

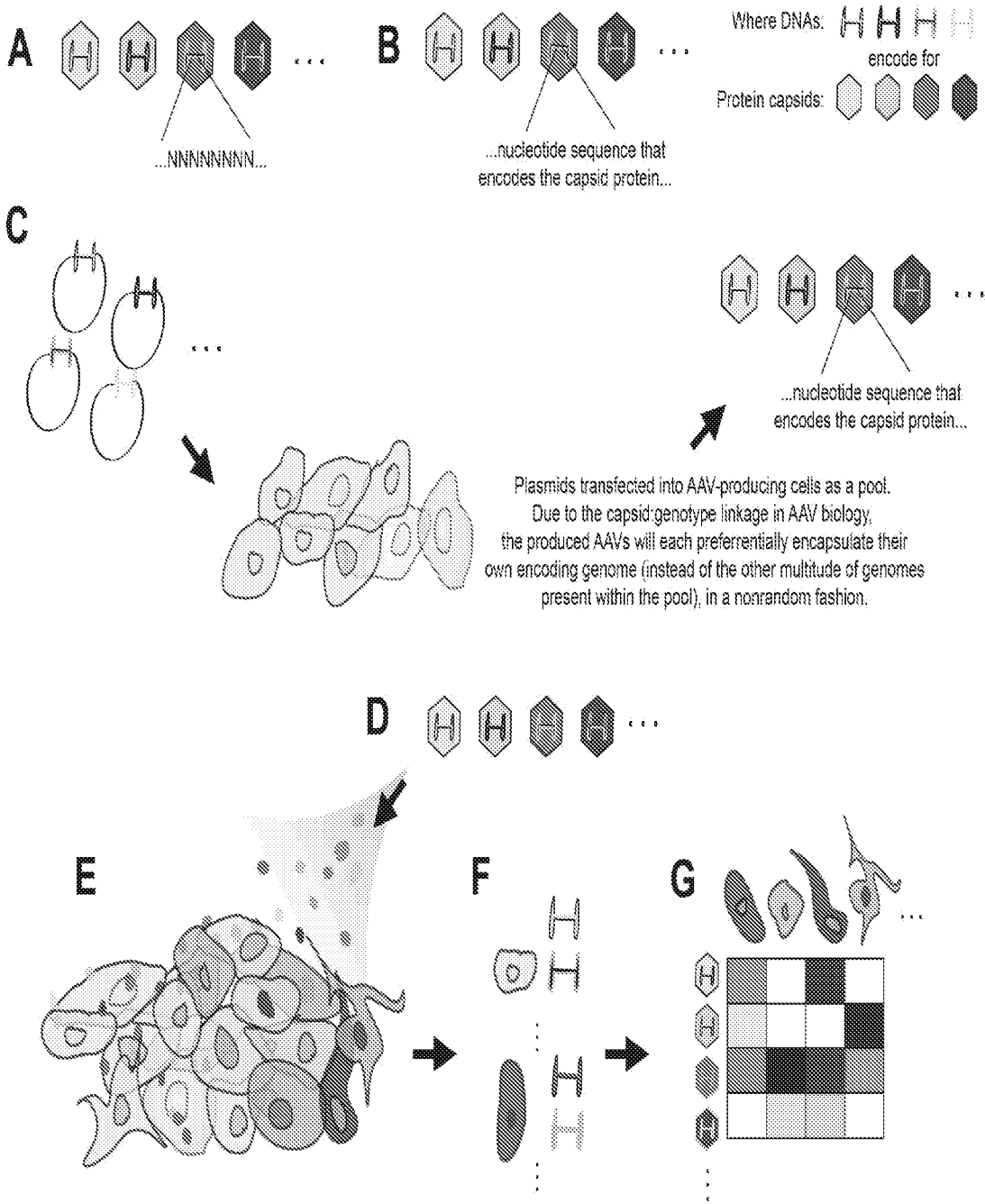


Figure 1

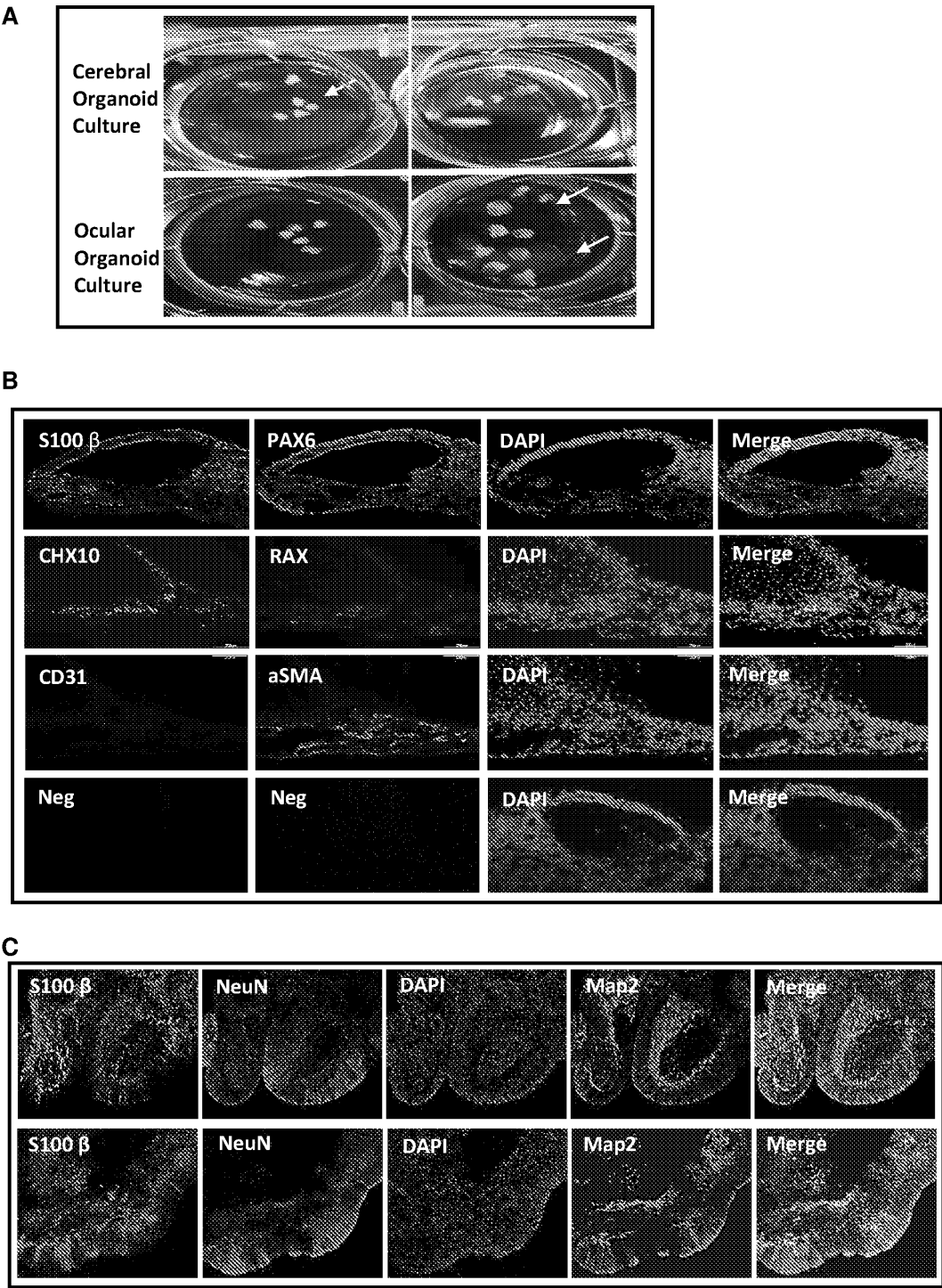


Figure 2

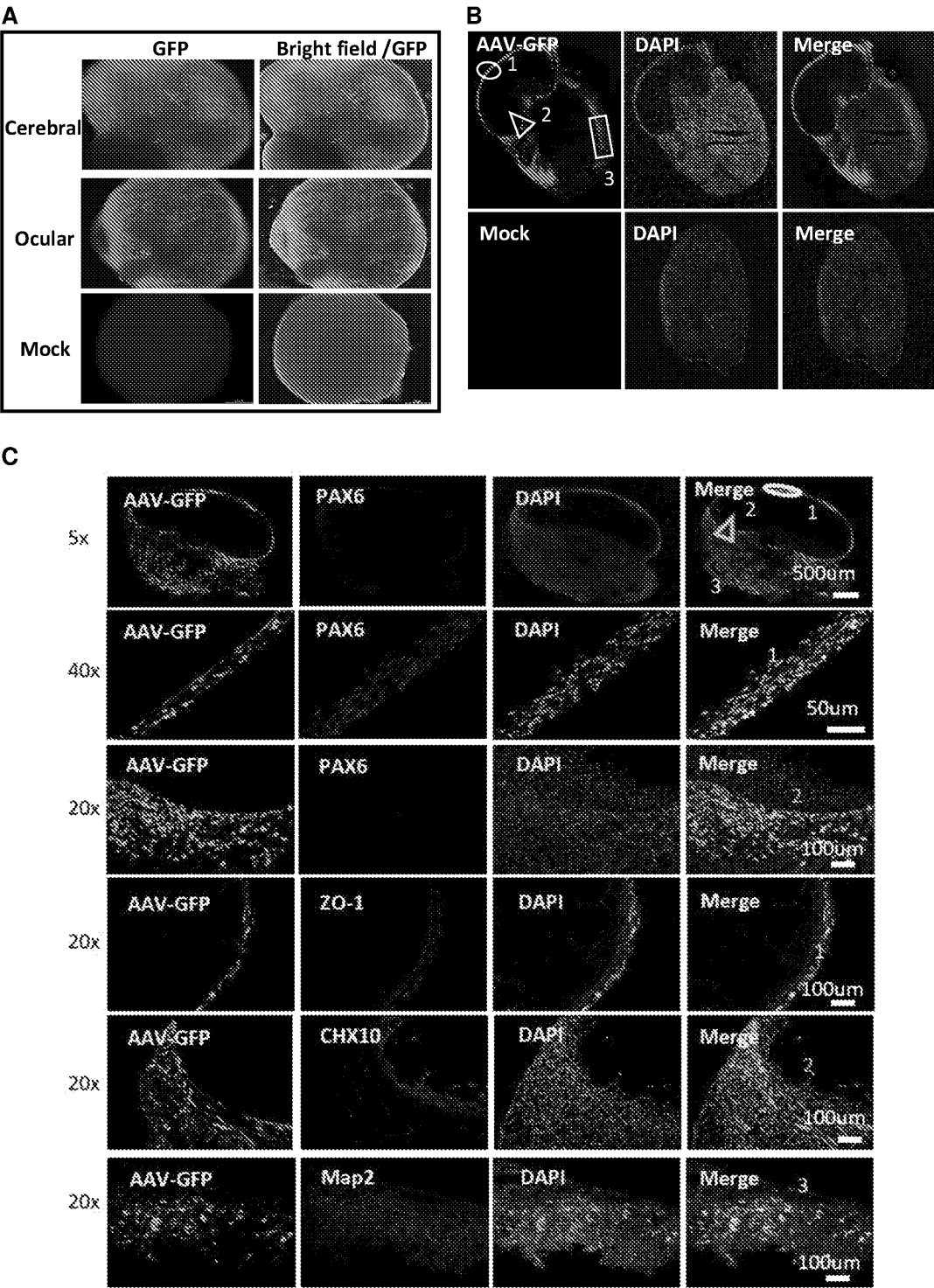


Figure 3

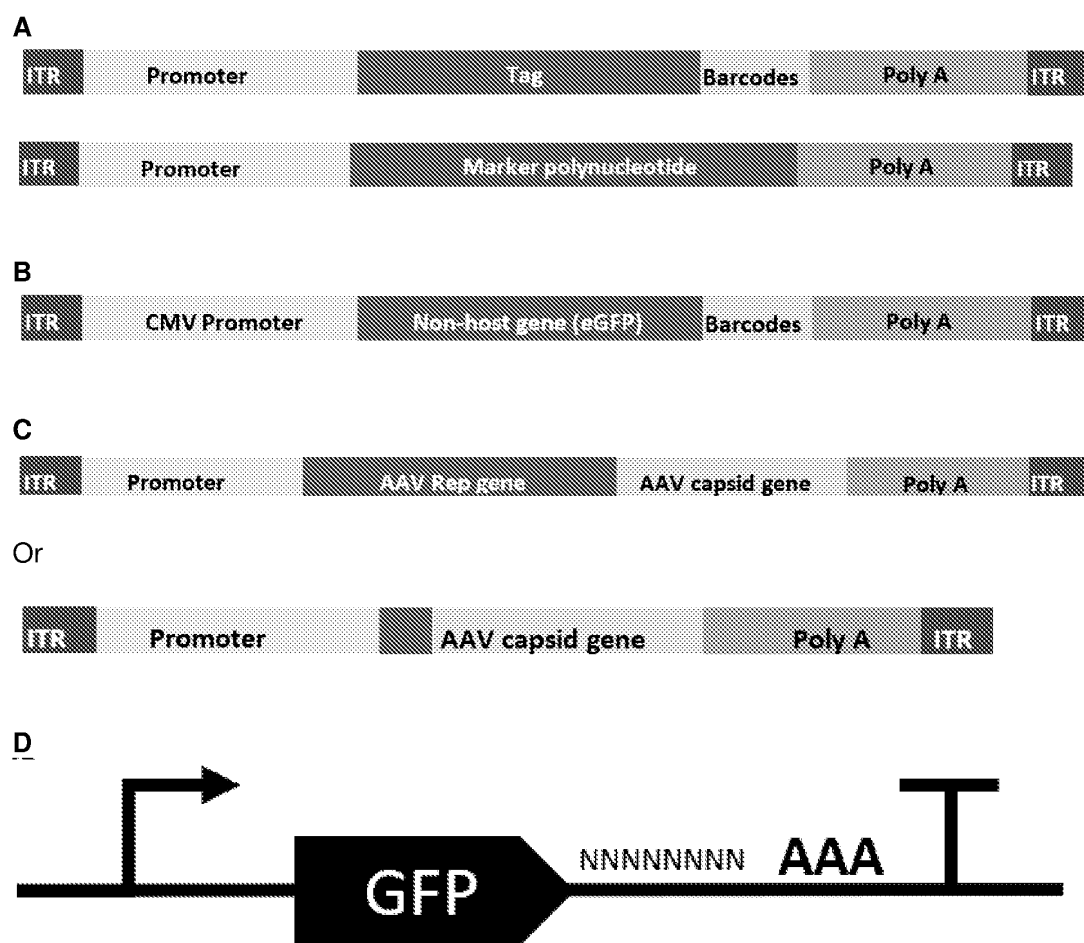


Figure 4

E

```

Edit gtf file to add in AAV barcoded transcript.
$ nano genes.gtf
Alt /
GFP1 me exon 1 19 . + . gene_id "GFP1"; transcript_id "GFP1";
GFP2 me exon 1 19 . + . gene_id "GFP2"; transcript_id "GFP2";
GFP3 me exon 1 19 . + . gene_id "GFP3"; transcript_id "GFP3";
GFP4 me exon 1 19 . + . gene_id "GFP4"; transcript_id "GFP4";
GFP5 me exon 1 19 . + . gene_id "GFP5"; transcript_id "GFP5";
GFP6 me exon 1 19 . + . gene_id "GFP6"; transcript_id "GFP6";
GFP7 me exon 1 19 . + . gene_id "GFP7"; transcript_id "GFP7";
GFP8 me exon 1 19 . + . gene_id "GFP8"; transcript_id "GFP8";
GFP9 me exon 1 19 . + . gene_id "GFP9"; transcript_id "GFP9";
GFP10 me exon 1 19 . + . gene_id "GFP10"; transcript_id "GFP10";
GFP11 me exon 1 19 . + . gene_id "GFP11"; transcript_id "GFP11";
GFP12 me exon 1 19 . + . gene_id "GFP12"; transcript_id "GFP12";
Ctl X to exit and save gtf file.

Edit genome.fa reference file for alignment of barcoded AAV transcripts
$ nano genome.fa
>GFP1
TAAATCGATCGATCACGAC (SEQ ID NO: 17)
>GFP2
TAAATCGATCGACAGTGGT (SEQ ID NO: 18)
>GFP3
TAAATCGATCGCAGATCCA (SEQ ID NO: 19)
>GFP4
TAAATCGATCGACAAACGG (SEQ ID NO: 20)
>GFP5
TAAATCGATCGACCCAGCA (SEQ ID NO: 21)
>GFP6
TAAATCGATCGAACCCCTC (SEQ ID NO: 22)
>GFP7
TAAATCGATCGCCCAACCT (SEQ ID NO: 23)
>GFP8
TAAATCGATCGCACCACAC (SEQ ID NO: 24)
>GFP9
TAAATCGATCGGAAACCCA (SEQ ID NO: 25)
>GFP10
TAAATCGATCGTGTGACCA (SEQ ID NO: 26)
>GFP11
TAAATCGATCGAGGGTCAA (SEQ ID NO: 27)
>GFP12
TAAATCGATCGAGGAGTGG (SEQ ID NO: 28)

```

Figure 4 (cont.)

