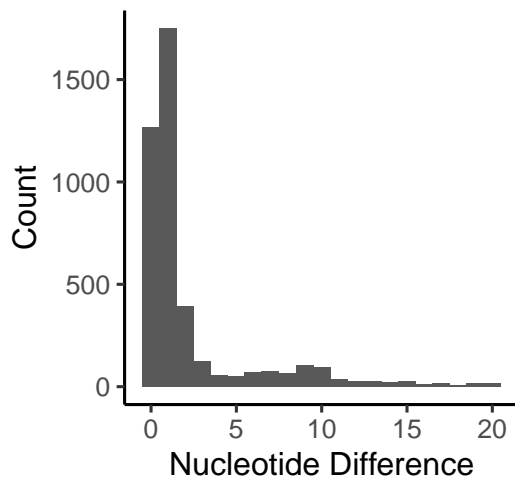


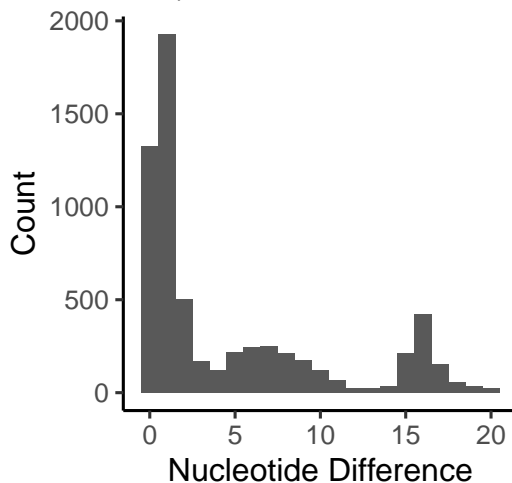
### IGHV1-2\*02

4880 sequences assigned  
1268 (26%) exact matches, in which:  
995 unique CDR3  
7 unique J



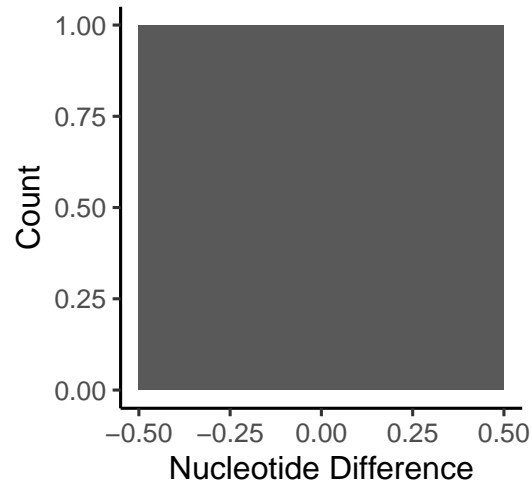
### IGHV1-8\*01

6455 sequences assigned  
1328 (20.6%) exact matches, in which:  
1041 unique CDR3  
7 unique J



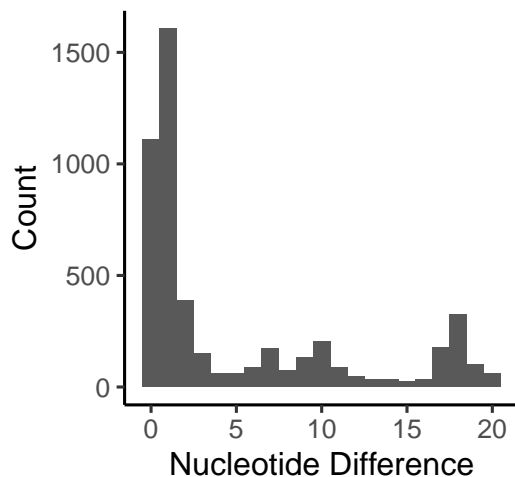
### IGHV1-38-4\*01

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



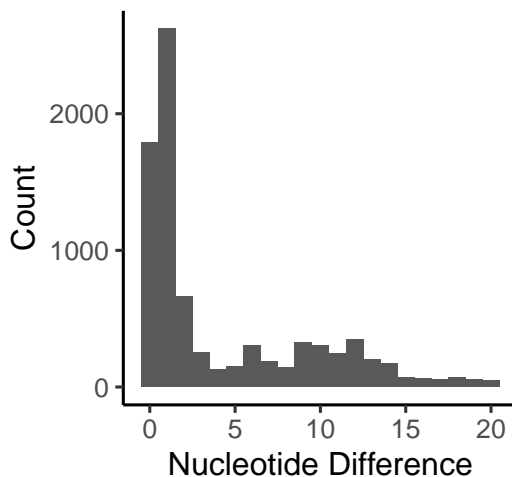
### IGHV1-2\*06

5461 sequences assigned  
1111 (20.3%) exact matches, in which:  
874 unique CDR3  
7 unique J



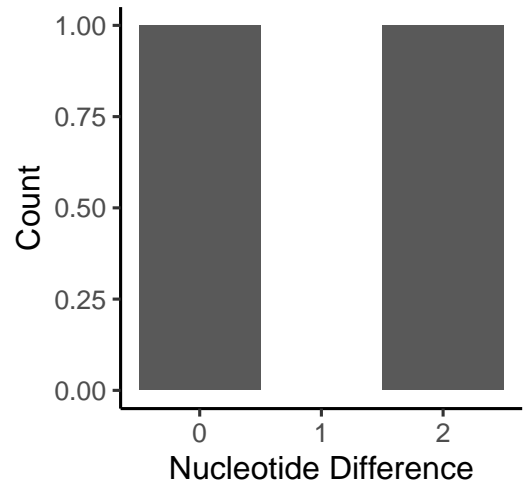
### IGHV1-18\*01

10302 sequences assigned  
1789 (17.4%) exact matches, in which:  
1376 unique CDR3  
7 unique J



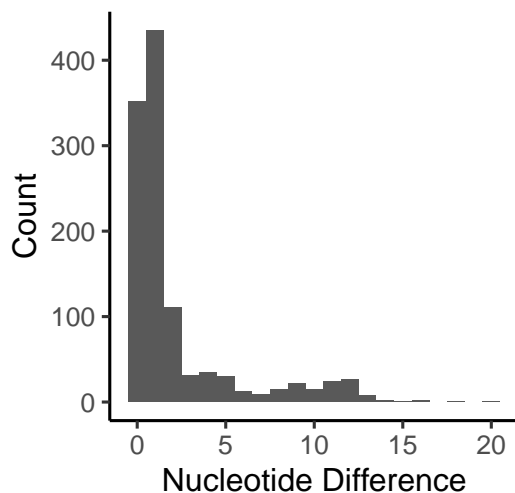
### IGHV1-45\*02

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



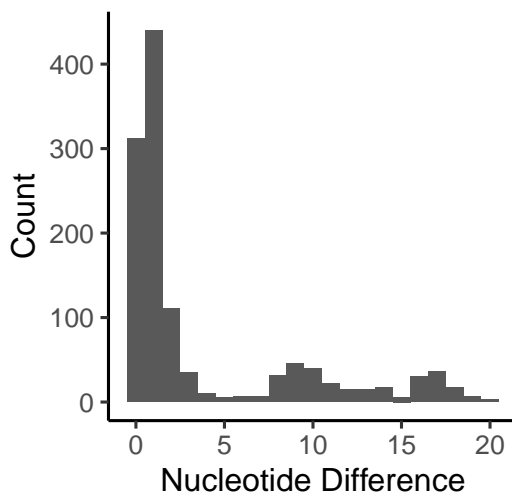
### IGHV1-3\*01\_05

1148 sequences assigned  
352 (30.7%) exact matches, in which:  
270 unique CDR3  
7 unique J



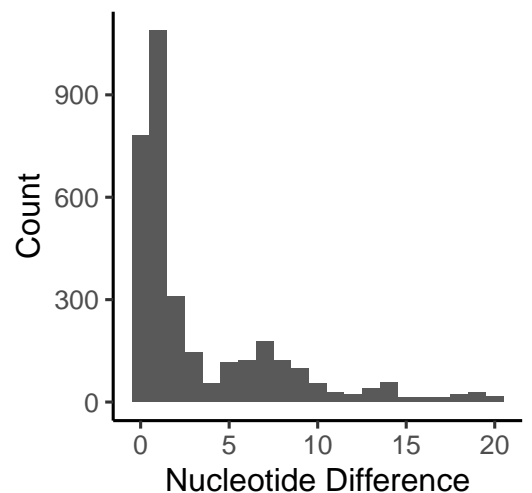
### IGHV1-24\*01

1255 sequences assigned  
312 (24.9%) exact matches, in which:  
240 unique CDR3  
7 unique J



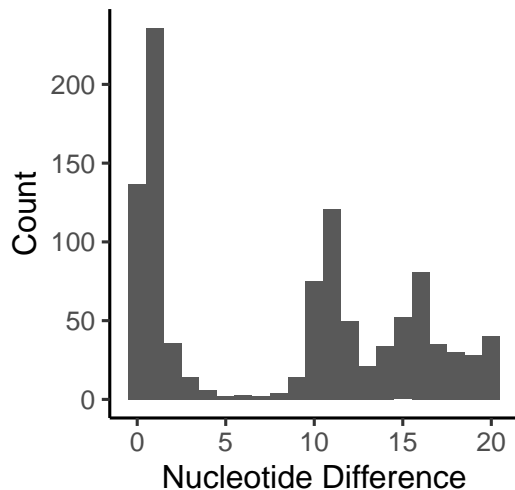
### IGHV1-46\*01

4367 sequences assigned  
782 (17.9%) exact matches, in which:  
657 unique CDR3  
7 unique J



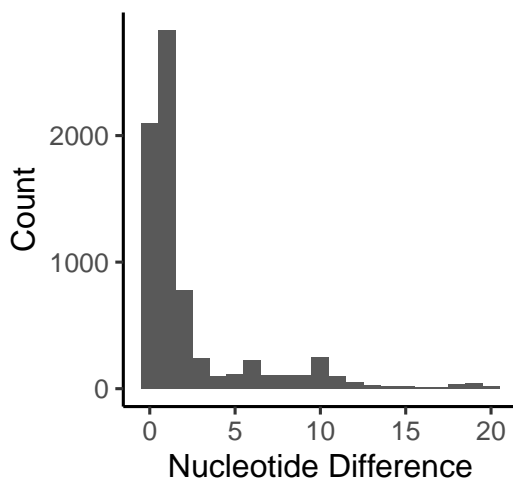
### IGHV1–58\*01\_03

1512 sequences assigned  
137 (9.1%) exact matches, in which:  
109 unique CDR3  
6 unique J



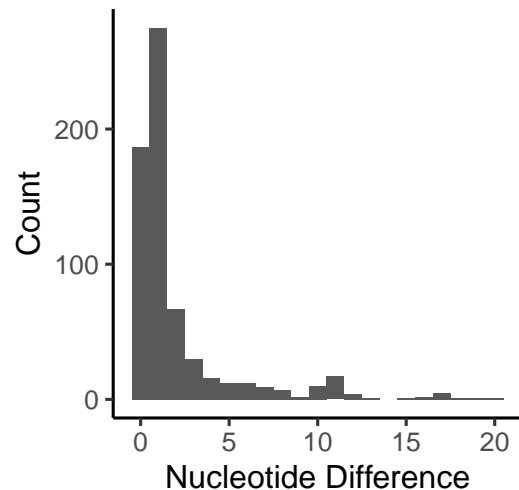
### IGHV1–69\*01\_12\_13

7498 sequences assigned  
2097 (28%) exact matches, in which:  
1672 unique CDR3  
7 unique J



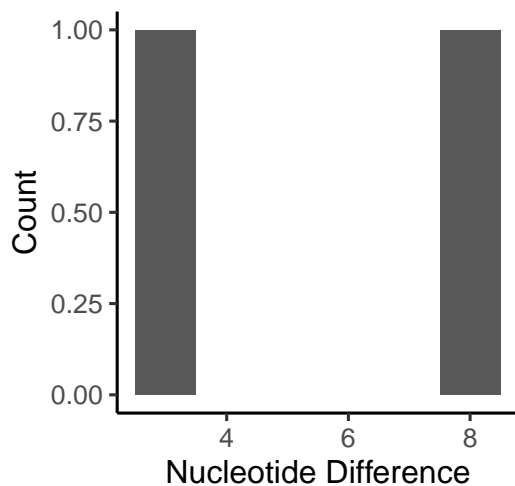
### IGHV2–5\*02

674 sequences assigned  
187 (27.7%) exact matches, in which:  
143 unique CDR3  
7 unique J



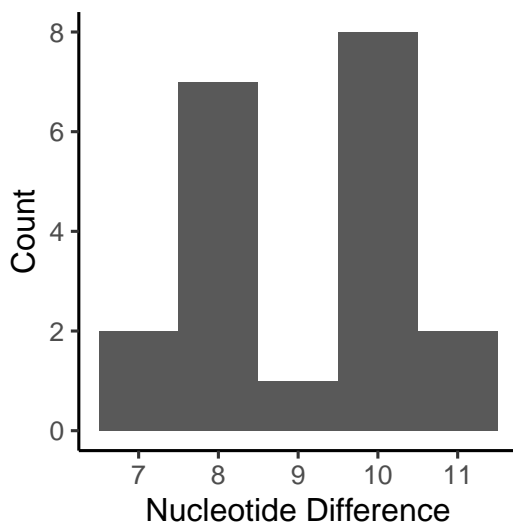
### IGHV1–68\*01

2 sequences assigned  
No exact matches.



