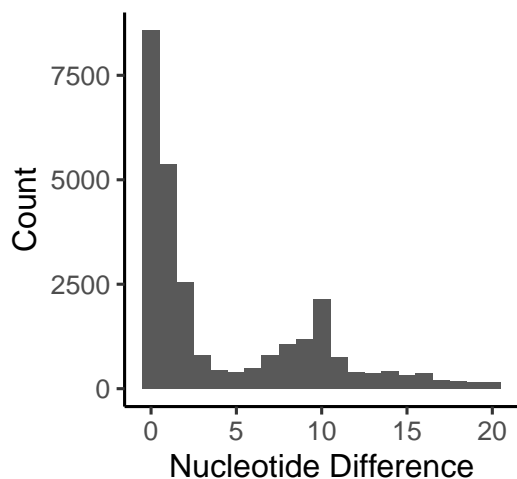


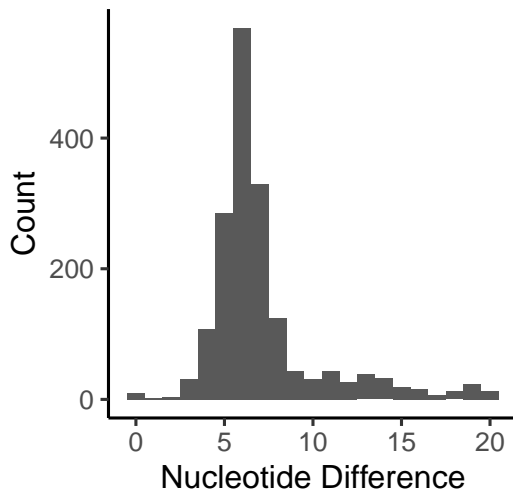
### IGHV1-2\*02

29678 sequences assigned  
8575 (28.9%) exact matches, in which:  
7712 unique CDR3  
7 unique J



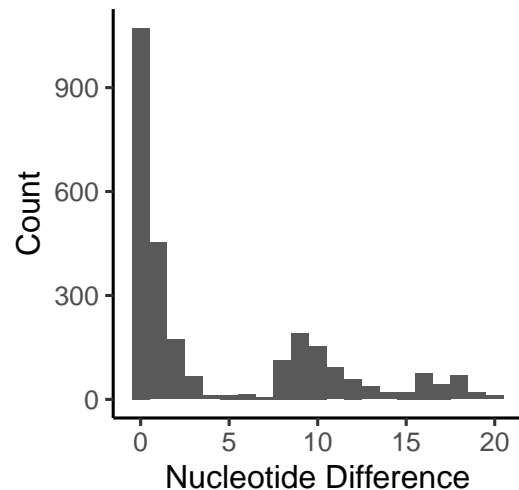
### IGHV1-8\*02

1827 sequences assigned  
10 (0.5%) exact matches, in which:  
10 unique CDR3  
4 unique J



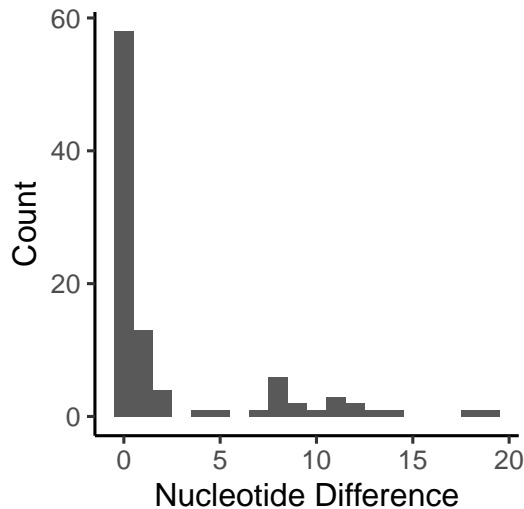
### IGHV1-24\*01

2771 sequences assigned  
1073 (38.7%) exact matches, in which:  
1007 unique CDR3  
7 unique J



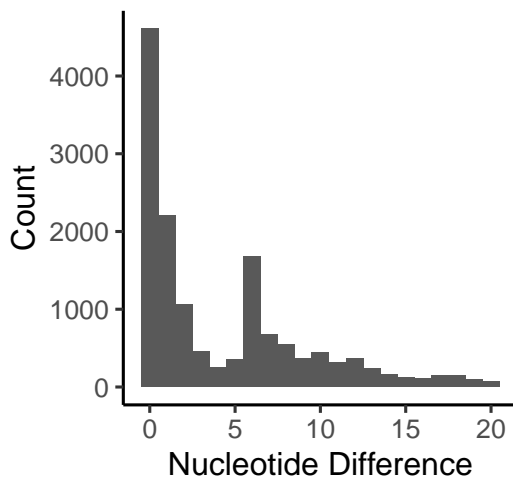
### IGHV1-3\*02

100 sequences assigned  
58 (58%) exact matches, in which:  
56 unique CDR3  
6 unique J



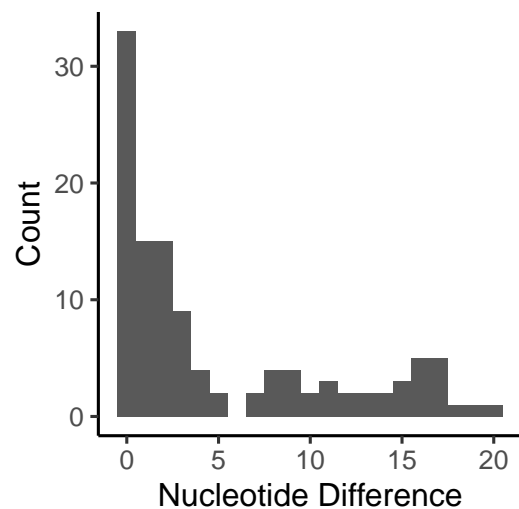
### IGHV1-18\*01

15629 sequences assigned  
4608 (29.5%) exact matches, in which:  
4319 unique CDR3  
7 unique J



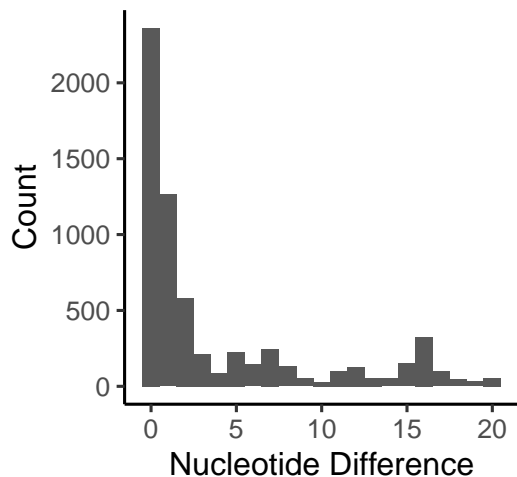
### IGHV1-45\*02

145 sequences assigned  
33 (22.8%) exact matches, in which:  
29 unique CDR3  
6 unique J



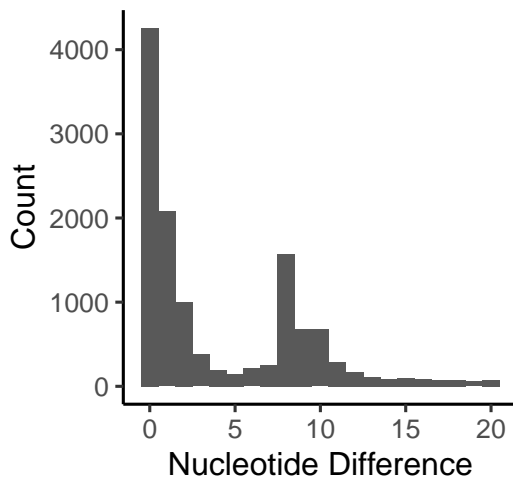
### IGHV1-8\*01

6594 sequences assigned  
2361 (35.8%) exact matches, in which:  
2202 unique CDR3  
7 unique J



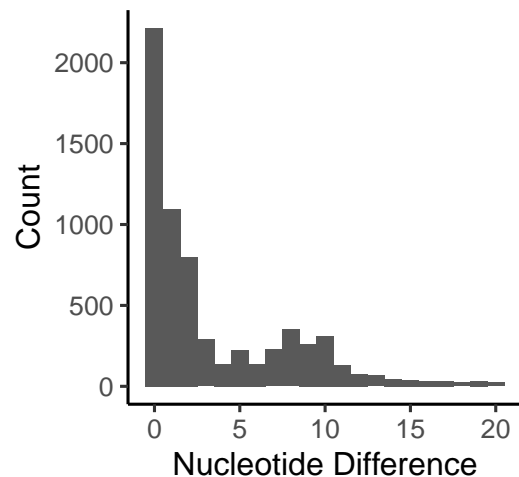
### IGHV1-18\*04

13163 sequences assigned  
4257 (32.3%) exact matches, in which:  
3967 unique CDR3  
7 unique J



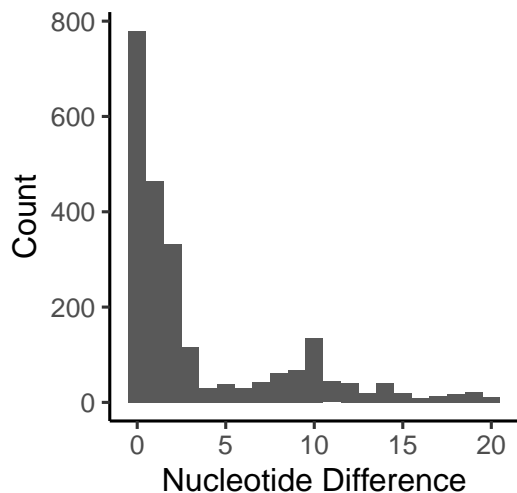
### IGHV1-46\*01

6756 sequences assigned  
2214 (32.8%) exact matches, in which:  
2089 unique CDR3  
7 unique J



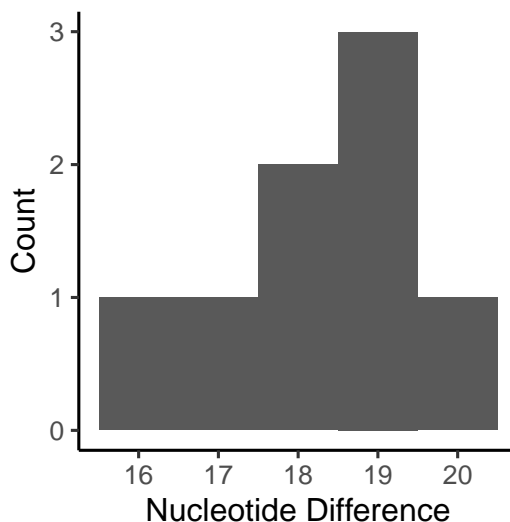
### IGHV1-46\*03

2422 sequences assigned  
780 (32.2%) exact matches, in which:  
689 unique CDR3  
7 unique J



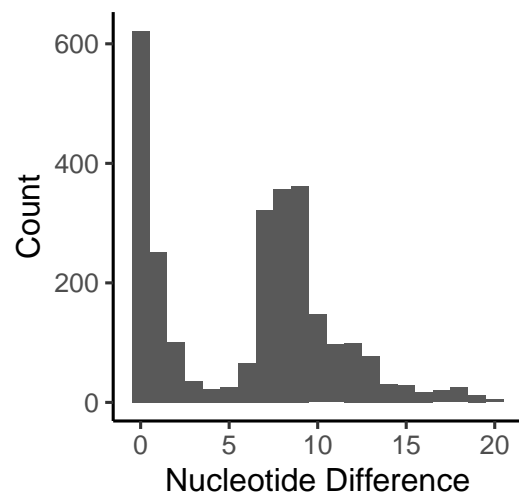
### IGHV1-69-2\*01

8 sequences assigned  
No exact matches.



