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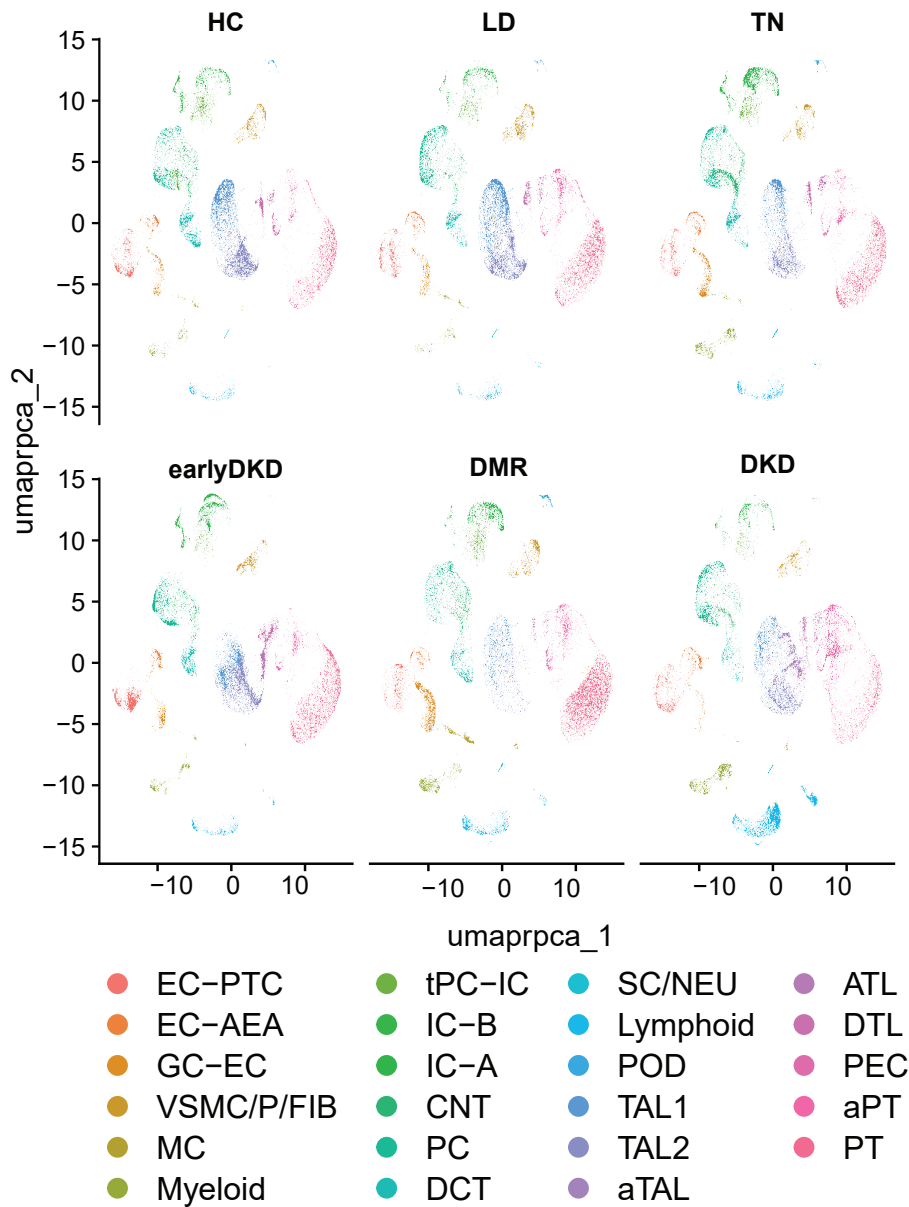
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