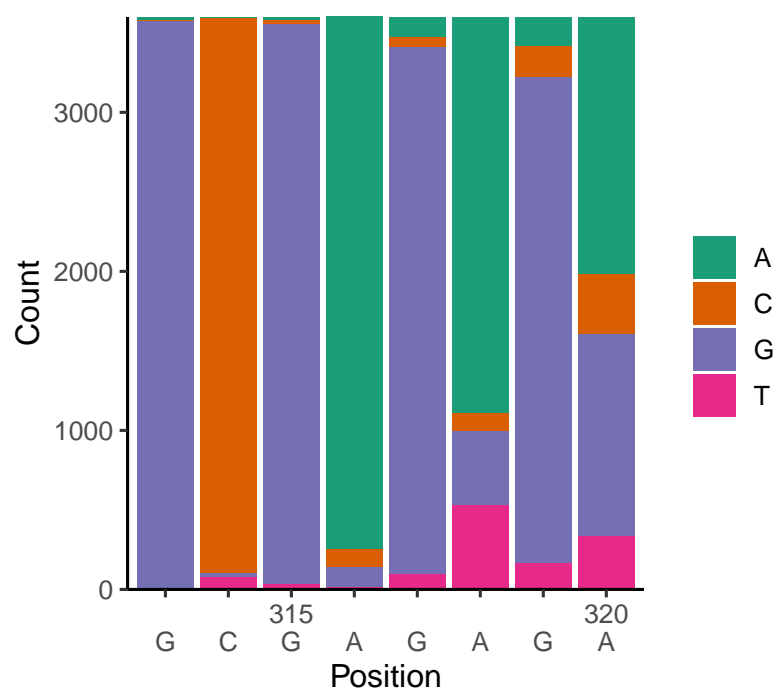
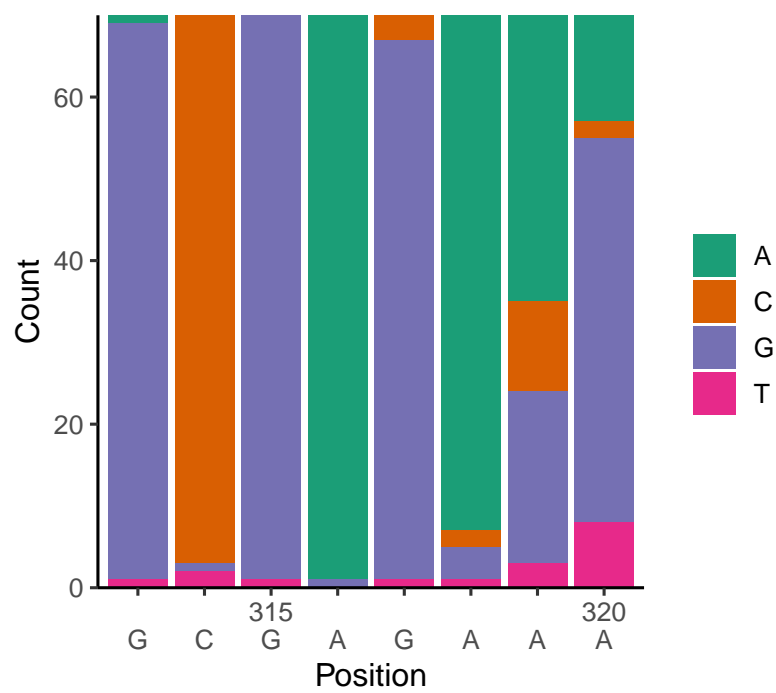


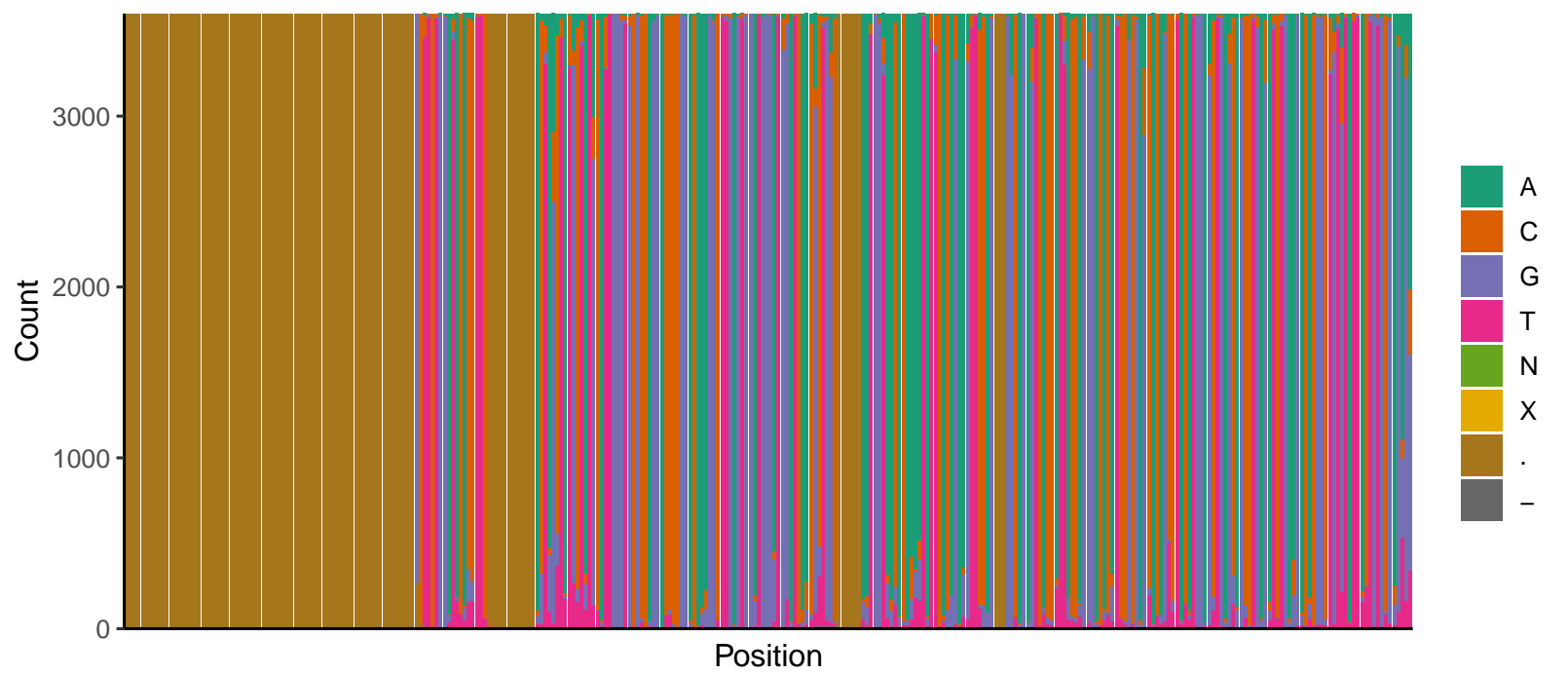
Gene IGHV1-3\*01\_05\_C134A



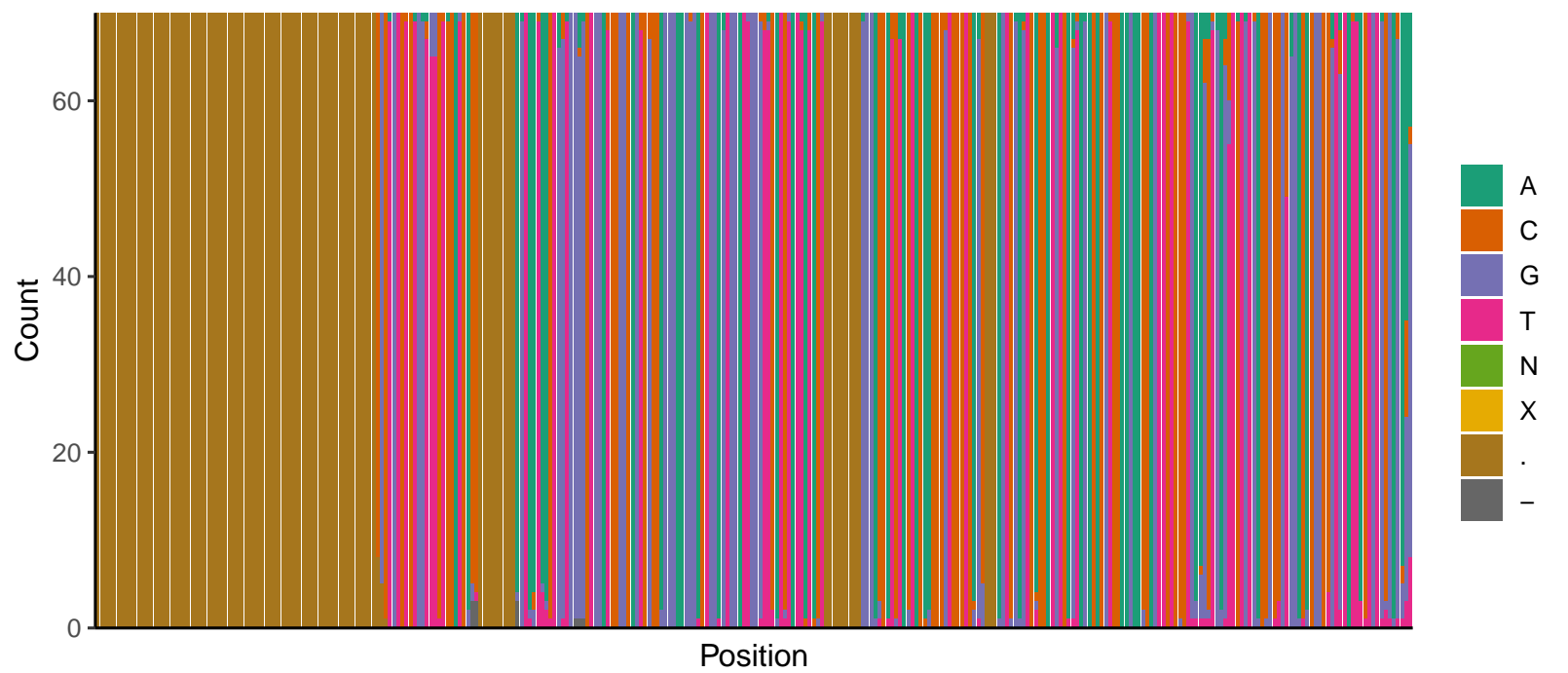
Gene IGHV4-28\*02\_05\_A83T\_G92C\_G107A\_C133T\_C135G\_A164T\_G176C\_G191C\_A2



