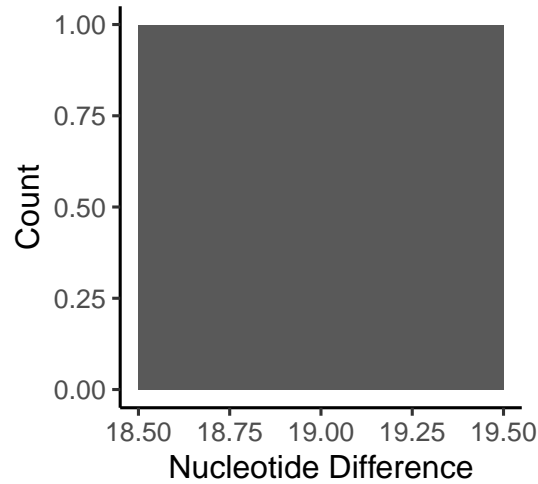


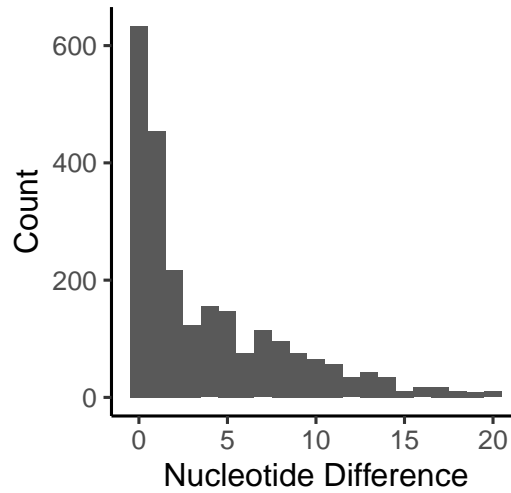
### IGHV1/OR21-1\*01

1 sequences assigned  
No exact matches.



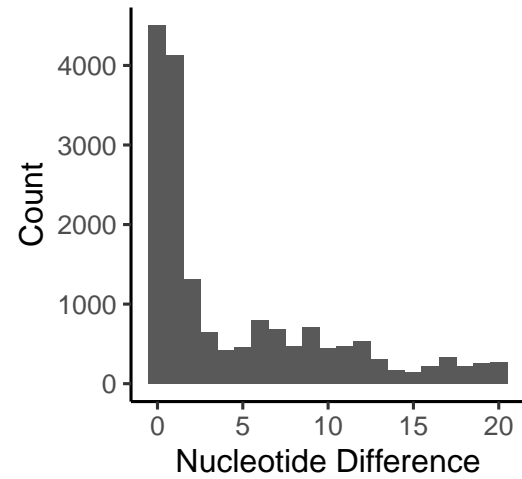
### IGHV1-3\*01\_05

2496 sequences assigned  
634 (25.4%) exact matches, in which:  
562 unique CDR3  
7 unique J



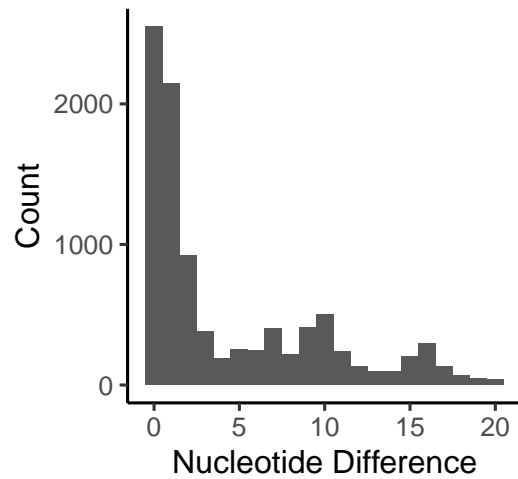
### IGHV1-18\*01

18949 sequences assigned  
4503 (23.8%) exact matches, in which:  
3826 unique CDR3  
7 unique J



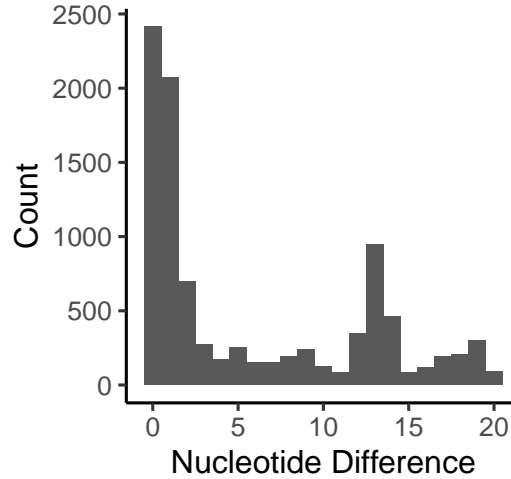
### IGHV1-2\*02

10519 sequences assigned  
2549 (24.2%) exact matches, in which:  
2236 unique CDR3  
7 unique J



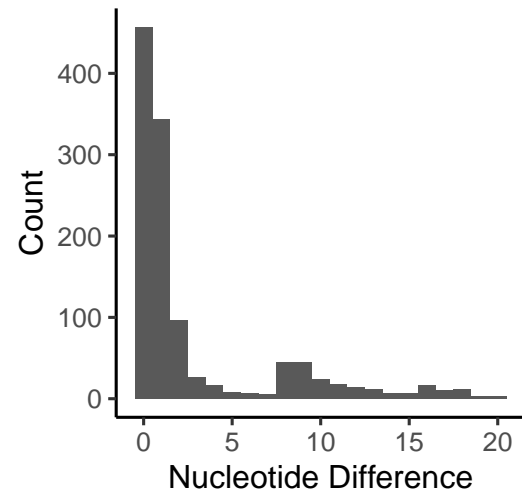
### IGHV1-8\*01

9715 sequences assigned  
2414 (24.8%) exact matches, in which:  
2129 unique CDR3  
7 unique J



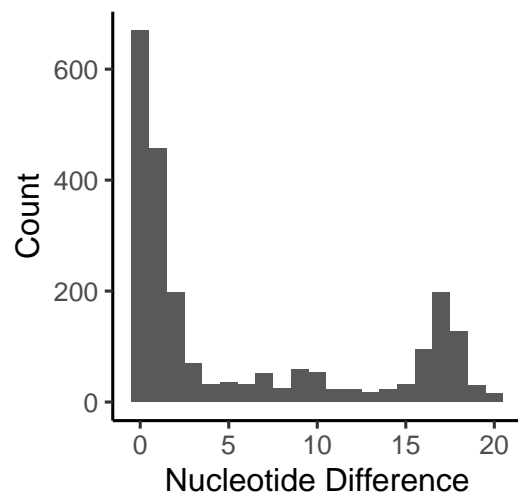
### IGHV1-24\*01

1309 sequences assigned  
457 (34.9%) exact matches, in which:  
401 unique CDR3  
7 unique J



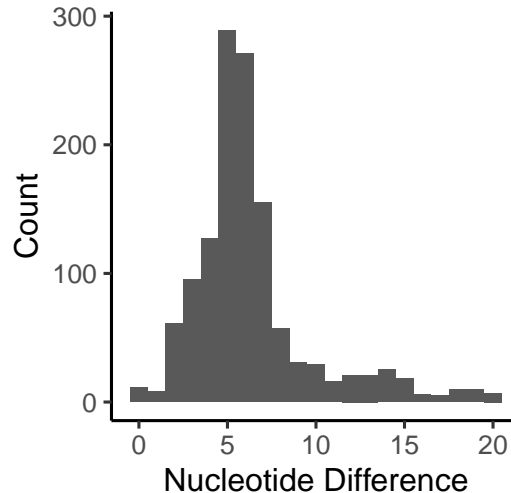
### IGHV1-2\*04

2308 sequences assigned  
670 (29%) exact matches, in which:  
591 unique CDR3  
7 unique J



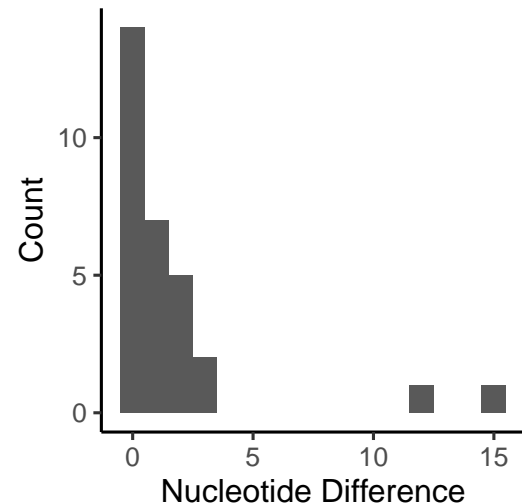
### IGHV1-8\*02

1321 sequences assigned  
11 (0.8%) exact matches, in which:  
11 unique CDR3  
4 unique J



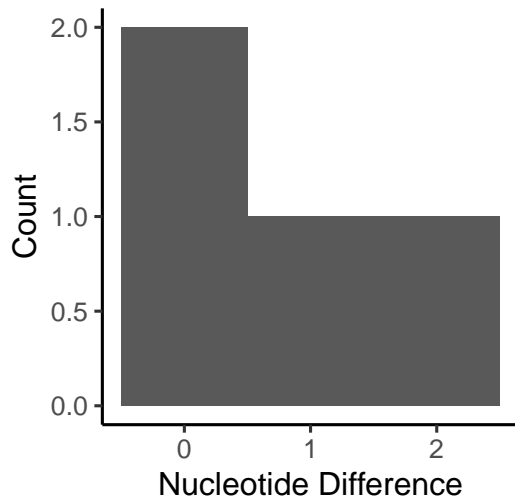
### IGHV1-45\*02

32 sequences assigned  
14 (43.8%) exact matches, in which:  
13 unique CDR3  
4 unique J



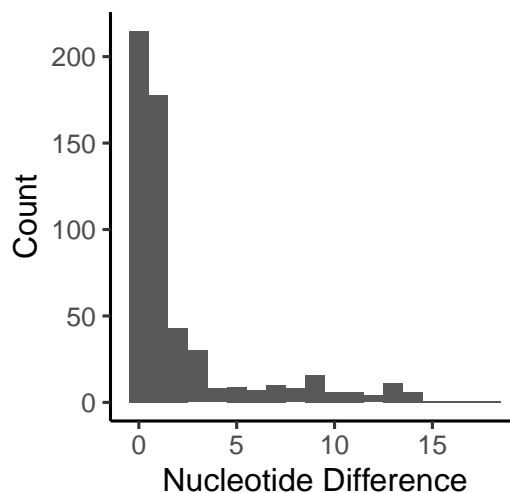
### IGHV1-45\*03

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



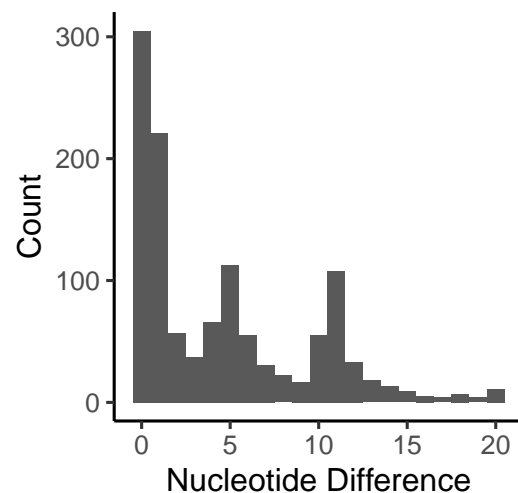
### IGHV1-58\*02

562 sequences assigned  
215 (38.3%) exact matches, in which:  
179 unique CDR3  
7 unique J



