

# Transcriptional Analysis of 2019-nCoV

Jan 30, 2020

Zhilong Jia

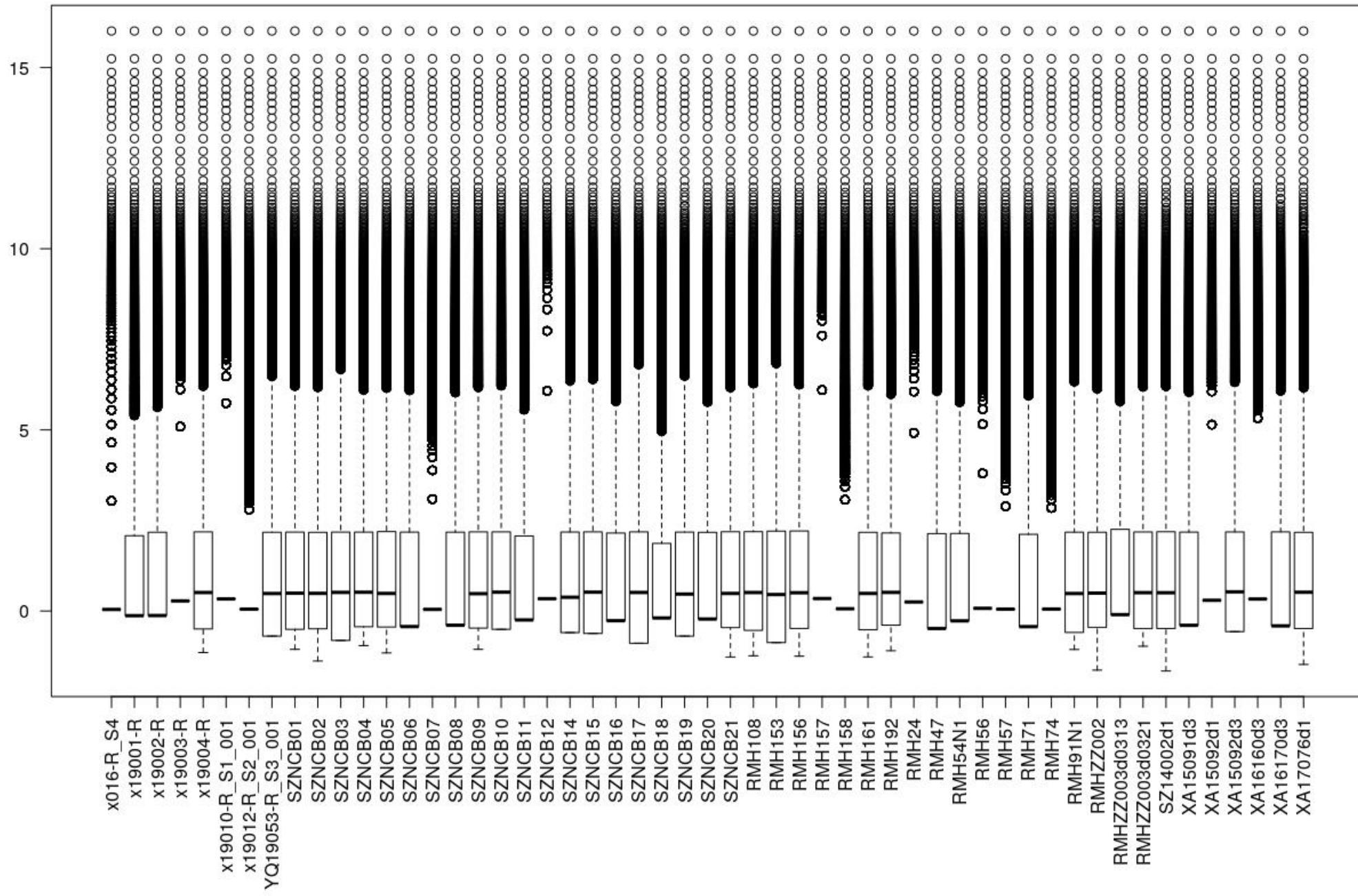
Chinese PLA General Hospital

# RNA-Seq data

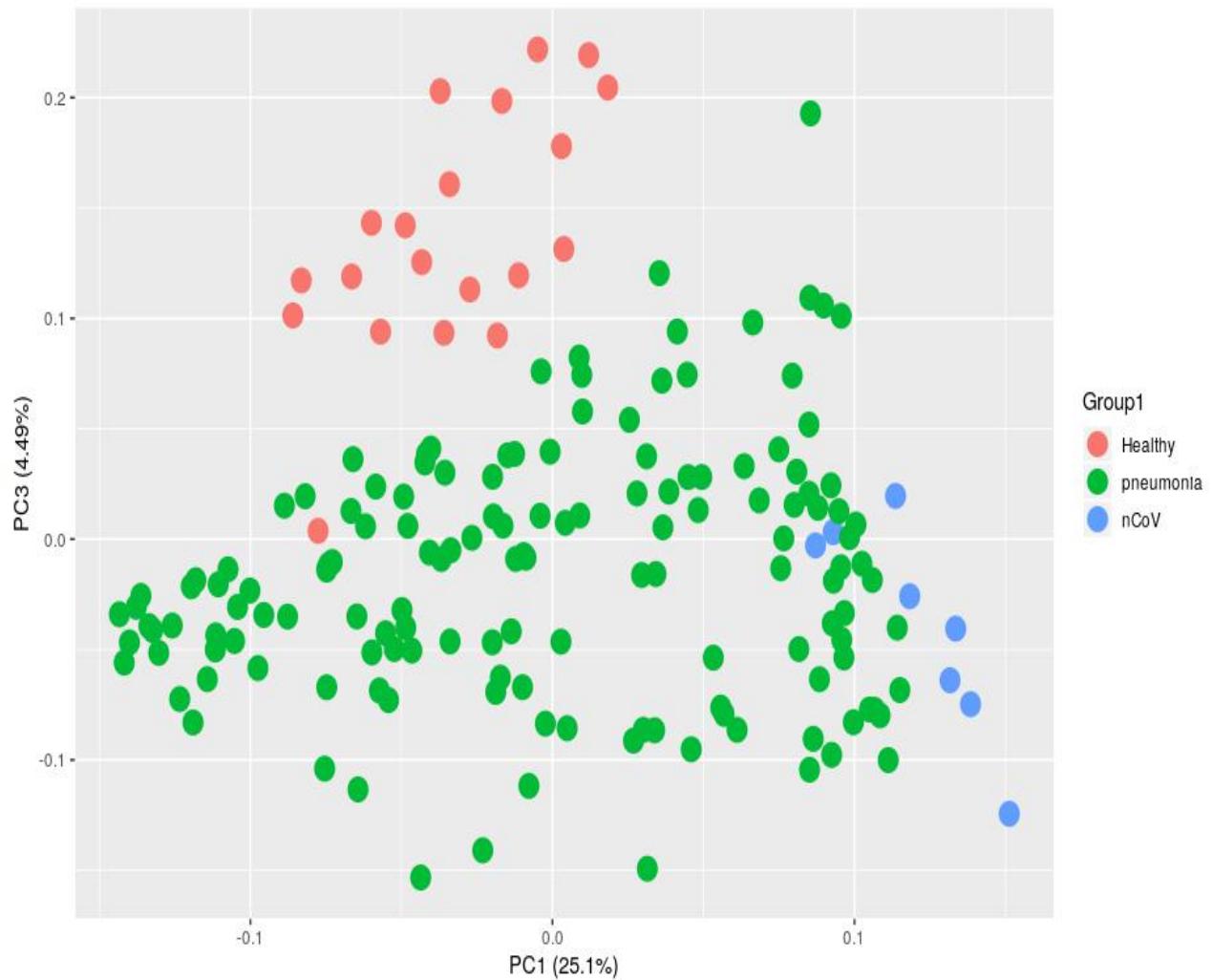
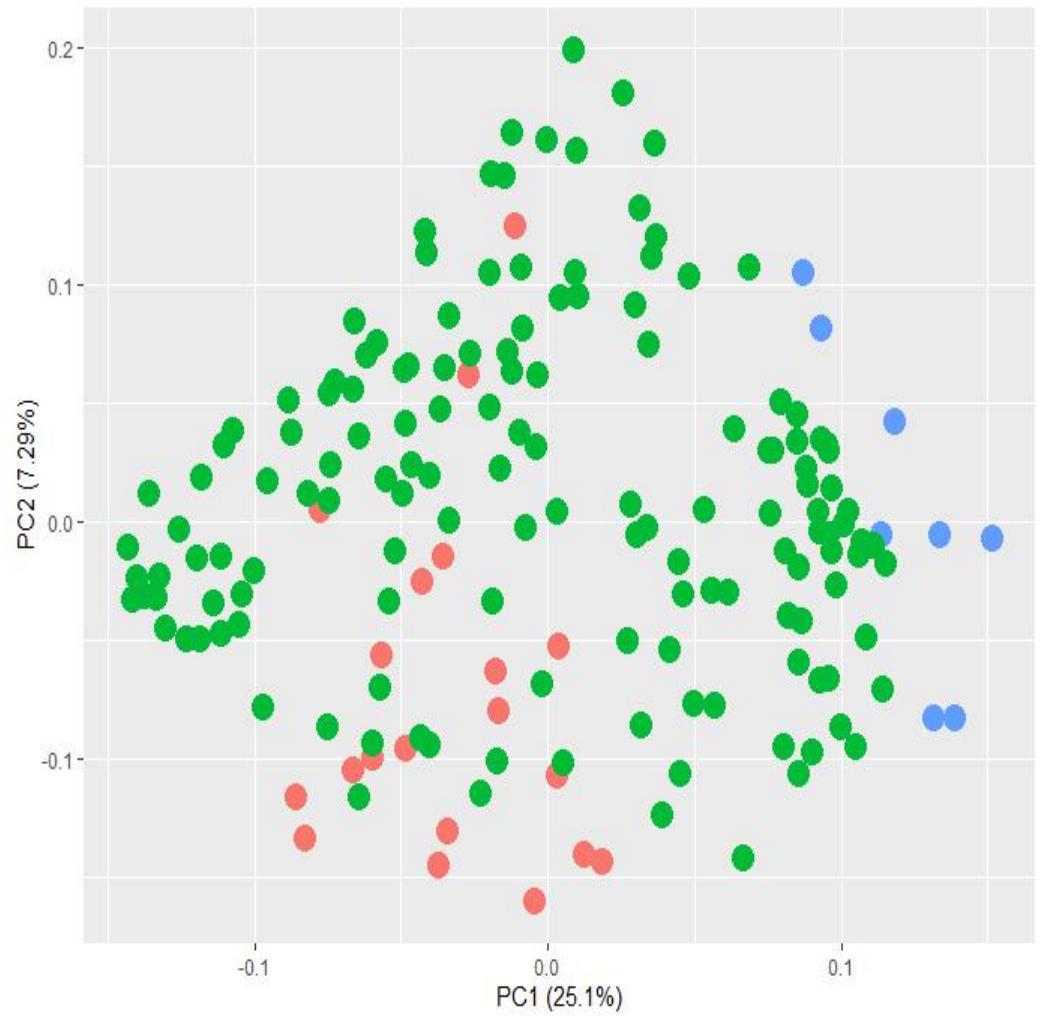
- Healthy 20
- 2019-nCoV 8
- pneumonia 146
  - pneumonia-virus 25
  - pneumonia-bacteria 121

# Proposal

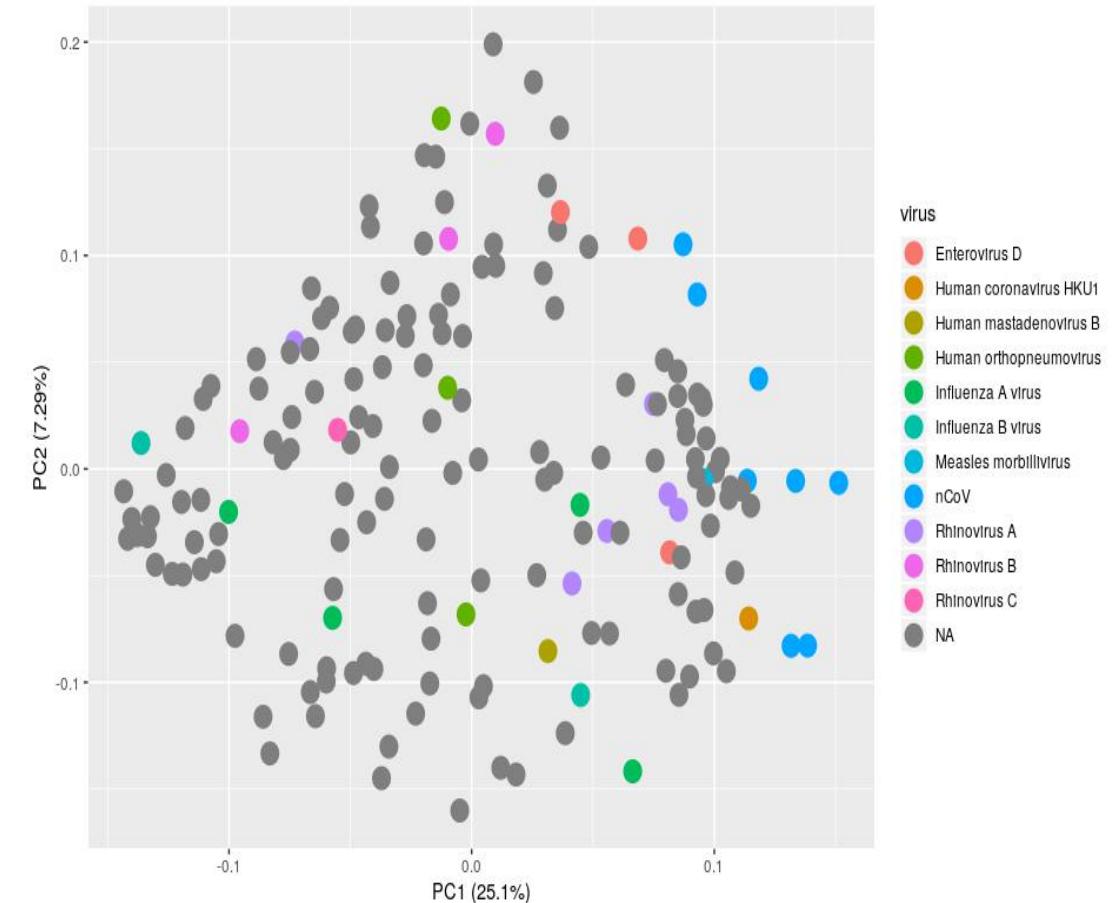
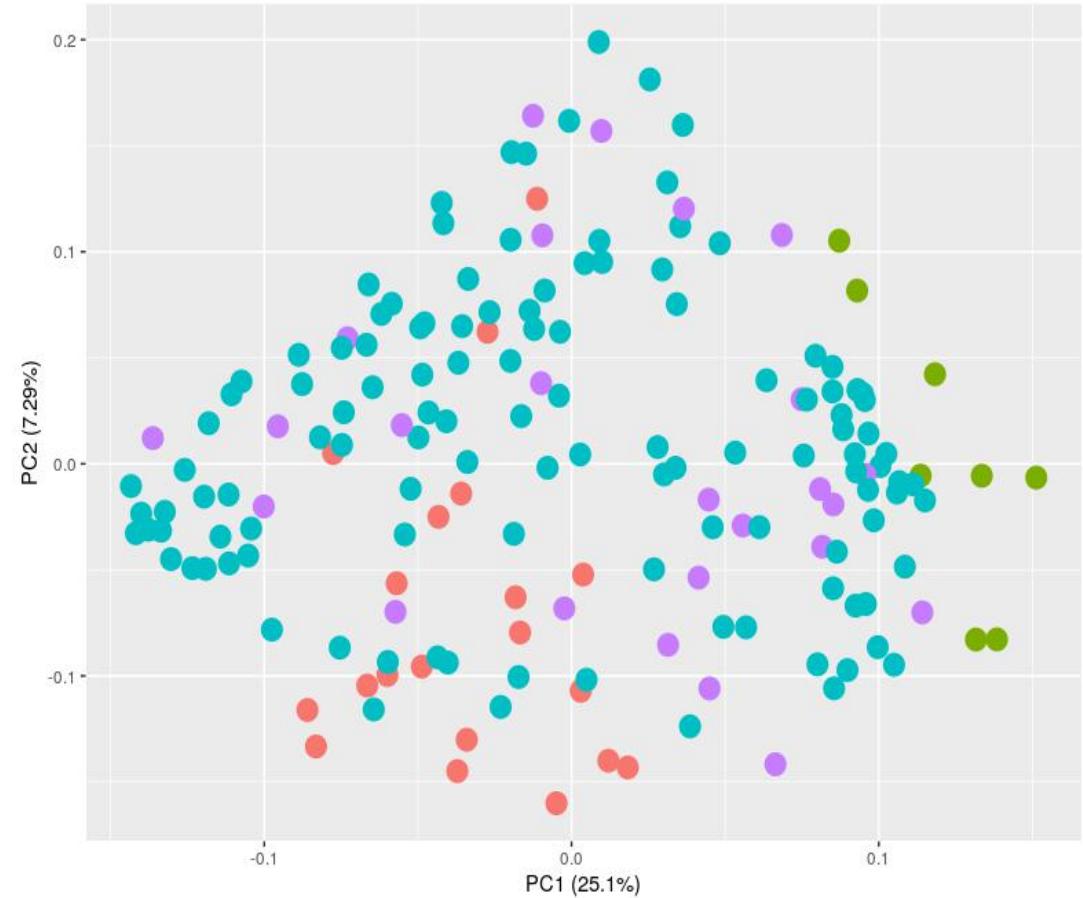
- Comparsion
  - nCoV\_Heal vs pneu\_Heal
  - nCoV\_Heal vs pneu-vir\_Heal
  - pneu-vir\_Heal vs pneu-bac\_Heal
- General analysis and DEG comparsion
  - PCA, heatmap, venn Diagram
- KEGG/GO/IPA analysis
  - Key Pathway?
- Drug repositioning for nCoV\_Heal and pneu-vir(bac)\_Heal pairs
  - cogena-based



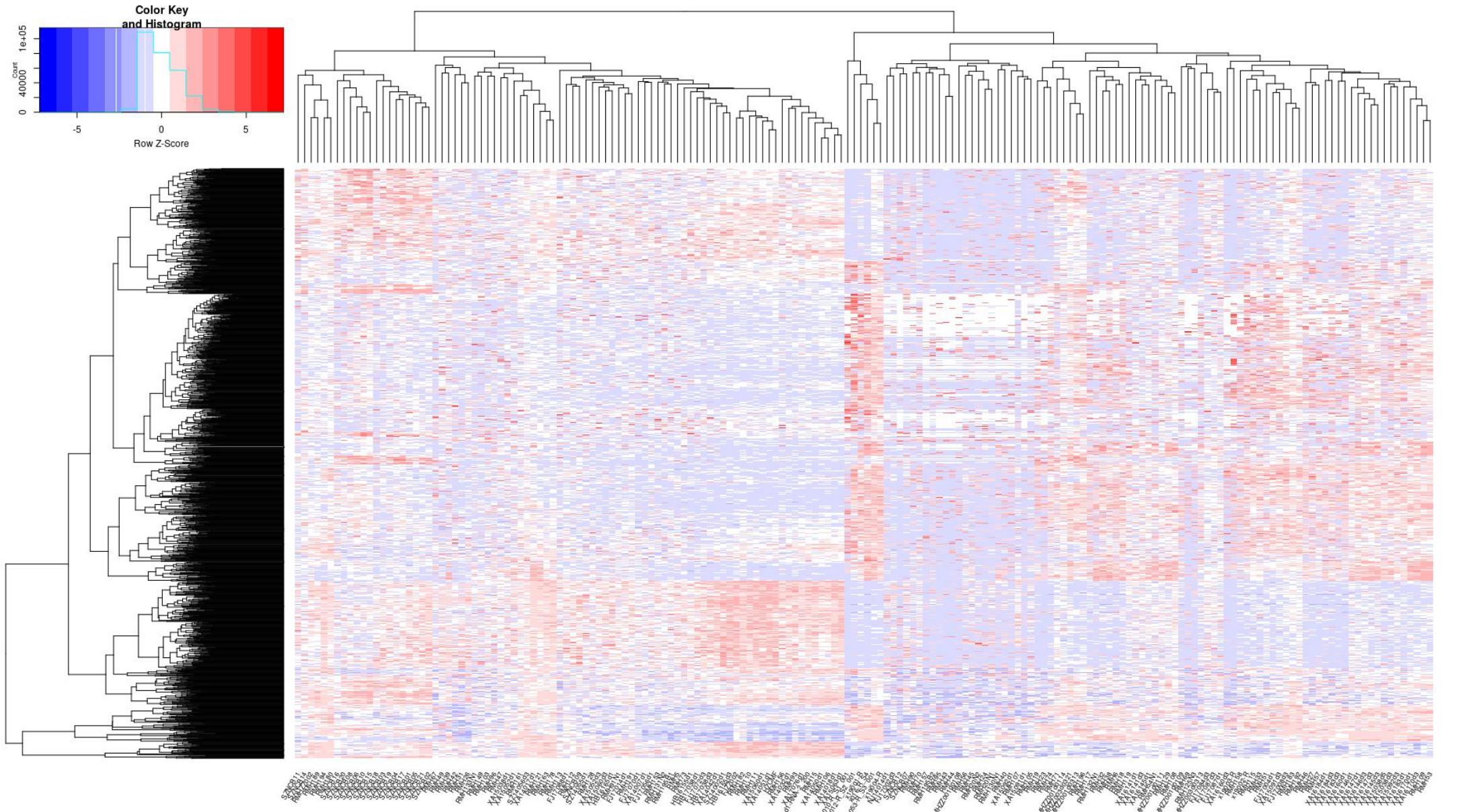
# PCA with DEG\_nCoV\_Heal



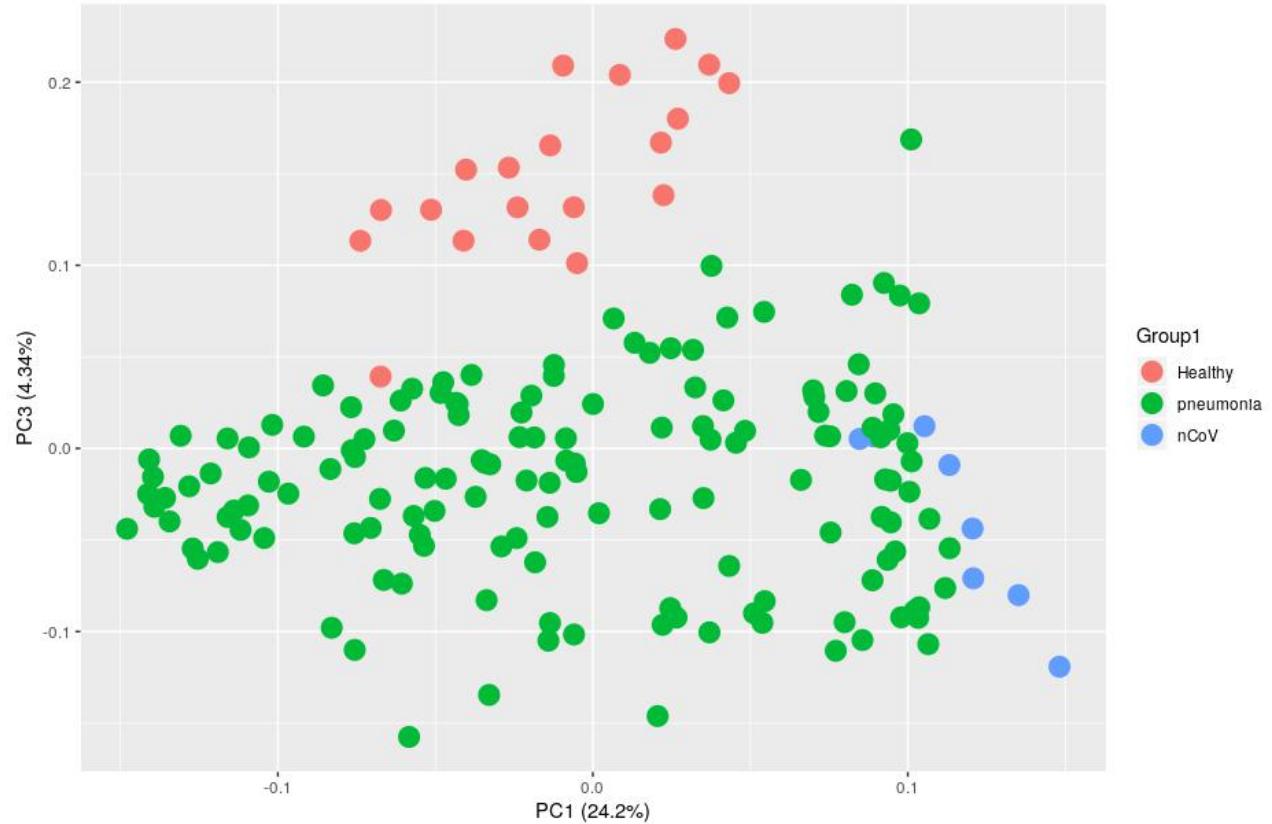
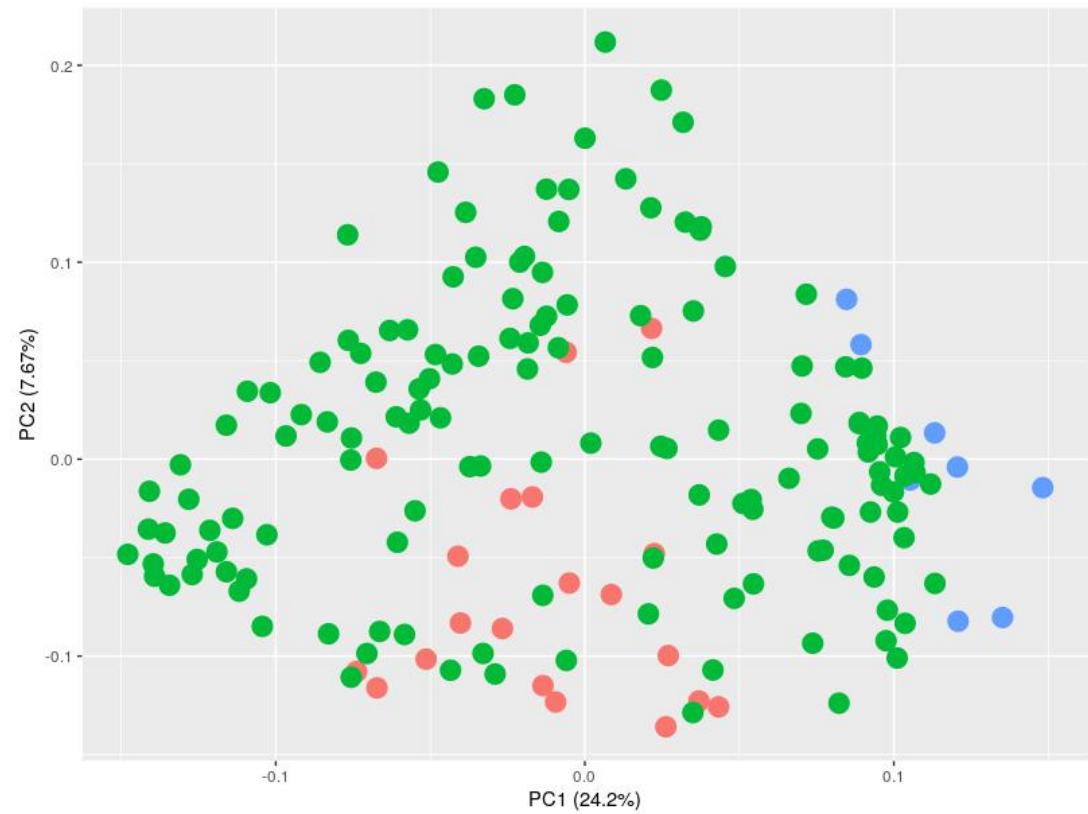
# PCA with DEG\_nCoV\_Heal



