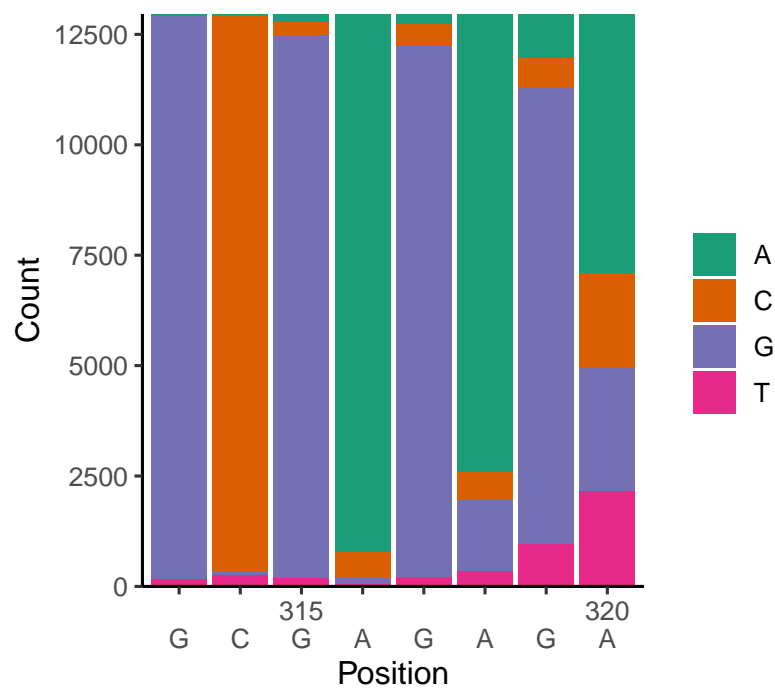
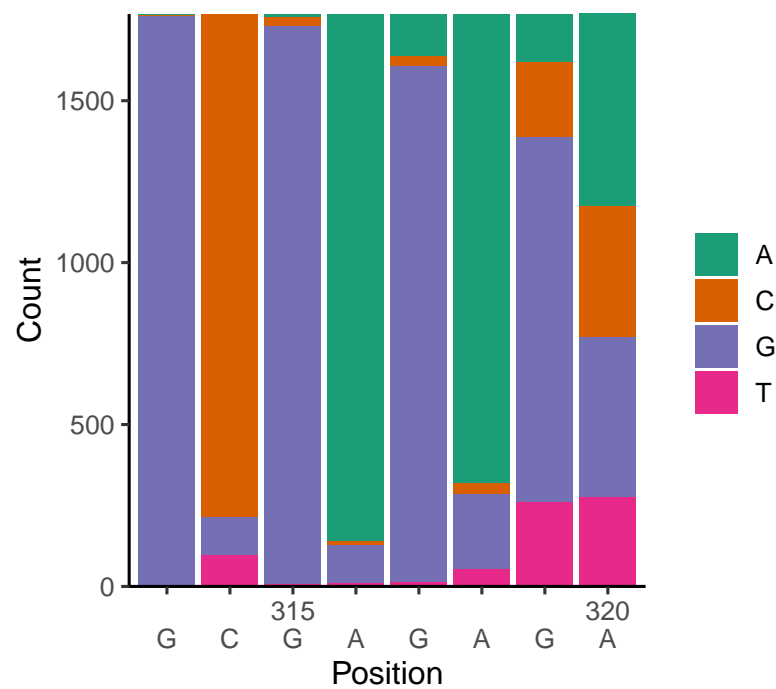