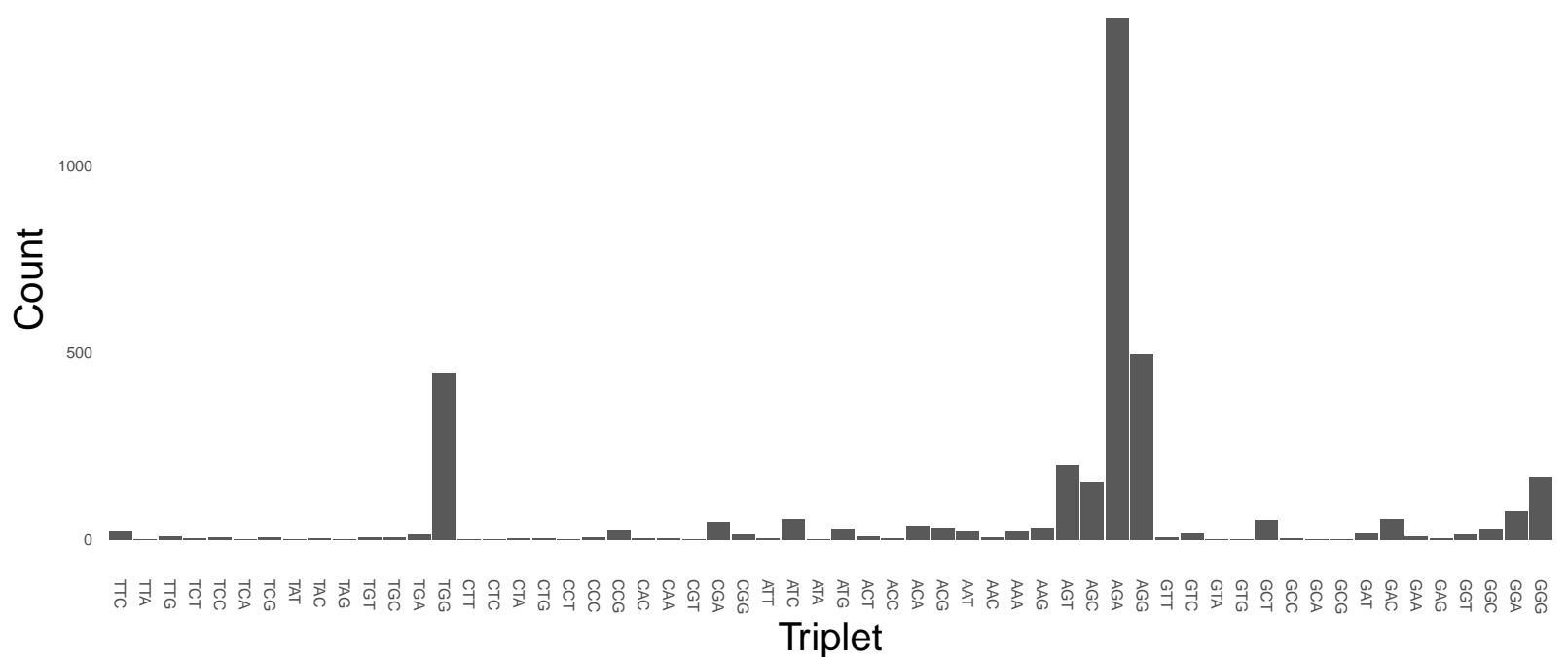
Gene IGHV1-3\*01\_05\_C134A



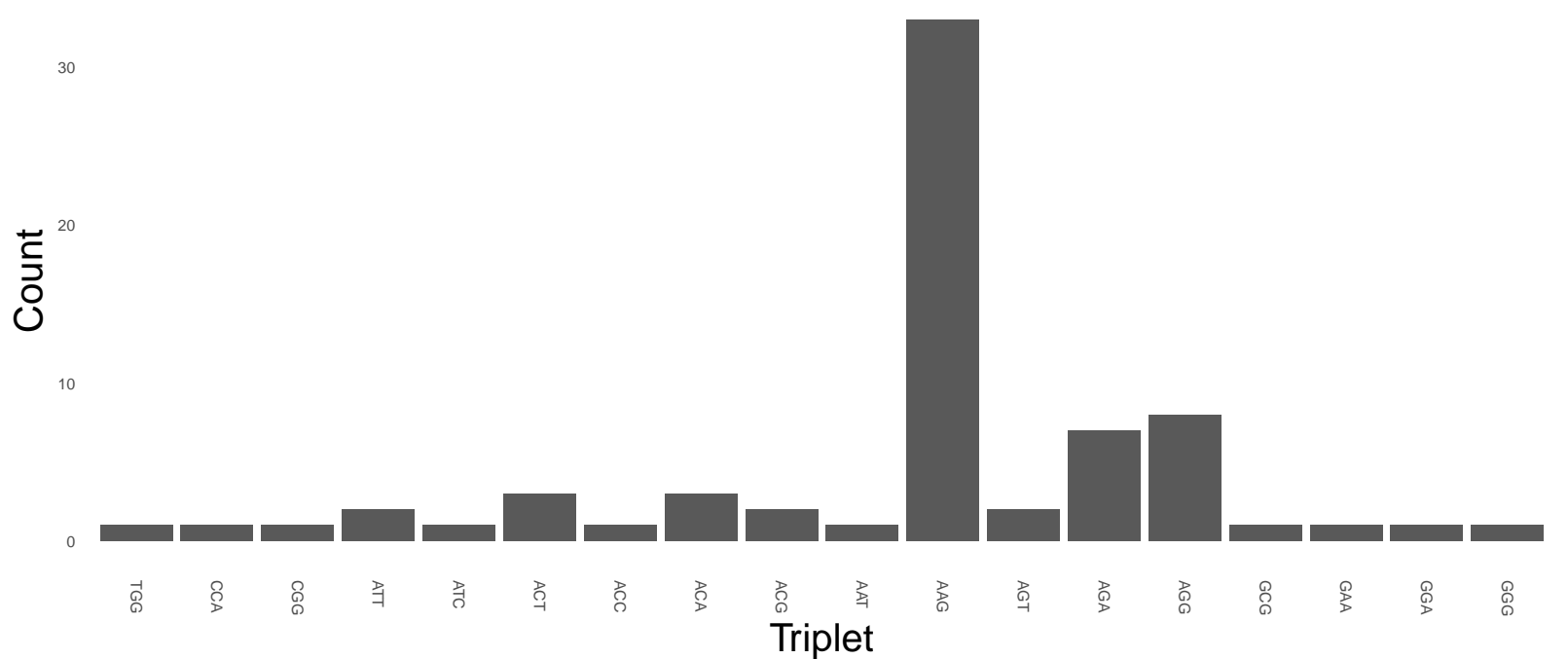
Gene IGHV4-28\*02\_05\_A83T\_G92C\_G107A\_C133T\_C135G\_A164T\_G176C\_G191C\_A2



IGHV1-3\*01\_05\_C134A- Final 3 nucleotides as a triplet

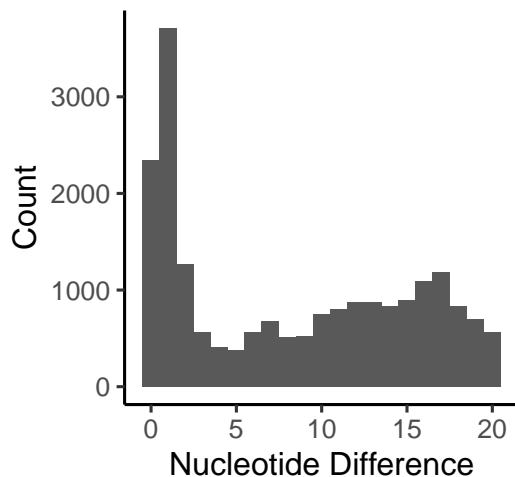


IGHV4-28\*02\_05\_A83T\_G92C\_G107A\_C133T\_C135G\_A164T\_G176C\_G191C\_A215G\_G216C\_



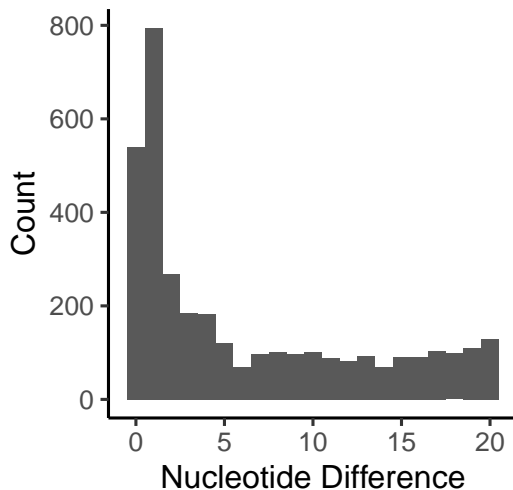
### IGHV1-2\*02

24984 sequences assigned  
2340 (9.4%) exact matches, in which:  
1605 unique CDR3  
7 unique J



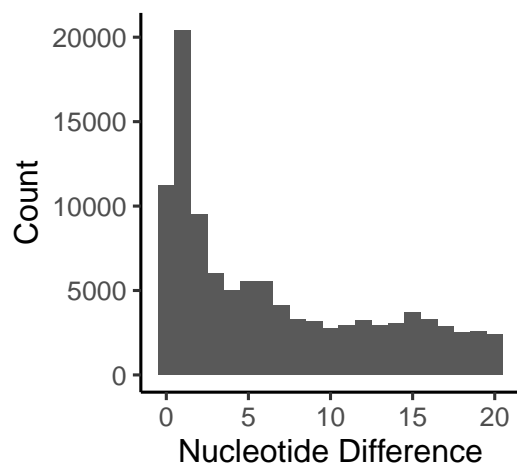
### IGHV1-3\*01\_05

4220 sequences assigned  
540 (12.8%) exact matches, in which:  
398 unique CDR3  
7 unique J



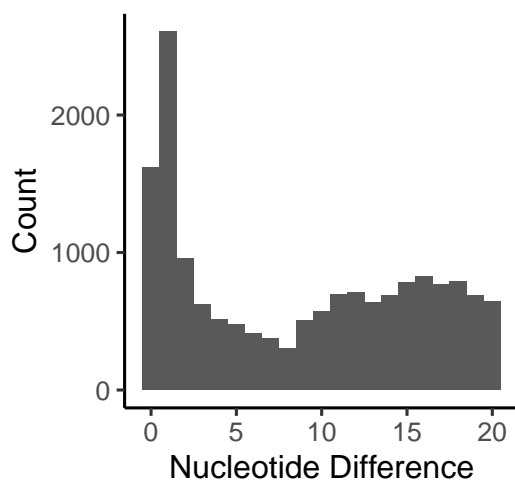
### IGHV1-18\*01

118825 sequences assigned  
11200 (9.4%) exact matches, in which:  
7233 unique CDR3  
7 unique J



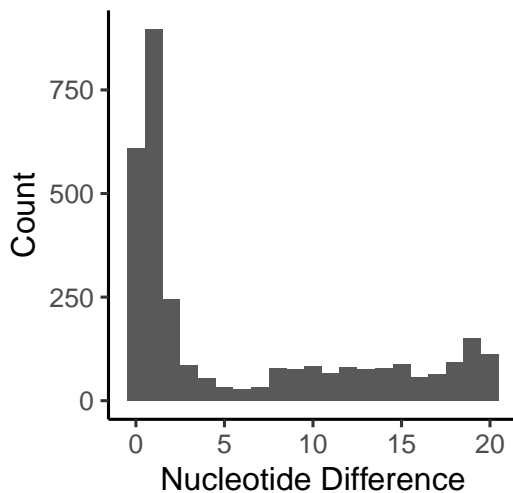
### IGHV1-2\*06

19805 sequences assigned  
1619 (8.2%) exact matches, in which:  
1087 unique CDR3  
7 unique J



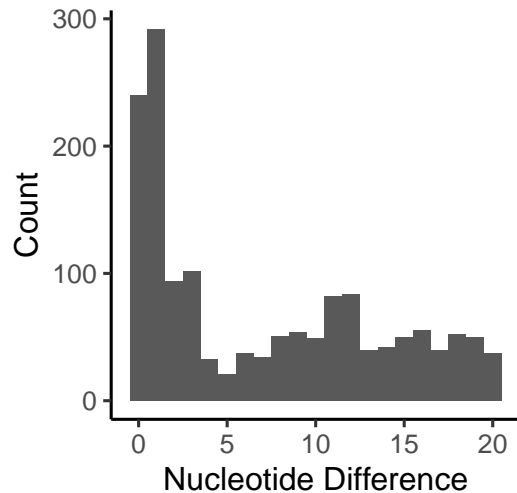
### IGHV1-3\*01\_05\_C134A

3600 sequences assigned  
610 (16.9%) exact matches, in which:  
416 unique CDR3  
7 unique J



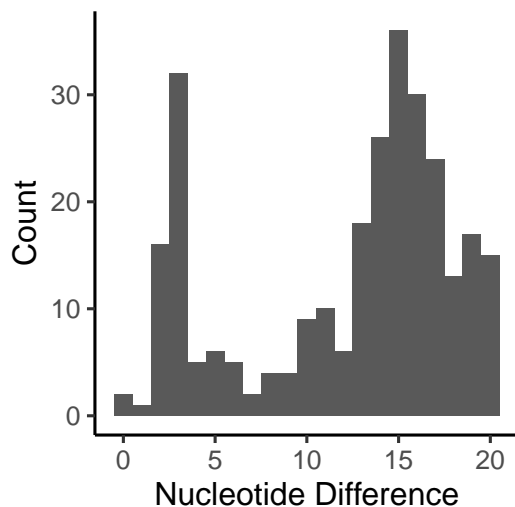
### IGHV1-24\*01

1658 sequences assigned  
240 (14.5%) exact matches, in which:  
183 unique CDR3  
7 unique J



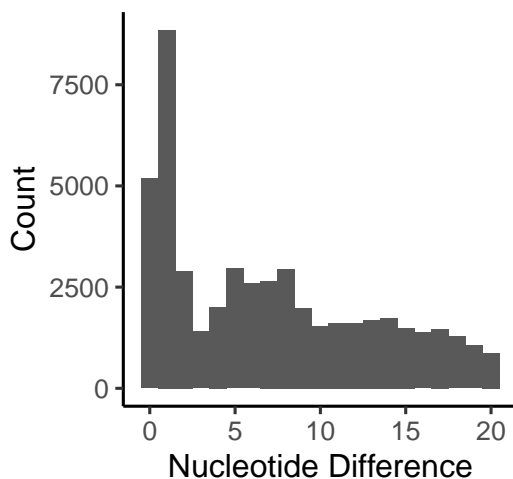
### IGHV1-3\*04

622 sequences assigned  
2 (0.3%) exact matches, in which:  
2 unique CDR3  
1 unique J



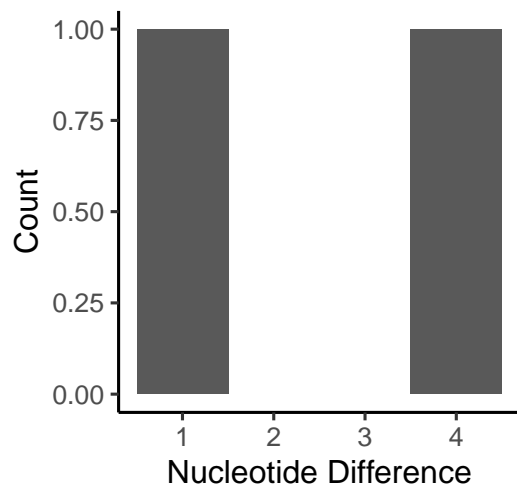
### IGHV1-8\*01

53352 sequences assigned  
5182 (9.7%) exact matches, in which:  
3350 unique CDR3  
7 unique J



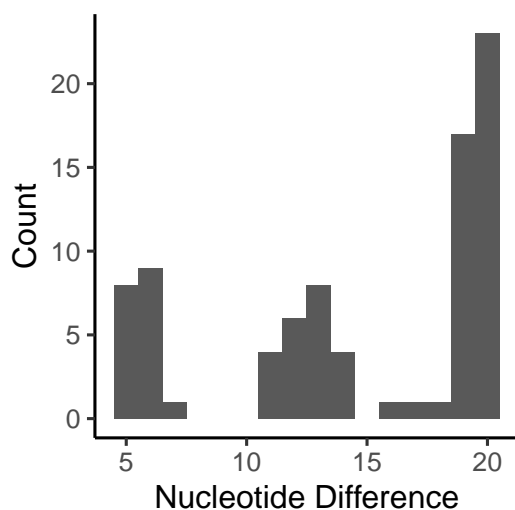
### IGHV1-38-4\*01

2 sequences assigned  
No exact matches.



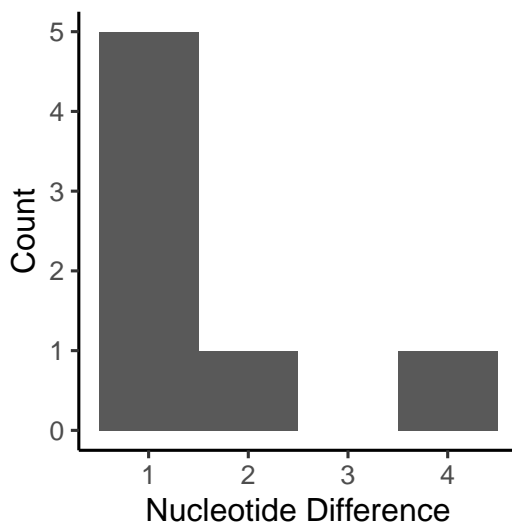
### IGHV1-45\*02

114 sequences assigned  
No exact matches.



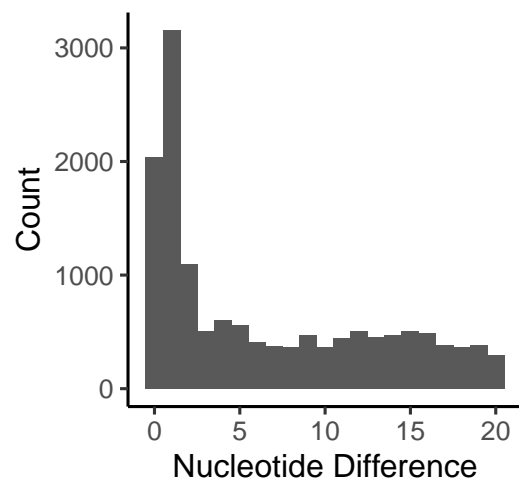
### IGHV1-68\*02\_03

7 sequences assigned  
No exact matches.



