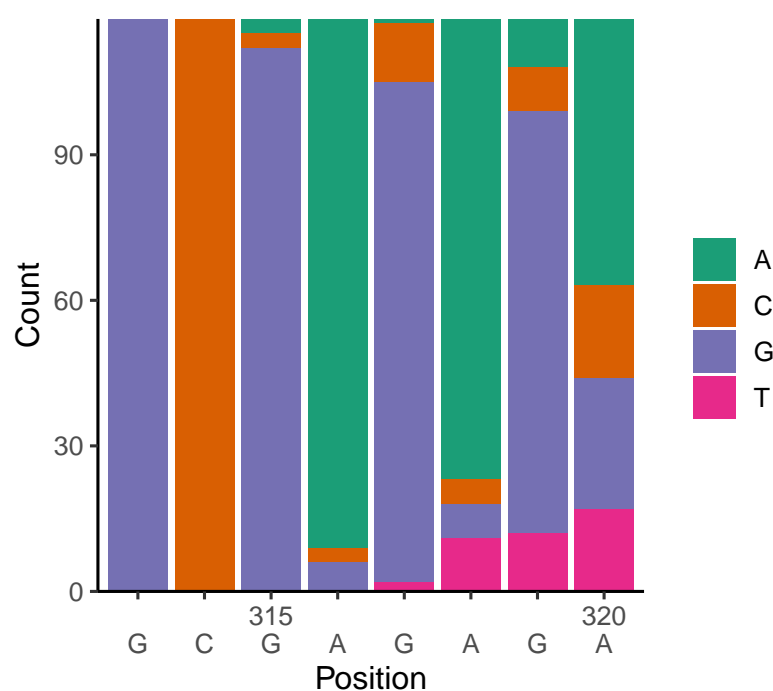
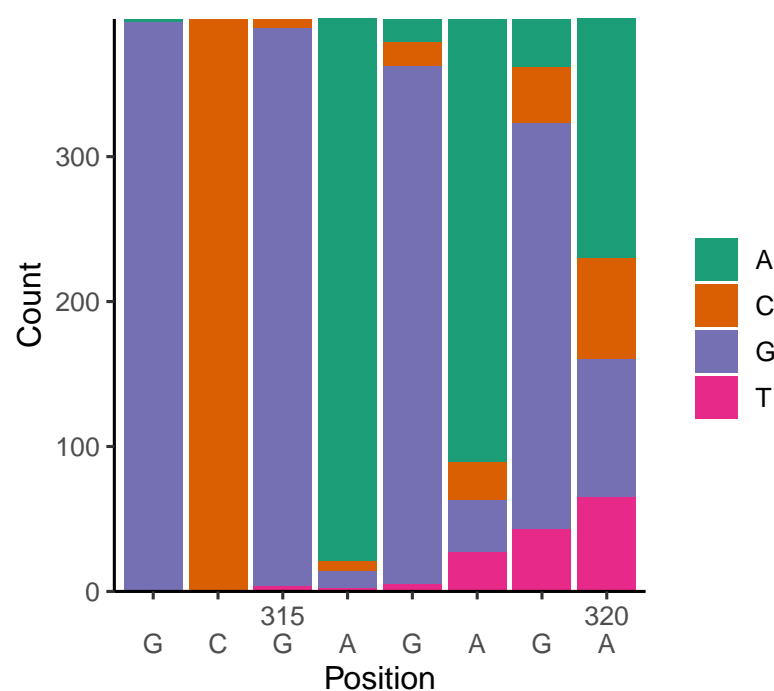


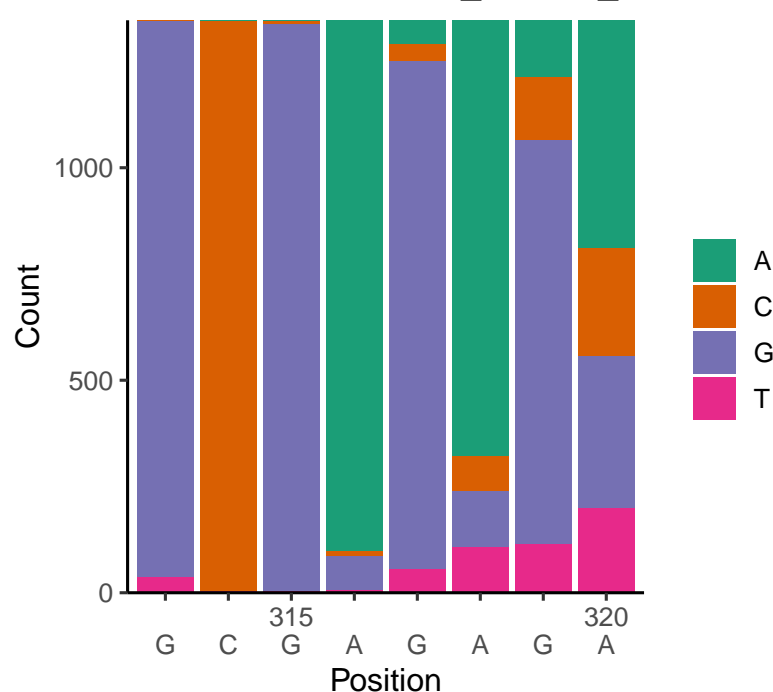
Gene IGHV1-3*02_T296C_T300C



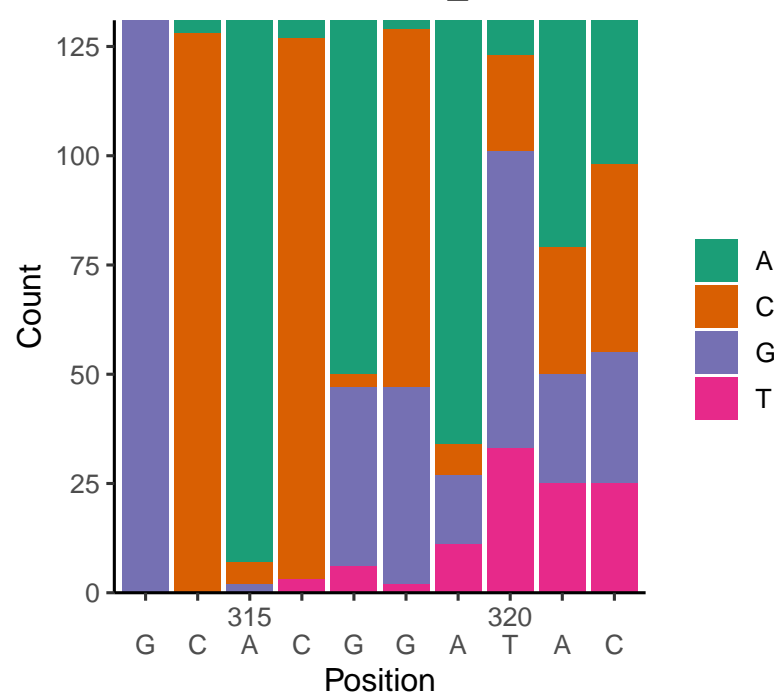
Gene IGHV1-69-2*01_A315G_C317G



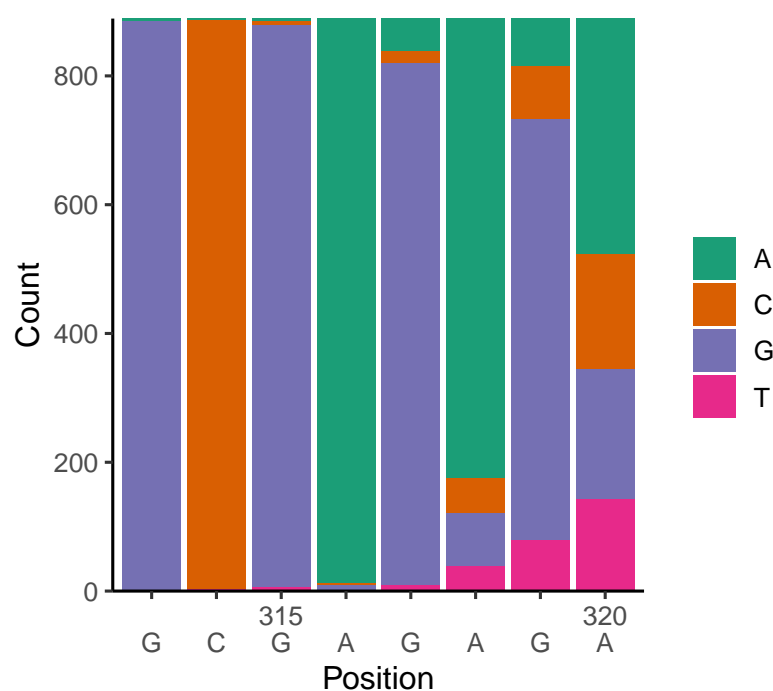
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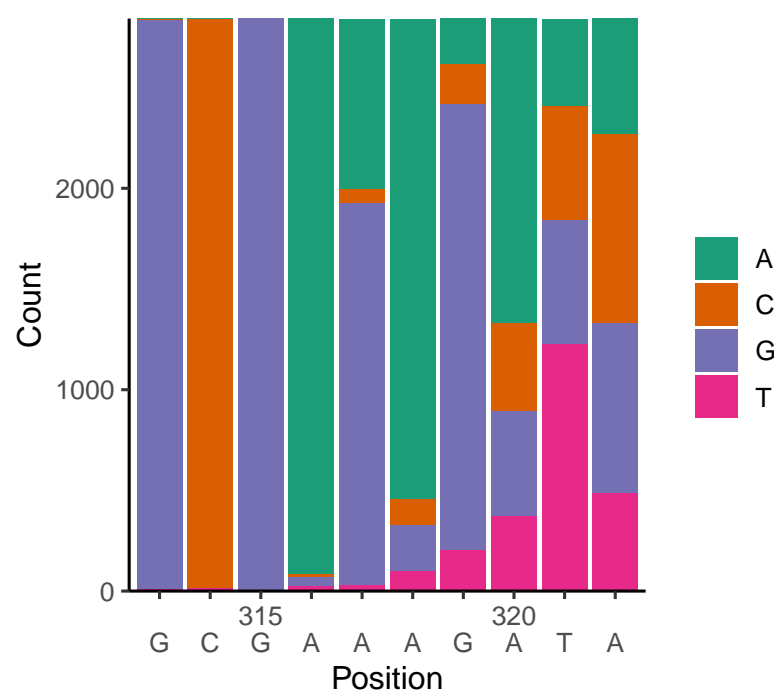
Gene IGHV2-70*01_G303A



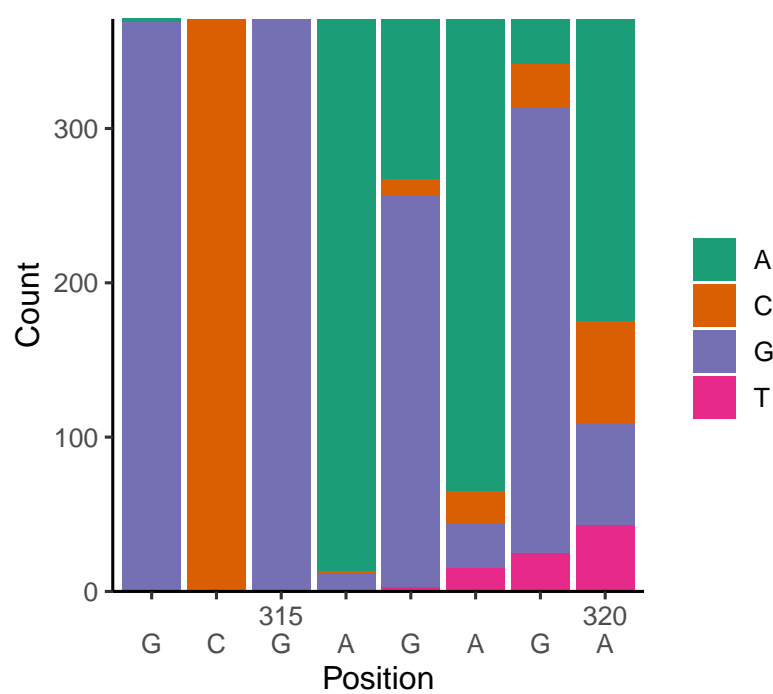
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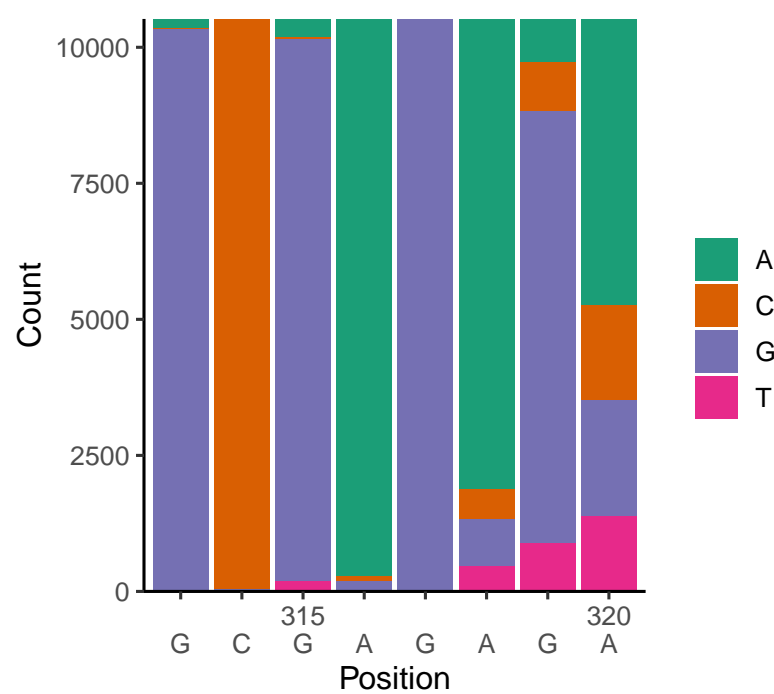
Gene IGHV3-9*01_A315G



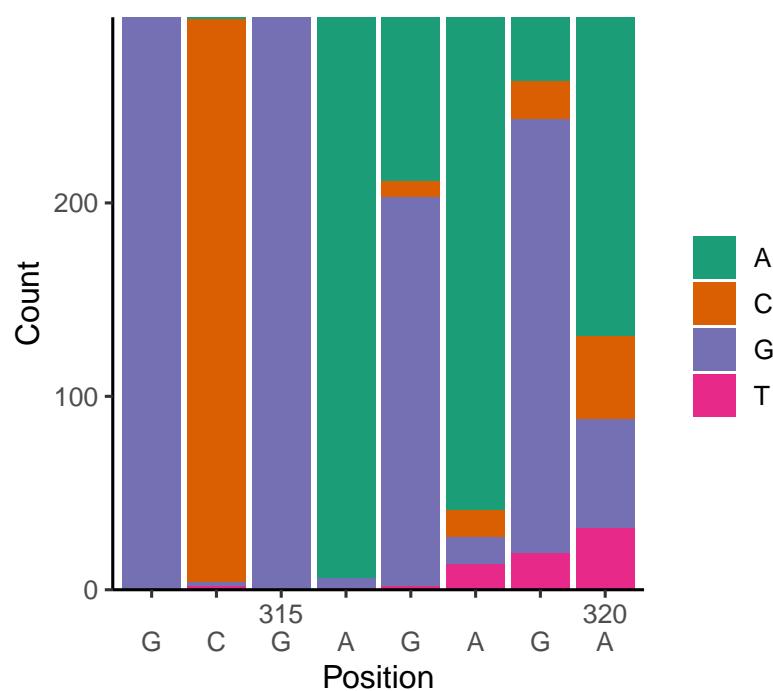
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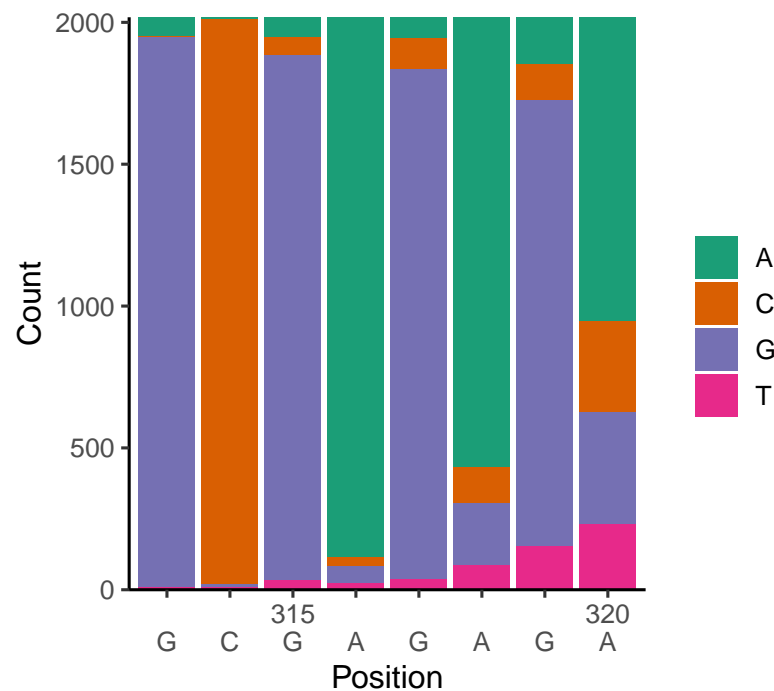
Gene IGHV3-23*01_A317G



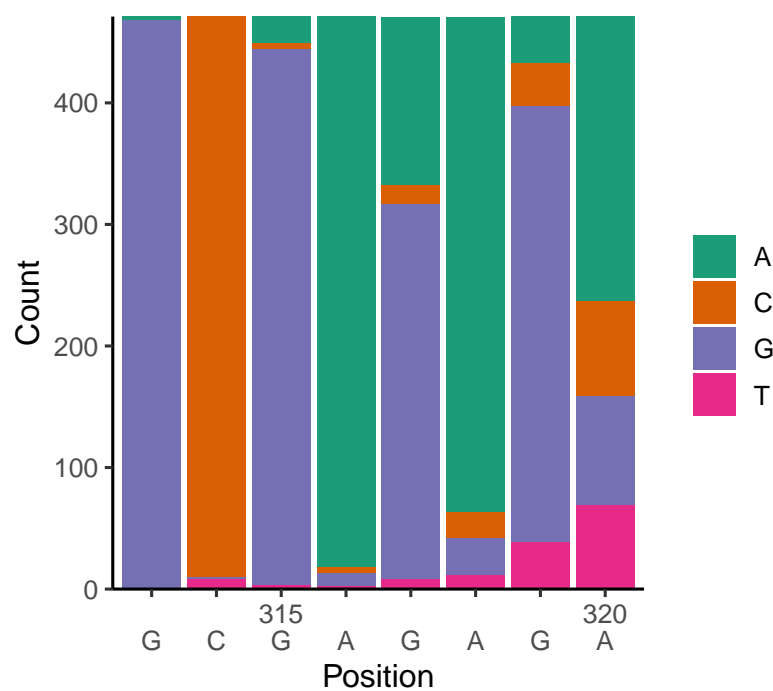
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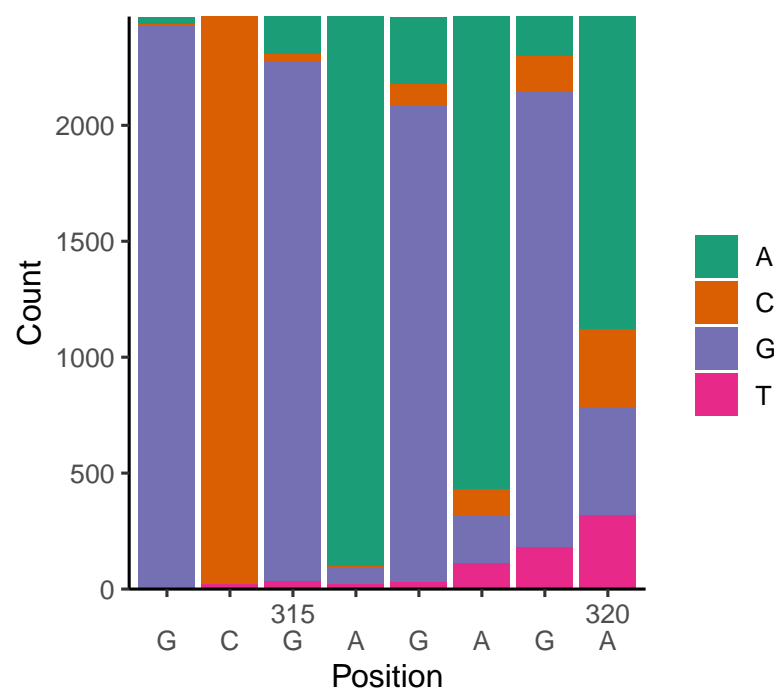
Gene IGHV3-30*03_T288C



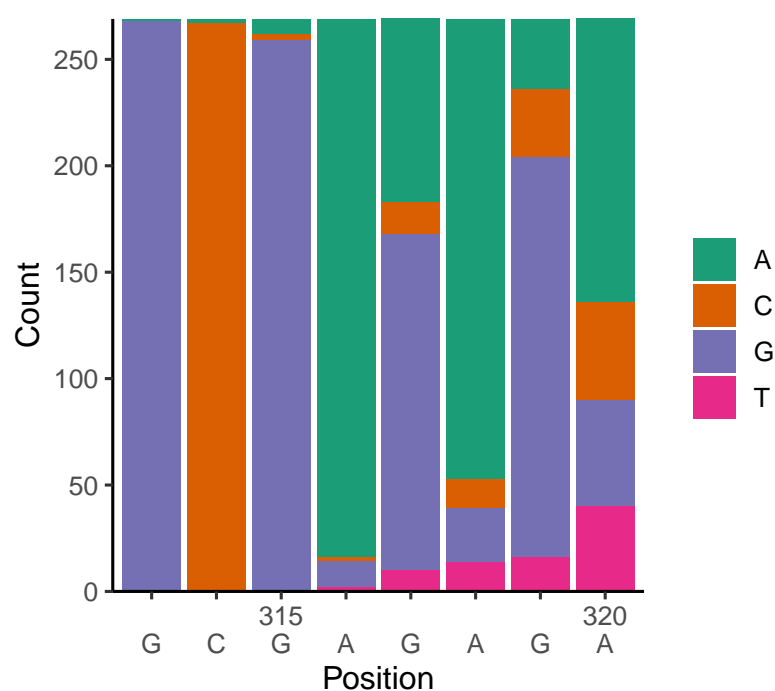
Gene IGHV3-20*04_T279C_C300T_T30'



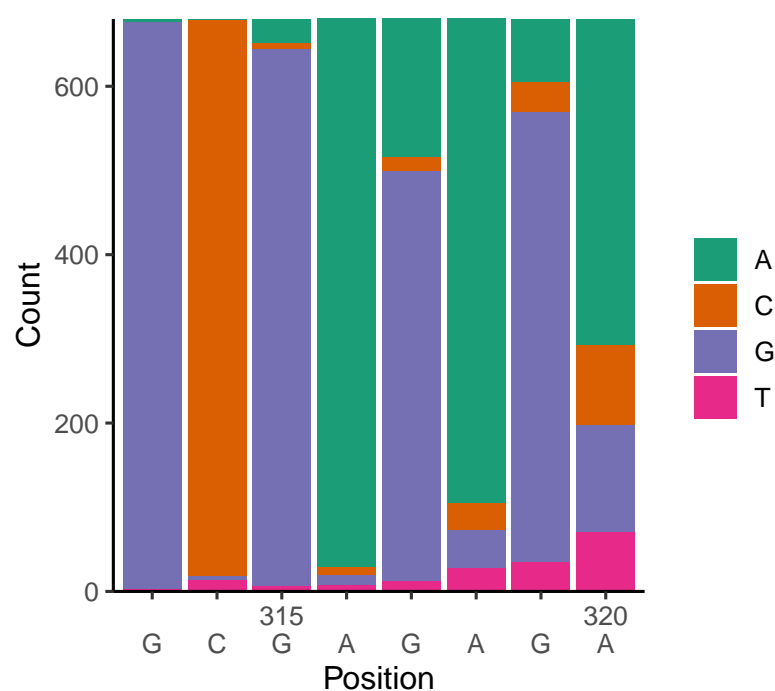
Gene IGHV3-48*03_T303G



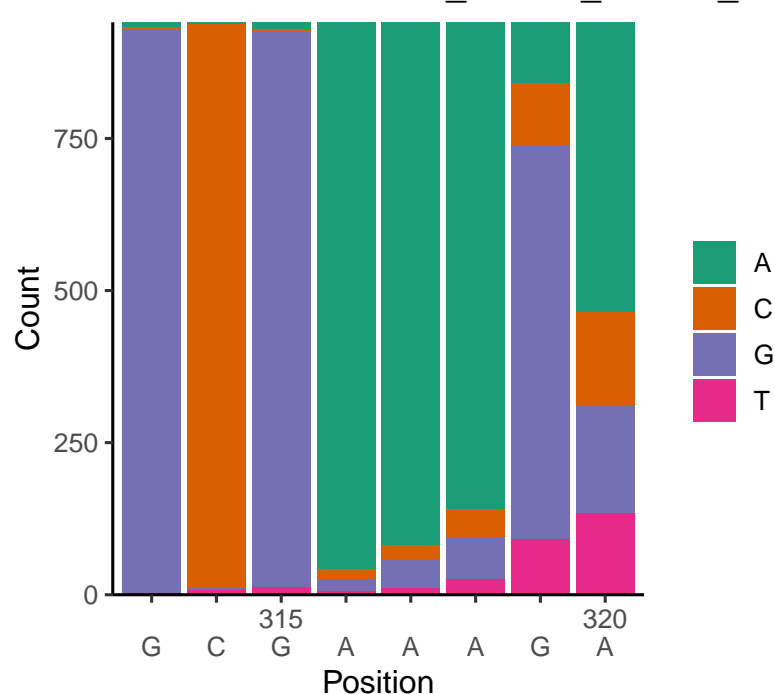
Gene IGHV3-49*05_A313G_T315G



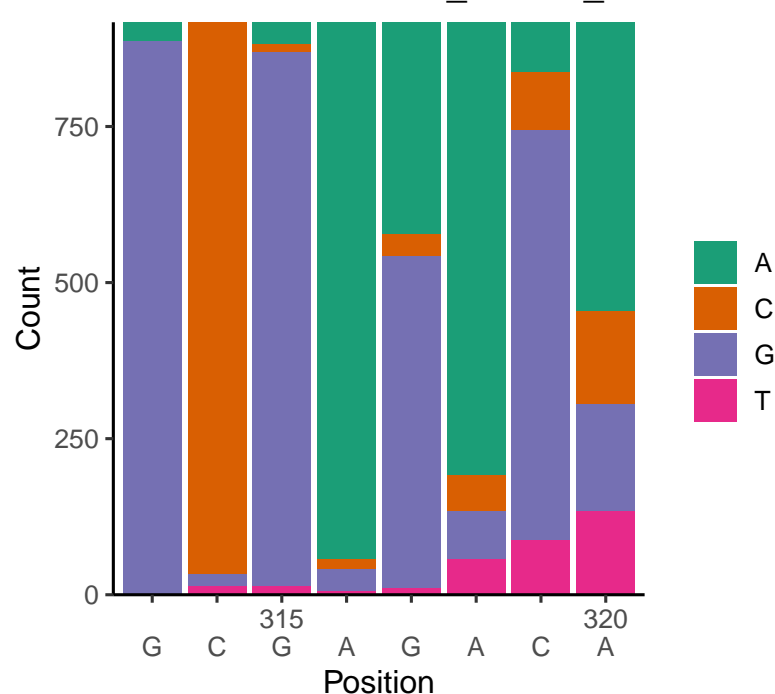
Gene IGHV3-66*03_T175G_T267G



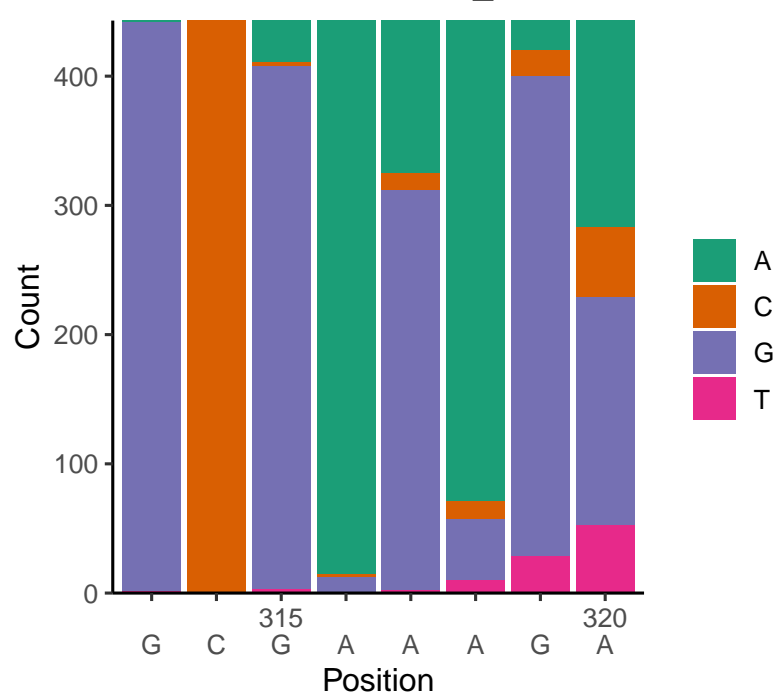
Gene IGHV3-53*01_T267G_G303A_G31



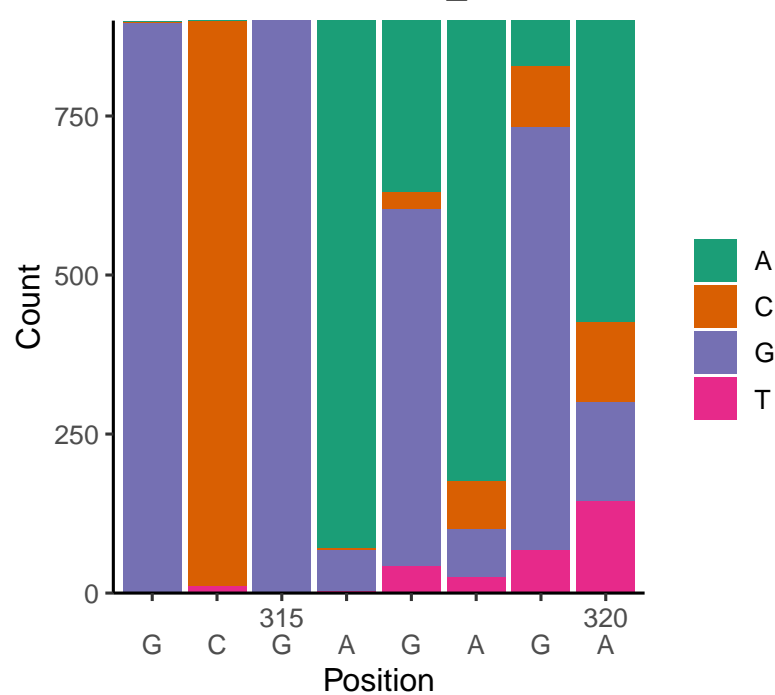
Gene IGHV3-73*02_A313G_T315G



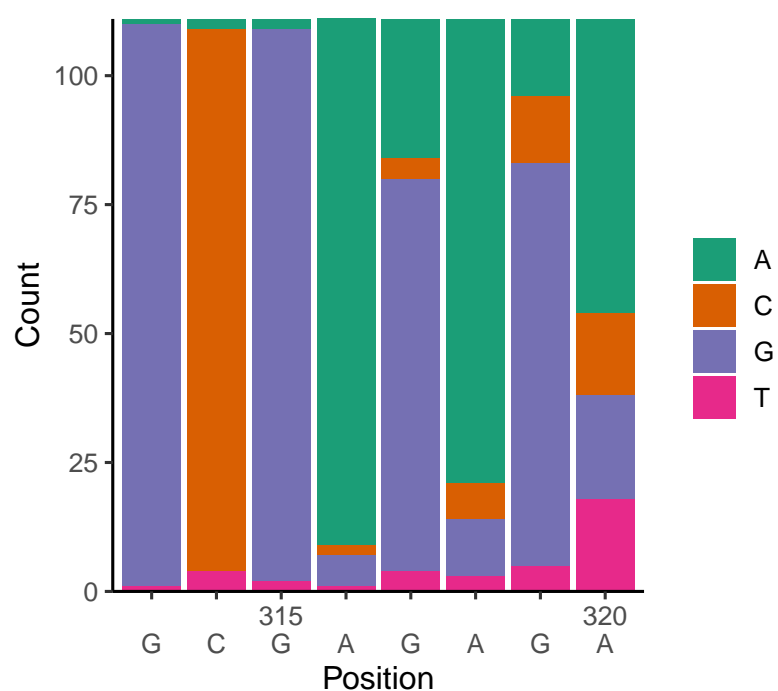
Gene IGHV3-64D*06_T314C



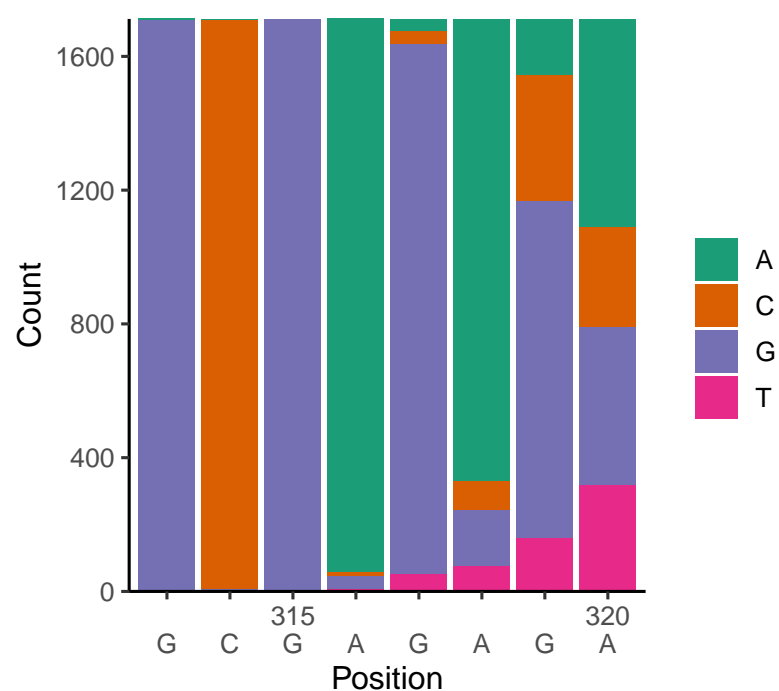
Gene IGHV3-74*01_A315G



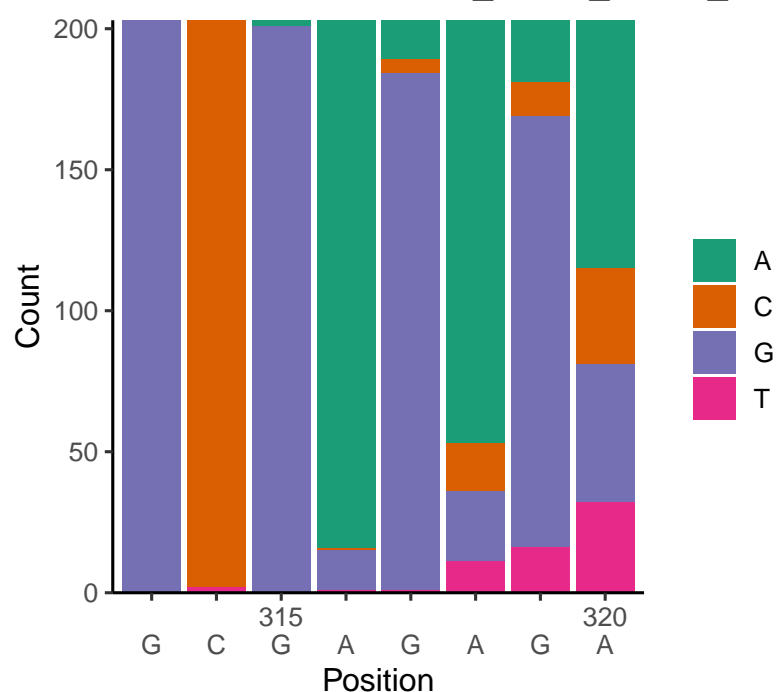
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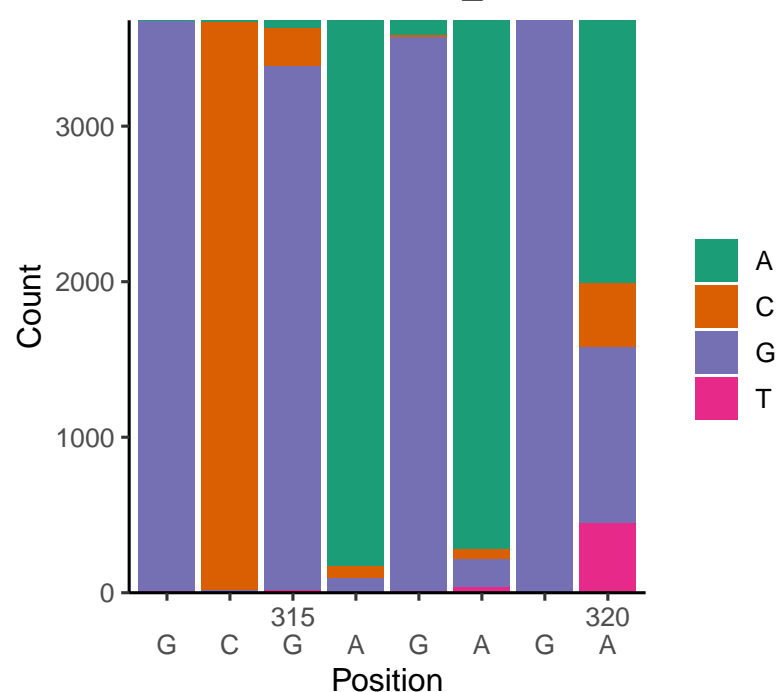
Gene IGHV4-30-4*01_C315G



