

Clustering Polypeptide motifs using the Hammock hidden Markov model peptide clustering

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This script clusters Polypeptide motifs using the Hammock hidden Markov model peptide clustering.

```
suppressPackageStartupMessages(library(knitr))
```

Loading samples

```
all.samples <- readRDS("data/allSamplesDataTable.RDS")
all.samples[, `:=`(Peptide, as.character(Peptide)), ]

setkey(all.samples, Group)

select.samples <- all.samples[J(c("mRNA_3000cpc_Organoid_MD101", "mRNA_30cpc_Organoid_MD114",
  "mRNA_30cpc_Str", "mRNA_3cpc_Str", "mRNA_30cpc_SN", "mRNA_30cpc_Th", "mRNA_30cpc_Ctx",
  "mRNA_3cpc_SN", "mRNA_3cpc_Th", "mRNA_3cpc_Ctx", "mRNA_30cpc_SN_4wks", "mRNA_30cpc_Th_4wks",
  "mRNA_30cpc_Ctx_4wks", "mRNA_3cpc_SN_4wks", "mRNA_3cpc_Th_4wks", "mRNA_3cpc_Ctx_4wks"))]

select.samples[, `:=`(BCcount, as.integer(mclapply(BC, function(x) length(table(strsplit(paste(t(x),
  collapse = ","), ","))), mc.cores = detectCores())))]
select.samples[Animals == "mRNA_3000cpc_Organoid_MD101", `:=`(BCcount, as.integer(BCcount/5)),
  ] # Removes unclear 3000cpc reads
select.samples <- select.samples[BCcount >= 1]
select.samples[, `:=`(Animalcount, as.integer(mclapply(Animals, function(x) length(table(strsplit(paste(t(x),
  collapse = ","), ","))), mc.cores = detectCores())))]
select.samples[, `:=`(Score, BCcount + Animalcount - 1), ]

select.samples.trsp <- unique(select.samples, by = c("Animals", "BC", "LUTnrs"))
setkey(select.samples.trsp, Sequence)

selected.peptides <- data.table(read.table("input/selectedPeptides.txt", header = TRUE,
  skip = 0, sep = "\t", stringsAsFactors = FALSE, fill = TRUE))
# Removed the first 2 serotypes selected for in vitro properties

selected.peptides <- selected.peptides[3:nrow(selected.peptides), ]
select.samples.main <- select.samples.trsp[J(selected.peptides$Sequence)]

select.samples.main[, `:=`(Group, as.character(lapply(Group, function(x) gsub("(_4wks)",
  "", x))))]
select.samples.main <- select.samples.main[, sum(Score), by = c("Sequence",
  "Group", "Peptide")]
setnames(select.samples.main, "V1", "Score")
select.samples.main <- merge(selected.peptides, select.samples.main, by = "Sequence",
  all = FALSE)
select.samples.main[, `:=`(Peptide, as.character(Peptide))]

out.table <- data.table(dcast(select.samples.main, Name + Peptide ~ Group, fun = sum,
  value.var = "Score"))
lastCount <- ncol(out.table)
out.table[, `:=`(alignment, paste("-----", Peptide, "-----",
```

```

    sep = ""))]
out.table <- transform(out.table, sum = rowSums(out.table[, 3:lastCount])) # Corrected to remove count hardcoding
out.table <- subset(out.table, select = c(1, 2, lastCount + 1, lastCount + 2,
    (3:lastCount))) # Corrected to remove count hardcoding
setnames(out.table, c("Name", "Peptide"), c("cluster_id", "sequence"))
write.table(out.table, file = "data/selectedPeptides_wOrganoids.tsv", quote = FALSE,
    sep = "\t", row.names = FALSE)

# Generate Scoring table for Weblogo Weighting
select.samples.pepMerge <- select.samples.trsp[, sum(Score), by = c("Peptide")]
setnames(select.samples.pepMerge, "V1", "Score")

# removing the selected peptides from all sequences to allow for clustering
select.samples.trsp <- select.samples.trsp[!(select.samples.trsp$Peptide %in%
    out.table$sequence), ]

fasta.names <- paste(1:nrow(select.samples.trsp), select.samples.trsp$Score,
    select.samples.trsp$Group, sep = "|")
write.fasta(as.list(select.samples.trsp$Peptide), fasta.names, "data/trspSamplesPeptidesNonSelectOrganoids.fasta",
    open = "w", nbchar = 60, as.string = TRUE)

```

Executing Hammock Clustering

```

Sys.setenv(PATH = paste("/root/HMMER/binaries", Sys.getenv("PATH"), sep = ":"),
    HHLIB = "/home/rstudio/Hammock_v_1.2.0/hhsuite-2.0.16/lib/hh/")
unlink("/home/rstudio/data/HammockSelectedOrganoids", recursive = TRUE, force = FALSE)
sys.out <- system(paste("java -jar /home/rstudio/Hammock_v_1.2.0/dist/Hammock.jar cluster -i /home/rstudio/data/selectedPeptides_wOrganoids.tsv -as
    nrow(selected.peptides), " -t ", detectCores(), sep = ""), intern = TRUE,
    ignore.stdout = TRUE)
# Alternative parameters --use_clinkage --alignment_threshold 23 --max_shift
# 13 --max_aln_length 42 --count_threshold 50 --max_inner_gaps 0
# --assign_thresholds 14.1,10.5,7.0 --assign_thresholds 15,12,10
hammock.log <- data.table(readLines("data/HammockSelectedOrganoids/run.log"))

colnames(hammock.log) <- c("Hammock log file")
knitr::kable(hammock.log, longtable = T)

```

Hammock log file

2020-11-09 21:55:59.731:

Hammock version 1.2.0 Run with -help for a brief description of command line parameters.

2020-11-09 21:55:59.866: Program started in mode "cluster".

Command-line arguments:

```

cluster -i /home/rstudio/data/selectedPeptides_wOrganoids.tsv -as
/home/rstudio/data/trspSamplesPeptidesNonSelectOrganoids.fasta -d
/home/rstudio/data/HammockSelectedOrganoids -max_shift 9 -assign_thresholds 15,12,10 -max_aln_length 42 -c
27 -t 48

```

Complete list of input/output parameters:

```

-i, -input /home/rstudio/data/selectedPeptides_wOrganoids.tsv
-d, -output_directory /home/rstudio/data/HammockSelectedOrganoids
-t, -thread 48
-l, -labels null

```

2020-11-09 21:55:59.866:

Loading clusters...

2020-11-09 21:55:59.873: Loading additional sequences...

2020-11-09 21:56:00.019: Generating input statistics...

2020-11-09 21:56:00.024: Minimal number of match states not set. Setting automatically to: 5

2020-11-09 21:56:00.041: Overlap threshold not set. Setting automatically to:

2020-11-09 21:56:00.043: 10.01,5.72,0.0

2020-11-09 21:56:00.043: Merge threshold not set. Setting automatically on the basis of average sequence length to:

2020-11-09 21:56:00.043: 14.3,12.87,11.44

2020-11-09 21:56:00.044: Initial extension threshold not set. Setting automatically on the basis of merge threshold sequence to: 15.730000000000002

Complete list of HMM-based clustering parameters:

-a, -part_threshold null

-s, -size_threshold null

-c, -count_threshold 27

-n, -assign_thresholds 15.0,12.0,10.0,

-v, -overlap_thresholds 10.01,5.72,0.0,

-r, -merge_thresholds 14.3,12.87,11.44,

-e, -relative_thresholds false

-b, -absolute_thresholds true

-h, -min_conserved_positions 5

-y, -max_gap_proportion 0.2

-k, -min_ic 1.2

-j, -max_aln_length 42

-u, -max_inner_gaps 0

-q, -extension_increase_length false

2020-11-09 21:56:00.060: Initial cluster extension...

2020-11-09 21:56:00.168:

Clustering in 3 rounds...

2020-11-09 21:56:00.169:

2020-11-09 21:56:00.169: Round 1:

2020-11-09 21:56:00.169: 27 clusters remaining

2020-11-09 21:56:00.169: Building hmms and searching database...

2020-11-09 21:56:00.879: Extending clusters...

2020-11-09 21:56:00.888: 306 sequences to be inserted into clusters

2020-11-09 21:56:00.889: 27 clusters to be extended

2020-11-09 21:56:00.991: 1 sequences rejected

2020-11-09 21:56:00.997: 2 cluster pairs to check and merge.

2020-11-09 21:56:00.997: Merging clusters from 2 groups...

2020-11-09 21:56:01.001: Building hhs...

2020-11-09 21:56:01.013: HH clustering...

2020-11-09 21:56:01.259:

2020-11-09 21:56:01.259: Round 2:

2020-11-09 21:56:01.260: 27 clusters remaining

2020-11-09 21:56:01.260: Building hmms and searching database...

2020-11-09 21:56:01.519: Extending clusters...

2020-11-09 21:56:01.531: 60 sequences to be inserted into clusters

2020-11-09 21:56:01.532: 18 clusters to be extended

2020-11-09 21:56:01.564: 1 sequences rejected

2020-11-09 21:56:01.568: 23 cluster pairs to check and merge.

Hammock log file

2020-11-09 21:56:01.568: Merging clusters from 2 groups...
2020-11-09 21:56:01.572: Buiding hhs...
2020-11-09 21:56:01.591: HH clustering...
2020-11-09 21:56:01.937:
2020-11-09 21:56:01.937: Round 3:

2020-11-09 21:56:01.938: 27 clusters remaining
2020-11-09 21:56:01.938: Building hmms and searching database...
2020-11-09 21:56:02.195: Extending clusters...
2020-11-09 21:56:02.205: 79 sequences to be inserted into clusters
2020-11-09 21:56:02.205: 17 clusters to be extended
2020-11-09 21:56:02.264: 11 sequences rejected
2020-11-09 21:56:02.267: Overlap threshold is 0. Running full cluster merging.
2020-11-09 21:56:02.271: Buiding hhs...
2020-11-09 21:56:02.288: HH clustering...
2020-11-09 21:56:02.695:
Ready. Clustering time : 2526
2020-11-09 21:56:02.695: Resulting clusers: 27
2020-11-09 21:56:02.696: Containing 459 unique sequences and 1634 total sequences.
2020-11-09 21:56:02.707: Unique sequences not assigned: 12319, total sequences not assigned: 29592
2020-11-09 21:56:02.707: Saving results to outupt files...
2020-11-09 21:56:02.795: Results in: /home/rstudio/data/HammockSelectedOrganoids/final_clusters_sequences.tsv
2020-11-09 21:56:02.795: and: /home/rstudio/data/HammockSelectedOrganoids/final_clusters.tsv
2020-11-09 21:56:02.795:
Calculating KLD...
2020-11-09 21:56:02.922: Final system KLD over match state MSA positions: 22.629620906402813
2020-11-09 21:56:02.922: Final system KLD over all MSA positions: 33.4783993799925
2020-11-09 21:56:02.922: Program successfully ended.

Generation of Weblogo visualization

```
ham.clusters <- data.table(read.table("/home/rstudio/data/HammockSelectedOrganoids/final_clusters.tsv",
  header = TRUE, skip = 0, sep = "\t", stringsAsFactors = FALSE, fill = TRUE))
id.order <- as.list(ham.clusters$cluster_id)
ham.clusters.all <- data.table(read.table("/home/rstudio/data/HammockSelectedOrganoids/final_clusters_sequences.tsv",
  header = TRUE, skip = 0, sep = "\t", stringsAsFactors = FALSE, fill = TRUE))
ham.clusters.all[, `:=`(alignment, gsub("\\-", "\\_", alignment))]
setkey(select.samples, Peptide)
setkey(select.samples.trsp, Peptide)
setkey(select.samples.pepMerge, Peptide)

unlink("/home/rstudio/data/WEBlogosSelected", recursive = TRUE, force = FALSE)
dir.create(file.path("/home/rstudio/data/", "WEBlogosSelected"), showWarnings = FALSE)
dir.create(file.path("/home/rstudio/data/HammockSelectedOrganoids/", "alignments_final_Scored"),
  showWarnings = FALSE)

setkey(ham.clusters.all, cluster_id)
setkey(ham.clusters, cluster_id)

opts_chunk$set(out.width = "100%", fig.align = "center")
generateWeblogo <- function(in.name) {
  # in.name <- ham.clusters$cluster_id[2] in.name <- 6777
```

```

this.fa <- read.fasta(file = paste("/home/rstudio/data/HamcockSelectedOrganoids/alignments_final/",
  in.name, ".aln", sep = ""))
allSeqs <- unlist(getSequence(this.fa, as.string = TRUE))
allSeqs <- data.table(unlist(lapply(allSeqs, function(x) gsub("[^A-Z]", "",
  toupper(x)))))
allSeqs.out <- select.samples.pepMerge[J(allSeqs)]
allSeqs.out$Annot <- data.table(getName(this.fa))
allSeqs.out[, `:=`(Annot, paste(Annot, "_", Score, sep = ""))]
allSeqs.out$Alignment <- data.table(toupper(unlist(getSequence(this.fa,
  as.string = TRUE))))
align.all <- strsplit(allSeqs.out$Alignment, "[A-Z]")
tail.length <- min(unlist(lapply(lapply(align.all, tail, n = 1L), nchar)))
head.length <- min(unlist(lapply(lapply(align.all, head, n = 1L), nchar)))
total.length <- max(nchar(allSeqs.out$Alignment))
allSeqs.out[, `:=`(Alignment, lapply(Alignment, function(x) substr(x, head.length +
  1, total.length - tail.length)))]
allSeqs.out <- allSeqs.out[rep(1:N, Score)][, `:=`(Indx, 1:N), by = Peptide]
allSeqs.out[, `:=`(Annot, paste(Annot, "_", Indx, sep = ""))]

write.fasta(as.list(allSeqs.out$Alignment), allSeqs.out$Annot, nbchar = 60,
  paste("/home/rstudio/data/HamcockSelectedOrganoids/alignments_final_Scored/",
    in.name, ".aln", sep = ""), open = "w")

this.main <- ham.clusters[J(in.name)]
main.gene <- select.samples[J(this.main$main_sequence)]$GeneName[1]
this.title <- paste("## Peptide ", this.main$main_sequence, " from ", main.gene,
  " used in serotype AAV-MNMO", in.name, sep = "")
tmp <- system(paste("weblog --format PDF --sequence-type protein --size large --stacks-per-line 48 --err",
  this.title, "' < /home/rstudio/data/HamcockSelectedOrganoids/alignments_final_Scored/",
  in.name, ".aln > /home/rstudio/data/WEBLogosSelected/", in.name, ".pdf",
  sep = ""), intern = TRUE, ignore.stdout = FALSE)

cat("\n")
cat(this.title, "\n")
cat("\n")
cat("\n")
cat(paste0("![Peptide: ", this.main$main_sequence, " from ", main.gene,
  " with cluster number ", in.name, "](/home/rstudio/data/WEBLogosSelected/",
  in.name, ".pdf)"))
cat("\n")
out.table <- knitr::kable(this.main[, c(1:9)], format = "latex")
print(column_spec(out.table, 1:9, monospace = TRUE) %>% kable_styling(latex_options = c("striped",
  "scale_down", "repeat_header"))
cat("\n")
this.cluster <- ham.clusters.all[J(in.name)]
align.all <- strsplit(this.cluster$alignment, "[A-Z]")
tail.length <- min(unlist(lapply(lapply(align.all, tail, n = 1L), nchar)))
head.length <- min(unlist(lapply(lapply(align.all, head, n = 1L), nchar)))
total.length <- max(nchar(this.cluster$alignment))
this.cluster[, `:=`(alignment, lapply(alignment, function(x) substr(x, head.length +
  1, total.length - tail.length)))]

out.table <- knitr::kable(this.cluster[, c(1:7)], format = "latex")
print(column_spec(out.table, 1:7, monospace = TRUE) %>% kable_styling(latex_options = c("striped",
  "scale_down", "repeat_header"))

this.found <- select.samples[J(this.cluster$sequence)]
setnames(this.cluster, "sequence", "Peptide")

```

```

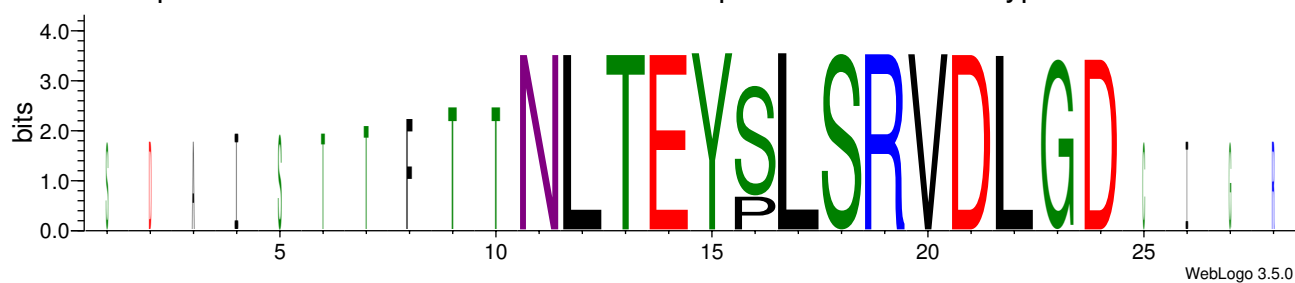
this.found <- merge(this.found, this.cluster[, 2:3], by = "Peptide", all = FALSE)
cat("\n")
cat("\n")
output.order <- c("alignment", "LUTnrs", "GeneName", "start", "structure",
  "Group", "Score")
if (nrow(this.found) >= 48) {
  this.found.p1 <- this.found[1:47, ]
  out.table <- knitr::kable(this.found.p1[, ..output.order], format = "latex")
  print(column_spec(out.table, 1, monospace = TRUE) %>% kable_styling(latex_options = c("striped",
    "scale_down", "repeat_header"))))
  cat("\n")
  cat("\n\n\\pagebreak\n")
  cat("\n\n\\clearpage\n")
  this.found <- this.found[48:nrow(this.found), ]
  if (nrow(this.found) >= 48) {
    this.found.p2 <- this.found[1:47, ]
    out.table <- knitr::kable(this.found.p2[, ..output.order], format = "latex")
    print(column_spec(out.table, 1, monospace = TRUE) %>% kable_styling(latex_options = c("striped",
      "scale_down", "repeat_header"))))
    cat("\n")
    cat("\n\n\\pagebreak\n")
    cat("\n\n\\clearpage\n")
    this.found <- this.found[48:nrow(this.found), ]
  }
  if (nrow(this.found) >= 48) {
    this.found.p2 <- this.found[1:47, ]
    out.table <- knitr::kable(this.found.p2[, ..output.order], format = "latex")
    print(column_spec(out.table, 1, monospace = TRUE) %>% kable_styling(latex_options = c("striped",
      "scale_down", "repeat_header"))))
    cat("\n")
    cat("\n\n\\pagebreak\n")
    cat("\n\n\\clearpage\n")
    this.found <- this.found[48:nrow(this.found), ]
  }
  out.table <- knitr::kable(this.found[, ..output.order], format = "latex")
  print(column_spec(out.table, 1, monospace = TRUE) %>% kable_styling(latex_options = c("striped",
    "scale_down", "repeat_header"))))
  cat("\n")
  cat("\n\n\\clearpage\n")
  cat("\n")
} else {
  out.table <- knitr::kable(this.found[, ..output.order], format = "latex")
  print(column_spec(out.table, 1, monospace = TRUE) %>% kable_styling(latex_options = c("striped",
    "scale_down", "repeat_header"))))
  cat("\n")
  cat("\n\n\\pagebreak\n")
  cat("\n\n\\clearpage\n")
}
}

id.order <- id.order[order(sapply(id.order, "[[", 1))]] #Comment out if you wish to have it sorted by total s
invisible(lapply(id.order, generateWeblogo))

```

Peptide NLTEYSLSRVDLGD from HSV-1-pUL27 used in serotype AAV-MNM03

Peptide NLTEYSLSRVDLGD from HSV-1-pUL27 used in serotype AAV-MNM03



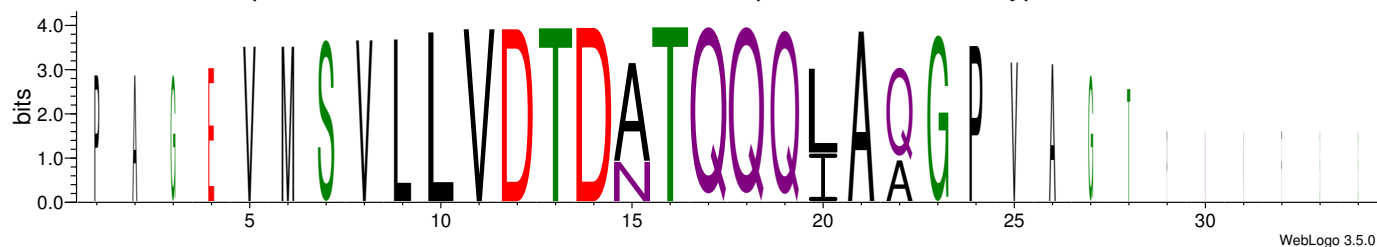
cluster_id	main_sequence	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str	mRNA_30cpc_Ctx	mRNA_30cpc_Th	mRNA_30cpc_SN
3	NLTEYSLSRVDLGD	34	7	3	3	5	5	4

cluster_id	sequence	alignment	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str
3	NLTEYSLSRVDLGD	-----NLTEYSLSRVDLGD-----	23	4	3	2
3	YLSRVDLGDCIGR	-----YLSRVDLGDCIGR-----	2	0	0	0
3	SDAISTTFTTNLT EYPLSRVDL	SDAISTTFTTNLT EYPLSRVDL-----	2	0	0	0
3	NLTEYPLSRVDLGD	-----NLTEYPLSRVDLGD-----	2	0	0	0
3	TTNLTEYSLSRVDL	-----TTNLTEYSLSRVDL-----	1	0	0	0
3	TTNLTEYPLSRVDL	-----TTNLTEYPLSRVDL-----	1	1	0	0
3	TFTTNLT EYPLSRV	-----TFTTNLT EYPLSRV-----	1	1	0	0
3	ISTTFTTNLT EYPL	---ISTTFTTNLT EYPL-----	1	0	0	1
3	FTTNLT EYPLSRVD	-----FTTNLT EYPLSRVD-----	1	1	0	0

alignment	LUThrs	GeneName	start	structure	Group	Score
_____FTTNLTEYPLSRVD_____	X74592	HSV-1-pUL27	395	14aa	mRNA_30cpc_Str	1
_____FTTNLTEYPLSRVD_____	X74592	HSV-2-pUL27	390	14aa	mRNA_30cpc_Str	1
___ISTTFTTNLTEYPL_____	X14756	HSV-1-pUL27	391	14aa	mRNA_3cpc_Str	1
___ISTTFTTNLTEYPL_____	X14756	HSV-2-pUL27	386	14aa	mRNA_3cpc_Str	1
_____NLTEYPLSRVDLGD_____	X1575	HSV-1-pUL27	398	14aa	mRNA_3000cpc_Organoid_MD101	1
_____NLTEYPLSRVDLGD_____	X1575	HSV-2-pUL27	393	14aa	mRNA_3000cpc_Organoid_MD101	1
_____NLTEYPLSRVDLGD_____	X1575	HSV-1-pUL27	398	14aa	mRNA_30cpc_Organoid_MD114	1
_____NLTEYPLSRVDLGD_____	X1575	HSV-2-pUL27	393	14aa	mRNA_30cpc_Organoid_MD114	1
_____NLTEYSLSRVDLGD_____	X1574	HSV-1-pUL27	398	14aa	mRNA_30cpc_Str	4
_____NLTEYSLSRVDLGD_____	X1574	HSV-2-pUL27	393	14aa	mRNA_30cpc_Str	4
_____NLTEYSLSRVDLGD_____	X1574	HSV-1-pUL27	398	14aa	mRNA_3cpc_Str	2
_____NLTEYSLSRVDLGD_____	X1574	HSV-2-pUL27	393	14aa	mRNA_3cpc_Str	2
_____NLTEYSLSRVDLGD_____	X1574	HSV-1-pUL27	398	14aa	mRNA_30cpc_SN	4
_____NLTEYSLSRVDLGD_____	X1574	HSV-2-pUL27	393	14aa	mRNA_30cpc_SN	4
_____NLTEYSLSRVDLGD_____	X1574	HSV-1-pUL27	398	14aa	mRNA_30cpc_Th	4
_____NLTEYSLSRVDLGD_____	X1574	HSV-2-pUL27	393	14aa	mRNA_30cpc_Th	4
_____NLTEYSLSRVDLGD_____	X1574	HSV-1-pUL27	398	14aa	mRNA_30cpc_Ctx	4
_____NLTEYSLSRVDLGD_____	X1574	HSV-2-pUL27	393	14aa	mRNA_30cpc_Ctx	4
_____NLTEYSLSRVDLGD_____	X1574	HSV-1-pUL27	398	14aa	mRNA_3cpc_SN	1
_____NLTEYSLSRVDLGD_____	X1574	HSV-2-pUL27	393	14aa	mRNA_3cpc_SN	1
_____NLTEYSLSRVDLGD_____	X1574	HSV-1-pUL27	398	14aa	mRNA_3cpc_Th	3
_____NLTEYSLSRVDLGD_____	X1574	HSV-2-pUL27	393	14aa	mRNA_3cpc_Th	3
_____NLTEYSLSRVDLGD_____	X1574	HSV-1-pUL27	398	14aa	mRNA_3cpc_Ctx	1
_____NLTEYSLSRVDLGD_____	X1574	HSV-2-pUL27	393	14aa	mRNA_3cpc_Ctx	1
SDAISTTFTTNLTEYPLSRVDL_____	X12537	HSV-1-pUL27	388	22aa	mRNA_3000cpc_Organoid_MD101	1
SDAISTTFTTNLTEYPLSRVDL_____	X12537	HSV-2-pUL27	383	22aa	mRNA_3000cpc_Organoid_MD101	1
SDAISTTFTTNLTEYPLSRVDL_____	X12537	HSV-1-pUL27	388	22aa	mRNA_30cpc_Organoid_MD114	1
SDAISTTFTTNLTEYPLSRVDL_____	X12537	HSV-2-pUL27	383	22aa	mRNA_30cpc_Organoid_MD114	1
_____TFTTNLTEYPLSRV_____	X79061	HSV-1-pUL27	394	14aaG4S	mRNA_30cpc_Str	1
_____TFTTNLTEYPLSRV_____	X79061	HSV-2-pUL27	389	14aaG4S	mRNA_30cpc_Str	1
_____TTNLTEYPLSRVDL_____	X5886	HSV-1-pUL27	396	14aa	mRNA_30cpc_Str	1
_____TTNLTEYPLSRVDL_____	X5886	HSV-2-pUL27	391	14aa	mRNA_30cpc_Str	1
_____TTNLTEYSLSRVDL_____	X5884	HSV-1-pUL27	396	14aa	mRNA_3000cpc_Organoid_MD101	1
_____TTNLTEYSLSRVDL_____	X5884	HSV-2-pUL27	391	14aa	mRNA_3000cpc_Organoid_MD101	1
_____YLSRVDLGDICIGR_____	X90770	HSV-1-pUL27	402	14aaG4S	mRNA_30cpc_Th	1
_____YLSRVDLGDICIGR_____	X90770	HSV-2-pUL27	397	14aaG4S	mRNA_30cpc_Th	1
_____YLSRVDLGDICIGR_____	X90770	HSV-1-pUL27	402	14aaG4S	mRNA_30cpc_Ctx	1
_____YLSRVDLGDICIGR_____	X90770	HSV-2-pUL27	397	14aaG4S	mRNA_30cpc_Ctx	1

Peptide VMSVLLVDTDATQQ from HSV-1-pUL22 used in serotype AAV-MNM04

Peptide VMSVLLVDTDATQQ from HSV-1-pUL22 used in serotype AAV-MNM04



cluster_id	main_sequence	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str	mRNA_30cpc_Ctx	mRNA_30cpc_Th	mRNA_30cpc_SN
4	VMSVLLVDTDATQQ	93	32	7	8	14	14	11

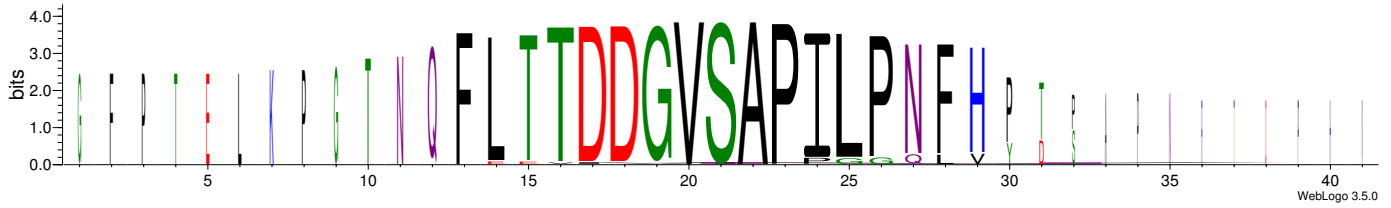
cluster_id	sequence	alignment	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str
4	VMSVLLVDTDATQQ	___VMSVLLVDTDATQQ_____	17	1	2	2
4	LVDTDATQQQLAAG	_____LVDTDATQQQLAAG_____	14	5	1	1
4	VDTDATQQQLAAGP	_____VDTDATQQQLAAGP_____	12	4	1	1
4	PAGEVMSVLLVDTDNTQQQIAA	PAGEVMSVLLVDTDNTQQQIAA_____	9	2	1	1
4	LVDTDNTQQQIAAG	_____LVDTDNTQQQIAAG_____	7	4	1	1
4	SVLLVDTDNTQQQI	_____SVLLVDTDNTQQQI_____	6	0	0	1
4	TDATQQQLAAGPVA	_____TDATQQQLAAGPVA_____	5	5	0	0
4	SVLLVDTDATQQQLAAGPVAGT	_____SVLLVDTDATQQQLAAGPVAGT_____	4	4	0	0
4	DATQQQLAAGPVAG	_____DATQQQLAAGPVAG_____	4	2	0	0
4	VDTDNTQQQIAAGP	_____VDTDNTQQQIAAGP_____	3	1	0	0
4	PAGEVMSVLLVDTDATQQQLAQ	PAGEVMSVLLVDTDATQQQLAQ_____	3	2	0	0
4	ATQQQLAAGPVAGT	_____ATQQQLAAGPVAGT_____	3	0	1	1
4	LLVDTDNTQQQIAA	_____LLVDTDNTQQQIAA_____	2	2	0	0
4	EVMSVLLVDTDATQ	___EVMSVLLVDTDATQ_____	2	0	0	0
4	TDATQQQLAAGPVAGTPNVFSS	_____TDATQQQLAAGPVAGTPNVFSS_____	1	0	0	0
4	EVMSVLLVDTDATQQQLAAGPV	___EVMSVLLVDTDATQQQLAAGPV_____	1	0	0	0

alignment	LUThrs	GeneName	start	structure	Group	Score
-----ATQQQLAQGPVAGT-----	X40235	HSV-2-pUL22	753	14aa	mRNA_30cpc_Organoid_MD114	1
-----ATQQQLAQGPVAGT-----	X40235	HSV-2-pUL22	753	14aa	mRNA_3cpc_Str	1
-----ATQQQLAQGPVAGT-----	X40235	HSV-2-pUL22	753	14aa	mRNA_3cpc_Th	1
-----DATQQQLAQGPVAG-----	X35790	HSV-2-pUL22	752	14aa	mRNA_3000cpc_Organoid_MD101	2
-----DATQQQLAQGPVAG-----	X35790	HSV-2-pUL22	752	14aa	mRNA_30cpc_Str	2
___EVMSVLLVDTDATQ_____	X86719	HSV-1-pUL22	742	14aaG4S	mRNA_30cpc_Th	1
___EVMSVLLVDTDATQ_____	X86719	HSV-2-pUL22	742	14aaG4S	mRNA_30cpc_Th	1
___EVMSVLLVDTDATQ_____	X86719	HSV-1-pUL22	742	14aaG4S	mRNA_30cpc_SN_4wks	1
___EVMSVLLVDTDATQ_____	X86719	HSV-2-pUL22	742	14aaG4S	mRNA_30cpc_SN_4wks	1
___EVMSVLLVDTDATQQQQLAQGPV_____	X39265	HSV-2-pUL22	742	22aa	mRNA_30cpc_Th_4wks	1
-----LLVDTDNNTQQQIAA-----	X31166	HSV-1-pUL22	747	14aa	mRNA_30cpc_Str	2
-----LVDTDATQQQLAQG-----	X32962	HSV-2-pUL22	748	14aa	mRNA_30cpc_Str	3
-----LVDTDATQQQLAQG-----	X53822	HSV-2-pUL22	748	14aaA5	mRNA_30cpc_Str	2
-----LVDTDATQQQLAQG-----	X53822	HSV-2-pUL22	748	14aaA5	mRNA_3cpc_Str	1
-----LVDTDATQQQLAQG-----	X53822	HSV-2-pUL22	748	14aaA5	mRNA_30cpc_SN	2
-----LVDTDATQQQLAQG-----	X53822	HSV-2-pUL22	748	14aaA5	mRNA_30cpc_Th	2
-----LVDTDATQQQLAQG-----	X53822	HSV-2-pUL22	748	14aaA5	mRNA_30cpc_Ctx	2
-----LVDTDATQQQLAQG-----	X53822	HSV-2-pUL22	748	14aaA5	mRNA_3cpc_Th	1
-----LVDTDATQQQLAQG-----	X53822	HSV-2-pUL22	748	14aaA5	mRNA_30cpc_SN_4wks	1
-----LVDTDNNTQQQIAAG-----	X32960	HSV-1-pUL22	748	14aa	mRNA_30cpc_Str	3
-----LVDTDNNTQQQIAAG-----	X53821	HSV-1-pUL22	748	14aaA5	mRNA_30cpc_Str	1
-----LVDTDNNTQQQIAAG-----	X32960	HSV-1-pUL22	748	14aa	mRNA_3cpc_Str	1
-----LVDTDNNTQQQIAAG-----	X32960	HSV-1-pUL22	748	14aa	mRNA_30cpc_Th	1
-----LVDTDNNTQQQIAAG-----	X32960	HSV-1-pUL22	748	14aa	mRNA_3cpc_Th	1
PAGEVMSVLLVDTDATQQQLAQ-----	X23669	HSV-2-pUL22	739	22aa	mRNA_30cpc_Str	2
PAGEVMSVLLVDTDATQQQLAQ-----	X23669	HSV-2-pUL22	739	22aa	mRNA_30cpc_Ctx	1
PAGEVMSVLLVDTDNNTQQQIAA-----	X23667	HSV-1-pUL22	739	22aa	mRNA_30cpc_Str	2
PAGEVMSVLLVDTDNNTQQQIAA-----	X23667	HSV-2-pUL22	739	22aa	mRNA_30cpc_Str	2
PAGEVMSVLLVDTDNNTQQQIAA-----	X23667	HSV-1-pUL22	739	22aa	mRNA_3cpc_Str	1
PAGEVMSVLLVDTDNNTQQQIAA-----	X23667	HSV-2-pUL22	739	22aa	mRNA_3cpc_Str	1
PAGEVMSVLLVDTDNNTQQQIAA-----	X23667	HSV-1-pUL22	739	22aa	mRNA_30cpc_SN	1
PAGEVMSVLLVDTDNNTQQQIAA-----	X23667	HSV-2-pUL22	739	22aa	mRNA_30cpc_SN	1
PAGEVMSVLLVDTDNNTQQQIAA-----	X23667	HSV-1-pUL22	739	22aa	mRNA_30cpc_Th	2
PAGEVMSVLLVDTDNNTQQQIAA-----	X23667	HSV-2-pUL22	739	22aa	mRNA_30cpc_Th	2
PAGEVMSVLLVDTDNNTQQQIAA-----	X23667	HSV-1-pUL22	739	22aa	mRNA_30cpc_Ctx	2
PAGEVMSVLLVDTDNNTQQQIAA-----	X23667	HSV-2-pUL22	739	22aa	mRNA_30cpc_Ctx	2
PAGEVMSVLLVDTDNNTQQQIAA-----	X23667	HSV-1-pUL22	739	22aa	mRNA_3cpc_Th	1
PAGEVMSVLLVDTDNNTQQQIAA-----	X23667	HSV-2-pUL22	739	22aa	mRNA_3cpc_Th	1
-----SVLLVDTDATQQQLAQGPVAGT-----	X13580	HSV-2-pUL22	745	22aa	mRNA_30cpc_Str	4
-----SVLLVDTDNNTQQQI-----	X13577	HSV-1-pUL22	745	14aa	mRNA_3cpc_Str	1
-----SVLLVDTDNNTQQQI-----	X13577	HSV-2-pUL22	745	14aa	mRNA_3cpc_Str	1
-----SVLLVDTDNNTQQQI-----	X13577	HSV-1-pUL22	745	14aa	mRNA_30cpc_SN	1
-----SVLLVDTDNNTQQQI-----	X13577	HSV-2-pUL22	745	14aa	mRNA_30cpc_SN	1
-----SVLLVDTDNNTQQQI-----	X13577	HSV-1-pUL22	745	14aa	mRNA_30cpc_Th	2
-----SVLLVDTDNNTQQQI-----	X13577	HSV-2-pUL22	745	14aa	mRNA_30cpc_Th	2
-----SVLLVDTDNNTQQQI-----	X13577	HSV-1-pUL22	745	14aa	mRNA_30cpc_Ctx	2
-----SVLLVDTDNNTQQQI-----	X13577	HSV-2-pUL22	745	14aa	mRNA_30cpc_Ctx	2

alignment	LUThrs	GeneName	start	structure	Group	Score
-----TDATQQQLAQGPVA-----	X8152	HSV-2-pUL22	751	14aa	mRNA_30cpc_Str	5
-----TDATQQQLAQGPVAGTPNVFSS-----	X8153	HSV-2-pUL22	751	22aa	mRNA_3000cpc_Organoid_MD101	1
-----VDTDATQQQLAQGP-----	X68061	HSV-2-pUL22	749	14aa	mRNA_30cpc_Str	4
-----VDTDATQQQLAQGP-----	X68061	HSV-2-pUL22	749	14aa	mRNA_3cpc_Str	1
-----VDTDATQQQLAQGP-----	X68061	HSV-2-pUL22	749	14aa	mRNA_30cpc_SN	2
-----VDTDATQQQLAQGP-----	X68061	HSV-2-pUL22	749	14aa	mRNA_30cpc_Th	2
-----VDTDATQQQLAQGP-----	X68061	HSV-2-pUL22	749	14aa	mRNA_30cpc_Ctx	2
-----VDTDATQQQLAQGP-----	X68061	HSV-2-pUL22	749	14aa	mRNA_3cpc_Th	1
-----VDTDNTQQQIAAGP-----	X68060	HSV-1-pUL22	749	14aa	mRNA_30cpc_Str	1
-----VDTDNTQQQIAAGP-----	X68060	HSV-1-pUL22	749	14aa	mRNA_30cpc_SN	1
-----VDTDNTQQQIAAGP-----	X68060	HSV-1-pUL22	749	14aa	mRNA_30cpc_Ctx	1
-----VMSVLLVDTDATQQ-----	X66790	HSV-1-pUL22	743	14aa	mRNA_30cpc_Str	1
-----VMSVLLVDTDATQQ-----	X66790	HSV-2-pUL22	743	14aa	mRNA_30cpc_Str	1
-----VMSVLLVDTDATQQ-----	X66790	HSV-1-pUL22	743	14aa	mRNA_3cpc_Str	2
-----VMSVLLVDTDATQQ-----	X66790	HSV-2-pUL22	743	14aa	mRNA_3cpc_Str	2
-----VMSVLLVDTDATQQ-----	X66790	HSV-1-pUL22	743	14aa	mRNA_30cpc_SN	4
-----VMSVLLVDTDATQQ-----	X66790	HSV-2-pUL22	743	14aa	mRNA_30cpc_SN	4
-----VMSVLLVDTDATQQ-----	X66790	HSV-1-pUL22	743	14aa	mRNA_30cpc_Th	4
-----VMSVLLVDTDATQQ-----	X66790	HSV-2-pUL22	743	14aa	mRNA_30cpc_Th	4
-----VMSVLLVDTDATQQ-----	X66790	HSV-1-pUL22	743	14aa	mRNA_30cpc_Ctx	4
-----VMSVLLVDTDATQQ-----	X66790	HSV-2-pUL22	743	14aa	mRNA_30cpc_Ctx	4
-----VMSVLLVDTDATQQ-----	X66790	HSV-1-pUL22	743	14aa	mRNA_3cpc_Th	2
-----VMSVLLVDTDATQQ-----	X66790	HSV-2-pUL22	743	14aa	mRNA_3cpc_Th	2