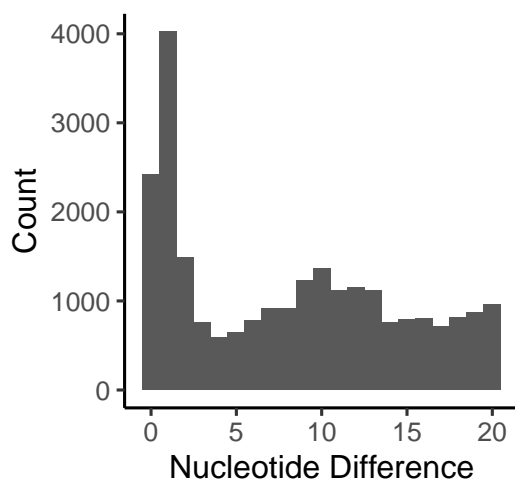
### IGHV1-69\*05

17301 sequences assigned  
2034 (11.8%) exact matches, in which:  
1386 unique CDR3  
7 unique J



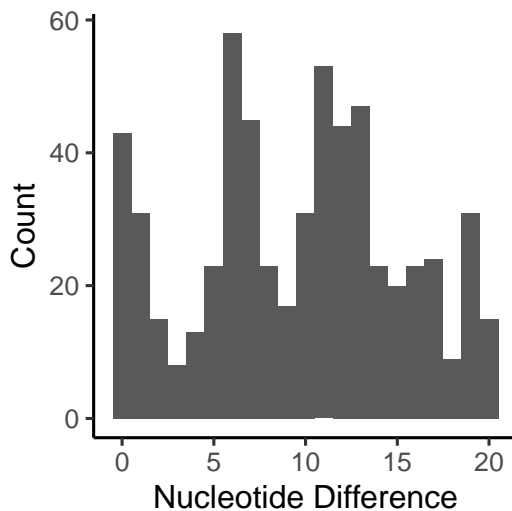
### IGHV1-46\*01

30395 sequences assigned  
2415 (7.9%) exact matches, in which:  
1661 unique CDR3  
7 unique J



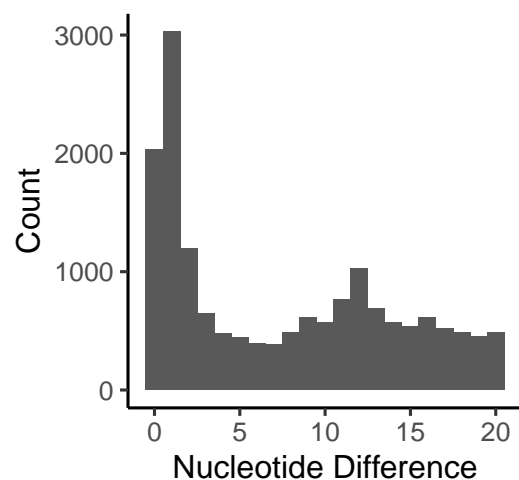
### IGHV1-69-2\*01

753 sequences assigned  
43 (5.7%) exact matches, in which:  
33 unique CDR3  
5 unique J



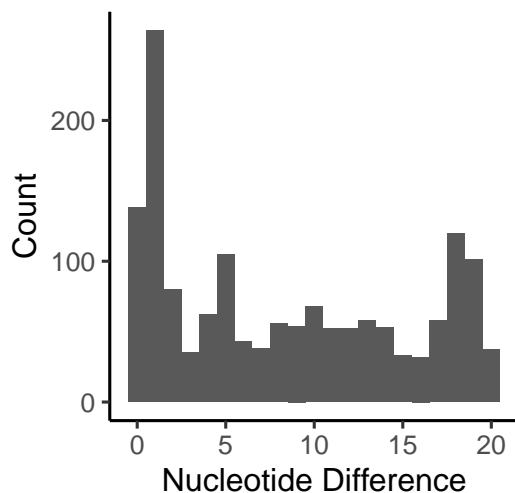
### IGHV1-69\*01\_12\_13

20048 sequences assigned  
2030 (10.1%) exact matches, in which:  
1399 unique CDR3  
7 unique J



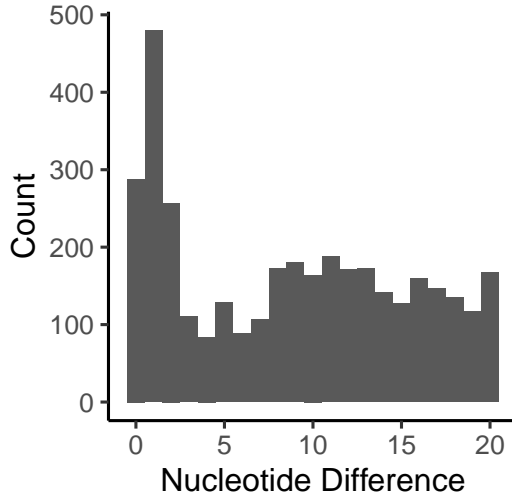
### IGHV1-58\*02

2243 sequences assigned  
138 (6.2%) exact matches, in which:  
86 unique CDR3  
6 unique J



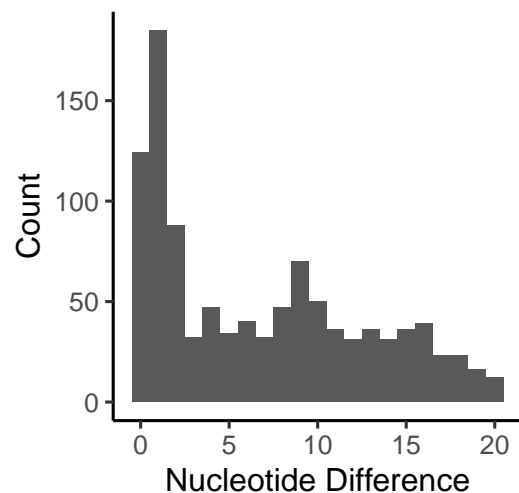
### IGHV1-69\*02

4900 sequences assigned  
288 (5.9%) exact matches, in which:  
204 unique CDR3  
7 unique J



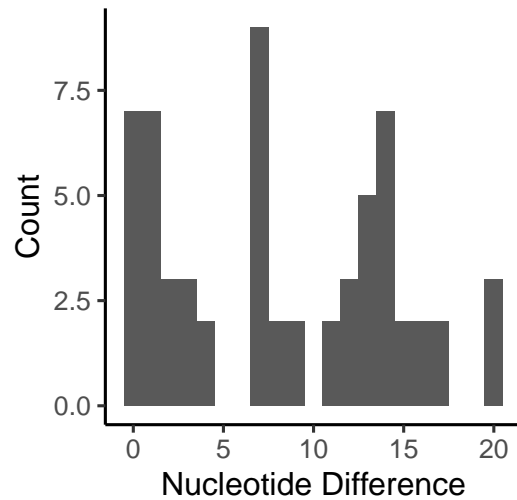
### IGHV2-5\*01

1085 sequences assigned  
124 (11.4%) exact matches, in which:  
99 unique CDR3  
7 unique J



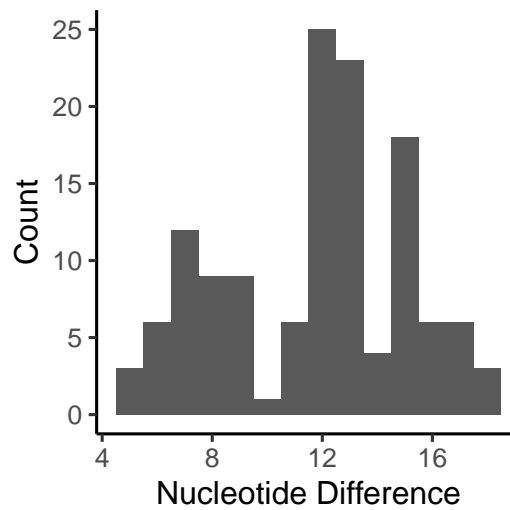
### IGHV2-26\*01

70 sequences assigned  
7 (10%) exact matches, in which:  
5 unique CDR3  
3 unique J



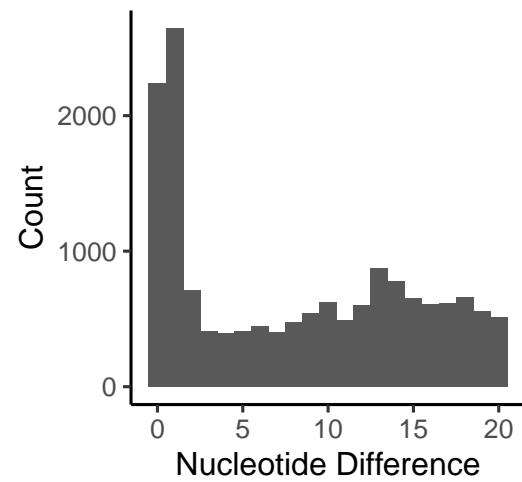
### IGHV2-70\*16\_17

133 sequences assigned  
No exact matches.



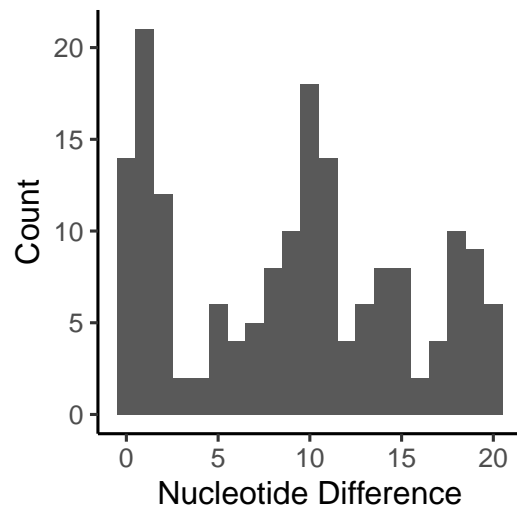
### IGHV3-11\*01

18087 sequences assigned  
2238 (12.4%) exact matches, in which:  
1557 unique CDR3  
7 unique J



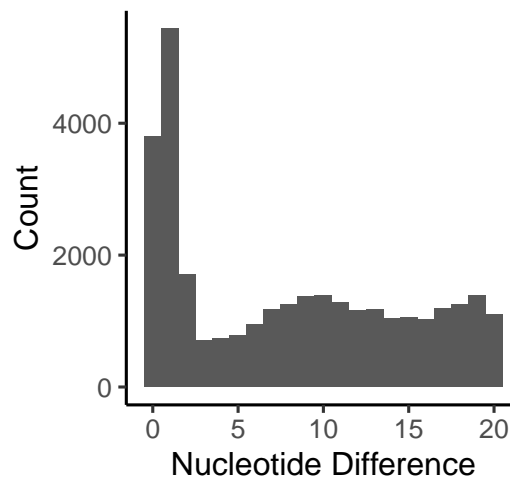
### IGHV2-70\*20

190 sequences assigned  
14 (7.4%) exact matches, in which:  
12 unique CDR3  
3 unique J



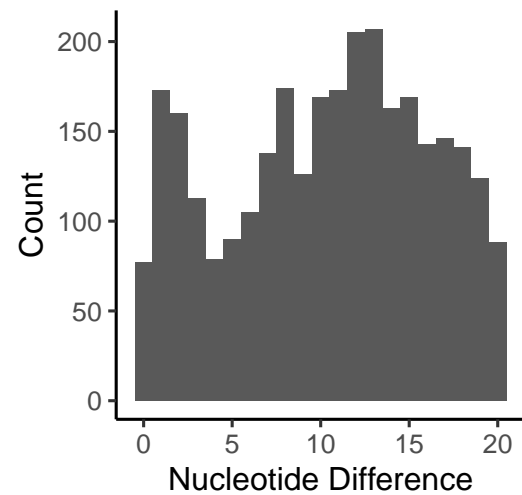
### IGHV3-7\*01

35351 sequences assigned  
3801 (10.8%) exact matches, in which:  
2516 unique CDR3  
7 unique J



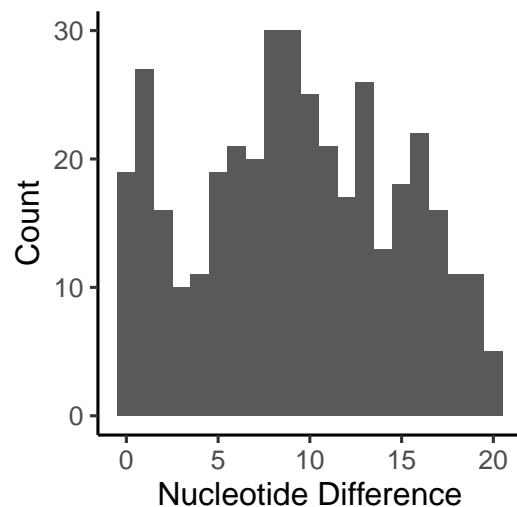
### IGHV3-11\*04

3437 sequences assigned  
77 (2.2%) exact matches, in which:  
77 unique CDR3  
7 unique J



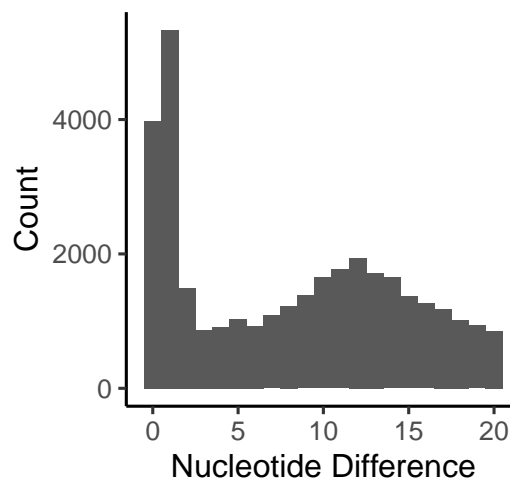
### IGHV2-70\*11\_15

423 sequences assigned  
19 (4.5%) exact matches, in which:  
13 unique CDR3  
3 unique J



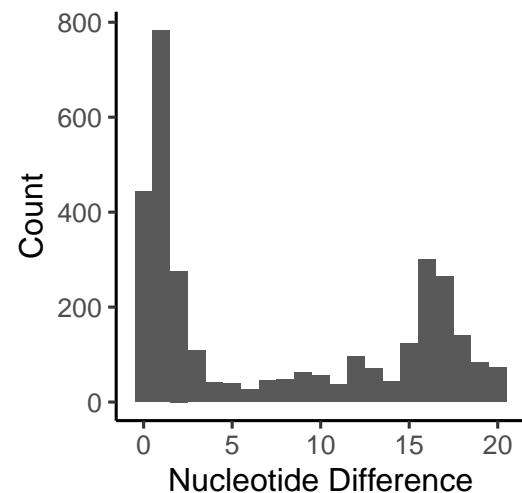
### IGHV3-9\*01

38452 sequences assigned  
3974 (10.3%) exact matches, in which:  
2653 unique CDR3  
7 unique J



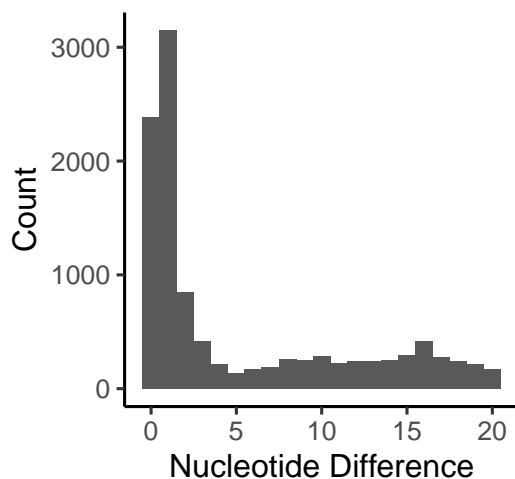
### IGHV3-13\*01

3308 sequences assigned  
443 (13.4%) exact matches, in which:  
261 unique CDR3  
7 unique J



