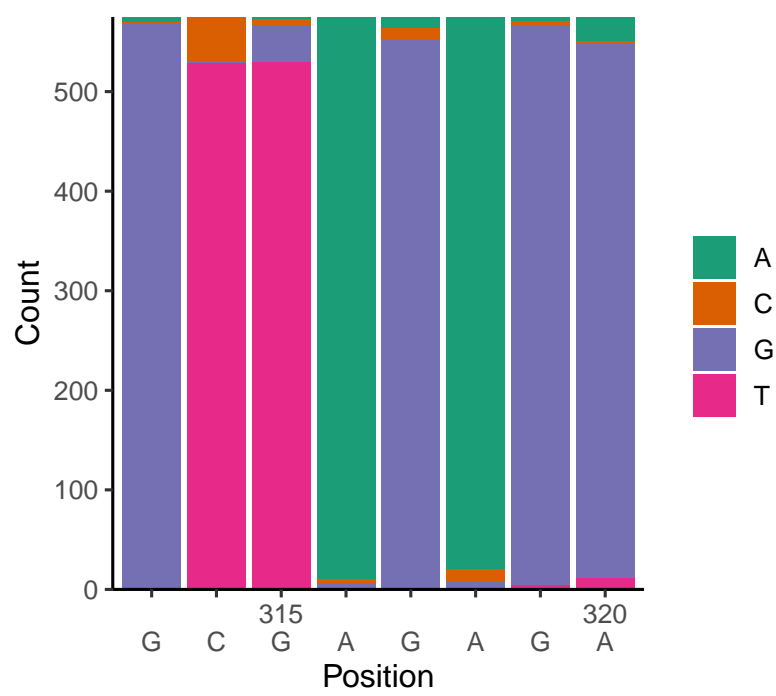
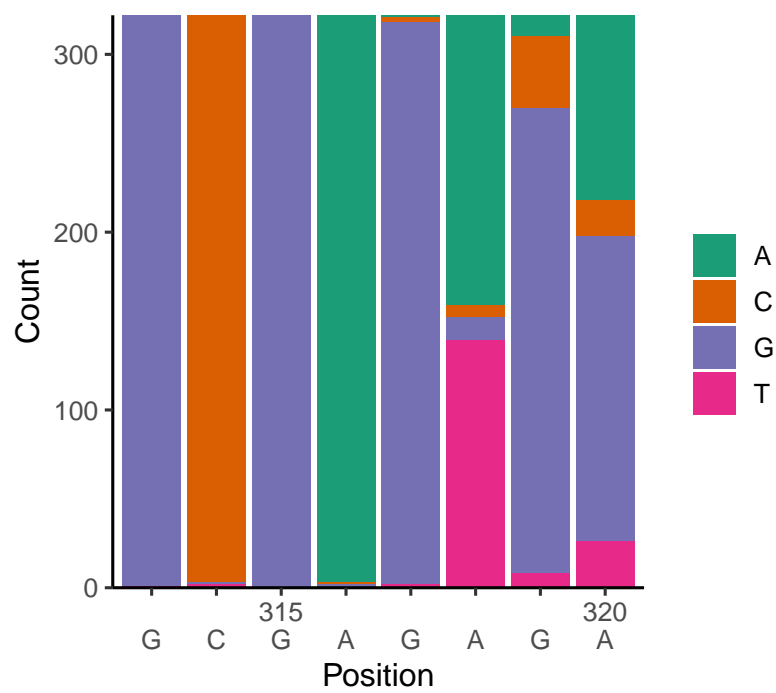


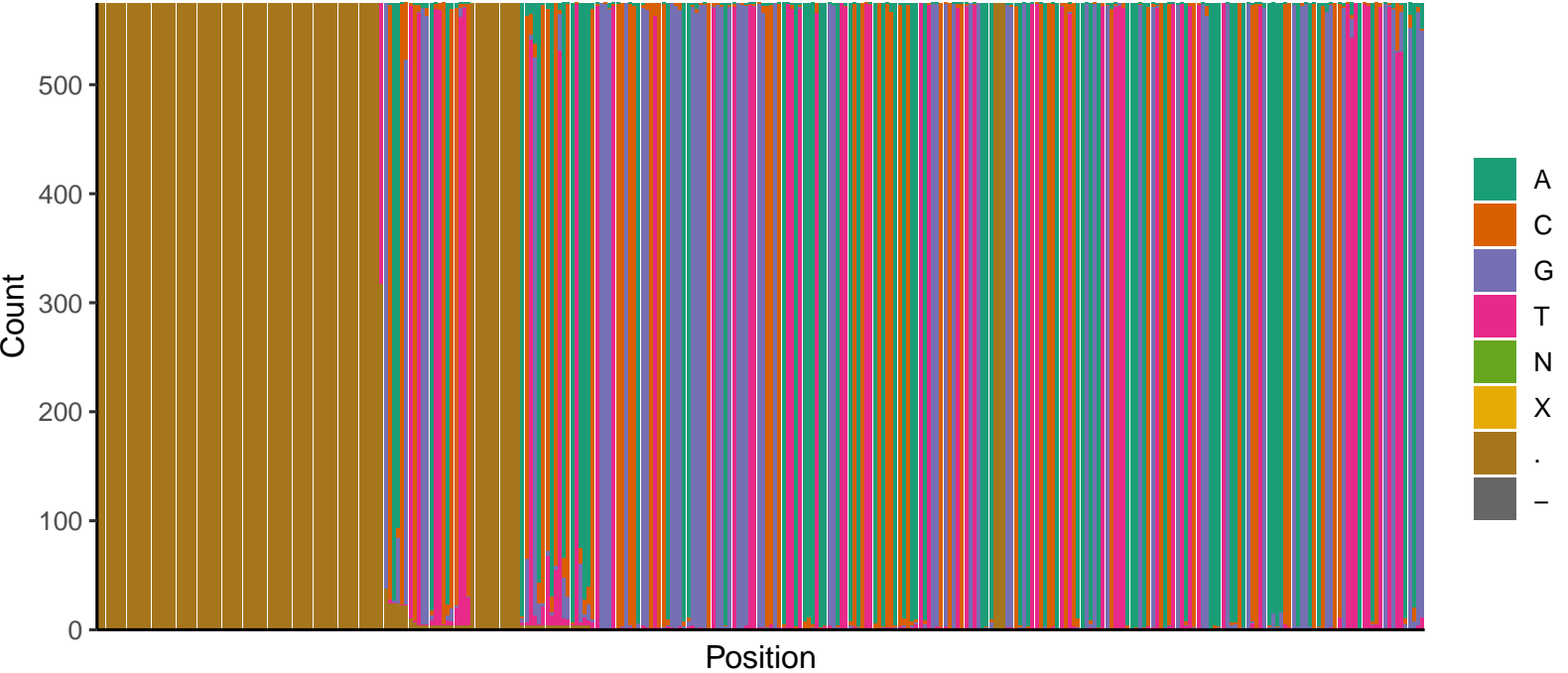
Gene IGHV3-72\*01\_G73A\_C75G\_G104C\_G117A\_G118A\_T165C\_C167T\_G170T\_C174



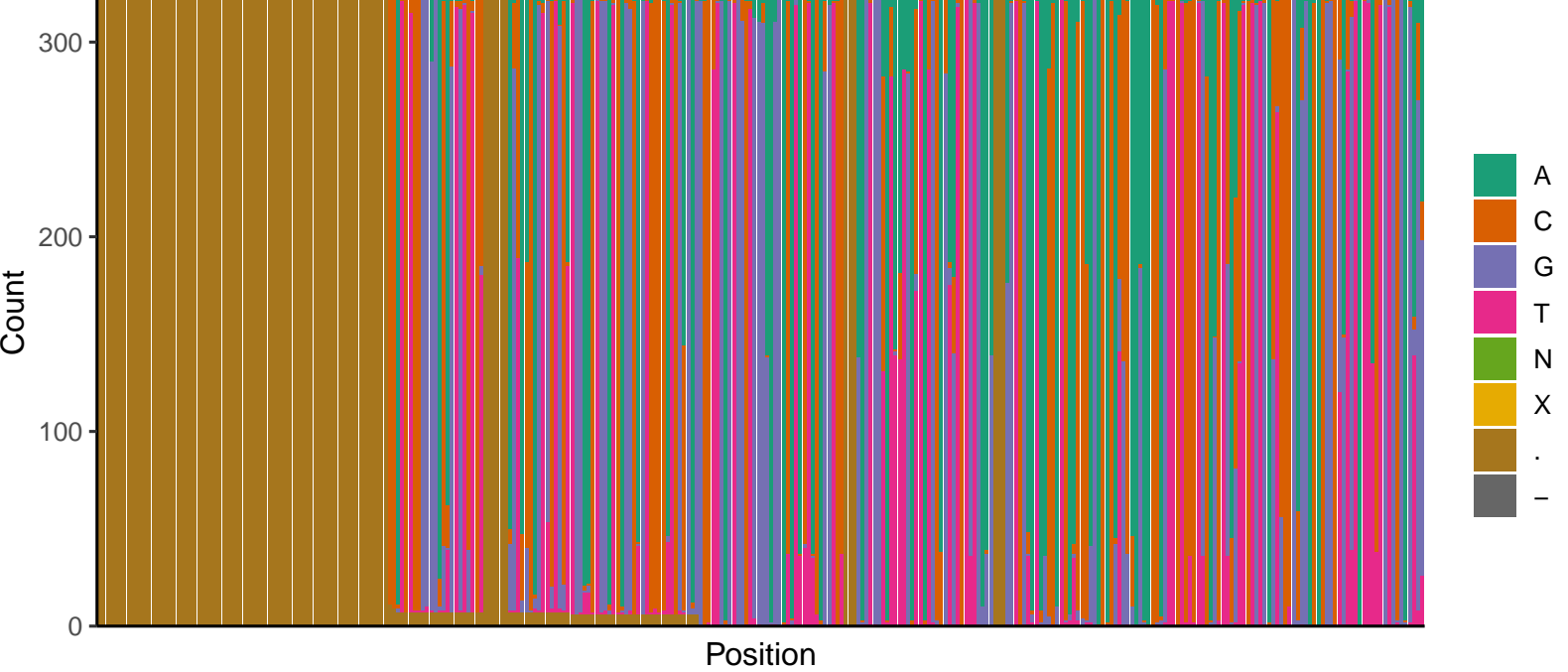
Gene IGHV6-1\*01\_02\_A315G



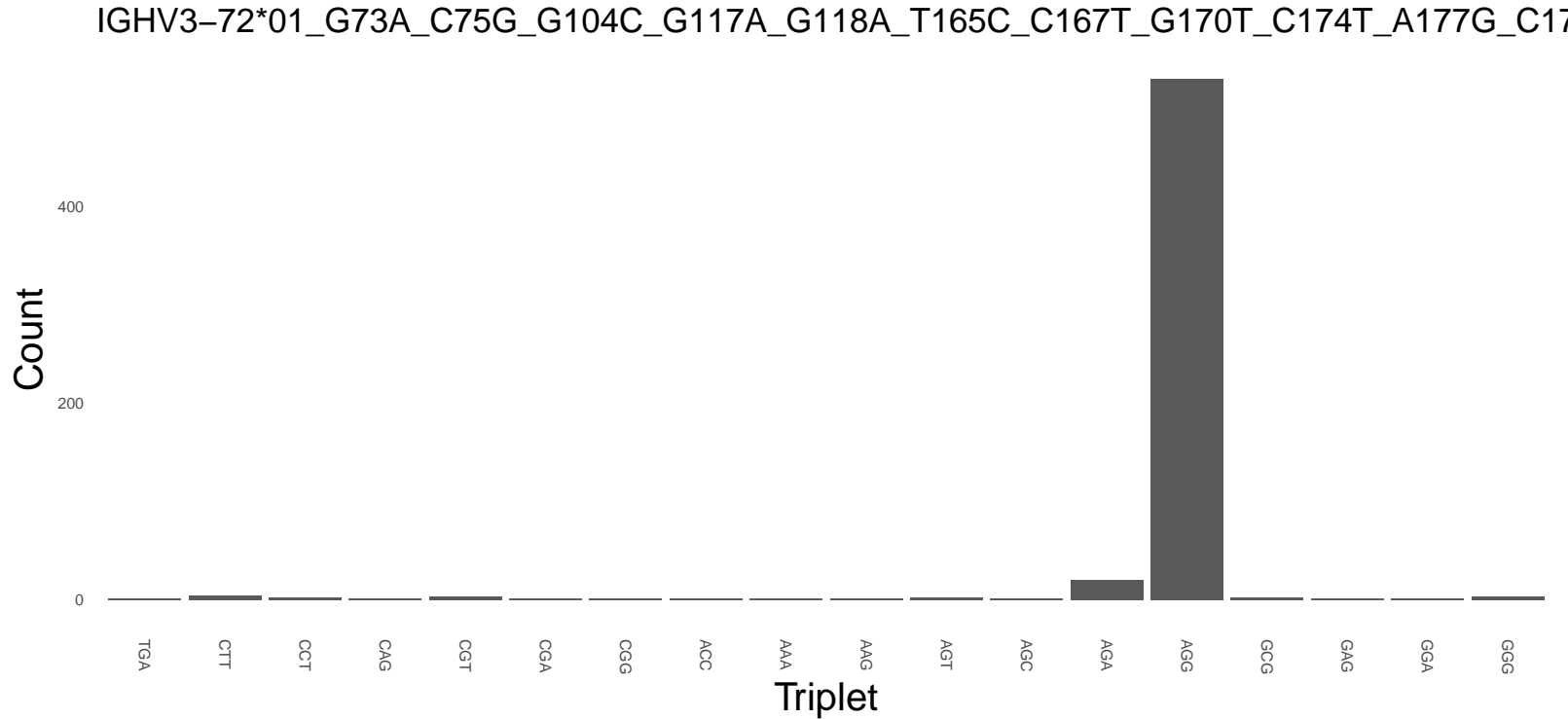
Gene IGHV3-72\*01\_G73A\_C75G\_G104C\_G117A\_G118A\_T165C\_C167T\_G170T\_C174



