

Transcriptal Analysis of 2019-nCoV

Jan 28, 2020

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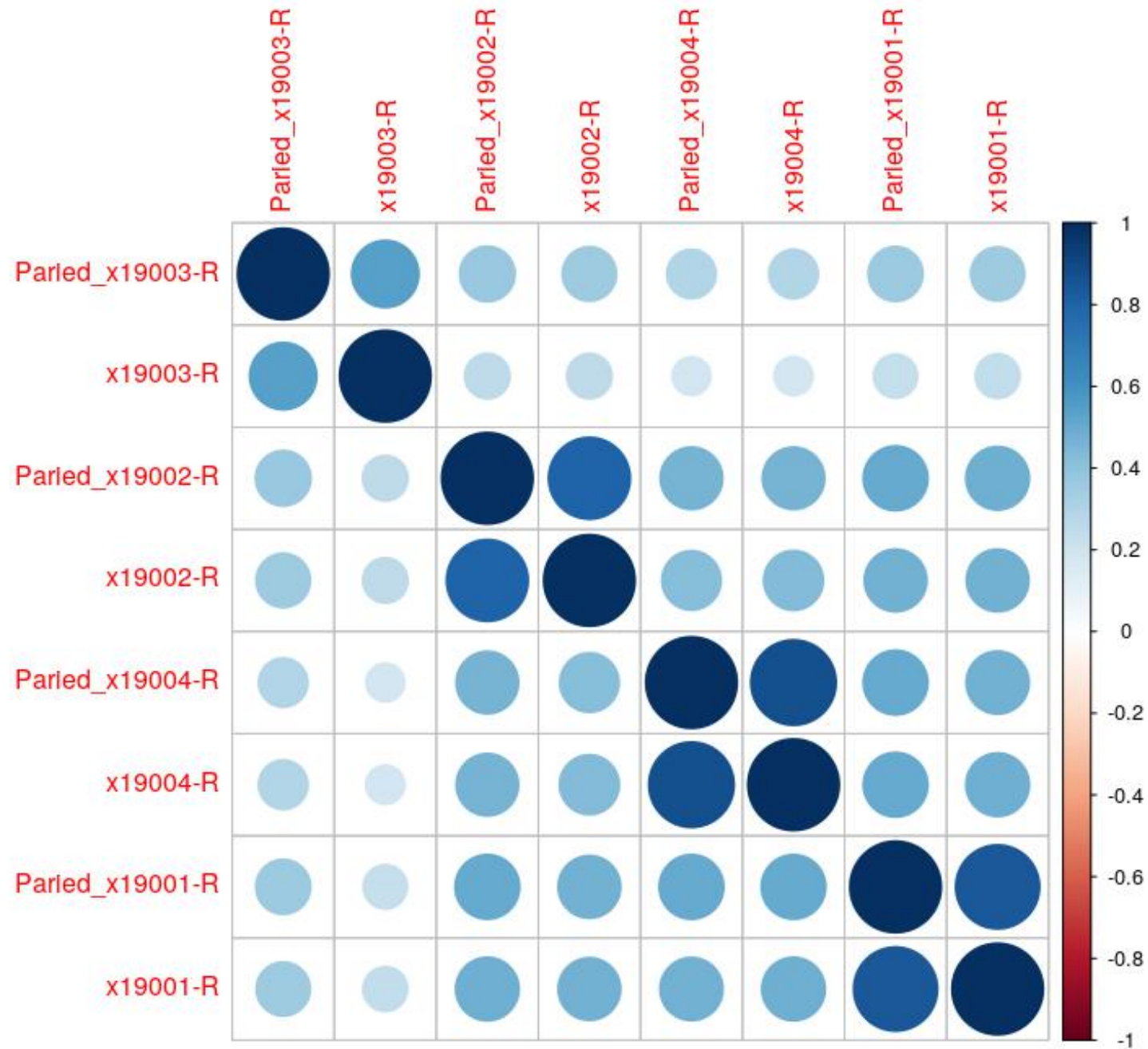
Chinese PLA General Hospital

Proposal

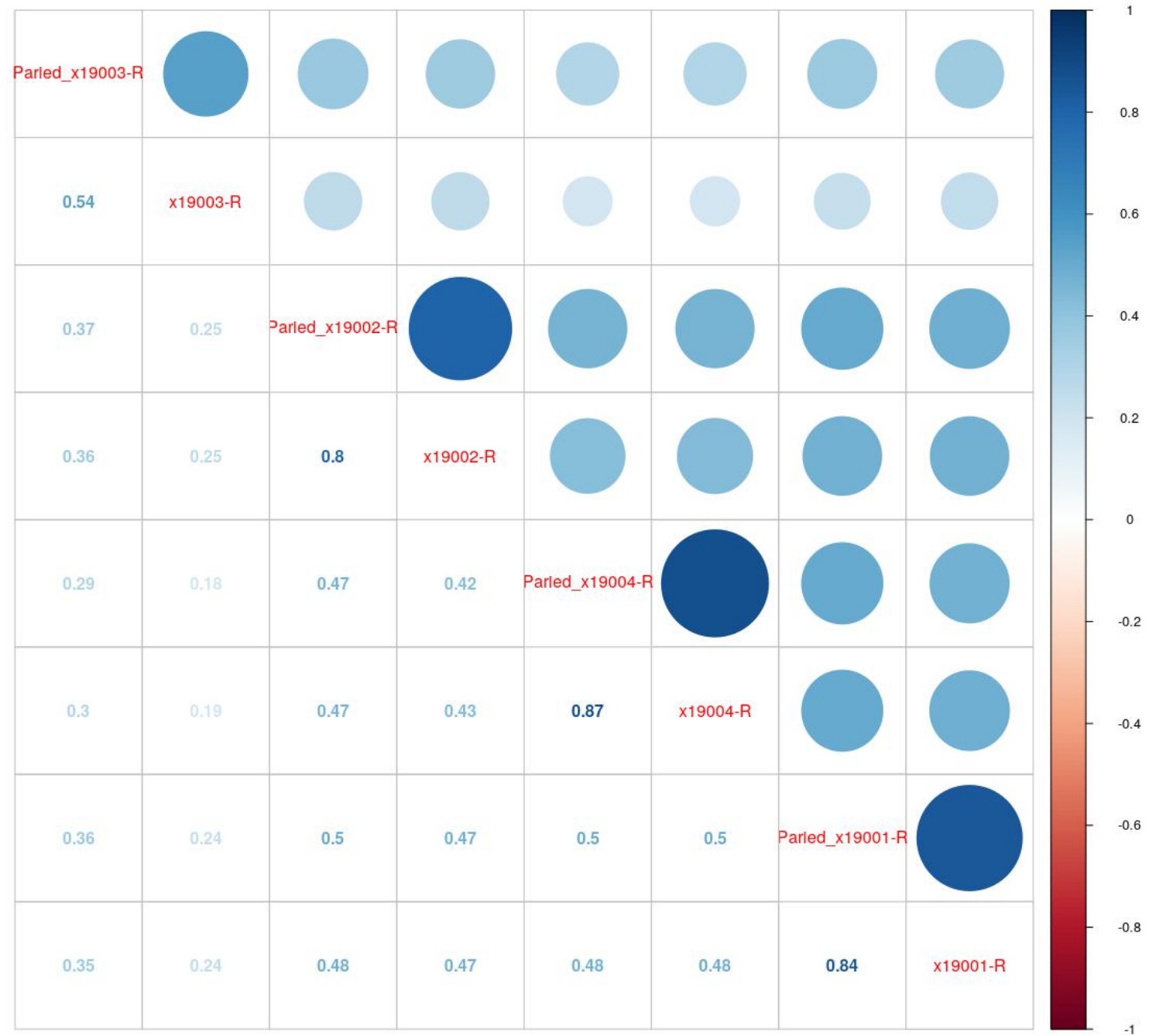
- DEG comparsion and general analysis
 - PCA, heatmap, venn Diagram
- nCoV_Heal, pneu_Heal and nCoV_pneu KEGG/GO analysis
 - Key Pathway?
- Drug repositioning for nCoV_Heal and pneu_Heal pairs
 - cogeno-based
 - lincs-based

RNA-Seq data

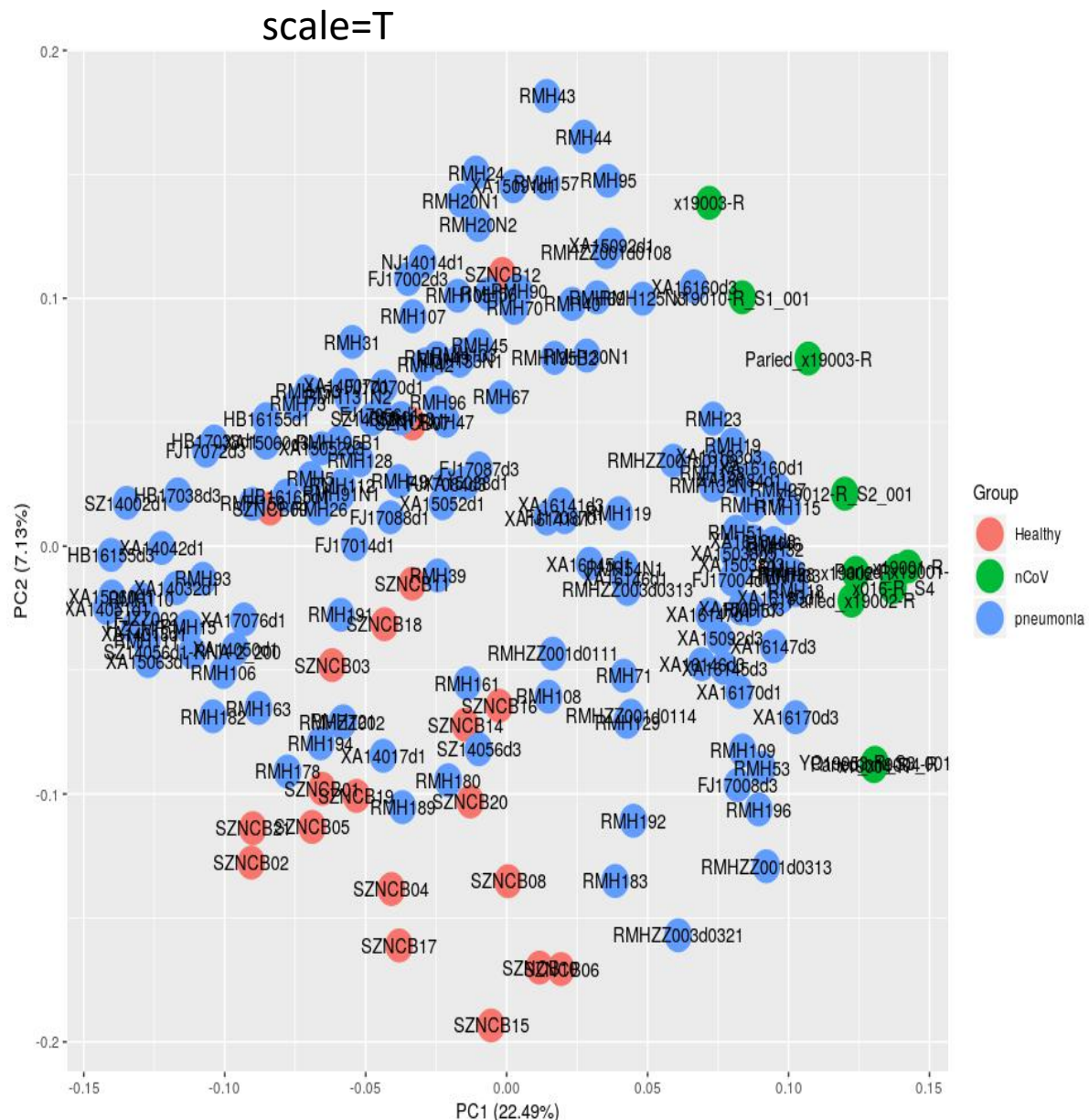
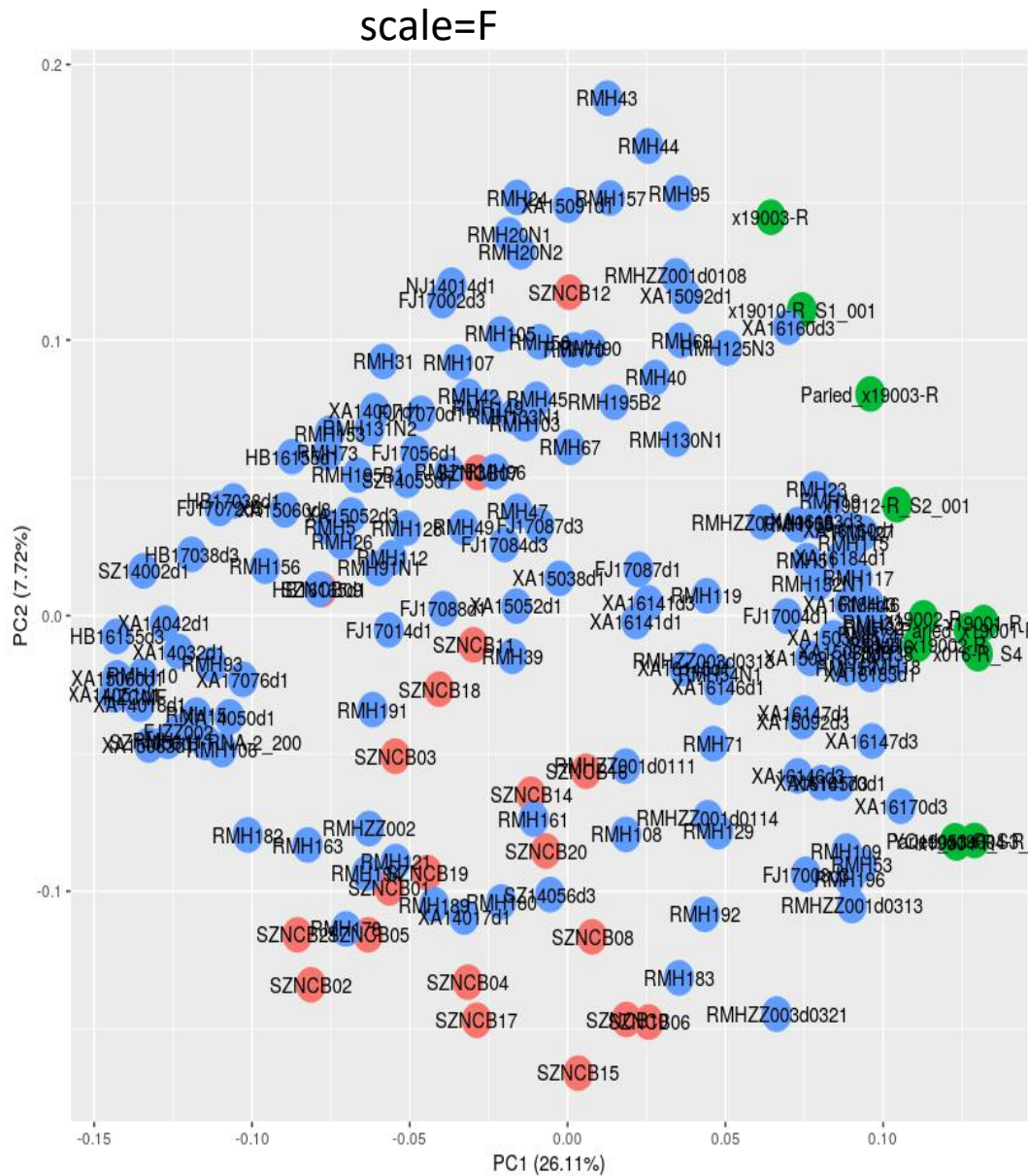
- Healthy 20
- nCoV 12
- pneumonia 146



