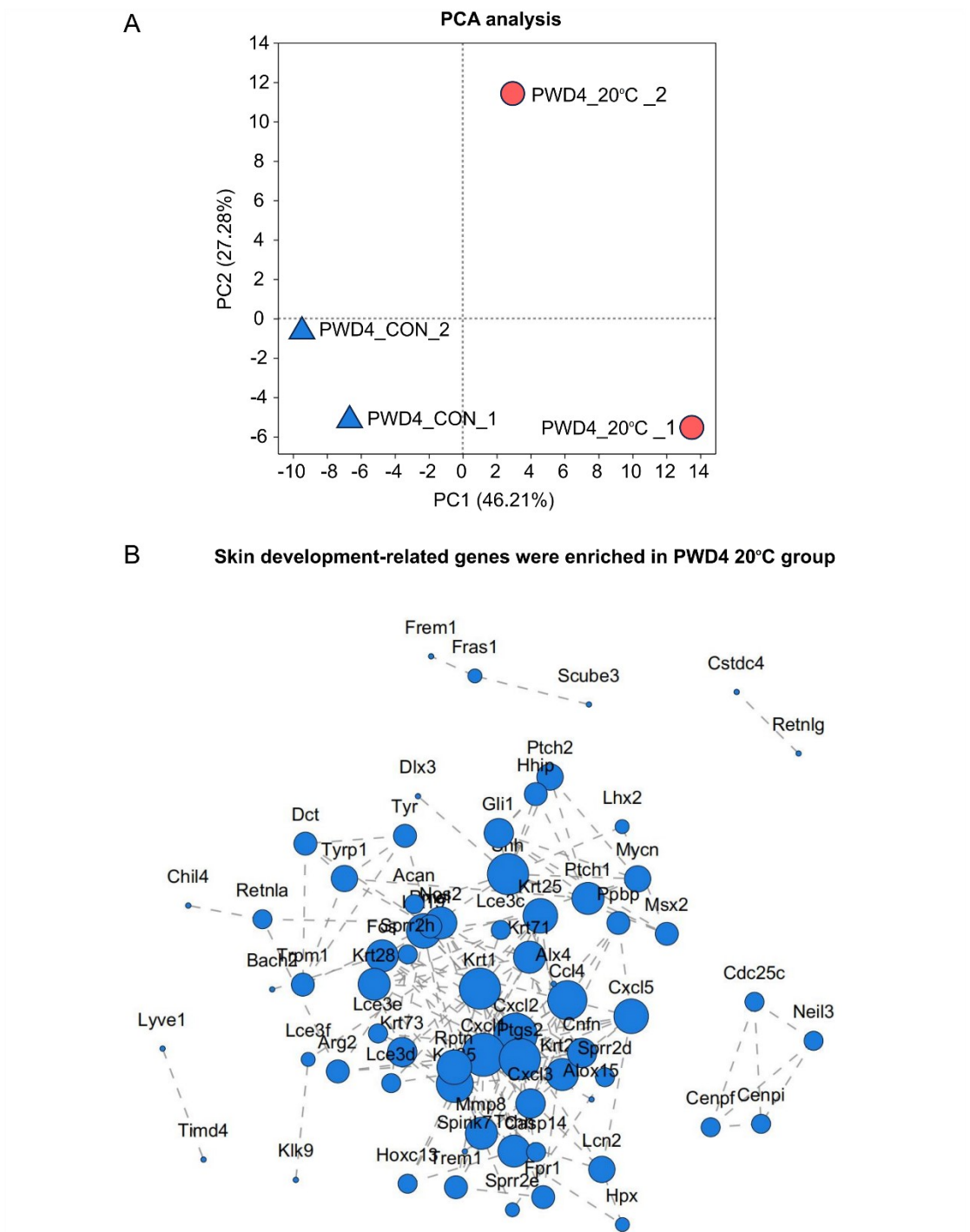


1 **Supplementary Material**

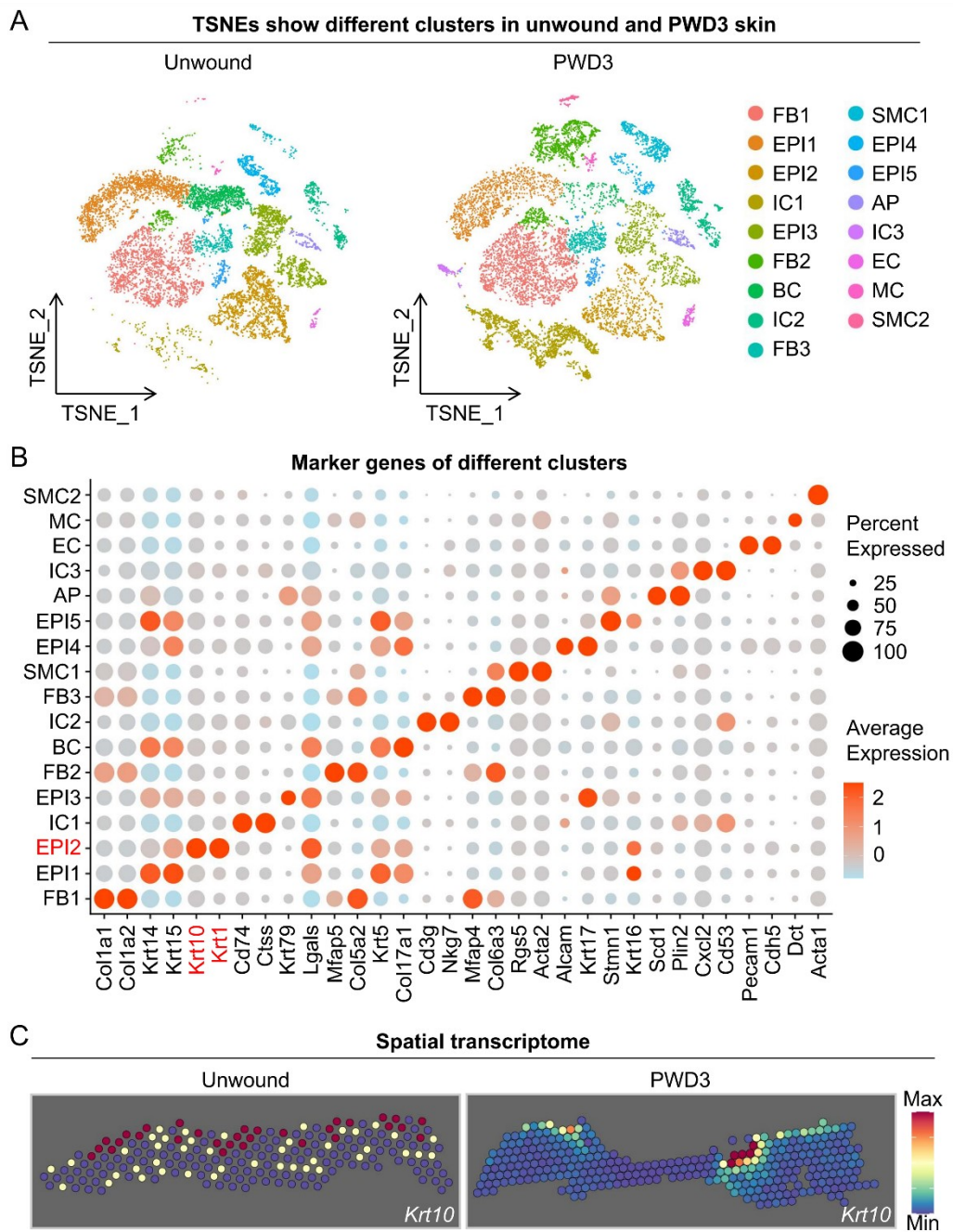


2
3 **Figure S1. Low-temperature treatment promotes wound healing.**

4 A. PCA reveals the differences between the PWD4 CON and PWD4 LTT (20°C) samples.

5 B. String analysis shows skin development related genes was enriched in PWD4 LTT (20°C)

6 group.



