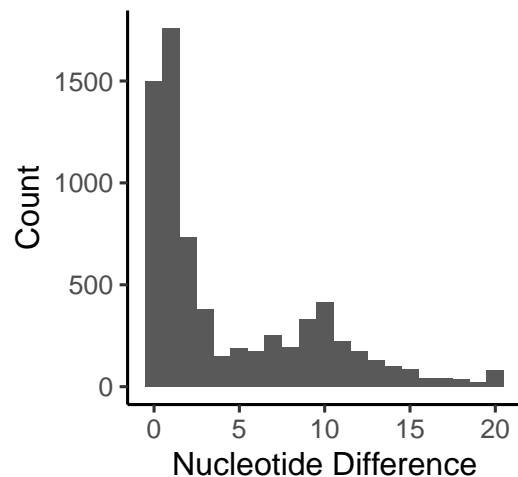


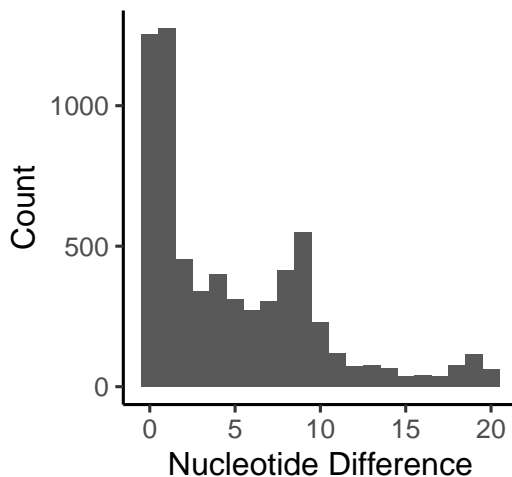
### IGHV1-2\*02

7660 sequences assigned  
1499 (19.6%) exact matches, in which:  
1276 unique CDR3  
7 unique J



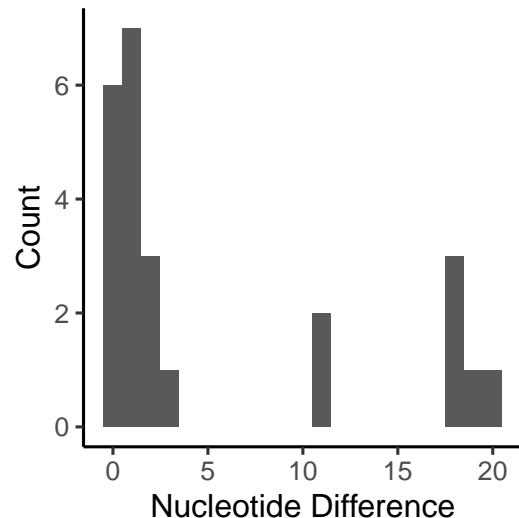
### IGHV1-8\*01

6677 sequences assigned  
1253 (18.8%) exact matches, in which:  
1080 unique CDR3  
7 unique J



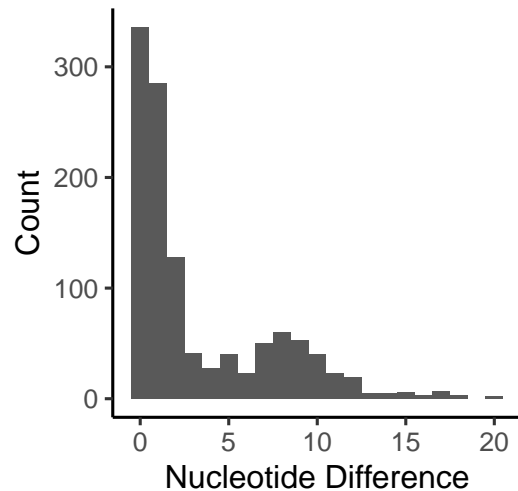
### IGHV1-45\*02

24 sequences assigned  
6 (25%) exact matches, in which:  
6 unique CDR3  
5 unique J



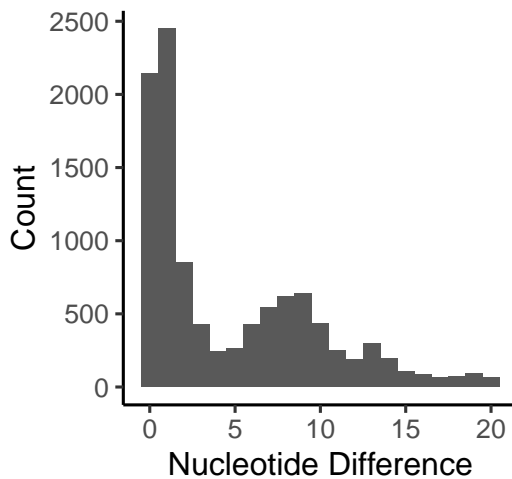
### IGHV1-2\*04

1157 sequences assigned  
336 (29%) exact matches, in which:  
301 unique CDR3  
7 unique J



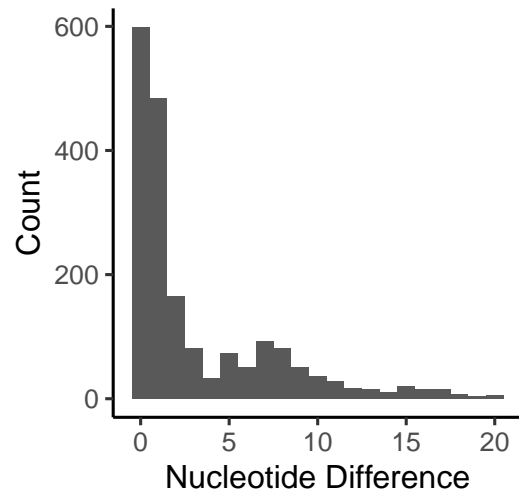
### IGHV1-18\*01

11095 sequences assigned  
2142 (19.3%) exact matches, in which:  
1800 unique CDR3  
7 unique J



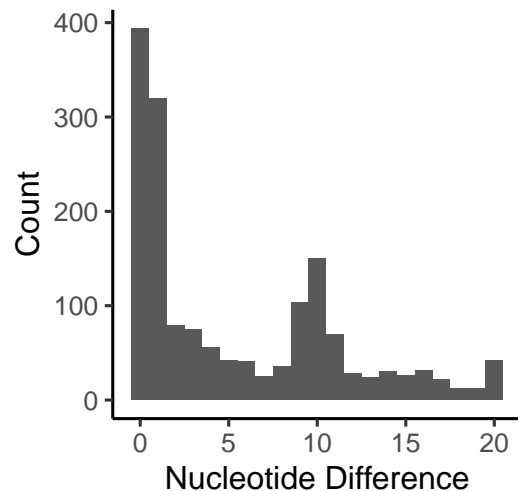
### IGHV1-46\*01

1902 sequences assigned  
599 (31.5%) exact matches, in which:  
530 unique CDR3  
7 unique J



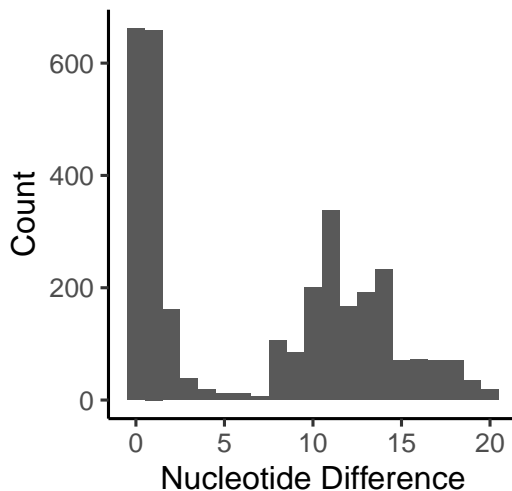
### IGHV1-3\*01\_05

1764 sequences assigned  
394 (22.3%) exact matches, in which:  
333 unique CDR3  
7 unique J



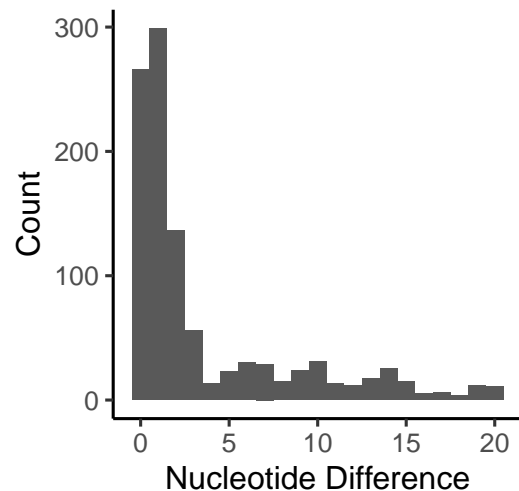
### IGHV1-24\*01

3318 sequences assigned  
662 (20%) exact matches, in which:  
558 unique CDR3  
7 unique J



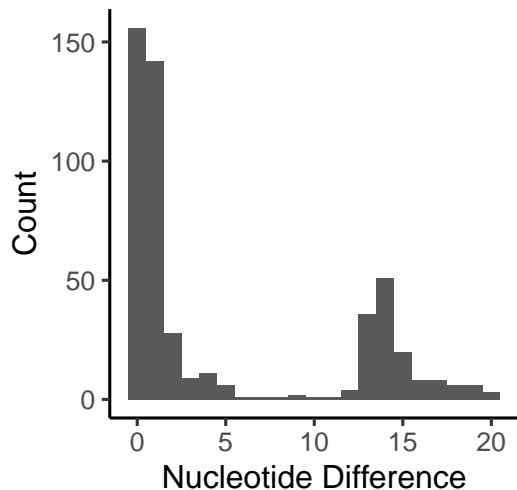
### IGHV1-46\*03

1074 sequences assigned  
266 (24.8%) exact matches, in which:  
210 unique CDR3  
7 unique J



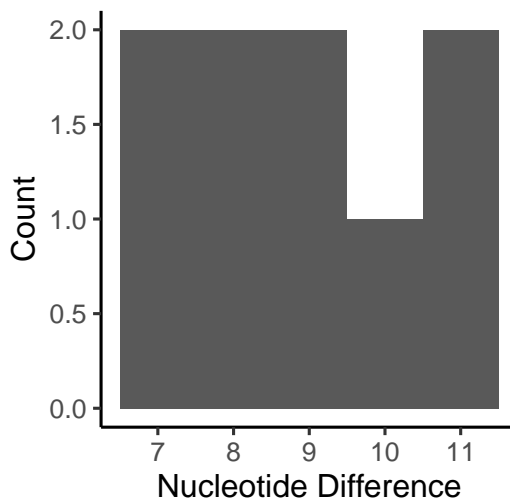
### IGHV1–58\*02

517 sequences assigned  
156 (30.2%) exact matches, in which:  
127 unique CDR3  
6 unique J



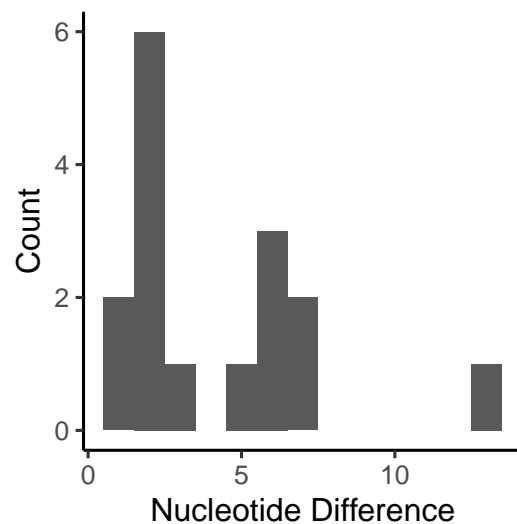
### IGHV1–NL1\*01

9 sequences assigned  
No exact matches.



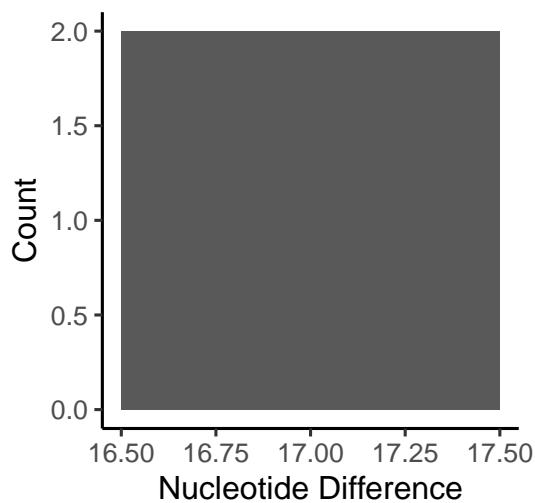
### IGHV2–70\*12

16 sequences assigned  
No exact matches.