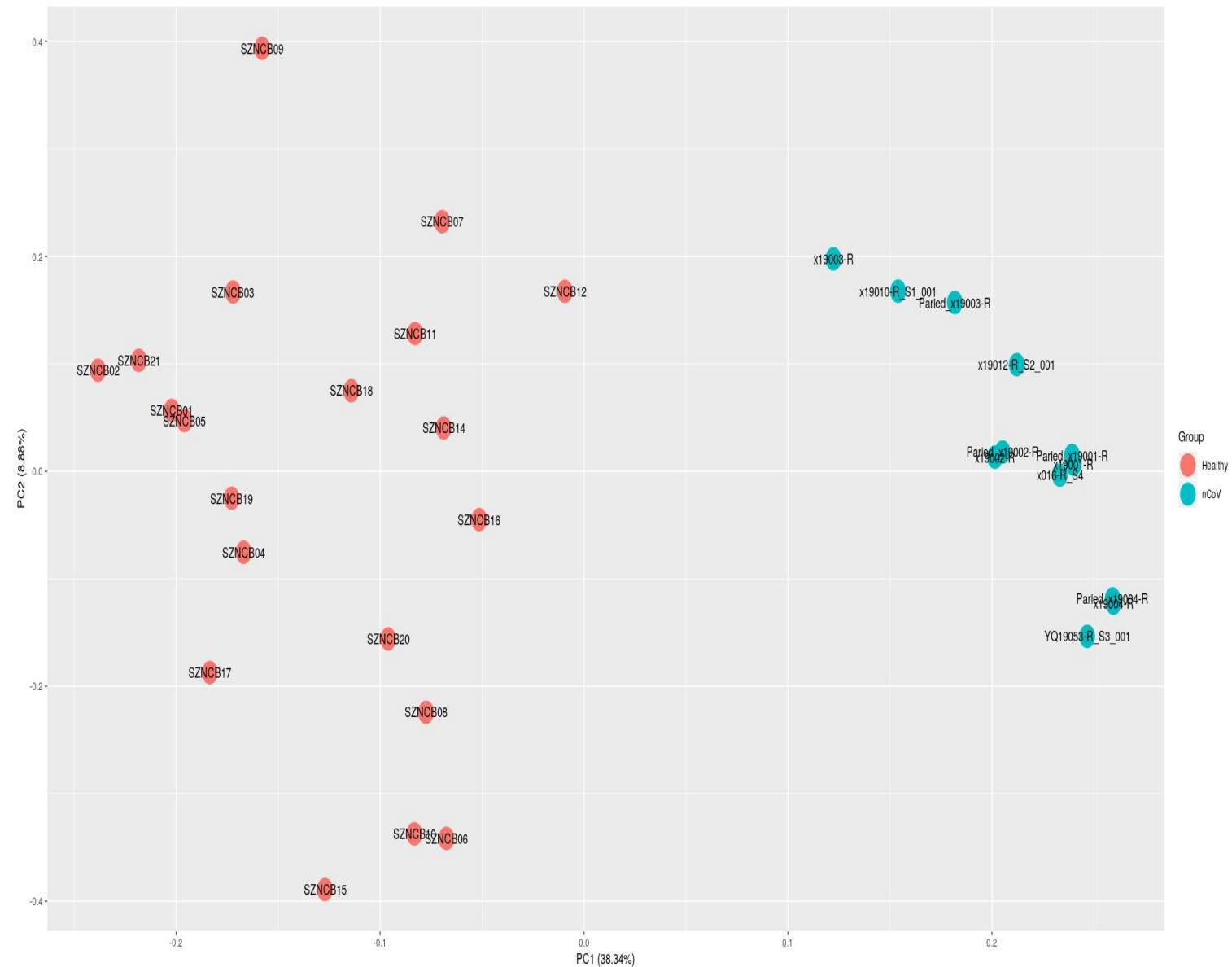
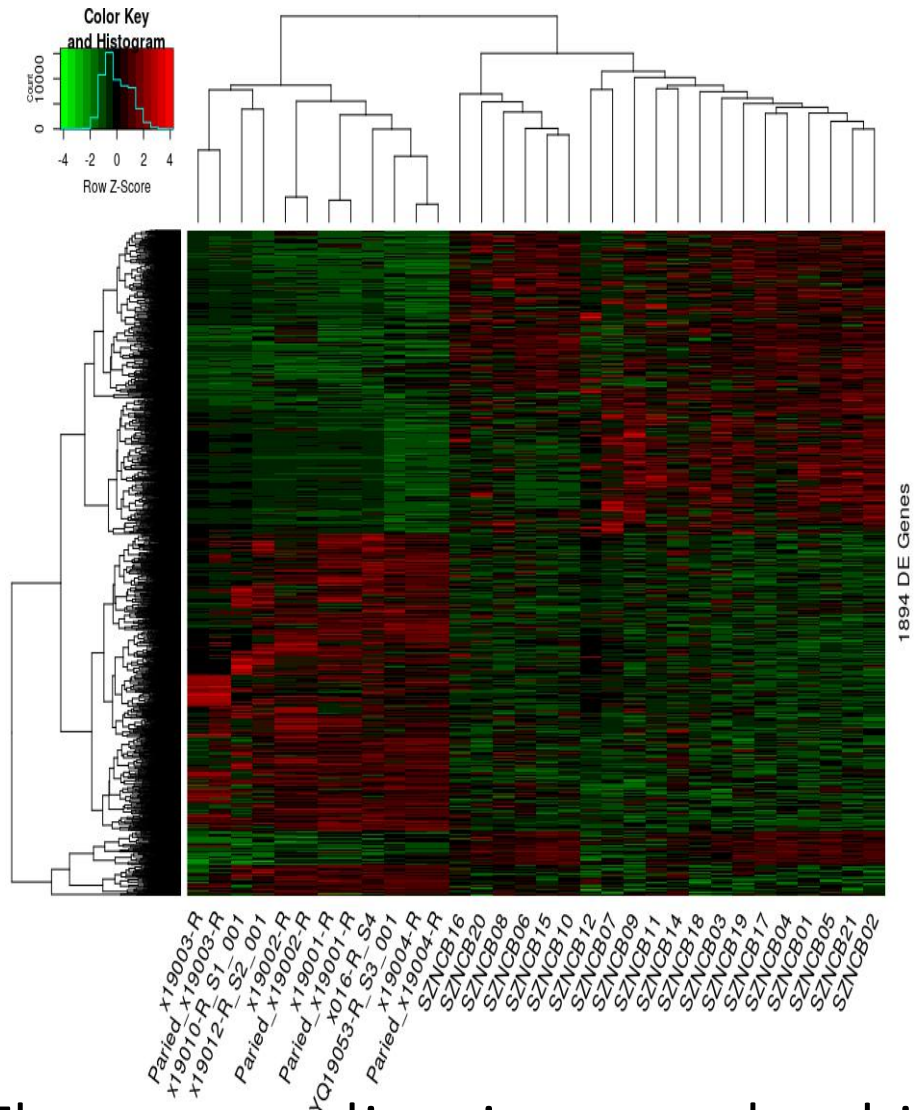
comparing SE
and PE, SE is
comparable.



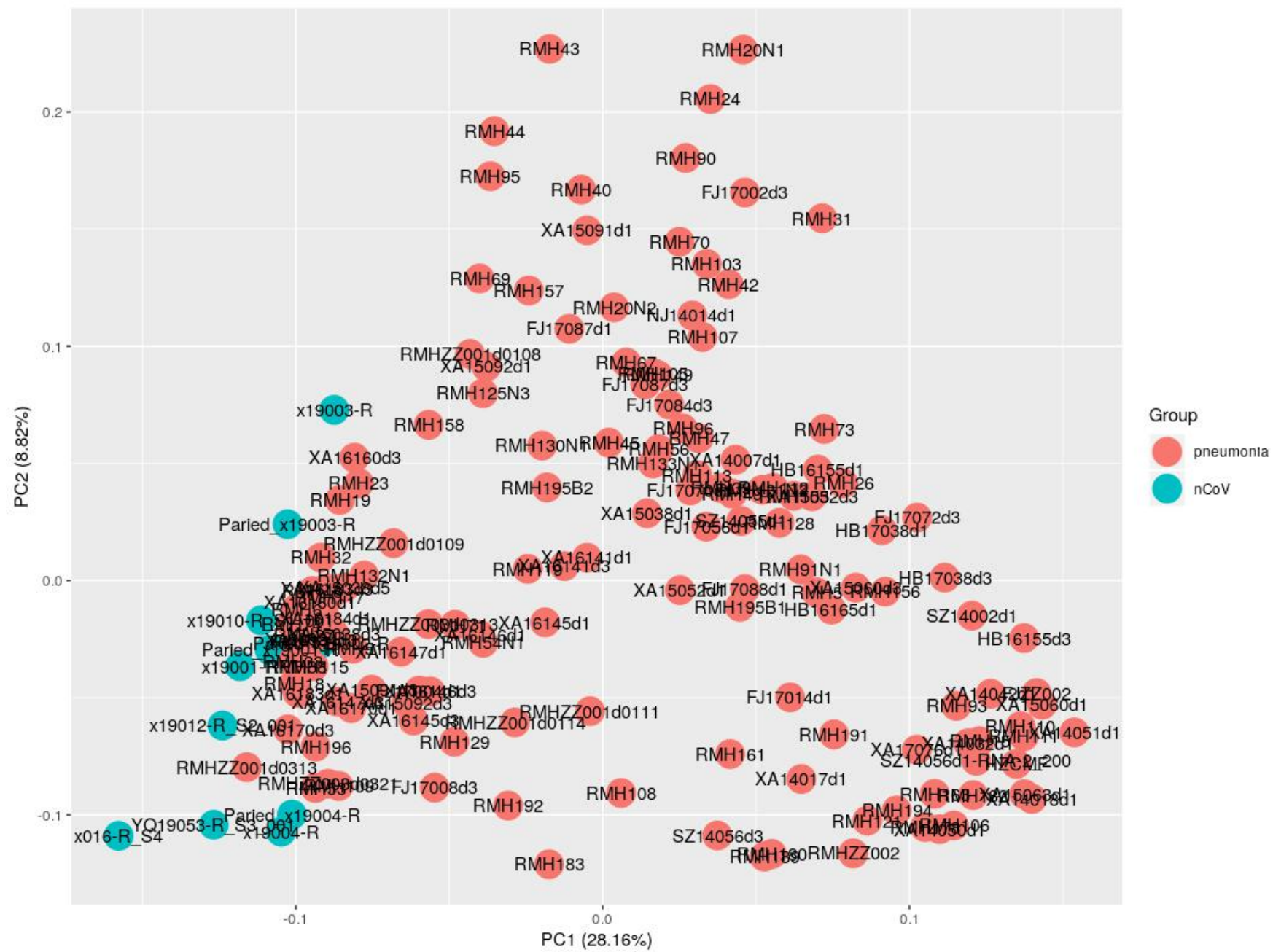
PCA can clearly distinguish three groups with nCoV vs Healthy DEGs.