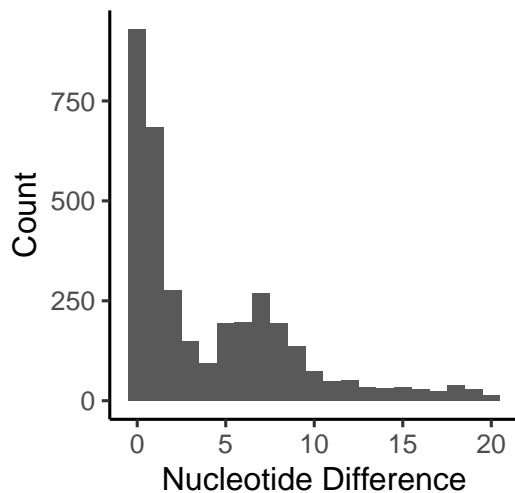
### IGHV2-5\*01

1614 sequences assigned  
305 (18.9%) exact matches, in which:  
268 unique CDR3  
7 unique J



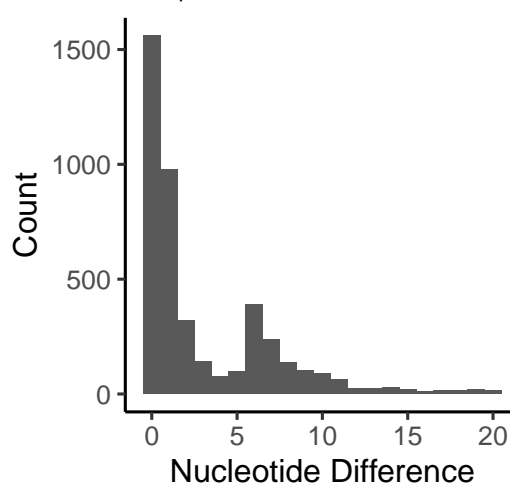
### IGHV1-46\*01

3853 sequences assigned  
930 (24.1%) exact matches, in which:  
841 unique CDR3  
7 unique J



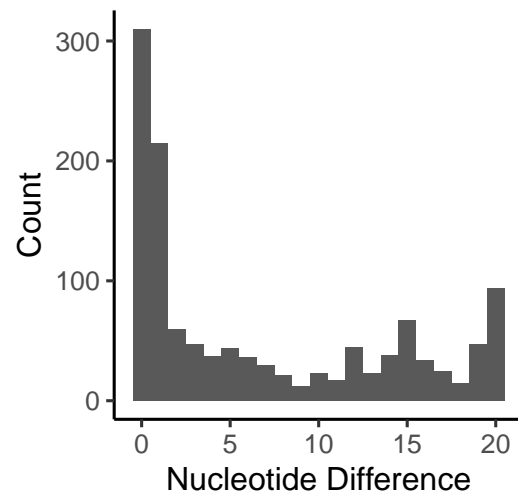
### IGHV1-69\*04\_09

4671 sequences assigned  
1560 (33.4%) exact matches, in which:  
1417 unique CDR3  
7 unique J



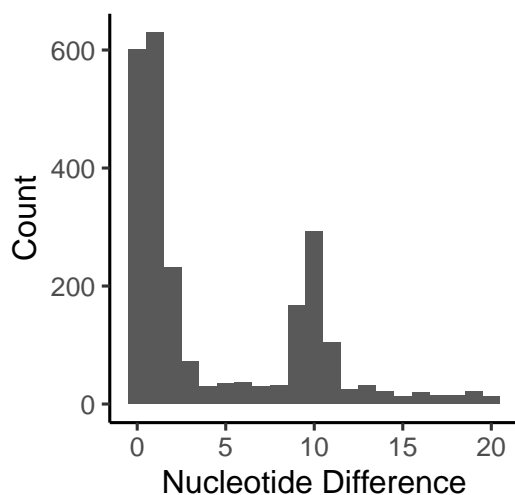
### IGHV2-5\*02

1470 sequences assigned  
310 (21.1%) exact matches, in which:  
277 unique CDR3  
7 unique J



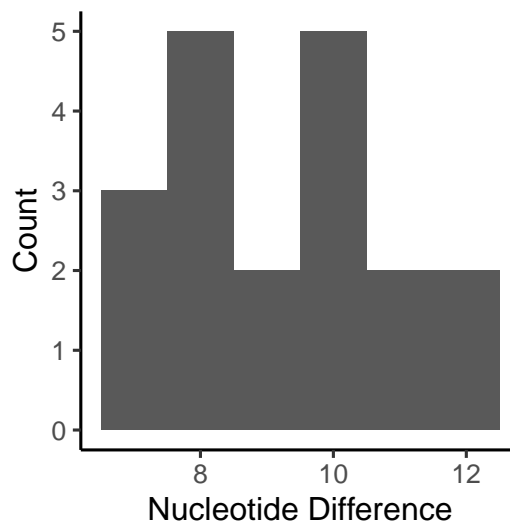
### IGHV1-46\*03

2519 sequences assigned  
601 (23.9%) exact matches, in which:  
499 unique CDR3  
7 unique J



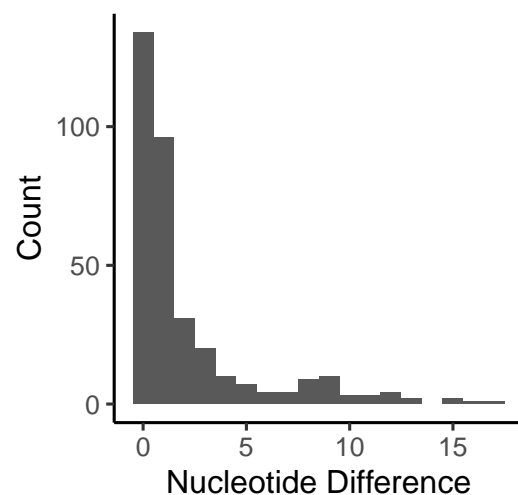
### IGHV1-NL1\*01

19 sequences assigned  
No exact matches.



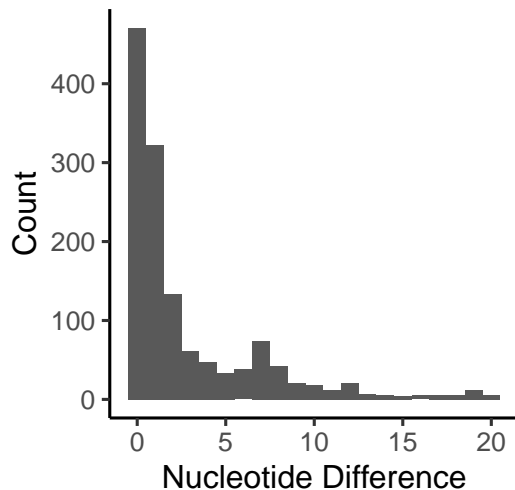
### IGHV2-26\*01

341 sequences assigned  
134 (39.3%) exact matches, in which:  
122 unique CDR3  
5 unique J



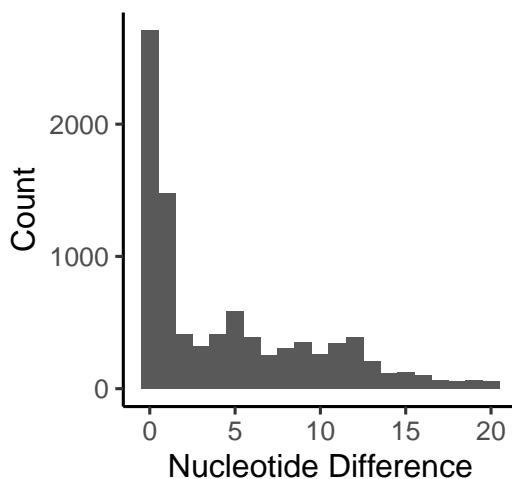
### IGHV2-70\*11\_15

1694 sequences assigned  
471 (27.8%) exact matches, in which:  
415 unique CDR3  
6 unique J



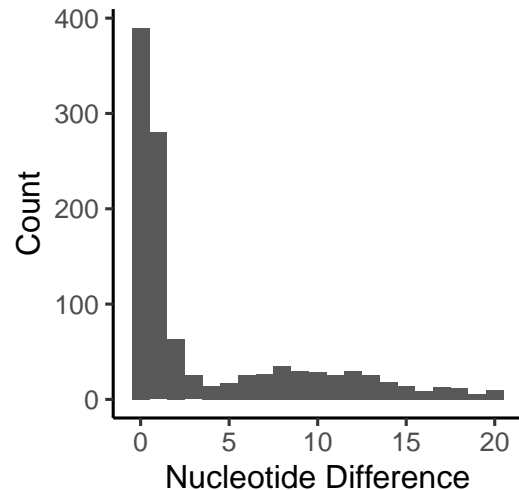
### IGHV3-9\*01

9738 sequences assigned  
2709 (27.8%) exact matches, in which:  
1698 unique CDR3  
7 unique J



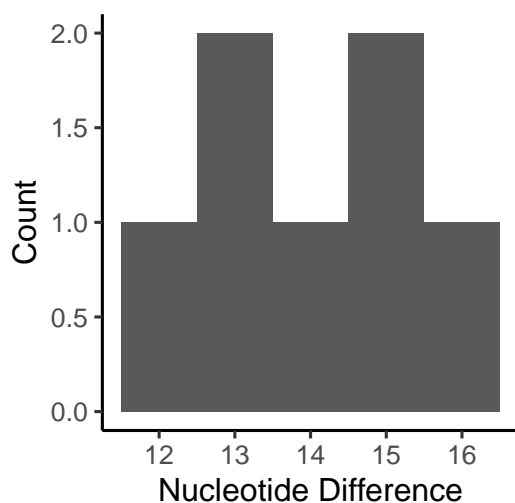
### IGHV3-13\*01

2249 sequences assigned  
390 (17.3%) exact matches, in which:  
243 unique CDR3  
7 unique J



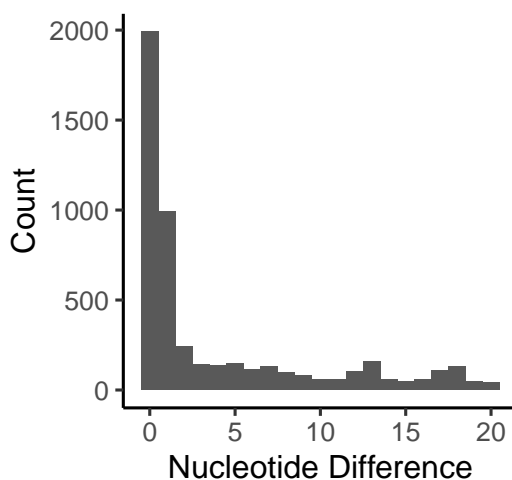
### IGHV2-70D\*04

8 sequences assigned  
No exact matches.