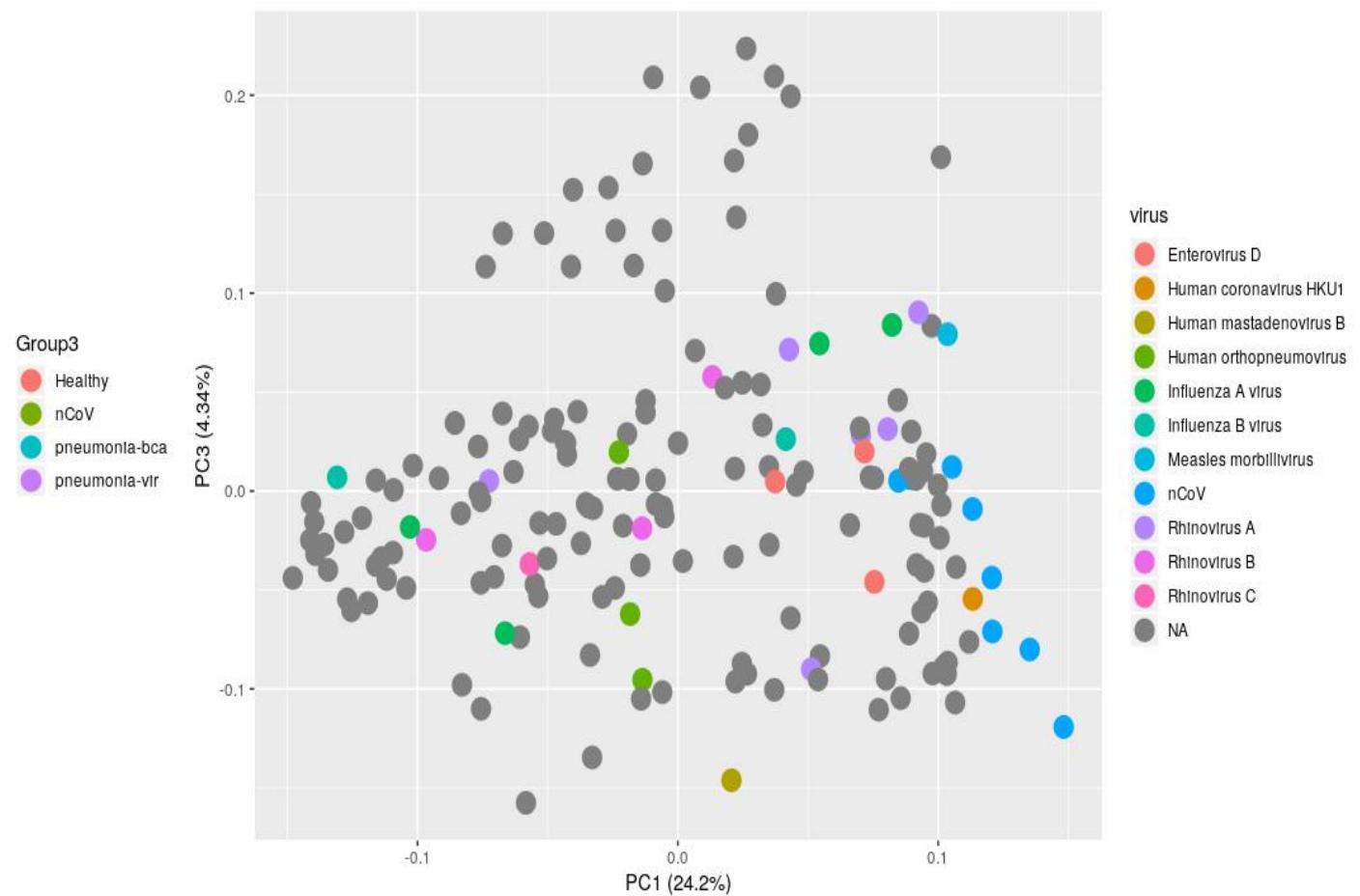
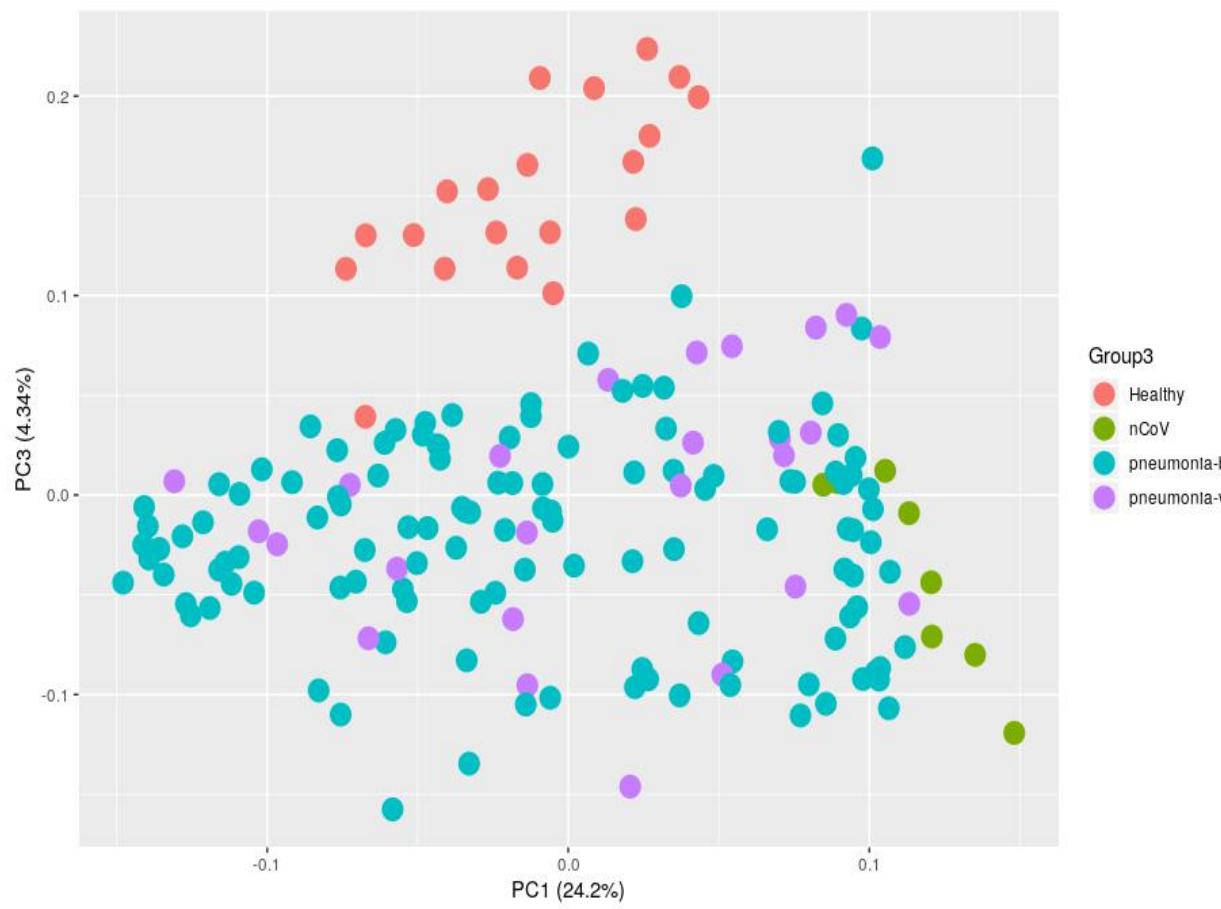
# heatmap with DEG\_nCoV\_Heal



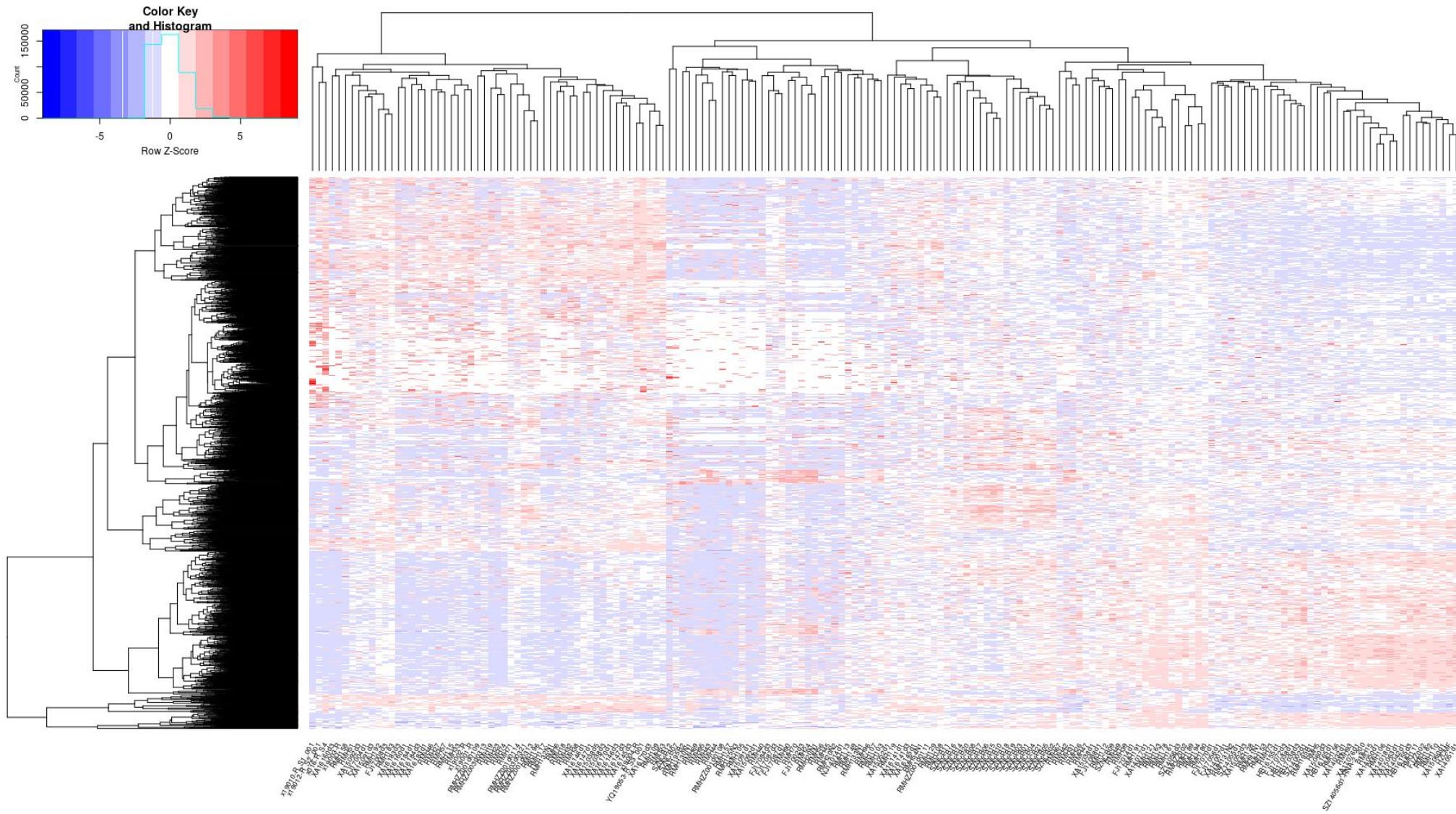
# PCA with DEG\_united



# PCA with DEG\_united



# heatmap with DEG\_nCoV\_Heal

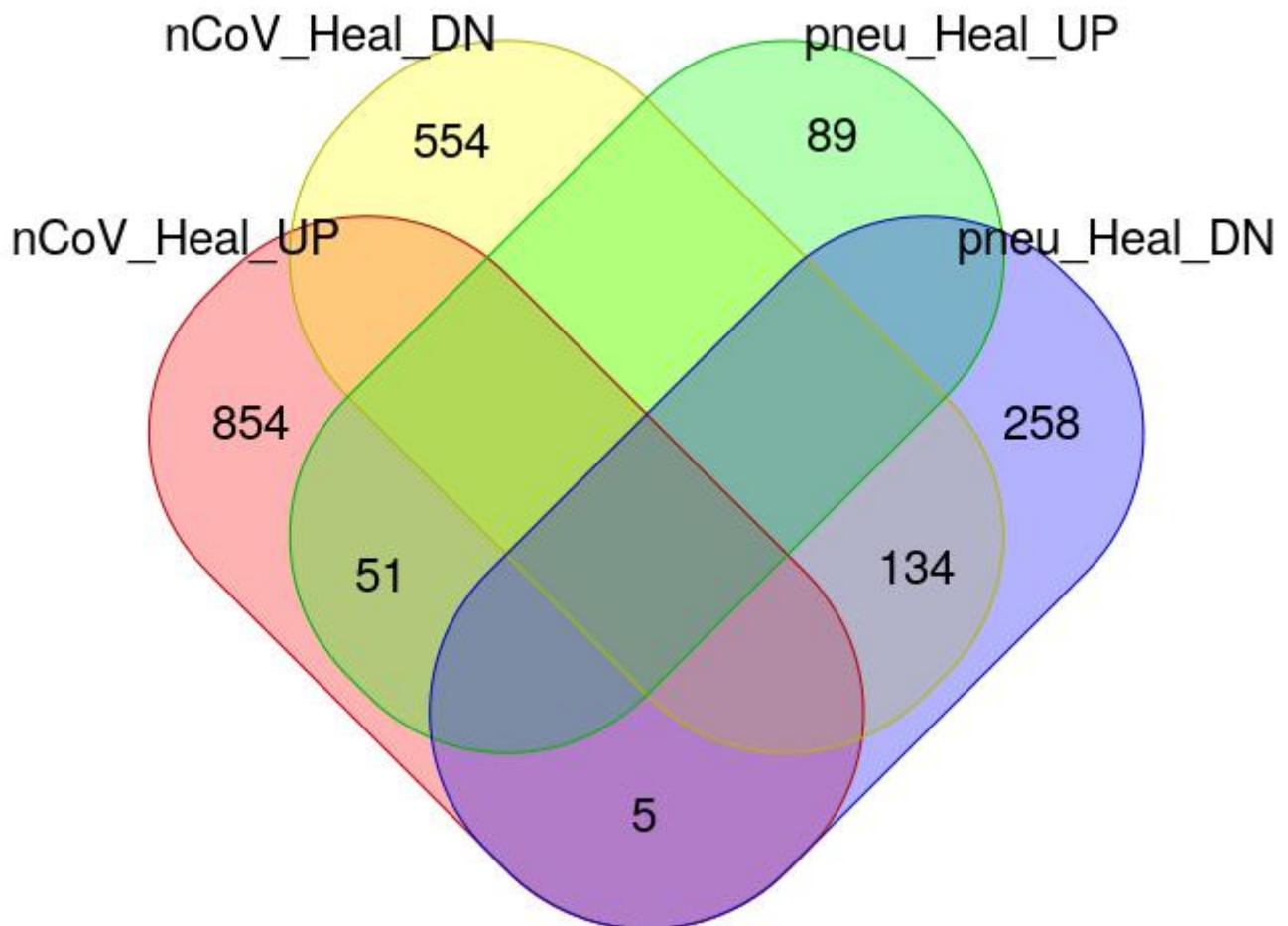
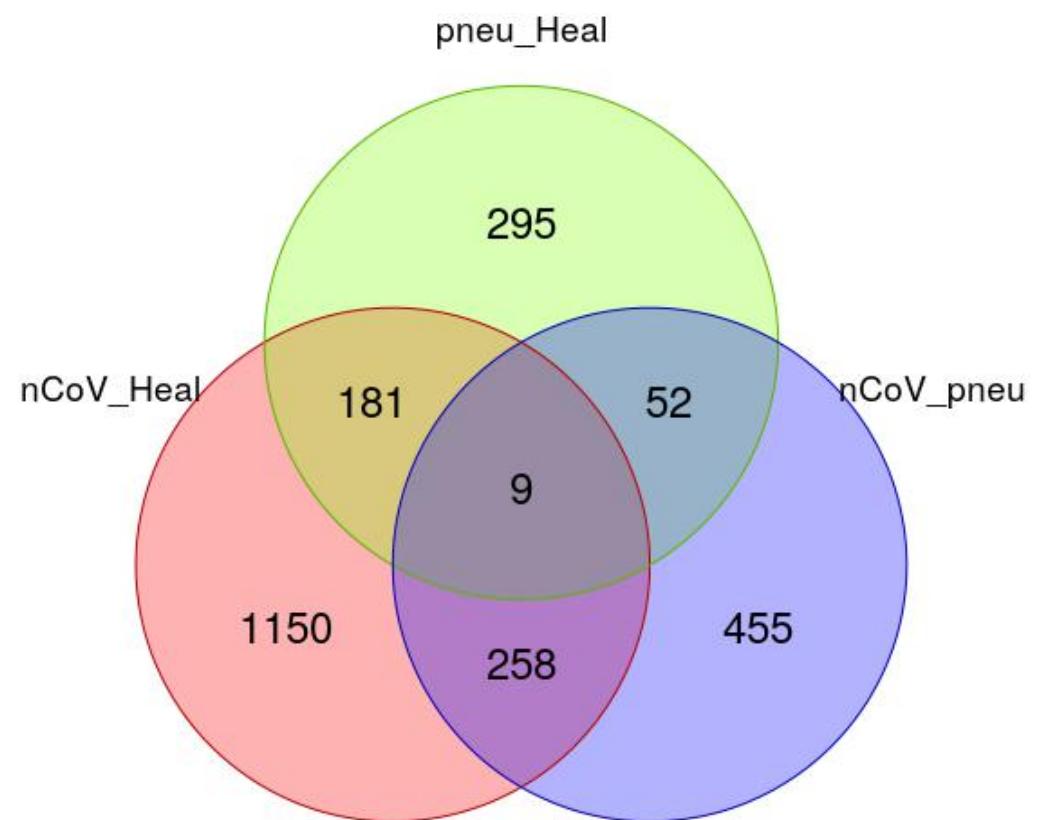


adj.P.Val<=0.05, abs(logFC)>=2

"Healthy" "nCoV" : 1600

"Healthy" "pneumonia": 539

"pneumonia" "nCoV": 776

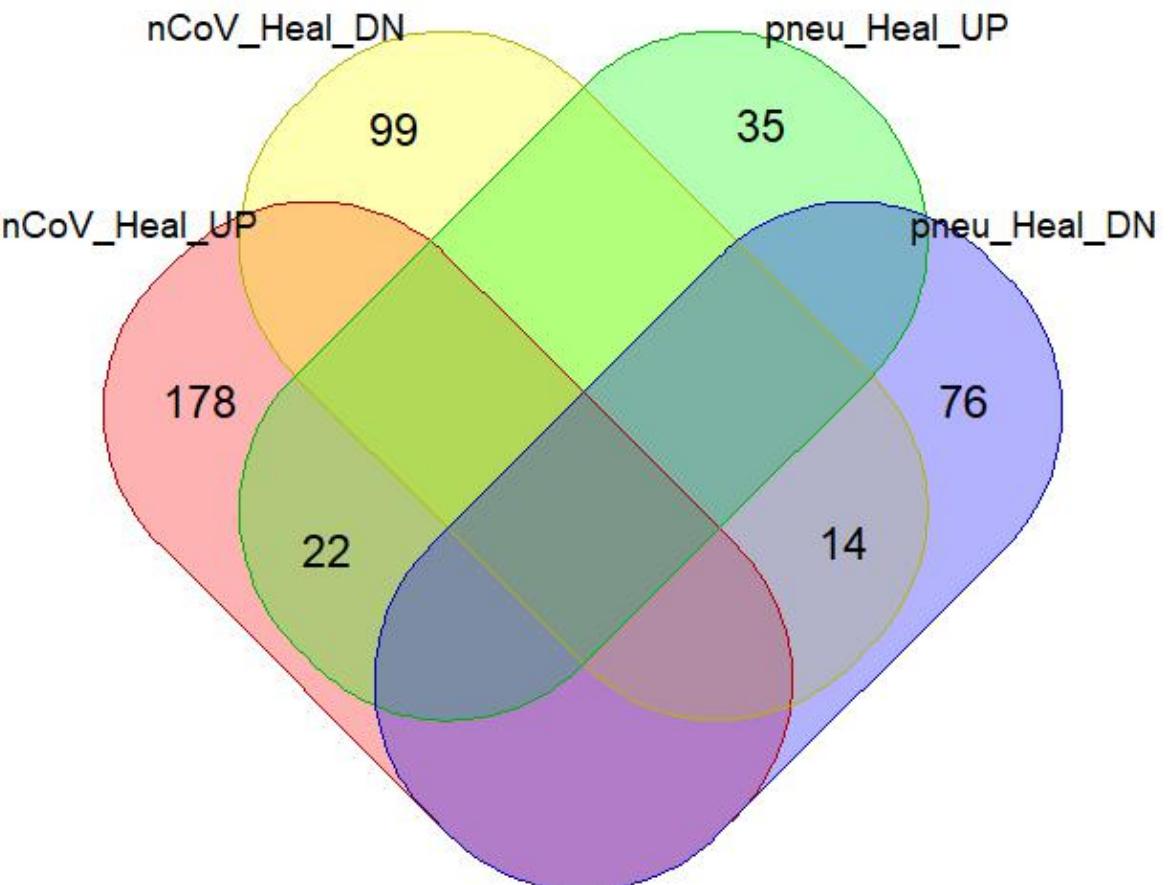
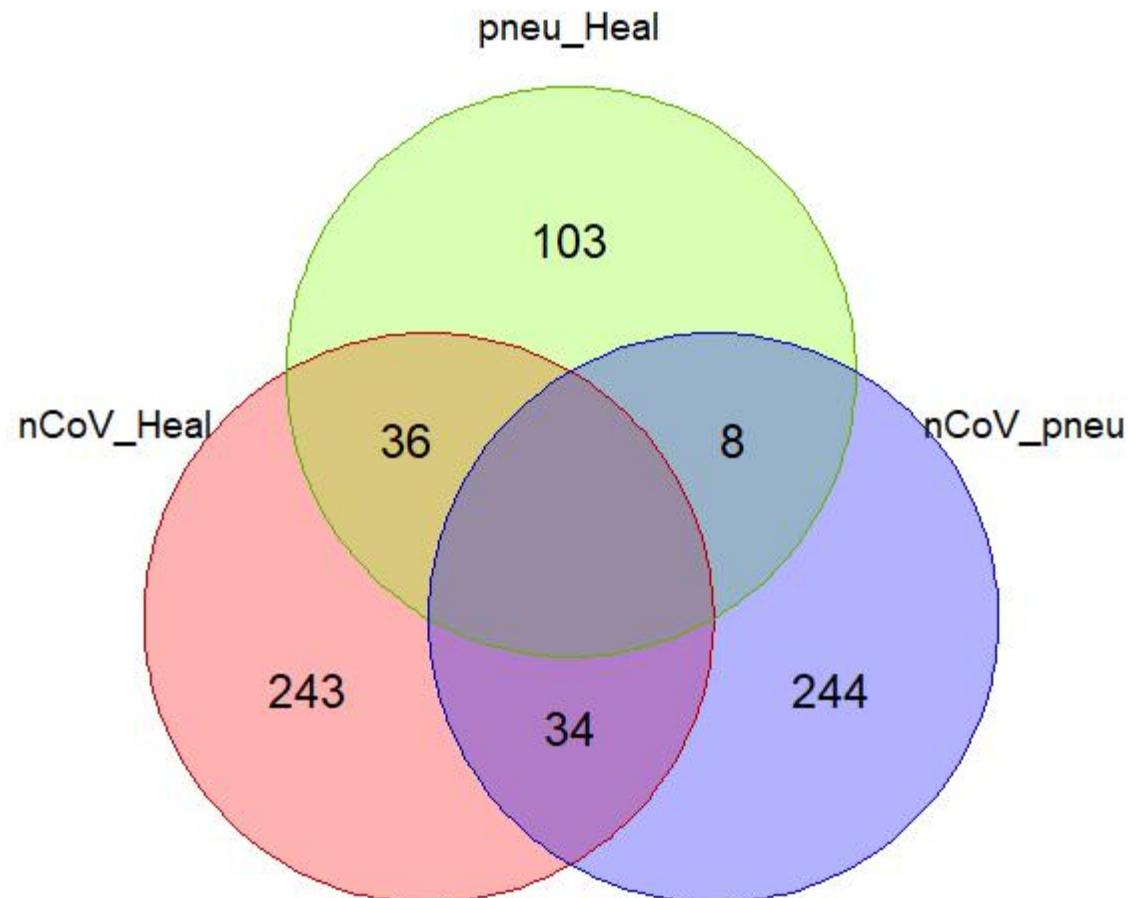


