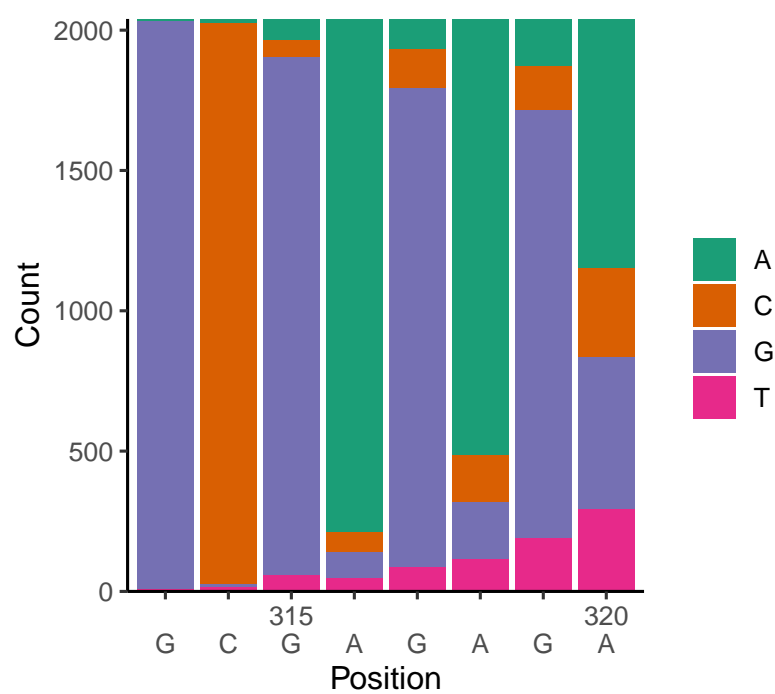
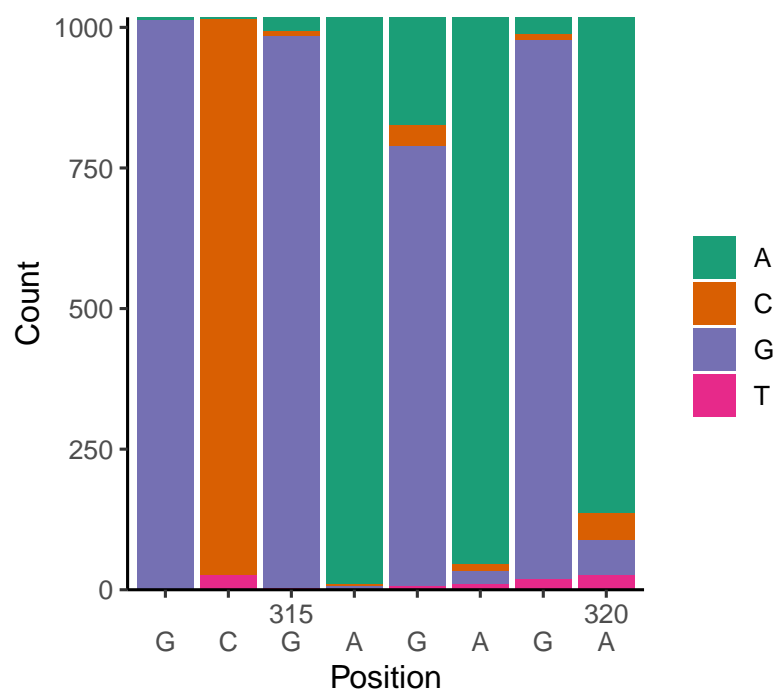