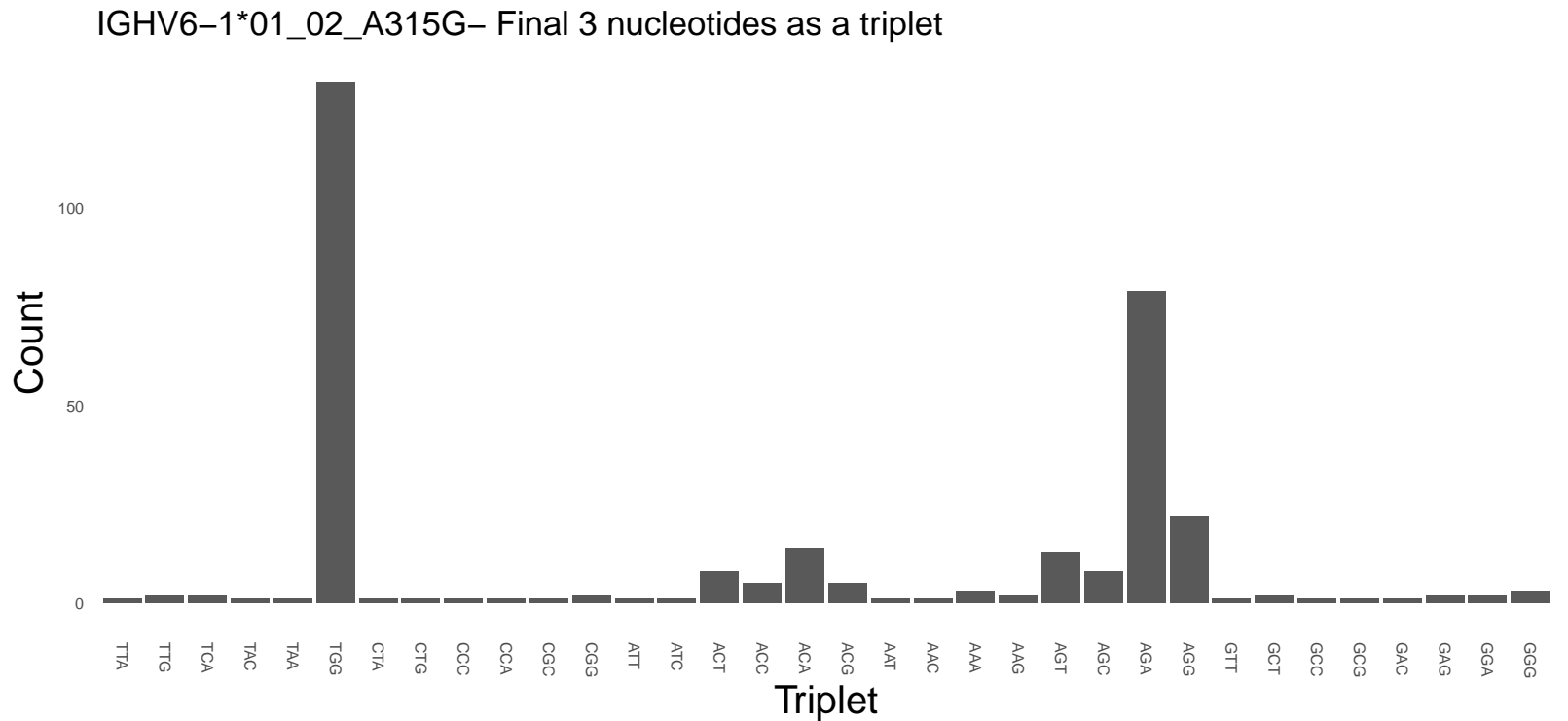
Gene IGHV6-1\*01\_02\_A315G



IGHV3-72\*01\_G73A\_C75G\_G104C\_G117A\_G118A\_T165C\_C167T\_G170T\_C174T\_A177G\_C178G

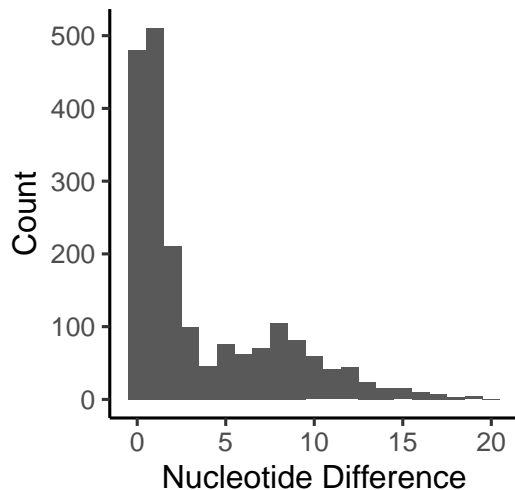


IGHV6-1\*01\_02\_A315G- Final 3 nucleotides as a triplet



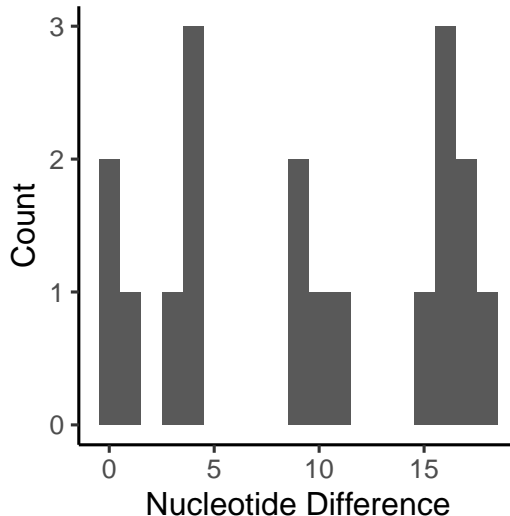
### IGHV1-2\*04

2009 sequences assigned  
480 (23.9%) exact matches, in which:  
413 unique CDR3  
6 unique J



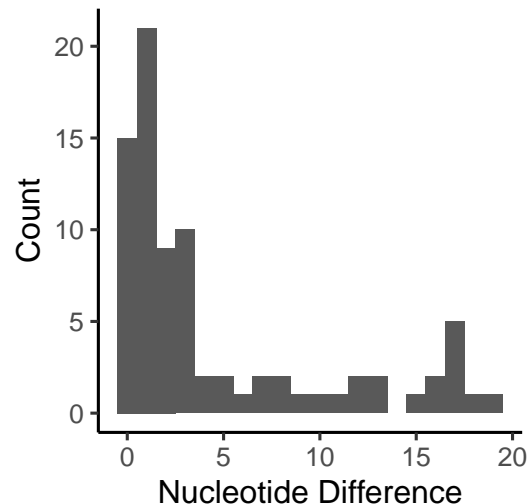
### IGHV1-8\*01

37 sequences assigned  
2 (5.4%) exact matches, in which:  
2 unique CDR3  
1 unique J



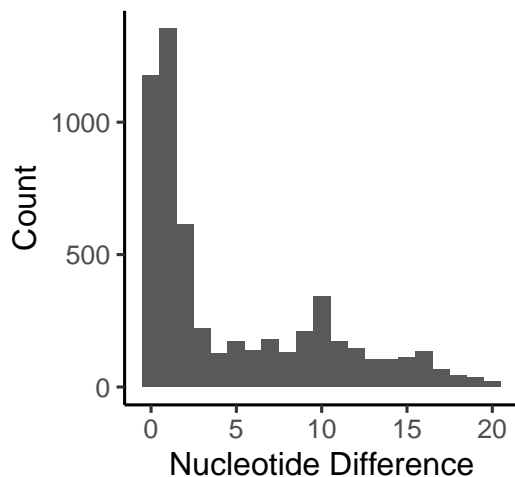
### IGHV1-45\*02

83 sequences assigned  
15 (18.1%) exact matches, in which:  
14 unique CDR3  
3 unique J



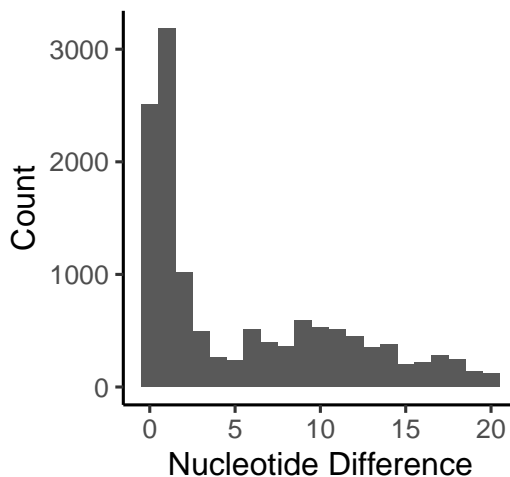
### IGHV1-2\*06

5973 sequences assigned  
1177 (19.7%) exact matches, in which:  
966 unique CDR3  
6 unique J



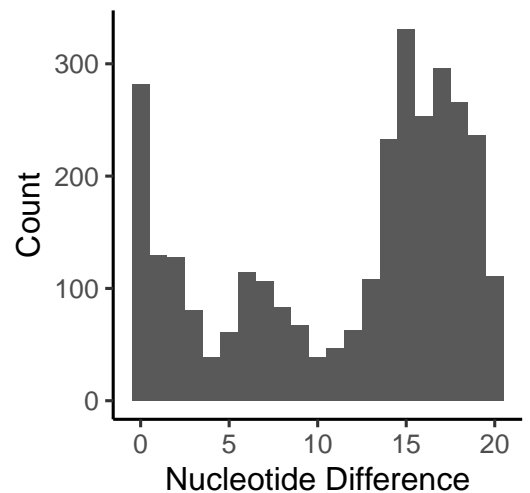
### IGHV1-18\*01

14557 sequences assigned  
2506 (17.2%) exact matches, in which:  
1966 unique CDR3  
6 unique J



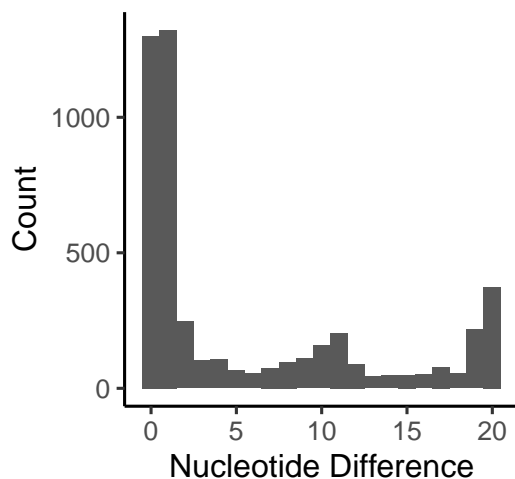
### IGHV1-46\*01

3419 sequences assigned  
282 (8.2%) exact matches, in which:  
279 unique CDR3  
6 unique J



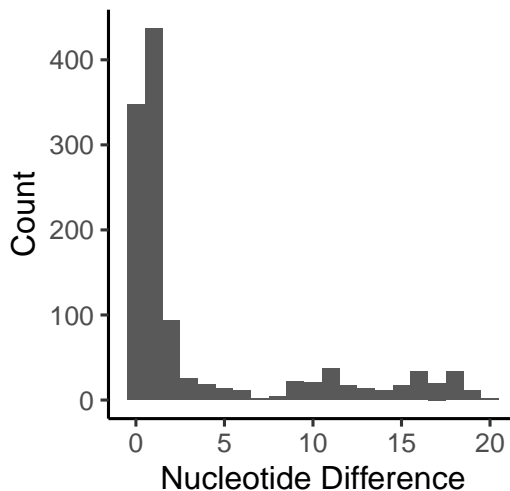
### IGHV1-3\*01\_05

5247 sequences assigned  
1300 (24.8%) exact matches, in which:  
1070 unique CDR3  
6 unique J



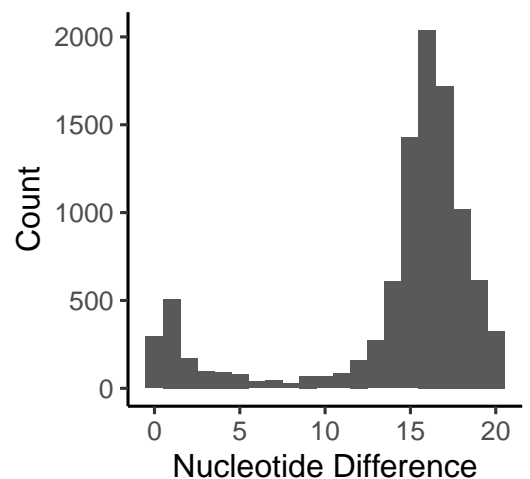
### IGHV1-24\*01

1203 sequences assigned  
347 (28.8%) exact matches, in which:  
251 unique CDR3  
6 unique J



