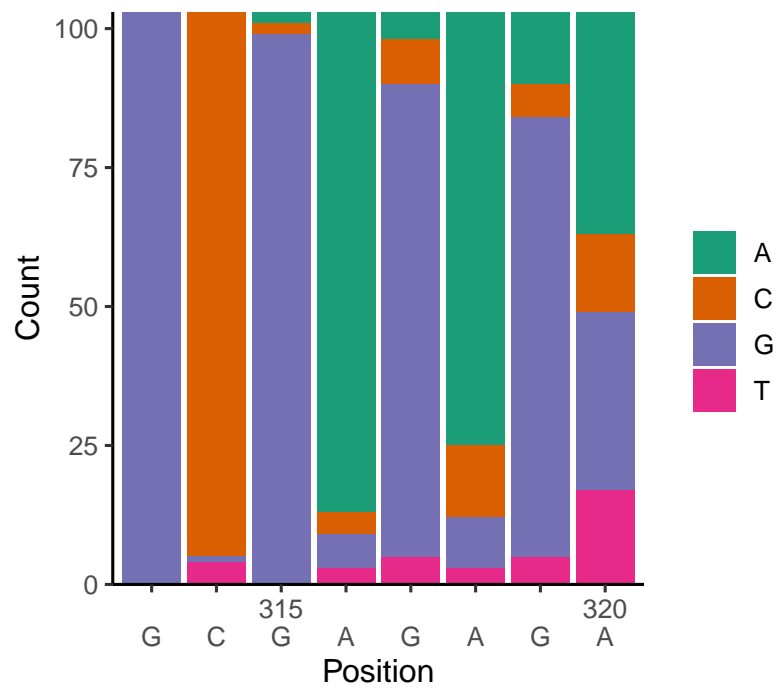
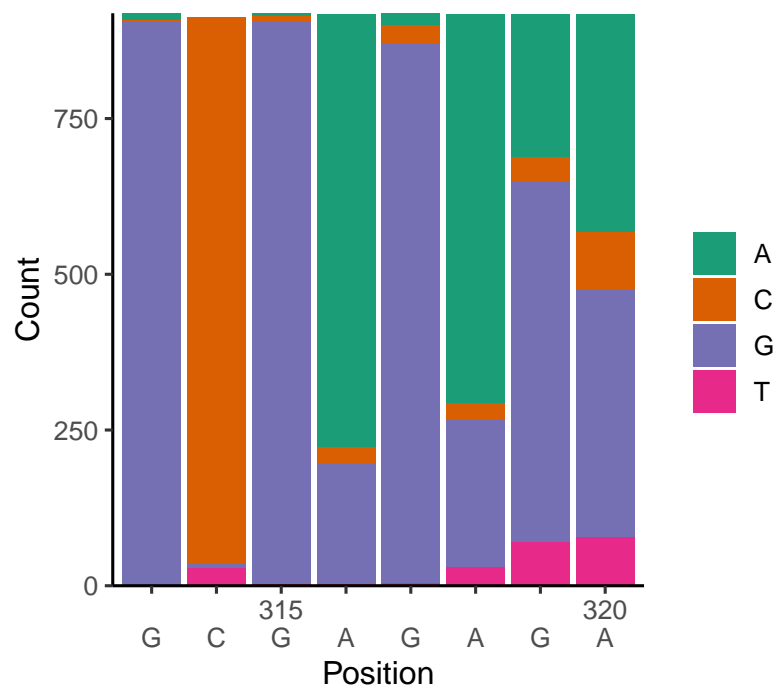


