

**Fig.S1** Histology and immunohistochemical staining for MSI1, KRT8 and pS6 in normal and EMPD human skin used for single cell RNA-sequencing. **a** H&E staining of human scrotal normal and EMPD skin tissues used for single cell RNA-sequencing. **b-d** Immunohistochemistry for MSI1, KRT8 and pS6 in human scrotal normal and EMPD tissue used for single-cell RNA-sequencing. Representative images are shown. Scale bar:  $\mathbf{a-d} - 100~\mu m$ .