



Monocyte inflammation and adaptive immune dysfunction in severe *Klebsiella pneumoniae* pneumonia

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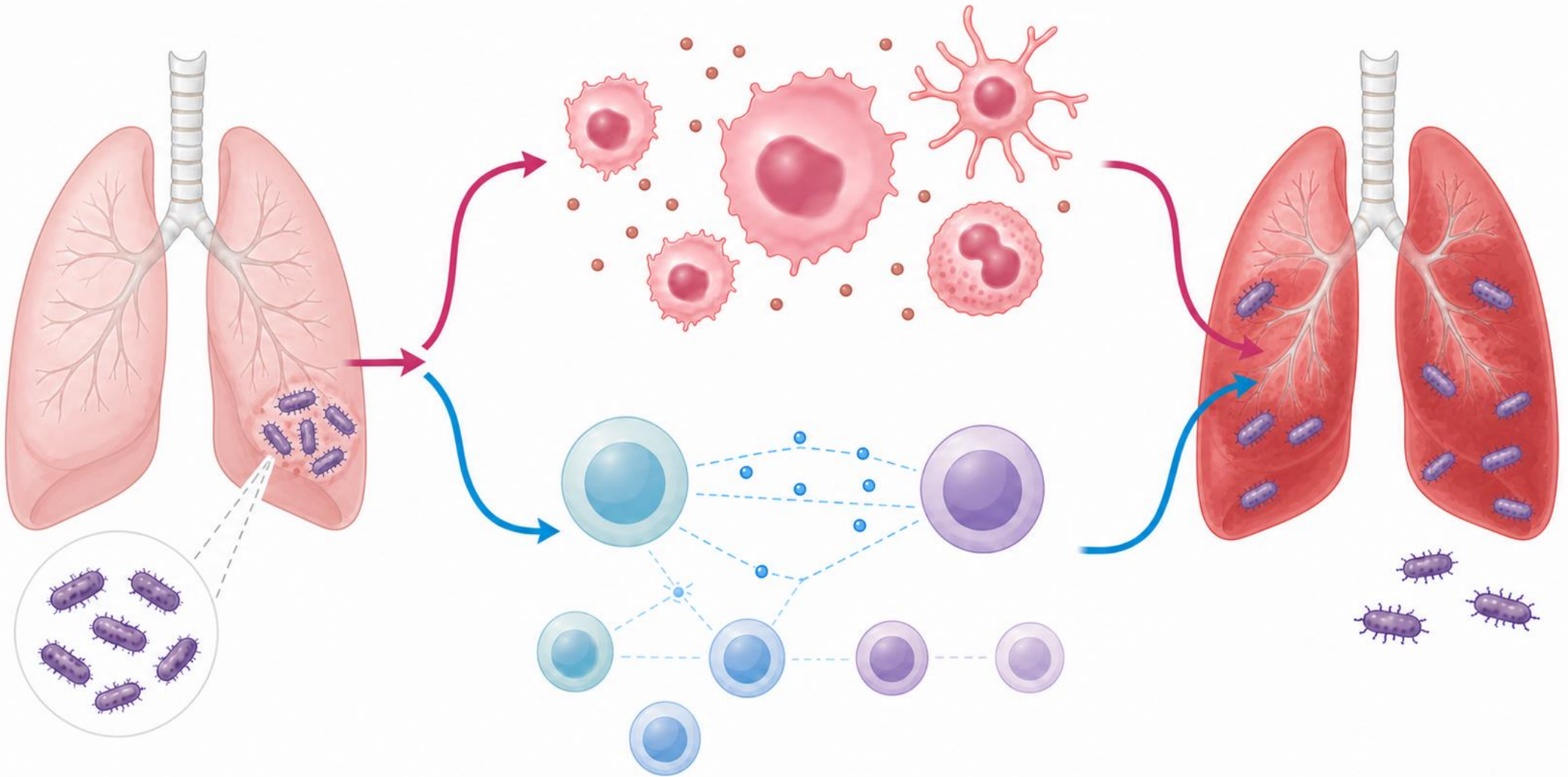


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<https://doi.org/10.1002/imt2.70172>



