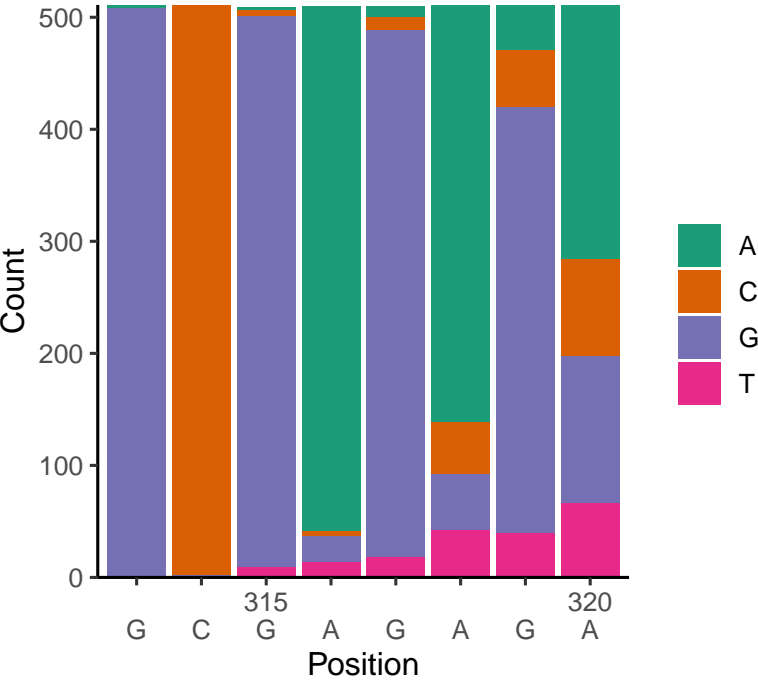
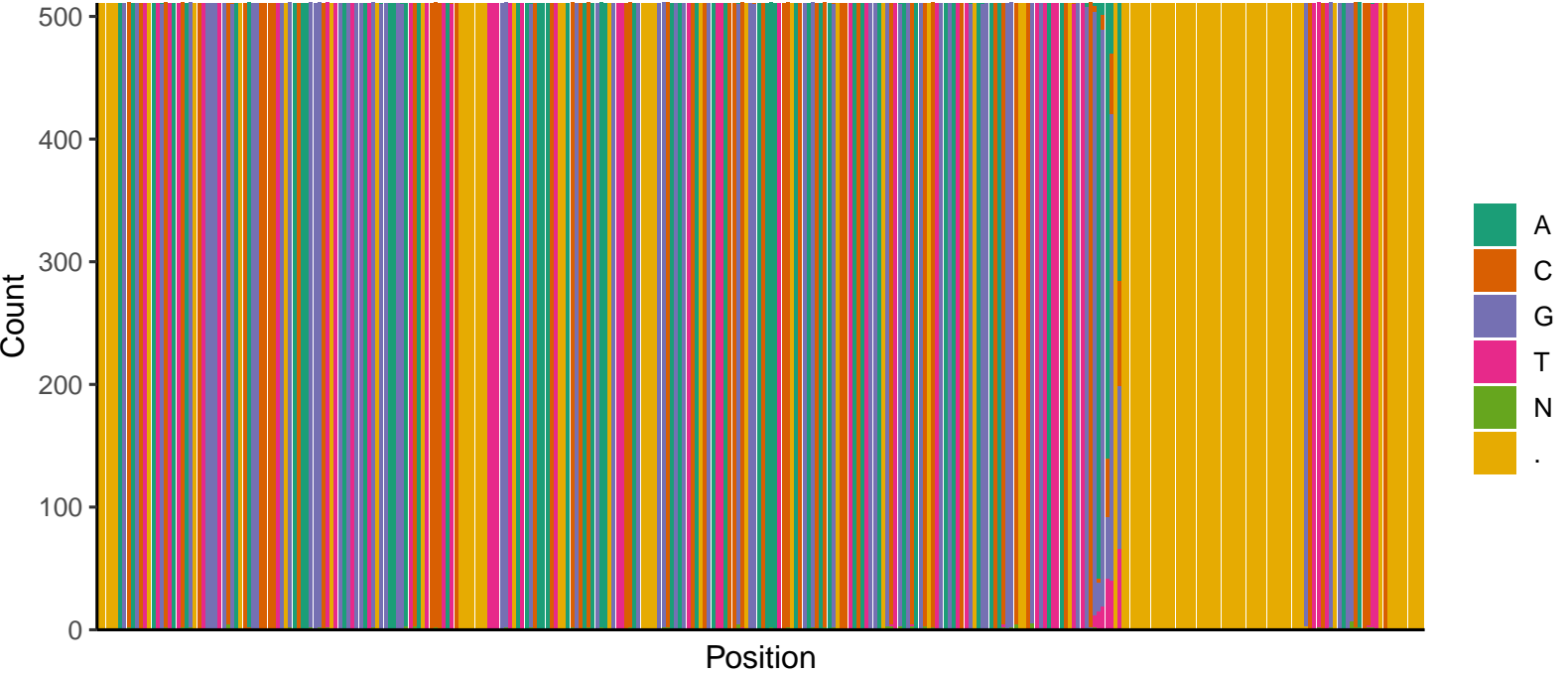


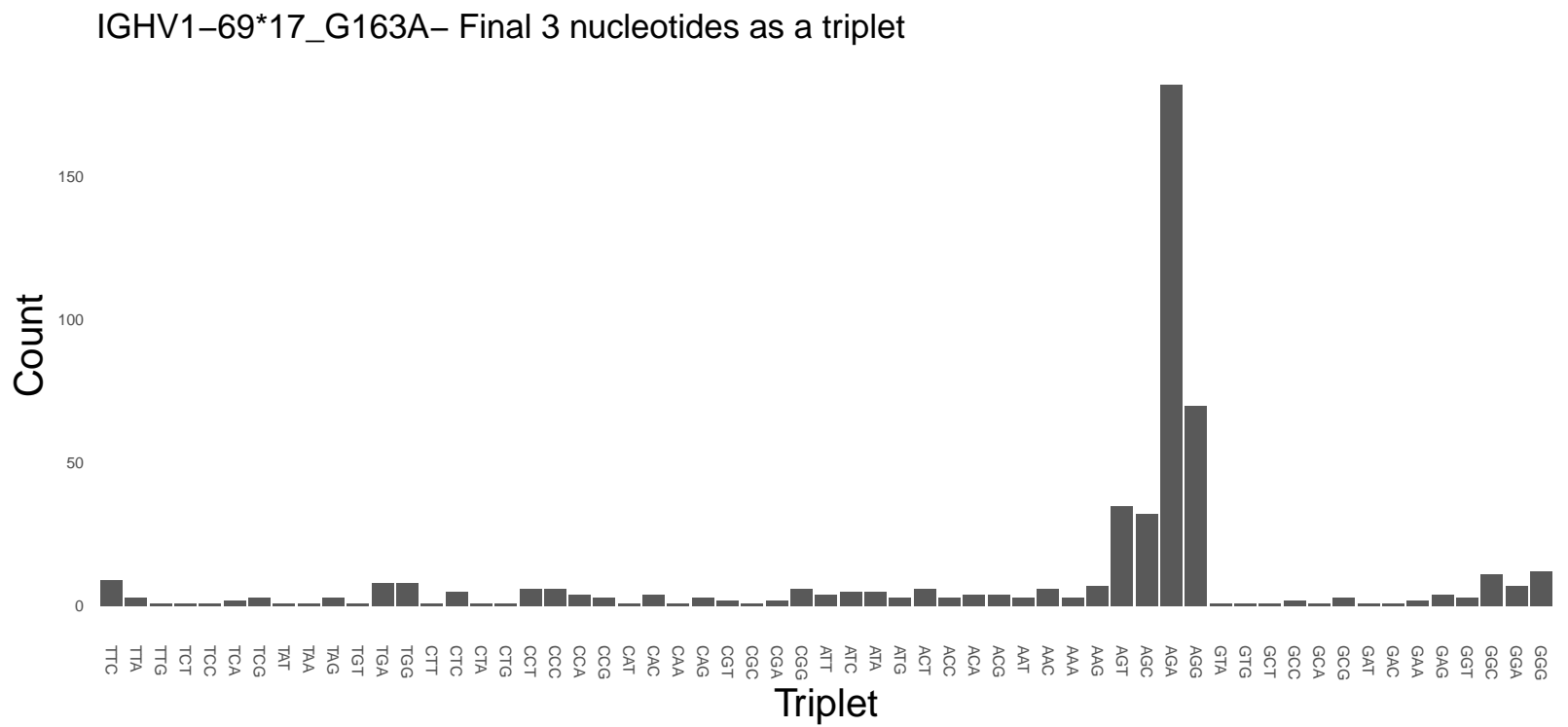
Gene IGHV1-69\*17\_G163A



Gene IGHV1-69\*17\_G163A

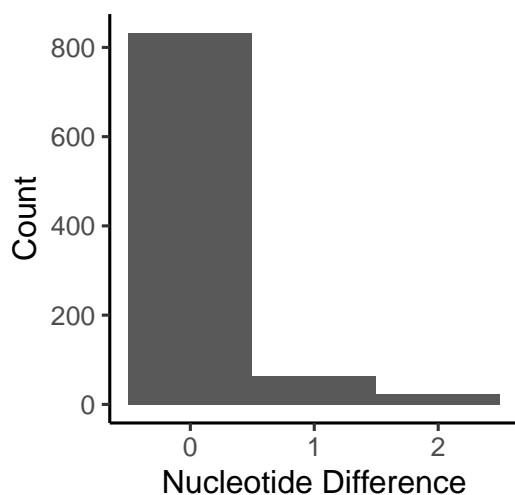


IGHV1-69\*17\_G163A- Final 3 nucleotides as a triplet



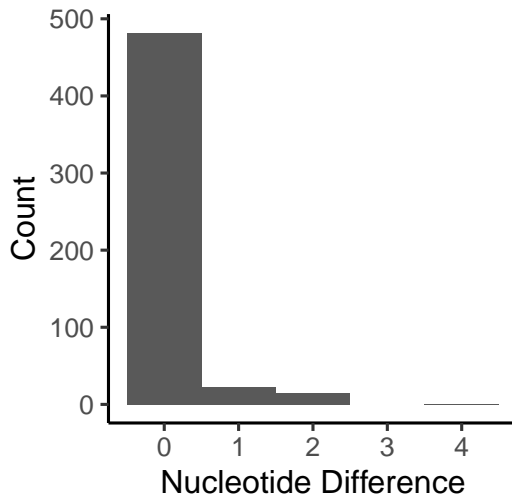
### IGHV1-2\*02

921 sequences assigned  
833 (90.4%) exact matches, in which:  
814 unique CDR3  
6 unique J



