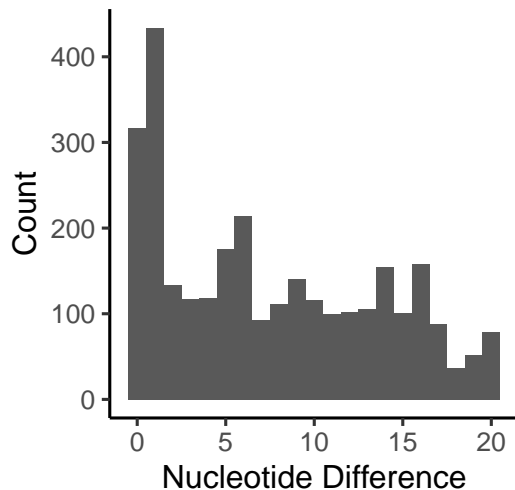


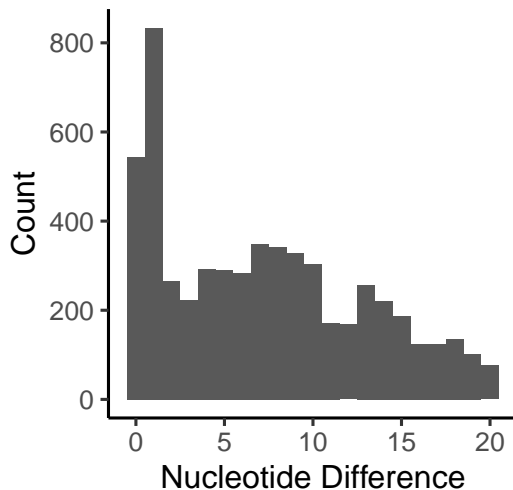
### IGHV1-2\*04

3184 sequences assigned  
317 (10%) exact matches, in which:  
238 unique CDR3  
6 unique J



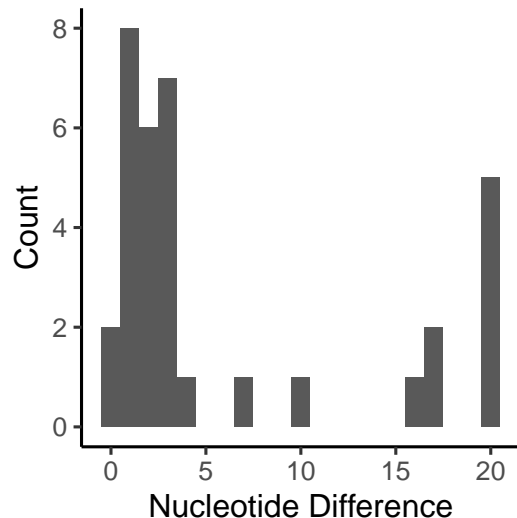
### IGHV1-18\*01

7524 sequences assigned  
544 (7.2%) exact matches, in which:  
414 unique CDR3  
7 unique J



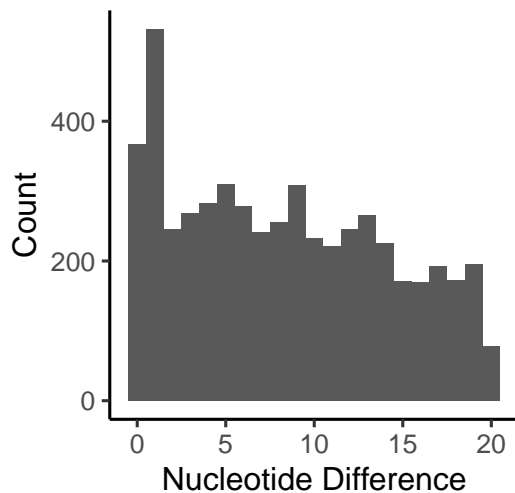
### IGHV1-45\*02

132 sequences assigned  
2 (1.5%) exact matches, in which:  
2 unique CDR3  
1 unique J



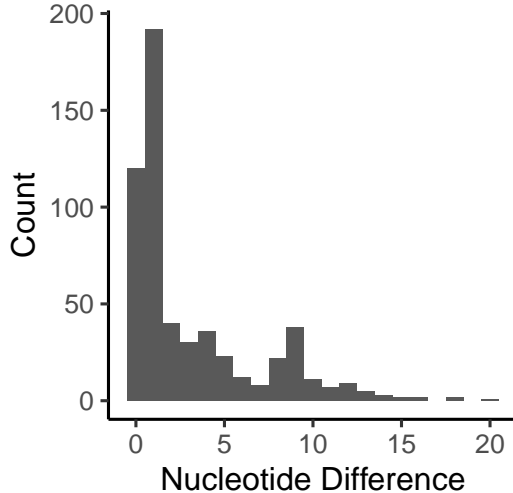
### IGHV1-3\*01\_05

5586 sequences assigned  
367 (6.6%) exact matches, in which:  
276 unique CDR3  
7 unique J



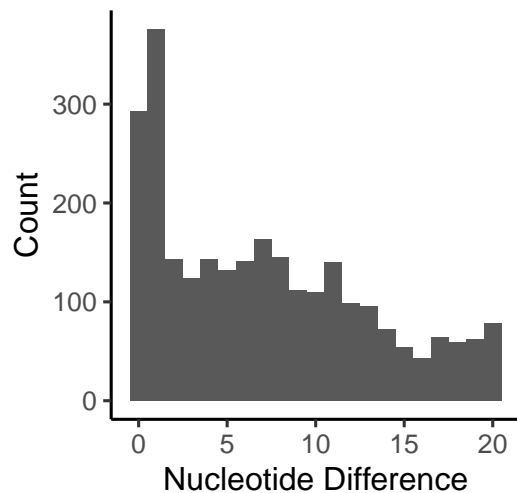
### IGHV1-24\*01

714 sequences assigned  
120 (16.8%) exact matches, in which:  
86 unique CDR3  
7 unique J



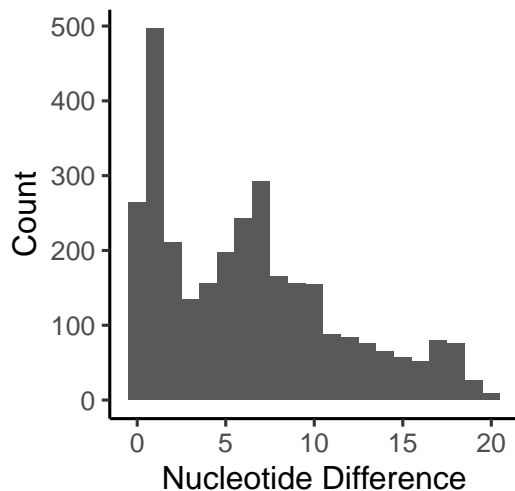
### IGHV1-46\*01

3529 sequences assigned  
293 (8.3%) exact matches, in which:  
240 unique CDR3  
7 unique J



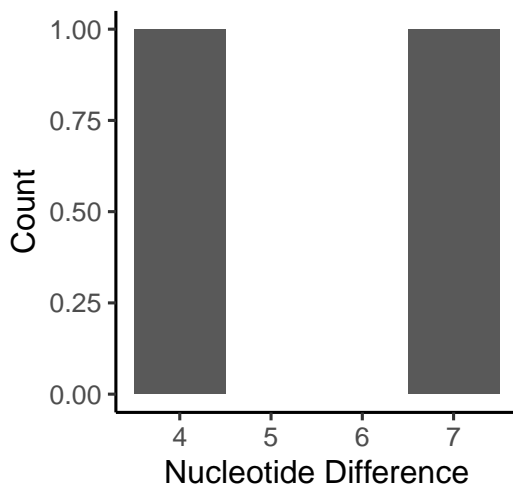
### IGHV1-8\*01

3785 sequences assigned  
264 (7%) exact matches, in which:  
218 unique CDR3  
7 unique J



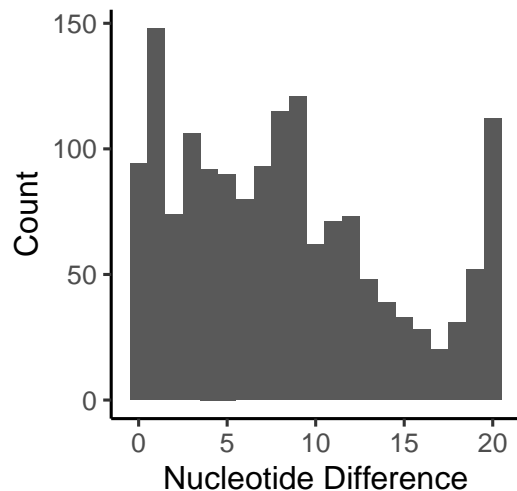
### IGHV1-45\*01

2 sequences assigned  
No exact matches.



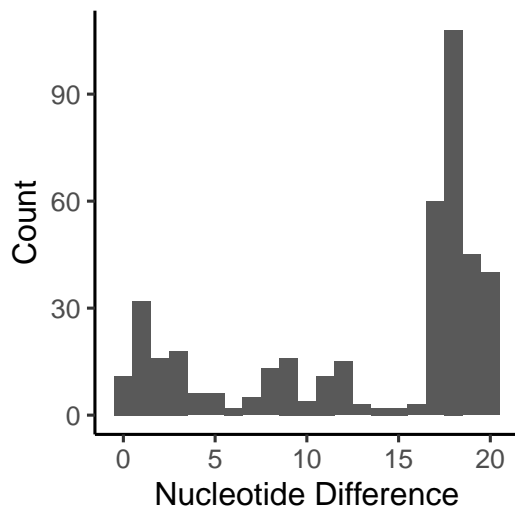
### IGHV1-46\*03

1710 sequences assigned  
94 (5.5%) exact matches, in which:  
67 unique CDR3  
6 unique J



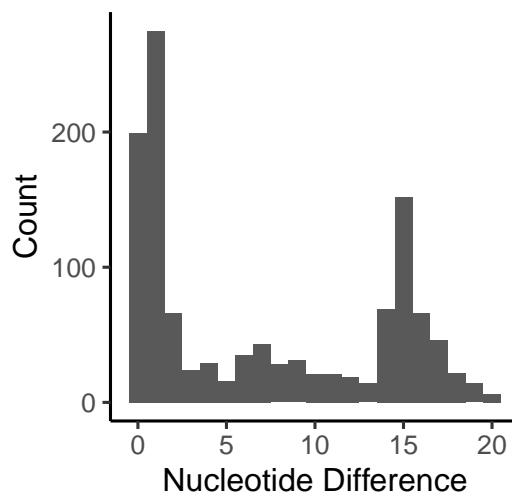
## IGHV1-58\*02

429 sequences assigned  
11 (2.6%) exact matches, in which:  
7 unique CDR3  
4 unique J