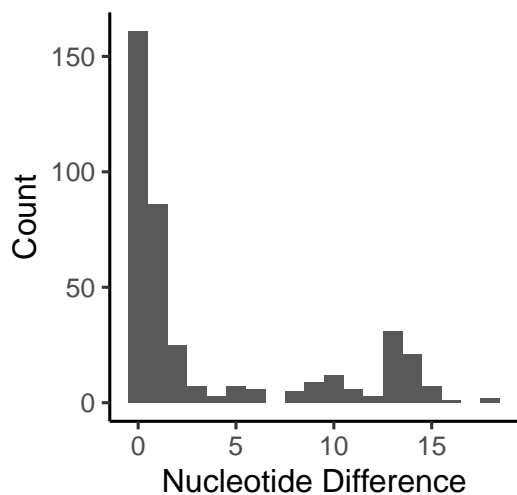
### IGHV1-69\*06\_14

2896 sequences assigned  
622 (21.5%) exact matches, in which:  
618 unique CDR3  
7 unique J



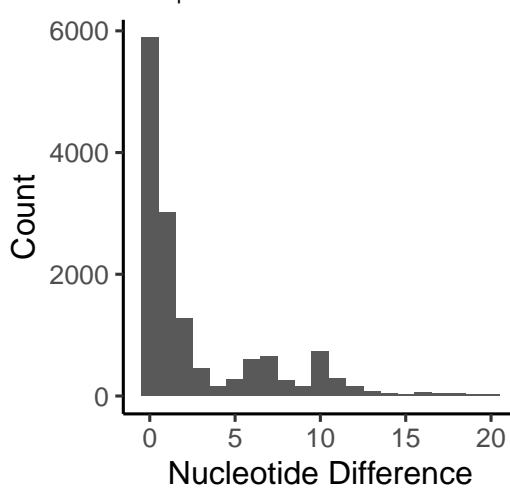
### IGHV1-58\*02

404 sequences assigned  
161 (39.9%) exact matches, in which:  
153 unique CDR3  
7 unique J



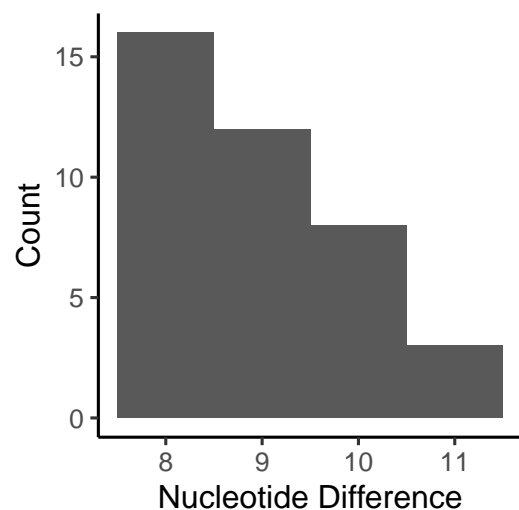
### IGHV1-69\*01\_12\_13

14708 sequences assigned  
5887 (40%) exact matches, in which:  
5495 unique CDR3  
7 unique J



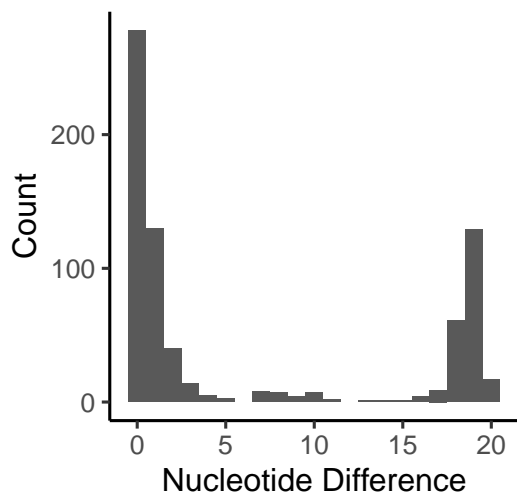
### IGHV1-NL1\*01

39 sequences assigned  
No exact matches.



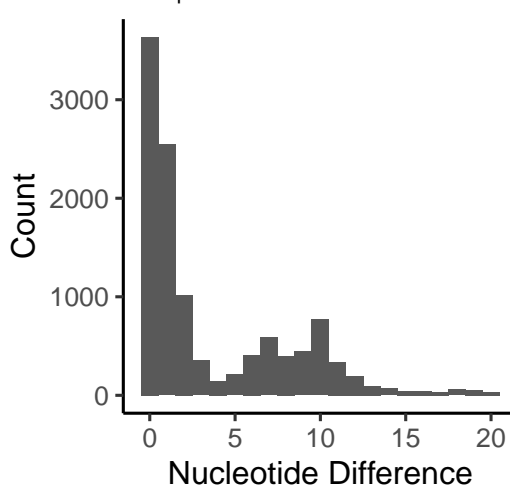
### IGHV1-58\*01\_03

743 sequences assigned  
278 (37.4%) exact matches, in which:  
264 unique CDR3  
7 unique J



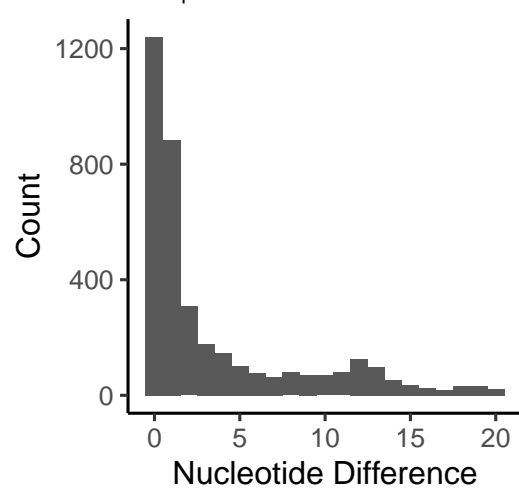
### IGHV1-69\*04\_09

12030 sequences assigned  
3636 (30.2%) exact matches, in which:  
3423 unique CDR3  
7 unique J



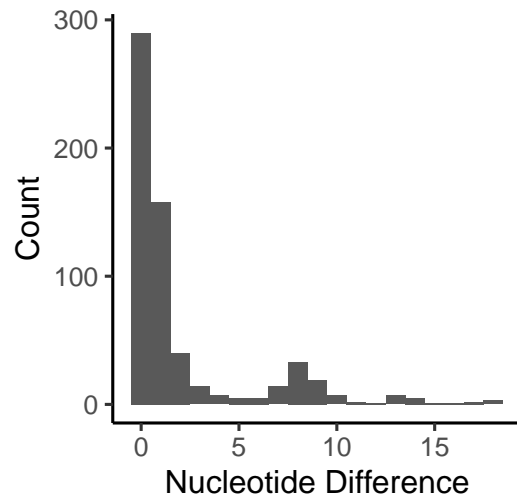
### IGHV2-5\*02

4191 sequences assigned  
1240 (29.6%) exact matches, in which:  
1122 unique CDR3  
7 unique J



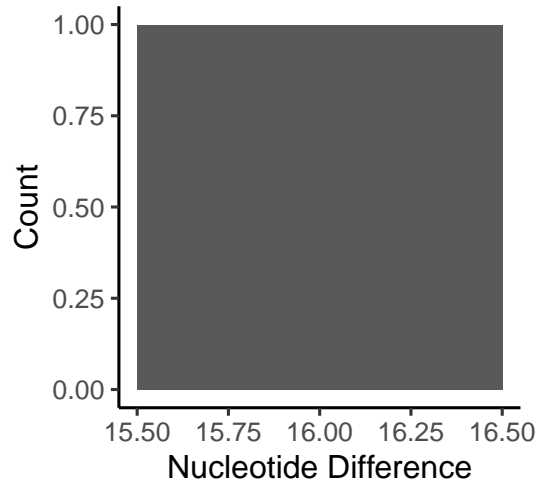
### IGHV2-26\*01

629 sequences assigned  
290 (46.1%) exact matches, in which:  
269 unique CDR3  
7 unique J



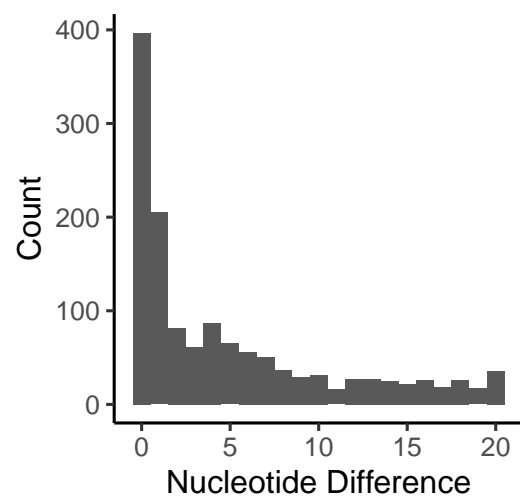
### IGHV2-70D\*04

6 sequences assigned  
No exact matches.



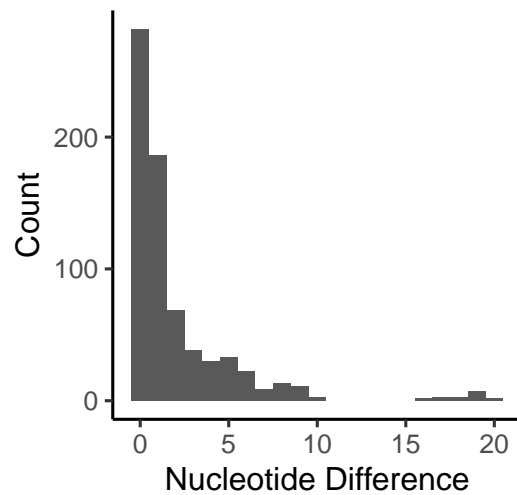
### IGHV3-7\*04

2974 sequences assigned  
397 (13.3%) exact matches, in which:  
314 unique CDR3  
7 unique J



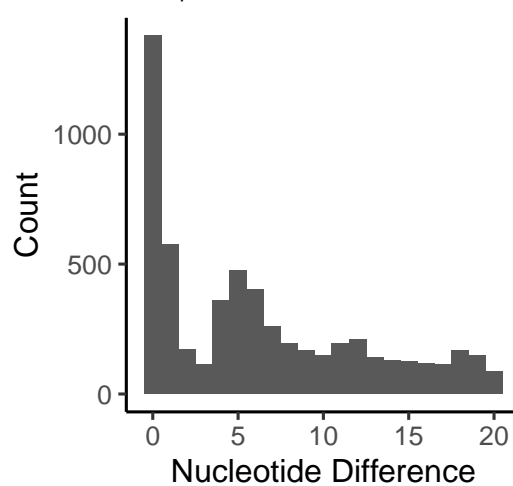
### IGHV2-70\*01

723 sequences assigned  
282 (39%) exact matches, in which:  
257 unique CDR3  
7 unique J



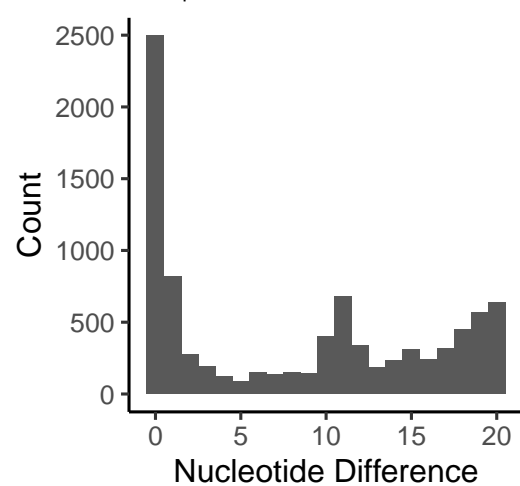
### IGHV3-7\*01

6172 sequences assigned  
1379 (22.3%) exact matches, in which:  
1118 unique CDR3  
7 unique J



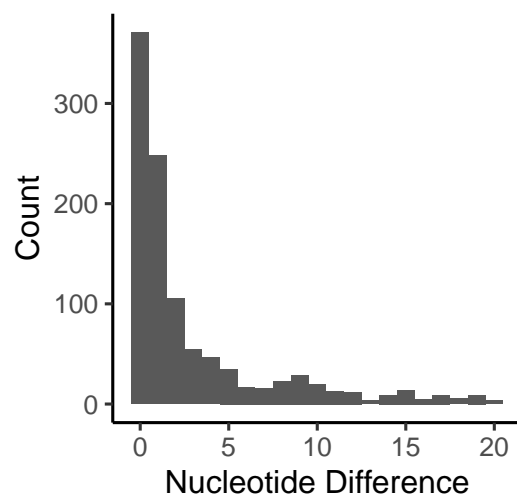
### IGHV3-9\*01

10263 sequences assigned  
2496 (24.3%) exact matches, in which:  
1835 unique CDR3  
7 unique J



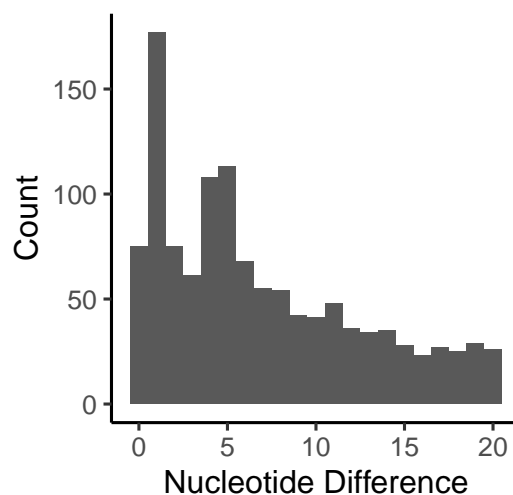
### IGHV2-70\*11\_15

1079 sequences assigned  
371 (34.4%) exact matches, in which:  
341 unique CDR3  
7 unique J