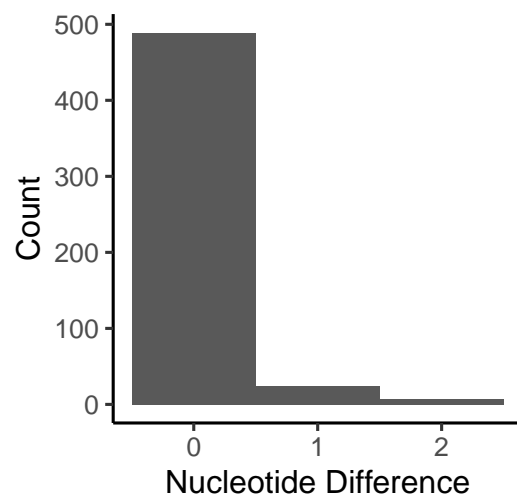
### IGHV1-3\*01\_05

521 sequences assigned  
482 (92.5%) exact matches, in which:  
480 unique CDR3  
7 unique J



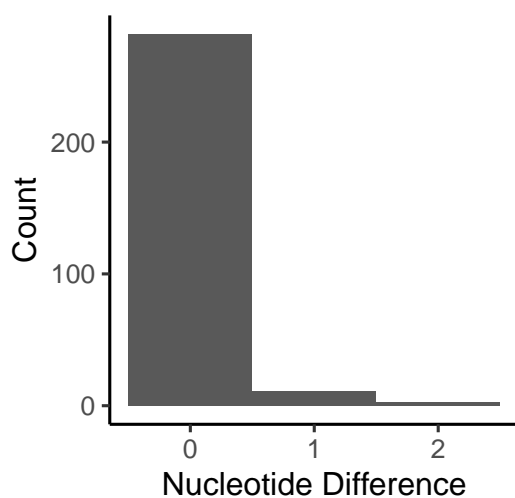
### IGHV1-24\*01

520 sequences assigned  
489 (94%) exact matches, in which:  
482 unique CDR3  
7 unique J



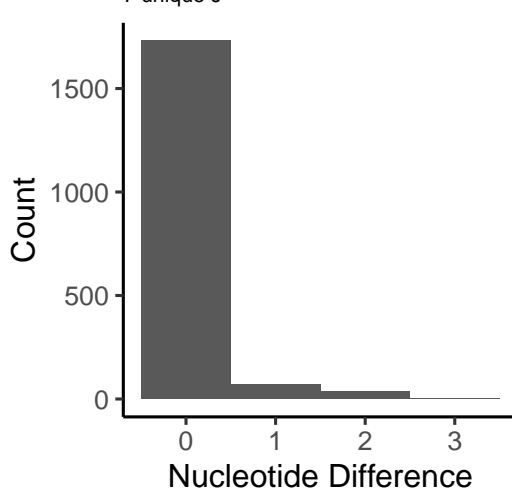
### IGHV1-2\*04

296 sequences assigned  
282 (95.3%) exact matches, in which:  
281 unique CDR3  
7 unique J



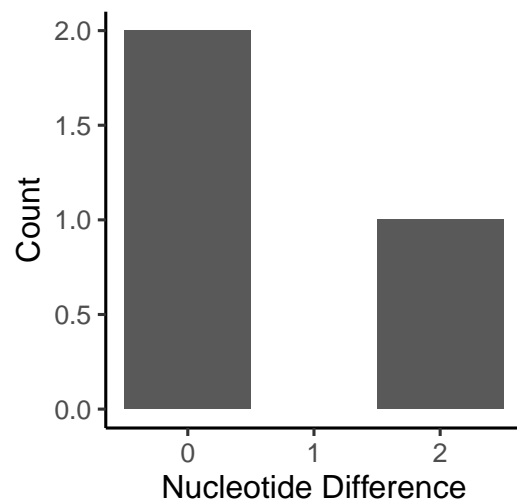
### IGHV1-8\*01

1840 sequences assigned  
1731 (94.1%) exact matches, in which:  
1704 unique CDR3  
7 unique J



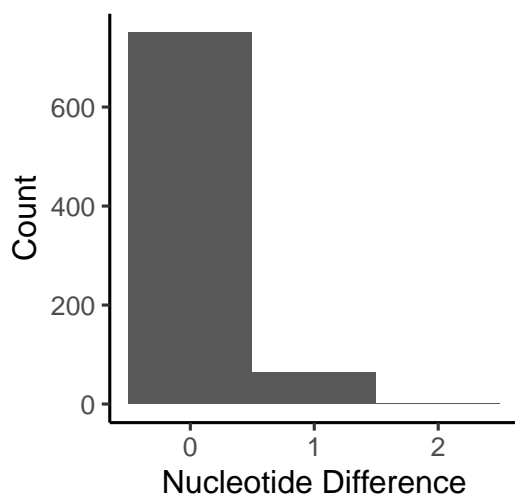
### IGHV1-45\*02

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



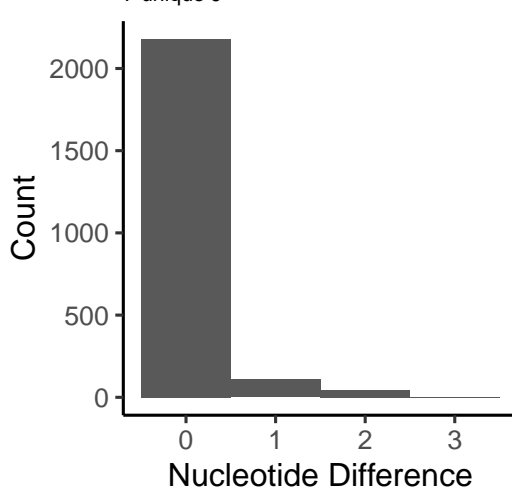
### IGHV1-2\*06

816 sequences assigned  
751 (92%) exact matches, in which:  
724 unique CDR3  
7 unique J



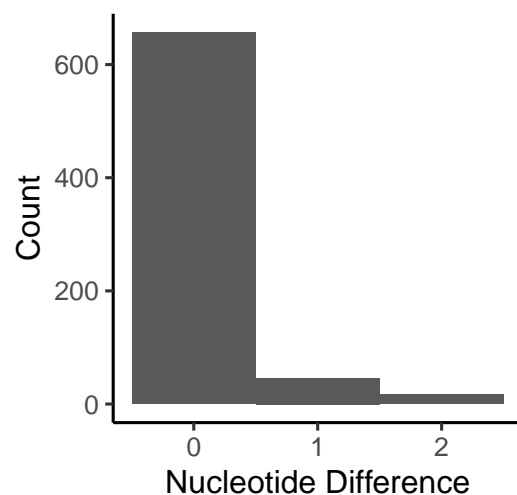
### IGHV1-18\*01

2333 sequences assigned  
2179 (93.4%) exact matches, in which:  
2142 unique CDR3  
7 unique J



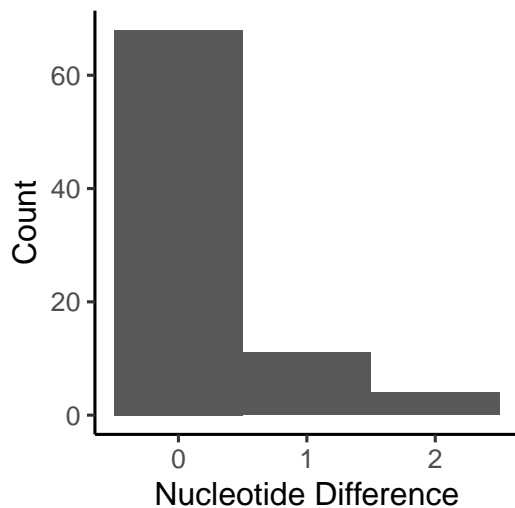
### IGHV1-46\*01

720 sequences assigned  
657 (91.2%) exact matches, in which:  
649 unique CDR3  
7 unique J



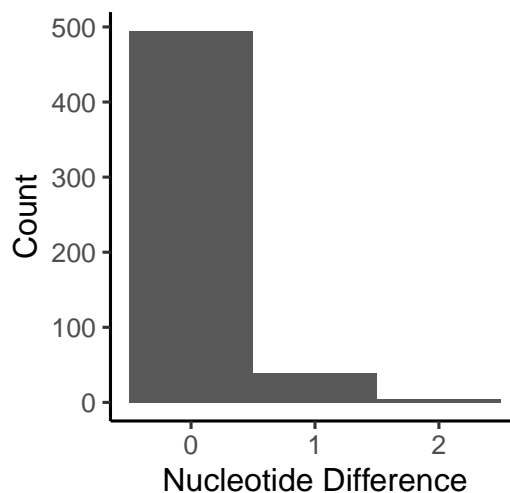
### IGHV1-58\*02

83 sequences assigned  
68 (81.9%) exact matches, in which:  
66 unique CDR3  
5 unique J