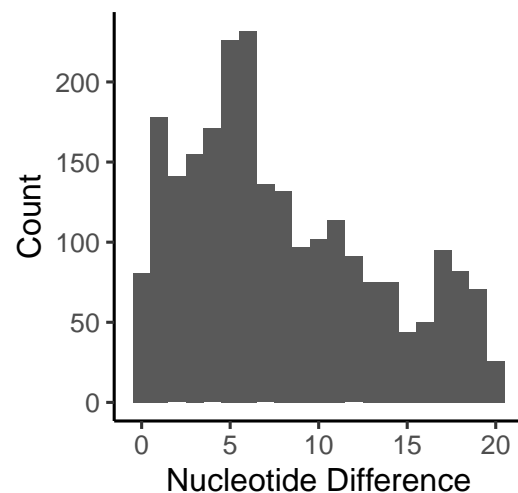
## IGHV1-69\*04\_09

1264 sequences assigned  
199 (15.7%) exact matches, in which:  
163 unique CDR3  
7 unique J



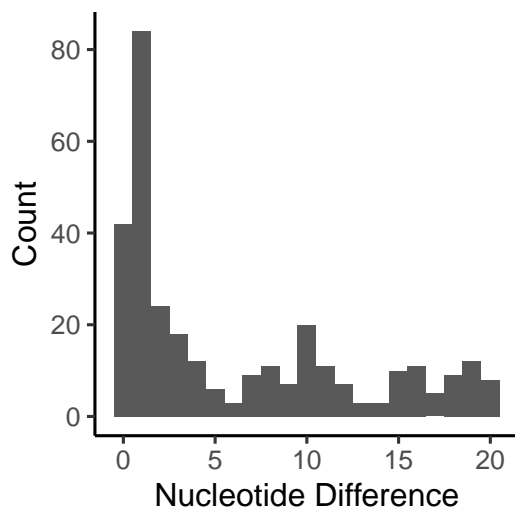
## IGHV2-5\*02

2687 sequences assigned  
81 (3%) exact matches, in which:  
61 unique CDR3  
5 unique J



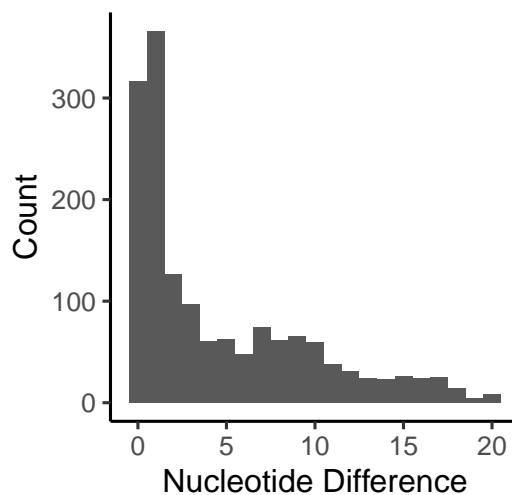
## IGHV1-58\*01\_03

351 sequences assigned  
42 (12%) exact matches, in which:  
30 unique CDR3  
5 unique J



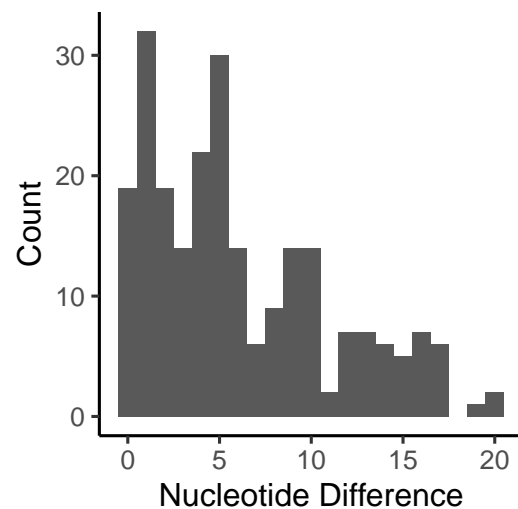
## IGHV1-69\*06\_14

1636 sequences assigned  
317 (19.4%) exact matches, in which:  
249 unique CDR3  
7 unique J



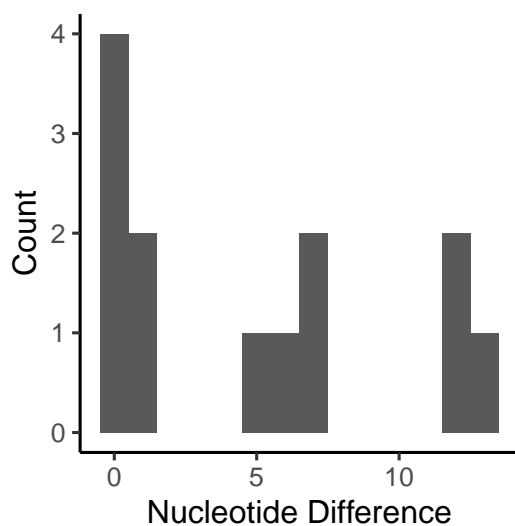
## IGHV2-26\*01

240 sequences assigned  
19 (7.9%) exact matches, in which:  
14 unique CDR3  
5 unique J



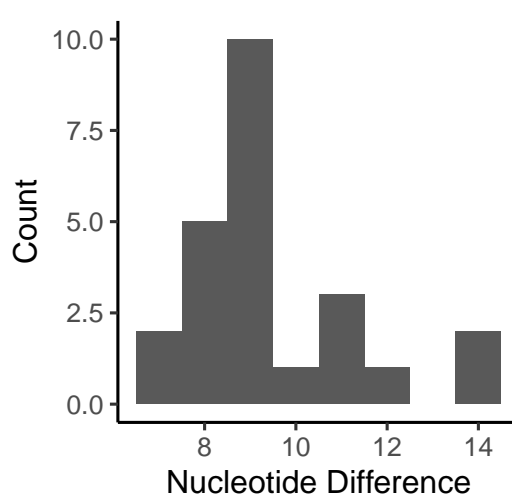
## IGHV1-69-2\*01

61 sequences assigned  
4 (6.6%) exact matches, in which:  
4 unique CDR3  
2 unique J



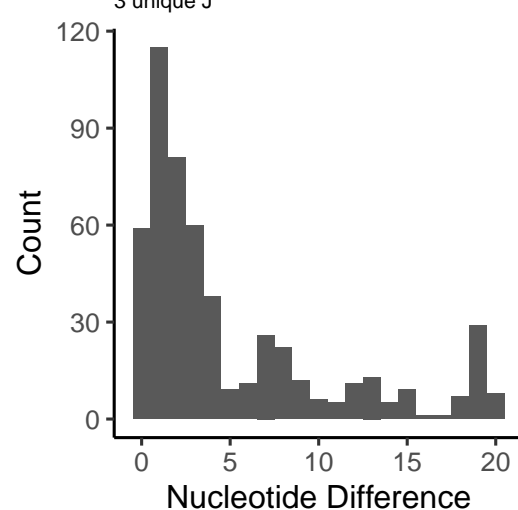
## IGHV1-NL1\*01

24 sequences assigned  
No exact matches.



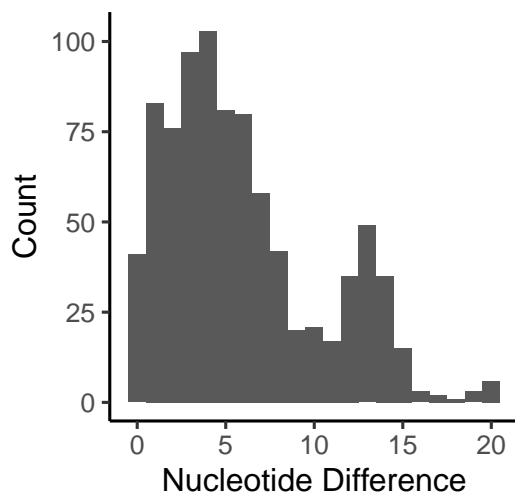
## IGHV2-70\*01

736 sequences assigned  
59 (8%) exact matches, in which:  
49 unique CDR3  
3 unique J



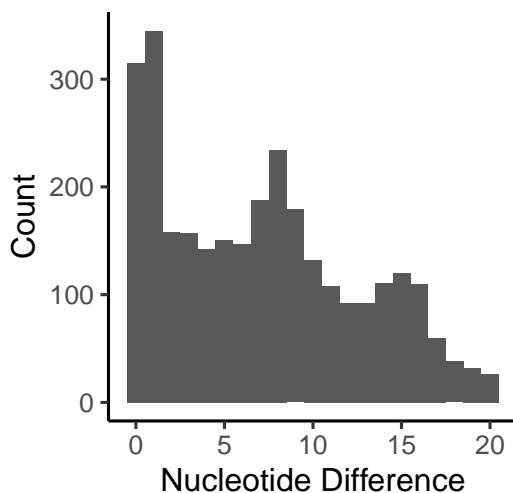
### IGHV2–70\*11\_15

1113 sequences assigned  
41 (3.7%) exact matches, in which:  
34 unique CDR3  
6 unique J



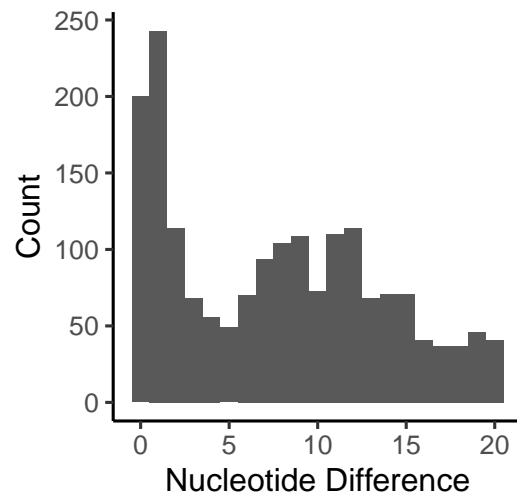
### IGHV3–9\*01

3791 sequences assigned  
315 (8.3%) exact matches, in which:  
176 unique CDR3  
7 unique J



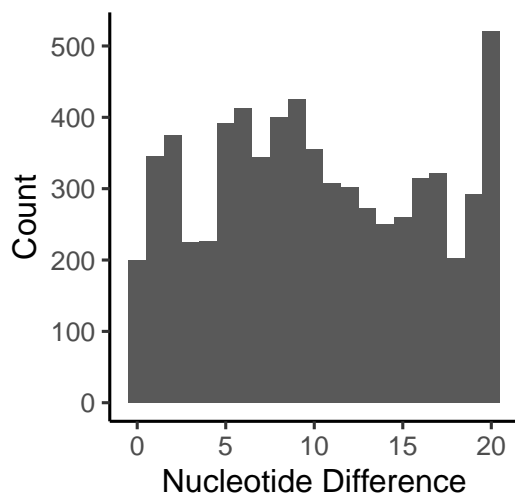
### IGHV3–11\*03\_05

2783 sequences assigned  
200 (7.2%) exact matches, in which:  
119 unique CDR3  
5 unique J



