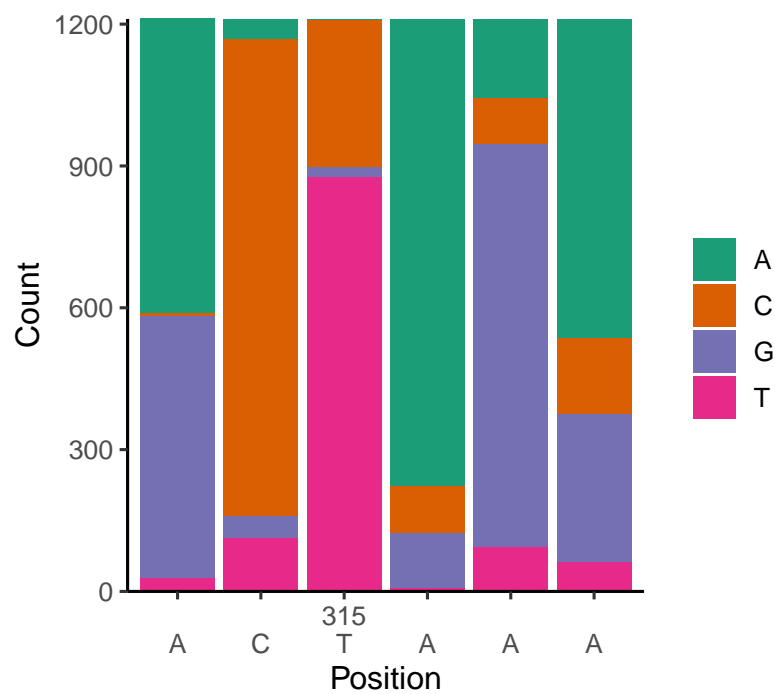
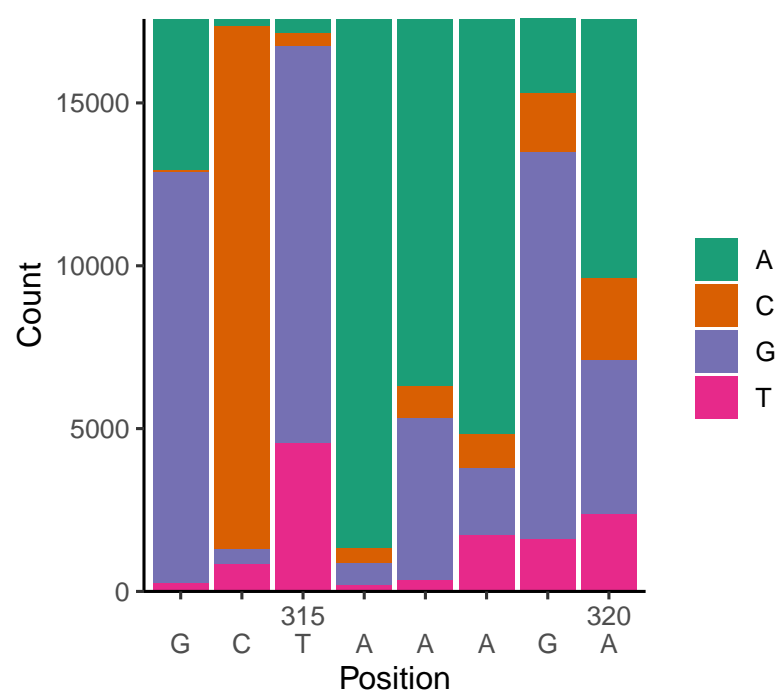