Introduction

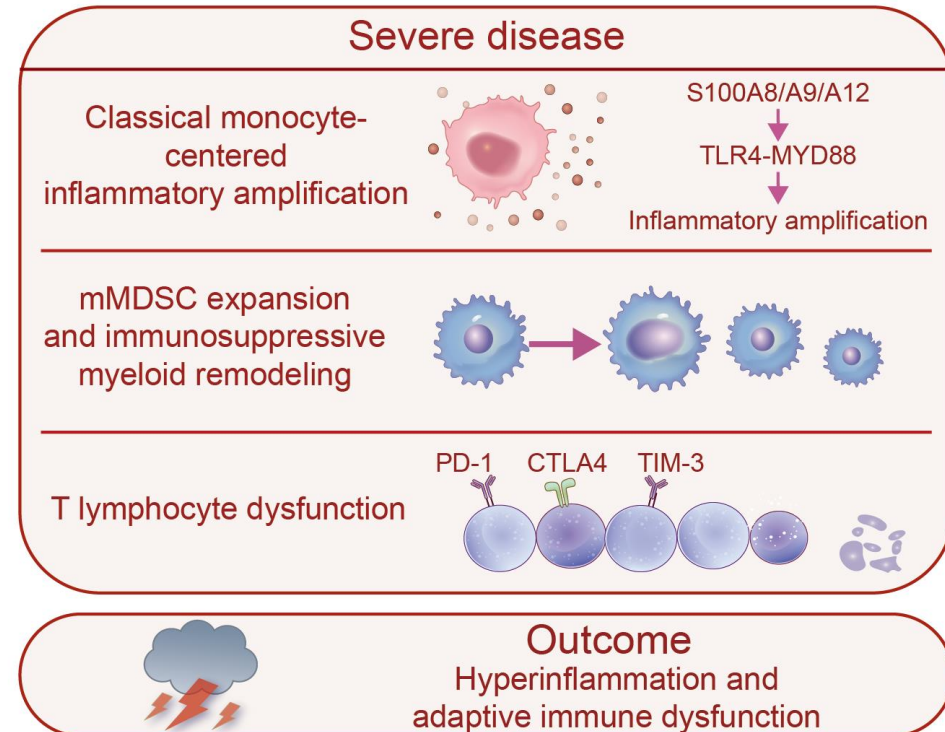
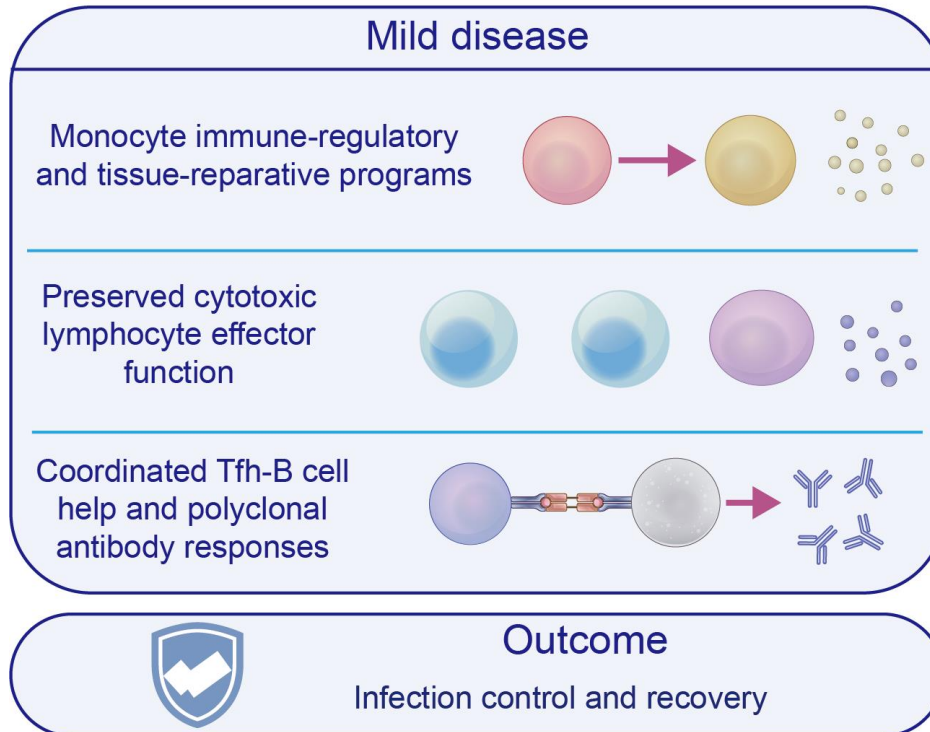
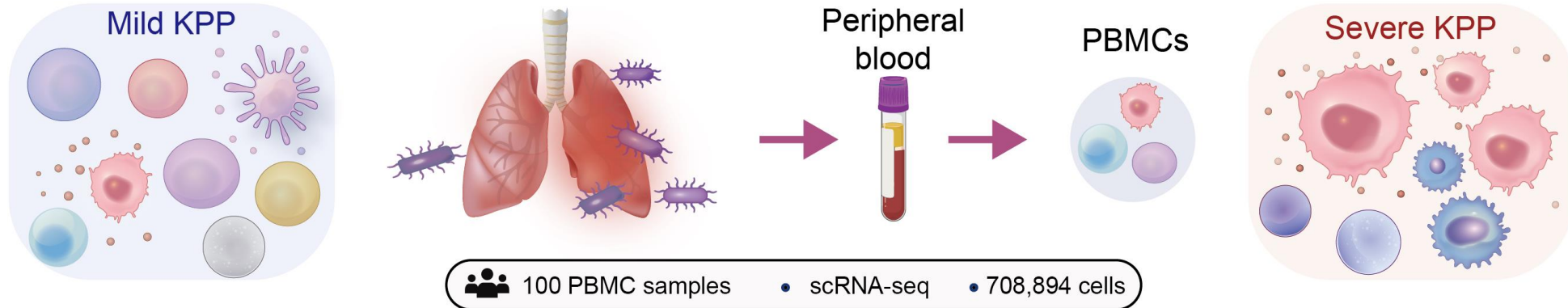