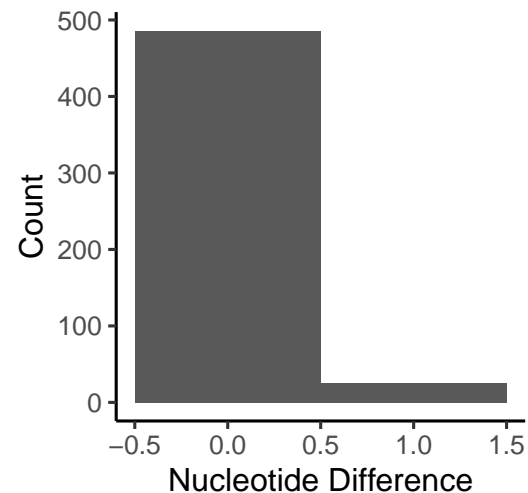
### IGHV1-69\*02

539 sequences assigned  
495 (91.8%) exact matches, in which:  
488 unique CDR3  
6 unique J



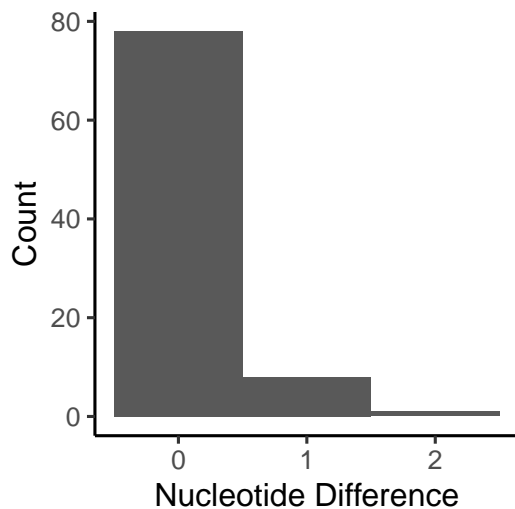
### IGHV1-69\*17\_G163A

511 sequences assigned  
486 (95.1%) exact matches, in which:  
474 unique CDR3  
6 unique J



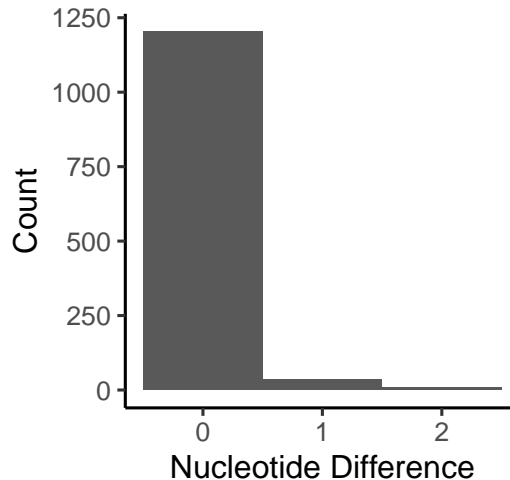
### IGHV1-58\*01\_03

87 sequences assigned  
78 (89.7%) exact matches, in which:  
78 unique CDR3  
7 unique J



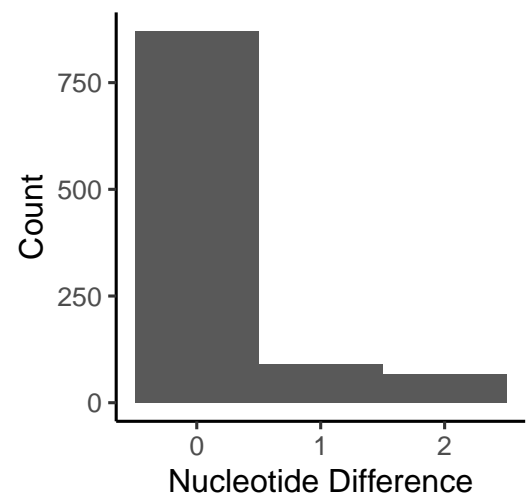
### IGHV1-69\*01\_12\_13

1244 sequences assigned  
1203 (96.7%) exact matches, in which:  
1203 unique CDR3  
7 unique J



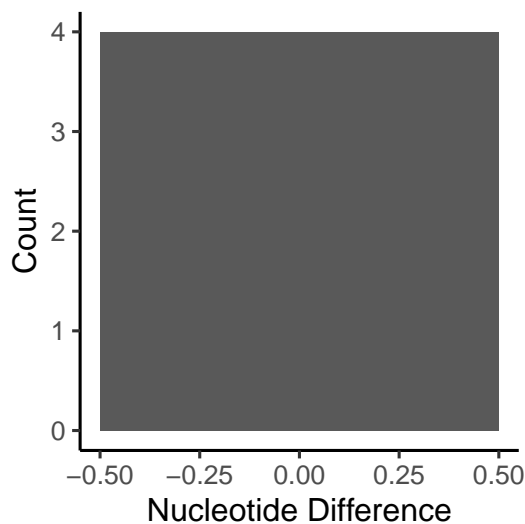
### IGHV2-5\*02

1027 sequences assigned  
871 (84.8%) exact matches, in which:  
861 unique CDR3  
7 unique J



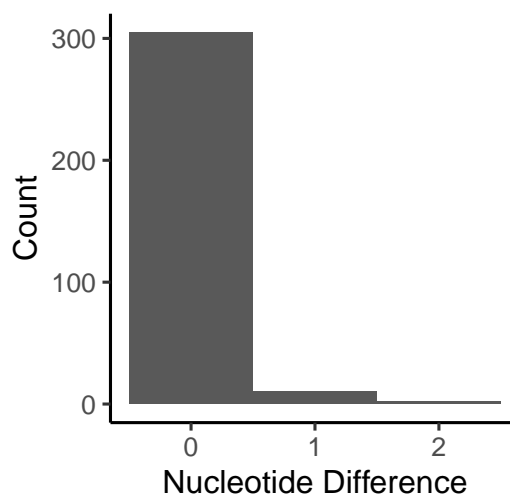
### IGHV1-69-2\*01

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



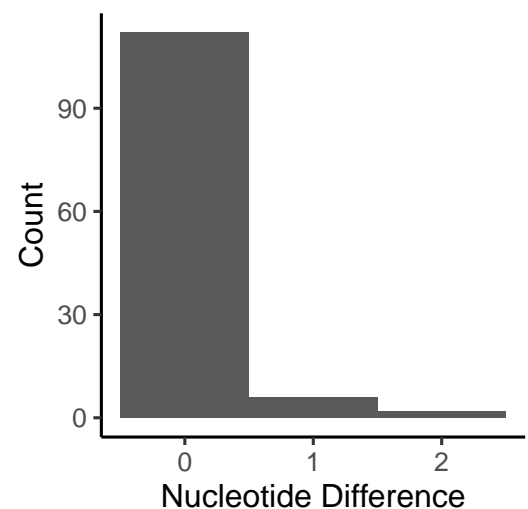
### IGHV1-69\*06\_14

317 sequences assigned  
305 (96.2%) exact matches, in which:  
305 unique CDR3  
6 unique J



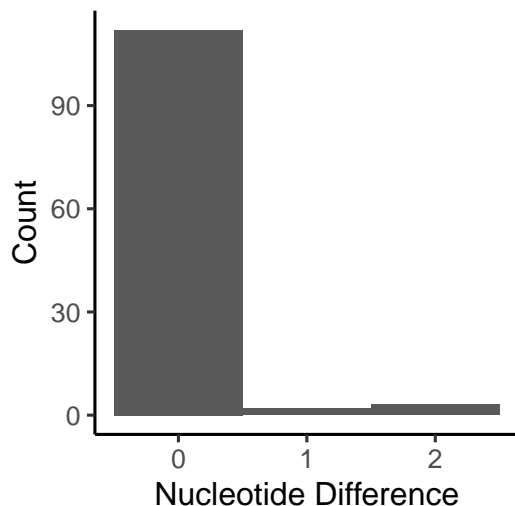
### IGHV2-26\*01

120 sequences assigned  
112 (93.3%) exact matches, in which:  
111 unique CDR3  
6 unique J



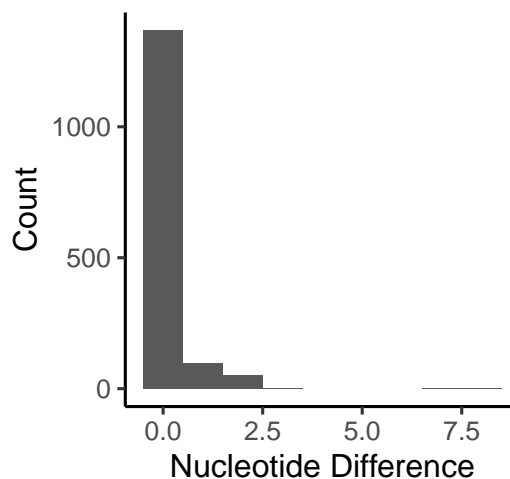
### IGHV2-70\*01

117 sequences assigned  
112 (95.7%) exact matches, in which:  
112 unique CDR3  
6 unique J



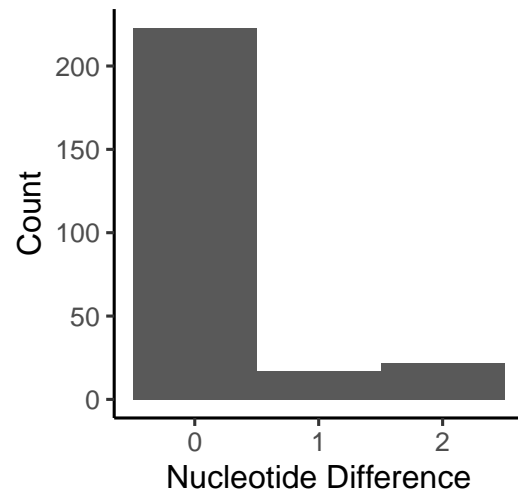
### IGHV3-11\*01

1520 sequences assigned  
1368 (90%) exact matches, in which:  
1313 unique CDR3  
7 unique J