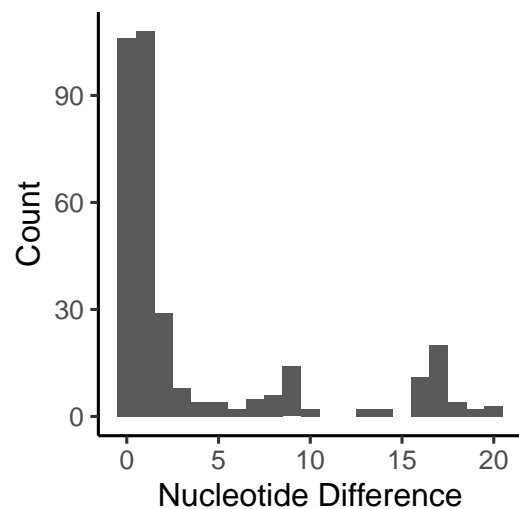
### IGHV1–NL1\*01

20 sequences assigned  
No exact matches.



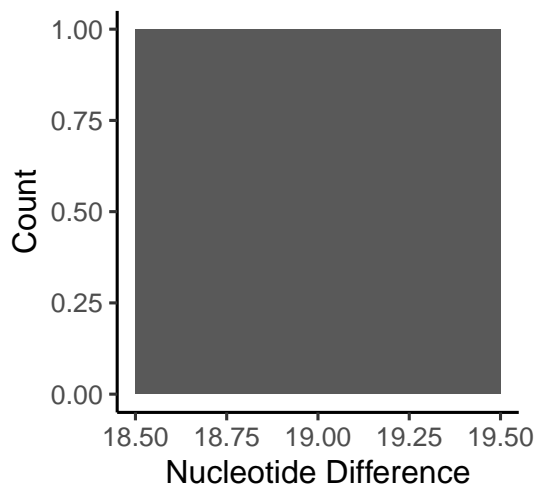
### IGHV2–26\*01

376 sequences assigned  
106 (28.2%) exact matches, in which:  
81 unique CDR3  
5 unique J



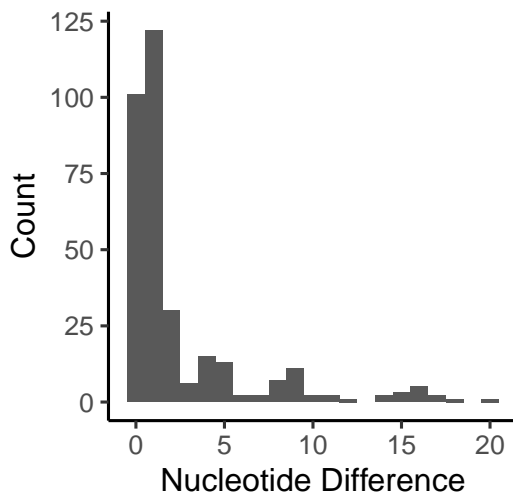
### IGHV1–69–2\*01

2 sequences assigned  
No exact matches.



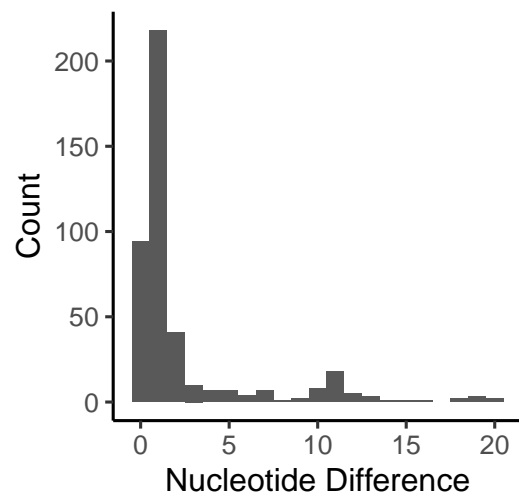
### IGHV2–5\*01

349 sequences assigned  
101 (28.9%) exact matches, in which:  
74 unique CDR3  
5 unique J



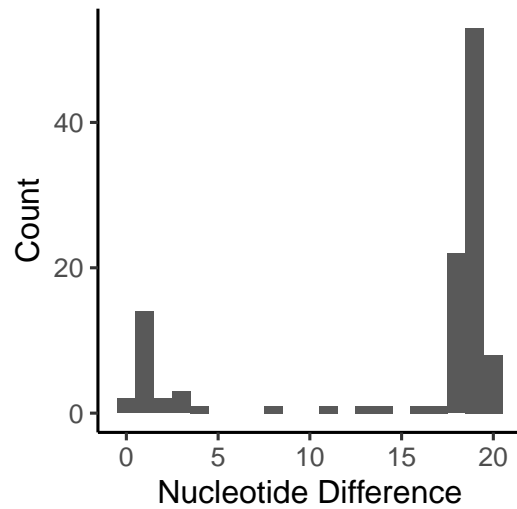
### IGHV2–70\*01

447 sequences assigned  
94 (21%) exact matches, in which:  
64 unique CDR3  
5 unique J



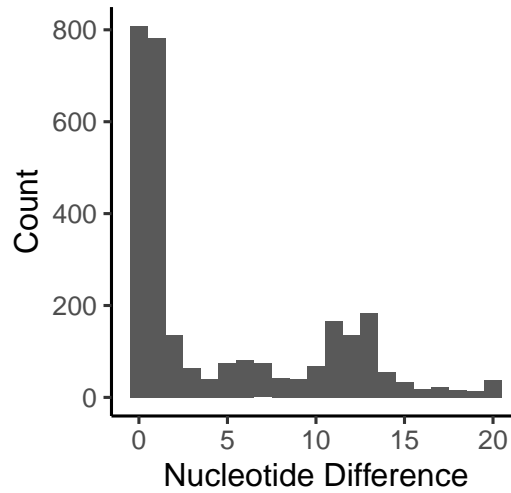
## IGHV2-70\*12

122 sequences assigned  
2 (1.6%) exact matches, in which:  
2 unique CDR3  
2 unique J



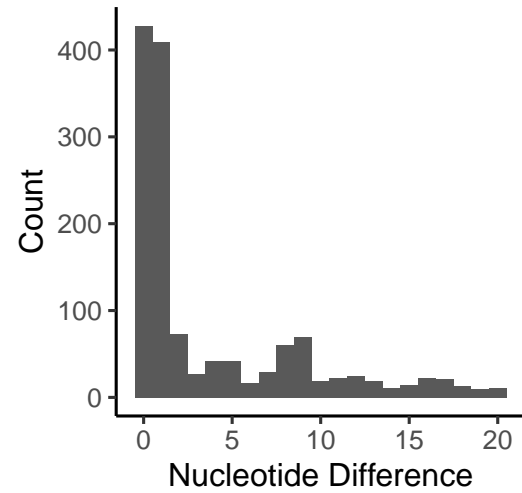
## IGHV3-11\*01

3927 sequences assigned  
809 (20.6%) exact matches, in which:  
527 unique CDR3  
7 unique J



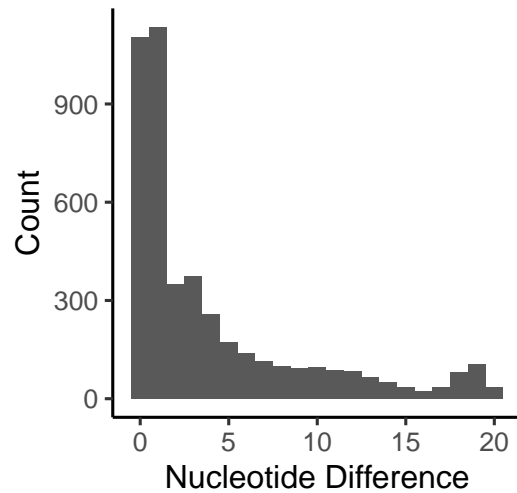
## IGHV3-15\*07

1687 sequences assigned  
428 (25.4%) exact matches, in which:  
253 unique CDR3  
7 unique J



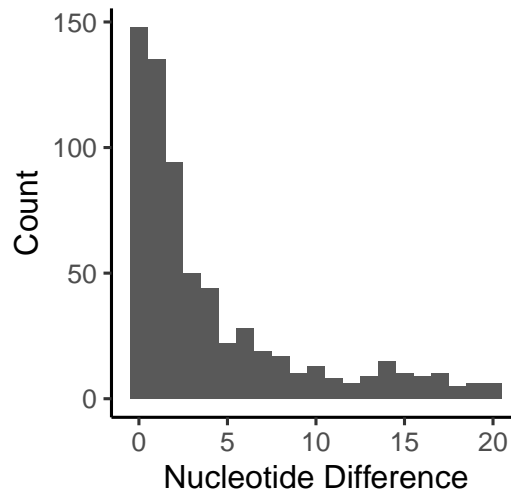
## IGHV3-7\*01

5127 sequences assigned  
1104 (21.5%) exact matches, in which:  
737 unique CDR3  
7 unique J



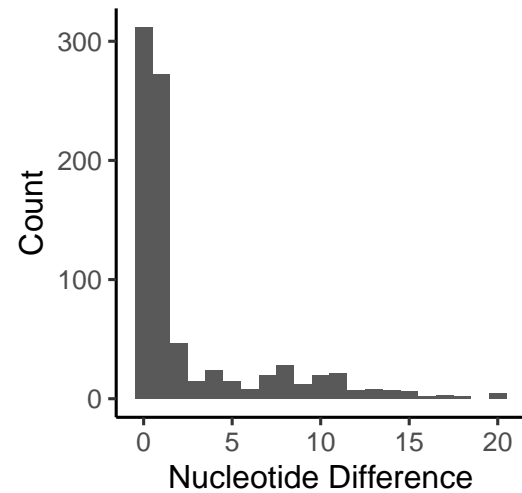
## IGHV3-11\*04

723 sequences assigned  
148 (20.5%) exact matches, in which:  
132 unique CDR3  
6 unique J