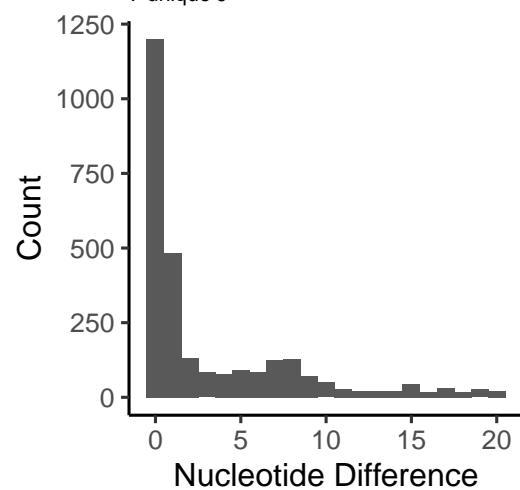
### IGHV3-7\*03

1438 sequences assigned  
75 (5.2%) exact matches, in which:  
72 unique CDR3  
7 unique J



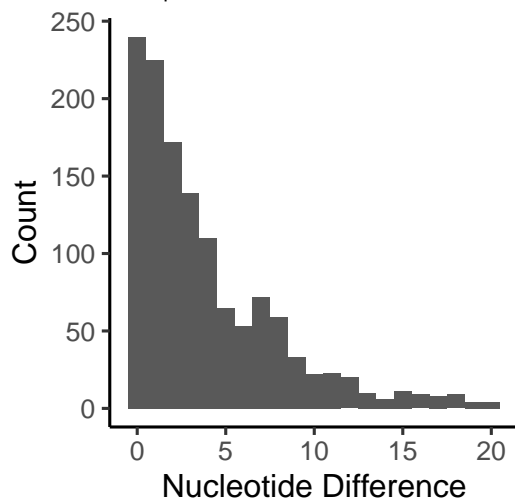
### IGHV3-11\*01

4896 sequences assigned  
1200 (24.5%) exact matches, in which:  
968 unique CDR3  
7 unique J



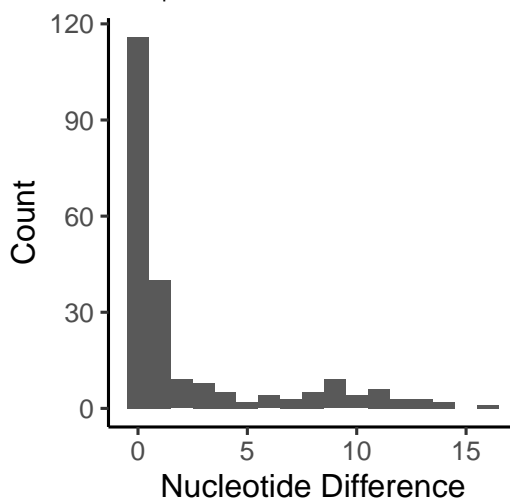
### IGHV3-11\*04

1428 sequences assigned  
240 (16.8%) exact matches, in which:  
240 unique CDR3  
7 unique J



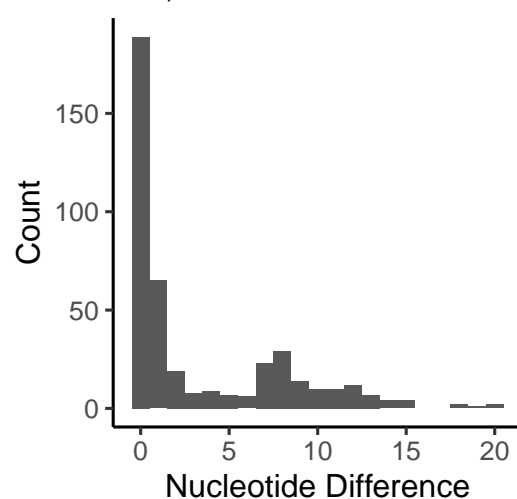
### IGHV3-13\*05

224 sequences assigned  
116 (51.8%) exact matches, in which:  
89 unique CDR3  
6 unique J



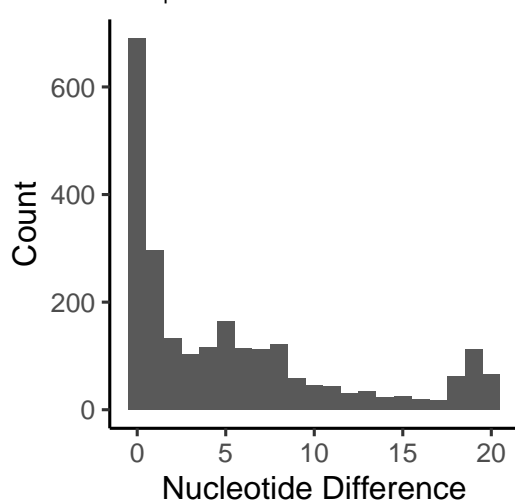
### IGHV3-20\*01\_02

422 sequences assigned  
189 (44.8%) exact matches, in which:  
150 unique CDR3  
7 unique J



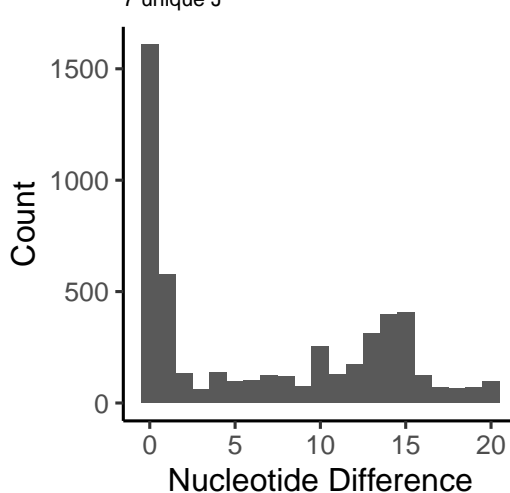
### IGHV3-11\*06

2557 sequences assigned  
691 (27%) exact matches, in which:  
570 unique CDR3  
7 unique J



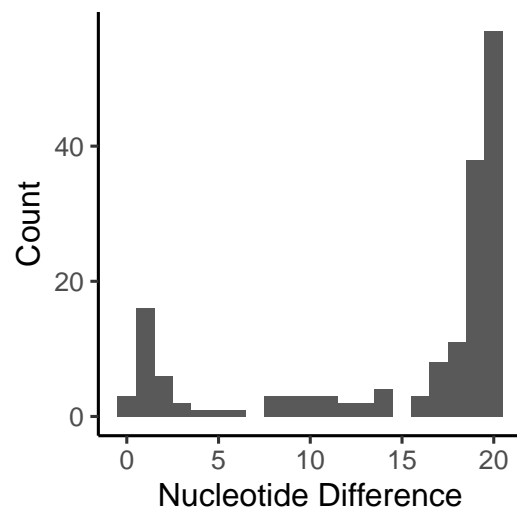
### IGHV3-15\*01\_02

5915 sequences assigned  
1608 (27.2%) exact matches, in which:  
1216 unique CDR3  
7 unique J



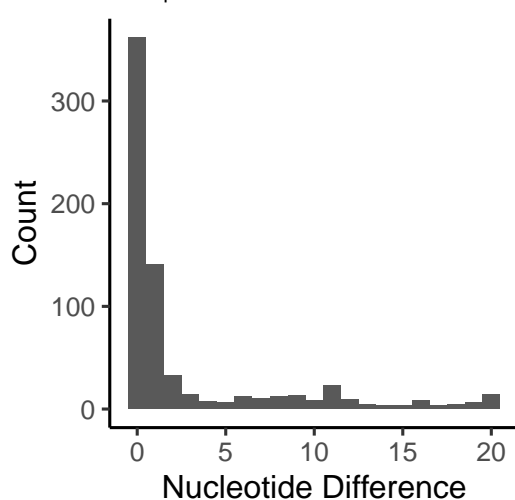
### IGHV3-20\*03\_04

310 sequences assigned  
3 (1%) exact matches, in which:  
3 unique CDR3  
2 unique J



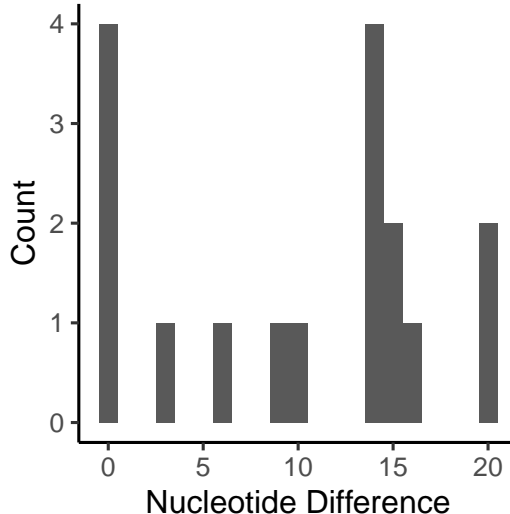
### IGHV3-13\*01

723 sequences assigned  
362 (50.1%) exact matches, in which:  
280 unique CDR3  
6 unique J



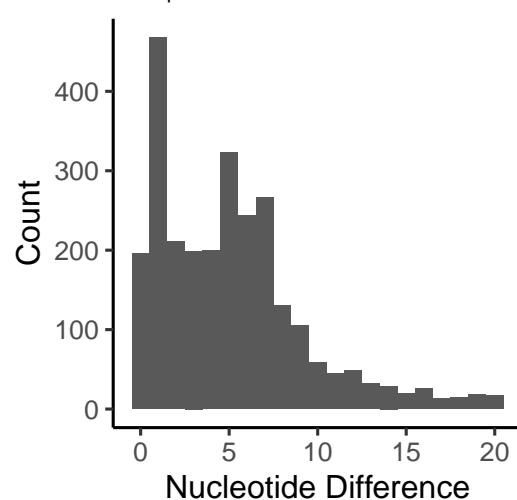
### IGHV3-19\*01

17 sequences assigned  
4 (23.5%) exact matches, in which:  
4 unique CDR3  
3 unique J



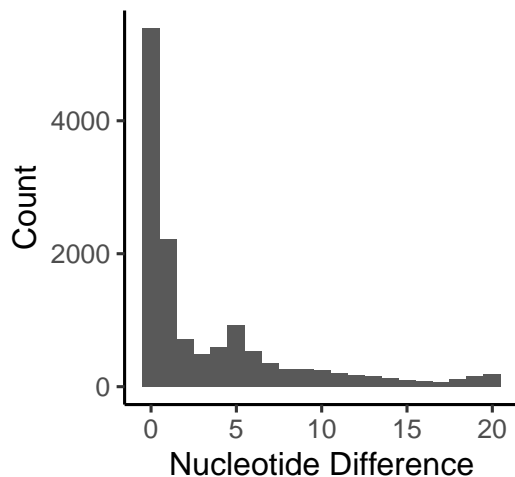
### IGHV3-21\*04

2834 sequences assigned  
196 (6.9%) exact matches, in which:  
195 unique CDR3  
7 unique J



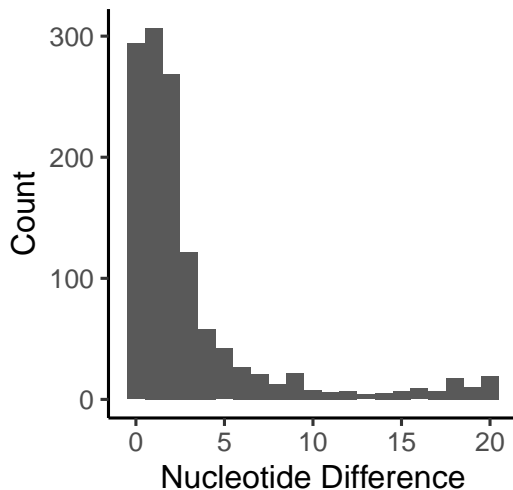
### IGHV3-21\*01\_02

15508 sequences assigned  
5389 (34.7%) exact matches, in which:  
4134 unique CDR3  
7 unique J



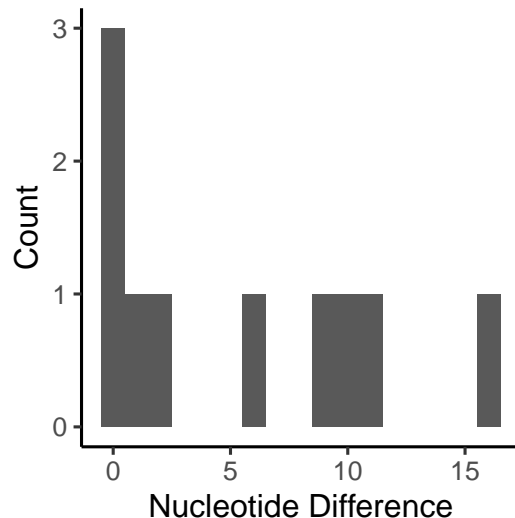
### IGHV3-30\*03

1706 sequences assigned  
294 (17.2%) exact matches, in which:  
290 unique CDR3  
7 unique J



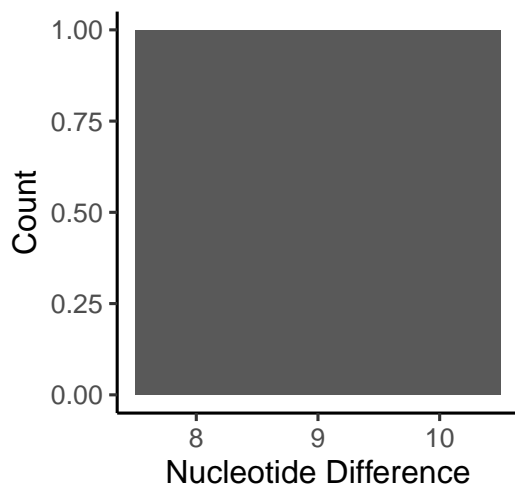
### IGHV3-35\*01

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



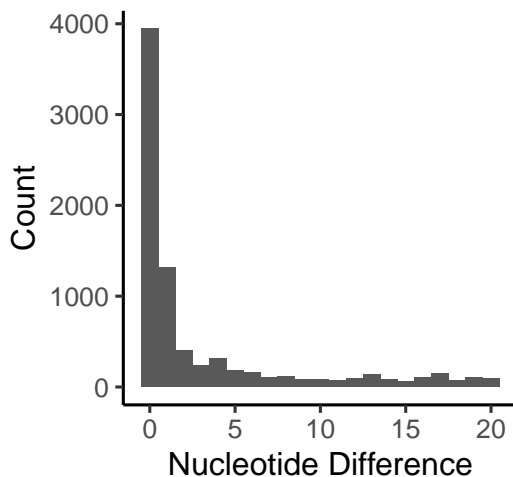
### IGHV3-22\*01\_02

4 sequences assigned  
No exact matches.



