Supplementary information

Single cell analysis of ACE2 expression reveals the potential targets for 2019-nCov

Yanyan Zhu $^{1,a},$ Miaomiao Jiang $^{2,a},$ Liang Gao $^{3,*},$ Xiaoyun Huang 2,*

 1 Department of Oncology, Henan Provincial People's Hospital; Zhengzhou University People's Hospital, Zhengzhou, Henan, 450003, China

² Zhiyu Center for Systems Biology, Zhiyu Inc., Shenzhen, China

³ The Brain Cognition and Brain Disease Institute, ShenZhen Institutes of Advanced Technology, Chinese Academy of Sciences, 1068 Xueyuan Avenue, Shenzhen 518055, China

^aThose authors contribute equally.

*Corresponding author: liang.gao@siat.ac.cn (Liang Gao) and stemidea@gmail.com (Xiaoyun Huang)

Supplementary Figures

Cell type (lung)	ACE2	Cells	% of cells expressed
Alveolar_Type1	3	764	0.3927
Alveolar_Type2	79	4676	1.6895
B_cells	0	1551	0.0000
Blood_vessel	2	2694	0.0742
Ciliated	2	466	0.4292
DC_1	0	163	0.0000
DC_2	0	1605	0.0000
DC_Monocyte_Dividing	0	242	0.0000
DC_activated	0	122	0.0000
DC_plasmacytoid	0	46	0.0000
Fibroblast	13	4624	0.2811
Lymph_vessel	0	337	0.0000
Macrophage_Dividing	0	94	0.0000
Macrophage_MARCOneg	0	937	0.0000
Macrophage_MARCOpos	0	4512	0.0000
Mast_cells	0	2911	0.0000
Monocyte	0	6067	0.0000
Muscle_cells	1	839	0.1192
NK	0	10418	0.0000
NK_Dividing	0	130	0.0000
Plasma_cells	1	287	0.3484
T_CD4	0	7211	0.0000
T_CD8_CytT	1	5755	0.0174
T_cells_Dividing	0	88	0.0000
T_regulatory	0	481	0.0000

Figure 1: ACE2 expression in the lung.

			% of cells		
Cell type (mature)	ACE2		Cells	expressed	
Ascending vasa recta endothelium		1	300		
B cell		1	975	0.1026	
CD4 T cell		12	2435	0.4928	
CD8 T cell		7	991		
Connecting tubule		1	157	0.6369	
Descending vasa recta endothelium		2	192		
Distinct proximal tubule 1		12	65	18.4615	
Distinct proximal tubule 2		14	151	9.2715	
Epithelial progenitor cell		4	238	1.6807	
Fibroblast		0	23	0.0000	
Glomerular endothelium		1	622	0.1608	
Indistinct intercalated cell		3	429	0.6993	
MNP-a/classical monocyte derived		3	555	0.5405	
MNP-b/non-classical monocyte derived		2	375	0.5333	
MNP-c/dendritic cell		1	220	0.4545	
MNP-d/Tissue macrophage		0	87	0.0000	
Mast cell		0	41	0.0000	
Myofibroblast		0	122	0.0000	
NK cell		13	1322	0.9834	
NKT cell		4	733	0.5457	
Neutrophil		0	46	0.0000	
Pelvic epithelium		3	136	2.2059	
Peritubular capillary endothelium 1		1	666	0.1502	
Peritubular capillary endothelium 2		2	185	1.0811	
Plasmacytoid dendritic cell		0	23	0.0000	
Podocyte		3	126	2.3810	
Principal cell		0	88	0.0000	
Proliferating Proximal Tubule		21	348	6.0345	
Proximal tubule	2	325	27497	8.4555	
Thick ascending limb of Loop of Henle		5	675	0.7407	
Transitional urothelium		0	45	0.0000	
Type A intercalated cell		3	275	1.0909	
Type B intercalated cell		3	125	2.4000	

Figure 2: ACE2 expression in the mature kidney.

