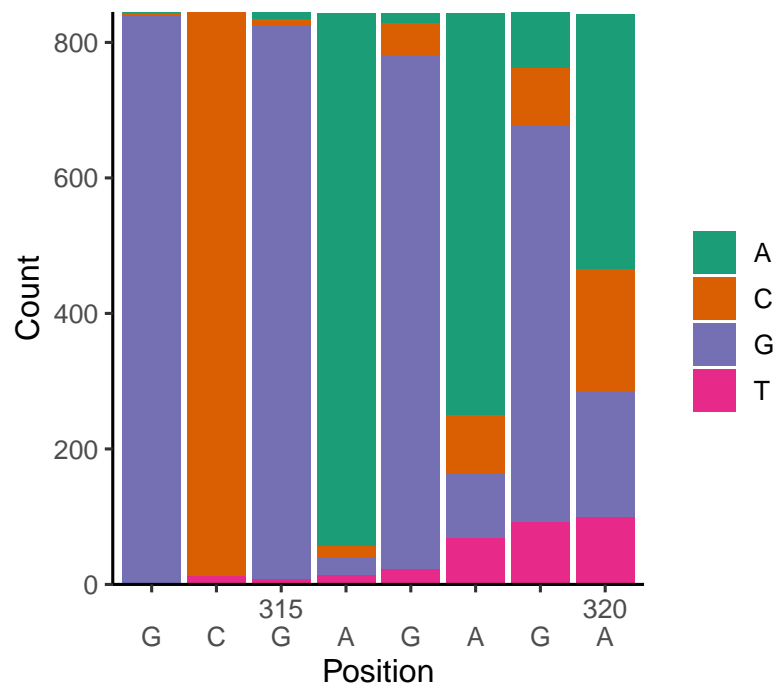
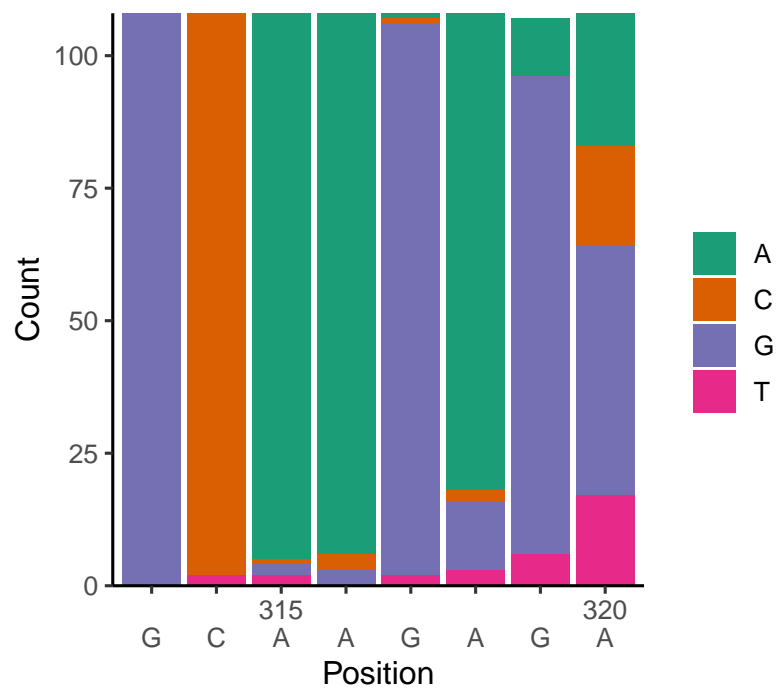


