

GSVA for mutil Group

Ximing Ran

2025-04-25

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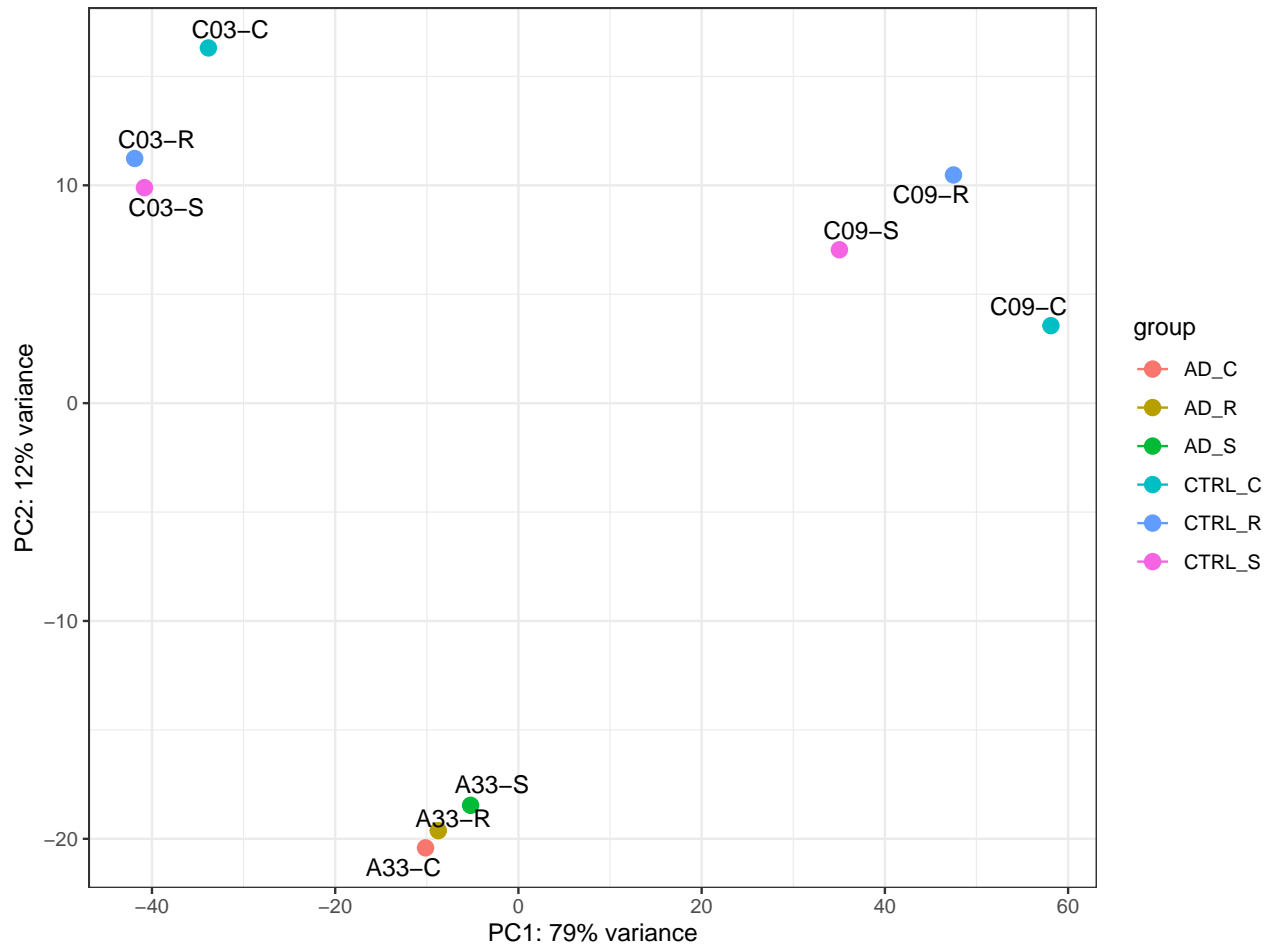
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1. Read the count data

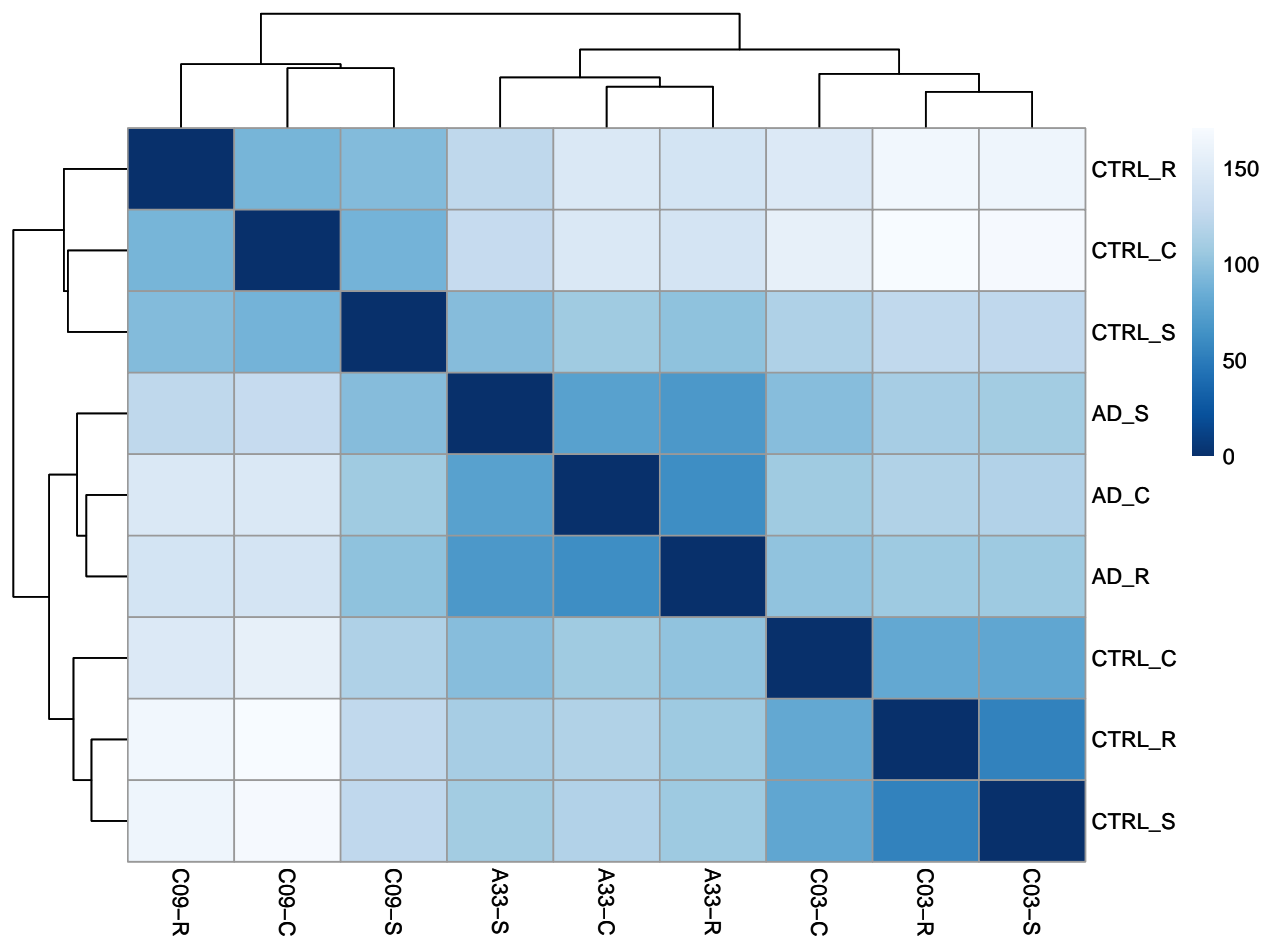
In this section, we will read the clean count data from the `synaptosomes_bulkRNA` folder. We will read the data and merge them into a single table.

2. Visualization for reuslt

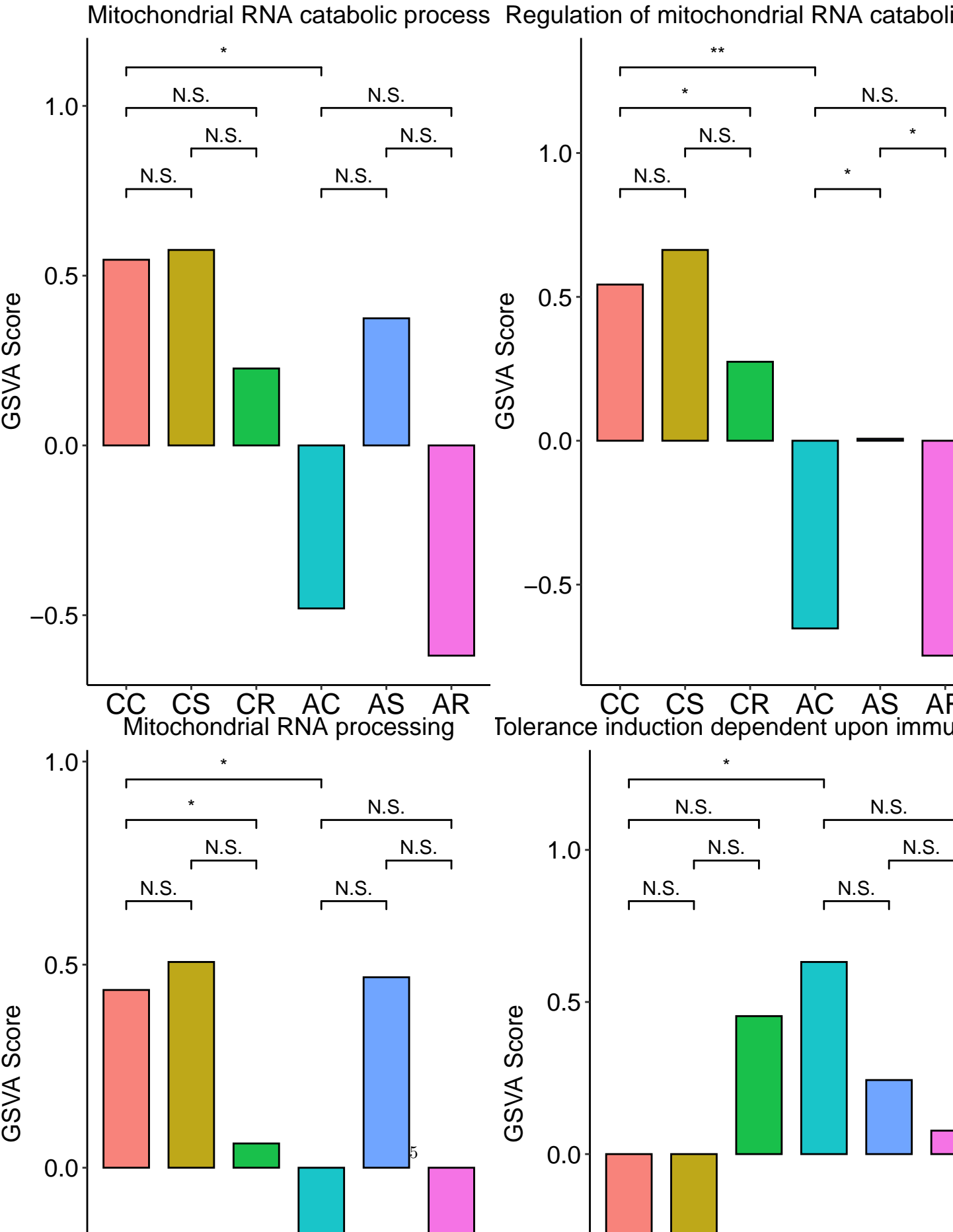
(1) Sample information - PCA plot



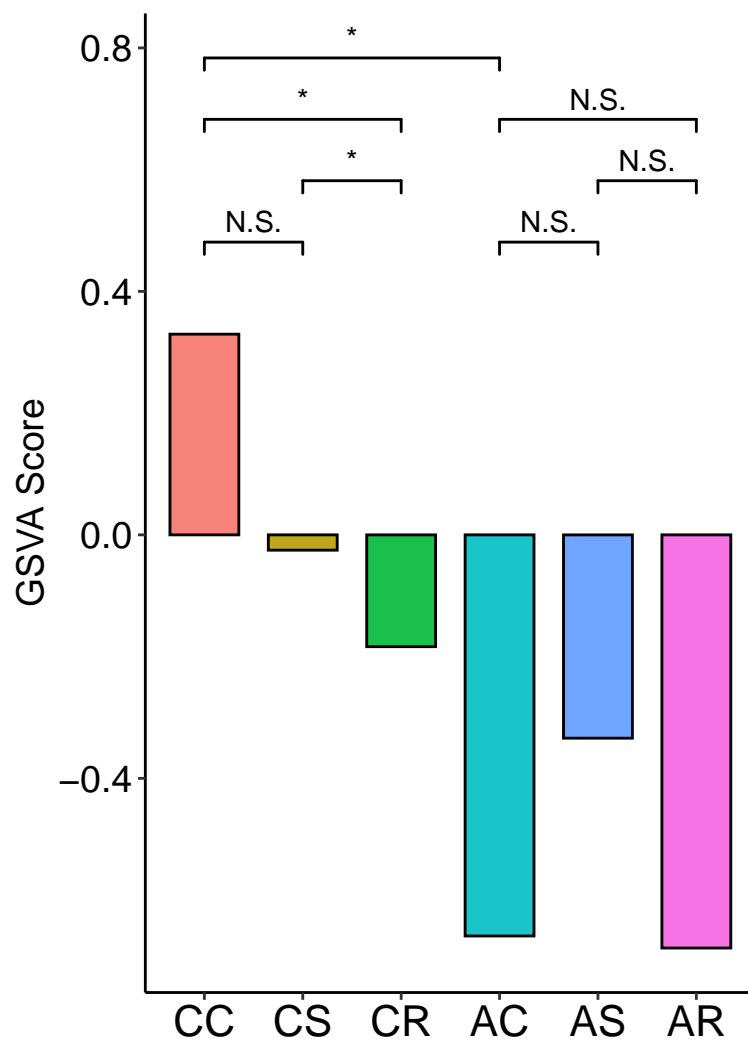
(2) Sample information - Distance heatmap



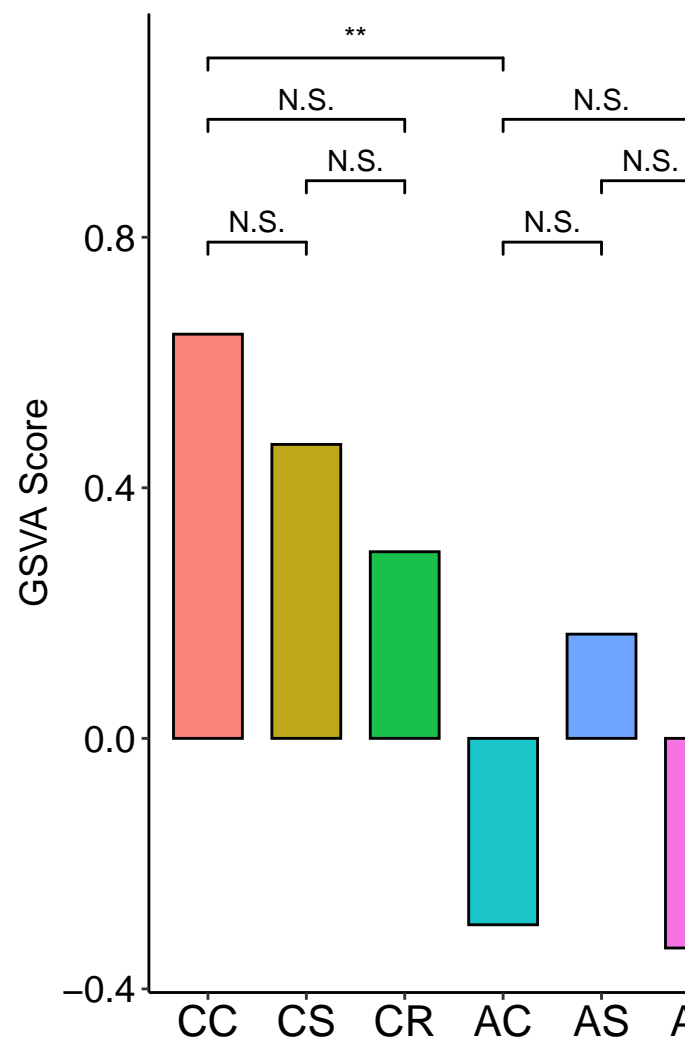
3. GSVA analysis

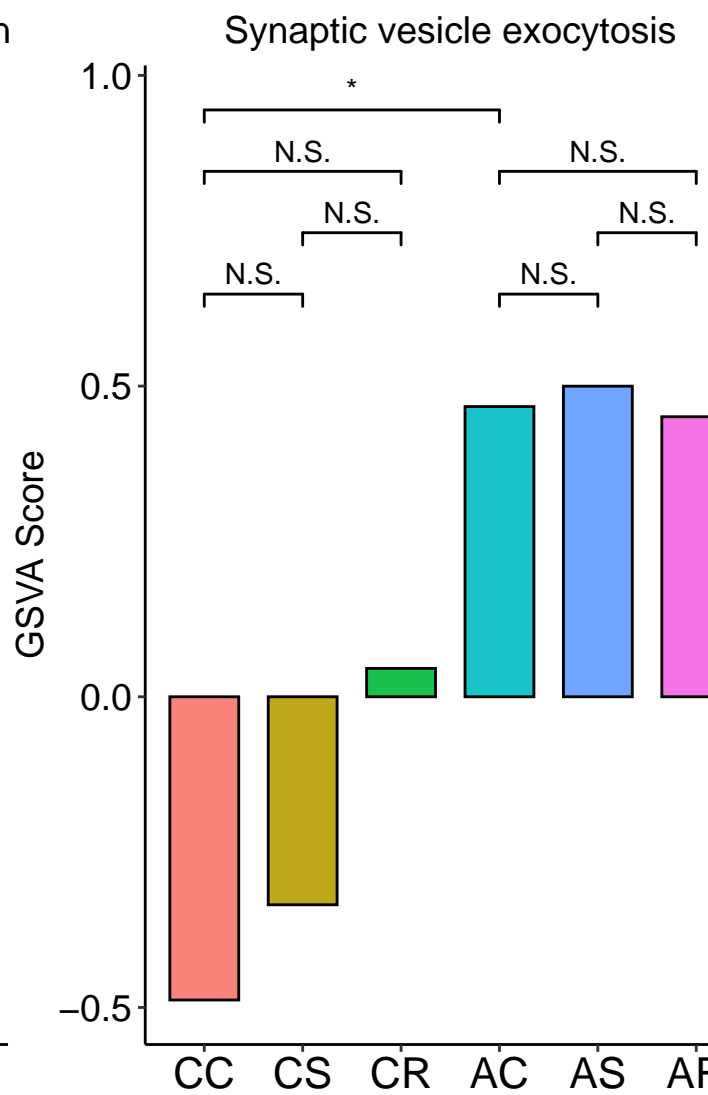
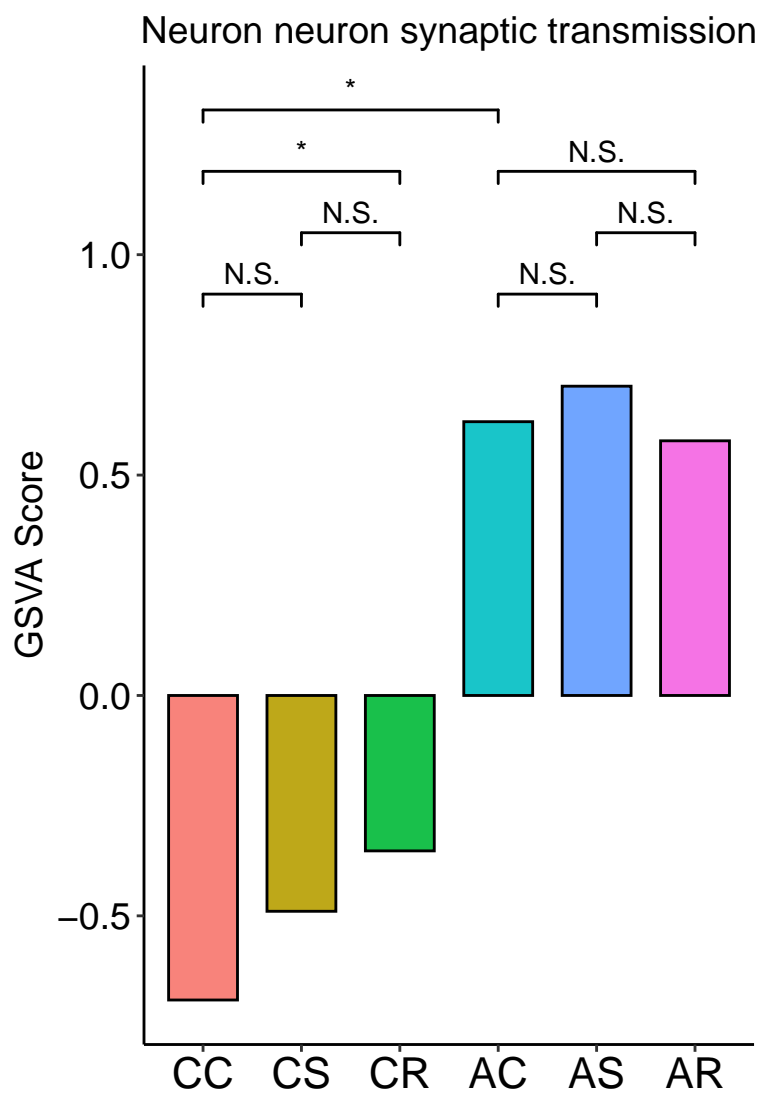


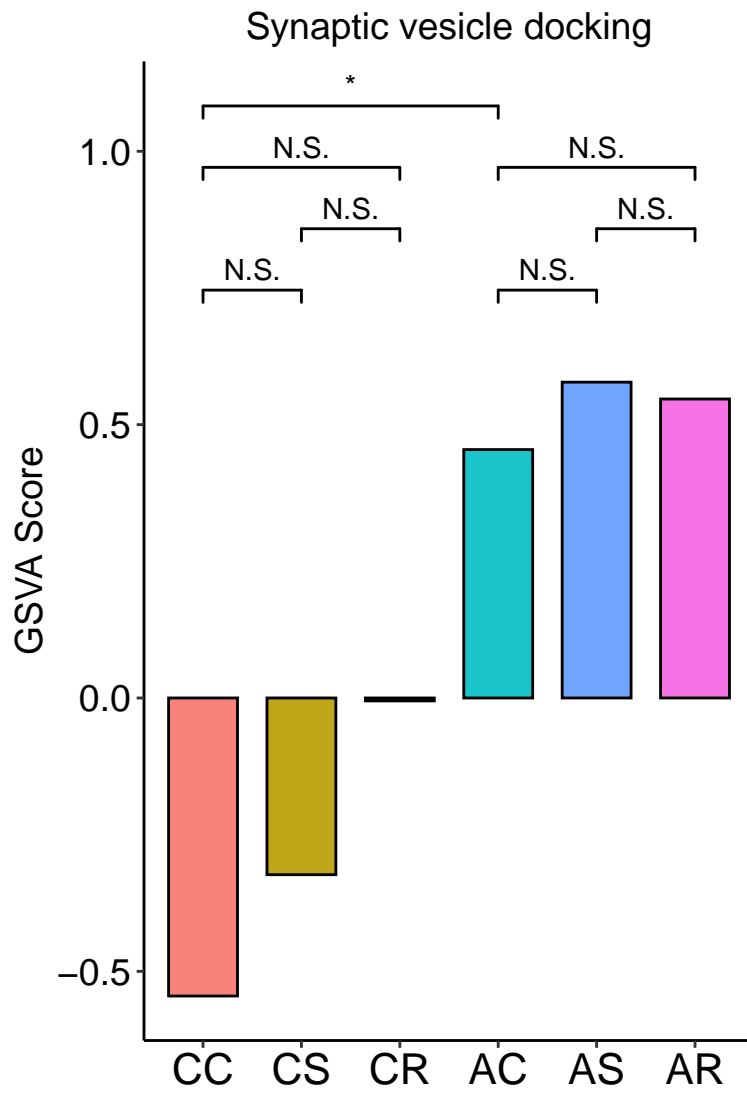
Mitochondrial electron transport succinate to ub



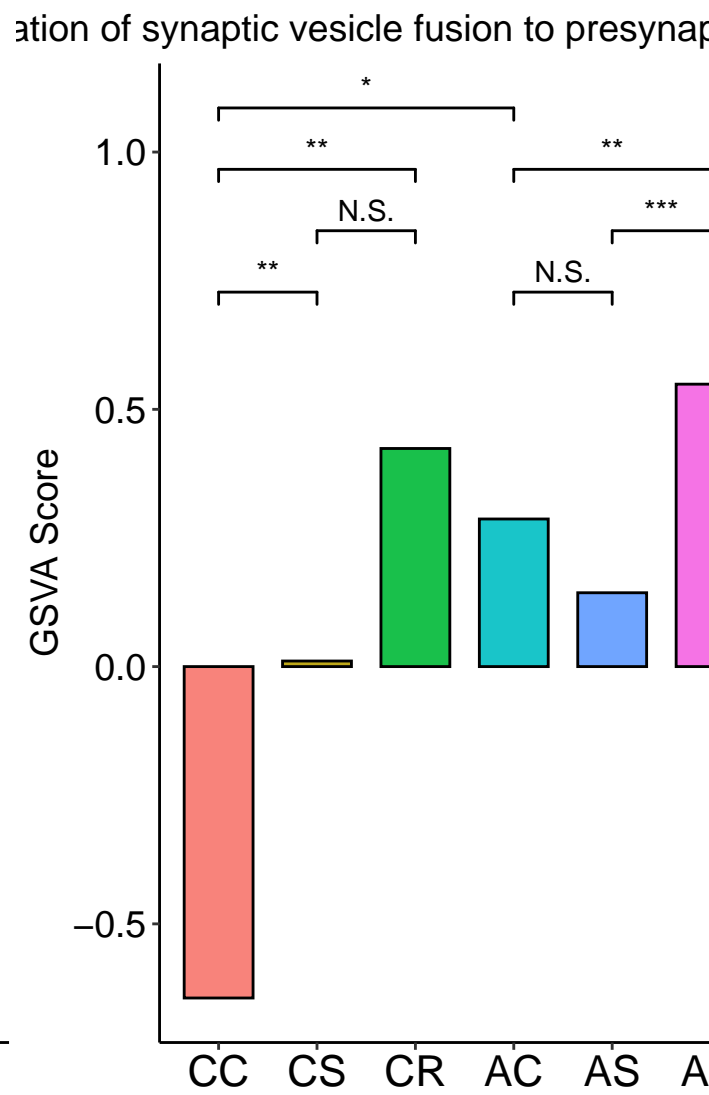
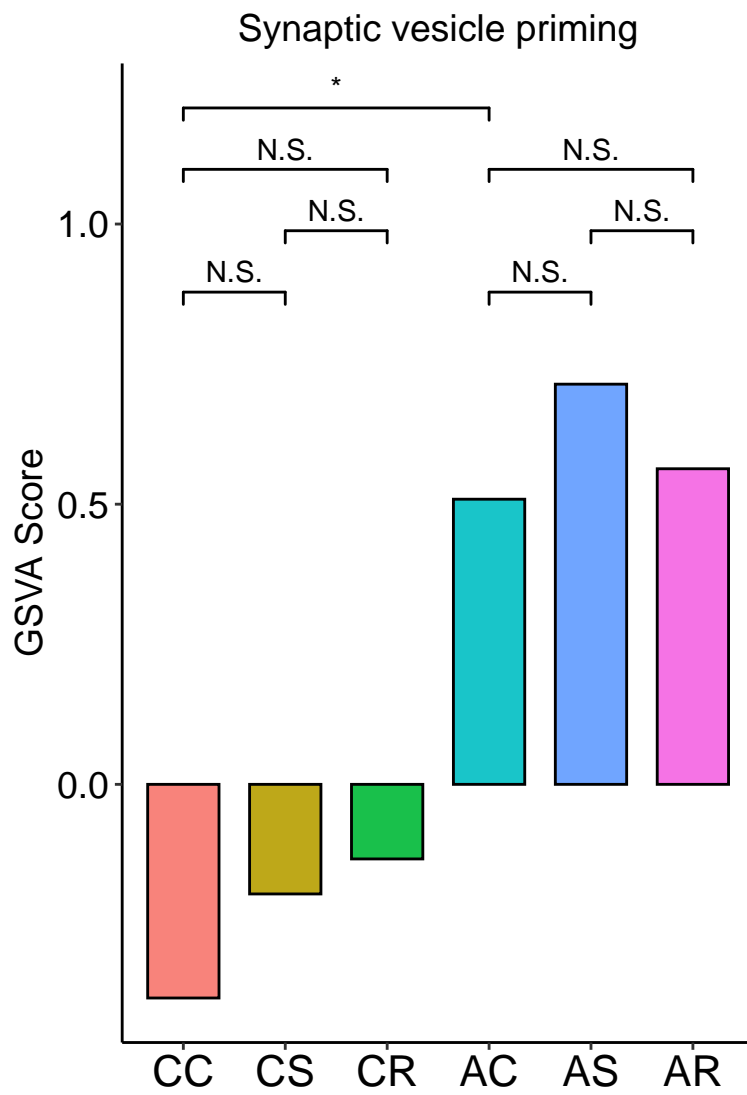
Mitochondrial dna replication



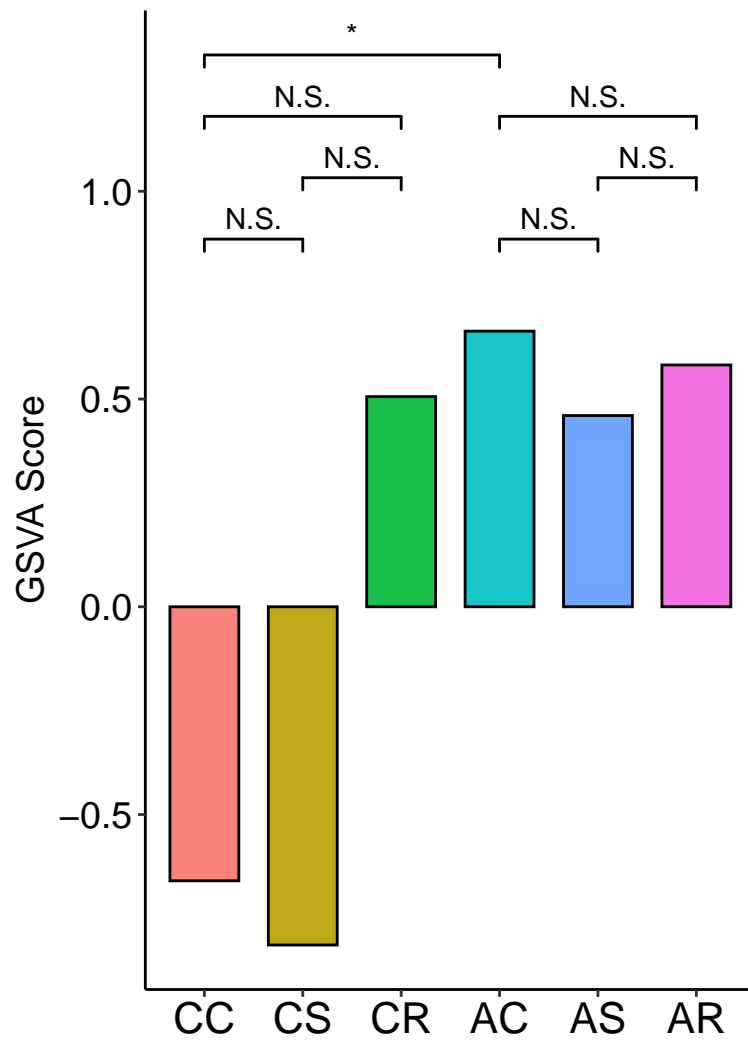




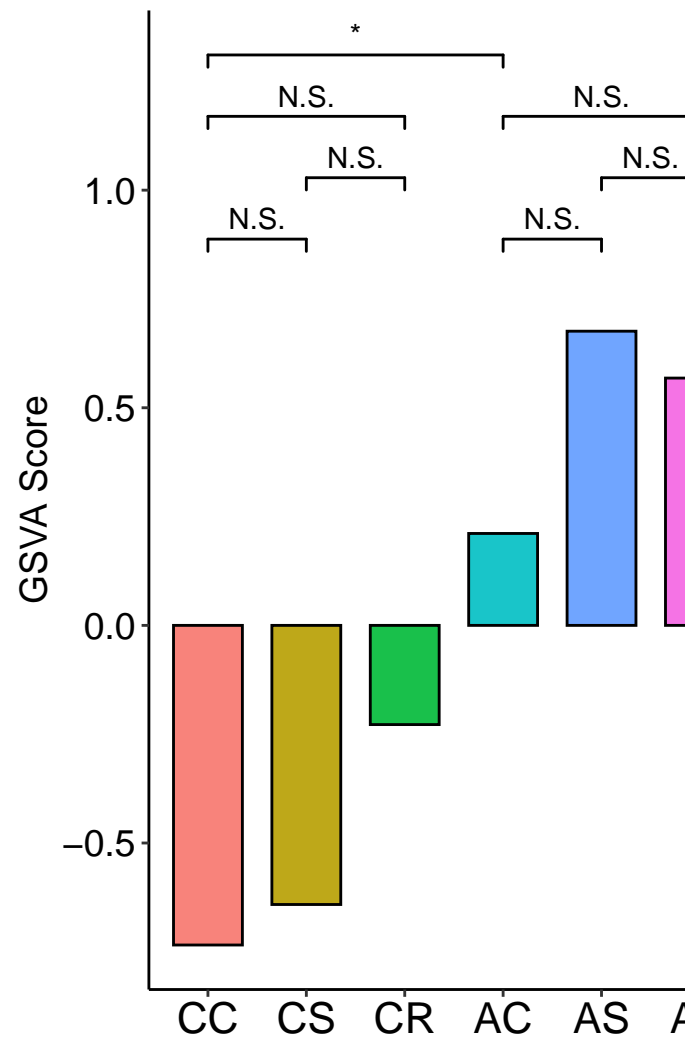
[1] "Processing 10 pathway"

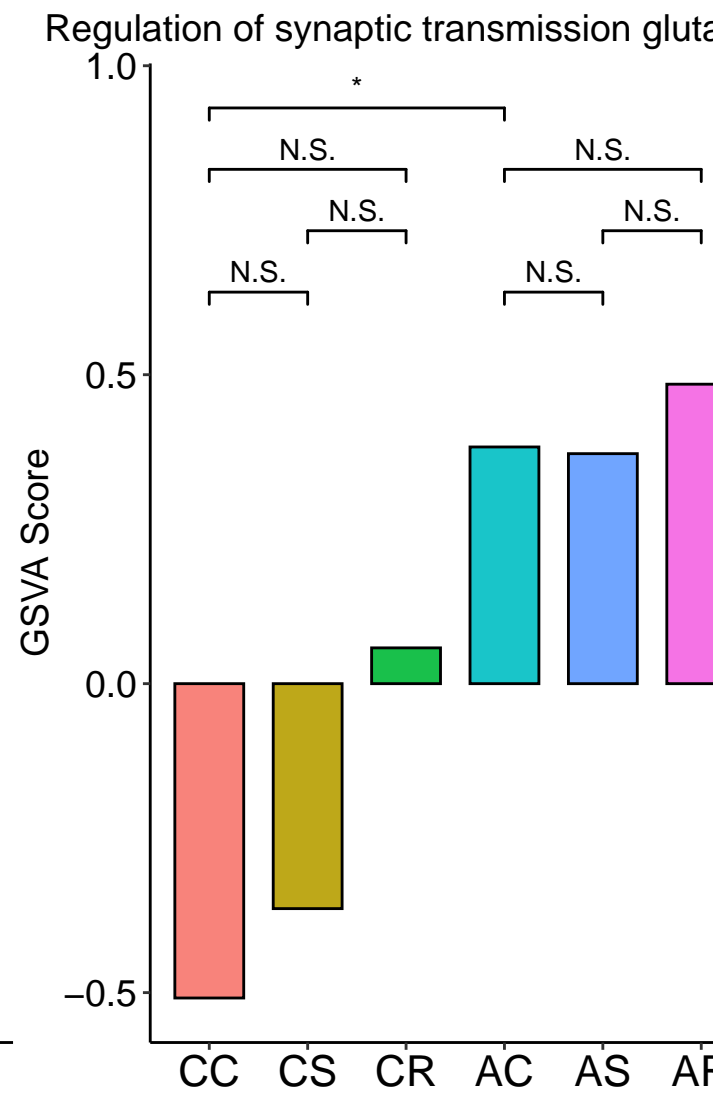
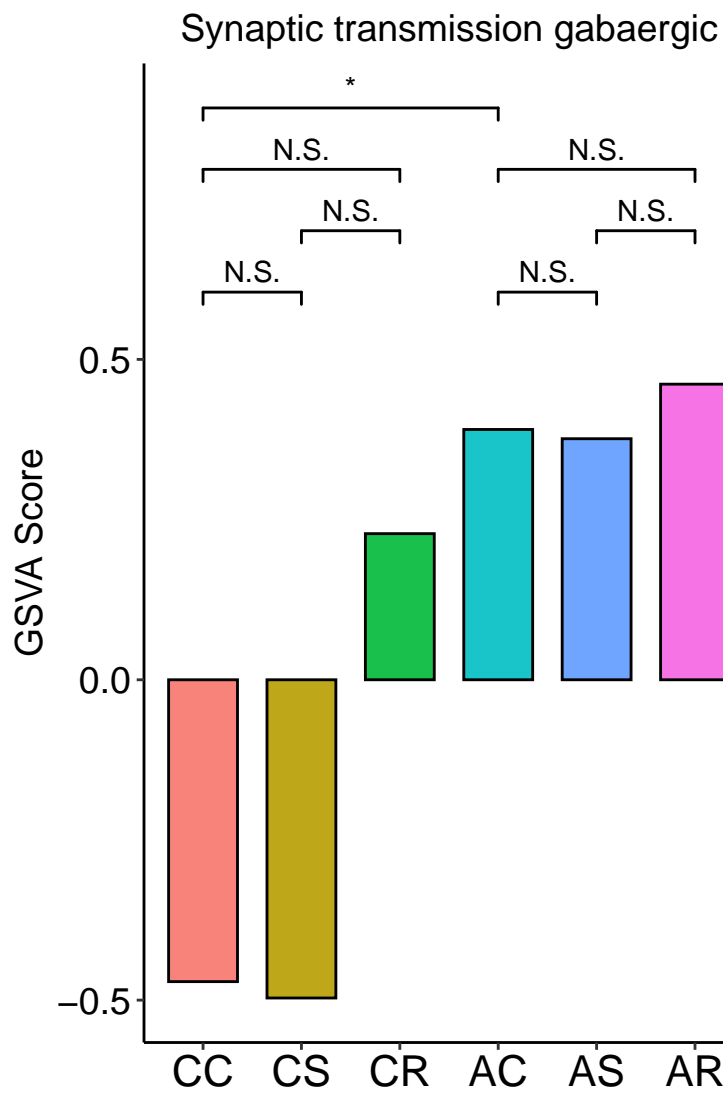