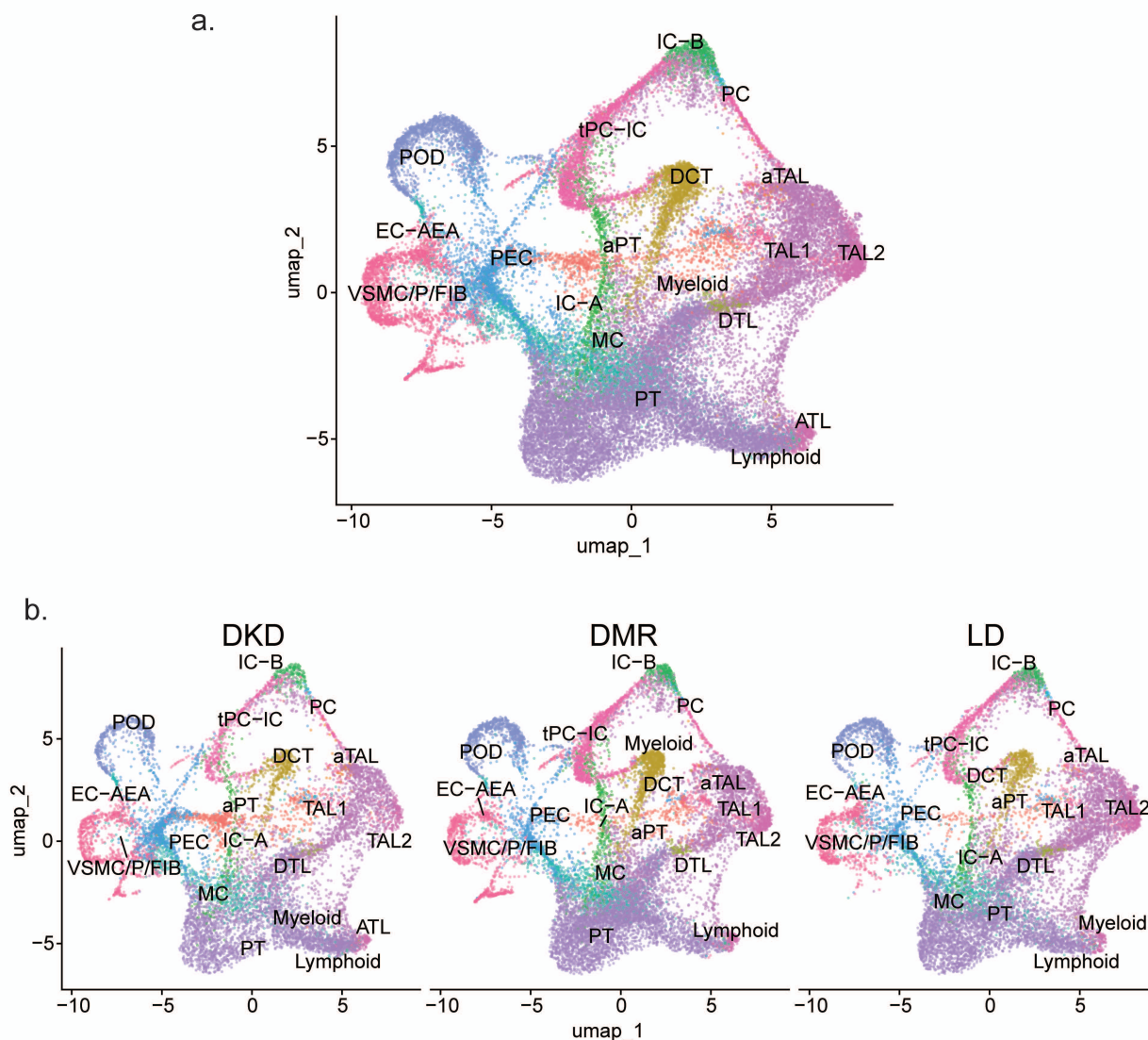
### Supplementary Figure S1. Split UMAP of the 6 sample groups studied