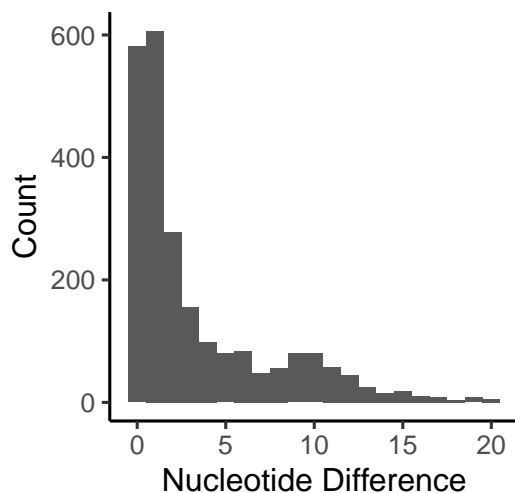
### IGHV1-46\*03

11373 sequences assigned  
294 (2.6%) exact matches, in which:  
201 unique CDR3  
6 unique J



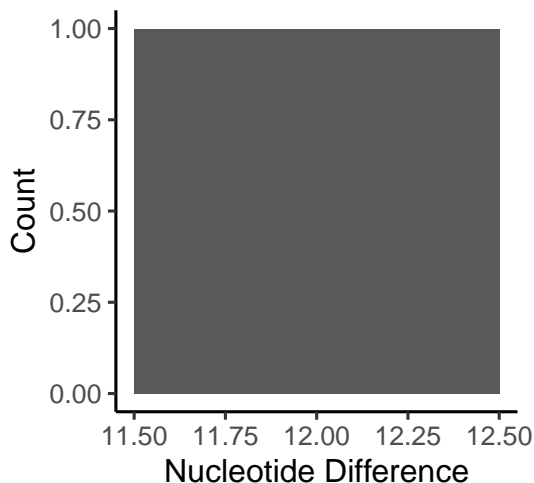
### IGHV1-46\*04

2548 sequences assigned  
581 (22.8%) exact matches, in which:  
494 unique CDR3  
6 unique J



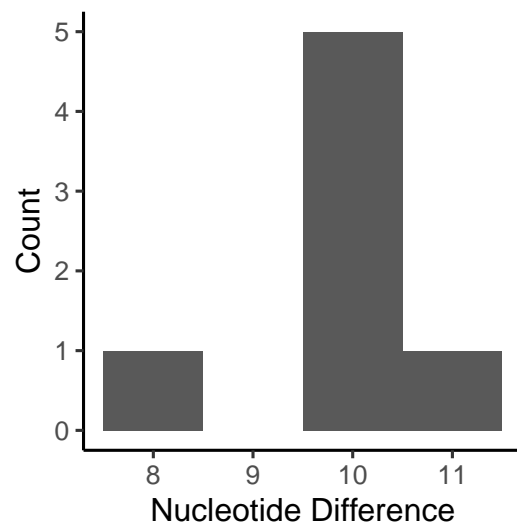
### IGHV1-69-2\*01

2 sequences assigned  
No exact matches.



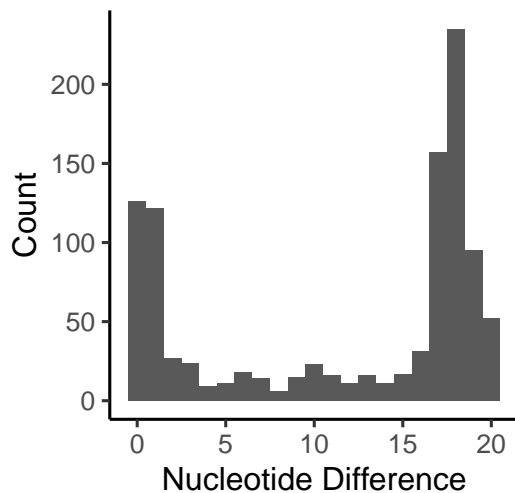
### IGHV1-NL1\*01

7 sequences assigned  
No exact matches.



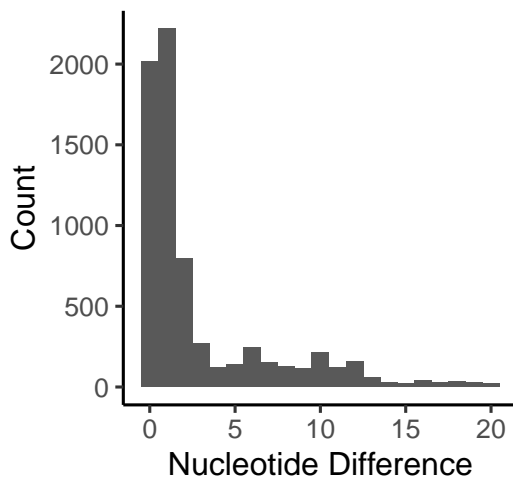
### IGHV1-58\*02

1266 sequences assigned  
126 (10%) exact matches, in which:  
104 unique CDR3  
5 unique J



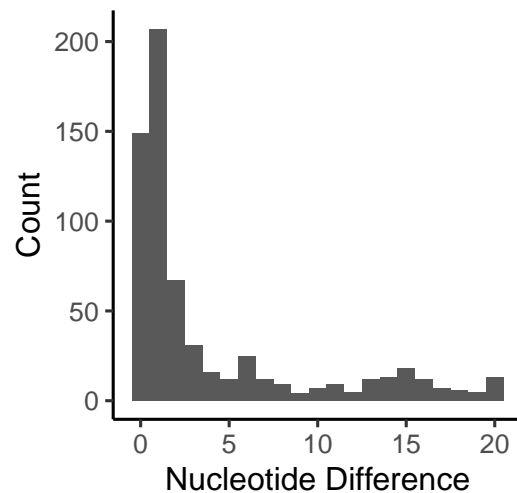
### IGHV1-69\*01\_12\_13

7181 sequences assigned  
2019 (28.1%) exact matches, in which:  
1711 unique CDR3  
6 unique J



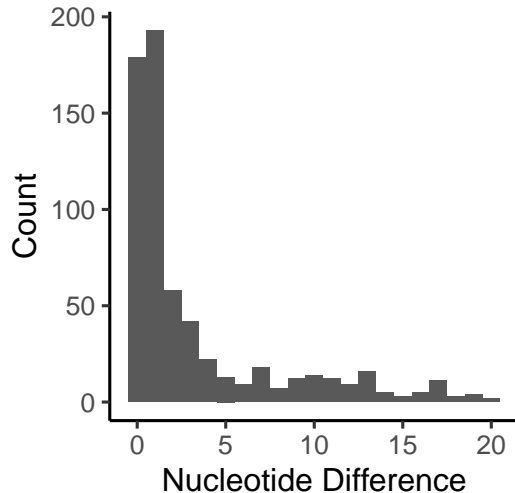
### IGHV2-5\*02

701 sequences assigned  
149 (21.3%) exact matches, in which:  
116 unique CDR3  
5 unique J



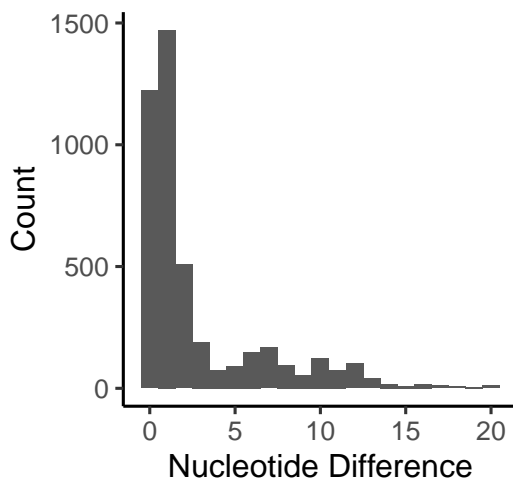
### IGHV1-58\*01\_03

1048 sequences assigned  
179 (17.1%) exact matches, in which:  
152 unique CDR3  
6 unique J



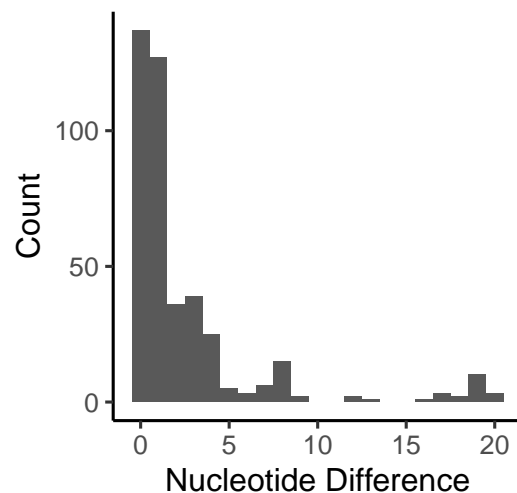
### IGHV1-69\*04\_09

4480 sequences assigned  
1223 (27.3%) exact matches, in which:  
1051 unique CDR3  
6 unique J



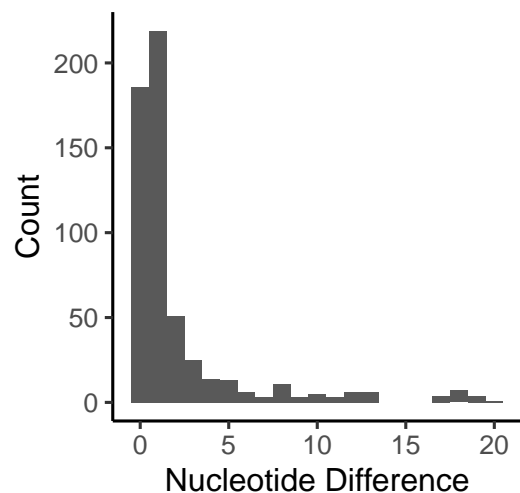
### IGHV2-26\*01

431 sequences assigned  
137 (31.8%) exact matches, in which:  
108 unique CDR3  
5 unique J



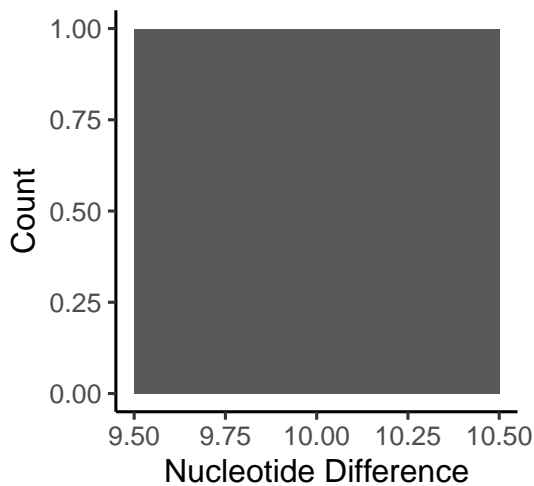
### IGHV2-70\*01

576 sequences assigned  
186 (32.3%) exact matches, in which:  
139 unique CDR3  
5 unique J



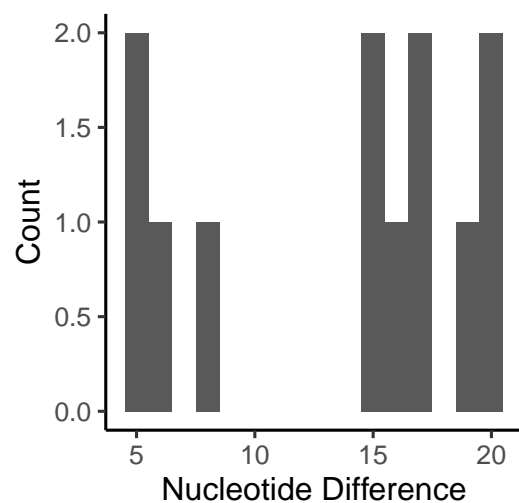
### IGHV2-70D\*14

2 sequences assigned  
No exact matches.



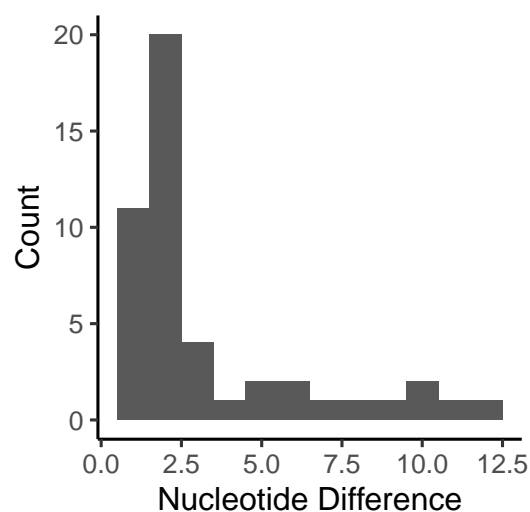
### IGHV3-9\*01

27 sequences assigned  
No exact matches.



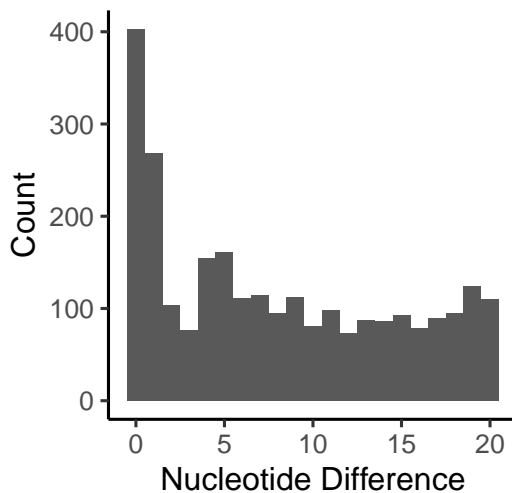
### IGHV2-70\*12

48 sequences assigned  
No exact matches.