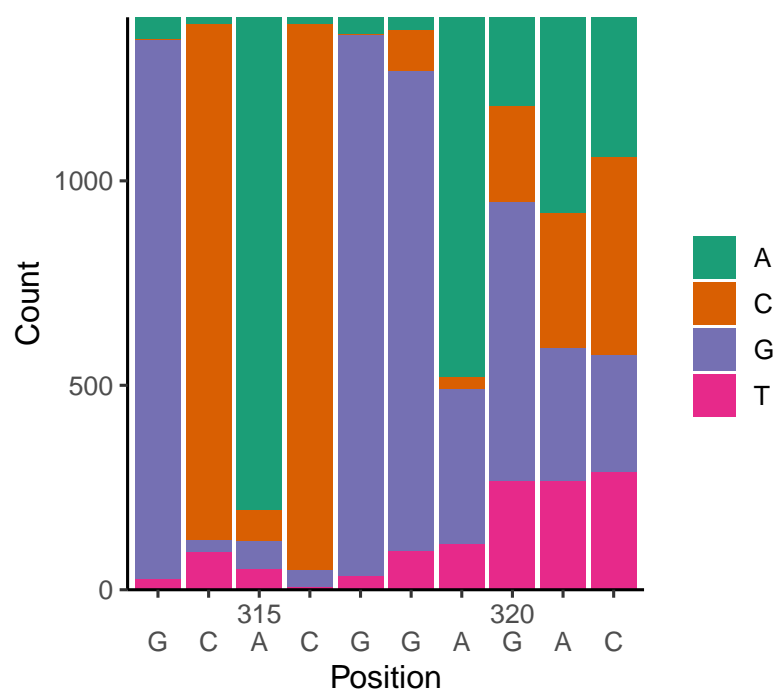
Gene IGHV3-13\*01\_C301G



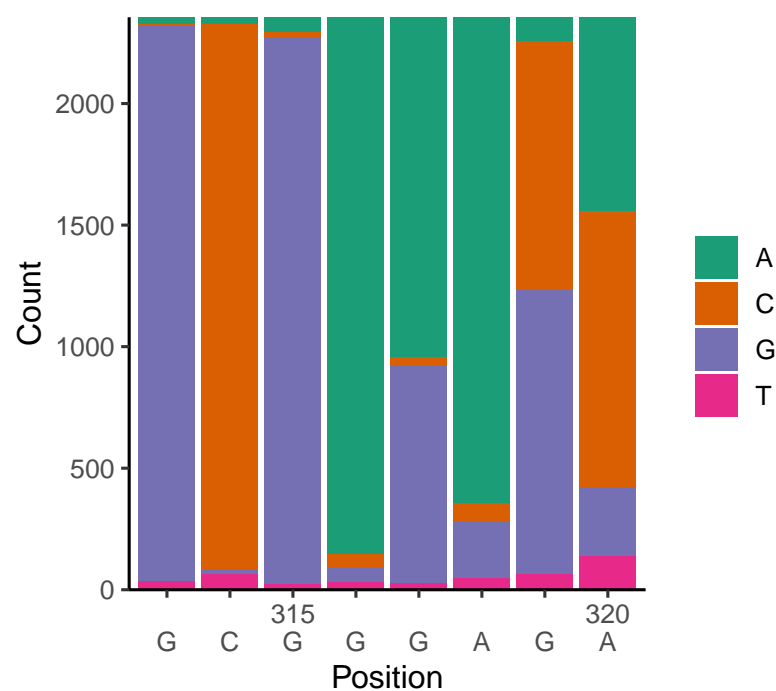
Gene IGHV3S42\*01\_T19A\_G24A\_C27A



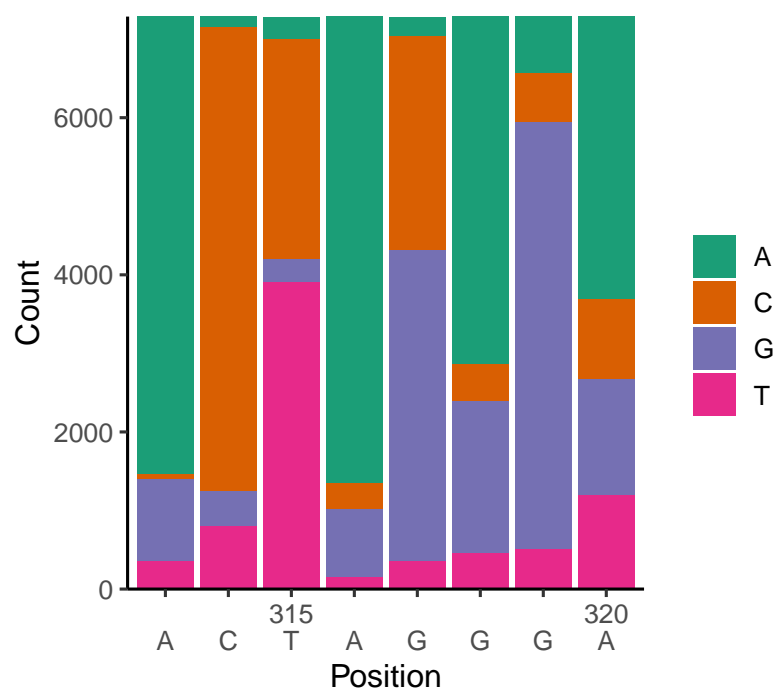
Gene IGHV2-10\*01\_C6G\_A23G\_G112C



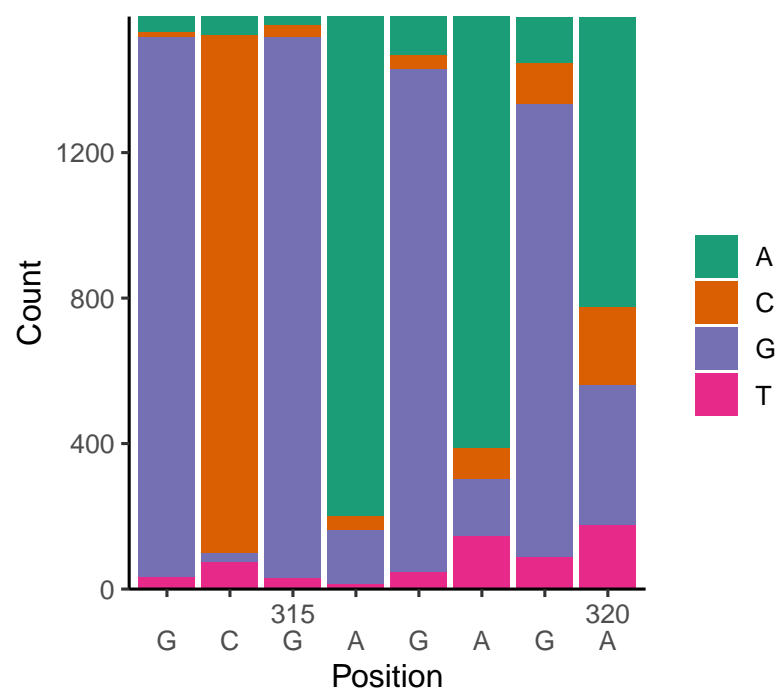
Gene IGHV3-28\*02\_C118T\_C176G\_A180G



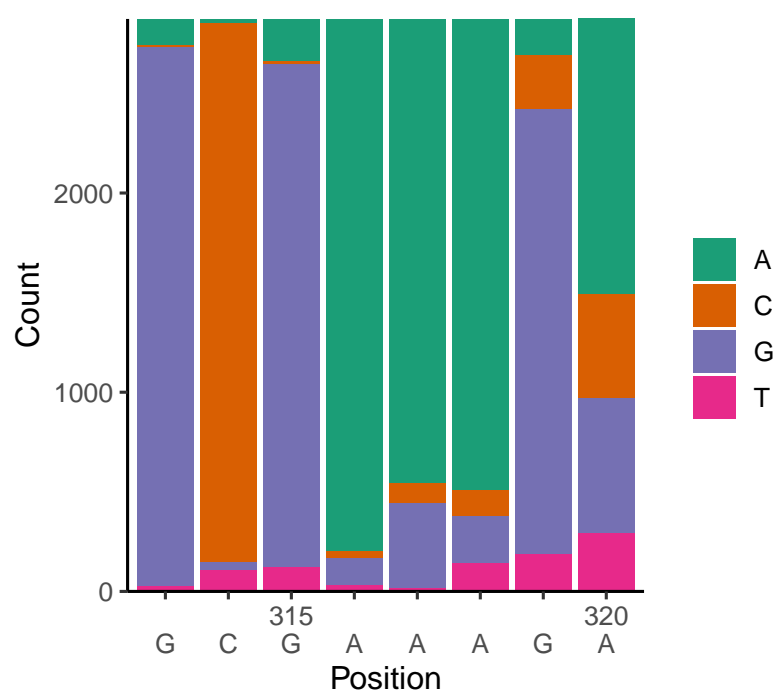
Gene IGHV3-184\*01\_G106A\_T109C\_G112C



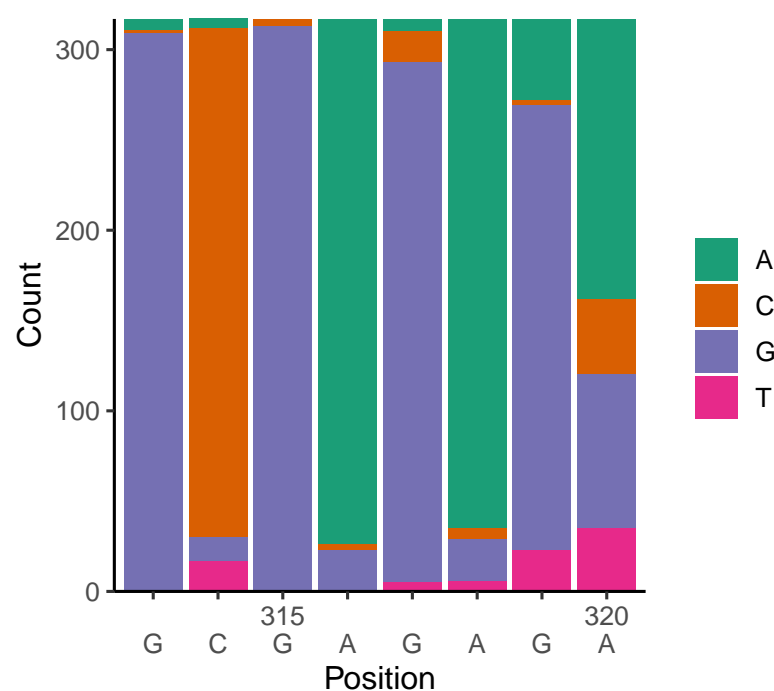
Gene IGHV3-54\*02\_G170C



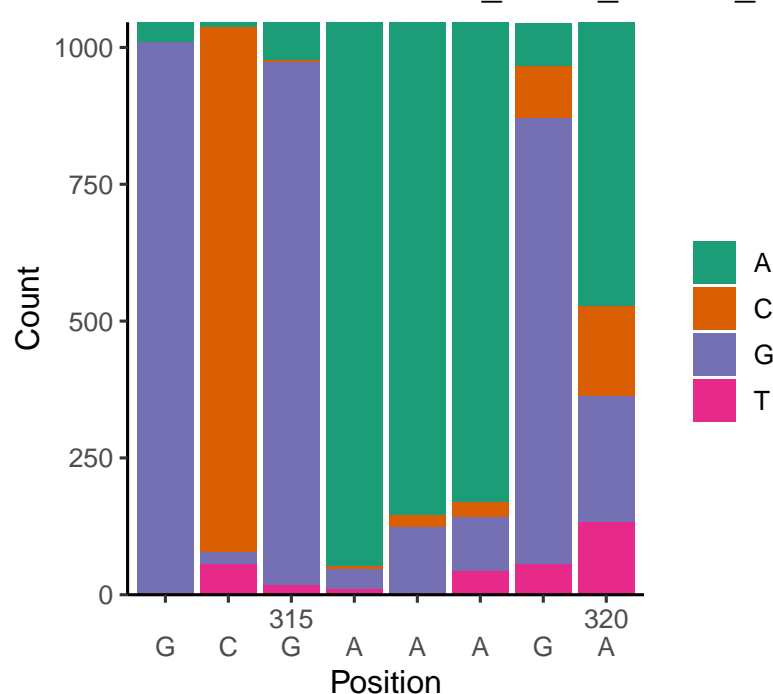
Gene IGHV3-103\*01\_G51A\_A170G



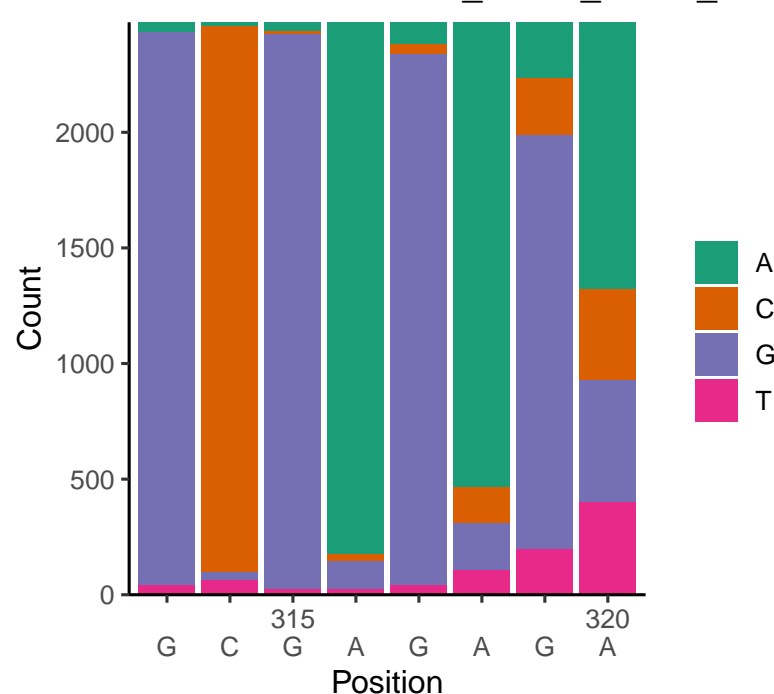
Gene IGHV4-73\*01\_G147A\_T163A\_C16



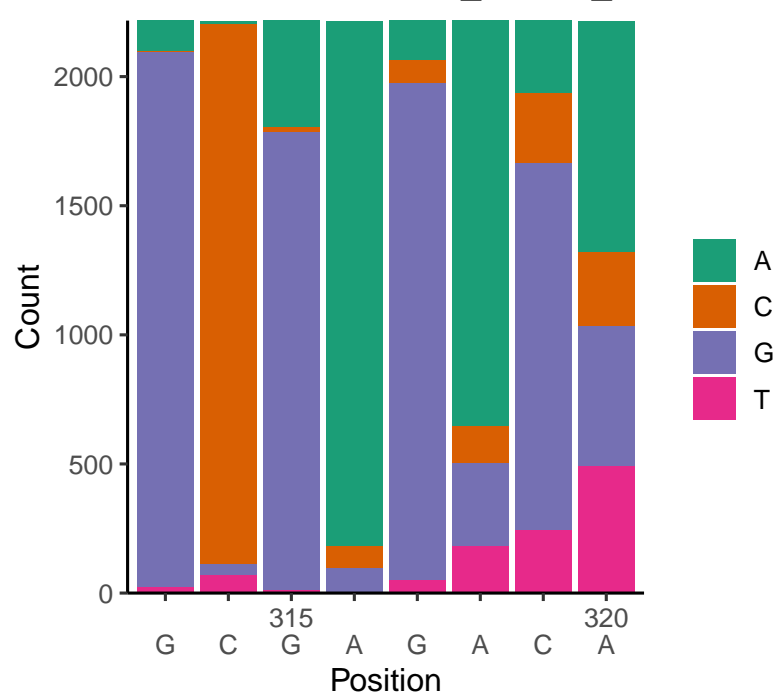
Gene IGHV3-103\*01\_G51A\_A170G\_A29



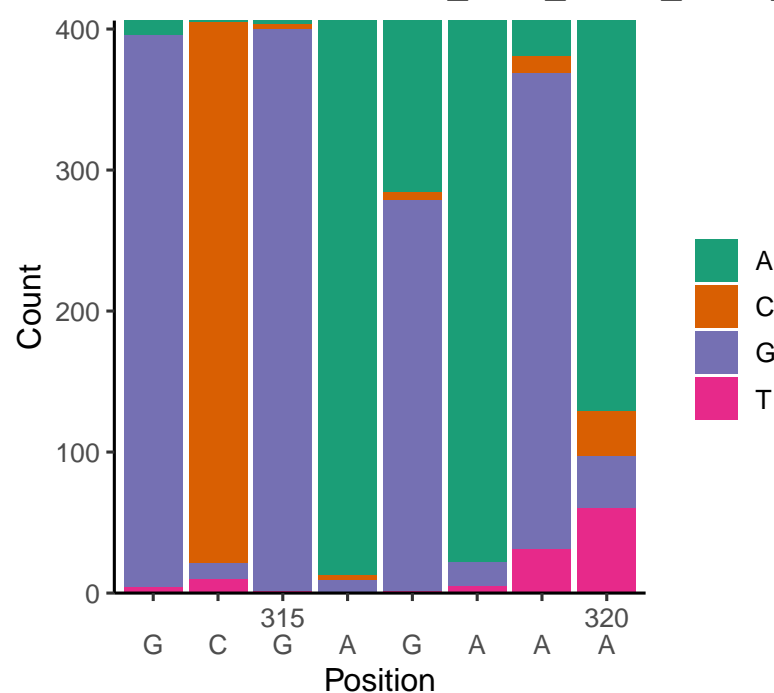
Gene IGHV4-93\*01\_C32G\_A33G\_G34C



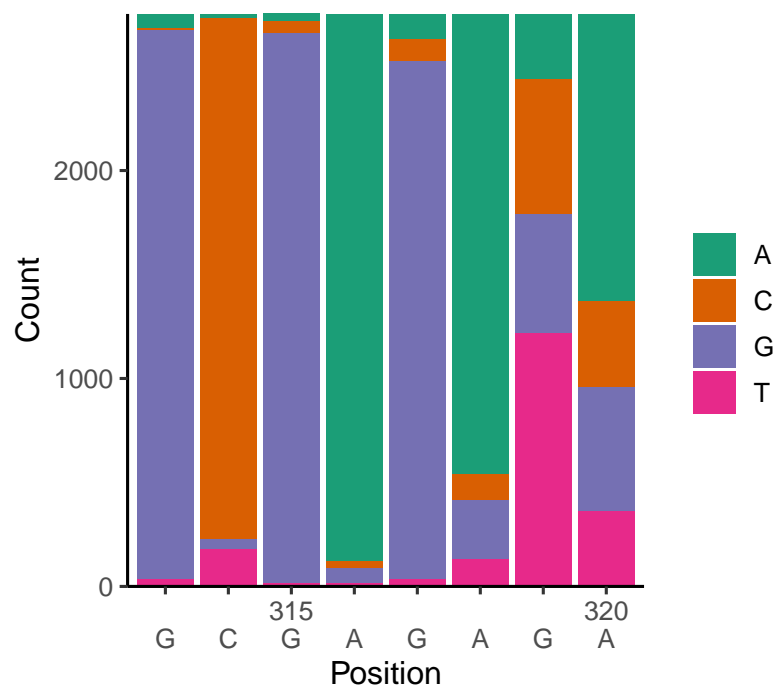
Gene IGHV4-65\*02\_A163T\_G169A



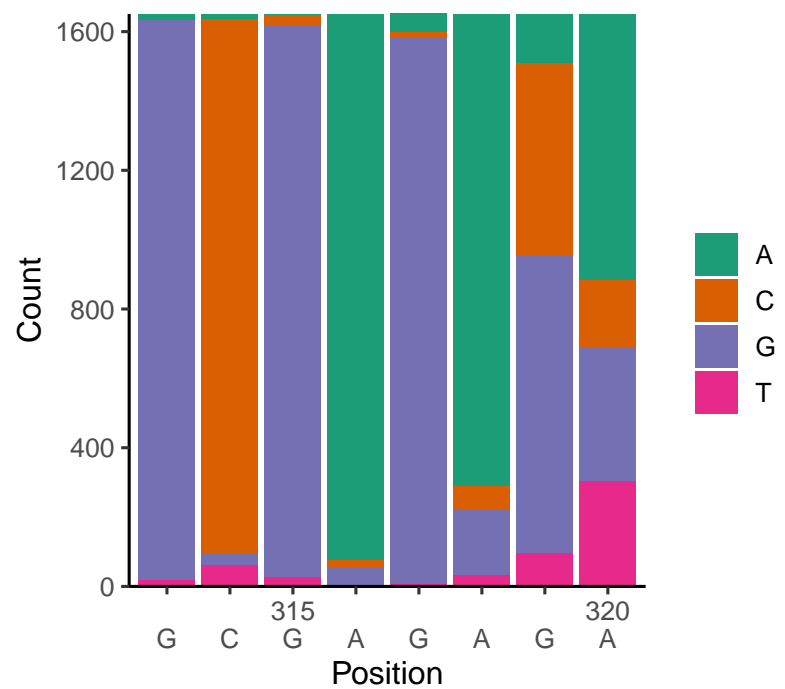
Gene IGHV4-81\*01\_C4G\_G21A\_A27T\_T



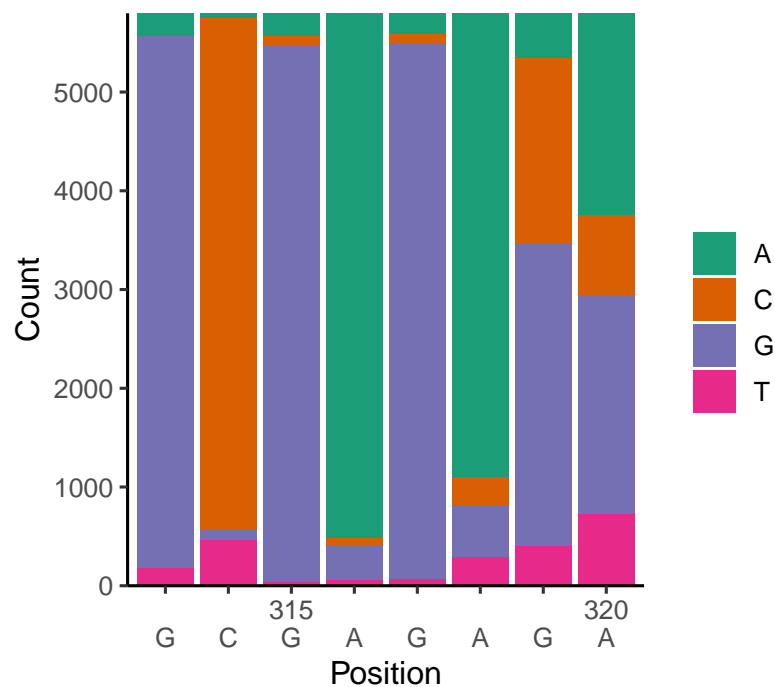
Gene IGHV4-127\*01\_T82G\_A83G



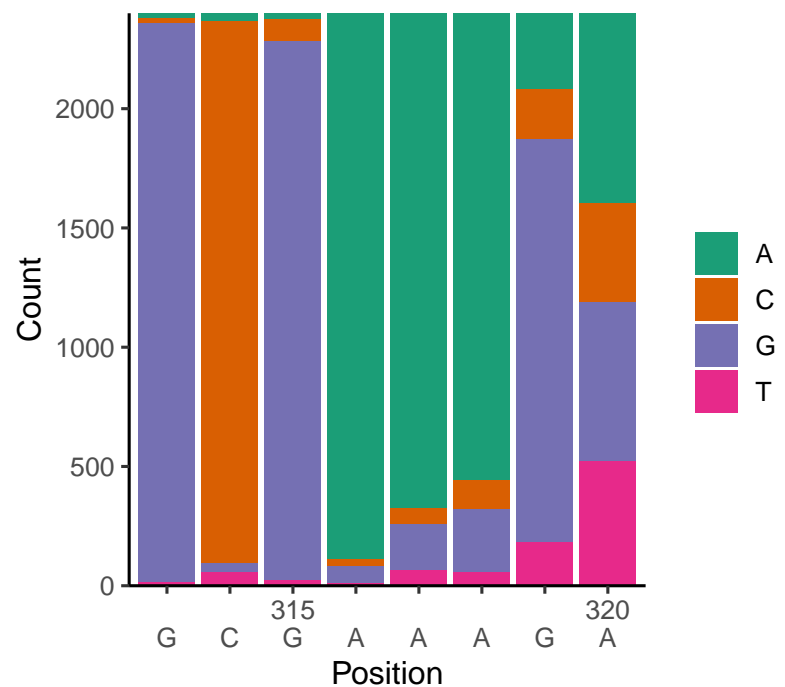
Gene IGHV4-165\*01\_G82T\_G83A\_A133



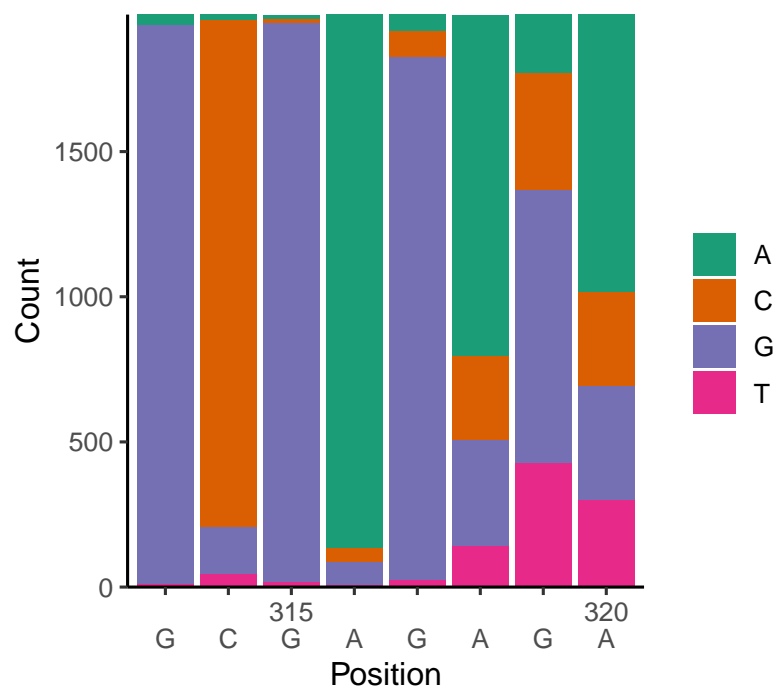
Gene IGHV4-160\*01\_A106G\_A109T\_G109



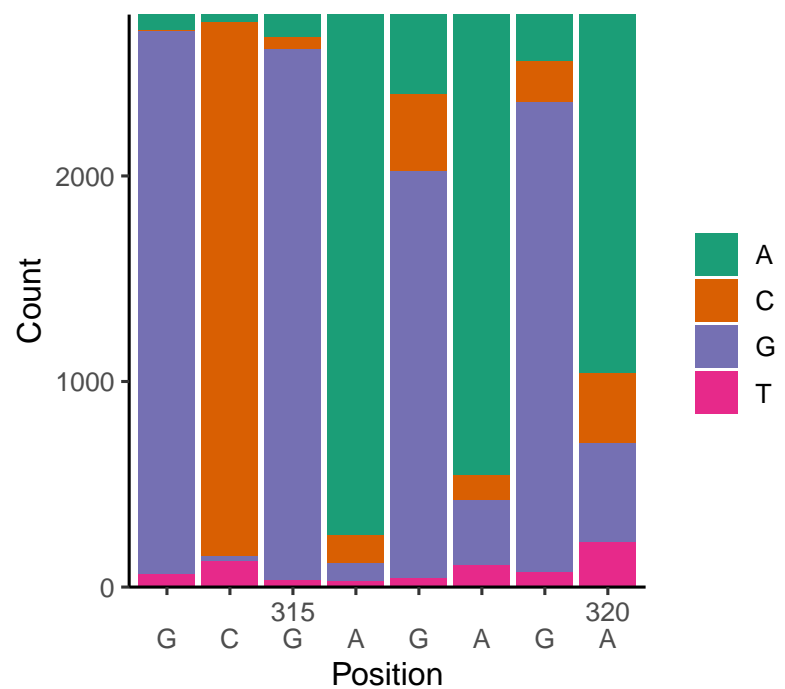
Gene IGHV5-20\*02\_A141G\_C312T



Gene IGHV4-165\*01\_G32A\_G106A\_T106



Gene IGHV3-178\*01\_A274G\_G297A\_T297



Gene IGHV4S13\*01\_T85A\_C137G\_G267A\_G289A



Gene IGHV4S9\*01\_T106A\_A107G\_C108T



Gene IGHV2-174\*01\_C6G\_T108A\_G159T\_C163A\_T164G



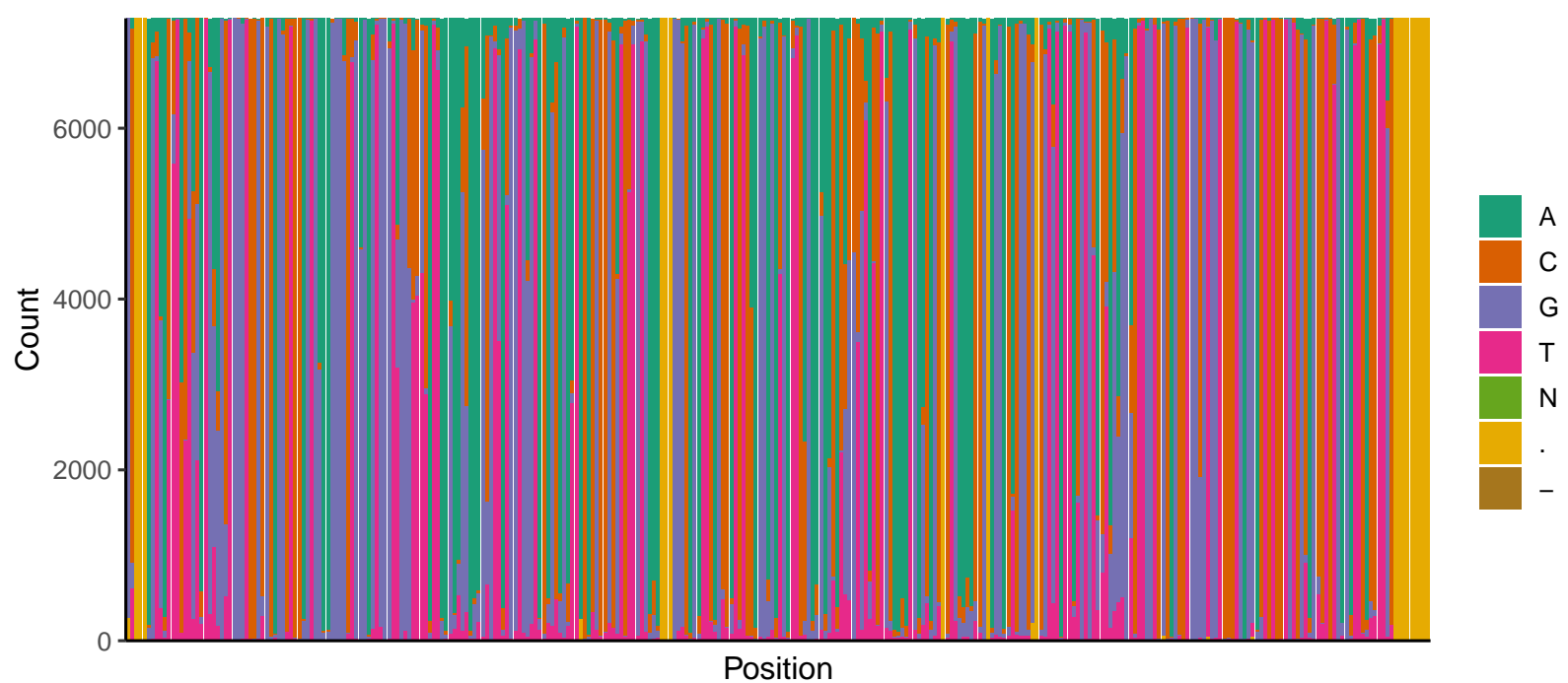
Gene IGHV3-13\*01\_C301G



Gene IGHV2-10\*01\_C6G\_A23G\_G112C\_G118A\_A119G\_G121T\_G141A\_C205A\_G210T



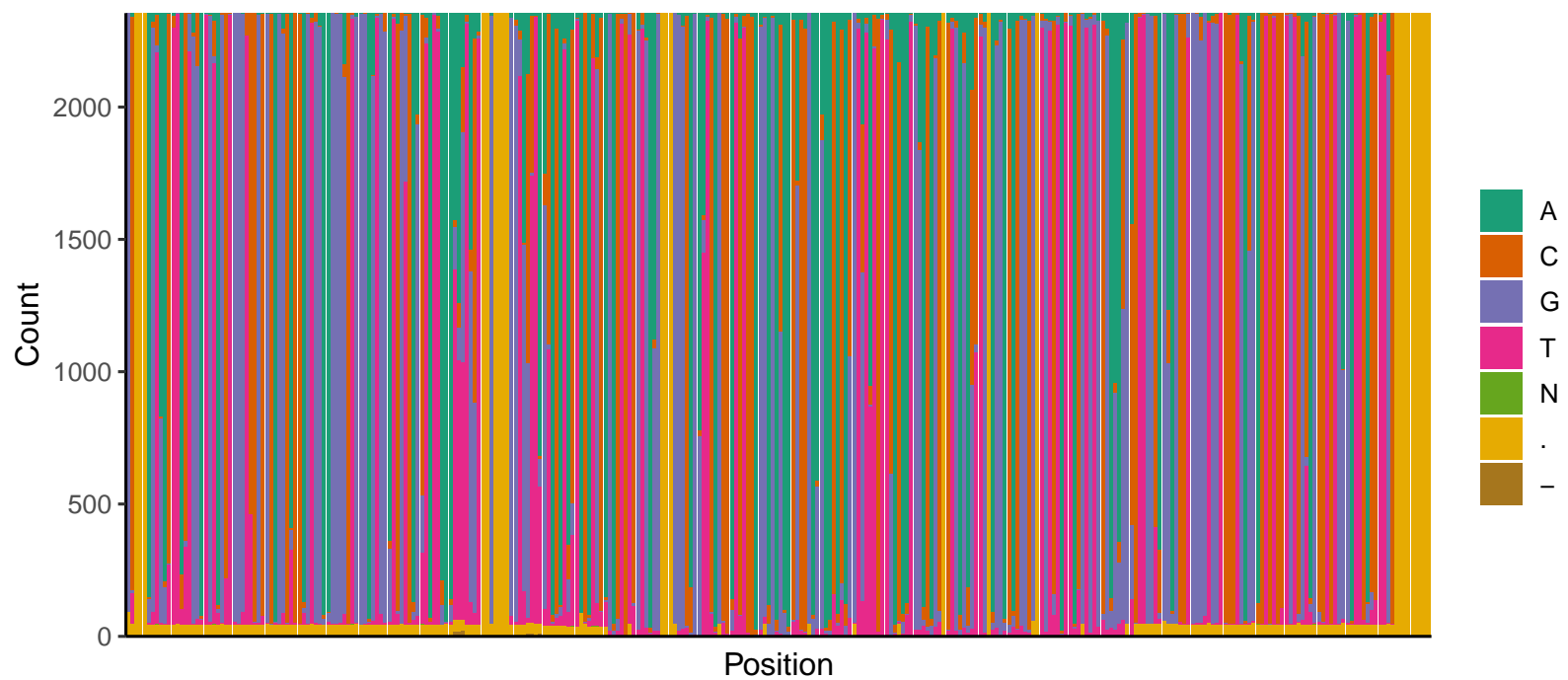
Gene IGHV3-184\*01\_G106A\_T109C\_G275A



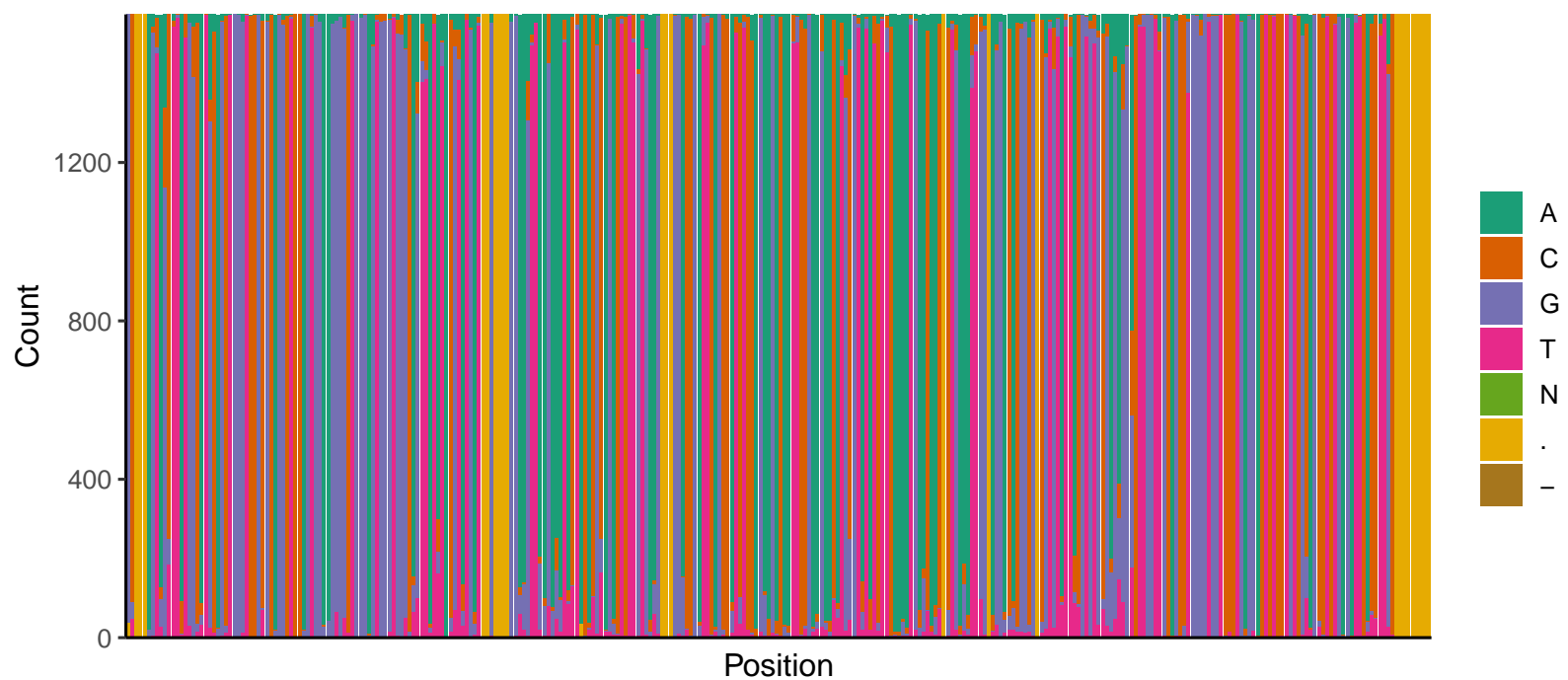
Gene IGHV3S42\*01\_T19A\_G24A\_C27A\_C38T\_A39C\_A40C\_C111T\_T112G\_G114C\_A