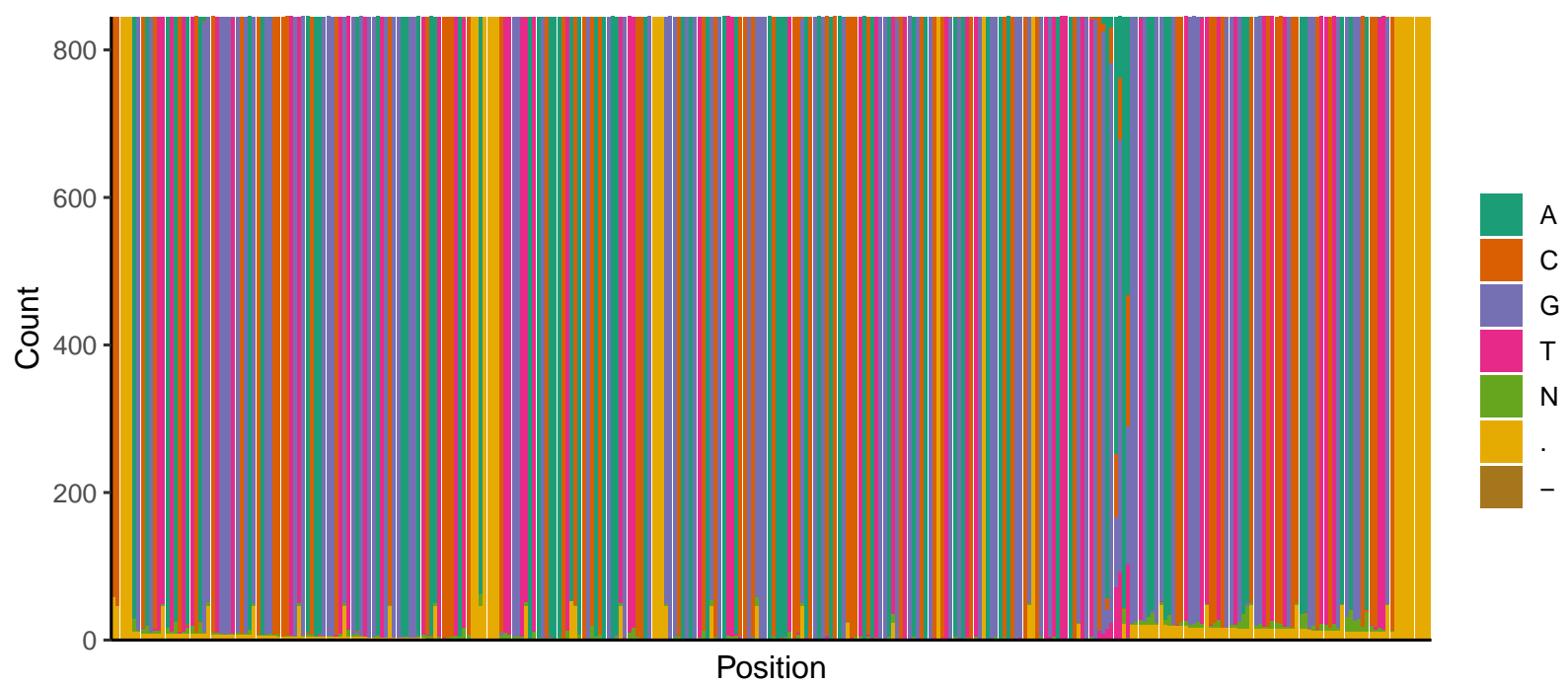
Gene IGHV1-69\*08\_C191T



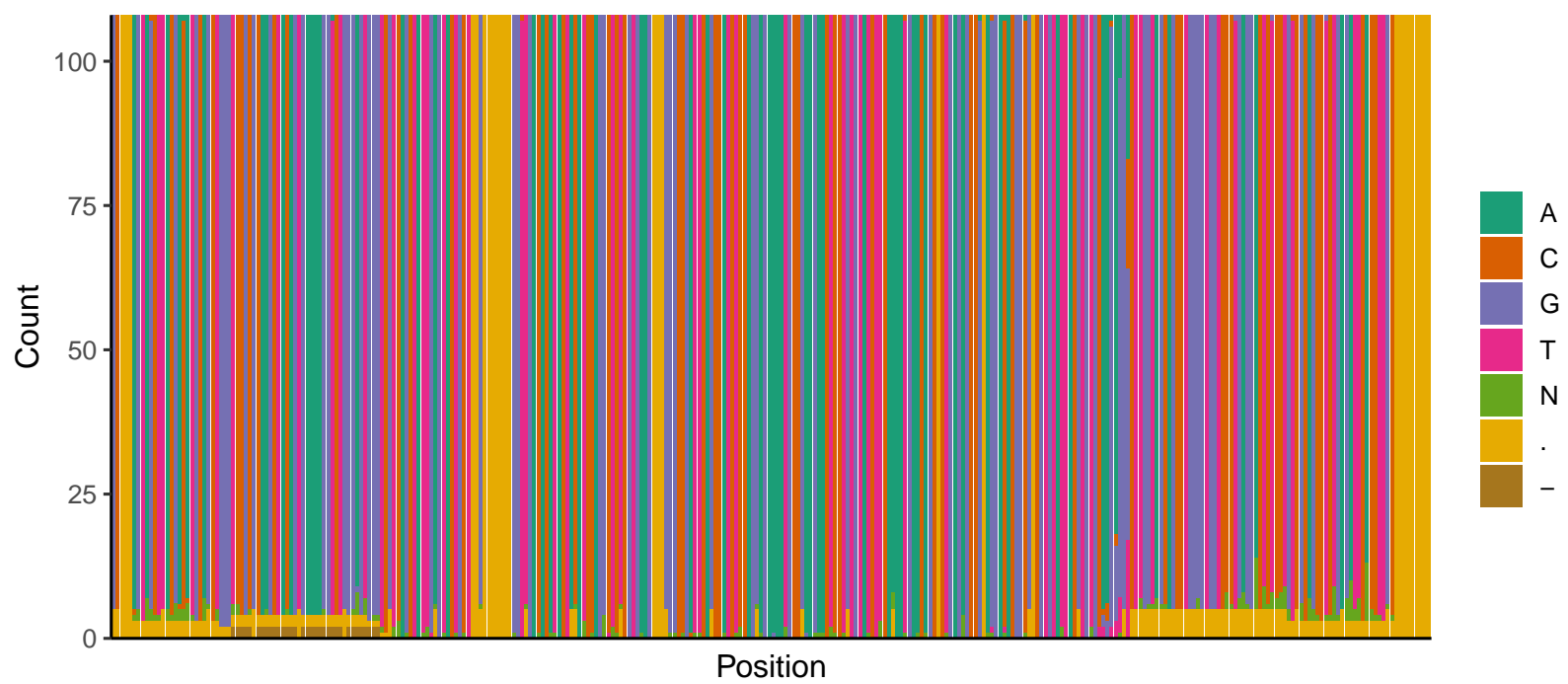
Gene IGHV3-13\*01\_G290A\_T300C



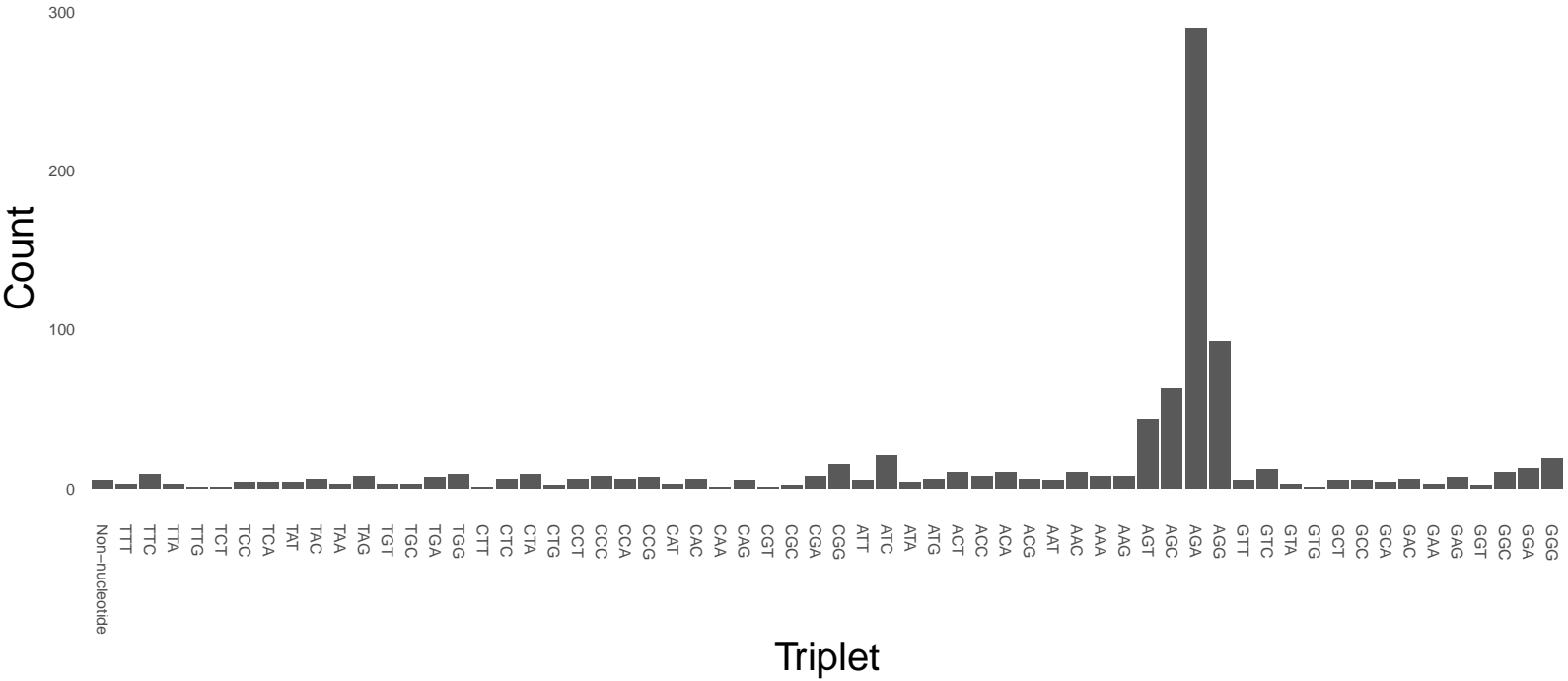
Gene IGHV1-69\*08\_C191T



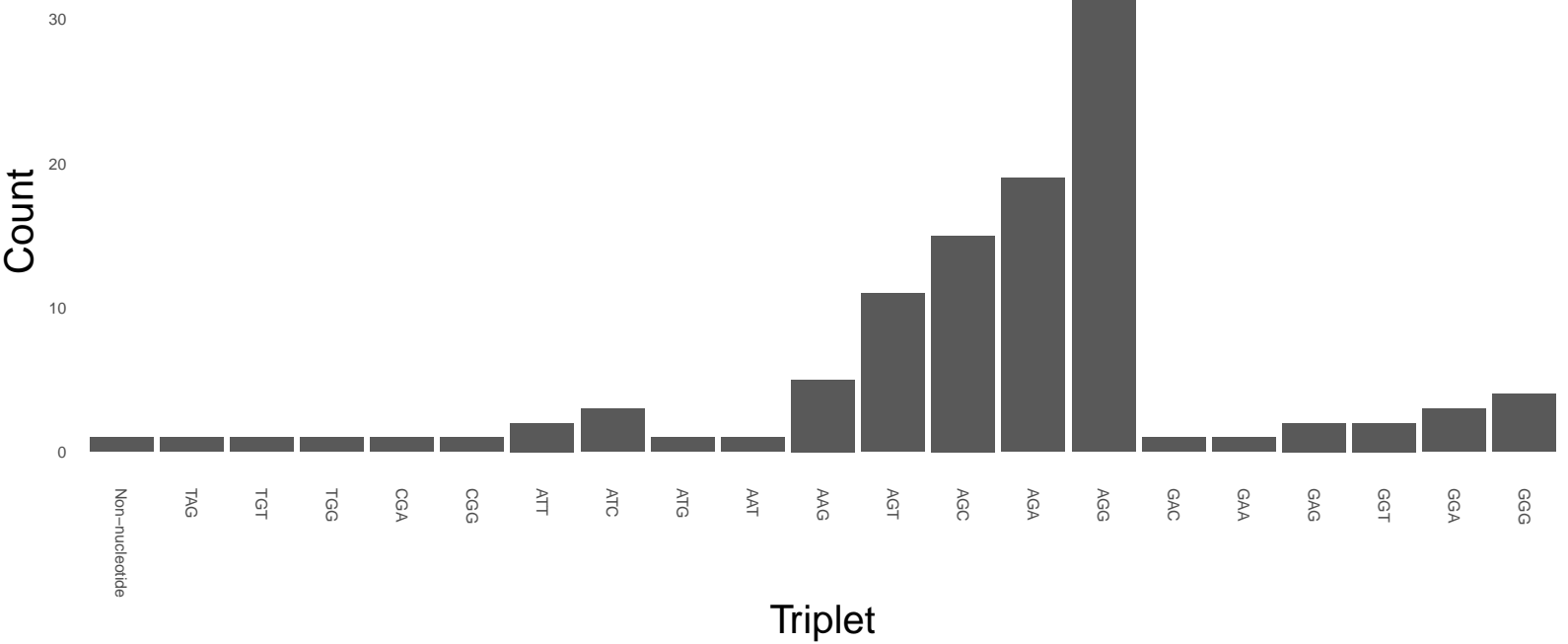
Gene IGHV3-13\*01\_G290A\_T300C



IGHV1-69\*08\_C191T- Final 3 nucleotides as a triplet

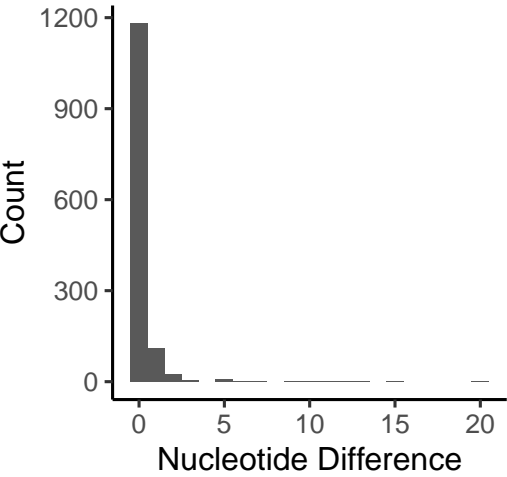


IGHV3-13\*01\_G290A\_T300C- Final 3 nucleotides as a triplet



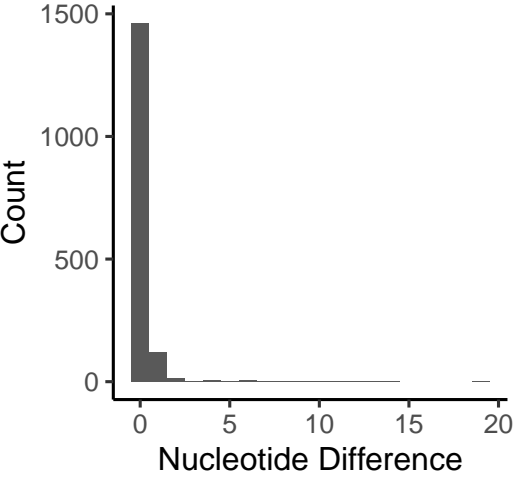
IGHV1-2\*02

1346 sequences assigned  
1181 (87.7%) exact matches, in which:  
1102 unique CDR3  
6 unique J



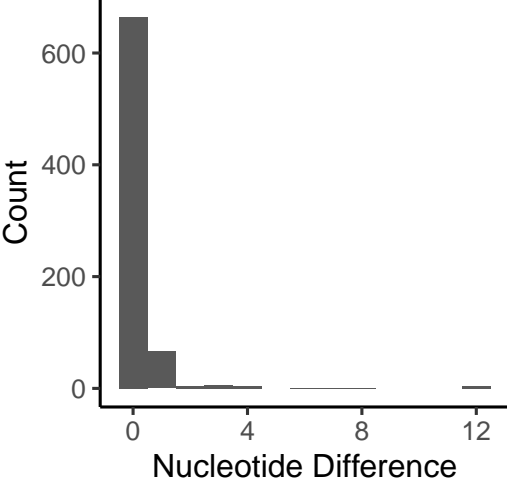
IGHV1-18\*01

1633 sequences assigned  
1461 (89.5%) exact matches, in which:  
1388 unique CDR3  
6 unique J