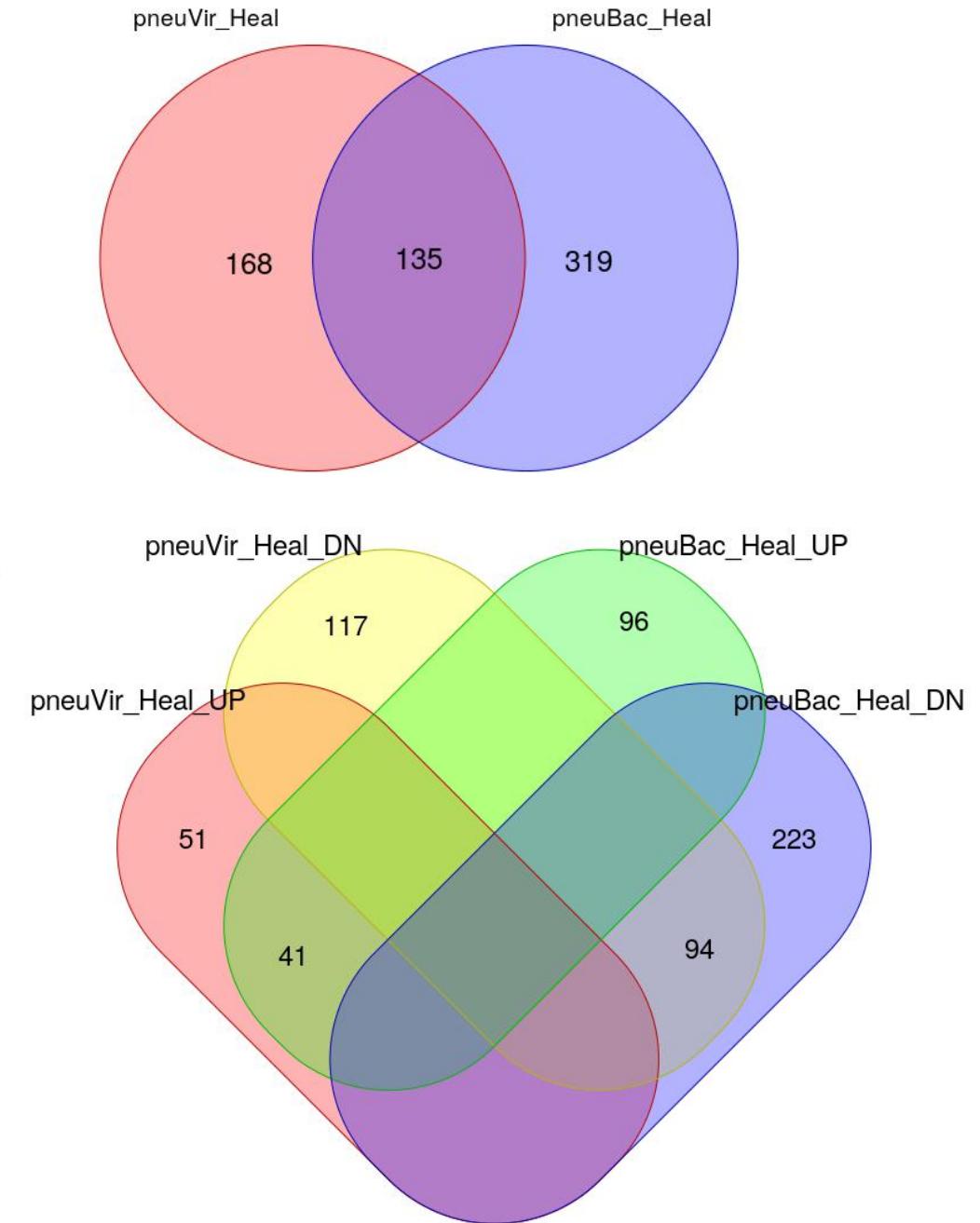
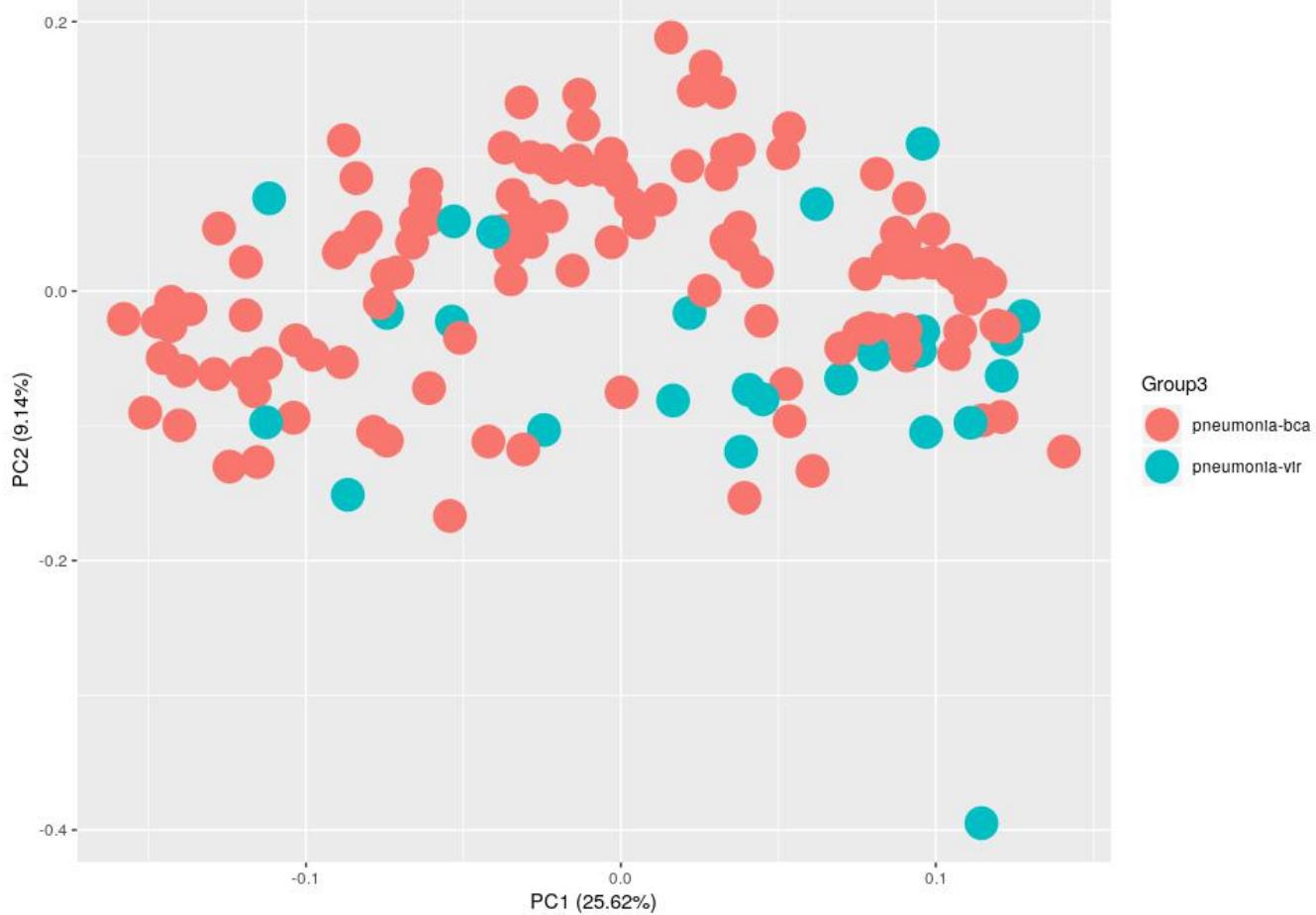
adj.P.Val<=0.001, abs(logFC)>=2

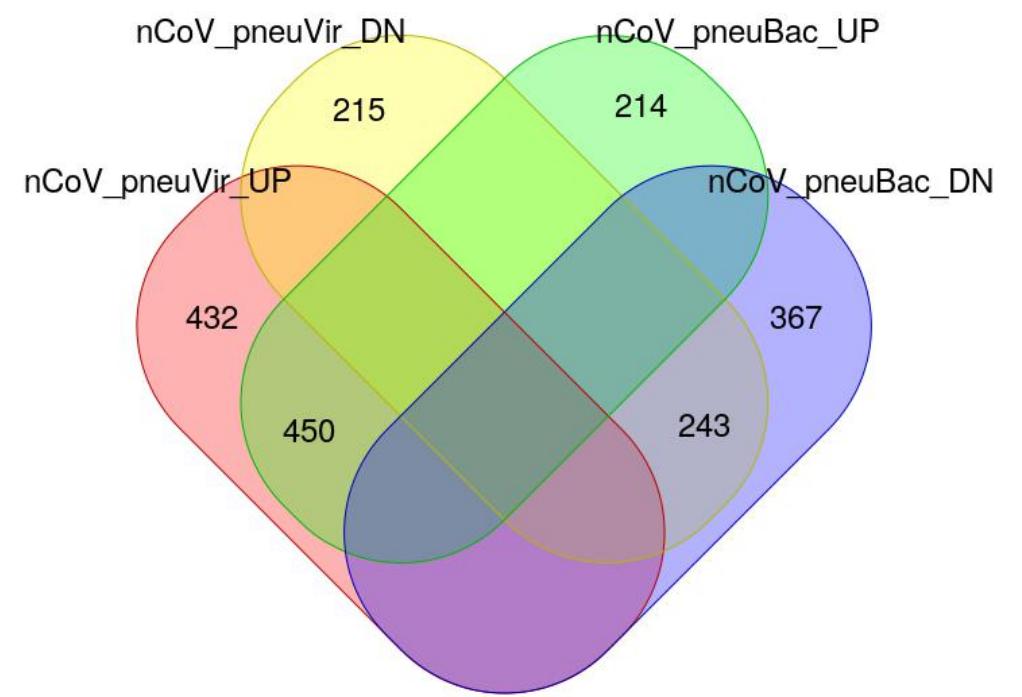
"Healthy" "nCoV" : 313

"Healthy" "pneumonia": 147

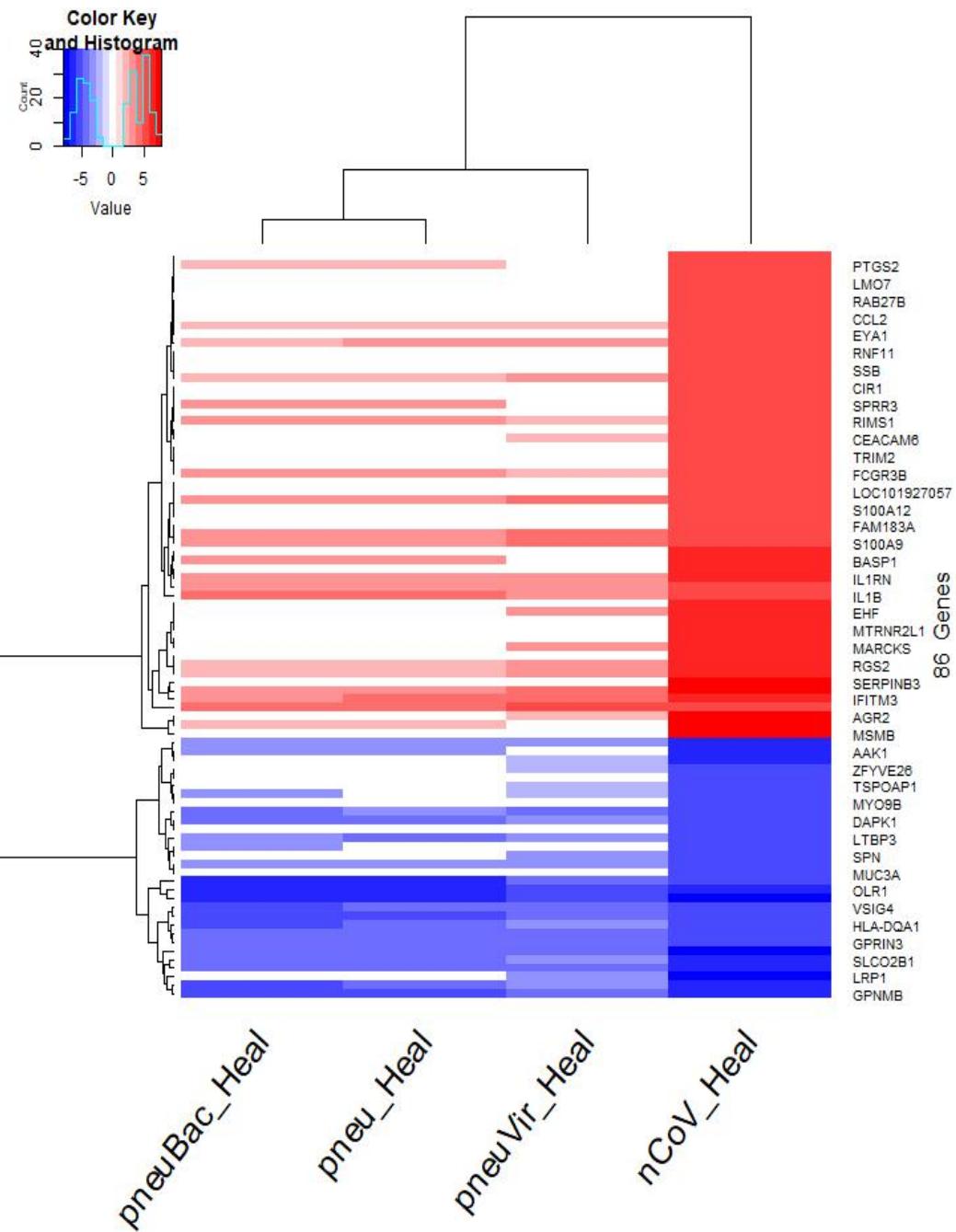
"pneumonia" "nCoV": 286



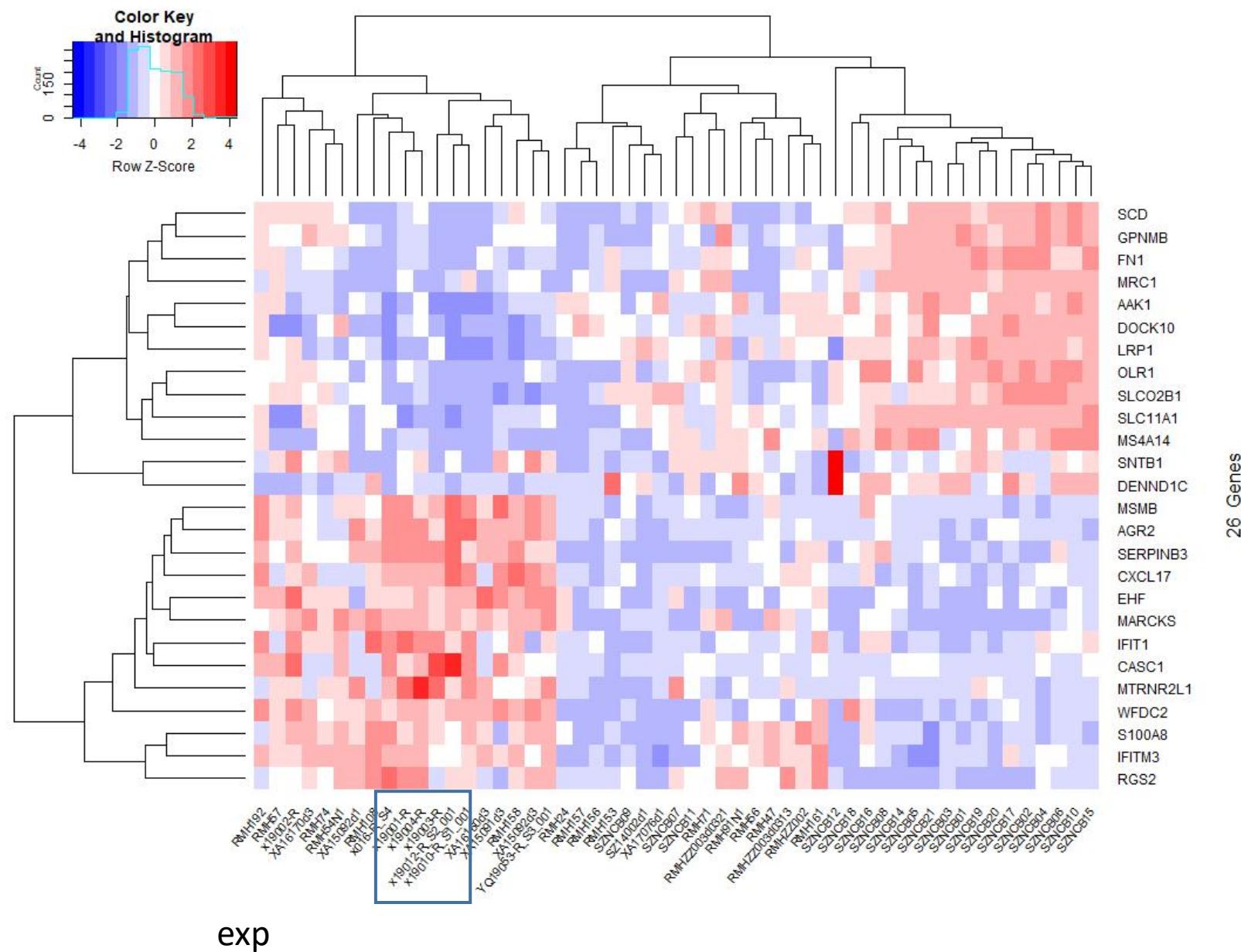
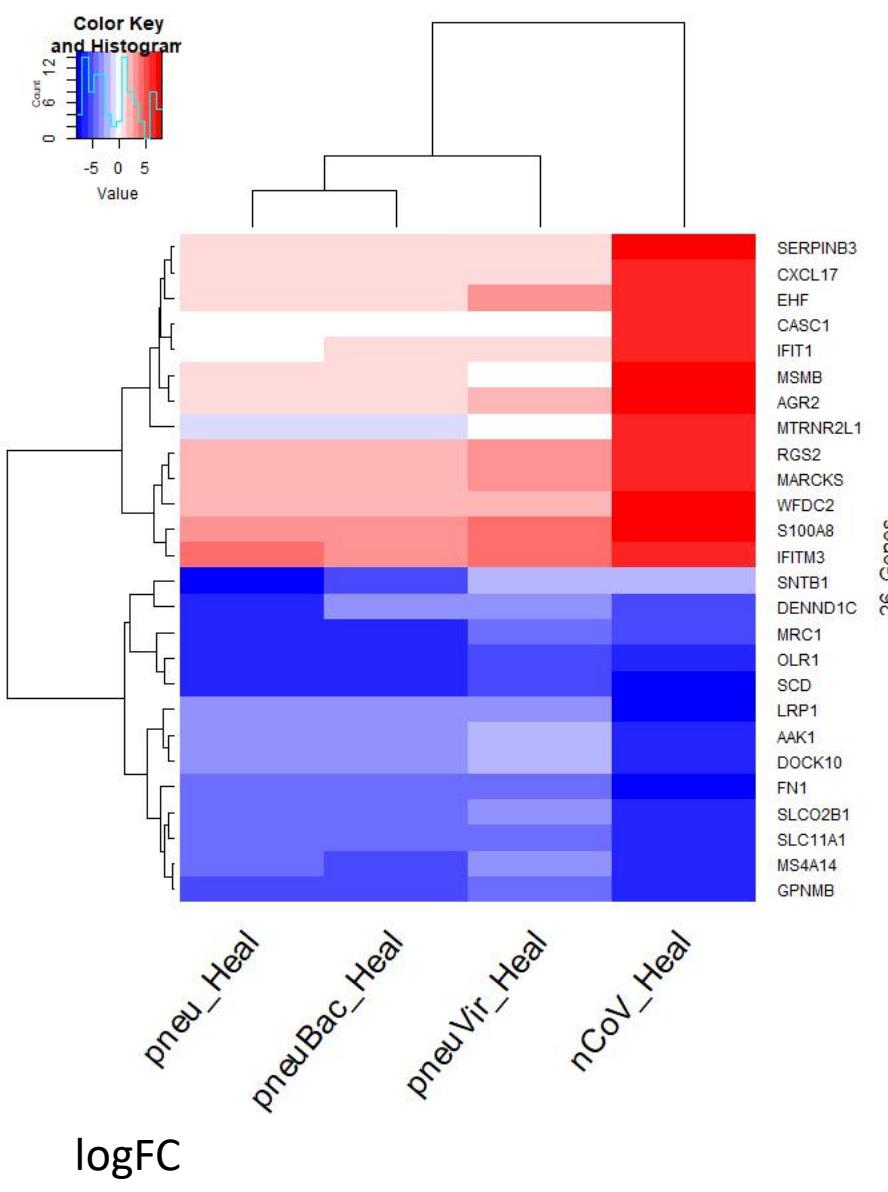




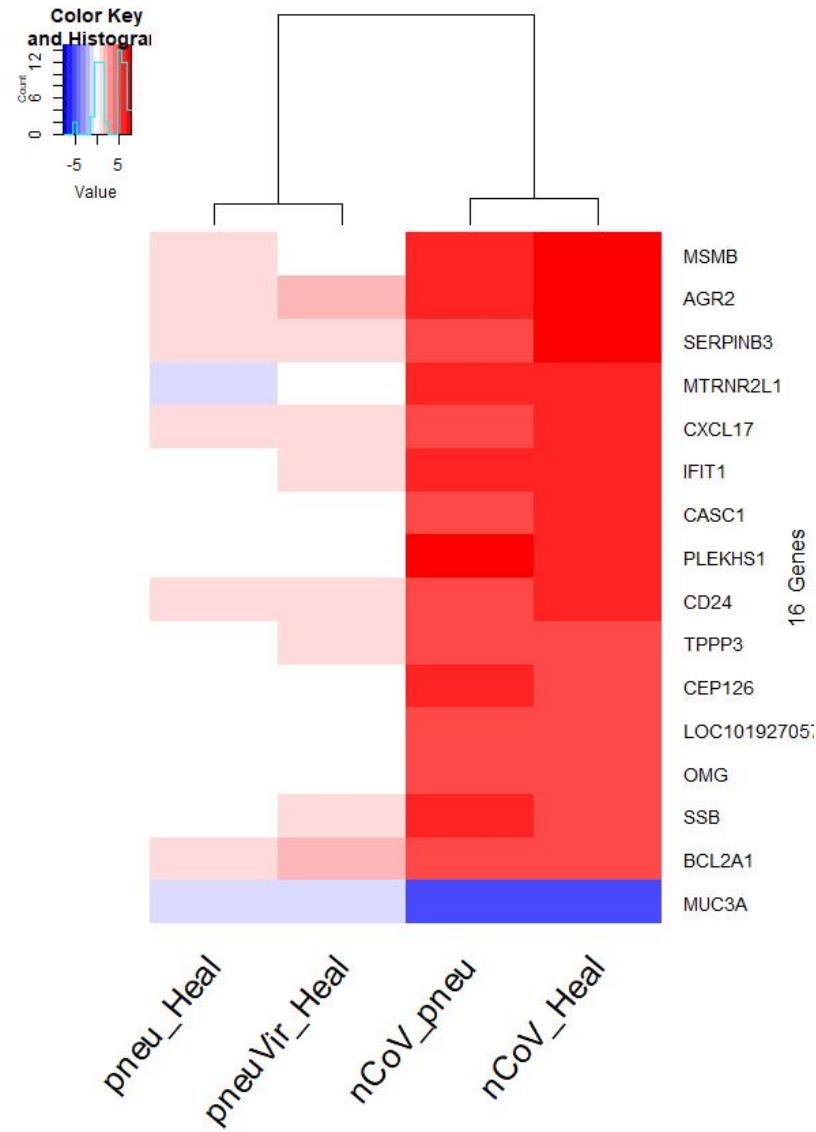
$\text{abs}(\text{nCoV\_Heal}) \geq 5$



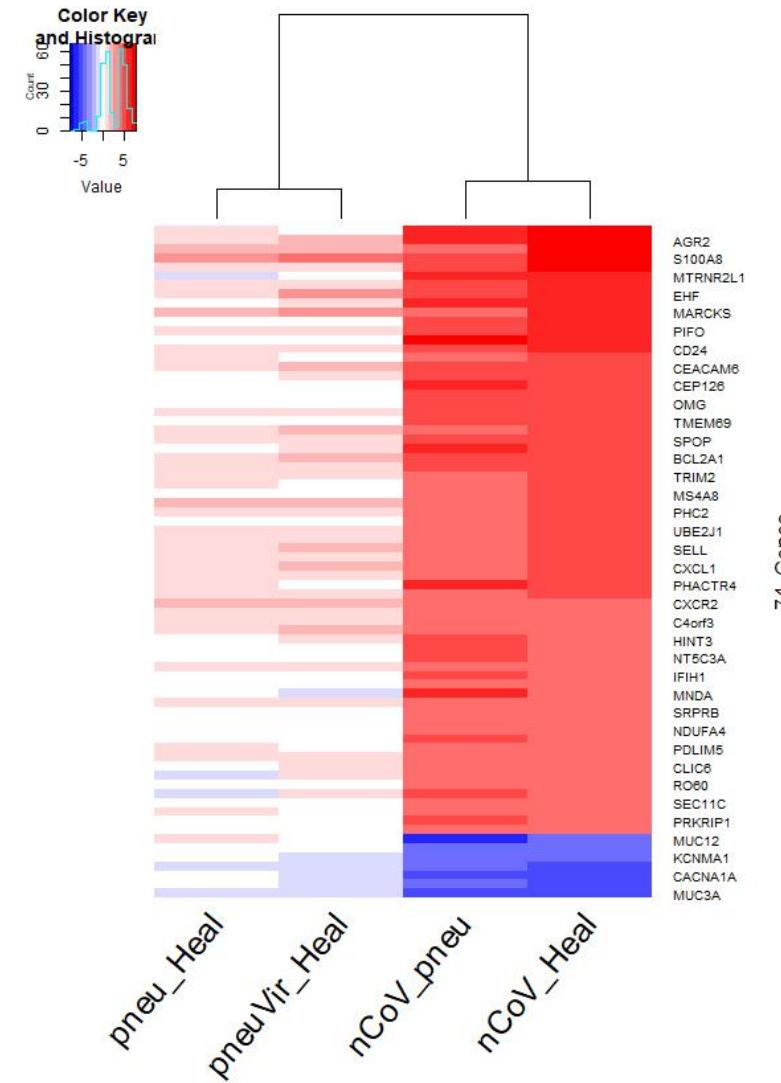
abs(nCoV\_Heal)>=6 | abs(pneu\_Heal)>=6



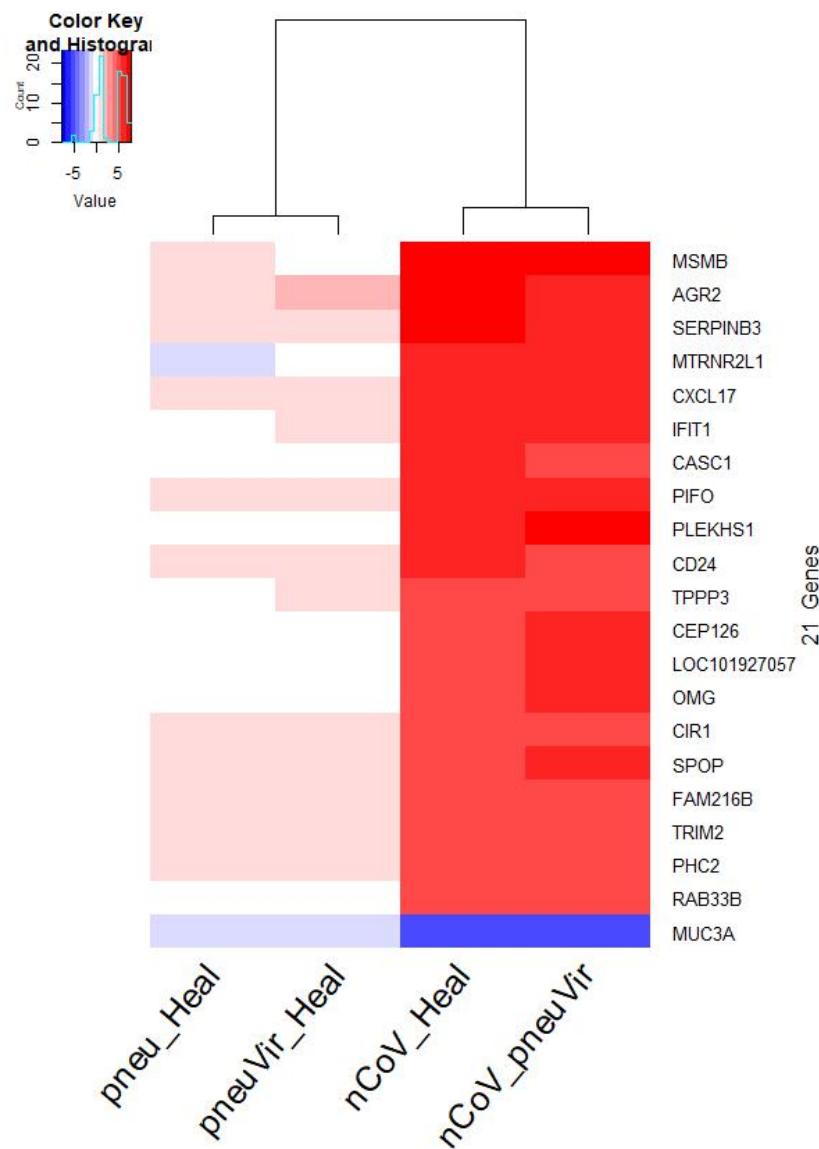
$\text{abs}(\text{nCoV\_Heal}) \geq 5 \text{ & } \text{abs}(\text{nCoV\_pneu}) \geq 5$