Negative regulation of synaptic transmission gα

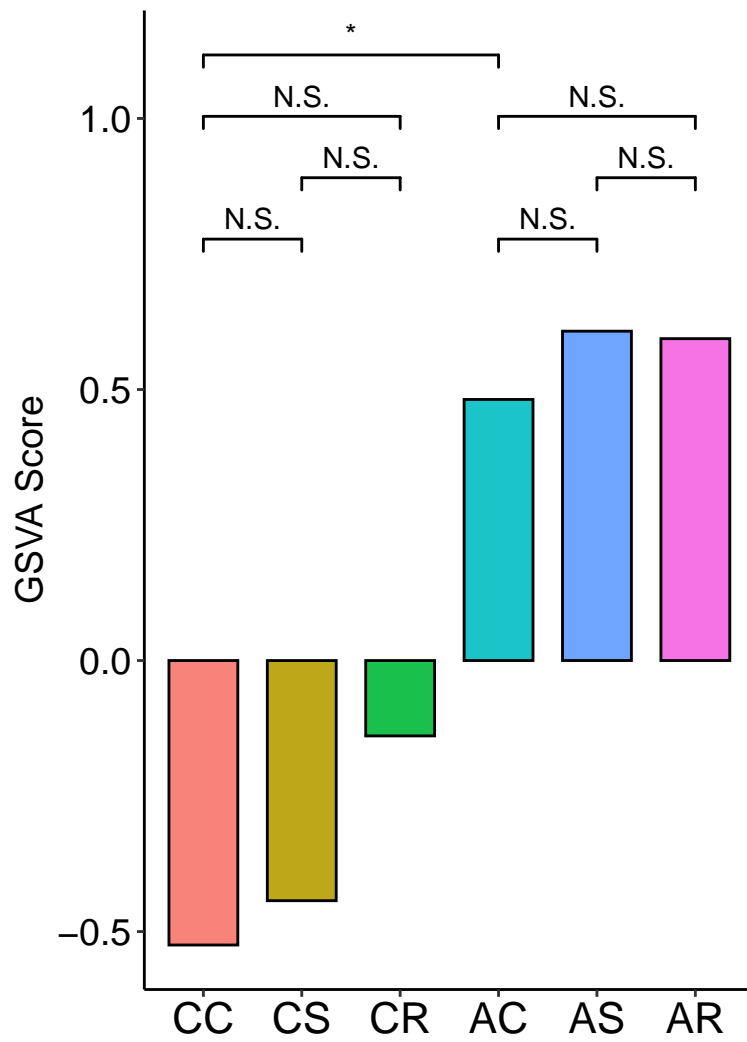


Regulation of synapse structural pl

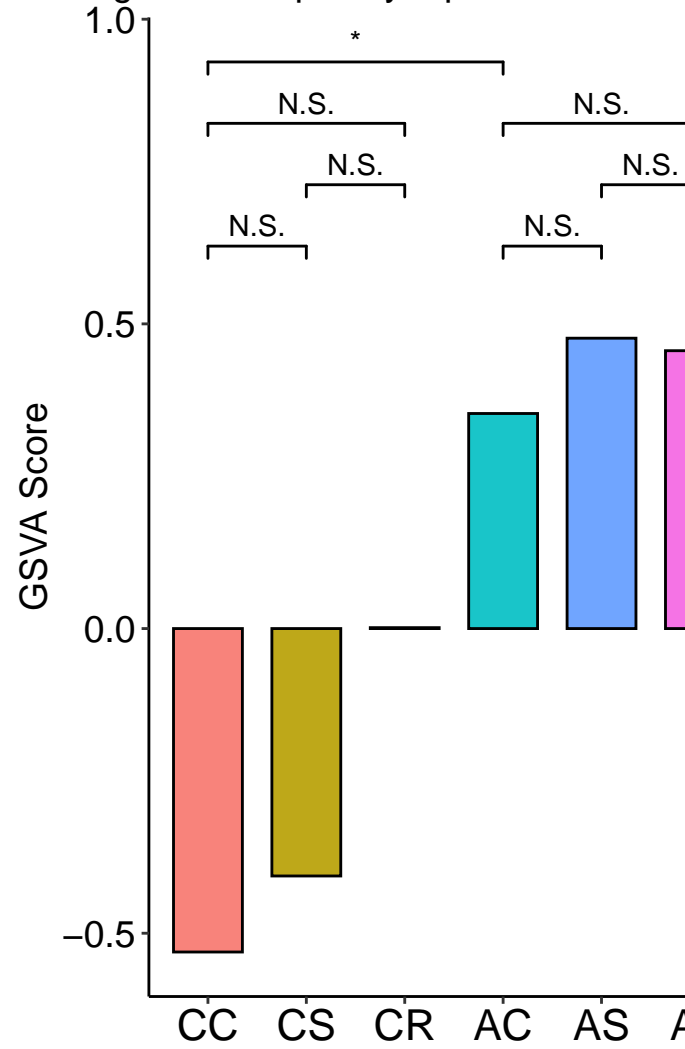




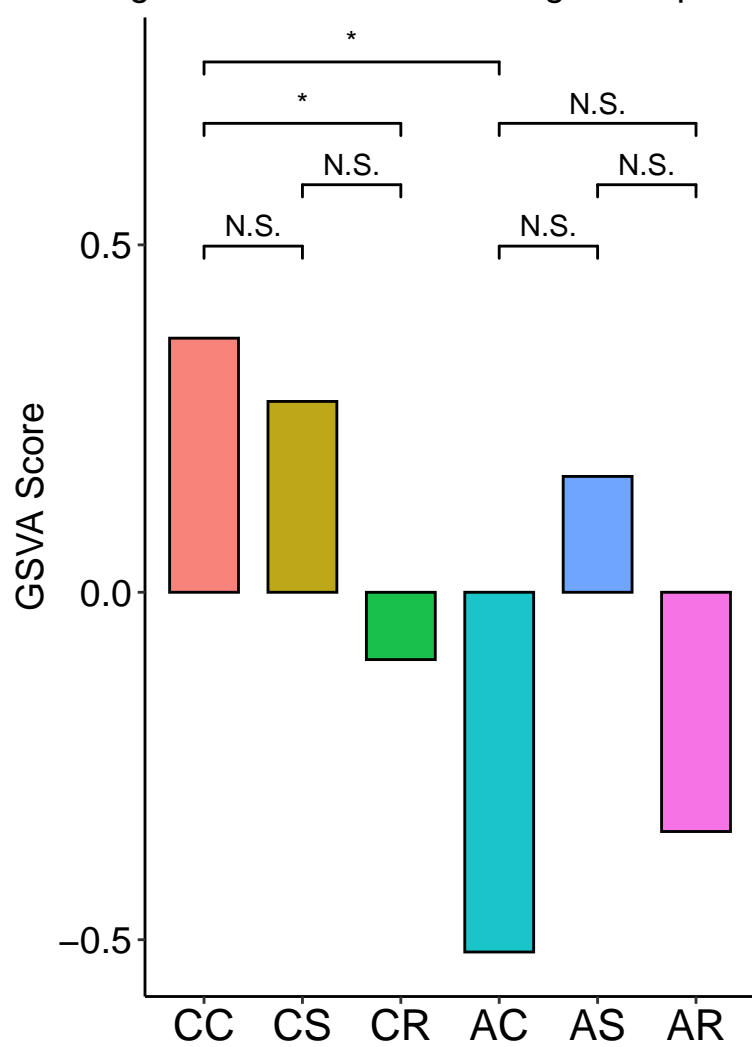
egative regulation of synaptic transmission glut



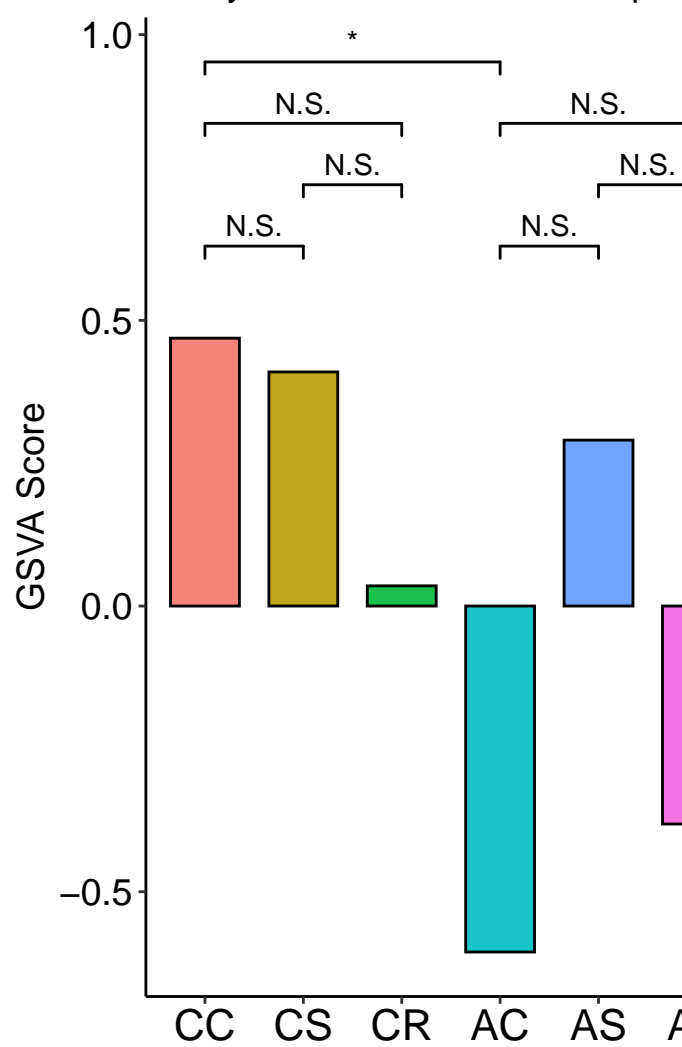
Regulation of postsynaptic membrane

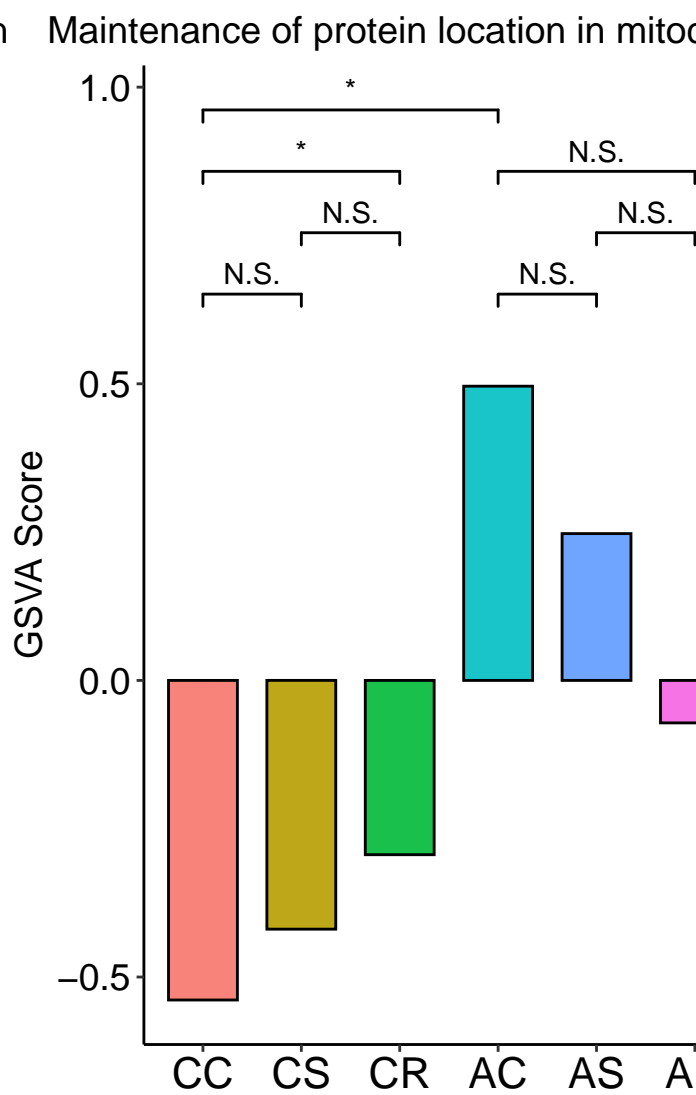
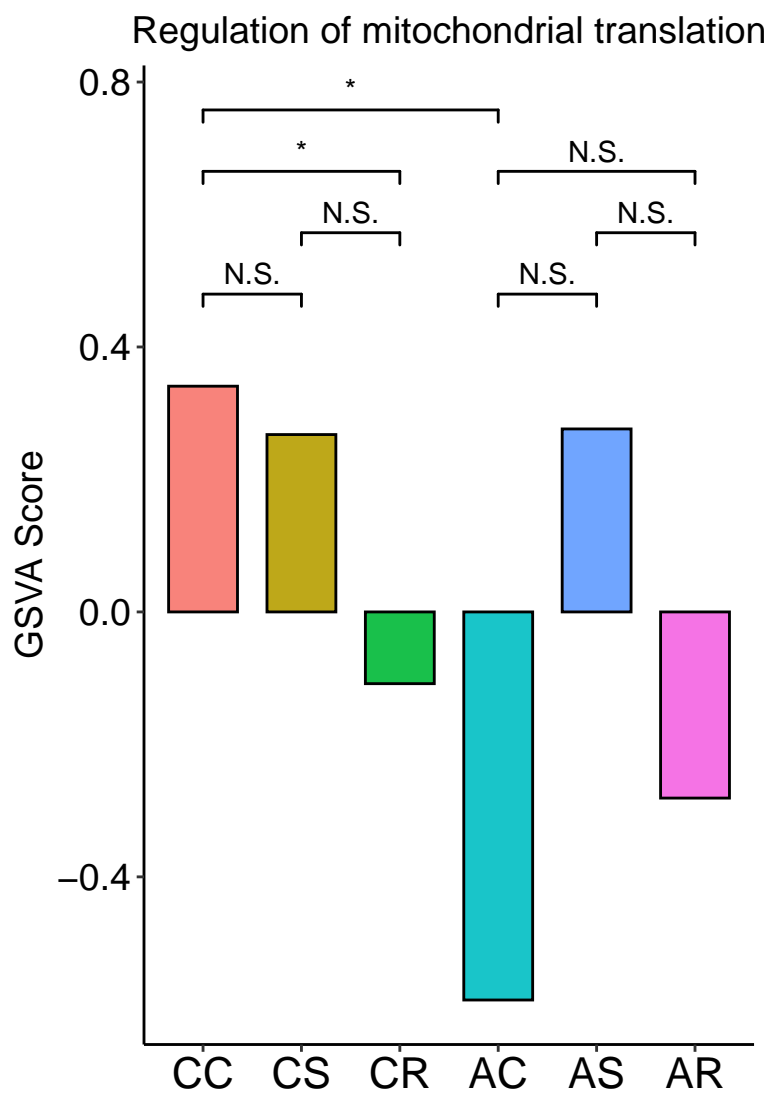


Regulation of mitochondrial gene expressRNA aminoacylation for mitochondrial pro

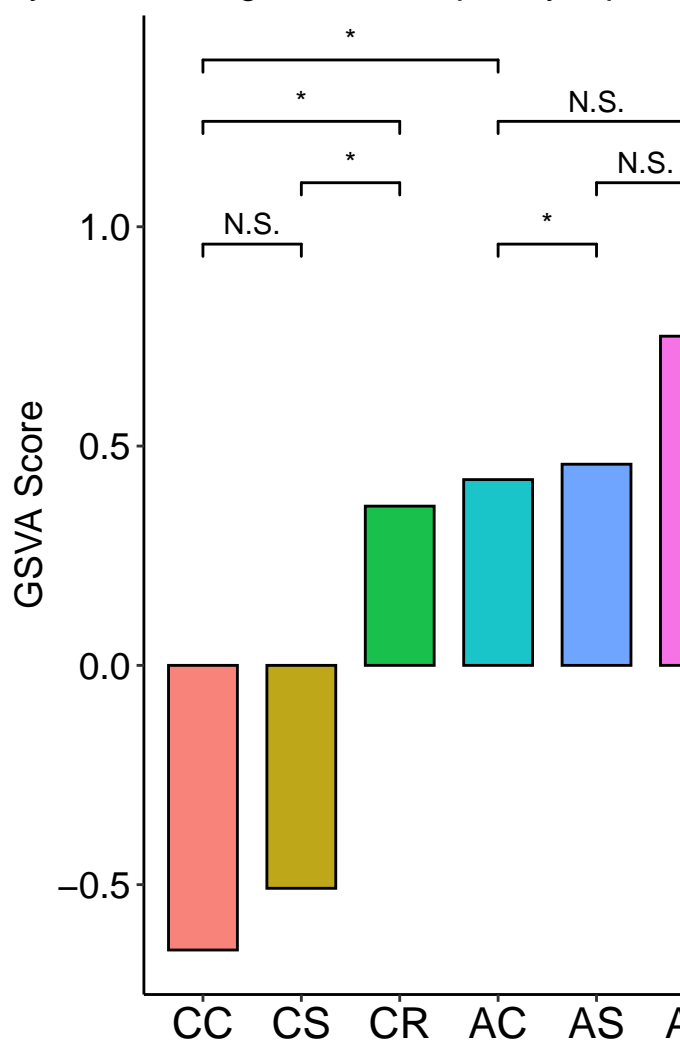
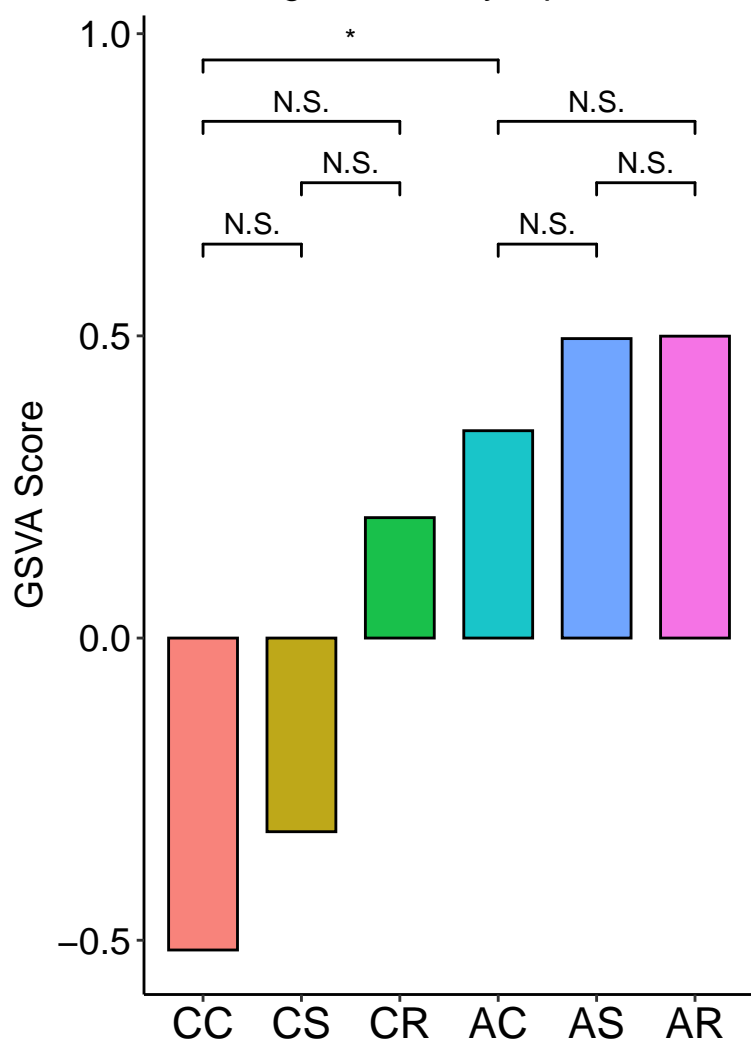


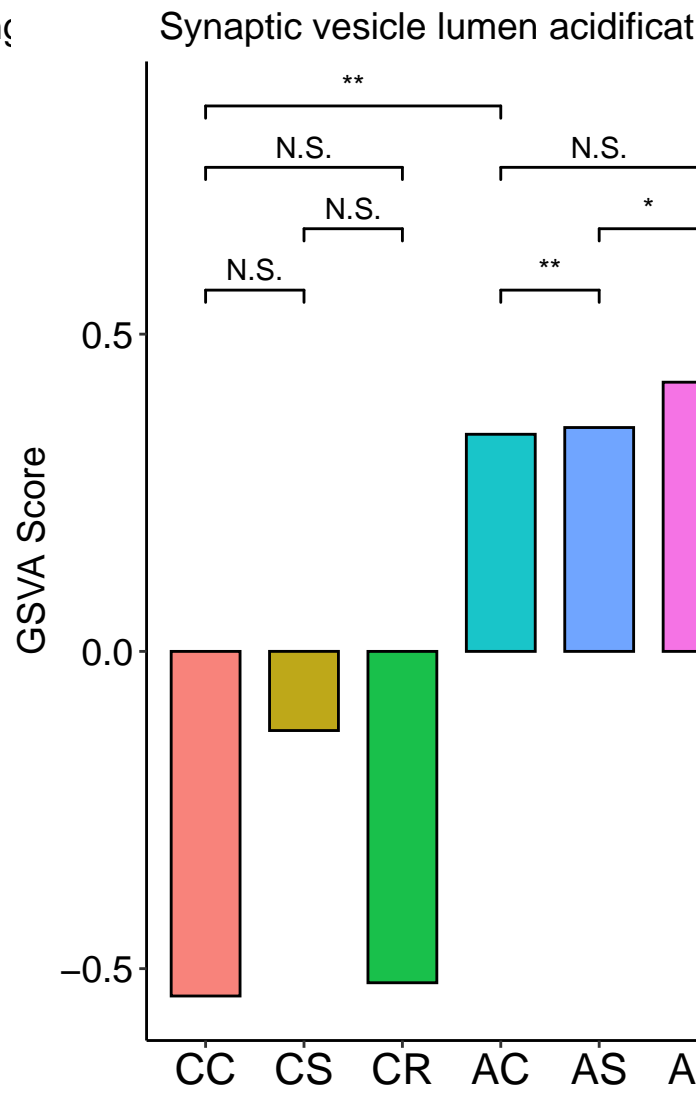
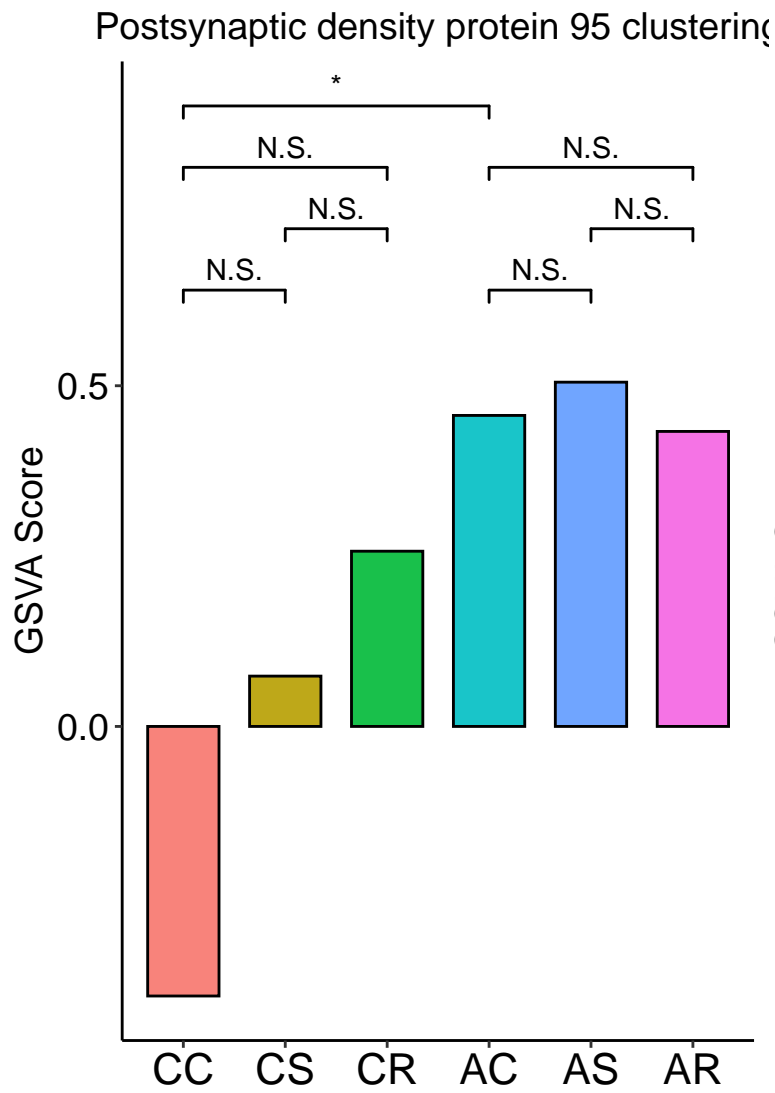
[1] "Processing 20 pathway"

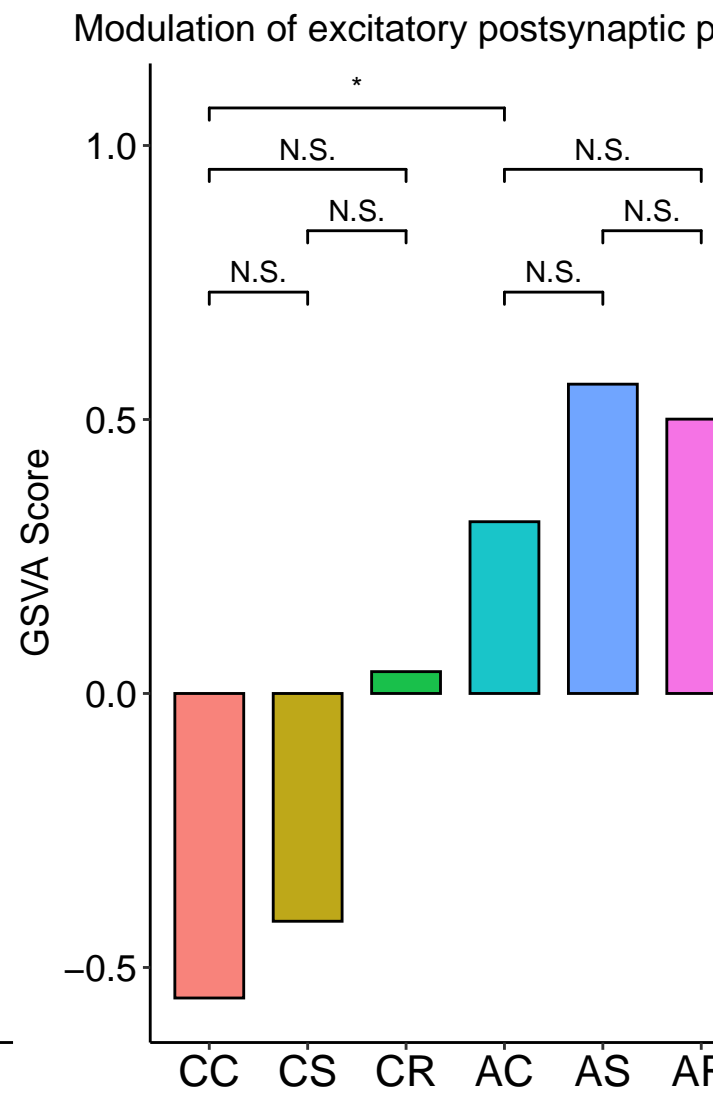
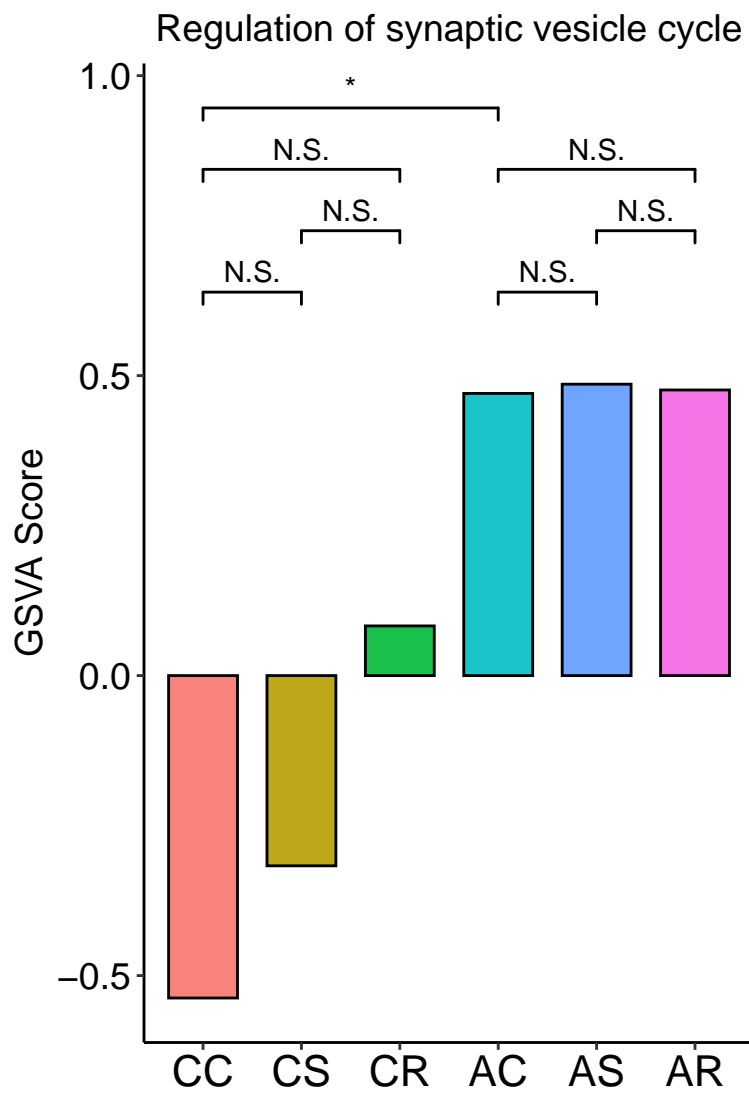


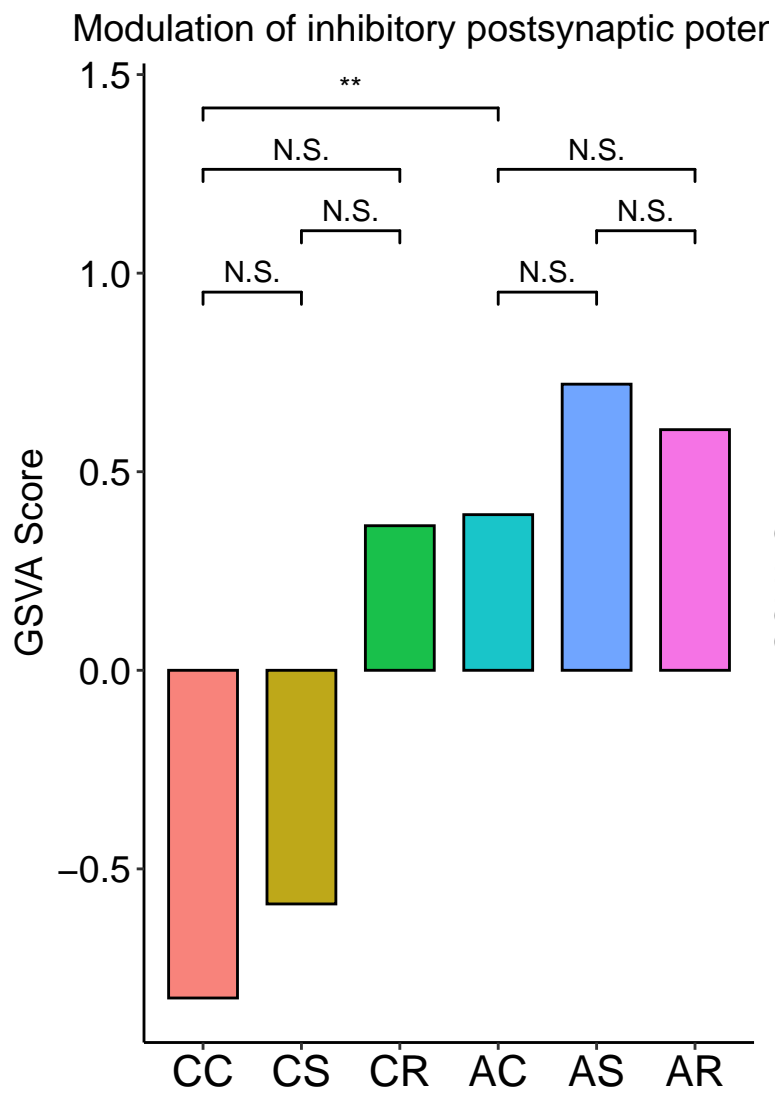


Positive regulation of synapse maturation
 hyrin clustering involved in postsynaptic c

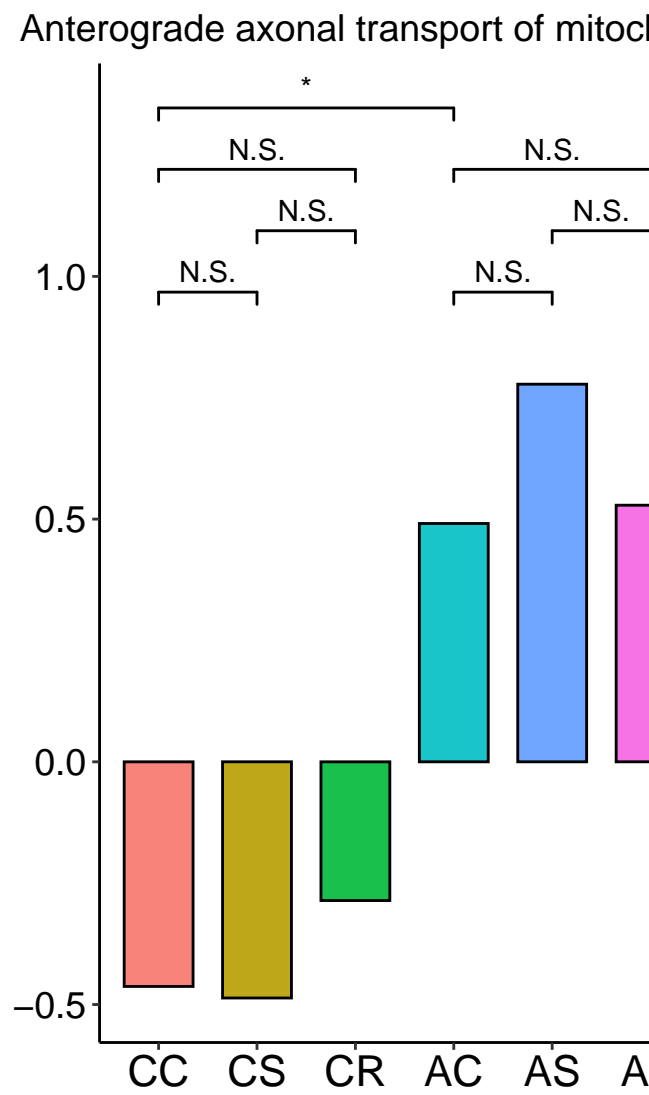




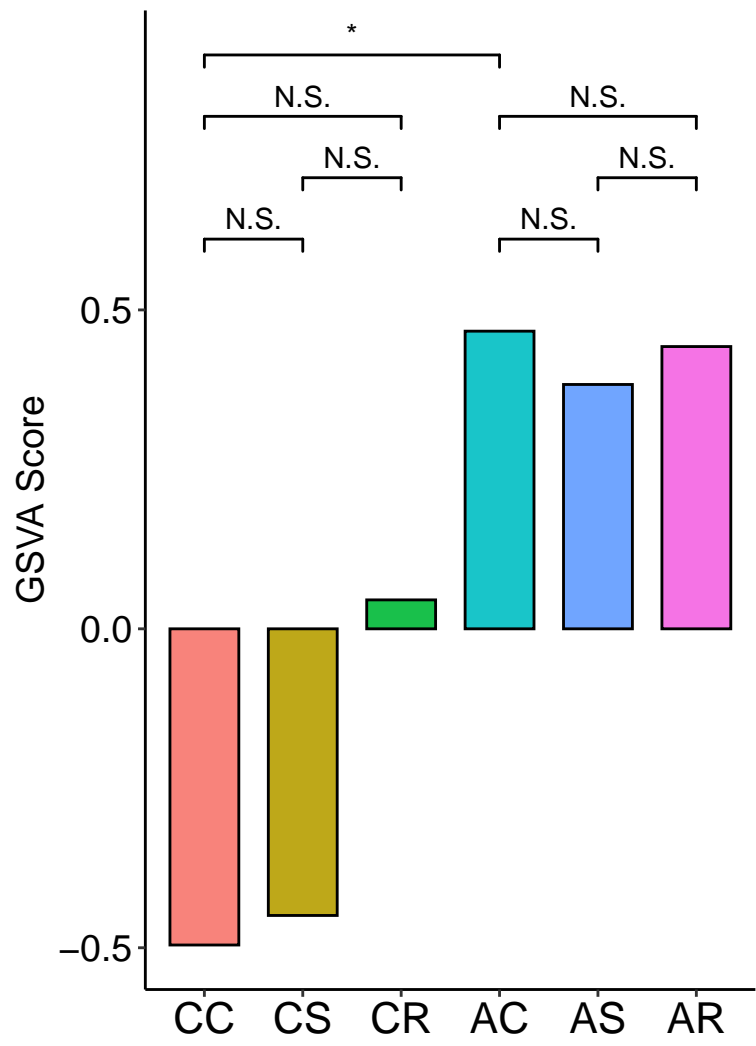




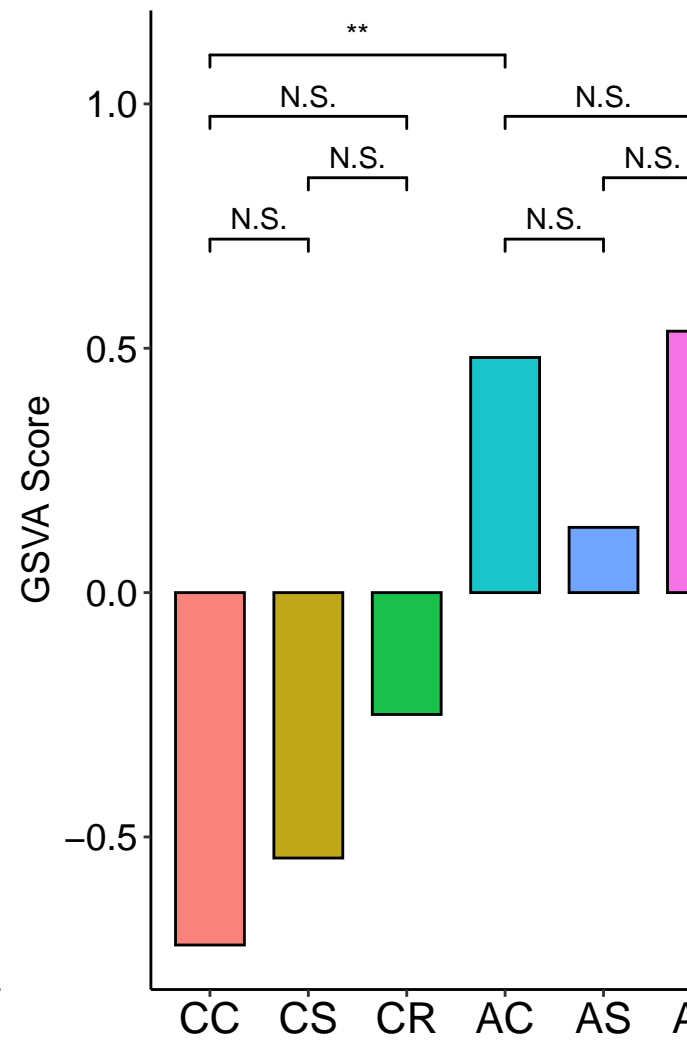
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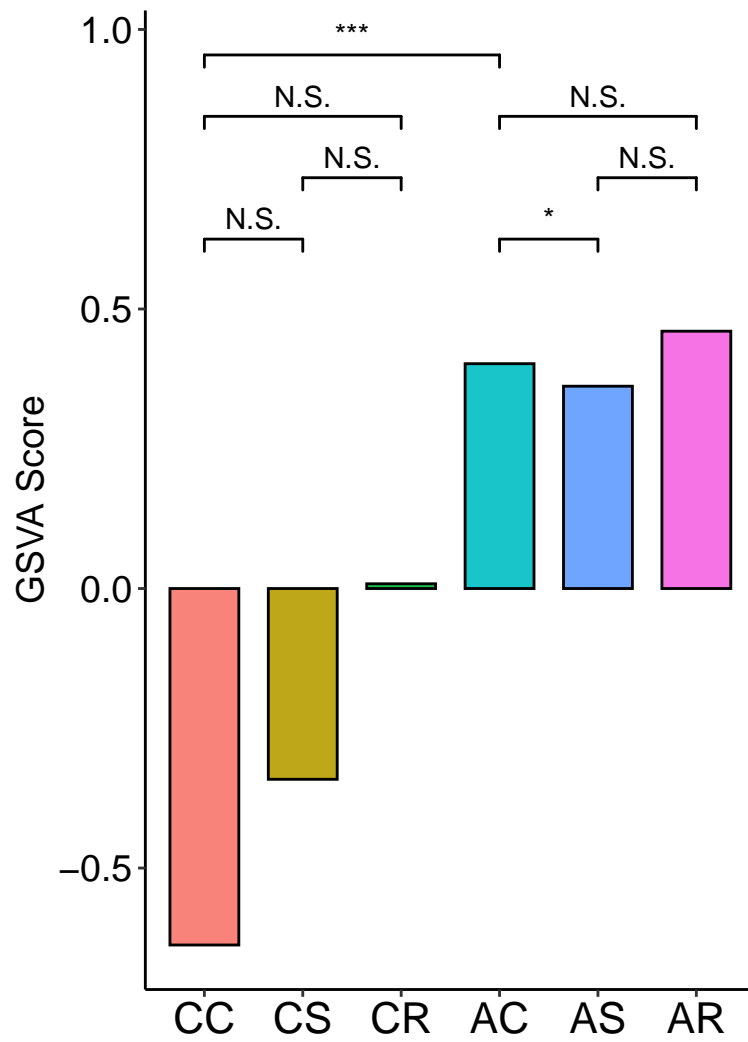
gulation of postsynaptic neurotransmitter recep