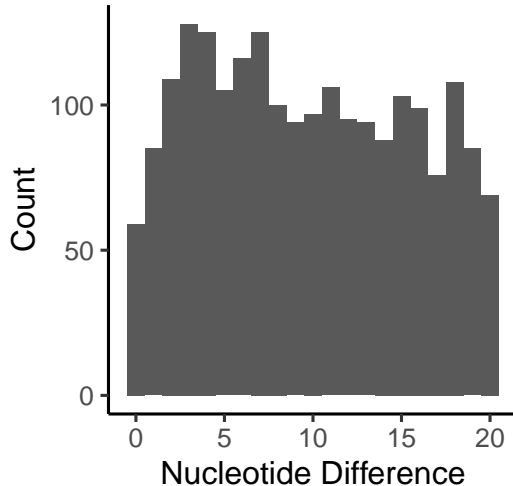
### IGHV3-15\*01\_02

12266 sequences assigned  
2383 (19.4%) exact matches, in which:  
1619 unique CDR3  
7 unique J



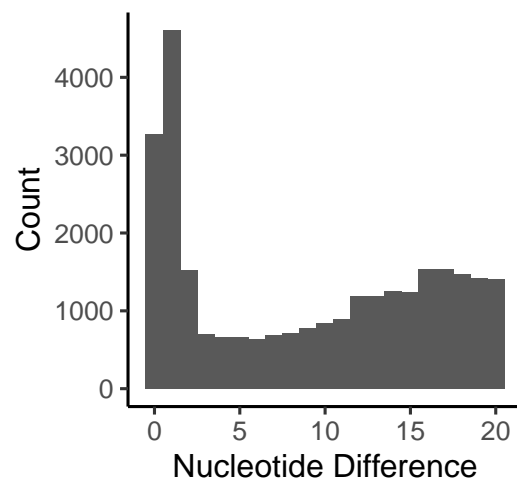
### IGHV3-21\*04

2553 sequences assigned  
59 (2.3%) exact matches, in which:  
59 unique CDR3  
6 unique J



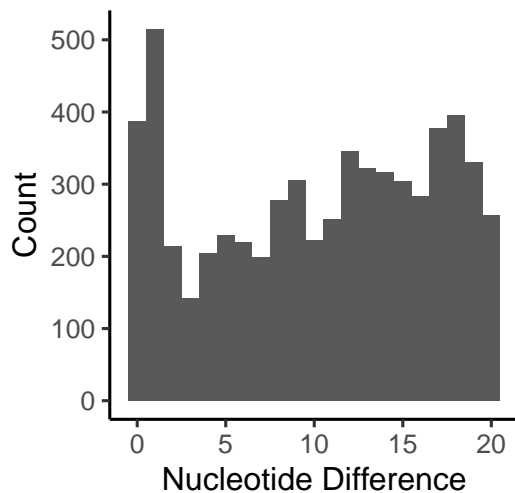
### IGHV3-23\*01\_04

34590 sequences assigned  
3264 (9.4%) exact matches, in which:  
2107 unique CDR3  
7 unique J



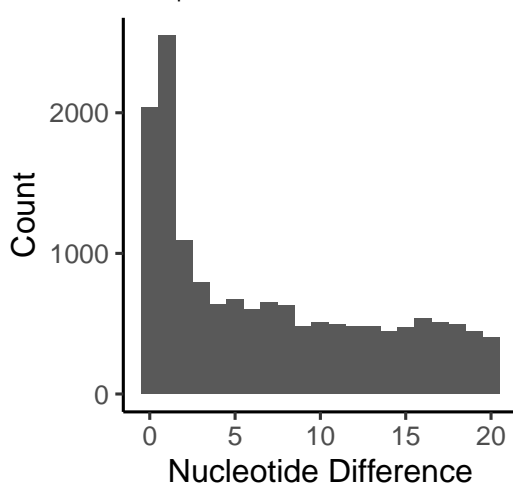
### IGHV3-20\*03\_04

7132 sequences assigned  
387 (5.4%) exact matches, in which:  
259 unique CDR3  
7 unique J



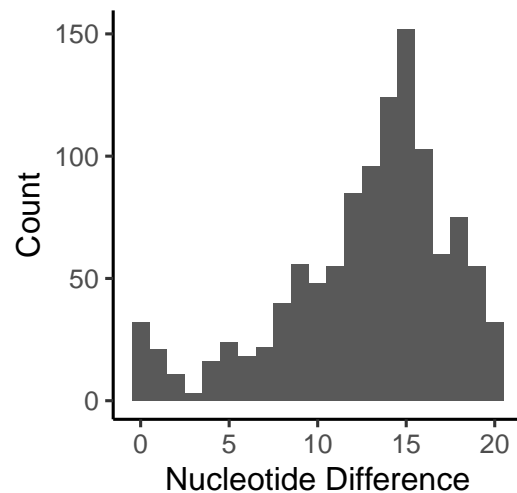
### IGHV3-21\*01\_02

17270 sequences assigned  
2037 (11.8%) exact matches, in which:  
1436 unique CDR3  
7 unique J



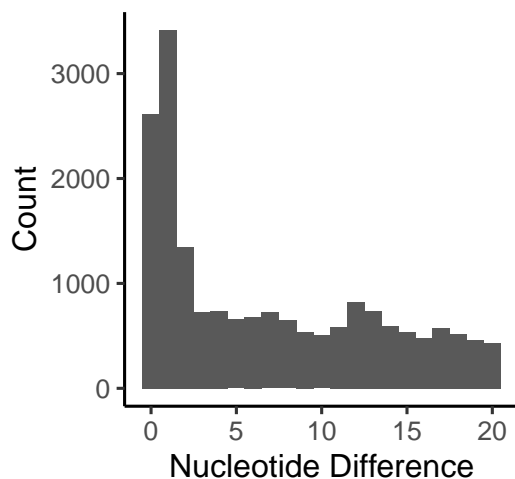
### IGHV3-30-3\*01

1500 sequences assigned  
32 (2.1%) exact matches, in which:  
31 unique CDR3  
6 unique J



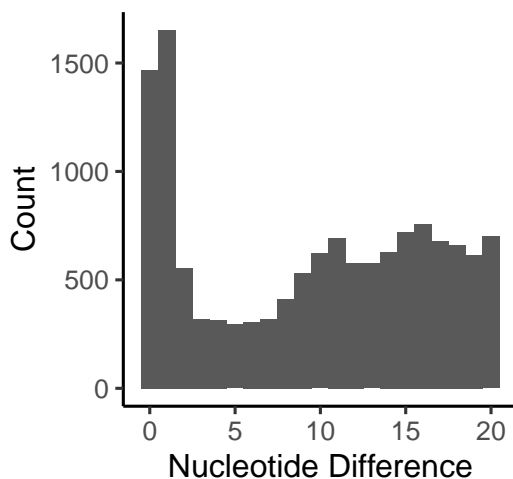
### IGHV3-21\*03

20154 sequences assigned  
2614 (13%) exact matches, in which:  
1687 unique CDR3  
7 unique J



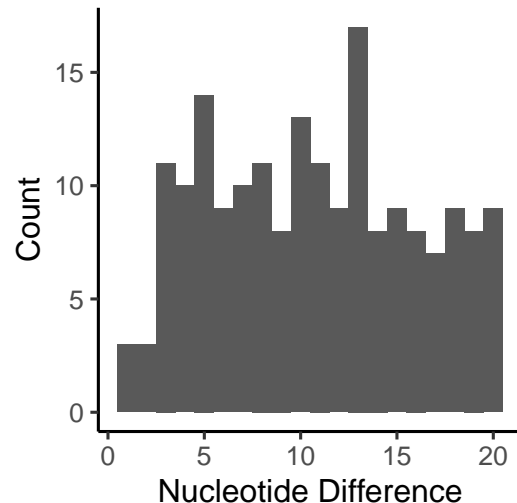
### IGHV3-23\*03

17010 sequences assigned  
1467 (8.6%) exact matches, in which:  
1025 unique CDR3  
7 unique J



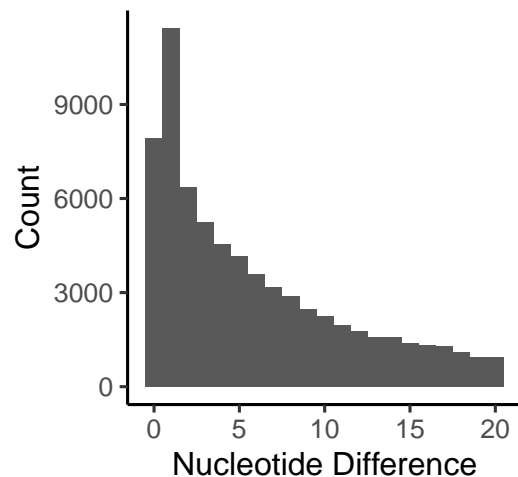
### IGHV3-30-3\*02

254 sequences assigned  
No exact matches.



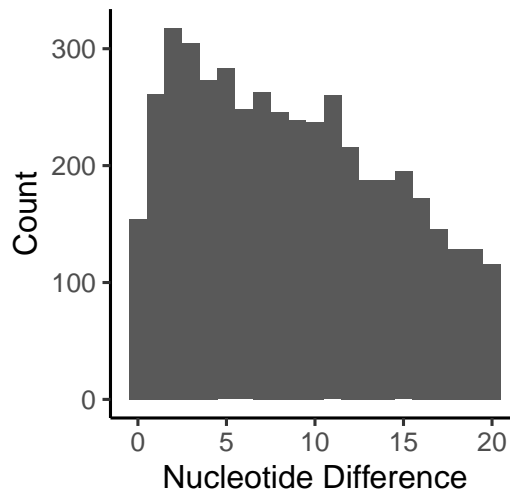
### IGHV3–30\*04

74020 sequences assigned  
7923 (10.7%) exact matches, in which:  
5381 unique CDR3  
7 unique J



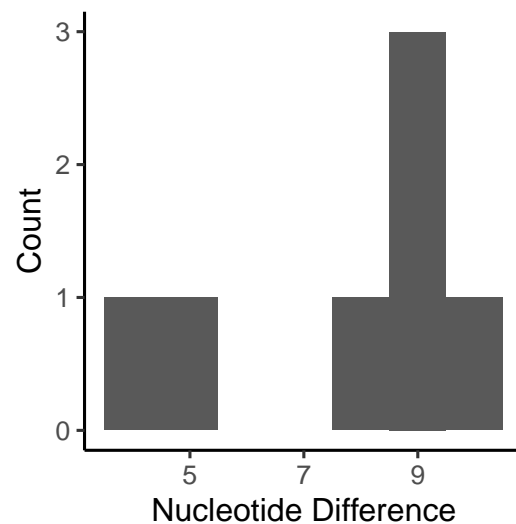
### IGHV3–33\*08

5142 sequences assigned  
154 (3%) exact matches, in which:  
144 unique CDR3  
7 unique J



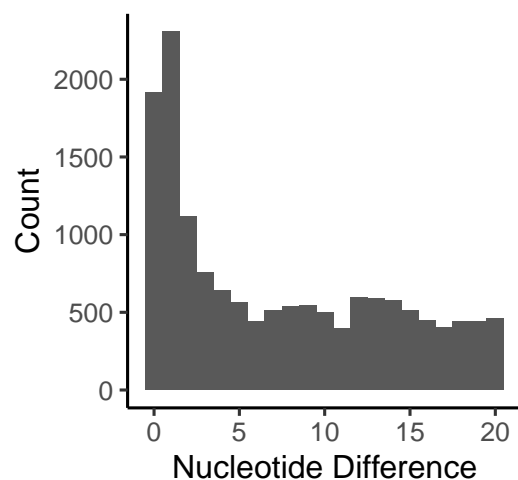
### IGHV3–38\*03

8 sequences assigned  
No exact matches.



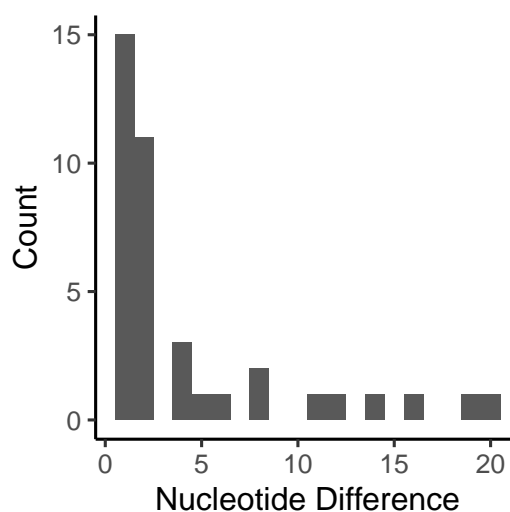
### IGHV3–33\*01

15975 sequences assigned  
1914 (12%) exact matches, in which:  
1312 unique CDR3  
7 unique J



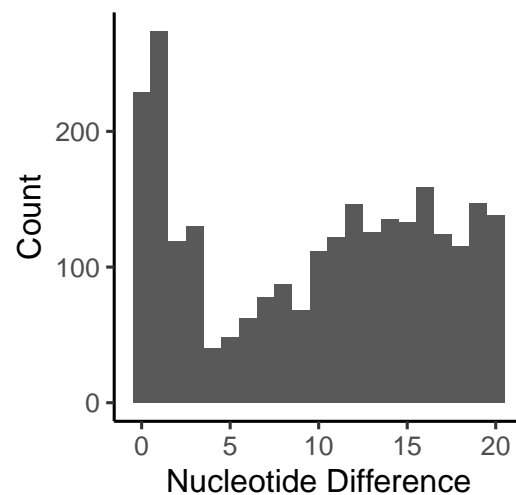
### IGHV3–35\*02

41 sequences assigned  
No exact matches.



