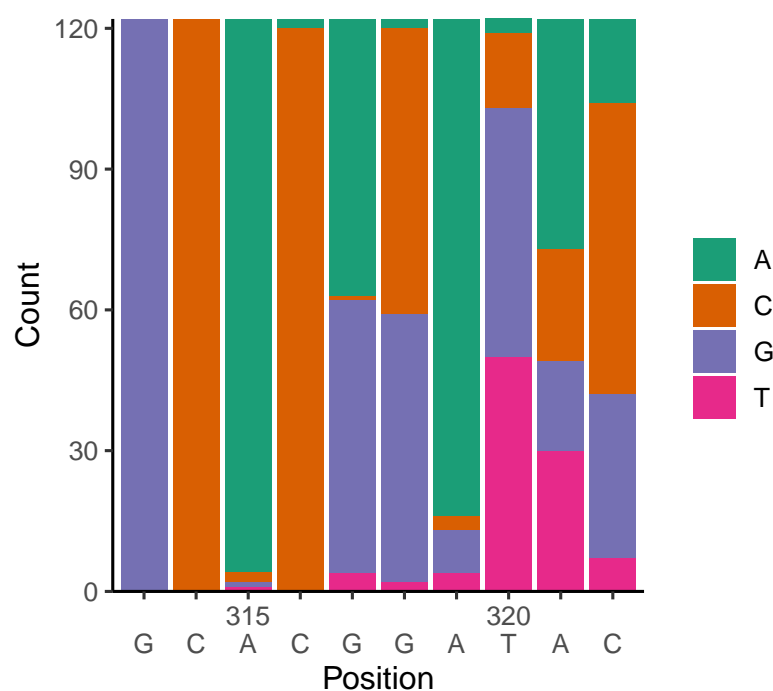
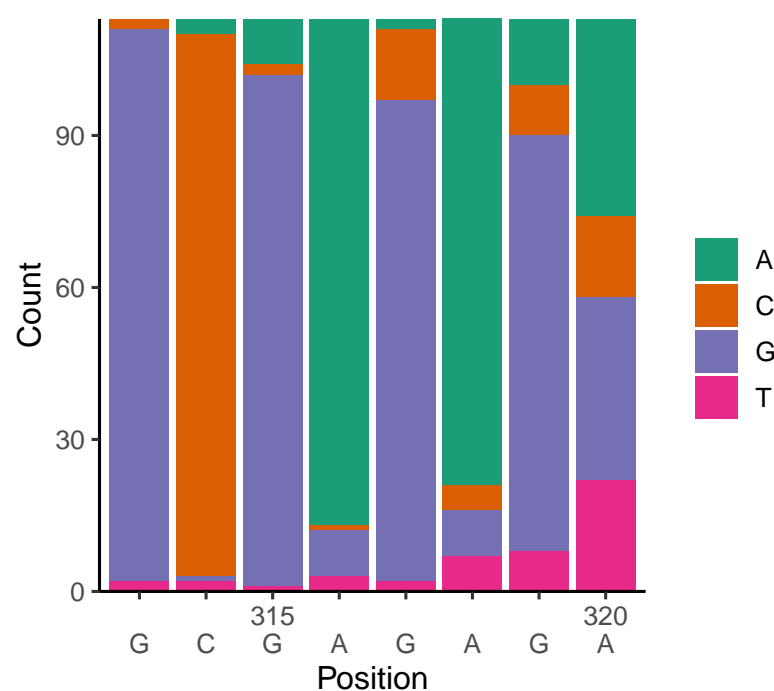