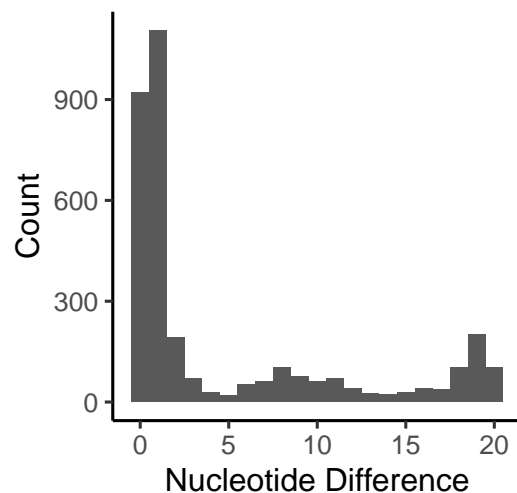
## IGHV3-15\*01\_02

859 sequences assigned  
312 (36.3%) exact matches, in which:  
195 unique CDR3  
7 unique J



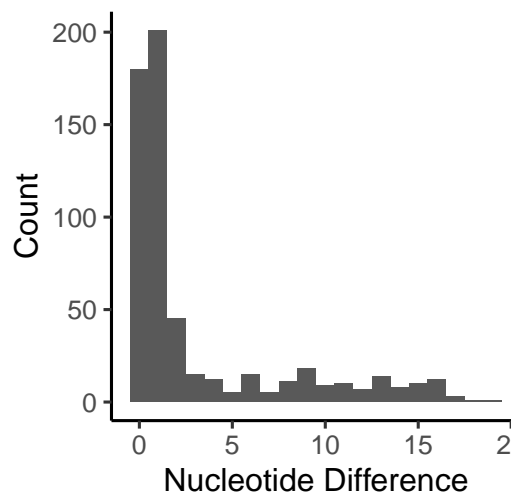
## IGHV3-9\*01

4041 sequences assigned  
920 (22.8%) exact matches, in which:  
519 unique CDR3  
7 unique J



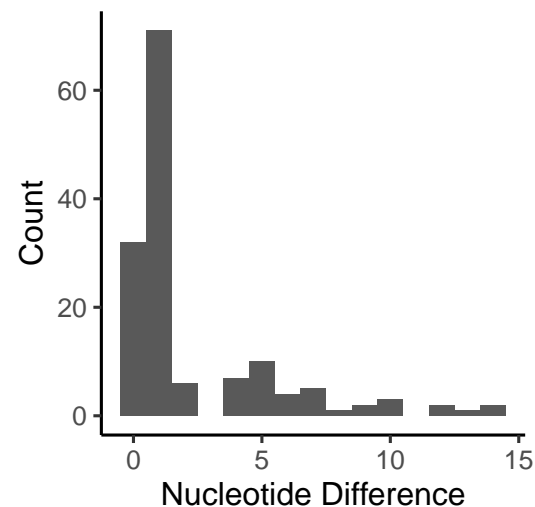
## IGHV3-13\*01

626 sequences assigned  
180 (28.8%) exact matches, in which:  
115 unique CDR3  
7 unique J



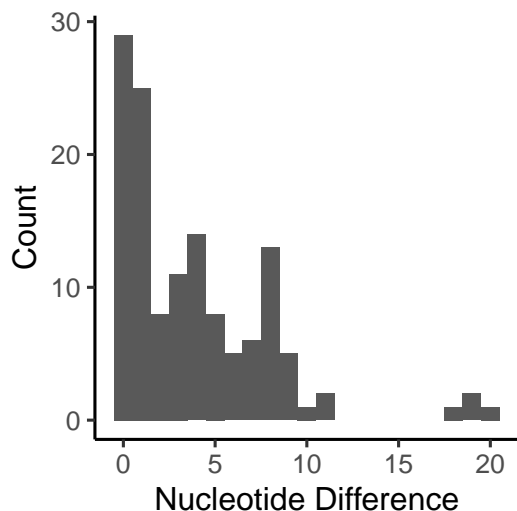
## IGHV3-20\*01\_02

146 sequences assigned  
32 (21.9%) exact matches, in which:  
21 unique CDR3  
4 unique J



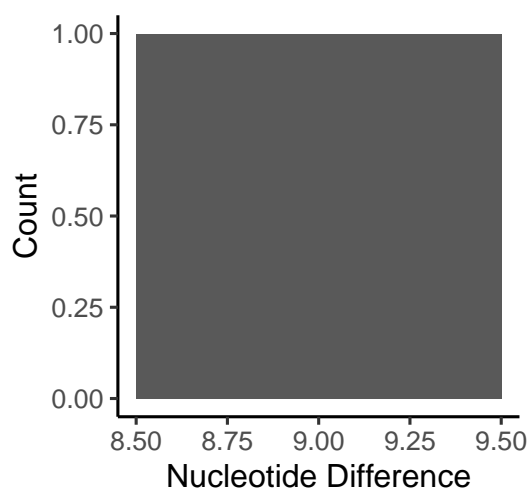
### IGHV3-20\*03\_04

135 sequences assigned  
29 (21.5%) exact matches, in which:  
23 unique CDR3  
5 unique J



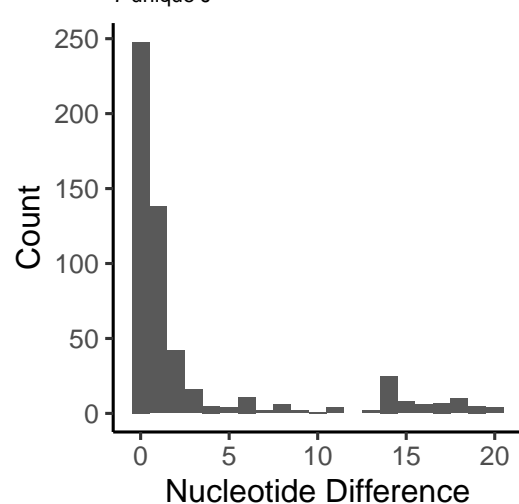
### IGHV3-22\*01\_02

1 sequences assigned  
No exact matches.



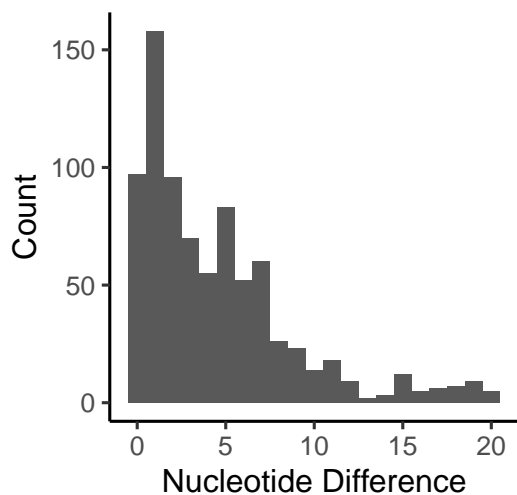
### IGHV3-30\*03

840 sequences assigned  
248 (29.5%) exact matches, in which:  
218 unique CDR3  
7 unique J



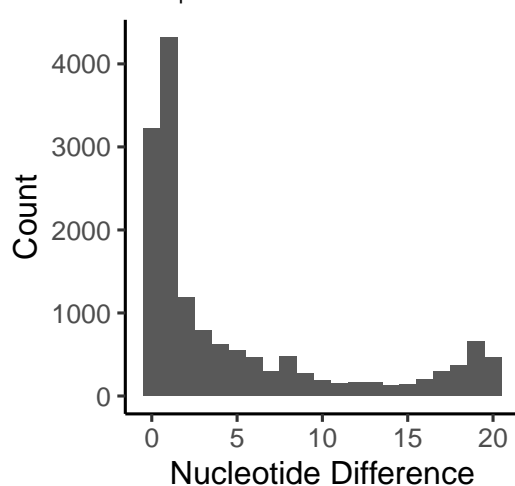
### IGHV3-21\*04

1030 sequences assigned  
97 (9.4%) exact matches, in which:  
89 unique CDR3  
7 unique J



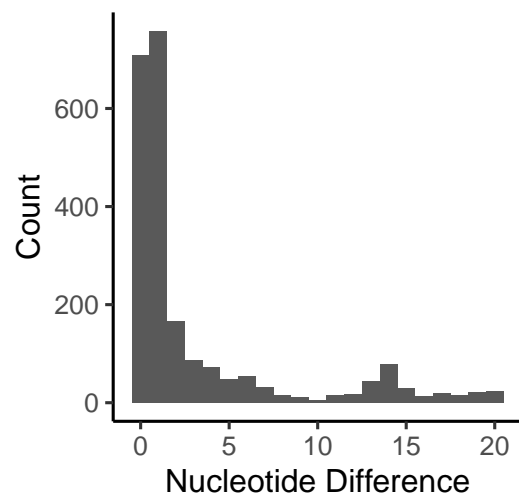
### IGHV3-23\*01\_04

24191 sequences assigned  
3222 (13.3%) exact matches, in which:  
1787 unique CDR3  
7 unique J



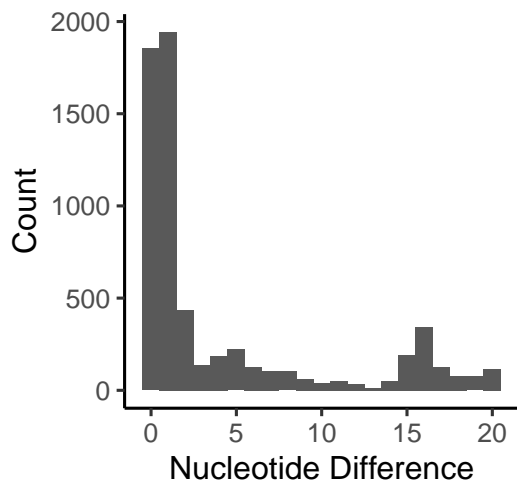
### IGHV3-33\*01

2707 sequences assigned  
708 (26.2%) exact matches, in which:  
447 unique CDR3  
7 unique J



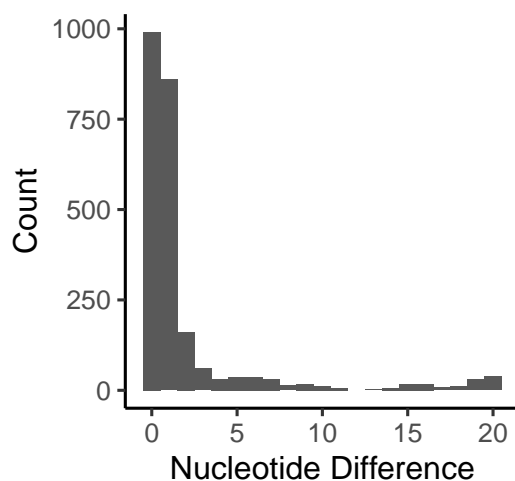
### IGHV3-21\*01\_02

9073 sequences assigned  
1853 (20.4%) exact matches, in which:  
1145 unique CDR3  
7 unique J



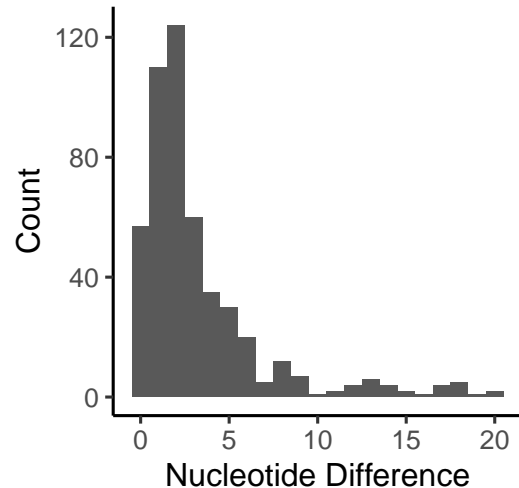
### IGHV3-30-3\*01

3302 sequences assigned  
991 (30%) exact matches, in which:  
664 unique CDR3  
7 unique J