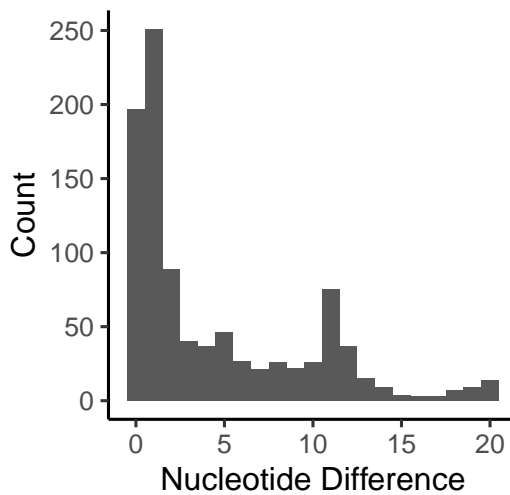
### IGHV1–69–2\*01

3 sequences assigned  
No exact matches.



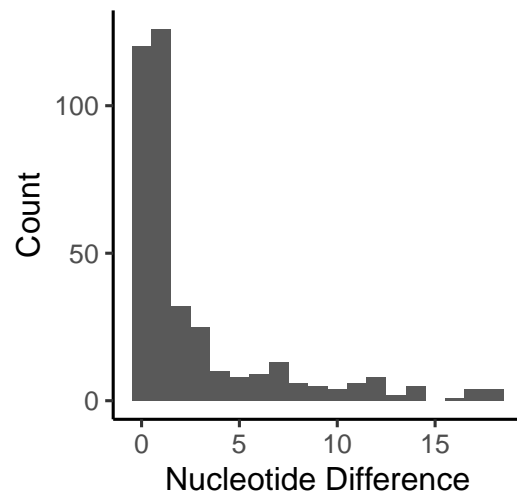
### IGHV2–5\*02

1030 sequences assigned  
197 (19.1%) exact matches, in which:  
167 unique CDR3  
7 unique J



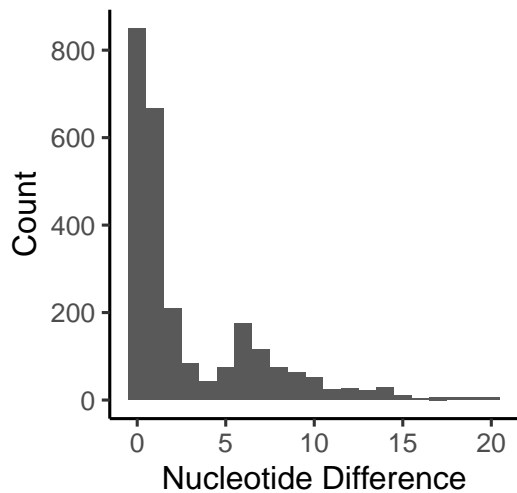
### IGHV2–70\*11\_15

390 sequences assigned  
120 (30.8%) exact matches, in which:  
95 unique CDR3  
5 unique J



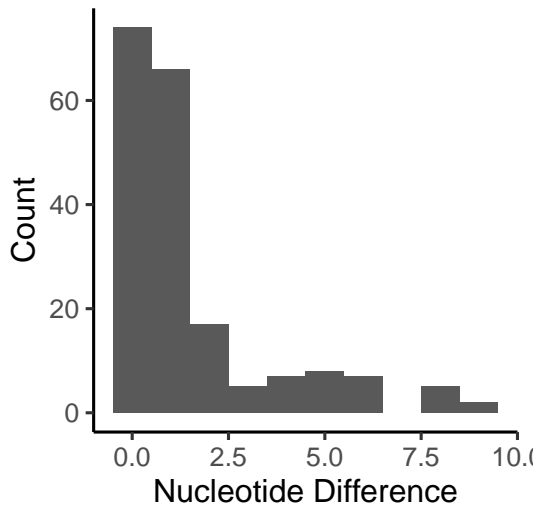
### IGHV1–69\*04\_09

2874 sequences assigned  
850 (29.6%) exact matches, in which:  
771 unique CDR3  
7 unique J



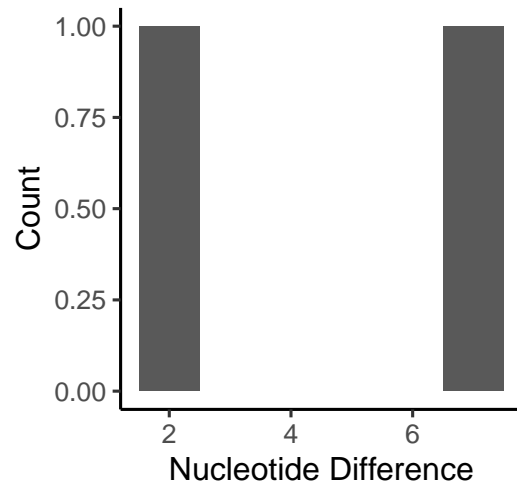
### IGHV2–26\*01

204 sequences assigned  
74 (36.3%) exact matches, in which:  
65 unique CDR3  
6 unique J



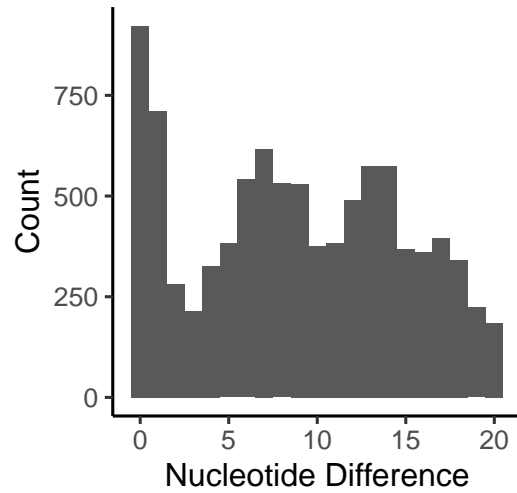
### IGHV2–70D\*04

2 sequences assigned  
No exact matches.



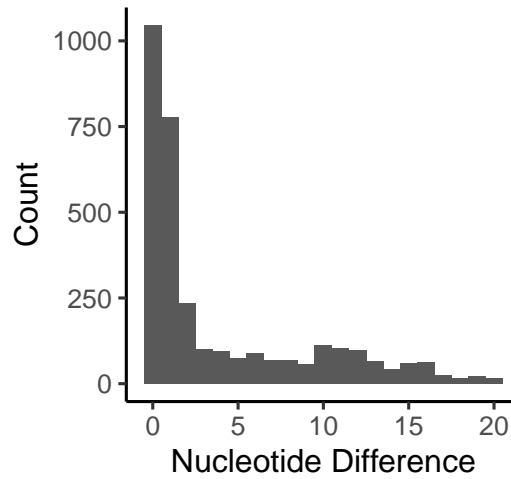
### IGHV3-7\*01

10404 sequences assigned  
923 (8.9%) exact matches, in which:  
654 unique CDR3  
7 unique J



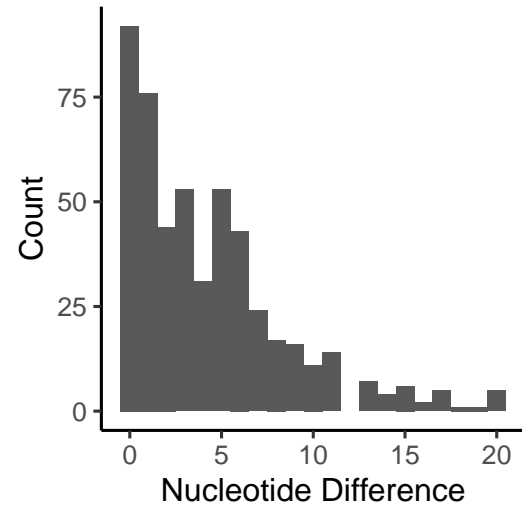
### IGHV3-9\*01

3571 sequences assigned  
1045 (29.3%) exact matches, in which:  
639 unique CDR3  
7 unique J



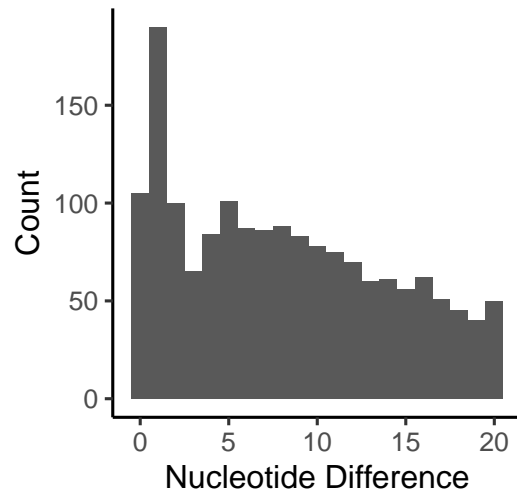
### IGHV3-11\*06

562 sequences assigned  
92 (16.4%) exact matches, in which:  
87 unique CDR3  
7 unique J



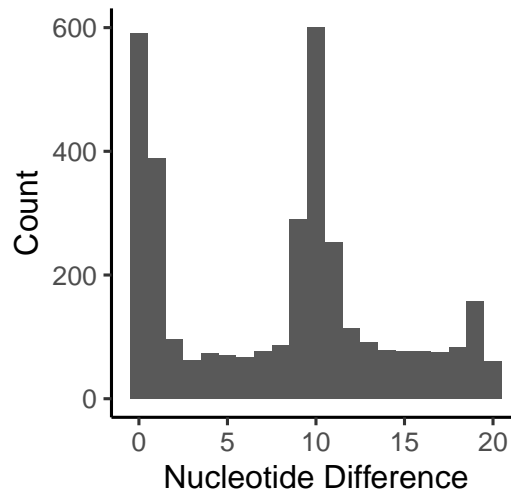
### IGHV3-7\*03

1926 sequences assigned  
105 (5.5%) exact matches, in which:  
80 unique CDR3  
6 unique J



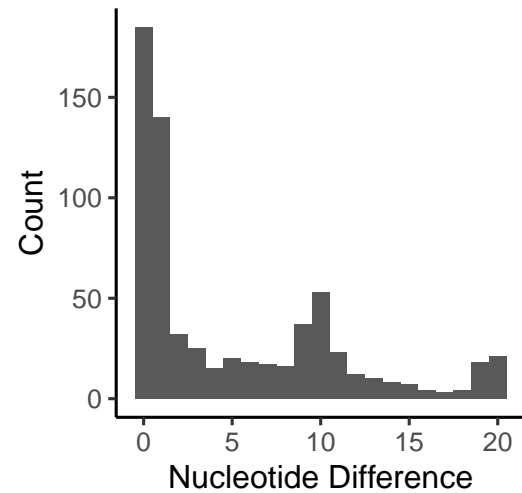
### IGHV3-11\*01

4609 sequences assigned  
591 (12.8%) exact matches, in which:  
412 unique CDR3  
6 unique J



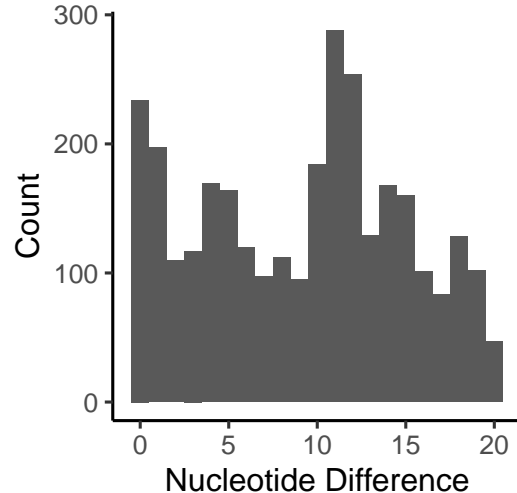
### IGHV3-13\*01

745 sequences assigned  
185 (24.8%) exact matches, in which:  
121 unique CDR3  
5 unique J