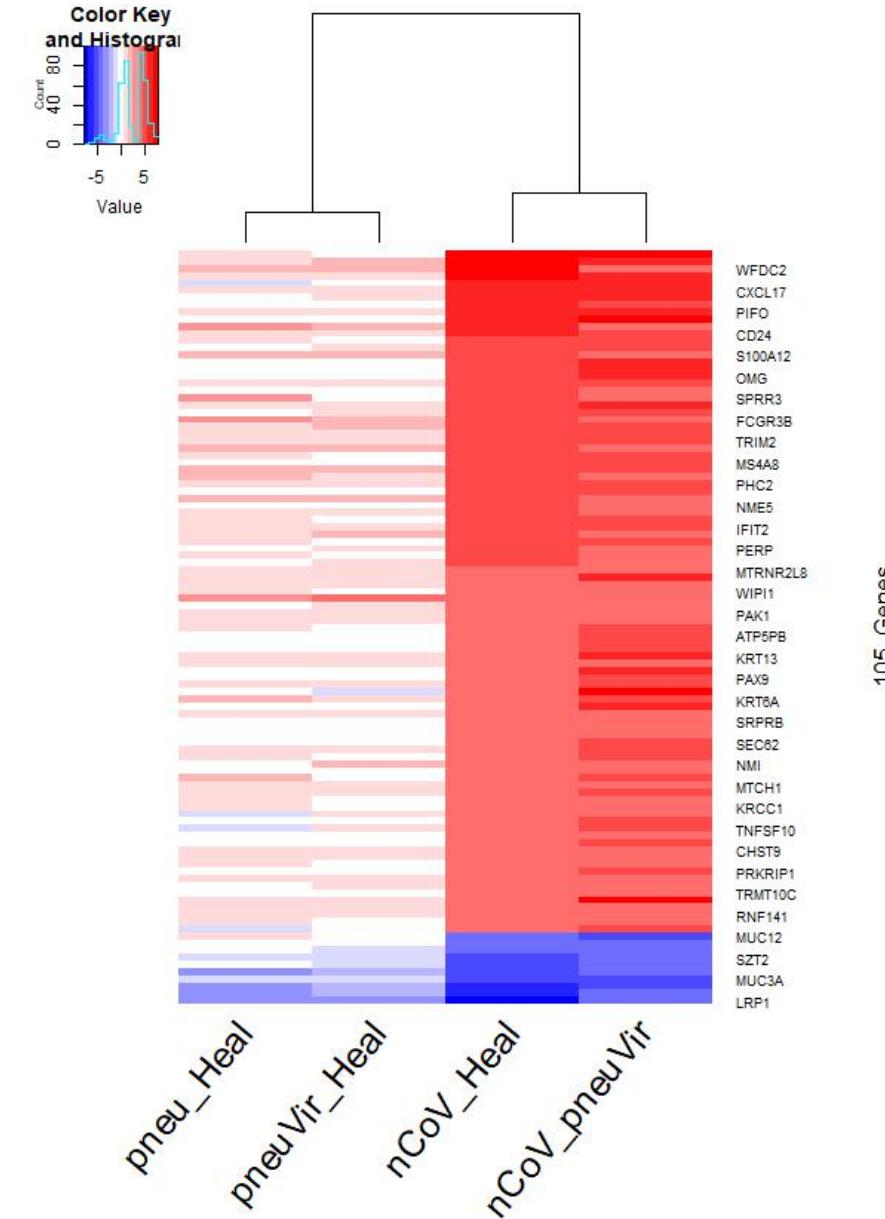
$\text{abs}(\text{nCoV\_Heal}) \geq 4 \text{ & } \text{abs}(\text{nCoV\_pneu}) \geq 4$



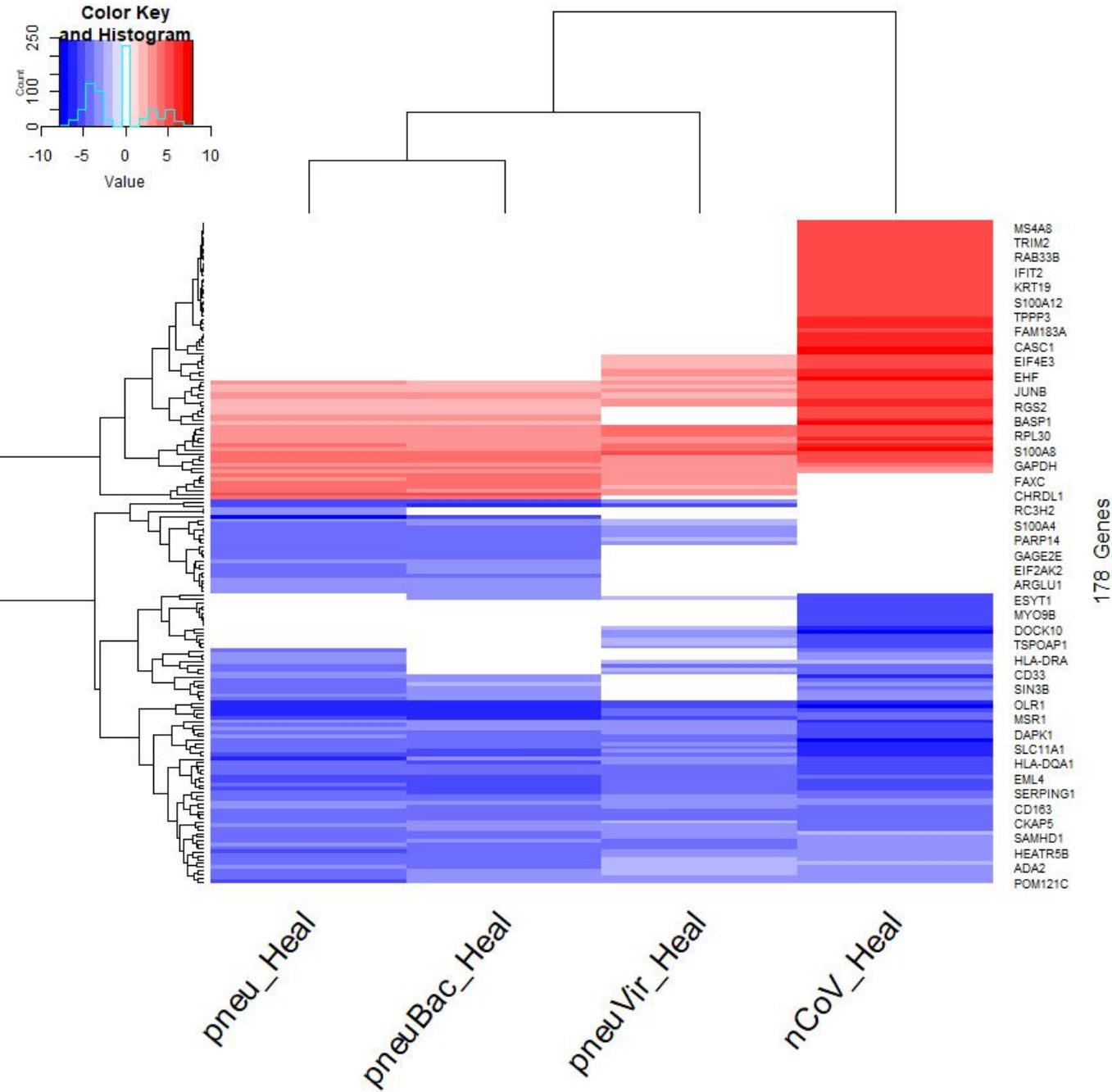
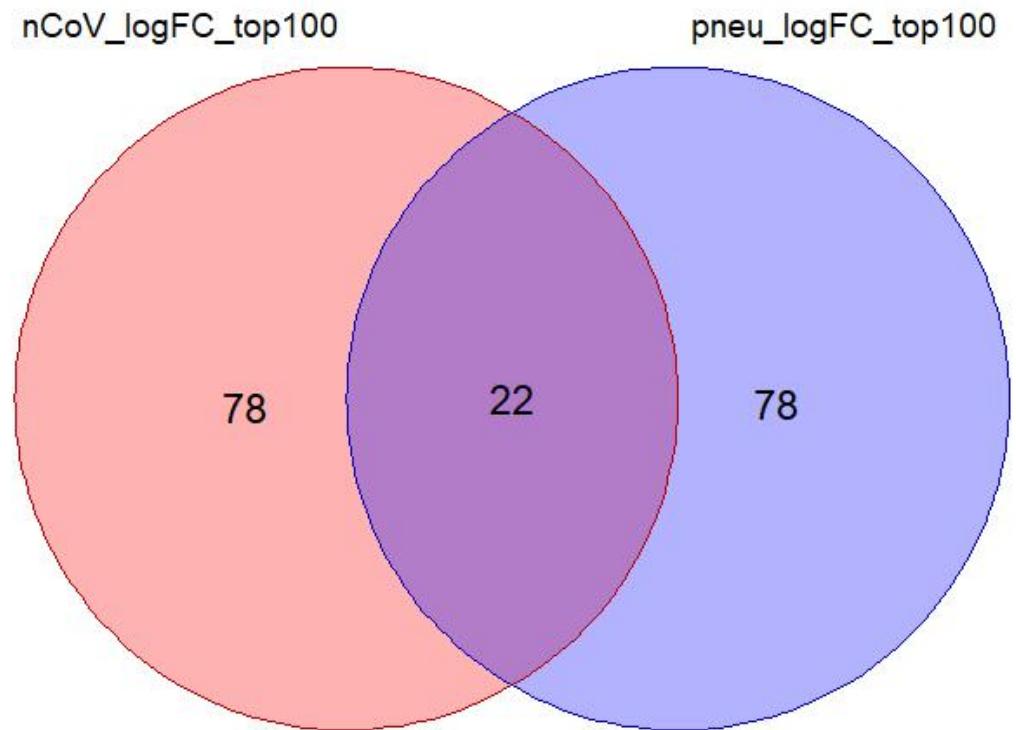
$\text{abs}(\text{nCoV\_Heal}) \geq 5 \text{ & } \text{abs}(\text{nCoV\_pneuVir}) \geq 5$



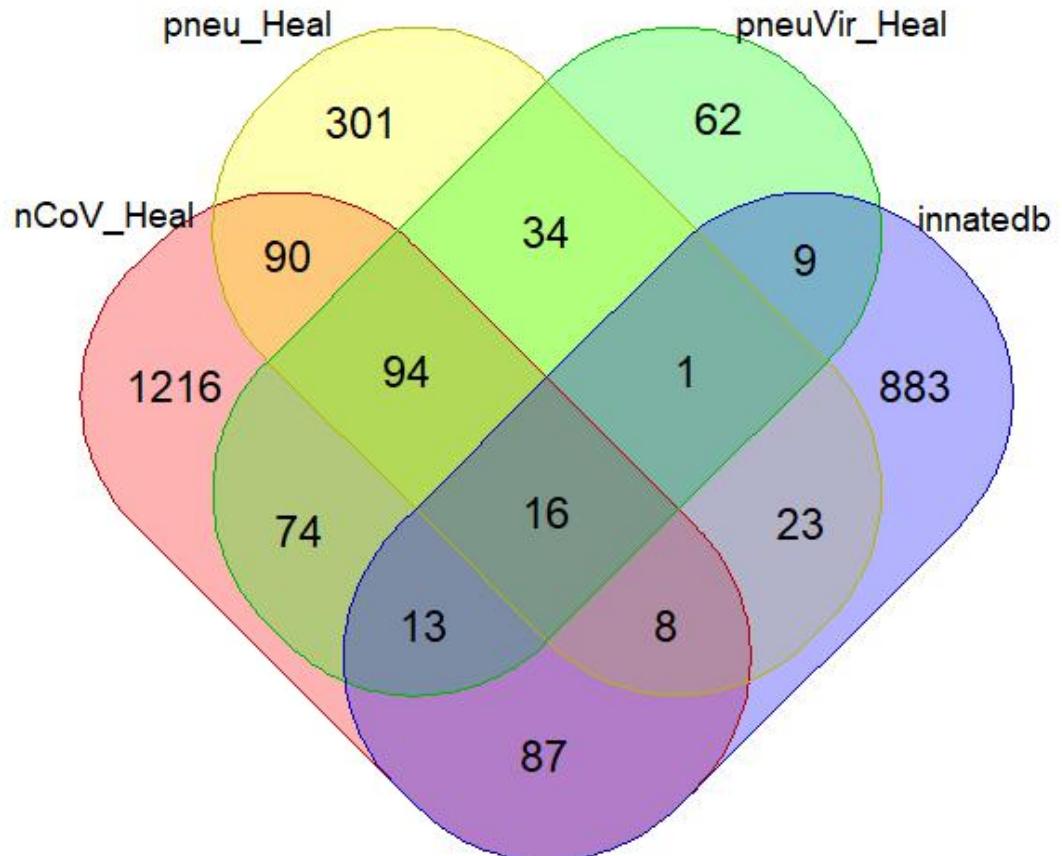
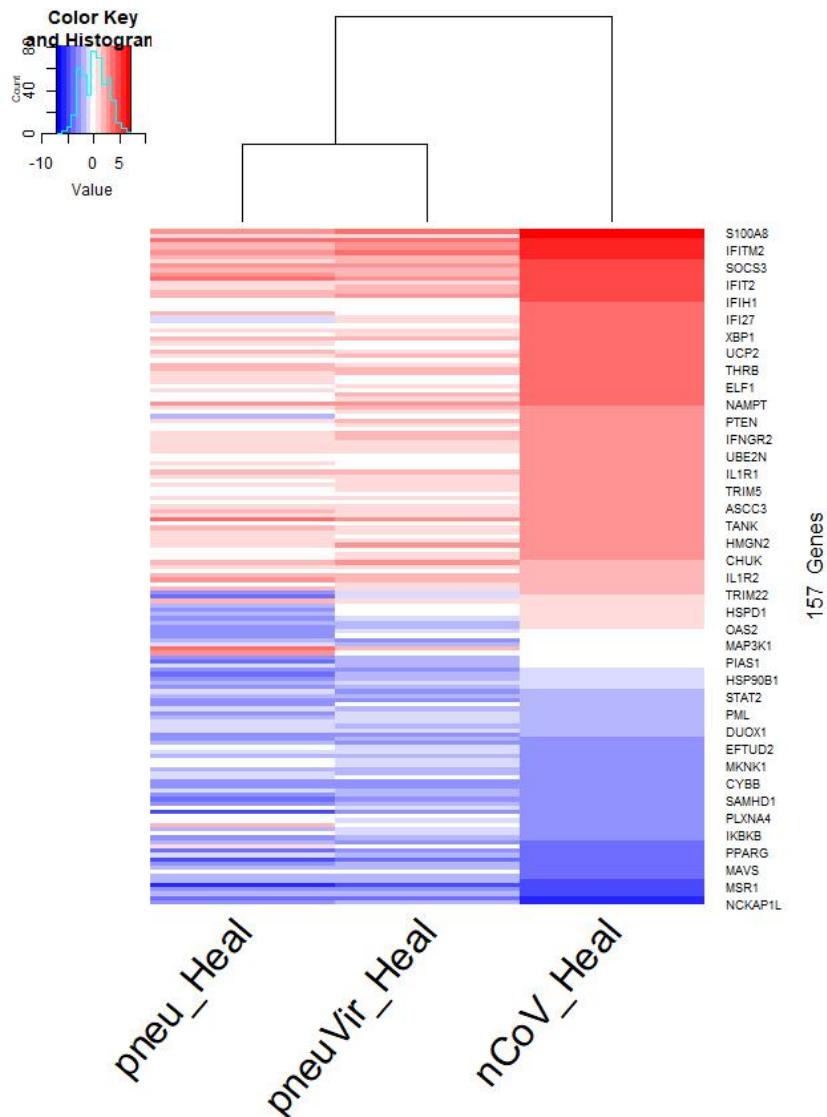
$\text{abs}(\text{nCoV\_Heal}) \geq 4 \text{ & } \text{abs}(\text{nCoV\_pneuVir}) \geq 4$



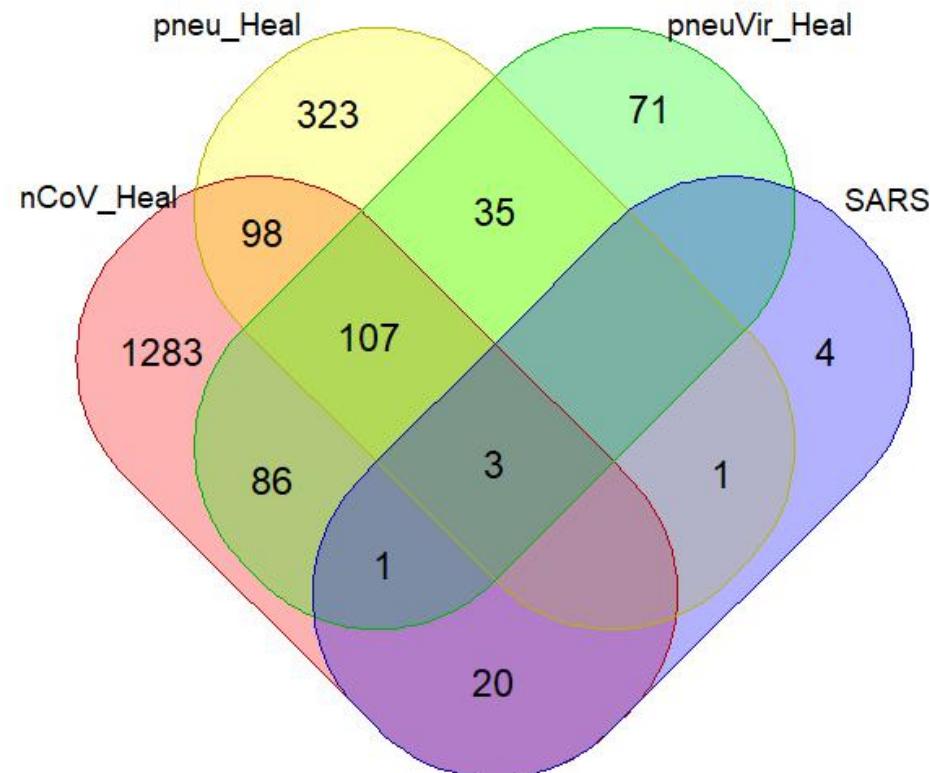
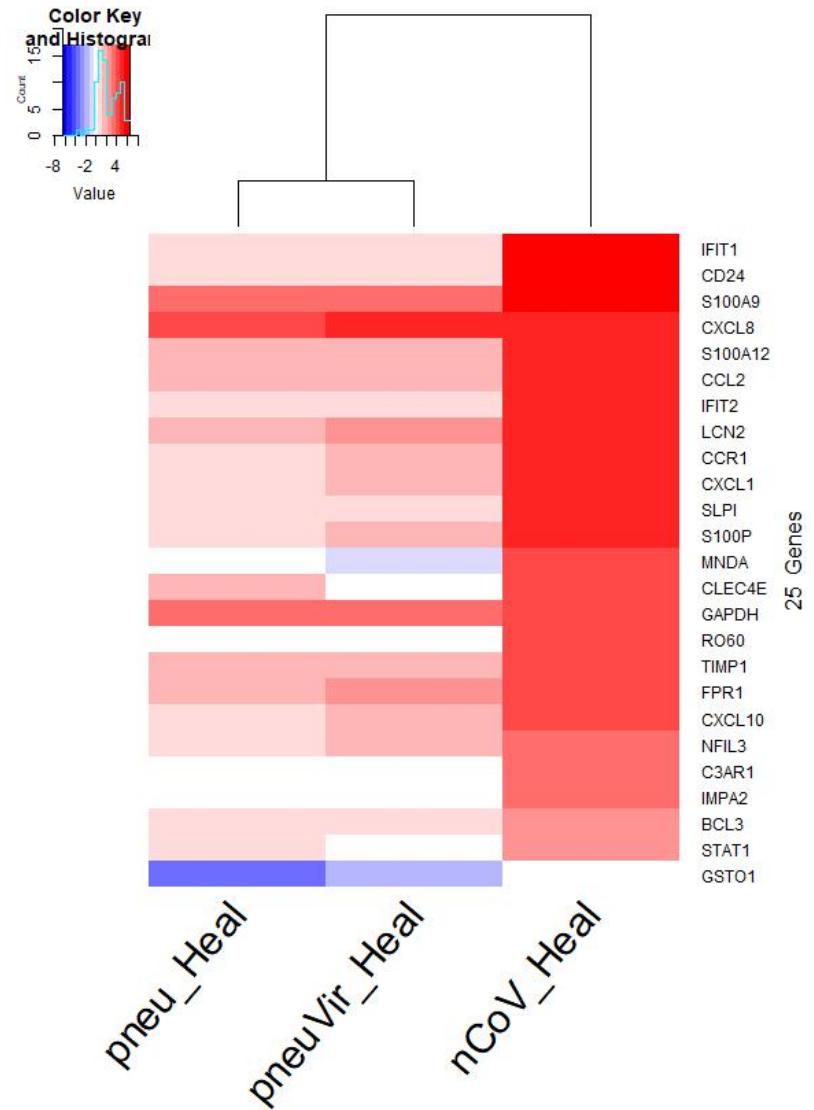
# nCoV\_logFC\_top100 + pneu\_logFC\_top100