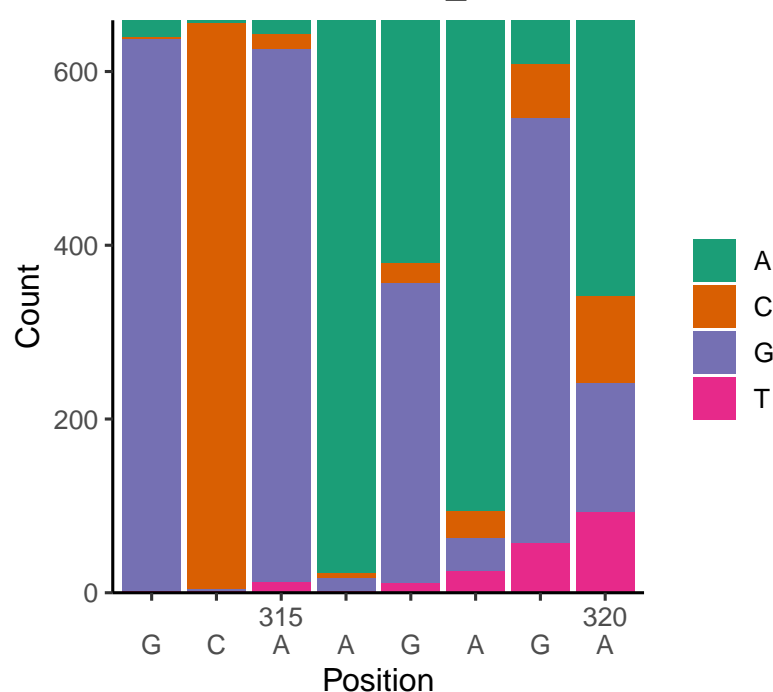
Gene IGHV2-70\*15\_G303A



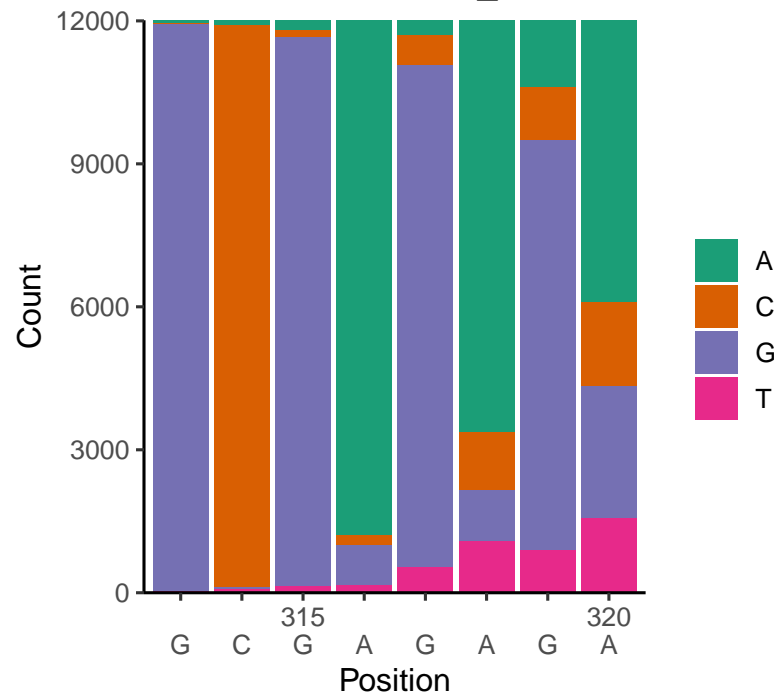
Gene IGHV1-3\*02\_T296C\_T300C



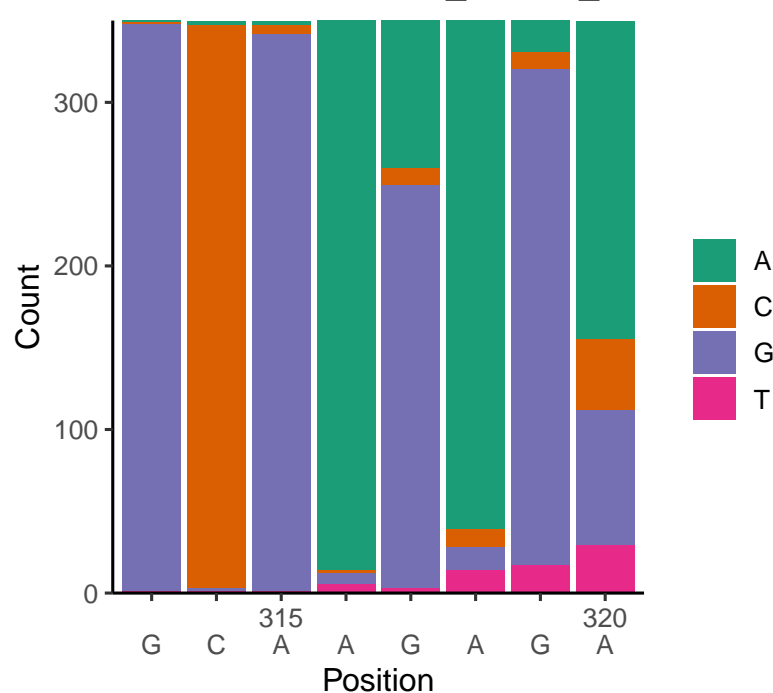
Gene IGHV3-74\*01\_T279C



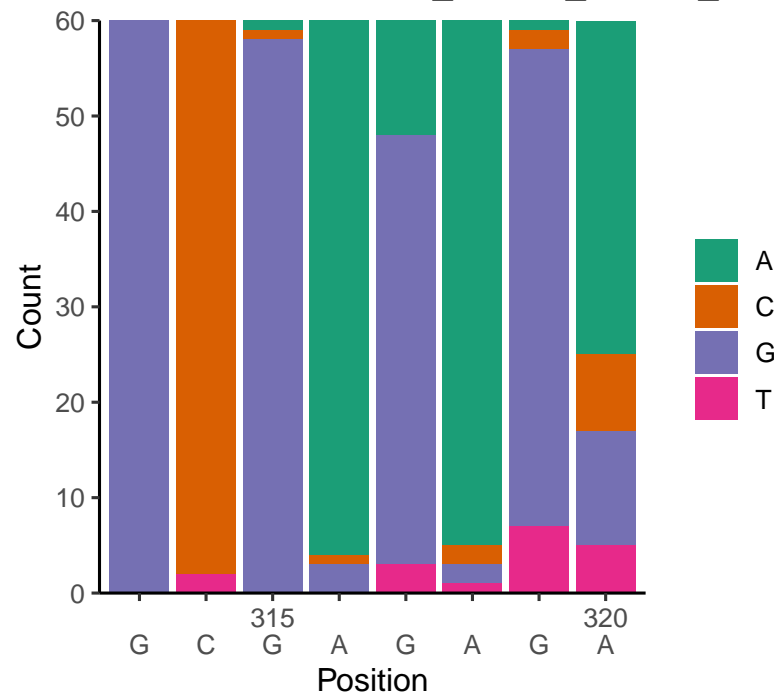
Gene IGHV1-69\*08\_C191T



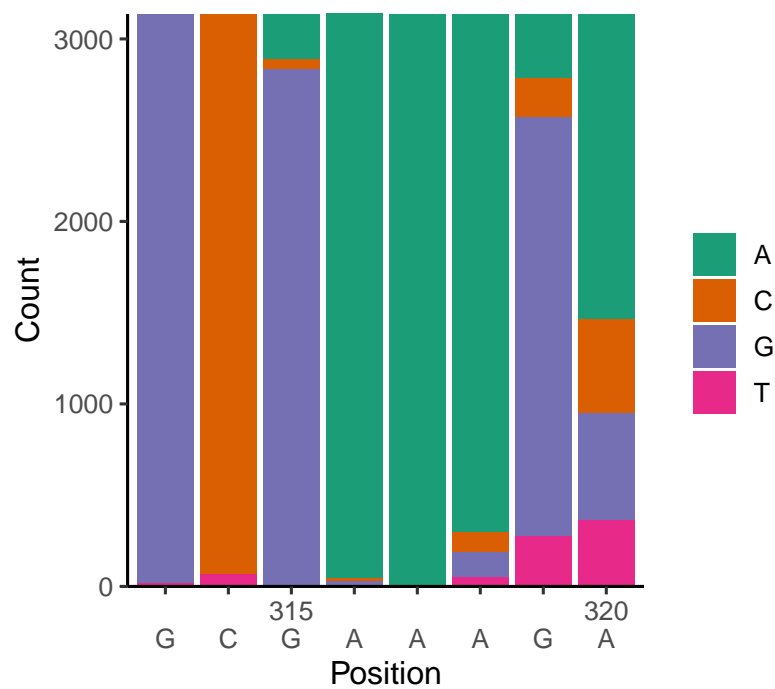
Gene IGHV3-74\*01\_T279C\_C288T



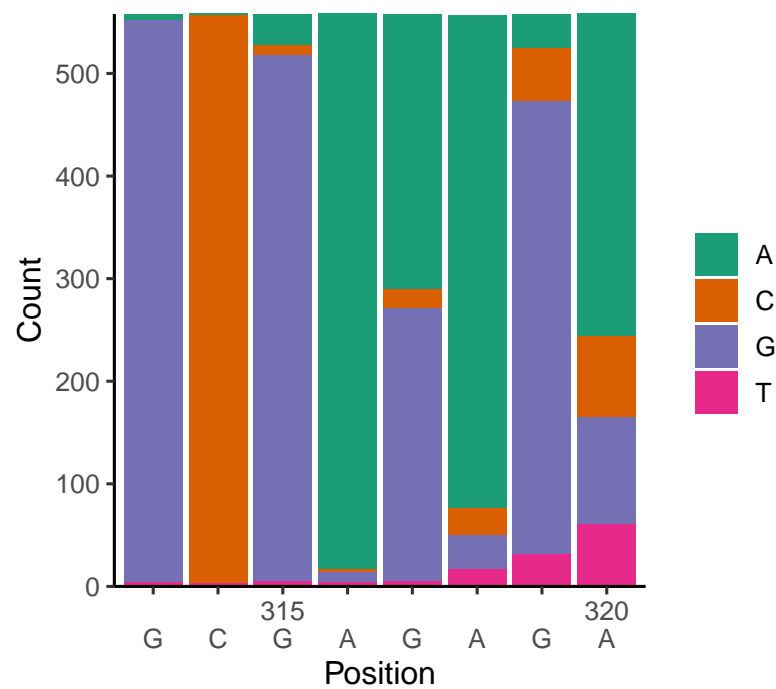
Gene IGHV3-20\*04\_T279C\_C288T\_C300



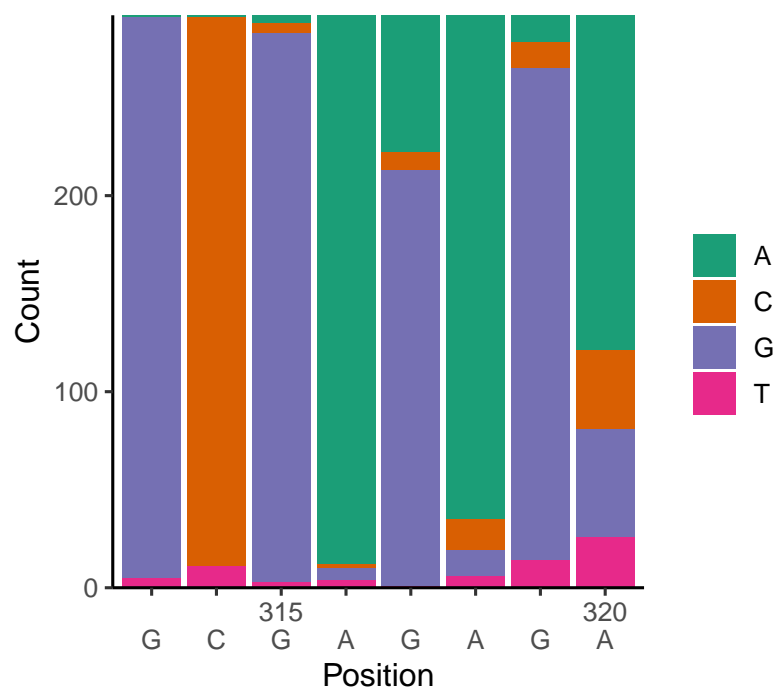
Gene IGHV3-30-3\*02\_G75C



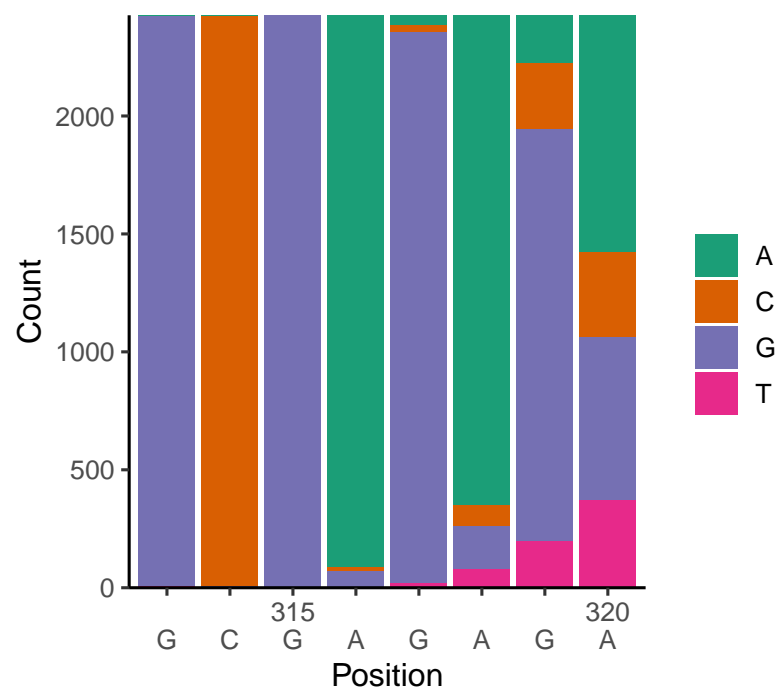
Gene IGHV3-64\*04\_A210C



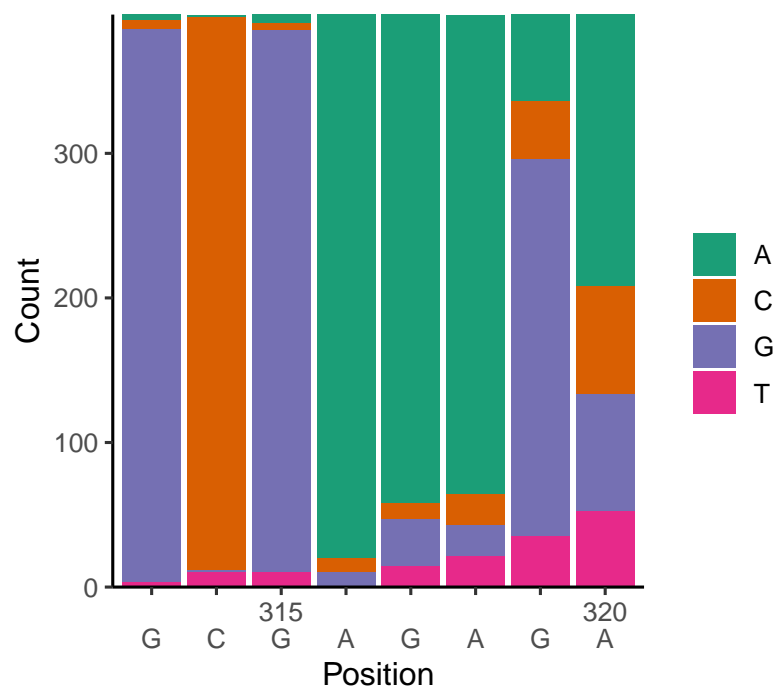
Gene IGHV3-53\*04\_C300T



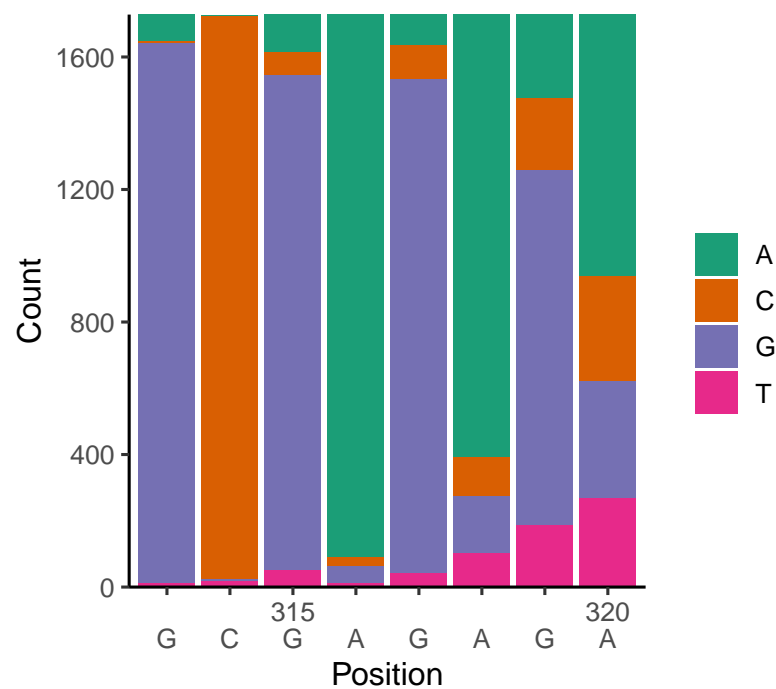
Gene IGHV4-30-4\*01\_C315G



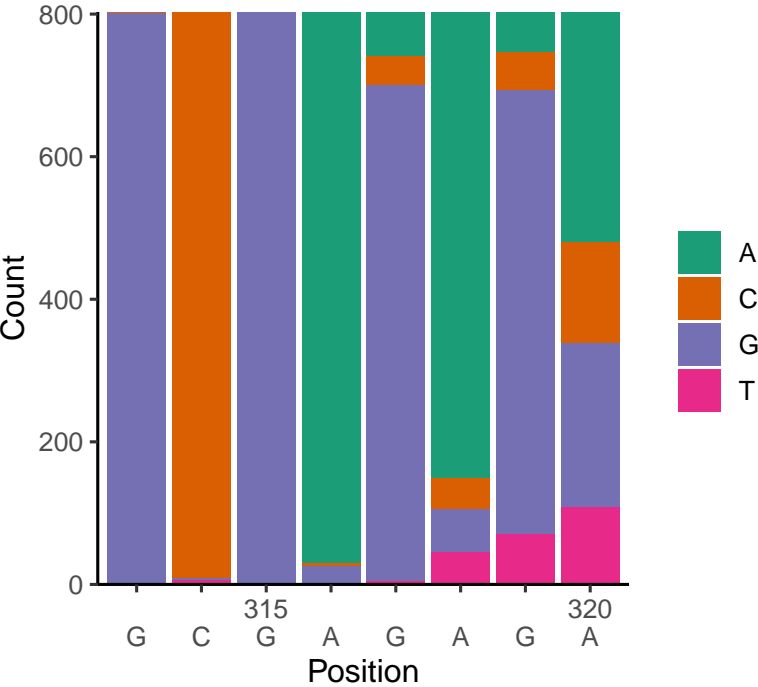
Gene IGHV3-53\*04\_T267G\_T288C\_G30



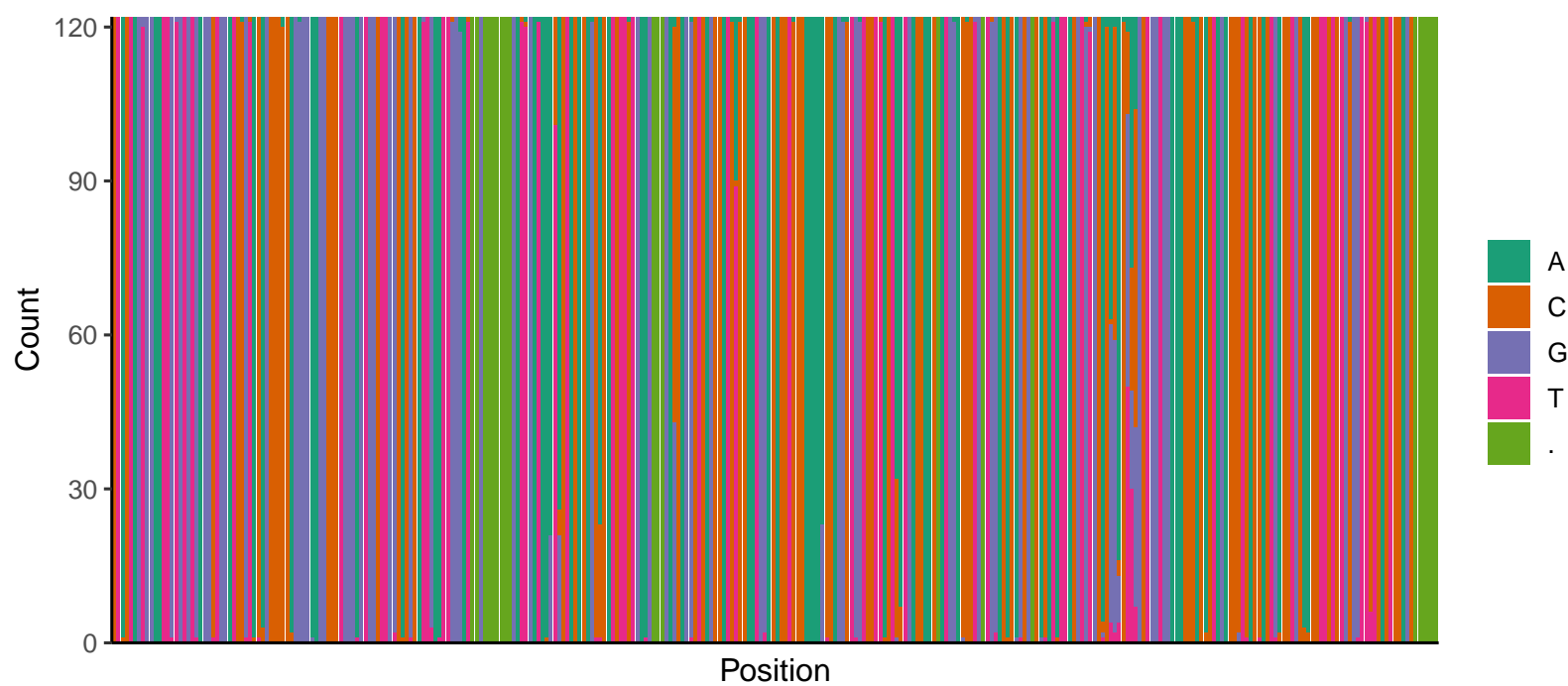
Gene IGHV3-30\*03\_T288C



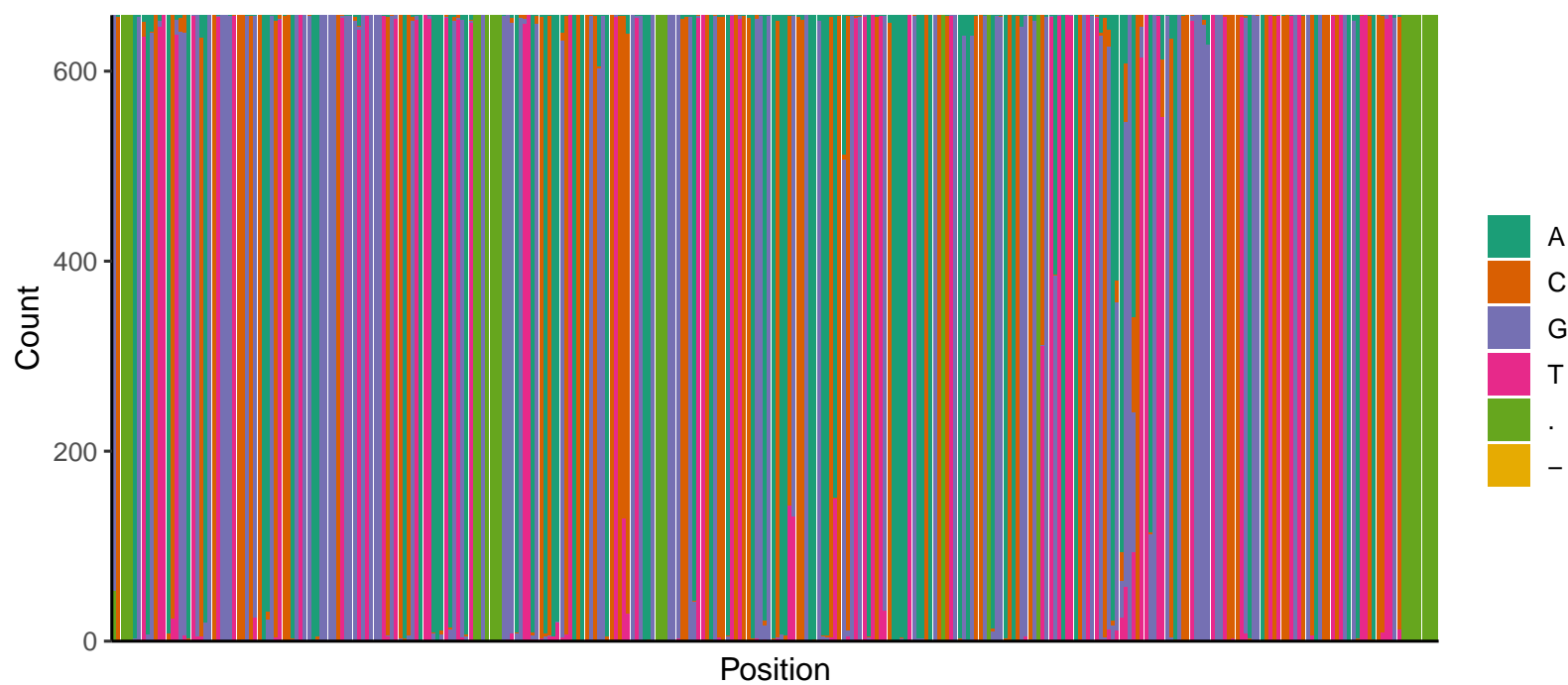
Gene IGHV6-1\*01\_A315G



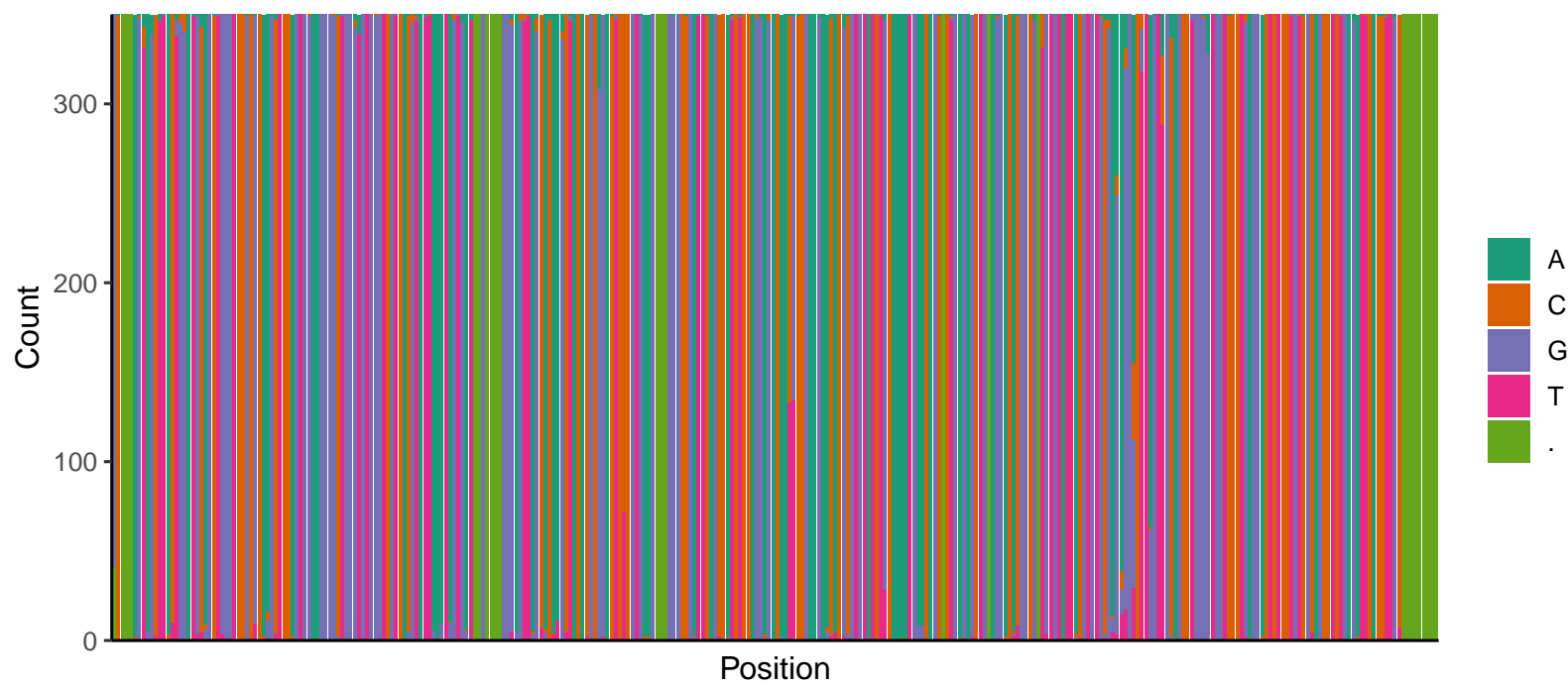
Gene IGHV2-70\*15\_G303A



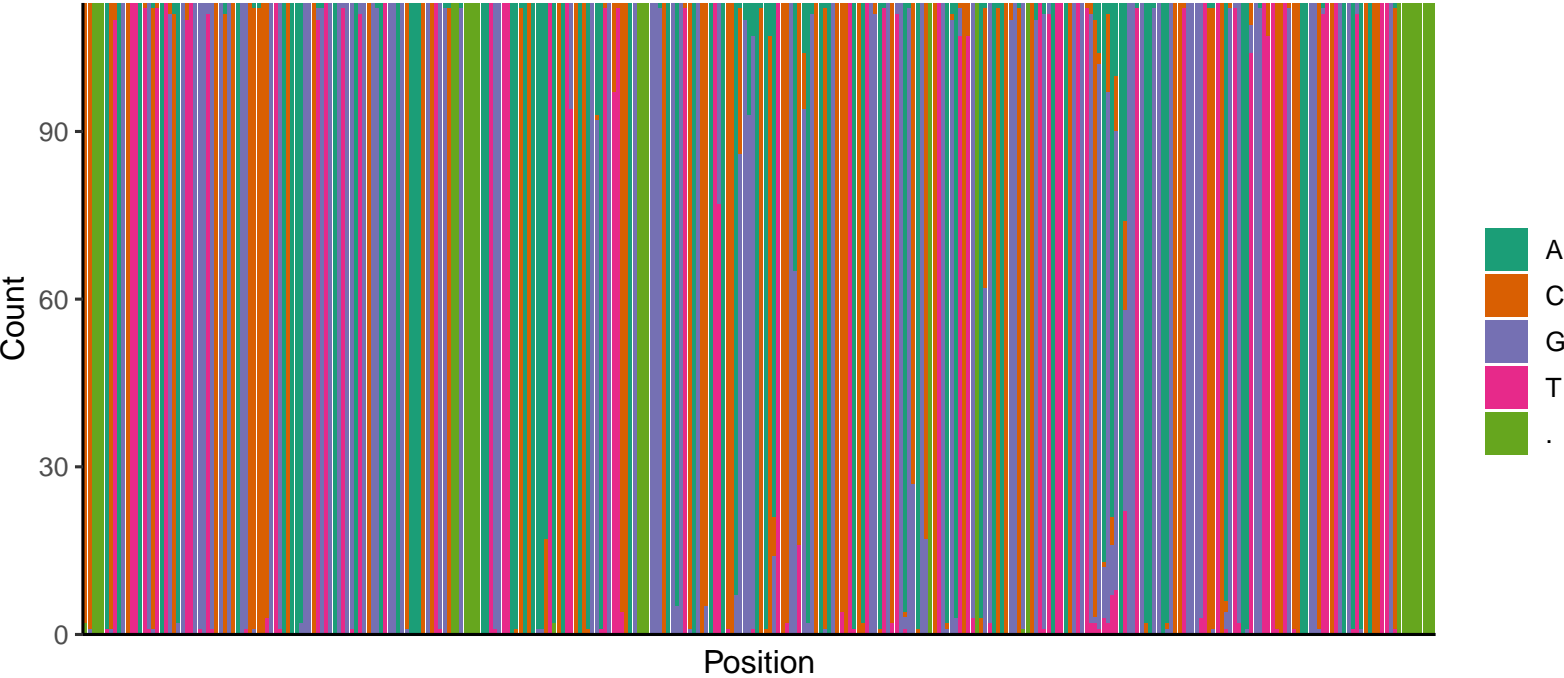