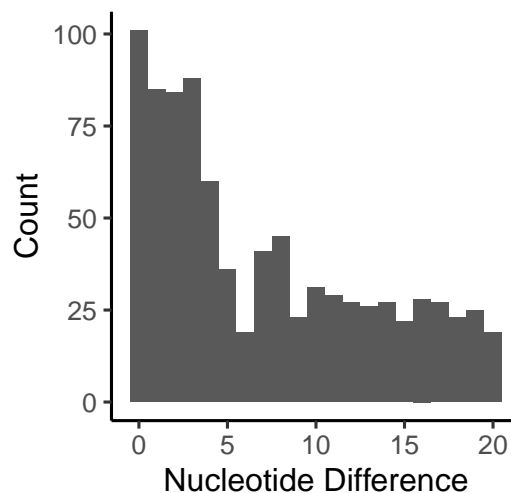
### IGHV3-7\*04

3353 sequences assigned  
234 (7%) exact matches, in which:  
146 unique CDR3  
7 unique J



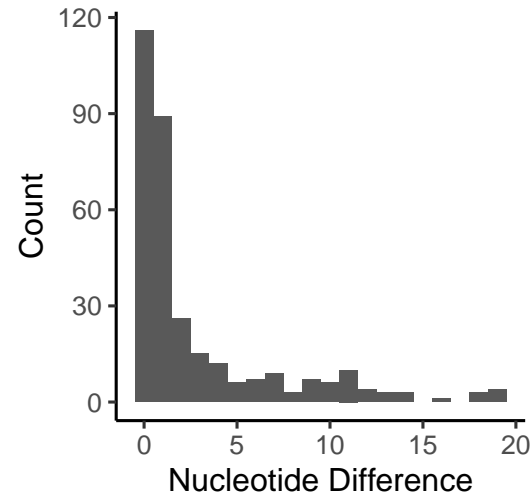
### IGHV3-11\*04

970 sequences assigned  
101 (10.4%) exact matches, in which:  
99 unique CDR3  
6 unique J



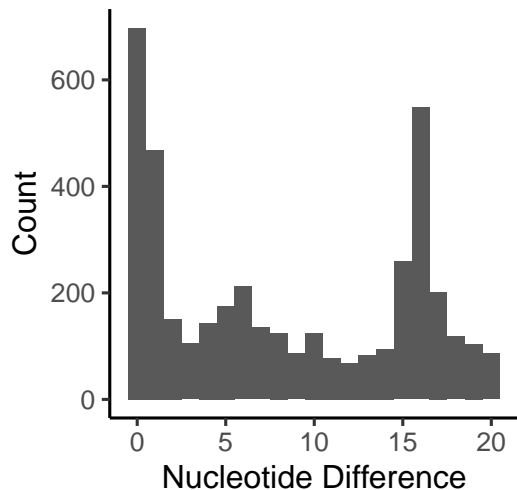
### IGHV3-13\*04

357 sequences assigned  
116 (32.5%) exact matches, in which:  
74 unique CDR3  
6 unique J



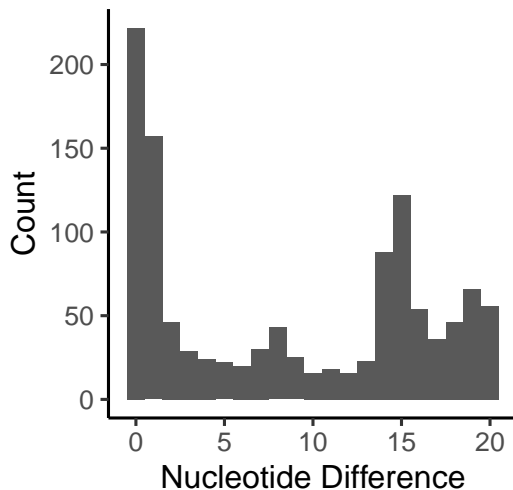
### IGHV3-15\*01\_02

4607 sequences assigned  
698 (15.2%) exact matches, in which:  
440 unique CDR3  
7 unique J



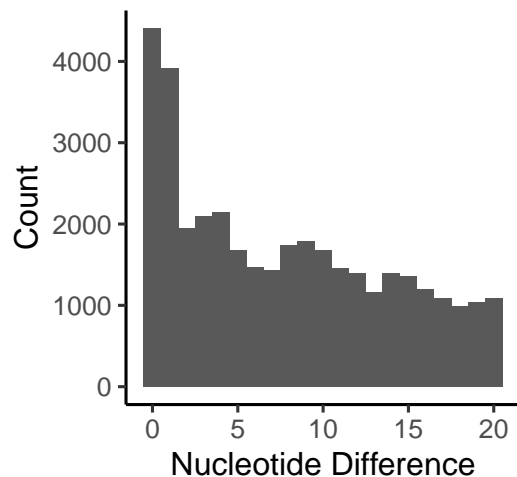
### IGHV3-20\*03\_04

1523 sequences assigned  
222 (14.6%) exact matches, in which:  
146 unique CDR3  
7 unique J



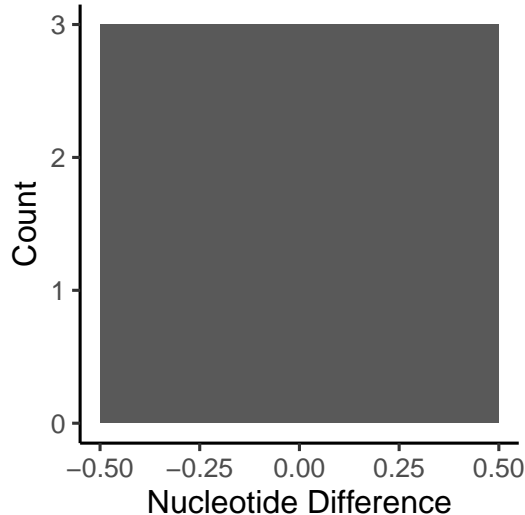
### IGHV3-23\*01\_04

48850 sequences assigned  
4406 (9%) exact matches, in which:  
2651 unique CDR3  
7 unique J



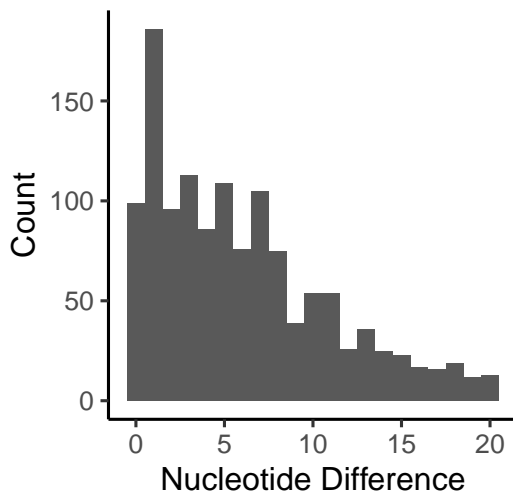
### IGHV3-19\*01

3 sequences assigned  
3 (100%) exact matches, in which:  
3 unique CDR3  
2 unique J



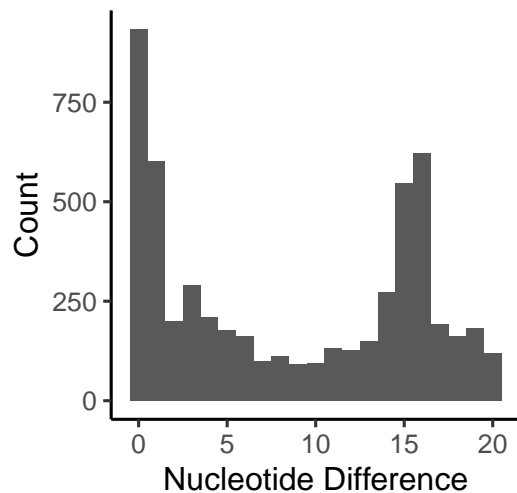
### IGHV3-21\*04

1394 sequences assigned  
99 (7.1%) exact matches, in which:  
92 unique CDR3  
6 unique J



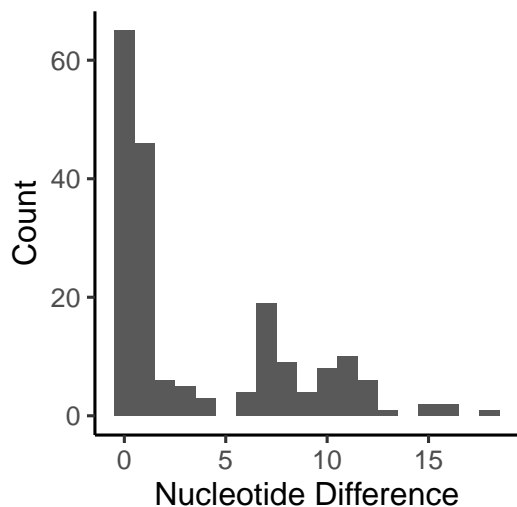
### IGHV3-30\*01

5841 sequences assigned  
934 (16%) exact matches, in which:  
626 unique CDR3  
7 unique J



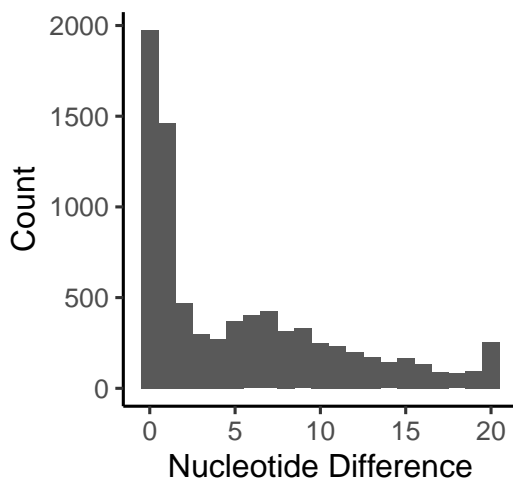
### IGHV3-20\*01\_02

207 sequences assigned  
65 (31.4%) exact matches, in which:  
36 unique CDR3  
5 unique J



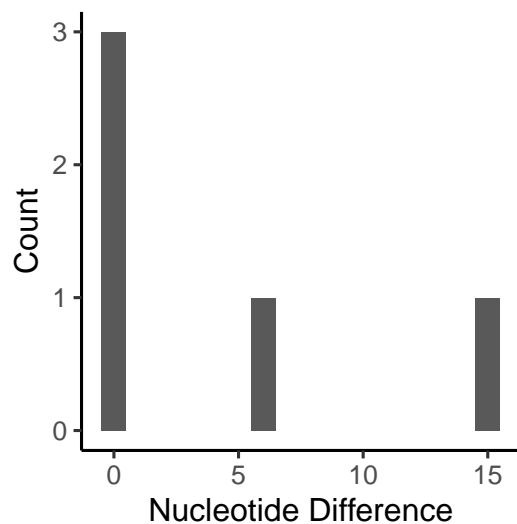
### IGHV3-21\*01\_02

9802 sequences assigned  
1975 (20.1%) exact matches, in which:  
1269 unique CDR3  
7 unique J



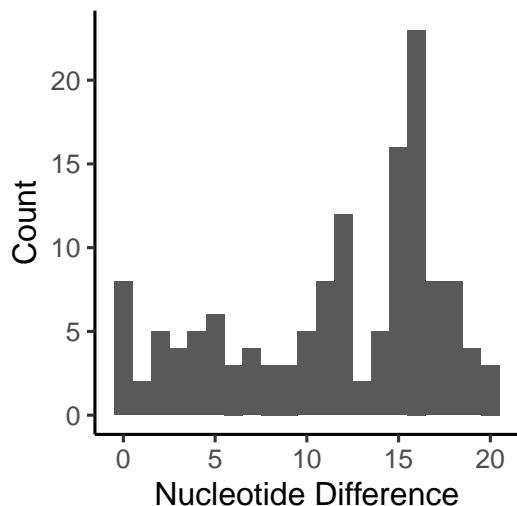
### IGHV3-30-3\*01

11 sequences assigned  
3 (27.3%) exact matches, in which:  
3 unique CDR3  
2 unique J