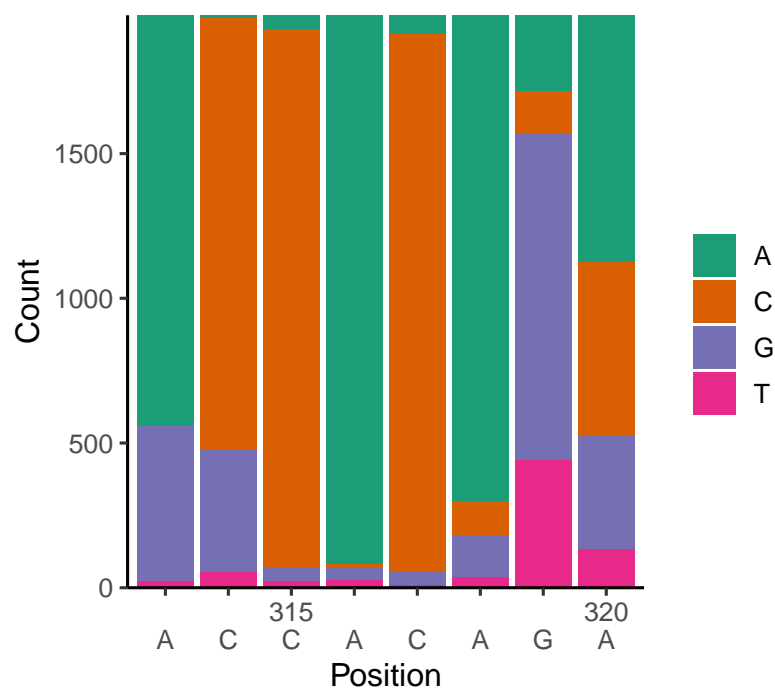
Gene IGHV1-18\*01\_A190G



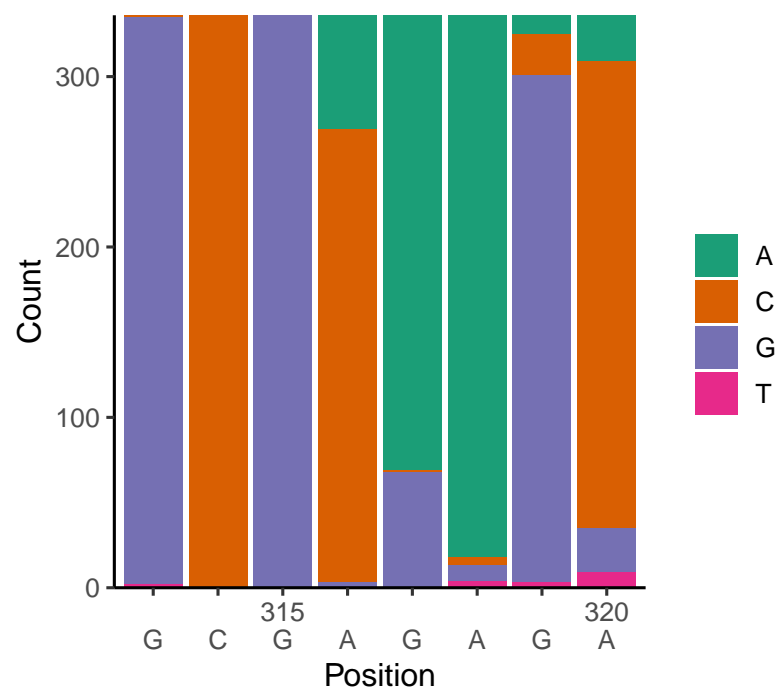
Gene IGHV4-31\*02\_C198T



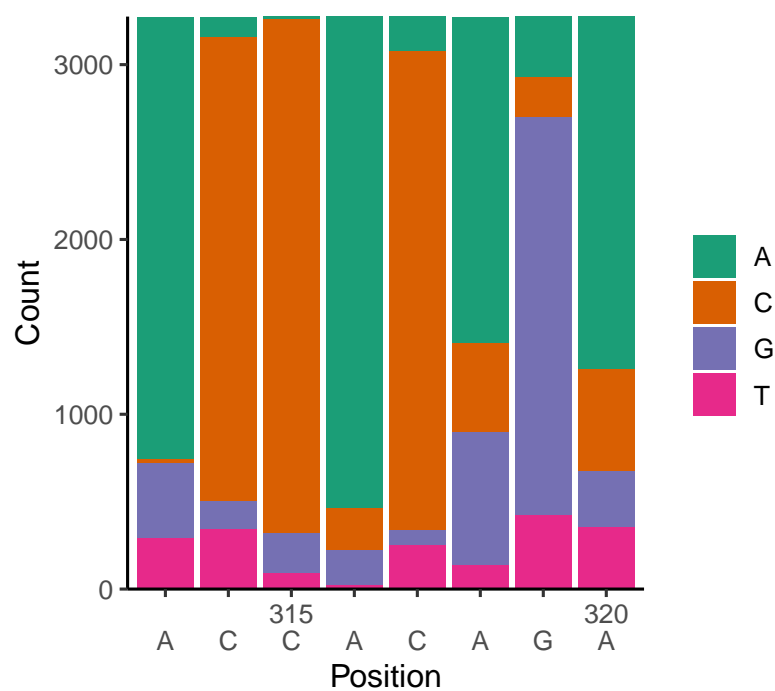
Gene IGHV3-15\*01\_02\_G147A



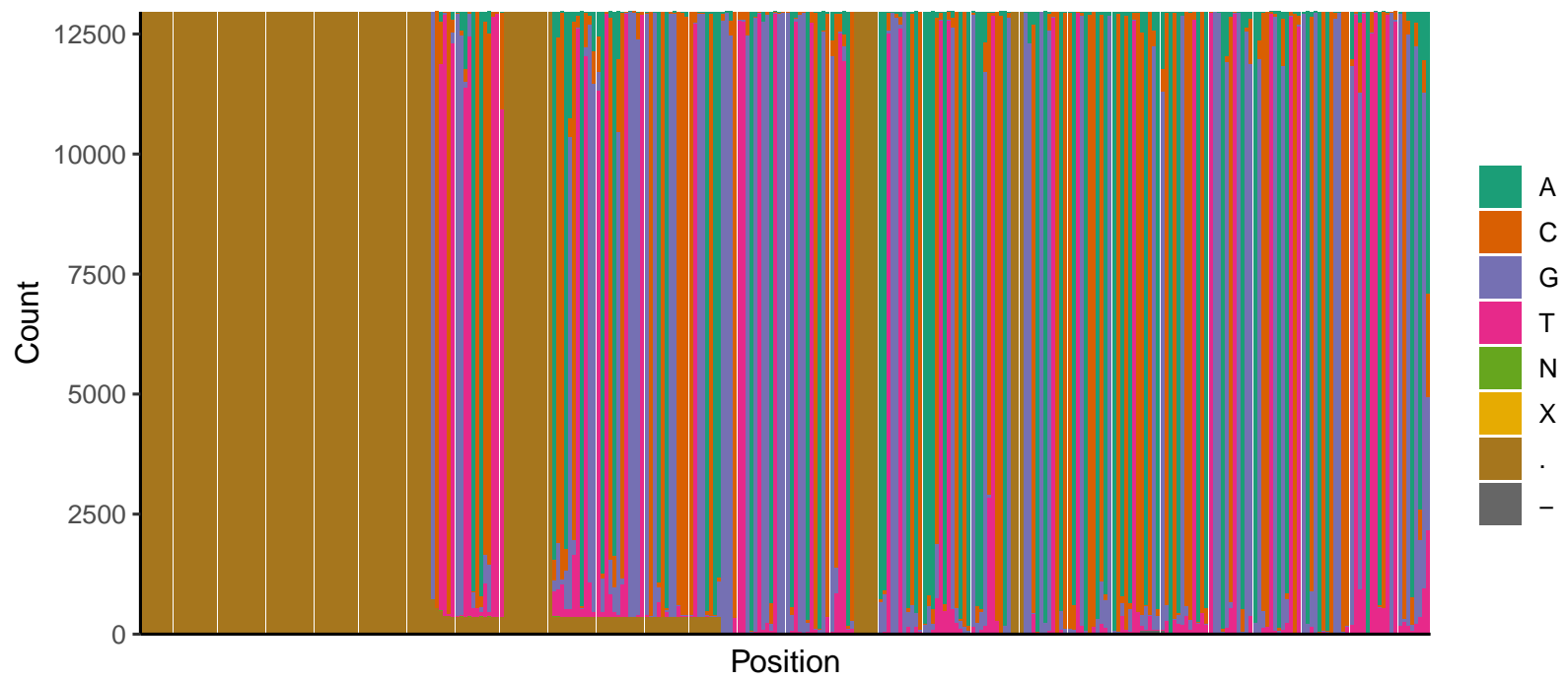
Gene IGHV6-1\*01\_02\_A315G



Gene IGHV3-15\*07\_C159T



Gene IGHV1-18\*01\_A190G



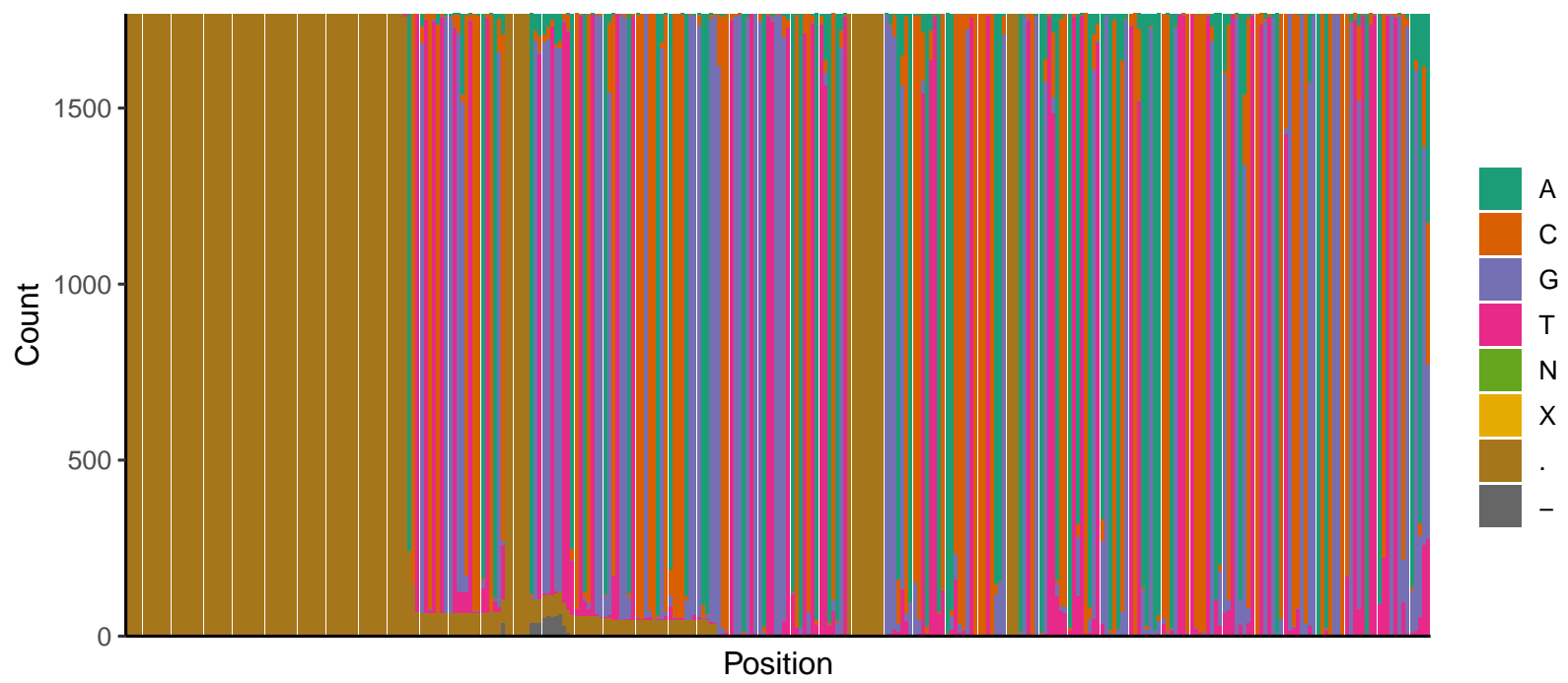
Gene IGHV3-15\*01\_02\_G147A



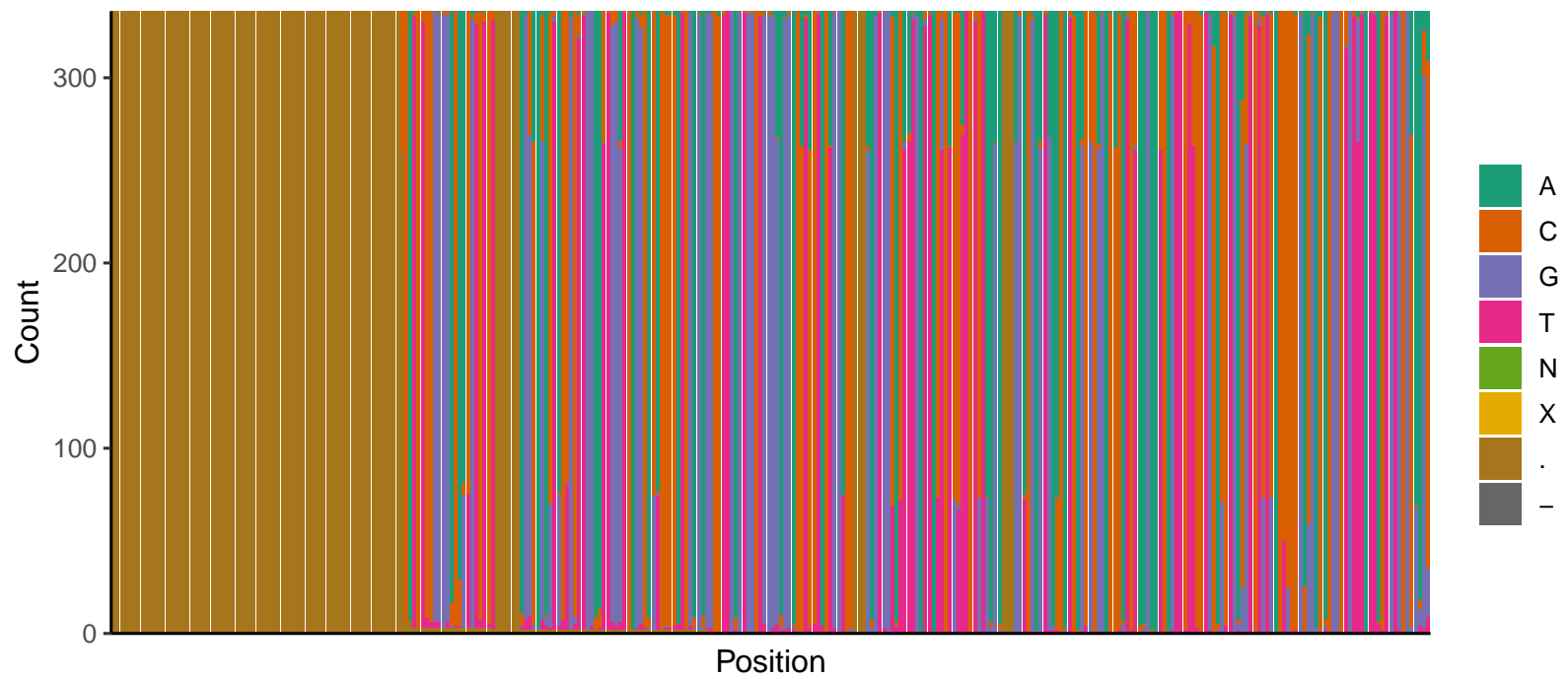
Gene IGHV3-15\*07\_C159T



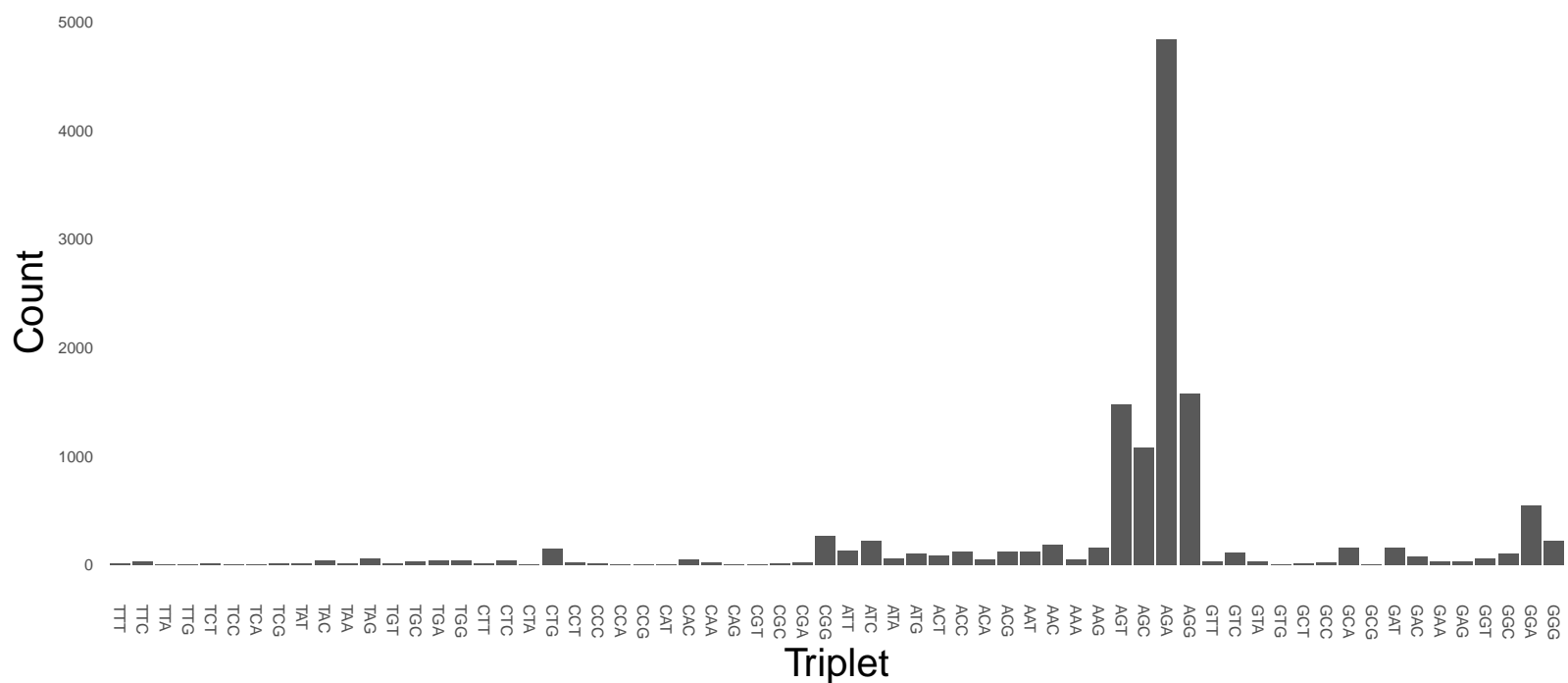
Gene IGHV4-31\*02\_C198T



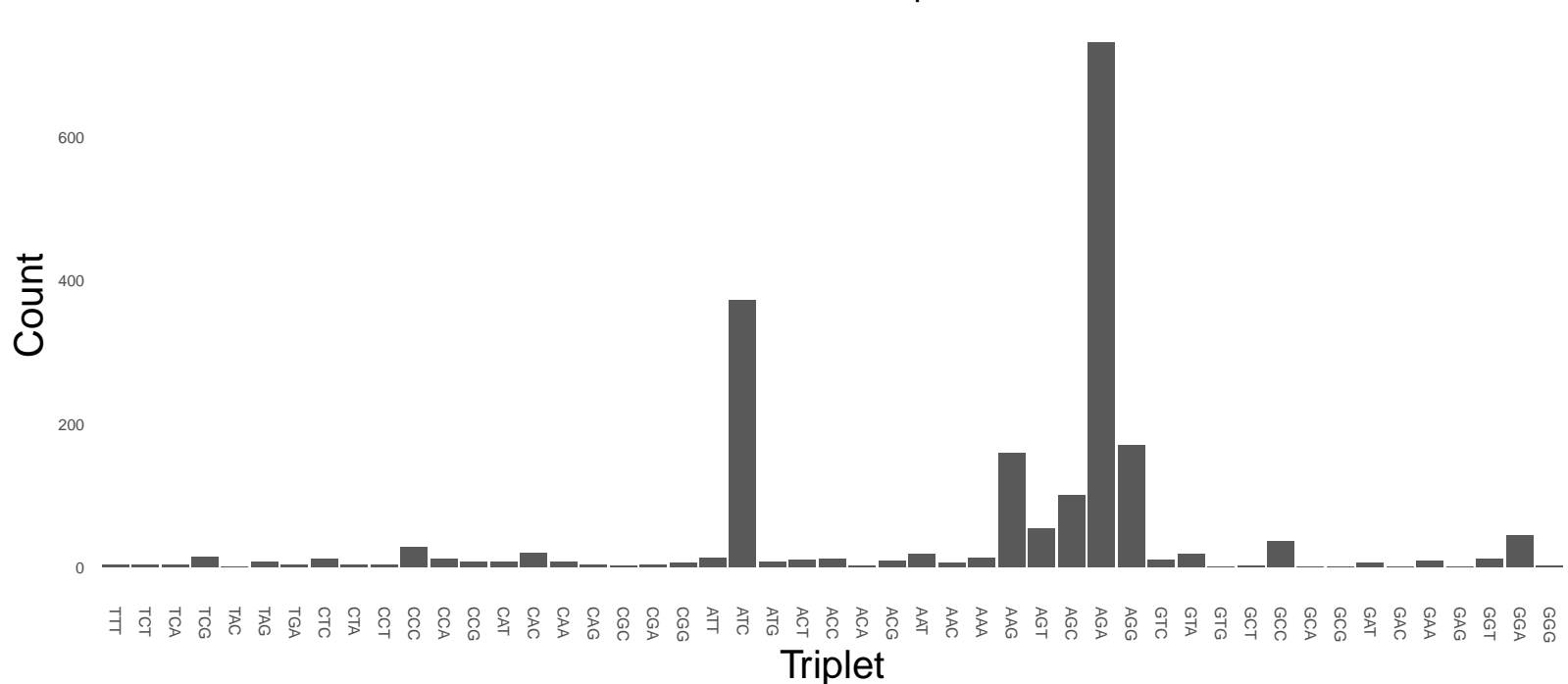
Gene IGHV6-1\*01\_02\_A315G



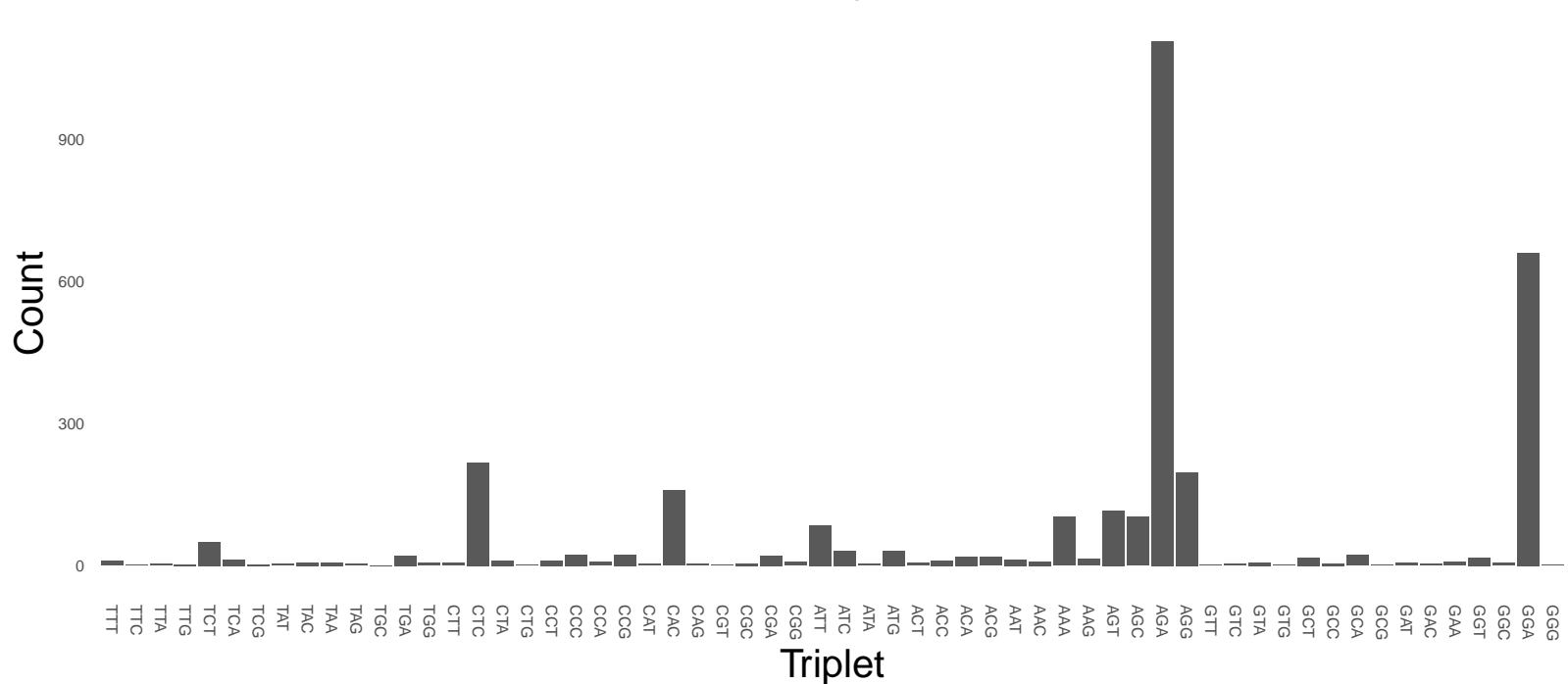
IGHV1-18\*01\_A190G- Final 3 nucleotides as a triplet



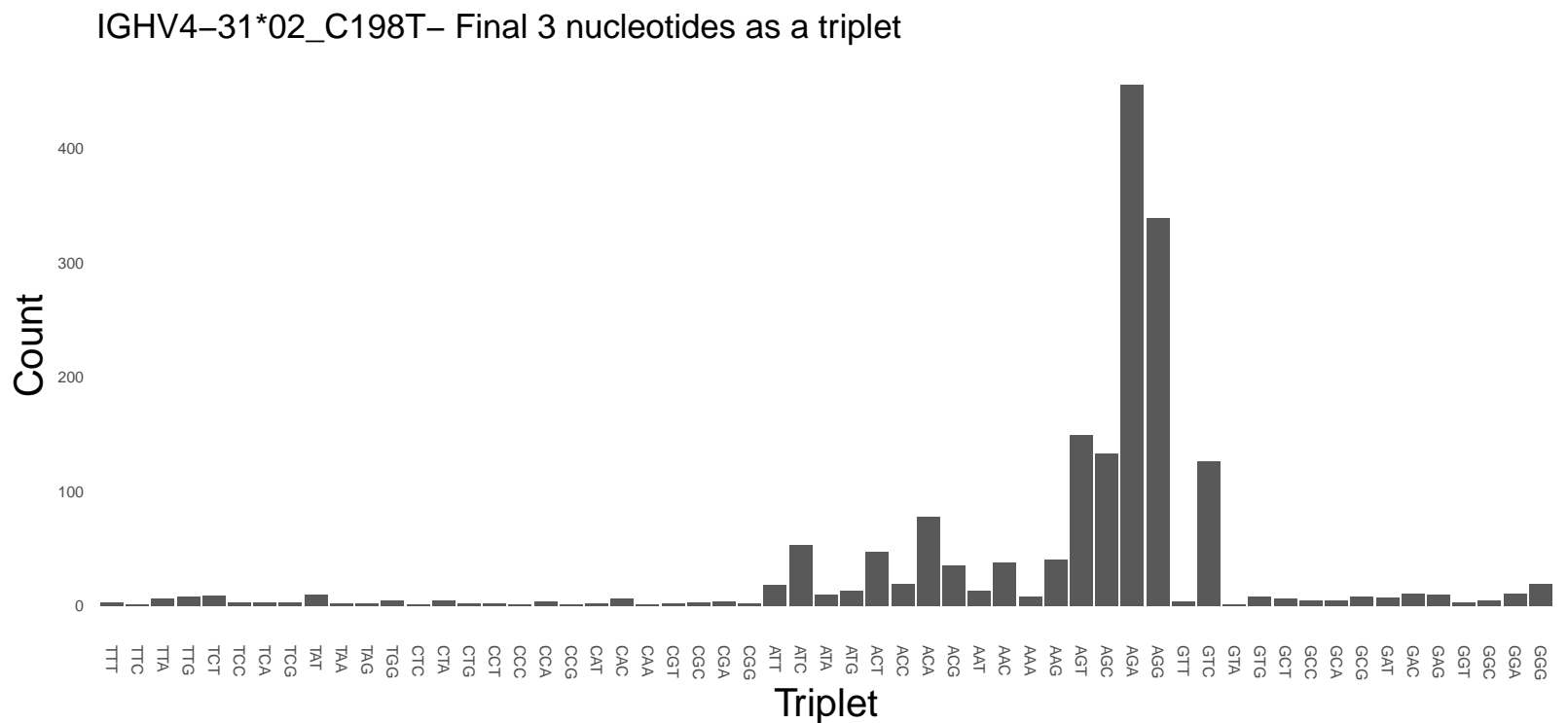
IGHV3-15\*01\_02\_G147A- Final 3 nucleotides as a triplet



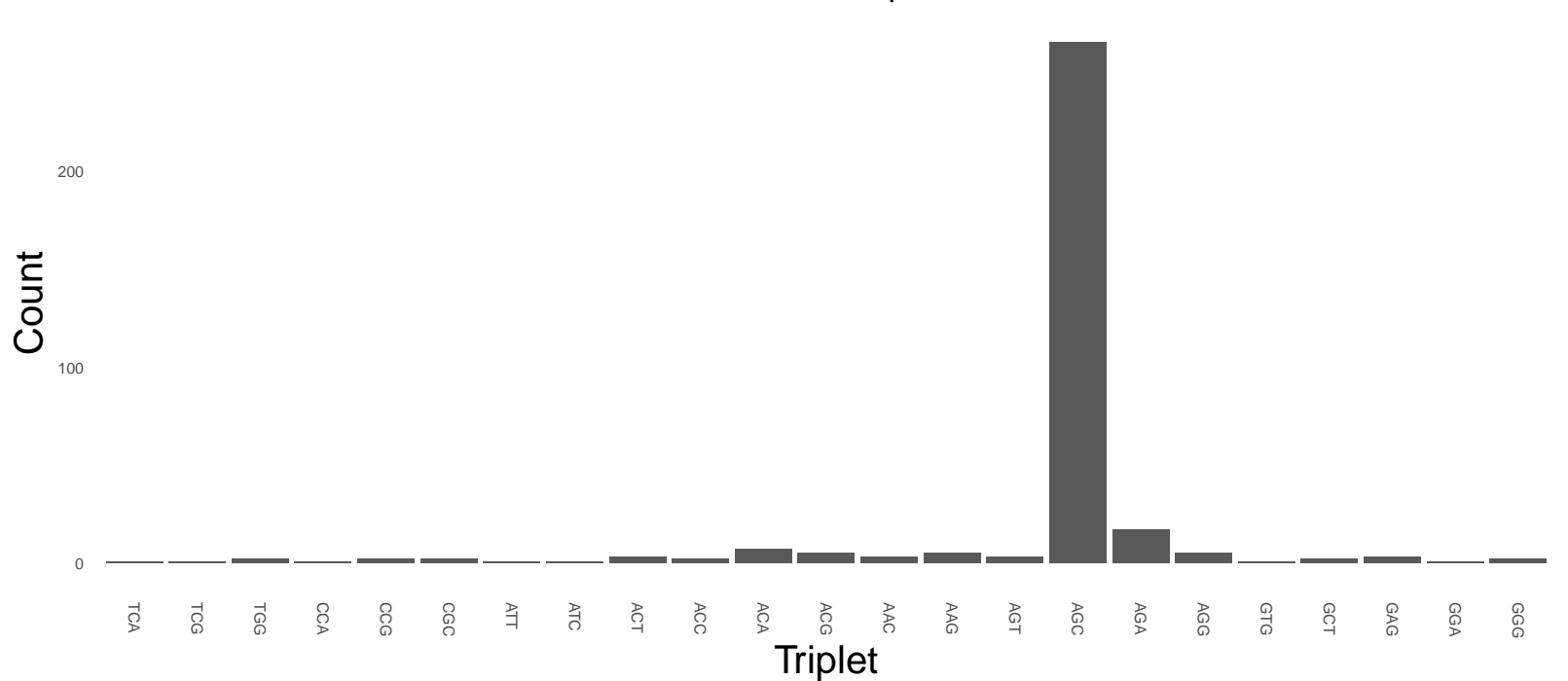
IGHV3-15\*07\_C159T- Final 3 nucleotides as a triplet