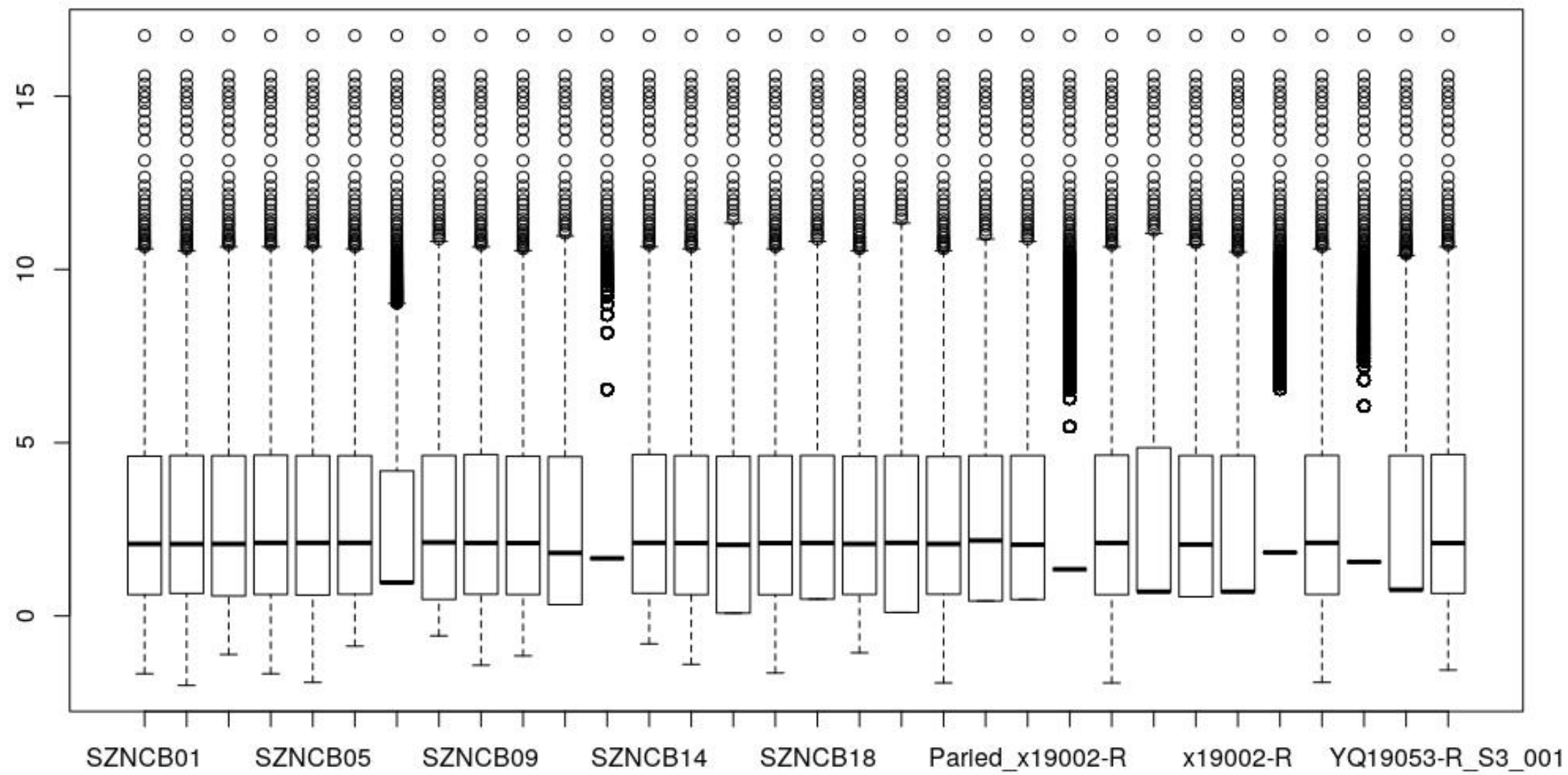


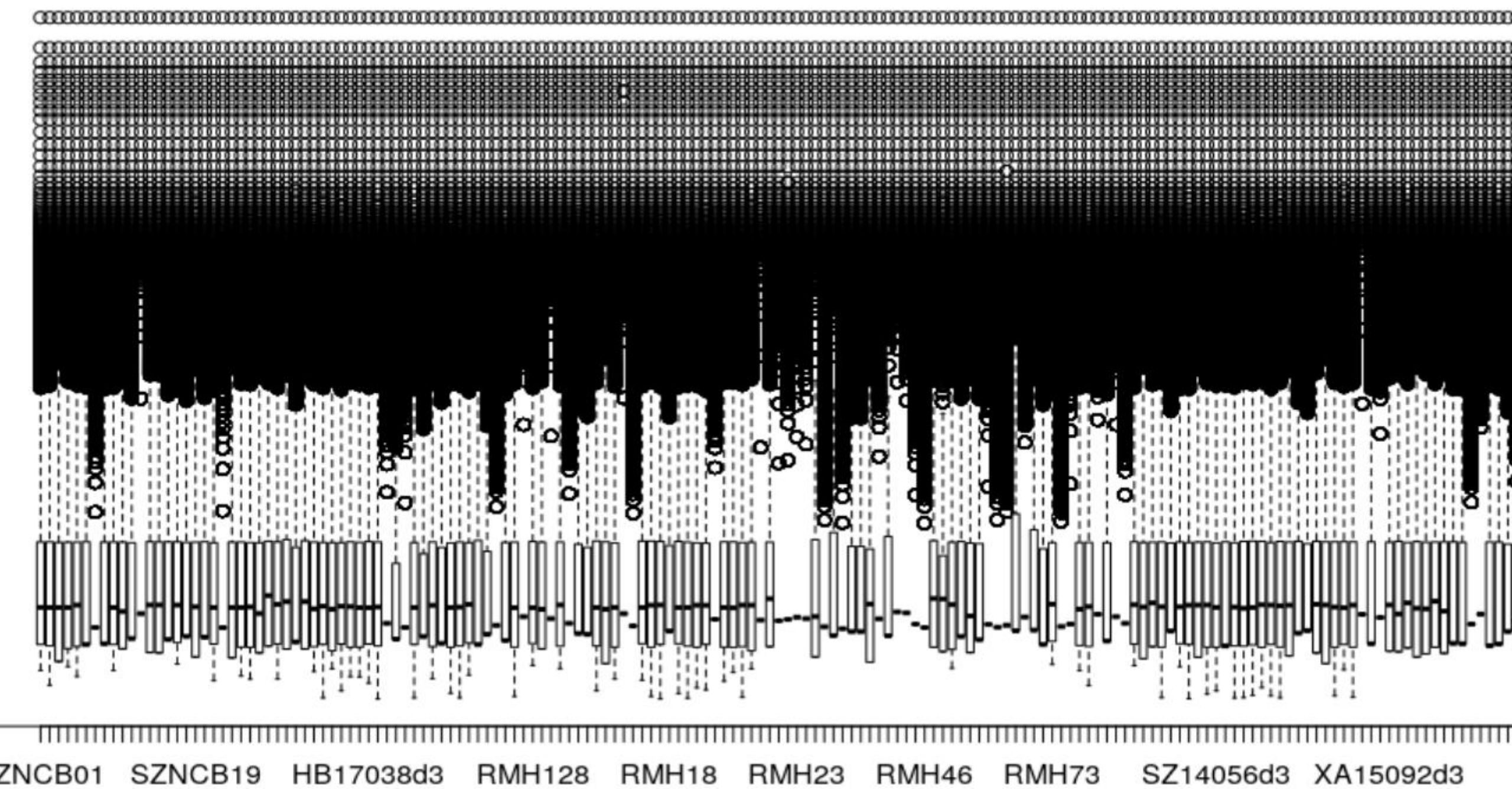
nCoV vs Healthy

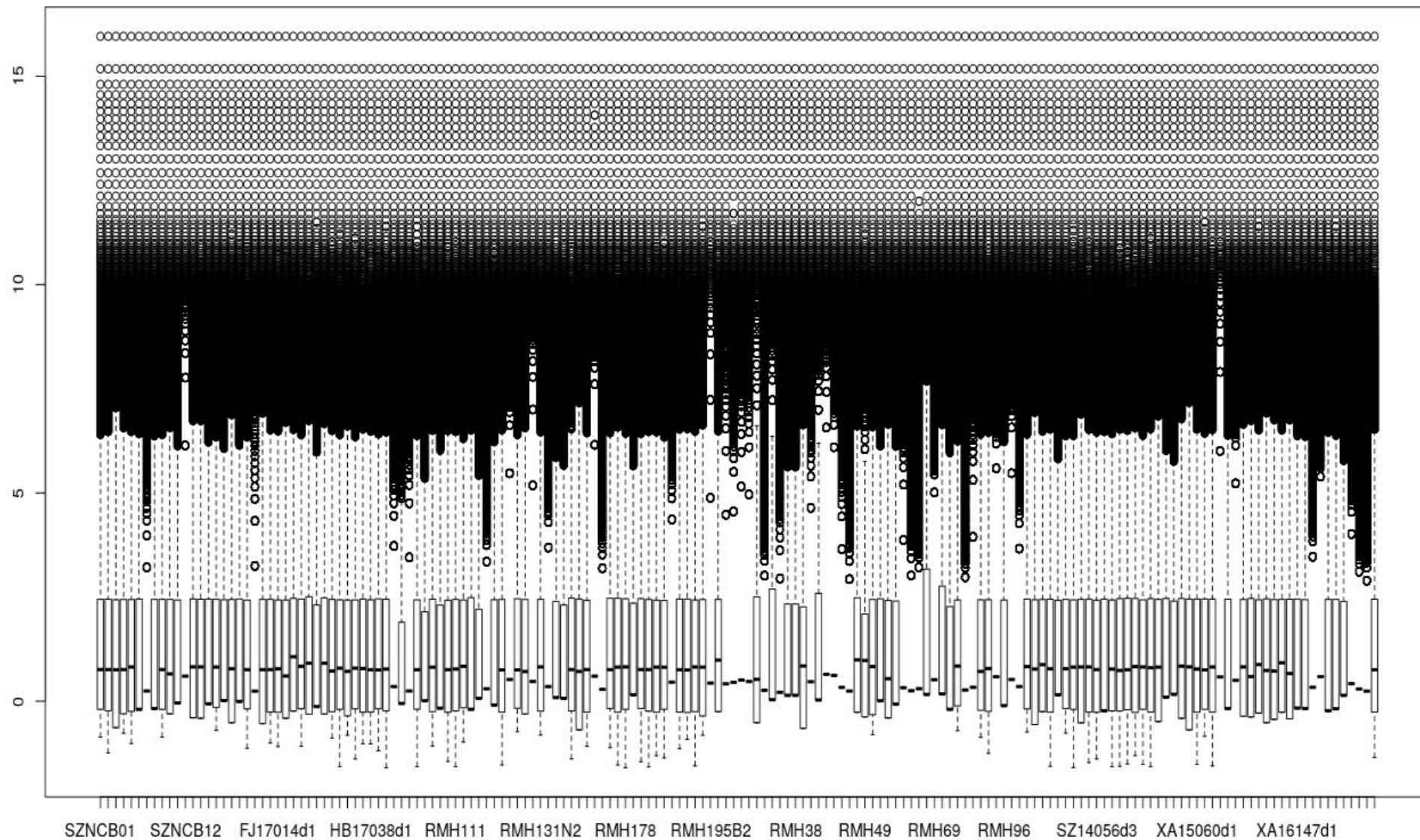


The normalization method is acceptable as PE and SE are nearby

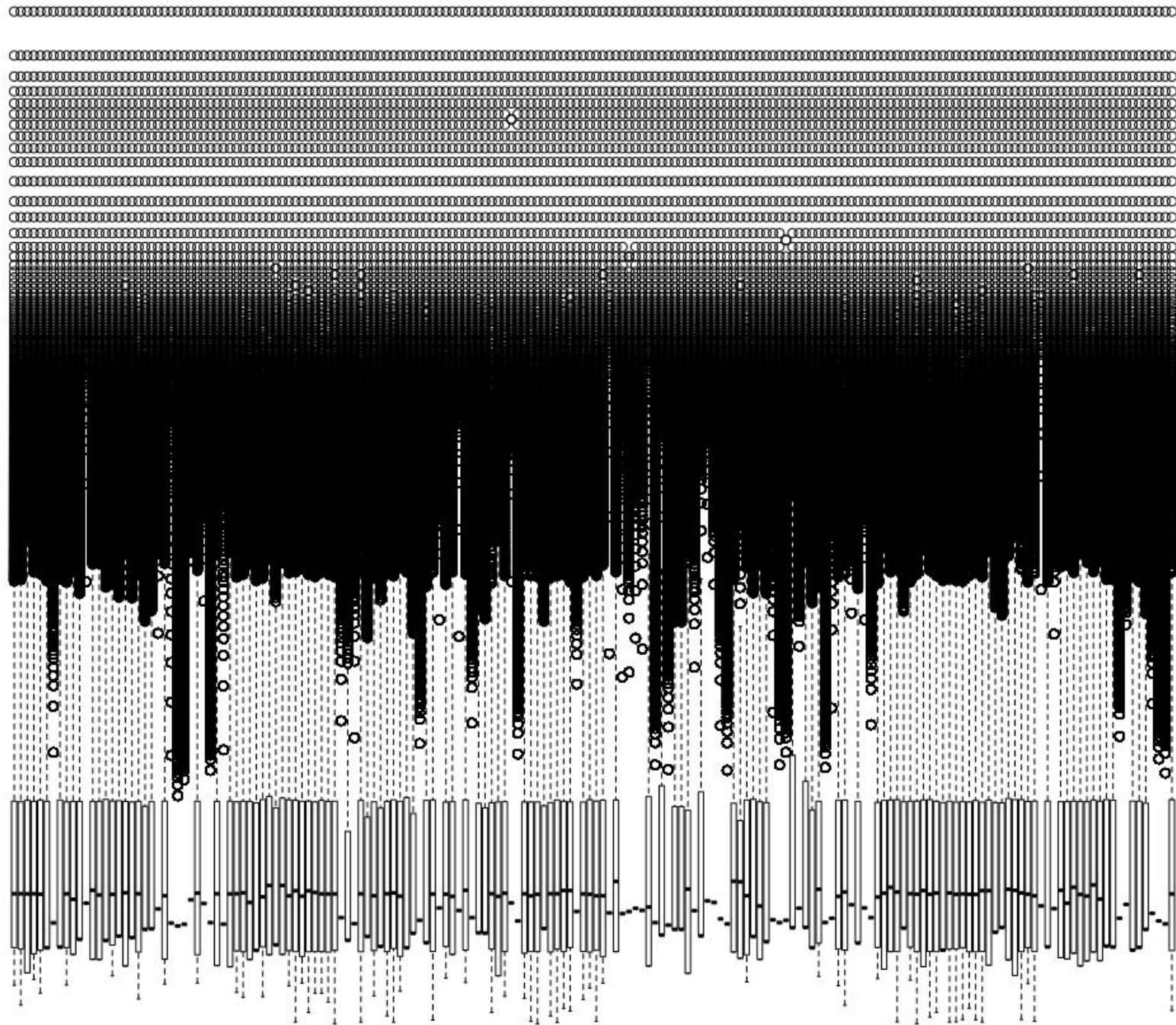