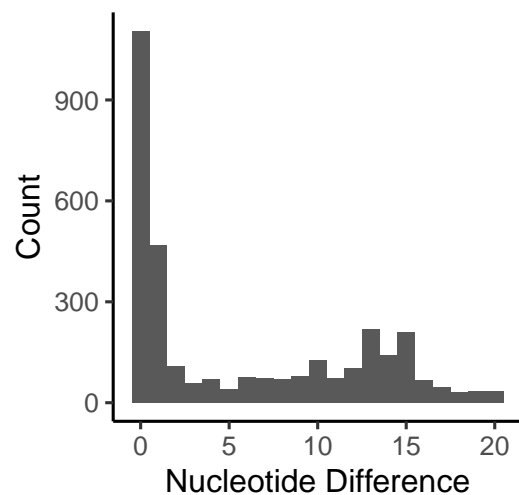
### IGHV3-11\*01

7438 sequences assigned  
1991 (26.8%) exact matches, in which:  
1339 unique CDR3  
7 unique J



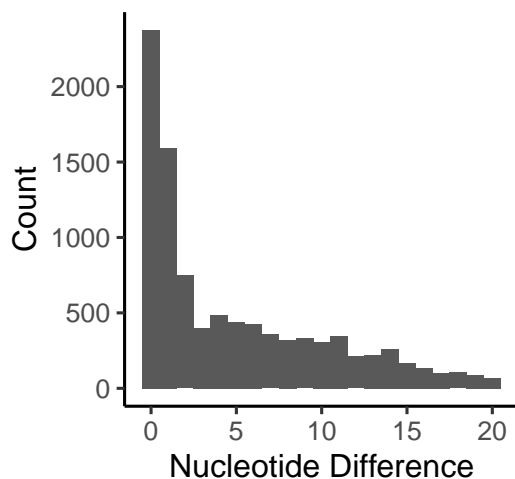
### IGHV3-15\*01\_02

3568 sequences assigned  
1105 (31%) exact matches, in which:  
726 unique CDR3  
7 unique J



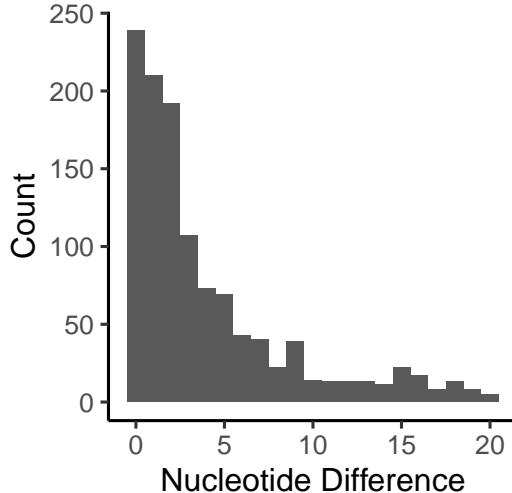
### IGHV3-7\*01

10718 sequences assigned  
2375 (22.2%) exact matches, in which:  
1629 unique CDR3  
7 unique J



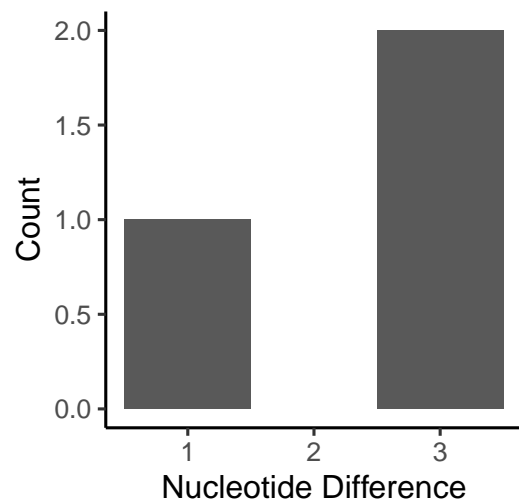
### IGHV3-11\*04

1394 sequences assigned  
239 (17.1%) exact matches, in which:  
233 unique CDR3  
7 unique J



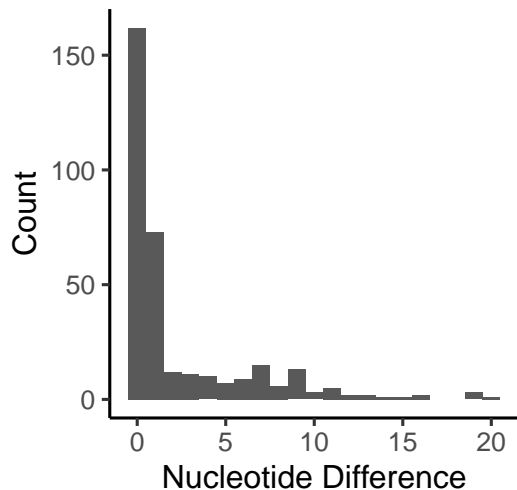
### IGHV3-19\*01

3 sequences assigned  
No exact matches.



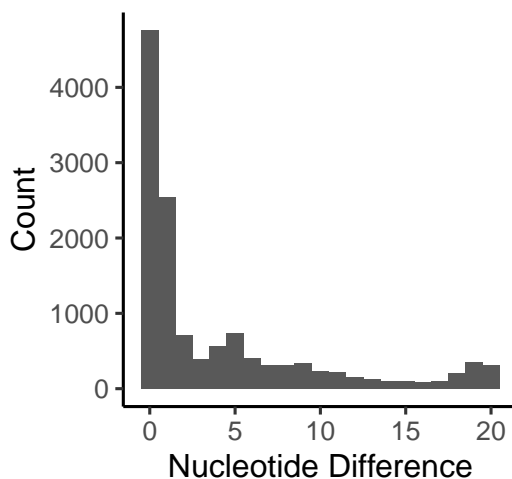
### IGHV3-20\*01\_02

338 sequences assigned  
162 (47.9%) exact matches, in which:  
96 unique CDR3  
6 unique J



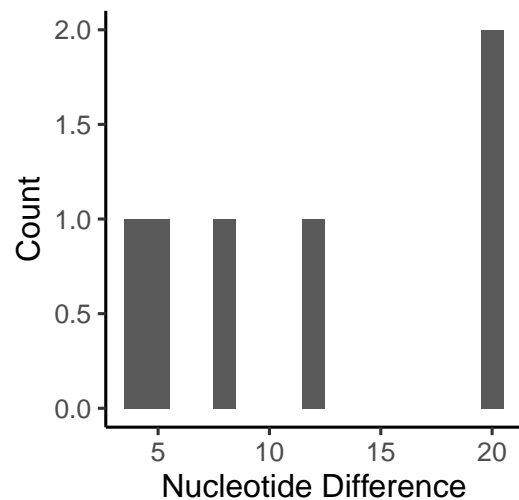
### IGHV3-21\*01\_02

13862 sequences assigned  
4756 (34.3%) exact matches, in which:  
3091 unique CDR3  
7 unique J



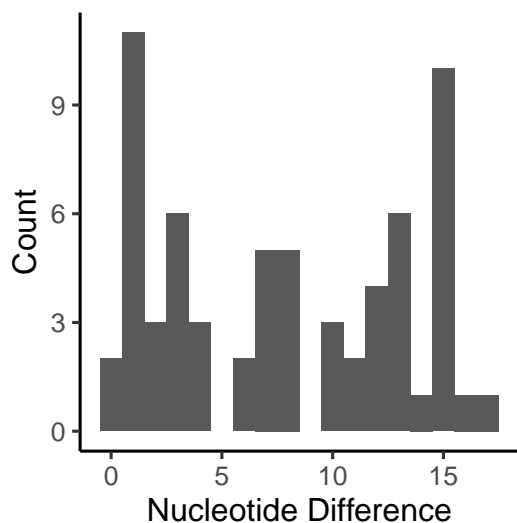
### IGHV3-30-3\*01

12 sequences assigned  
No exact matches.



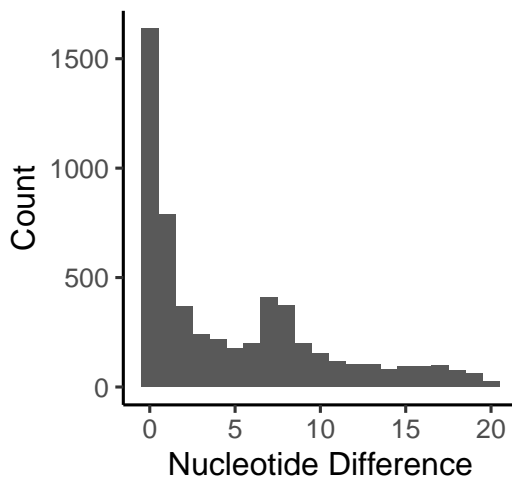
### IGHV3-20\*03\_04

69 sequences assigned  
2 (2.9%) exact matches, in which:  
2 unique CDR3  
2 unique J



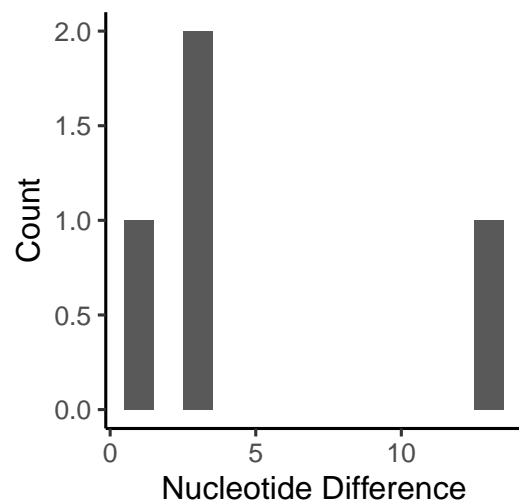
### IGHV3-23\*03

6153 sequences assigned  
1637 (26.6%) exact matches, in which:  
1135 unique CDR3  
7 unique J



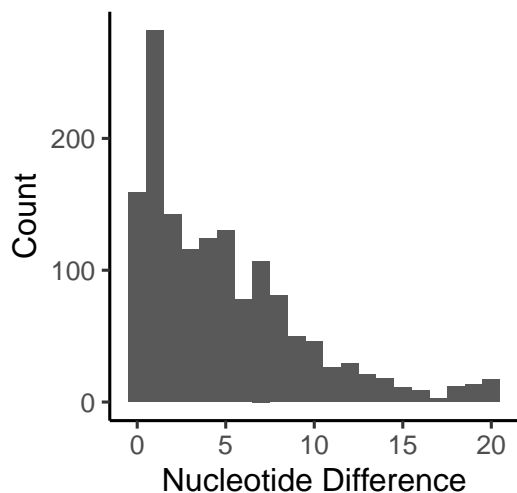
### IGHV3-30-3\*02

6 sequences assigned  
No exact matches.



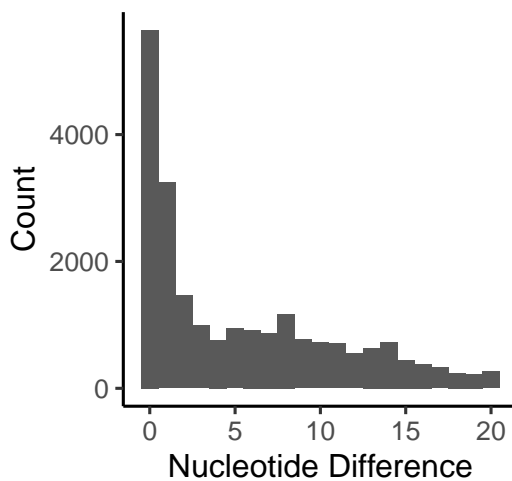
### IGHV3-21\*04

1546 sequences assigned  
159 (10.3%) exact matches, in which:  
156 unique CDR3  
6 unique J



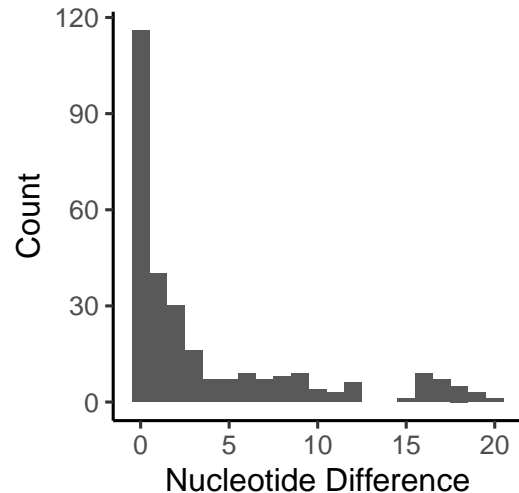
### IGHV3-23\*01\_04

25003 sequences assigned  
5648 (22.6%) exact matches, in which:  
3560 unique CDR3  
7 unique J



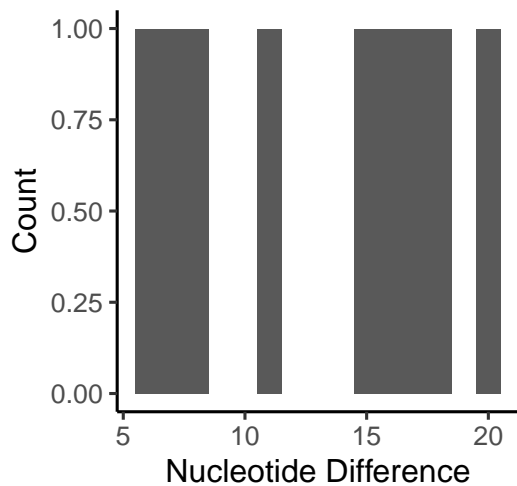
### IGHV3-30\*03

331 sequences assigned  
116 (35%) exact matches, in which:  
113 unique CDR3  
6 unique J



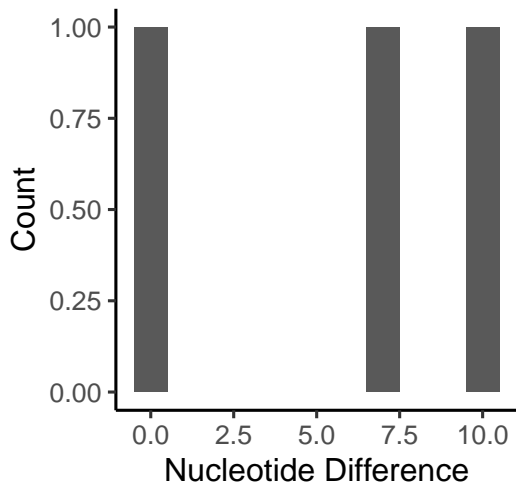
### IGHV3-30-3\*03

20 sequences assigned  
No exact matches.