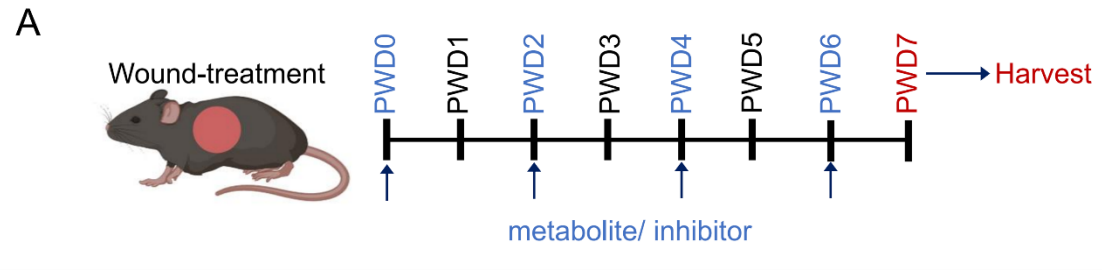
7

8 **Figure S2. Single cell RNA-sequencing analysis of skin wound.**

9 A. TSNEs show different clusters in unwound and PWD3 group.

10 B. DotPlot shows marker genes of different clusters.

11 C. ST-seq shows marker genes of epidermis and dermis.



12

13 **Figure S3. Functional study of Elovl4-EPA/DHA.**

14 A. Schematic shows experimental design.

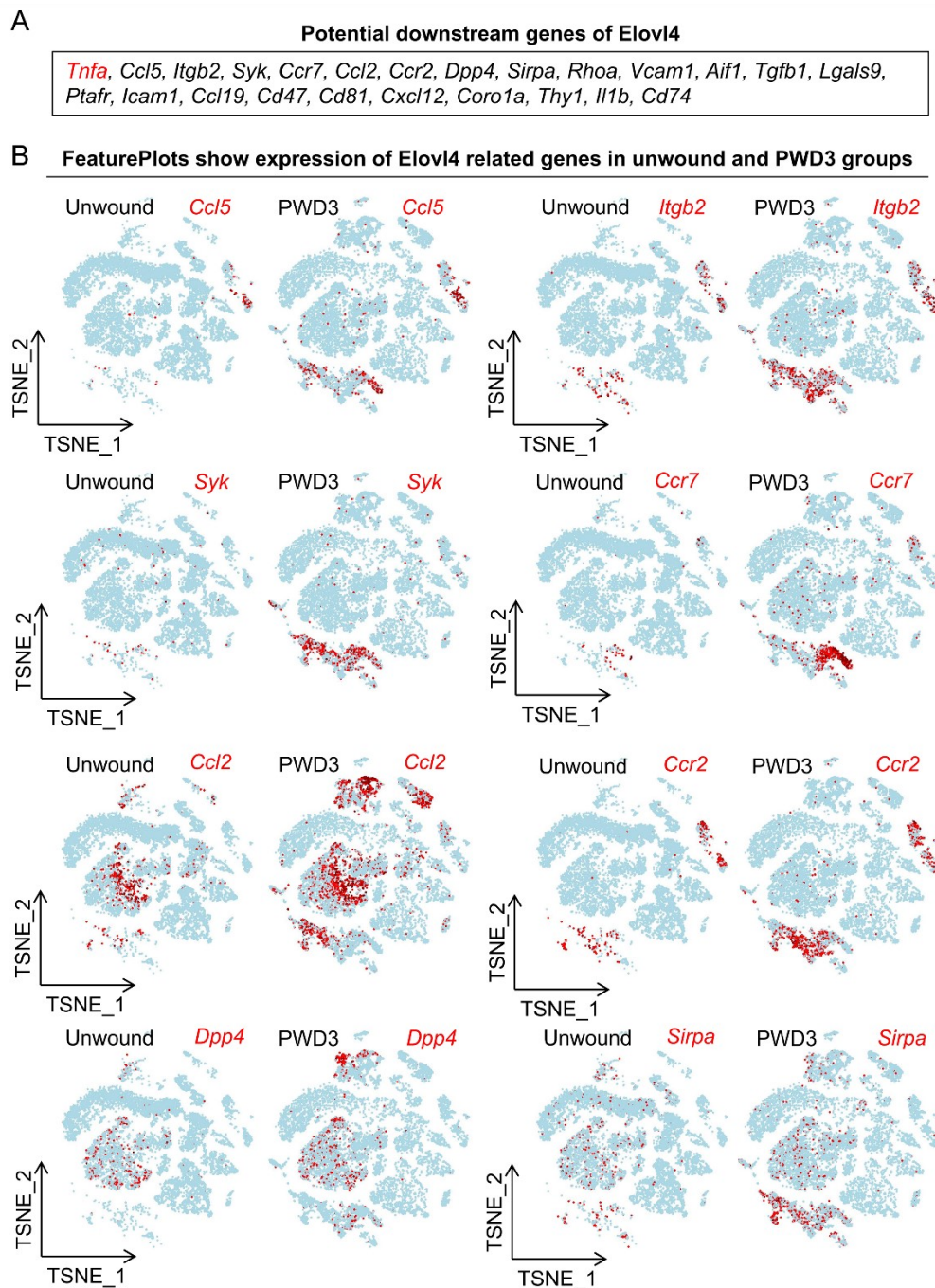


Figure S4. Downstream analysis of Elov14.