Gene IGHV1-69\*04\_09\_C184T



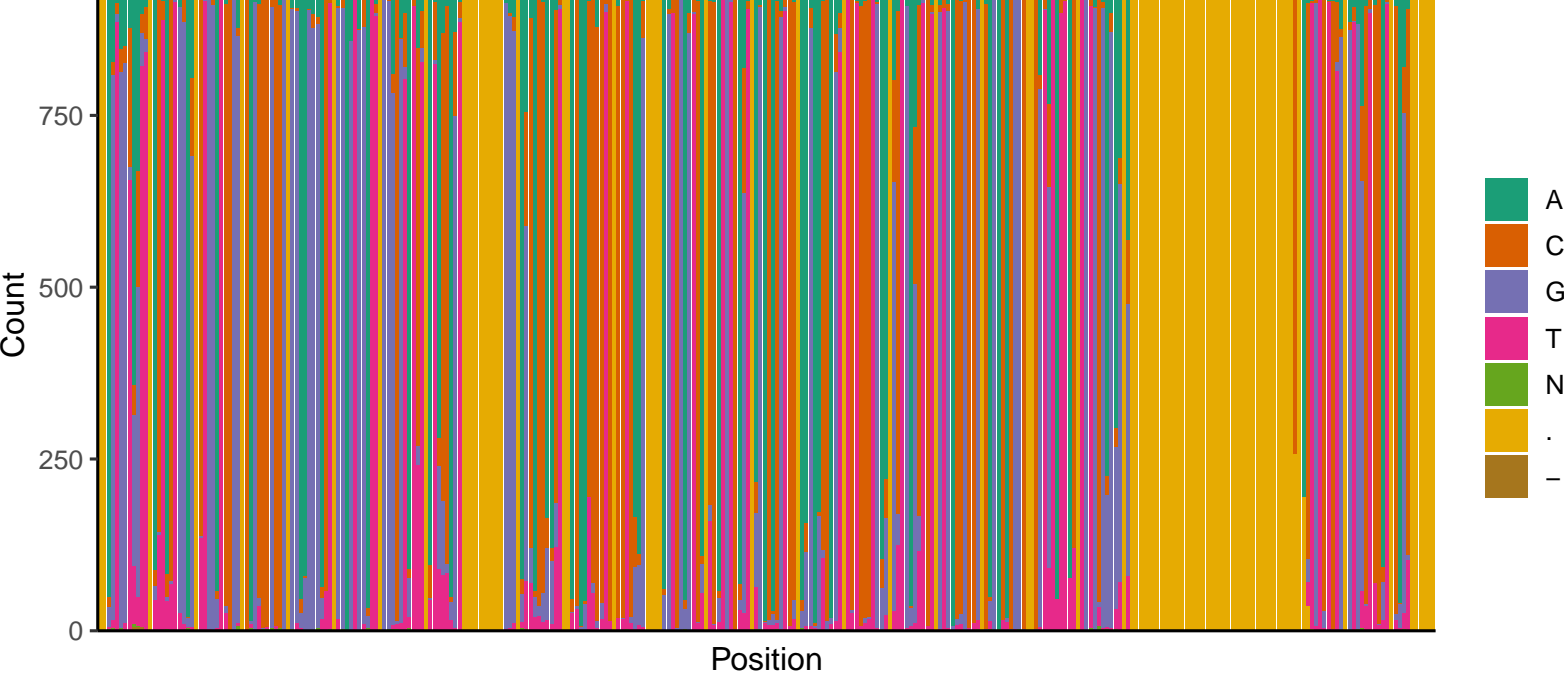
Gene IGHV4-61\*02\_A234G



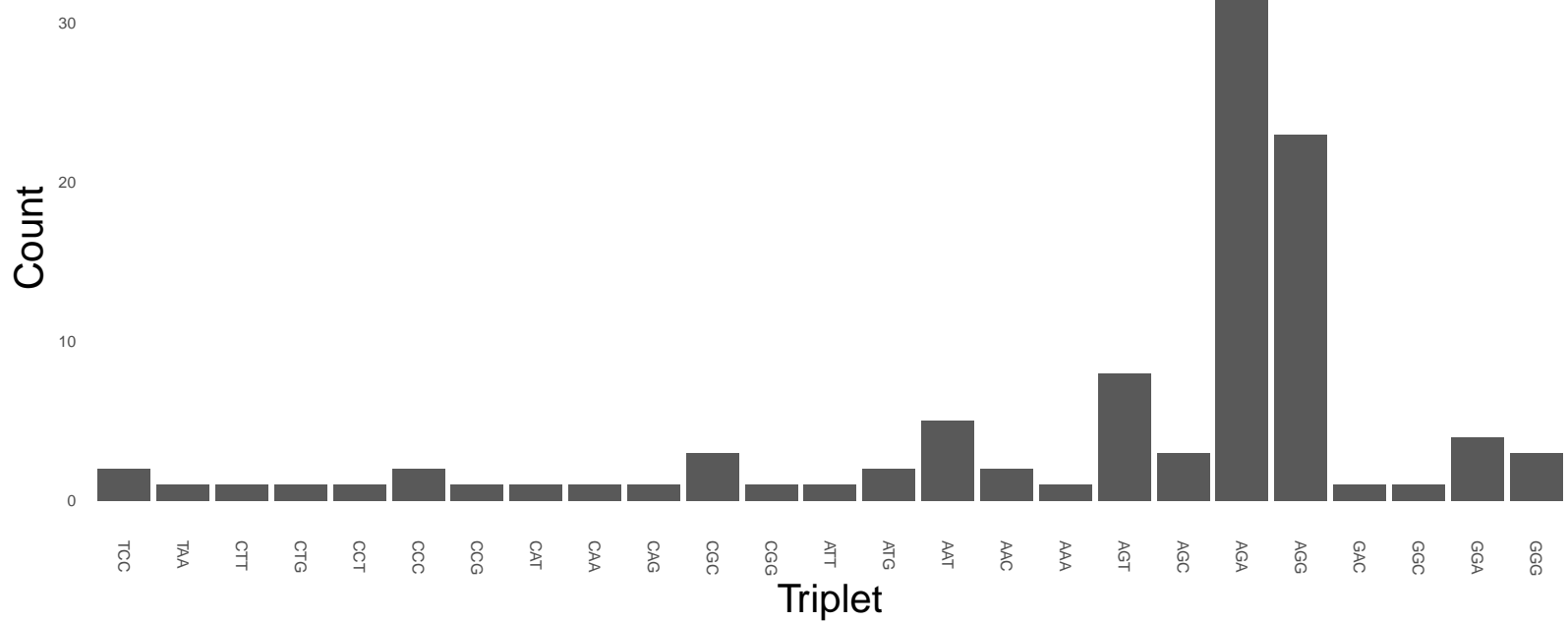
Gene IGHV1-69\*04\_09\_C184T



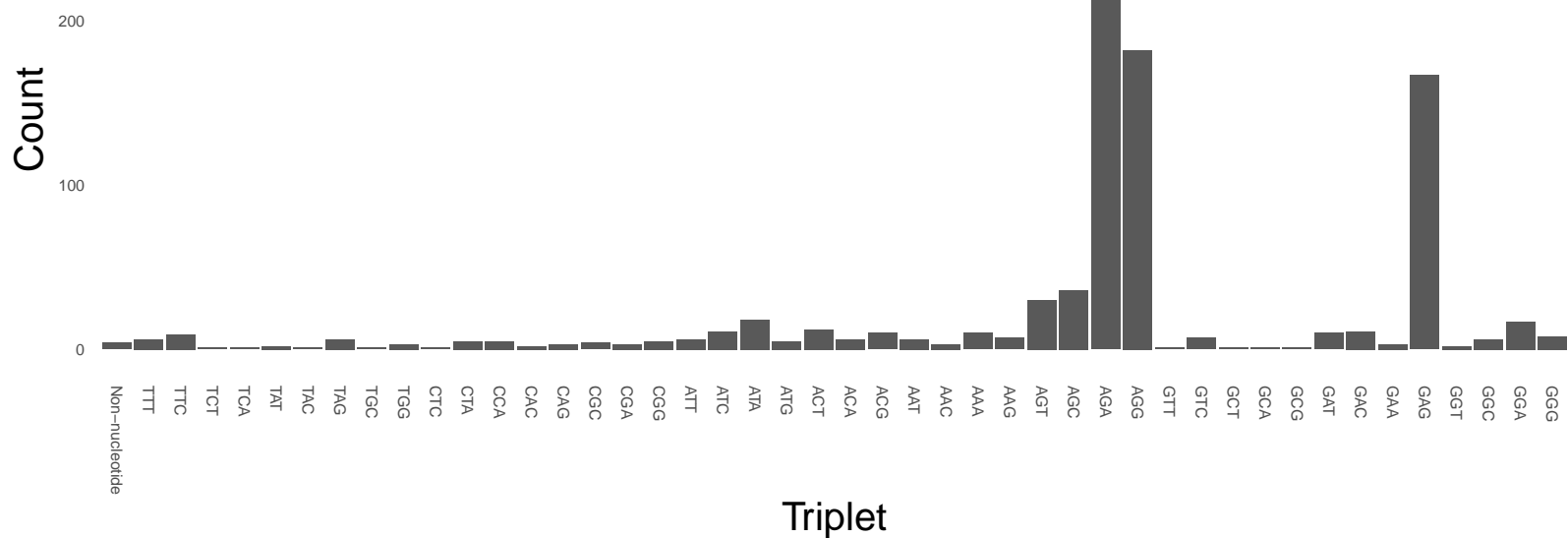
Gene IGHV4-61\*02\_A234G



IGHV1-69\*04\_09\_C184T- Final 3 nucleotides as a triplet

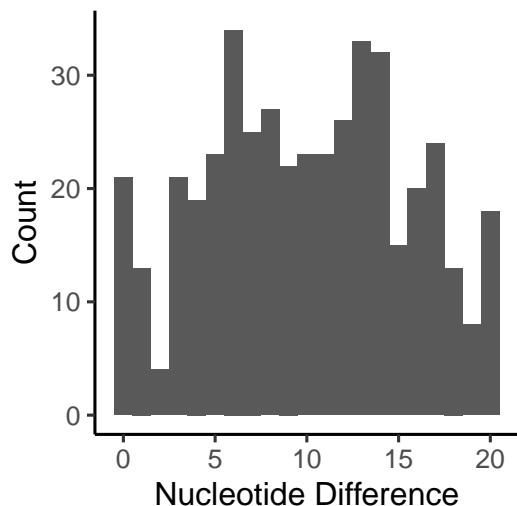


IGHV4-61\*02\_A234G- Final 3 nucleotides as a triplet



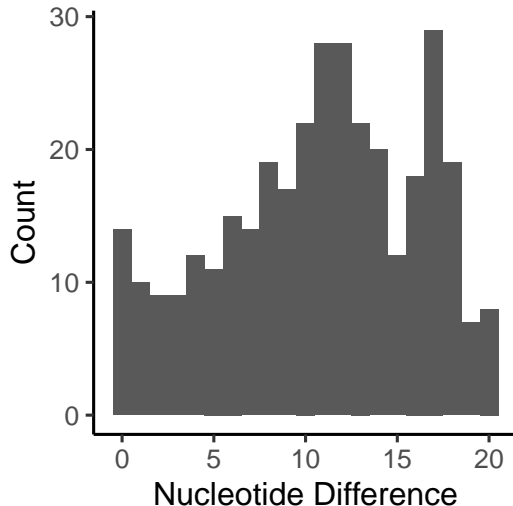
### IGHV1-2\*02

615 sequences assigned  
21 (3.4%) exact matches, in which:  
18 unique CDR3  
4 unique J



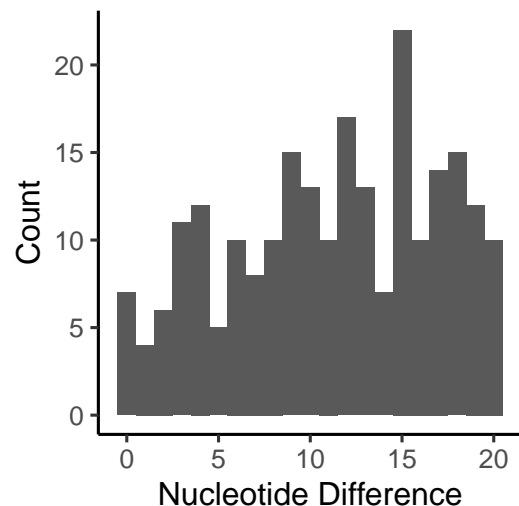
### IGHV1-3\*01\_05

404 sequences assigned  
14 (3.5%) exact matches, in which:  
14 unique CDR3  
4 unique J



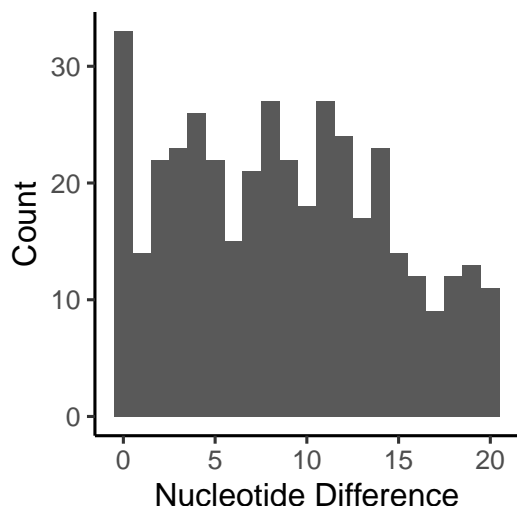
### IGHV1-18\*04

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



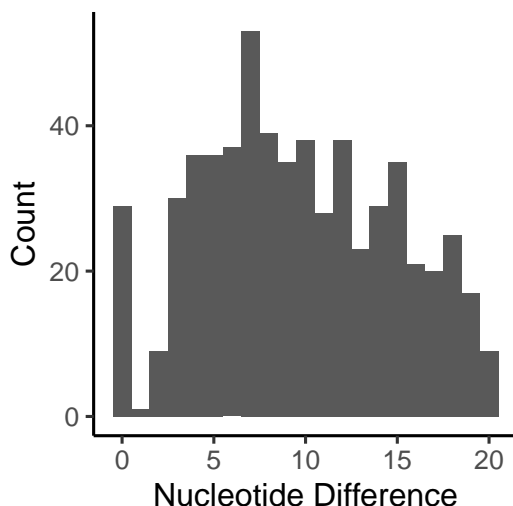
### IGHV1-2\*06

465 sequences assigned  
33 (7.1%) exact matches, in which:  
29 unique CDR3  
4 unique J



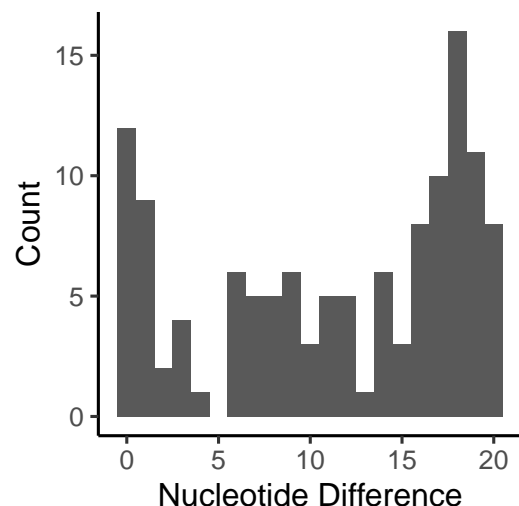
### IGHV1-8\*01

699 sequences assigned  
29 (4.1%) exact matches, in which:  
29 unique CDR3  
5 unique J



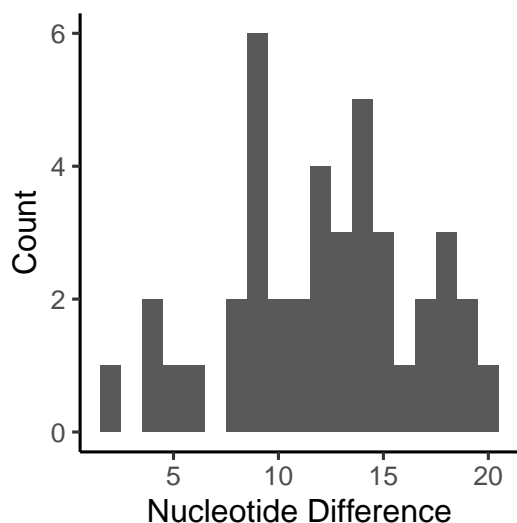
### IGHV1-24\*01

175 sequences assigned  
12 (6.9%) exact matches, in which:  
10 unique CDR3  
5 unique J



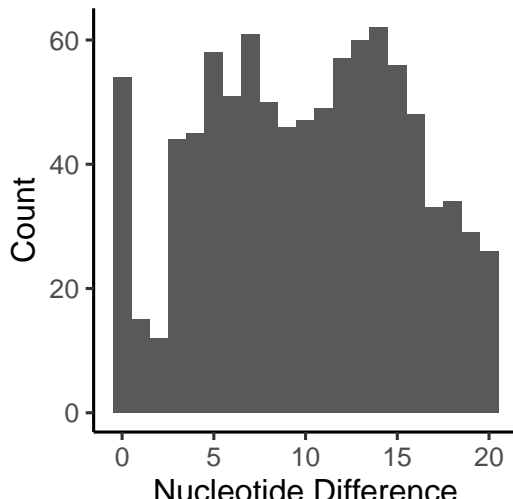
### IGHV1-3\*04

67 sequences assigned  
No exact matches.



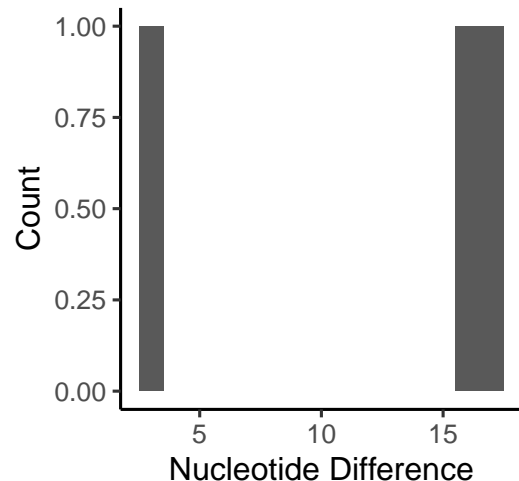
### IGHV1-18\*01

1217 sequences assigned  
54 (4.4%) exact matches, in which:  
51 unique CDR3  
7 unique J



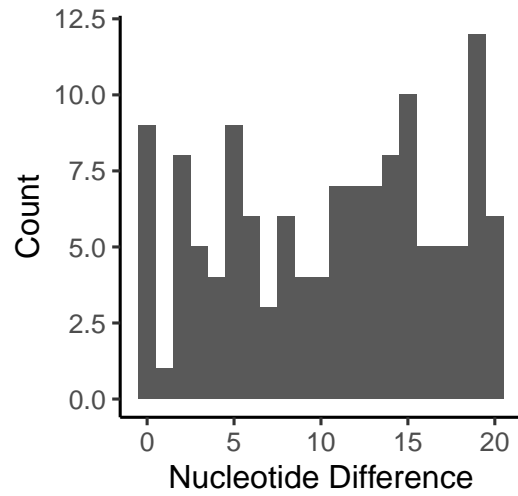
### IGHV1-45\*02

4 sequences assigned  
No exact matches.



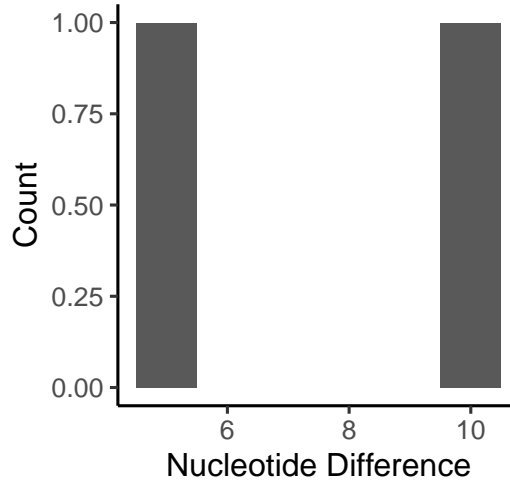
### IGHV1-46\*01

173 sequences assigned  
9 (5.2%) exact matches, in which:  
9 unique CDR3  
5 unique J



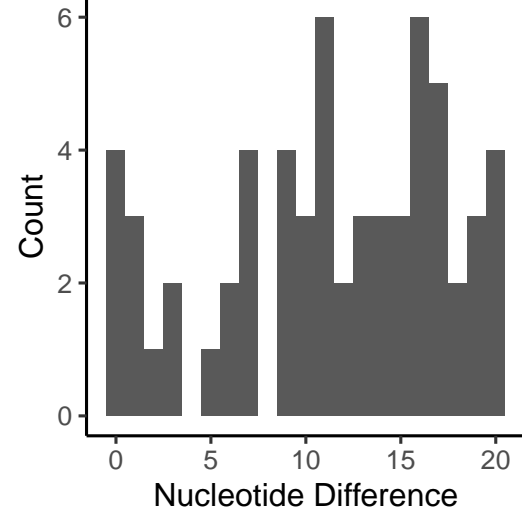
### IGHV1-58\*01\_03

4 sequences assigned  
No exact matches.