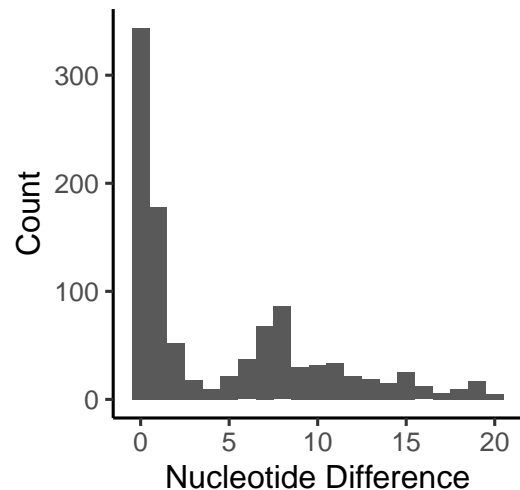
### IGHV3-35\*01

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



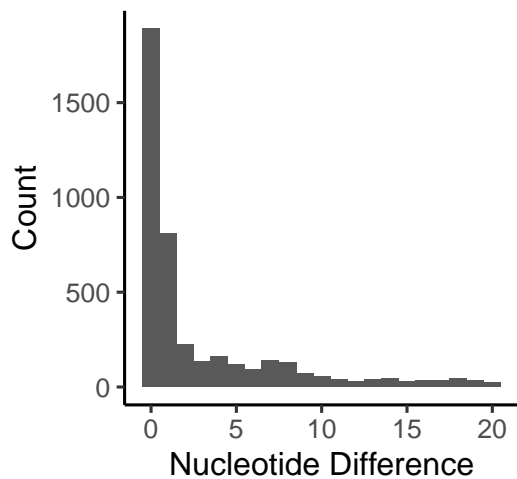
### IGHV3-43\*02

1113 sequences assigned  
344 (30.9%) exact matches, in which:  
212 unique CDR3  
7 unique J



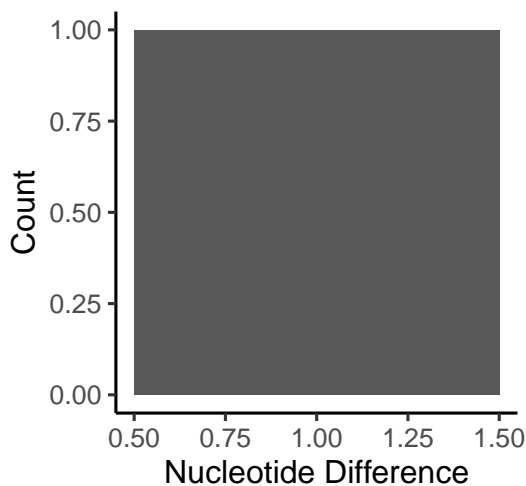
### IGHV3-33\*01

4317 sequences assigned  
1890 (43.8%) exact matches, in which:  
1341 unique CDR3  
7 unique J



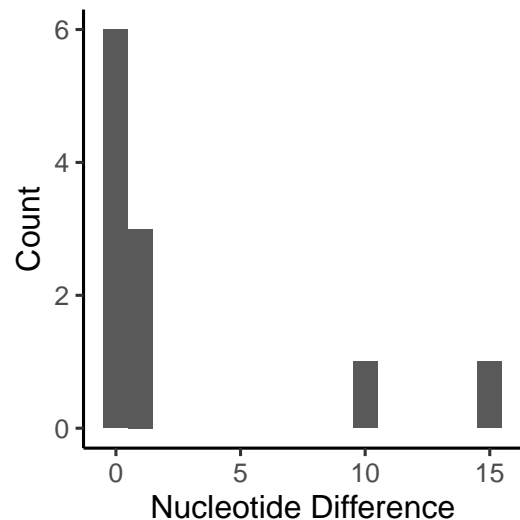
### IGHV3-41\*02

1 sequences assigned  
No exact matches.



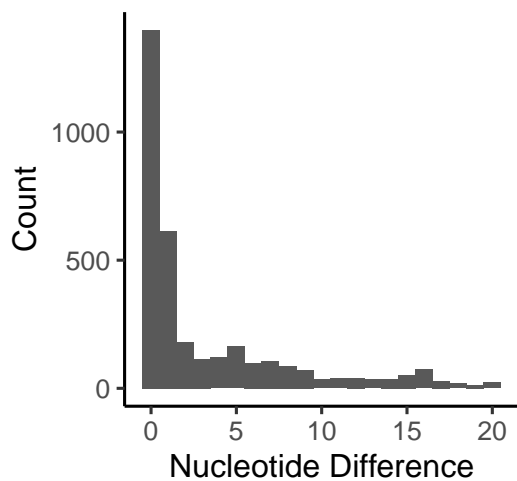
### IGHV3-47\*01

11 sequences assigned  
6 (54.5%) exact matches, in which:  
4 unique CDR3  
2 unique J



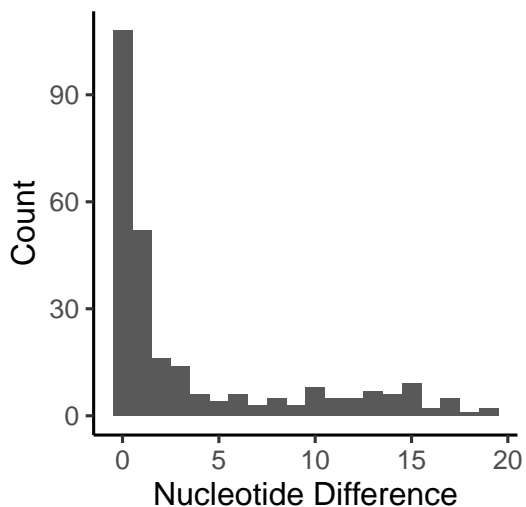
### IGHV3-33\*08

3739 sequences assigned  
1398 (37.4%) exact matches, in which:  
1009 unique CDR3  
7 unique J



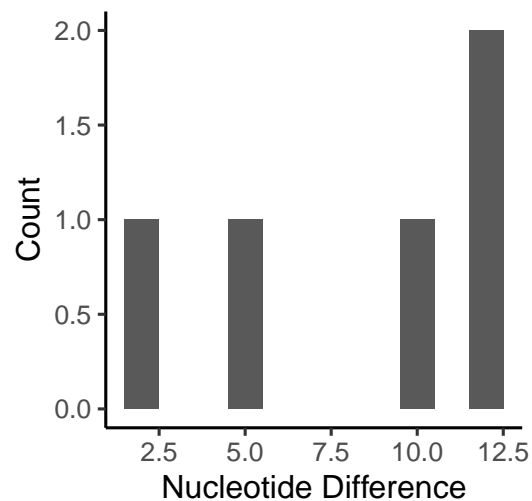
### IGHV3-43\*01

302 sequences assigned  
108 (35.8%) exact matches, in which:  
72 unique CDR3  
6 unique J



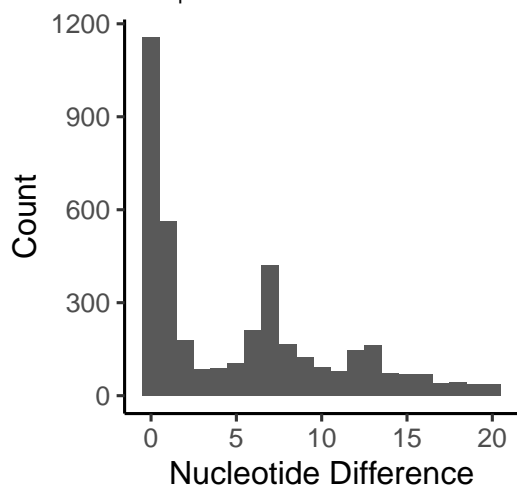
### IGHV3-47\*02

5 sequences assigned  
No exact matches.



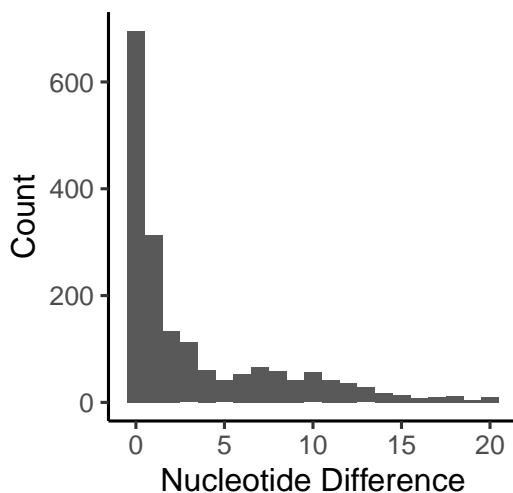
### IGHV3-48\*02

4629 sequences assigned  
1156 (25%) exact matches, in which:  
756 unique CDR3  
7 unique J



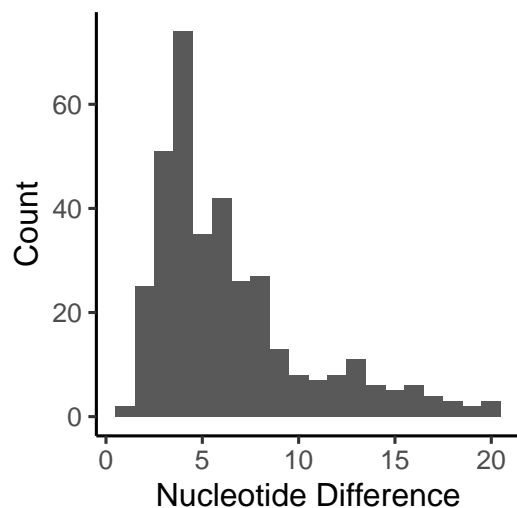
### IGHV3-49\*04

2072 sequences assigned  
696 (33.6%) exact matches, in which:  
444 unique CDR3  
7 unique J



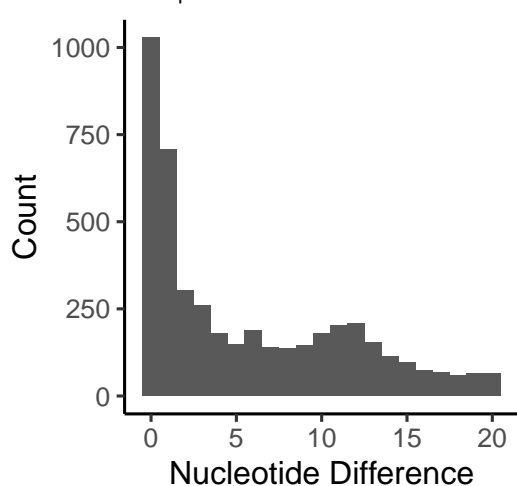
### IGHV3-53\*01\_02

373 sequences assigned  
No exact matches.



