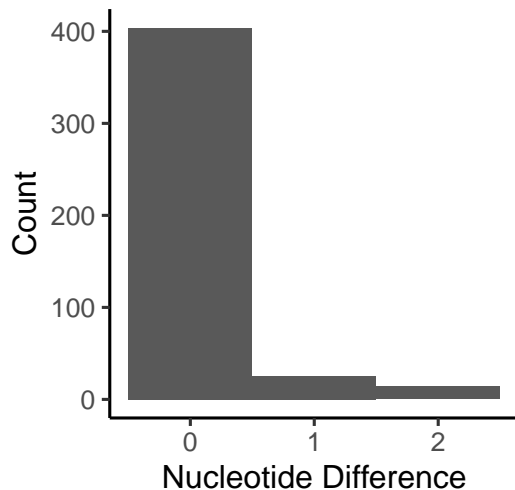


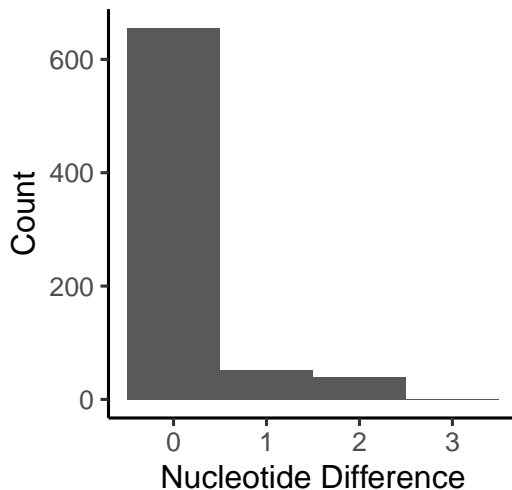
### IGHV1-2\*02

443 sequences assigned  
404 (91.2%) exact matches, in which:  
403 unique CDR3  
7 unique J



### IGHV1-8\*01

749 sequences assigned  
656 (87.6%) exact matches, in which:  
655 unique CDR3  
7 unique J



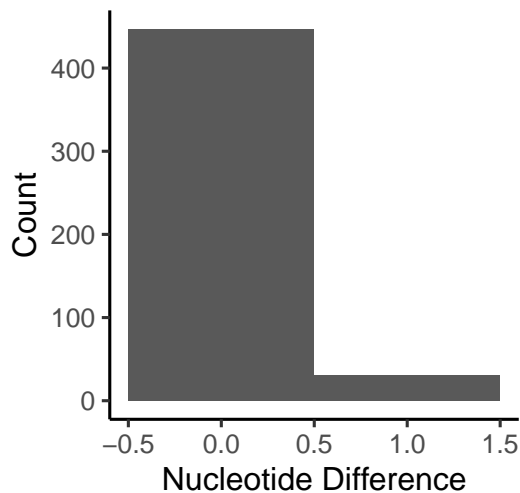
### IGHV1-45\*02

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



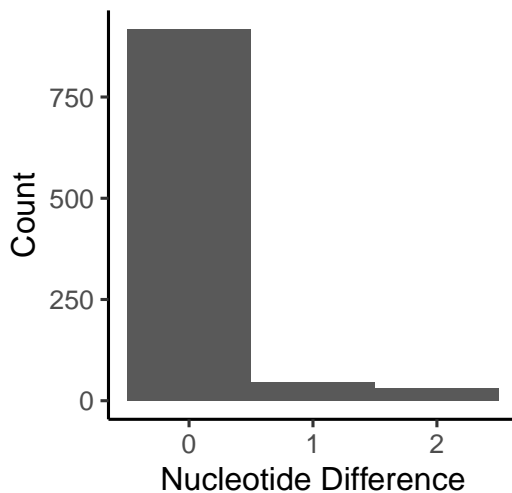
### IGHV1-2\*06

478 sequences assigned  
447 (93.5%) exact matches, in which:  
444 unique CDR3  
7 unique J



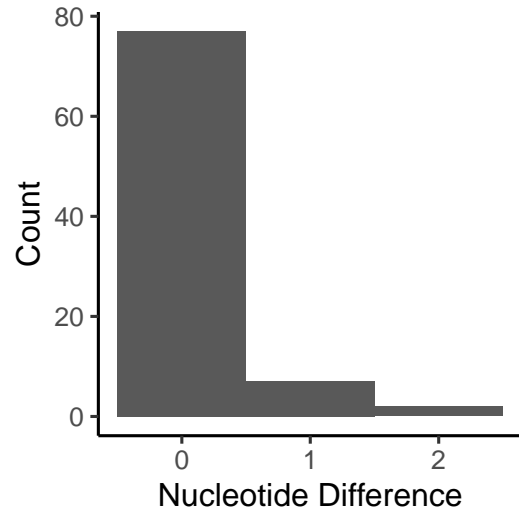
### IGHV1-18\*01

994 sequences assigned  
918 (92.4%) exact matches, in which:  
915 unique CDR3  
7 unique J



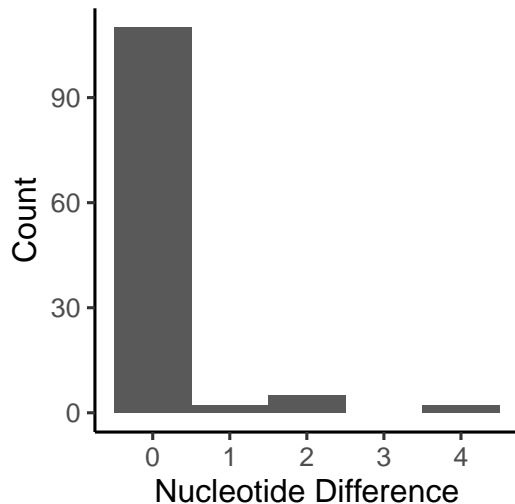
### IGHV1-46\*01

86 sequences assigned  
77 (89.5%) exact matches, in which:  
77 unique CDR3  
6 unique J