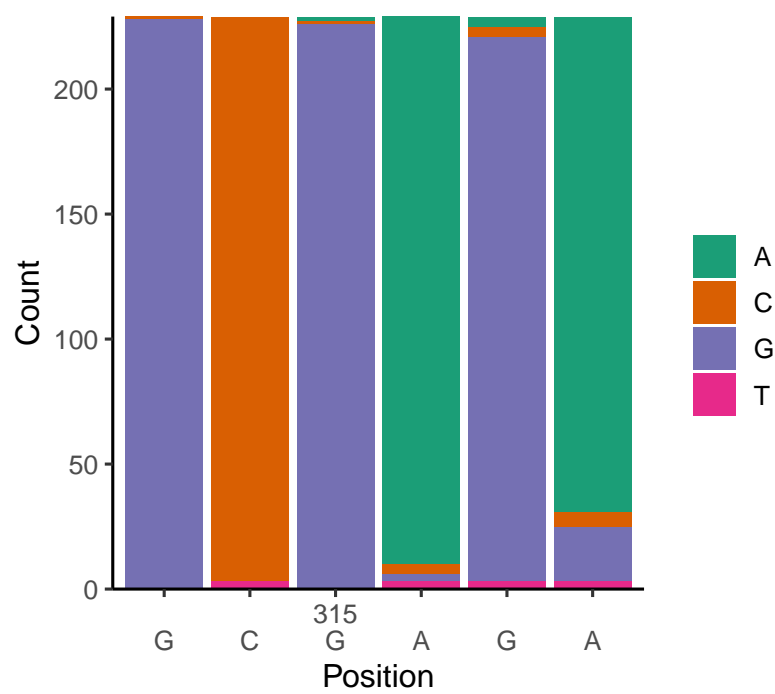
Gene IGHV1-69\*08\_C191T



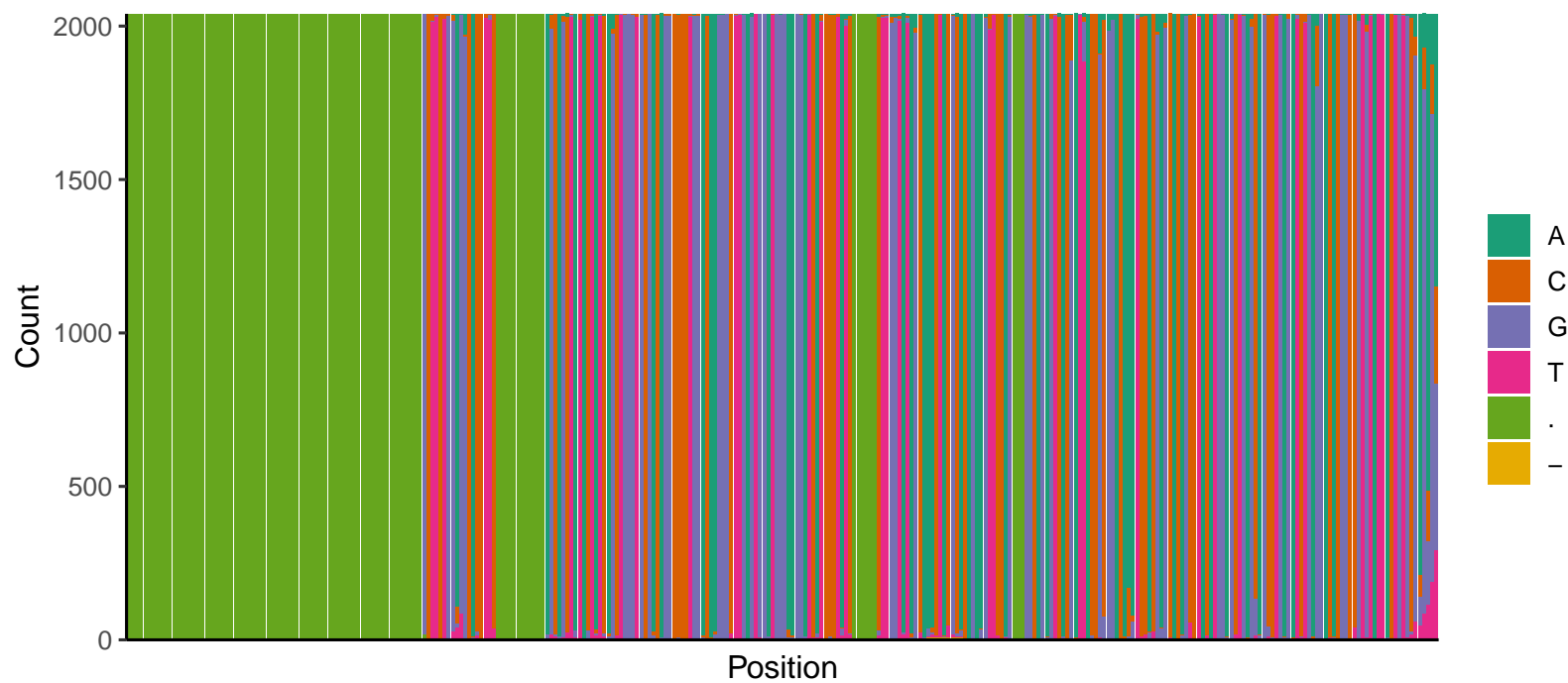
Gene IGHV3-53\*05\_C300T



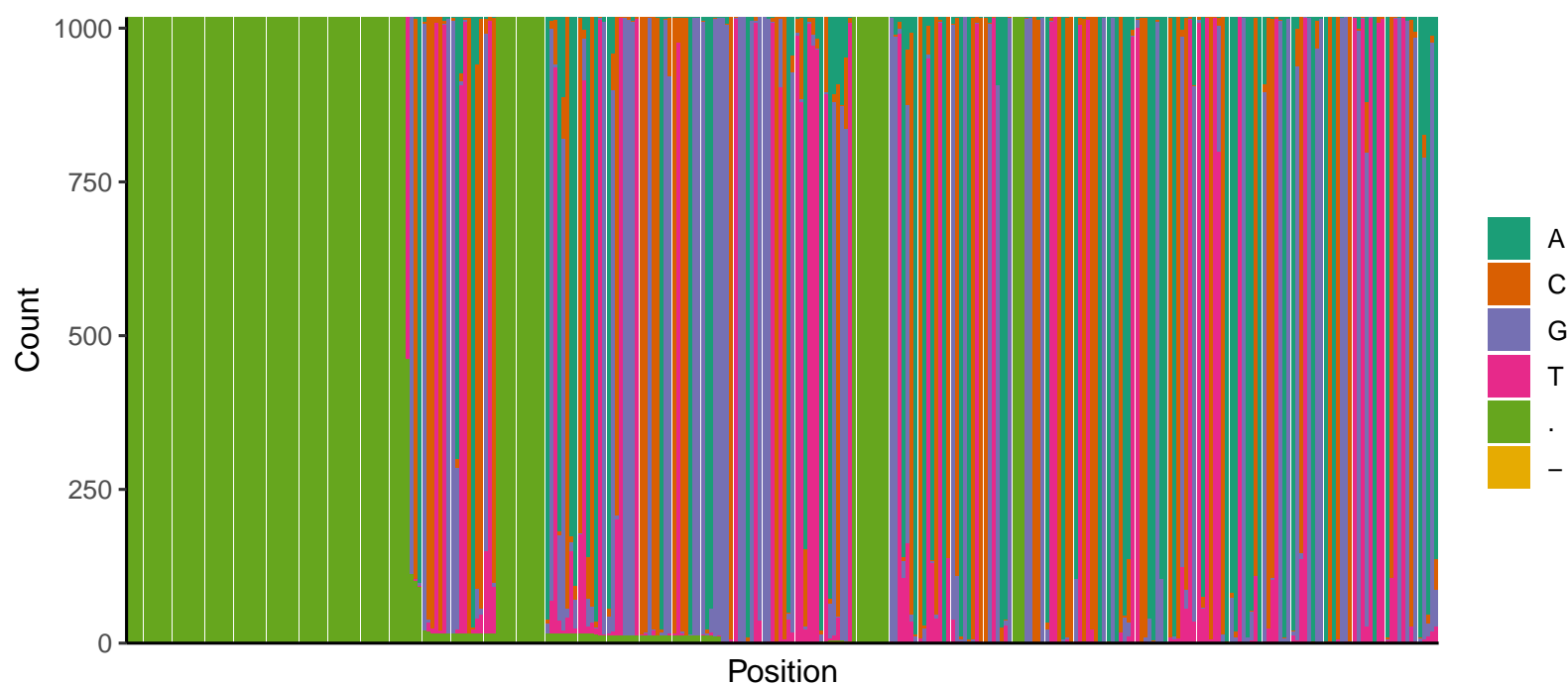
Gene IGHV5-10-1\*01\_03\_T258C



Gene IGHV1-69\*08\_C191T



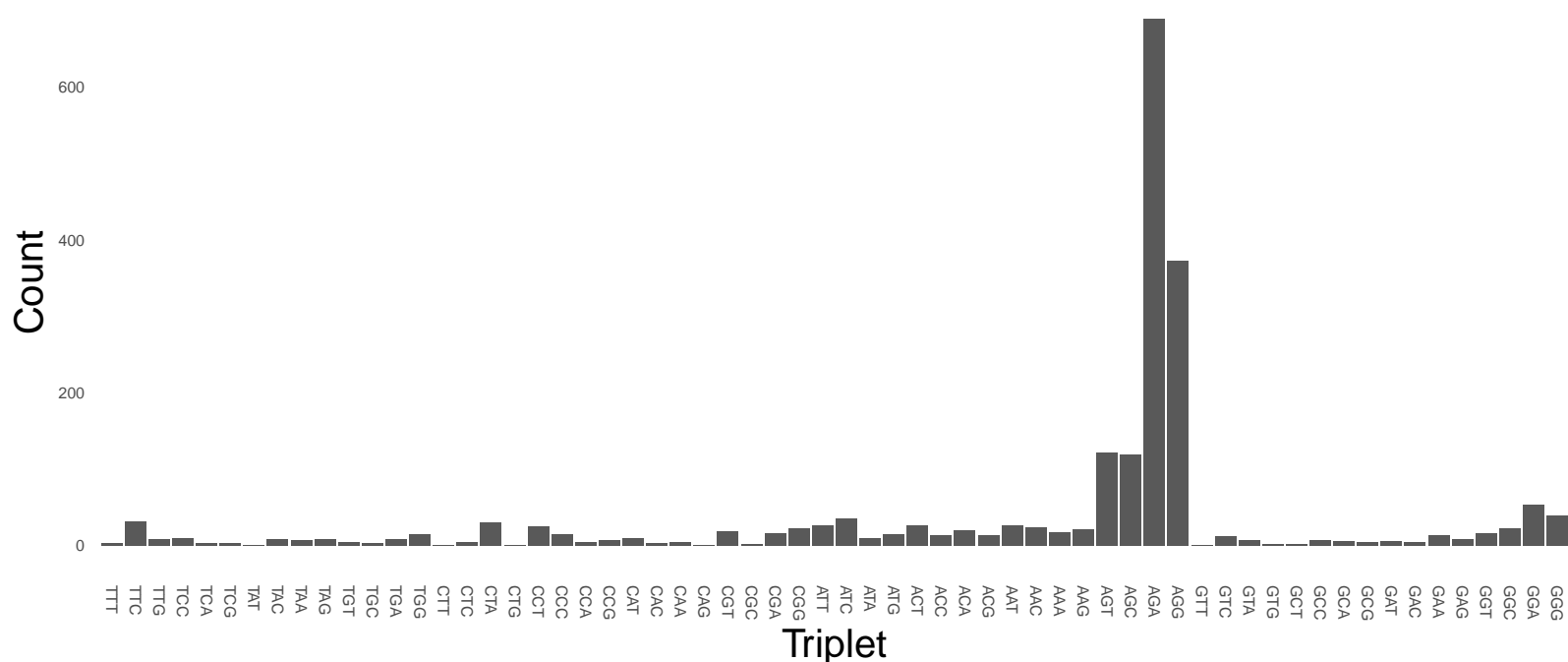
Gene IGHV3-53\*05\_C300T



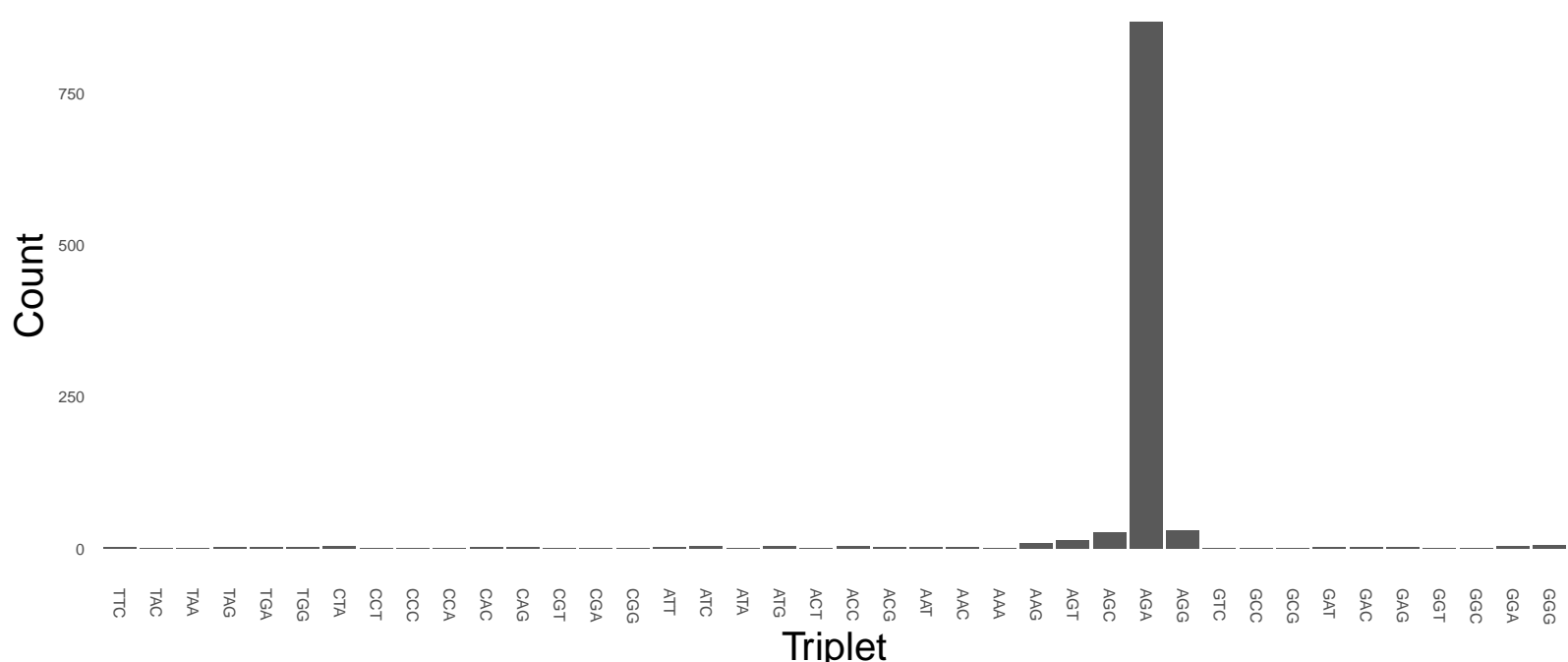
Gene IGHV5-10-1\*01\_03\_T258C



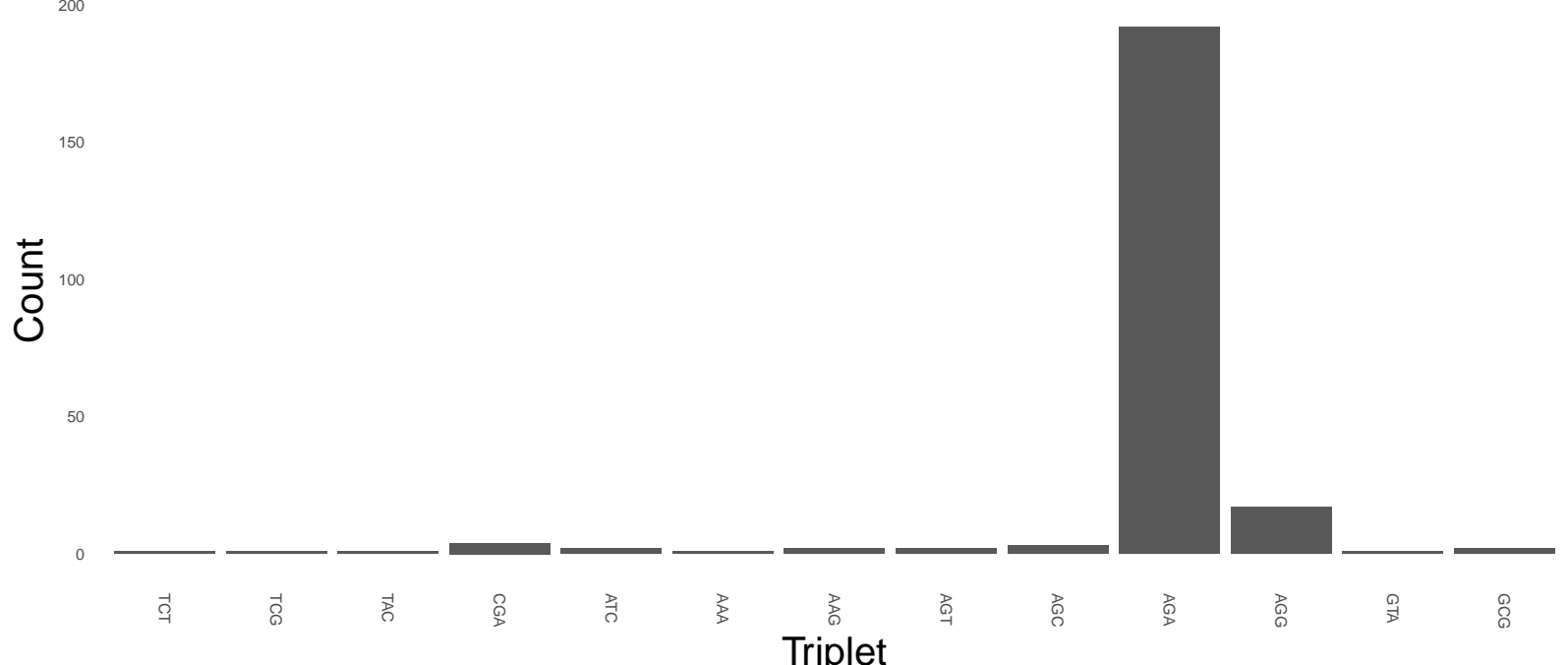
IGHV1-69\*08\_C191T- Final 3 nucleotides as a triplet



IGHV3-53\*05\_C300T- Final 3 nucleotides as a triplet

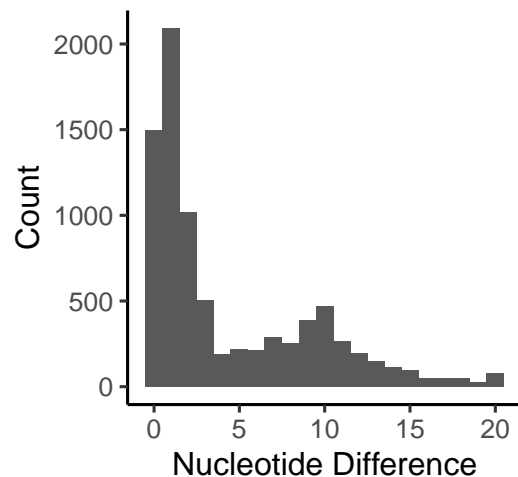


IGHV5-10-1\*01\_03\_T258C- Final 3 nucleotides as a triplet



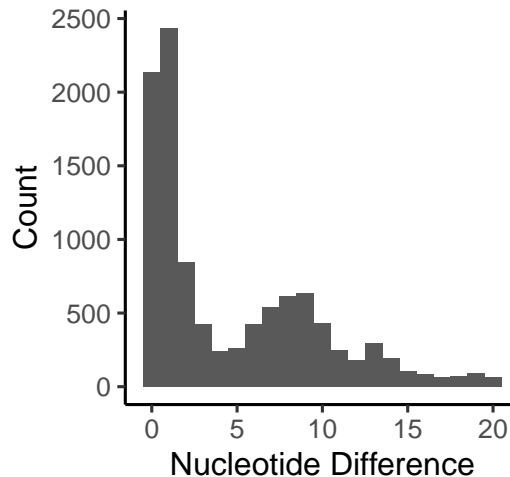
### IGHV1-2\*02

8854 sequences assigned  
1495 (16.9%) exact matches, in which:  
1271 unique CDR3  
7 unique J



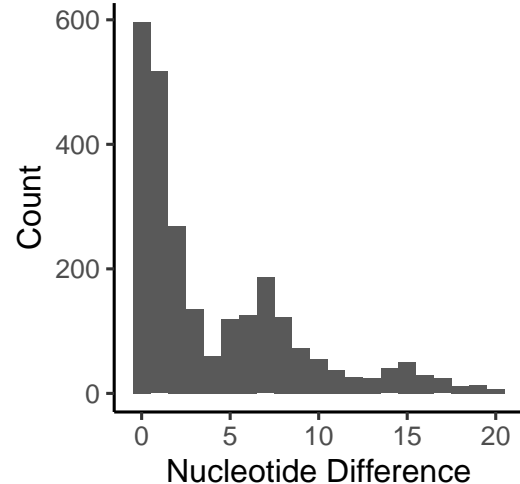
### IGHV1-18\*01

11052 sequences assigned  
2134 (19.3%) exact matches, in which:  
1794 unique CDR3  
7 unique J



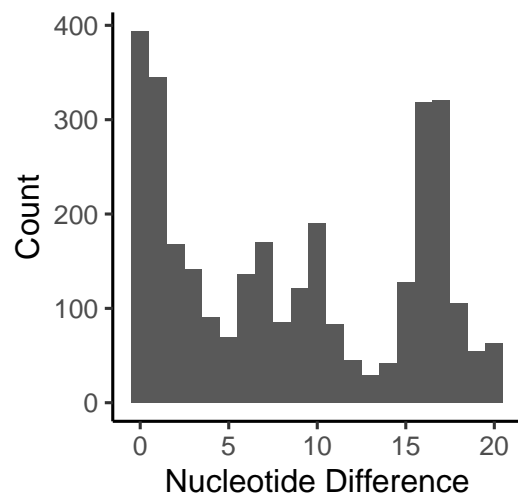
### IGHV1-46\*01

2550 sequences assigned  
597 (23.4%) exact matches, in which:  
528 unique CDR3  
7 unique J



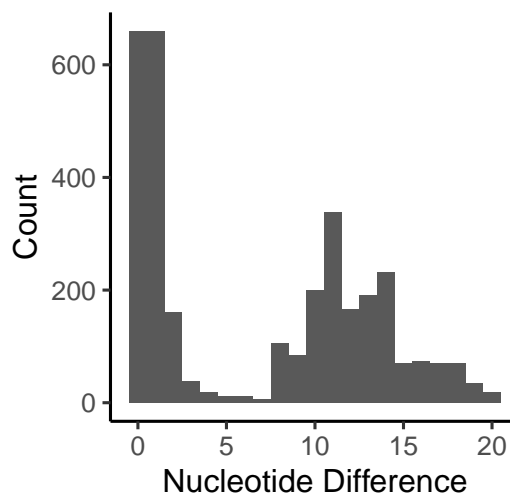
### IGHV1-3\*01\_05

3328 sequences assigned  
394 (11.8%) exact matches, in which:  
333 unique CDR3  
7 unique J



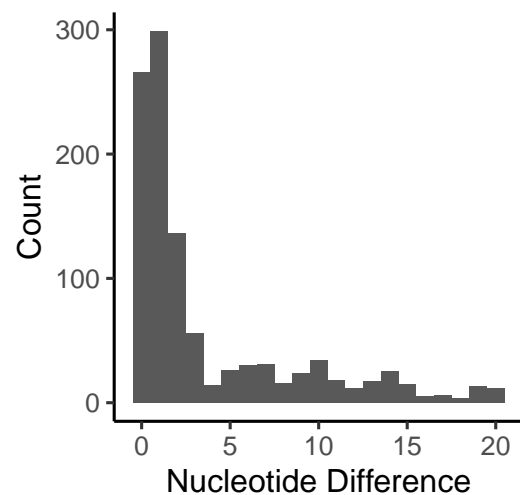
### IGHV1-24\*01

3313 sequences assigned  
660 (19.9%) exact matches, in which:  
556 unique CDR3  
7 unique J



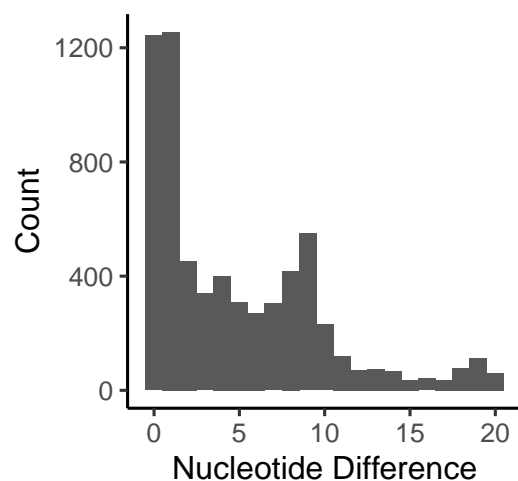
### IGHV1-46\*03

1093 sequences assigned  
266 (24.3%) exact matches, in which:  
210 unique CDR3  
7 unique J