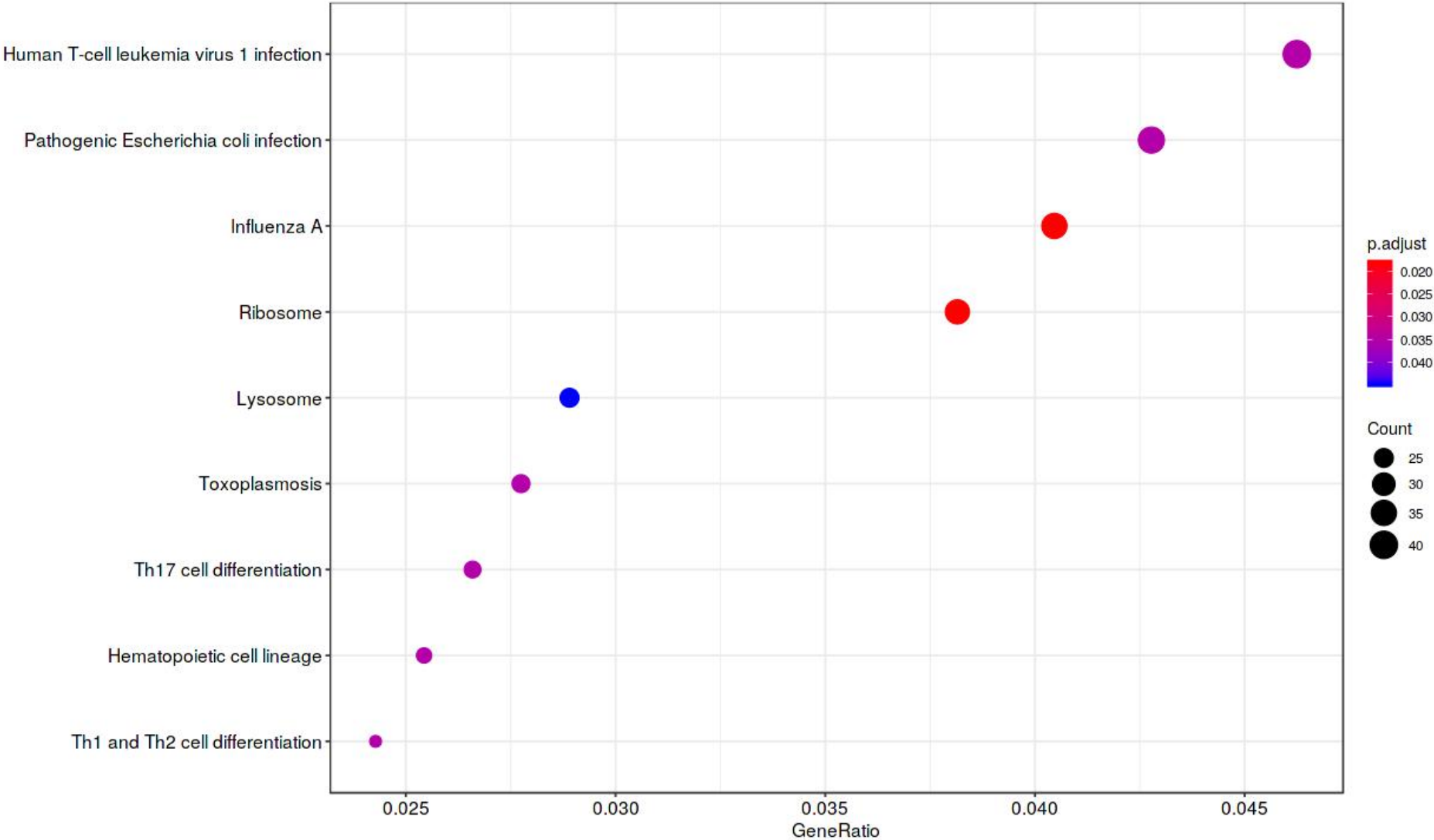




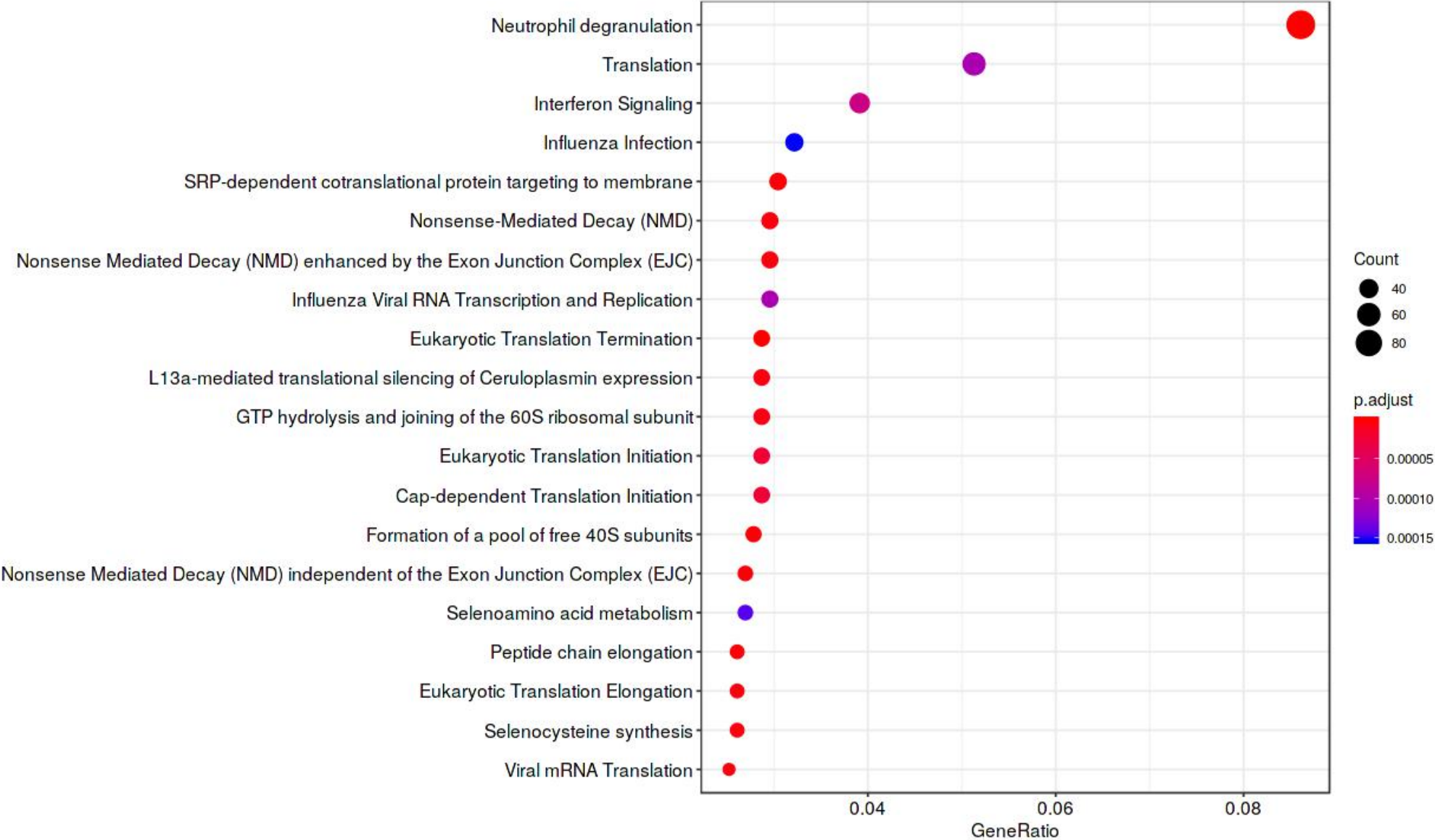
all samples



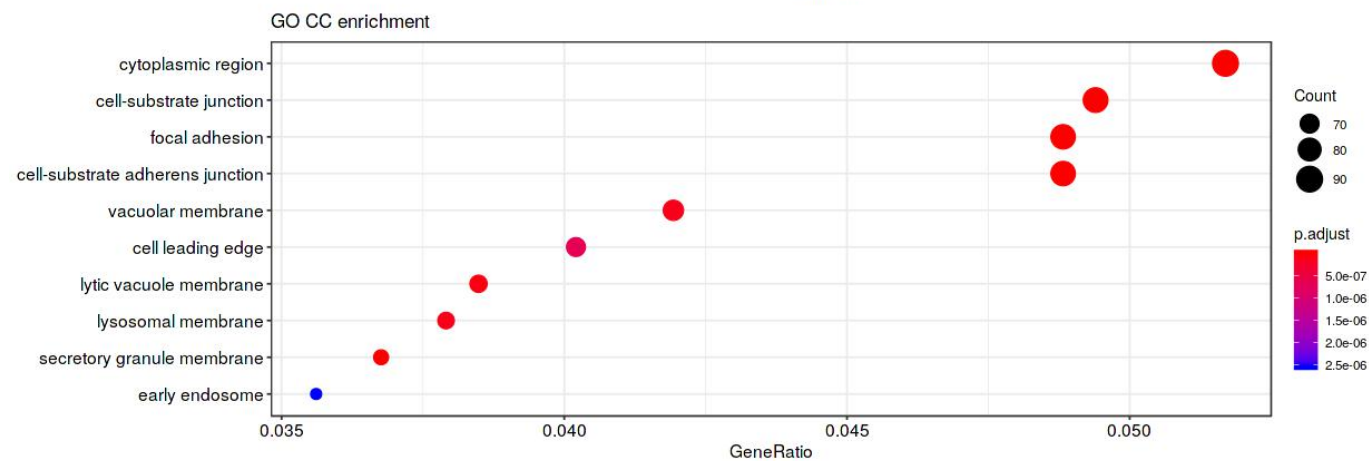
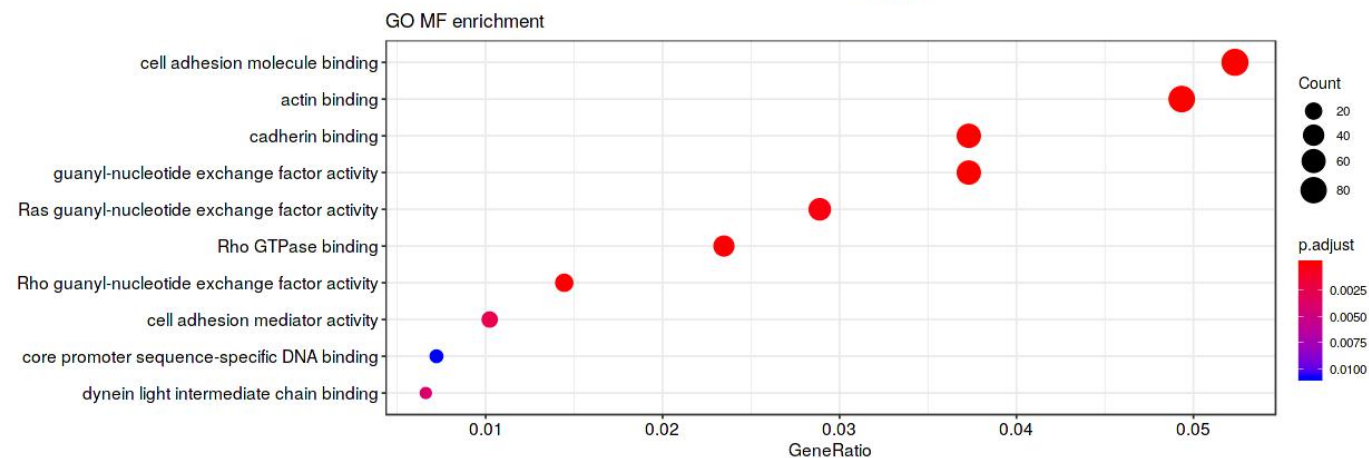
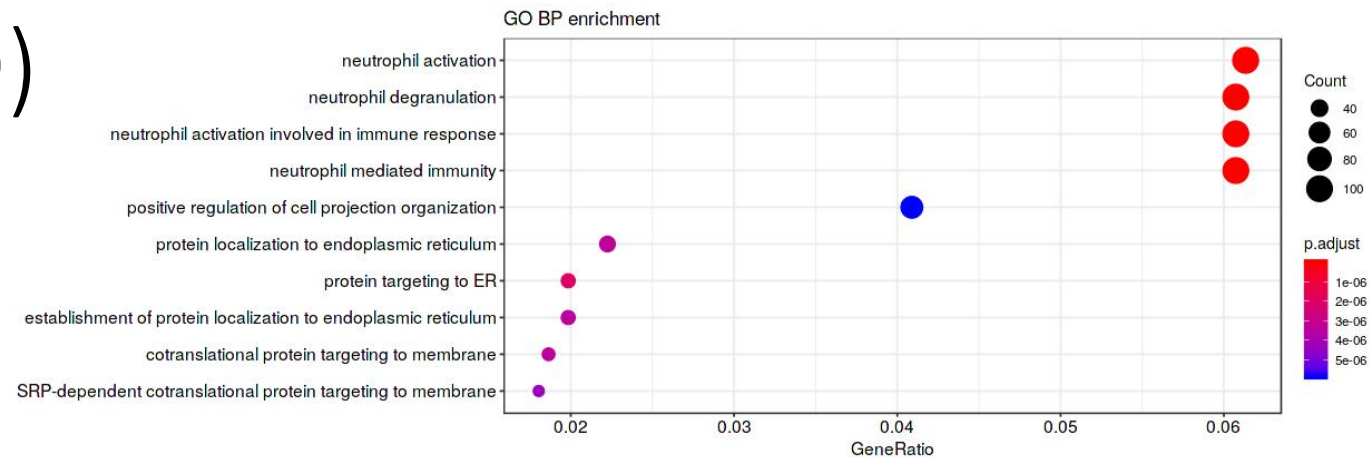
nCoV vs Healthy (KEGG)