Abbreviations: HC- healthy controls; LD- living kidney donor; TN- tumor nephrectomy;

DMR - diabetes mellitus resistor; DKD - diabetic kidney disease;

Cell types: podocyte, POD; parietal epithelial cell, PEC; proximal tubule, PT; adaptive/maladaptive, aPT; descending thin loop of Henle, DTL; ascending thin loop of Henle, ATL; thick ascending loop of Henle, TAL; adaptive/maladaptive thick ascending loop of Henle, aTAL; distal convoluted tubule, DCT; connecting tubule, CNT; principal cell, PC; intercalated type A, IC-A; Intercalated type B, IC-B; transient between PC and IC, tPC-IC; endothelial cell EC; efferent and afferent arteriolar endothelial cells EC-AEA; glomerular endothelial cell, EC-GC; fibroblast, FIB; vascular smooth muscle cell, VSMC; pericyte, P; mesangial cell, MC; myeloid cell, MYL; B cell, B; T cell, T; natural killer T cell, NK T/C.

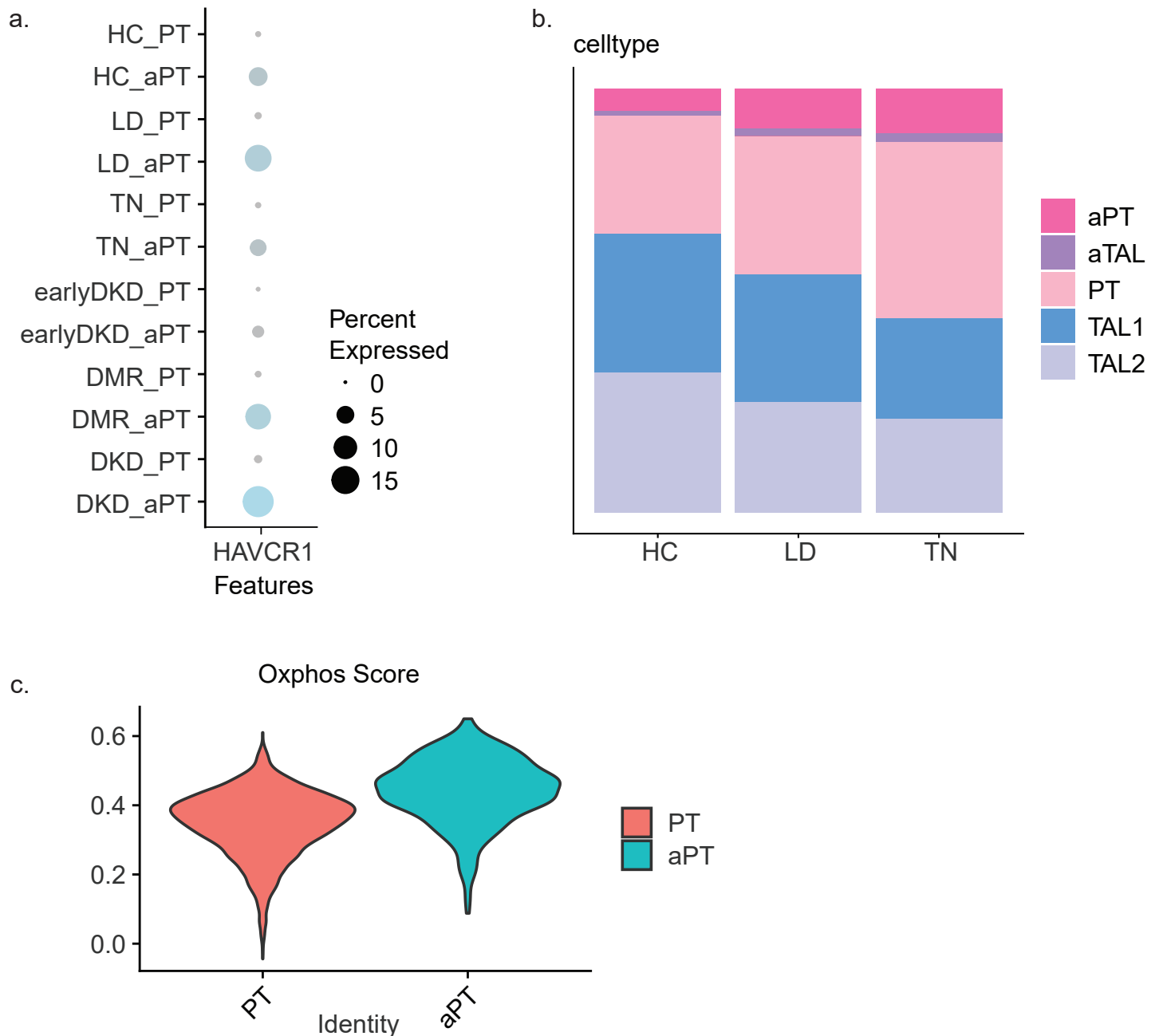
Supplementary Figure S2



**Supplementary Figure S2. UMAPs of Visium data.** a. Combined and b. split UMAPs of the integrated Visium dataset containing LD, DMR-R and DKD samples. These datasets were downloaded from KPMP repository site., 15 samples per LD, and DM-R, and 13 samples in DKD. 38,942 spots in total from the three sample groups.

Abbreviations: Living donor LD, Diabetes mellitus resilient DM-R, Diabetic kidney disease DKD  
 Cell types: podocyte, POD; parietal epithelial cell, PEC; proximal tubule, PT; adaptive/maladaptive, aPT; descending thin loop of Henle, DTL; ascending thin loop of Henle, ATL; thick ascending loop of Henle, TAL; adaptive/maladaptive thick ascending loop of Henle, aTAL; distal convoluted tubule, DCT; connecting tubule, CNT; principal cell, PC; intercalated type A, IC-A; Intercalated type B, IC-B; transient between PC and IC, tPC-IC; endothelial cell EC; efferent and afferent arteriolar endothelial cells EC-AEA; glomerular endothelial cell, EC-GC; fibroblast, FIB; vascular smooth muscle cell, VSMC; pericyte, P; mesangial cell, MC; myeloid cell, MYL; B cell, B; T cell, T; natural killer T cell, NK T/C.

