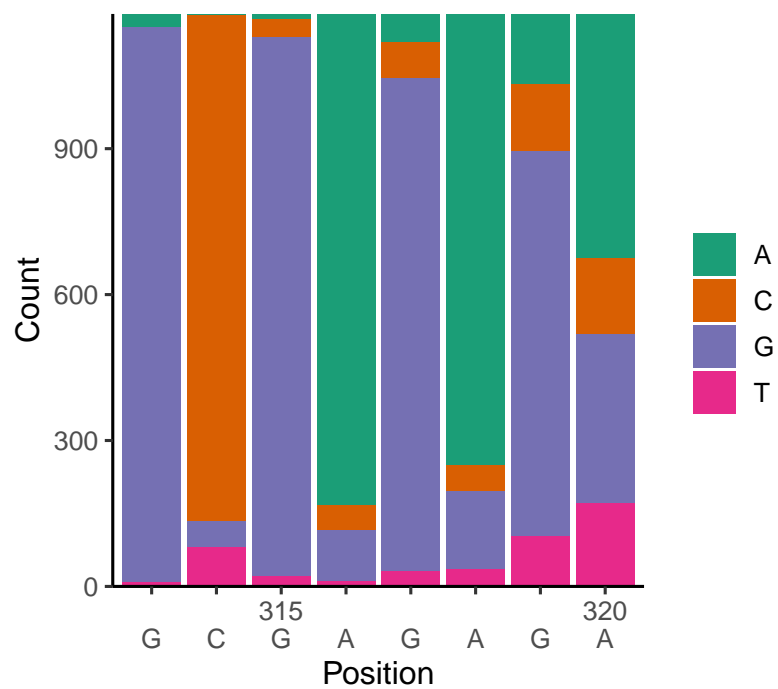
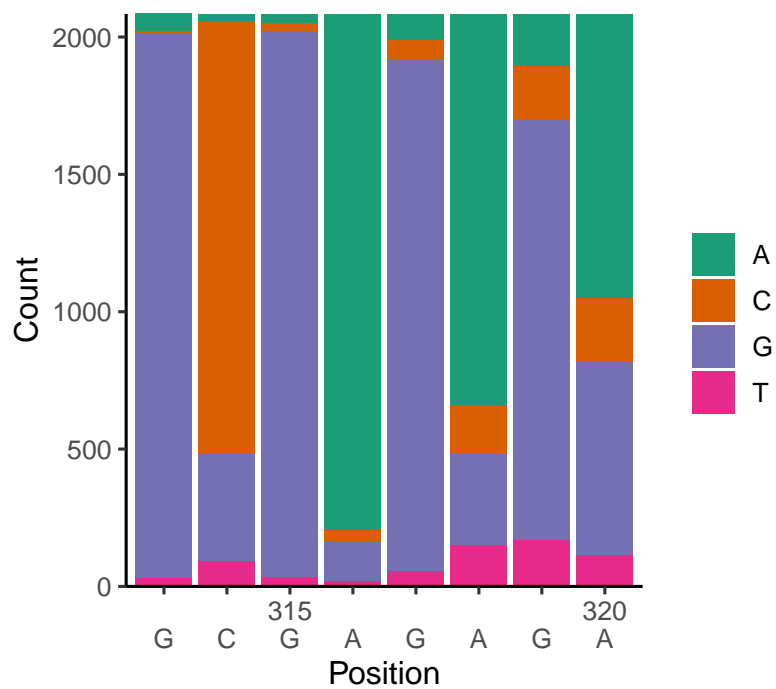


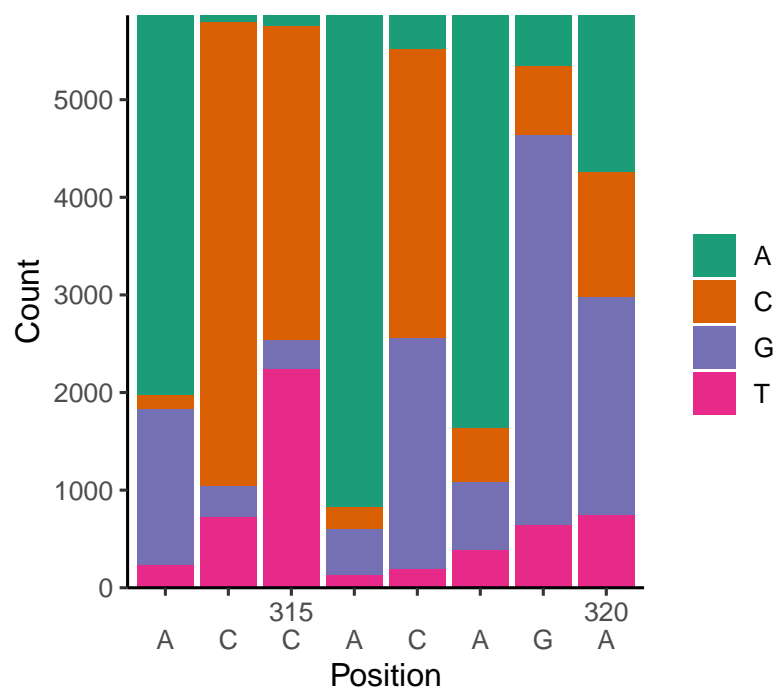
Gene IGHV4-73\*01\_G147A\_T163A\_C168



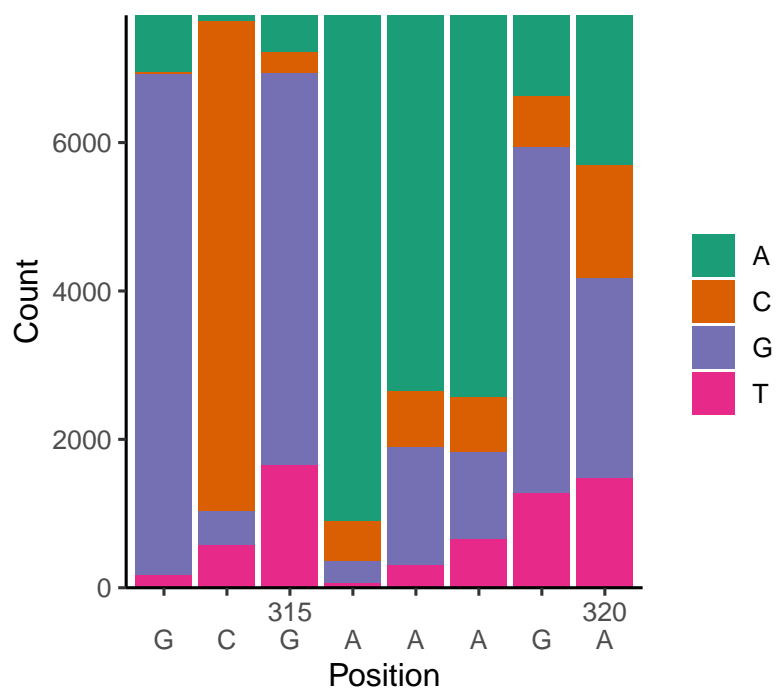
Gene IGHV3-54\*02\_G170C



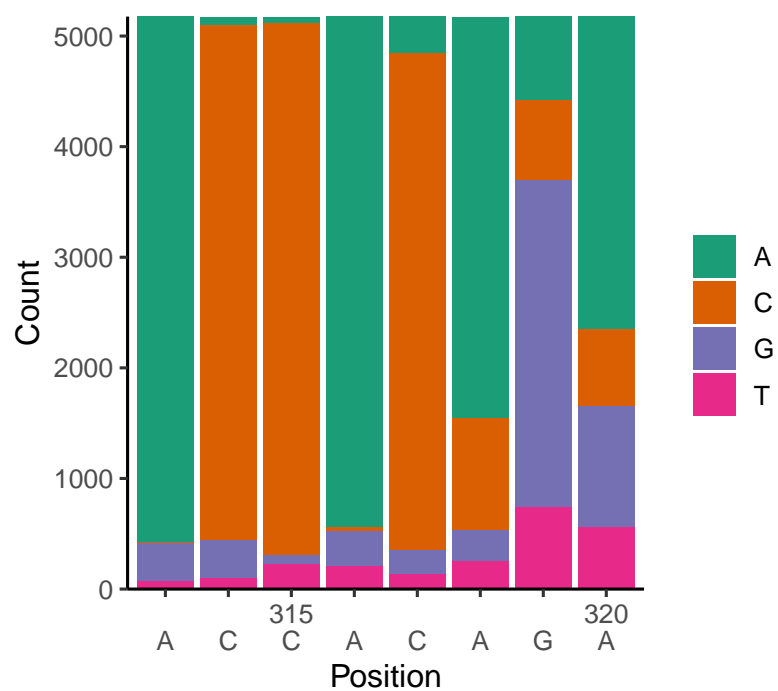
Gene IGHV3-30\*01\_G174C\_A188G\_G1



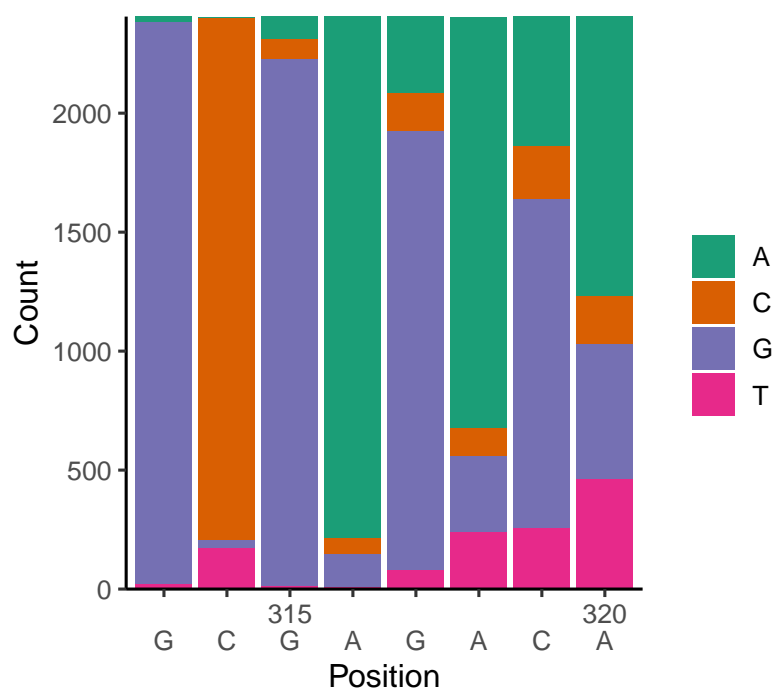
Gene IGHV3-103\*01\_T19A\_G24A\_C27A



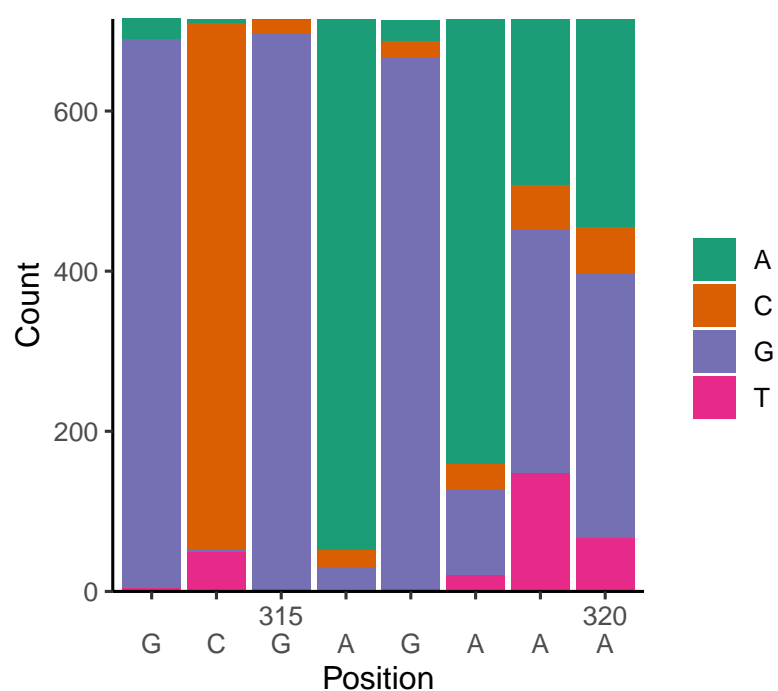
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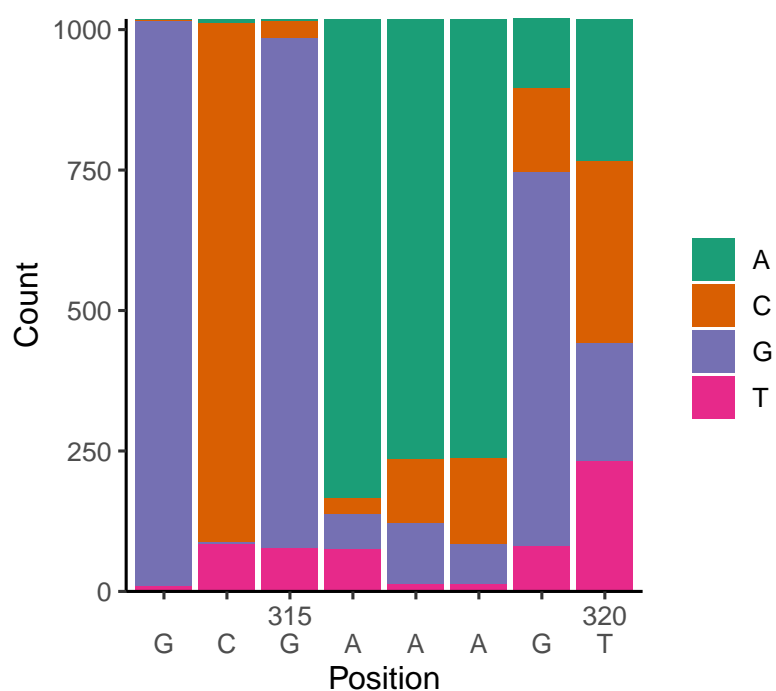
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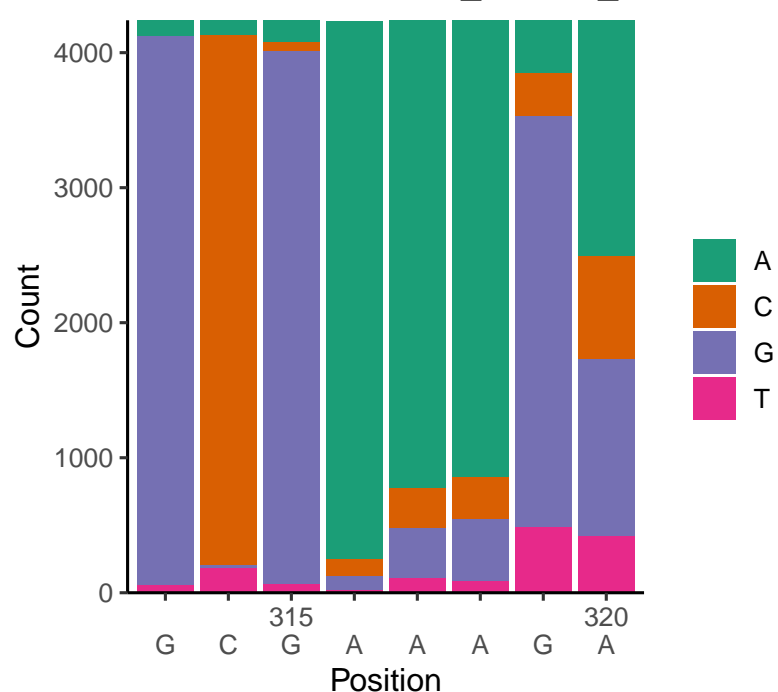
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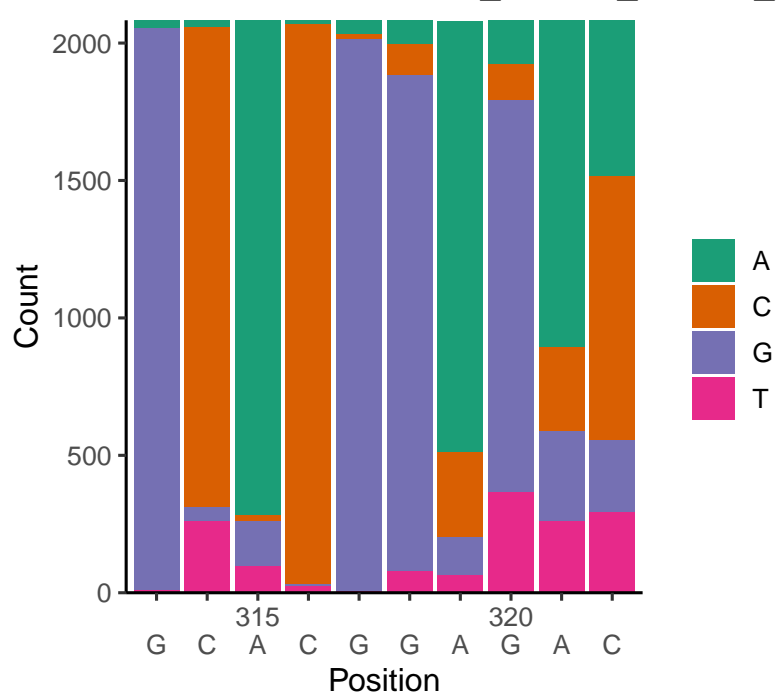
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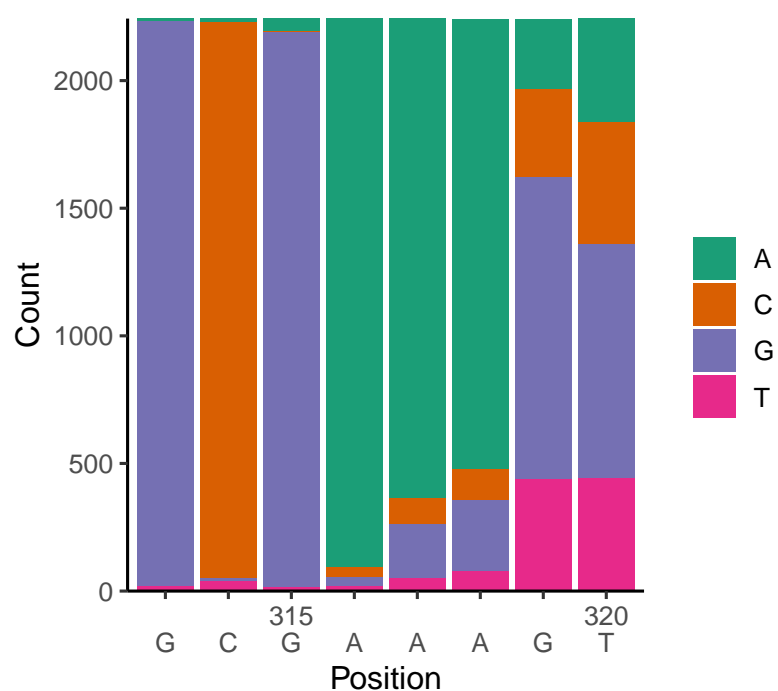
Gene IGHV5-20\*02\_A141G\_C312T



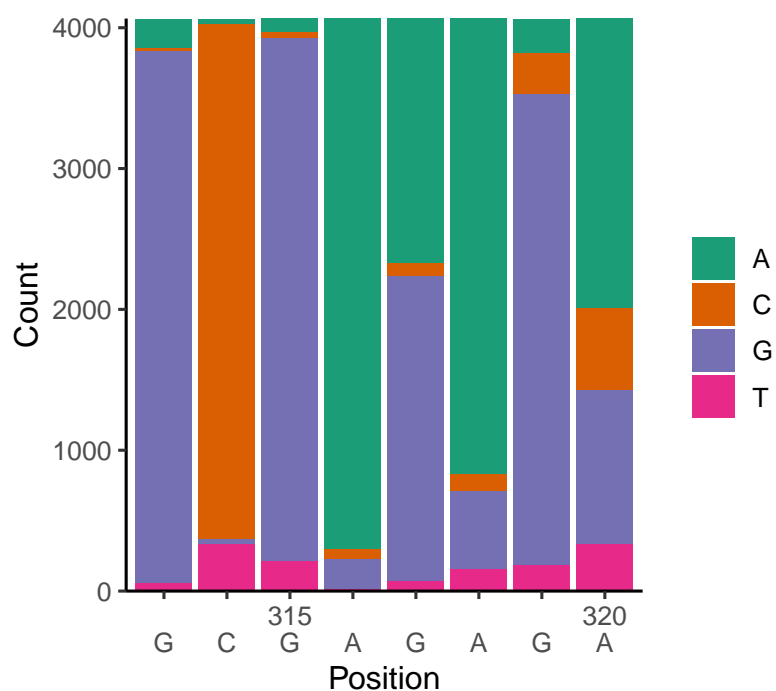
Gene IGHV2-174\*02\_G175A\_G195A\_C



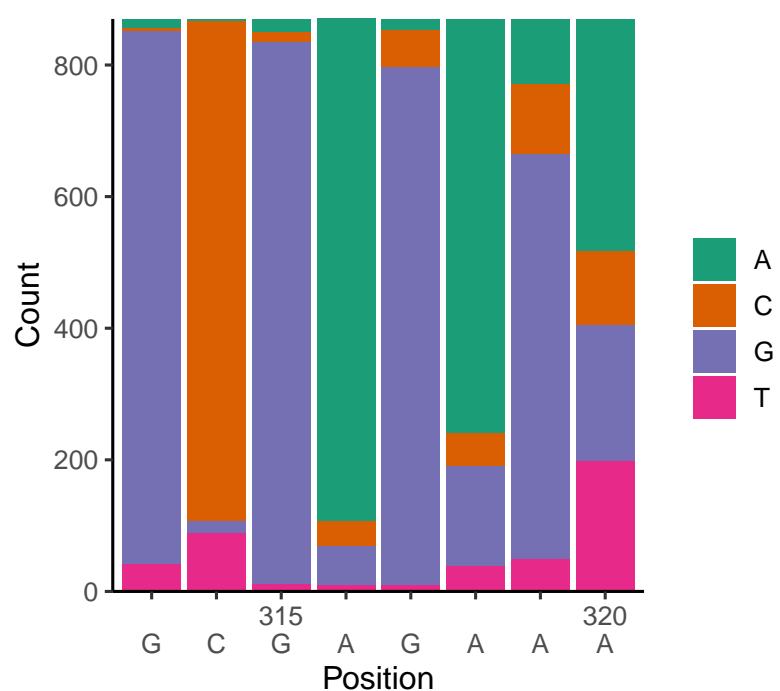
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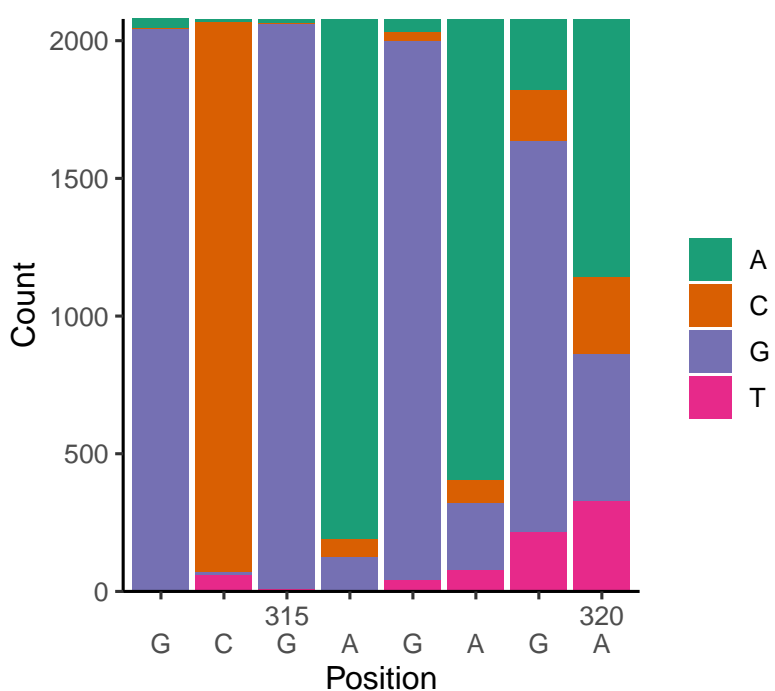
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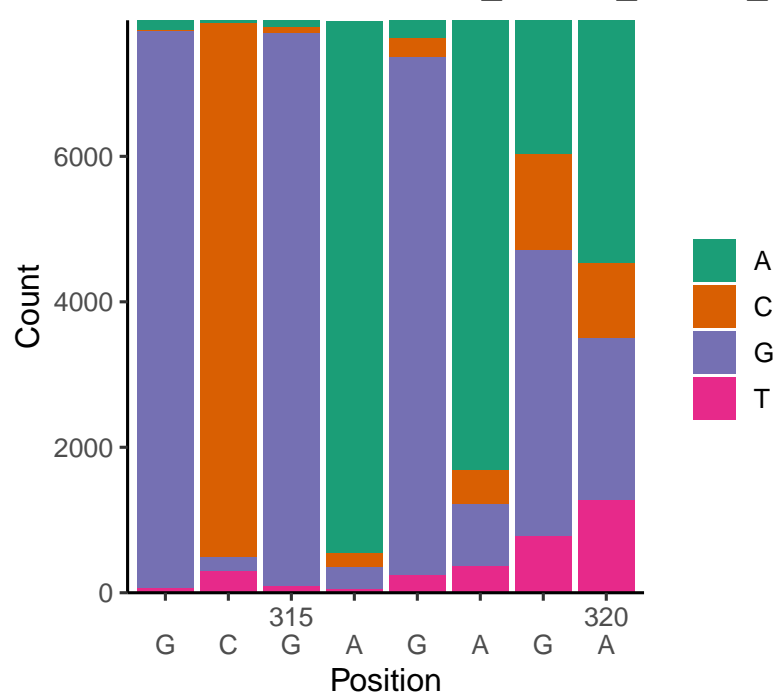
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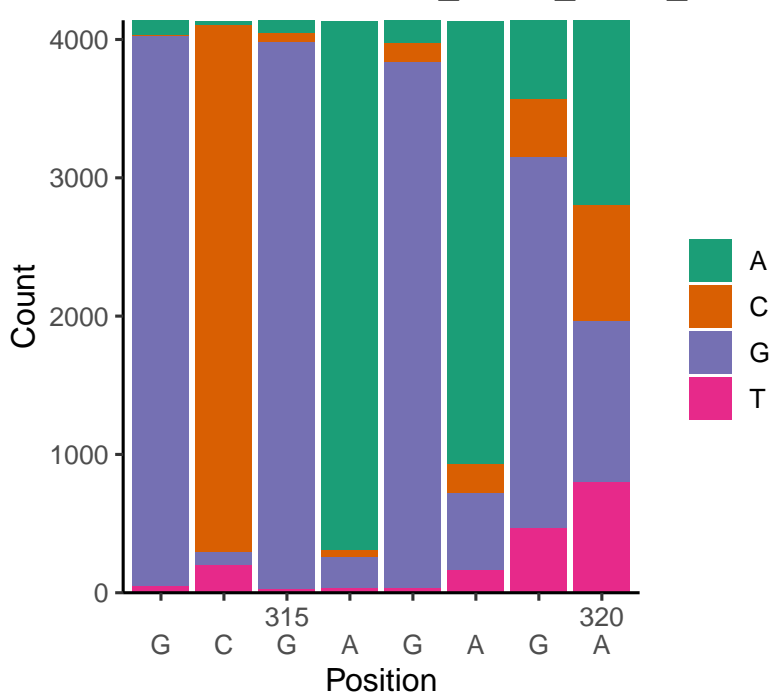
Gene IGHV4S13\*01\_T85A\_C137G\_G26