Peptide TDDGVSAPILPNFH from EV71-VP3 used in serotype AAV-MNM05

Peptide TDDGVSAPILPNFH from EV71-VP3 used in serotype AAV-MNM05



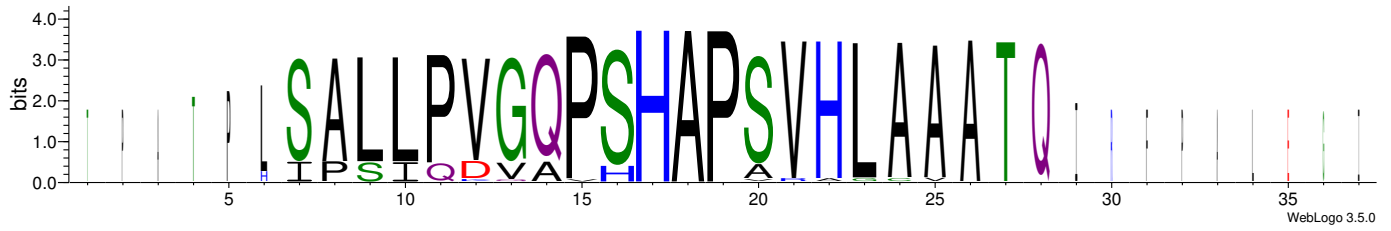
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5	TDDGVSAPILPNFH	65	37	4	4	6	7	3

cluster_id	sequence	alignment	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str
5	TDDGVSAPILPNFH	-----TDDGVSAPILPNFH-----	19	7	1	0
5	FLTTDDGVSAPILP	-----FLTTDDGVSAPILP-----	15	5	3	4
5	GFPTTELKPGTNQFLTTDDGVS	GFPTTELKPGTNQFLTTDDGVS	7	5	0	0
5	QFLTTDDGVSAPIL	-----QFLTTDDGVSAPIL-----	6	6	0	0
5	TTDDGVSAPILPNF	-----TTDDGVSAPILPNF-----	3	3	0	0
5	TNQFLTDDGVSAPILPNFHPT	-----TNQFLTDDGVSAPILPNFHPT-----	3	1	0	0
5	GVSAPILPNFHPT	-----GVSAPILPNFHPT-----	3	2	0	0
5	VSAPPGGQLVYDSAPNRTDPHV	-----VSAPPGGQLVYDSAPNRTDPHV-----	2	1	0	0
5	DDGVSAPILPNFHP	-----DDGVSAPILPNFHP-----	2	2	0	0
5	NQFLTDDGVSAPI	-----NQFLTDDGVSAPI-----	1	1	0	0
5	KPGTNQFLTDDGVSAPILPNF	-----KPGTNQFLTDDGVSAPILPNF-----	1	1	0	0
5	GTNQLTTDDGVS	-----GTNQLTTDDGVS-----	1	1	0	0
5	EEVMNVNSAPPGGQLVYDSAPN	-----EEVMNVNSAPPGGQLVYDSAPN-----	1	1	0	0
5	DGVSAPILPNFHPT	-----DGVSAPILPNFHPT-----	1	1	0	0

alignment	LUThrs	GeneName	start	structure	Group	Score
-----DDGVSAPILPNFHP-----	X35605	EV71-VP3	17	14aa	mRNA_30cpc_Str	2
-----DGVSAPILPNFHPT-----	X36171	EV71-VP3	18	14aa	mRNA_30cpc_Str	1
-----EEVMNVNSAPPGGQLVYDSAPN-----	X38670	HSV-2-pUL44	145	22aa	mRNA_30cpc_Str	1
-----FLTTDDGVSAPILP-----	X75357	EV71-VP3	13	14aa	mRNA_3000cpc_Organoid_MD101	1
-----FLTTDDGVSAPILP-----	X75357	EV71-VP3	13	14aa	mRNA_30cpc_Str	5
-----FLTTDDGVSAPILP-----	X75357	EV71-VP3	13	14aa	mRNA_3cpc_Str	4
-----FLTTDDGVSAPILP-----	X75357	EV71-VP3	13	14aa	mRNA_30cpc_Ctx	1
-----FLTTDDGVSAPILP-----	X75357	EV71-VP3	13	14aa	mRNA_3cpc_Th	3
-----FLTTDDGVSAPILP-----	X75357	EV71-VP3	13	14aa	mRNA_3cpc_SN_4wks	1
GFPTTELKPGTNQFLTTDDGVS	X65483	EV71-VP3	1	22aa	mRNA_30cpc_Str	5
GFPTTELKPGTNQFLTTDDGVS	X65483	EV71-VP3	1	22aa	mRNA_30cpc_Th	1
GFPTTELKPGTNQFLTTDDGVS	X65483	EV71-VP3	1	22aa	mRNA_30cpc_Ctx	1
-----GTNQLTTDDGVS-----	X61458	EV71-VP3	9	14aa	mRNA_30cpc_Str	1
-----GVSAPILPNFHPT-----	X64798	EV71-VP3	19	14aa	mRNA_30cpc_Str	2
-----GVSAPILPNFHPT-----	X64798	EV71-VP3	19	14aa	mRNA_30cpc_Th	1
-----KPGTNQFLTDDGVSAPILPNF-----	X4012	EV71-VP3	7	22aa	mRNA_30cpc_Str	1
-----NQFLTDDGVSAPI-----	X1204	EV71-VP3	11	14aa	mRNA_30cpc_Str	1
-----QFLTTDDGVSAPIL-----	X20430	EV71-VP3	12	14aa	mRNA_30cpc_Str	6
-----TDDGVSAPILPNFH-----	X47355	EV71-VP3	16	14aaA5	mRNA_30cpc_Organoid_MD114	2
-----TDDGVSAPILPNFH-----	X8142	EV71-VP3	16	14aa	mRNA_30cpc_Str	2
-----TDDGVSAPILPNFH-----	X47355	EV71-VP3	16	14aaA5	mRNA_30cpc_Str	5
-----TDDGVSAPILPNFH-----	X47355	EV71-VP3	16	14aaA5	mRNA_30cpc_SN	2
-----TDDGVSAPILPNFH-----	X8142	EV71-VP3	16	14aa	mRNA_30cpc_Th	1
-----TDDGVSAPILPNFH-----	X47355	EV71-VP3	16	14aaA5	mRNA_30cpc_Th	3
-----TDDGVSAPILPNFH-----	X47355	EV71-VP3	16	14aaA5	mRNA_30cpc_Ctx	3
-----TDDGVSAPILPNFH-----	X47355	EV71-VP3	16	14aaA5	mRNA_3cpc_Th	1
-----TNQFLTDDGVSAPILPNFHPT-----	X5571	EV71-VP3	10	22aa	mRNA_30cpc_Str	1
-----TNQFLTDDGVSAPILPNFHPT-----	X5571	EV71-VP3	10	22aa	mRNA_30cpc_Th	1
-----TNQFLTDDGVSAPILPNFHPT-----	X5571	EV71-VP3	10	22aa	mRNA_30cpc_Ctx	1
-----TTDDGVSAPILPNF-----	X6088	EV71-VP3	15	14aa	mRNA_30cpc_Str	3
-----VSAPPGGQLVYDSAPNRTDPHV-----	X66473	HSV-1-pUL44	182	22aa	mRNA_30cpc_Str	1
-----VSAPPGGQLVYDSAPNRTDPHV-----	X66473	HSV-2-pUL44	151	22aa	mRNA_30cpc_Str	1
-----VSAPPGGQLVYDSAPNRTDPHV-----	X66473	HSV-1-pUL44	182	22aa	mRNA_30cpc_SN	1
-----VSAPPGGQLVYDSAPNRTDPHV-----	X66473	HSV-2-pUL44	151	22aa	mRNA_30cpc_SN	1

Peptide SALLPVGQPSHAPSVHLAAATQ from HSV-1-pUL37 used in serotype AAV-MNM06

Peptide SALLPVGQPSHAPSVHLAAATQ from HSV-1-pUL37 used in serotype AAV-MNM06



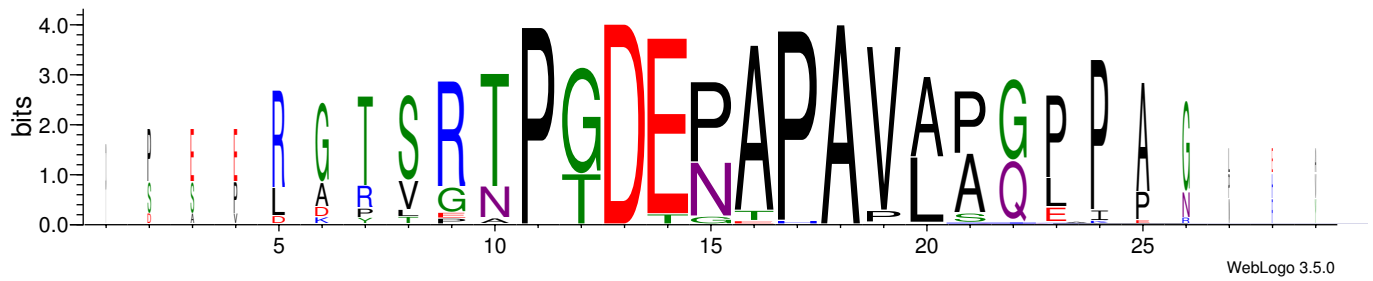
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6	SALLPVGQPSHAPSVHLAAATQ	48	20	4	3	4	3	2

cluster_id	sequence	alignment	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str
6	SALLPVGQPSHAPSVHLAAATQ	-----SALLPVGQPSHAPSVHLAAATQ-----	22	4	4	3
6	IPSIQDVAPHHAPA	-----IPSIQDVAPHHAPA-----	5	4	0	0
6	PVGQPSHAPSVHLA	-----PVGQPSHAPSVHLA-----	3	1	0	0
6	LSALLPVGQPSHAP	-----LSALLPVGQPSHAP-----	3	3	0	0
6	TPATPLSALLPVGQPSHAPSVH	TPATPLSALLPVGQPSHAPSVH-----	2	1	0	0
6	SHAPSVHLAAATQIRFPALEGI	-----SHAPSVHLAAATQIRFPALEGI-----	2	0	0	0
6	GQPSHAPSVHLAAA	-----GQPSHAPSVHLAAA-----	2	1	0	0
6	TPLSALLPVGQPSHAPSVHLAA	___TPLSALLPVGQPSHAPSVHLAA-----	1	1	0	0
6	TPLSALLPVGQPSH	___TPLSALLPVGQPSH-----	1	1	0	0
6	SHAPSVHLAAATQI	-----SHAPSVHLAAATQI-----	1	1	0	0
6	QPSHAPSVHLAAAT	-----QPSHAPSVHLAAAT-----	1	0	0	0
6	PSHAPSVHLAAATQ	-----PSHAPSVHLAAATQ-----	1	0	0	0
6	PLSALLPVGQPSHA	___PLSALLPVGQPSHA-----	1	0	0	0
6	LLPVGQPSHAPSVH	-----LLPVGQPSHAPSVH-----	1	1	0	0
6	KQAVSHAPVRAGCV	-----KQAVSHAPVRAGCV-----	1	1	0	0
6	HIPSIQDVAPHHAP	___HIPSIQDVAPHHAP-----	1	1	0	0

alignment	LUThrs	GeneName	start	structure	Group	Score
-----GQPSHAPSVHLAAA-----	X88609	HSV-1-pUL37	586	14aaG4S	mRNA_30cpc_Str	1
-----GQPSHAPSVHLAAA-----	X88609	HSV-1-pUL37	586	14aaG4S	mRNA_30cpc_SN_4wks	1
___HIPSIQDVAPHHAP___	X17276	HSV-2-pUS6	320	14aa	mRNA_30cpc_Str	1
___IPSIQDVAPHHAPA___	X15359	HSV-2-pUS6	321	14aa	mRNA_3000cpc_Organoid_MD101	1
___IPSIQDVAPHHAPA___	X15359	HSV-2-pUS6	321	14aa	mRNA_30cpc_Str	4
-----KQAVSHAPVRAGCV-----	X3903	HSV-2-pUL1	137	14aa	mRNA_30cpc_Str	1
-----LLPVGQPSHAPSVH-----	X30920	HSV-1-pUL37	582	14aa	mRNA_30cpc_Str	1
-----LSALLPVGQPSHAP-----	X29378	HSV-1-pUL37	579	14aa	mRNA_30cpc_Str	3
___PLSALLPVGQPSHA___	X22598	HSV-1-pUL37	578	14aa	mRNA_30cpc_Organoid_MD114	1
-----PSHAPSVHLAAATQ-----	X21171	HSV-1-pUL37	588	14aa	mRNA_30cpc_Organoid_MD114	1
-----PVGQPSHAPSVHLA-----	X24308	HSV-1-pUL37	584	14aa	mRNA_3000cpc_Organoid_MD101	1
-----PVGQPSHAPSVHLA-----	X24308	HSV-1-pUL37	584	14aa	mRNA_30cpc_Organoid_MD114	1
-----PVGQPSHAPSVHLA-----	X24308	HSV-1-pUL37	584	14aa	mRNA_30cpc_Str	1
-----QPSHAPSVHLAAAT-----	X19194	HSV-1-pUL37	587	14aa	mRNA_3cpc_Th_4wks	1
-----SALLPVGQPSHAPSVHLAAATQ-----	X12949	HSV-1-pUL37	580	22aa	mRNA_30cpc_Str	4
-----SALLPVGQPSHAPSVHLAAATQ-----	X12949	HSV-1-pUL37	580	22aa	mRNA_3cpc_Str	3
-----SALLPVGQPSHAPSVHLAAATQ-----	X12949	HSV-1-pUL37	580	22aa	mRNA_30cpc_SN	2
-----SALLPVGQPSHAPSVHLAAATQ-----	X12949	HSV-1-pUL37	580	22aa	mRNA_30cpc_Th	2
-----SALLPVGQPSHAPSVHLAAATQ-----	X12949	HSV-1-pUL37	580	22aa	mRNA_30cpc_Ctx	2
-----SALLPVGQPSHAPSVHLAAATQ-----	X12949	HSV-1-pUL37	580	22aa	mRNA_3cpc_SN	2
-----SALLPVGQPSHAPSVHLAAATQ-----	X12949	HSV-1-pUL37	580	22aa	mRNA_3cpc_Th	4
-----SALLPVGQPSHAPSVHLAAATQ-----	X12949	HSV-1-pUL37	580	22aa	mRNA_3cpc_Ctx	3
-----SHAPSVHLAAATQI-----	X48212	HSV-1-pUL37	589	14aaA5	mRNA_30cpc_Str	1
-----SHAPSVHLAAATQIRFPALEGI-----	X11302	HSV-1-pUL37	589	22aa	mRNA_30cpc_Th	1
-----SHAPSVHLAAATQIRFPALEGI-----	X11302	HSV-1-pUL37	589	22aa	mRNA_30cpc_Ctx	1
TPATPLSALLPVGQPSHAPSVH-----	X7369	HSV-1-pUL37	574	22aa	mRNA_30cpc_Str	1
TPATPLSALLPVGQPSHAPSVH-----	X7369	HSV-1-pUL37	574	22aa	mRNA_30cpc_Ctx	1
___TPLSALLPVGQPSH___	X78436	HSV-1-pUL37	577	14aaG4S	mRNA_30cpc_Str	1
___TPLSALLPVGQPSHAPSVHLAA-----	X7312	HSV-1-pUL37	577	22aa	mRNA_30cpc_Str	1

Peptide RTPGDEPAPAVAAQ from BV-G used in serotype AAV-MNM07

Peptide RTPGDEPAPAVAAQ from BV-G used in serotype AAV-MNM07



cluster_id	main_sequence	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str	mRNA_30cpc_Ctx	mRNA_30cpc_Th	mRNA_30cpc_SN
7	RTPGDEPAPAVAAQ	109	52	16	16	7	3	4

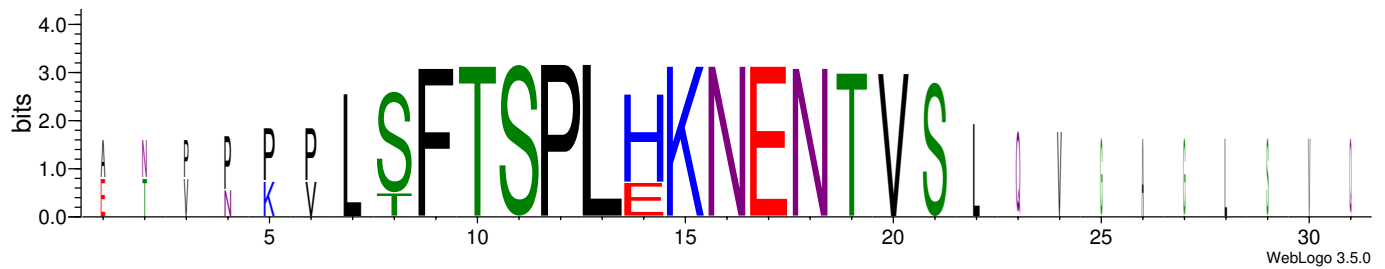
cluster_id	sequence	alignment	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str
7	RTPGDEPAPAVAAQ	_____RTPGDEPAPAVAAQ_____	19	0	7	6
7	TDENAPAVLPGPPA	_____TDENAPAVLPGPPA_____	13	6	2	3
7	RGTSRTPGDEPAPA	____RGTSRTPGDEPAPA_____	13	0	5	5
7	LARVGNPTDENAPAVLPGPPAG	____LARVGNPTDENAPAVLPGPPAG____	7	5	0	0
7	SRTPGDEPAPAVAA	_____SRTPGDEPAPAVAA_____	6	4	0	0
7	DENAPAVLPGPPAG	_____DENAPAVLPGPPAG_____	6	4	1	0
7	TSRTPGDEPAPAVA	_____TSRTPGDEPAPAVA_____	5	4	0	0
7	VGNPTDENAPAVLP	_____VGNPTDENAPAVLP_____	4	4	0	0
7	PTDENAPAVLPGPP	_____PTDENAPAVLPGPP_____	4	3	0	0
7	PGDEPAPAVAAQLP	_____PGDEPAPAVAAQLP_____	4	4	0	0
7	PEERGTSRTPGDEP	____PEERGTSRTPGDEP_____	4	2	0	0
7	SSPRDPTPAPGDTGTPAPASGE	____SSPRDPTPAPGDTGTPAPASGE____	3	0	1	2
7	RGTSRTPGDEPAPAVAAQLPPN	____RGTSRTPGDEPAPAVAAQLPPN____	3	1	0	0
7	PGDTGTPAPASGEI	_____PGDTGTPAPASGEI_____	3	2	0	0
7	NPTDENAPAVLPGP	_____NPTDENAPAVLPGP_____	3	3	0	0
7	GDEPAPAVAAQLPP	_____GDEPAPAVAAQLPP_____	3	3	0	0
7	GTSRTPGDEPAPAV	____GTSRTPGDEPAPAV_____	2	2	0	0
7	VGNPTDENAPAVLPGPPAGPRY	____VGNPTDENAPAVLPGPPAGPRY____	1	1	0	0
7	SRTPGDEPAPAVAAQLPPNWHV	____SRTPGDEPAPAVAAQLPPNWHV____	1	0	0	0
7	PEERGTSRTPGDEPAPAVAAQL	____PEERGTSRTPGDEPAPAVAAQL____	1	1	0	0
7	PDAVDKYLETPGDE	PDAVDKYLETPGDE_____	1	1	0	0
7	LETPGDENEHAHFQKAKERLEA	____LETPGDENEHAHFQKAKERLEA____	1	1	0	0
7	GNPTDENAPAVLPG	_____GNPTDENAPAVLPG_____	1	0	0	0
7	DKYLETPGDENEHA	____DKYLETPGDENEHA_____	1	1	0	0

alignment	LUThrs	GeneName	start	structure	Group	Score
_____DENAPAVLPGPPAG_____	X35636	HSV-2-pUL22	303	14aa	mRNA_30cpc_Str	4
_____DENAPAVLPGPPAG_____	X35636	HSV-2-pUL22	303	14aa	mRNA_30cpc_SN	1
_____DENAPAVLPGPPAG_____	X35636	HSV-2-pUL22	303	14aa	mRNA_3cpc_Th	1
____DKYLETPGDENEHA_____	X54076	APP	376	14aaA5	mRNA_30cpc_Str	1
_____GDEPAPAVAAQLPP_____	X63646	BV-G	305	14aa	mRNA_30cpc_Str	3
_____GNPTDENAPAVLPG_____	X61125	HSV-2-pUL22	299	14aa	mRNA_3000cpc_Organoid_MD101	1
_____GTSRTPGDEPAPAV_____	X61508	BV-G	299	14aa	mRNA_30cpc_Str	2
_____LARVGNPTDENAPAVLPGPPAG_____	X31974	HSV-2-pUL22	295	22aa	mRNA_3000cpc_Organoid_MD101	1
_____LARVGNPTDENAPAVLPGPPAG_____	X31974	HSV-2-pUL22	295	22aa	mRNA_30cpc_Str	5
_____LARVGNPTDENAPAVLPGPPAG_____	X31974	HSV-2-pUL22	295	22aa	mRNA_30cpc_Ctx	1
_____LETPGDENEHAHFQKAKERLEA_____	X31514	APP	379	22aa	mRNA_30cpc_Str	1
_____NPTDENAPAVLPGP_____	X1239	HSV-2-pUL22	300	14aa	mRNA_30cpc_Str	3
PDAVDKYLETPGDE_____	X23014	APP	372	14aa	mRNA_30cpc_Str	1
____PEERGTSRTPGDEP_____	X23187	BV-G	295	14aa	mRNA_30cpc_Str	2
____PEERGTSRTPGDEP_____	X23187	BV-G	295	14aa	mRNA_30cpc_SN	1
____PEERGTSRTPGDEP_____	X23187	BV-G	295	14aa	mRNA_30cpc_Ctx	1
____PEERGTSRTPGDEPAPAVAAQL_____	X23188	BV-G	295	22aa	mRNA_30cpc_Str	1
_____PGDEPAPAVAAQLP_____	X23927	BV-G	304	14aa	mRNA_30cpc_Str	3
_____PGDEPAPAVAAQLP_____	X82712	BV-G	304	14aaG4S	mRNA_30cpc_Str	1
_____PGDTGTPAPASGEI_____	X23917	HSV-2-pUS7	226	14aa	mRNA_30cpc_Str	1
_____PGDTGTPAPASGEI_____	X51419	HSV-2-pUS7	226	14aaA5	mRNA_30cpc_Str	1
_____PGDTGTPAPASGEI_____	X82709	HSV-2-pUS7	226	14aaG4S	mRNA_30cpc_Th_4wks	1
_____PTDENAPAVLPGPP_____	X50697	HSV-2-pUL22	301	14aaA5	mRNA_30cpc_Str	3
_____PTDENAPAVLPGPP_____	X50697	HSV-2-pUL22	301	14aaA5	mRNA_30cpc_Ctx	1
_____RGTSRTPGDEPAPA_____	X27393	BV-G	298	14aa	mRNA_3cpc_Str	1
_____RGTSRTPGDEPAPA_____	X83630	BV-G	298	14aaG4S	mRNA_3cpc_Str	4
_____RGTSRTPGDEPAPA_____	X83630	BV-G	298	14aaG4S	mRNA_30cpc_Th	1
_____RGTSRTPGDEPAPA_____	X83630	BV-G	298	14aaG4S	mRNA_30cpc_Ctx	1
_____RGTSRTPGDEPAPA_____	X27393	BV-G	298	14aa	mRNA_3cpc_Th	1
_____RGTSRTPGDEPAPA_____	X83630	BV-G	298	14aaG4S	mRNA_3cpc_Th	4
_____RGTSRTPGDEPAPA_____	X83630	BV-G	298	14aaG4S	mRNA_3cpc_Ctx	1
_____RGTSRTPGDEPAPAVAAQLPPN_____	X27394	BV-G	298	22aa	mRNA_30cpc_Str	1
_____RGTSRTPGDEPAPAVAAQLPPN_____	X27394	BV-G	298	22aa	mRNA_30cpc_Th	1
_____RGTSRTPGDEPAPAVAAQLPPN_____	X27394	BV-G	298	22aa	mRNA_30cpc_Ctx	1
_____RTPGDEPAPAVAAQ_____	X25013	BV-G	302	14aa	mRNA_3cpc_Str	6
_____RTPGDEPAPAVAAQ_____	X25013	BV-G	302	14aa	mRNA_30cpc_SN	1
_____RTPGDEPAPAVAAQ_____	X25013	BV-G	302	14aa	mRNA_30cpc_Th	1
_____RTPGDEPAPAVAAQ_____	X25013	BV-G	302	14aa	mRNA_30cpc_Ctx	1
_____RTPGDEPAPAVAAQ_____	X25013	BV-G	302	14aa	mRNA_3cpc_SN	2
_____RTPGDEPAPAVAAQ_____	X25013	BV-G	302	14aa	mRNA_3cpc_Th	6
_____RTPGDEPAPAVAAQ_____	X25013	BV-G	302	14aa	mRNA_3cpc_Ctx	1
_____RTPGDEPAPAVAAQ_____	X25013	BV-G	302	14aa	mRNA_3cpc_Th_4wks	1
_____SRTPGDEPAPAVAA_____	X11807	BV-G	301	14aa	mRNA_3000cpc_Organoid_MD101	1
_____SRTPGDEPAPAVAA_____	X11807	BV-G	301	14aa	mRNA_30cpc_Str	4
_____SRTPGDEPAPAVAA_____	X79635	BV-G	301	14aaG4S	mRNA_3cpc_Th_4wks	1
_____SRTPGDEPAPAVAAQLPPNWHV_____	X11806	BV-G	301	22aa	mRNA_3000cpc_Organoid_MD101	1
____SSPRDPTAPGDTGTPAPASGE_____	X10717	HSV-2-pUS7	217	22aa	mRNA_3cpc_Str	2

alignment	LUThrs	GeneName	start	structure	Group	Score
SSPRDPTPAPGDTGTPAPASGE-----	X10717	HSV-2-pUS7	217	22aa	mRNA_3cpc_Th	1
-----TDENAPAVLPGPPA_-----	X8143	HSV-2-pUL22	302	14aa	mRNA_30cpc_Str	6
-----TDENAPAVLPGPPA_-----	X8143	HSV-2-pUL22	302	14aa	mRNA_3cpc_Str	3
-----TDENAPAVLPGPPA_-----	X8143	HSV-2-pUL22	302	14aa	mRNA_30cpc_SN	1
-----TDENAPAVLPGPPA_-----	X8143	HSV-2-pUL22	302	14aa	mRNA_3cpc_SN	1
-----TDENAPAVLPGPPA_-----	X8143	HSV-2-pUL22	302	14aa	mRNA_3cpc_Th	2
-----TSRTPGDEPAPAVA_-----	X6345	BV-G	300	14aa	mRNA_30cpc_Str	4
-----TSRTPGDEPAPAVA_-----	X6345	BV-G	300	14aa	mRNA_30cpc_Ctx	1
-----VGNPTDENAPAVLP_-----	X68904	HSV-2-pUL22	298	14aa	mRNA_30cpc_Str	1
-----VGNPTDENAPAVLP_-----	X59043	HSV-2-pUL22	298	14aaA5	mRNA_30cpc_Str	3
-----VGNPTDENAPAVLPGPPAGPRY	X68905	HSV-2-pUL22	298	22aa	mRNA_30cpc_Str	1

Peptide SFTSPLHKNENTVS from CAV-2-F-SH01 used in serotype AAV-MNM08

Peptide SFTSPLHKNENTVS from CAV-2-F-SH01 used in serotype AAV-MNM08



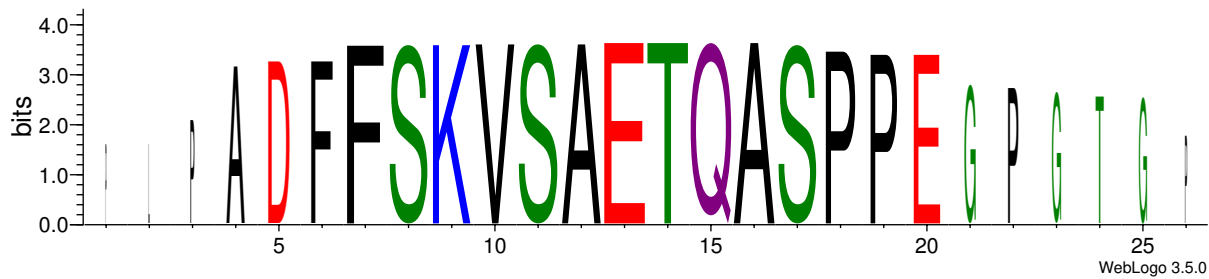
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8	SFTSPLHKNENTVS	18	7	1	5	0	1	1

cluster_id	sequence	alignment	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str
8	SFTSPLHKNENTVS	-----SFTSPLHKNENTVS-----	8	0	1	5
8	LSFTSPLHKNENTV	-----LSFTSPLHKNENTV-----	3	1	0	0
8	TSPLEKNENTVSLQVGAGLSVQ	-----TSPLEKNENTVSLQVGAGLSVQ	1	1	0	0
8	SPLEKNENTVSLQV	-----SPLEKNENTVSLQV-----	1	0	0	0
8	PPPLTFTSPLEKNE	___PPPLTFTSPLEKNE_____	1	1	0	0
8	PPLTFTSPLEKNEN	___PPLTFTSPLEKNEN_____	1	1	0	0
8	KVLSFTSPLHKNEN	___KVLSFTSPLHKNEN_____	1	1	0	0
8	ENVNKVLSFTSPLH	ENVNKVLSFTSPLH_____	1	1	0	0
8	ATPPPPLTFTSPLEKNENTVSL	ATPPPPLTFTSPLEKNENTVSL_-----	1	1	0	0

alignment	LUThrs	GeneName	start	structure	Group	Score
ATPPPPLTFTSPLEKNENTVSL_-----	X40264	CAV-2-F-SH01	238	22aa	mRNA_30cpc_Str	1
ATPPPPLTFTSPLEKNENTVSL_-----	X40264	CAV-2-F-Toronto-A26-61	238	22aa	mRNA_30cpc_Str	1
ENVNKVLSFTSPLH_-----	X54829	CAV-2-F-SH01	94	14aaA5	mRNA_30cpc_Str	1
ENVNKVLSFTSPLH_-----	X54829	CAV-2-F-Toronto-A26-61	94	14aaA5	mRNA_30cpc_Str	1
___KVLSFTSPLHKNEN_-----	X5098	CAV-2-F-SH01	98	14aa	mRNA_30cpc_Str	1
___KVLSFTSPLHKNEN_-----	X5098	CAV-2-F-Toronto-A26-61	98	14aa	mRNA_30cpc_Str	1
-----LSFTSPLHKNENTV_-----	X84185	CAV-2-F-SH01	100	14aaG4S	mRNA_30cpc_Str	1
-----LSFTSPLHKNENTV_-----	X84185	CAV-2-F-Toronto-A26-61	100	14aaG4S	mRNA_30cpc_Str	1
-----LSFTSPLHKNENTV_-----	X29479	CAV-2-F-SH01	100	14aa	mRNA_30cpc_SN	1
-----LSFTSPLHKNENTV_-----	X29479	CAV-2-F-Toronto-A26-61	100	14aa	mRNA_30cpc_SN	1
-----LSFTSPLHKNENTV_-----	X29479	CAV-2-F-SH01	100	14aa	mRNA_30cpc_Th	1
-----LSFTSPLHKNENTV_-----	X29479	CAV-2-F-Toronto-A26-61	100	14aa	mRNA_30cpc_Th	1
___PPLTFTSPLEKNEN_-----	X22060	CAV-2-F-SH01	242	14aa	mRNA_30cpc_Str	1
___PPLTFTSPLEKNEN_-----	X22060	CAV-2-F-Toronto-A26-61	242	14aa	mRNA_30cpc_Str	1
___PPPLTFTSPLEKNE_-----	X82229	CAV-2-F-SH01	241	14aaG4S	mRNA_30cpc_Str	1
___PPPLTFTSPLEKNE_-----	X82229	CAV-2-F-Toronto-A26-61	241	14aaG4S	mRNA_30cpc_Str	1
-----SFTSPLHKNENTVS_-----	X14027	CAV-2-F-SH01	101	14aa	mRNA_3cpc_Str	5
-----SFTSPLHKNENTVS_-----	X14027	CAV-2-F-Toronto-A26-61	101	14aa	mRNA_3cpc_Str	5
-----SFTSPLHKNENTVS_-----	X14027	CAV-2-F-SH01	101	14aa	mRNA_3cpc_SN	2
-----SFTSPLHKNENTVS_-----	X14027	CAV-2-F-Toronto-A26-61	101	14aa	mRNA_3cpc_SN	2
-----SFTSPLHKNENTVS_-----	X14027	CAV-2-F-SH01	101	14aa	mRNA_3cpc_Th	1
-----SFTSPLHKNENTVS_-----	X14027	CAV-2-F-Toronto-A26-61	101	14aa	mRNA_3cpc_Th	1
-----SPLEKNENTVSLQV_-----	X11647	CAV-2-F-SH01	248	14aa	mRNA_30cpc_Organoid_MD114	1
-----SPLEKNENTVSLQV_-----	X11647	CAV-2-F-Toronto-A26-61	248	14aa	mRNA_30cpc_Organoid_MD114	1
-----TSPLEKNENTVSLQVGAGLSVQ	X6338	CAV-2-F-SH01	247	22aa	mRNA_30cpc_Str	1
-----TSPLEKNENTVSLQVGAGLSVQ	X6338	CAV-2-F-Toronto-A26-61	247	22aa	mRNA_30cpc_Str	1

Peptide FSKVSAETQASPPE from Tau used in serotype AAV-MNM09

Peptide FSKVSAETQASPPE from Tau used in serotype AAV-MNM09



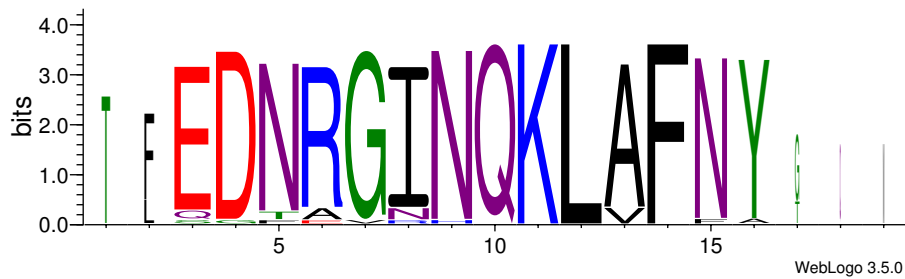
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9	FSKVSAETQASPPE	40	16	4	5	2	5	2

cluster_id	sequence	alignment	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str
9	FSKVSAETQASPPE	_____FSKVSAETQASPPE_____	15	3	3	4
9	ADFFSKVSAETQAS	___ADFFSKVSAETQAS_____	8	1	1	1
9	ADFFSKVSAETQASPPEGPGTG	___ADFFSKVSAETQASPPEGPGTG_	6	4	0	0
9	PADFFSKVSAETQA	___PADFFSKVSAETQA_____	3	3	0	0
9	DFFSKVSAETQASP	___DFFSKVSAETQASP_____	3	3	0	0
9	ETQASPPEGPGTGP	_____ETQASPPEGPGTGP	2	1	0	0
9	VSAETQASPPEGPG	_____VSAETQASPPEGPG___	1	1	0	0
9	SKVSAETQASPPEG	_____SKVSAETQASPPEG___	1	0	0	0
9	PLPADFFSKVSAETQASPPEGP	PLPADFFSKVSAETQASPPEGP_	1	0	0	0

alignment	LUTnrs	GeneName	start	structure	Group	Score
___ADFFSKVSAETQAS_____	X43096	Tau	265	14aa	mRNA_3000cpc_Organoid_MD101	1
___ADFFSKVSAETQAS_____	X56423	Tau	265	14aaA5	mRNA_30cpc_Str	1
___ADFFSKVSAETQAS_____	X43096	Tau	265	14aa	mRNA_3cpc_Str	1
___ADFFSKVSAETQAS_____	X43096	Tau	265	14aa	mRNA_30cpc_SN	1
___ADFFSKVSAETQAS_____	X43096	Tau	265	14aa	mRNA_30cpc_Th	1
___ADFFSKVSAETQAS_____	X43096	Tau	265	14aa	mRNA_30cpc_Ctx	2
___ADFFSKVSAETQAS_____	X43096	Tau	265	14aa	mRNA_3cpc_Th	1
___ADFFSKVSAETQASPPEGPGTG_	X43095	Tau	265	22aa	mRNA_30cpc_Str	4
___ADFFSKVSAETQASPPEGPGTG_	X43095	Tau	265	22aa	mRNA_30cpc_Th	1
___ADFFSKVSAETQASPPEGPGTG_	X43095	Tau	265	22aa	mRNA_30cpc_Th_4wks	1
___DFFSKVSAETQASP_____	X36735	Tau	266	14aa	mRNA_30cpc_Str	3
___ETQASPPEGPGTGP_____	X54884	Tau	274	14aaA5	mRNA_30cpc_Str	1
___ETQASPPEGPGTGP_____	X54884	Tau	274	14aaA5	mRNA_30cpc_Th	1
___FSKVSAETQASPPE_____	X74747	Tau	268	14aa	mRNA_30cpc_Str	3
___FSKVSAETQASPPE_____	X74747	Tau	268	14aa	mRNA_3cpc_Str	4
___FSKVSAETQASPPE_____	X74747	Tau	268	14aa	mRNA_30cpc_SN	1
___FSKVSAETQASPPE_____	X74747	Tau	268	14aa	mRNA_30cpc_Th	2
___FSKVSAETQASPPE_____	X74747	Tau	268	14aa	mRNA_3cpc_SN	1
___FSKVSAETQASPPE_____	X74747	Tau	268	14aa	mRNA_3cpc_Th	3
___FSKVSAETQASPPE_____	X74747	Tau	268	14aa	mRNA_3cpc_Ctx	1
___PADFFSKVSAETQA_____	X23574	Tau	264	14aa	mRNA_30cpc_Str	3
PLPADFFSKVSAETQASPPEGP_	X22668	Tau	262	22aa	mRNA_30cpc_Organoid_MD114	1
___SKVSAETQASPPEG_____	X10176	Tau	269	14aa	mRNA_3000cpc_Organoid_MD101	1
___VSAETQASPPEGPG_____	X66482	Tau	271	14aa	mRNA_30cpc_Str	1

Peptide EDNRGINQKLAFFNY from BoNT-E-Hc used in serotype AAV-MNM010

ide EDNRGINQKLAFFNY from BoNT-E-Hc used in serotype AAV-lv



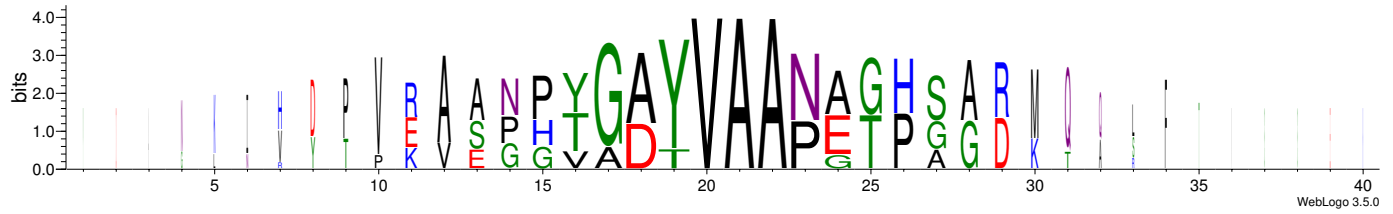
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10	EDNRGINQKLAFFNY	38	7	7	6	3	3	3

cluster_id	sequence	alignment	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str
10	EDNRGINQKLAFFNY	__EDNRGINQKLAFFNY__	24	3	4	4
10	TFEDNRGINQKLAF	TFEDNRGINQKLAF_____	7	1	2	1
10	DNRGINQKLAFFNYG	___DNRGINQKLAFFNYG__	3	0	1	1
10	TLQDTAGNNQKLVF	TLQDTAGNNQKLVF_____	1	1	0	0
10	SGFEVRHQKLVFFA	__SGFEVRHQKLVFFA__	1	0	0	0
10	LQDTAGNNQKLVFN	_LQDTAGNNQKLVFN_____	1	1	0	0
10	AGNNQKLVFNFTQM	_____AGNNQKLVFNFTQM	1	1	0	0

alignment	LUThrs	GeneName	start	structure	Group	Score
_____AGNNQKLVFNFTQM	X87922	BoNT-F-Hc	124	14aaG4S	mRNA_30cpc_Str	1
___DNRGINQKLAFFNYG__	X33773	BoNT-E-Hc	185	14aa	mRNA_3cpc_Str	1
___DNRGINQKLAFFNYG__	X33773	BoNT-E-Hc	185	14aa	mRNA_3cpc_Th	1
___DNRGINQKLAFFNYG__	X33773	BoNT-E-Hc	185	14aa	mRNA_3cpc_Ctx	1
__EDNRGINQKLAFFNY__	X38325	BoNT-E-Hc	184	14aa	mRNA_30cpc_Str	2
__EDNRGINQKLAFFNY__	X86476	BoNT-E-Hc	184	14aaG4S	mRNA_30cpc_Str	1
__EDNRGINQKLAFFNY__	X38325	BoNT-E-Hc	184	14aa	mRNA_3cpc_Str	4
__EDNRGINQKLAFFNY__	X38325	BoNT-E-Hc	184	14aa	mRNA_30cpc_SN	3
__EDNRGINQKLAFFNY__	X38325	BoNT-E-Hc	184	14aa	mRNA_30cpc_Th	3
__EDNRGINQKLAFFNY__	X38325	BoNT-E-Hc	184	14aa	mRNA_30cpc_Ctx	3
__EDNRGINQKLAFFNY__	X38325	BoNT-E-Hc	184	14aa	mRNA_3cpc_SN	2
__EDNRGINQKLAFFNY__	X38325	BoNT-E-Hc	184	14aa	mRNA_3cpc_Th	4
__EDNRGINQKLAFFNY__	X38325	BoNT-E-Hc	184	14aa	mRNA_3cpc_Ctx	2
_LQDTAGNNQKLVFN_____	X30035	BoNT-F-Hc	120	14aa	mRNA_30cpc_Str	1
__SGFEVRHQKLVFFA__	X13412	APP	679	14aa	mRNA_30cpc_Organoid_MD114	1
TFEDNRGINQKLAF_____	X9739	BoNT-E-Hc	182	14aa	mRNA_30cpc_Str	1
TFEDNRGINQKLAF_____	X9739	BoNT-E-Hc	182	14aa	mRNA_3cpc_Str	1
TFEDNRGINQKLAF_____	X9739	BoNT-E-Hc	182	14aa	mRNA_3cpc_SN	1
TFEDNRGINQKLAF_____	X9739	BoNT-E-Hc	182	14aa	mRNA_3cpc_Th	2
TFEDNRGINQKLAF_____	X9739	BoNT-E-Hc	182	14aa	mRNA_3cpc_Ctx	2
TLQDTAGNNQKLVF_____	X7801	BoNT-F-Hc	119	14aa	mRNA_30cpc_Str	1