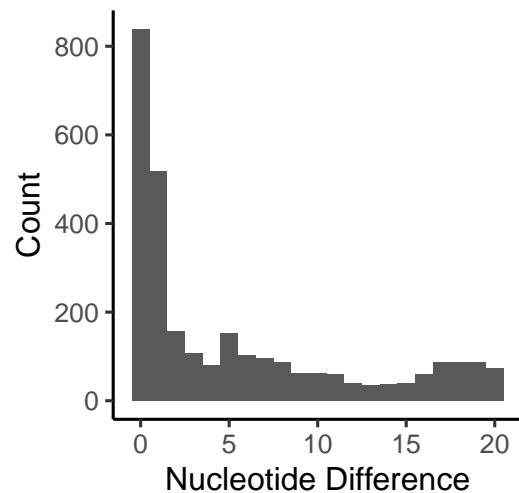
### IGHV3-7\*01

3180 sequences assigned  
403 (12.7%) exact matches, in which:  
364 unique CDR3  
6 unique J



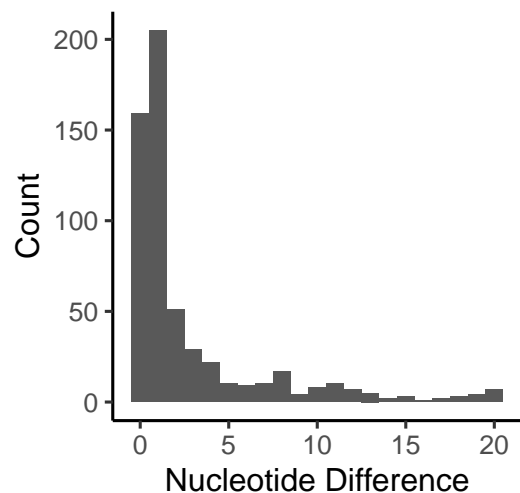
### IGHV3-11\*06

5574 sequences assigned  
839 (15.1%) exact matches, in which:  
576 unique CDR3  
6 unique J



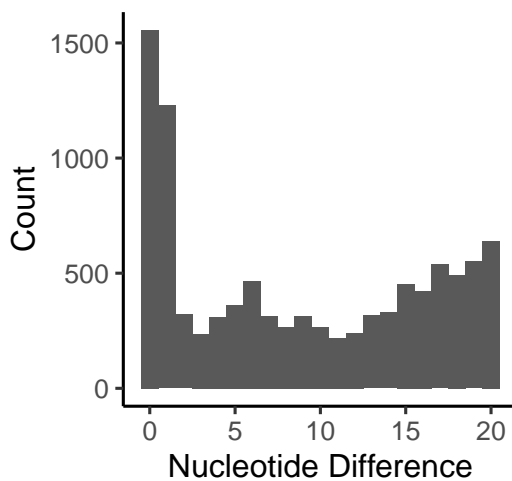
### IGHV2-70\*11\_15

902 sequences assigned  
159 (17.6%) exact matches, in which:  
119 unique CDR3  
5 unique J



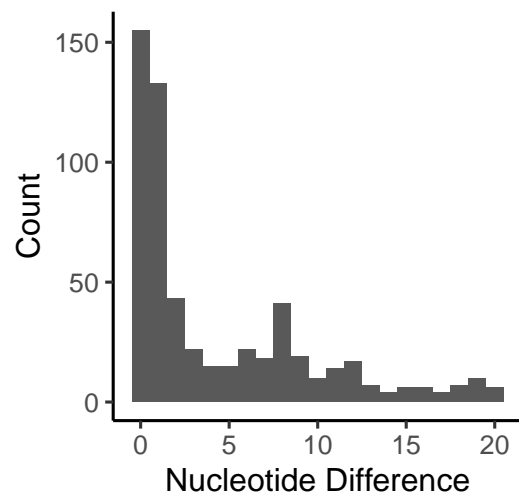
### IGHV3-7\*03

13656 sequences assigned  
1556 (11.4%) exact matches, in which:  
984 unique CDR3  
6 unique J



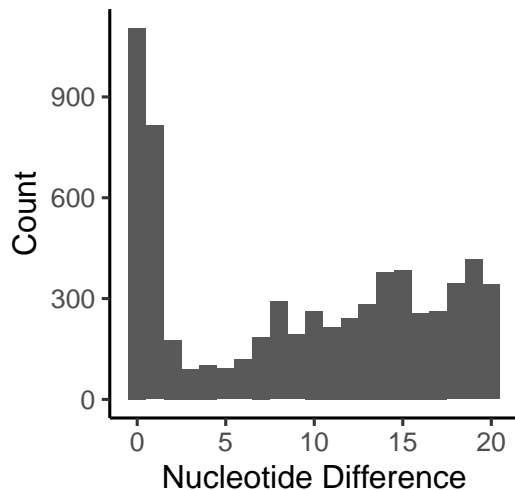
### IGHV3-13\*05

665 sequences assigned  
155 (23.3%) exact matches, in which:  
108 unique CDR3  
6 unique J



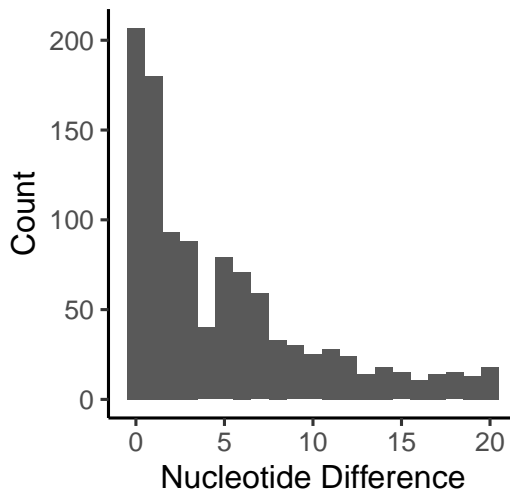
### IGHV3-15\*01\_02

8527 sequences assigned  
1106 (13%) exact matches, in which:  
657 unique CDR3  
6 unique J



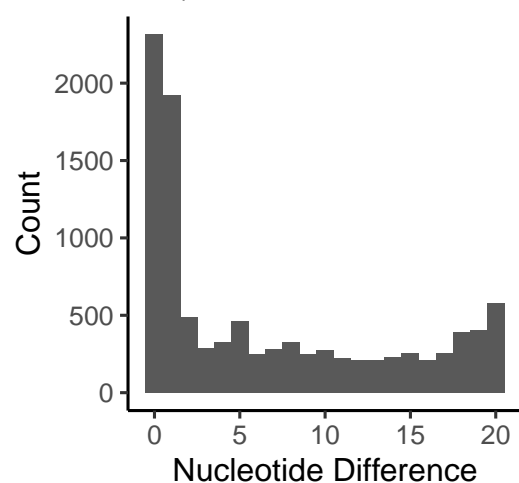
### IGHV3-21\*04

1887 sequences assigned  
207 (11%) exact matches, in which:  
179 unique CDR3  
6 unique J



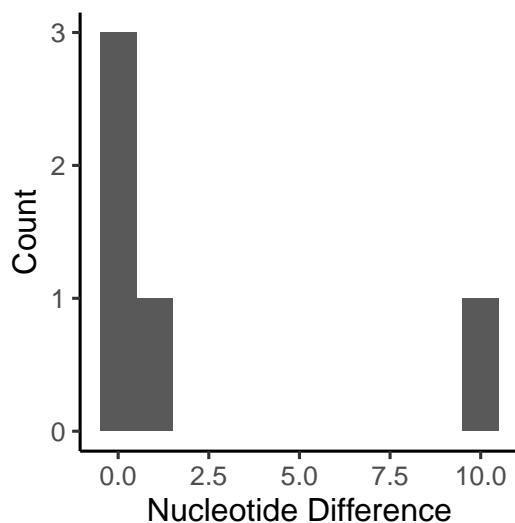
### IGHV3-23\*01\_04

16005 sequences assigned  
2315 (14.5%) exact matches, in which:  
1338 unique CDR3  
6 unique J



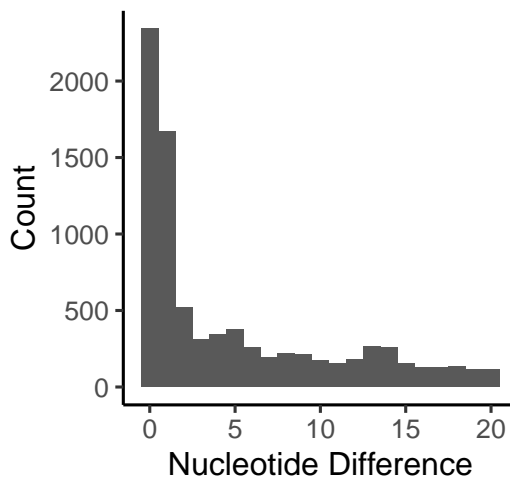
### IGHV3-19\*01

5 sequences assigned  
3 (60%) exact matches, in which:  
3 unique CDR3  
3 unique J



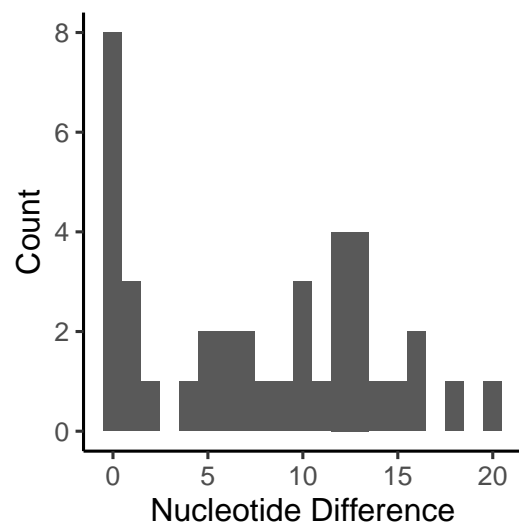
### IGHV3-21\*01\_02

9290 sequences assigned  
2342 (25.2%) exact matches, in which:  
1483 unique CDR3  
6 unique J



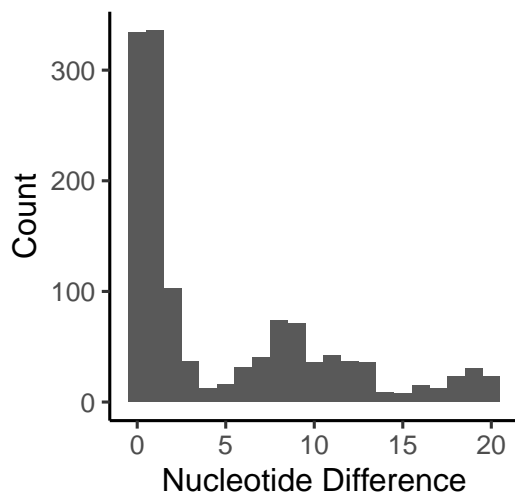
### IGHV3-30-3\*01

280 sequences assigned  
8 (2.9%) exact matches, in which:  
8 unique CDR3  
4 unique J



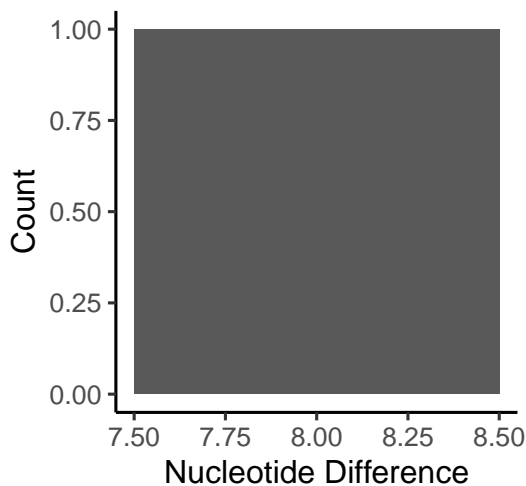
### IGHV3-20\*03\_04

1710 sequences assigned  
334 (19.5%) exact matches, in which:  
206 unique CDR3  
6 unique J



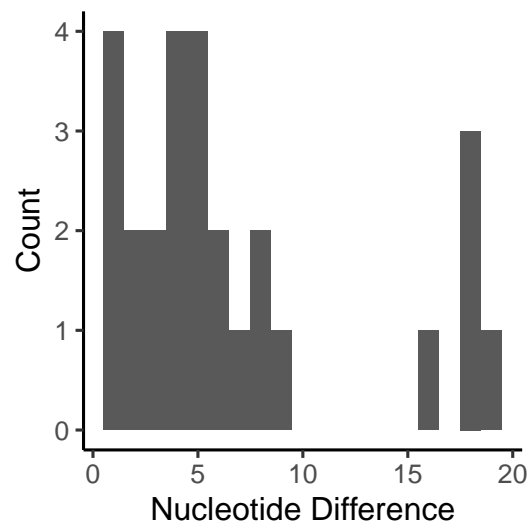
### IGHV3-22\*01\_02

1 sequences assigned  
No exact matches.



