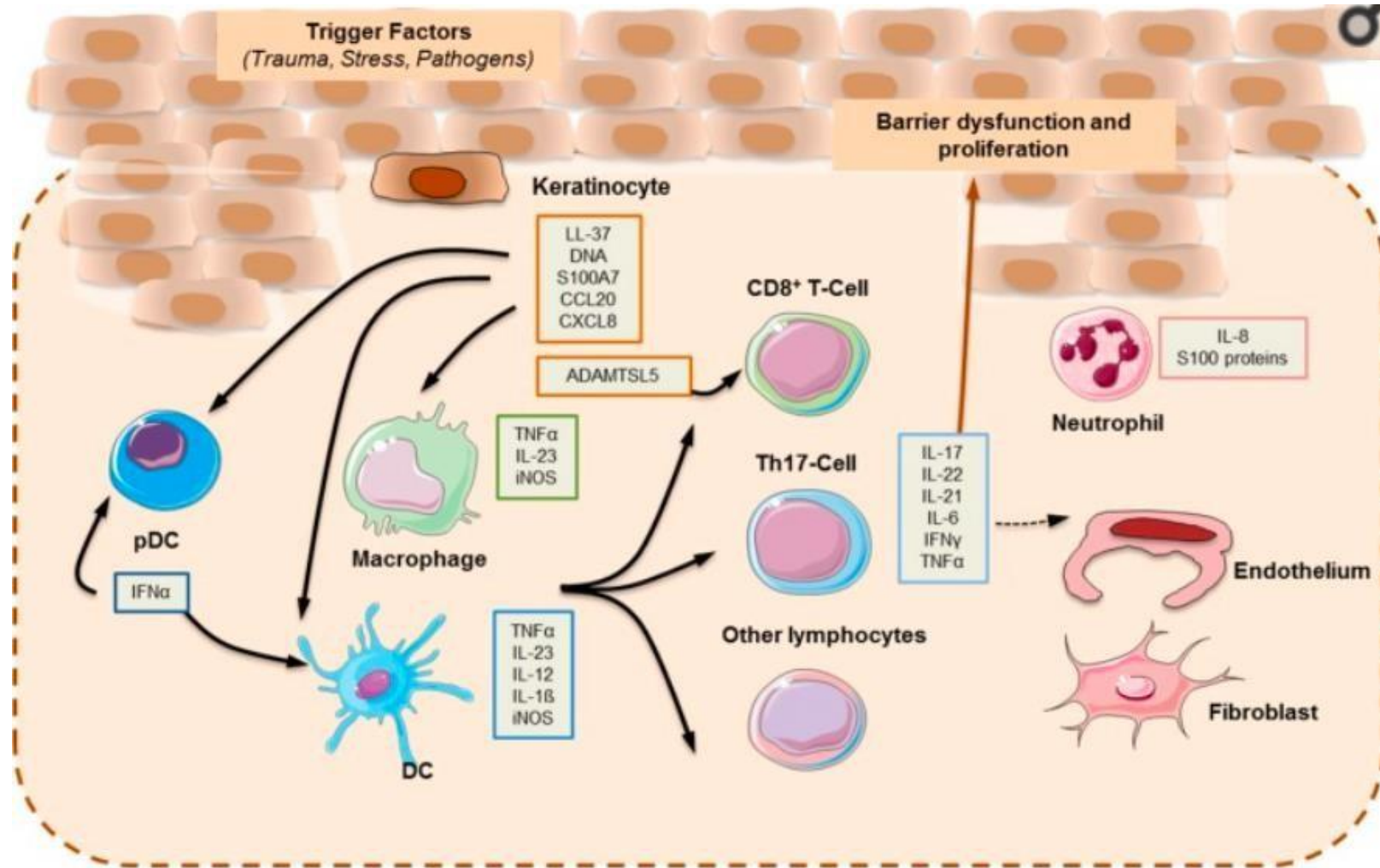
Diagnostics



1. Clinical characteristics
2. Histopathology
3. Immunohistochemical staining of melanocyte-specific S100 antigen
4. Transmission electron micrographs (TEM)