Peptide TGDYVAANETHSGR from TBEV-E-4387-B7 used in serotype AAV-MNM011

Peptide TGDYVAANETHSGR from TBEV-E-4387-B7 used in serotype AAV-MNM011



cluster_id	main_sequence	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str	mRNA_30cpc_Ctx	mRNA_30cpc_Th	mRNA_30cpc_SN
11	TGDYVAANETHSGR	98	62	5	7	5	6	2

cluster_id	sequence	alignment	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str
11	TGDYVAANETHSGR	_____TGDYVAANETHSGR_____	16	4	3	5
11	RASGGVAATVAANG	_____RASGGVAATVAANG_____	12	7	0	0
11	YGAYVAAPAGPGAD	_____YGAYVAAPAGPGAD_____	5	4	0	0
11	PYGAYVAAPAGPGA	_____PYGAYVAAPAGPGA_____	5	5	0	0
11	PHTGDYVAANETHS	_____PHTGDYVAANETHS_____	5	5	0	0
11	AYVAAPAGPAADMQ	_____AYVAAPAGPAADMQ_____	5	4	0	0
11	AANPYGAYVAAPAG	_____AANPYGAYVAAPAG_____	5	1	1	1
11	VKVEPHTGDYVAAN	_____VKVEPHTGDYVAAN_____	4	3	0	0
11	HDPVEAANPYGAYV	_____HDPVEAANPYGAYV_____	4	2	0	1
11	GDYVAANETHSGRK	_____GDYVAANETHSGRK_____	4	1	0	0
11	PRASGGVAATVAAN	_____PRASGGVAATVAAN_____	3	3	0	0
11	AYVAAPAGPGADMQ	_____AYVAAPAGPGADMQ_____	3	3	0	0
11	ANPYGAYVAAPAGPAADMQQLF	_____ANPYGAYVAAPAGPAADMQQLF_____	3	3	0	0
11	VEAANPYGAYVAAPAGPGADMQ	_____VEAANPYGAYVAAPAGPGADMQ_____	2	2	0	0
11	PYGAYVAAPAGPAA	_____PYGAYVAAPAGPAA_____	2	1	0	0
11	NKIVYTVKVEPHTGDYVAANET	_____NKIVYTVKVEPHTGDYVAANET_____	2	1	1	0
11	HDPVEAANPYGAYVAAPAGPGA	_____HDPVEAANPYGAYVAAPAGPGA_____	2	0	0	0
11	DPVEAANPYGAYVA	_____DPVEAANPYGAYVA_____	2	1	0	0
11	YVAAPAGPAADMQQ	_____YVAAPAGPAADMQQ_____	1	1	0	0
11	YVAANETHSGRKTAFTVSSEK	_____YVAANETHSGRKTAFTVSSEK_____	1	1	0	0
11	YVAANETHSGRKTA	_____YVAANETHSGRKTA_____	1	1	0	0
11	YDANKIVYTVKVEPHTGDYVAA	YDANKIVYTVKVEPHTGDYVAA_____	1	1	0	0
11	VYTVKVEPHTGDYV	_____VYTVKVEPHTGDYV_____	1	1	0	0
11	VEPHTGDYVAANET	_____VEPHTGDYVAANET_____	1	1	0	0
11	PVEAANPYGAYVAA	_____PVEAANPYGAYVAA_____	1	1	0	0
11	PHTGDYVAANETHSGRKTAFT	_____PHTGDYVAANETHSGRKTAFT_____	1	1	0	0
11	KIVYTVKVEPHTGDYVAANETH	_____KIVYTVKVEPHTGDYVAANETH_____	1	1	0	0
11	HTGDYVAANETHSG	_____HTGDYVAANETHSG_____	1	1	0	0
11	GLNRDPVEAANPYGAYVAAPAG	_____GLNRDPVEAANPYGAYVAAPAG_____	1	0	0	0
11	GAYVAAPAGPAADM	_____GAYVAAPAGPAADM_____	1	1	0	0
11	EAAANPYGAYVAAPA	_____EAAANPYGAYVAAPA_____	1	0	0	0
11	ANPYGAYVAAPAGPGADMQR	_____ANPYGAYVAAPAGPGADMQR_____	1	1	0	0

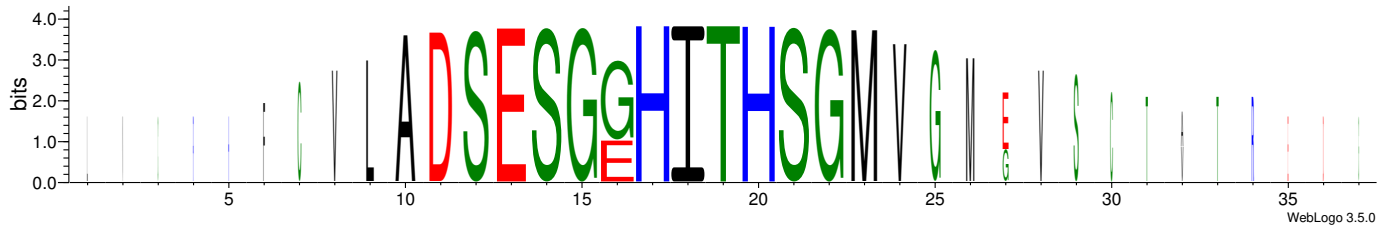
alignment	LUThrs	GeneName	start	structure	Group	Score
-----AANPYGAYVAAPAG-----	X43370	HSV-1-pUL19	483	14aa	mRNA_3000cpc_Organoid_MD101	1
-----AANPYGAYVAAPAG-----	X43370	HSV-2-pUL19	483	14aa	mRNA_3000cpc_Organoid_MD101	1
-----AANPYGAYVAAPAG-----	X43370	HSV-1-pUL19	483	14aa	mRNA_30cpc_Str	1
-----AANPYGAYVAAPAG-----	X43370	HSV-2-pUL19	483	14aa	mRNA_30cpc_Str	1
-----AANPYGAYVAAPAG-----	X43370	HSV-1-pUL19	483	14aa	mRNA_3cpc_Str	1
-----AANPYGAYVAAPAG-----	X43370	HSV-2-pUL19	483	14aa	mRNA_3cpc_Str	1
-----AANPYGAYVAAPAG-----	X43370	HSV-1-pUL19	483	14aa	mRNA_3cpc_Th	1
-----AANPYGAYVAAPAG-----	X43370	HSV-2-pUL19	483	14aa	mRNA_3cpc_Th	1
-----AANPYGAYVAAPAG-----	X43370	HSV-1-pUL19	483	14aa	mRNA_3cpc_Th_4wks	1
-----AANPYGAYVAAPAG-----	X43370	HSV-2-pUL19	483	14aa	mRNA_3cpc_Th_4wks	1
-----ANPYGAYVAAPAGPAADMQQLF-----	X39859	HSV-1-pUL19	484	22aa	mRNA_30cpc_Str	3
-----ANPYGAYVAAPAGPAADMQQLF-----	X39859	HSV-2-pUL19	484	22aa	mRNA_30cpc_Str	3
-----ANPYGAYVAAPAGPGADMQQRF-----	X39860	HSV-1-pUL19	484	22aa	mRNA_30cpc_Str	1
-----ANPYGAYVAAPAGPGADMQQRF-----	X39860	HSV-2-pUL19	484	22aa	mRNA_30cpc_Str	1
-----AYVAAPAGPAADM-----	X44864	HSV-1-pUL19	489	14aa	mRNA_30cpc_Organoid_MD114	1
-----AYVAAPAGPAADM-----	X44864	HSV-2-pUL19	489	14aa	mRNA_30cpc_Organoid_MD114	1
-----AYVAAPAGPAADM-----	X44864	HSV-1-pUL19	489	14aa	mRNA_30cpc_Str	4
-----AYVAAPAGPAADM-----	X44864	HSV-2-pUL19	489	14aa	mRNA_30cpc_Str	4
-----AYVAAPAGPGADM-----	X44865	HSV-1-pUL19	489	14aa	mRNA_30cpc_Str	3
-----AYVAAPAGPGADM-----	X44865	HSV-2-pUL19	489	14aa	mRNA_30cpc_Str	3
-----DPVEAANPYGAYVA-----	X35018	HSV-1-pUL19	479	14aa	mRNA_30cpc_Str	1
-----DPVEAANPYGAYVA-----	X35018	HSV-2-pUL19	479	14aa	mRNA_30cpc_Str	1
-----DPVEAANPYGAYVA-----	X35018	HSV-1-pUL19	479	14aa	mRNA_30cpc_Th	1
-----DPVEAANPYGAYVA-----	X35018	HSV-2-pUL19	479	14aa	mRNA_30cpc_Th	1
-----EAANPYGAYVAAPA-----	X38905	HSV-1-pUL19	482	14aa	mRNA_30cpc_Th_4wks	1
-----EAANPYGAYVAAPA-----	X38905	HSV-2-pUL19	482	14aa	mRNA_30cpc_Th_4wks	1
-----GAYVAAPAGPAADM-----	X64347	HSV-1-pUL19	488	14aa	mRNA_30cpc_Str	1
-----GAYVAAPAGPAADM-----	X64347	HSV-2-pUL19	488	14aa	mRNA_30cpc_Str	1
-----GDYVAANETHSGRK-----	X88953	TBEV-E-4387-B7	148	14aaG4S	mRNA_30cpc_Organoid_MD114	1
-----GDYVAANETHSGRK-----	X88953	TBEV-E-80	148	14aaG4S	mRNA_30cpc_Organoid_MD114	1
-----GDYVAANETHSGRK-----	X88953	TBEV-E-Simo-9	104	14aaG4S	mRNA_30cpc_Organoid_MD114	1
-----GDYVAANETHSGRK-----	X88953	TBEV-E-4387-B7	148	14aaG4S	mRNA_30cpc_Str	1
-----GDYVAANETHSGRK-----	X88953	TBEV-E-80	148	14aaG4S	mRNA_30cpc_Str	1
-----GDYVAANETHSGRK-----	X88953	TBEV-E-Simo-9	104	14aaG4S	mRNA_30cpc_Str	1
-----GDYVAANETHSGRK-----	X88953	TBEV-E-4387-B7	148	14aaG4S	mRNA_30cpc_Th	1
-----GDYVAANETHSGRK-----	X88953	TBEV-E-80	148	14aaG4S	mRNA_30cpc_Th	1
-----GDYVAANETHSGRK-----	X88953	TBEV-E-Simo-9	104	14aaG4S	mRNA_30cpc_Th	1
-----GDYVAANETHSGRK-----	X88953	TBEV-E-4387-B7	148	14aaG4S	mRNA_30cpc_Ctx	1
-----GDYVAANETHSGRK-----	X88953	TBEV-E-80	148	14aaG4S	mRNA_30cpc_Ctx	1
-----GDYVAANETHSGRK-----	X88953	TBEV-E-Simo-9	104	14aaG4S	mRNA_30cpc_Ctx	1
-----GLNRDPVEAANPYGAYVAAPAG-----	X63079	HSV-1-pUL19	475	22aa	mRNA_30cpc_Organoid_MD114	1
-----GLNRDPVEAANPYGAYVAAPAG-----	X63079	HSV-2-pUL19	475	22aa	mRNA_30cpc_Organoid_MD114	1
-----HDPVEAANPYGAYV-----	X49896	HSV-1-pUL19	478	14aaA5	mRNA_30cpc_Str	2
-----HDPVEAANPYGAYV-----	X49896	HSV-2-pUL19	478	14aaA5	mRNA_30cpc_Str	2
-----HDPVEAANPYGAYV-----	X49896	HSV-1-pUL19	478	14aaA5	mRNA_3cpc_Str	1
-----HDPVEAANPYGAYV-----	X49896	HSV-2-pUL19	478	14aaA5	mRNA_3cpc_Str	1
-----HDPVEAANPYGAYV-----	X49896	HSV-1-pUL19	478	14aaA5	mRNA_30cpc_Th	1

alignment	LUThrs	GeneName	start	structure	Group	Score
HDPVEAANPYGAYV	X49896	HSV-2-pUL19	478	14aaA5	mRNA_30cpc_Th	1
HDPVEAANPYGAYVAAPAGPGA	X17858	HSV-1-pUL19	478	22aa	mRNA_30cpc_Th	1
HDPVEAANPYGAYVAAPAGPGA	X17858	HSV-2-pUL19	478	22aa	mRNA_30cpc_Th	1
HDPVEAANPYGAYVAAPAGPGA	X17858	HSV-1-pUL19	478	22aa	mRNA_30cpc_Ctx	1
HDPVEAANPYGAYVAAPAGPGA	X17858	HSV-2-pUL19	478	22aa	mRNA_30cpc_Ctx	1
HTGDYVAANETHSG	X17151	TBEV-E-4387-B7	146	14aa	mRNA_30cpc_Str	1
HTGDYVAANETHSG	X17151	TBEV-E-80	146	14aa	mRNA_30cpc_Str	1
HTGDYVAANETHSG	X17151	TBEV-E-Simo-9	102	14aa	mRNA_30cpc_Str	1
KIVYTVKVEPHTGDYVAANETH	X3715	TBEV-E-4387-B7	136	22aa	mRNA_30cpc_Str	1
KIVYTVKVEPHTGDYVAANETH	X3715	TBEV-E-80	136	22aa	mRNA_30cpc_Str	1
KIVYTVKVEPHTGDYVAANETH	X3715	TBEV-E-Simo-9	92	22aa	mRNA_30cpc_Str	1
NKIVYTVKVEPHTGDYVAANET	X299	TBEV-E-4387-B7	135	22aa	mRNA_30cpc_Str	1
NKIVYTVKVEPHTGDYVAANET	X299	TBEV-E-80	135	22aa	mRNA_30cpc_Str	1
NKIVYTVKVEPHTGDYVAANET	X299	TBEV-E-Simo-9	91	22aa	mRNA_30cpc_Str	1
NKIVYTVKVEPHTGDYVAANET	X299	TBEV-E-4387-B7	135	22aa	mRNA_3cpc_Th	1
NKIVYTVKVEPHTGDYVAANET	X299	TBEV-E-80	135	22aa	mRNA_3cpc_Th	1
NKIVYTVKVEPHTGDYVAANET	X299	TBEV-E-Simo-9	91	22aa	mRNA_3cpc_Th	1
PHTGDYVAANETHS	X21571	TBEV-E-4387-B7	145	14aa	mRNA_30cpc_Str	1
PHTGDYVAANETHS	X50829	TBEV-E-4387-B7	145	14aaA5	mRNA_30cpc_Str	3
PHTGDYVAANETHS	X82119	TBEV-E-4387-B7	145	14aaG4S	mRNA_30cpc_Str	1
PHTGDYVAANETHS	X21571	TBEV-E-80	145	14aa	mRNA_30cpc_Str	1
PHTGDYVAANETHS	X50829	TBEV-E-80	145	14aaA5	mRNA_30cpc_Str	3
PHTGDYVAANETHS	X82119	TBEV-E-80	145	14aaG4S	mRNA_30cpc_Str	1
PHTGDYVAANETHS	X21571	TBEV-E-Simo-9	101	14aa	mRNA_30cpc_Str	1
PHTGDYVAANETHS	X50829	TBEV-E-Simo-9	101	14aaA5	mRNA_30cpc_Str	3
PHTGDYVAANETHS	X82119	TBEV-E-Simo-9	101	14aaG4S	mRNA_30cpc_Str	1
PHTGDYVAANETHSGRKTASFT	X21572	TBEV-E-4387-B7	145	22aa	mRNA_30cpc_Str	1
PHTGDYVAANETHSGRKTASFT	X21572	TBEV-E-80	145	22aa	mRNA_30cpc_Str	1
PHTGDYVAANETHSGRKTASFT	X21572	TBEV-E-Simo-9	101	22aa	mRNA_30cpc_Str	1
PRASGGVAATVAAN	X22454	HSV-2-pUL27	30	14aa	mRNA_30cpc_Str	3
PVEAANPYGAYVAA	X24259	HSV-1-pUL19	480	14aa	mRNA_30cpc_Str	1
PVEAANPYGAYVAA	X24259	HSV-2-pUL19	480	14aa	mRNA_30cpc_Str	1
PYGAYVAAPAGPAA	X24438	HSV-1-pUL19	486	14aa	mRNA_30cpc_Str	1
PYGAYVAAPAGPAA	X24438	HSV-2-pUL19	486	14aa	mRNA_30cpc_Str	1
PYGAYVAAPAGPAA	X24438	HSV-1-pUL19	486	14aa	mRNA_30cpc_Ctx	1
PYGAYVAAPAGPAA	X24438	HSV-2-pUL19	486	14aa	mRNA_30cpc_Ctx	1
PYGAYVAAPAGPGA	X24439	HSV-1-pUL19	486	14aa	mRNA_30cpc_Str	5
PYGAYVAAPAGPGA	X24439	HSV-2-pUL19	486	14aa	mRNA_30cpc_Str	5
RASGGVAATVAANG	X27064	HSV-2-pUL27	31	14aa	mRNA_30cpc_Str	7
RASGGVAATVAANG	X27064	HSV-2-pUL27	31	14aa	mRNA_30cpc_SN	2
RASGGVAATVAANG	X27064	HSV-2-pUL27	31	14aa	mRNA_30cpc_Th	1
RASGGVAATVAANG	X27064	HSV-2-pUL27	31	14aa	mRNA_30cpc_Ctx	2
TGDYVAANETHSGR	X47562	TBEV-E-4387-B7	147	14aaA5	mRNA_30cpc_Organoid_MD114	1
TGDYVAANETHSGR	X47562	TBEV-E-80	147	14aaA5	mRNA_30cpc_Organoid_MD114	1
TGDYVAANETHSGR	X47562	TBEV-E-Simo-9	103	14aaA5	mRNA_30cpc_Organoid_MD114	1
TGDYVAANETHSGR	X8898	TBEV-E-4387-B7	147	14aa	mRNA_30cpc_Str	3
TGDYVAANETHSGR	X47562	TBEV-E-4387-B7	147	14aaA5	mRNA_30cpc_Str	1

alignment	LUThrs	GeneName	start	structure	Group	Score
-----TGDYVAANETHSGR-----	X8898	TBEV-E-80	147	14aa	mRNA_30cpc_Str	3
-----TGDYVAANETHSGR-----	X47562	TBEV-E-80	147	14aaA5	mRNA_30cpc_Str	1
-----TGDYVAANETHSGR-----	X8898	TBEV-E-Simo-9	103	14aa	mRNA_30cpc_Str	3
-----TGDYVAANETHSGR-----	X47562	TBEV-E-Simo-9	103	14aaA5	mRNA_30cpc_Str	1
-----TGDYVAANETHSGR-----	X8898	TBEV-E-4387-B7	147	14aa	mRNA_3cpc_Str	5
-----TGDYVAANETHSGR-----	X8898	TBEV-E-80	147	14aa	mRNA_3cpc_Str	5
-----TGDYVAANETHSGR-----	X8898	TBEV-E-Simo-9	103	14aa	mRNA_3cpc_Str	5
-----TGDYVAANETHSGR-----	X8898	TBEV-E-4387-B7	147	14aa	mRNA_3cpc_Th	3
-----TGDYVAANETHSGR-----	X8898	TBEV-E-80	147	14aa	mRNA_3cpc_Th	3
-----TGDYVAANETHSGR-----	X8898	TBEV-E-Simo-9	103	14aa	mRNA_3cpc_Th	3
-----TGDYVAANETHSGR-----	X8898	TBEV-E-4387-B7	147	14aa	mRNA_3cpc_Ctx	3
-----TGDYVAANETHSGR-----	X8898	TBEV-E-80	147	14aa	mRNA_3cpc_Ctx	3
-----TGDYVAANETHSGR-----	X8898	TBEV-E-Simo-9	103	14aa	mRNA_3cpc_Ctx	3
-----VEAANPYGAYVAAPAGPGADMQ-----	X68395	HSV-1-pUL19	481	22aa	mRNA_30cpc_Str	2
-----VEAANPYGAYVAAPAGPGADMQ-----	X68395	HSV-2-pUL19	481	22aa	mRNA_30cpc_Str	2
-----VEPHTGDYVAANET-----	X68307	TBEV-E-4387-B7	143	14aa	mRNA_30cpc_Str	1
-----VEPHTGDYVAANET-----	X68307	TBEV-E-80	143	14aa	mRNA_30cpc_Str	1
-----VEPHTGDYVAANET-----	X68307	TBEV-E-Simo-9	99	14aa	mRNA_30cpc_Str	1
-----VKVEPHTGDYVAAN-----	X65915	TBEV-E-4387-B7	141	14aa	mRNA_30cpc_Str	2
-----VKVEPHTGDYVAAN-----	X58252	TBEV-E-4387-B7	141	14aaA5	mRNA_30cpc_Str	1
-----VKVEPHTGDYVAAN-----	X65915	TBEV-E-80	141	14aa	mRNA_30cpc_Str	2
-----VKVEPHTGDYVAAN-----	X58252	TBEV-E-80	141	14aaA5	mRNA_30cpc_Str	1
-----VKVEPHTGDYVAAN-----	X65915	TBEV-E-Simo-9	97	14aa	mRNA_30cpc_Str	2
-----VKVEPHTGDYVAAN-----	X58252	TBEV-E-Simo-9	97	14aaA5	mRNA_30cpc_Str	1
-----VKVEPHTGDYVAAN-----	X65915	TBEV-E-4387-B7	141	14aa	mRNA_30cpc_Th	1
-----VKVEPHTGDYVAAN-----	X65915	TBEV-E-80	141	14aa	mRNA_30cpc_Th	1
-----VKVEPHTGDYVAAN-----	X65915	TBEV-E-Simo-9	97	14aa	mRNA_30cpc_Th	1
-----VYTVKVEPHTGDYV-----	X69594	TBEV-E-4387-B7	138	14aa	mRNA_30cpc_Str	1
-----VYTVKVEPHTGDYV-----	X69594	TBEV-E-80	138	14aa	mRNA_30cpc_Str	1
-----VYTVKVEPHTGDYV-----	X69594	TBEV-E-Simo-9	94	14aa	mRNA_30cpc_Str	1
YDANKIVYTVKVEPHTGDYVAA-----	X71328	TBEV-E-4387-B7	132	22aa	mRNA_30cpc_Str	1
YDANKIVYTVKVEPHTGDYVAA-----	X71328	TBEV-E-80	132	22aa	mRNA_30cpc_Str	1
YDANKIVYTVKVEPHTGDYVAA-----	X71328	TBEV-E-Simo-9	88	22aa	mRNA_30cpc_Str	1
-----YGAYVAAPAGPGAD-----	X71709	HSV-1-pUL19	487	14aa	mRNA_3000cpc_Organoid_MD101	1
-----YGAYVAAPAGPGAD-----	X71709	HSV-2-pUL19	487	14aa	mRNA_3000cpc_Organoid_MD101	1
-----YGAYVAAPAGPGAD-----	X71709	HSV-1-pUL19	487	14aa	mRNA_30cpc_Str	4
-----YGAYVAAPAGPGAD-----	X71709	HSV-2-pUL19	487	14aa	mRNA_30cpc_Str	4
-----YVAANETHSGRKTA-----	X59843	TBEV-E-4387-B7	150	14aaA5	mRNA_30cpc_Str	1
-----YVAANETHSGRKTA-----	X59843	TBEV-E-80	150	14aaA5	mRNA_30cpc_Str	1
-----YVAANETHSGRKTA-----	X59843	TBEV-E-Simo-9	106	14aaA5	mRNA_30cpc_Str	1
-----YVAANETHSGRKTAFTVSSEK-----	X71870	TBEV-E-4387-B7	150	22aa	mRNA_30cpc_Str	1
-----YVAANETHSGRKTAFTVSSEK-----	X71870	TBEV-E-80	150	22aa	mRNA_30cpc_Str	1
-----YVAANETHSGRKTAFTVSSEK-----	X71870	TBEV-E-Simo-9	106	22aa	mRNA_30cpc_Str	1
-----YVAAPAGPAADMQQ-----	X71873	HSV-1-pUL19	490	14aa	mRNA_30cpc_Str	1
-----YVAAPAGPAADMQQ-----	X71873	HSV-2-pUL19	490	14aa	mRNA_30cpc_Str	1

Peptide ADSESGGHITHSGM from MV-H-Edmonston used in serotype AAV-MNM012

Peptide ADSESGGHITHSGM from MV-H-Edmonston used in serotype AAV-MNM012



cluster_id	main_sequence	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str	mRNA_30cpc_Ctx	mRNA_30cpc_Th	mRNA_30cpc_SN
12	ADSESGGHITHSGM	62	37	5	4	4	1	4

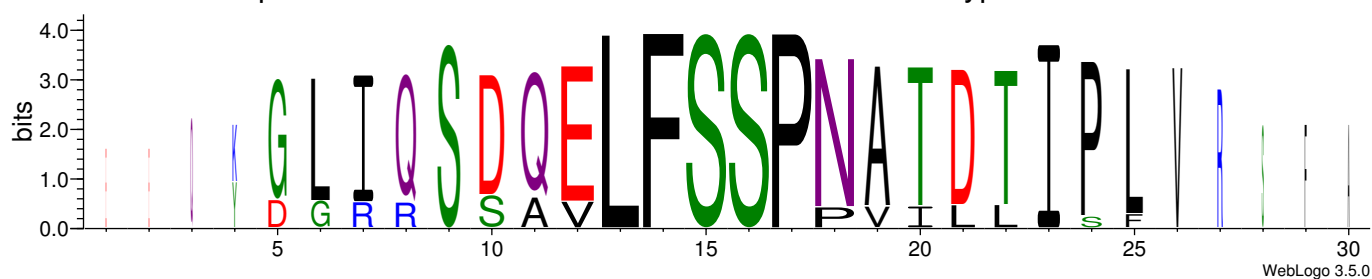
cluster_id	sequence	alignment	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str
12	ADSESGGHITHSGM	-----ADSESGGHITHSGM-----	22	9	4	3
12	LADSESGGHITHSG	-----LADSESGGHITHSG-----	4	2	0	0
12	EHITHSGMVGMEVS	-----EHITHSGMVGMEVS-----	4	3	0	0
12	DSESGEITHSGMV	-----DSESGEITHSGMV-----	4	3	0	0
12	VLADSESGGHITHS	-----VLADSESGGHITHS-----	3	2	1	0
12	SESGEITHSGMVG	-----SESGEITHSGMVG-----	3	3	0	0
12	CVLADSESGGHITH	-----CVLADSESGGHITH-----	3	1	0	0
12	SESGGHITHSGMVG	-----SESGGHITHSGMVG-----	2	1	0	0
12	FCVLADSESGEITH	-----FCVLADSESGEITH-----	2	2	0	0
12	ESGGHITHSGMVGSGVCTATR	-----ESGGHITHSGMVGSGVCTATR-----	2	1	0	0
12	ESGGHITHSGMVG	-----ESGGHITHSGMVG-----	2	1	0	0
12	ESGEHITHSGMVG	-----ESGEHITHSGMVG-----	2	2	0	0
12	SGEHITHSGMVGME	-----SGEHITHSGMVGME-----	1	0	0	0
12	LWCRHFCVLADSESGEITHSG	LWCRHFCVLADSESGEITHSG	1	1	0	0
12	HITHSGMVGSGVSC	-----HITHSGMVGSGVSC-----	1	1	0	0
12	GHITHSGMVGSGVCTVTREDG	-----GHITHSGMVGSGVCTVTREDG-----	1	1	0	0
12	GEHITHSGMVGMEV	-----GEHITHSGMVGMEV-----	1	1	0	0
12	ESGEHITHSGMVGMEVCTVTR	-----ESGEHITHSGMVGMEVCTVTR-----	1	1	0	0
12	DSESGGHITHSGMV	-----DSESGGHITHSGMV-----	1	0	0	1
12	CVLADSESGEITH	-----CVLADSESGEITH-----	1	1	0	0
12	ADSESGEITHSGM	-----ADSESGEITHSGM-----	1	1	0	0

alignment	LUThrs	GeneName	start	structure	Group	Score
-----ADSESGEHITHSGM-----	X42884	MV-H-CAM-70	586	14aa	mRNA_30cpc_Str	1
-----ADSESGGHITHSGM-----	X42886	MV-H-Edmonston	586	14aa	mRNA_3000cpc_Organoid_MD101	1
-----ADSESGGHITHSGM-----	X42886	MV-H-Halle	586	14aa	mRNA_3000cpc_Organoid_MD101	1
-----ADSESGGHITHSGM-----	X42886	MV-H-MVi-Illinois.USA-50.99	586	14aa	mRNA_3000cpc_Organoid_MD101	1
-----ADSESGGHITHSGM-----	X42886	MV-H-MVi-Texas.USA-28.99	586	14aa	mRNA_3000cpc_Organoid_MD101	1
-----ADSESGGHITHSGM-----	X42886	MV-H-Edmonston	586	14aa	mRNA_30cpc_Str	5
-----ADSESGGHITHSGM-----	X56376	MV-H-Edmonston	586	14aaA5	mRNA_30cpc_Str	4
-----ADSESGGHITHSGM-----	X42886	MV-H-Halle	586	14aa	mRNA_30cpc_Str	5
-----ADSESGGHITHSGM-----	X56376	MV-H-Halle	586	14aaA5	mRNA_30cpc_Str	4
-----ADSESGGHITHSGM-----	X42886	MV-H-MVi-Illinois.USA-50.99	586	14aa	mRNA_30cpc_Str	5
-----ADSESGGHITHSGM-----	X56376	MV-H-MVi-Illinois.USA-50.99	586	14aaA5	mRNA_30cpc_Str	4
-----ADSESGGHITHSGM-----	X42886	MV-H-MVi-Texas.USA-28.99	586	14aa	mRNA_30cpc_Str	5
-----ADSESGGHITHSGM-----	X56376	MV-H-MVi-Texas.USA-28.99	586	14aaA5	mRNA_30cpc_Str	4
-----ADSESGGHITHSGM-----	X56376	MV-H-Edmonston	586	14aaA5	mRNA_3cpc_Str	3
-----ADSESGGHITHSGM-----	X56376	MV-H-Halle	586	14aaA5	mRNA_3cpc_Str	3
-----ADSESGGHITHSGM-----	X56376	MV-H-MVi-Illinois.USA-50.99	586	14aaA5	mRNA_3cpc_Str	3
-----ADSESGGHITHSGM-----	X56376	MV-H-MVi-Texas.USA-28.99	586	14aaA5	mRNA_3cpc_Str	3
-----ADSESGGHITHSGM-----	X42886	MV-H-Edmonston	586	14aa	mRNA_30cpc_Ctx	2
-----ADSESGGHITHSGM-----	X42886	MV-H-Halle	586	14aa	mRNA_30cpc_Ctx	2
-----ADSESGGHITHSGM-----	X42886	MV-H-MVi-Illinois.USA-50.99	586	14aa	mRNA_30cpc_Ctx	2
-----ADSESGGHITHSGM-----	X42886	MV-H-MVi-Texas.USA-28.99	586	14aa	mRNA_30cpc_Ctx	2
-----ADSESGGHITHSGM-----	X42886	MV-H-Edmonston	586	14aa	mRNA_3cpc_Th	1
-----ADSESGGHITHSGM-----	X56376	MV-H-Edmonston	586	14aaA5	mRNA_3cpc_Th	3
-----ADSESGGHITHSGM-----	X42886	MV-H-Halle	586	14aa	mRNA_3cpc_Th	1
-----ADSESGGHITHSGM-----	X56376	MV-H-Halle	586	14aaA5	mRNA_3cpc_Th	3
-----ADSESGGHITHSGM-----	X42886	MV-H-MVi-Illinois.USA-50.99	586	14aa	mRNA_3cpc_Th	1
-----ADSESGGHITHSGM-----	X56376	MV-H-MVi-Illinois.USA-50.99	586	14aaA5	mRNA_3cpc_Th	3
-----ADSESGGHITHSGM-----	X42886	MV-H-MVi-Texas.USA-28.99	586	14aa	mRNA_3cpc_Th	1
-----ADSESGGHITHSGM-----	X56376	MV-H-MVi-Texas.USA-28.99	586	14aaA5	mRNA_3cpc_Th	3
-----ADSESGGHITHSGM-----	X42886	MV-H-Edmonston	586	14aa	mRNA_3cpc_Ctx	1
-----ADSESGGHITHSGM-----	X56376	MV-H-Edmonston	586	14aaA5	mRNA_3cpc_Ctx	2
-----ADSESGGHITHSGM-----	X42886	MV-H-Halle	586	14aa	mRNA_3cpc_Ctx	1
-----ADSESGGHITHSGM-----	X56376	MV-H-Halle	586	14aaA5	mRNA_3cpc_Ctx	2
-----ADSESGGHITHSGM-----	X42886	MV-H-MVi-Illinois.USA-50.99	586	14aa	mRNA_3cpc_Ctx	1
-----ADSESGGHITHSGM-----	X56376	MV-H-MVi-Illinois.USA-50.99	586	14aaA5	mRNA_3cpc_Ctx	2
-----ADSESGGHITHSGM-----	X42886	MV-H-MVi-Texas.USA-28.99	586	14aa	mRNA_3cpc_Ctx	1
-----ADSESGGHITHSGM-----	X56376	MV-H-MVi-Texas.USA-28.99	586	14aaA5	mRNA_3cpc_Ctx	2
-----CVLADSESGEHITH-----	X60183	MV-H-CAM-70	583	14aaA5	mRNA_30cpc_Str	1
-----CVLADSESGEHITH-----	X60183	MV-H-Edmonston	583	14aaA5	mRNA_30cpc_Str	1
-----CVLADSESGEHITH-----	X60183	MV-H-Halle	583	14aaA5	mRNA_30cpc_Str	1
-----CVLADSESGEHITH-----	X60183	MV-H-MVi-Illinois.USA-50.99	583	14aaA5	mRNA_30cpc_Str	1
-----CVLADSESGEHITH-----	X60183	MV-H-MVi-Texas.USA-28.99	583	14aaA5	mRNA_30cpc_Str	1
-----CVLADSESGGHITH-----	X60184	MV-H-CAM-70	583	14aaA5	mRNA_30cpc_Str	1
-----CVLADSESGGHITH-----	X60184	MV-H-Edmonston	583	14aaA5	mRNA_30cpc_Str	1
-----CVLADSESGGHITH-----	X60184	MV-H-Halle	583	14aaA5	mRNA_30cpc_Str	1
-----CVLADSESGGHITH-----	X60184	MV-H-MVi-Illinois.USA-50.99	583	14aaA5	mRNA_30cpc_Str	1
-----CVLADSESGGHITH-----	X60184	MV-H-MVi-Texas.USA-28.99	583	14aaA5	mRNA_30cpc_Str	1

alignment	LUThrs	GeneName	start	structure	Group	Score
-----LADSESGGHITHSG-----	X32033	MV-H-MVi-Texas.USA-28.99	585	14aa	mRNA_30cpc_Str	2
-----LADSESGGHITHSG-----	X32033	MV-H-CAM-70	585	14aa	mRNA_30cpc_SN	1
-----LADSESGGHITHSG-----	X32033	MV-H-Edmonston	585	14aa	mRNA_30cpc_SN	1
-----LADSESGGHITHSG-----	X32033	MV-H-Halle	585	14aa	mRNA_30cpc_SN	1
-----LADSESGGHITHSG-----	X32033	MV-H-MVi-Illinois.USA-50.99	585	14aa	mRNA_30cpc_SN	1
-----LADSESGGHITHSG-----	X32033	MV-H-MVi-Texas.USA-28.99	585	14aa	mRNA_30cpc_SN	1
-----LADSESGGHITHSG-----	X32033	MV-H-CAM-70	585	14aa	mRNA_30cpc_Ctx	1
-----LADSESGGHITHSG-----	X32033	MV-H-Edmonston	585	14aa	mRNA_30cpc_Ctx	1
-----LADSESGGHITHSG-----	X32033	MV-H-Halle	585	14aa	mRNA_30cpc_Ctx	1
-----LADSESGGHITHSG-----	X32033	MV-H-MVi-Illinois.USA-50.99	585	14aa	mRNA_30cpc_Ctx	1
-----LADSESGGHITHSG-----	X32033	MV-H-MVi-Texas.USA-28.99	585	14aa	mRNA_30cpc_Ctx	1
LWCRHFCVLADSESGEITHSG-----	X33493	MV-H-CAM-70	577	22aa	mRNA_30cpc_Str	1
LWCRHFCVLADSESGEITHSG-----	X33493	MV-H-Edmonston	577	22aa	mRNA_30cpc_Str	1
LWCRHFCVLADSESGEITHSG-----	X33493	MV-H-Halle	577	22aa	mRNA_30cpc_Str	1
LWCRHFCVLADSESGEITHSG-----	X33493	MV-H-MVi-Illinois.USA-50.99	577	22aa	mRNA_30cpc_Str	1
LWCRHFCVLADSESGEITHSG-----	X33493	MV-H-MVi-Texas.USA-28.99	577	22aa	mRNA_30cpc_Str	1
-----SESGEITHSGMVG-----	X12641	MV-H-CAM-70	588	14aa	mRNA_30cpc_Str	3
-----SESGEITHSGMVG-----	X12641	MV-H-Edmonston	588	14aa	mRNA_30cpc_Str	3
-----SESGEITHSGMVG-----	X12641	MV-H-Halle	588	14aa	mRNA_30cpc_Str	3
-----SESGEITHSGMVG-----	X12641	MV-H-MVi-Illinois.USA-50.99	588	14aa	mRNA_30cpc_Str	3
-----SESGEITHSGMVG-----	X12641	MV-H-MVi-Texas.USA-28.99	588	14aa	mRNA_30cpc_Str	3
-----SESGGHITHSGMVG-----	X12642	MV-H-CAM-70	588	14aa	mRNA_30cpc_Str	1
-----SESGGHITHSGMVG-----	X12642	MV-H-Edmonston	588	14aa	mRNA_30cpc_Str	1
-----SESGGHITHSGMVG-----	X12642	MV-H-Halle	588	14aa	mRNA_30cpc_Str	1
-----SESGGHITHSGMVG-----	X12642	MV-H-MVi-Illinois.USA-50.99	588	14aa	mRNA_30cpc_Str	1
-----SESGGHITHSGMVG-----	X12642	MV-H-MVi-Texas.USA-28.99	588	14aa	mRNA_30cpc_Str	1
-----SESGGHITHSGMVG-----	X12642	MV-H-CAM-70	588	14aa	mRNA_30cpc_SN	1
-----SESGGHITHSGMVG-----	X12642	MV-H-Edmonston	588	14aa	mRNA_30cpc_SN	1
-----SESGGHITHSGMVG-----	X12642	MV-H-Halle	588	14aa	mRNA_30cpc_SN	1
-----SESGGHITHSGMVG-----	X12642	MV-H-MVi-Illinois.USA-50.99	588	14aa	mRNA_30cpc_SN	1
-----SESGGHITHSGMVG-----	X12642	MV-H-MVi-Texas.USA-28.99	588	14aa	mRNA_30cpc_SN	1
-----SGEITHSGMVGME-----	X13283	MV-H-CAM-70	590	14aa	mRNA_30cpc_SN_4wks	1
-----SGEITHSGMVGME-----	X13283	MV-H-Edmonston	590	14aa	mRNA_30cpc_SN_4wks	1
-----SGEITHSGMVGME-----	X13283	MV-H-Halle	590	14aa	mRNA_30cpc_SN_4wks	1
-----SGEITHSGMVGME-----	X13283	MV-H-MVi-Illinois.USA-50.99	590	14aa	mRNA_30cpc_SN_4wks	1
-----SGEITHSGMVGME-----	X13283	MV-H-MVi-Texas.USA-28.99	590	14aa	mRNA_30cpc_SN_4wks	1
-----VLADSESGGHITHS-----	X67898	MV-H-CAM-70	584	14aa	mRNA_30cpc_Str	2
-----VLADSESGGHITHS-----	X67898	MV-H-Edmonston	584	14aa	mRNA_30cpc_Str	2
-----VLADSESGGHITHS-----	X67898	MV-H-Halle	584	14aa	mRNA_30cpc_Str	2
-----VLADSESGGHITHS-----	X67898	MV-H-MVi-Illinois.USA-50.99	584	14aa	mRNA_30cpc_Str	2
-----VLADSESGGHITHS-----	X67898	MV-H-MVi-Texas.USA-28.99	584	14aa	mRNA_30cpc_Str	2
-----VLADSESGGHITHS-----	X67898	MV-H-CAM-70	584	14aa	mRNA_3cpc_Th	1
-----VLADSESGGHITHS-----	X67898	MV-H-Edmonston	584	14aa	mRNA_3cpc_Th	1
-----VLADSESGGHITHS-----	X67898	MV-H-Halle	584	14aa	mRNA_3cpc_Th	1
-----VLADSESGGHITHS-----	X67898	MV-H-MVi-Illinois.USA-50.99	584	14aa	mRNA_3cpc_Th	1
-----VLADSESGGHITHS-----	X67898	MV-H-MVi-Texas.USA-28.99	584	14aa	mRNA_3cpc_Th	1