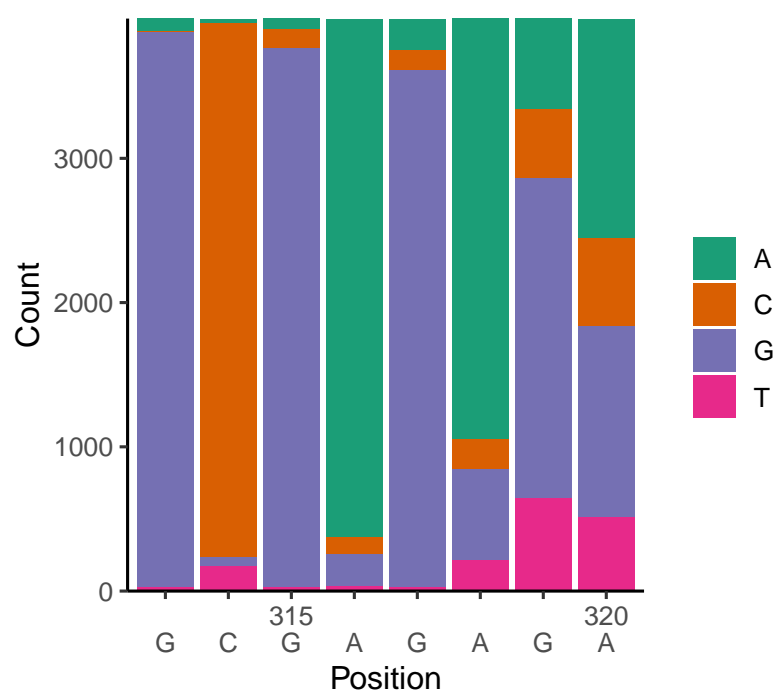
Gene IGHV4-127\*01\_T189G\_A196T\_G2



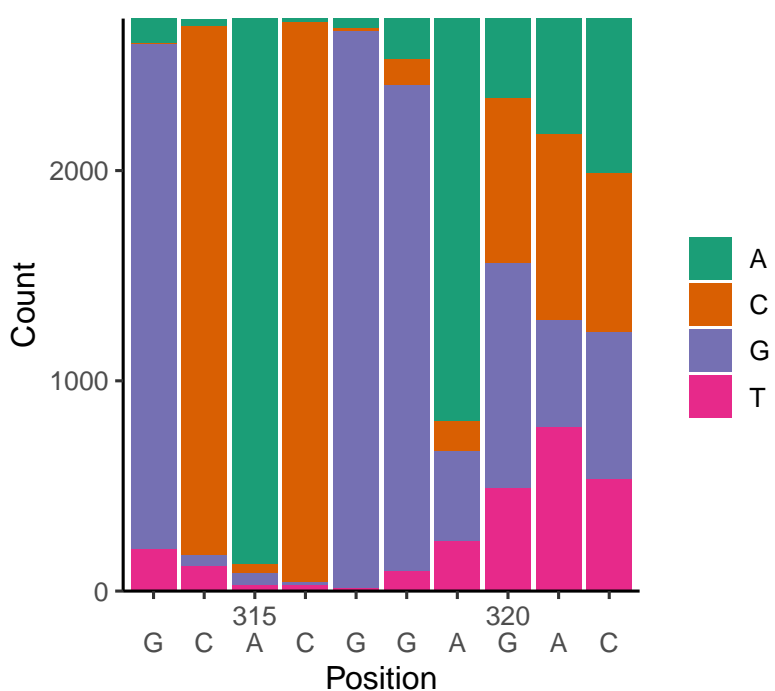
Gene IGHV4S9\*01\_G32A\_C87T\_G103A



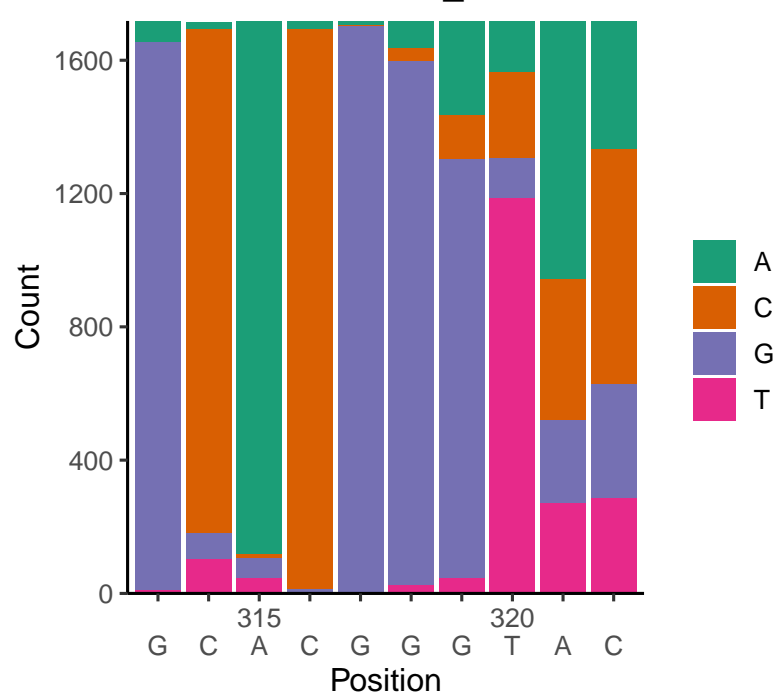
Gene IGHV4-160\*01\_C133G\_G147A



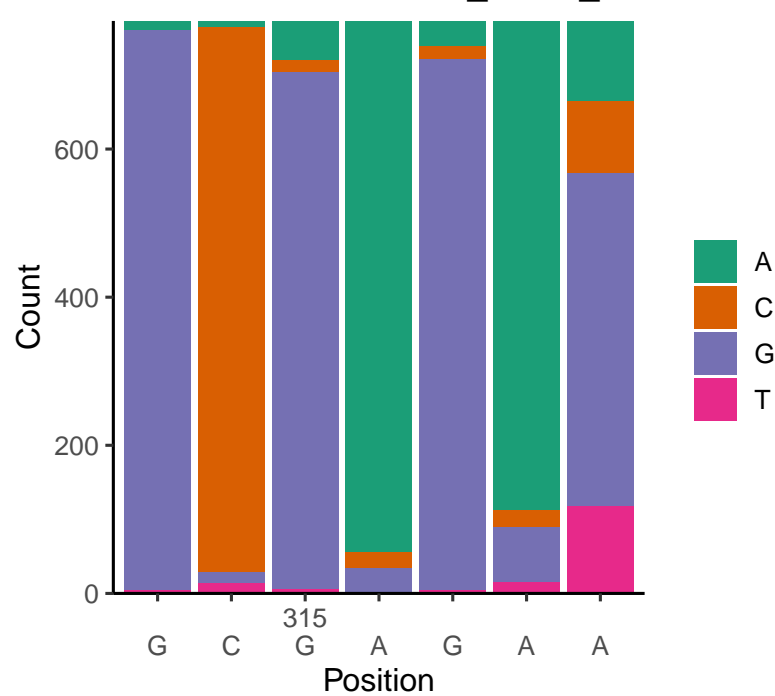
Gene IGHV2-10\*01\_C6G\_A23G\_G112C



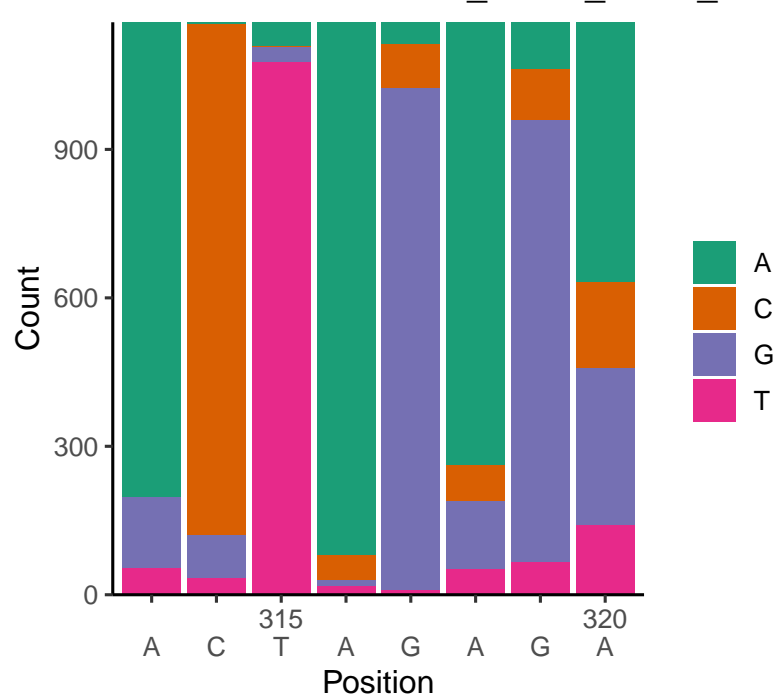
Gene IGHV2S1\*01\_G289T



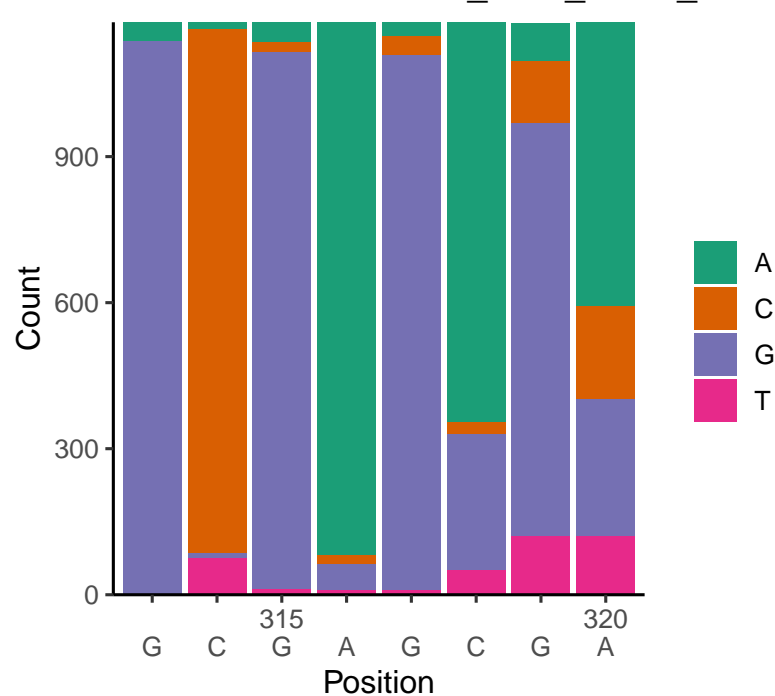
Gene IGHV4-169\*01\_T60C\_G61C



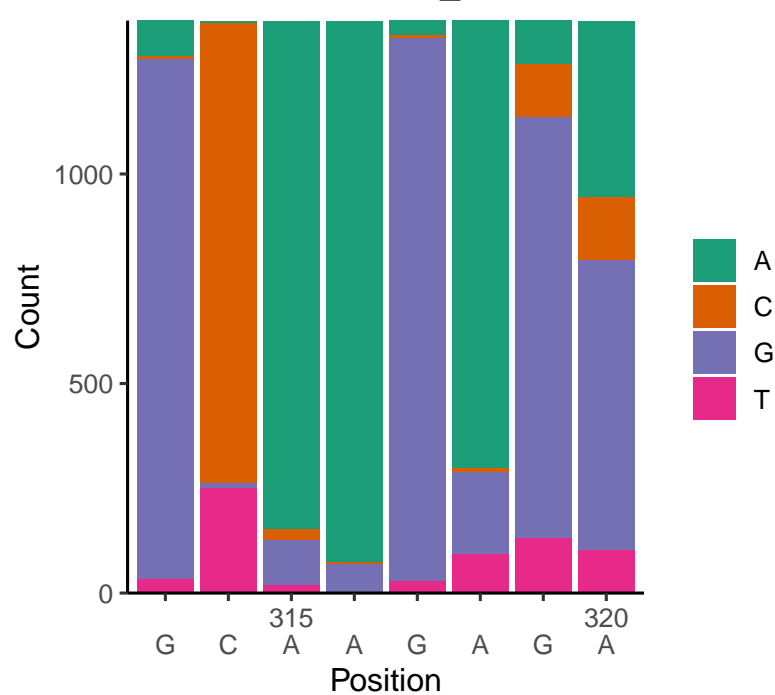
Gene IGHV3-134\*01\_G32C\_T38C\_A40C



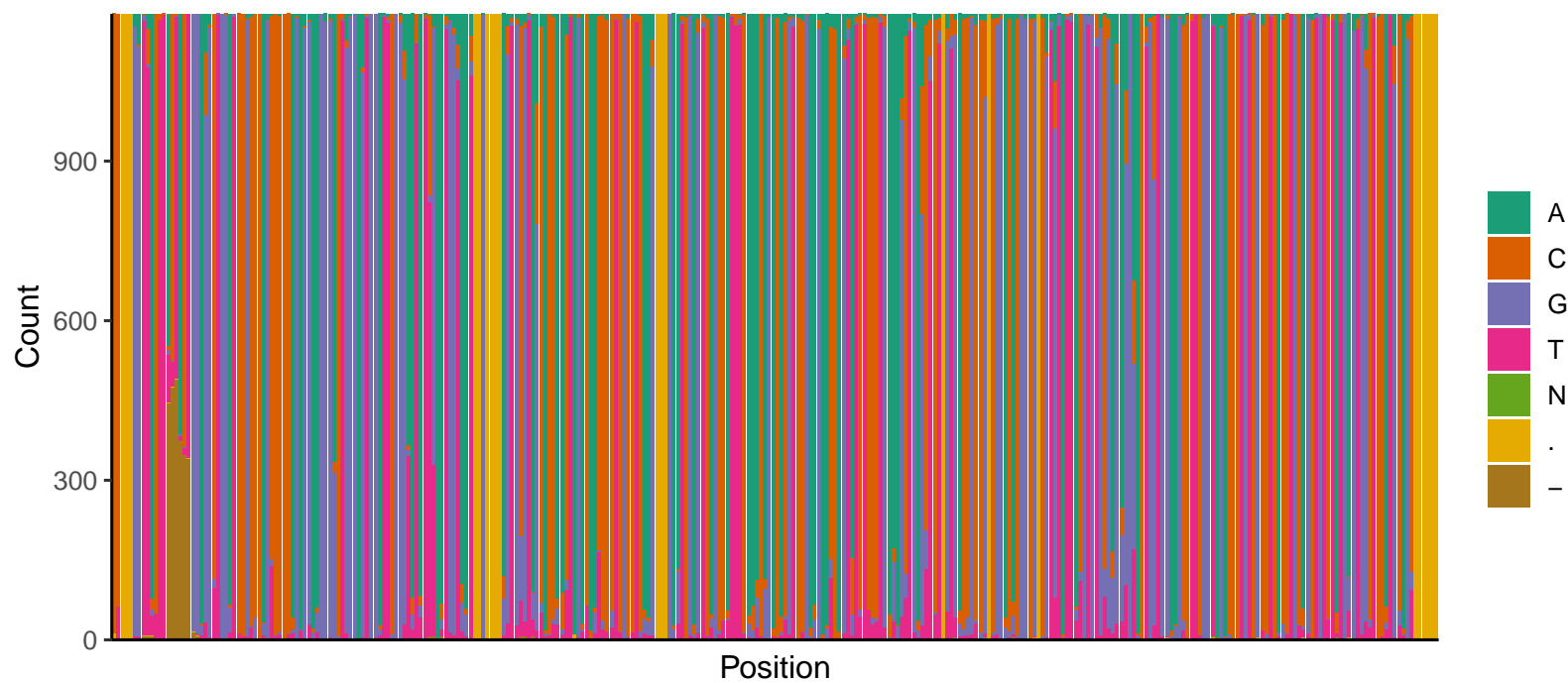
Gene IGHV4-169\*02\_C4G\_T60C\_G61C\_



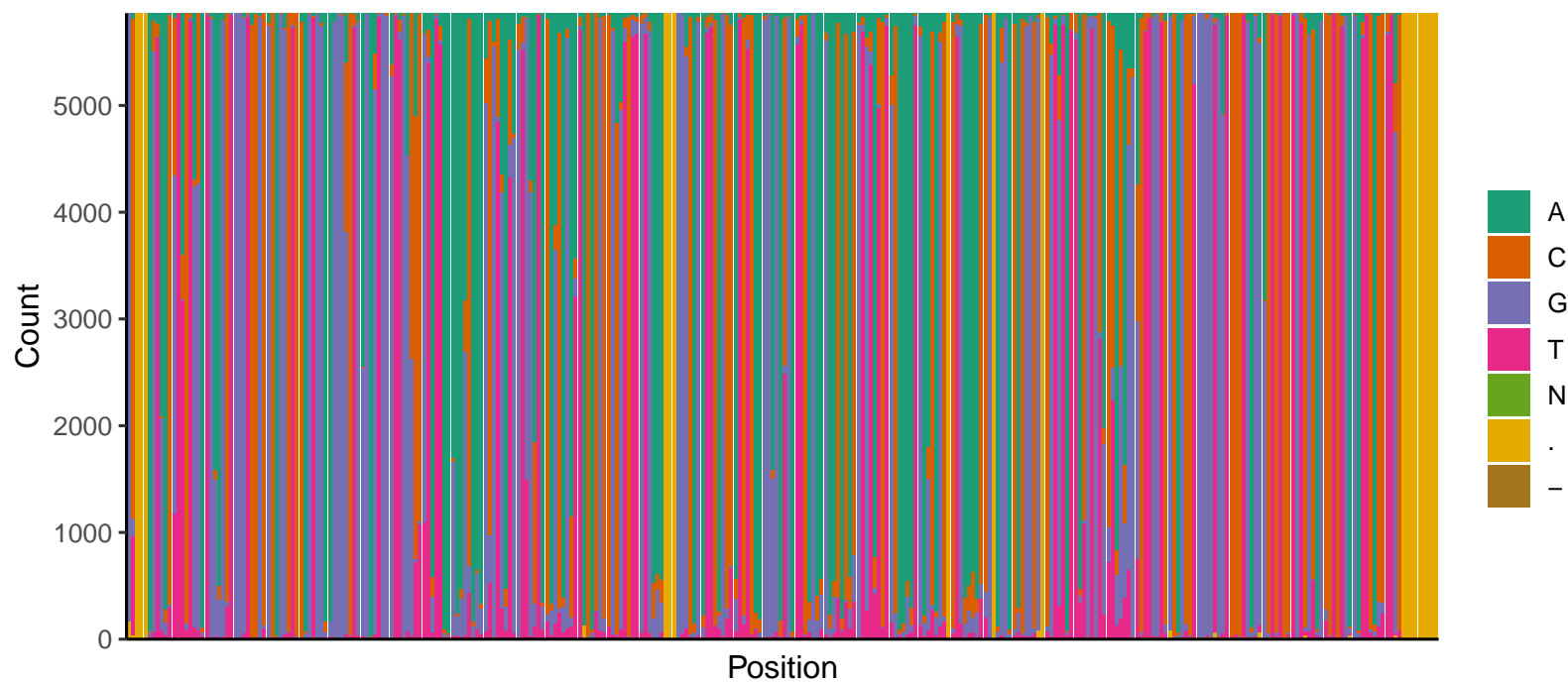
Gene IGHV6-1\*01\_G280T



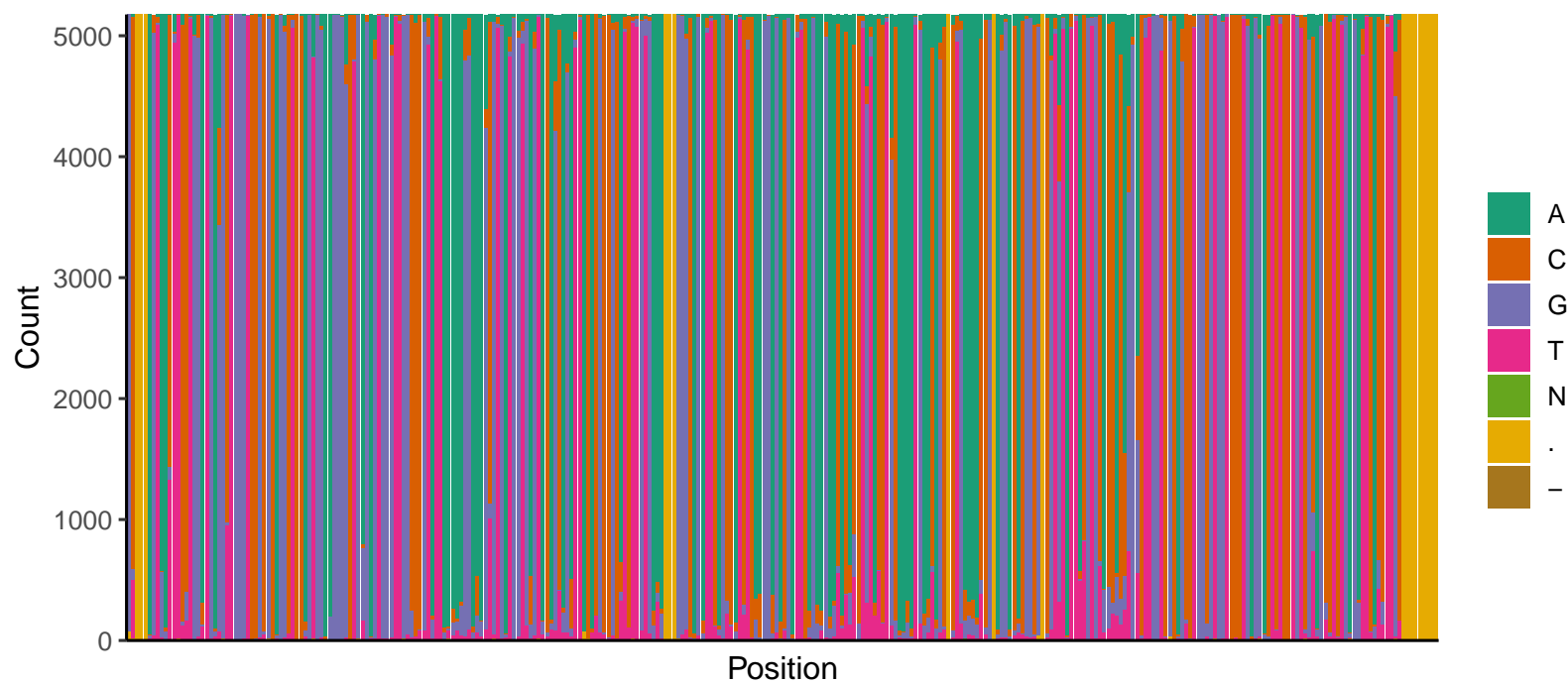
Gene IGHV4-73\*01\_G147A\_T163A\_C168T\_T169G



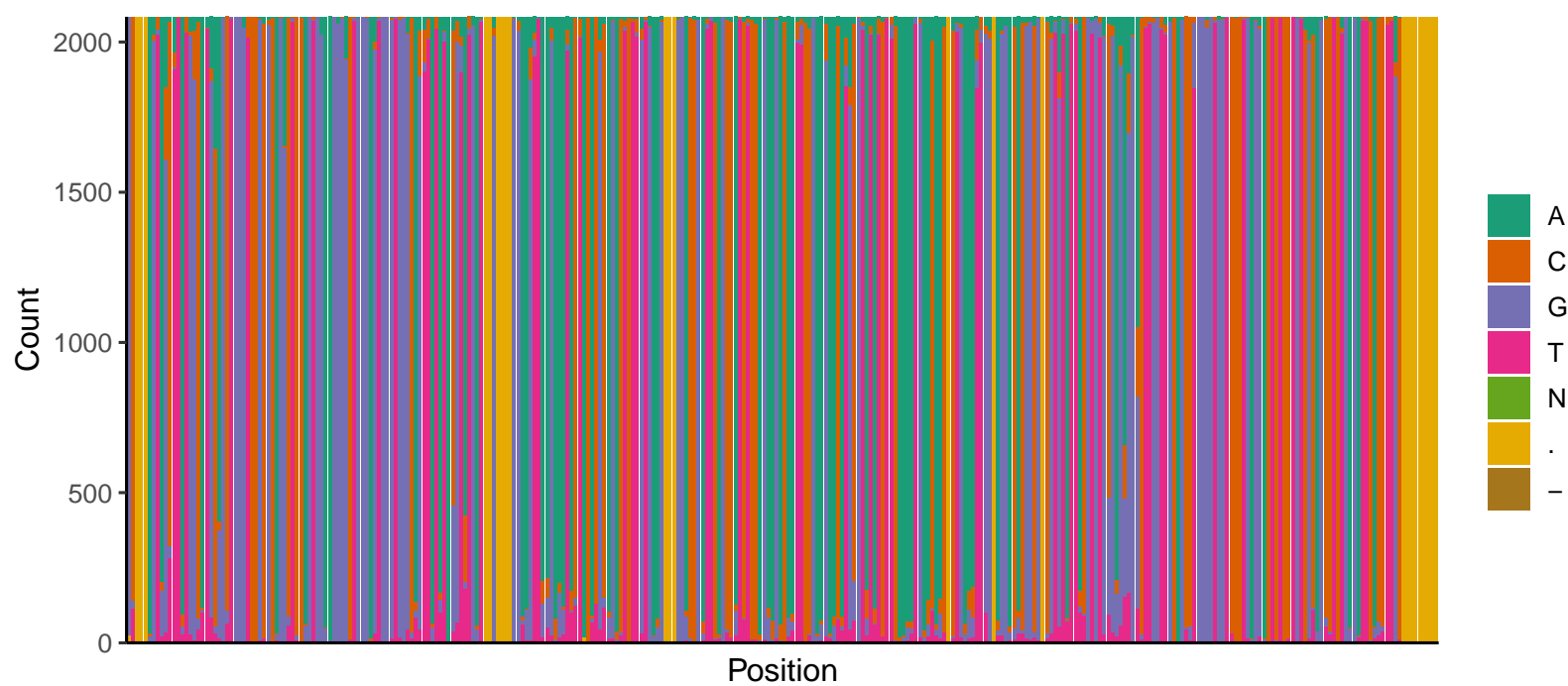
Gene IGHV3-30\*01\_G174C\_A188G\_G189A\_C264T



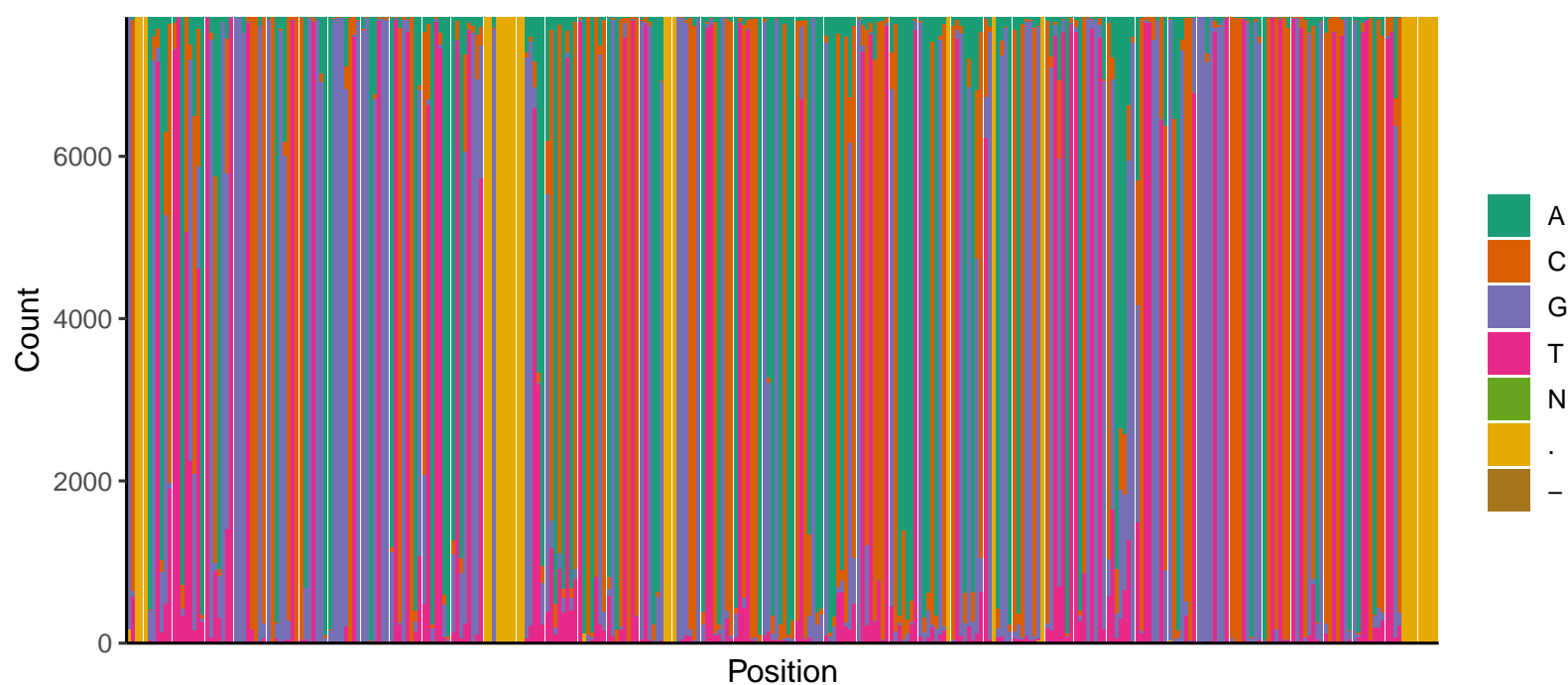
Gene IGHV3-30\*02\_C141G\_C183T



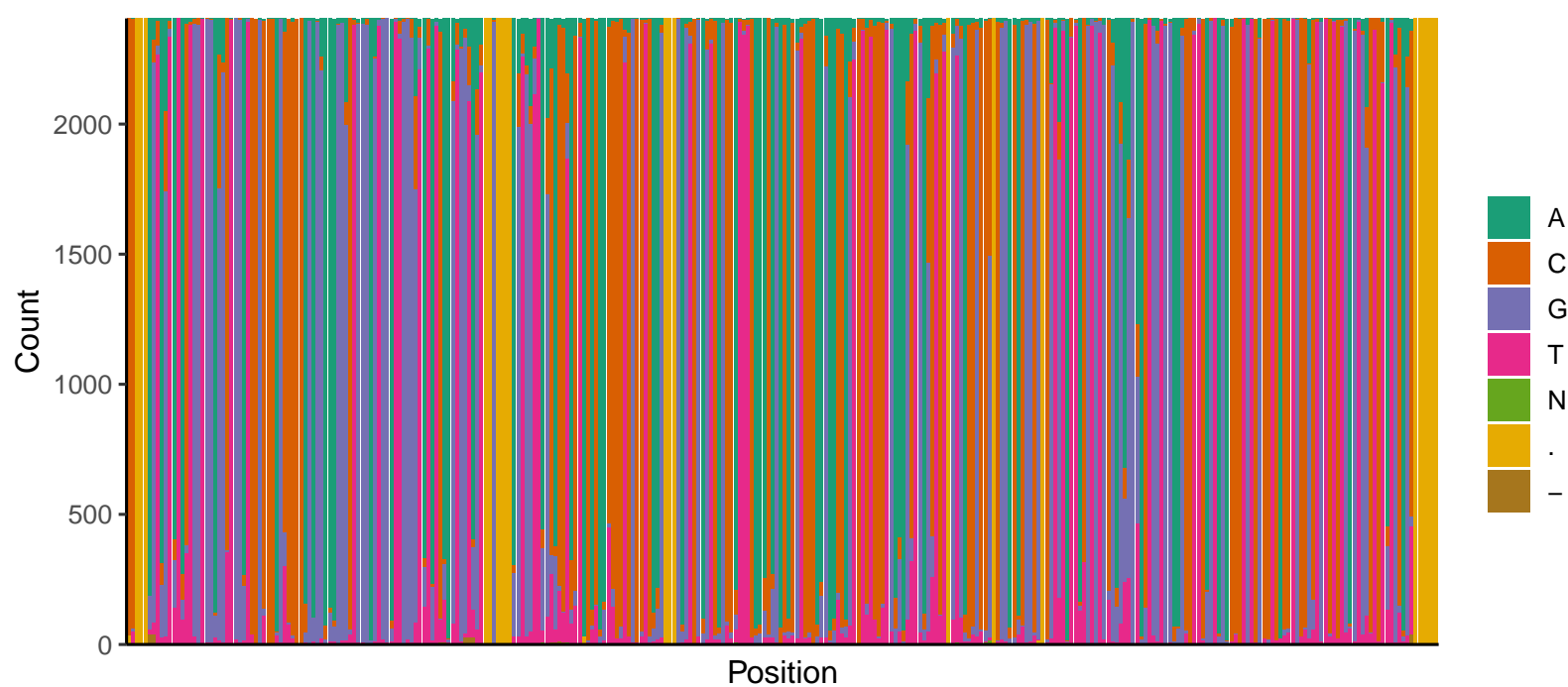
Gene IGHV3-54\*02\_G170C



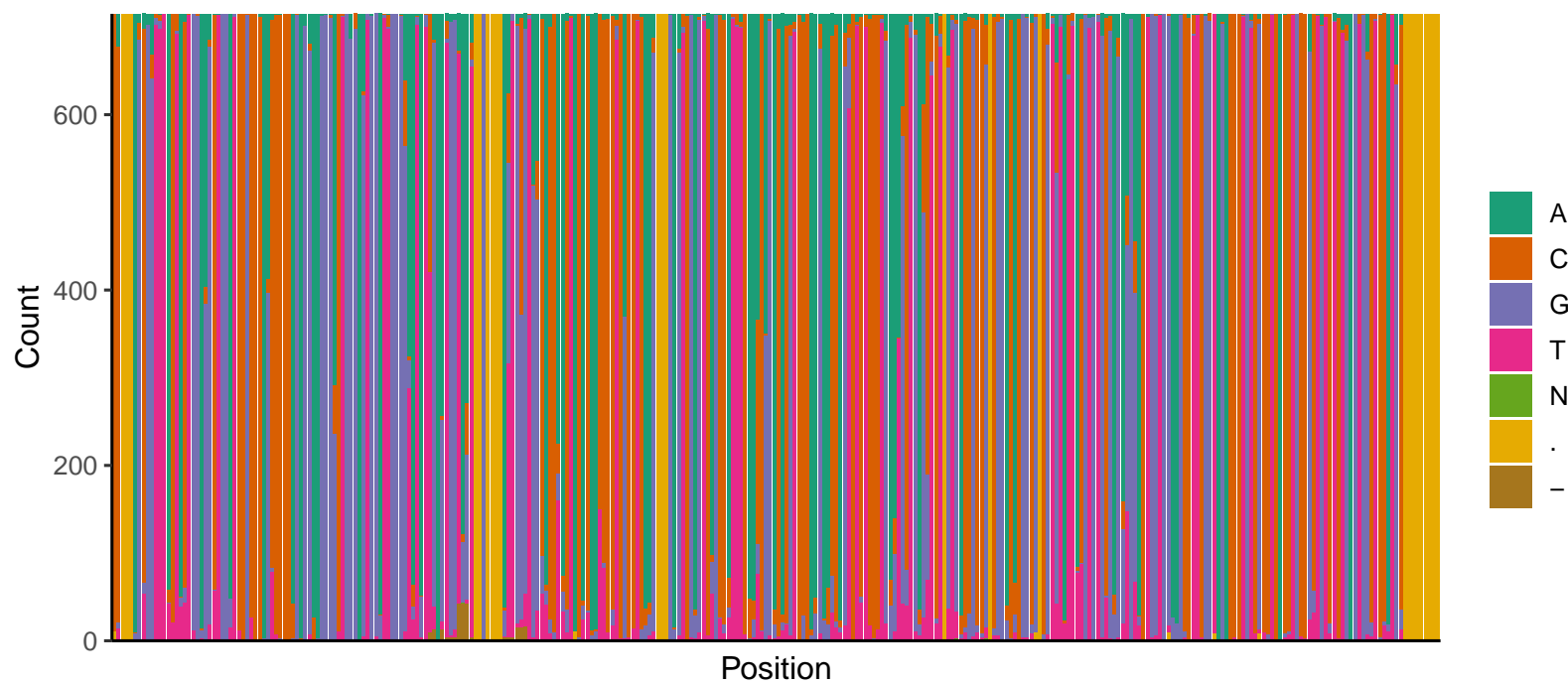
Gene IGHV3-103\*01\_T19A\_G24A\_C27A\_C38T\_A39C\_A40C\_C120G\_G157A