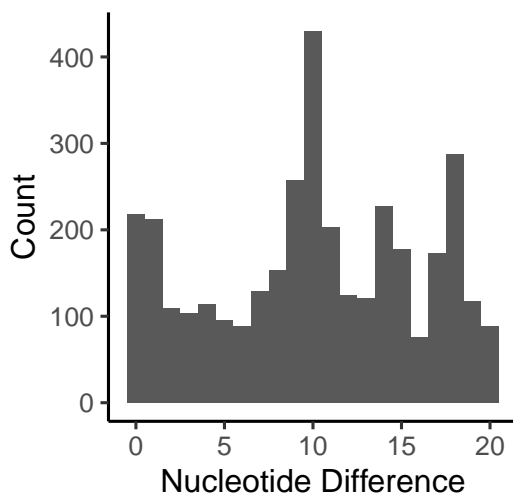
### IGHV3–7\*01

8057 sequences assigned  
200 (2.5%) exact matches, in which:  
122 unique CDR3  
7 unique J



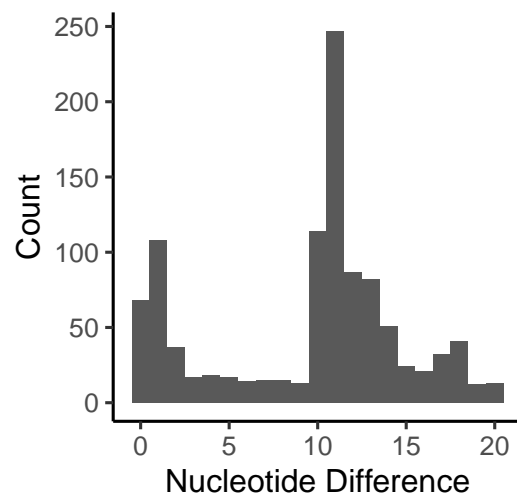
### IGHV3–11\*01

4279 sequences assigned  
218 (5.1%) exact matches, in which:  
132 unique CDR3  
6 unique J



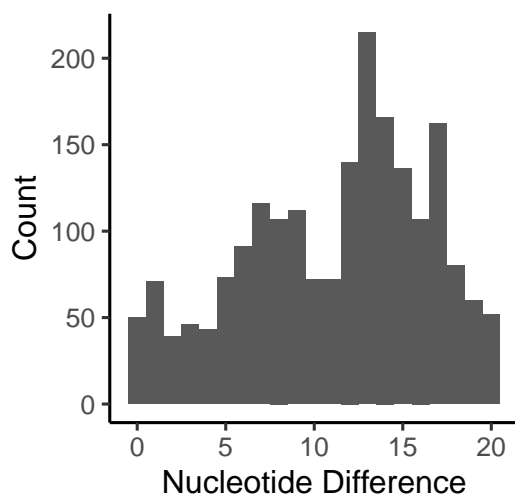
### IGHV3–13\*01

1186 sequences assigned  
68 (5.7%) exact matches, in which:  
41 unique CDR3  
4 unique J



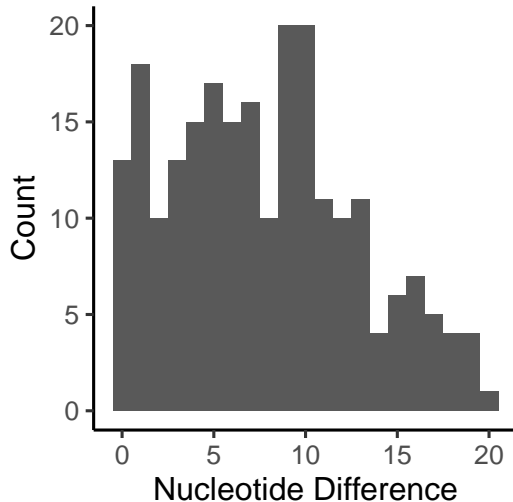
### IGHV3–7\*04

2764 sequences assigned  
50 (1.8%) exact matches, in which:  
28 unique CDR3  
4 unique J



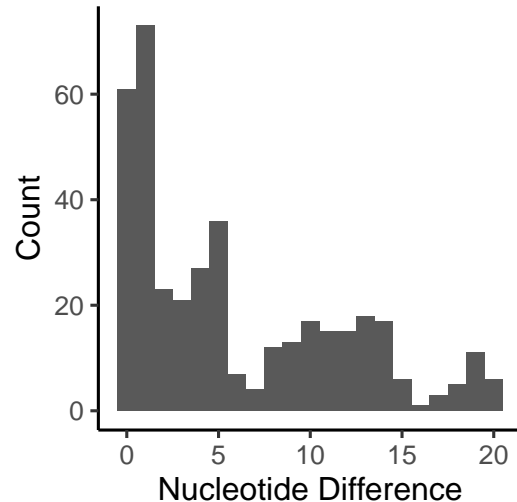
### IGHV3–11\*06

255 sequences assigned  
13 (5.1%) exact matches, in which:  
13 unique CDR3  
5 unique J



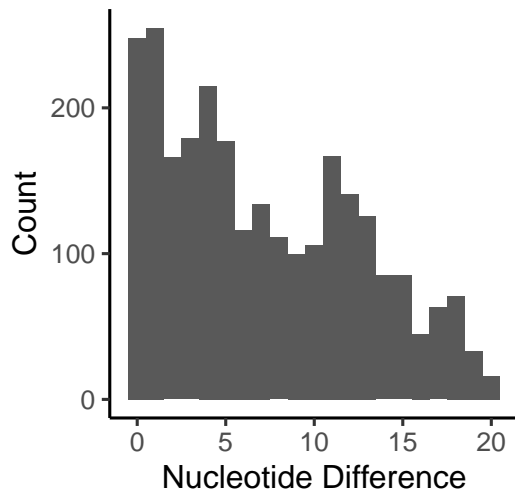
### IGHV3–13\*04

400 sequences assigned  
61 (15.2%) exact matches, in which:  
38 unique CDR3  
4 unique J



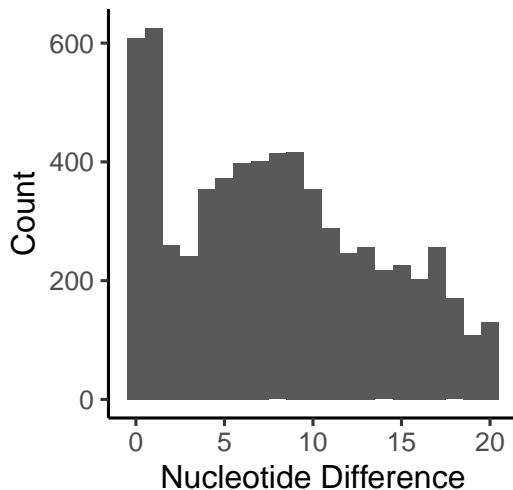
### IGHV3-15\*07

3824 sequences assigned  
248 (6.5%) exact matches, in which:  
151 unique CDR3  
7 unique J



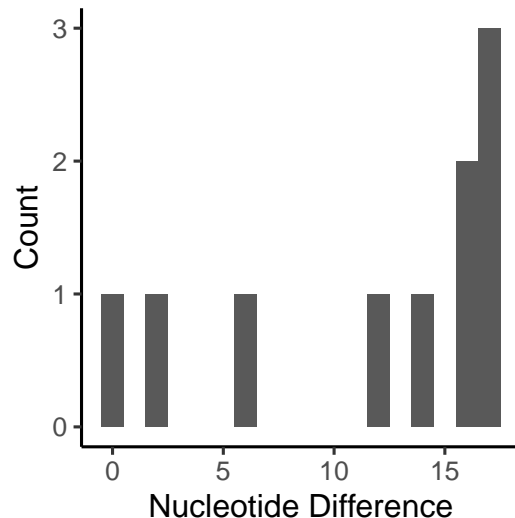
### IGHV3-21\*01\_02

7942 sequences assigned  
608 (7.7%) exact matches, in which:  
366 unique CDR3  
7 unique J



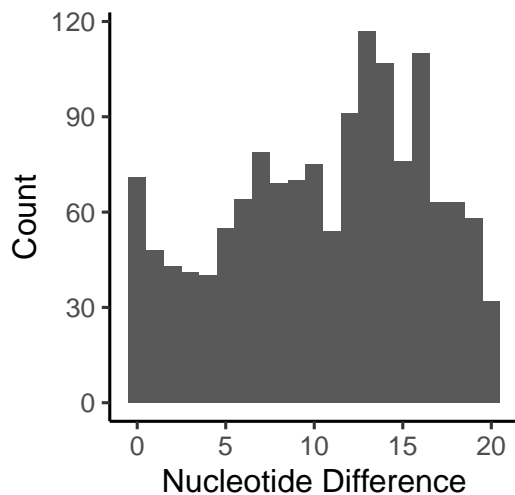
### IGHV3-30-3\*01

16 sequences assigned  
1 (6.2%) exact matches, in which:  
1 unique CDR3  
1 unique J



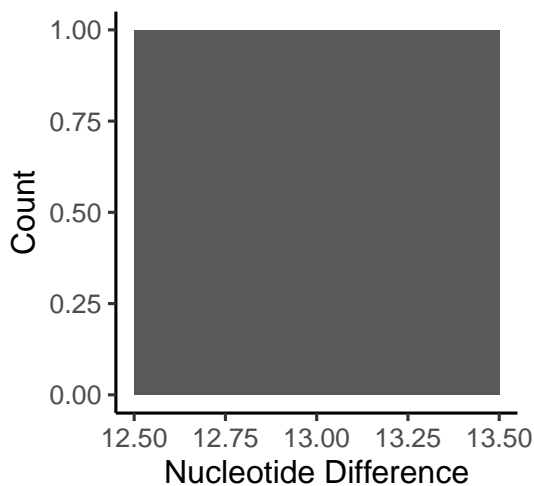
### IGHV3-15\*01\_02

1656 sequences assigned  
71 (4.3%) exact matches, in which:  
45 unique CDR3  
6 unique J



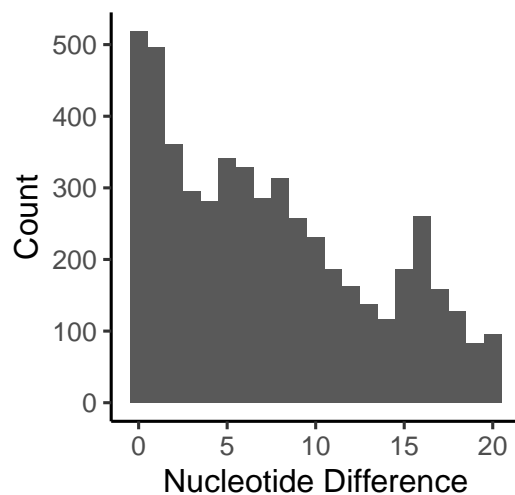
### IGHV3-22\*01\_02

1 sequences assigned  
No exact matches.



