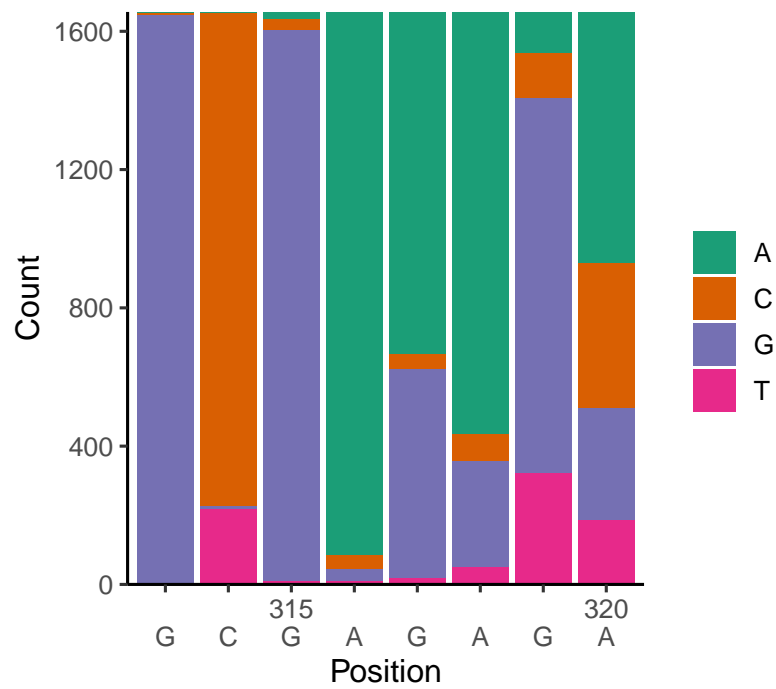
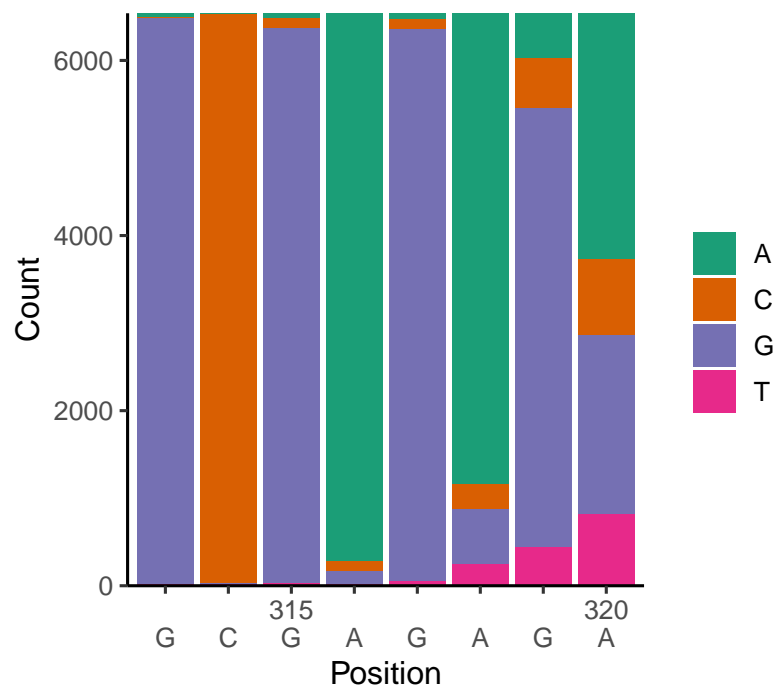


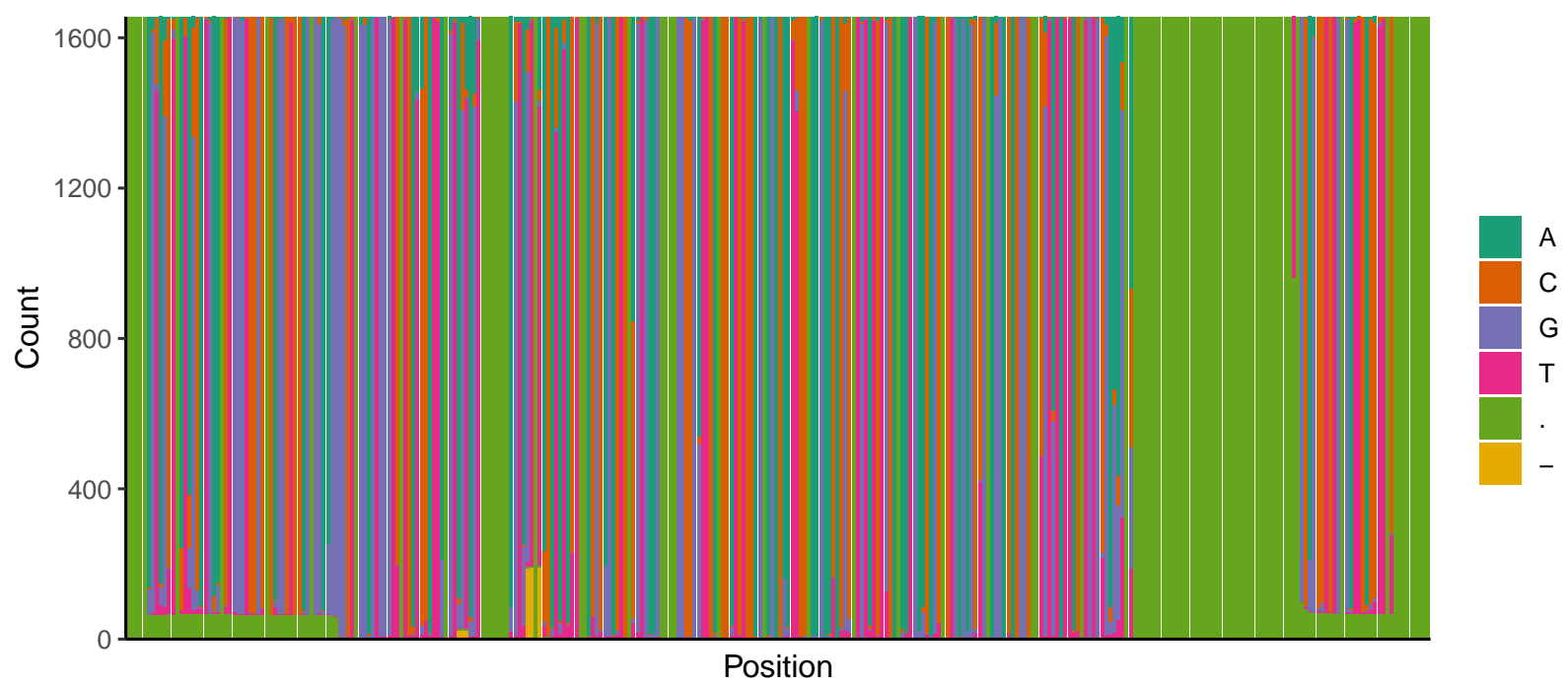
Gene IGHV3-21\*04\_C246T\_G247T\_T256A\_A258G\_G303A



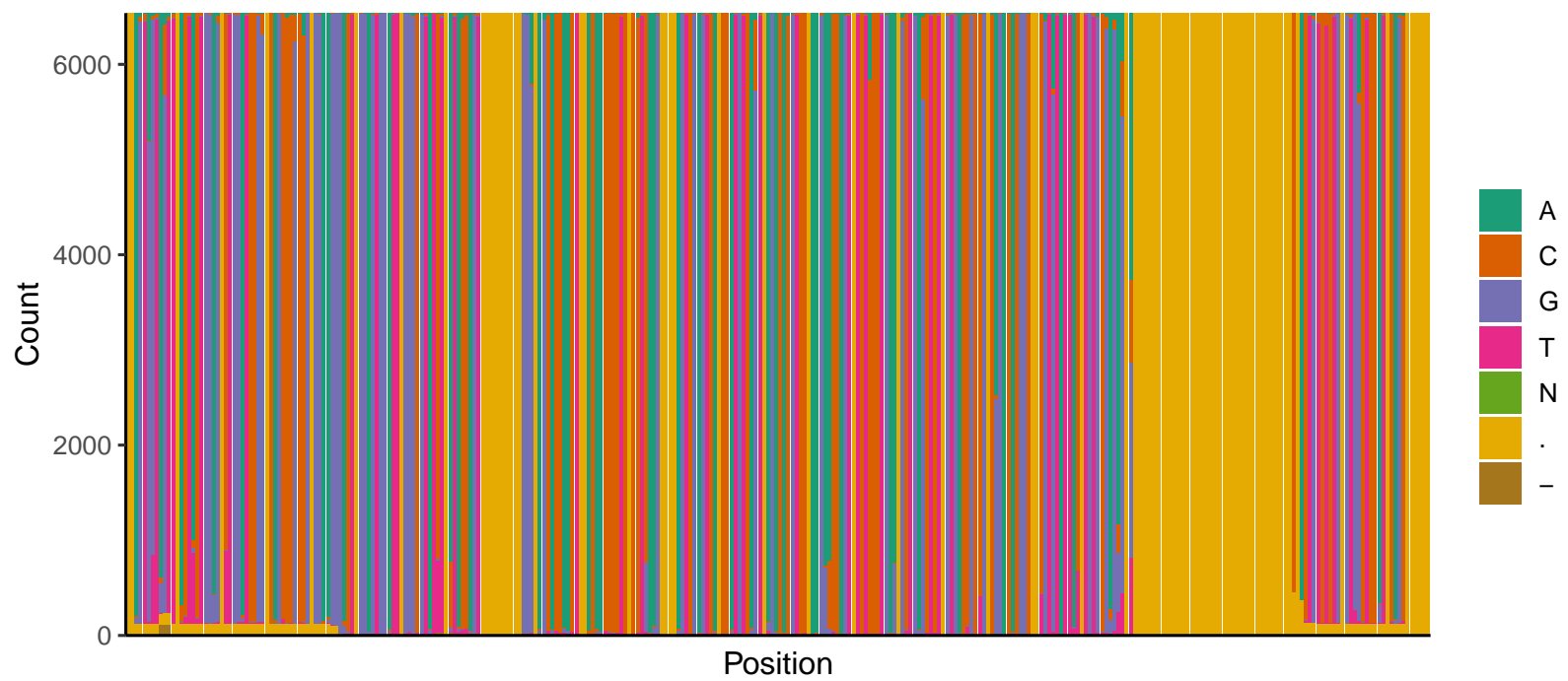
Gene IGHV4-61\*02\_A234G



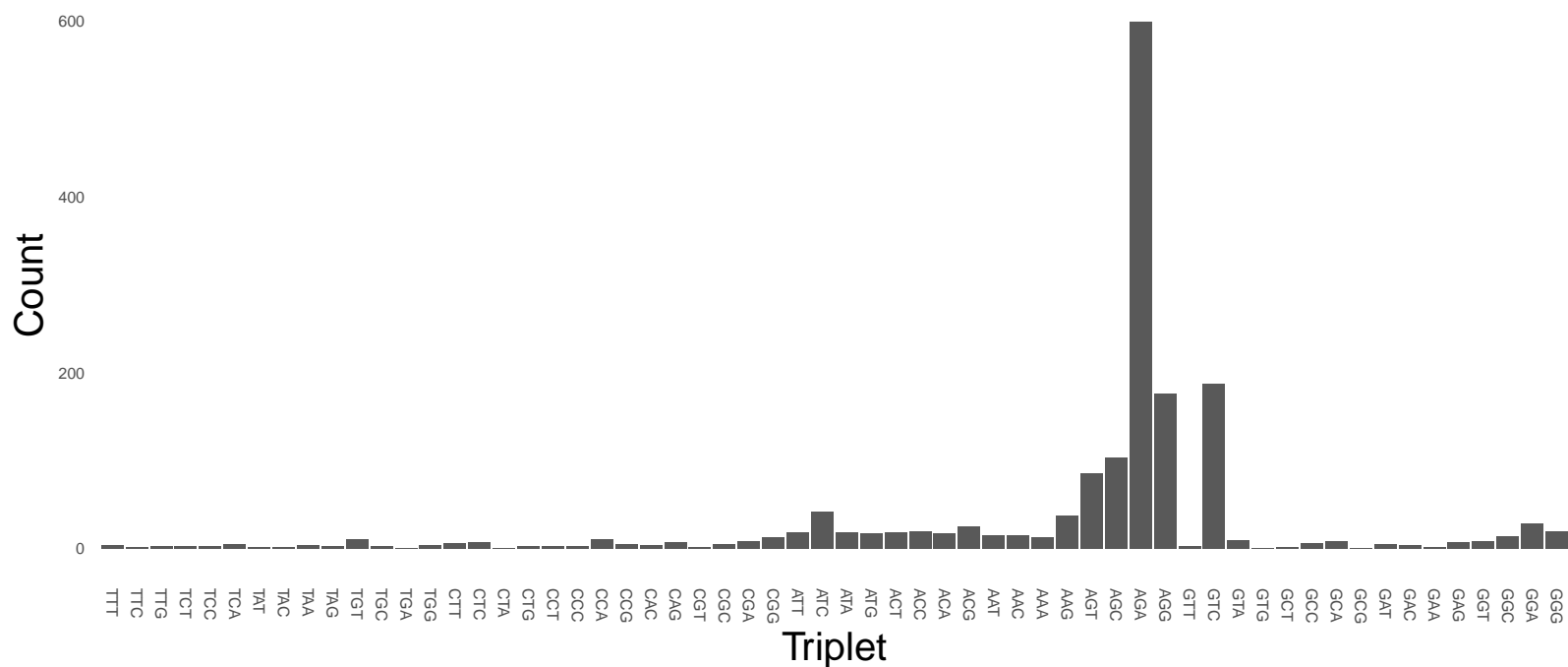
Gene IGHV3-21\*04\_C246T\_G247T\_T256A\_A258G\_G303A