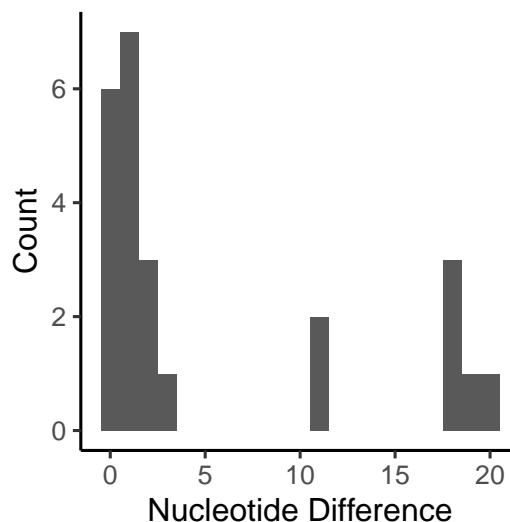
### IGHV1-8\*01

6644 sequences assigned  
1243 (18.7%) exact matches, in which:  
1074 unique CDR3  
7 unique J



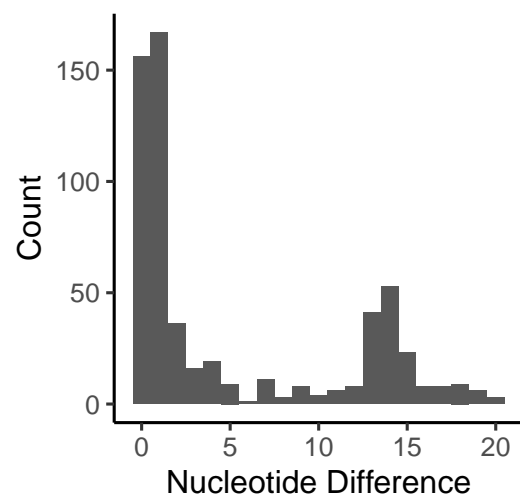
### IGHV1-45\*02

24 sequences assigned  
6 (25%) exact matches, in which:  
6 unique CDR3  
5 unique J



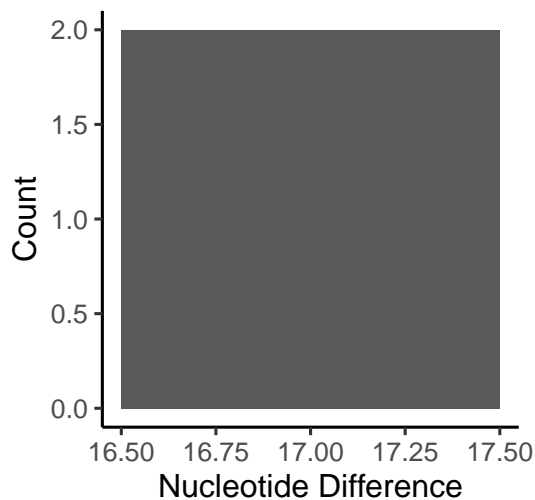
### IGHV1-58\*02

612 sequences assigned  
156 (25.5%) exact matches, in which:  
127 unique CDR3  
6 unique J



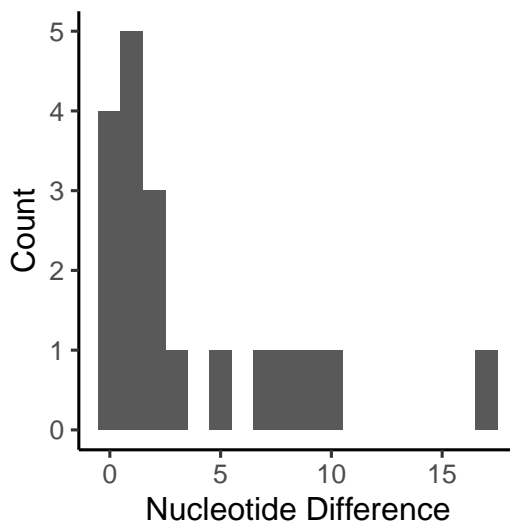
### IGHV1-69-2\*01

3 sequences assigned  
No exact matches.



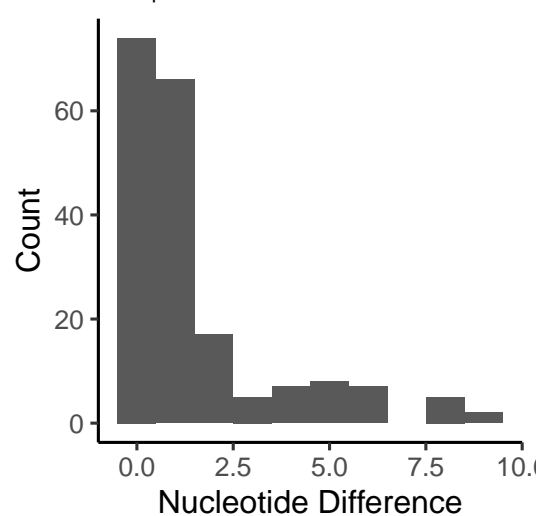
### IGHV1-69D\*01

19 sequences assigned  
4 (21.1%) exact matches, in which:  
4 unique CDR3  
2 unique J



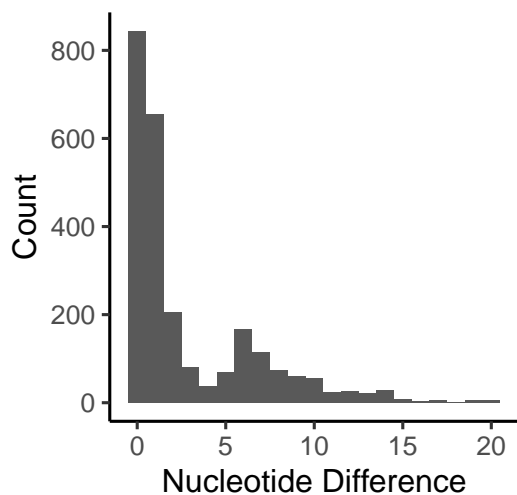
### IGHV2-26\*01

204 sequences assigned  
74 (36.3%) exact matches, in which:  
65 unique CDR3  
6 unique J



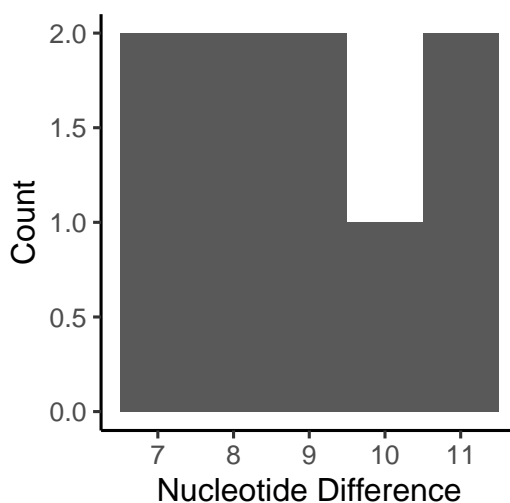
### IGHV1-69\*04\_09

2783 sequences assigned  
844 (30.3%) exact matches, in which:  
767 unique CDR3  
7 unique J



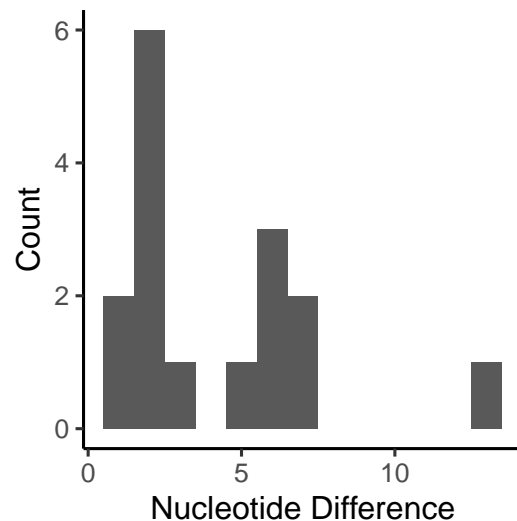
### IGHV1-NL1\*01

9 sequences assigned  
No exact matches.



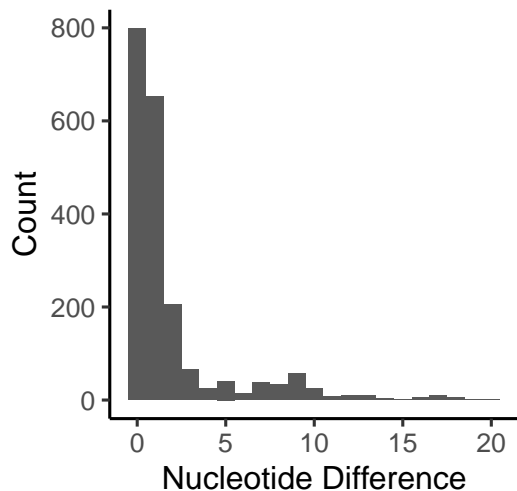
### IGHV2-70\*12

16 sequences assigned  
No exact matches.



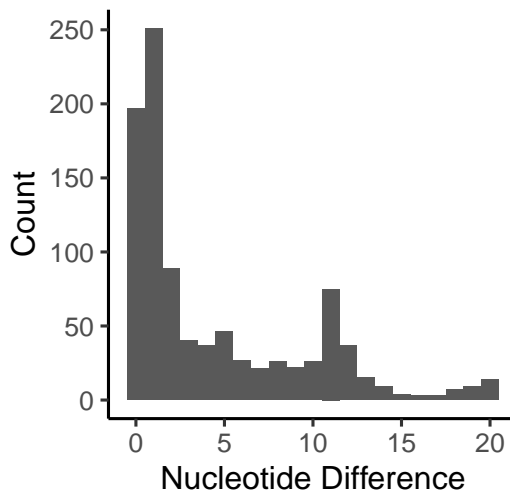
### IGHV1-69\*08\_C191T

2040 sequences assigned  
799 (39.2%) exact matches, in which:  
717 unique CDR3  
7 unique J



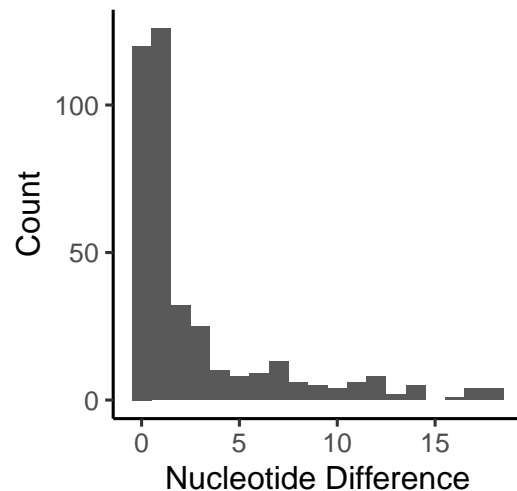
### IGHV2-5\*02

1030 sequences assigned  
197 (19.1%) exact matches, in which:  
167 unique CDR3  
7 unique J



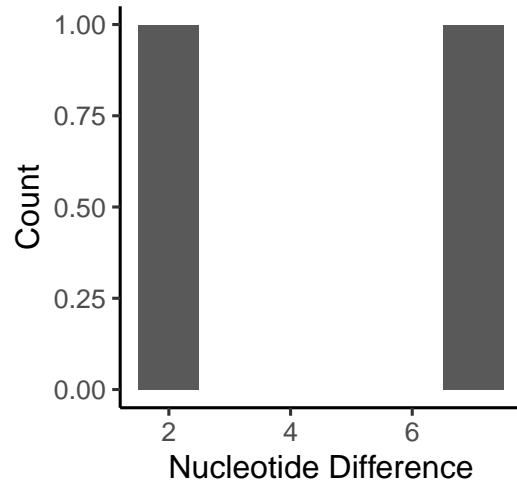
### IGHV2-70\*11\_15

390 sequences assigned  
120 (30.8%) exact matches, in which:  
95 unique CDR3  
5 unique J



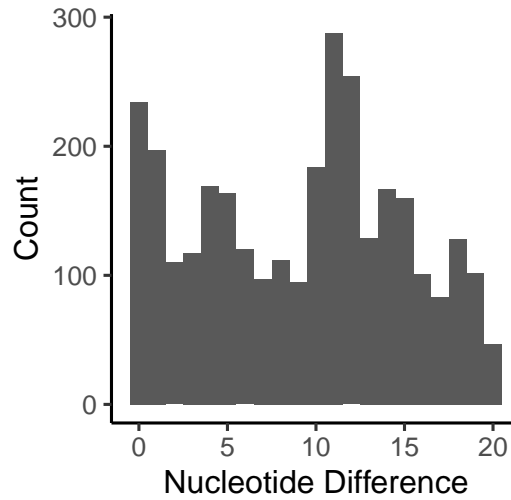
### IGHV2-70D\*04

2 sequences assigned  
No exact matches.