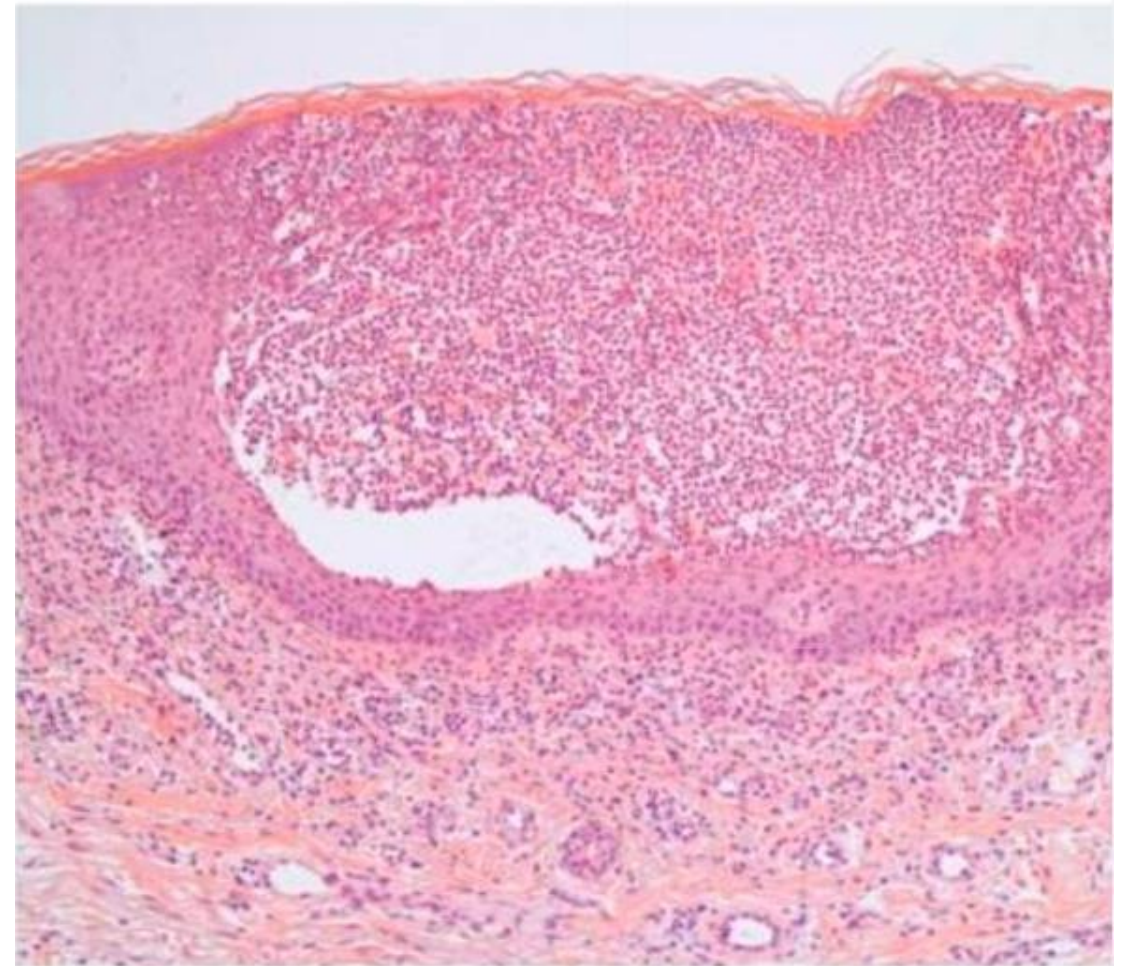
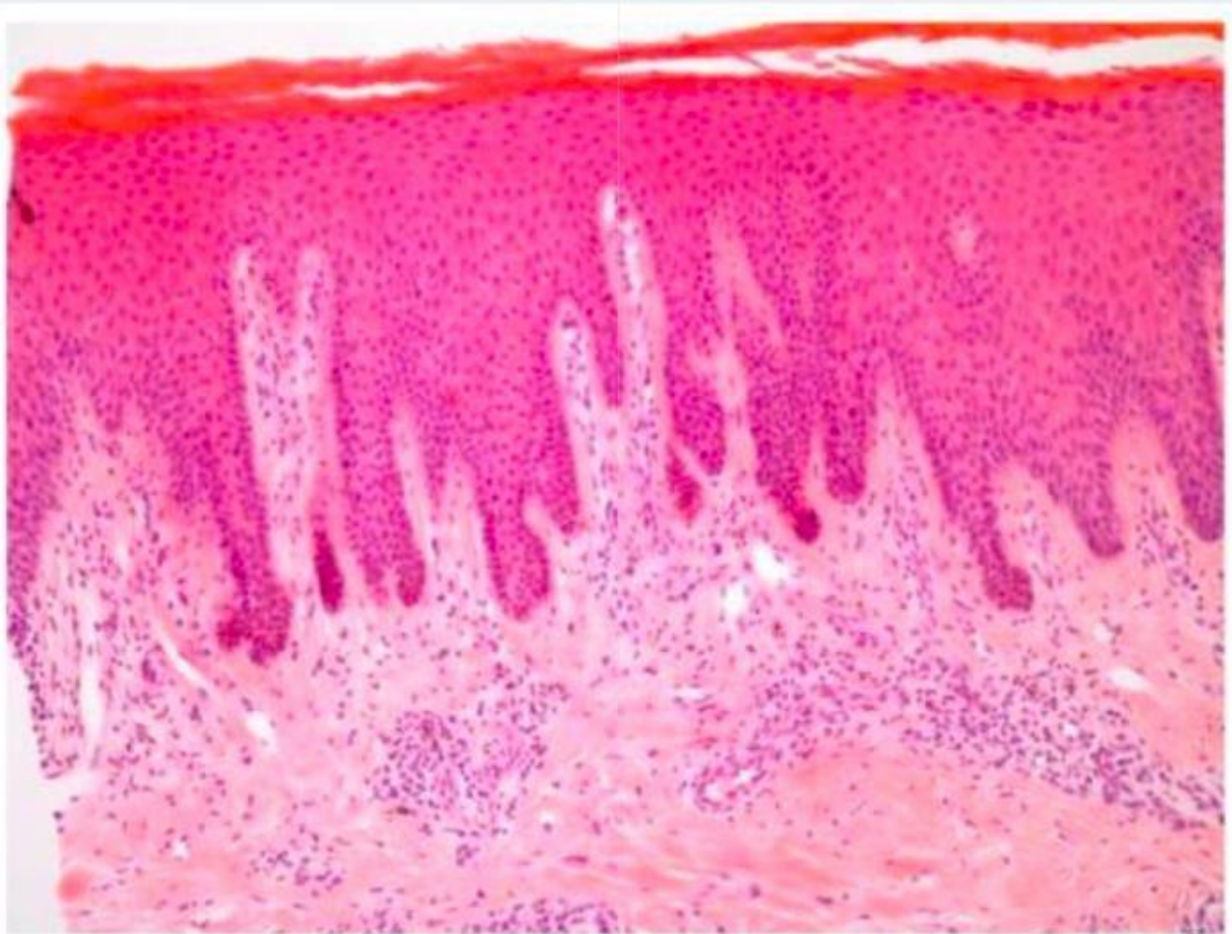
Archana Singh, Vishvabandhu Goherwal, Päivi Junni et al. Mapping architectural and transcriptional alterations in non-lesional and lesional epidermis in vitiligo. *Sci Rep.* 2017; 7: 9860.
doi: 10.1038/s41598-017-10253-w. PMCID: PMC5575244; PMID: 28852211