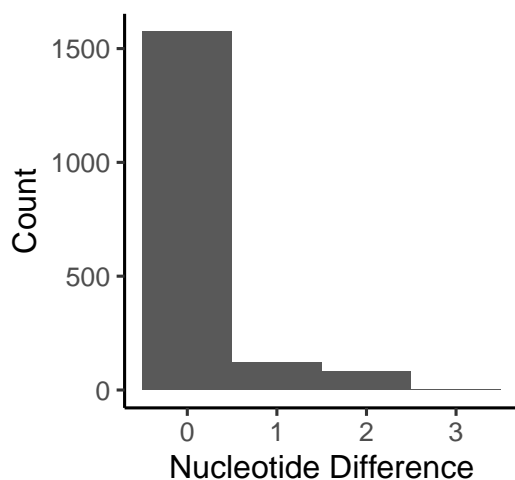
### IGHV3-20\*01\_02

262 sequences assigned  
223 (85.1%) exact matches, in which:  
208 unique CDR3  
7 unique J



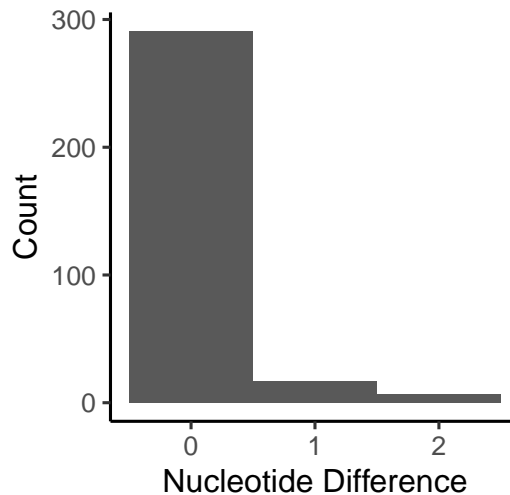
### IGHV3-7\*01

1781 sequences assigned  
1574 (88.4%) exact matches, in which:  
1521 unique CDR3  
7 unique J



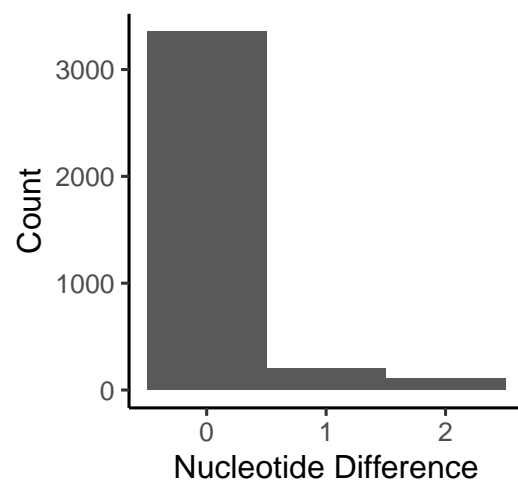
### IGHV3-13\*01

315 sequences assigned  
291 (92.4%) exact matches, in which:  
284 unique CDR3  
6 unique J



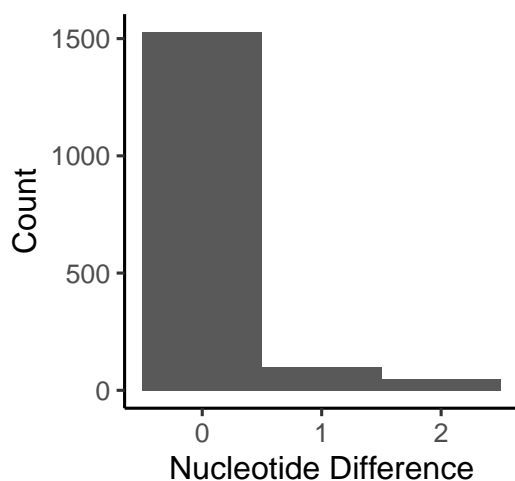
### IGHV3-21\*01\_02

3660 sequences assigned  
3354 (91.6%) exact matches, in which:  
3186 unique CDR3  
7 unique J



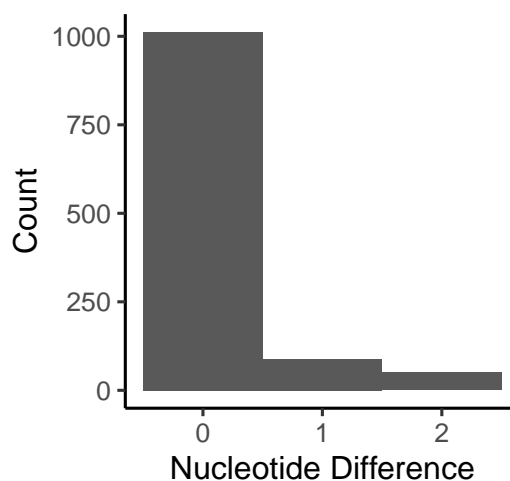
### IGHV3-9\*01

1677 sequences assigned  
1528 (91.1%) exact matches, in which:  
1481 unique CDR3  
7 unique J



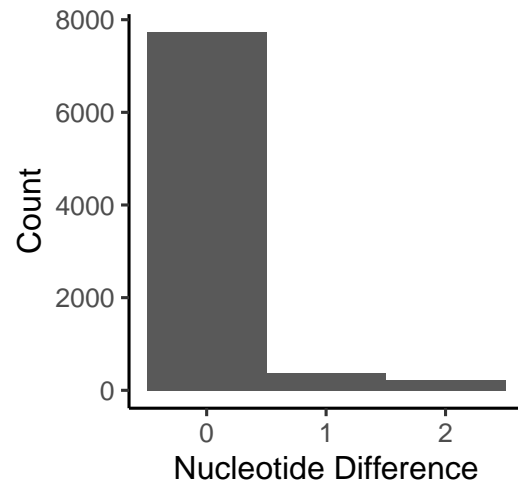
### IGHV3-15\*01\_02

1150 sequences assigned  
1012 (88%) exact matches, in which:  
966 unique CDR3  
7 unique J



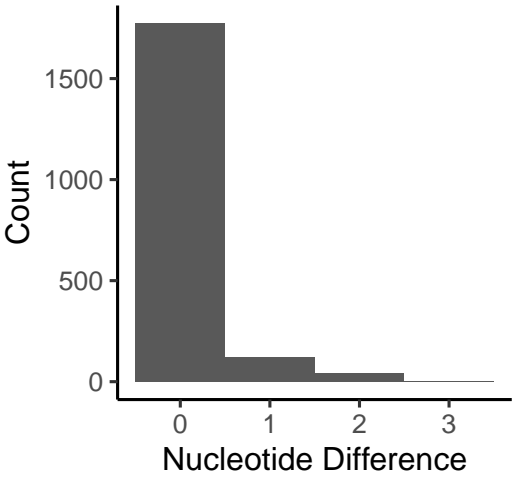
### IGHV3-23\*01\_04

8330 sequences assigned  
7733 (92.8%) exact matches, in which:  
7377 unique CDR3  
7 unique J



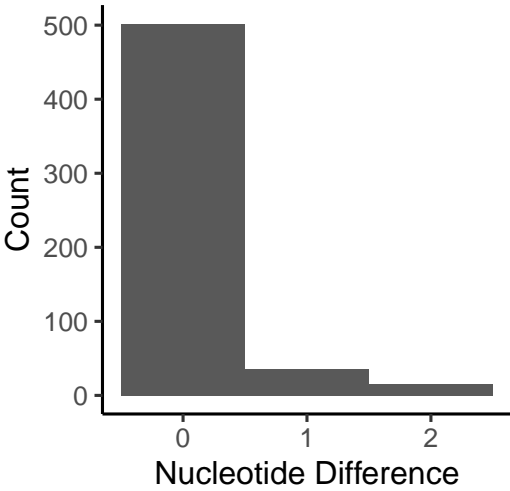
IGHV3-30-3\*01

1935 sequences assigned  
1773 (91.6%) exact matches, in which:  
1720 unique CDR3  
7 unique J



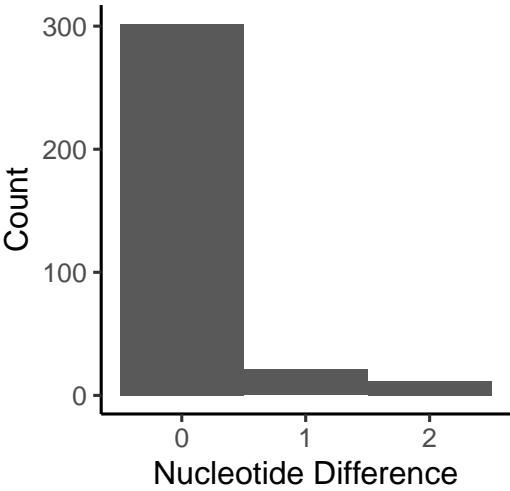
IGHV3-43\*02

553 sequences assigned  
502 (90.8%) exact matches, in which:  
480 unique CDR3  
7 unique J