Gene IGHV3-28\*02\_C118T\_C176G\_A187G\_G274A\_G277A



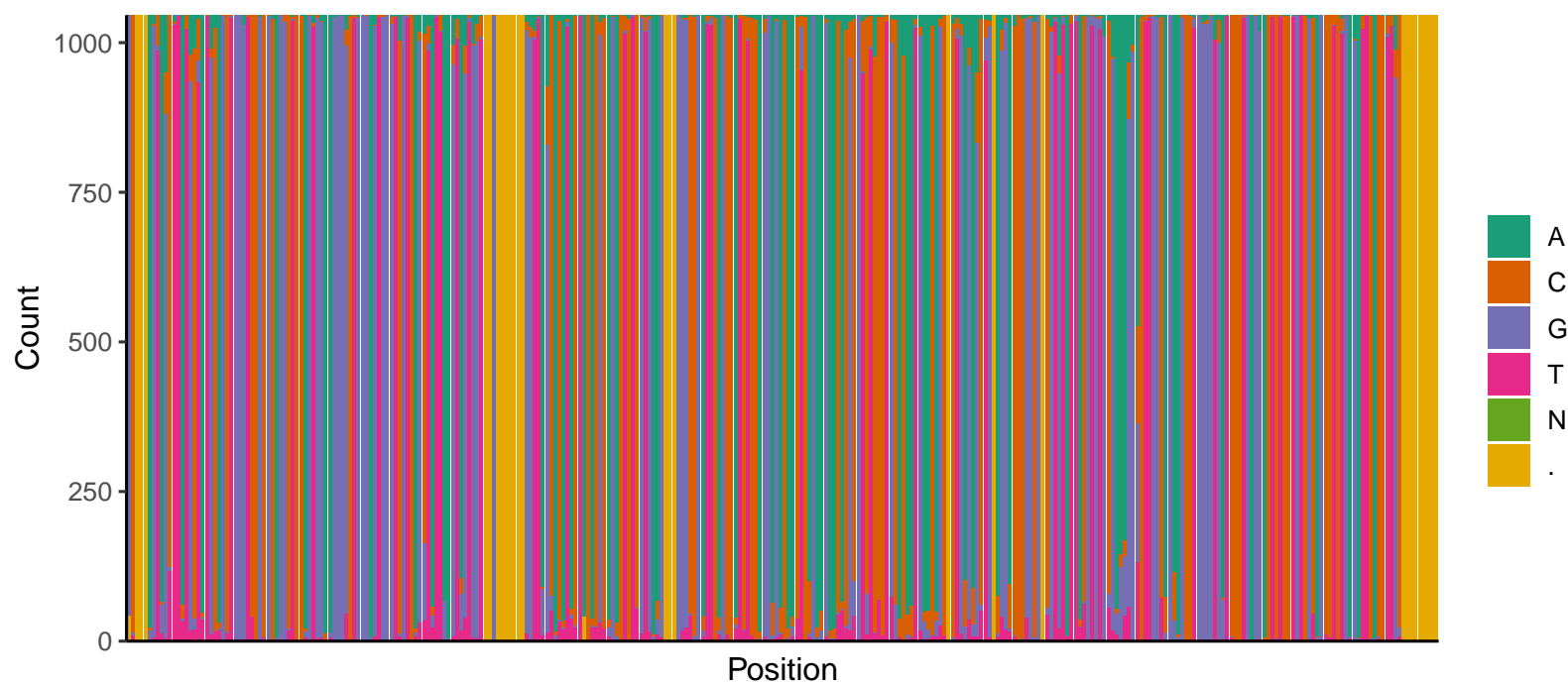
Gene IGHV3-54\*02\_G170C



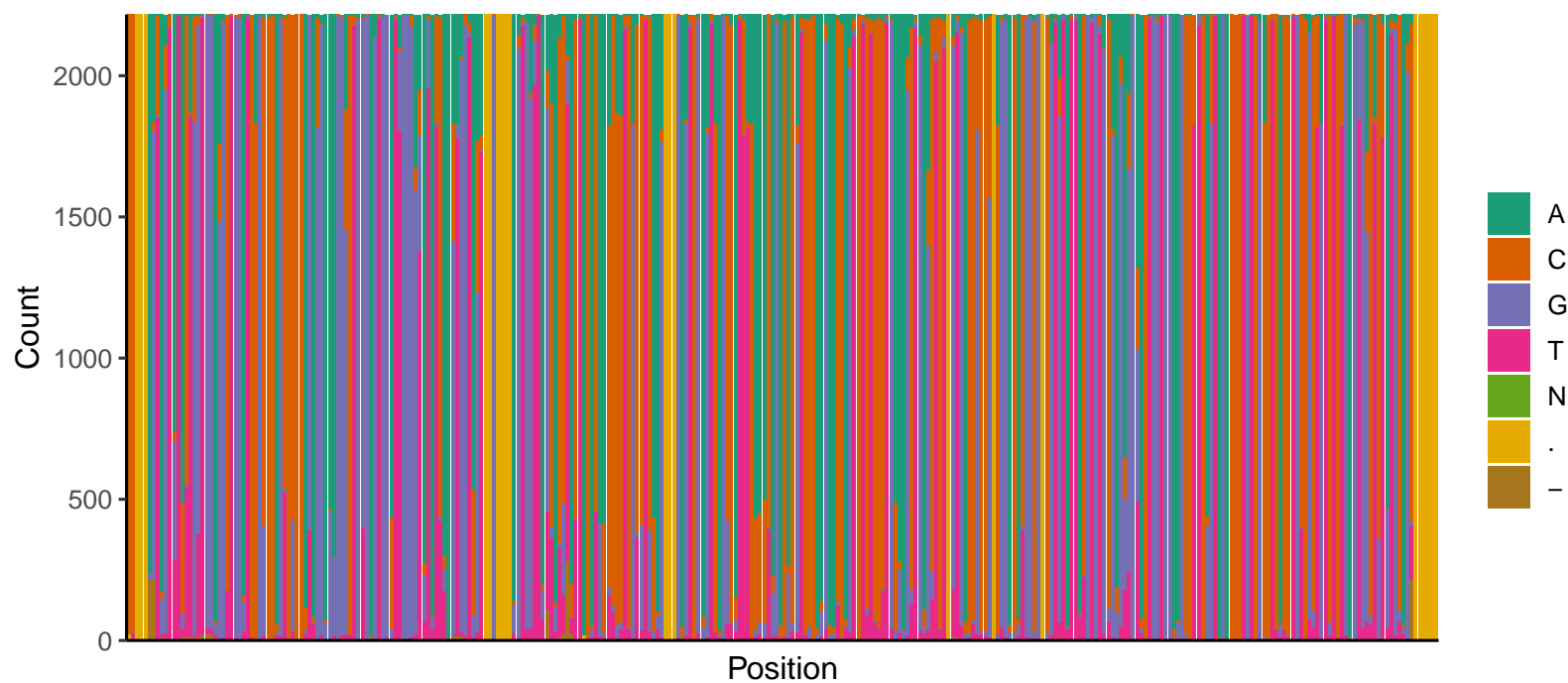
Gene IGHV3-103\*01\_G51A\_A170G



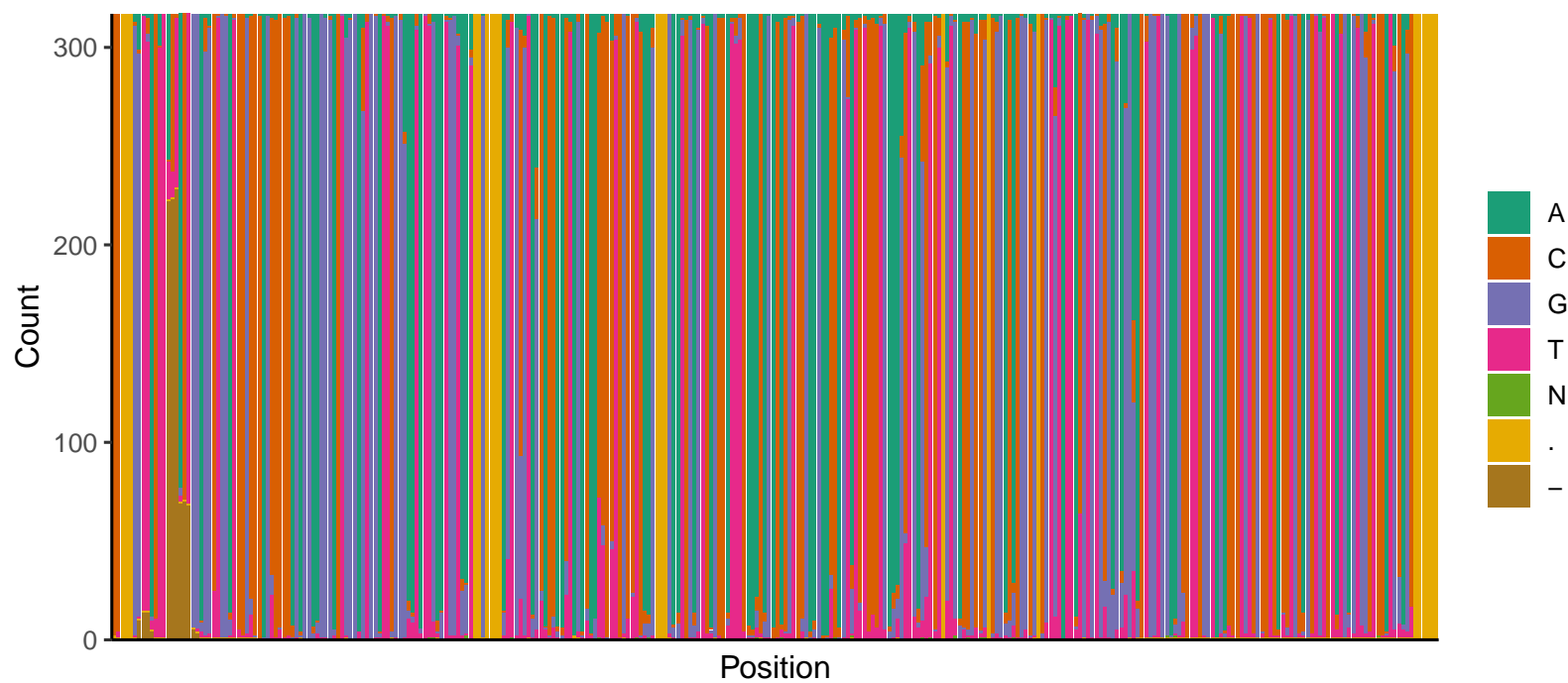
Gene IGHV3-103\*01\_G51A\_A170G\_A295C



Gene IGHV4-65\*02\_A163T\_G169A



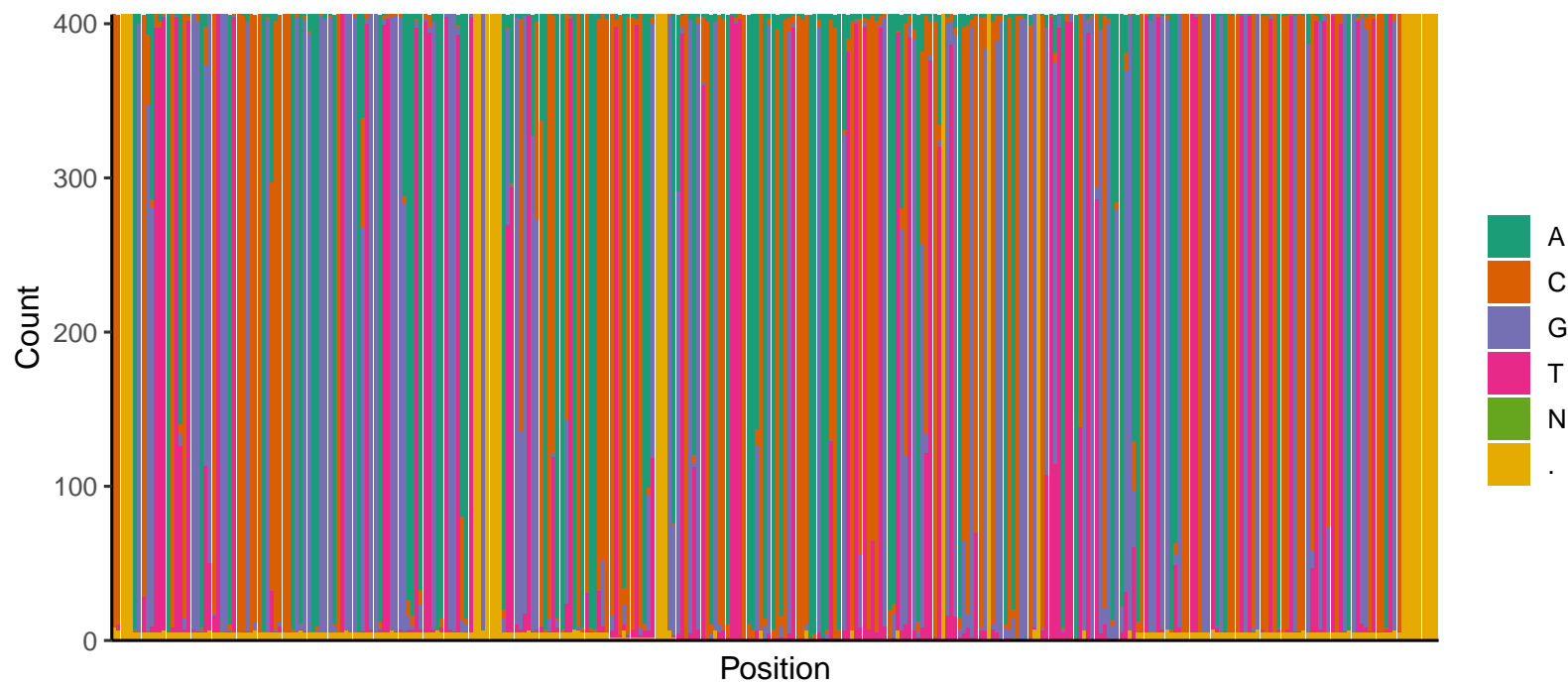
Gene IGHV4-73\*01\_G147A\_T163A\_C168T\_T169G



Gene IGHV4-93\*01\_C32G\_A33G\_G34C\_A239T



Gene IGHV4-81\*01\_C4G\_G21A\_A27T\_T255C





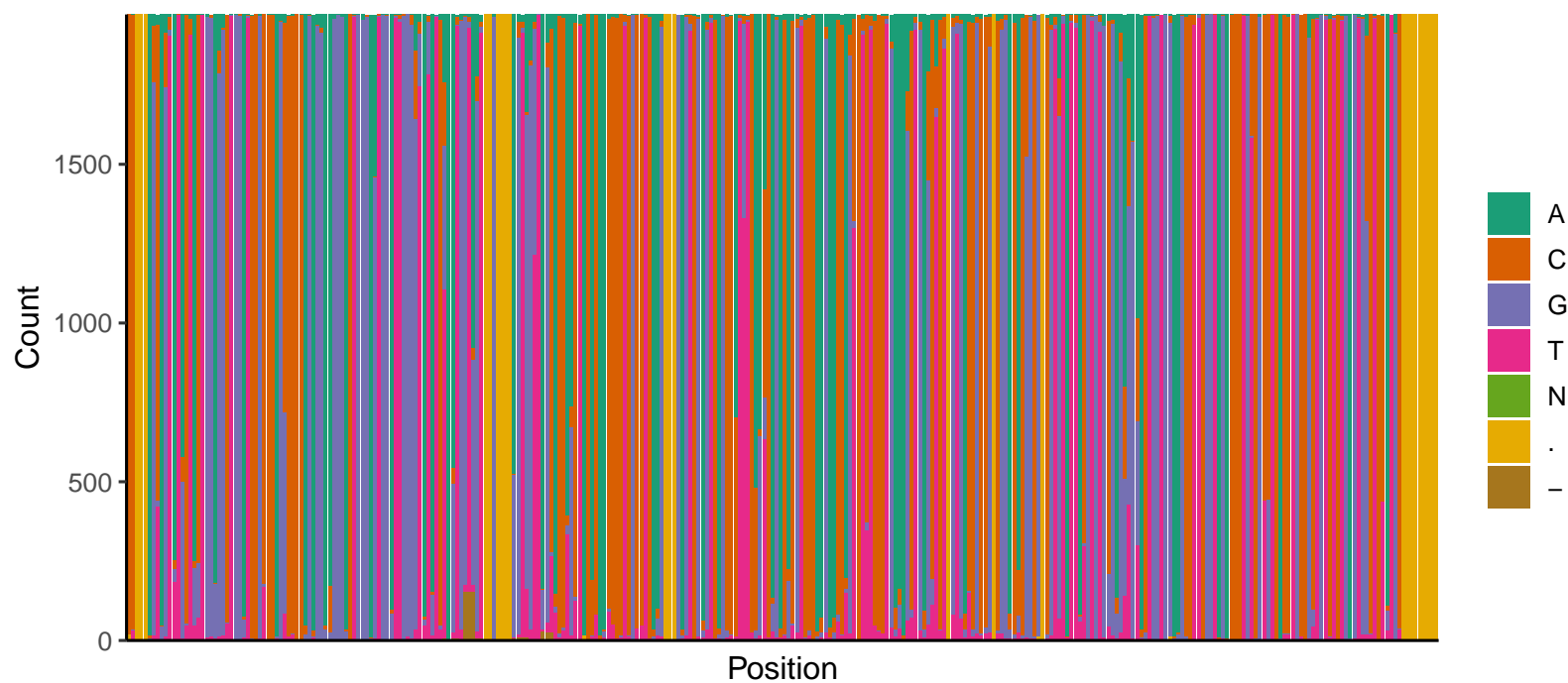
Gene IGHV4-127\*01\_T82G\_A83G



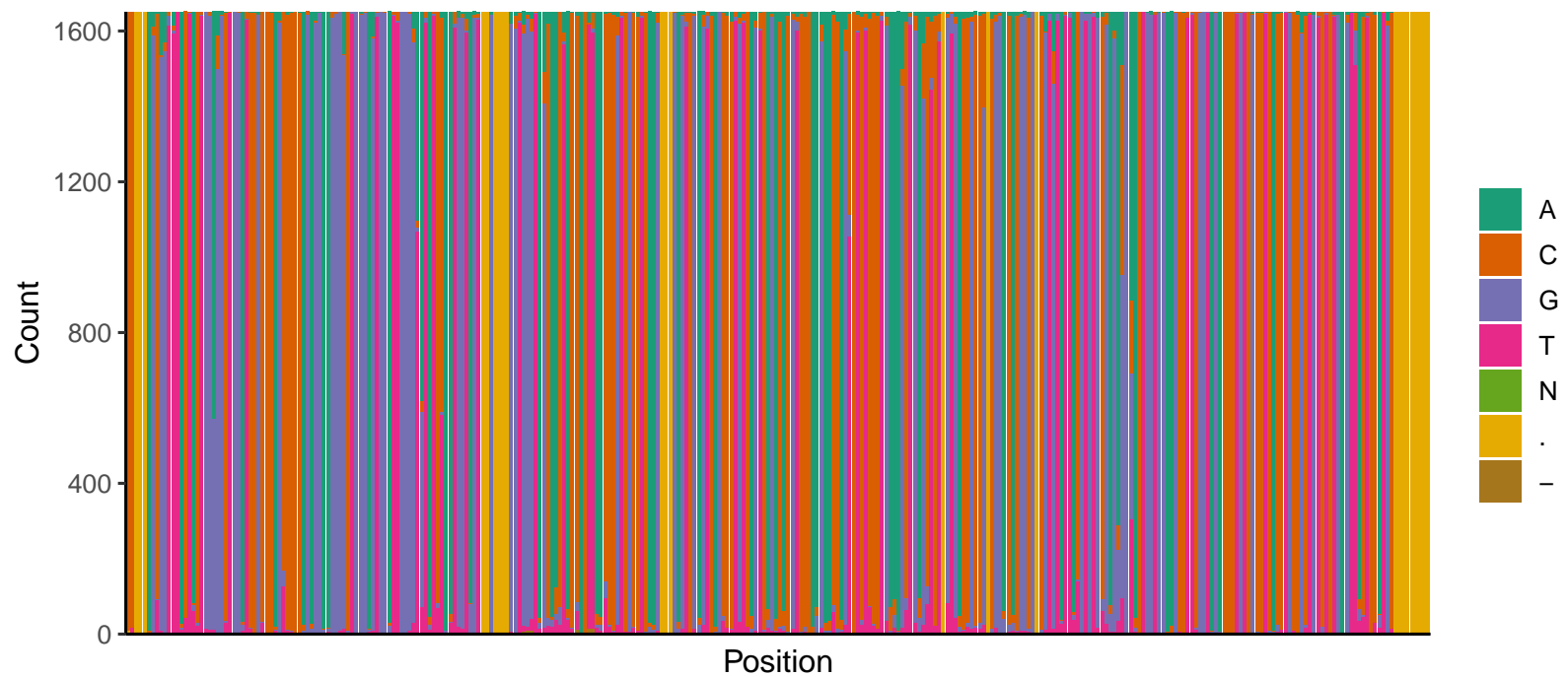
Gene IGHV4-160\*01\_A106G\_A109T\_G147A



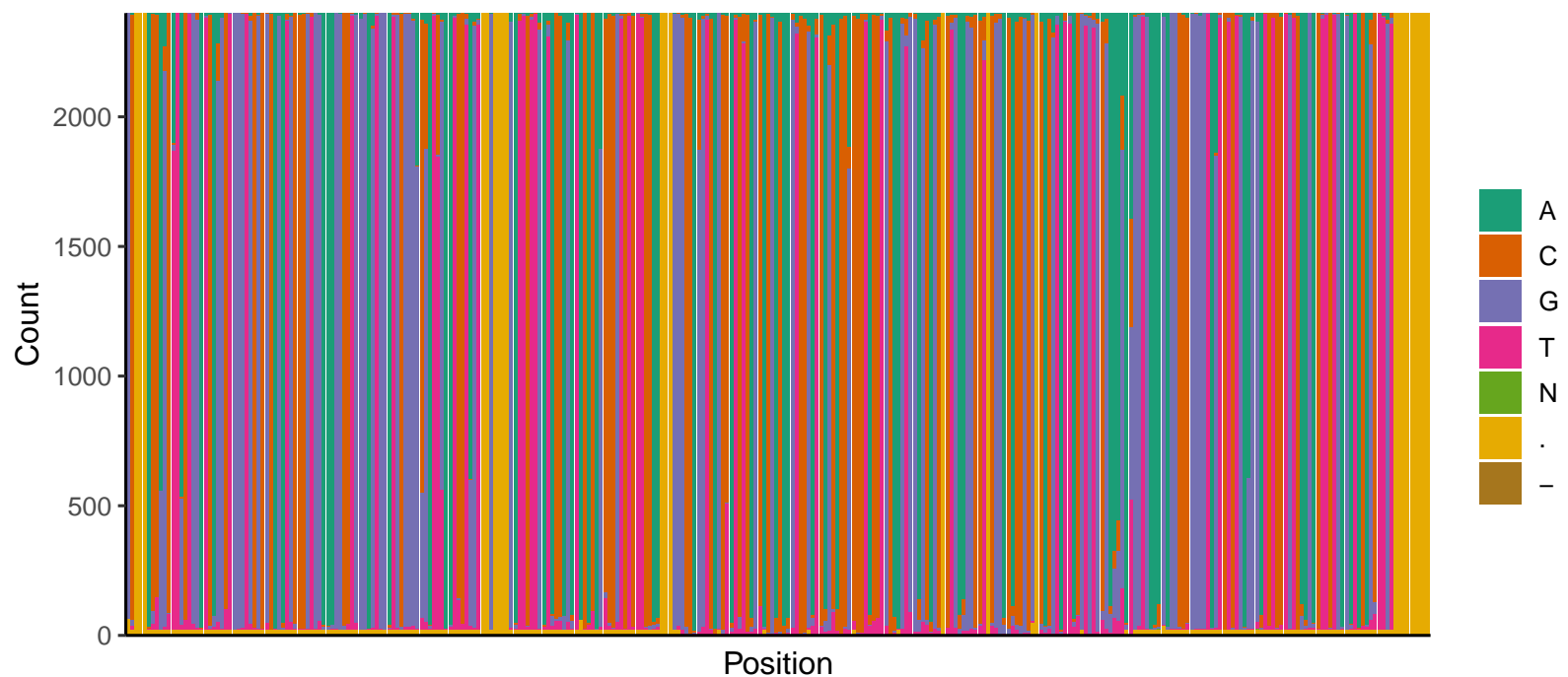
Gene IGHV4-165\*01\_G32A\_G106A\_T109A\_A132G\_G147A\_G153A\_G189T\_T196A



Gene IGHV4-165\*01\_G82T\_G83A\_A132G\_G169C\_G170A\_A184G\_C194A\_T199C\_A200G



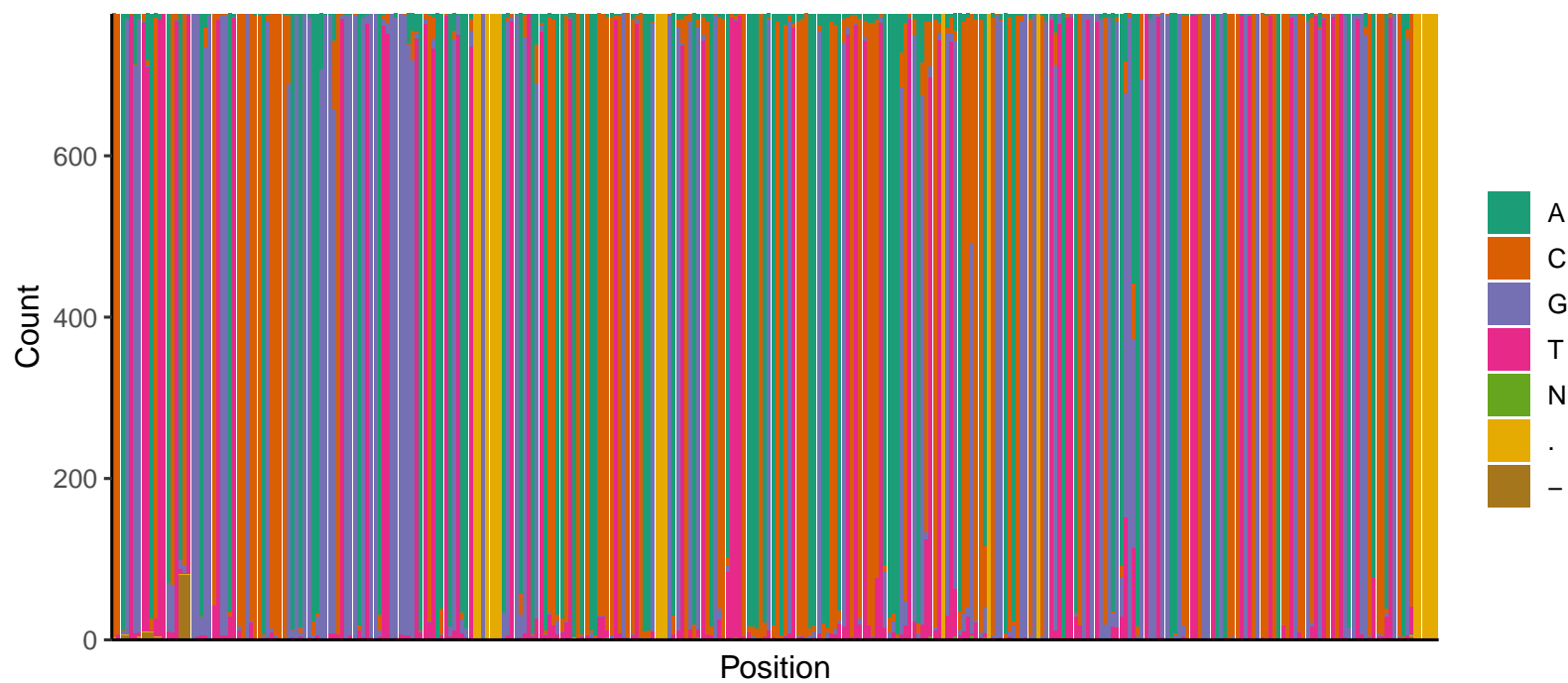
Gene IGHV5-20\*02\_A141G\_C312T



Gene IGHV3-178\*01\_A274G\_G297A\_T300C\_C303G



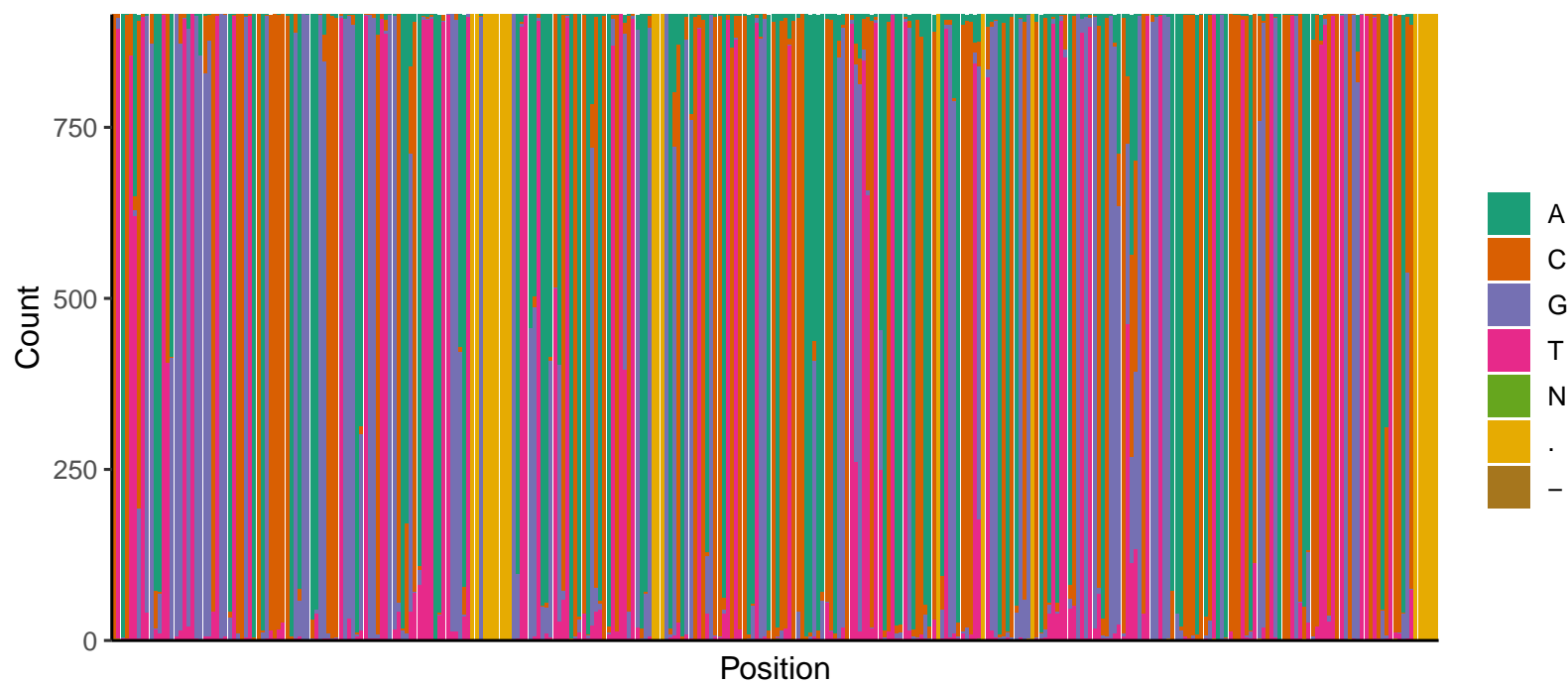
Gene IGHV4S13\*01\_T85A\_C137G\_G267A\_G289A