Pathogenesis of psoriasis



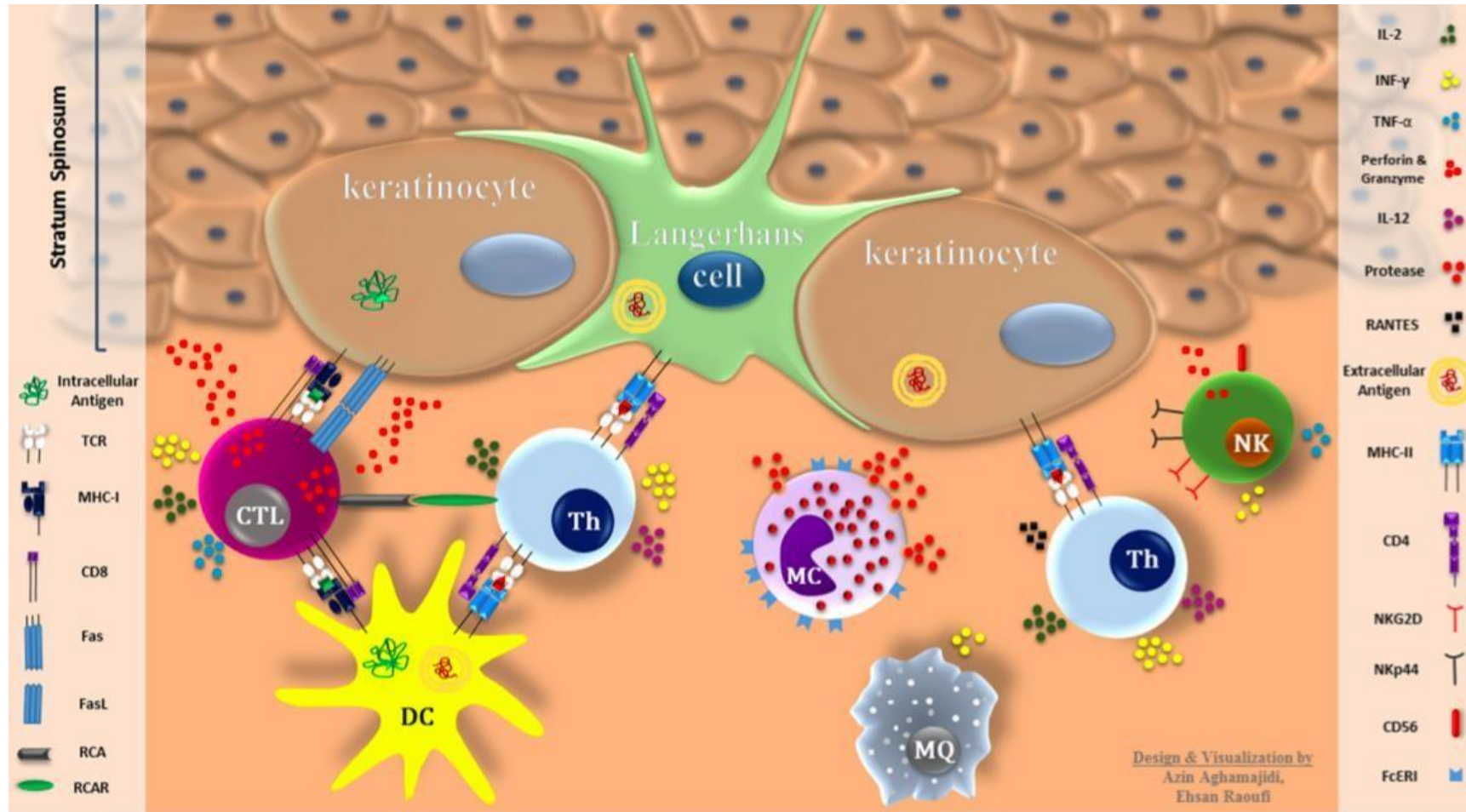
Adriana Rendon, Knut Schäkel. Psoriasis Pathogenesis and Treatment. J Mol Sci. 2019 Mar 23;20(6):1475. doi: 10.3390/ijms20061475. PMID: 30909615; PMCID: PMC6471628