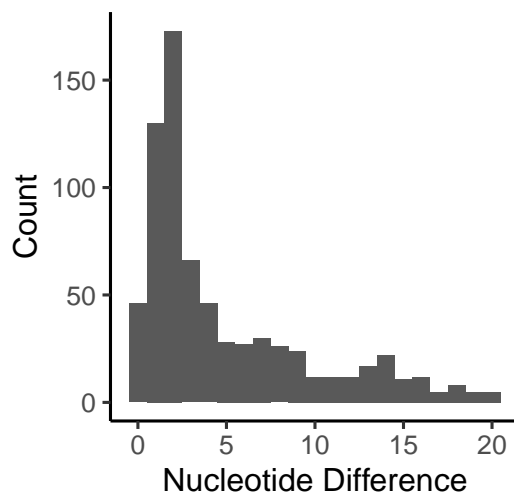
### IGHV3-30-3\*03

336 sequences assigned  
8 (2.4%) exact matches, in which:  
6 unique CDR3  
3 unique J



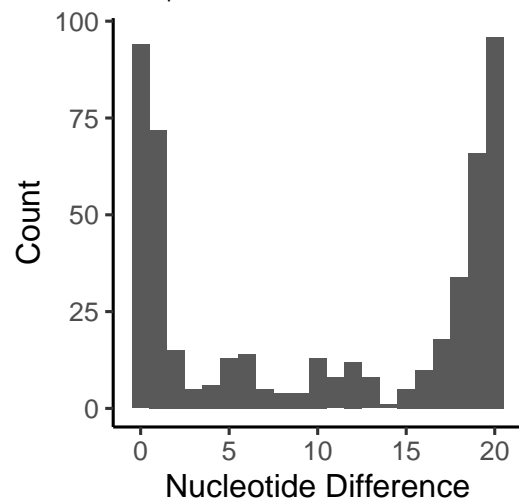
### IGHV3-33\*06

749 sequences assigned  
46 (6.1%) exact matches, in which:  
45 unique CDR3  
5 unique J



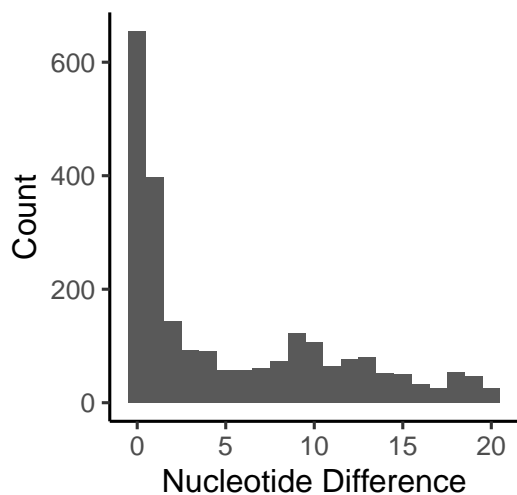
### IGHV3-43\*01

1115 sequences assigned  
94 (8.4%) exact matches, in which:  
54 unique CDR3  
6 unique J



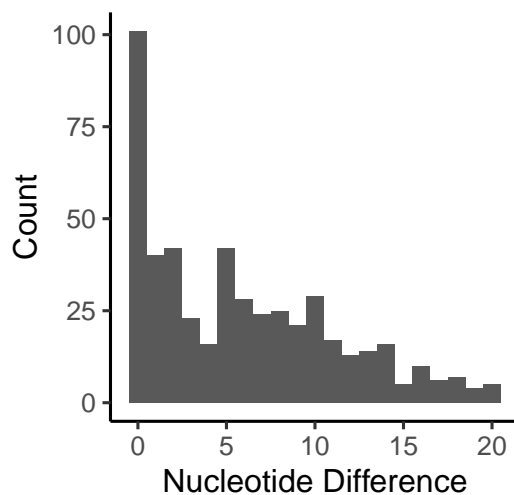
### IGHV3-33\*01

2673 sequences assigned  
655 (24.5%) exact matches, in which:  
446 unique CDR3  
7 unique J



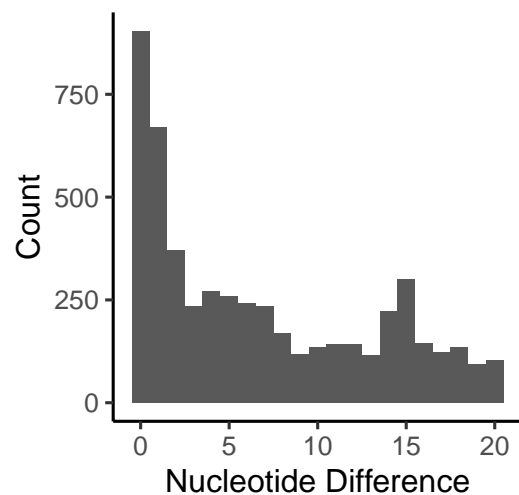
### IGHV3-33\*08

541 sequences assigned  
101 (18.7%) exact matches, in which:  
88 unique CDR3  
6 unique J



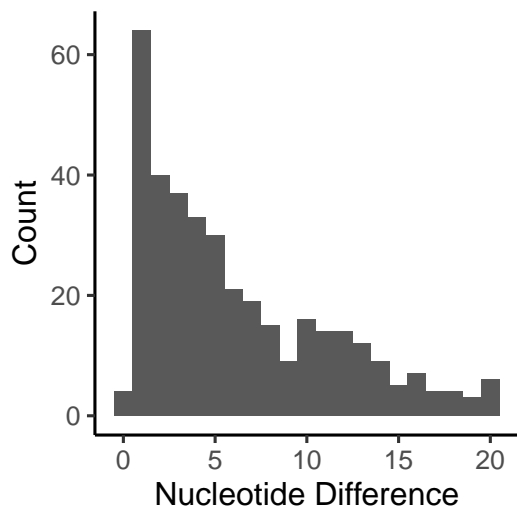
### IGHV3-48\*01

5823 sequences assigned  
904 (15.5%) exact matches, in which:  
611 unique CDR3  
7 unique J



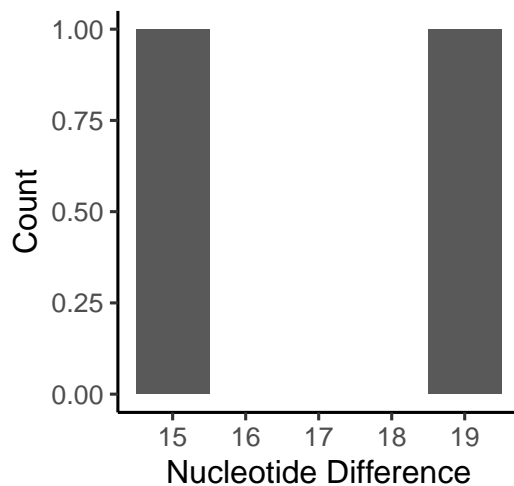
### IGHV3-33\*05

467 sequences assigned  
4 (0.9%) exact matches, in which:  
4 unique CDR3  
3 unique J



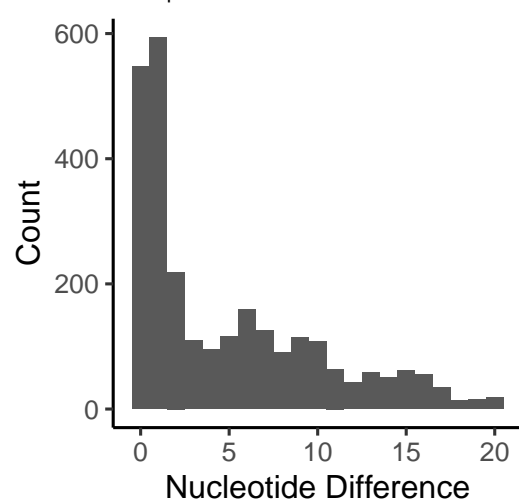
### IGHV3-35\*01

2 sequences assigned  
No exact matches.



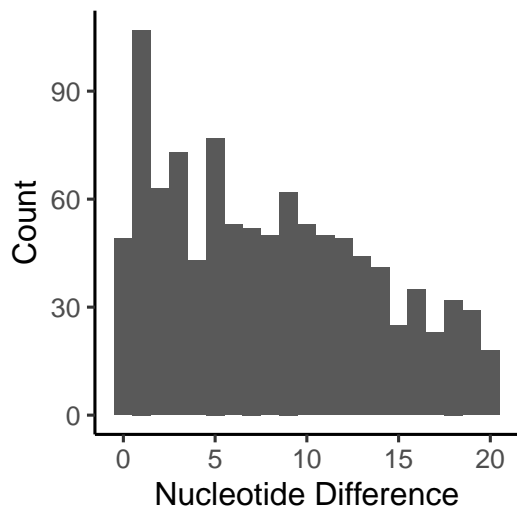
### IGHV3-48\*02

2809 sequences assigned  
547 (19.5%) exact matches, in which:  
339 unique CDR3  
7 unique J



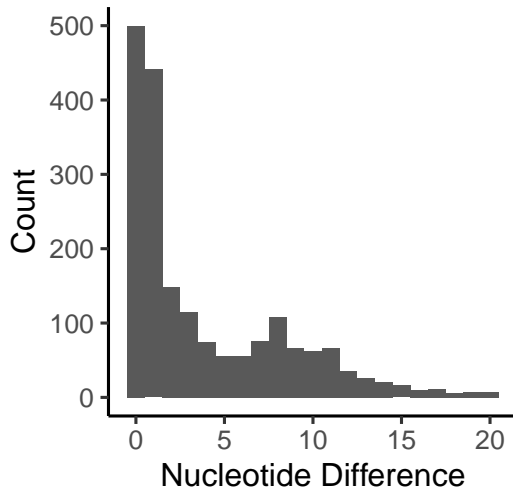
### IGHV3-48\*04

1163 sequences assigned  
49 (4.2%) exact matches, in which:  
49 unique CDR3  
5 unique J



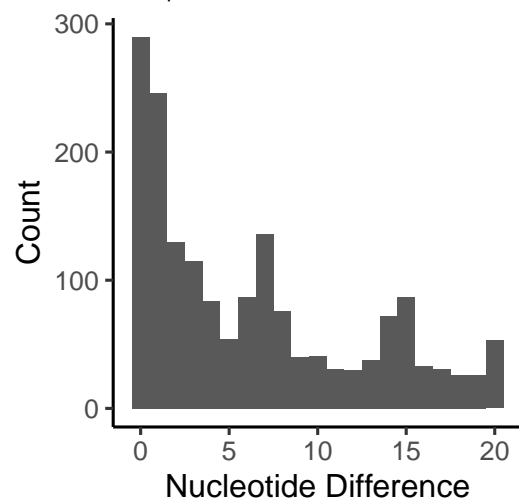
### IGHV3-53\*01\_02

1992 sequences assigned  
500 (25.1%) exact matches, in which:  
335 unique CDR3  
7 unique J



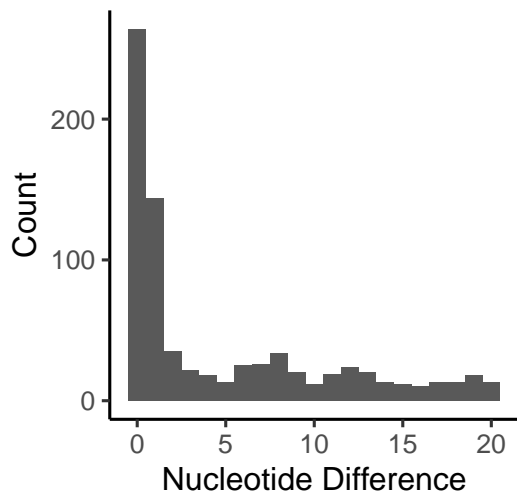
### IGHV3-66\*01

2377 sequences assigned  
290 (12.2%) exact matches, in which:  
201 unique CDR3  
6 unique J



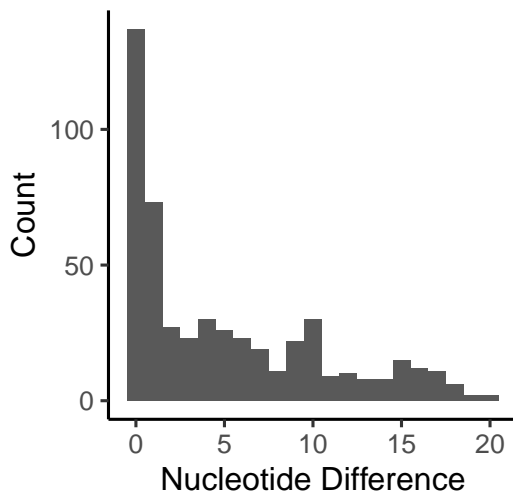
### IGHV3-49\*03\_05

909 sequences assigned  
264 (29%) exact matches, in which:  
165 unique CDR3  
7 unique J



