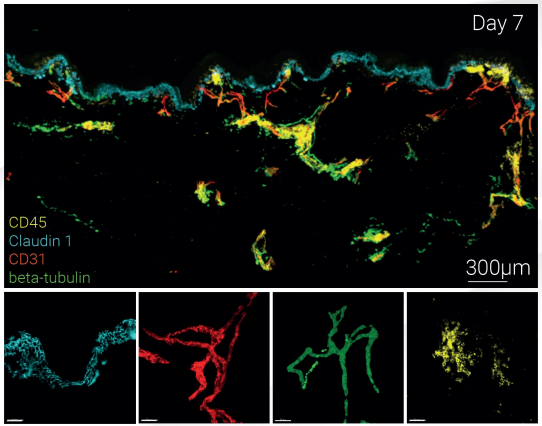
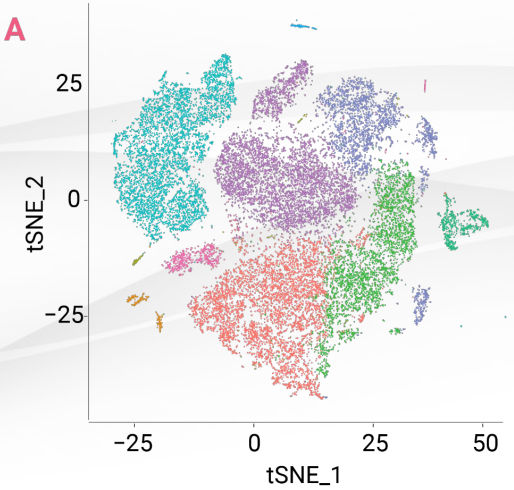
The Hyposkin® platform: a unique framework to decipher the early steps of human immune response to vaccines at the site of injection

3-D 2-Photon imaging of stability in structural components at day 7



immune cells (CD45, yellow),
epidermis (Claudin 1, blue)
blood vessels (CD31, red),
nerve endings (Beta-tubulin, green)

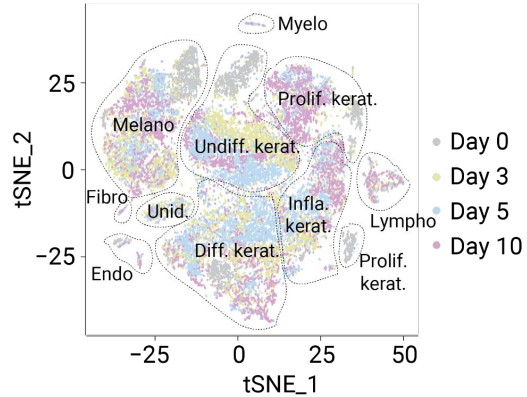
A



- Undifferentiated Keratinocytes (KRT5, KRT14)
- Differentiated Keratinocytes (KRT5, KRT1, KRT10, DSG1)
- Proliferating Keratinocytes (KRT5, KRT14, KRT17)
- Inflammatory Keratinocytes (KRT5, KRT16, SERPINB4)
- Melanocytes (MLANA, PMEL, TYRP1)
- Fibroblasts (COL6A1, MMP2, COL6A2)
- Endothelial_cells (PLVAP, LYVE1, ACKR1)
- Lymphoid (PTPRC, CD3E, CD3D, GNLY)
- Myeloid (PTPRC, CD1A, CD207, FCER1A)
- Unidentified

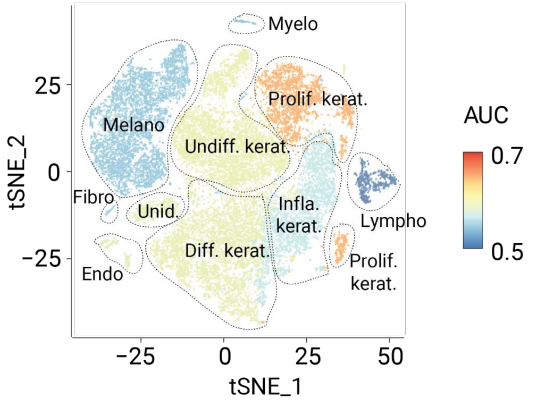
B

Aggregated data over time



C

Genes perturbation analysis over 10 days



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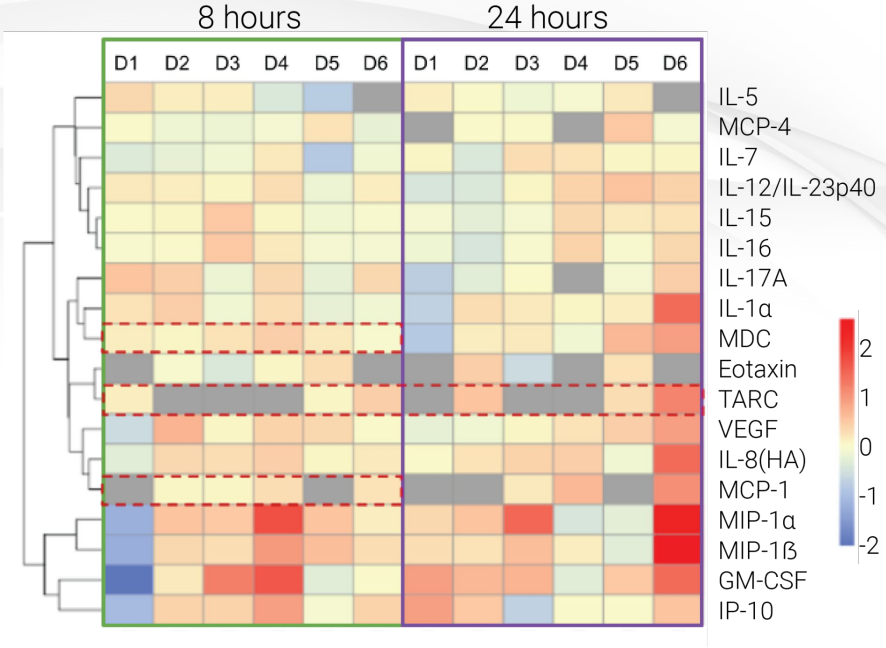
Impact of Moderna vaccine on cytokine release