Peptide GLIQSDQELFSSPN from HRP used in serotype AAV-MNM013

Peptide GLIQSDQELFSSPN from HRP used in serotype AAV-MNM013



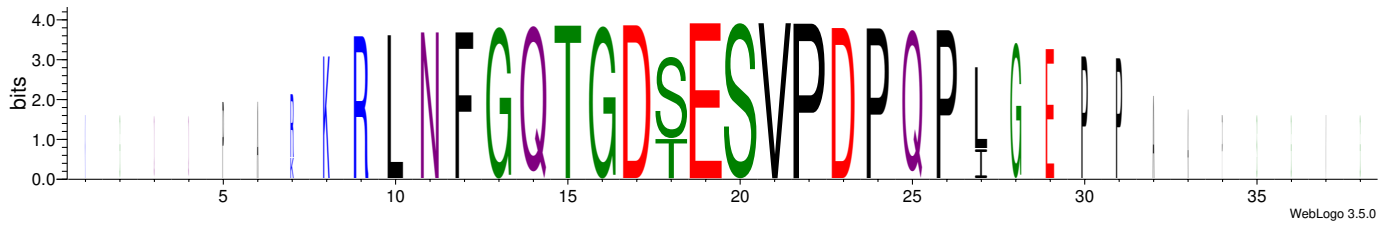
cluster_id	main_sequence	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str	mRNA_30cpc_Ctx	mRNA_30cpc_Th	mRNA_30cpc_SN
13	GLIQSDQELFSSPN	83	46	6	7	5	11	3

cluster_id	sequence	alignment	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str
13	GLIQSDQELFSSPN	___GLIQSDQELFSSPN_____	25	5	5	4
13	ELFSSPNATDTIPL	_____ELFSSPNATDTIPL_____	11	9	0	0
13	LFSSPNATDTIPLV	_____LFSSPNATDTIPLV_____	9	5	0	0
13	FSSPNATDTIPLVR	_____FSSPNATDTIPLVR_____	7	3	0	1
13	QELFSSPNATDTIP	_____QELFSSPNATDTIP_____	5	4	0	0
13	SDQELFSSPNATDTIPLVRSFA	_____SDQELFSSPNATDTIPLVRSFA_____	4	4	0	0
13	SAVLFSSPPVILLI	_____SAVLFSSPPVILLI_____	4	1	1	2
13	YDGRSSAVLFSSPPVILLISF	___YDGRSSAVLFSSPPVILLISF_____	3	3	0	0
13	QKGLIQSDQELFSSPNATDTIP	__QKGLIQSDQELFSSPNATDTIP_____	3	3	0	0
13	IQSDQELFSSPNAT	_____IQSDQELFSSPNAT_____	3	3	0	0
13	DGRSSAVLFSSPP	___DGRSSAVLFSSPP_____	3	1	0	0
13	YDGRSSAVLFSSP	___YDGRSSAVLFSSP_____	1	0	0	0
13	SDQELFSSPNATDT	_____SDQELFSSPNATDT_____	1	1	0	0
13	QSDQELFSSPNATD	_____QSDQELFSSPNATD_____	1	1	0	0
13	QKGLIQSDQELFSS	__QKGLIQSDQELFSS_____	1	1	0	0
13	LIQSDQELFSSPNA	_____LIQSDQELFSSPNA_____	1	1	0	0
13	EEQKGLIQSDQELF	EEQKGLIQSDQELF_____	1	1	0	0

alignment	LUThrs	GeneName	start	structure	Group	Score
___DGRSSAVLFSSPP_____	X36108	PrPc	227	14aa	mRNA_30cpc_Str	1
___DGRSSAVLFSSPP_____	X36108	PrPc	227	14aa	mRNA_30cpc_SN	1
___DGRSSAVLFSSPP_____	X36108	PrPc	227	14aa	mRNA_30cpc_Th	1
EEQKGLIQSDQELF_____	X38543	HRP	239	14aa	mRNA_30cpc_Str	1
_____ELFSSPNATDTIPL_____	X38318	HRP	250	14aa	mRNA_30cpc_Str	6
_____ELFSSPNATDTIPL_____	X86475	HRP	250	14aaG4S	mRNA_30cpc_Str	3
_____ELFSSPNATDTIPL_____	X86475	HRP	250	14aaG4S	mRNA_30cpc_Th	1
_____ELFSSPNATDTIPL_____	X38318	HRP	250	14aa	mRNA_30cpc_Ctx	1
_____FSSPNATDTIPLVR_____	X74767	HRP	252	14aa	mRNA_30cpc_Str	3
_____FSSPNATDTIPLVR_____	X74767	HRP	252	14aa	mRNA_3cpc_Str	1
_____FSSPNATDTIPLVR_____	X74767	HRP	252	14aa	mRNA_30cpc_Th	3
___GLIQSDQELFSSPN_____	X63143	HRP	243	14aa	mRNA_30cpc_Str	5
___GLIQSDQELFSSPN_____	X63143	HRP	243	14aa	mRNA_3cpc_Str	4
___GLIQSDQELFSSPN_____	X63143	HRP	243	14aa	mRNA_30cpc_Th	4
___GLIQSDQELFSSPN_____	X63143	HRP	243	14aa	mRNA_30cpc_Ctx	3
___GLIQSDQELFSSPN_____	X63143	HRP	243	14aa	mRNA_3cpc_SN	1
___GLIQSDQELFSSPN_____	X63143	HRP	243	14aa	mRNA_3cpc_Th	5
___GLIQSDQELFSSPN_____	X63143	HRP	243	14aa	mRNA_3cpc_Ctx	2
___GLIQSDQELFSSPN_____	X63143	HRP	243	14aa	mRNA_30cpc_Th_4wks	1
___IQSDQELFSSPNAT_____	X15256	HRP	245	14aa	mRNA_30cpc_Str	3
_____LFSSPNATDTIPLV_____	X33533	HRP	251	14aa	mRNA_3000cpc_Organoid_MD101	1
_____LFSSPNATDTIPLV_____	X33533	HRP	251	14aa	mRNA_30cpc_Str	5
_____LFSSPNATDTIPLV_____	X33533	HRP	251	14aa	mRNA_30cpc_SN	1
_____LFSSPNATDTIPLV_____	X33533	HRP	251	14aa	mRNA_30cpc_Th	1
_____LFSSPNATDTIPLV_____	X33533	HRP	251	14aa	mRNA_30cpc_Ctx	1
___LIQSDQELFSSPNA_____	X84208	HRP	244	14aaG4S	mRNA_30cpc_Str	1
_____QELFSSPNATDTIP_____	X19776	HRP	249	14aa	mRNA_30cpc_Str	4
_____QELFSSPNATDTIP_____	X19776	HRP	249	14aa	mRNA_30cpc_SN	1
__QKGLIQSDQELFSS_____	X18579	HRP	241	14aa	mRNA_30cpc_Str	1
__QKGLIQSDQELFSSPNATDTIP_____	X18578	HRP	241	22aa	mRNA_30cpc_Str	3
_____QSDQELFSSPNATD_____	X18815	HRP	246	14aa	mRNA_30cpc_Str	1
_____SAVLFSSPPVILLI_____	X13067	PrPc	232	14aa	mRNA_30cpc_Str	1
_____SAVLFSSPPVILLI_____	X48665	PrPc	232	14aaA5	mRNA_3cpc_Str	2
_____SAVLFSSPPVILLI_____	X48665	PrPc	232	14aaA5	mRNA_3cpc_Th	1
_____SDQELFSSPNATDT_____	X12451	HRP	247	14aa	mRNA_30cpc_Str	1
_____SDQELFSSPNATDTIPLVRSFA_____	X12450	HRP	247	22aa	mRNA_30cpc_Str	4
___YDGRSSAVLFSSP_____	X71336	PrPc	226	14aa	mRNA_30cpc_Organoid_MD114	1
___YDGRSSAVLFSSPPVILLISF_____	X71335	PrPc	226	22aa	mRNA_30cpc_Str	3

Peptide GQTGDSESVDPDPQP from AAV1-VP1 used in serotype AAV-MNM014

Peptide GQTGDSESVDPDPQP from AAV1-VP1 used in serotype AAV-MNM014



cluster_id	main_sequence	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str	mRNA_30cpc_Ctx	mRNA_30cpc_Th	mRNA_30cpc_SN
14	GQTGDSESVDPDPQP	81	37	5	9	8	8	6

cluster_id	sequence	alignment	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str
14	GQTGDSESVDPDPQP	-----GQTGDSESVDPDPQP-----	18	1	4	4
14	RLNFGQTGDTEVP	-----RLNFGQTGDTEVP-----	15	6	0	3
14	SESVDPDPQLGEPP	-----SESVDPDPQLGEPP-----	9	1	1	1
14	RLNFGQTGDSEVP	-----RLNFGQTGDSEVP-----	5	5	0	0
14	RKRLNFGQTGDSESVDPDPQLG	-----RKRLNFGQTGDSESVDPDPQLG-----	5	3	0	1
14	NFGQTGDSESVDP	-----NFGQTGDSESVDP-----	4	3	0	0
14	QTGDSESVDPQPL	-----QTGDSESVDPQPL-----	3	1	0	0
14	KRLNFGQTGDTEVPDPQPIGE	-----KRLNFGQTGDTEVPDPQPIGE-----	3	3	0	0
14	TESVPDPQPIGEPP	-----TESVPDPQPIGEPP-----	2	2	0	0
14	PAKKRLNFGQTGDTEVPDPQP	-----PAKKRLNFGQTGDTEVPDPQP-----	2	1	0	0
14	LNFGQTGDSEVPD	-----LNFGQTGDSEVPD-----	2	2	0	0
14	KRLNFGQTGDSESVDPDPQLGE	-----KRLNFGQTGDSESVDPDPQLGE-----	2	1	0	0
14	KRLNFGQTGDSESV	-----KRLNFGQTGDSESV-----	2	1	0	0
14	TGDSESVDPQPLG	-----TGDSESVDPQPLG-----	1	1	0	0
14	SVPDPQPIGEPPAA	-----SVPDPQPIGEPPAA-----	1	1	0	0
14	NFGQTGDTEVPDPQPIGEPPA	-----NFGQTGDTEVPDPQPIGEPPA-----	1	0	0	0
14	NFGQTGDTEVPDP	-----NFGQTGDTEVPDP-----	1	0	0	0
14	KRLNFGQTGDTESV	-----KRLNFGQTGDTESV-----	1	1	0	0
14	KGQQPARKRLNFGQTGDSEVP	KGQQPARKRLNFGQTGDSEVP-----	1	1	0	0
14	ESVPDPQPLGEPPA	-----ESVPDPQPLGEPPA-----	1	1	0	0
14	DTESVPDPQPIGEPPAAPSGVG	-----DTESVPDPQPIGEPPAAPSGVG-----	1	1	0	0
14	DSESVDPQPLGEP	-----DSESVDPQPLGEP-----	1	1	0	0

alignment	LUThrs	GeneName	start	structure	Group	Score
-----DSESVDPQPPLGEP-----	X34366	AAV1-VP1	178	14aa	mRNA_30cpc_Str	1
-----DSESVDPQPPLGEP-----	X34366	AAV6-VP1	178	14aa	mRNA_30cpc_Str	1
-----DSESVDPQPPLGEP-----	X34366	AAV8-VP1	179	14aa	mRNA_30cpc_Str	1
-----DSESVDPQPPLGEP-----	X34366	AAV9-VP1	178	14aa	mRNA_30cpc_Str	1
-----DTESVDPQPPIGEPPAAPSGVG-----	X34103	AAV8-VP1	179	22aa	mRNA_30cpc_Str	1
-----DTESVDPQPPIGEPPAAPSGVG-----	X34103	AAV9-VP1	178	22aa	mRNA_30cpc_Str	1
-----ESVDPQPPLGEPPA-----	X54949	AAV1-VP1	180	14aaA5	mRNA_30cpc_Str	1
-----ESVDPQPPLGEPPA-----	X54949	AAV6-VP1	180	14aaA5	mRNA_30cpc_Str	1
-----ESVDPQPPLGEPPA-----	X54949	AAV8-VP1	181	14aaA5	mRNA_30cpc_Str	1
-----ESVDPQPPLGEPPA-----	X54949	AAV9-VP1	180	14aaA5	mRNA_30cpc_Str	1
-----GQTGDSESVDPQP-----	X62390	AAV1-VP1	174	14aa	mRNA_30cpc_Str	1
-----GQTGDSESVDPQP-----	X62390	AAV6-VP1	174	14aa	mRNA_30cpc_Str	1
-----GQTGDSESVDPQP-----	X62390	AAV8-VP1	175	14aa	mRNA_30cpc_Str	1
-----GQTGDSESVDPQP-----	X62390	AAV9-VP1	174	14aa	mRNA_30cpc_Str	1
-----GQTGDSESVDPQP-----	X62390	AAV1-VP1	174	14aa	mRNA_3cpc_Str	4
-----GQTGDSESVDPQP-----	X62390	AAV6-VP1	174	14aa	mRNA_3cpc_Str	4
-----GQTGDSESVDPQP-----	X62390	AAV8-VP1	175	14aa	mRNA_3cpc_Str	4
-----GQTGDSESVDPQP-----	X62390	AAV9-VP1	174	14aa	mRNA_3cpc_Str	4
-----GQTGDSESVDPQP-----	X62390	AAV1-VP1	174	14aa	mRNA_30cpc_SN	2
-----GQTGDSESVDPQP-----	X62390	AAV6-VP1	174	14aa	mRNA_30cpc_SN	2
-----GQTGDSESVDPQP-----	X62390	AAV8-VP1	175	14aa	mRNA_30cpc_SN	2
-----GQTGDSESVDPQP-----	X62390	AAV9-VP1	174	14aa	mRNA_30cpc_SN	2
-----GQTGDSESVDPQP-----	X62390	AAV1-VP1	174	14aa	mRNA_30cpc_Th	2
-----GQTGDSESVDPQP-----	X62390	AAV6-VP1	174	14aa	mRNA_30cpc_Th	2
-----GQTGDSESVDPQP-----	X62390	AAV8-VP1	175	14aa	mRNA_30cpc_Th	2
-----GQTGDSESVDPQP-----	X62390	AAV9-VP1	174	14aa	mRNA_30cpc_Th	2
-----GQTGDSESVDPQP-----	X62390	AAV1-VP1	174	14aa	mRNA_30cpc_Ctx	2
-----GQTGDSESVDPQP-----	X62390	AAV6-VP1	174	14aa	mRNA_30cpc_Ctx	2
-----GQTGDSESVDPQP-----	X62390	AAV8-VP1	175	14aa	mRNA_30cpc_Ctx	2
-----GQTGDSESVDPQP-----	X62390	AAV9-VP1	174	14aa	mRNA_30cpc_Ctx	2
-----GQTGDSESVDPQP-----	X62390	AAV1-VP1	174	14aa	mRNA_3cpc_SN	1
-----GQTGDSESVDPQP-----	X62390	AAV6-VP1	174	14aa	mRNA_3cpc_SN	1
-----GQTGDSESVDPQP-----	X62390	AAV8-VP1	175	14aa	mRNA_3cpc_SN	1
-----GQTGDSESVDPQP-----	X62390	AAV9-VP1	174	14aa	mRNA_3cpc_SN	1
-----GQTGDSESVDPQP-----	X62390	AAV1-VP1	174	14aa	mRNA_3cpc_Th	4
-----GQTGDSESVDPQP-----	X62390	AAV6-VP1	174	14aa	mRNA_3cpc_Th	4
-----GQTGDSESVDPQP-----	X62390	AAV8-VP1	175	14aa	mRNA_3cpc_Th	4
-----GQTGDSESVDPQP-----	X62390	AAV9-VP1	174	14aa	mRNA_3cpc_Th	4
-----GQTGDSESVDPQP-----	X62390	AAV1-VP1	174	14aa	mRNA_3cpc_Ctx	2
-----GQTGDSESVDPQP-----	X62390	AAV6-VP1	174	14aa	mRNA_3cpc_Ctx	2
-----GQTGDSESVDPQP-----	X62390	AAV8-VP1	175	14aa	mRNA_3cpc_Ctx	2
-----GQTGDSESVDPQP-----	X62390	AAV9-VP1	174	14aa	mRNA_3cpc_Ctx	2
KGQQPARKRLNFGQTGDSESV-----	X4917	AAV1-VP1	162	22aa	mRNA_30cpc_Str	1
KGQQPARKRLNFGQTGDSESV-----	X4917	AAV6-VP1	162	22aa	mRNA_30cpc_Str	1
KGQQPARKRLNFGQTGDSESV-----	X4917	AAV8-VP1	163	22aa	mRNA_30cpc_Str	1
-----KRLNFGQTGDSESV-----	X4104	AAV1-VP1	169	14aa	mRNA_30cpc_Str	1
-----KRLNFGQTGDSESV-----	X4104	AAV6-VP1	169	14aa	mRNA_30cpc_Str	1

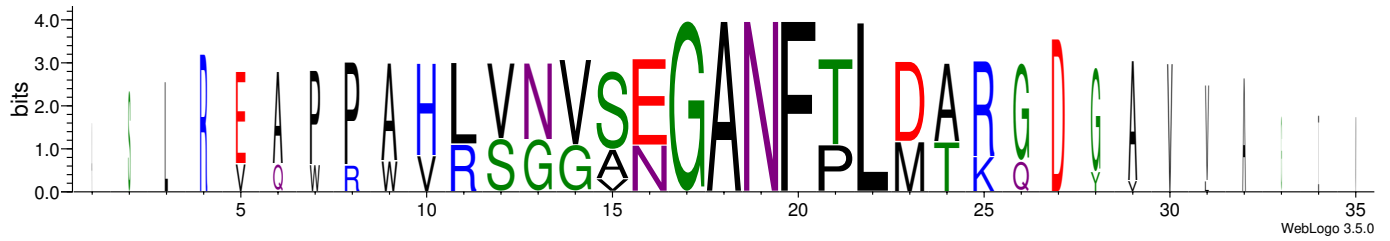
alignment	LUThrs	GeneName	start	structure	Group	Score
KRLNFGQTGDSESV	X4104	AAV8-VP1	170	14aa	mRNA_30cpc_Str	1
KRLNFGQTGDSESV	X4104	AAV9-VP1	169	14aa	mRNA_30cpc_Str	1
KRLNFGQTGDSESV	X4104	AAV1-VP1	169	14aa	mRNA_30cpc_Ctx	1
KRLNFGQTGDSESV	X4104	AAV6-VP1	169	14aa	mRNA_30cpc_Ctx	1
KRLNFGQTGDSESV	X4104	AAV8-VP1	170	14aa	mRNA_30cpc_Ctx	1
KRLNFGQTGDSESV	X4104	AAV9-VP1	169	14aa	mRNA_30cpc_Ctx	1
KRLNFGQTGDSESVDPQPPLGE	X4103	AAV1-VP1	169	22aa	mRNA_30cpc_Str	1
KRLNFGQTGDSESVDPQPPLGE	X4103	AAV6-VP1	169	22aa	mRNA_30cpc_Str	1
KRLNFGQTGDSESVDPQPPLGE	X4103	AAV8-VP1	170	22aa	mRNA_30cpc_Str	1
KRLNFGQTGDSESVDPQPPLGE	X4103	AAV9-VP1	169	22aa	mRNA_30cpc_Str	1
KRLNFGQTGDSESVDPQPPLGE	X4103	AAV1-VP1	169	22aa	mRNA_30cpc_Th	1
KRLNFGQTGDSESVDPQPPLGE	X4103	AAV6-VP1	169	22aa	mRNA_30cpc_Th	1
KRLNFGQTGDSESVDPQPPLGE	X4103	AAV8-VP1	170	22aa	mRNA_30cpc_Th	1
KRLNFGQTGDSESVDPQPPLGE	X4103	AAV9-VP1	169	22aa	mRNA_30cpc_Th	1
KRLNFGQTGDSESV	X4102	AAV1-VP1	169	14aa	mRNA_30cpc_Str	1
KRLNFGQTGDSESV	X4102	AAV6-VP1	169	14aa	mRNA_30cpc_Str	1
KRLNFGQTGDSESV	X4102	AAV8-VP1	170	14aa	mRNA_30cpc_Str	1
KRLNFGQTGDSESV	X4102	AAV9-VP1	169	14aa	mRNA_30cpc_Str	1
KRLNFGQTGDSESVDPQPPIGE	X4101	AAV1-VP1	169	22aa	mRNA_30cpc_Str	3
KRLNFGQTGDSESVDPQPPIGE	X4101	AAV6-VP1	169	22aa	mRNA_30cpc_Str	3
KRLNFGQTGDSESVDPQPPIGE	X4101	AAV8-VP1	170	22aa	mRNA_30cpc_Str	3
KRLNFGQTGDSESVDPQPPIGE	X4101	AAV9-VP1	169	22aa	mRNA_30cpc_Str	3
LNFGQTGDSESVDP	X28522	AAV1-VP1	171	14aa	mRNA_30cpc_Str	1
LNFGQTGDSESVDP	X83927	AAV1-VP1	171	14aaG4S	mRNA_30cpc_Str	1
LNFGQTGDSESVDP	X28522	AAV6-VP1	171	14aa	mRNA_30cpc_Str	1
LNFGQTGDSESVDP	X83927	AAV6-VP1	171	14aaG4S	mRNA_30cpc_Str	1
LNFGQTGDSESVDP	X28522	AAV8-VP1	172	14aa	mRNA_30cpc_Str	1
LNFGQTGDSESVDP	X83927	AAV8-VP1	172	14aaG4S	mRNA_30cpc_Str	1
LNFGQTGDSESVDP	X28522	AAV9-VP1	171	14aa	mRNA_30cpc_Str	1
LNFGQTGDSESVDP	X83927	AAV9-VP1	171	14aaG4S	mRNA_30cpc_Str	1
NFGQTGDSESVDP	X2978	AAV1-VP1	172	14aa	mRNA_30cpc_Str	3
NFGQTGDSESVDP	X2978	AAV6-VP1	172	14aa	mRNA_30cpc_Str	3
NFGQTGDSESVDP	X2978	AAV8-VP1	173	14aa	mRNA_30cpc_Str	3
NFGQTGDSESVDP	X2978	AAV9-VP1	172	14aa	mRNA_30cpc_Str	3
NFGQTGDSESVDP	X2978	AAV1-VP1	172	14aa	mRNA_30cpc_Th	1
NFGQTGDSESVDP	X2978	AAV6-VP1	172	14aa	mRNA_30cpc_Th	1
NFGQTGDSESVDP	X2978	AAV8-VP1	173	14aa	mRNA_30cpc_Th	1
NFGQTGDSESVDP	X2978	AAV9-VP1	172	14aa	mRNA_30cpc_Th	1
NFGQTGDSESVDP	X2976	AAV1-VP1	172	14aa	mRNA_30cpc_Ctx_4wks	1
NFGQTGDSESVDP	X2976	AAV6-VP1	172	14aa	mRNA_30cpc_Ctx_4wks	1
NFGQTGDSESVDP	X2976	AAV8-VP1	173	14aa	mRNA_30cpc_Ctx_4wks	1
NFGQTGDSESVDP	X2976	AAV9-VP1	172	14aa	mRNA_30cpc_Ctx_4wks	1
NFGQTGDSESVDPQPPIGEPPA	X2975	AAV1-VP1	172	22aa	mRNA_30cpc_Organoid_MD114	1
NFGQTGDSESVDPQPPIGEPPA	X2975	AAV6-VP1	172	22aa	mRNA_30cpc_Organoid_MD114	1
NFGQTGDSESVDPQPPIGEPPA	X2975	AAV8-VP1	173	22aa	mRNA_30cpc_Organoid_MD114	1
NFGQTGDSESVDPQPPIGEPPA	X2975	AAV9-VP1	172	22aa	mRNA_30cpc_Organoid_MD114	1
PAKKRLNFGQTGDSESVDPQP	X23308	AAV1-VP1	166	22aa	mRNA_3000cpc_Organoid_MD101	1

alignment	LUThrs	GeneName	start	structure	Group	Score
PAKKRLNFGQTGDTEVPDPQP	X23308	AAV6-VP1	166	22aa	mRNA_3000cpc_Organoid_MD101	1
PAKKRLNFGQTGDTEVPDPQP	X23308	AAV8-VP1	167	22aa	mRNA_3000cpc_Organoid_MD101	1
PAKKRLNFGQTGDTEVPDPQP	X23308	AAV9-VP1	166	22aa	mRNA_3000cpc_Organoid_MD101	1
PAKKRLNFGQTGDTEVPDPQP	X23308	AAV1-VP1	166	22aa	mRNA_30cpc_Str	1
PAKKRLNFGQTGDTEVPDPQP	X23308	AAV6-VP1	166	22aa	mRNA_30cpc_Str	1
PAKKRLNFGQTGDTEVPDPQP	X23308	AAV8-VP1	167	22aa	mRNA_30cpc_Str	1
PAKKRLNFGQTGDTEVPDPQP	X23308	AAV9-VP1	166	22aa	mRNA_30cpc_Str	1
QTGDSESVDPQPPL	X18701	AAV1-VP1	175	14aa	mRNA_30cpc_Str	1
QTGDSESVDPQPPL	X18701	AAV6-VP1	175	14aa	mRNA_30cpc_Str	1
QTGDSESVDPQPPL	X18701	AAV8-VP1	176	14aa	mRNA_30cpc_Str	1
QTGDSESVDPQPPL	X18701	AAV9-VP1	175	14aa	mRNA_30cpc_Str	1
QTGDSESVDPQPPL	X18701	AAV1-VP1	175	14aa	mRNA_30cpc_Th	1
QTGDSESVDPQPPL	X18701	AAV6-VP1	175	14aa	mRNA_30cpc_Th	1
QTGDSESVDPQPPL	X18701	AAV8-VP1	176	14aa	mRNA_30cpc_Th	1
QTGDSESVDPQPPL	X18701	AAV9-VP1	175	14aa	mRNA_30cpc_Th	1
QTGDSESVDPQPPL	X18701	AAV1-VP1	175	14aa	mRNA_30cpc_Th_4wks	1
QTGDSESVDPQPPL	X18701	AAV6-VP1	175	14aa	mRNA_30cpc_Th_4wks	1
QTGDSESVDPQPPL	X18701	AAV8-VP1	176	14aa	mRNA_30cpc_Th_4wks	1
QTGDSESVDPQPPL	X18701	AAV9-VP1	175	14aa	mRNA_30cpc_Th_4wks	1
RKRLNFGQTGDSESVDPQPPLG	X24884	AAV1-VP1	168	22aa	mRNA_30cpc_Str	3
RKRLNFGQTGDSESVDPQPPLG	X24884	AAV6-VP1	168	22aa	mRNA_30cpc_Str	3
RKRLNFGQTGDSESVDPQPPLG	X24884	AAV8-VP1	169	22aa	mRNA_30cpc_Str	3
RKRLNFGQTGDSESVDPQPPLG	X24884	AAV9-VP1	168	22aa	mRNA_30cpc_Str	3
RKRLNFGQTGDSESVDPQPPLG	X24884	AAV1-VP1	168	22aa	mRNA_3cpc_Str	1
RKRLNFGQTGDSESVDPQPPLG	X24884	AAV6-VP1	168	22aa	mRNA_3cpc_Str	1
RKRLNFGQTGDSESVDPQPPLG	X24884	AAV8-VP1	169	22aa	mRNA_3cpc_Str	1
RKRLNFGQTGDSESVDPQPPLG	X24884	AAV9-VP1	168	22aa	mRNA_3cpc_Str	1
RKRLNFGQTGDSESVDPQPPLG	X24884	AAV1-VP1	168	22aa	mRNA_30cpc_Ctx	1
RKRLNFGQTGDSESVDPQPPLG	X24884	AAV6-VP1	168	22aa	mRNA_30cpc_Ctx	1
RKRLNFGQTGDSESVDPQPPLG	X24884	AAV8-VP1	169	22aa	mRNA_30cpc_Ctx	1
RKRLNFGQTGDSESVDPQPPLG	X24884	AAV9-VP1	168	22aa	mRNA_30cpc_Ctx	1
RLNFGQTGDSESV	X26311	AAV1-VP1	170	14aa	mRNA_30cpc_Str	5
RLNFGQTGDSESV	X26311	AAV6-VP1	170	14aa	mRNA_30cpc_Str	5
RLNFGQTGDSESV	X26311	AAV8-VP1	171	14aa	mRNA_30cpc_Str	5
RLNFGQTGDSESV	X26311	AAV9-VP1	170	14aa	mRNA_30cpc_Str	5
RLNFGQTGDSESV	X26310	AAV1-VP1	170	14aa	mRNA_30cpc_Str	6
RLNFGQTGDSESV	X26310	AAV6-VP1	170	14aa	mRNA_30cpc_Str	6
RLNFGQTGDSESV	X26310	AAV8-VP1	171	14aa	mRNA_30cpc_Str	6
RLNFGQTGDSESV	X26310	AAV9-VP1	170	14aa	mRNA_30cpc_Str	6
RLNFGQTGDSESV	X26310	AAV1-VP1	170	14aa	mRNA_3cpc_Str	3
RLNFGQTGDSESV	X26310	AAV6-VP1	170	14aa	mRNA_3cpc_Str	3
RLNFGQTGDSESV	X26310	AAV8-VP1	171	14aa	mRNA_3cpc_Str	3
RLNFGQTGDSESV	X26310	AAV9-VP1	170	14aa	mRNA_3cpc_Str	3
RLNFGQTGDSESV	X26310	AAV1-VP1	170	14aa	mRNA_30cpc_SN	3
RLNFGQTGDSESV	X26310	AAV6-VP1	170	14aa	mRNA_30cpc_SN	3
RLNFGQTGDSESV	X26310	AAV8-VP1	171	14aa	mRNA_30cpc_SN	3
RLNFGQTGDSESV	X26310	AAV9-VP1	170	14aa	mRNA_30cpc_SN	3

alignment	LUThrs	GeneName	start	structure	Group	Score
-----RLNFGQTGDTEVP-----	X26310	AAV1-VP1	170	14aa	mRNA_30cpc_Th	1
-----RLNFGQTGDTEVP-----	X26310	AAV6-VP1	170	14aa	mRNA_30cpc_Th	1
-----RLNFGQTGDTEVP-----	X26310	AAV8-VP1	171	14aa	mRNA_30cpc_Th	1
-----RLNFGQTGDTEVP-----	X26310	AAV9-VP1	170	14aa	mRNA_30cpc_Th	1
-----RLNFGQTGDTEVP-----	X26310	AAV1-VP1	170	14aa	mRNA_30cpc_Ctx	2
-----RLNFGQTGDTEVP-----	X26310	AAV6-VP1	170	14aa	mRNA_30cpc_Ctx	2
-----RLNFGQTGDTEVP-----	X26310	AAV8-VP1	171	14aa	mRNA_30cpc_Ctx	2
-----RLNFGQTGDTEVP-----	X26310	AAV9-VP1	170	14aa	mRNA_30cpc_Ctx	2
-----SESVPDPQPLGEPP-----	X12643	AAV1-VP1	179	14aa	mRNA_30cpc_Str	1
-----SESVPDPQPLGEPP-----	X12643	AAV6-VP1	179	14aa	mRNA_30cpc_Str	1
-----SESVPDPQPLGEPP-----	X12643	AAV8-VP1	180	14aa	mRNA_30cpc_Str	1
-----SESVPDPQPLGEPP-----	X12643	AAV9-VP1	179	14aa	mRNA_30cpc_Str	1
-----SESVPDPQPLGEPP-----	X12643	AAV1-VP1	179	14aa	mRNA_3cpc_Str	1
-----SESVPDPQPLGEPP-----	X12643	AAV6-VP1	179	14aa	mRNA_3cpc_Str	1
-----SESVPDPQPLGEPP-----	X12643	AAV8-VP1	180	14aa	mRNA_3cpc_Str	1
-----SESVPDPQPLGEPP-----	X12643	AAV9-VP1	179	14aa	mRNA_3cpc_Str	1
-----SESVPDPQPLGEPP-----	X12643	AAV1-VP1	179	14aa	mRNA_30cpc_SN	1
-----SESVPDPQPLGEPP-----	X12643	AAV6-VP1	179	14aa	mRNA_30cpc_SN	1
-----SESVPDPQPLGEPP-----	X12643	AAV8-VP1	180	14aa	mRNA_30cpc_SN	1
-----SESVPDPQPLGEPP-----	X12643	AAV9-VP1	179	14aa	mRNA_30cpc_SN	1
-----SESVPDPQPLGEPP-----	X12643	AAV1-VP1	179	14aa	mRNA_30cpc_Th	2
-----SESVPDPQPLGEPP-----	X12643	AAV6-VP1	179	14aa	mRNA_30cpc_Th	2
-----SESVPDPQPLGEPP-----	X12643	AAV8-VP1	180	14aa	mRNA_30cpc_Th	2
-----SESVPDPQPLGEPP-----	X12643	AAV9-VP1	179	14aa	mRNA_30cpc_Th	2
-----SESVPDPQPLGEPP-----	X12643	AAV1-VP1	179	14aa	mRNA_30cpc_Ctx	2
-----SESVPDPQPLGEPP-----	X12643	AAV6-VP1	179	14aa	mRNA_30cpc_Ctx	2
-----SESVPDPQPLGEPP-----	X12643	AAV8-VP1	180	14aa	mRNA_30cpc_Ctx	2
-----SESVPDPQPLGEPP-----	X12643	AAV9-VP1	179	14aa	mRNA_30cpc_Ctx	2
-----SESVPDPQPLGEPP-----	X12643	AAV1-VP1	179	14aa	mRNA_3cpc_Th	1
-----SESVPDPQPLGEPP-----	X12643	AAV6-VP1	179	14aa	mRNA_3cpc_Th	1
-----SESVPDPQPLGEPP-----	X12643	AAV8-VP1	180	14aa	mRNA_3cpc_Th	1
-----SESVPDPQPLGEPP-----	X12643	AAV9-VP1	179	14aa	mRNA_3cpc_Th	1
-----SESVPDPQPLGEPP-----	X12643	AAV1-VP1	179	14aa	mRNA_3cpc_Ctx	1
-----SESVPDPQPLGEPP-----	X12643	AAV6-VP1	179	14aa	mRNA_3cpc_Ctx	1
-----SESVPDPQPLGEPP-----	X12643	AAV8-VP1	180	14aa	mRNA_3cpc_Ctx	1
-----SESVPDPQPLGEPP-----	X12643	AAV9-VP1	179	14aa	mRNA_3cpc_Ctx	1
-----SVPDPQPIGEPPAA-----	X48787	AAV1-VP1	181	14aaA5	mRNA_30cpc_Str	1
-----SVPDPQPIGEPPAA-----	X48787	AAV6-VP1	181	14aaA5	mRNA_30cpc_Str	1
-----SVPDPQPIGEPPAA-----	X48787	AAV8-VP1	182	14aaA5	mRNA_30cpc_Str	1
-----SVPDPQPIGEPPAA-----	X48787	AAV9-VP1	181	14aaA5	mRNA_30cpc_Str	1
-----TESVPDPQPIGEPP-----	X8234	AAV1-VP1	179	14aa	mRNA_30cpc_Str	2
-----TESVPDPQPIGEPP-----	X8234	AAV6-VP1	179	14aa	mRNA_30cpc_Str	2
-----TESVPDPQPIGEPP-----	X8234	AAV8-VP1	180	14aa	mRNA_30cpc_Str	2
-----TESVPDPQPIGEPP-----	X8234	AAV9-VP1	179	14aa	mRNA_30cpc_Str	2
-----TGDSESVDPQPLG-----	X8883	AAV1-VP1	176	14aa	mRNA_30cpc_Str	1
-----TGDSESVDPQPLG-----	X8883	AAV6-VP1	176	14aa	mRNA_30cpc_Str	1
-----TGDSESVDPQPLG-----	X8883	AAV8-VP1	177	14aa	mRNA_30cpc_Str	1
-----TGDSESVDPQPLG-----	X8883	AAV9-VP1	176	14aa	mRNA_30cpc_Str	1

Peptide PAHLVNVSEGANFT from PRV-Becker-gE used in serotype AAV-MNM015

Peptide PAHLVNVSEGANFT from PRV-Becker-gE used in serotype AAV-MNM015



cluster_id	main_sequence	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str	mRNA_30cpc_Ctx	mRNA_30cpc_Th	mRNA_30cpc_SN
15	PAHLVNVSEGANFT	97	53	8	7	12	5	9

cluster_id	sequence	alignment	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str
15	VSEGANFTLDARGD	-----VSEGANFTLDARGD-----	9	3	0	0
15	RSGGANGANFPLMT	-----RSGGANGANFPLMT-----	9	4	1	0
15	REAPPAHLVNVSEGANFTLDAR	_REAPPAHLVNVSEGANFTLDAR_	9	0	4	4
15	PAHLVNVSEGANFT	-----PAHLVNVSEGANFT-----	9	3	1	1
15	LVNVSEGANFTLDARGDGAVVA	-----LVNVSEGANFTLDARGDGAVVA_	7	4	0	0
15	VQWRWVRSGGVNGANFPLMTKQ	_VQWRWVRSGGVNGANFPLMTKQ_	6	1	1	1
15	SGGANGANFPLMTK	-----SGGANGANFPLMTK-----	5	2	1	1
15	EGANFTLDARGDGA	-----EGANFTLDARGDGA-----	5	2	0	0
15	VRSGGANGANFPLM	-----VRSGGANGANFPLM-----	4	4	0	0
15	SLREAPPAHLVNVSEGANFTLD	_SLREAPPAHLVNVSEGANFTLD_	4	4	0	0
15	GANFTLDARGDGAV	-----GANFTLDARGDGAV_	4	4	0	0
15	HLVNVSEGANFTLD	-----HLVNVSEGANFTLD-----	3	3	0	0
15	VSEGANFTLDARGDGAVVAGIW	-----VSEGANFTLDARGDGAVVAGIW_	2	2	0	0
15	RWVRSGGANGANFPLMTKQDYV	-----RWVRSGGANGANFPLMTKQDYV_	2	1	0	0
15	RSGGVNGANFPLMT	-----RSGGVNGANFPLMT-----	2	2	0	0
15	REAPPAHLVNVSEG	_REAPPAHLVNVSEG_	2	1	0	0
15	NGANFPLMTKQDYA	-----NGANFPLMTKQDYA_	2	2	0	0
15	LREAPPAHLVNVSE	_LREAPPAHLVNVSE_	2	1	0	0
15	WVRSGGVNGANFPL	-----WVRSGGVNGANFPL_	1	1	0	0
15	WVRSGGANGANFPL	-----WVRSGGANGANFPL_	1	1	0	0
15	SLREAPPAHLVNVVS	_SLREAPPAHLVNVVS_	1	1	0	0
15	SEGANFTLDARGDG	-----SEGANFTLDARGDG_	1	1	0	0
15	PPAHLVNVSEGANF	-----PPAHLVNVSEGANF_	1	1	0	0
15	PAHLVNVSEGANFTLDARGDGA	-----PAHLVNVSEGANFTLDARGDGA_	1	1	0	0
15	NVSEGANFTLDARG	-----NVSEGANFTLDARG_	1	1	0	0
15	HLVNVSEGANFTLDARGDGAVL	-----HLVNVSEGANFTLDARGDGAVL_	1	1	0	0
15	EAPPAHLVNVSEGANFTLDARG	____EAPPAHLVNVSEGANFTLDARG_	1	1	0	0
15	ASLREAPPAHLVNVSEGANFTL	ASLREAPPAHLVNVSEGANFTL_	1	0	0	0
15	AHLVNVSEGANFTL	-----AHLVNVSEGANFTL_	1	1	0	0