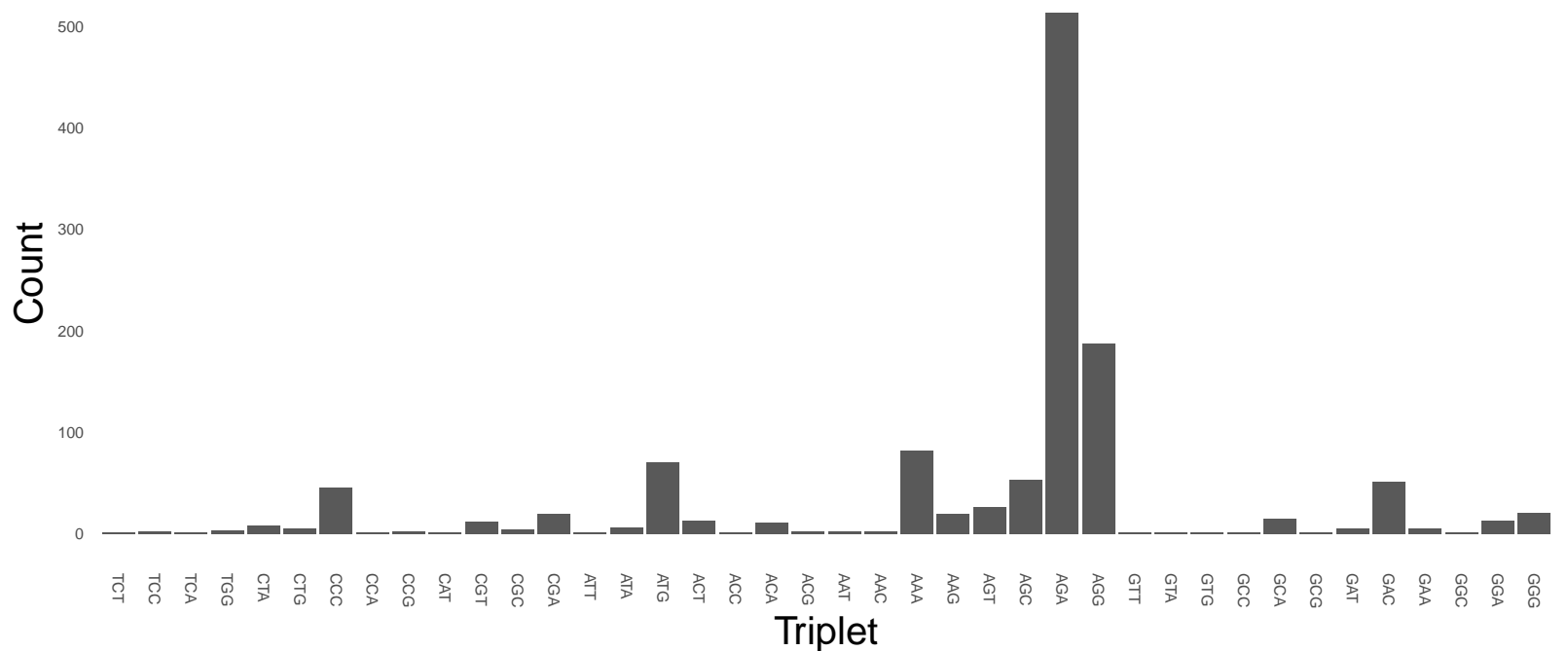
Gene IGHV4S9\*01\_T106A\_A107G\_C108T



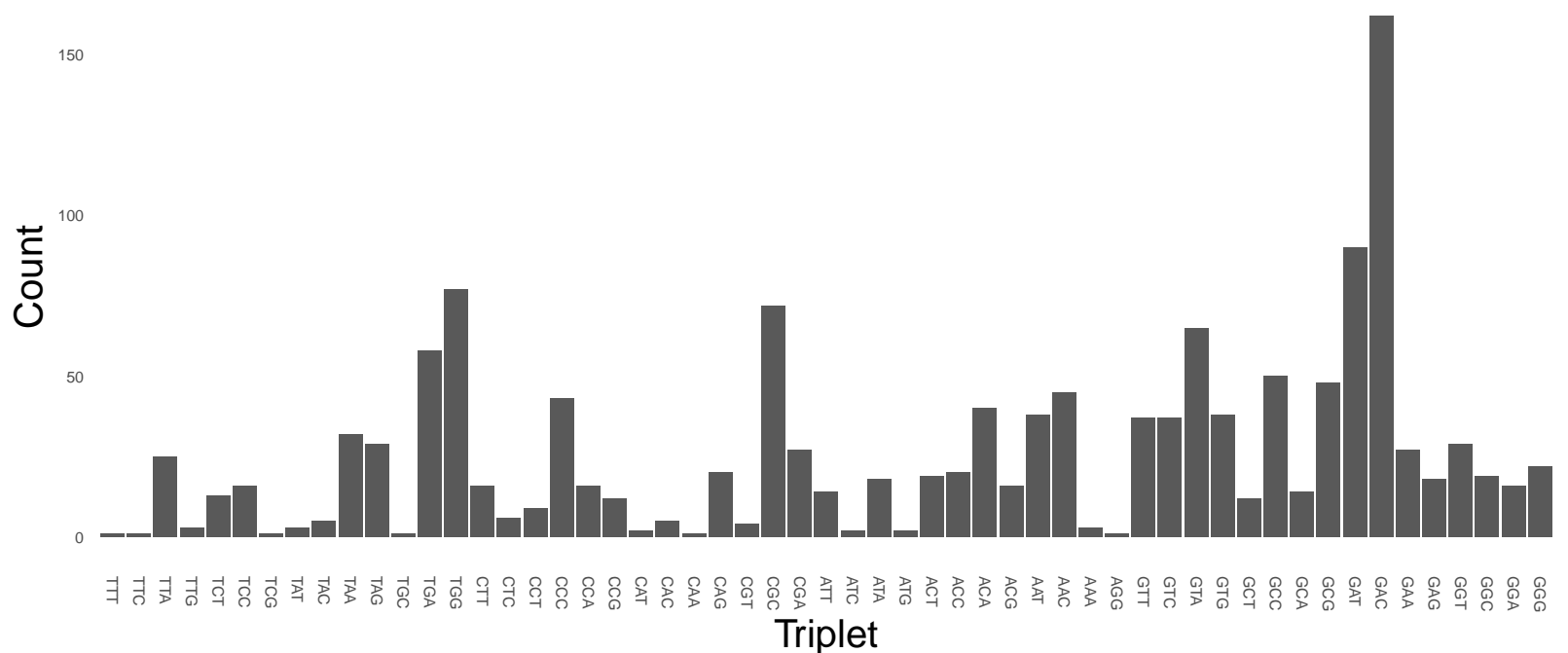
Gene IGHV2-174\*01\_C6G\_T108A\_G159T\_C163A\_T164G



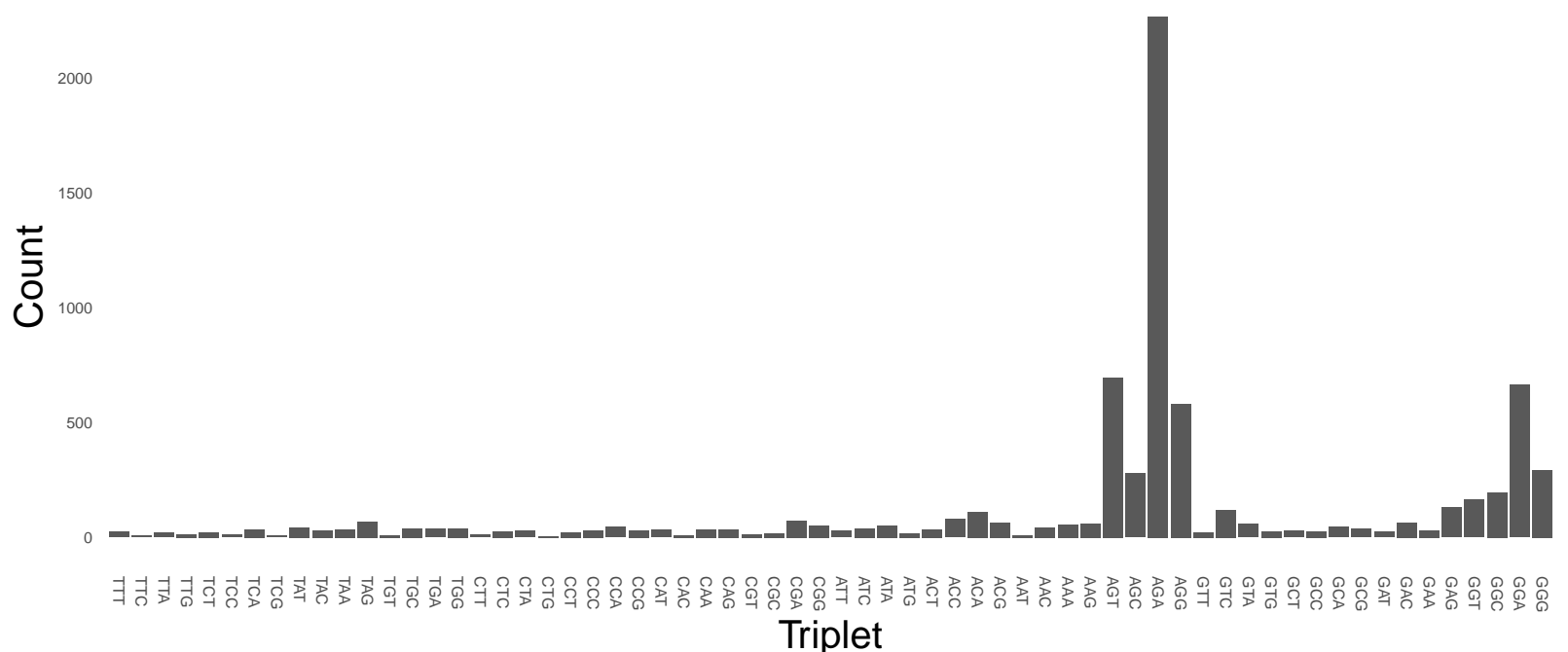
IGHV3-13\*01\_C301G- Final 3 nucleotides as a triplet



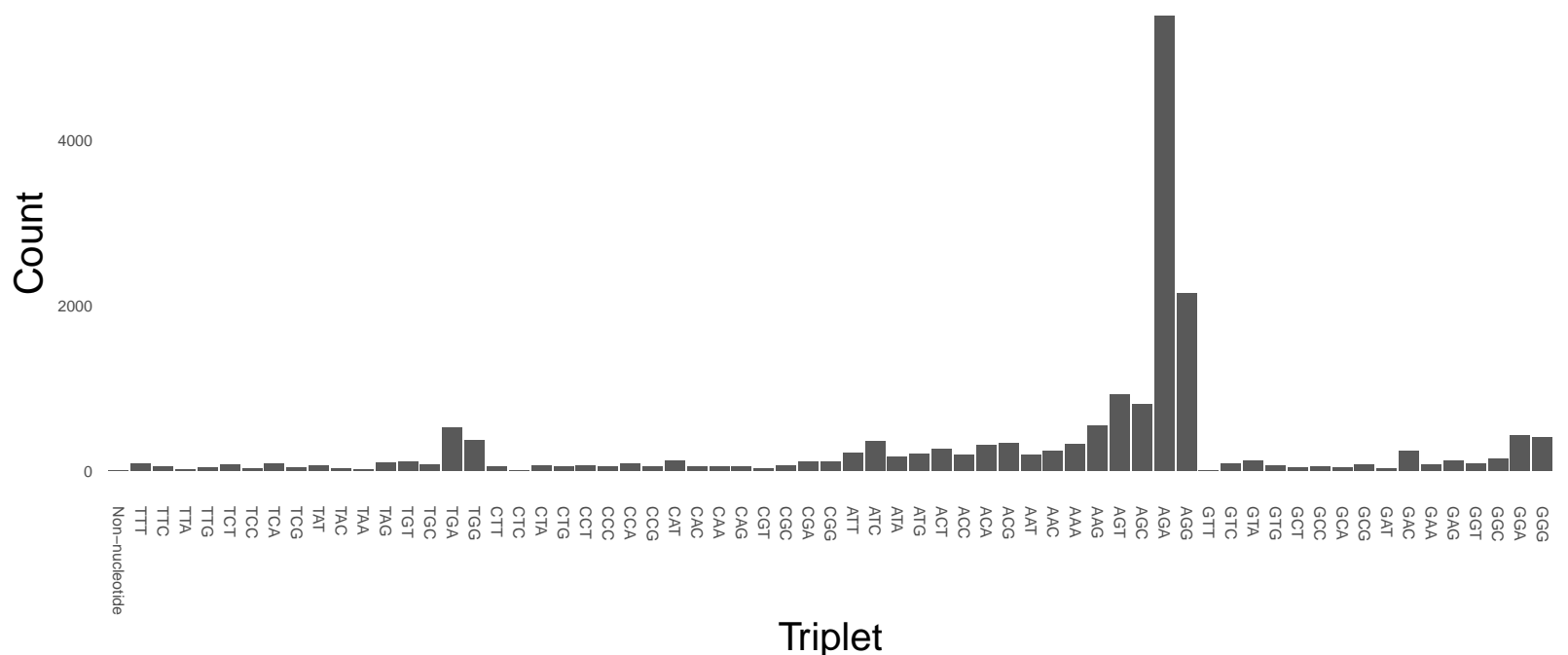
IGHV2-10\*01\_C6G\_A23G\_G112C\_G118A\_A119G\_G121T\_G141A\_C205A\_G210T- Final 3 nucleotides as a triplet



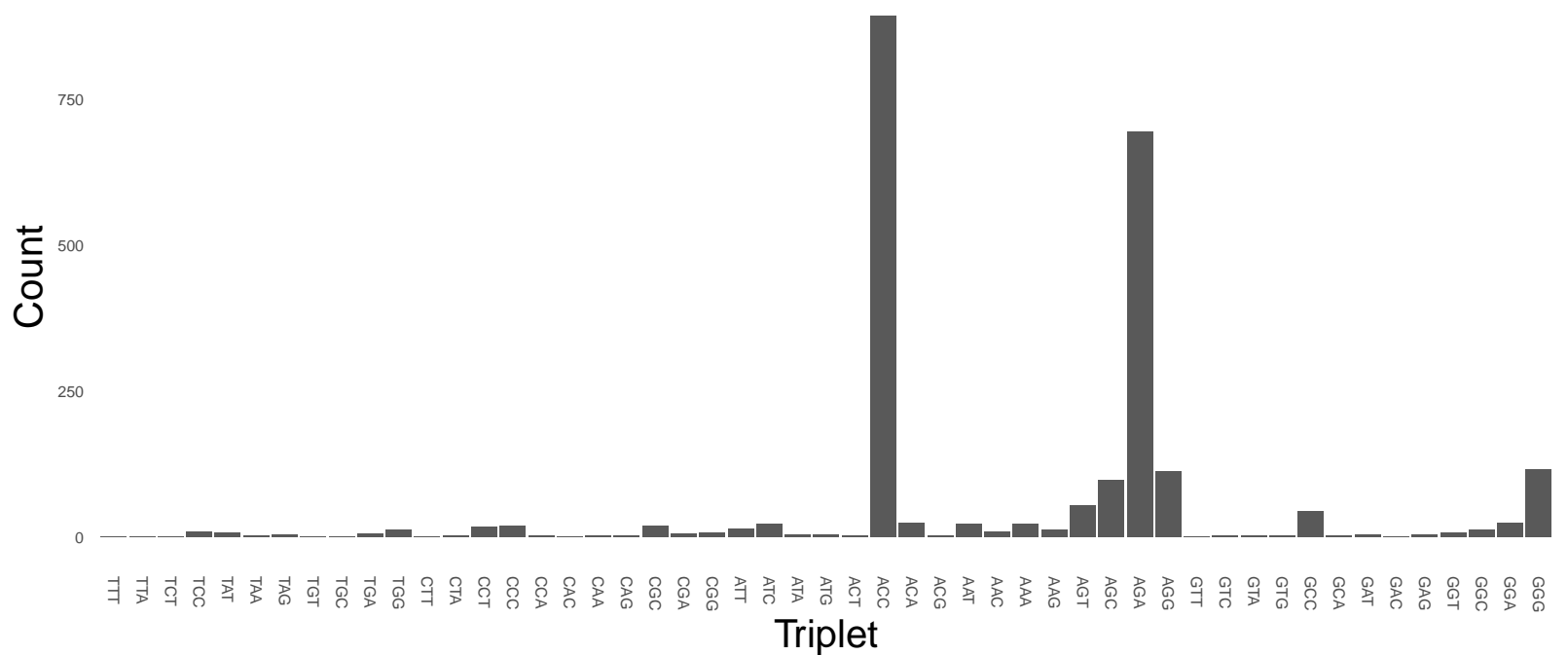
IGHV3-184\*01\_G106A\_T109C\_G275A- Final 3 nucleotides as a triplet



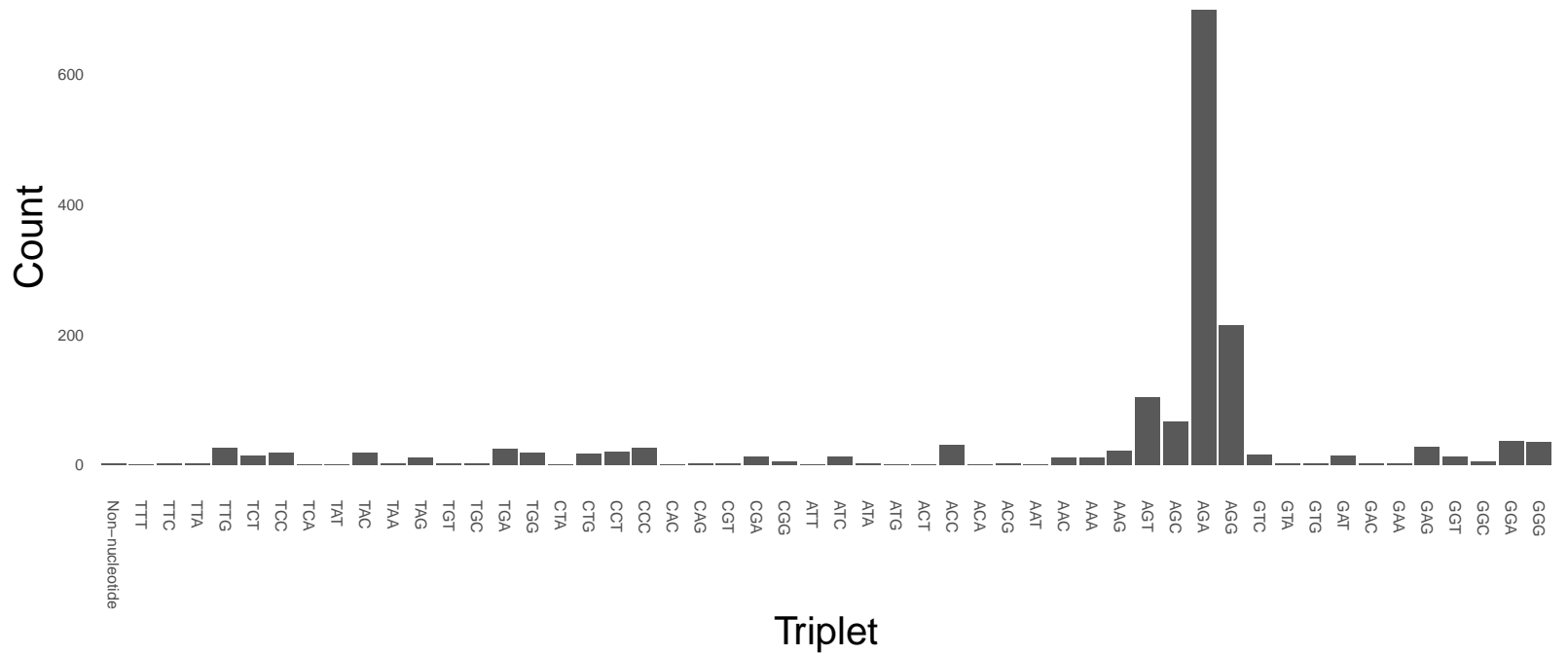
IGHV3S42\*01\_T19A\_G24A\_C27A\_C38T\_A39C\_A40C\_C111T\_T112G\_G114C\_A119G\_T120C\_



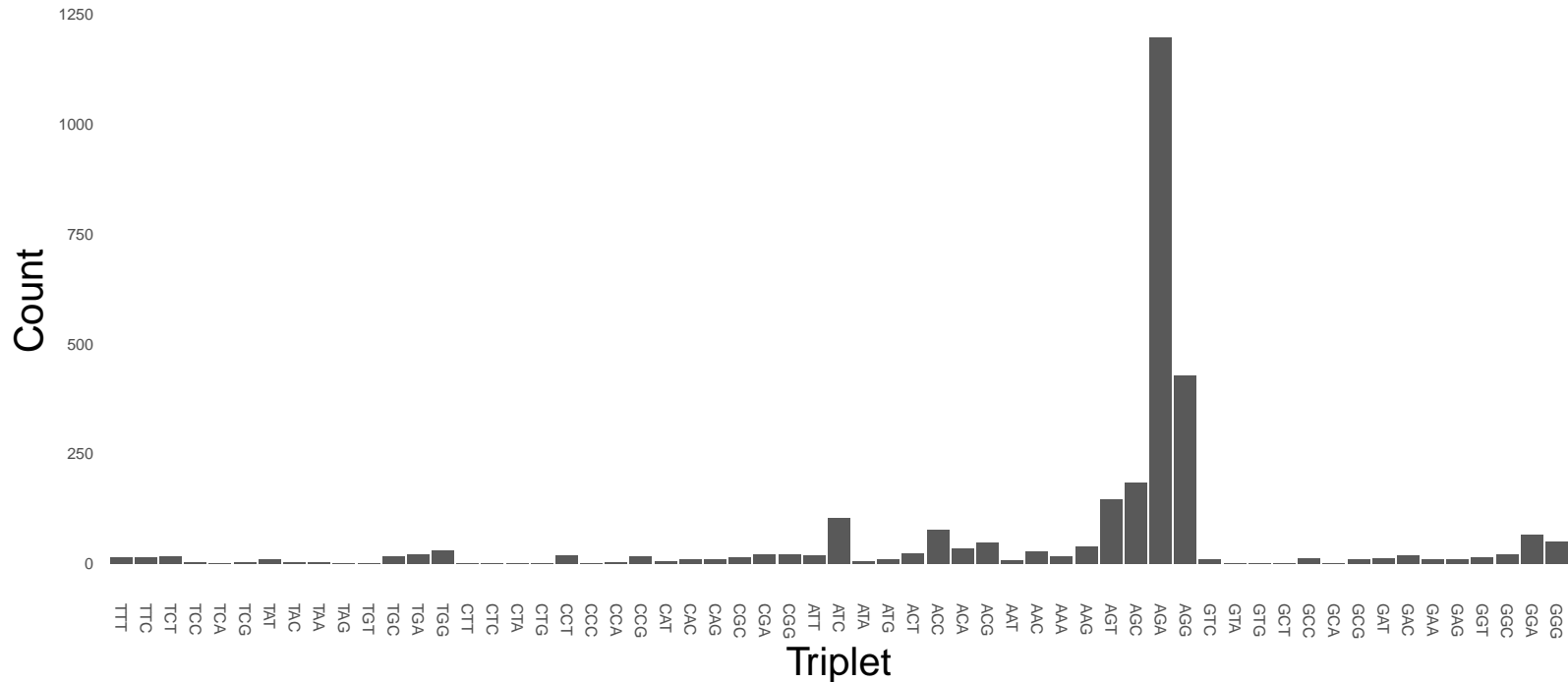
IGHV3-28\*02\_C118T\_C176G\_A187G\_G274A\_G277A- Final 3 nucleotides as a triplet