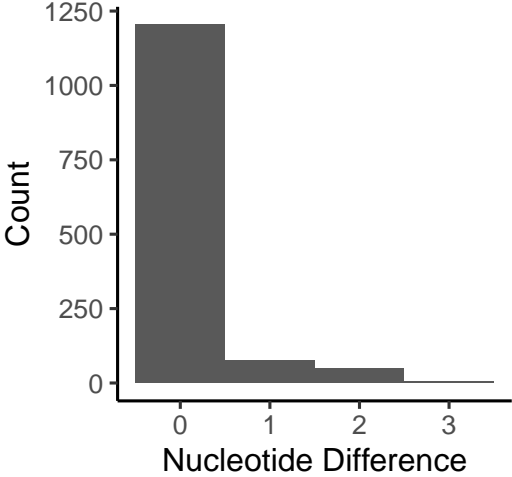
IGHV3-49\*04

335 sequences assigned  
302 (90.1%) exact matches, in which:  
295 unique CDR3  
7 unique J



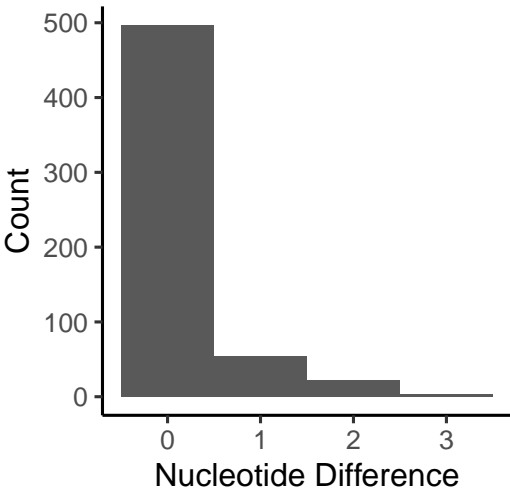
IGHV3-33\*01

1332 sequences assigned  
1204 (90.4%) exact matches, in which:  
1162 unique CDR3  
7 unique J



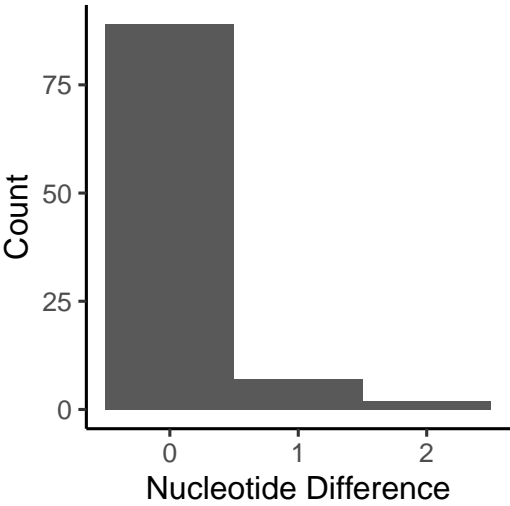
IGHV3-48\*01

576 sequences assigned  
497 (86.3%) exact matches, in which:  
471 unique CDR3  
6 unique J



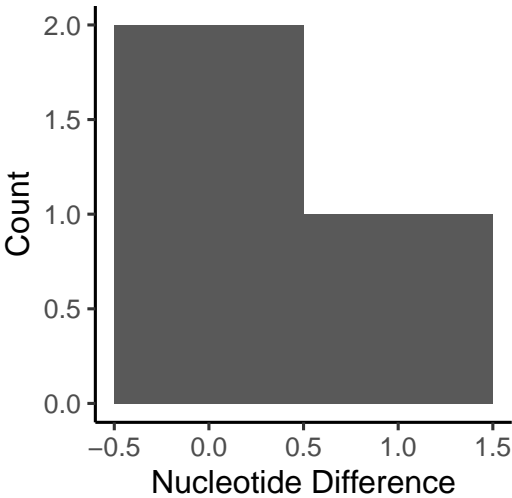
IGHV3-49\*03\_05

98 sequences assigned  
89 (90.8%) exact matches, in which:  
86 unique CDR3  
5 unique J



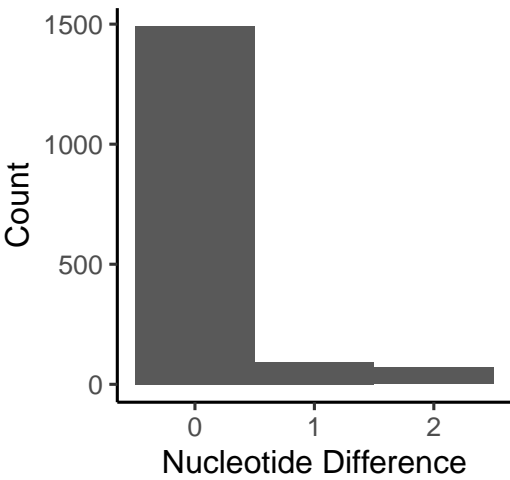
IGHV3-35\*01

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



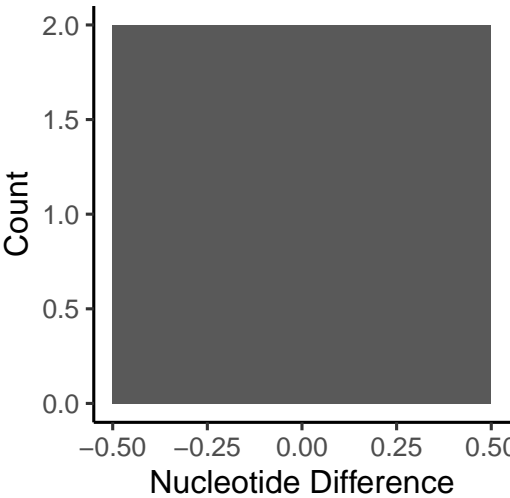
IGHV3-48\*03

1655 sequences assigned  
1492 (90.2%) exact matches, in which:  
1454 unique CDR3  
7 unique J



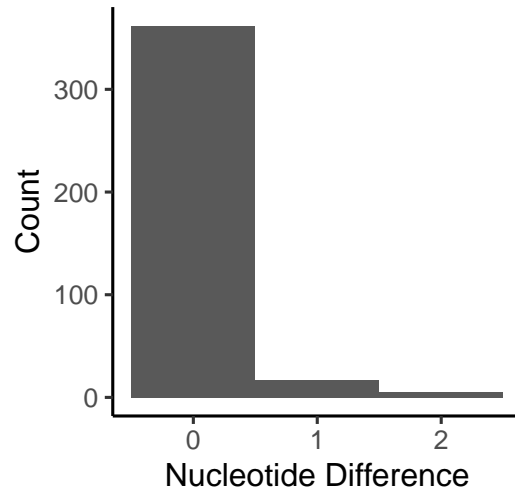
IGHV3-52\*01\_03

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



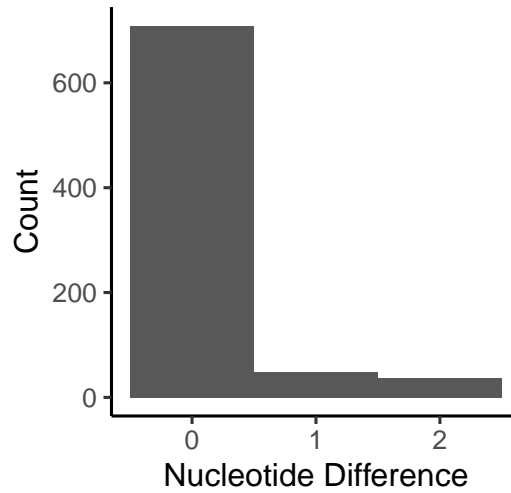
### IGHV3-53\*04

384 sequences assigned  
362 (94.3%) exact matches, in which:  
348 unique CDR3  
7 unique J



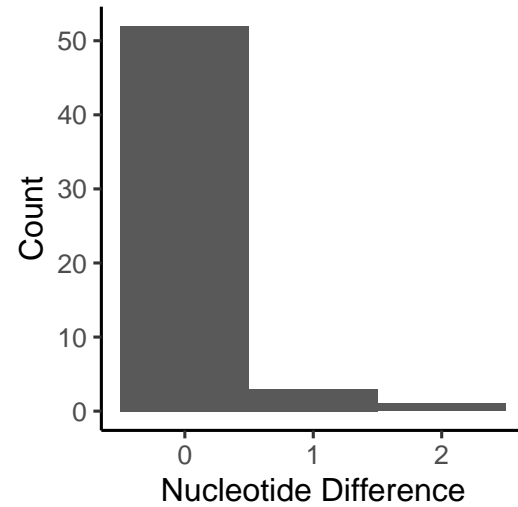
### IGHV3-66\*02

794 sequences assigned  
709 (89.3%) exact matches, in which:  
659 unique CDR3  
6 unique J



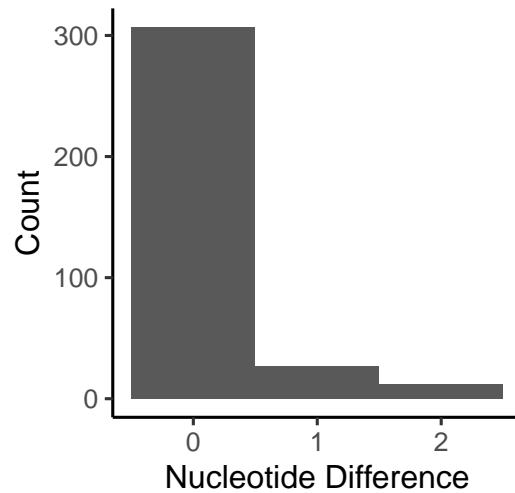
### IGHV3-72\*01

56 sequences assigned  
52 (92.9%) exact matches, in which:  
52 unique CDR3  
6 unique J