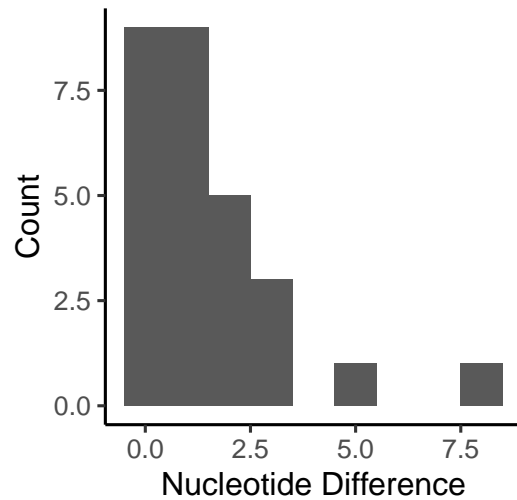
### IGHV3-33\*06

511 sequences assigned  
57 (11.2%) exact matches, in which:  
54 unique CDR3  
5 unique J



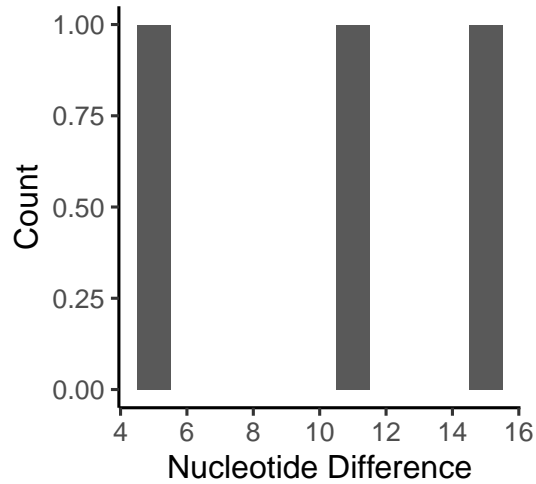
### IGHV3-38-3\*01

28 sequences assigned  
9 (32.1%) exact matches, in which:  
8 unique CDR3  
3 unique J



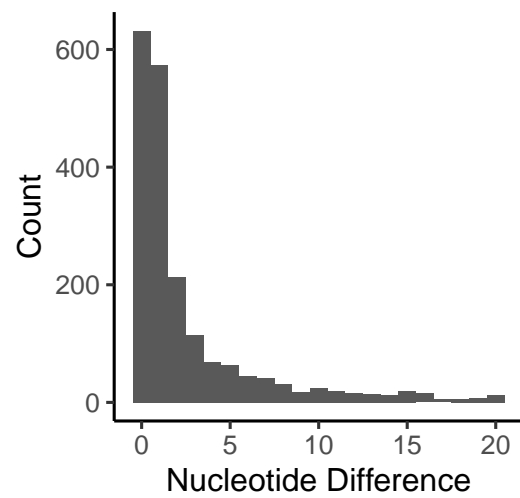
### IGHV3-47\*02

3 sequences assigned  
No exact matches.



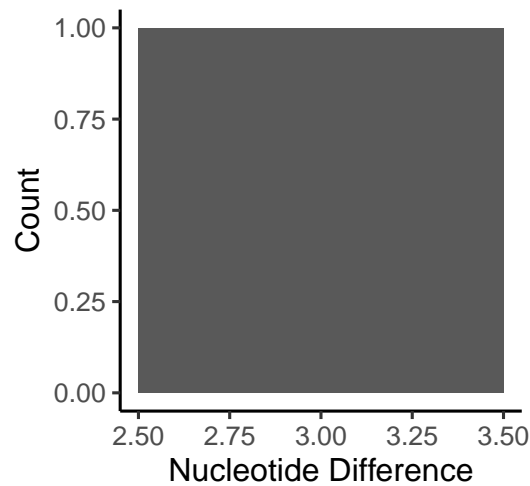
### IGHV3-48\*04

2054 sequences assigned  
632 (30.8%) exact matches, in which:  
413 unique CDR3  
7 unique J



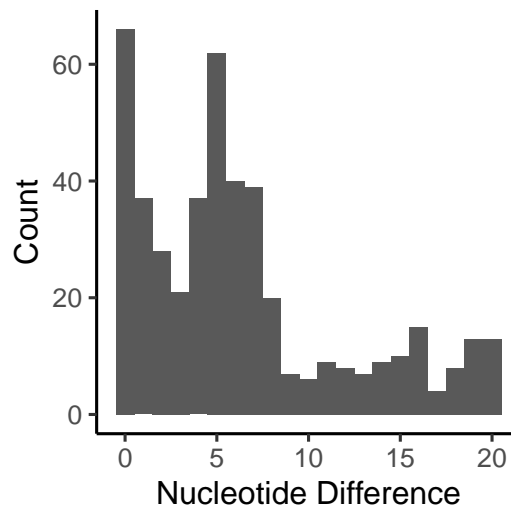
### IGHV3-38\*03

1 sequences assigned  
No exact matches.



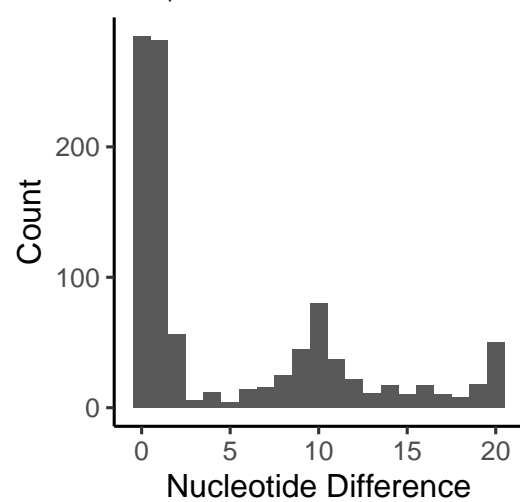
### IGHV3-48\*01

589 sequences assigned  
66 (11.2%) exact matches, in which:  
65 unique CDR3  
5 unique J



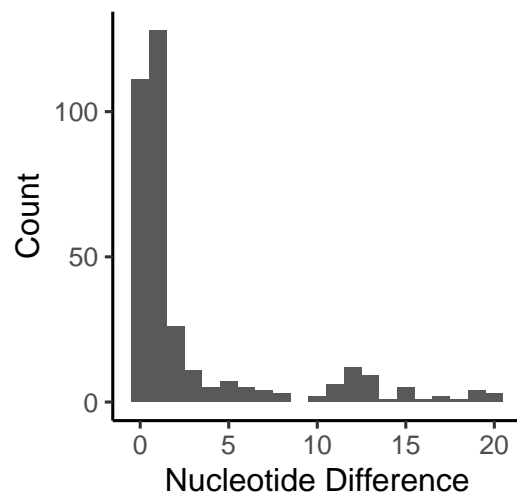
### IGHV3-49\*03\_05

1110 sequences assigned  
285 (25.7%) exact matches, in which:  
165 unique CDR3  
7 unique J



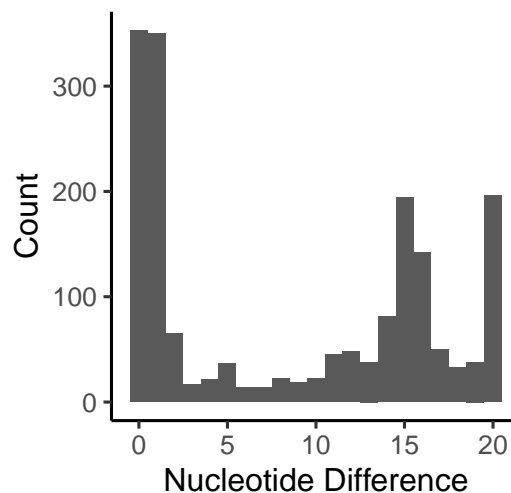
### IGHV3-43\*01

367 sequences assigned  
111 (30.2%) exact matches, in which:  
58 unique CDR3  
6 unique J



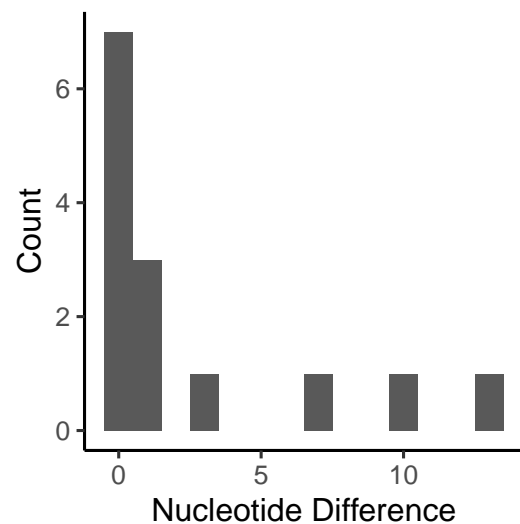
### IGHV3-48\*02

3907 sequences assigned  
353 (9%) exact matches, in which:  
211 unique CDR3  
7 unique J



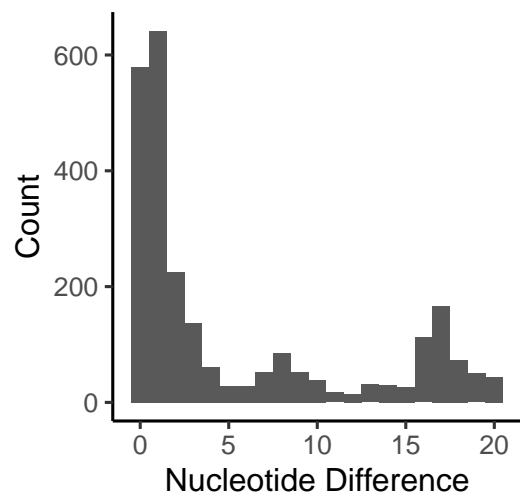
### IGHV3-52\*01\_03

14 sequences assigned  
7 (50%) exact matches, in which:  
6 unique CDR3  
3 unique J



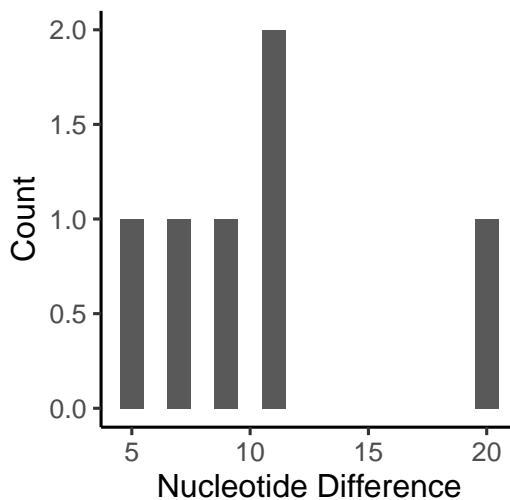
### IGHV3–53\*01\_02

3267 sequences assigned  
579 (17.7%) exact matches, in which:  
371 unique CDR3  
7 unique J



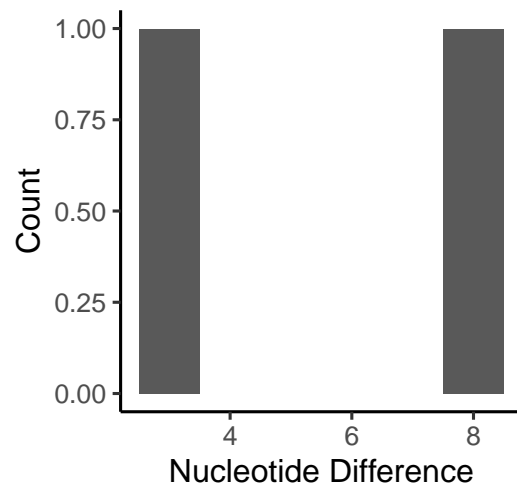
### IGHV3–66\*01

13 sequences assigned  
No exact matches.