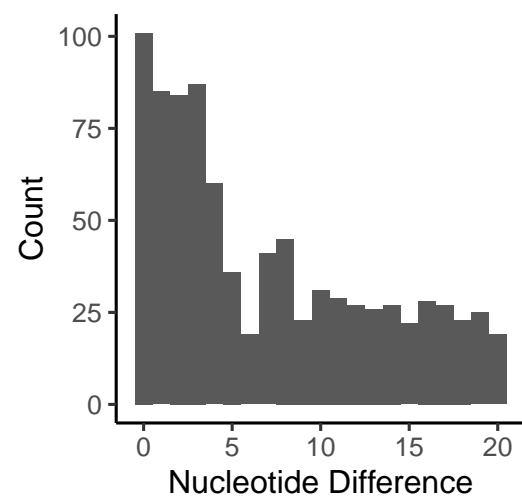
### IGHV3-7\*04

3352 sequences assigned  
234 (7%) exact matches, in which:  
146 unique CDR3  
7 unique J



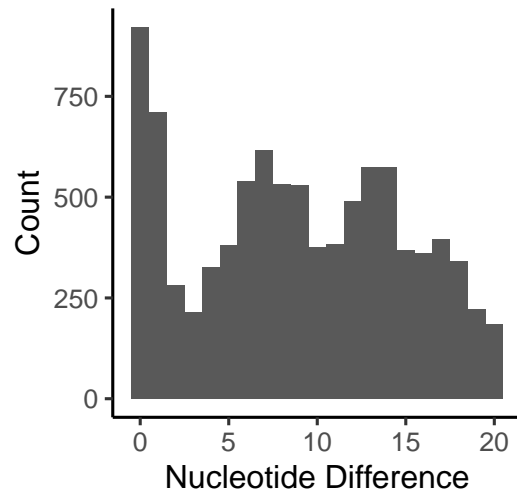
### IGHV3-11\*04

968 sequences assigned  
101 (10.4%) exact matches, in which:  
99 unique CDR3  
6 unique J



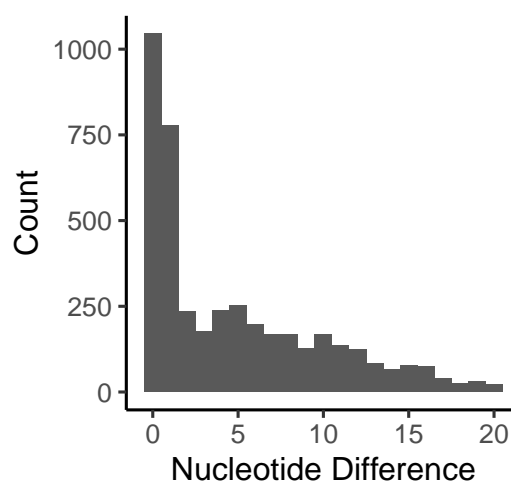
### IGHV3-7\*01

10395 sequences assigned  
922 (8.9%) exact matches, in which:  
653 unique CDR3  
7 unique J



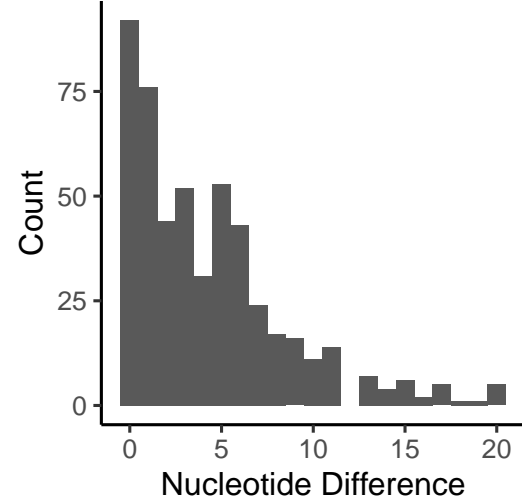
### IGHV3-9\*01

4634 sequences assigned  
1045 (22.6%) exact matches, in which:  
639 unique CDR3  
7 unique J



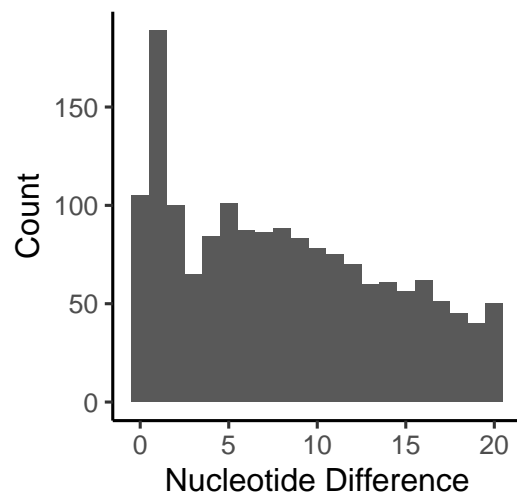
### IGHV3-11\*06

560 sequences assigned  
92 (16.4%) exact matches, in which:  
87 unique CDR3  
7 unique J



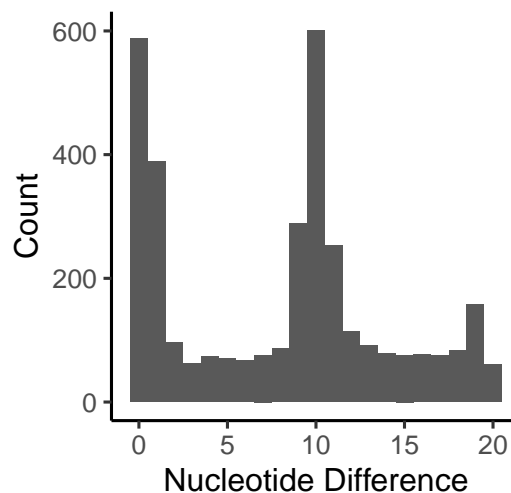
### IGHV3-7\*03

1924 sequences assigned  
105 (5.5%) exact matches, in which:  
80 unique CDR3  
6 unique J



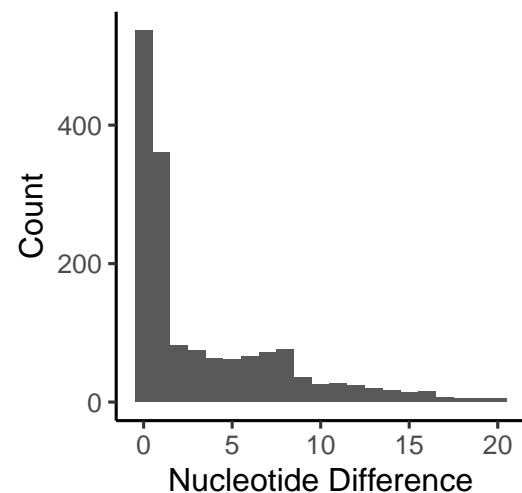
### IGHV3-11\*01

4603 sequences assigned  
588 (12.8%) exact matches, in which:  
410 unique CDR3  
6 unique J



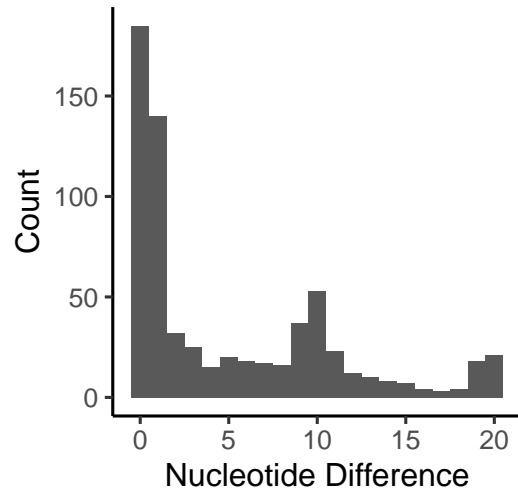
### IGHV3-11\*03\_05

1823 sequences assigned  
537 (29.5%) exact matches, in which:  
346 unique CDR3  
6 unique J



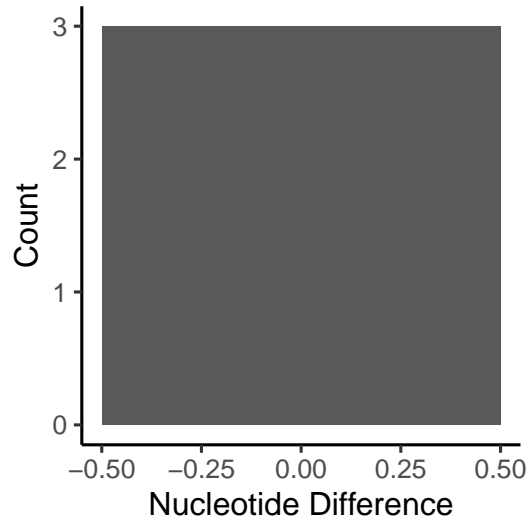
### IGHV3-13\*01

745 sequences assigned  
185 (24.8%) exact matches, in which:  
121 unique CDR3  
5 unique J



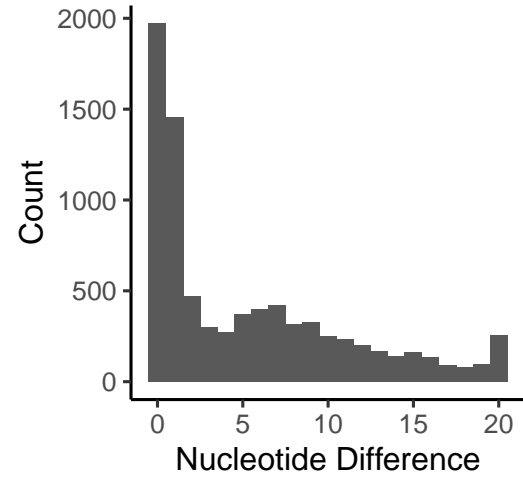
### IGHV3-19\*01

3 sequences assigned  
3 (100%) exact matches, in which:  
3 unique CDR3  
2 unique J



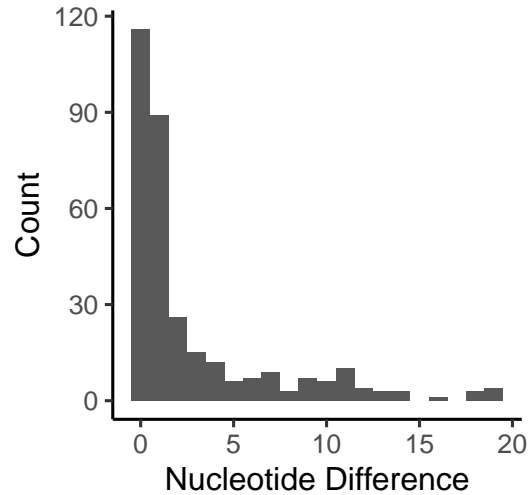
### IGHV3-21\*01\_02

9783 sequences assigned  
1972 (20.2%) exact matches, in which:  
1268 unique CDR3  
7 unique J



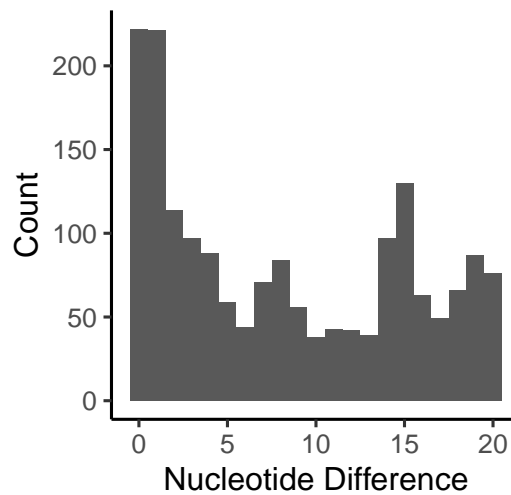
### IGHV3-13\*04

357 sequences assigned  
116 (32.5%) exact matches, in which:  
74 unique CDR3  
6 unique J



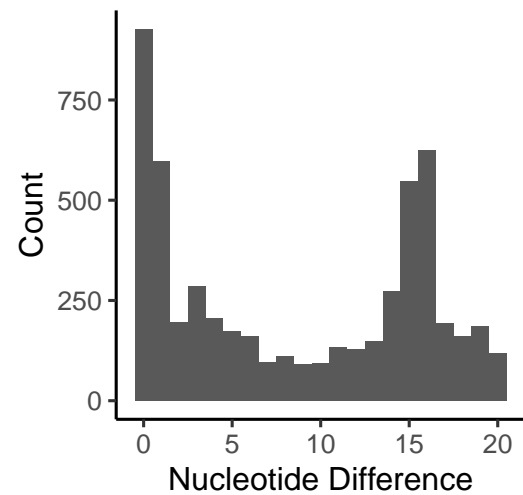
### IGHV3-20\*03\_04

2261 sequences assigned  
222 (9.8%) exact matches, in which:  
146 unique CDR3  
7 unique J



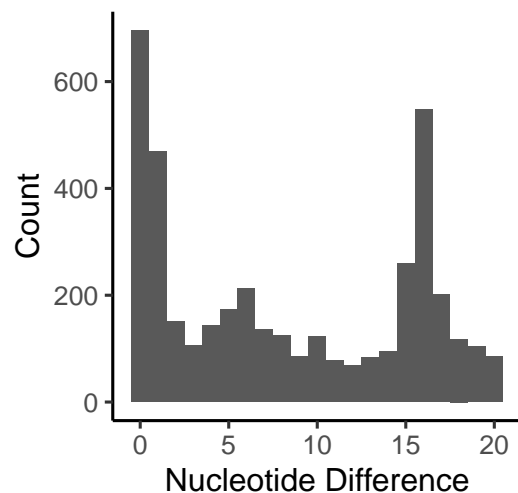
### IGHV3-30\*01

5843 sequences assigned  
927 (15.9%) exact matches, in which:  
622 unique CDR3  
7 unique J



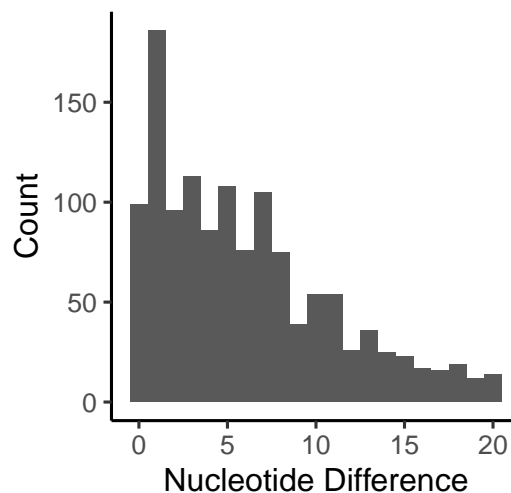
### IGHV3-15\*01\_02

4599 sequences assigned  
696 (15.1%) exact matches, in which:  
439 unique CDR3  
7 unique J



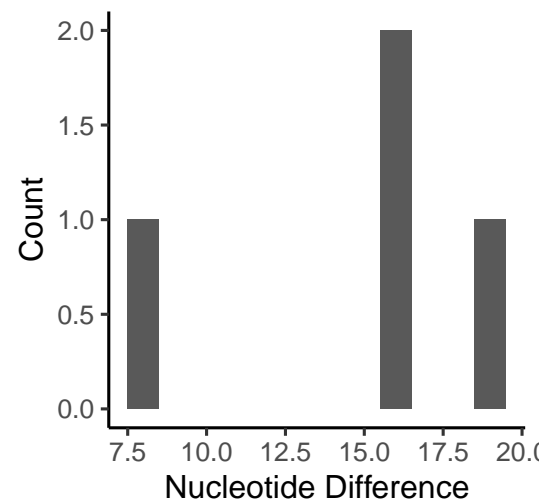
### IGHV3-21\*04

1394 sequences assigned  
99 (7.1%) exact matches, in which:  
92 unique CDR3  
6 unique J



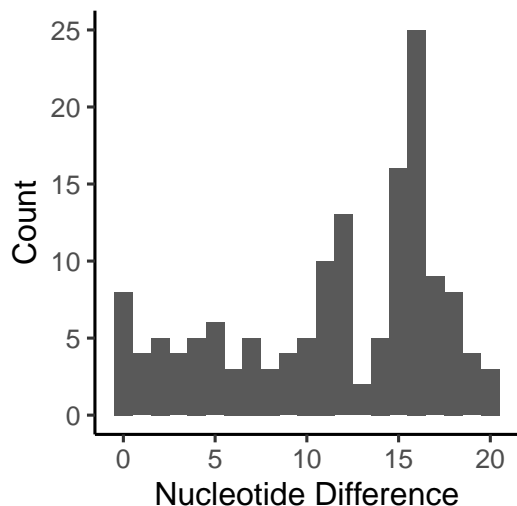
### IGHV3-30-3\*02

9 sequences assigned  
No exact matches.