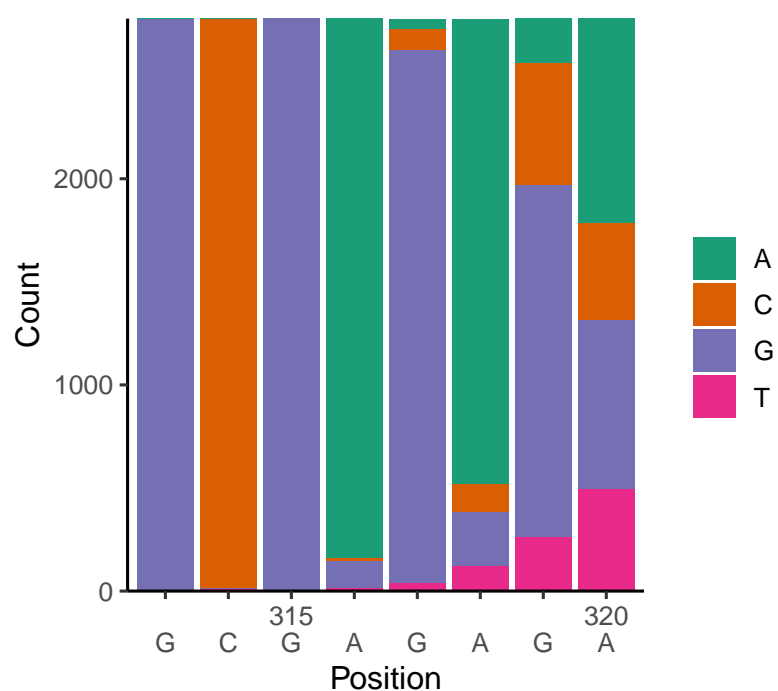
Gene IGHV3-NL1*01_G49A_G75C_T201



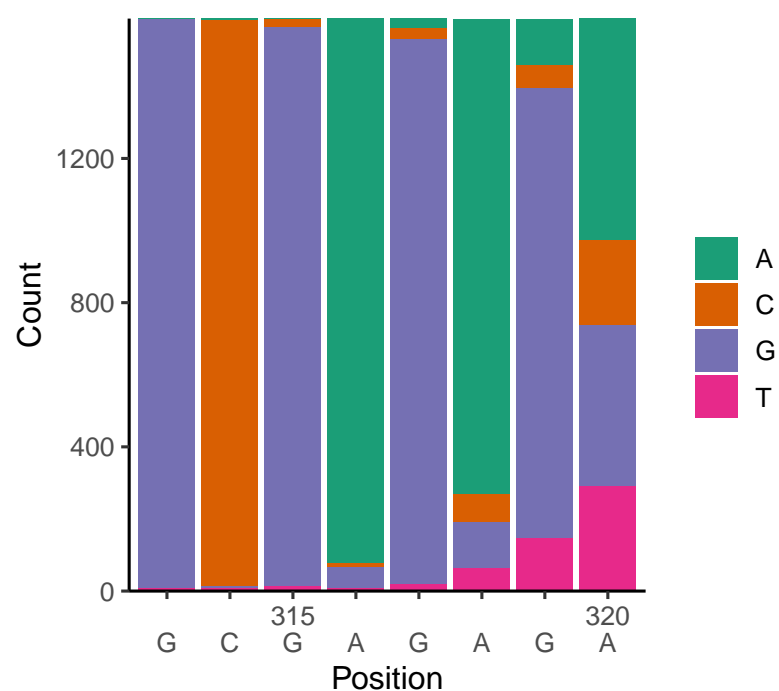
Gene IGHV4-39*02_C258G



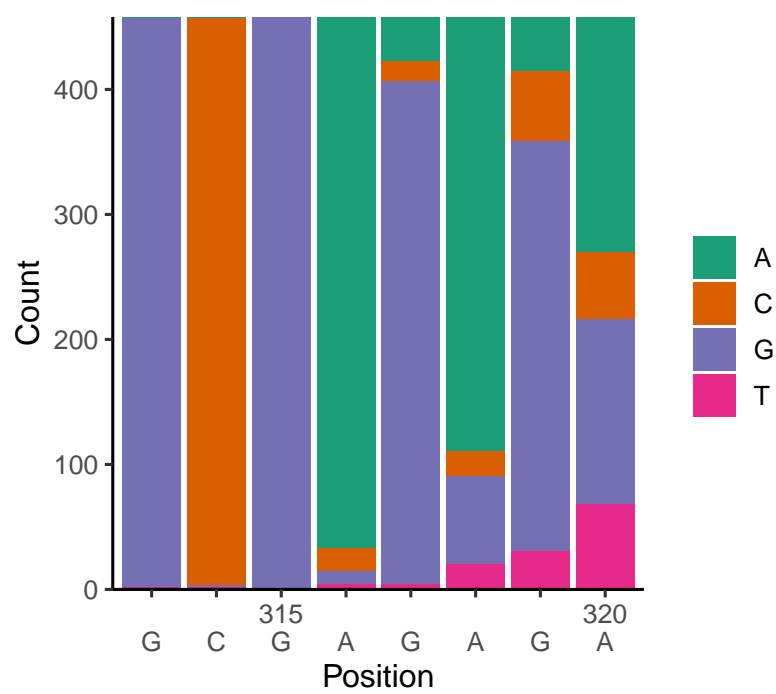
Gene IGHV4-30-2*01_C315G



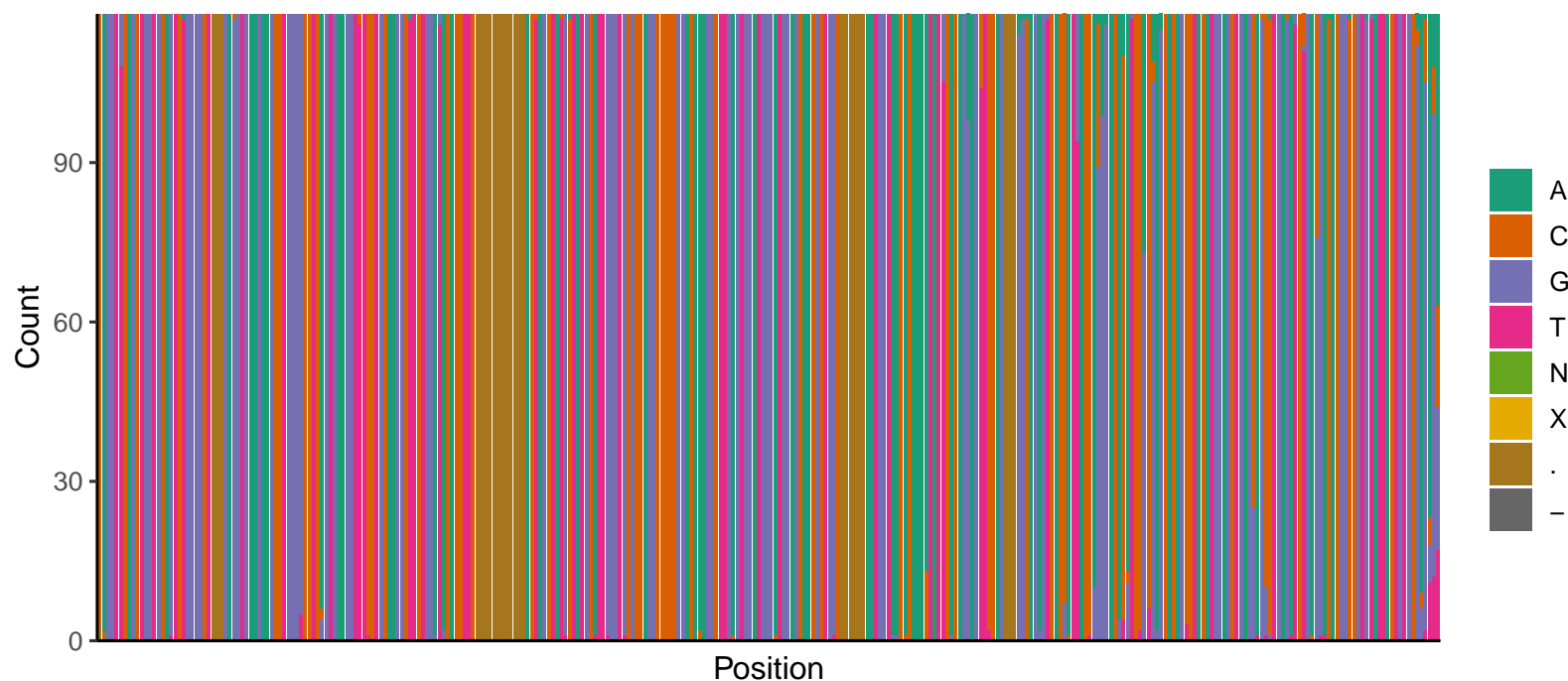
Gene IGHV4-61*08_G48A_G49C_G88A



Gene IGHV6-1*01_A315G



Gene IGHV1-3*02_T296C_T300C



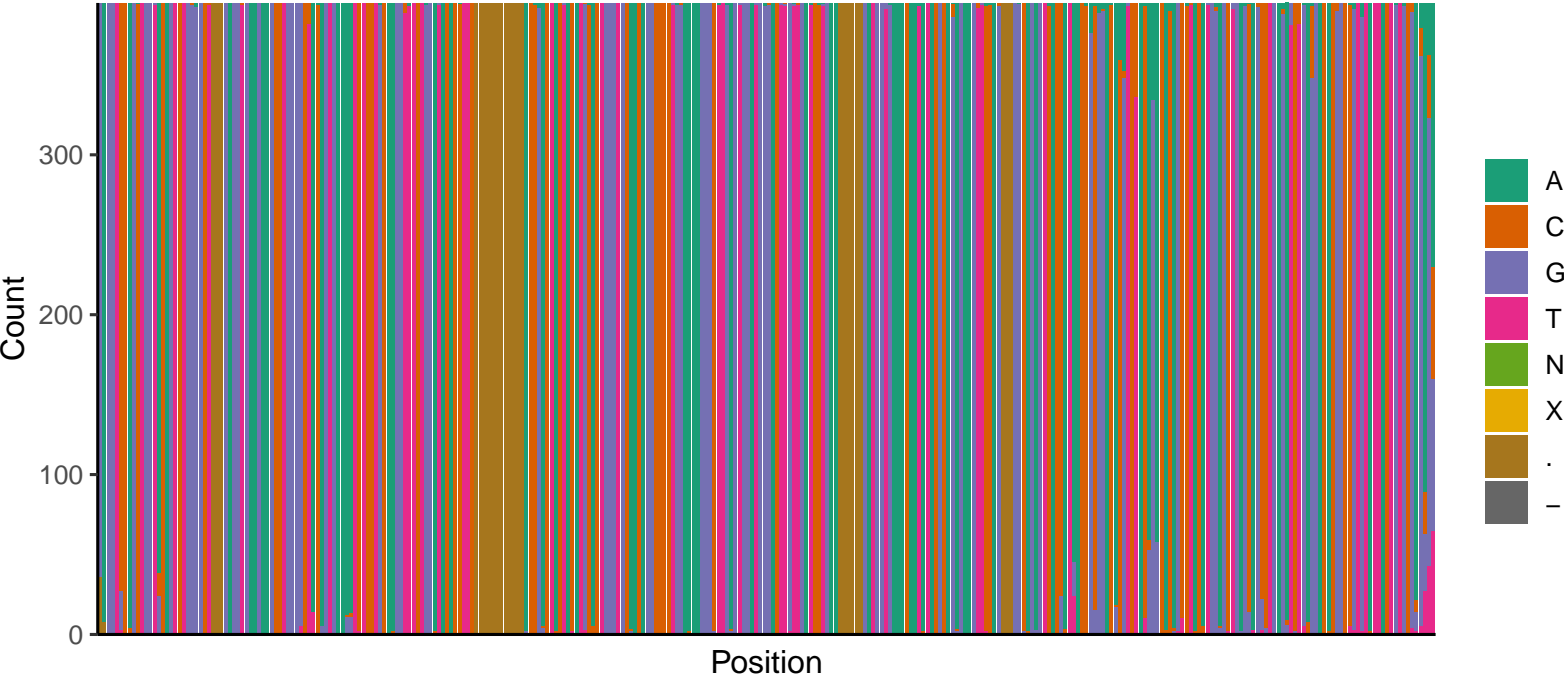
Gene IGHV1-24*01_A315G_C317G



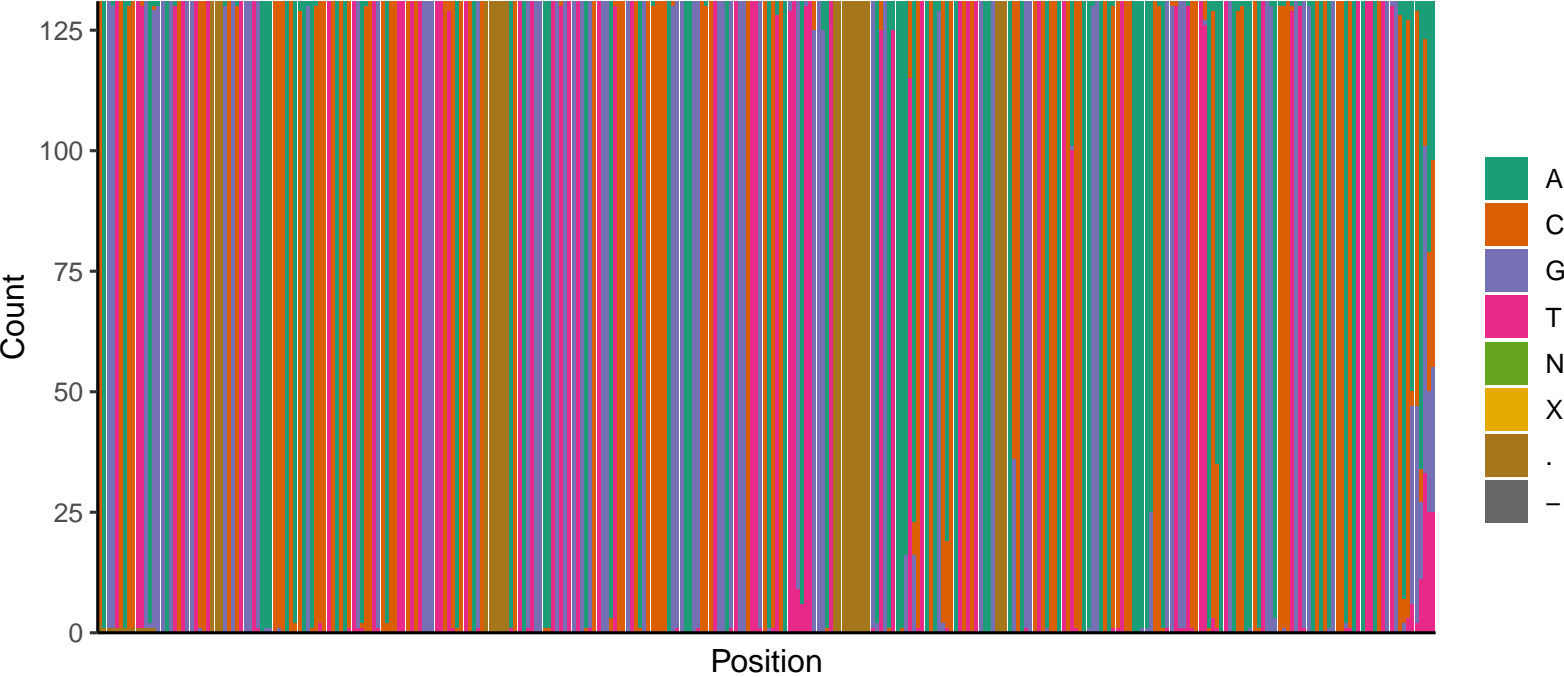
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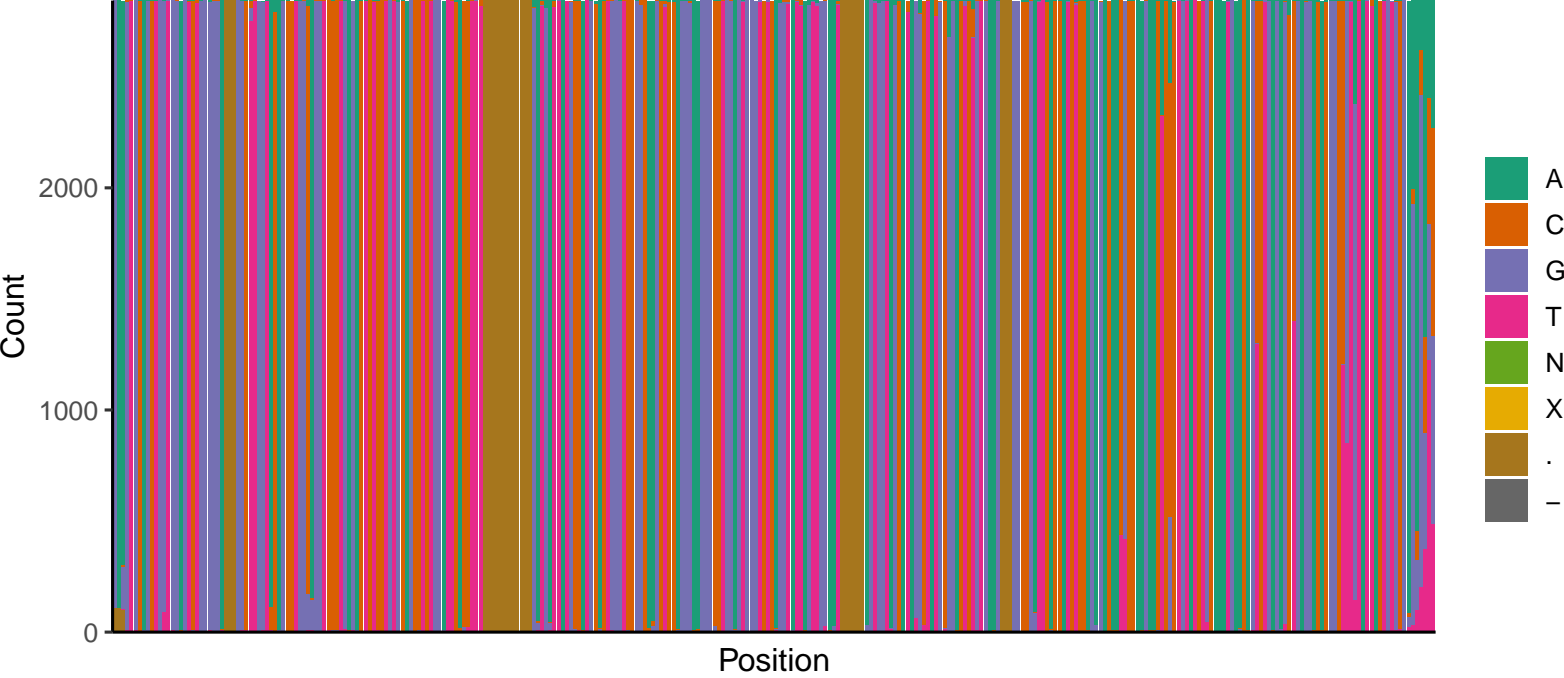
Gene IGHV1-69-2*01_A315G_C317G



Gene IGHV2-70*01_G303A



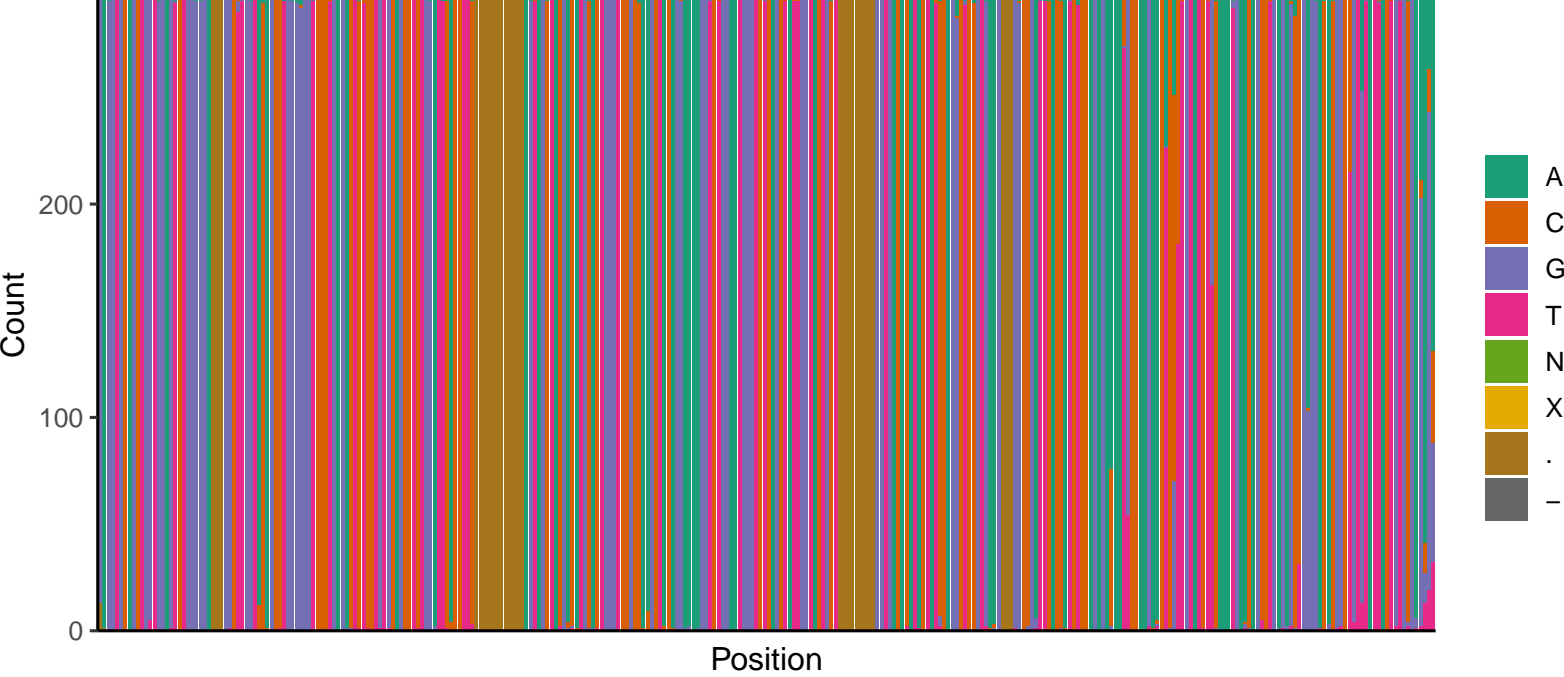
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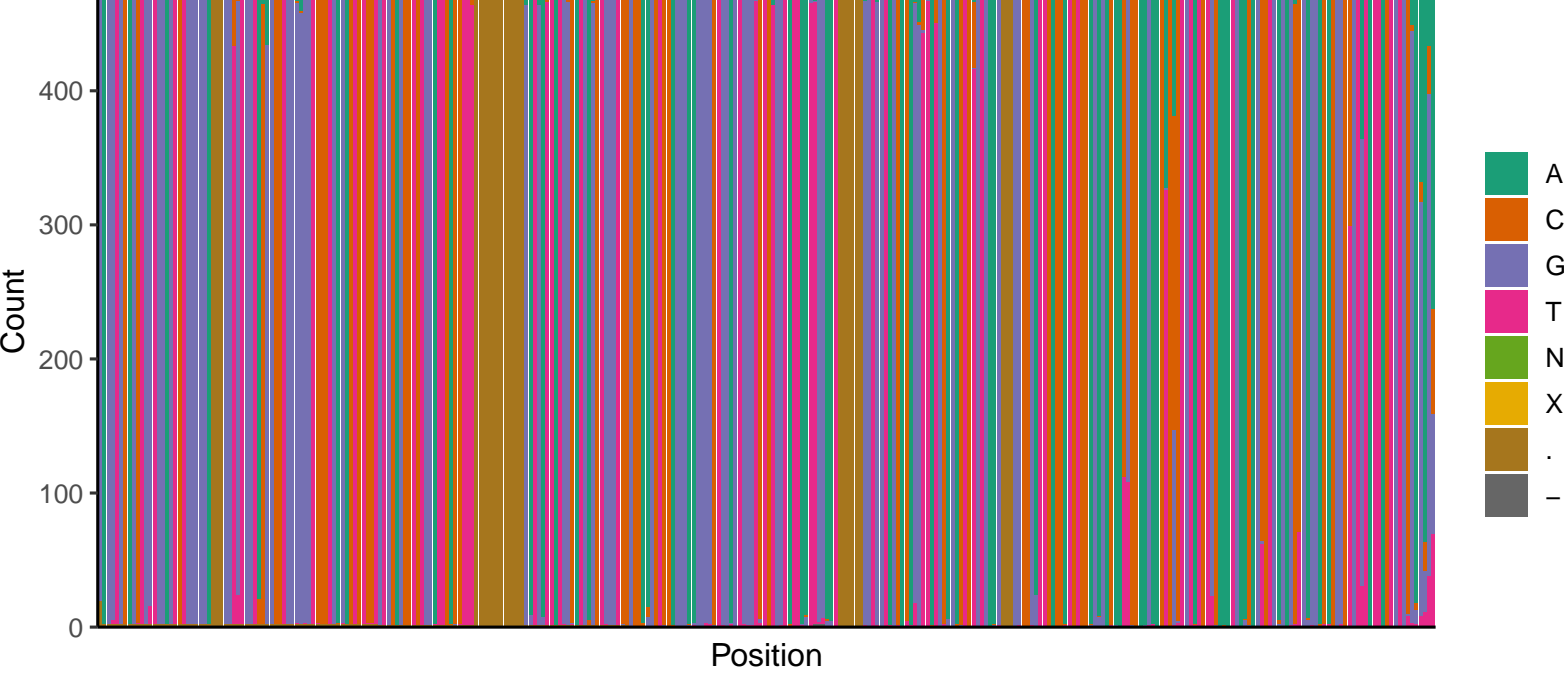
Gene IGHV3-13*01_A315G