B cell	Cell type (fetal)	ACE2	Cells	6 of cells expressed
CD8 T cell 0 73 0.0000 CNT/PC - proximal UB 6 575 1.0435 Cap mesenchyme 7 3557 0.1968 Distal S shaped body 1 554 0.1805 Distal renal vesicle 1 494 0.2024 Endothelium 2 1221 0.1638 Erythroid 0 35 0.0000 Fibroblast 1 1 673 0.1486 Fibroblast 2 0 371 0.0000 Innate like lymphocyte 0 177 0.000 Loop of Henle 1 121 0.8264 Macrophage 1 3 1543 0.1944 Macrophage 2 5 648 0.7716 Mast cells 0 85 0.0000 Medial S shaped body 76 742 10.2426 Megakaryocyte 1 124 0.805 Monocyte 5 783 0.6386 Myofibroblast 1 8 1742	B cell			0.0000
CNT/PC - proximal UB 6 575 1.0435 Cap mesenchyme 7 3557 0.1986 Distal S shaped body 1 554 0.1805 Distal renal vesicle 1 494 0.2024 Endothelium 2 1221 0.1638 Erythroid 0 35 0.0000 Fibroblast 1 1 673 0.1486 Fibroblast 2 0 371 0.0000 Innate like lymphocyte 0 177 0.048	CD4 T cell	0	440	0.0000
Cap mesenchyme 7 3557 0.1968 Distal S shaped body 1 554 0.1805 Distal renal vesicle 1 494 0.2024 Endothelium 2 1221 0.1638 Erythroid 0 35 0.0000 Fibroblast 1 1 673 0.1486 Fibroblast 2 0 371 0.0000 Innate like lymphocyte 0 177 0.0000 Macrophage 1 3 1543 0.1944 Macrophage 2 5 648 0.7716 Mast cells 0 85 0.0000 Medial S shaped body 76 742 10.2426 Macrophage 2 1 124 0.8065 Monocyte 5 </td <td>CD8 T cell</td> <td></td> <td></td> <td>0.0000</td>	CD8 T cell			0.0000
Distal S shaped body 1 554 0.1805 Distal renal vesicle 1 494 0.2024 Endothelium 2 1221 0.1638 Erythroid 0 35 0.0000 Fibroblast 1 1 673 0.1486 Fibroblast 2 0 371 0.0000 Innate like lymphocyte 0 177 0.0000 Loop of Henle 1 121 0.8264 Macrophage 1 3 1543 0.1944 Macrophage 2 5 648 0.7716 Mast cells 0 85 0.0000 Medial S shaped body 76 742 10.2426 Megakaryocyte 1 124 0.8065 Monocyte 5 783 0.6386 Myofibroblast 1 8 1742 0.4592 Myofibroblast 2 0 440 0.0000 NK cell 1 707 0.1414 Neuron 0 25 0.0000 <td>CNT/PC - proximal UB</td> <td></td> <td></td> <td>1.0435</td>	CNT/PC - proximal UB			1.0435
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Erythroid 0 35 0.0000 Fibroblast 1 1 673 0.1486 Fibroblast 2 0 371 0.0000 Innate like lymphocyte 0 177 0.0000 Loop of Henle 1 121 0.8264 Macrophage 1 3 1543 0.1944 Macrophage 2 5 648 0.7716 Mast cells 0 85 0.0000 Medial S shaped body 76 742 10.2426 Megakaryocyte 1 124 0.8065 Monocyte 5 783 0.6386 Myofibroblast 1 8 1742 0.4592 Myofibroblast 2 0 440 0.0000 NK cell 1 707 0.1414 Neuron 0 25 0.0000 Neutrophil 0 25 0.0000 Pelvic epithelium - distal UB 1 170 0.5882 Podocyte 0 278 0.0000	Distal renal vesicle			0.2024
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Medial S shaped body 76 742 10.2426 Megakaryocyte 1 124 0.8065 Monocyte 5 783 0.6386 Myofibroblast 1 8 1742 0.4592 Myofibroblast 2 0 440 0.0000 NK cell 1 707 0.1414 Neuron 0 25 0.0000 Neutrophil 0 229 0.0000 Pelvic epithelium - distal UB 1 170 0.5882 Podocyte 0 278 0.0000 Proliferating B cell 1 128 0.7813 Proliferating CDC2 1 224 0.4464 Proliferating cap mesenchyme 7 1560 0.4487 Proliferating distal renal vesicle 5 725 0.6897 Proliferating macrophage 1 359 0.2786 Proliferating monocyte 0 149 0.0000 Proliferating myofibroblast 3 470 0.6383 <td< td=""><td>Macrophage 2</td><td>5</td><td>648</td><td>0.7716</td></td<>	Macrophage 2	5	648	0.7716