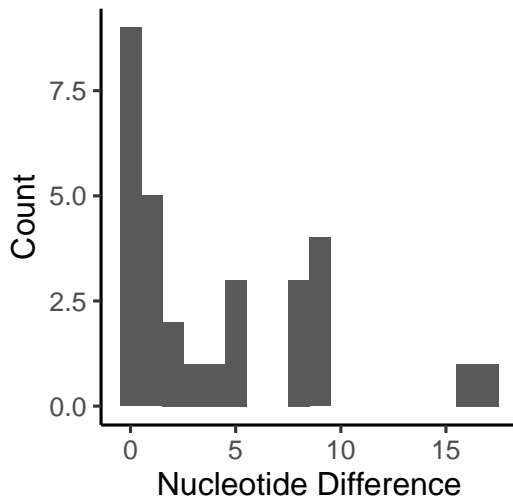
### IGHV3-48\*03

4933 sequences assigned  
1028 (20.8%) exact matches, in which:  
671 unique CDR3  
7 unique J



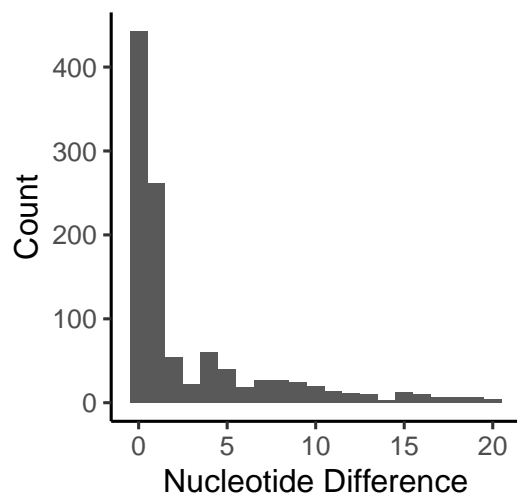
### IGHV3-52\*01\_03

30 sequences assigned  
9 (30%) exact matches, in which:  
7 unique CDR3  
4 unique J



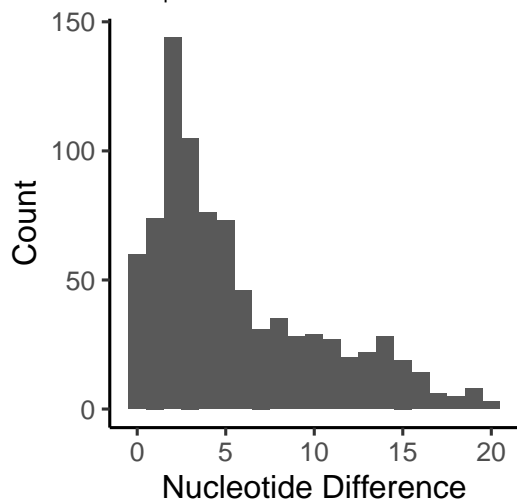
### IGHV3-64\*01

1118 sequences assigned  
443 (39.6%) exact matches, in which:  
290 unique CDR3  
6 unique J



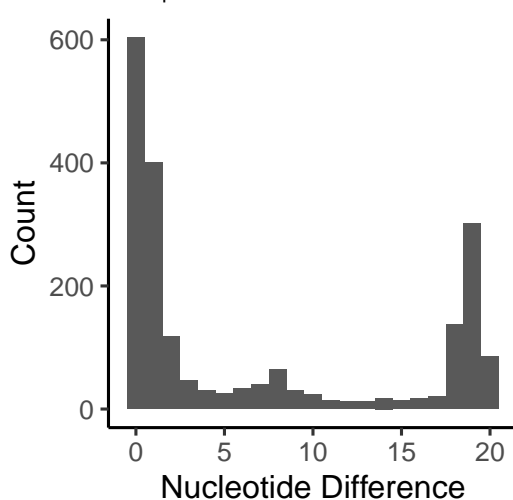
### IGHV3-48\*04

887 sequences assigned  
60 (6.8%) exact matches, in which:  
60 unique CDR3  
7 unique J



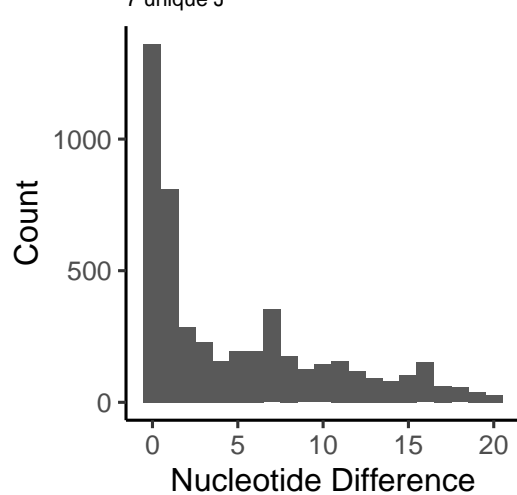
### IGHV3-53\*04

2186 sequences assigned  
604 (27.6%) exact matches, in which:  
411 unique CDR3  
7 unique J



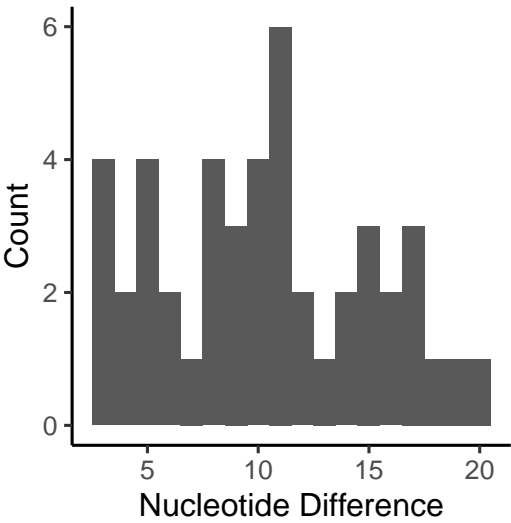
### IGHV3-66\*01

5520 sequences assigned  
1361 (24.7%) exact matches, in which:  
911 unique CDR3  
7 unique J



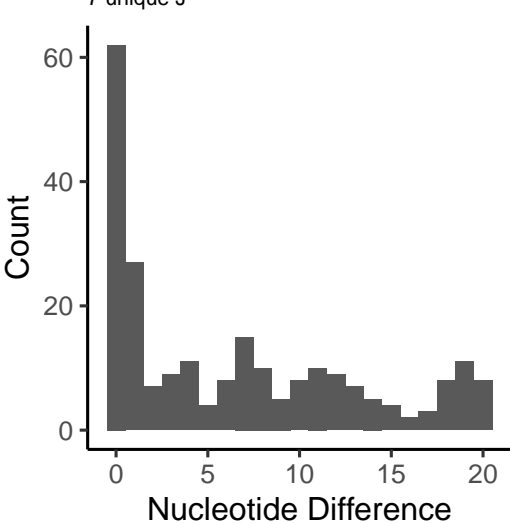
IGHV3-69-1\*01

65 sequences assigned  
No exact matches.



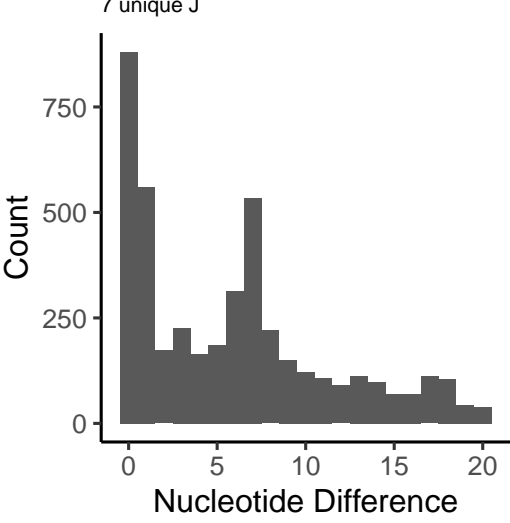
IGHV3-72\*01

331 sequences assigned  
62 (18.7%) exact matches, in which:  
41 unique CDR3  
7 unique J



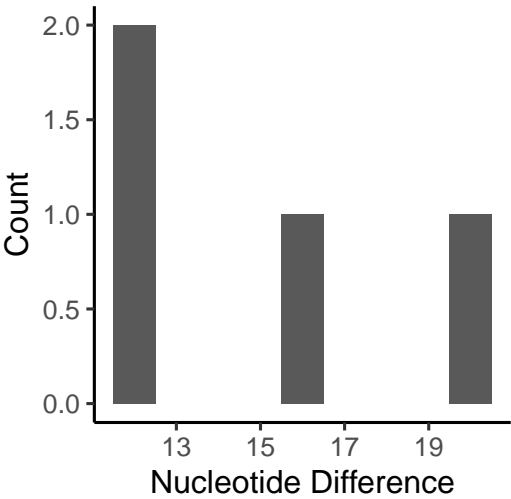
IGHV3-74\*01\_02

4561 sequences assigned  
881 (19.3%) exact matches, in which:  
570 unique CDR3  
7 unique J



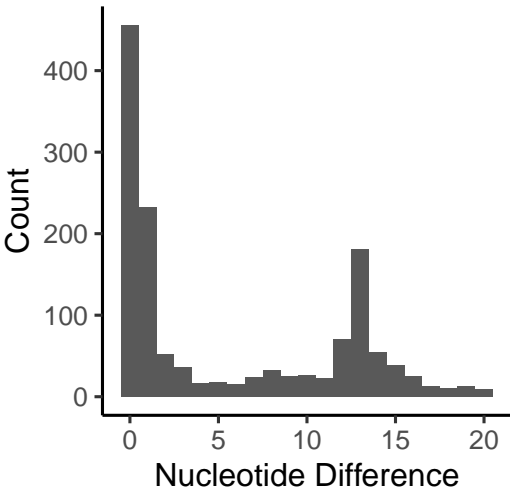
IGHV3-69-1\*02

19 sequences assigned  
No exact matches.



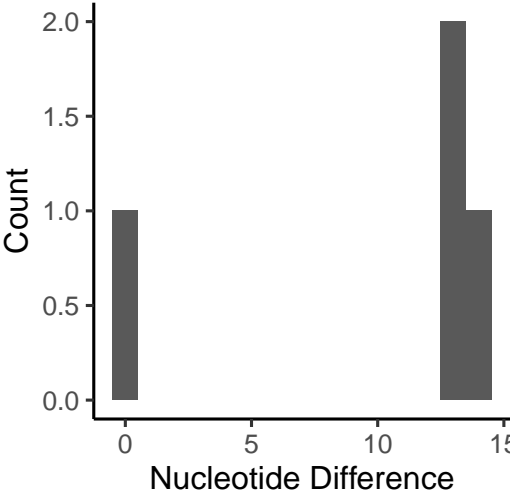
IGHV3-73\*01\_02

1449 sequences assigned  
456 (31.5%) exact matches, in which:  
309 unique CDR3  
7 unique J



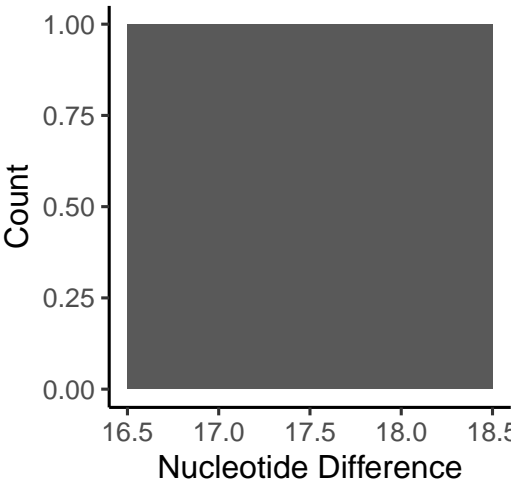
IGHV3-43D\*04

4 sequences assigned  
1 (25%) exact matches, in which:  
1 unique CDR3  
1 unique J



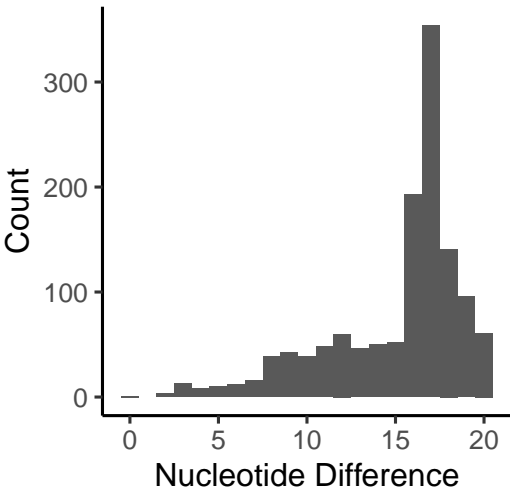
IGHV3-71\*01\_04

2 sequences assigned  
No exact matches.