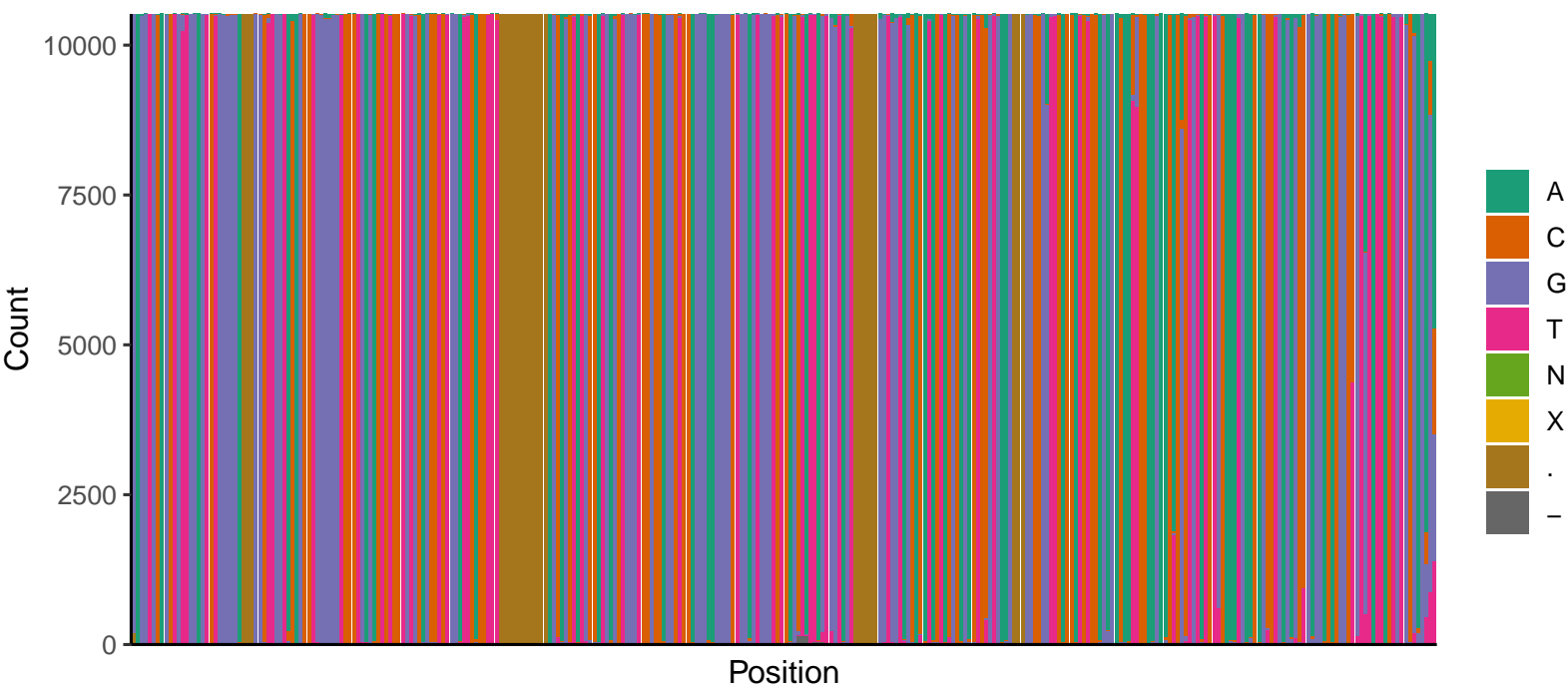
Gene IGHV3-13*04_A315G



Gene IGHV3-20*04_T279C_C300T_T301G



Gene IGHV3-23*01_A317G



Gene IGHV3-30*03_T288C



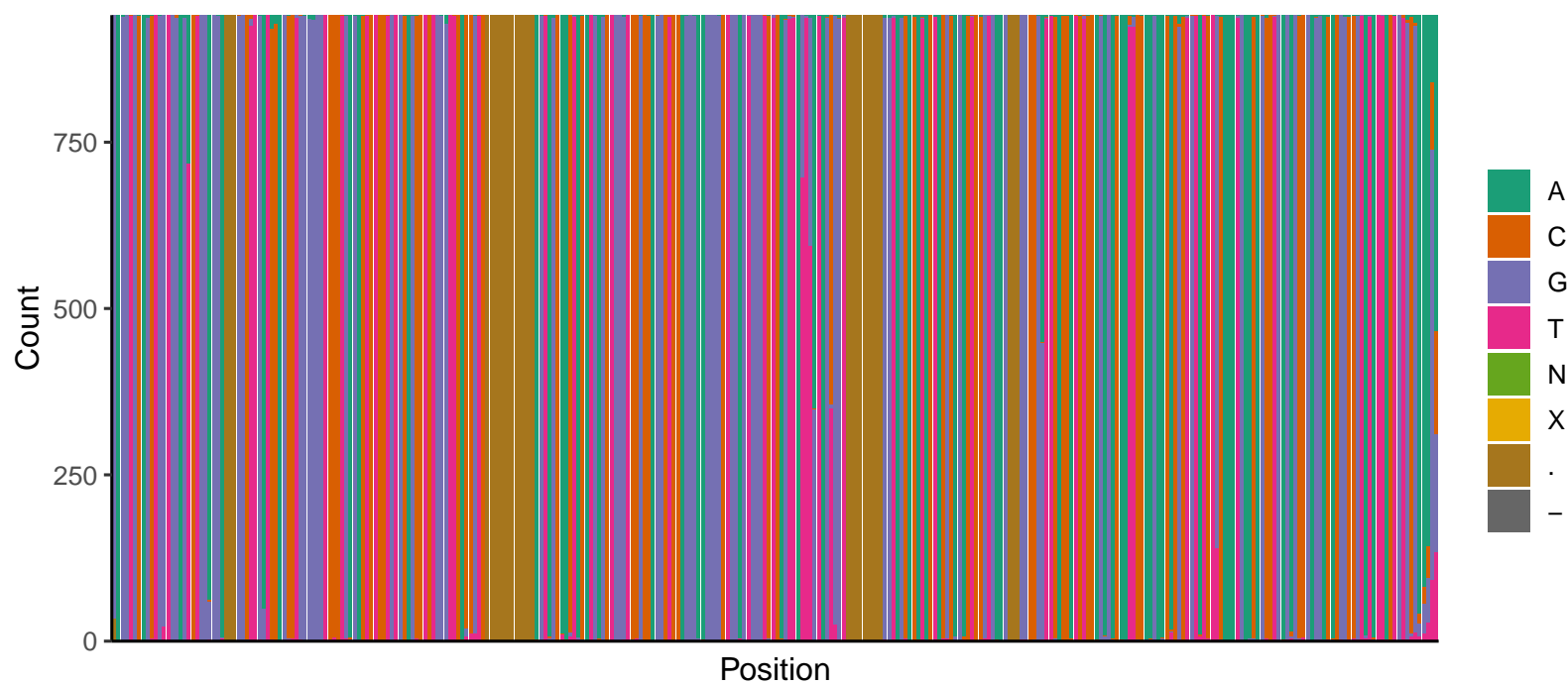
Gene IGHV3-48*03_T303G



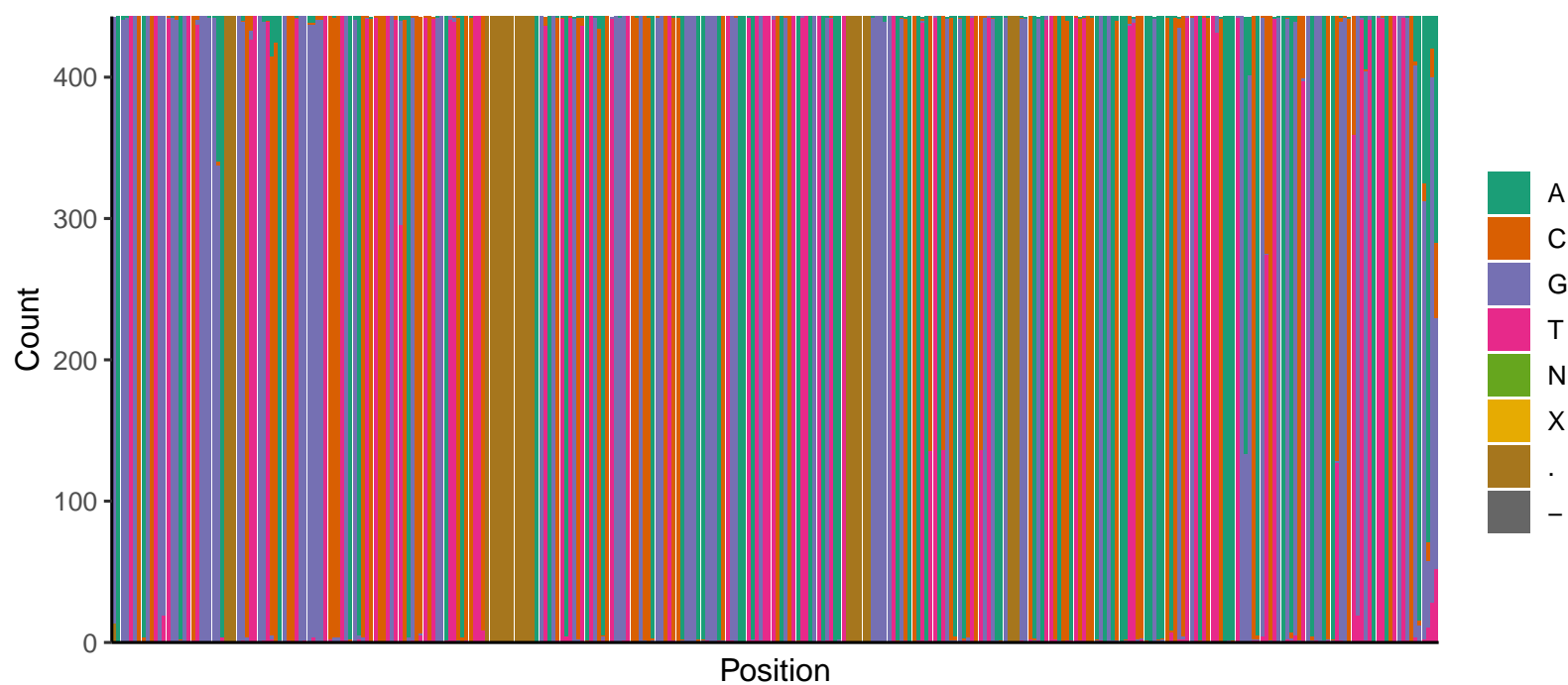
Gene IGHV3-49*05_A313G_T315G



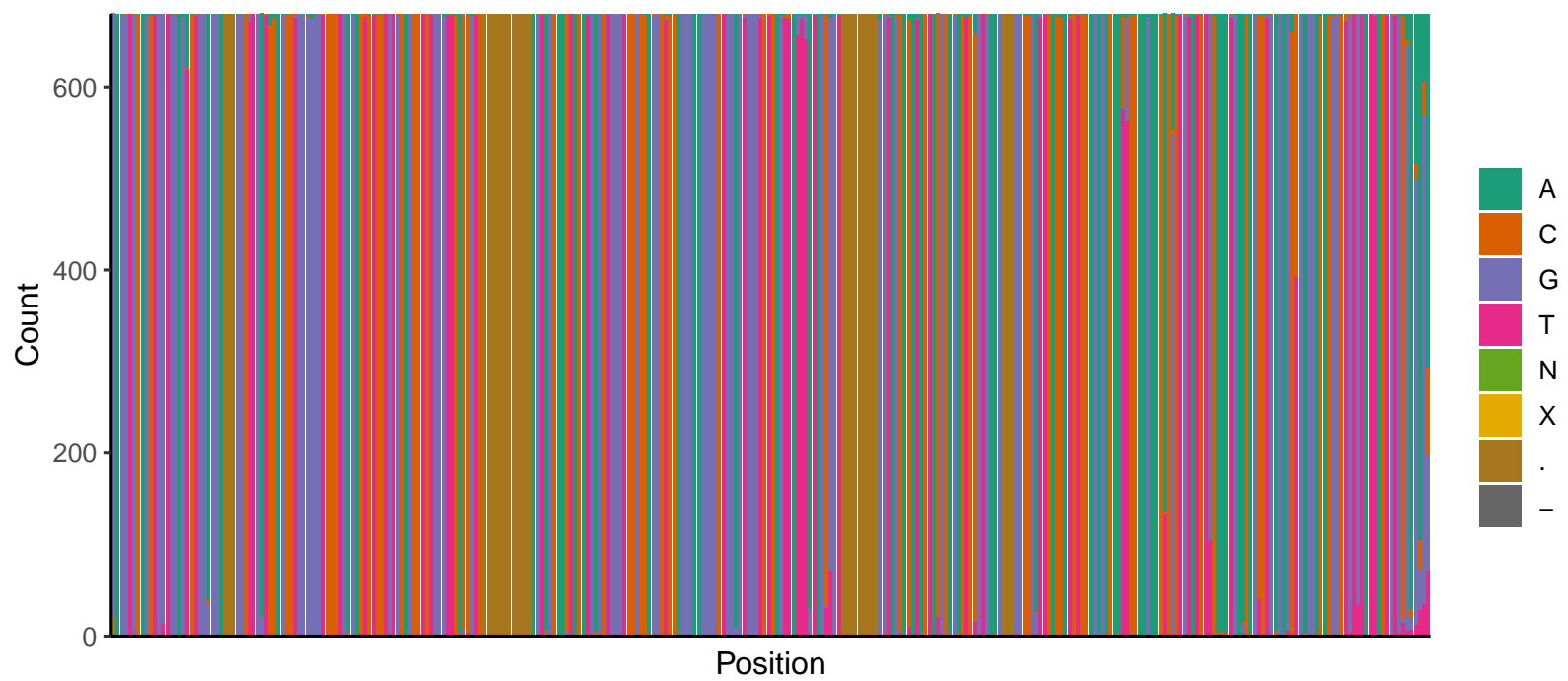
Gene IGHV3-53*01_T267G_G303A_G317A



Gene IGHV3-64D*06_T314C



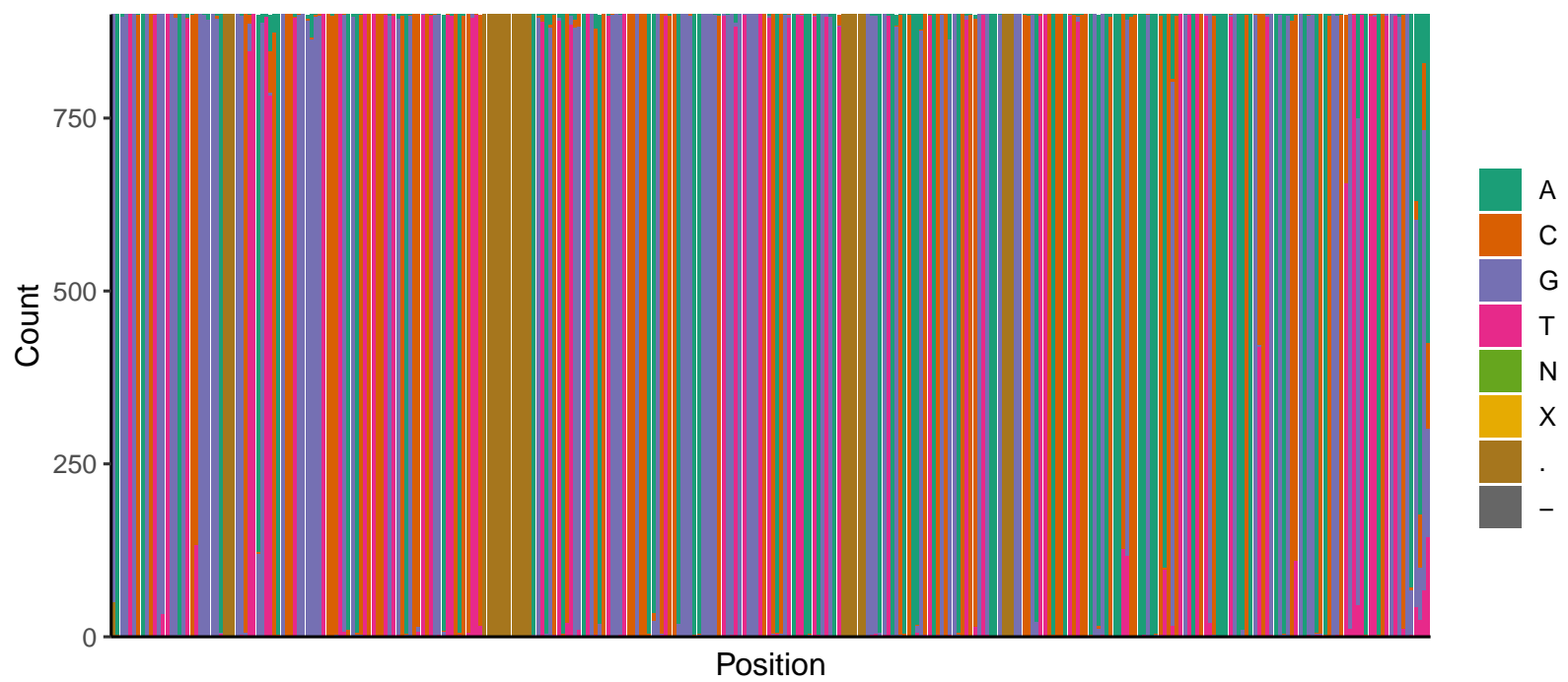
Gene IGHV3-66*03_T175G_T267G



Gene IGHV3-73*02_A313G_T315G



Gene IGHV3-74*01_A315G



Gene IGHV3–NL1*01_G49A_T201C_G267T_T288C_T300C_A317G



Gene IGHV3–NL1*01_G49A_G75C_T201C_G267T_T288C_T300C_A317G



Gene IGHV4–30–2*01_C315G



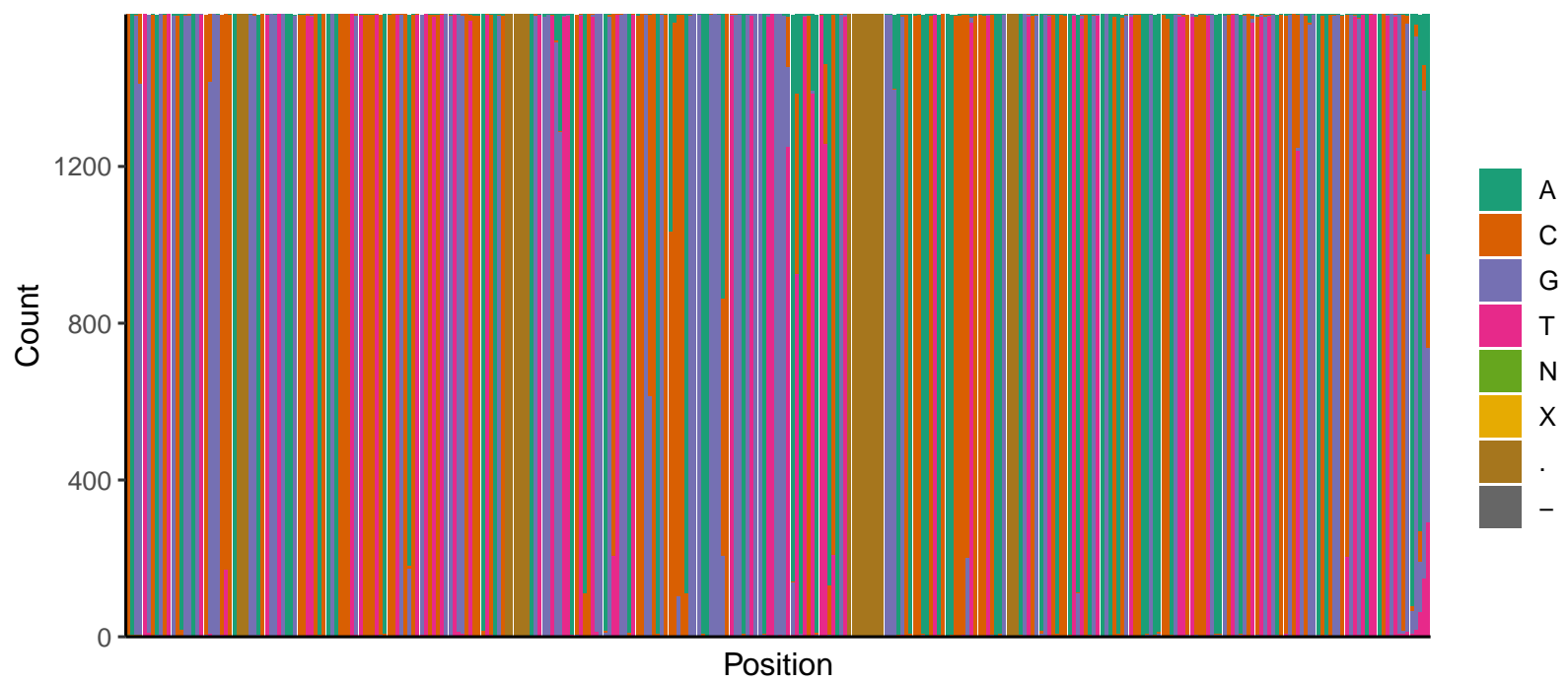
Gene IGHV4-30-4*01_C315G



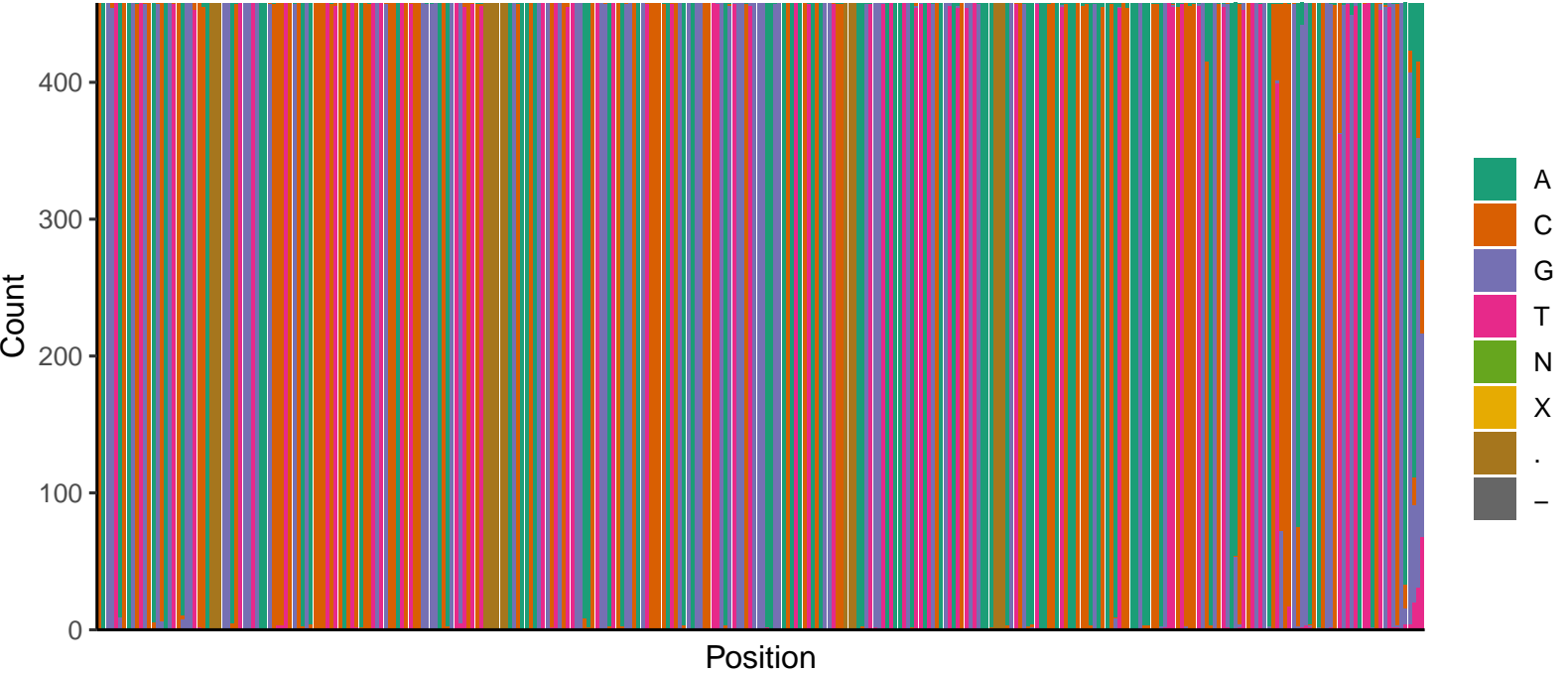
Gene IGHV4-39*02_C258G



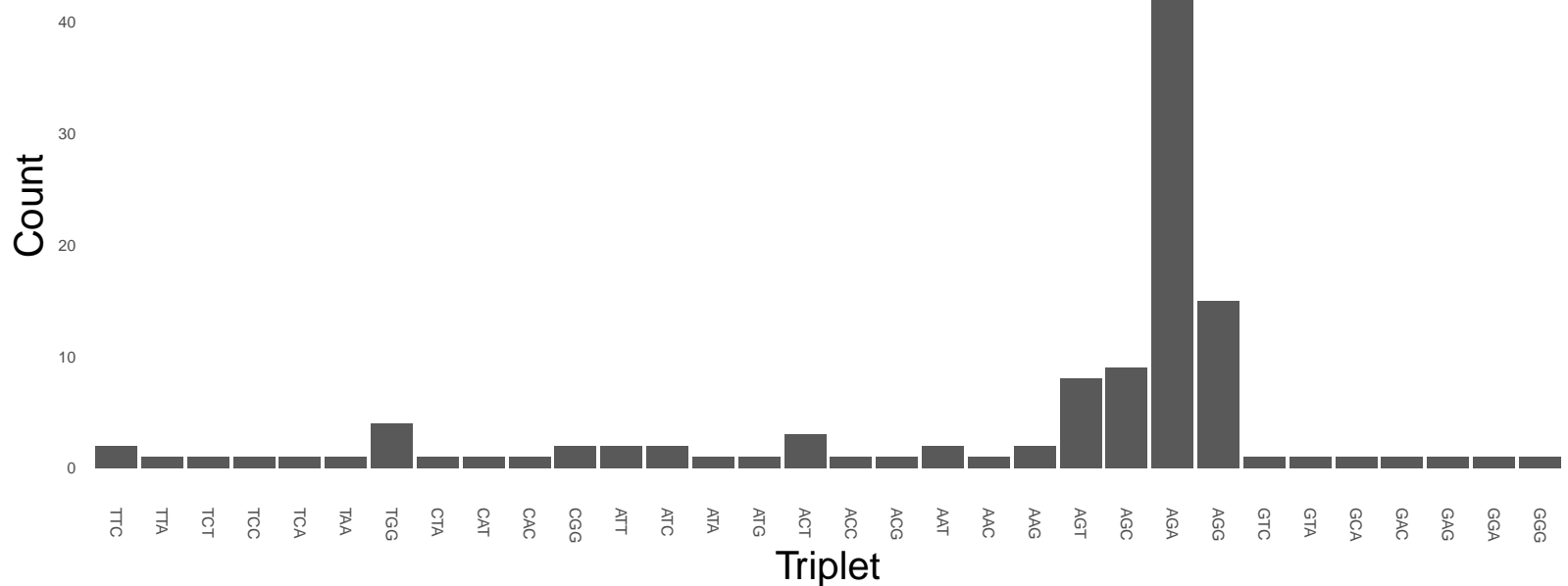
Gene IGHV4-61*08_G48A_G49C_G88A



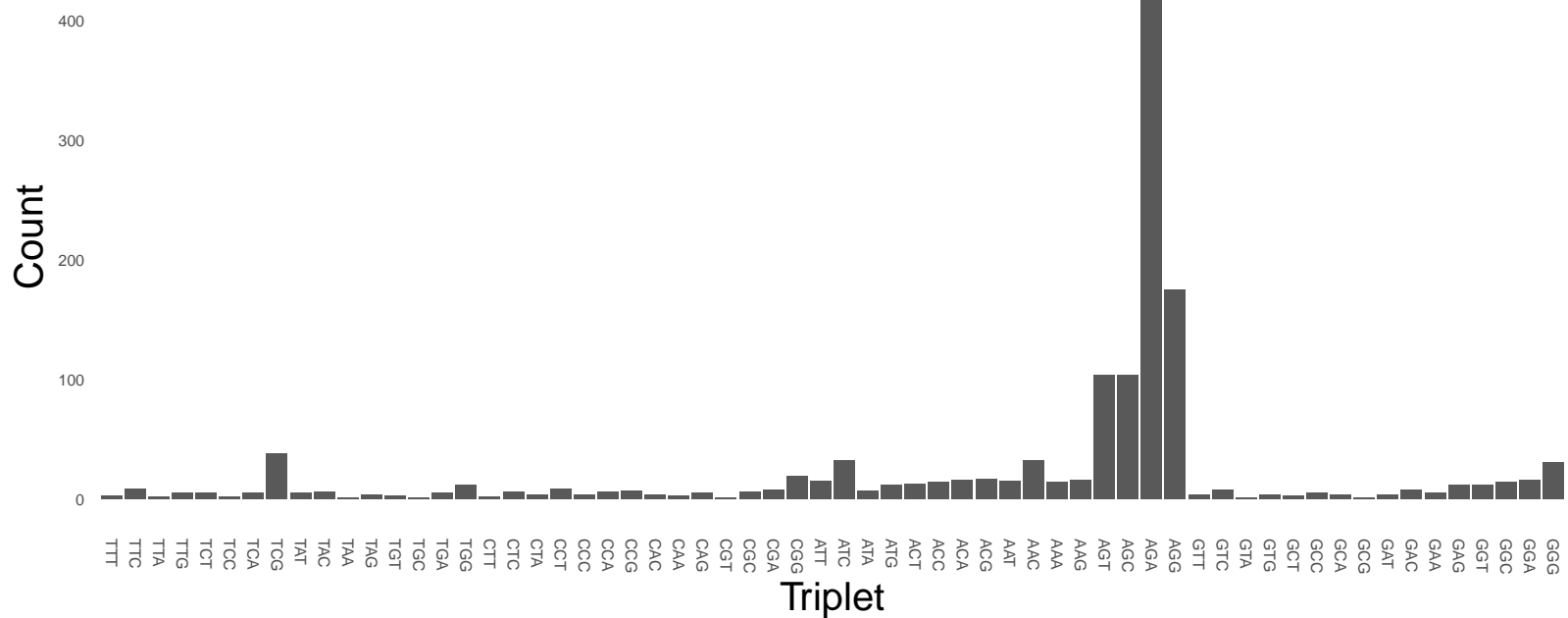
Gene IGHV6-1*01_A315G



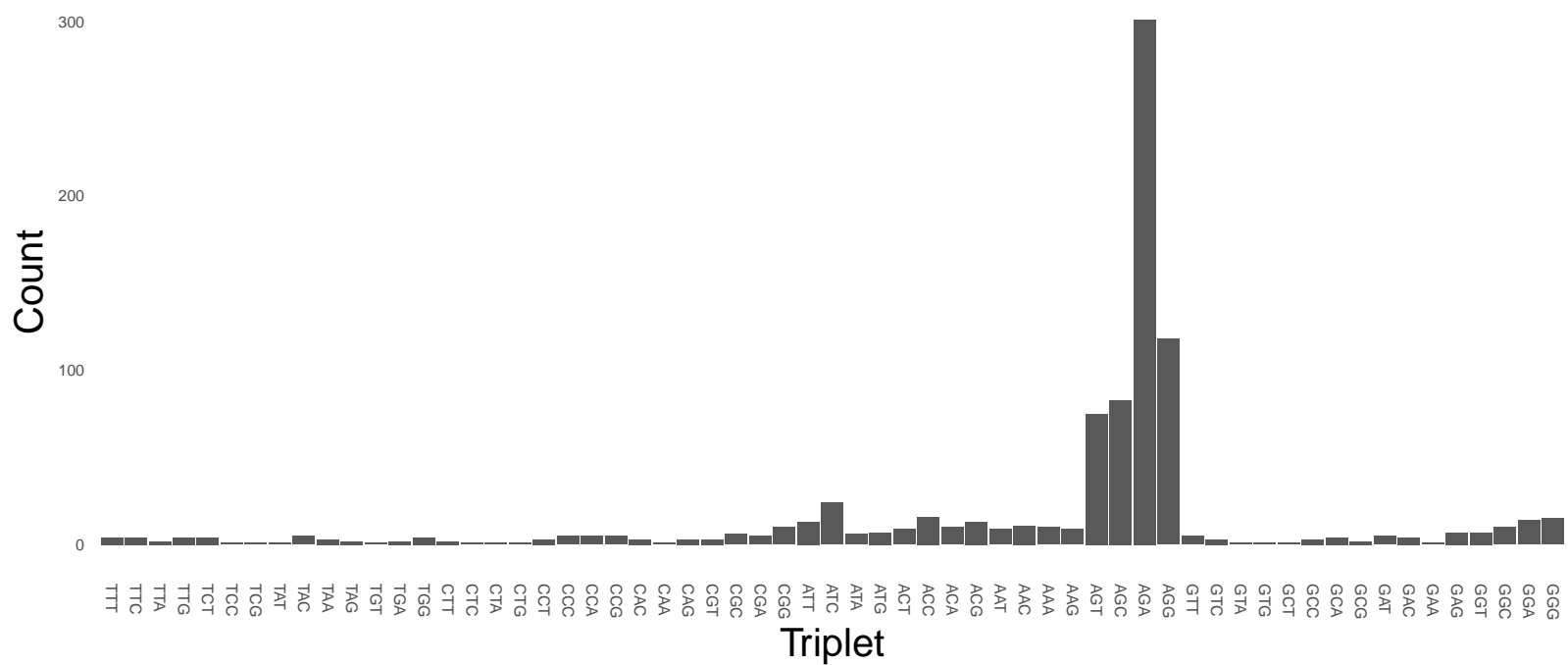
IGHV1-3*02_T296C_T300C- Final 3 nucleotides as a triplet



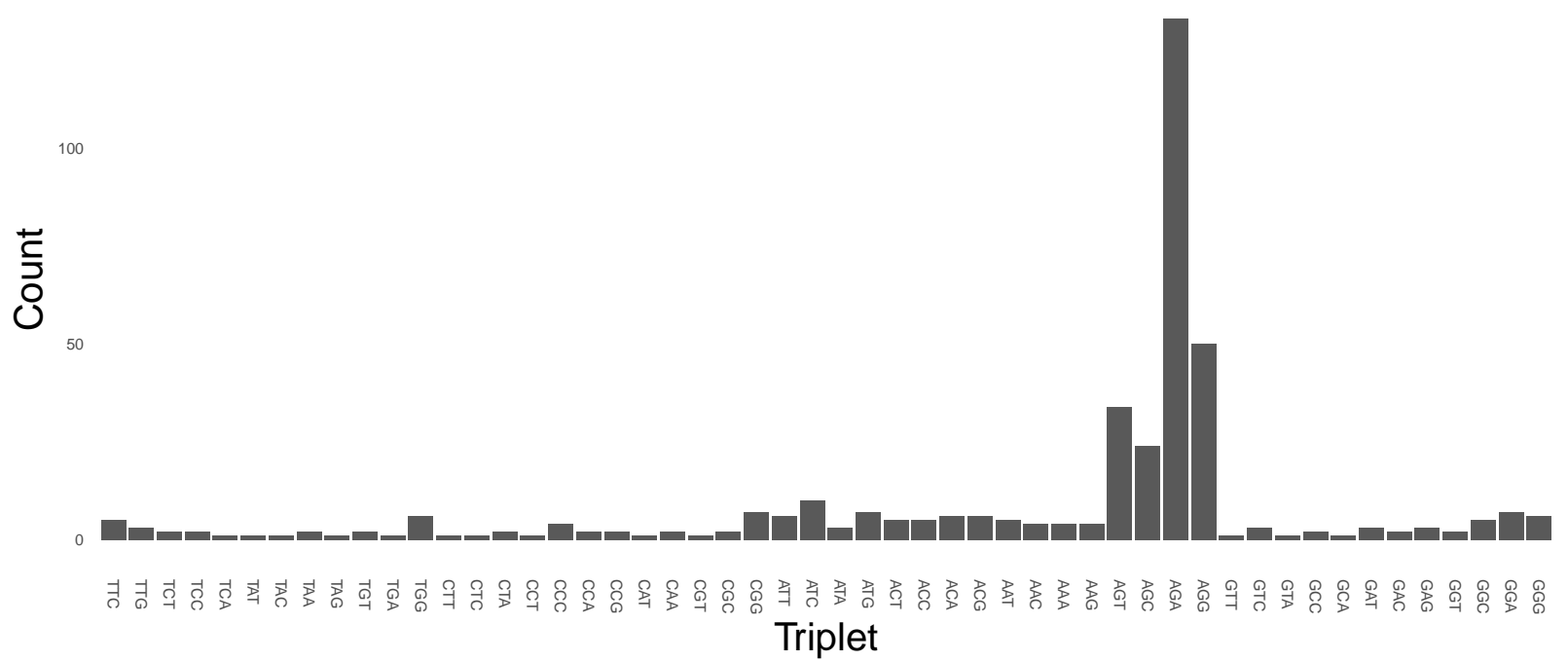
IGHV1-24*01_A315G_C317G- Final 3 nucleotides as a triplet



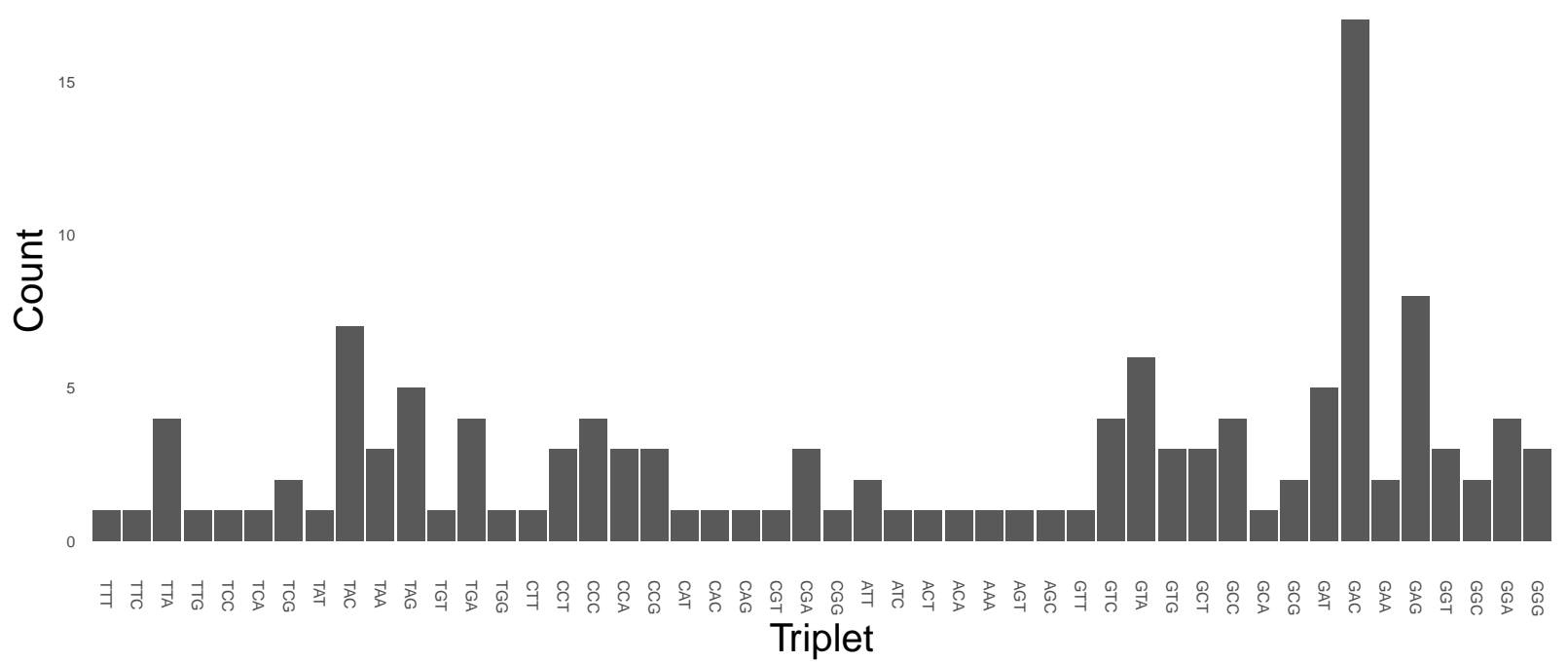
IGHV1-58*01_G316A_C317G- Final 3 nucleotides as a triplet



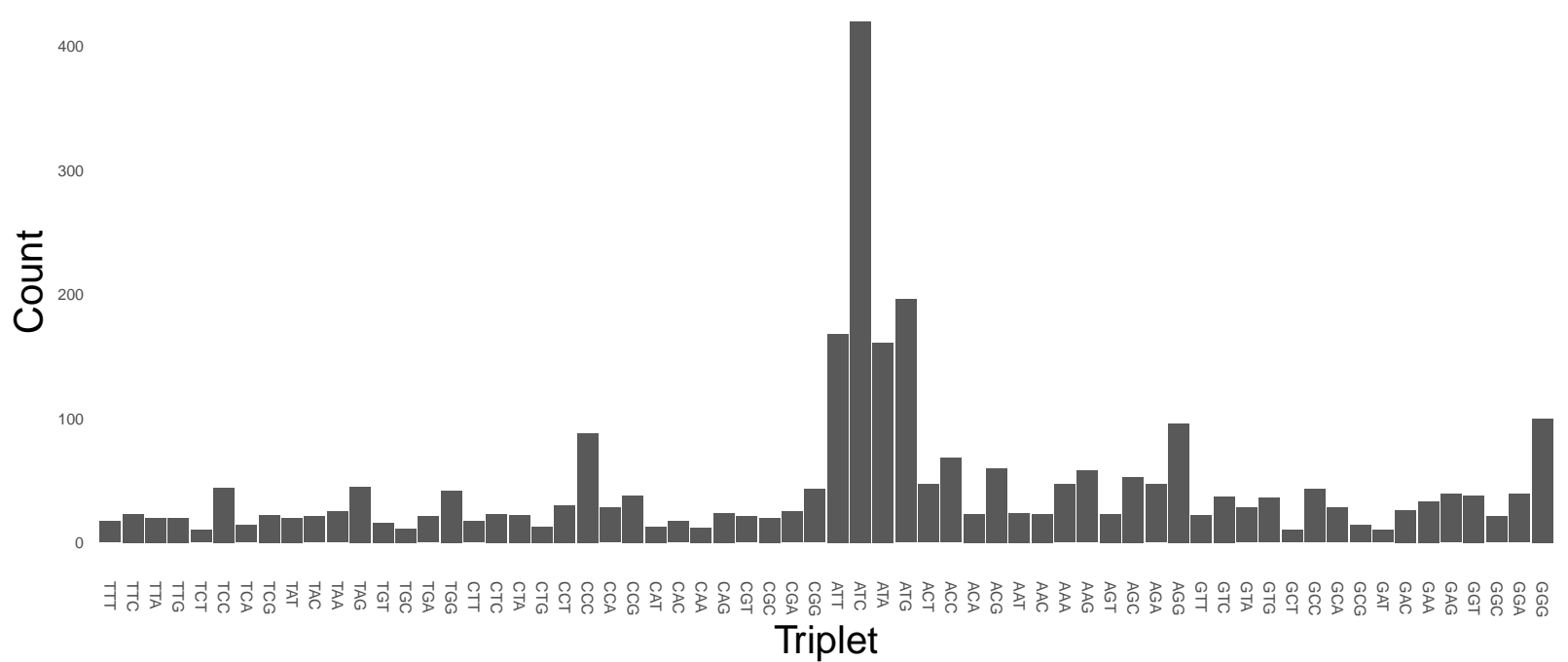
IGHV1-69-2*01_A315G_C317G- Final 3 nucleotides as a triplet