Gene IGHV3-74\*01\_T279C



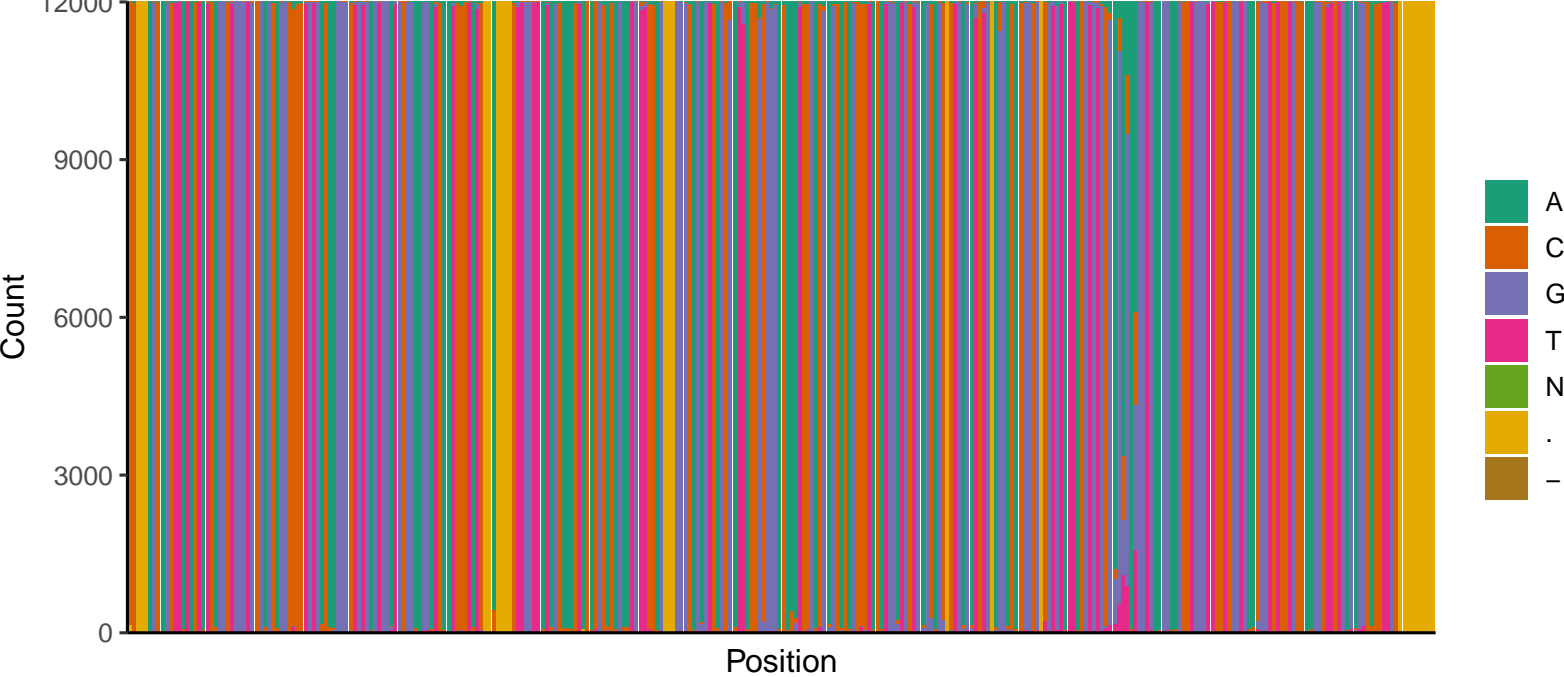
Gene IGHV3-74\*01\_T279C\_C288T



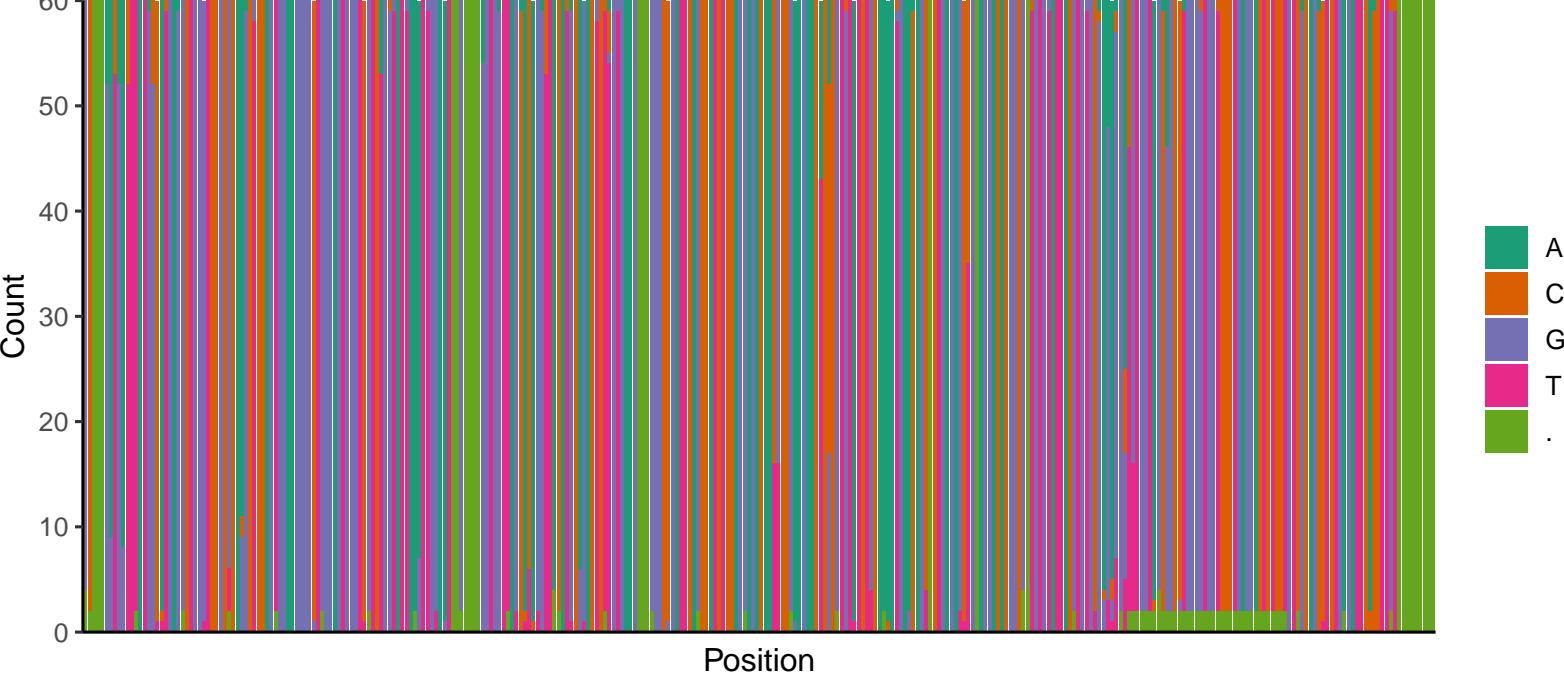
Gene IGHV1-3\*02\_T296C\_T300C



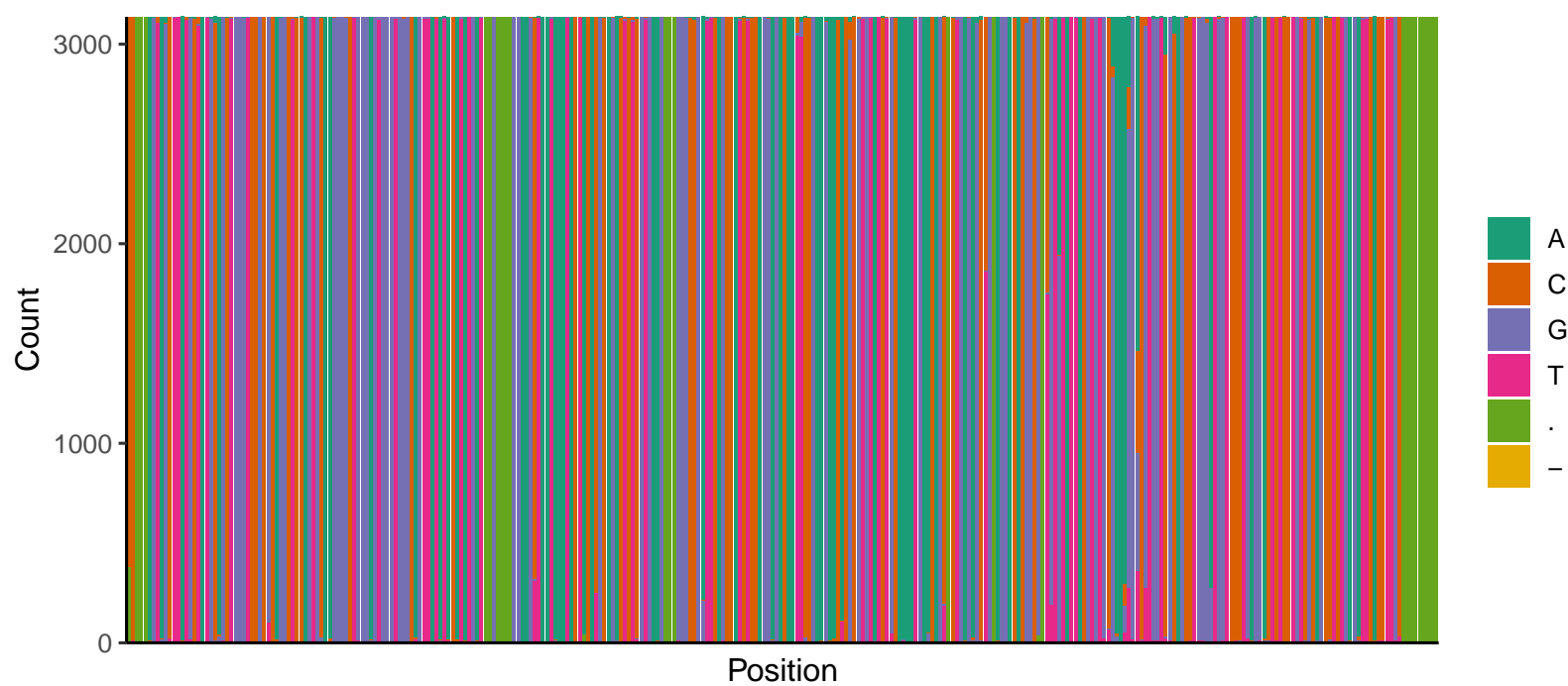
Gene IGHV1-69\*08\_C191T



Gene IGHV3-20\*04\_T279C\_C288T\_C300T\_T301G



Gene IGHV3-30-3\*02\_G75C



Gene IGHV3-53\*04\_C300T



Gene IGHV3-53\*04\_T267G\_T288C\_G303A



Gene IGHV3-64\*04\_A210C



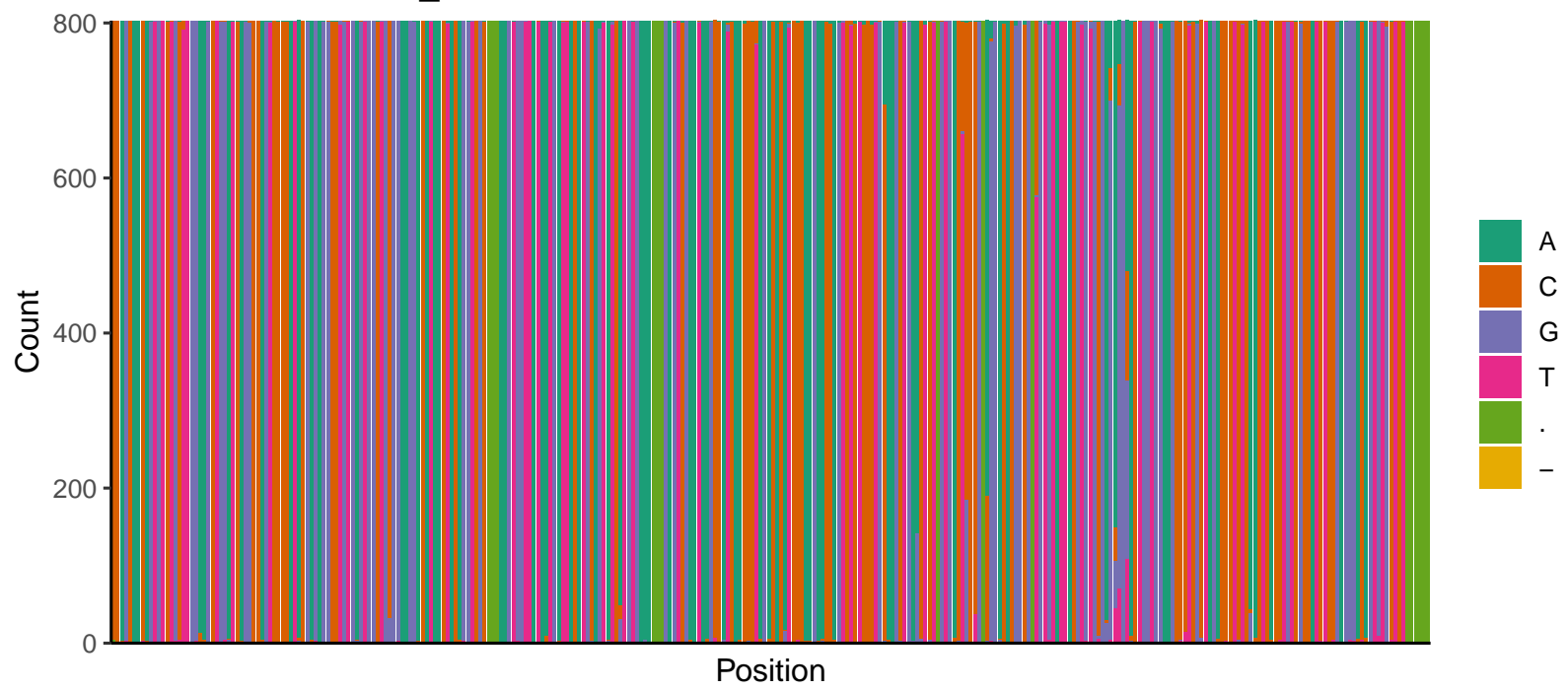
Gene IGHV4-30-4\*01\_C315G



Gene IGHV3-30\*03\_T288C

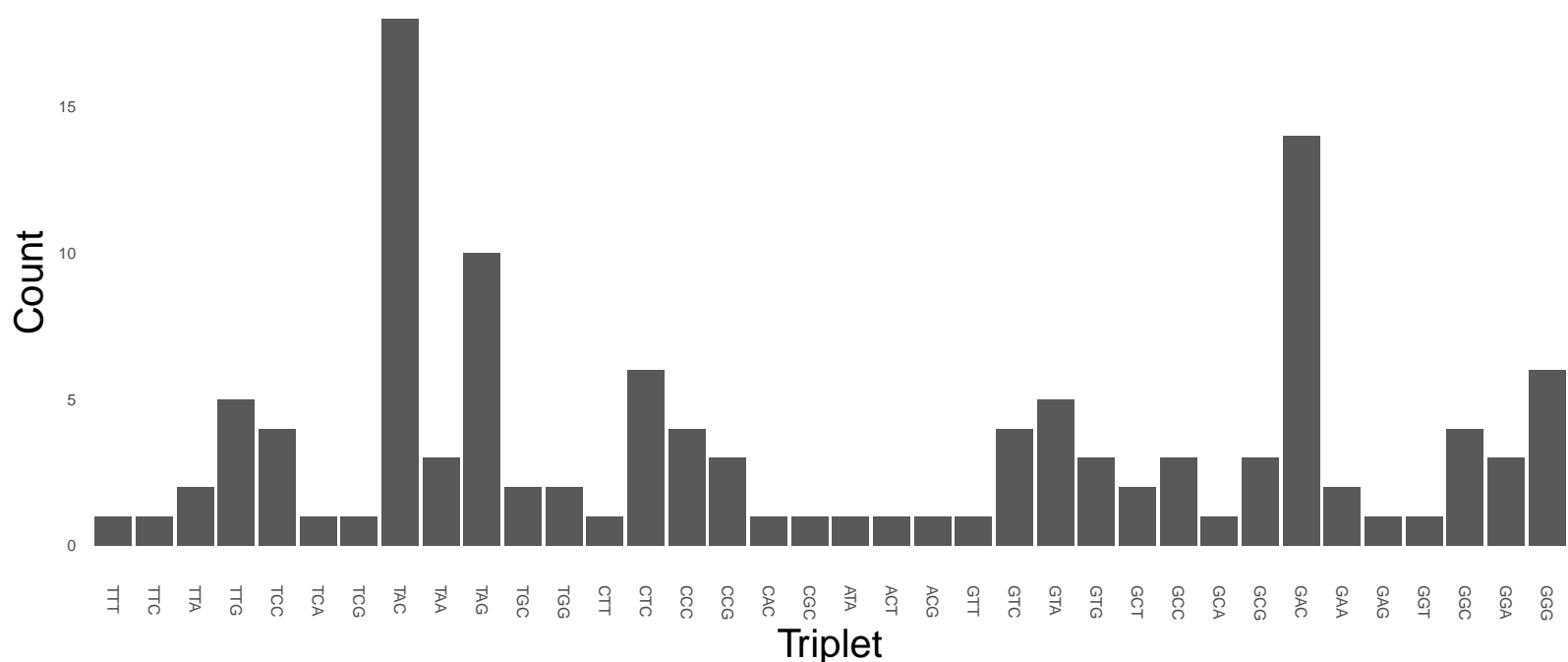


## Gene IGHV6-1\*01\_A315G

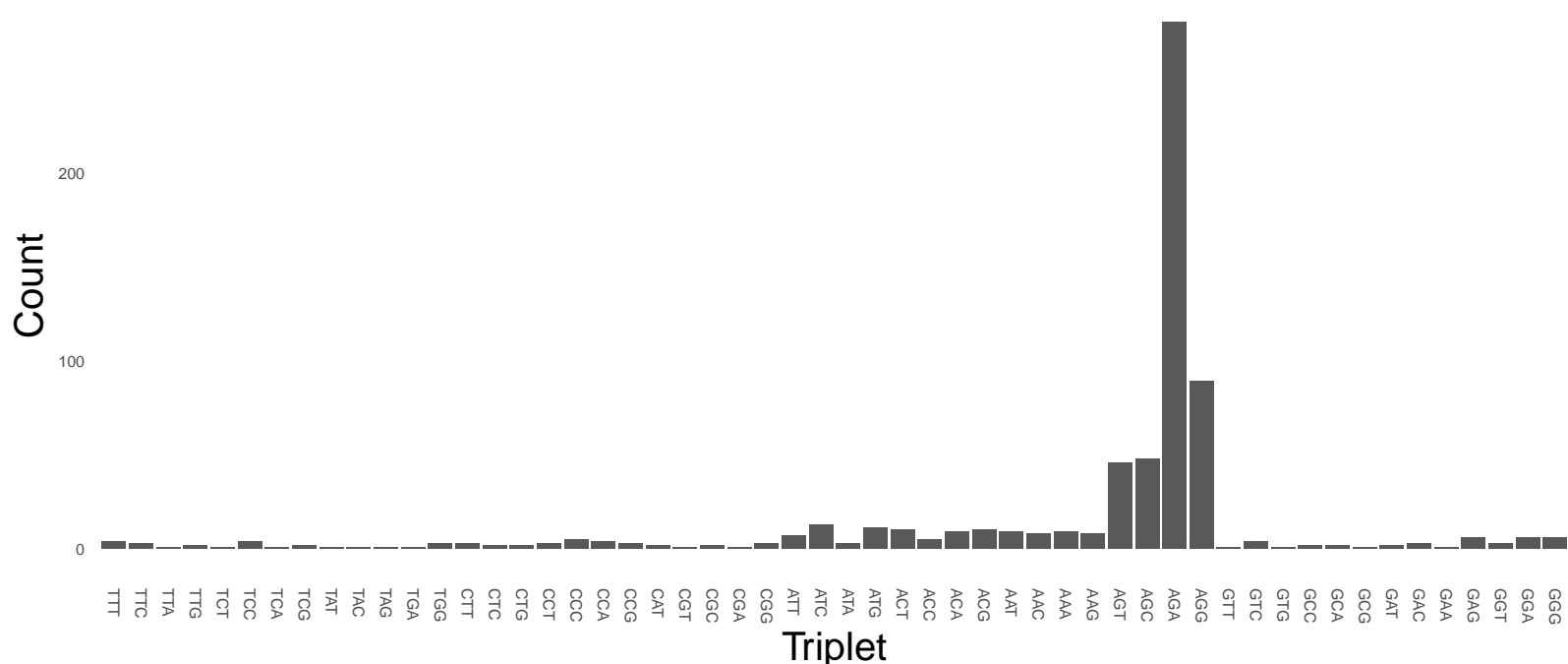




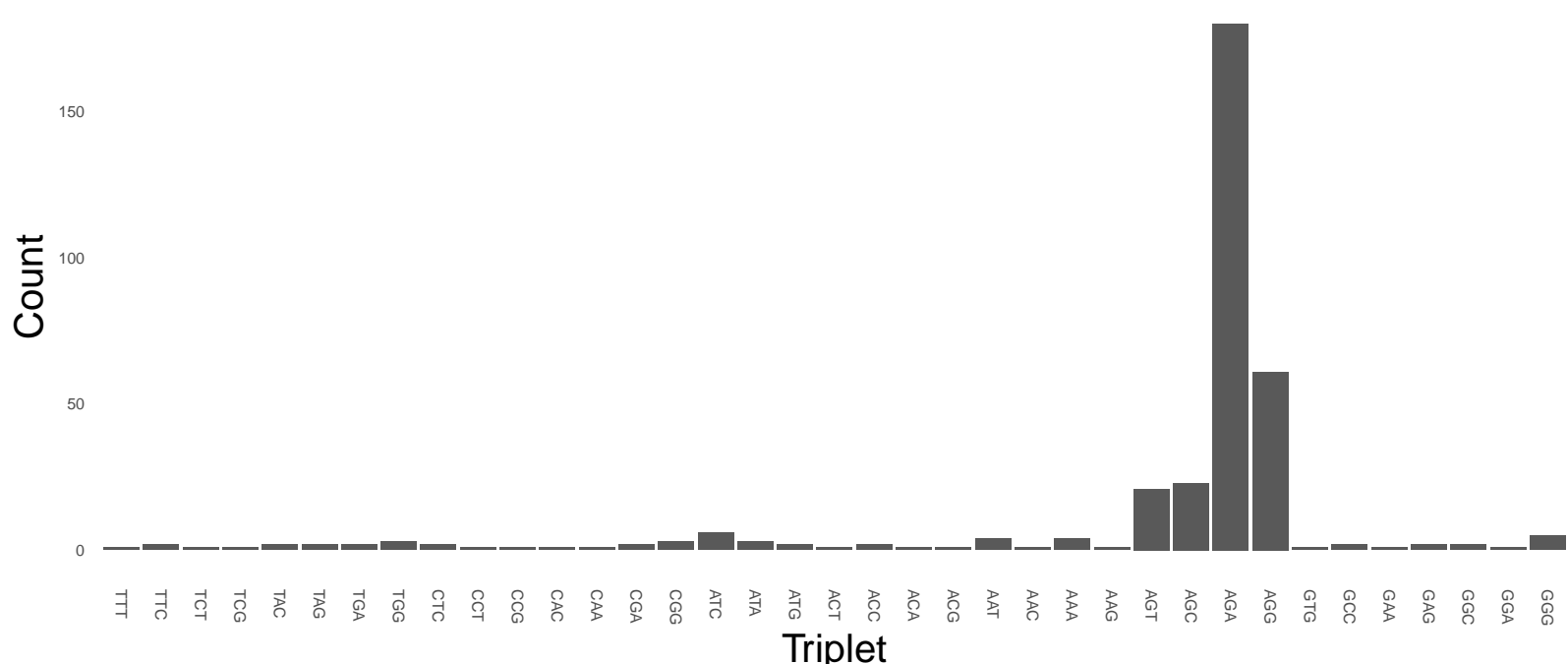
IGHV2-70\*15\_G303A- Final 3 nucleotides as a triplet



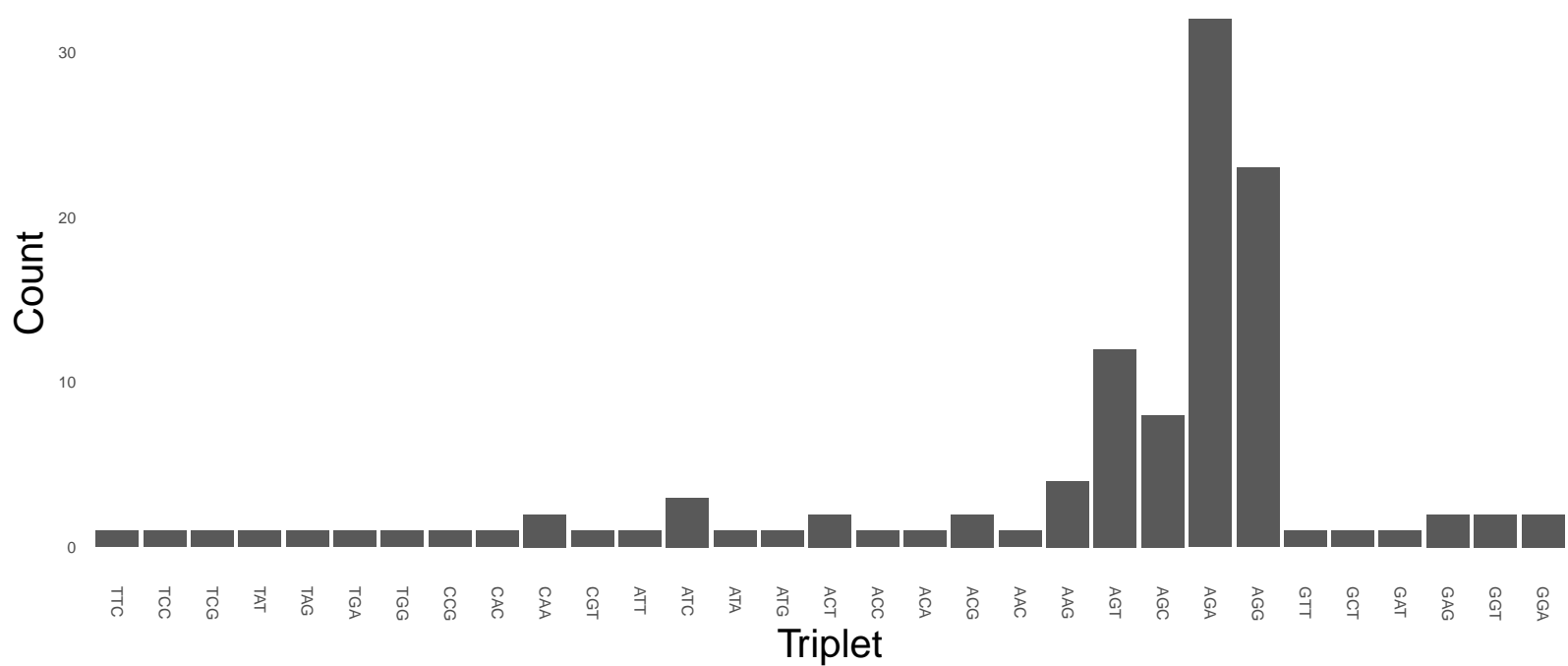
IGHV3-74\*01\_T279C- Final 3 nucleotides as a triplet



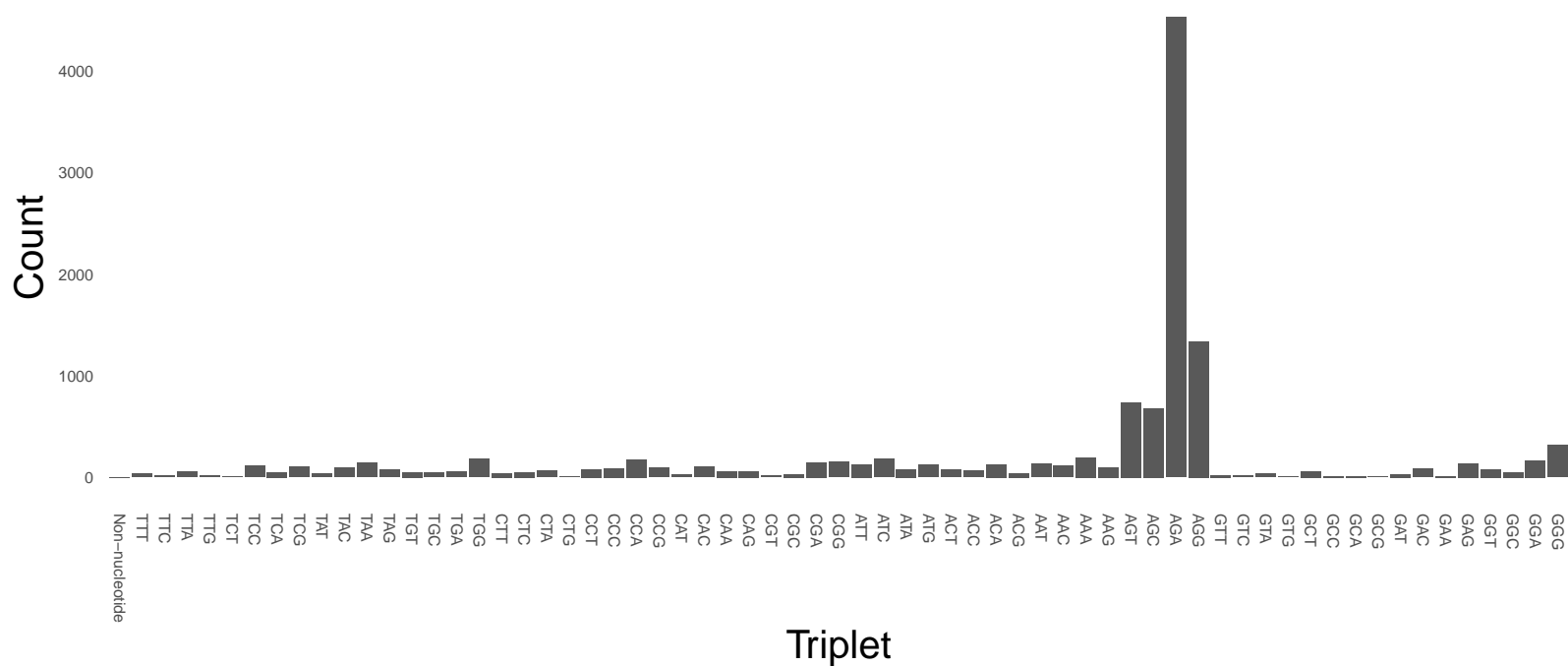
IGHV3-74\*01\_T279C\_C288T- Final 3 nucleotides as a triplet



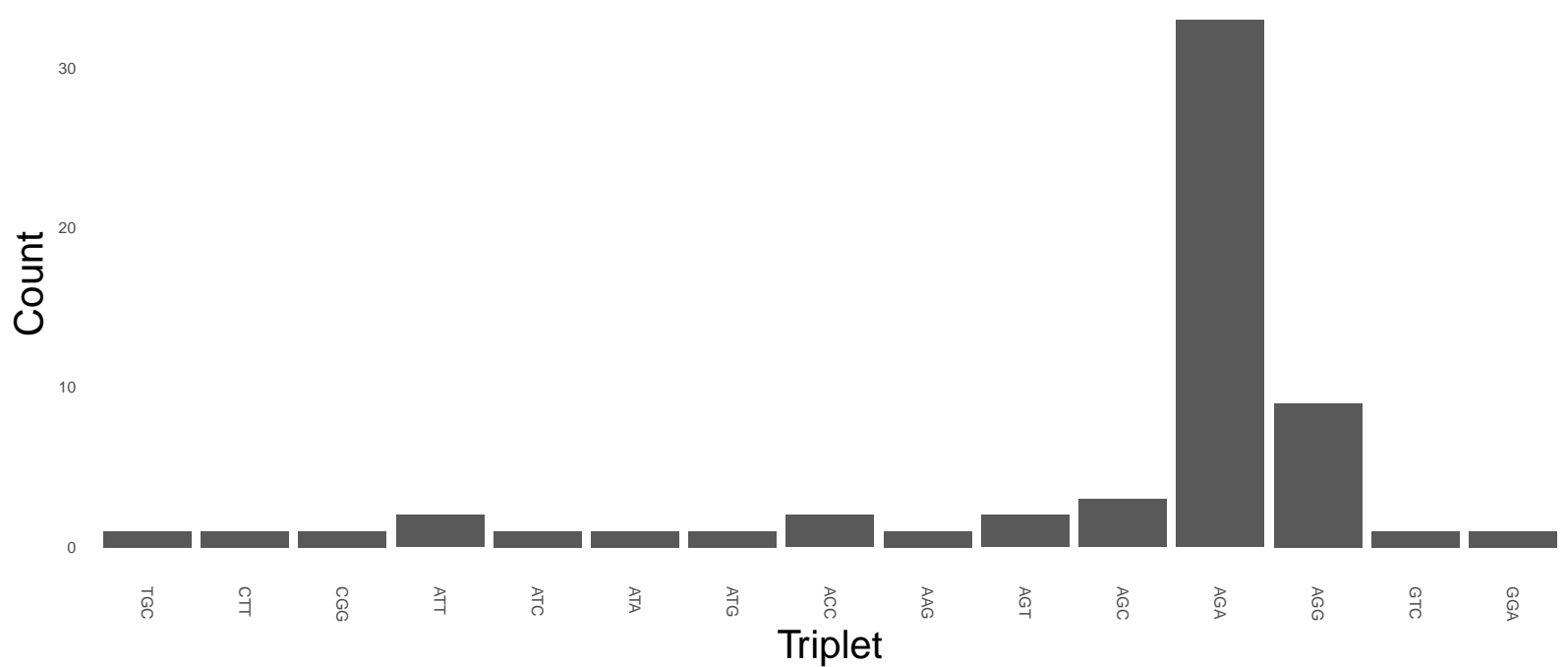
IGHV1-3\*02\_T296C\_T300C- Final 3 nucleotides as a triplet