How does peripheral immunity change with disease severity?



Highlights

Peripheral immune remodeling in *Klebsiella pneumoniae* pneumonia (KPP)



Severity-focused single-cell atlas reveals divergent immune states in *Klebsiella pneumoniae* pneumonia

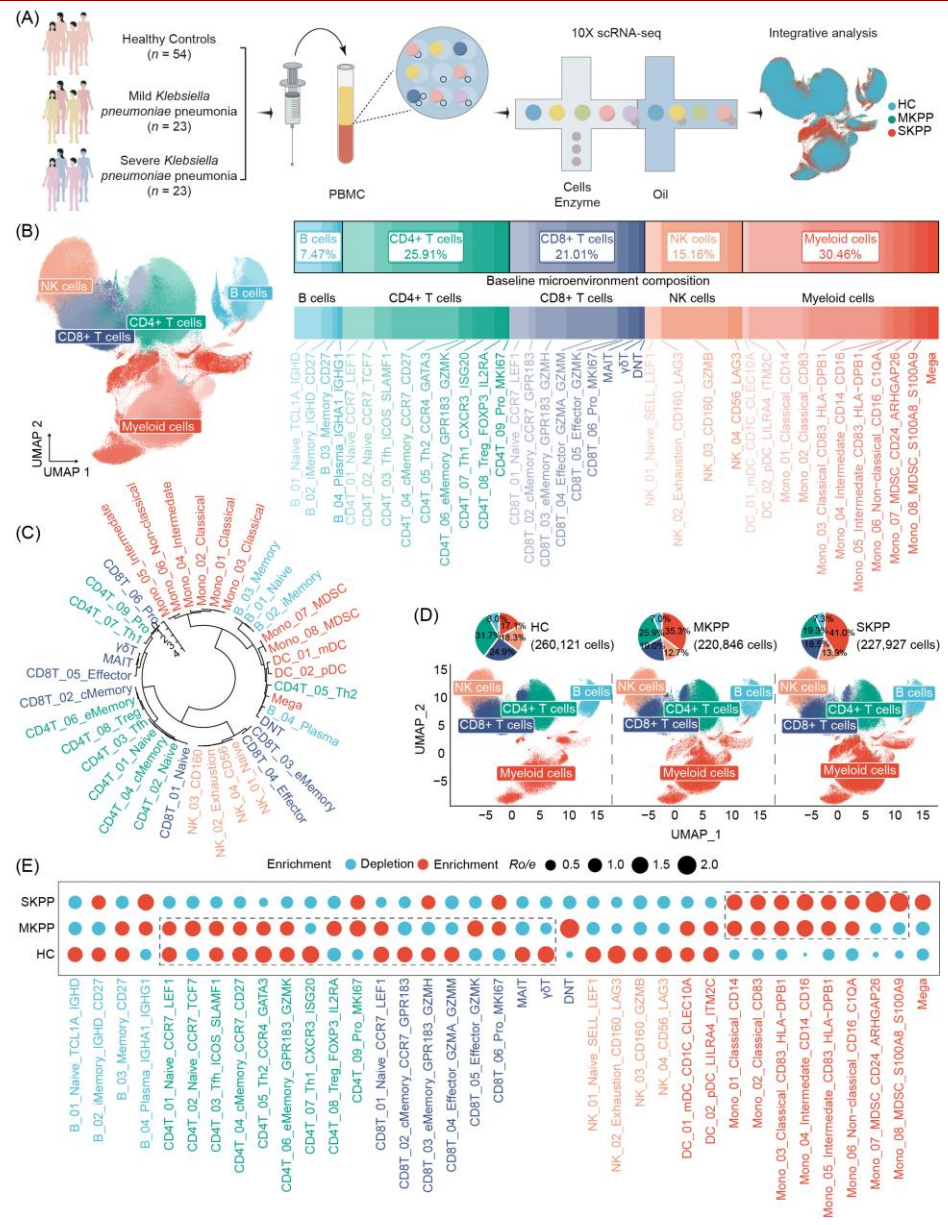