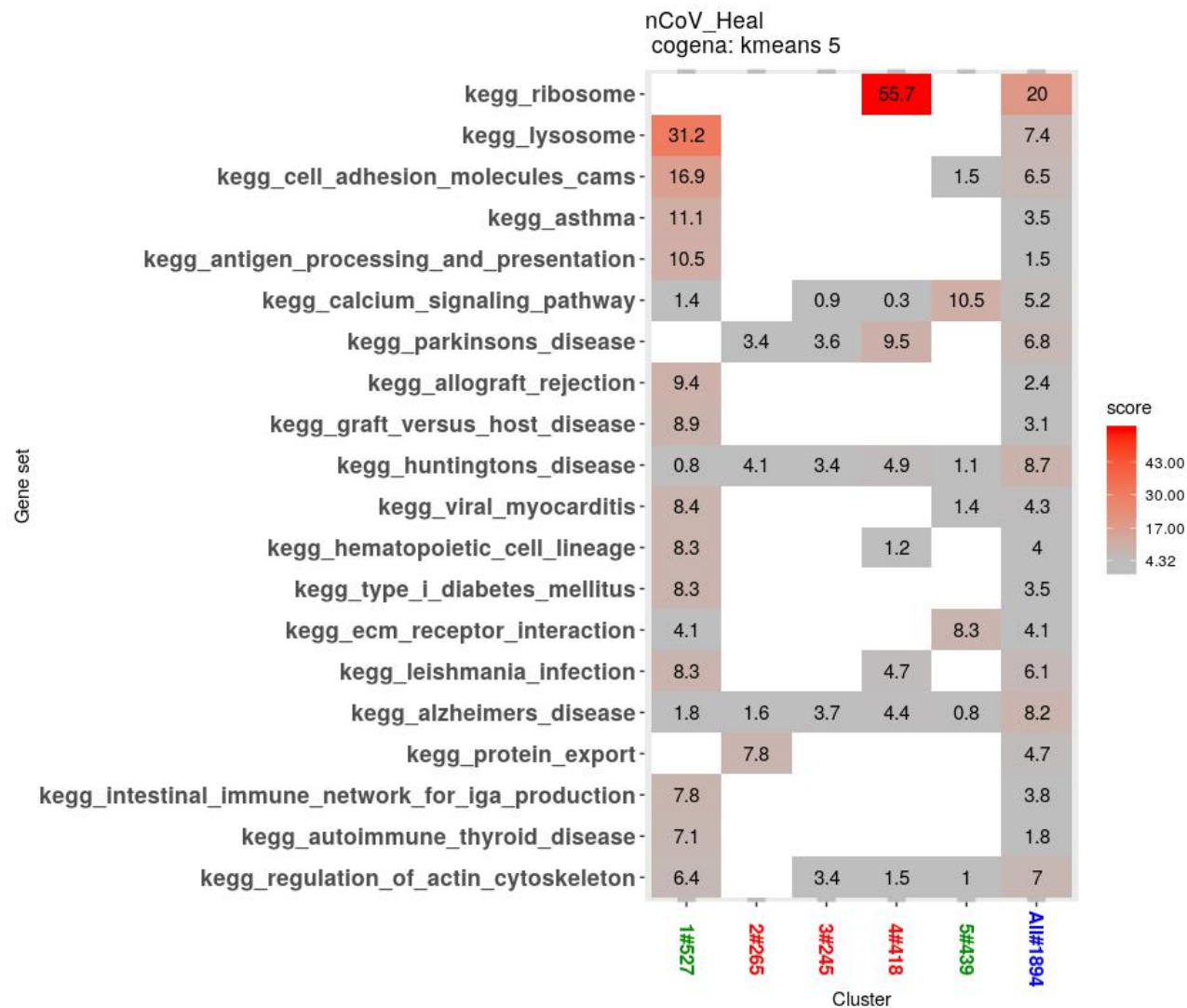
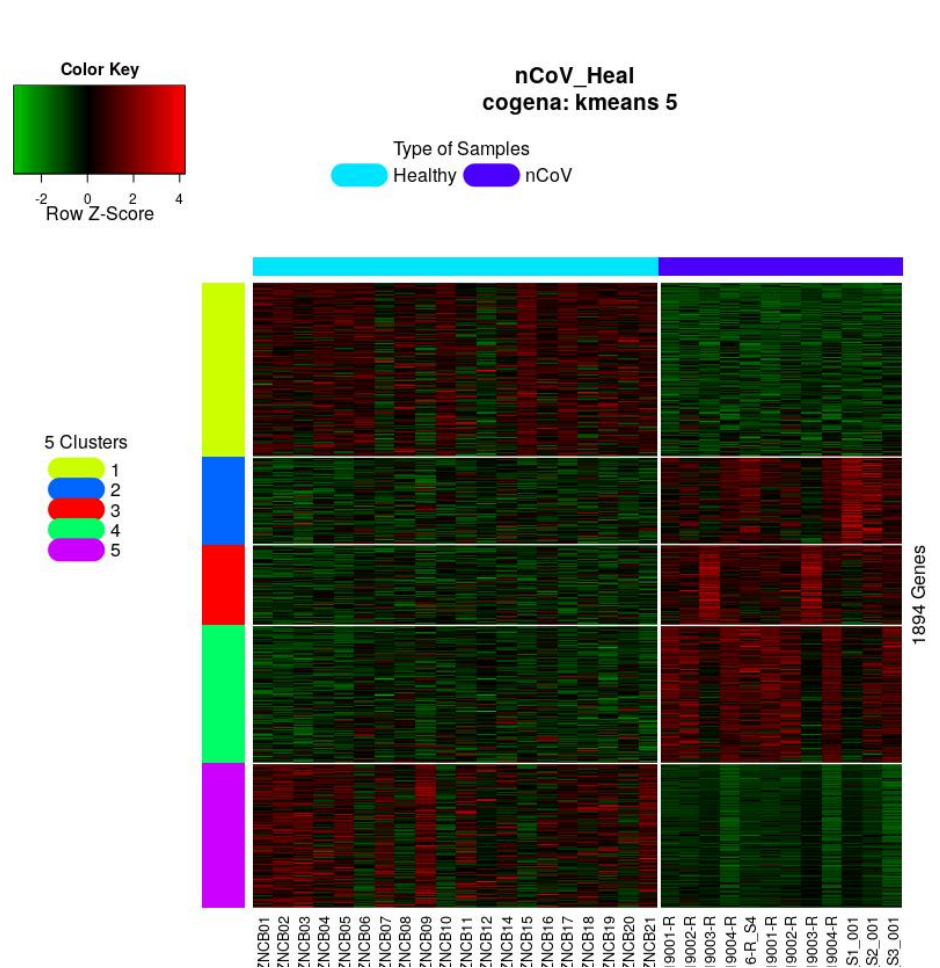
nCoV vs Healthy (Reactome)



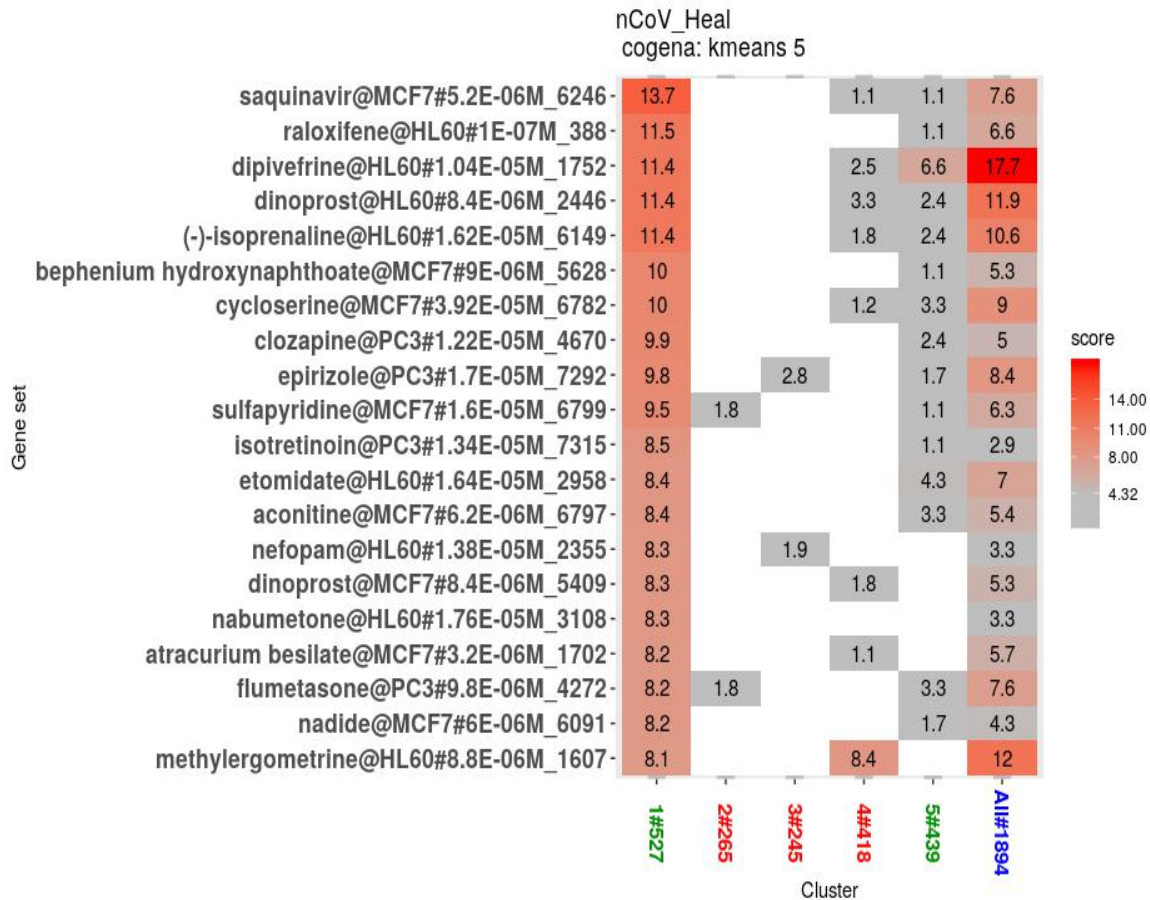
nCoV vs Healthy (GO)



nCoV vs Healthy (cogena)



nCoV vs Healthy (cogena_CMap_Up)



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.

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).

Isoprenaline, or isoproterenol, is a medication used for the treatment of bradycardia (心搏缓慢), heart block, and rarely for **asthma**.

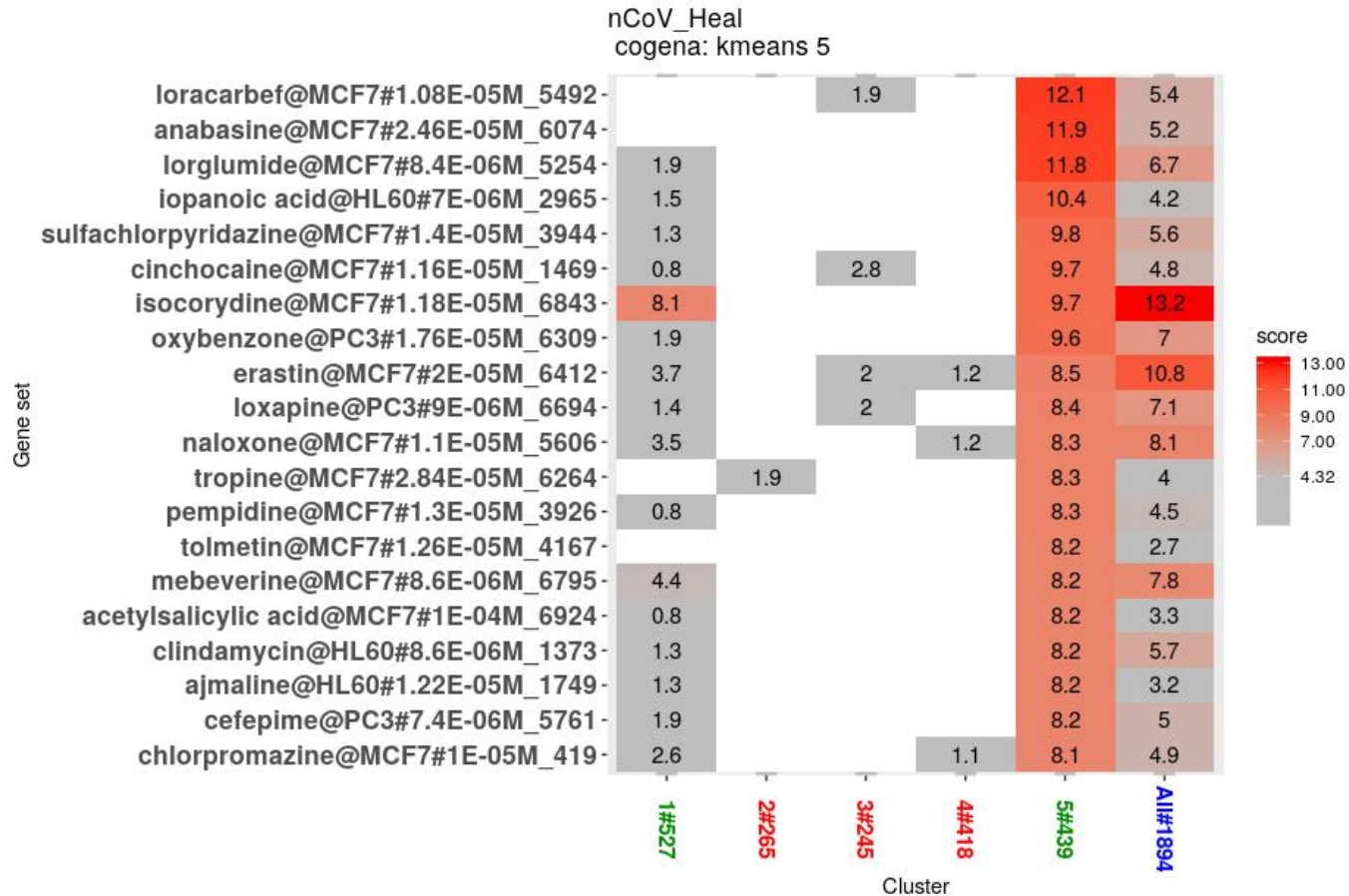
Bephenium hydroxynaphthoate is an anthelmintic agent (驱虫剂) formerly used in the treatment of hookworm infections and ascariasis.

Cycloserine is an antibiotic that is used to treat tuberculosis (TB).

除此之外, 据中科院消息, 上海药物研究所和上海科技大学免疫化学研究所抗2019-nCoV病毒感染联合应急攻关团队发现了30种可能对2019-nCoV有治疗作用的药物、活性天然产物和中药。

候选药物包括蛋白酶抑制剂茚地那韦、沙奎那韦、洛匹那韦、卡非佐米、利托那韦等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; 研究发现含有“二苯乙烯”结构的孟鲁司特以及植物药活性成分虎杖苷和脱氧土大黄苷与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、环孢菌素A可能对2019-nCoV有效。

nCoV vs Healthy (cogena_CMap_Up)