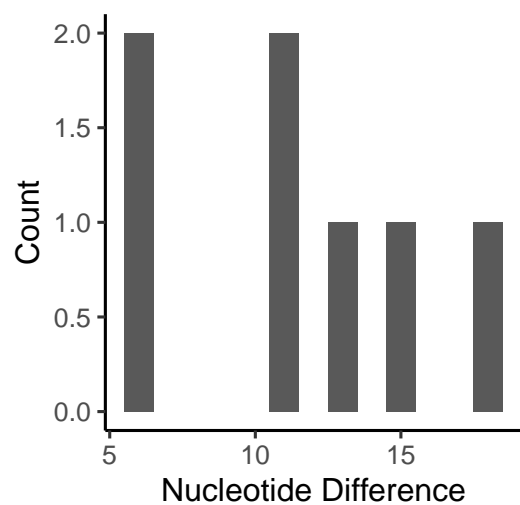
### IGHV3–66\*04

7 sequences assigned  
No exact matches.



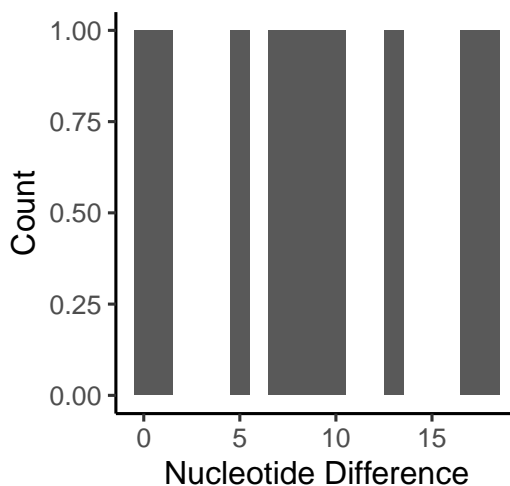
### IGHV3–64\*04

9 sequences assigned  
No exact matches.



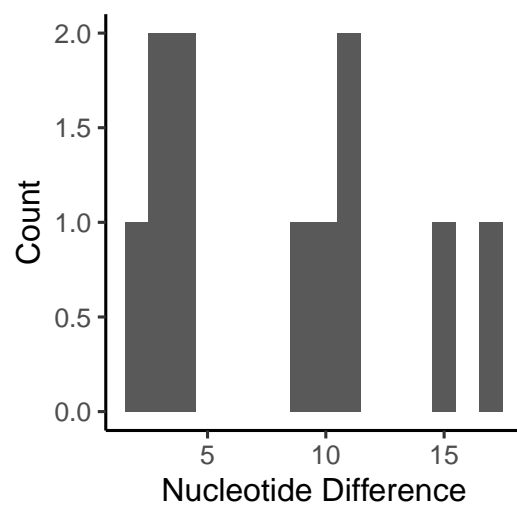
### IGHV3–66\*02

15 sequences assigned  
1 (6.7%) exact matches, in which:  
1 unique CDR3  
1 unique J



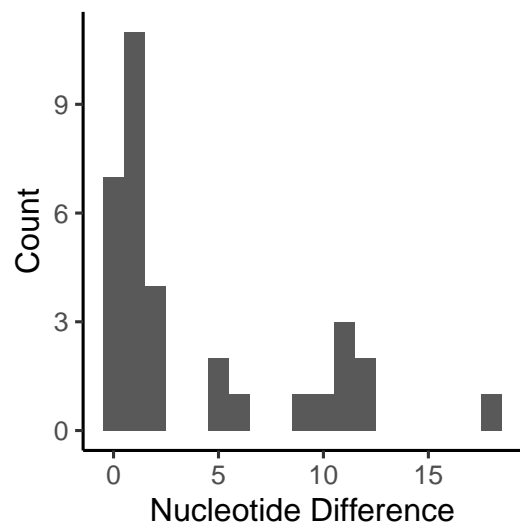
### IGHV3–69–1\*01

28 sequences assigned  
No exact matches.



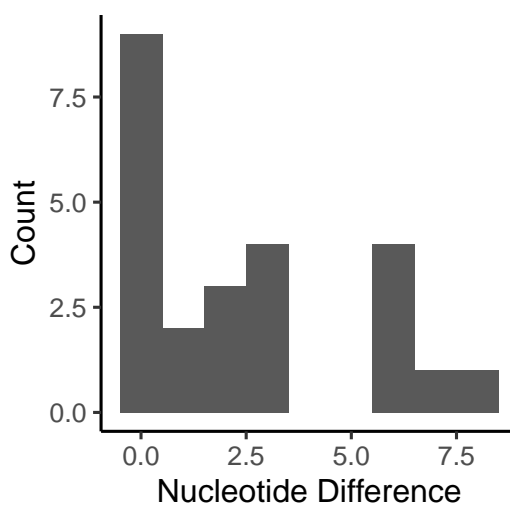
### IGHV3–64\*02\_07

33 sequences assigned  
7 (21.2%) exact matches, in which:  
6 unique CDR3  
1 unique J



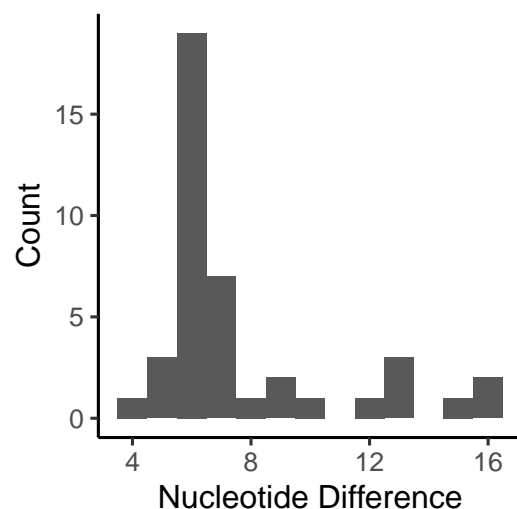
### IGHV3–66\*03

27 sequences assigned  
9 (33.3%) exact matches, in which:  
9 unique CDR3  
4 unique J



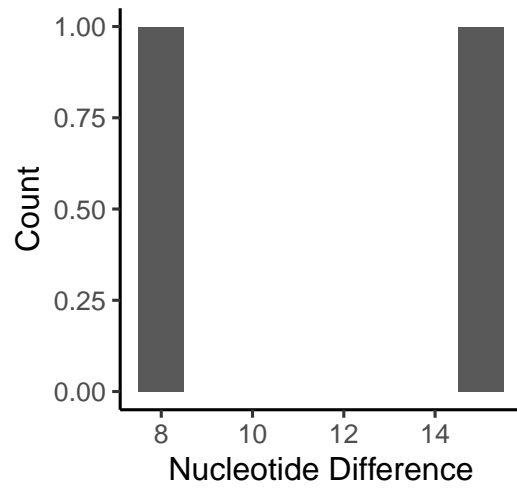
### IGHV3–69–1\*02

57 sequences assigned  
No exact matches.



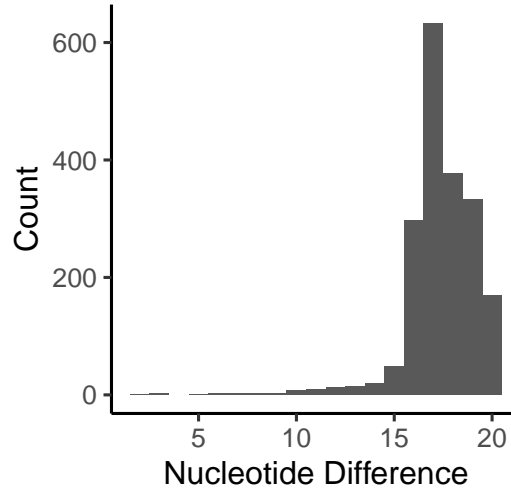
### IGHV3-71\*01\_04

2 sequences assigned  
No exact matches.



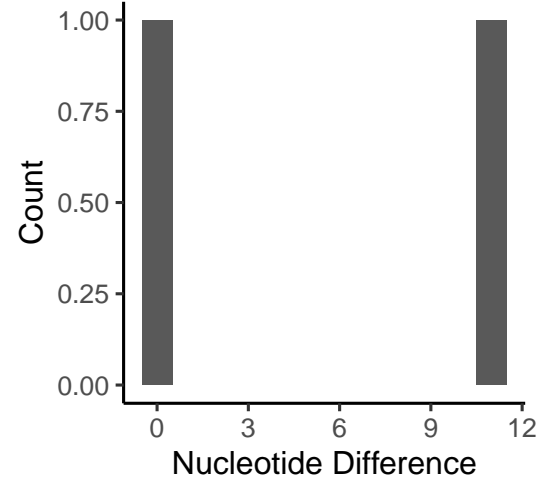
### IGHV3-74\*03

5954 sequences assigned  
No exact matches.



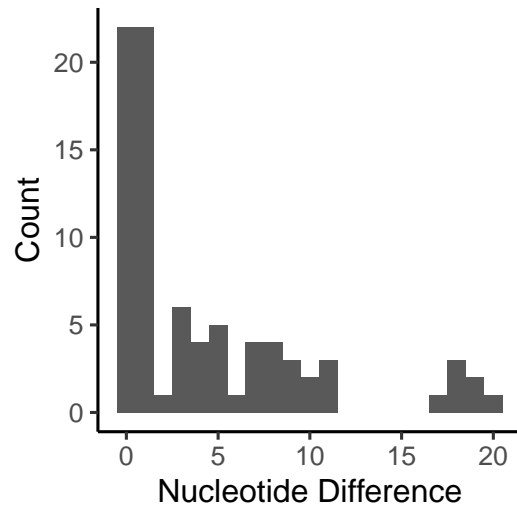
### IGHV3-64D\*06

45 sequences assigned  
1 (2.2%) exact matches, in which:  
1 unique CDR3  
1 unique J



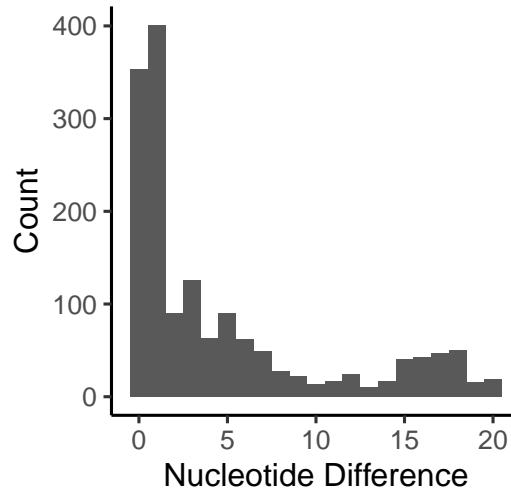
### IGHV3-72\*01

127 sequences assigned  
22 (17.3%) exact matches, in which:  
13 unique CDR3  
5 unique J



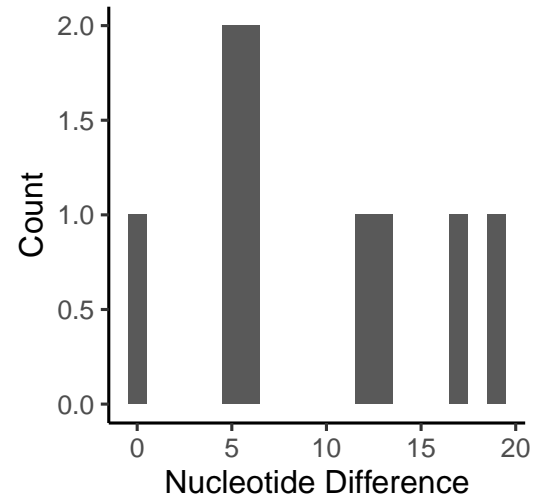
### IGHV3-74\*01\_02

2249 sequences assigned  
353 (15.7%) exact matches, in which:  
232 unique CDR3  
7 unique J