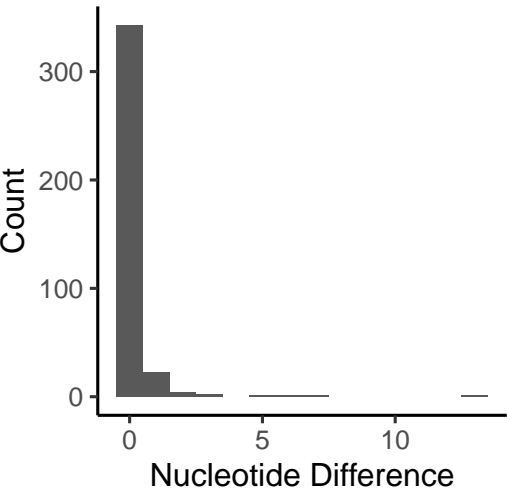
IGHV1-46\*01

753 sequences assigned  
665 (88.3%) exact matches, in which:  
629 unique CDR3  
6 unique J



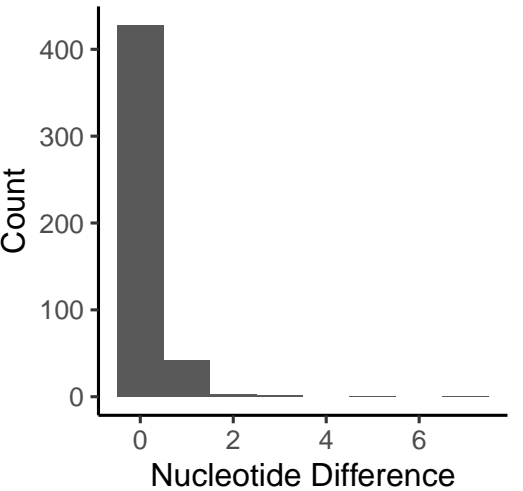
IGHV1-2\*04

376 sequences assigned  
343 (91.2%) exact matches, in which:  
327 unique CDR3  
5 unique J



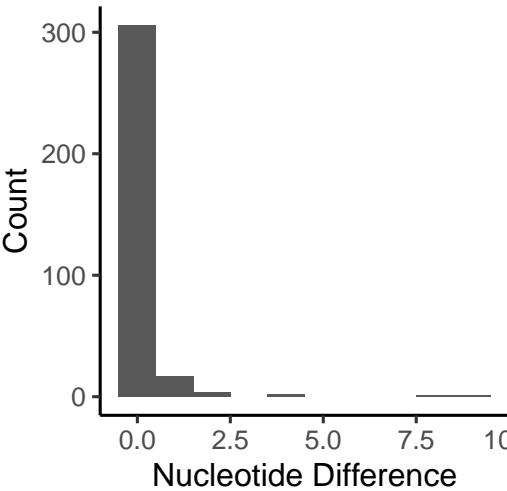
IGHV1-24\*01

477 sequences assigned  
428 (89.7%) exact matches, in which:  
405 unique CDR3  
6 unique J



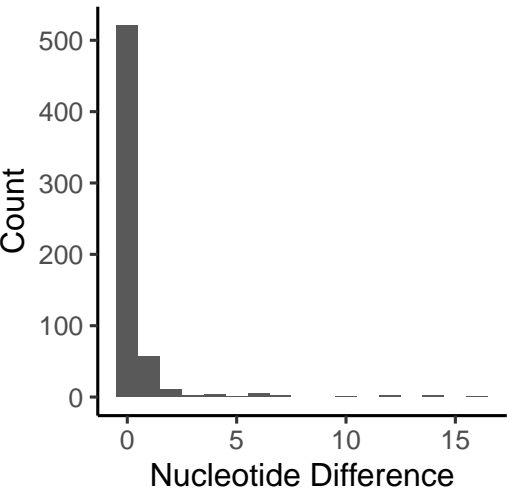
IGHV1-46\*03

331 sequences assigned  
306 (92.4%) exact matches, in which:  
290 unique CDR3  
6 unique J



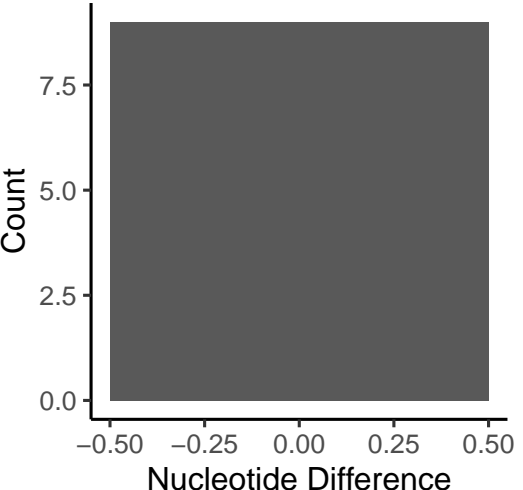
IGHV1-3\*01

608 sequences assigned  
521 (85.7%) exact matches, in which:  
496 unique CDR3  
6 unique J



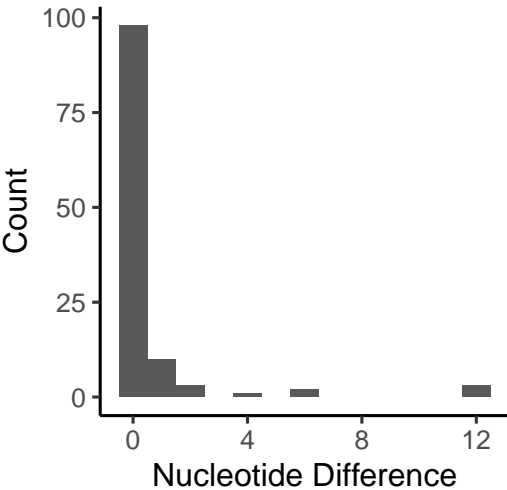
IGHV1-45\*02

9 sequences assigned  
9 (100%) exact matches, in which:  
9 unique CDR3  
5 unique J



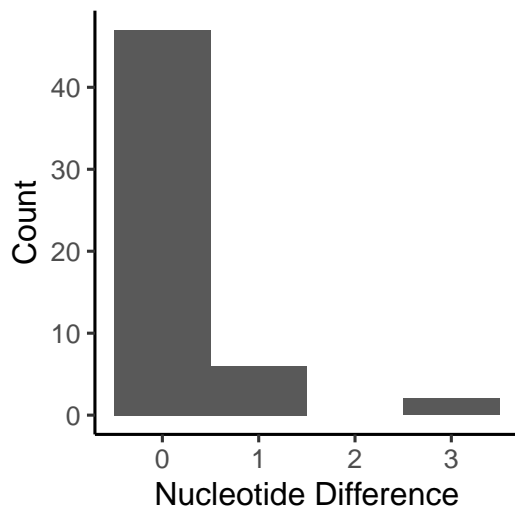
IGHV1-58\*01

117 sequences assigned  
98 (83.8%) exact matches, in which:  
90 unique CDR3  
6 unique J



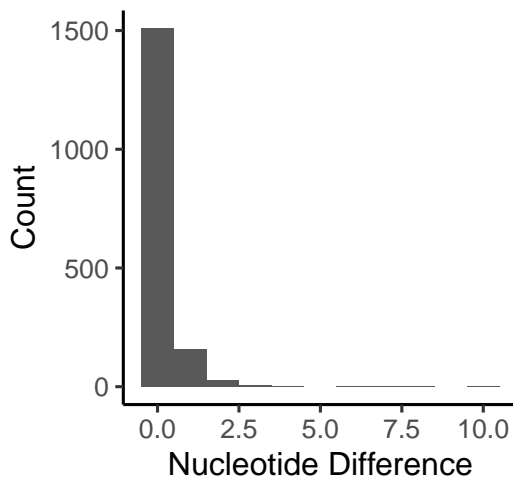
## IGHV1-58\*02

55 sequences assigned  
47 (85.5%) exact matches, in which:  
43 unique CDR3  
5 unique J



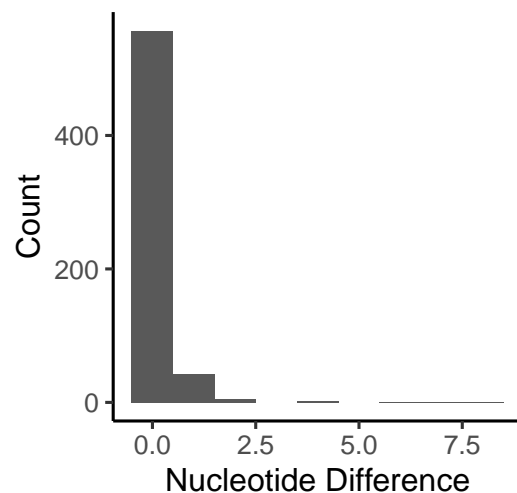
## IGHV1-69\*06

1713 sequences assigned  
1509 (88.1%) exact matches, in which:  
1385 unique CDR3  
6 unique J



## IGHV2-26\*01

610 sequences assigned  
557 (91.3%) exact matches, in which:  
531 unique CDR3  
6 unique J