Figure 1. A single-cell atlas of the peripheral immune response to *Klebsiella pneumoniae* pneumonia.

***S100A8/A9/A12*-high monocytes form the inflammatory core of severe *Klebsiella pneumoniae* pneumonia**

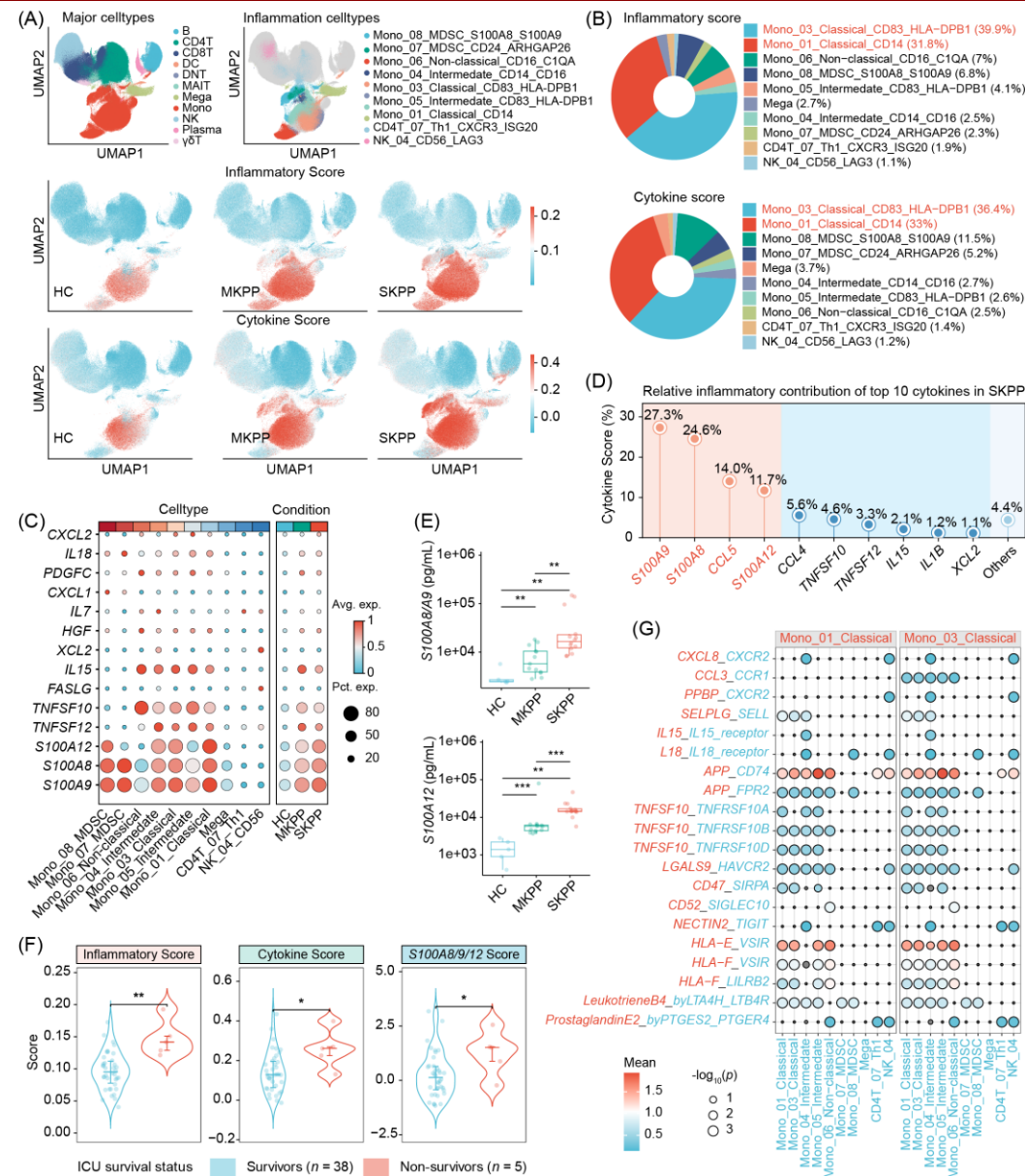


Figure 2. *S100A8/A9/A12*-high classical monocytes dominate the inflammatory signature of severe *Klebsiella pneumoniae* pneumonia.