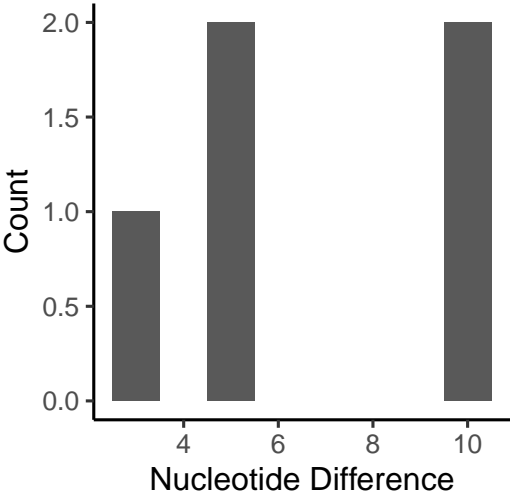
IGHV3-74\*03

1508 sequences assigned  
1 (0.1%) exact matches, in which:  
1 unique CDR3  
1 unique J



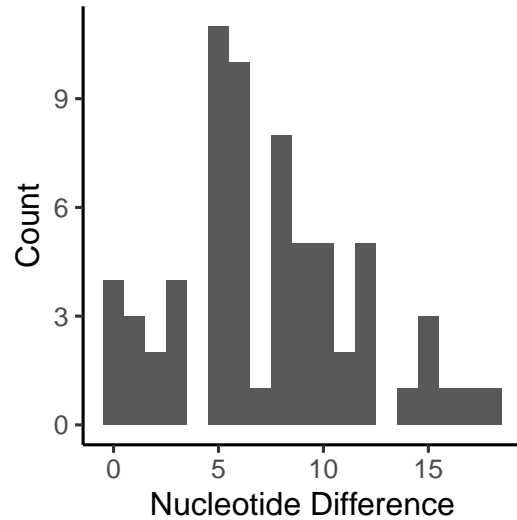
IGHV3-64D\*06

20 sequences assigned  
No exact matches.



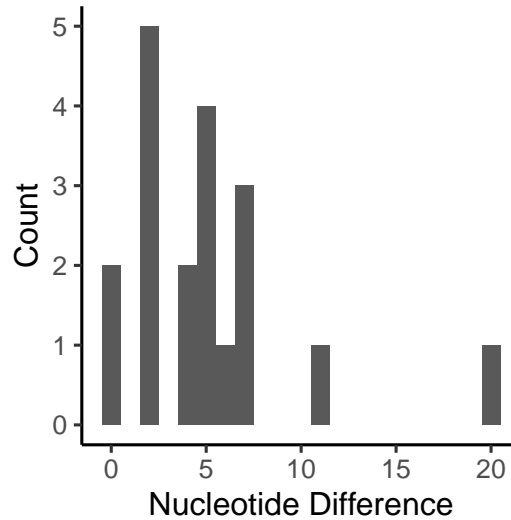
### IGHV3–NL1\*01

70 sequences assigned  
4 (5.7%) exact matches, in which:  
4 unique CDR3  
2 unique J



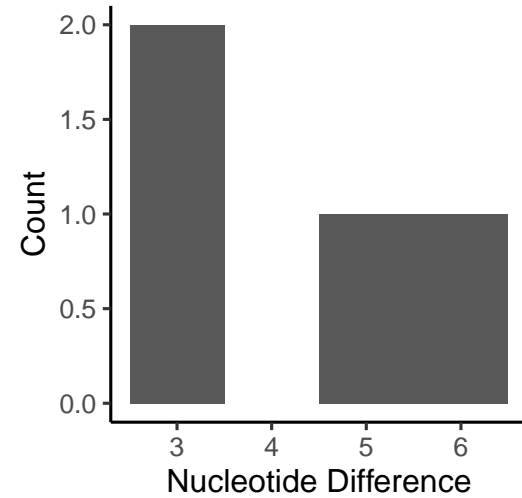
### IGHV4–28\*03

21 sequences assigned  
2 (9.5%) exact matches, in which:  
2 unique CDR3  
1 unique J



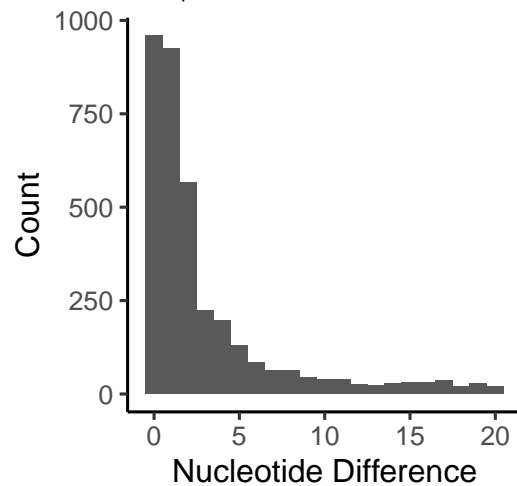
### IGHV4–30–2\*04

4 sequences assigned  
No exact matches.



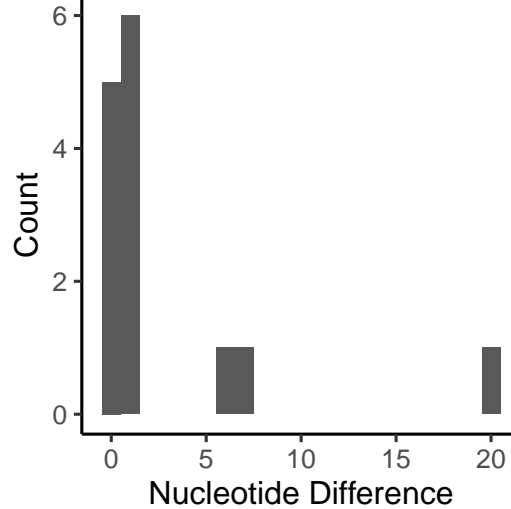
### IGHV4–4\*07

4764 sequences assigned  
959 (20.1%) exact matches, in which:  
847 unique CDR3  
7 unique J



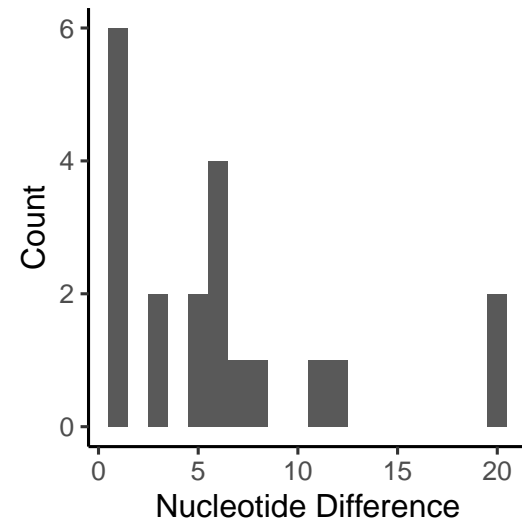
### IGHV4–28\*01\_07

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



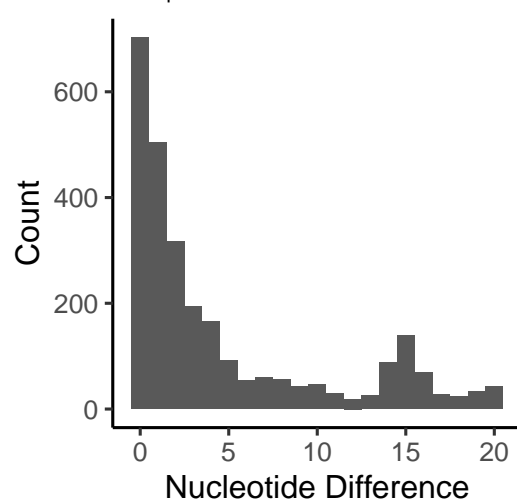
### IGHV4–30–4\*08

22 sequences assigned  
No exact matches.



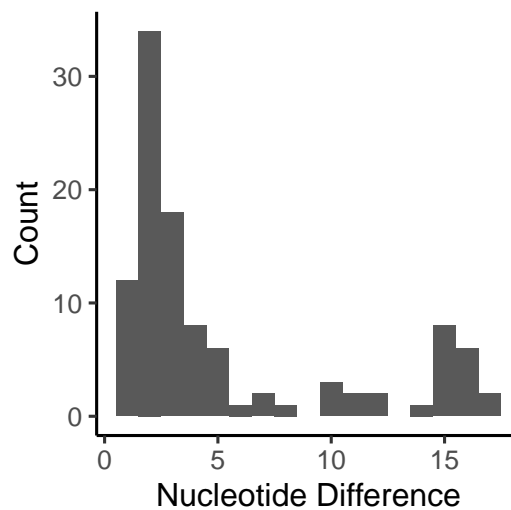
### IGHV4–4\*02\_03

3081 sequences assigned  
703 (22.8%) exact matches, in which:  
597 unique CDR3  
7 unique J



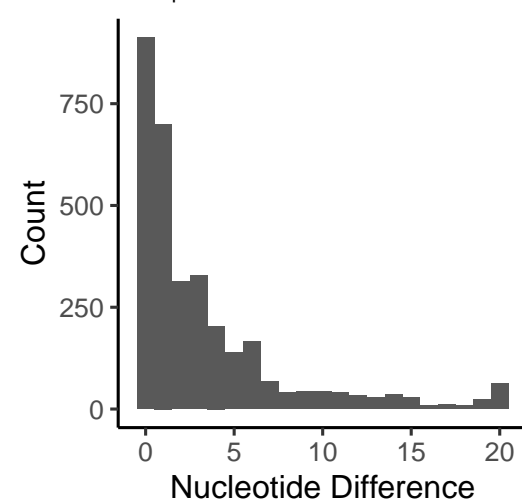
### IGHV4–30–2\*03

113 sequences assigned  
No exact matches.