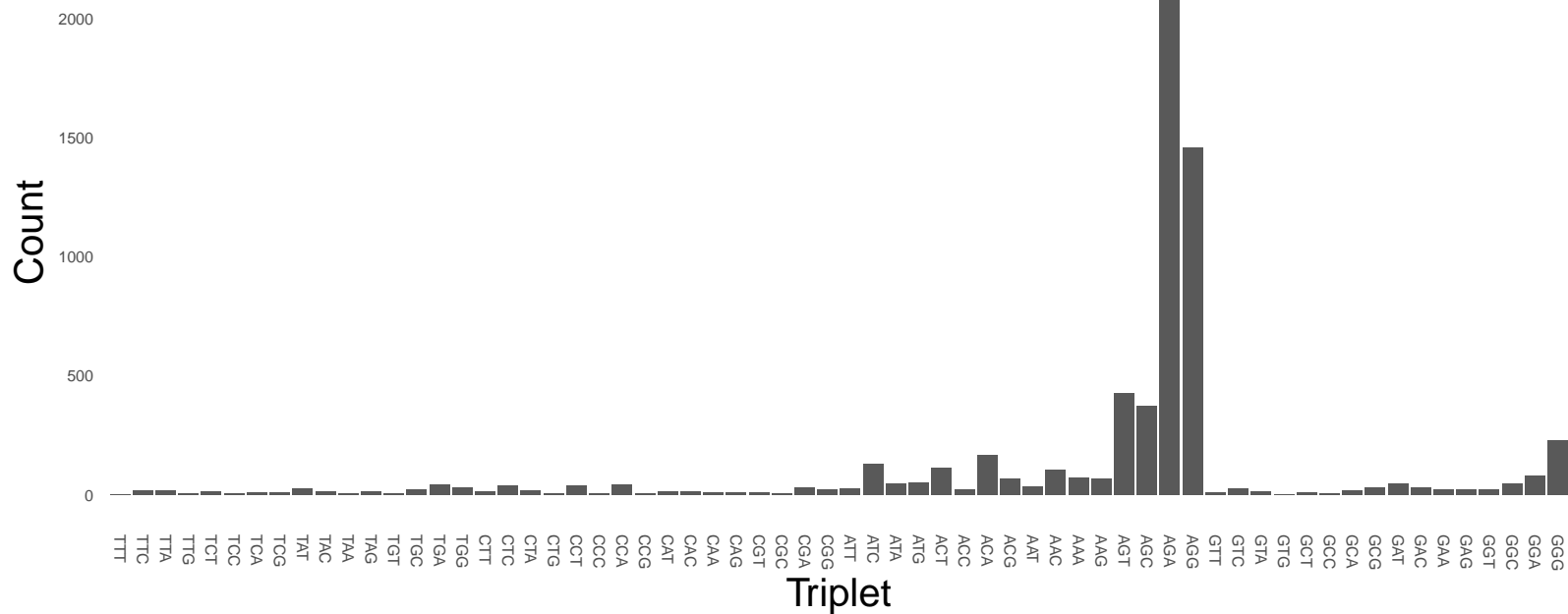
Gene IGHV4-61\*02\_A234G



IGHV3–21\*04\_C246T\_G247T\_T256A\_A258G\_G303A– Final 3 nucleotides as a triplet

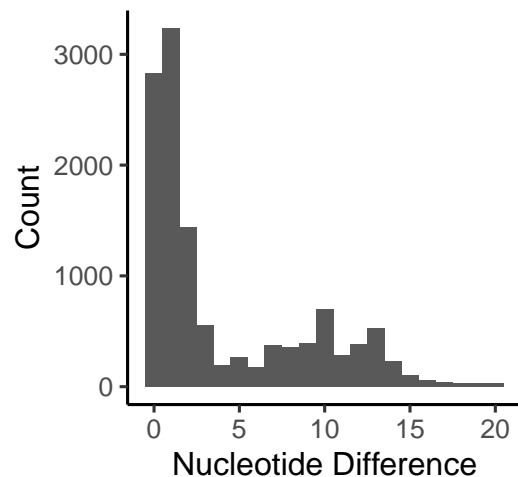


IGHV4–61\*02\_A234G– Final 3 nucleotides as a triplet



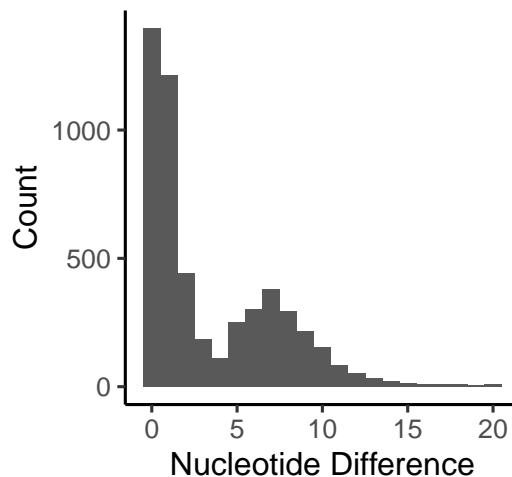
### IGHV1-2\*02

12324 sequences assigned  
2826 (22.9%) exact matches, in which:  
2272 unique CDR3  
7 unique J



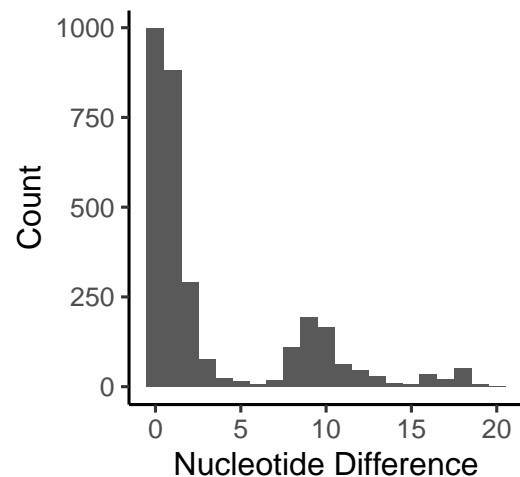
### IGHV1-8\*01

5202 sequences assigned  
1396 (26.8%) exact matches, in which:  
1209 unique CDR3  
7 unique J



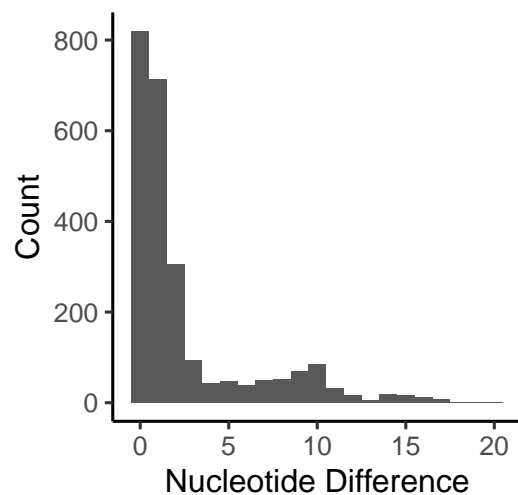
### IGHV1-24\*01

3057 sequences assigned  
998 (32.6%) exact matches, in which:  
839 unique CDR3  
7 unique J



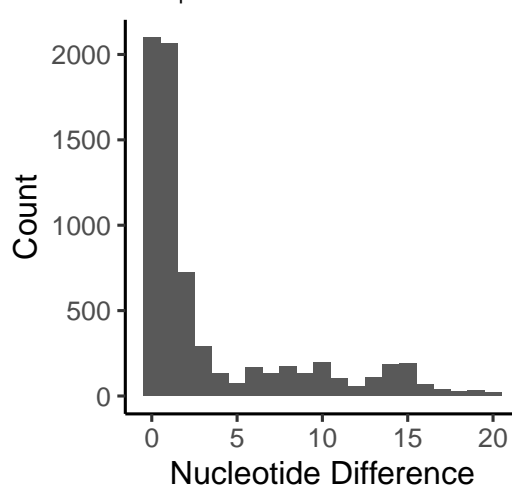
### IGHV1-2\*04

2435 sequences assigned  
820 (33.7%) exact matches, in which:  
691 unique CDR3  
7 unique J



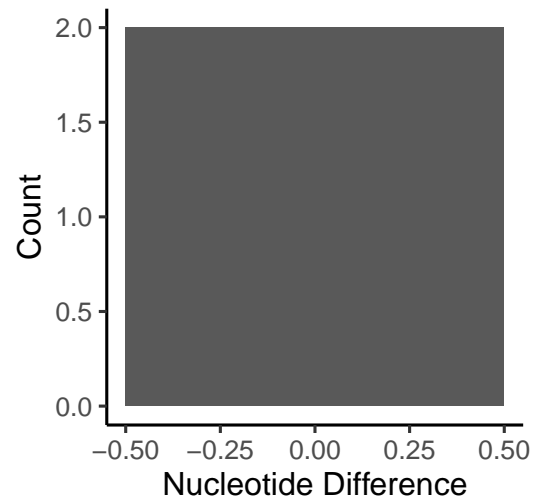
### IGHV1-18\*01

7803 sequences assigned  
2098 (26.9%) exact matches, in which:  
1730 unique CDR3  
7 unique J



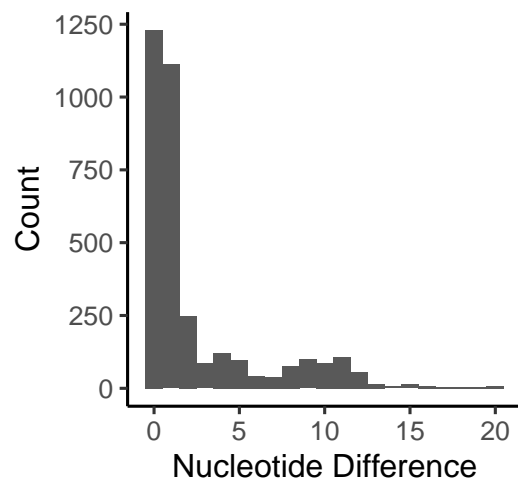
### IGHV1-38-4\*01

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



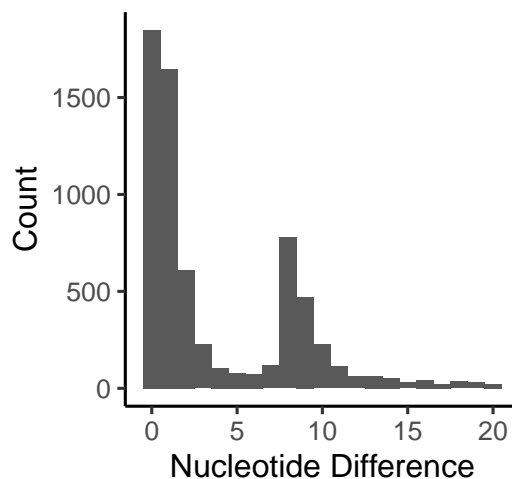
### IGHV1-3\*01\_05

4332 sequences assigned  
1230 (28.4%) exact matches, in which:  
996 unique CDR3  
7 unique J



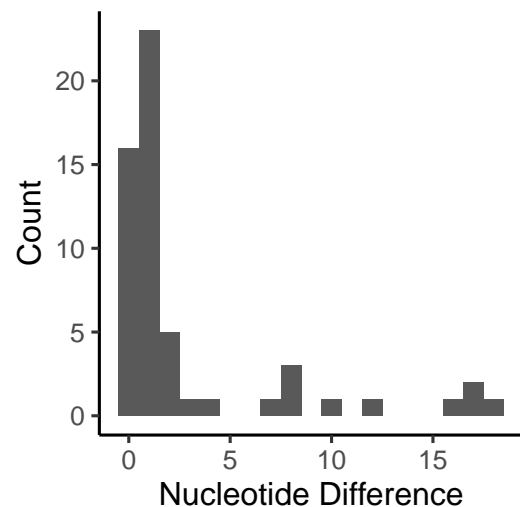
### IGHV1-18\*04

7302 sequences assigned  
1848 (25.3%) exact matches, in which:  
1582 unique CDR3  
7 unique J



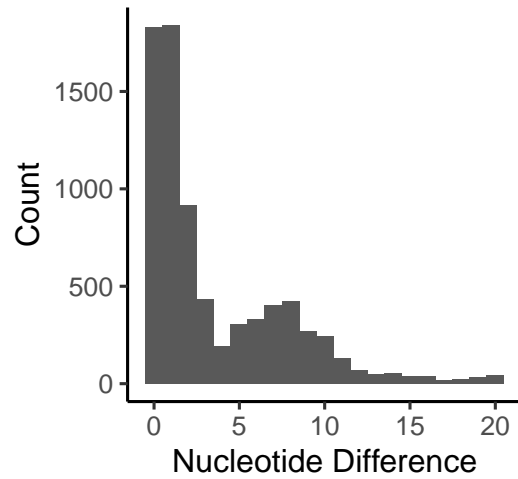
### IGHV1-45\*02

56 sequences assigned  
16 (28.6%) exact matches, in which:  
13 unique CDR3  
6 unique J



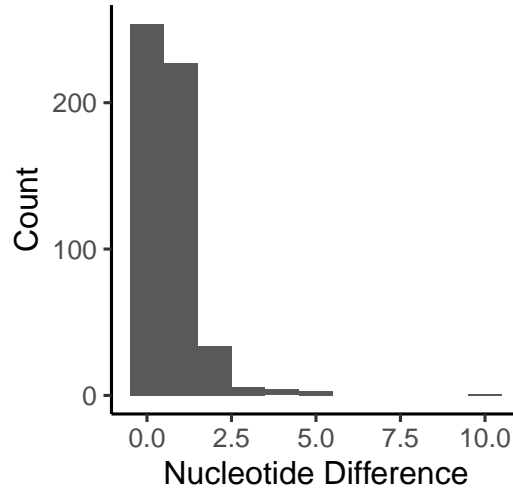
### IGHV1-46\*01

8384 sequences assigned  
1831 (21.8%) exact matches, in which:  
1597 unique CDR3  
7 unique J



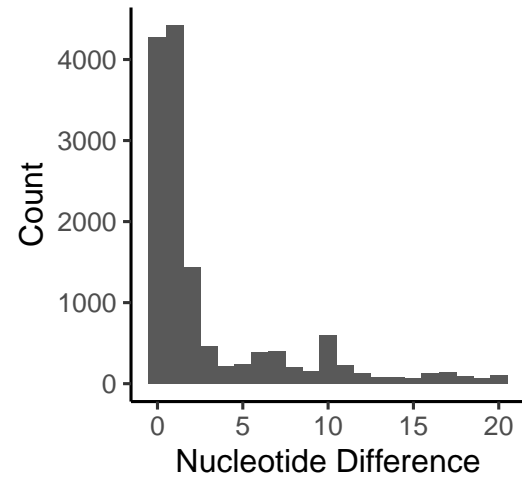
### IGHV1-58\*01\_03

530 sequences assigned  
254 (47.9%) exact matches, in which:  
227 unique CDR3  
7 unique J