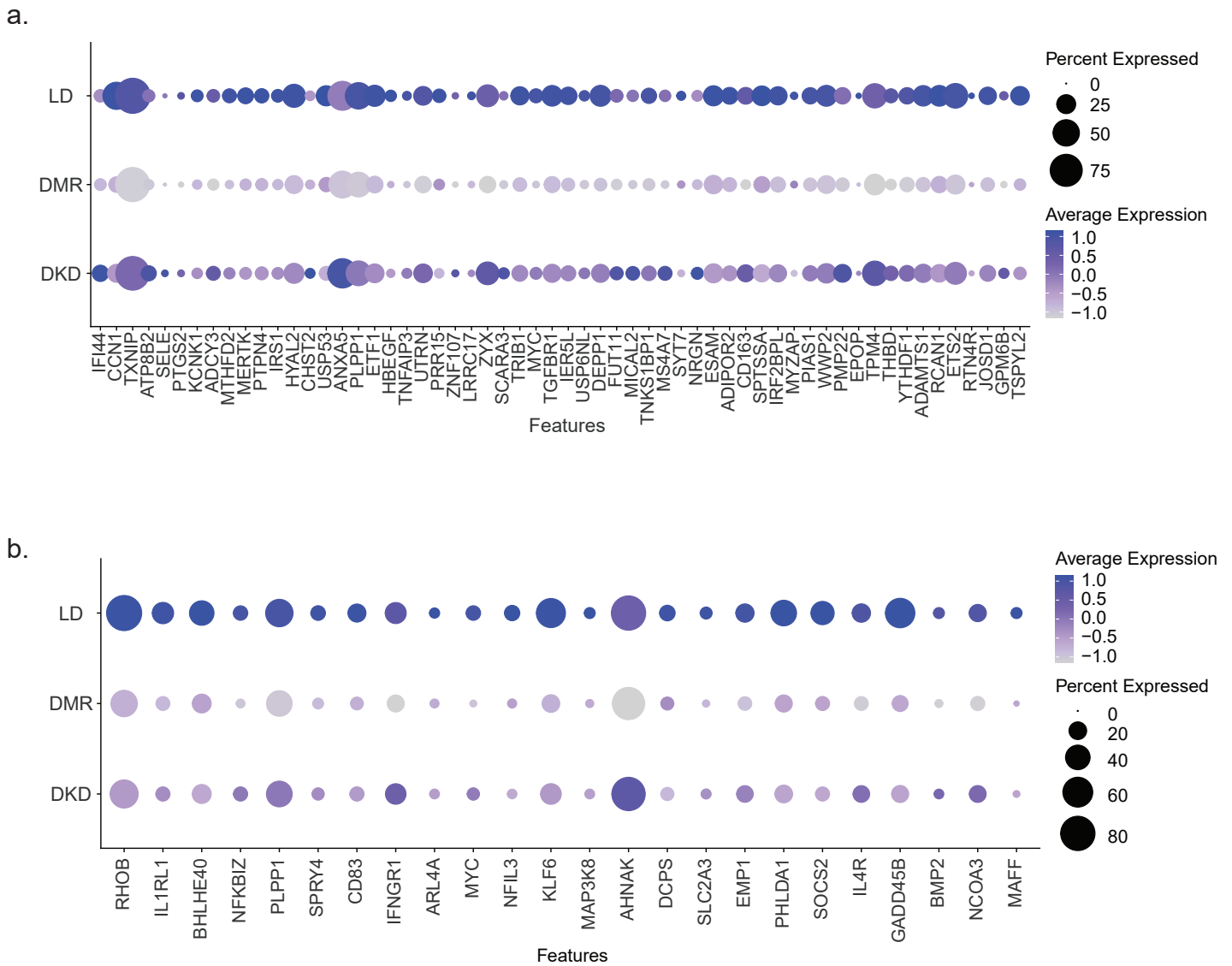
Supplementary Figure S3



**Supplementary Figure S3. Cell states.** **a.** Expression levels of HAVCR1 (Hepatitis A Virus Cellular Receptor 1), also known as TIM-1 (T-cell immunoglobulin mucin domain-1) or KIM-1 (Kidney Injury Molecule-1) in proximal cell states. **b.** Proportion of cell states in proximal epithelial and thick ascending loop cells in reference groups. **c.** Oxidative phosphorylation in the PT cell states (PT and aPT) in DM-R.