### IGHV4–31\*02

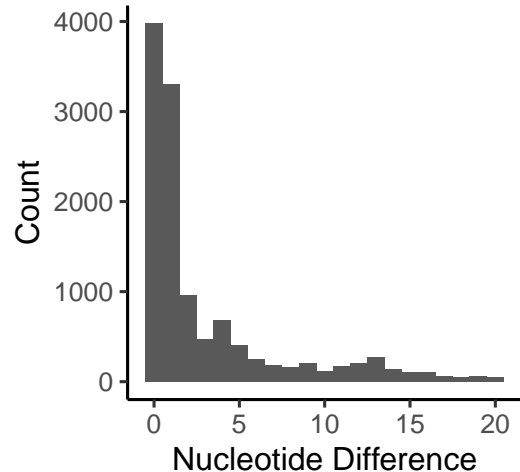
3777 sequences assigned  
913 (24.2%) exact matches, in which:  
836 unique CDR3  
7 unique J





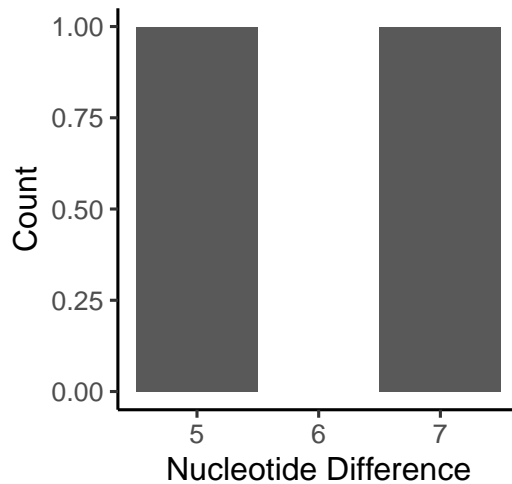
### IGHV4-34\*01\_02

12327 sequences assigned  
3979 (32.3%) exact matches, in which:  
3266 unique CDR3  
7 unique J



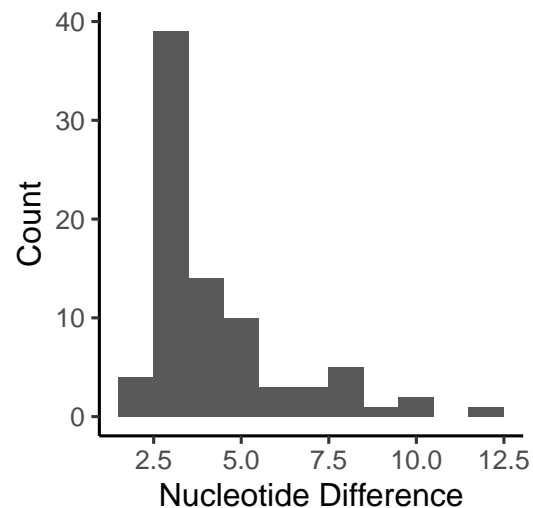
### IGHV4-55\*09

2 sequences assigned  
No exact matches.



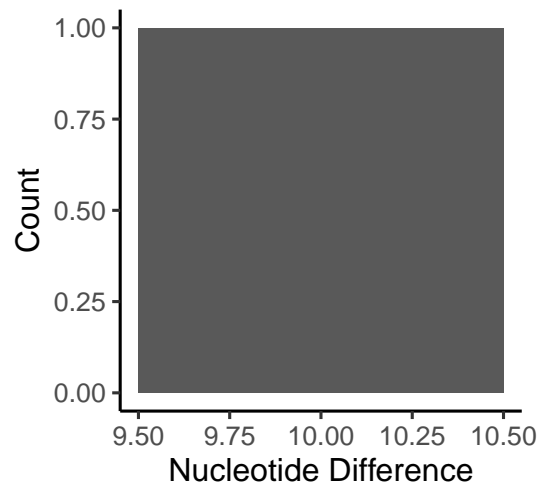
### IGHV4-61\*02

85 sequences assigned  
No exact matches.



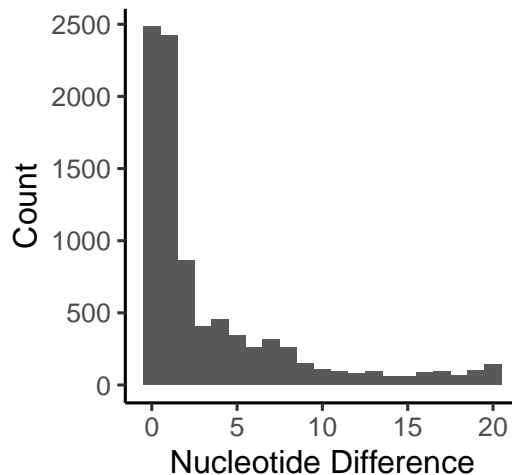
### IGHV4-38-2\*02

5 sequences assigned  
No exact matches.



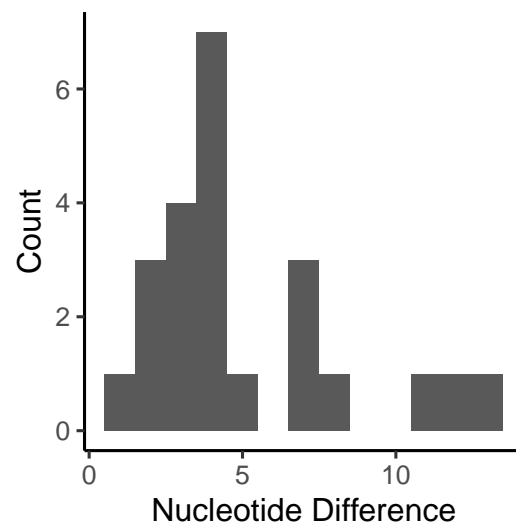
### IGHV4-59\*08

10889 sequences assigned  
2483 (22.8%) exact matches, in which:  
2117 unique CDR3  
7 unique J



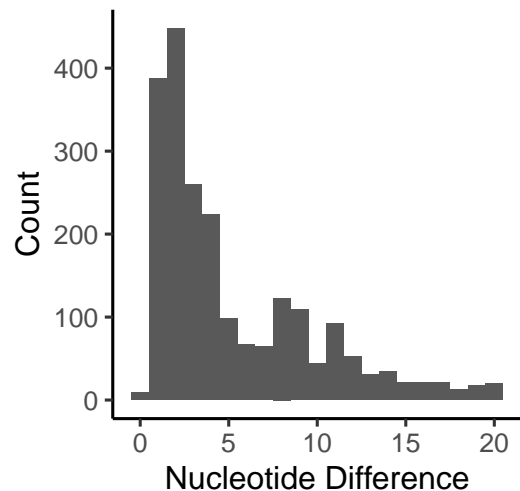
### IGHV4-61\*05

25 sequences assigned  
No exact matches.



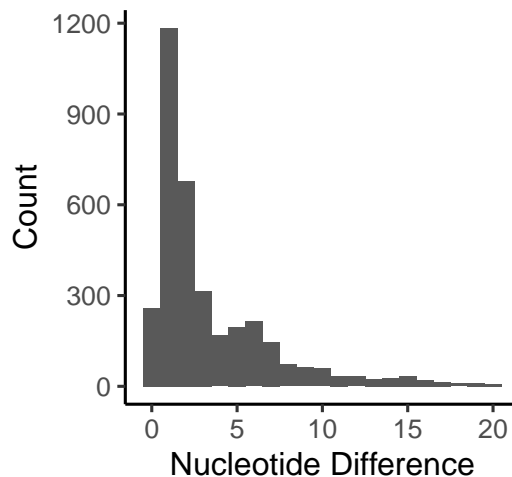
### IGHV4-39\*07

2493 sequences assigned  
9 (0.4%) exact matches, in which:  
9 unique CDR3  
4 unique J



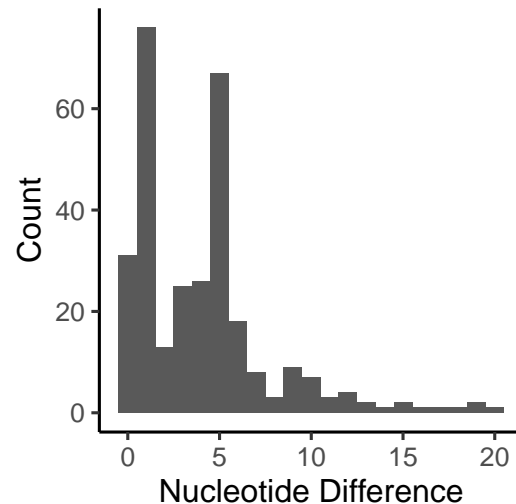
### IGHV4-59\*12

3723 sequences assigned  
258 (6.9%) exact matches, in which:  
250 unique CDR3  
7 unique J



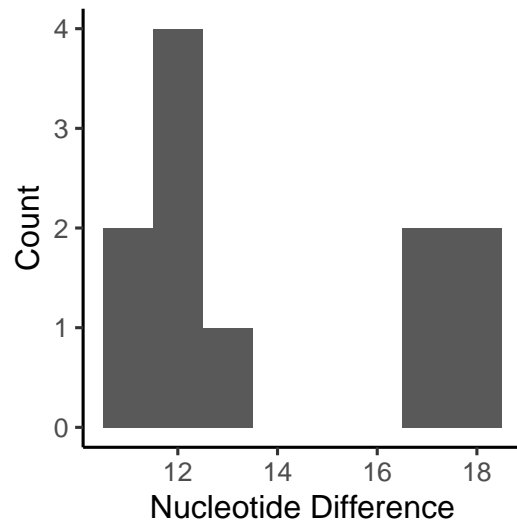
### IGHV4-61\*08

323 sequences assigned  
31 (9.6%) exact matches, in which:  
23 unique CDR3  
5 unique J



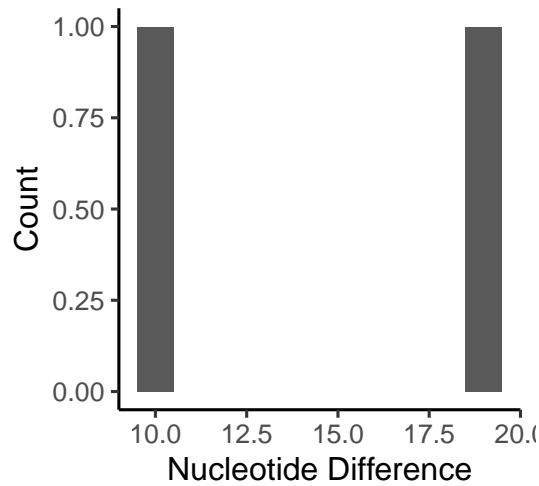
### IGHV1/OR15-2\*02\_03

14 sequences assigned  
No exact matches.



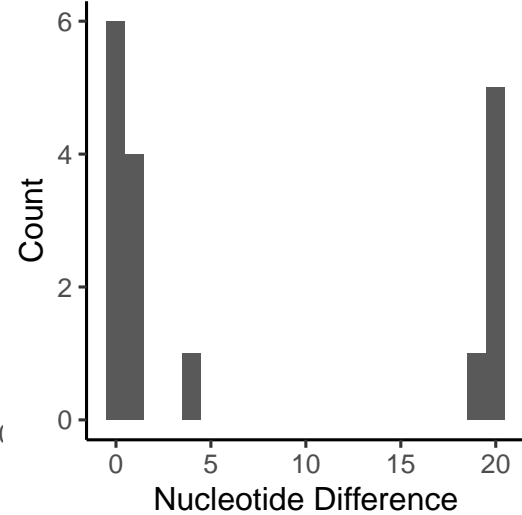
### IGHV4/OR15-8\*02

7 sequences assigned  
No exact matches.



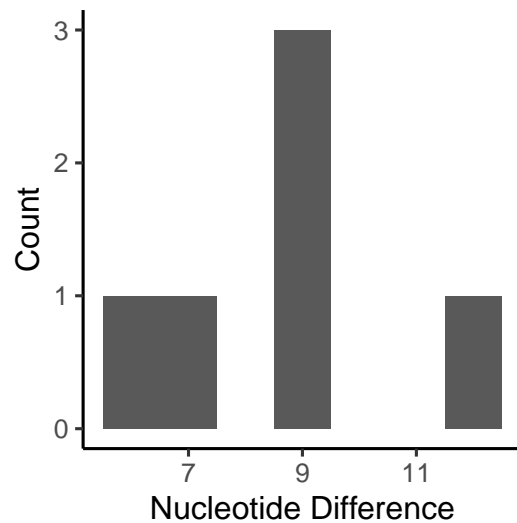
### IGHV5-51\*06

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



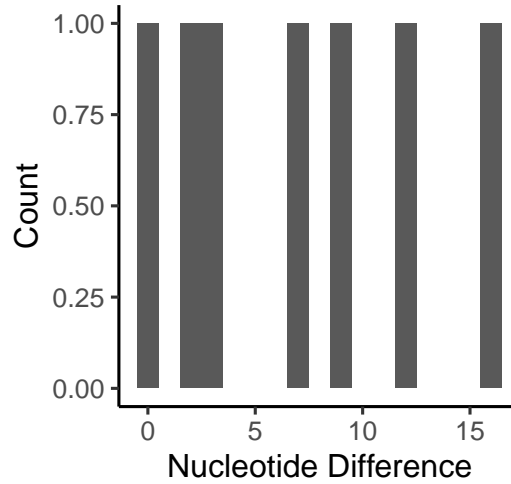
### IGHV1/OR15-3\*02

6 sequences assigned  
No exact matches.