IGHV4–31\*02\_C198T– Final 3 nucleotides as a triplet

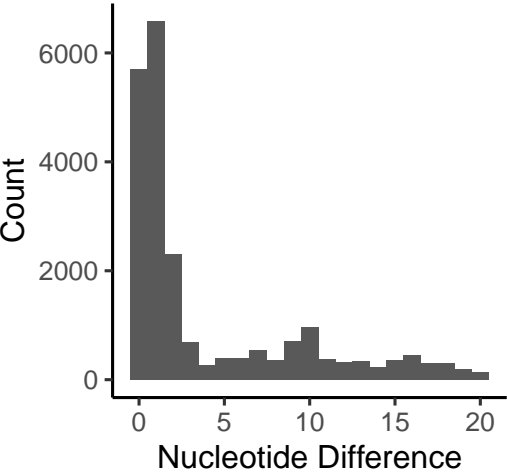


IGHV6–1\*01\_02\_A315G– Final 3 nucleotides as a triplet



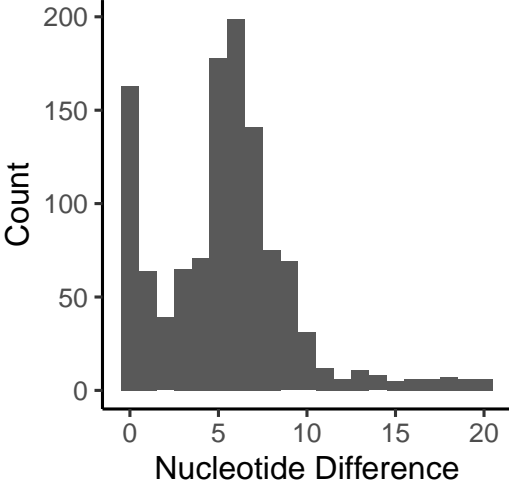
IGHV1-2\*02

24254 sequences assigned  
5706 (23.5%) exact matches, in which:  
4661 unique CDR3  
6 unique J



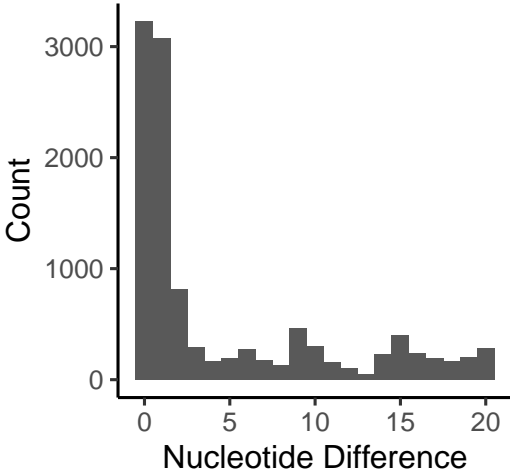
IGHV1-8\*02

1180 sequences assigned  
163 (13.8%) exact matches, in which:  
161 unique CDR3  
5 unique J



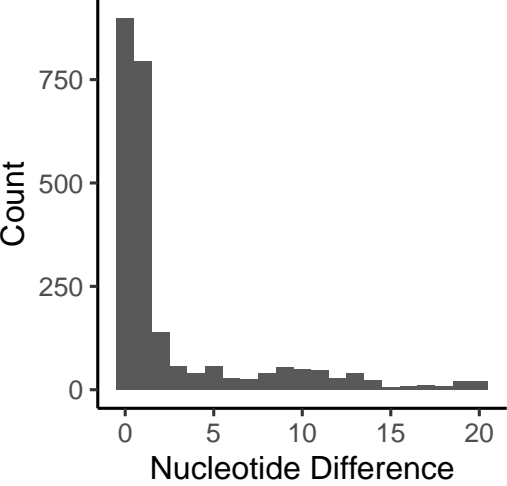
IGHV1-18\*01\_A190G

12963 sequences assigned  
3227 (24.9%) exact matches, in which:  
2722 unique CDR3  
6 unique J



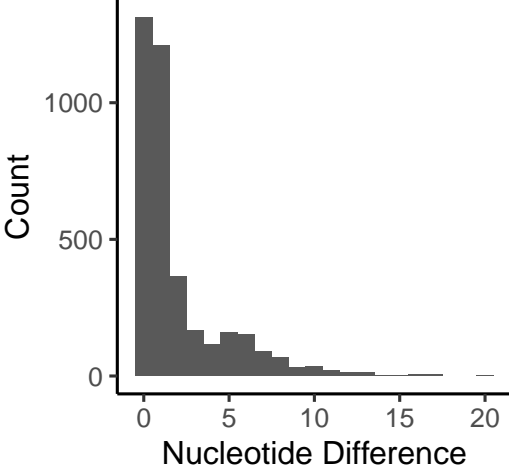
IGHV1-3\*01\_05

2679 sequences assigned  
899 (33.6%) exact matches, in which:  
759 unique CDR3  
6 unique J



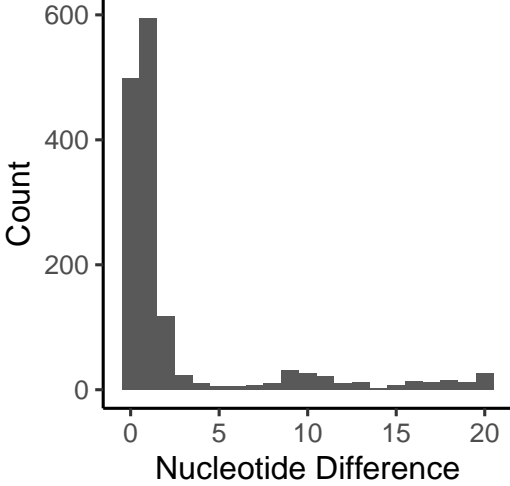
IGHV1-8\*03

3819 sequences assigned  
1311 (34.3%) exact matches, in which:  
1129 unique CDR3  
6 unique J



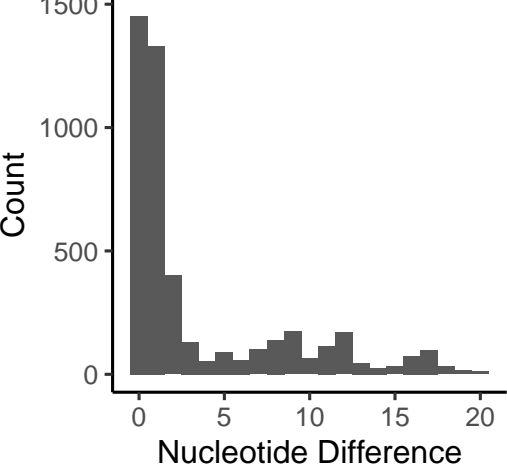
IGHV1-24\*01

2123 sequences assigned  
498 (23.5%) exact matches, in which:  
386 unique CDR3  
6 unique J



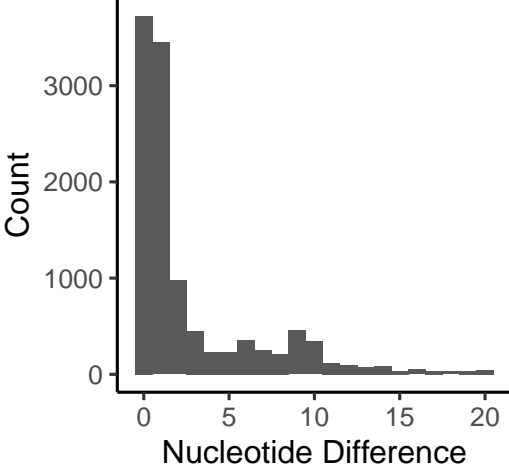
IGHV1-8\*01

4671 sequences assigned  
1452 (31.1%) exact matches, in which:  
1275 unique CDR3  
6 unique J



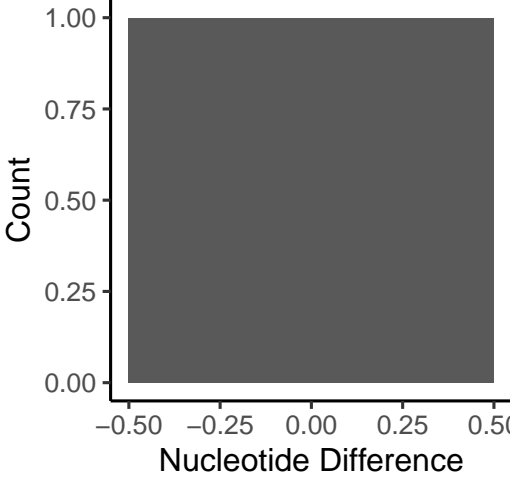
IGHV1-18\*01

11925 sequences assigned  
3724 (31.2%) exact matches, in which:  
3164 unique CDR3  
6 unique J



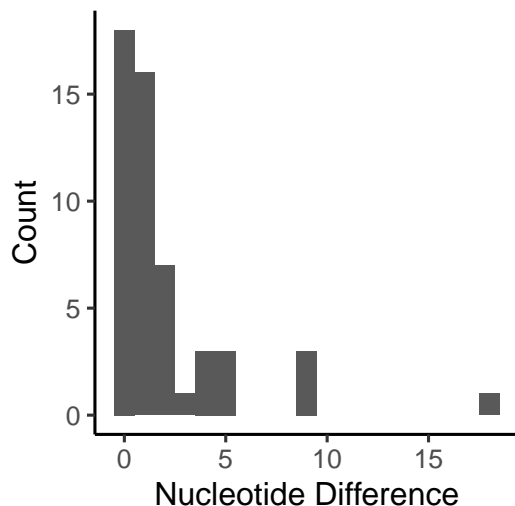
IGHV1-38-4\*01

1 sequences assigned  
1 (100%) exact matches, in which:  
1 unique CDR3  
1 unique J



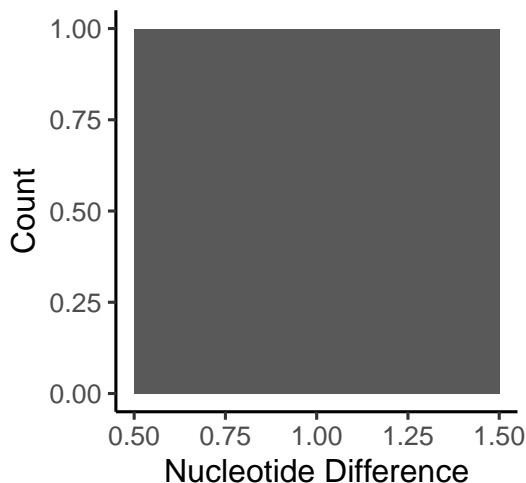
### IGHV1-45\*02

52 sequences assigned  
18 (34.6%) exact matches, in which:  
15 unique CDR3  
2 unique J



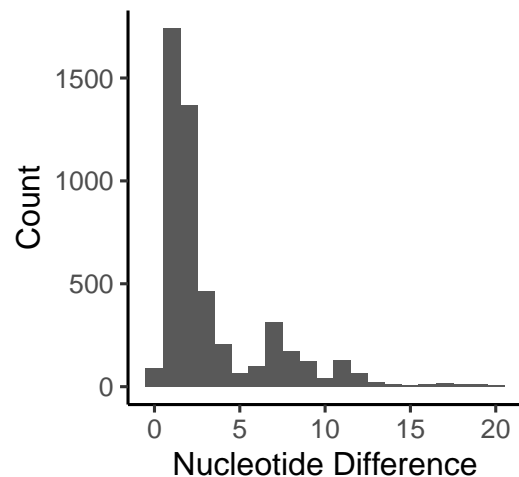
### IGHV1-68\*02\_03

1 sequences assigned  
No exact matches.



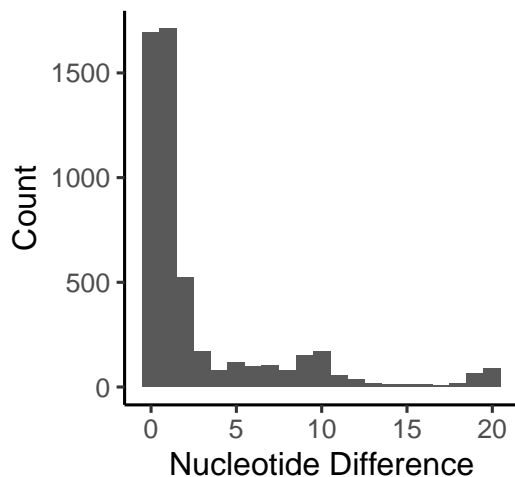
### IGHV1-69\*10

5053 sequences assigned  
89 (1.8%) exact matches, in which:  
88 unique CDR3  
5 unique J



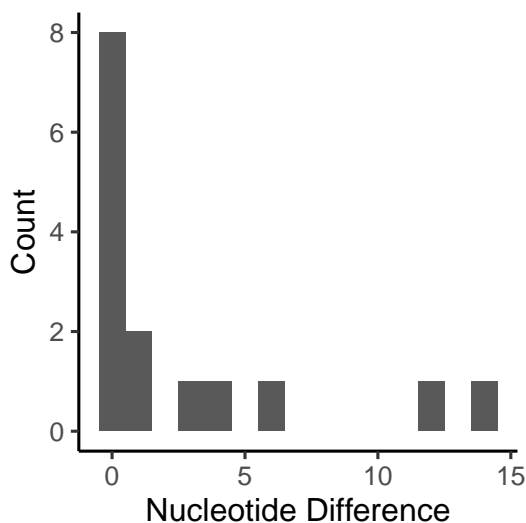
### IGHV1-46\*01

5596 sequences assigned  
1695 (30.3%) exact matches, in which:  
1433 unique CDR3  
6 unique J



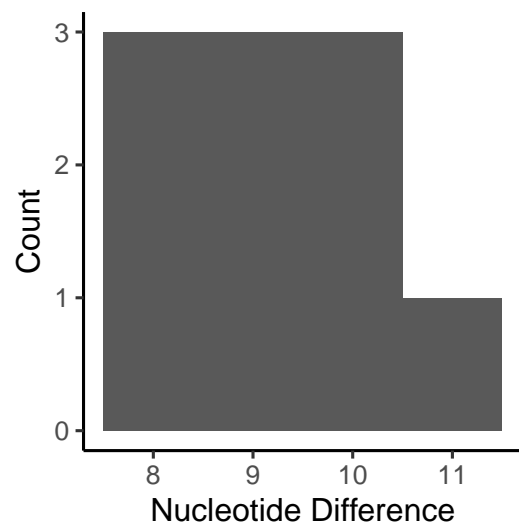
### IGHV1-69-2\*01

20 sequences assigned  
8 (40%) exact matches, in which:  
6 unique CDR3  
4 unique J



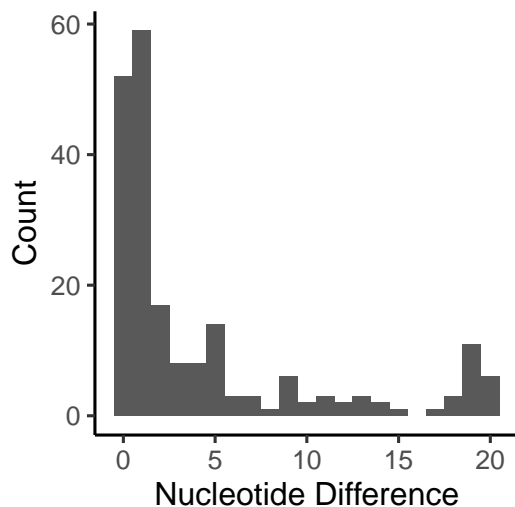
### IGHV1-NL1\*01

10 sequences assigned  
No exact matches.