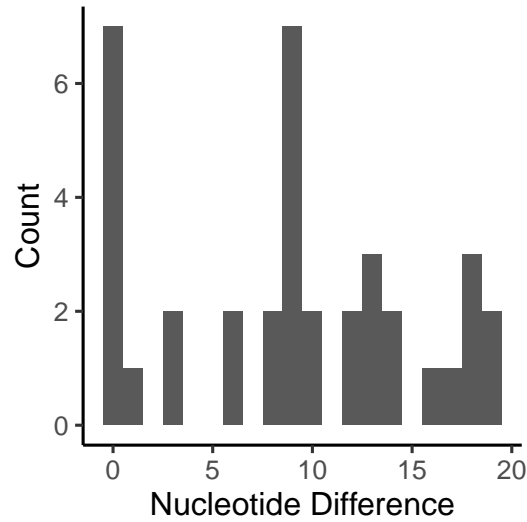
### IGHV1-69\*04\_09

89 sequences assigned  
4 (4.5%) exact matches, in which:  
4 unique CDR3  
1 unique J



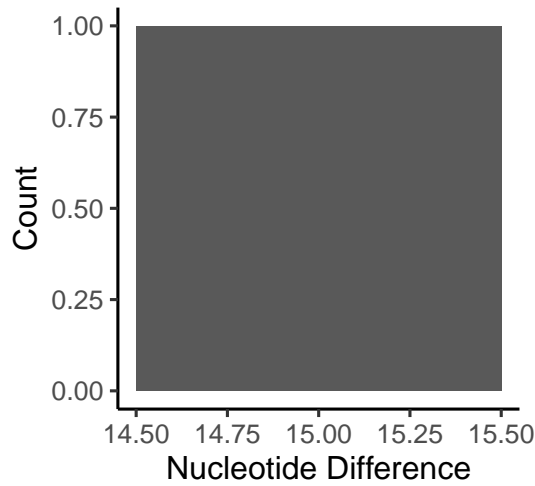
### IGHV1-46\*03

43 sequences assigned  
7 (16.3%) exact matches, in which:  
7 unique CDR3  
4 unique J



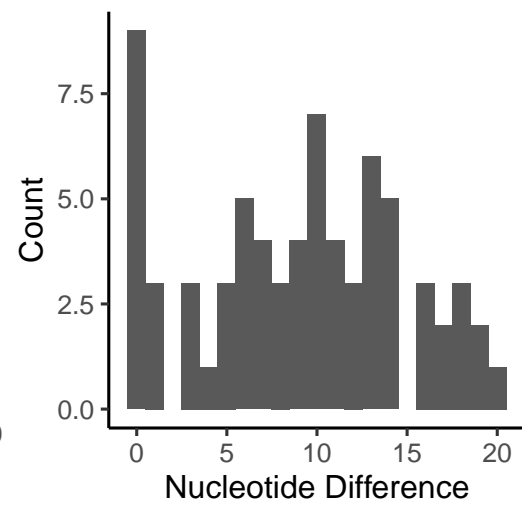
### IGHV1-69-2\*01

4 sequences assigned  
No exact matches.



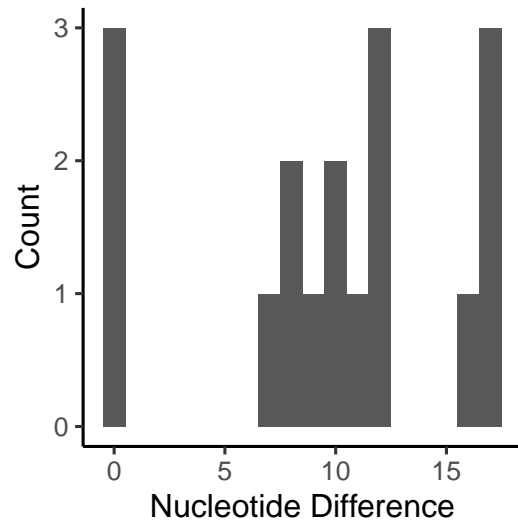
### IGHV1-69\*04\_09\_C184T

103 sequences assigned  
9 (8.7%) exact matches, in which:  
9 unique CDR3  
4 unique J



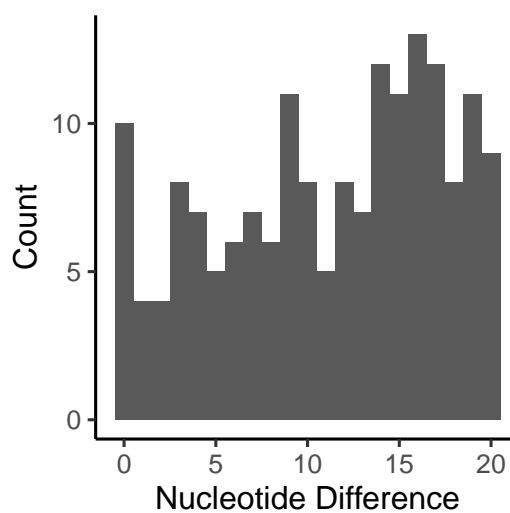
### IGHV1-58\*02

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



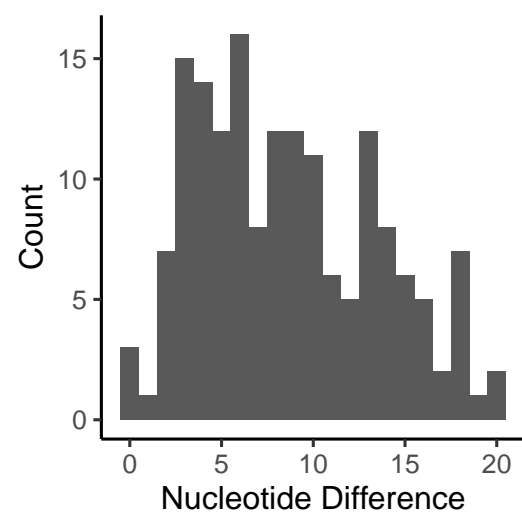
### IGHV1-69\*01\_12\_13

219 sequences assigned  
10 (4.6%) exact matches, in which:  
9 unique CDR3  
3 unique J



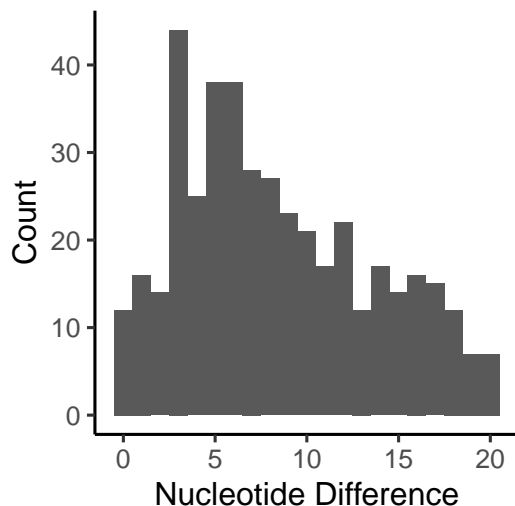
### IGHV2-5\*01

170 sequences assigned  
3 (1.8%) exact matches, in which:  
3 unique CDR3  
2 unique J



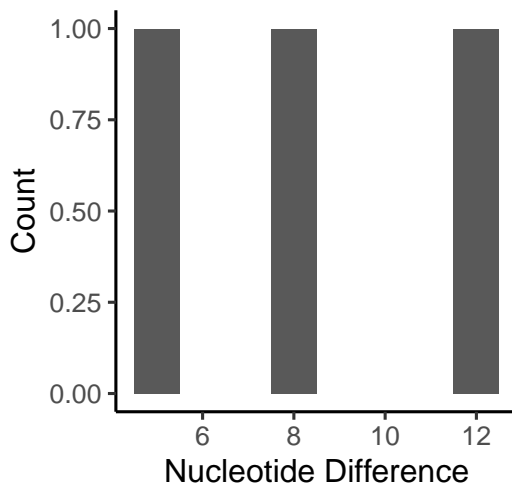
### IGHV2-5\*02

466 sequences assigned  
12 (2.6%) exact matches, in which:  
12 unique CDR3  
2 unique J



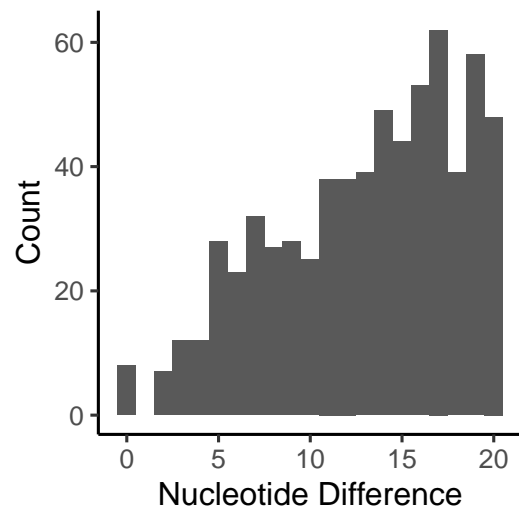
### IGHV2-70\*13

5 sequences assigned  
No exact matches.



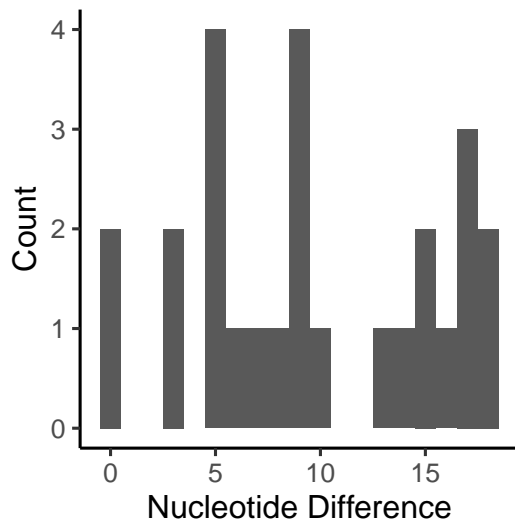
### IGHV3-7\*03

1042 sequences assigned  
8 (0.8%) exact matches, in which:  
4 unique CDR3  
4 unique J



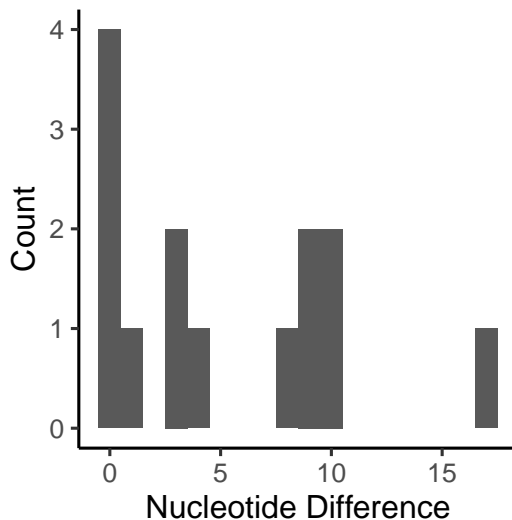
### IGHV2-26\*01

26 sequences assigned  
2 (7.7%) exact matches, in which:  
2 unique CDR3  
2 unique J



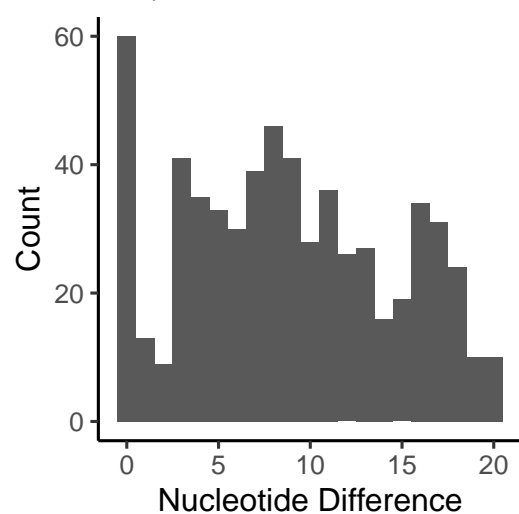
### IGHV2-70\*11\_15

14 sequences assigned  
4 (28.6%) exact matches, in which:  
3 unique CDR3  
1 unique J



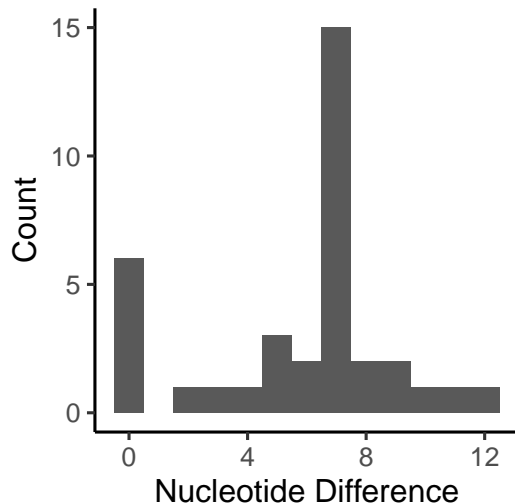
### IGHV3-9\*01

692 sequences assigned  
60 (8.7%) exact matches, in which:  
44 unique CDR3  
7 unique J



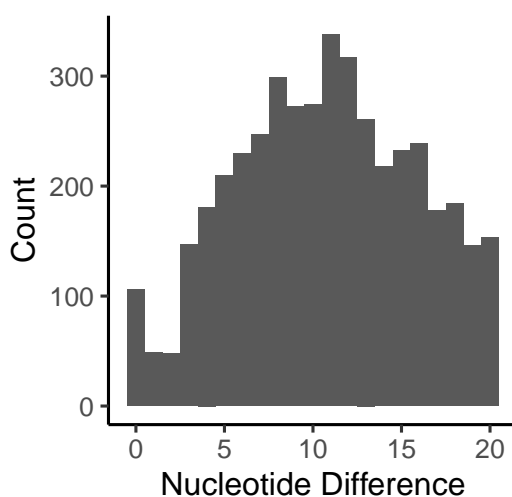
### IGHV2-70\*01

38 sequences assigned  
6 (15.8%) exact matches, in which:  
5 unique CDR3  
4 unique J