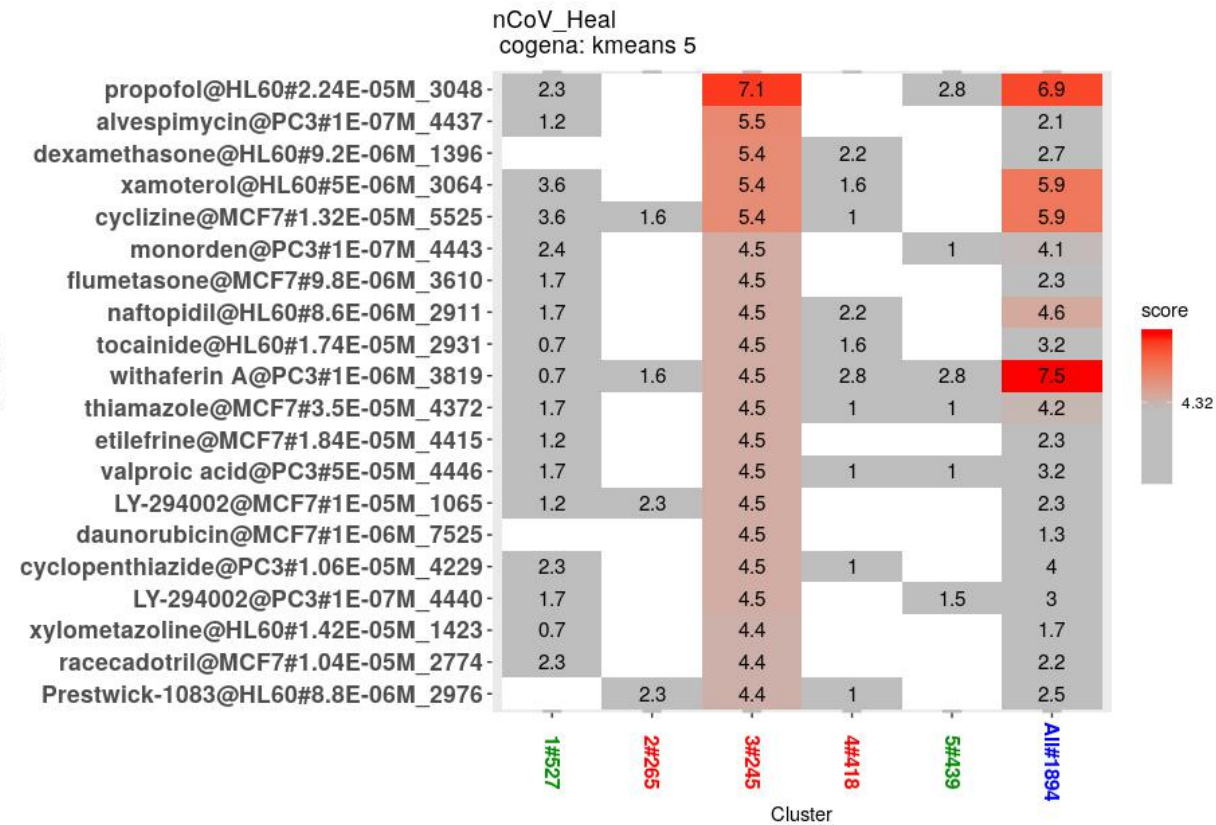
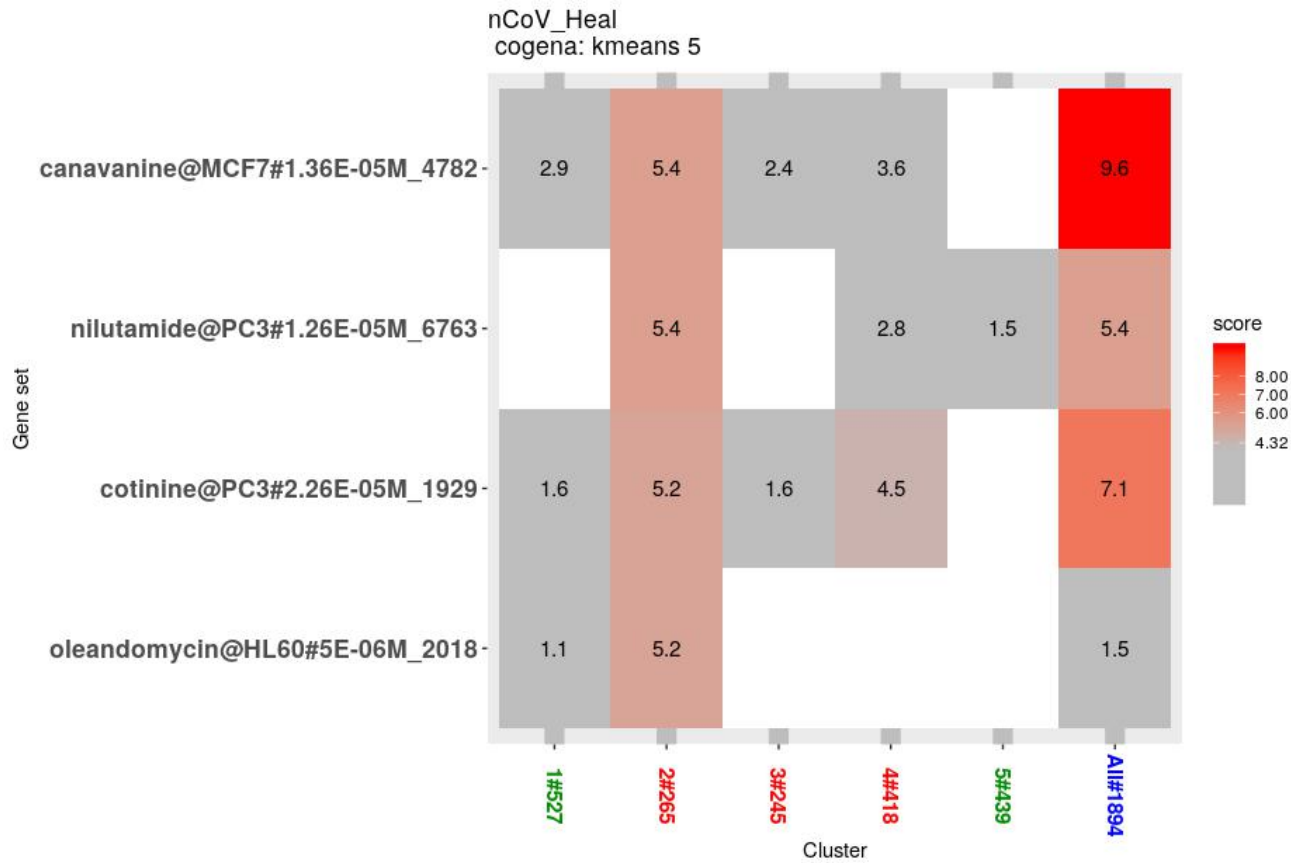
Loracarbef is an antibiotic.

Anabasine: insecticide

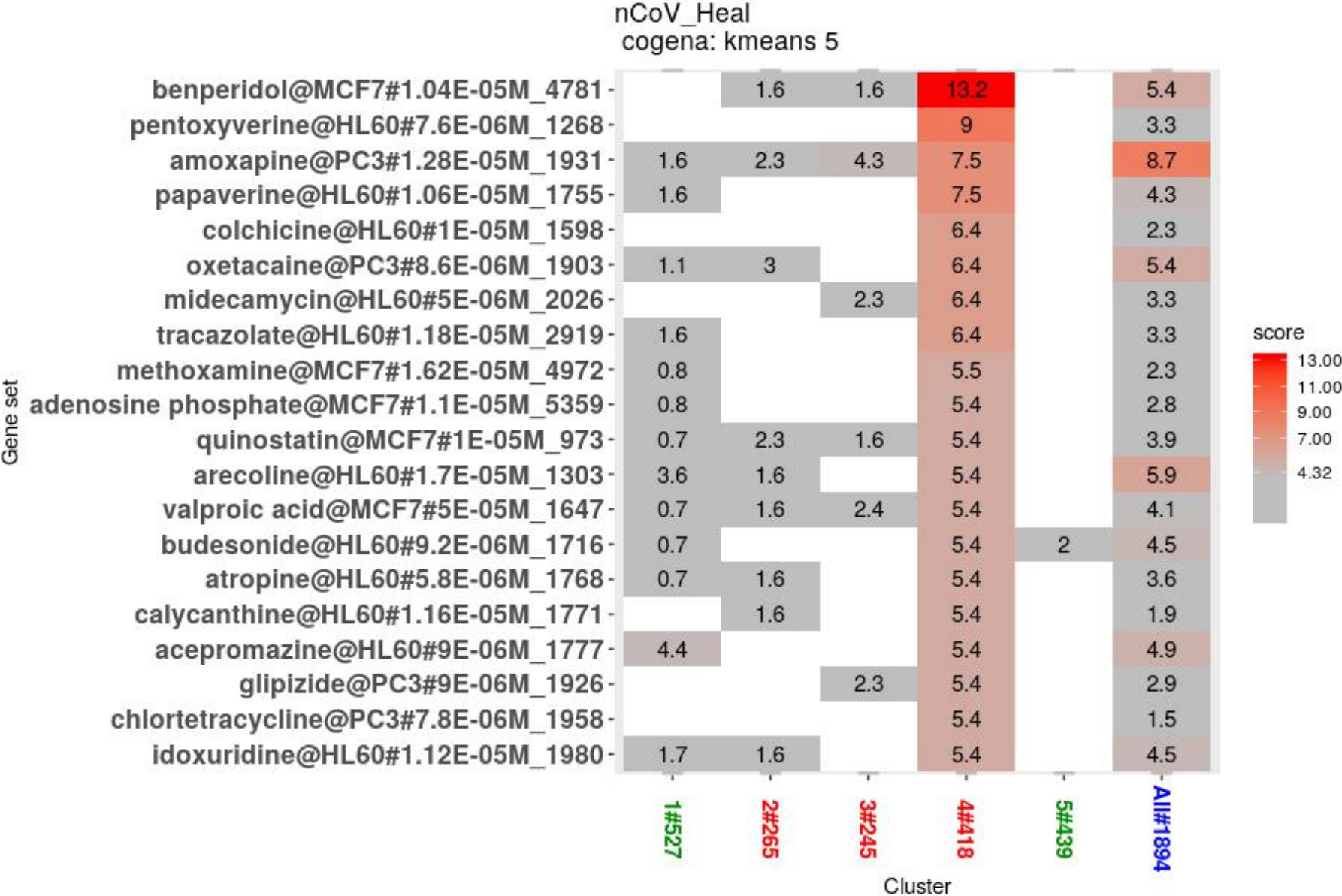
Lorglumide is a drug which inhibits gastrointestinal motility and reduces gastric secretions, acting as a cholecystokinin antagonist. It has been suggested as a potential treatment for a variety of gastrointestinal problems .

Both iopanoic acid and ipodate sodium are potent inhibitors of thyroid hormone release from thyroid gland, as well as of peripheral conversion of thyroxine (T4) to triiodothyronine (T3).

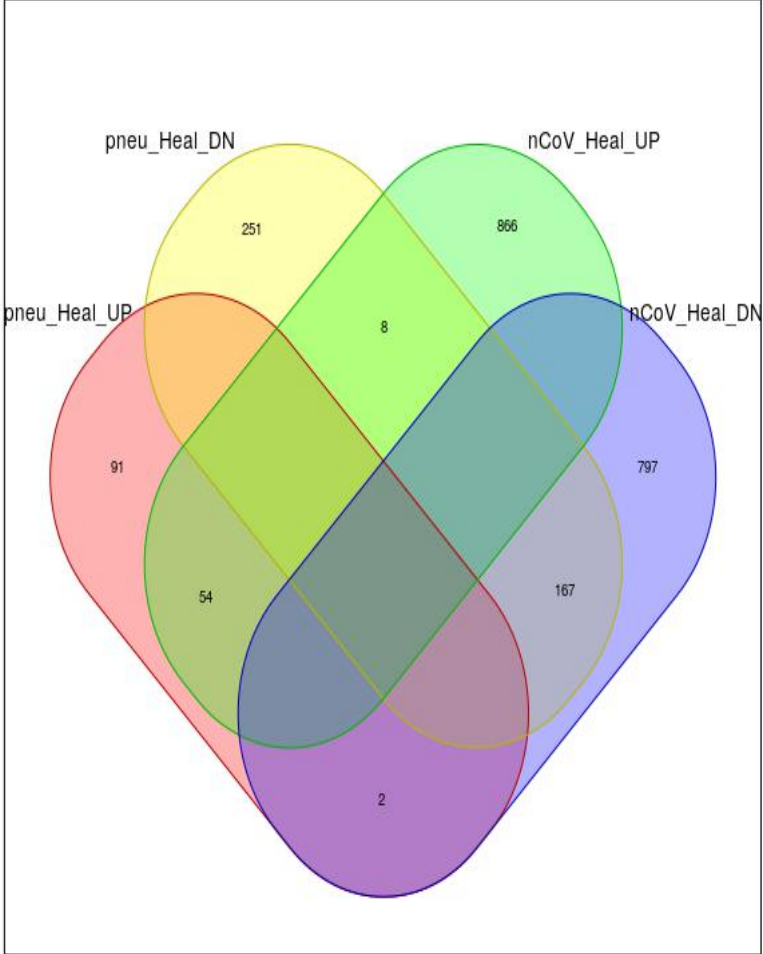
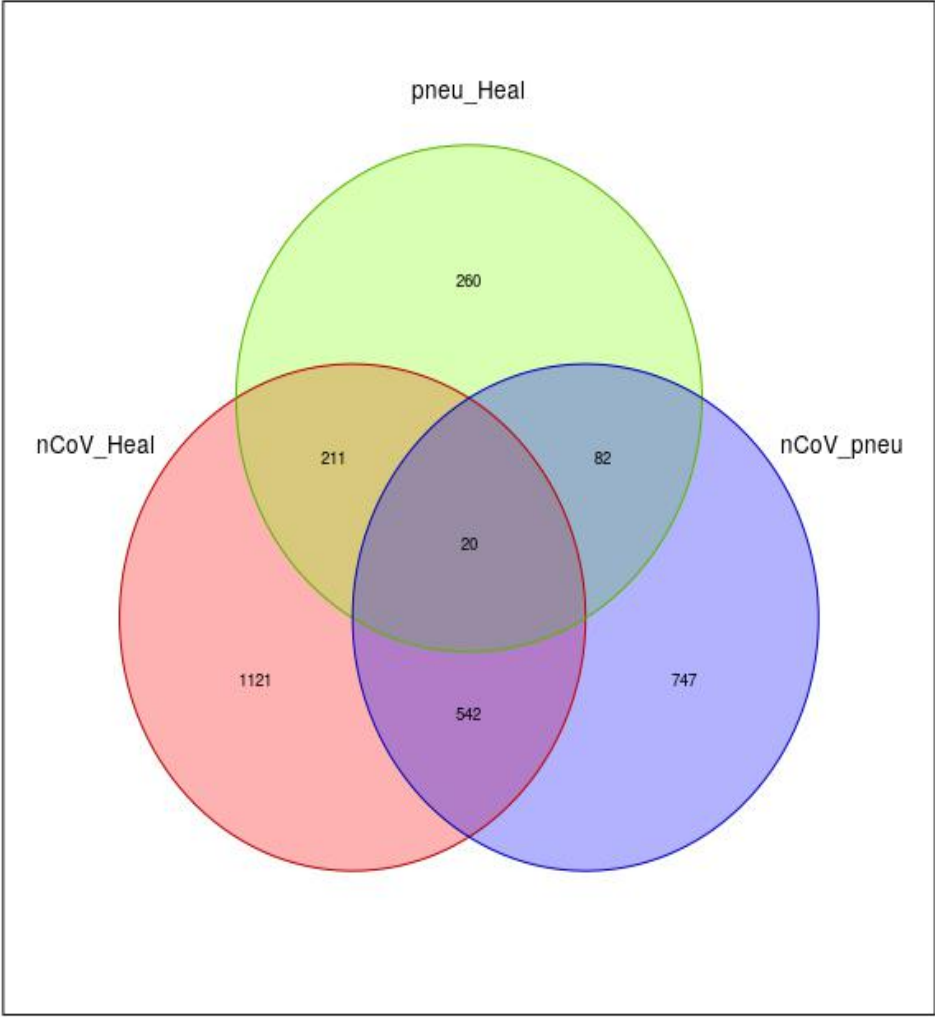
nCoV vs Healthy (cogena_CMap_DN)