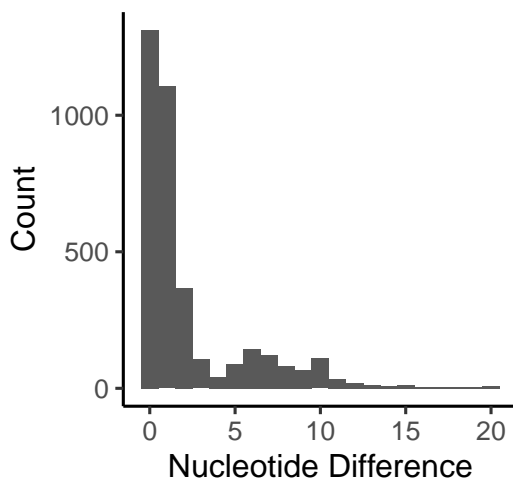
### IGHV1-58\*02

267 sequences assigned  
52 (19.5%) exact matches, in which:  
41 unique CDR3  
5 unique J



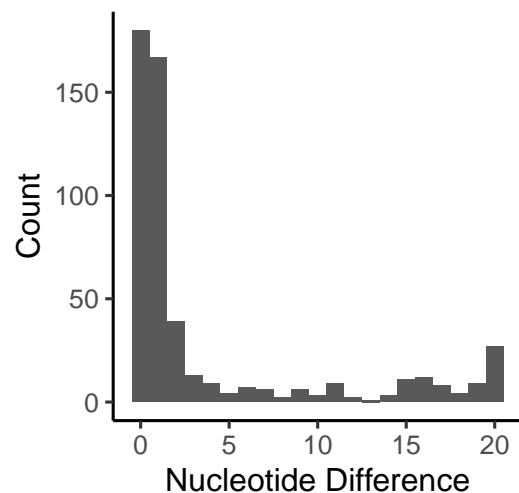
### IGHV1-69\*05

3861 sequences assigned  
1312 (34%) exact matches, in which:  
1174 unique CDR3  
6 unique J



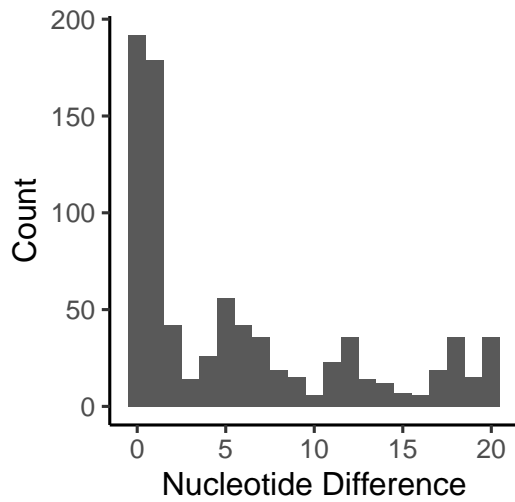
### IGHV2-5\*01

867 sequences assigned  
180 (20.8%) exact matches, in which:  
157 unique CDR3  
6 unique J



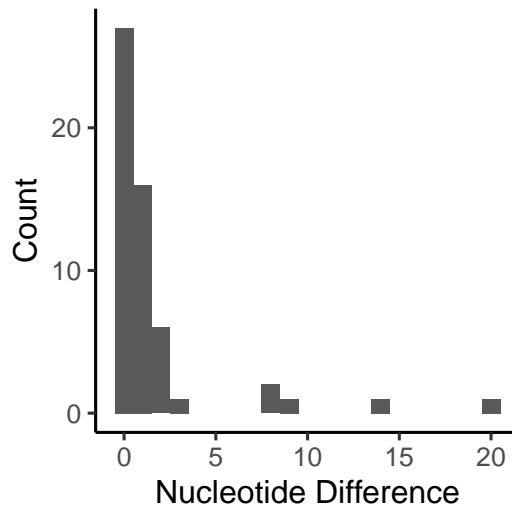
### IGHV2–5\*02

1100 sequences assigned  
192 (17.5%) exact matches, in which:  
169 unique CDR3  
5 unique J



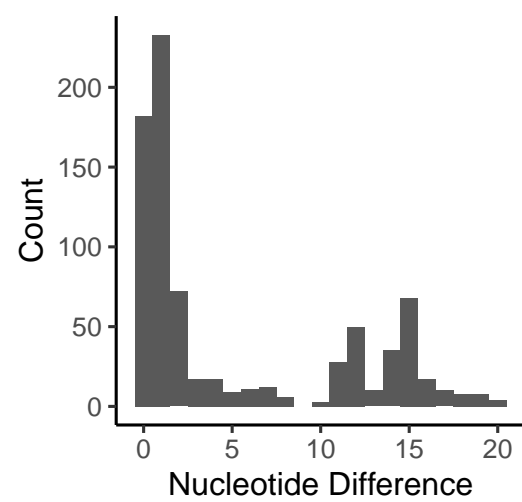
### IGHV2–26\*04

170 sequences assigned  
27 (15.9%) exact matches, in which:  
23 unique CDR3  
4 unique J



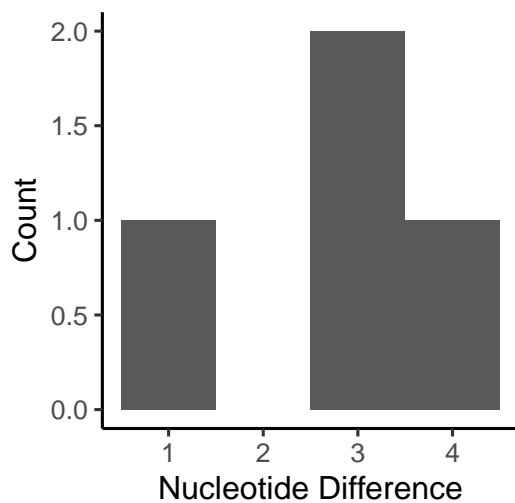
### IGHV2–70\*11\_15

846 sequences assigned  
182 (21.5%) exact matches, in which:  
149 unique CDR3  
6 unique J



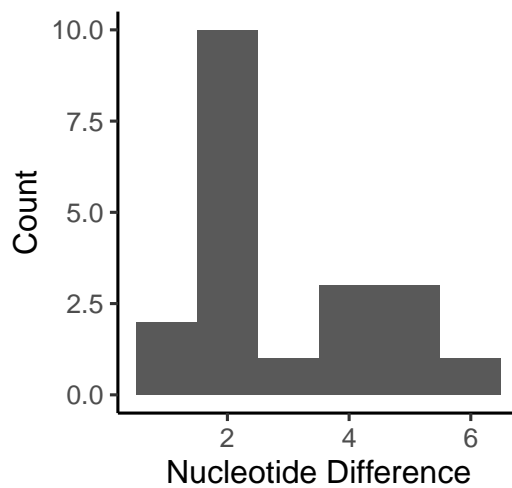
### IGHV2–26\*01

5 sequences assigned  
No exact matches.



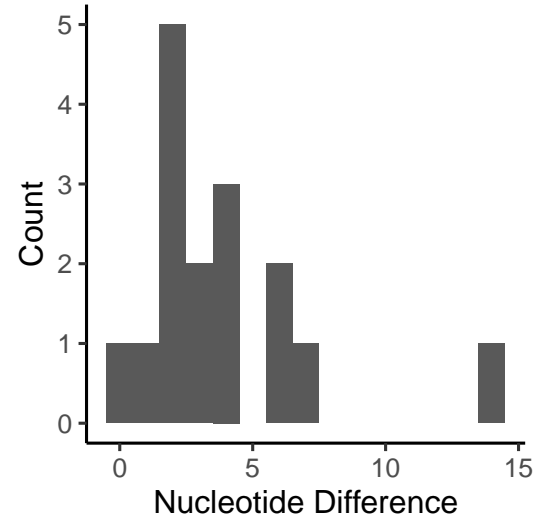
### IGHV2–70\*12

21 sequences assigned  
No exact matches.



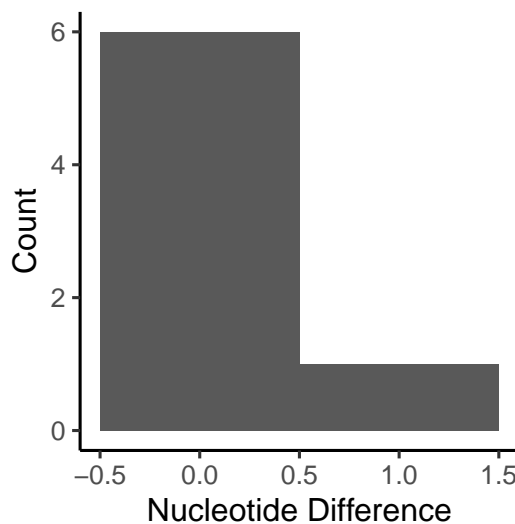
### IGHV2–70D\*14

17 sequences assigned  
1 (5.9%) exact matches, in which:  
1 unique CDR3  
1 unique J



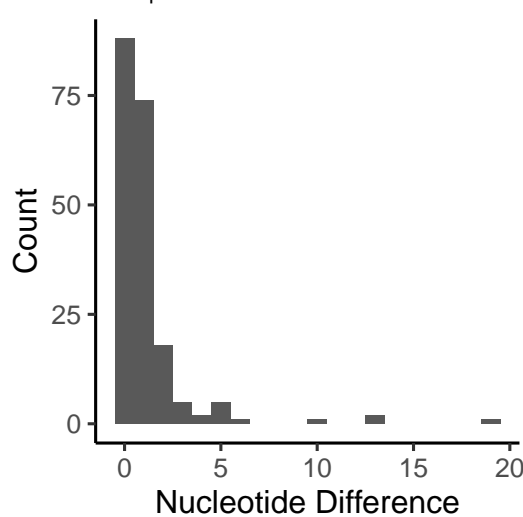
### IGHV2–26\*02

7 sequences assigned  
6 (85.7%) exact matches, in which:  
6 unique CDR3  
3 unique J



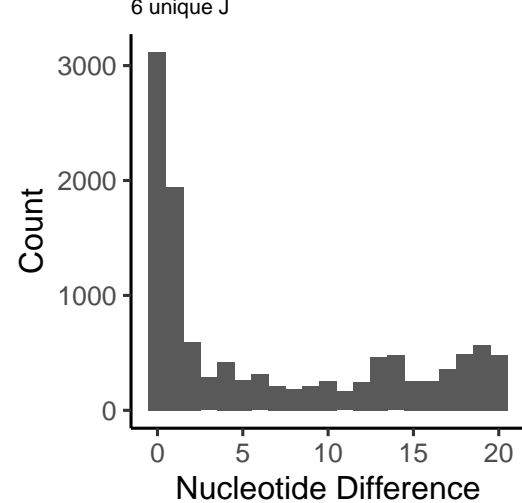
### IGHV2–70\*20

257 sequences assigned  
88 (34.2%) exact matches, in which:  
63 unique CDR3  
5 unique J



### IGHV3–7\*01

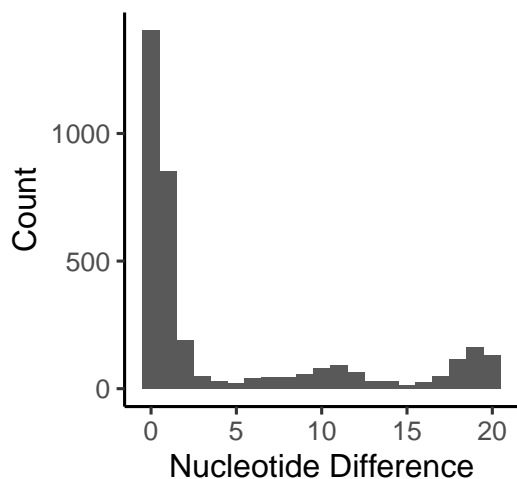
16458 sequences assigned  
3118 (18.9%) exact matches, in which:  
2050 unique CDR3  
6 unique J





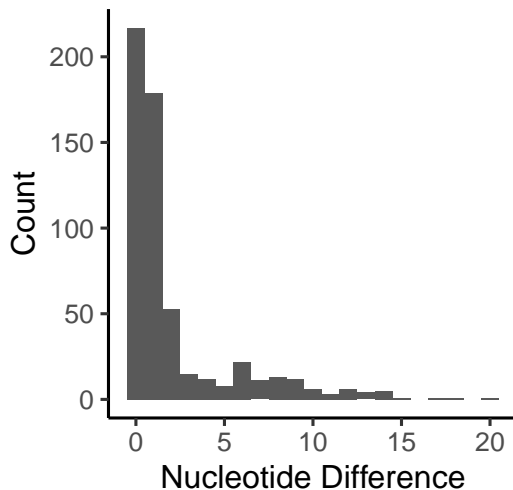
### IGHV3-9\*01

4182 sequences assigned  
1404 (33.6%) exact matches, in which:  
848 unique CDR3  
6 unique J



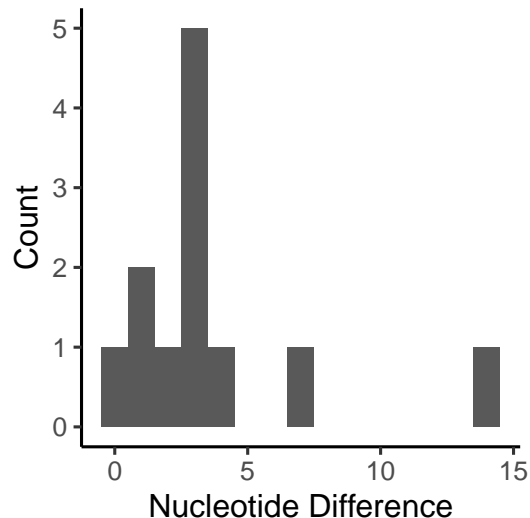
### IGHV3-13\*01

695 sequences assigned  
217 (31.2%) exact matches, in which:  
133 unique CDR3  
6 unique J



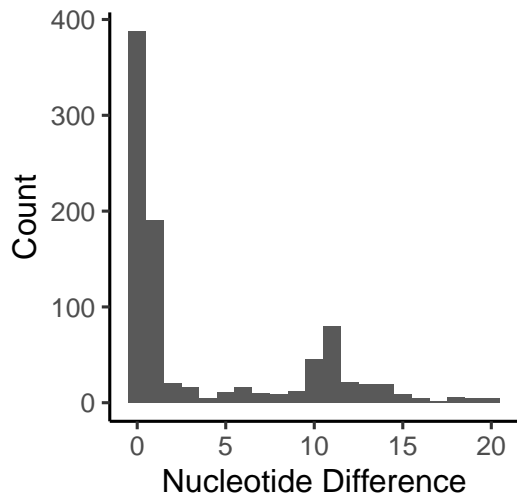
### IGHV3-19\*01

12 sequences assigned  
1 (8.3%) exact matches, in which:  
1 unique CDR3  
0 unique J



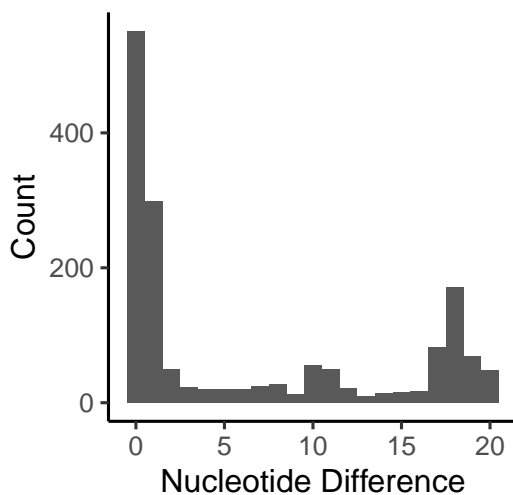
### IGHV3-9\*03

900 sequences assigned  
388 (43.1%) exact matches, in which:  
225 unique CDR3  
6 unique J



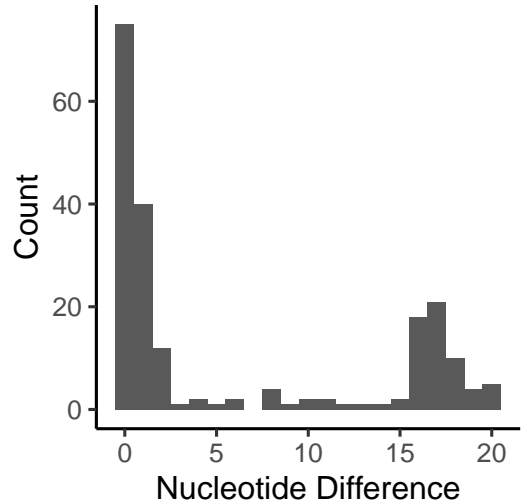
### IGHV3-15\*01\_02\_G147A

1978 sequences assigned  
551 (27.9%) exact matches, in which:  
363 unique CDR3  
6 unique J



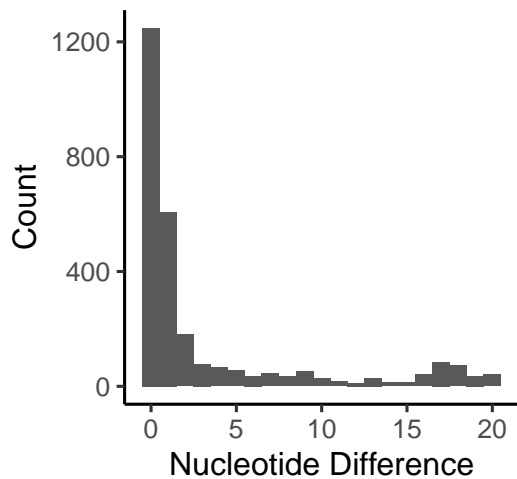
### IGHV3-20\*01\_02

266 sequences assigned  
75 (28.2%) exact matches, in which:  
45 unique CDR3  
6 unique J



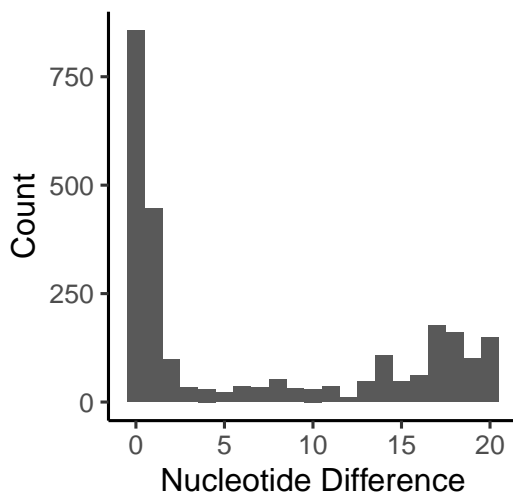
### IGHV3-11\*04

4090 sequences assigned  
1248 (30.5%) exact matches, in which:  
864 unique CDR3  
6 unique J



