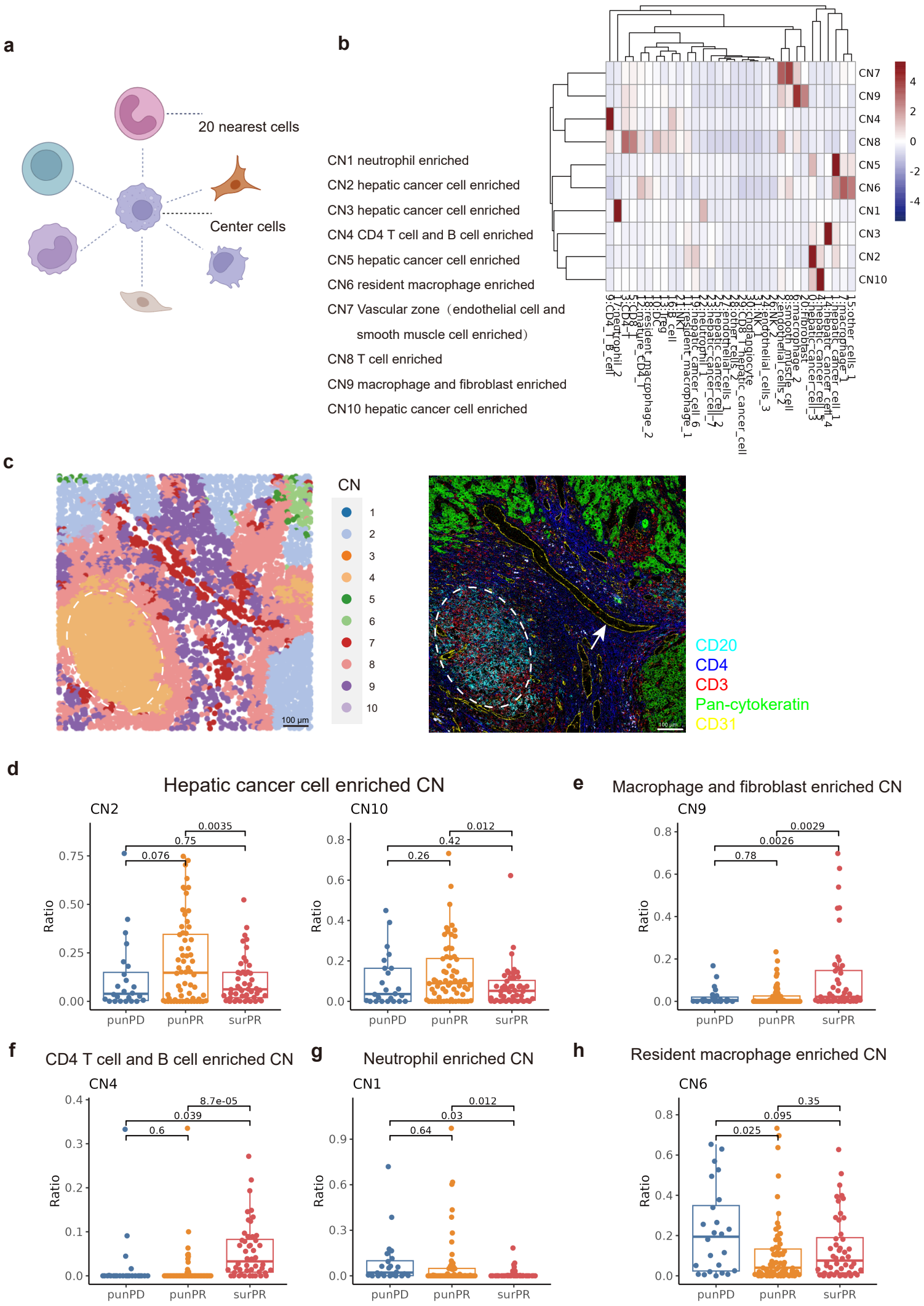
a
20 nearest cells
Center cells
b
CN1 neutrophil enriched
CN2 hepatic cancer cell enriched
CN3 hepatic cancer cell enriched
CN4 CD4 T cell and B cell enriched
CN5 hepatic cancer cell enriched
CN6 resident macrophage enriched
CN7 Vascular zone（endothelial cell and smooth muscle cell enriched）
CN8 T cell enriched
CN9 macrophage and fibroblast enriched
CN10 hepatic cancer cell enriched
CN7
CN9
CN4
CN8
CN5
CN6
CN1
CN3
CN2
CN10
4
2
0
-2
-4
9:CD4_1_B_cell
3:CD8_1
18:resident_macrophage_2
2:mature_CD4_1
10:DC
13:Treg
16:B_cell
21:NK1
11:resident_macrophage_1
6:hepatic_cancer_cell_6
16:neutrophil_1
23:hepatic_cancer_cell_7
22:hepatic_cancer_cell_2
27:endothelial_cells_1
28:other_cells_2
29:CD8_1_hepatic_cancer_cell
30:cholangiocyte
31:NK1
24:endothelial_cells_3
25:NK2
26:endothelial_cells_2
8:smooth_muscle_cell
12:macrophage_2
20:fibroblast
0:hepatic_cancer_cell_3
4:hepatic_cancer_cell_4
14:hepatic_cancer_cell_1
1:hepatic_cancer_cell_1
7:macrophage_1
15:other_cells_1
c
CN
1
2
3
4
5
6
7
8
9
10
100 μm
CD20
CD4
CD3
Pan-cytokeratin
CD31
d
Hepatic cancer cell enriched CN
CN2
Ratio
0.00
0.25
0.50
0.75
0.0035
0.75
0.076
punPD
punPR
surPR
CN10
0.0
0.2
0.4
0.6
0.8
0.012
0.42
0.26
e
Macrophage and fibroblast enriched CN
CN9
0.0029
0.0026
0.78
f
CD4 T cell and B cell enriched CN
CN4
0.4
0.3
0.2
0.1
8.7e-05
0.039
0.6
g
Neutrophil enriched CN
CN1
0.9
0.012
0.03
0.64
h
Resident macrophage enriched CN
CN6
0.35
0.095
0.025