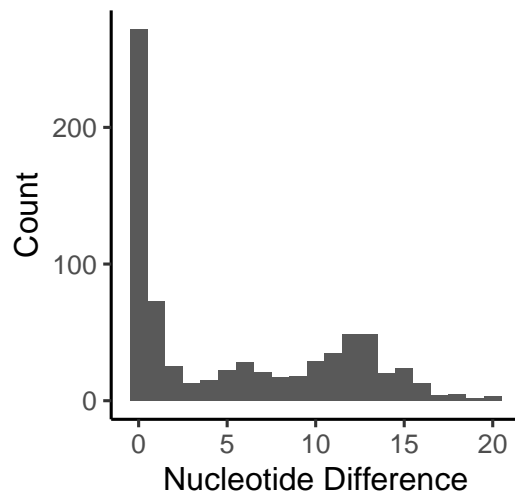
### IGHV3-33\*01

9172 sequences assigned  
3945 (43%) exact matches, in which:  
3250 unique CDR3  
7 unique J



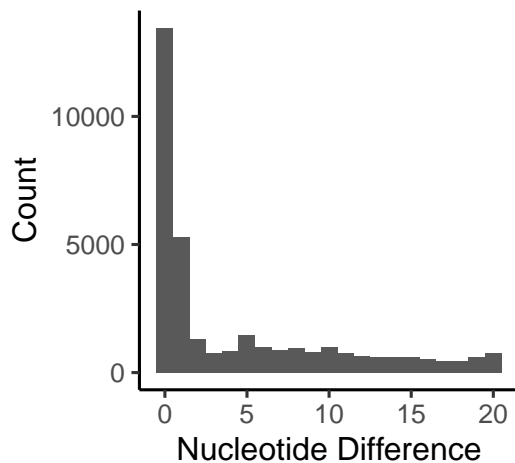
### IGHV3-43\*01

1100 sequences assigned  
272 (24.7%) exact matches, in which:  
210 unique CDR3  
7 unique J



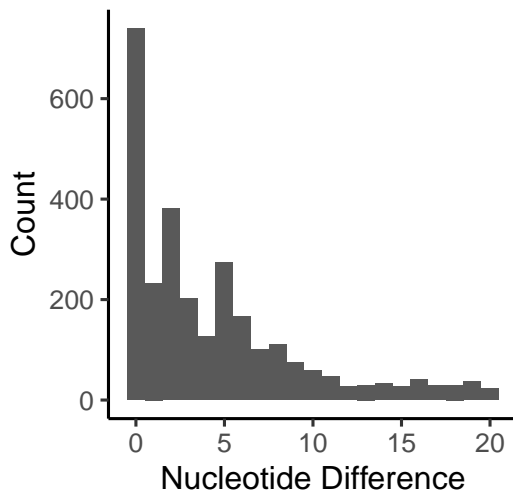
### IGHV3-23\*01\_04

40591 sequences assigned  
13459 (33.2%) exact matches, in which:  
9303 unique CDR3  
7 unique J



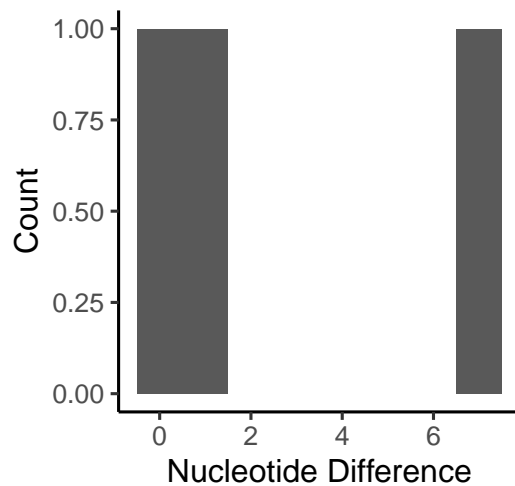
### IGHV3-33\*08

3090 sequences assigned  
740 (23.9%) exact matches, in which:  
698 unique CDR3  
7 unique J



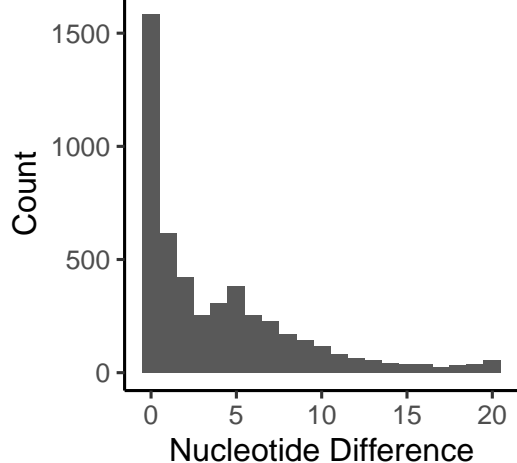
### IGHV3-47\*02

3 sequences assigned  
1 (33.3%) exact matches, in which:  
1 unique CDR3  
1 unique J



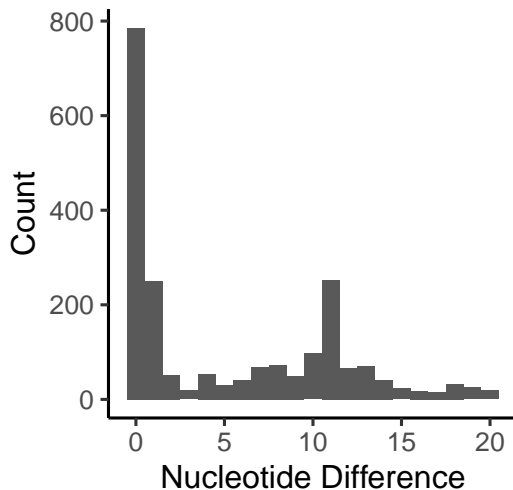
### IGHV3-48\*01

5623 sequences assigned  
1583 (28.2%) exact matches, in which:  
1273 unique CDR3  
7 unique J



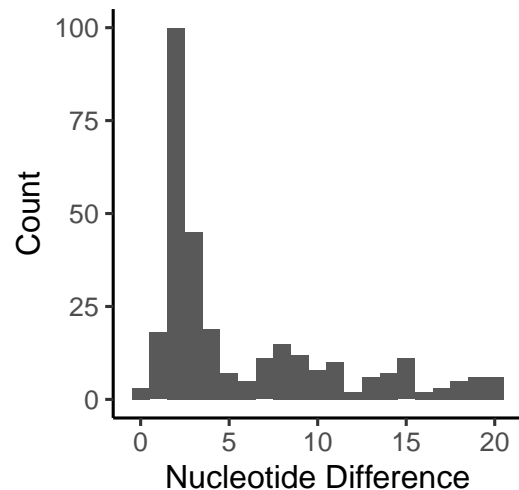
### IGHV3-49\*03\_05

2244 sequences assigned  
786 (35%) exact matches, in which:  
606 unique CDR3  
6 unique J



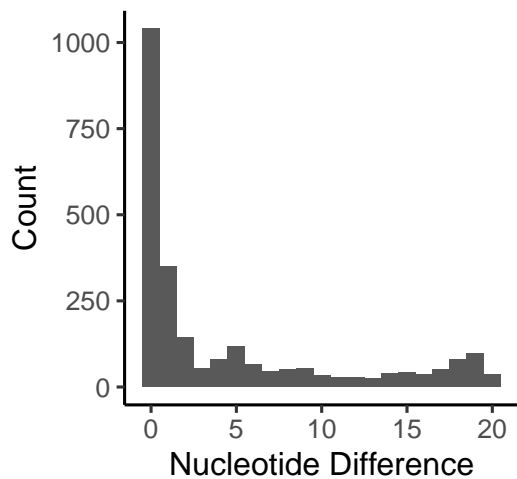
### IGHV3-53\*05

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



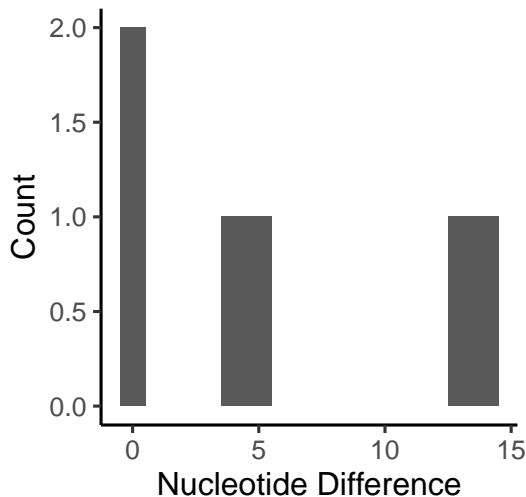
### IGHV3-48\*02

2887 sequences assigned  
1040 (36%) exact matches, in which:  
798 unique CDR3  
7 unique J



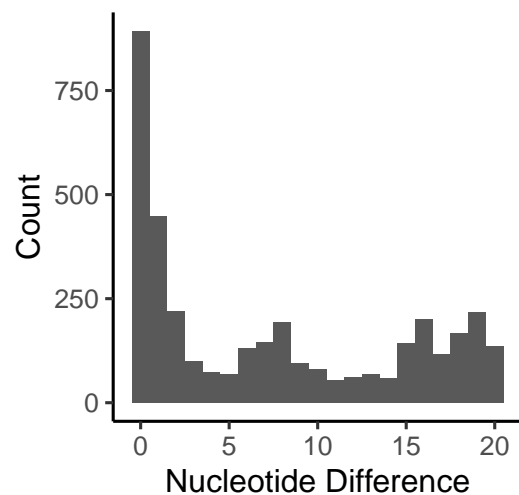
### IGHV3-52\*02

6 sequences assigned  
2 (33.3%) exact matches, in which:  
2 unique CDR3  
1 unique J



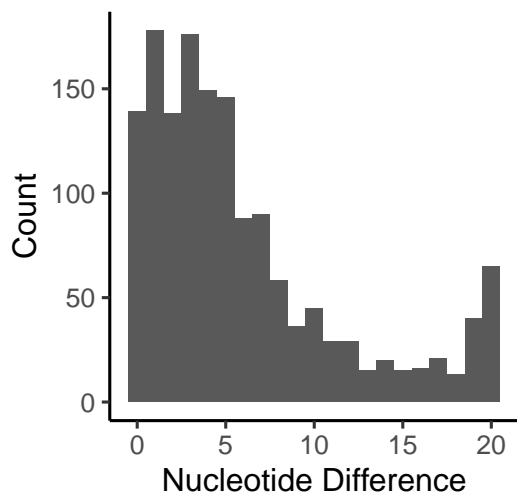
### IGHV3-53\*01\_02

4299 sequences assigned  
893 (20.8%) exact matches, in which:  
713 unique CDR3  
7 unique J



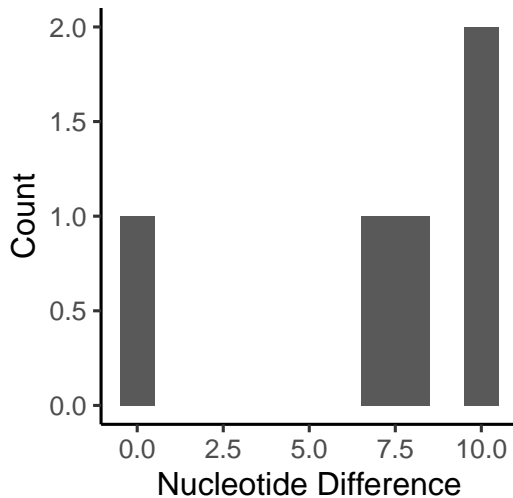
### IGHV3-48\*04

1801 sequences assigned  
139 (7.7%) exact matches, in which:  
138 unique CDR3  
7 unique J