Severe *Klebsiella pneumoniae* pneumonia redirects CD4⁺ T cells into a poorly coordinated activated state

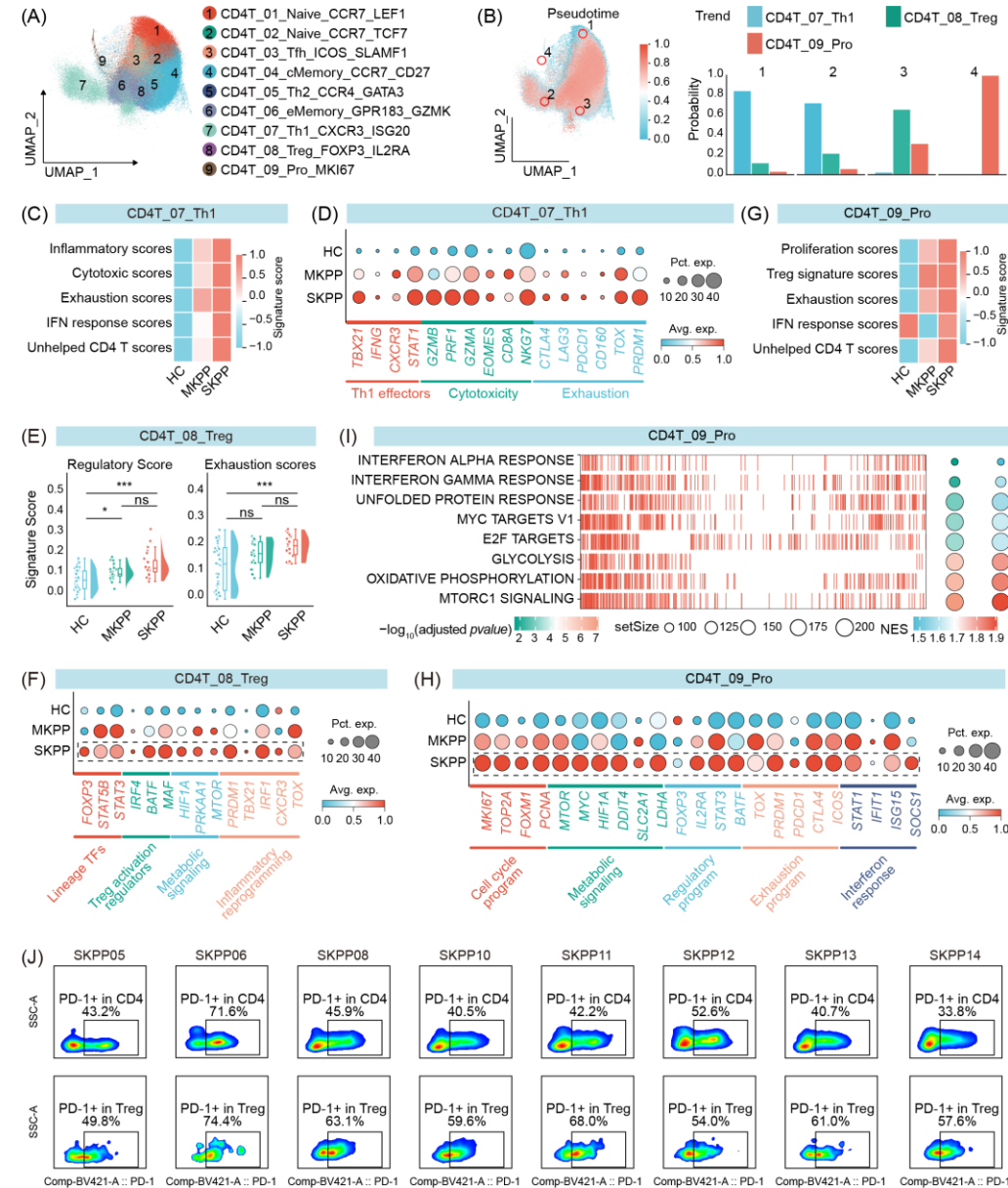


Figure 3. Severe *Klebsiella pneumoniae* pneumonia reshapes CD4⁺ T cells toward a poorly coordinated activated state.