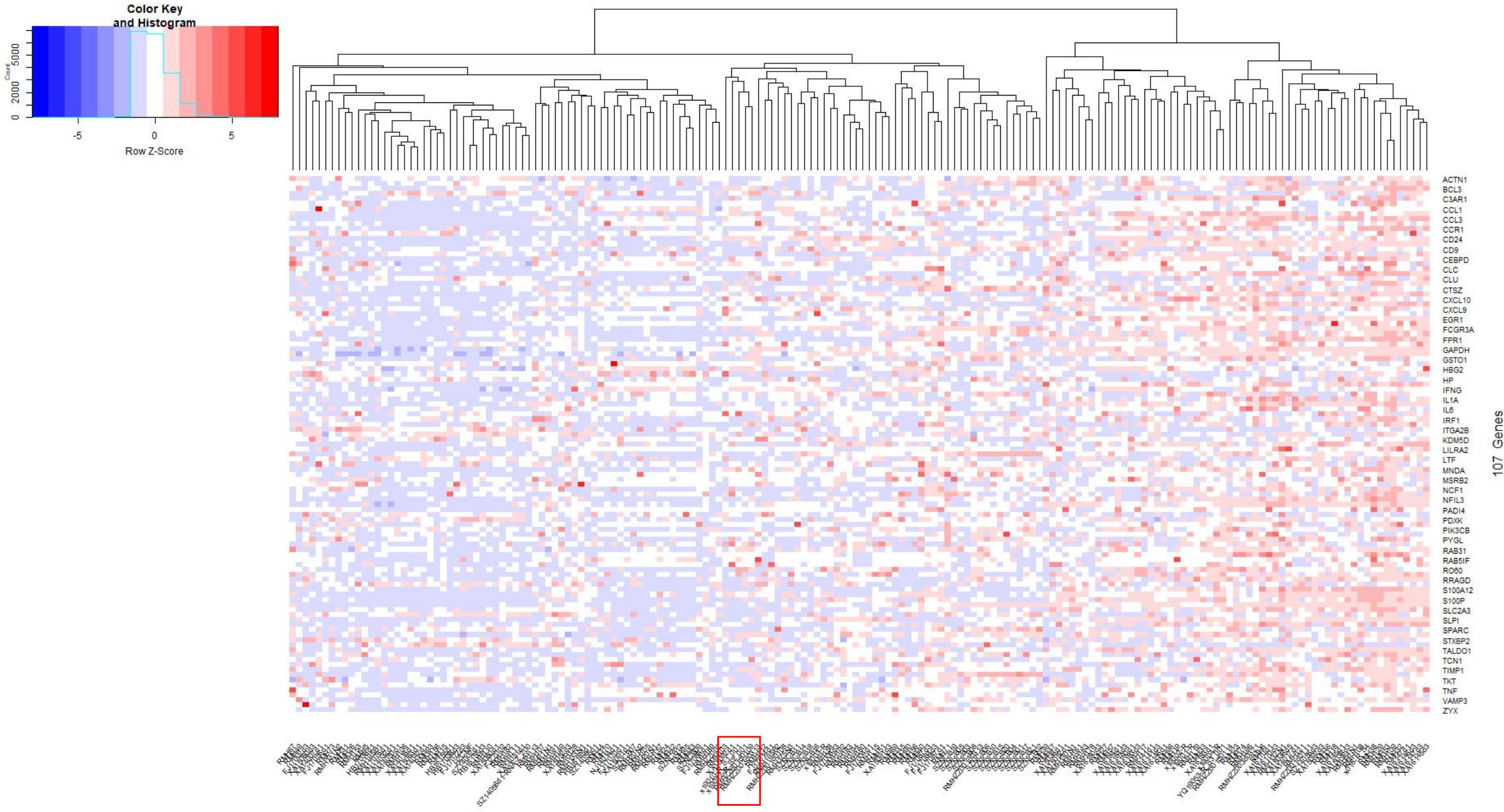


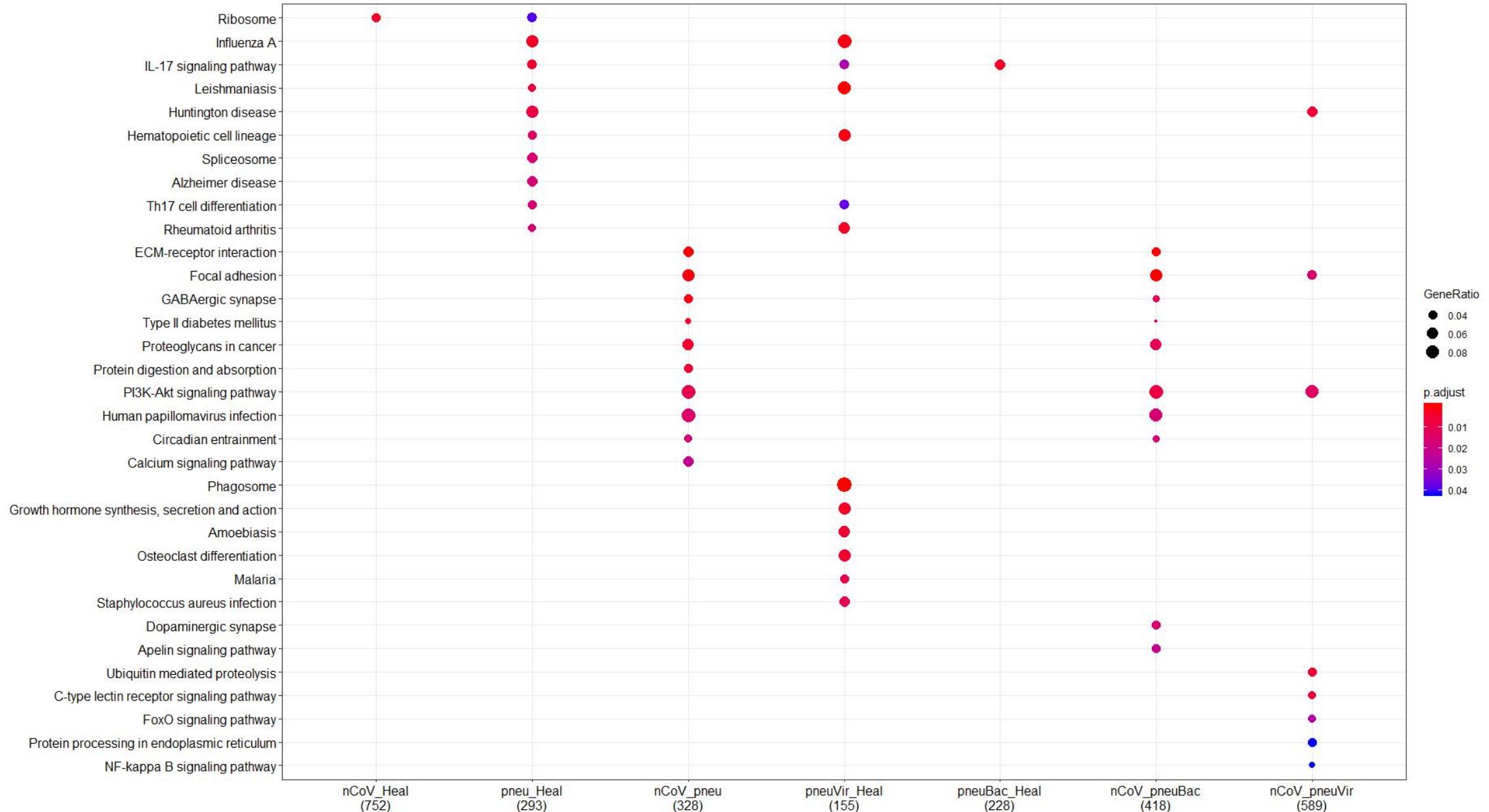
# innatedb\_curated\_genes



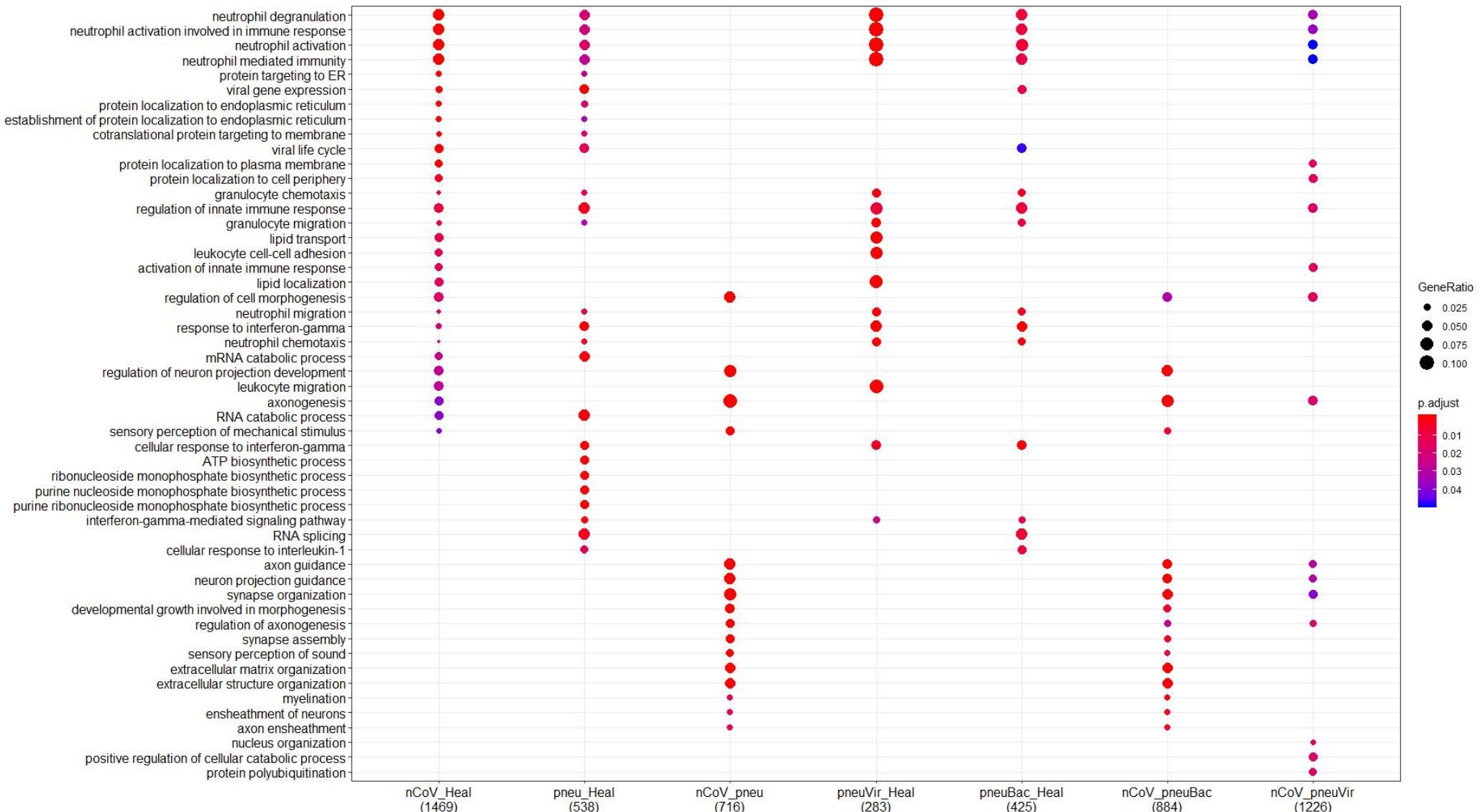
# SARS\_genes







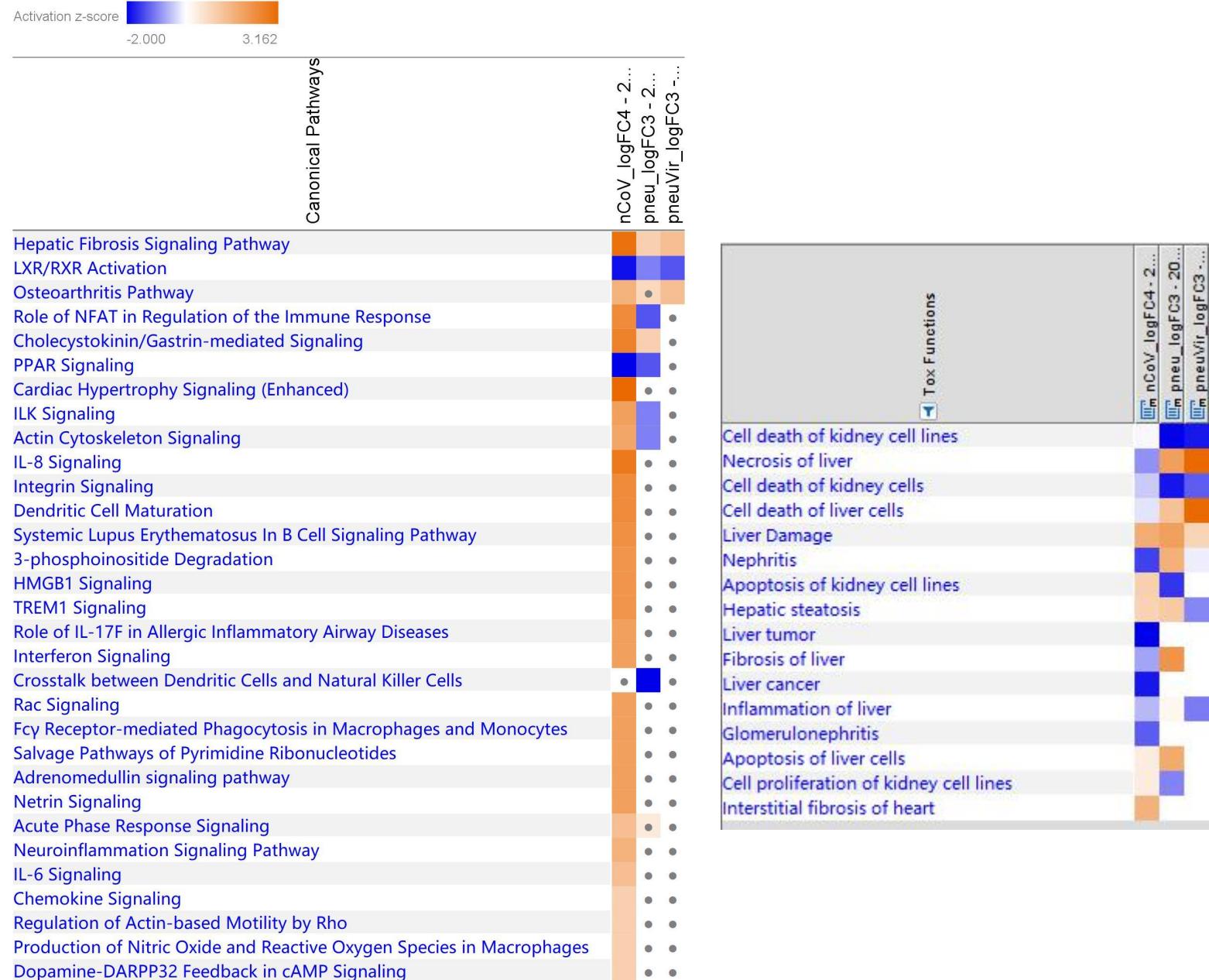
# Lipid transport and localization enriched in nCOV.



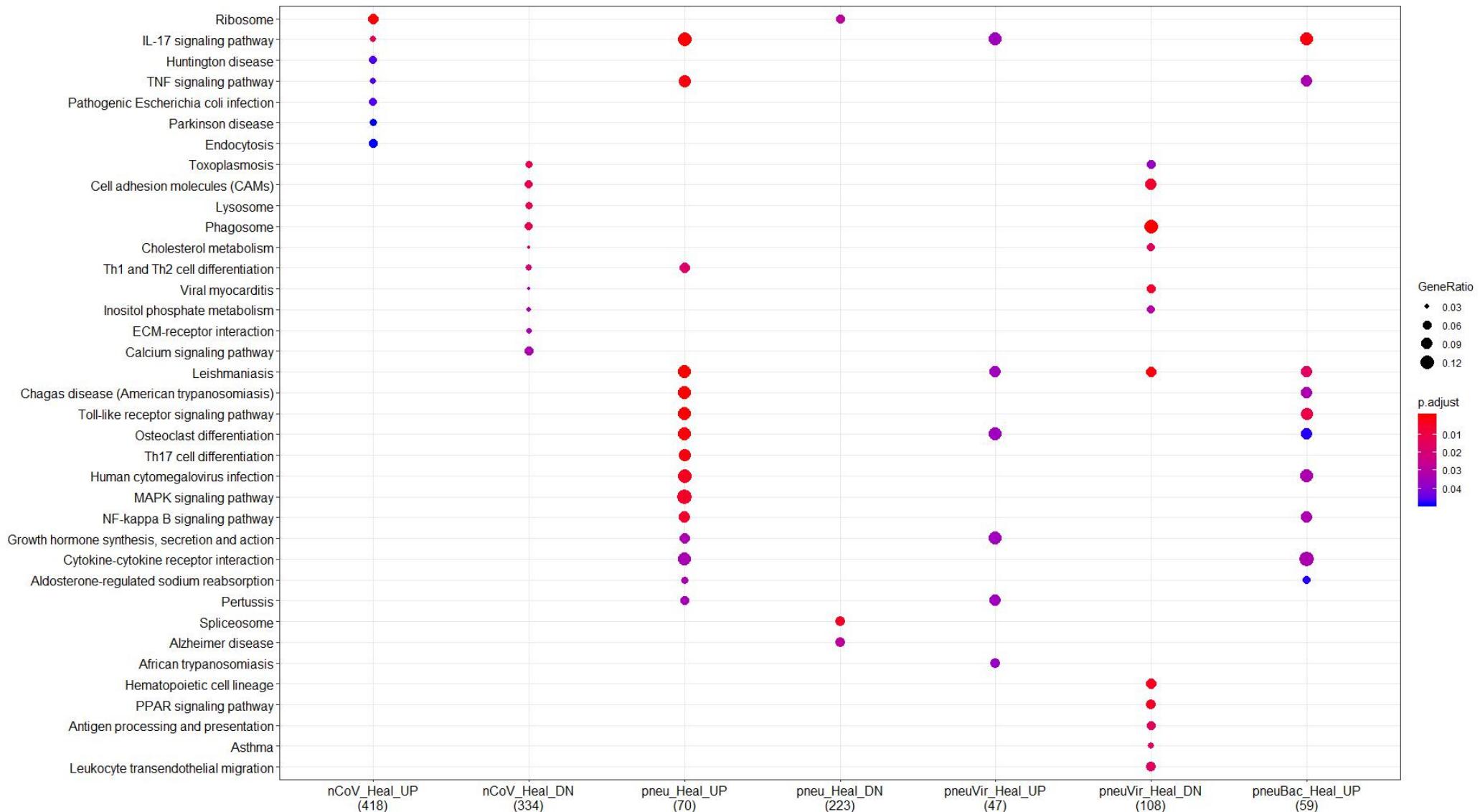
### Analysis Comparison 3



### nCoV\_pneu\_Vir\_comparison



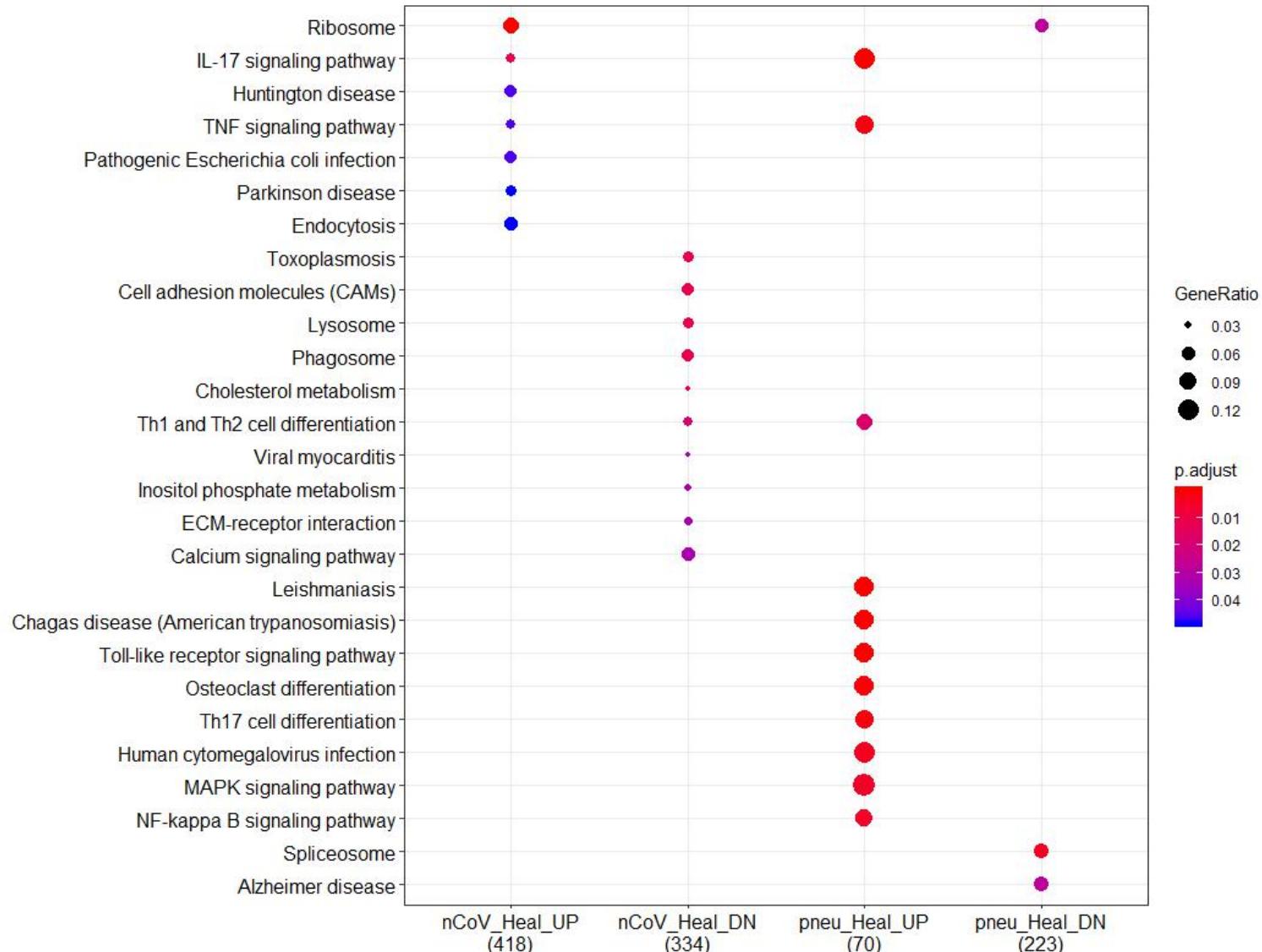
# upregulated IL-17 signaling Pathway exists in nCoV, pneu\_vir/bac



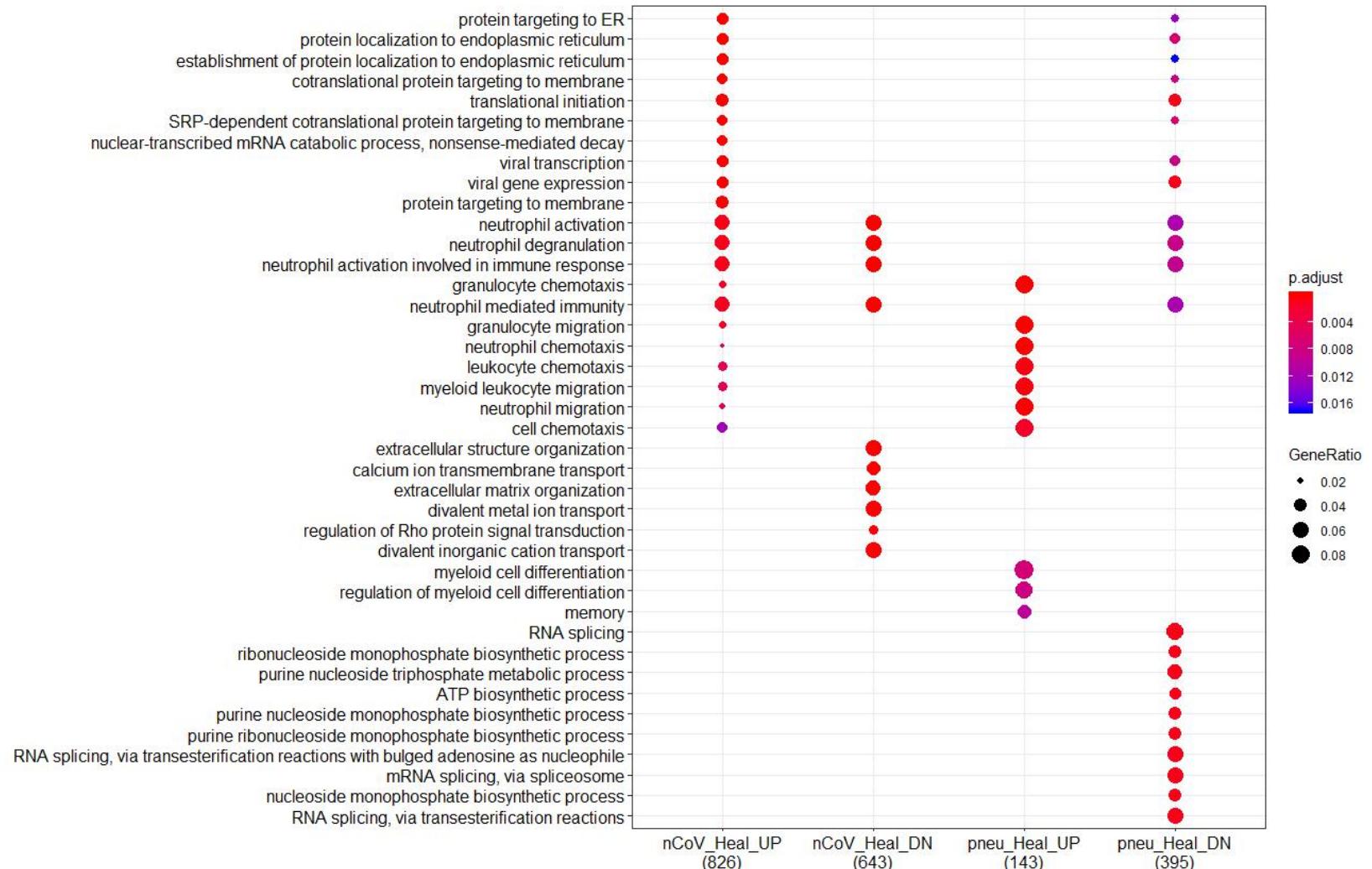
Vir transcription and gene expression terms are up-regulated in nCoV while down-regulated in pnuea