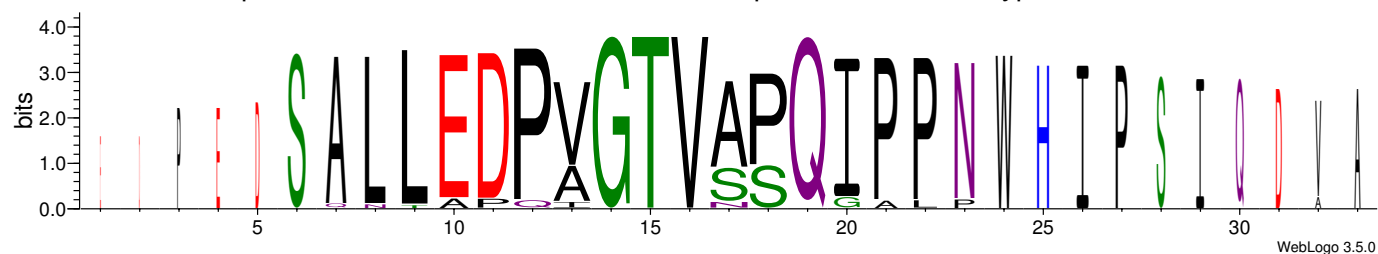
alignment	LUThrs	GeneName	start	structure	Group	Score
_____AHLNVNVEGANFTL_____	X41317	PRV-Becker-gE	83	14aa	mRNA_30cpc_Str	1
_____AHLNVNVEGANFTL_____	X41317	PRV-TJ-gE	84	14aa	mRNA_30cpc_Str	1
ASLREAPPAHLNVNVEGANFTL_____	X40742	PRV-Becker-gE	75	22aa	mRNA_30cpc_Organoid_MD114	1
ASLREAPPAHLNVNVEGANFTL_____	X40742	PRV-TJ-gE	76	22aa	mRNA_30cpc_Organoid_MD114	1
____EAPPAHLNVNVEGANFTLDARG_____	X38815	PRV-Becker-gE	79	22aa	mRNA_30cpc_Str	1
____EAPPAHLNVNVEGANFTLDARG_____	X38815	PRV-TJ-gE	80	22aa	mRNA_30cpc_Str	1
_____EGANFTLDARGDGA_____	X39108	PRV-Becker-gE	90	14aa	mRNA_30cpc_Str	1
_____EGANFTLDARGDGA_____	X86678	PRV-Becker-gE	90	14aaG4S	mRNA_30cpc_Str	1
_____EGANFTLDARGDGA_____	X39108	PRV-TJ-gE	91	14aa	mRNA_30cpc_Str	1
_____EGANFTLDARGDGA_____	X86678	PRV-TJ-gE	91	14aaG4S	mRNA_30cpc_Str	1
_____EGANFTLDARGDGA_____	X39108	PRV-Becker-gE	90	14aa	mRNA_30cpc_SN	2
_____EGANFTLDARGDGA_____	X39108	PRV-TJ-gE	91	14aa	mRNA_30cpc_SN	2
_____EGANFTLDARGDGA_____	X39108	PRV-Becker-gE	90	14aa	mRNA_30cpc_Ctx	1
_____EGANFTLDARGDGA_____	X39108	PRV-TJ-gE	91	14aa	mRNA_30cpc_Ctx	1
_____GANFTLDARGDGAV_____	X57742	PRV-Becker-gE	91	14aaA5	mRNA_30cpc_Str	4
_____GANFTLDARGDGAV_____	X57742	PRV-TJ-gE	92	14aaA5	mRNA_30cpc_Str	4
_____HLNVNVEGANFTLD_____	X17821	PRV-Becker-gE	84	14aa	mRNA_30cpc_Str	3
_____HLNVNVEGANFTLD_____	X17821	PRV-TJ-gE	85	14aa	mRNA_30cpc_Str	3
_____HLNVNVEGANFTLDARGDGAVL_____	X17822	PRV-Becker-gE	84	22aa	mRNA_30cpc_Str	1
_____HLNVNVEGANFTLDARGDGAVL_____	X17822	PRV-TJ-gE	85	22aa	mRNA_30cpc_Str	1
____LREAPPAHLNVNVE_____	X30660	PRV-Becker-gE	77	14aa	mRNA_30cpc_Str	1
____LREAPPAHLNVNVE_____	X30660	PRV-TJ-gE	78	14aa	mRNA_30cpc_Str	1
____LREAPPAHLNVNVE_____	X30660	PRV-Becker-gE	77	14aa	mRNA_30cpc_SN	1
____LREAPPAHLNVNVE_____	X30660	PRV-TJ-gE	78	14aa	mRNA_30cpc_SN	1
_____LVNVSEGANFTLDARGDGAVVA_____	X32748	PRV-Becker-gE	85	22aa	mRNA_30cpc_Str	4
_____LVNVSEGANFTLDARGDGAVVA_____	X32748	PRV-TJ-gE	86	22aa	mRNA_30cpc_Str	4
_____LVNVSEGANFTLDARGDGAVVA_____	X32748	PRV-Becker-gE	85	22aa	mRNA_30cpc_Ctx	3
_____LVNVSEGANFTLDARGDGAVVA_____	X32748	PRV-TJ-gE	86	22aa	mRNA_30cpc_Ctx	3
_____NGANFPLMTKQDYA_____	X2419	TMEV-VP-DQ401688.1	102	14aa	mRNA_30cpc_Str	2
_____NGANFPLMTKQDYA_____	X2419	TMEV-VP1-U33047.1	102	14aa	mRNA_30cpc_Str	2
_____NVSEGANFTLDARG_____	X2541	PRV-Becker-gE	87	14aa	mRNA_30cpc_Str	1
_____NVSEGANFTLDARG_____	X2541	PRV-TJ-gE	88	14aa	mRNA_30cpc_Str	1
_____PAHLNVNVEGANFT_____	X23396	PRV-Becker-gE	82	14aa	mRNA_30cpc_Str	3
_____PAHLNVNVEGANFT_____	X23396	PRV-TJ-gE	83	14aa	mRNA_30cpc_Str	3
_____PAHLNVNVEGANFT_____	X23396	PRV-Becker-gE	82	14aa	mRNA_3cpc_Str	1
_____PAHLNVNVEGANFT_____	X23396	PRV-TJ-gE	83	14aa	mRNA_3cpc_Str	1
_____PAHLNVNVEGANFT_____	X23396	PRV-Becker-gE	82	14aa	mRNA_30cpc_SN	1
_____PAHLNVNVEGANFT_____	X23396	PRV-TJ-gE	83	14aa	mRNA_30cpc_SN	1
_____PAHLNVNVEGANFT_____	X23396	PRV-Becker-gE	82	14aa	mRNA_30cpc_Th	1
_____PAHLNVNVEGANFT_____	X23396	PRV-TJ-gE	83	14aa	mRNA_30cpc_Th	1
_____PAHLNVNVEGANFT_____	X23396	PRV-Becker-gE	82	14aa	mRNA_30cpc_Ctx	2
_____PAHLNVNVEGANFT_____	X23396	PRV-TJ-gE	83	14aa	mRNA_30cpc_Ctx	2
_____PAHLNVNVEGANFT_____	X23396	PRV-Becker-gE	82	14aa	mRNA_3cpc_Th	1
_____PAHLNVNVEGANFT_____	X23396	PRV-TJ-gE	83	14aa	mRNA_3cpc_Th	1
_____PAHLNVNVEGANFTLDARGDGA_____	X23395	PRV-Becker-gE	82	22aa	mRNA_30cpc_Str	1
_____PAHLNVNVEGANFTLDARGDGA_____	X23395	PRV-TJ-gE	83	22aa	mRNA_30cpc_Str	1
_____PPAHLNVNVEGANF_____	X50983	PRV-Becker-gE	81	14aaA5	mRNA_30cpc_Str	1

alignment	LUThrs	GeneName	start	structure	Group	Score
_____PPAHLVNVSEGANF_____	X50983	PRV-TJ-gE	82	14aaA5	mRNA_30cpc_Str	1
____REAPPAHLVNVSEG_____	X26958	PRV-Becker-gE	78	14aa	mRNA_30cpc_Str	1
____REAPPAHLVNVSEG_____	X26958	PRV-TJ-gE	79	14aa	mRNA_30cpc_Str	1
____REAPPAHLVNVSEG_____	X26958	PRV-Becker-gE	78	14aa	mRNA_30cpc_Th	1
____REAPPAHLVNVSEG_____	X26958	PRV-TJ-gE	79	14aa	mRNA_30cpc_Th	1
____REAPPAHLVNVSEGANFTLDAR_____	X26959	PRV-Becker-gE	78	22aa	mRNA_3cpc_Str	4
____REAPPAHLVNVSEGANFTLDAR_____	X26959	PRV-TJ-gE	79	22aa	mRNA_3cpc_Str	4
____REAPPAHLVNVSEGANFTLDAR_____	X26959	PRV-Becker-gE	78	22aa	mRNA_3cpc_Th	4
____REAPPAHLVNVSEGANFTLDAR_____	X26959	PRV-TJ-gE	79	22aa	mRNA_3cpc_Th	4
____REAPPAHLVNVSEGANFTLDAR_____	X26959	PRV-Becker-gE	78	22aa	mRNA_3cpc_Ctx	1
____REAPPAHLVNVSEGANFTLDAR_____	X26959	PRV-TJ-gE	79	22aa	mRNA_3cpc_Ctx	1
____RSGGANGANFPLMT_____	X25307	TMEV-VP-DQ401688.1	97	14aa	mRNA_30cpc_Str	3
____RSGGANGANFPLMT_____	X51770	TMEV-VP-DQ401688.1	97	14aaA5	mRNA_30cpc_Str	1
____RSGGANGANFPLMT_____	X25307	TMEV-VP1-U33047.1	97	14aa	mRNA_30cpc_Str	3
____RSGGANGANFPLMT_____	X51770	TMEV-VP1-U33047.1	97	14aaA5	mRNA_30cpc_Str	1
____RSGGANGANFPLMT_____	X83060	TMEV-VP-DQ401688.1	97	14aaG4S	mRNA_30cpc_SN	1
____RSGGANGANFPLMT_____	X83060	TMEV-VP1-U33047.1	97	14aaG4S	mRNA_30cpc_SN	1
____RSGGANGANFPLMT_____	X25307	TMEV-VP-DQ401688.1	97	14aa	mRNA_30cpc_Ctx	1
____RSGGANGANFPLMT_____	X83060	TMEV-VP-DQ401688.1	97	14aaG4S	mRNA_30cpc_Ctx	2
____RSGGANGANFPLMT_____	X25307	TMEV-VP1-U33047.1	97	14aa	mRNA_30cpc_Ctx	1
____RSGGANGANFPLMT_____	X83060	TMEV-VP1-U33047.1	97	14aaG4S	mRNA_30cpc_Ctx	2
____RSGGANGANFPLMT_____	X83060	TMEV-VP-DQ401688.1	97	14aaG4S	mRNA_3cpc_Th	1
____RSGGANGANFPLMT_____	X83060	TMEV-VP1-U33047.1	97	14aaG4S	mRNA_3cpc_Th	1
____RSGGVNGANFPLMT_____	X25309	TMEV-VP-DQ401688.1	97	14aa	mRNA_30cpc_Str	1
____RSGGVNGANFPLMT_____	X83061	TMEV-VP-DQ401688.1	97	14aaG4S	mRNA_30cpc_Str	1
____RSGGVNGANFPLMT_____	X25309	TMEV-VP1-U33047.1	97	14aa	mRNA_30cpc_Str	1
____RSGGVNGANFPLMT_____	X83061	TMEV-VP1-U33047.1	97	14aaG4S	mRNA_30cpc_Str	1
____RWVRSGGANGANFPLMTKQDYV_____	X28170	TMEV-VP-DQ401688.1	94	22aa	mRNA_30cpc_Str	1
____RWVRSGGANGANFPLMTKQDYV_____	X28170	TMEV-VP1-U33047.1	94	22aa	mRNA_30cpc_Str	1
____RWVRSGGANGANFPLMTKQDYV_____	X28170	TMEV-VP-DQ401688.1	94	22aa	mRNA_30cpc_SN	1
____RWVRSGGANGANFPLMTKQDYV_____	X28170	TMEV-VP1-U33047.1	94	22aa	mRNA_30cpc_SN	1
____SEGANFTLDARGDG_____	X12739	PRV-Becker-gE	89	14aa	mRNA_30cpc_Str	1
____SEGANFTLDARGDG_____	X12739	PRV-TJ-gE	90	14aa	mRNA_30cpc_Str	1
____SGGANGANFPLMTK_____	X13325	TMEV-VP-DQ401688.1	98	14aa	mRNA_30cpc_Str	2
____SGGANGANFPLMTK_____	X13325	TMEV-VP1-U33047.1	98	14aa	mRNA_30cpc_Str	2
____SGGANGANFPLMTK_____	X13325	TMEV-VP-DQ401688.1	98	14aa	mRNA_3cpc_Str	1
____SGGANGANFPLMTK_____	X13325	TMEV-VP1-U33047.1	98	14aa	mRNA_3cpc_Str	1
____SGGANGANFPLMTK_____	X13325	TMEV-VP-DQ401688.1	98	14aa	mRNA_3cpc_Th	1
____SGGANGANFPLMTK_____	X13325	TMEV-VP1-U33047.1	98	14aa	mRNA_3cpc_Th	1
____SGGANGANFPLMTK_____	X13325	TMEV-VP-DQ401688.1	98	14aa	mRNA_3cpc_Ctx	1
____SGGANGANFPLMTK_____	X13325	TMEV-VP1-U33047.1	98	14aa	mRNA_3cpc_Ctx	1
____SLREAPPAHLVNVS_____	X12188	PRV-Becker-gE	76	14aa	mRNA_30cpc_Str	1
____SLREAPPAHLVNVS_____	X12188	PRV-TJ-gE	77	14aa	mRNA_30cpc_Str	1
____SLREAPPAHLVNVSEGANFTLD_____	X12187	PRV-Becker-gE	76	22aa	mRNA_30cpc_Str	4
____SLREAPPAHLVNVSEGANFTLD_____	X12187	PRV-TJ-gE	77	22aa	mRNA_30cpc_Str	4
____VQWRWVRSGGVNGANFPLMTKQ_____	X67063	TMEV-VP-DQ401688.1	91	22aa	mRNA_30cpc_Str	1
____VQWRWVRSGGVNGANFPLMTKQ_____	X67063	TMEV-VP1-M20301.1	91	22aa	mRNA_30cpc_Str	1

alignment	LUThrs	GeneName	start	structure	Group	Score
_____VQWRWVRSGGVNGANFPLMTKQ_____	X67063	TMEV-VP1-U33047.1	91	22aa	mRNA_30cpc_Str	1
_____VQWRWVRSGGVNGANFPLMTKQ_____	X67063	TMEV-VP-DQ401688.1	91	22aa	mRNA_3cpc_Str	1
_____VQWRWVRSGGVNGANFPLMTKQ_____	X67063	TMEV-VP1-M20301.1	91	22aa	mRNA_3cpc_Str	1
_____VQWRWVRSGGVNGANFPLMTKQ_____	X67063	TMEV-VP1-U33047.1	91	22aa	mRNA_3cpc_Str	1
_____VQWRWVRSGGVNGANFPLMTKQ_____	X67063	TMEV-VP-DQ401688.1	91	22aa	mRNA_30cpc_SN	1
_____VQWRWVRSGGVNGANFPLMTKQ_____	X67063	TMEV-VP1-M20301.1	91	22aa	mRNA_30cpc_SN	1
_____VQWRWVRSGGVNGANFPLMTKQ_____	X67063	TMEV-VP1-U33047.1	91	22aa	mRNA_30cpc_SN	1
_____VQWRWVRSGGVNGANFPLMTKQ_____	X67063	TMEV-VP-DQ401688.1	91	22aa	mRNA_30cpc_Th	1
_____VQWRWVRSGGVNGANFPLMTKQ_____	X67063	TMEV-VP1-M20301.1	91	22aa	mRNA_30cpc_Th	1
_____VQWRWVRSGGVNGANFPLMTKQ_____	X67063	TMEV-VP1-U33047.1	91	22aa	mRNA_30cpc_Th	1
_____VQWRWVRSGGVNGANFPLMTKQ_____	X67063	TMEV-VP-DQ401688.1	91	22aa	mRNA_30cpc_Ctx	1
_____VQWRWVRSGGVNGANFPLMTKQ_____	X67063	TMEV-VP1-M20301.1	91	22aa	mRNA_30cpc_Ctx	1
_____VQWRWVRSGGVNGANFPLMTKQ_____	X67063	TMEV-VP1-U33047.1	91	22aa	mRNA_30cpc_Ctx	1
_____VQWRWVRSGGVNGANFPLMTKQ_____	X67063	TMEV-VP-DQ401688.1	91	22aa	mRNA_3cpc_Th	1
_____VQWRWVRSGGVNGANFPLMTKQ_____	X67063	TMEV-VP1-M20301.1	91	22aa	mRNA_3cpc_Th	1
_____VQWRWVRSGGVNGANFPLMTKQ_____	X67063	TMEV-VP1-U33047.1	91	22aa	mRNA_3cpc_Th	1
_____VRSGGANGANFPLM_____	X67437	TMEV-VP-DQ401688.1	96	14aa	mRNA_30cpc_Str	4
_____VRSGGANGANFPLM_____	X67437	TMEV-VP1-U33047.1	96	14aa	mRNA_30cpc_Str	4
_____VSEGANFTLDARGD_____	X66456	PRV-Becker-gE	88	14aa	mRNA_30cpc_Str	1
_____VSEGANFTLDARGD_____	X58402	PRV-Becker-gE	88	14aaA5	mRNA_30cpc_Str	2
_____VSEGANFTLDARGD_____	X66456	PRV-TJ-gE	89	14aa	mRNA_30cpc_Str	1
_____VSEGANFTLDARGD_____	X58402	PRV-TJ-gE	89	14aaA5	mRNA_30cpc_Str	2
_____VSEGANFTLDARGD_____	X58402	PRV-Becker-gE	88	14aaA5	mRNA_30cpc_SN	2
_____VSEGANFTLDARGD_____	X58402	PRV-TJ-gE	89	14aaA5	mRNA_30cpc_SN	2
_____VSEGANFTLDARGD_____	X58402	PRV-Becker-gE	88	14aaA5	mRNA_30cpc_Th	2
_____VSEGANFTLDARGD_____	X58402	PRV-TJ-gE	89	14aaA5	mRNA_30cpc_Th	2
_____VSEGANFTLDARGD_____	X58402	PRV-Becker-gE	88	14aaA5	mRNA_30cpc_Ctx	2
_____VSEGANFTLDARGD_____	X58402	PRV-TJ-gE	89	14aaA5	mRNA_30cpc_Ctx	2
_____VSEGANFTLDARGDGAVVAGIW_____	X66457	PRV-Becker-gE	88	22aa	mRNA_30cpc_Str	2
_____VSEGANFTLDARGDGAVVAGIW_____	X66457	PRV-TJ-gE	89	22aa	mRNA_30cpc_Str	2
_____WVRSGGANGANFPL_____	X74175	TMEV-VP1-U33047.1	95	14aa	mRNA_30cpc_Str	1
_____WVRSGGVNGANFPL_____	X74176	TMEV-VP-DQ401688.1	95	14aa	mRNA_30cpc_Str	1

Peptide SALLEDPVGTVPAPQ from HSV-1-pUS6 used in serotype AAV-MNM016

Peptide SALLEDPVGTVPAPQ from HSV-1-pUS6 used in serotype AAV-MNM016



cluster_id	main_sequence	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str	mRNA_30cpc_Ctx	mRNA_30cpc_Th	mRNA_30cpc_SN
16	SALLEDPVGTVPAPQ	57	26	6	7	3	5	4

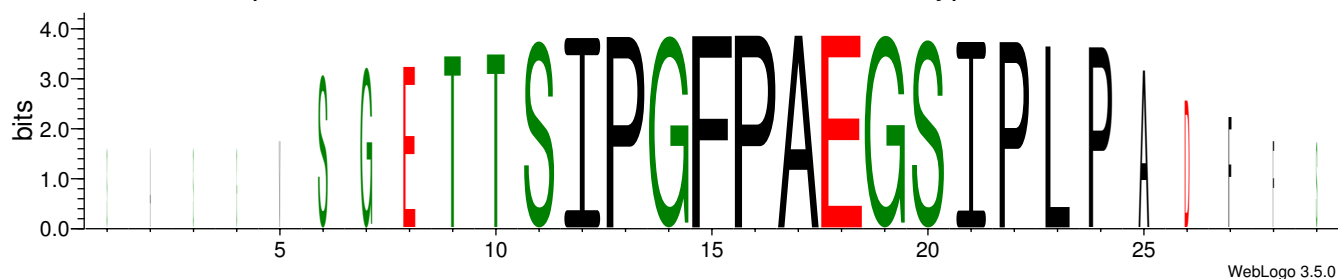
cluster_id	sequence	alignment	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str
16	SALLEDPVGTVPAPQ	_____SALLEDPVGTVPAPQ_____	14	3	4	4
16	PAGTVSSQIPPNNWHIPSIQDVA	_____PAGTVSSQIPPNNWHIPSIQDVA_____	8	1	1	1
16	SALLEDPVGTVPAPQIPPNNWHIP	_____SALLEDPVGTVPAPQIPPNNWHIP_____	4	4	0	0
16	PEDSALLEDPVGTVPAPQIPPNNW	__PEDSALLEDPVGTVPAPQIPPNNW_____	4	1	0	0
16	LEDPVGTVPAPQIPP	_____LEDPVGTVPAPQIPP_____	4	1	1	2
16	EDPVGTVPAPQIPP	_____EDPVGTVPAPQIPP_____	3	3	0	0
16	ALLEDPVGTVPAPQI	_____ALLEDPVGTVPAPQI_____	3	1	0	0
16	SALLEDPAGTVSSQ	_____SALLEDPAGTVSSQ_____	2	0	0	0
16	LEDPVGTVPAPQIPPNNWHIPSIQ	_____LEDPVGTVPAPQIPPNNWHIPSIQ_____	2	2	0	0
16	DPAGTVSSQIPPNNW	_____DPAGTVSSQIPPNNW_____	2	1	0	0
16	APQIGTVNSQGALP	_____APQIGTVNSQGALP_____	2	1	0	0
16	TVAPQIPPNNWHIPS	_____TVAPQIPPNNWHIPS_____	1	1	0	0
16	SALLEDPAGTVSSQIPPNNWHIP	_____SALLEDPAGTVSSQIPPNNWHIP_____	1	1	0	0
16	QNTAPQIGTVNSQG	_____QNTAPQIGTVNSQG_____	1	1	0	0
16	PVGTVPAPQIPPNNWHIPSIQDAA	_____PVGTVPAPQIPPNNWHIPSIQDAA_____	1	1	0	0
16	LEDPAGTVSSQIPPNNWHIPSIQ	_____LEDPAGTVSSQIPPNNWHIPSIQ_____	1	1	0	0
16	LEDPAGTVSSQIPP	_____LEDPAGTVSSQIPP_____	1	0	0	0
16	EDPEDSALLEDPAG	EDPEDSALLEDPAG_____	1	1	0	0
16	DSALLEDPVGTVPAP	____DSALLEDPVGTVPAP_____	1	1	0	0
16	DPVGTVPAPQIPPNNW	_____DPVGTVPAPQIPPNNW_____	1	1	0	0

alignment	LUThrs	GeneName	start	structure	Group	Score
____ALLEDPVGTVPAPQI_____	X42520	HSV-1-pUS6	302	14aa	mRNA_30cpc_Str	1
____ALLEDPVGTVPAPQI_____	X42520	HSV-1-pUS6	302	14aa	mRNA_30cpc_Th	1
____ALLEDPVGTVPAPQI_____	X42520	HSV-1-pUS6	302	14aa	mRNA_30cpc_Ctx	1
____APQIGTVNSQGALP_____	X41669	AAV8-VP1	592	14aa	mRNA_3000cpc_Organoid_MD101	1
____APQIGTVNSQGALP_____	X56070	AAV8-VP1	592	14aaA5	mRNA_30cpc_Str	1
____DPAGTVSSQIPPNW_____	X34989	HSV-2-pUS6	306	14aa	mRNA_30cpc_Organoid_MD114	1
____DPAGTVSSQIPPNW_____	X34989	HSV-2-pUS6	306	14aa	mRNA_30cpc_Str	1
____DPVGTVPAPQIPPNW_____	X35019	HSV-1-pUS6	306	14aa	mRNA_30cpc_Str	1
____DSALLEDPVGTVPAP_____	X34394	HSV-1-pUS6	300	14aa	mRNA_30cpc_Str	1
EDPEDSALLEDPAG_____	X38384	HSV-1-pUS6	296	14aa	mRNA_30cpc_Str	1
EDPEDSALLEDPAG_____	X38384	HSV-2-pUS6	296	14aa	mRNA_30cpc_Str	1
____EDPVGTVPAPQIPPN_____	X38388	HSV-1-pUS6	305	14aa	mRNA_30cpc_Str	3
____LEDAGTVSSQIPPP_____	X53482	HSV-2-pUS6	304	14aaA5	mRNA_30cpc_Organoid_MD114	1
____LEDAGTVSSQIPPNWHIPSIQ____	X31660	HSV-1-pUS6	304	22aa	mRNA_30cpc_Str	1
____LEDAGTVSSQIPPNWHIPSIQ____	X31660	HSV-2-pUS6	304	22aa	mRNA_30cpc_Str	1
____LEDPVGTVPAPQIPP_____	X53483	HSV-1-pUS6	304	14aaA5	mRNA_30cpc_Str	1
____LEDPVGTVPAPQIPP_____	X84773	HSV-1-pUS6	304	14aaG4S	mRNA_3cpc_Str	2
____LEDPVGTVPAPQIPP_____	X84773	HSV-1-pUS6	304	14aaG4S	mRNA_3cpc_Th	1
____LEDPVGTVPAPQIPPNWHIPSIQ____	X31662	HSV-1-pUS6	304	22aa	mRNA_30cpc_Str	2
____LEDPVGTVPAPQIPPNWHIPSIQ____	X31662	HSV-2-pUS6	304	22aa	mRNA_30cpc_Str	2
____PAGTVSSQIPPNWHIPSIQDVA_____	X23640	HSV-2-pUS6	307	22aa	mRNA_30cpc_Str	1
____PAGTVSSQIPPNWHIPSIQDVA_____	X23640	HSV-2-pUS6	307	22aa	mRNA_3cpc_Str	1
____PAGTVSSQIPPNWHIPSIQDVA_____	X23640	HSV-2-pUS6	307	22aa	mRNA_30cpc_SN	2
____PAGTVSSQIPPNWHIPSIQDVA_____	X23640	HSV-2-pUS6	307	22aa	mRNA_30cpc_Th	1
____PAGTVSSQIPPNWHIPSIQDVA_____	X23640	HSV-2-pUS6	307	22aa	mRNA_30cpc_Ctx	2
____PAGTVSSQIPPNWHIPSIQDVA_____	X23640	HSV-2-pUS6	307	22aa	mRNA_3cpc_Th	1
____PEDSALLEDPVGTVPAPQIPPNW_____	X23162	HSV-1-pUS6	298	22aa	mRNA_30cpc_Str	1
____PEDSALLEDPVGTVPAPQIPPNW_____	X23162	HSV-2-pUS6	298	22aa	mRNA_30cpc_Str	1
____PEDSALLEDPVGTVPAPQIPPNW_____	X23162	HSV-1-pUS6	298	22aa	mRNA_30cpc_SN	2
____PEDSALLEDPVGTVPAPQIPPNW_____	X23162	HSV-2-pUS6	298	22aa	mRNA_30cpc_SN	2
____PEDSALLEDPVGTVPAPQIPPNW_____	X23162	HSV-1-pUS6	298	22aa	mRNA_30cpc_Th	1
____PEDSALLEDPVGTVPAPQIPPNW_____	X23162	HSV-2-pUS6	298	22aa	mRNA_30cpc_Th	1
____PVGTVPAPQIPPNWHIPSIQDAA_____	X24304	HSV-1-pUS6	307	22aa	mRNA_30cpc_Str	1
____QNTAPQIGTVNSQG_____	X18419	AAV8-VP1	589	14aa	mRNA_30cpc_Str	1
____SALLEDPAGTVSSQ_____	X12952	HSV-2-pUS6	301	14aa	mRNA_30cpc_Organoid_MD114	1
____SALLEDPAGTVSSQ_____	X12952	HSV-2-pUS6	301	14aa	mRNA_30cpc_Th	1
____SALLEDPAGTVSSQIPPNWHIP_____	X12951	HSV-1-pUS6	301	22aa	mRNA_30cpc_Str	1
____SALLEDPAGTVSSQIPPNWHIP_____	X12951	HSV-2-pUS6	301	22aa	mRNA_30cpc_Str	1
____SALLEDPVGTVPAPQ_____	X12954	HSV-1-pUS6	301	14aa	mRNA_30cpc_Str	2
____SALLEDPVGTVPAPQ_____	X79929	HSV-1-pUS6	301	14aaG4S	mRNA_30cpc_Str	1
____SALLEDPVGTVPAPQ_____	X12954	HSV-1-pUS6	301	14aa	mRNA_3cpc_Str	4
____SALLEDPVGTVPAPQ_____	X12954	HSV-1-pUS6	301	14aa	mRNA_30cpc_Th	1
____SALLEDPVGTVPAPQ_____	X12954	HSV-1-pUS6	301	14aa	mRNA_3cpc_Th	4
____SALLEDPVGTVPAPQ_____	X12954	HSV-1-pUS6	301	14aa	mRNA_3cpc_Ctx	2
____SALLEDPVGTVPAPQIPPNWHIP_____	X12953	HSV-1-pUS6	301	22aa	mRNA_30cpc_Str	4
____SALLEDPVGTVPAPQIPPNWHIP_____	X12953	HSV-2-pUS6	301	22aa	mRNA_30cpc_Str	4
____TVAPQIPPNWHIPS_____	X78945	HSV-1-pUS6	310	14aaG4S	mRNA_30cpc_Str	1

alignment	LUThrs	GeneName	start	structure	Group	Score
-----TVAPQIPPNWHIPS-----	X78945	HSV-2-pUS6	310	14aaG4S	mRNA_30cpc_Str	1

Peptide SIPGFPAEGSIPLP from Tau used in serotype AAV-MNM017

Peptide SIPGFPAEGSIPLP from Tau used in serotype AAV-MNM017



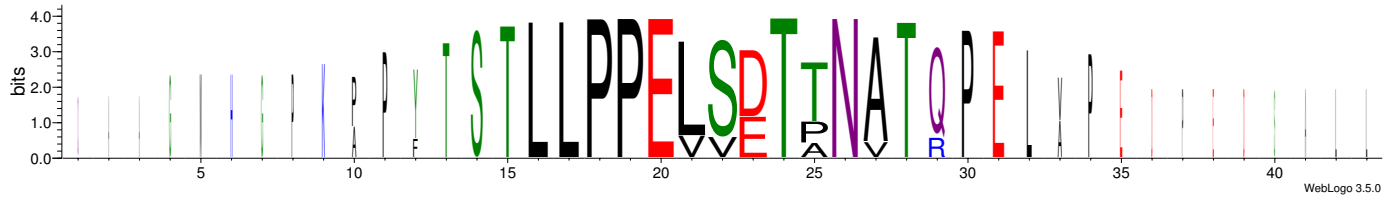
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17	SIPGFPAEGSIPLP	69	42	4	6	6	3	3

cluster_id	sequence	alignment	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str
17	SIPGFPAEGSIPLP	_____SIPGFPAEGSIPLP_____	21	9	4	5
17	SGETTSIPGFPAEG	_____SGETTSIPGFPAEG_____	14	9	0	0
17	IPGFPAEGSIPLPA	_____IPGFPAEGSIPLPA_____	10	6	0	0
17	TTSIPGFPAEGSIP	_____TTSIPGFPAEGSIP_____	8	3	0	1
17	GETTSIPGFPAEGS	_____GETTSIPGFPAEGS_____	4	4	0	0
17	PGFPAEGSIPLPAD	_____PGFPAEGSIPLPAD_____	3	3	0	0
17	GFPAEGSIPLPADF	_____GFPAEGSIPLPADF_____	3	2	0	0
17	TSIPGFPAEGSIPL	_____TSIPGFPAEGSIPL_____	2	2	0	0
17	PAEGSIPLPADFFS	_____PAEGSIPLPADFFS_____	2	2	0	0
17	VSGETTSIPGFPAE	_____VSGETTSIPGFPAE_____	1	1	0	0
17	SASGVSGETTSIPGFPAEGSIP	SASGVSGETTSIPGFPAEGSIP_____	1	1	0	0

alignment	LUThrs	GeneName	start	structure	Group	Score
_____GETTSIPGFPAEGS_____	X63754	Tau	247	14aa	mRNA_30cpc_Str	3
_____GETTSIPGFPAEGS_____	X88961	Tau	247	14aaG4S	mRNA_30cpc_Str	1
_____GFPAEGSIPLPADF_____	X65487	Tau	254	14aa	mRNA_30cpc_Organoid_MD114	1
_____GFPAEGSIPLPADF_____	X65487	Tau	254	14aa	mRNA_30cpc_Str	2
_____IPGFPAEGSIPLPA_____	X15485	Tau	252	14aa	mRNA_30cpc_Str	6
_____IPGFPAEGSIPLPA_____	X15485	Tau	252	14aa	mRNA_30cpc_SN	2
_____IPGFPAEGSIPLPA_____	X15485	Tau	252	14aa	mRNA_30cpc_Ctx	2
_____PAEGSIPLPADFFS_____	X51344	Tau	256	14aaA5	mRNA_30cpc_Str	2
_____PGFPAEGSIPLPAD_____	X24072	Tau	253	14aa	mRNA_30cpc_Str	2
_____PGFPAEGSIPLPAD_____	X51452	Tau	253	14aaA5	mRNA_30cpc_Str	1
SASGVSGETTSIPGFPAEGSIP_____	X12843	Tau	241	22aa	mRNA_30cpc_Str	1
_____SGETTSIPGFPAEG_____	X13281	Tau	246	14aa	mRNA_3000cpc_Organoid_MD101	1
_____SGETTSIPGFPAEG_____	X13281	Tau	246	14aa	mRNA_30cpc_Organoid_MD114	1
_____SGETTSIPGFPAEG_____	X13281	Tau	246	14aa	mRNA_30cpc_Str	9
_____SGETTSIPGFPAEG_____	X13281	Tau	246	14aa	mRNA_30cpc_Th	1
_____SGETTSIPGFPAEG_____	X13281	Tau	246	14aa	mRNA_30cpc_Ctx	2
_____SIPGFPAEGSIPLP_____	X11013	Tau	251	14aa	mRNA_3000cpc_Organoid_MD101	1
_____SIPGFPAEGSIPLP_____	X11013	Tau	251	14aa	mRNA_30cpc_Str	9
_____SIPGFPAEGSIPLP_____	X11013	Tau	251	14aa	mRNA_3cpc_Str	5
_____SIPGFPAEGSIPLP_____	X11013	Tau	251	14aa	mRNA_30cpc_SN	1
_____SIPGFPAEGSIPLP_____	X11013	Tau	251	14aa	mRNA_30cpc_Th	1
_____SIPGFPAEGSIPLP_____	X11013	Tau	251	14aa	mRNA_3cpc_Th	4
_____TSIPGFPAEGSIPL_____	X78151	Tau	250	14aaG4S	mRNA_30cpc_Str	2
_____TTSIPGFPAEGSIP_____	X5959	Tau	249	14aa	mRNA_30cpc_Organoid_MD114	1
_____TTSIPGFPAEGSIP_____	X5959	Tau	249	14aa	mRNA_30cpc_Str	3
_____TTSIPGFPAEGSIP_____	X5959	Tau	249	14aa	mRNA_3cpc_Str	1
_____TTSIPGFPAEGSIP_____	X5959	Tau	249	14aa	mRNA_30cpc_Th	1
_____TTSIPGFPAEGSIP_____	X5959	Tau	249	14aa	mRNA_30cpc_Ctx	2
_____VSGETTSIPGFPAE_____	X66501	Tau	245	14aa	mRNA_30cpc_Str	1

Peptide STLLPPELSDTTNA from HSV-1-pUS6 used in serotype AAV-MNM018

Peptide STLLPPELSDTTNA from HSV-1-pUS6 used in serotype AAV-MNM018



cluster_id	main_sequence	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str	mRNA_30cpc_Ctx	mRNA_30cpc_Th	mRNA_30cpc_SN
18	STLLPPELSDTTNA	91	45	7	6	9	9	7

cluster_id	sequence	alignment	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str
18	STLLPPELSDTTNA	-----STLLPPELSDTTNA-----	16	3	1	0
18	TLLPPELSDTTNAT	-----TLLPPELSDTTNAT-----	8	5	0	0
18	PPELSDTTNATQPE	-----PPELSDTTNATQPE-----	8	1	1	0
18	PPEVETANVTRPE	-----PPEVETANVTRPE-----	7	3	1	2
18	LLPPELSETPNATQ	-----LLPPELSETPNATQ-----	7	5	0	0
18	LLPPELSDTTNATQ	-----LLPPELSDTTNATQ-----	7	4	1	1
18	GWHGKPPYTSLLPPELSDTT	___GWHGKPPYTSLLPPELSDTT___	4	3	1	0
18	TSTLLPPEVVETAN	-----TSTLLPPEVVETAN-----	3	0	1	1
18	SDTTNATQPELVPE	-----SDTTNATQPELVPE-----	3	2	1	0
18	SETPNATQPELAPEDPEDSALL	-----SETPNATQPELAPEDPEDSALL-----	2	2	0	0
18	QAAGWHGPKAPFTSTLLPPEVV	QAAGWHGPKAPFTSTLLPPEVV_	2	0	0	0
18	PPELSETPNATQPE	-----PPELSETPNATQPE-----	2	2	0	0
18	LSETPNATQPELAP	-----LSETPNATQPELAP-----	2	1	0	0
18	LSDTTNATQPELV	-----LSDTTNATQPELV-----	2	1	0	1
18	KPPYTSLLPPELS	-----KPPYTSLLPPELS-----	2	2	0	0
18	APYTSLLPPELSETPNATQPE	-----APYTSLLPPELSETPNATQPE-----	2	2	0	0
18	TSTLLPPEVVETANVTRPELAP	-----TSTLLPPEVVETANVTRPELAP-----	1	1	0	0
18	TSTLLPPELSETPN	-----TSTLLPPELSETPN-----	1	0	0	0
18	TSTLLPPELSDTTNATQPELV	-----TSTLLPPELSDTTNATQPELV-----	1	0	0	0
18	TLLPPEVVETANVT	-----TLLPPEVVETANVT-----	1	1	0	0
18	STLLPPELSETPNA	-----STLLPPELSETPNA-----	1	1	0	0
18	SETPNATQPELAPE	-----SETPNATQPELAPE-----	1	0	0	1
18	SDTTNATQPELVPEDPEDSALL	-----SDTTNATQPELVPEDPEDSALL-----	1	1	0	0
18	PYTSTLLPPELSET	-----PYTSTLLPPELSET-----	1	1	0	0
18	PPYTSTLLPPELSDTTNATQPE	-----PPYTSTLLPPELSDTTNATQPE-----	1	0	0	0
18	PPYTSTLLPPELSD	-----PPYTSTLLPPELSD-----	1	1	0	0
18	PEVVETANVTRPEL	-----PEVVETANVTRPEL-----	1	1	0	0
18	PELSDTTNATQPEL	-----PELSDTTNATQPEL-----	1	1	0	0
18	LPPELSETPNATQP	-----LPPELSETPNATQP-----	1	1	0	0
18	KAPFTSTLLPPEVV	-----KAPFTSTLLPPEVV-----	1	0	0	0