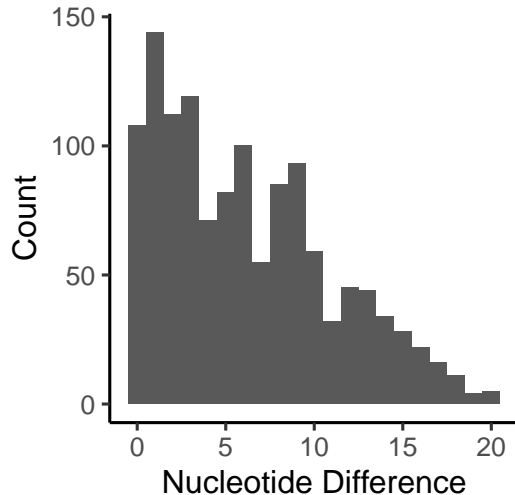
### IGHV3-33\*01

6598 sequences assigned  
519 (7.9%) exact matches, in which:  
311 unique CDR3  
6 unique J



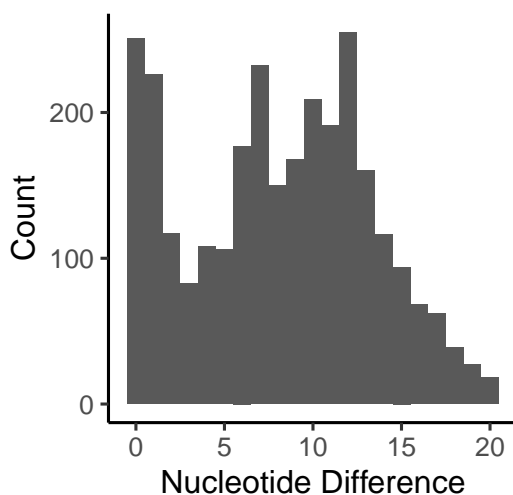
### IGHV3-20\*03\_04

1462 sequences assigned  
108 (7.4%) exact matches, in which:  
65 unique CDR3  
5 unique J



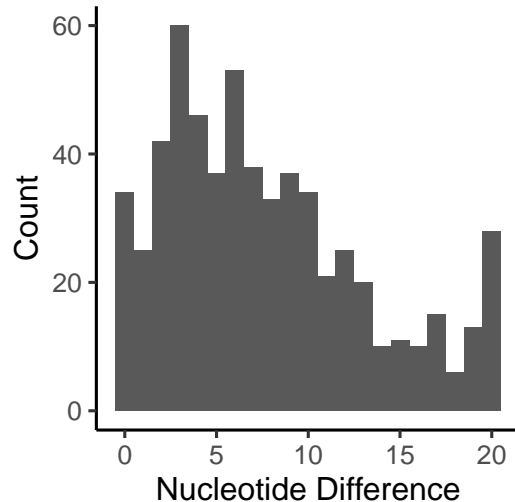
### IGHV3-30\*01

3917 sequences assigned  
251 (6.4%) exact matches, in which:  
151 unique CDR3  
6 unique J



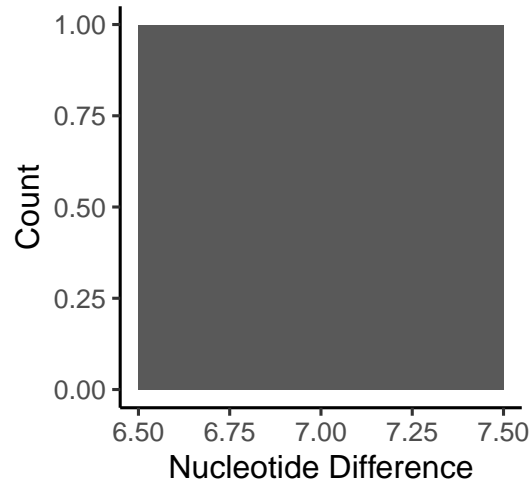
### IGHV3-33\*06

701 sequences assigned  
34 (4.9%) exact matches, in which:  
29 unique CDR3  
5 unique J



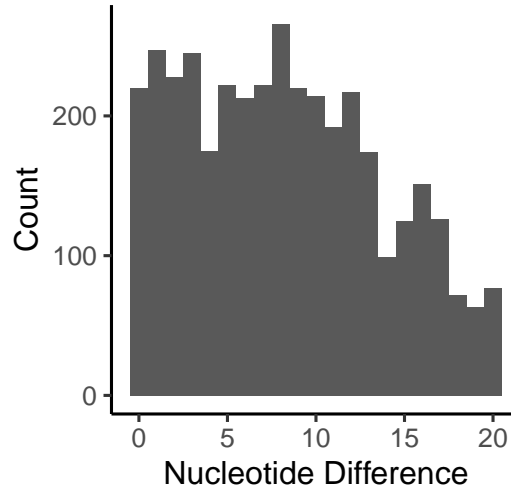
### IGHV3-35\*01

1 sequences assigned  
No exact matches.



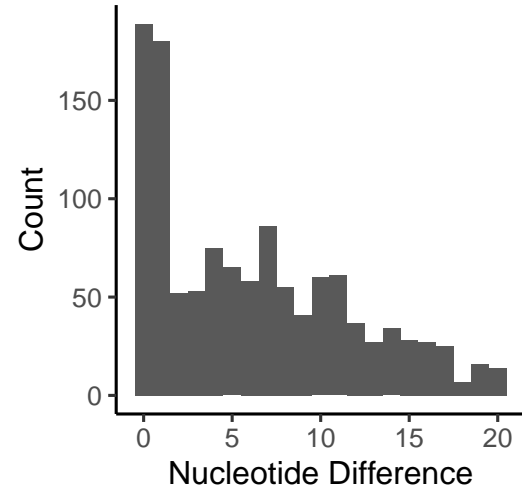
### IGHV3-48\*01

4109 sequences assigned  
220 (5.4%) exact matches, in which:  
141 unique CDR3  
7 unique J



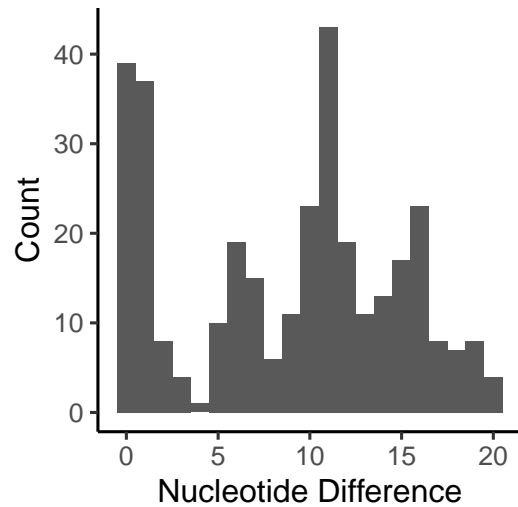
### IGHV3-49\*03\_05

1332 sequences assigned  
189 (14.2%) exact matches, in which:  
98 unique CDR3  
6 unique J



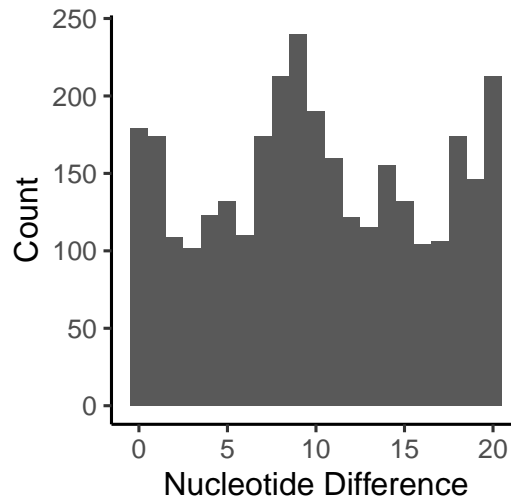
### IGHV3-43\*01

387 sequences assigned  
39 (10.1%) exact matches, in which:  
23 unique CDR3  
5 unique J



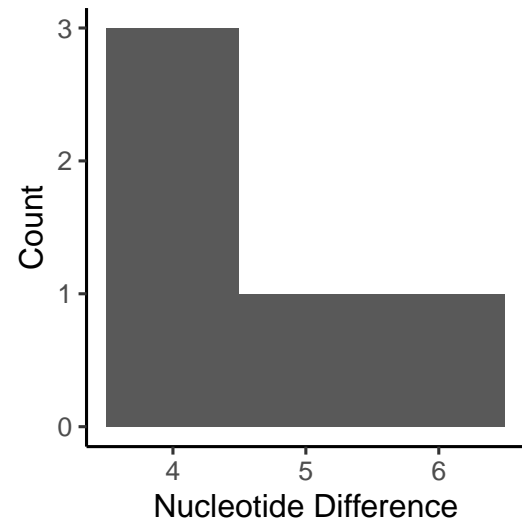
### IGHV3-48\*02

4267 sequences assigned  
179 (4.2%) exact matches, in which:  
102 unique CDR3  
6 unique J



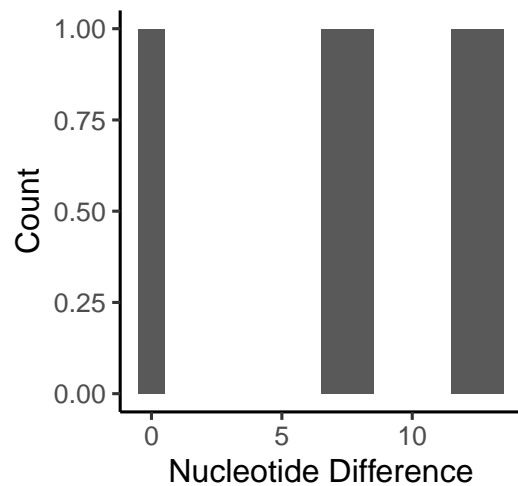
### IGHV3-52\*02

5 sequences assigned  
No exact matches.