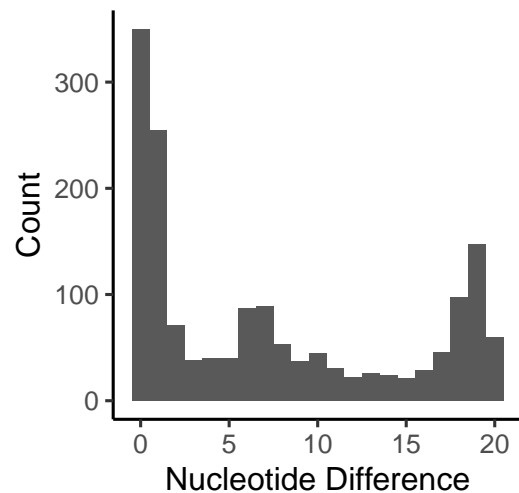
### IGHV3-64\*01

537 sequences assigned  
137 (25.5%) exact matches, in which:  
87 unique CDR3  
5 unique J



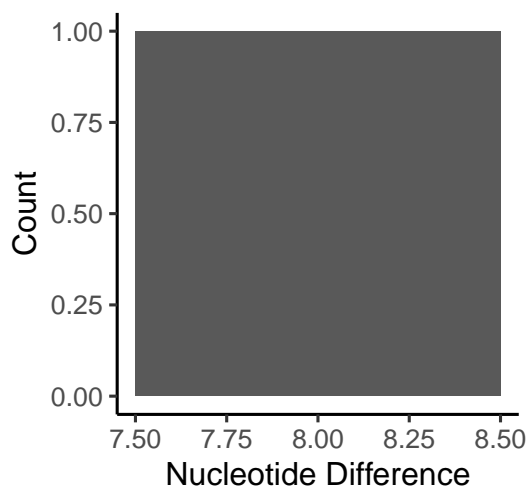
### IGHV3-66\*02

1902 sequences assigned  
350 (18.4%) exact matches, in which:  
228 unique CDR3  
7 unique J



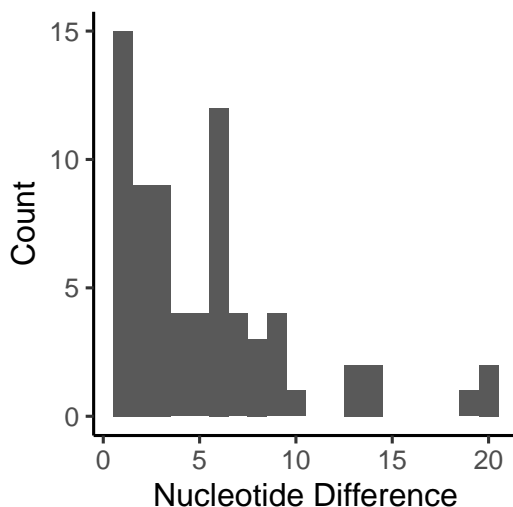
### IGHV3-52\*02

1 sequences assigned  
No exact matches.



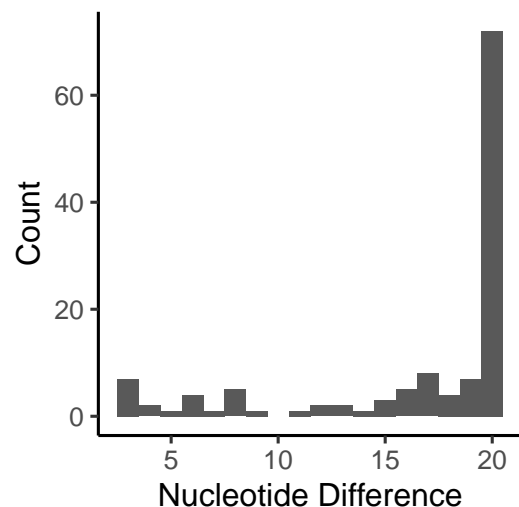
### IGHV3-64\*04

75 sequences assigned  
No exact matches.



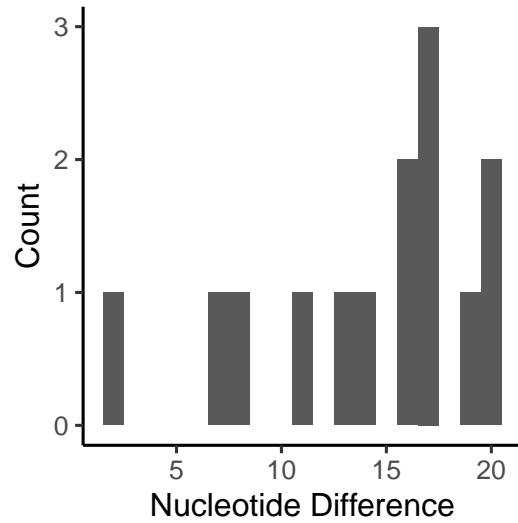
### IGHV3-69-1\*01

322 sequences assigned  
No exact matches.



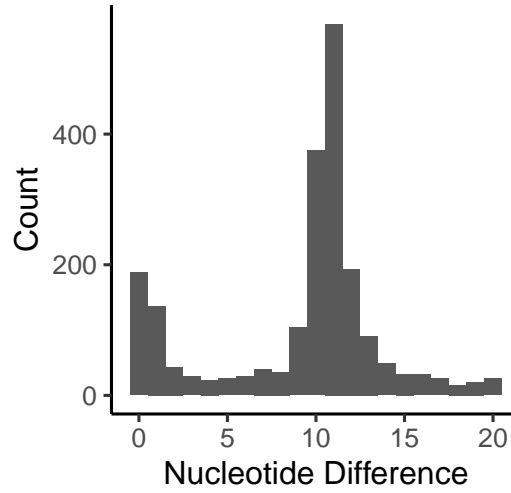
### IGHV3-69-1\*02

20 sequences assigned  
No exact matches.



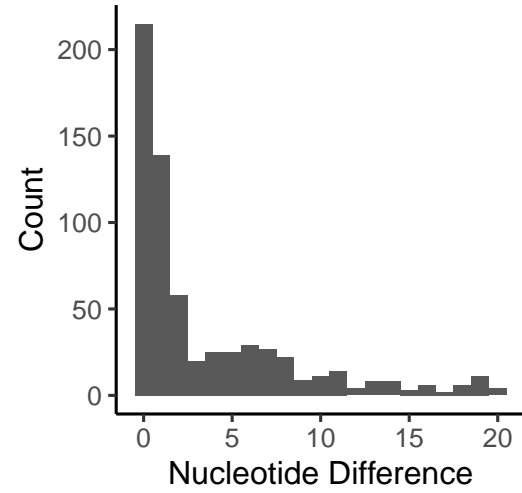
### IGHV3-73\*01\_02

2137 sequences assigned  
188 (8.8%) exact matches, in which:  
118 unique CDR3  
7 unique J



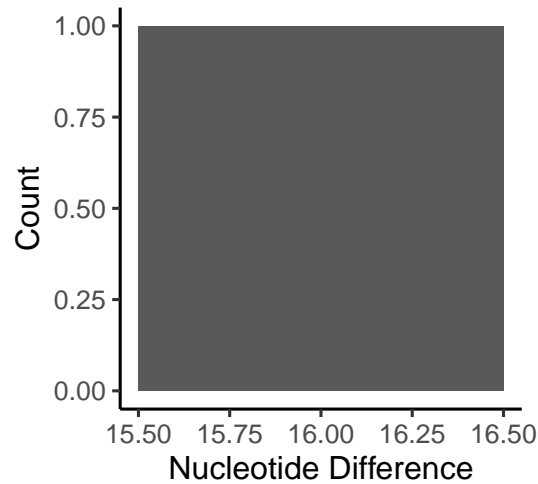
### IGHV3-64D\*06

850 sequences assigned  
215 (25.3%) exact matches, in which:  
127 unique CDR3  
7 unique J



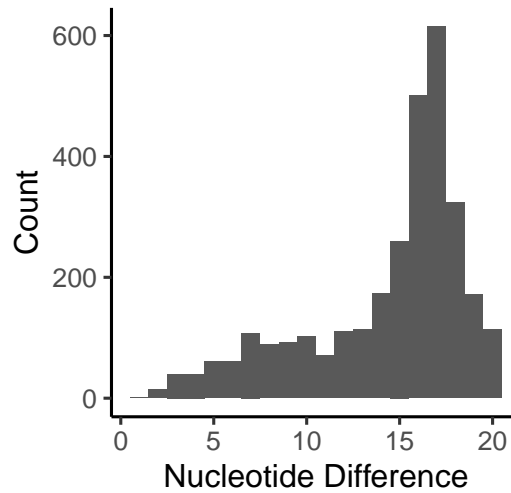
### IGHV3-71\*03

1 sequences assigned  
No exact matches.



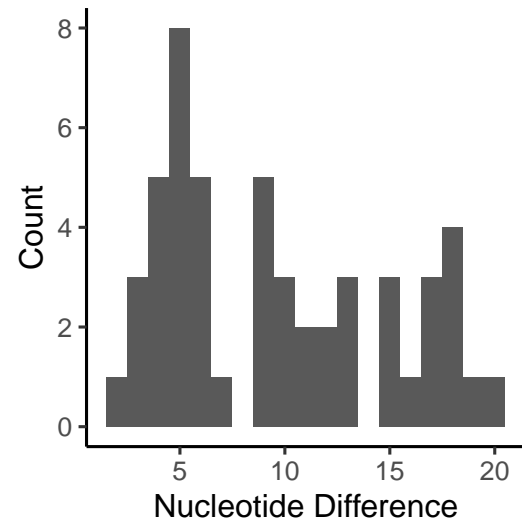
### IGHV3-74\*03

3791 sequences assigned  
No exact matches.



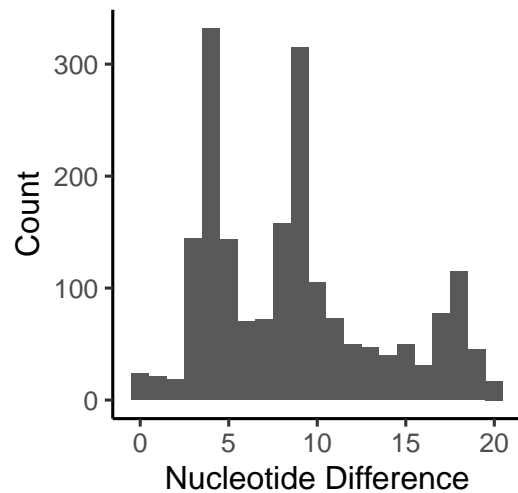
### IGHV3-NL1\*01

74 sequences assigned  
No exact matches.