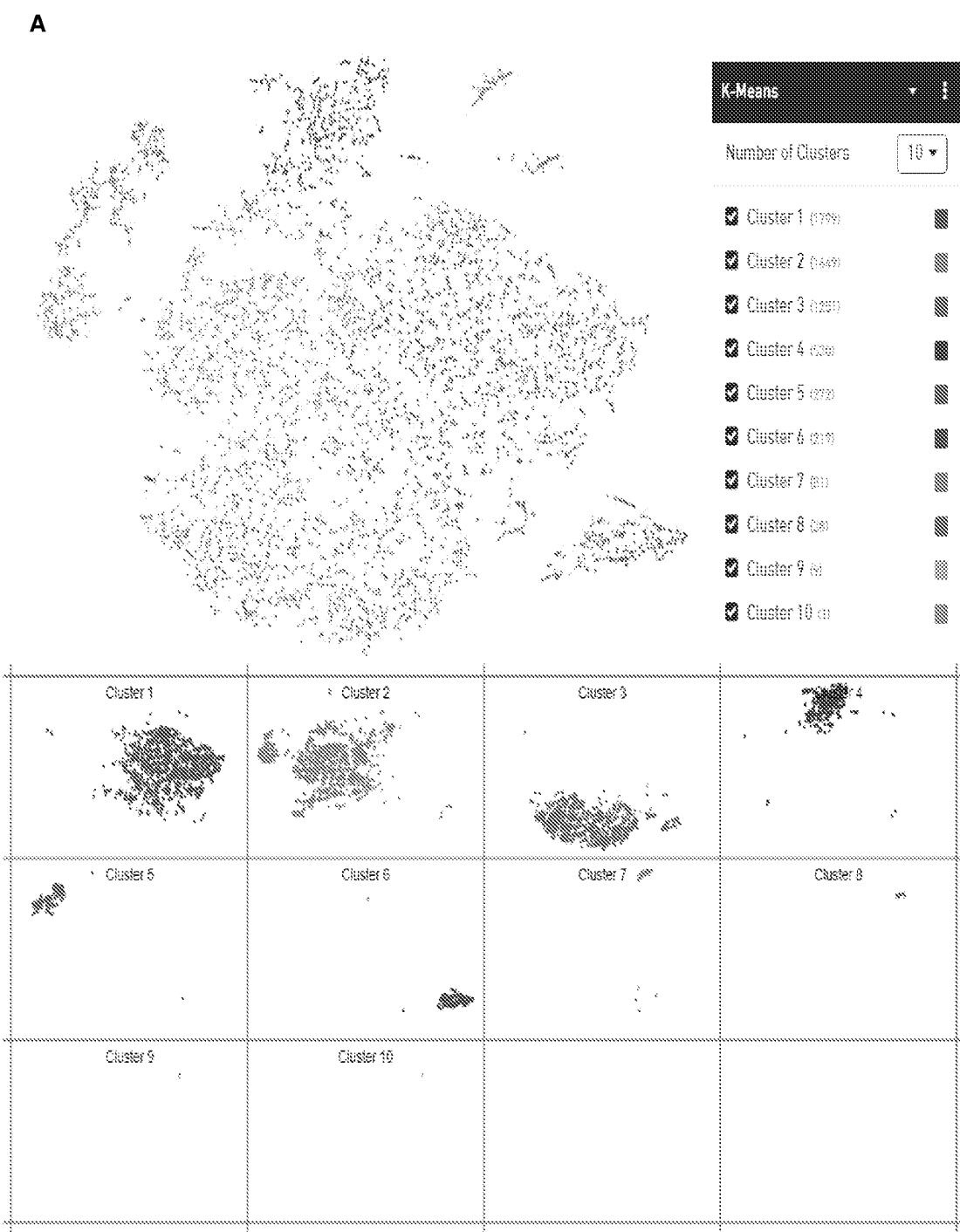


Figure 5

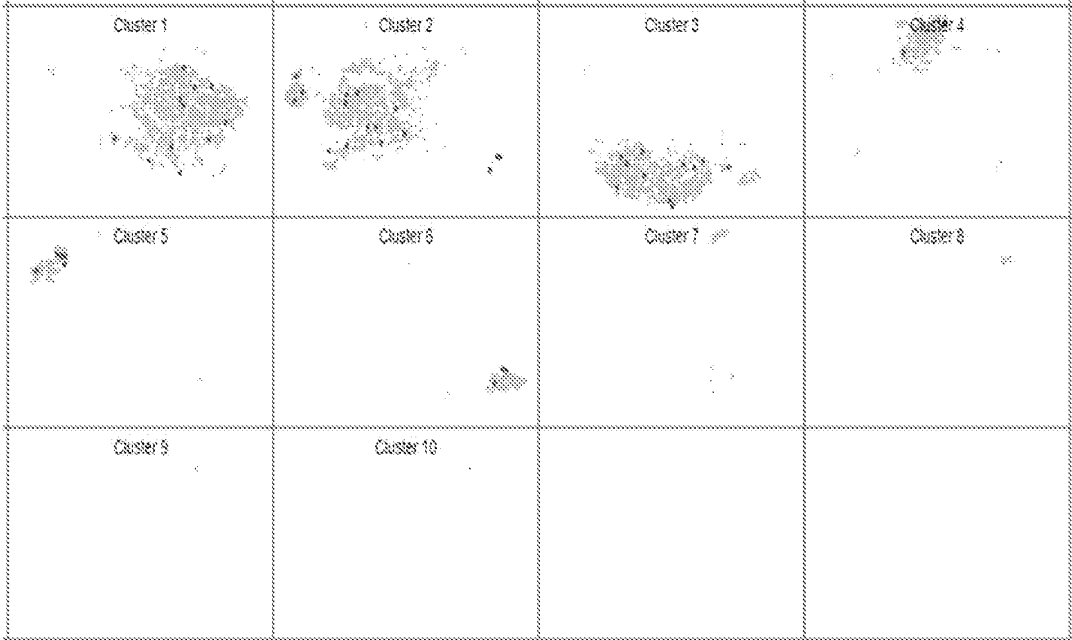
B

|                                          | Cluster1 | Cluster2  | Cluster3 | Cluster4   | Cluster5 |
|------------------------------------------|----------|-----------|----------|------------|----------|
| Top 10<br>highest<br>expressing<br>genes | EGFL6    | SPARCL1   | S100A1   | DNAH6      | SLN      |
|                                          | EPHX1    | LINC01993 | COL2A1   | TOGARAM2   | MYOZ1    |
|                                          | SFRP2    | HELB      | COL9A1   | DNAH9      | CKM      |
|                                          | SELENOP  | MOK       | COL11A2  | STMND1     | MYL1     |
|                                          | CCDC80   | STMN2     | FABP7    | CDHR4      | TNNI1    |
|                                          | LUM      | SNHG19    | COL9A2   | NCR3LG1    | ACTA1    |
|                                          | OGN      | SEPSECS   | MATN3    | PPP1R3D    | TNNI2    |
|                                          | CLU      | ITGB4     | MIA      | AC068790.9 | TNNC2    |
|                                          | POSTN    | ELN       | COL9A3   | FAM92B     | HSPB2    |
|                                          | COL3A1   | ZFAS1     | EPYC     | CASC1      | ACTC1    |

|                                          | Cluster6 | Cluster7 | Cluster8 | Cluster9 | Cluster10  |