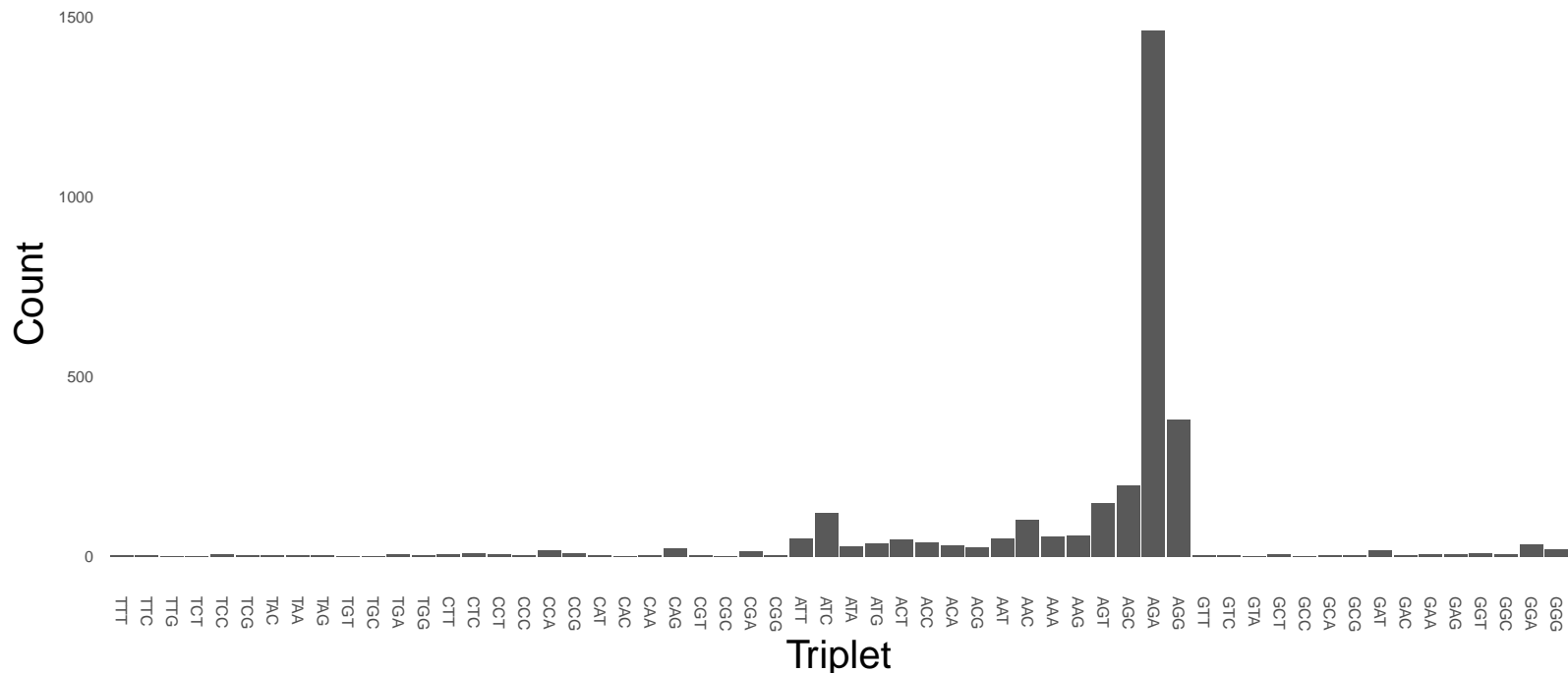
IGHV1-69\*08\_C191T- Final 3 nucleotides as a triplet



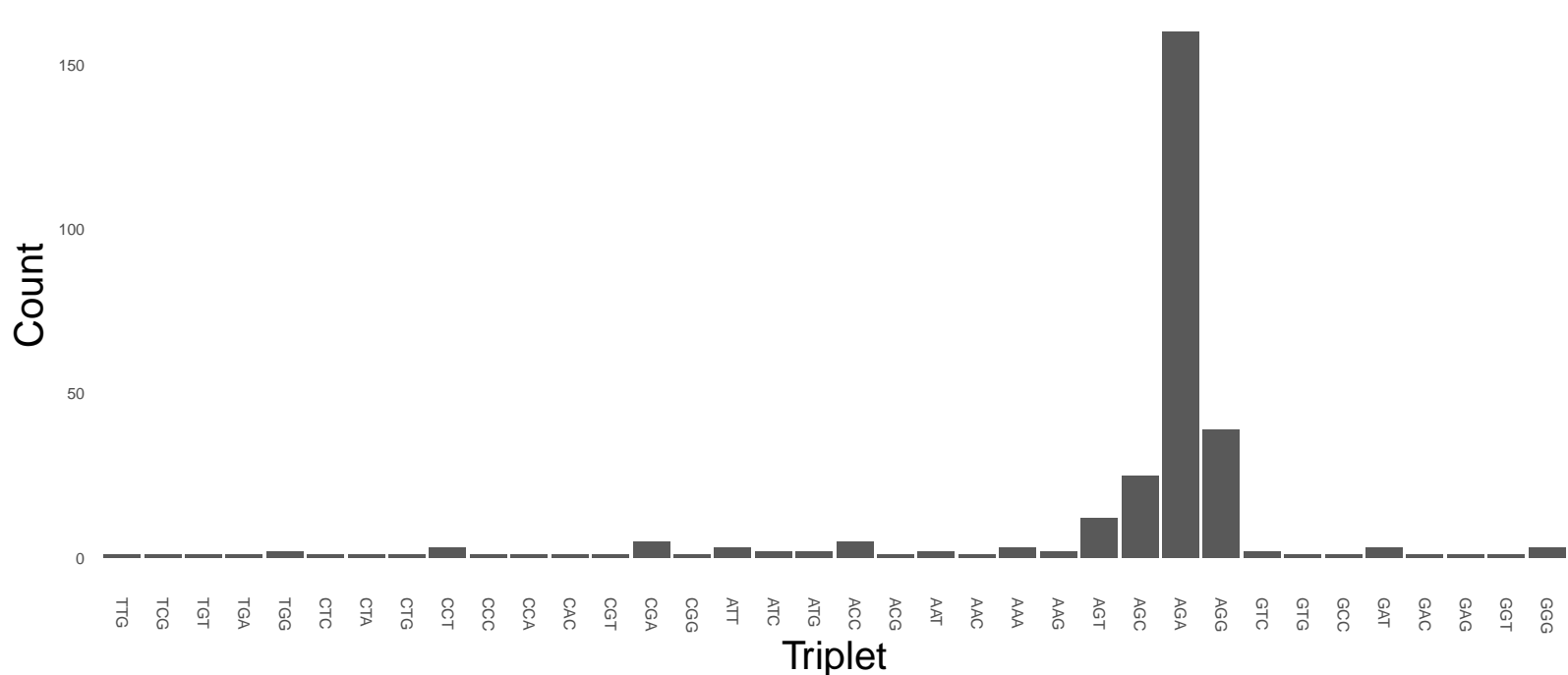
IGHV3-20\*04\_T279C\_C288T\_C300T\_T301G- Final 3 nucleotides as a triplet



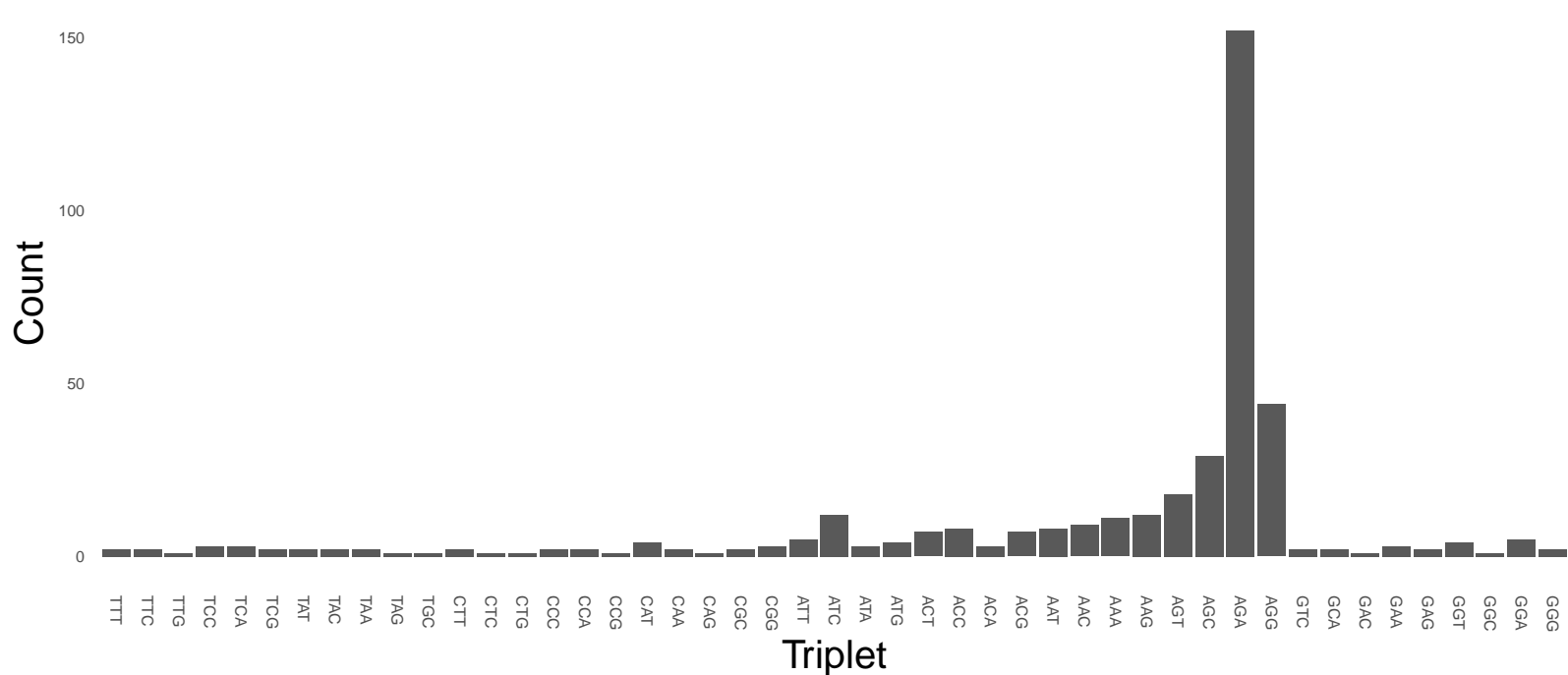
IGHV3-30-3\*02\_G75C- Final 3 nucleotides as a triplet



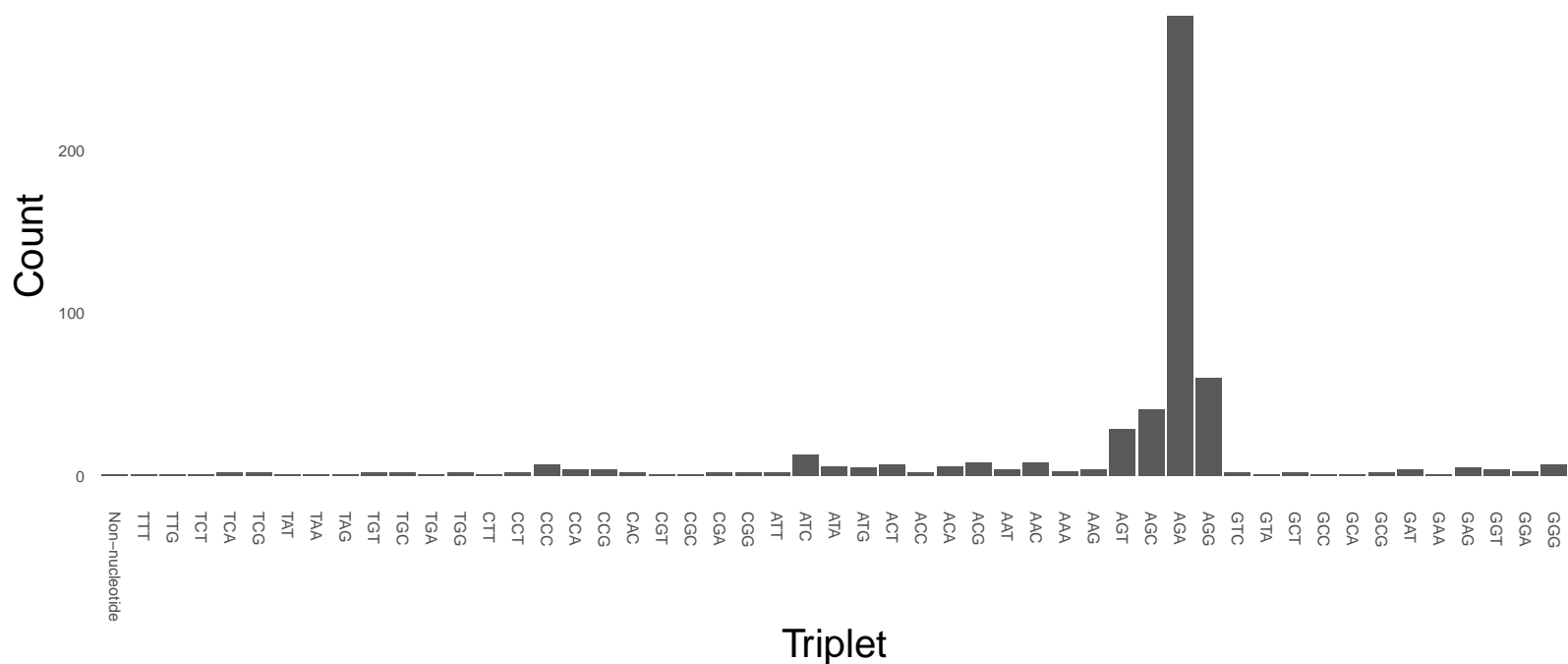
IGHV3-53\*04\_C300T- Final 3 nucleotides as a triplet



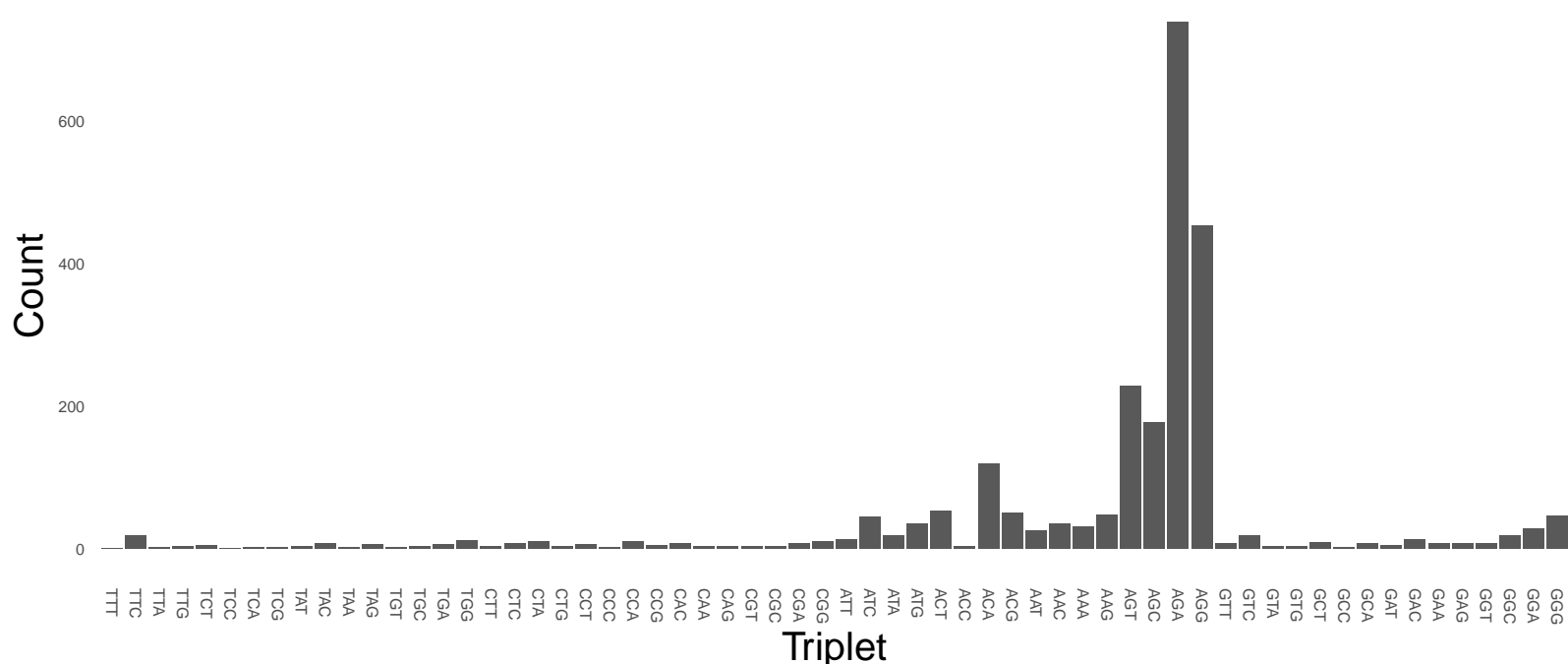
IGHV3-53\*04\_T267G\_T288C\_G303A- Final 3 nucleotides as a triplet



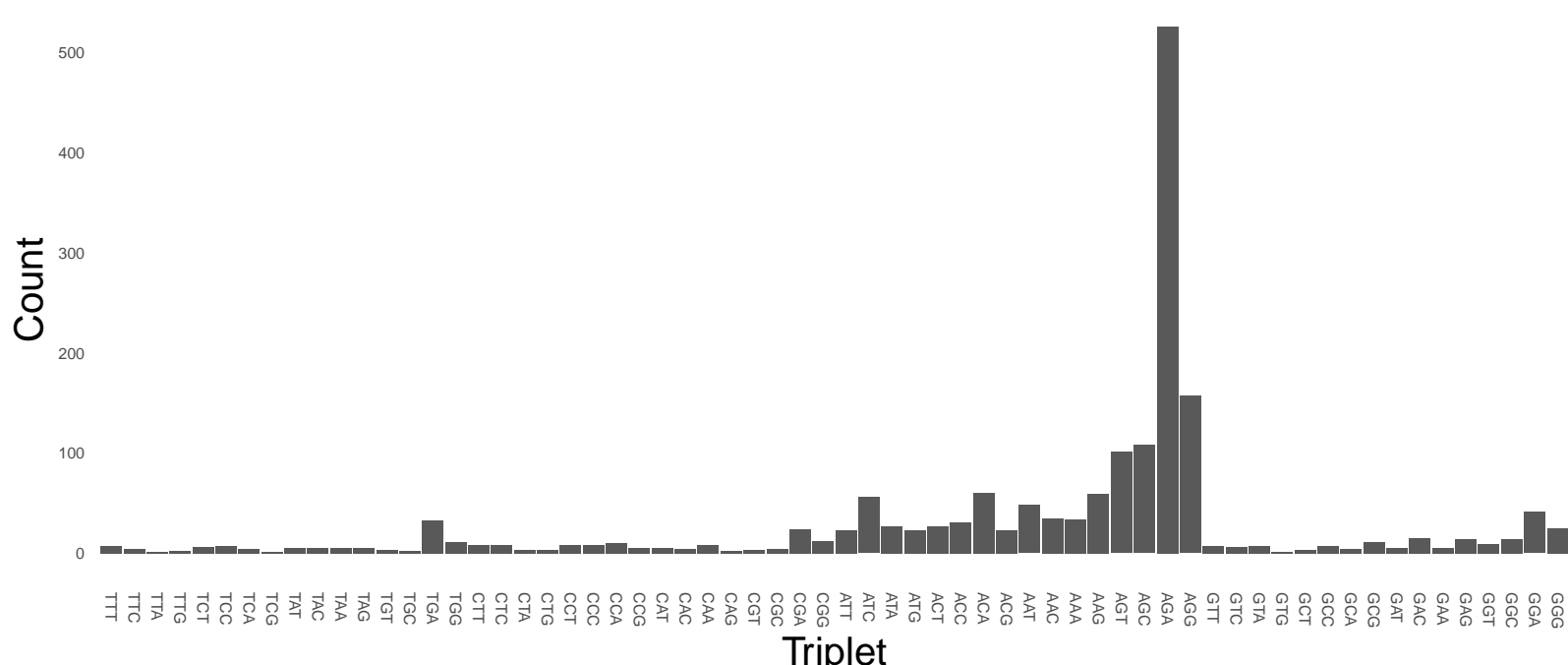
IGHV3-64\*04\_A210C- Final 3 nucleotides as a triplet



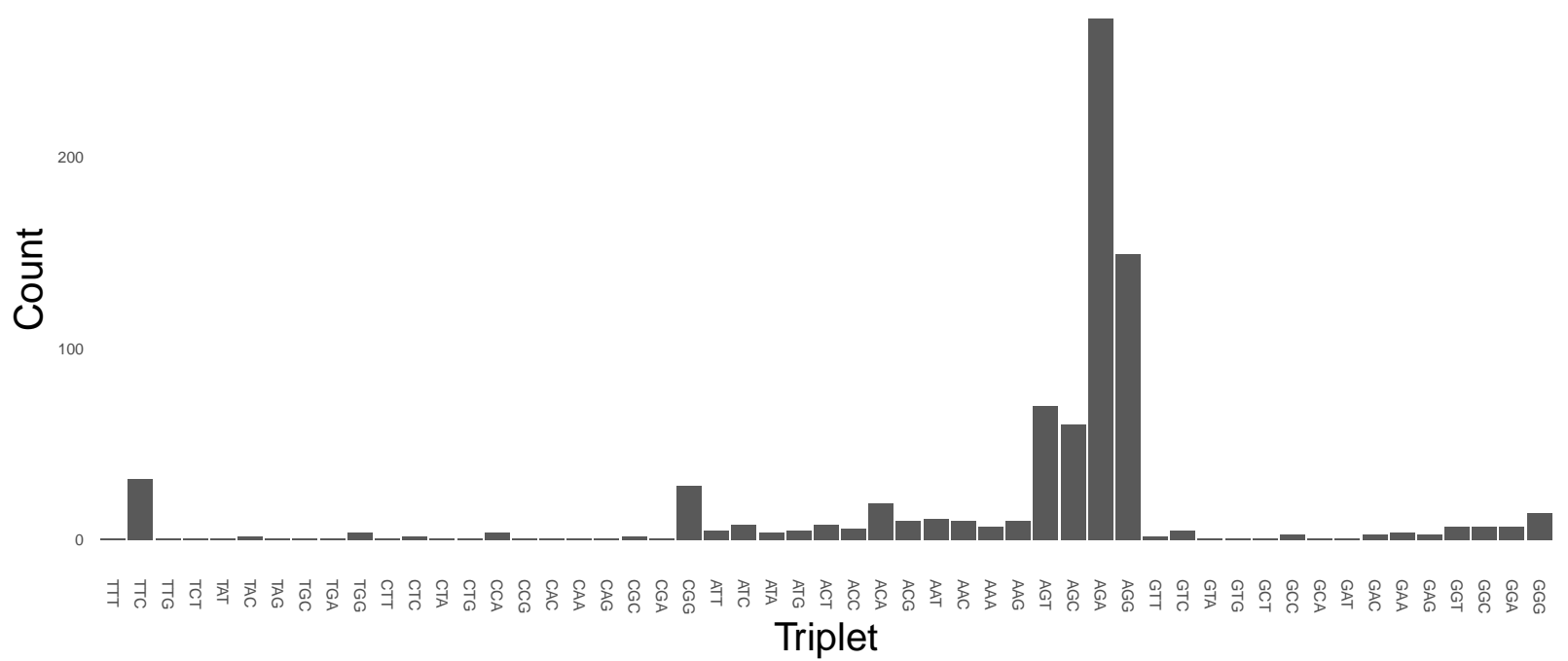
IGHV4-30-4\*01\_C315G- Final 3 nucleotides as a triplet



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

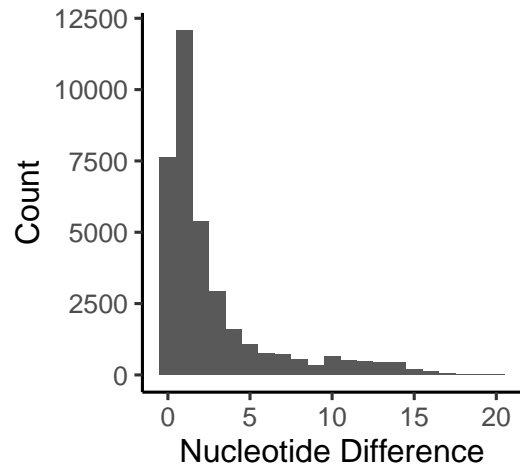


IGHV6-1\*01\_A315G- Final 3 nucleotides as a triplet



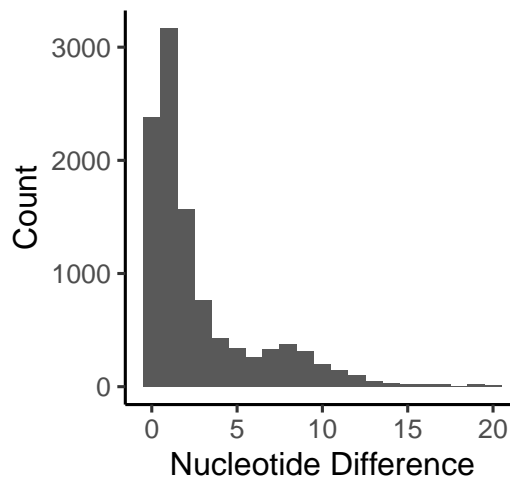
### IGHV1-2\*02

36270 sequences assigned  
7631 (21%) exact matches, in which:  
6108 unique CDR3  
7 unique J