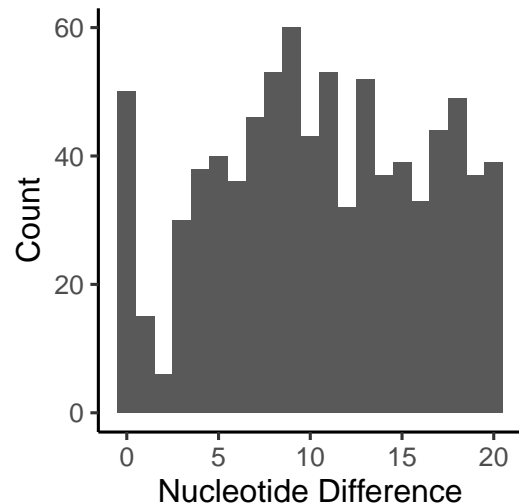
### IGHV3-7\*01

4978 sequences assigned  
106 (2.1%) exact matches, in which:  
56 unique CDR3  
7 unique J



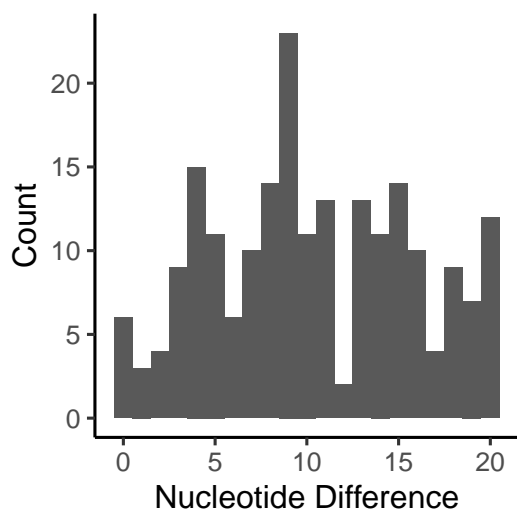
### IGHV3-11\*01

1074 sequences assigned  
50 (4.7%) exact matches, in which:  
27 unique CDR3  
5 unique J



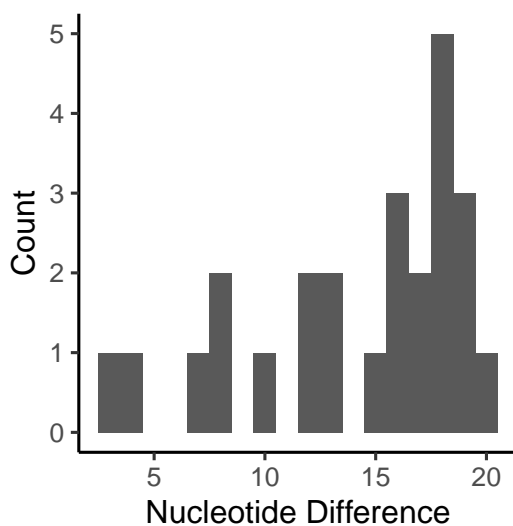
### IGHV3-13\*01

239 sequences assigned  
6 (2.5%) exact matches, in which:  
5 unique CDR3  
3 unique J



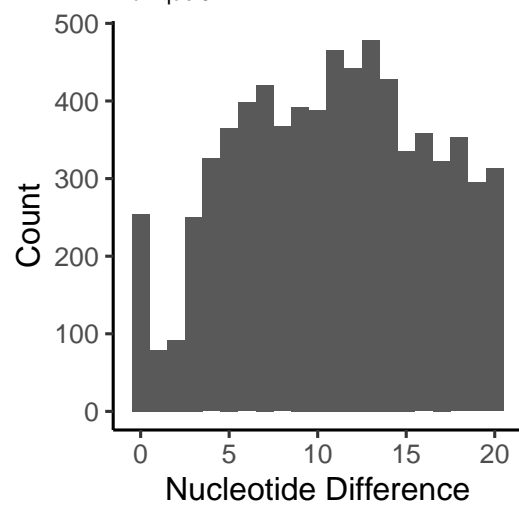
### IGHV3-20\*03\_04

33 sequences assigned  
No exact matches.



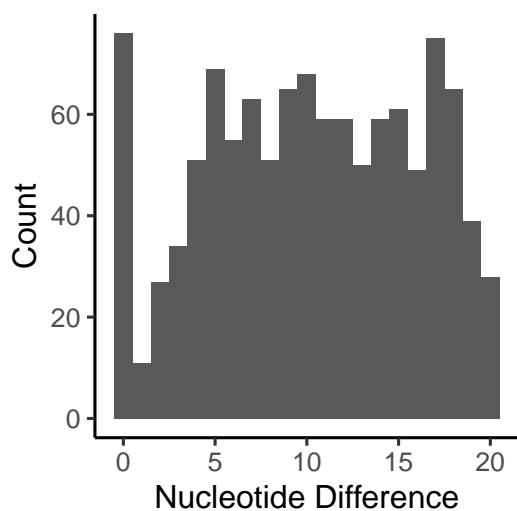
### IGHV3-23\*01\_04

9212 sequences assigned  
254 (2.8%) exact matches, in which:  
151 unique CDR3  
7 unique J



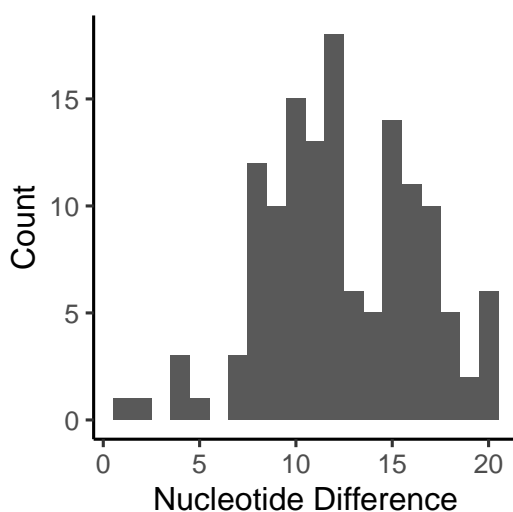
### IGHV3-15\*01\_02

1361 sequences assigned  
76 (5.6%) exact matches, in which:  
53 unique CDR3  
5 unique J



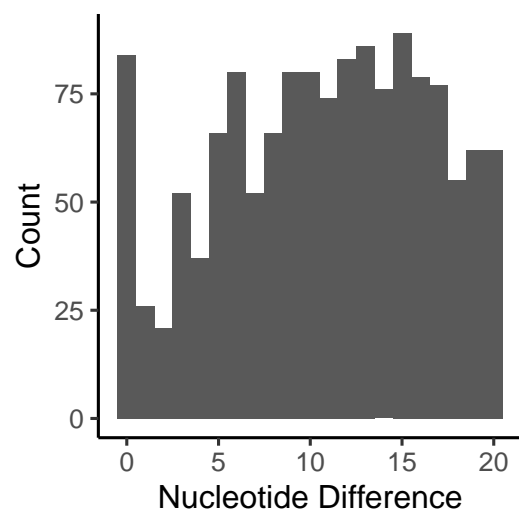
### IGHV3-21\*06

202 sequences assigned  
No exact matches.



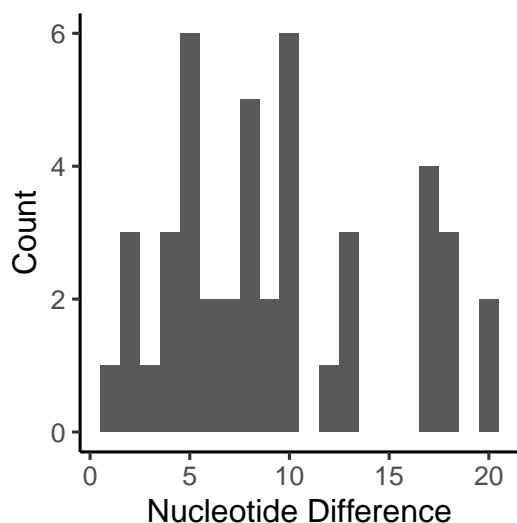
### IGHV3-30-3\*01

1673 sequences assigned  
84 (5%) exact matches, in which:  
60 unique CDR3  
6 unique J



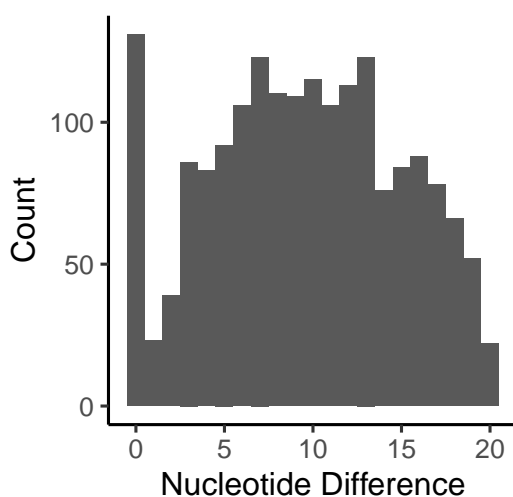
### IGHV3-20\*01\_02

45 sequences assigned  
No exact matches.



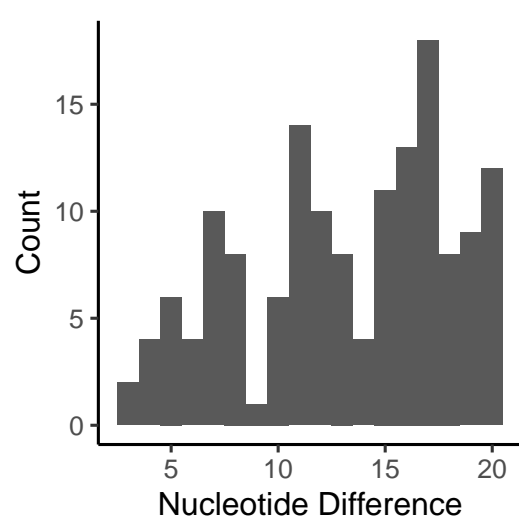
### IGHV3-21\*01\_02

2024 sequences assigned  
131 (6.5%) exact matches, in which:  
75 unique CDR3  
7 unique J



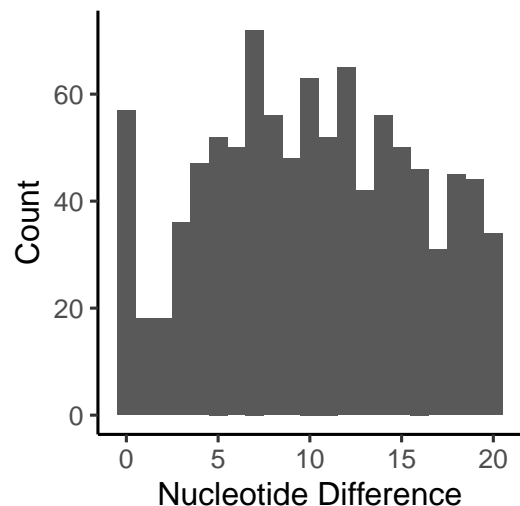
### IGHV3-30\*04

221 sequences assigned  
No exact matches.