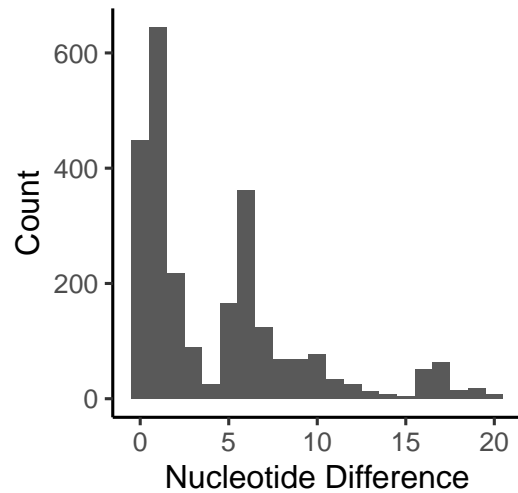
### IGHV1-69\*01\_12\_13

14538 sequences assigned  
4275 (29.4%) exact matches, in which:  
3588 unique CDR3  
7 unique J



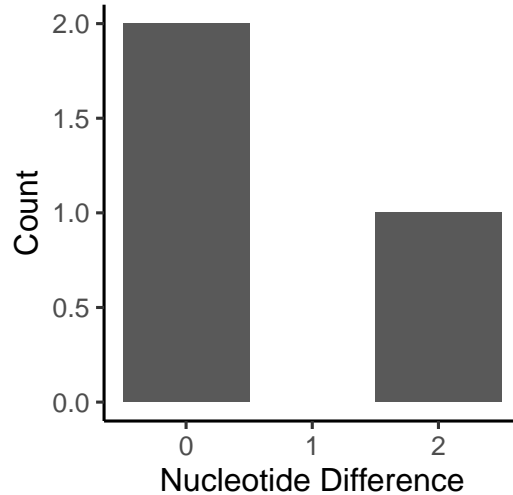
### IGHV1-46\*03

2561 sequences assigned  
448 (17.5%) exact matches, in which:  
302 unique CDR3  
7 unique J



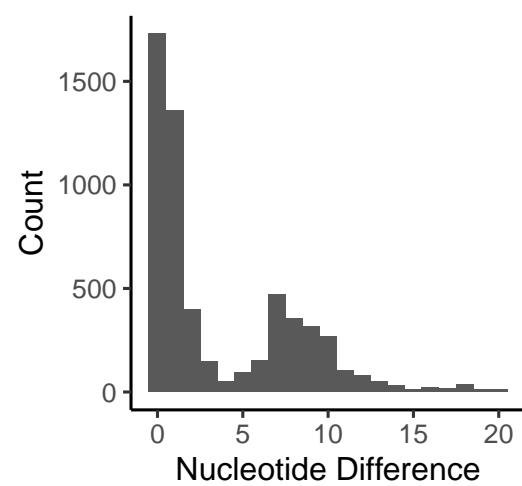
### IGHV1-68\*01

3 sequences assigned  
2 (66.7%) exact matches, in which:  
2 unique CDR3  
2 unique J



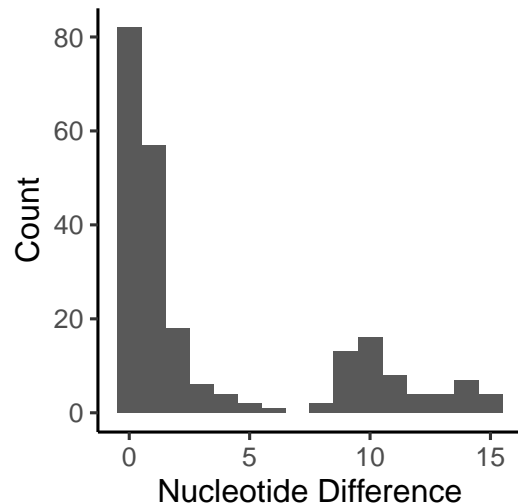
### IGHV1-69\*06\_14

5784 sequences assigned  
1730 (29.9%) exact matches, in which:  
1526 unique CDR3  
7 unique J



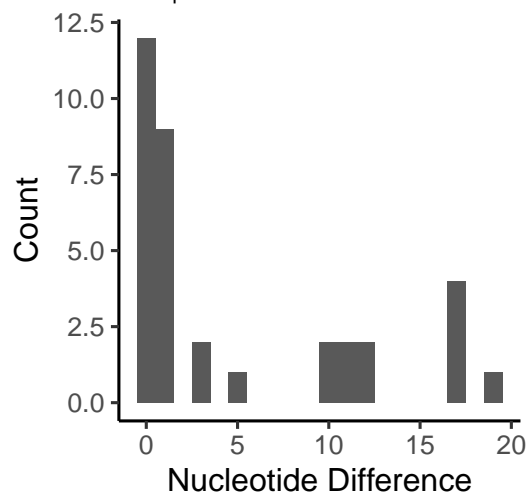
### IGHV1-58\*02

228 sequences assigned  
82 (36%) exact matches, in which:  
68 unique CDR3  
6 unique J



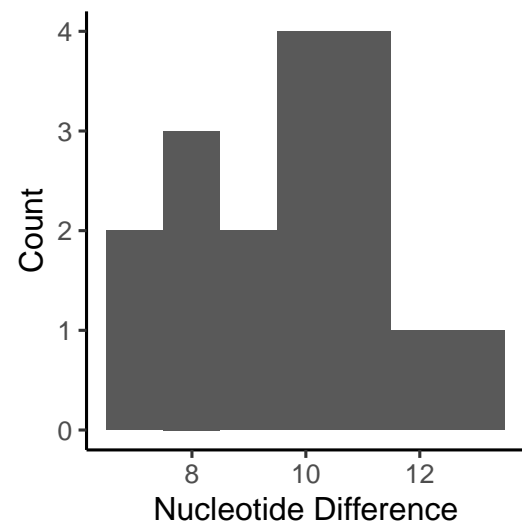
### IGHV1-69-2\*01

35 sequences assigned  
12 (34.3%) exact matches, in which:  
9 unique CDR3  
3 unique J



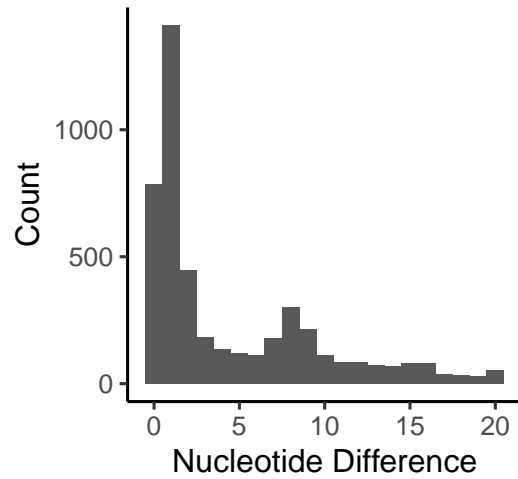
### IGHV1-NL1\*01

17 sequences assigned  
No exact matches.



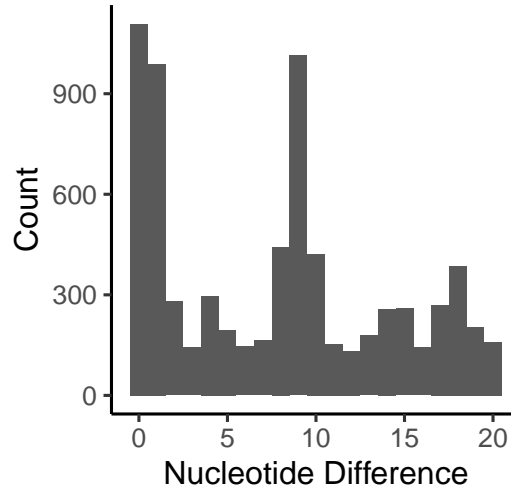
### IGHV2-5\*02

5233 sequences assigned  
786 (15%) exact matches, in which:  
566 unique CDR3  
7 unique J



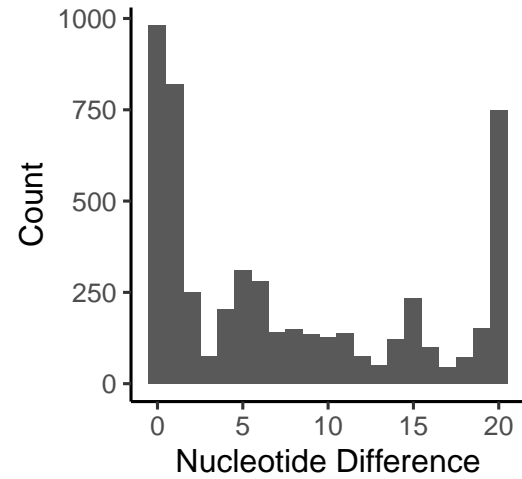
### IGHV3-7\*01

9478 sequences assigned  
1109 (11.7%) exact matches, in which:  
797 unique CDR3  
7 unique J



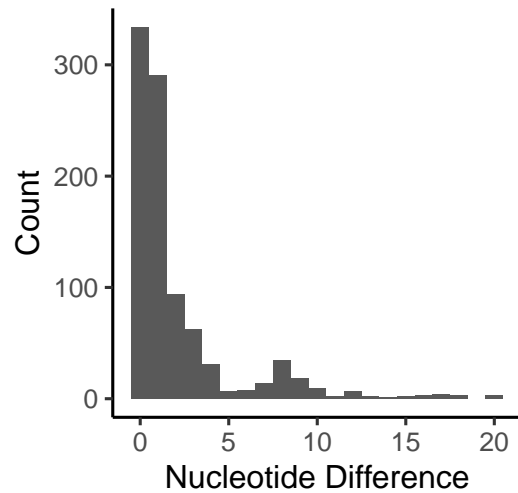
### IGHV3-9\*01

8362 sequences assigned  
981 (11.7%) exact matches, in which:  
572 unique CDR3  
7 unique J



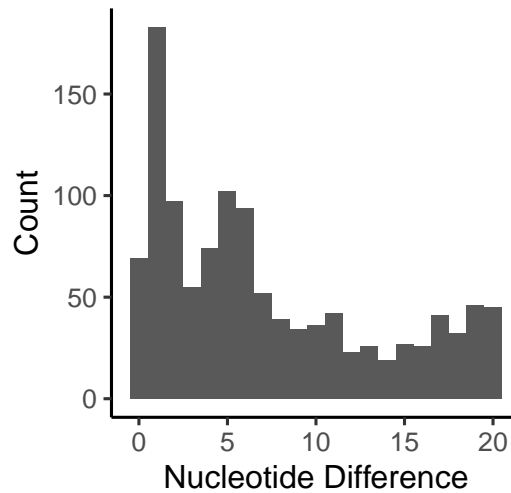
### IGHV2-26\*01

930 sequences assigned  
334 (35.9%) exact matches, in which:  
266 unique CDR3  
7 unique J



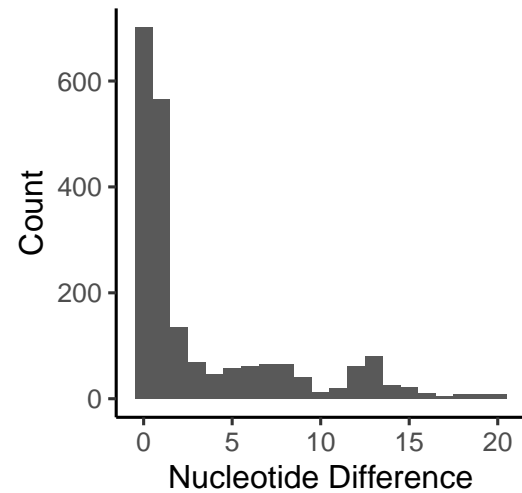
### IGHV3-7\*03

1693 sequences assigned  
69 (4.1%) exact matches, in which:  
60 unique CDR3  
6 unique J



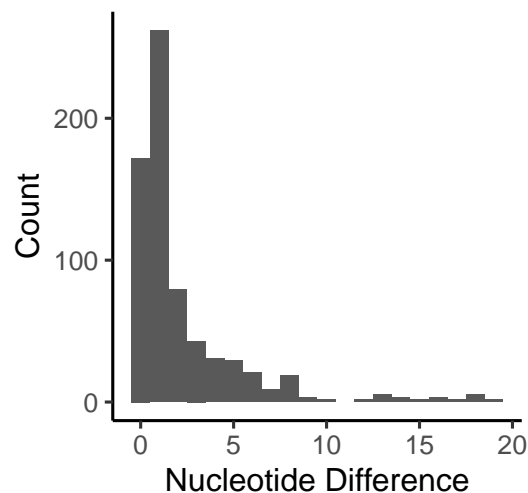
### IGHV3-11\*01

2194 sequences assigned  
702 (32%) exact matches, in which:  
501 unique CDR3  
7 unique J



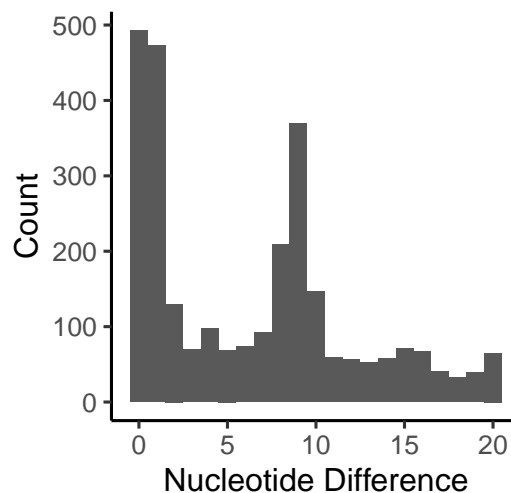
### IGHV2-70\*01

720 sequences assigned  
172 (23.9%) exact matches, in which:  
121 unique CDR3  
6 unique J



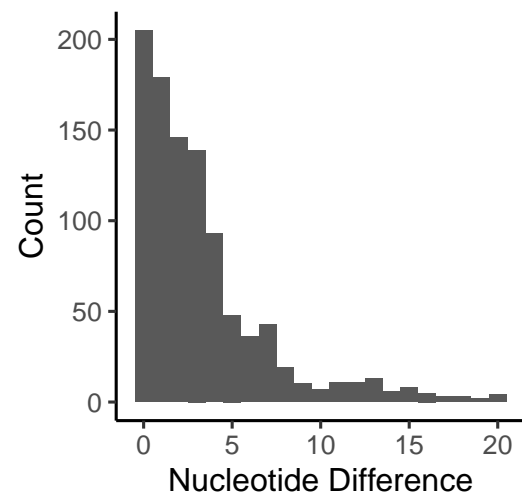
### IGHV3-7\*04

2929 sequences assigned  
493 (16.8%) exact matches, in which:  
312 unique CDR3  
6 unique J