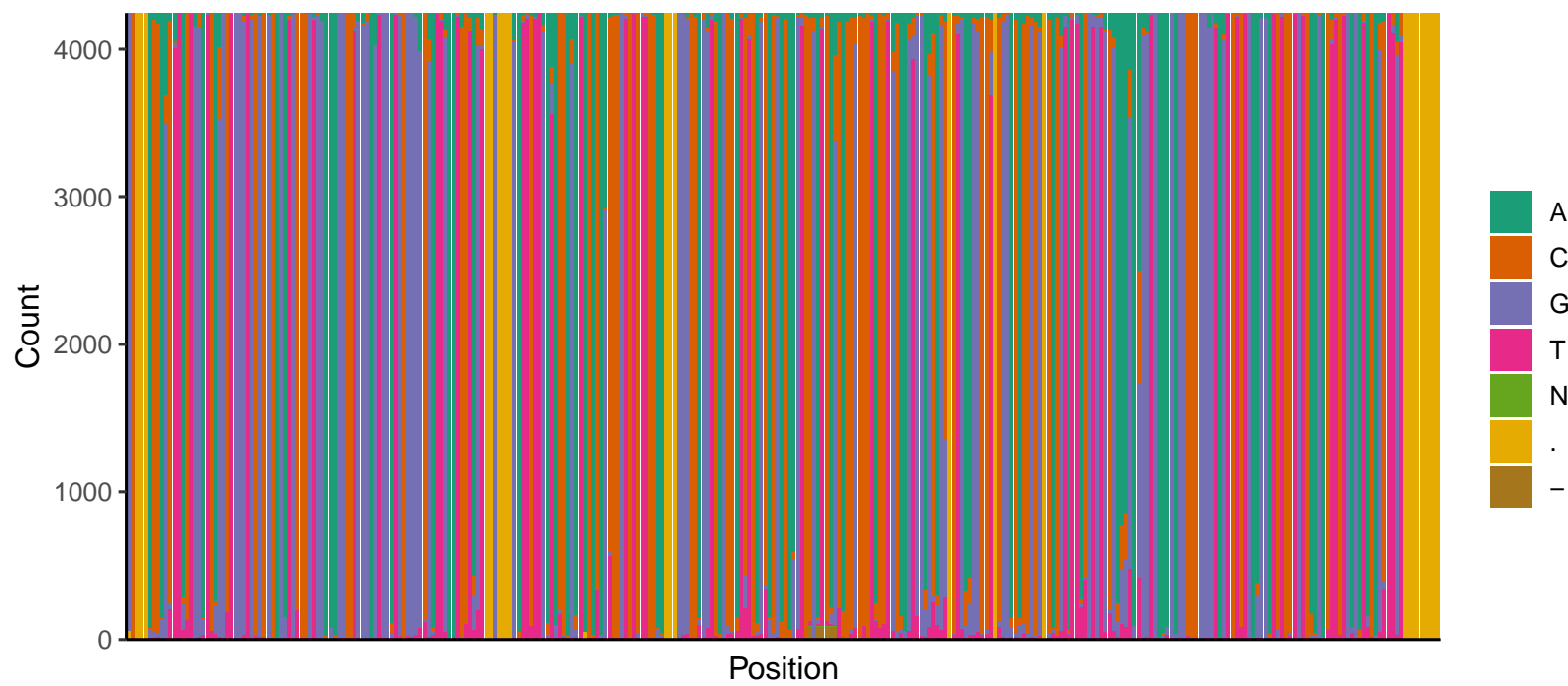
Gene IGHV4-65\*02\_A163T\_G169A



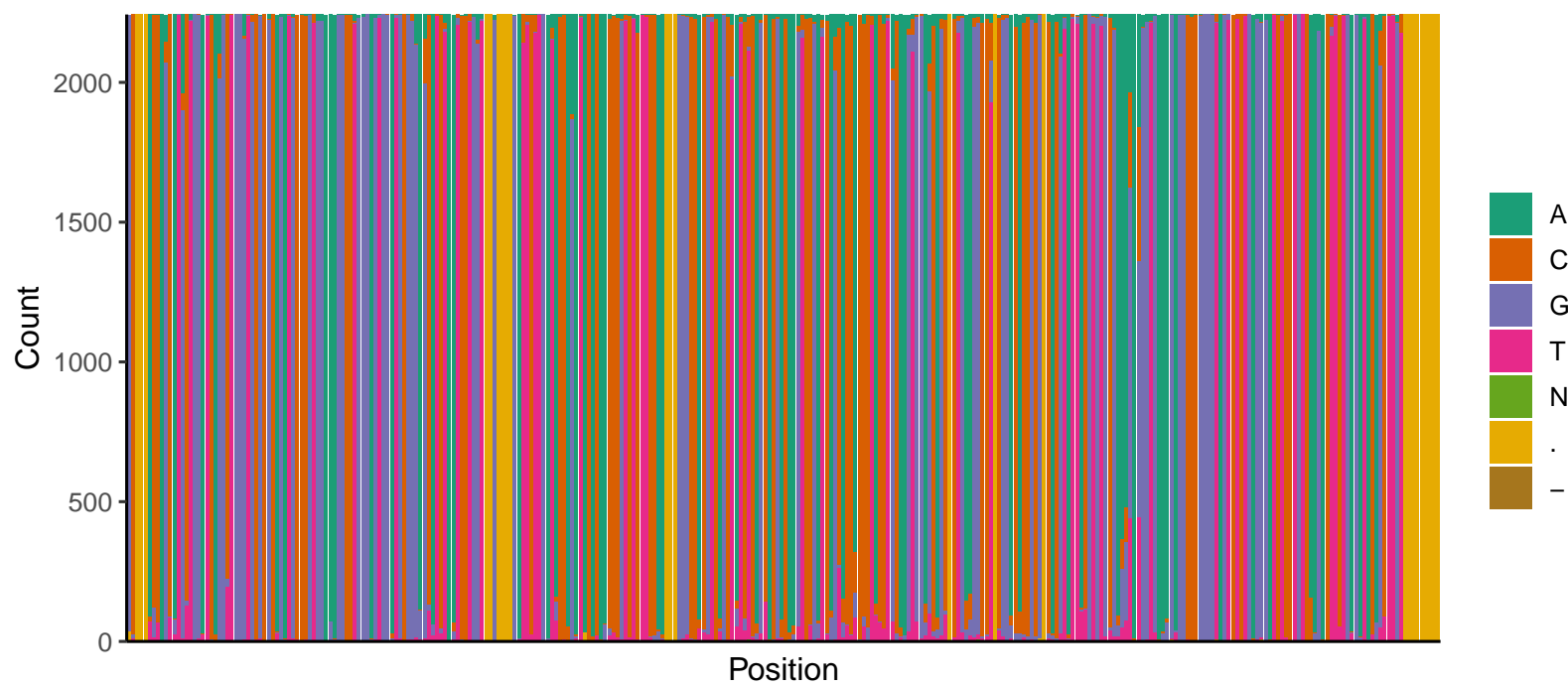
Gene IGHV4-81\*01\_C4G\_G21A\_A27T\_T255C



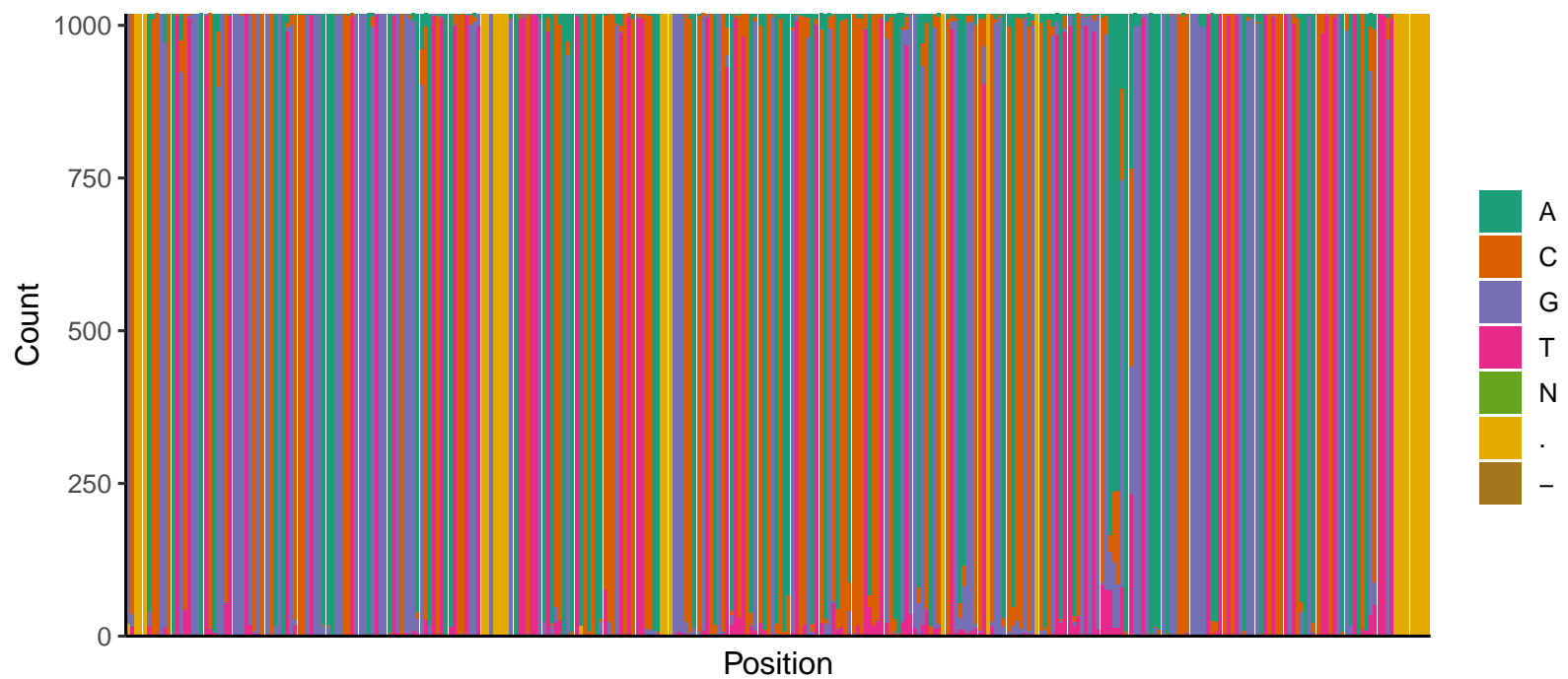
Gene IGHV5-20\*02\_A141G\_C312T



Gene IGHV5-43\*01\_A51G



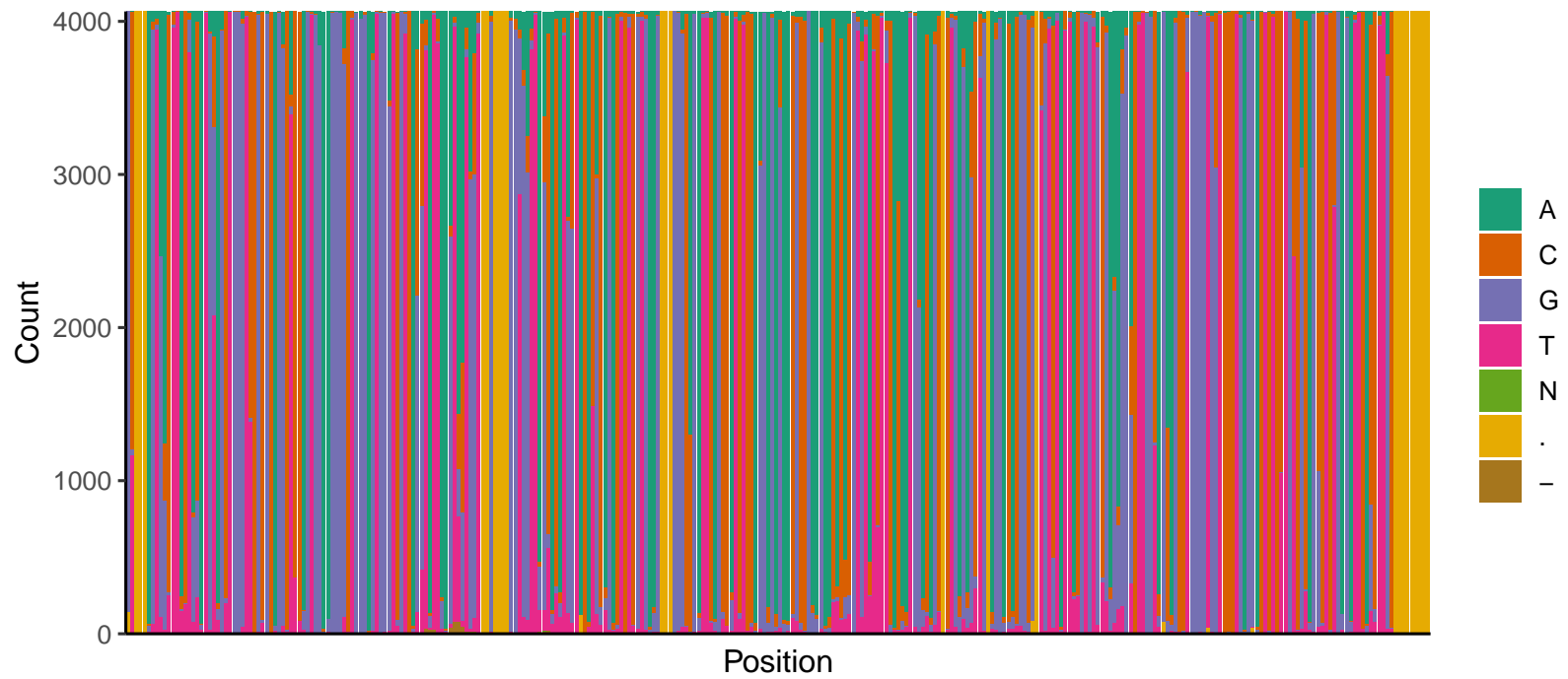
Gene IGHV5-43\*01\_A106G



Gene IGHV2-174\*02\_G175A\_G195A\_C196T\_G197A\_T210G\_A289G

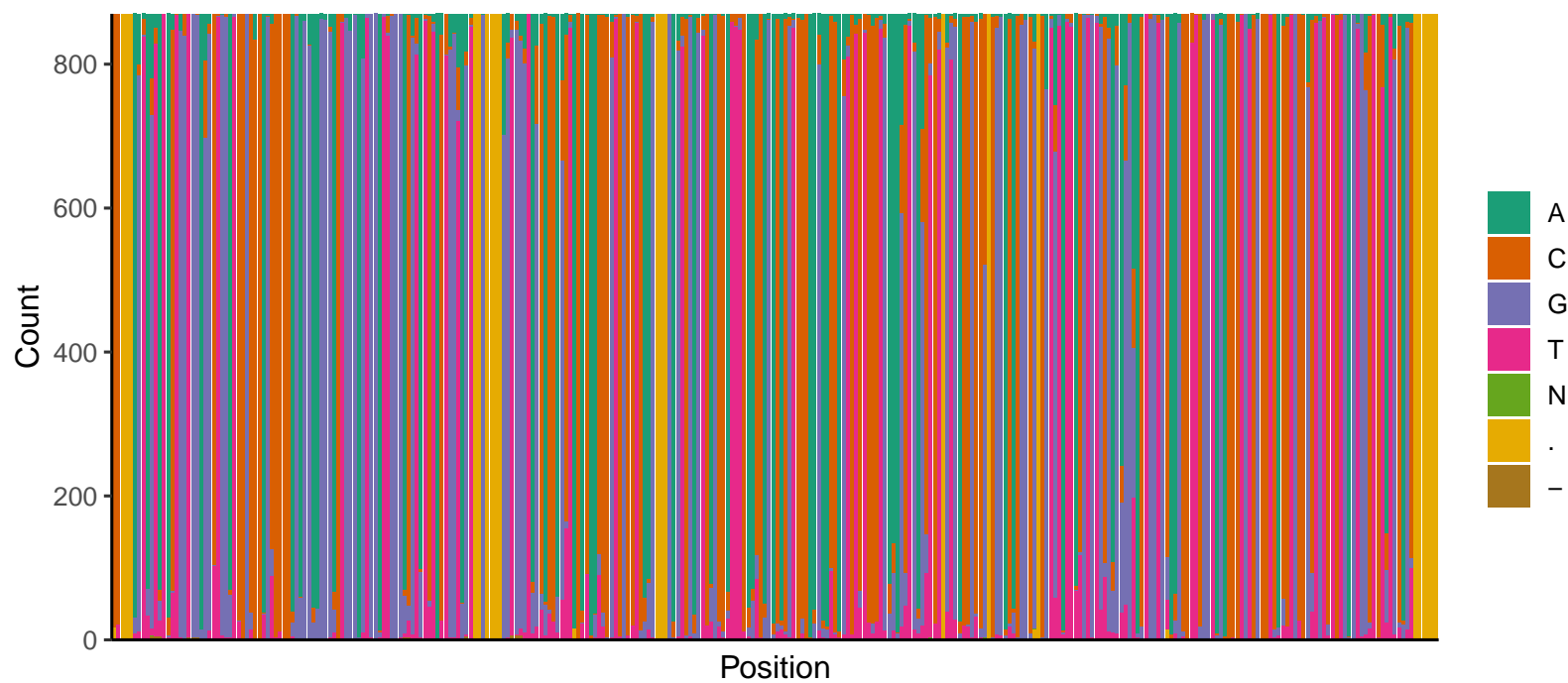


Gene IGHV3-59\*01\_C69T\_C86G\_C118T\_T136C\_C163G\_A172T\_G175A\_G176C\_G197





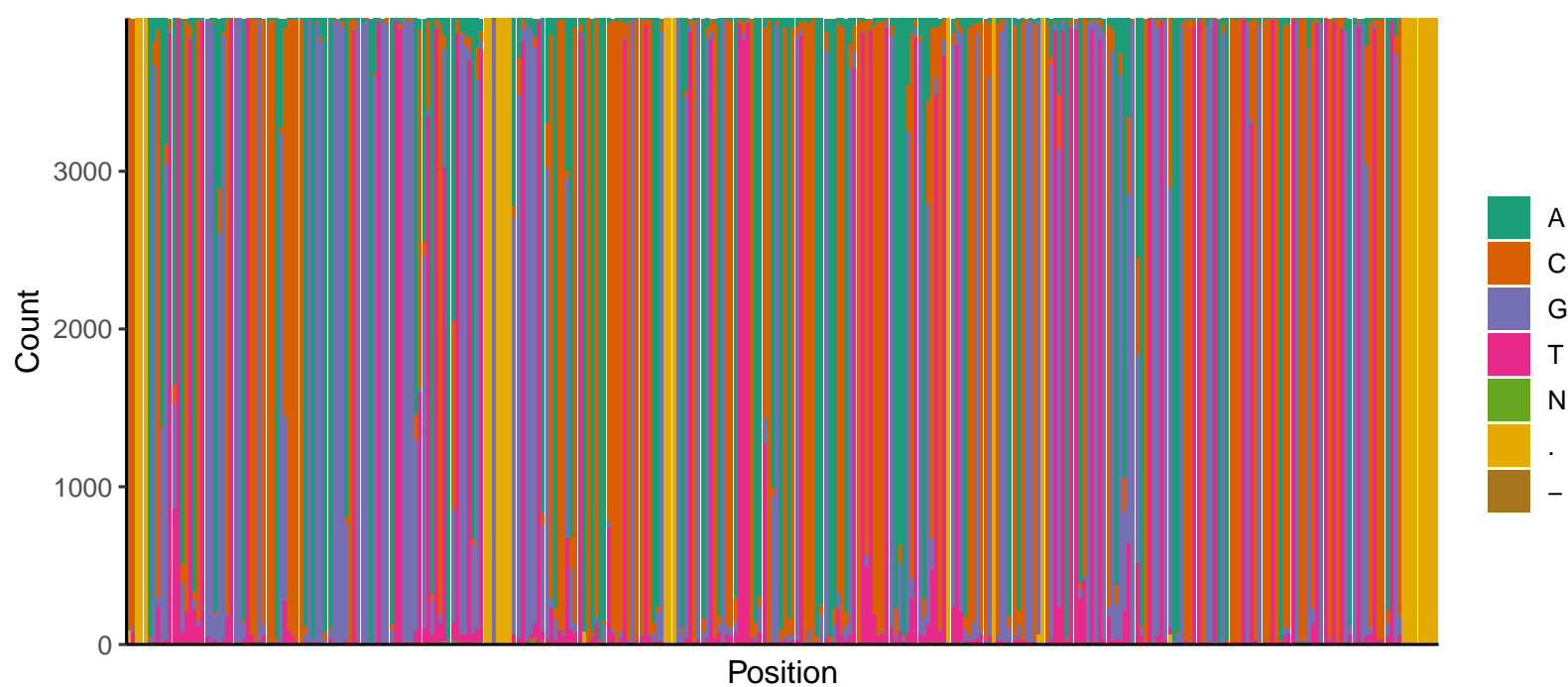
Gene IGHV4-57\*02\_C87T\_G199T\_C207G\_A239C\_T255C