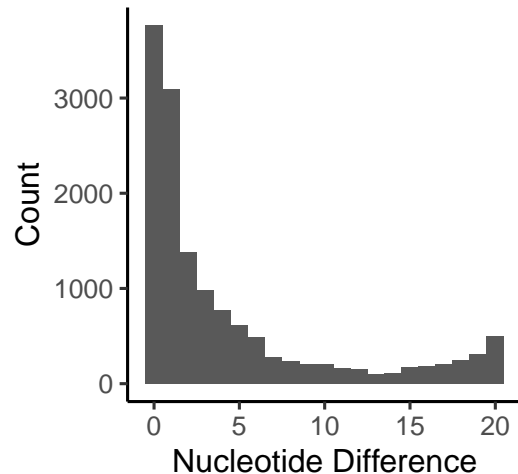
### IGHV3-30-3\*02

129 sequences assigned  
No exact matches.



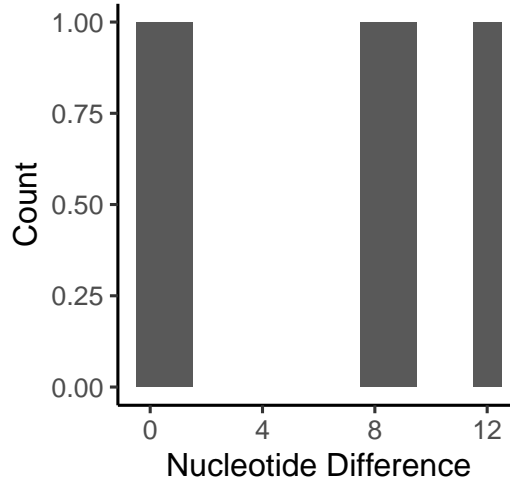
### IGHV3-30\*04

17684 sequences assigned  
3763 (21.3%) exact matches, in which:  
2321 unique CDR3  
6 unique J



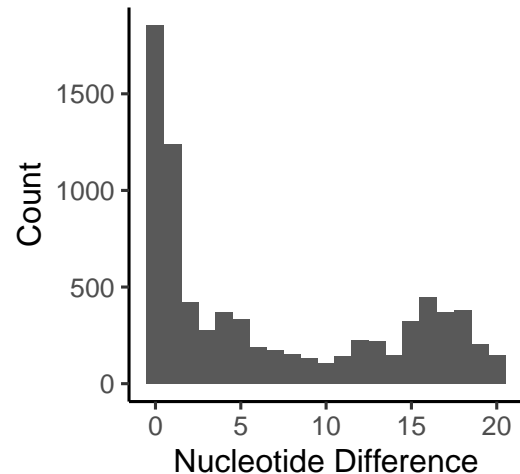
### IGHV3-35\*01

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



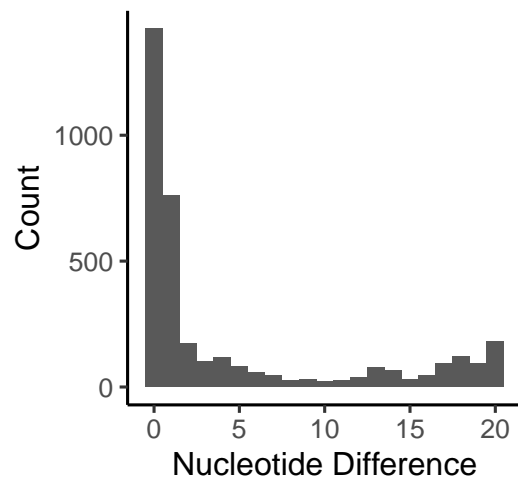
### IGHV3-48\*01

9401 sequences assigned  
1854 (19.7%) exact matches, in which:  
1201 unique CDR3  
6 unique J



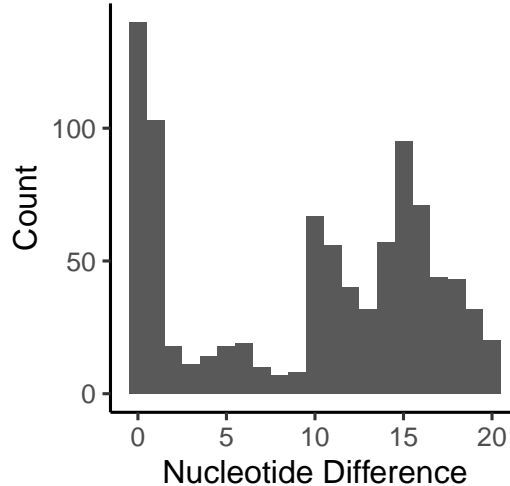
### IGHV3-33\*01

5506 sequences assigned  
1423 (25.8%) exact matches, in which:  
1010 unique CDR3  
6 unique J



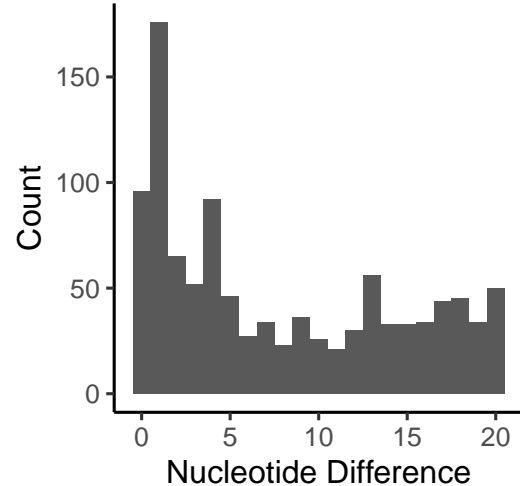
### IGHV3-43\*01

1225 sequences assigned  
140 (11.4%) exact matches, in which:  
80 unique CDR3  
5 unique J



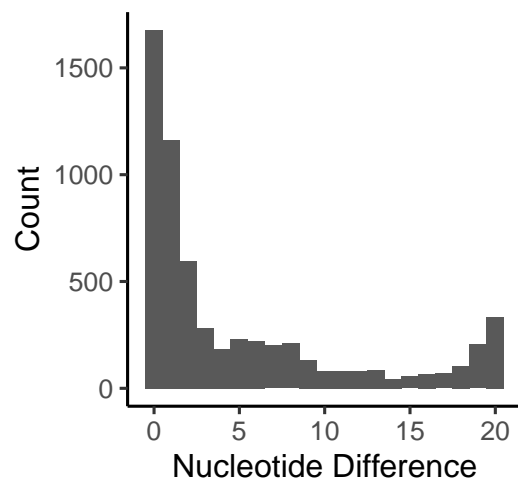
### IGHV3-48\*04

1521 sequences assigned  
96 (6.3%) exact matches, in which:  
89 unique CDR3  
6 unique J



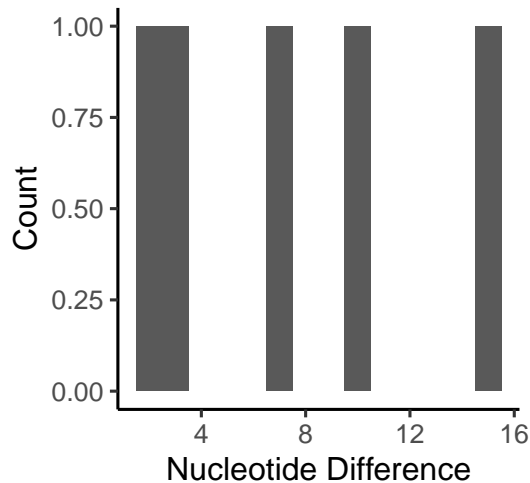
### IGHV3-33\*08

11108 sequences assigned  
1677 (15.1%) exact matches, in which:  
1132 unique CDR3  
6 unique J



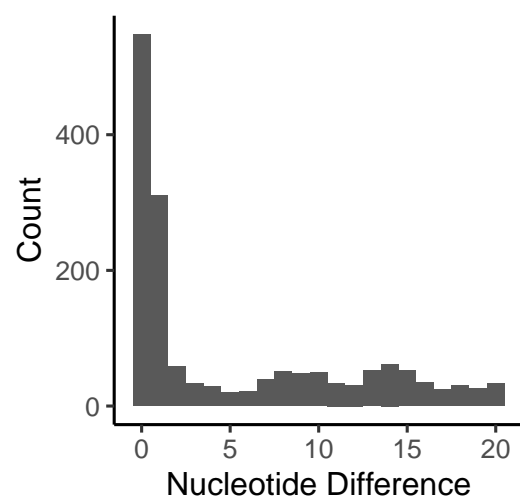
### IGHV3-47\*02

5 sequences assigned  
No exact matches.



### IGHV3-49\*03\_05

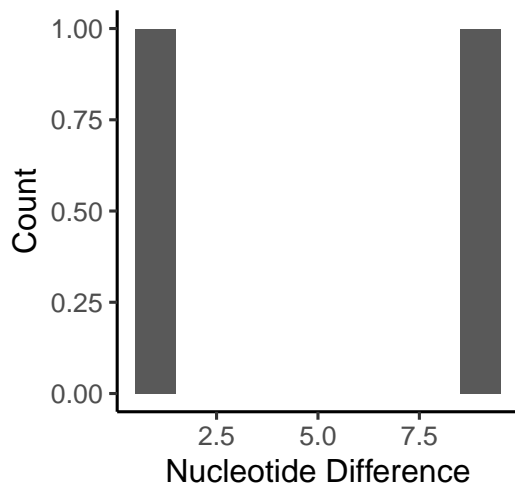
2053 sequences assigned  
548 (26.7%) exact matches, in which:  
337 unique CDR3  
6 unique J





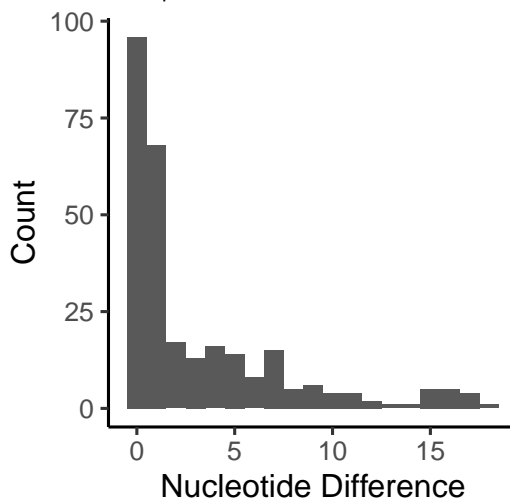
### IGHV3-52\*02

2 sequences assigned  
No exact matches.



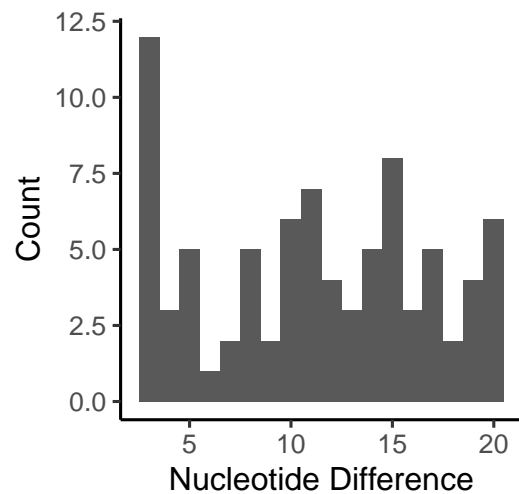
### IGHV3-64\*01

328 sequences assigned  
96 (29.3%) exact matches, in which:  
64 unique CDR3  
5 unique J



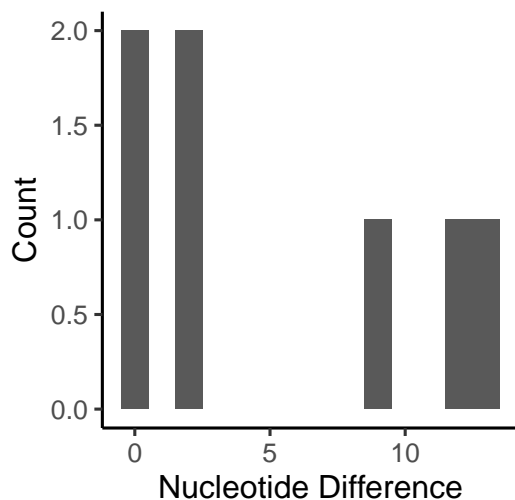
### IGHV3-69-1\*01

214 sequences assigned  
No exact matches.