|------------------------------------------|----------|----------|----------|----------|------------|
| Top 10<br>highest<br>expressing<br>genes | CENPF    | KRT15    | CALCA    | C11orf88 | TOGARAM2   |
|                                          | CCNB1    | KRT14    | CALCB    | TTR      | CDHR4      |
|                                          | UBE2C    | SFN      | CDH6     | TEKT1    | STMND1     |
|                                          | TOP2A    | KRT5     | GAP43    | CP       | AC068790.9 |
|                                          | BIRC5    | S100A14  | LY6H     | CAPSL    | DNAH6      |
|                                          | AURKB    | KRT17    | STMND1   | C1orf194 | FAM92B     |
|                                          | CDC20    | CXCL14   | TOGARAM2 | FAM183A  | CASC1      |
|                                          | TPX2     | PERP     | PCSK1N   | FAM81B   | CASMD2     |
|                                          | NUSAP1   | MYC      | BEX1     | CFAP157  | UBXN10     |
|                                          | CDKN3    | TOGARAM2 | FAM92B   | CA2      | AGR3       |

Figure 5 (cont.)

AAV1 Plot



AAV2 plot

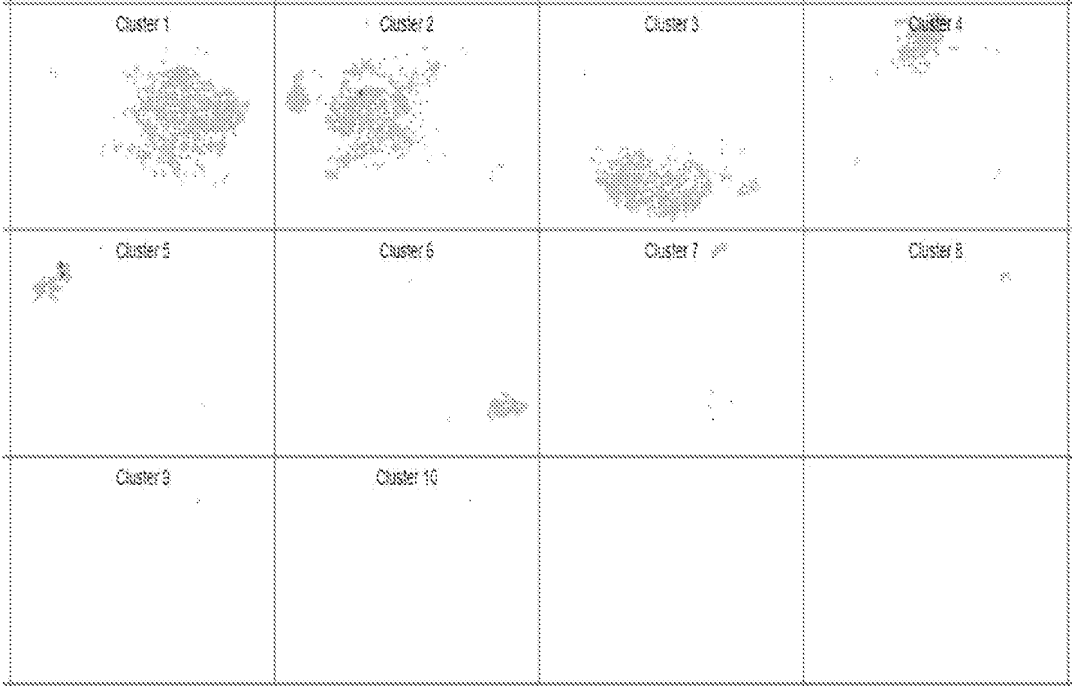
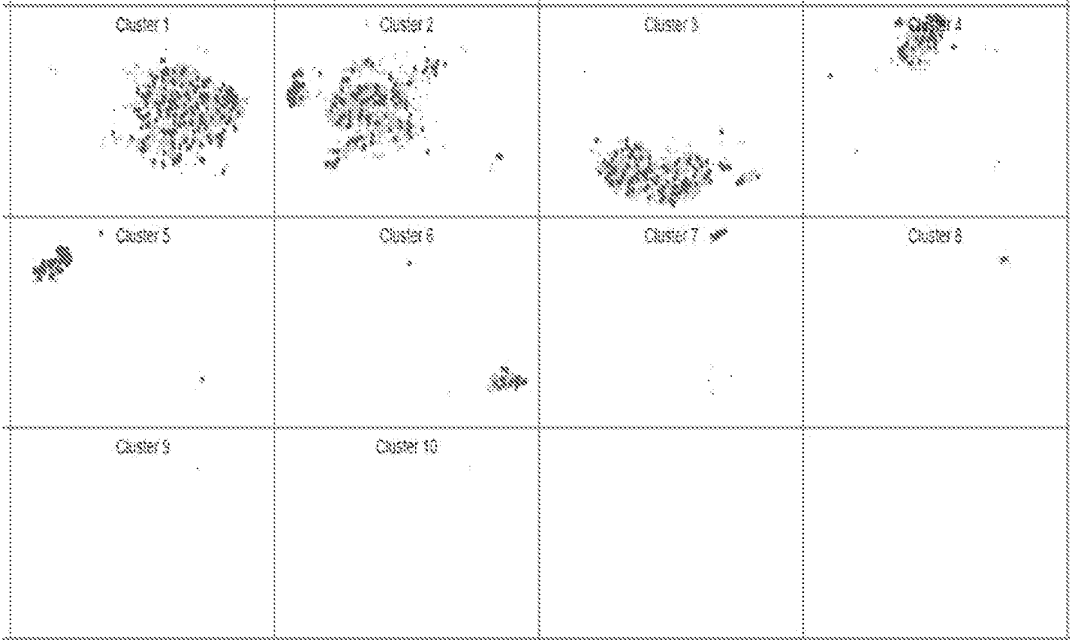


Figure 6A

AAV6 Plot



AAV7 Plot

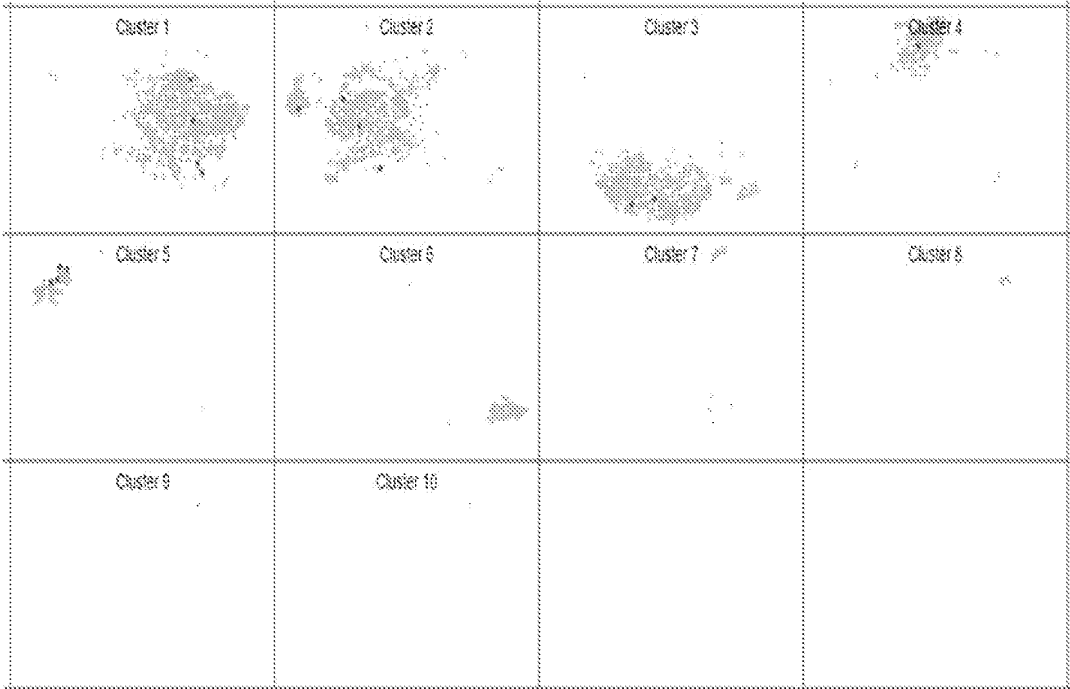
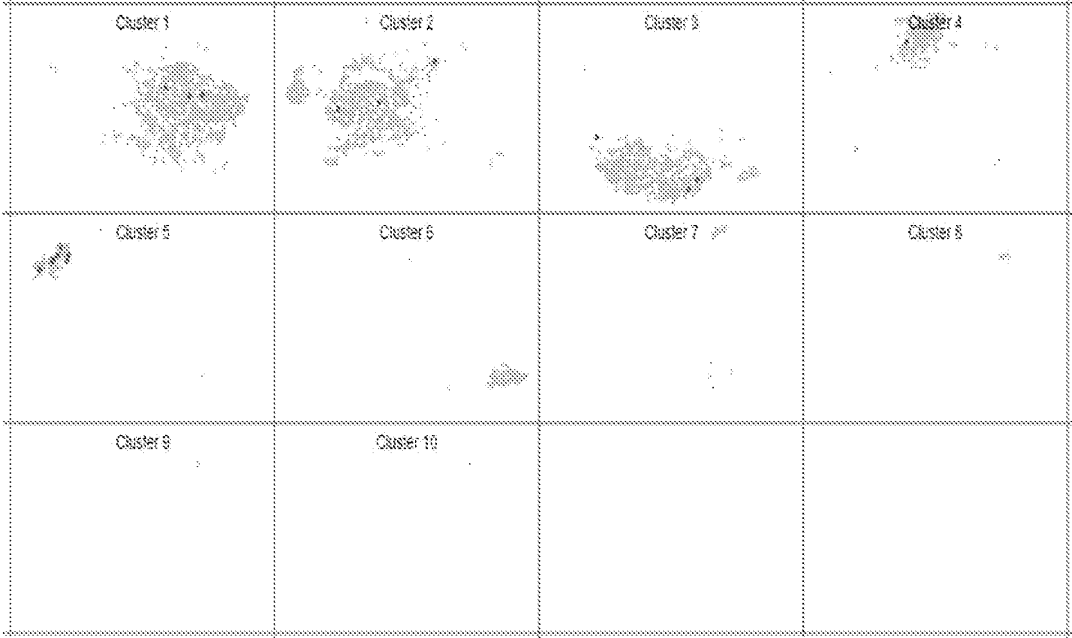


Figure 6A (cont.)