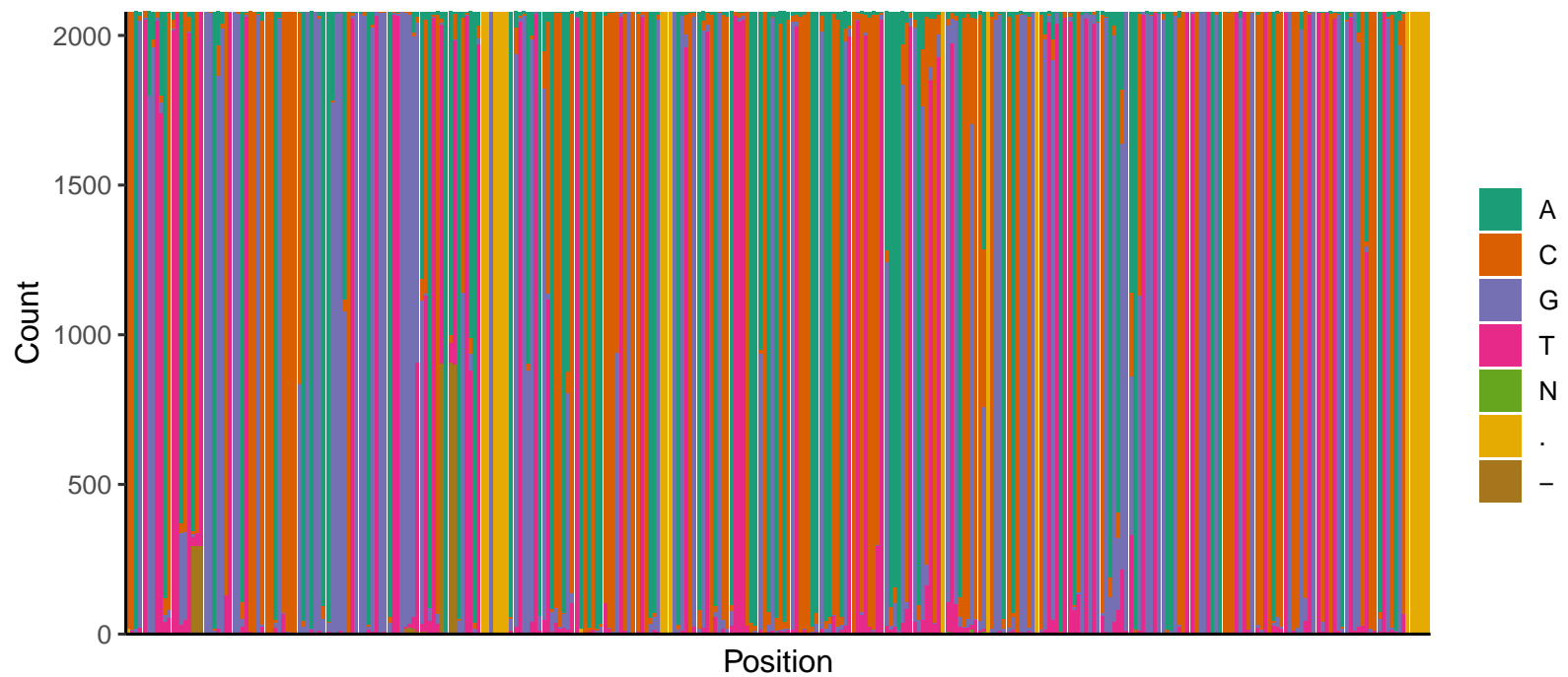
Gene IGHV4-127\*01\_T189G\_A196T\_G246A



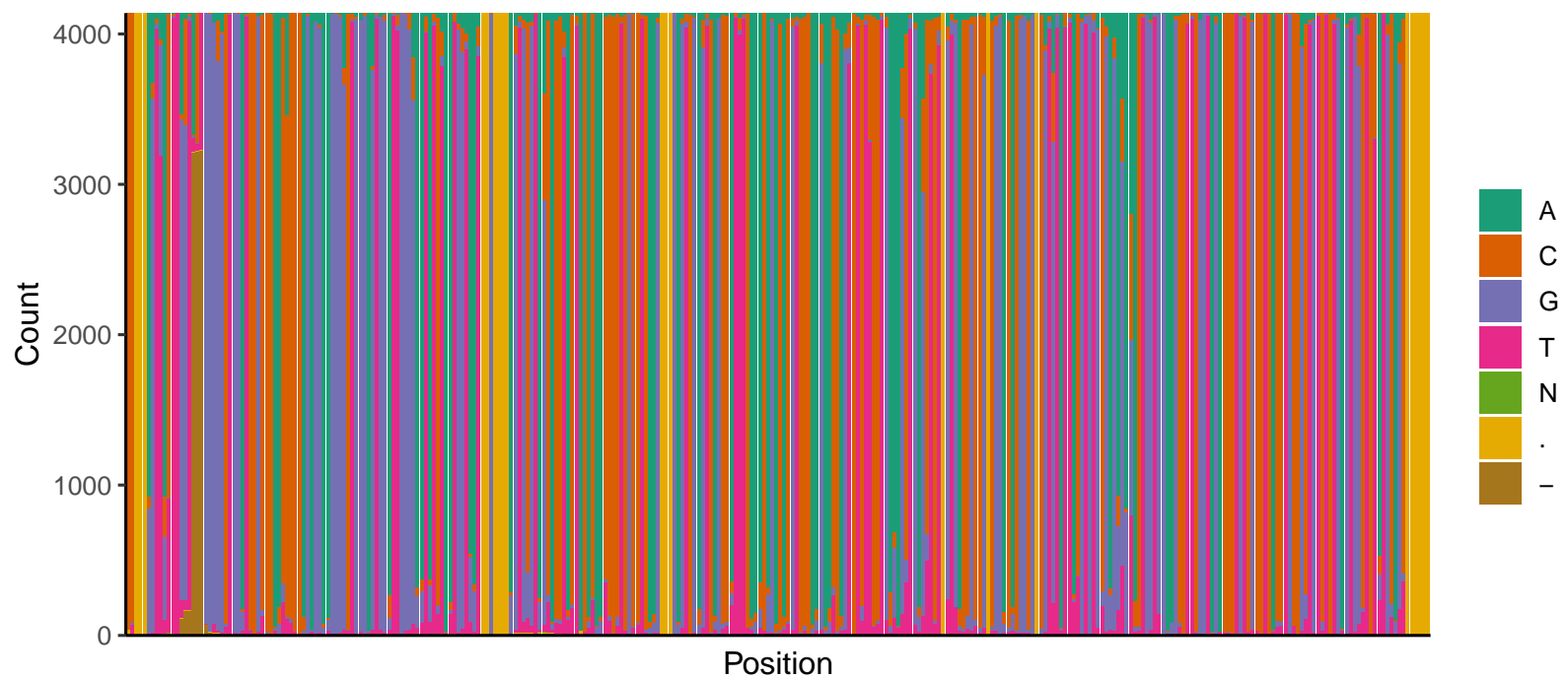
Gene IGHV4-160\*01\_C133G\_G147A



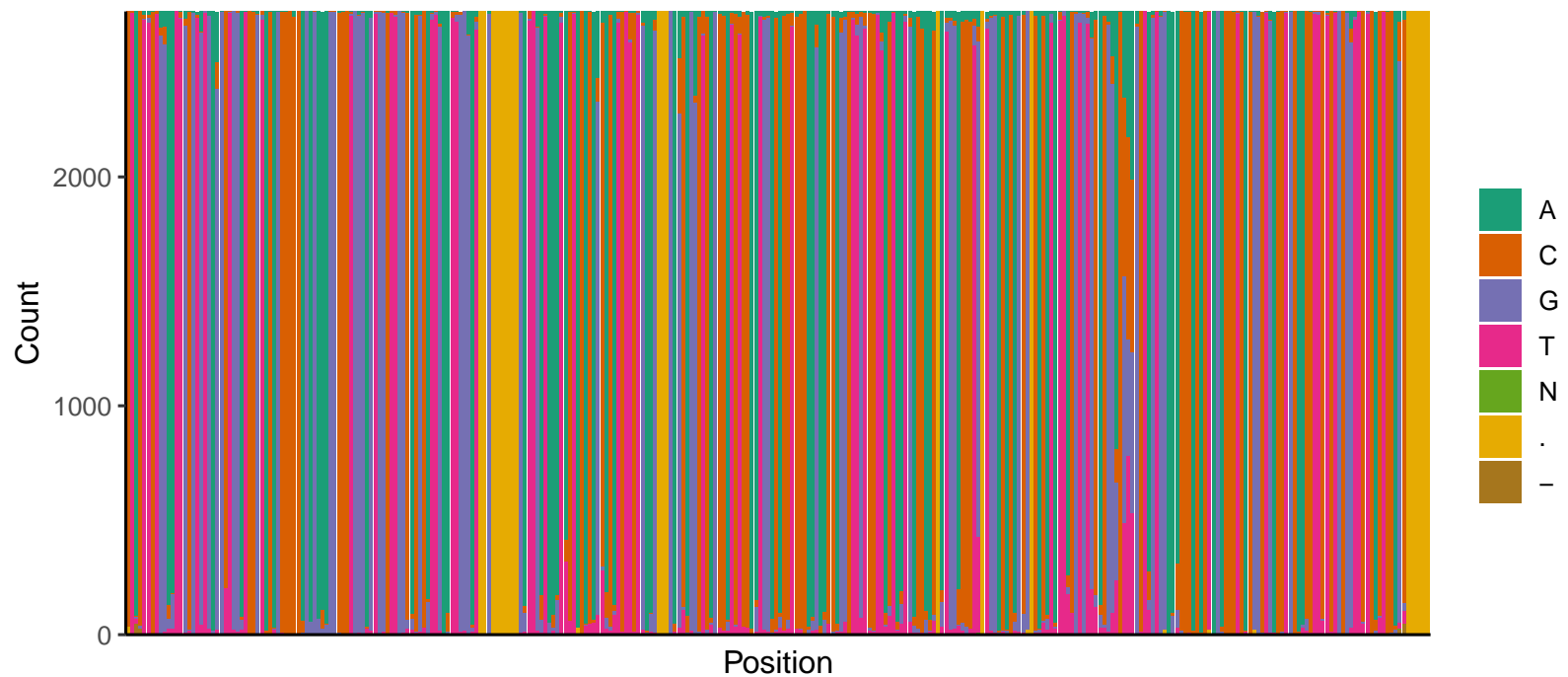
Gene IGHV4S13\*01\_T85A\_C137G\_G267A\_G289A



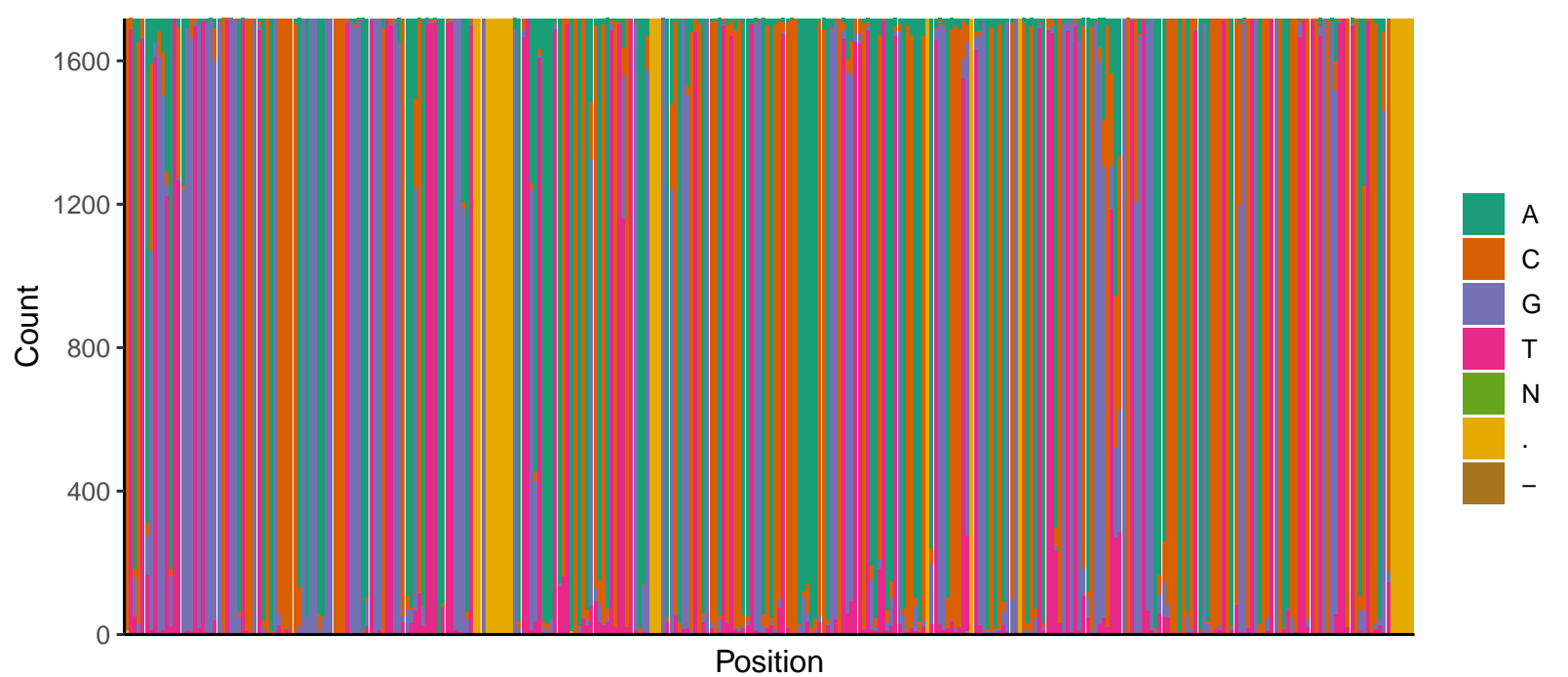
Gene IGHV4S9\*01\_G32A\_C87T\_G103A\_A104G\_A110G\_C111G\_A118G\_A119G\_C297G



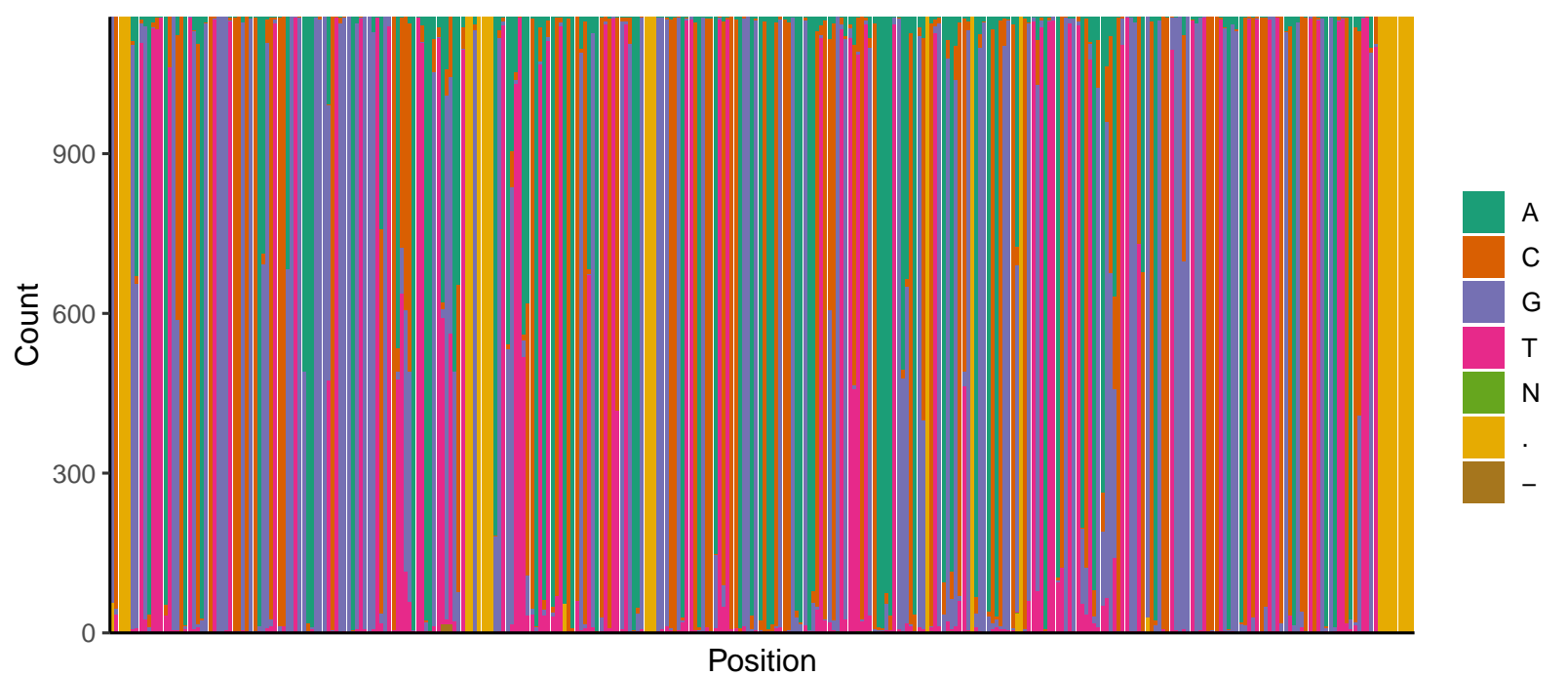
Gene IGHV2-10\*01\_C6G\_A23G\_G112C\_G118A\_A119G\_G121T\_G141A\_C205A\_G210G



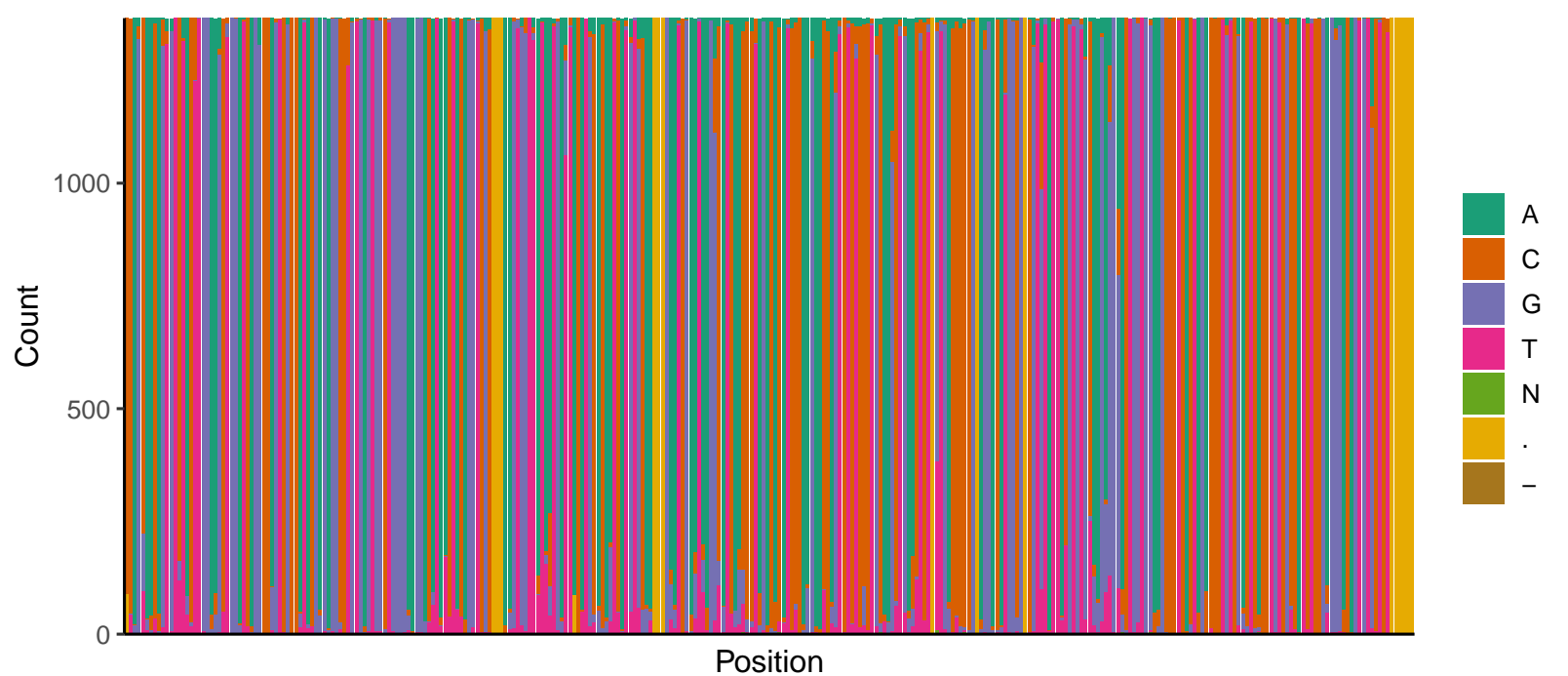
Gene IGHV2S1\*01\_G289T



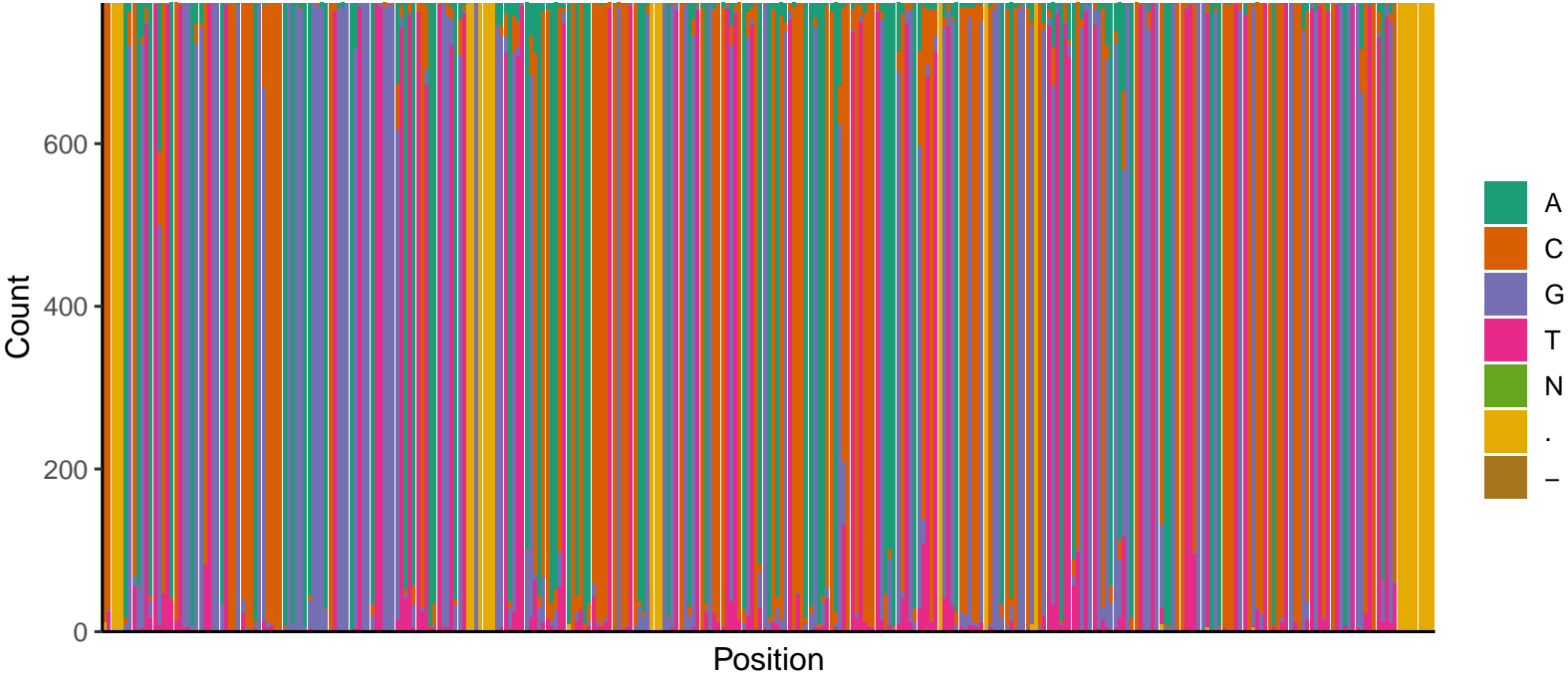
Gene IGHV3-134\*01\_G32C\_T38C\_A40C\_A48C\_A118C\_G119A\_G132A\_G175A\_G184A



Gene IGHV6-1\*01\_G280T



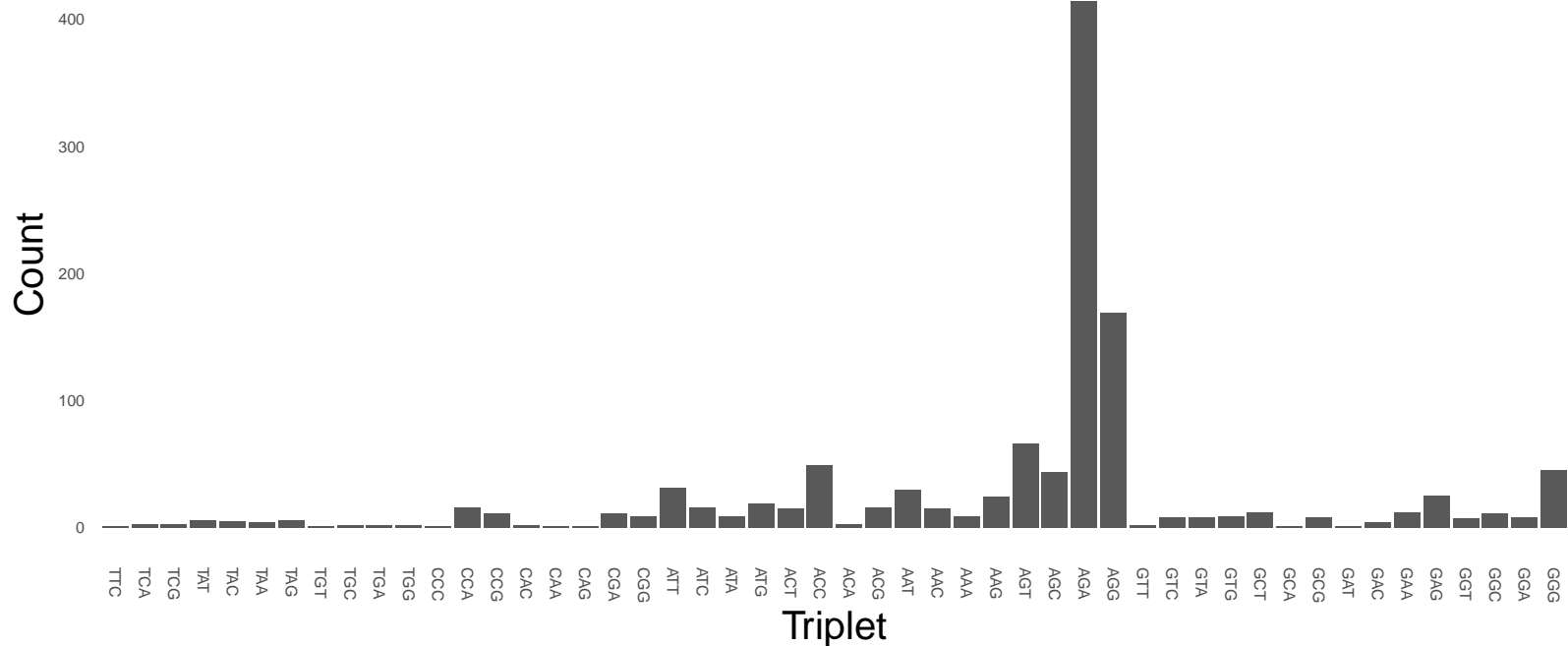
Gene IGHV4-169\*01\_T60C\_G61C



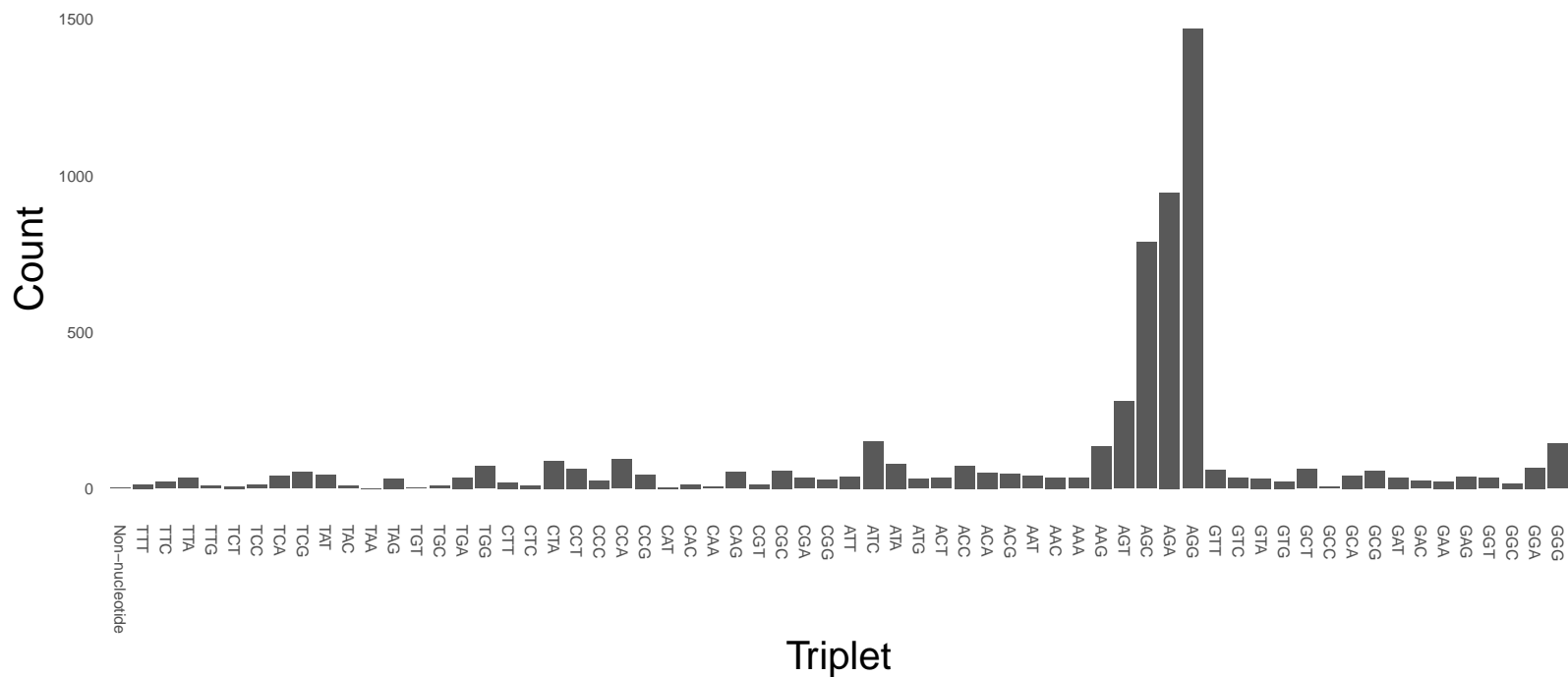
Gene IGHV4-169\*02\_C4G\_T60C\_G61C\_T87C



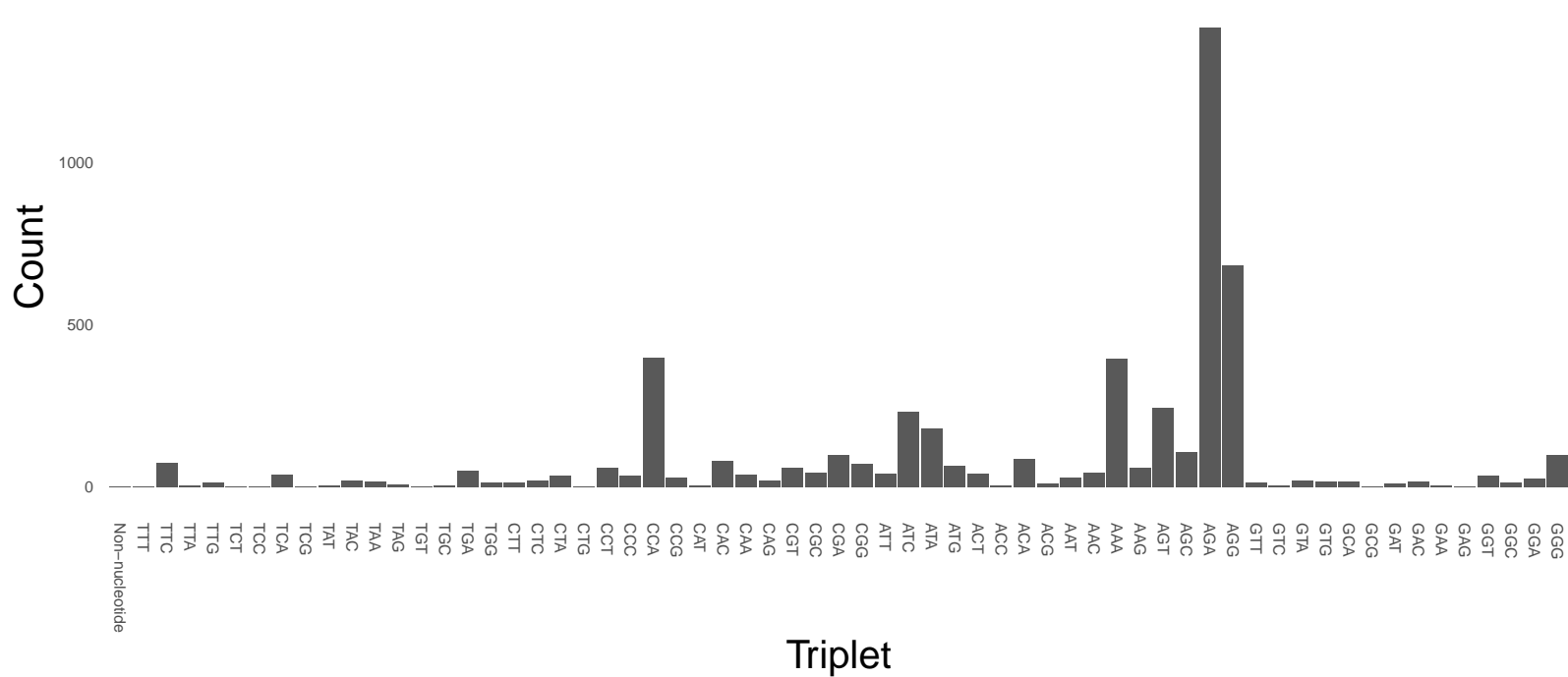
IGHV4-73\*01\_G147A\_T163A\_C168T\_T169G- Final 3 nucleotides as a triplet