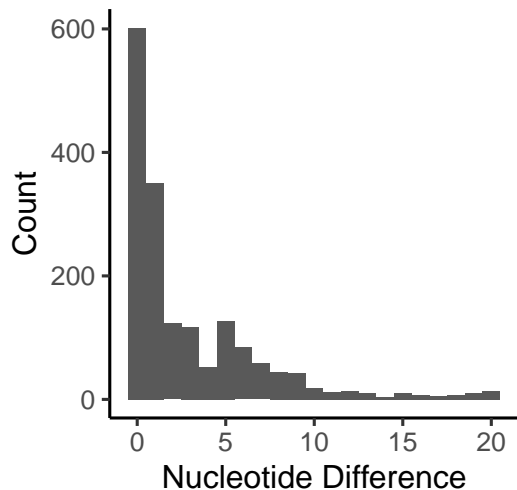
### IGHV3-11\*04

1027 sequences assigned  
205 (20%) exact matches, in which:  
192 unique CDR3  
7 unique J



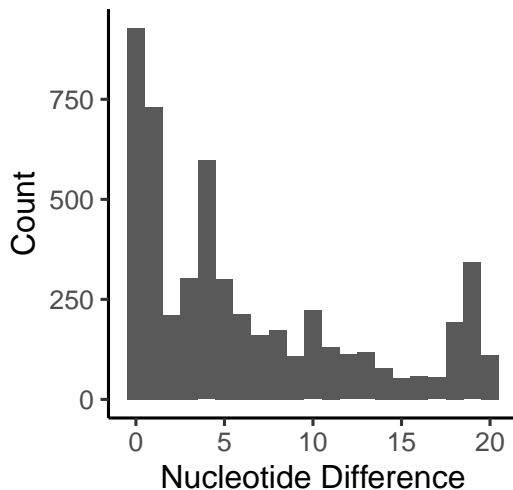
### IGHV3-11\*06

2080 sequences assigned  
602 (28.9%) exact matches, in which:  
426 unique CDR3  
7 unique J



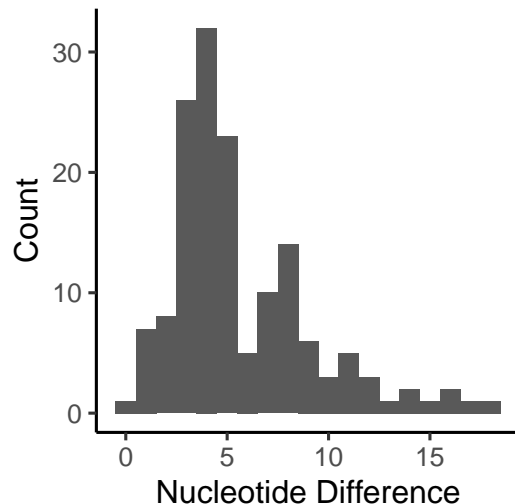
### IGHV3-15\*01\_02

5642 sequences assigned  
929 (16.5%) exact matches, in which:  
558 unique CDR3  
7 unique J



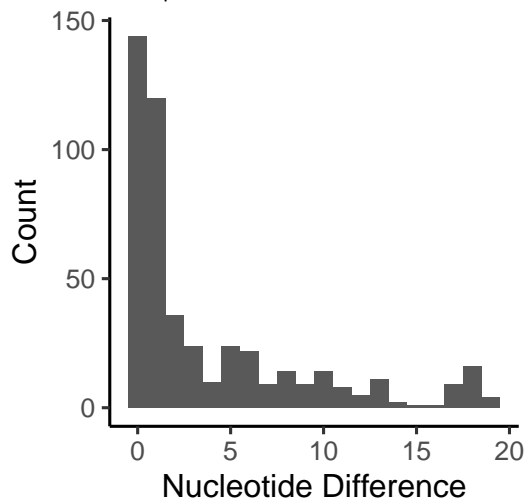
### IGHV3-20\*03\_04

159 sequences assigned  
1 (0.6%) exact matches, in which:  
1 unique CDR3  
1 unique J



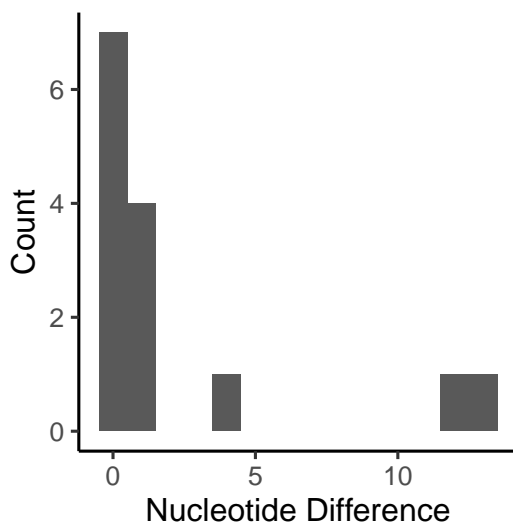
### IGHV3-13\*01

486 sequences assigned  
144 (29.6%) exact matches, in which:  
94 unique CDR3  
7 unique J



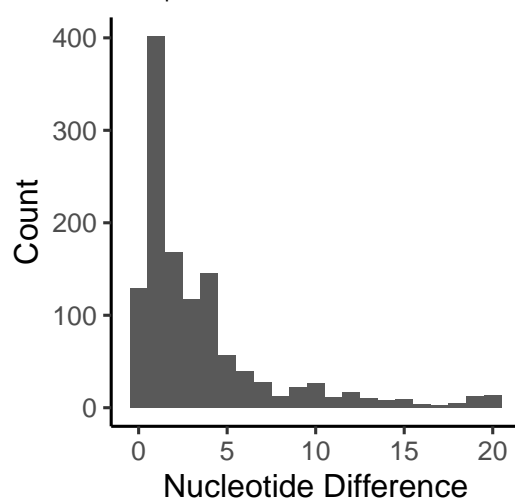
### IGHV3-19\*01

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



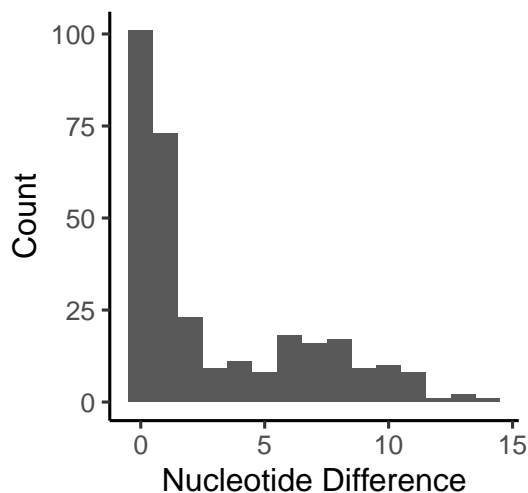
### IGHV3-21\*04

1271 sequences assigned  
129 (10.1%) exact matches, in which:  
117 unique CDR3  
7 unique J



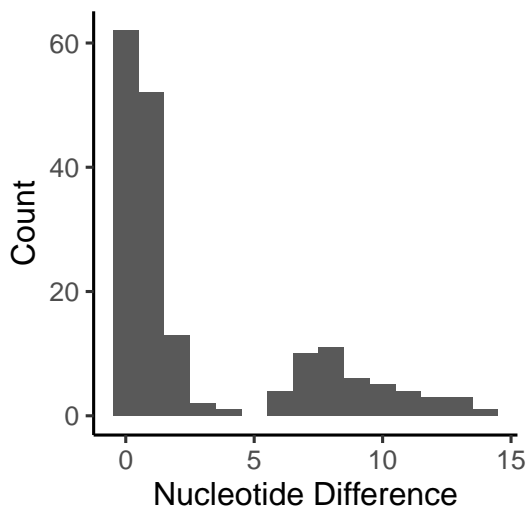
### IGHV3-13\*05

307 sequences assigned  
101 (32.9%) exact matches, in which:  
72 unique CDR3  
5 unique J



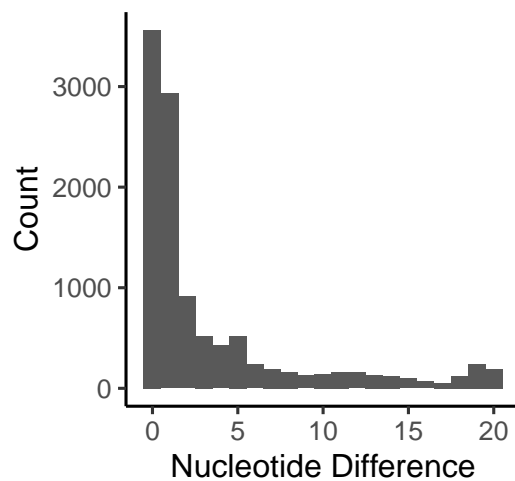
### IGHV3-20\*01\_02

177 sequences assigned  
62 (35%) exact matches, in which:  
37 unique CDR3  
5 unique J



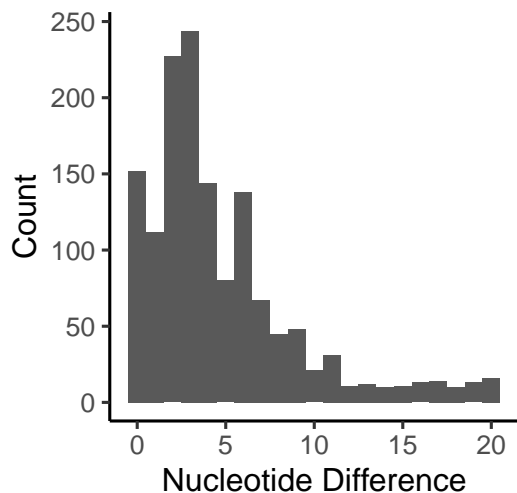
### IGHV3-21\*01\_02

11782 sequences assigned  
3562 (30.2%) exact matches, in which:  
2260 unique CDR3  
7 unique J



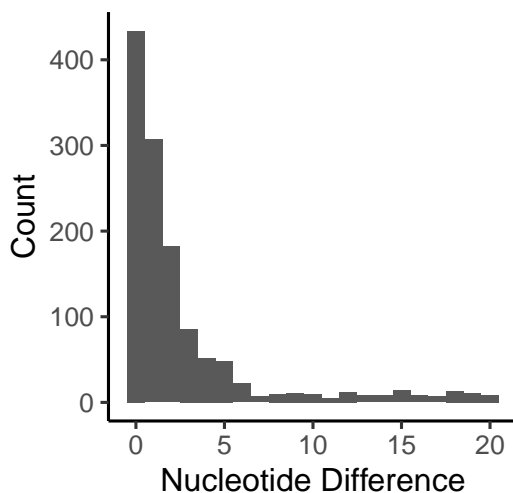
### IGHV3-21\*04\_C246T\_G2

1656 sequences assigned  
152 (9.2%) exact matches, in which:  
148 unique CDR3  
7 unique J



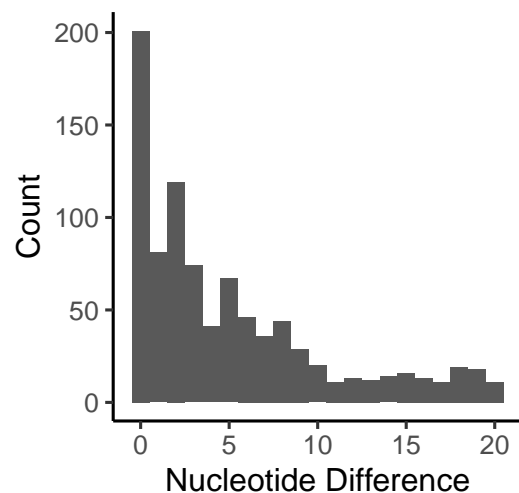
### IGHV3-30\*03

1328 sequences assigned  
434 (32.7%) exact matches, in which:  
396 unique CDR3  
7 unique J



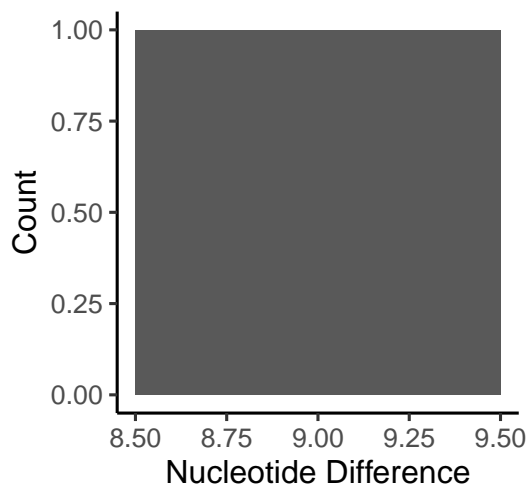
### IGHV3-33\*08

996 sequences assigned  
201 (20.2%) exact matches, in which:  
151 unique CDR3  
6 unique J



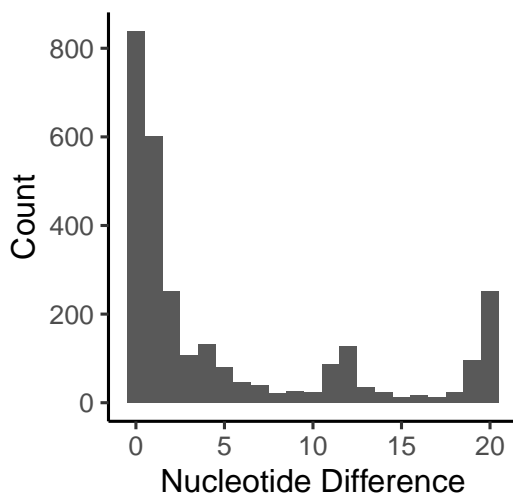
### IGHV3-22\*01\_02

1 sequences assigned  
No exact matches.