AAV8 Plot



AAV9 Plot

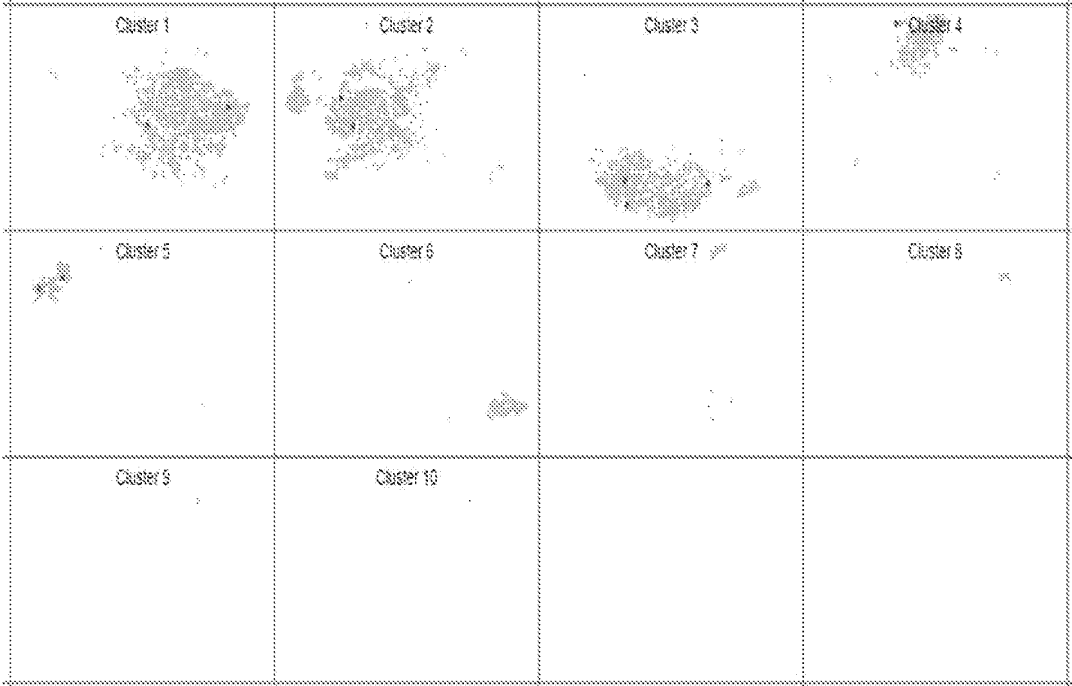
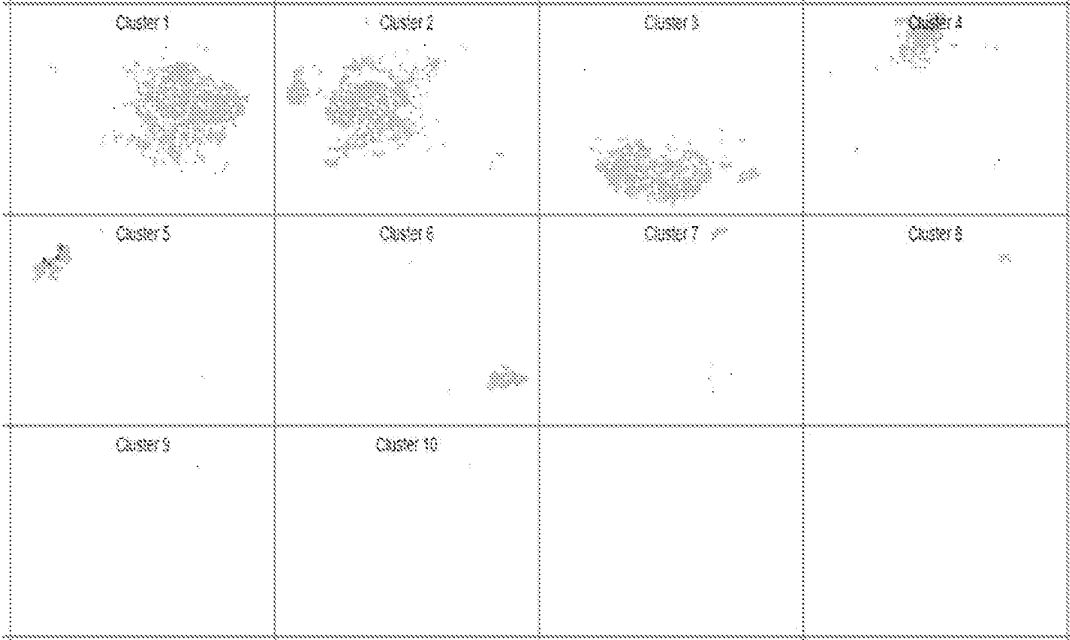


Figure 6A (cont.)

AAVrh10 plot



AAV-DJ Plot

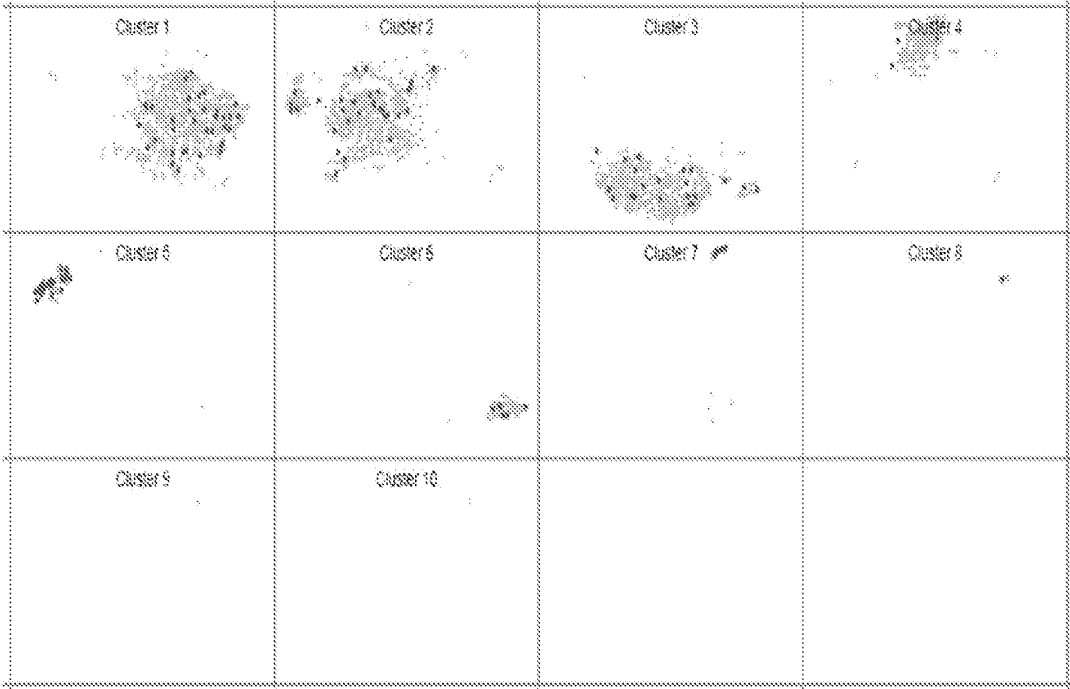


Figure 6A (cont.)

AAV-Anc80 Plot

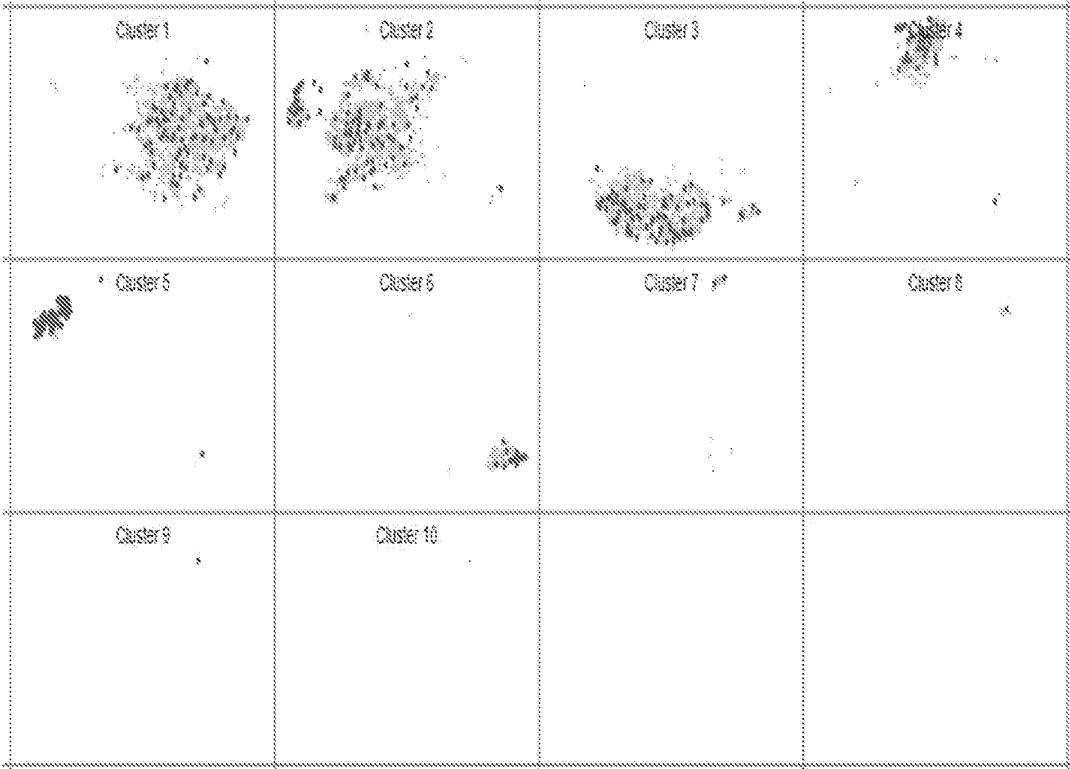


Figure 6A (cont.)

