

# Is Skin Disease a Local Manifestation of Systemic Tissue Turnover? Serological Collagen Biomarkers Provide Important Information on Skin Diseases Arising from Mutations in Collagen Genes

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**BACKGROUND**

Collagens are the main constituents of the skin. Genetic mutations in type VI, VII, and XVII collagen cause skin diseases, such as atopic dermatitis, epidermolysis bullosa, and bullous pemphigoid. These are all characterized as systemic diseases, with local manifestations. Novel collagen biomarkers hold the potential to detect skin manifestations, monitor the disease course, as well as improve our understanding of the pathophysiology.

**AIM:** to develop blood-based biomarkers of type VI, VII, and XVII collagen, and investigate their diagnostic potential for skin pathologies, including systemic sclerosis.

**METHODS**

Three novel immunoassays targeting the N-terminal of type VI collagen (C6A6), an MMP-generated neo-epitope fragment of type VII collagen (C7M), and type XVII collagen (PRO-C17) were developed and used to measure the analyte levels in serum from healthy donors (n=25), patients with atopic dermatitis (n=20) and systemic sclerosis (n=5).

Differences between biomarker levels in healthy donors and patients with atopic dermatitis, and systemic sclerosis, were calculated by a Mann-Whitney U test. The diagnostic accuracy was evaluated by the area under the receiver operating characteristics (AUROC) curve between the individual dermatological indications and healthy controls. An AUC=0.85 was considered clinically relevant

**CONCLUSION**

These biomarkers reflect the downstream effect of different genetic mutations leading to skin disease and may be useful to determine skin involvement in rheumatic diseases, including systemic sclerosis and psoriatic arthritis.

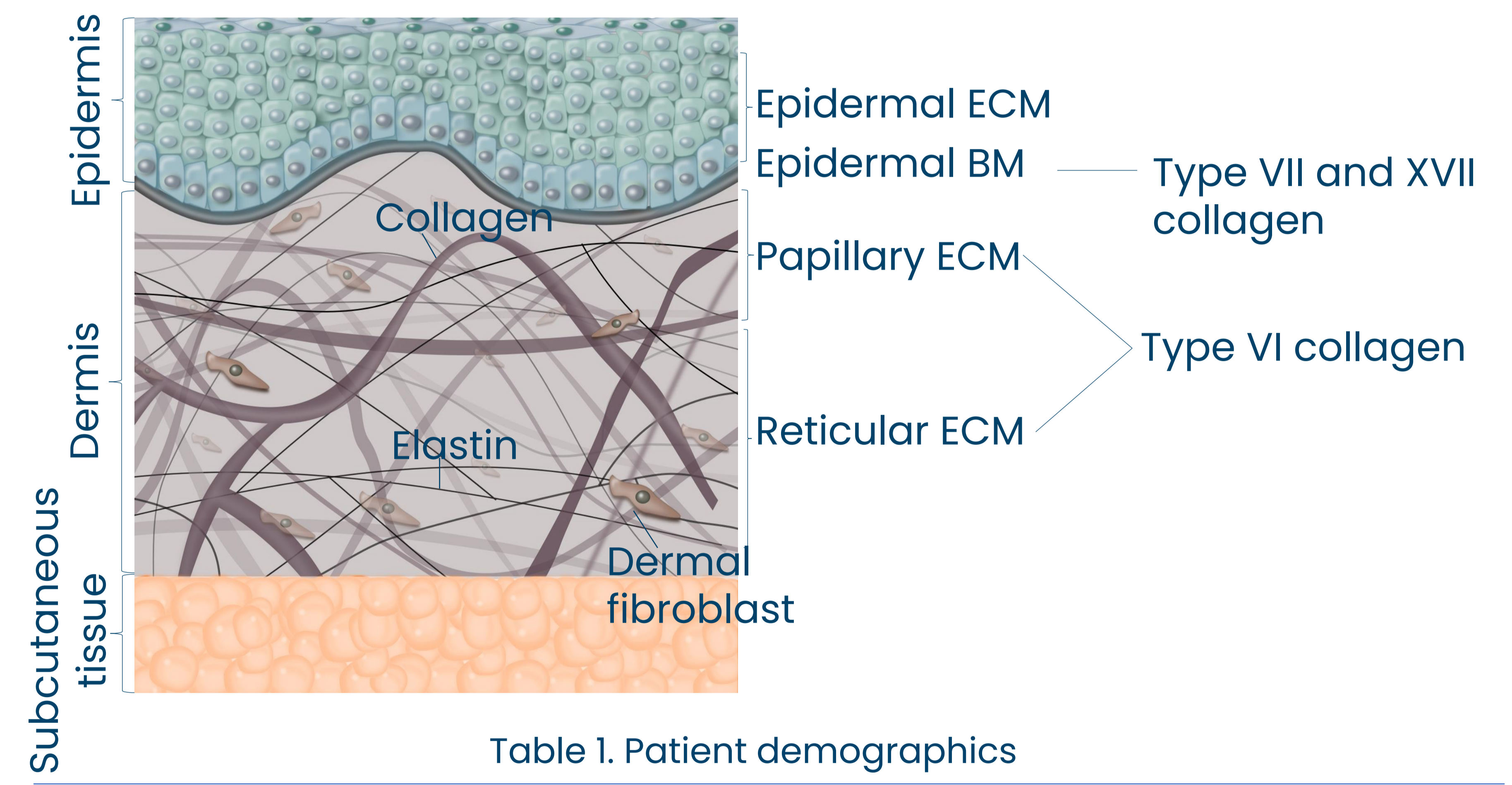


Table 1. Patient demographics

	Healthy (n=25)	Atopic dermatitis (n=20)	Systemic sclerosis (n=5)
Male sex, n (%)	14 (56%)	10 (50%)	5 (100%)
Age, mean (SD)	46.20 (11.77)	52.30 (4.11)	57.60 (9.86)
Ethnicity, %			
Caucasian	68%	100%	100%
Black	32%		