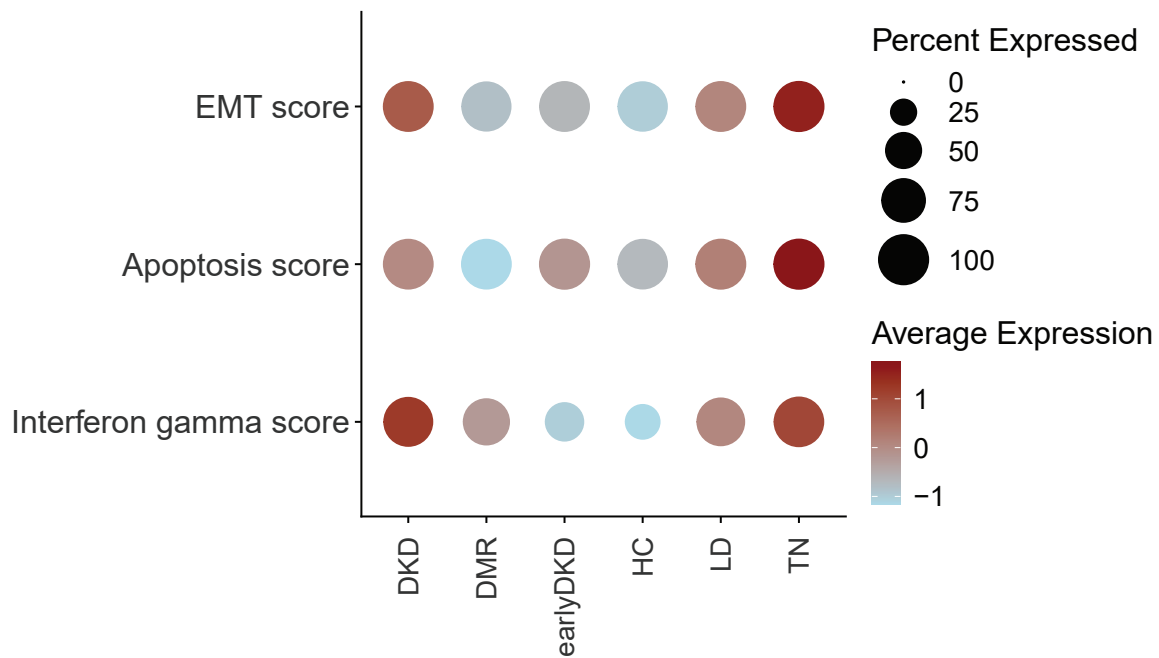
Abbreviations: HC- healthy controls; LD- living kidney donor; TN- tumor nephrectomy; PT-proximal tubule, adaptive/maladaptive proximal tubule - aPT; TAL-thick ascending loop of Henle; adaptive/maladaptive thick ascending loop of Henle-aTAL.

Supplementary Figure S4



**Supplementary Figure S4. TNFA signaling and IL2-STAT5 pathway genes** **a.** Dot plot showing the expression pattern of genes involved in TNFA signaling (Hallmark pathway TNFA\_SIGNALING\_VIA\_NFKB) in LD, DM-R and DKD. Only the genes that were significantly ( $p_{adj} < 0.05$ ) differentially expressed in DKD versus LD are shown. **b.** Dot Plot showing the expression pattern of genes involved in IL2/STAT5 signaling (Hallmark pathway: IL2\_STAT5\_SIGNALING) in LD, DM-R and DKD. Only the genes that were significantly ( $p_{adj} < 0.05$ ) differentially expressed in DM-R versus LD are shown.

Abbreviations: LD - living kidney donor; DMR - diabetes mellitus resistor; DKD - diabetic kidney disease;



**Supplementary Figure S5. Pathway scores.** Dot plot showing the scores generated for the genes involved in epithelial-to-mesenchymal transition (EMT), apoptosis and interferon gamma response in the visium data of all 6 sample groups. 15 samples each in LD and DM-R, 13 samples in DKD, 5 samples in HC, 4 samples in early DKD and 2 samples in TN  
Abbreviations: Healthy control HC, Living donor LD, Tumor-nephrectomy TN, Diabetes mellitus resilient DM-R, early diabetic kidney disease earlyDKD, Diabetic kidney disease DKD