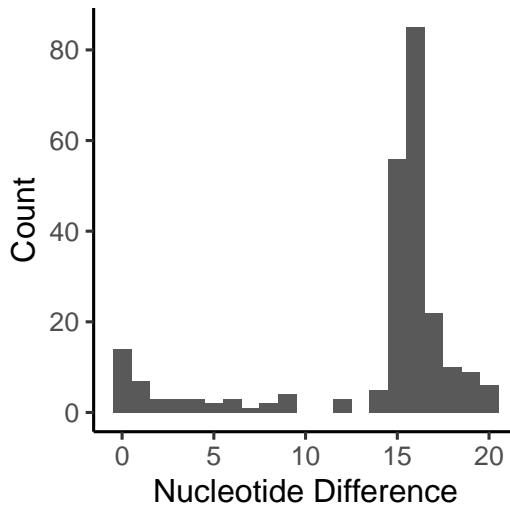
### IGHV3-52\*01\_03

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



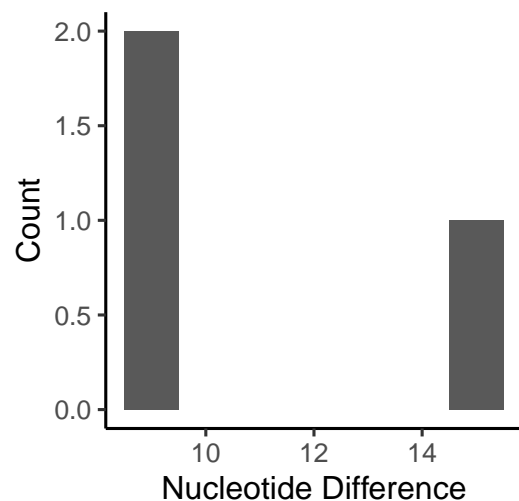
### IGHV3-64\*02\_07

266 sequences assigned  
14 (5.3%) exact matches, in which:  
12 unique CDR3  
5 unique J



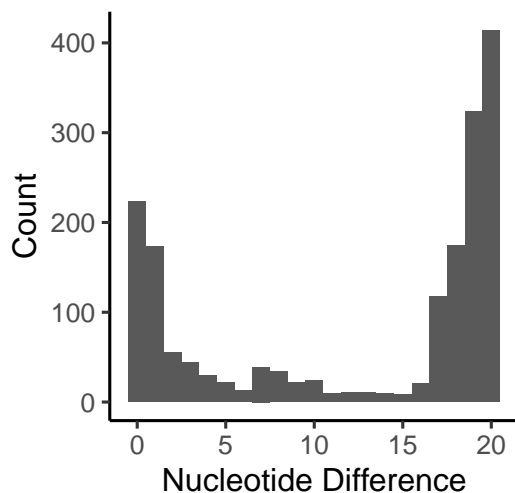
### IGHV3-71\*01\_04

6 sequences assigned  
No exact matches.



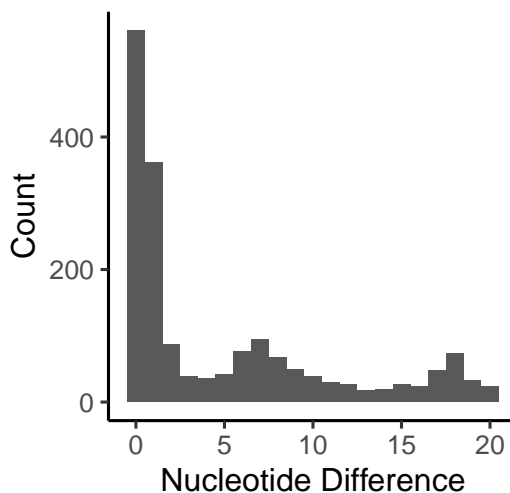
### IGHV3-53\*01\_02

5028 sequences assigned  
223 (4.4%) exact matches, in which:  
151 unique CDR3  
6 unique J



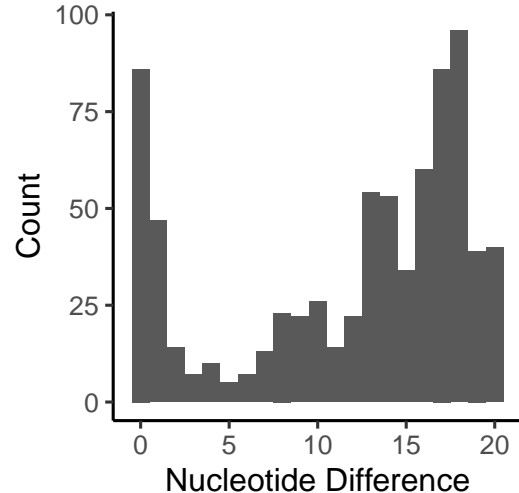
### IGHV3-66\*01

1963 sequences assigned  
561 (28.6%) exact matches, in which:  
405 unique CDR3  
6 unique J



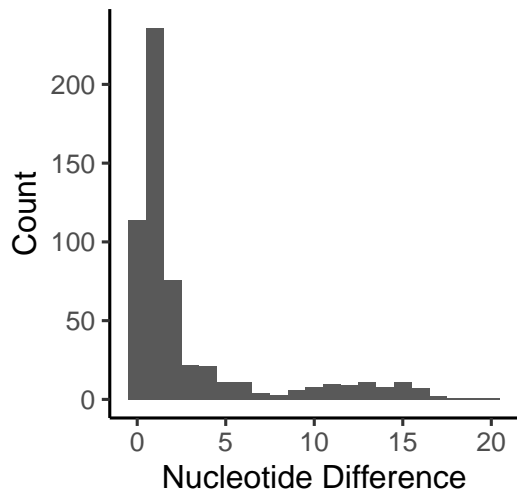
### IGHV3-72\*01

929 sequences assigned  
86 (9.3%) exact matches, in which:  
50 unique CDR3  
5 unique J



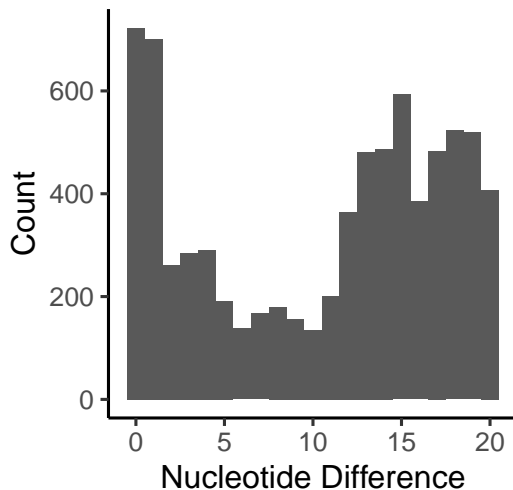
### IGHV3-72\*01\_G73A\_C73

575 sequences assigned  
114 (19.8%) exact matches, in which:  
65 unique CDR3  
4 unique J



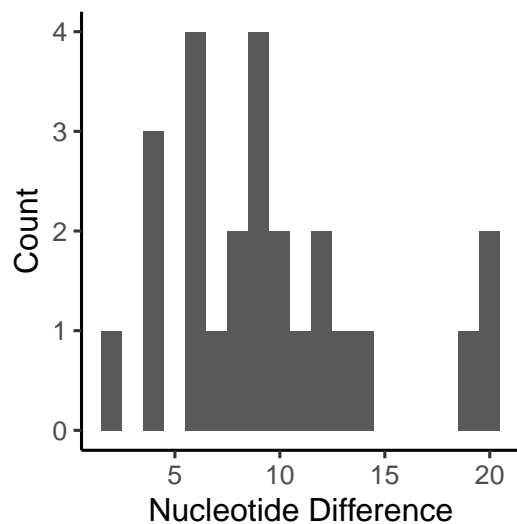
### IGHV3-74\*01\_02

10716 sequences assigned  
723 (6.7%) exact matches, in which:  
485 unique CDR3  
6 unique J



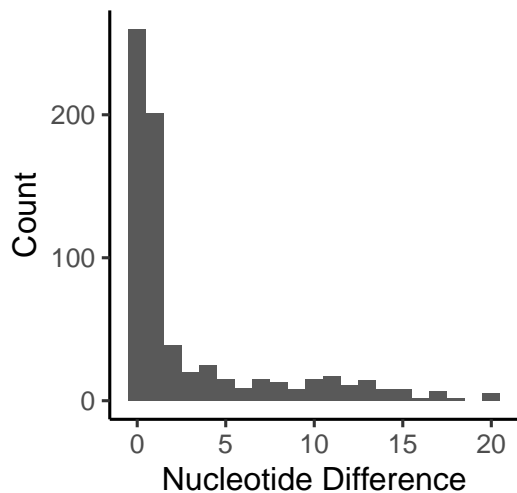
### IGHV3-NL1\*01

76 sequences assigned  
No exact matches.



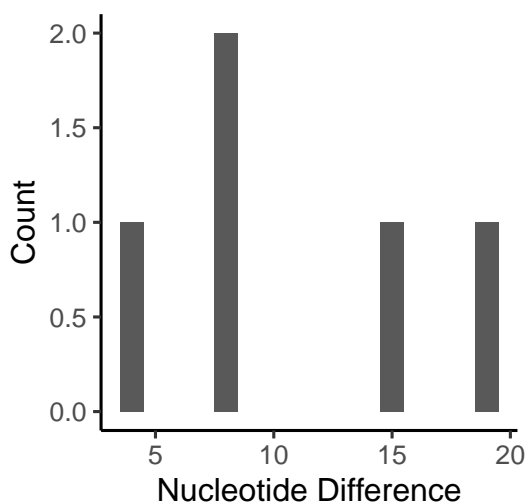
### IGHV3-73\*01\_02

787 sequences assigned  
260 (33%) exact matches, in which:  
152 unique CDR3  
5 unique J



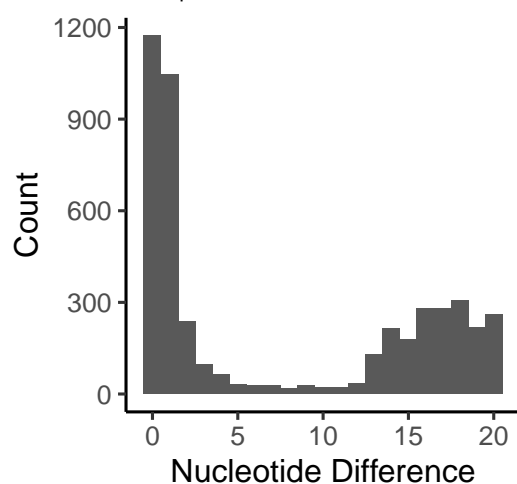
### IGHV3-43D\*04

6 sequences assigned  
No exact matches.



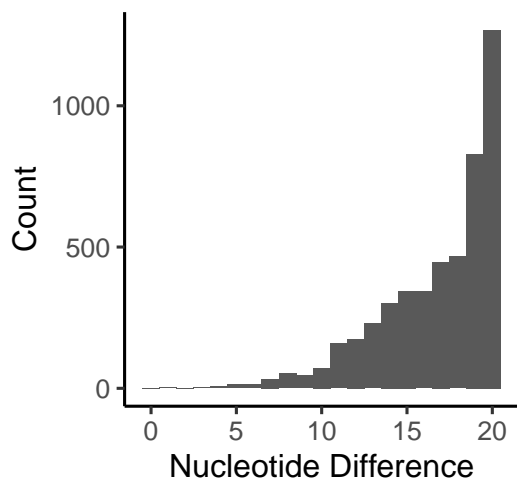
### IGHV4-4\*02\_03

7220 sequences assigned  
1173 (16.2%) exact matches, in which:  
904 unique CDR3  
6 unique J



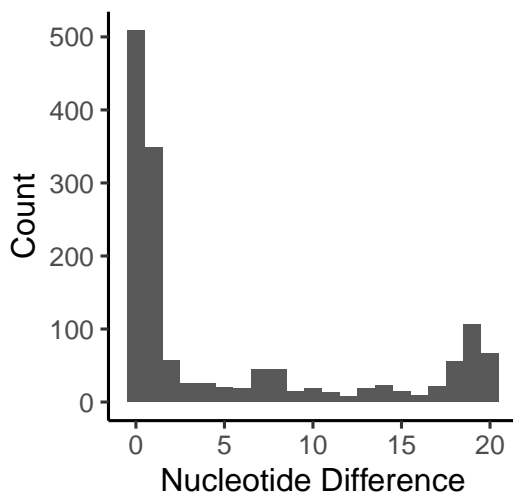
### IGHV3-74\*03

16952 sequences assigned  
1 (0%) exact matches, in which:  
1 unique CDR3  
1 unique J



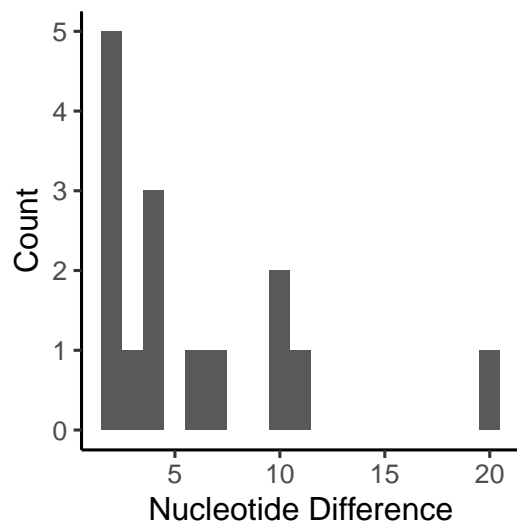
### IGHV3-64D\*06

2193 sequences assigned  
509 (23.2%) exact matches, in which:  
236 unique CDR3  
6 unique J



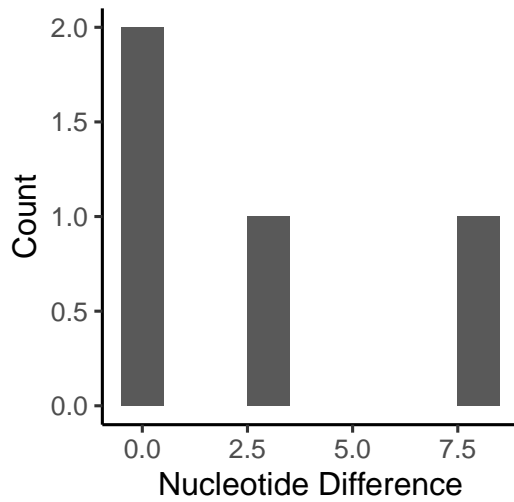
### IGHV4-28\*03

20 sequences assigned  
No exact matches.