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Proliferating cap mesenchyme 7 1560 0.4487 Proliferating distal renal vesicle 5 725 0.6897 Proliferating fibroblast 0 66 0.0000 Proliferating macrophage 1 359 0.2786 Proliferating monocyte 0 149 0.0000 Proliferating myofibroblast 3 470 0.6383 Proliferating stroma progenitor 2 717 0.2789 Proximal S shaped body 3 622 0.4823 Proximal UB 3 405 0.7407 Proximal renal vesicle 0 280 0.0000 Proximal tubule 298 707 42.1499 Stroma progenitor 7 3841 0.1822 cDC1 0 83 0.0000 cDC2 2 646 0.3096	Proliferating NK cell	0	67	
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Proliferating fibroblast 0 66 0.0000 Proliferating macrophage 1 359 0.2786 Proliferating monocyte 0 149 0.0000 Proliferating myofibroblast 3 470 0.6383 Proliferating stroma progenitor 2 717 0.2789 Proximal S shaped body 3 622 0.4823 Proximal UB 3 405 0.7407 Proximal renal vesicle 0 280 0.0000 Proximal tubule 298 707 42.1499 Stroma progenitor 7 3841 0.1822 CDC1 0 83 0.0000 cDC2 2 646 0.3096	Proliferating cap mesenchyme	7	1560	0.4487
Proliferating macrophage 1 359 0.2786 Proliferating monocyte 0 149 0.0000 Proliferating myofibroblast 3 470 0.6383 Proliferating stroma progenitor 2 717 0.2789 Proximal S shaped body 3 622 0.4823 Proximal UB 3 405 0.7407 Proximal renal vesicle 0 280 0.0000 Proximal tubule 298 707 42.1499 Stroma progenitor 7 3841 0.1822 cDC1 0 83 0.0000 cDC2 2 646 0.3096	Proliferating distal renal vesicle	5	725	0.6897
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Proliferating myofibroblast 3 470 0.6383 Proliferating stroma progenitor 2 717 0.2789 Proximal S shaped body 3 622 0.4823 Proximal UB 3 405 0.7407 Proximal renal vesicle 0 280 0.0000 Proximal tubule 298 707 42.1499 Stroma progenitor 7 3841 0.1822 cDC1 0 83 0.0000 cDC2 2 646 0.3096	Proliferating macrophage	1	. 359	0.2786
Proliferating stroma progenitor 2 717 0.2789 Proximal S shaped body 3 622 0.4823 Proximal UB 3 405 0.7407 Proximal renal vesicle 0 280 0.0000 Proximal tubule 298 707 42.1499 Stroma progenitor 7 3841 0.1822 cDC1 0 83 0.0000 cDC2 2 646 0.3096	Proliferating monocyte	0	149	0.0000
Proximal S shaped body 3 622 0.4823 Proximal UB 3 405 0.7407 Proximal renal vesicle 0 280 0.0000 Proximal tubule 298 707 42.1499 Stroma progenitor 7 3841 0.1822 cDC1 0 83 0.0000 cDC2 2 646 0.3096	Proliferating myofibroblast			0.6383
Proximal UB 3 405 0.7407 Proximal renal vesicle 0 280 0.0000 Proximal tubule 298 707 42.1499 Stroma progenitor 7 3841 0.1822 CDC1 0 83 0.0000 cDC2 2 646 0.3096	Proliferating stroma progenitor			0.2789
Proximal renal vesicle 0 280 0.0000 Proximal tubule 298 707 42.1499 Stroma progenitor 7 3841 0.1822 cDC1 0 83 0.0000 cDC2 2 646 0.3096	Proximal S shaped body	3	622	0.4823
Proximal tubule 298 707 42.1499 Stroma progenitor 7 3841 0.1822 cDC1 0 83 0.0000 cDC2 2 646 0.3096	Proximal UB			0.7407
Stroma progenitor 7 3841 0.1822 cDC1 0 83 0.0000 cDC2 2 646 0.3096	Proximal renal vesicle	0	280	0.0000
cDC1 0 83 0.0000 cDC2 2 646 0.3096	Proximal tubule	298	707	42.1499
cDC2 2 646 0.3096	Stroma progenitor	7	3841	0.1822
	cDC1			0.0000
pDC 0 89 0.0000	cDC2			0.3096
- 70 01000	pDC	0	89	0.0000