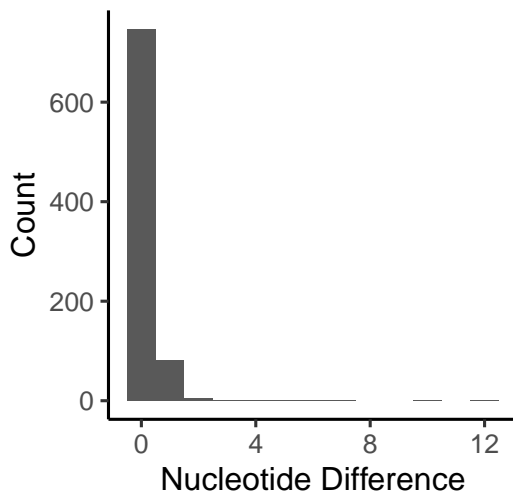
## IGHV1-68\*02

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



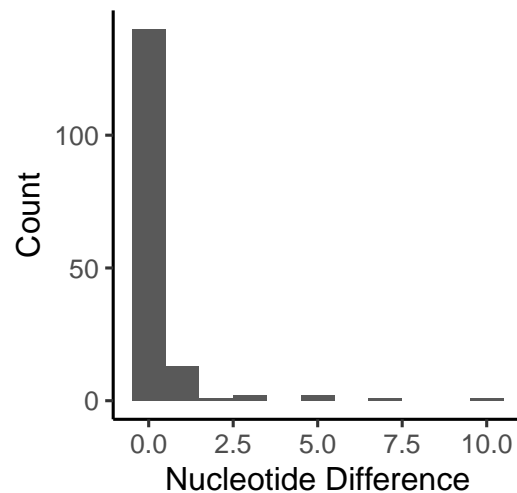
## IGHV1-69\*08\_C191T

845 sequences assigned  
747 (88.4%) exact matches, in which:  
690 unique CDR3  
6 unique J



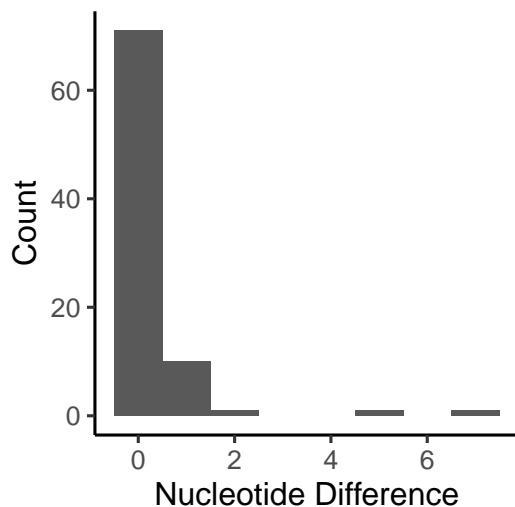
## IGHV2-70\*01

160 sequences assigned  
140 (87.5%) exact matches, in which:  
135 unique CDR3  
5 unique J



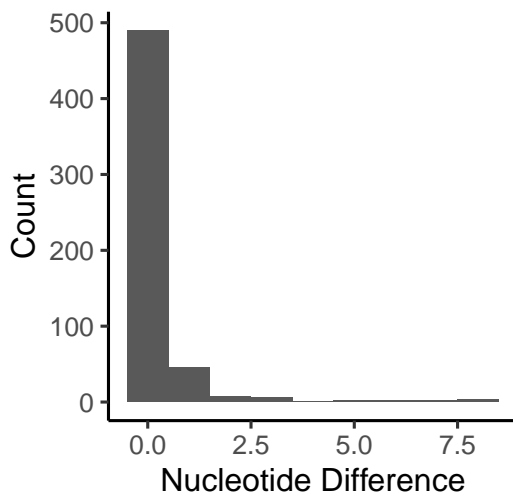
## IGHV1-69-2\*01

84 sequences assigned  
71 (84.5%) exact matches, in which:  
67 unique CDR3  
5 unique J



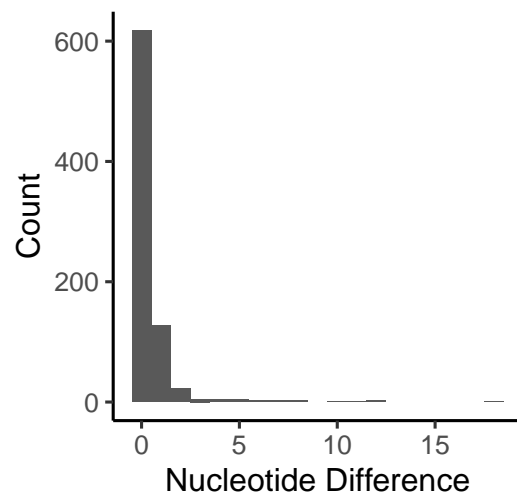
## IGHV2-5\*02

560 sequences assigned  
490 (87.5%) exact matches, in which:  
456 unique CDR3  
6 unique J



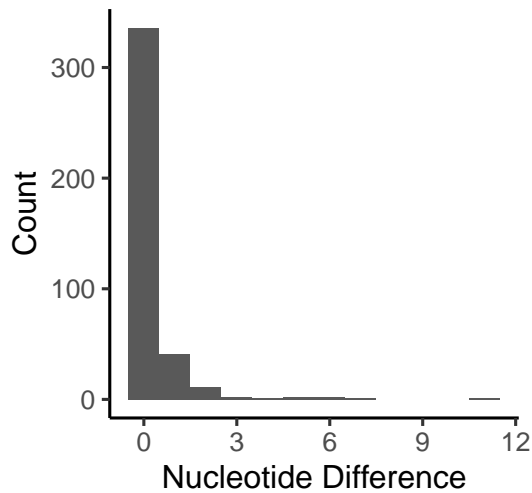
## IGHV3-7\*03

794 sequences assigned  
618 (77.8%) exact matches, in which:  
596 unique CDR3  
6 unique J



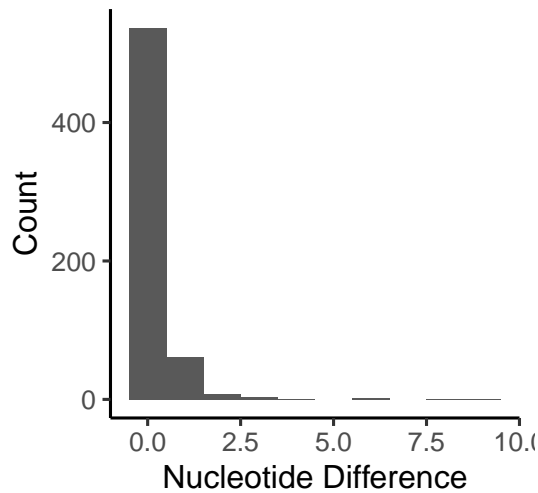
### IGHV3-11\*06

397 sequences assigned  
336 (84.6%) exact matches, in which:  
325 unique CDR3  
6 unique J



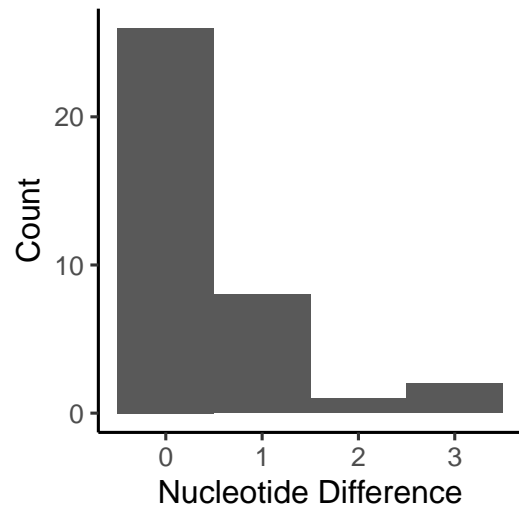
### IGHV3-15\*01

614 sequences assigned  
537 (87.5%) exact matches, in which:  
509 unique CDR3  
6 unique J



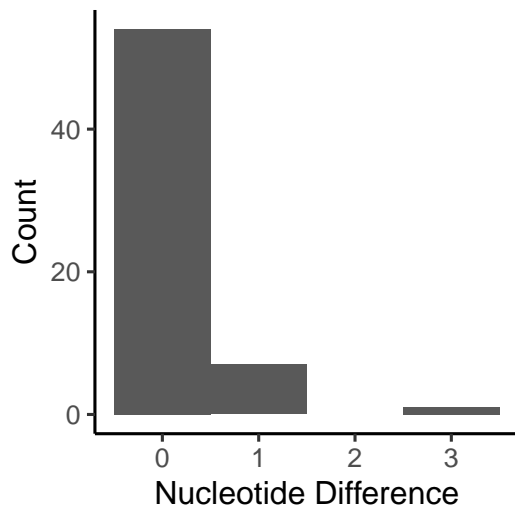
### IGHV3-20\*01

37 sequences assigned  
26 (70.3%) exact matches, in which:  
24 unique CDR3  
5 unique J



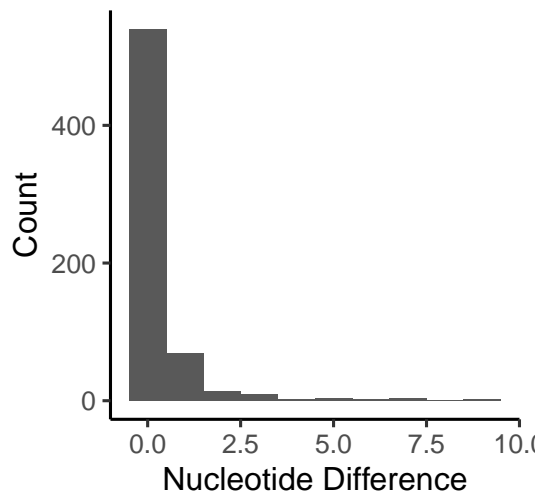
### IGHV3-13\*05

62 sequences assigned  
54 (87.1%) exact matches, in which:  
49 unique CDR3  
5 unique J



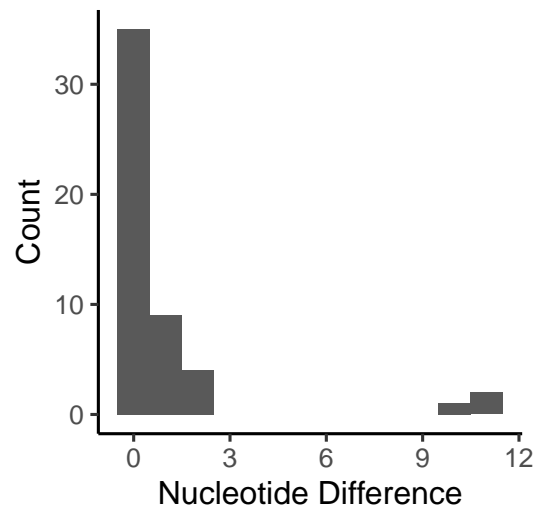
### IGHV3-15\*07

646 sequences assigned  
540 (83.6%) exact matches, in which:  
513 unique CDR3  
6 unique J