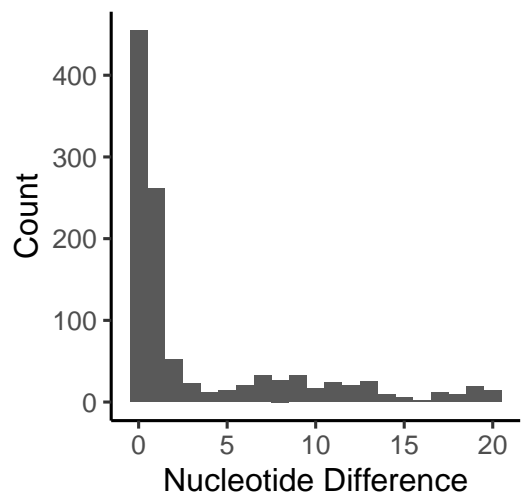
### IGHV3-15\*07\_C159T

3275 sequences assigned  
857 (26.2%) exact matches, in which:  
576 unique CDR3  
6 unique J



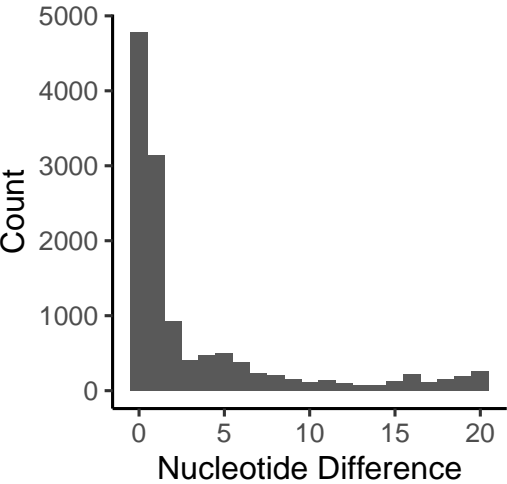
### IGHV3-20\*03\_04

1193 sequences assigned  
455 (38.1%) exact matches, in which:  
294 unique CDR3  
6 unique J



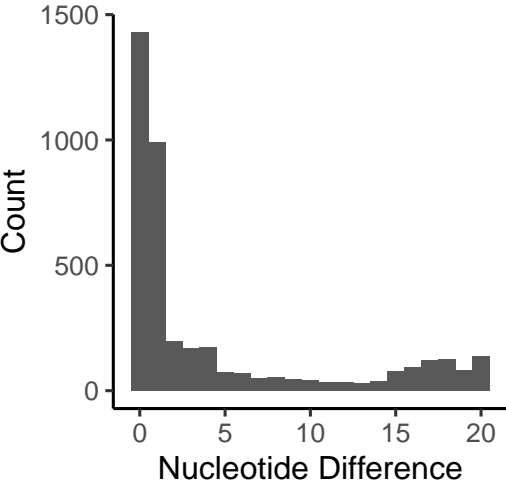
IGHV3-21\*01\_02

16117 sequences assigned  
4779 (29.7%) exact matches, in which:  
2984 unique CDR3  
6 unique J



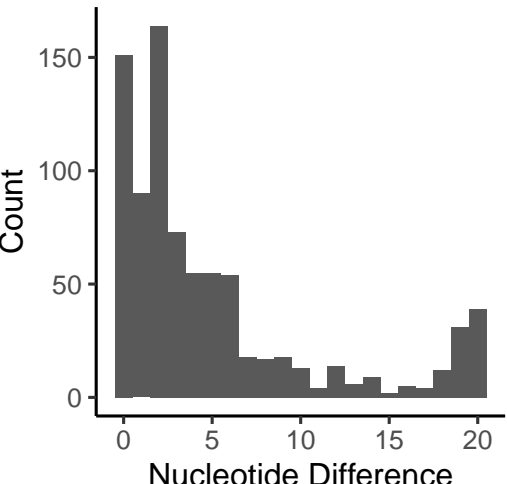
IGHV3-30\*02

4979 sequences assigned  
1429 (28.7%) exact matches, in which:  
847 unique CDR3  
6 unique J



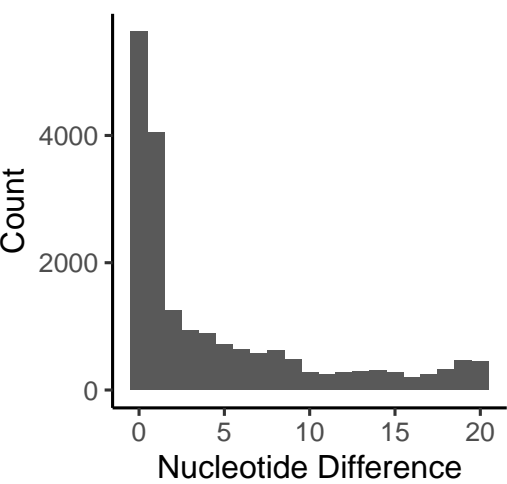
IGHV3-33\*08

1117 sequences assigned  
151 (13.5%) exact matches, in which:  
134 unique CDR3  
6 unique J



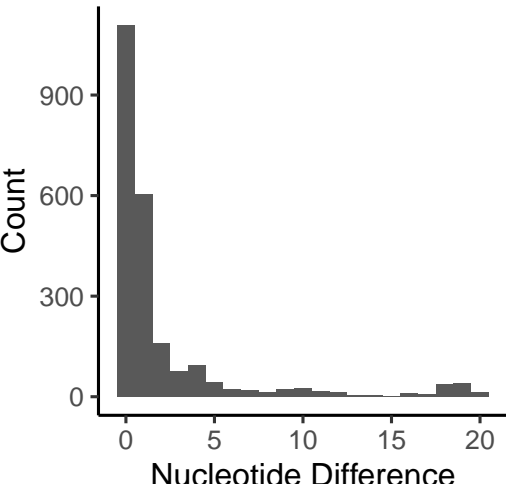
IGHV3-23\*01\_04

26908 sequences assigned  
5630 (20.9%) exact matches, in which:  
3236 unique CDR3  
6 unique J



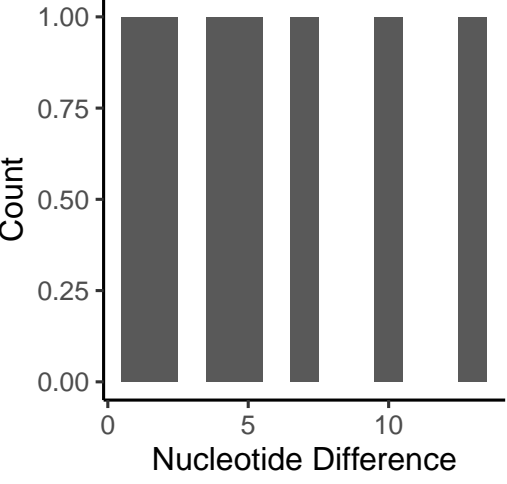
IGHV3-33\*01

2785 sequences assigned  
1109 (39.8%) exact matches, in which:  
739 unique CDR3  
6 unique J



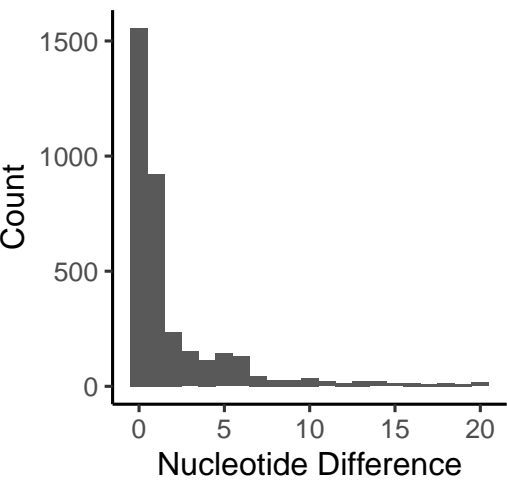
IGHV3-35\*01

7 sequences assigned  
No exact matches.



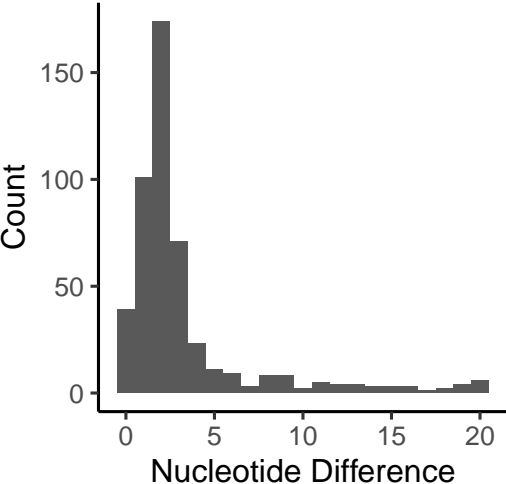
IGHV3-30-3\*01

4218 sequences assigned  
1556 (36.9%) exact matches, in which:  
1029 unique CDR3  
6 unique J



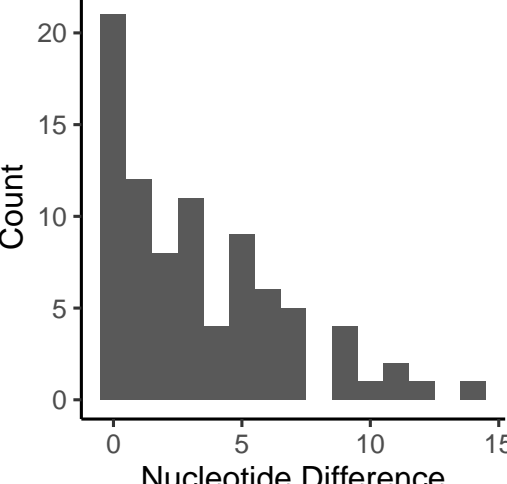
IGHV3-33\*06

511 sequences assigned  
39 (7.6%) exact matches, in which:  
39 unique CDR3  
5 unique J



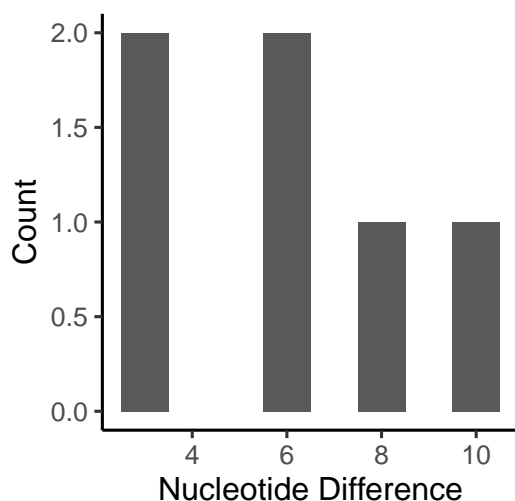
IGHV3-38-3\*01

85 sequences assigned  
21 (24.7%) exact matches, in which:  
21 unique CDR3  
5 unique J



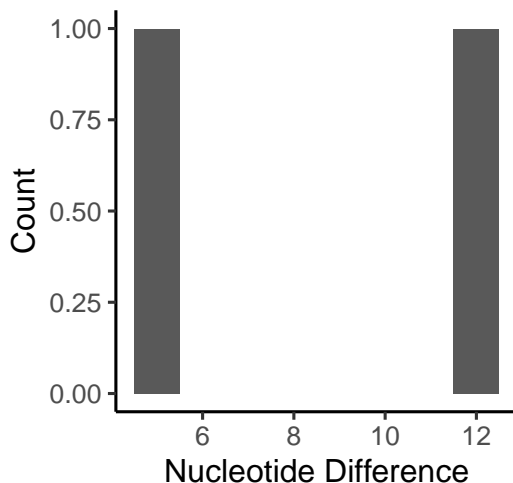
### IGHV3-38\*03

6 sequences assigned  
No exact matches.



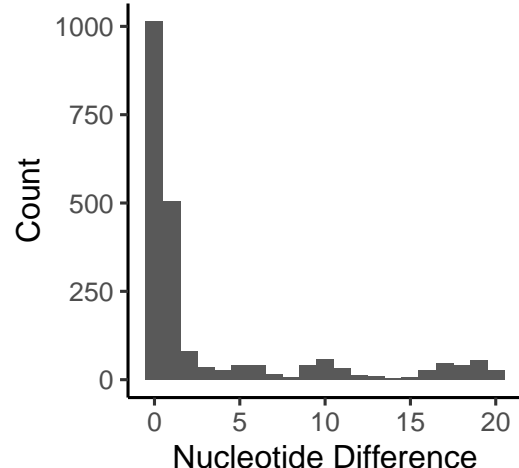
### IGHV3-47\*02

2 sequences assigned  
No exact matches.



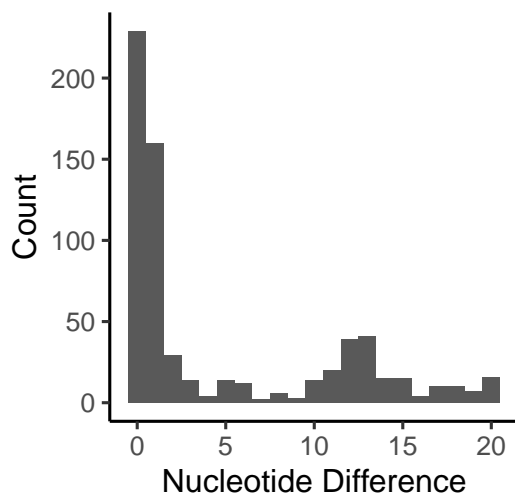
### IGHV3-48\*03

2236 sequences assigned  
1014 (45.3%) exact matches, in which:  
647 unique CDR3  
6 unique J



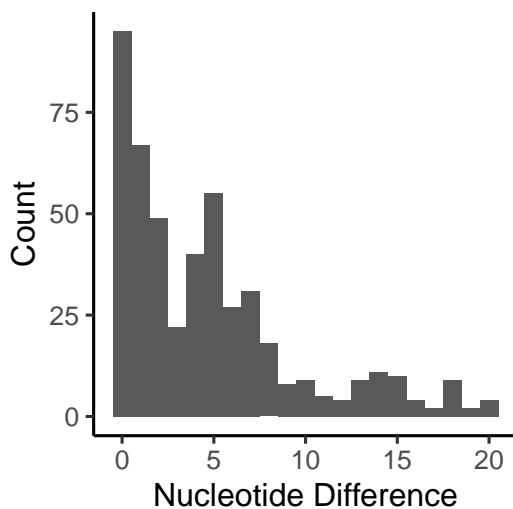
### IGHV3-43\*01

893 sequences assigned  
229 (25.6%) exact matches, in which:  
137 unique CDR3  
5 unique J



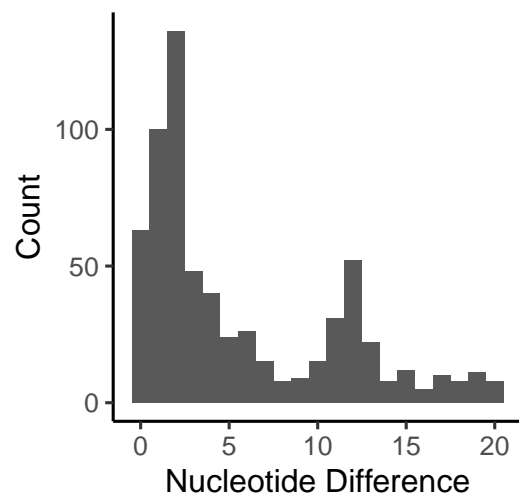
### IGHV3-48\*01

528 sequences assigned  
95 (18%) exact matches, in which:  
91 unique CDR3  
6 unique J



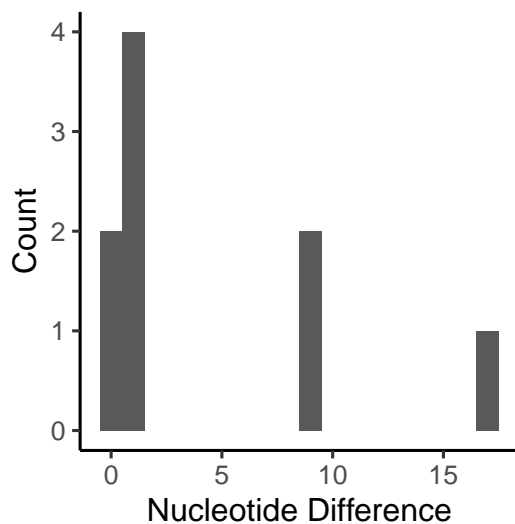
### IGHV3-48\*04

718 sequences assigned  
63 (8.8%) exact matches, in which:  
63 unique CDR3  
5 unique J



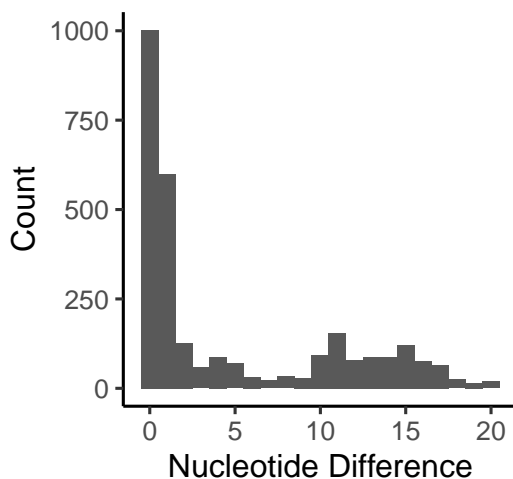
### IGHV3-47\*01

9 sequences assigned  
2 (22.2%) exact matches, in which:  
1 unique CDR3  
1 unique J