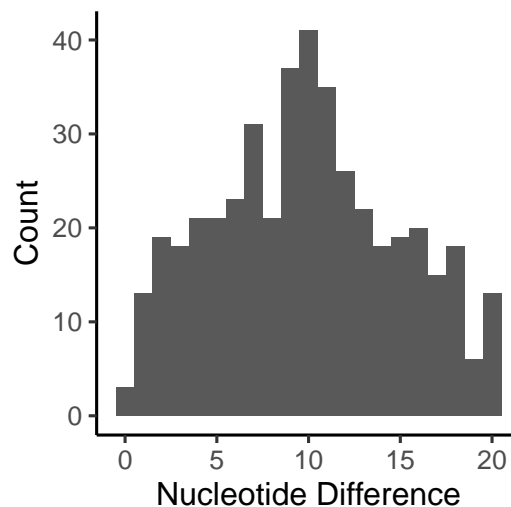
### IGHV3-47\*02

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



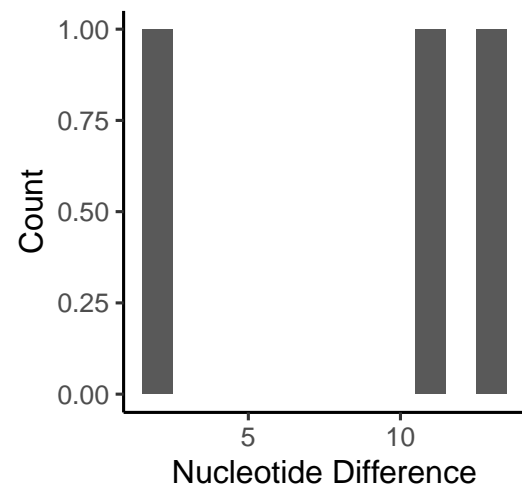
### IGHV3-48\*04

702 sequences assigned  
3 (0.4%) exact matches, in which:  
3 unique CDR3  
1 unique J



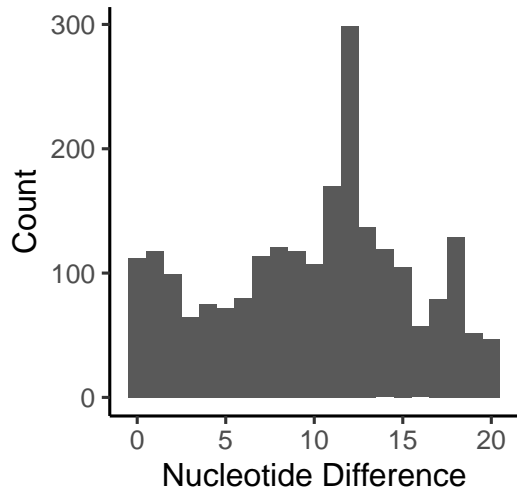
### IGHV3-52\*01\_03

3 sequences assigned  
No exact matches.



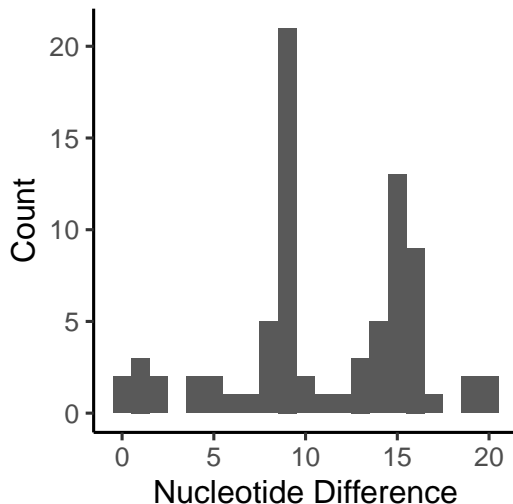
### IGHV3-53\*01\_02

2581 sequences assigned  
112 (4.3%) exact matches, in which:  
68 unique CDR3  
7 unique J



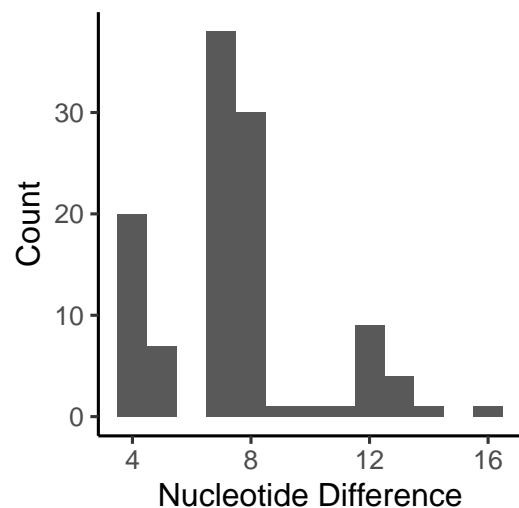
### IGHV3-64\*02\_07

86 sequences assigned  
2 (2.3%) exact matches, in which:  
1 unique CDR3  
1 unique J



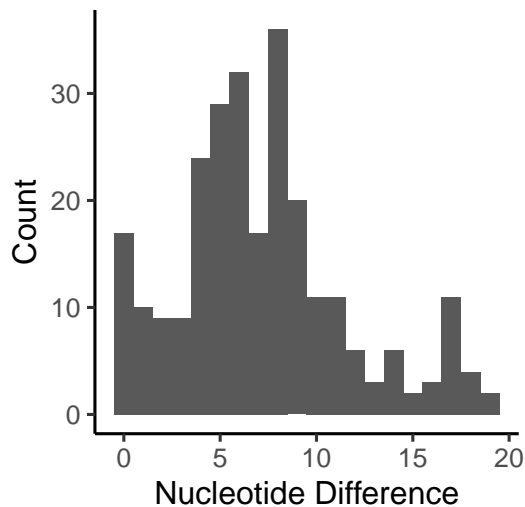
### IGHV3-69-1\*02

189 sequences assigned  
No exact matches.



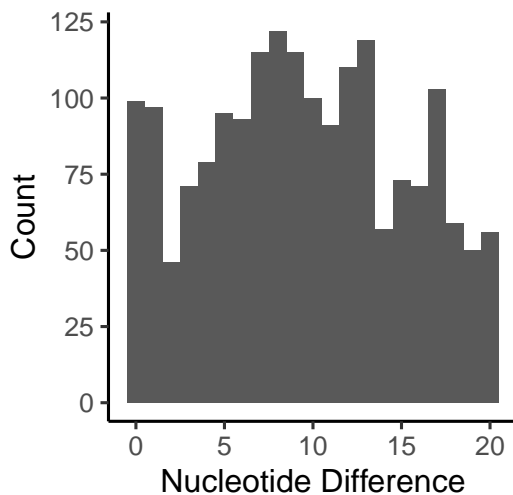
### IGHV3-64\*01

299 sequences assigned  
17 (5.7%) exact matches, in which:  
10 unique CDR3  
3 unique J



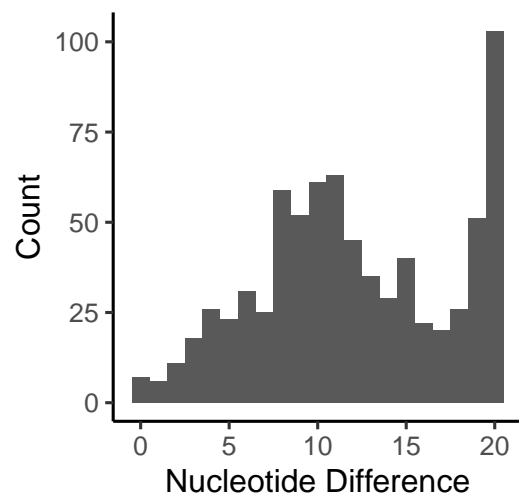
### IGHV3-66\*01

3081 sequences assigned  
99 (3.2%) exact matches, in which:  
62 unique CDR3  
6 unique J



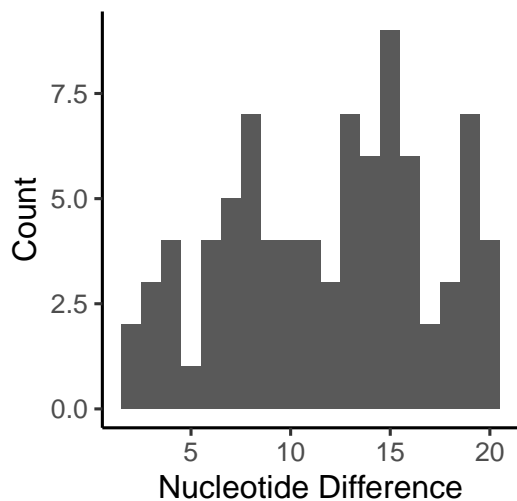
### IGHV3-72\*01

1298 sequences assigned  
7 (0.5%) exact matches, in which:  
3 unique CDR3  
2 unique J



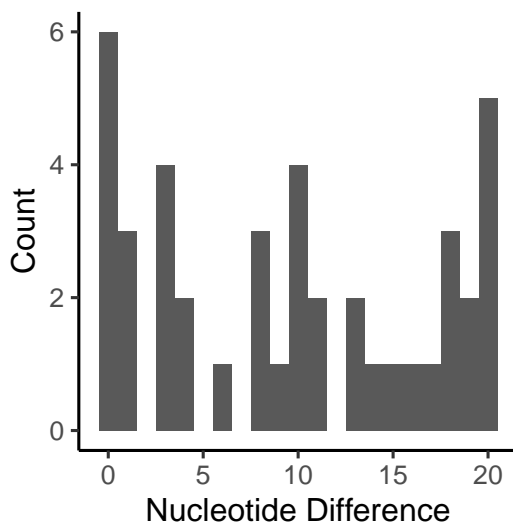
### IGHV3-64\*04

112 sequences assigned  
No exact matches.



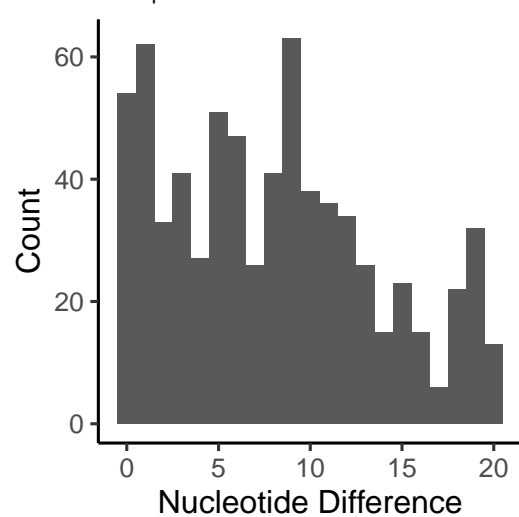
### IGHV3-69-1\*01

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



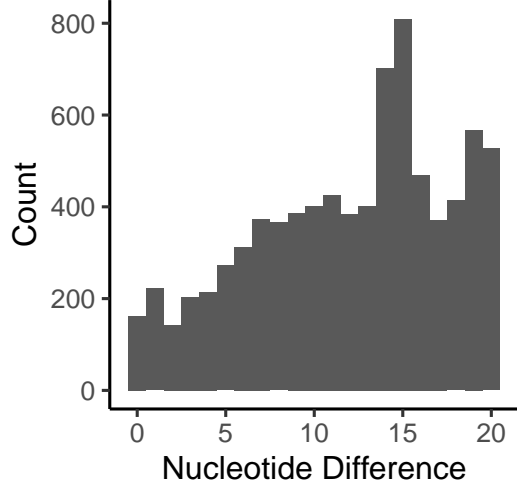
### IGHV3-73\*01\_02

1254 sequences assigned  
54 (4.3%) exact matches, in which:  
29 unique CDR3  
4 unique J