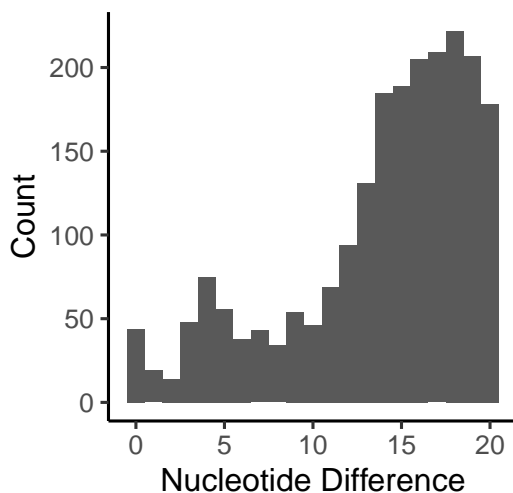
### IGHV3-33\*01

1248 sequences assigned  
57 (4.6%) exact matches, in which:  
43 unique CDR3  
6 unique J



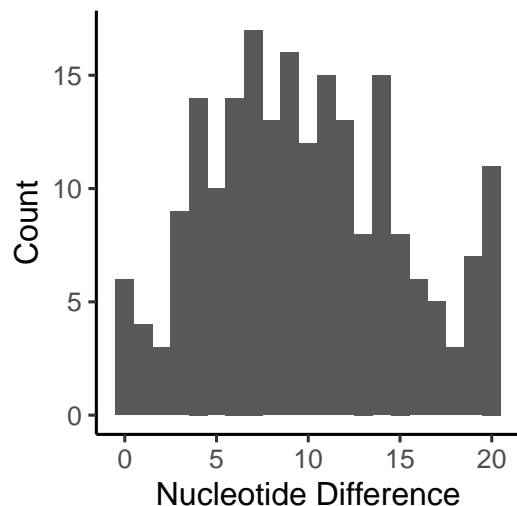
### IGHV3-48\*01

3015 sequences assigned  
44 (1.5%) exact matches, in which:  
19 unique CDR3  
3 unique J



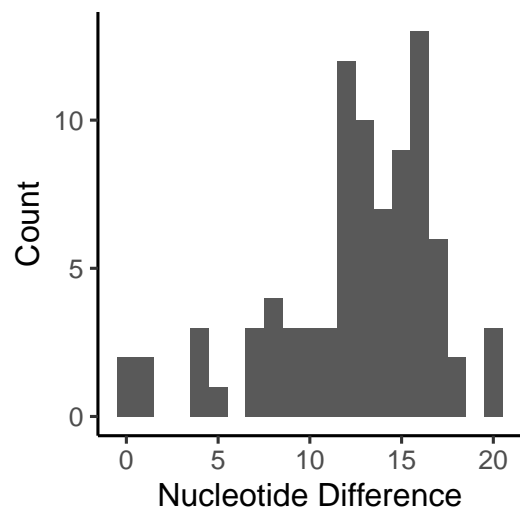
### IGHV3-49\*04

247 sequences assigned  
6 (2.4%) exact matches, in which:  
3 unique CDR3  
2 unique J



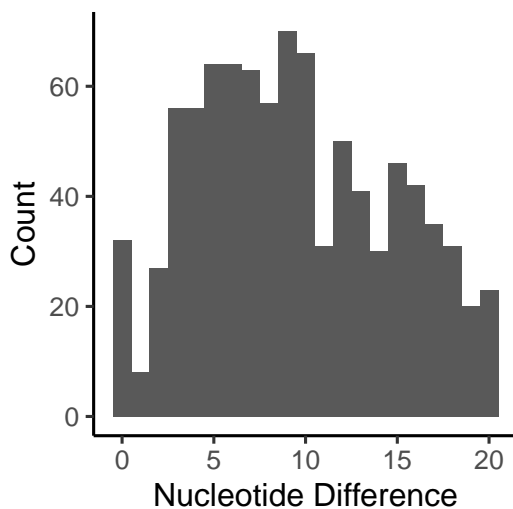
### IGHV3-43\*01

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



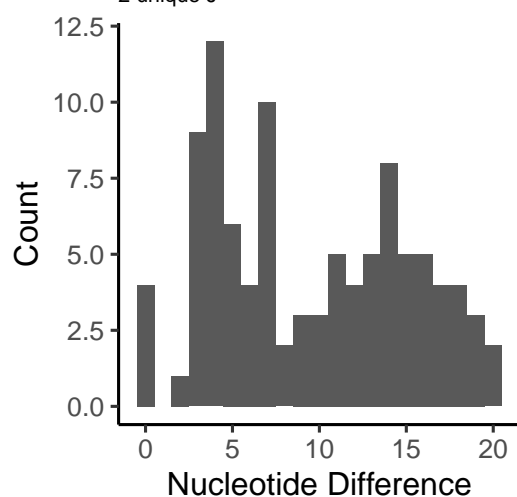
### IGHV3-48\*03

1088 sequences assigned  
32 (2.9%) exact matches, in which:  
22 unique CDR3  
4 unique J



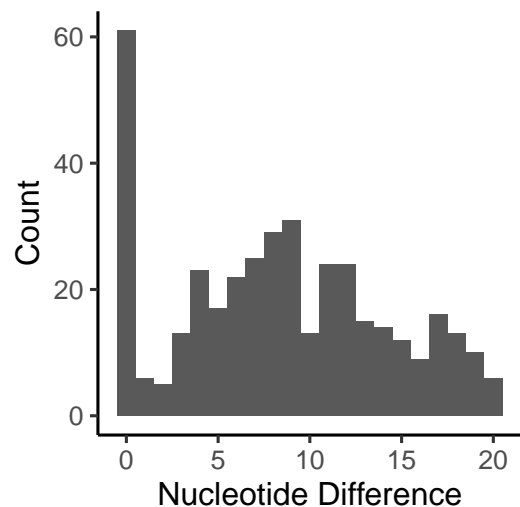
### IGHV3-49\*03\_05

112 sequences assigned  
4 (3.6%) exact matches, in which:  
3 unique CDR3  
2 unique J



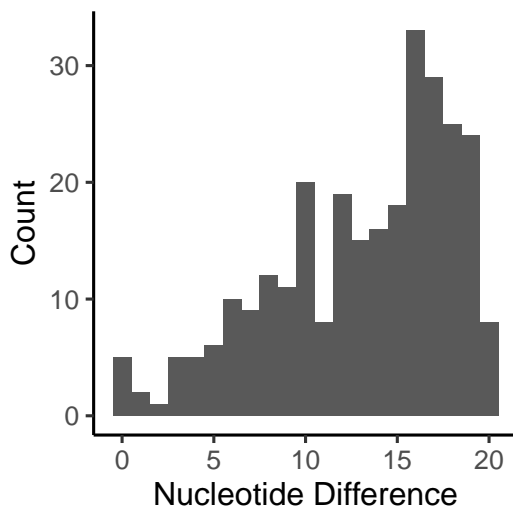
### IGHV3-43\*02

435 sequences assigned  
61 (14%) exact matches, in which:  
34 unique CDR3  
4 unique J



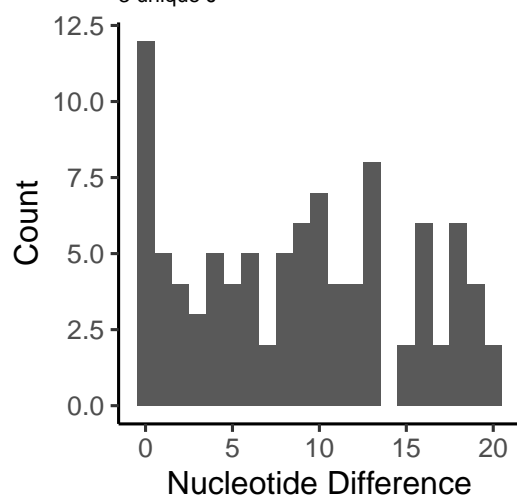
### IGHV3-48\*04

391 sequences assigned  
5 (1.3%) exact matches, in which:  
3 unique CDR3  
1 unique J



### IGHV3-53\*04

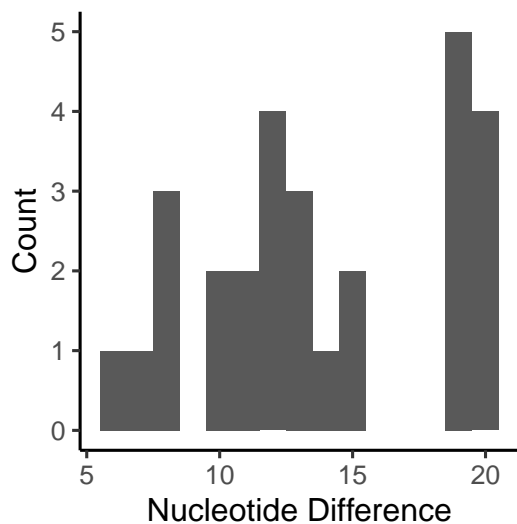
136 sequences assigned  
12 (8.8%) exact matches, in which:  
6 unique CDR3  
3 unique J





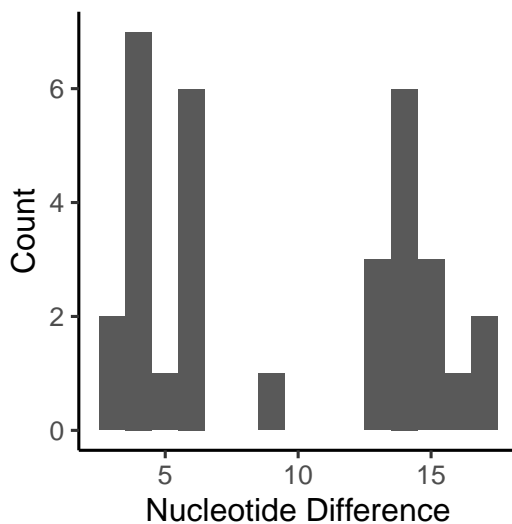
### IGHV3-53\*05

53 sequences assigned  
No exact matches.



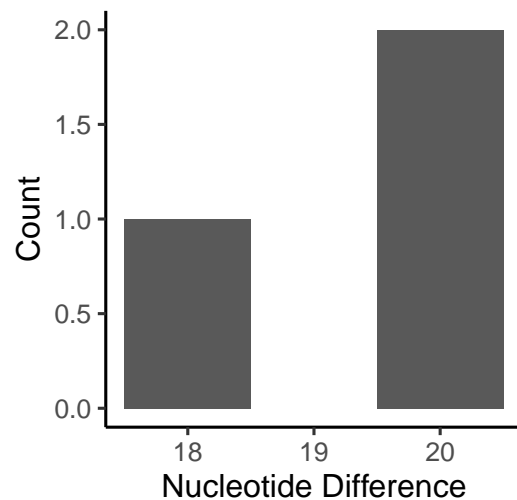
### IGHV3-64\*02\_07

43 sequences assigned  
No exact matches.



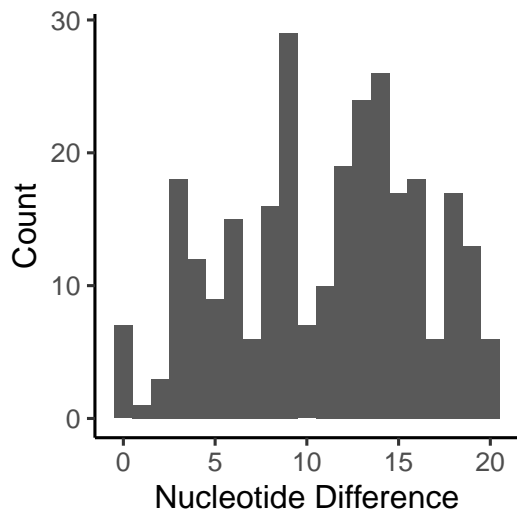
### IGHV3-69-1\*01

4 sequences assigned  
No exact matches.



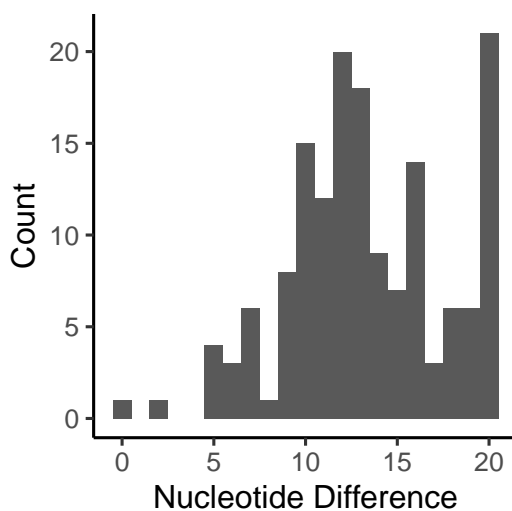
### IGHV3-53\*01\_02

328 sequences assigned  
7 (2.1%) exact matches, in which:  
2 unique CDR3  
2 unique J



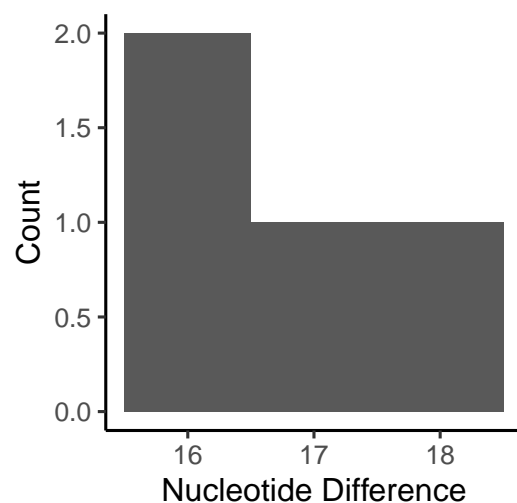
### IGHV3-66\*01

248 sequences assigned  
1 (0.4%) exact matches, in which:  
1 unique CDR3  
1 unique J



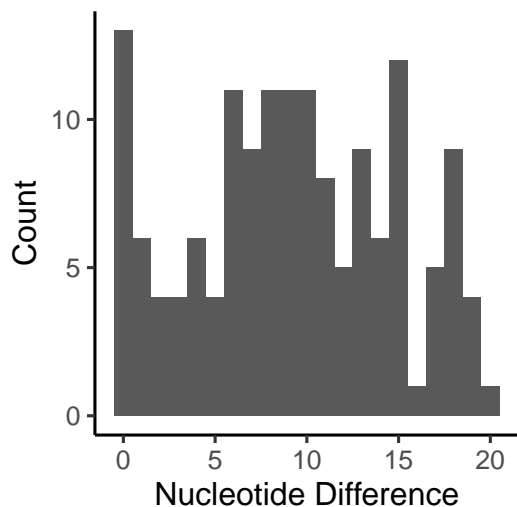
### IGHV3-69-1\*02

8 sequences assigned  
No exact matches.