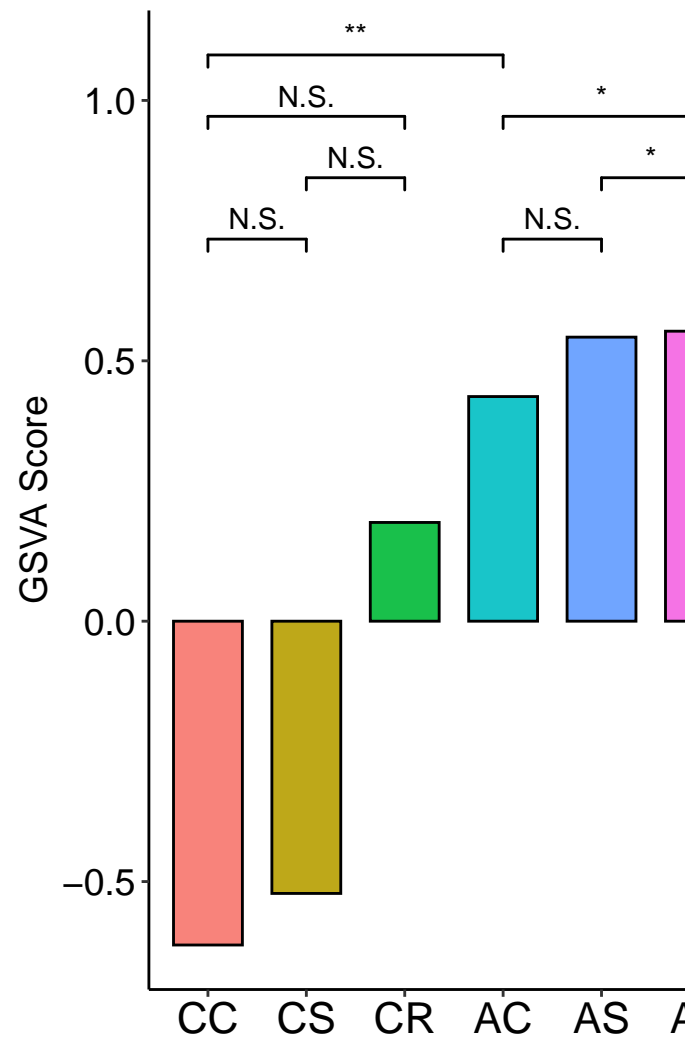
Excitatory chemical synaptic trans



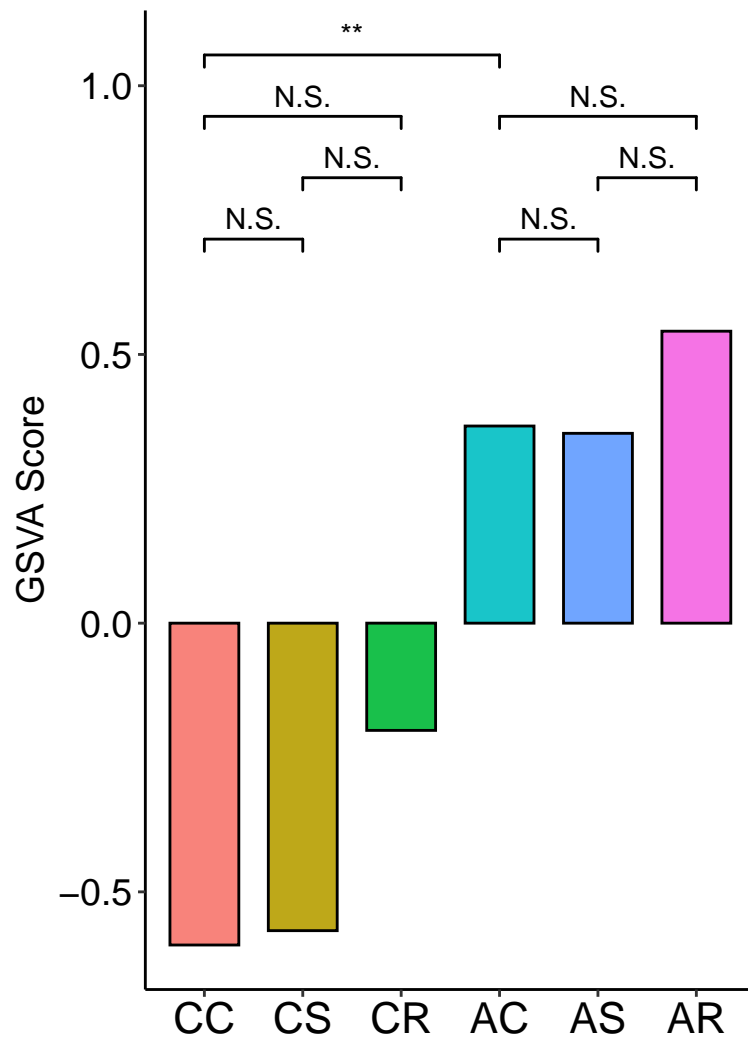
resynaptic modulation of chemical synaptic transmission



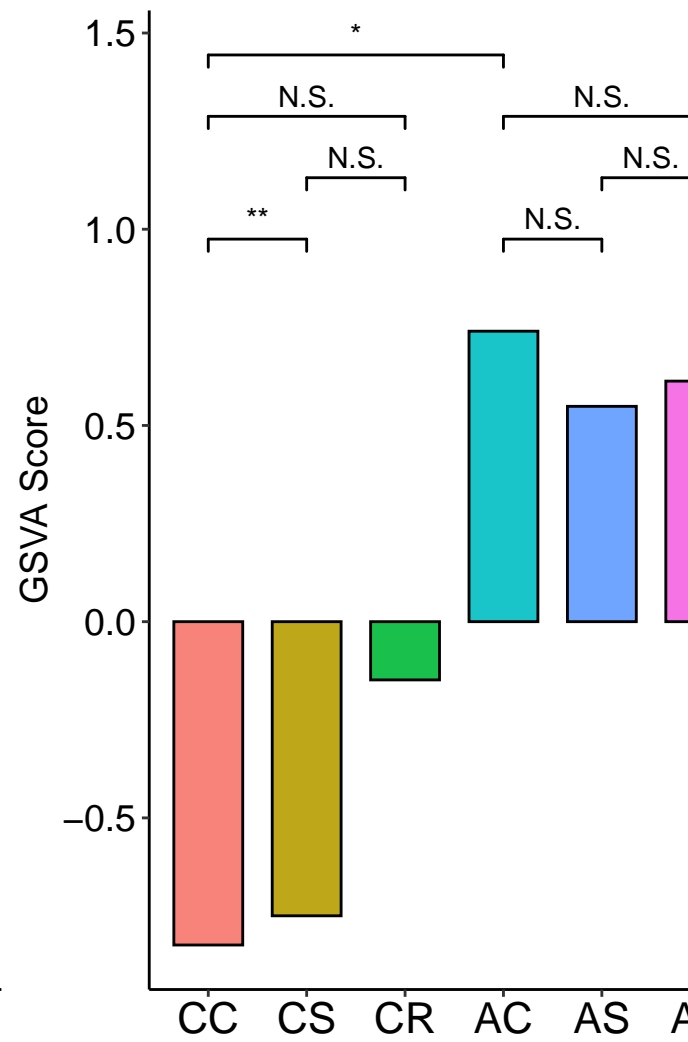
Regulation of presynaptic membrane



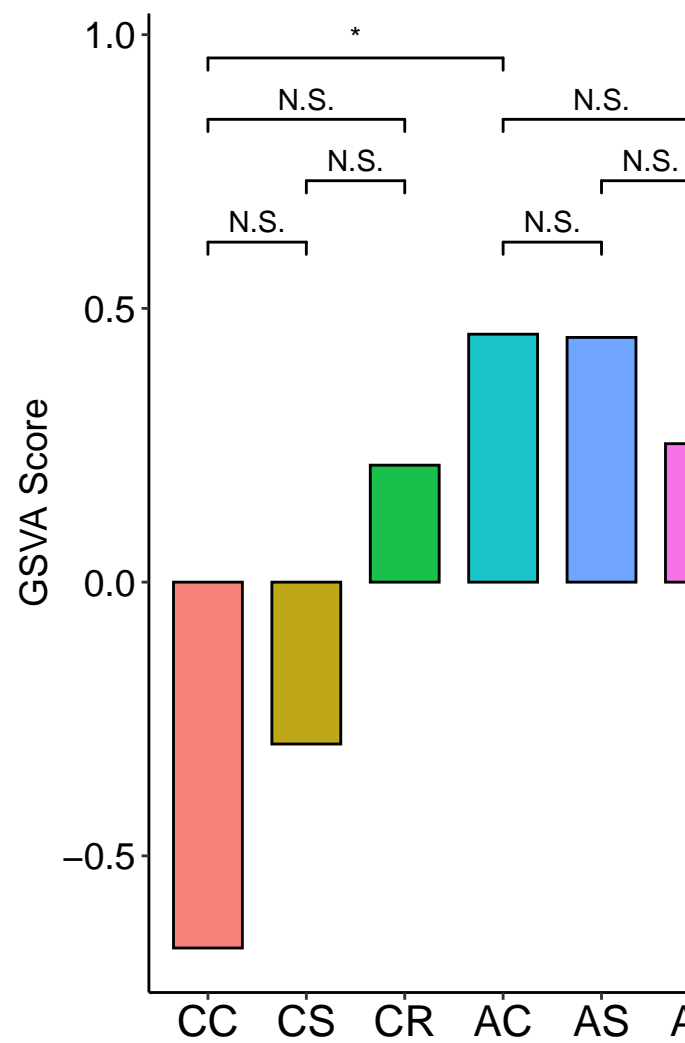
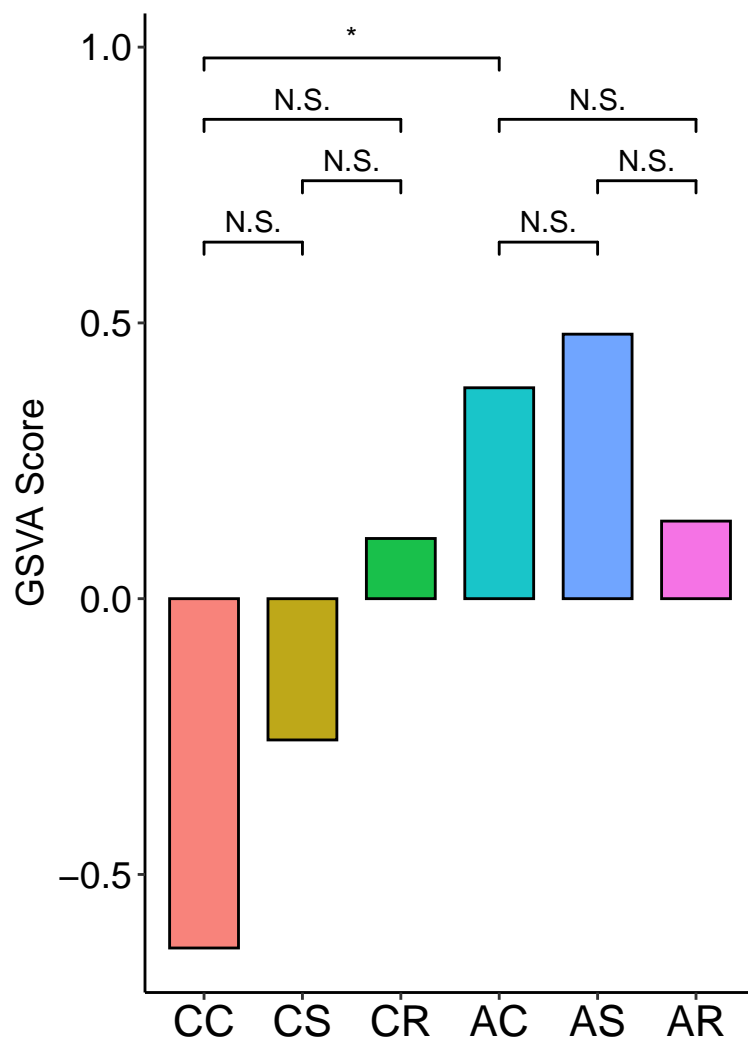
gulation of presynaptic cytosolic calcium ion co

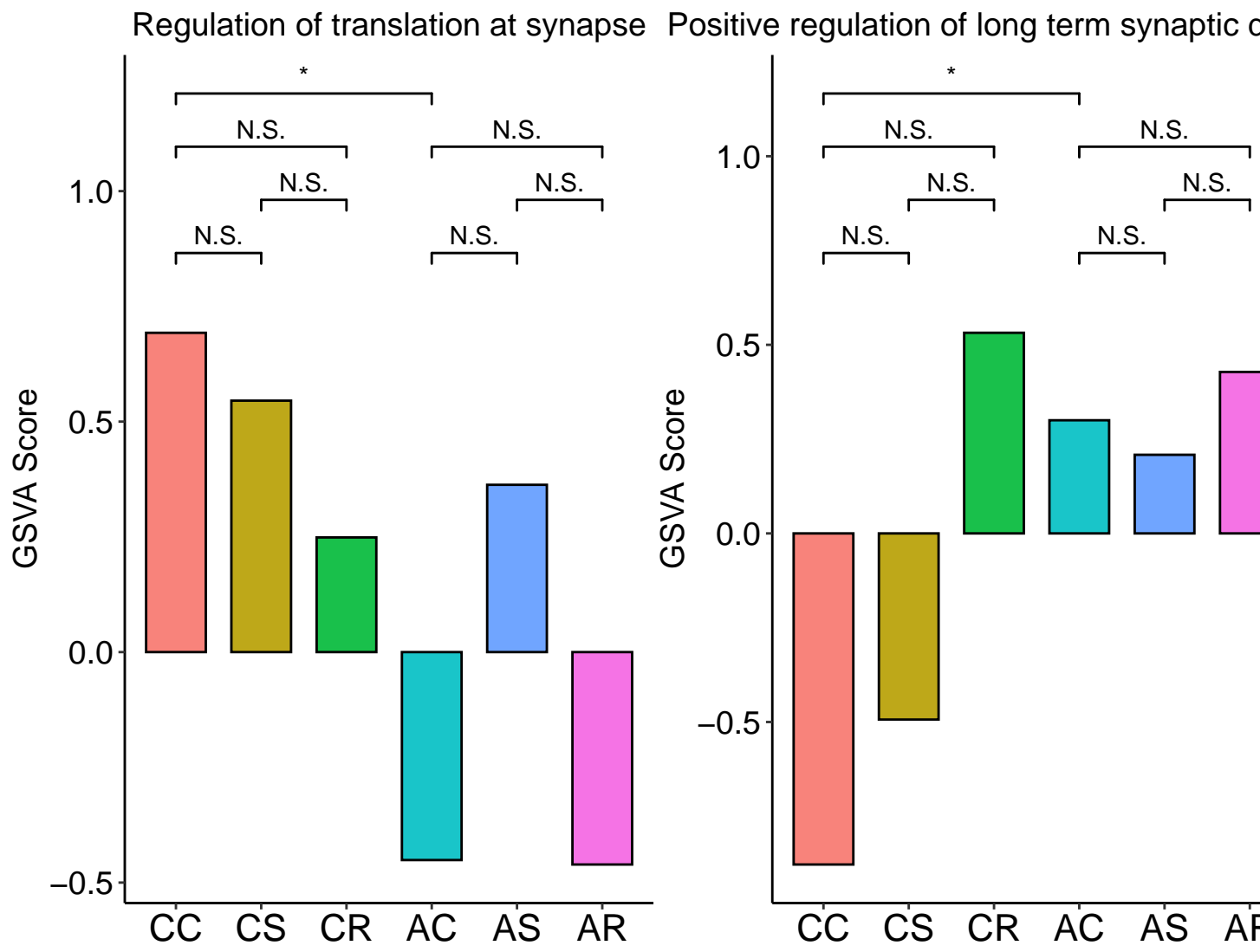


Synaptic signaling via neuropep



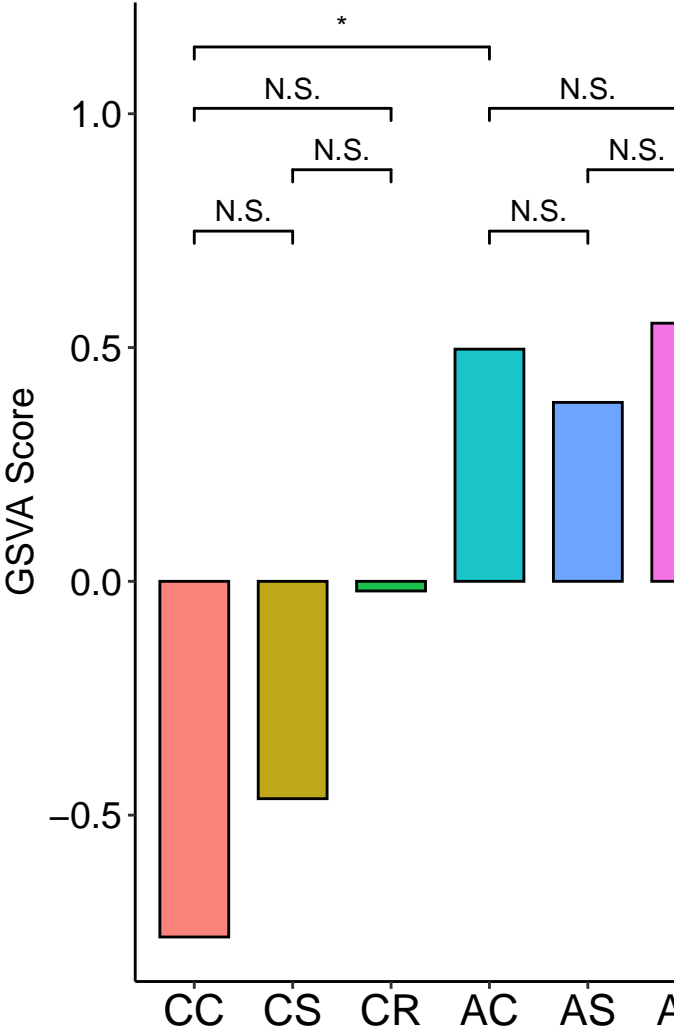
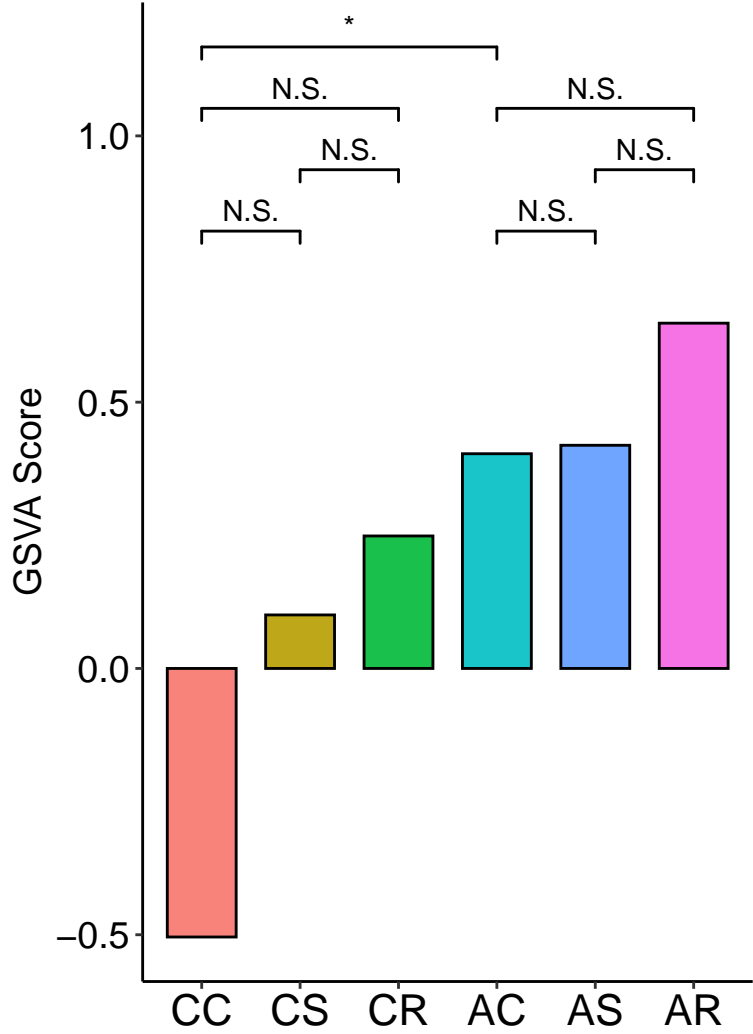
Trans synaptic signaling by trans synaptic co-trans synaptic signaling modulating synaptic

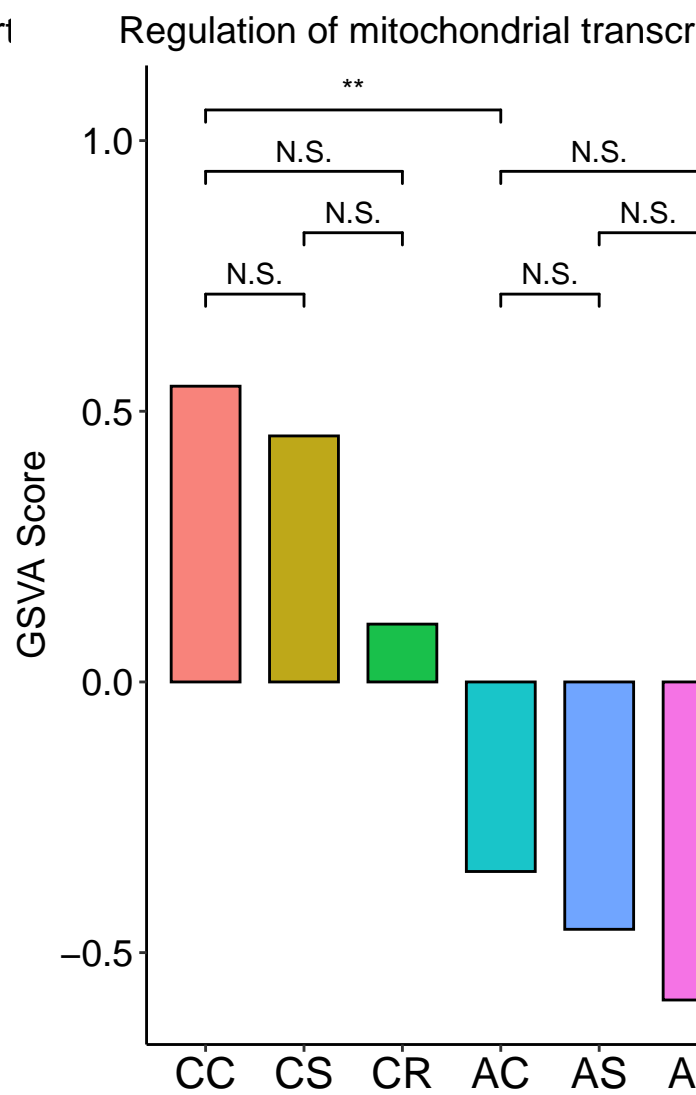
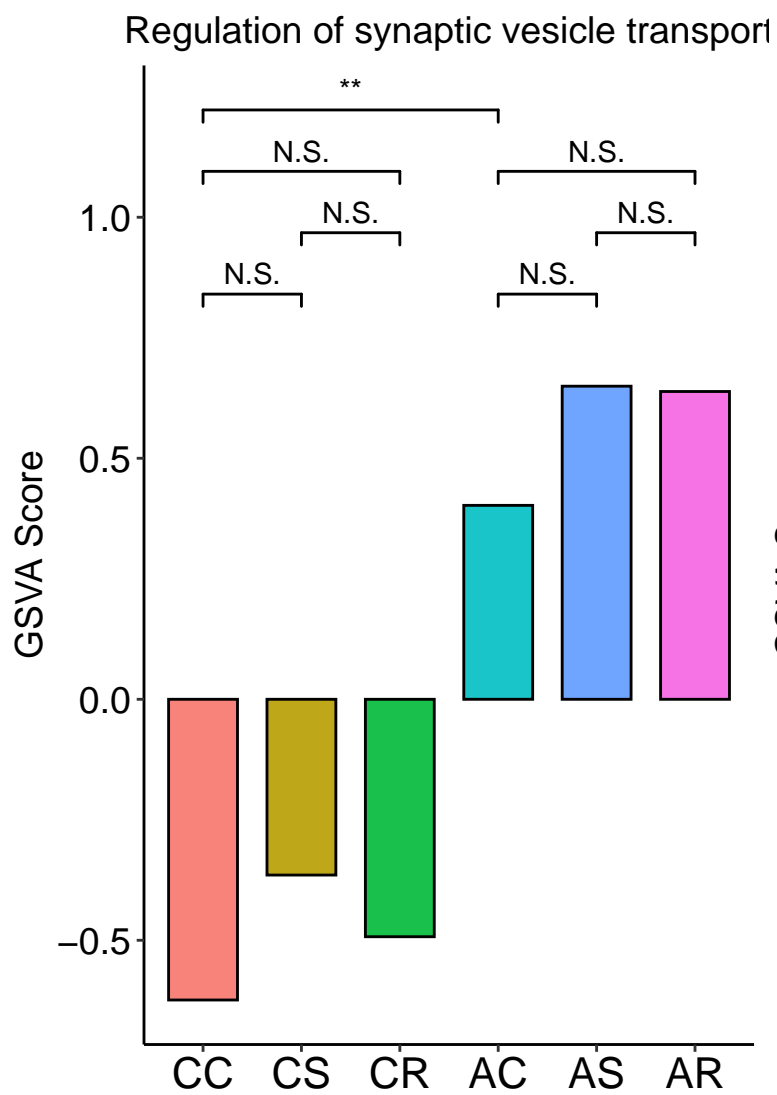


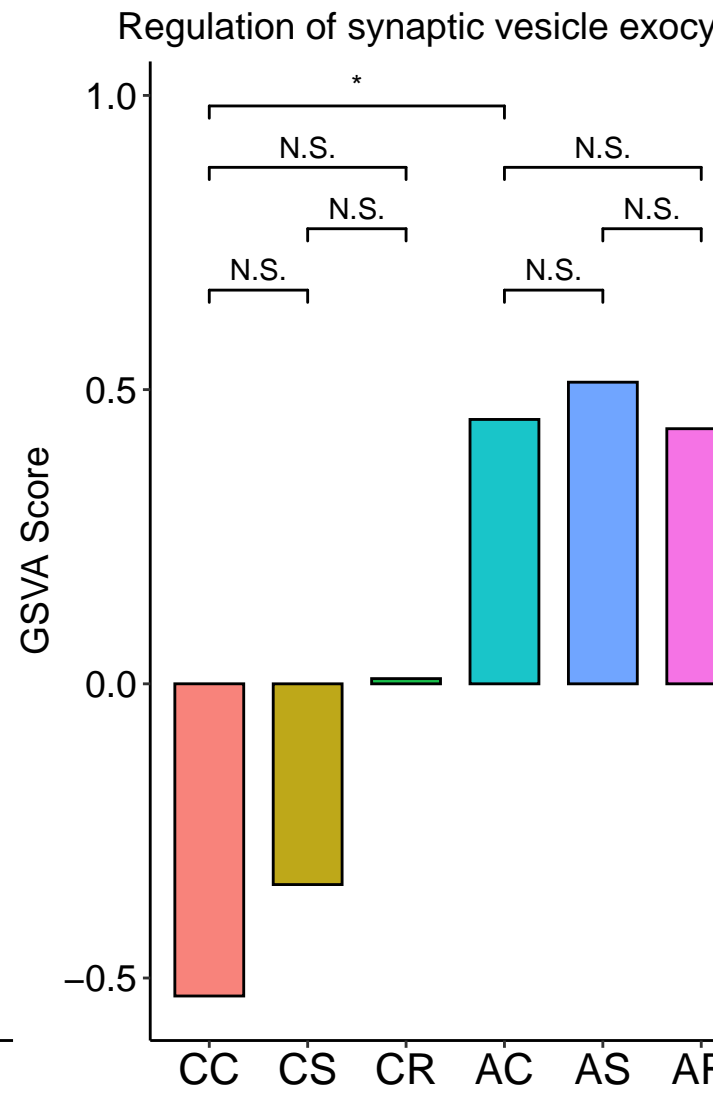
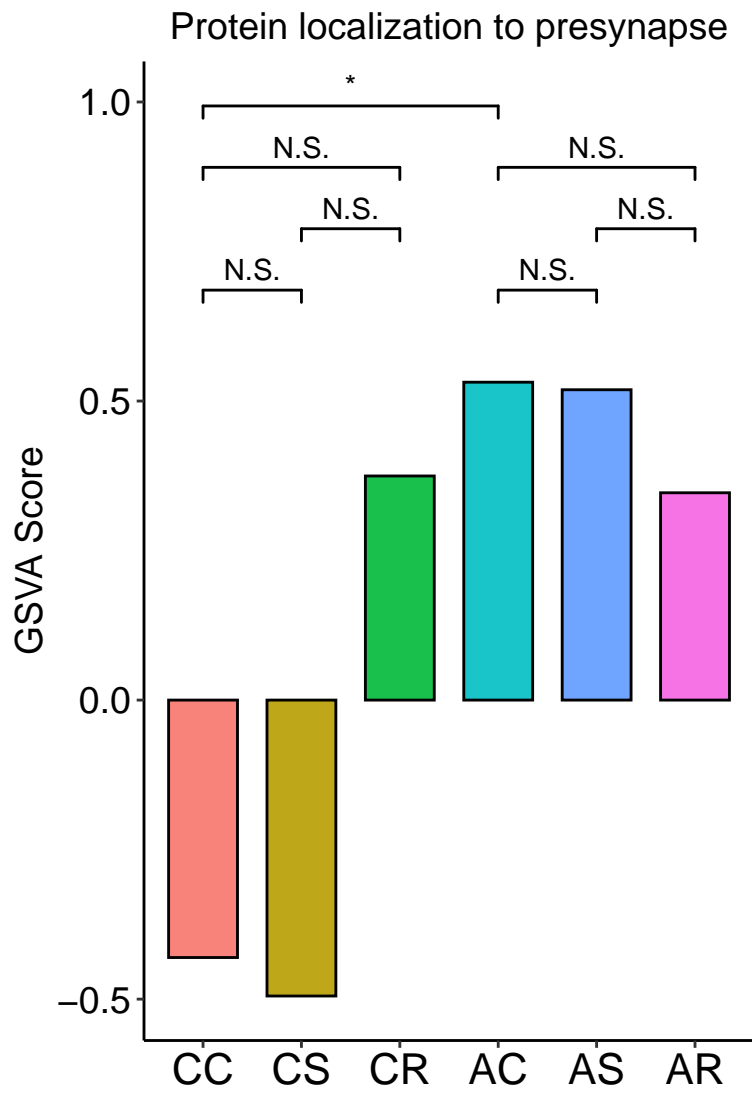


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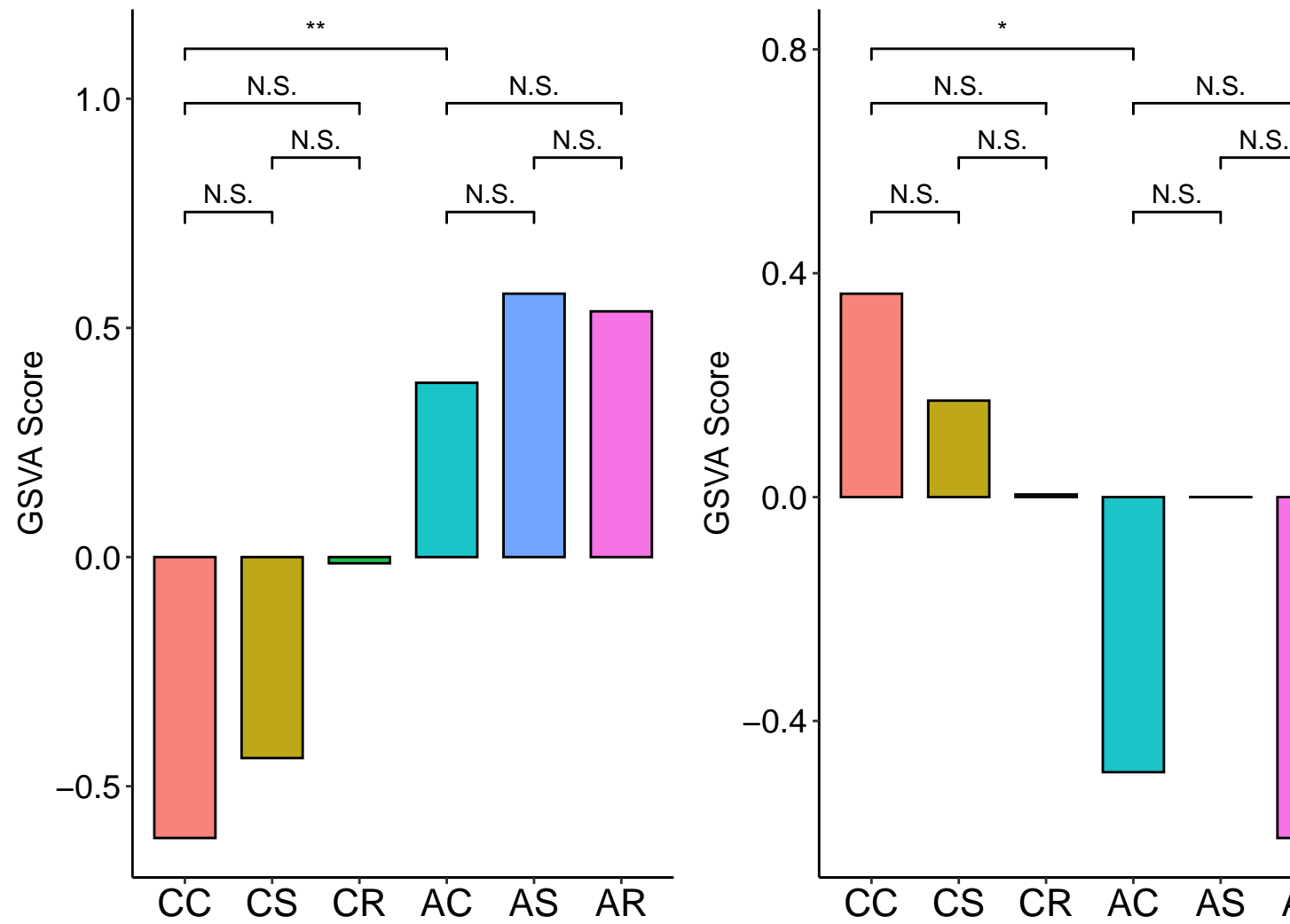
Regulation of synaptic vesicle membrane orga Positive regulation of protein localization