Severe *Klebsiella pneumoniae* pneumonia is associated with a cytotoxic lymphocyte state bearing exhaustion-associated features

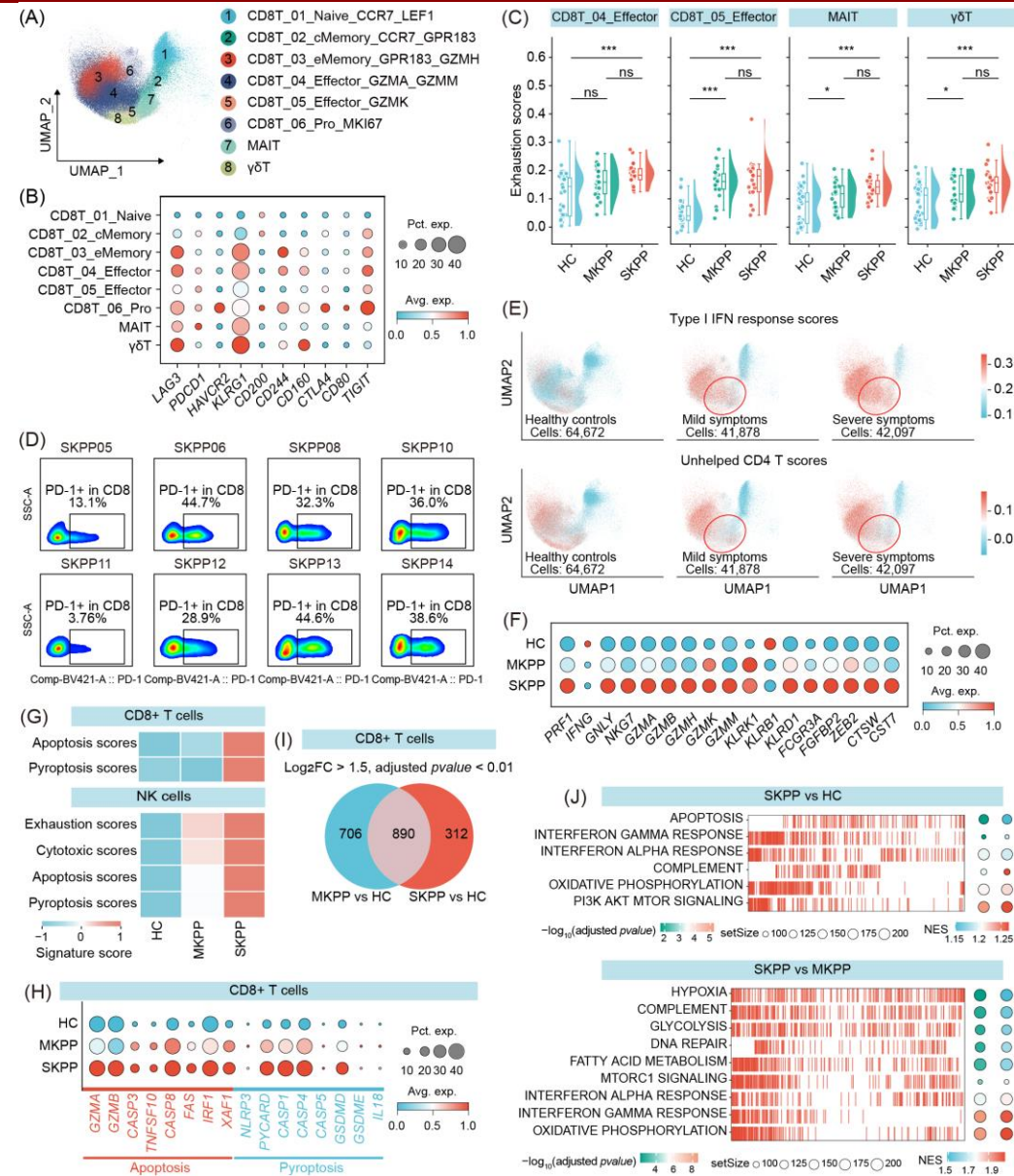


Figure 4. Severe *Klebsiella pneumoniae* pneumonia is associated with CD8-lineage lymphocyte states bearing cytotoxicity- and exhaustion-related signatures.