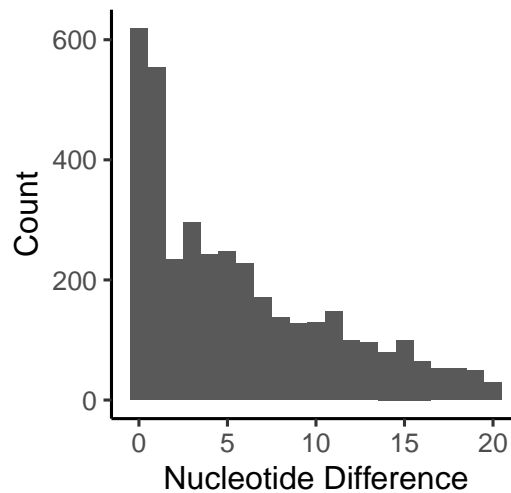
### IGHV3-72\*01

2006 sequences assigned  
24 (1.2%) exact matches, in which:  
16 unique CDR3  
6 unique J



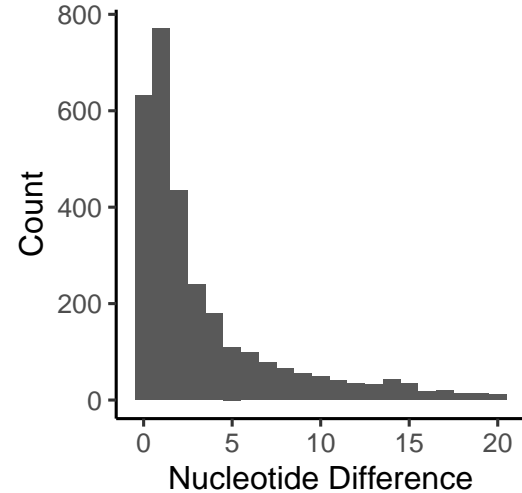
### IGHV3-74\*01\_02

4192 sequences assigned  
619 (14.8%) exact matches, in which:  
418 unique CDR3  
7 unique J



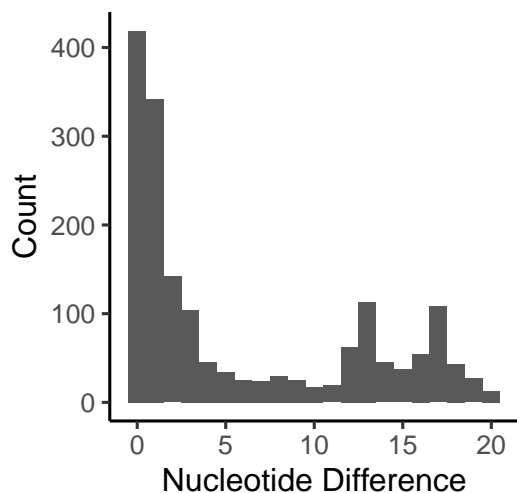
### IGHV4-4\*07

3331 sequences assigned  
631 (18.9%) exact matches, in which:  
547 unique CDR3  
7 unique J



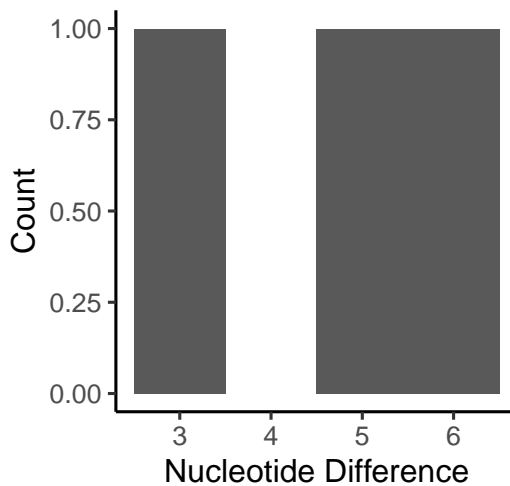
### IGHV4-4\*02\_03

2062 sequences assigned  
419 (20.3%) exact matches, in which:  
357 unique CDR3  
7 unique J



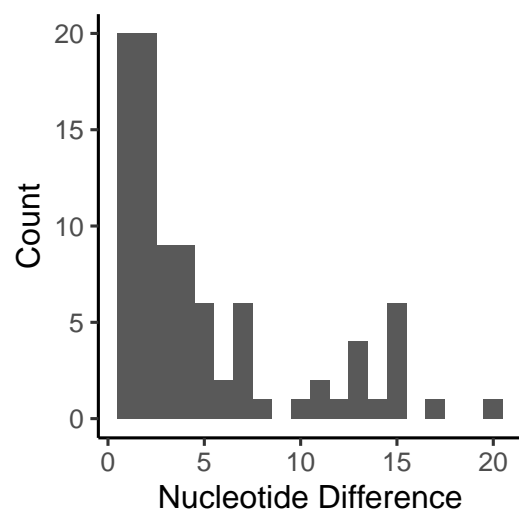
### IGHV4-28\*02\_05

3 sequences assigned  
No exact matches.



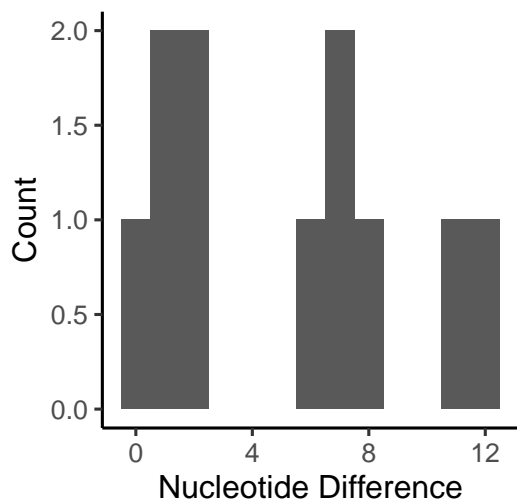
### IGHV4-30-2\*03

131 sequences assigned  
No exact matches.



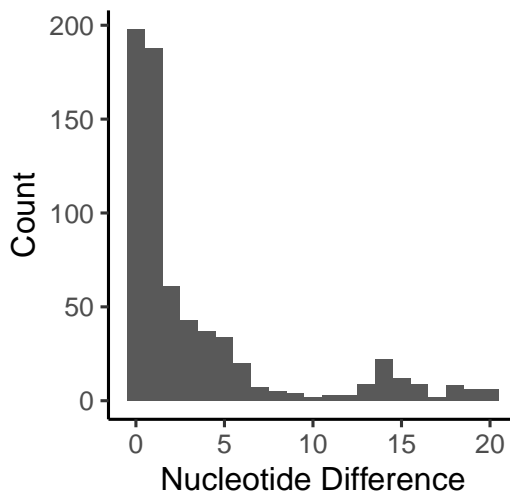
### IGHV4-28\*03

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



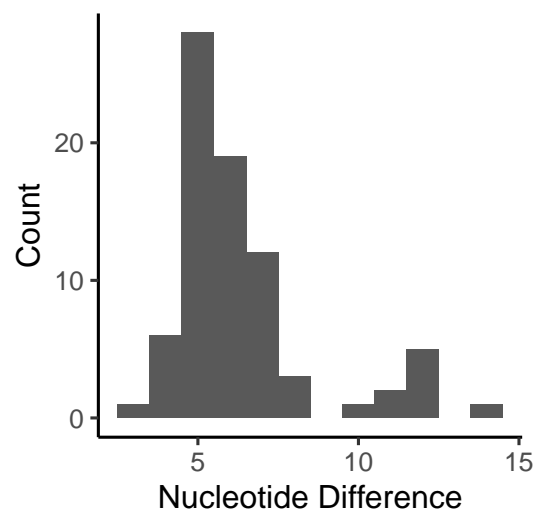
### IGHV4-30-2\*01

847 sequences assigned  
198 (23.4%) exact matches, in which:  
141 unique CDR3  
5 unique J



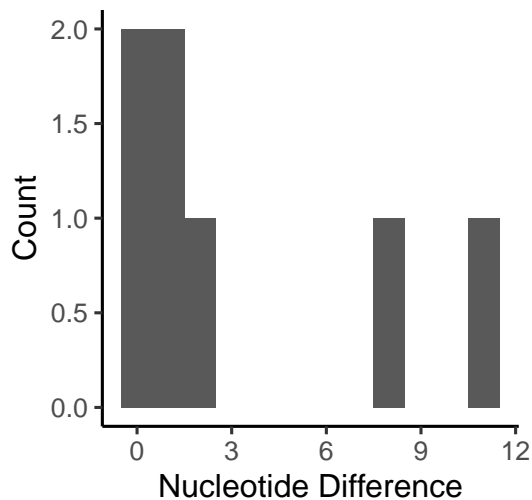
### IGHV4-30-4\*07

78 sequences assigned  
No exact matches.



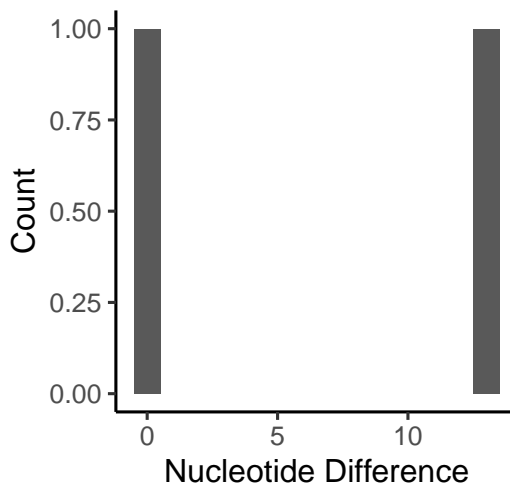
### IGHV4-28\*01\_07

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



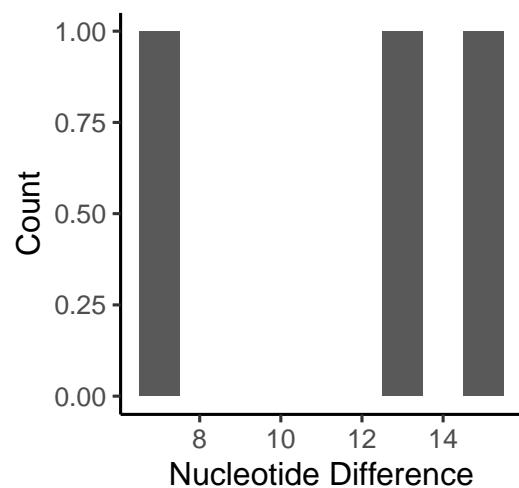
### IGHV4-30-4\*01

2 sequences assigned  
1 (50%) exact matches, in which:  
1 unique CDR3  
1 unique J



### IGHV4-30-4\*08

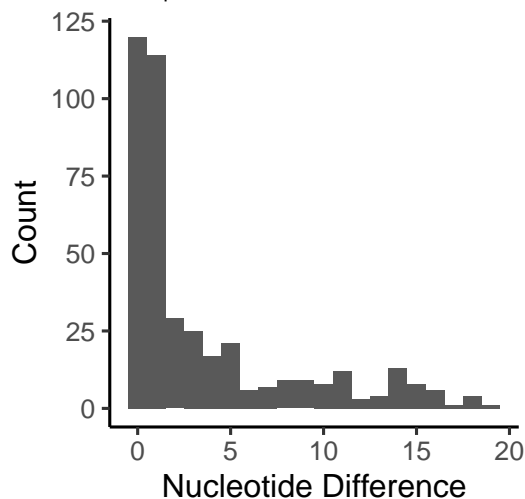
4 sequences assigned  
No exact matches.





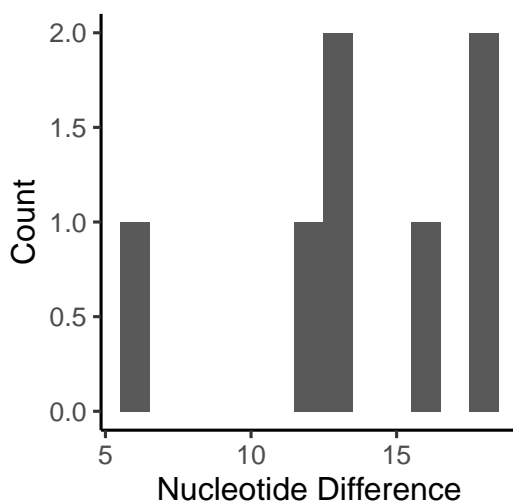
### IGHV4-31\*01

438 sequences assigned  
120 (27.4%) exact matches, in which:  
102 unique CDR3  
7 unique J



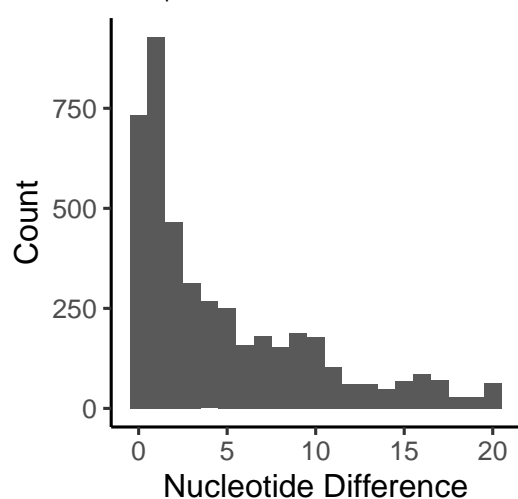
### IGHV4-38-2\*02

9 sequences assigned  
No exact matches.