Psoriasis



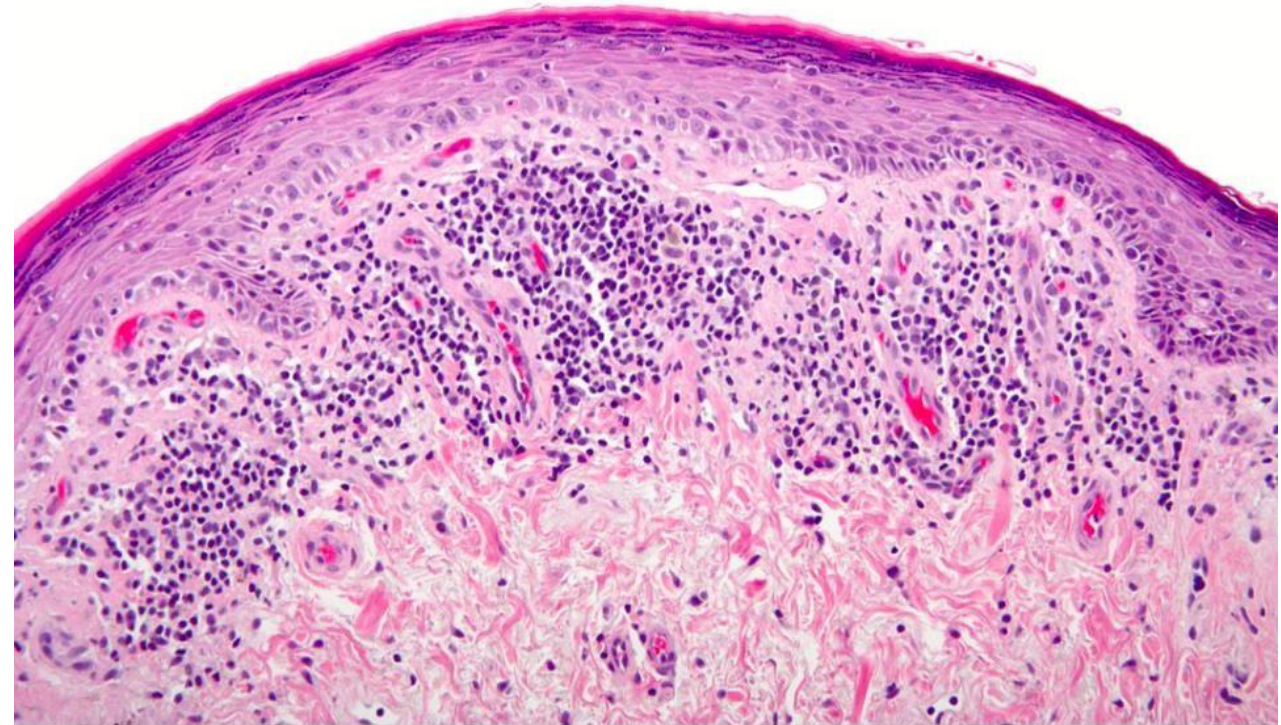
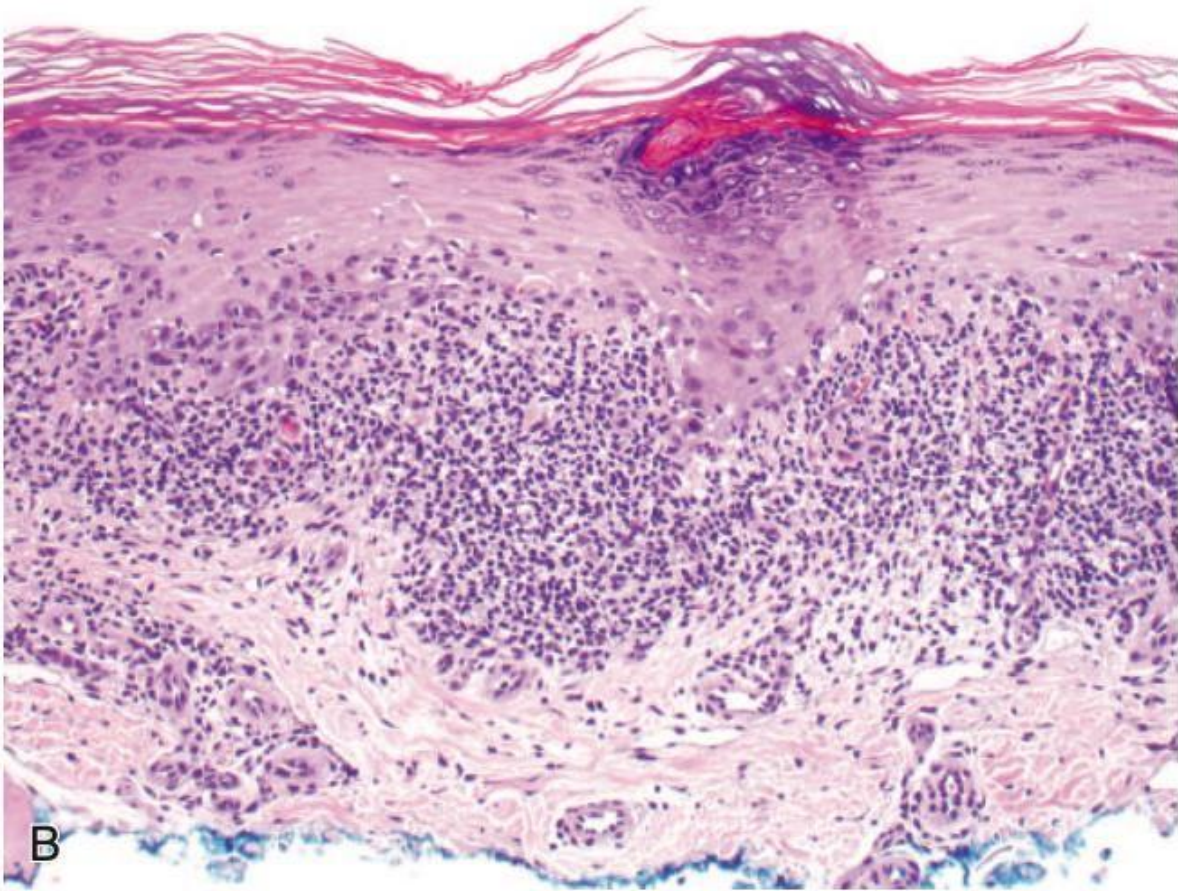
Adriana Rendon, Knut Schäkel. Psoriasis Pathogenesis and Treatment. *J Mol Sci*. 2019 Mar 23;20(6):1475. doi: 10.3390/ijms20061475. PMID: 30909615; PMCID: PMC6471628