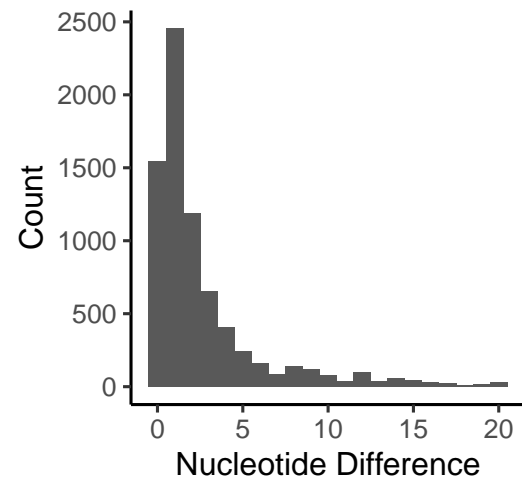
### IGHV1-8\*01

10610 sequences assigned  
2381 (22.4%) exact matches, in which:  
1997 unique CDR3  
7 unique J



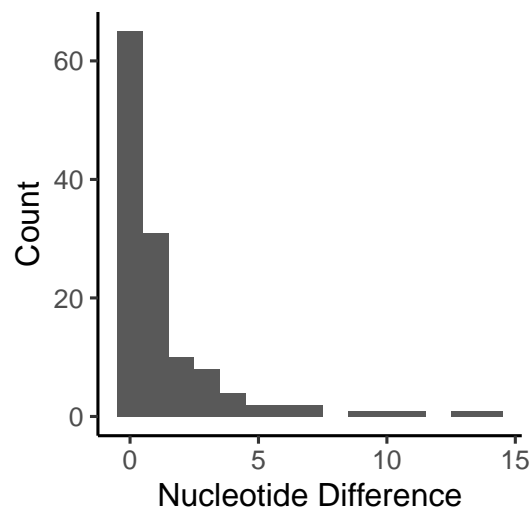
### IGHV1-24\*01

7689 sequences assigned  
1545 (20.1%) exact matches, in which:  
1251 unique CDR3  
7 unique J



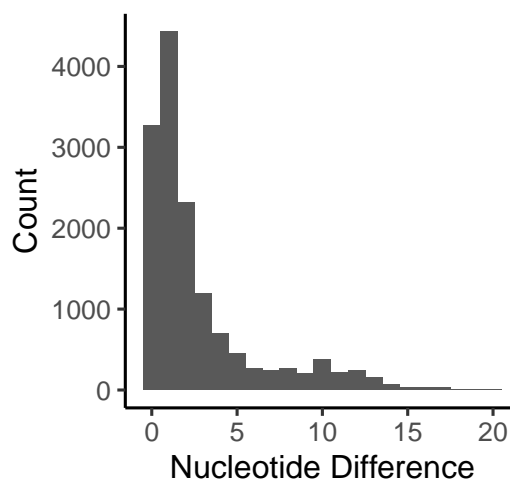
### IGHV1-3\*02

130 sequences assigned  
65 (50%) exact matches, in which:  
64 unique CDR3  
6 unique J



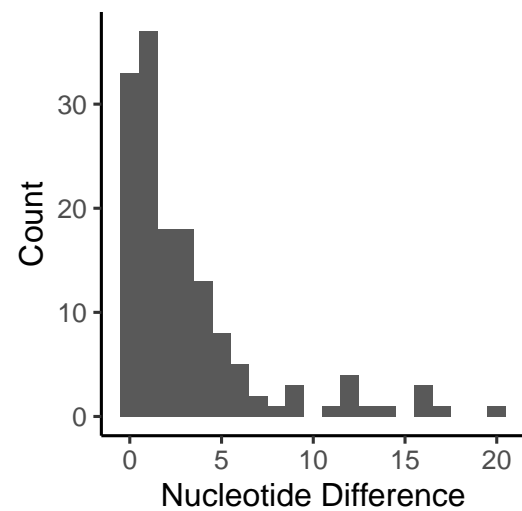
### IGHV1-18\*01

14569 sequences assigned  
3268 (22.4%) exact matches, in which:  
2729 unique CDR3  
7 unique J



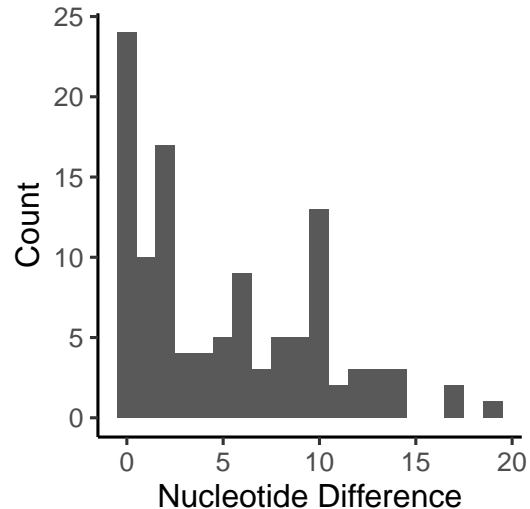
### IGHV1-45\*02

157 sequences assigned  
33 (21%) exact matches, in which:  
31 unique CDR3  
6 unique J



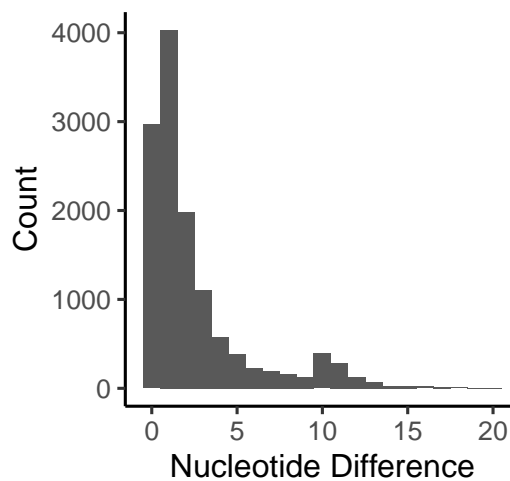
### IGHV1-3\*02\_T296C\_T300C

113 sequences assigned  
24 (21.2%) exact matches, in which:  
24 unique CDR3  
5 unique J



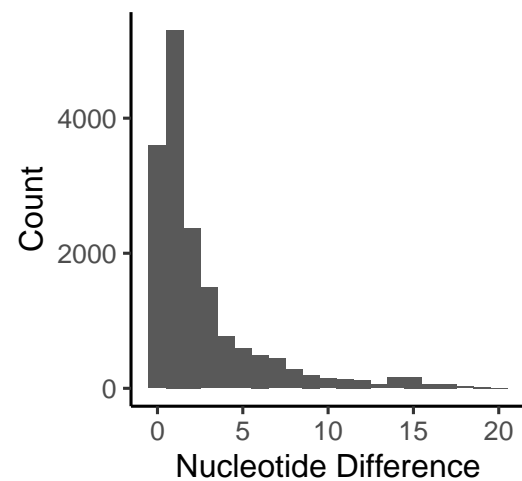
### IGHV1-18\*04

12810 sequences assigned  
2966 (23.2%) exact matches, in which:  
2451 unique CDR3  
7 unique J



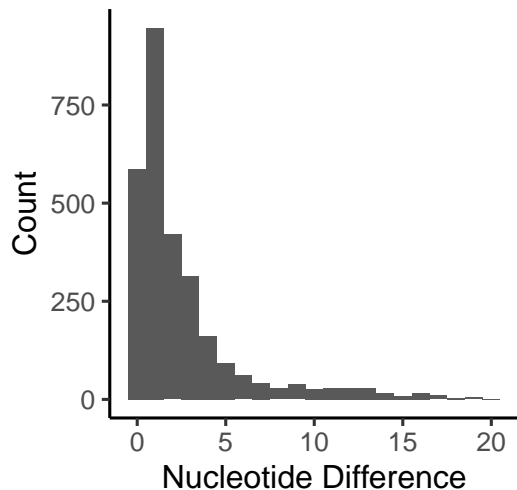
### IGHV1-46\*01

16695 sequences assigned  
3594 (21.5%) exact matches, in which:  
2978 unique CDR3  
7 unique J



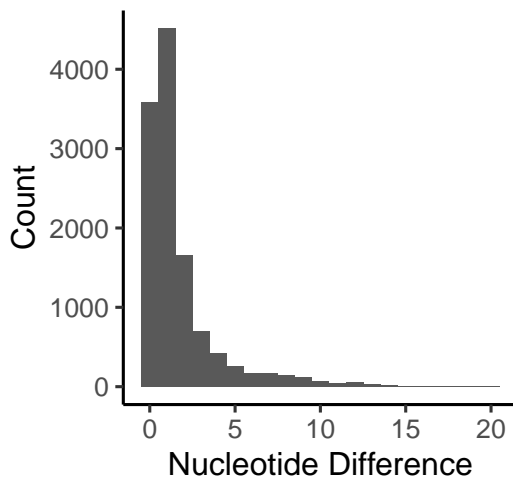
### IGHV1–58\*02

2896 sequences assigned  
587 (20.3%) exact matches, in which:  
461 unique CDR3  
7 unique J



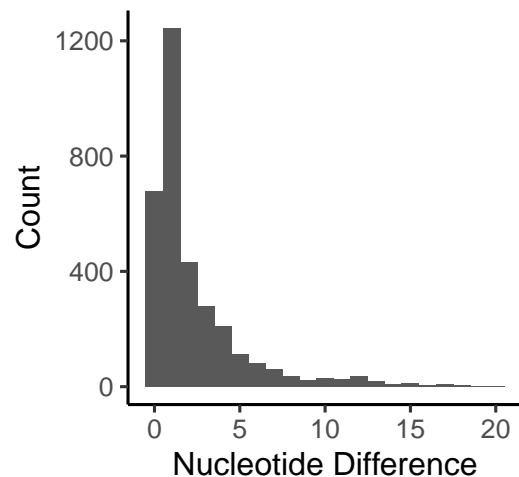
### IGHV1–69\*08\_C191T

12013 sequences assigned  
3581 (29.8%) exact matches, in which:  
3045 unique CDR3  
7 unique J



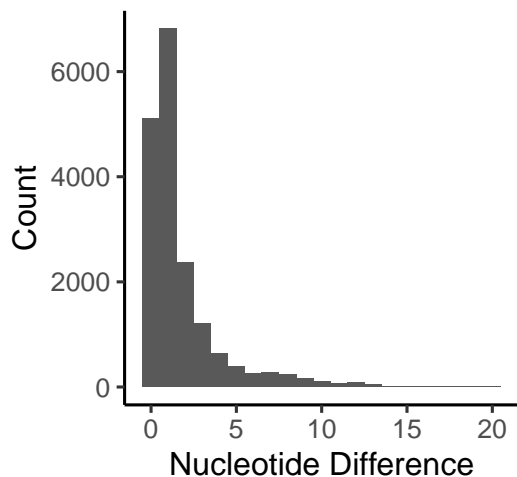
### IGHV2–5\*02

3380 sequences assigned  
678 (20.1%) exact matches, in which:  
559 unique CDR3  
7 unique J



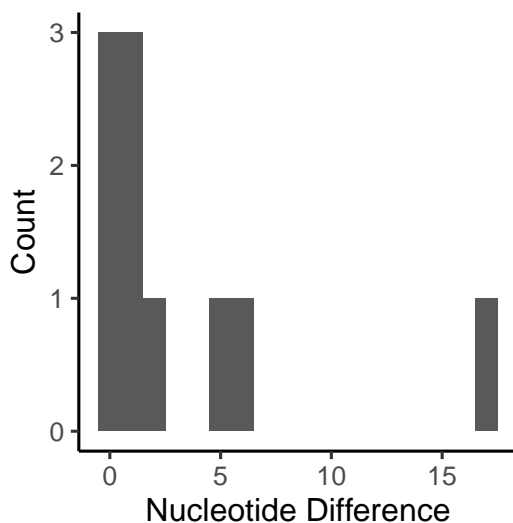
### IGHV1–69\*04

17911 sequences assigned  
5102 (28.5%) exact matches, in which:  
4207 unique CDR3  
7 unique J



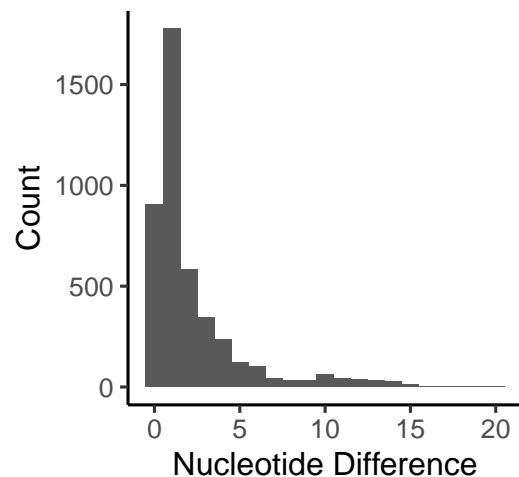
### IGHV1–69D\*01

11 sequences assigned  
3 (27.3%) exact matches, in which:  
3 unique CDR3  
1 unique J



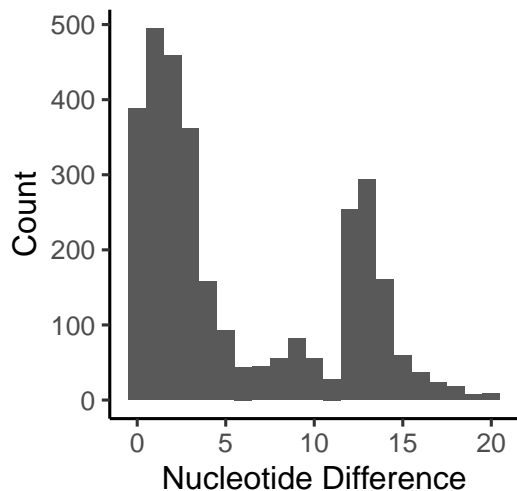
### IGHV2–26\*01

4551 sequences assigned  
905 (19.9%) exact matches, in which:  
726 unique CDR3  
7 unique J



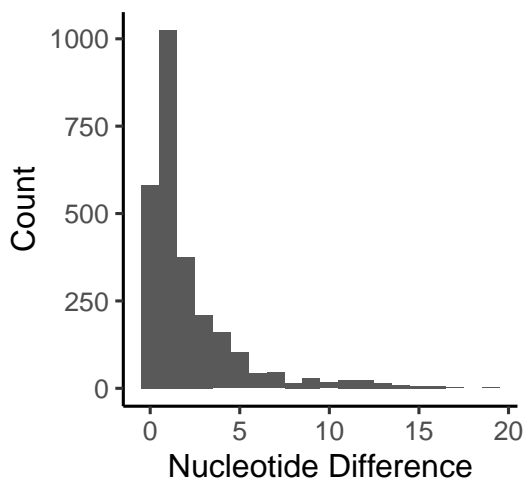
### IGHV1–69\*09

3342 sequences assigned  
388 (11.6%) exact matches, in which:  
346 unique CDR3  
7 unique J



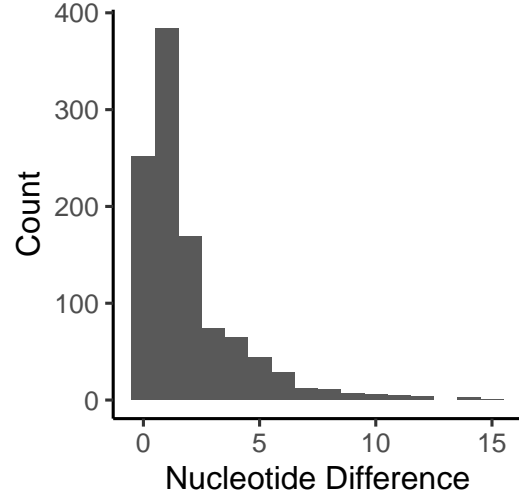
### IGHV2–5\*01

2731 sequences assigned  
581 (21.3%) exact matches, in which:  
472 unique CDR3  
7 unique J



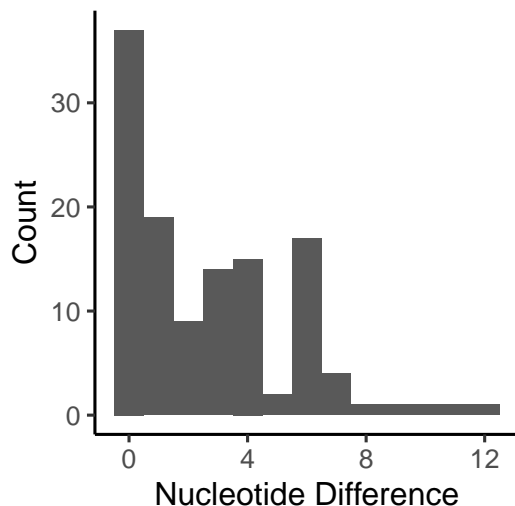
### IGHV2–70\*15

1102 sequences assigned  
252 (22.9%) exact matches, in which:  
197 unique CDR3  
7 unique J



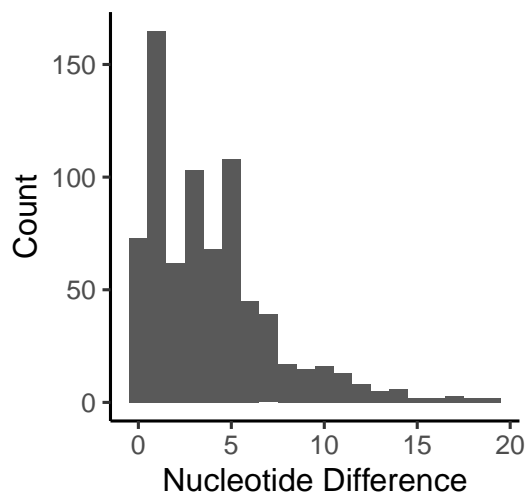
## IGHV2-70\*15\_G303A

122 sequences assigned  
37 (30.3%) exact matches, in which:  
37 unique CDR3  
6 unique J



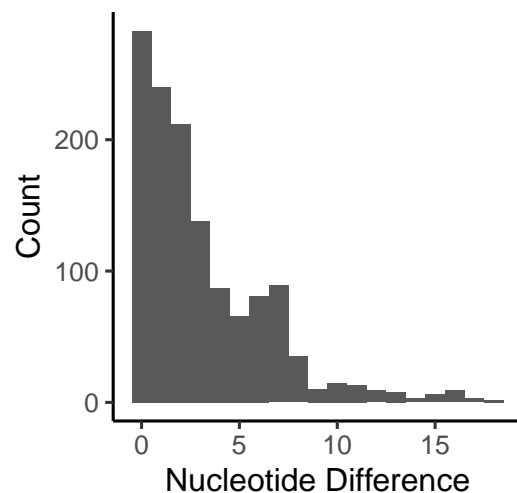
## IGHV3-7\*03

762 sequences assigned  
73 (9.6%) exact matches, in which:  
72 unique CDR3  
7 unique J



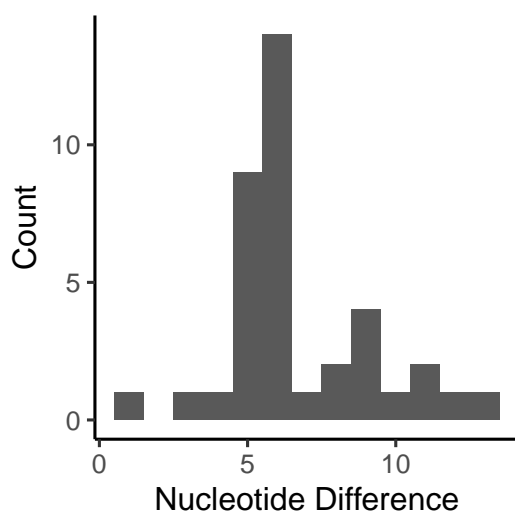
## IGHV3-11\*04

1355 sequences assigned  
283 (20.9%) exact matches, in which:  
281 unique CDR3  
7 unique J



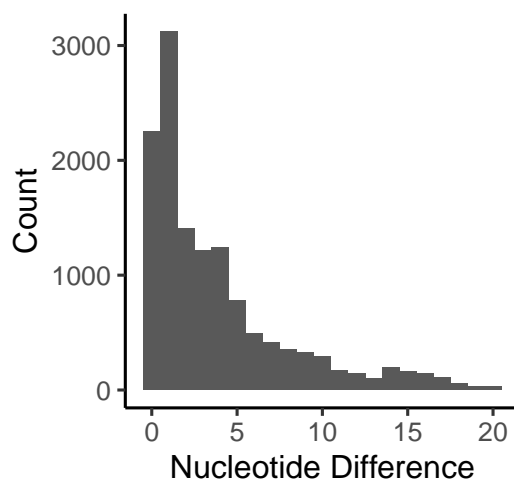
## IGHV2-70D\*04

40 sequences assigned  
No exact matches.