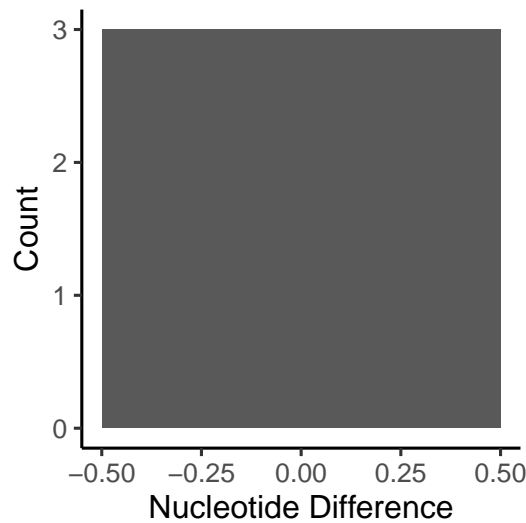
### IGHV3-53\*01\_02

346 sequences assigned  
307 (88.7%) exact matches, in which:  
297 unique CDR3  
6 unique J



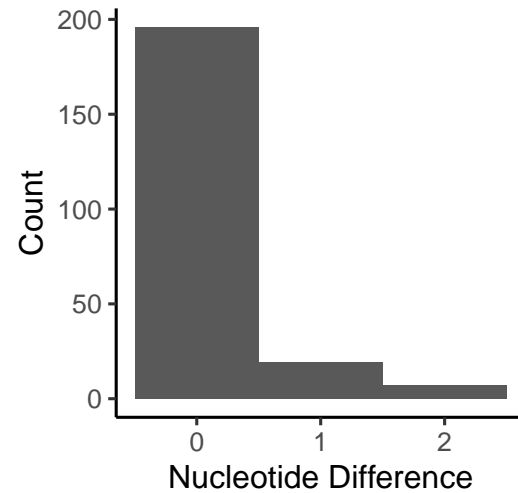
### IGHV3-69-1\*01

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



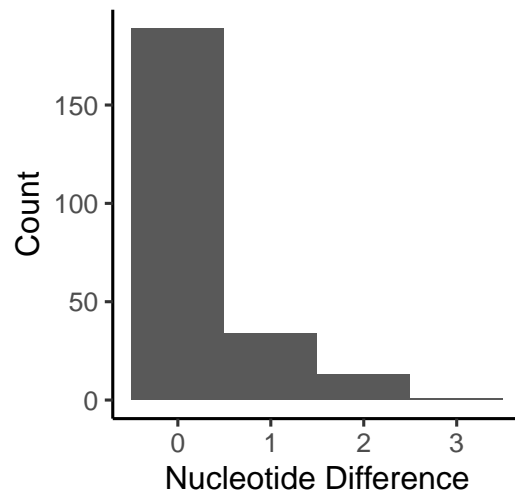
### IGHV3-73\*01\_02

222 sequences assigned  
196 (88.3%) exact matches, in which:  
188 unique CDR3  
7 unique J



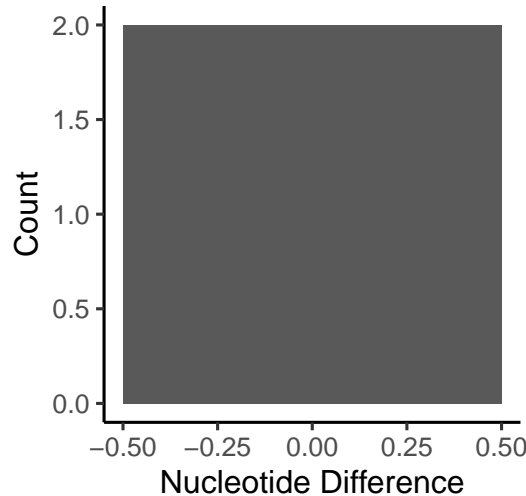
### IGHV3-64\*01

237 sequences assigned  
189 (79.7%) exact matches, in which:  
178 unique CDR3  
5 unique J



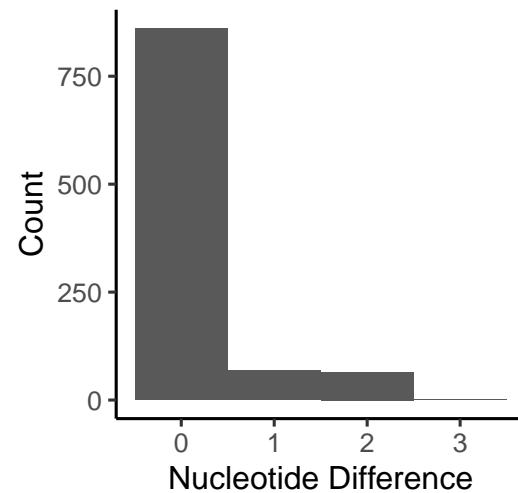
### IGHV3-69-1\*02

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



### IGHV3-74\*01\_02

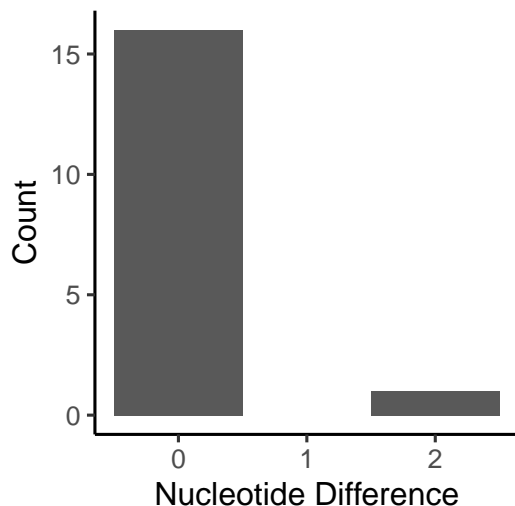
997 sequences assigned  
861 (86.4%) exact matches, in which:  
825 unique CDR3  
7 unique J





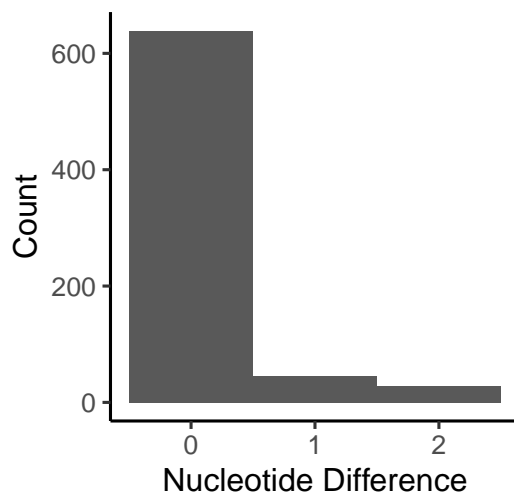
### IGHV3-43D\*04

17 sequences assigned  
16 (94.1%) exact matches, in which:  
16 unique CDR3  
2 unique J



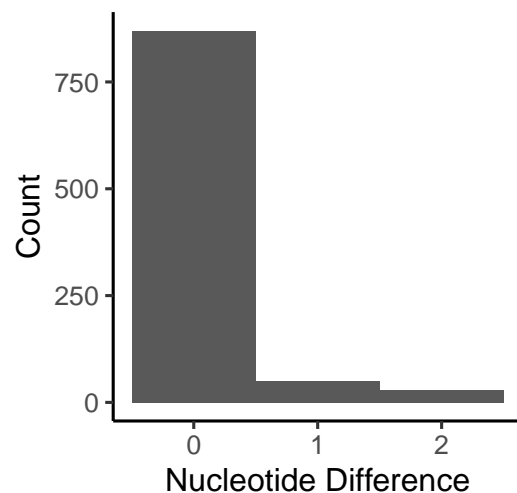
### IGHV4-4\*02\_03

712 sequences assigned  
639 (89.7%) exact matches, in which:  
620 unique CDR3  
7 unique J



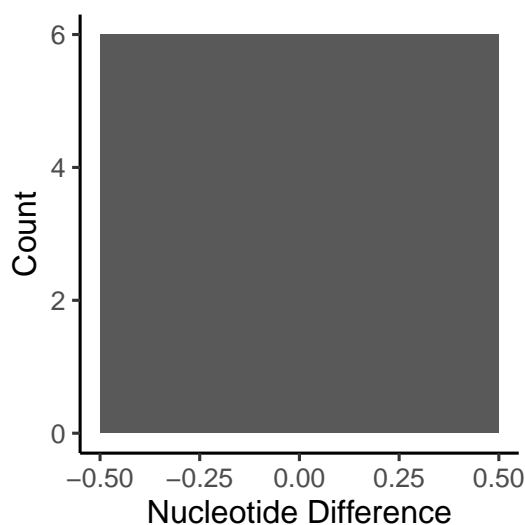
### IGHV4-30-4\*01

950 sequences assigned  
870 (91.6%) exact matches, in which:  
849 unique CDR3  
7 unique J



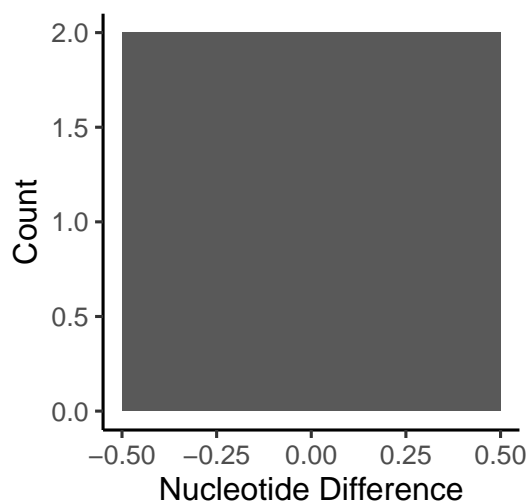
### IGHV3-64D\*06

6 sequences assigned  
6 (100%) exact matches, in which:  
6 unique CDR3  
4 unique J