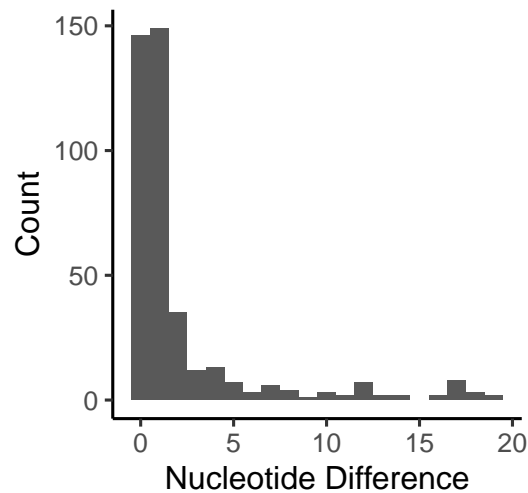
### IGHV3-NL1\*01

29 sequences assigned  
1 (3.4%) exact matches, in which:  
1 unique CDR3  
1 unique J



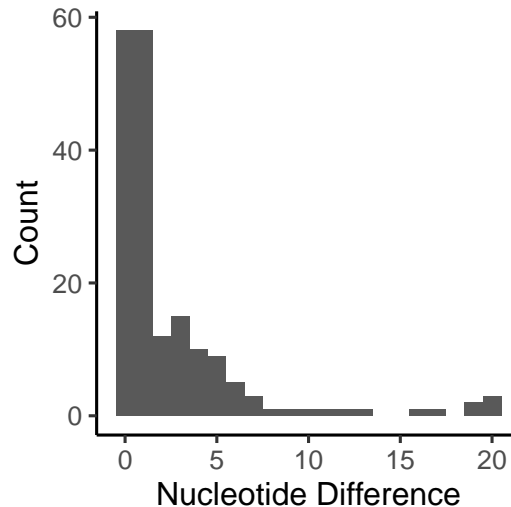
### IGHV3-73\*01\_02

731 sequences assigned  
146 (20%) exact matches, in which:  
90 unique CDR3  
7 unique J



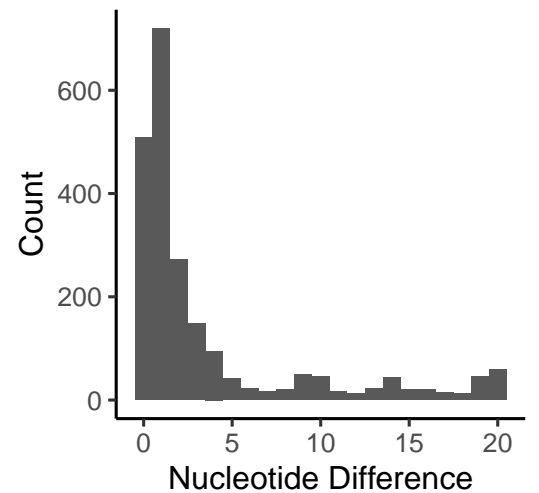
### IGHV3-43D\*03

190 sequences assigned  
58 (30.5%) exact matches, in which:  
32 unique CDR3  
6 unique J



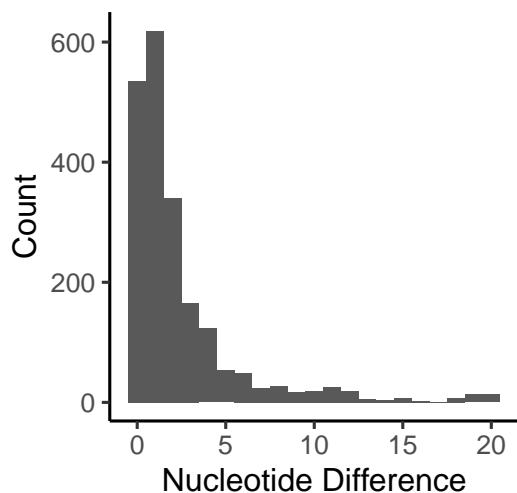
### IGHV4-4\*07

2526 sequences assigned  
509 (20.2%) exact matches, in which:  
403 unique CDR3  
7 unique J



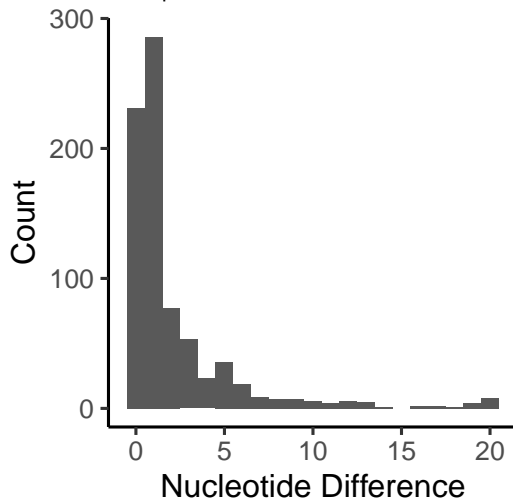
### IGHV4-4\*02\_03

2180 sequences assigned  
535 (24.5%) exact matches, in which:  
397 unique CDR3  
7 unique J



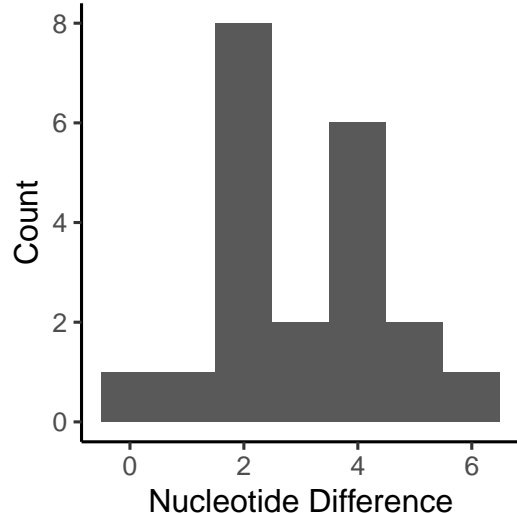
### IGHV4-30-4\*01

913 sequences assigned  
231 (25.3%) exact matches, in which:  
183 unique CDR3  
7 unique J



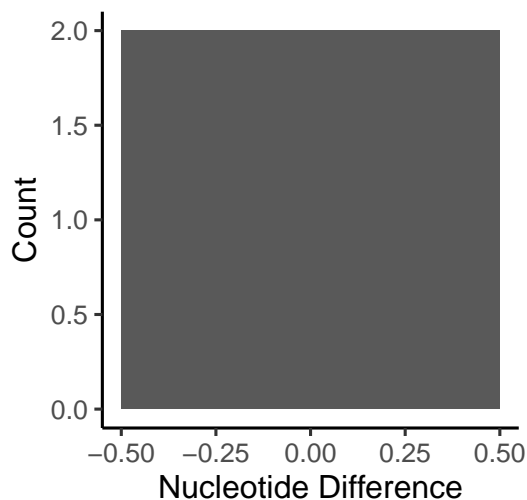
### IGHV4-30-2\*05

21 sequences assigned  
1 (4.8%) exact matches, in which:  
1 unique CDR3  
1 unique J



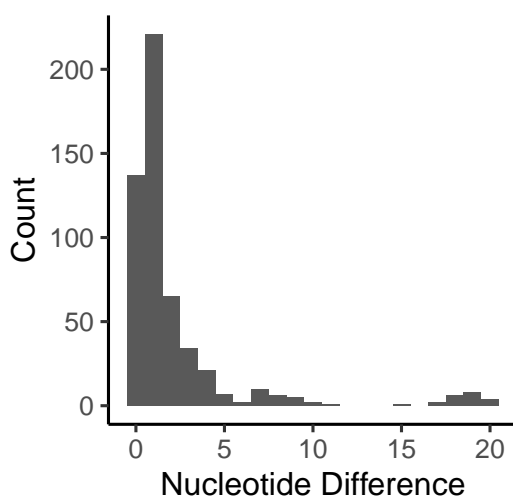
### IGHV4-28\*03

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



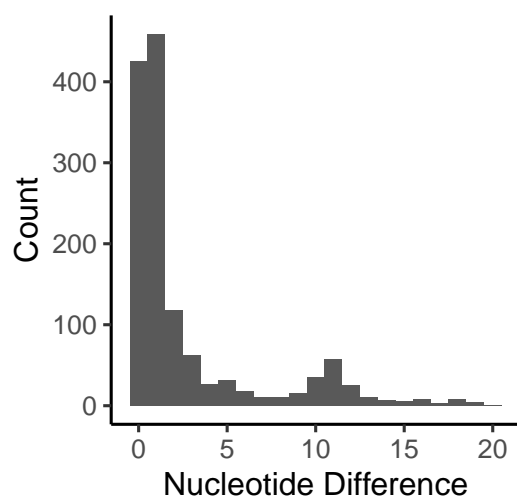
### IGHV4-30-2\*01

543 sequences assigned  
137 (25.2%) exact matches, in which:  
82 unique CDR3  
6 unique J



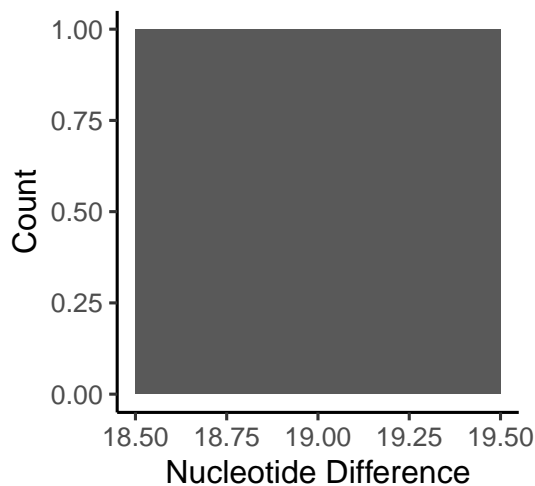
### IGHV4-31\*02

1386 sequences assigned  
425 (30.7%) exact matches, in which:  
340 unique CDR3  
7 unique J



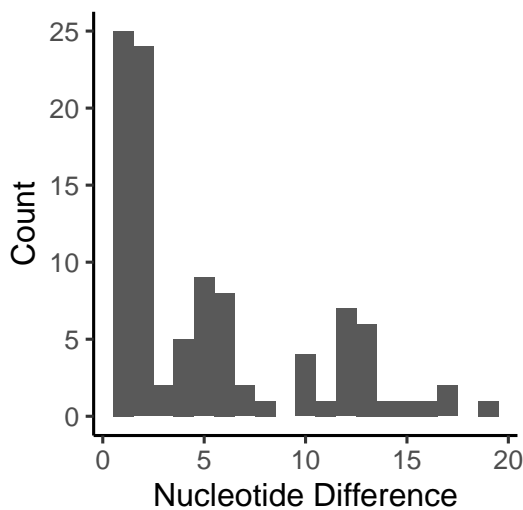
### IGHV4-28\*02\_05

1 sequences assigned  
No exact matches.



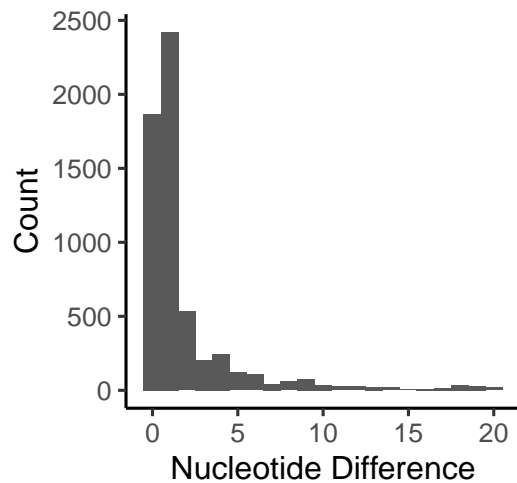
### IGHV4-30-2\*03

106 sequences assigned  
No exact matches.