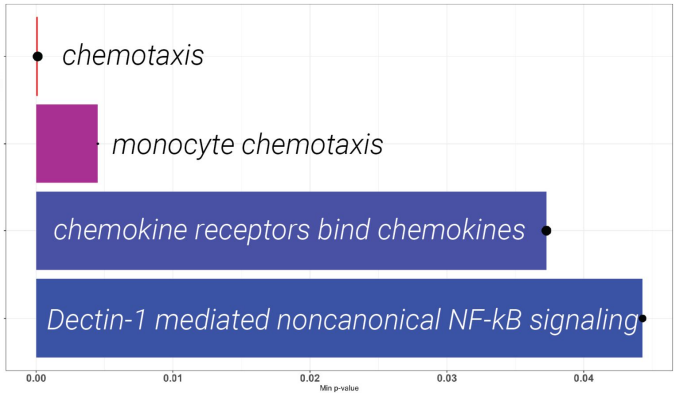
- Cytokines released by HypoSkin® at 8 hours after Moderna vaccine injection:

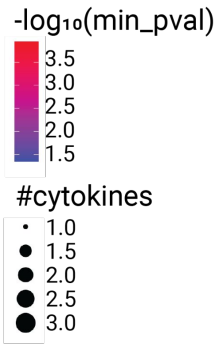
MCP-1
- Recruitment of monocytes and macrophages to the site of skin inflammation
- Modulation of T cell, mast cells and dendritic cells activity

MDC
- T cell recruitment and activity

TARC
- T cell recruitment





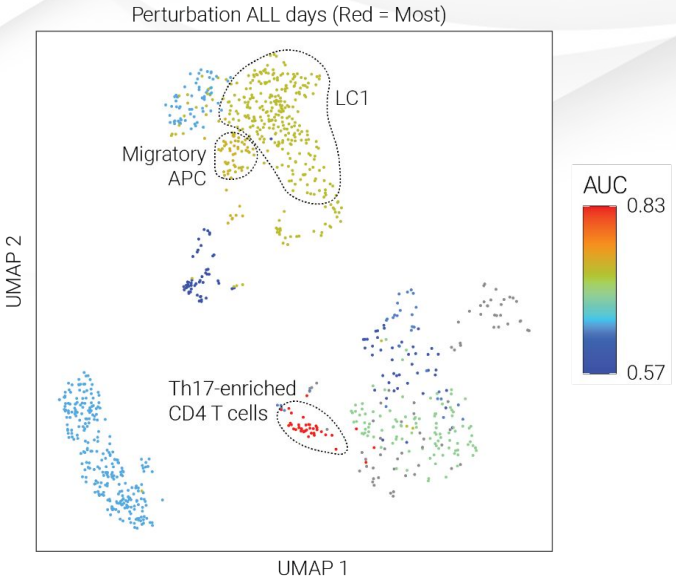


Analysis Moderna vaccine effect on gene expression at the single cell level focus on immune cells

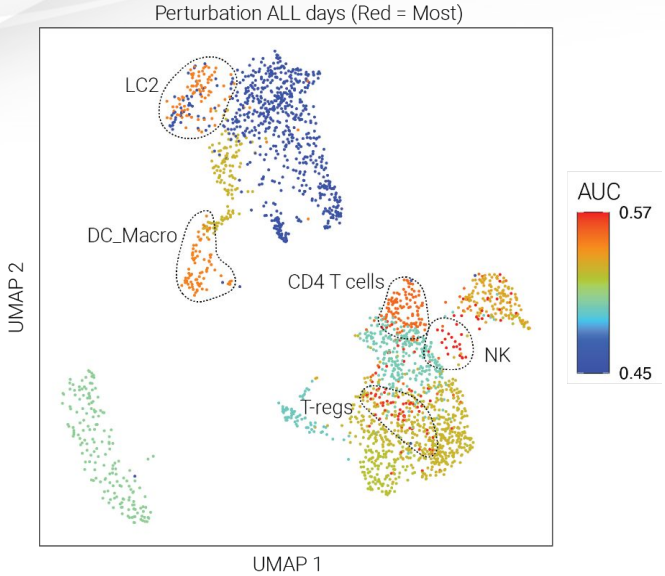
- Immune cell types known to be present in human skin were present at 8h and 24h in HypoSkin® models.
- All immune cell types identified were found both in vaccine and water treated conditions at 8 and 24h.

Gene expression perturbation by vaccine injection

8 hours



24 hours



- Moderna vaccine induced a perturbation of gene expression in:

8h

- Type 1 Langerhans cells,
- Th17-enriched CD4 T cells,
- Migratory APCs.

24h

- Regulatory T cells,
- Dendritic cells/Macrophages,
- Natural Killer cells,
- Type 2 Langerhans cells.