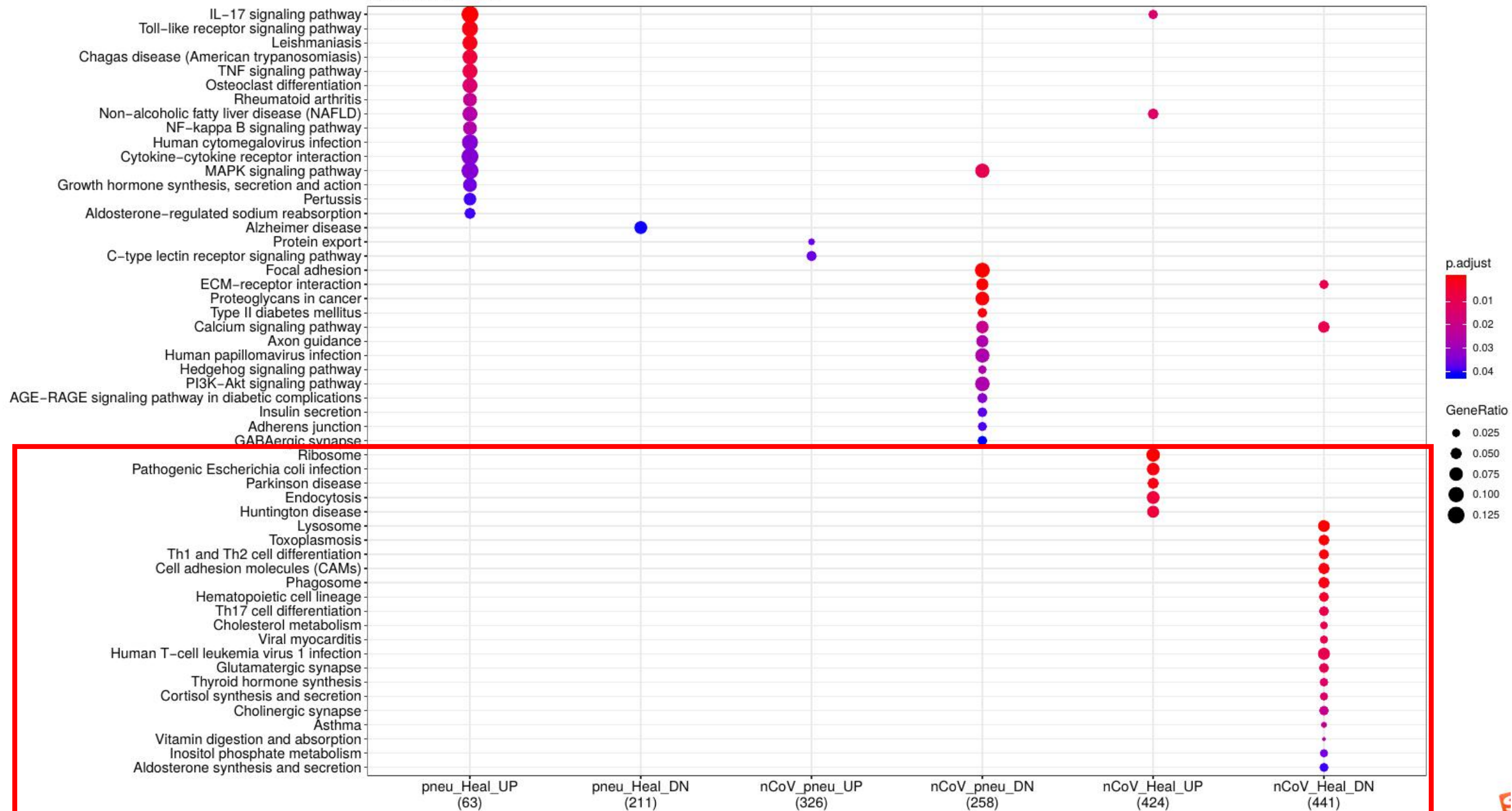
nCoV vs Healthy (cogena_CMap_DN)