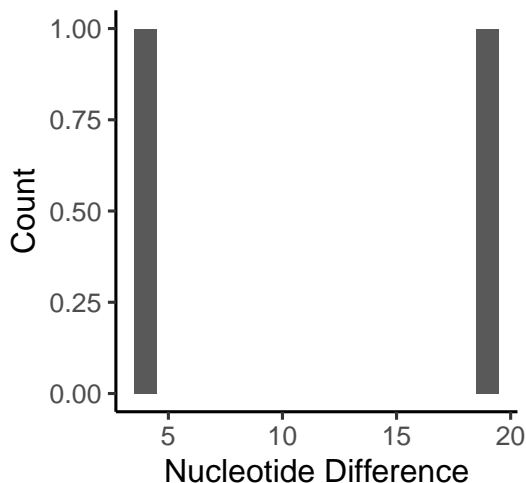
### IGHV3-74\*01\_02

10576 sequences assigned  
162 (1.5%) exact matches, in which:  
96 unique CDR3  
6 unique J



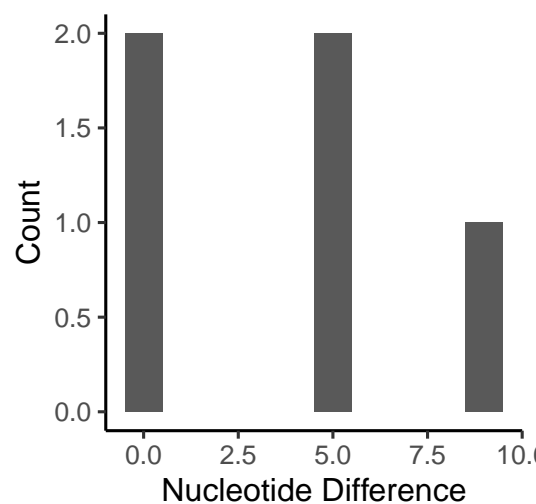
### IGHV4-28\*03

2 sequences assigned  
No exact matches.



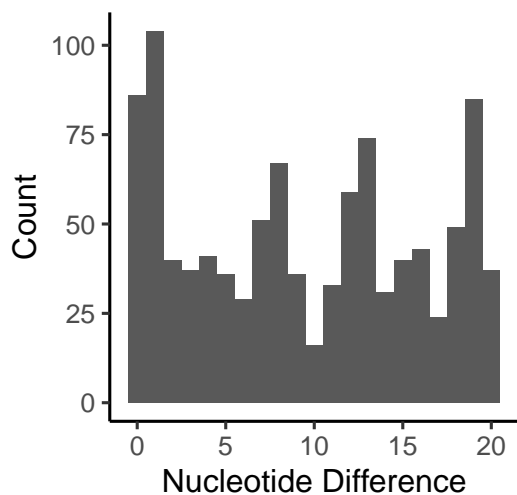
### IGHV4-30-4\*01

8 sequences assigned  
2 (25%) exact matches, in which:  
2 unique CDR3  
2 unique J



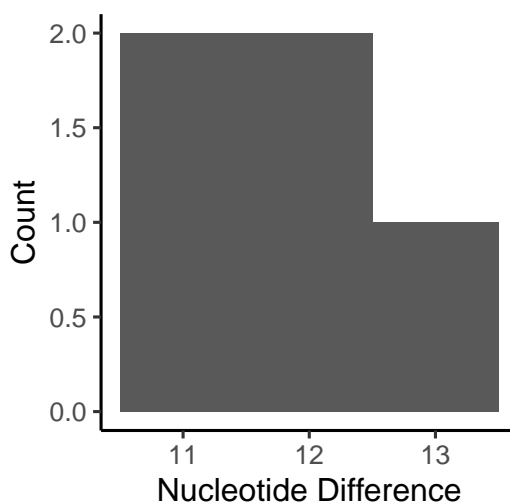
### IGHV3-64D\*06

1899 sequences assigned  
86 (4.5%) exact matches, in which:  
52 unique CDR3  
5 unique J



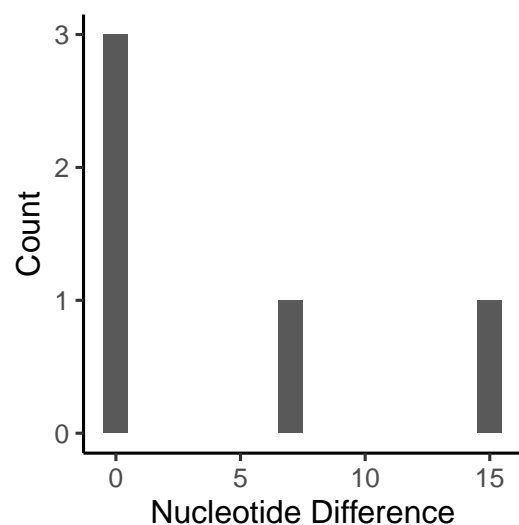
### IGHV4-28\*01\_07

5 sequences assigned  
No exact matches.



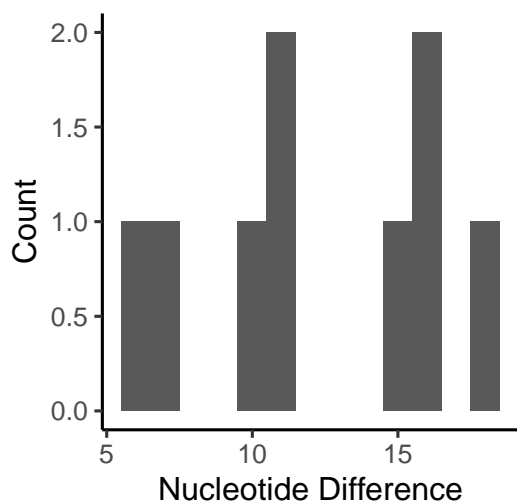
### IGHV4-30-2\*01

7 sequences assigned  
3 (42.9%) exact matches, in which:  
3 unique CDR3  
2 unique J



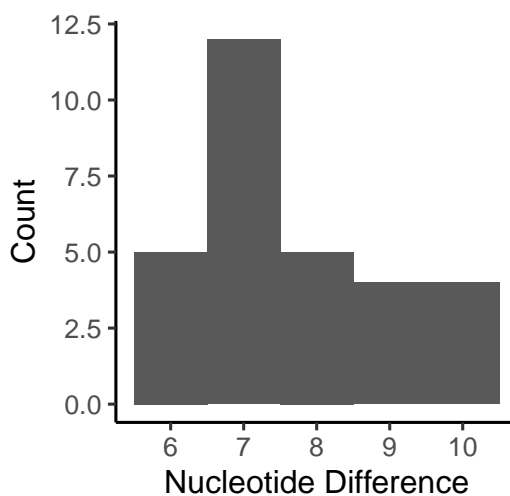
### IGHV3-NL1\*01

16 sequences assigned  
No exact matches.



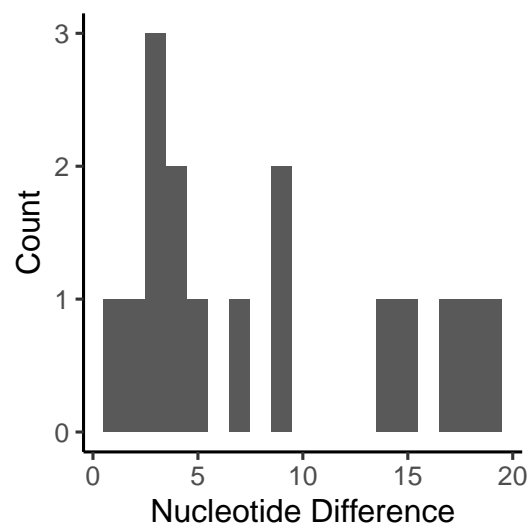
### IGHV4-28\*02\_05

30 sequences assigned  
No exact matches.



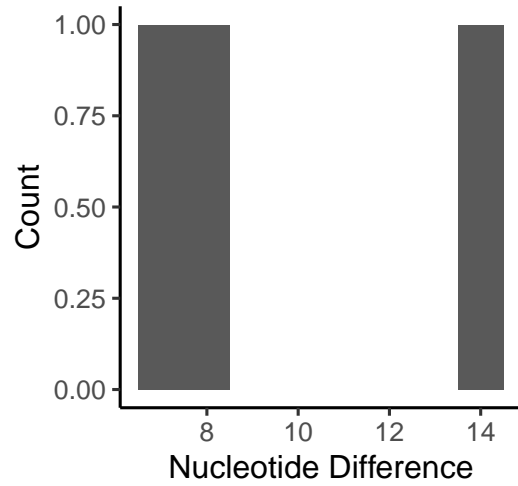
### IGHV4-30-2\*03

17 sequences assigned  
No exact matches.



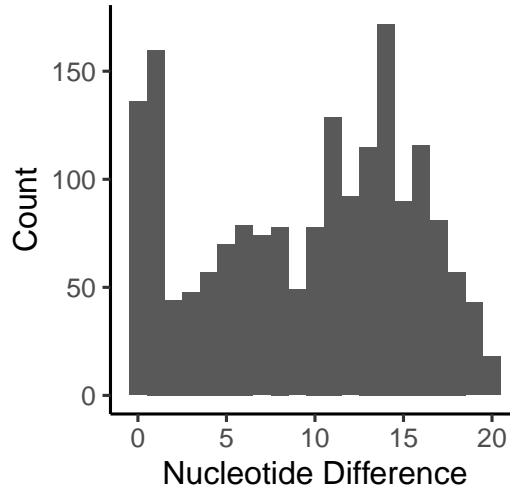
### IGHV4-30-2\*04

3 sequences assigned  
No exact matches.



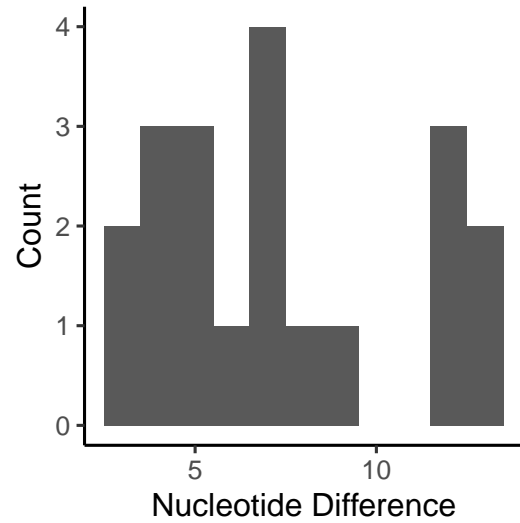
### IGHV4-31\*03\_04

2999 sequences assigned  
136 (4.5%) exact matches, in which:  
107 unique CDR3  
7 unique J



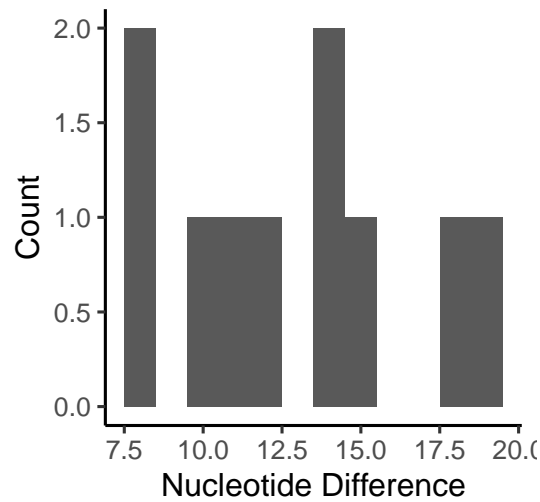
### IGHV4-38-2\*02

30 sequences assigned  
No exact matches.