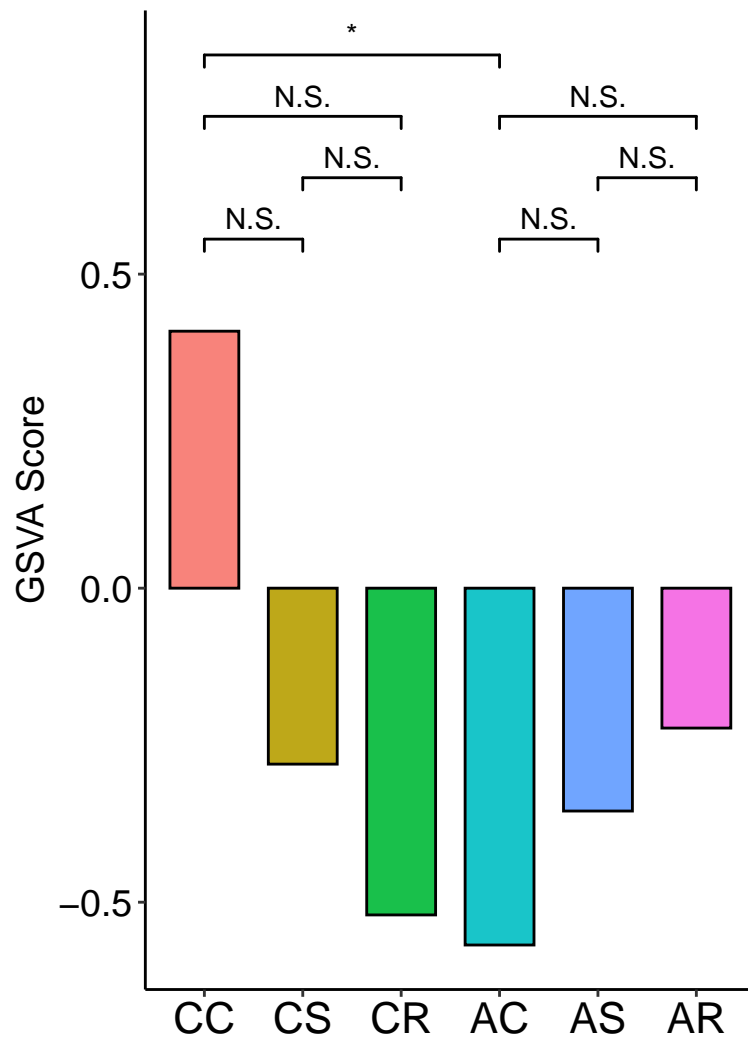




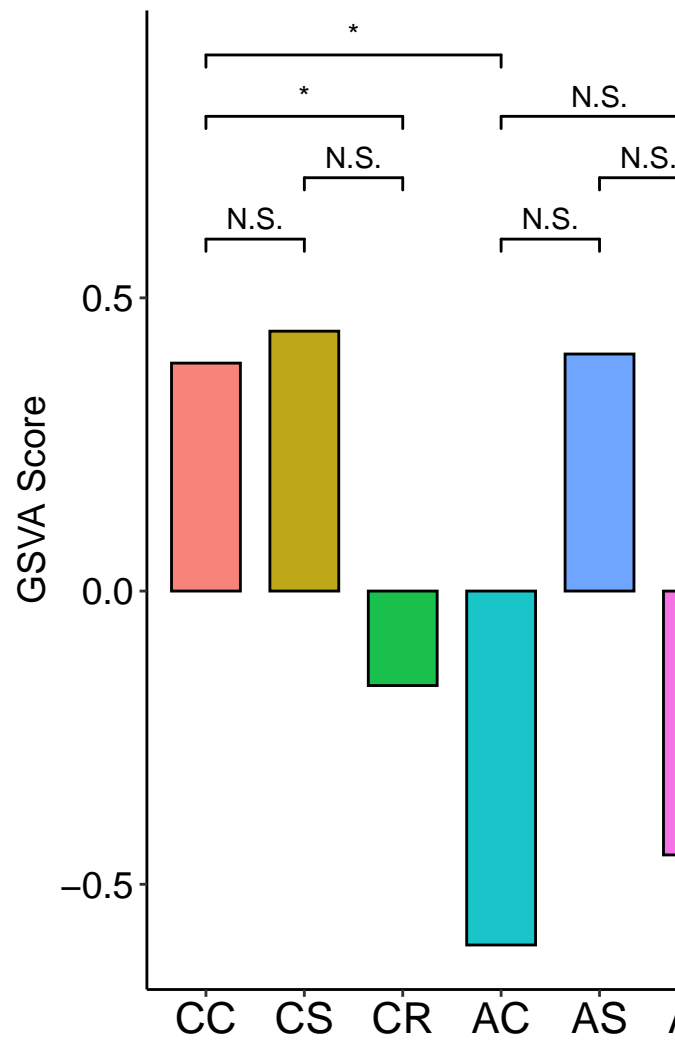
Positive regulation of excitatory postsynaptic p3 mitochondrial import inner membrane tr

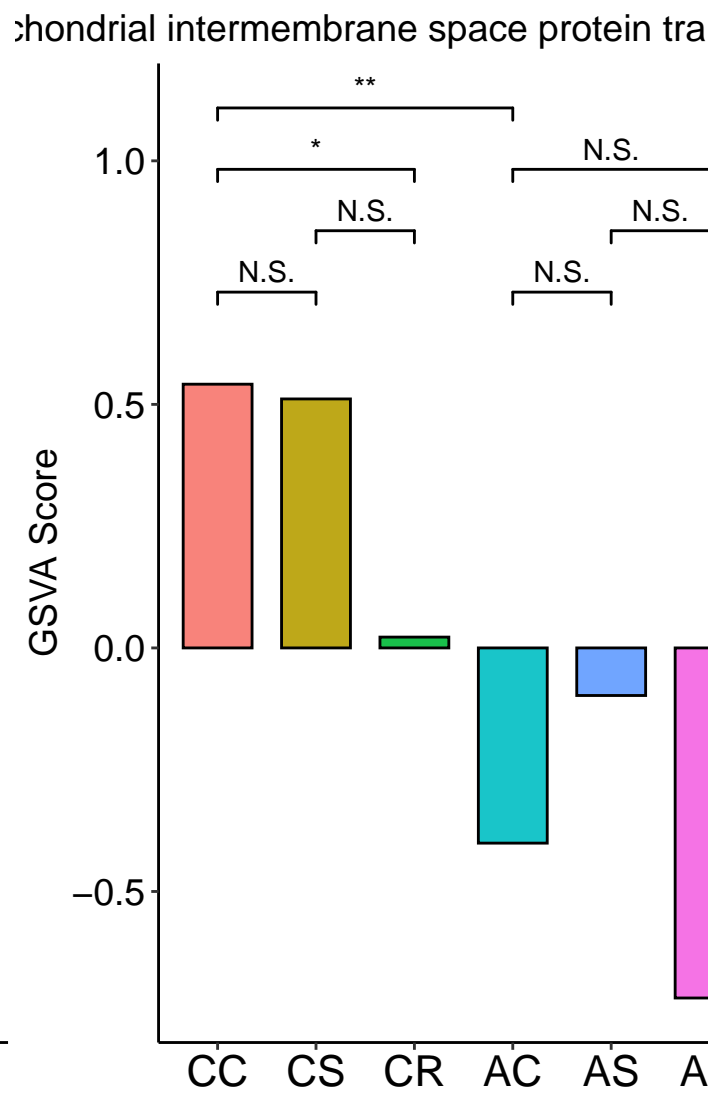
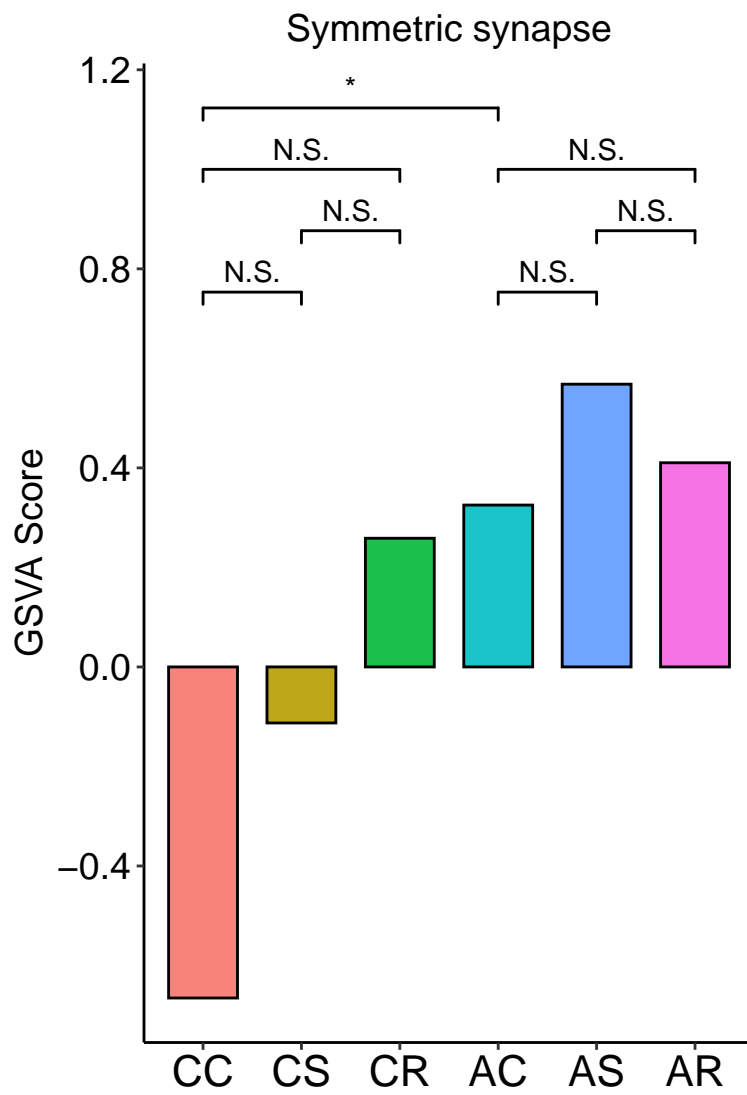


mitochondrial alpha ketoglutarate dehydrogenase Extrinsic component of mitochondrial inner

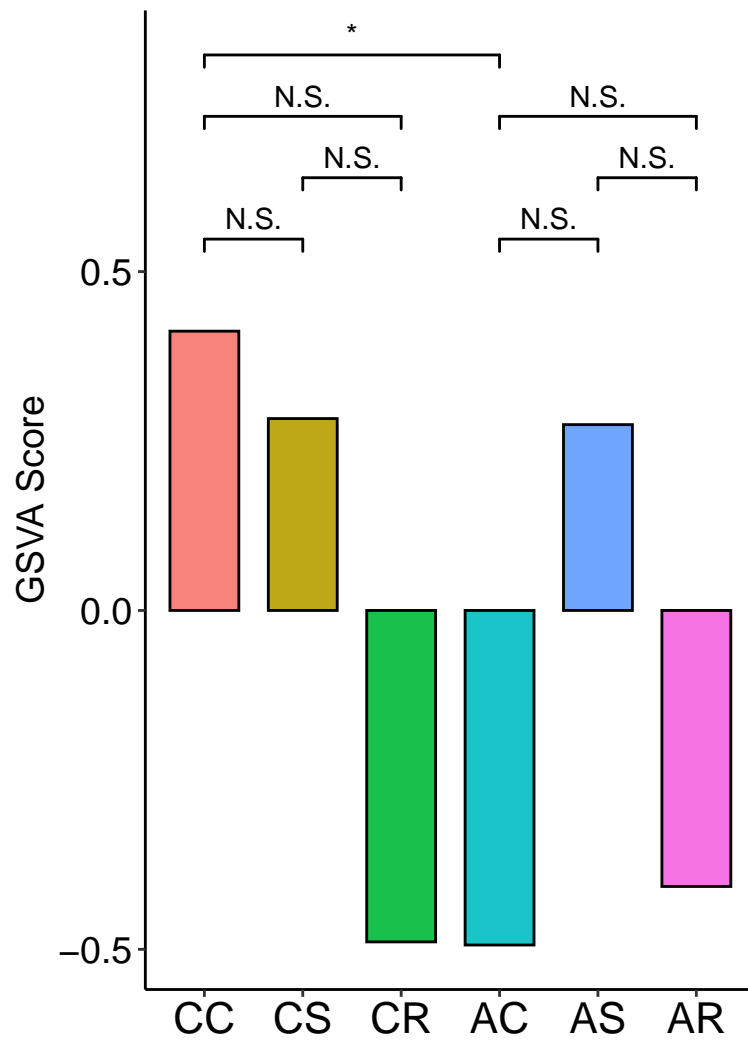


[1] "Processing 50 pathway"

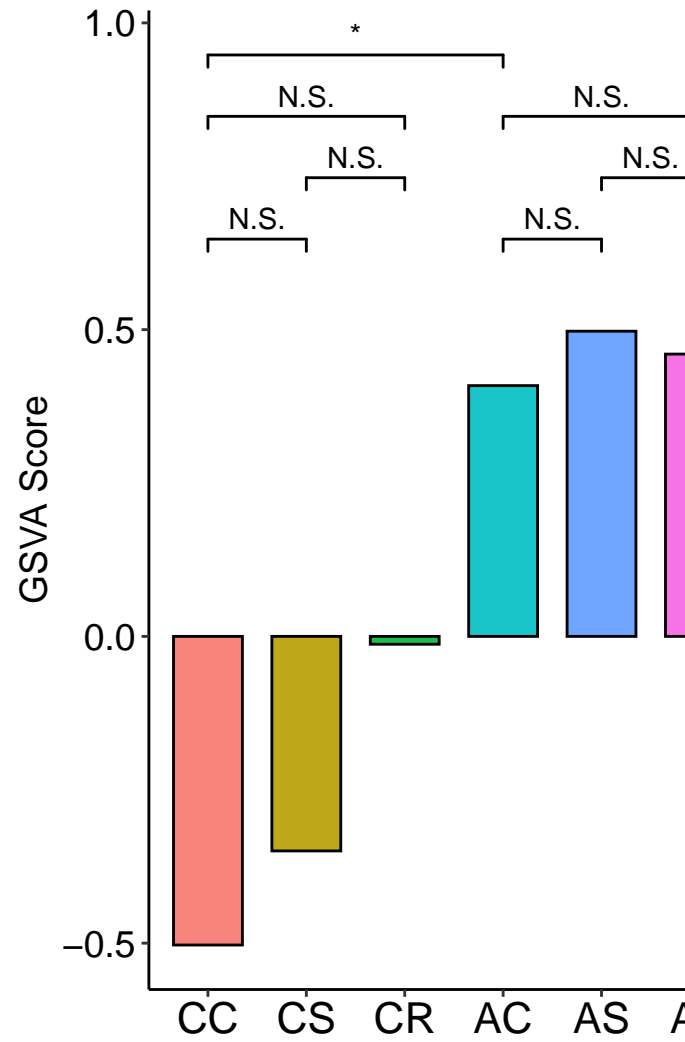


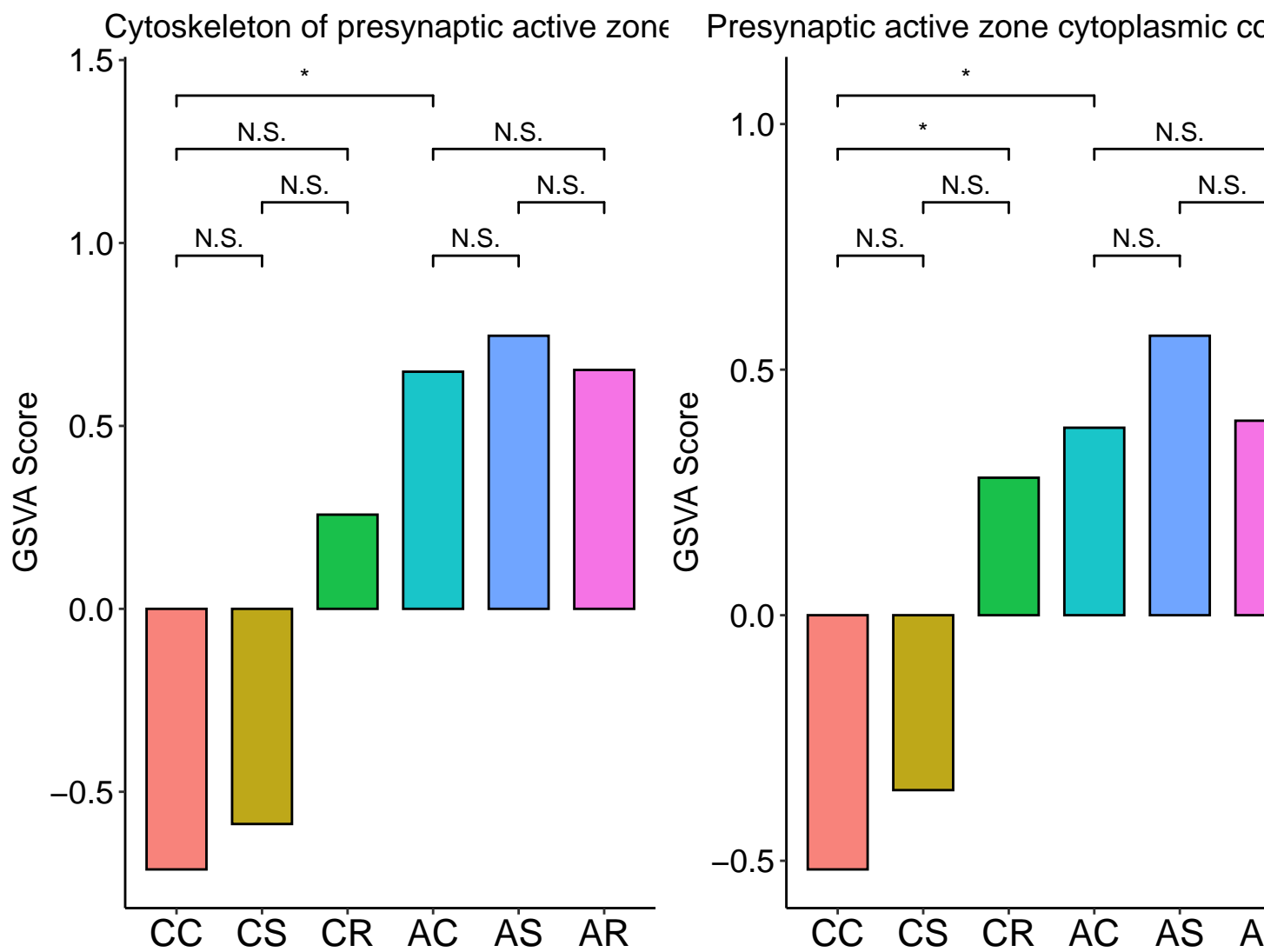


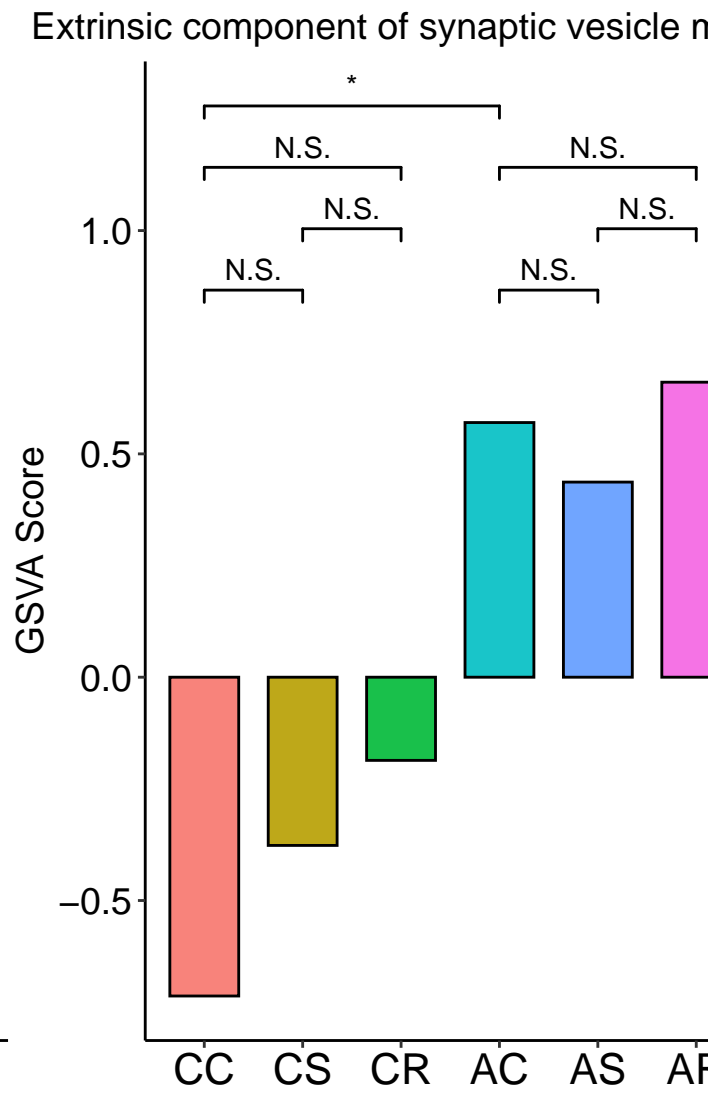
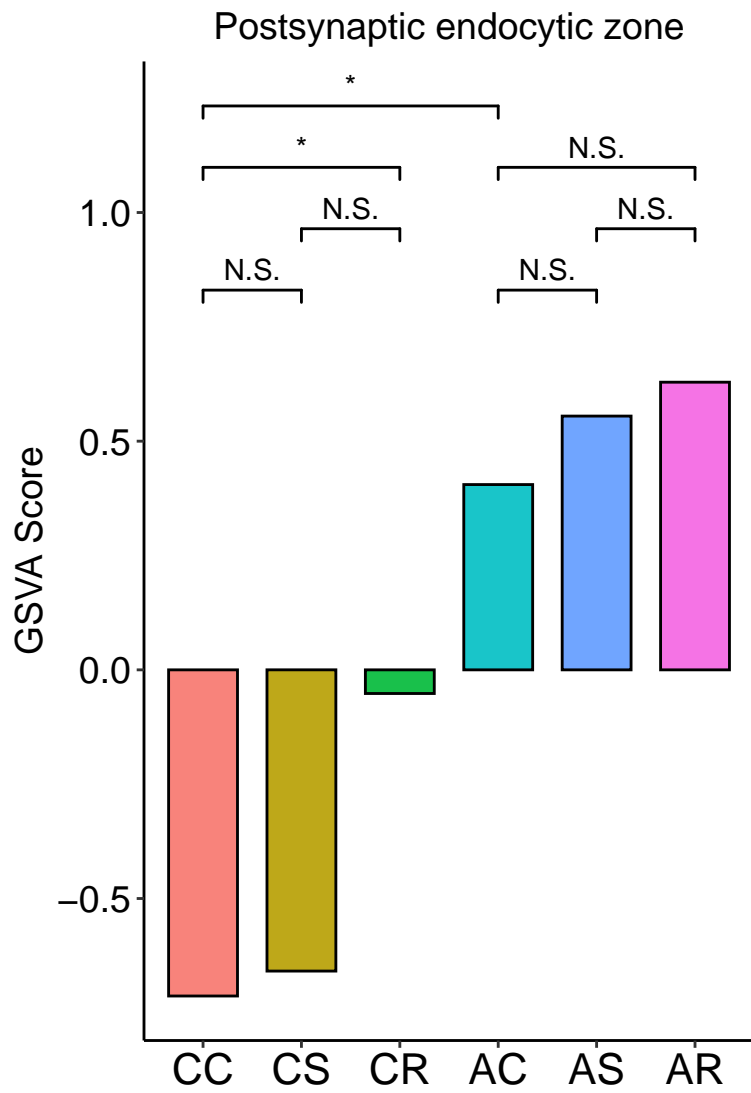
22 mitochondrial import inner membrane insert

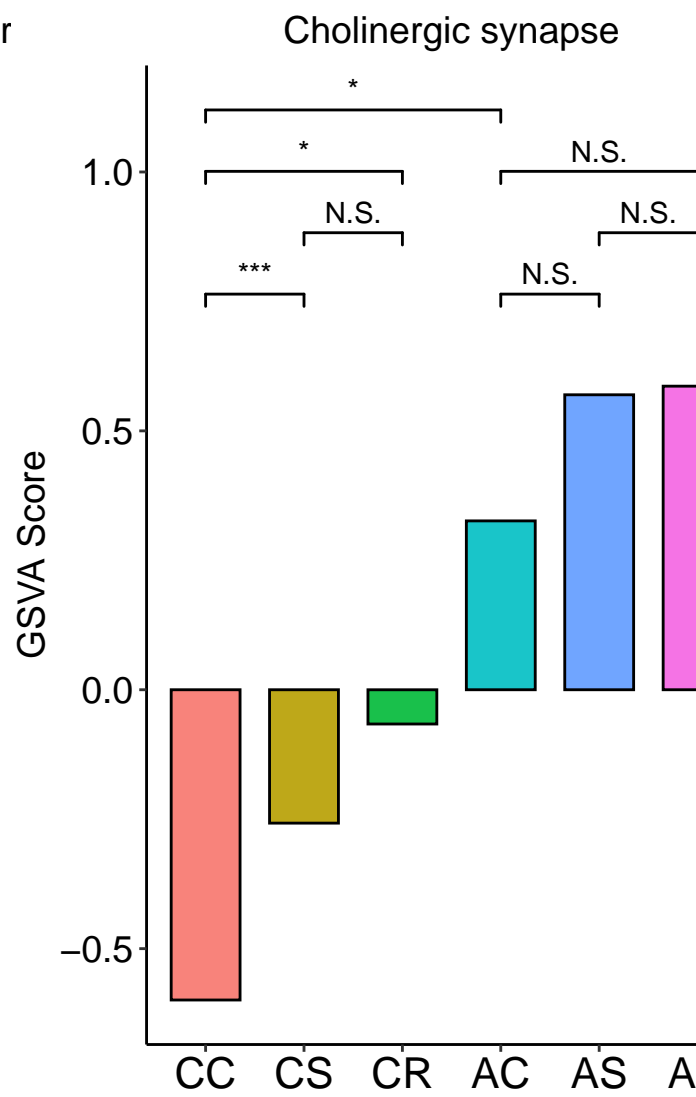
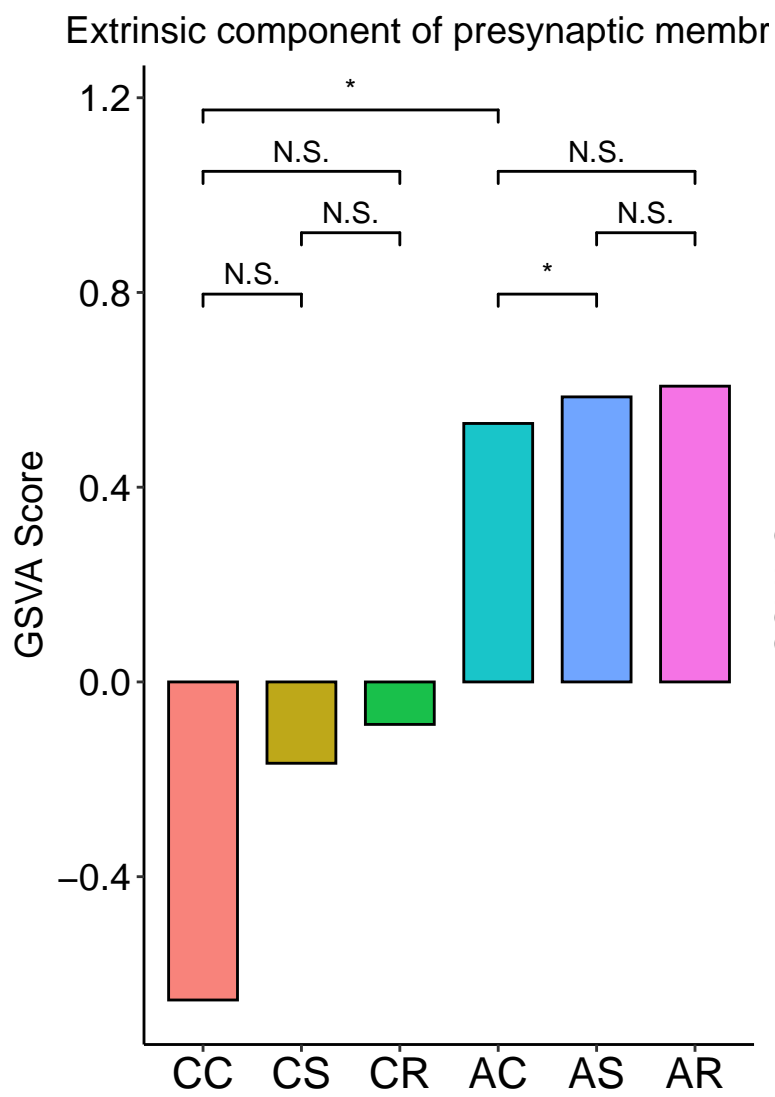


Presynaptic active zone membr

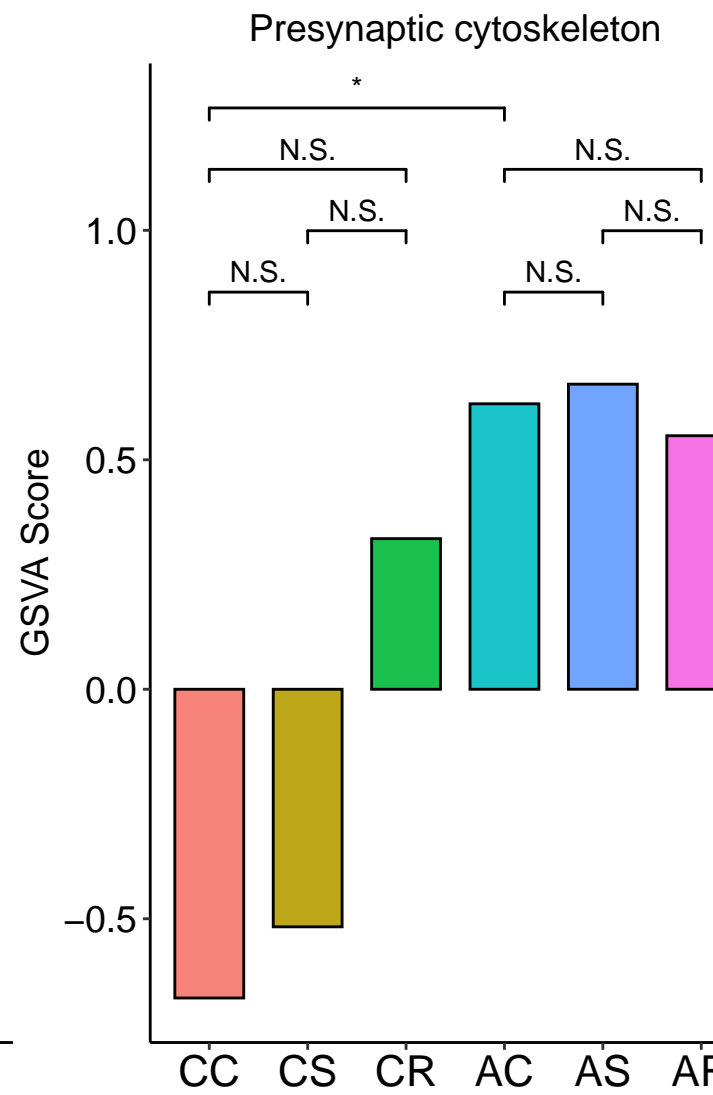
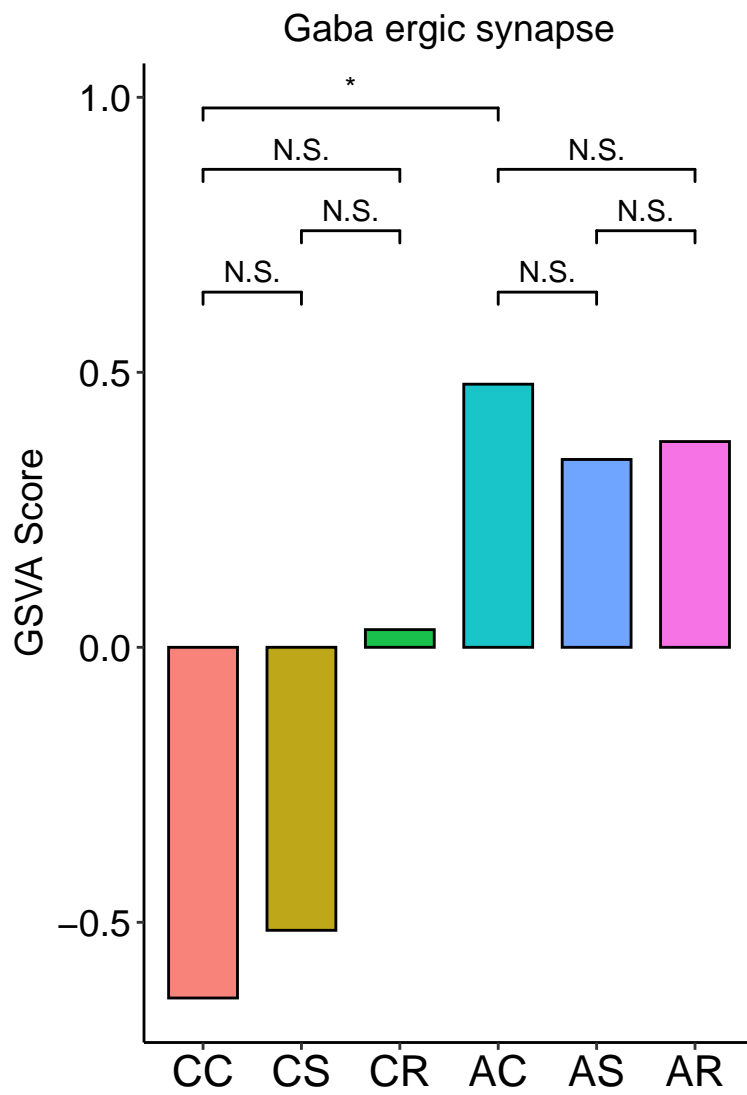


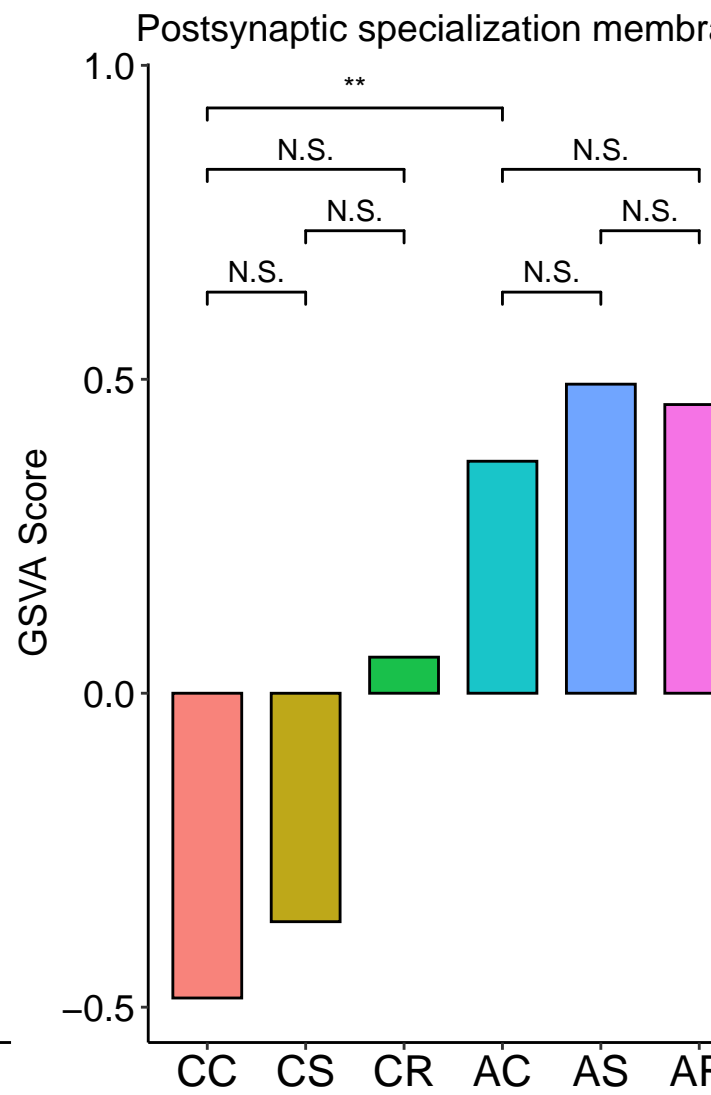
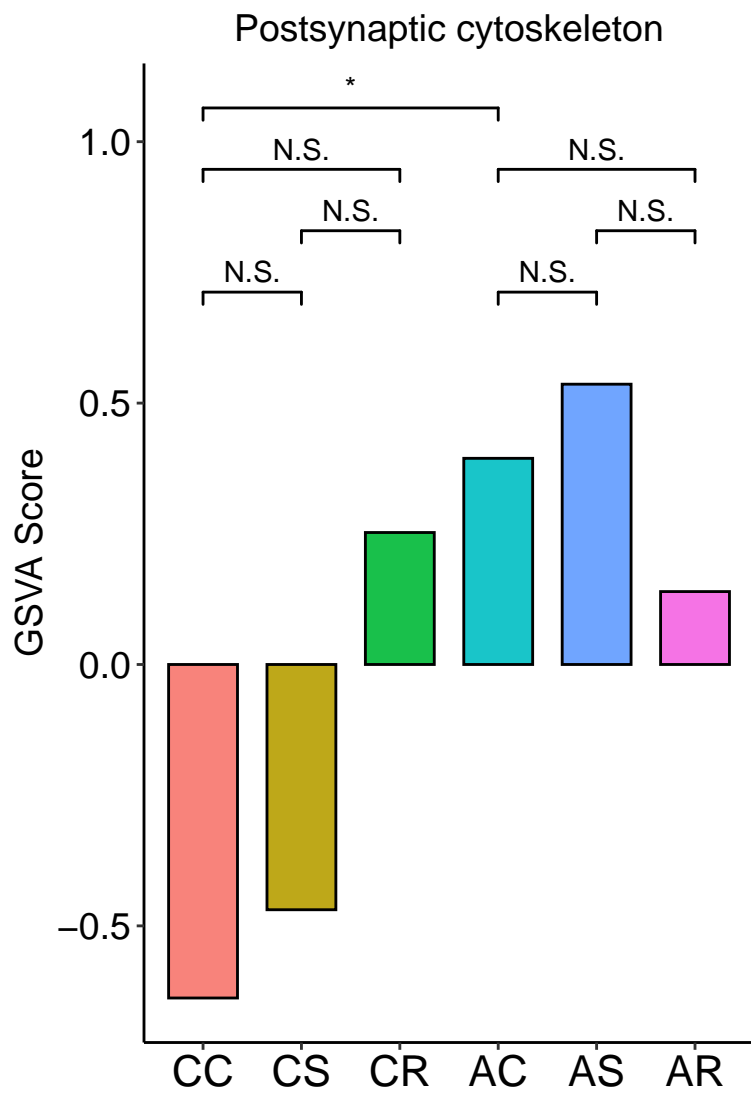




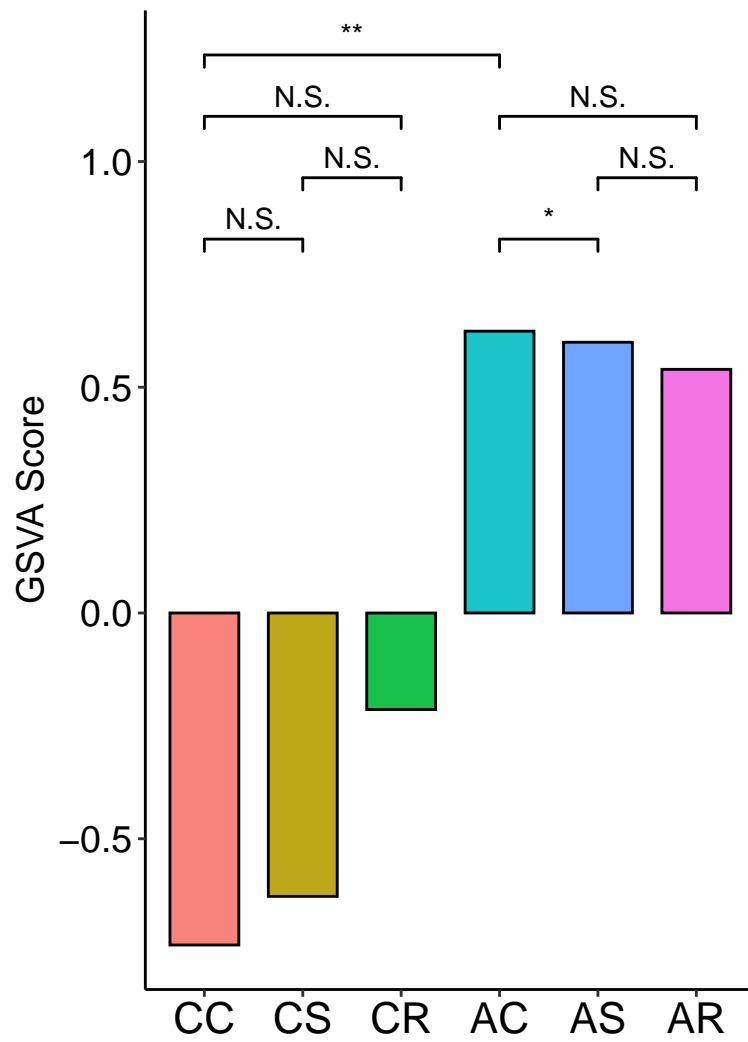


[1] "Processing 60 pathway"