Severe *Klebsiella pneumoniae* pneumonia decouples plasma cell expansion from coordinated humoral immunity

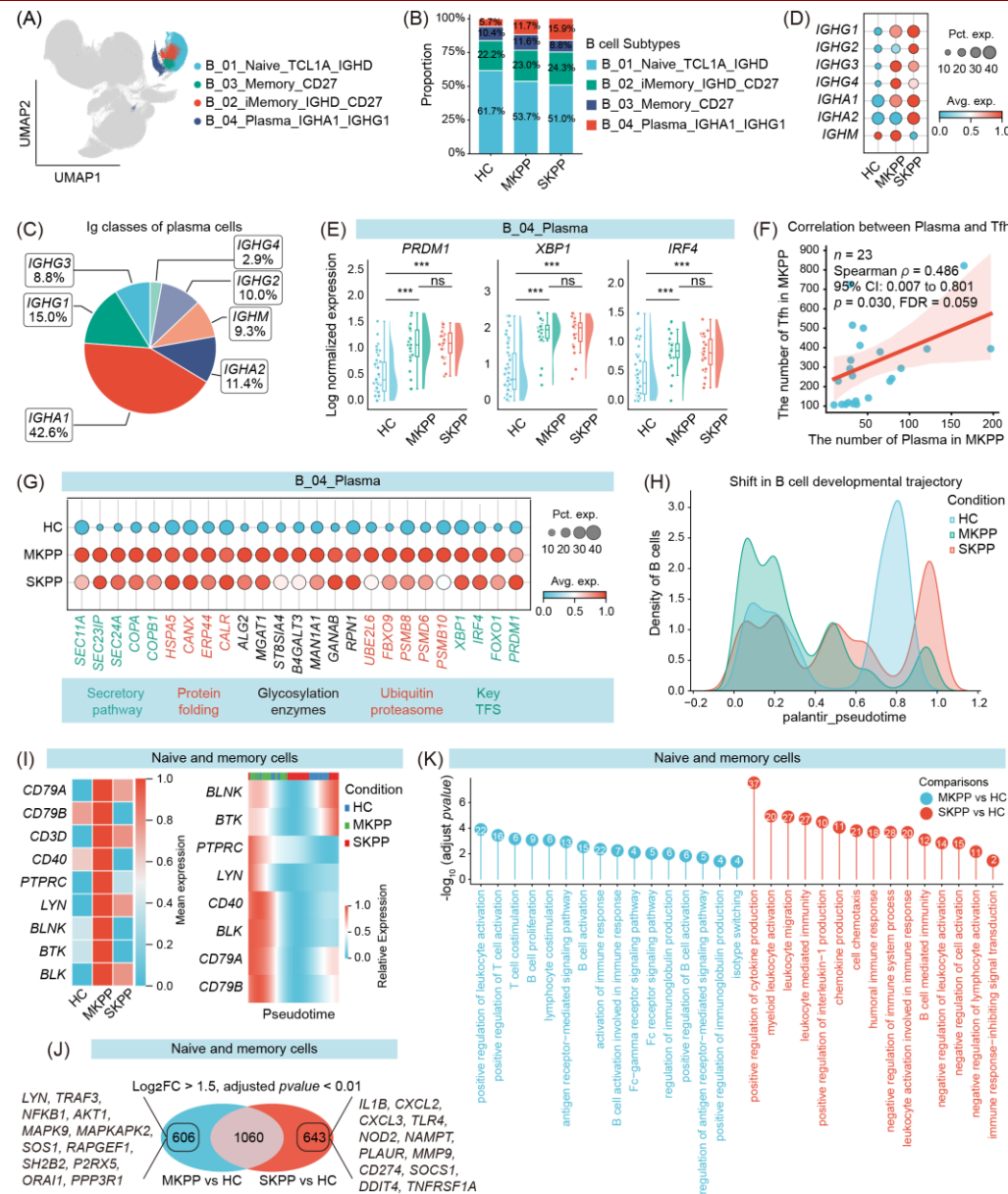


Figure 5. Severe *Klebsiella pneumoniae* pneumonia decouples plasma cell expansion from coordinated humoral immunity.