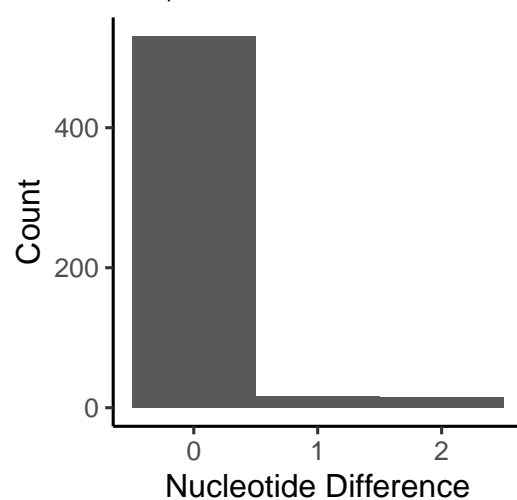
### IGHV4-28\*03

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



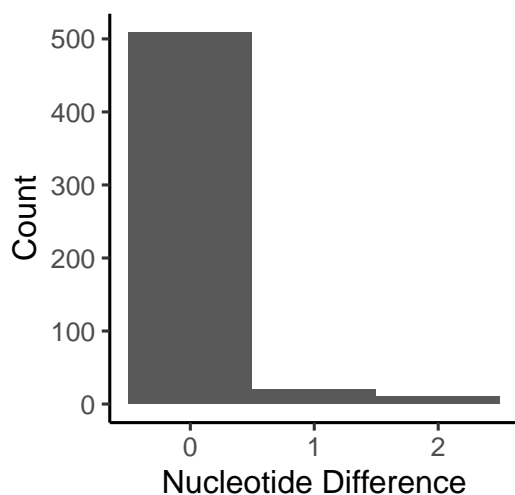
### IGHV4-30-2\*01

563 sequences assigned  
531 (94.3%) exact matches, in which:  
506 unique CDR3  
7 unique J



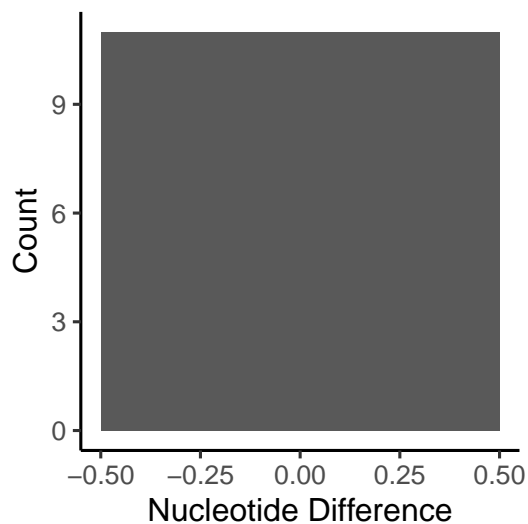
### IGHV4-4\*07

539 sequences assigned  
509 (94.4%) exact matches, in which:  
482 unique CDR3  
6 unique J



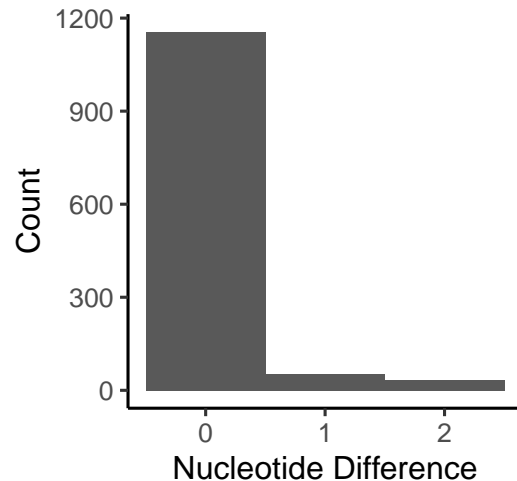
### IGHV4-28\*01\_07

11 sequences assigned  
11 (100%) exact matches, in which:  
9 unique CDR3  
3 unique J



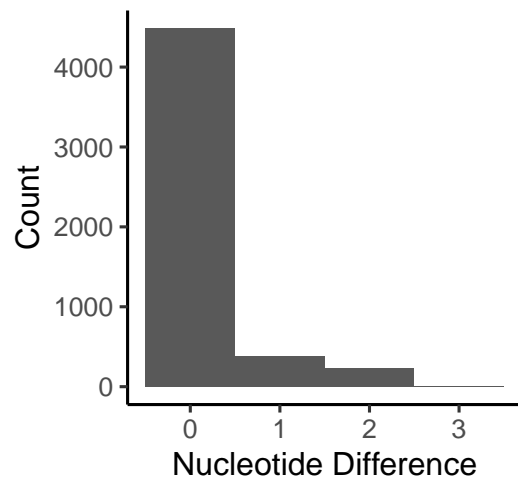
### IGHV4-31\*02

1242 sequences assigned  
1155 (93%) exact matches, in which:  
1124 unique CDR3  
7 unique J



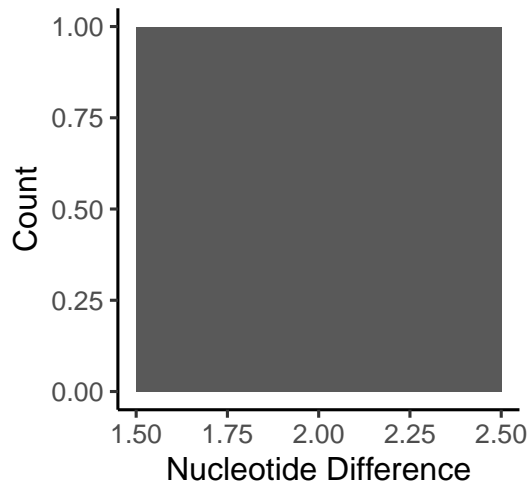
### IGHV4-34\*01\_02

5088 sequences assigned  
4484 (88.1%) exact matches, in which:  
4272 unique CDR3  
7 unique J



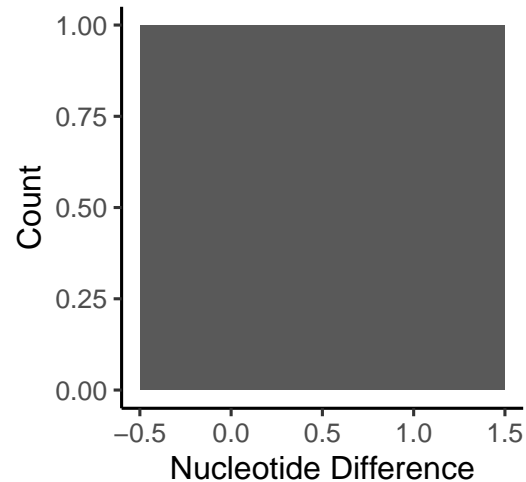
### IGHV4-59\*02

1 sequences assigned  
No exact matches.



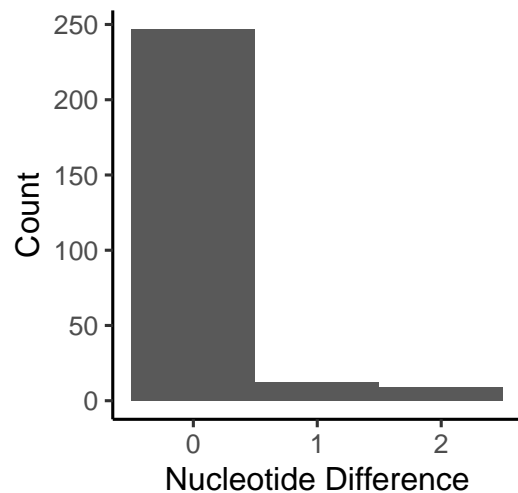
### IGHV4-59\*11

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



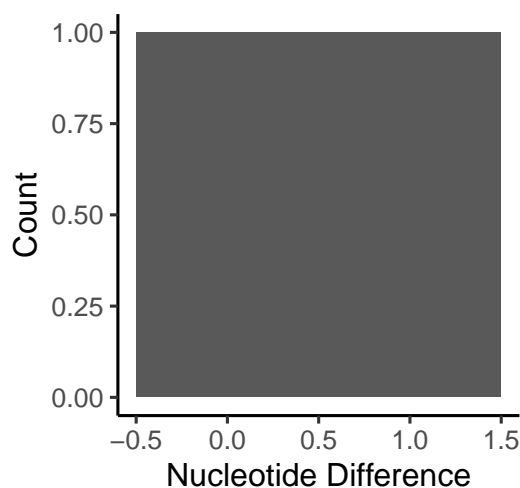
### IGHV4-38-2\*01

268 sequences assigned  
247 (92.2%) exact matches, in which:  
244 unique CDR3  
5 unique J



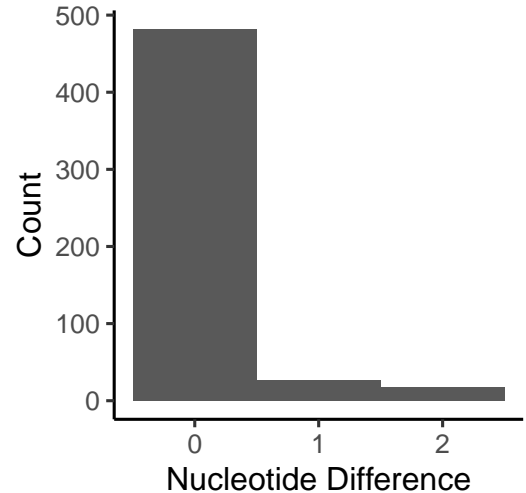
### IGHV4-59\*08

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



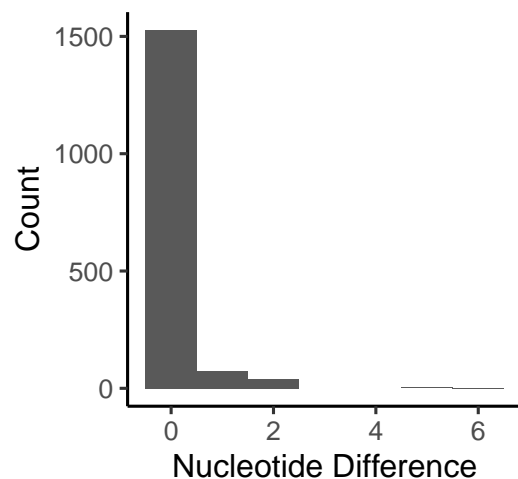
### IGHV4-61\*01

527 sequences assigned  
482 (91.5%) exact matches, in which:  
475 unique CDR3  
7 unique J