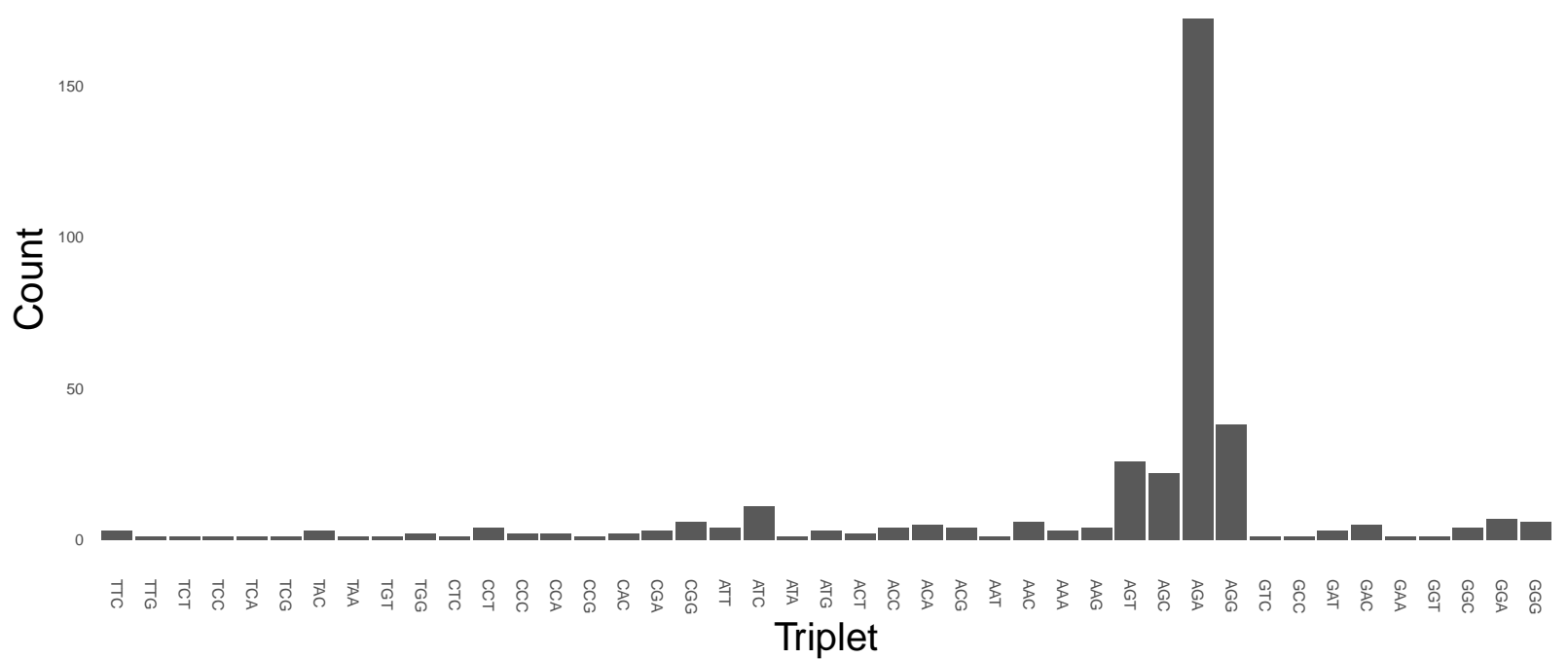
IGHV2-70*01_G303A- Final 3 nucleotides as a triplet



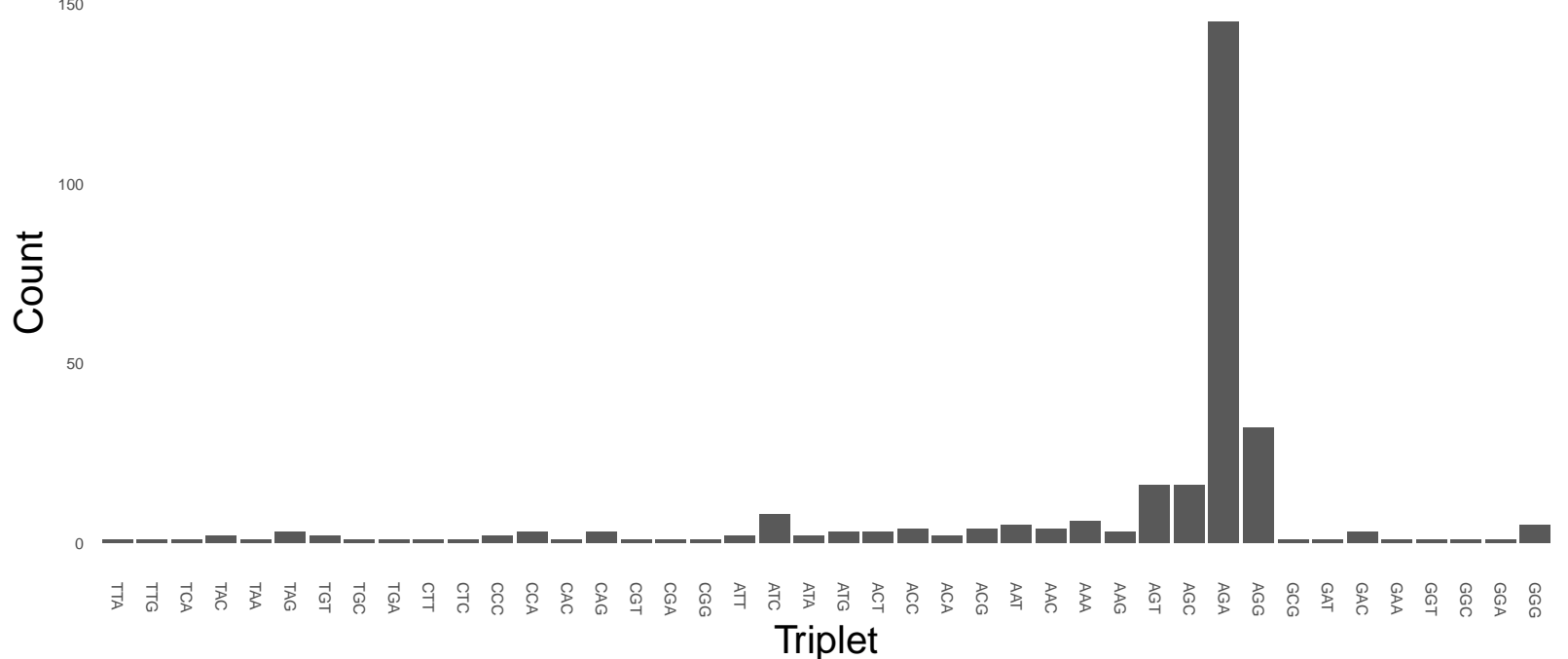
IGHV3-9*01_A315G- Final 3 nucleotides as a triplet



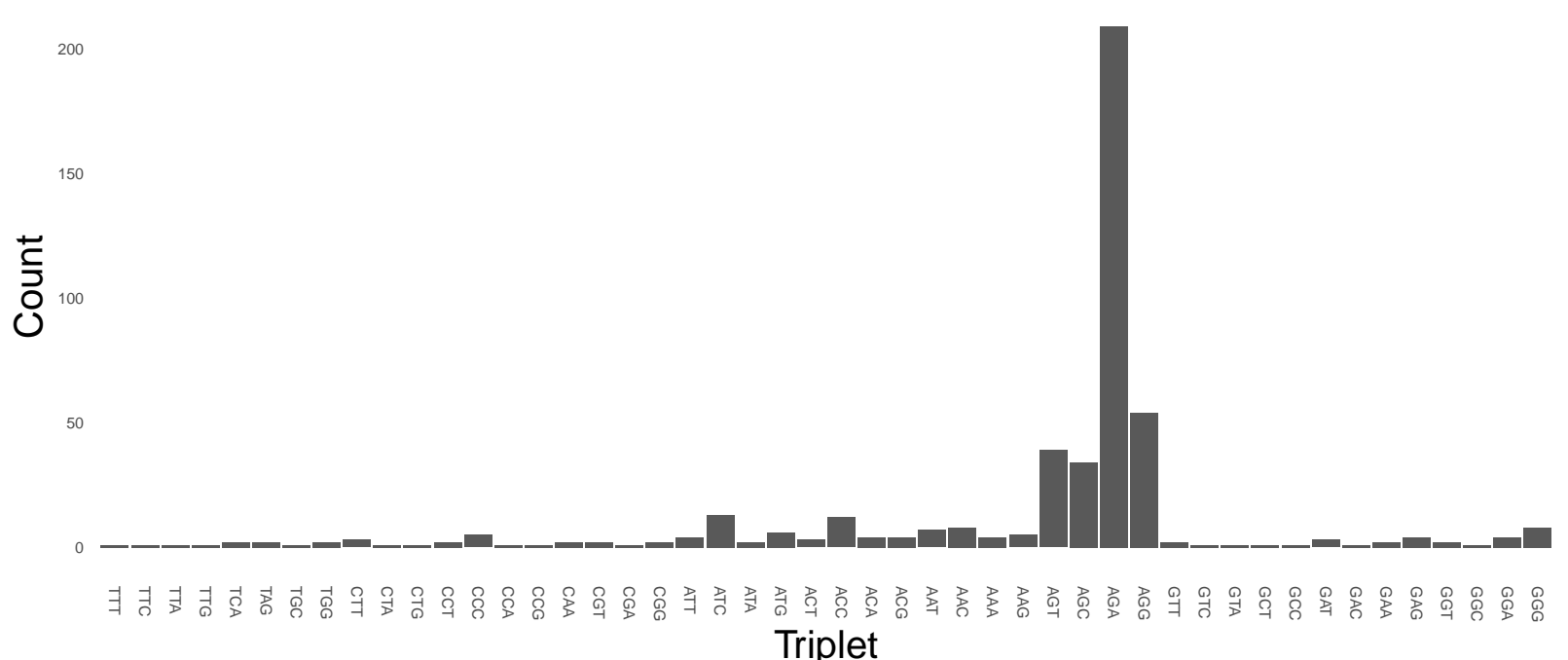
IGHV3-13*01_A315G- Final 3 nucleotides as a triplet



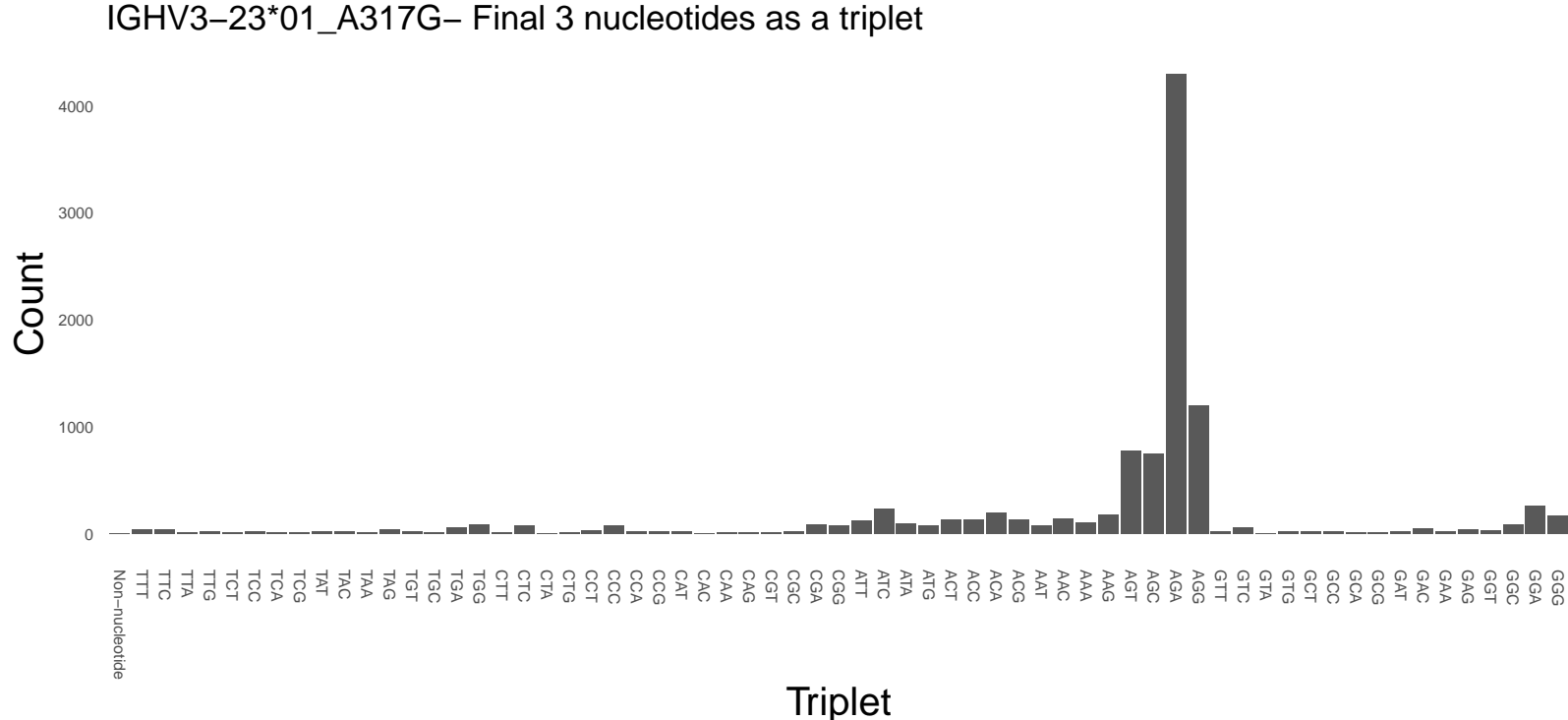
IGHV3-13*04_A315G- Final 3 nucleotides as a triplet



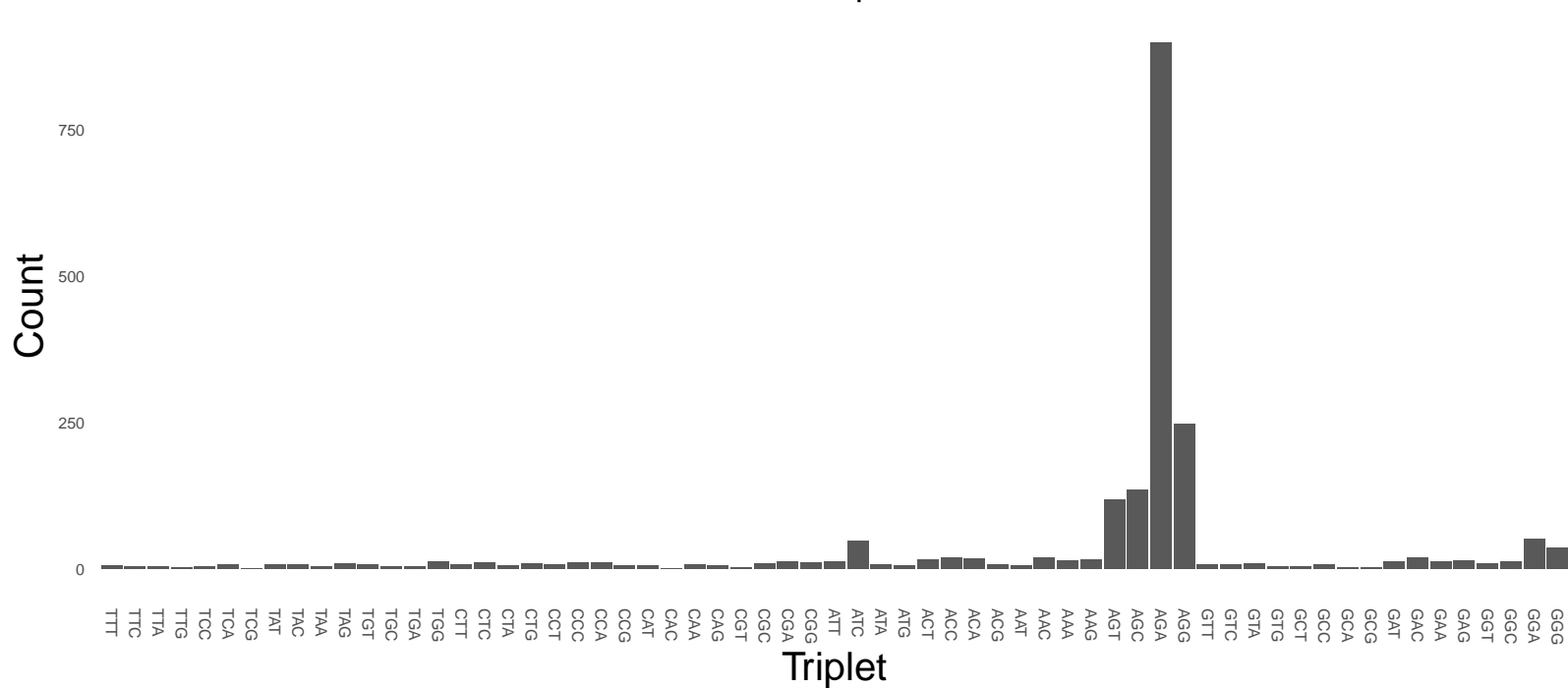
IGHV3-20*04_T279C_C300T_T301G- Final 3 nucleotides as a triplet



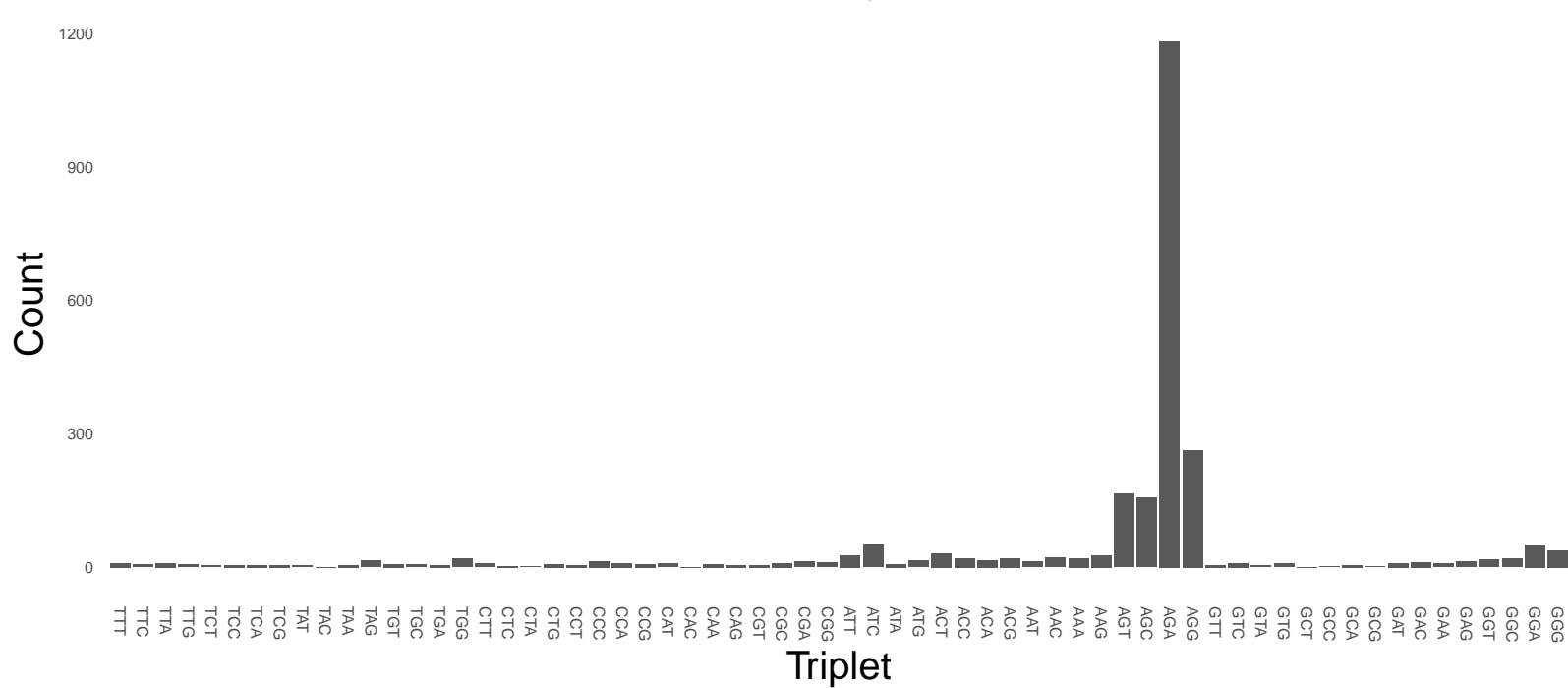
IGHV3-23*01_A317G- Final 3 nucleotides as a triplet



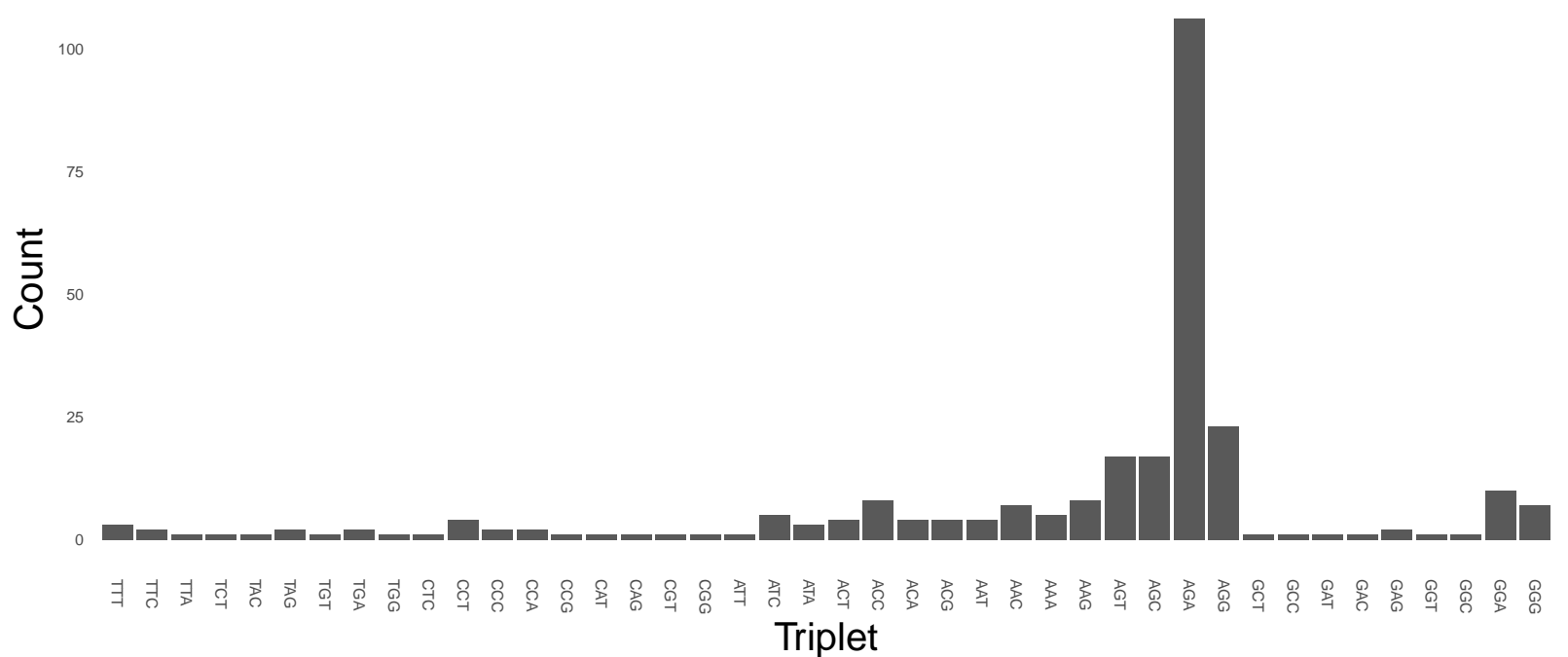
IGHV3-30*03_T288C- Final 3 nucleotides as a triplet



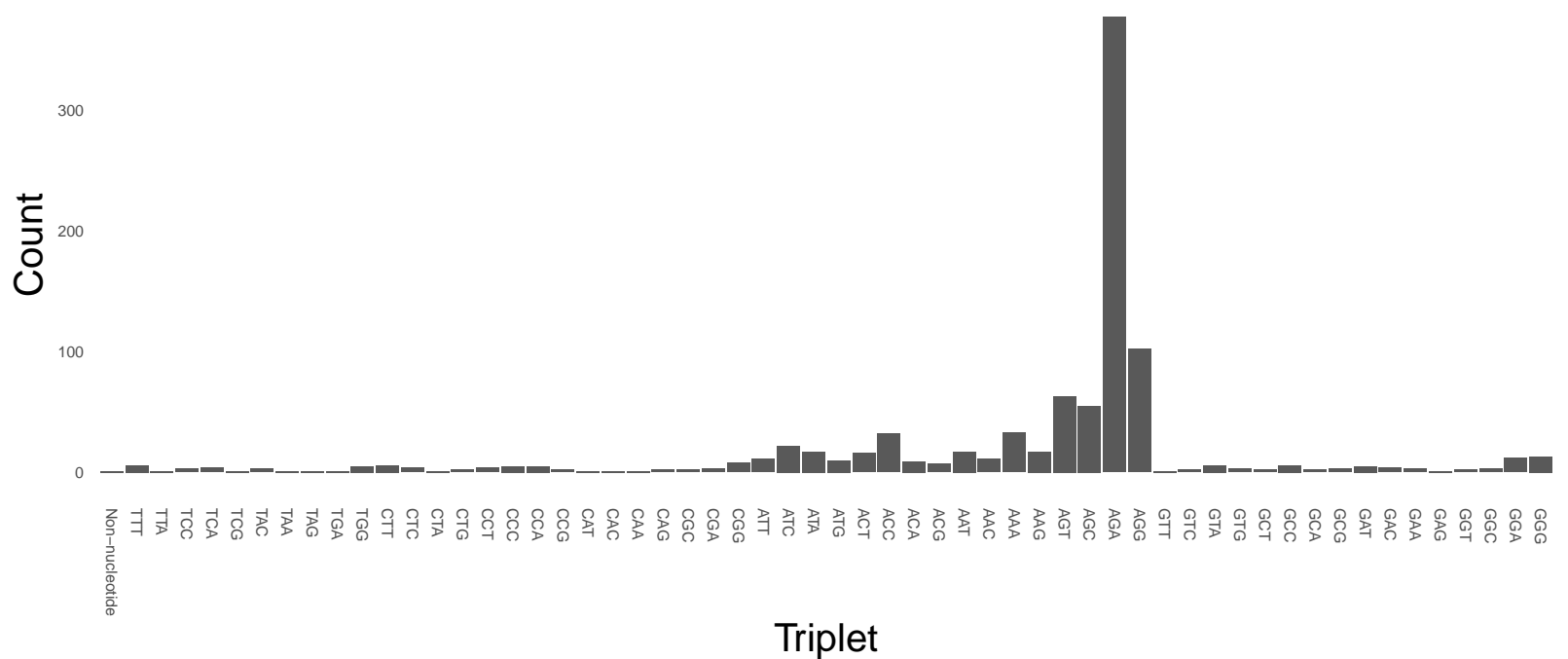
IGHV3-48*03_T303G- Final 3 nucleotides as a triplet



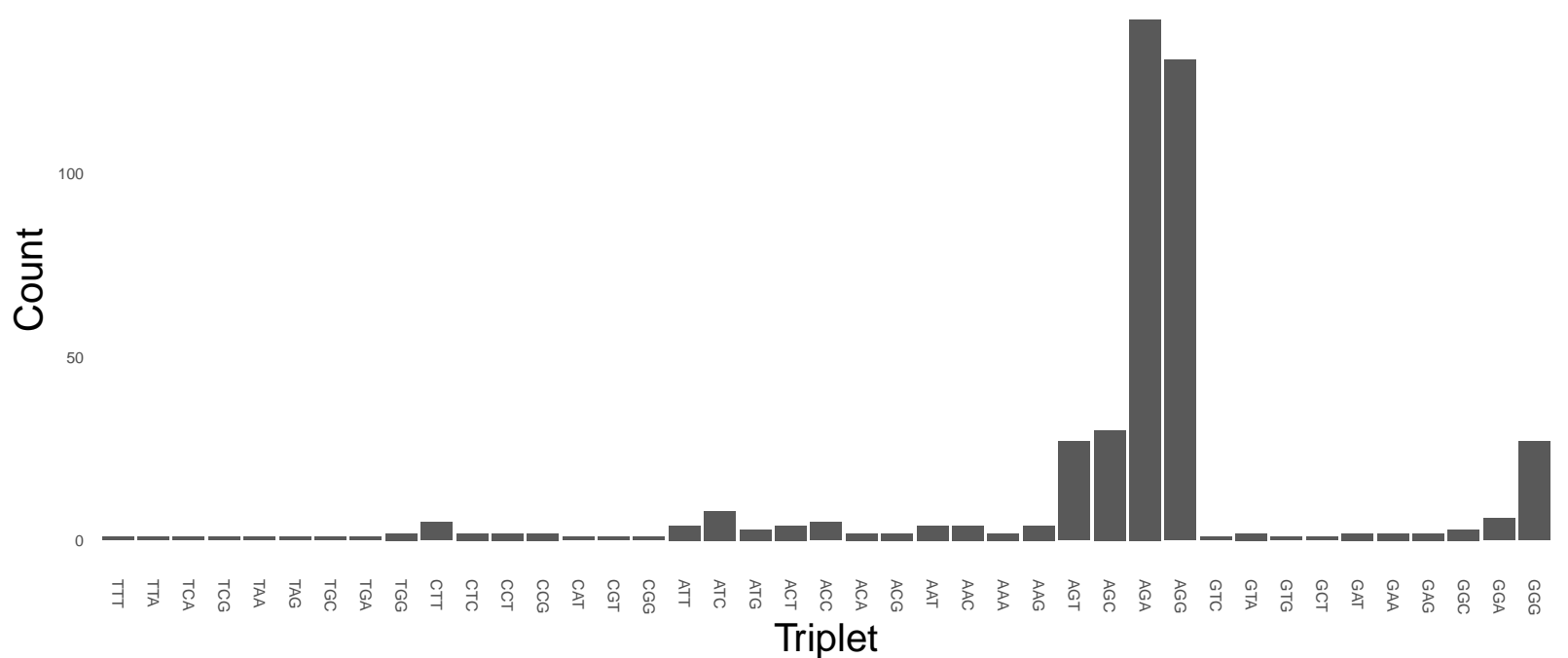
IGHV3–49*05_A313G_T315G– Final 3 nucleotides as a triplet



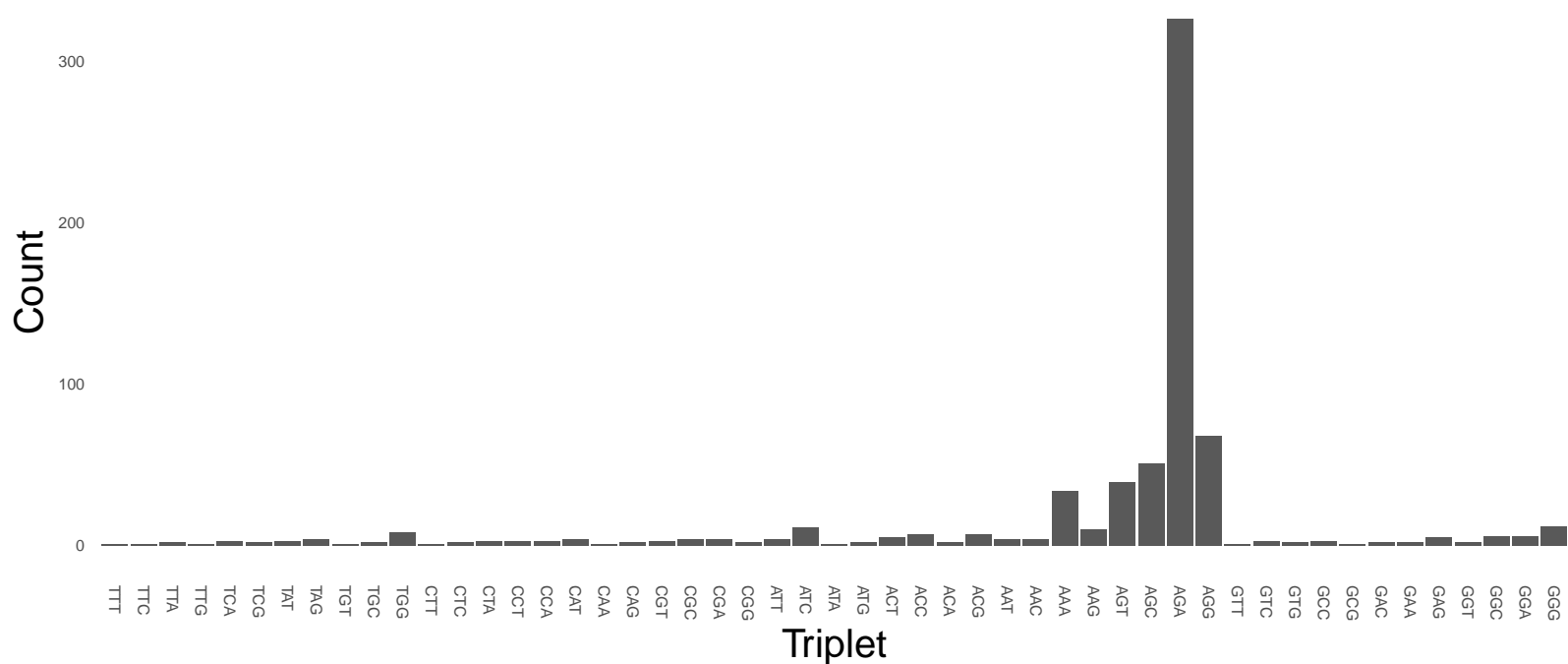
IGHV3–53*01_T267G_G303A_G317A– Final 3 nucleotides as a triplet



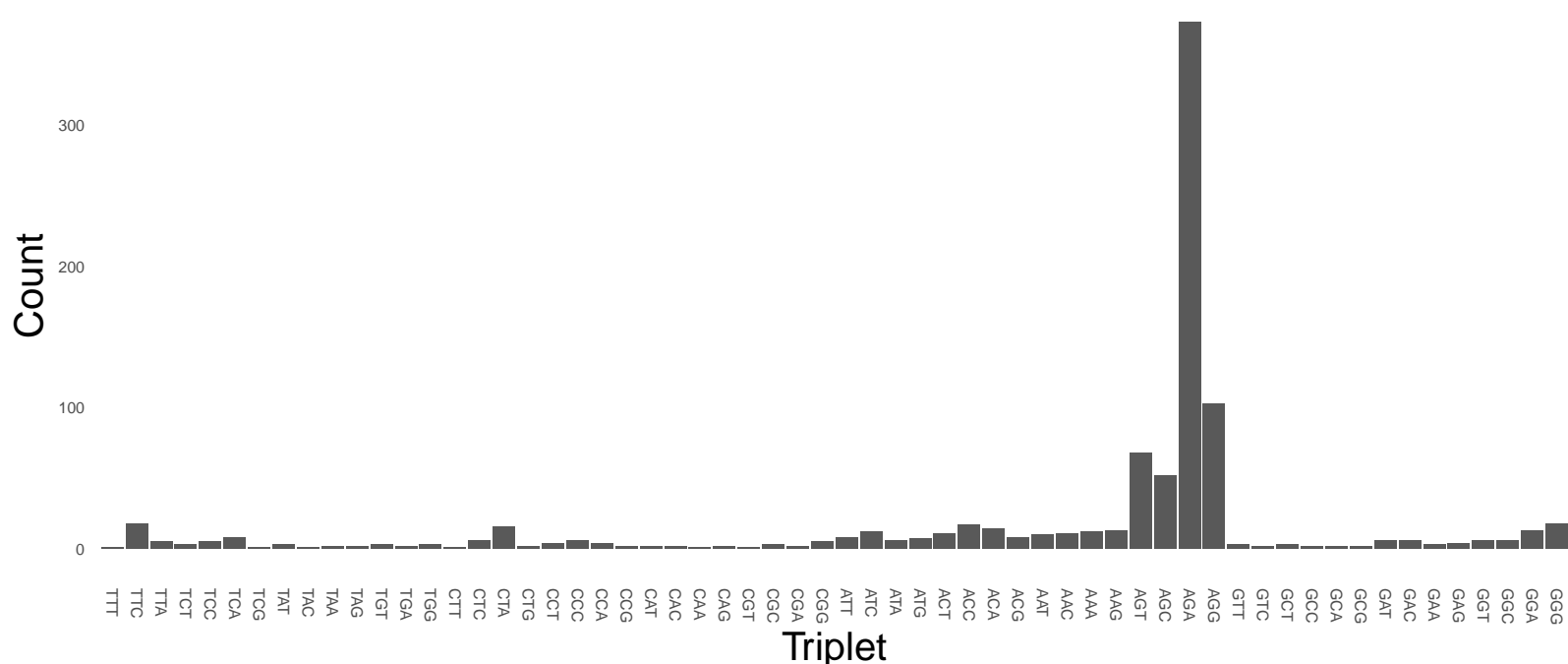
IGHV3–64D*06_T314C– Final 3 nucleotides as a triplet