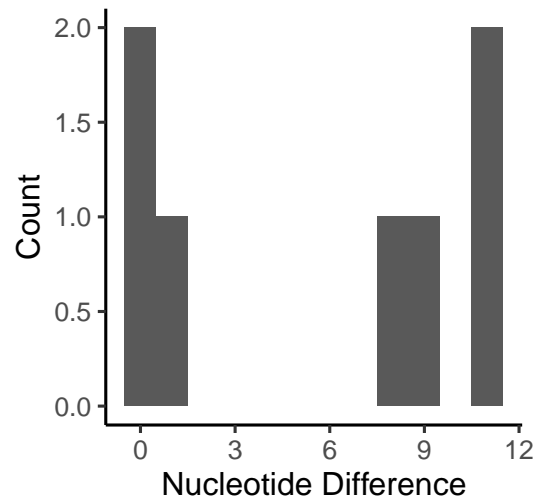
### IGHV3-33\*01

3343 sequences assigned  
839 (25.1%) exact matches, in which:  
570 unique CDR3  
7 unique J



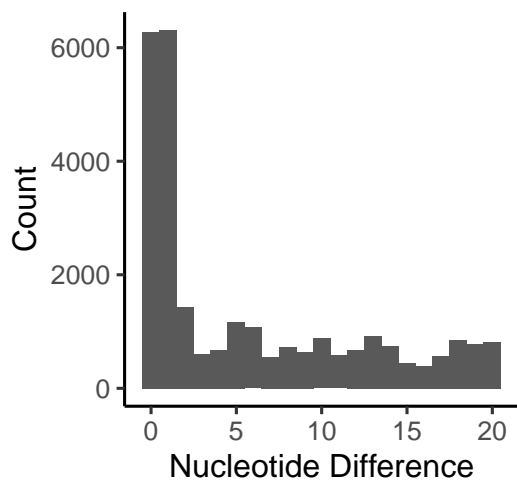
### IGHV3-35\*01

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



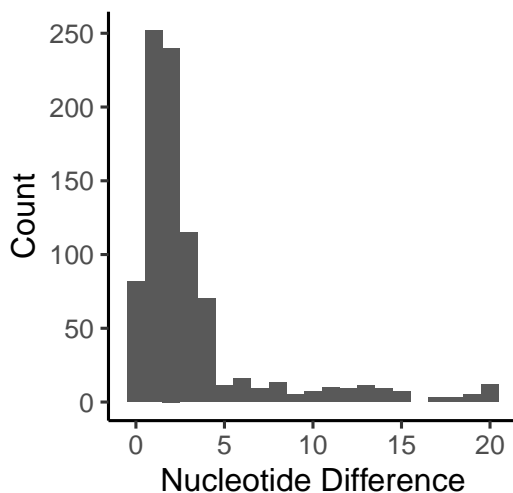
### IGHV3-23\*01\_04

32543 sequences assigned  
6273 (19.3%) exact matches, in which:  
3508 unique CDR3  
7 unique J



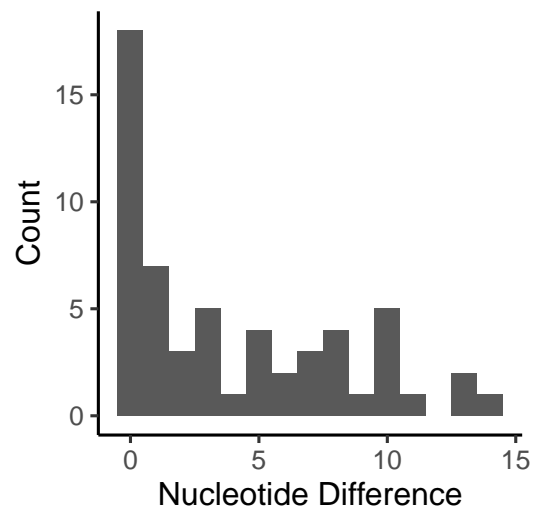
### IGHV3-33\*06

946 sequences assigned  
82 (8.7%) exact matches, in which:  
81 unique CDR3  
6 unique J



### IGHV3-38-3\*01

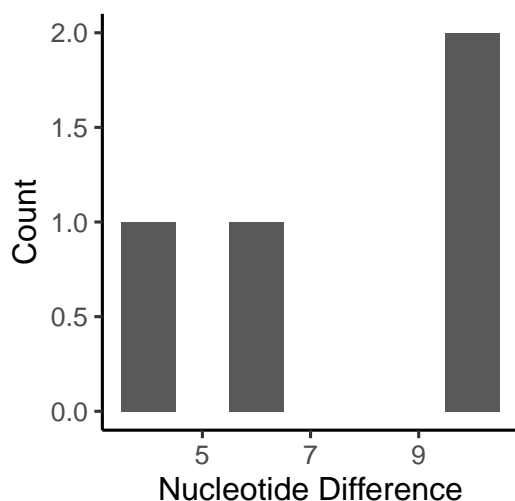
57 sequences assigned  
18 (31.6%) exact matches, in which:  
17 unique CDR3  
5 unique J





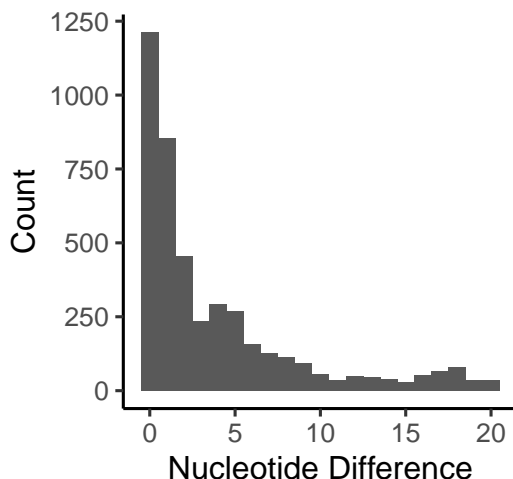
### IGHV3-38\*03

4 sequences assigned  
No exact matches.



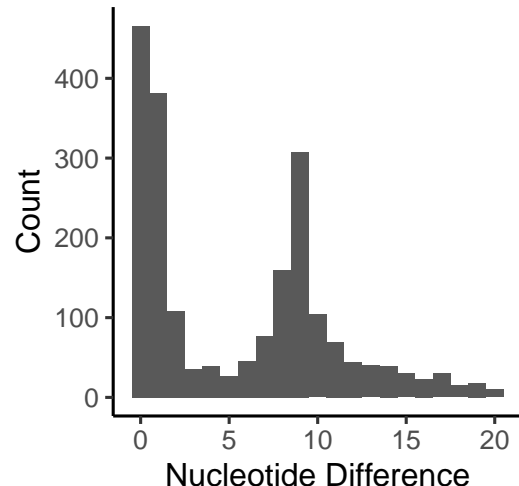
### IGHV3-48\*01

5086 sequences assigned  
1212 (23.8%) exact matches, in which:  
849 unique CDR3  
7 unique J



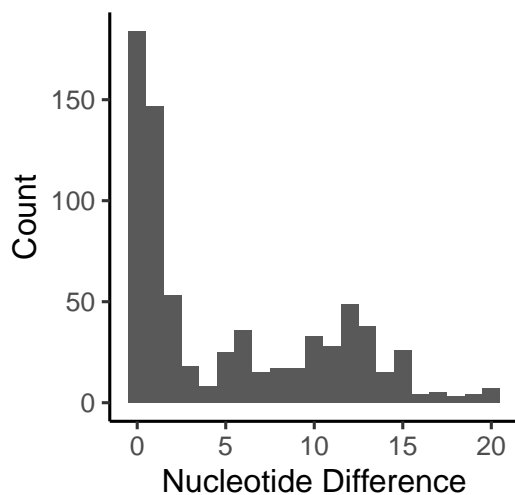
### IGHV3-49\*03\_05

2101 sequences assigned  
466 (22.2%) exact matches, in which:  
282 unique CDR3  
7 unique J



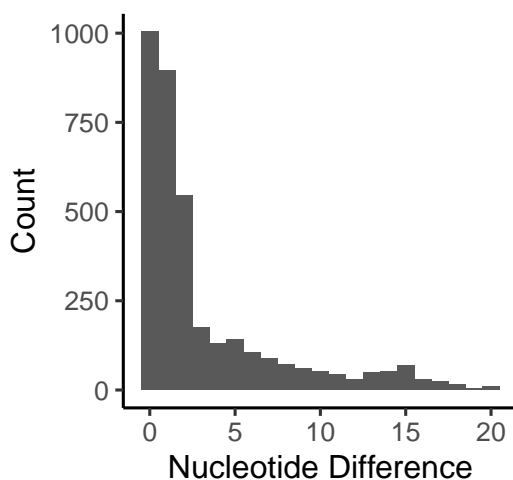
### IGHV3-43\*01

747 sequences assigned  
184 (24.6%) exact matches, in which:  
107 unique CDR3  
7 unique J



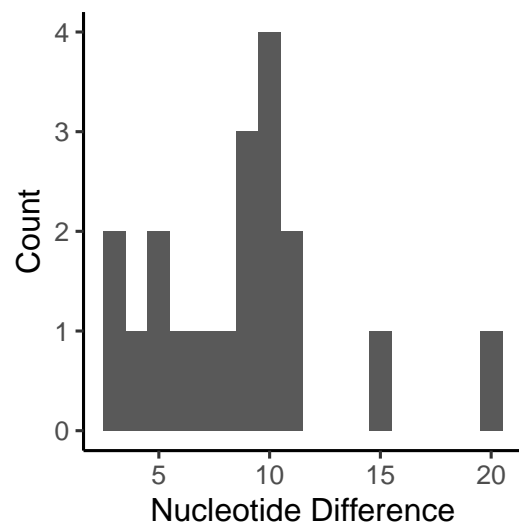
### IGHV3-48\*02

4854 sequences assigned  
1004 (20.7%) exact matches, in which:  
639 unique CDR3  
7 unique J



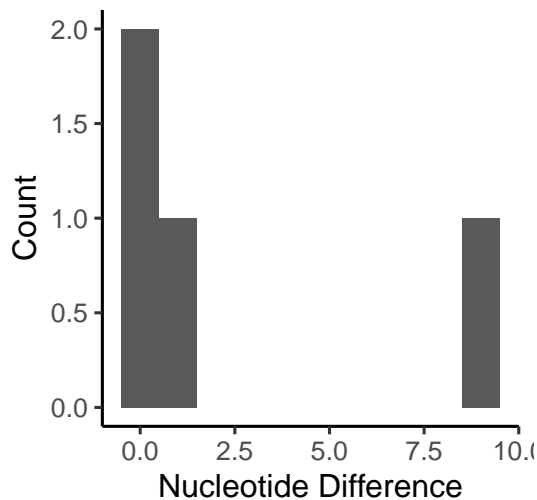
### IGHV3-52\*02

19 sequences assigned  
No exact matches.



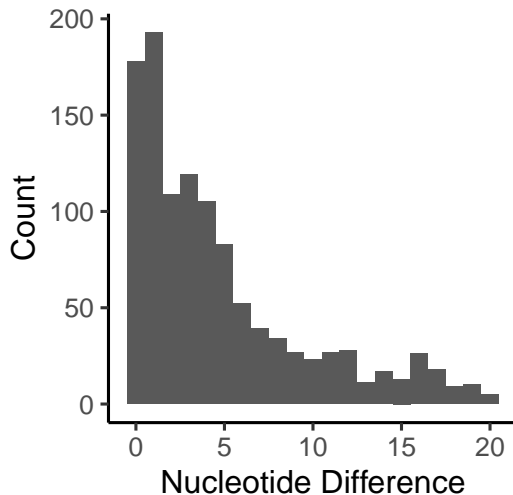
### IGHV3-47\*02

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



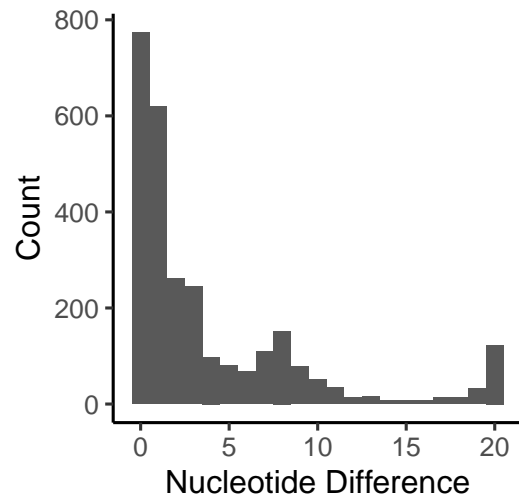
### IGHV3-48\*04

1210 sequences assigned  
178 (14.7%) exact matches, in which:  
163 unique CDR3  
7 unique J



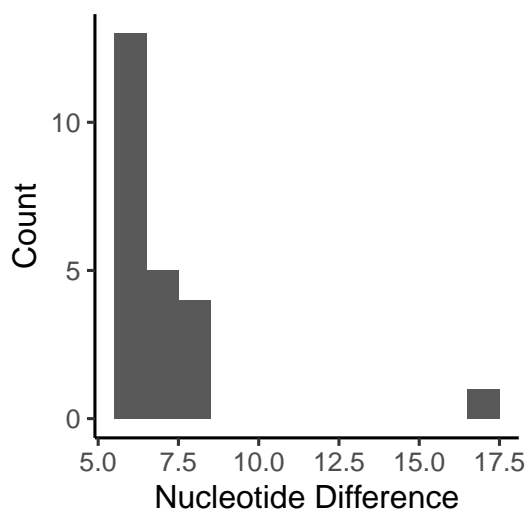
### IGHV3-53\*01\_02

4176 sequences assigned  
774 (18.5%) exact matches, in which:  
527 unique CDR3  
7 unique J



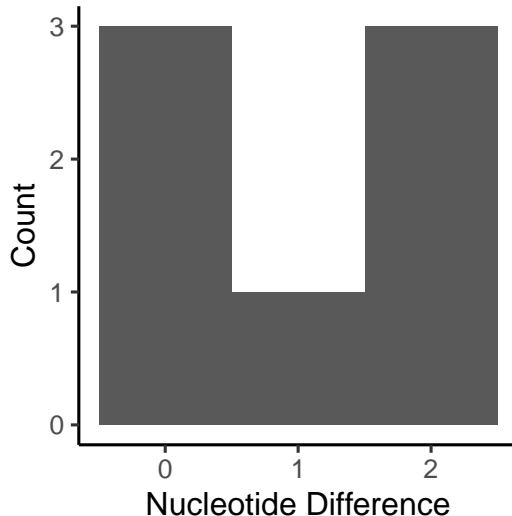
### IGHV3-64\*04

23 sequences assigned  
No exact matches.