### IGHV4-34\*01\_02

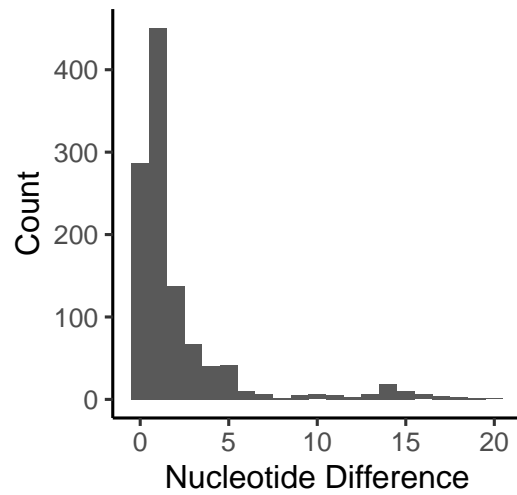
6754 sequences assigned  
1868 (27.7%) exact matches, in which:  
1283 unique CDR3  
7 unique J





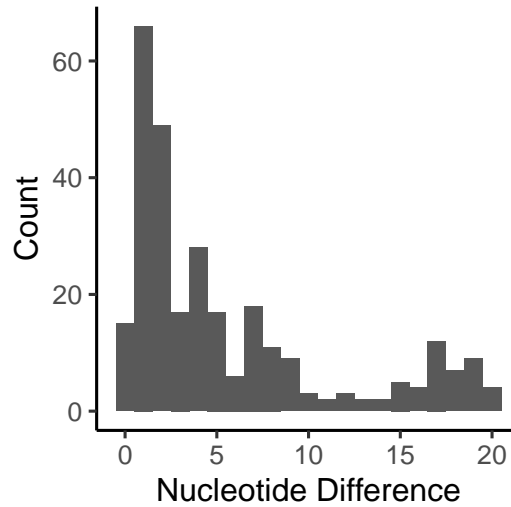
### IGHV4-38-2\*02

1176 sequences assigned  
287 (24.4%) exact matches, in which:  
227 unique CDR3  
7 unique J



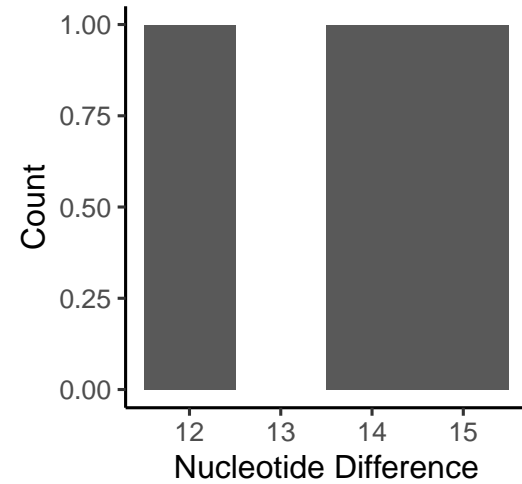
### IGHV4-59\*08

418 sequences assigned  
15 (3.6%) exact matches, in which:  
15 unique CDR3  
4 unique J



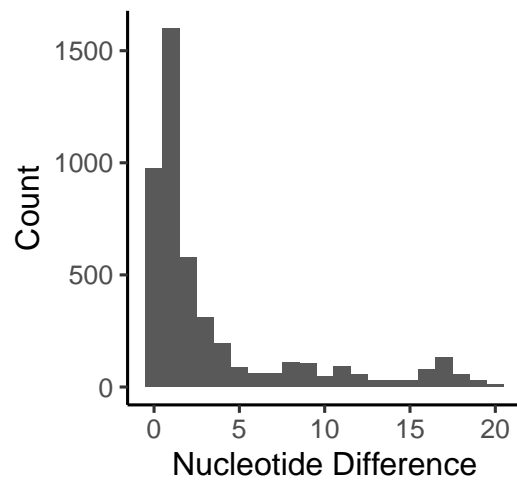
### IGHV1/OR15-2\*02\_03

4 sequences assigned  
No exact matches.



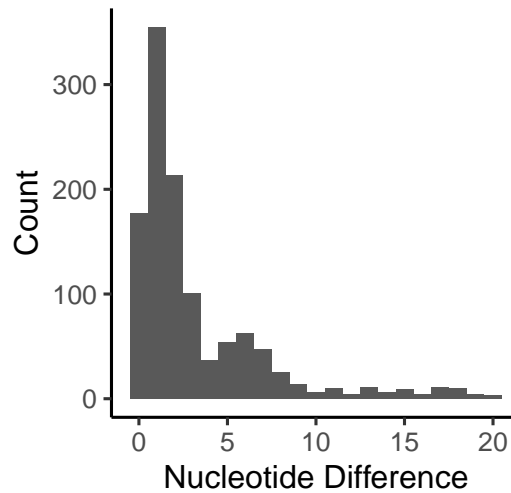
### IGHV4-39\*07

4779 sequences assigned  
975 (20.4%) exact matches, in which:  
737 unique CDR3  
7 unique J



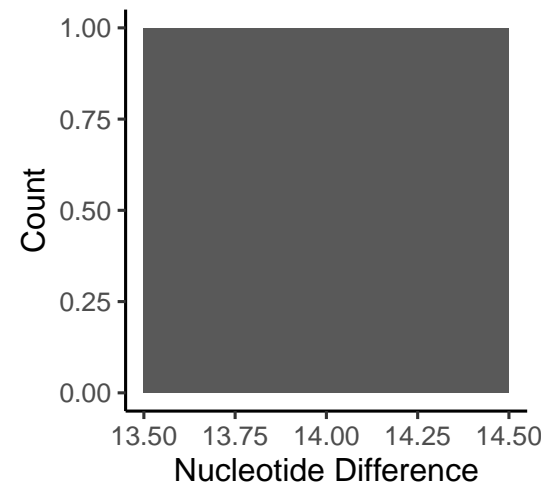
### IGHV4-59\*12

1287 sequences assigned  
177 (13.8%) exact matches, in which:  
174 unique CDR3  
7 unique J



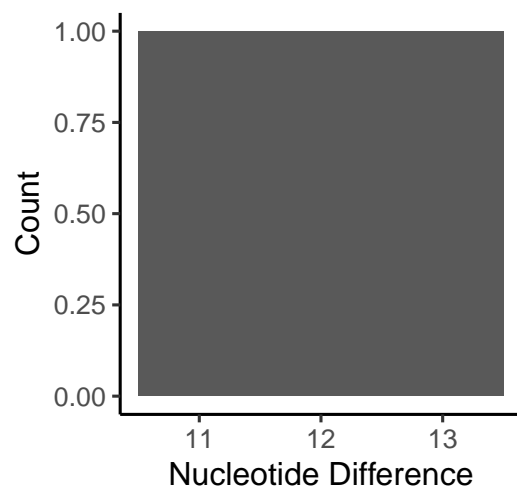
### IGHV1/OR15-4\*01

1 sequences assigned  
No exact matches.



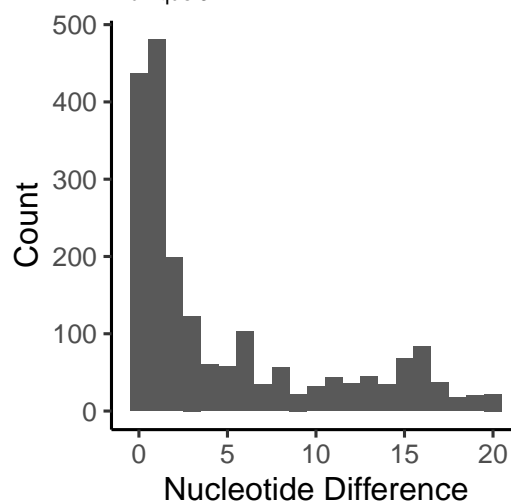
### IGHV4-55\*09

3 sequences assigned  
No exact matches.



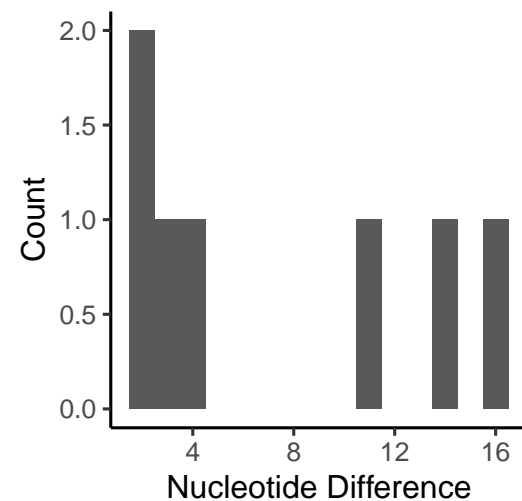
### IGHV4-61\*01

2181 sequences assigned  
437 (20%) exact matches, in which:  
368 unique CDR3  
7 unique J



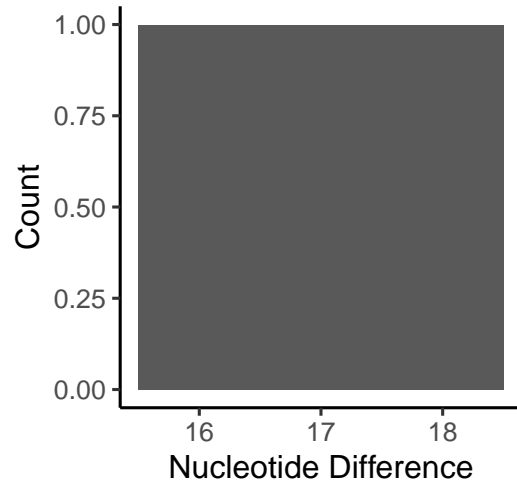
### IGHV4/OR15-8\*01

7 sequences assigned  
No exact matches.



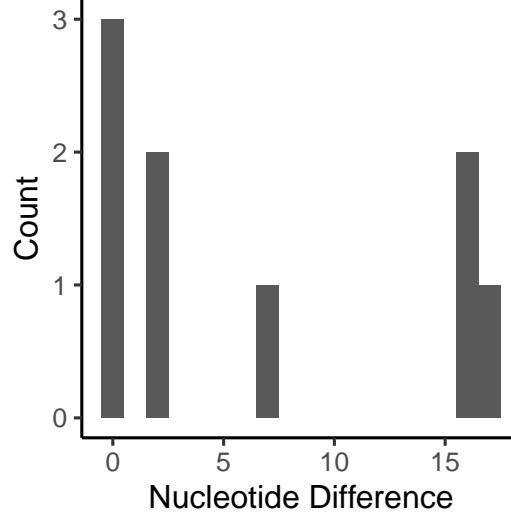
### IGHV4/OR15–8\*02

10 sequences assigned  
No exact matches.



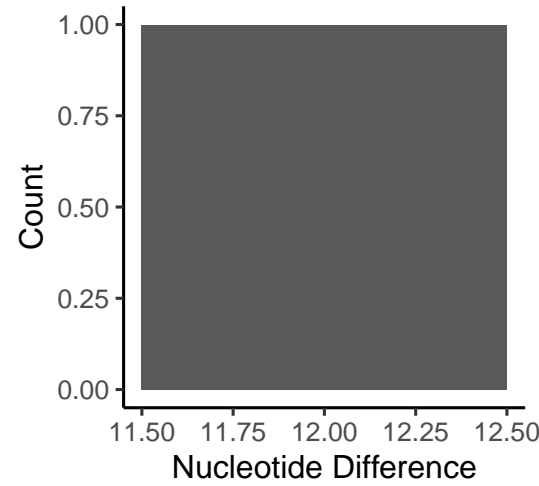
### IGHV5–51\*06

38 sequences assigned  
3 (7.9%) exact matches, in which:  
3 unique CDR3  
3 unique J



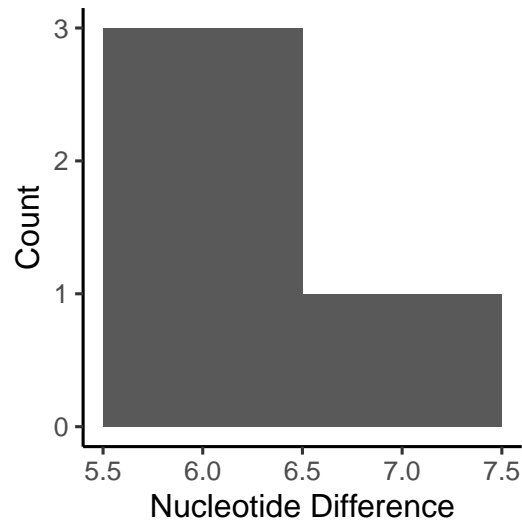
### IGHV3/OR16–9\*01

2 sequences assigned  
No exact matches.



