

Description of Additional Supplementary Files

File Name: Supplementary Data 1

Description: Clinicodemographic characteristics of the cohort.

File Name: Supplementary Data 2

Description: Marker genes of keratinocyte subclusters, which were identified by tow-sided Wilcoxon rank-sum test.

File Name: Supplementary Data 3

Description: Reactome pathways significantly enriched among differentially expressed genes across disease groups. One-sided hyper-geometric test was performed.

File Name: Supplementary Data 4

Description: Correlation between cytokine expression in T cell subtypes and responsive scores in each keratinocyte subcluster. Spearman rank correlation coefficients (ρ), two-sided p values and BH-adjusted p values are shown.

File Name: Supplementary Data 5

Description: Per-sample QC metrics.

File Name: Supplementary Data 6

Description: Curated skin cell marker genes.

File Name: Supplementary Data 7

Description: QC metrics for pseudobulk cell compartments, stratified by disease groups.

File Name: Supplementary Data 8

Description: Epidermal Differentiation Complex gene list from HUGO Gene Nomenclature Committee (HGNC).

File Name: Supplementary Data 9

Description: Gene Ontology Biological Process (GOBP) terms significantly enriched in the differentially expressed genes (up-DEGs) that are uniquely identified in our dataset or Ma_etal dataset. One-sided hypergeometric test was performed.

File Name: Supplementary Data 10

Description: Apoptosis-related Reactome pathways significantly upregulated in the lesional AD keratinocytes. One-sided hypergeometric test was performed.