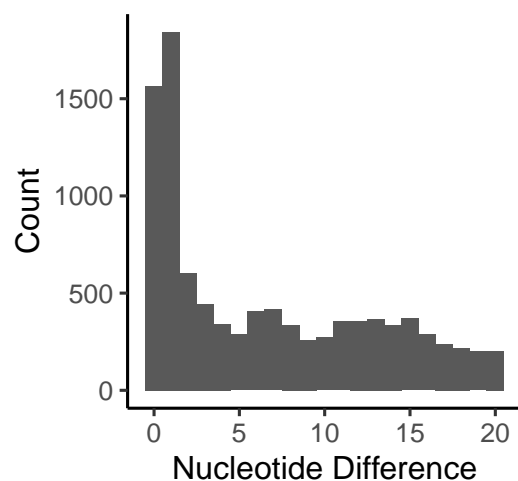
### IGHV3–43\*01

3282 sequences assigned  
229 (7%) exact matches, in which:  
176 unique CDR3  
6 unique J



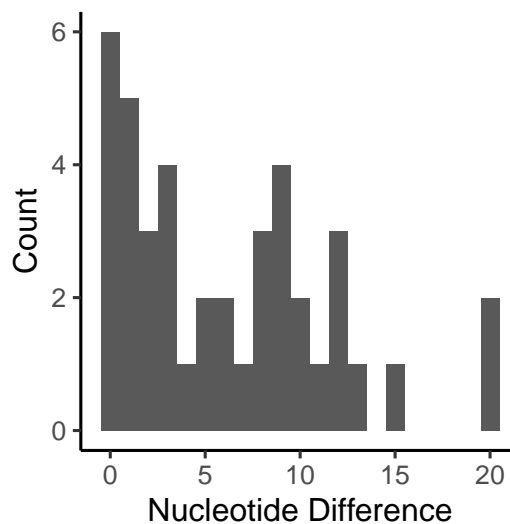
### IGHV3–33\*06

10519 sequences assigned  
1565 (14.9%) exact matches, in which:  
913 unique CDR3  
7 unique J



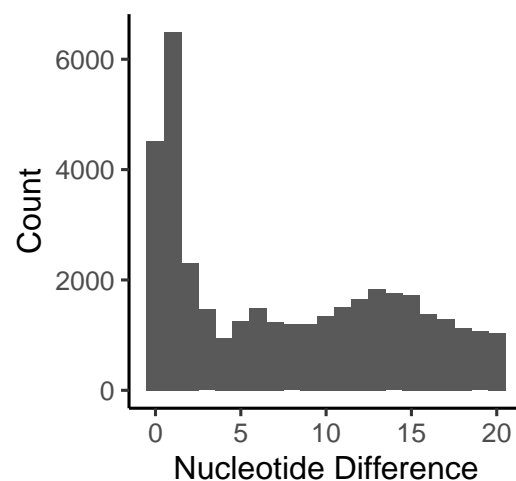
### IGHV3–38–3\*01

41 sequences assigned  
6 (14.6%) exact matches, in which:  
6 unique CDR3  
3 unique J



### IGHV3–48\*03

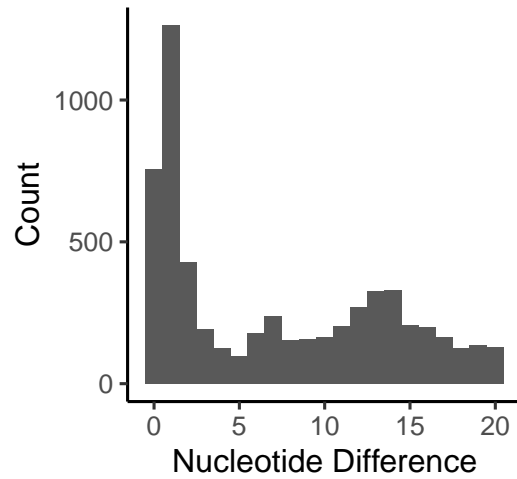
42926 sequences assigned  
4523 (10.5%) exact matches, in which:  
2922 unique CDR3  
7 unique J





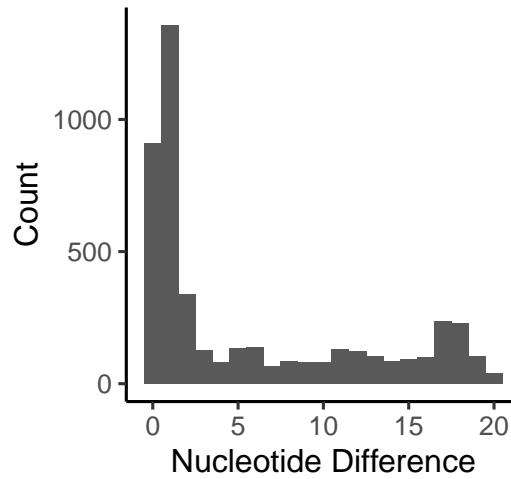
### IGHV3-49\*04

6984 sequences assigned  
756 (10.8%) exact matches, in which:  
460 unique CDR3  
7 unique J



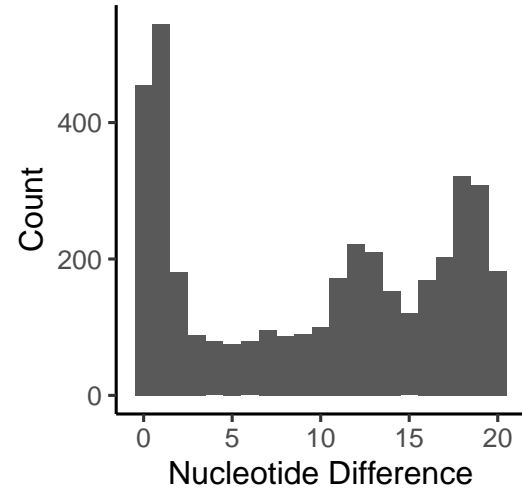
### IGHV3-53\*04

5097 sequences assigned  
909 (17.8%) exact matches, in which:  
570 unique CDR3  
7 unique J



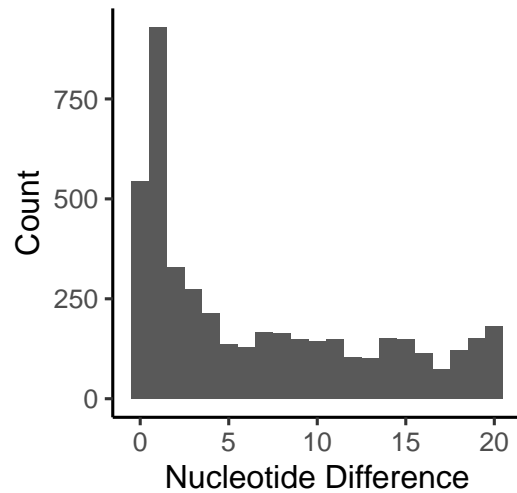
### IGHV3-64\*01

4649 sequences assigned  
455 (9.8%) exact matches, in which:  
313 unique CDR3  
7 unique J



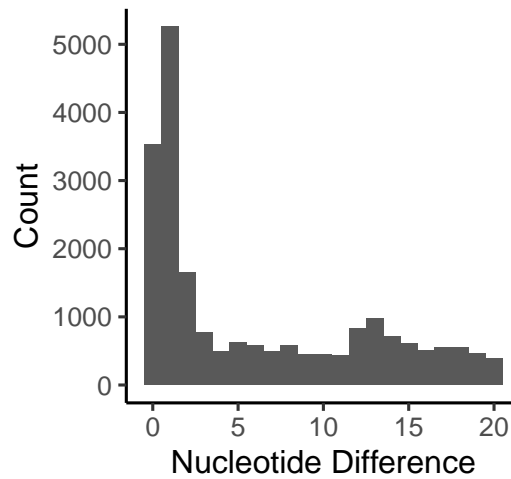
### IGHV3-49\*03\_05

5134 sequences assigned  
543 (10.6%) exact matches, in which:  
347 unique CDR3  
7 unique J



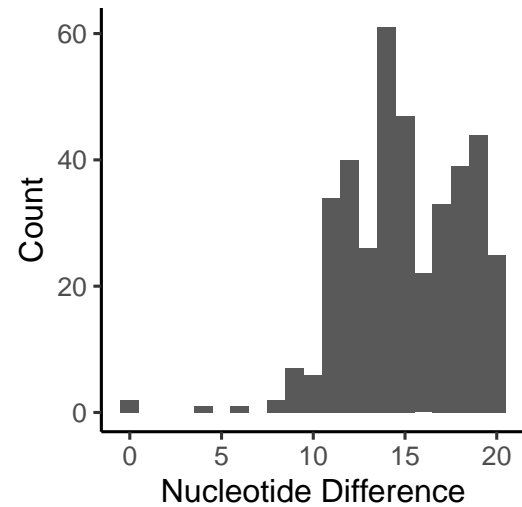
### IGHV3-53\*05

23852 sequences assigned  
3526 (14.8%) exact matches, in which:  
2258 unique CDR3  
7 unique J



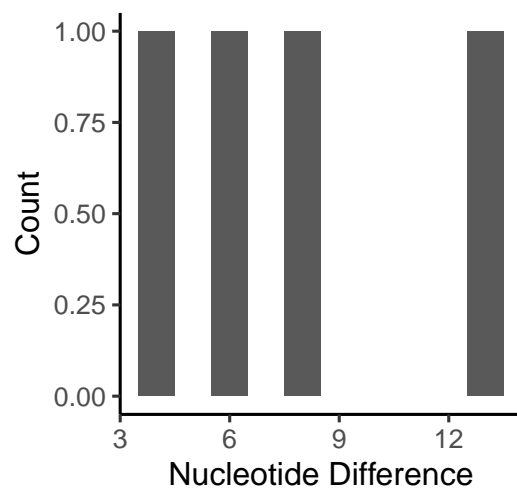
### IGHV3-64\*02\_07

629 sequences assigned  
2 (0.3%) exact matches, in which:  
2 unique CDR3  
1 unique J



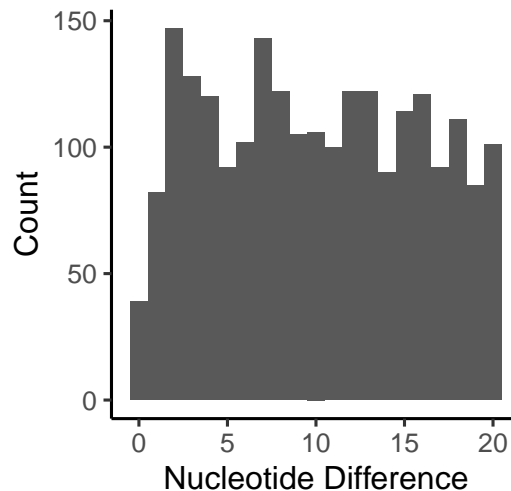
### IGHV3-52\*01\_03

4 sequences assigned  
No exact matches.



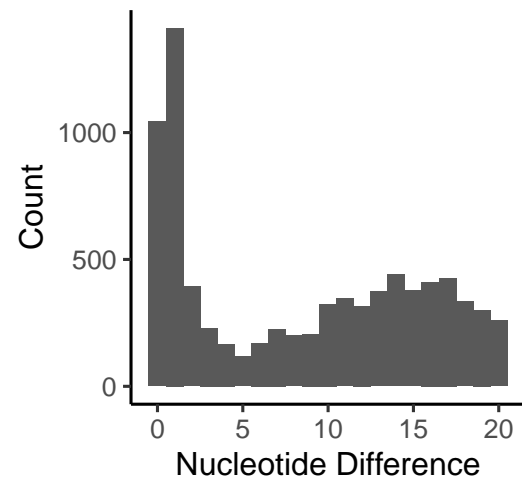
### IGHV3-53\*01\_02

2782 sequences assigned  
39 (1.4%) exact matches, in which:  
38 unique CDR3  
5 unique J



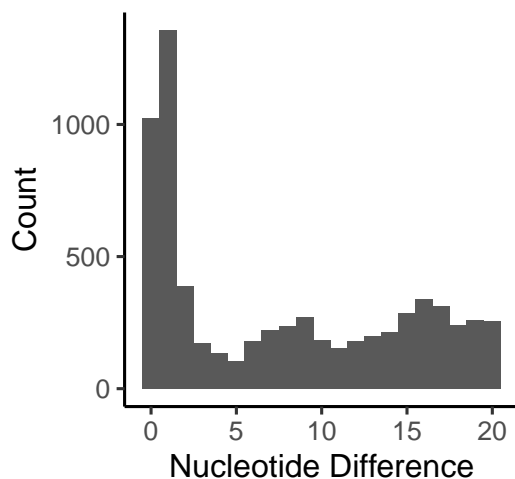
### IGHV3-66\*01

10173 sequences assigned  
1044 (10.3%) exact matches, in which:  
697 unique CDR3  
7 unique J



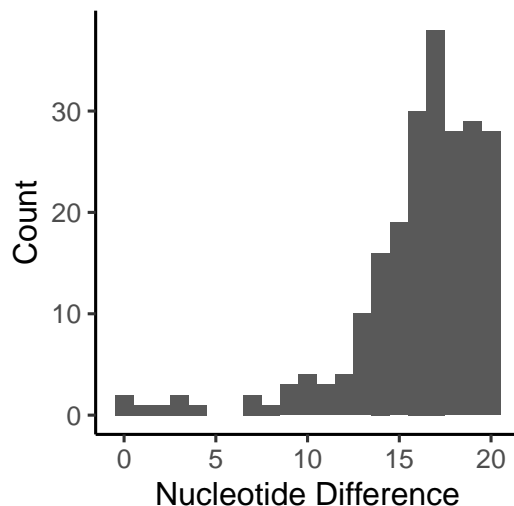
### IGHV3-66\*02

8203 sequences assigned  
1023 (12.5%) exact matches, in which:  
674 unique CDR3  
7 unique J



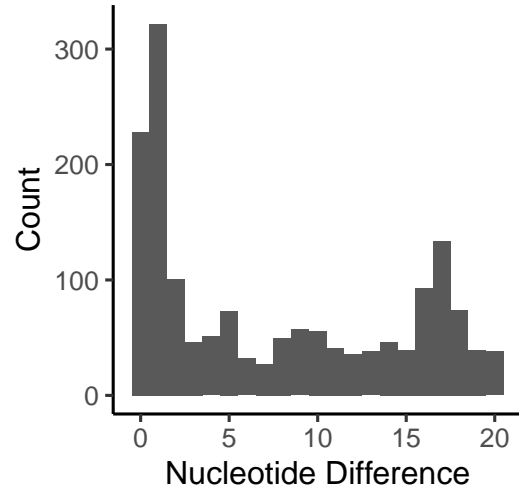
### IGHV3-69-1\*02

374 sequences assigned  
2 (0.5%) exact matches, in which:  
2 unique CDR3  
1 unique J



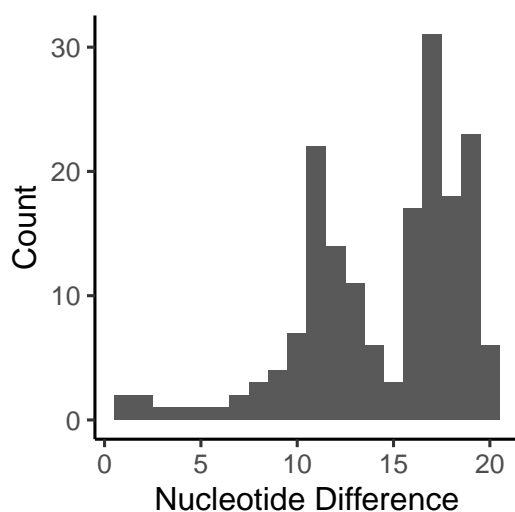
### IGHV3-73\*01\_02

1941 sequences assigned  
228 (11.7%) exact matches, in which:  
155 unique CDR3  
6 unique J



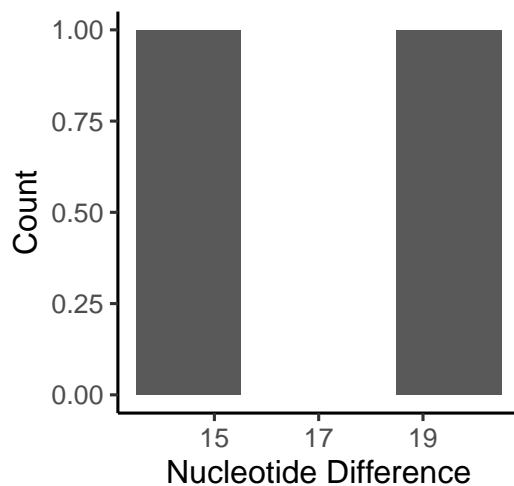
### IGHV3-66\*03

242 sequences assigned  
No exact matches.