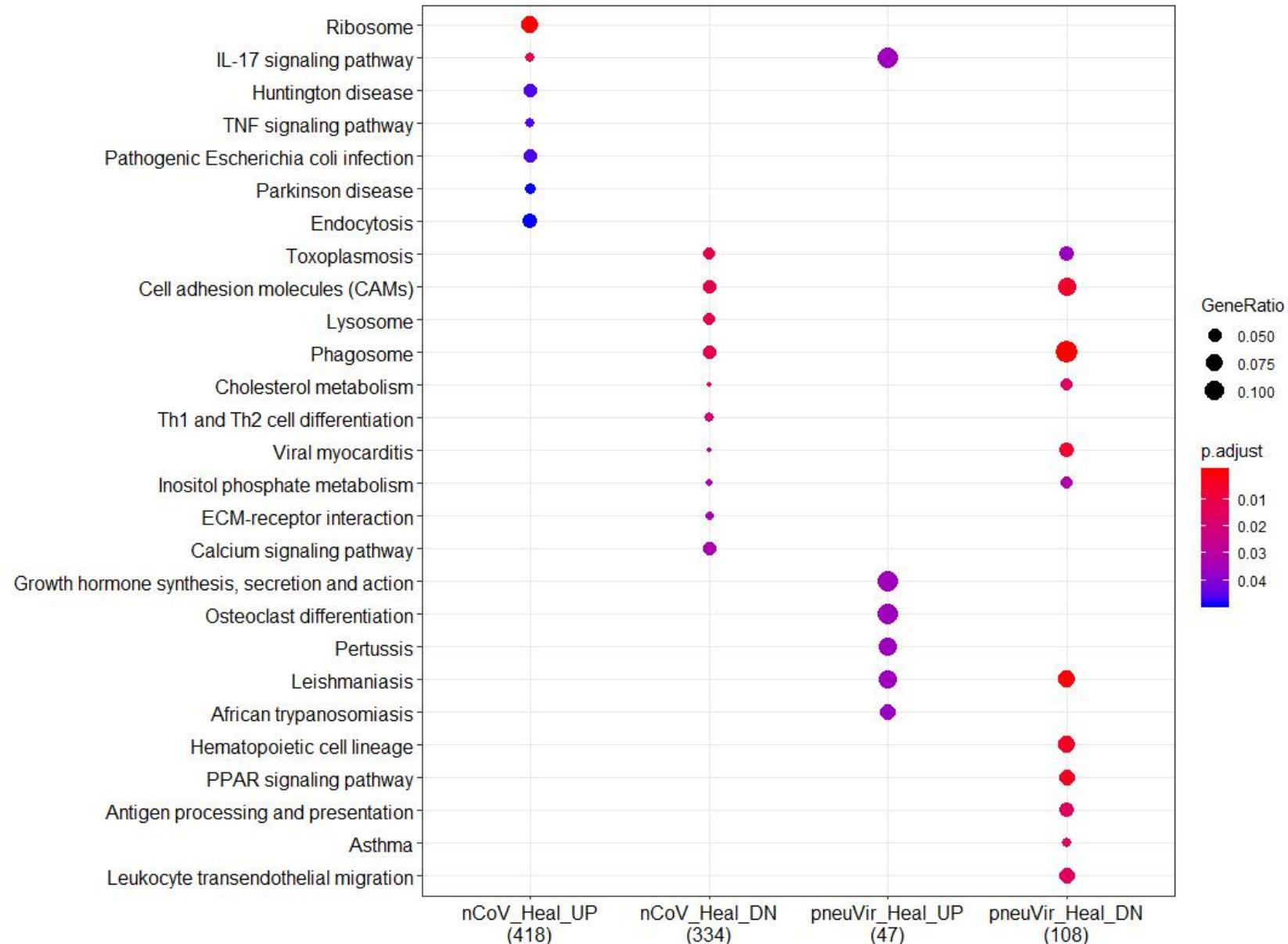
# nCoV\_Heal vs pneu\_Heal



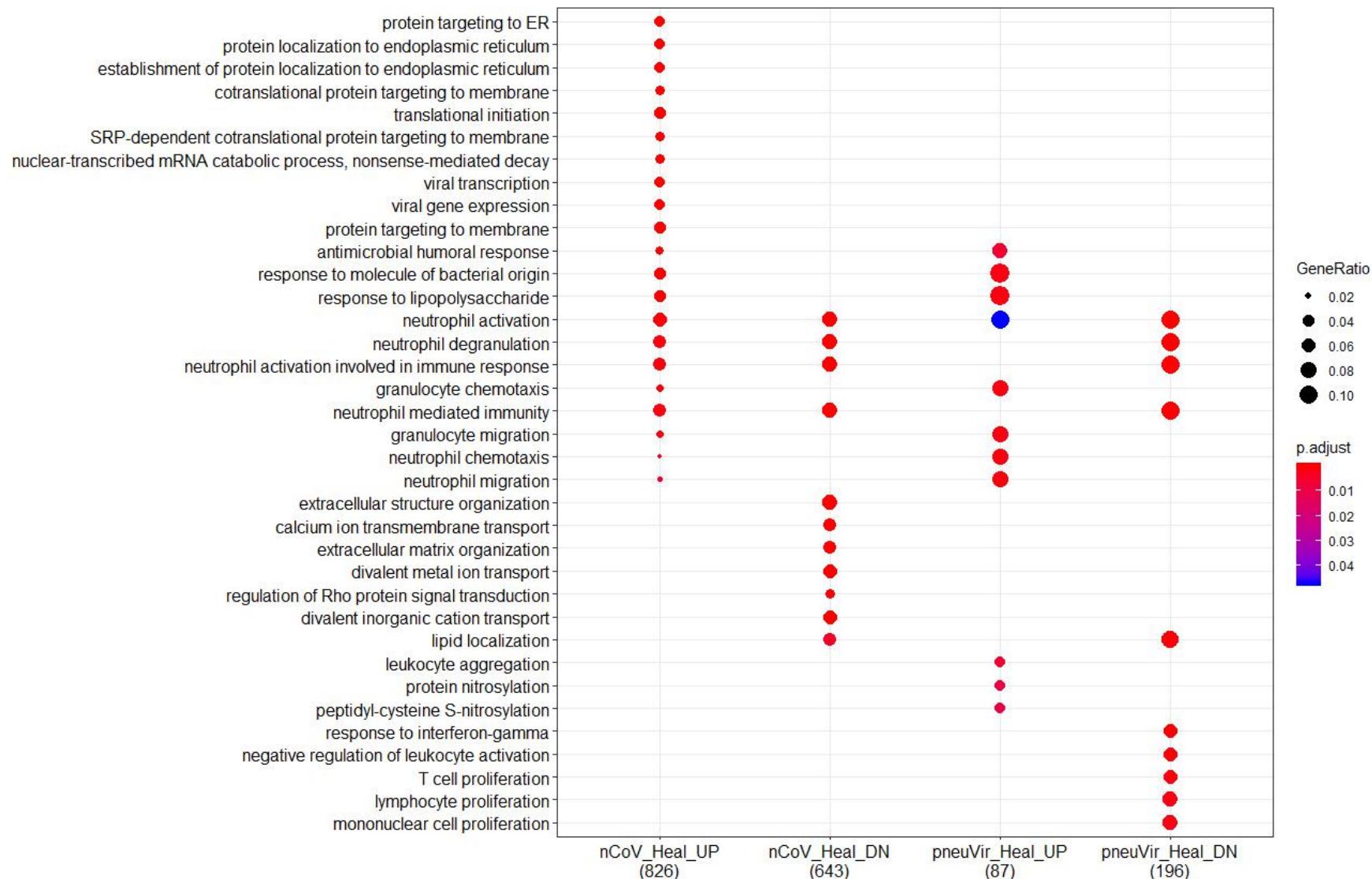
# nCoV\_Heal vs pneu\_Heal



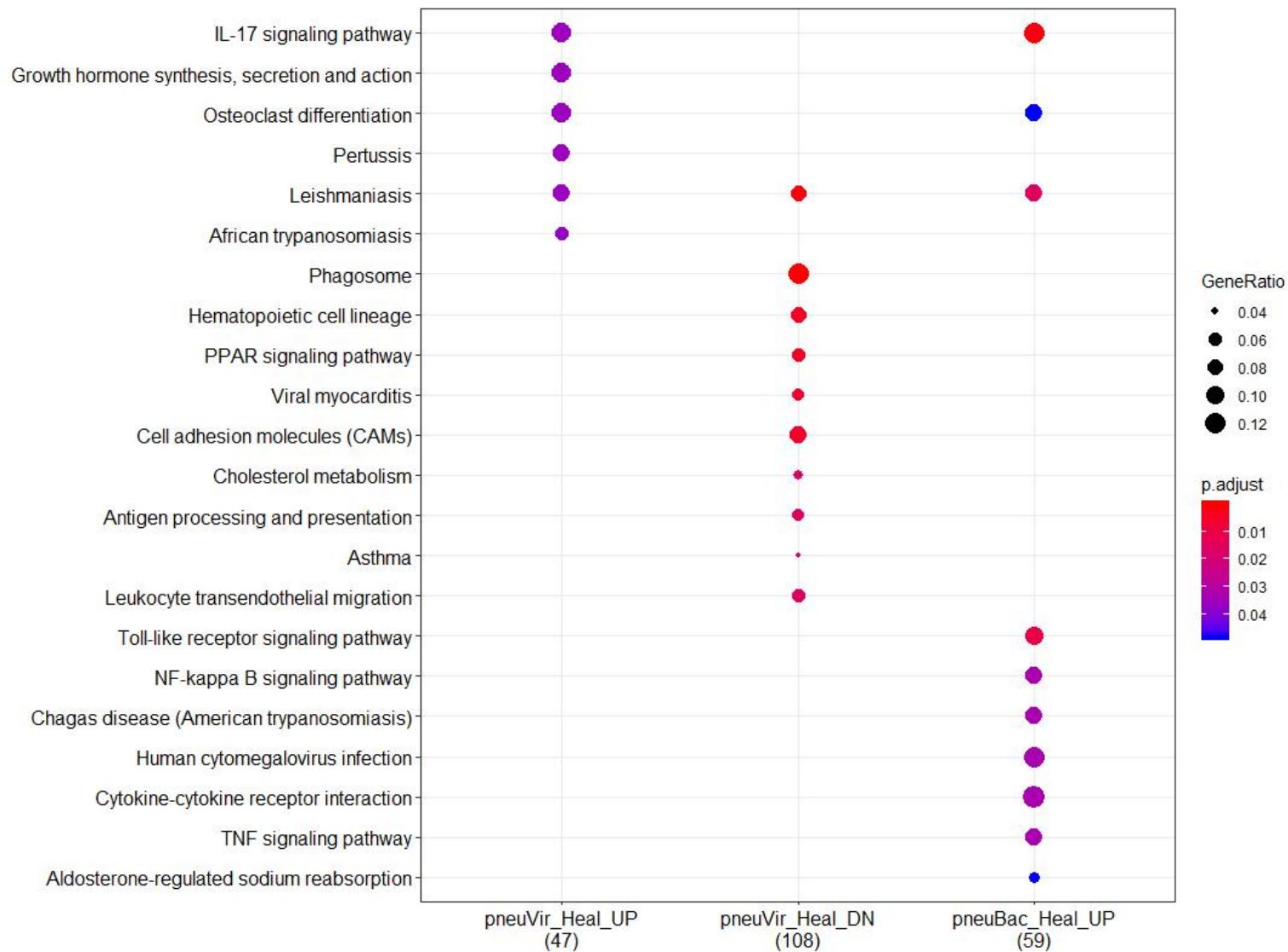
# nCoV\_Heal vs pneu-vir\_Heal



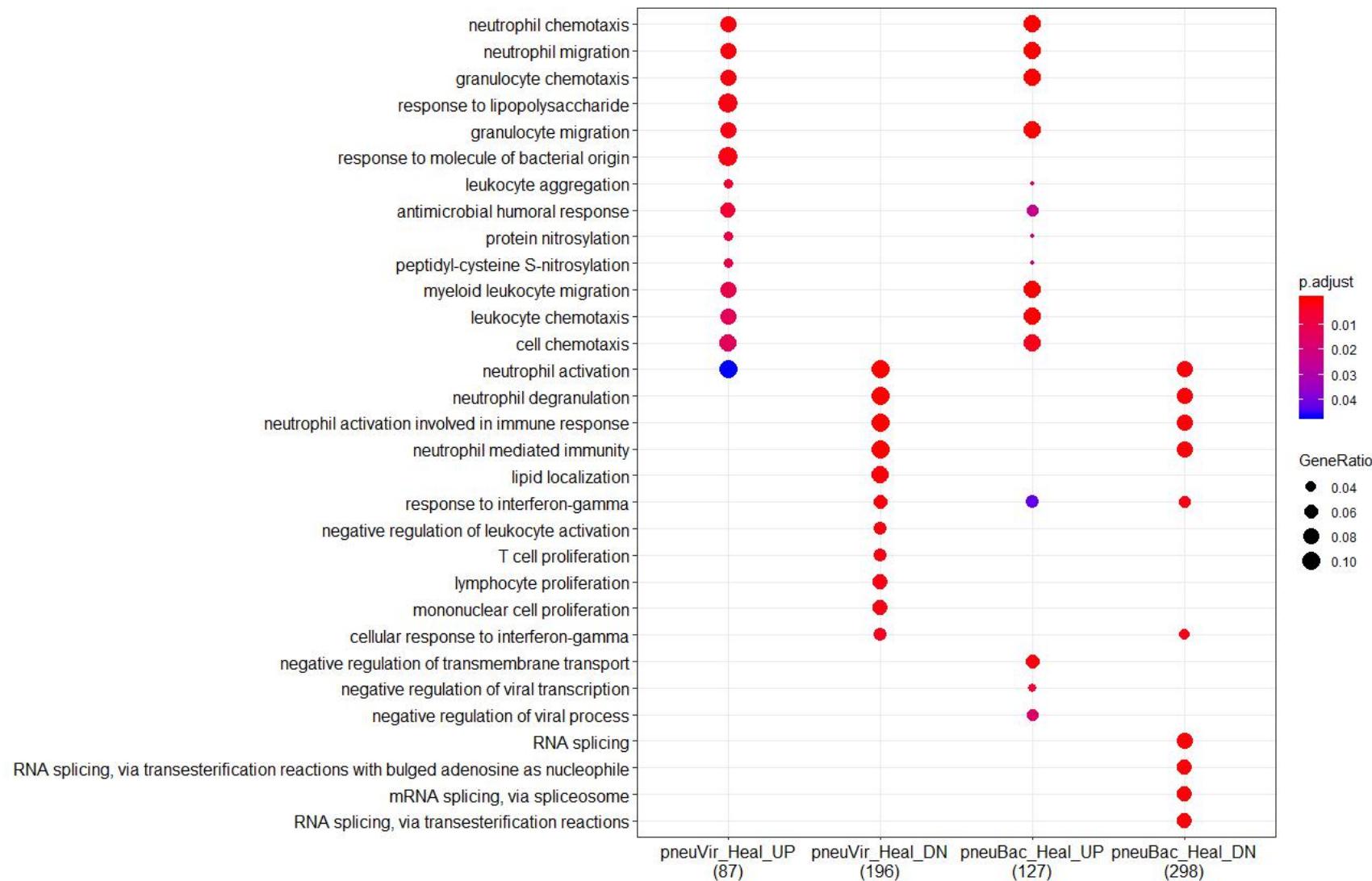
# nCoV\_Heal vs pneu-vir\_Heal



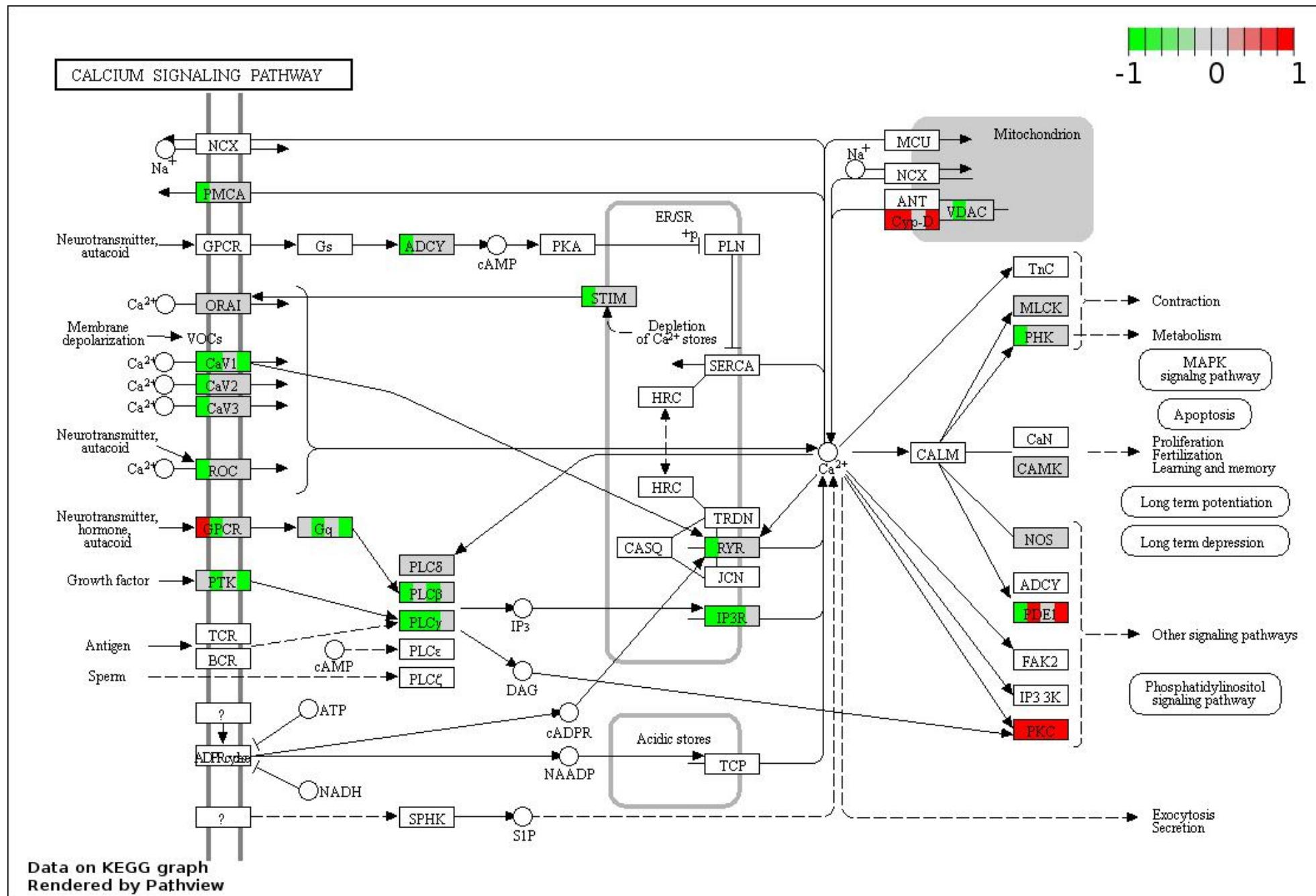
# pneu-vir\_Heal vs pneu-bac\_Heal



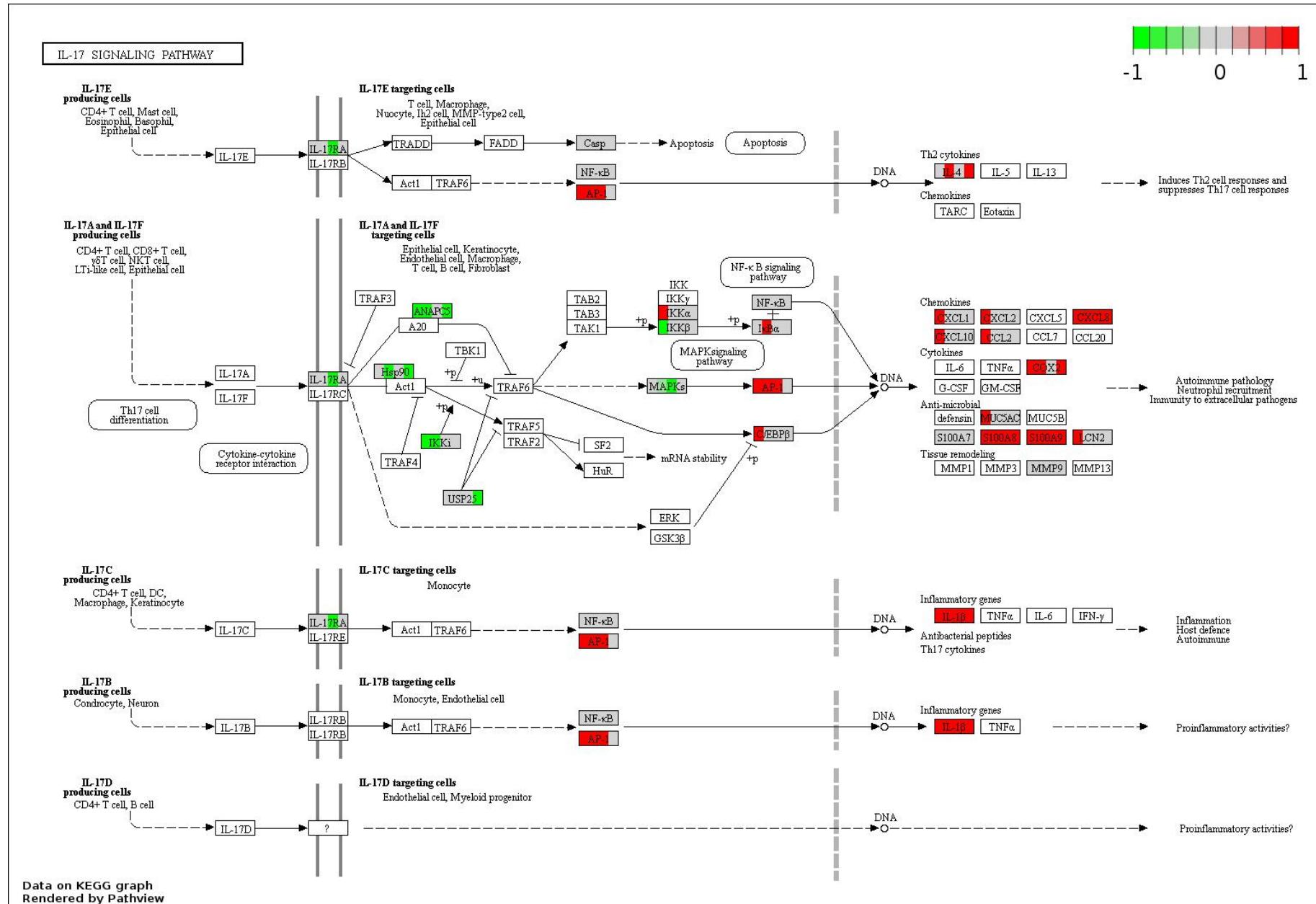
# pneu-vir\_Heal vs pneu-bac\_Heal



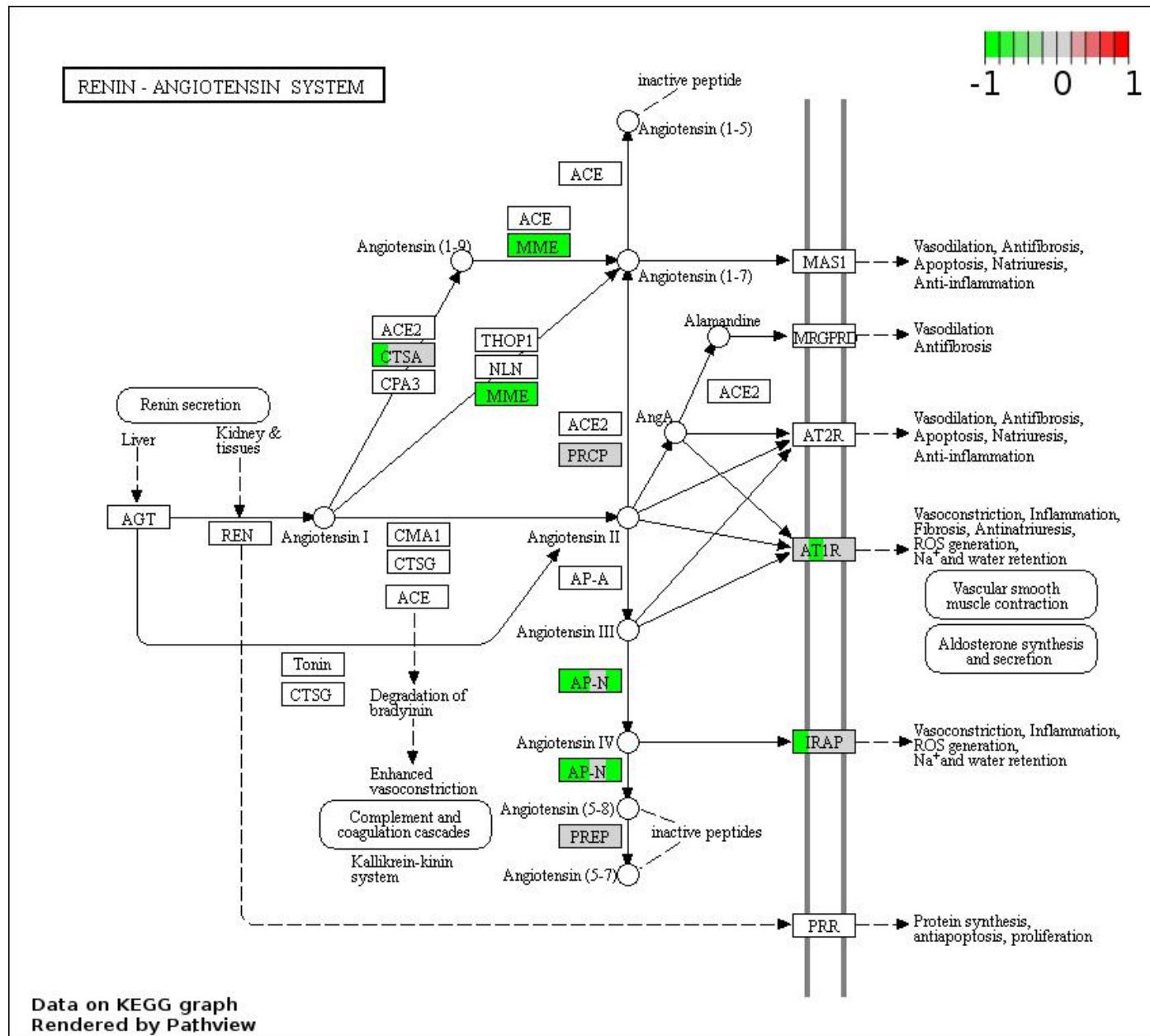
"nCoV\_Heal", "pneu\_Heal", "pneuVir\_Heal", "pneuBac\_Heal"



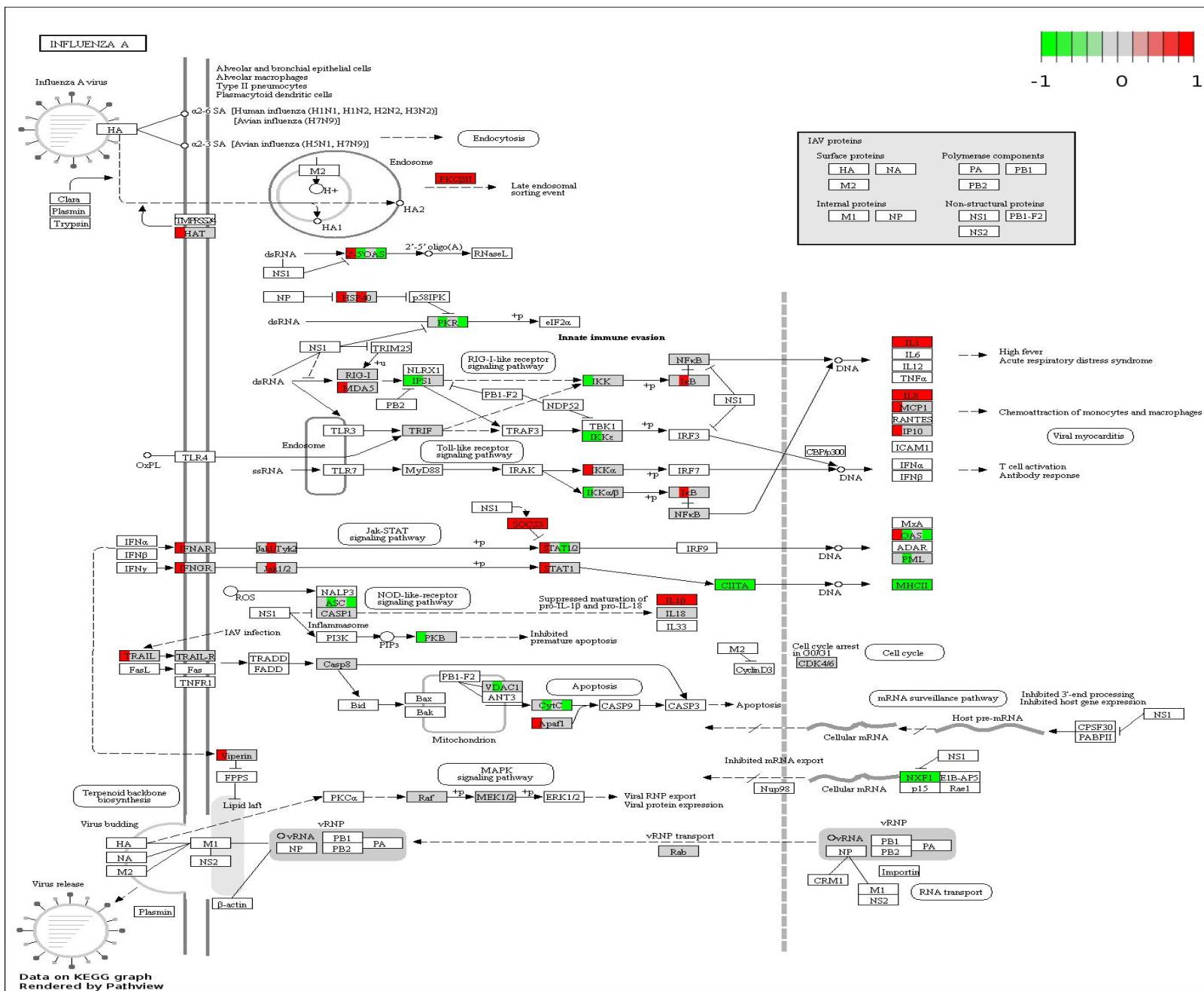
# "nCoV\_Heal", "pneu\_Heal", "pneuVir\_Heal", "pneuBac\_Heal"