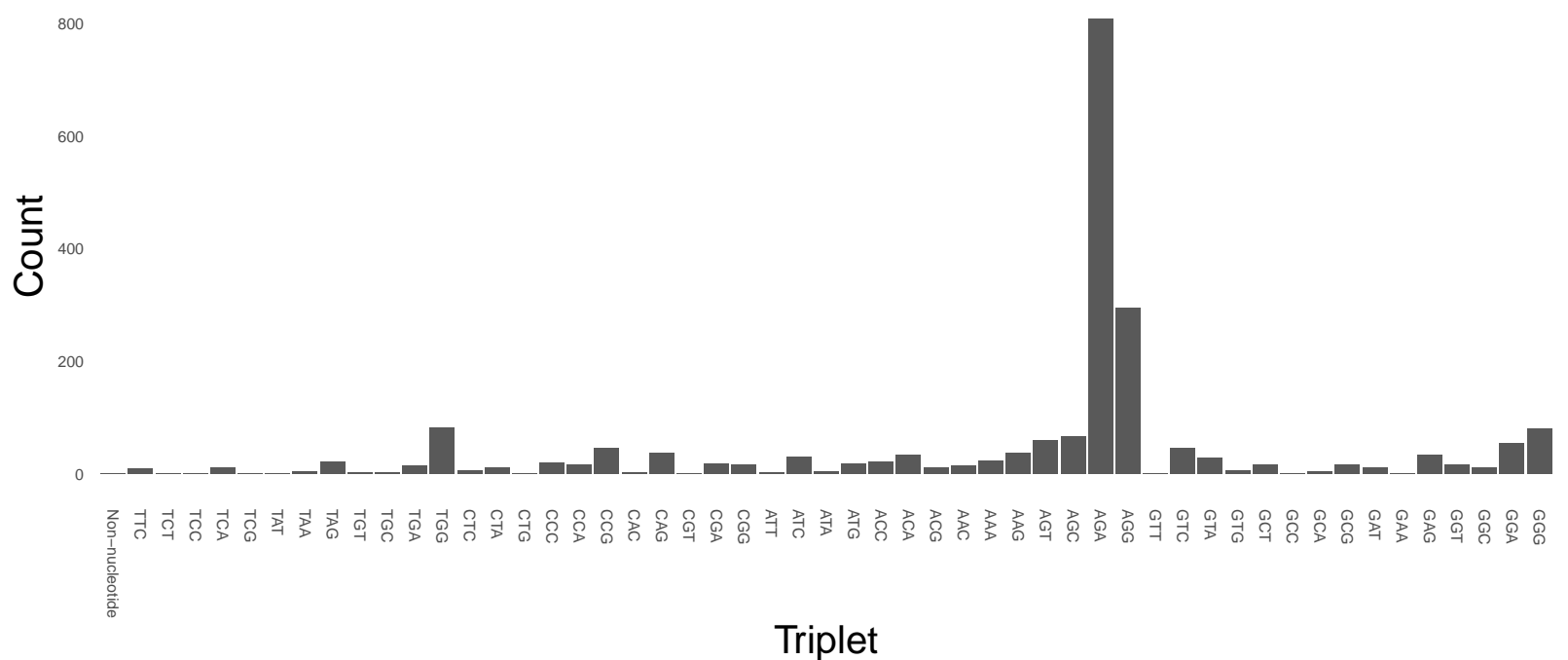
IGHV3-30\*01\_G174C\_A188G\_G189A\_C264T- Final 3 nucleotides as a triplet



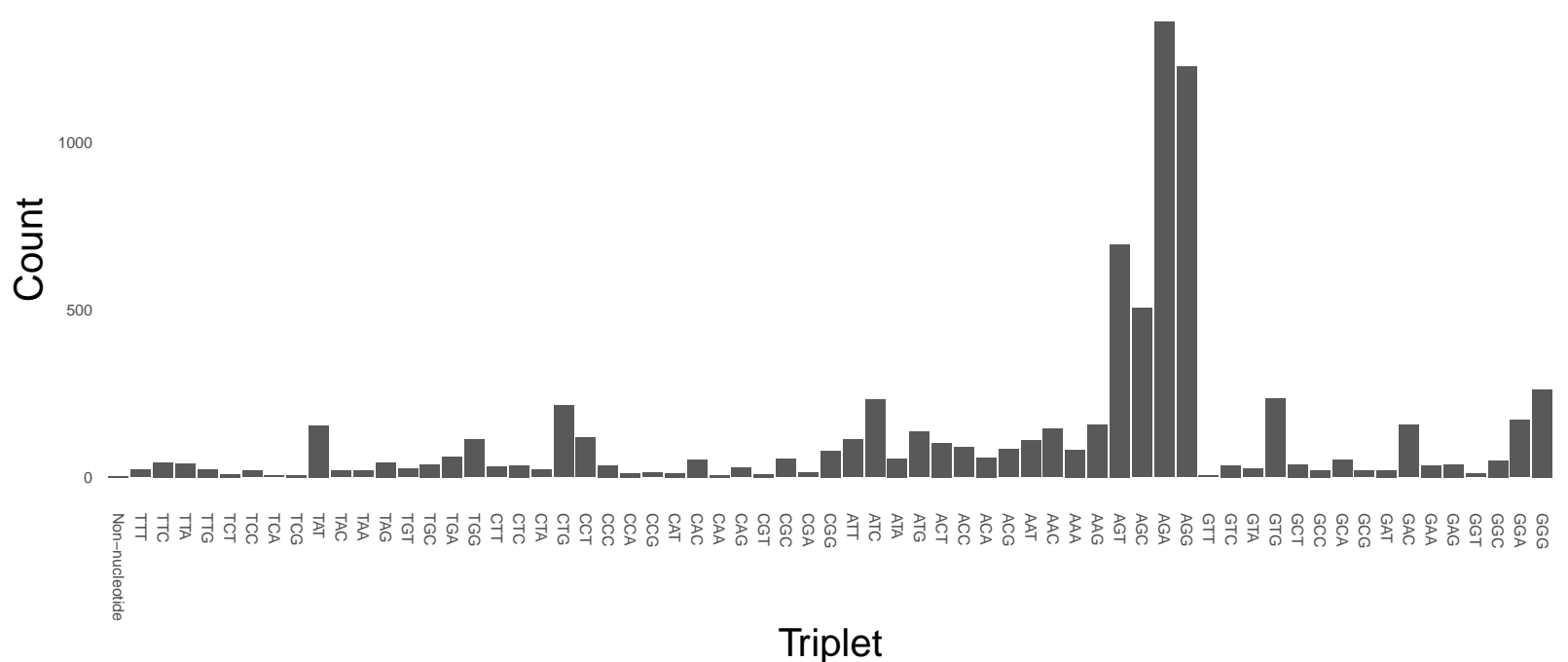
IGHV3-30\*02\_C141G\_C183T- Final 3 nucleotides as a triplet



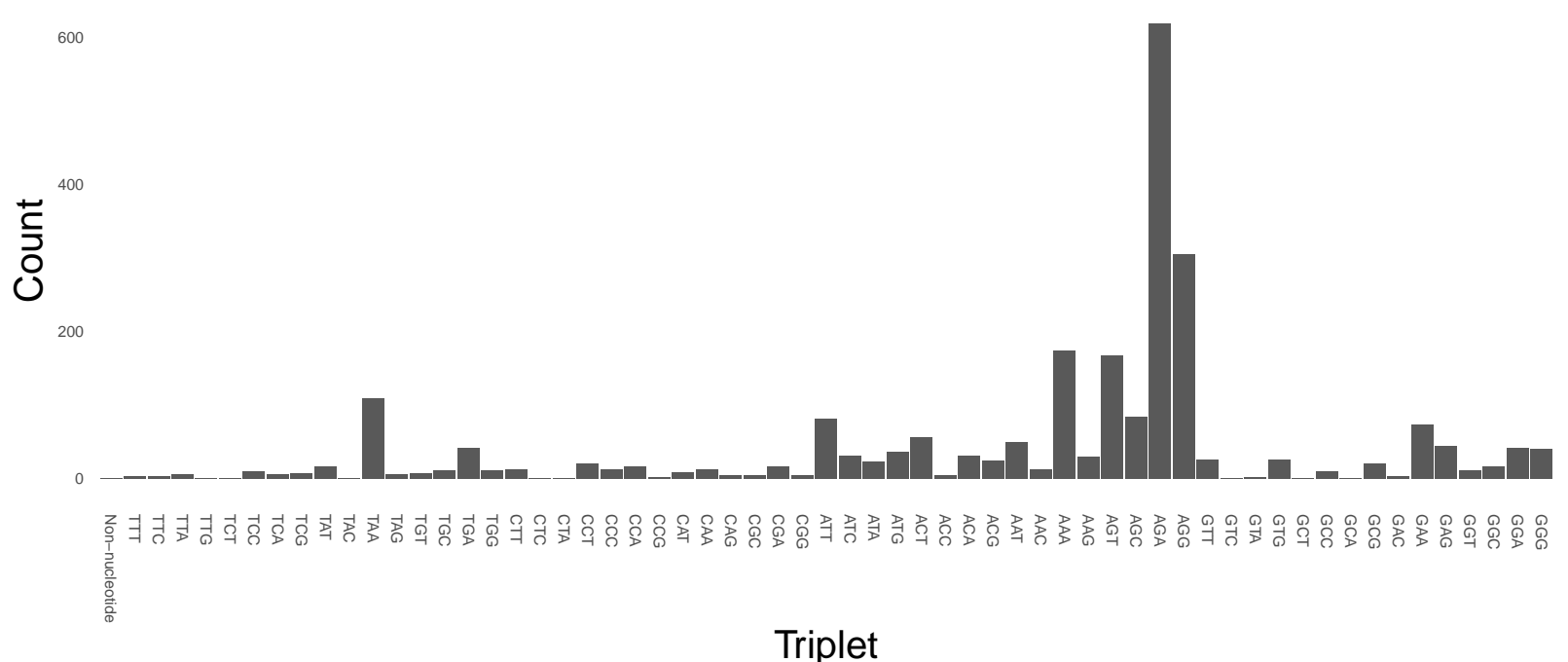
IGHV3–54\*02\_G170C– Final 3 nucleotides as a triplet



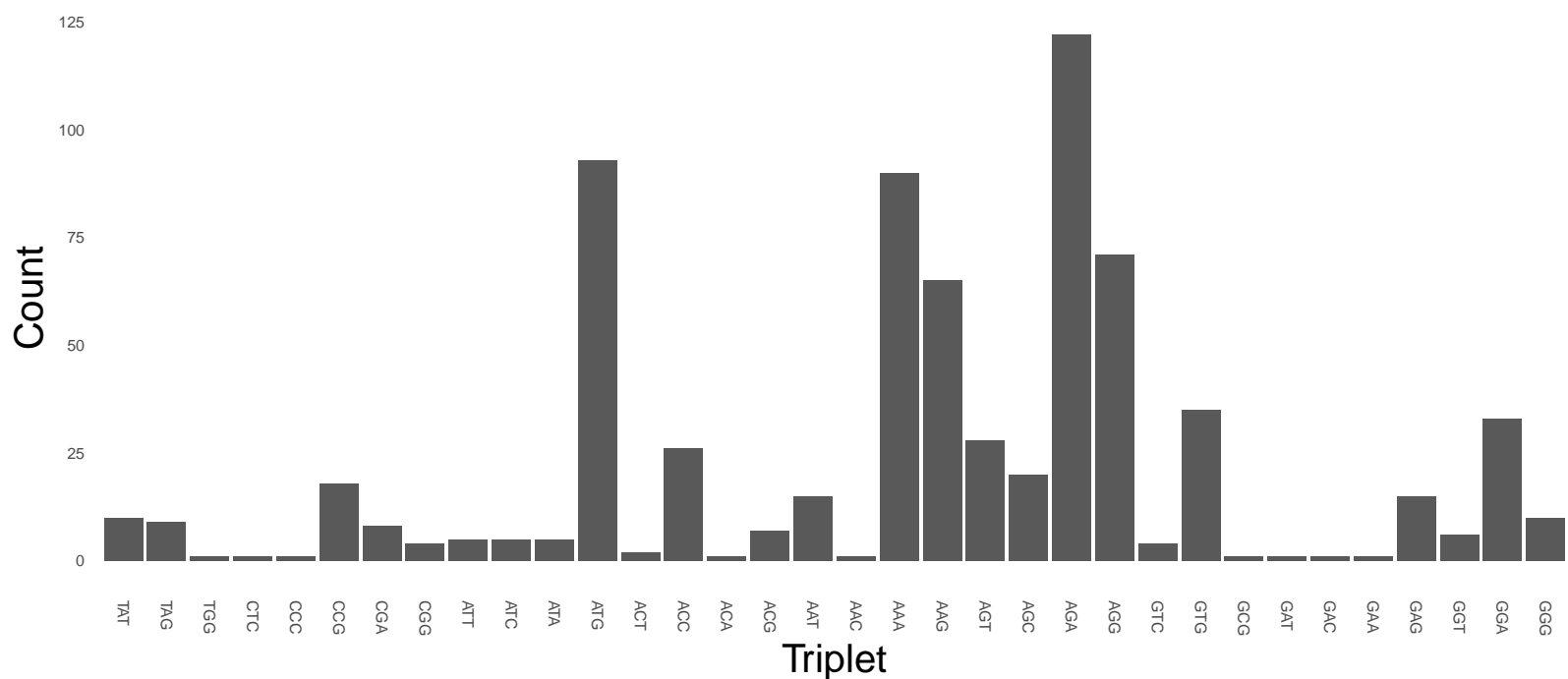
IGHV3–103\*01\_T19A\_G24A\_C27A\_C38T\_A39C\_A40C\_C120G\_G157A– Final 3 nucleotides as a triplet



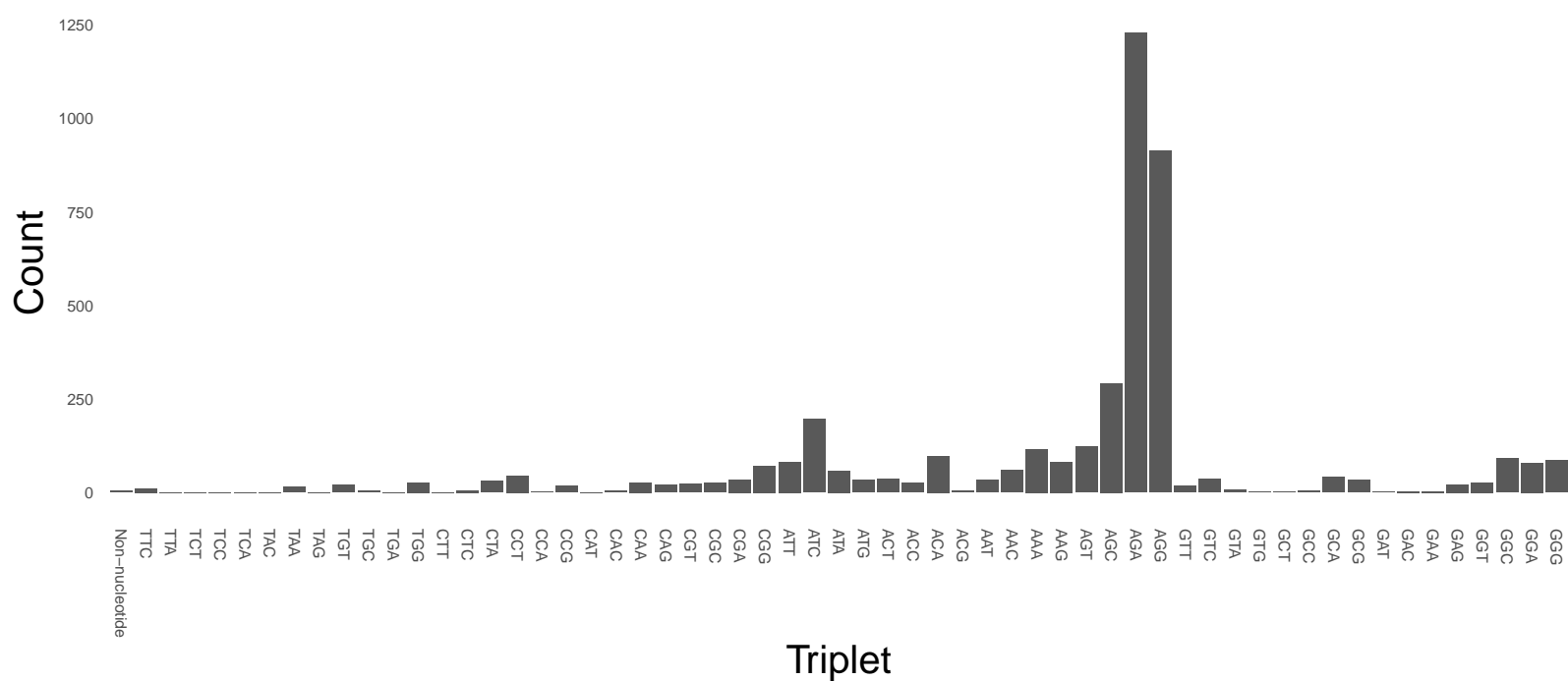
IGHV4–65\*02\_A163T\_G169A– Final 3 nucleotides as a triplet



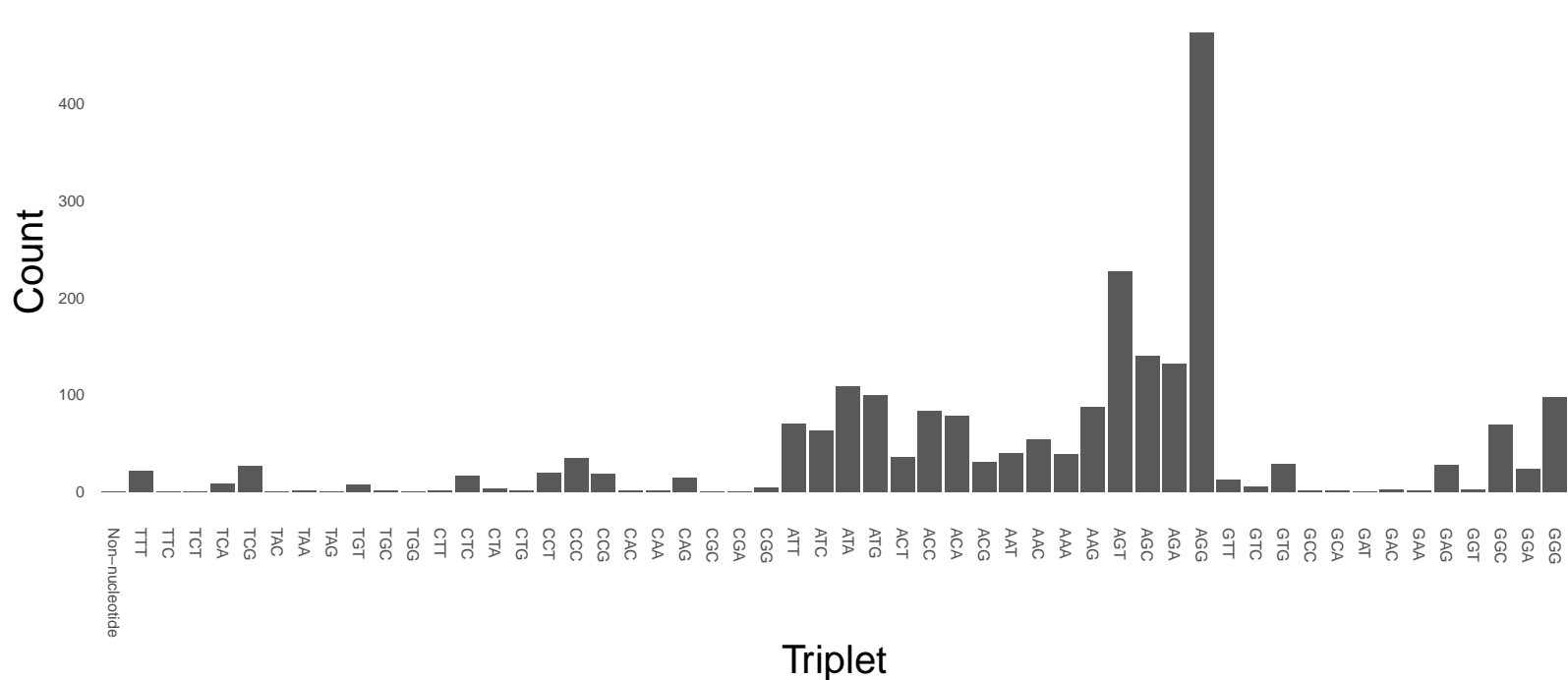
IGHV4–81\*01\_C4G\_G21A\_A27T\_T255C– Final 3 nucleotides as a triplet



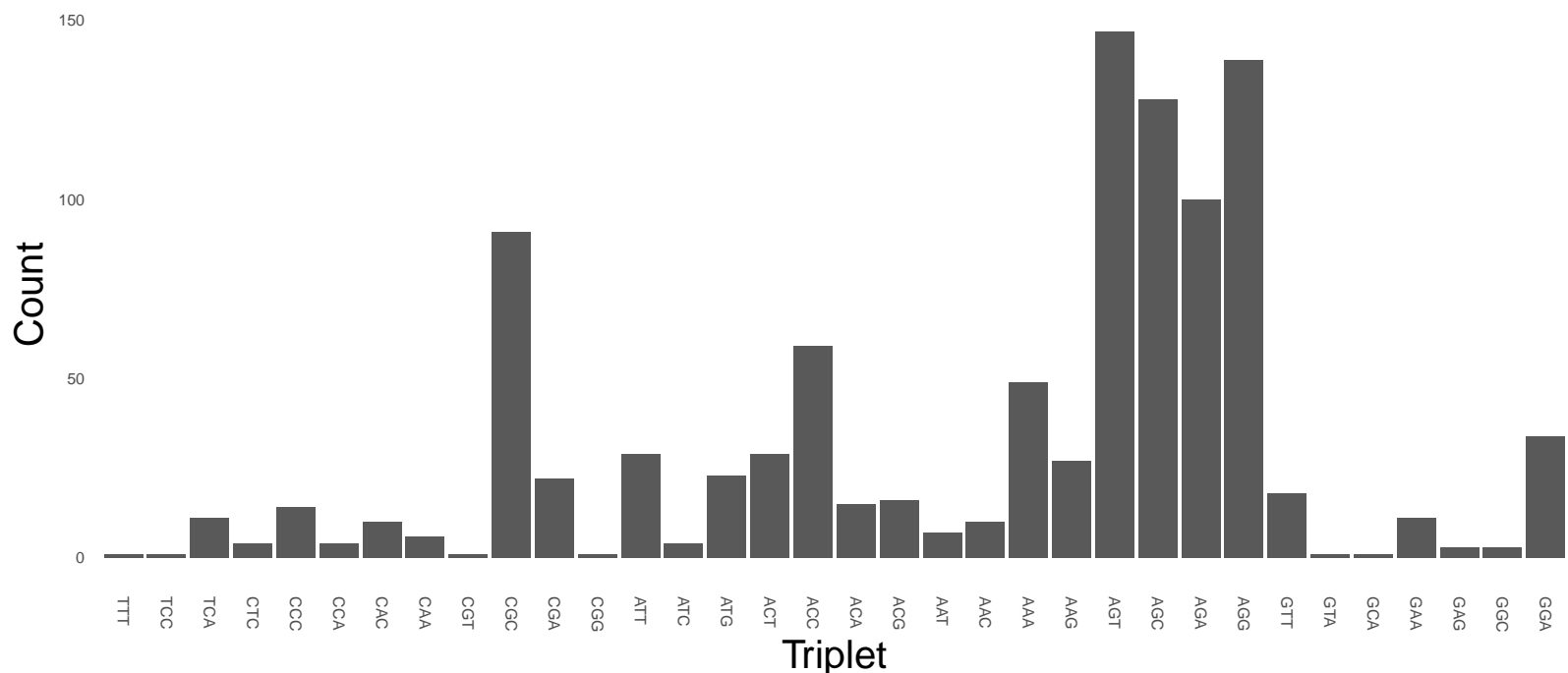
IGHV5–20\*02\_A141G\_C312T– Final 3 nucleotides as a triplet



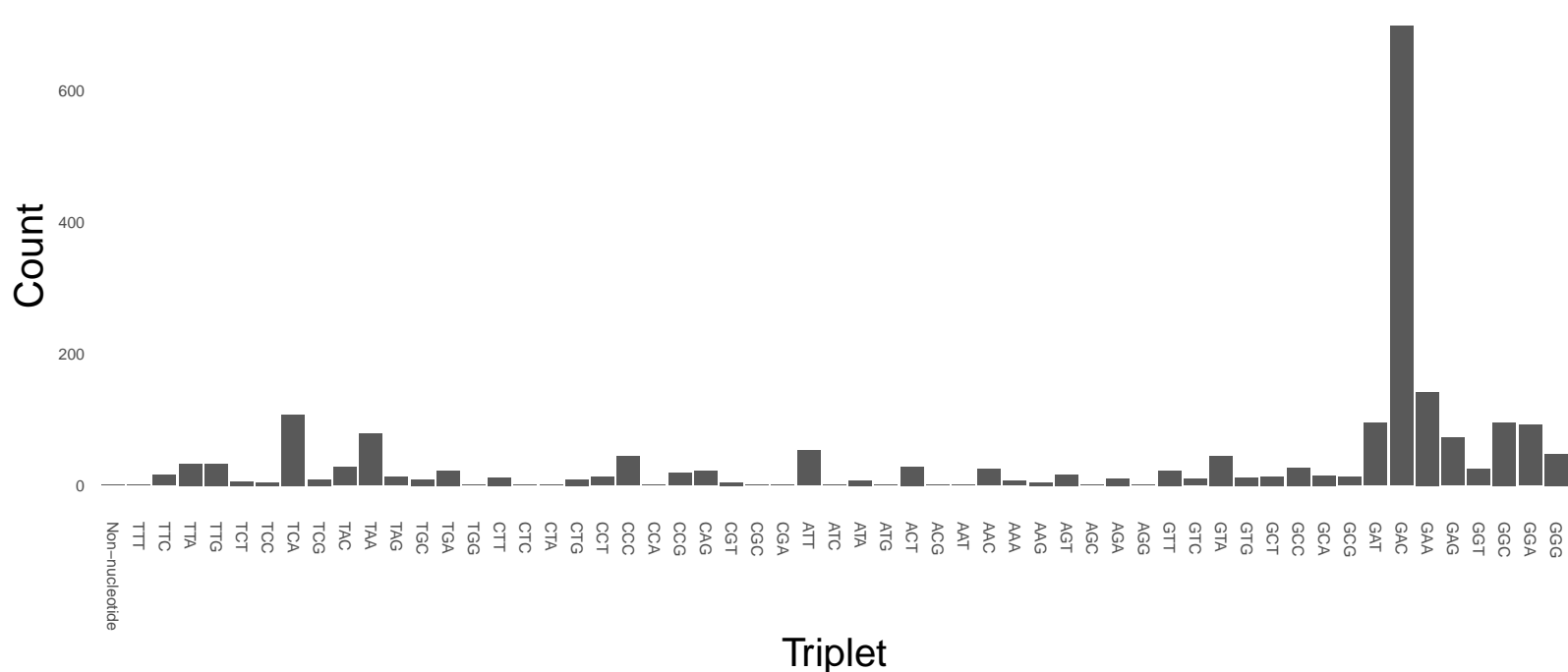
IGHV5–43\*01\_A51G– Final 3 nucleotides as a triplet



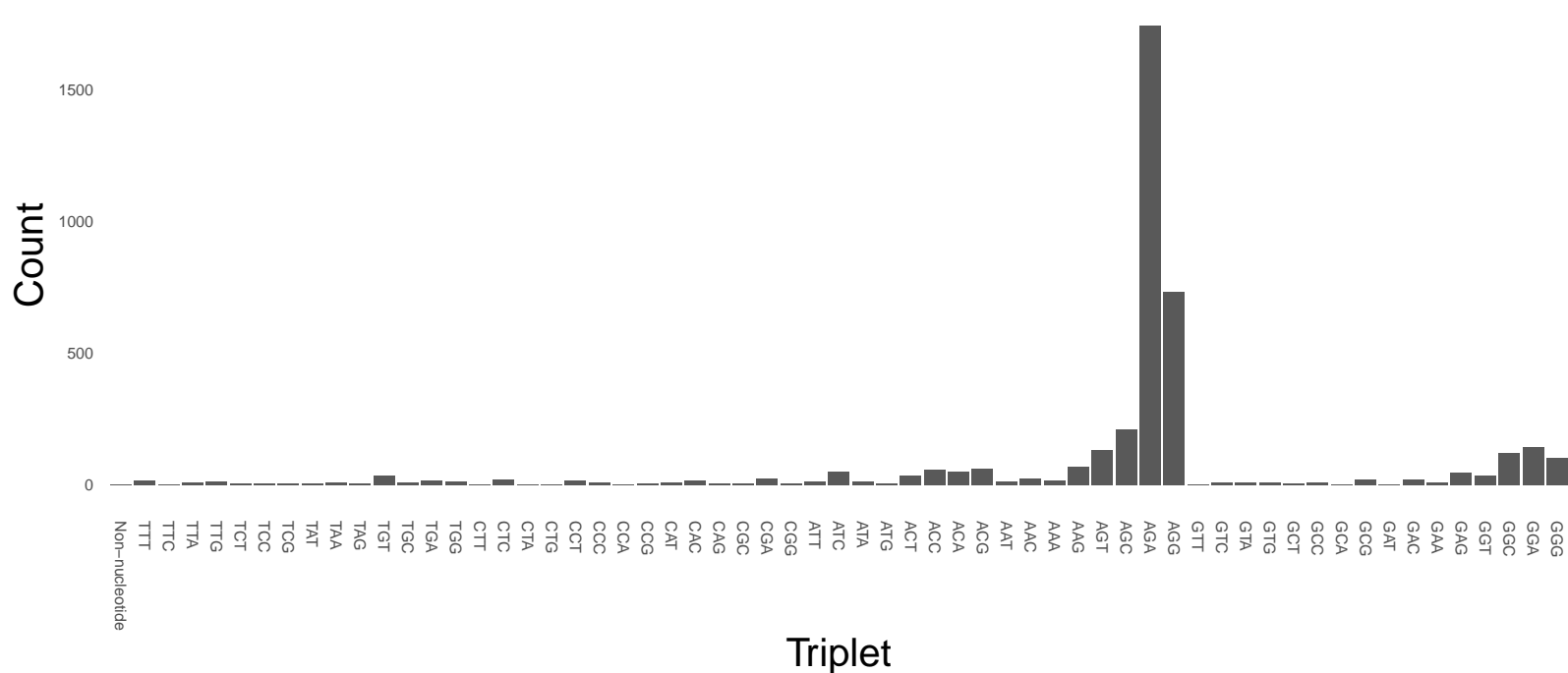
IGHV5-43\*01\_A106G- Final 3 nucleotides as a triplet



IGHV2-174\*02\_G175A\_G195A\_C196T\_G197A\_T210G\_A289G- Final 3 nucleotides as a triplet