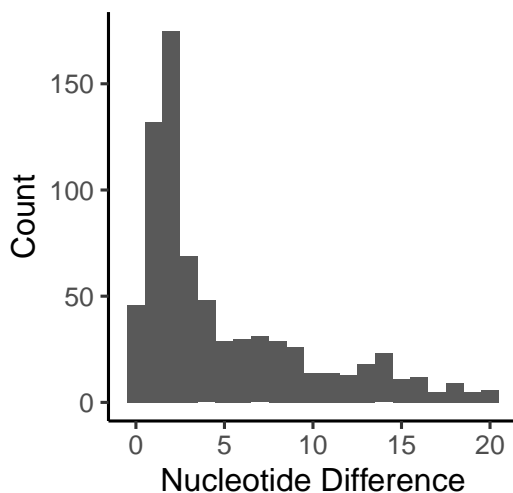
### IGHV3-30-3\*03

356 sequences assigned  
8 (2.2%) exact matches, in which:  
6 unique CDR3  
3 unique J



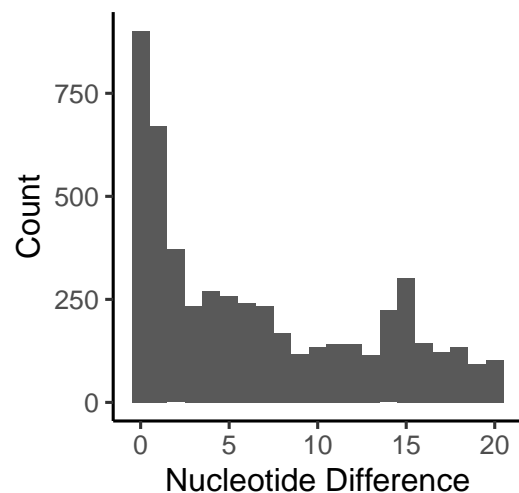
### IGHV3-33\*06

777 sequences assigned  
46 (5.9%) exact matches, in which:  
45 unique CDR3  
5 unique J



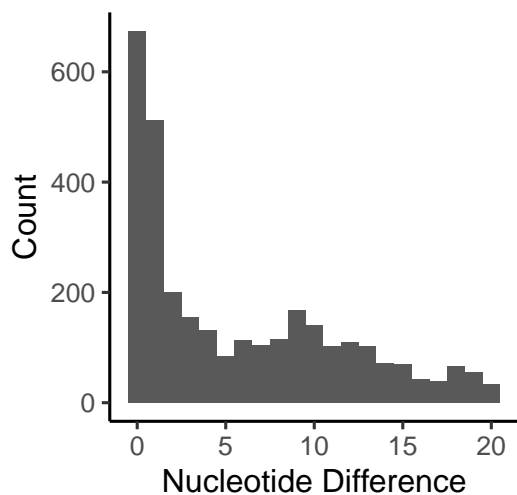
### IGHV3-48\*01

5810 sequences assigned  
902 (15.5%) exact matches, in which:  
610 unique CDR3  
7 unique J



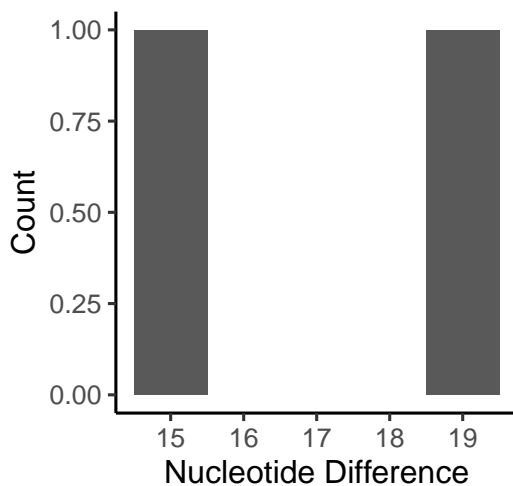
### IGHV3-33\*01

3476 sequences assigned  
674 (19.4%) exact matches, in which:  
457 unique CDR3  
7 unique J



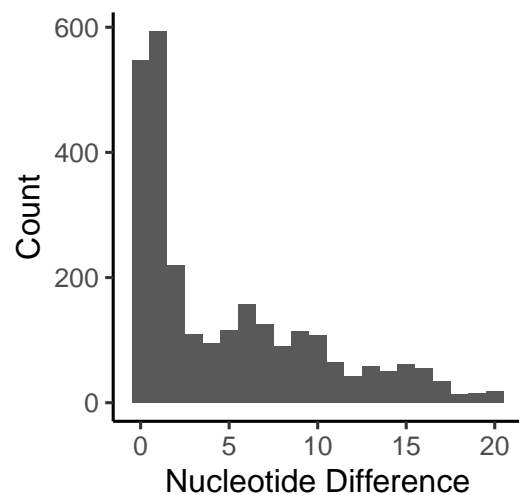
### IGHV3-35\*01

2 sequences assigned  
No exact matches.



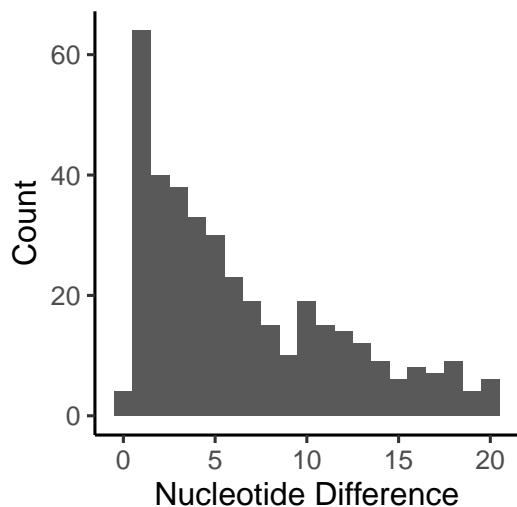
### IGHV3-48\*02

2808 sequences assigned  
547 (19.5%) exact matches, in which:  
339 unique CDR3  
7 unique J



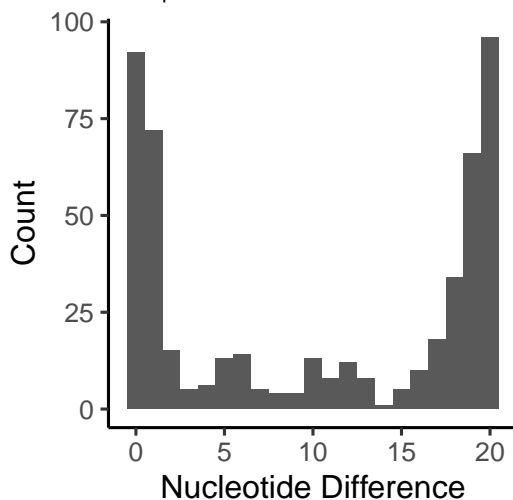
### IGHV3-33\*05

492 sequences assigned  
4 (0.8%) exact matches, in which:  
4 unique CDR3  
3 unique J



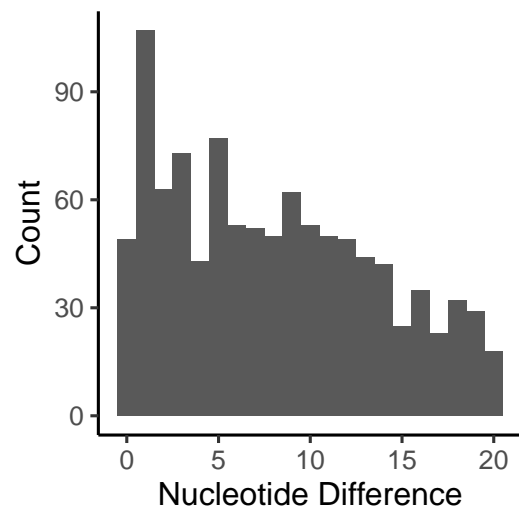
### IGHV3-43\*01

1113 sequences assigned  
92 (8.3%) exact matches, in which:  
53 unique CDR3  
6 unique J



### IGHV3-48\*04

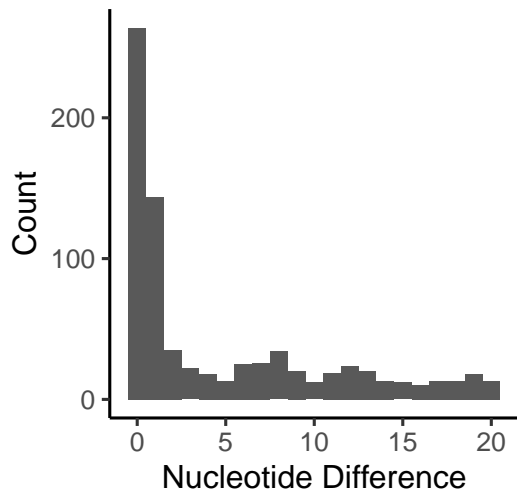
1165 sequences assigned  
49 (4.2%) exact matches, in which:  
49 unique CDR3  
5 unique J





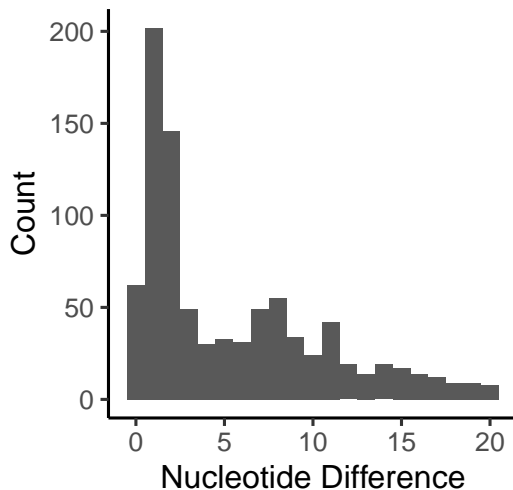
### IGHV3-49\*03\_05

909 sequences assigned  
264 (29%) exact matches, in which:  
165 unique CDR3  
7 unique J



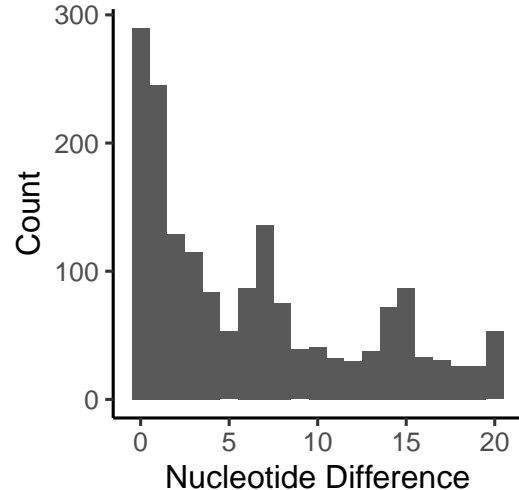
### IGHV3-53\*05\_C300T

1018 sequences assigned  
62 (6.1%) exact matches, in which:  
55 unique CDR3  
6 unique J



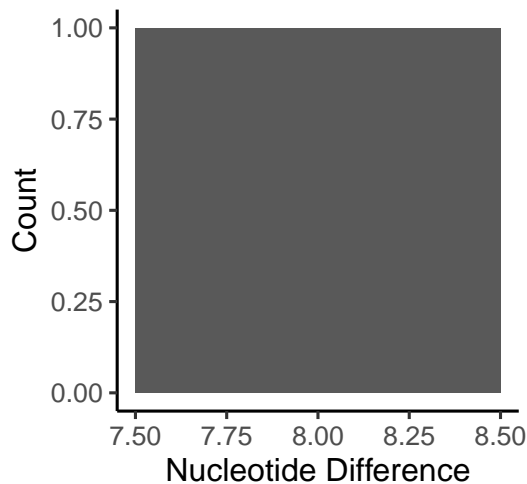
### IGHV3-66\*01

2368 sequences assigned  
290 (12.2%) exact matches, in which:  
201 unique CDR3  
6 unique J



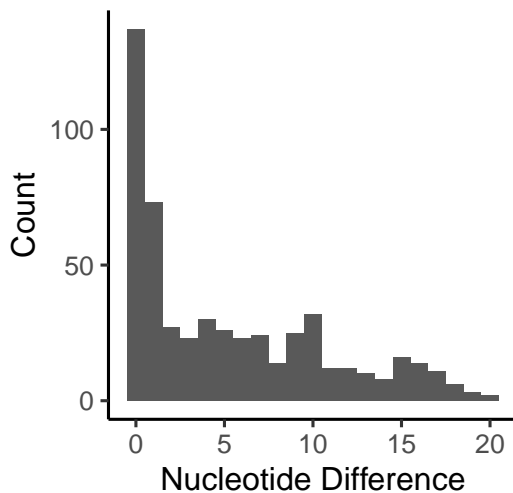
### IGHV3-52\*02

1 sequences assigned  
No exact matches.