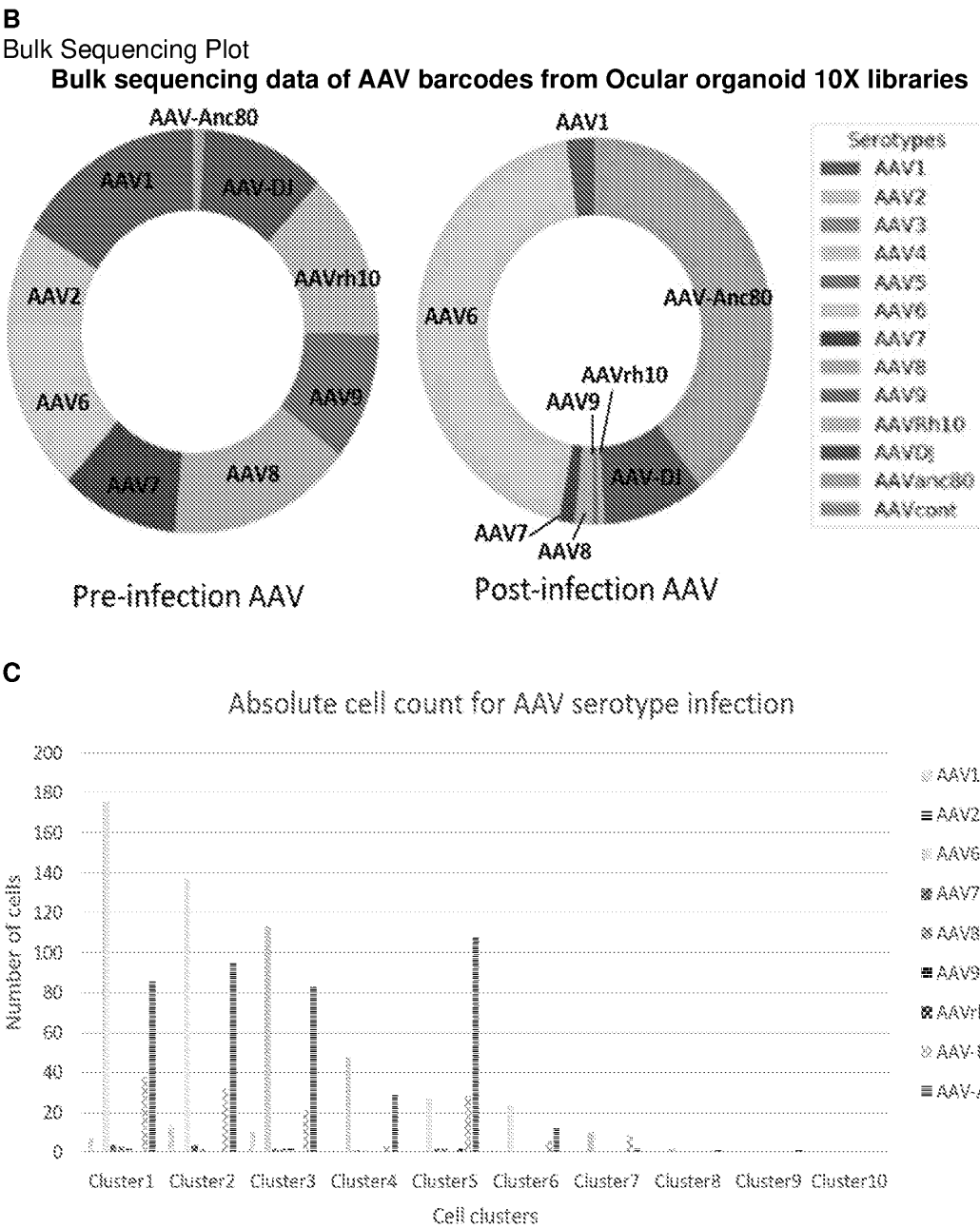
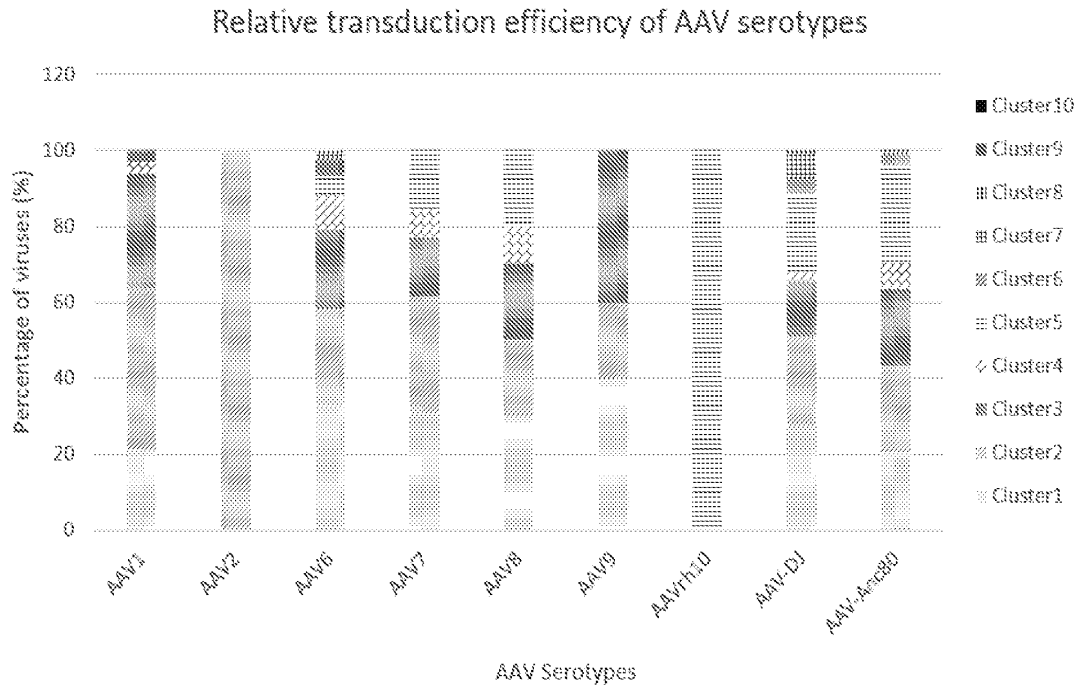


Figure 6 (cont.)

D



E

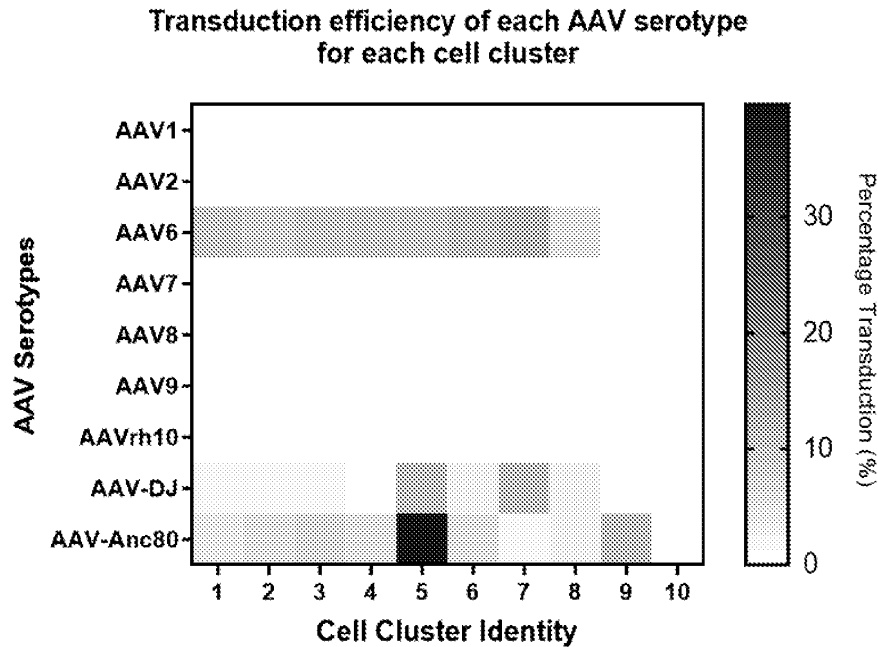


Figure 6 (cont.)