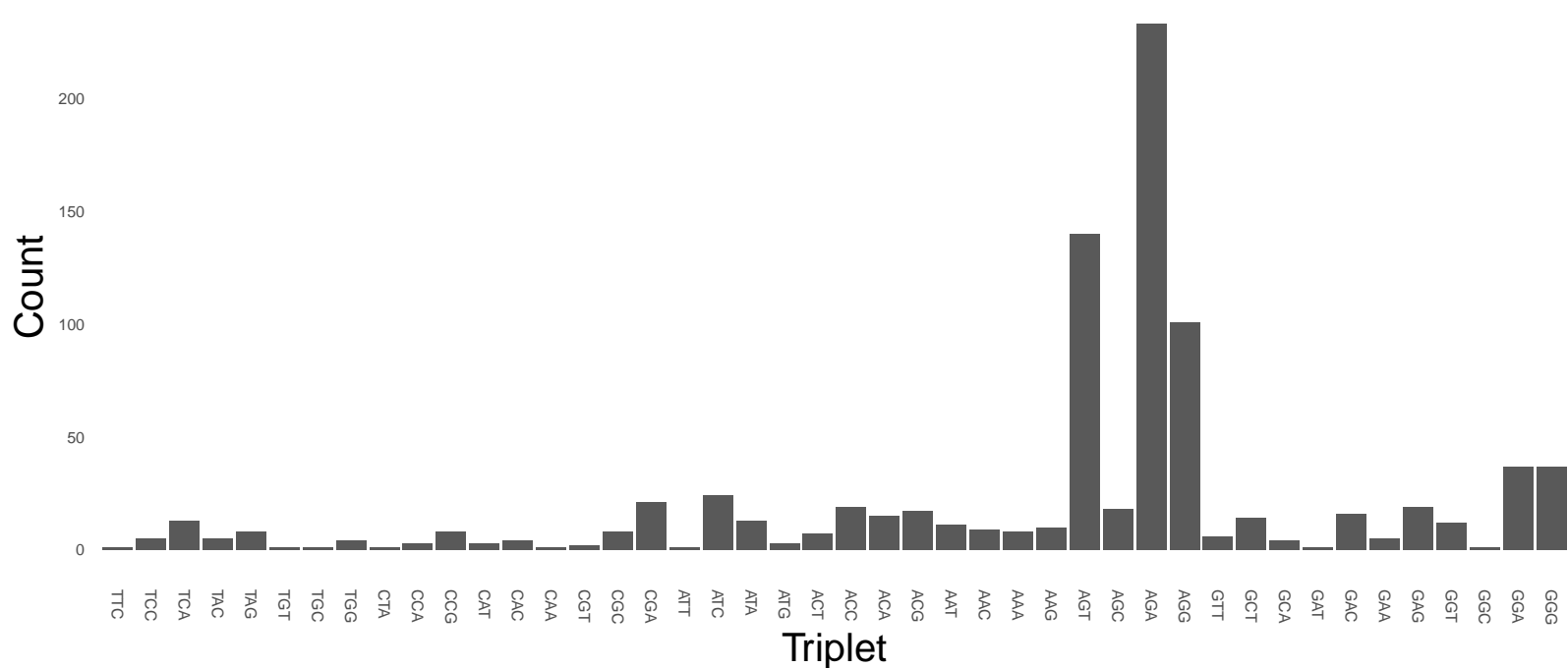


IGHV3-59\*01\_C69T\_C86G\_C118T\_T136C\_C163G\_A172T\_G175A\_G176C\_G197A\_G198C\_C2

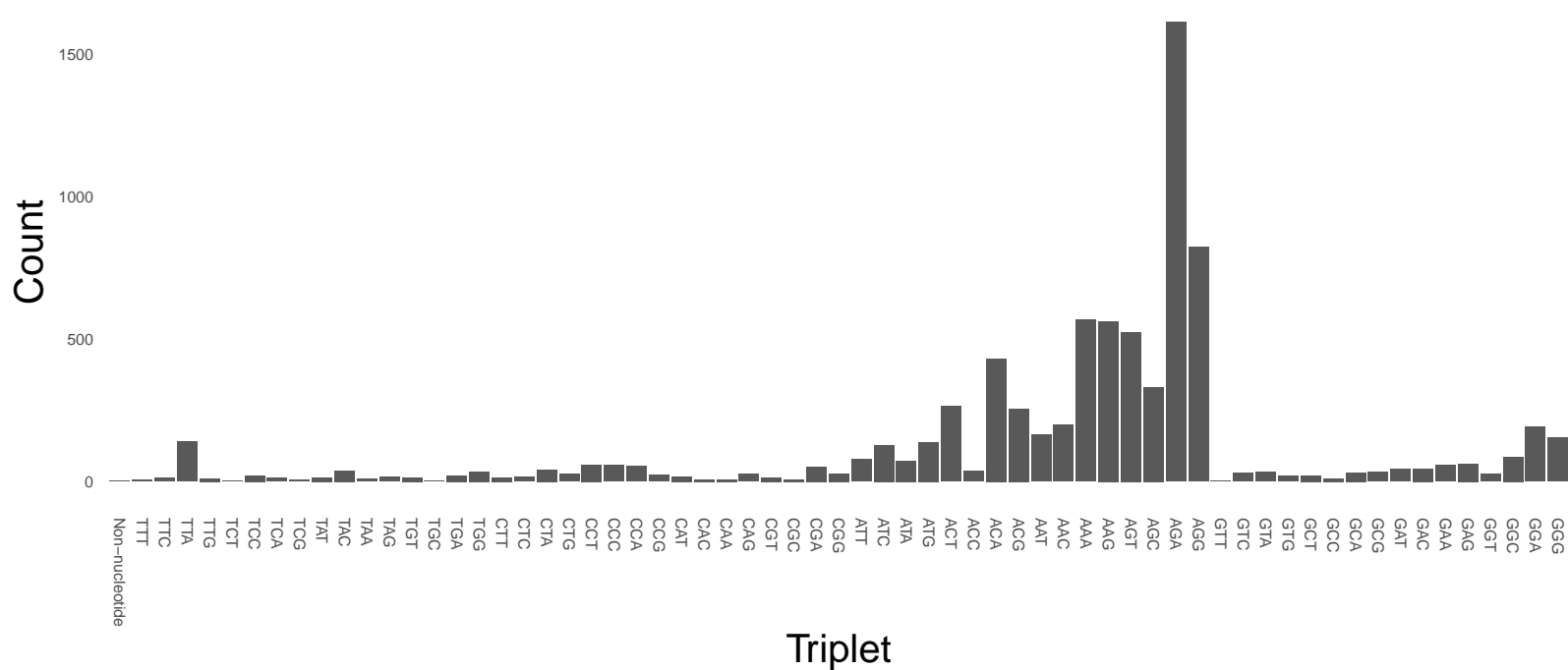




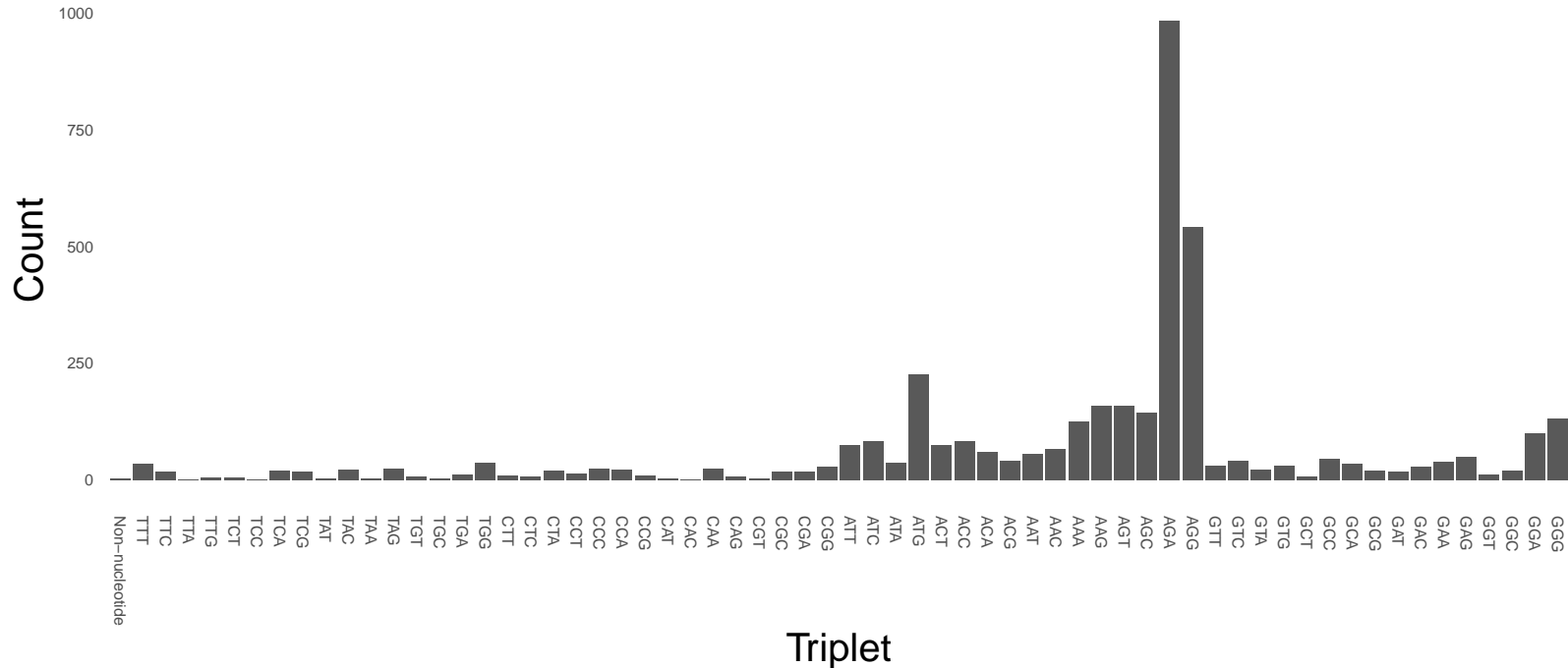
IGHV4-57\*02\_C87T\_G199T\_C207G\_A239C\_T255C- Final 3 nucleotides as a triplet



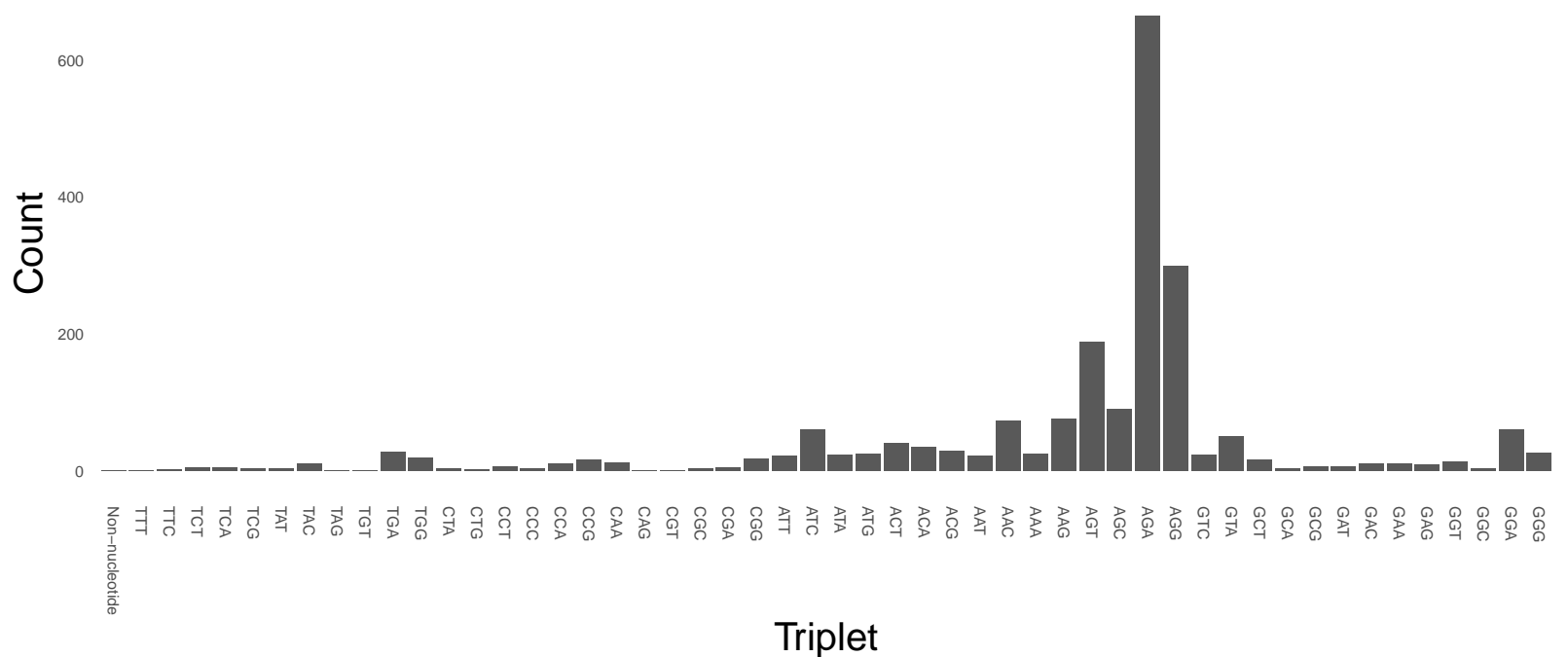
IGHV4-127\*01\_T189G\_A196T\_G246A- Final 3 nucleotides as a triplet



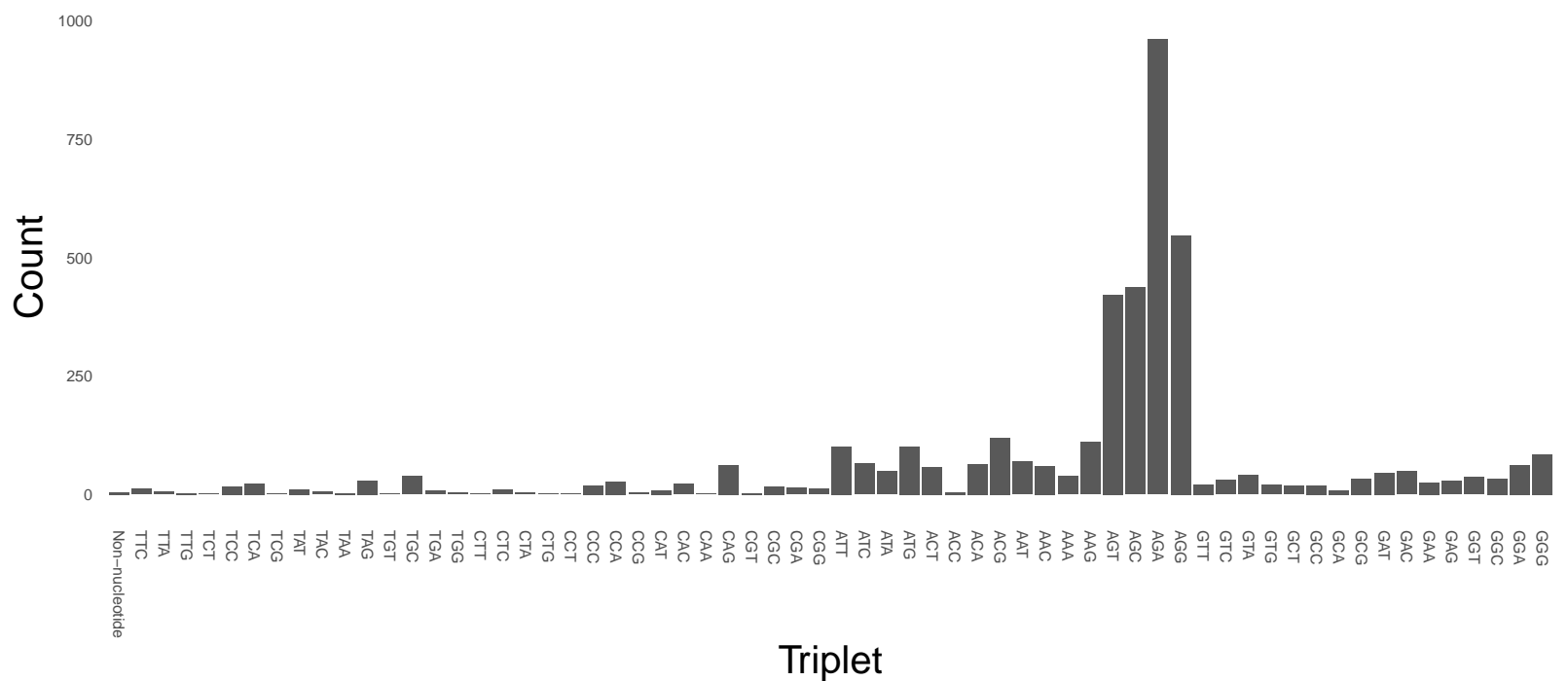
IGHV4-160\*01\_C133G\_G147A- Final 3 nucleotides as a triplet



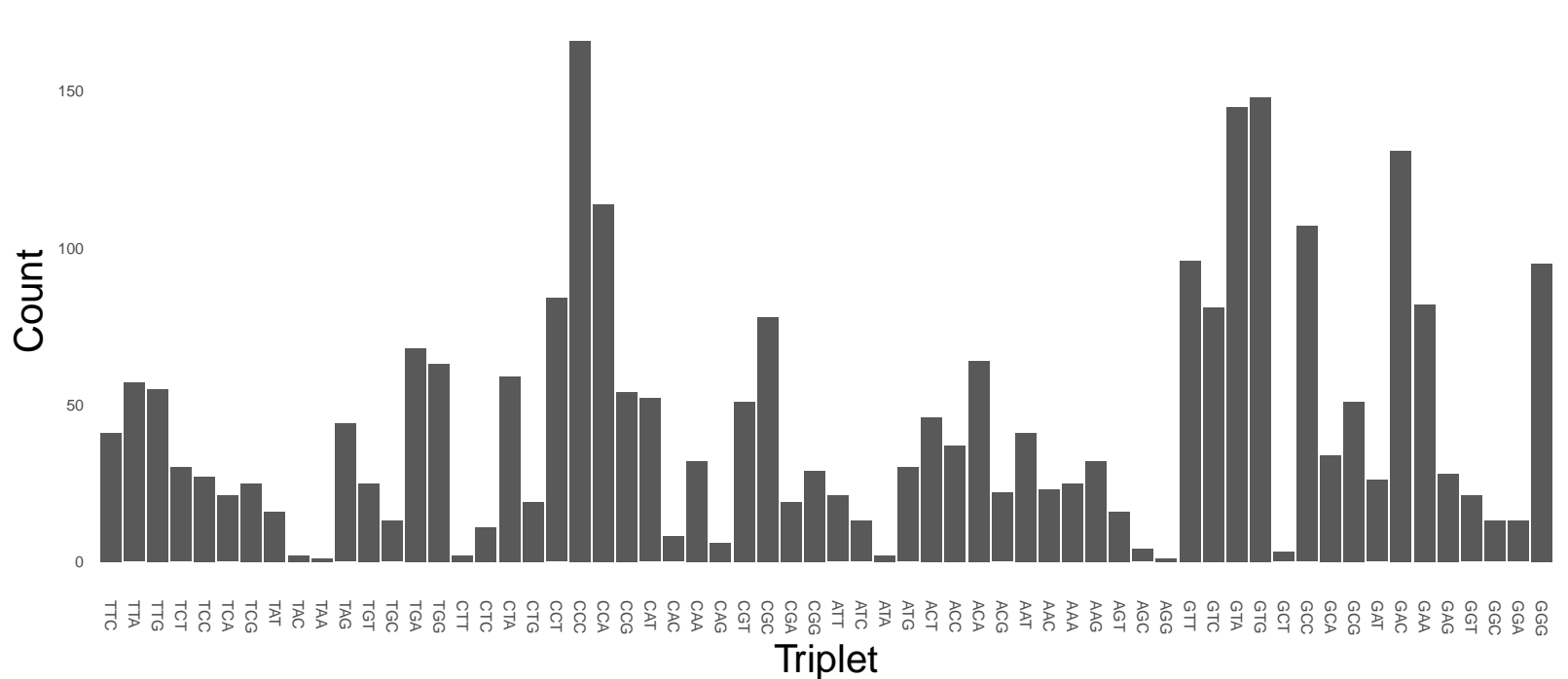
IGHV4S13\*01\_T85A\_C137G\_G267A\_G289A– Final 3 nucleotides as a triplet



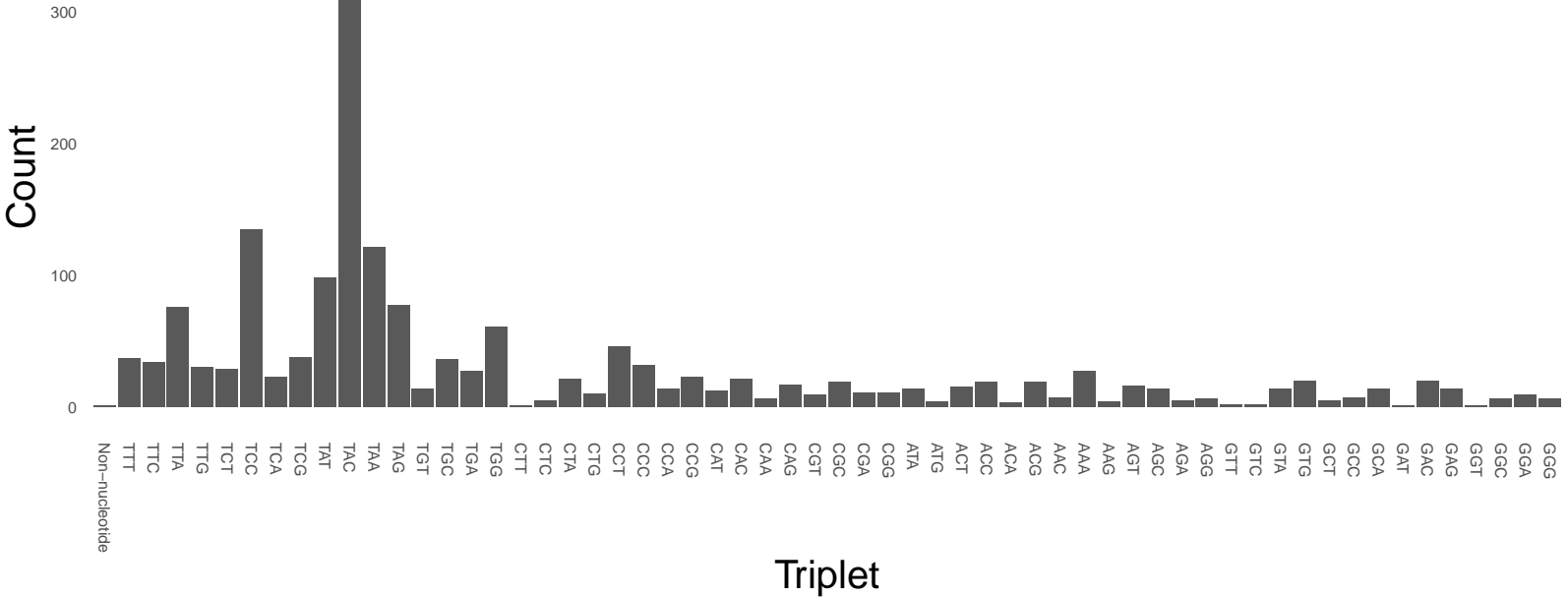
IGHV4S9\*01\_G32A\_C87T\_G103A\_A104G\_A110G\_C111G\_A118G\_A119G\_C297G– Final 3 nucleotides as a triplet



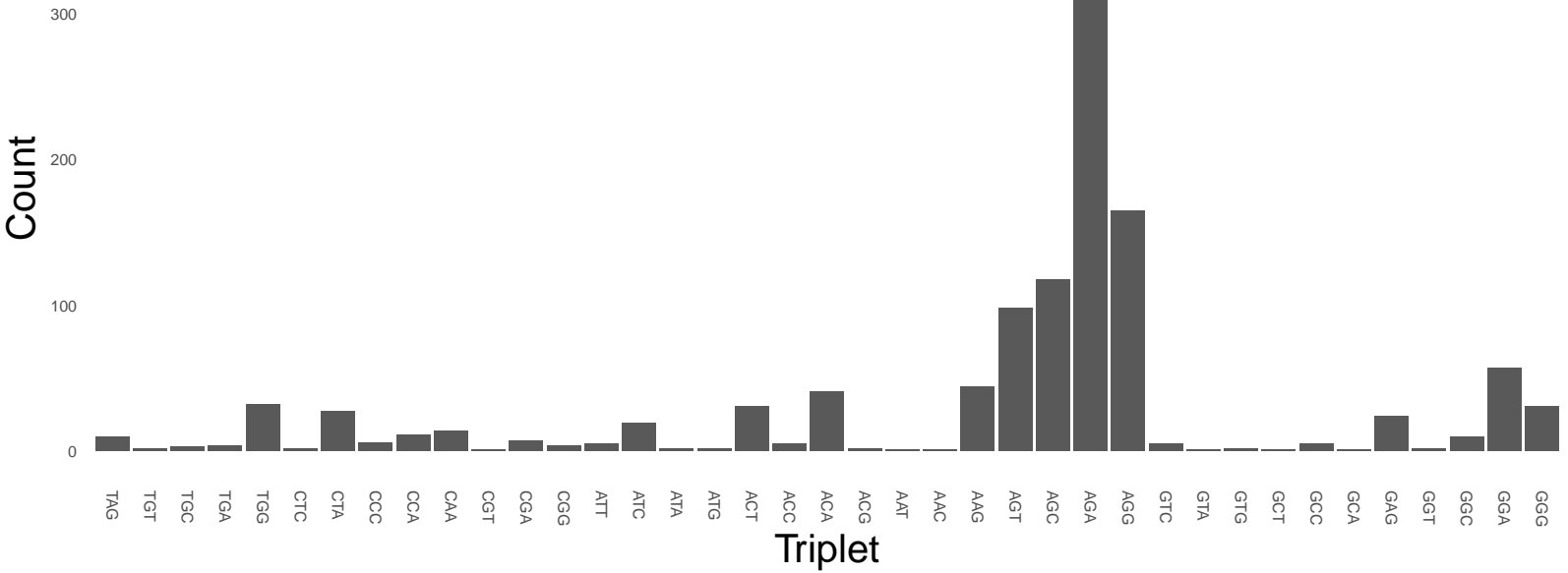
IGHV2-10\*01\_C6G\_A23G\_G112C\_G118A\_A119G\_G121T\_G141A\_C205A\_G210C– Final 3 nucleotides as a triplet



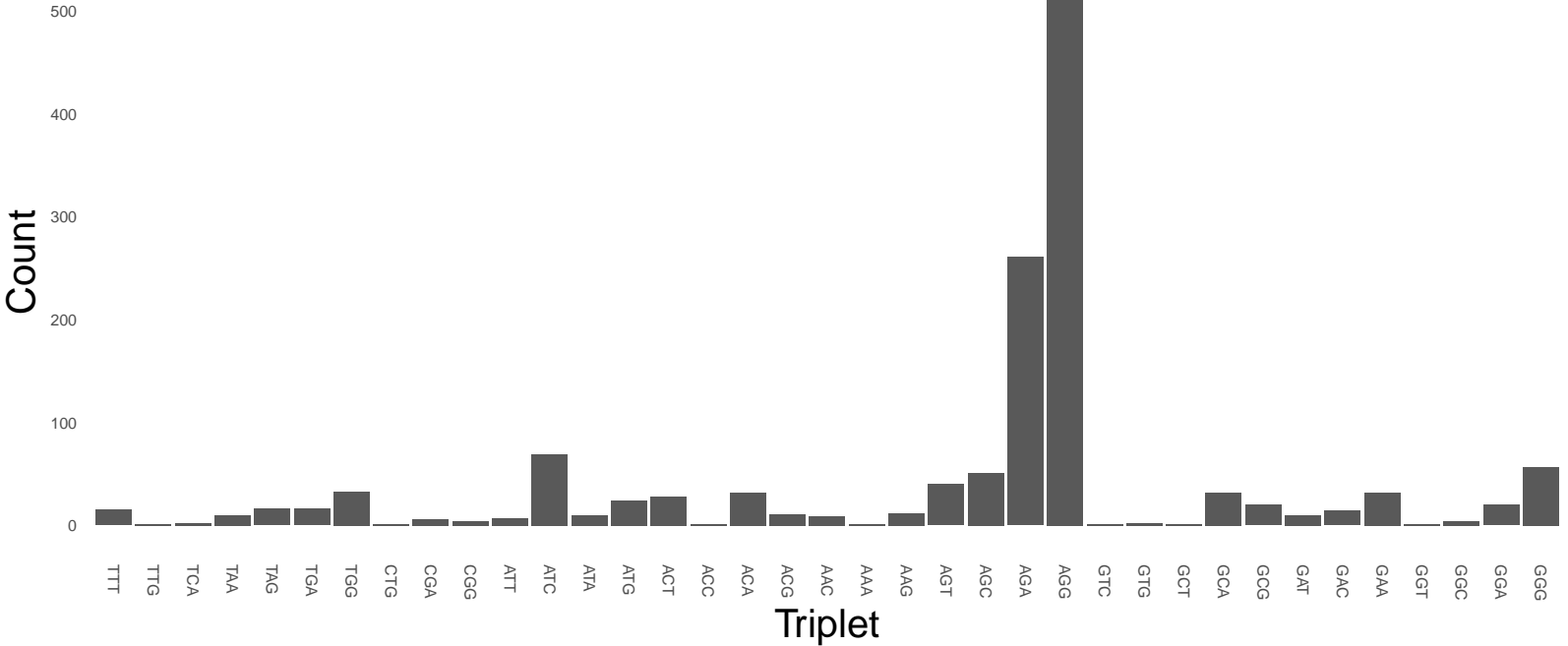
IGHV2S1\*01\_G289T– Final 3 nucleotides as a triplet