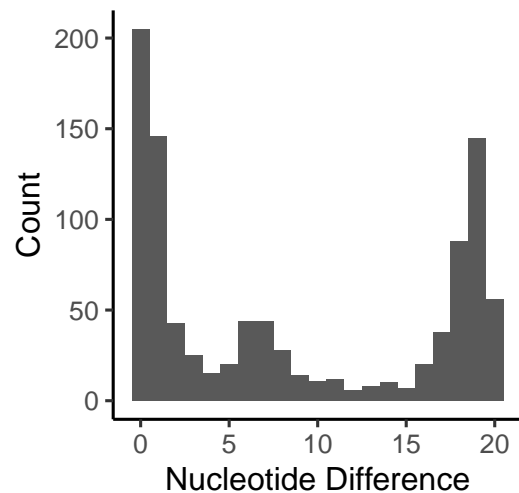
### IGHV3-64\*01

561 sequences assigned  
137 (24.4%) exact matches, in which:  
87 unique CDR3  
5 unique J



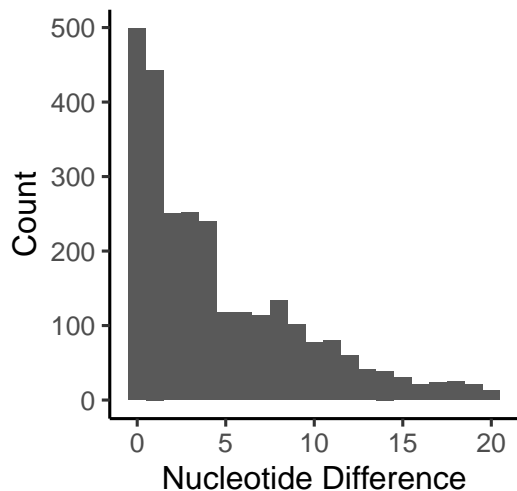
### IGHV3-66\*02

1157 sequences assigned  
205 (17.7%) exact matches, in which:  
132 unique CDR3  
7 unique J



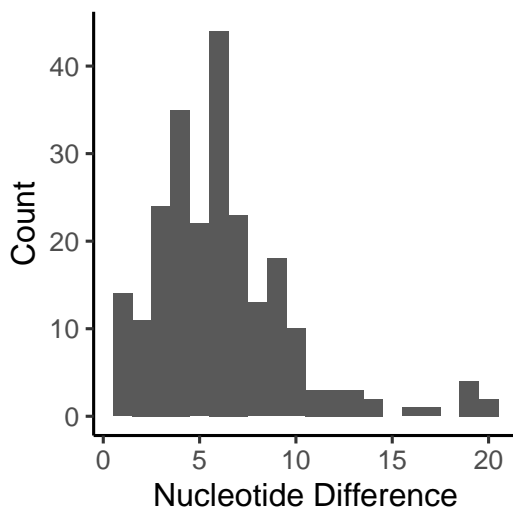
### IGHV3-53\*01\_02

2856 sequences assigned  
499 (17.5%) exact matches, in which:  
334 unique CDR3  
7 unique J



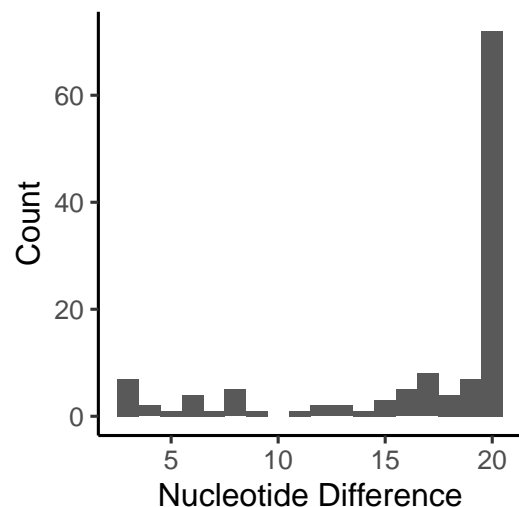
### IGHV3-64\*04

254 sequences assigned  
No exact matches.



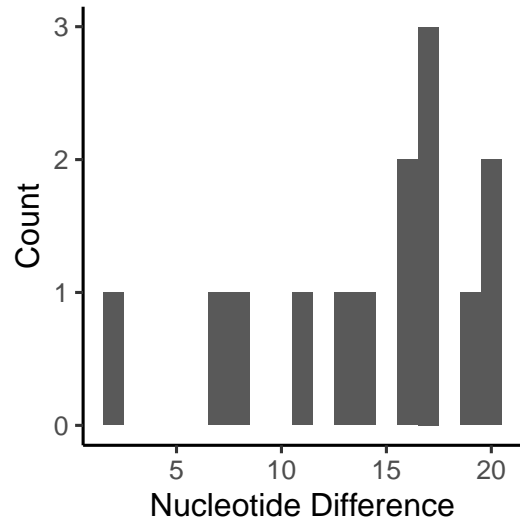
### IGHV3-69-1\*01

322 sequences assigned  
No exact matches.



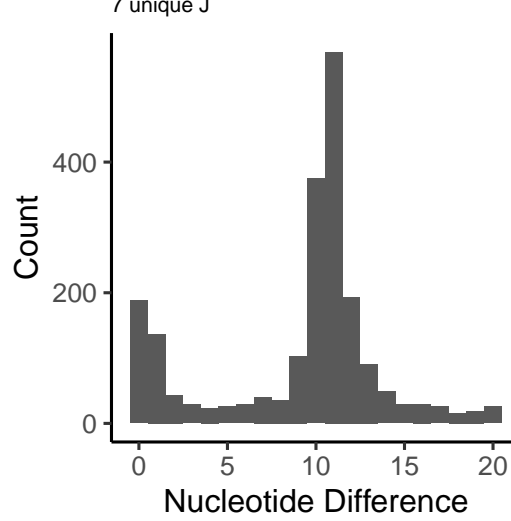
### IGHV3-69-1\*02

20 sequences assigned  
No exact matches.



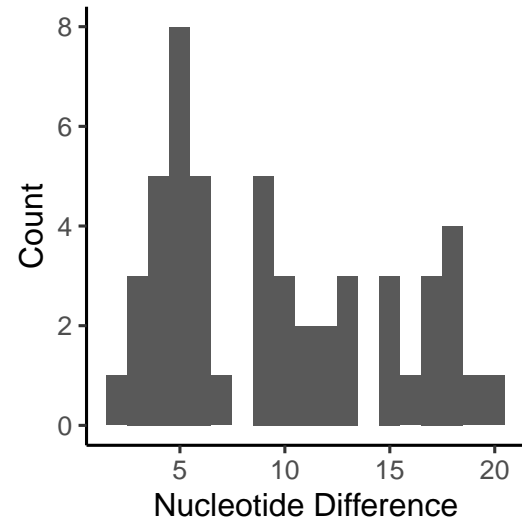
### IGHV3-73\*01\_02

2127 sequences assigned  
188 (8.8%) exact matches, in which:  
118 unique CDR3  
7 unique J



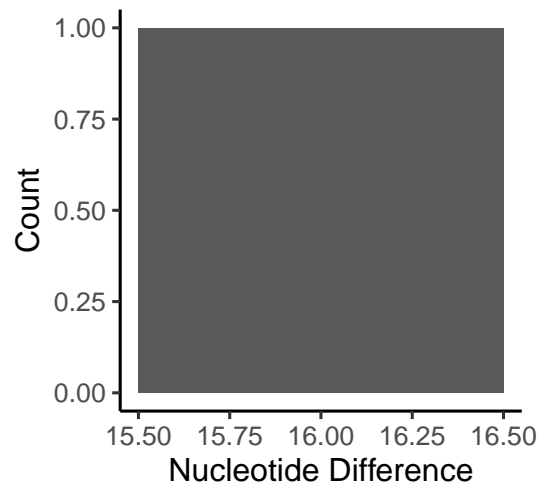
### IGHV3-NL1\*01

71 sequences assigned  
No exact matches.



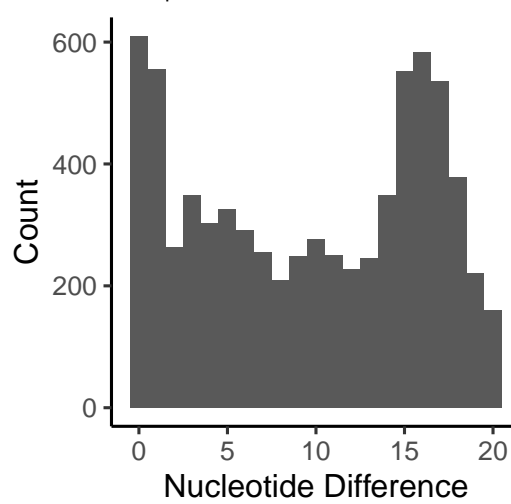
### IGHV3-71\*03

1 sequences assigned  
No exact matches.



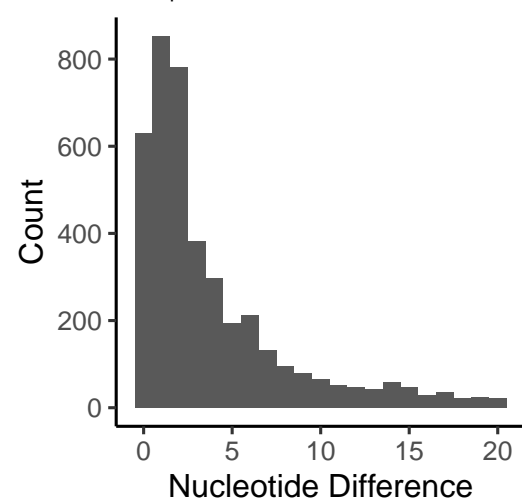
### IGHV3-74\*01\_02

8529 sequences assigned  
610 (7.2%) exact matches, in which:  
411 unique CDR3  
7 unique J



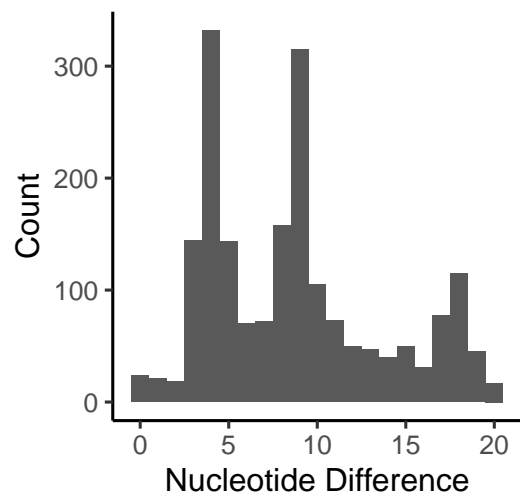
### IGHV4-4\*07

4964 sequences assigned  
629 (12.7%) exact matches, in which:  
545 unique CDR3  
7 unique J



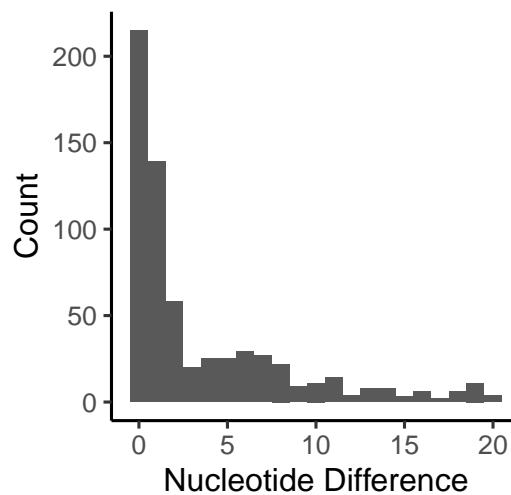
### IGHV3-72\*01

2006 sequences assigned  
24 (1.2%) exact matches, in which:  
16 unique CDR3  
6 unique J



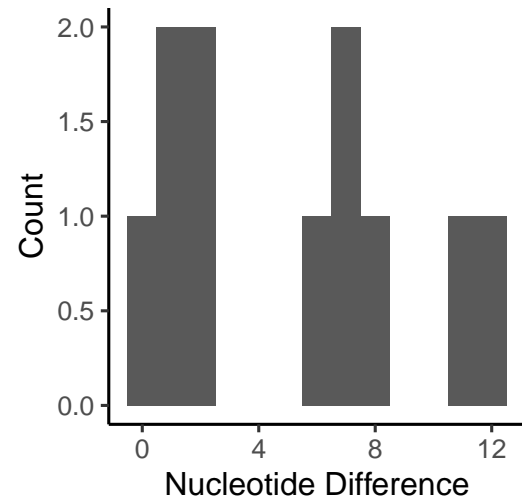
### IGHV3-64D\*06

850 sequences assigned  
215 (25.3%) exact matches, in which:  
127 unique CDR3  
7 unique J



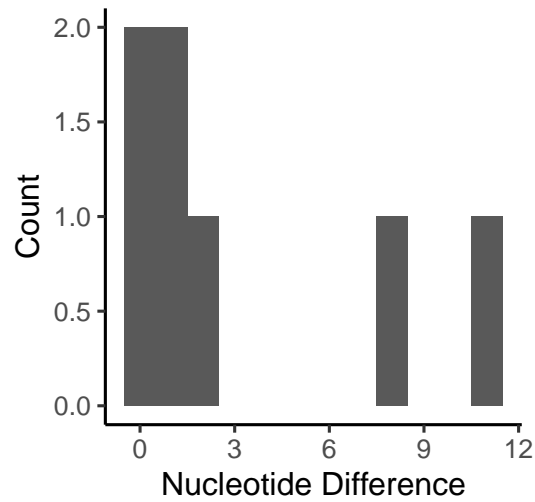
### IGHV4-28\*03

13 sequences assigned  
1 (7.7%) exact matches, in which:  
1 unique CDR3  
1 unique J



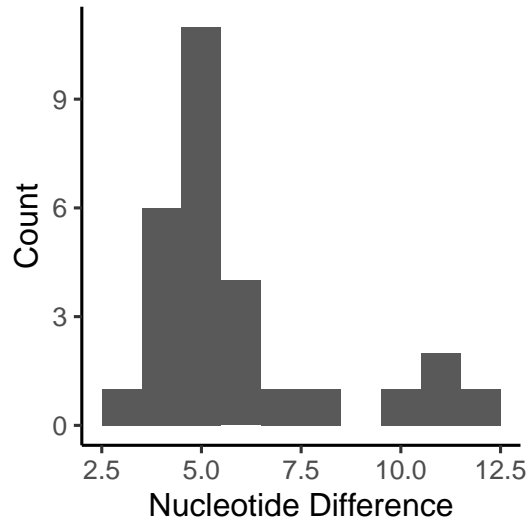
### IGHV4-28\*01\_07

7 sequences assigned  
2 (28.6%) exact matches, in which:  
2 unique CDR3  
2 unique J



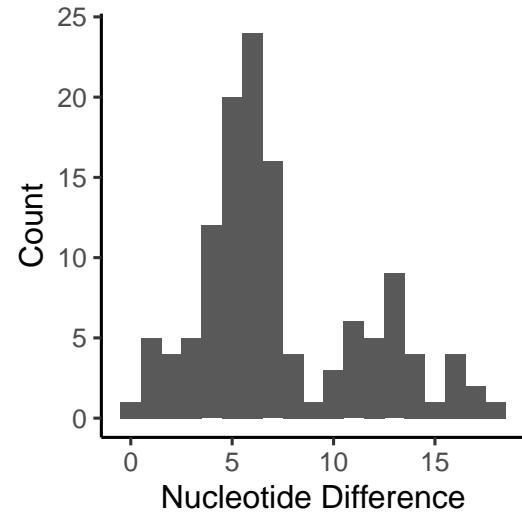
### IGHV4-30-4\*07

28 sequences assigned  
No exact matches.