A

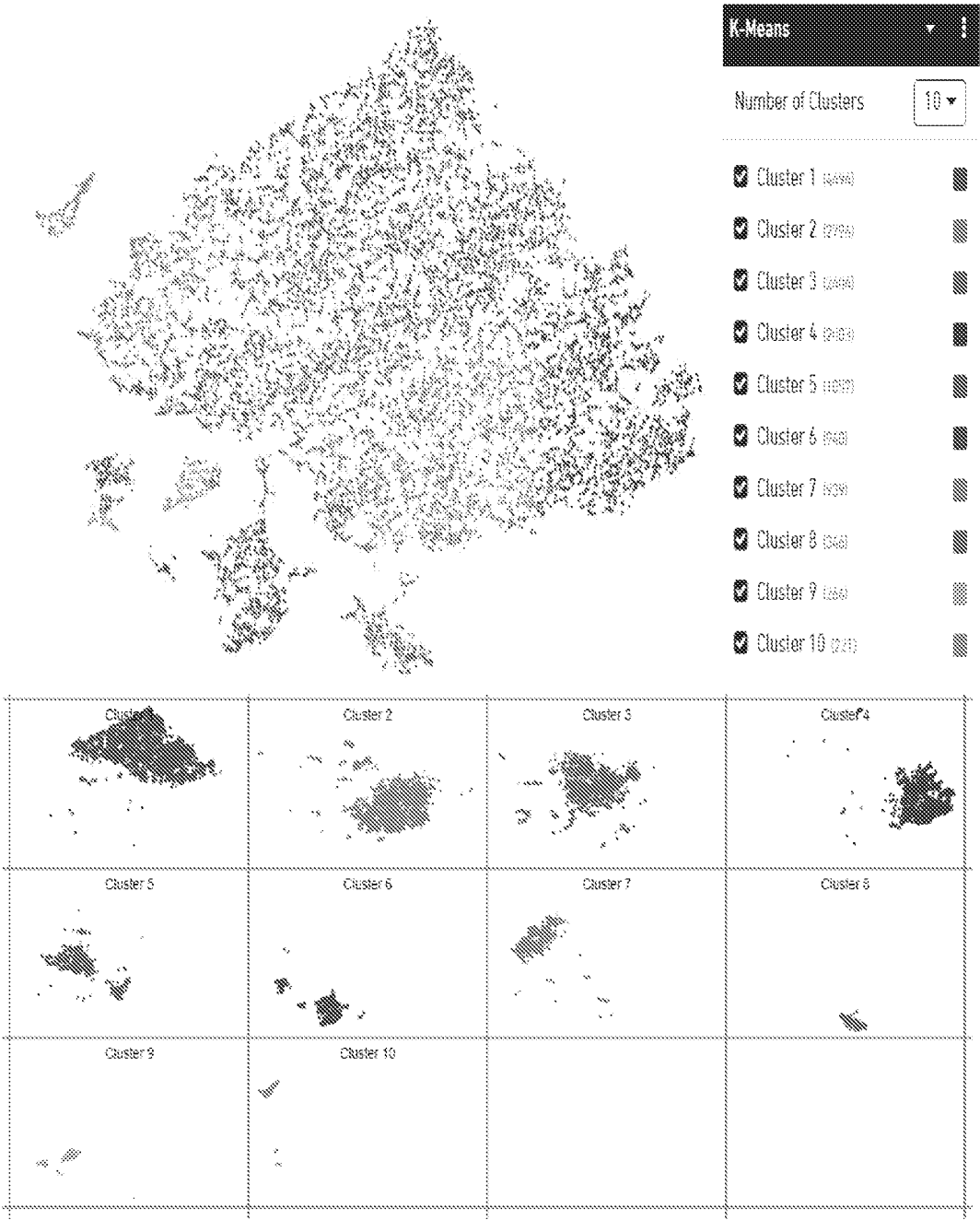


Figure 7

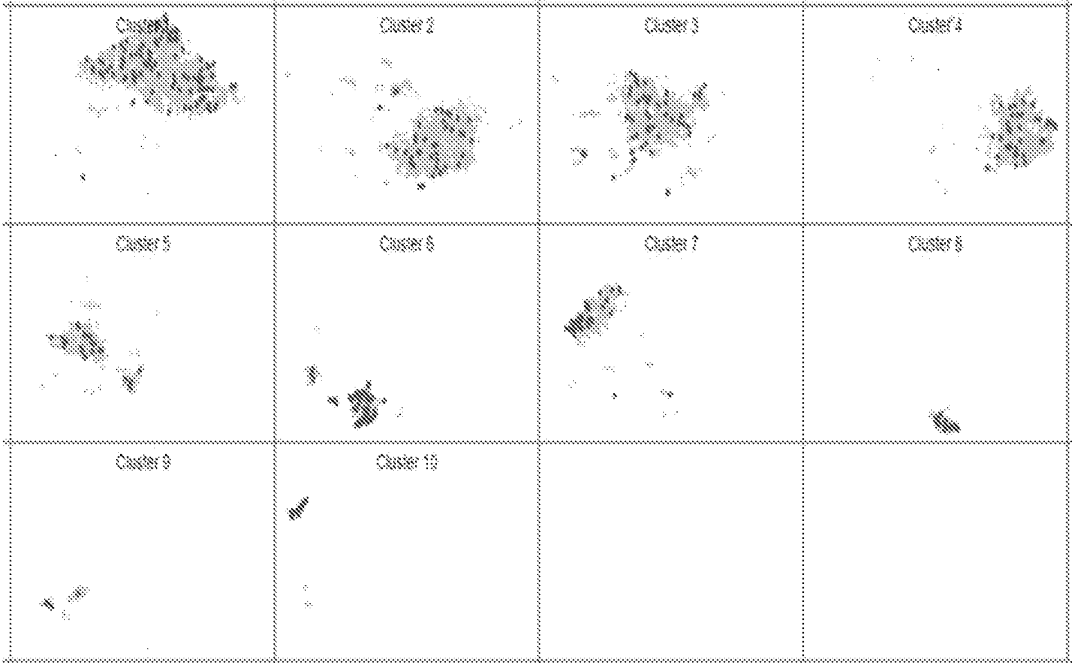
**B**

|                                 | Cluster1 | Cluster2 | Cluster3 | Cluster4 | Cluster5 |
|---------------------------------|----------|----------|----------|----------|----------|
| Top 10 highest expressing genes | NEFL     | MALAT1   | GNG3     | ZFHX3    | CRYAB    |
|                                 | STMN2    | SEC62    | CKB      | DPYSL2   | ARF4     |
|                                 | GAP43    | HMGCS1   | DDIT4    | DPYSL3   | MAP1LC3B |
|                                 | NSG2     | RTF1     | COMMD6   | RUNX1T1  | HM13     |
|                                 | STMN4    | SOX4     | ZFAS1    | DCX      | CYCS     |
|                                 | TUBB2A   | DPYSL3   | TMSB4X   | LHX9     | AURKAIP1 |
|                                 | TCF7L2   | GPM6A    | RPL24    | NREP     | KRT10    |
|                                 | CRMP1    | MT-ND2   | PEG10    | GPM6A    | P4HB     |
|                                 | TUBA1A   | SOX11    | RPS11    | SOX11    | FTL      |
|                                 | LHX9     | ZFHX3    | RPS15A   | MARCKS   | TRMT112  |

|                                 | Cluster6 | Cluster7 | Cluster8 | Cluster9 | Cluster10 |
|---------------------------------|----------|----------|----------|----------|-----------|
| Top 10 highest expressing genes | COL1A1   | TTR      | DCT      | CDC20    | ACTC1     |
|                                 | COL3A1   | SLC2A1   | MLANA    | UBE2C    | TNNI2     |
|                                 | LUM      | TTYH1    | BCAN     | TOP2A    | TNNI1     |
|                                 | COL1A2   | SOX2     | TYRP1    | CENPF    | MYBPH     |
|                                 | ITM2A    | Cluster7 | CD44     | BIRC5    | ACTA1     |
|                                 | DCN      | PTN      | PMEL     | TPX2     | CKM       |
|                                 | MGP      | HSPA5    | PLP1     | NUSAP1   | MYL1      |
|                                 | SFRP2    | FABP7    | IGFBP7   | CDK1     | MYLPF     |
|                                 | DLK1     | CD9      | PTGDS    | PTTG1    | TNNC2     |
|                                 | COL6A2   | GPM6B    | SAT1     | HMG82    | MYOG      |

**Figure 7 (cont.)**

AAV1 Plot



AAV2 Plot

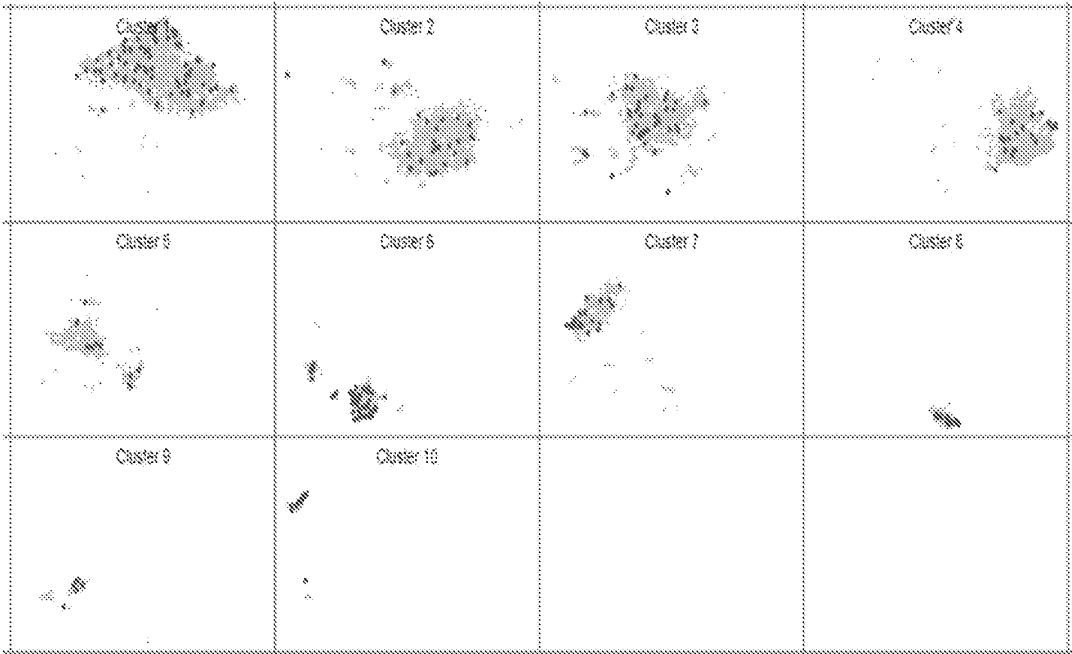
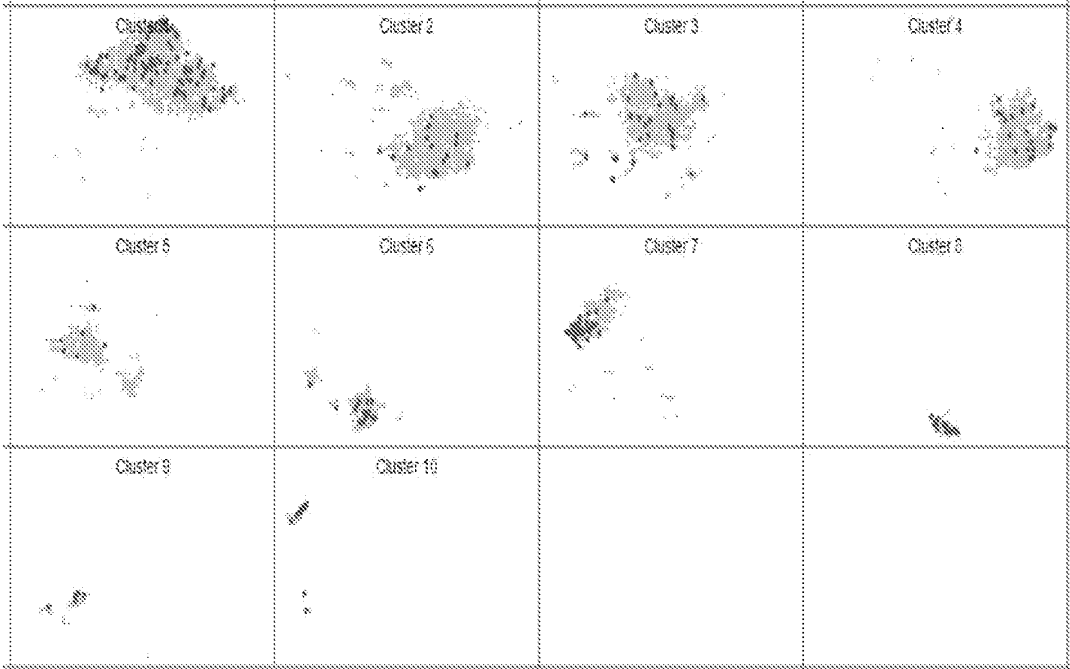