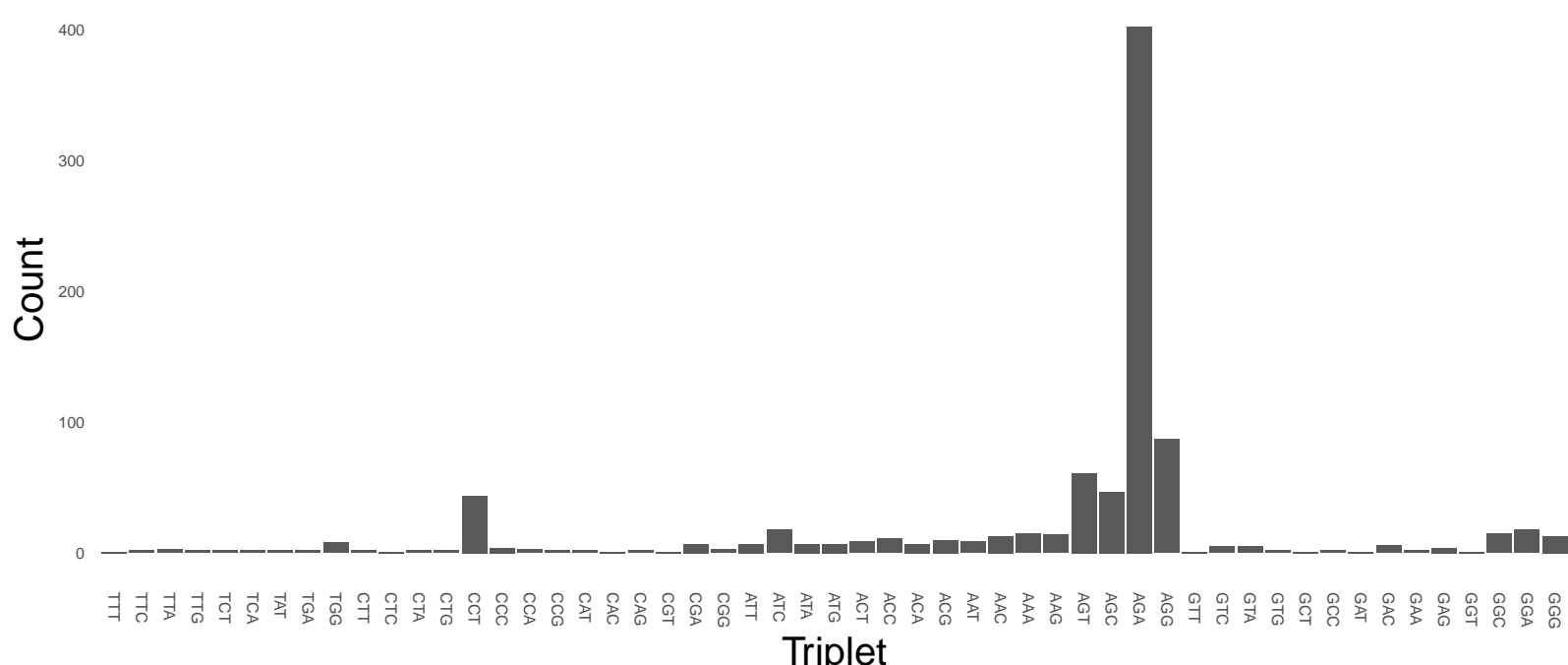
IGHV3-66*03_T175G_T267G- Final 3 nucleotides as a triplet



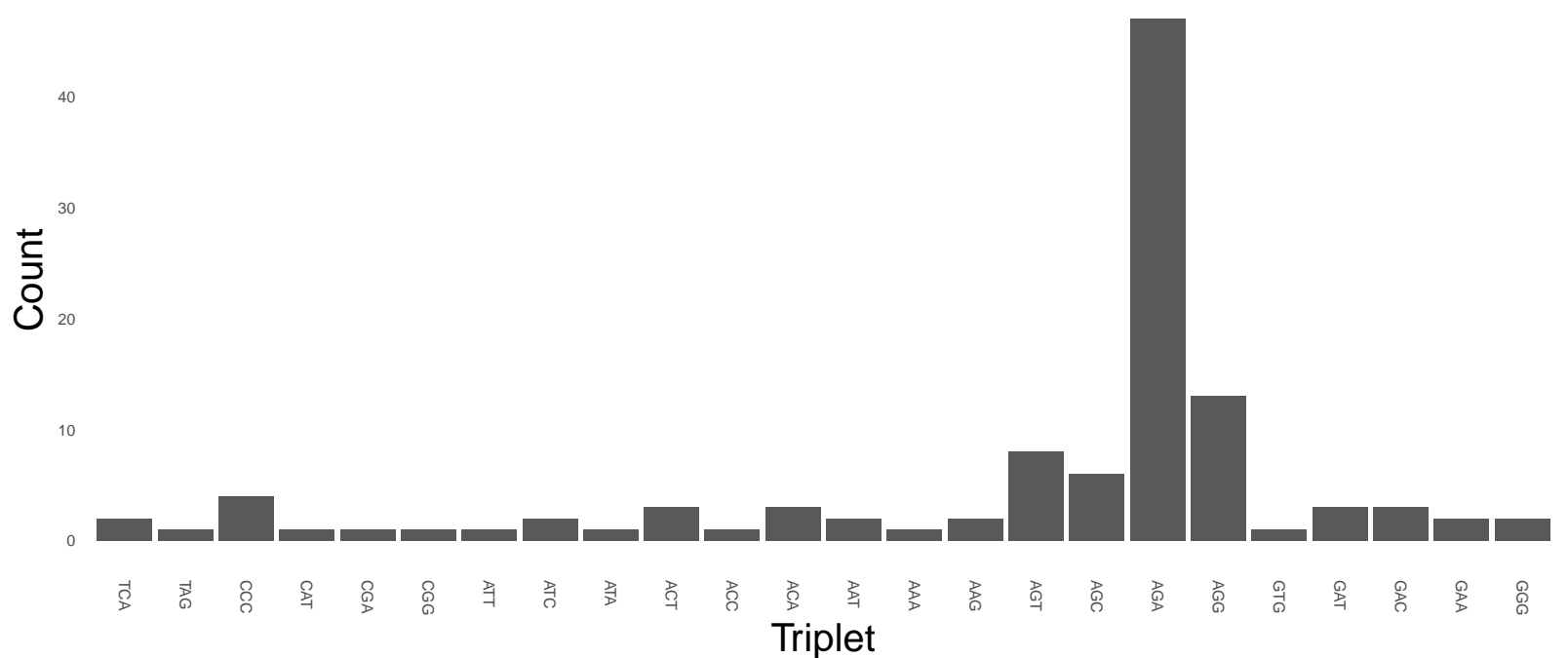
IGHV3-73*02_A313G_T315G- Final 3 nucleotides as a triplet



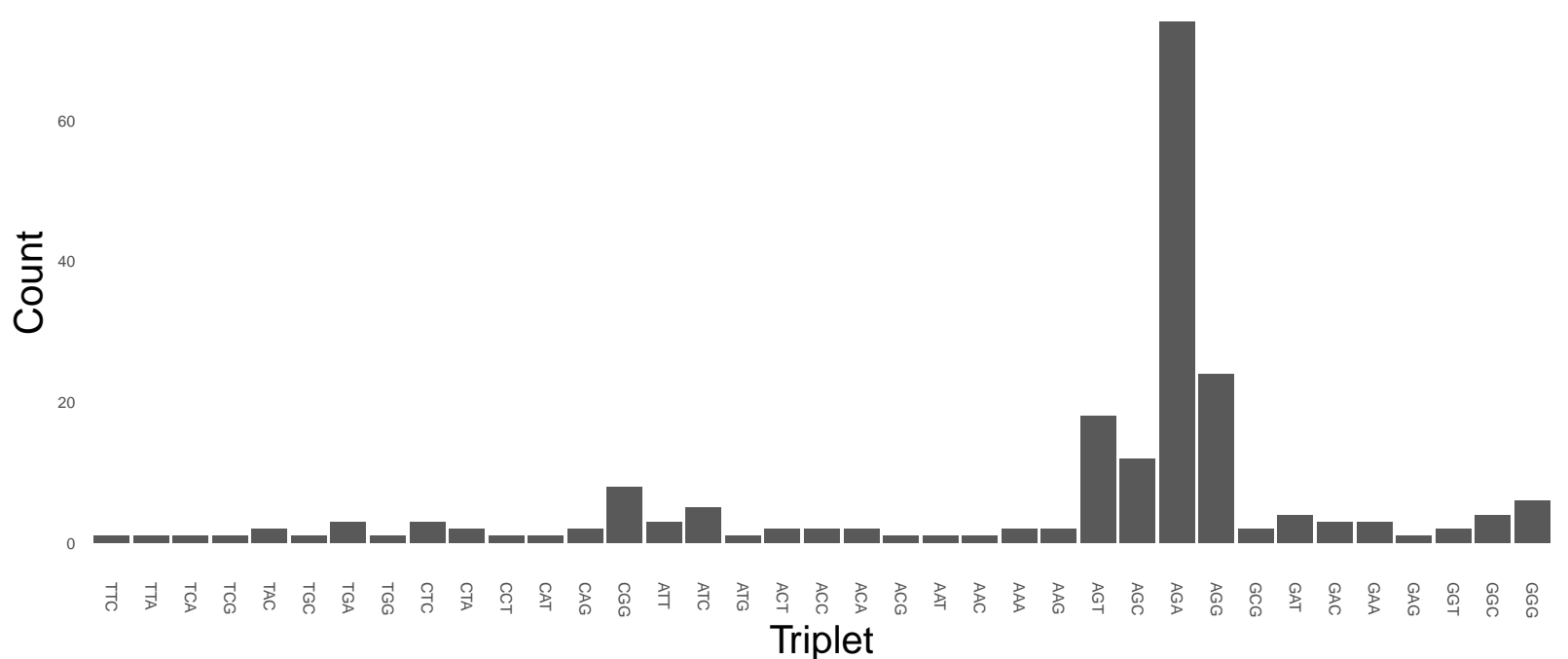
IGHV3-74*01_A315G- Final 3 nucleotides as a triplet



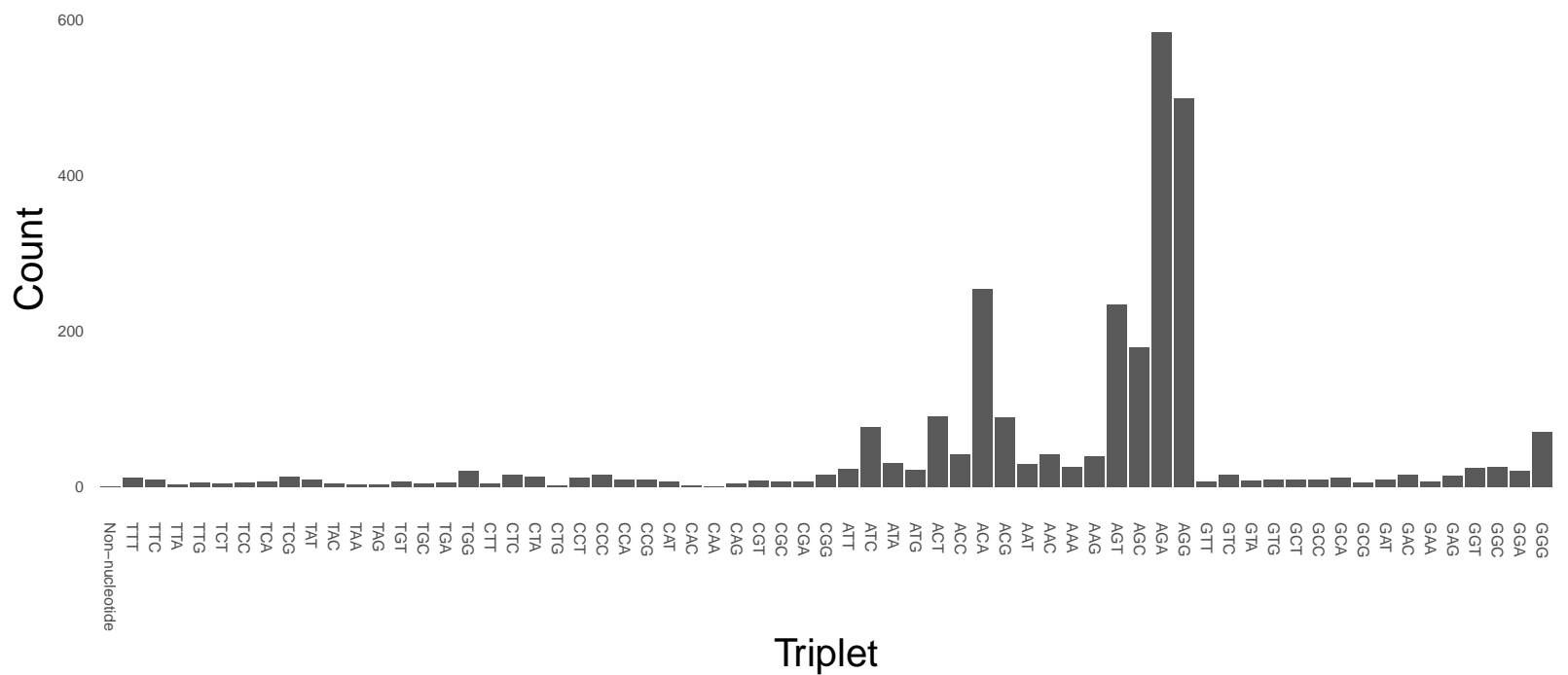
IGHV3-NL1*01_G49A_T201C_G267T_T288C_T300C_A317G- Final 3 nucleotides as a triplet



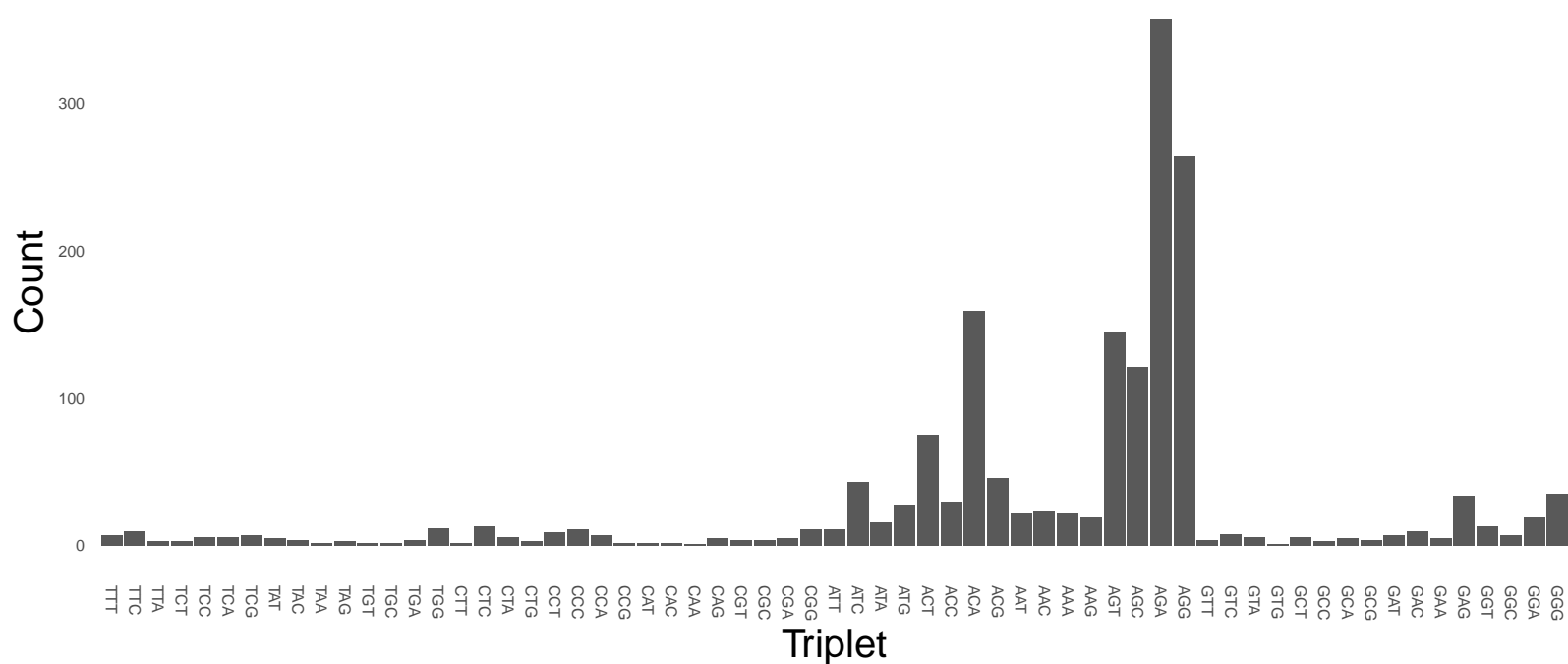
IGHV3-NL1*01_G49A_G75C_T201C_G267T_T288C_T300C_A317G- Final 3 nucleotides as a trip



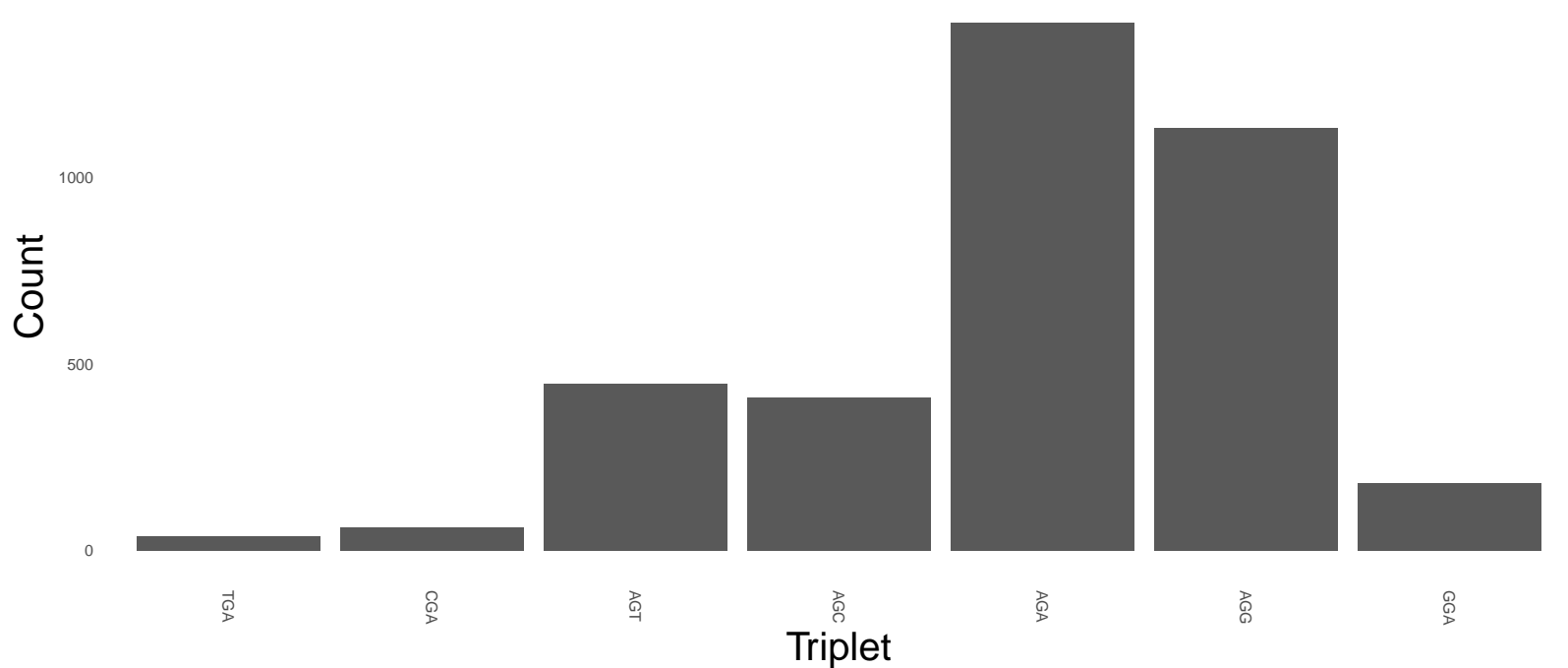
IGHV4-30-2*01_C315G- Final 3 nucleotides as a triplet



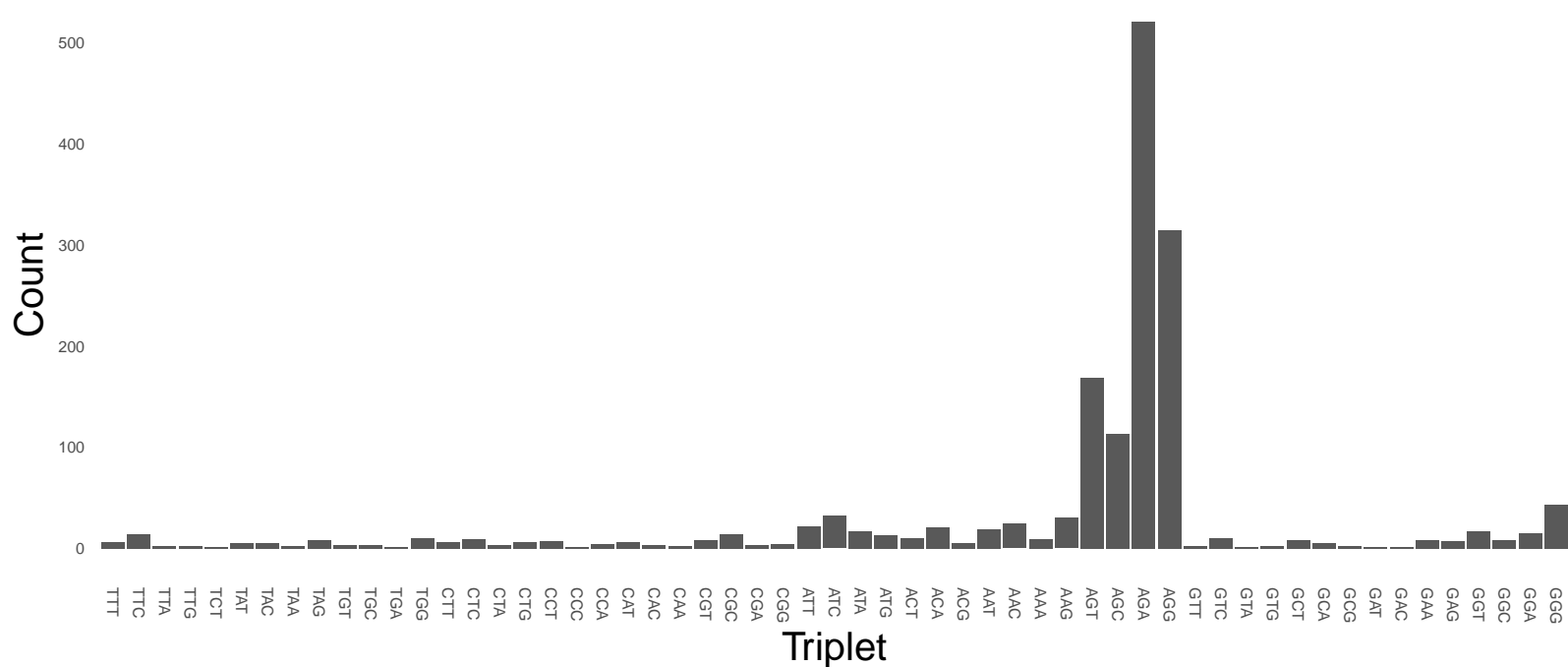
IGHV4-30-4*01_C315G- Final 3 nucleotides as a triplet



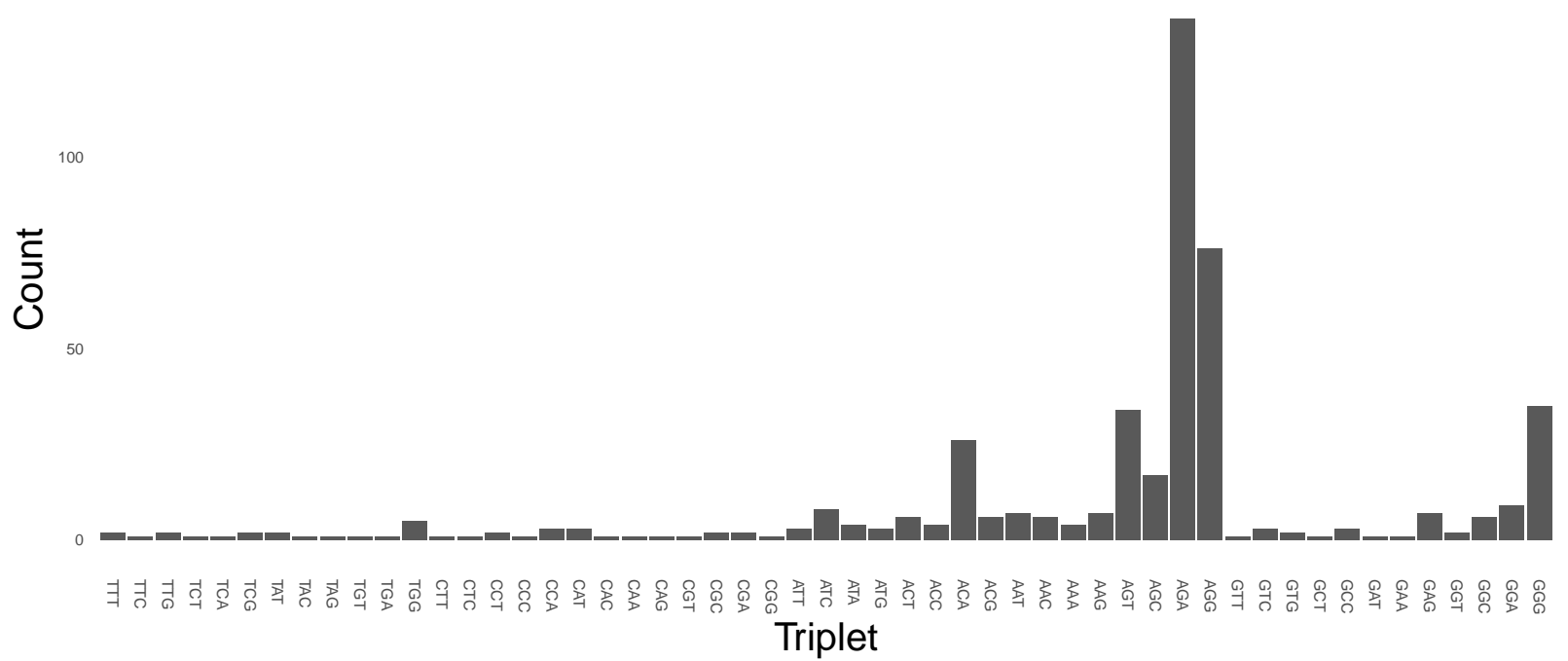
IGHV4-39*02_C258G- Final 3 nucleotides as a triplet



IGHV4-61*08_G48A_G49C_G88A- Final 3 nucleotides as a triplet

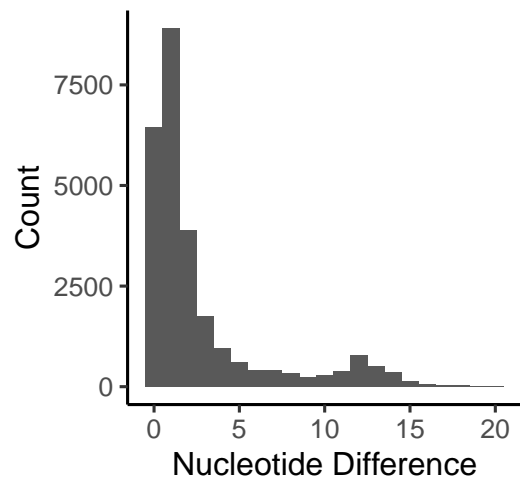


IGHV6-1*01_A315G- Final 3 nucleotides as a triplet



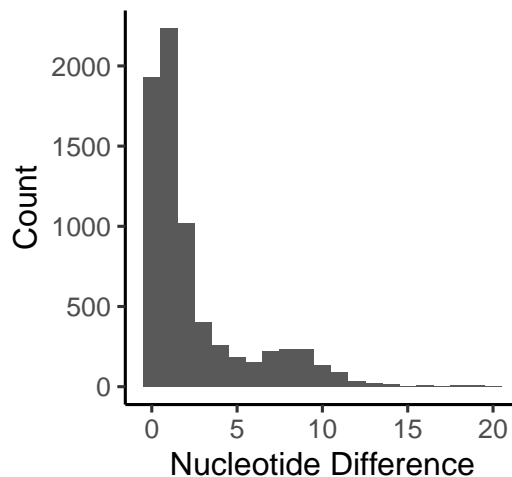
IGHV1-2*02

26740 sequences assigned
6444 (24.1%) exact matches, in which:
5271 unique CDR3
6 unique J



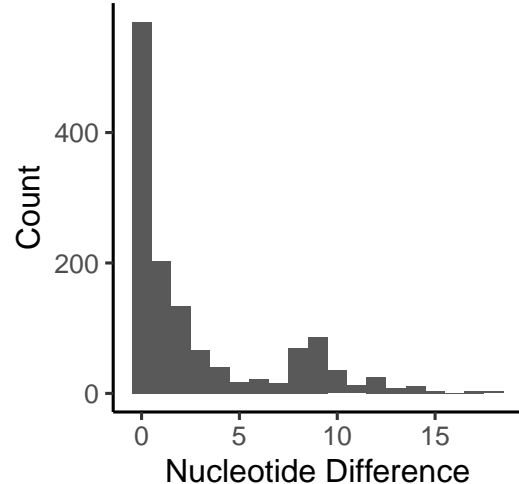
IGHV1-8*01

7232 sequences assigned
1930 (26.7%) exact matches, in which:
1629 unique CDR3
6 unique J



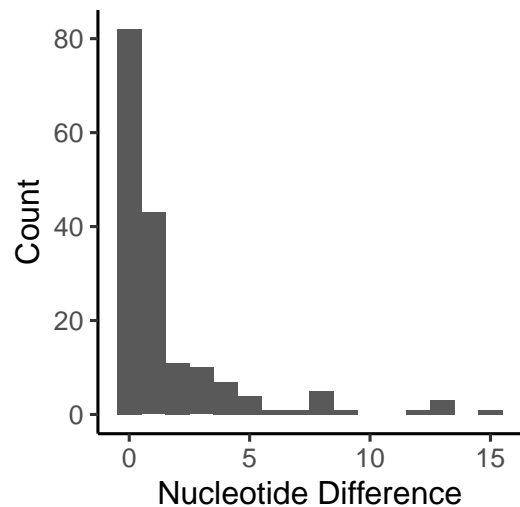
IGHV1-24*01_A315G_C3

1347 sequences assigned
570 (42.3%) exact matches, in which:
567 unique CDR3
6 unique J



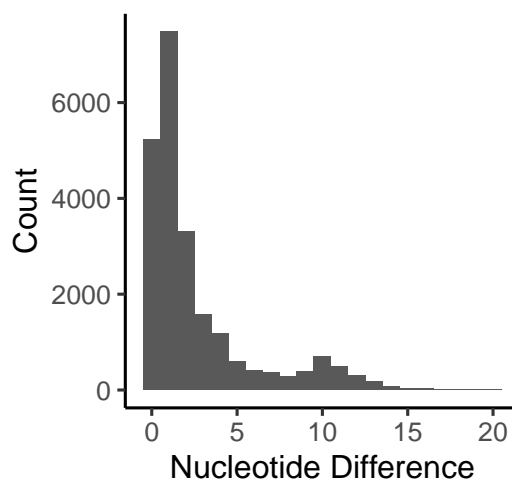
IGHV1-3*02

170 sequences assigned
82 (48.2%) exact matches, in which:
79 unique CDR3
6 unique J



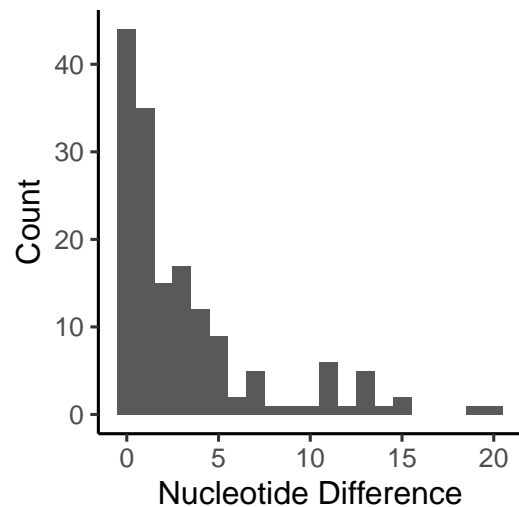
IGHV1-18*01

22755 sequences assigned
5232 (23%) exact matches, in which:
4314 unique CDR3
6 unique J



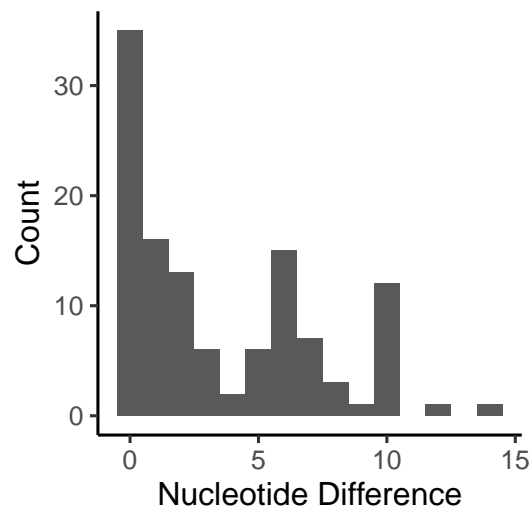
IGHV1-45*02

163 sequences assigned
44 (27%) exact matches, in which:
32 unique CDR3
4 unique J



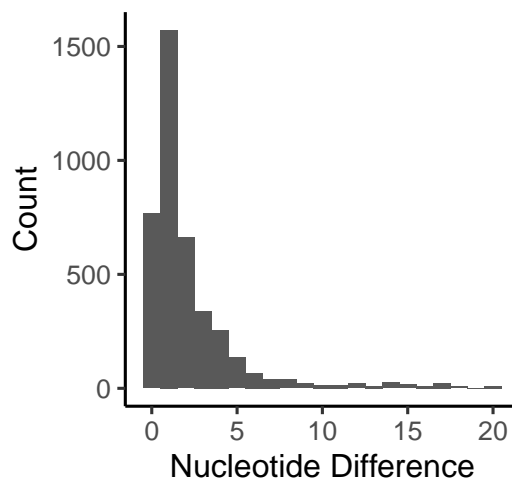
IGHV1-3*02_T296C_T300C

118 sequences assigned
35 (29.7%) exact matches, in which:
35 unique CDR3
6 unique J