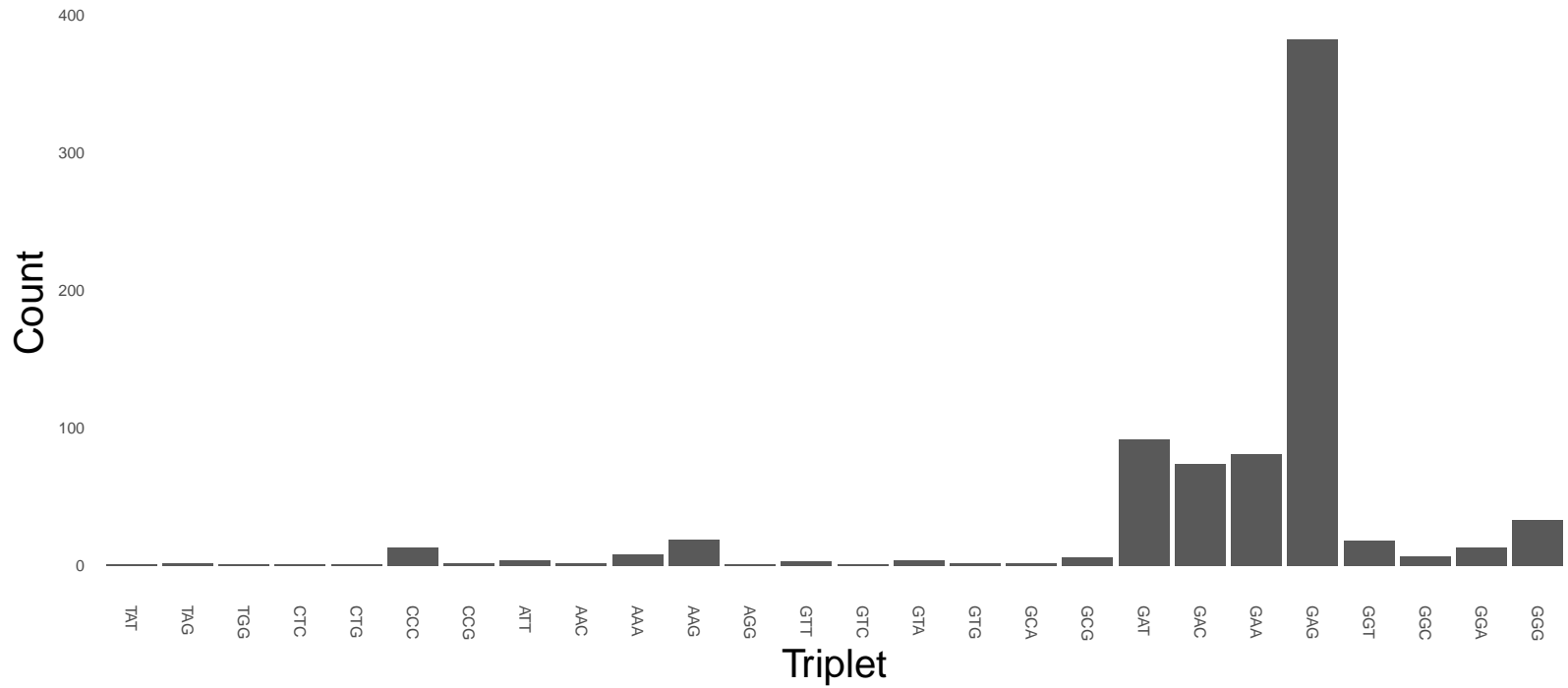
IGHV3-134\*01\_G32C\_T38C\_A40C\_A48C\_A118C\_G119A\_G132A\_G175A\_G184A\_G191C\_C199A



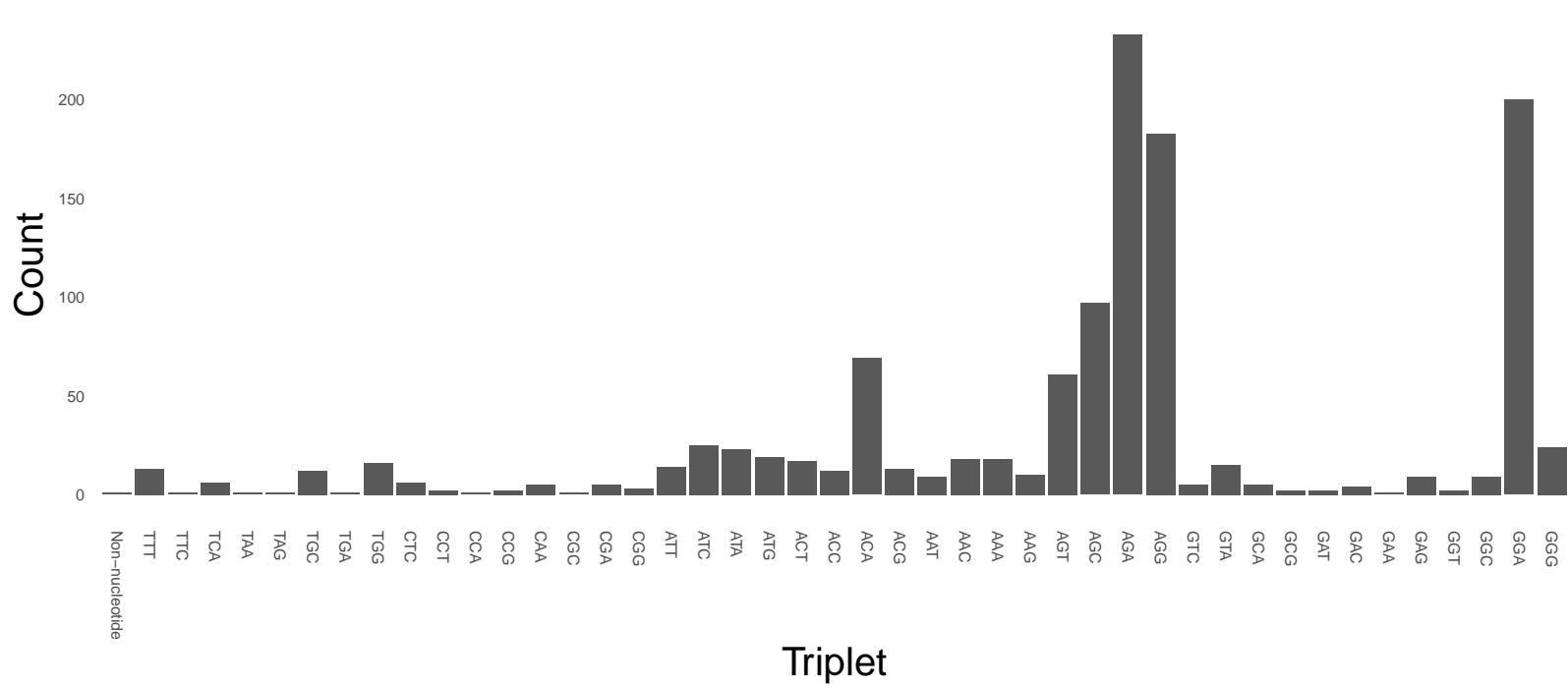
IGHV6-1\*01\_G280T– Final 3 nucleotides as a triplet



IGHV4-169\*01\_T60C\_G61C- Final 3 nucleotides as a triplet

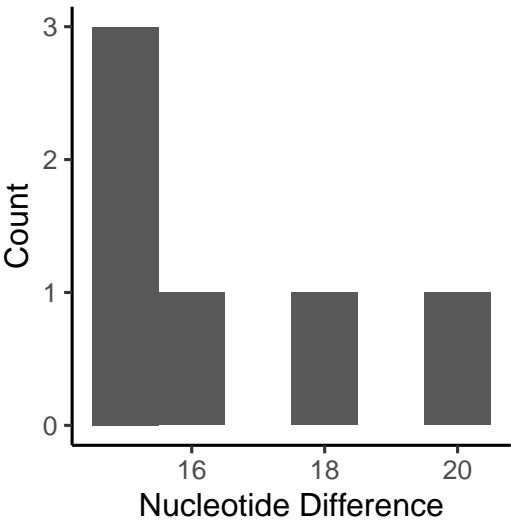


IGHV4-169\*02\_C4G\_T60C\_G61C\_T87C- Final 3 nucleotides as a triplet



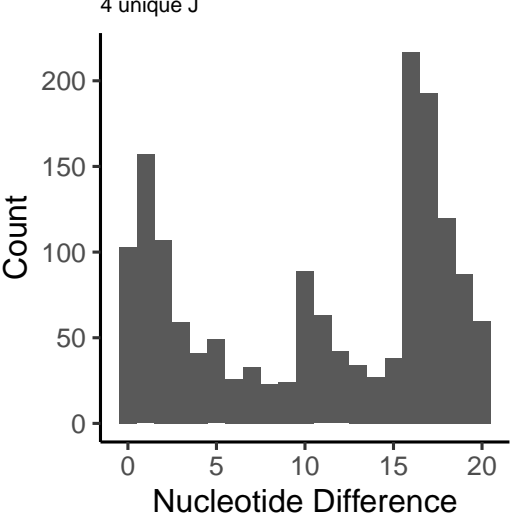
IGHV1S2\*01

282 sequences assigned  
No exact matches.



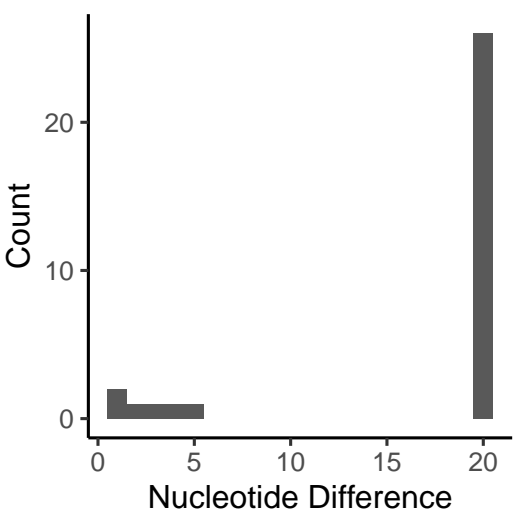
IGHV4S13\*01\_T85A\_C13

2079 sequences assigned  
103 (5%) exact matches, in which:  
95 unique CDR3  
4 unique J



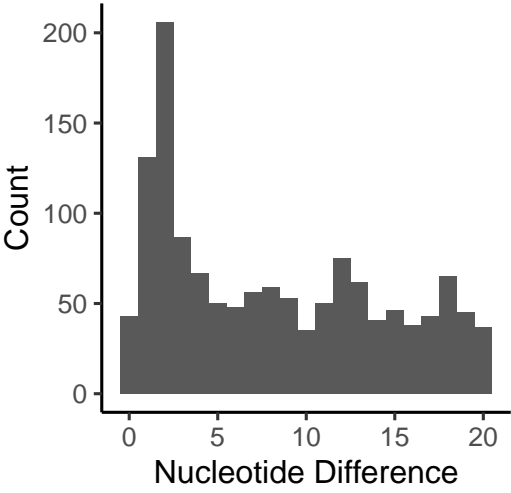
IGHV1-156D\*01

147 sequences assigned  
No exact matches.



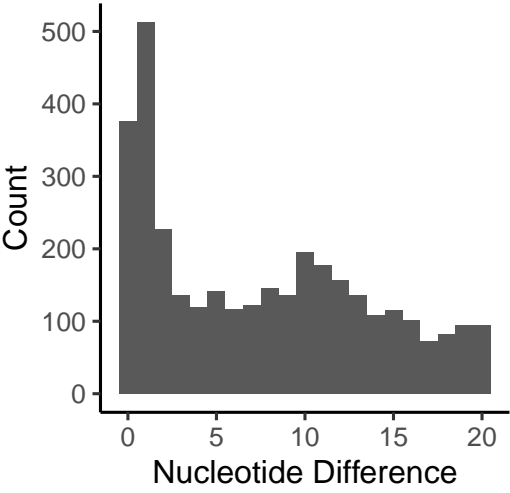
IGHV2S1\*01\_G289T

1718 sequences assigned  
43 (2.5%) exact matches, in which:  
42 unique CDR3  
4 unique J



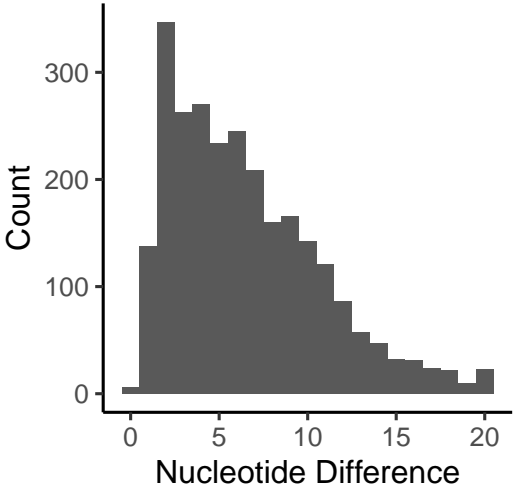
IGHV4S9\*01\_G32A\_C87

4139 sequences assigned  
376 (9.1%) exact matches, in which:  
331 unique CDR3  
4 unique J



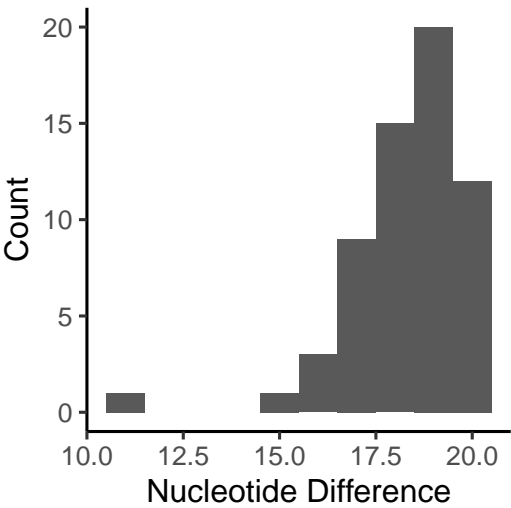
IGHV2-10\*01\_C6G\_A23

2723 sequences assigned  
6 (0.2%) exact matches, in which:  
6 unique CDR3  
2 unique J



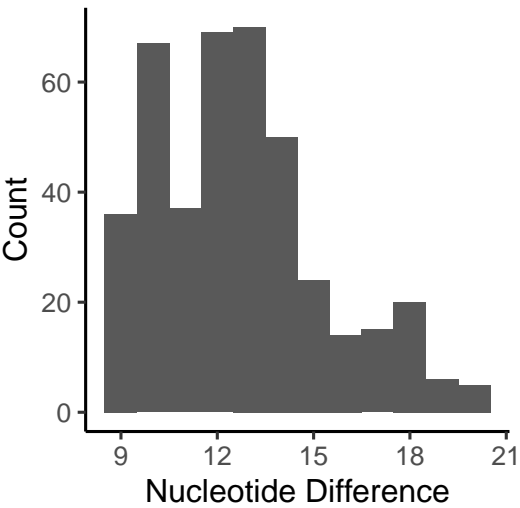
IGHV3S3\*01

787 sequences assigned  
No exact matches.



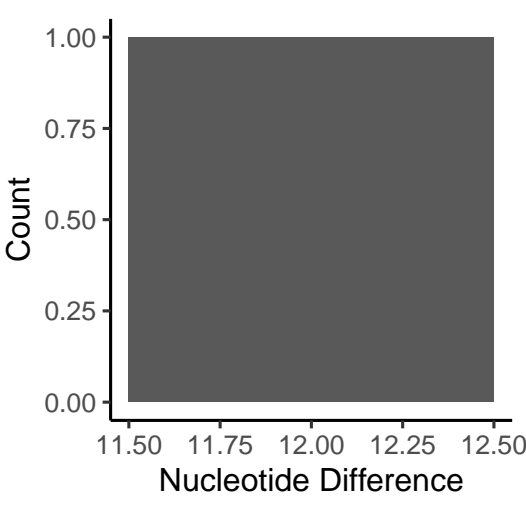
IGHV1-151\*01

777 sequences assigned  
No exact matches.



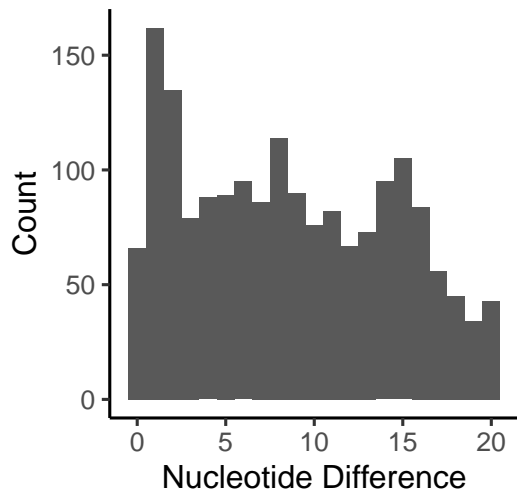
IGHV2-152\*01

4 sequences assigned  
No exact matches.



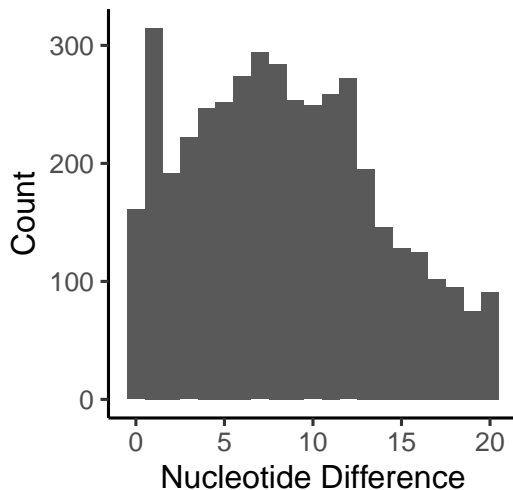
### IGHV2-174\*02\_G175A\_C

2083 sequences assigned  
66 (3.2%) exact matches, in which:  
56 unique CDR3  
4 unique J



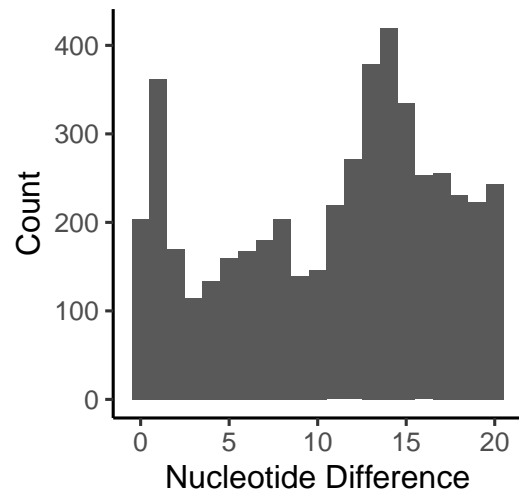
### IGHV3-30\*02\_C141G\_C

5176 sequences assigned  
161 (3.1%) exact matches, in which:  
137 unique CDR3  
3 unique J



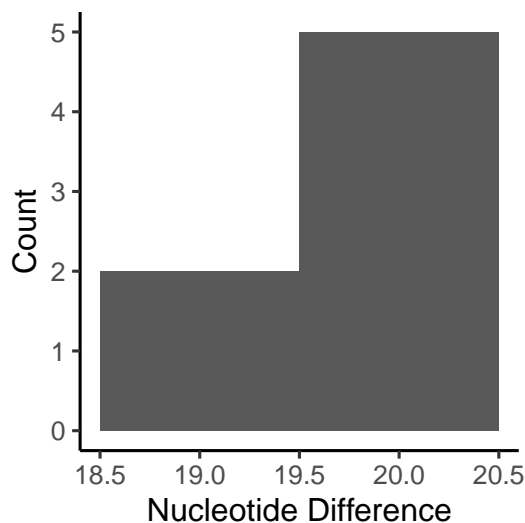
### IGHV3-103\*01\_T19A\_G2

7716 sequences assigned  
204 (2.6%) exact matches, in which:  
160 unique CDR3  
4 unique J



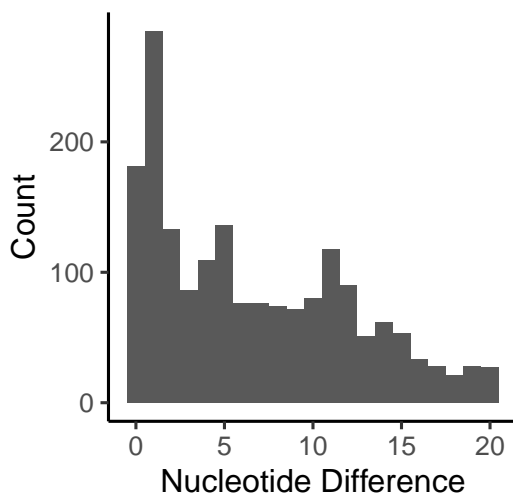
### IGHV3-12\*01

2107 sequences assigned  
No exact matches.



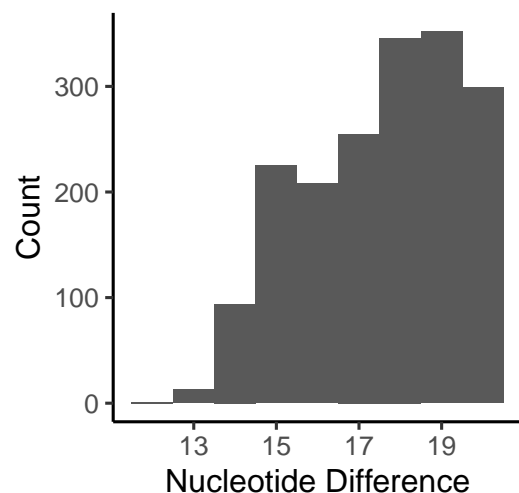
### IGHV3-54\*02\_G170C

2084 sequences assigned  
181 (8.7%) exact matches, in which:  
156 unique CDR3  
4 unique J



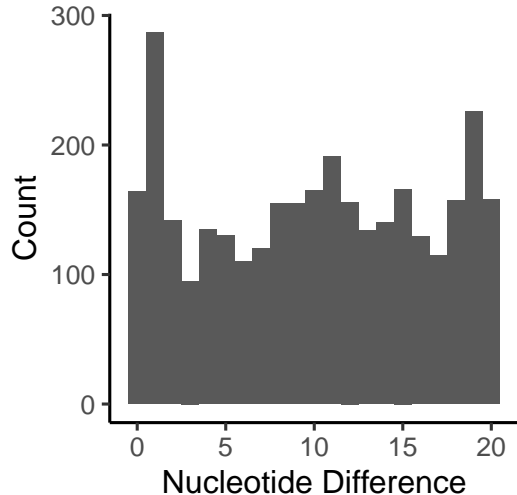
### IGHV3-108\*01

5050 sequences assigned  
No exact matches.



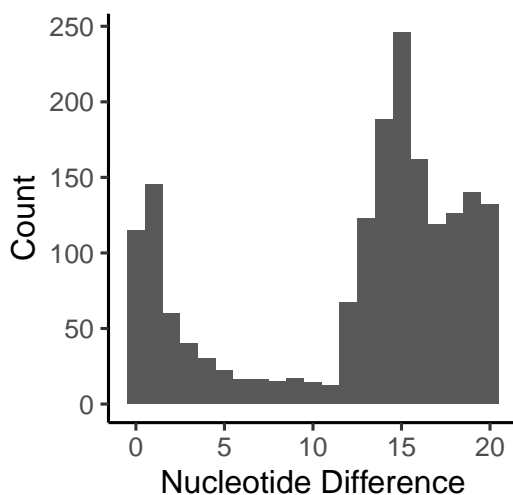
### IGHV3-30\*01\_G174C\_A

5865 sequences assigned  
164 (2.8%) exact matches, in which:  
134 unique CDR3  
4 unique J



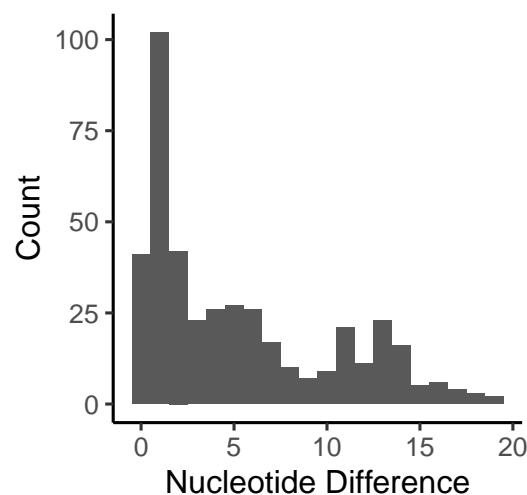
### IGHV3-59\*01\_C69T\_C86

4065 sequences assigned  
115 (2.8%) exact matches, in which:  
100 unique CDR3  
4 unique J



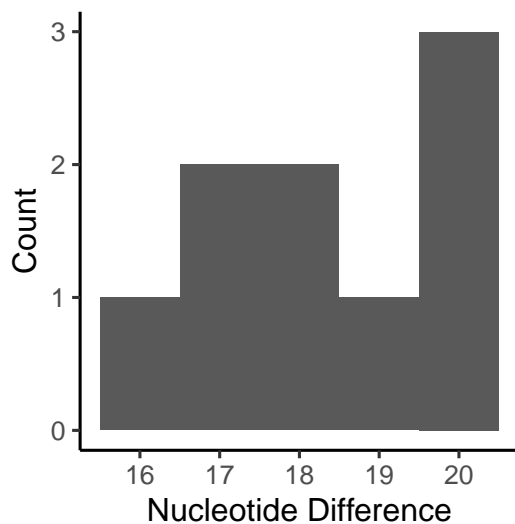
### IGHV3-134\*01\_G32C\_T3

1157 sequences assigned  
41 (3.5%) exact matches, in which:  
40 unique CDR3  
4 unique J



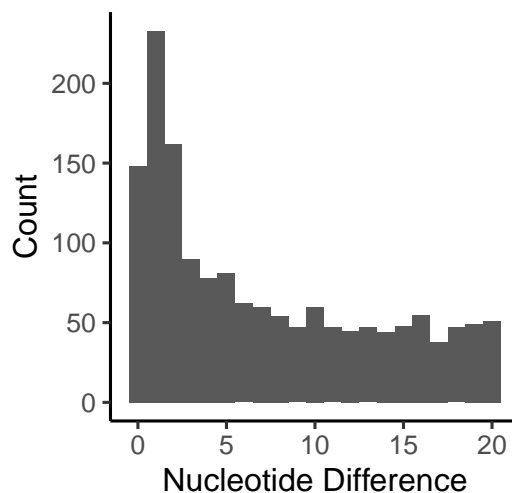
### IGHV3-137\*01

2012 sequences assigned  
No exact matches.



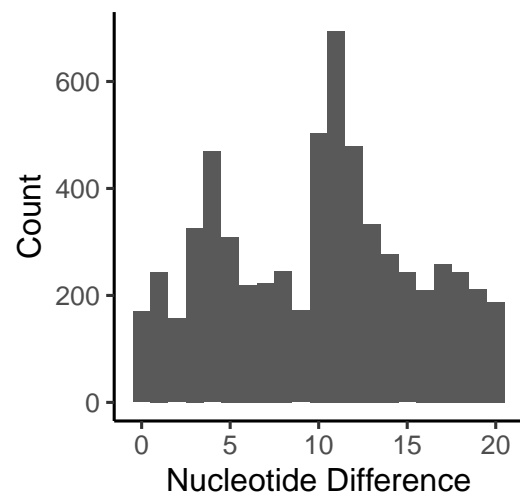
### IGHV4-65\*02\_A163T\_G1

2406 sequences assigned  
148 (6.2%) exact matches, in which:  
133 unique CDR3  
4 unique J



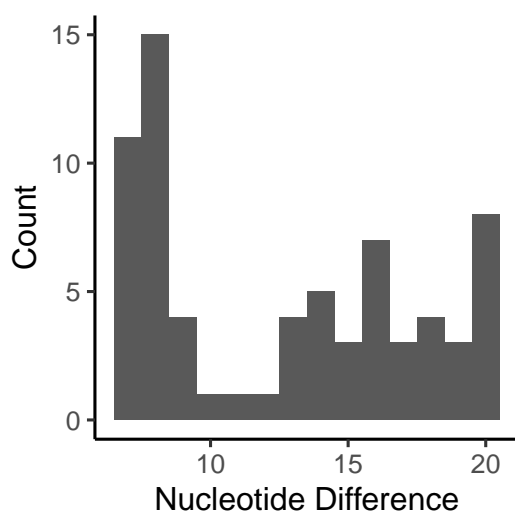
### IGHV4-127\*01\_T189G\_A

7871 sequences assigned  
170 (2.2%) exact matches, in which:  
155 unique CDR3  
4 unique J



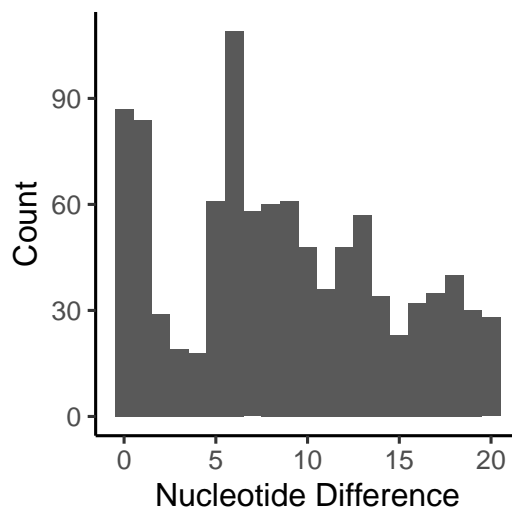
### IGHV3-186\*02

201 sequences assigned  
No exact matches.