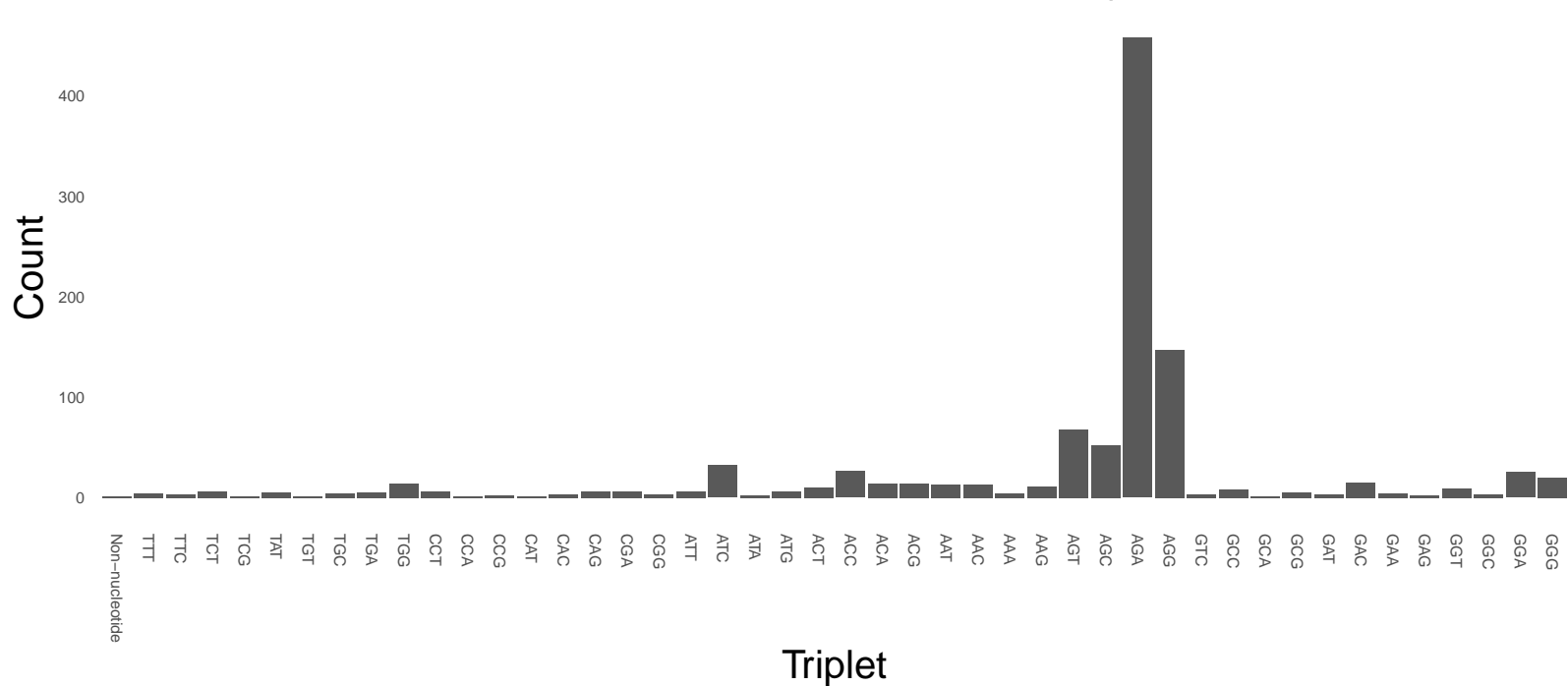
IGHV3-54\*02\_G170C- Final 3 nucleotides as a triplet



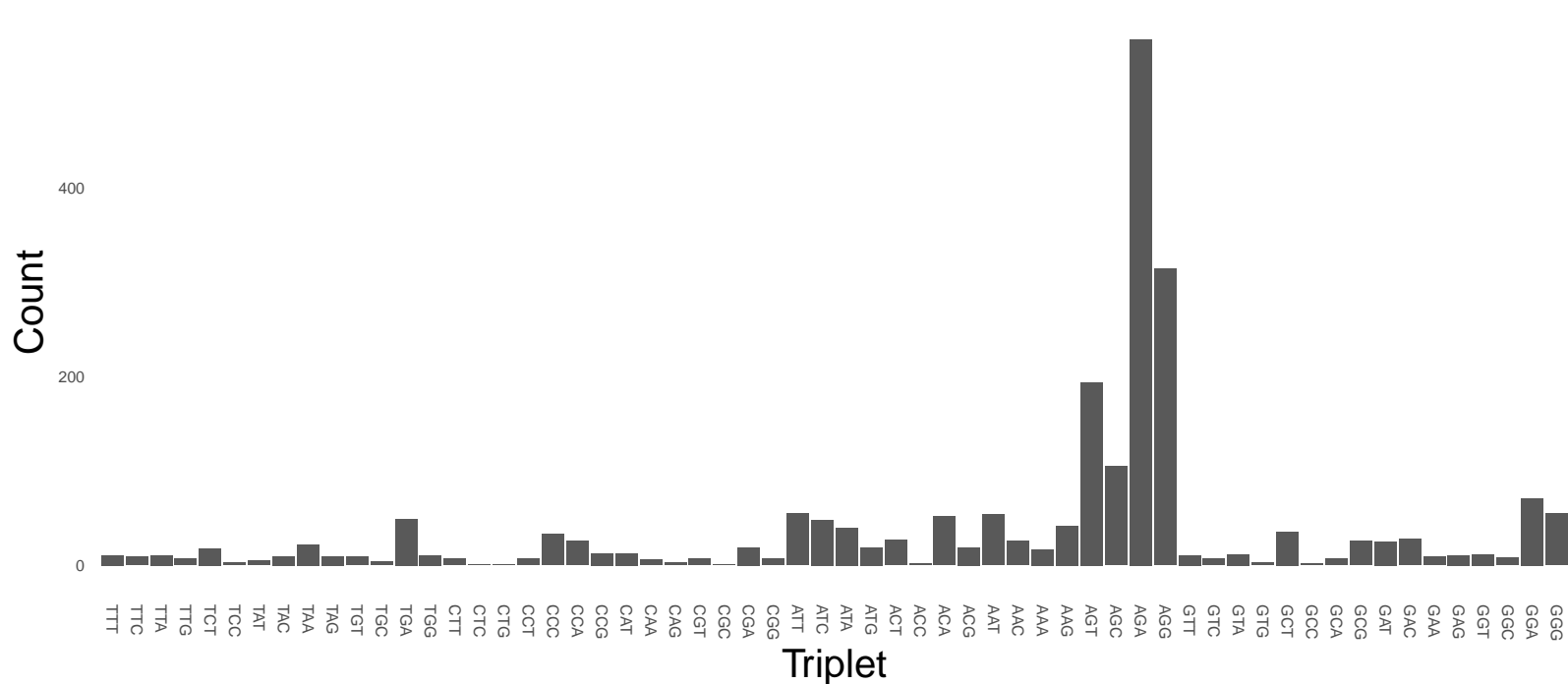
IGHV3-103\*01\_G51A\_A170G- Final 3 nucleotides as a triplet



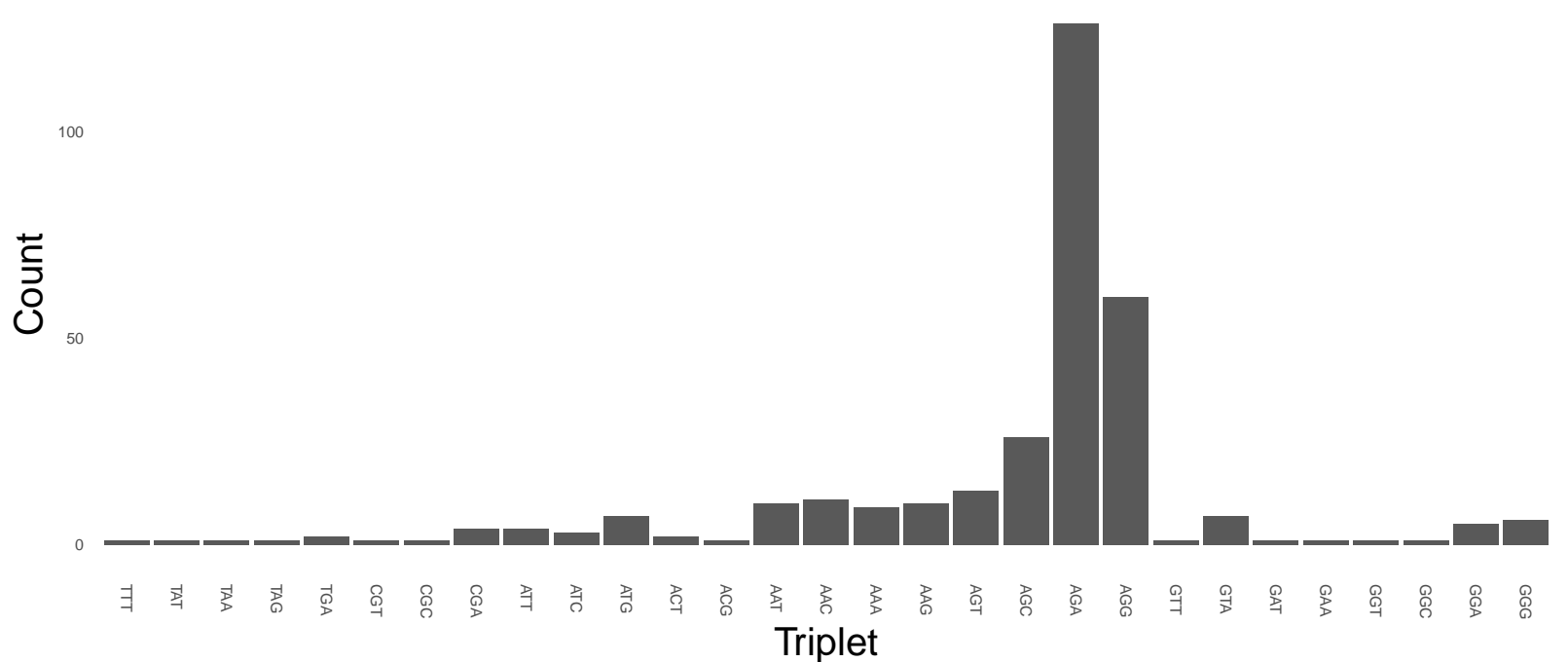
IGHV3-103\*01\_G51A\_A170G\_A295C- Final 3 nucleotides as a triplet



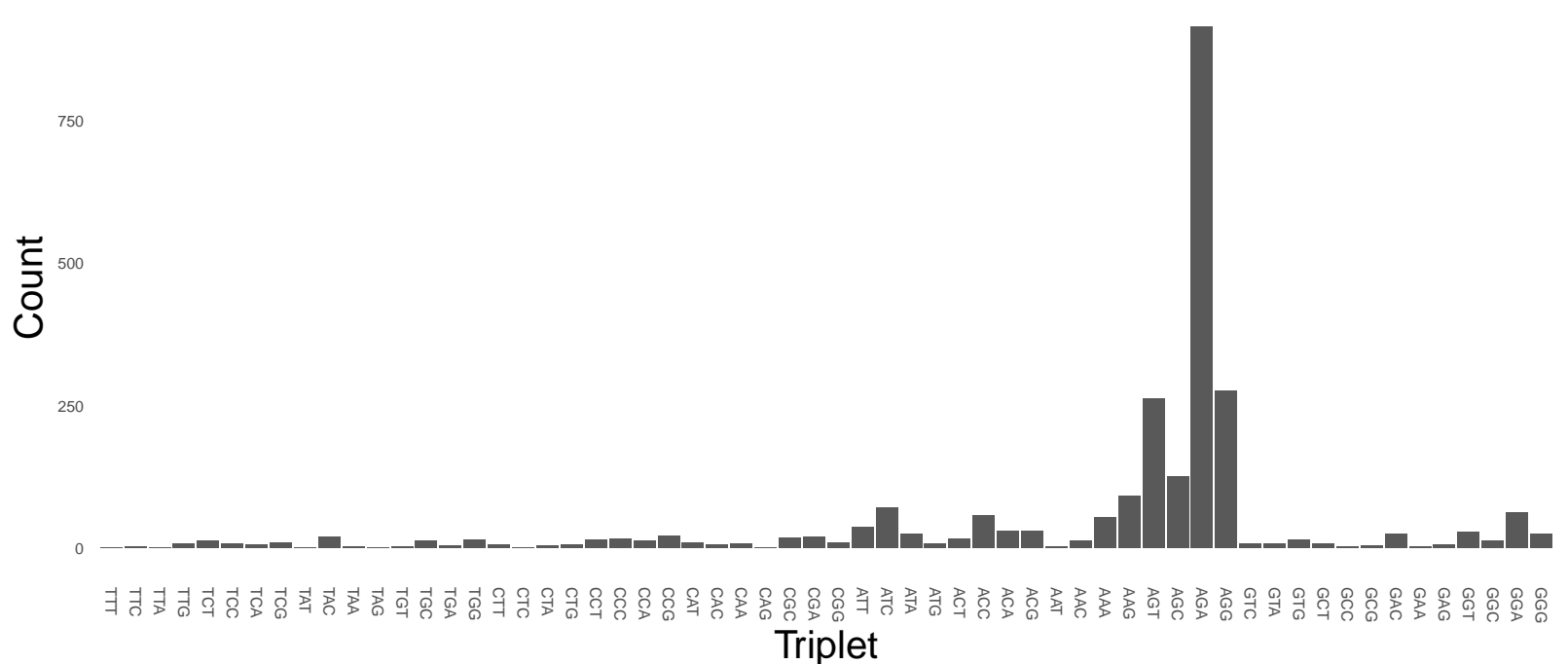
IGHV4-65\*02\_A163T\_G169A- Final 3 nucleotides as a triplet



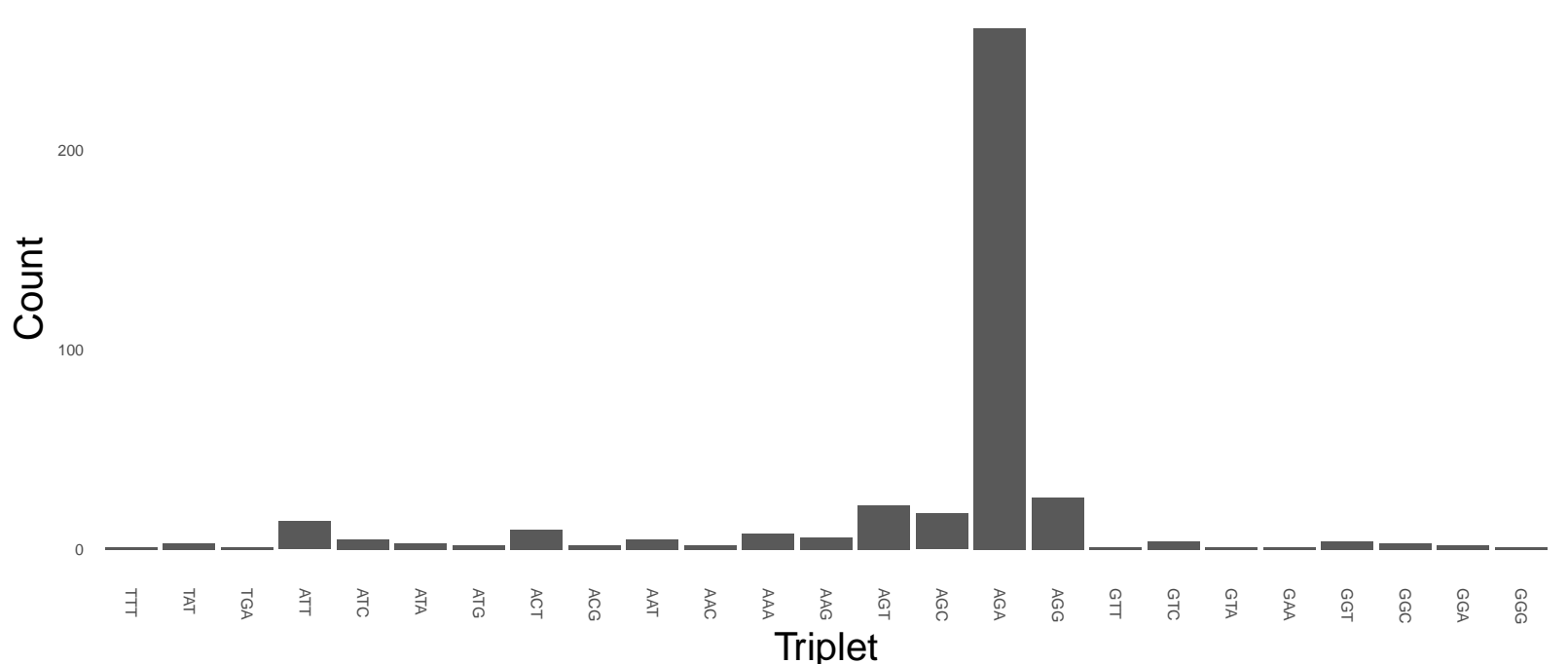
IGHV4-73\*01\_G147A\_T163A\_C168T\_T169G- Final 3 nucleotides as a triplet



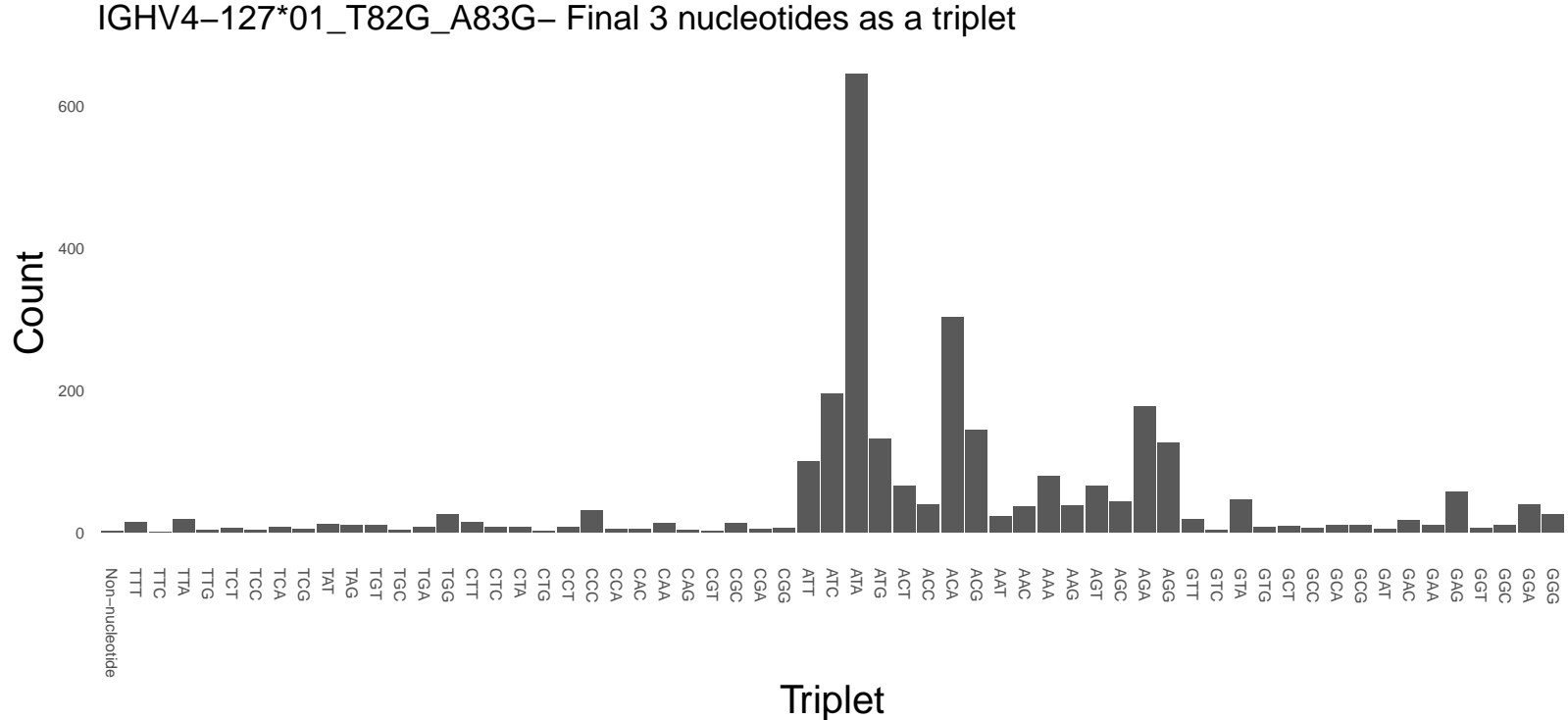
IGHV4-93\*01\_C32G\_A33G\_G34C\_A239T- Final 3 nucleotides as a triplet



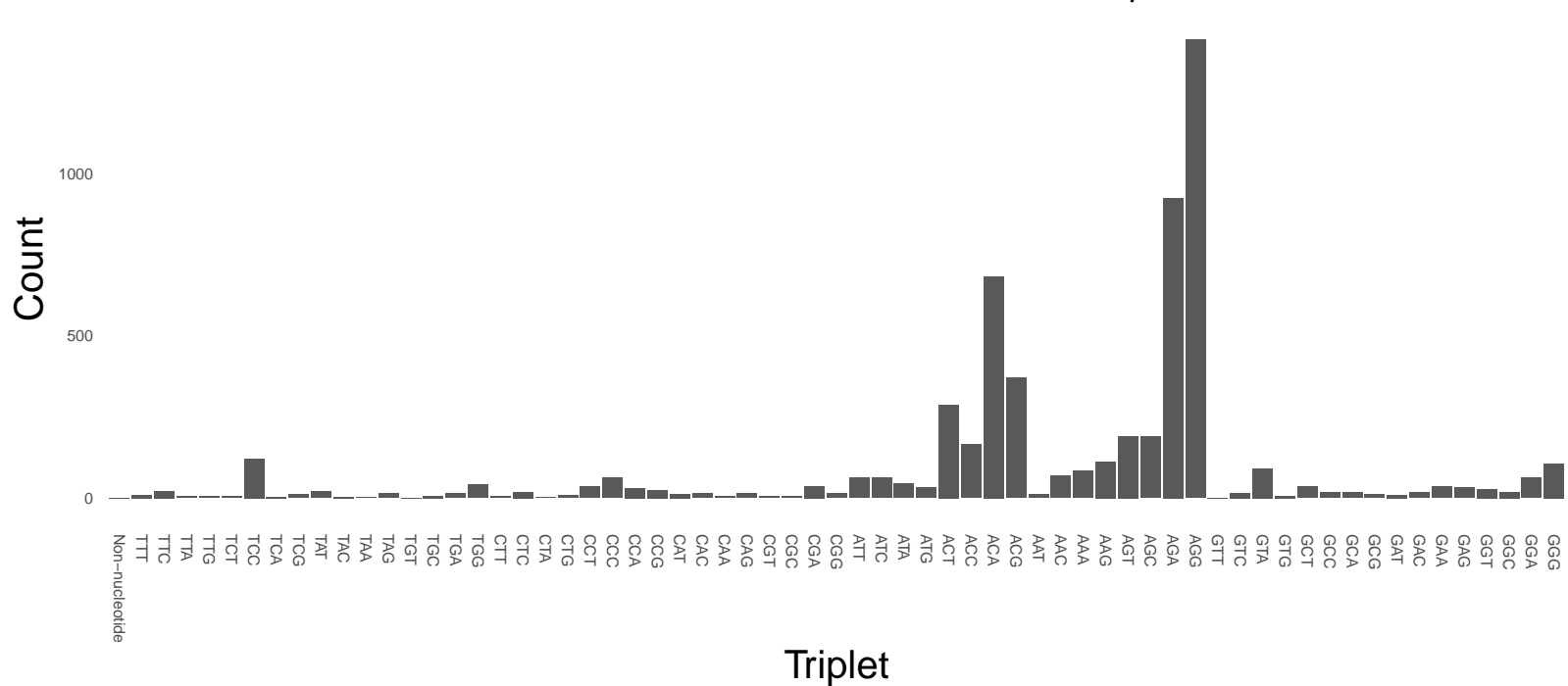
IGHV4-81\*01\_C4G\_G21A\_A27T\_T255C- Final 3 nucleotides as a triplet