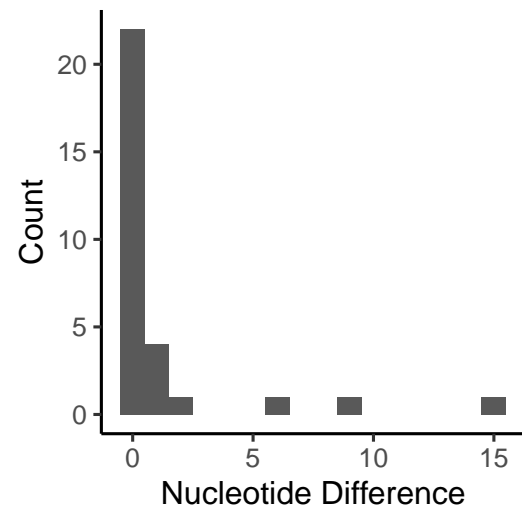
### IGHV5-10-1\*01\_03

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



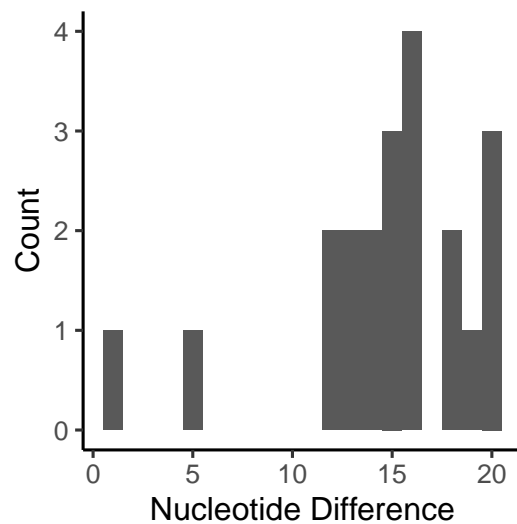
### IGHV5-51\*07

35 sequences assigned  
22 (62.9%) exact matches, in which:  
21 unique CDR3  
5 unique J



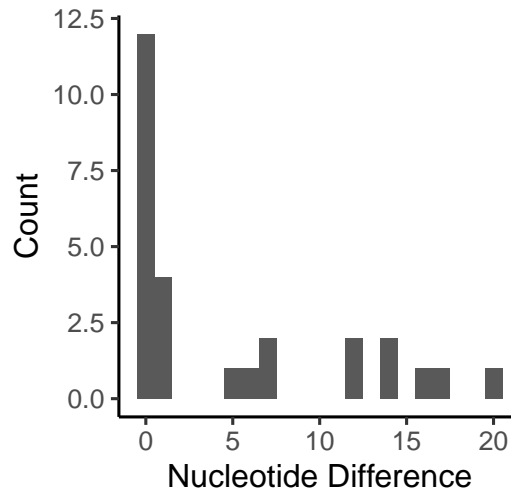
### IGHV4/OR15-8\*01

27 sequences assigned  
No exact matches.



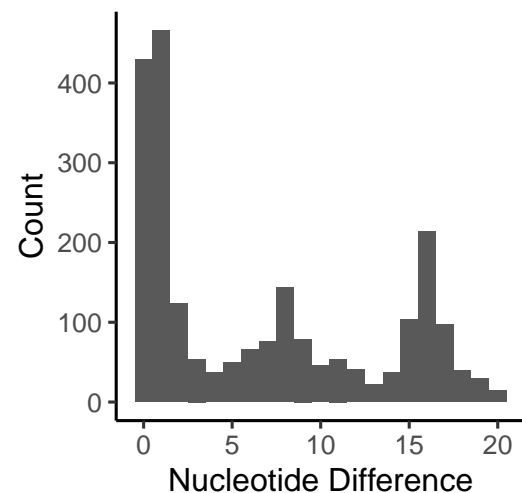
### IGHV5-51\*04

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



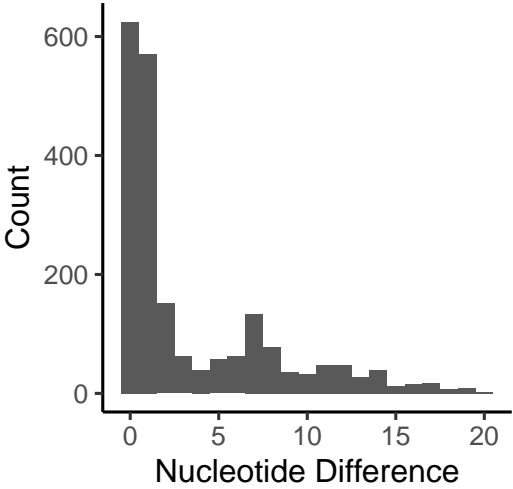
### IGHV6-1\*01\_02

2467 sequences assigned  
429 (17.4%) exact matches, in which:  
368 unique CDR3  
6 unique J

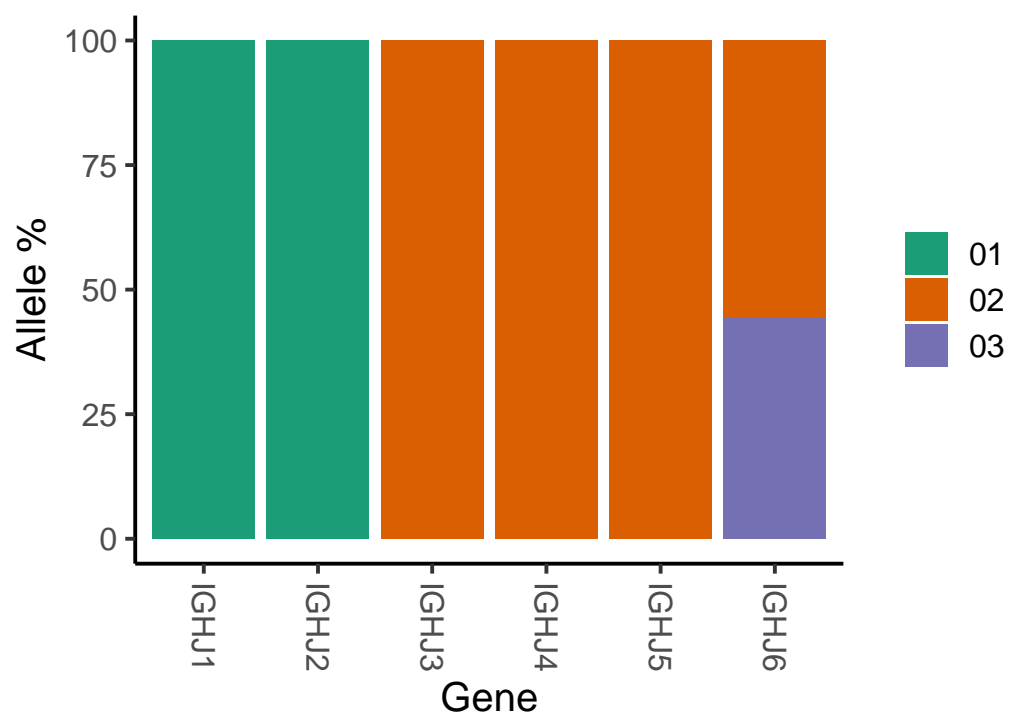


IGHV7-4-1\*02

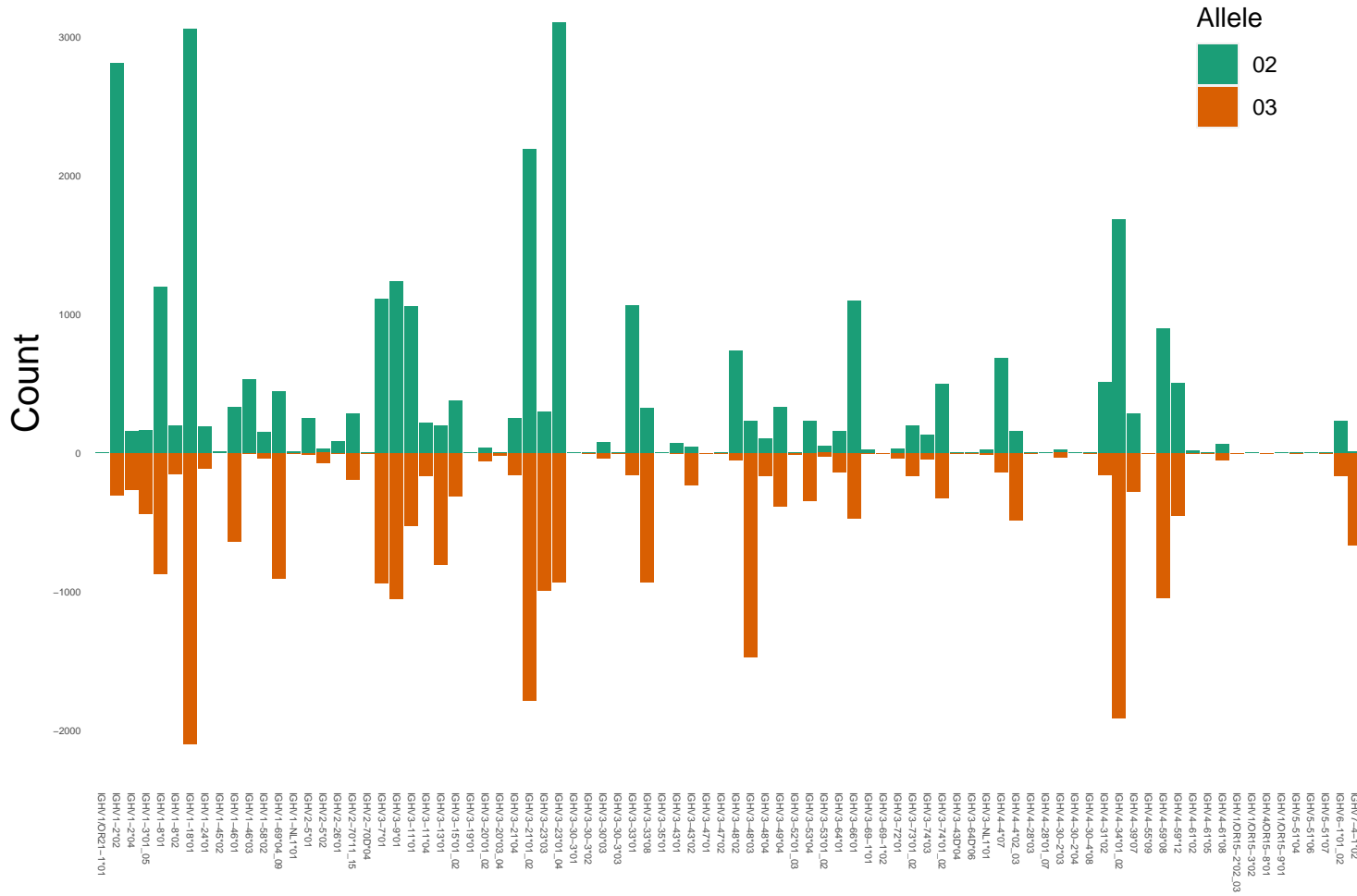
2236 sequences assigned  
625 (28%) exact matches, in which:  
531 unique CDR3  
7 unique J



Allele Usage



Sequence Count by IGHJ6 allele usage



[illegible]