A. A list of potential downstream genes of Elov14.

B. FeaturePlots show expression of Elov14 related genes in unwound and PWD3 groups.

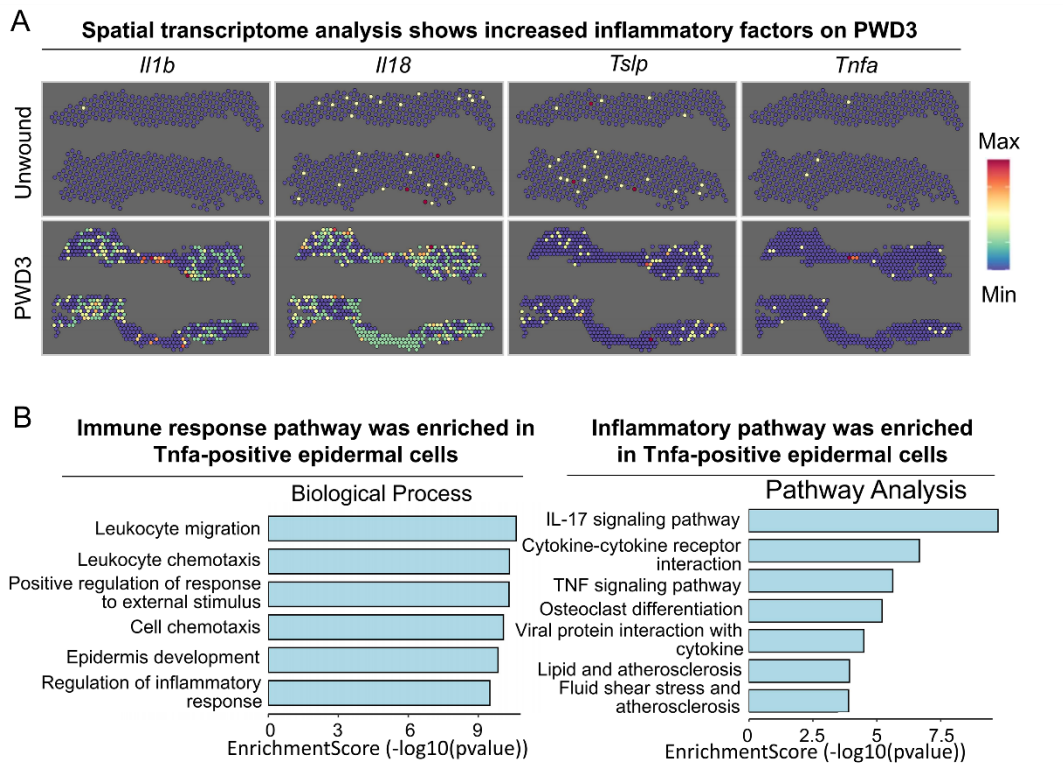


Figure S5. Identification of inflammatory factors.