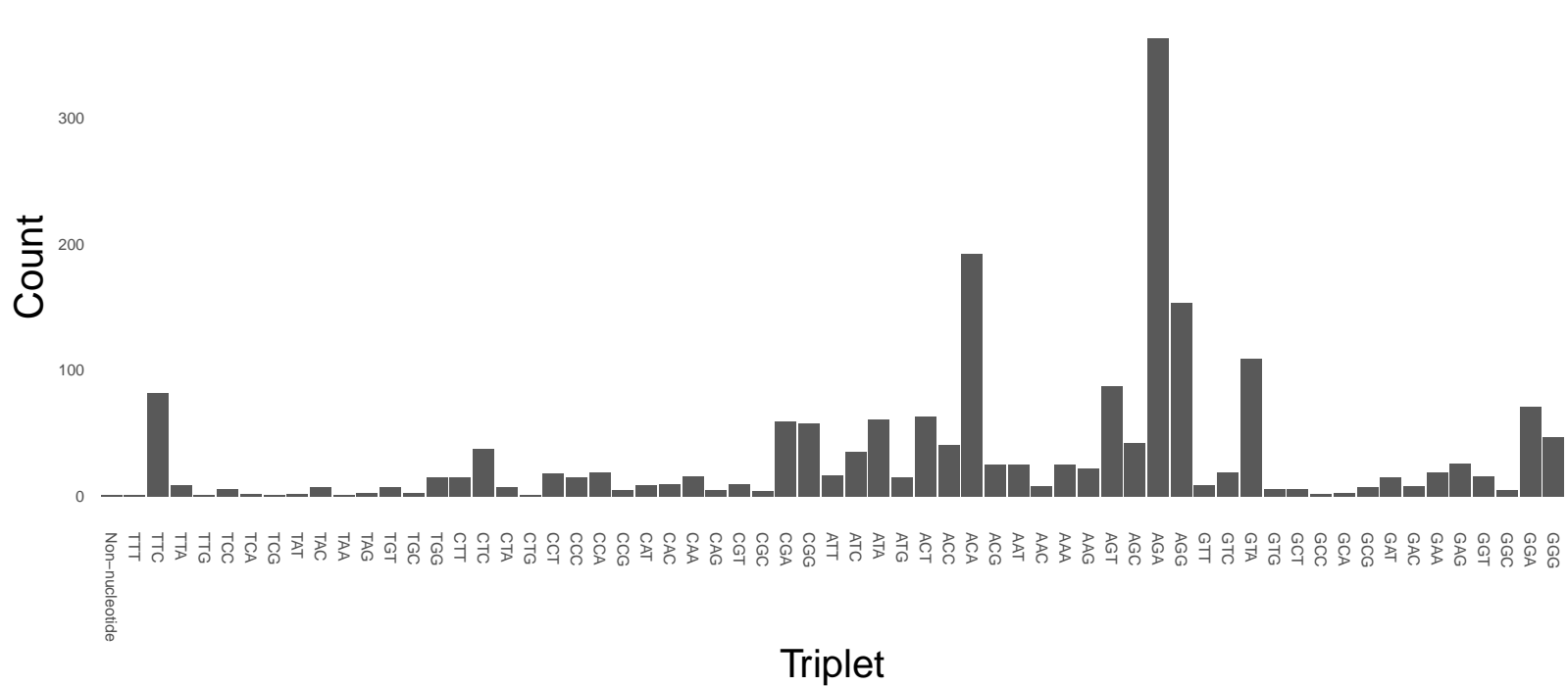
IGHV4-127\*01\_T82G\_A83G- Final 3 nucleotides as a triplet



IGHV4-160\*01\_A106G\_A109T\_G147A- Final 3 nucleotides as a triplet

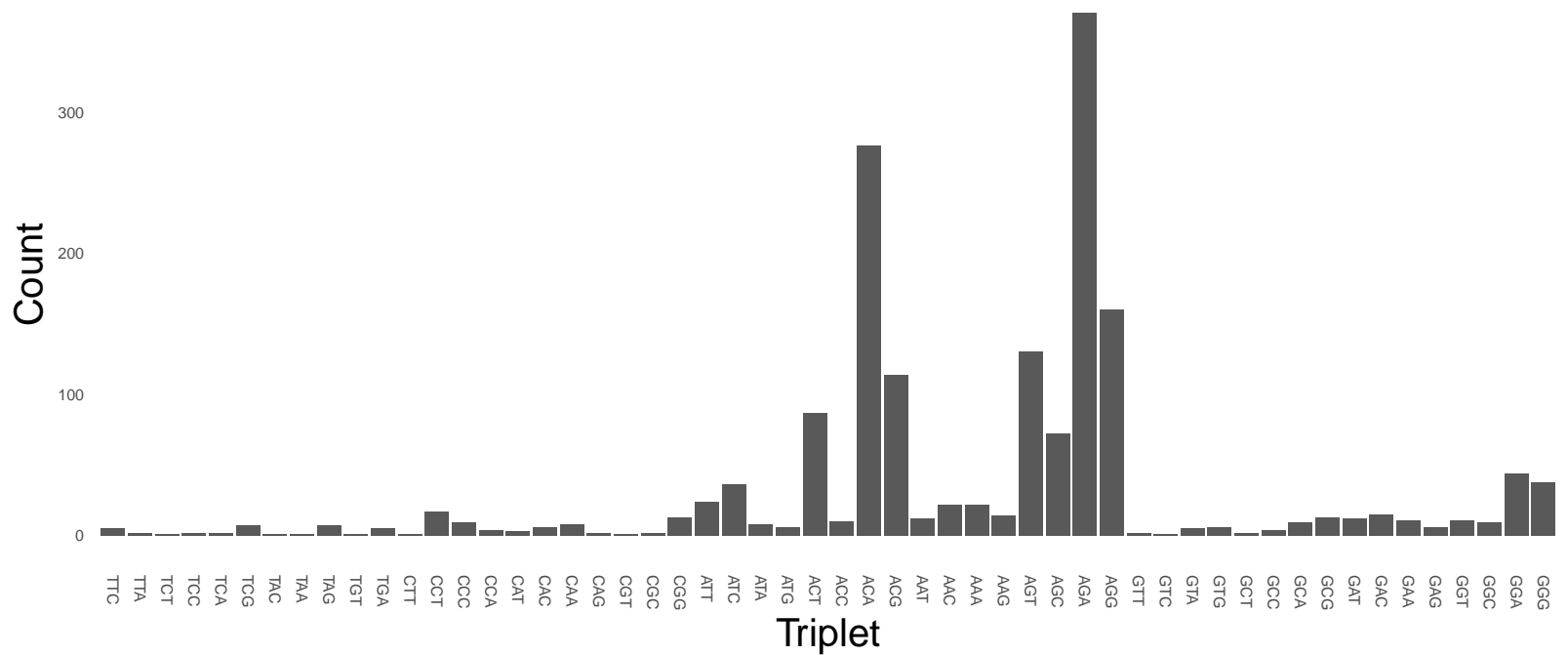


IGHV4-165\*01\_G32A\_G106A\_T109A\_A132G\_G147A\_G153A\_G189T\_T196A- Final 3 nucleotides as a triplet

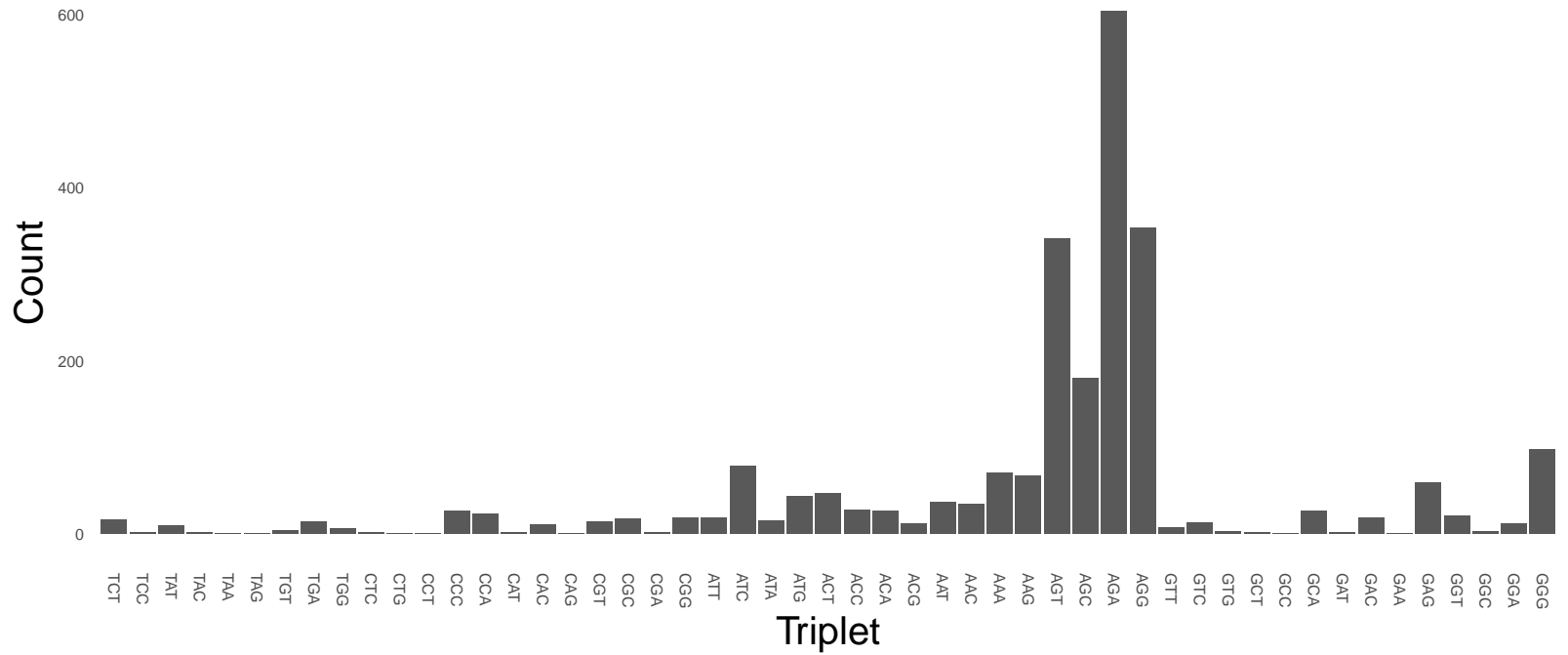




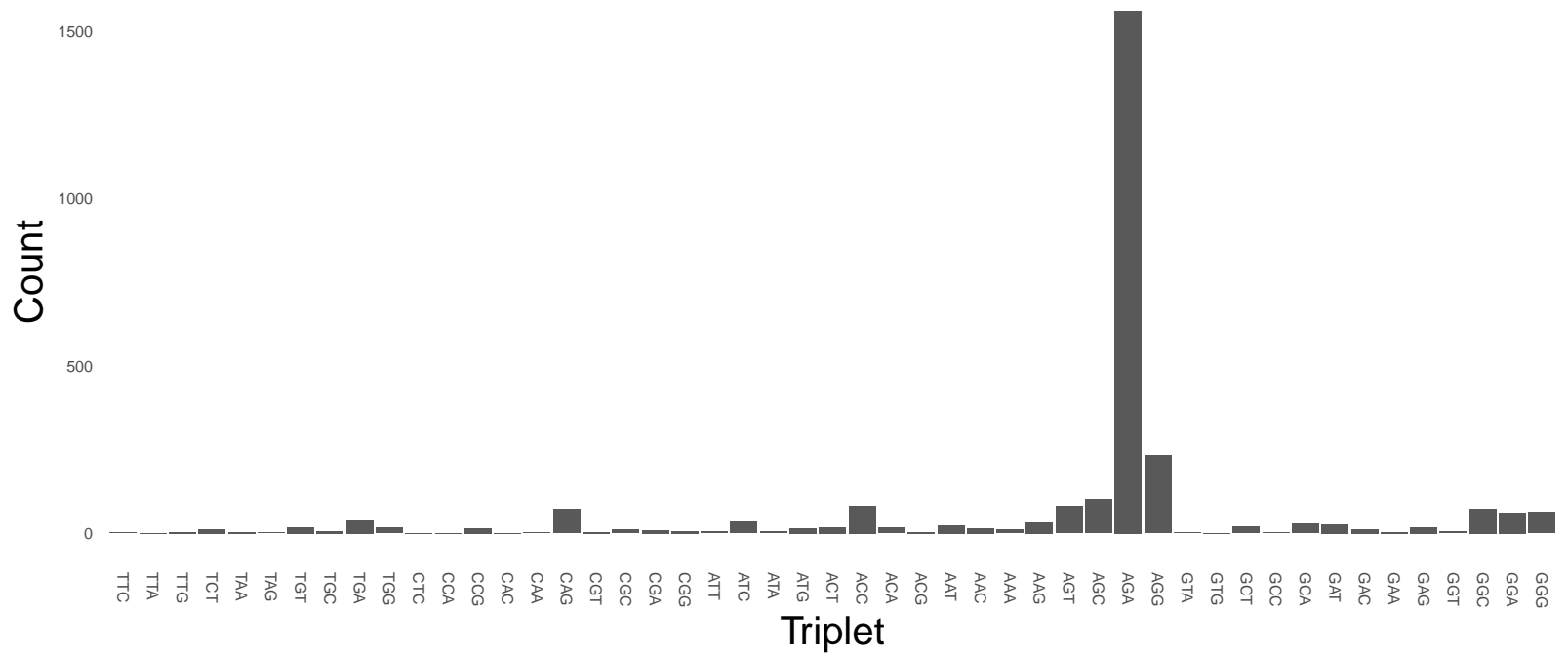
IGHV4-165\*01\_G82T\_G83A\_A132G\_G169C\_G170A\_A184G\_C194A\_T199C\_A200T\_C201T\_C2



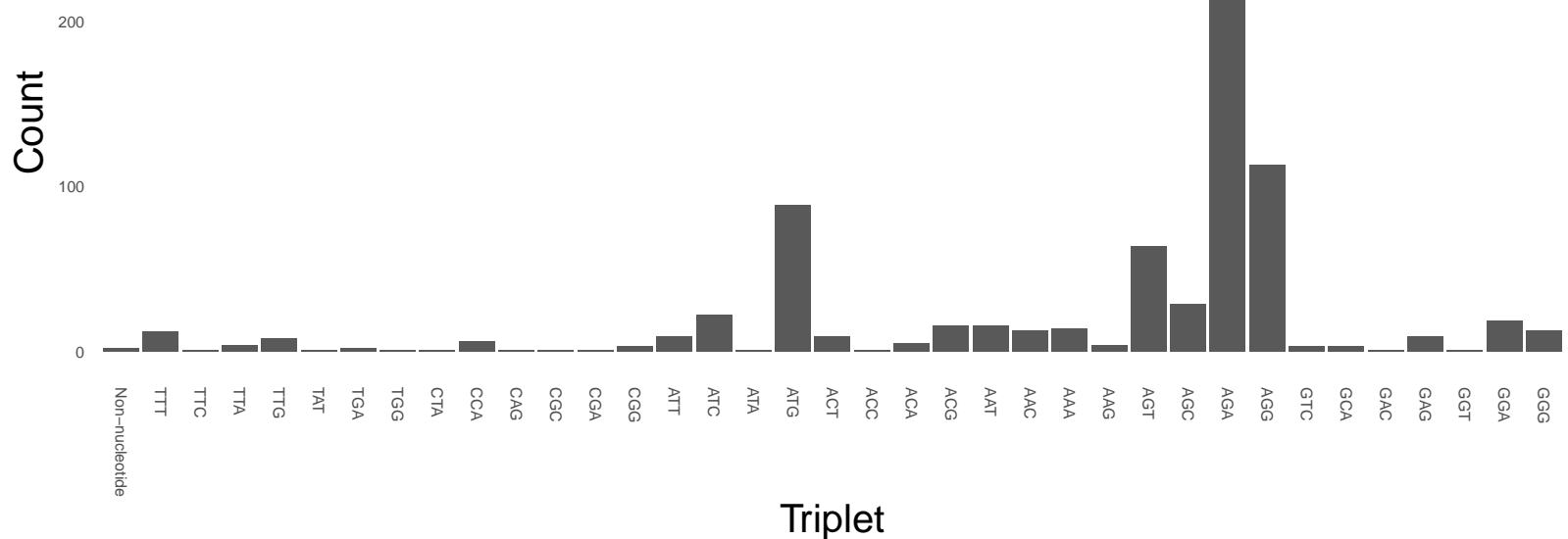
IGHV5-20\*02\_A141G\_C312T- Final 3 nucleotides as a triplet



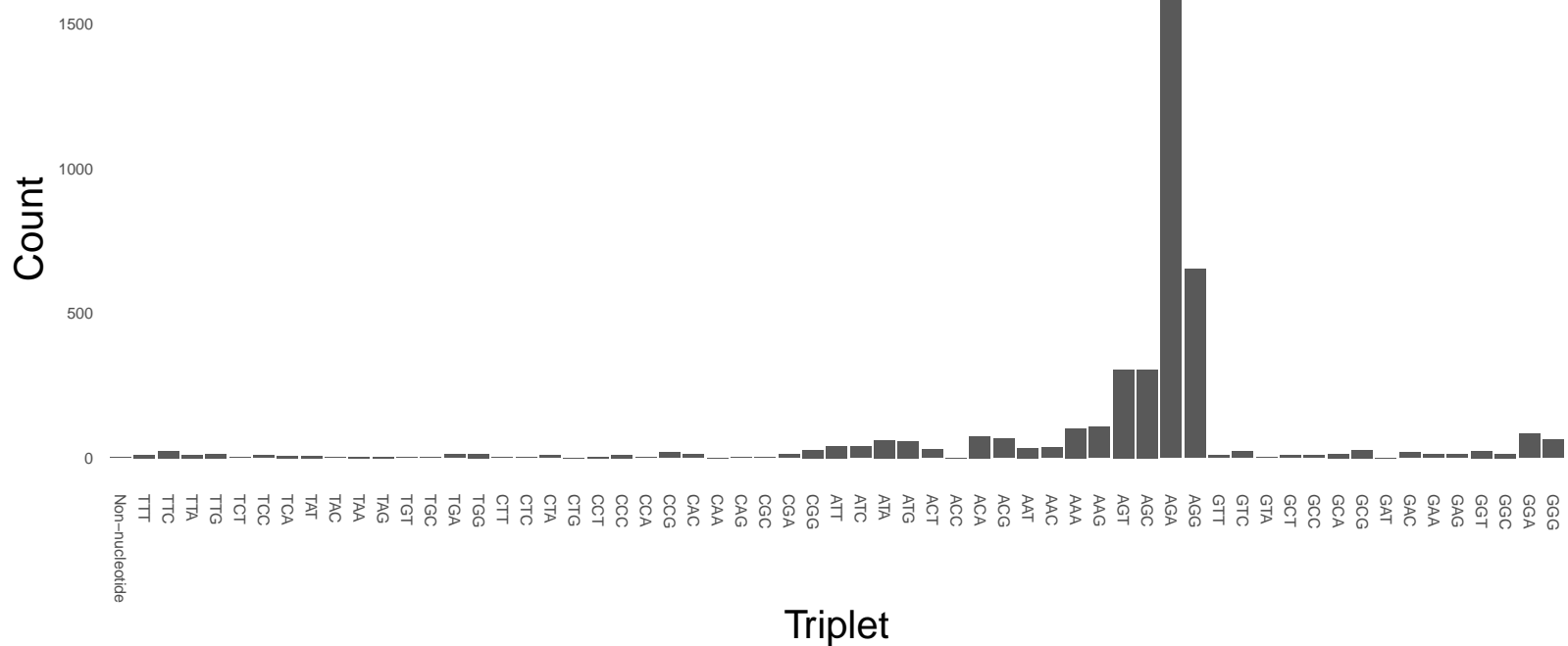
IGHV3-178\*01\_A274G\_G297A\_T300C\_C303G- Final 3 nucleotides as a triplet



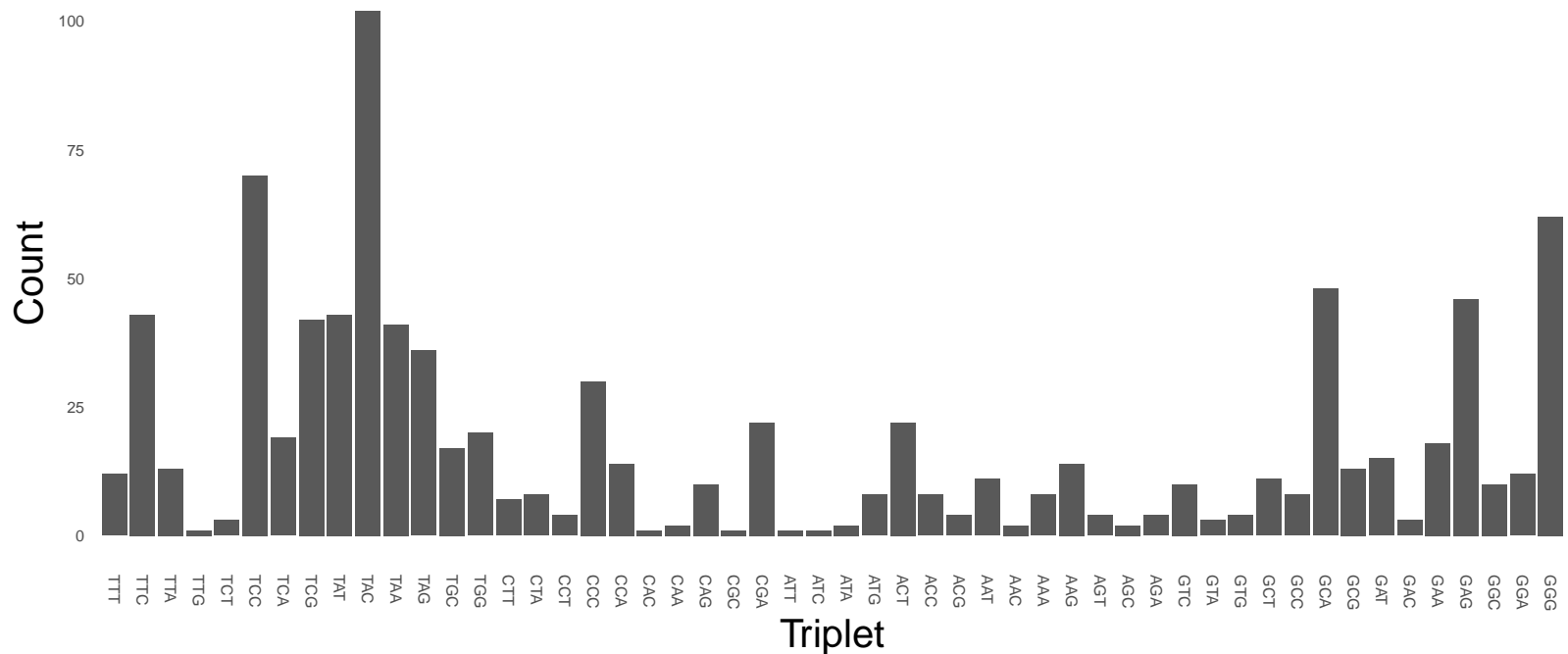
IGHV4S13\*01\_T85A\_C137G\_G267A\_G289A- Final 3 nucleotides as a triplet



IGHV4S9\*01\_T106A\_A107G\_C108T– Final 3 nucleotides as a triplet

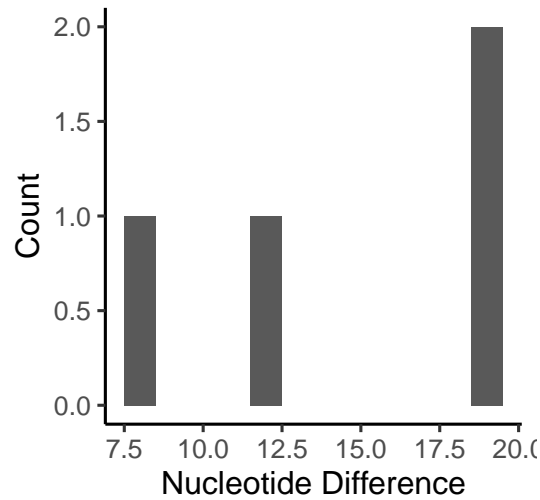


IGHV2-174\*01\_C6G\_T108A\_G159T\_C163A\_T164G- Final 3 nucleotides as a triplet



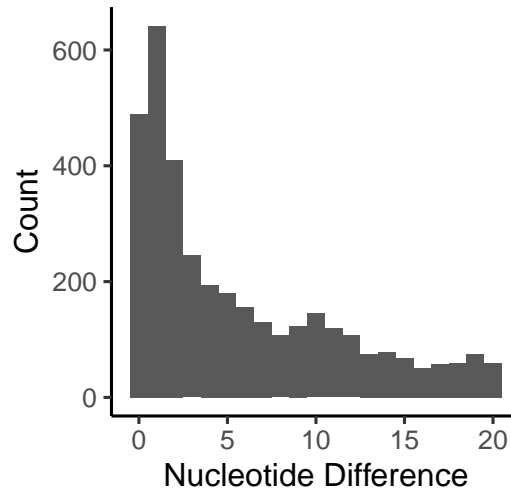
### IGHV3S41\*01

295 sequences assigned  
No exact matches.