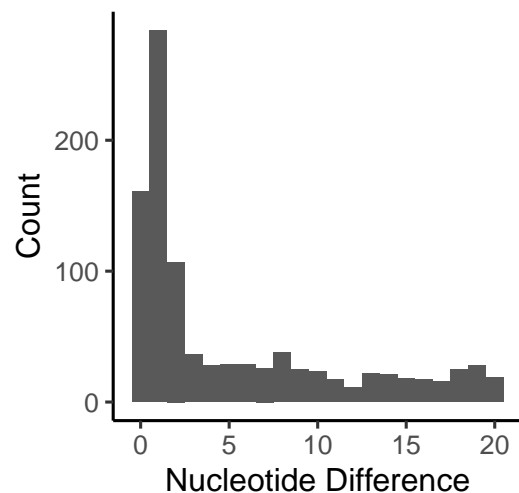
### IGHV3-52\*01\_03

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



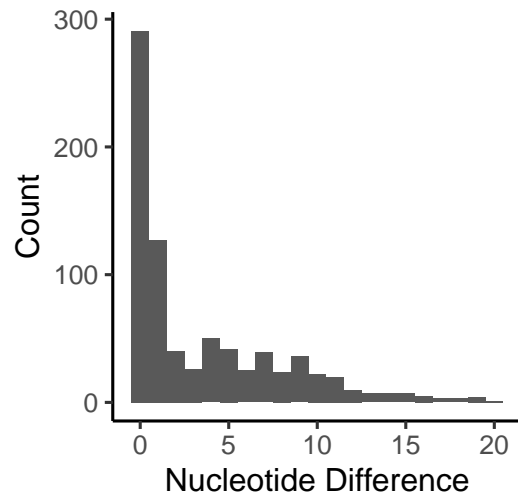
### IGHV3-53\*01\_02\_A225G

1146 sequences assigned  
161 (14%) exact matches, in which:  
159 unique CDR3  
7 unique J



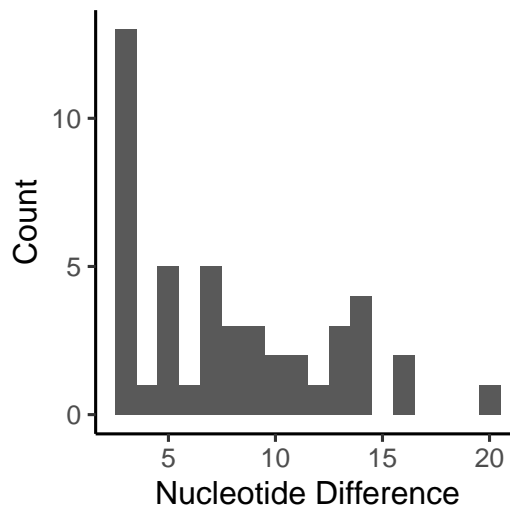
### IGHV3-64\*01

823 sequences assigned  
291 (35.4%) exact matches, in which:  
211 unique CDR3  
6 unique J



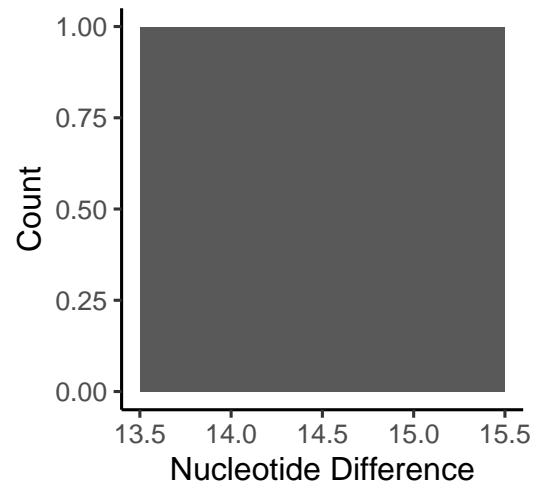
### IGHV3-69-1\*01

82 sequences assigned  
No exact matches.



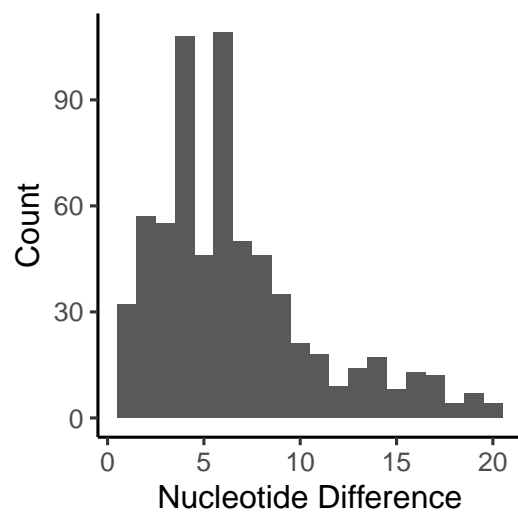
### IGHV3-71\*01\_04

3 sequences assigned  
No exact matches.



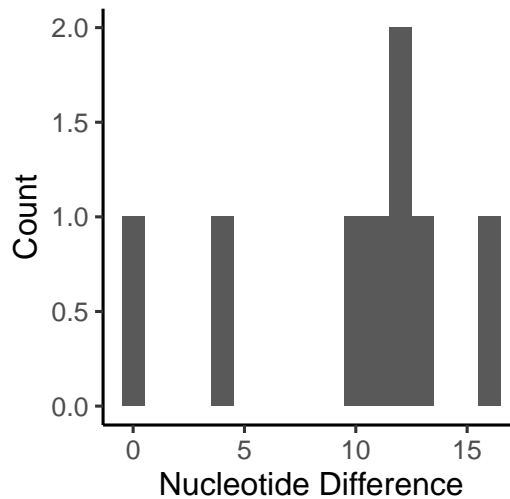
### IGHV3-64\*04

694 sequences assigned  
No exact matches.



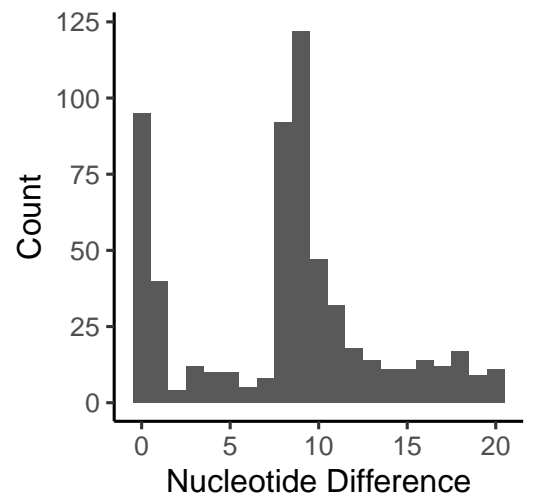
### IGHV3-69-1\*02

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



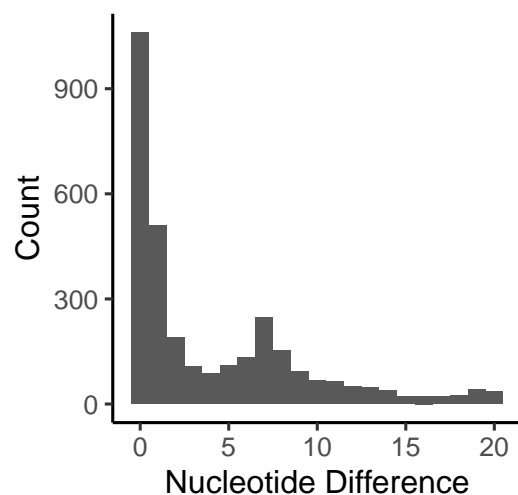
### IGHV3-72\*01

805 sequences assigned  
95 (11.8%) exact matches, in which:  
75 unique CDR3  
6 unique J



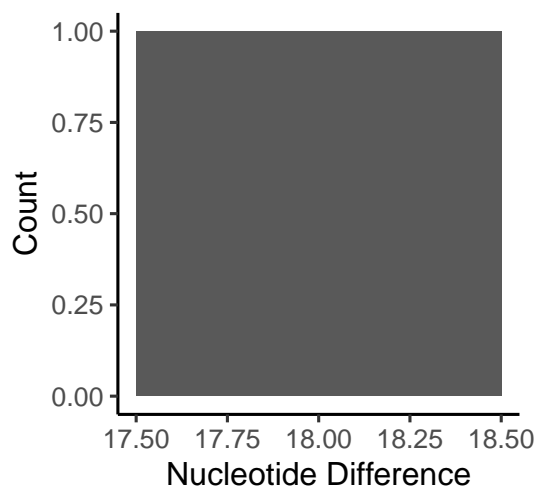
### IGHV3-66\*01

3689 sequences assigned  
1061 (28.8%) exact matches, in which:  
855 unique CDR3  
7 unique J



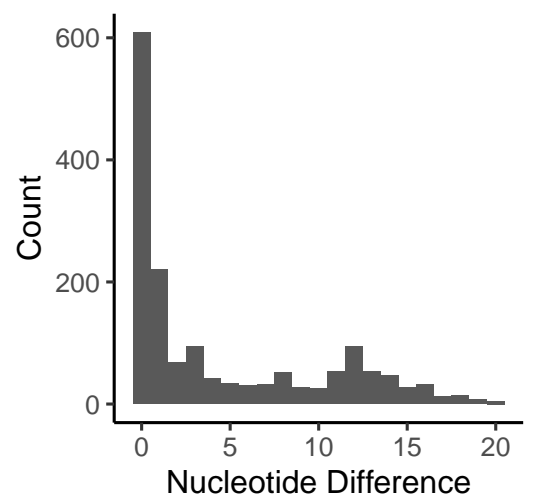
### IGHV3-71\*03

1 sequences assigned  
No exact matches.



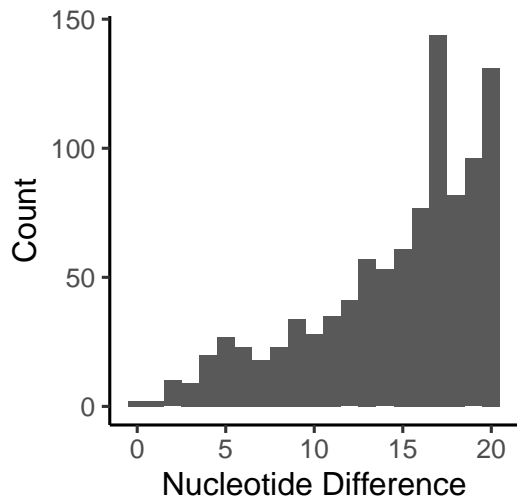
### IGHV3-73\*01\_02

1740 sequences assigned  
609 (35%) exact matches, in which:  
458 unique CDR3  
7 unique J



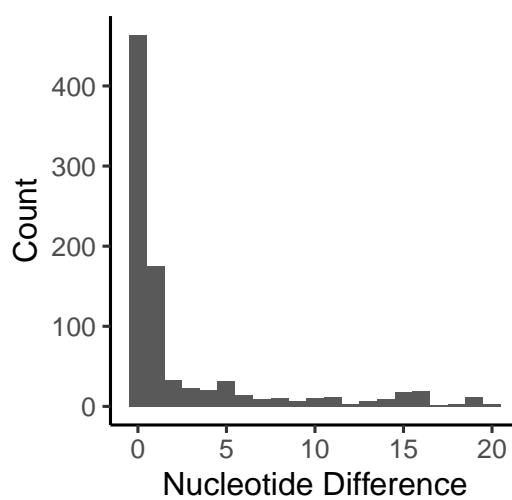
### IGHV3-74\*03

2456 sequences assigned  
2 (0.1%) exact matches, in which:  
2 unique CDR3  
2 unique J



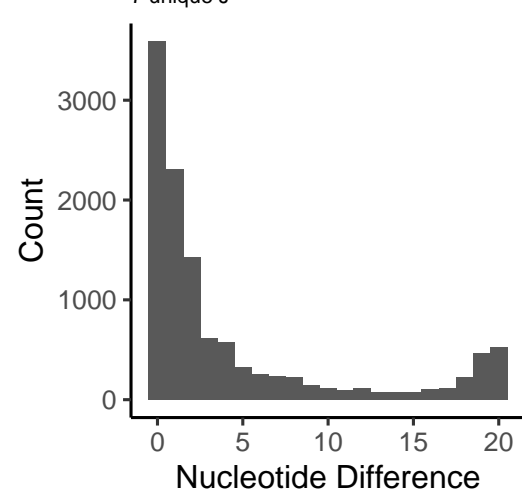
### IGHV3-64D\*06

906 sequences assigned  
464 (51.2%) exact matches, in which:  
310 unique CDR3  
7 unique J



