## Table S1: Rep78 Partitions

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| --- | --- | --- | --- |
| **Partition** | **AAV2 nt coordinates** | **Rep78 codons** | **Notes** |
| 1 | 321–383 | 1–21 | N-terminal motif; moderately conserved |
| 2 | 552–731 | 78–137 | Internal region, low indel rate |
| 3 | 753–875 | 145–185 | Distinct central block |
| 4 | 990–1178 | 224–286 | Conserved across major clades |
| 5 | 1206–1736 | 296–472 | Long, robust region with broad coverage |

## Table S2: VP1 Partitions

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| --- | --- | --- | --- |
| **Partition** | **AAV2 nt coordinates** | **VP1 codons** | **Notes** |
| 1 | 2332–2601 | 44–133 | VP1-specific N-terminal extension |
| 2 | 2833–2973 | 211–257 | Internal conserved motif |
| 3 | 3016–3342 | 272–380 | High-confidence mid-region |
| 4 | 3376–3546 | 392–448 | Linked to partition 3 |
| 5 | 3586–3645 | 462–481 | Short conserved segment |
| 6 | 3880–4314 | 560–704 | Most conserved region in VP1 |
| 7 | 4336–4395 | 712–731 | Terminal conserved region |