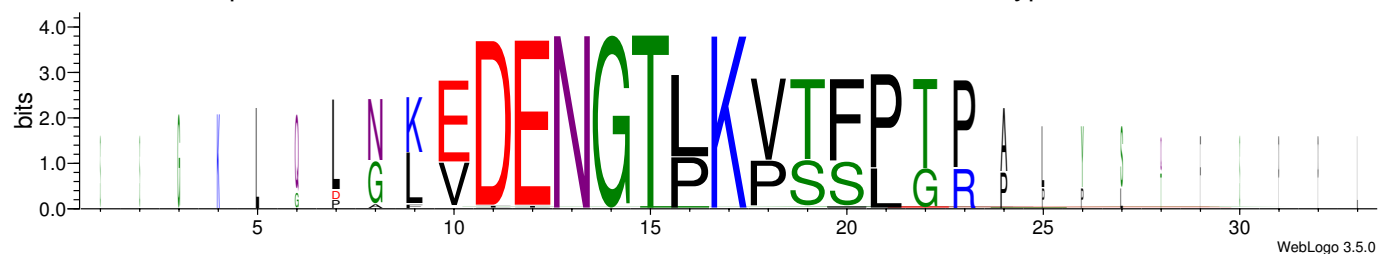
alignment	LUThrs	GeneName	start	structure	Group	Score
_____APYTSTLLPPELSETPNATQPE_____	X41982	HSV-1-pUS6	271	22aa	mRNA_30cpc_Str	2
_____APYTSTLLPPELSETPNATQPE_____	X41982	HSV-2-pUS6	271	22aa	mRNA_30cpc_Str	2
___GWHGPKPPYTSTLLPPELSDTT_____	X65370	HSV-1-pUS6	265	22aa	mRNA_30cpc_Str	3
___GWHGPKPPYTSTLLPPELSDTT_____	X65370	HSV-2-pUS6	265	22aa	mRNA_30cpc_Str	3
___GWHGPKPPYTSTLLPPELSDTT_____	X65370	HSV-1-pUS6	265	22aa	mRNA_3cpc_Th	1
___GWHGPKPPYTSTLLPPELSDTT_____	X65370	HSV-2-pUS6	265	22aa	mRNA_3cpc_Th	1
_____KAPFTSTLLPPEVV_____	X4768	BV-G	270	14aa	mRNA_30cpc_Organoid_MD114	1
_____KPPYTSTLLPPELS_____	X3978	HSV-1-pUS6	270	14aa	mRNA_30cpc_Str	2
_____KPPYTSTLLPPELS_____	X3978	HSV-2-pUS6	270	14aa	mRNA_30cpc_Str	2
_____LLPPELSDTTNATQ_____	X30911	HSV-1-pUS6	277	14aa	mRNA_30cpc_Str	1
_____LLPPELSDTTNATQ_____	X53288	HSV-1-pUS6	277	14aaA5	mRNA_30cpc_Str	1
_____LLPPELSDTTNATQ_____	X84578	HSV-1-pUS6	277	14aaG4S	mRNA_30cpc_Str	2
_____LLPPELSDTTNATQ_____	X30911	HSV-2-pUS6	277	14aa	mRNA_30cpc_Str	1
_____LLPPELSDTTNATQ_____	X53288	HSV-2-pUS6	277	14aaA5	mRNA_30cpc_Str	1
_____LLPPELSDTTNATQ_____	X84578	HSV-2-pUS6	277	14aaG4S	mRNA_30cpc_Str	2
_____LLPPELSDTTNATQ_____	X30911	HSV-1-pUS6	277	14aa	mRNA_3cpc_Str	1
_____LLPPELSDTTNATQ_____	X30911	HSV-2-pUS6	277	14aa	mRNA_3cpc_Str	1
_____LLPPELSDTTNATQ_____	X84578	HSV-1-pUS6	277	14aaG4S	mRNA_30cpc_Ctx	1
_____LLPPELSDTTNATQ_____	X84578	HSV-2-pUS6	277	14aaG4S	mRNA_30cpc_Ctx	1
_____LLPPELSDTTNATQ_____	X30911	HSV-1-pUS6	277	14aa	mRNA_3cpc_Th	1
_____LLPPELSDTTNATQ_____	X30911	HSV-2-pUS6	277	14aa	mRNA_3cpc_Th	1
_____LLPPELSETPNATQ_____	X30913	HSV-1-pUS6	277	14aa	mRNA_30cpc_Str	4
_____LLPPELSETPNATQ_____	X53289	HSV-1-pUS6	277	14aaA5	mRNA_30cpc_Str	1
_____LLPPELSETPNATQ_____	X30913	HSV-2-pUS6	277	14aa	mRNA_30cpc_Str	4
_____LLPPELSETPNATQ_____	X53289	HSV-2-pUS6	277	14aaA5	mRNA_30cpc_Str	1
_____LLPPELSETPNATQ_____	X30913	HSV-1-pUS6	277	14aa	mRNA_30cpc_SN	1
_____LLPPELSETPNATQ_____	X30913	HSV-2-pUS6	277	14aa	mRNA_30cpc_SN	1
_____LLPPELSETPNATQ_____	X30913	HSV-1-pUS6	277	14aa	mRNA_30cpc_Ctx	1
_____LLPPELSETPNATQ_____	X30913	HSV-2-pUS6	277	14aa	mRNA_30cpc_Ctx	1
_____LPPELSETPNATQP_____	X30222	HSV-1-pUS6	278	14aa	mRNA_30cpc_Str	1
_____LPPELSETPNATQP_____	X30222	HSV-2-pUS6	278	14aa	mRNA_30cpc_Str	1
_____LSDTTNATQPELVP_____	X29330	HSV-1-pUS6	282	14aa	mRNA_30cpc_Str	1
_____LSDTTNATQPELVP_____	X29330	HSV-2-pUS6	282	14aa	mRNA_30cpc_Str	1
_____LSDTTNATQPELVP_____	X29330	HSV-1-pUS6	282	14aa	mRNA_3cpc_Str	1
_____LSDTTNATQPELVP_____	X29330	HSV-2-pUS6	282	14aa	mRNA_3cpc_Str	1
_____LSETPNATQPELAP_____	X29351	HSV-1-pUS6	282	14aa	mRNA_3000cpc_Organoid_MD101	1
_____LSETPNATQPELAP_____	X29351	HSV-2-pUS6	282	14aa	mRNA_3000cpc_Organoid_MD101	1
_____LSETPNATQPELAP_____	X29351	HSV-1-pUS6	282	14aa	mRNA_30cpc_Str	1
_____LSETPNATQPELAP_____	X29351	HSV-2-pUS6	282	14aa	mRNA_30cpc_Str	1
_____PELSDTTNATQPEL_____	X23140	HSV-1-pUS6	280	14aa	mRNA_30cpc_Str	1
_____PELSDTTNATQPEL_____	X23140	HSV-2-pUS6	280	14aa	mRNA_30cpc_Str	1
_____PEVVETANVTRPEL_____	X23262	BV-G	280	14aa	mRNA_30cpc_Str	1
_____PPELSDTTNATQPE_____	X22117	HSV-2-pUS6	279	14aa	mRNA_30cpc_Str	1
_____PPELSDTTNATQPE_____	X22117	HSV-2-pUS6	279	14aa	mRNA_30cpc_SN	2
_____PPELSDTTNATQPE_____	X22117	HSV-2-pUS6	279	14aa	mRNA_30cpc_Th	2
_____PPELSDTTNATQPE_____	X22117	HSV-2-pUS6	279	14aa	mRNA_30cpc_Ctx	2
_____PPELSDTTNATQPE_____	X22117	HSV-2-pUS6	279	14aa	mRNA_3cpc_Th	1

alignment	LUThrs	GeneName	start	structure	Group	Score
-----PPELSETPNATQPE-----	X22118	HSV-1-pUS6	279	14aa	mRNA_30cpc_Str	2
-----PPEVVETANVTRPE-----	X22129	BV-G	279	14aa	mRNA_30cpc_Str	3
-----PPEVVETANVTRPE-----	X22129	BV-G	279	14aa	mRNA_3cpc_Str	2
-----PPEVVETANVTRPE-----	X22129	BV-G	279	14aa	mRNA_3cpc_Th	1
-----PPEVVETANVTRPE-----	X22129	BV-G	279	14aa	mRNA_3cpc_Ctx	1
-----PPYTSTLLPPELSD-----	X51016	HSV-1-pUS6	271	14aaA5	mRNA_30cpc_Str	1
-----PPYTSTLLPPELSD-----	X51016	HSV-2-pUS6	271	14aaA5	mRNA_30cpc_Str	1
-----PPYTSTLLPPELSDTTNATQPE-----	X22271	HSV-1-pUS6	271	22aa	mRNA_30cpc_Th	1
-----PPYTSTLLPPELSDTTNATQPE-----	X22271	HSV-2-pUS6	271	22aa	mRNA_30cpc_Th	1
-----PYTSTLLPPELSET-----	X24380	HSV-1-pUS6	272	14aa	mRNA_30cpc_Str	1
-----PYTSTLLPPELSET-----	X24380	HSV-2-pUS6	272	14aa	mRNA_30cpc_Str	1
QAAGWHGPKAPFTSTLLPPEVV-----	X19942	BV-G	262	22aa	mRNA_30cpc_Organoid_MD114	2
-----SDTTNATQPELVPE-----	X12402	HSV-1-pUS6	283	14aa	mRNA_30cpc_Str	2
-----SDTTNATQPELVPE-----	X12402	HSV-2-pUS6	283	14aa	mRNA_30cpc_Str	2
-----SDTTNATQPELVPE-----	X12402	HSV-1-pUS6	283	14aa	mRNA_3cpc_Th	1
-----SDTTNATQPELVPE-----	X12402	HSV-2-pUS6	283	14aa	mRNA_3cpc_Th	1
-----SDTTNATQPELVPEDPEDSALL-----	X12401	HSV-1-pUS6	283	22aa	mRNA_30cpc_Str	1
-----SDTTNATQPELVPEDPEDSALL-----	X12401	HSV-2-pUS6	283	22aa	mRNA_30cpc_Str	1
-----SETPNATQPELAPE-----	X12618	HSV-1-pUS6	283	14aa	mRNA_3cpc_Str	1
-----SETPNATQPELAPE-----	X12618	HSV-2-pUS6	283	14aa	mRNA_3cpc_Str	1
-----SETPNATQPELAPEDPEDSALL-----	X12617	HSV-1-pUS6	283	22aa	mRNA_30cpc_Str	2
-----SETPNATQPELAPEDPEDSALL-----	X12617	HSV-2-pUS6	283	22aa	mRNA_30cpc_Str	2
-----STLLPPELSDTTNA-----	X10394	HSV-1-pUS6	275	14aa	mRNA_30cpc_Str	3
-----STLLPPELSDTTNA-----	X10394	HSV-2-pUS6	275	14aa	mRNA_30cpc_Str	3
-----STLLPPELSDTTNA-----	X10394	HSV-1-pUS6	275	14aa	mRNA_30cpc_SN	4
-----STLLPPELSDTTNA-----	X10394	HSV-2-pUS6	275	14aa	mRNA_30cpc_SN	4
-----STLLPPELSDTTNA-----	X10394	HSV-1-pUS6	275	14aa	mRNA_30cpc_Th	4
-----STLLPPELSDTTNA-----	X10394	HSV-2-pUS6	275	14aa	mRNA_30cpc_Th	4
-----STLLPPELSDTTNA-----	X10394	HSV-1-pUS6	275	14aa	mRNA_30cpc_Ctx	4
-----STLLPPELSDTTNA-----	X10394	HSV-2-pUS6	275	14aa	mRNA_30cpc_Ctx	4
-----STLLPPELSDTTNA-----	X10394	HSV-1-pUS6	275	14aa	mRNA_3cpc_Th	1
-----STLLPPELSDTTNA-----	X10394	HSV-2-pUS6	275	14aa	mRNA_3cpc_Th	1
-----STLLPPELSETPNA-----	X10395	HSV-1-pUS6	275	14aa	mRNA_30cpc_Str	1
-----STLLPPELSETPNA-----	X10395	HSV-2-pUS6	275	14aa	mRNA_30cpc_Str	1
-----TLLPPELSDTTNAT-----	X7845	HSV-1-pUS6	276	14aa	mRNA_30cpc_Str	5
-----TLLPPELSDTTNAT-----	X7845	HSV-2-pUS6	276	14aa	mRNA_30cpc_Str	5
-----TLLPPELSDTTNAT-----	X7845	HSV-1-pUS6	276	14aa	mRNA_30cpc_Th	2
-----TLLPPELSDTTNAT-----	X7845	HSV-2-pUS6	276	14aa	mRNA_30cpc_Th	2
-----TLLPPELSDTTNAT-----	X7845	HSV-1-pUS6	276	14aa	mRNA_30cpc_Ctx	1
-----TLLPPELSDTTNAT-----	X7845	HSV-2-pUS6	276	14aa	mRNA_30cpc_Ctx	1
-----TLLPPEVVETANVT-----	X7847	BV-G	276	14aa	mRNA_30cpc_Str	1
-----TSTLLPPELSDTTNATQPELV-----	X6255	HSV-1-pUS6	274	22aa	mRNA_30cpc_Organoid_MD114	1
-----TSTLLPPELSDTTNATQPELV-----	X6255	HSV-2-pUS6	274	22aa	mRNA_30cpc_Organoid_MD114	1
-----TSTLLPPELSETPN-----	X46854	HSV-1-pUS6	274	14aaA5	mRNA_30cpc_Organoid_MD114	1
-----TSTLLPPELSETPN-----	X46854	HSV-2-pUS6	274	14aaA5	mRNA_30cpc_Organoid_MD114	1
-----TSTLLPPEVVETAN-----	X46855	BV-G	274	14aaA5	mRNA_3cpc_Str	1
-----TSTLLPPEVVETAN-----	X46855	BV-G	274	14aaA5	mRNA_3cpc_Th	1

alignment	LUThrs	GeneName	start	structure	Group	Score
-----TSTLLPPEVVETAN-----	X46855	BV-G	274	14aaA5	mRNA_3cpc_Ctx	1
-----TSTLLPPEVVETANVTRPELAP-----	X6259	BV-G	274	22aa	mRNA_30cpc_Str	1

Peptide EDENGLTKVTFPTP from CAV-2-F-SH01 used in serotype AAV-MNM019

Peptide EDENGLTKVTFPTP from CAV-2-F-SH01 used in serotype AAV-MNM019



cluster_id	main_sequence	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str	mRNA_30cpc_Ctx	mRNA_30cpc_Th	mRNA_30cpc_SN
19	EDENGLTKVTFPTP	60	23	8	14	4	2	3

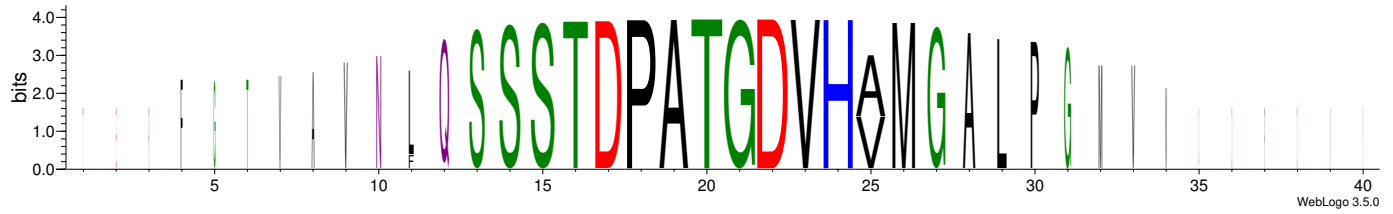
cluster_id	sequence	alignment	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str
19	EDENGLTKVTFPTP	_____EDENGLTKVTFPTP_____	20	3	5	5
19	GLEDENGLTKVTFP	_____GLEDENGLTKVTFP_____	8	5	0	0
19	VDENGLTKPSSSLGR	_____VDENGLTKPSSSLGR_____	4	0	1	2
19	LNKVDENGLTKPSS	_____LNKVDENGLTKPSS_____	4	0	1	3
19	DENGLTKPSSSLGRA	_____DENGLTKPSSSLGRA_____	4	3	0	0
19	NKVDENGLTKPSSSL	_____NKVDENGLTKPSSSL_____	3	0	0	2
19	LEDENGLTKVTFPT	_____LEDENGLTKVTFPT_____	3	3	0	0
19	GKLQLNKVDENGLTP	__GKLQLNKVDENGLTP_____	3	2	0	0
19	DENGLTKVTFPTPP	_____DENGLTKVTFPTPP_____	3	2	0	0
19	GTPKPSSSLGRALYS	_____GTPKPSSSLGRALYS_____	2	0	1	1
19	SSGKLQLNKVDENGLTKPSSSLG	SSGKLQLNKVDENGLTKPSSSLG_____	1	1	0	0
19	QLNKVDENGLTKPKPS	_____QLNKVDENGLTKPKPS_____	1	1	0	0
19	PAFTIINGTLKYFE	_____PAFTIINGTLKYFE_____	1	1	0	0
19	LNKVDENGLTKPSSSLGRALYST	_____LNKVDENGLTKPSSSLGRALYST_____	1	0	0	1
19	LGDGLEENGLTKV	____LGDGLEENGLTKV_____	1	1	0	0
19	ENGLTKVTFPTPPPLQFSPPL	_____ENGLTKVTFPTPPPLQFSPPL_____	1	1	0	0

alignment	LUThrs	GeneName	start	structure	Group	Score
_____DENGTLKVTFTPTTP_____	X35638	CAV-2-F-SH01	123	14aa	mRNA_3000cpc_Organoid_MD101	1
_____DENGTLKVTFTPTTP_____	X35638	CAV-2-F-Toronto-A26-61	123	14aa	mRNA_3000cpc_Organoid_MD101	1
_____DENGTLKVTFTPTTP_____	X35638	CAV-2-F-SH01	123	14aa	mRNA_30cpc_Str	2
_____DENGTLKVTFTPTTP_____	X35638	CAV-2-F-Toronto-A26-61	123	14aa	mRNA_30cpc_Str	2
_____DENGTPKPSSLGRA_____	X35637	SA	38	14aa	mRNA_30cpc_Str	3
_____DENGTPKPSSLGRA_____	X35637	SA	38	14aa	mRNA_30cpc_Ctx	1
_____EDENGTLKVTFTPTTP_____	X38436	CAV-2-F-SH01	122	14aa	mRNA_30cpc_Str	3
_____EDENGTLKVTFTPTTP_____	X38436	CAV-2-F-Toronto-A26-61	122	14aa	mRNA_30cpc_Str	3
_____EDENGTLKVTFTPTTP_____	X38436	CAV-2-F-SH01	122	14aa	mRNA_3cpc_Str	5
_____EDENGTLKVTFTPTTP_____	X38436	CAV-2-F-Toronto-A26-61	122	14aa	mRNA_3cpc_Str	5
_____EDENGTLKVTFTPTTP_____	X38436	CAV-2-F-SH01	122	14aa	mRNA_30cpc_SN	2
_____EDENGTLKVTFTPTTP_____	X38436	CAV-2-F-Toronto-A26-61	122	14aa	mRNA_30cpc_SN	2
_____EDENGTLKVTFTPTTP_____	X38436	CAV-2-F-SH01	122	14aa	mRNA_30cpc_Th	1
_____EDENGTLKVTFTPTTP_____	X38436	CAV-2-F-Toronto-A26-61	122	14aa	mRNA_30cpc_Th	1
_____EDENGTLKVTFTPTTP_____	X38436	CAV-2-F-SH01	122	14aa	mRNA_30cpc_Ctx	2
_____EDENGTLKVTFTPTTP_____	X38436	CAV-2-F-Toronto-A26-61	122	14aa	mRNA_30cpc_Ctx	2
_____EDENGTLKVTFTPTTP_____	X38436	CAV-2-F-SH01	122	14aa	mRNA_3cpc_Th	5
_____EDENGTLKVTFTPTTP_____	X38436	CAV-2-F-Toronto-A26-61	122	14aa	mRNA_3cpc_Th	5
_____EDENGTLKVTFTPTTP_____	X38436	CAV-2-F-SH01	122	14aa	mRNA_3cpc_Ctx	2
_____EDENGTLKVTFTPTTP_____	X38436	CAV-2-F-Toronto-A26-61	122	14aa	mRNA_3cpc_Ctx	2
_____ENGTLKVTFTPTTPPLQFSPPL_____	X36873	CAV-2-F-SH01	124	22aa	mRNA_30cpc_Str	1
_____ENGTLKVTFTPTTPPLQFSPPL_____	X36873	CAV-2-F-Toronto-A26-61	124	22aa	mRNA_30cpc_Str	1
_____GKLQLNKVDENGTP_____	X61329	SA	30	14aa	mRNA_30cpc_Organoid_MD114	1
_____GKLQLNKVDENGTP_____	X61329	SA	30	14aa	mRNA_30cpc_Str	2
_____GLEDENGTLKVTFTTP_____	X63297	CAV-2-F-SH01	120	14aa	mRNA_30cpc_Str	5
_____GLEDENGTLKVTFTTP_____	X63297	CAV-2-F-Toronto-A26-61	120	14aa	mRNA_30cpc_Str	5
_____GLEDENGTLKVTFTTP_____	X63297	CAV-2-F-SH01	120	14aa	mRNA_30cpc_SN	1
_____GLEDENGTLKVTFTTP_____	X63297	CAV-2-F-Toronto-A26-61	120	14aa	mRNA_30cpc_SN	1
_____GLEDENGTLKVTFTTP_____	X63297	CAV-2-F-SH01	120	14aa	mRNA_30cpc_Th	1
_____GLEDENGTLKVTFTTP_____	X63297	CAV-2-F-Toronto-A26-61	120	14aa	mRNA_30cpc_Th	1
_____GLEDENGTLKVTFTTP_____	X63297	CAV-2-F-SH01	120	14aa	mRNA_30cpc_Ctx	1
_____GLEDENGTLKVTFTTP_____	X63297	CAV-2-F-Toronto-A26-61	120	14aa	mRNA_30cpc_Ctx	1
_____GTPKPSSLGRALYS_____	X61541	SA	41	14aa	mRNA_3cpc_Str	1
_____GTPKPSSLGRALYS_____	X61541	SA	41	14aa	mRNA_3cpc_Th	1
_____LEDENGTLKVTFTPTTP_____	X31668	CAV-2-F-SH01	121	14aa	mRNA_30cpc_Str	3
_____LEDENGTLKVTFTPTTP_____	X31668	CAV-2-F-Toronto-A26-61	121	14aa	mRNA_30cpc_Str	3
_____LGDGLEDENGTLKV_____	X32543	CAV-2-F-SH01	117	14aa	mRNA_30cpc_Str	1
_____LGDGLEDENGTLKV_____	X32543	CAV-2-F-Toronto-A26-61	117	14aa	mRNA_30cpc_Str	1
_____LNKVDENGTPKPSS_____	X52582	SA	34	14aaA5	mRNA_3cpc_Str	3
_____LNKVDENGTPKPSS_____	X52582	SA	34	14aaA5	mRNA_3cpc_Th	1
_____LNKVDENGTPKPSSLGRALYST_____	X28331	SA	34	22aa	mRNA_3cpc_Str	1
_____NKVDENGTPKPSSL_____	X359	SA	35	14aa	mRNA_3cpc_Str	2
_____NKVDENGTPKPSSL_____	X359	SA	35	14aa	mRNA_3cpc_SN	1
_____PAFTIINGTLKYFE_____	X23716	VSV-Indiana-G	330	14aa	mRNA_30cpc_Str	1
_____PAFTIINGTLKYFE_____	X23716	VSV-Orsay-G	314	14aa	mRNA_30cpc_Str	1
_____QLNKVDENGTPKPSS_____	X19457	SA	33	14aa	mRNA_30cpc_Str	1
SSGKLQLNKVDENGTPKPSSLG_____	X10831	SA	28	22aa	mRNA_30cpc_Str	1

alignment	LUThrs	GeneName	start	structure	Group	Score
-----VDENGTPKPSSLGR-----	X58834	SA	37	14aaA5	mRNA_3cpc_Str	2
-----VDENGTPKPSSLGR-----	X58834	SA	37	14aaA5	mRNA_3cpc_Th	1
-----VDENGTPKPSSLGR-----	X58834	SA	37	14aaA5	mRNA_3cpc_Ctx	1

Peptide SSTDPATGDVHAMG from AAV1-VP1 used in serotype AAV-MNM020

Peptide SSTDPATGDVHAMG from AAV1-VP1 used in serotype AAV-MNM020



cluster_id	main_sequence	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str	mRNA_30cpc_Ctx	mRNA_30cpc_Th	mRNA_30cpc_SN
20	SSTDPATGDVHAMG	90	51	4	4	8	6	6

cluster_id	sequence	alignment	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str
20	SSTDPATGDVHAMG	-----SSTDPATGDVHAMG-----	15	6	1	1
20	QSSSTDPATGDVHV	-----QSSSTDPATGDVHV-----	13	3	3	1
20	SSSTDPATGDVHAM	-----SSSTDPATGDVHAM-----	8	6	0	0
20	SSSTDPATGDVHVM	-----SSSTDPATGDVHVM-----	6	5	0	0
20	TGDVHAMGALPGMV	-----TGDVHAMGALPGMV-----	5	4	0	0
20	STDPATGDVHAMGA	-----STDPATGDVHAMGA-----	5	3	0	0
20	FGTVAVNLQSSSTDPATGDVHV	__FGTVAVNLQSSSTDPATGDVHV__	5	1	0	0
20	PATGDVHAMGALPG	-----PATGDVHAMGALPG-----	4	0	0	2
20	VNLQSSSTDPATGD	-----VNLQSSSTDPATGD-----	3	3	0	0
20	STDPATGDVHVMGA	-----STDPATGDVHVMGA-----	3	3	0	0
20	SSSTDPATGDVHAMGALPGMVW	-----SSSTDPATGDVHAMGALPGMVW-----	3	2	0	0
20	PATGDVHVMGALPG	-----PATGDVHVMGALPG-----	3	3	0	0
20	DPATGDVHVMGALP	-----DPATGDVHVMGALP-----	3	1	0	0
20	TDPATGDVHAMGAL	-----TDPATGDVHAMGAL-----	2	1	0	0
20	NLQSSSTDPATGDVHVMGALPG	-----NLQSSSTDPATGDVHVMGALPG-----	2	2	0	0
20	VAVNLQSSSTDPATGDVHVMGA	-----VAVNLQSSSTDPATGDVHVMGA-----	1	1	0	0
20	TGDVHVMGALPGMV	-----TGDVHVMGALPGMV-----	1	1	0	0
20	TERFGTVAVNFQSSSTDPATGD	TERFGTVAVNFQSSSTDPATGD-----	1	0	0	0
20	TDPATGDVHVMGAL	-----TDPATGDVHVMGAL-----	1	1	0	0
20	SSTDPATGDVHVMG	-----SSTDPATGDVHVMG-----	1	1	0	0
20	QSSSTDPATGDVHA	-----QSSSTDPATGDVHA-----	1	1	0	0
20	NFQSSSTDPATGDVHAMGALPG	-----NFQSSSTDPATGDVHAMGALPG-----	1	1	0	0
20	DPATGDVHAMGALP	-----DPATGDVHAMGALP-----	1	1	0	0
20	AVNLQSSSTDPATG	-----AVNLQSSSTDPATG-----	1	0	0	0
20	ATGDVHAMGALPGMVWQDRDVY	-----ATGDVHAMGALPGMVWQDRDVY-----	1	1	0	0

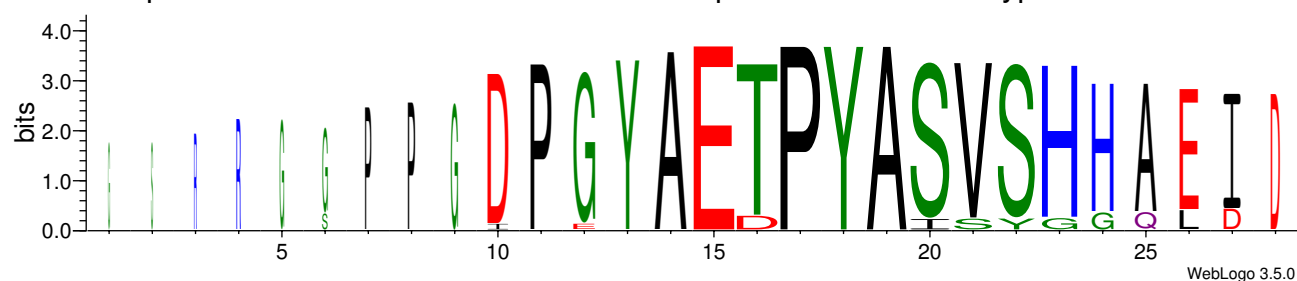
alignment	LUThrs	GeneName	start	structure	Group	Score
-----ATGDVHAMGALPGMVWQDRDVY	X40460	AAV1-VP1	592	22aa	mRNA_30cpc_Str	1
-----ATGDVHAMGALPGMVWQDRDVY	X40460	AAV6-VP1	592	22aa	mRNA_30cpc_Str	1
-----AVNLQSSSTDPATG-----	X44332	AAV1-VP1	581	14aa	mRNA_30cpc_Organoid_MD114	1
-----AVNLQSSSTDPATG-----	X44332	AAV6-VP1	581	14aa	mRNA_30cpc_Organoid_MD114	1
-----DPATGDVHAMGALP-----	X34959	AAV1-VP1	590	14aa	mRNA_30cpc_Str	1
-----DPATGDVHAMGALP-----	X34959	AAV6-VP1	590	14aa	mRNA_30cpc_Str	1
-----DPATGDVHVMGALP-----	X34960	AAV1-VP1	590	14aa	mRNA_30cpc_Str	1
-----DPATGDVHVMGALP-----	X34960	AAV6-VP1	590	14aa	mRNA_30cpc_Str	1
-----DPATGDVHVMGALP-----	X34960	AAV1-VP1	590	14aa	mRNA_30cpc_Th	1
-----DPATGDVHVMGALP-----	X34960	AAV6-VP1	590	14aa	mRNA_30cpc_Th	1
-----DPATGDVHVMGALP-----	X34960	AAV1-VP1	590	14aa	mRNA_30cpc_Ctx	1
-----DPATGDVHVMGALP-----	X34960	AAV6-VP1	590	14aa	mRNA_30cpc_Ctx	1
-----FGTVAVNLQSSSTDPATGDVHV-----	X75911	AAV1-VP1	577	22aa	mRNA_30cpc_Str	1
-----FGTVAVNLQSSSTDPATGDVHV-----	X75911	AAV6-VP1	577	22aa	mRNA_30cpc_Str	1
-----FGTVAVNLQSSSTDPATGDVHV-----	X75911	AAV1-VP1	577	22aa	mRNA_30cpc_SN	1
-----FGTVAVNLQSSSTDPATGDVHV-----	X75911	AAV6-VP1	577	22aa	mRNA_30cpc_SN	1
-----FGTVAVNLQSSSTDPATGDVHV-----	X75911	AAV1-VP1	577	22aa	mRNA_30cpc_Th	1
-----FGTVAVNLQSSSTDPATGDVHV-----	X75911	AAV6-VP1	577	22aa	mRNA_30cpc_Th	1
-----FGTVAVNLQSSSTDPATGDVHV-----	X75911	AAV1-VP1	577	22aa	mRNA_30cpc_Ctx	1
-----FGTVAVNLQSSSTDPATGDVHV-----	X75911	AAV6-VP1	577	22aa	mRNA_30cpc_Ctx	1
-----FGTVAVNLQSSSTDPATGDVHV-----	X75911	AAV1-VP1	577	22aa	mRNA_30cpc_Th_4wks	1
-----FGTVAVNLQSSSTDPATGDVHV-----	X75911	AAV6-VP1	577	22aa	mRNA_30cpc_Th_4wks	1
-----NFQSSSTDPATGDVHAMGALPG-----	X2938	AAV1-VP1	583	22aa	mRNA_30cpc_Str	1
-----NFQSSSTDPATGDVHAMGALPG-----	X2938	AAV6-VP1	583	22aa	mRNA_30cpc_Str	1
-----NLQSSSTDPATGDVHVMGALPG-----	X1625	AAV1-VP1	583	22aa	mRNA_30cpc_Str	2
-----NLQSSSTDPATGDVHVMGALPG-----	X1625	AAV6-VP1	583	22aa	mRNA_30cpc_Str	2
-----PATGDVHAMGALPG-----	X23344	AAV1-VP1	591	14aa	mRNA_3000cpc_Organoid_MD101	2
-----PATGDVHAMGALPG-----	X23344	AAV6-VP1	591	14aa	mRNA_3000cpc_Organoid_MD101	2
-----PATGDVHAMGALPG-----	X23344	AAV1-VP1	591	14aa	mRNA_3cpc_Str	2
-----PATGDVHAMGALPG-----	X23344	AAV6-VP1	591	14aa	mRNA_3cpc_Str	2
-----PATGDVHVMGALPG-----	X23345	AAV1-VP1	591	14aa	mRNA_30cpc_Str	3
-----PATGDVHVMGALPG-----	X23345	AAV6-VP1	591	14aa	mRNA_30cpc_Str	3
-----QSSSTDPATGDVHA-----	X18755	AAV1-VP1	585	14aa	mRNA_30cpc_Str	1
-----QSSSTDPATGDVHA-----	X18755	AAV6-VP1	585	14aa	mRNA_30cpc_Str	1
-----QSSSTDPATGDVHV-----	X18756	AAV1-VP1	585	14aa	mRNA_30cpc_Str	3
-----QSSSTDPATGDVHV-----	X18756	AAV6-VP1	585	14aa	mRNA_30cpc_Str	3
-----QSSSTDPATGDVHV-----	X18756	AAV1-VP1	585	14aa	mRNA_3cpc_Str	1
-----QSSSTDPATGDVHV-----	X18756	AAV6-VP1	585	14aa	mRNA_3cpc_Str	1
-----QSSSTDPATGDVHV-----	X18756	AAV1-VP1	585	14aa	mRNA_30cpc_SN	1
-----QSSSTDPATGDVHV-----	X18756	AAV6-VP1	585	14aa	mRNA_30cpc_SN	1
-----QSSSTDPATGDVHV-----	X18756	AAV1-VP1	585	14aa	mRNA_30cpc_Th	2
-----QSSSTDPATGDVHV-----	X18756	AAV6-VP1	585	14aa	mRNA_30cpc_Th	2
-----QSSSTDPATGDVHV-----	X18756	AAV1-VP1	585	14aa	mRNA_30cpc_Ctx	2
-----QSSSTDPATGDVHV-----	X18756	AAV6-VP1	585	14aa	mRNA_30cpc_Ctx	2
-----QSSSTDPATGDVHV-----	X18756	AAV1-VP1	585	14aa	mRNA_3cpc_Th	3
-----QSSSTDPATGDVHV-----	X18756	AAV6-VP1	585	14aa	mRNA_3cpc_Th	3
-----QSSSTDPATGDVHV-----	X18756	AAV1-VP1	585	14aa	mRNA_3cpc_Th_4wks	1

alignment	LUThrs	GeneName	start	structure	Group	Score
-----QSSSTDPATGDVHV-----	X18756	AAV6-VP1	585	14aa	mRNA_3cpc_Th_4wks	1
-----SSSTDPATGDVHAM-----	X10626	AAV1-VP1	586	14aa	mRNA_30cpc_Str	4
-----SSSTDPATGDVHAM-----	X48025	AAV1-VP1	586	14aaA5	mRNA_30cpc_Str	2
-----SSSTDPATGDVHAM-----	X10626	AAV6-VP1	586	14aa	mRNA_30cpc_Str	4
-----SSSTDPATGDVHAM-----	X48025	AAV6-VP1	586	14aaA5	mRNA_30cpc_Str	2
-----SSSTDPATGDVHAM-----	X10626	AAV1-VP1	586	14aa	mRNA_30cpc_SN	1
-----SSSTDPATGDVHAM-----	X10626	AAV6-VP1	586	14aa	mRNA_30cpc_SN	1
-----SSSTDPATGDVHAM-----	X10626	AAV1-VP1	586	14aa	mRNA_30cpc_Ctx	1
-----SSSTDPATGDVHAM-----	X10626	AAV6-VP1	586	14aa	mRNA_30cpc_Ctx	1
-----SSSTDPATGDVHAMGALPGMVW-----	X10627	AAV1-VP1	586	22aa	mRNA_3000cpc_Organoid_MD101	1
-----SSSTDPATGDVHAMGALPGMVW-----	X10627	AAV6-VP1	586	22aa	mRNA_3000cpc_Organoid_MD101	1
-----SSSTDPATGDVHAMGALPGMVW-----	X10627	AAV1-VP1	586	22aa	mRNA_30cpc_Str	2
-----SSSTDPATGDVHAMGALPGMVW-----	X10627	AAV6-VP1	586	22aa	mRNA_30cpc_Str	2
-----SSSTDPATGDVHVM-----	X10628	AAV1-VP1	586	14aa	mRNA_3000cpc_Organoid_MD101	1
-----SSSTDPATGDVHVM-----	X10628	AAV6-VP1	586	14aa	mRNA_3000cpc_Organoid_MD101	1
-----SSSTDPATGDVHVM-----	X10628	AAV1-VP1	586	14aa	mRNA_30cpc_Str	4
-----SSSTDPATGDVHVM-----	X48026	AAV1-VP1	586	14aaA5	mRNA_30cpc_Str	1
-----SSSTDPATGDVHVM-----	X10628	AAV6-VP1	586	14aa	mRNA_30cpc_Str	4
-----SSSTDPATGDVHVM-----	X48026	AAV6-VP1	586	14aaA5	mRNA_30cpc_Str	1
-----SSTDPATGDVHAMG-----	X10606	AAV1-VP1	587	14aa	mRNA_3000cpc_Organoid_MD101	1
-----SSTDPATGDVHAMG-----	X10606	AAV6-VP1	587	14aa	mRNA_3000cpc_Organoid_MD101	1
-----SSTDPATGDVHAMG-----	X10606	AAV1-VP1	587	14aa	mRNA_30cpc_Str	6
-----SSTDPATGDVHAMG-----	X10606	AAV6-VP1	587	14aa	mRNA_30cpc_Str	6
-----SSTDPATGDVHAMG-----	X10606	AAV1-VP1	587	14aa	mRNA_3cpc_Str	1
-----SSTDPATGDVHAMG-----	X10606	AAV6-VP1	587	14aa	mRNA_3cpc_Str	1
-----SSTDPATGDVHAMG-----	X10606	AAV1-VP1	587	14aa	mRNA_30cpc_SN	3
-----SSTDPATGDVHAMG-----	X10606	AAV6-VP1	587	14aa	mRNA_30cpc_SN	3
-----SSTDPATGDVHAMG-----	X10606	AAV1-VP1	587	14aa	mRNA_30cpc_Th	1
-----SSTDPATGDVHAMG-----	X10606	AAV6-VP1	587	14aa	mRNA_30cpc_Th	1
-----SSTDPATGDVHAMG-----	X10606	AAV1-VP1	587	14aa	mRNA_30cpc_Ctx	2
-----SSTDPATGDVHAMG-----	X10606	AAV6-VP1	587	14aa	mRNA_30cpc_Ctx	2
-----SSTDPATGDVHAMG-----	X10606	AAV1-VP1	587	14aa	mRNA_3cpc_Th	1
-----SSTDPATGDVHAMG-----	X10606	AAV6-VP1	587	14aa	mRNA_3cpc_Th	1
-----SSTDPATGDVHVMG-----	X10607	AAV1-VP1	587	14aa	mRNA_30cpc_Str	1
-----SSTDPATGDVHVMG-----	X10607	AAV6-VP1	587	14aa	mRNA_30cpc_Str	1
-----STD PATGDVHAMGA-----	X10423	AAV1-VP1	588	14aa	mRNA_30cpc_Str	3
-----STD PATGDVHAMGA-----	X10423	AAV6-VP1	588	14aa	mRNA_30cpc_Str	3
-----STD PATGDVHAMGA-----	X10423	AAV1-VP1	588	14aa	mRNA_30cpc_Th	1
-----STD PATGDVHAMGA-----	X10423	AAV6-VP1	588	14aa	mRNA_30cpc_Th	1
-----STD PATGDVHAMGA-----	X10423	AAV1-VP1	588	14aa	mRNA_30cpc_Ctx	1
-----STD PATGDVHAMGA-----	X10423	AAV6-VP1	588	14aa	mRNA_30cpc_Ctx	1
-----STD PATGDVHVMGA-----	X10424	AAV1-VP1	588	14aa	mRNA_30cpc_Str	3
-----STD PATGDVHVMGA-----	X10424	AAV6-VP1	588	14aa	mRNA_30cpc_Str	3
-----TDPATGDVHAMGAL-----	X78635	AAV1-VP1	589	14aaG4S	mRNA_30cpc_Organoid_MD114	1
-----TDPATGDVHAMGAL-----	X78635	AAV6-VP1	589	14aaG4S	mRNA_30cpc_Organoid_MD114	1
-----TDPATGDVHAMGAL-----	X8105	AAV1-VP1	589	14aa	mRNA_30cpc_Str	1
-----TDPATGDVHAMGAL-----	X8105	AAV6-VP1	589	14aa	mRNA_30cpc_Str	1

alignment	LUThrs	GeneName	start	structure	Group	Score
-----TDPATGDVHVMGAL-----	X47346	AAV1-VP1	589	14aaA5	mRNA_30cpc_Str	1
-----TDPATGDVHVMGAL-----	X47346	AAV6-VP1	589	14aaA5	mRNA_30cpc_Str	1
TERFGTVAVNFQSSSTD PATGD-----	X8301	AAV1-VP1	574	22aa	mRNA_30cpc_Organoid_MD114	1
TERFGTVAVNFQSSSTD PATGD-----	X8301	AAV6-VP1	574	22aa	mRNA_30cpc_Organoid_MD114	1
-----TGDVHAMGALPGMV-----	X8895	AAV1-VP1	593	14aa	mRNA_3000cpc_Organoid_MD101	1
-----TGDVHAMGALPGMV-----	X8895	AAV6-VP1	593	14aa	mRNA_3000cpc_Organoid_MD101	1
-----TGDVHAMGALPGMV-----	X8895	AAV1-VP1	593	14aa	mRNA_30cpc_Str	4
-----TGDVHAMGALPGMV-----	X8895	AAV6-VP1	593	14aa	mRNA_30cpc_Str	4
-----TGDVHVMGALPGMV-----	X8896	AAV1-VP1	593	14aa	mRNA_30cpc_Str	1
-----TGDVHVMGALPGMV-----	X8896	AAV6-VP1	593	14aa	mRNA_30cpc_Str	1
-----VAVNLQSSSTD PATGDVHVMGA-----	X68817	AAV1-VP1	580	22aa	mRNA_30cpc_Str	1
-----VAVNLQSSSTD PATGDVHVMGA-----	X68817	AAV6-VP1	580	22aa	mRNA_30cpc_Str	1
-----VNLQSSSTD PATGD-----	X65678	AAV1-VP1	582	14aa	mRNA_30cpc_Str	3
-----VNLQSSSTD PATGD-----	X65678	AAV6-VP1	582	14aa	mRNA_30cpc_Str	3