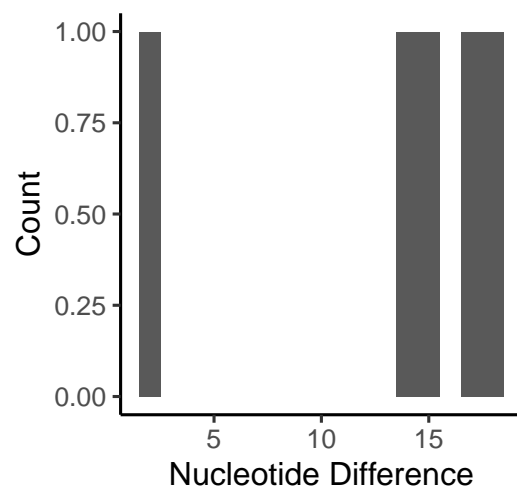
### IGHV3-66\*03

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



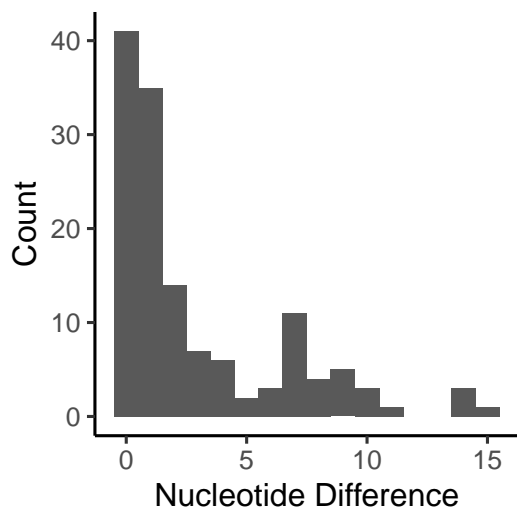
### IGHV3-71\*01\_04

5 sequences assigned  
No exact matches.



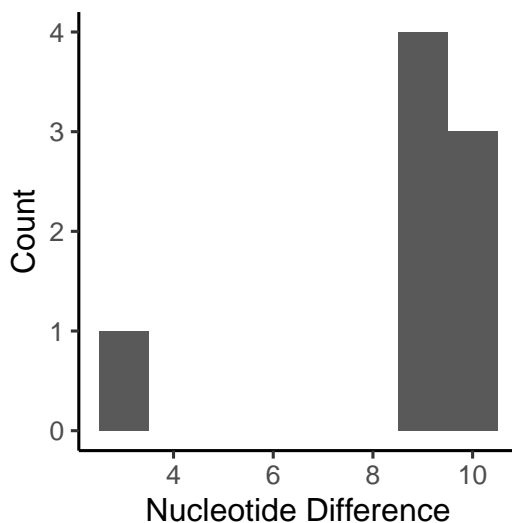
### IGHV3-64\*02\_07

136 sequences assigned  
41 (30.1%) exact matches, in which:  
24 unique CDR3  
4 unique J



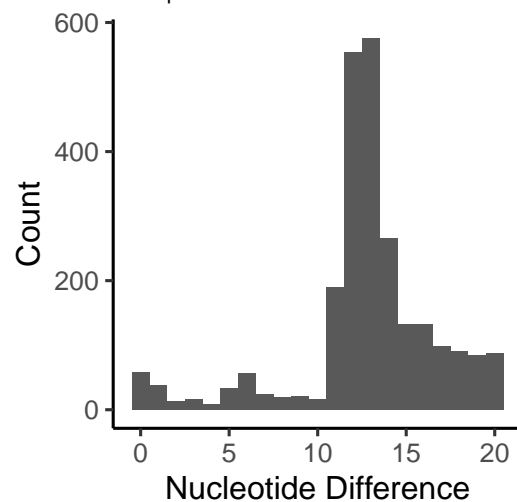
### IGHV3-66\*04

8 sequences assigned  
No exact matches.



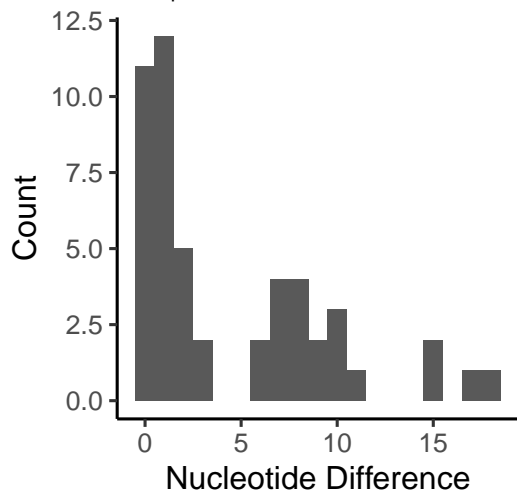
### IGHV3-72\*01

3929 sequences assigned  
58 (1.5%) exact matches, in which:  
43 unique CDR3  
6 unique J



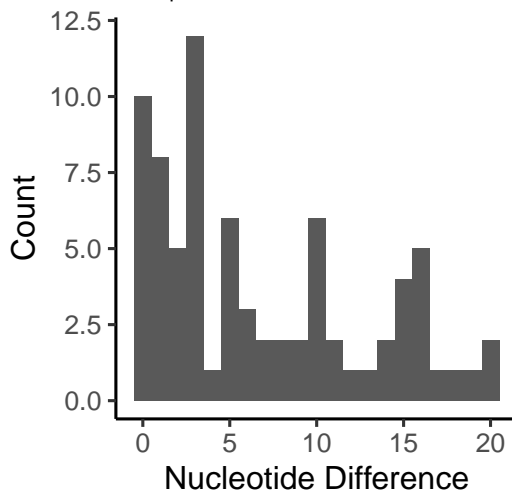
### IGHV3-66\*01

52 sequences assigned  
11 (21.2%) exact matches, in which:  
7 unique CDR3  
4 unique J



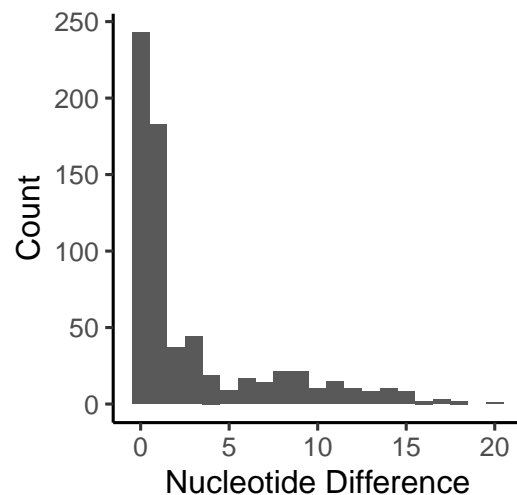
### IGHV3-69-1\*01

144 sequences assigned  
10 (6.9%) exact matches, in which:  
8 unique CDR3  
2 unique J



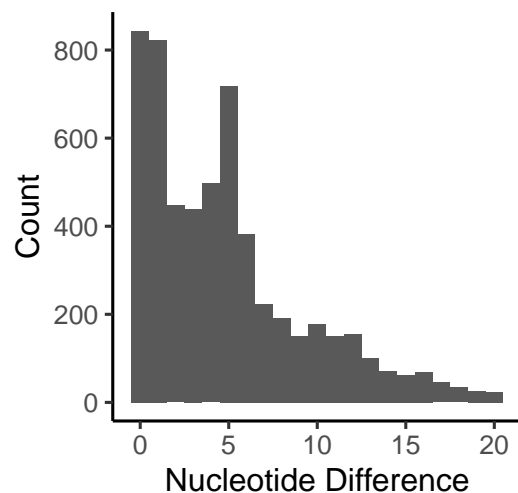
### IGHV3-73\*01\_02

690 sequences assigned  
243 (35.2%) exact matches, in which:  
158 unique CDR3  
7 unique J



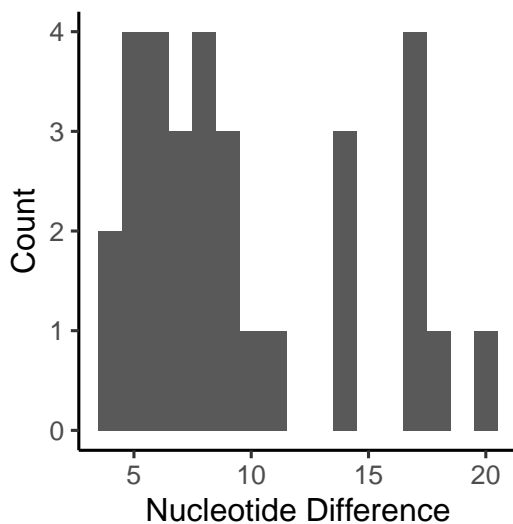
### IGHV3-74\*01\_02

6244 sequences assigned  
844 (13.5%) exact matches, in which:  
572 unique CDR3  
7 unique J



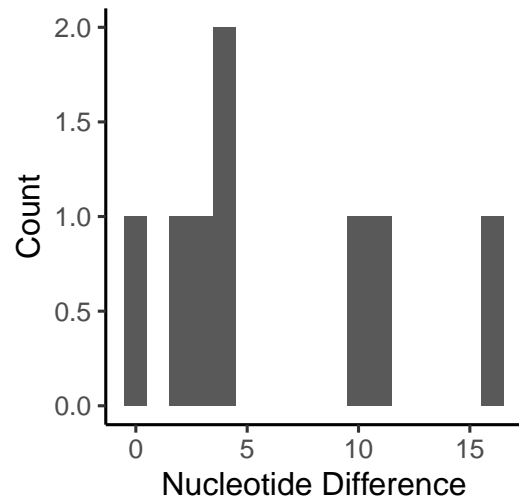
### IGHV3-NL1\*01

43 sequences assigned  
No exact matches.



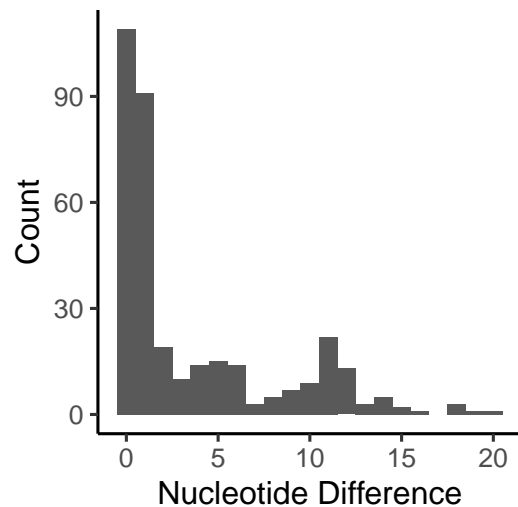
### IGHV4-28\*03

8 sequences assigned  
1 (12.5%) exact matches, in which:  
1 unique CDR3  
1 unique J



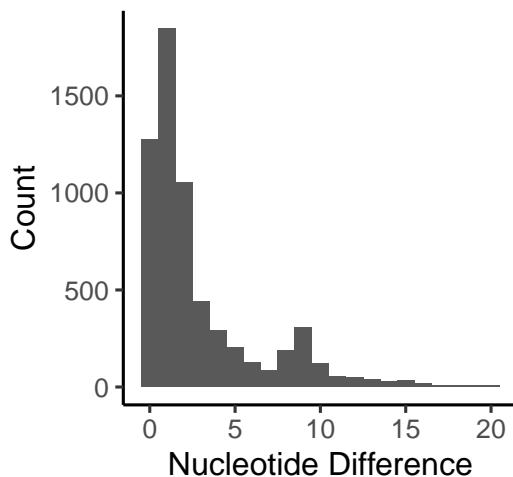
### IGHV3-43D\*03

608 sequences assigned  
109 (17.9%) exact matches, in which:  
70 unique CDR3  
5 unique J



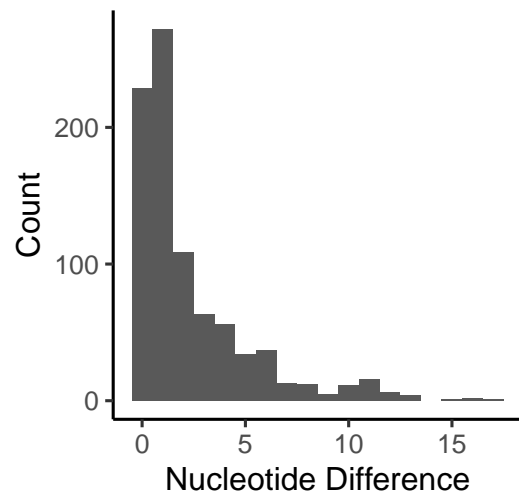
### IGHV4-4\*07

8083 sequences assigned  
1273 (15.7%) exact matches, in which:  
1063 unique CDR3  
7 unique J



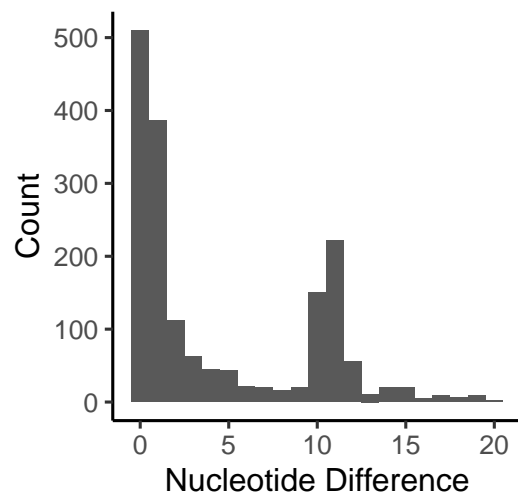
### IGHV4-30-2\*01

873 sequences assigned  
229 (26.2%) exact matches, in which:  
129 unique CDR3  
6 unique J



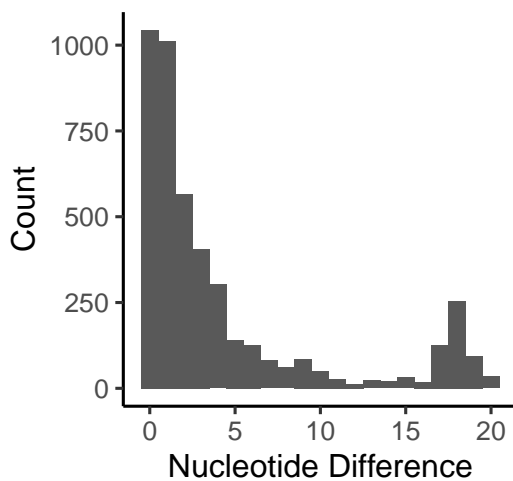
### IGHV3-64D\*06

2147 sequences assigned  
510 (23.8%) exact matches, in which:  
336 unique CDR3  
7 unique J



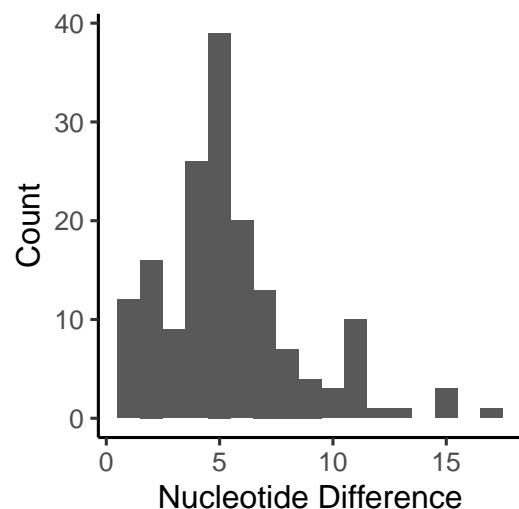
### IGHV4-4\*02\_03

4634 sequences assigned  
1044 (22.5%) exact matches, in which:  
799 unique CDR3  
7 unique J



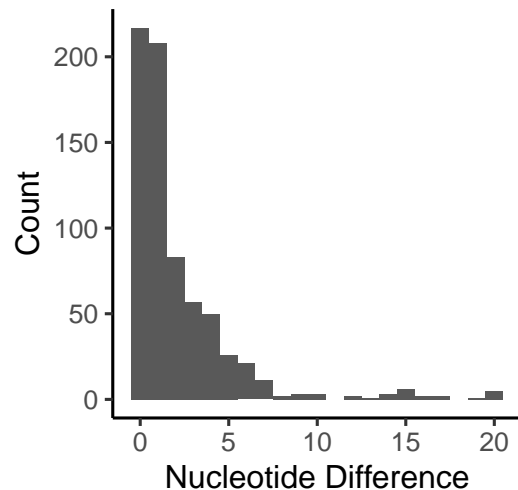
### IGHV4-30-2\*03

167 sequences assigned  
No exact matches.