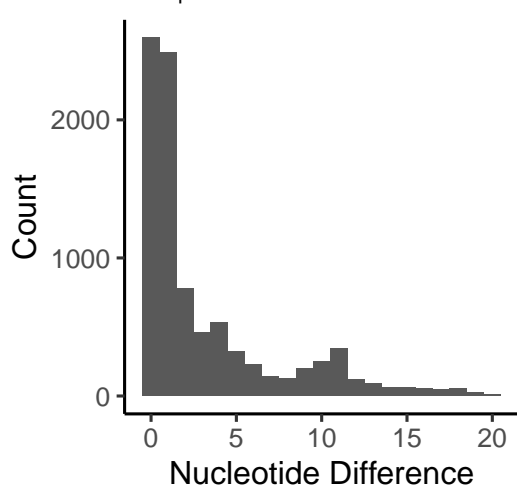
### IGHV4-59\*08

5489 sequences assigned  
733 (13.4%) exact matches, in which:  
621 unique CDR3  
7 unique J



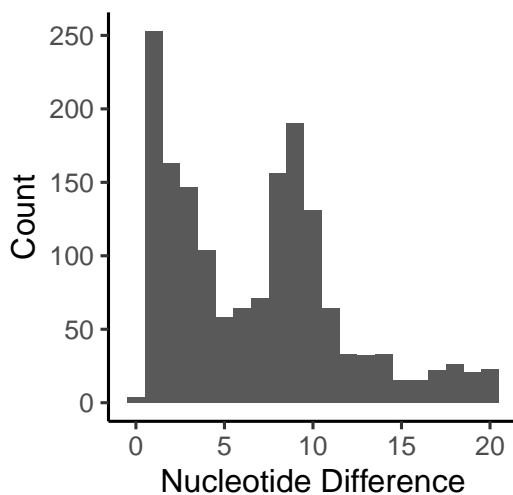
### IGHV4-34\*01\_02

9600 sequences assigned  
2595 (27%) exact matches, in which:  
1951 unique CDR3  
7 unique J



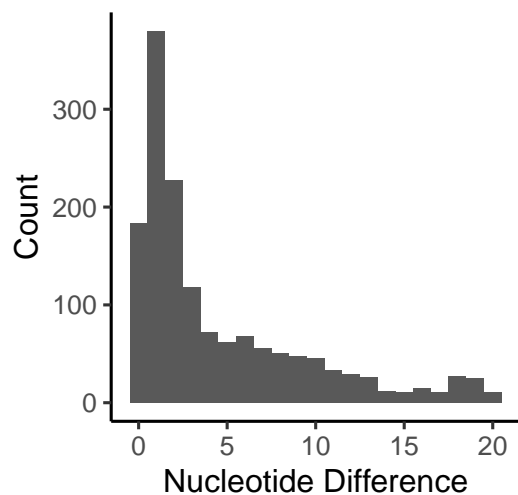
### IGHV4-39\*07

1782 sequences assigned  
4 (0.2%) exact matches, in which:  
4 unique CDR3  
2 unique J



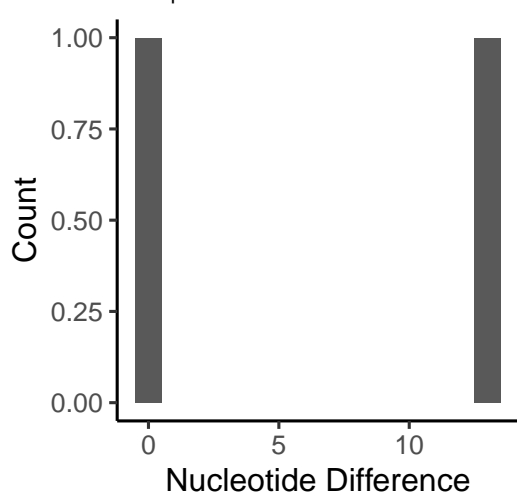
### IGHV4-59\*12

2303 sequences assigned  
184 (8%) exact matches, in which:  
177 unique CDR3  
7 unique J



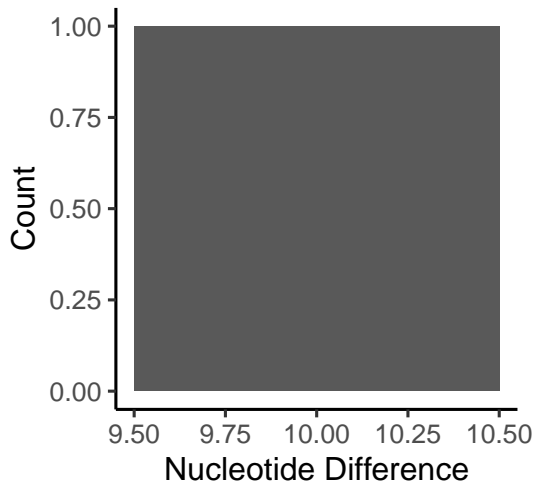
### IGHV4-38-2\*01

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



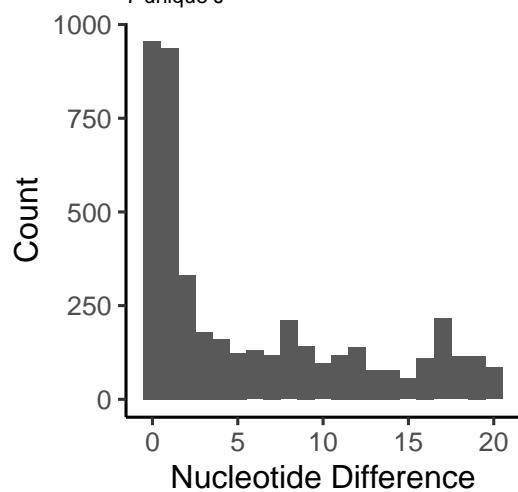
### IGHV4-55\*03

1 sequences assigned  
No exact matches.



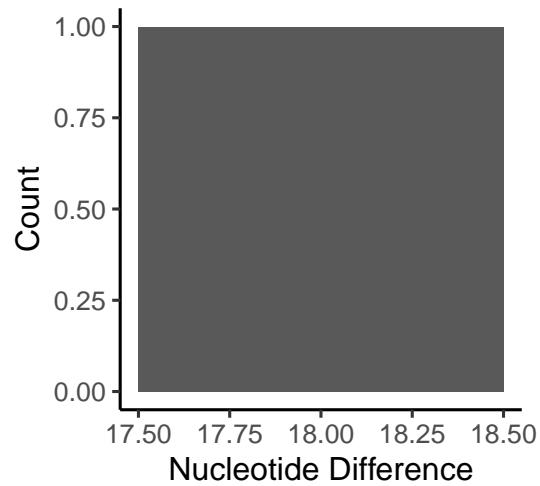
### IGHV4-61\*02

5307 sequences assigned  
956 (18%) exact matches, in which:  
832 unique CDR3  
7 unique J



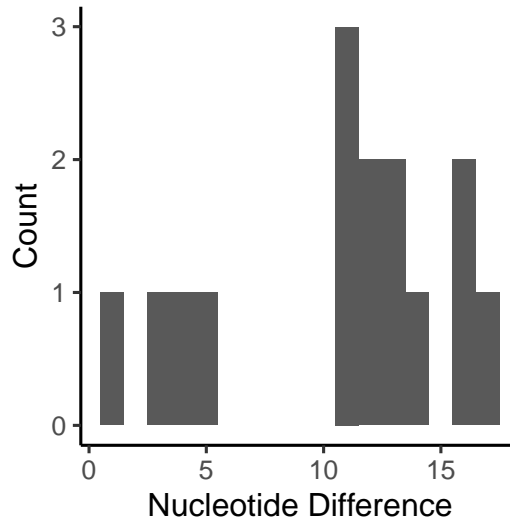
### IGHV1/OR15-2\*01

1 sequences assigned  
No exact matches.



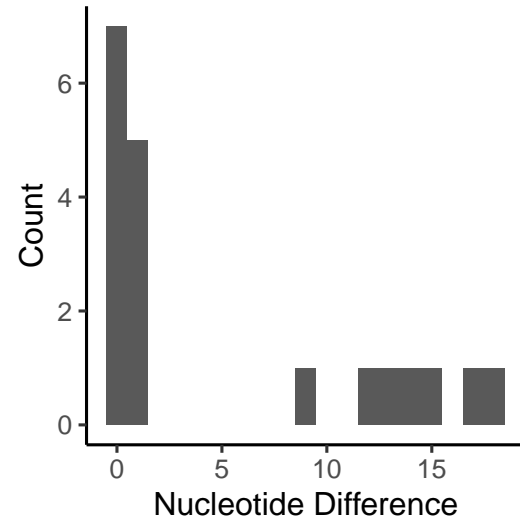
### IGHV4/OR15-8\*01

19 sequences assigned  
No exact matches.



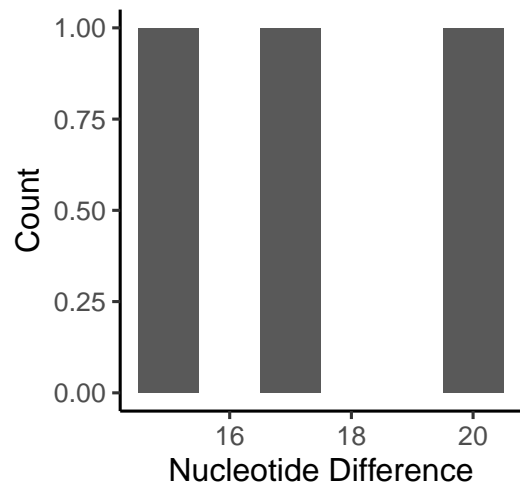
### IGHV5-51\*04

22 sequences assigned  
7 (31.8%) exact matches, in which:  
7 unique CDR3  
4 unique J



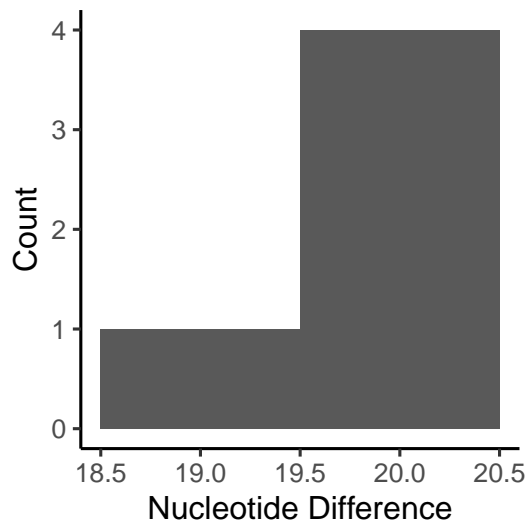
### IGHV1/OR15-2\*02\_03

3 sequences assigned  
No exact matches.



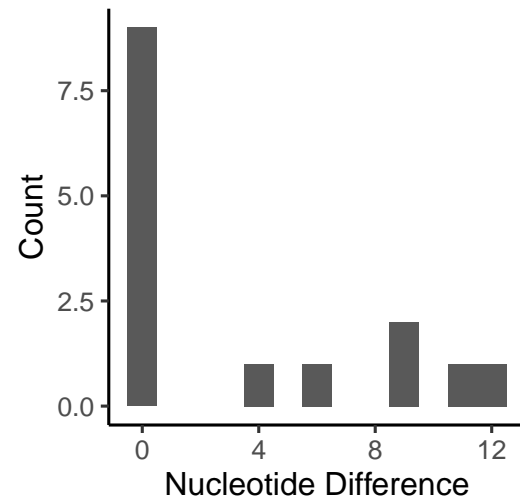
### IGHV4/OR15-8\*02

11 sequences assigned  
No exact matches.



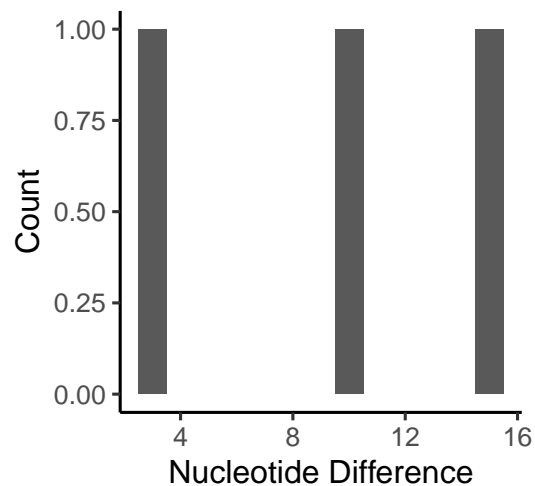
### IGHV5-51\*06

16 sequences assigned  
9 (56.2%) exact matches, in which:  
9 unique CDR3  
5 unique J



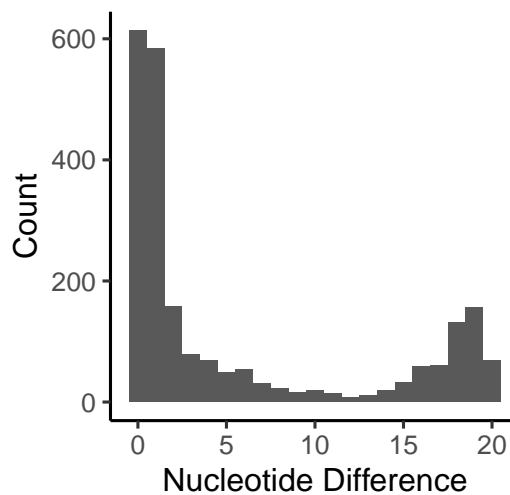
### IGHV1/OR15-3\*02

4 sequences assigned  
No exact matches.