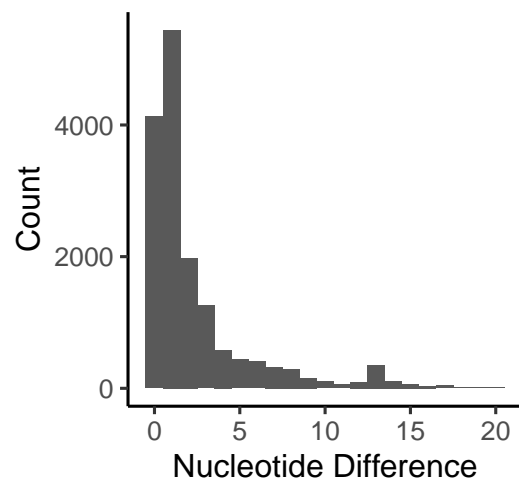
IGHV1-24*01

4222 sequences assigned
767 (18.2%) exact matches, in which:
538 unique CDR3
6 unique J



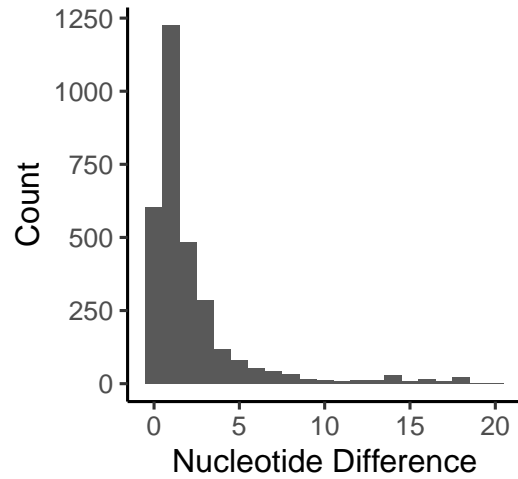
IGHV1-46*01

16037 sequences assigned
4130 (25.8%) exact matches, in which:
3415 unique CDR3
6 unique J



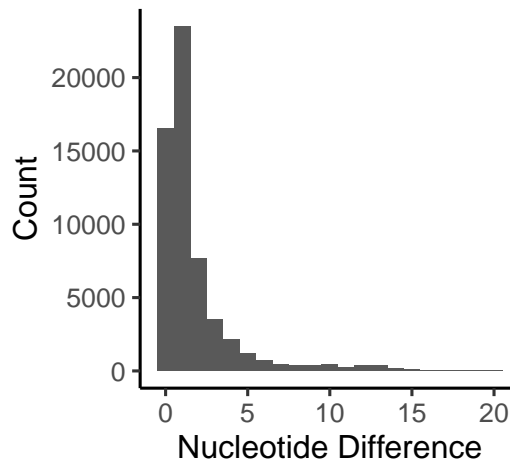
IGHV1-58*01

3087 sequences assigned
602 (19.5%) exact matches, in which:
362 unique CDR3
5 unique J



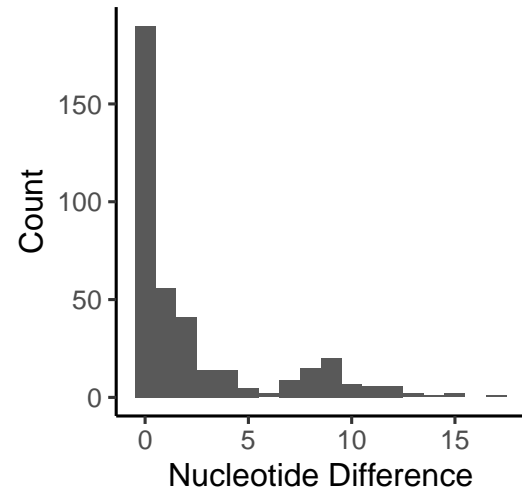
IGHV1-69*01

58751 sequences assigned
16532 (28.1%) exact matches, in which:
12920 unique CDR3
6 unique J



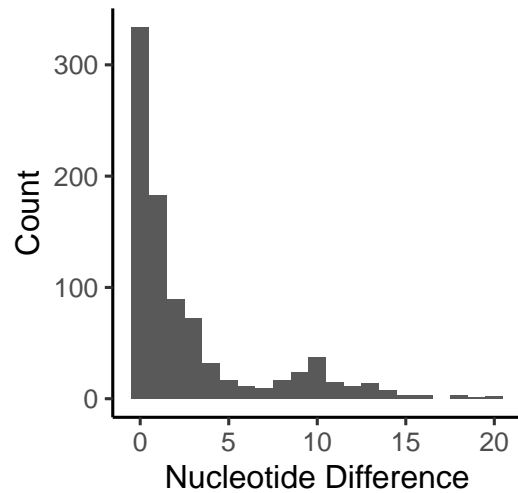
IGHV1-69-2*01_A315G_

395 sequences assigned
190 (48.1%) exact matches, in which:
188 unique CDR3
6 unique J



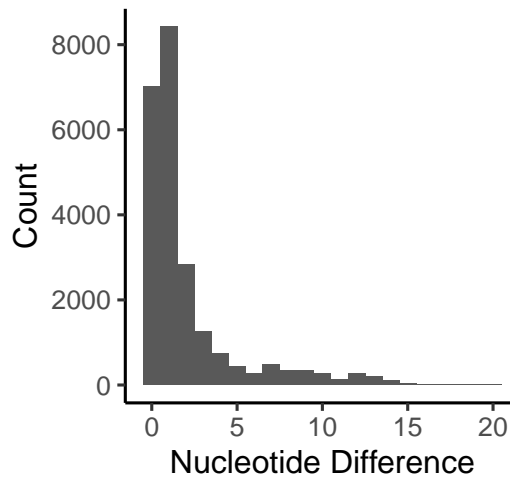
IGHV1-58*01_G316A_C3

889 sequences assigned
334 (37.6%) exact matches, in which:
332 unique CDR3
6 unique J



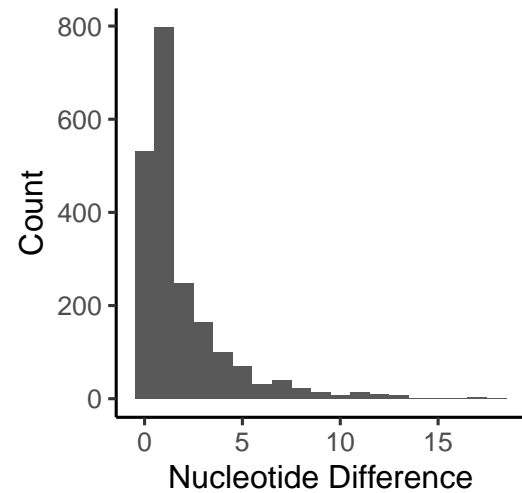
IGHV1-69*06

23297 sequences assigned
7019 (30.1%) exact matches, in which:
5758 unique CDR3
6 unique J



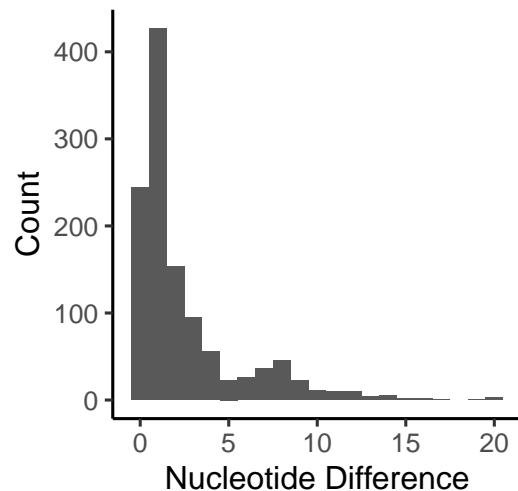
IGHV2-5*01

2093 sequences assigned
531 (25.4%) exact matches, in which:
446 unique CDR3
6 unique J



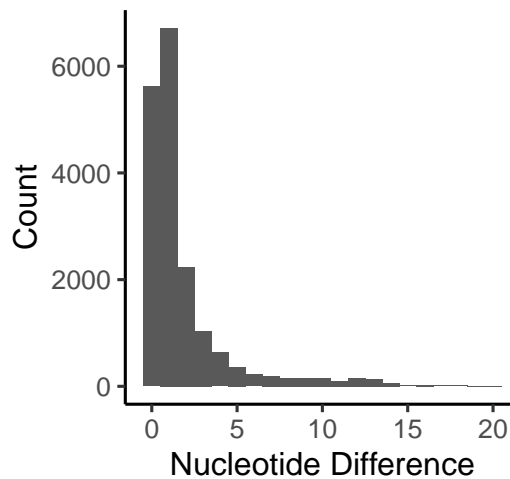
IGHV1-69-2*01

1224 sequences assigned
244 (19.9%) exact matches, in which:
178 unique CDR3
6 unique J



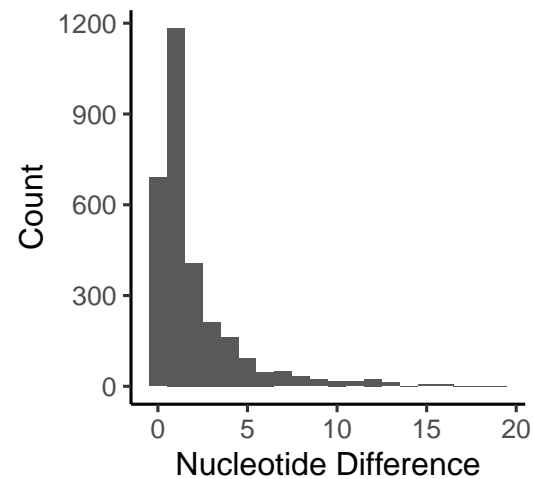
IGHV1-69*17

18118 sequences assigned
5623 (31%) exact matches, in which:
4634 unique CDR3
6 unique J



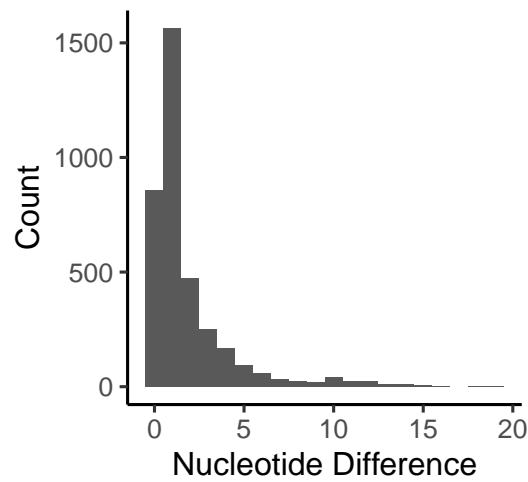
IGHV2-5*02

3008 sequences assigned
690 (22.9%) exact matches, in which:
564 unique CDR3
6 unique J



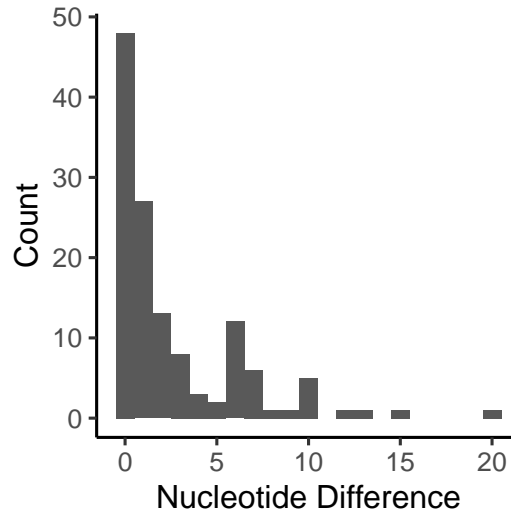
IGHV2-26*01

3744 sequences assigned
856 (22.9%) exact matches, in which:
673 unique CDR3
6 unique J



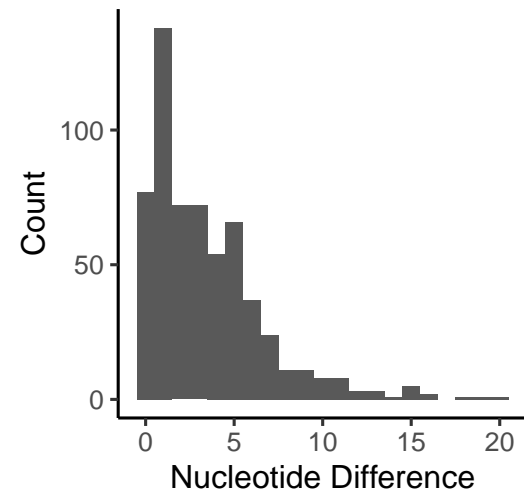
IGHV2-70*01_G303A

131 sequences assigned
48 (36.6%) exact matches, in which:
48 unique CDR3
5 unique J



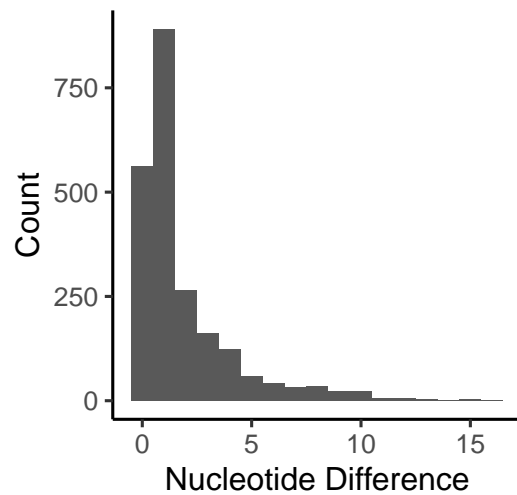
IGHV3-7*03

599 sequences assigned
77 (12.9%) exact matches, in which:
77 unique CDR3
6 unique J



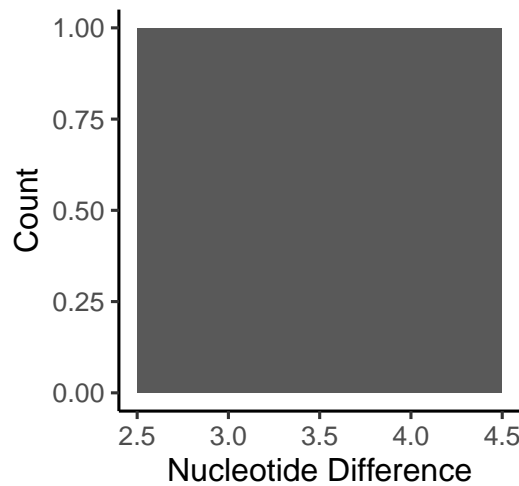
IGHV2-70*01

2284 sequences assigned
561 (24.6%) exact matches, in which:
447 unique CDR3
6 unique J



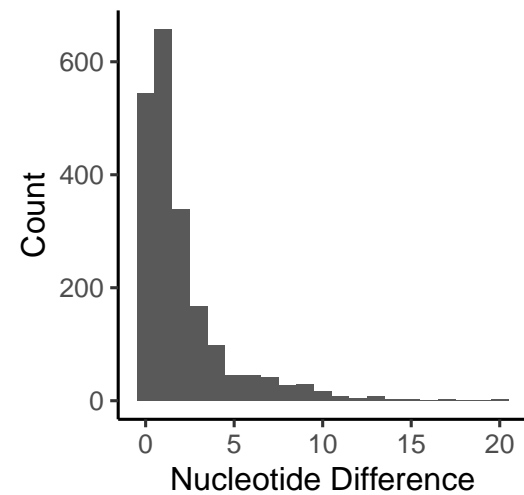
IGHV2-70D*14

2 sequences assigned
No exact matches.



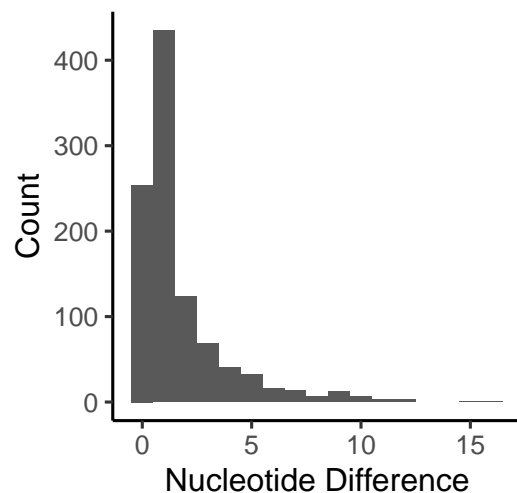
IGHV3-7*04

2061 sequences assigned
545 (26.4%) exact matches, in which:
435 unique CDR3
6 unique J



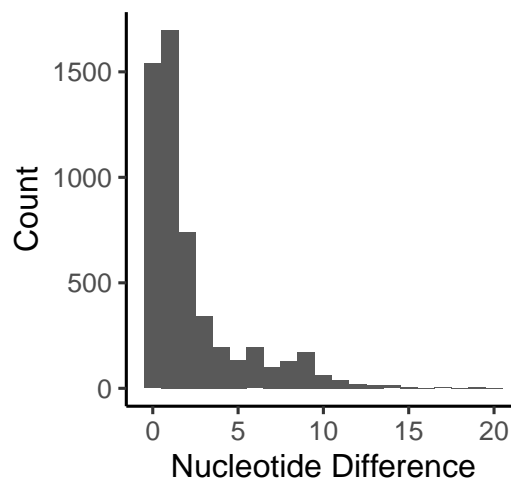
IGHV2-70*04

1041 sequences assigned
254 (24.4%) exact matches, in which:
199 unique CDR3
5 unique J



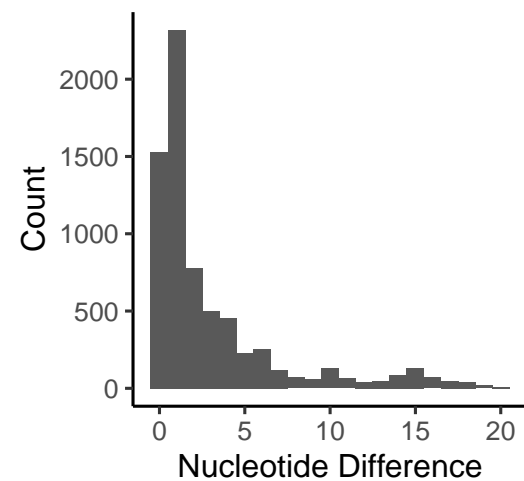
IGHV3-7*01

5447 sequences assigned
1539 (28.3%) exact matches, in which:
1272 unique CDR3
6 unique J



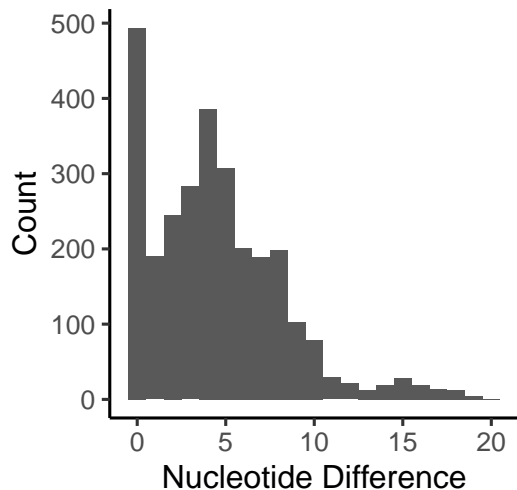
IGHV3-9*01

7075 sequences assigned
1527 (21.6%) exact matches, in which:
1085 unique CDR3
6 unique J



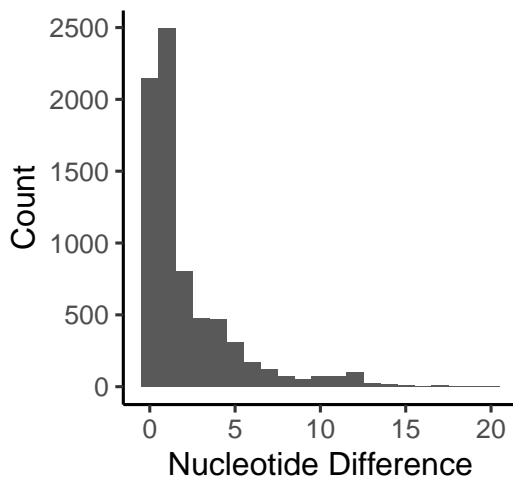
IGHV3-9*01_A315G

2843 sequences assigned
494 (17.4%) exact matches, in which:
494 unique CDR3
6 unique J



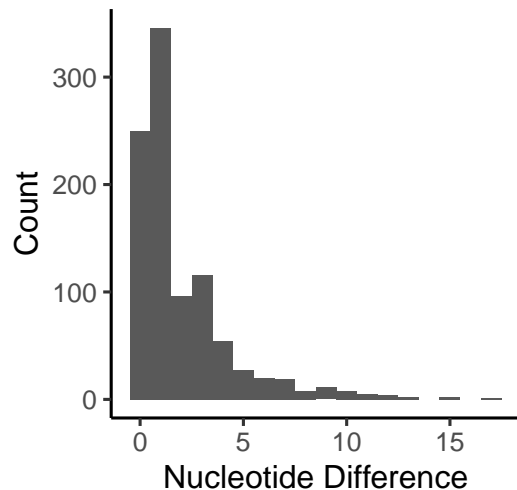
IGHV3-11*05

7514 sequences assigned
2146 (28.6%) exact matches, in which:
1679 unique CDR3
6 unique J



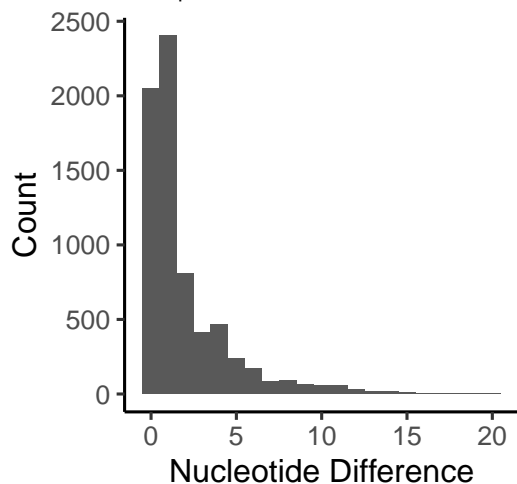
IGHV3-13*04

969 sequences assigned
250 (25.8%) exact matches, in which:
182 unique CDR3
5 unique J



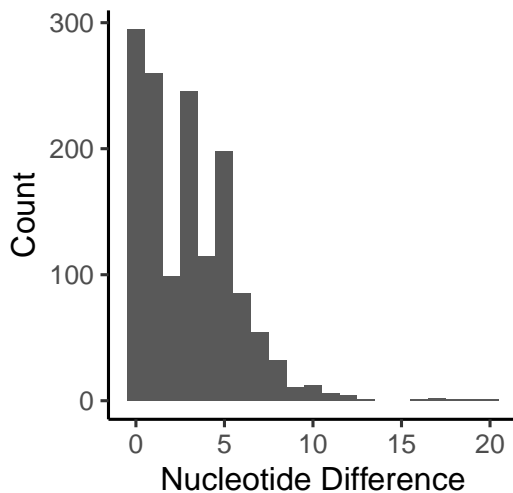
IGHV3-11*01

7048 sequences assigned
2049 (29.1%) exact matches, in which:
1669 unique CDR3
6 unique J



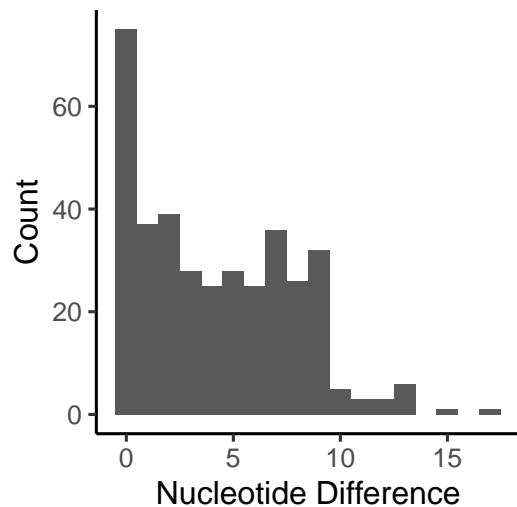
IGHV3-11*06

1440 sequences assigned
295 (20.5%) exact matches, in which:
295 unique CDR3
6 unique J



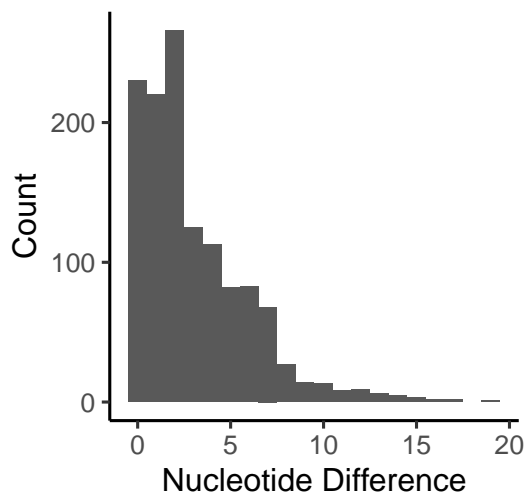
IGHV3-13*01_A315G

371 sequences assigned
75 (20.2%) exact matches, in which:
75 unique CDR3
6 unique J



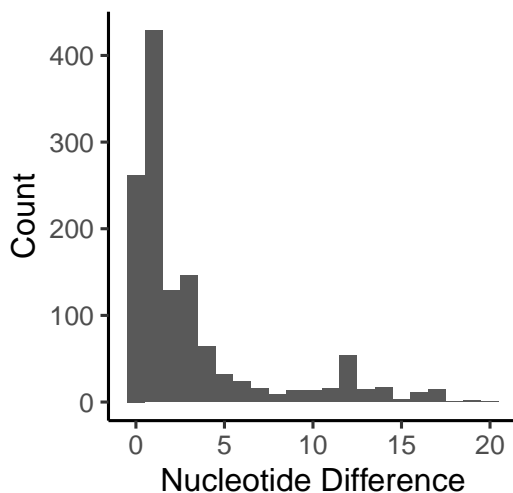
IGHV3-11*04

1309 sequences assigned
230 (17.6%) exact matches, in which:
229 unique CDR3
6 unique J



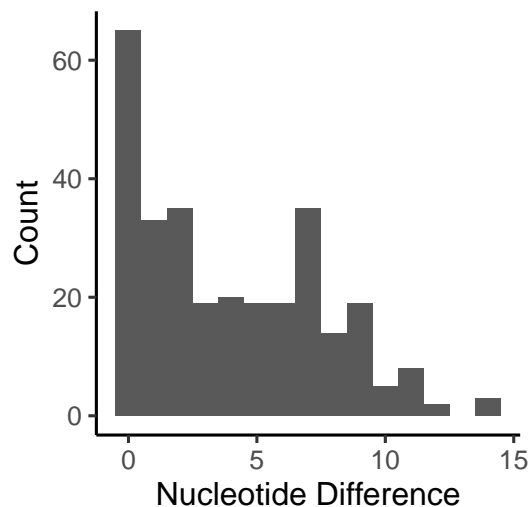
IGHV3-13*01

1279 sequences assigned
262 (20.5%) exact matches, in which:
191 unique CDR3
5 unique J



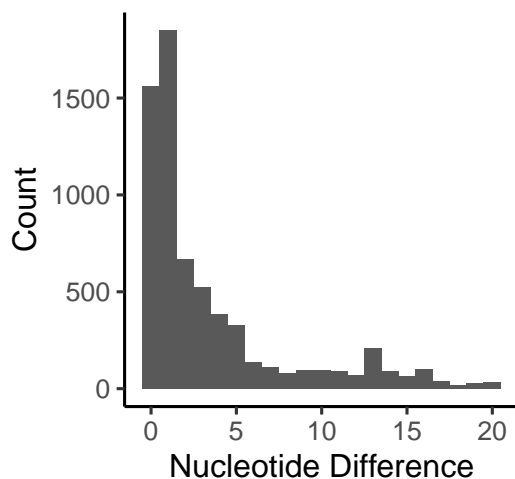
IGHV3-13*04_A315G

296 sequences assigned
65 (22%) exact matches, in which:
65 unique CDR3
6 unique J



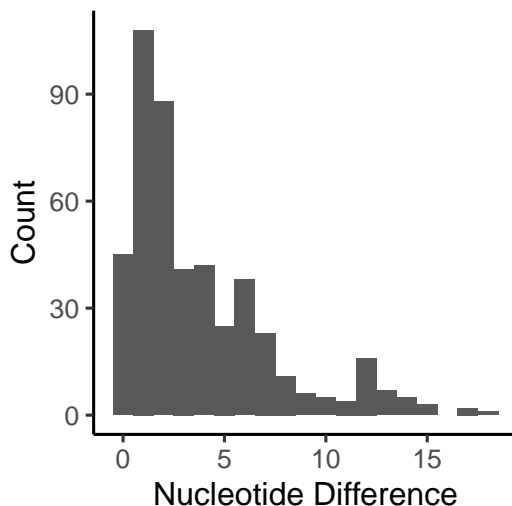
IGHV3-15*01

6693 sequences assigned
1561 (23.3%) exact matches, in which:
1216 unique CDR3
6 unique J



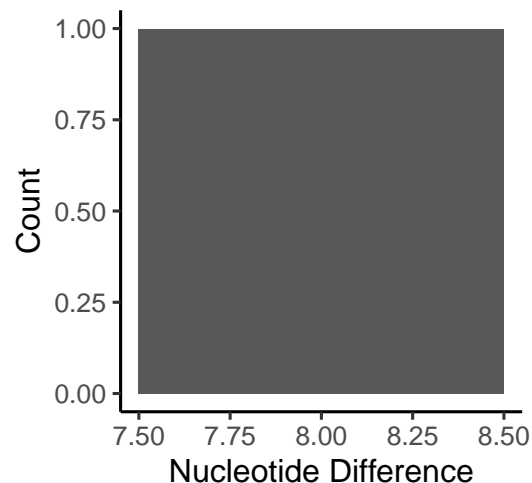
IGHV3-20*04_T279C_C300T_T221C

471 sequences assigned
45 (9.6%) exact matches, in which:
45 unique CDR3
5 unique J



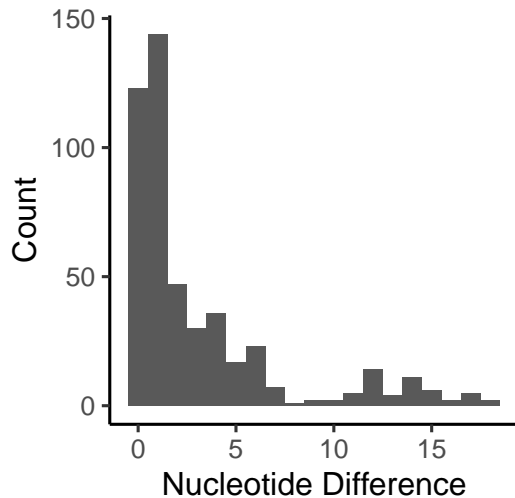
IGHV3-22*02

1 sequences assigned
No exact matches.



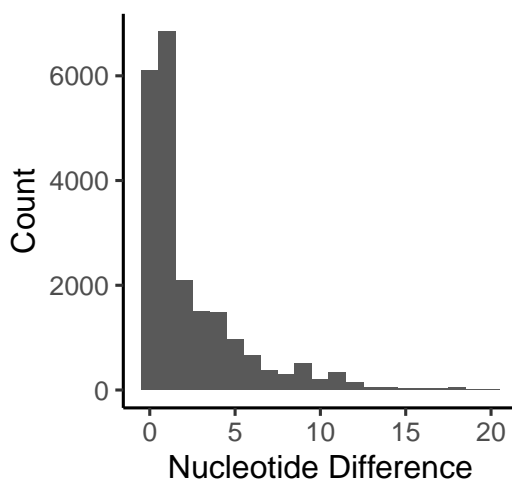
IGHV3-20*01

483 sequences assigned
123 (25.5%) exact matches, in which:
96 unique CDR3
6 unique J



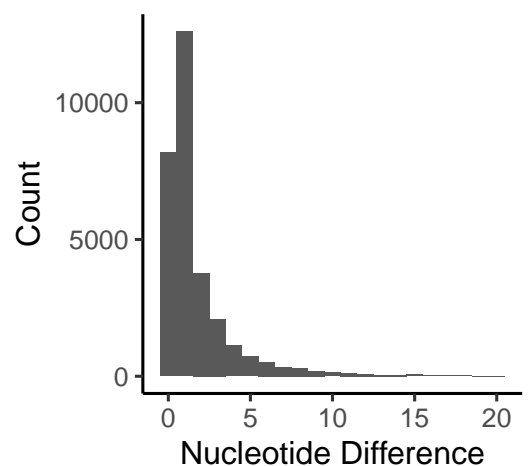
IGHV3-21*01

21966 sequences assigned
6111 (27.8%) exact matches, in which:
4834 unique CDR3
6 unique J



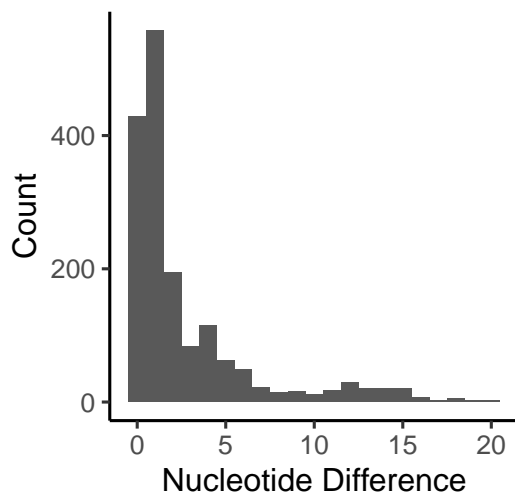
IGHV3-23*01

30483 sequences assigned
8183 (26.8%) exact matches, in which:
6081 unique CDR3
6 unique J



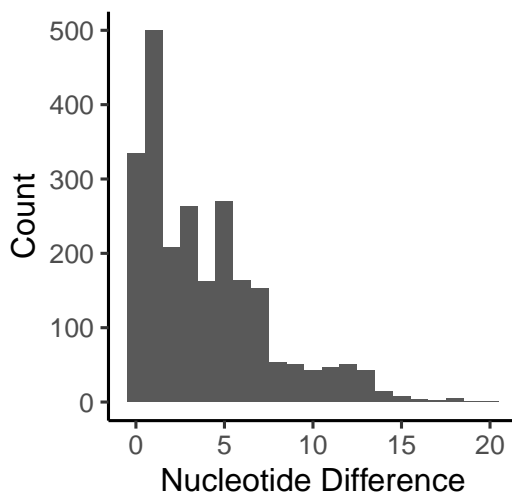
IGHV3-20*04

1692 sequences assigned
428 (25.3%) exact matches, in which:
351 unique CDR3
6 unique J



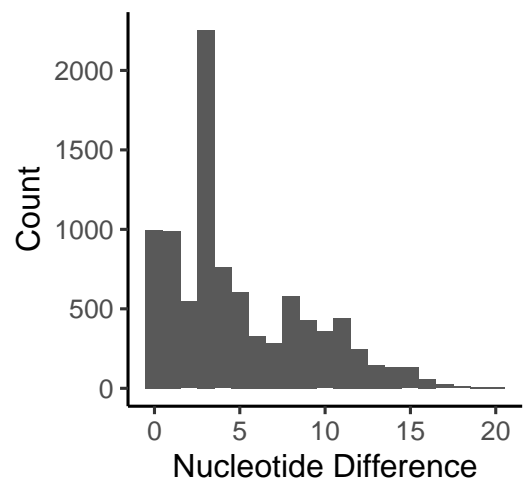
IGHV3-21*04

2382 sequences assigned
334 (14%) exact matches, in which:
329 unique CDR3
6 unique J



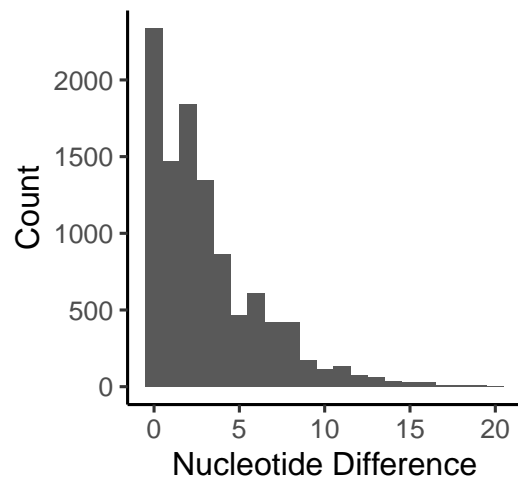
IGHV3-23*04

9613 sequences assigned
995 (10.4%) exact matches, in which:
855 unique CDR3
6 unique J



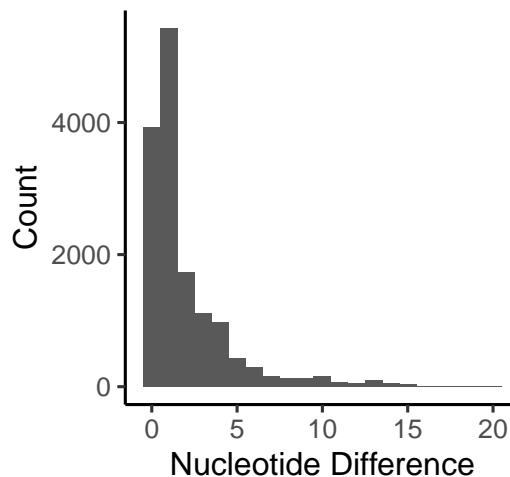
IGHV3-23*01_A317G

10521 sequences assigned
2336 (22.2%) exact matches, in which:
2279 unique CDR3
6 unique J



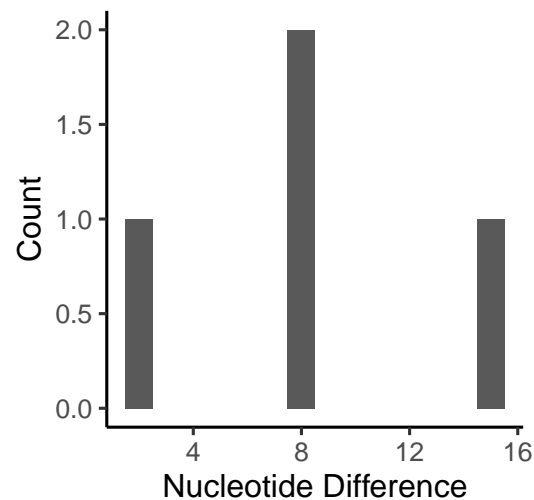
IGHV3-30*18

14928 sequences assigned
3925 (26.3%) exact matches, in which:
2930 unique CDR3
6 unique J



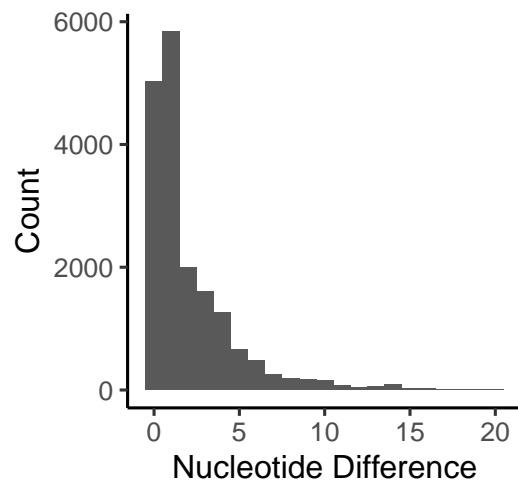
IGHV3-35*01

4 sequences assigned
No exact matches.