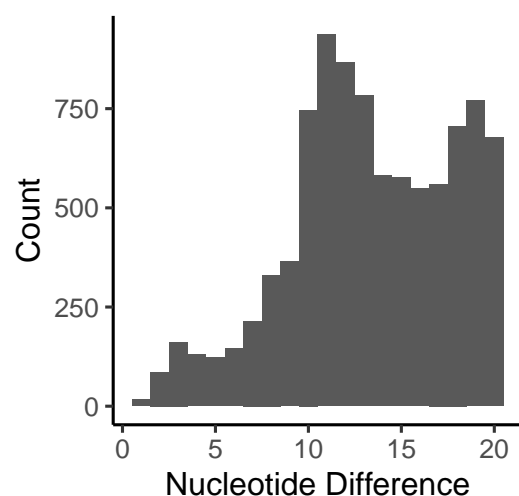
### IGHV3-71\*01\_04

23 sequences assigned  
No exact matches.



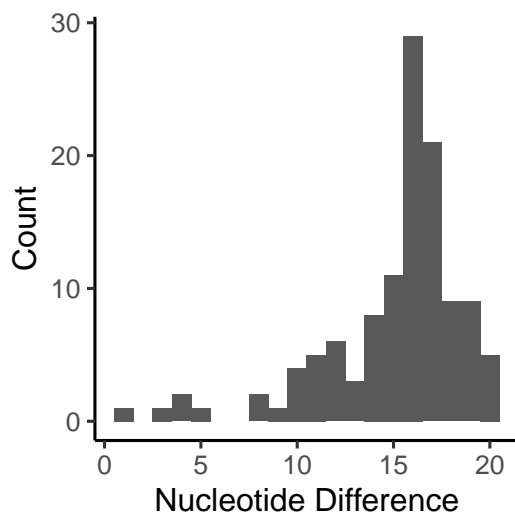
### IGHV3-74\*03

12877 sequences assigned  
No exact matches.



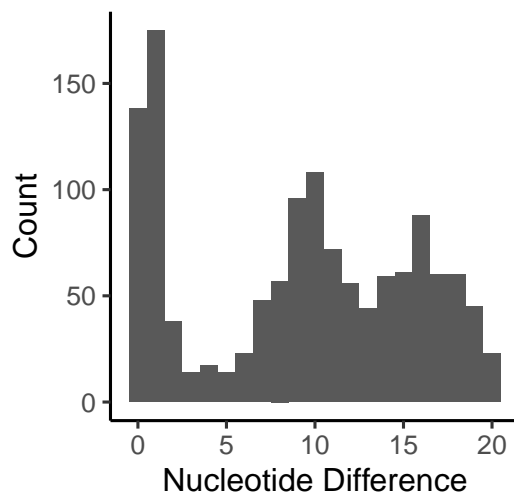
### IGHV3-69-1\*01

185 sequences assigned  
No exact matches.



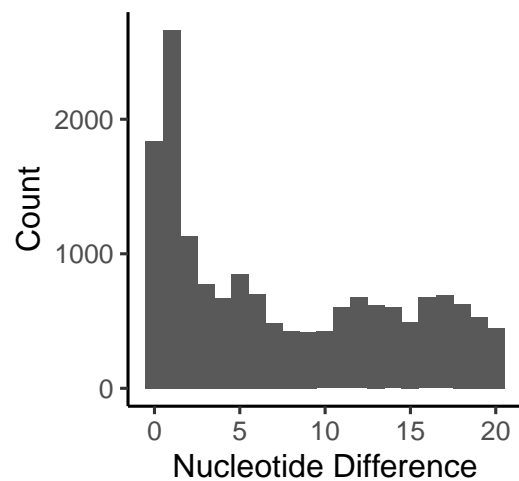
### IGHV3-72\*01

1920 sequences assigned  
138 (7.2%) exact matches, in which:  
101 unique CDR3  
4 unique J



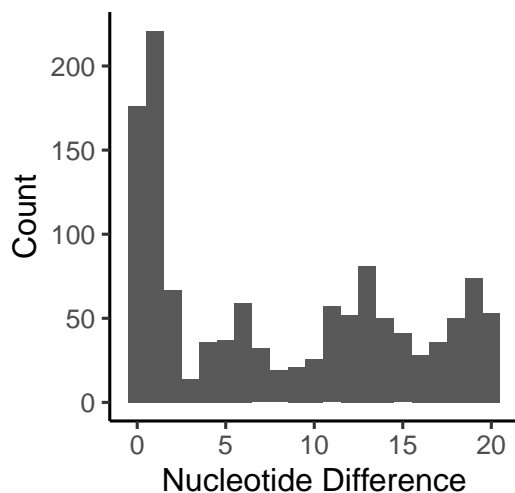
### IGHV3-74\*01\_02

19114 sequences assigned  
1837 (9.6%) exact matches, in which:  
1199 unique CDR3  
7 unique J



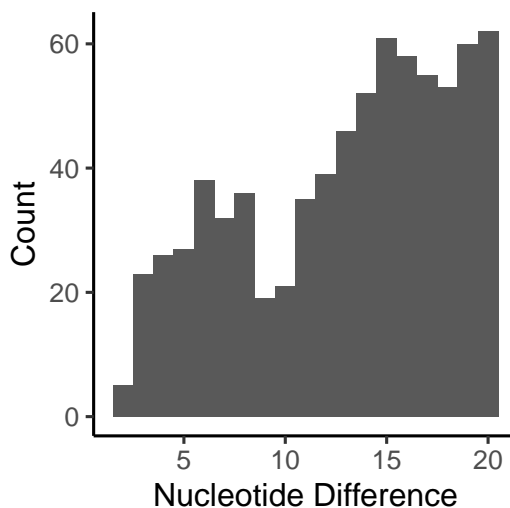
### IGHV3-43D\*03

1371 sequences assigned  
176 (12.8%) exact matches, in which:  
124 unique CDR3  
7 unique J



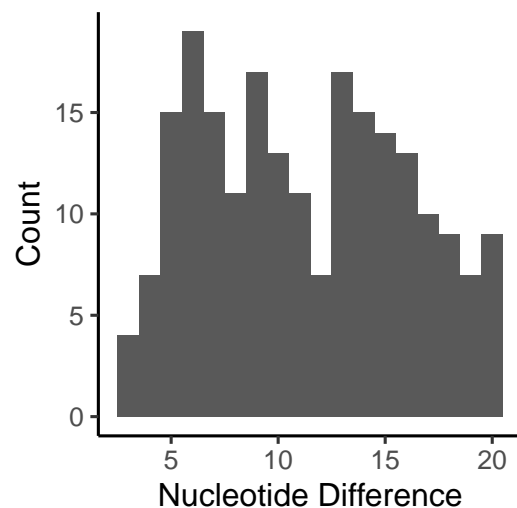
### IGHV3-NL1\*01

1071 sequences assigned  
No exact matches.



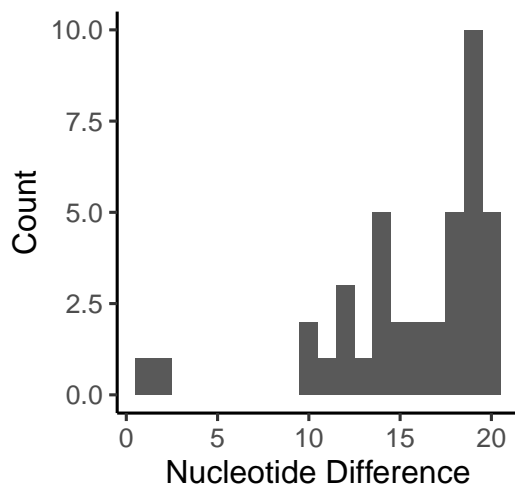
### IGHV4-28\*03

265 sequences assigned  
No exact matches.



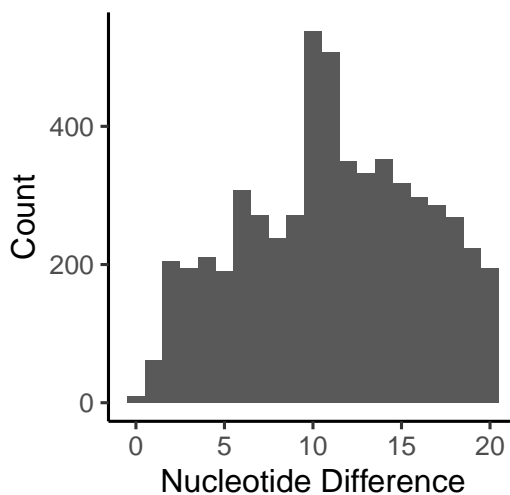
### IGHV3-43D\*04

89 sequences assigned  
No exact matches.



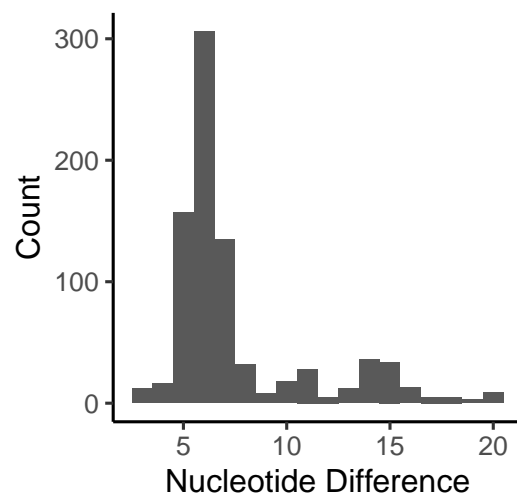
### IGHV4-4\*07

6435 sequences assigned  
10 (0.2%) exact matches, in which:  
10 unique CDR3  
5 unique J



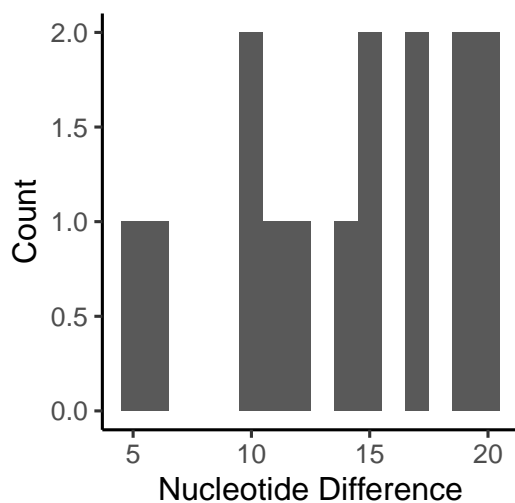
### IGHV4-28\*01\_07

915 sequences assigned  
No exact matches.



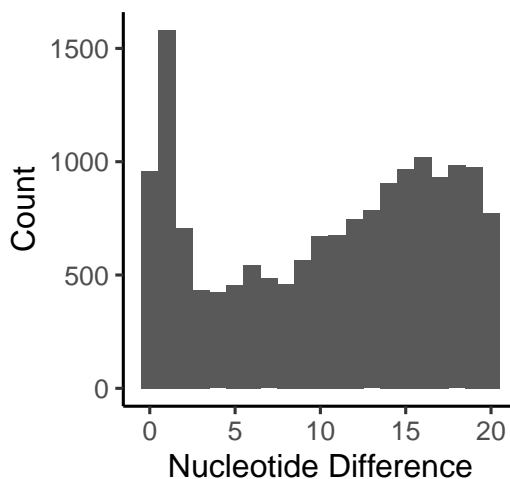
### IGHV3-64D\*09

25 sequences assigned  
No exact matches.



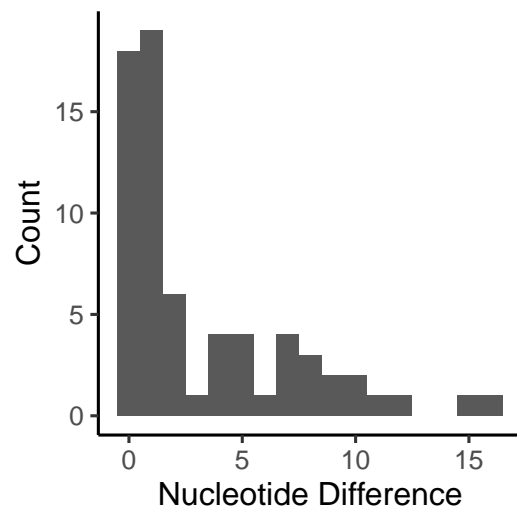
### IGHV4-4\*02\_03

20013 sequences assigned  
959 (4.8%) exact matches, in which:  
608 unique CDR3  
7 unique J



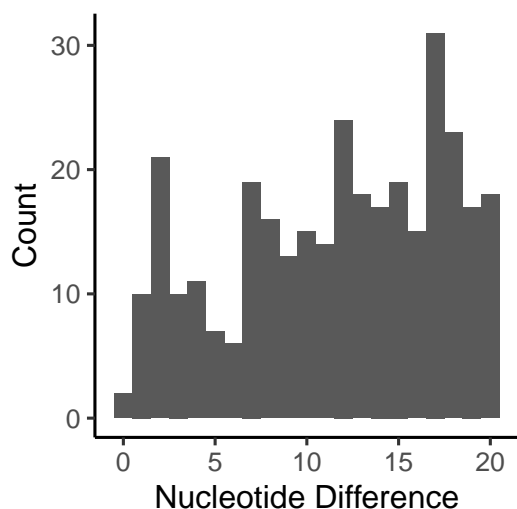
### IGHV4-28\*02\_05\_A83T\_C

70 sequences assigned  
18 (25.7%) exact matches, in which:  
14 unique CDR3  
6 unique J



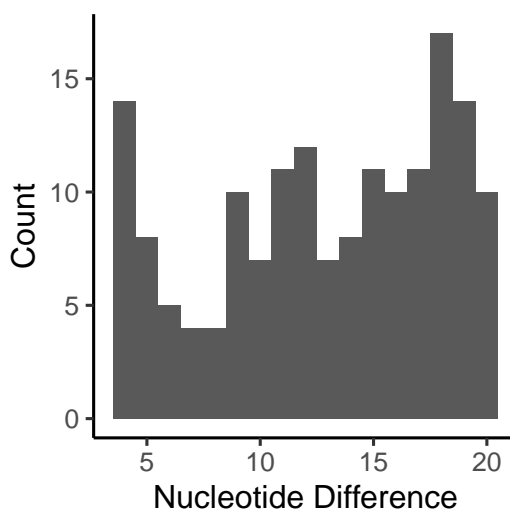
### IGHV4-30-2\*01

400 sequences assigned  
2 (0.5%) exact matches, in which:  
2 unique CDR3  
2 unique J



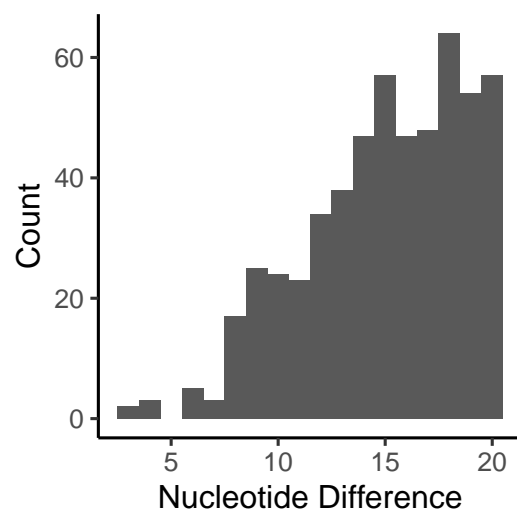
### IGHV4-30-2\*03

244 sequences assigned  
No exact matches.