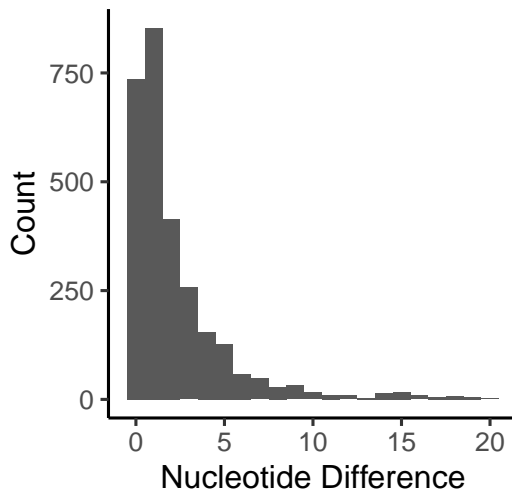
### IGHV4-30-4\*07

737 sequences assigned  
217 (29.4%) exact matches, in which:  
173 unique CDR3  
7 unique J



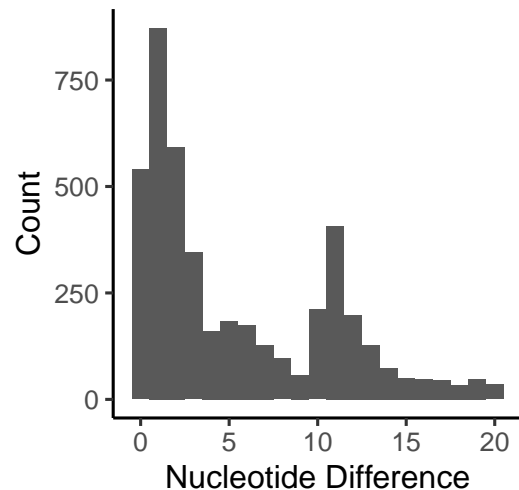
### IGHV4-38-2\*02

2854 sequences assigned  
737 (25.8%) exact matches, in which:  
624 unique CDR3  
7 unique J



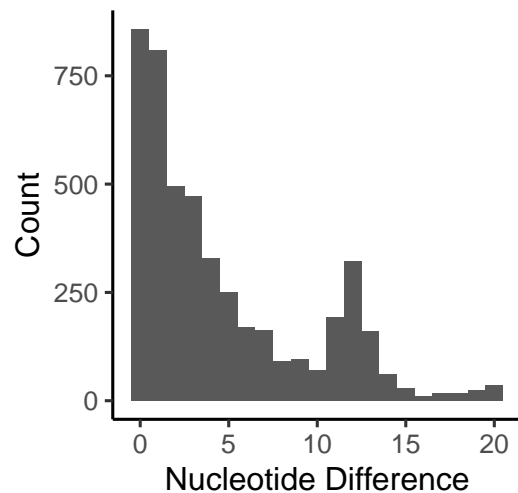
### IGHV4-59\*12

6156 sequences assigned  
540 (8.8%) exact matches, in which:  
522 unique CDR3  
7 unique J



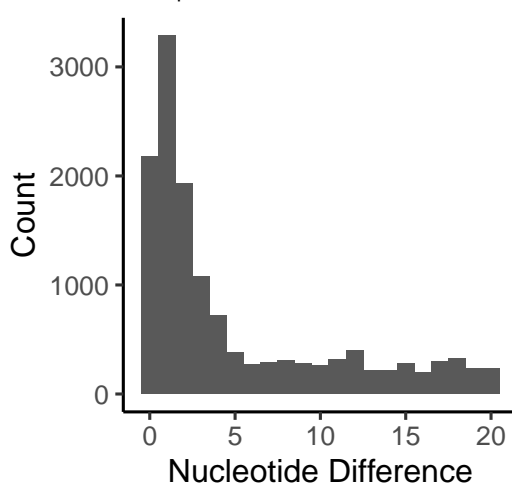
### IGHV4-31\*02

6620 sequences assigned  
858 (13%) exact matches, in which:  
720 unique CDR3  
7 unique J



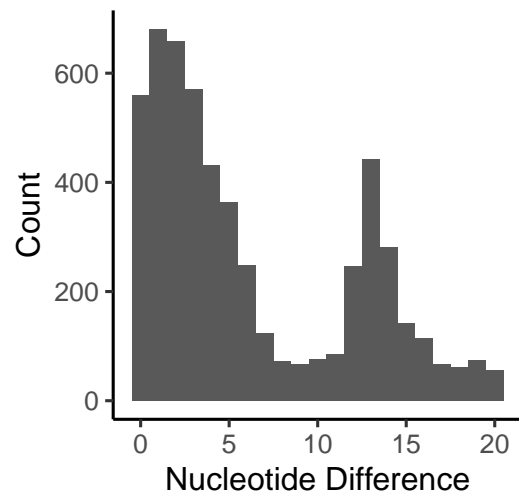
### IGHV4-39\*07

15474 sequences assigned  
2177 (14.1%) exact matches, in which:  
1683 unique CDR3  
7 unique J



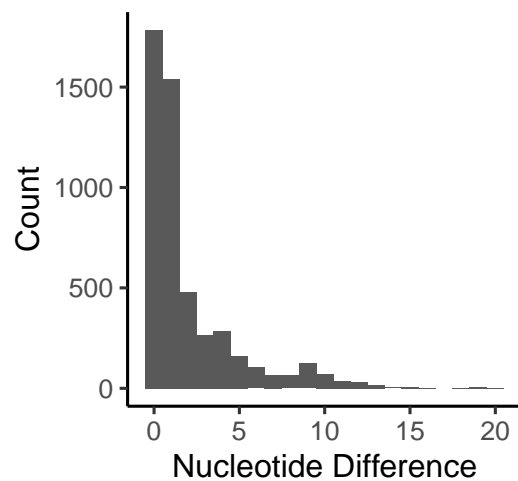
### IGHV4-61\*01

5642 sequences assigned  
560 (9.9%) exact matches, in which:  
505 unique CDR3  
7 unique J



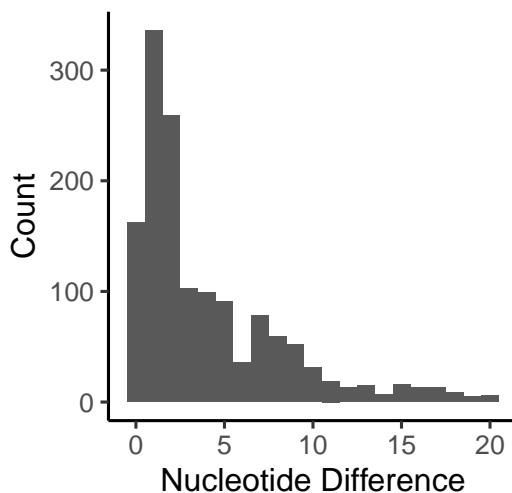
### IGHV4-34\*01\_02

5068 sequences assigned  
1784 (35.2%) exact matches, in which:  
1309 unique CDR3  
7 unique J



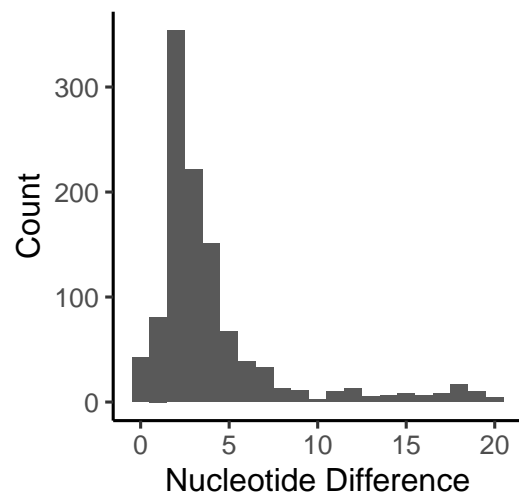
### IGHV4-59\*08

1461 sequences assigned  
162 (11.1%) exact matches, in which:  
153 unique CDR3  
7 unique J



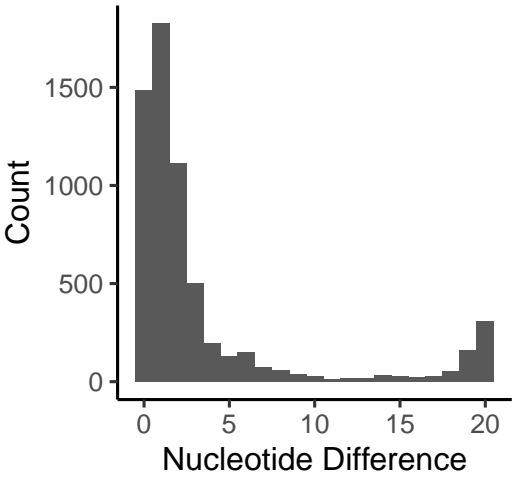
### IGHV4-61\*02

1108 sequences assigned  
42 (3.8%) exact matches, in which:  
40 unique CDR3  
5 unique J



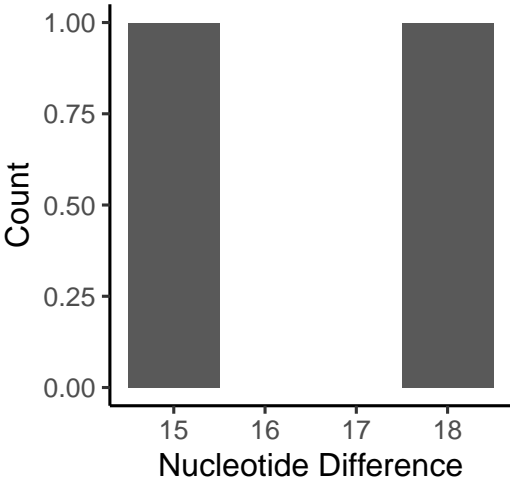
IGHV4-61\*02\_A234G

6539 sequences assigned  
1488 (22.8%) exact matches, in which:  
1248 unique CDR3  
7 unique J



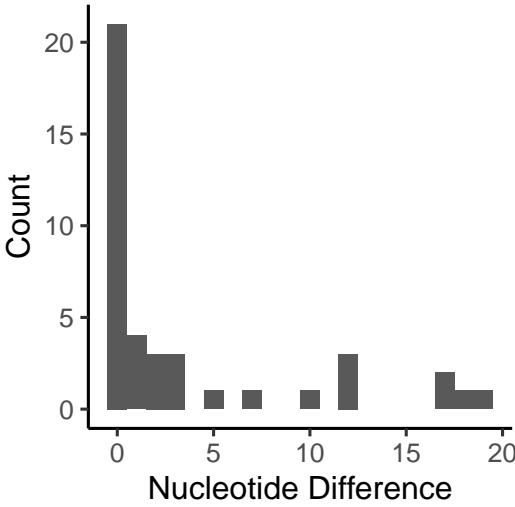
IGHV1/OR15-4\*01

2 sequences assigned  
No exact matches.



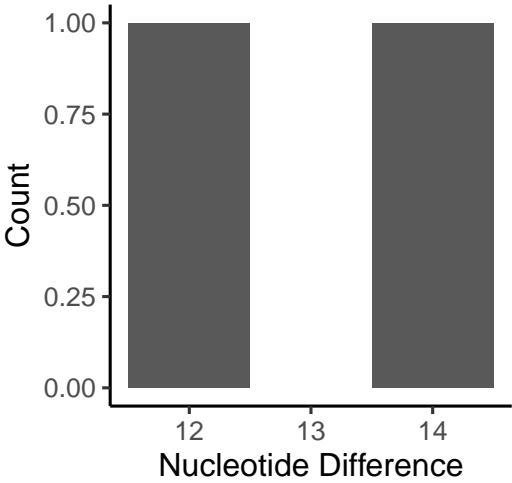
IGHV5-51\*04

46 sequences assigned  
21 (45.7%) exact matches, in which:  
21 unique CDR3  
5 unique J



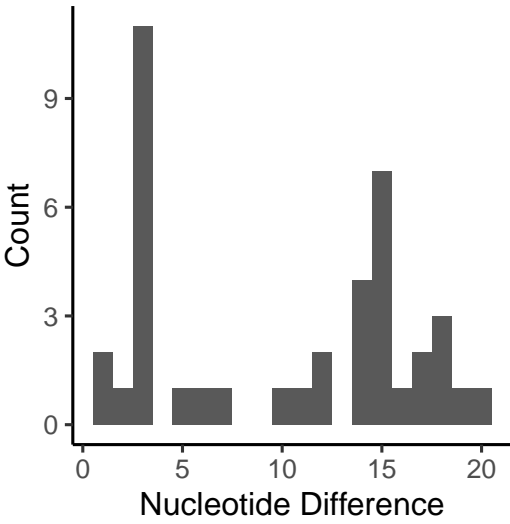
IGHV1/OR15-2\*02\_03

2 sequences assigned  
No exact matches.