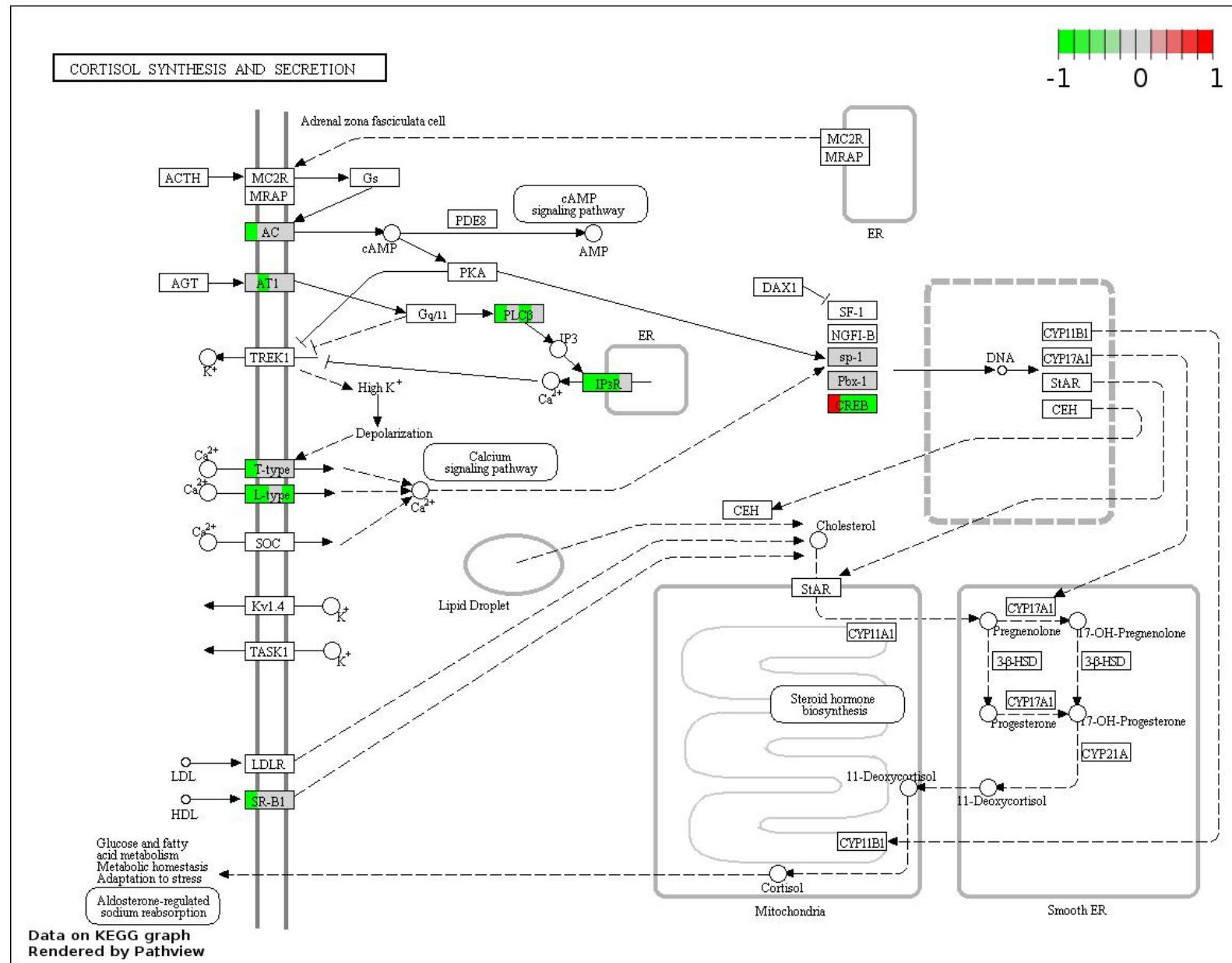


"nCoV\_Heal", "pneu\_Heal", "pneuVir\_Heal", "pneuBac\_Heal"

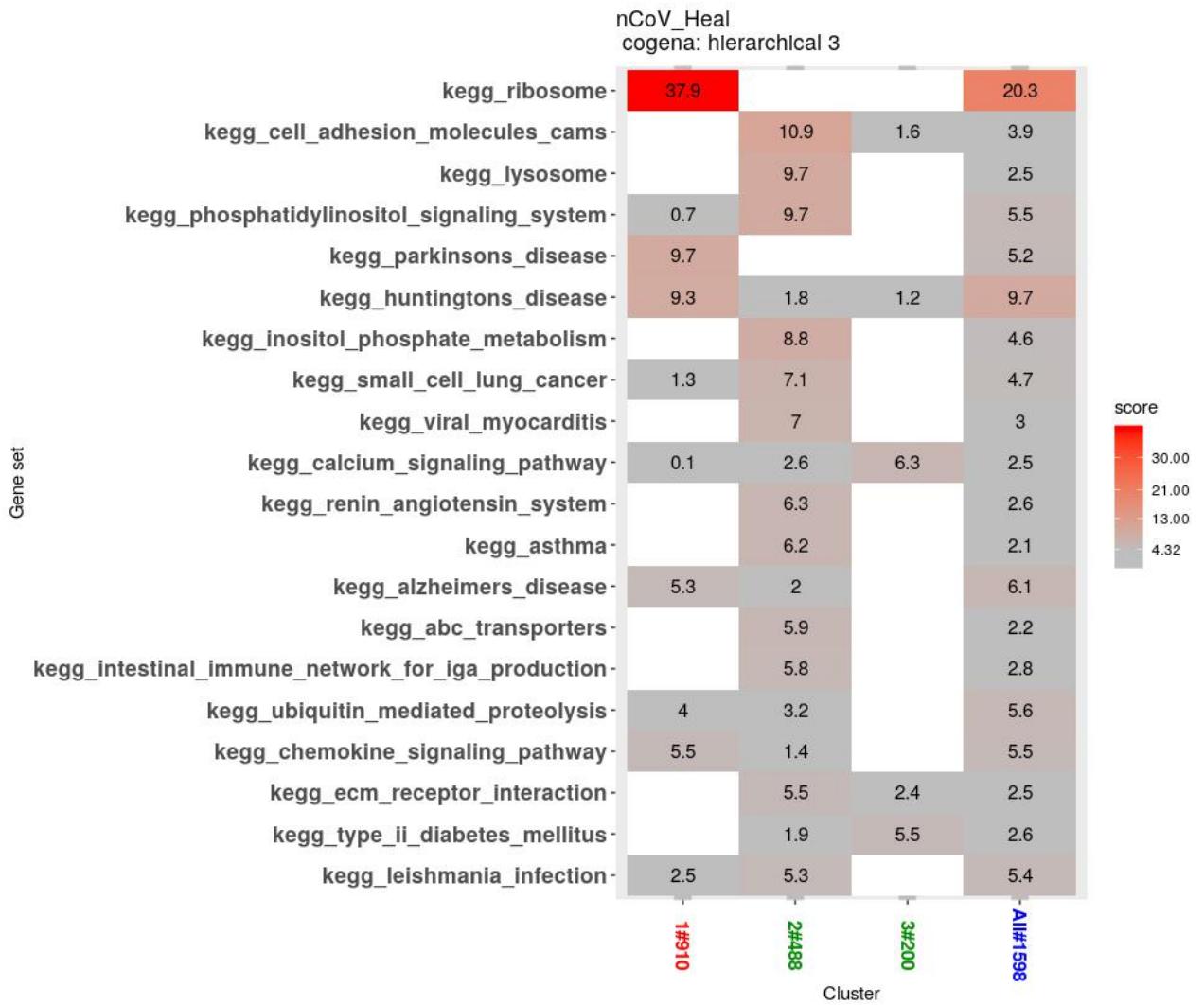
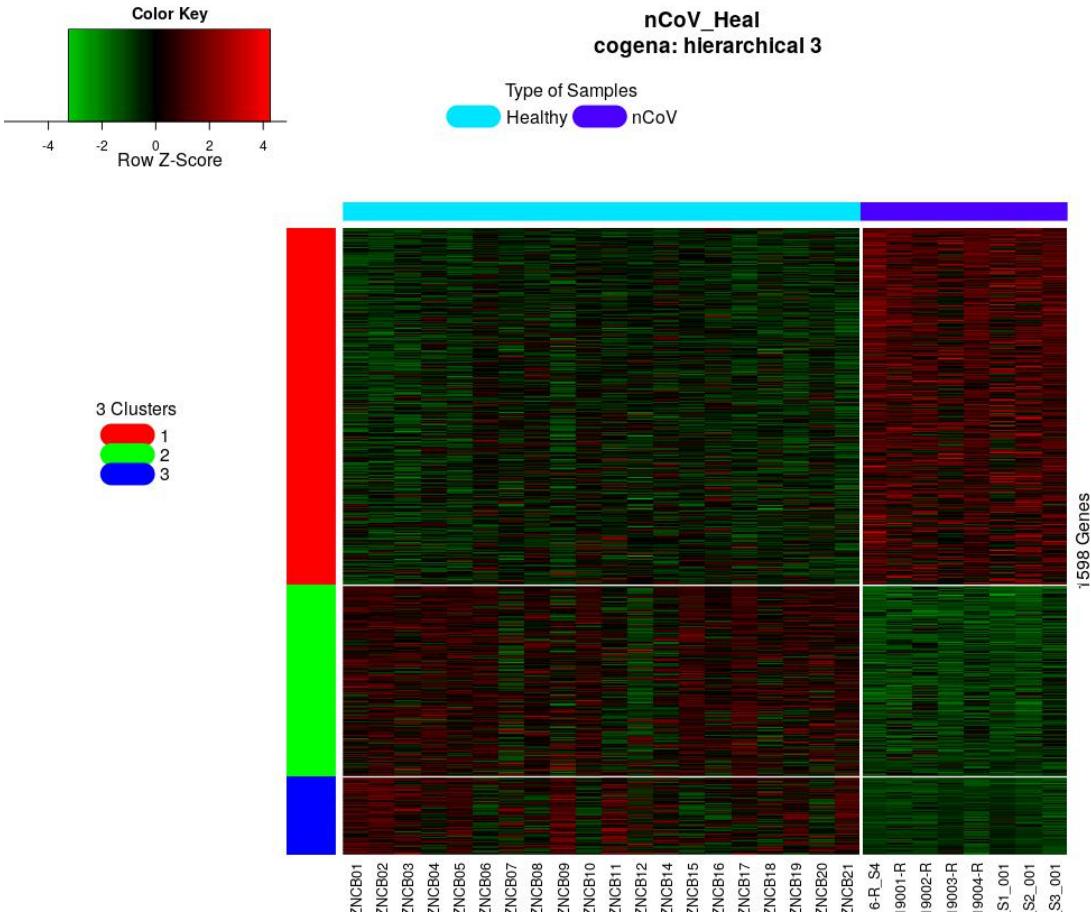


# "nCoV\_Heal", "pneu\_Heal", "pneuVir\_Heal", "pneuBac\_Heal"

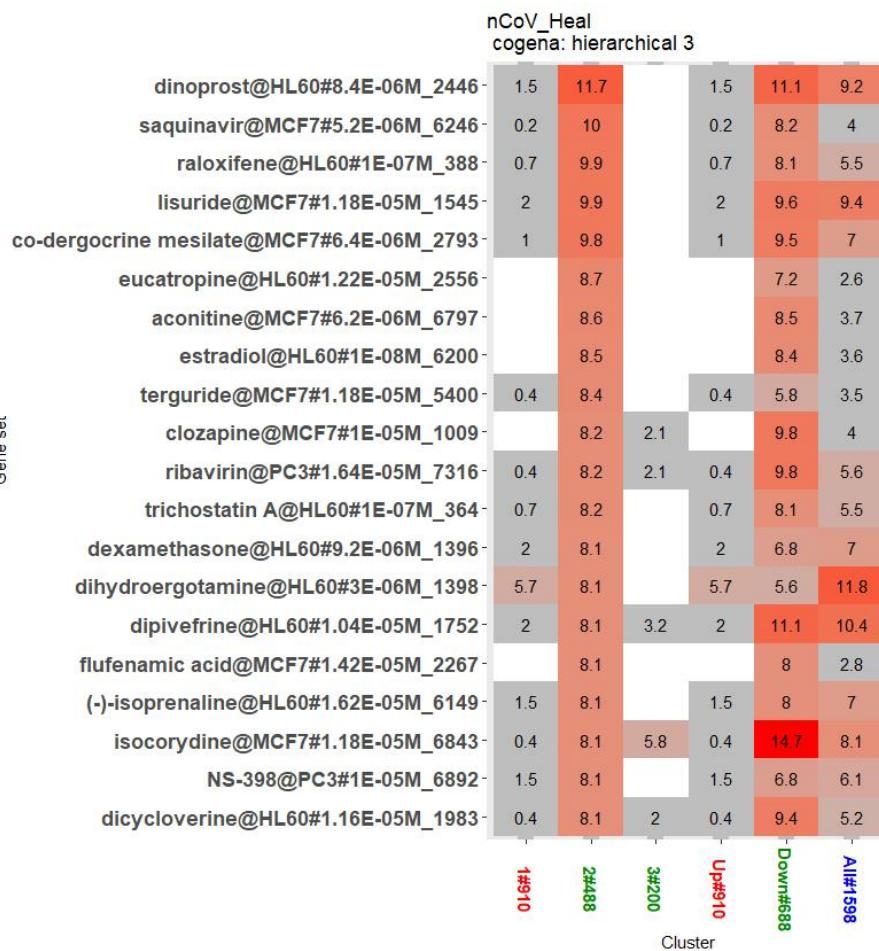




# Drug repositioning



# nCoV vs Healthy (cogena\_CMap\_Up Cluster 2)



**Dinoprost (地诺前列素)** can be used for first-trimester and midtrimester abortion.

**Saquinavir (沙奎那韦)** is an **antiviral** medicine that prevents human immunodeficiency virus from multiplying in your body.

Raloxifene is a prescription drug used by women to prevent and treat bone loss (osteoporosis) after menopause.

**Lisuride (麦角乙脲)**, is an **antiparkinson** agent

Codergocrine Mesylate (甲磺酸双氢麦角毒碱) is used in the treatment of **Alzheimer's** disease, Stroke,Dementia in **Parkinson's** disease, Age related memory loss,Head injury.

**Ribavirin (利巴韦林)** is used in combination with other **antiviral** medications (such as interferon, sofosbuvir) to treat chronic (long-lasting) hepatitis C.

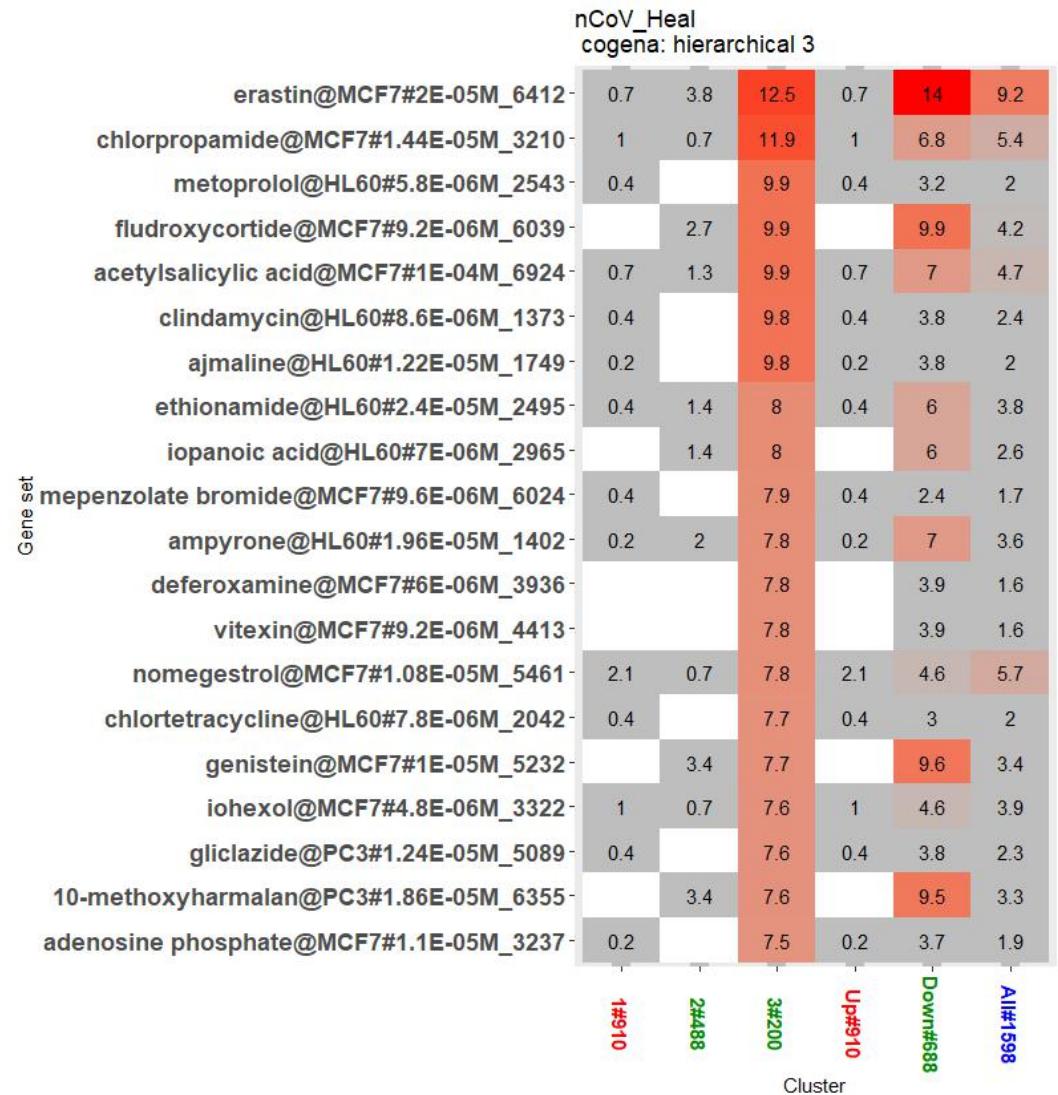
**Dipivefrine** is a Ophthalmologic Agent that is FDA approved for the treatment of of intraocular pressure in chronic open-angle glaucoma (慢开角青光眼).  
aconitine is also used in small doses as an analgesic and blood coagulant.

**Terguride (特麦角脲): 肺动脉高压**

**Isoprenaline (异丙基肾上腺素)**, or isoproterenol, is a medication used for the treatment of bradycardia (心搏缓慢), heart block, and rarely for **asthma (哮喘)**.

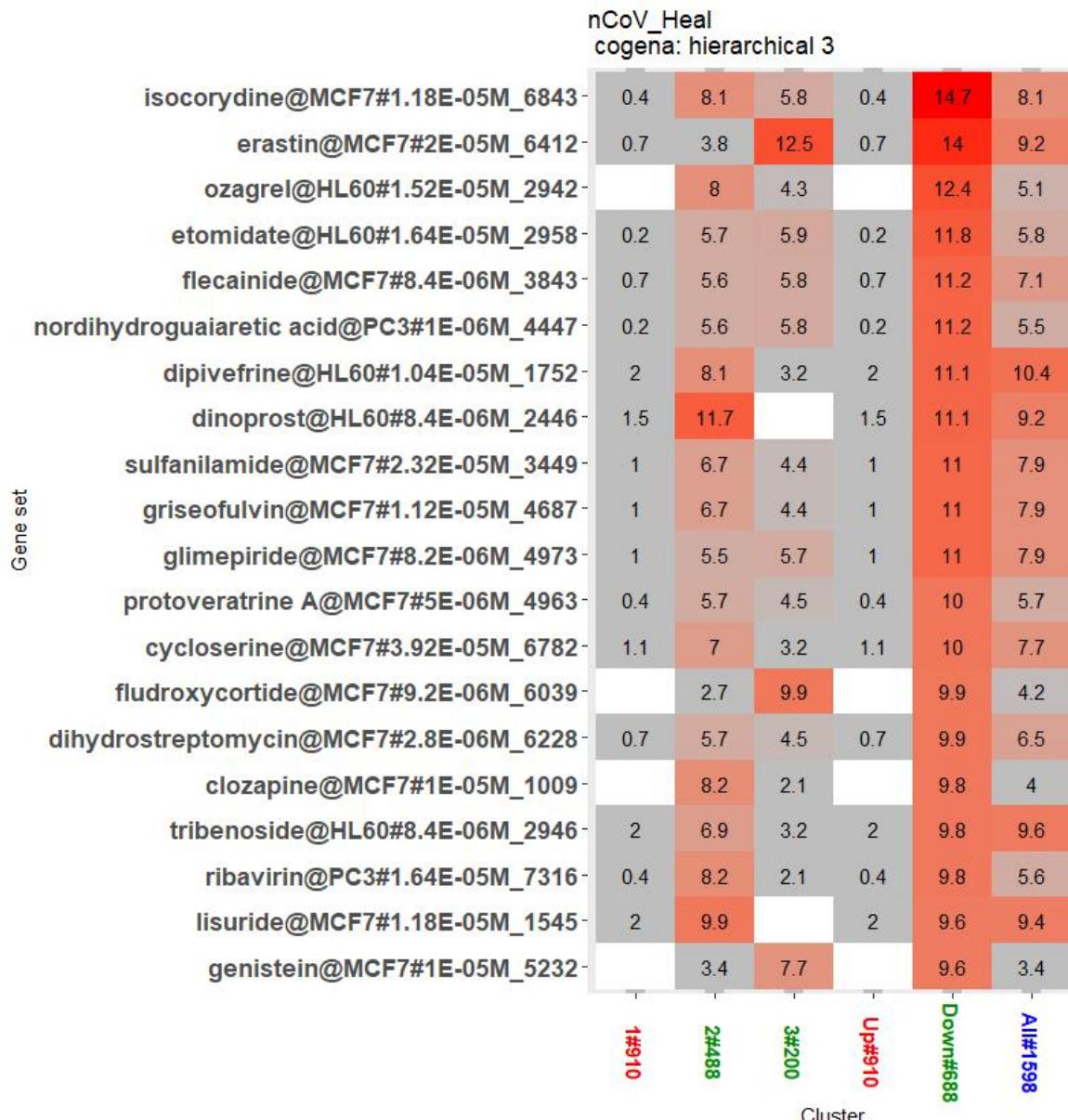
**Clozapine (氯氮平)** is an **antipsychotic** medication Flufenamic acid (FFA) is a class of NSAID drugs, a COX inhibitor and prevents formation of prostaglandins.

