Gene Expression Differences Identified in Skin Samples of Mycosis Fungoides, Atopic Dermatitis, and Psoriasis

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Background

1. Updates in the molecular understanding of common and often debilitating skin diseases such as atop dermatitis (AD) and psoriasis (PSO) led to the development of multiple targeted systemic drugs.1,2
2. Yet, molecular heterogeneity contributes to inconsistent clinical presentation and therapeutic response. Therefore, understanding a patient’s personalized molecular profile may be important for determining the ideal therapy.3,4

Methods

1. Lesional baseline samples were assessed from 76 patients (AD, n=24; PSO, n=48; MF, n=4) enrolled in one of two IIB-approved studies (IDENTITY or SIGNAL-MF).
2. The superficial epidermis was collected by gently scraping the skin ten times with a curette and immediately preserving in a proprietary buffer (Figure 1).
3. Library preparation and next-generation RNA sequencing were performed using the Ion AmpliSeq Transcriptive Human Gene Expression panel on the S5 Prime sequencer (ThermoFisher).
4. Clinical response to a subset of AD patients taking dupilumab and PSO patients taking risankizumab was further assessed over 3 months using the eczema area and severity index (EASI) or psoriasis area or severity index (PASI), respectively.

Objective

1. To identify gene expression differences based on diagnosis of MF, AD, or PSO and response to targeted systemic AD or PSO therapies.

Results

Figure 2. Gene Expression Differences in Mycosis Fungoides, Atopic Dermatitis, and Psoriasis

Figure 3. Gene Expression Differences in Superresponders to the Atopic Dermatitis Therapy Dupilumab

Figure 4. Gene Expression Differences in Super-responders to the Psoriasis Therapy Risankizumab

Conclusions

1. Robust gene expression is obtained from lesional PSO, AD, and MF samples collected by non-invasive skin scraping.
2. Gene expression differences are observed between PSO, AD, and MF lesions.
3. AD lesions from super-responders to dupilumab exhibit distinct gene expression.

References

8. Quick AP et al. JDD. 2020; 198(3):340.2

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