Myeloid remodeling links inflammatory amplification with antigen-presentation failure and immune suppression in severe *Klebsiella pneumoniae* pneumonia

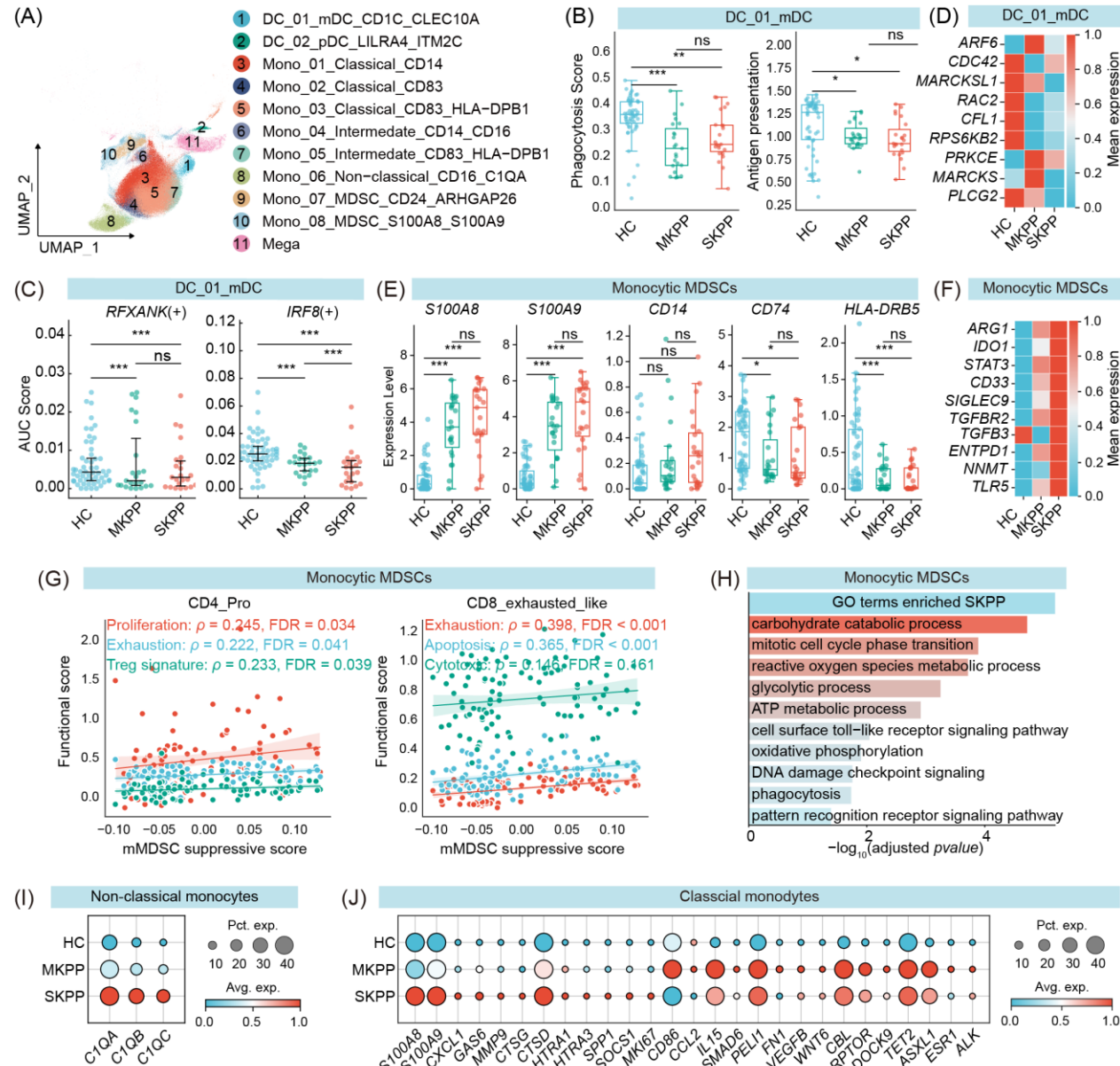


Figure 6. Myeloid remodeling in severe *Klebsiella pneumoniae* pneumonia is characterized by inflammatory amplification, reduced antigen-presentation programs, and immunoregulatory monocyte states resembling monocytic myeloid-derived suppressor cells.



Summary

- ❑ Severe disease exhibits a distinct peripheral immune state, characterized by monocyte expansion and lymphocyte reduction.
- ❑ *S100A8/A9/A12*-high classical monocytes are a major source of the inflammatory response in severe disease.
- ❑ CD4⁺ T cells, cytotoxic lymphocytes, and B cells show functional alterations, accompanied by impaired adaptive immune coordination.
- ❑ Severe disease features immunoregulatory monocyte expansion and reduced dendritic cell antigen presentation programs.

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