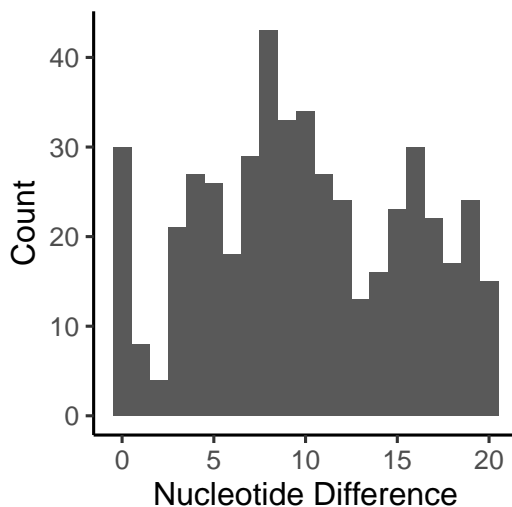
### IGHV3-64\*01

167 sequences assigned  
13 (7.8%) exact matches, in which:  
7 unique CDR3  
3 unique J



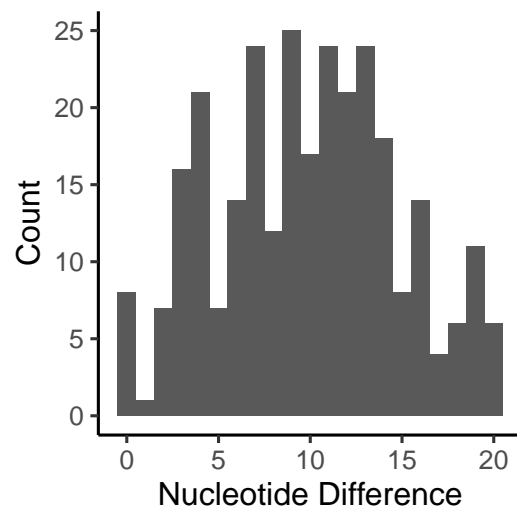
### IGHV3-66\*02

602 sequences assigned  
30 (5%) exact matches, in which:  
19 unique CDR3  
4 unique J



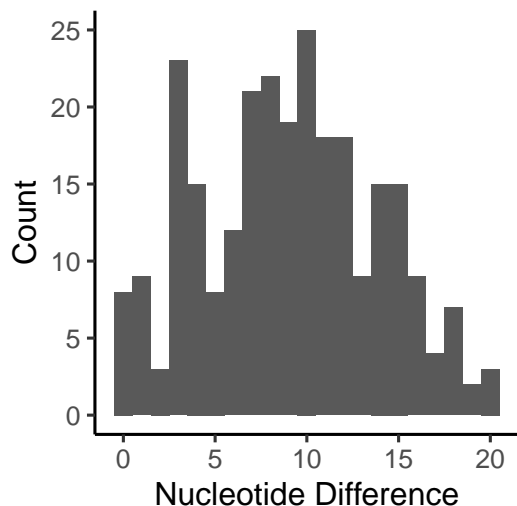
### IGHV3-72\*01

314 sequences assigned  
8 (2.5%) exact matches, in which:  
5 unique CDR3  
2 unique J



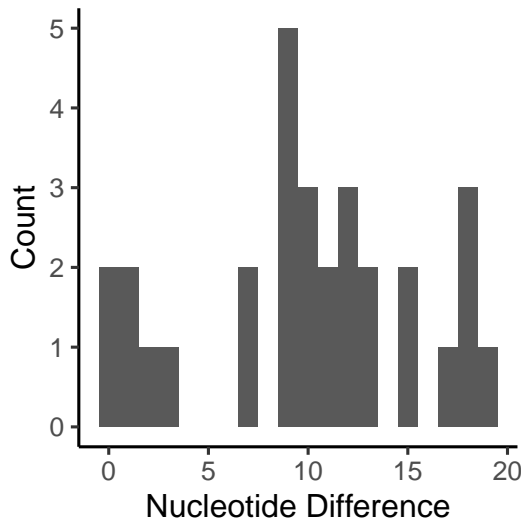
### IGHV3-73\*01\_02

298 sequences assigned  
8 (2.7%) exact matches, in which:  
5 unique CDR3  
2 unique J



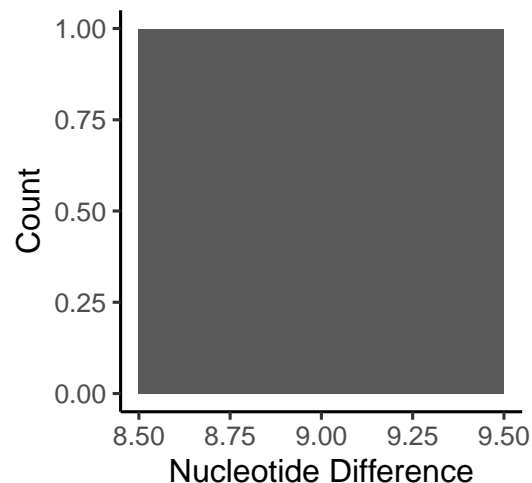
### IGHV3-43D\*03

34 sequences assigned  
2 (5.9%) exact matches, in which:  
2 unique CDR3  
1 unique J



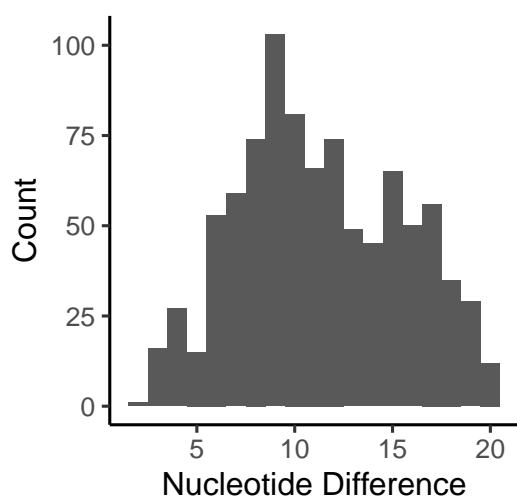
### IGHV3-NL1\*01

1 sequences assigned  
No exact matches.



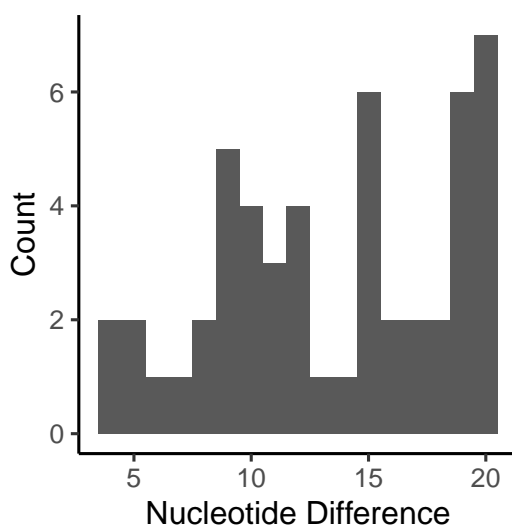
### IGHV3-74\*03

997 sequences assigned  
No exact matches.



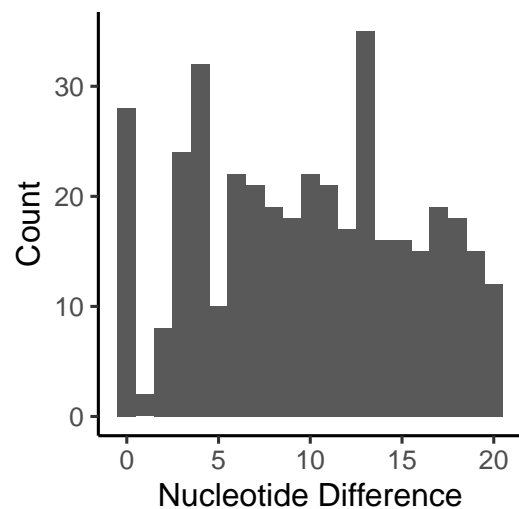
### IGHV3-64D\*06

158 sequences assigned  
No exact matches.



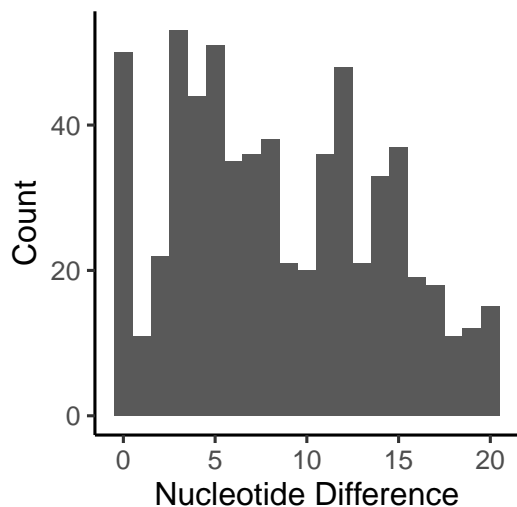
### IGHV4-4\*07

462 sequences assigned  
28 (6.1%) exact matches, in which:  
16 unique CDR3  
3 unique J



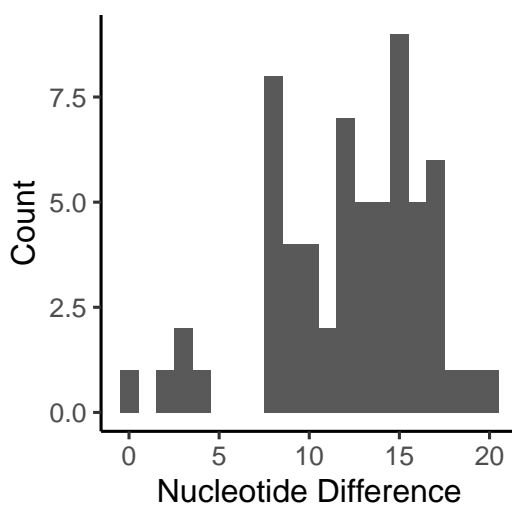
### IGHV3-74\*01\_02

674 sequences assigned  
50 (7.4%) exact matches, in which:  
28 unique CDR3  
6 unique J



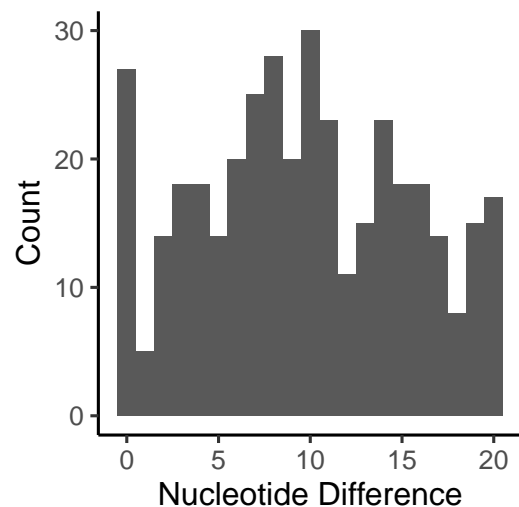
### IGHV3-64D\*09

80 sequences assigned  
1 (1.2%) exact matches, in which:  
1 unique CDR3  
1 unique J



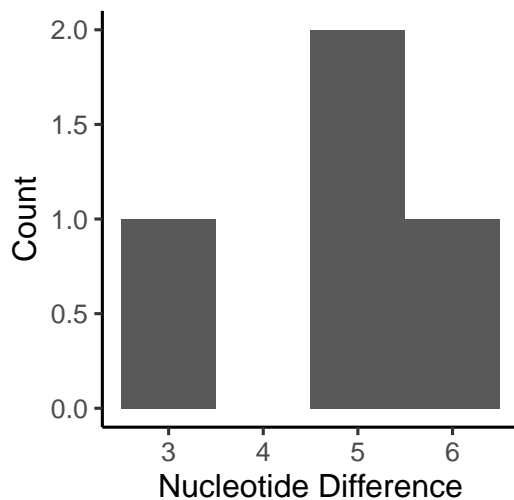
### IGHV4-4\*02\_03

485 sequences assigned  
27 (5.6%) exact matches, in which:  
21 unique CDR3  
6 unique J



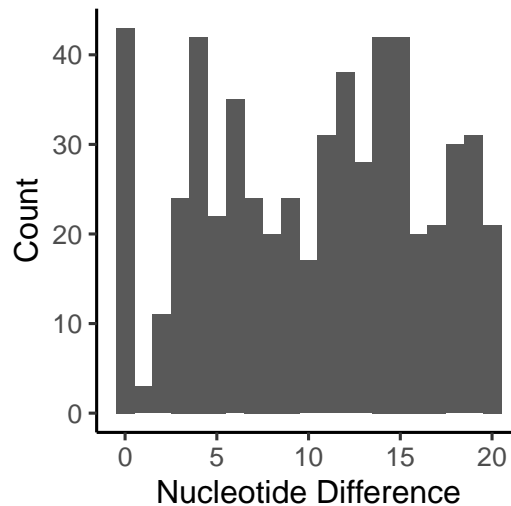
### IGHV4-28\*01\_07

7 sequences assigned  
No exact matches.