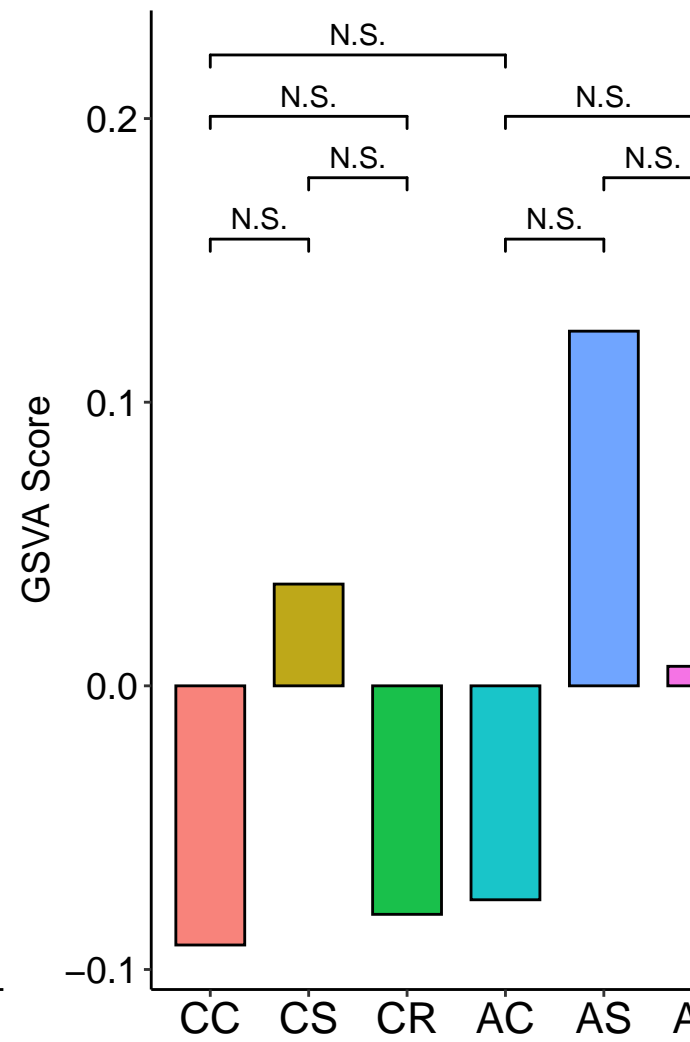




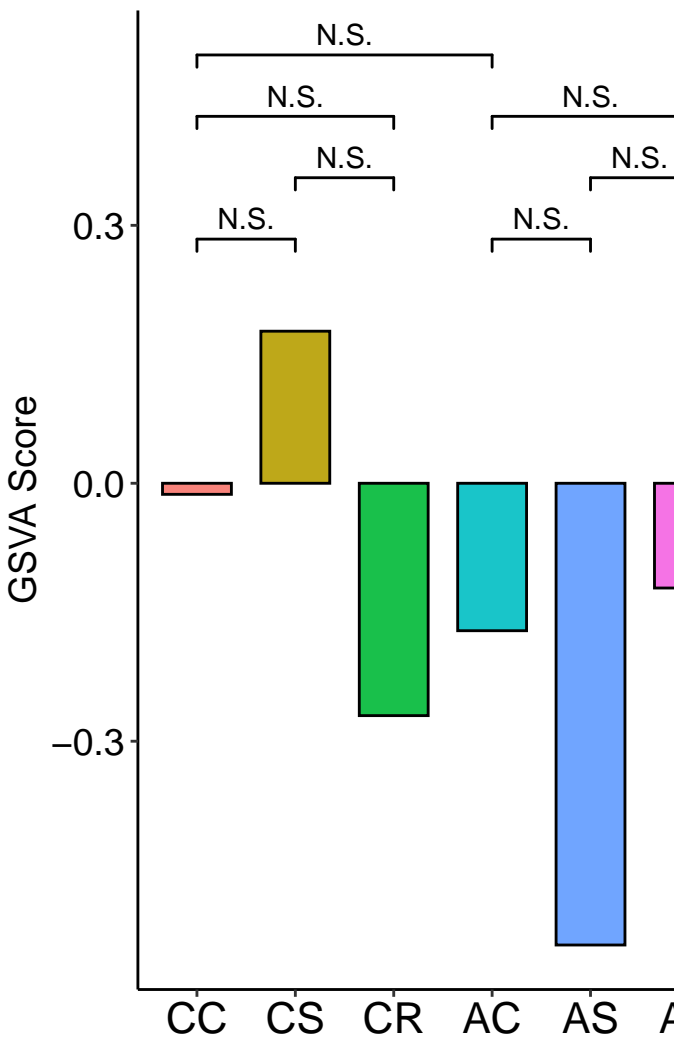
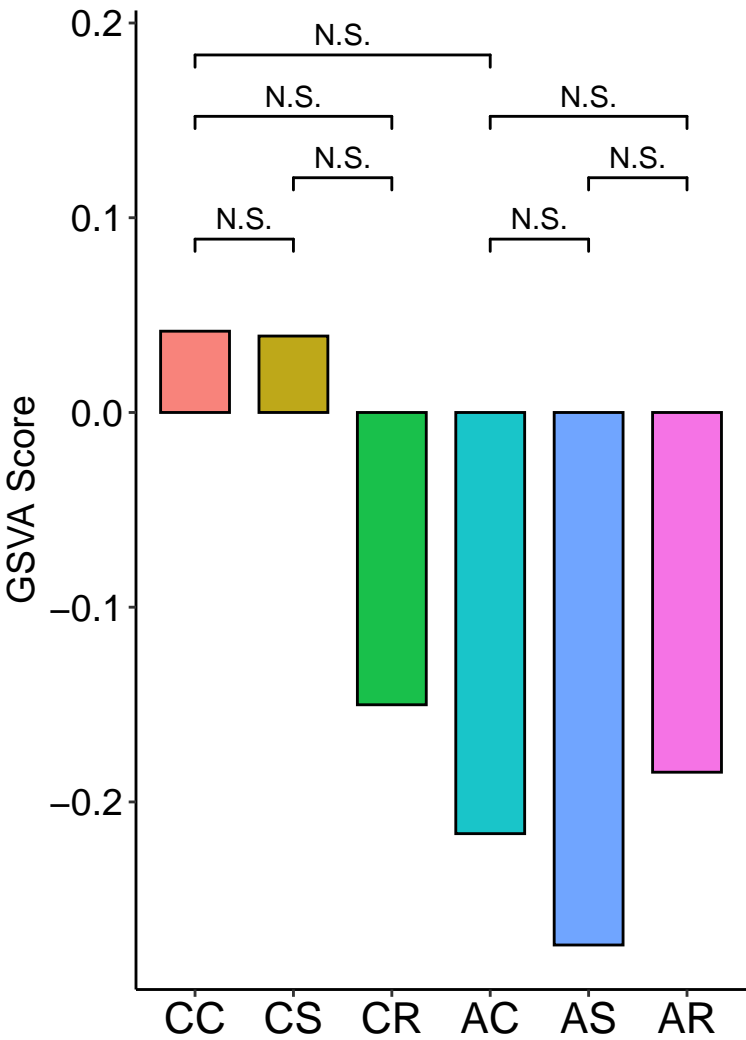
ic ion channel activity involved in regulation of

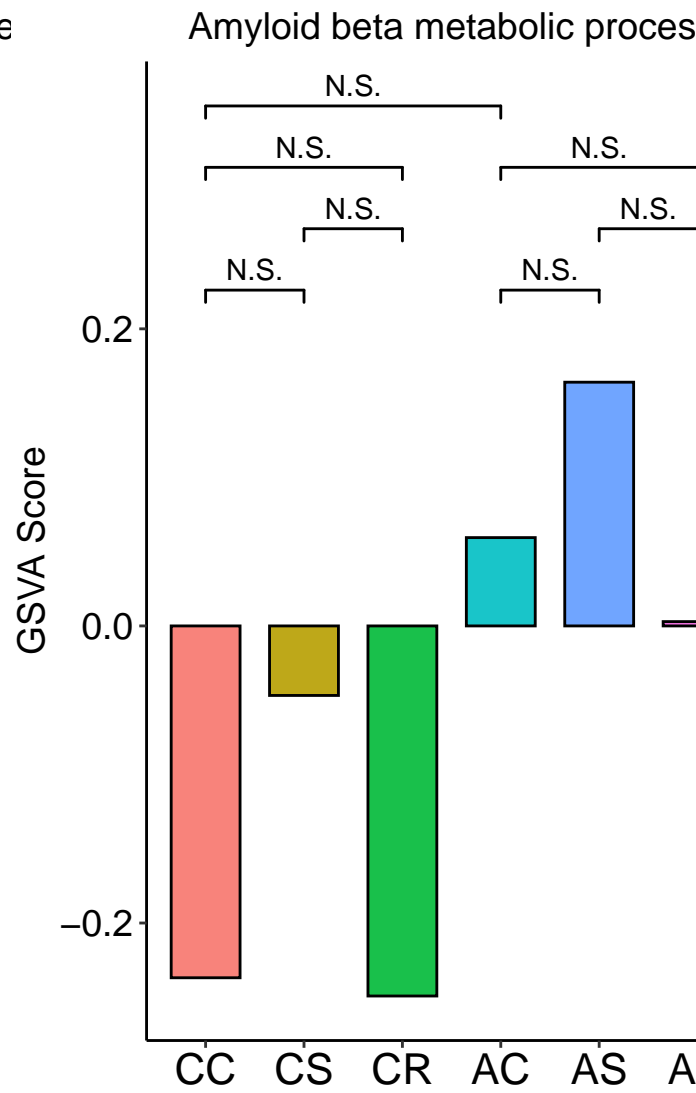
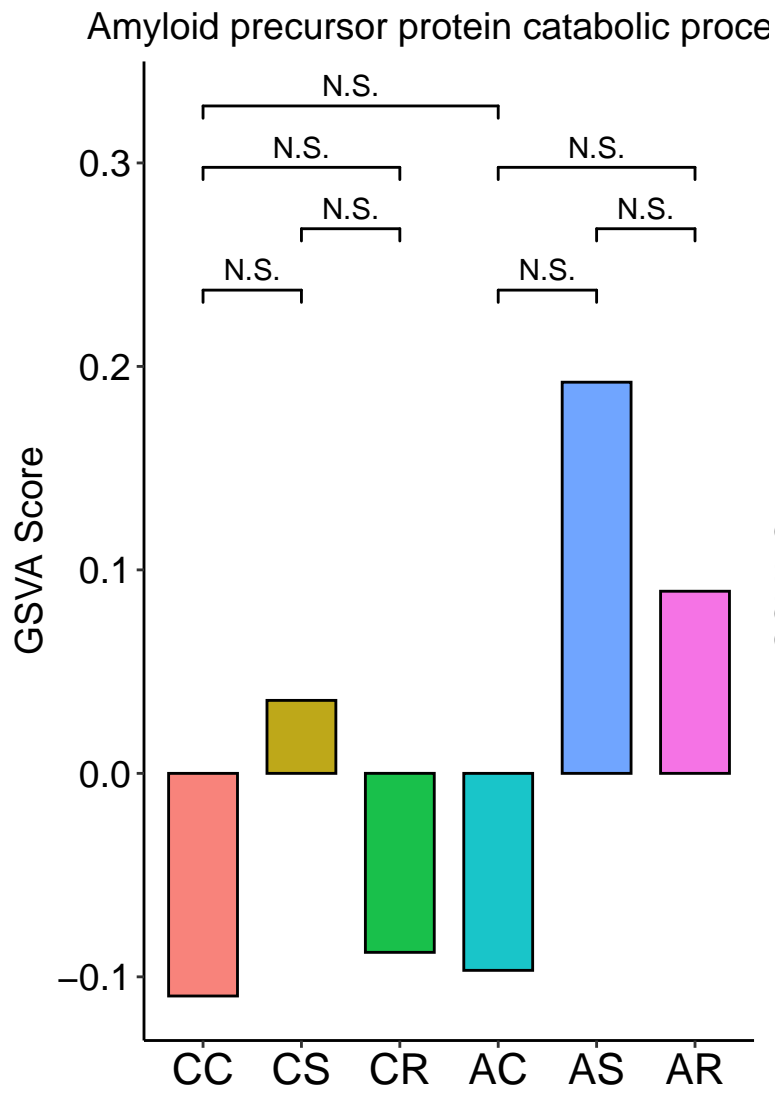


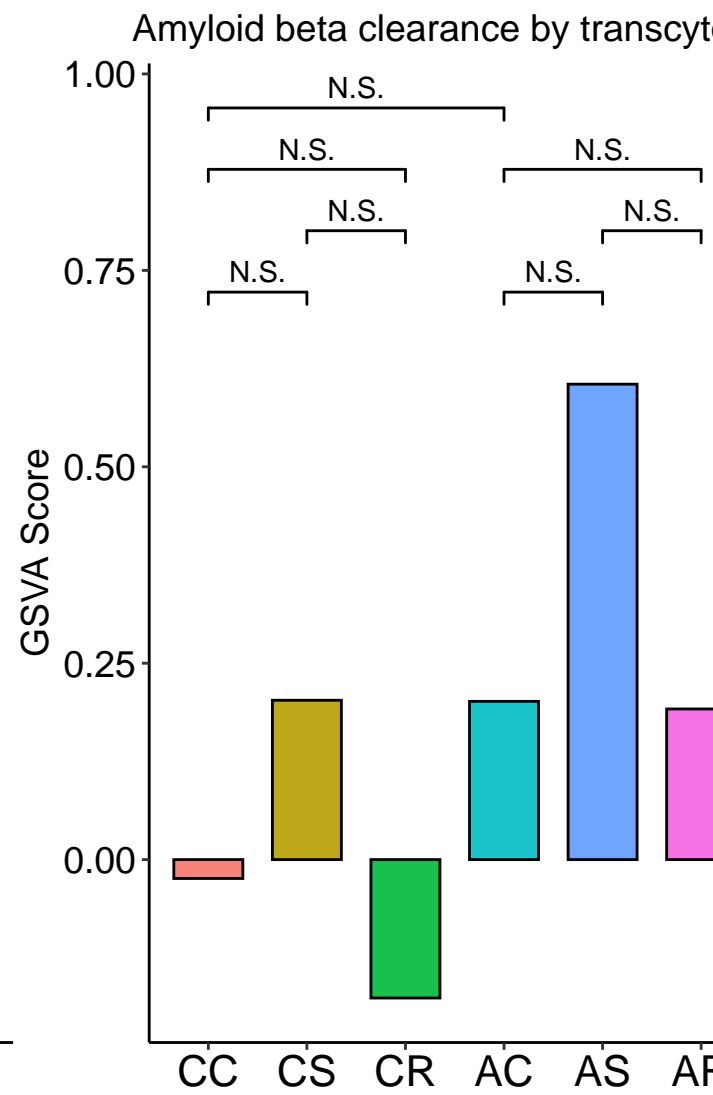
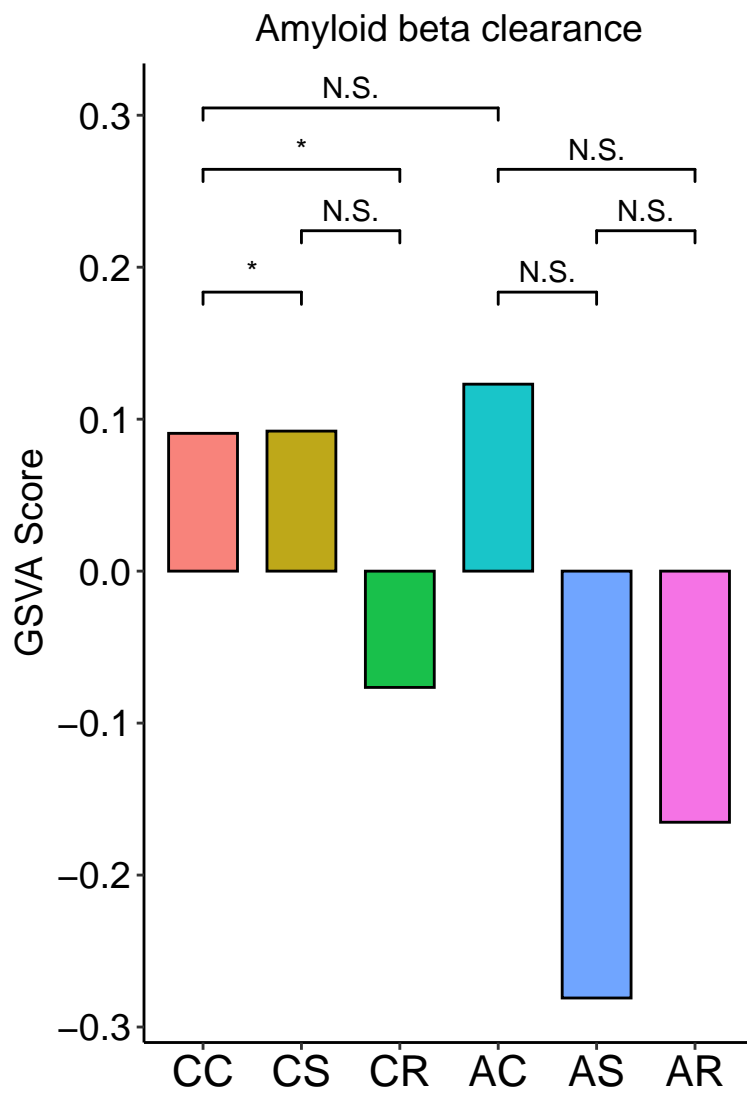
Amyloid precursor protein metabolic



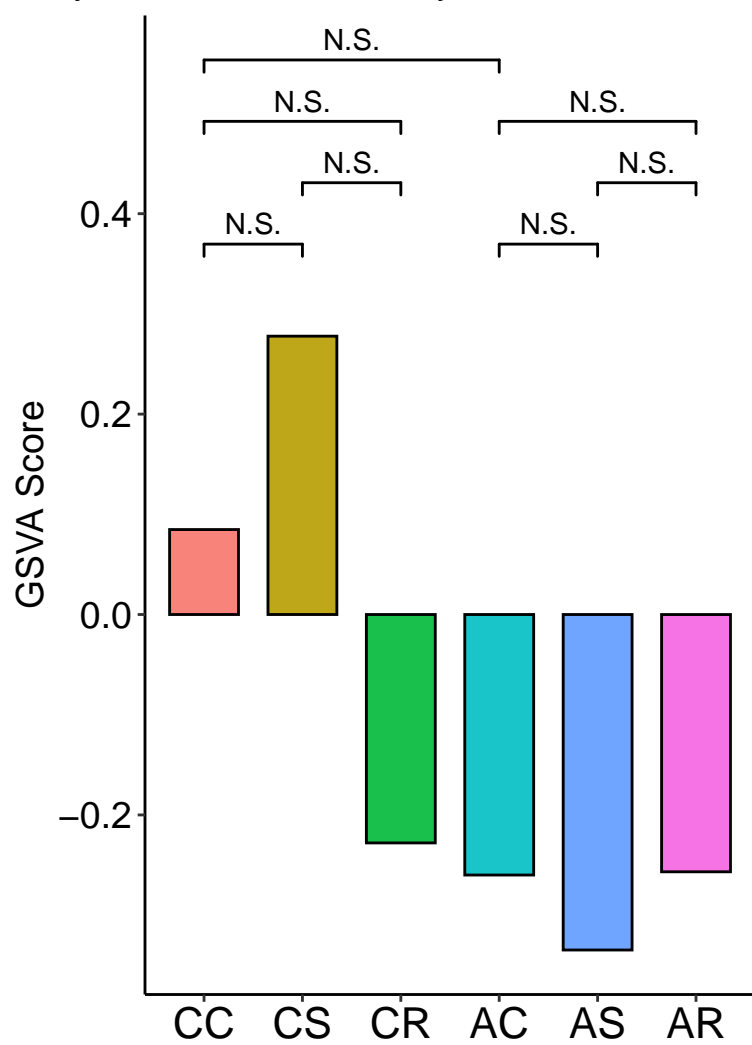
Amyloid precursor protein biosynthetic process regulation of amyloid precursor protein





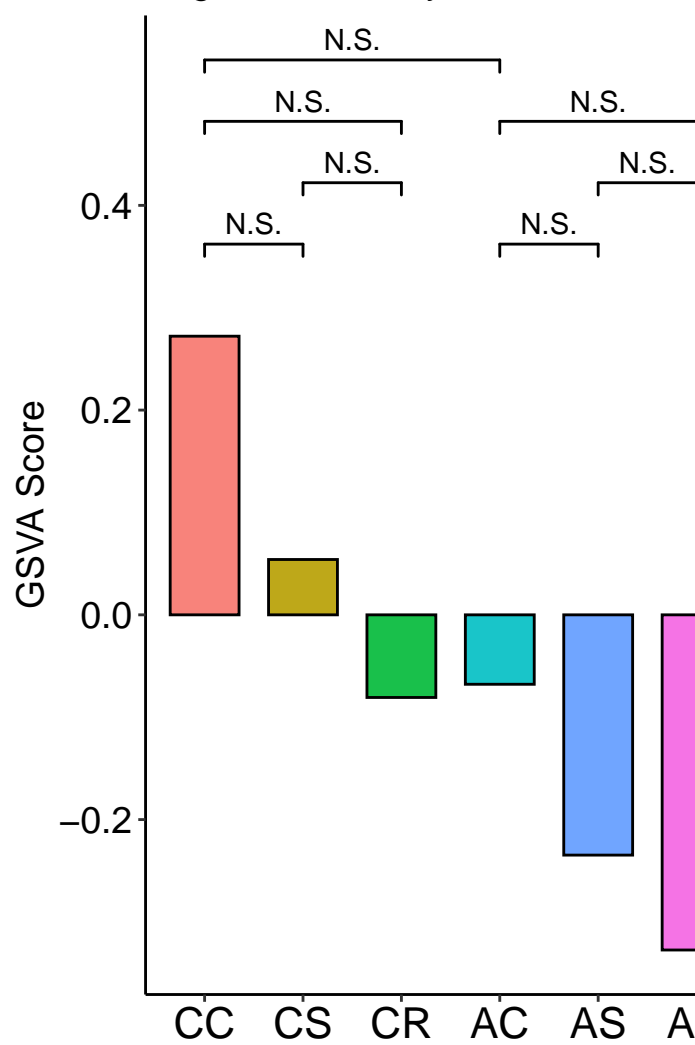


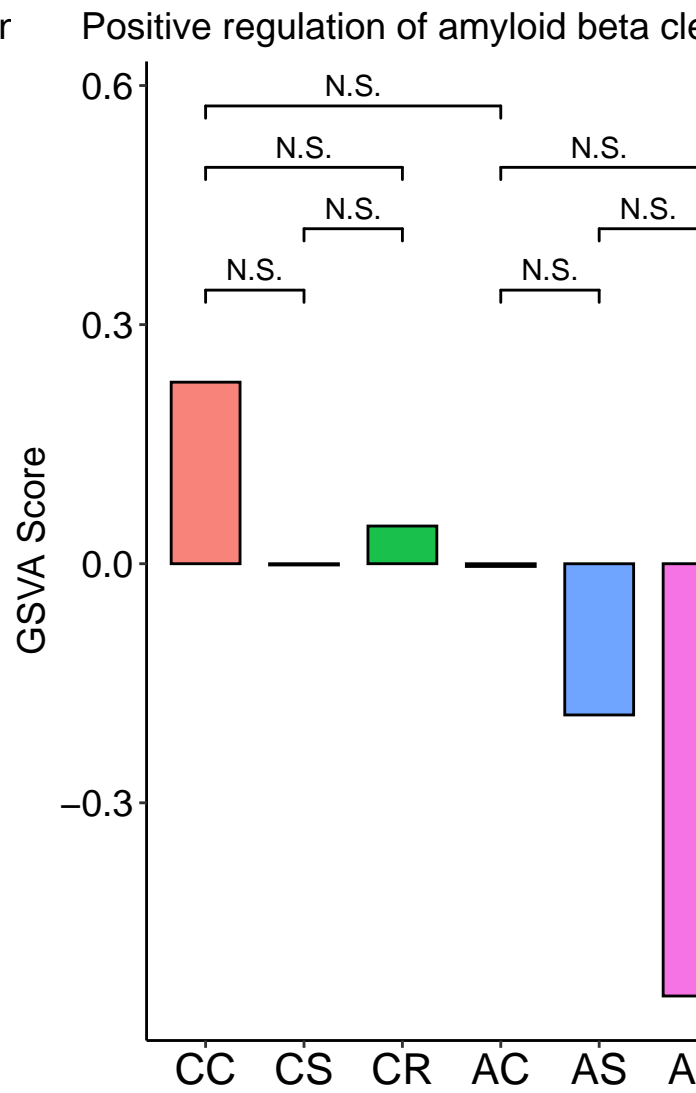
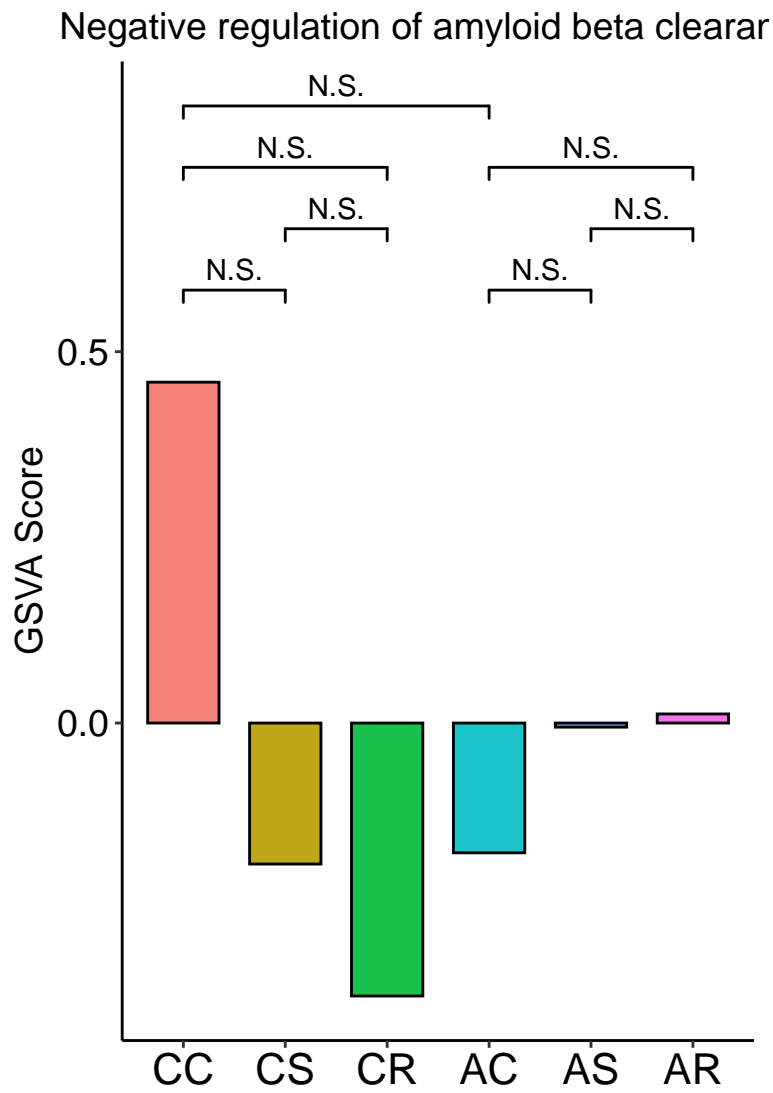
Amyloid beta clearance by cellular catabolic p



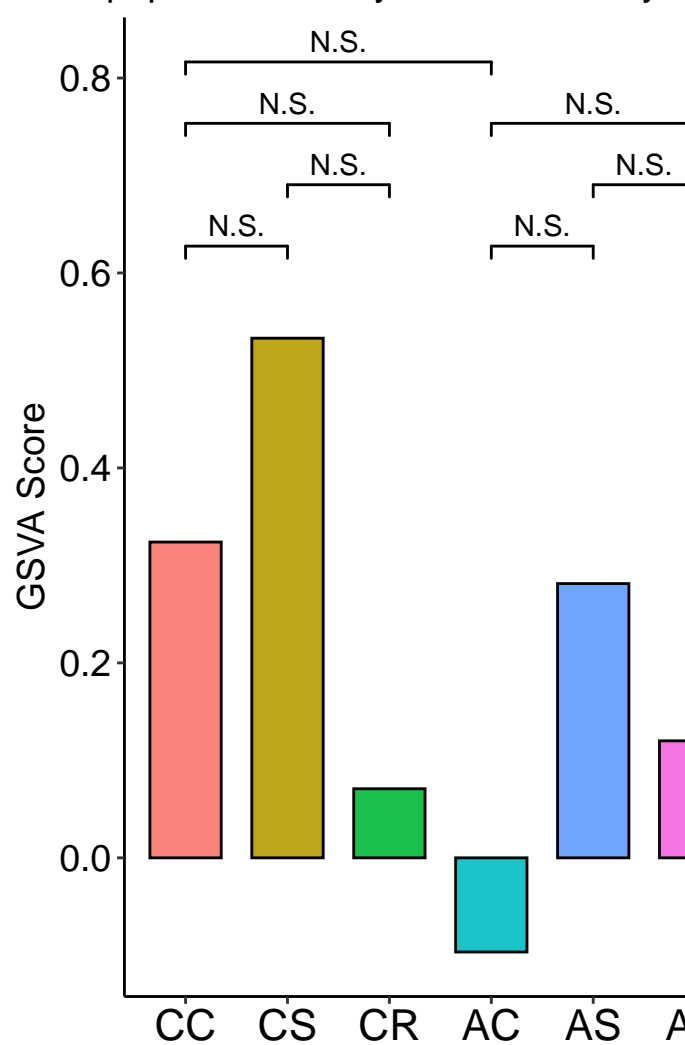
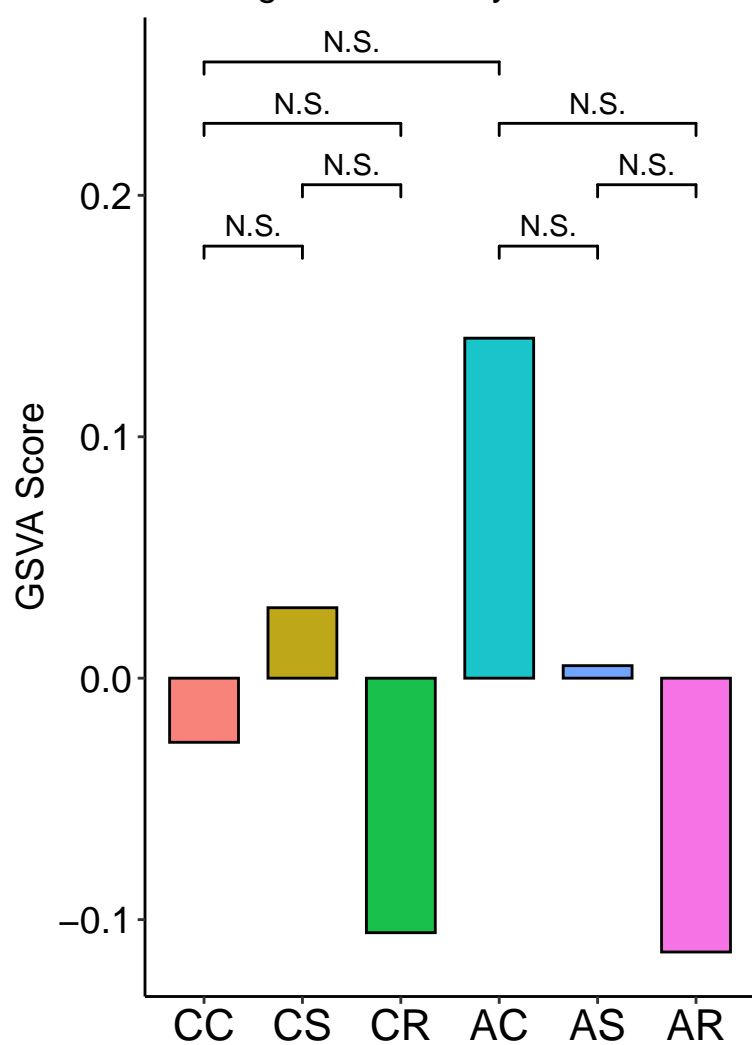
[1] "Processing 10 pathway"

Regulation of amyloid beta cleara

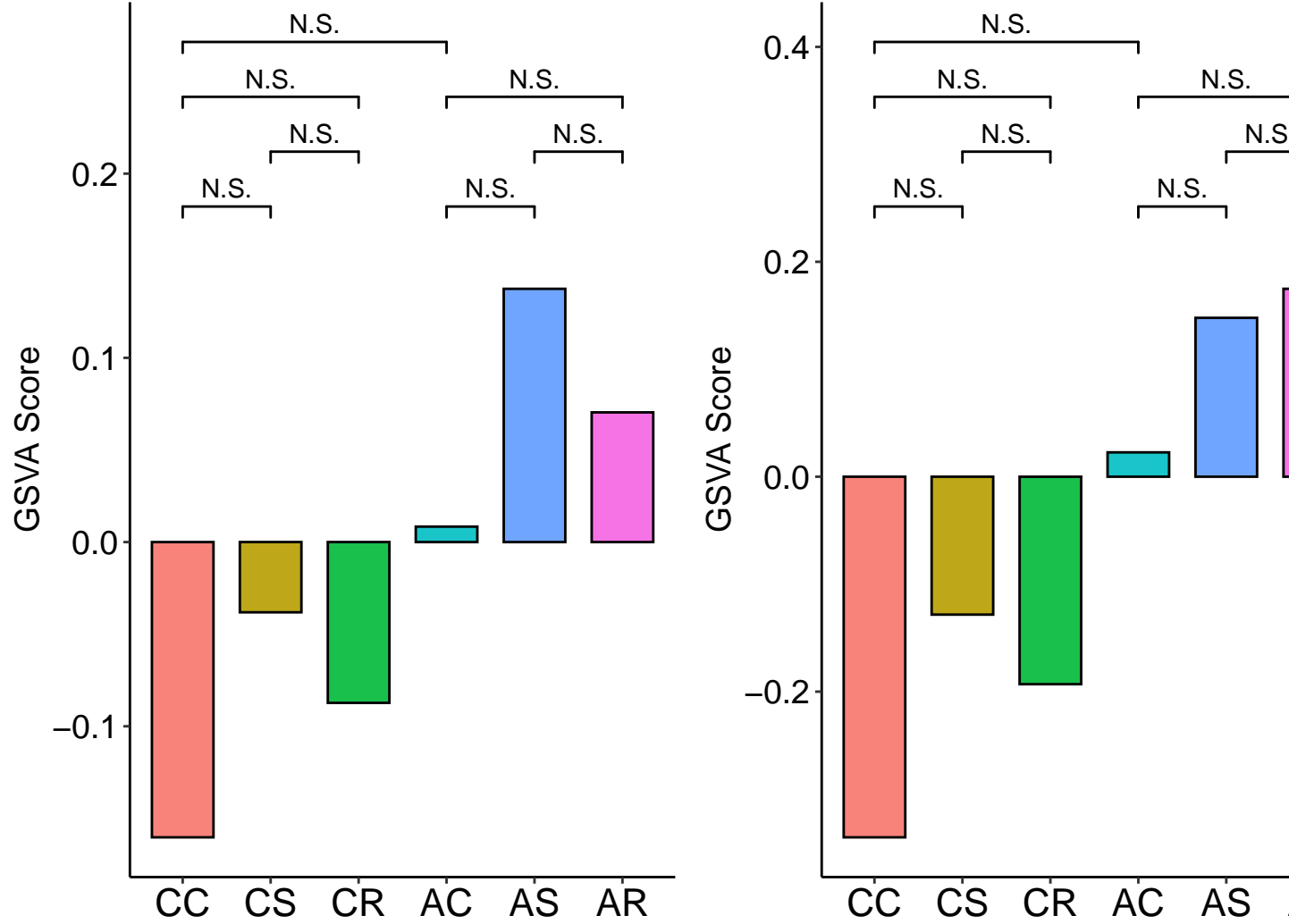




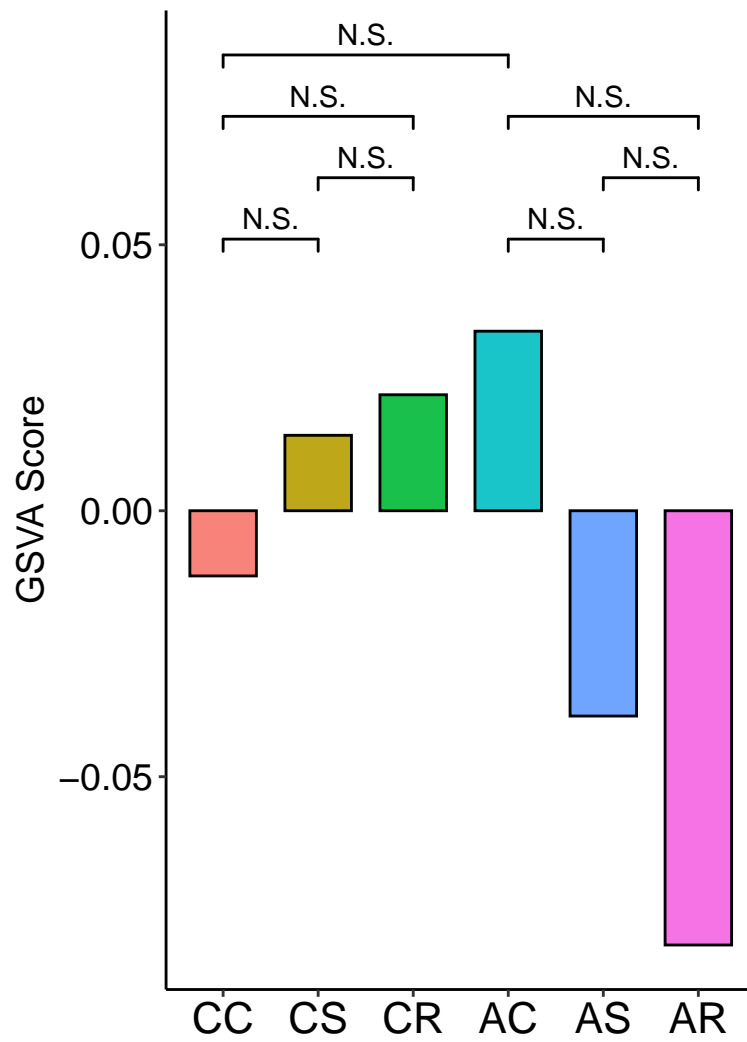
Positive regulation of amyloid beta format