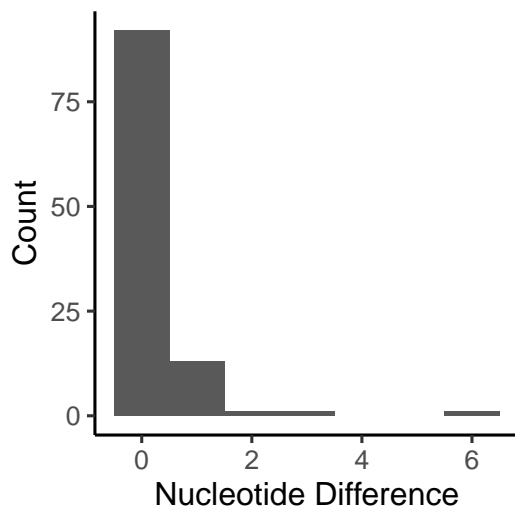
### IGHV3-20\*04

51 sequences assigned  
35 (68.6%) exact matches, in which:  
33 unique CDR3  
4 unique J



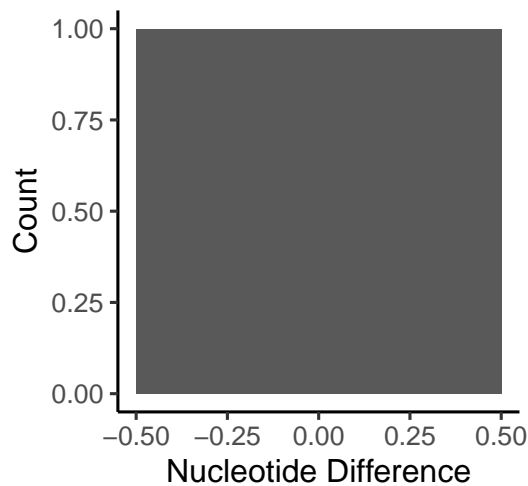
### IGHV3-13\*01\_G290A\_T3I

108 sequences assigned  
92 (85.2%) exact matches, in which:  
87 unique CDR3  
5 unique J



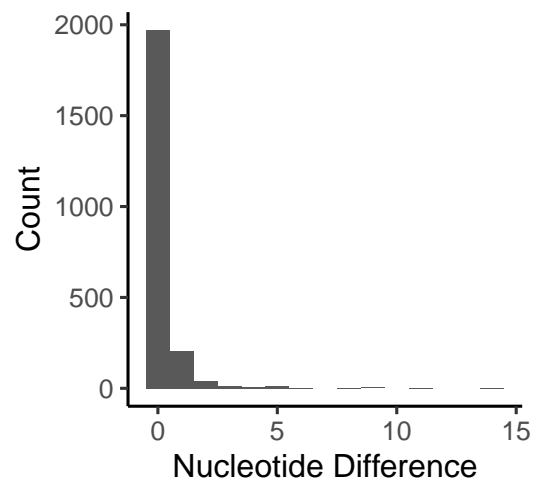
### IGHV3-19\*01

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



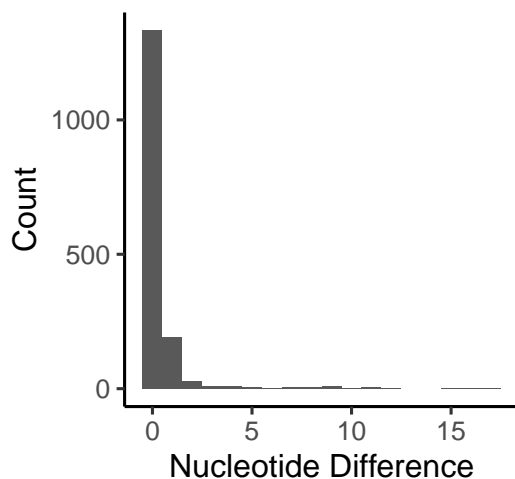
### IGHV3-21\*01

2262 sequences assigned  
1971 (87.1%) exact matches, in which:  
1849 unique CDR3  
6 unique J



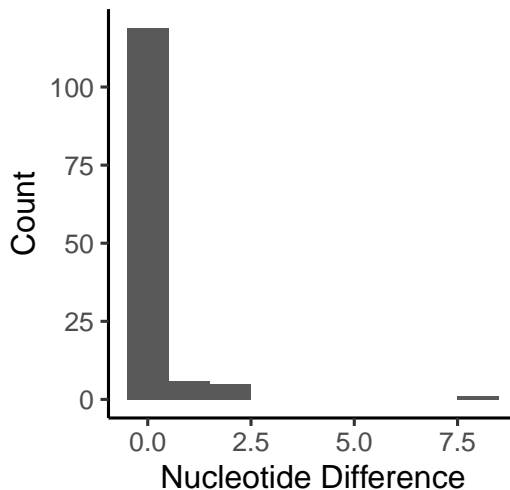
### IGHV3-23\*04

1618 sequences assigned  
1333 (82.4%) exact matches, in which:  
1253 unique CDR3  
6 unique J



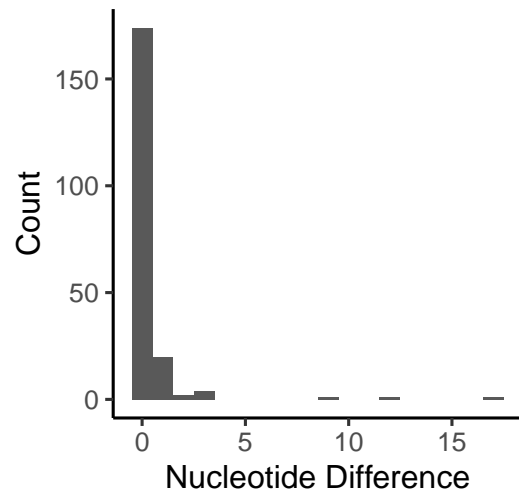
### IGHV3-43\*01

131 sequences assigned  
119 (90.8%) exact matches, in which:  
114 unique CDR3  
6 unique J



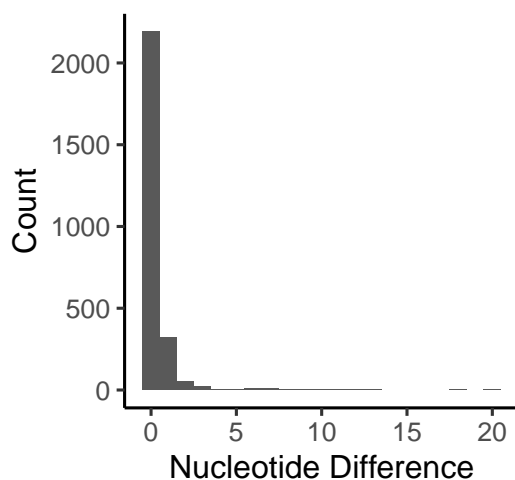
### IGHV3-49\*03

203 sequences assigned  
174 (85.7%) exact matches, in which:  
165 unique CDR3  
5 unique J



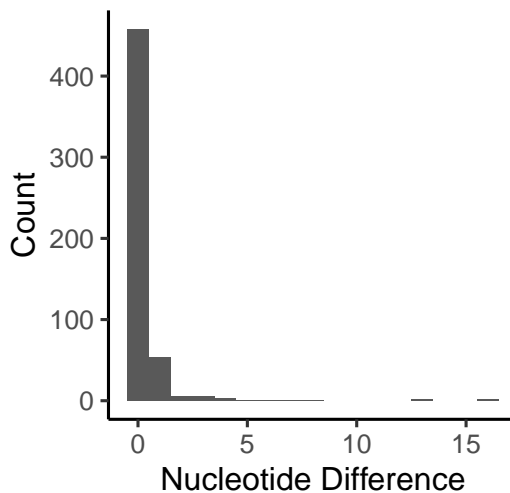
### IGHV3-30-3\*01

2638 sequences assigned  
2191 (83.1%) exact matches, in which:  
2079 unique CDR3  
6 unique J



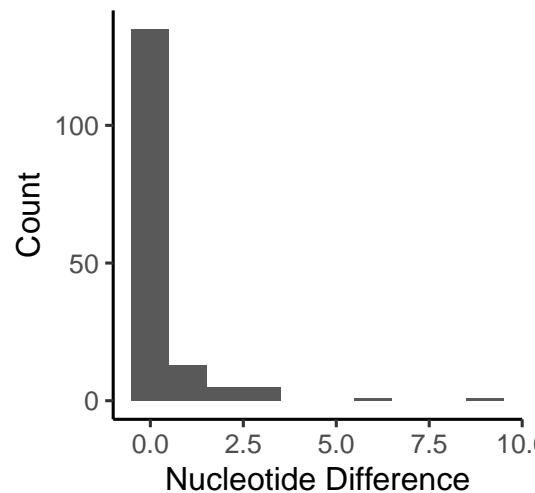
### IGHV3-48\*01

535 sequences assigned  
458 (85.6%) exact matches, in which:  
430 unique CDR3  
6 unique J



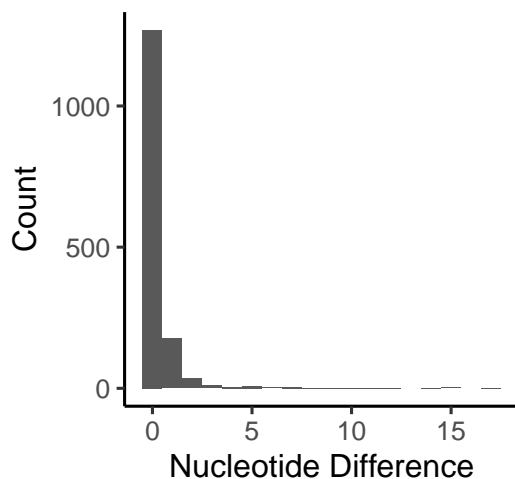
### IGHV3-49\*05

161 sequences assigned  
135 (83.9%) exact matches, in which:  
126 unique CDR3  
5 unique J