Figure 8A

AAV6 Plot



AAV7 Plot

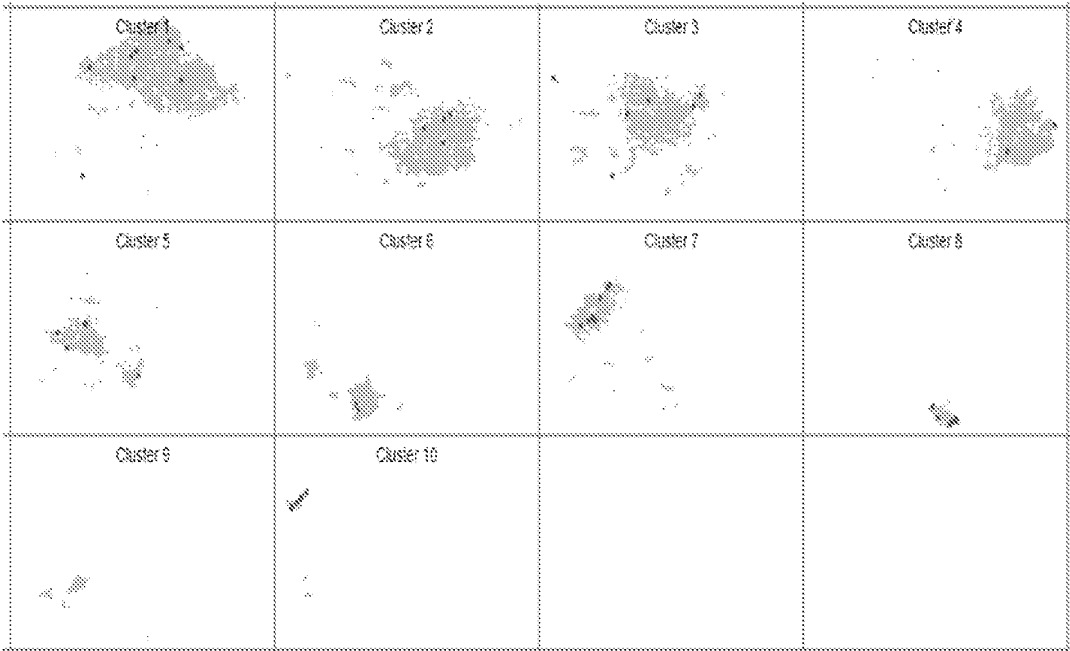
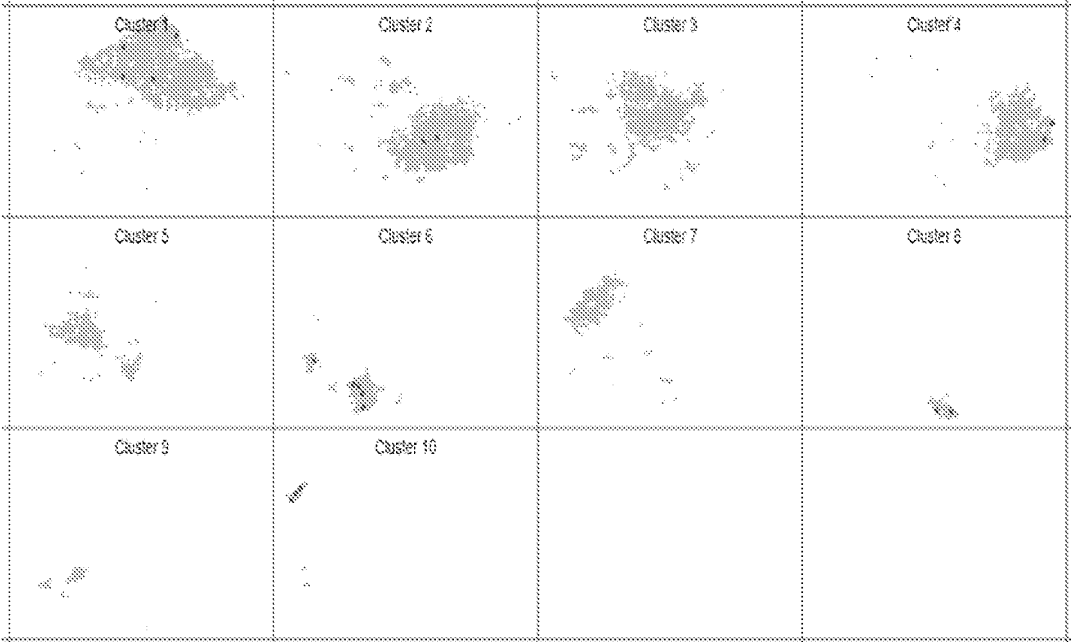


Figure 8A (cont.)

AAV8 Plot



AAV9 Plot

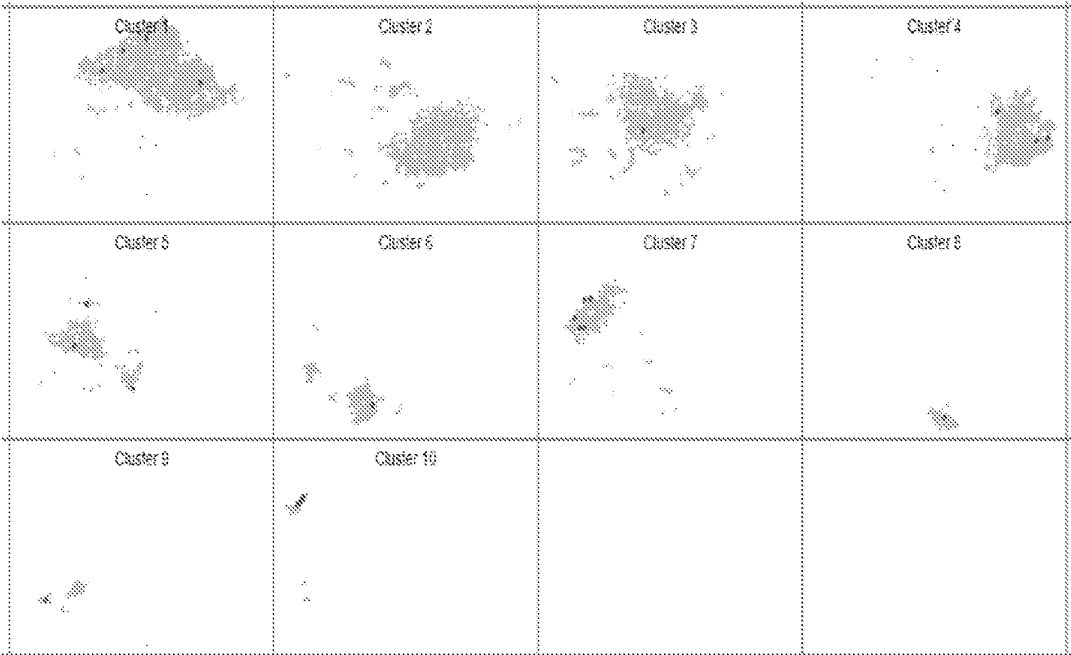
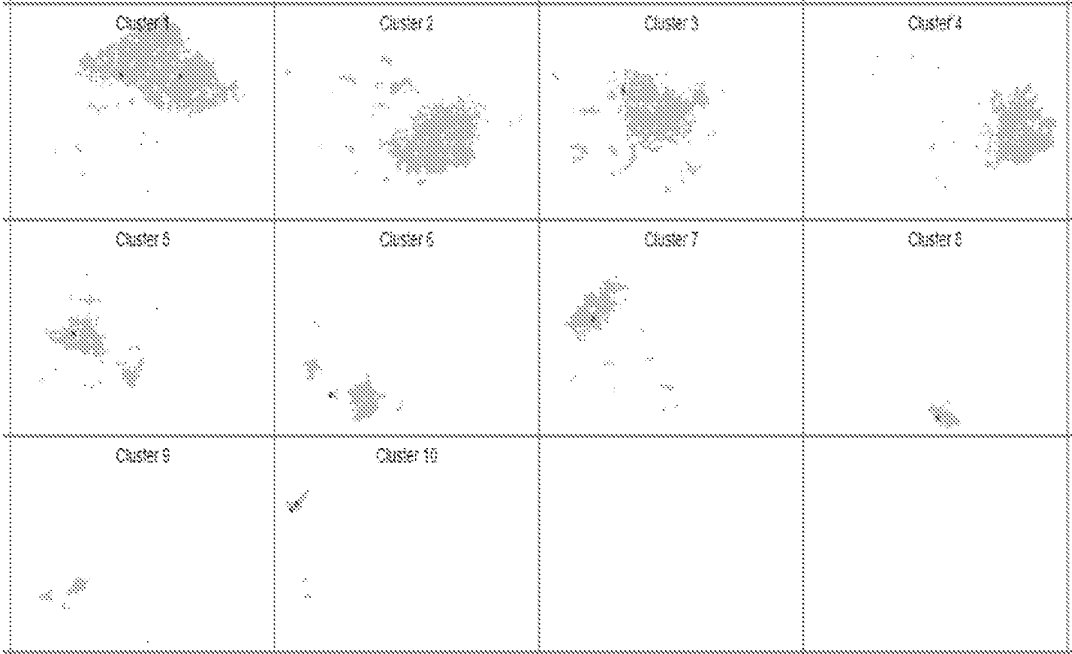


Figure 8A (cont.)

AAVrh10 Plot



AAV-DJ Plot

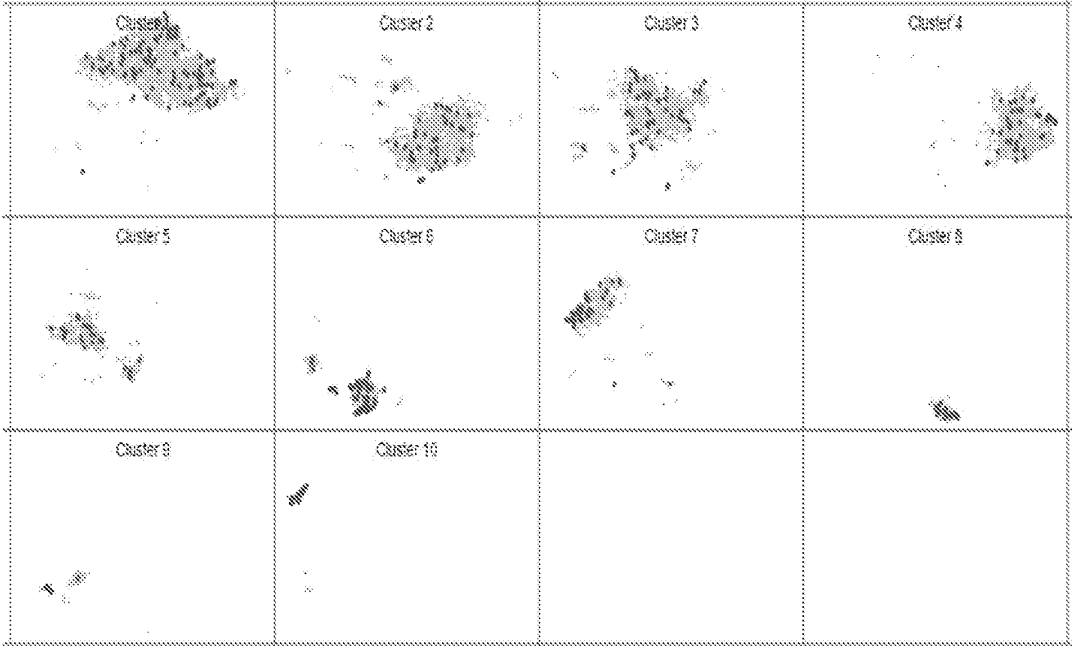


Figure 8A (cont.)