Peptide DPGYAETPYASVSH from HSV-2-pUL10 used in serotype AAV-MNM021

Peptide DPGYAETPYASVSH from HSV-2-pUL10 used in serotype AAV-MNM021



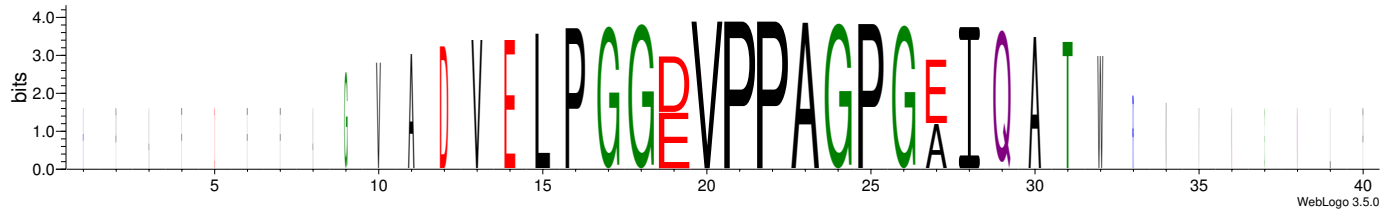
cluster_id	main_sequence	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str	mRNA_30cpc_Ctx	mRNA_30cpc_Th	mRNA_30cpc_SN
21	DPGYAETPYASVSH	45	15	7	3	6	7	4

cluster_id	sequence	alignment	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str
21	DPGYAETPYASVSH	-----DPGYAETPYASVSH-----	15	2	2	1
21	ETPYASVSHHAEID	-----ETPYASVSHHAEID-----	10	3	1	1
21	AETPYASVSHHAEI	-----AETPYASVSHHAEI-----	6	1	3	1
21	AEDPYAISYGGQLD	-----AEDPYAISYGGQLD-----	3	0	0	0
21	YAETPYASVSHHAE	-----YAETPYASVSHHAE-----	2	2	0	0
21	RGGPPGDPGYAETPYASVSHA	___RGGPPGDPGYAETPYASVSHA___	2	1	1	0
21	GSRRGGPPGDPGYAETPYASVS	GSRRGGPPGDPGYAETPYASVS-----	2	1	0	0
21	SPPGIPEYAEDPYA	-----SPPGIPEYAEDPYA-----	1	1	0	0
21	RRGGPPGDPGYAET	__RRGGPPGDPGYAET-----	1	1	0	0
21	PPGDPGYAETPYAS	-----PPGDPGYAETPYAS-----	1	1	0	0
21	PGDPGYAETPYASV	-----PGDPGYAETPYASV-----	1	1	0	0
21	GYAETPYASVSHA	-----GYAETPYASVSHA-----	1	1	0	0

alignment	LUThrs	GeneName	start	structure	Group	Score
-----AEDPYAISYGGQLD_	X43223	HSV-1-pUL10	399	14aa	mRNA_30cpc_Th	1
-----AEDPYAISYGGQLD_	X43223	HSV-1-pUL10	399	14aa	mRNA_30cpc_Ctx	1
-----AEDPYAISYGGQLD_	X43223	HSV-1-pUL10	399	14aa	mRNA_30cpc_Th_4wks	1
-----AETPYASVSHHAEI_	X43117	HSV-2-pUL10	392	14aa	mRNA_30cpc_Str	1
-----AETPYASVSHHAEI_	X43117	HSV-2-pUL10	392	14aa	mRNA_3cpc_Str	1
-----AETPYASVSHHAEI_	X43117	HSV-2-pUL10	392	14aa	mRNA_3cpc_Th	3
-----AETPYASVSHHAEI_	X43117	HSV-2-pUL10	392	14aa	mRNA_30cpc_Th_4wks	1
-----DPGYAETPYASVSH_	X35006	HSV-2-pUL10	388	14aa	mRNA_30cpc_Str	1
-----DPGYAETPYASVSH_	X85651	HSV-2-pUL10	388	14aaG4S	mRNA_30cpc_Str	1
-----DPGYAETPYASVSH_	X35006	HSV-2-pUL10	388	14aa	mRNA_3cpc_Str	1
-----DPGYAETPYASVSH_	X35006	HSV-2-pUL10	388	14aa	mRNA_30cpc_SN	1
-----DPGYAETPYASVSH_	X54361	HSV-2-pUL10	388	14aaA5	mRNA_30cpc_SN	2
-----DPGYAETPYASVSH_	X35006	HSV-2-pUL10	388	14aa	mRNA_30cpc_Th	1
-----DPGYAETPYASVSH_	X54361	HSV-2-pUL10	388	14aaA5	mRNA_30cpc_Th	2
-----DPGYAETPYASVSH_	X35006	HSV-2-pUL10	388	14aa	mRNA_30cpc_Ctx	1
-----DPGYAETPYASVSH_	X54361	HSV-2-pUL10	388	14aaA5	mRNA_30cpc_Ctx	2
-----DPGYAETPYASVSH_	X85651	HSV-2-pUL10	388	14aaG4S	mRNA_30cpc_Ctx	1
-----DPGYAETPYASVSH_	X35006	HSV-2-pUL10	388	14aa	mRNA_3cpc_Th	1
-----DPGYAETPYASVSH_	X54361	HSV-2-pUL10	388	14aaA5	mRNA_3cpc_Th	1
-----ETPYASVSHHAEID	X37111	HSV-2-pUL10	393	14aa	mRNA_30cpc_Str	3
-----ETPYASVSHHAEID	X37111	HSV-2-pUL10	393	14aa	mRNA_3cpc_Str	1
-----ETPYASVSHHAEID	X37111	HSV-2-pUL10	393	14aa	mRNA_30cpc_SN	1
-----ETPYASVSHHAEID	X37111	HSV-2-pUL10	393	14aa	mRNA_30cpc_Th	2
-----ETPYASVSHHAEID	X37111	HSV-2-pUL10	393	14aa	mRNA_30cpc_Ctx	1
-----ETPYASVSHHAEID	X37111	HSV-2-pUL10	393	14aa	mRNA_3cpc_Th	1
-----ETPYASVSHHAEID	X37111	HSV-2-pUL10	393	14aa	mRNA_30cpc_SN_4wks	1
GSRRGGPPGDPGYAETPYASVS_	X61846	HSV-2-pUL10	379	22aa	mRNA_30cpc_Str	1
GSRRGGPPGDPGYAETPYASVS_	X61846	HSV-2-pUL10	379	22aa	mRNA_30cpc_Th	1
-----GYAETPYASVSHHA_	X65194	HSV-2-pUL10	390	14aa	mRNA_30cpc_Str	1
-----PGDGPYAETPYASV_	X23923	HSV-2-pUL10	386	14aa	mRNA_30cpc_Str	1
-----PPGDPGYAETPYAS_	X51003	HSV-2-pUL10	385	14aaA5	mRNA_30cpc_Str	1
___RGGPPGDPGYAETPYASVSHHA_	X27566	HSV-2-pUL10	382	22aa	mRNA_30cpc_Str	1
___RGGPPGDPGYAETPYASVSHHA_	X27566	HSV-2-pUL10	382	22aa	mRNA_3cpc_Th	1
___RRGGPPGDPGYAET_	X26241	HSV-2-pUL10	381	14aa	mRNA_30cpc_Str	1
-----SPPGIPEYAEDPYA_	X48291	HSV-1-pUL10	391	14aaA5	mRNA_30cpc_Str	1
-----YAETPYASVSHHAE_	X71549	HSV-2-pUL10	391	14aa	mRNA_30cpc_Str	1
-----YAETPYASVSHHAE_	X59759	HSV-2-pUL10	391	14aaA5	mRNA_30cpc_Str	1

Peptide DVPPAGPGGEIQATW from HSV-1-pUL19 used in serotype AAV-MNM022

Peptide DVPPAGPGGEIQATW from HSV-1-pUL19 used in serotype AAV-MNM022



cluster_id	main_sequence	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str	mRNA_30cpc_Ctx	mRNA_30cpc_Th	mRNA_30cpc_SN
22	DVPPAGPGGEIQATW	75	40	2	3	9	6	11

cluster_id	sequence	alignment	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str
22	DVPPAGPGGEIQATW	-----DVPPAGPGGEIQATW-----	11	5	0	0
22	PGGDVPPAGPGGEIQ	-----PGGDVPPAGPGGEIQ-----	8	5	1	1
22	LPGGEVPPAGPGGAI	-----LPGGEVPPAGPGGAI-----	8	3	0	0
22	GVADVELPGGEVPP	-----GVADVELPGGEVPP-----	7	1	1	1
22	GDVPPAGPGGEIQAT	-----GDVPPAGPGGEIQAT-----	5	4	0	0
22	PGGEVPPAGPGGAIQ	-----PGGEVPPAGPGGAIQ-----	4	4	0	0
22	GEVPPAGPGGAIQAT	-----GEVPPAGPGGAIQAT-----	4	2	0	0
22	VELPGGEVPPAGPG	-----VELPGGEVPPAGPG-----	3	1	0	0
22	GGEVPPAGPGGAIQA	-----GGEVPPAGPGGAIQA-----	3	2	0	0
22	GGDVPPAGPGGEIQA	-----GGDVPPAGPGGEIQA-----	3	1	0	0
22	DVELPGGDVPPAGP	-----DVELPGGDVPPAGP-----	3	1	0	0
22	ADVELPGGEVPPAG	-----ADVELPGGEVPPAG-----	3	0	0	0
22	VELPGGDVPPAGPG	-----VELPGGDVPPAGPG-----	2	2	0	0
22	VADVELPGGDVPPA	-----VADVELPGGDVPPA-----	2	2	0	0
22	DVELPGGEVPPAGP	-----DVELPGGEVPPAGP-----	2	1	0	1
22	VPPAGPGGEIQATWR	-----VPPAGPGGEIQATWR-----	1	1	0	0
22	VELPGGDVPPAGPGGEIQATWRV	-----VELPGGDVPPAGPGGEIQATWRV-----	1	1	0	0
22	VADVELPGGEVPPAGPGAIQAT	-----VADVELPGGEVPPAGPGAIQAT-----	1	1	0	0
22	LPGGDVPPAGPGGEI	-----LPGGDVPPAGPGGEI-----	1	1	0	0
22	HPAFDFFAGVADVELPGGEVPP	HPAFDFFAGVADVELPGGEVPP-----	1	1	0	0
22	EVPPAGPGAIQATWRVVNGNLP	-----EVPPAGPGAIQATWRVVNGNLP-----	1	0	0	0
22	ADVELPGGDVPPAG	-----ADVELPGGDVPPAG-----	1	1	0	0

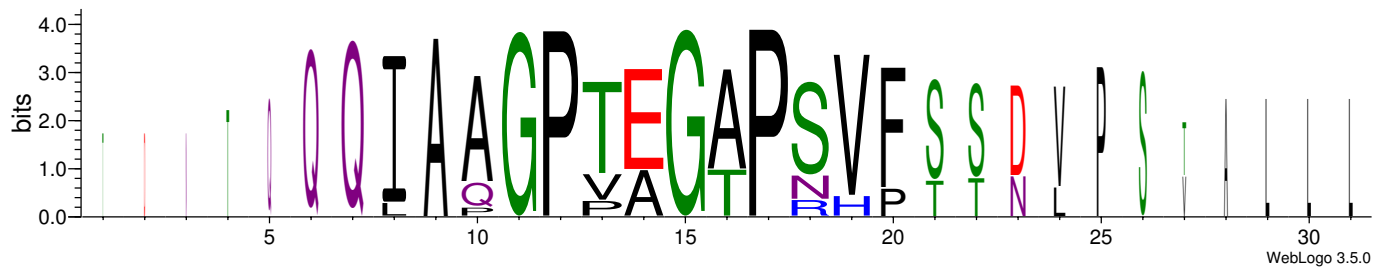
alignment	LUThrs	GeneName	start	structure	Group	Score
-----ADVELPGGDVPPAG-----	X43070	HSV-1-pUL19	554	14aa	mRNA_30cpc_Str	1
-----ADVELPGGDVPPAG-----	X43070	HSV-2-pUL19	554	14aa	mRNA_30cpc_Str	1
-----ADVELPGGEVPPAG-----	X43071	HSV-1-pUL19	554	14aa	mRNA_30cpc_SN	1
-----ADVELPGGEVPPAG-----	X43071	HSV-2-pUL19	554	14aa	mRNA_30cpc_SN	1
-----ADVELPGGEVPPAG-----	X43071	HSV-1-pUL19	554	14aa	mRNA_30cpc_Th	1
-----ADVELPGGEVPPAG-----	X43071	HSV-2-pUL19	554	14aa	mRNA_30cpc_Th	1
-----ADVELPGGEVPPAG-----	X43071	HSV-1-pUL19	554	14aa	mRNA_30cpc_Ctx	1
-----ADVELPGGEVPPAG-----	X43071	HSV-2-pUL19	554	14aa	mRNA_30cpc_Ctx	1
-----DVELPGGDVPPAGP-----	X36344	HSV-1-pUL19	555	14aa	mRNA_30cpc_Str	1
-----DVELPGGDVPPAGP-----	X36344	HSV-2-pUL19	555	14aa	mRNA_30cpc_Str	1
-----DVELPGGDVPPAGP-----	X36344	HSV-1-pUL19	555	14aa	mRNA_30cpc_SN	1
-----DVELPGGDVPPAGP-----	X36344	HSV-2-pUL19	555	14aa	mRNA_30cpc_SN	1
-----DVELPGGDVPPAGP-----	X36344	HSV-1-pUL19	555	14aa	mRNA_30cpc_Ctx	1
-----DVELPGGDVPPAGP-----	X36344	HSV-2-pUL19	555	14aa	mRNA_30cpc_Ctx	1
-----DVELPGGEVPPAGP-----	X36345	HSV-1-pUL19	555	14aa	mRNA_30cpc_Str	1
-----DVELPGGEVPPAGP-----	X36345	HSV-2-pUL19	555	14aa	mRNA_30cpc_Str	1
-----DVELPGGEVPPAGP-----	X36345	HSV-1-pUL19	555	14aa	mRNA_3cpc_Str	1
-----DVELPGGEVPPAGP-----	X36345	HSV-2-pUL19	555	14aa	mRNA_3cpc_Str	1
-----DVPPAGPGEIQATW-----	X36289	HSV-1-pUL19	562	14aa	mRNA_3000cpc_Organoid_MD101	1
-----DVPPAGPGEIQATW-----	X36289	HSV-2-pUL19	562	14aa	mRNA_3000cpc_Organoid_MD101	1
-----DVPPAGPGEIQATW-----	X36289	HSV-1-pUL19	562	14aa	mRNA_30cpc_Str	1
-----DVPPAGPGEIQATW-----	X54669	HSV-1-pUL19	562	14aaA5	mRNA_30cpc_Str	4
-----DVPPAGPGEIQATW-----	X36289	HSV-2-pUL19	562	14aa	mRNA_30cpc_Str	1
-----DVPPAGPGEIQATW-----	X54669	HSV-2-pUL19	562	14aaA5	mRNA_30cpc_Str	4
-----DVPPAGPGEIQATW-----	X54669	HSV-1-pUL19	562	14aaA5	mRNA_30cpc_SN	1
-----DVPPAGPGEIQATW-----	X54669	HSV-2-pUL19	562	14aaA5	mRNA_30cpc_SN	1
-----DVPPAGPGEIQATW-----	X54669	HSV-1-pUL19	562	14aaA5	mRNA_30cpc_Th	1
-----DVPPAGPGEIQATW-----	X54669	HSV-2-pUL19	562	14aaA5	mRNA_30cpc_Th	1
-----DVPPAGPGEIQATW-----	X54669	HSV-1-pUL19	562	14aaA5	mRNA_30cpc_Ctx	2
-----DVPPAGPGEIQATW-----	X54669	HSV-2-pUL19	562	14aaA5	mRNA_30cpc_Ctx	2
-----DVPPAGPGEIQATW-----	X54669	HSV-1-pUL19	562	14aaA5	mRNA_30cpc_SN_4wks	1
-----DVPPAGPGEIQATW-----	X54669	HSV-2-pUL19	562	14aaA5	mRNA_30cpc_SN_4wks	1
-----EVPPAGPGAIQATWRVVNGNLP-----	X39289	HSV-1-pUL19	562	22aa	mRNA_30cpc_Organoid_MD114	1
-----EVPPAGPGAIQATWRVVNGNLP-----	X39289	HSV-2-pUL19	562	22aa	mRNA_30cpc_Organoid_MD114	1
-----GDVPPAGPGEIQAT-----	X63695	HSV-1-pUL19	561	14aa	mRNA_30cpc_Str	4
-----GDVPPAGPGEIQAT-----	X63695	HSV-2-pUL19	561	14aa	mRNA_30cpc_Str	4
-----GDVPPAGPGEIQAT-----	X63695	HSV-1-pUL19	561	14aa	mRNA_30cpc_Th	1
-----GDVPPAGPGEIQAT-----	X63695	HSV-2-pUL19	561	14aa	mRNA_30cpc_Th	1
-----GEVPPAGPGAIQAT-----	X63937	HSV-1-pUL19	561	14aa	mRNA_30cpc_Str	2
-----GEVPPAGPGAIQAT-----	X63937	HSV-2-pUL19	561	14aa	mRNA_30cpc_Str	2
-----GEVPPAGPGAIQAT-----	X63937	HSV-1-pUL19	561	14aa	mRNA_30cpc_SN	1
-----GEVPPAGPGAIQAT-----	X63937	HSV-2-pUL19	561	14aa	mRNA_30cpc_SN	1
-----GEVPPAGPGAIQAT-----	X63937	HSV-1-pUL19	561	14aa	mRNA_30cpc_Ctx	1
-----GEVPPAGPGAIQAT-----	X63937	HSV-2-pUL19	561	14aa	mRNA_30cpc_Ctx	1
-----GGDVPPAGPGEIQA-----	X64573	HSV-1-pUL19	560	14aa	mRNA_30cpc_Str	1
-----GGDVPPAGPGEIQA-----	X64573	HSV-1-pUL19	560	14aa	mRNA_30cpc_Th	1
-----GGDVPPAGPGEIQA-----	X64573	HSV-1-pUL19	560	14aa	mRNA_30cpc_Ctx	1

alignment	LUThrs	GeneName	start	structure	Group	Score
-----GGEVPPAGPGAIA-----	X64590	HSV-2-pUL19	560	14aa	mRNA_30cpc_Str	2
-----GGEVPPAGPGAIA-----	X64590	HSV-2-pUL19	560	14aa	mRNA_30cpc_SN	1
-----GVADVELPGGEVPP-----	X64949	HSV-1-pUL19	552	14aa	mRNA_30cpc_Str	1
-----GVADVELPGGEVPP-----	X64949	HSV-2-pUL19	552	14aa	mRNA_30cpc_Str	1
-----GVADVELPGGEVPP-----	X64949	HSV-1-pUL19	552	14aa	mRNA_3cpc_Str	1
-----GVADVELPGGEVPP-----	X64949	HSV-2-pUL19	552	14aa	mRNA_3cpc_Str	1
-----GVADVELPGGEVPP-----	X64949	HSV-1-pUL19	552	14aa	mRNA_30cpc_SN	2
-----GVADVELPGGEVPP-----	X64949	HSV-2-pUL19	552	14aa	mRNA_30cpc_SN	2
-----GVADVELPGGEVPP-----	X64949	HSV-1-pUL19	552	14aa	mRNA_30cpc_Th	1
-----GVADVELPGGEVPP-----	X64949	HSV-2-pUL19	552	14aa	mRNA_30cpc_Th	1
-----GVADVELPGGEVPP-----	X64949	HSV-1-pUL19	552	14aa	mRNA_30cpc_Ctx	1
-----GVADVELPGGEVPP-----	X64949	HSV-2-pUL19	552	14aa	mRNA_30cpc_Ctx	1
-----GVADVELPGGEVPP-----	X64949	HSV-1-pUL19	552	14aa	mRNA_3cpc_Th	1
-----GVADVELPGGEVPP-----	X64949	HSV-2-pUL19	552	14aa	mRNA_3cpc_Th	1
HPAFDFFAGVADVELPGGEVPP	X17574	HSV-1-pUL19	544	22aa	mRNA_30cpc_Str	1
HPAFDFFAGVADVELPGGEVPP	X17574	HSV-2-pUL19	544	22aa	mRNA_30cpc_Str	1
-----LPGGDVPPAGPGEI-----	X30371	HSV-1-pUL19	558	14aa	mRNA_30cpc_Str	1
-----LPGGDVPPAGPGEI-----	X30371	HSV-2-pUL19	558	14aa	mRNA_30cpc_Str	1
-----LPGGEVPPAGPGAIA-----	X30373	HSV-1-pUL19	558	14aa	mRNA_3000cpc_Organoid_MD101	1
-----LPGGEVPPAGPGAIA-----	X30373	HSV-2-pUL19	558	14aa	mRNA_3000cpc_Organoid_MD101	1
-----LPGGEVPPAGPGAIA-----	X30373	HSV-1-pUL19	558	14aa	mRNA_30cpc_Str	3
-----LPGGEVPPAGPGAIA-----	X30373	HSV-2-pUL19	558	14aa	mRNA_30cpc_Str	3
-----LPGGEVPPAGPGAIA-----	X30373	HSV-1-pUL19	558	14aa	mRNA_30cpc_SN	3
-----LPGGEVPPAGPGAIA-----	X30373	HSV-2-pUL19	558	14aa	mRNA_30cpc_SN	3
-----LPGGEVPPAGPGAIA-----	X30373	HSV-1-pUL19	558	14aa	mRNA_30cpc_Ctx	1
-----LPGGEVPPAGPGAIA-----	X30373	HSV-2-pUL19	558	14aa	mRNA_30cpc_Ctx	1
-----PGGDVPPAGPGEIQ-----	X24018	HSV-1-pUL19	559	14aa	mRNA_30cpc_Str	5
-----PGGDVPPAGPGEIQ-----	X24018	HSV-2-pUL19	559	14aa	mRNA_30cpc_Str	5
-----PGGDVPPAGPGEIQ-----	X24018	HSV-1-pUL19	559	14aa	mRNA_3cpc_Str	1
-----PGGDVPPAGPGEIQ-----	X24018	HSV-2-pUL19	559	14aa	mRNA_3cpc_Str	1
-----PGGDVPPAGPGEIQ-----	X24018	HSV-1-pUL19	559	14aa	mRNA_30cpc_SN	1
-----PGGDVPPAGPGEIQ-----	X24018	HSV-2-pUL19	559	14aa	mRNA_30cpc_SN	1
-----PGGDVPPAGPGEIQ-----	X24018	HSV-1-pUL19	559	14aa	mRNA_3cpc_Th	1
-----PGGDVPPAGPGEIQ-----	X24018	HSV-2-pUL19	559	14aa	mRNA_3cpc_Th	1
-----PGGEVPPAGPGAIA-----	X24021	HSV-1-pUL19	559	14aa	mRNA_30cpc_Str	3
-----PGGEVPPAGPGAIA-----	X82731	HSV-1-pUL19	559	14aaG4S	mRNA_30cpc_Str	1
-----PGGEVPPAGPGAIA-----	X24021	HSV-2-pUL19	559	14aa	mRNA_30cpc_Str	3
-----PGGEVPPAGPGAIA-----	X82731	HSV-2-pUL19	559	14aaG4S	mRNA_30cpc_Str	1
-----VADVELPGGDVPPA-----	X68718	HSV-1-pUL19	553	14aa	mRNA_30cpc_Str	1
-----VADVELPGGDVPPA-----	X58989	HSV-1-pUL19	553	14aaA5	mRNA_30cpc_Str	1
-----VADVELPGGDVPPA-----	X68718	HSV-2-pUL19	553	14aa	mRNA_30cpc_Str	1
-----VADVELPGGDVPPA-----	X58989	HSV-2-pUL19	553	14aaA5	mRNA_30cpc_Str	1
-----VADVELPGGEVPPAGPGAIA-----	X68721	HSV-1-pUL19	553	22aa	mRNA_30cpc_Str	1
-----VADVELPGGEVPPAGPGAIA-----	X68721	HSV-2-pUL19	553	22aa	mRNA_30cpc_Str	1
-----VELPGGDVPPAGPG-----	X58880	HSV-1-pUL19	556	14aaA5	mRNA_30cpc_Str	2
-----VELPGGDVPPAGPG-----	X58880	HSV-2-pUL19	556	14aaA5	mRNA_30cpc_Str	2
-----VELPGGDVPPAGPGEIQATWRV-----	X68331	HSV-1-pUL19	556	22aa	mRNA_30cpc_Str	1

alignment	LUThrs	GeneName	start	structure	Group	Score
-----VELPGGDVPPAGPGEIQATWRV-----	X68331	HSV-2-pUL19	556	22aa	mRNA_30cpc_Str	1
-----VELPGGEVPPAGPG-----	X58881	HSV-1-pUL19	556	14aaA5	mRNA_30cpc_Str	1
-----VELPGGEVPPAGPG-----	X58881	HSV-2-pUL19	556	14aaA5	mRNA_30cpc_Str	1
-----VELPGGEVPPAGPG-----	X58881	HSV-1-pUL19	556	14aaA5	mRNA_30cpc_Th	1
-----VELPGGEVPPAGPG-----	X58881	HSV-2-pUL19	556	14aaA5	mRNA_30cpc_Th	1
-----VELPGGEVPPAGPG-----	X58881	HSV-1-pUL19	556	14aaA5	mRNA_30cpc_Ctx	1
-----VELPGGEVPPAGPG-----	X58881	HSV-2-pUL19	556	14aaA5	mRNA_30cpc_Ctx	1
-----VPPAGPGEIQATWR-----	X67169	HSV-1-pUL19	563	14aa	mRNA_30cpc_Str	1
-----VPPAGPGEIQATWR-----	X67169	HSV-2-pUL19	563	14aa	mRNA_30cpc_Str	1

Peptide QQIAAGPTEGAPSV from HSV-1-pUL22 used in serotype AAV-MNM023

Peptide QQIAAGPTEGAPSV from HSV-1-pUL22 used in serotype AAV-MNM023



cluster_id	main_sequence	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str	mRNA_30cpc_Ctx	mRNA_30cpc_Th	mRNA_30cpc_SN
23	QQIAAGPTEGAPSV	76	35	6	5	7	5	5

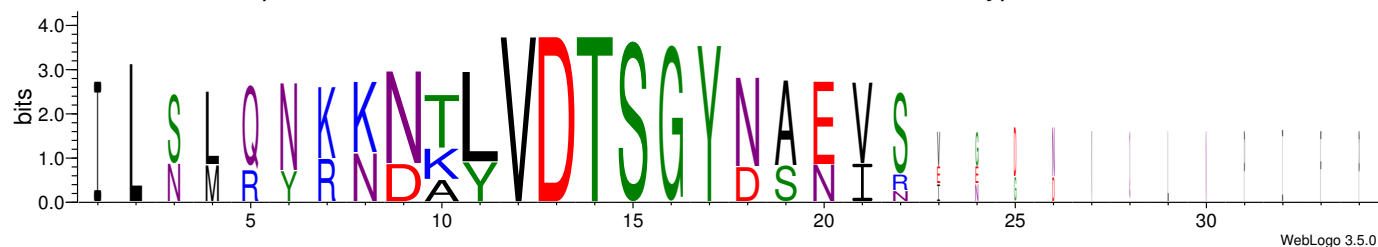
cluster_id	sequence	alignment	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str
23	QQIAAGPTEGAPSV	____QQIAAGPTEGAPSV_____	22	1	5	4
23	QIAAGPTEGAPSVF	____QIAAGPTEGAPSVF_____	12	5	0	0
23	TEGAPSVFSSDVPS	____TEGAPSVFSSDVPS_____	5	4	0	0
23	GPPAGTPRHPTTNL	____GPPAGTPRHPTTNL_____	5	5	0	0
23	PGPPAGTPRHPTTN	____PGPPAGTPRHPTTN_____	4	3	0	0
23	AGPTEGAPSVFSSDVPSTALL	____AGPTEGAPSVFSSDVPSTALL	4	3	0	0
23	VAGTPNVFSSDVPS	____VAGTPNVFSSDVPS_____	3	2	0	0
23	QGPVAGTPNVFSSDVPSVALLL	____QGPVAGTPNVFSSDVPSVALLL	3	3	0	0
23	QGPVAGTPNVFSSD	____QGPVAGTPNVFSSD_____	3	1	0	0
23	IAAGPTEGAPSVFS	____IAAGPTEGAPSVFS_____	3	1	0	0
23	TQQQLAQGPVAGTP	__TQQQLAQGPVAGTP_____	2	1	0	0
23	QQQIAAGPTEGAPS	___QQQIAAGPTEGAPS_____	2	0	1	1
23	TQQQIAAGPTEGAP	__TQQQIAAGPTEGAP_____	1	1	0	0
23	TDNTQQQIAAGPTEGAPSVFSS	TDNTQQQIAAGPTEGAPSVFSS_____	1	1	0	0
23	TDNTQQQIAAGPTE	TDNTQQQIAAGPTE_____	1	1	0	0
23	QQLAQGPVAGTPNV	____QQLAQGPVAGTPNV_____	1	0	0	0
23	QLAQGPVAGTPNVF	____QLAQGPVAGTPNVF_____	1	1	0	0
23	PVAGTPNVFSSDVP	____PVAGTPNVFSSDVP_____	1	0	0	0
23	PTEGAPSVFSSDVP	____PTEGAPSVFSSDVP_____	1	1	0	0
23	AQGPVAGTPNVFSS	____AQGPVAGTPNVFSS_____	1	1	0	0

alignment	LUThrs	GeneName	start	structure	Group	Score
-----AGPTEGAPSVFSSDVPSTALL	X44043	HSV-1-pUL22	760	22aa	mRNA_30cpc_Organoid_MD114	1
-----AGPTEGAPSVFSSDVPSTALL	X44043	HSV-1-pUL22	760	22aa	mRNA_30cpc_Str	3
-----AQGPVAGTPNVFSS-----	X41474	HSV-2-pUL22	759	14aa	mRNA_30cpc_Str	1
-----GPPAGTPRHPTTNL-----	X62616	HSV-2-pUL22	196	14aa	mRNA_30cpc_Str	1
-----GPPAGTPRHPTTNL-----	X57375	HSV-2-pUL22	196	14aaA5	mRNA_30cpc_Str	3
-----GPPAGTPRHPTTNL-----	X88665	HSV-2-pUL22	196	14aaG4S	mRNA_30cpc_Str	1
-----IAAGPTEGAPSVFS-----	X16325	HSV-1-pUL22	758	14aa	mRNA_3000cpc_Organoid_MD101	1
-----IAAGPTEGAPSVFS-----	X16325	HSV-1-pUL22	758	14aa	mRNA_30cpc_Organoid_MD114	1
-----IAAGPTEGAPSVFS-----	X16325	HSV-1-pUL22	758	14aa	mRNA_30cpc_Str	1
-----PGPPAGTPRHPTTN-----	X23852	HSV-2-pUL22	195	14aa	mRNA_30cpc_Str	3
-----PGPPAGTPRHPTTN-----	X23852	HSV-2-pUL22	195	14aa	mRNA_30cpc_Th	1
-----PTEGAPSVFSSDVP-----	X21004	HSV-1-pUL22	762	14aa	mRNA_30cpc_Str	1
-----PVAGTPNVFSSDVP-----	X24297	HSV-2-pUL22	762	14aa	mRNA_3000cpc_Organoid_MD101	1
-----QGPVAGTPNVFSSD-----	X50456	HSV-2-pUL22	760	14aaA5	mRNA_3000cpc_Organoid_MD101	1
-----QGPVAGTPNVFSSD-----	X50456	HSV-2-pUL22	760	14aaA5	mRNA_30cpc_Organoid_MD114	1
-----QGPVAGTPNVFSSD-----	X50456	HSV-2-pUL22	760	14aaA5	mRNA_30cpc_Str	1
-----QGPVAGTPNVFSSDVPSVALLL	X20046	HSV-2-pUL22	760	22aa	mRNA_30cpc_Str	3
-----QIAAGPTEGAPSVF-----	X50187	HSV-1-pUL22	757	14aaA5	mRNA_30cpc_Organoid_MD114	1
-----QIAAGPTEGAPSVF-----	X18980	HSV-1-pUL22	757	14aa	mRNA_30cpc_Str	3
-----QIAAGPTEGAPSVF-----	X50187	HSV-1-pUL22	757	14aaA5	mRNA_30cpc_Str	1
-----QIAAGPTEGAPSVF-----	X81477	HSV-1-pUL22	757	14aaG4S	mRNA_30cpc_Str	1
-----QIAAGPTEGAPSVF-----	X18980	HSV-1-pUL22	757	14aa	mRNA_30cpc_SN	1
-----QIAAGPTEGAPSVF-----	X81477	HSV-1-pUL22	757	14aaG4S	mRNA_30cpc_SN	1
-----QIAAGPTEGAPSVF-----	X81477	HSV-1-pUL22	757	14aaG4S	mRNA_30cpc_Th	1
-----QIAAGPTEGAPSVF-----	X18980	HSV-1-pUL22	757	14aa	mRNA_30cpc_Ctx	1
-----QIAAGPTEGAPSVF-----	X81477	HSV-1-pUL22	757	14aaG4S	mRNA_30cpc_Ctx	2
-----QLAQGPVAGTPNVF-----	X50344	HSV-2-pUL22	757	14aaA5	mRNA_30cpc_Str	1
-----QQIAAGPTEGAPSV-----	X19117	HSV-1-pUL22	756	14aa	mRNA_30cpc_Organoid_MD114	1
-----QQIAAGPTEGAPSV-----	X19117	HSV-1-pUL22	756	14aa	mRNA_30cpc_Str	1
-----QQIAAGPTEGAPSV-----	X19117	HSV-1-pUL22	756	14aa	mRNA_3cpc_Str	4
-----QQIAAGPTEGAPSV-----	X19117	HSV-1-pUL22	756	14aa	mRNA_30cpc_SN	2
-----QQIAAGPTEGAPSV-----	X19117	HSV-1-pUL22	756	14aa	mRNA_30cpc_Th	3
-----QQIAAGPTEGAPSV-----	X19117	HSV-1-pUL22	756	14aa	mRNA_30cpc_Ctx	3
-----QQIAAGPTEGAPSV-----	X19117	HSV-1-pUL22	756	14aa	mRNA_3cpc_SN	1
-----QQIAAGPTEGAPSV-----	X19117	HSV-1-pUL22	756	14aa	mRNA_3cpc_Th	4
-----QQIAAGPTEGAPSV-----	X19117	HSV-1-pUL22	756	14aa	mRNA_3cpc_Ctx	2
-----QQIAAGPTEGAPSV-----	X19117	HSV-1-pUL22	756	14aa	mRNA_3cpc_Th_4wks	1
-----QQLAQGPVAGTPNV-----	X19148	HSV-2-pUL22	756	14aa	mRNA_3000cpc_Organoid_MD101	1
-----QQQIAAGPTEGAPS-----	X19124	HSV-1-pUL22	755	14aa	mRNA_3cpc_Str	1
-----QQQIAAGPTEGAPS-----	X19124	HSV-1-pUL22	755	14aa	mRNA_3cpc_Th	1
-----TDNTQQQIAAGPTE-----	X8006	HSV-1-pUL22	751	14aa	mRNA_30cpc_Str	1
-----TDNTQQQIAAGPTEGAPSVFSS-----	X8007	HSV-1-pUL22	751	22aa	mRNA_30cpc_Str	1
-----TEGAPSVFSSDVPS-----	X8353	HSV-1-pUL22	763	14aa	mRNA_30cpc_Str	3
-----TEGAPSVFSSDVPS-----	X47416	HSV-1-pUL22	763	14aaA5	mRNA_30cpc_Str	1
-----TEGAPSVFSSDVPS-----	X8353	HSV-1-pUL22	763	14aa	mRNA_30cpc_Ctx	1
-----TQQQIAAGPTEGAP-----	X7007	HSV-1-pUL22	754	14aa	mRNA_30cpc_Str	1
-----TQQQLAQGPVAGTP-----	X7009	HSV-2-pUL22	754	14aa	mRNA_3000cpc_Organoid_MD101	1

alignment	LUTnrs	GeneName	start	structure	Group	Score
___TQQQLAQGPVAGTP_____	X7009	HSV-2-pUL22	754	14aa	mRNA_30cpc_Str	1
_____VAGTPNVFSSDVPS_____	X68789	HSV-2-pUL22	763	14aa	mRNA_30cpc_Str	1
_____VAGTPNVFSSDVPS_____	X90297	HSV-2-pUL22	763	14aaG4S	mRNA_30cpc_Str	1
_____VAGTPNVFSSDVPS_____	X90297	HSV-2-pUL22	763	14aaG4S	mRNA_30cpc_SN	1

Peptide NTLVDTSGYNAEVS from BoNT-C-Hc used in serotype AAV-MNM024

Peptide NTLVDTSGYNAEVS from BoNT-C-Hc used in serotype AAV-MNM024



cluster_id	main_sequence	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str	mRNA_30cpc_Ctx	mRNA_30cpc_Th	mRNA_30cpc_SN
24	NTLVDTSGYNAEVS	50	24	5	5	6	4	5

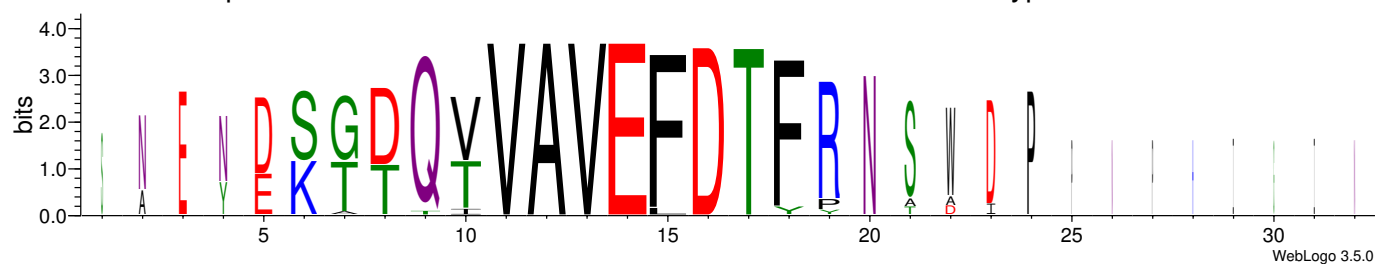
cluster_id	sequence	alignment	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str
24	NTLVDTSGYNAEVS	_____NTLVDTSGYNAEVS_____	14	3	2	1
24	ILSLQNRKNTLVDT	ILSLQNRKNTLVDT_____	9	3	1	1
24	NDKYVDTSGYDSNI	_____NDKYVDTSGYDSNI_____	7	1	1	1
24	LNMRKYNDKYVDT	_LNMRKYNDKYVDTS_____	6	3	1	2
24	QNKKNALVDTSGYNAEVRVGDN	____QNKKNALVDTSGYNAEVRVGDN_____	2	2	0	0
24	QNKKNALVDTSGYN	____QNKKNALVDTSGYN_____	2	2	0	0
24	YVDTSGYDSNININ	_____YVDTSGYDSNININ_____	1	1	0	0
24	NKKNALVDTSGYNA	____NKKNALVDTSGYNA_____	1	1	0	0
24	NALVDTSGYNAEVR	____NALVDTSGYNAEVR_____	1	1	0	0
24	LSLQNKKNALVDT	_LSLQNKKNALVDTS_____	1	1	0	0
24	LQNKKNALVDTSGY	__LQNKKNALVDTSGY_____	1	1	0	0
24	KNTLVDTSGYNAEV	____KNTLVDTSGYNAEV_____	1	1	0	0
24	KKNALVDTSGYNAE	____KKNALVDTSGYNAE_____	1	1	0	0
24	ILSLQNKKNALVDT	ILSLQNKKNALVDT_____	1	1	0	0
24	DTSGYNAEVSEEGDVQLNPIFP	_____DTSGYNAEVSEEGDVQLNPIFP_____	1	1	0	0
24	DKYVDTSGYDSNIN	____DKYVDTSGYDSNIN_____	1	1	0	0

alignment	LUThrs	GeneName	start	structure	Group	Score
_____DKYVDTSGYDSNIN_____	X33972	BoNT-E-Hc	80	14aa	mRNA_30cpc_Str	1
_____DTSGYNAEVSEEGDVQLNPIFP_____	X34018	BoNT-C-Hc	25	22aa	mRNA_30cpc_Str	1
ILSLQNKKNALVDT_____	X15718	BoNT-D-Hc	6	14aa	mRNA_30cpc_Str	1
ILSLQNRKNTLVDT_____	X15720	BoNT-C-Hc	13	14aa	mRNA_30cpc_Str	3
ILSLQNRKNTLVDT_____	X15720	BoNT-C-Hc	13	14aa	mRNA_3cpc_Str	1
ILSLQNRKNTLVDT_____	X15720	BoNT-C-Hc	13	14aa	mRNA_30cpc_SN	1
ILSLQNRKNTLVDT_____	X15720	BoNT-C-Hc	13	14aa	mRNA_30cpc_Th	1
ILSLQNRKNTLVDT_____	X15720	BoNT-C-Hc	13	14aa	mRNA_30cpc_Ctx	2
ILSLQNRKNTLVDT_____	X15720	BoNT-C-Hc	13	14aa	mRNA_3cpc_Th	1
_____KKNALVDTSGYNAE_____	X3131	BoNT-C-Hc	19	14aa	mRNA_30cpc_Str	1
_____KKNALVDTSGYNAE_____	X3131	BoNT-D-Hc	12	14aa	mRNA_30cpc_Str	1
_____KNTLVDTSGYNAEV_____	X3017	BoNT-C-Hc	20	14aa	mRNA_30cpc_Str	1
_____KNTLVDTSGYNAEV_____	X3017	BoNT-D-Hc	13	14aa	mRNA_30cpc_Str	1
__LNMRYKNDKYVDTS_____	X52597	BoNT-E-Hc	73	14aaA5	mRNA_30cpc_Str	3
__LNMRYKNDKYVDTS_____	X52597	BoNT-E-Hc	73	14aaA5	mRNA_3cpc_Str	2
__LNMRYKNDKYVDTS_____	X52597	BoNT-E-Hc	73	14aaA5	mRNA_3cpc_Th	1
___LQNKKNALVDTSGY_____	X29936	BoNT-C-Hc	16	14aa	mRNA_30cpc_Str	1
___LQNKKNALVDTSGY_____	X29936	BoNT-D-Hc	9	14aa	mRNA_30cpc_Str	1
__LSLQNKKNALVDTS_____	X52853	BoNT-D-Hc	7	14aaA5	mRNA_30cpc_Str	1
_____NALVDTSGYNAEVR_____	X2173	BoNT-C-Hc	21	14aa	mRNA_30cpc_Str	1
_____NALVDTSGYNAEVR_____	X2173	BoNT-D-Hc	14	14aa	mRNA_30cpc_Str	1
_____NDKYVDTSGYDSNI_____	X1776	BoNT-E-Hc	79	14aa	mRNA_3000cpc_Organoid_MD101	1
_____NDKYVDTSGYDSNI_____	X1776	BoNT-E-Hc	79	14aa	mRNA_30cpc_Str	1
_____NDKYVDTSGYDSNI_____	X45703	BoNT-E-Hc	79	14aaA5	mRNA_3cpc_Str	1
_____NDKYVDTSGYDSNI_____	X1776	BoNT-E-Hc	79	14aa	mRNA_30cpc_SN	1
_____NDKYVDTSGYDSNI_____	X45703	BoNT-E-Hc	79	14aaA5	mRNA_30cpc_Th	1
_____NDKYVDTSGYDSNI_____	X45703	BoNT-E-Hc	79	14aaA5	mRNA_30cpc_Ctx	1
_____NDKYVDTSGYDSNI_____	X45703	BoNT-E-Hc	79	14aaA5	mRNA_3cpc_Th	1
_____NKKNALVDTSGYNA_____	X254	BoNT-C-Hc	18	14aa	mRNA_30cpc_Str	1
_____NKKNALVDTSGYNA_____	X254	BoNT-D-Hc	11	14aa	mRNA_30cpc_Str	1
_____NTLVDTSGYNAEVS_____	X514	BoNT-C-Hc	21	14aa	mRNA_30cpc_Str	3
_____NTLVDTSGYNAEVS_____	X514	BoNT-D-Hc	14	14aa	mRNA_30cpc_Str	3
_____NTLVDTSGYNAEVS_____	X514	BoNT-C-Hc	21	14aa	mRNA_3cpc_Str	1
_____NTLVDTSGYNAEVS_____	X514	BoNT-D-Hc	14	14aa	mRNA_3cpc_Str	1
_____NTLVDTSGYNAEVS_____	X514	BoNT-C-Hc	21	14aa	mRNA_30cpc_SN	3
_____NTLVDTSGYNAEVS_____	X514	BoNT-D-Hc	14	14aa	mRNA_30cpc_SN	3
_____NTLVDTSGYNAEVS_____	X514	BoNT-C-Hc	21	14aa	mRNA_30cpc_Th	2
_____NTLVDTSGYNAEVS_____	X514	BoNT-D-Hc	14	14aa	mRNA_30cpc_Th	2
_____NTLVDTSGYNAEVS_____	X514	BoNT-C-Hc	21	14aa	mRNA_30cpc_Ctx	3
_____NTLVDTSGYNAEVS_____	X514	BoNT-D-Hc	14	14aa	mRNA_30cpc_Ctx	3
_____NTLVDTSGYNAEVS_____	X514	BoNT-C-Hc	21	14aa	mRNA_3cpc_Th	2
_____NTLVDTSGYNAEVS_____	X514	BoNT-D-Hc	14	14aa	mRNA_3cpc_Th	2
_____QNKKNALVDTSGYN_____	X18405	BoNT-C-Hc	17	14aa	mRNA_30cpc_Str	1
_____QNKKNALVDTSGYN_____	X50034	BoNT-C-Hc	17	14aaA5	mRNA_30cpc_Str	1
_____QNKKNALVDTSGYN_____	X18405	BoNT-D-Hc	10	14aa	mRNA_30cpc_Str	1
_____QNKKNALVDTSGYN_____	X50034	BoNT-D-Hc	10	14aaA5	mRNA_30cpc_Str	1
_____QNKKNALVDTSGYNAEVRVGDN_____	X18406	BoNT-D-Hc	10	22aa	mRNA_30cpc_Str	2

alignment	LUThrs	GeneName	start	structure	Group	Score
-----YVDTSGYDSNININ-----	X59840	BoNT-E-Hc	82	14aaA5	mRNA_30cpc_Str	1