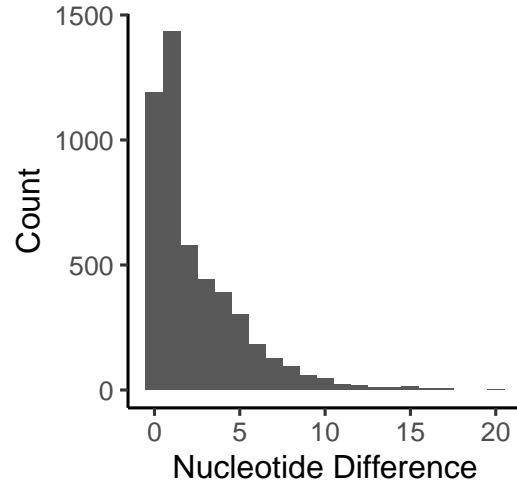
## IGHV3-9\*01

13195 sequences assigned  
2253 (17.1%) exact matches, in which:  
1792 unique CDR3  
7 unique J



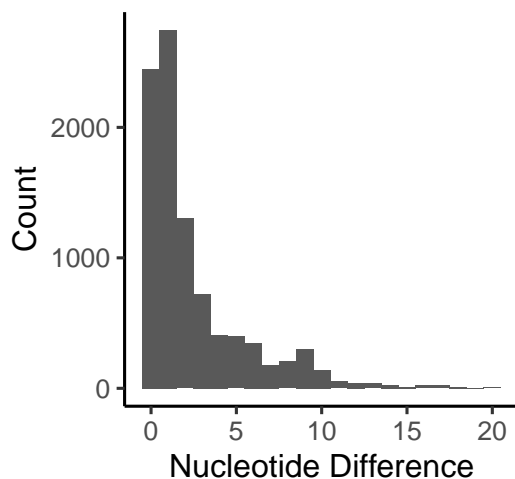
## IGHV3-11\*06

4989 sequences assigned  
1191 (23.9%) exact matches, in which:  
945 unique CDR3  
7 unique J



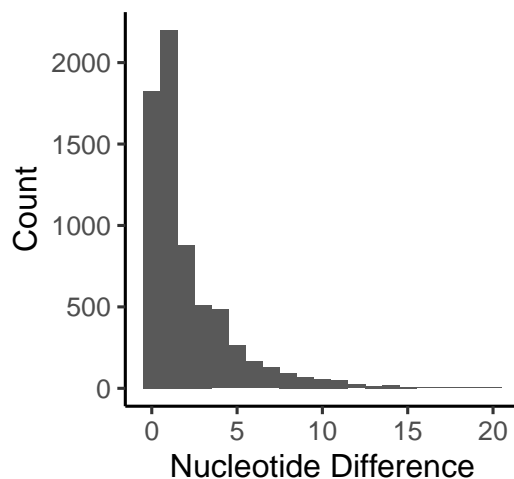
## IGHV3-7\*01

9480 sequences assigned  
2448 (25.8%) exact matches, in which:  
2046 unique CDR3  
7 unique J



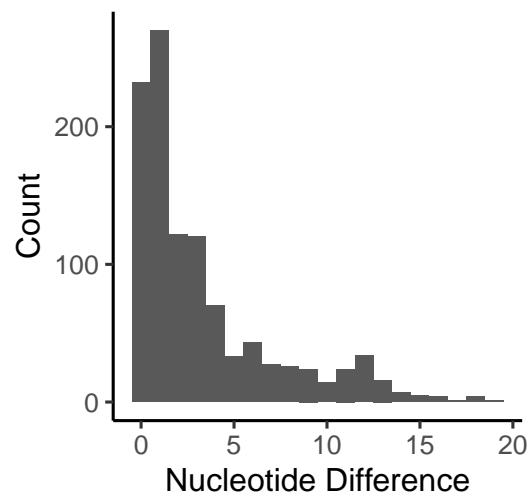
## IGHV3-11\*01

6928 sequences assigned  
1827 (26.4%) exact matches, in which:  
1456 unique CDR3  
7 unique J



## IGHV3-13\*01

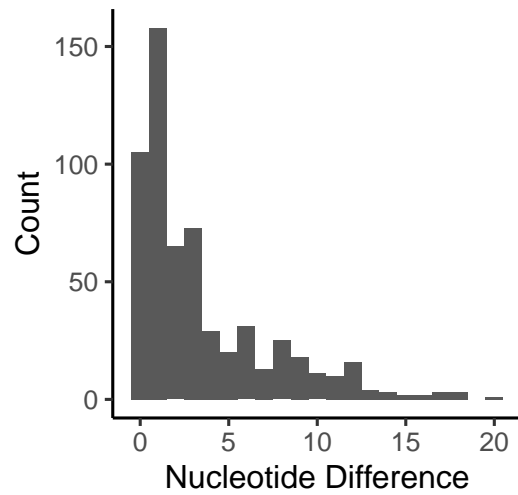
1080 sequences assigned  
232 (21.5%) exact matches, in which:  
188 unique CDR3  
7 unique J





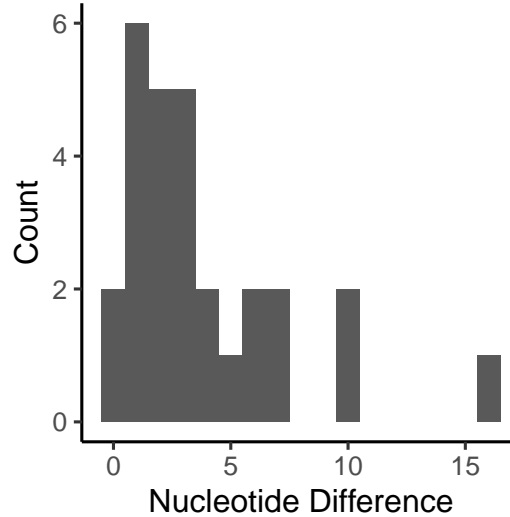
### IGHV3-13\*05

593 sequences assigned  
105 (17.7%) exact matches, in which:  
79 unique CDR3  
6 unique J



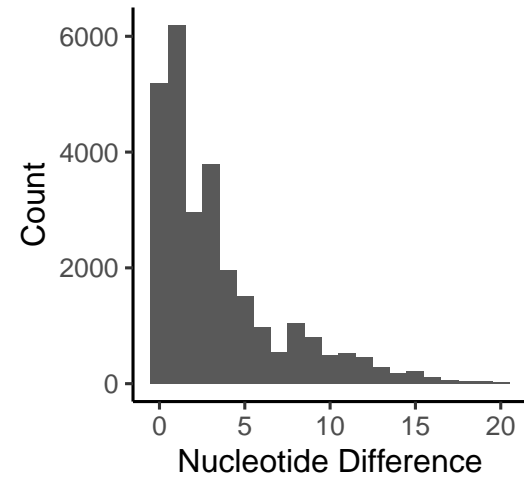
### IGHV3-20\*04

28 sequences assigned  
2 (7.1%) exact matches, in which:  
2 unique CDR3  
2 unique J



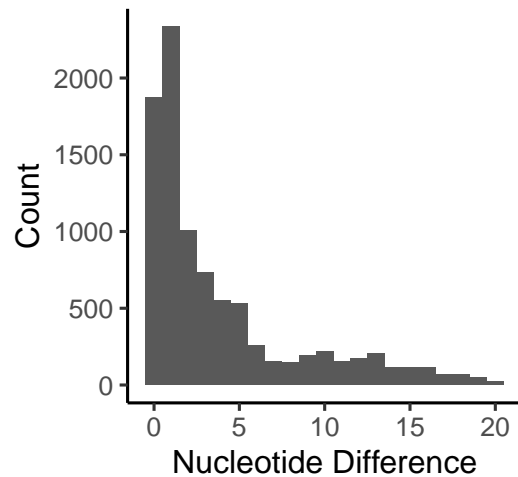
### IGHV3-23\*04

27675 sequences assigned  
5186 (18.7%) exact matches, in which:  
4153 unique CDR3  
7 unique J



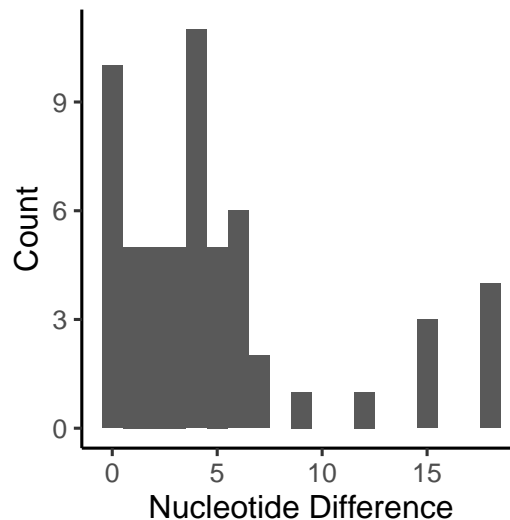
### IGHV3-15\*01

9245 sequences assigned  
1872 (20.2%) exact matches, in which:  
1460 unique CDR3  
7 unique J



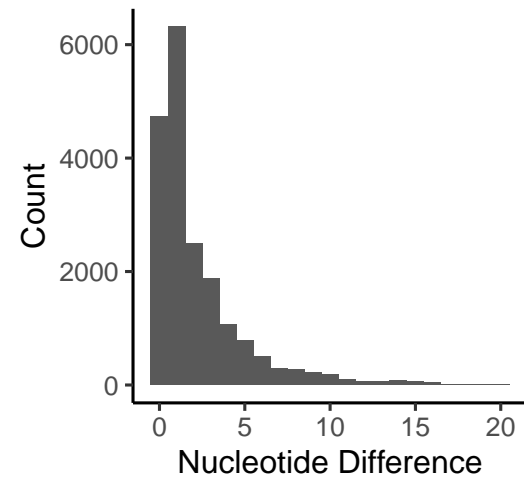
### IGHV3-20\*04\_T279C\_C280T\_C281G\_C282T\_T283C

60 sequences assigned  
10 (16.7%) exact matches, in which:  
10 unique CDR3  
4 unique J



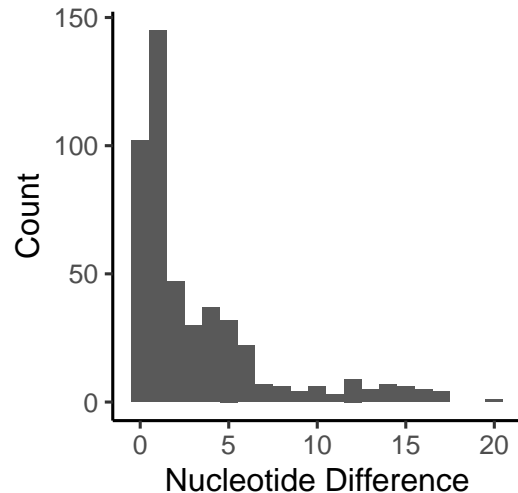
### IGHV3-30-3\*01

19299 sequences assigned  
4733 (24.5%) exact matches, in which:  
3631 unique CDR3  
7 unique J



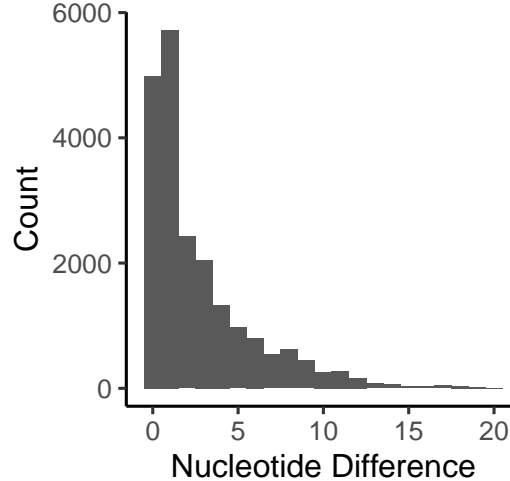
### IGHV3-20\*01

482 sequences assigned  
102 (21.2%) exact matches, in which:  
68 unique CDR3  
4 unique J



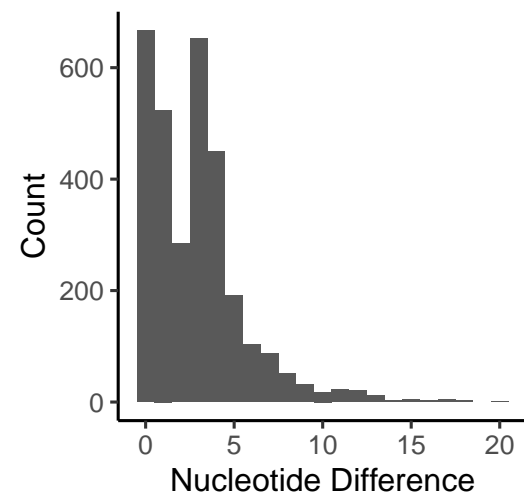
### IGHV3-21\*01

21035 sequences assigned  
4984 (23.7%) exact matches, in which:  
3732 unique CDR3  
7 unique J



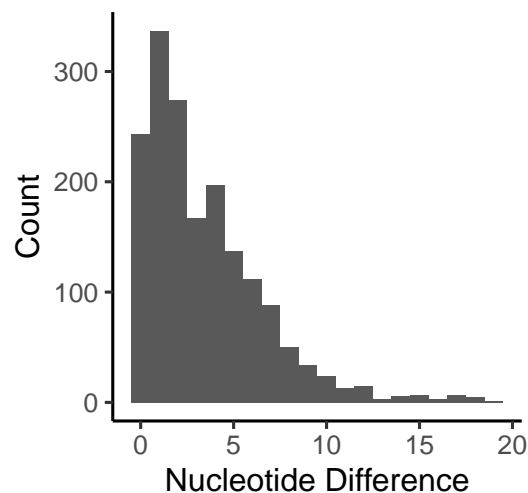
### IGHV3-30-3\*02\_G75C

3137 sequences assigned  
667 (21.3%) exact matches, in which:  
640 unique CDR3  
7 unique J



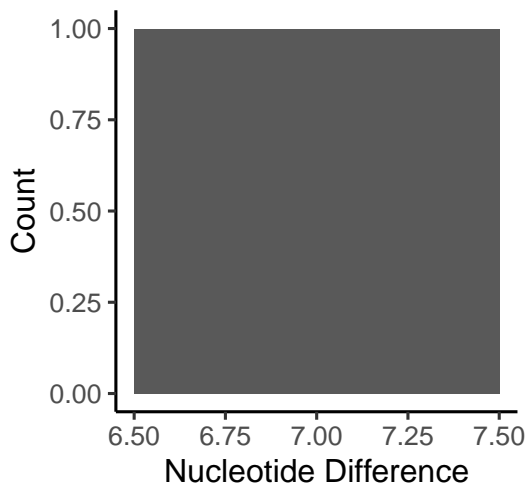
### IGHV3–30\*03\_T288C

1728 sequences assigned  
243 (14.1%) exact matches, in which:  
238 unique CDR3  
7 unique J



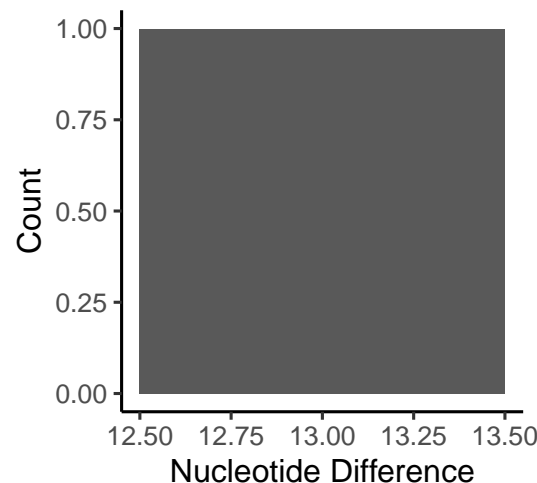
### IGHV3–35\*01

1 sequences assigned  
No exact matches.



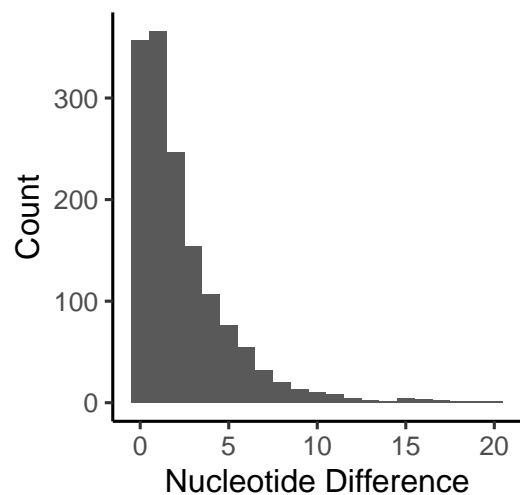
### IGHV3–47\*01

1 sequences assigned  
No exact matches.



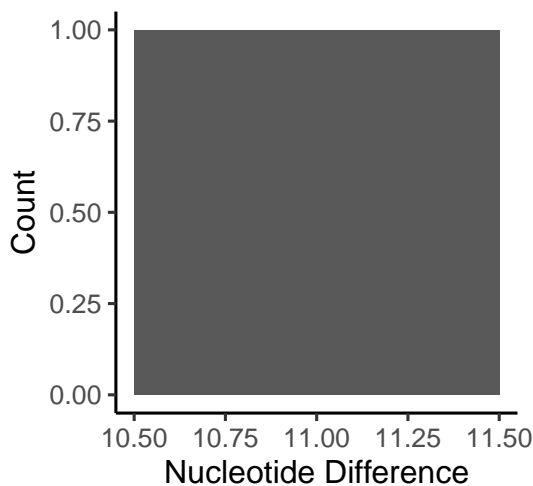
### IGHV3–33\*01

1472 sequences assigned  
357 (24.3%) exact matches, in which:  
347 unique CDR3  
7 unique J



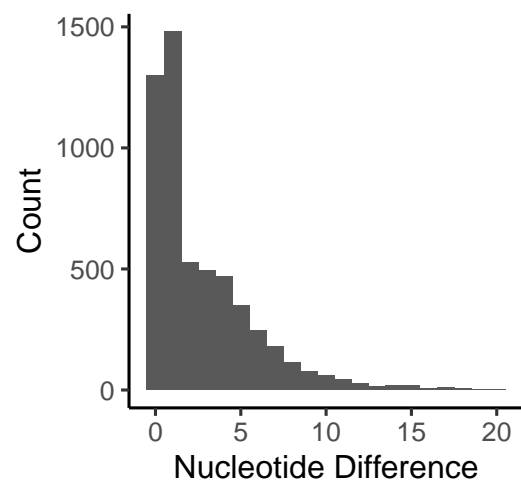
### IGHV3–41\*02

1 sequences assigned  
No exact matches.



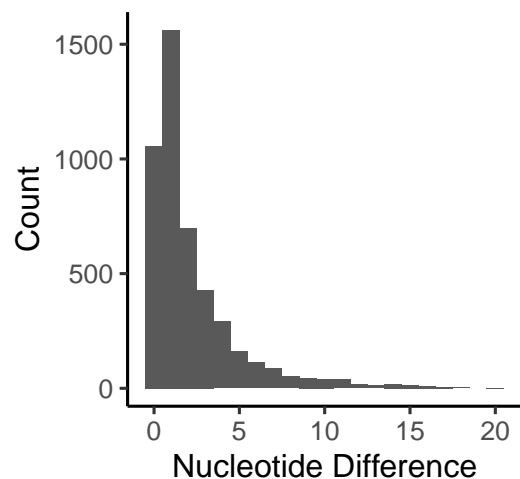
### IGHV3–48\*01

5447 sequences assigned  
1300 (23.9%) exact matches, in which:  
1062 unique CDR3  
7 unique J



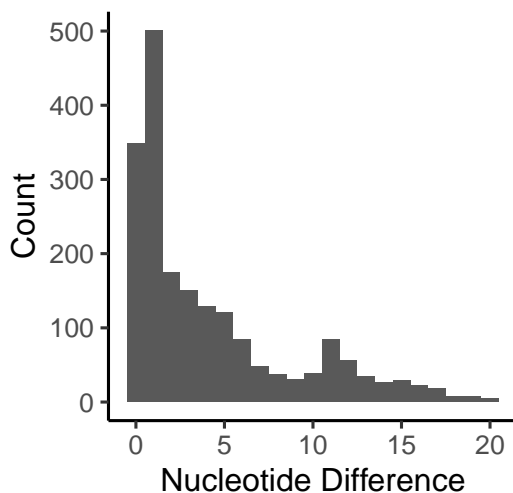
### IGHV3–33\*06

4665 sequences assigned  
1056 (22.6%) exact matches, in which:  
793 unique CDR3  
7 unique J



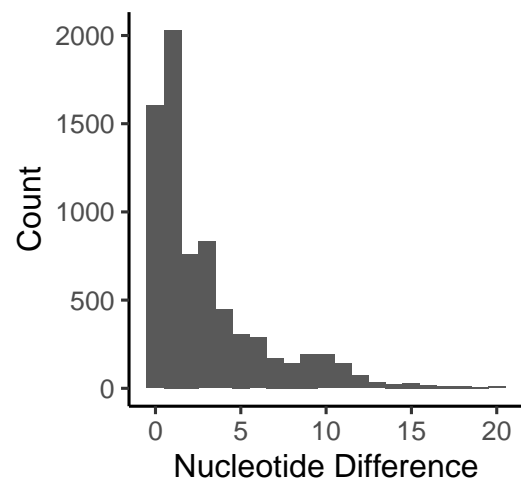
### IGHV3–43\*01

1968 sequences assigned  
348 (17.7%) exact matches, in which:  
287 unique CDR3  
7 unique J



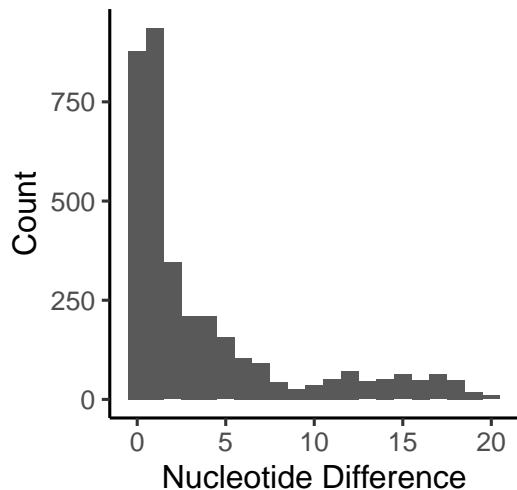
### IGHV3–48\*04

7359 sequences assigned  
1603 (21.8%) exact matches, in which:  
1271 unique CDR3  
7 unique J



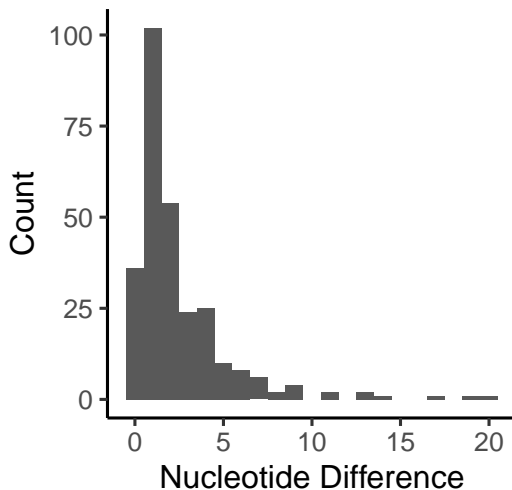
### IGHV3-49\*03

3585 sequences assigned  
879 (24.5%) exact matches, in which:  
736 unique CDR3  
7 unique J



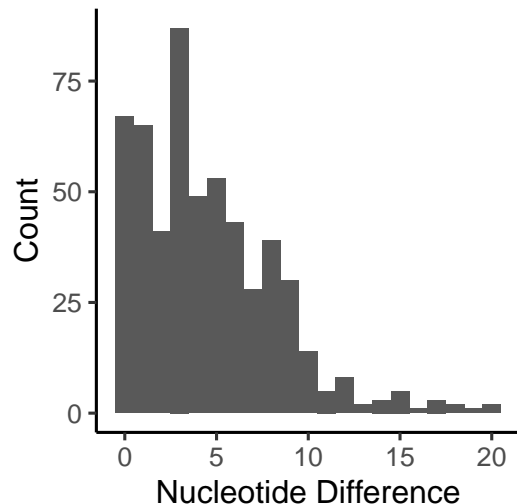
### IGHV3-53\*04\_C300T

292 sequences assigned  
36 (12.3%) exact matches, in which:  
36 unique CDR3  
7 unique J



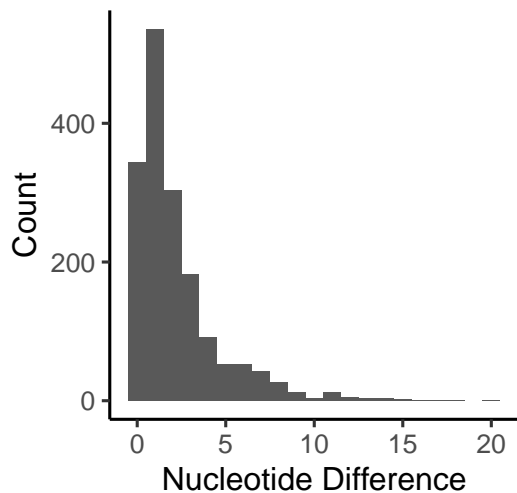
### IGHV3-64\*04\_A210C

558 sequences assigned  
67 (12%) exact matches, in which:  
67 unique CDR3  
7 unique J



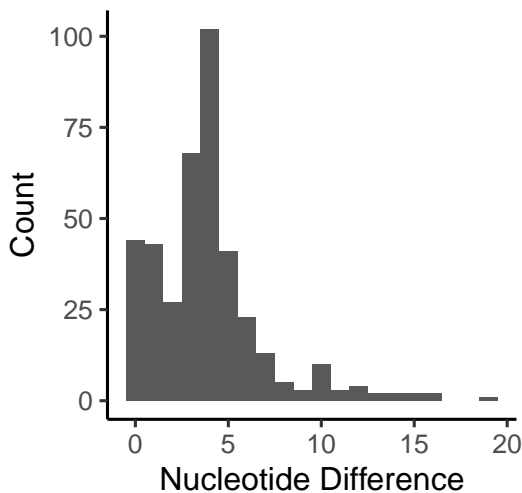
### IGHV3-53\*02

1687 sequences assigned  
344 (20.4%) exact matches, in which:  
275 unique CDR3  
6 unique J