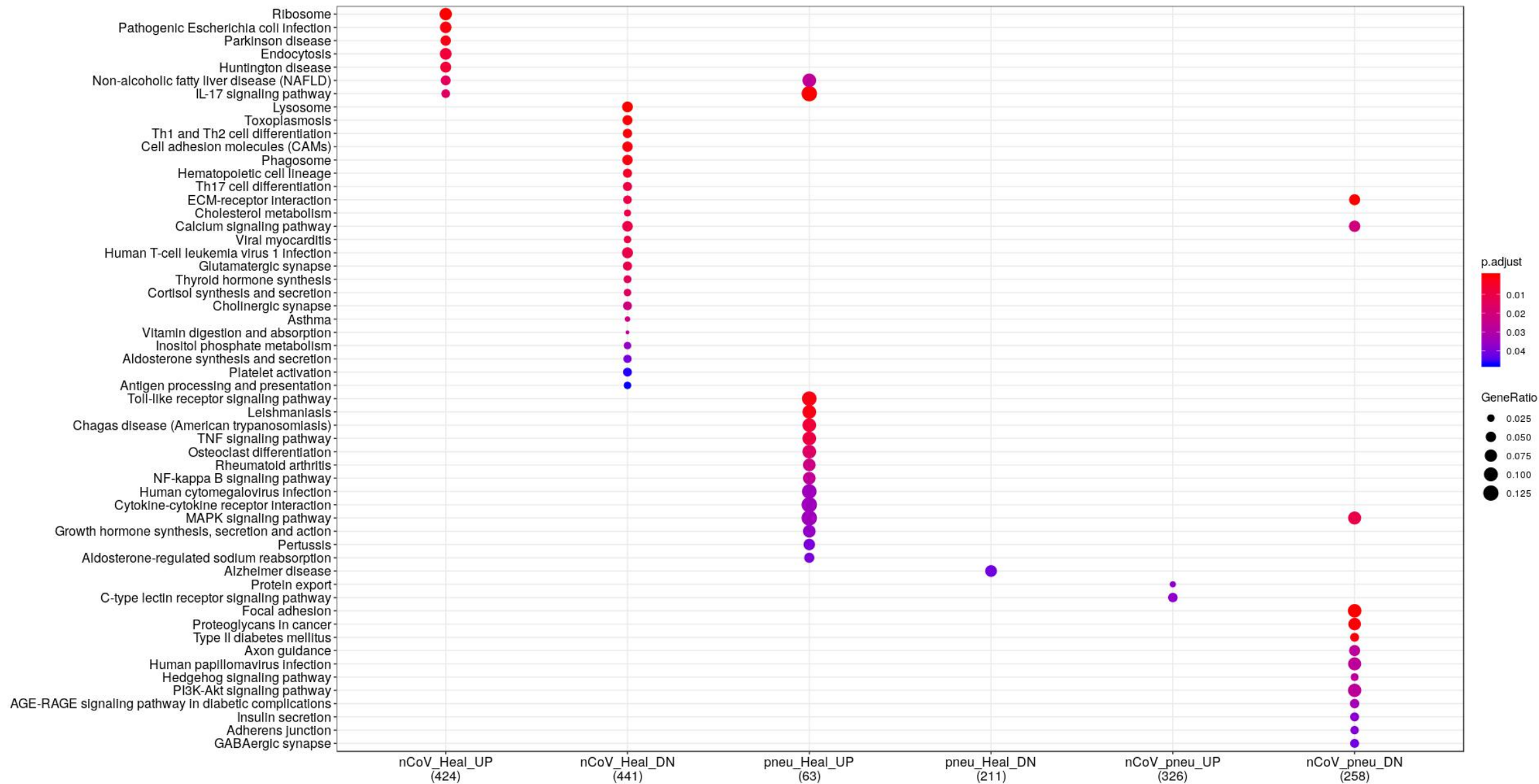


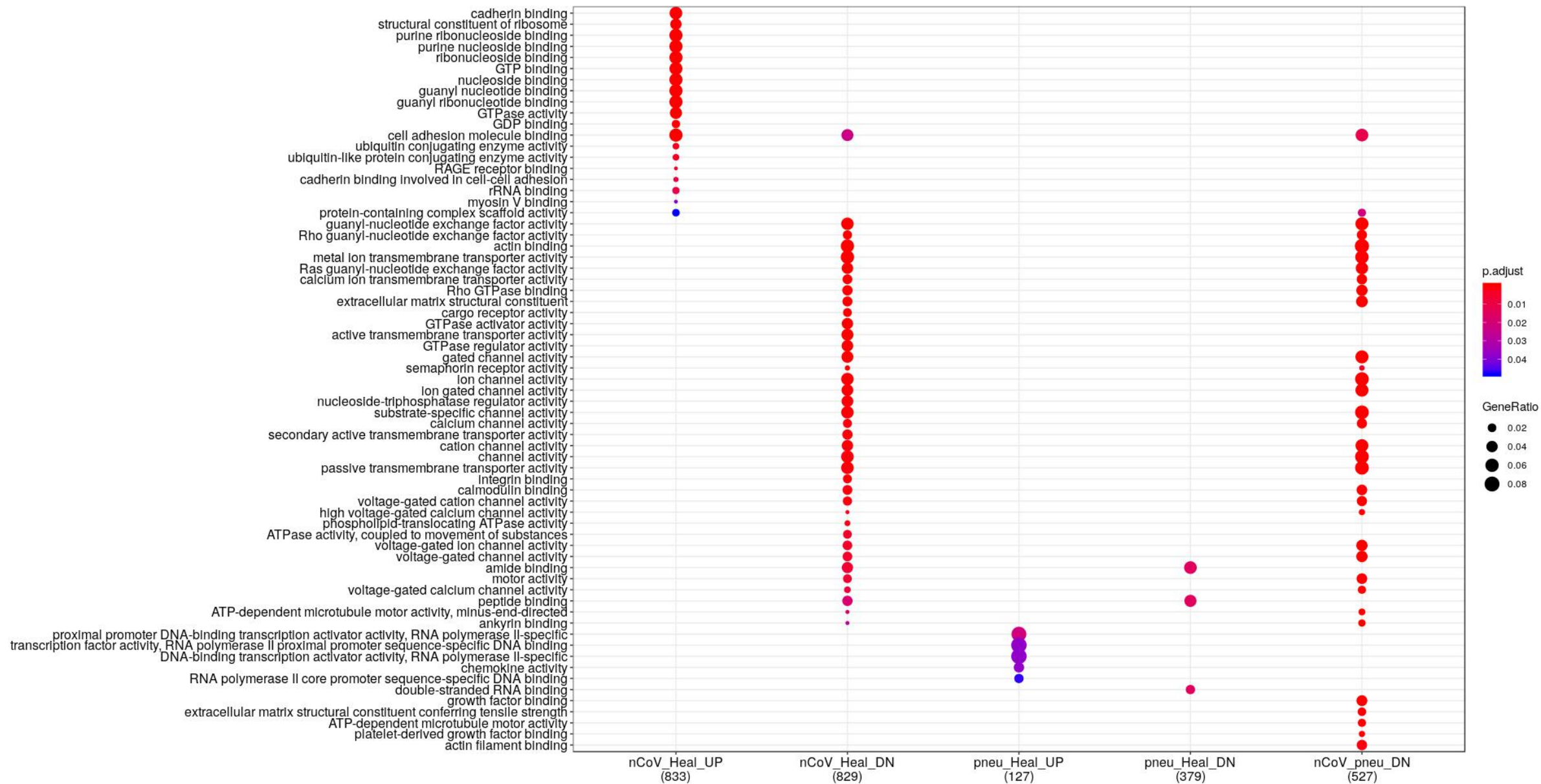
DEG



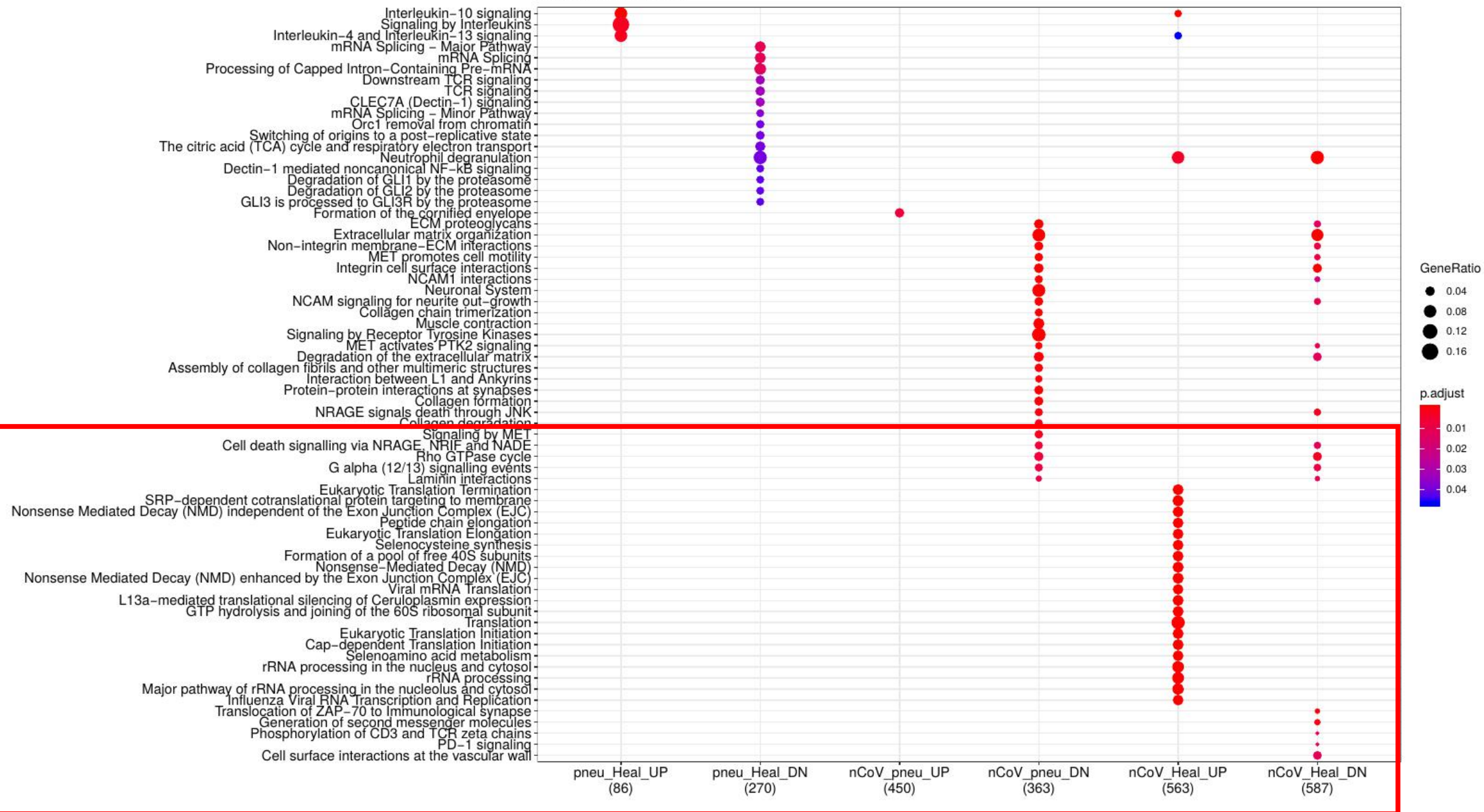
KEGG Enrichment



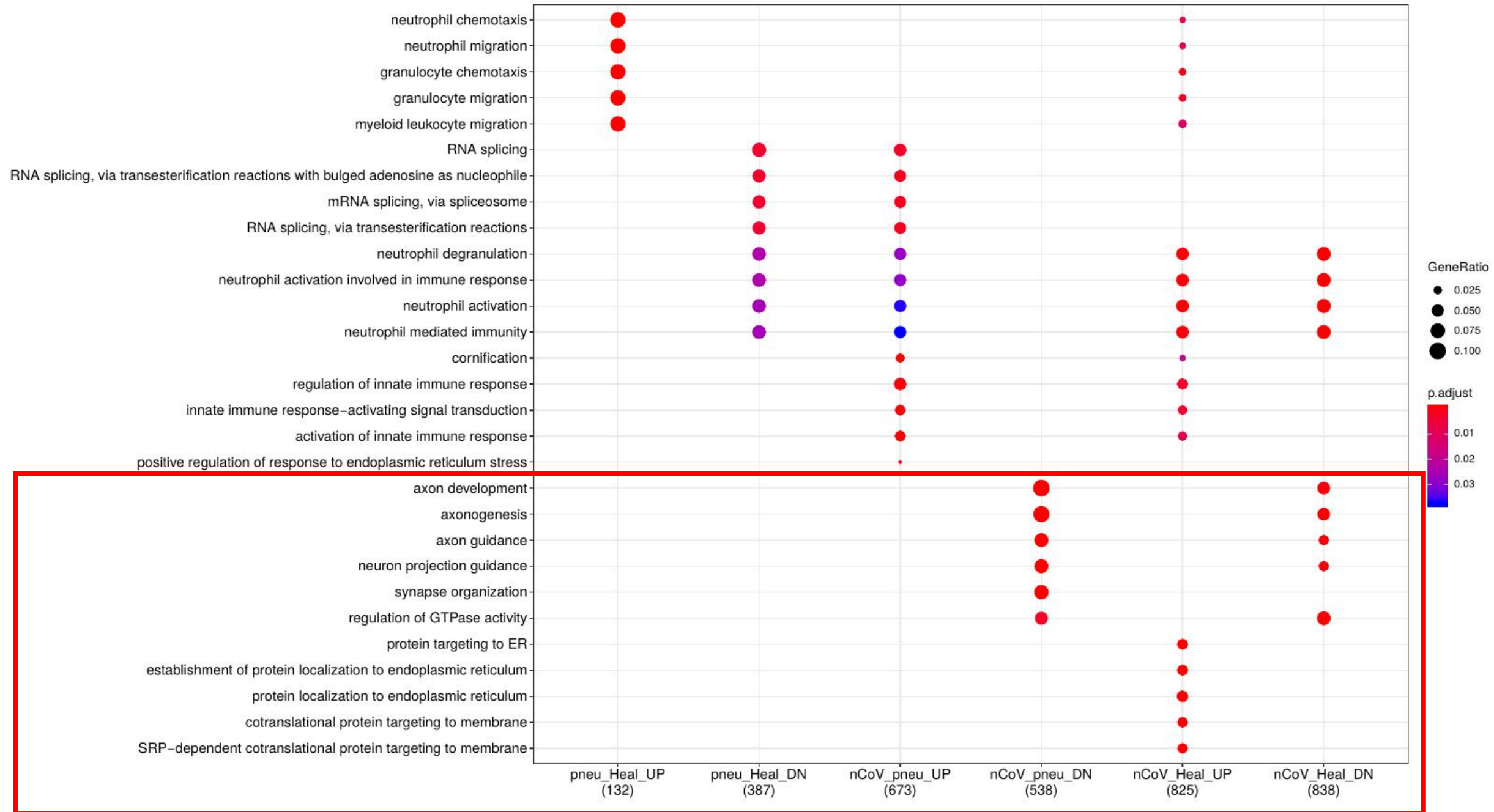




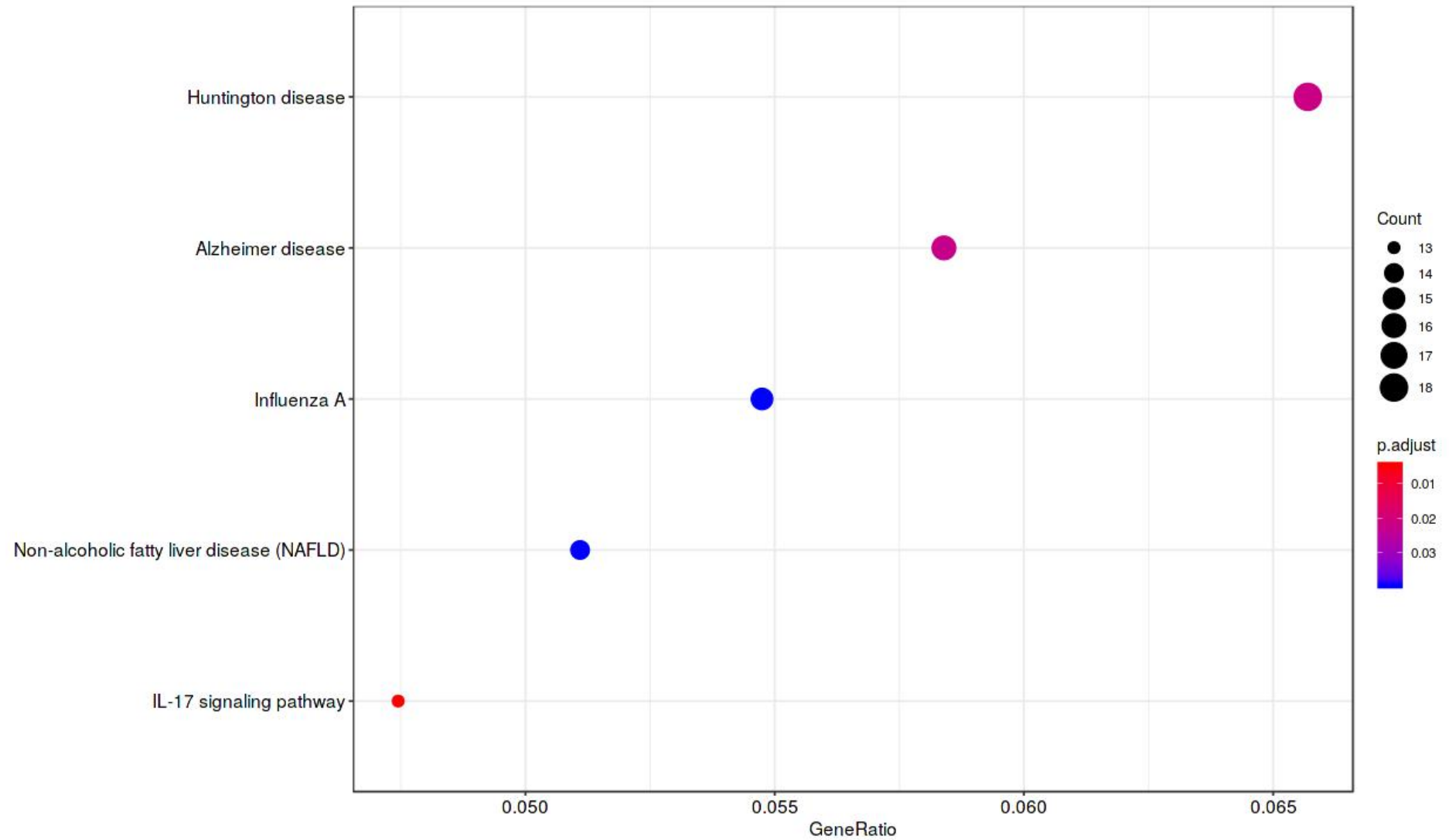
Reactome Enrichment



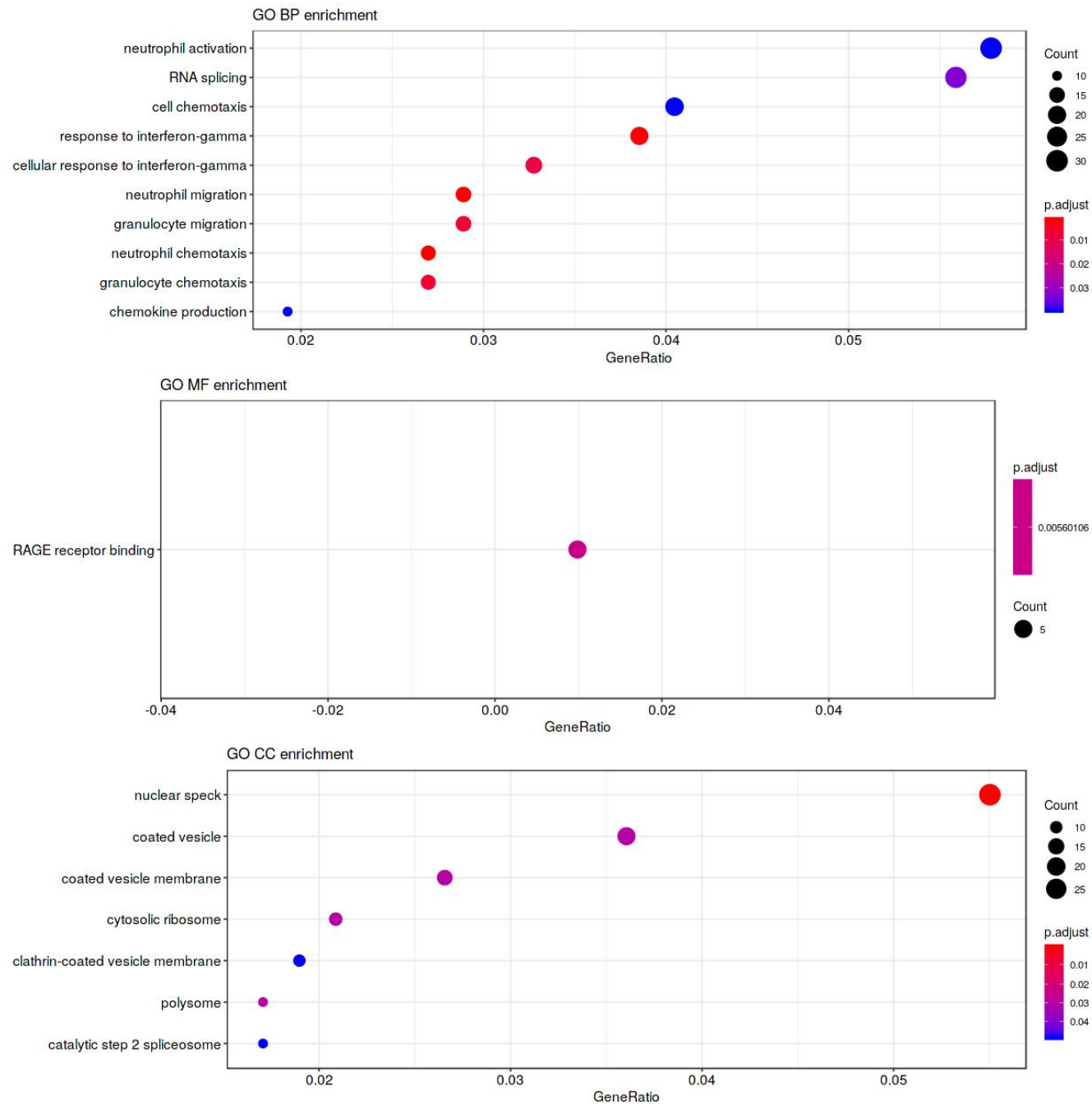
GO BP Enrichment



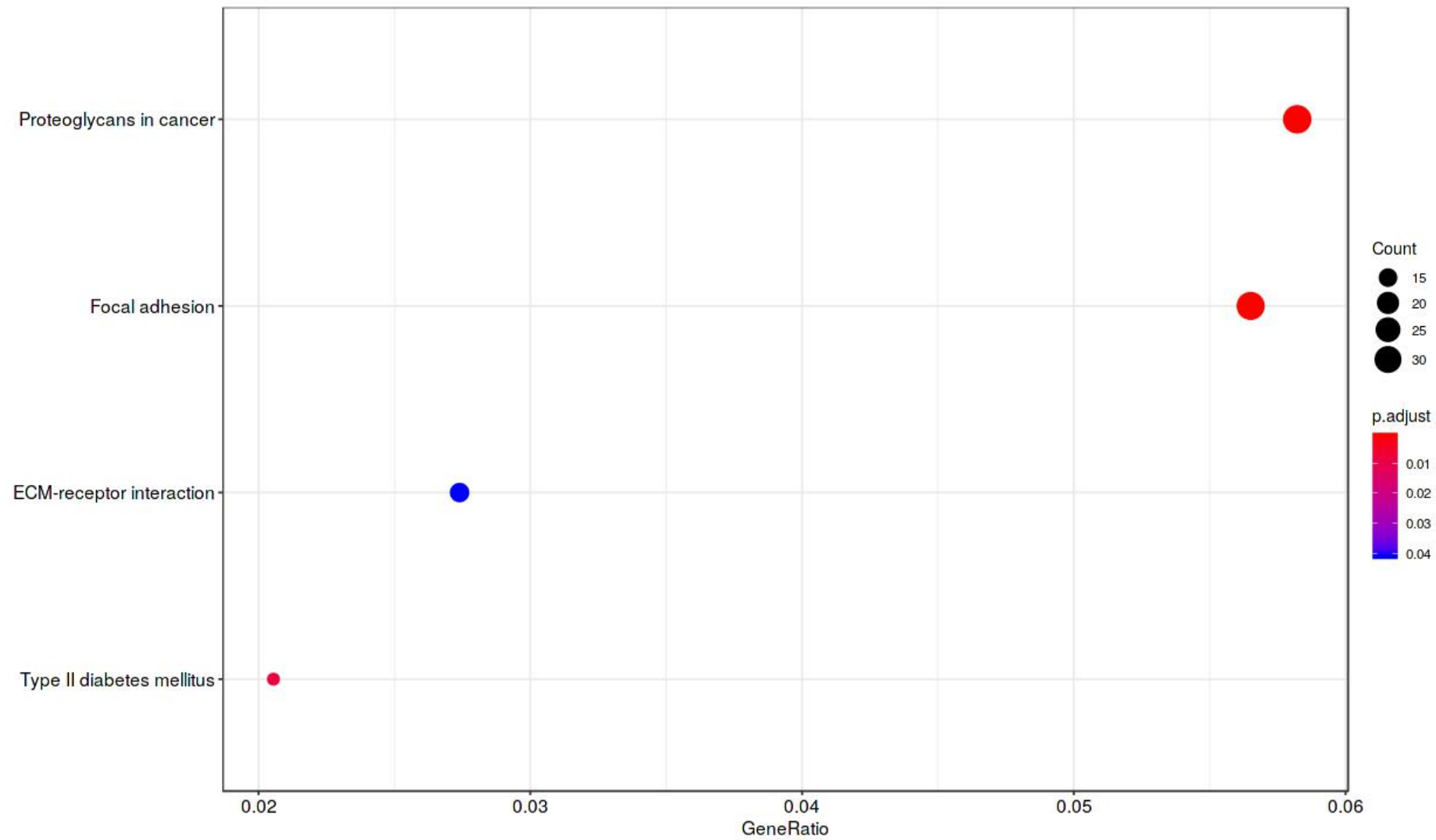
pneu_Heal (KEGG)



pneu_Heal (GO)



nCoV_pneu (KEGG)



nCoV_pneu (GO)