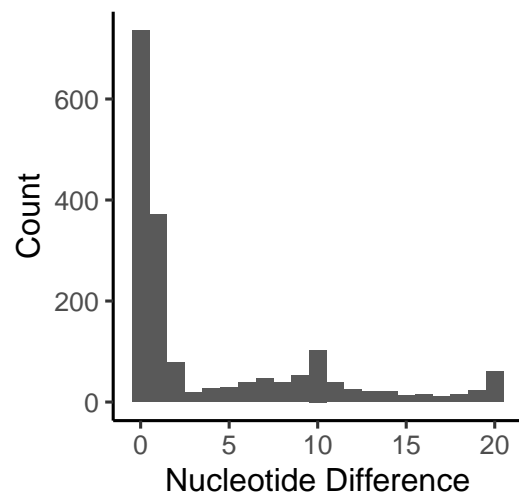
### IGHV3-48\*02

3883 sequences assigned  
1002 (25.8%) exact matches, in which:  
635 unique CDR3  
6 unique J



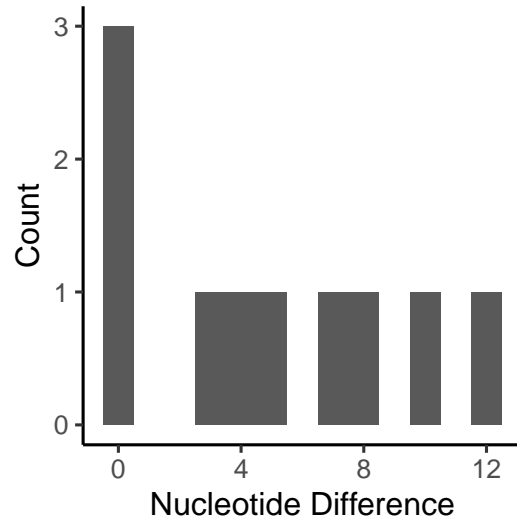
### IGHV3-49\*03\_05

2203 sequences assigned  
736 (33.4%) exact matches, in which:  
472 unique CDR3  
6 unique J



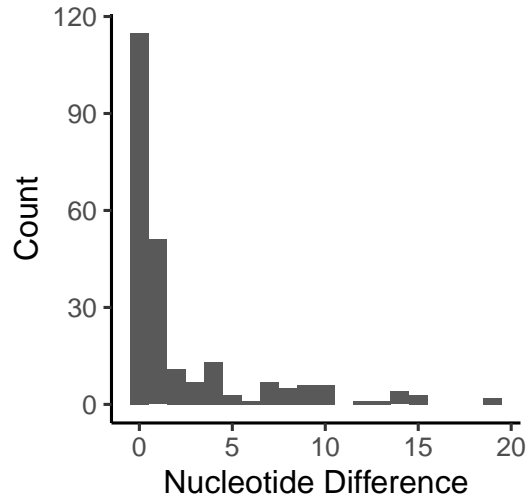
### IGHV3-52\*01\_03

10 sequences assigned  
3 (30%) exact matches, in which:  
3 unique CDR3  
2 unique J



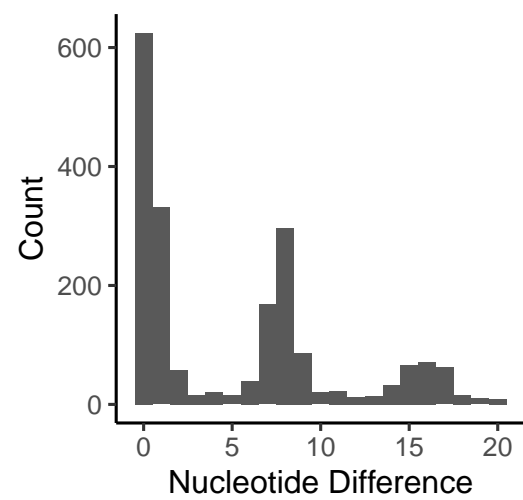
### IGHV3-64\*01

238 sequences assigned  
115 (48.3%) exact matches, in which:  
71 unique CDR3  
5 unique J



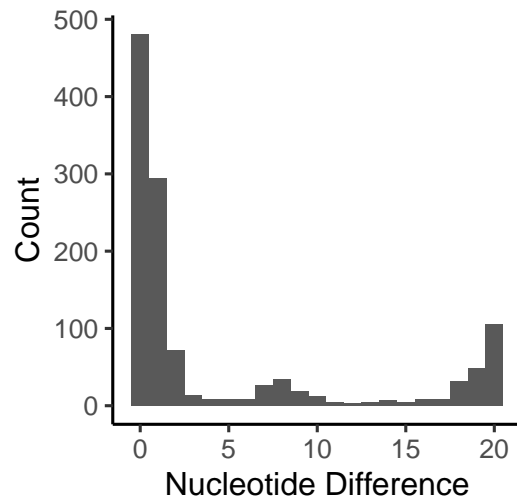
### IGHV3-66\*02

2208 sequences assigned  
625 (28.3%) exact matches, in which:  
394 unique CDR3  
6 unique J



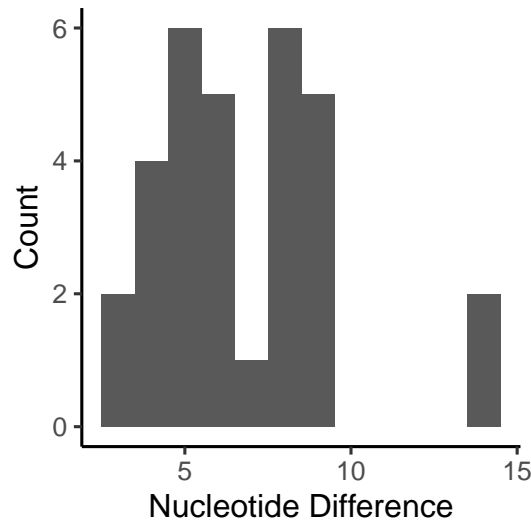
### IGHV3-53\*04

1665 sequences assigned  
481 (28.9%) exact matches, in which:  
302 unique CDR3  
6 unique J



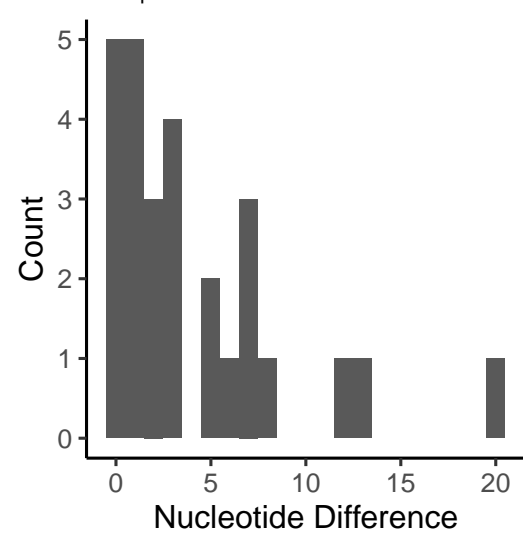
### IGHV3-64\*04

84 sequences assigned  
No exact matches.



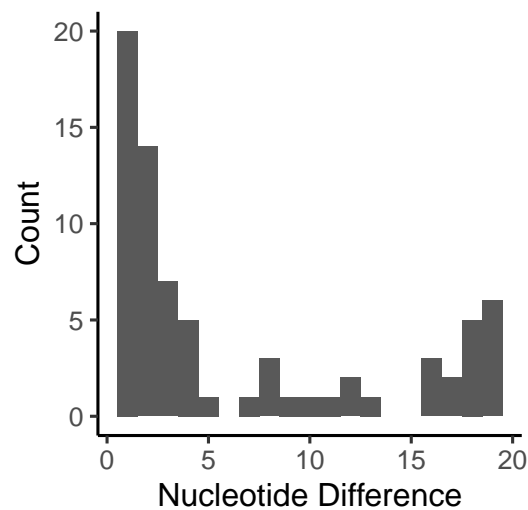
### IGHV3-69-1\*01

41 sequences assigned  
5 (12.2%) exact matches, in which:  
5 unique CDR3  
2 unique J



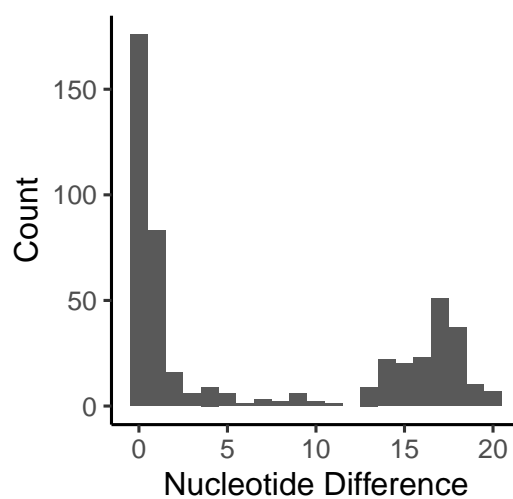
### IGHV3-53\*05

84 sequences assigned  
No exact matches.



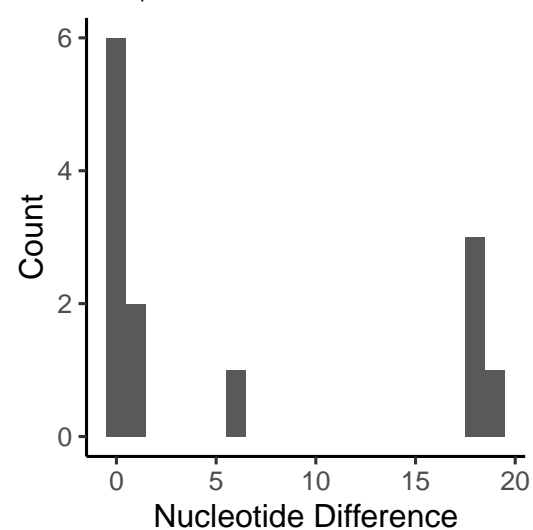
### IGHV3-64\*02\_07

572 sequences assigned  
176 (30.8%) exact matches, in which:  
114 unique CDR3  
6 unique J



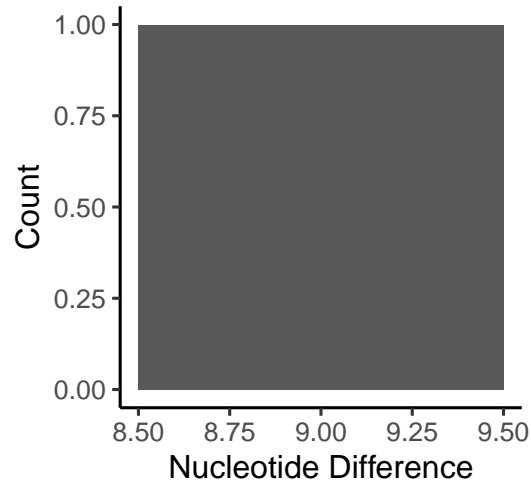
### IGHV3-69-1\*02

89 sequences assigned  
6 (6.7%) exact matches, in which:  
6 unique CDR3  
3 unique J



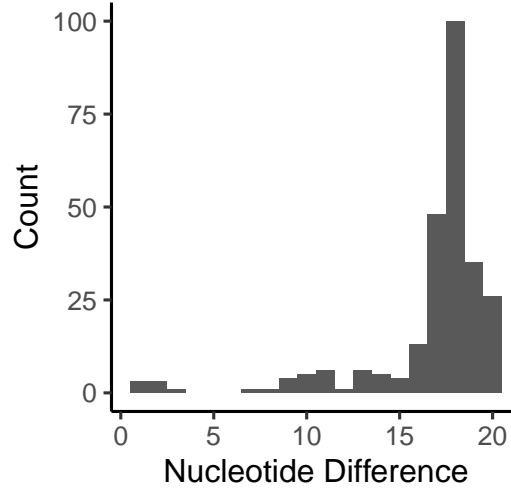
### IGHV3-71\*01\_04

3 sequences assigned  
No exact matches.



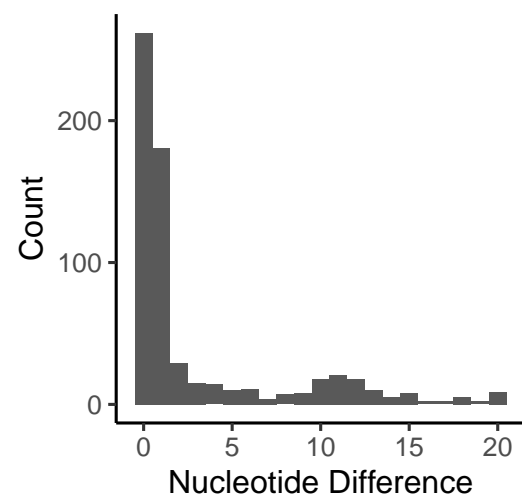
### IGHV3-74\*03

1457 sequences assigned  
No exact matches.



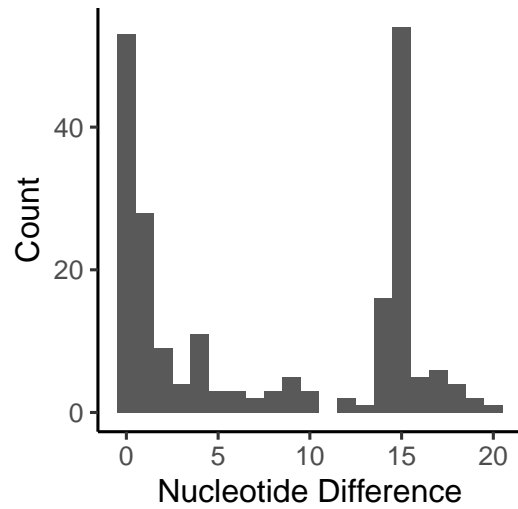
### IGHV3-43D\*04

704 sequences assigned  
262 (37.2%) exact matches, in which:  
154 unique CDR3  
6 unique J



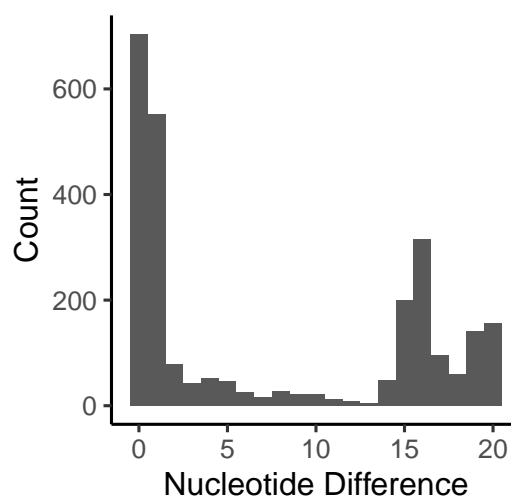
### IGHV3-72\*01

627 sequences assigned  
53 (8.5%) exact matches, in which:  
35 unique CDR3  
5 unique J



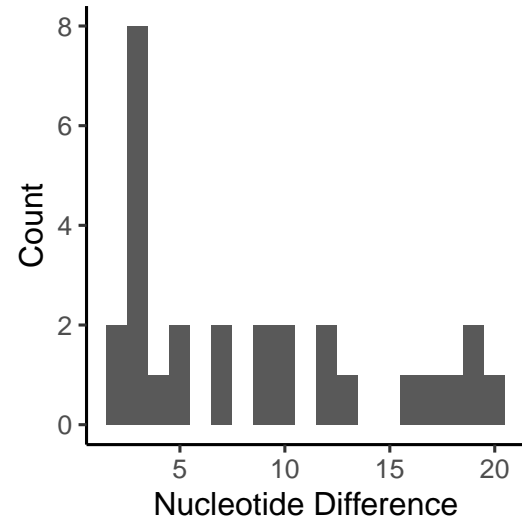
### IGHV3-74\*01\_02

3240 sequences assigned  
704 (21.7%) exact matches, in which:  
389 unique CDR3  
6 unique J



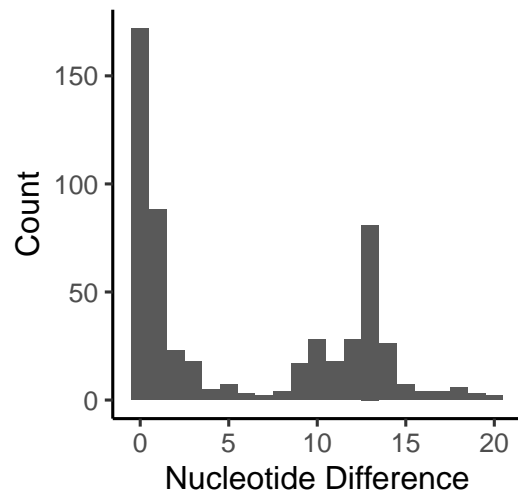
### IGHV3-NL1\*01

36 sequences assigned  
No exact matches.