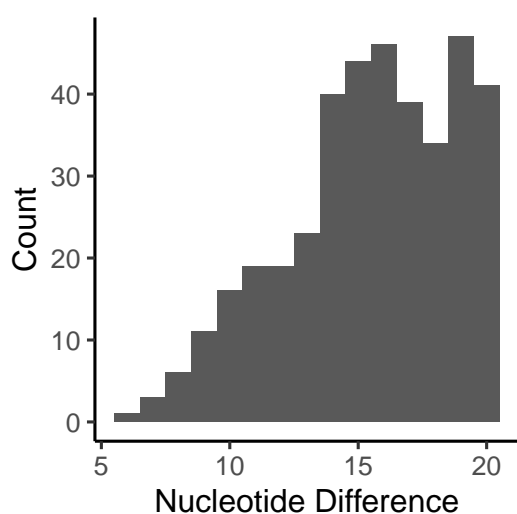
### IGHV4-30-4\*08

922 sequences assigned  
No exact matches.



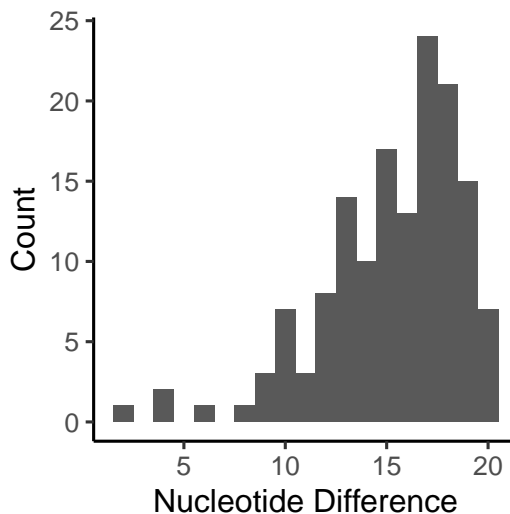
### IGHV4-30-4\*01

652 sequences assigned  
No exact matches.



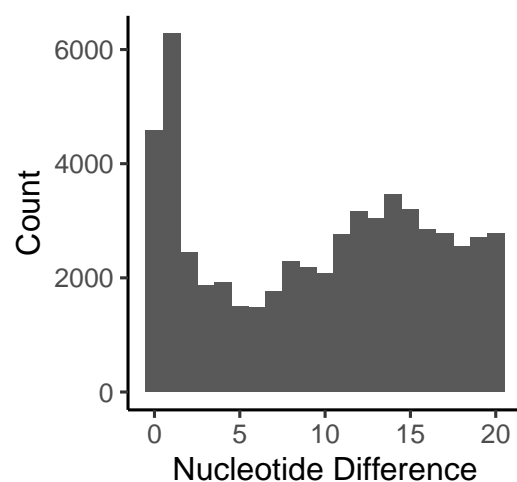
### IGHV4-30-2\*06

221 sequences assigned  
No exact matches.



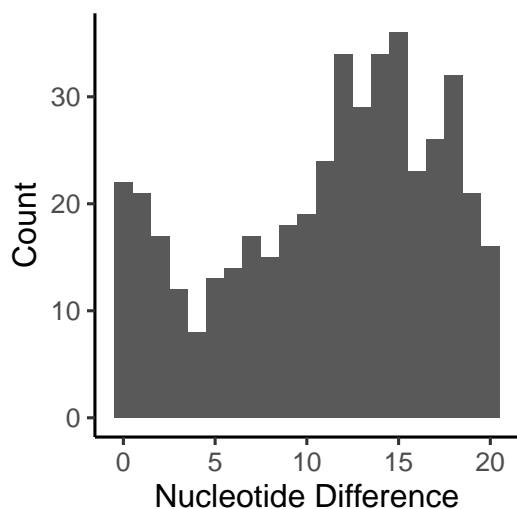
### IGHV4-31\*02

71345 sequences assigned  
4581 (6.4%) exact matches, in which:  
2922 unique CDR3  
7 unique J



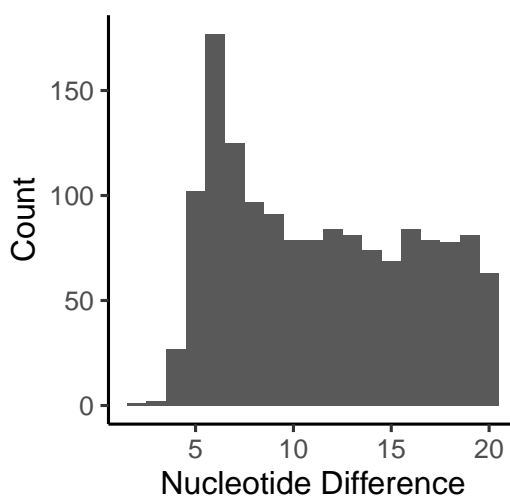
### IGHV4-30-2\*02

516 sequences assigned  
22 (4.3%) exact matches, in which:  
22 unique CDR3  
5 unique J



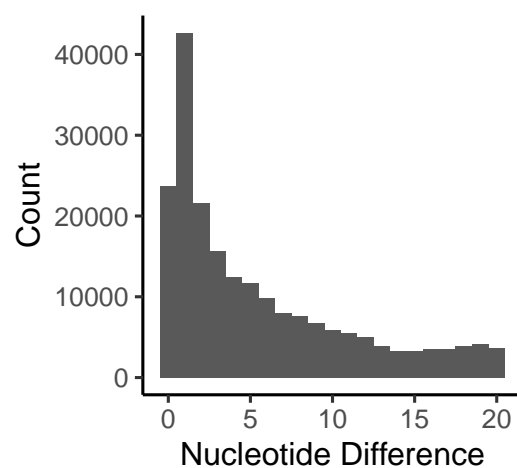
### IGHV4-30-4\*07

1831 sequences assigned  
No exact matches.



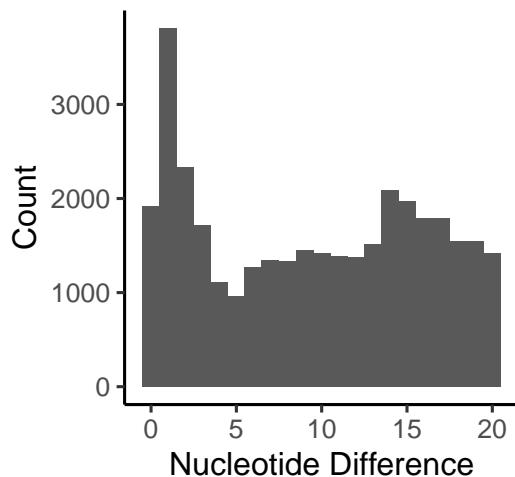
### IGHV4-34\*01\_02

220430 sequences assigned  
23646 (10.7%) exact matches, in which:  
13895 unique CDR3  
7 unique J



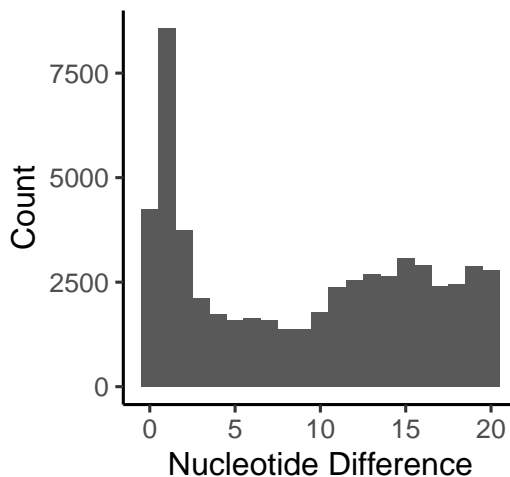
### IGHV4-38-2\*02

42003 sequences assigned  
1917 (4.6%) exact matches, in which:  
1242 unique CDR3  
7 unique J



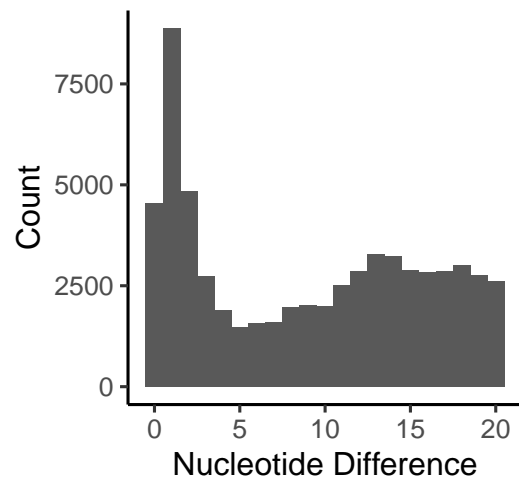
### IGHV4-59\*08

79224 sequences assigned  
4238 (5.3%) exact matches, in which:  
2520 unique CDR3  
7 unique J



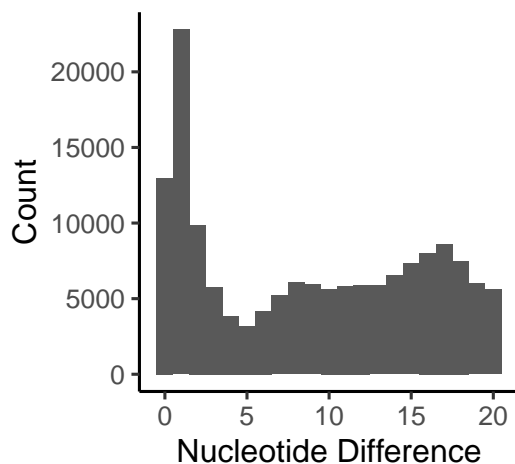
### IGHV4-61\*02

77097 sequences assigned  
4537 (5.9%) exact matches, in which:  
2835 unique CDR3  
7 unique J



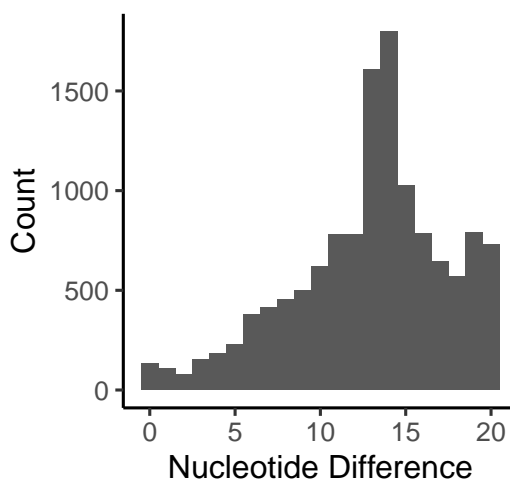
### IGHV4-39\*07

190873 sequences assigned  
12983 (6.8%) exact matches, in which:  
7872 unique CDR3  
7 unique J



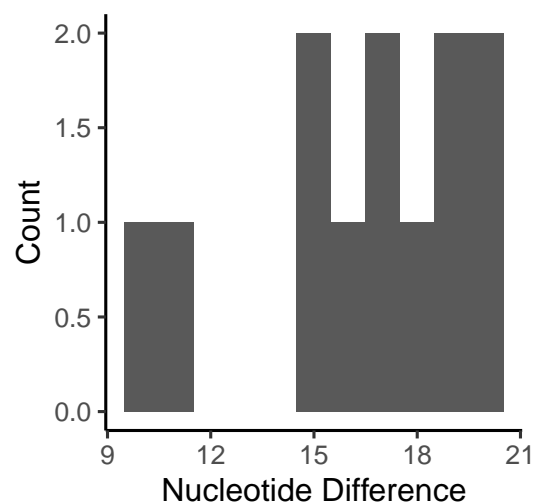
### IGHV4-59\*11

18702 sequences assigned  
133 (0.7%) exact matches, in which:  
113 unique CDR3  
6 unique J



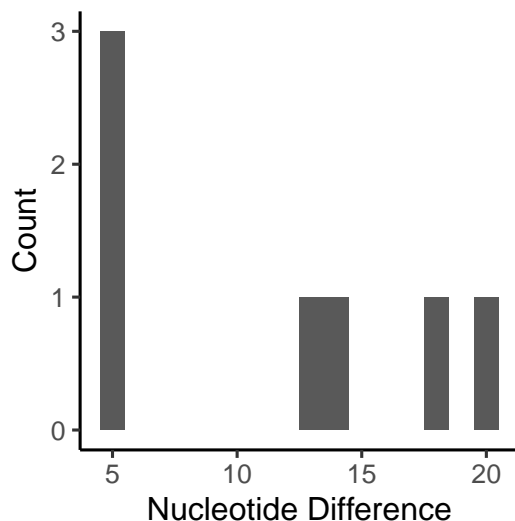
### IGHV1/OR15-1\*04

14 sequences assigned  
No exact matches.



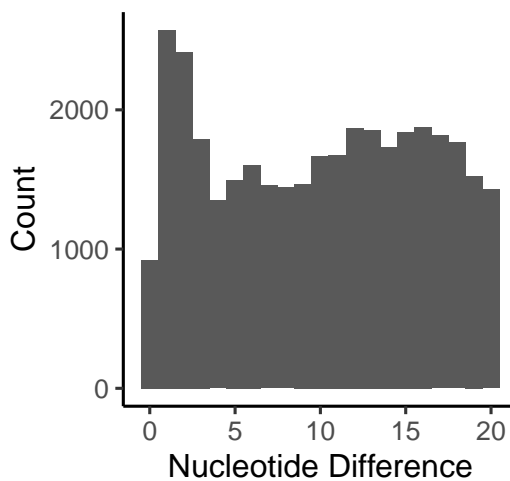
### IGHV4-55\*09

10 sequences assigned  
No exact matches.