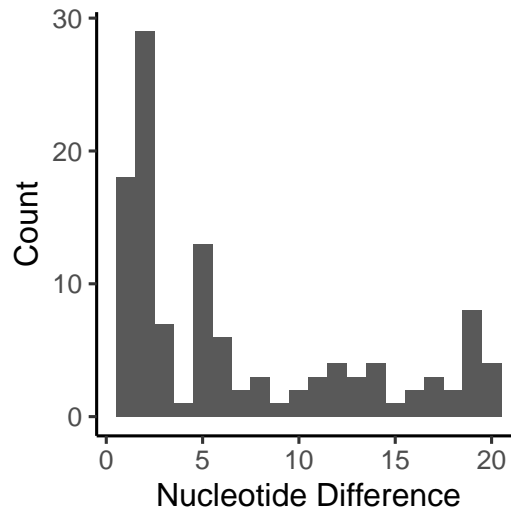
### IGHV4-28\*01\_07

5 sequences assigned  
2 (40%) exact matches, in which:  
1 unique CDR3  
1 unique J



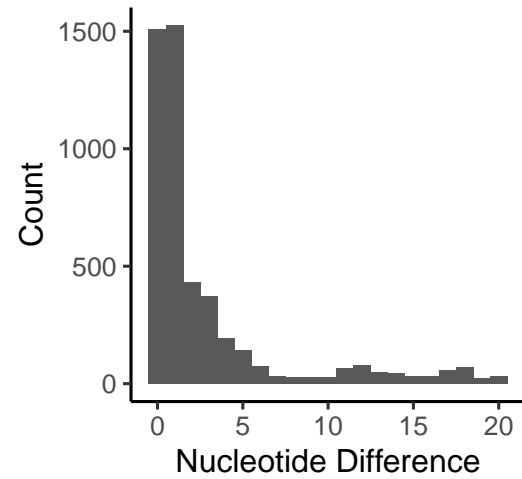
### IGHV4-30-2\*03

133 sequences assigned  
No exact matches.



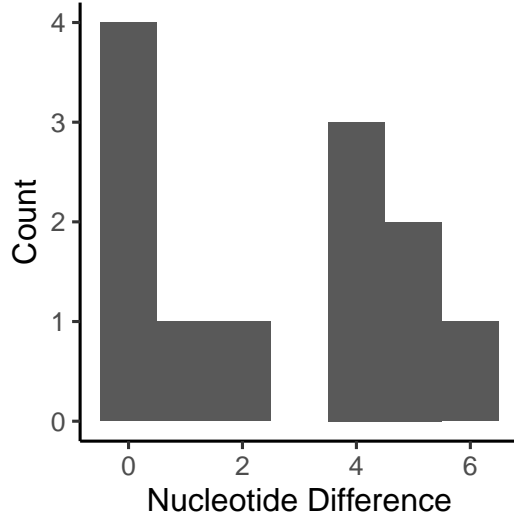
### IGHV4-31\*02

5654 sequences assigned  
1508 (26.7%) exact matches, in which:  
1207 unique CDR3  
6 unique J



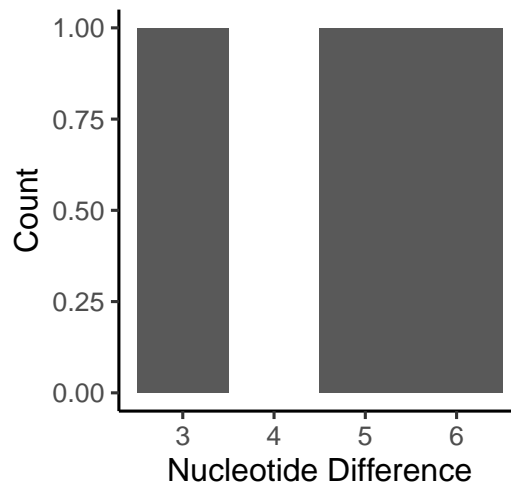
### IGHV4-28\*02\_05

12 sequences assigned  
4 (33.3%) exact matches, in which:  
4 unique CDR3  
3 unique J



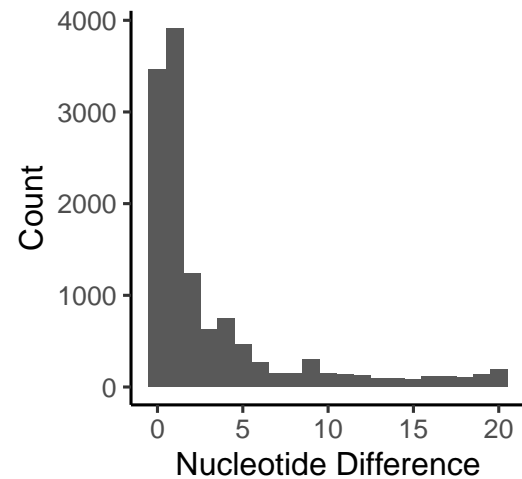
### IGHV4-30-2\*04

3 sequences assigned  
No exact matches.



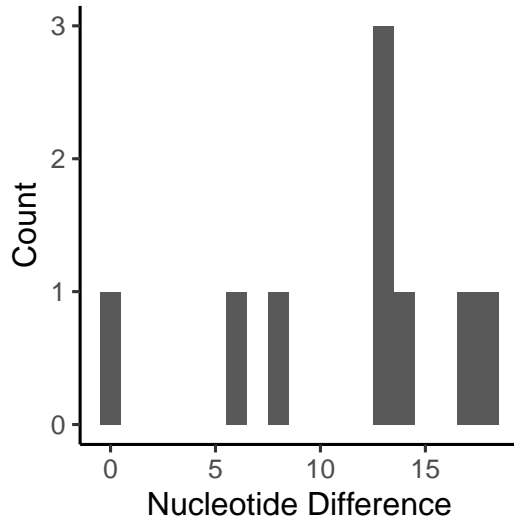
### IGHV4-34\*01\_02

13782 sequences assigned  
3463 (25.1%) exact matches, in which:  
2469 unique CDR3  
6 unique J



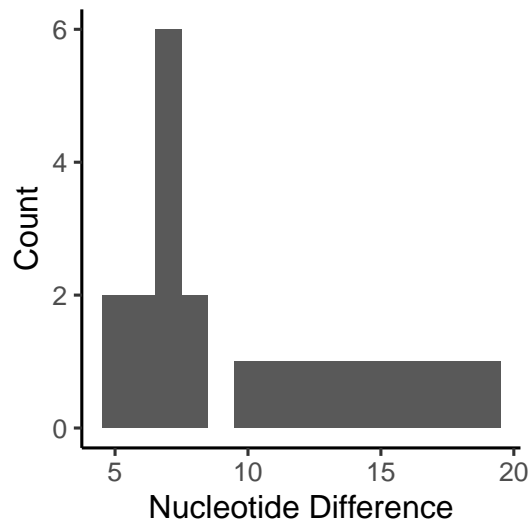
### IGHV4-30-4\*01

29 sequences assigned  
1 (3.4%) exact matches, in which:  
1 unique CDR3  
1 unique J



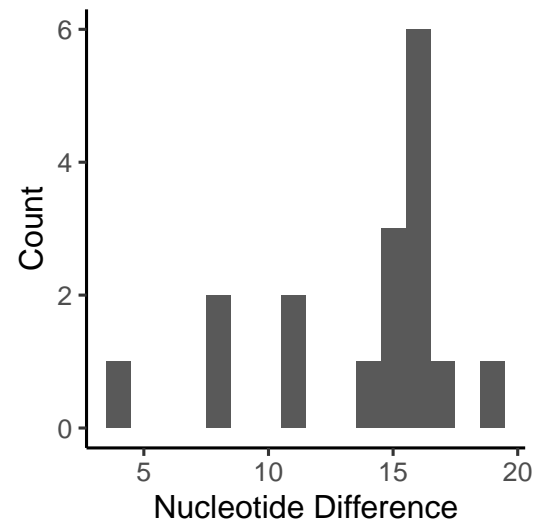
### IGHV4-30-4\*08

32 sequences assigned  
No exact matches.



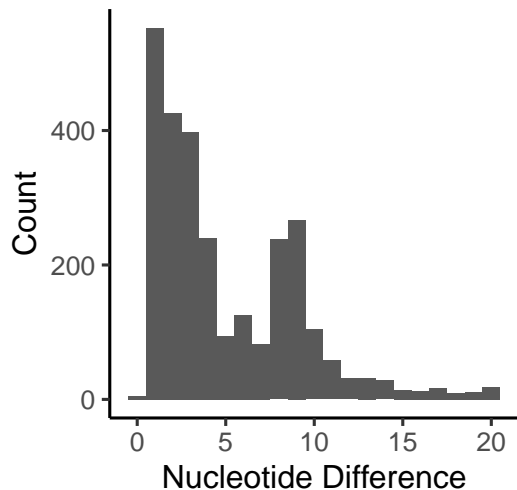
### IGHV4-38-2\*02

98 sequences assigned  
No exact matches.



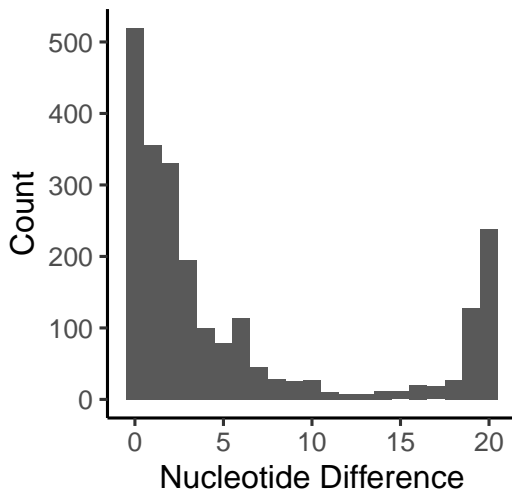
### IGHV4-39\*07

2997 sequences assigned  
5 (0.2%) exact matches, in which:  
5 unique CDR3  
3 unique J



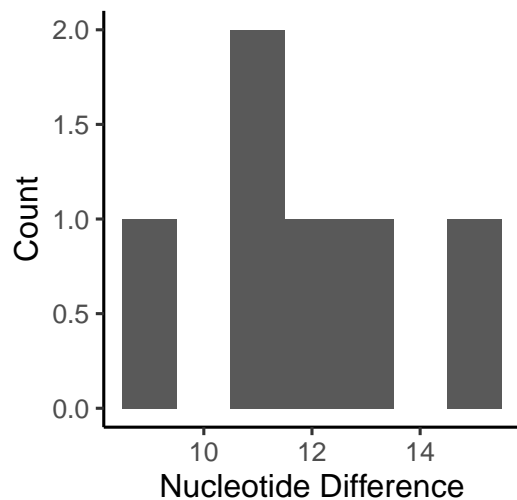
### IGHV4-61\*01

2533 sequences assigned  
520 (20.5%) exact matches, in which:  
454 unique CDR3  
6 unique J



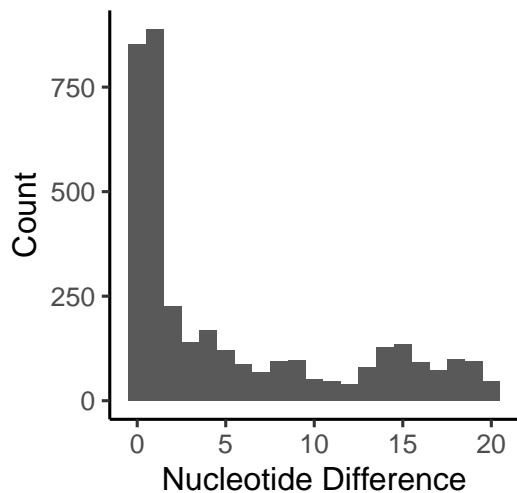
### IGHV1/OR15-3\*02

6 sequences assigned  
No exact matches.



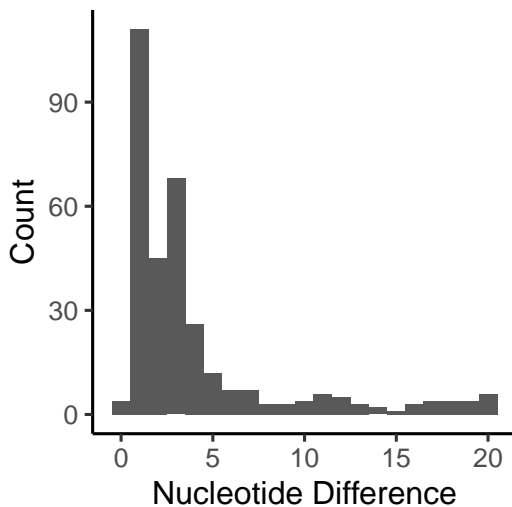
### IGHV4-59\*08

5250 sequences assigned  
853 (16.2%) exact matches, in which:  
667 unique CDR3  
6 unique J



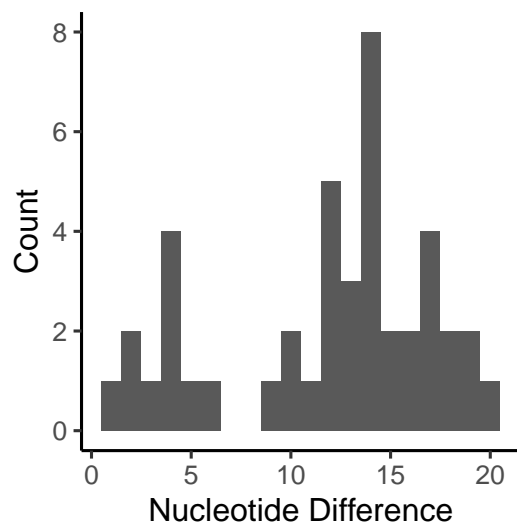
### IGHV4-61\*08

371 sequences assigned  
4 (1.1%) exact matches, in which:  
4 unique CDR3  
2 unique J



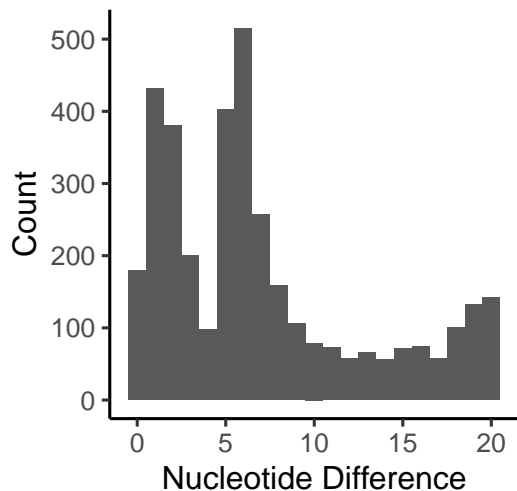
### IGHV4/OR15-8\*01

61 sequences assigned  
No exact matches.