Pathogenesis of lichen planus

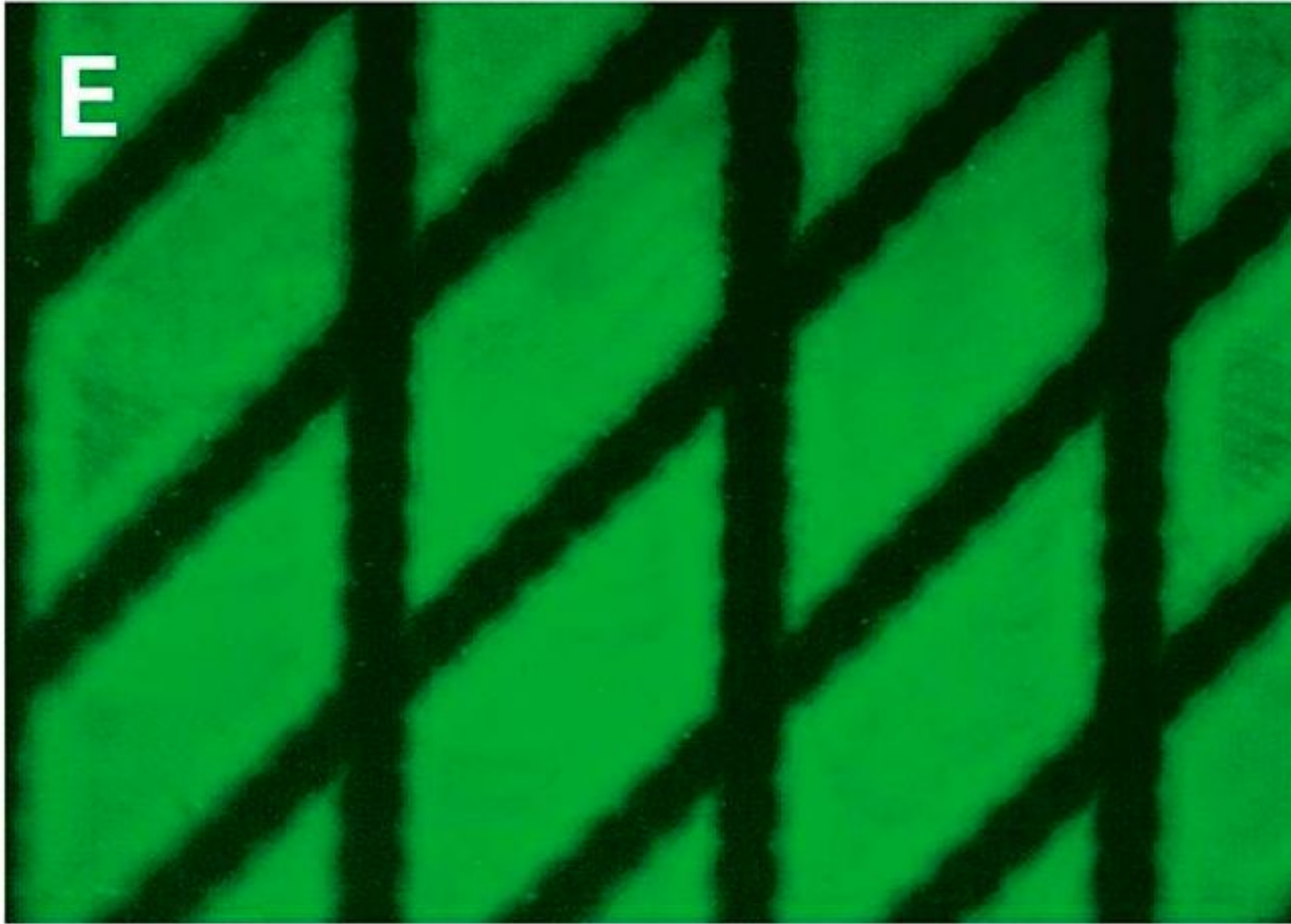


Azin Aghamajidi, Ehsan Raoufi, Gilda Parsamanesh et al. The attentive focus on T cell-mediated autoimmune pathogenesis of psoriasis, lichen planus and vitiligo. *Immunol.* 2021 Apr;93(4):e13000. doi: 10.1111/sji.13000. Epub 2020 Nov 25. PMID: 3319033

Lichen Planus



Diagnostics



1. Clinical characteristics
2. Histopathology
3. Direct immunofluorescence (DIF)
4. Indirect immunofluorescence (IIF)
5. BIOCHIP - BP180-NC16A-4X
(tetrameric NC16A domain)

Sandra Saschenbrecker, Ingolf Karl, Lars Komorowski. Serological Diagnosis of Autoimmune Bullous Skin Diseases. *Front Immunol.* 2019; 10: 1974. doi: 10.3389/fimmu.2019.01974. PMID: 31552014; PMCID: PMC6736620

References

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2. Robbins basic pathology. Tenth edition. | Philadelphia, Pennsylvania : Elsevier, [2018]
3. Miao Yang, Haijing Wu, Ming Zhao, Christopher Chang, Qianjin Lu. The pathogenesis of bullous skin diseases. *Journal of Translational Autoimmunity*. 2019 Aug 26;2:100014. doi: 10.1016/j.jtauto.2019.100014. PMID: 32743502; PMCID: PMC7388362
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References

7. Mehdi Rashighi and John E. Harris. Vitiligo pathogenesis and emerging treatments. *Dermatol Clin.* 2017 Apr;35(2):257-265. doi: 10.1016/j.det.2016.11.014. PMID: 28317534; PMCID: PMC5362109
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10. Adriana Rendon, Knut Schökel. Psoriasis Pathogenesis and Treatment. *J Mol Sci.* 2019 Mar 23;20(6):1475. doi: 10.3390/ijms20061475. PMID: 30909615; PMCID: PMC6471628
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4. Michael Kasperkiewicz, Christoph T. Ellebrecht, Hayato Takahashi et al. Pemphigus. *Nat Rev Dis Primers.* Author manuscript; available in PMC 2018 May 11. doi: 10.1038/nrdp.2017.26. PMID: 28482232; PMCID: PMC5801722