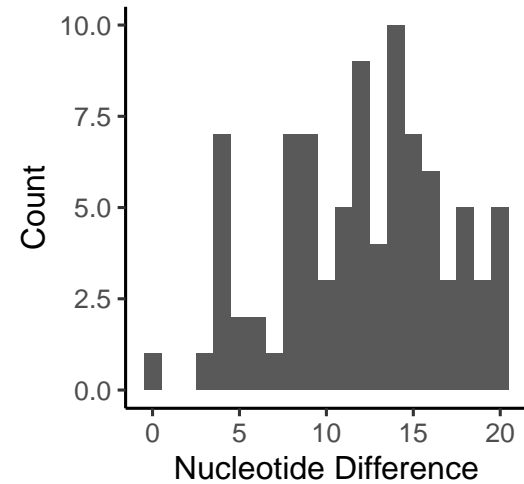
### IGHV4-31\*02

842 sequences assigned  
43 (5.1%) exact matches, in which:  
35 unique CDR3  
4 unique J



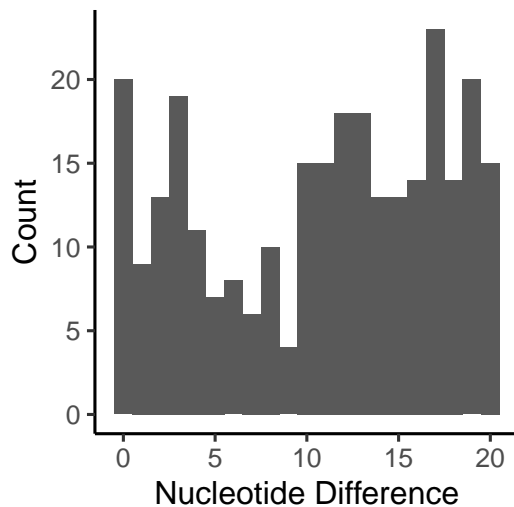
### IGHV4-39\*02

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



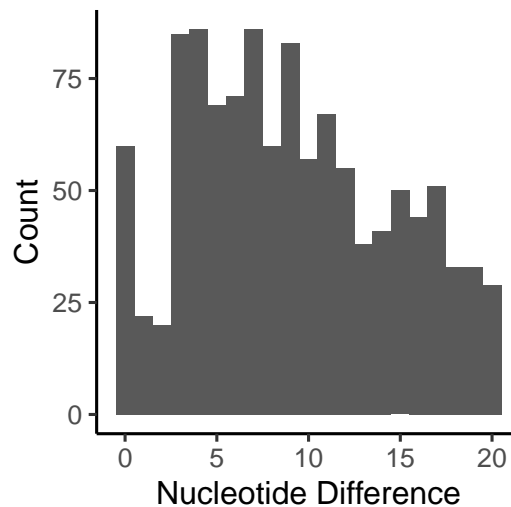
### IGHV4-30-2\*01

491 sequences assigned  
20 (4.1%) exact matches, in which:  
12 unique CDR3  
3 unique J



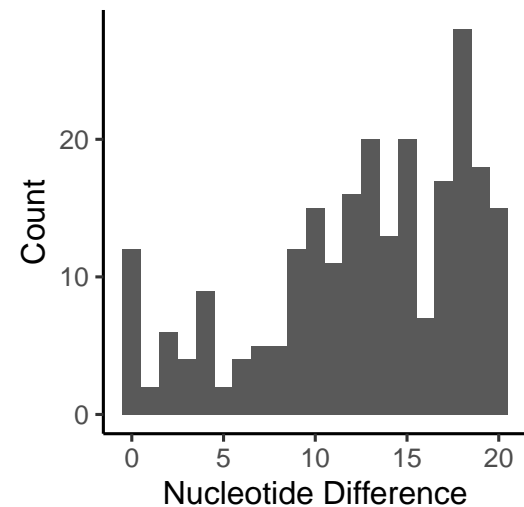
### IGHV4-34\*01\_02

1418 sequences assigned  
60 (4.2%) exact matches, in which:  
37 unique CDR3  
6 unique J



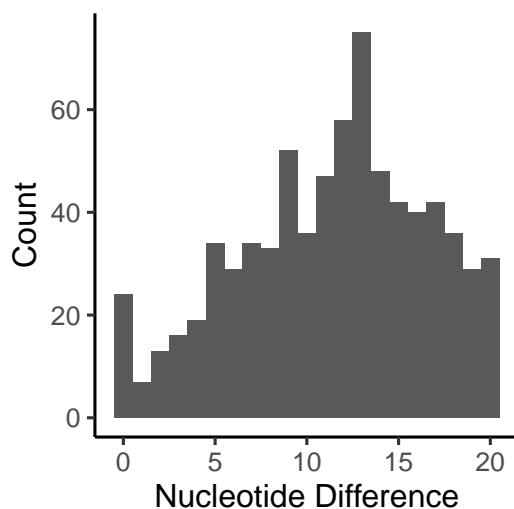
### IGHV4-39\*07

423 sequences assigned  
12 (2.8%) exact matches, in which:  
11 unique CDR3  
3 unique J



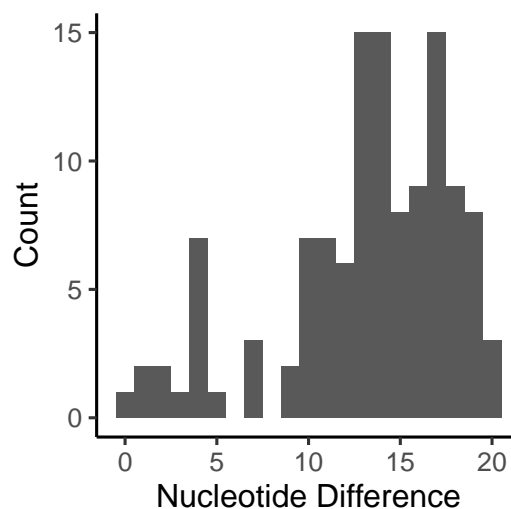
### IGHV4-30-4\*01

930 sequences assigned  
24 (2.6%) exact matches, in which:  
16 unique CDR3  
3 unique J



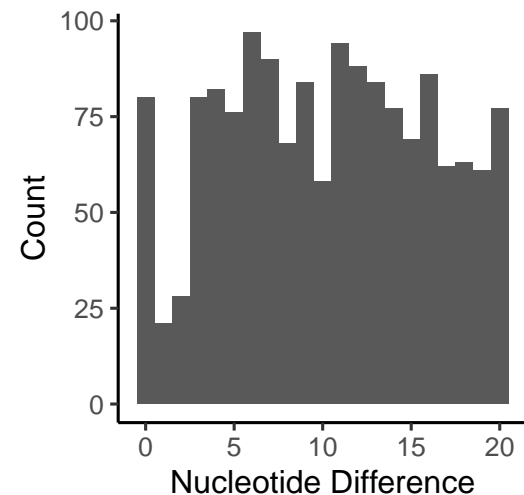
### IGHV4-38-2\*02

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



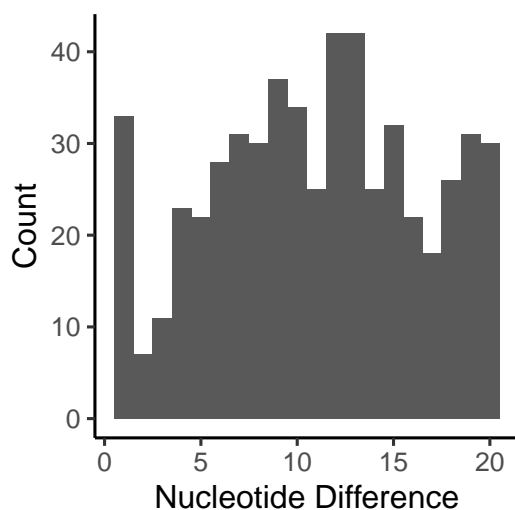
### IGHV4-59\*01\_07

2168 sequences assigned  
80 (3.7%) exact matches, in which:  
49 unique CDR3  
7 unique J



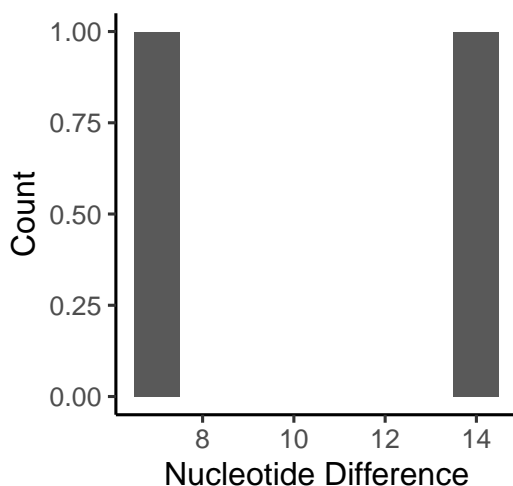
### IGHV4–59\*11

903 sequences assigned  
No exact matches.



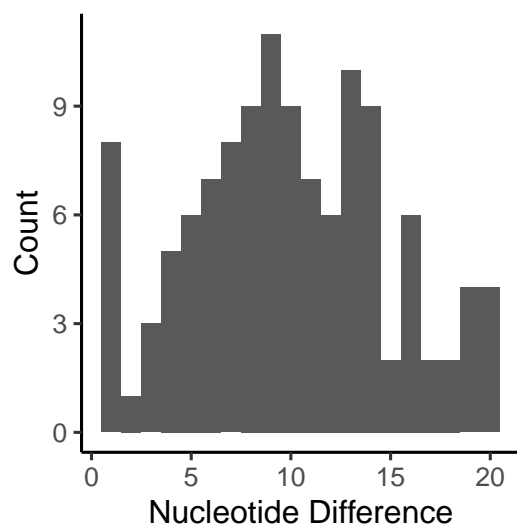
### IGHV4/OR15–8\*01

4 sequences assigned  
No exact matches.



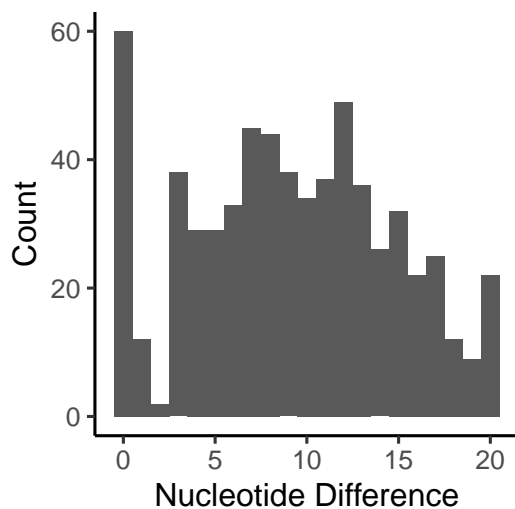
### IGHV5–51\*07

135 sequences assigned  
No exact matches.



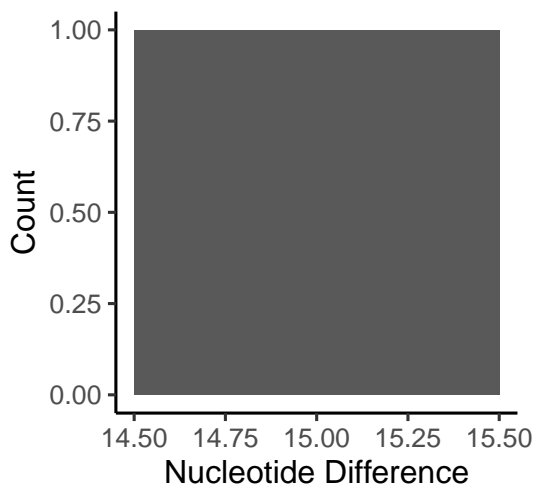
### IGHV4–61\*02

706 sequences assigned  
60 (8.5%) exact matches, in which:  
45 unique CDR3  
5 unique J



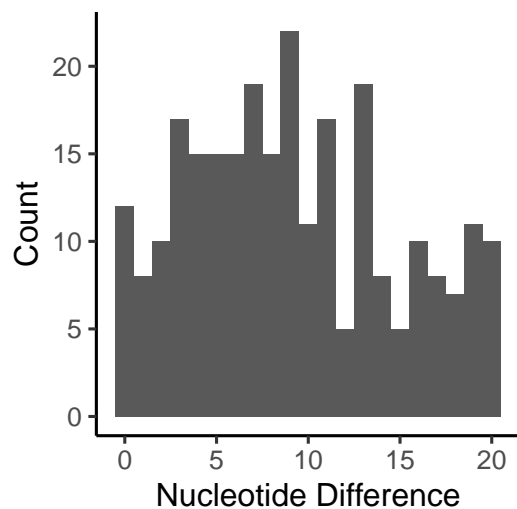
### IGHV4/OR15–8\*02

5 sequences assigned  
No exact matches.