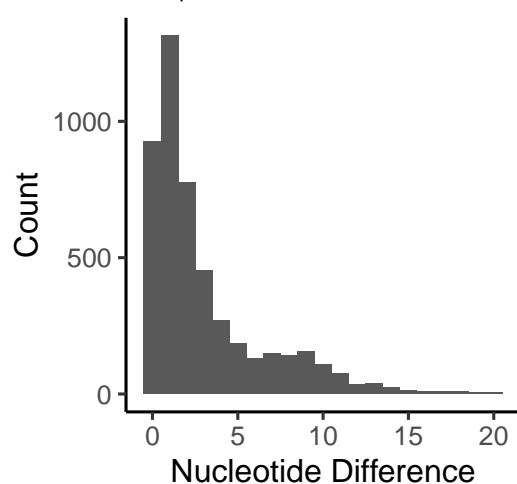
### IGHV3-53\*04\_T267G\_T2

396 sequences assigned  
44 (11.1%) exact matches, in which:  
44 unique CDR3  
6 unique J



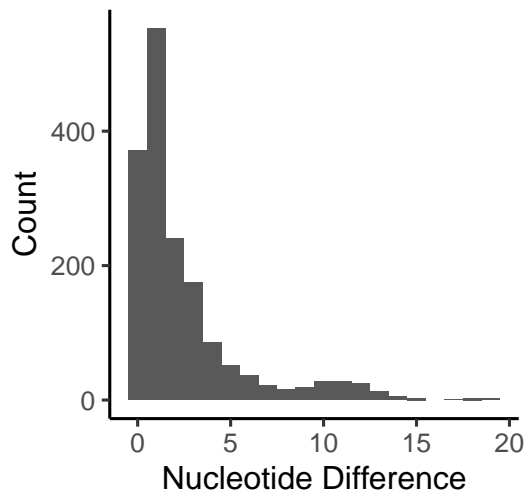
### IGHV3-66\*01

4890 sequences assigned  
926 (18.9%) exact matches, in which:  
723 unique CDR3  
7 unique J



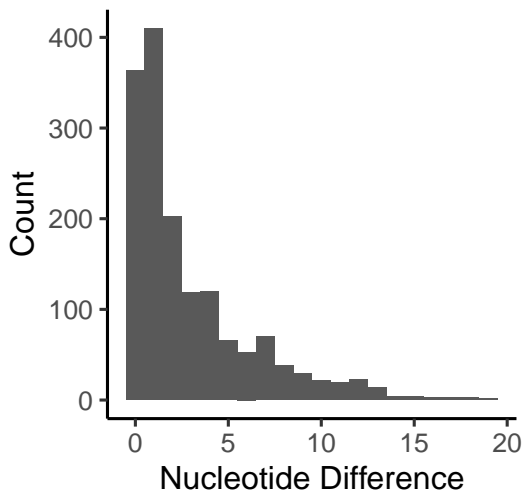
### IGHV3-53\*04

1692 sequences assigned  
371 (21.9%) exact matches, in which:  
298 unique CDR3  
7 unique J



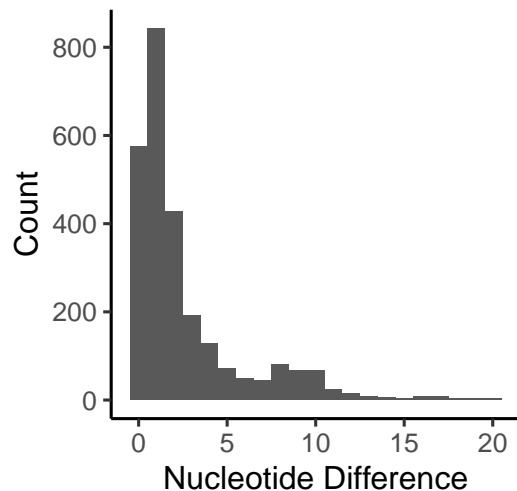
### IGHV3-64\*01

1578 sequences assigned  
363 (23%) exact matches, in which:  
311 unique CDR3  
7 unique J



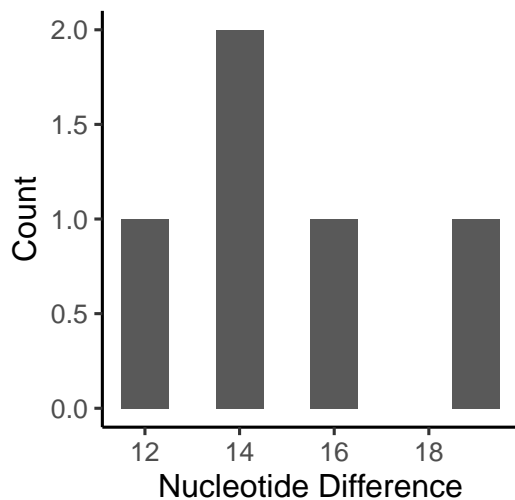
### IGHV3-66\*02

2644 sequences assigned  
575 (21.7%) exact matches, in which:  
472 unique CDR3  
7 unique J



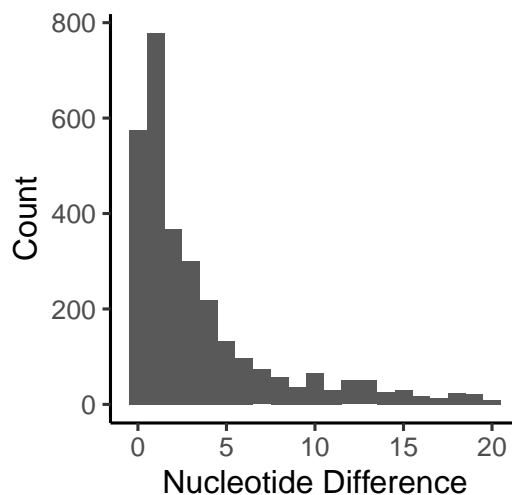
### IGHV3-69-1\*01

9 sequences assigned  
No exact matches.



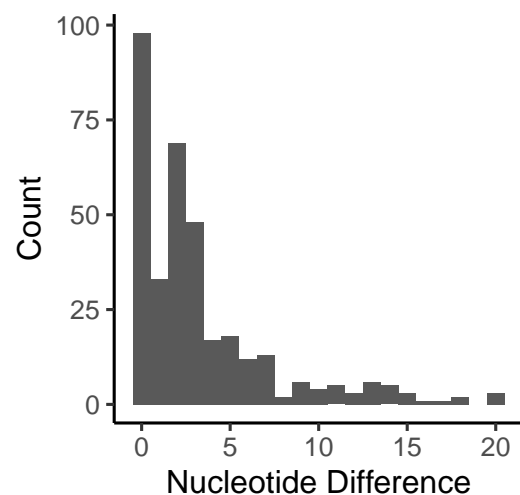
### IGHV3-73\*01

3018 sequences assigned  
575 (19.1%) exact matches, in which:  
465 unique CDR3  
7 unique J



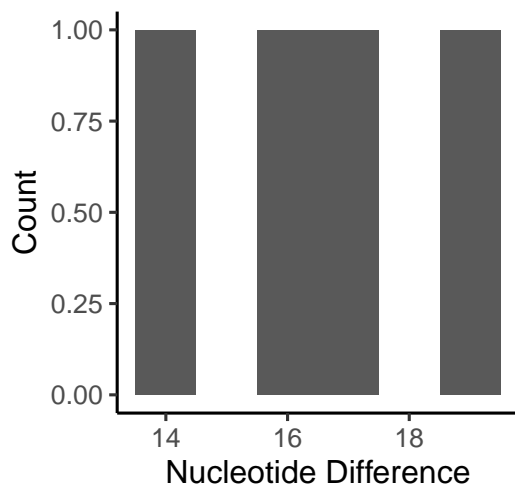
### IGHV3-74\*01\_T279C\_C2

350 sequences assigned  
98 (28%) exact matches, in which:  
98 unique CDR3  
7 unique J



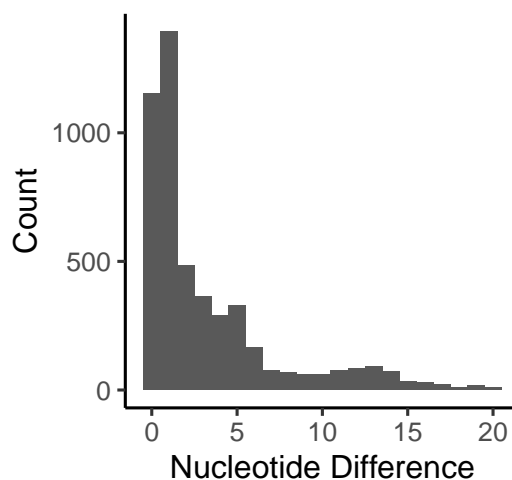
### IGHV3-71\*04

4 sequences assigned  
No exact matches.



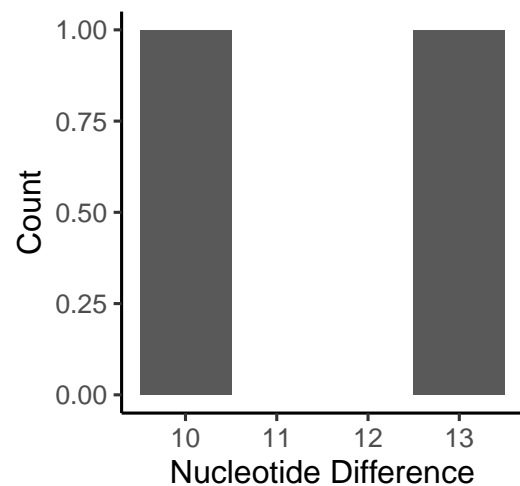
### IGHV3-74\*01

4957 sequences assigned  
1153 (23.3%) exact matches, in which:  
965 unique CDR3  
7 unique J



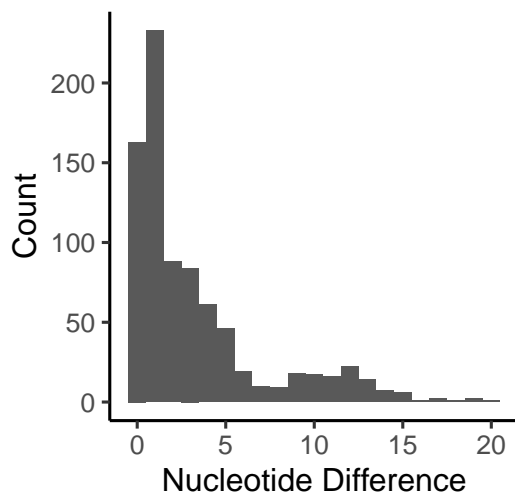
### IGHV3-43D\*04

2 sequences assigned  
No exact matches.



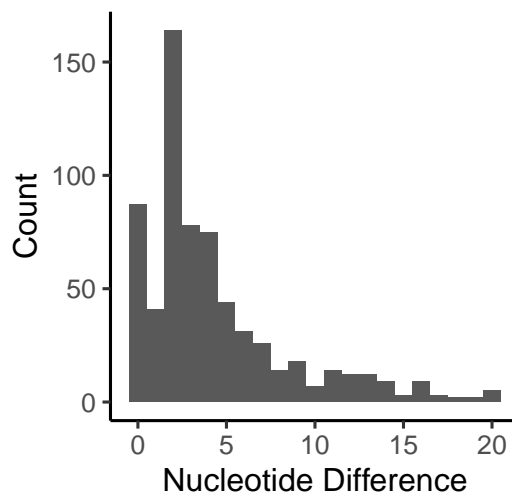
### IGHV3-72\*01

836 sequences assigned  
163 (19.5%) exact matches, in which:  
119 unique CDR3  
7 unique J



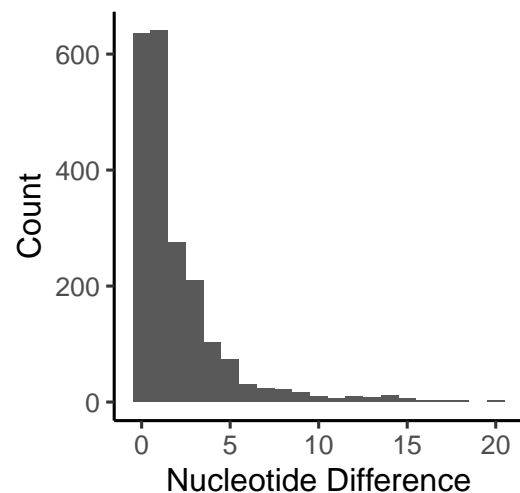
### IGHV3-74\*01\_T279C

659 sequences assigned  
87 (13.2%) exact matches, in which:  
87 unique CDR3  
7 unique J



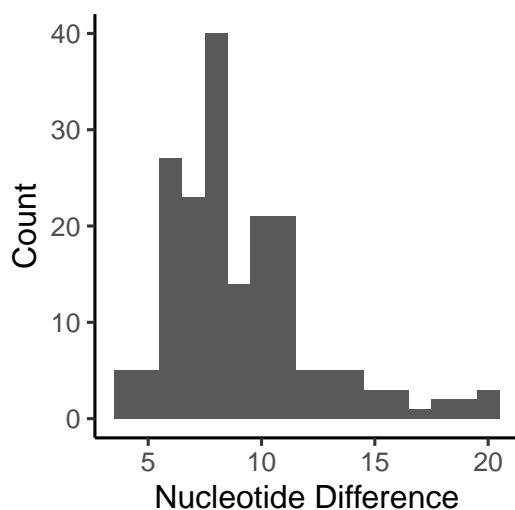
### IGHV3-64D\*06

2142 sequences assigned  
636 (29.7%) exact matches, in which:  
511 unique CDR3  
7 unique J



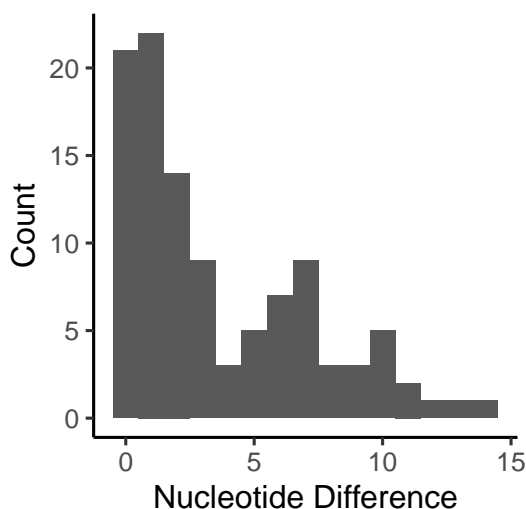
### IGHV3–NL1\*01

187 sequences assigned  
No exact matches.



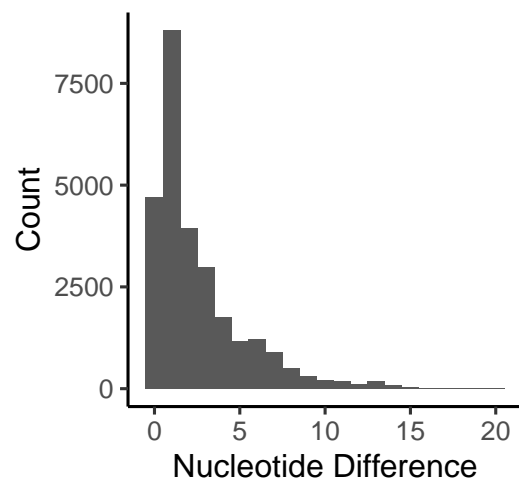
### IGHV4–28\*03

106 sequences assigned  
21 (19.8%) exact matches, in which:  
19 unique CDR3  
5 unique J



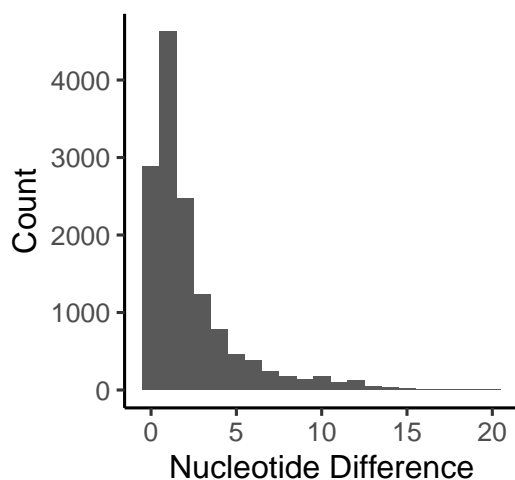
### IGHV4–31\*03

27369 sequences assigned  
4709 (17.2%) exact matches, in which:  
3809 unique CDR3  
7 unique J



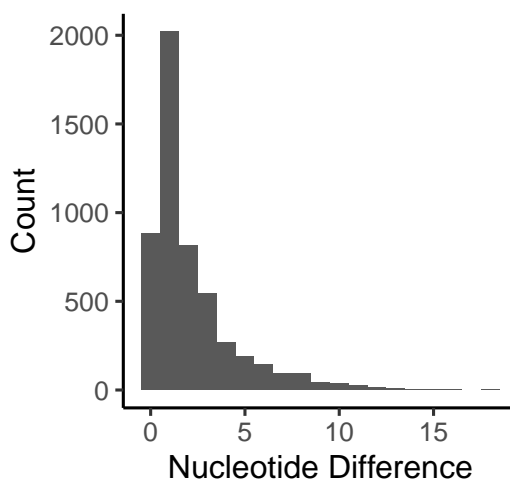
### IGHV4–4\*07

13959 sequences assigned  
2887 (20.7%) exact matches, in which:  
2419 unique CDR3  
7 unique J



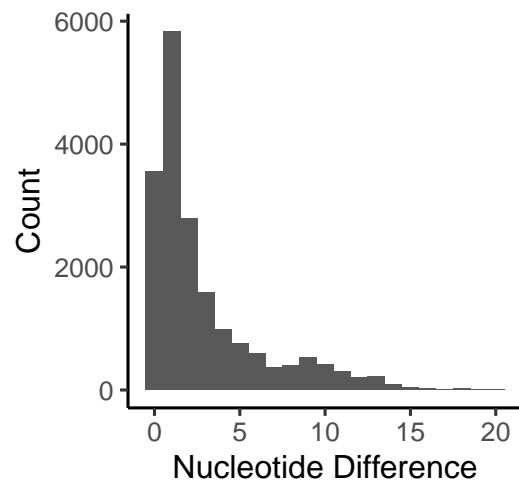
### IGHV4–30–4\*01

5215 sequences assigned  
881 (16.9%) exact matches, in which:  
652 unique CDR3  
7 unique J



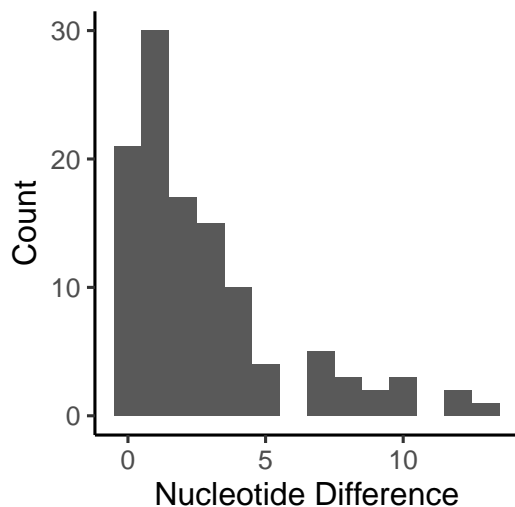
### IGHV4–34\*01

18923 sequences assigned  
3552 (18.8%) exact matches, in which:  
2977 unique CDR3  
7 unique J



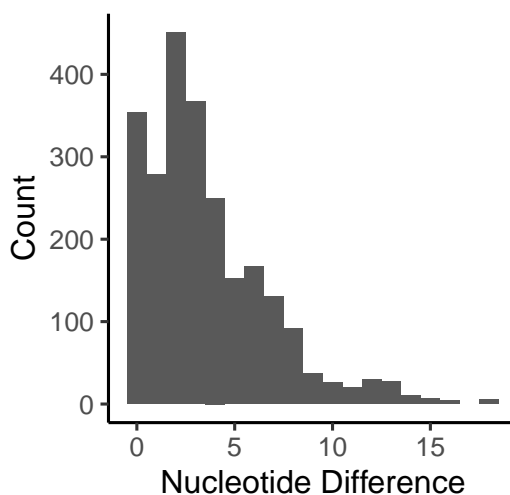
### IGHV4–28\*02

117 sequences assigned  
21 (17.9%) exact matches, in which:  
15 unique CDR3  
5 unique J



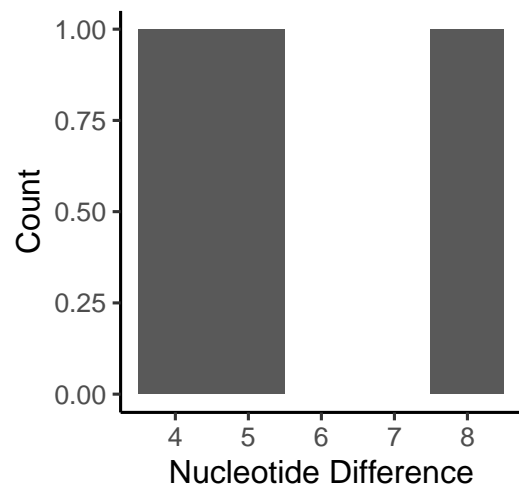
### IGHV4–30–4\*01\_C315G

2427 sequences assigned  
354 (14.6%) exact matches, in which:  
352 unique CDR3  
7 unique J



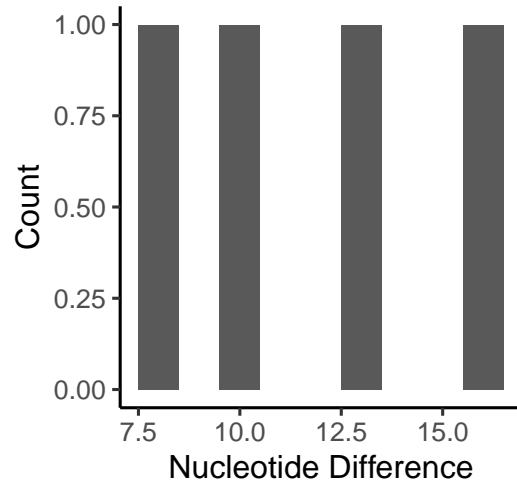
### IGHV4–38–2\*01

88 sequences assigned  
No exact matches.



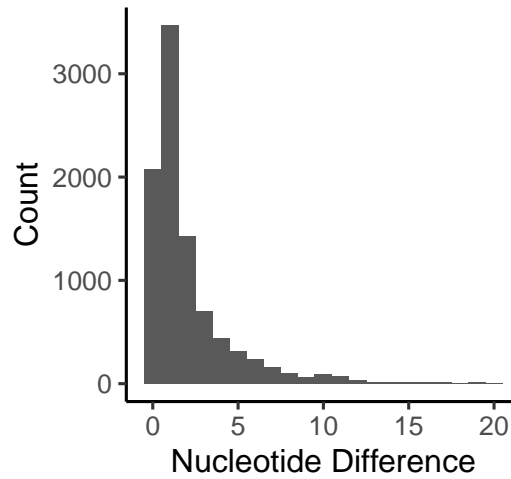
### IGHV4-38-2\*02

48 sequences assigned  
No exact matches.



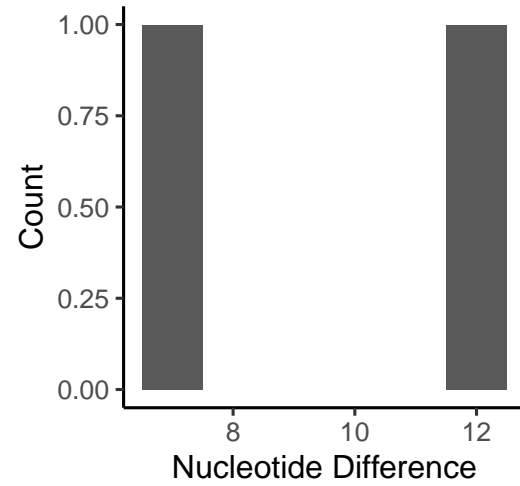
### IGHV4-59\*08

9340 sequences assigned  
2075 (22.2%) exact matches, in which:  
1621 unique CDR3  
7 unique J



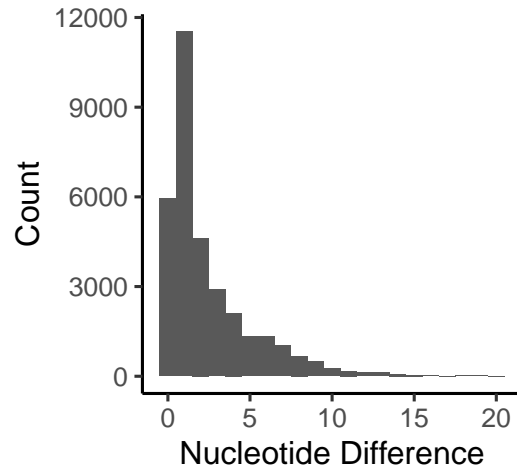
### IGHV4/OR15-8\*01

10 sequences assigned  
No exact matches.