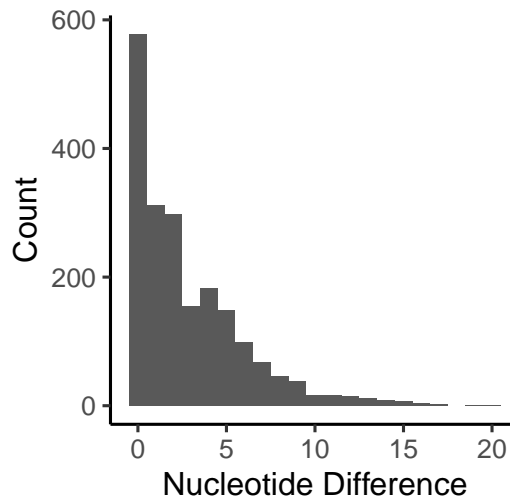
IGHV3-30-3*01

18132 sequences assigned
5025 (27.7%) exact matches, in which:
4025 unique CDR3
6 unique J



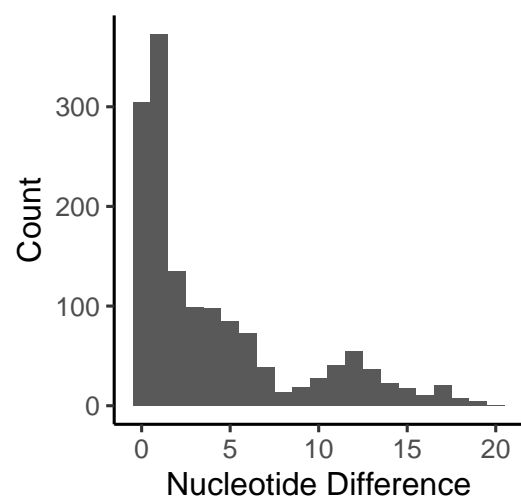
IGHV3-30*03_T288C

2018 sequences assigned
578 (28.6%) exact matches, in which:
561 unique CDR3
6 unique J



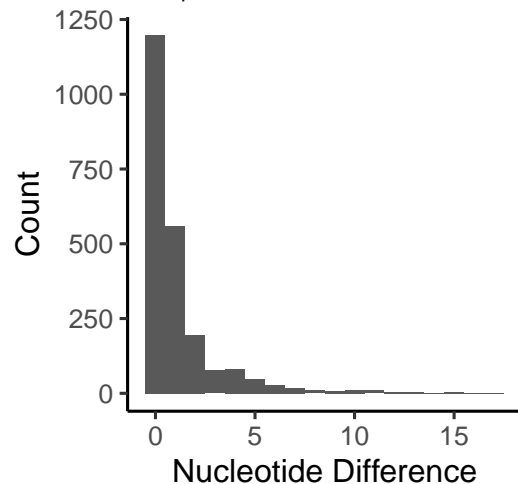
IGHV3-43*01

1503 sequences assigned
305 (20.3%) exact matches, in which:
251 unique CDR3
6 unique J



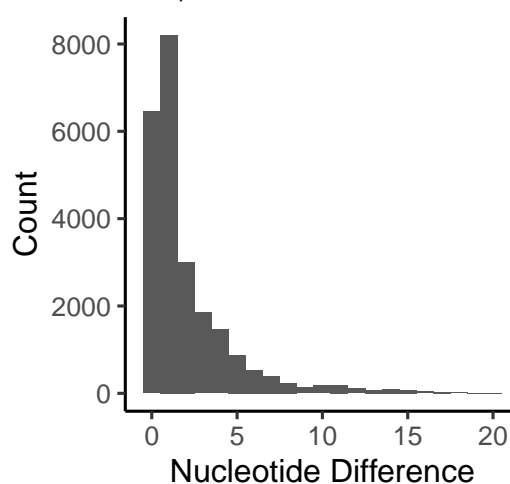
IGHV3-30*03

2267 sequences assigned
1198 (52.8%) exact matches, in which:
1176 unique CDR3
6 unique J



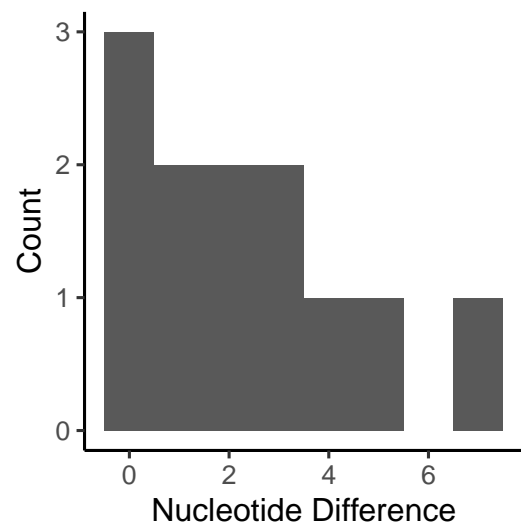
IGHV3-33*01

24121 sequences assigned
6452 (26.7%) exact matches, in which:
5127 unique CDR3
6 unique J



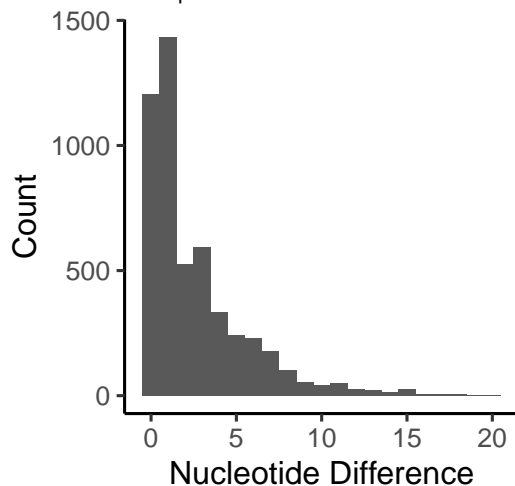
IGHV3-47*02

12 sequences assigned
3 (25%) exact matches, in which:
2 unique CDR3
1 unique J



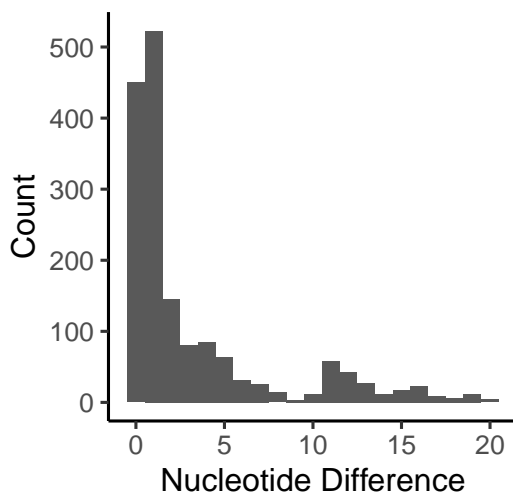
IGHV3-48*02

5113 sequences assigned
1207 (23.6%) exact matches, in which:
968 unique CDR3
6 unique J



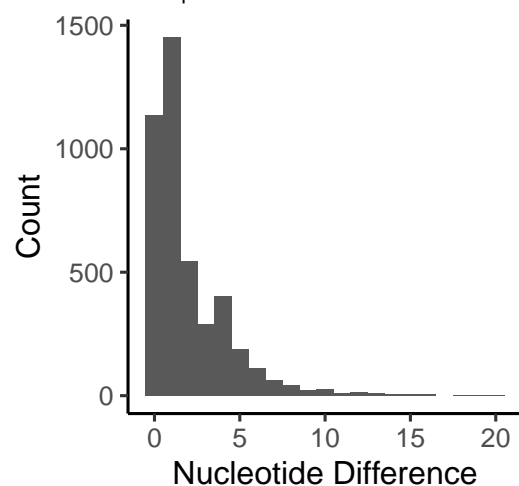
IGHV3-49*04

1648 sequences assigned
450 (27.3%) exact matches, in which:
349 unique CDR3
6 unique J



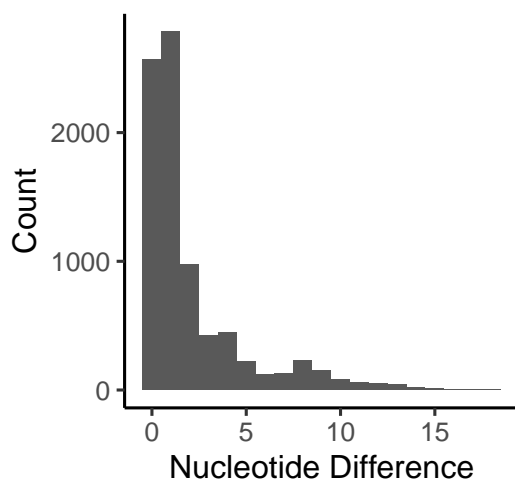
IGHV3-53*01

4363 sequences assigned
1138 (26.1%) exact matches, in which:
887 unique CDR3
6 unique J



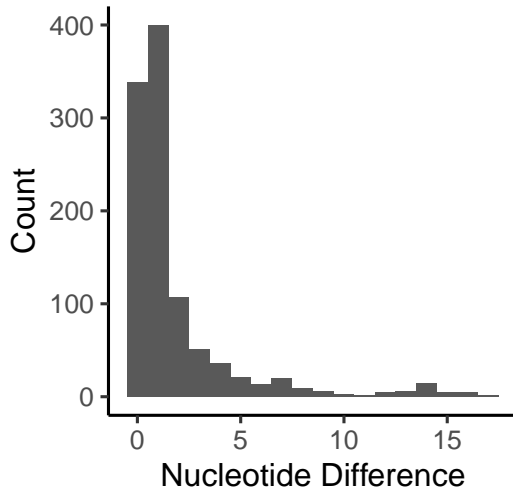
IGHV3-48*03

8334 sequences assigned
2569 (30.8%) exact matches, in which:
2038 unique CDR3
6 unique J



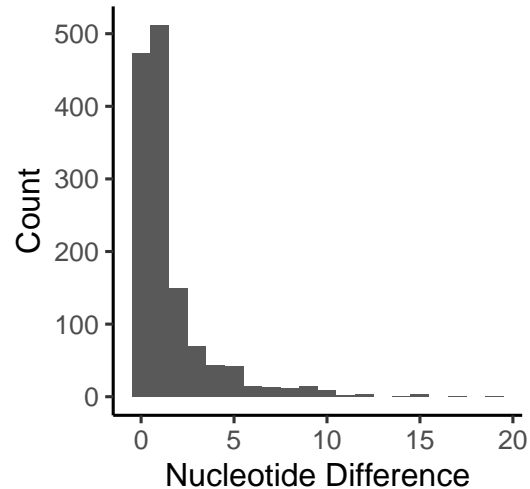
IGHV3-49*05

1065 sequences assigned
338 (31.7%) exact matches, in which:
243 unique CDR3
6 unique J



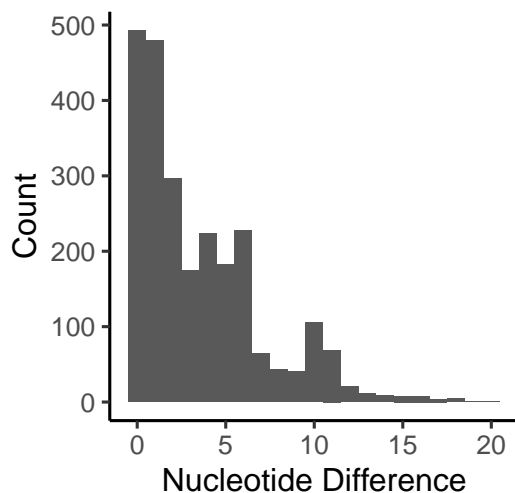
IGHV3-53*02

1365 sequences assigned
473 (34.7%) exact matches, in which:
412 unique CDR3
6 unique J



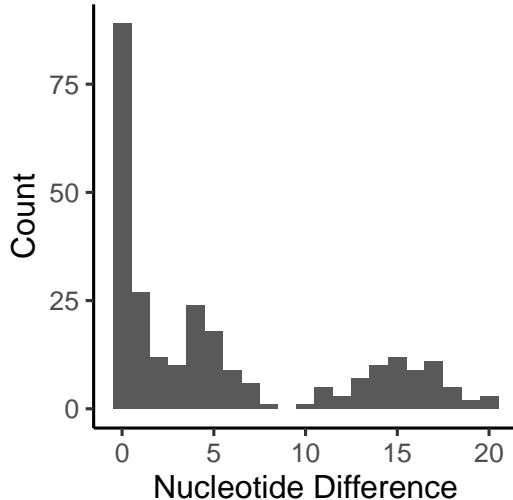
IGHV3-48*03_T303G

2469 sequences assigned
493 (20%) exact matches, in which:
491 unique CDR3
6 unique J



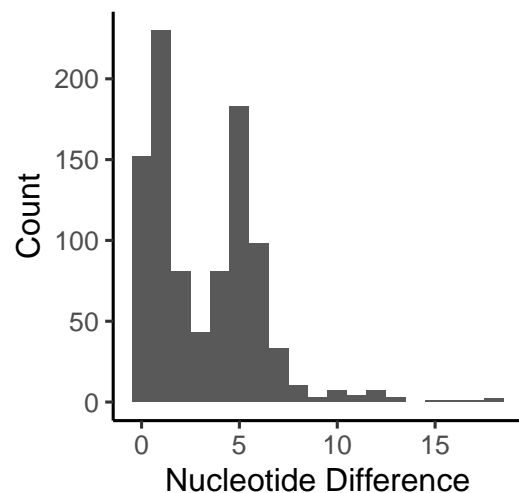
IGHV3-49*05_A313G_T3

269 sequences assigned
89 (33.1%) exact matches, in which:
89 unique CDR3
6 unique J



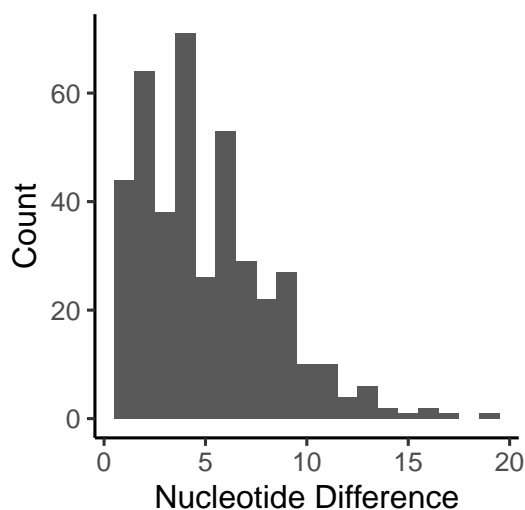
IGHV3-53*01_T267G_G3

941 sequences assigned
152 (16.2%) exact matches, in which:
152 unique CDR3
6 unique J



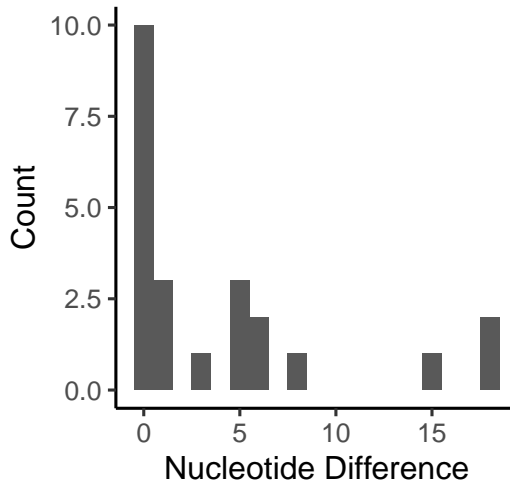
IGHV3-64*04

413 sequences assigned
No exact matches.



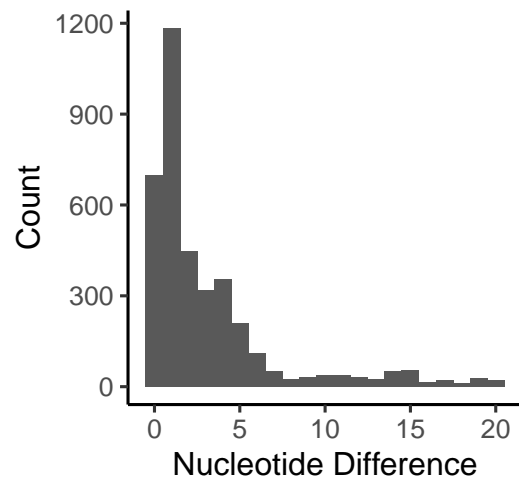
IGHV3-69-1*01

24 sequences assigned
10 (41.7%) exact matches, in which:
9 unique CDR3
2 unique J



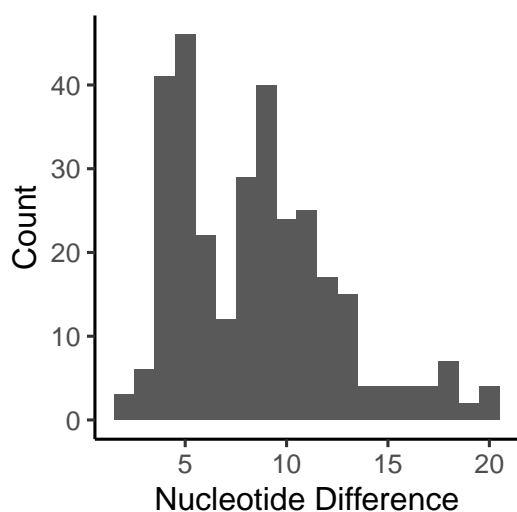
IGHV3-73*02

3794 sequences assigned
700 (18.5%) exact matches, in which:
491 unique CDR3
6 unique J



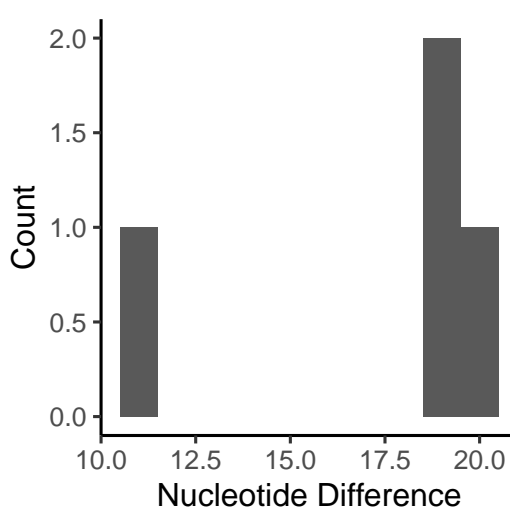
IGHV3-66*01

312 sequences assigned
No exact matches.



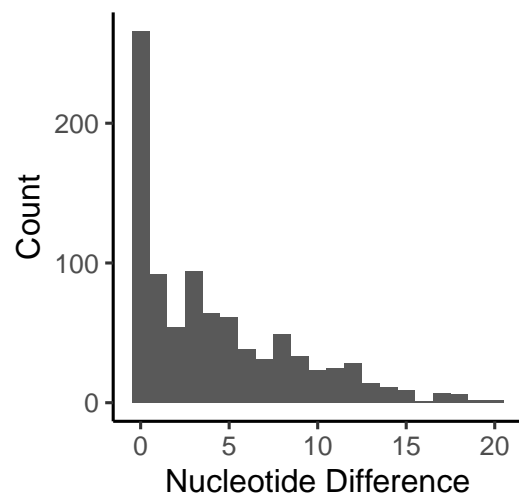
IGHV3-71*04

4 sequences assigned
No exact matches.



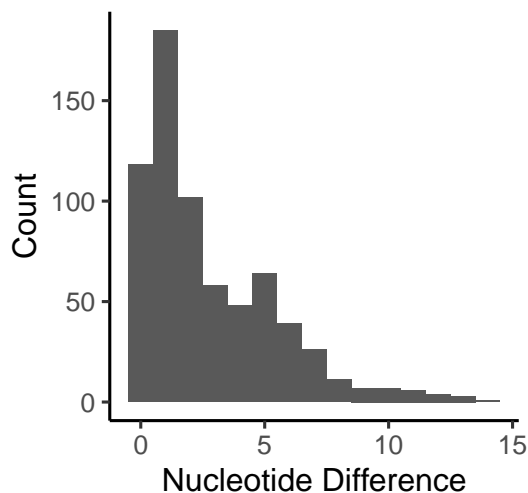
IGHV3-73*02_A313G_T3

917 sequences assigned
266 (29%) exact matches, in which:
266 unique CDR3
6 unique J



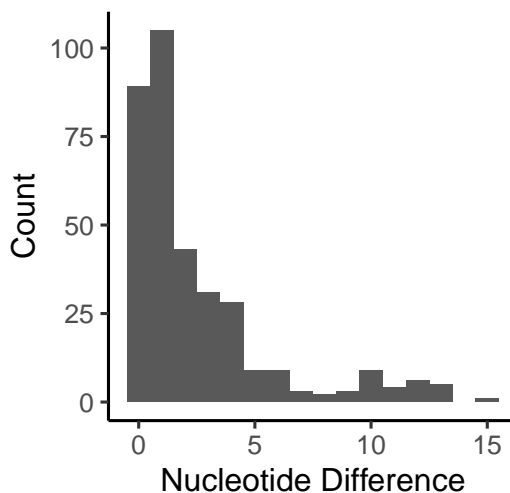
IGHV3-66*03_T175G_T2

680 sequences assigned
118 (17.4%) exact matches, in which:
117 unique CDR3
6 unique J



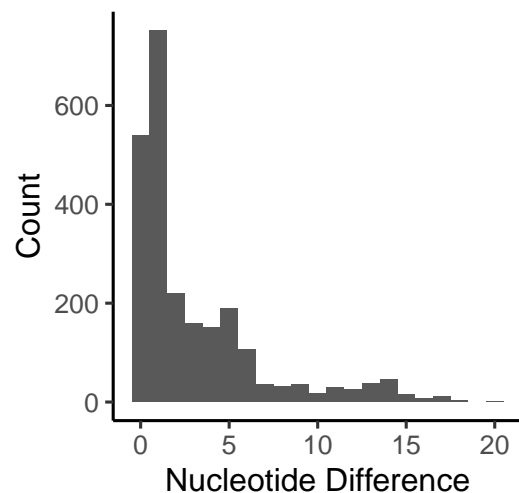
IGHV3-72*01

350 sequences assigned
89 (25.4%) exact matches, in which:
65 unique CDR3
5 unique J



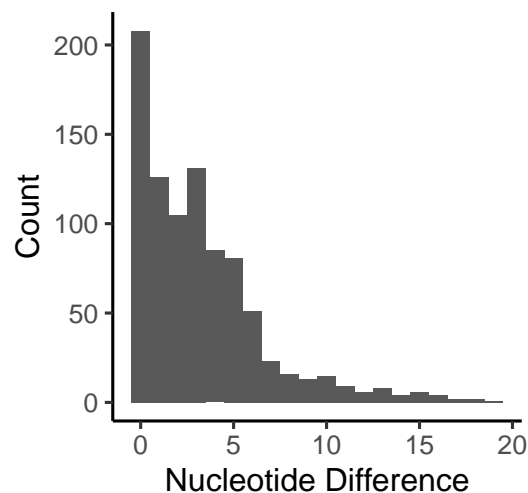
IGHV3-74*01

2427 sequences assigned
539 (22.2%) exact matches, in which:
411 unique CDR3
6 unique J



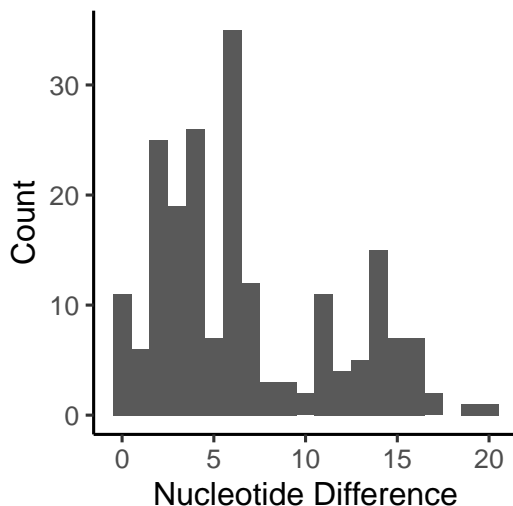
IGHV3-74*01_A315G

900 sequences assigned
208 (23.1%) exact matches, in which:
203 unique CDR3
6 unique J



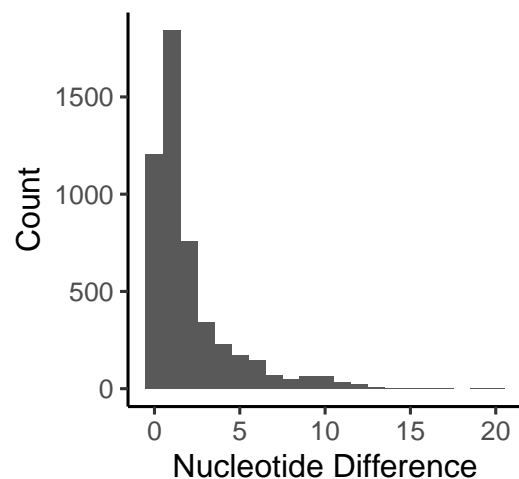
IGHV3-NL1*01_G49A_G7

203 sequences assigned
11 (5.4%) exact matches, in which:
11 unique CDR3
4 unique J



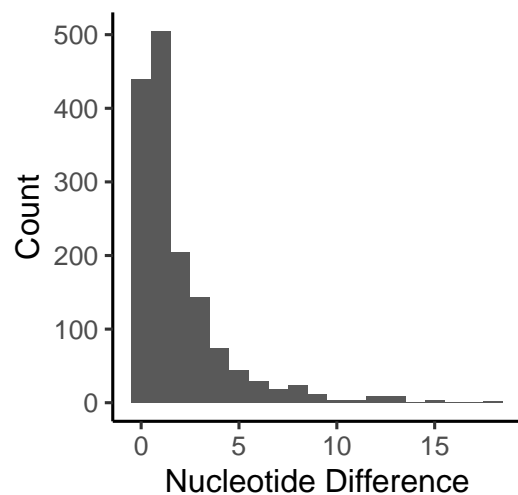
IGHV4-4*07

5038 sequences assigned
1207 (24%) exact matches, in which:
1014 unique CDR3
6 unique J



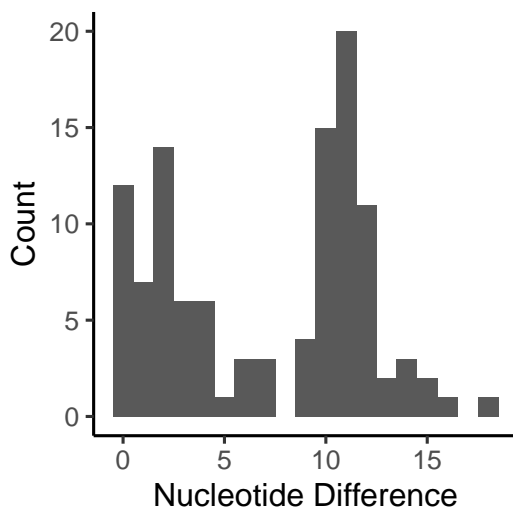
IGHV3-64D*06

1541 sequences assigned
439 (28.5%) exact matches, in which:
334 unique CDR3
6 unique J



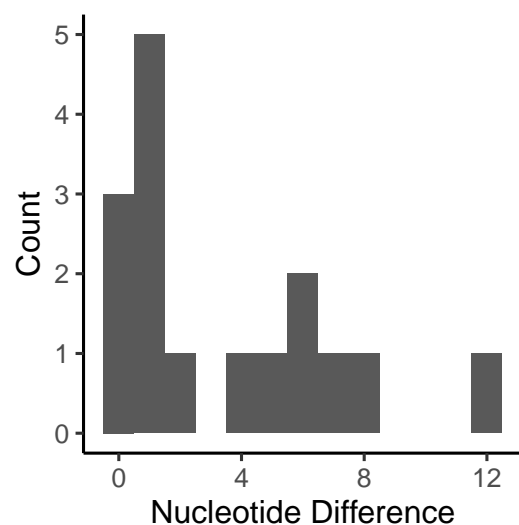
IGHV3-NL1*01_G49A_T2

111 sequences assigned
12 (10.8%) exact matches, in which:
12 unique CDR3
4 unique J



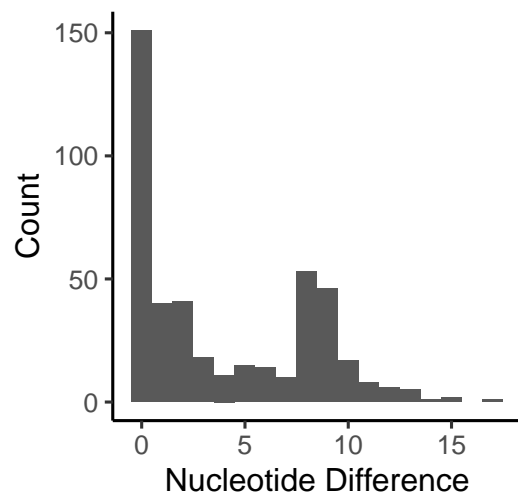
IGHV4-28*03

16 sequences assigned
3 (18.8%) exact matches, in which:
1 unique CDR3
2 unique J



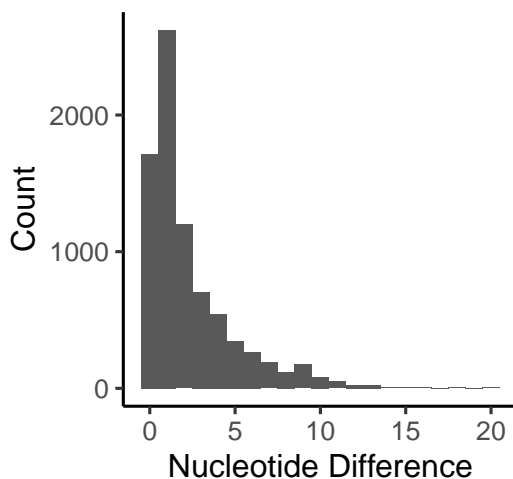
IGHV3-64D*06_T314C

443 sequences assigned
151 (34.1%) exact matches, in which:
150 unique CDR3
6 unique J



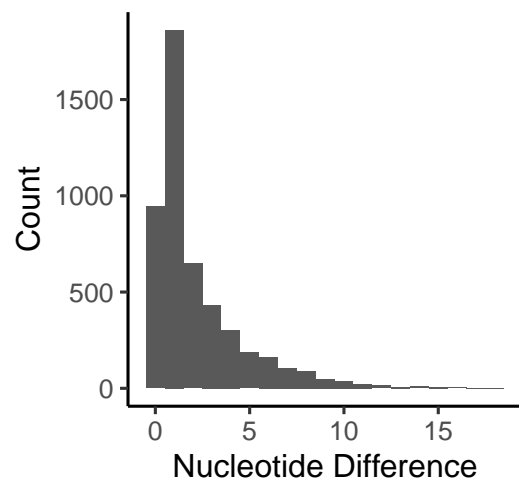
IGHV4-4*02

8194 sequences assigned
1714 (20.9%) exact matches, in which:
1461 unique CDR3
6 unique J



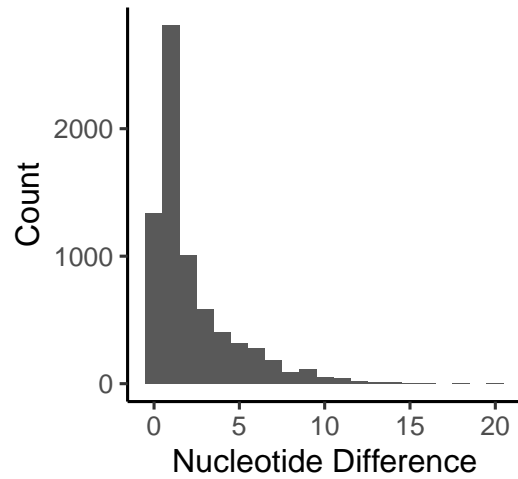
IGHV4-30-4*01

4912 sequences assigned
945 (19.2%) exact matches, in which:
705 unique CDR3
6 unique J



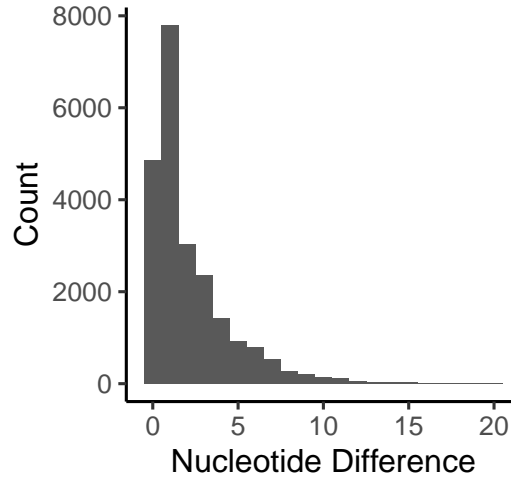
IGHV4-30-2*01

7303 sequences assigned
1339 (18.3%) exact matches, in which:
929 unique CDR3
6 unique J