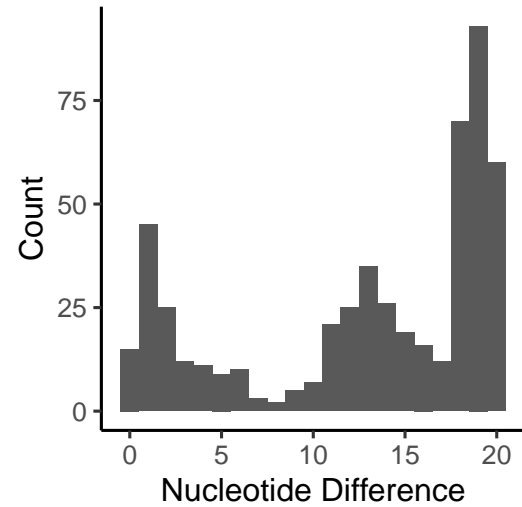
### IGHV4S9\*01\_T106A\_A1C

4078 sequences assigned  
490 (12%) exact matches, in which:  
466 unique CDR3  
4 unique J



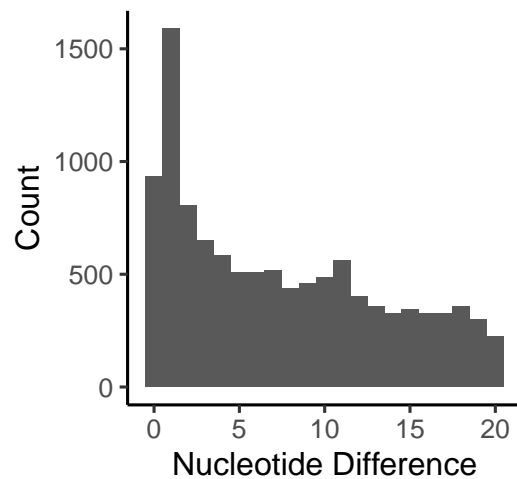
### IGHV2-174\*01\_C6G\_T10

915 sequences assigned  
15 (1.6%) exact matches, in which:  
14 unique CDR3  
4 unique J



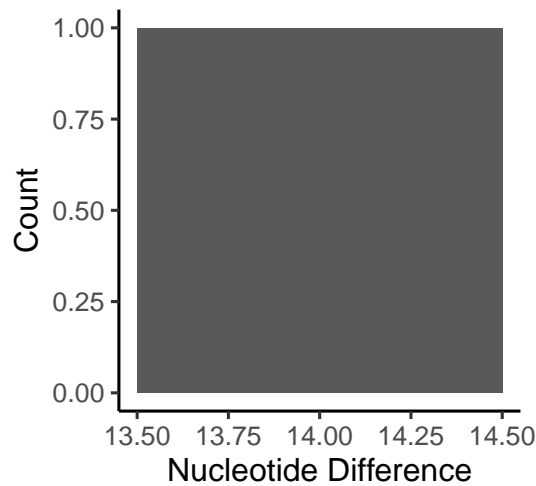
### IGHV3S42\*01\_T19A\_G2

17580 sequences assigned  
933 (5.3%) exact matches, in which:  
852 unique CDR3  
4 unique J



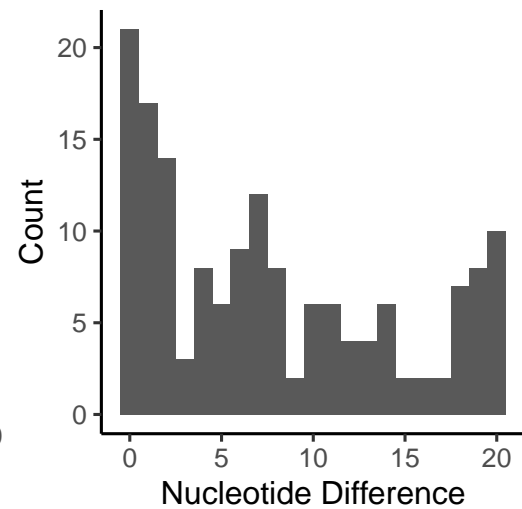
### IGHV1-113\*01

226 sequences assigned  
No exact matches.



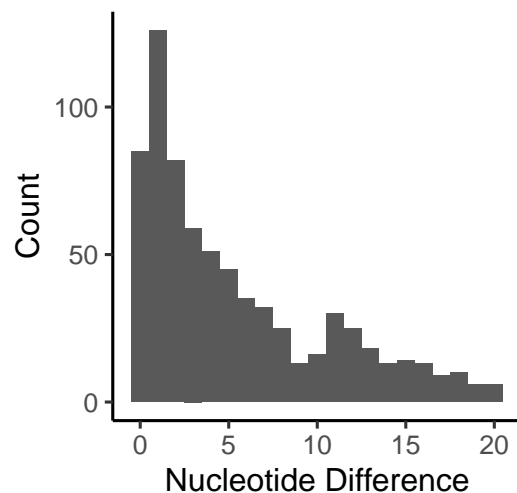
### IGHV3-13\*01\_C301G

1211 sequences assigned  
21 (1.7%) exact matches, in which:  
20 unique CDR3  
3 unique J



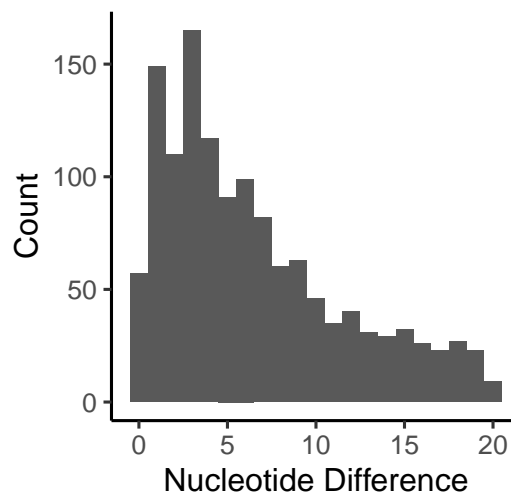
### IGHV4S13\*01\_T85A\_C13

776 sequences assigned  
85 (11%) exact matches, in which:  
83 unique CDR3  
4 unique J



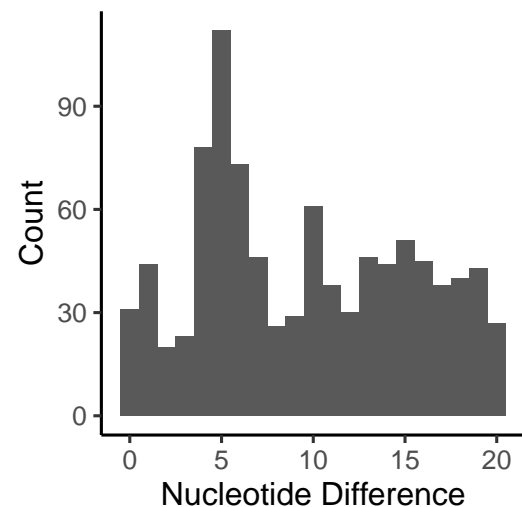
### IGHV2-10\*01\_C6G\_A23C

1400 sequences assigned  
57 (4.1%) exact matches, in which:  
51 unique CDR3  
4 unique J



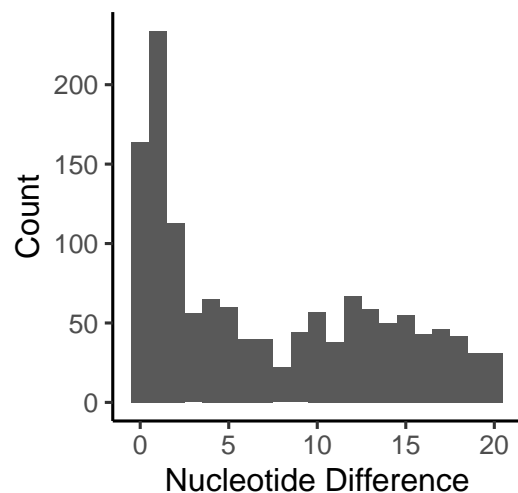
### IGHV3-28\*02\_C118T\_C1

2355 sequences assigned  
31 (1.3%) exact matches, in which:  
30 unique CDR3  
4 unique J



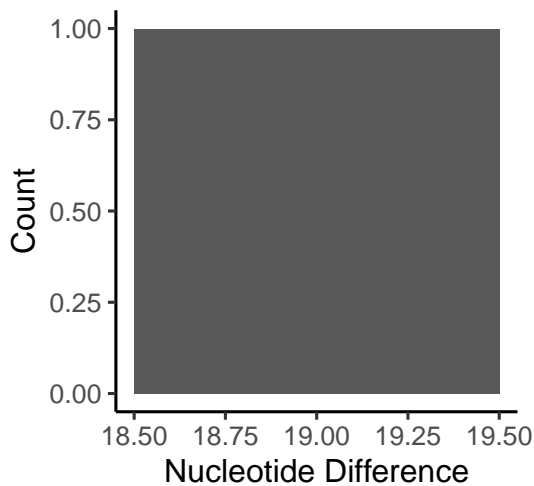
### IGHV3-54\*02\_G170C

1574 sequences assigned  
164 (10.4%) exact matches, in which:  
149 unique CDR3  
4 unique J



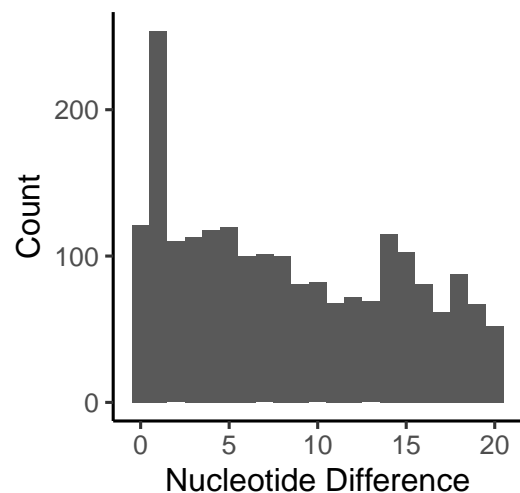
### IGHV3-108\*01

11 sequences assigned  
No exact matches.



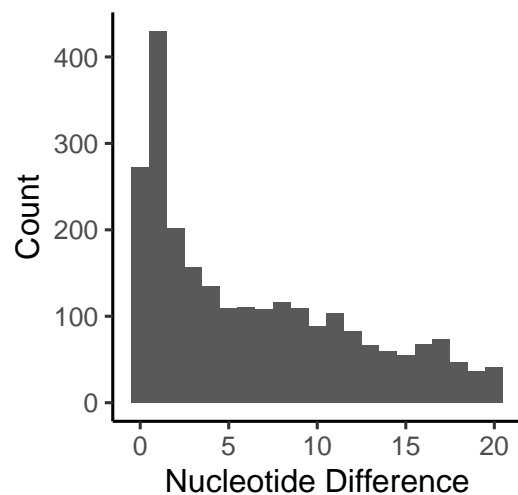
### IGHV3-178\*01\_A274G\_C

2785 sequences assigned  
121 (4.3%) exact matches, in which:  
108 unique CDR3  
4 unique J



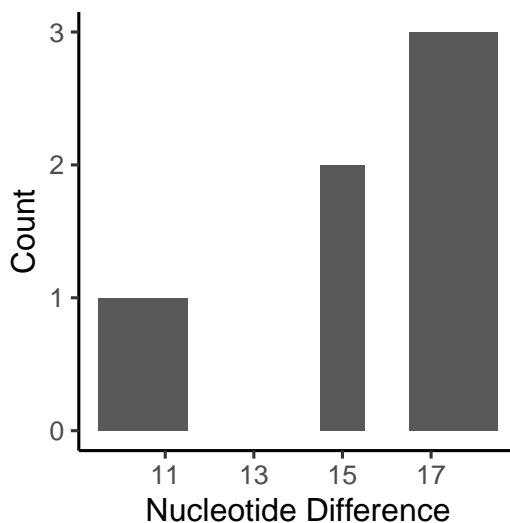
### IGHV3-103\*01\_G51A\_A1

2874 sequences assigned  
272 (9.5%) exact matches, in which:  
245 unique CDR3  
4 unique J



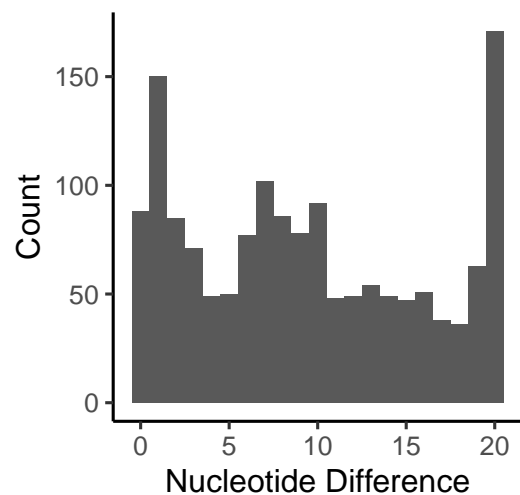
### IGHV3-117\*01

872 sequences assigned  
No exact matches.



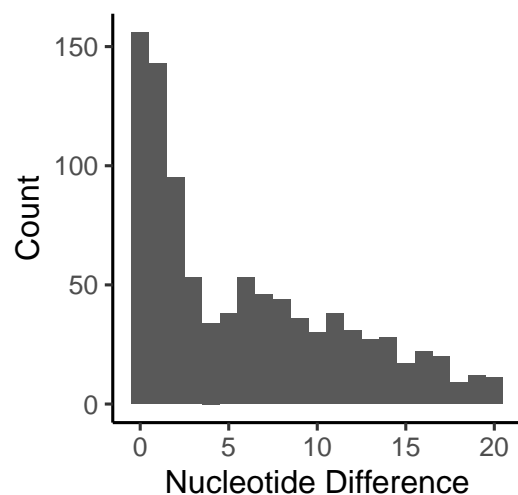
### IGHV3-184\*01\_G106A\_T

7287 sequences assigned  
88 (1.2%) exact matches, in which:  
82 unique CDR3  
3 unique J



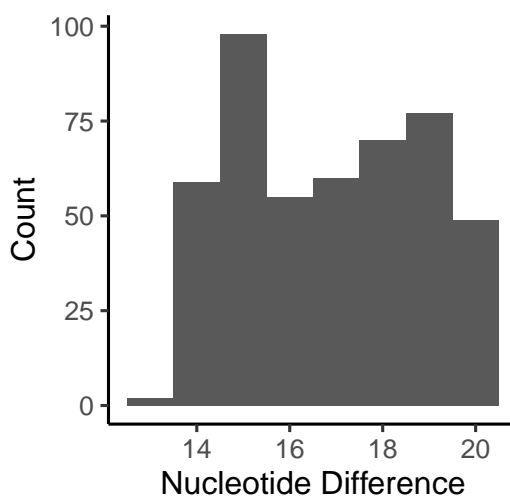
### IGHV3-103\*01\_G51A\_A1

1046 sequences assigned  
156 (14.9%) exact matches, in which:  
149 unique CDR3  
4 unique J



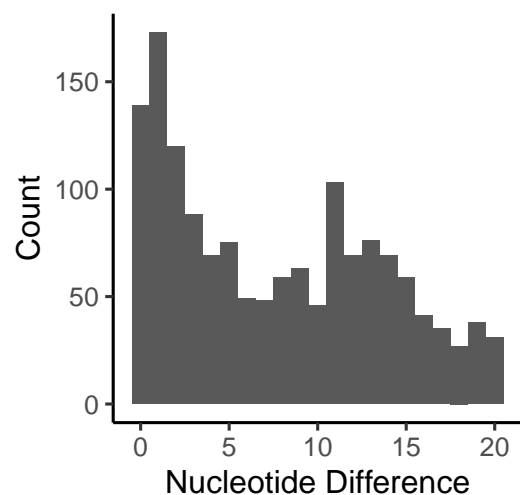
### IGHV3-137\*01

2556 sequences assigned  
No exact matches.



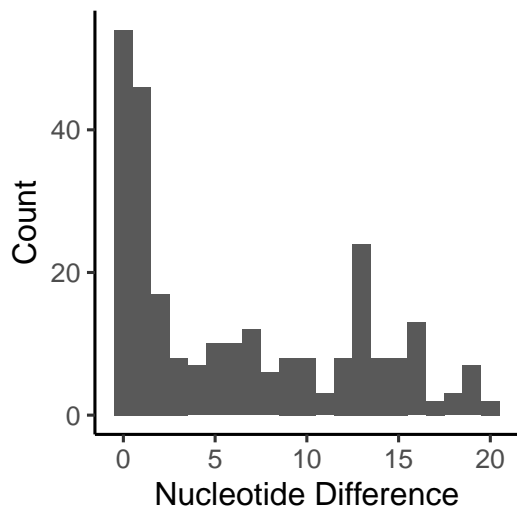
### IGHV4-65\*02\_A163T\_G1

2217 sequences assigned  
139 (6.3%) exact matches, in which:  
133 unique CDR3  
4 unique J



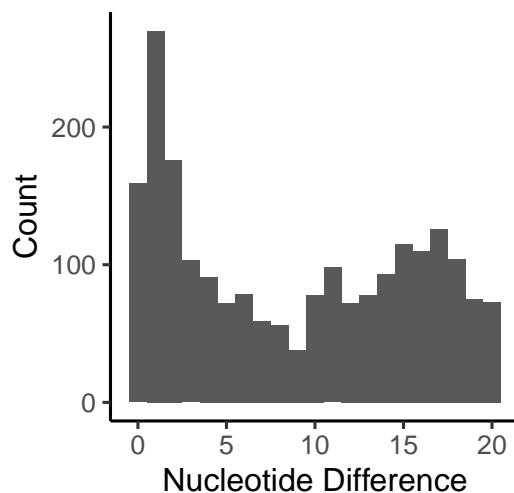
### IGHV4-73\*01\_G147A\_T10

317 sequences assigned  
54 (17%) exact matches, in which:  
52 unique CDR3  
4 unique J



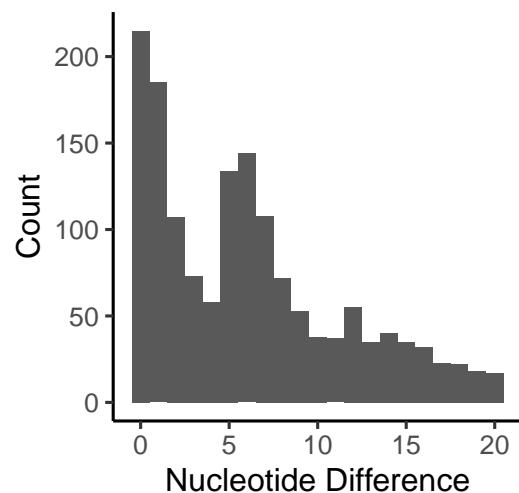
### IGHV4-127\*01\_T82G\_A8

2753 sequences assigned  
159 (5.8%) exact matches, in which:  
155 unique CDR3  
4 unique J



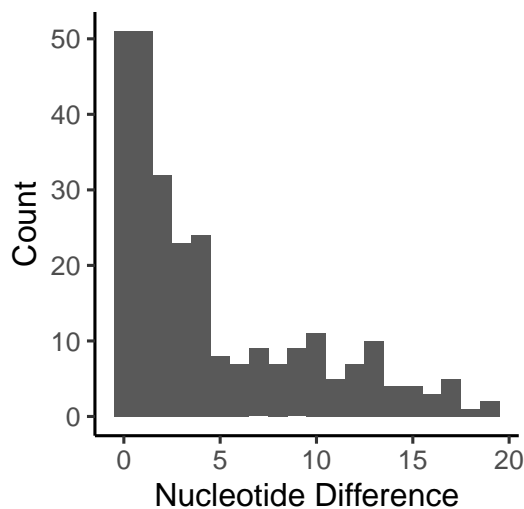
### IGHV4-165\*01\_G82T\_G8

1651 sequences assigned  
215 (13%) exact matches, in which:  
202 unique CDR3  
4 unique J



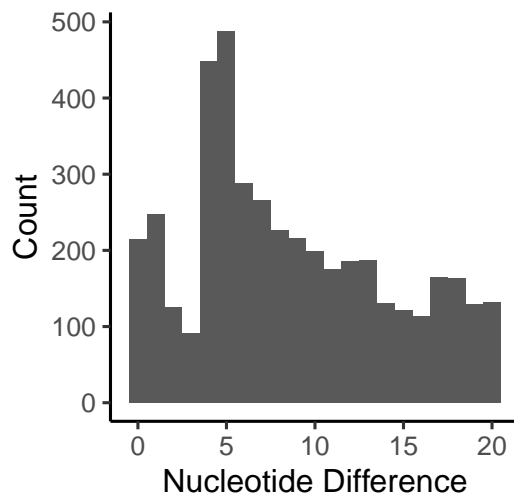
### IGHV4-81\*01\_C4G\_G21A

406 sequences assigned  
51 (12.6%) exact matches, in which:  
49 unique CDR3  
4 unique J



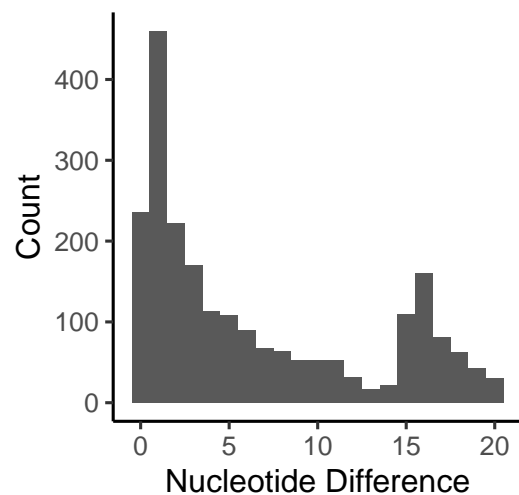
### IGHV4-160\*01\_A106G\_A

5798 sequences assigned  
215 (3.7%) exact matches, in which:  
205 unique CDR3  
4 unique J



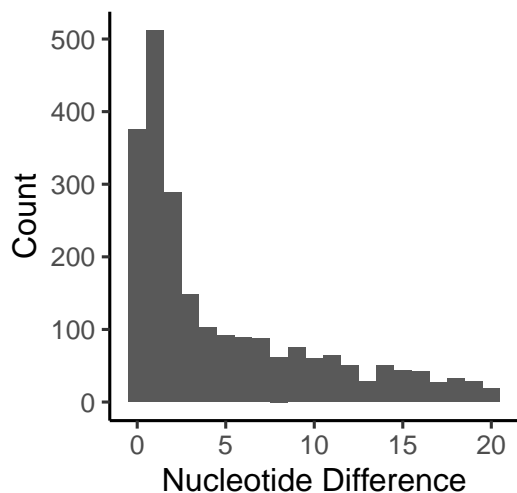
### IGHV5-20\*02\_A141G\_C3

2400 sequences assigned  
236 (9.8%) exact matches, in which:  
206 unique CDR3  
4 unique J