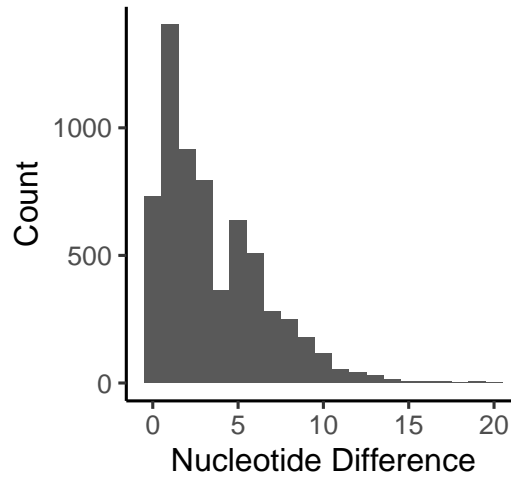
### IGHV4-39\*07

33011 sequences assigned  
5948 (18%) exact matches, in which:  
4986 unique CDR3  
7 unique J



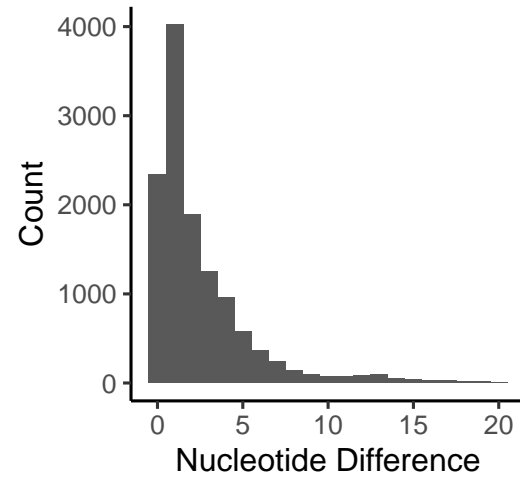
### IGHV4-59\*12

6410 sequences assigned  
732 (11.4%) exact matches, in which:  
721 unique CDR3  
7 unique J



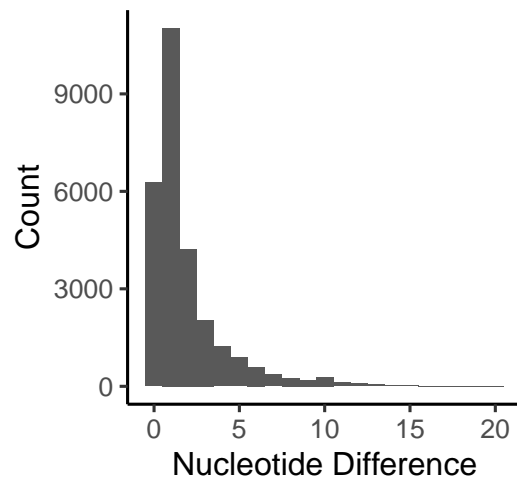
### IGHV5-10-1\*03

12515 sequences assigned  
2342 (18.7%) exact matches, in which:  
1866 unique CDR3  
7 unique J



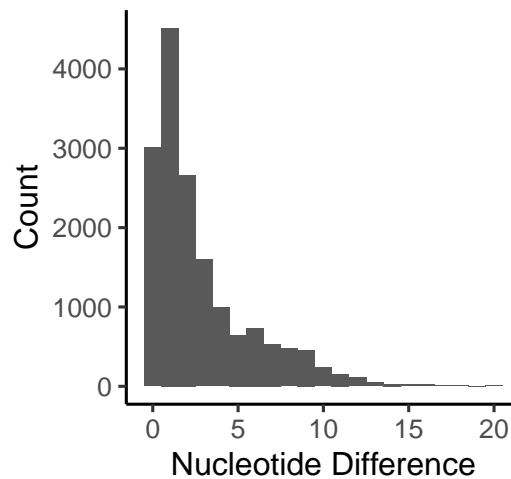
### IGHV4-59\*01

27876 sequences assigned  
6269 (22.5%) exact matches, in which:  
4970 unique CDR3  
7 unique J



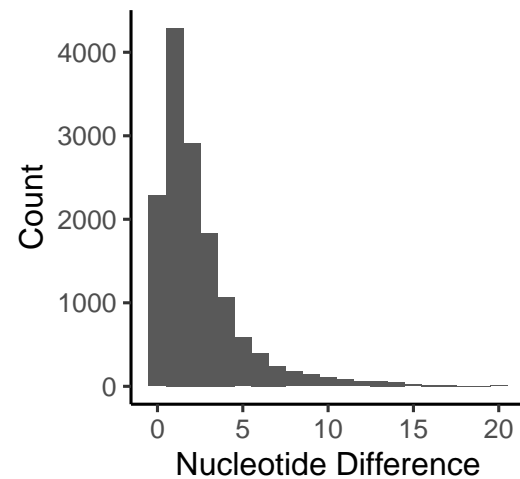
### IGHV4-61\*02

16325 sequences assigned  
3009 (18.4%) exact matches, in which:  
2534 unique CDR3  
7 unique J



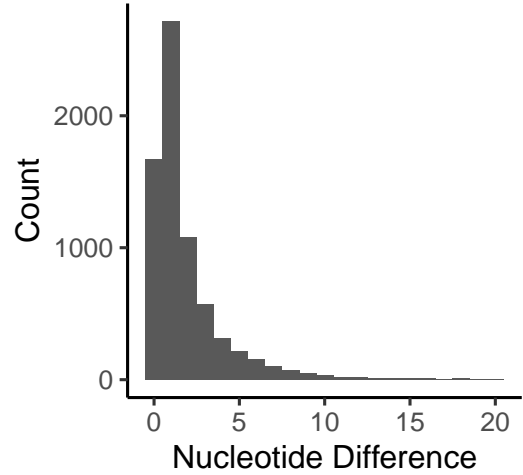
### IGHV5-51\*01

14458 sequences assigned  
2284 (15.8%) exact matches, in which:  
1882 unique CDR3  
7 unique J



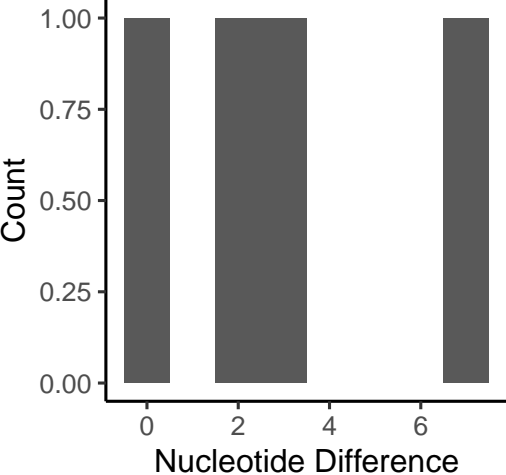
IGHV5–51\*03

7112 sequences assigned  
1670 (23.5%) exact matches, in which:  
1368 unique CDR3  
7 unique J



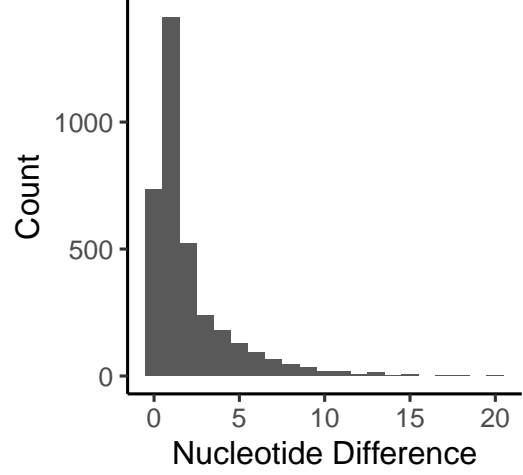
IGHV7–81\*01

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



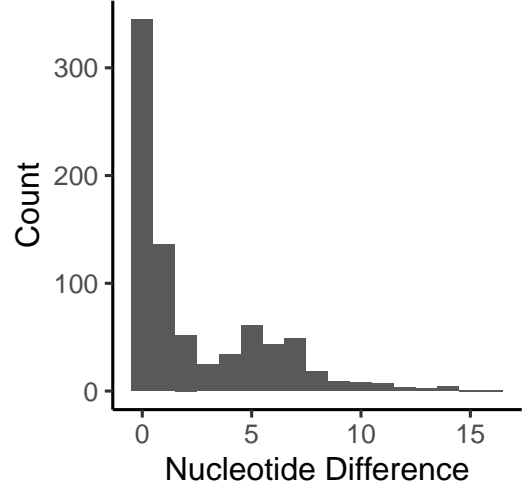
IGHV6–1\*01

3529 sequences assigned  
736 (20.9%) exact matches, in which:  
538 unique CDR3  
7 unique J

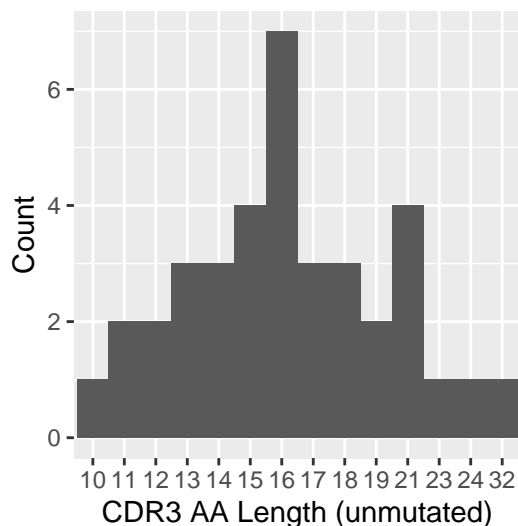


IGHV6–1\*01\_A315G

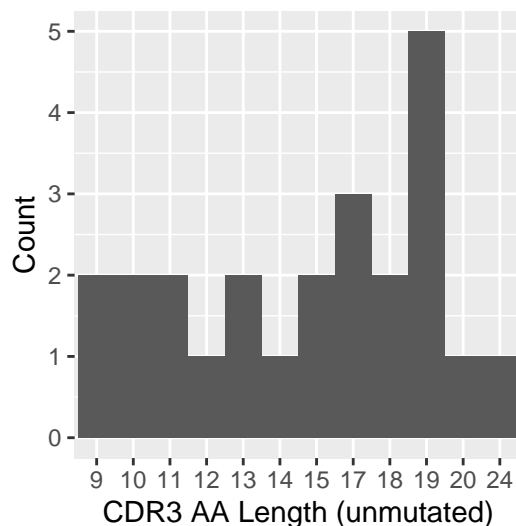
803 sequences assigned  
345 (43%) exact matches, in which:  
340 unique CDR3  
7 unique J



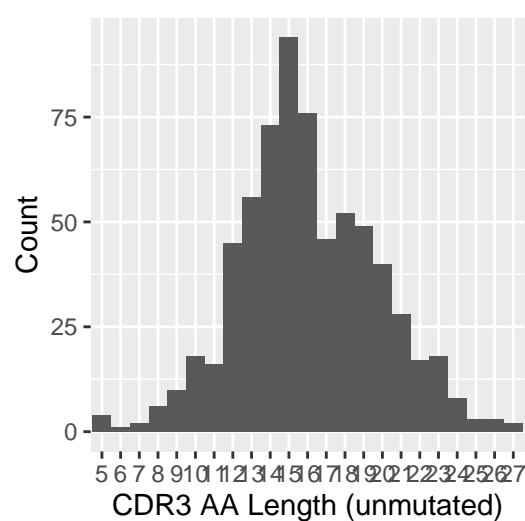
IGHV2-70\*15\_G303A



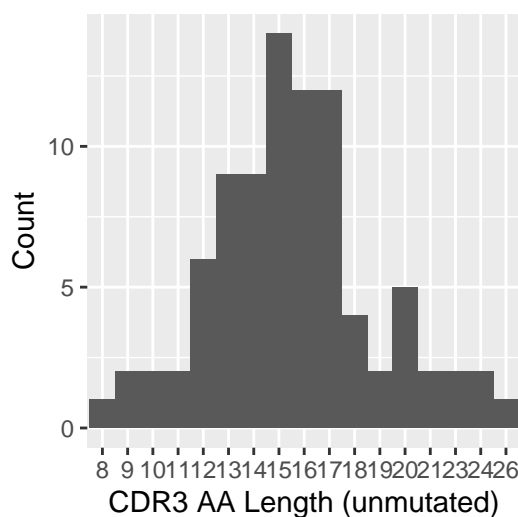
IGHV1-3\*02\_T296C\_T300C



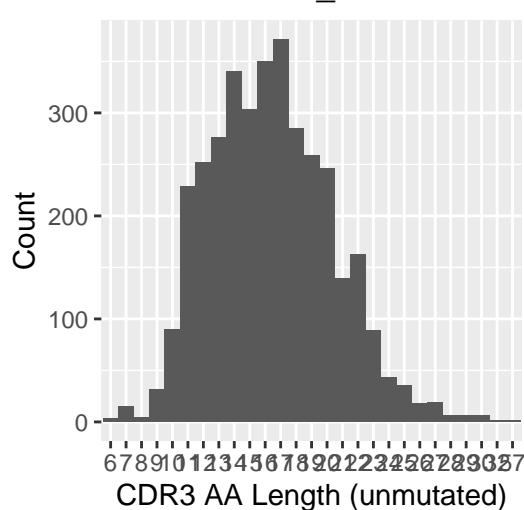
IGHV3-30-3\*02\_G75C



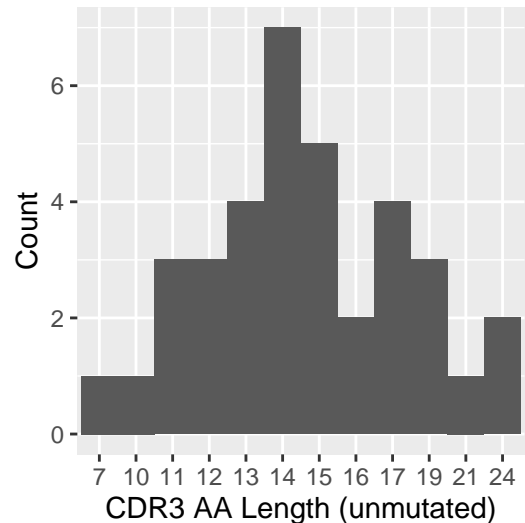
IGHV3-74\*01\_T279C



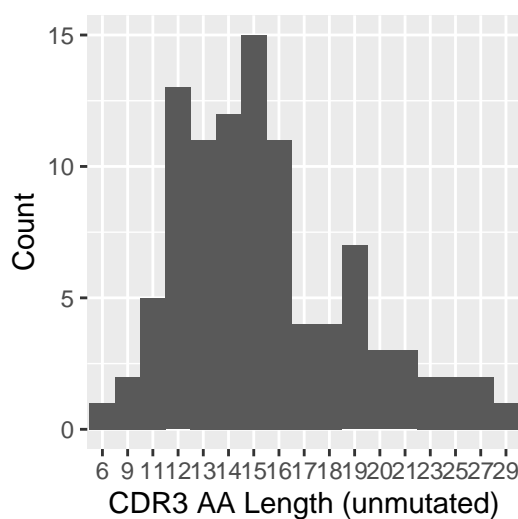
IGHV1-69\*08\_C191T



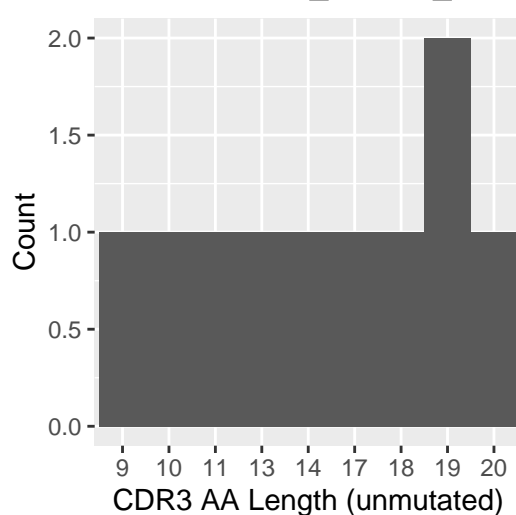
IGHV3-53\*04\_C300T



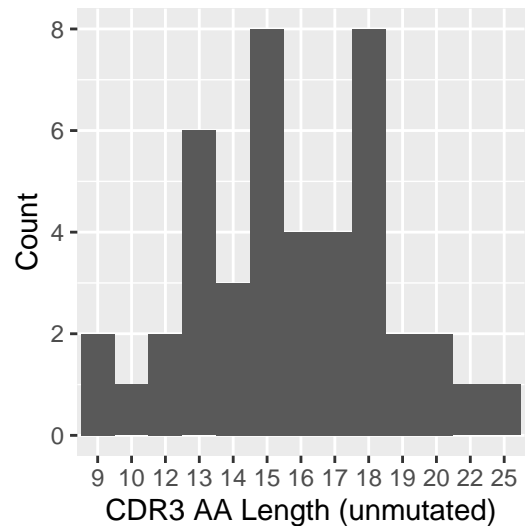
IGHV3-74\*01\_T279C\_C288



IGHV3-20\*04\_T279C\_C288

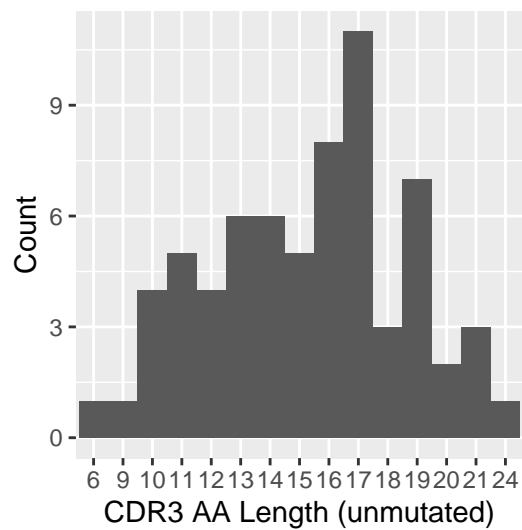


IGHV3-53\*04\_T267G\_T288C

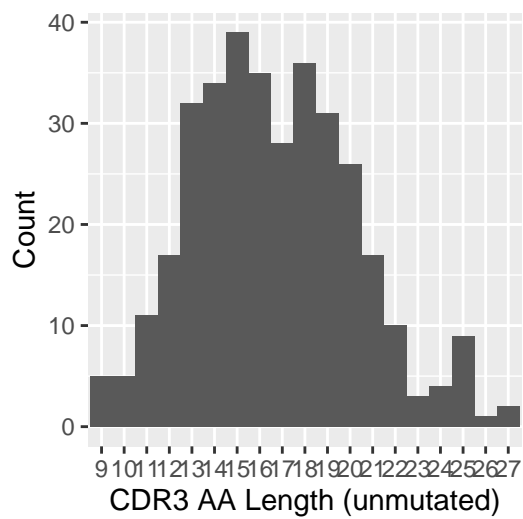




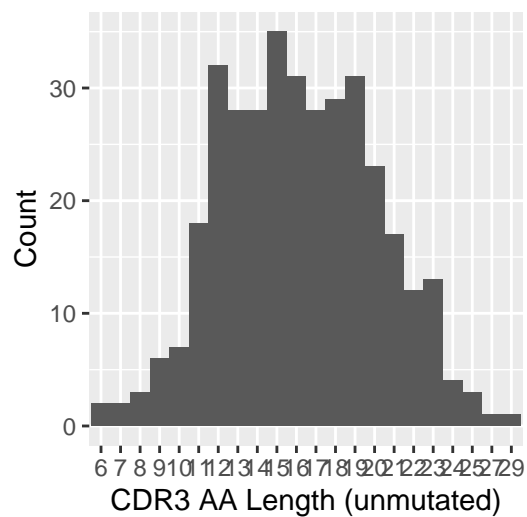
IGHV3-64\*04\_A210C



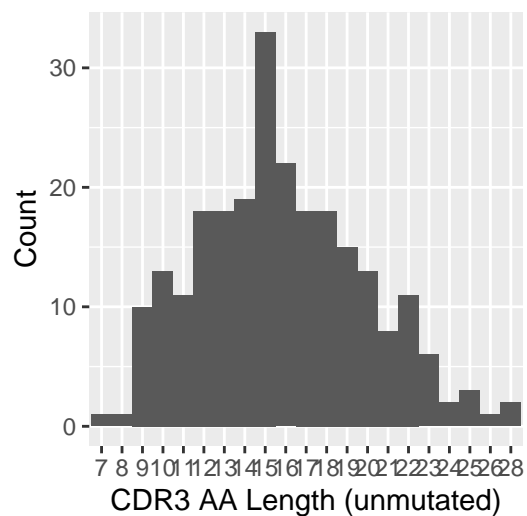
IGHV6-1\*01\_A315G



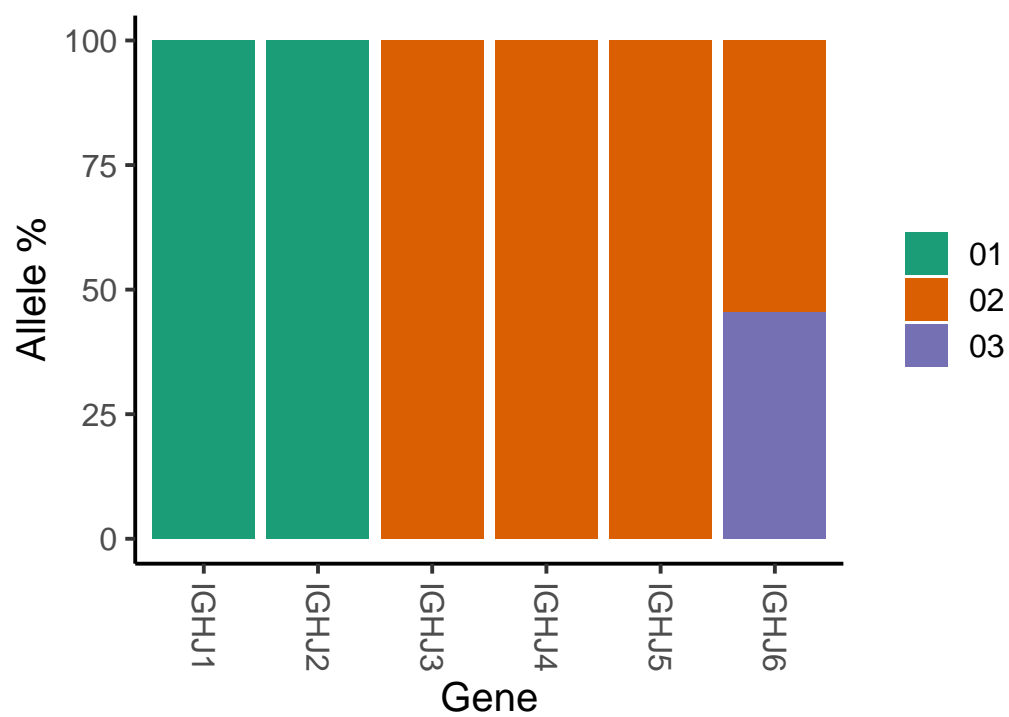
IGHV4-30-4\*01\_C315G



IGHV3-30\*03\_T288C



Allele Usage



Sequence Count by IGHJ6 allele usage