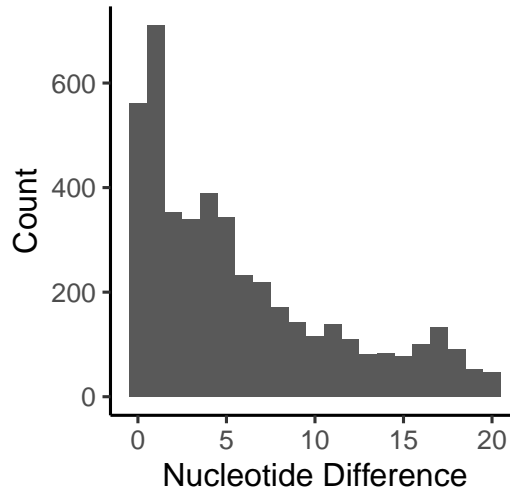
### IGHV4-30-4\*08

10 sequences assigned  
No exact matches.



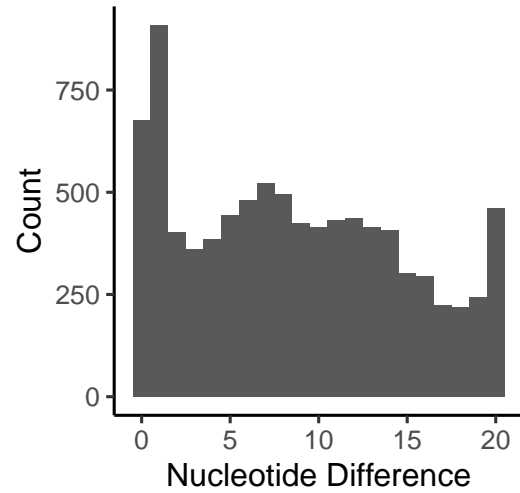
### IGHV4-34\*01\_02

5024 sequences assigned  
562 (11.2%) exact matches, in which:  
409 unique CDR3  
7 unique J



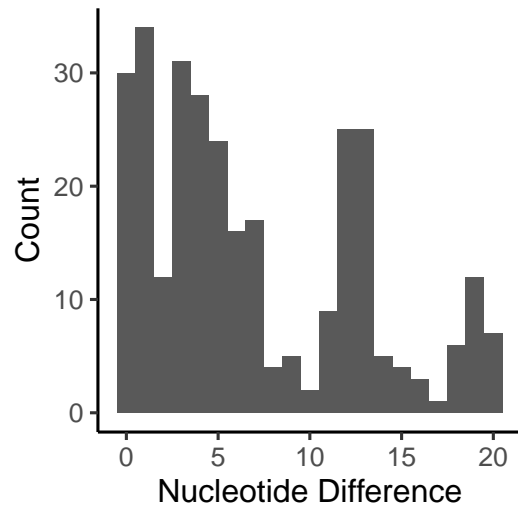
### IGHV4-39\*01\_05

12977 sequences assigned  
675 (5.2%) exact matches, in which:  
513 unique CDR3  
7 unique J



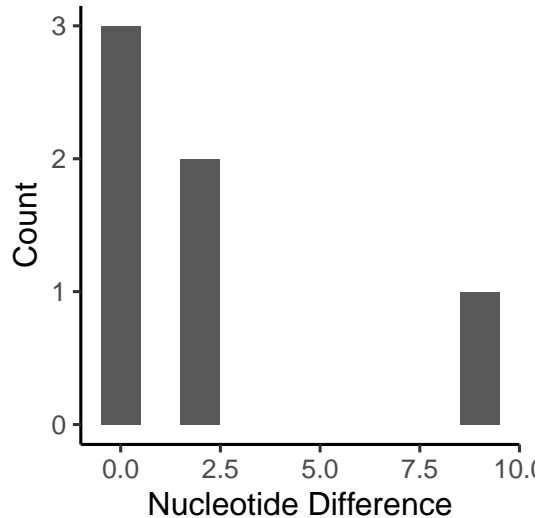
### IGHV4-31\*01

1225 sequences assigned  
30 (2.4%) exact matches, in which:  
23 unique CDR3  
5 unique J



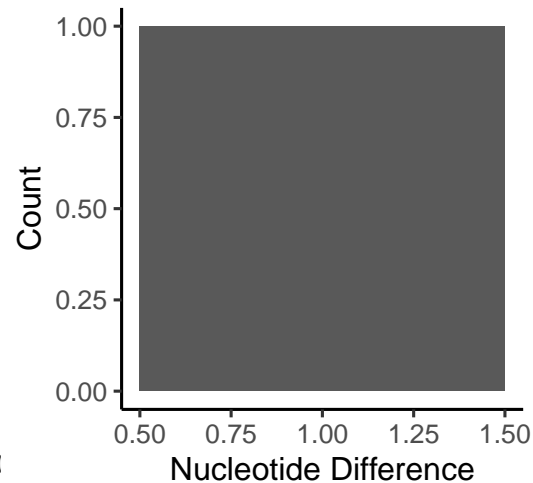
### IGHV4-38-2\*01

7 sequences assigned  
3 (42.9%) exact matches, in which:  
3 unique CDR3  
2 unique J



### IGHV4-55\*01\_05

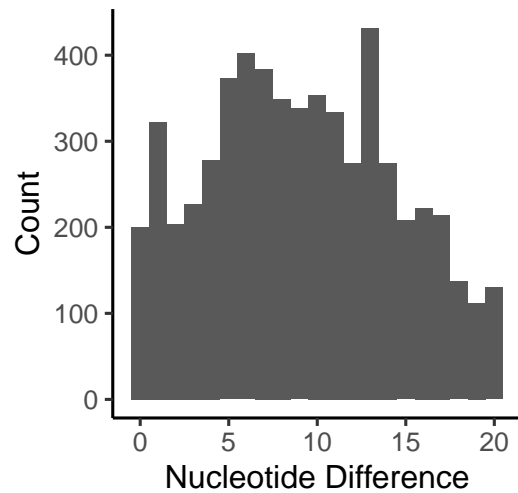
1 sequences assigned  
No exact matches.





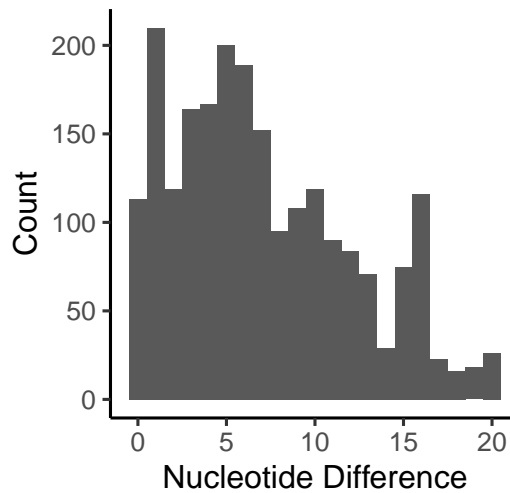
### IGHV4-59\*08

7894 sequences assigned  
200 (2.5%) exact matches, in which:  
157 unique CDR3  
7 unique J



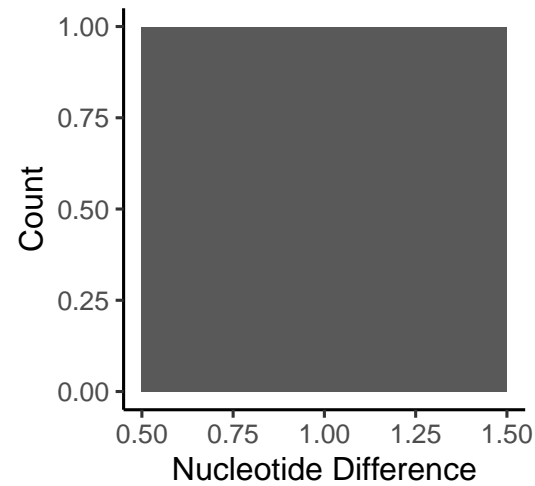
### IGHV5-10-1\*01\_03

2498 sequences assigned  
113 (4.5%) exact matches, in which:  
72 unique CDR3  
6 unique J



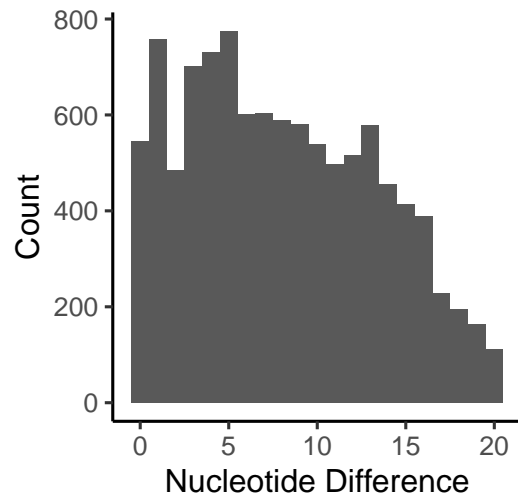
### IGHV7-4-1\*01

1 sequences assigned  
No exact matches.