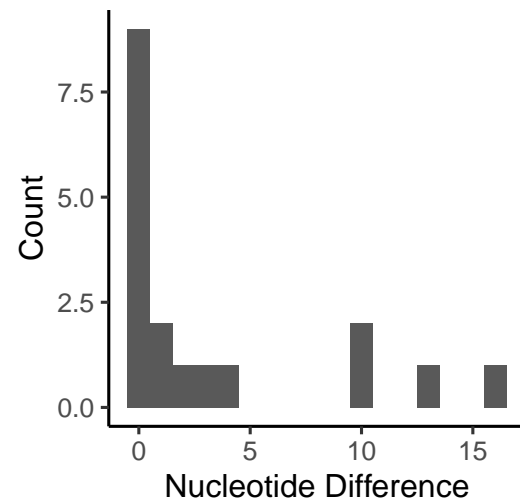
### IGHV5-10-1\*01\_03

2526 sequences assigned  
614 (24.3%) exact matches, in which:  
407 unique CDR3  
7 unique J



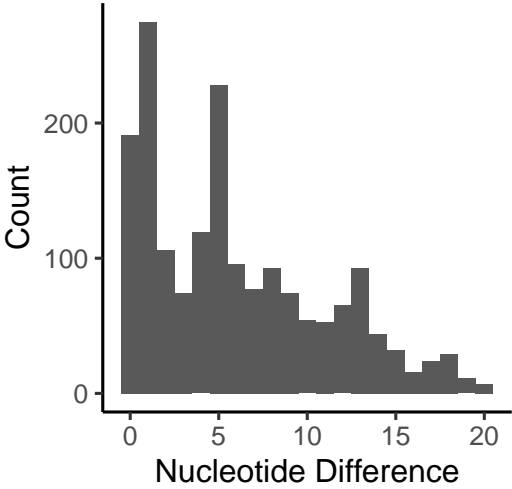
### IGHV5-51\*07

21 sequences assigned  
9 (42.9%) exact matches, in which:  
9 unique CDR3  
4 unique J



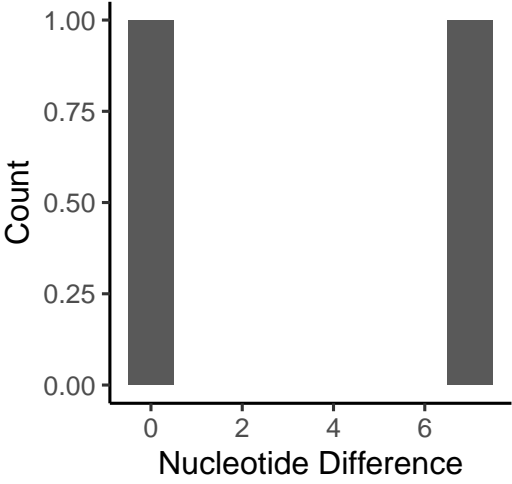
IGHV6-1\*01\_02

1769 sequences assigned  
191 (10.8%) exact matches, in which:  
154 unique CDR3  
7 unique J



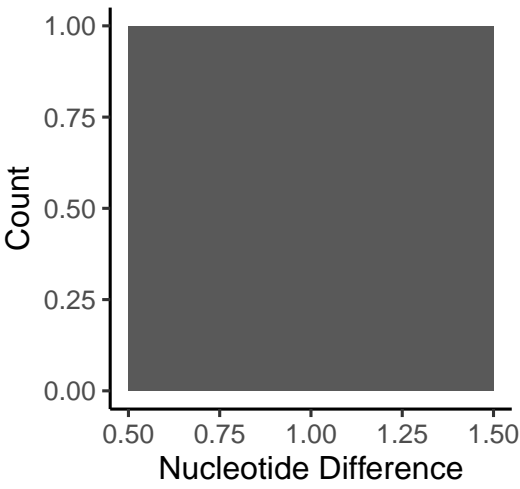
IGHV7-4-1\*02

2 sequences assigned  
1 (50%) exact matches, in which:  
1 unique CDR3  
1 unique J



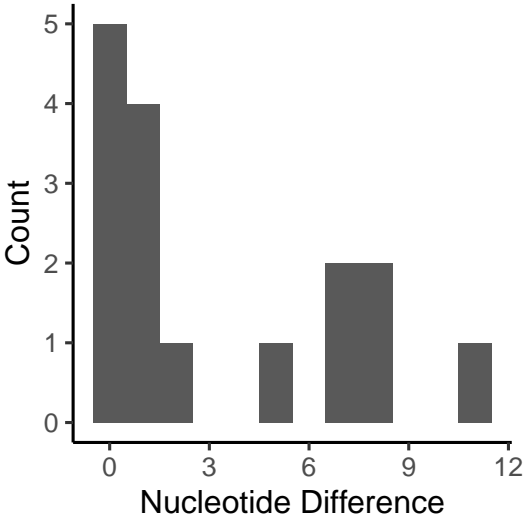
IGHV3/OR16-8\*01

1 sequences assigned  
No exact matches.

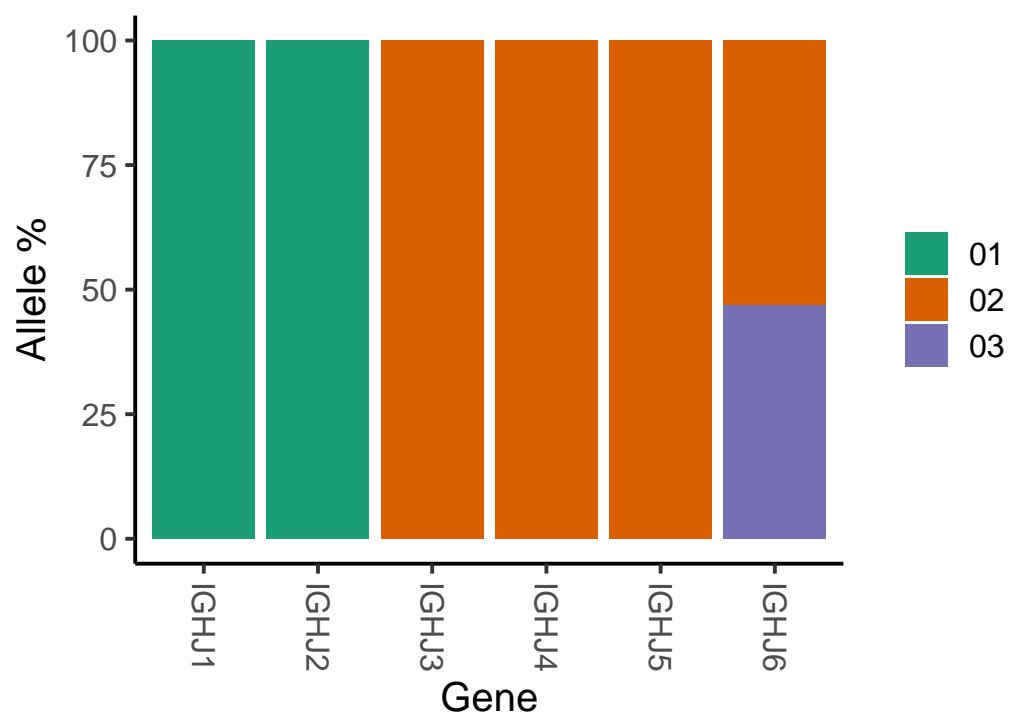


IGHV7-4-1\*01

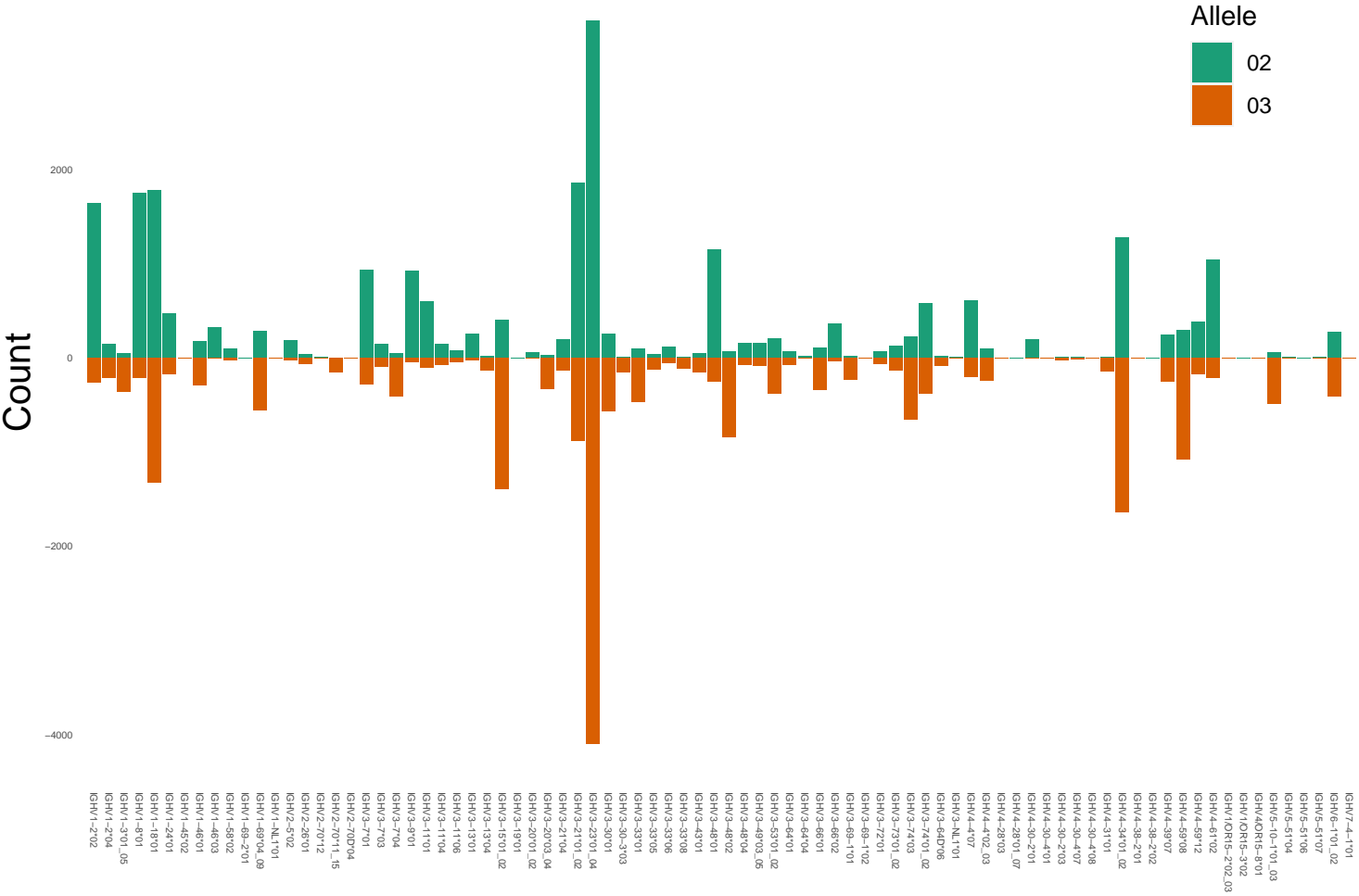
16 sequences assigned  
5 (31.2%) exact matches, in which:  
5 unique CDR3  
3 unique J



Allele Usage



Sequence Count by IGHJ6 allele usage



[illegible]