Peptide DKTTQTVAVEFDTF from PSA-Chain-C used in serotype AAV-MNM025

Peptide DKTTQTVAVEFDTF from PSA-Chain-C used in serotype AAV-MNM025



cluster_id	main_sequence	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str	mRNA_30cpc_Ctx	mRNA_30cpc_Th	mRNA_30cpc_SN
25	DKTTQTVAVEFDTF	44	19	4	4	6	5	4

cluster_id	sequence	alignment	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str
25	SGDQVVAVEFDTFR	____SGDQVVAVEFDTFR_____	10	3	1	1
25	DKTTQTVAVEFDTF	____DKTTQTVAVEFDTF_____	10	2	1	1
25	VAVEFDTFRNSWDP	____VAVEFDTFRNSWDP_____	8	4	0	0
25	NENESGDQVVAVEF	__NENESGDQVVAVEF_____	6	2	1	1
25	SAEYDKTTQTVAVE	SAEYDKTTQTVAVE_____	2	0	1	1
25	DQVVAVEFDTFRNS	____DQVVAVEFDTFRNS_____	2	2	0	0
25	VAVEFDTFRNSWDPPNPHIGIN	____VAVEFDTFRNSWDPPNPHIGIN_____	1	1	0	0
25	QTVAVEFDTFYNAA	____QTVAVEFDTFYNAA_____	1	1	0	0
25	IVAVELDTYPNTDI	____IVAVELDTYPNTDI_____	1	1	0	0
25	EYDKTTQTVAVEFD	__EYDKTTQTVAVEFD_____	1	1	0	0
25	ESGDQVVAVEFDTF	____ESGDQVVAVEFDTF_____	1	1	0	0
25	ADTIVAVELDTYPN	____ADTIVAVELDTYPN_____	1	1	0	0

alignment	LUThrs	GeneName	start	structure	Group	Score
_____ADTIVAVELDTYPN_____	X56370	ConA	1	14aaA5	mRNA_30cpc_Str	1
_____DKTTQTVAVEFDTF_____	X33863	PSA-Chain-C	110	14aa	mRNA_30cpc_Str	2
_____DKTTQTVAVEFDTF_____	X33863	PSA-Chain-C	110	14aa	mRNA_3cpc_Str	1
_____DKTTQTVAVEFDTF_____	X33863	PSA-Chain-C	110	14aa	mRNA_30cpc_SN	2
_____DKTTQTVAVEFDTF_____	X33863	PSA-Chain-C	110	14aa	mRNA_30cpc_Th	2
_____DKTTQTVAVEFDTF_____	X33863	PSA-Chain-C	110	14aa	mRNA_30cpc_Ctx	2
_____DKTTQTVAVEFDTF_____	X33863	PSA-Chain-C	110	14aa	mRNA_3cpc_Th	1
_____DQVVAVEFDTFRNS_____	X34798	SA	118	14aa	mRNA_30cpc_Str	1
_____DQVVAVEFDTFRNS_____	X85593	SA	118	14aaG4S	mRNA_30cpc_Str	1
_____ESGDQVVAVEFDTF_____	X54946	SA	115	14aaA5	mRNA_30cpc_Str	1
_____EYDKTTQTVAVEFD_____	X39465	PSA-Chain-C	108	14aa	mRNA_30cpc_Str	1
_____IVAVELDTYPNTDI_____	X16662	ConA	4	14aa	mRNA_30cpc_Str	1
_____NENESGDQVVAVEF_____	X45740	SA	112	14aaA5	mRNA_30cpc_Str	1
_____NENESGDQVVAVEF_____	X77030	SA	112	14aaG4S	mRNA_30cpc_Str	1
_____NENESGDQVVAVEF_____	X45740	SA	112	14aaA5	mRNA_3cpc_Str	1
_____NENESGDQVVAVEF_____	X45740	SA	112	14aaA5	mRNA_3cpc_SN	1
_____NENESGDQVVAVEF_____	X45740	SA	112	14aaA5	mRNA_3cpc_Th	1
_____NENESGDQVVAVEF_____	X45740	SA	112	14aaA5	mRNA_3cpc_Ctx	1
_____QTVAVEFDTFYNAA_____	X18718	PSA-Chain-C	114	14aa	mRNA_30cpc_Str	1
_____SAEYDKTTQTVAVE_____	X48652	PSA-Chain-C	106	14aaA5	mRNA_3cpc_Str	1
_____SAEYDKTTQTVAVE_____	X48652	PSA-Chain-C	106	14aaA5	mRNA_3cpc_Th	1
_____SGDQVVAVEFDTFR_____	X13273	SA	116	14aa	mRNA_30cpc_Str	3
_____SGDQVVAVEFDTFR_____	X13273	SA	116	14aa	mRNA_3cpc_Str	1
_____SGDQVVAVEFDTFR_____	X13273	SA	116	14aa	mRNA_30cpc_Th	1
_____SGDQVVAVEFDTFR_____	X13273	SA	116	14aa	mRNA_30cpc_Ctx	3
_____SGDQVVAVEFDTFR_____	X13273	SA	116	14aa	mRNA_3cpc_Th	1
_____SGDQVVAVEFDTFR_____	X13273	SA	116	14aa	mRNA_30cpc_Th_4wks	1
_____VAVEFDTFRNSWDP_____	X68842	SA	121	14aa	mRNA_30cpc_Str	1
_____VAVEFDTFRNSWDP_____	X59024	SA	121	14aaA5	mRNA_30cpc_Str	3
_____VAVEFDTFRNSWDP_____	X68842	SA	121	14aa	mRNA_30cpc_SN	1
_____VAVEFDTFRNSWDP_____	X59024	SA	121	14aaA5	mRNA_30cpc_SN	1
_____VAVEFDTFRNSWDP_____	X68842	SA	121	14aa	mRNA_30cpc_Th	1
_____VAVEFDTFRNSWDP_____	X68842	SA	121	14aa	mRNA_30cpc_Ctx	1
_____VAVEFDTFRNSWDPNPHIGIN_____	X68841	SA	121	22aa	mRNA_30cpc_Str	1

Peptide ANTENEVEPVDARP from APP used in serotype AAV-MNM027

Peptide ANTENEVEPVDARP from APP used in serotype AAV-MNM027



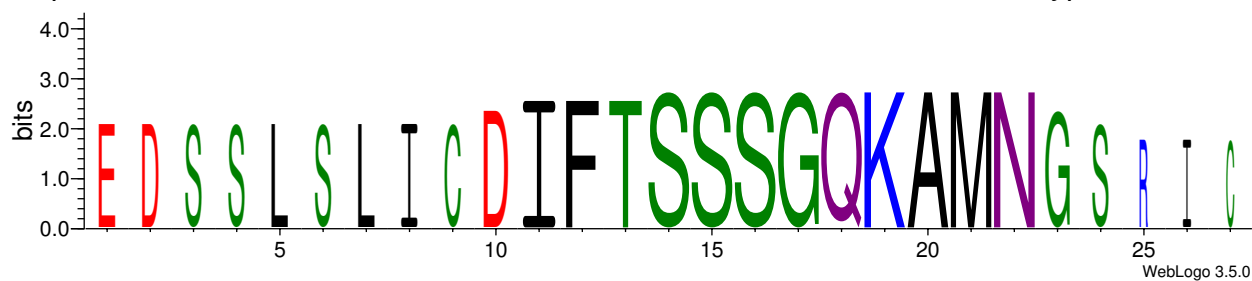
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27	ANTENEVEPVDARP	24	5	0	2	0	0	0

cluster_id	sequence	alignment	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str
27	ANTENEVEPVDARP	_____ANTENEVEPVDARP_____	5	0	0	0
27	GVDSVPANTENEVEPVDARPA	GVDSVPANTENEVEPVDARPA_____	3	0	0	0
27	VPANTENEVEPVDA	____VPANTENEVEPVDA_____	2	0	0	0
27	TENEVEPVDARPA	____TENEVEPVDARPA_____	2	0	0	0
27	SVPANTENEVEPVDARPAADRG	____SVPANTENEVEPVDARPAADRG_____	2	0	0	1
27	SVPANTENEVEPVD	____SVPANTENEVEPVD_____	2	1	0	0
27	ENEVEPVDARPAADRGLTTRPG	____ENEVEPVDARPAADRGLTTRPG_____	2	2	0	0
27	VEPVDARPAADRGL	____VEPVDARPAADRGL_____	1	0	0	1
27	VDARPAADRGLTTR	____VDARPAADRGLTTR_____	1	1	0	0
27	NTENEVEPVDARPA	____NTENEVEPVDARPA_____	1	0	0	0
27	NEVEPVDARPAADR	____NEVEPVDARPAADR_____	1	1	0	0
27	EPVDARPAADRGLT	____EPVDARPAADRGLT_____	1	0	0	0
27	ANTENEVEPVDARPAADRGLTT	____ANTENEVEPVDARPAADRGLTT_____	1	0	0	0

alignment	LUThrs	GeneName	start	structure	Group	Score
_____ANTENEVEPVDARP_____	X39803	APP	631	14aa	mRNA_3000cpc_Organoid_MD101	2
_____ANTENEVEPVDARP_____	X39803	APP	631	14aa	mRNA_30cpc_Organoid_MD114	1
_____ANTENEVEPVDARP_____	X55577	APP	631	14aaA5	mRNA_30cpc_Organoid_MD114	1
_____ANTENEVEPVDARP_____	X86867	APP	631	14aaG4S	mRNA_30cpc_Organoid_MD114	1
_____ANTENEVEPVDARPAADRGLTT_____	X39804	APP	631	22aa	mRNA_3000cpc_Organoid_MD101	1
_____ENEVEPVDARPAADRGLTTRPG_____	X36857	APP	634	22aa	mRNA_30cpc_Str	2
_____EPVDARPAADRGLT_____	X37901	APP	638	14aa	mRNA_3000cpc_Organoid_MD101	1
GVDSVPANTENEVEPVDARPA	X64911	APP	625	22aa	mRNA_3000cpc_Organoid_MD101	3
_____NEVEPVDARPAADR_____	X2014	APP	635	14aa	mRNA_30cpc_Str	1
_____NTENEVEPVDARPA_____	X524	APP	632	14aa	mRNA_3000cpc_Organoid_MD101	1
____SVPANTENEVEPVD_____	X48790	APP	628	14aaA5	mRNA_3000cpc_Organoid_MD101	1
____SVPANTENEVEPVD_____	X13534	APP	628	14aa	mRNA_30cpc_Str	1
____SVPANTENEVEPVDARPAADRG_____	X13535	APP	628	22aa	mRNA_3000cpc_Organoid_MD101	1
____SVPANTENEVEPVDARPAADRG_____	X13535	APP	628	22aa	mRNA_3cpc_Str	1
____TENEVEPVDARPA_____	X8197	APP	633	14aa	mRNA_3000cpc_Organoid_MD101	1
____TENEVEPVDARPA_____	X8197	APP	633	14aa	mRNA_30cpc_Organoid_MD114	1
____VDARPAADRGLTTR_____	X68174	APP	640	14aa	mRNA_30cpc_Str	1
____VEPVDARPAADRGL_____	X58874	APP	637	14aaA5	mRNA_3cpc_Str	1
____VPANTENEVEPVDA_____	X67260	APP	629	14aa	mRNA_3000cpc_Organoid_MD101	2

Peptide EDSSLSLICDIFTSSSGQKAMN from RV-G-Mocala used in serotype AAV-MNM028

Peptide EDSSLSLICDIFTSSSGQKAMN from RV-G-Mocala used in serotype AAV-MNM028



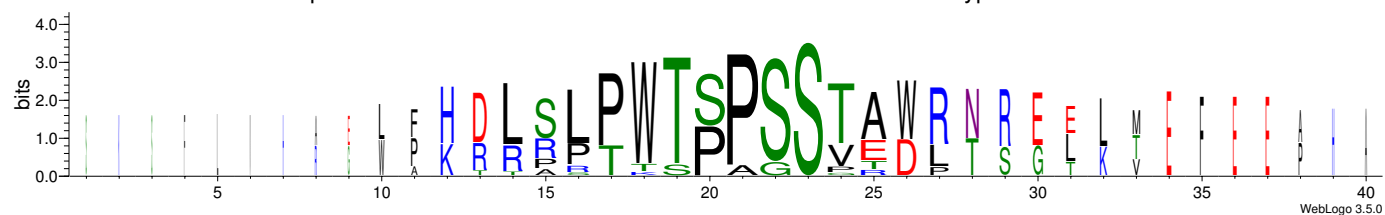
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28	EDSSLSLICDIFTSSSGQKAMN	10	4	1	1	0	0	2

cluster_id	sequence	alignment	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str
28	EDSSLSLICDIFTSSSGQKAMN	EDSSLSLICDIFTSSSGQKAMN_____	4	3	0	0
28	SSSGQKAMNGSRIC	_____SSSGQKAMNGSRIC	2	0	0	0
28	IFTSSSGQKAMNGS	_____IFTSSSGQKAMNGS__	2	1	0	0
28	DIFTSSSGQKAMNG	_____DIFTSSSGQKAMNG__	2	0	1	1

alignment	LUThrs	GeneName	start	structure	Group	Score
_____DIFTSSSGQKAMNG__	X34605	RV-G-Mocala	190	14aa	mRNA_3cpc_Str	1
_____DIFTSSSGQKAMNG__	X34605	RV-G-Mocala	190	14aa	mRNA_3cpc_Th	1
EDSSLSLICDIFTSSSGQKAMN_____	X38349	RV-G-Mocala	181	22aa	mRNA_30cpc_Str	3
EDSSLSLICDIFTSSSGQKAMN_____	X38349	RV-G-Mocala	181	22aa	mRNA_30cpc_SN	1
_____IFTSSSGQKAMNGS__	X16903	RV-G-Mocala	191	14aa	mRNA_30cpc_Str	1
_____IFTSSSGQKAMNGS__	X16903	RV-G-Mocala	191	14aa	mRNA_30cpc_SN	1
_____SSSGQKAMNGSRIC	X10648	RV-G-Mocala	194	14aa	mRNA_30cpc_Organoid_MD114	2

Peptide HDLSLPWTSPSSTA from JEV-E-KE-093 used in serotype AAV-MNM029

Peptide HDLSLPWTSPSSTA from JEV-E-KE-093 used in serotype AAV-MNM029



cluster_id	main_sequence	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str	mRNA_30cpc_Ctx	mRNA_30cpc_Th	mRNA_30cpc_SN
29	HDLSLPWTSPSSTA	34	22	1	0	2	3	0

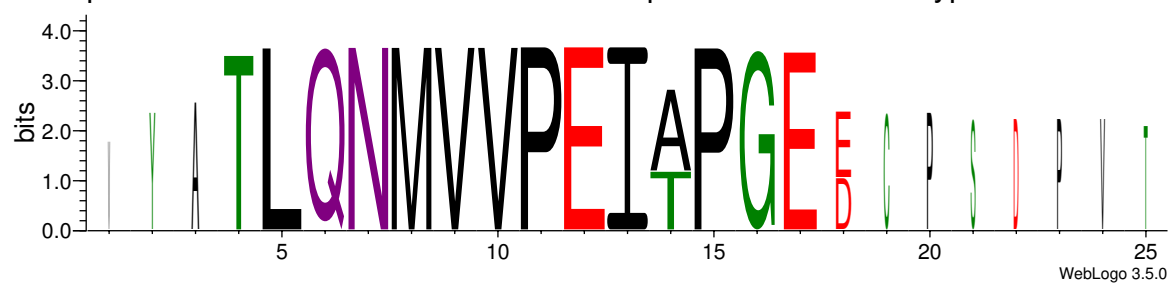
cluster_id	sequence	alignment	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str
29	HDSLPLWTPSPSSTA	_____HDSLPLWTPSPSSTA_____	6	3	0	0
29	PPSSVEDLTSGEKT	_____PPSSVEDLTSGEKT_____	3	3	0	0
29	LSLPWTSPSSTAAR	_____LSLPWTSPSSTAAR_____	3	1	0	0
29	TPPSSTAARNRELLMEFEEAHA	_____TPPSSTAARNRELLMEFEEAHA_____	2	1	1	0
29	PWSSAGSTTWRNRETLVEFEET	_____PWSSAGSTTWRNRETLVEFEET_____	2	2	0	0
29	PRTTTPSSPRDPT	_____PRTTTPSSPRDPT_____	2	2	0	0
29	LPKRRRPTWTPSS	_____LPKRRRPTWTPSS_____	2	2	0	0
29	LALPWTSPSSTAAR	_____LALPWTSPSSTAAR_____	2	0	0	0
29	WTPPSSVEDLTSGE	_____WTPPSSVEDLTSGE_____	1	1	0	0
29	WFHDSLPLWTPSPSSTAARNREL	_____WFHDSLPLWTPSPSSTAARNREL_____	1	0	0	0
29	WFHDSLPLWTPSPSS	_____WFHDSLPLWTPSPSS_____	1	1	0	0
29	SKSFLVHREWFHDSLPLWTPSPS	SKSFLVHREWFHDSLPLWTPSPS_____	1	1	0	0
29	RRRPTWTPPSSVED	_____RRRPTWTPPSSVED_____	1	1	0	0
29	RRPTWTPPSSVEDL	_____RRPTWTPPSSVEDL_____	1	1	0	0
29	PWSSAGSTTWRNRE	_____PWSSAGSTTWRNRE_____	1	0	0	0
29	PSSTAARNRELLME	_____PSSTAARNRELLME_____	1	1	0	0
29	LPWTTPSSTAARNR	_____LPWTTPSSTAARNR_____	1	1	0	0
29	KRRRPTWTPSSVE	_____KRRRPTWTPSSVE_____	1	0	0	0
29	AKTTPSPKTPPGSG	_____AKTTPSPKTPPGSG_____	1	1	0	0
29	AGLPKRRRPTWTPP	_____AGLPKRRRPTWTPP_____	1	0	0	0

alignment	LUThrs	GeneName	start	structure	Group	Score
_____AGLPKRRRPTWTPP_____	X44090	HSV-1-pUL36	394	14aa	mRNA_30cpc_Organoid_MD114	1
_____AKTTPSPKTPPGSG_____	X39987	Tau	418	14aa	mRNA_30cpc_Str	1
_____HDLSLPWTSPSSTA_____	X17861	JEV-E-KE-093	219	14aa	mRNA_30cpc_Organoid_MD114	1
_____HDLSLPWTSPSSTA_____	X17861	JEV-E-SA14-5-3	219	14aa	mRNA_30cpc_Organoid_MD114	1
_____HDLSLPWTSPSSTA_____	X17861	JEV-E-ThCMAR4492	219	14aa	mRNA_30cpc_Organoid_MD114	1
_____HDLSLPWTSPSSTA_____	X17861	JEV-E-KE-093	219	14aa	mRNA_30cpc_Str	3
_____HDLSLPWTSPSSTA_____	X17861	JEV-E-SA14-5-3	219	14aa	mRNA_30cpc_Str	3
_____HDLSLPWTSPSSTA_____	X17861	JEV-E-ThCMAR4492	219	14aa	mRNA_30cpc_Str	3
_____HDLSLPWTSPSSTA_____	X17861	JEV-E-KE-093	219	14aa	mRNA_30cpc_Th	1
_____HDLSLPWTSPSSTA_____	X17861	JEV-E-SA14-5-3	219	14aa	mRNA_30cpc_Th	1
_____HDLSLPWTSPSSTA_____	X17861	JEV-E-ThCMAR4492	219	14aa	mRNA_30cpc_Th	1
_____HDLSLPWTSPSSTA_____	X17861	JEV-E-KE-093	219	14aa	mRNA_30cpc_Ctx	1
_____HDLSLPWTSPSSTA_____	X17861	JEV-E-SA14-5-3	219	14aa	mRNA_30cpc_Ctx	1
_____HDLSLPWTSPSSTA_____	X17861	JEV-E-ThCMAR4492	219	14aa	mRNA_30cpc_Ctx	1
_____KRRRPTWTPSSVE_____	X4095	HSV-1-pUL36	398	14aa	mRNA_30cpc_Th	1
_____LALPWTSPSSTA_____	X31994	JEV-E-BN19	221	14aa	mRNA_30cpc_Organoid_MD114	2
_____LALPWTSPSSTA_____	X31994	JEV-E-KE-093	221	14aa	mRNA_30cpc_Organoid_MD114	2
_____LALPWTSPSSTA_____	X31994	JEV-E-SA14-5-3	221	14aa	mRNA_30cpc_Organoid_MD114	2
_____LALPWTSPSSTA_____	X31994	JEV-E-ThCMAR4492	221	14aa	mRNA_30cpc_Organoid_MD114	2
_____LPKRRRPTWTPSS_____	X30129	HSV-1-pUL36	396	14aa	mRNA_30cpc_Str	2
_____LPWTTPPSSTA_____	X30423	JEV-E-BN19	223	14aa	mRNA_30cpc_Str	1
_____LPWTTPPSSTA_____	X30423	JEV-E-KE-093	223	14aa	mRNA_30cpc_Str	1
_____LPWTTPPSSTA_____	X30423	JEV-E-SA14-5-3	223	14aa	mRNA_30cpc_Str	1
_____LPWTTPPSSTA_____	X30423	JEV-E-ThCMAR4492	223	14aa	mRNA_30cpc_Str	1
_____LSLPWTSPSSTA_____	X29312	JEV-E-BN19	221	14aa	mRNA_30cpc_Str	1
_____LSLPWTSPSSTA_____	X29312	JEV-E-KE-093	221	14aa	mRNA_30cpc_Str	1
_____LSLPWTSPSSTA_____	X29312	JEV-E-SA14-5-3	221	14aa	mRNA_30cpc_Str	1
_____LSLPWTSPSSTA_____	X29312	JEV-E-ThCMAR4492	221	14aa	mRNA_30cpc_Str	1
_____LSLPWTSPSSTA_____	X29312	JEV-E-BN19	221	14aa	mRNA_30cpc_Th	1
_____LSLPWTSPSSTA_____	X29312	JEV-E-KE-093	221	14aa	mRNA_30cpc_Th	1
_____LSLPWTSPSSTA_____	X29312	JEV-E-SA14-5-3	221	14aa	mRNA_30cpc_Th	1
_____LSLPWTSPSSTA_____	X29312	JEV-E-ThCMAR4492	221	14aa	mRNA_30cpc_Th	1
_____LSLPWTSPSSTA_____	X29312	JEV-E-BN19	221	14aa	mRNA_30cpc_Ctx	1
_____LSLPWTSPSSTA_____	X29312	JEV-E-KE-093	221	14aa	mRNA_30cpc_Ctx	1
_____LSLPWTSPSSTA_____	X29312	JEV-E-SA14-5-3	221	14aa	mRNA_30cpc_Ctx	1
_____LSLPWTSPSSTA_____	X29312	JEV-E-ThCMAR4492	221	14aa	mRNA_30cpc_Ctx	1
_____PPSSVEDLTSGEKT_____	X21897	HSV-1-pUL36	406	14aa	mRNA_30cpc_Str	3
_____PRTTTPSPSPRDPT_____	X22302	HSV-2-pUS7	210	14aa	mRNA_30cpc_Str	2
_____PSSTAWNRNRELLME_____	X21123	JEV-E-BN19	228	14aa	mRNA_30cpc_Str	1
_____PSSTAWNRNRELLME_____	X21123	JEV-E-KE-093	228	14aa	mRNA_30cpc_Str	1
_____PSSTAWNRNRELLME_____	X21123	JEV-E-SA14-5-3	228	14aa	mRNA_30cpc_Str	1
_____PSSTAWNRNRELLME_____	X21123	JEV-E-ThCMAR4492	228	14aa	mRNA_30cpc_Str	1
_____PWSSAGSTTWRNRE_____	X24556	WNV-E-AZ10-918	224	14aa	mRNA_30cpc_Organoid_MD114	1
_____PWSSAGSTTWRNRE_____	X24556	WNV-E-ArD76104	220	14aa	mRNA_30cpc_Organoid_MD114	1
_____PWSSAGSTTWRNRE_____	X24556	WNV-E-H-442	224	14aa	mRNA_30cpc_Organoid_MD114	1
_____PWSSAGSTTWRNRETLVEFEEP_____	X24555	WNV-E-AZ10-918	224	22aa	mRNA_30cpc_Str	2
_____PWSSAGSTTWRNRETLVEFEEP_____	X24555	WNV-E-ArD76104	220	22aa	mRNA_30cpc_Str	2

alignment	LUThrs	GeneName	start	structure	Group	Score
-----PWSSAGSTTWRNRETLVEFEEP--	X24555	WNV-E-H-442	224	22aa	mRNA_30cpc_Str	2
-----RRPTWTPSSVEDL-----	X51983	HSV-1-pUL36	400	14aaA5	mRNA_30cpc_Str	1
-----RRRPTWTPSSVED-----	X26099	HSV-1-pUL36	399	14aa	mRNA_30cpc_Str	1
SKSFLVHREWFHDLSLPWTSPS-----	X10043	JEV-E-BN19	208	22aa	mRNA_30cpc_Str	1
SKSFLVHREWFHDLSLPWTSPS-----	X10043	JEV-E-KE-093	208	22aa	mRNA_30cpc_Str	1
SKSFLVHREWFHDLSLPWTSPS-----	X10043	JEV-E-SA14-5-3	208	22aa	mRNA_30cpc_Str	1
SKSFLVHREWFHDLSLPWTSPS-----	X10043	JEV-E-ThCMAr4492	208	22aa	mRNA_30cpc_Str	1
-----TPPSSTAWRNRELLMEFEEAHA	X7244	JEV-E-BN19	226	22aa	mRNA_30cpc_Str	1
-----TPPSSTAWRNRELLMEFEEAHA	X7244	JEV-E-KE-093	226	22aa	mRNA_30cpc_Str	1
-----TPPSSTAWRNRELLMEFEEAHA	X7244	JEV-E-SA14-5-3	226	22aa	mRNA_30cpc_Str	1
-----TPPSSTAWRNRELLMEFEEAHA	X7244	JEV-E-ThCMAr4492	226	22aa	mRNA_30cpc_Str	1
-----TPPSSTAWRNRELLMEFEEAHA	X7244	JEV-E-BN19	226	22aa	mRNA_3cpc_Th	1
-----TPPSSTAWRNRELLMEFEEAHA	X7244	JEV-E-KE-093	226	22aa	mRNA_3cpc_Th	1
-----TPPSSTAWRNRELLMEFEEAHA	X7244	JEV-E-SA14-5-3	226	22aa	mRNA_3cpc_Th	1
-----TPPSSTAWRNRELLMEFEEAHA	X7244	JEV-E-ThCMAr4492	226	22aa	mRNA_3cpc_Th	1
-----WFHDLSLPWTSPSS-----	X60468	JEV-E-KE-093	217	14aaA5	mRNA_30cpc_Str	1
-----WFHDLSLPWTSPSS-----	X60468	JEV-E-SA14-5-3	217	14aaA5	mRNA_30cpc_Str	1
-----WFHDLSLPWTSPSS-----	X60468	JEV-E-ThCMAr4492	217	14aaA5	mRNA_30cpc_Str	1
-----WFHDLSLPWTSPSSTAWRNREL	X74320	JEV-E-BN19	217	22aa	mRNA_30cpc_Th_4wks	1
-----WFHDLSLPWTSPSSTAWRNREL	X74320	JEV-E-KE-093	217	22aa	mRNA_30cpc_Th_4wks	1
-----WFHDLSLPWTSPSSTAWRNREL	X74320	JEV-E-SA14-5-3	217	22aa	mRNA_30cpc_Th_4wks	1
-----WFHDLSLPWTSPSSTAWRNREL	X74320	JEV-E-ThCMAr4492	217	22aa	mRNA_30cpc_Th_4wks	1
-----WTPSSVEDLTSGE-----	X73520	HSV-1-pUL36	404	14aa	mRNA_30cpc_Str	1

Peptide TLQNMVVPEIAPGE from HSV-1-pUL19 used in serotype AAV-MNM030

Peptide TLQNMVVPEIAPGE from HSV-1-pUL19 used in serotype AAV-MNM030



cluster_id	main_sequence	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str	mRNA_30cpc_Ctx	mRNA_30cpc_Th	mRNA_30cpc_SN
30	TLQNMVVPEIAPGE	43	20	3	1	1	3	2

cluster_id	sequence	alignment	sum	mRNA_30cpc_Str	mRNA_3cpc_Th	mRNA_3cpc_Str
30	TLQNMVVPEIAPGE	___TLQNMVVPEIAPGE_____	12	5	1	0
30	TLQNMVVPEITPGE	___TLQNMVVPEITPGE_____	7	3	0	0
30	LQNMVVPEITPGED	___LQNMVVPEITPGED_____	5	0	2	1
30	LQNMVVPEIAPGEE	___LQNMVVPEIAPGEE_____	5	3	0	0
30	YATLQNMVVPEITP	_YATLQNMVVPEITP_____	3	1	0	0
30	TLQNMVVPEIAPGEECPSPDVT	___TLQNMVVPEIAPGEECPSPDVT	3	3	0	0
30	ATLQNMVVPEIAPG	__ATLQNMVVPEIAPG_____	2	0	0	0
30	YATLQNMVVPEIAP	_YATLQNMVVPEIAP_____	1	1	0	0
30	VYATLQNMVVPEIT	VYATLQNMVVPEIT_____	1	1	0	0
30	VYATLQNMVVPEIA	VYATLQNMVVPEIA_____	1	1	0	0
30	TLQNMVVPEITPGEDCPSPDVT	___TLQNMVVPEITPGEDCPSPDVT	1	1	0	0
30	PEITPGEDCPSPDV	_____PEITPGEDCPSPDV_	1	0	0	0
30	NMVVPEIAPGEECP	_____NMVVPEIAPGEECP_____	1	1	0	0

alignment	LUThrs	GeneName	start	structure	Group	Score
__ATLQNMVVPEIAPG_____	X40328	HSV-1-pUL19	837	14aa	mRNA_3000cpc_Organoid_MD101	1
__ATLQNMVVPEIAPG_____	X40328	HSV-2-pUL19	837	14aa	mRNA_3000cpc_Organoid_MD101	1
__ATLQNMVVPEIAPG_____	X40328	HSV-1-pUL19	837	14aa	mRNA_30cpc_Organoid_MD114	1
__ATLQNMVVPEIAPG_____	X40328	HSV-2-pUL19	837	14aa	mRNA_30cpc_Organoid_MD114	1
___LQNMVVPEIAPGEE_____	X29938	HSV-1-pUL19	839	14aa	mRNA_30cpc_Organoid_MD114	2
___LQNMVVPEIAPGEE_____	X29938	HSV-2-pUL19	839	14aa	mRNA_30cpc_Organoid_MD114	2
___LQNMVVPEIAPGEE_____	X29938	HSV-1-pUL19	839	14aa	mRNA_30cpc_Str	3
___LQNMVVPEIAPGEE_____	X29938	HSV-2-pUL19	839	14aa	mRNA_30cpc_Str	3
___LQNMVVPEITPGED_____	X29937	HSV-1-pUL19	839	14aa	mRNA_3000cpc_Organoid_MD101	1
___LQNMVVPEITPGED_____	X29937	HSV-2-pUL19	839	14aa	mRNA_3000cpc_Organoid_MD101	1
___LQNMVVPEITPGED_____	X29937	HSV-1-pUL19	839	14aa	mRNA_30cpc_Organoid_MD114	1
___LQNMVVPEITPGED_____	X29937	HSV-2-pUL19	839	14aa	mRNA_30cpc_Organoid_MD114	1
___LQNMVVPEITPGED_____	X29937	HSV-1-pUL19	839	14aa	mRNA_3cpc_Str	1
___LQNMVVPEITPGED_____	X29937	HSV-2-pUL19	839	14aa	mRNA_3cpc_Str	1
___LQNMVVPEITPGED_____	X29937	HSV-1-pUL19	839	14aa	mRNA_3cpc_Th	2
___LQNMVVPEITPGED_____	X29937	HSV-2-pUL19	839	14aa	mRNA_3cpc_Th	2
___NMVVPEIAPGEECP_____	X76797	HSV-1-pUL19	841	14aaG4S	mRNA_30cpc_Str	1
___NMVVPEIAPGEECP_____	X76797	HSV-2-pUL19	841	14aaG4S	mRNA_30cpc_Str	1
_____PEITPGEDCPSDPV_	X23096	HSV-1-pUL19	845	14aa	mRNA_30cpc_Organoid_MD114	1
___TLQNMVVPEIAPGE_____	X7795	HSV-1-pUL19	838	14aa	mRNA_3000cpc_Organoid_MD101	1
___TLQNMVVPEIAPGE_____	X47264	HSV-1-pUL19	838	14aaA5	mRNA_3000cpc_Organoid_MD101	1
___TLQNMVVPEIAPGE_____	X7795	HSV-2-pUL19	838	14aa	mRNA_3000cpc_Organoid_MD101	1
___TLQNMVVPEIAPGE_____	X47264	HSV-2-pUL19	838	14aaA5	mRNA_3000cpc_Organoid_MD101	1
___TLQNMVVPEIAPGE_____	X7795	HSV-1-pUL19	838	14aa	mRNA_30cpc_Organoid_MD114	1
___TLQNMVVPEIAPGE_____	X47264	HSV-1-pUL19	838	14aaA5	mRNA_30cpc_Organoid_MD114	1
___TLQNMVVPEIAPGE_____	X7795	HSV-2-pUL19	838	14aa	mRNA_30cpc_Organoid_MD114	1
___TLQNMVVPEIAPGE_____	X47264	HSV-2-pUL19	838	14aaA5	mRNA_30cpc_Organoid_MD114	1
___TLQNMVVPEIAPGE_____	X7795	HSV-1-pUL19	838	14aa	mRNA_30cpc_Str	5
___TLQNMVVPEIAPGE_____	X7795	HSV-2-pUL19	838	14aa	mRNA_30cpc_Str	5
___TLQNMVVPEIAPGE_____	X7795	HSV-1-pUL19	838	14aa	mRNA_30cpc_SN	1
___TLQNMVVPEIAPGE_____	X7795	HSV-2-pUL19	838	14aa	mRNA_30cpc_SN	1
___TLQNMVVPEIAPGE_____	X7795	HSV-1-pUL19	838	14aa	mRNA_30cpc_Th	1
___TLQNMVVPEIAPGE_____	X7795	HSV-2-pUL19	838	14aa	mRNA_30cpc_Th	1
___TLQNMVVPEIAPGE_____	X7795	HSV-1-pUL19	838	14aa	mRNA_3cpc_Th	1
___TLQNMVVPEIAPGE_____	X7795	HSV-2-pUL19	838	14aa	mRNA_3cpc_Th	1
___TLQNMVVPEIAPGEECPSDPVT	X7794	HSV-1-pUL19	838	22aa	mRNA_30cpc_Str	3
___TLQNMVVPEIAPGEECPSDPVT	X7794	HSV-2-pUL19	838	22aa	mRNA_30cpc_Str	3
___TLQNMVVPEITPGE_____	X47263	HSV-1-pUL19	838	14aaA5	mRNA_30cpc_Str	3
___TLQNMVVPEITPGE_____	X47263	HSV-2-pUL19	838	14aaA5	mRNA_30cpc_Str	3
___TLQNMVVPEITPGE_____	X47263	HSV-1-pUL19	838	14aaA5	mRNA_30cpc_SN	1
___TLQNMVVPEITPGE_____	X47263	HSV-2-pUL19	838	14aaA5	mRNA_30cpc_SN	1
___TLQNMVVPEITPGE_____	X47263	HSV-1-pUL19	838	14aaA5	mRNA_30cpc_Th	2
___TLQNMVVPEITPGE_____	X47263	HSV-2-pUL19	838	14aaA5	mRNA_30cpc_Th	2
___TLQNMVVPEITPGE_____	X47263	HSV-1-pUL19	838	14aaA5	mRNA_30cpc_Ctx	1
___TLQNMVVPEITPGE_____	X47263	HSV-2-pUL19	838	14aaA5	mRNA_30cpc_Ctx	1
___TLQNMVVPEITPGEDCPSDPVT	X7792	HSV-1-pUL19	838	22aa	mRNA_30cpc_Str	1
___TLQNMVVPEITPGEDCPSDPVT	X7792	HSV-2-pUL19	838	22aa	mRNA_30cpc_Str	1

alignment	LUThrs	GeneName	start	structure	Group	Score
VYATLQNMVVPEIA_____	X69669	HSV-1-pUL19	835	14aa	mRNA_30cpc_Str	1
VYATLQNMVVPEIA_____	X69669	HSV-2-pUL19	835	14aa	mRNA_30cpc_Str	1
VYATLQNMVVPEIT_____	X90528	HSV-1-pUL19	835	14aaG4S	mRNA_30cpc_Str	1
VYATLQNMVVPEIT_____	X90528	HSV-2-pUL19	835	14aaG4S	mRNA_30cpc_Str	1
_YATLQNMVVPEIAP_____	X71451	HSV-1-pUL19	836	14aa	mRNA_30cpc_Str	1
_YATLQNMVVPEIAP_____	X71451	HSV-2-pUL19	836	14aa	mRNA_30cpc_Str	1
_YATLQNMVVPEITP_____	X71450	HSV-1-pUL19	836	14aa	mRNA_3000cpc_Organoid_MD101	2
_YATLQNMVVPEITP_____	X71450	HSV-2-pUL19	836	14aa	mRNA_3000cpc_Organoid_MD101	2
_YATLQNMVVPEITP_____	X71450	HSV-1-pUL19	836	14aa	mRNA_30cpc_Str	1
_YATLQNMVVPEITP_____	X71450	HSV-2-pUL19	836	14aa	mRNA_30cpc_Str	1

```
# setkey(select.samples.trsp,Peptide) select.samples.trsp.select <-
# select.samples.trsp[J(c('PPDELNLTTASLPL'))]
```

```
print("Total analysis time:")
```

```
[1] "Total analysis time:"
```

```
print(Sys.time() - strt1)
```

```
Time difference of 40.08659 secs
```

```
devtools::session_info()
```

```
Session info -----
```

```
setting  value
version  R version 3.4.2 (2017-09-28)
system   x86_64, linux-gnu
ui        X11
language (EN)
collate   en_US.UTF-8
tz        UTC
date      2020-11-09
```

```
Packages -----
```

package	* version	date	source
ade4	1.7-8	2017-08-09	CRAN (R 3.4.2)
backports	1.1.1	2017-09-25	CRAN (R 3.4.2)
base	* 3.4.2	2017-10-06	local
compiler	3.4.2	2017-10-06	local
data.table	* 1.10.4-2	2017-10-12	url
datasets	* 3.4.2	2017-10-06	local
devtools	* 1.13.3	2017-08-02	CRAN (R 3.4.2)
digest	0.6.12	2017-01-27	CRAN (R 3.4.2)
evaluate	0.10.1	2017-06-24	CRAN (R 3.4.2)
formatR	1.5	2017-04-25	CRAN (R 3.4.2)
graphics	* 3.4.2	2017-10-06	local
grDevices	* 3.4.2	2017-10-06	local
highr	0.6	2016-05-09	CRAN (R 3.4.2)
hms	0.3	2016-11-22	CRAN (R 3.4.2)
htmltools	0.3.6	2017-04-28	CRAN (R 3.4.2)
httr	1.3.1	2017-08-20	CRAN (R 3.4.2)
kableExtra	* 0.5.2	2017-09-15	url
knitr	* 1.17	2017-08-10	CRAN (R 3.4.2)
magrittr	1.5	2014-11-22	CRAN (R 3.4.2)
memoise	1.1.0	2017-04-21	CRAN (R 3.4.2)
methods	3.4.2	2017-10-06	local
parallel	* 3.4.2	2017-10-06	local
plyr	1.8.4	2016-06-08	CRAN (R 3.4.2)
R6	2.2.2	2017-06-17	CRAN (R 3.4.2)
Rcpp	0.12.13	2017-09-28	url
readr	1.1.1	2017-05-16	CRAN (R 3.4.2)
reshape2	* 1.4.2	2016-10-22	CRAN (R 3.4.2)
rlang	0.1.2	2017-08-09	CRAN (R 3.4.2)
rmarkdown	1.6	2017-06-15	url
rprojroot	1.2	2017-01-16	CRAN (R 3.4.2)
rvest	0.3.2	2016-06-17	CRAN (R 3.4.2)
seqinr	* 3.4-5	2017-08-01	CRAN (R 3.4.2)

stats	* 3.4.2	2017-10-06	local
stringi	1.1.5	2017-04-07	url
stringr	1.2.0	2017-02-18	CRAN (R 3.4.2)
tibble	1.3.4	2017-08-22	CRAN (R 3.4.2)
tools	3.4.2	2017-10-06	local
utils	* 3.4.2	2017-10-06	local
withr	2.0.0	2017-07-28	url
xml2	1.1.1	2017-01-24	CRAN (R 3.4.2)
yaml	2.1.14	2016-11-12	CRAN (R 3.4.2)