# nCoV vs Healthy (cogena\_CMap\_Up)



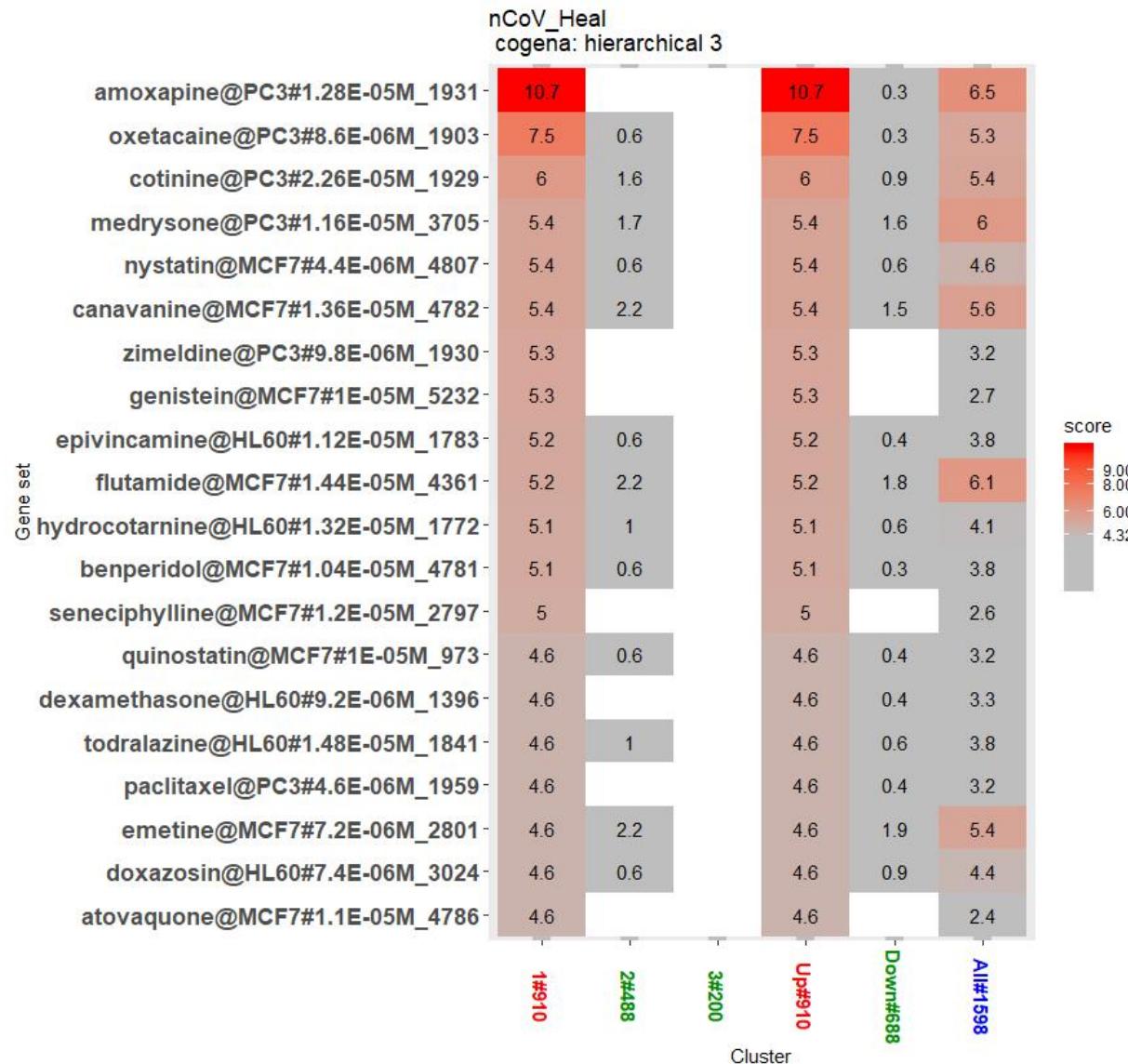
erastin@MCF7#2E-05M\_6412 引起 **ferroptosis** 细胞铁死亡，杀灭癌细胞  
 chlorpropamide@MCF7#1.44E-05M\_3210 T2D，促进胰岛素分泌  
 metoprolol@HL60#5.8E-06M\_2543 选择性β1受体抑制剂，治疗高血压、心脏衰竭  
 fludroxcortide@MCF7#9.2E-06M\_6039 合成的外用类固醇，抗炎、治疗皮肤刺激  
 acetylsalicylic acid@MCF7#1E-04M\_6924 =阿司匹林  
 clindamycin@HL60#8.6E-06M\_1373 抗生素  
 ajmaline@HL60#1.22E-05M\_1749 生物碱，抗心律失常药  
 ethionamide@HL60#2.4E-05M\_2495 抗菌、治结核  
 iopanoic acid@HL60#7E-06M\_2965 造影剂；抑制甲状腺激素释放和T4向T3的转化  
 mepenzolate bromide@MCF7#9.6E-06M\_6024 神经节后副交感神经抑制剂，抑制胃酸、胃蛋白酶分泌和大肠收缩  
 ampyrone@HL60#1.96E-05M\_1402 止痛、抗炎、退烧，由于可导致粒细胞缺乏症，不再推荐作为药物使用  
 deferoxamine@MCF7#6E-06M\_3936 细菌源产物，螯合剂，用于结合血液中的铁铝经尿排出  
 vitexin@MCF7#9.2E-06M\_4413 牡荆碱，血小板凝集抑制剂、alpha葡萄糖苷酶抑制剂；多种中药的有效成分，抗氧化、抗炎、抗肿瘤、镇痛、神经保护。  
 nomegestrol@MCF7#1.08E-05M\_5461 黄体酮，避孕、更年期治疗  
 chlortetracycline@HL60#7.8E-06M\_2042 四环素抗生素  
 genistein@MCF7#1E-05M\_5232 血管生成抑制剂、植物雌激素  
 iohexol@MCF7#4.8E-06M\_3322 造影剂  
 gliclazide@PC3#1.24E-05M\_5089 T2D，结合胰岛beta细胞上的SUR-1受体  
 10-methoxyharmalan@PC3#1.86E-05M\_6355 结合血清素，影响conditioned behavior  
 adenosine phosphate@MCF7#1.1E-05M\_3237 磷酸腺苷（AMP、ATP）

# nCoV vs Healthy (cogena\_CMap\_Up)



isocorydine@MCF7#1.18E-05M\_6843 阿朴啡生物碱，植物源，结合多巴胺、肾上腺素、血清素受体  
 erastin@MCF7#2E-05M\_6412 引起ferroptosis细胞铁死亡，杀灭癌细胞  
 ozagrel@HL60#1.52E-05M\_2942 作用于血小板，抗血栓  
 etomidate@HL60#1.64E-05M\_2958 短效麻醉剂  
 flecainide@MCF7#8.4E-06M\_3843 用于心动过速、心律失常  
 nordihydroguaiaretic acid@PC3#1E-06M\_4447 植物来源，用途广泛，抗氧化、心血管疾病、神经系统疾病、癌症  
 dipivefrine@HL60#1.04E-05M\_1752 青光眼，局部用药  
 dinoprost@HL60#8.4E-06M\_2446 催产素/堕胎  
 sulfanilamide@MCF7#2.32E-05M\_3449 磺胺，抗菌  
 griseofulvin@MCF7#1.12E-05M\_4687 抗真菌  
 glimepiride@MCF7#8.2E-06M\_4973 T2D，刺激胰岛素分泌，提高胰岛素敏感性  
 protoveratrine A@MCF7#5E-06M\_4963 植物源，治疗高血压，可抑制呼吸  
 cycloserine@MCF7#3.92E-05M\_6782 广谱抗菌、抑制细菌细胞壁合成  
 fludroxycortide@MCF7#9.2E-06M\_6039 皮质类固醇  
 dihydrostreptomycin@MCF7#2.8E-06M\_6228 抗生素  
 clozapine@MCF7#1E-05M\_1009 精神疾病、精神分裂  
 tribenoside@HL60#8.4E-06M\_2946 血管保护、修复，治痔疮  
**ribavirin@PC3#1.64E-05M\_7316** 抗病毒  
 lisuride@MCF7#1.18E-05M\_1545 帕金森，结合5-HT(1A) and 5-HT(2A/2C) receptors and dopamine receptor  
 genistein@MCF7#1E-05M\_5232 大豆异黄酮类，血管生成inhibitor，雌激素

# nCoV vs Healthy (cogena\_CMap\_Dn)

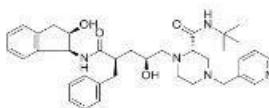
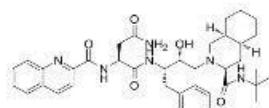
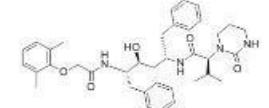
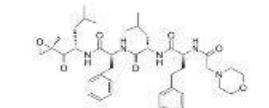
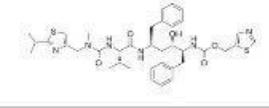
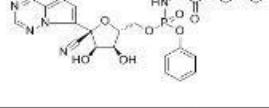
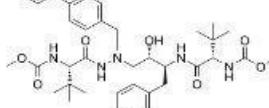


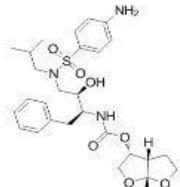
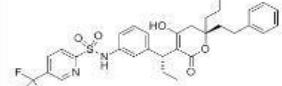
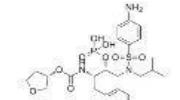
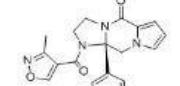
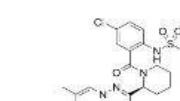
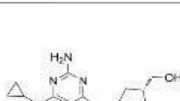
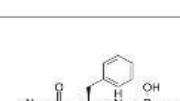
amoxapine@PC3#1.28E-05M\_1931 阿莫沙平 (抗抑郁药)  
 oxetacaine@PC3#8.6E-06M\_1903 relieve dysphagia, relieve pain due to reflux, chronic gastritis, and duodenal ulcer  
 cotinine@PC3#2.26E-05M\_1929 尼古丁代谢产物  
**medrysone@PC3#1.16E-05M\_3705** 甲羟松, 局部应用皮质类激素  
 nystatin@MCF7#4.4E-06M\_4807 antifungal, not absorbed by oral  
canavanine@MCF7#1.36E-05M\_4782 刀豆氨酸, 抑菌  
 zimeldine@PC3#9.8E-06M\_1930 血清素重吸收抑制剂、抗抑郁  
 genistein@MCF7#1E-05M\_5232 大豆异黄酮类, 血管生成inhibitor, 雌激素  
 epivincamine@HL60#1.12E-05M\_1783 植物源, 健脑益智、促进大脑供血  
 flutamide@MCF7#1.44E-05M\_4361 非甾体类抗雄激素  
 hydrocotarnine@HL60#1.32E-05M\_1772 鸦片碱、镇痛  
 benperidol@MCF7#1.04E-05M\_4781 精神抑制、安定  
 seneciphylline@MCF7#1.2E-05M\_2797 吡咯嗪核生物碱, 中药tusanqi土三七? 主要成分, 副作用窦性阻塞综合征  
 quinostatin@MCF7#1E-05M\_973  
 dexamethasone@HL60#9.2E-06M\_1396  
 todralazine@HL60#1.48E-05M\_1841  
 paclitaxel@PC3#4.6E-06M\_1959  
 emetine@MCF7#7.2E-06M\_2801  
 doxazosin@HL60#7.4E-06M\_3024  
 atovaquone@MCF7#1.1E-05M\_4786

# 中国科学院上海药物研究所和上海科技大学联合研究团队发现一批可能对新型冠状肺炎有治疗作用的老药和中药

- 候选药物包括蛋白酶抑制剂茚地那韦（Indinavir）、**沙奎那韦**（Saquinavir）、洛匹那韦（Lopinavir）、卡非佐米（Carfilzomib）、利托那韦（ritonavir）等12种抗HIV药物，2种抗呼吸道合胞病毒药物，1种抗人巨噬病毒药物，1种**抗精神分裂症**药物，1种免疫抑制剂以及2种其他类药物；发现含有“二苯乙烯”结构的**孟鲁司特(Montelukast, 哮喘的预防和长期治疗)**以及植物药活性成分虎杖苷和脱氧土大黄苷与2019-nCoV水解酶Mpro结合较好，可能对病毒有抑制作用；在前期抗SARS研究及计算机模拟基础上发现老药肉桂硫胺（cinanserin,精神系统疾病）、环孢菌素A(cyclosporine)可能对2019-nCoV有效，其中肉桂硫胺是上世纪70年代用于抗精神分裂症的药物，对冠状病毒3CL水解酶具有抑制作用，免疫抑制剂环孢菌素A可以阻止病毒的核衣壳蛋白与人的环孢亲和素A相互结合，已有研究表明联用干扰素和环孢菌素A能显著抑制冠状病毒在人类支气管和肺部复制及造成的组织损伤。他们研究还发现，虎杖、山豆根等中药材中可能含有抗2019-nCoV有效成分。

## 对 2019-nCoV 可能有治疗作用的化学药物或中药活性成分

序	药物(化合物)名称	结构式	原作用或功效	中药活性成分来源
1	Indinavir (茚地那韦)		蛋白酶抑制剂, 抗 HIV	—
2	Saquinavir (沙奎那韦)		蛋白酶抑制剂, 抗 HIV	—
3	Lopinavir (洛匹那韦)		蛋白酶抑制剂, 抗 HIV	—
4	Carfilzomib (卡非佐米)		蛋白酶抑制剂, 多发性骨髓瘤	—
5	Ritonavir (瑞托那韦)		蛋白酶抑制剂, 抗 HIV	—
6	Remdesivir (瑞德西韦或伦地西韦)		抗 HIV	—
7	Atazanavir (阿扎那韦)		蛋白酶抑制剂, 抗 HIV	—

序	药物(化合物)名称	结构式	原作用或功效	中药活性成分来源
8	Darunavir (达芦那韦)		蛋白酶抑制剂, 抗 HIV	—
9	Tipranavir (替拉那韦)		蛋白酶抑制剂, 抗 HIV	—
10	Fosamprenavir (福沙那韦)		蛋白酶抑制剂, 抗 HIV	—
11	Enzaplatovir (恩扎托韦)		融合蛋白抑制剂, 抗呼吸道合胞病毒	—
12	Presatovir (普瑞托韦)		融合蛋白抑制剂, 抗呼吸道合胞病毒	—
13	Abacavir (阿巴卡韦)		核苷类逆转录酶抑制剂, 抗病毒	—
14	Bortezomib (硼替佐米)		蛋白酶抑制剂, 多发性骨髓瘤	—

序	药物(化合物)名称	结构式	原作用或功效	中药活性成分来源
15	Elvitegravir (埃替格韦)		整合酶抑制剂, 抗 HIV	—
16	Maribavir (马立巴韦或曼巴韦)		抑制 HCMV 编码的蛋白激酶 UL97, 抗人巨噬病毒	—
17	Raltegravir (雷特格韦)		整合酶抑制剂, 抗 HIV	—
18	孟鲁司特		哮喘	—
19	脱氧土大黄苷		改善微循环	大黄
20	虎杖苷		改善微循环	虎杖
21	山豆根查尔酮		清热解毒	山豆根
22	双硫仑		酒精依赖症	—

序	药物(化合物)名称	结构式	原作用或功效	中药活性成分来源
23	卡莫氟		抗肿瘤	—
24	紫草素		抗肿瘤、抗炎症	紫草
25	依布硒		抗炎	—
26	Tideglusib		神经退行性疾病	—
27	PX-12		抗肿瘤	—
28	TDZD-8		神经退行性疾病	—
29	环孢菌素 A		免疫抑制剂	—
30	肉桂硫胺		精神系统疾病、抗 SARS 冠状病毒	—

# Other Drugs

- 雷姆昔韦（Remdesivir）（一种病毒聚合酶抑制剂）
- 氨溴索（ambroxol），又称沐舒坦，是一种呼吸道润滑祛痰药，临幊上常用于急慢性支气管炎等疾病。针对ACE2分子，北京大学基础医学院王月丹、初明团队采用自主研发的人工智能药靶筛选系统，重点针对2674种已上市药物以及1500种中药提取物进行了药物筛选，发现多种潜在的ACE2结合剂。
- 氯喹（Chloroquine）细胞层面的抑制作用。军医科和武汉病毒所

# 与基于分子对接的比较

上海药物所、上海科技大学

候选药物包括蛋白酶抑制剂茚地那韦 (Indinavir)、**沙奎那韦 (Saquinavir)**、洛匹那韦 (Lopinavir)、卡非佐米 (Carfilzomib)、利托那韦 (ritonavir) 等12种抗HIV药物，2种抗呼吸道合胞病毒药物，1种抗人巨噬病毒药物，1种**抗精神分裂症**药物，1种免疫抑制剂以及2种其他类药物；发现含有“二苯乙烯”结构的**孟鲁司特 (Montelukast, 哮喘的预防和长期治疗)**以及植物药活性成分虎杖苷和脱氧土大黄苷与2019-nCoV水解酶Mpro结合较好，可能对病毒有抑制作用

晶泰科技

MedChemExpress

Com.	Name	Indication
1	Carfilzomib	用于多发性骨髓瘤患者的治疗
2		用于消化道疾病的诊断
3		用于成人生长激素缺乏症(AGHD)的诊断
4	Saquinavir	用于HIV-1治疗
5		用于预防急性冠脉综合征，和心肌梗死，心脏病的治疗
6		用于胃酸分泌功能评价的辅助诊断
7		血清素合成抑制剂
8		降低非瓣膜性房颤患者发生卒中风险
9		DNA聚合酶抑制剂，用于标记疱疹
10		用于牙周袋深度的减少
11		用于治疗免疫缺陷，结肠癌
12		用于的光毒性预防
13		用于黑色素瘤的治疗
14		用于高血压的治疗
15		用于慢性病毒丙肝的治疗

抗 HIV 药物沙奎那韦 (Saquinavir)、蛋白酶抑制剂卡非佐米 (Carfilzomib)，以及洛匹那韦 (Lopinavir) 的打分值分别处于 FDA 化合物库的第三名、第五名和第七名。

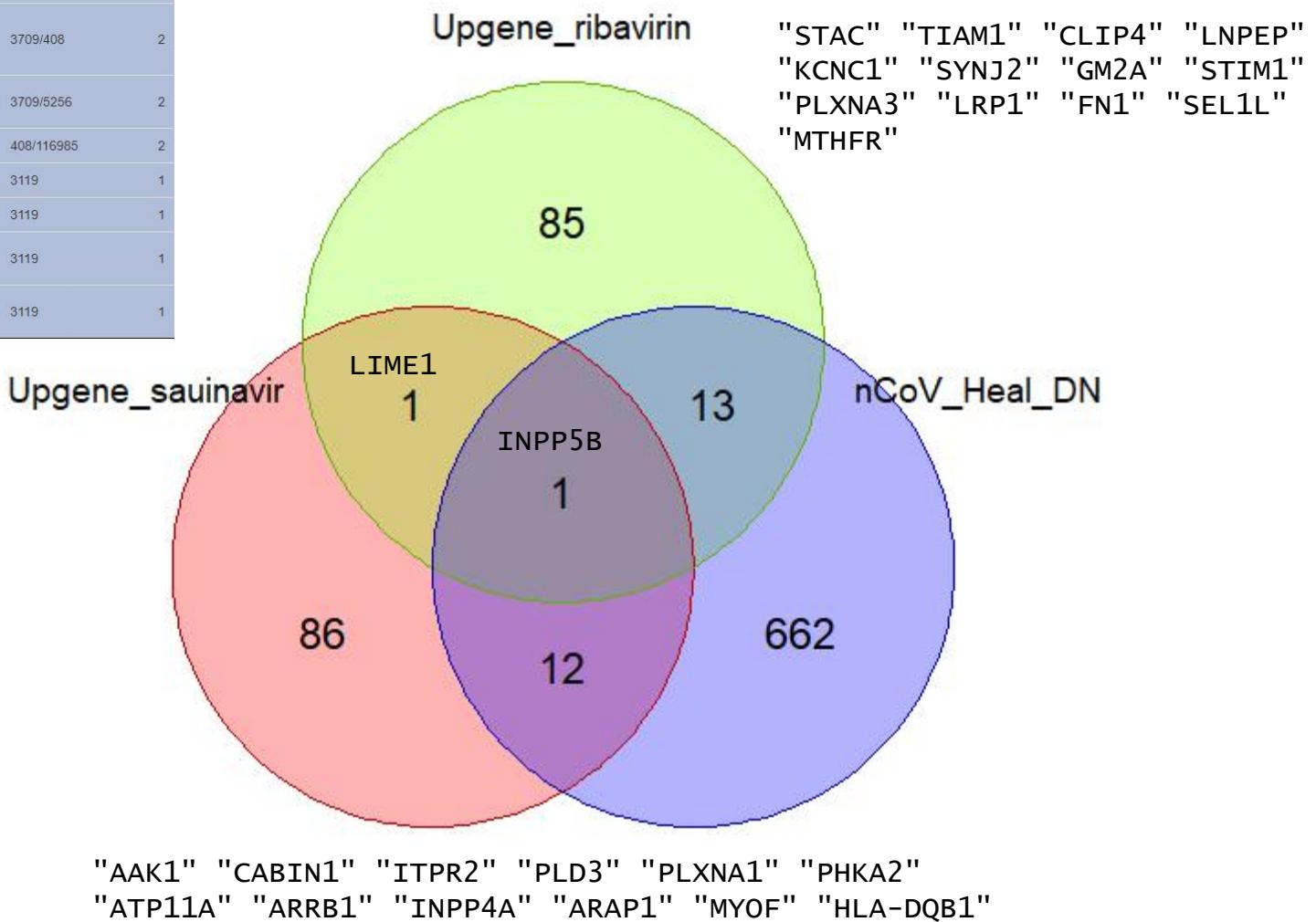
图6：对3CLpro靶点可能有抑制作用的活性排序靠前的已上市药物分子。其中，Carfilzomib和Saquinavir与中科院上海药物所和上海科技大学联合研究团队发现的潜在药物列表重合

# 结论

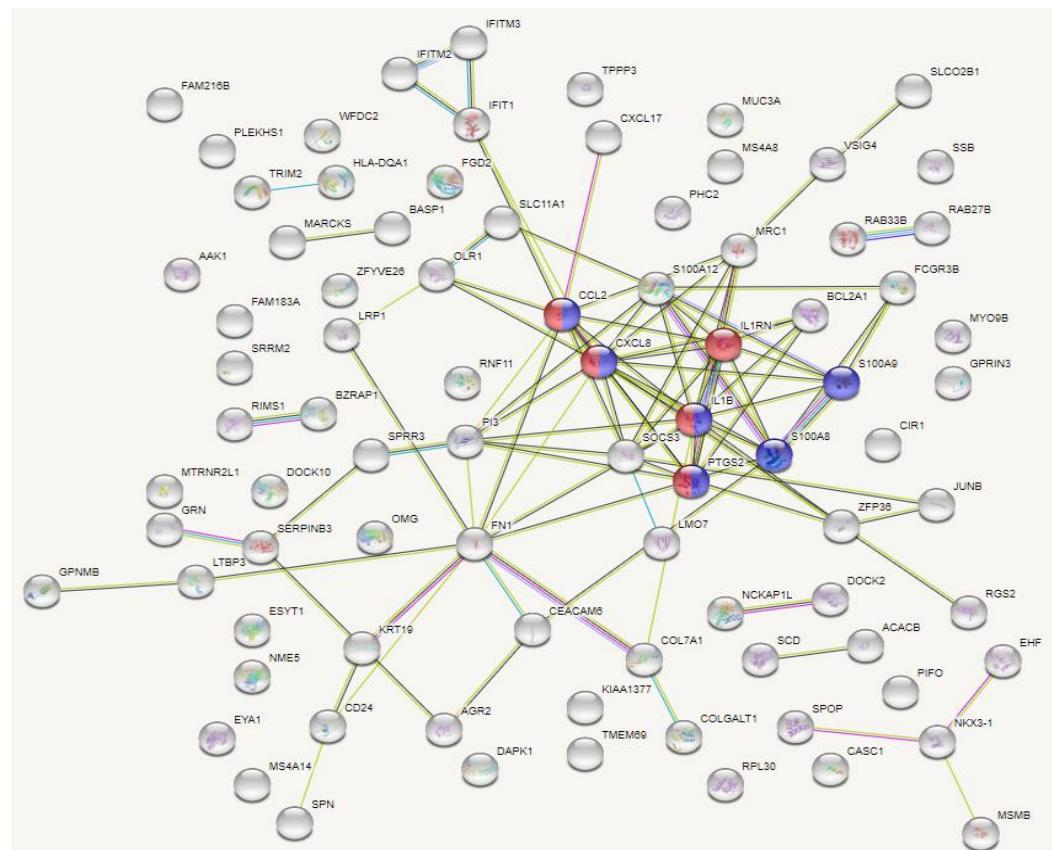
- 防治2019-nCOV肺炎的候选药物（需要进一步的细胞和动物实验验证）
  - Saquinavir（沙奎那韦）、Ribavirin（利巴韦林）
  - Lisuride（麦角乙脲）、Codergocrine Mesylate（甲磺酸双氢麦角毒碱）、Terguride（特麦角脲，非上市药物）
  - Isoprenaline（异丙基肾上腺素）、Clozapine（氯氮平）、Dinoprost（地诺前列素）
- 如有其他2019-nCOV相关转录组数据，可以进一步的分析验证。

# Pathways related to 13 overlapped genes

ID		Description	GeneRatio	BgRatio	pvalue	p.adjust	qvalue	genelD	Count
hsa04929	hsa04929	GnRH secretion	2/8	64/7946	0.00173325225278616	0.0901689568746703	0.078890133150771	3709/408	2
hsa04070	hsa04070	Phosphatidylinositol signaling system	2/8	99/7946	0.00409758752641193	0.0901689568746703	0.078890133150771	3709/3631	2
hsa04922	hsa04922	Glucagon signalling pathway	2/8	106/7946	0.00468410165582703	0.0901689568746703	0.078890133150771	3709/5256	2
hsa04928	hsa04928	Parathyroid hormone synthesis, secretion and action	2/8	106/7946	0.00468410165582703	0.0901689568746703	0.078890133150771	3709/408	2
hsa04020	hsa04020	Calcium signaling pathway	2/8	193/7946	0.014923662789708	0.186559143996907	0.163223311220807	3709/5256	2
hsa04144	hsa04144	Endocytosis	2/8	249/7946	0.0241735041980252	0.186559143996907	0.163223311220807	408/116985	2
hsa05310	hsa05310	Asthma	1/8	31/7946	0.0308011944909605	0.186559143996907	0.163223311220807	3119	1
hsa05330	hsa05330	Allograft rejection	1/8	38/7946	0.0376402715034933	0.186559143996907	0.163223311220807	3119	1
hsa05332	hsa05332	Graft-versus-host disease	1/8	41/7946	0.0405583533703223	0.186559143996907	0.163223311220807	3119	1
hsa04940	hsa04940	Type I diabetes mellitus	1/8	43/7946	0.0424994373276389	0.186559143996907	0.163223311220807	3119	1



# nCoV\_logFC5.csv



KEGG Pathways

pathway	description	count in gene set	false discovery rate
hsa04657	IL-17 signaling pathway	6 of 92	0.00046
hsa05144	Malaria	4 of 47	0.0038
hsa04668	TNF signaling pathway	5 of 108	0.0048
hsa05140	Leishmaniasis	4 of 70	0.0082
hsa05323	Rheumatoid arthritis	4 of 84	0.0127
(more ...)			

Reactome Pathways

pathway	description	count in gene set	false discovery rate
HSA-168256	Immune System	27 of 1925	6.64e-06
<b>HSA-6783783</b>	<b>Interleukin-10 signaling</b>	<b>5 of 45</b>	<b>0.00033</b>
HSA-6798695	Neutrophil degranulation	11 of 471	0.00064
HSA-6785807	Interleukin-4 and Interleukin-13 signaling	6 of 106	0.00064
HSA-168249	Innate Immune System	15 of 1012	0.0015

# nCoV\_logFC4.csv

Top Regulator Effect Networks

ID	Regulators	Disease & Functions	Consistency Score
<b>1</b>	<b>IFNG</b>	Binding of myeloid cells	3.328
<b>2</b>	<b>PTGS2</b>	Activation of cells	3.182

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5

INGENITY  
PATHWAY ANALYSIS

Summary of Analysis - nCoV\_logFC4 - 2020-02-02 03:03

<b>3</b>	<b>PTGS2</b>	Adhesion of immune cells	3.182
<b>4</b>	<b>PTGS2</b>	Binding of blood cells	3.182
<b>5</b>	<b>PTGS2</b>	Binding of leukocytes	3.182

Top Analysis-Ready Molecules

Expr Fold Change

Molecules	Expr. Value
<b>SRRM2</b>	↑ 9.224
<b>KIAA0754</b>	↑ 7.640
<b>MACF1</b>	↑ 7.640

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7

Summary of Analysis - nCoV\_logFC4 - 2020-02-02 03:03

<b>MSR1</b>	↑ 7.544
<b>SCD</b>	↑ 7.457
<b>LRP1</b>	↑ 7.057
<b>FN1</b>	↑ 6.967
<b>EML4</b>	↑ 6.922
<b>MRC1</b>	↑ 6.841
<b>SLC11A1</b>	↑ 6.713

Expr Fold Change

Molecules	Expr. Value
<b>MORN2</b>	↓ -1.404
<b>TACSTD2</b>	↓ -1.197
<b>DDIT3</b>	↓ -1.165
<b>CLEC4E</b>	↓ -1.075
<b>SPTSSA</b>	↓ -1.056
<b>RGS18</b>	↓ -1.006