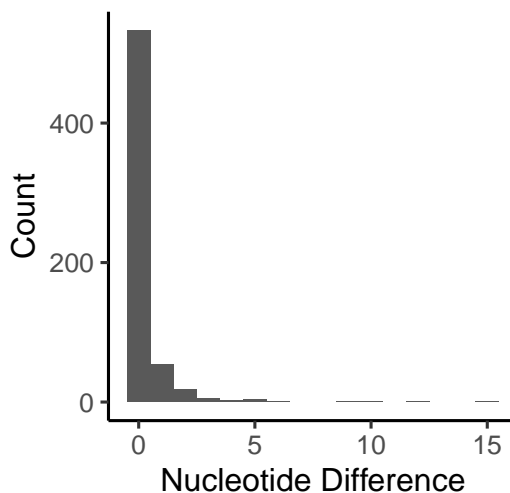
### IGHV3-33\*01

1525 sequences assigned  
1269 (83.2%) exact matches, in which:  
1210 unique CDR3  
6 unique J



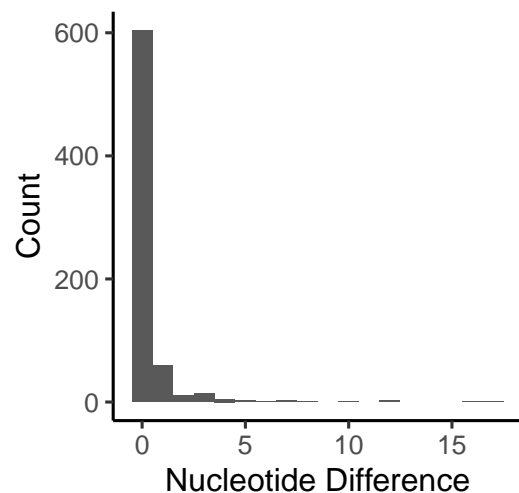
### IGHV3-48\*02

620 sequences assigned  
533 (86%) exact matches, in which:  
513 unique CDR3  
6 unique J



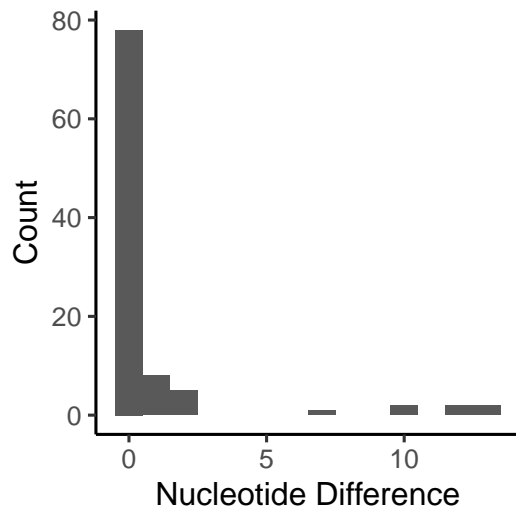
### IGHV3-53\*01

706 sequences assigned  
604 (85.6%) exact matches, in which:  
575 unique CDR3  
6 unique J



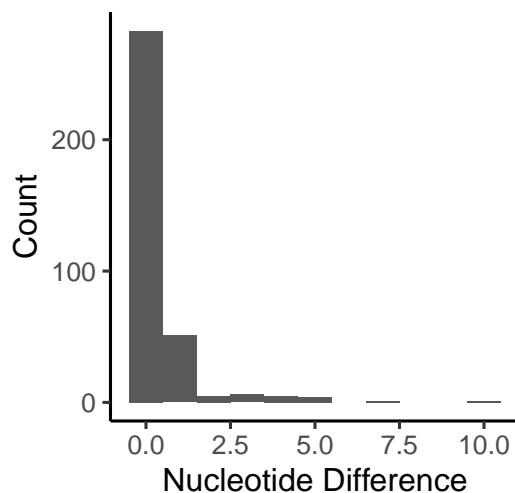
### IGHV3-64\*01

98 sequences assigned  
78 (79.6%) exact matches, in which:  
73 unique CDR3  
5 unique J



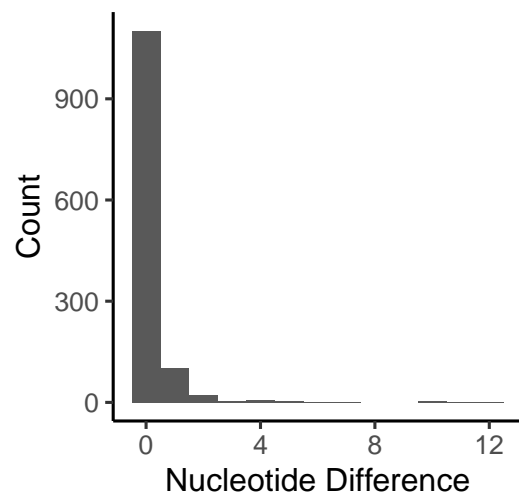
### IGHV3-73\*02

356 sequences assigned  
283 (79.5%) exact matches, in which:  
266 unique CDR3  
6 unique J



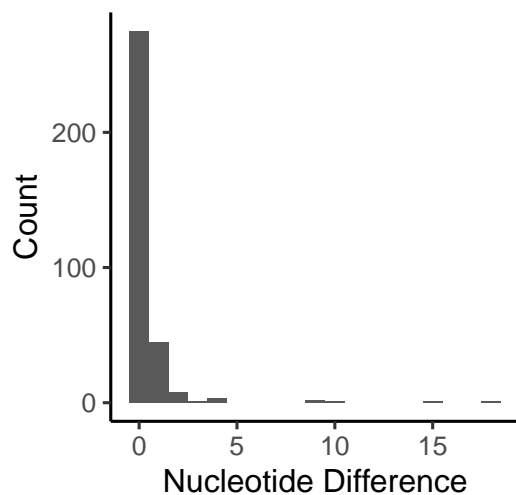
### IGHV4-4\*02

1249 sequences assigned  
1102 (88.2%) exact matches, in which:  
1054 unique CDR3  
6 unique J



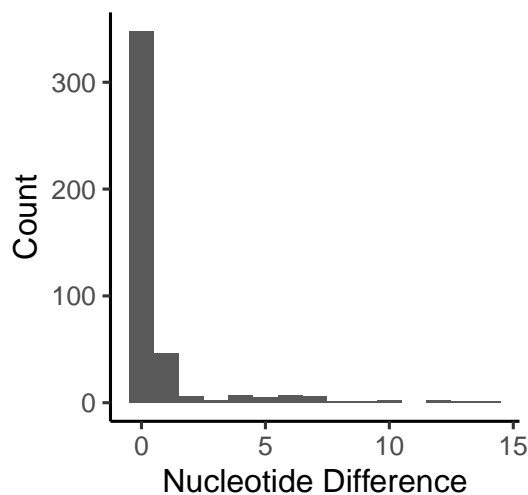
### IGHV3-66\*02

337 sequences assigned  
275 (81.6%) exact matches, in which:  
260 unique CDR3  
6 unique J



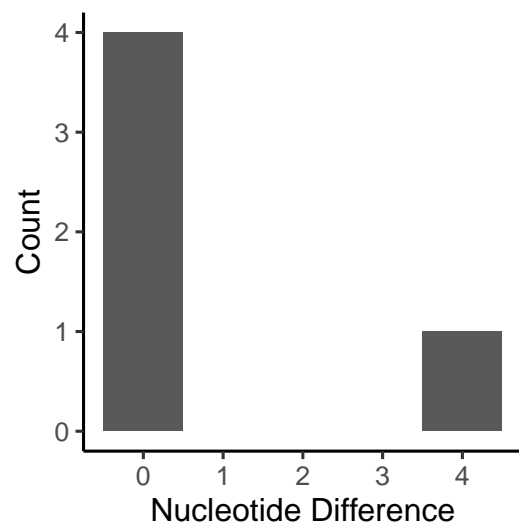
### IGHV3-74\*01

436 sequences assigned  
348 (79.8%) exact matches, in which:  
334 unique CDR3  
5 unique J



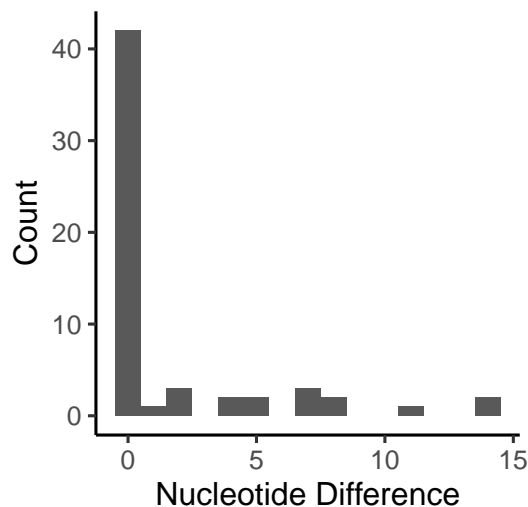
### IGHV4-28\*01

5 sequences assigned  
4 (80%) exact matches, in which:  
4 unique CDR3  
3 unique J



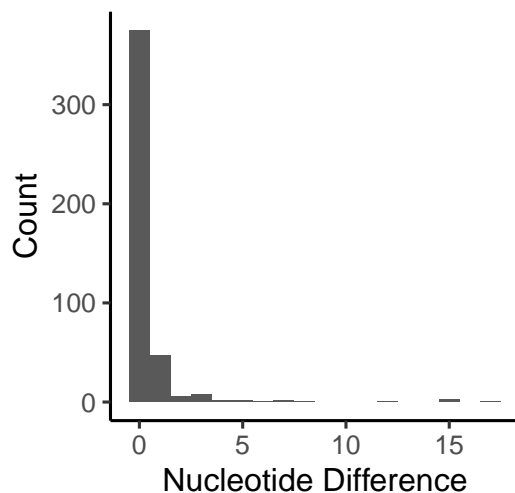
### IGHV3-72\*01

58 sequences assigned  
42 (72.4%) exact matches, in which:  
40 unique CDR3  
4 unique J