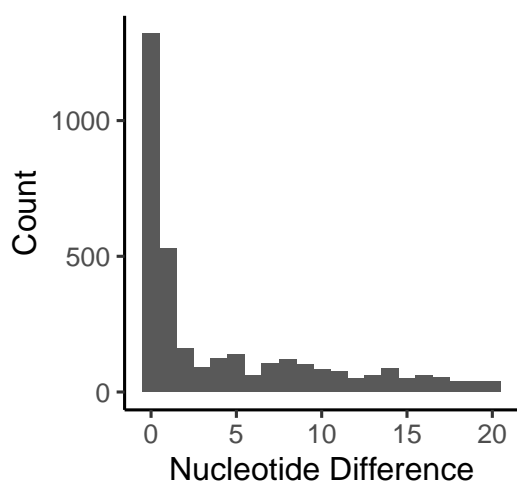
### IGHV4-4\*07

13109 sequences assigned  
3589 (27.4%) exact matches, in which:  
3323 unique CDR3  
7 unique J



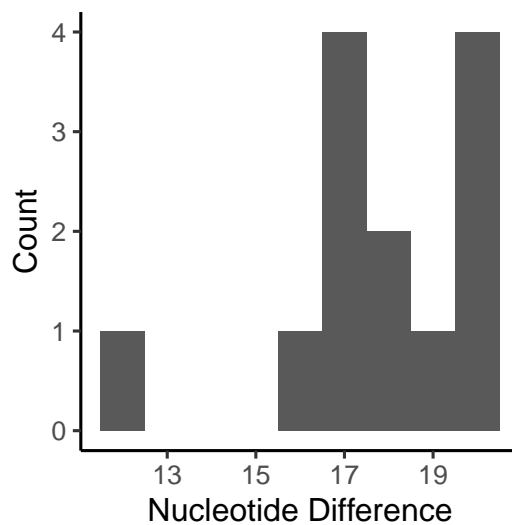
### IGHV3-74\*01\_02

4356 sequences assigned  
1320 (30.3%) exact matches, in which:  
1024 unique CDR3  
7 unique J



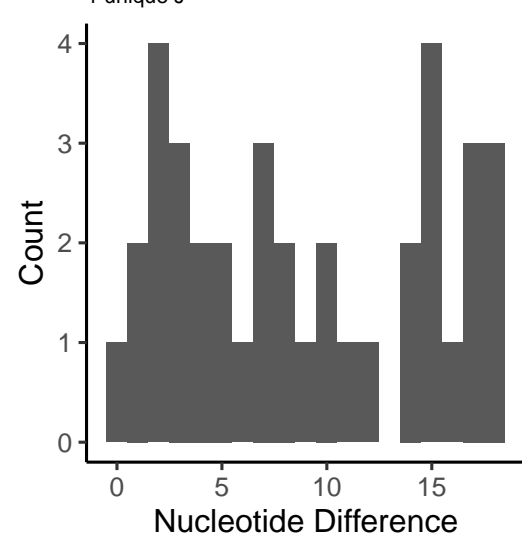
### IGHV3-64D\*08

30 sequences assigned  
No exact matches.



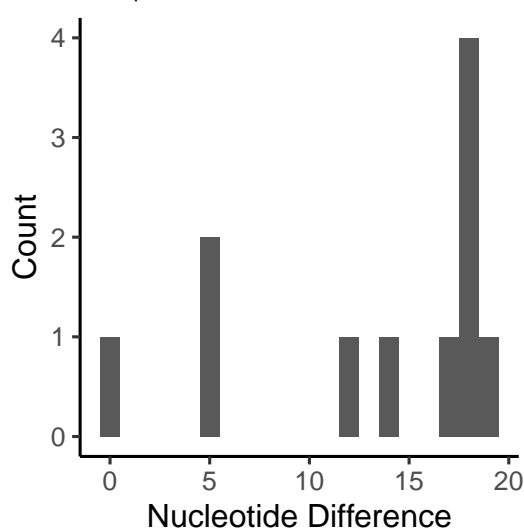
### IGHV4-28\*03

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



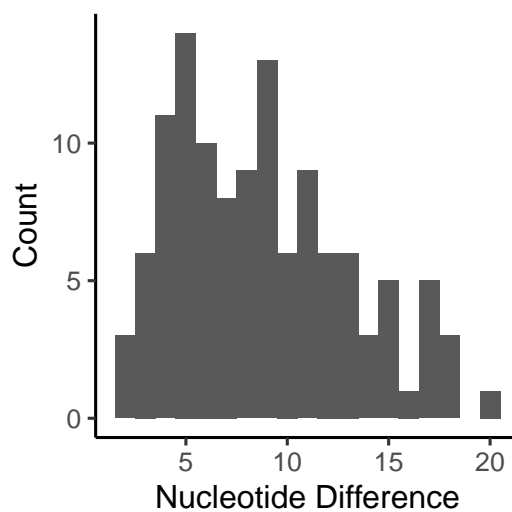
### IGHV3-43D\*04

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



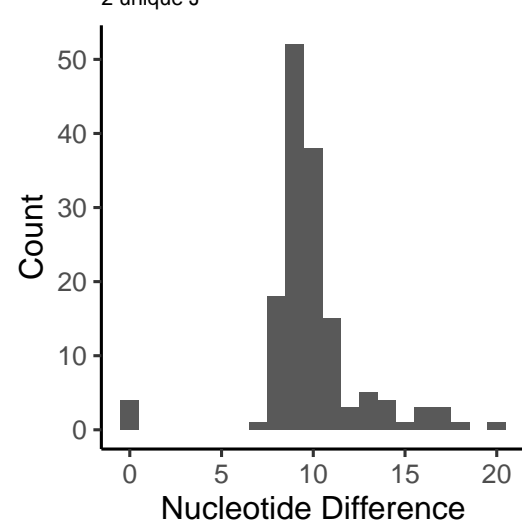
### IGHV3-NL1\*01

137 sequences assigned  
No exact matches.



### IGHV4-28\*01\_07

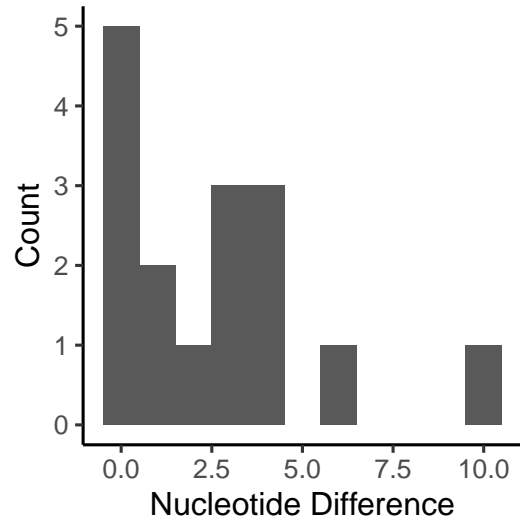
155 sequences assigned  
4 (2.6%) exact matches, in which:  
4 unique CDR3  
2 unique J





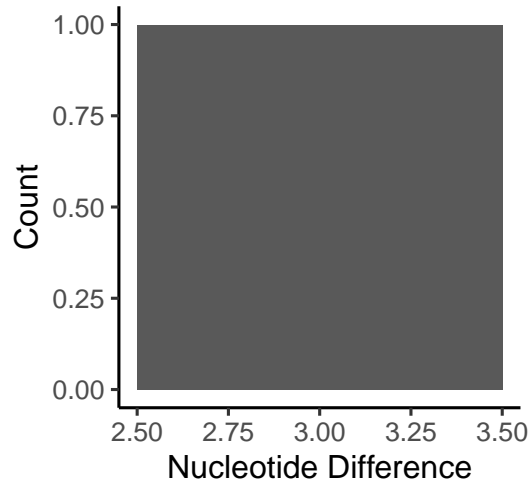
### IGHV4-28\*02\_05

17 sequences assigned  
5 (29.4%) exact matches, in which:  
5 unique CDR3  
3 unique J



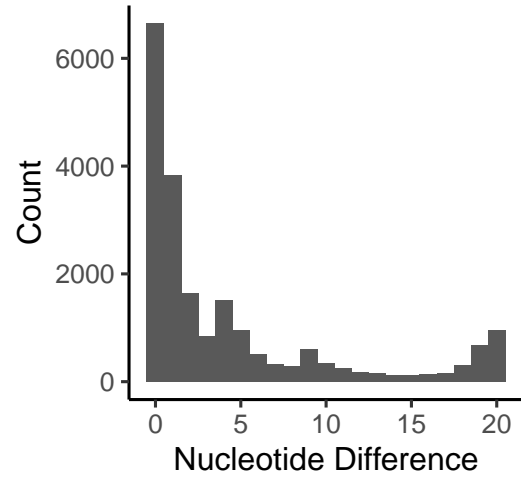
### IGHV4-30-4\*05

1 sequences assigned  
No exact matches.



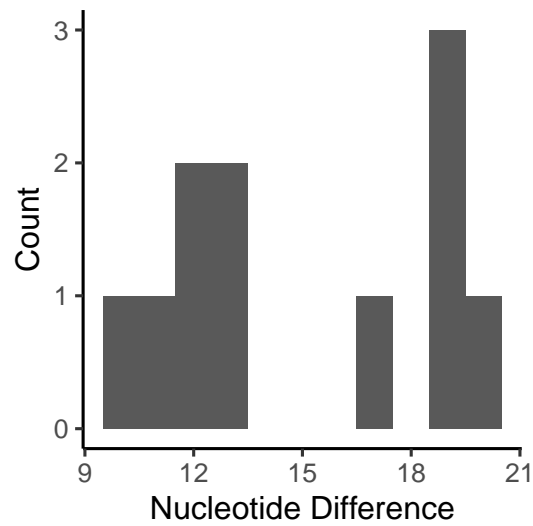
### IGHV4-34\*01\_02

22512 sequences assigned  
6648 (29.5%) exact matches, in which:  
5885 unique CDR3  
7 unique J



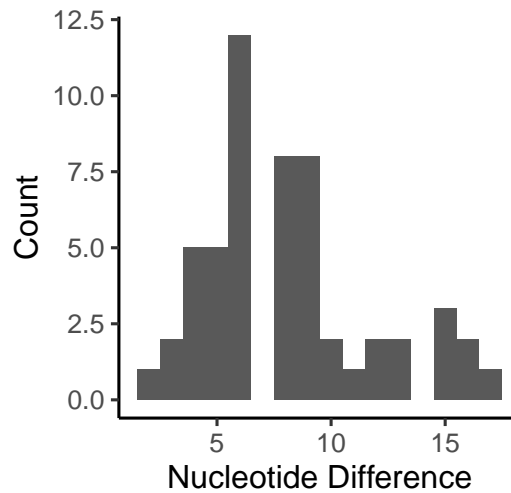
### IGHV4-30-4\*01

30 sequences assigned  
No exact matches.



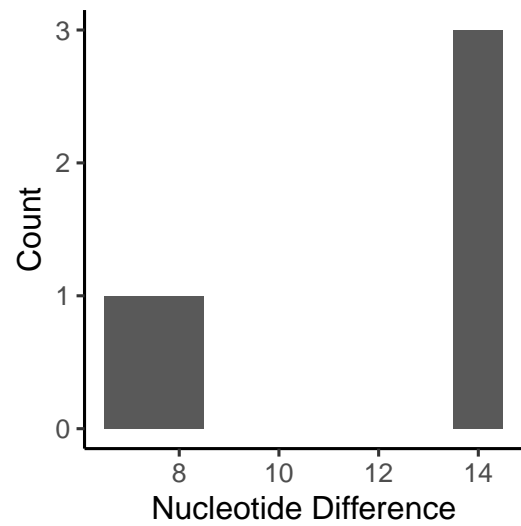
### IGHV4-30-4\*08

102 sequences assigned  
No exact matches.



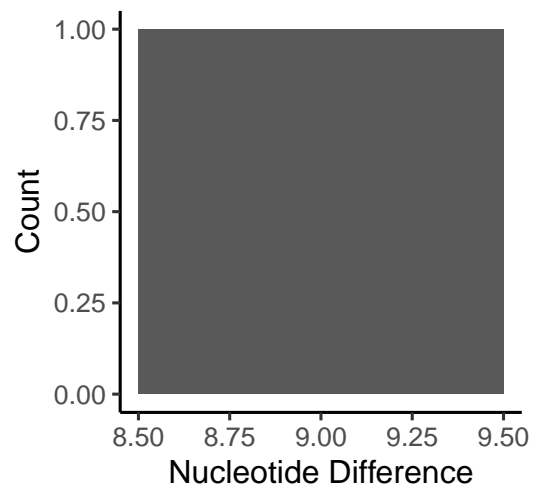
### IGHV4-38-2\*01

8 sequences assigned  
No exact matches.