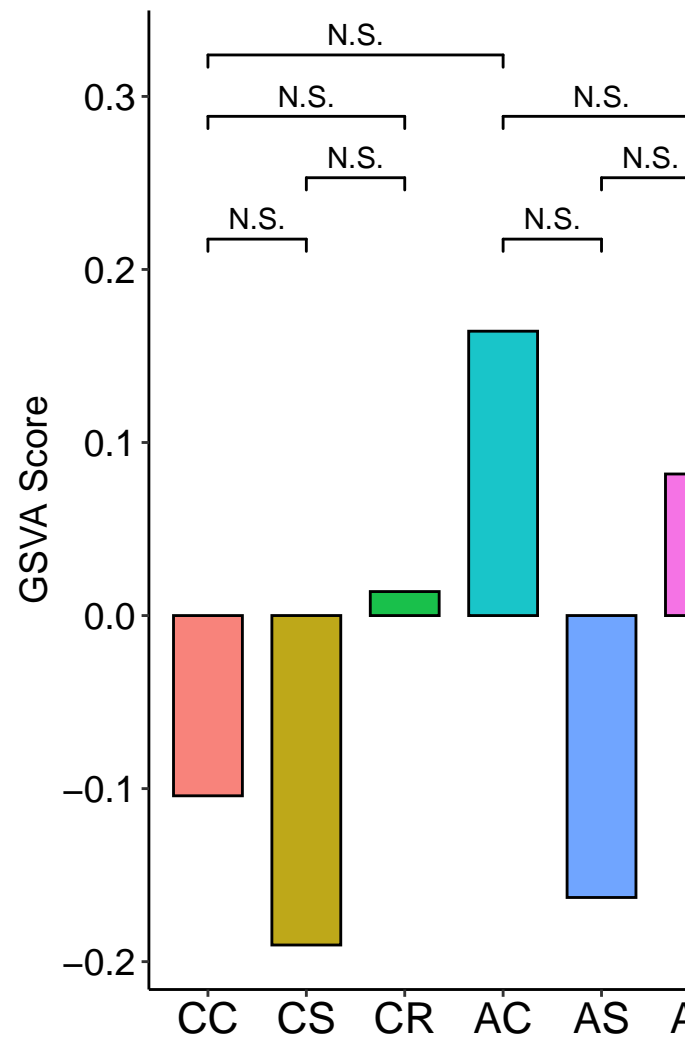
regulation of amyloid precursor protein catabolism regulation of amyloid precursor prote

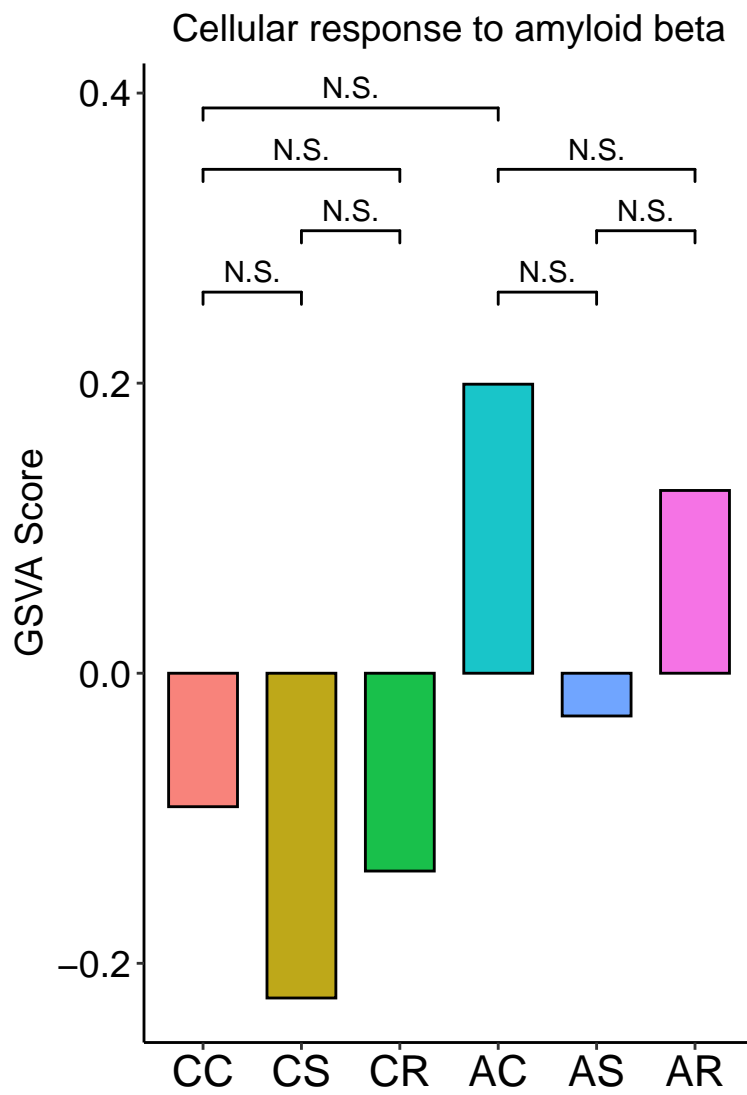


ive regulation of amyloid precursor protein cat

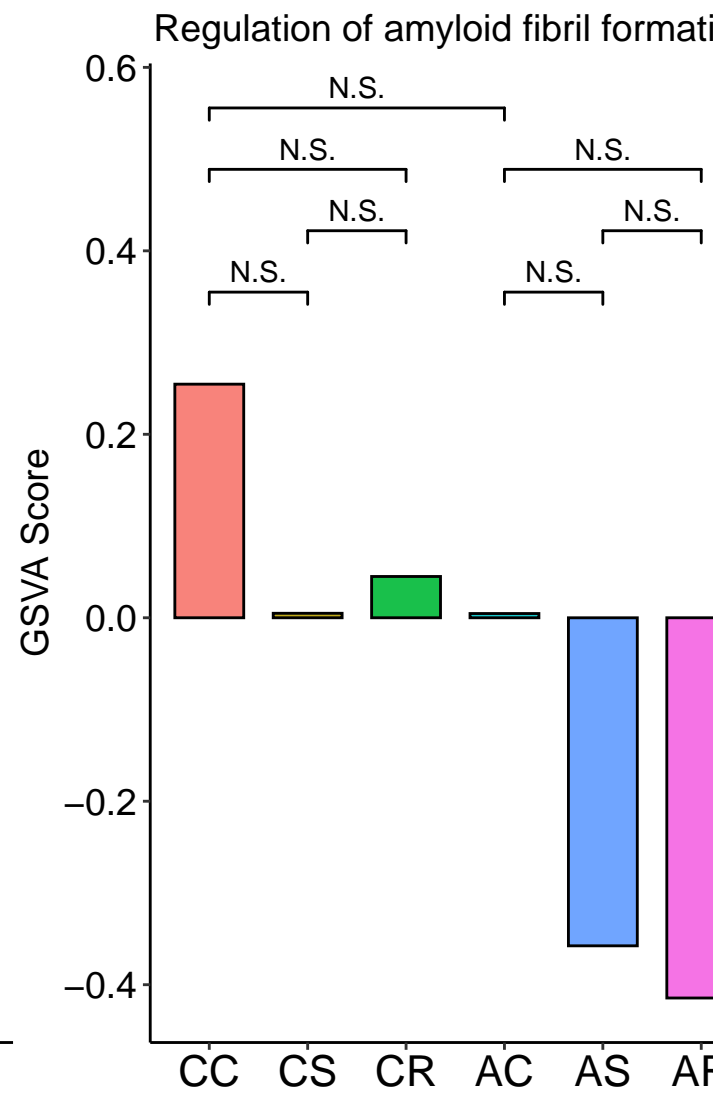


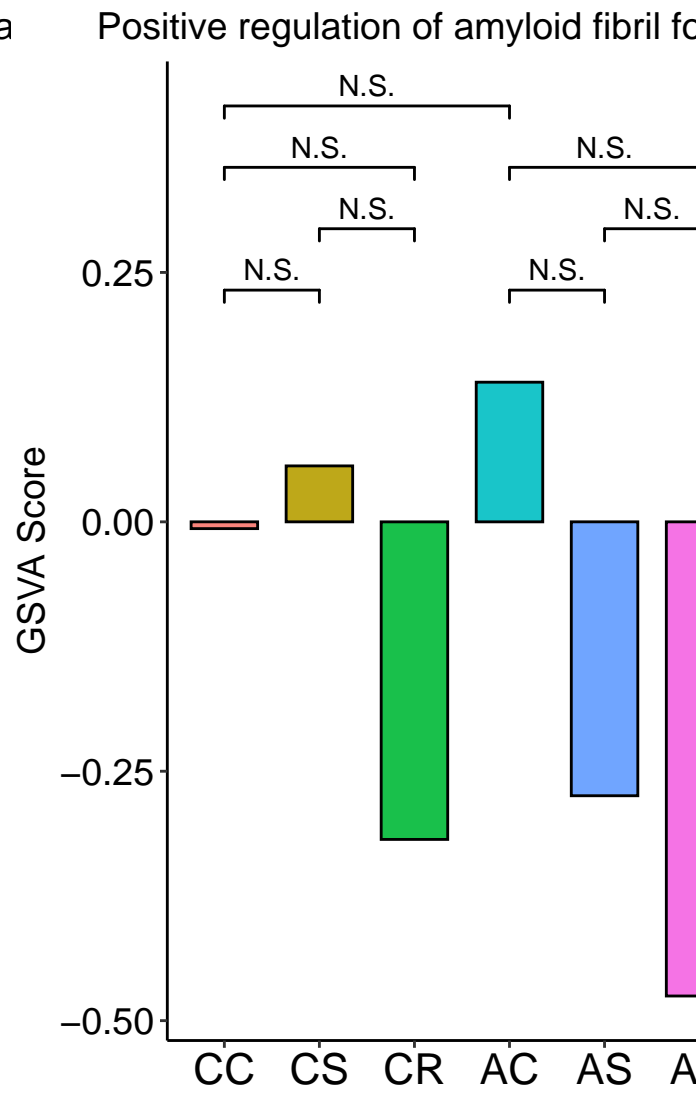
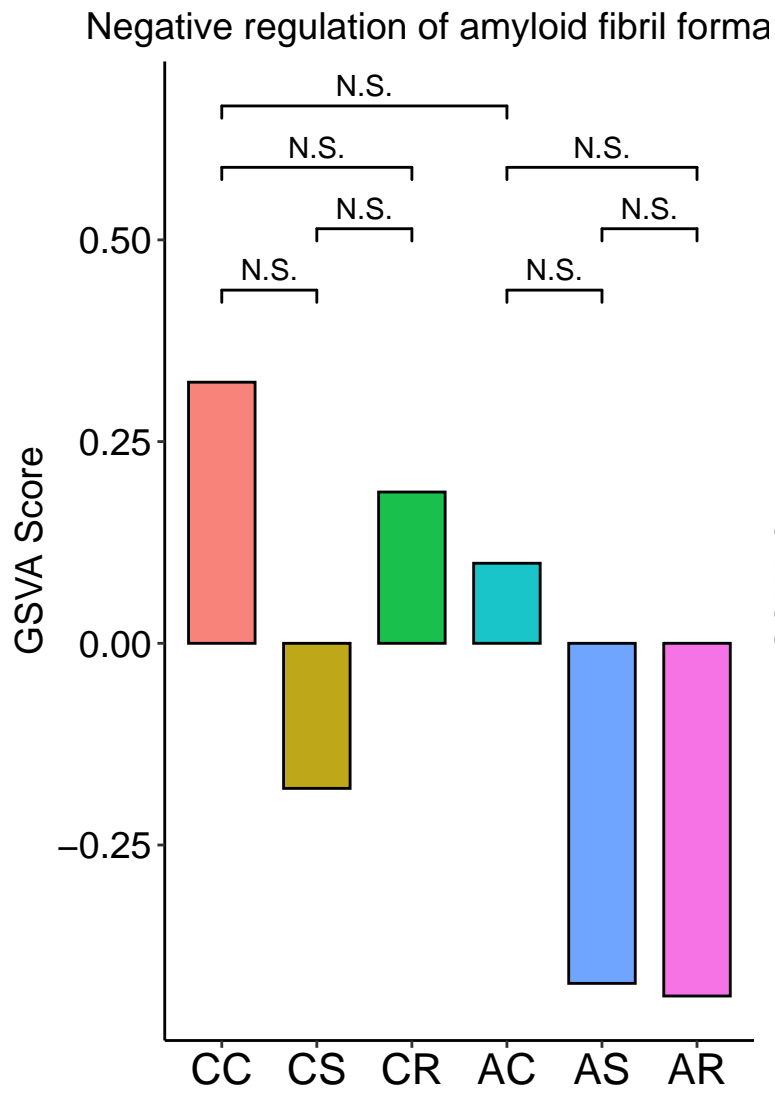
Response to amyloid beta

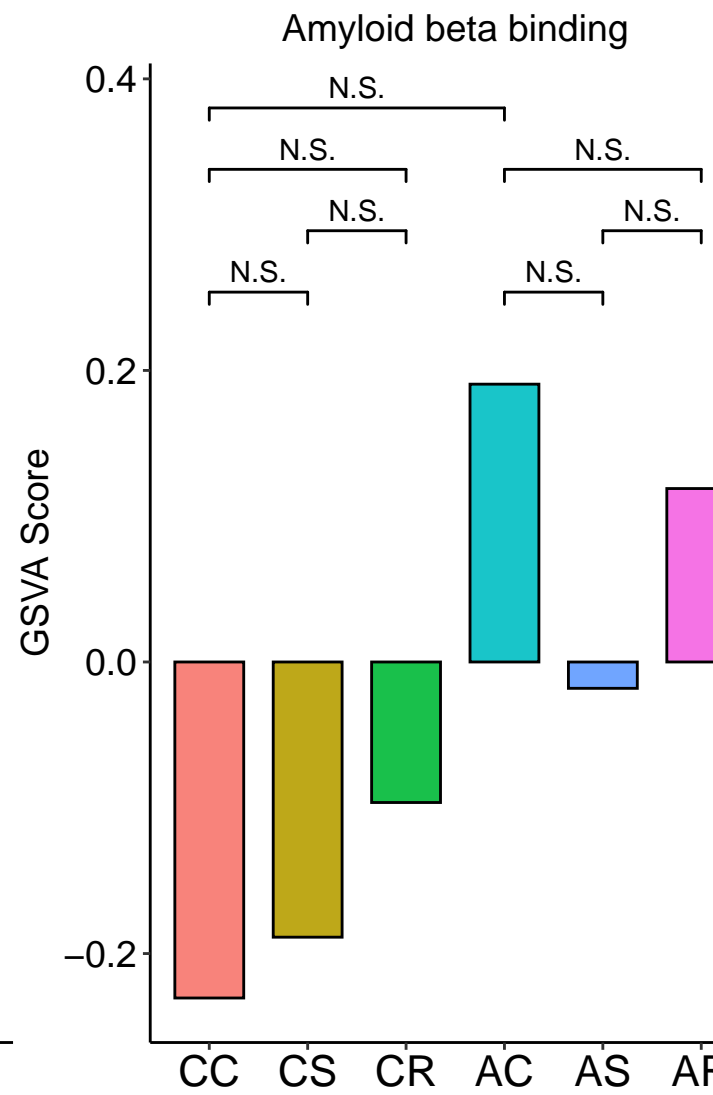
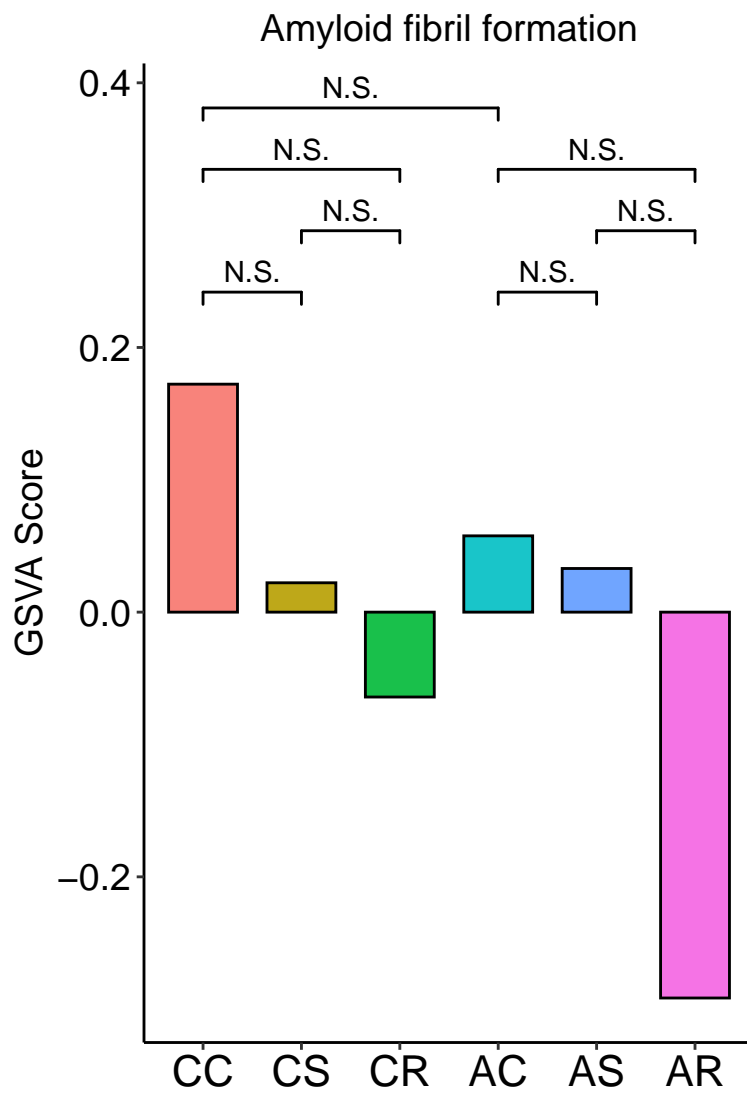




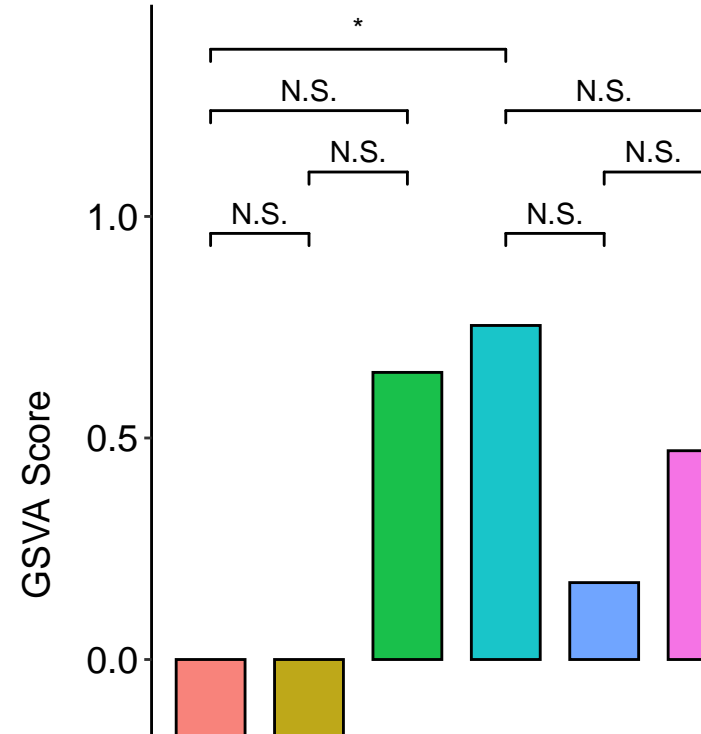
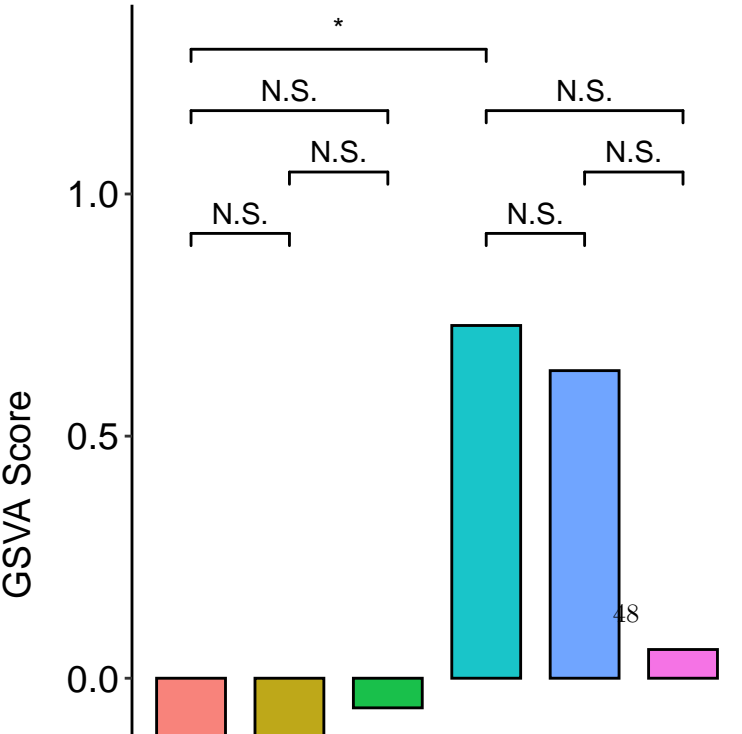
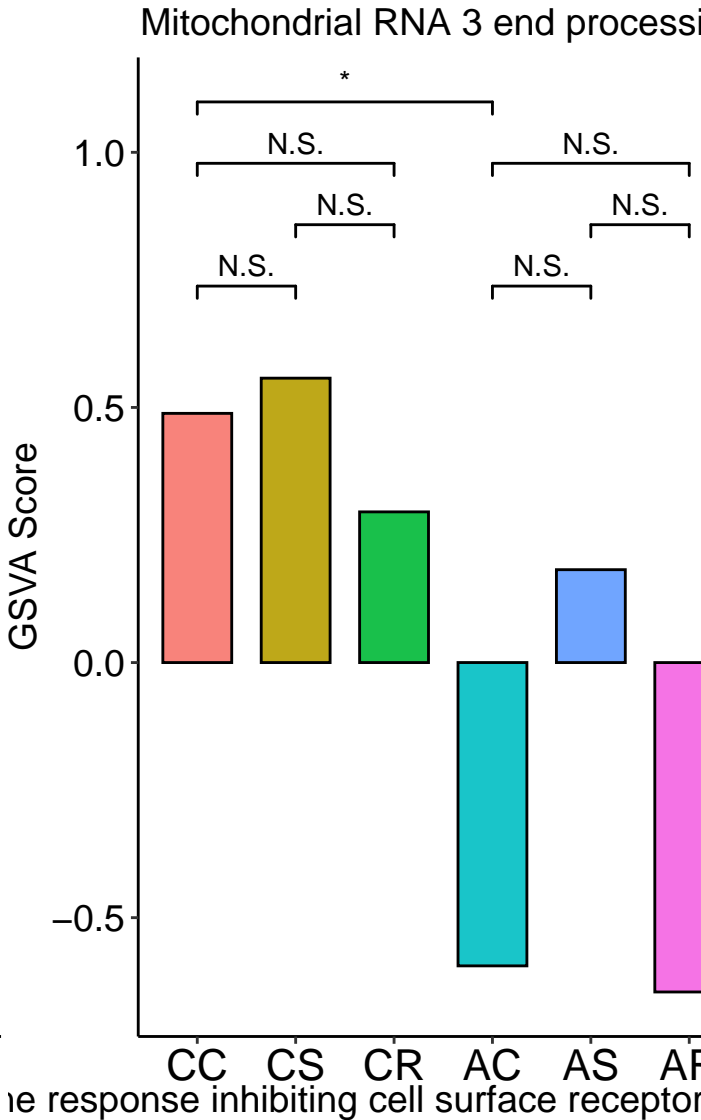
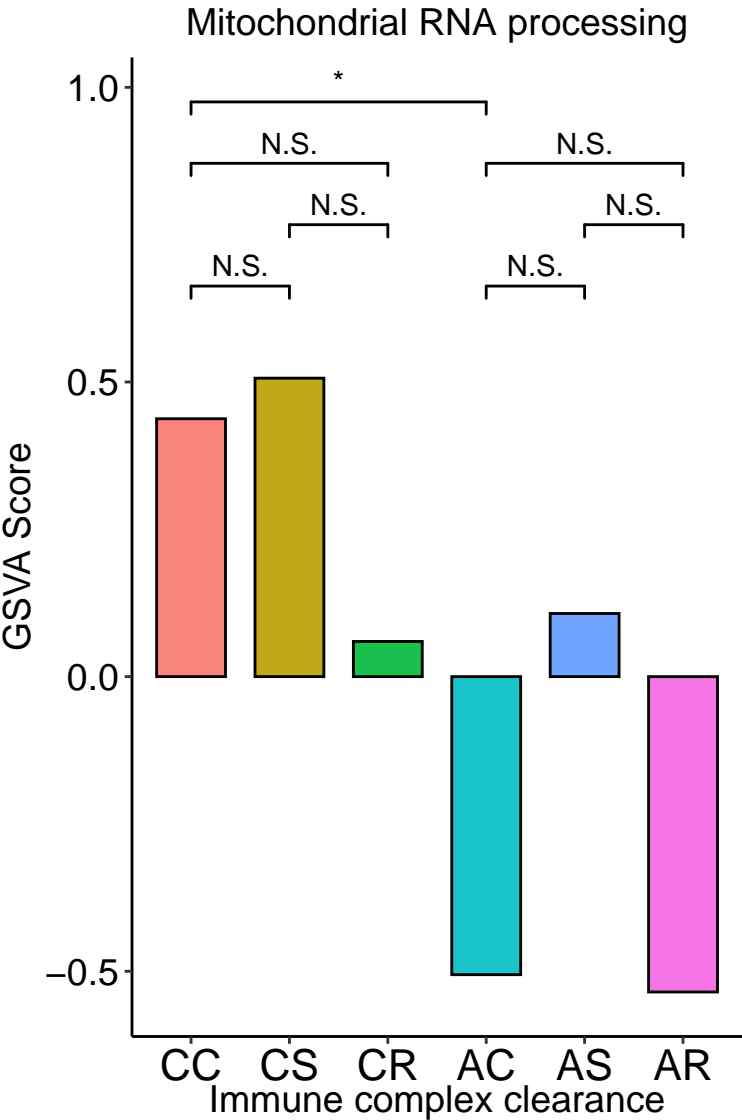
[1] "Processing 20 pathway"



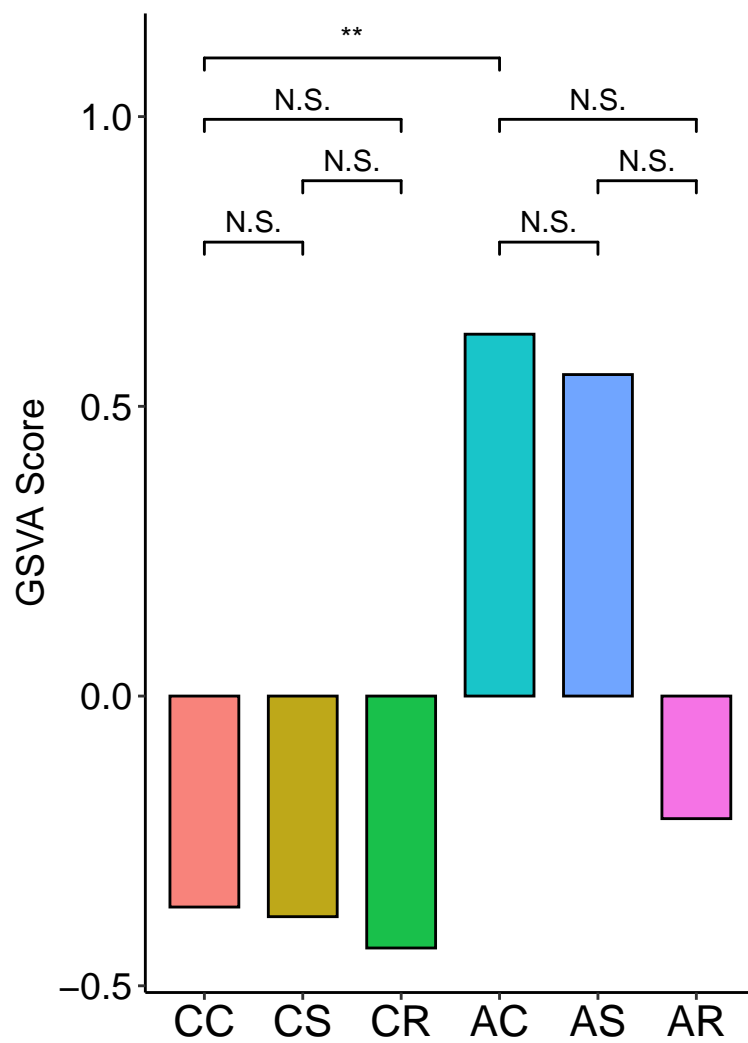




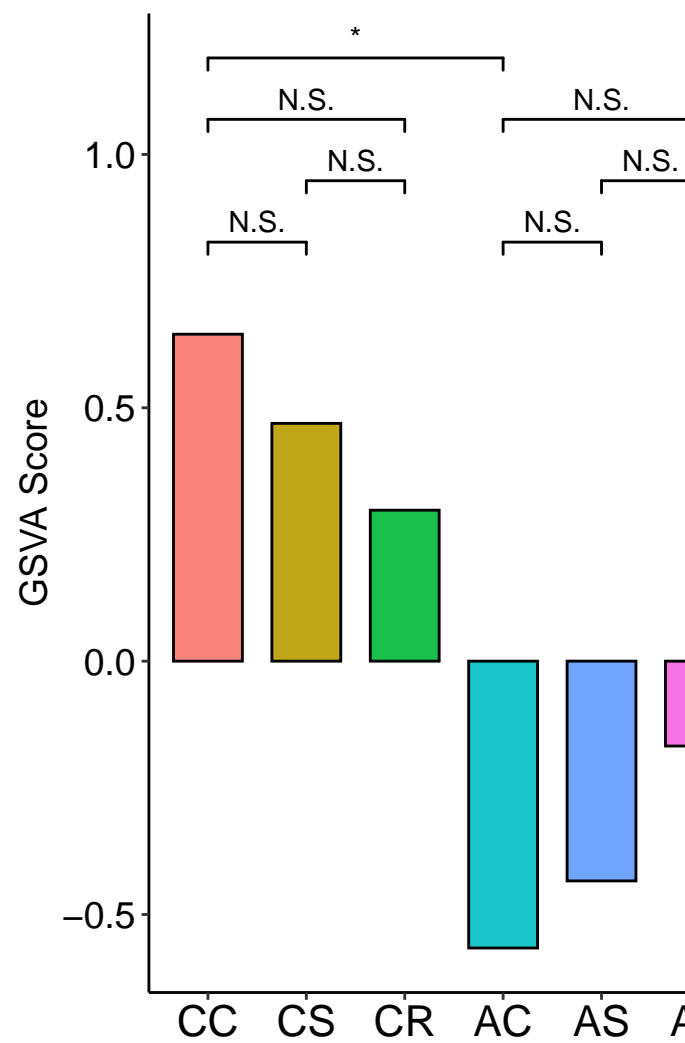
result for other group

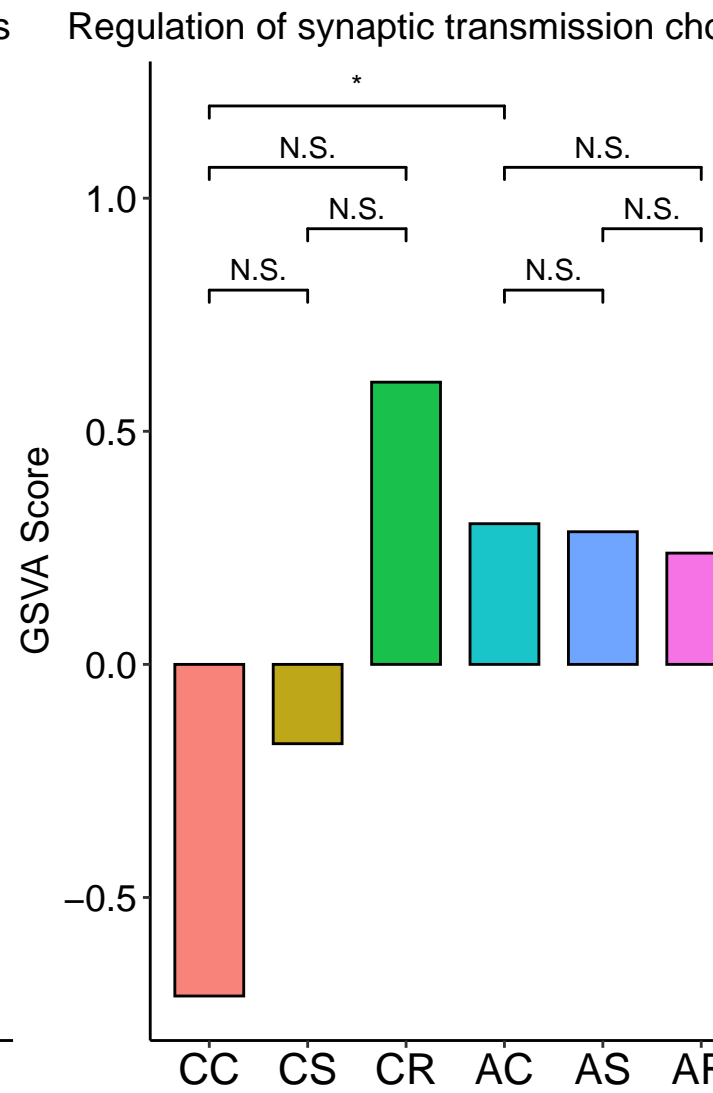
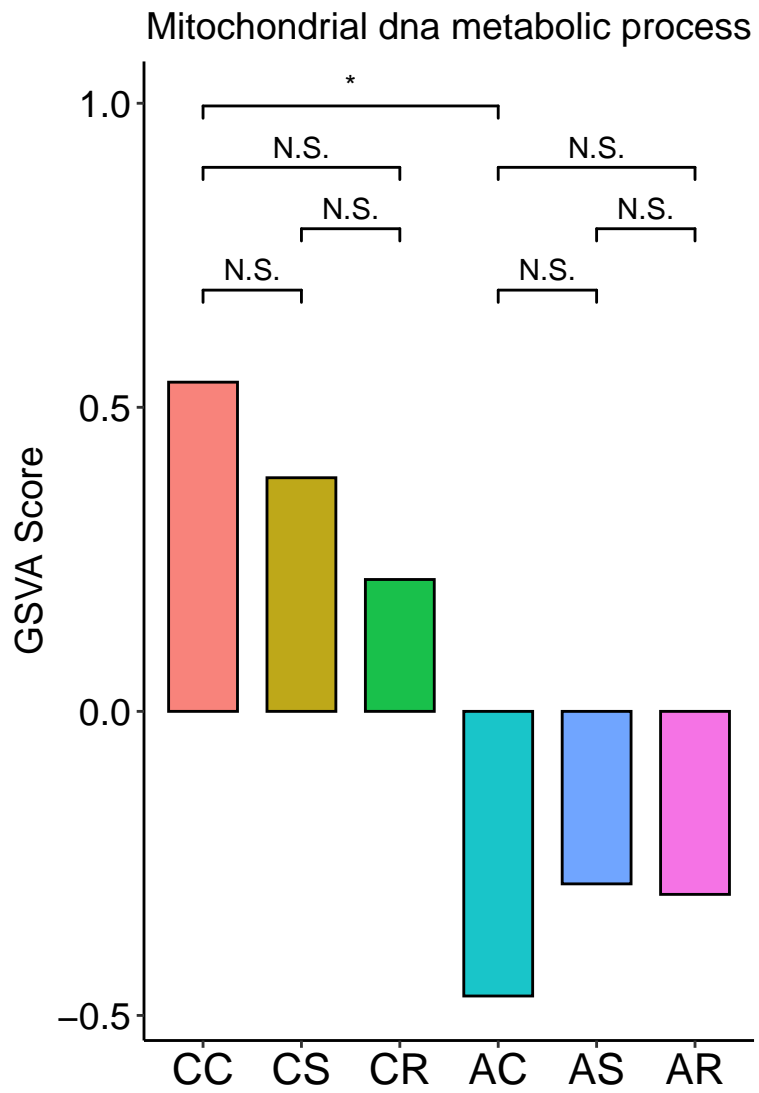