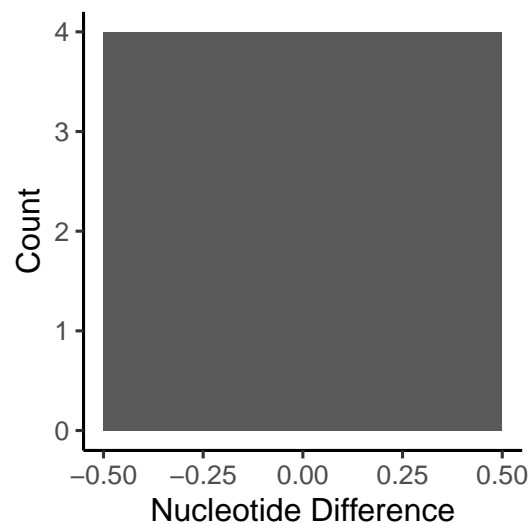
### IGHV3-64D\*06

449 sequences assigned  
375 (83.5%) exact matches, in which:  
351 unique CDR3  
6 unique J



### IGHV4-28\*02

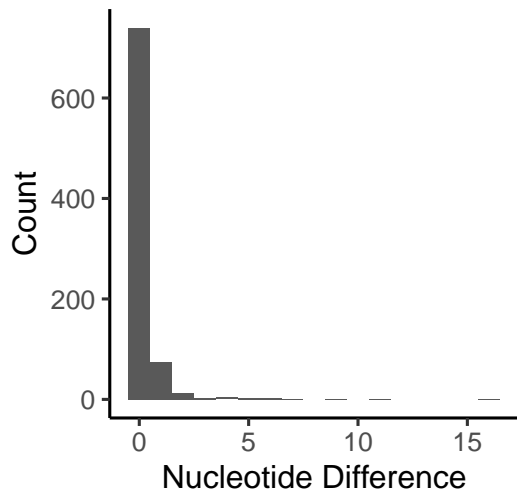
4 sequences assigned  
4 (100%) exact matches, in which:  
4 unique CDR3  
3 unique J





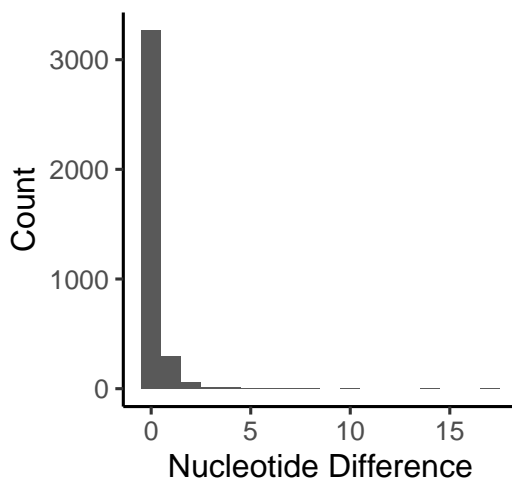
### IGHV4-30-4\*01

841 sequences assigned  
740 (88%) exact matches, in which:  
702 unique CDR3  
6 unique J



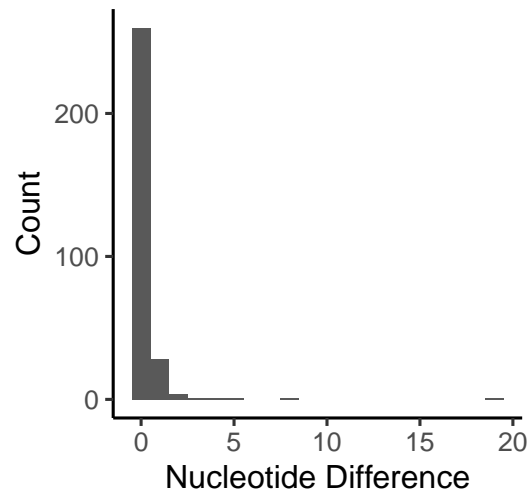
### IGHV4-34\*01

3681 sequences assigned  
3267 (88.8%) exact matches, in which:  
2984 unique CDR3  
6 unique J



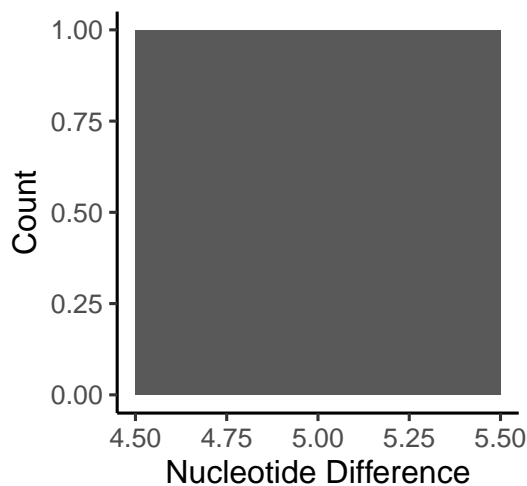
### IGHV4-61\*01

298 sequences assigned  
260 (87.2%) exact matches, in which:  
247 unique CDR3  
6 unique J



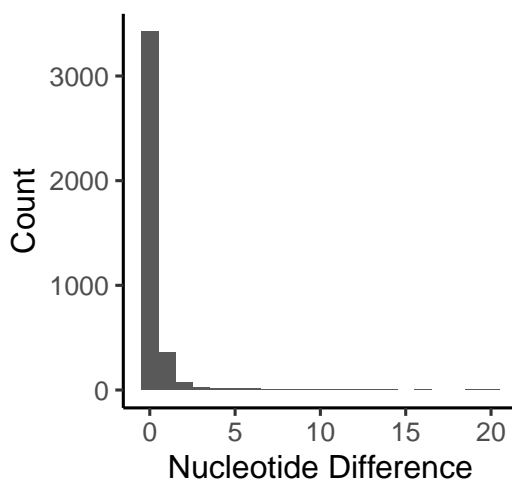
### IGHV4-30-2\*05

1 sequences assigned  
No exact matches.



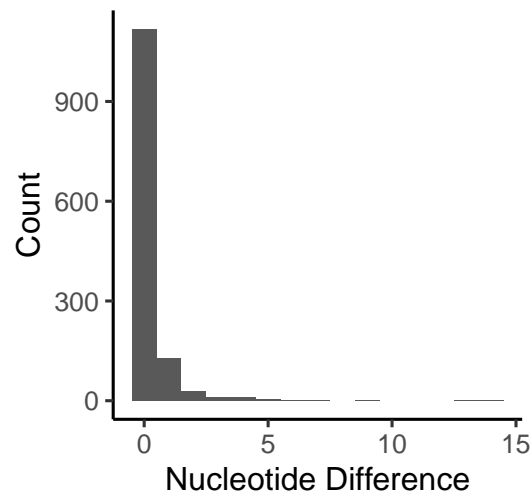
### IGHV4-39\*01

3980 sequences assigned  
3423 (86%) exact matches, in which:  
3127 unique CDR3  
6 unique J



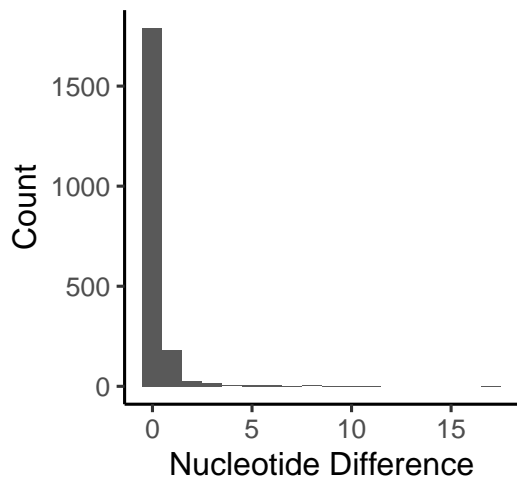
### IGHV4-61\*02

1310 sequences assigned  
1118 (85.3%) exact matches, in which:  
1067 unique CDR3  
6 unique J



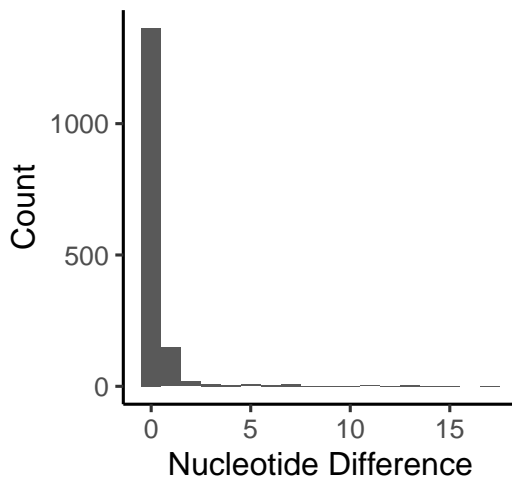
### IGHV4-31\*03

2043 sequences assigned  
1790 (87.6%) exact matches, in which:  
1702 unique CDR3  
6 unique J



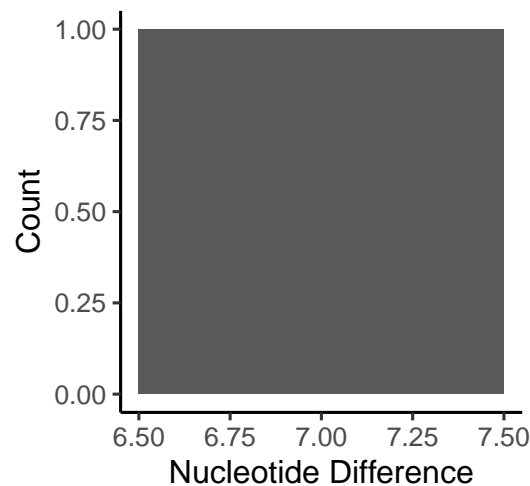
### IGHV4-59\*01

1584 sequences assigned  
1364 (86.1%) exact matches, in which:  
1304 unique CDR3  
6 unique J



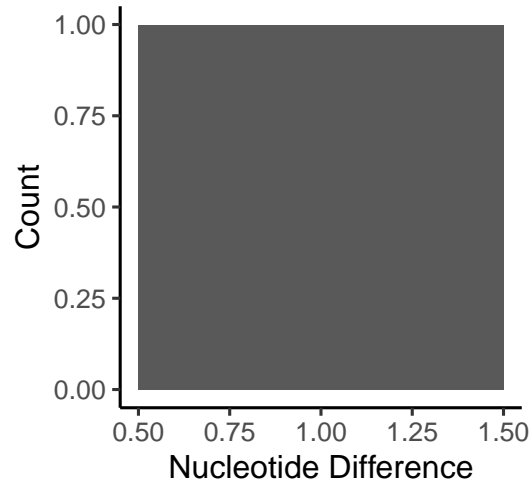
### IGHV1/OR15-3\*02

1 sequences assigned  
No exact matches.