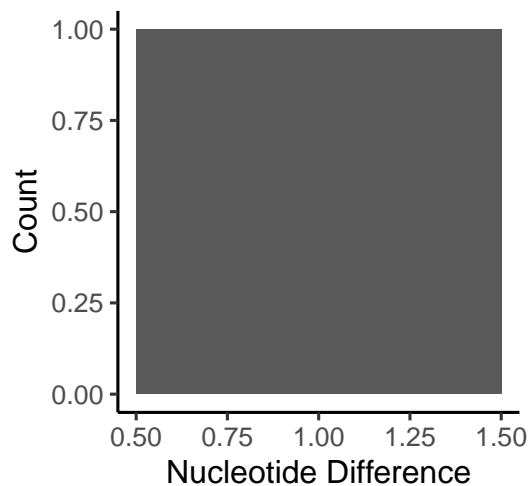
### IGHV4-39\*07

1645 sequences assigned  
1527 (92.8%) exact matches, in which:  
1450 unique CDR3  
6 unique J



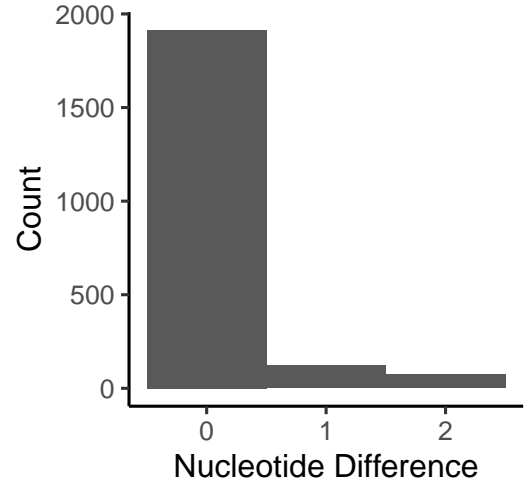
### IGHV4-59\*10

1 sequences assigned  
No exact matches.



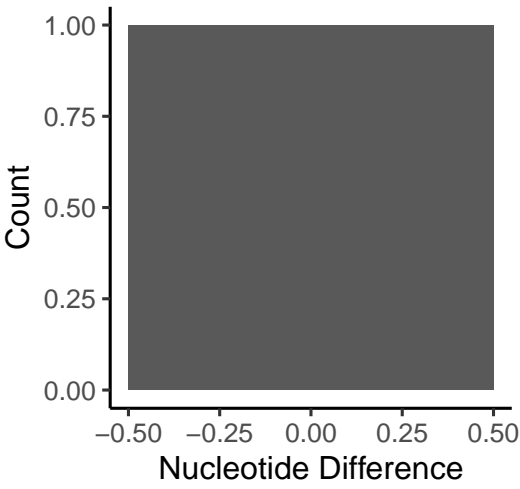
### IGHV4-61\*02

2109 sequences assigned  
1914 (90.8%) exact matches, in which:  
1833 unique CDR3  
6 unique J



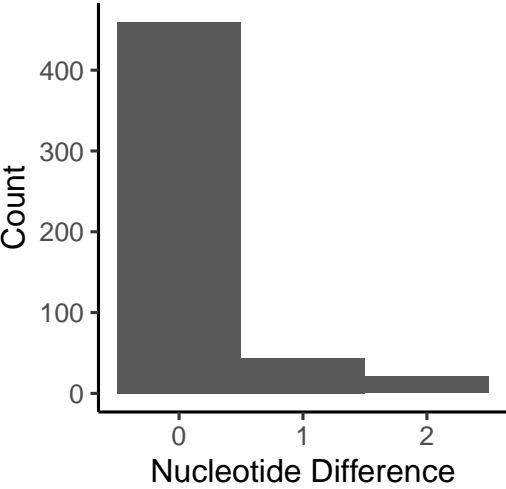
IGHV5-51\*07

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



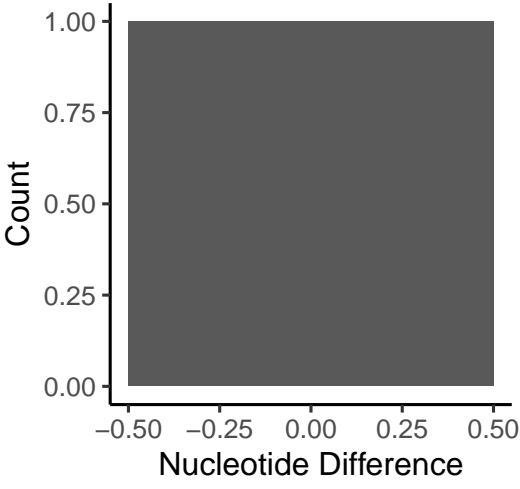
IGHV7-4-1\*02

525 sequences assigned  
460 (87.6%) exact matches, in which:  
453 unique CDR3  
7 unique J



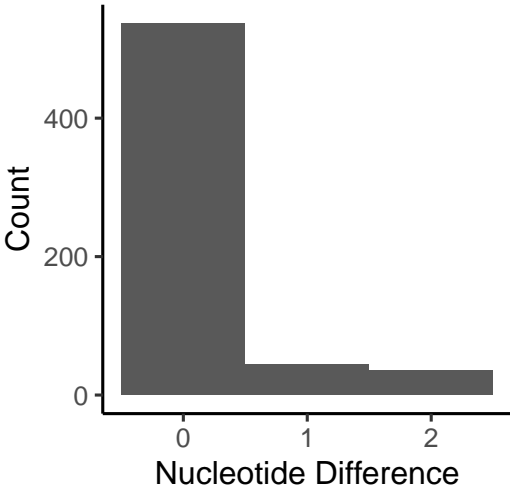
IGHV5-51\*01\_03

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

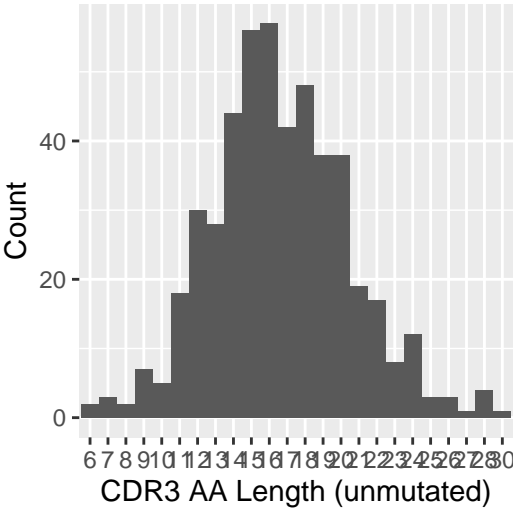


IGHV6-1\*01\_02

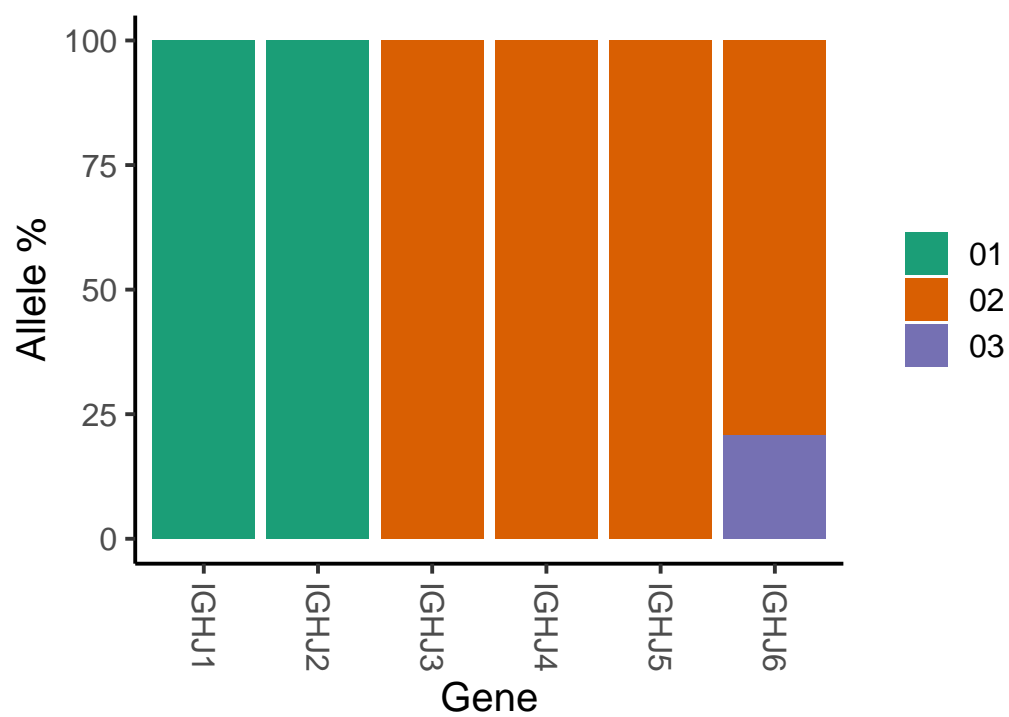
616 sequences assigned  
537 (87.2%) exact matches, in which:  
509 unique CDR3  
7 unique J



IGHV1-69\*17\_G163A



Allele Usage



[illegible]