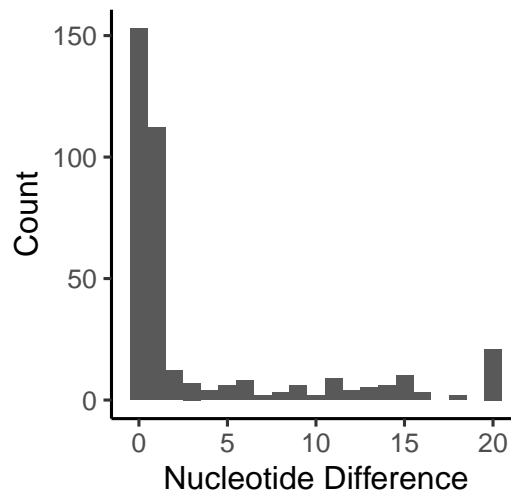
### IGHV3-73\*01\_02

598 sequences assigned  
172 (28.8%) exact matches, in which:  
106 unique CDR3  
6 unique J



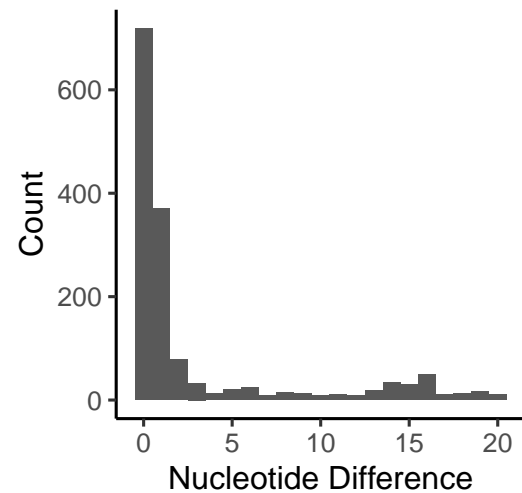
### IGHV3-43D\*03

428 sequences assigned  
153 (35.7%) exact matches, in which:  
95 unique CDR3  
5 unique J



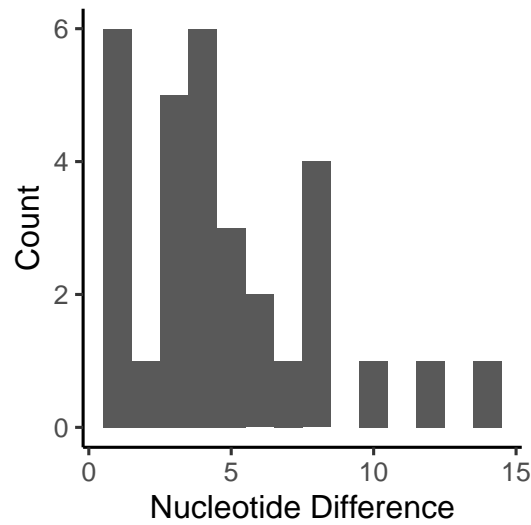
### IGHV4-4\*02\_03

2019 sequences assigned  
719 (35.6%) exact matches, in which:  
592 unique CDR3  
6 unique J



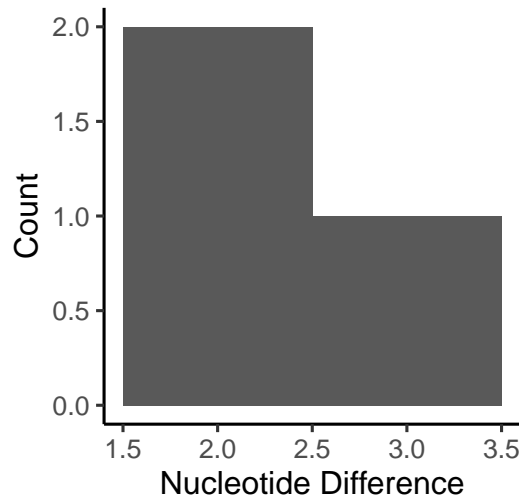
### IGHV4-28\*03

33 sequences assigned  
No exact matches.



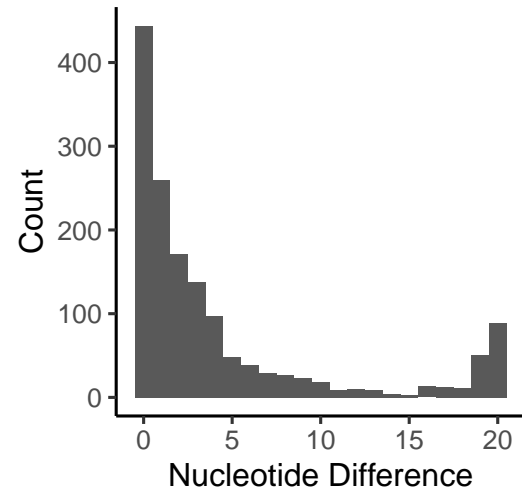
### IGHV4-30-2\*04

3 sequences assigned  
No exact matches.



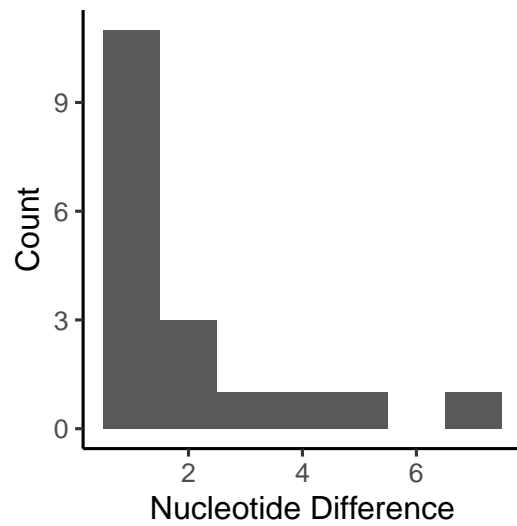
### IGHV4-31\*02\_C198T

1768 sequences assigned  
444 (25.1%) exact matches, in which:  
399 unique CDR3  
6 unique J



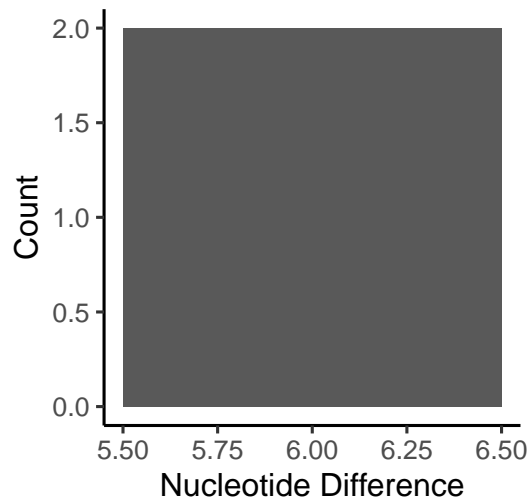
### IGHV4-28\*01\_07

50 sequences assigned  
No exact matches.



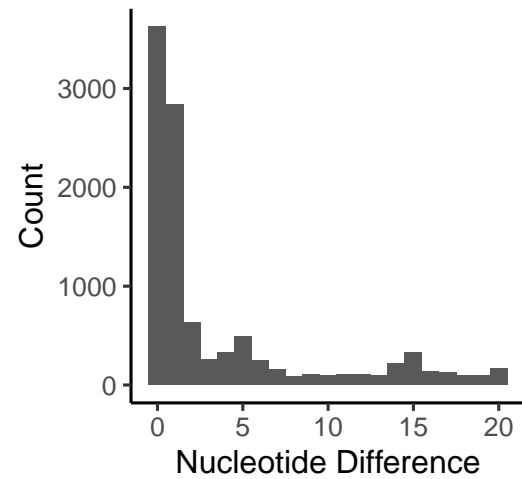
### IGHV4-30-2\*05

2 sequences assigned  
No exact matches.



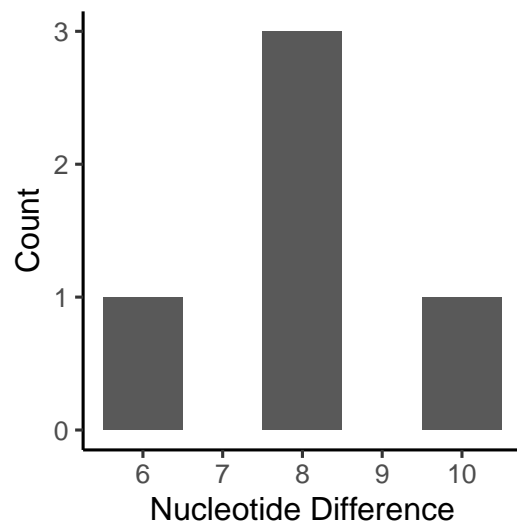
### IGHV4-34\*01\_02

12523 sequences assigned  
3625 (28.9%) exact matches, in which:  
2716 unique CDR3  
6 unique J



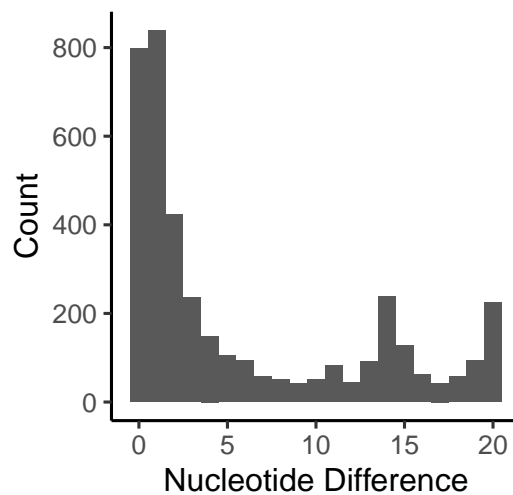
### IGHV4-30-2\*03

7 sequences assigned  
No exact matches.



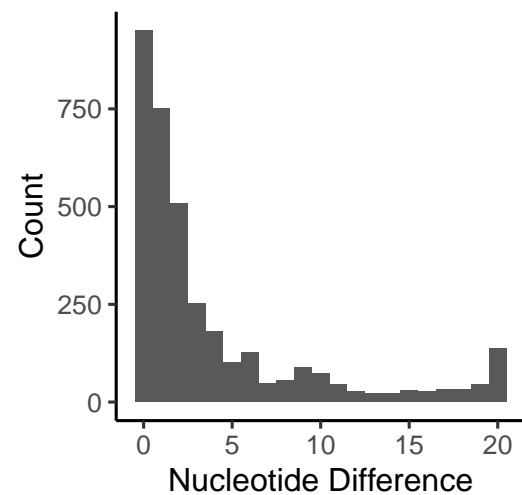
### IGHV4-30-4\*08

5076 sequences assigned  
797 (15.7%) exact matches, in which:  
690 unique CDR3  
6 unique J



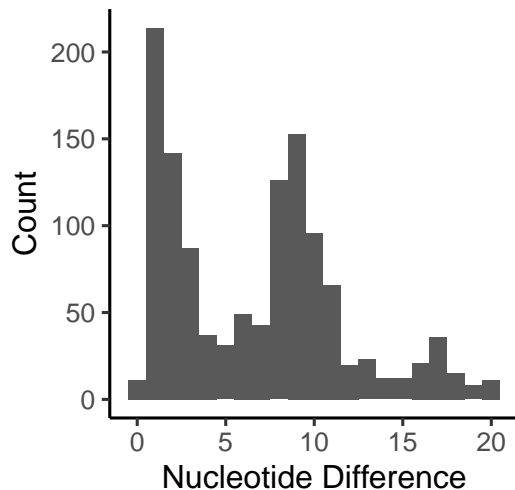
### IGHV4-38-2\*02

6484 sequences assigned  
951 (14.7%) exact matches, in which:  
891 unique CDR3  
6 unique J



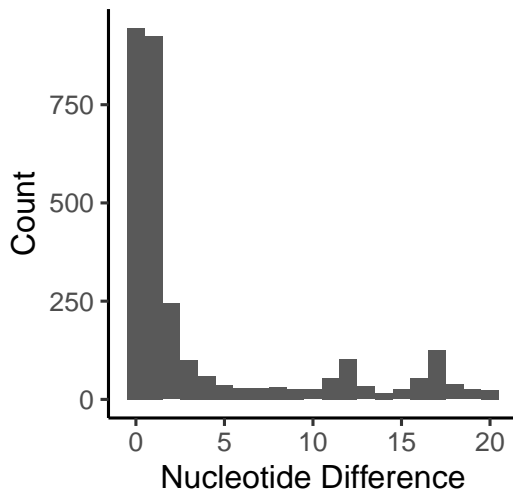
### IGHV4-39\*07

2071 sequences assigned  
11 (0.5%) exact matches, in which:  
11 unique CDR3  
4 unique J



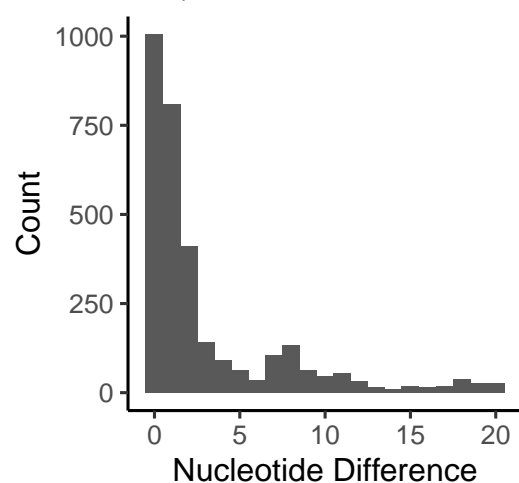
### IGHV4-59\*11

4075 sequences assigned  
946 (23.2%) exact matches, in which:  
781 unique CDR3  
6 unique J



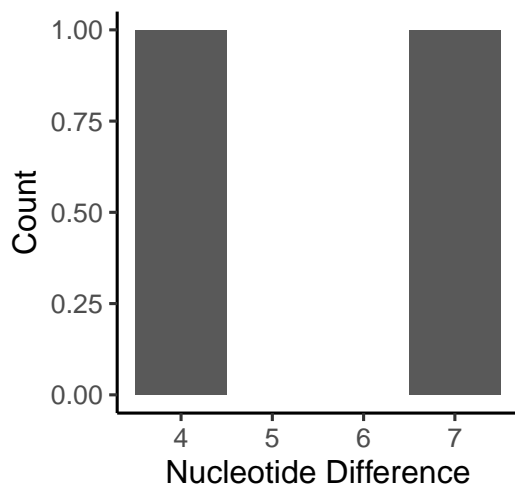
### IGHV4-61\*09

4012 sequences assigned  
1005 (25%) exact matches, in which:  
907 unique CDR3  
6 unique J



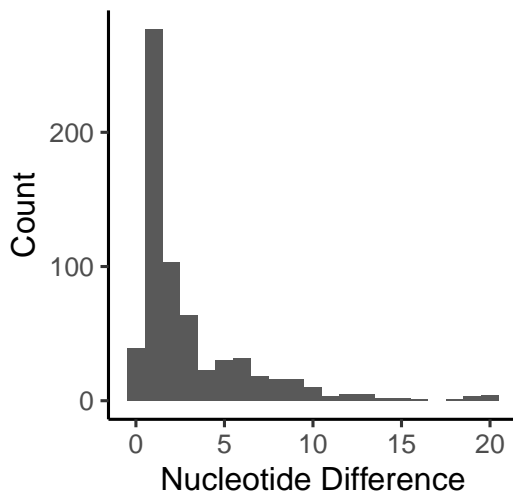
### IGHV4-55\*09

2 sequences assigned  
No exact matches.



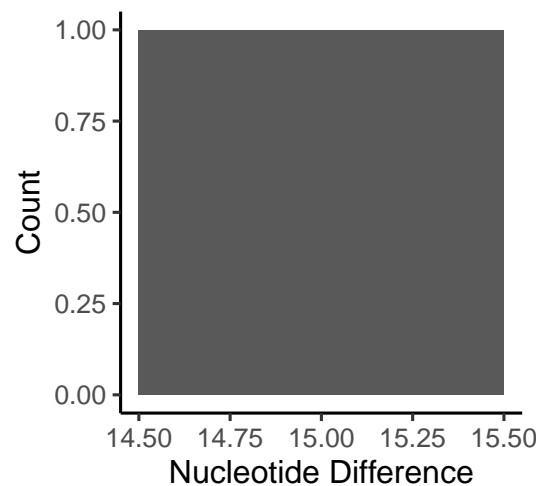
### IGHV4-59\*12

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



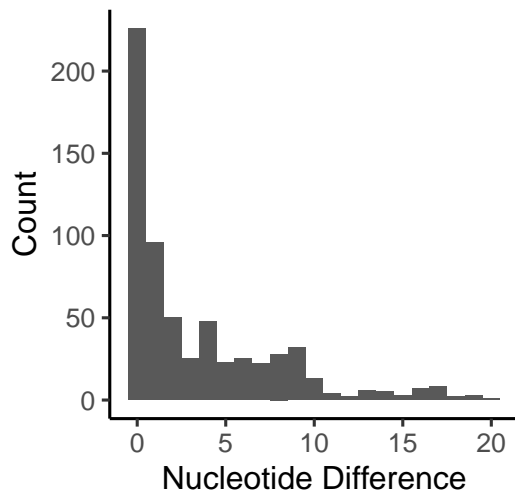
### IGHV1/OR15-1\*04

2 sequences assigned  
No exact matches.



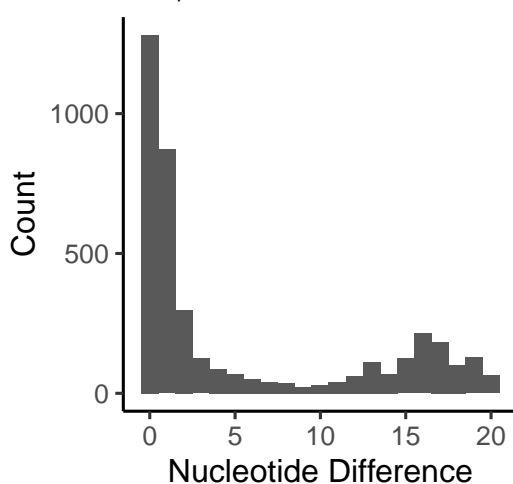
### IGHV4-59\*08

703 sequences assigned  
226 (32.1%) exact matches, in which:  
223 unique CDR3  
6 unique J



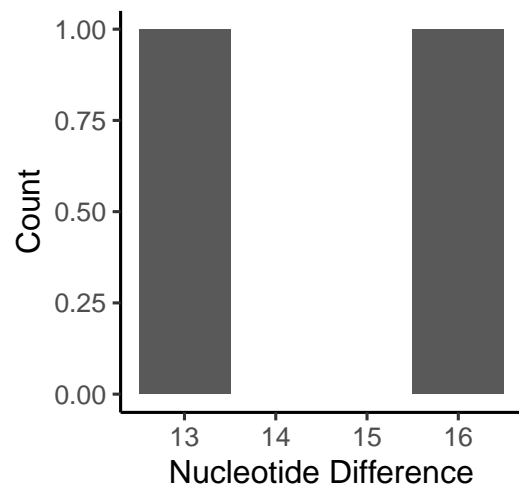
### IGHV4-61\*02

5505 sequences assigned  
1281 (23.3%) exact matches, in which:  
1167 unique CDR3  
6 unique J



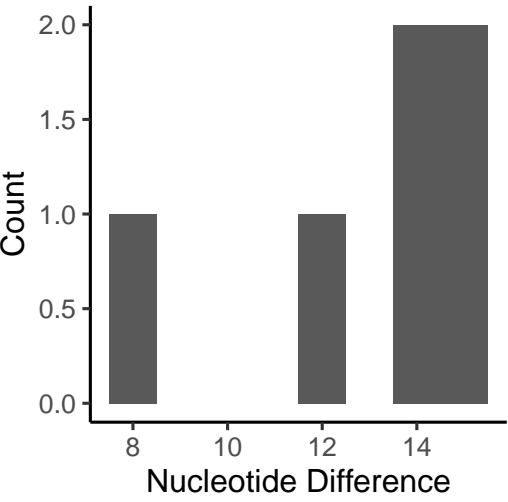
### IGHV1/OR15-2\*02\_03

8 sequences assigned  
No exact matches.