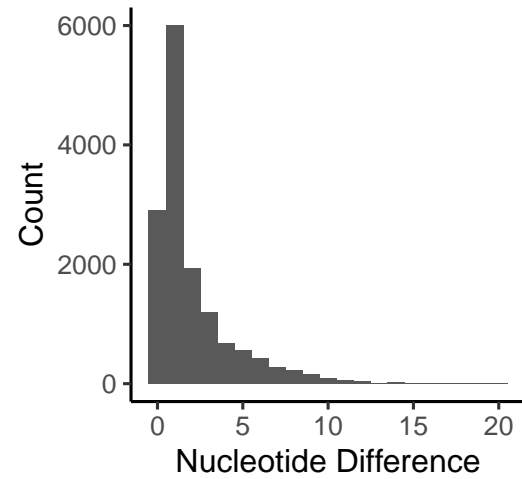
IGHV4-31*03

22821 sequences assigned
4863 (21.3%) exact matches, in which:
3969 unique CDR3
6 unique J



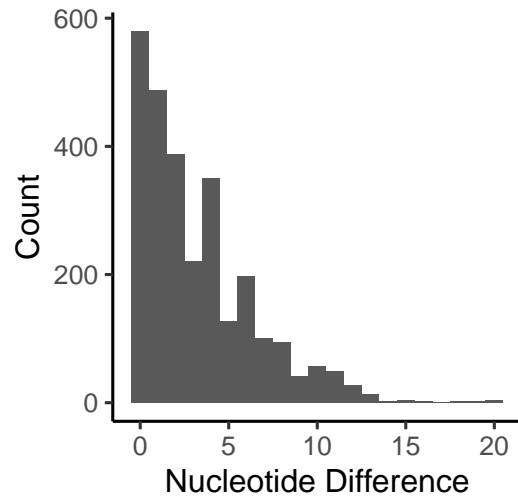
IGHV4-39*01

14726 sequences assigned
2906 (19.7%) exact matches, in which:
2166 unique CDR3
6 unique J



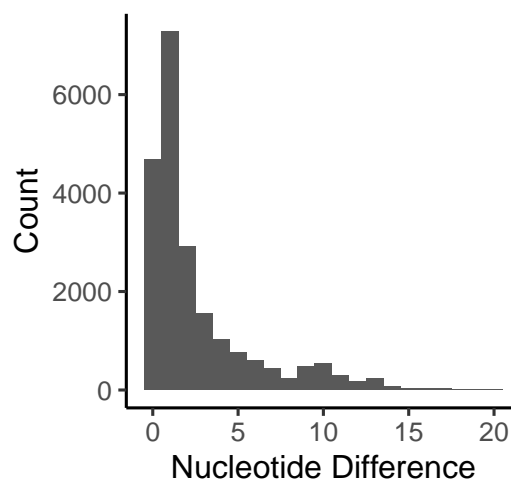
IGHV4-30-2*01_C315G

2777 sequences assigned
580 (20.9%) exact matches, in which:
576 unique CDR3
6 unique J



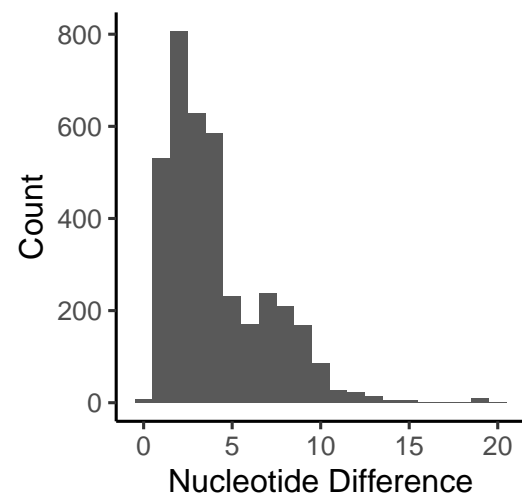
IGHV4-34*01

21599 sequences assigned
4676 (21.6%) exact matches, in which:
3817 unique CDR3
6 unique J



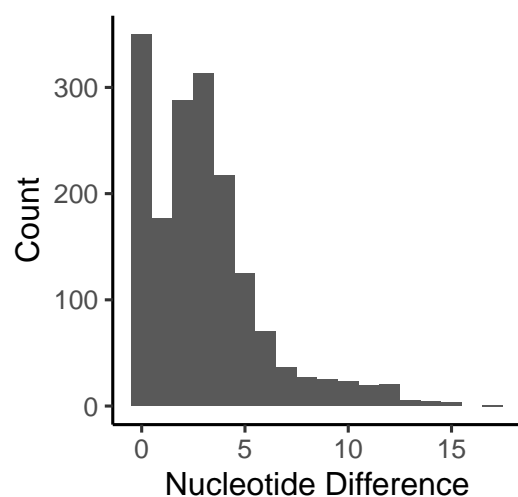
IGHV4-39*07

3773 sequences assigned
7 (0.2%) exact matches, in which:
7 unique CDR3
3 unique J



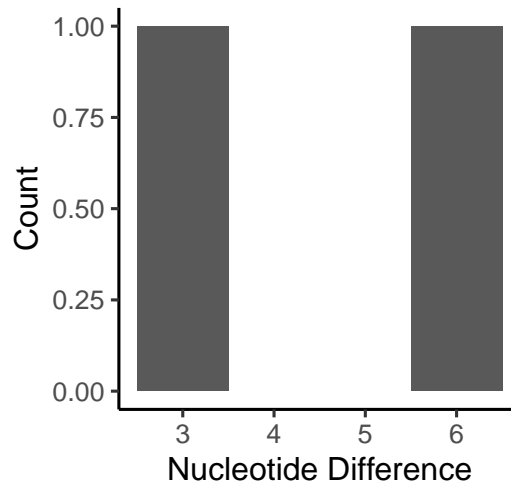
IGHV4-30-4*01_C315G

1712 sequences assigned
350 (20.4%) exact matches, in which:
348 unique CDR3
6 unique J



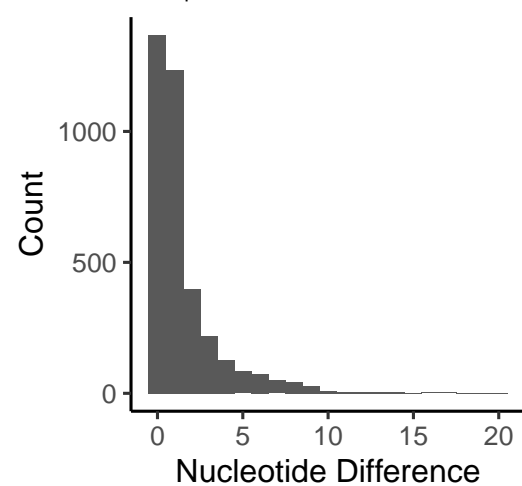
IGHV4-38-2*01

57 sequences assigned
No exact matches.



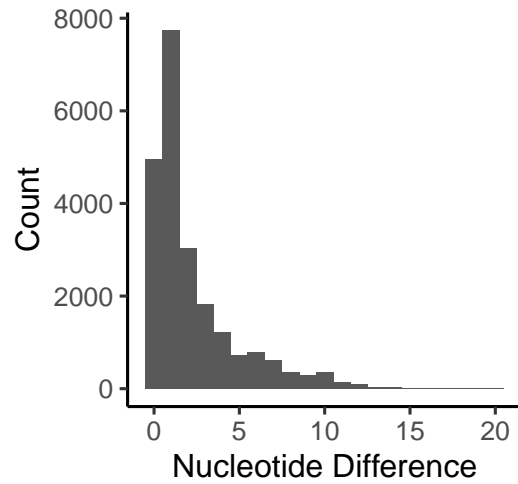
IGHV4-39*02_C258G

3681 sequences assigned
1368 (37.2%) exact matches, in which:
1296 unique CDR3
6 unique J



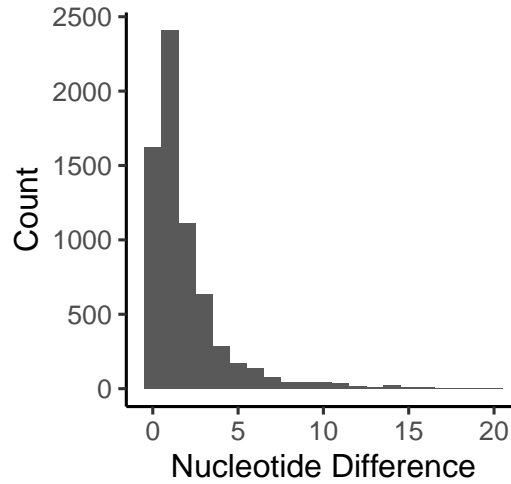
IGHV4-59*01

22389 sequences assigned
4966 (22.2%) exact matches, in which:
4068 unique CDR3
6 unique J



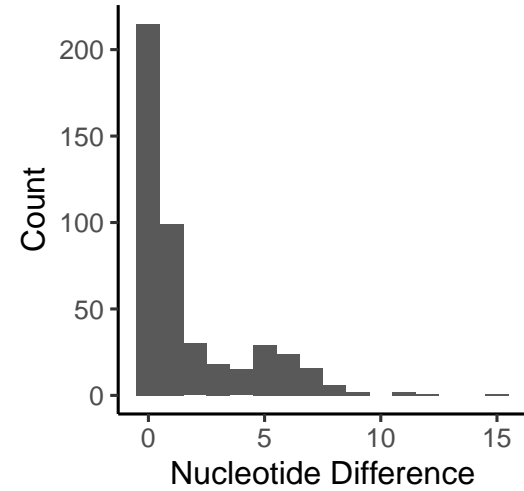
IGHV5-10-1*01

6763 sequences assigned
1626 (24%) exact matches, in which:
1301 unique CDR3
6 unique J



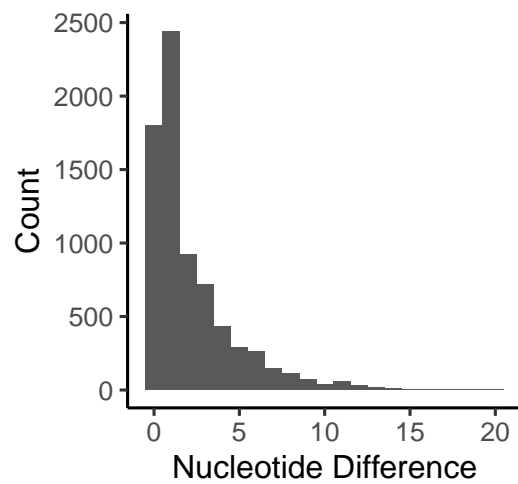
IGHV6-1*01_A315G

458 sequences assigned
215 (46.9%) exact matches, in which:
209 unique CDR3
6 unique J



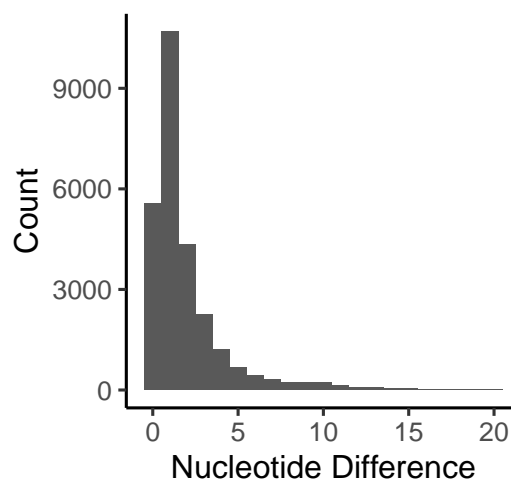
IGHV4-61*01

7391 sequences assigned
1801 (24.4%) exact matches, in which:
1542 unique CDR3
6 unique J



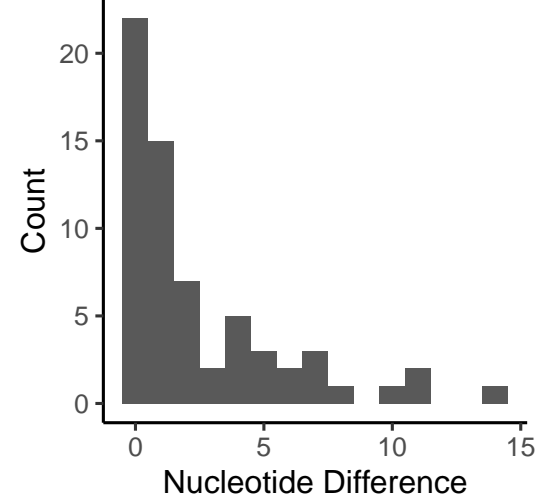
IGHV5-51*01

26817 sequences assigned
5569 (20.8%) exact matches, in which:
4051 unique CDR3
6 unique J



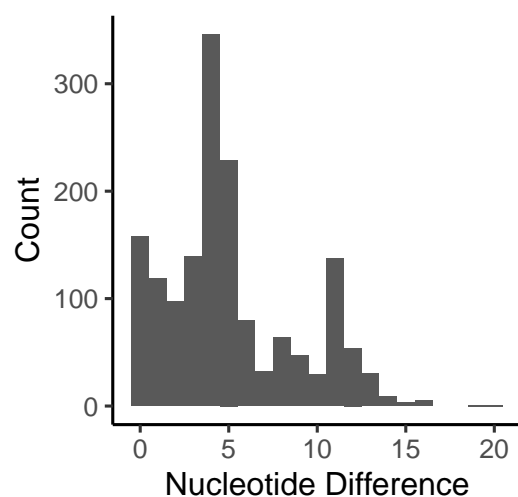
IGHV7-4-1*01

65 sequences assigned
22 (33.8%) exact matches, in which:
21 unique CDR3
4 unique J



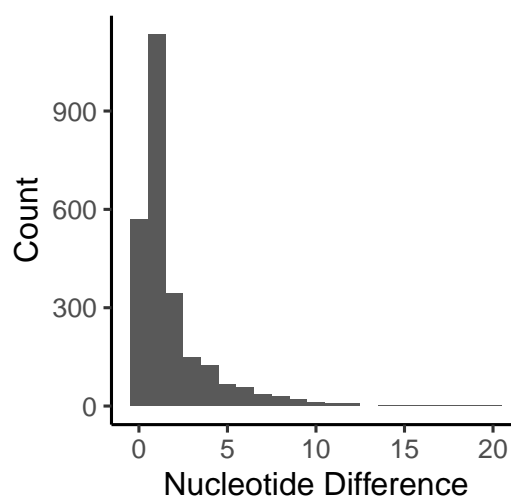
IGHV4-61*08_G48A_G49A

1588 sequences assigned
158 (9.9%) exact matches, in which:
158 unique CDR3
6 unique J

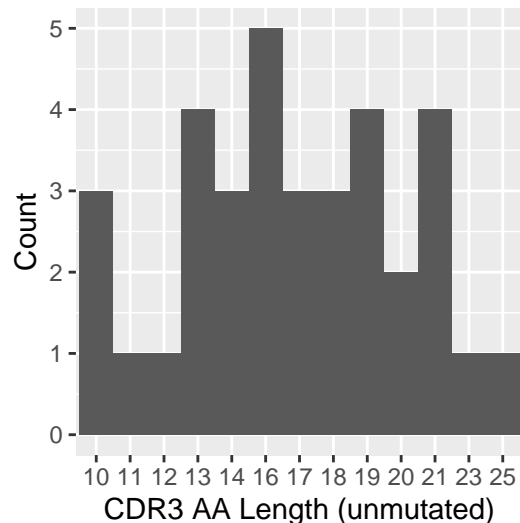


IGHV6-1*01

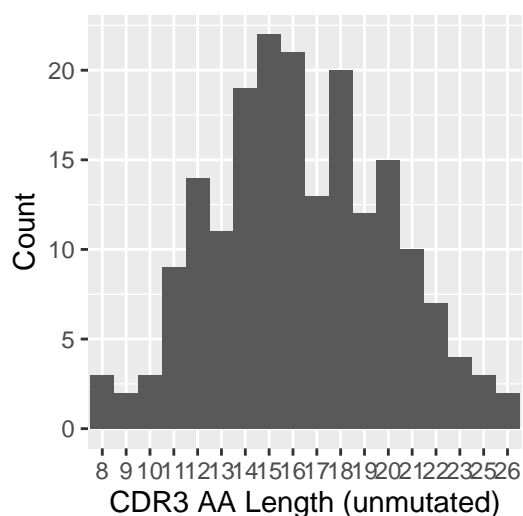
2561 sequences assigned
569 (22.2%) exact matches, in which:
402 unique CDR3
6 unique J



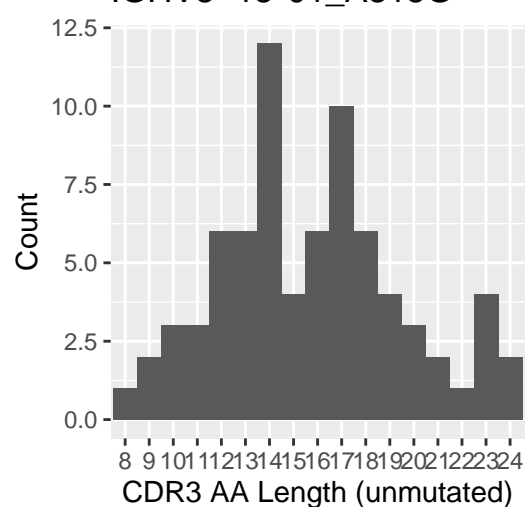
IGHV1-3*02_T296C_T300C



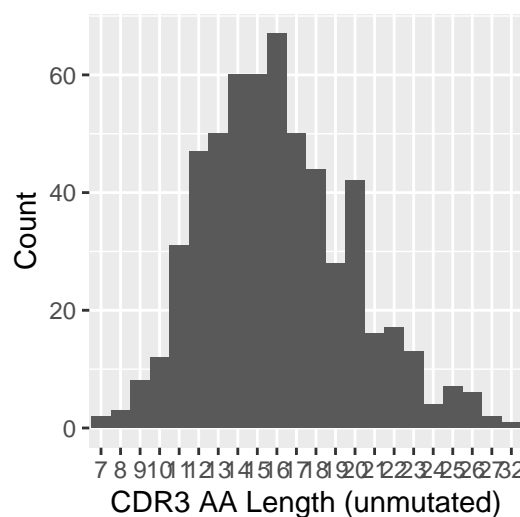
IGHV1-69-2*01_A315G_C3



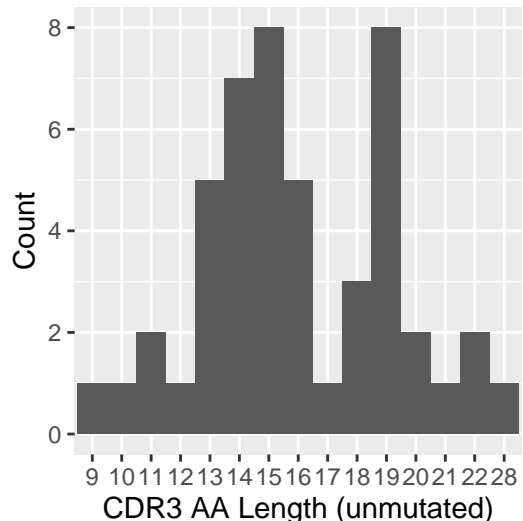
IGHV3-13*01_A315G



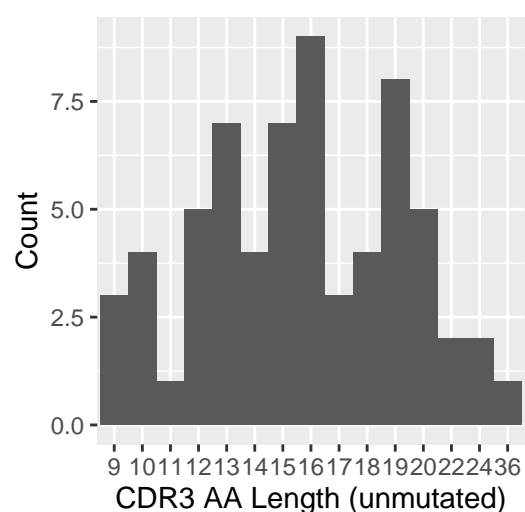
IGHV1-24*01_A315G_C317



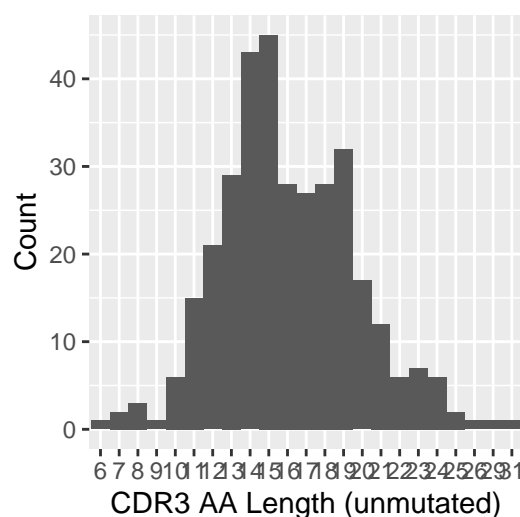
IGHV2-70*01_G303A



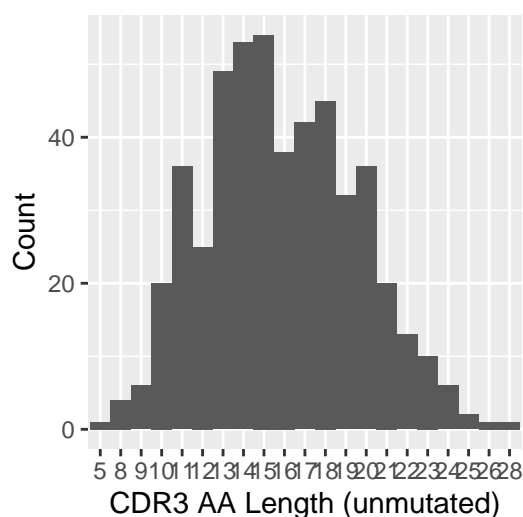
IGHV3-13*04_A315G



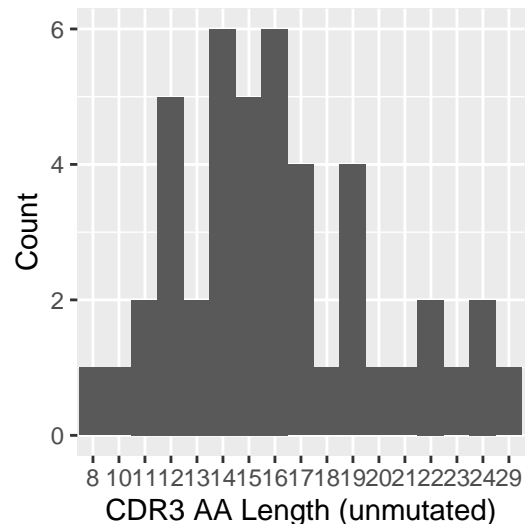
IGHV1-58*01_G316A_C317



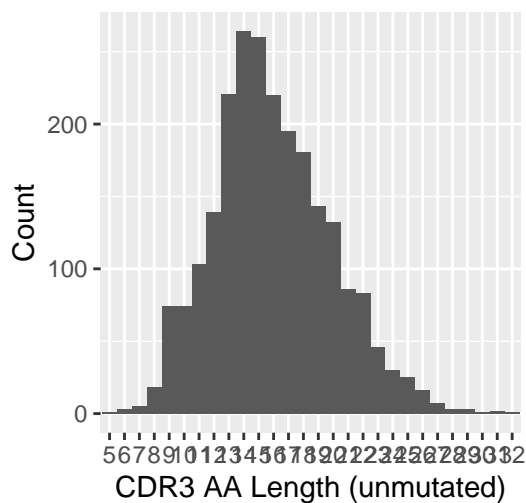
IGHV3-9*01_A315G



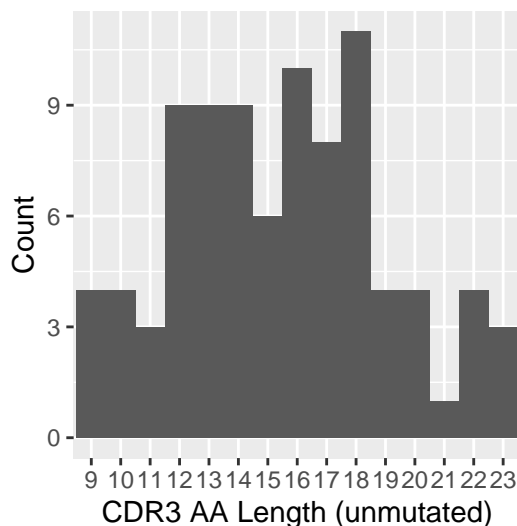
IGHV3-20*04_T279C_C300T



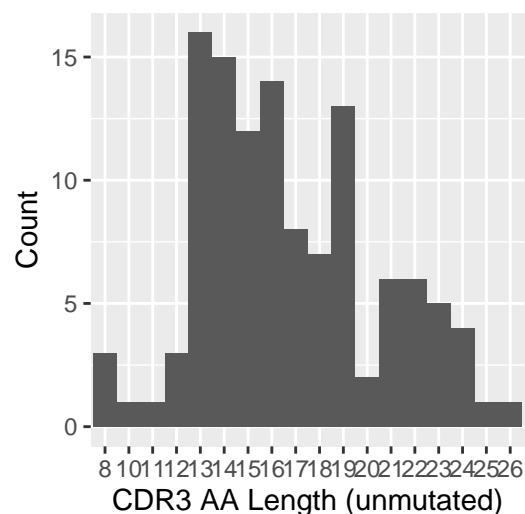
IGHV3-23*01_A317G



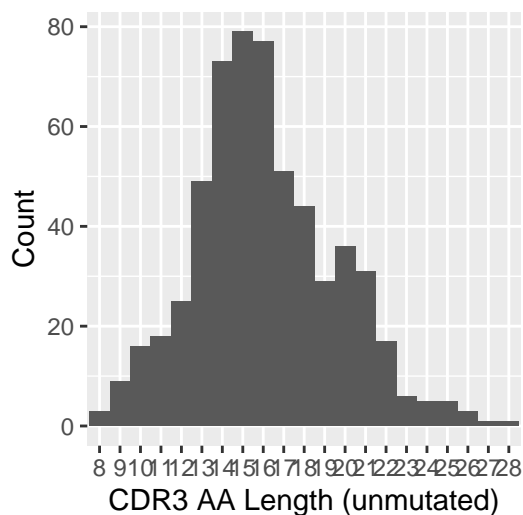
IGHV3-49*05_A313G_T315G



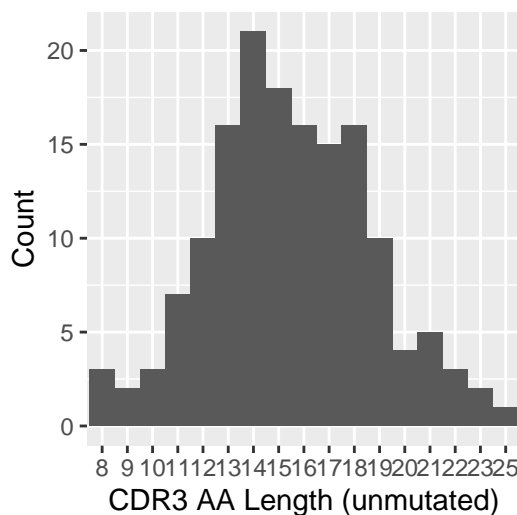
IGHV3-66*03_T175G_T267C



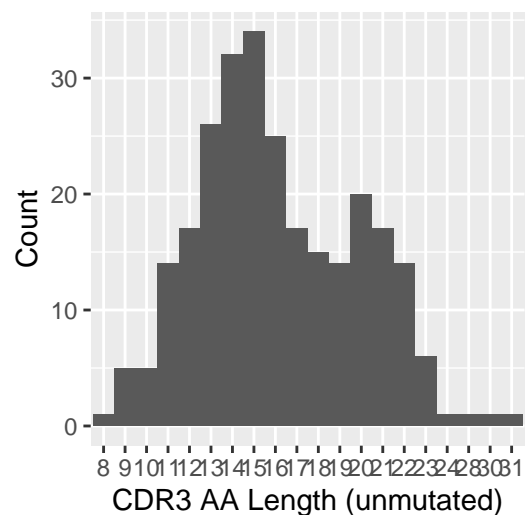
IGHV3-30*03_T288C



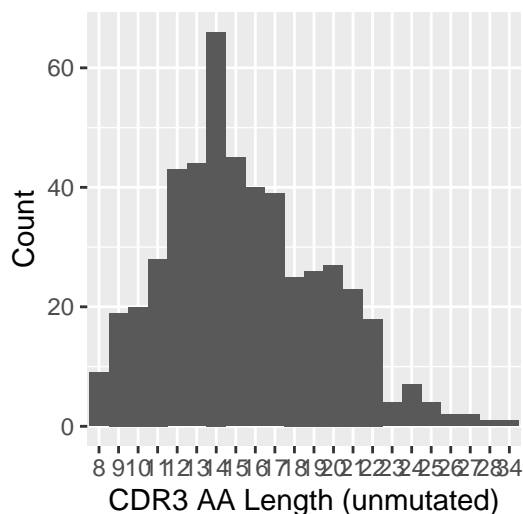
IGHV3-53*01_T267G_G303.



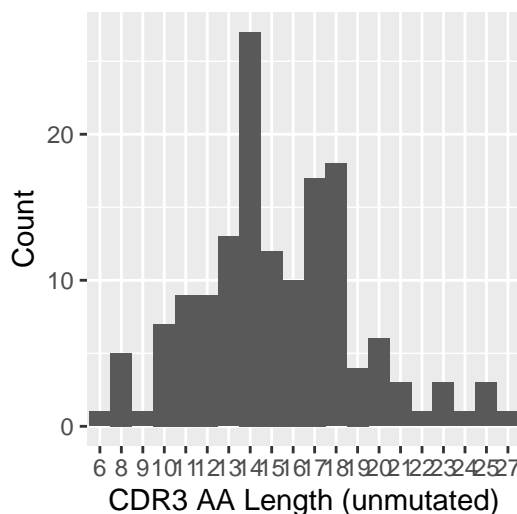
IGHV3-73*02_A313G_T315G



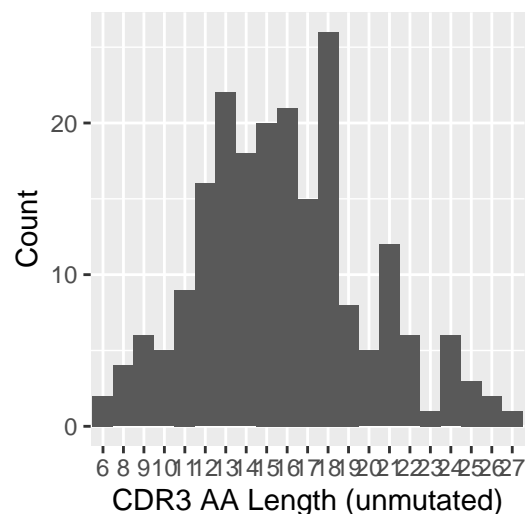
IGHV3-48*03_T303G

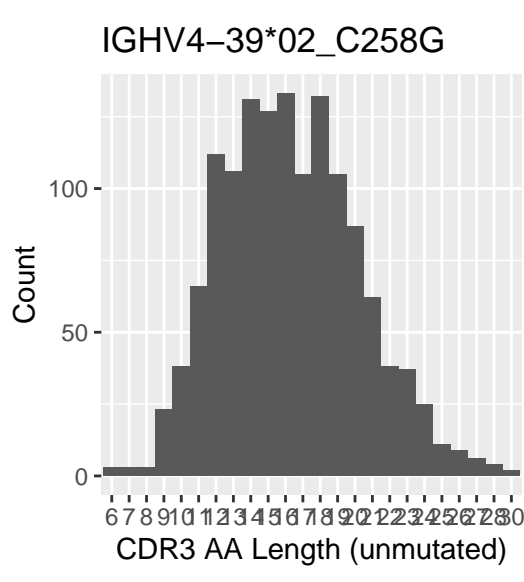
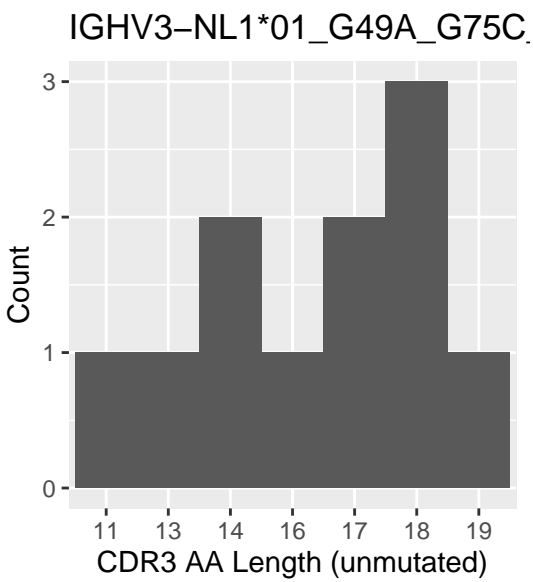
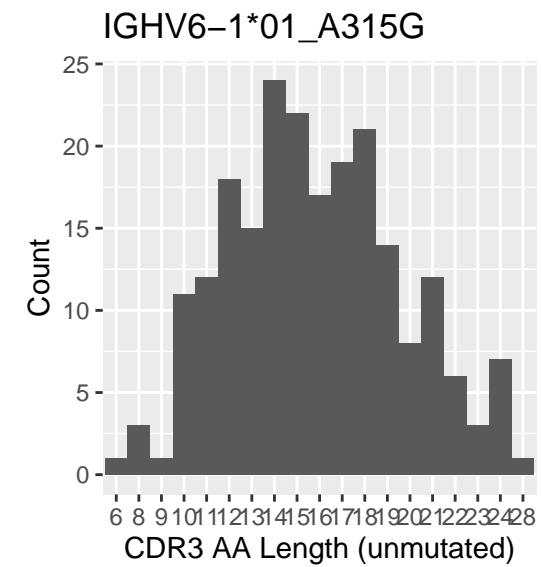
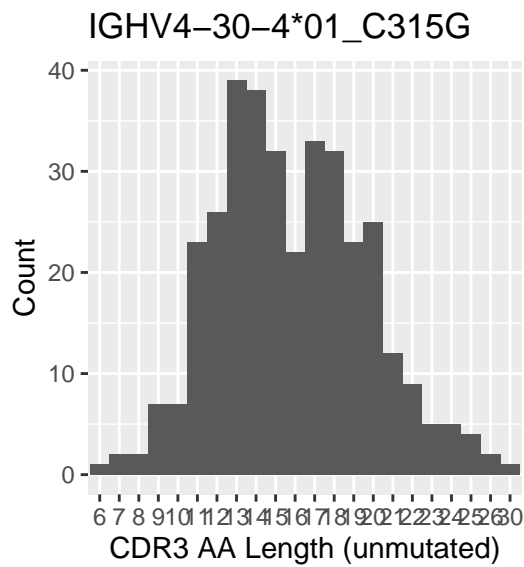
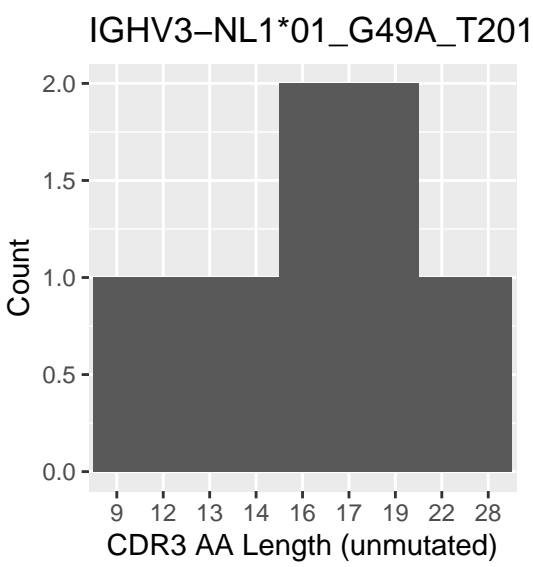


IGHV3-64D*06_T314C



IGHV3-74*01_A315G





317G