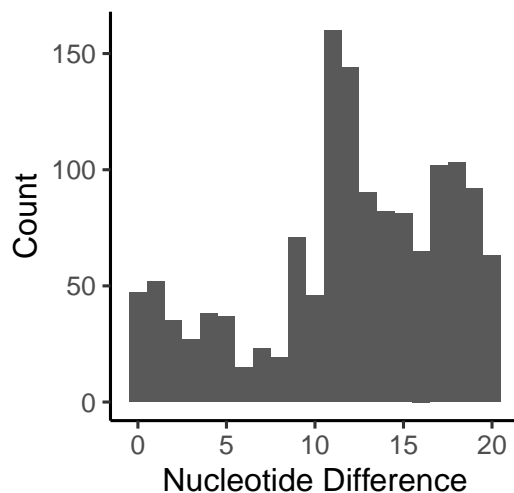
### IGHV4-93\*01\_C32G\_A33

2476 sequences assigned  
375 (15.1%) exact matches, in which:  
358 unique CDR3  
4 unique J



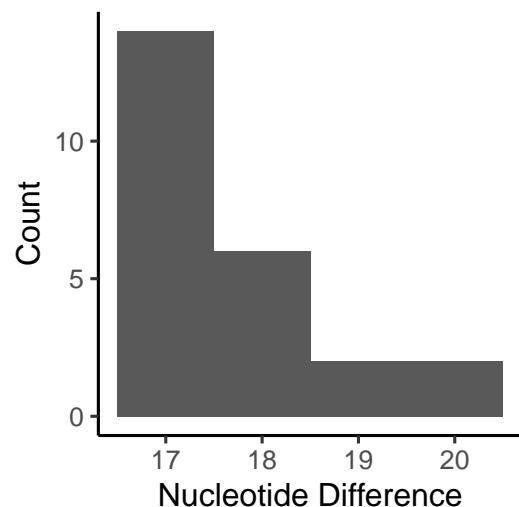
### IGHV4-165\*01\_G32A\_G

1972 sequences assigned  
47 (2.4%) exact matches, in which:  
43 unique CDR3  
4 unique J

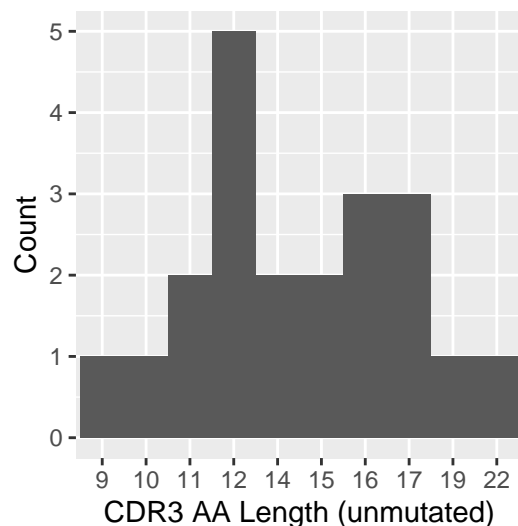


### IGHV7-94\*01

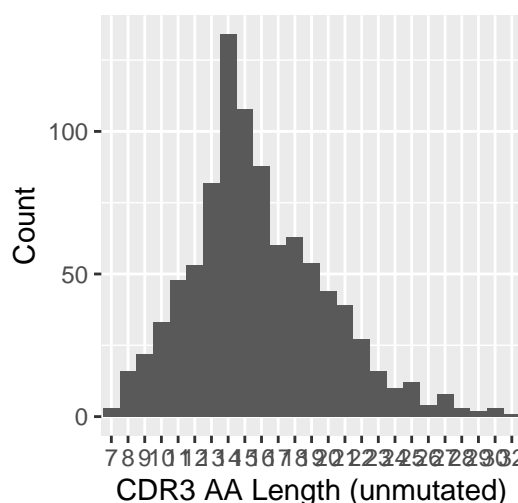
40 sequences assigned  
No exact matches.



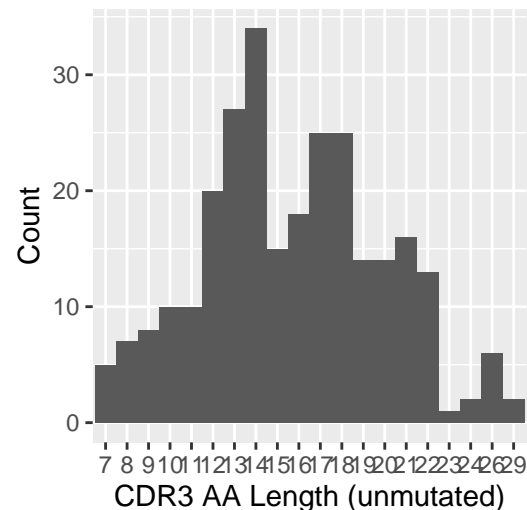
IGHV3-13\*01\_C301G



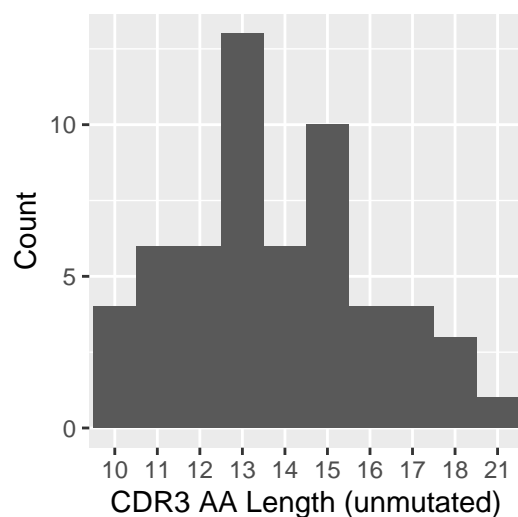
IGHV3S42\*01\_T19A\_G24A\_



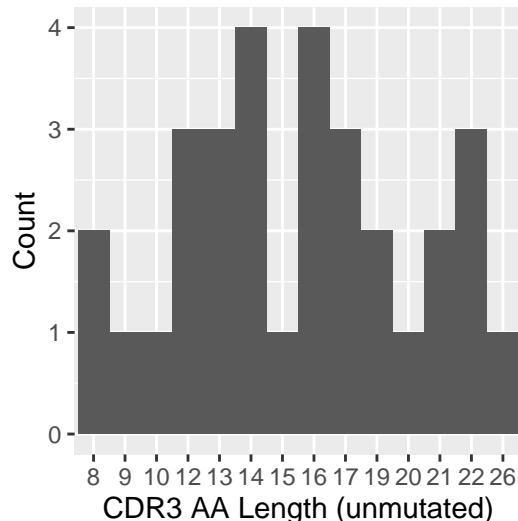
IGHV3-103\*01\_G51A\_A170



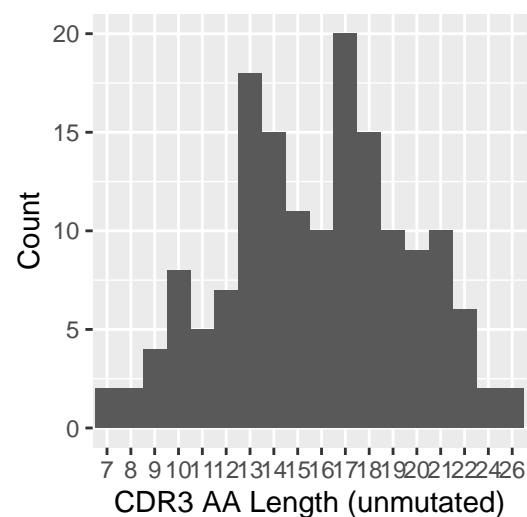
IGHV2-10\*01\_C6G\_A23G\_C



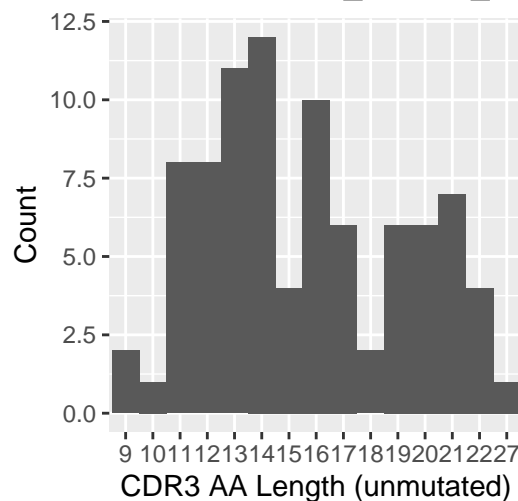
IGHV3-28\*02\_C118T\_C176G



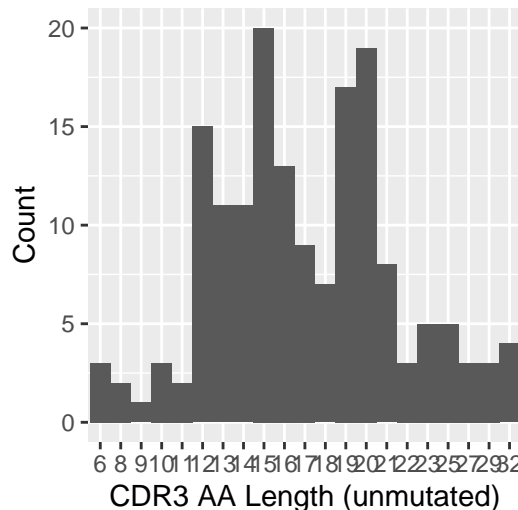
IGHV3-103\*01\_G51A\_A170



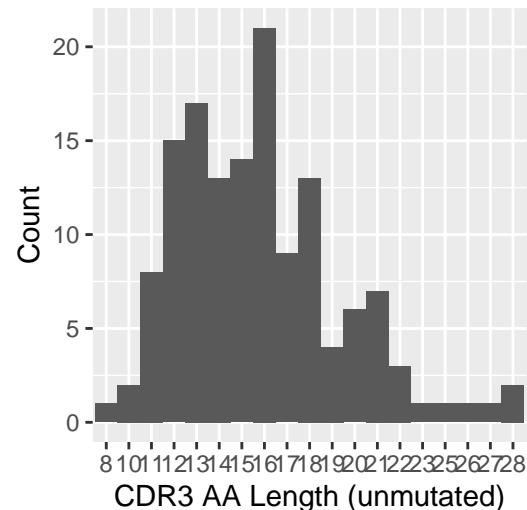
IGHV3-184\*01\_G106A\_T10



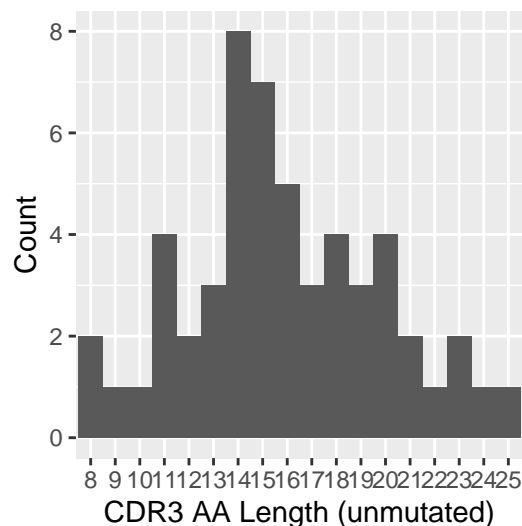
IGHV3-54\*02\_G170C



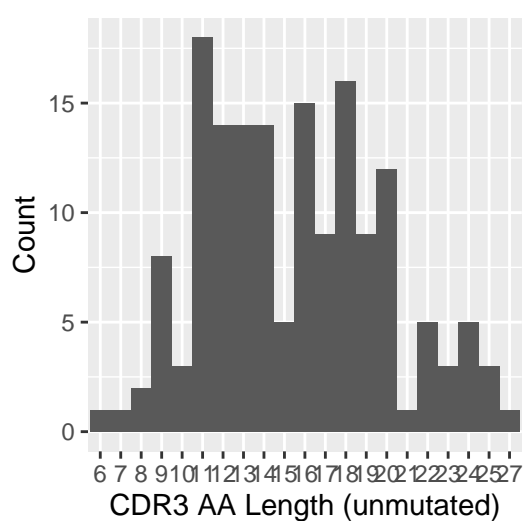
IGHV4-65\*02\_A163T\_G169



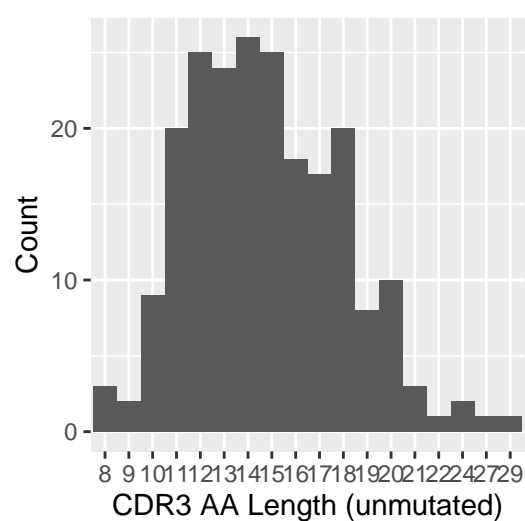
IGHV4-73\*01\_G147A\_T163A



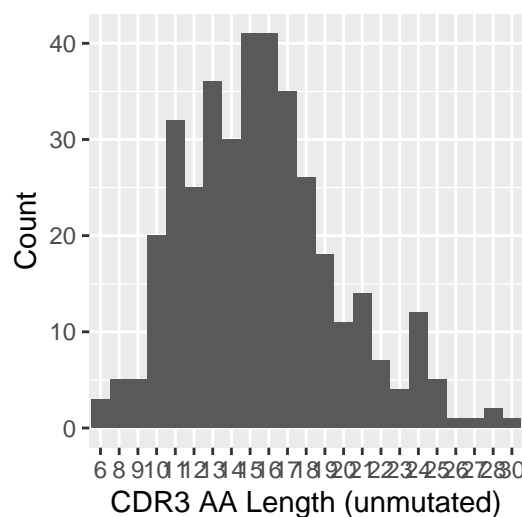
IGHV4-127\*01\_T82G\_A83G



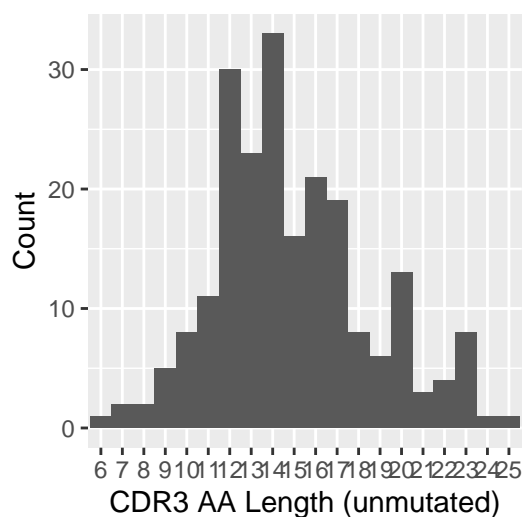
IGHV4-165\*01\_G82T\_G83A



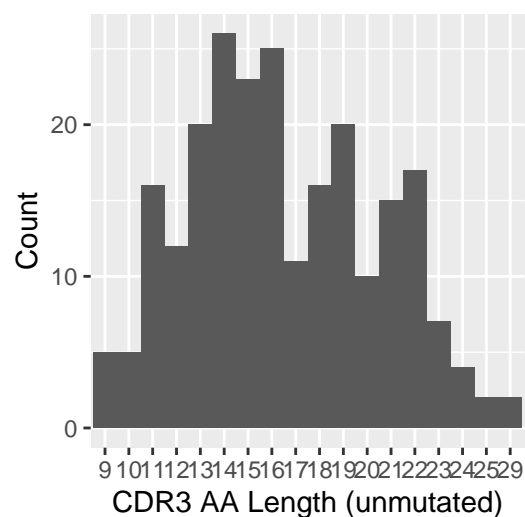
IGHV4-93\*01\_C32G\_A33G\_



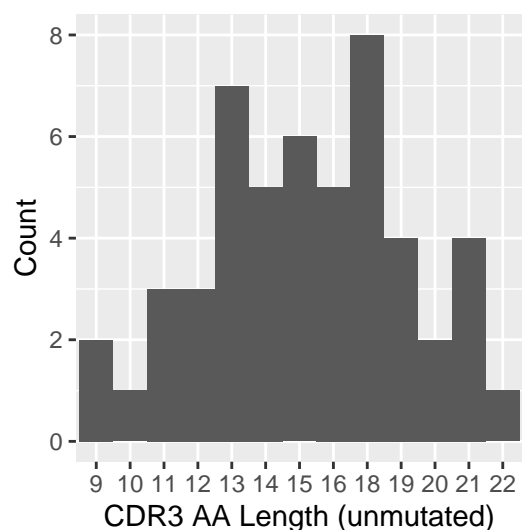
IGHV4-160\*01\_A106G\_A108G



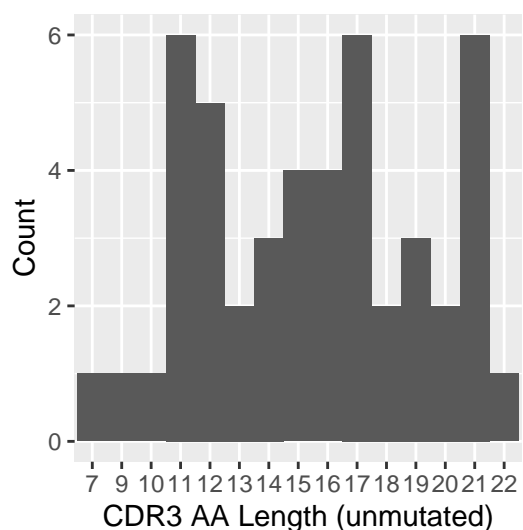
IGHV5-20\*02\_A141G\_C312G



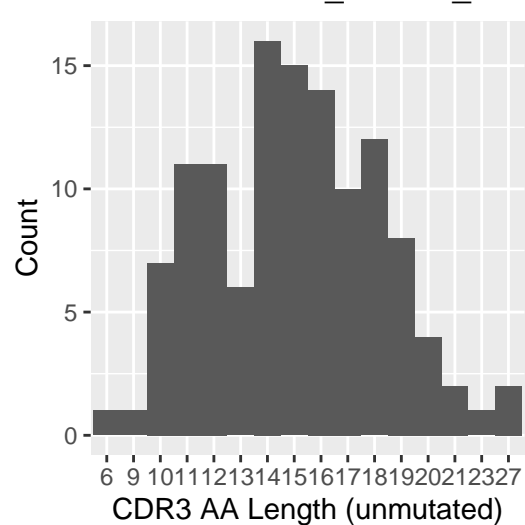
IGHV4-81\*01\_C4G\_G21A\_A:



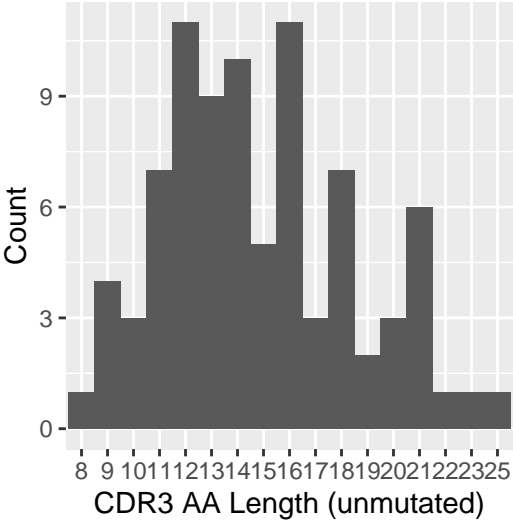
IGHV4-165\*01\_G32A\_G106A



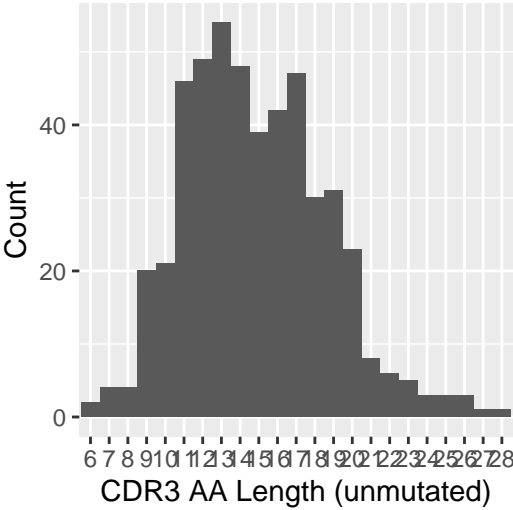
IGHV3-178\*01\_A274G\_G29



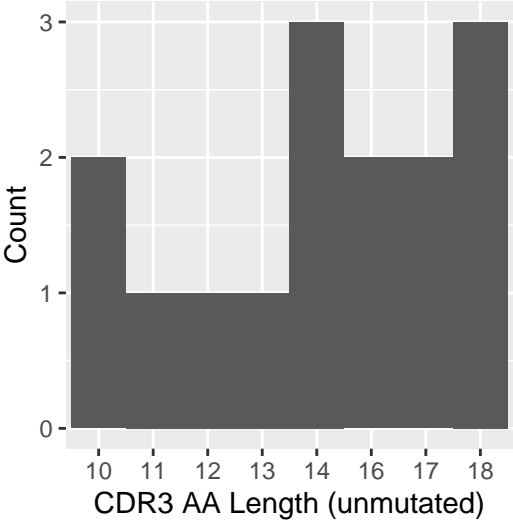
IGHV4S13\*01\_T85A\_C137G\_G267A\_G289A



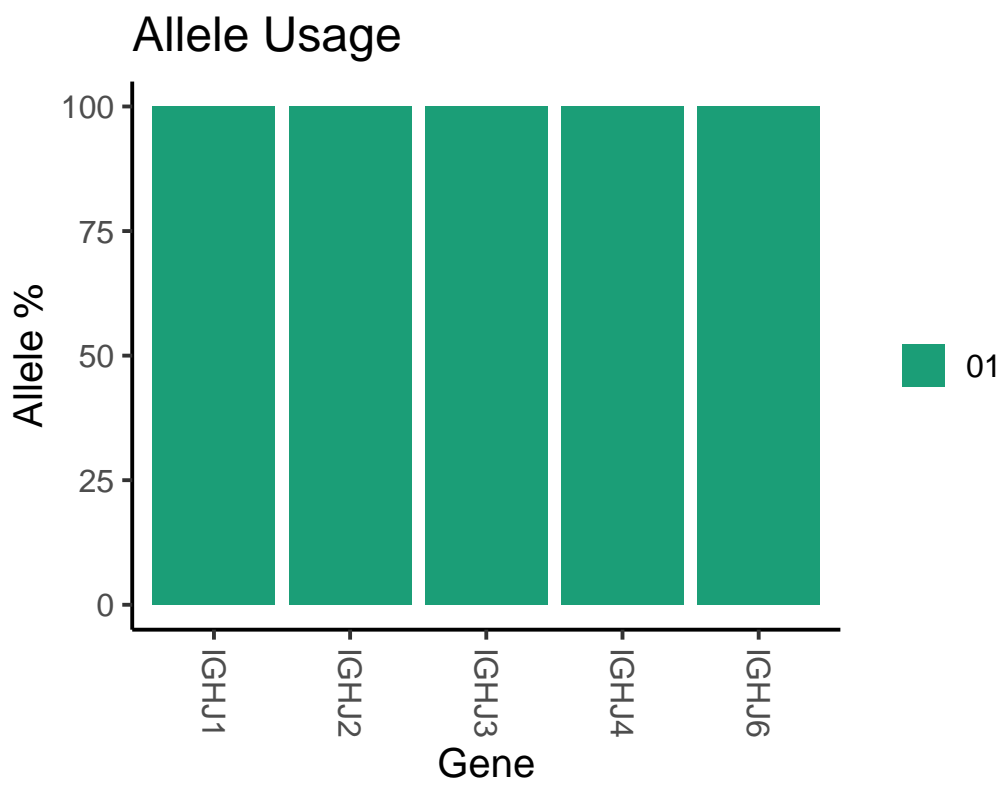
IGHV4S9\*01\_T106A\_A107G\_C108T



IGHV2-174\*01\_C6G\_T108A\_G159T\_C163A\_T164G







Warning – no inferred sequences found.

Warning – no inferred sequences found.

Warning – no inferred sequences found.

Warning – no inferred sequences found.