Figure 3: ACE2 expression in the fetal kidney.

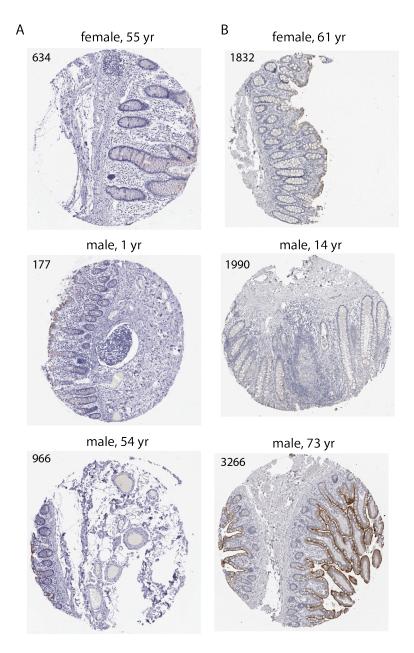


Figure 4: ACE2 expression in the colon. Normal colon tissues were stained with antibody HPA000288 (A) and CAB026174 (B). 25%-75% glandular cells displayed high intensity. Images are from the human protein atlas.

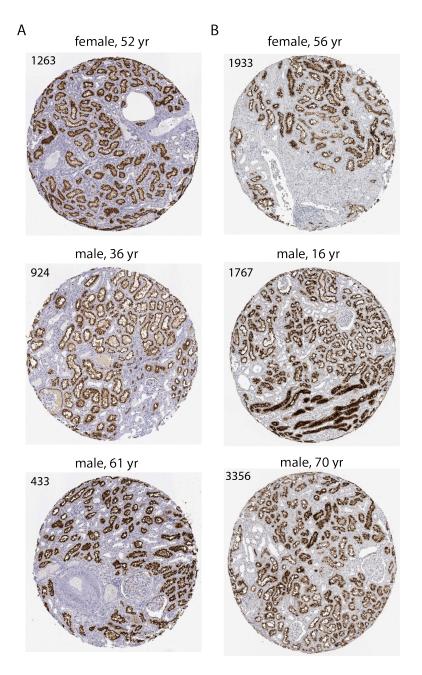


Figure 5: ACE2 expression at the protein level. Normal kidney tissues were stained with antibody HPA000288 (A) and CAB026174 (B). 25%-75% cells in tubules displayed high intensity. Images are from the human protein atlas.