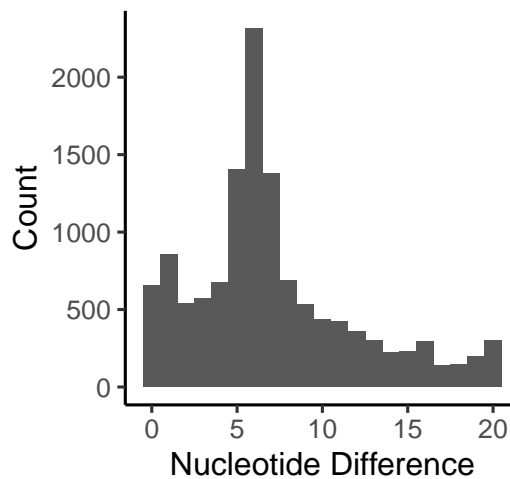
### IGHV4-59\*01\_07

12850 sequences assigned  
546 (4.2%) exact matches, in which:  
433 unique CDR3  
7 unique J



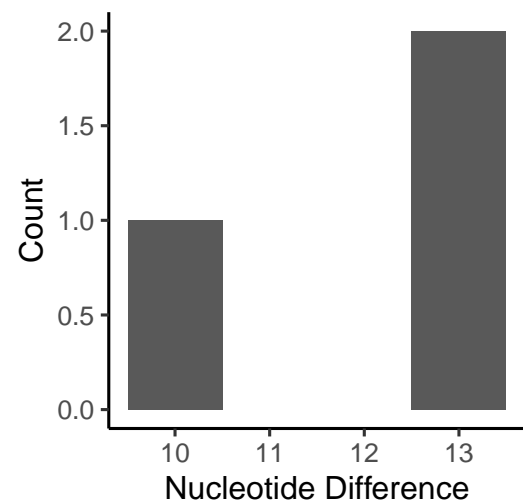
### IGHV5-51\*01\_03

14795 sequences assigned  
653 (4.4%) exact matches, in which:  
383 unique CDR3  
7 unique J



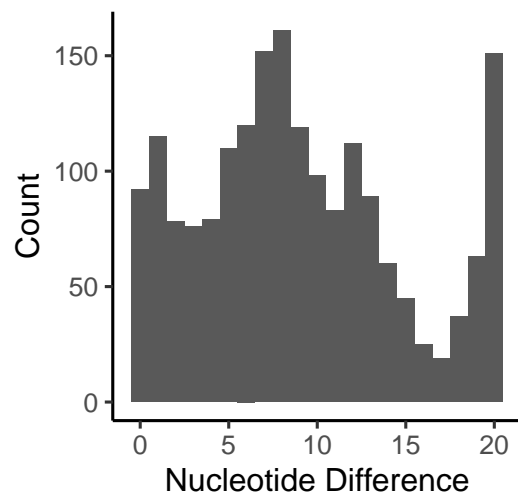
### IGHV7-4-1\*02

3 sequences assigned  
No exact matches.



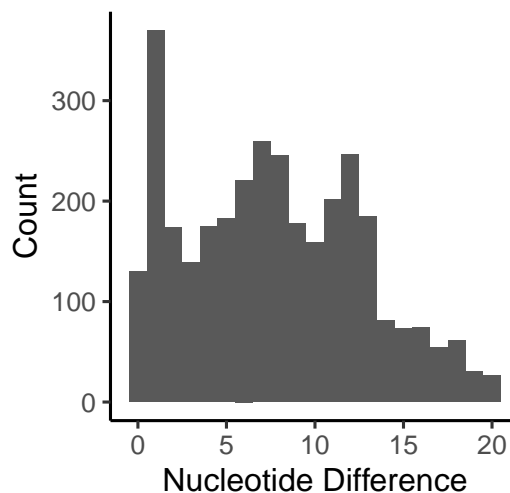
### IGHV4-61\*01

3064 sequences assigned  
92 (3%) exact matches, in which:  
72 unique CDR3  
6 unique J

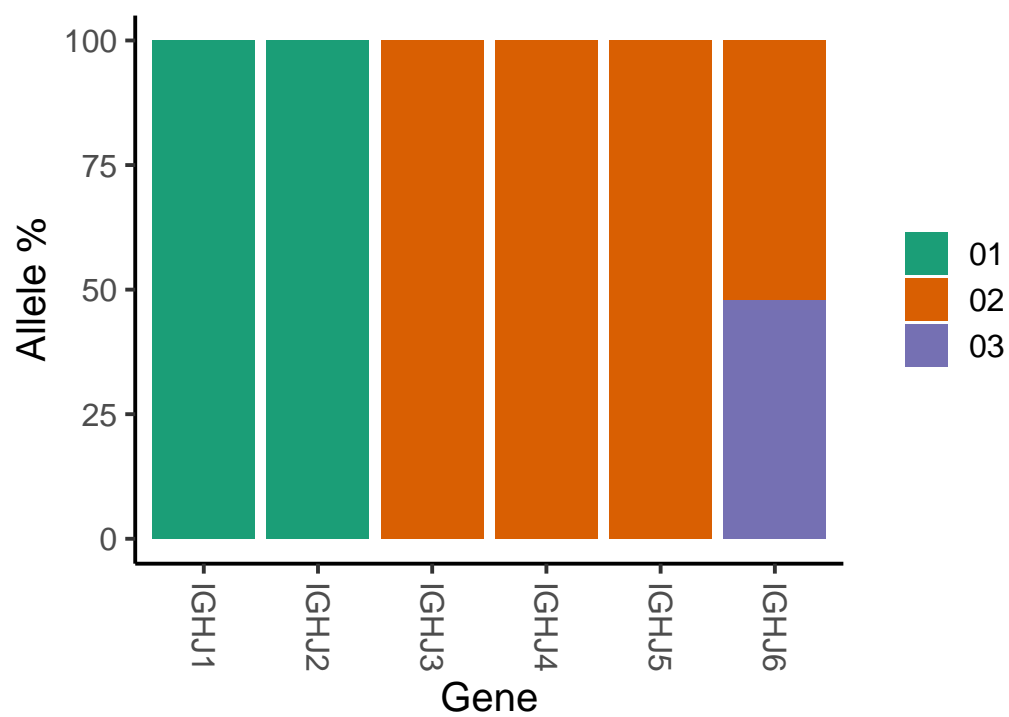


### IGHV6-1\*01\_02

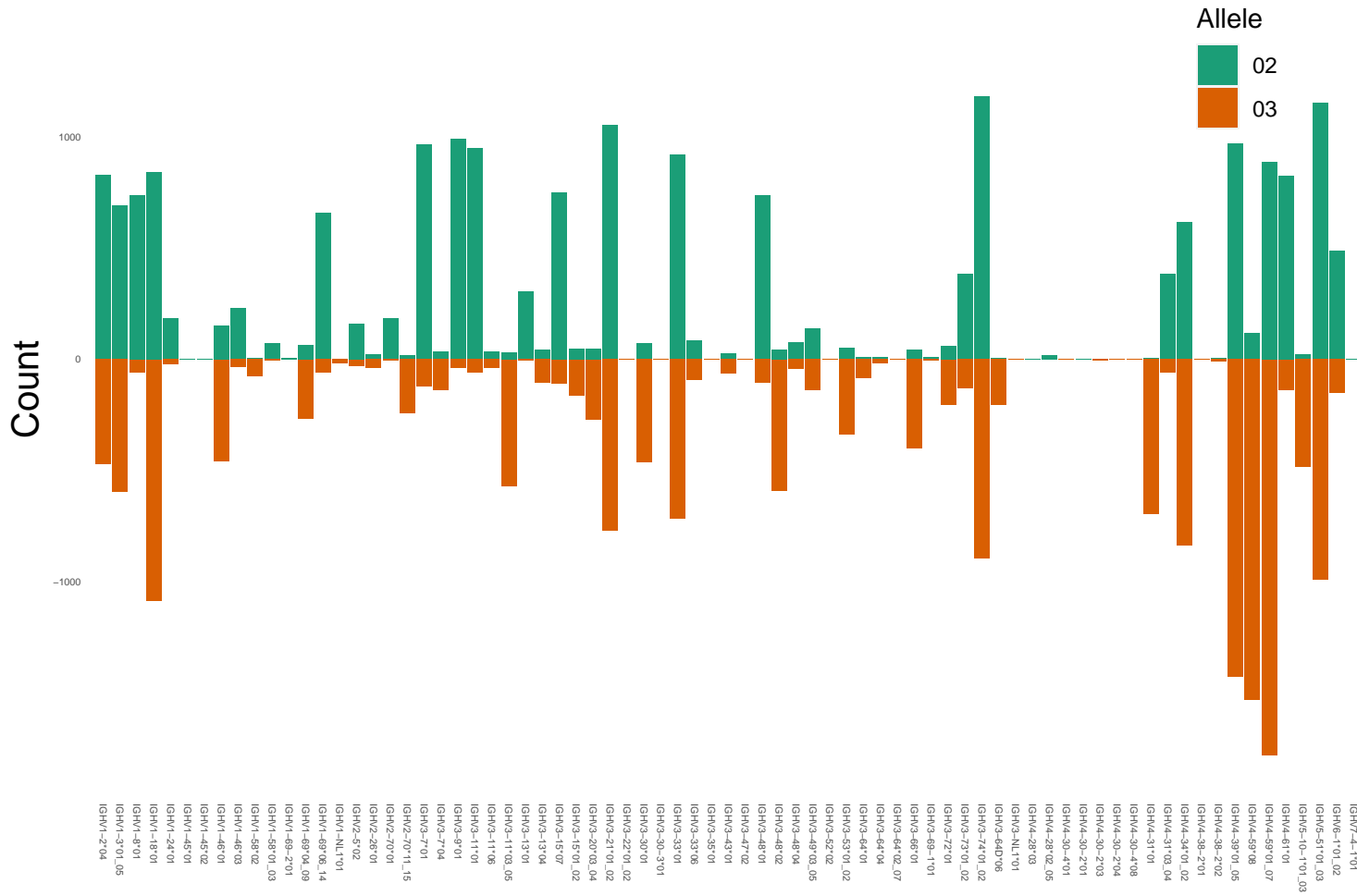
3514 sequences assigned  
130 (3.7%) exact matches, in which:  
91 unique CDR3  
5 unique J



Allele Usage



Sequence Count by IGHJ6 allele usage



Warning - no inferred sequences found.

Warning - no inferred sequences found.

Novel sequence(s) IGHV1-69\*04\_09\_G112A IGHV4-59\*02\_G88A IGHV5-10-1\*01\_03\_T258C IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Warning - no inferred sequences found.

Novel sequence(s) IGHV1-69\*08\_C191T IGHV3-48\*03\_T303G IGHV4-59\*02\_G88A IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Warning - no inferred sequences found.

Warning - no inferred sequences found.

Novel sequence(s) IGHV3-30\*03\_T288C IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Warning: IGHV4-31\*02, IGHV4-31\*03\_04 have identical germline sequences.

Novel sequence(s) IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Novel sequence(s) IGHV1-69\*04\_09\_G112A are not listed in the genotype and will be ignored.

Novel sequence(s) IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Warning - no inferred sequences found.

Novel sequence(s) IGHV1-69\*08\_C191T IGHV3-30\*03\_T288C IGHV3-30-3\*02\_G75C IGHV4-59\*02\_G88A IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Novel sequence(s) IGHV4-59\*02\_G88A IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Novel sequence(s) IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Novel sequence(s) IGHV4-4\*02\_03\_C300T IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Novel sequence(s) IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Warning - no inferred sequences found.

Novel sequence(s) IGHV4-59\*02\_G88A are not listed in the genotype and will be ignored.

Novel sequence(s) IGHV1-69\*08\_C191T IGHV3-11\*06\_T300C IGHV3-30\*03\_T288C IGHV4-59\*02\_G88A IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Novel sequence(s) IGHV4-59\*02\_G88A IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Novel sequence(s) IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Warning - no inferred sequences found.