Mitochondrial electron transport cytochrome c t

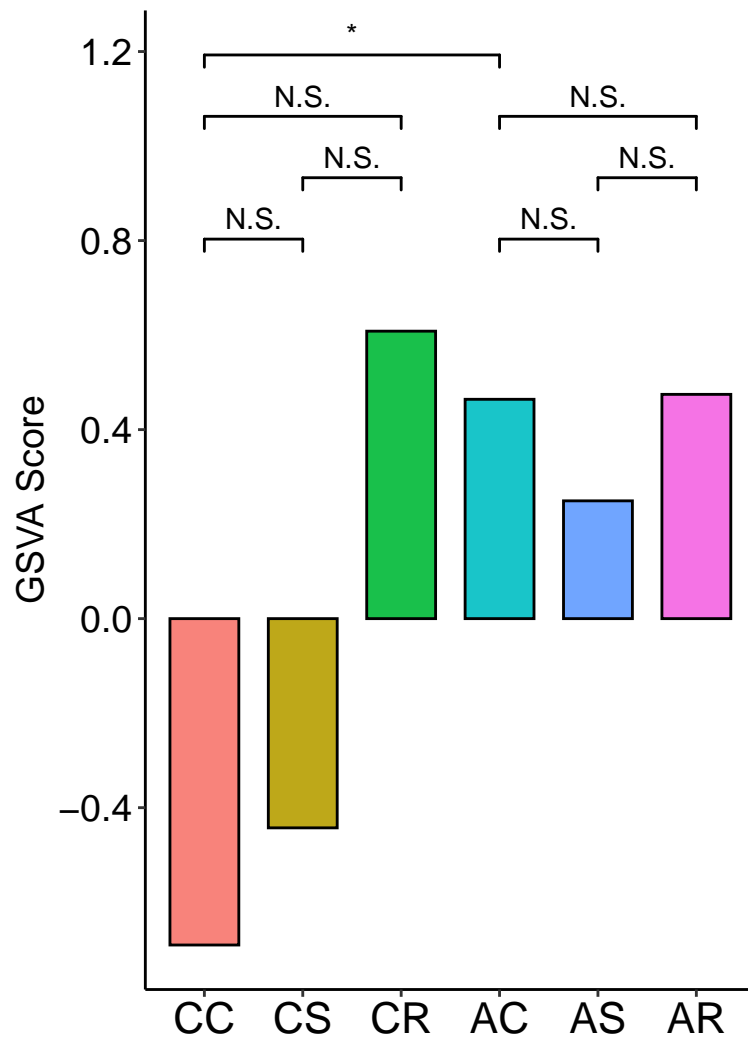


Mitochondrial dna replication

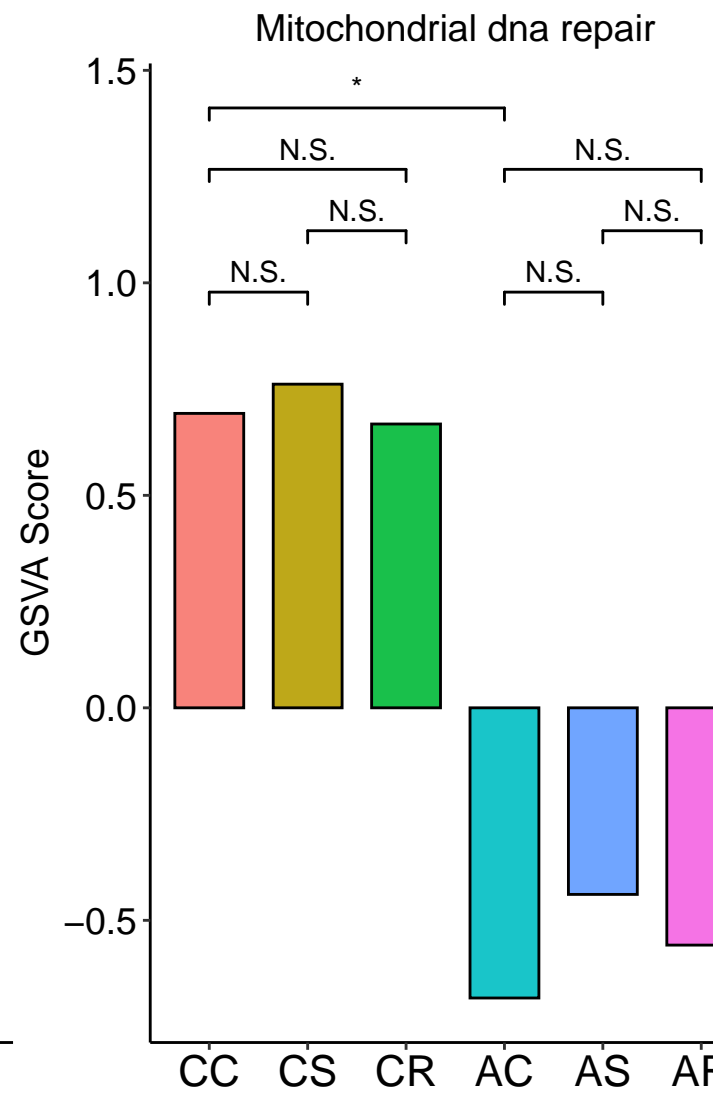
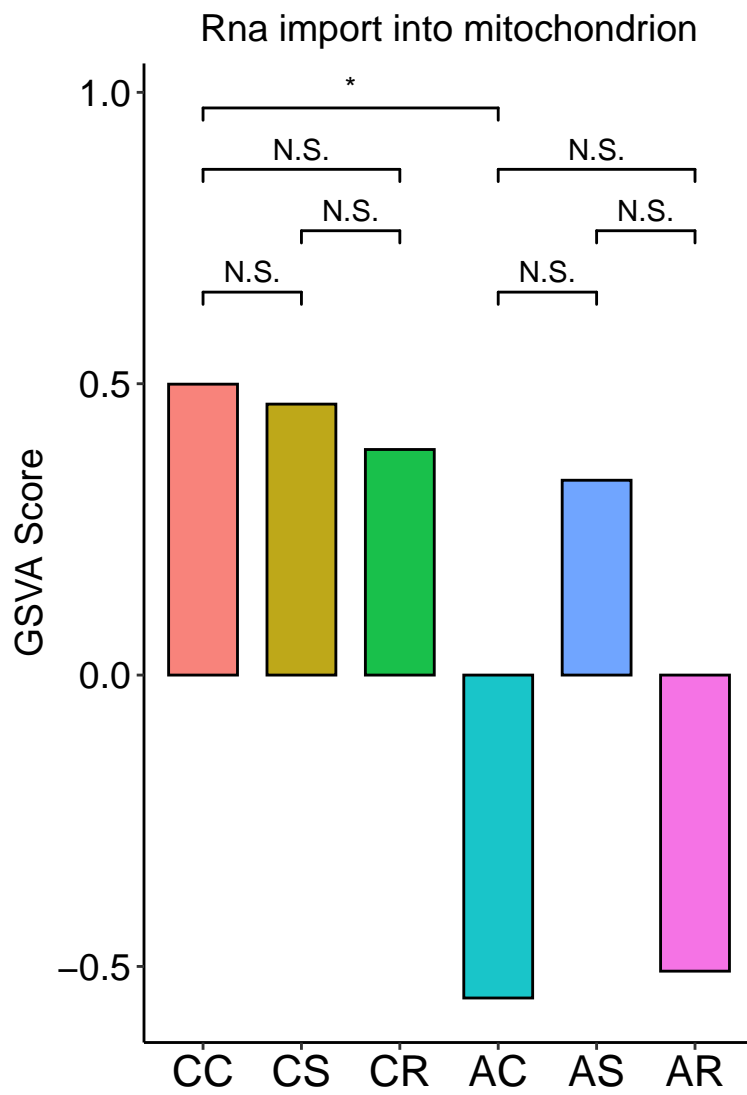


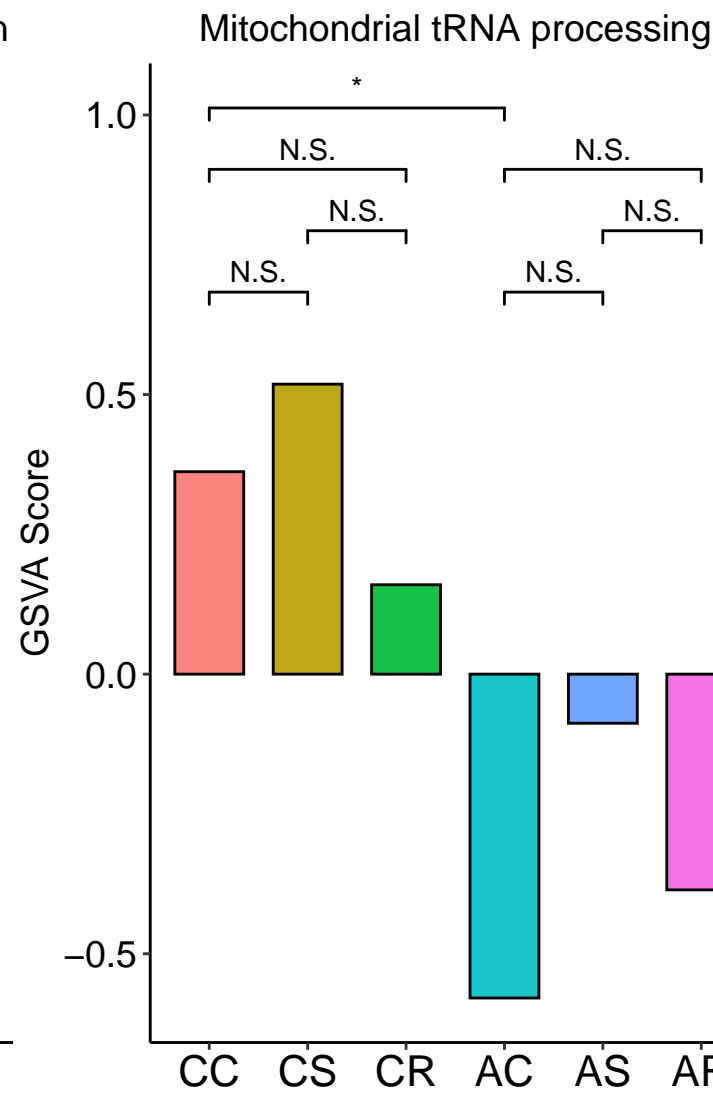
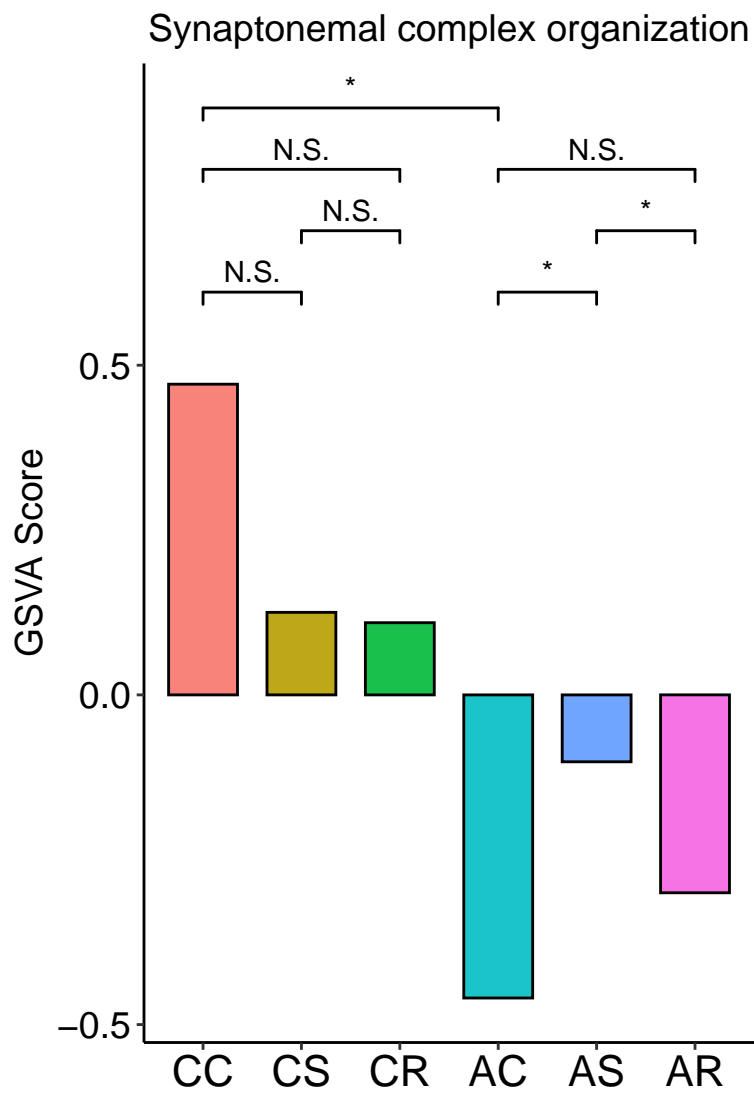


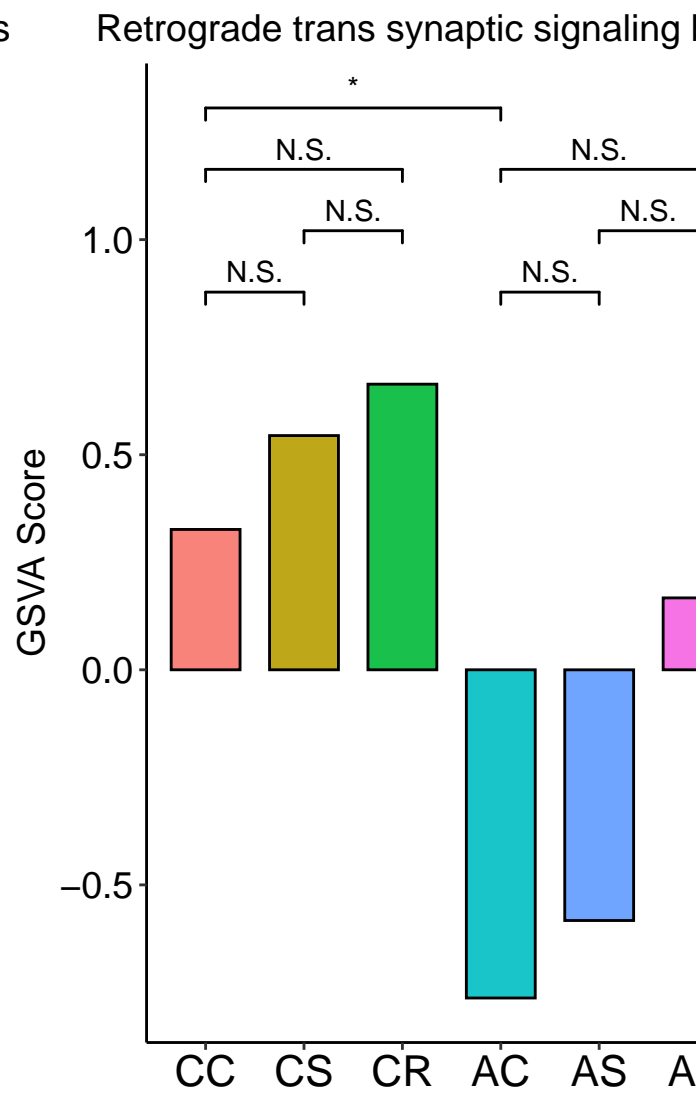
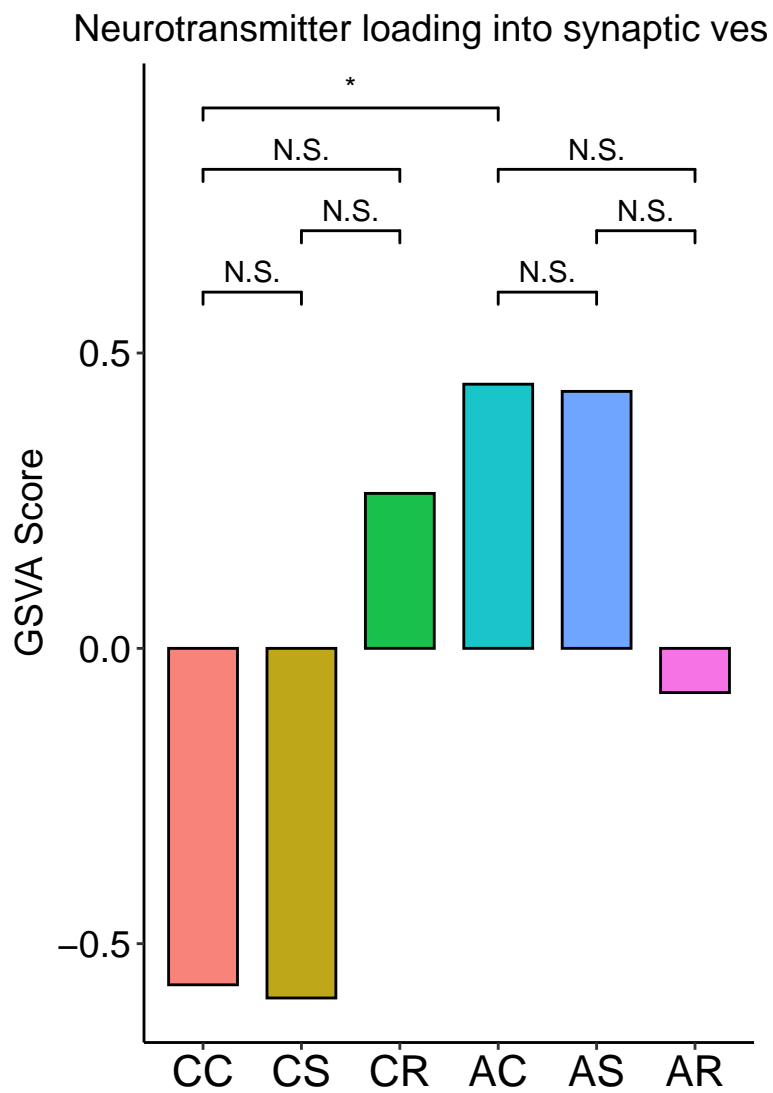
Positive regulation of synaptic transmission chr

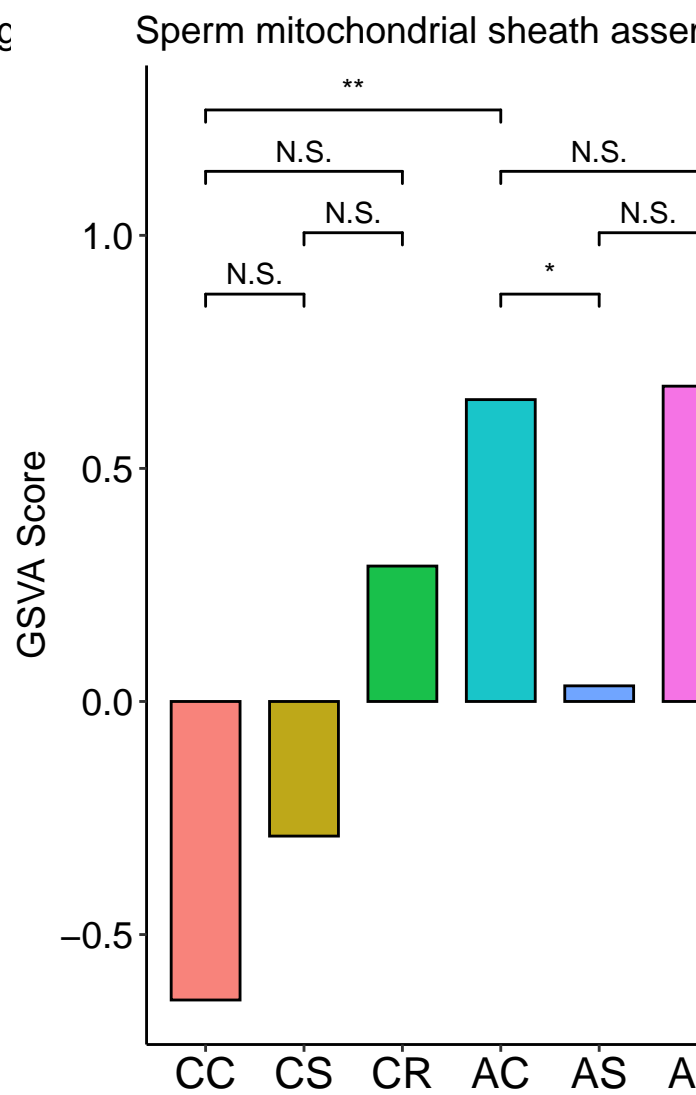
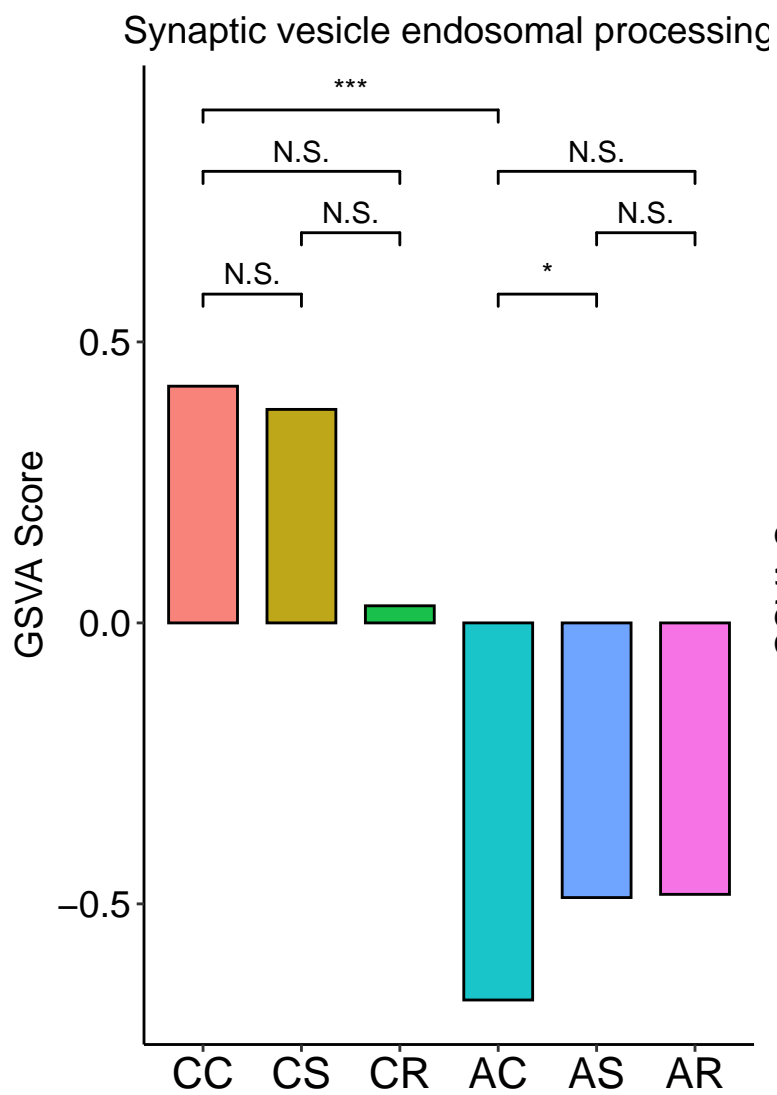


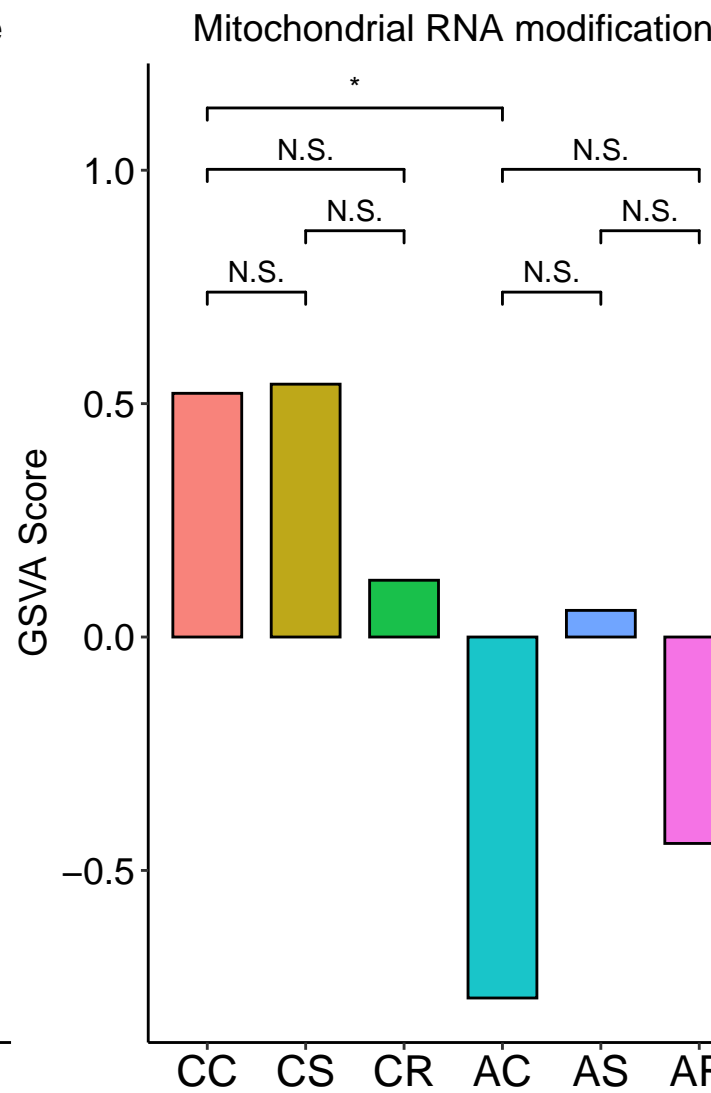
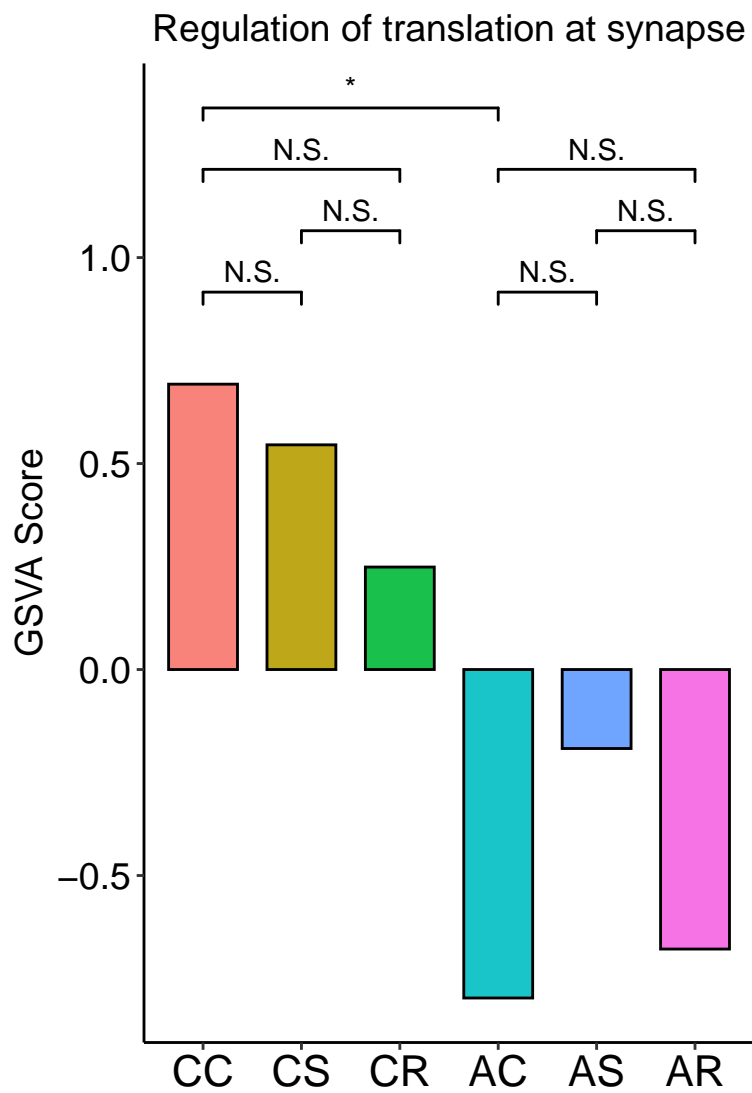
[1] "Processing 10 pathway"

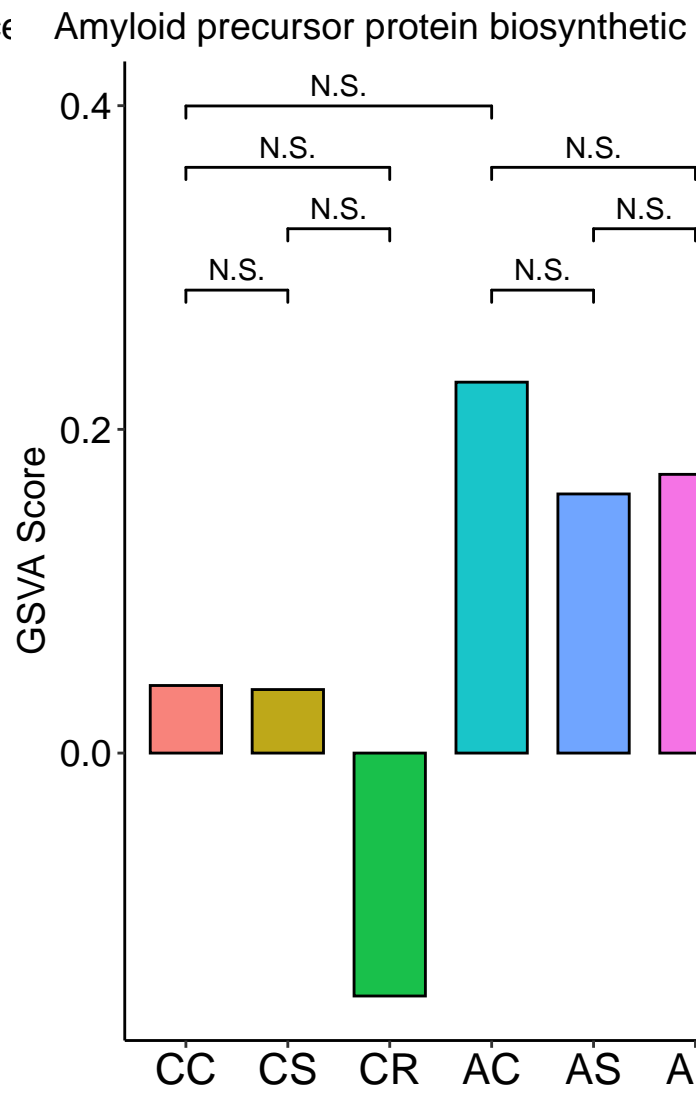
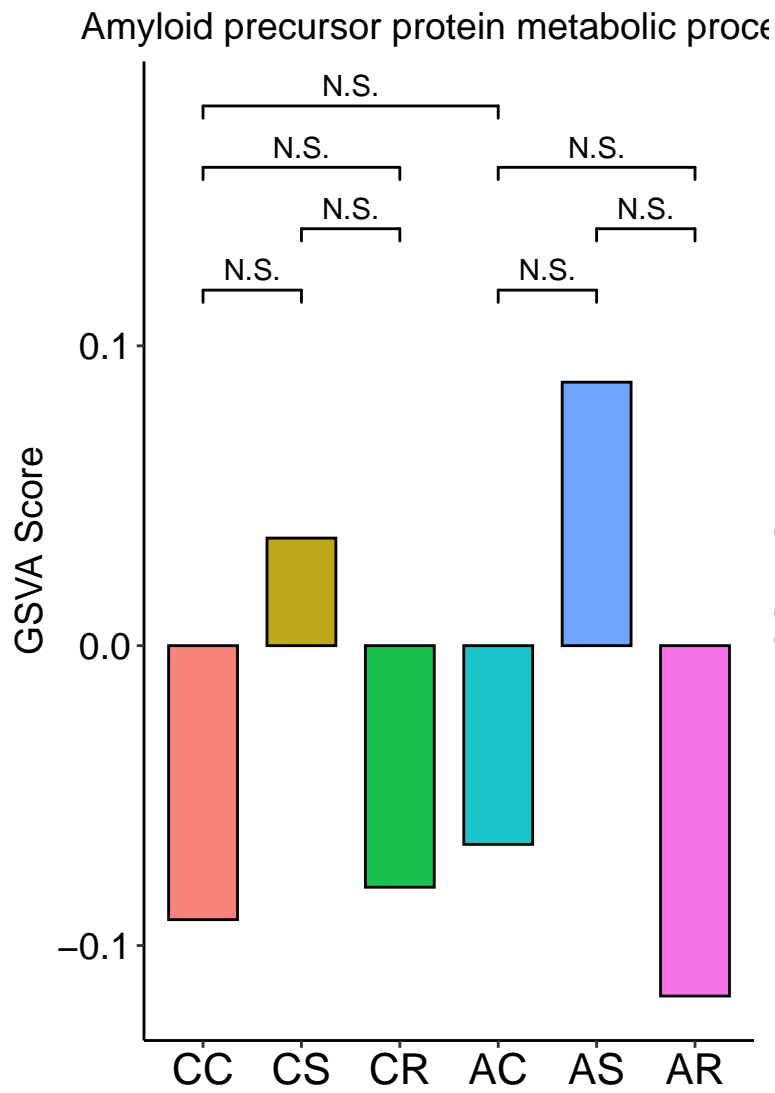




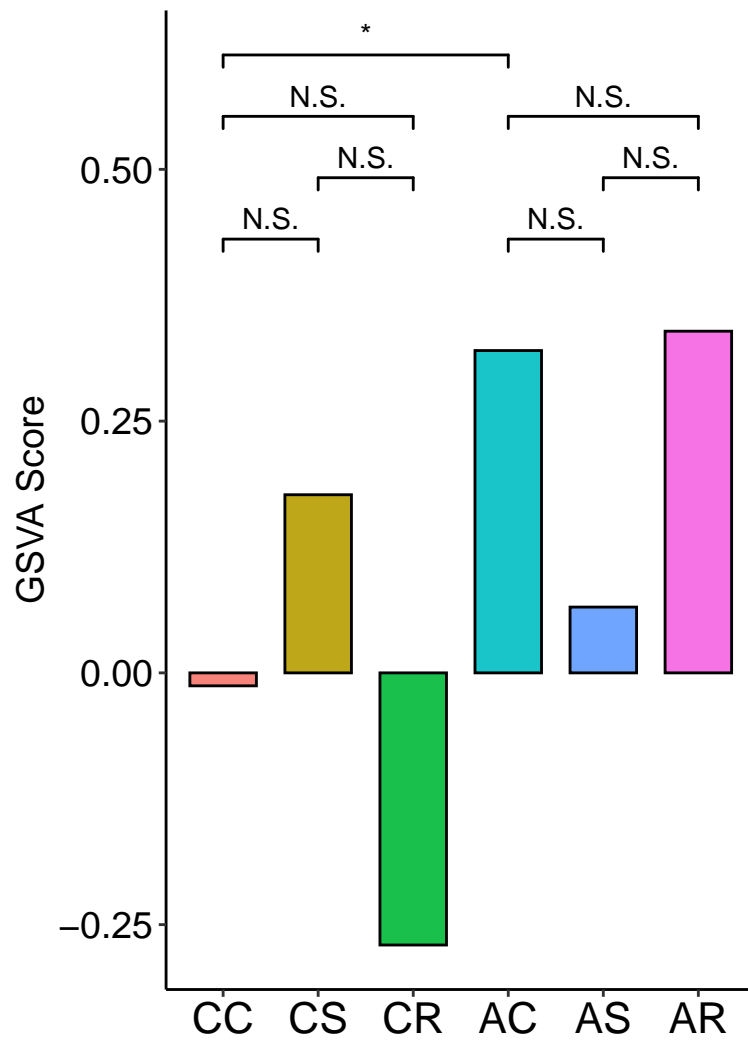




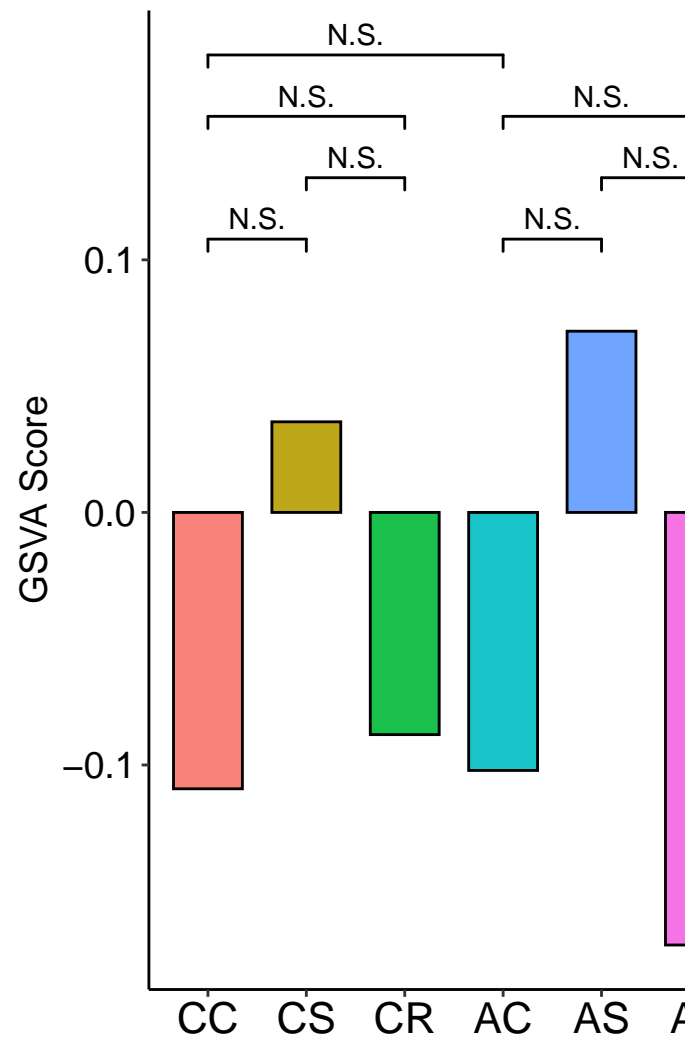


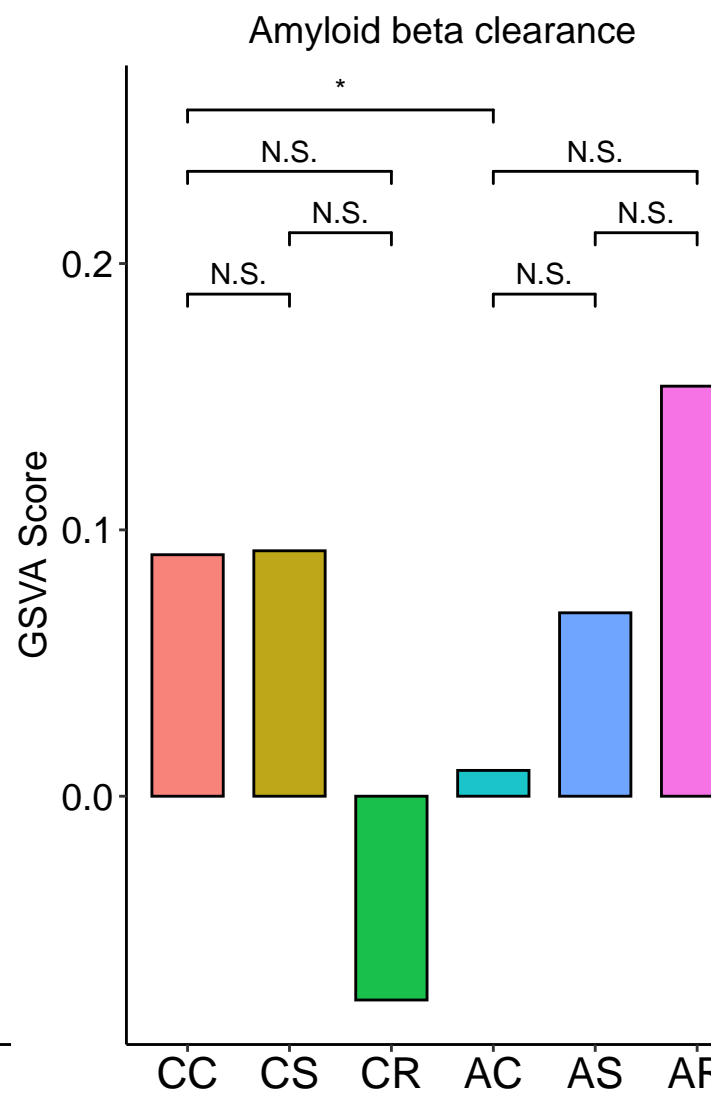
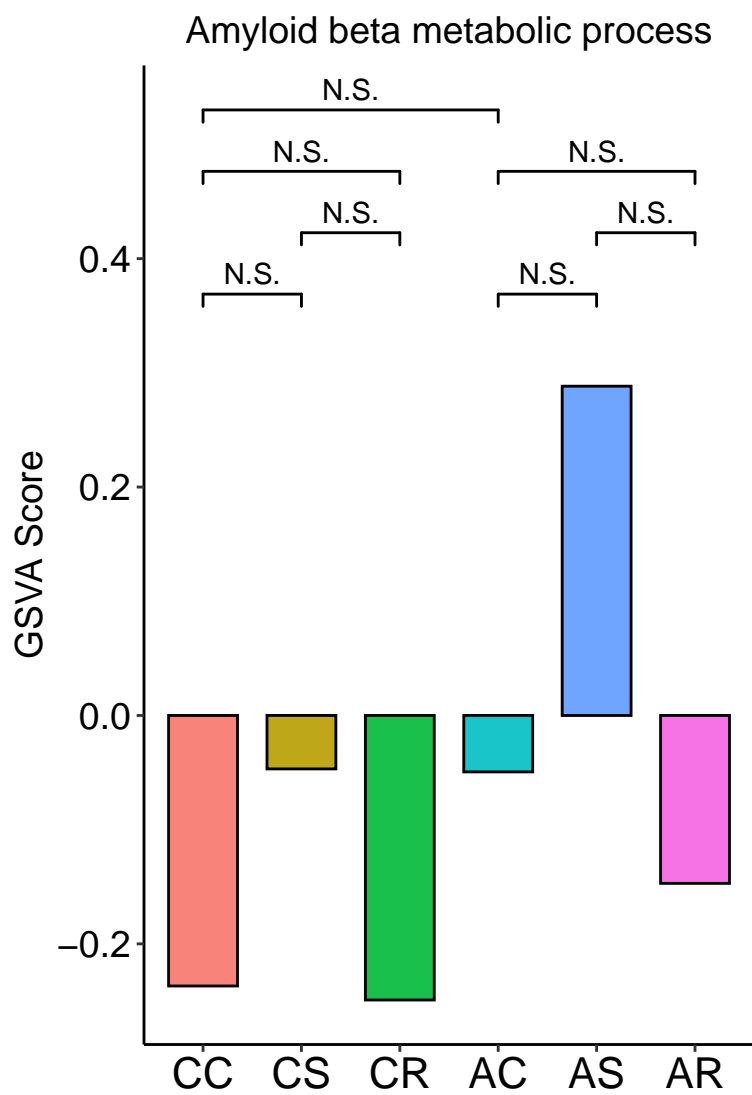