AAV-Anc80

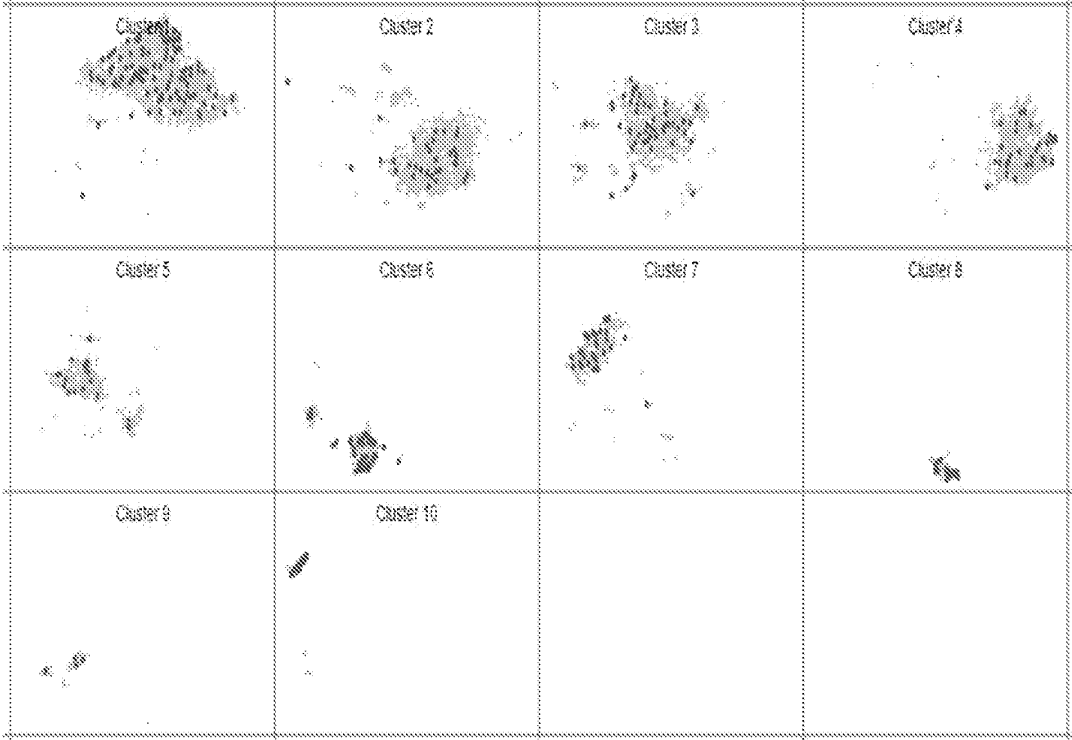
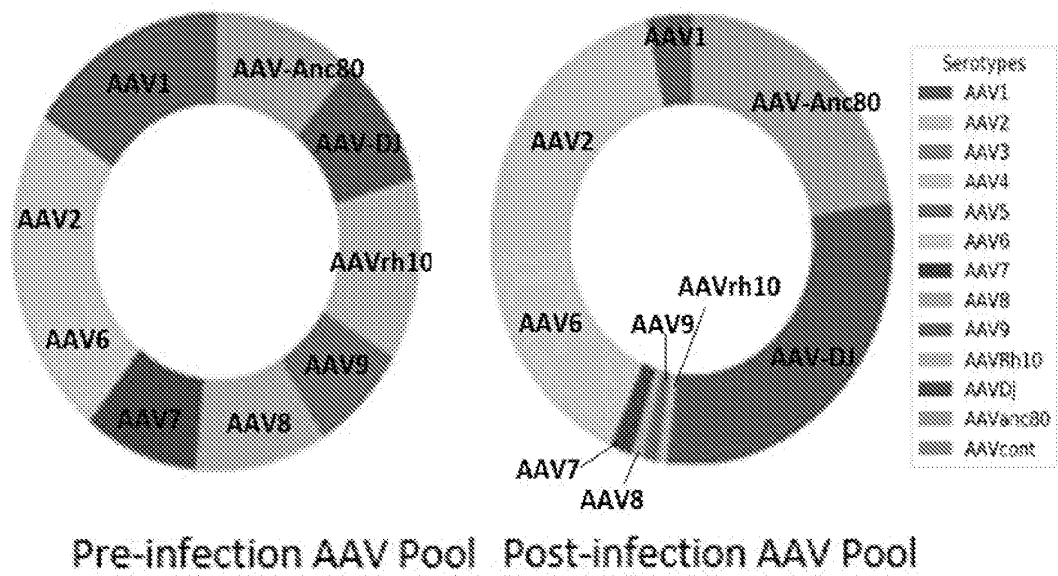


Figure 8A (cont.)

**B**  
Bulk Sequencing Plot  
Bulk sequencing data of AAV barcodes from Ocular organoid 10X libraries



**C**  
Absolute cell count for AAV serotype infection

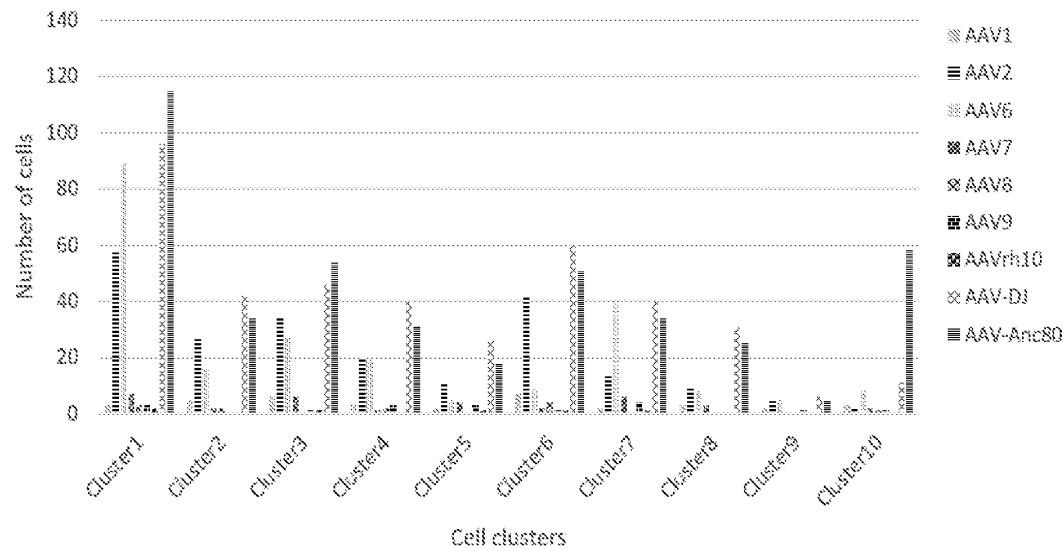


Figure 8 (cont.)

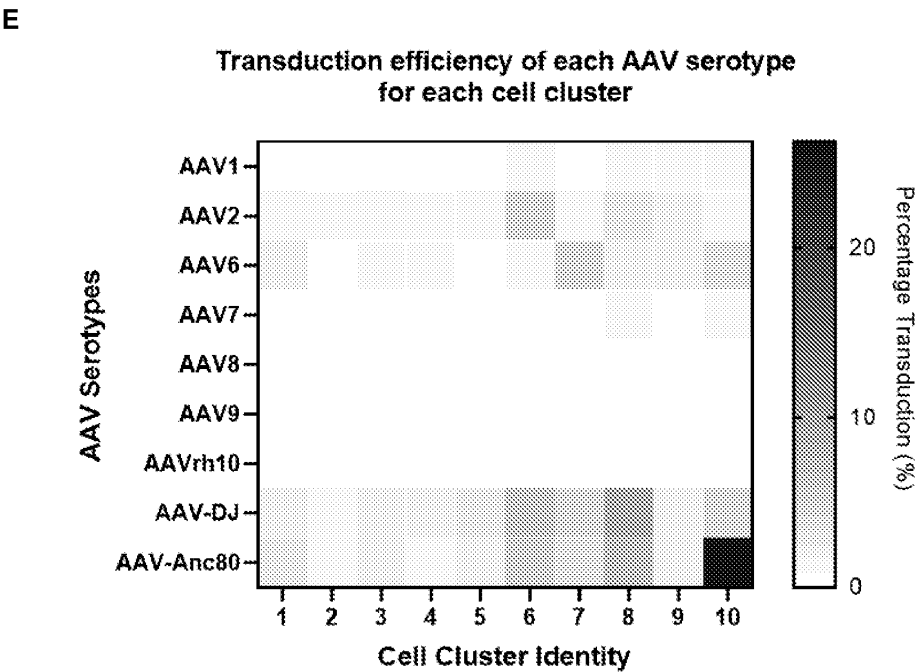
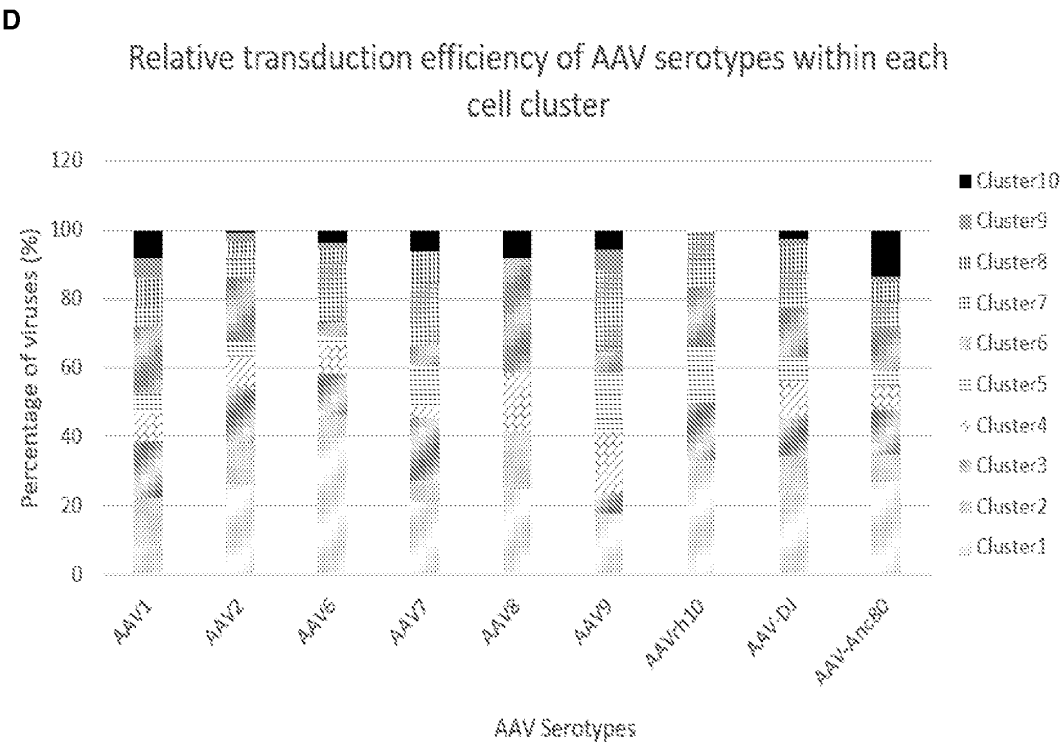


Figure 8 (cont.)