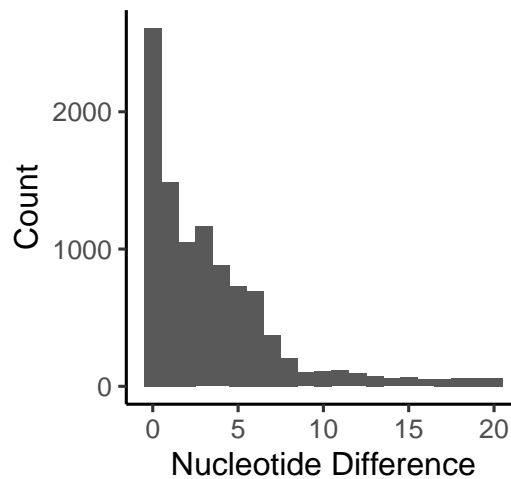
### IGHV4-30-2\*04

1 sequences assigned  
No exact matches.



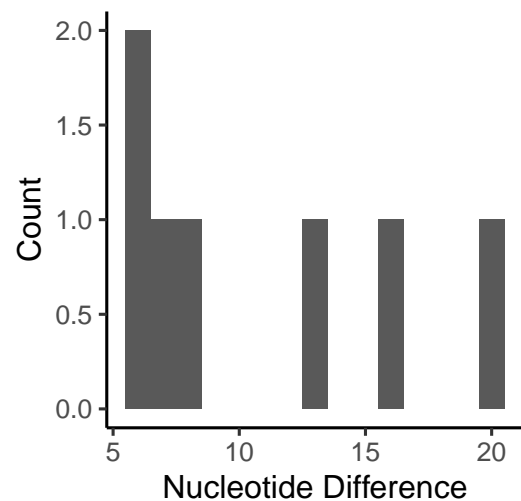
### IGHV4-31\*02

11413 sequences assigned  
2610 (22.9%) exact matches, in which:  
2446 unique CDR3  
7 unique J



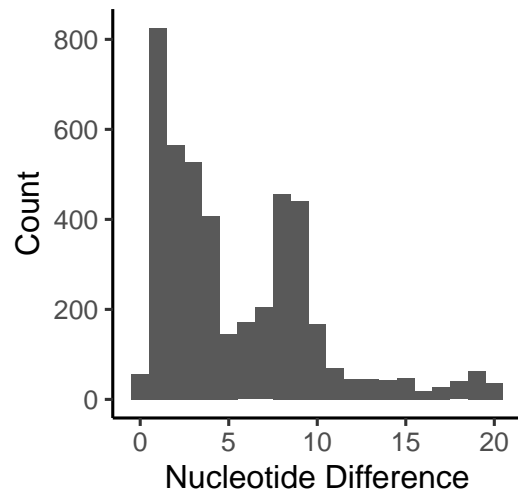
### IGHV4-38-2\*02

22 sequences assigned  
No exact matches.



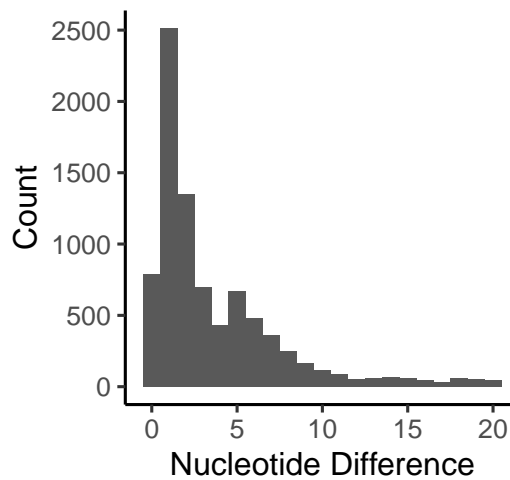
### IGHV4-39\*07

5403 sequences assigned  
56 (1%) exact matches, in which:  
56 unique CDR3  
6 unique J



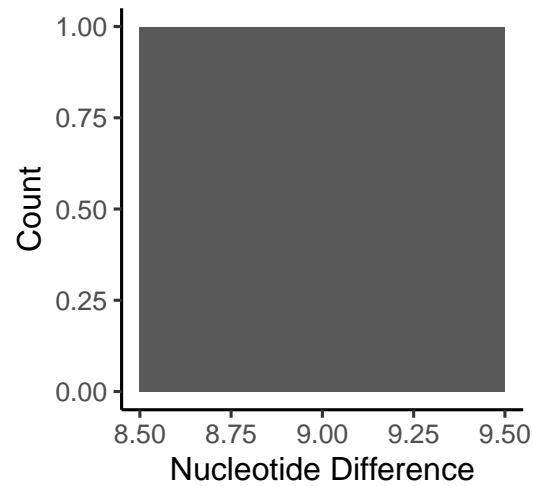
### IGHV4-59\*12

9279 sequences assigned  
786 (8.5%) exact matches, in which:  
769 unique CDR3  
7 unique J



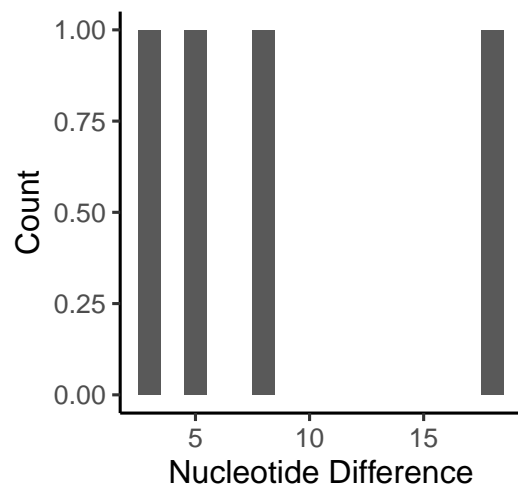
### IGHV1/OR15-1\*04

2 sequences assigned  
No exact matches.



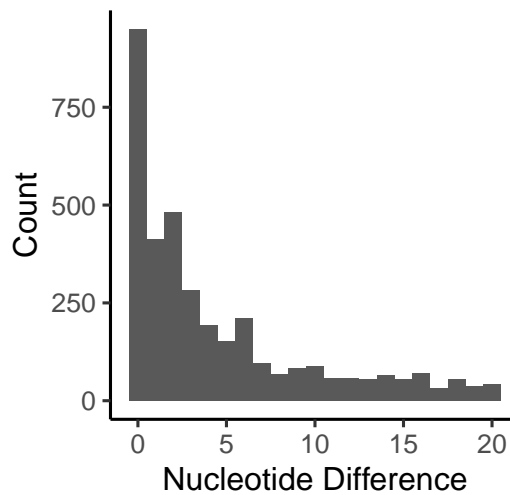
### IGHV4-55\*09

4 sequences assigned  
No exact matches.



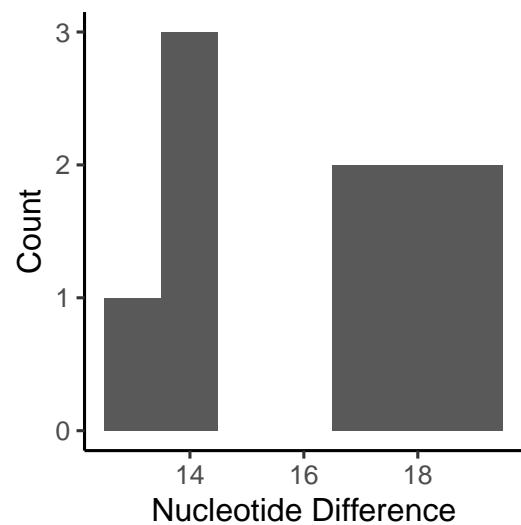
### IGHV4-61\*01

5647 sequences assigned  
950 (16.8%) exact matches, in which:  
904 unique CDR3  
7 unique J



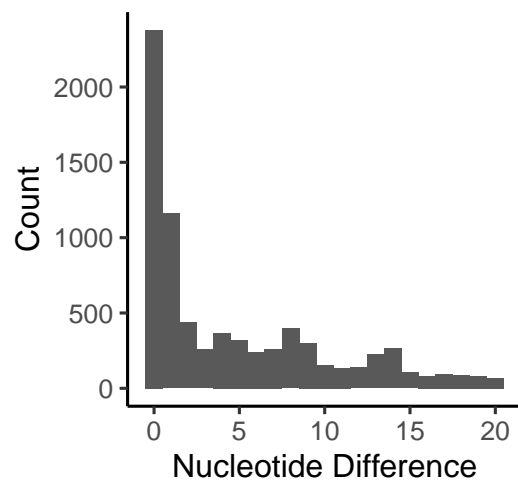
### IGHV1/OR15-2\*02\_03

17 sequences assigned  
No exact matches.



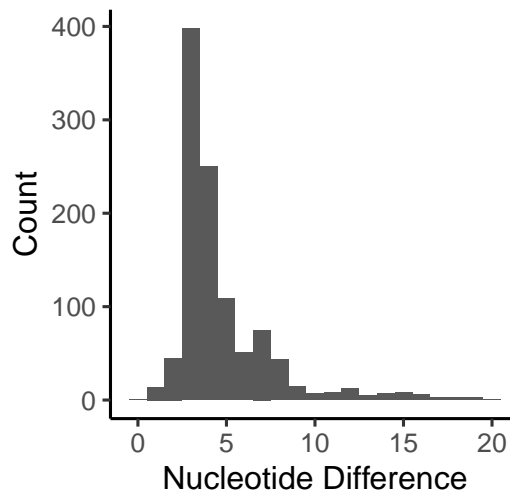
### IGHV4-59\*08

9995 sequences assigned  
2378 (23.8%) exact matches, in which:  
2169 unique CDR3  
7 unique J



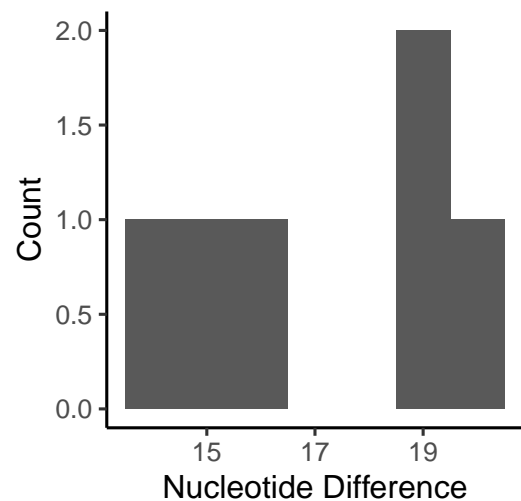
### IGHV4-61\*02

1115 sequences assigned  
1 (0.1%) exact matches, in which:  
1 unique CDR3  
1 unique J



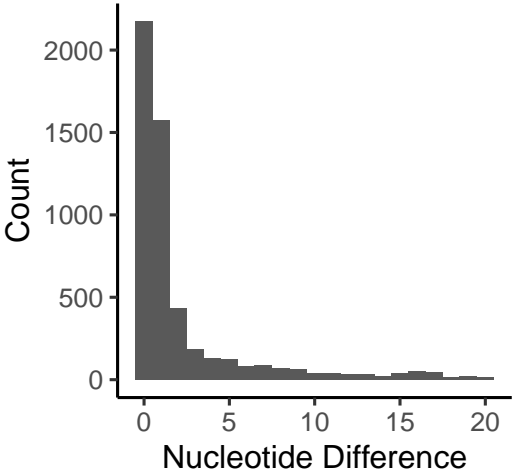
### IGHV4/OR15-8\*01

12 sequences assigned  
No exact matches.