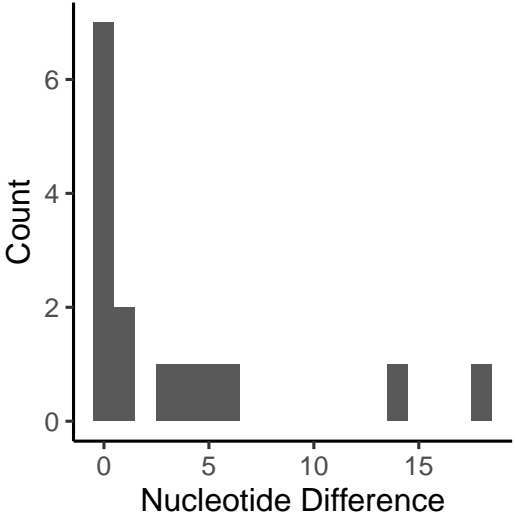
IGHV4/OR15-8\*01

56 sequences assigned  
No exact matches.



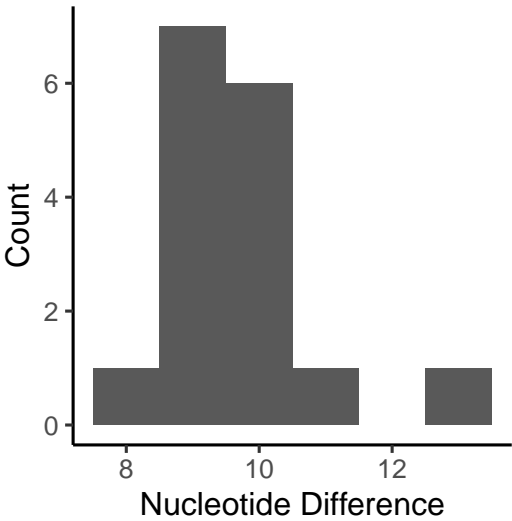
IGHV5-51\*06

15 sequences assigned  
7 (46.7%) exact matches, in which:  
7 unique CDR3  
1 unique J



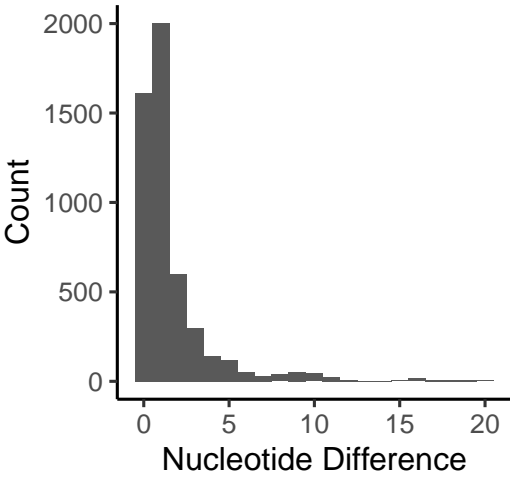
IGHV1/OR15-3\*02

16 sequences assigned  
No exact matches.



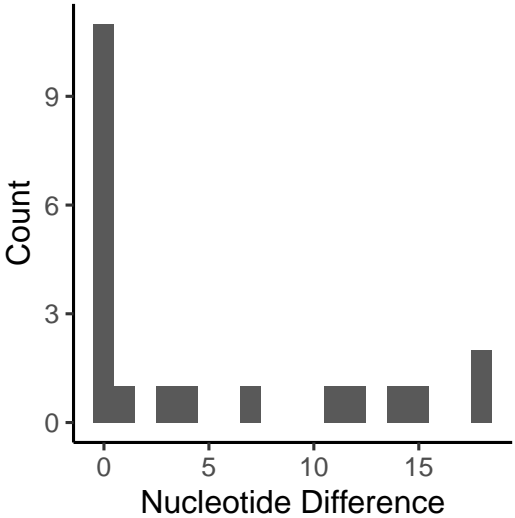
IGHV5-10-1\*01\_03

5385 sequences assigned  
1613 (30%) exact matches, in which:  
990 unique CDR3  
7 unique J



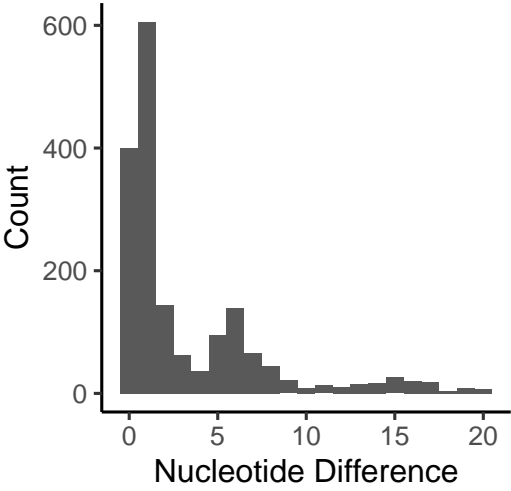
IGHV5-51\*07

22 sequences assigned  
11 (50%) exact matches, in which:  
11 unique CDR3  
4 unique J



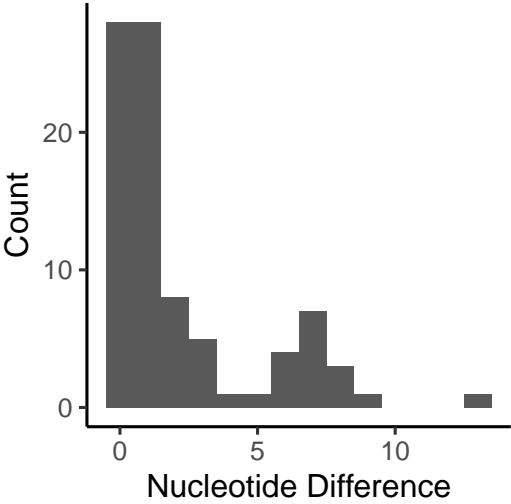
IGHV6-1\*01\_02

2496 sequences assigned  
400 (16%) exact matches, in which:  
324 unique CDR3  
6 unique J



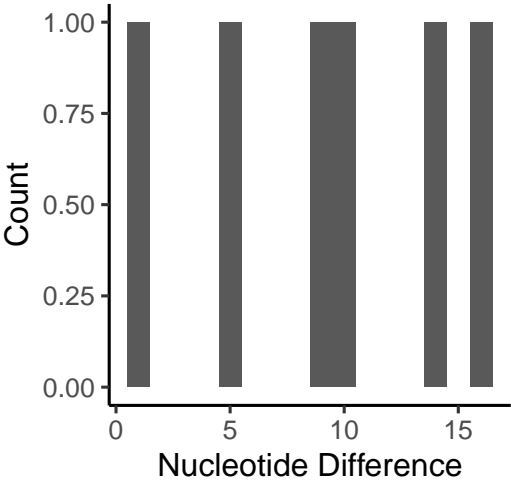
IGHV7-4-1\*01

87 sequences assigned  
28 (32.2%) exact matches, in which:  
23 unique CDR3  
7 unique J

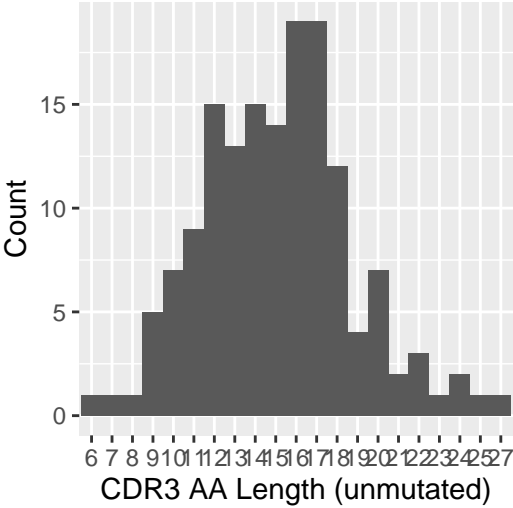


IGHV7-4-1\*02

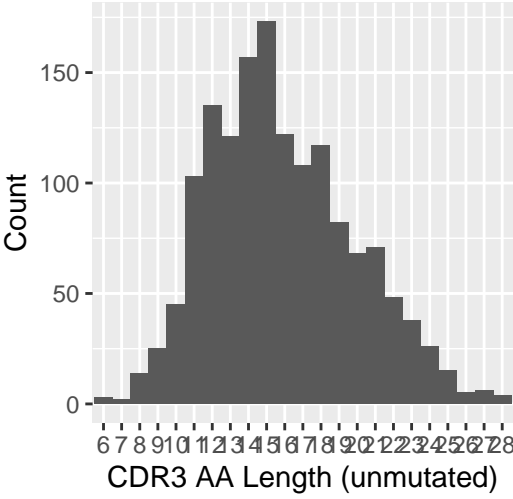
6 sequences assigned  
No exact matches.



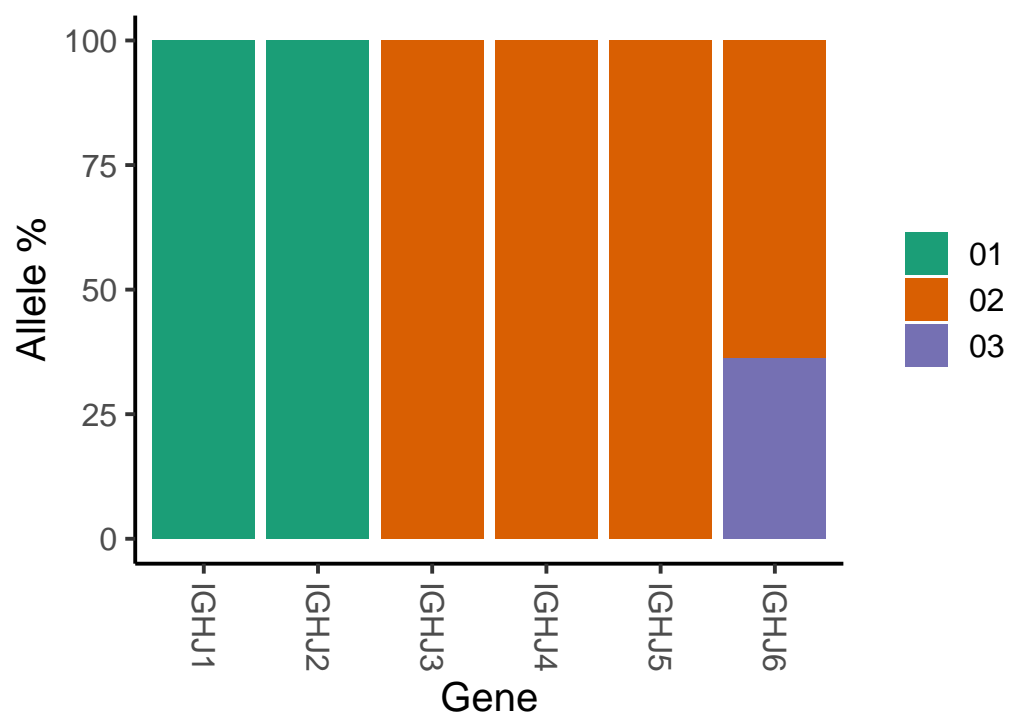
IGHV3-21\*04\_C246T\_G247T\_T256A\_A258G\_G303A



IGHV4-61\*02\_A234G

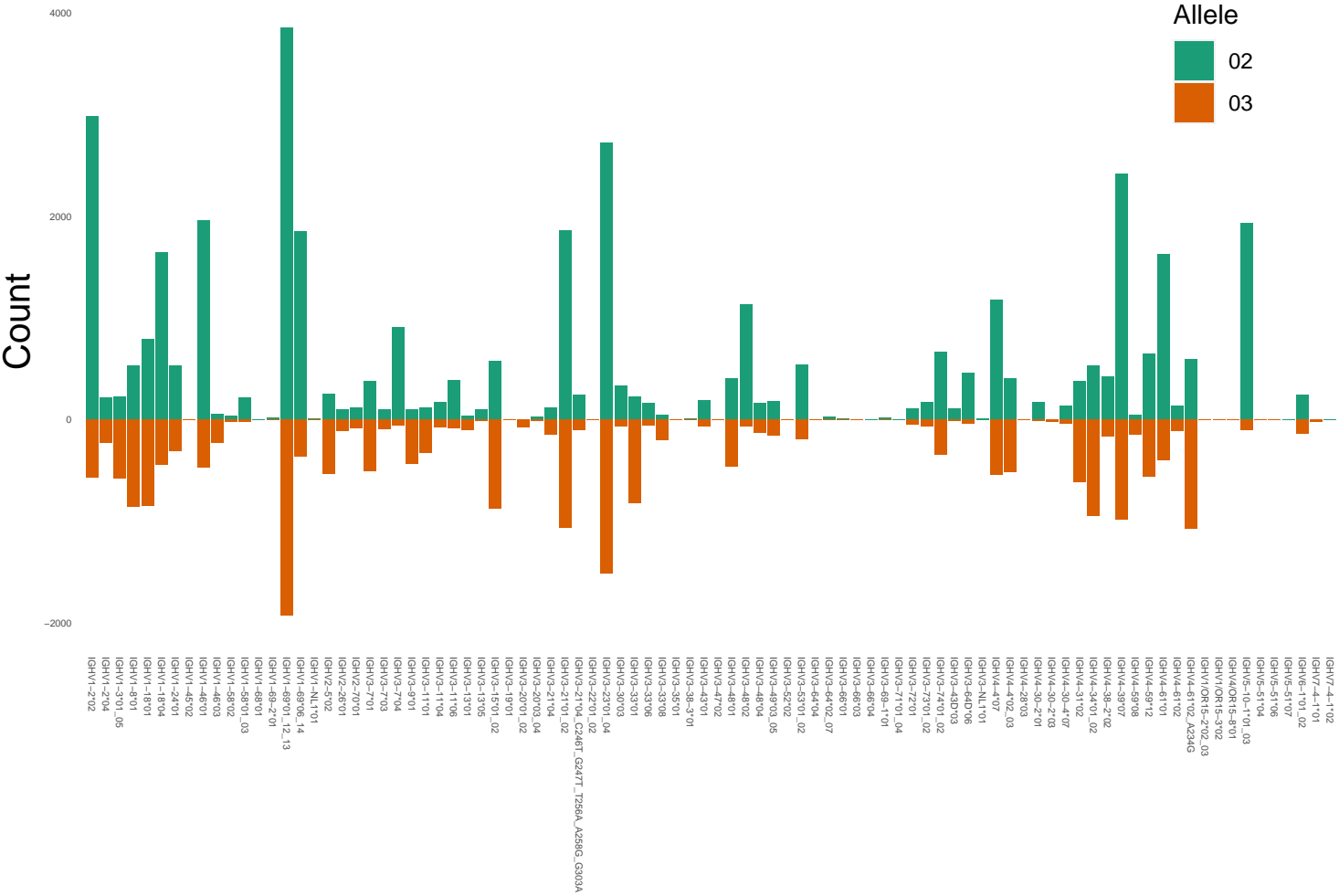


Allele Usage





# Sequence Count by IGHJ6 allele usage



[illegible]