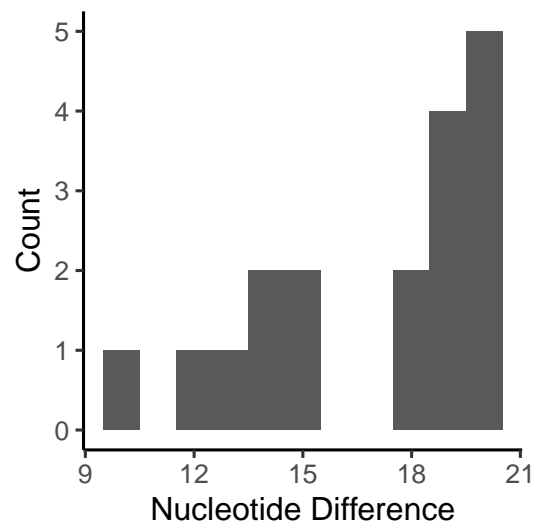
### IGHV4-59\*12

43275 sequences assigned  
920 (2.1%) exact matches, in which:  
768 unique CDR3  
7 unique J



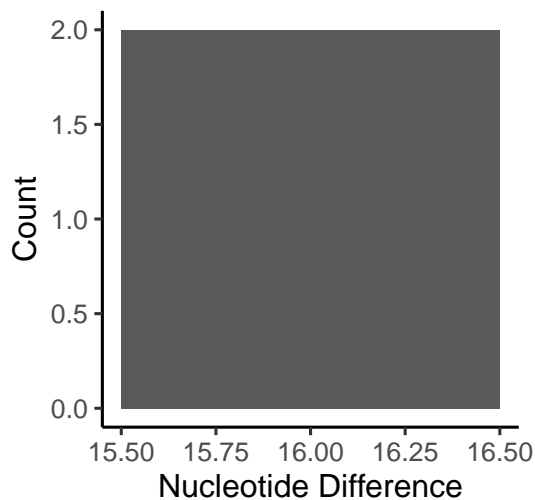
### IGHV1/OR15-2\*02\_03

35 sequences assigned  
No exact matches.



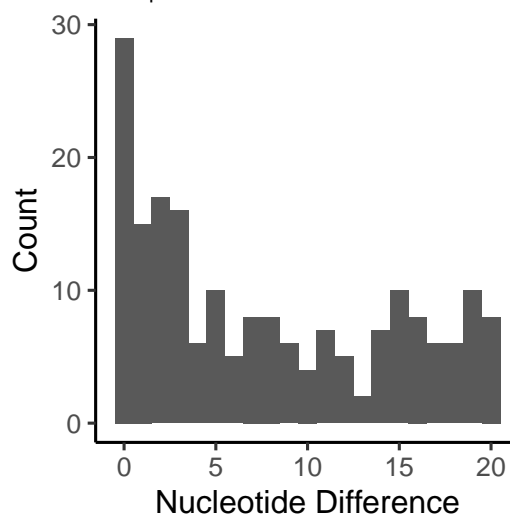
### IGHV1/OR15-3\*02

6 sequences assigned  
No exact matches.



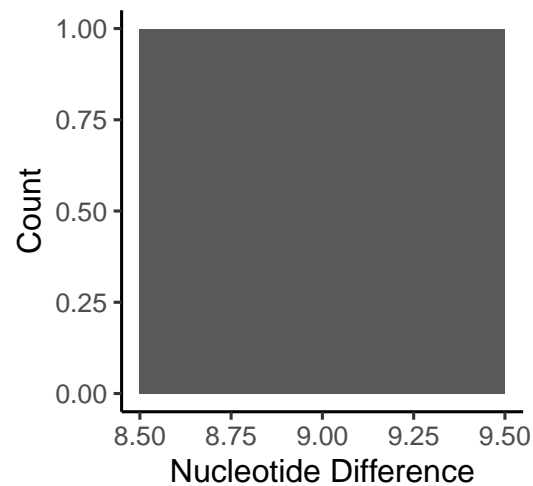
### IGHV5-51\*04

245 sequences assigned  
29 (11.8%) exact matches, in which:  
27 unique CDR3  
5 unique J



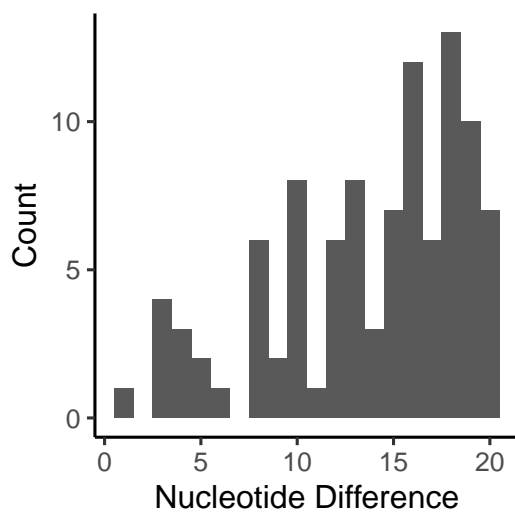
### IGHV5-78\*01

1 sequences assigned  
No exact matches.



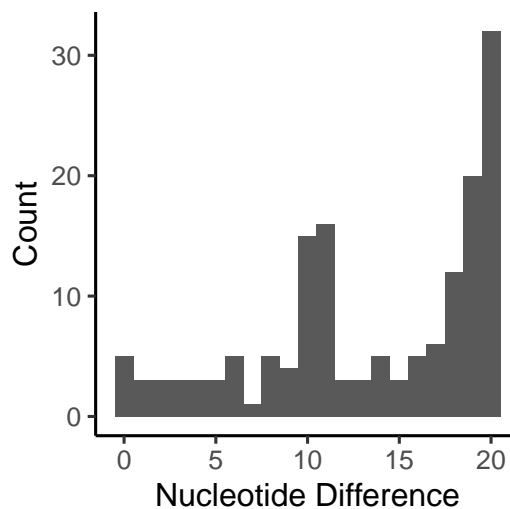
### IGHV4/OR15-8\*01

188 sequences assigned  
No exact matches.



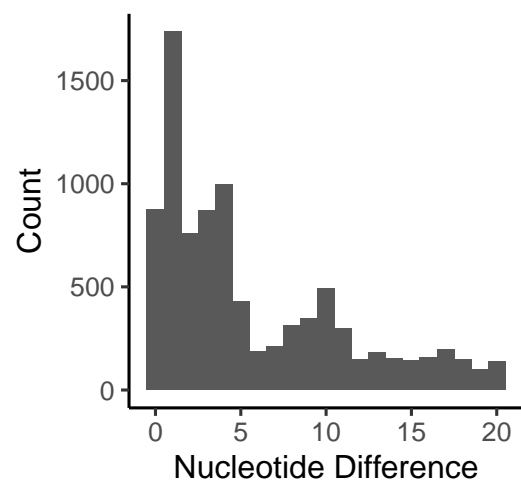
### IGHV5-51\*06

208 sequences assigned  
5 (2.4%) exact matches, in which:  
5 unique CDR3  
2 unique J



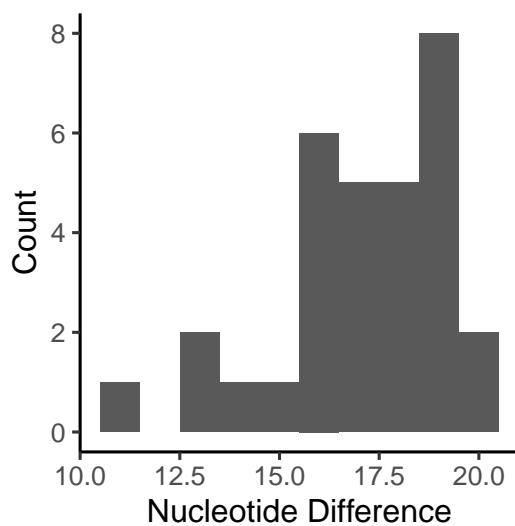
### IGHV6-1\*01\_02

9490 sequences assigned  
875 (9.2%) exact matches, in which:  
546 unique CDR3  
7 unique J



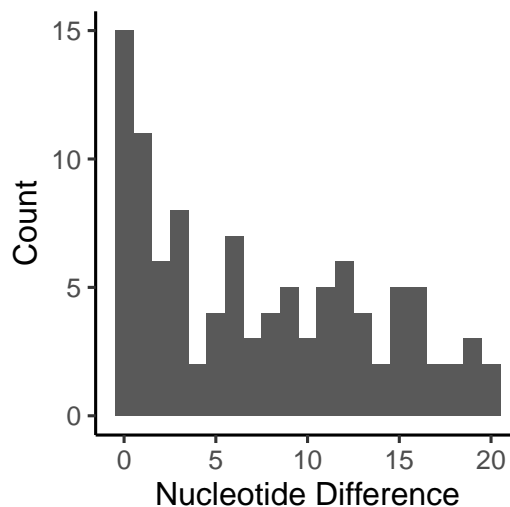
### IGHV4/OR15-8\*02

154 sequences assigned  
No exact matches.



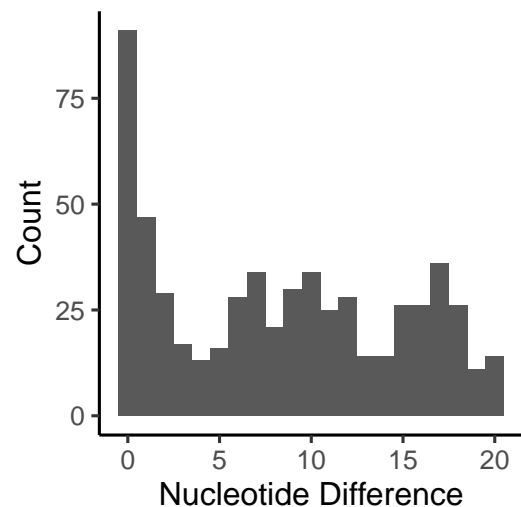
### IGHV5-51\*07

124 sequences assigned  
15 (12.1%) exact matches, in which:  
15 unique CDR3  
4 unique J



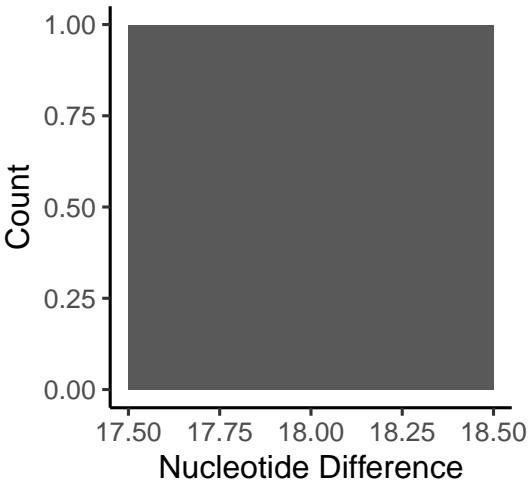
### IGHV7-4-1\*02

789 sequences assigned  
91 (11.5%) exact matches, in which:  
83 unique CDR3  
5 unique J

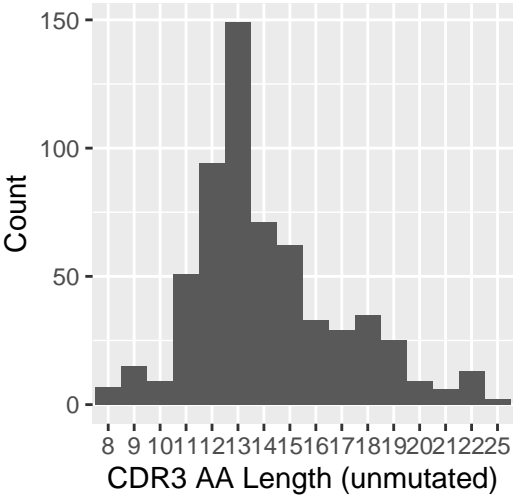


# IGHV7-81\*01

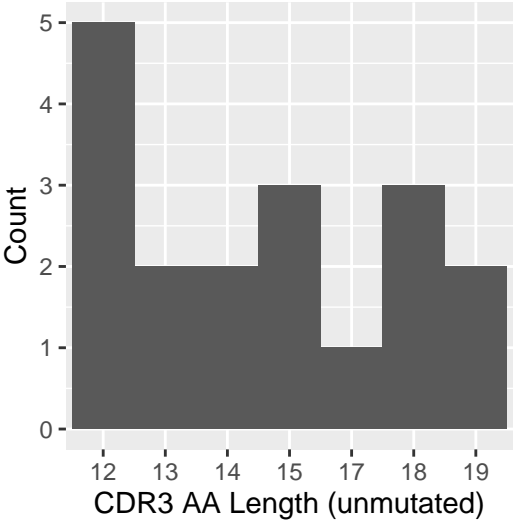
48 sequences assigned  
No exact matches.



IGHV1-3\*01\_05\_C134A

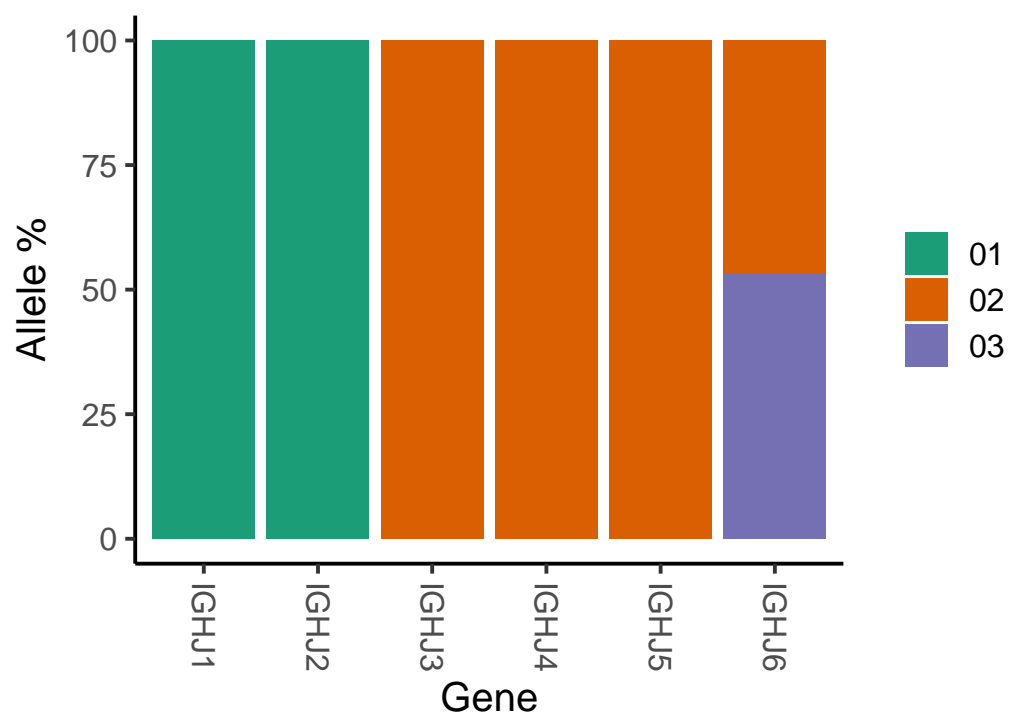


IGHV4-28\*02\_05\_A83T\_G92C\_G107A\_C133T\_C135G\_A164T\_G176C\_G191C\_A215G\_G216C\_C





Allele Usage



Sequence Count by IGHJ6 allele usage