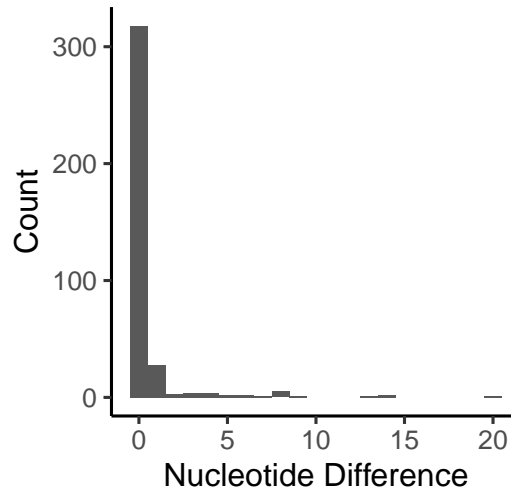
### IGHV1/OR15-4\*01

1 sequences assigned  
No exact matches.



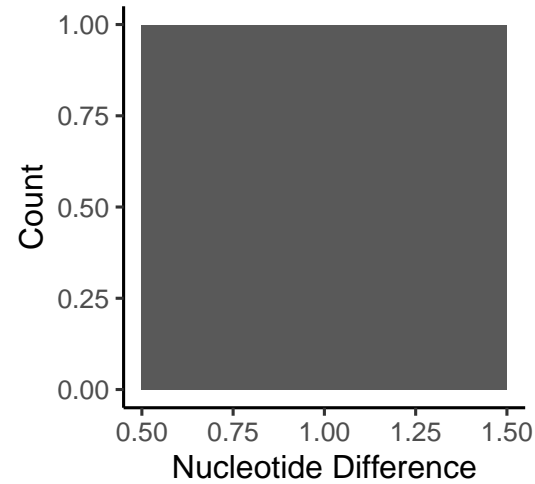
### IGHV6-1\*01

372 sequences assigned  
318 (85.5%) exact matches, in which:  
294 unique CDR3  
6 unique J



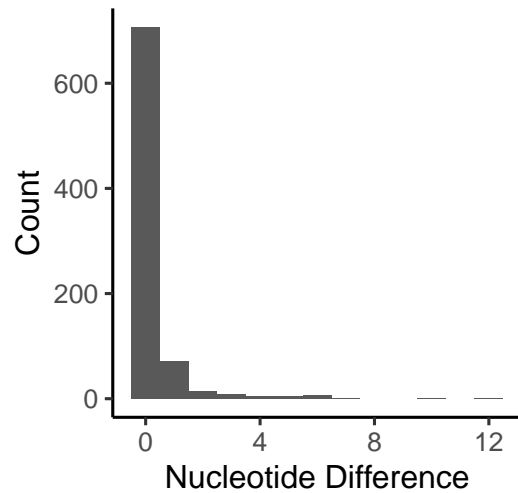
### IGHV3/OR16-12\*01

1 sequences assigned  
No exact matches.



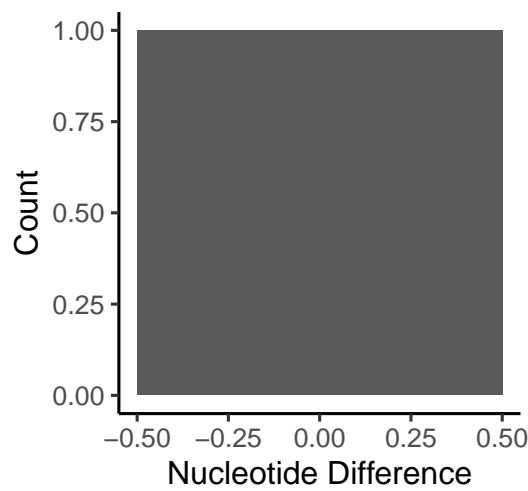
### IGHV5-10-1\*03

822 sequences assigned  
707 (86%) exact matches, in which:  
670 unique CDR3  
6 unique J



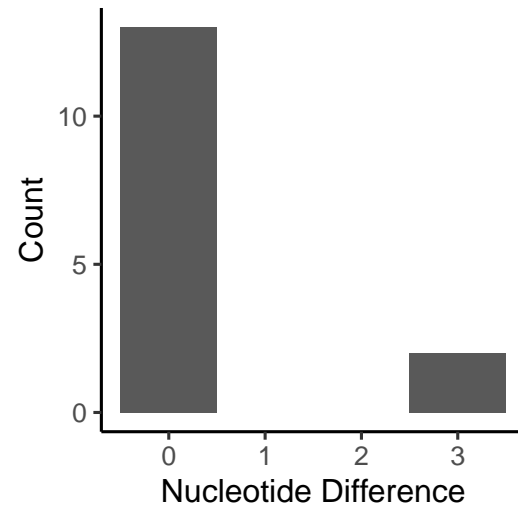
### IGHV3/OR16-8\*01

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



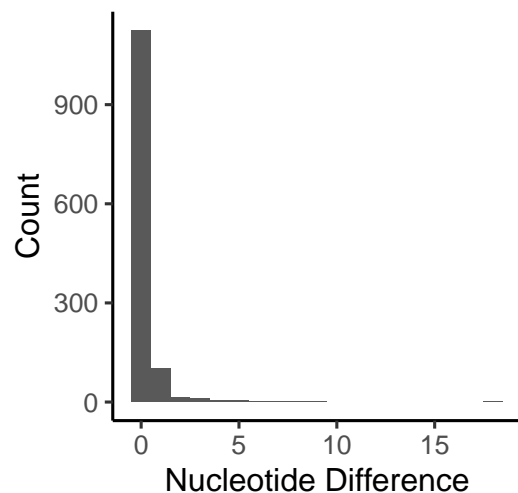
### IGHV7-4-1\*01

15 sequences assigned  
13 (86.7%) exact matches, in which:  
13 unique CDR3  
4 unique J



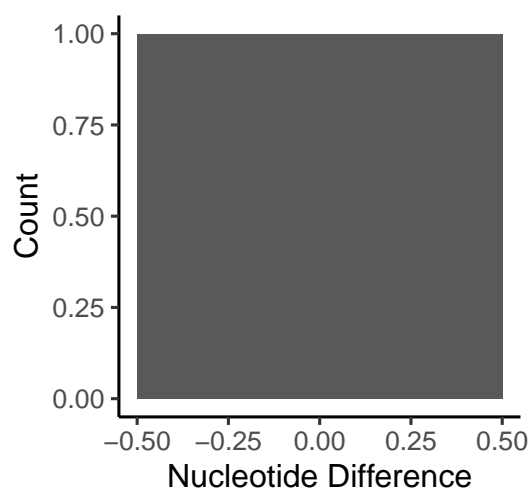
### IGHV5-51\*01

1277 sequences assigned  
1125 (88.1%) exact matches, in which:  
1071 unique CDR3  
6 unique J

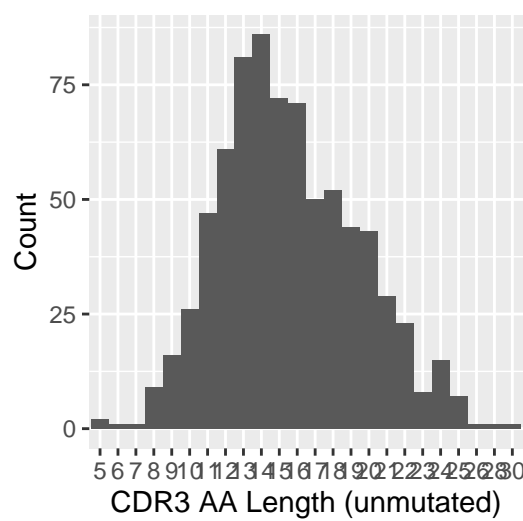


### IGHV3/OR16-9\*01

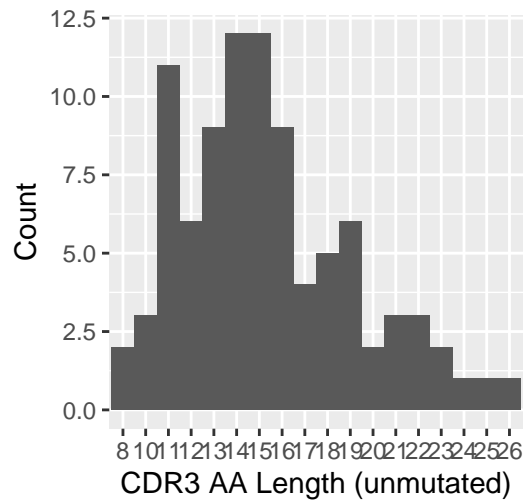
1 sequences assigned  
1 (100%) exact matches, in which:  
1 unique CDR3  
1 unique J



IGHV1-69\*08\_C191T



IGHV3-13\*01\_G290A\_T300C





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