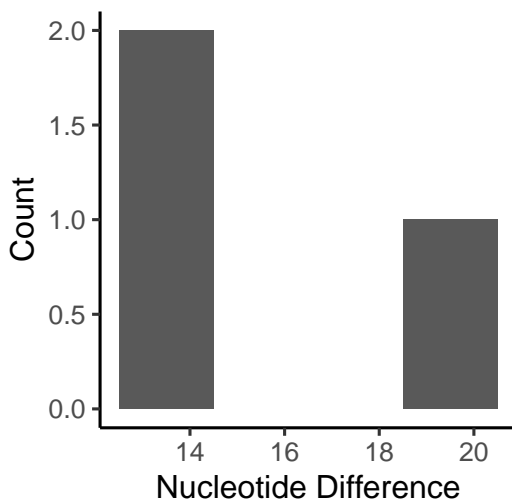
### IGHV4-59\*12

6720 sequences assigned  
179 (2.7%) exact matches, in which:  
171 unique CDR3  
6 unique J



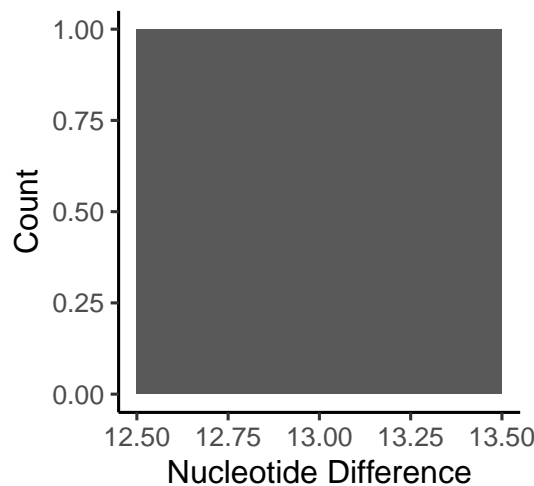
### IGHV1/OR15-2\*02\_03

15 sequences assigned  
No exact matches.



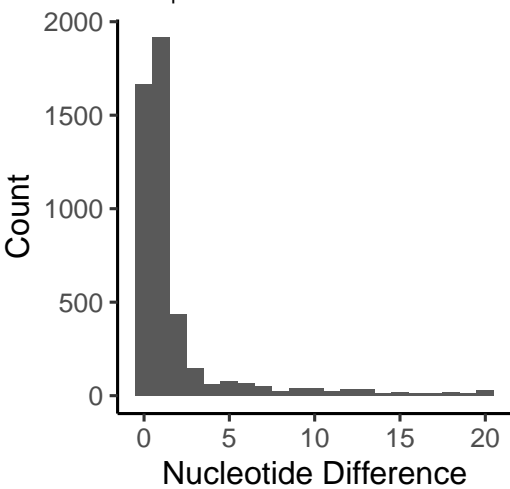
### IGHV4/OR15-8\*02

230 sequences assigned  
No exact matches.



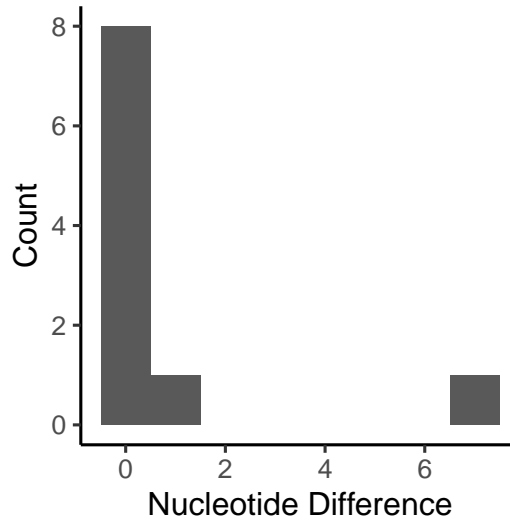
### IGHV5-10-1\*01\_03

5545 sequences assigned  
1664 (30%) exact matches, in which:  
959 unique CDR3  
6 unique J



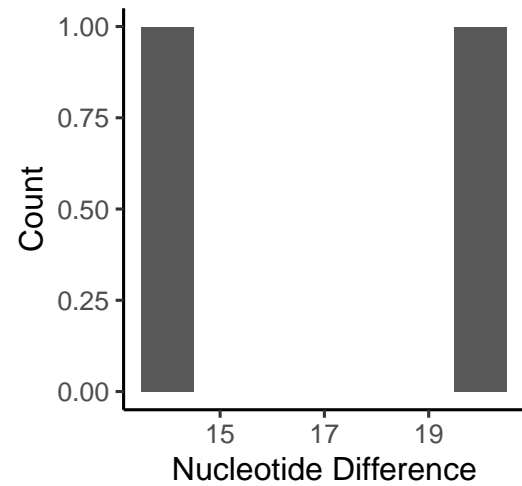
### IGHV5-51\*07

11 sequences assigned  
8 (72.7%) exact matches, in which:  
8 unique CDR3  
4 unique J



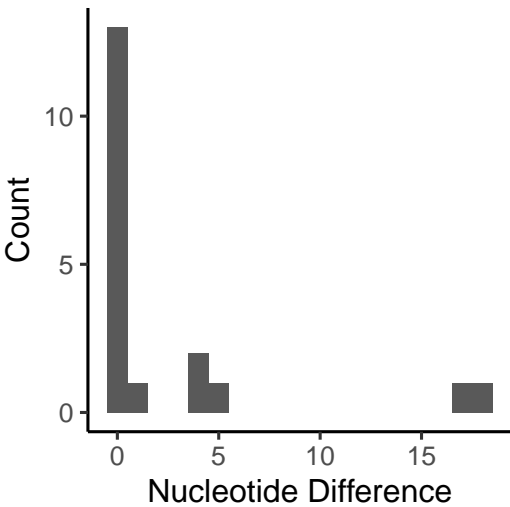
### IGHV3/OR16-9\*01

4 sequences assigned  
No exact matches.



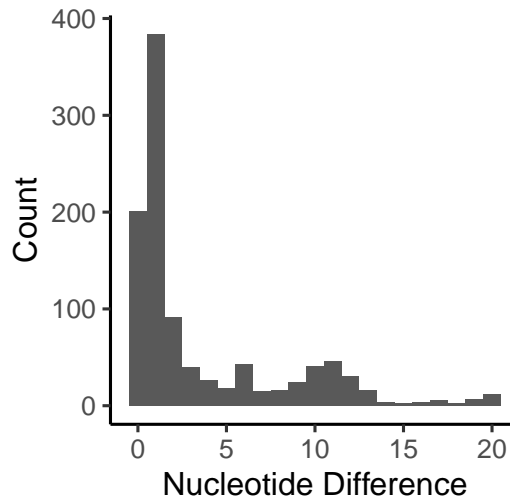
### IGHV5-51\*04

19 sequences assigned  
13 (68.4%) exact matches, in which:  
13 unique CDR3  
6 unique J



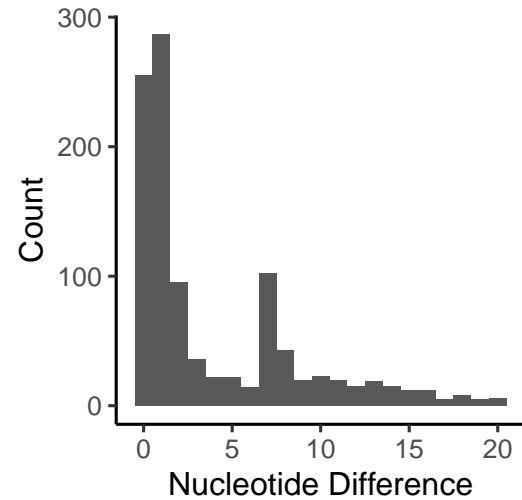
### IGHV6-1\*01\_02

1270 sequences assigned  
201 (15.8%) exact matches, in which:  
152 unique CDR3  
6 unique J



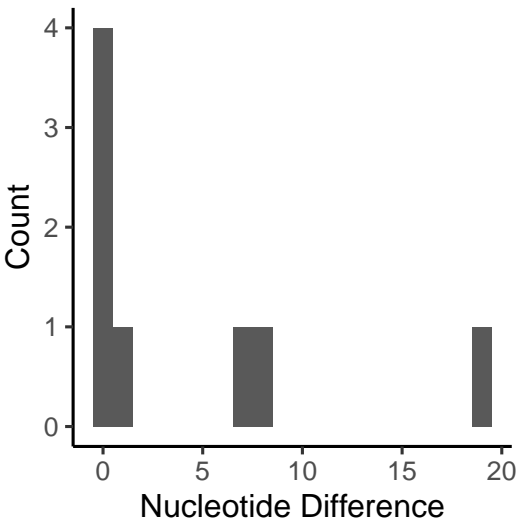
### IGHV7-4-1\*02

1090 sequences assigned  
255 (23.4%) exact matches, in which:  
196 unique CDR3  
5 unique J



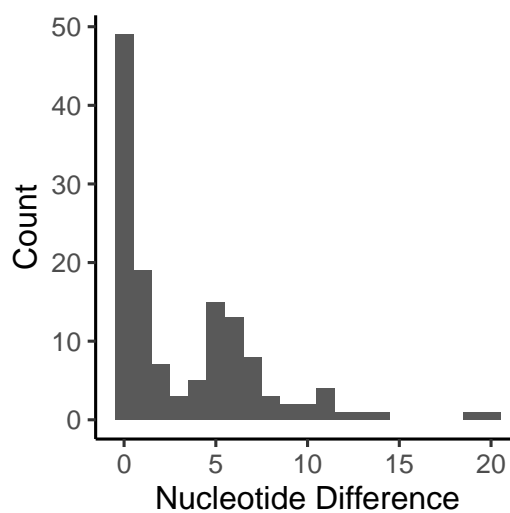
### IGHV5-51\*06

36 sequences assigned  
4 (11.1%) exact matches, in which:  
4 unique CDR3  
3 unique J



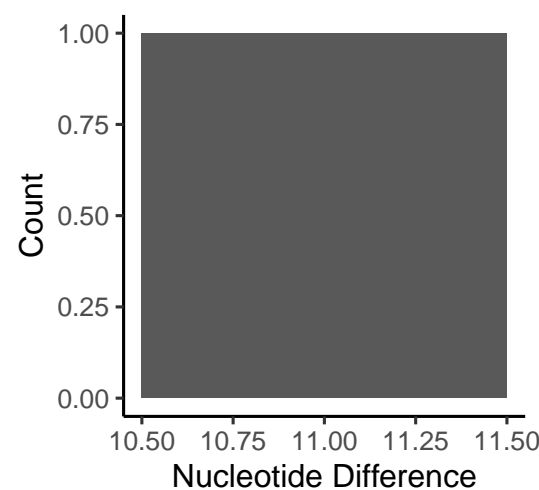
### IGHV6-1\*01\_02\_A315G

322 sequences assigned  
49 (15.2%) exact matches, in which:  
49 unique CDR3  
4 unique J

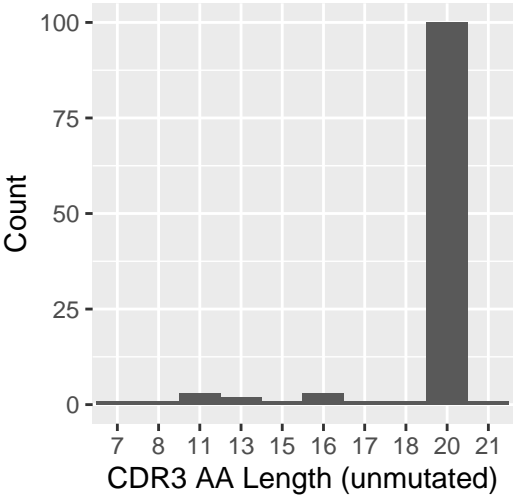


### IGHV7-81\*01

2 sequences assigned  
No exact matches.



IGHV3-72\*01\_G73A\_C75G\_G104C\_G117A\_G118A\_T165C\_C167T\_G170T\_C174T\_A177G\_C179G



IGHV6-1\*01\_02\_A315G