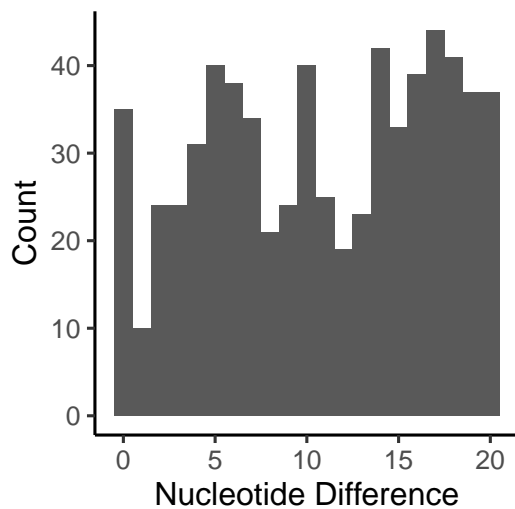
### IGHV5–51\*01\_03

288 sequences assigned  
12 (4.2%) exact matches, in which:  
11 unique CDR3  
4 unique J



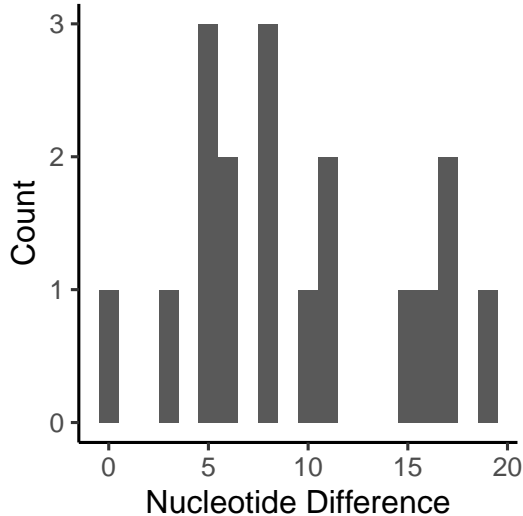
### IGHV4–61\*02\_A234G

919 sequences assigned  
35 (3.8%) exact matches, in which:  
25 unique CDR3  
5 unique J



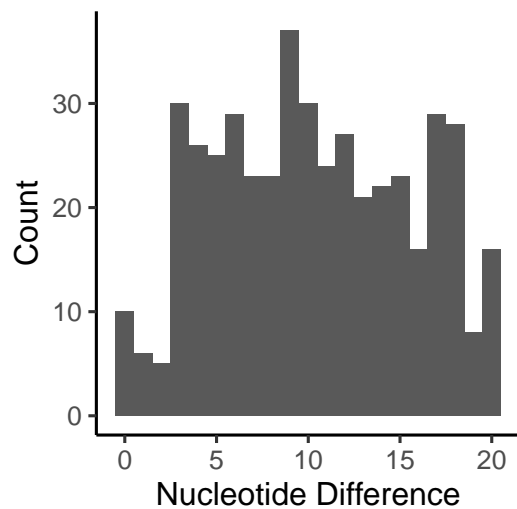
### IGHV5–10–1\*01\_03

19 sequences assigned  
1 (5.3%) exact matches, in which:  
1 unique CDR3  
1 unique J



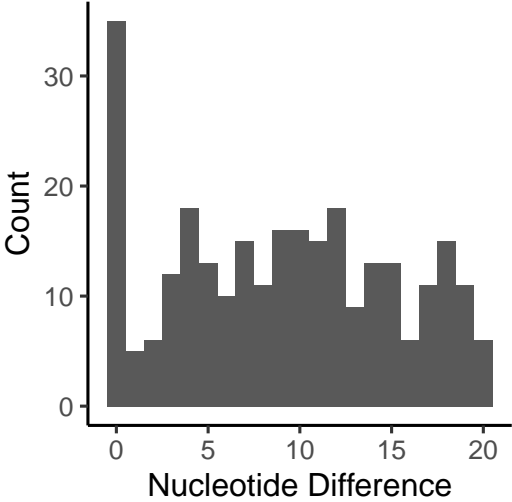
### IGHV6–1\*01\_02

520 sequences assigned  
10 (1.9%) exact matches, in which:  
8 unique CDR3  
5 unique J

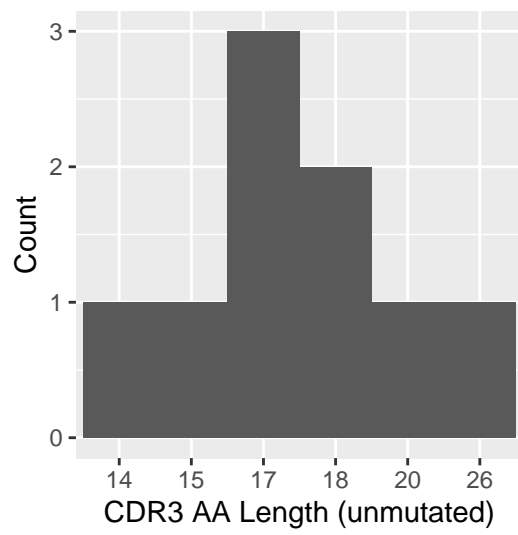


# IGHV7-4-1\*02

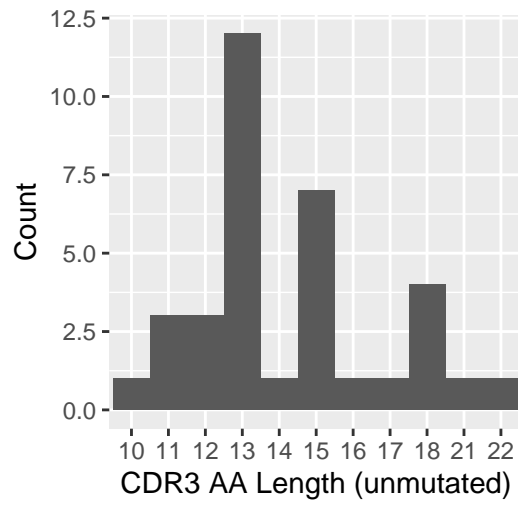
311 sequences assigned  
35 (11.3%) exact matches, in which:  
33 unique CDR3  
5 unique J



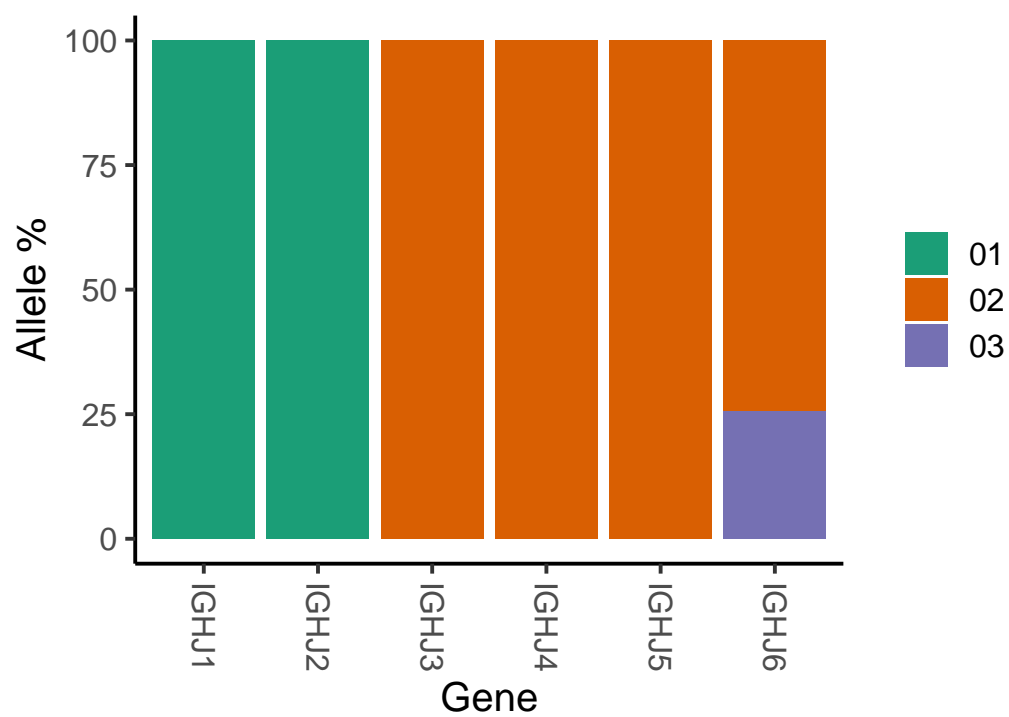
IGHV1-69\*04\_09\_C184T



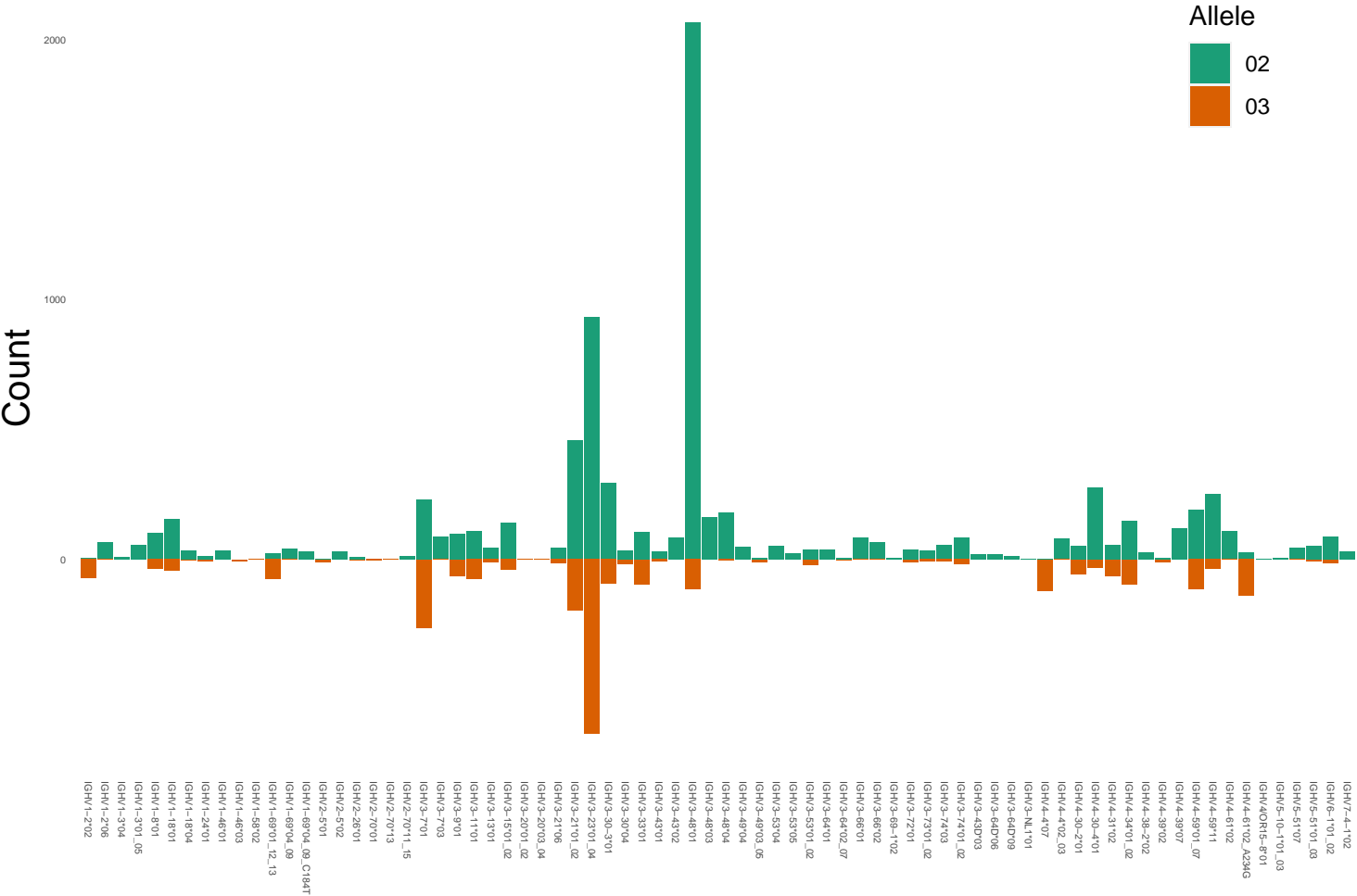
IGHV4-61\*02\_A234G



Allele Usage



Sequence Count by IGHJ6 allele usage





[illegible]