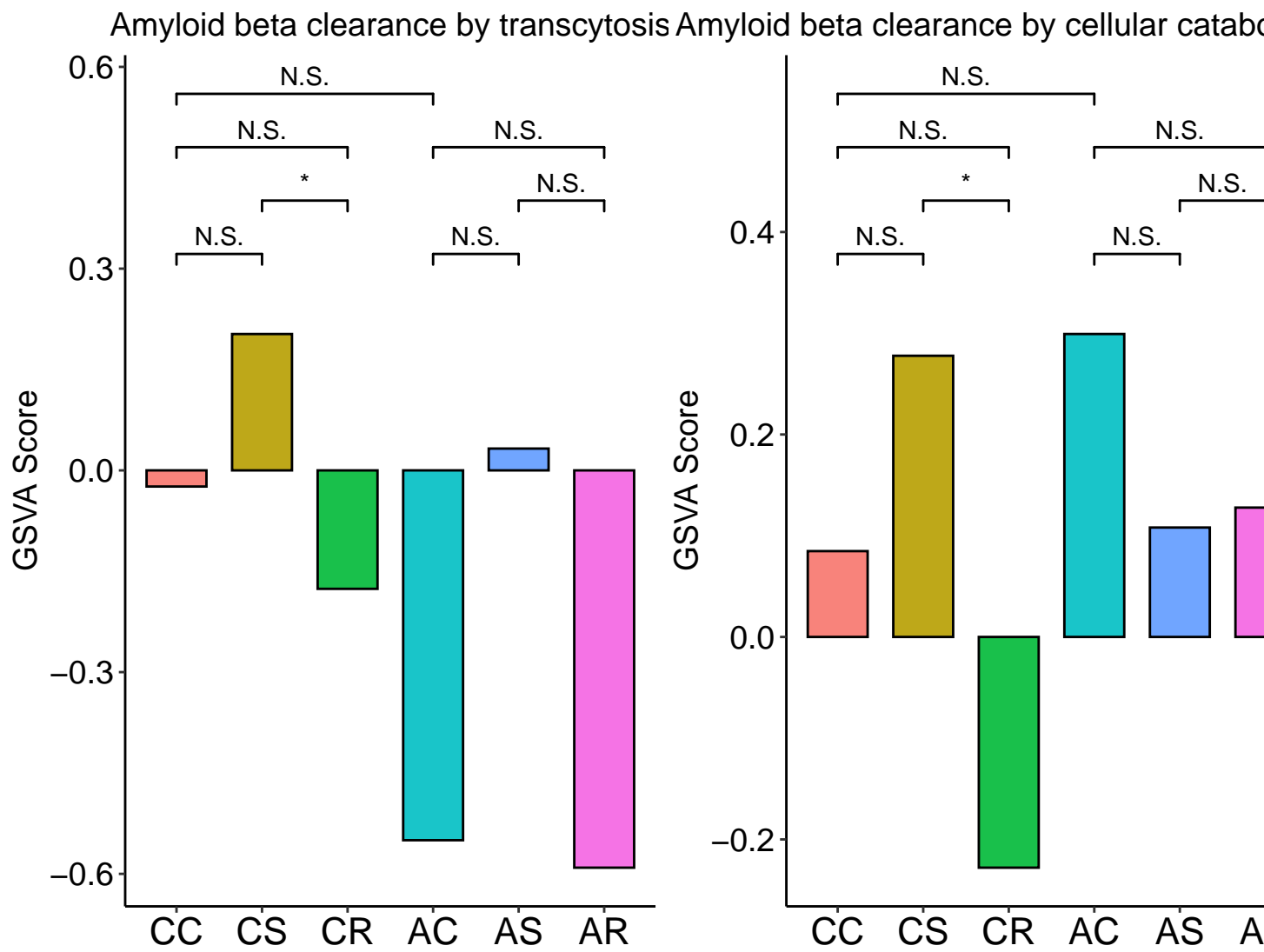
ve regulation of amyloid precursor protein biosy



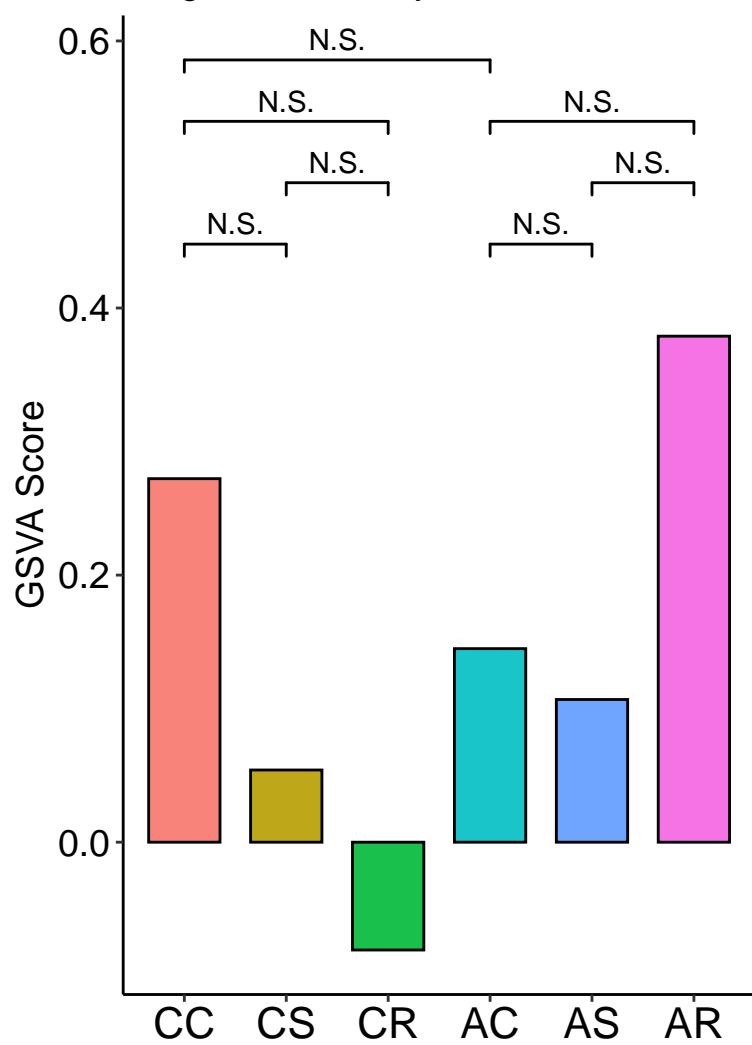
Amyloid precursor protein catabolic



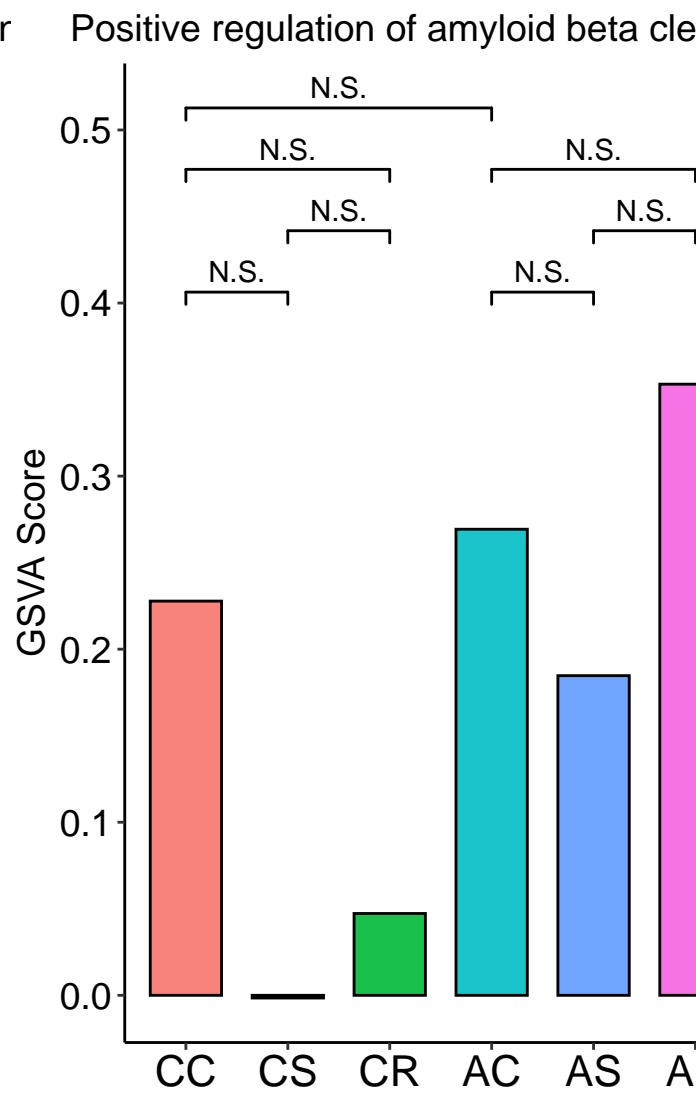
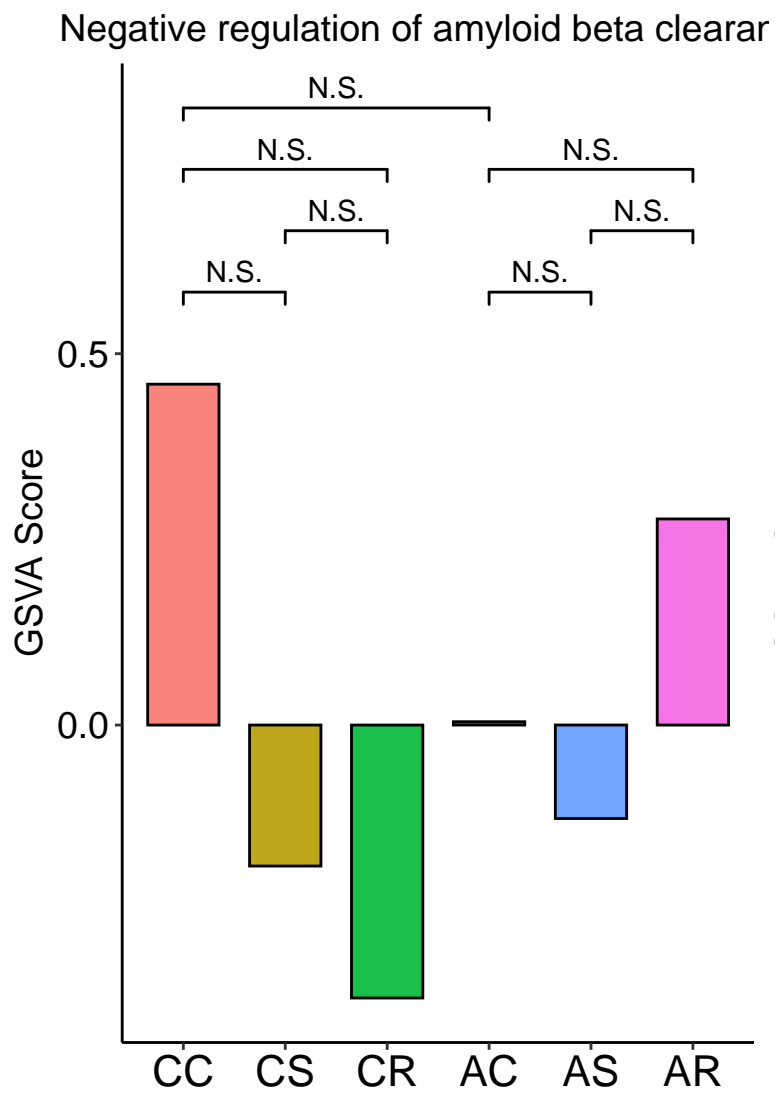




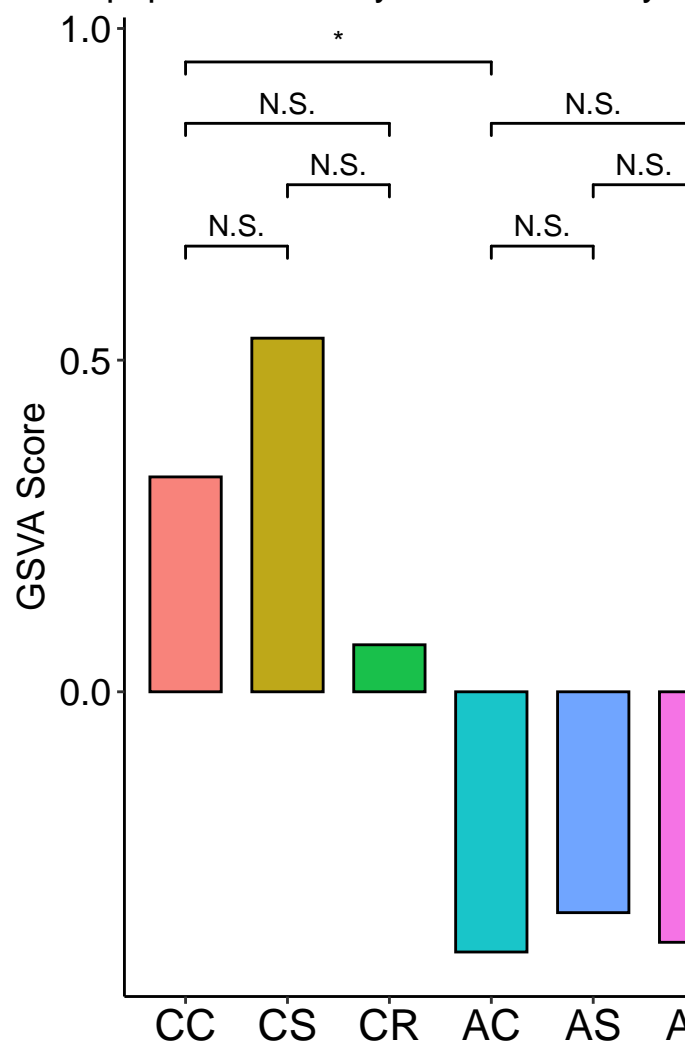
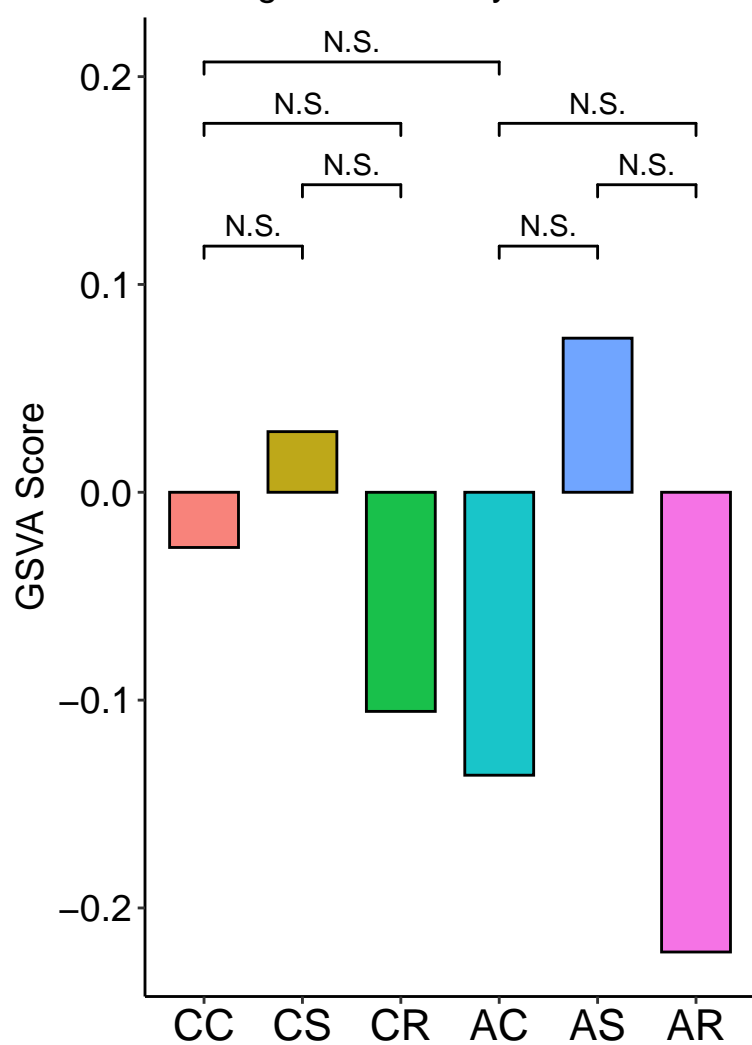
Regulation of amyloid beta clearance



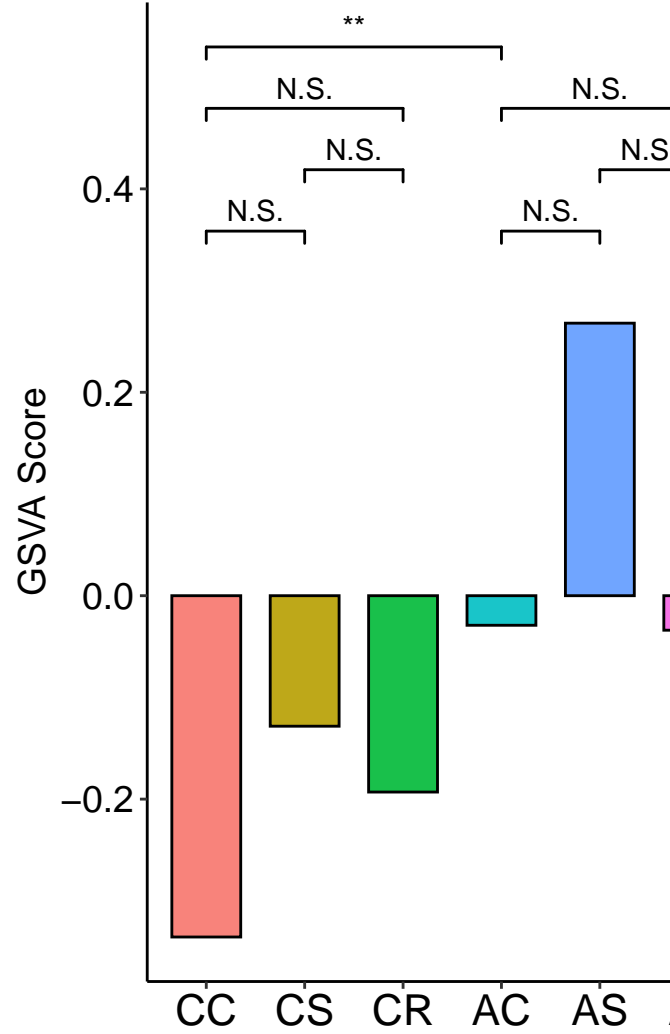
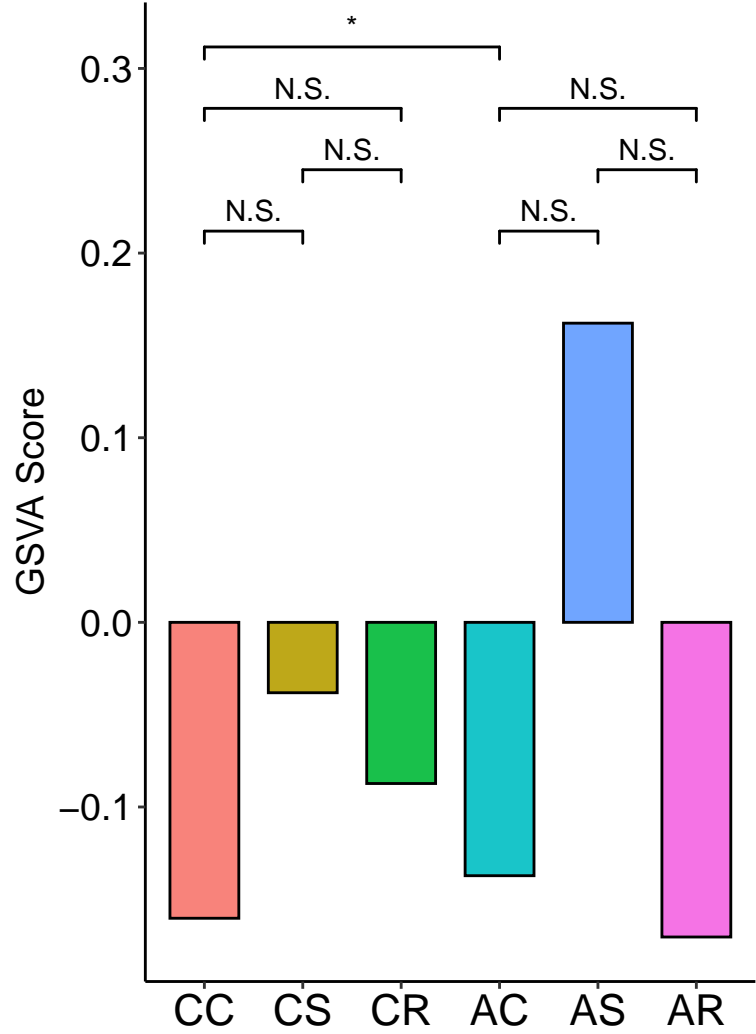
[1] "Processing 10 pathway"



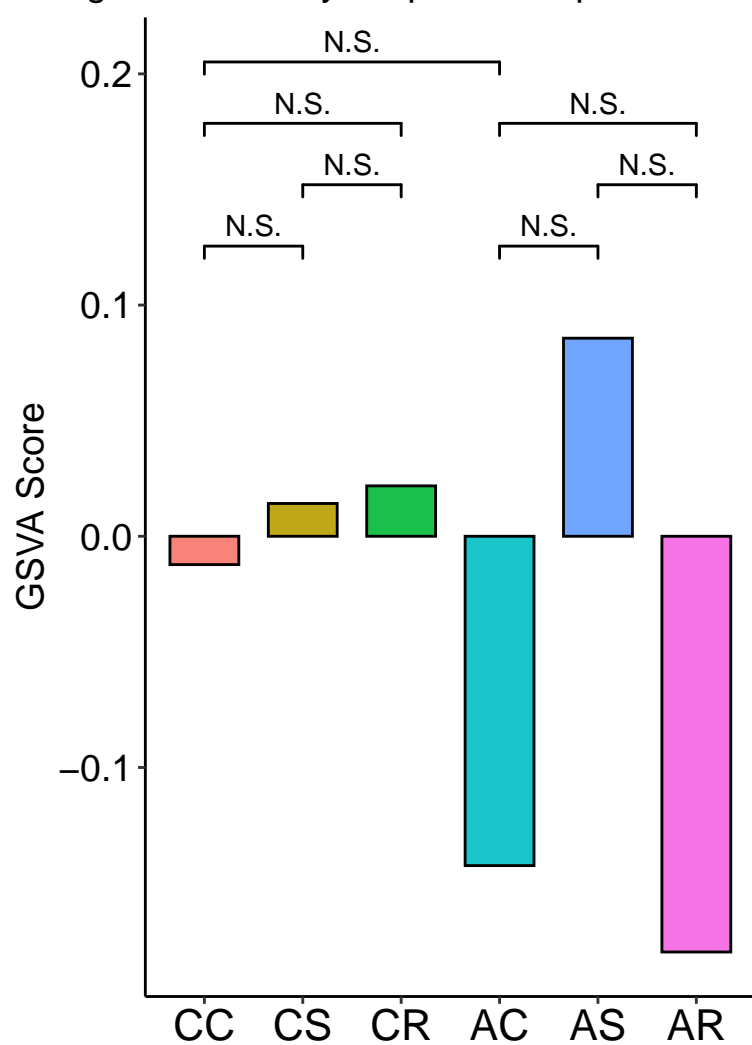
Positive regulation of amyloid beta formatꝰ endopeptidase activity involved in amylo



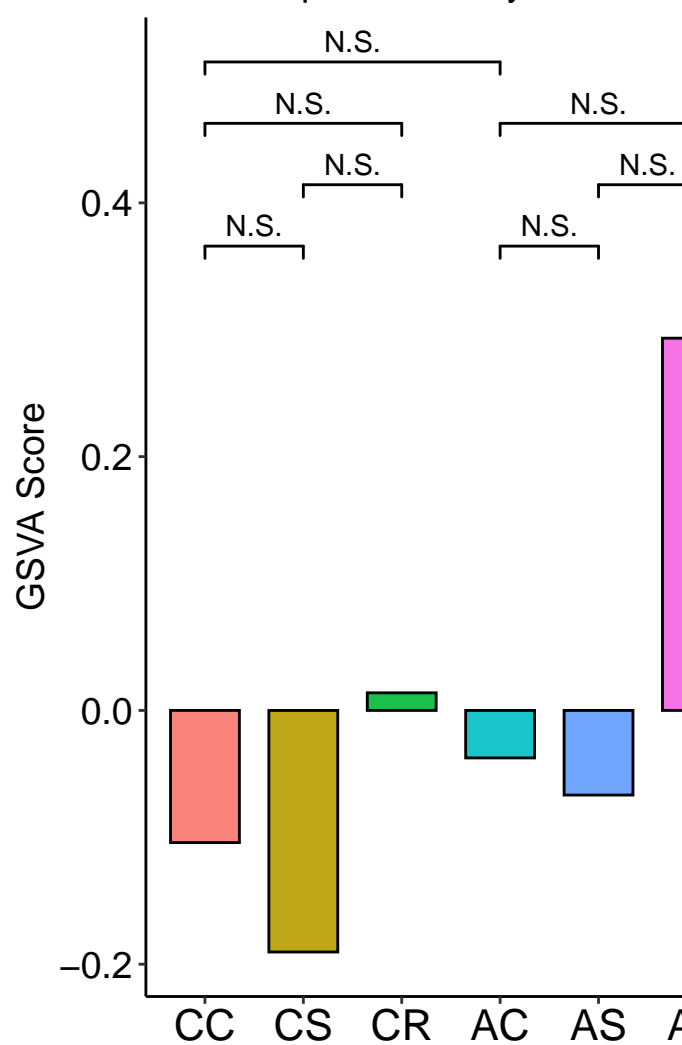
egulation of amyloid precursor protein catabolism
ive regulation of amyloid precursor prote

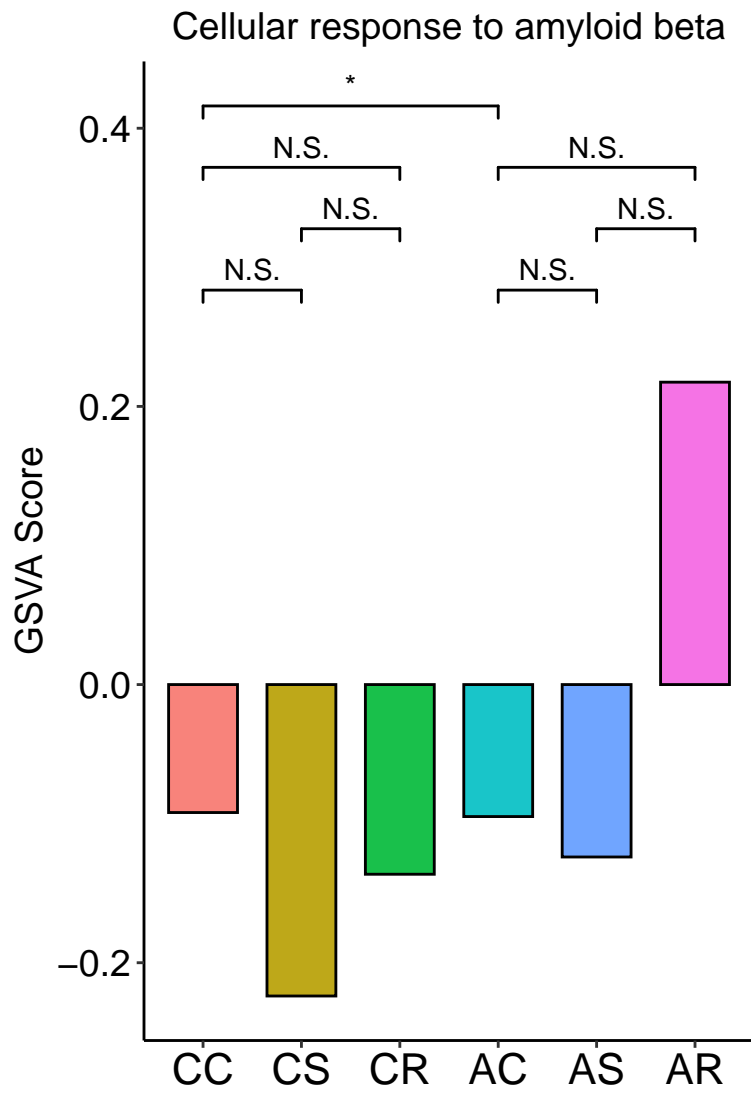


ve regulation of amyloid precursor protein cata

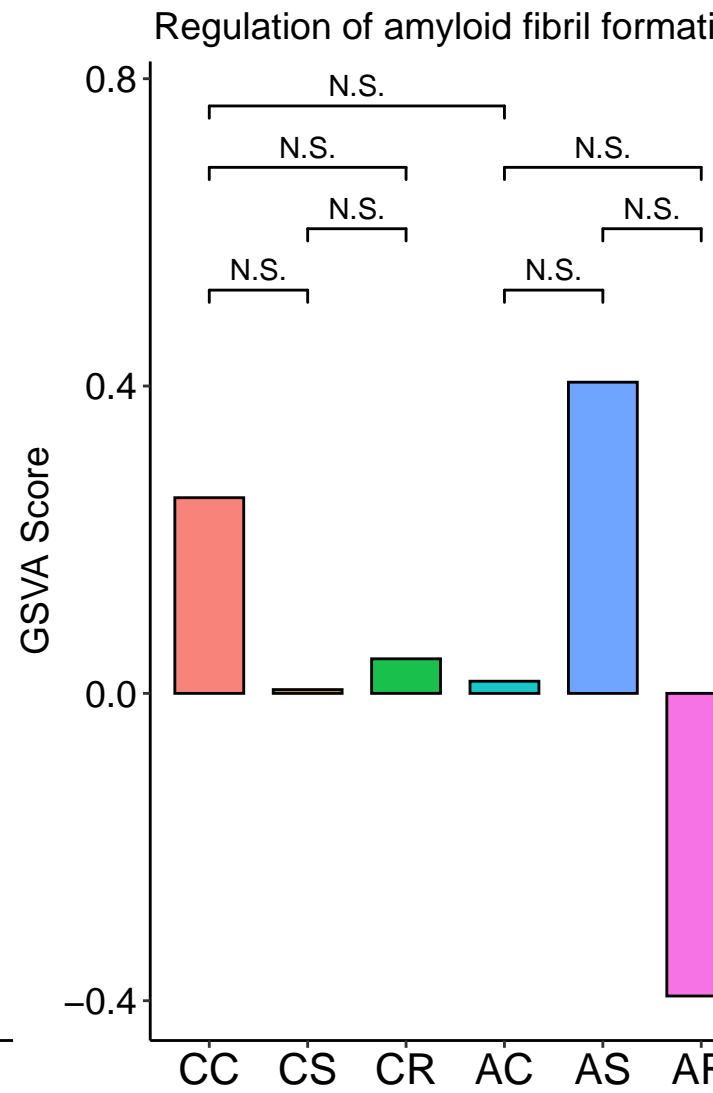


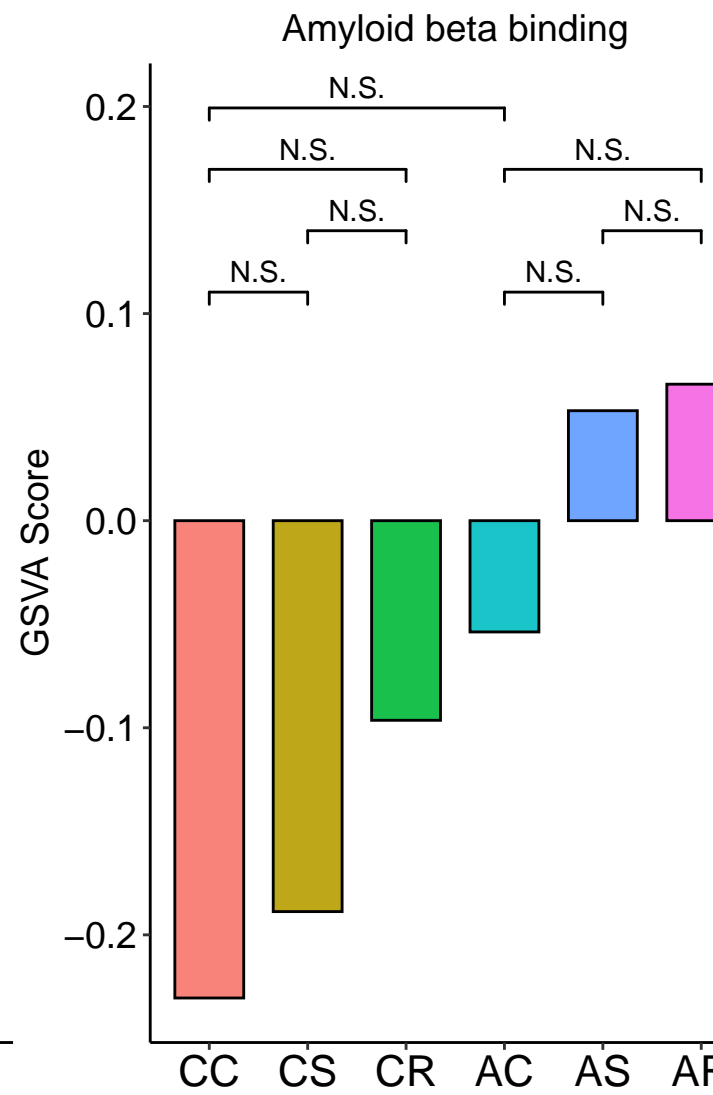
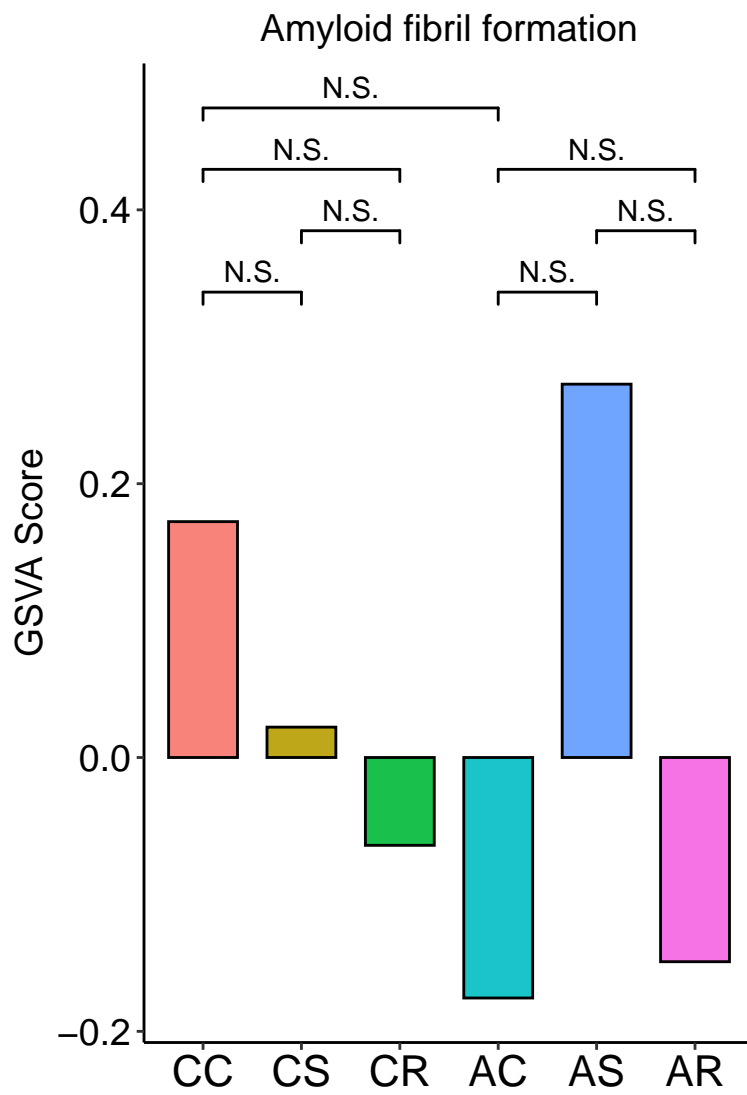
Response to amyloid beta





[1] "Processing 20 pathway"





Session information

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## Platform: aarch64-apple-darwin20
## Running under: macOS 15.4
##
## Matrix products: default
## BLAS:   /Library/Frameworks/R.framework/Versions/4.4-arm64/Resources/lib/libRblas.0.dylib
## LAPACK: /Library/Frameworks/R.framework/Versions/4.4-arm64/Resources/lib/libRlapack.dylib; LAPACK v
##
## locale:
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##
## time zone: America/New_York
## tzcode source: internal
##
## attached base packages:
## [1] parallel stats4 stats graphics grDevices utils datasets
## [8] methods base
##
## other attached packages:
## [1] GSEABase_1.66.0 graph_1.82.0
## [3] annotate_1.82.0 XML_3.99-0.18
## [5] extrafont_0.19 ggsignif_0.6.4
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## [11] edgeR_4.2.2 limma_3.60.6
## [13] GenomicFeatures_1.56.0 biomaRt_2.60.1
## [15] gprofiler2_0.2.3 RColorBrewer_1.1-3
## [17] data.table_1.17.0 org.Hs.eg.db_3.19.1
## [19] AnnotationDbi_1.66.0 clusterProfiler_4.12.6
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## [37] rtracklayer_1.64.0 GenomicRanges_1.56.2
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## [45] forcats_1.0.0 stringr_1.5.1
## [47] dplyr_1.1.4 purrr_1.0.4
## [49] readr_2.1.5 tidyr_1.3.1
## [51] tibble_3.2.1 ggplot2_3.5.2
## [53] tidyverse_2.0.0
##
## loaded via a namespace (and not attached):
## [1] SpatialExperiment_1.14.0 R.methodsS3_1.8.2
## [3] progress_1.2.3 goftest_1.2-3
## [5] HDF5Array_1.32.1 Biostrings_2.72.1
## [7] vctrs_0.6.5 spatstat.random_3.3-3
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