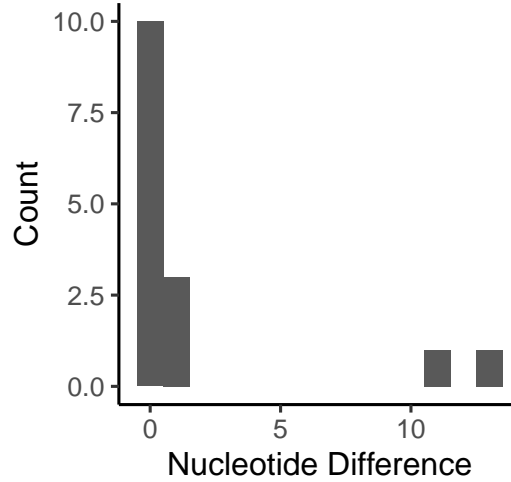
### IGHV5–10–1\*01\_03

4 sequences assigned  
No exact matches.



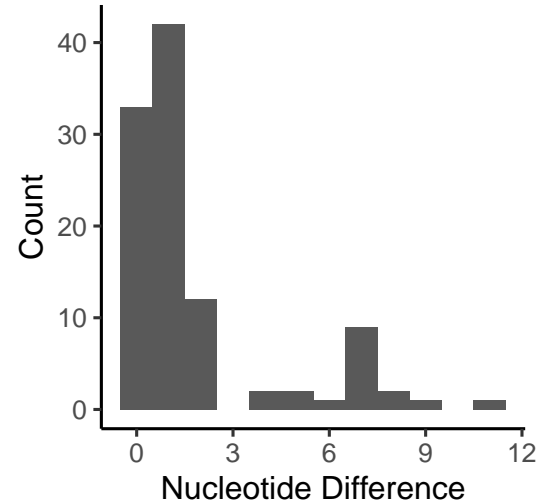
### IGHV5–51\*07

16 sequences assigned  
10 (62.5%) exact matches, in which:  
10 unique CDR3  
5 unique J



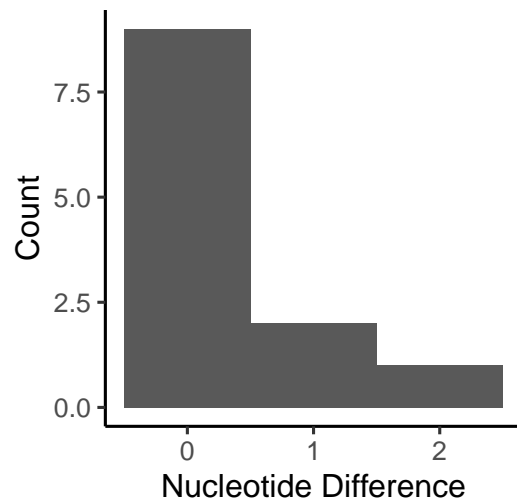
### IGHV7–4–1\*01

105 sequences assigned  
33 (31.4%) exact matches, in which:  
26 unique CDR3  
5 unique J



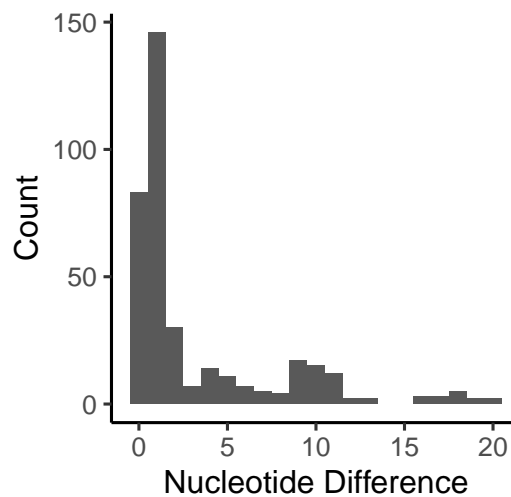
### IGHV5–51\*04

111 sequences assigned  
9 (8.1%) exact matches, in which:  
8 unique CDR3  
3 unique J



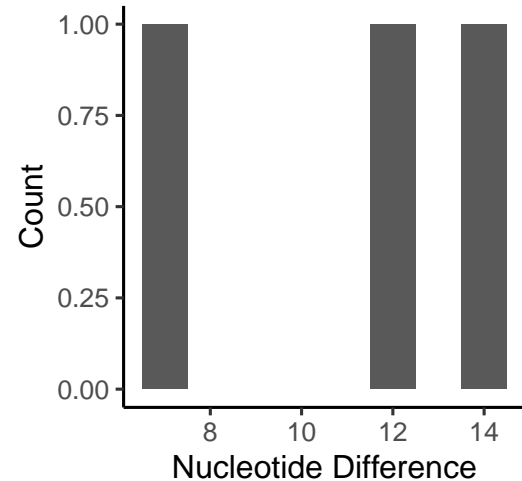
### IGHV6–1\*01\_02

373 sequences assigned  
83 (22.3%) exact matches, in which:  
66 unique CDR3  
6 unique J

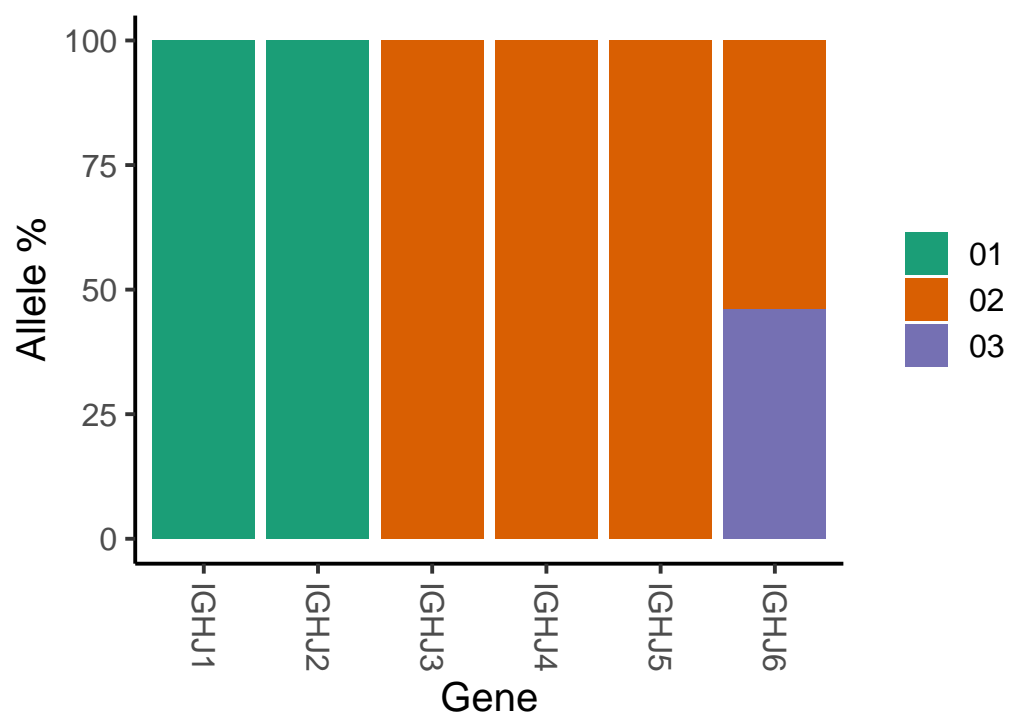


### IGHV7–4–1\*02

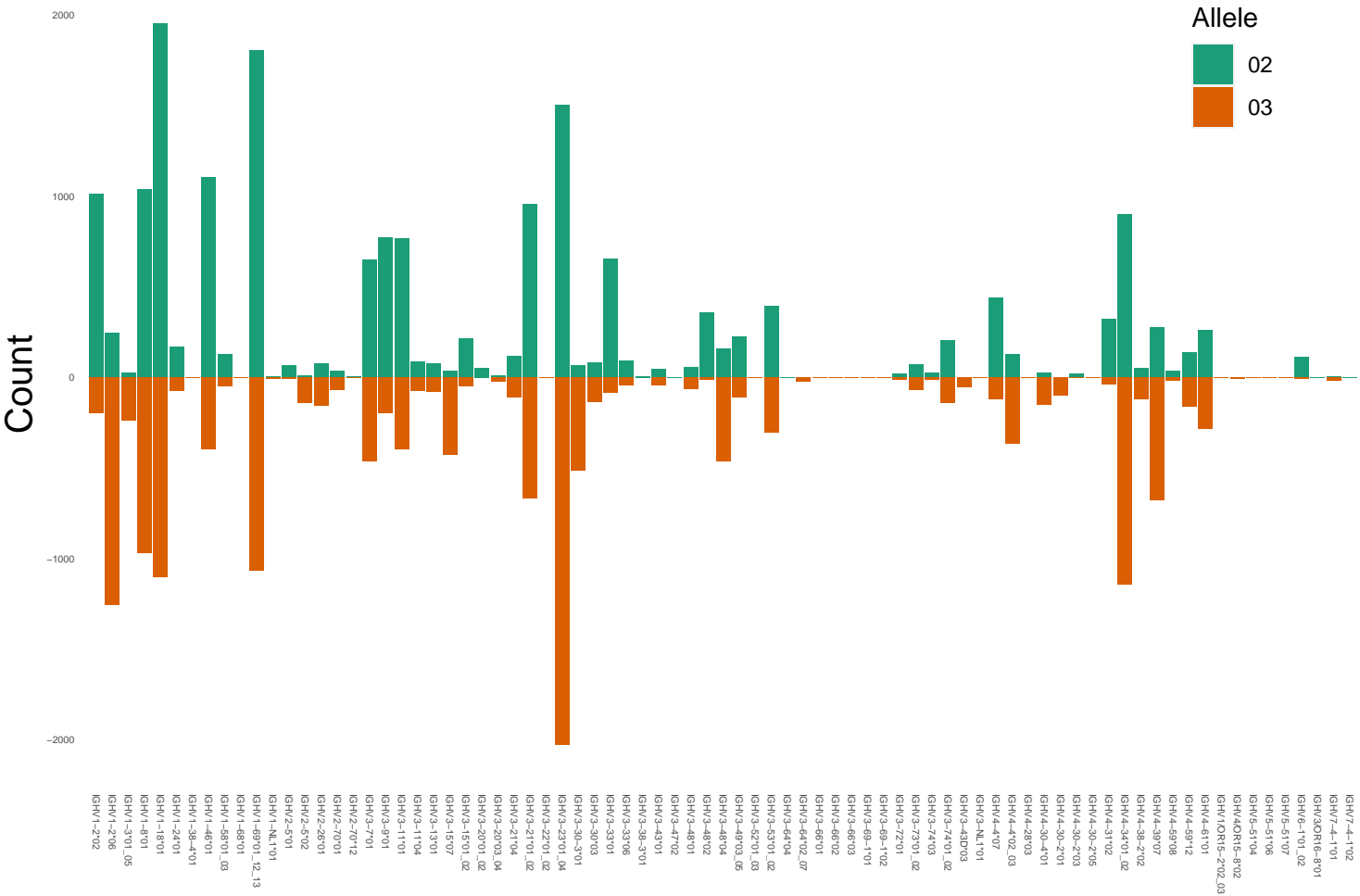
3 sequences assigned  
No exact matches.



Allele Usage



## Sequence Count by IGHJ6 allele usage



[illegible]