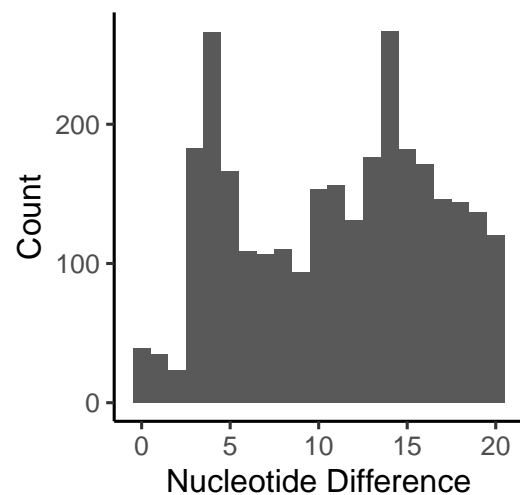
### IGHV4-73\*01\_G147A\_T16

1177 sequences assigned  
87 (7.4%) exact matches, in which:  
82 unique CDR3  
4 unique J



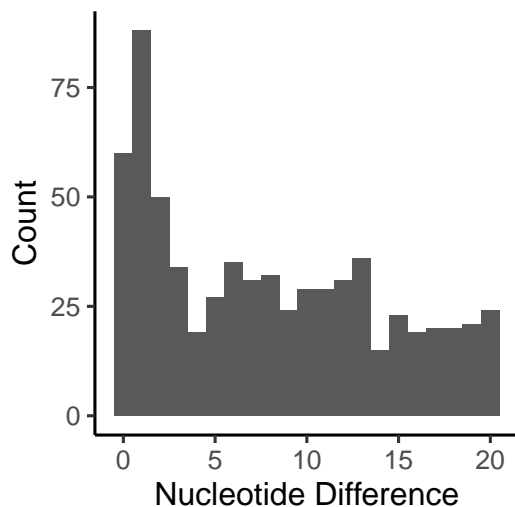
### IGHV4-160\*01\_C133G\_C

3969 sequences assigned  
39 (1%) exact matches, in which:  
37 unique CDR3  
4 unique J



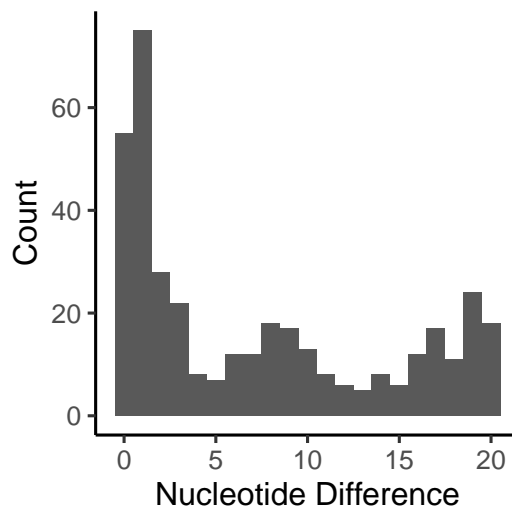
### IGHV4-57\*02\_C87T\_G19

870 sequences assigned  
60 (6.9%) exact matches, in which:  
55 unique CDR3  
4 unique J



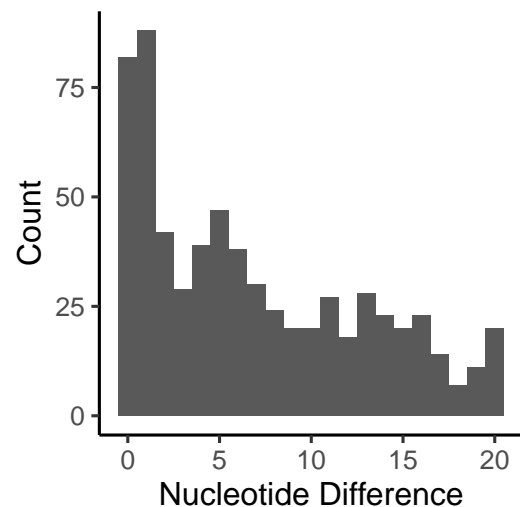
### IGHV4-81\*01\_C4G\_G21A

715 sequences assigned  
55 (7.7%) exact matches, in which:  
48 unique CDR3  
4 unique J



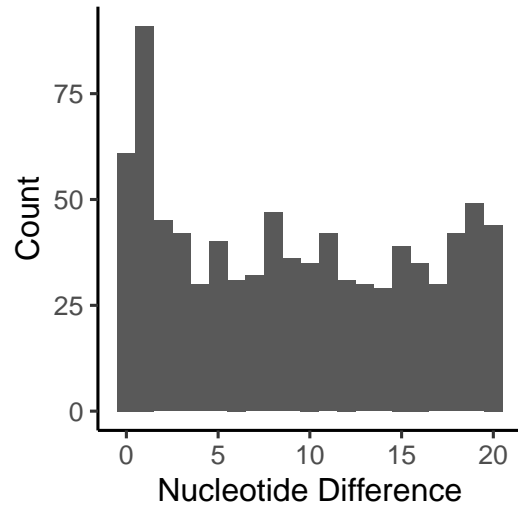
### IGHV4-169\*01\_T60C\_G6

773 sequences assigned  
82 (10.6%) exact matches, in which:  
68 unique CDR3  
4 unique J



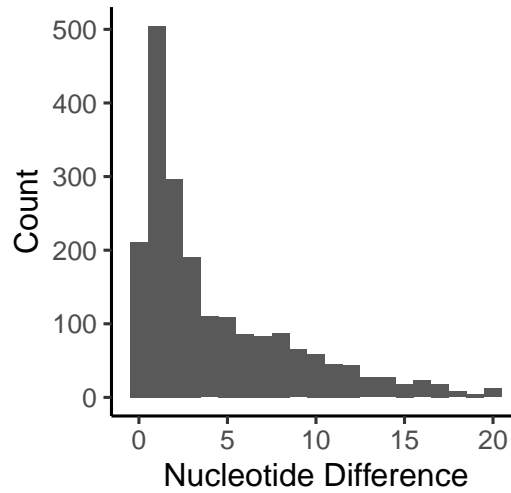
## IGHV4-169\*02\_C4G\_T60I

1176 sequences assigned  
61 (5.2%) exact matches, in which:  
52 unique CDR3  
4 unique J



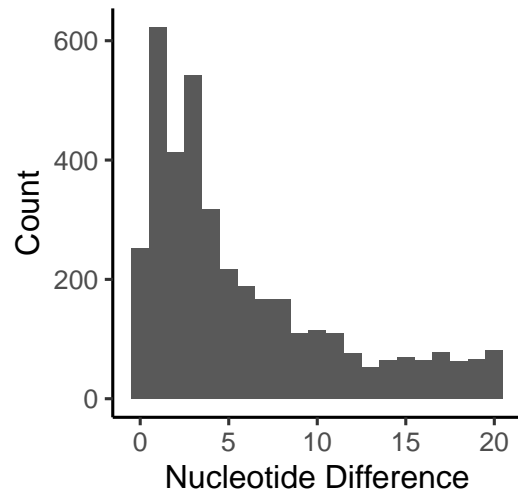
## IGHV5-43\*01\_A51G

2243 sequences assigned  
211 (9.4%) exact matches, in which:  
156 unique CDR3  
4 unique J



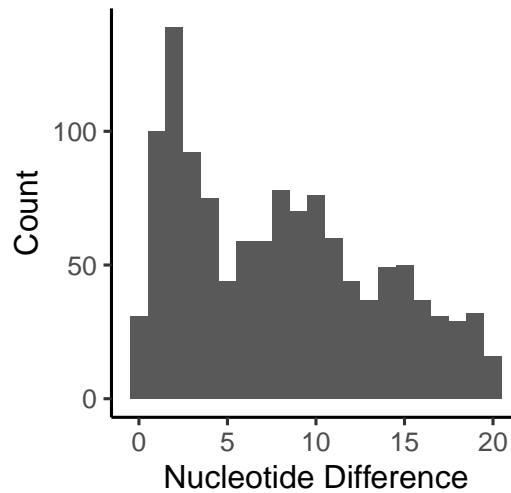
## IGHV5-20\*02\_A141G\_C3

4240 sequences assigned  
252 (5.9%) exact matches, in which:  
206 unique CDR3  
4 unique J



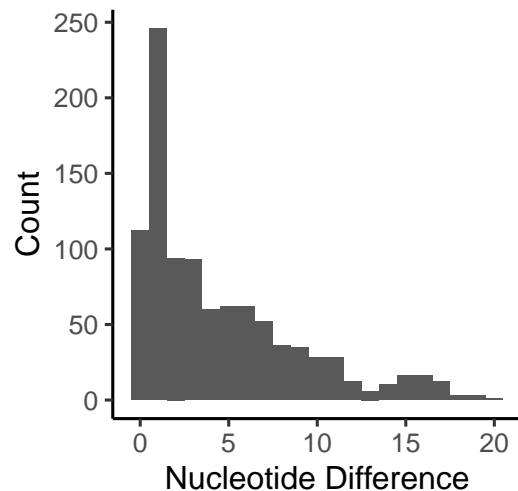
## IGHV6-1\*01\_G280T

1366 sequences assigned  
31 (2.3%) exact matches, in which:  
28 unique CDR3  
4 unique J



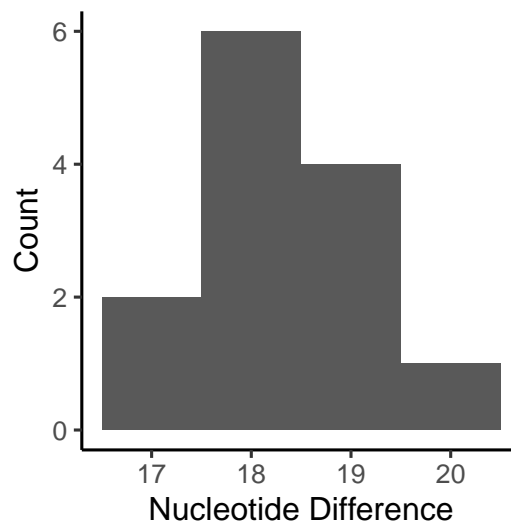
## IGHV5-43\*01\_A106G

1019 sequences assigned  
112 (11%) exact matches, in which:  
89 unique CDR3  
4 unique J



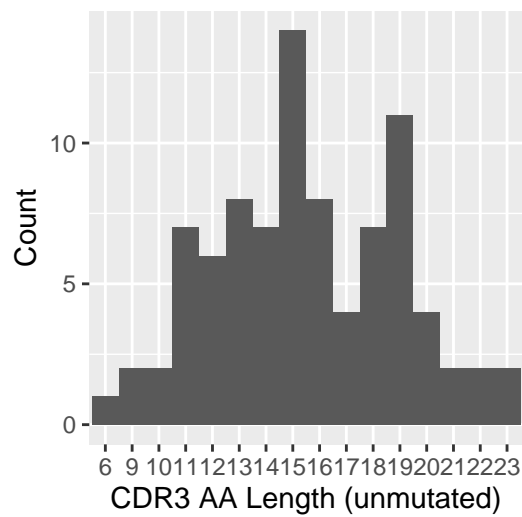
## IGHV7-94\*01

14 sequences assigned  
No exact matches.

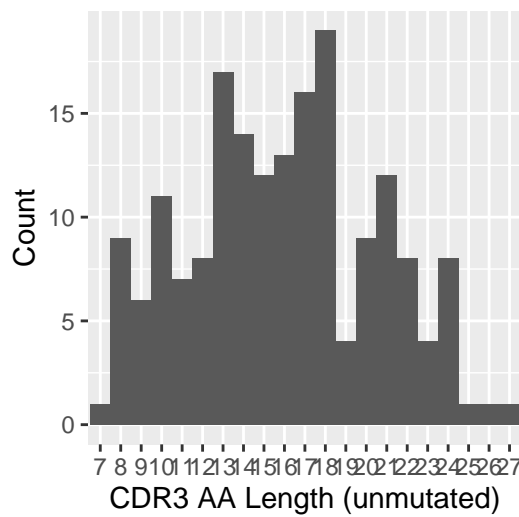




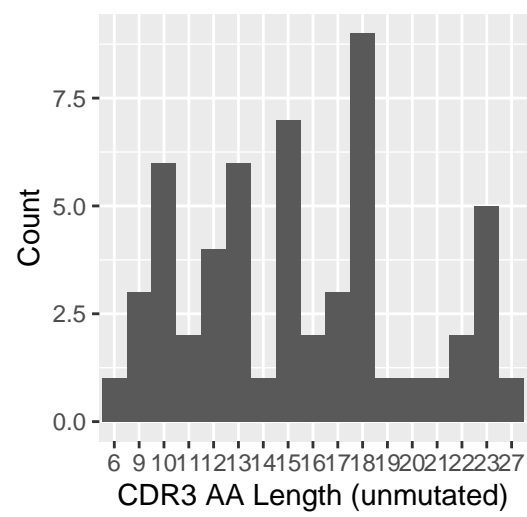
IGHV4-73\*01\_G147A\_T163/



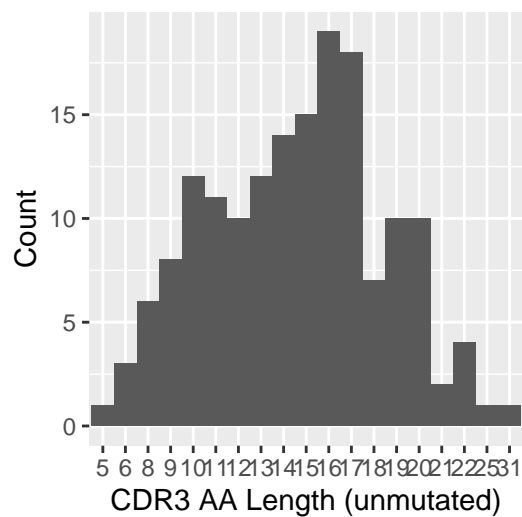
IGHV3-54\*02\_G170C



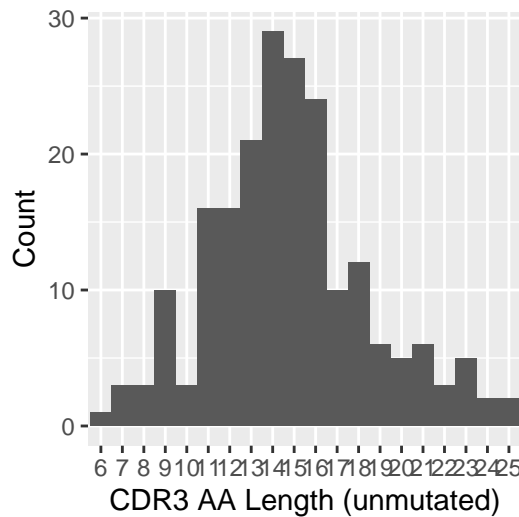
IGHV4-81\*01\_C4G\_G21A/



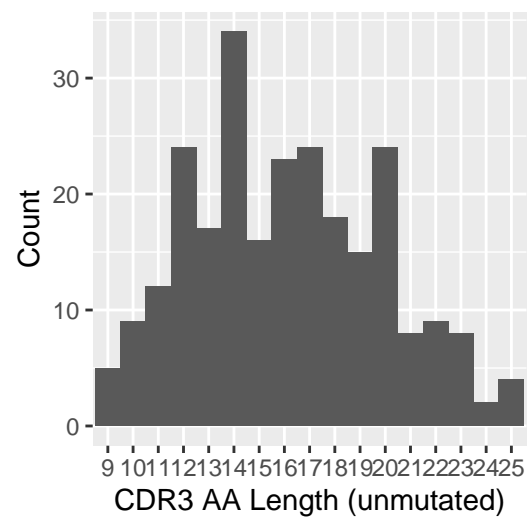
IGHV3-30\*01\_G174C\_A188/



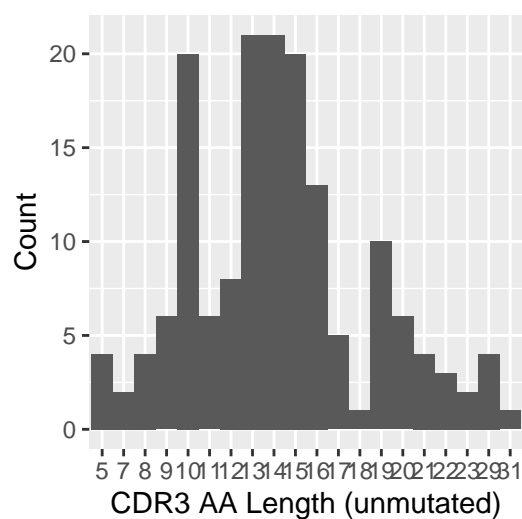
IGHV3-103\*01\_T19A\_G24A/



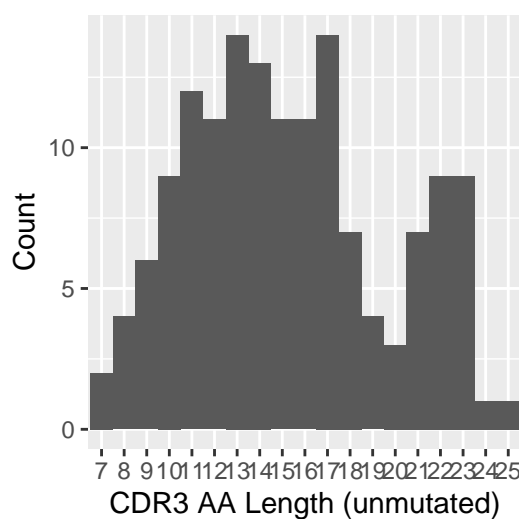
IGHV5-20\*02\_A141G\_C312/



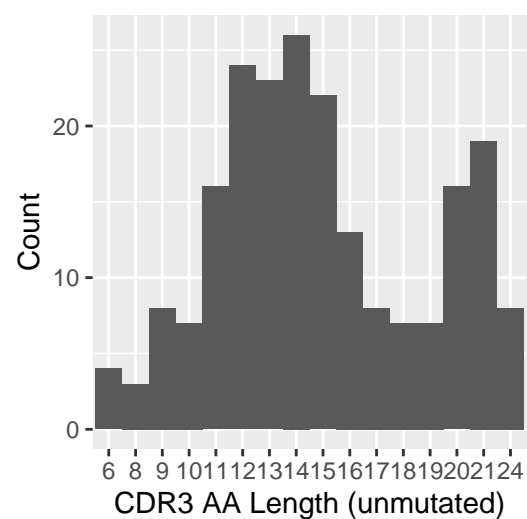
IGHV3-30\*02\_C141G\_C183/



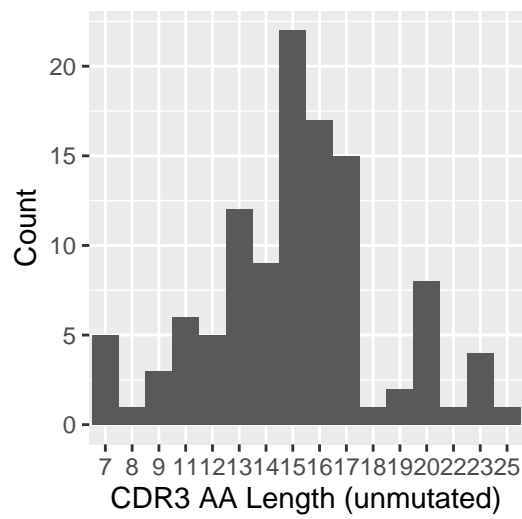
IGHV4-65\*02\_A163T\_G169/



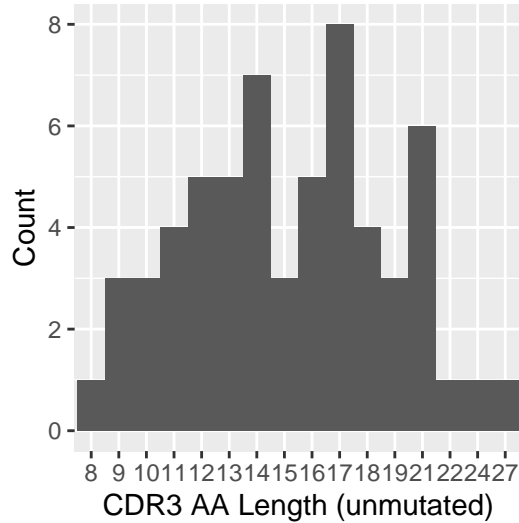
IGHV5-43\*01\_A51G



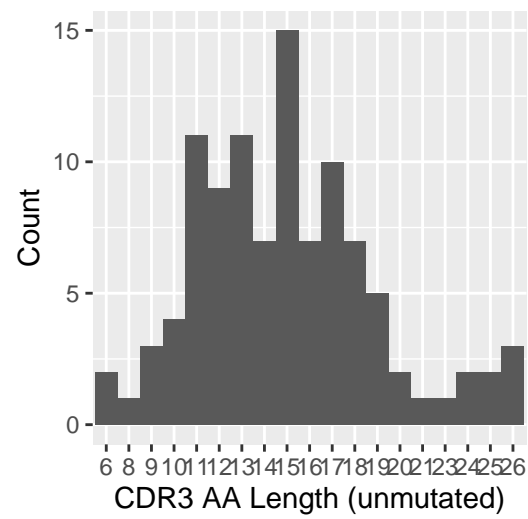
IGHV5-43\*01\_A106G



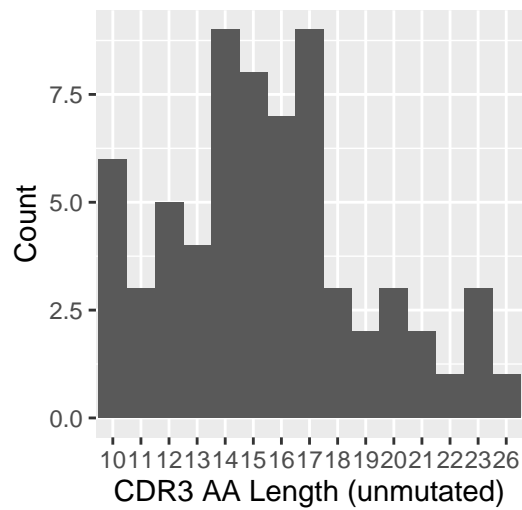
IGHV4-57\*02\_C87T\_G199T\_



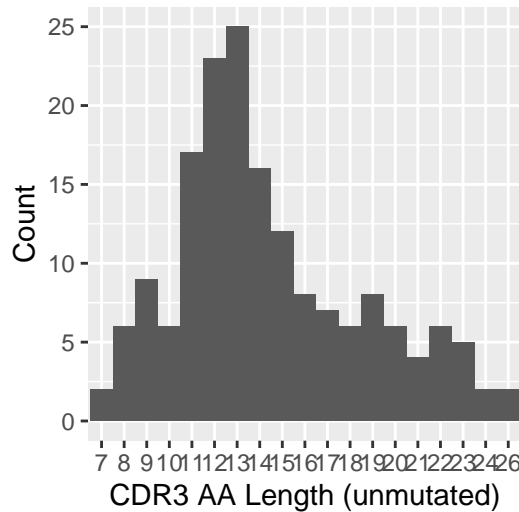
IGHV4S13\*01\_T85A\_C137G



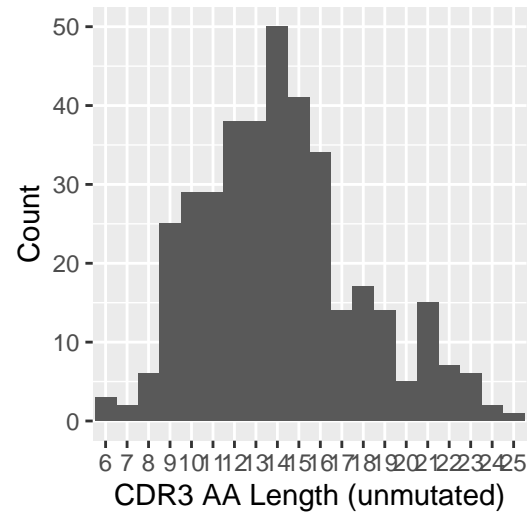
IGHV2-174\*02\_G175A\_G19



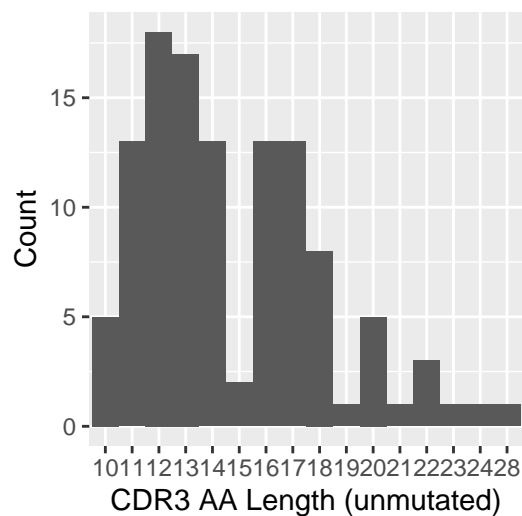
IGHV4-127\*01\_T189G\_A196



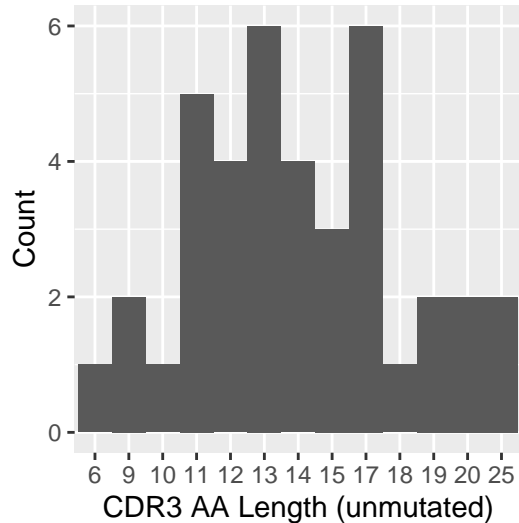
IGHV4S9\*01\_G32A\_C87T\_G



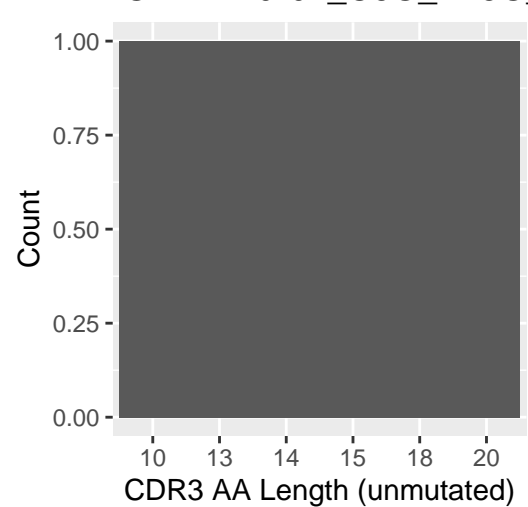
IGHV3-59\*01\_C69T\_C86G\_



IGHV4-160\*01\_C133G\_G147



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



[illegible]

A histogram showing the distribution of CDR3 AA Length (unmutated). The x-axis is labeled 'CDR3 AA Length (unmutated)' and ranges from 9 to 23. The y-axis is labeled 'Count' and ranges from 0 to 10. The distribution is unimodal and slightly right-skewed, with a peak at length 14 (count 14).

CDR3 AA Length (unmutated)	Count
9	4
10	7
11	3
12	9
13	11
14	14
15	13
16	3
18	8
19	7
20	1
21	1
22	1
23	2

A histogram showing the distribution of CDR3 AA Length (unmutated). The x-axis is labeled 'CDR3 AA Length (unmutated)' and ranges from 7 to 26. The y-axis is labeled 'Count' and ranges from 0 to 8. The distribution is unimodal and slightly right-skewed, with a peak at a length of 17 (count of 8).

CDR3 AA Length (unmutated)	Count
7	1
8	2
9	2
10	4
11	3
12	1
13	6
14	5
15	2
16	5
17	8
18	2
19	1
20	1
21	1
22	1
23	1
24	1
25	1
26	1

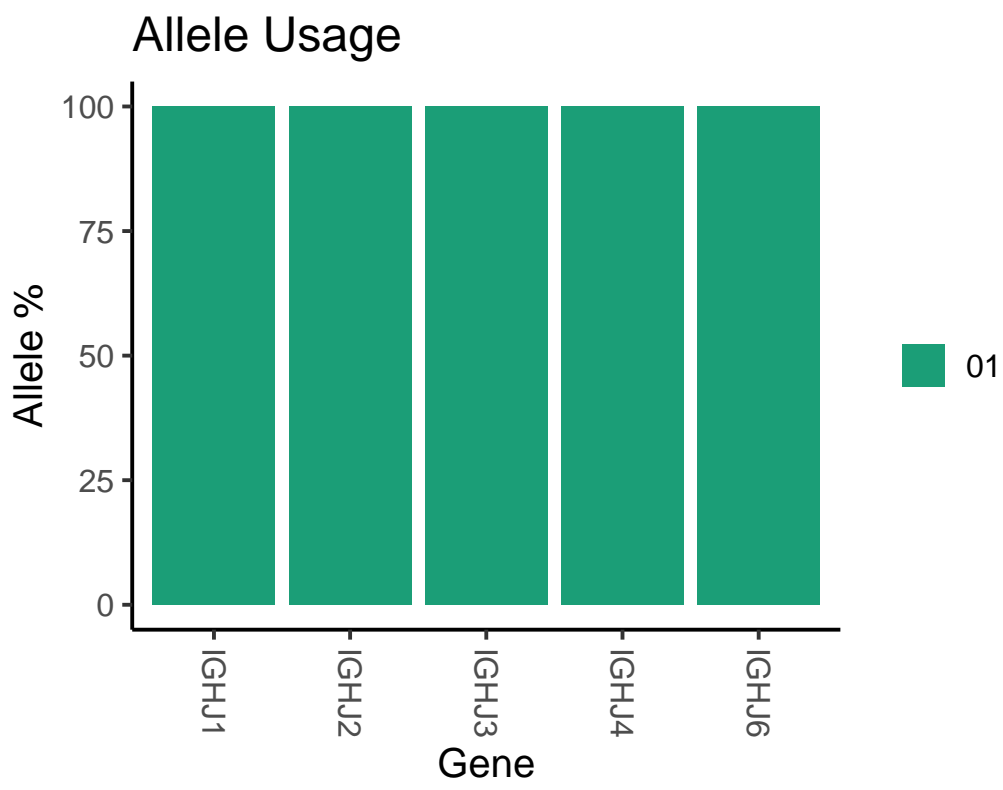
Count

CDR3 AA Length (unmutated)

CDR3 AA Length (unmutated)	Count
7	1.0
8	2.0
9	3.0
10	12.0
11	4.0
12	5.0
13	5.0
14	2.0
15	2.0
16	6.0
17	6.0
18	2.0
19	6.0
20	3.0
21	1.0
22	1.0
23	1.0
24	1.0
25	1.0
26	1.0
27	1.0
28	1.0
29	1.0
30	1.0
31	1.0
32	1.0
33	1.0
34	1.0
35	1.0
36	1.0

A histogram showing the distribution of CDR3 AA Length (unmutated). The x-axis is labeled 'CDR3 AA Length (unmutated)' and ranges from 9 to 28. The y-axis is labeled 'Count' and ranges from 0 to 5. The distribution is as follows:

CDR3 AA Length (unmutated)	Count
9	1
10	3
11	1
12	5
13	3
14	3
15	4
16	3
18	3
19	1
22	2
28	2



Warning – no inferred sequences found.

Warning – no inferred sequences found.

Warning – no inferred sequences found.

Warning – no inferred sequences found.