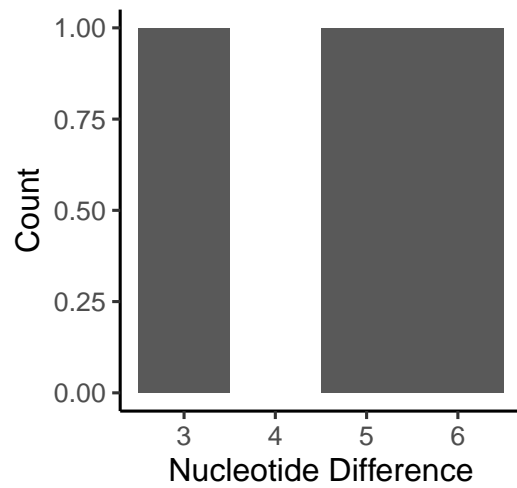
### IGHV4-31\*03\_04

148 sequences assigned  
1 (0.7%) exact matches, in which:  
1 unique CDR3  
1 unique J



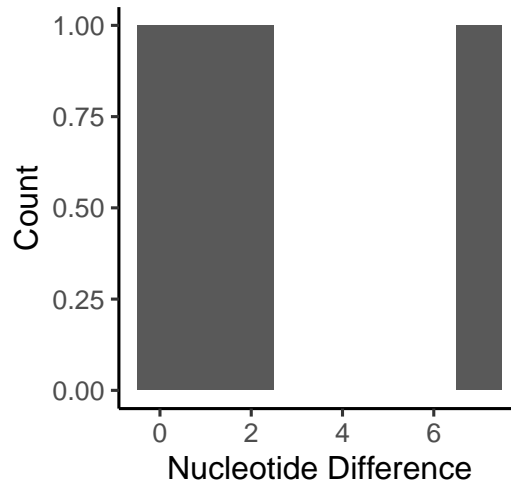
### IGHV4-28\*02\_05

3 sequences assigned  
No exact matches.



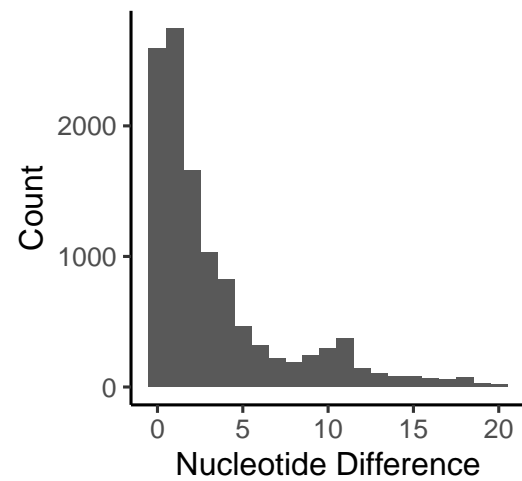
### IGHV4-30-4\*08

5 sequences assigned  
1 (20%) exact matches, in which:  
1 unique CDR3  
1 unique J



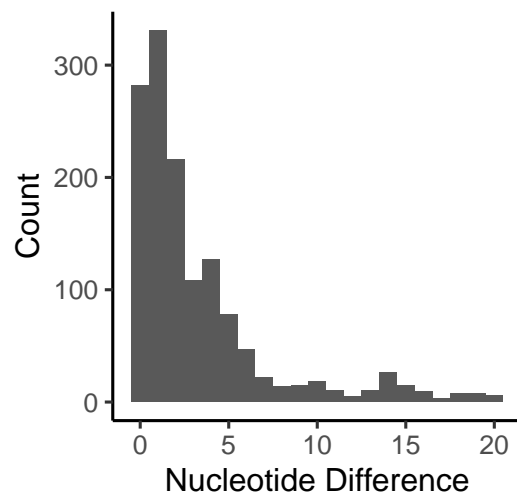
### IGHV4-34\*01\_02

12243 sequences assigned  
2591 (21.2%) exact matches, in which:  
1949 unique CDR3  
7 unique J



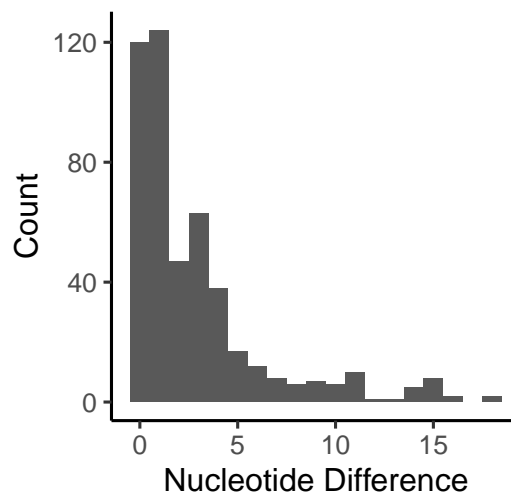
### IGHV4-30-2\*01

1538 sequences assigned  
282 (18.3%) exact matches, in which:  
218 unique CDR3  
7 unique J



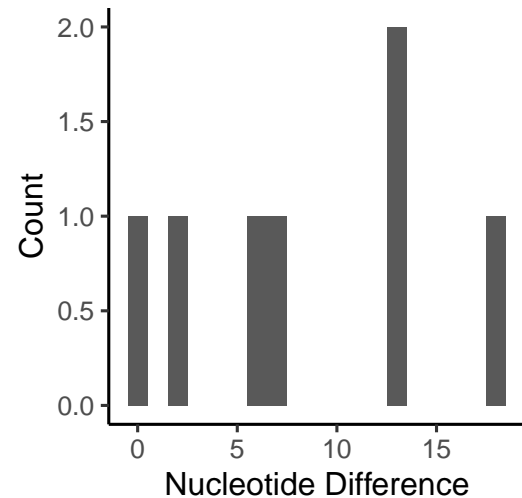
### IGHV4-31\*01

498 sequences assigned  
120 (24.1%) exact matches, in which:  
102 unique CDR3  
7 unique J



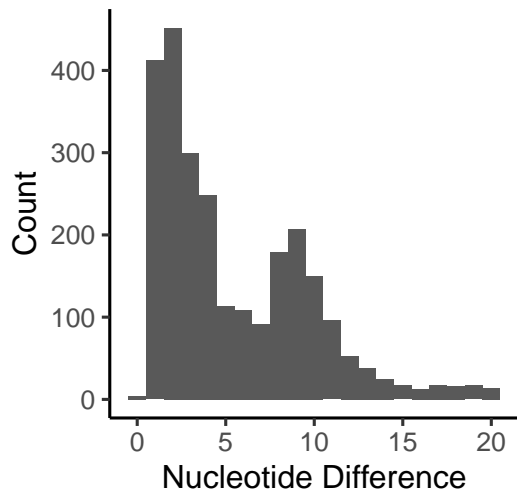
### IGHV4-38-2\*02

9 sequences assigned  
1 (11.1%) exact matches, in which:  
1 unique CDR3  
1 unique J



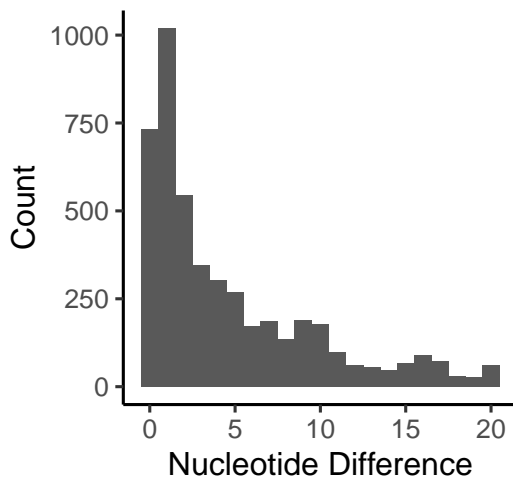
### IGHV4-39\*07

2654 sequences assigned  
4 (0.2%) exact matches, in which:  
4 unique CDR3  
2 unique J



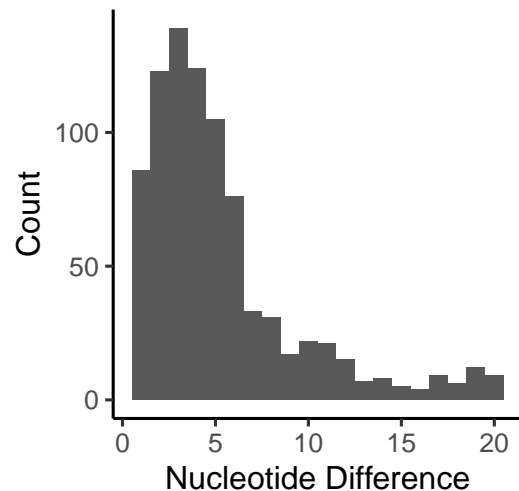
### IGHV4-59\*08

5721 sequences assigned  
731 (12.8%) exact matches, in which:  
619 unique CDR3  
7 unique J



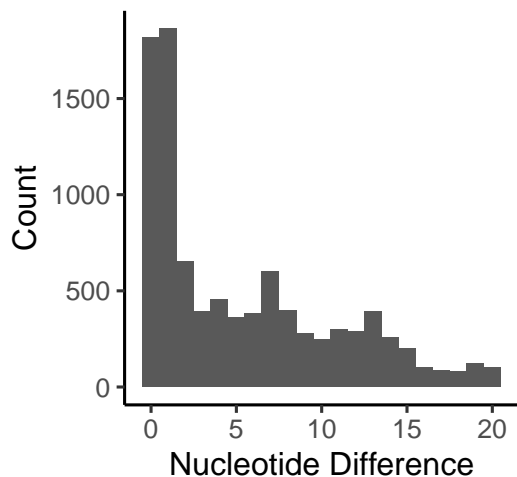
### IGHV4-61\*01

888 sequences assigned  
No exact matches.



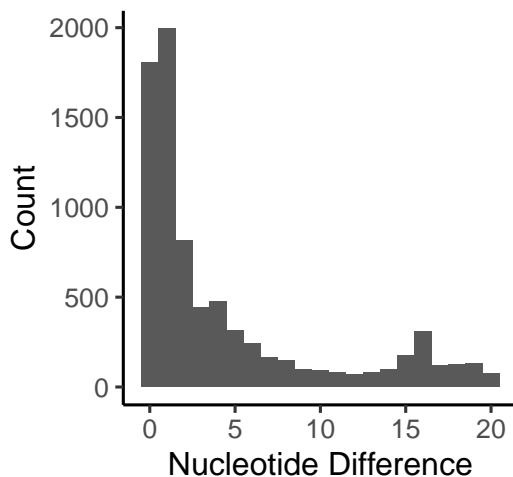
### IGHV4-39\*01\_05

10915 sequences assigned  
1815 (16.6%) exact matches, in which:  
1416 unique CDR3  
7 unique J



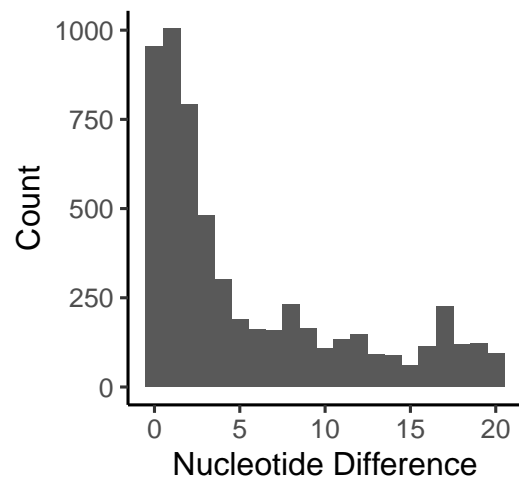
### IGHV4-59\*01\_07

9323 sequences assigned  
1805 (19.4%) exact matches, in which:  
1493 unique CDR3  
7 unique J



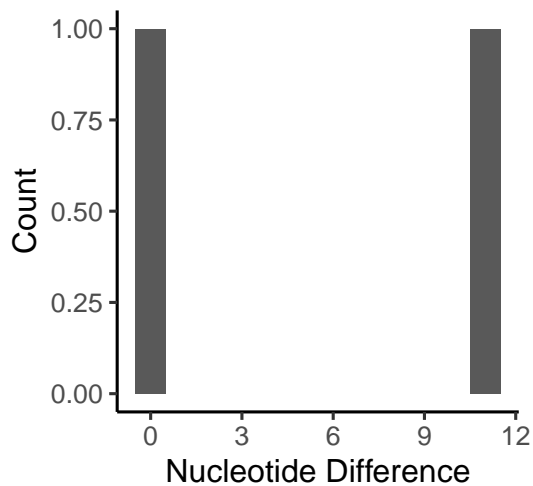
### IGHV4-61\*02

6575 sequences assigned  
955 (14.5%) exact matches, in which:  
831 unique CDR3  
7 unique J



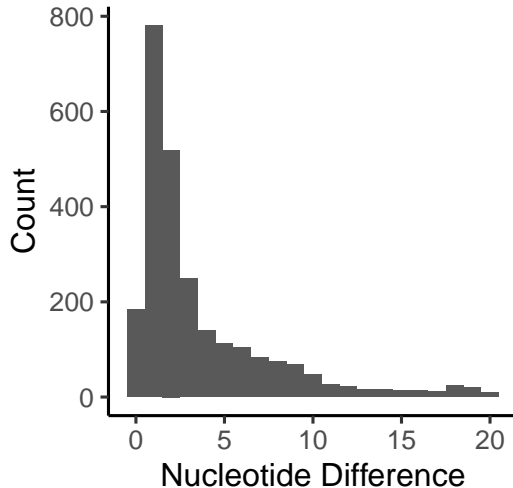
### IGHV4-55\*02\_04\_08

2 sequences assigned  
1 (50%) exact matches, in which:  
1 unique CDR3  
1 unique J