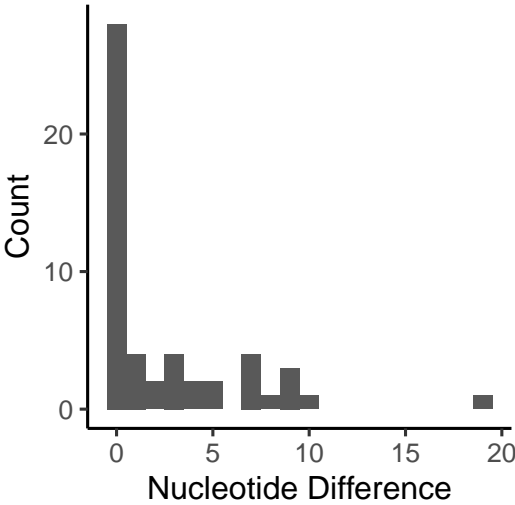
IGHV5-10-1\*01\_03

5611 sequences assigned  
2174 (38.7%) exact matches, in which:  
1779 unique CDR3  
7 unique J



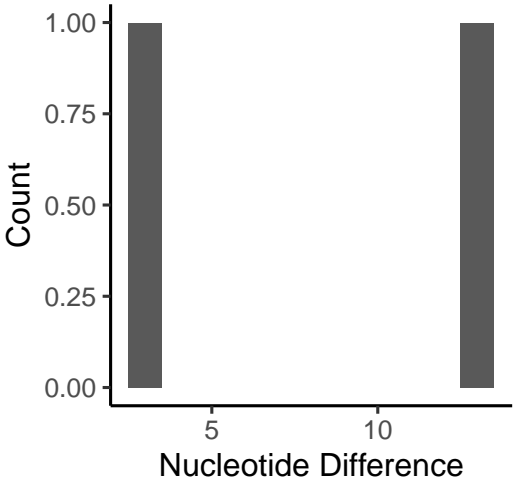
IGHV5-51\*07

53 sequences assigned  
28 (52.8%) exact matches, in which:  
27 unique CDR3  
6 unique J



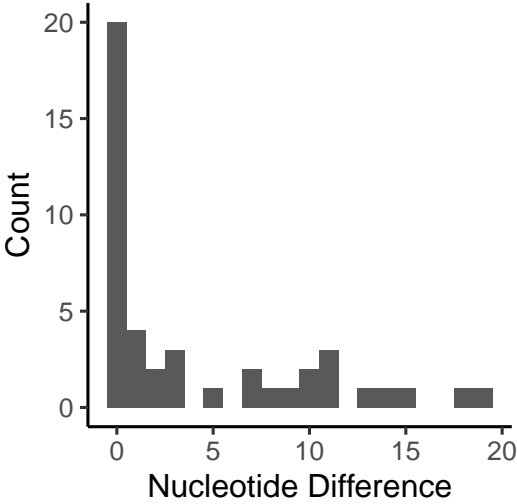
IGHV3/OR16-10\*01\_03

3 sequences assigned  
No exact matches.



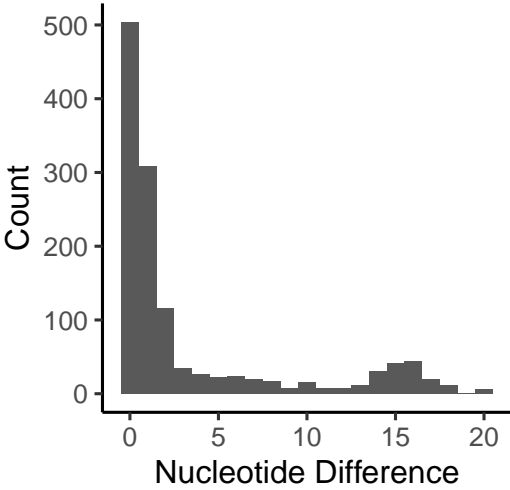
IGHV5-51\*04

46 sequences assigned  
20 (43.5%) exact matches, in which:  
18 unique CDR3  
4 unique J



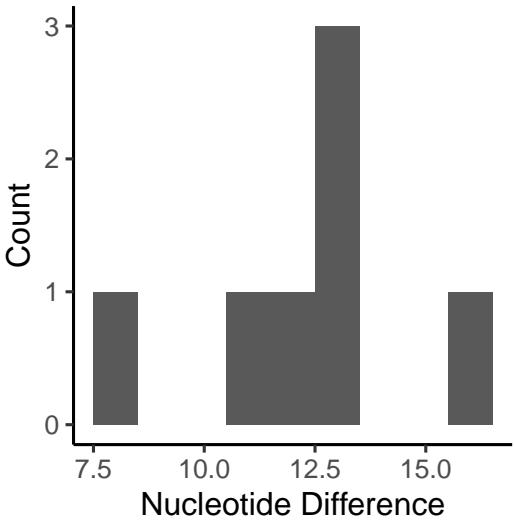
IGHV6-1\*01\_02

1366 sequences assigned  
504 (36.9%) exact matches, in which:  
456 unique CDR3  
7 unique J



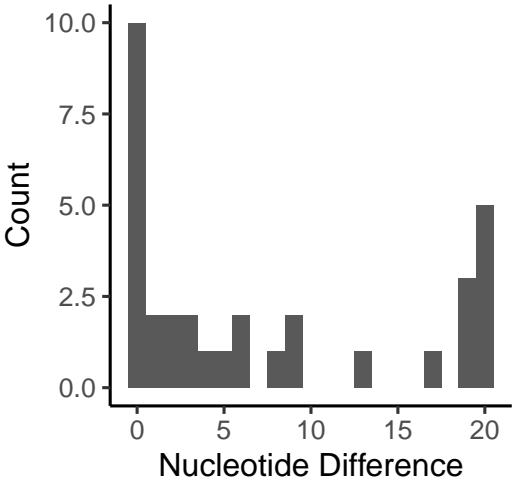
IGHV7-4-1\*02

7 sequences assigned  
No exact matches.



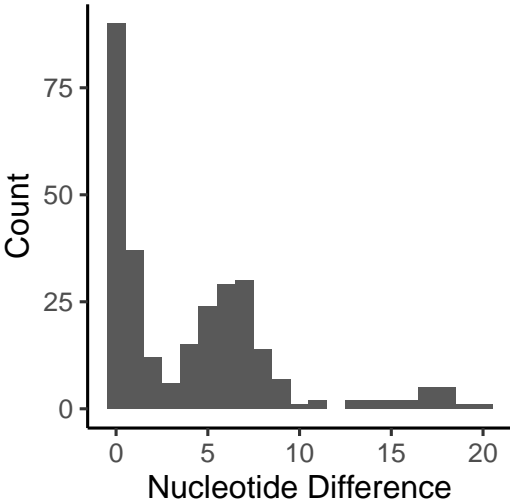
IGHV5-51\*06

86 sequences assigned  
10 (11.6%) exact matches, in which:  
10 unique CDR3  
3 unique J



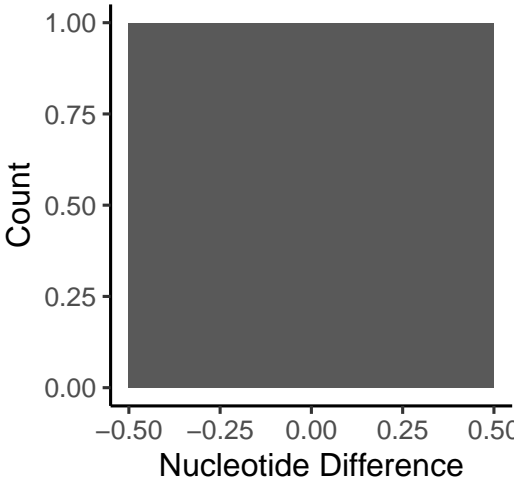
IGHV6-1\*01\_02\_A315G

293 sequences assigned  
90 (30.7%) exact matches, in which:  
90 unique CDR3  
5 unique J

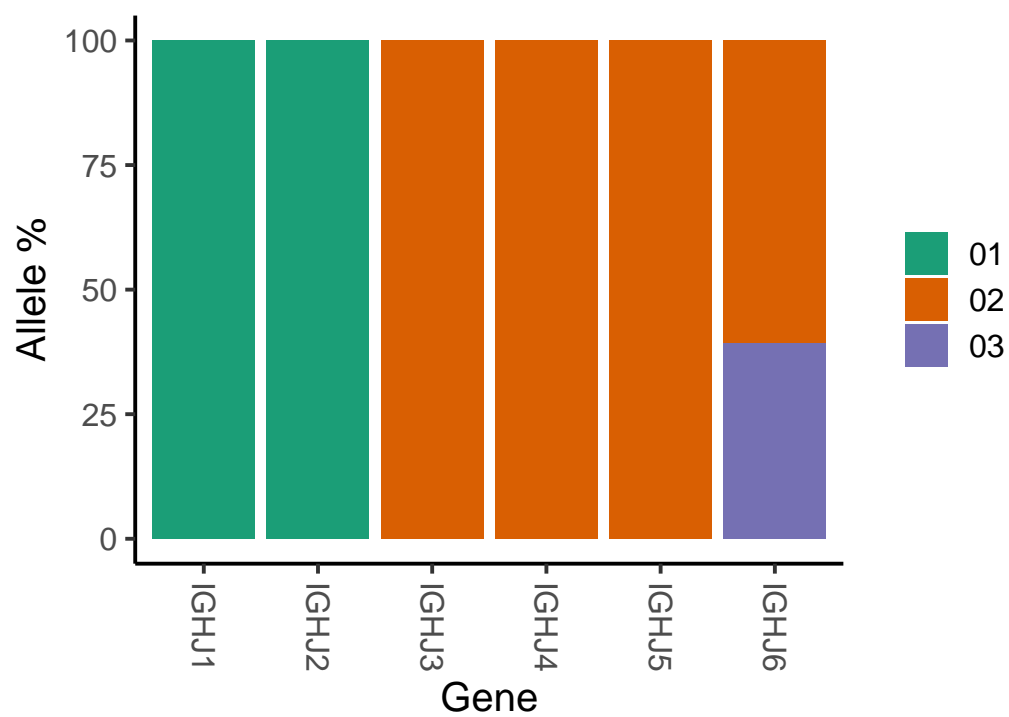


IGHV7-81\*01

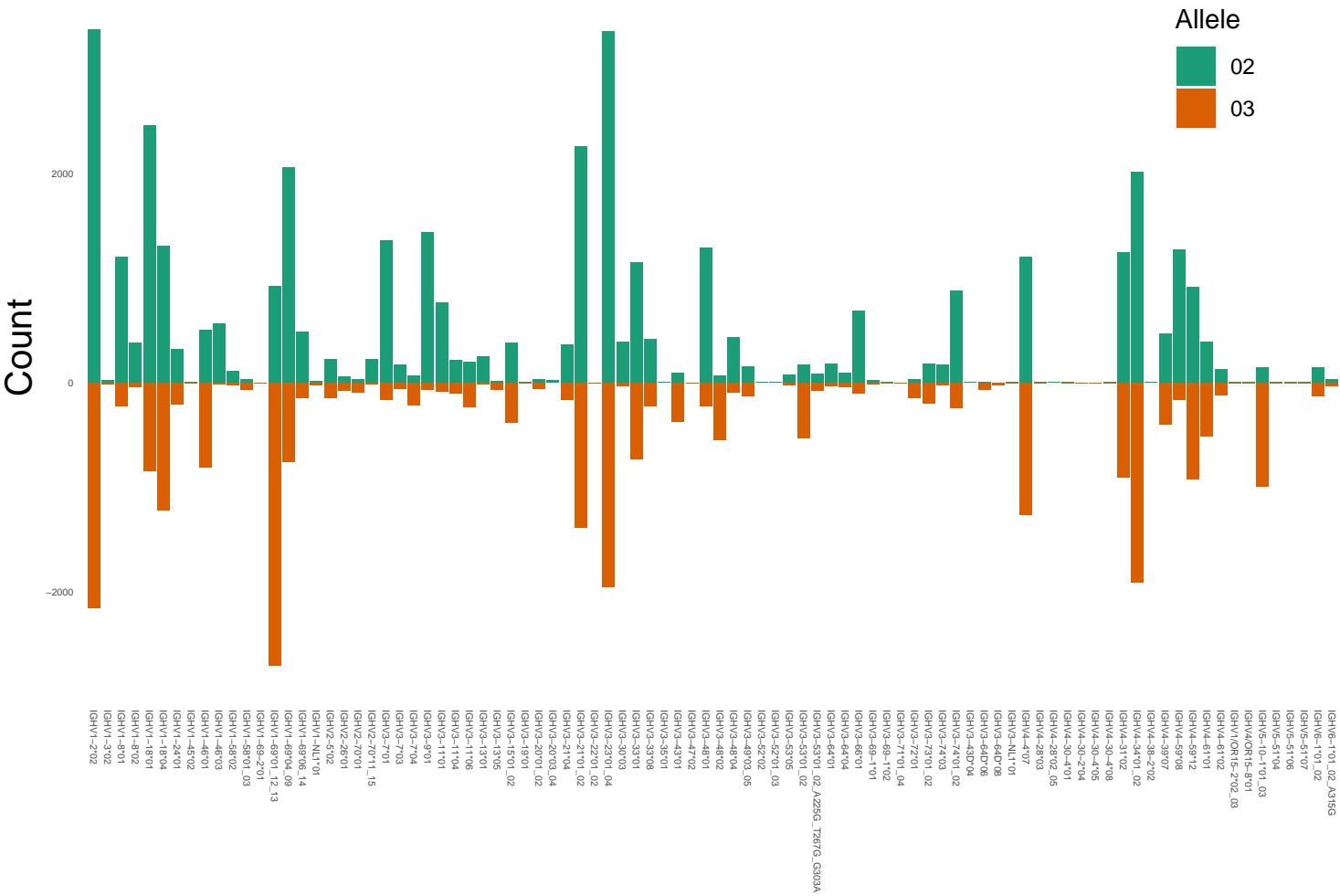
1 sequences assigned  
1 (100%) exact matches, in which:  
1 unique CDR3  
1 unique J



Allele Usage



## Sequence Count by IGHJ6 allele usage



Warning – no inferred sequences found.