A. ST-seq shows expression of inflammatory factors in unwound and PWD3 group.

B. GO and KEGG analysis show enriched immune response pathway in TNF α positive epidermal cells.

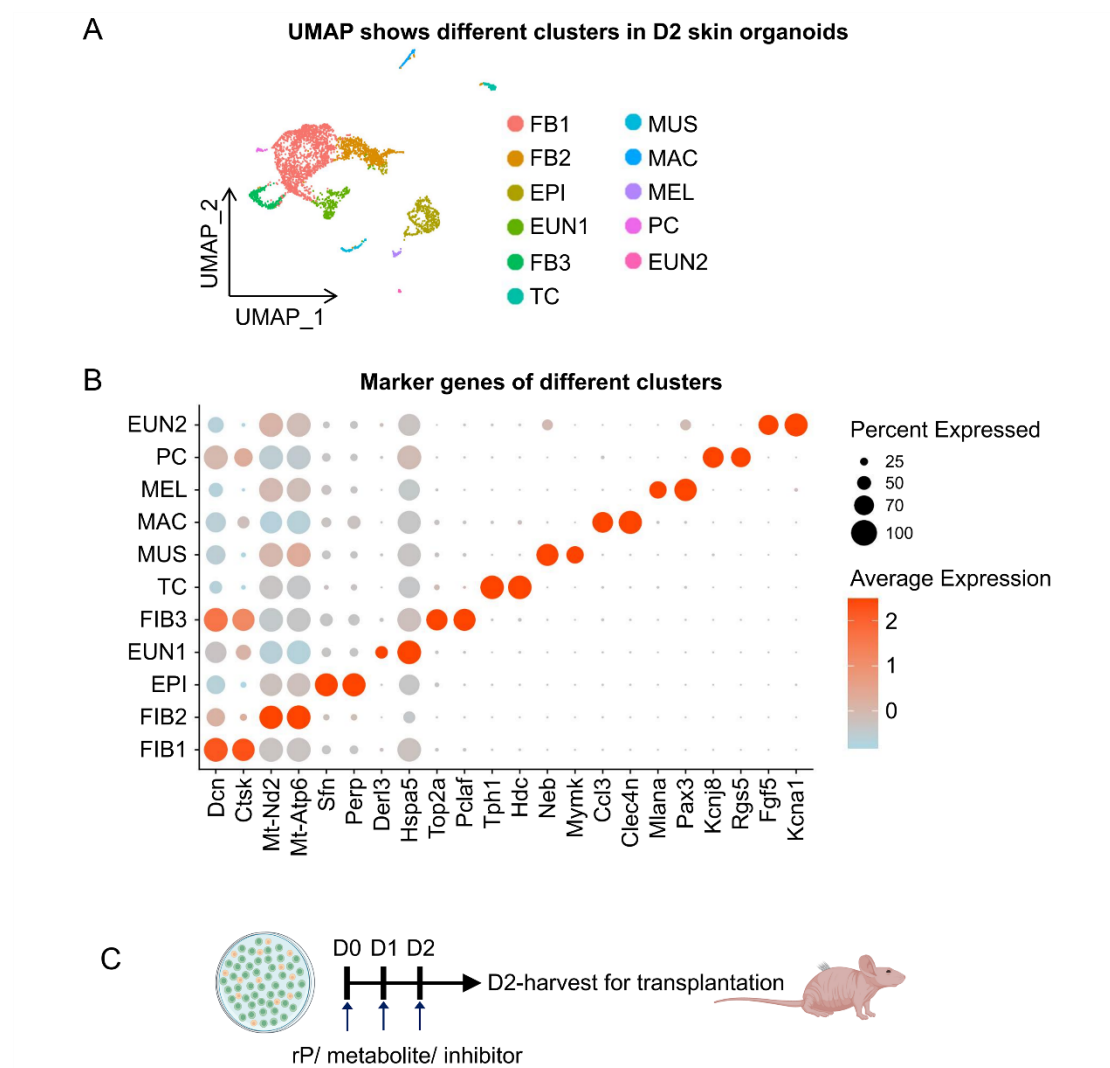
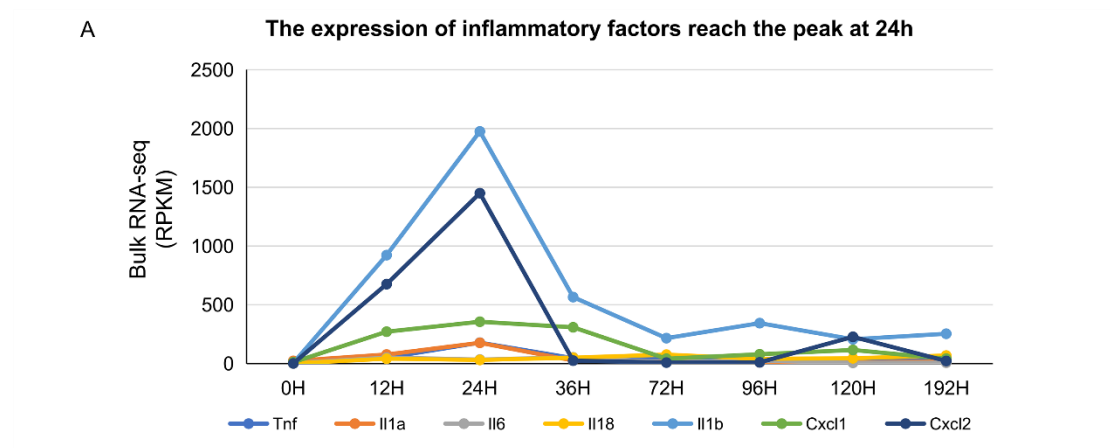


Figure S6. Single cell RNA-seq analysis of skin organoids.

A. UMAP shows different clusters in D2 skin organoids.

B. Dotplot shows marker genes of different clusters.

C. Schematic shows experimental design.



29

30 **Figure S7. Bulk RNA-seq analysis of skin wound.**

31 A. Line chart shows expressions of different inflammatory factors in PWD0-PWD8.