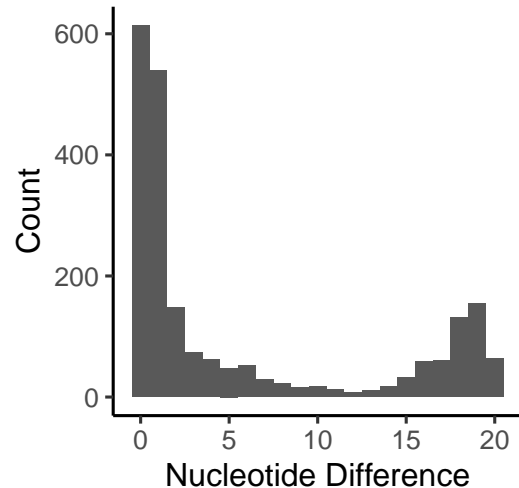
### IGHV4-59\*12

2723 sequences assigned  
184 (6.8%) exact matches, in which:  
177 unique CDR3  
7 unique J



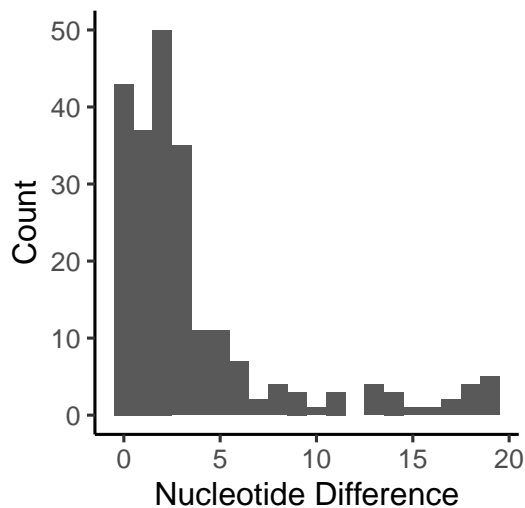
### IGHV5-10-1\*01\_03

2445 sequences assigned  
614 (25.1%) exact matches, in which:  
407 unique CDR3  
7 unique J



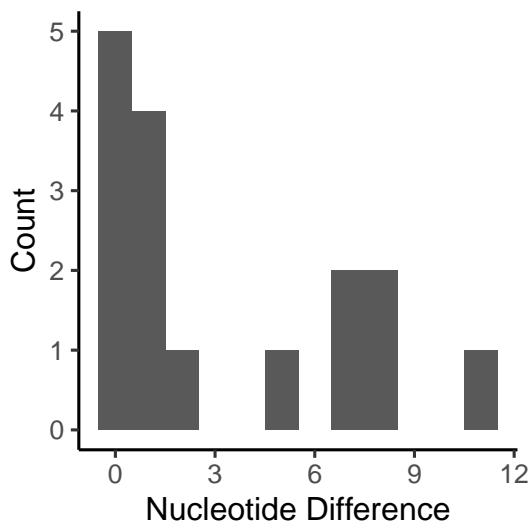
## IGHV5-10-1\*01\_03\_T258

229 sequences assigned  
43 (18.8%) exact matches, in which:  
43 unique CDR3  
6 unique J



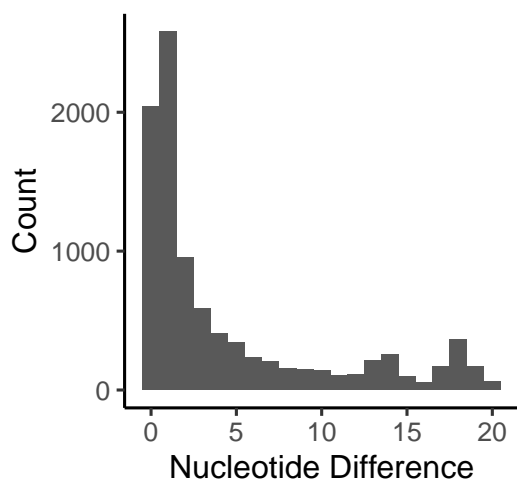
## IGHV7-4-1\*01

16 sequences assigned  
5 (31.2%) exact matches, in which:  
5 unique CDR3  
3 unique J



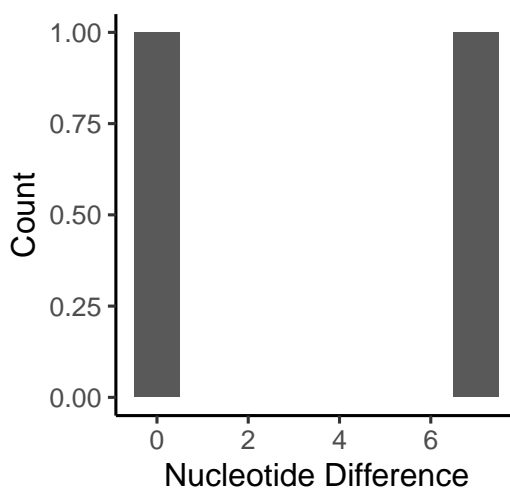
## IGHV5-51\*01\_03

10163 sequences assigned  
2045 (20.1%) exact matches, in which:  
1177 unique CDR3  
7 unique J



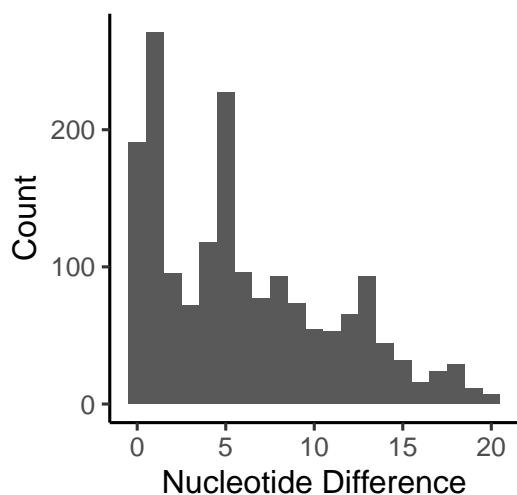
## IGHV7-4-1\*02

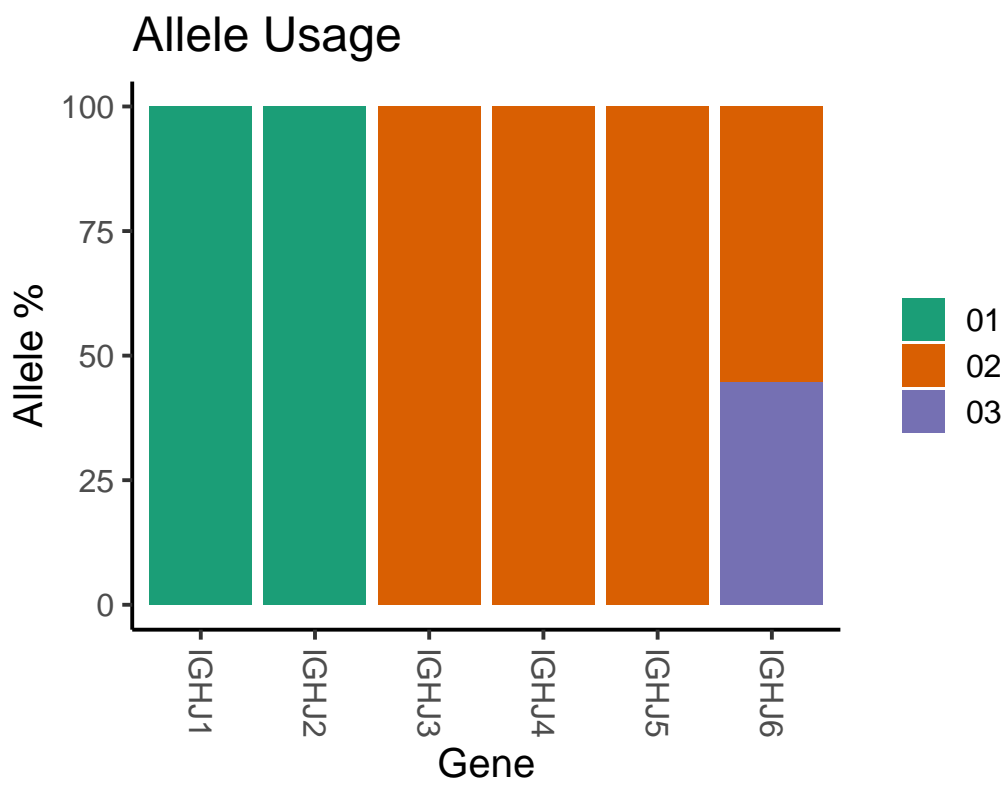
2 sequences assigned  
1 (50%) exact matches, in which:  
1 unique CDR3  
1 unique J



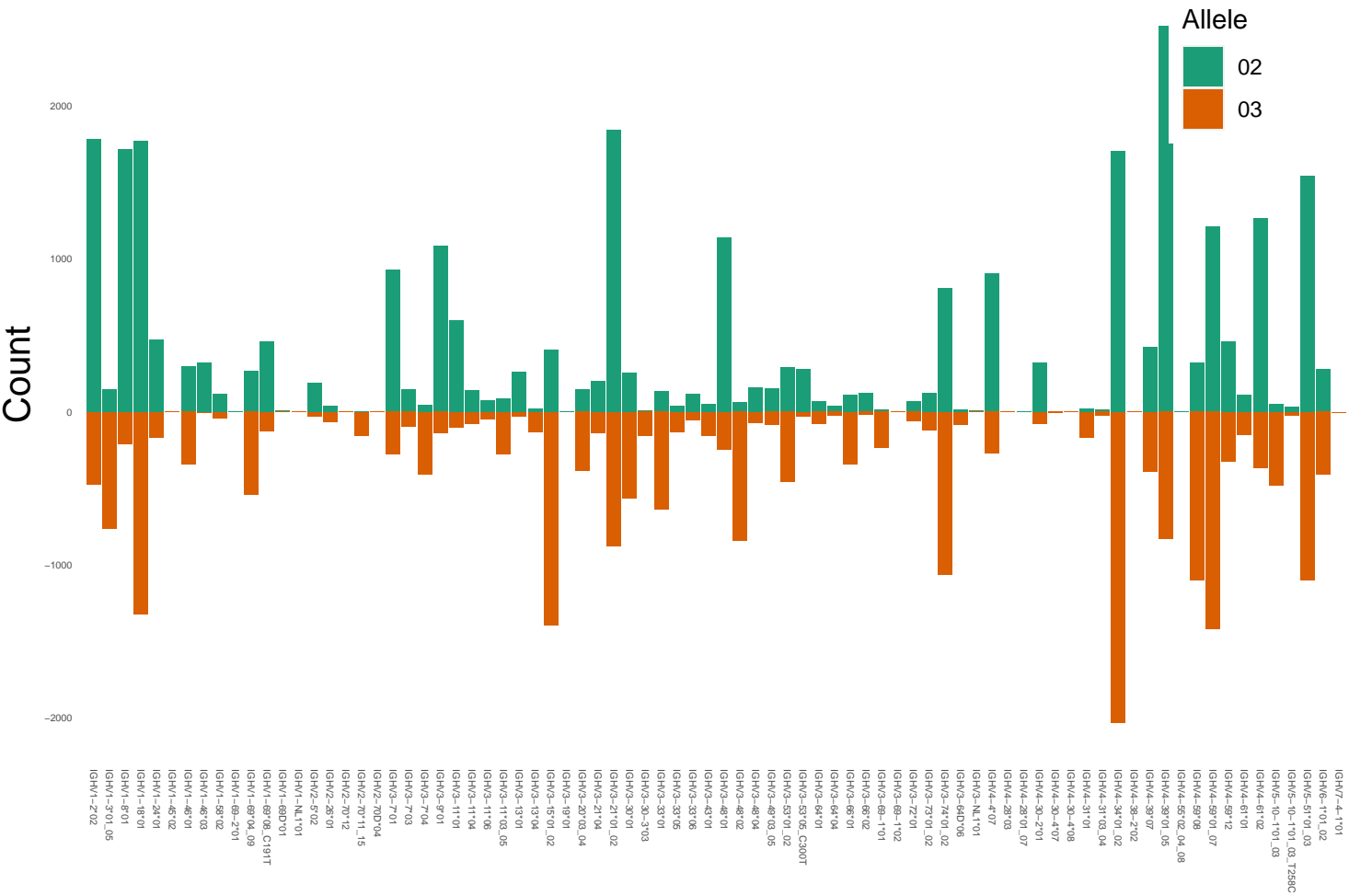
## IGHV6-1\*01\_02

1749 sequences assigned  
191 (10.9%) exact matches, in which:  
154 unique CDR3  
7 unique J





Sequence Count by IGHJ6 allele usage



Warning - no inferred sequences found.

Warning - no inferred sequences found.

Novel sequence(s) IGHV1-69\*04\_09\_G112A IGHV4-59\*02\_G88A IGHV5-10-1\*01\_03\_T258C IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Warning - no inferred sequences found.

Novel sequence(s) IGHV1-69\*08\_C191T IGHV3-48\*03\_T303G IGHV4-59\*02\_G88A IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Warning - no inferred sequences found.

Warning - no inferred sequences found.

Novel sequence(s) IGHV3-30\*03\_T288C IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Warning: IGHV4-31\*02, IGHV4-31\*03\_04 have identical germline sequences.

Novel sequence(s) IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Novel sequence(s) IGHV1-69\*04\_09\_G112A are not listed in the genotype and will be ignored.

Novel sequence(s) IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Warning - no inferred sequences found.

Novel sequence(s) IGHV1-69\*08\_C191T IGHV3-30\*03\_T288C IGHV3-30-3\*02\_G75C IGHV4-59\*02\_G88A IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Novel sequence(s) IGHV4-59\*02\_G88A IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Novel sequence(s) IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Novel sequence(s) IGHV4-4\*02\_03\_C300T IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Novel sequence(s) IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Warning - no inferred sequences found.

Novel sequence(s) IGHV4-59\*02\_G88A are not listed in the genotype and will be ignored.

Novel sequence(s) IGHV1-69\*08\_C191T IGHV3-11\*06\_T300C IGHV3-30\*03\_T288C IGHV4-59\*02\_G88A IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Novel sequence(s) IGHV4-59\*02\_G88A IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Novel sequence(s) IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Warning - no inferred sequences found.