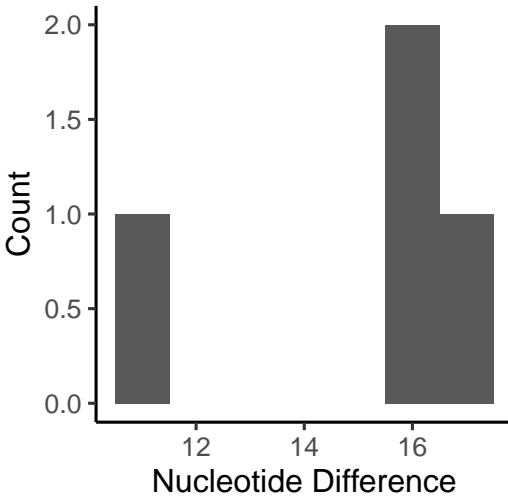
IGHV1/OR15-3\*02

7 sequences assigned  
No exact matches.



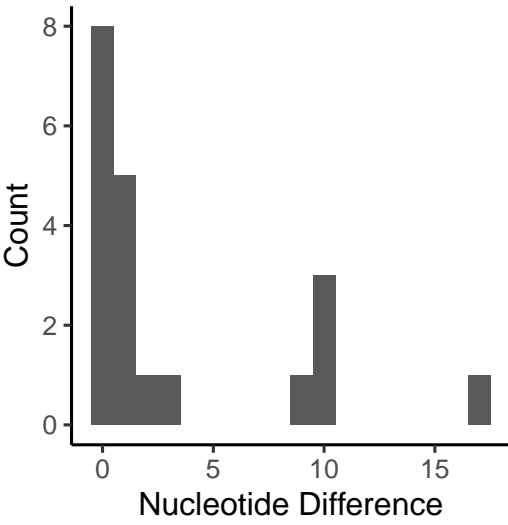
IGHV4/OR15-8\*02

17 sequences assigned  
No exact matches.



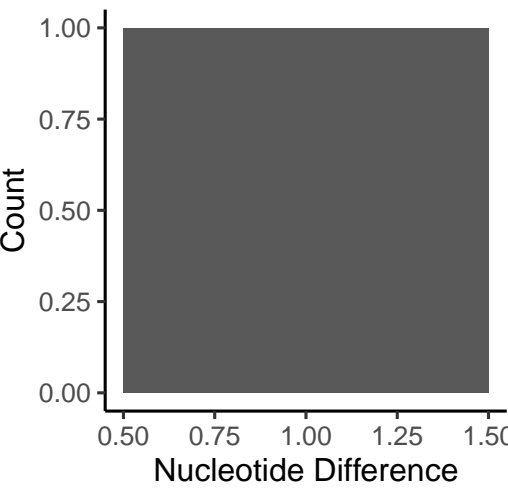
IGHV5-51\*04

22 sequences assigned  
8 (36.4%) exact matches, in which:  
8 unique CDR3  
2 unique J



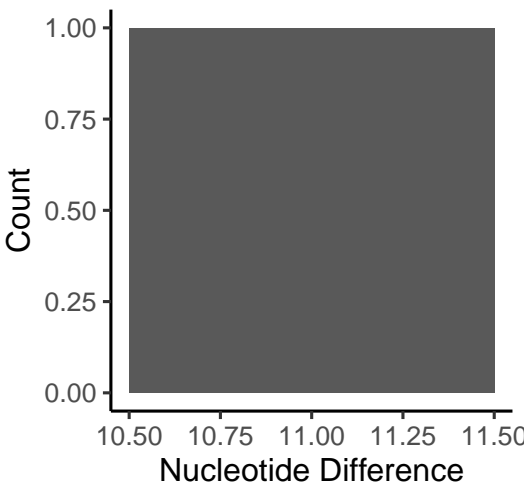
IGHV1/OR15-5\*01

1 sequences assigned  
No exact matches.



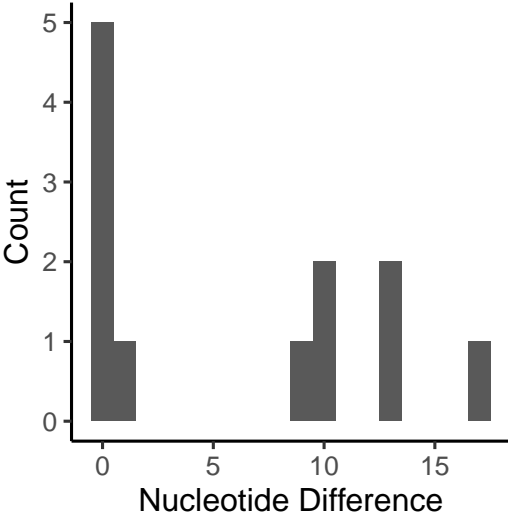
IGHV1/OR15-9\*01

1 sequences assigned  
No exact matches.



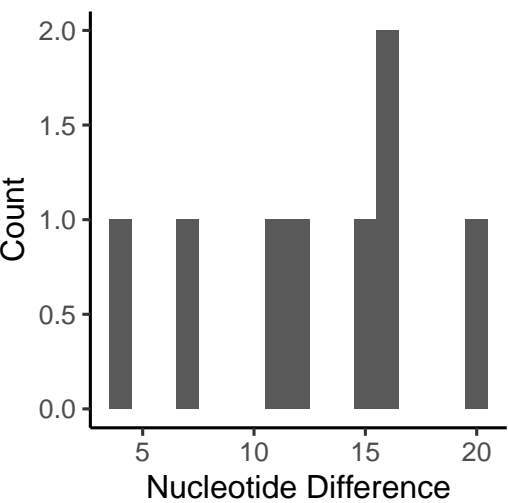
IGHV5-51\*06

14 sequences assigned  
5 (35.7%) exact matches, in which:  
5 unique CDR3  
3 unique J



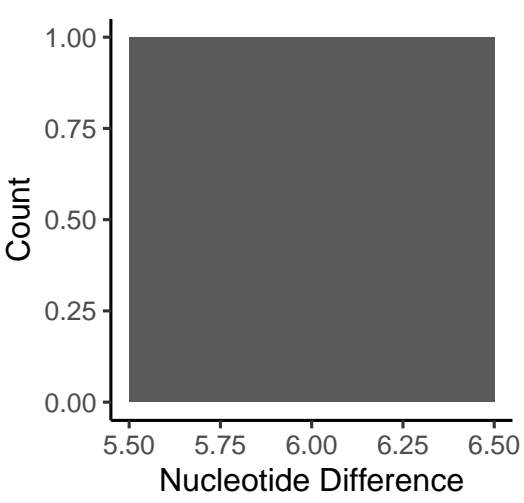
IGHV4/OR15-8\*01

62 sequences assigned  
No exact matches.



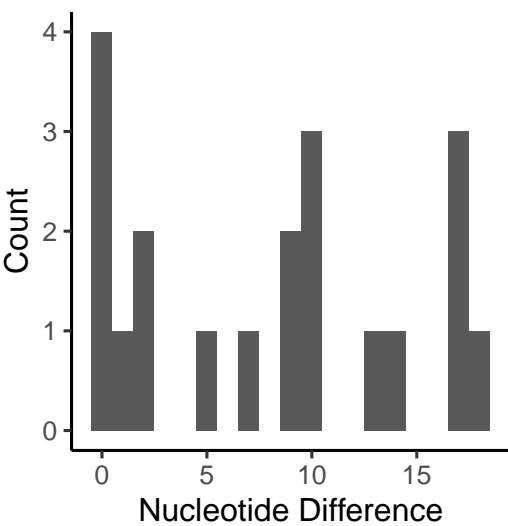
IGHV5-10-1\*01\_03

2 sequences assigned  
No exact matches.



IGHV5-51\*07

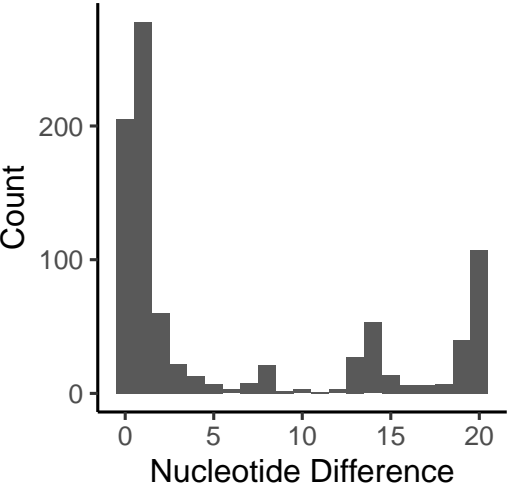
24 sequences assigned  
4 (16.7%) exact matches, in which:  
4 unique CDR3  
3 unique J





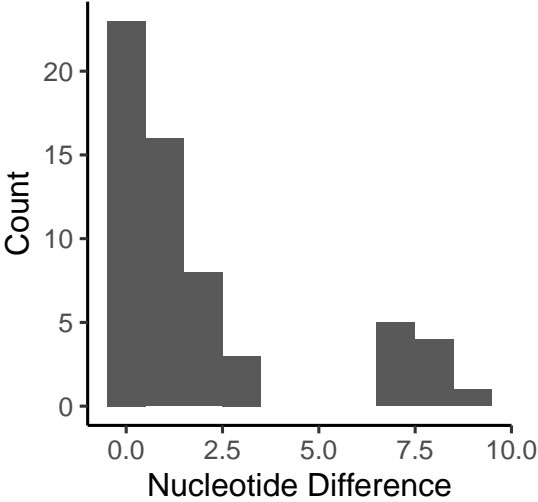
IGHV6-1\*01\_02

1439 sequences assigned  
205 (14.2%) exact matches, in which:  
179 unique CDR3  
5 unique J



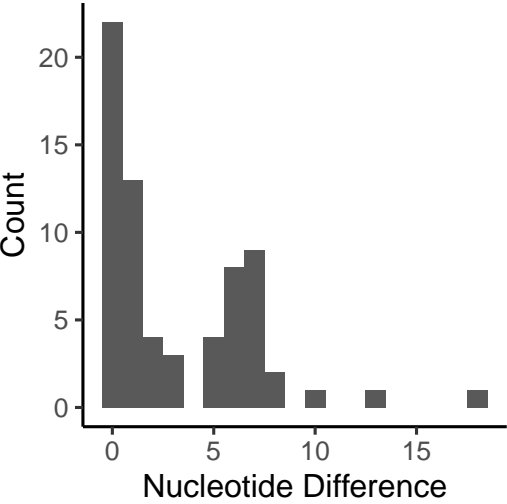
IGHV7-4-1\*01

60 sequences assigned  
23 (38.3%) exact matches, in which:  
16 unique CDR3  
4 unique J



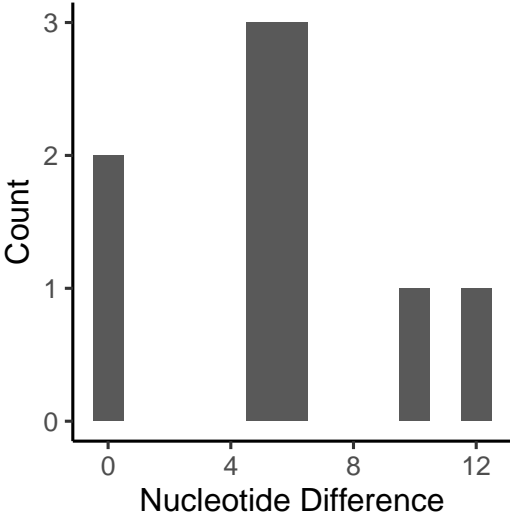
IGHV6-1\*01\_02\_A315G

336 sequences assigned  
22 (6.5%) exact matches, in which:  
22 unique CDR3  
5 unique J



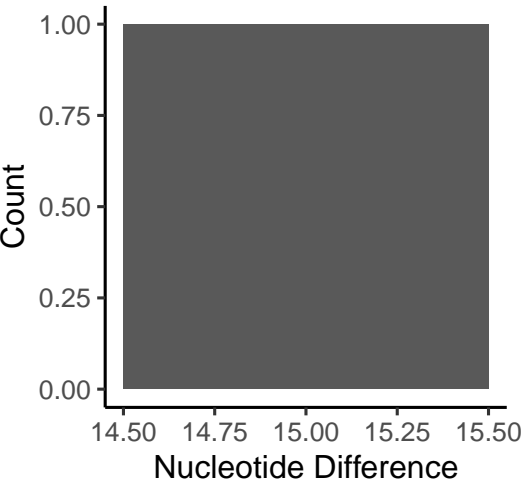
IGHV7-4-1\*02

10 sequences assigned  
2 (20%) exact matches, in which:  
2 unique CDR3  
1 unique J

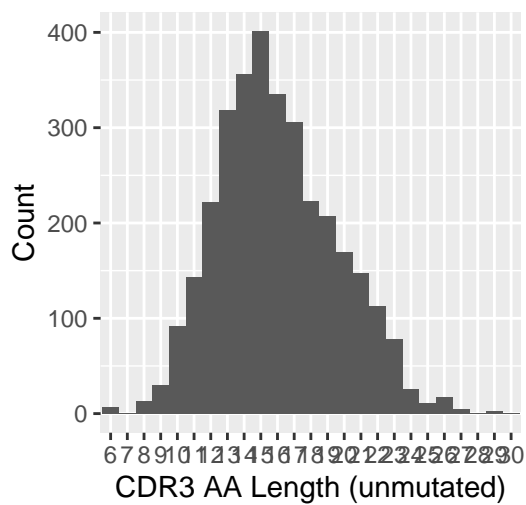


IGHV3/OR16-9\*01

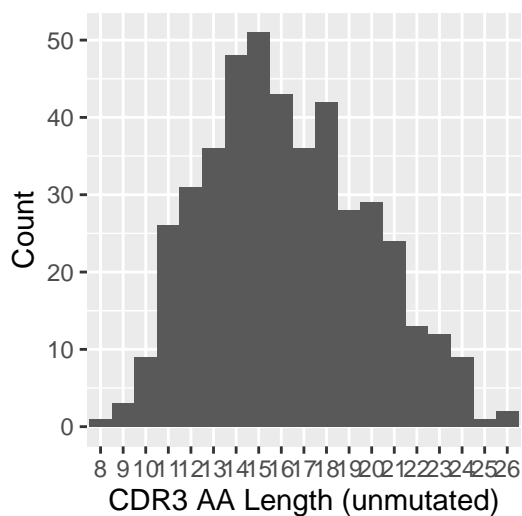
1 sequences assigned  
No exact matches.



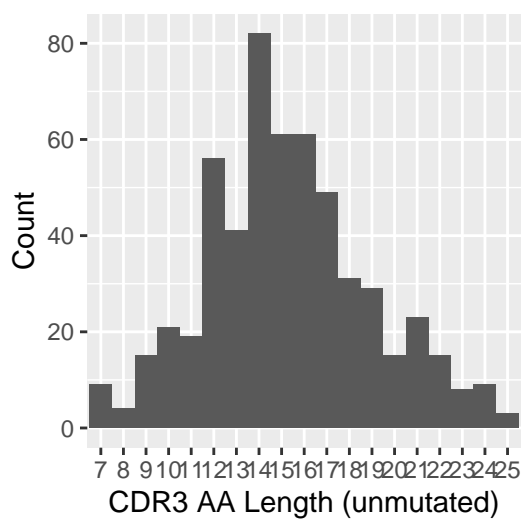
IGHV1-18\*01\_A190G



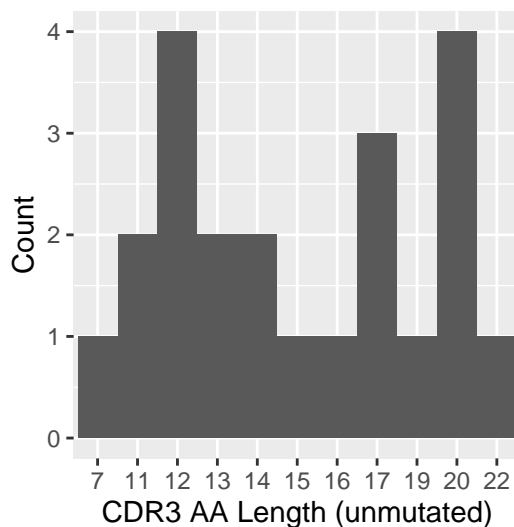
IGHV4-31\*02\_C198T



IGHV3-15\*01\_02\_G147A



IGHV6-1\*01\_02\_A315G



IGHV3-15\*07\_C159T