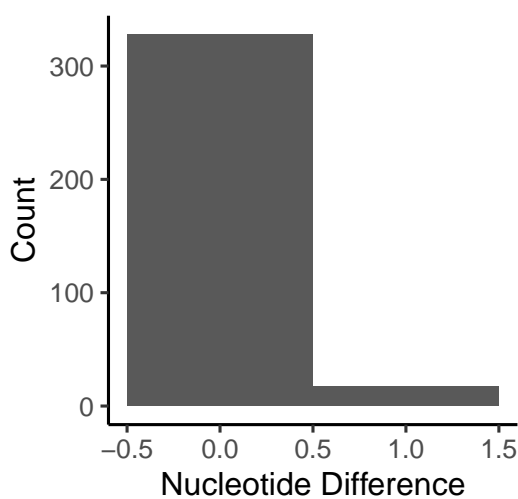
### IGHV1-3\*01\_05

119 sequences assigned  
110 (92.4%) exact matches, in which:  
110 unique CDR3  
6 unique J



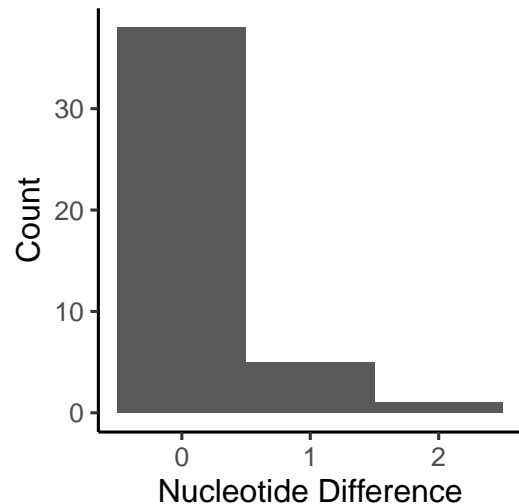
### IGHV1-24\*01

345 sequences assigned  
328 (95.1%) exact matches, in which:  
327 unique CDR3  
7 unique J



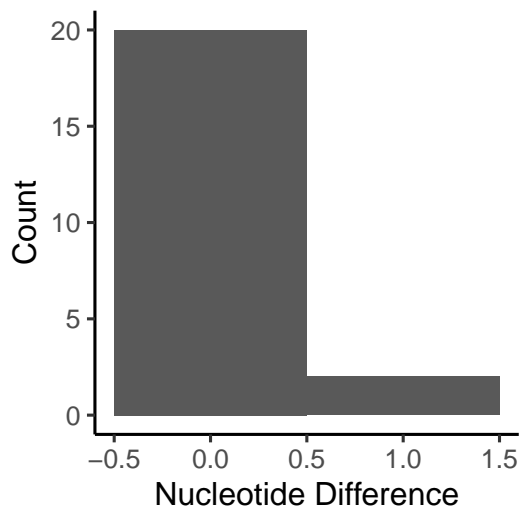
### IGHV1-46\*03

44 sequences assigned  
38 (86.4%) exact matches, in which:  
38 unique CDR3  
5 unique J



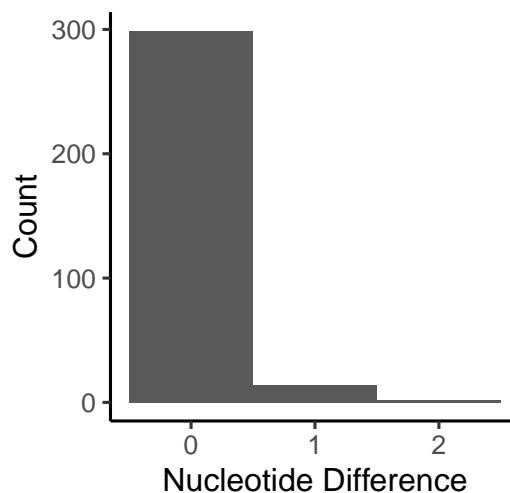
### IGHV1-58\*02

22 sequences assigned  
20 (90.9%) exact matches, in which:  
20 unique CDR3  
6 unique J



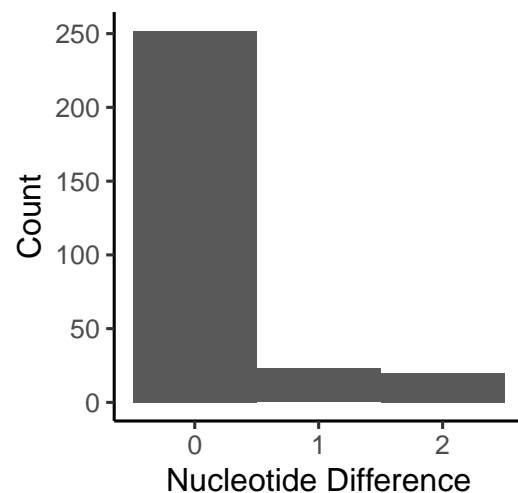
### IGHV1-69\*01\_12\_13

315 sequences assigned  
299 (94.9%) exact matches, in which:  
299 unique CDR3  
7 unique J



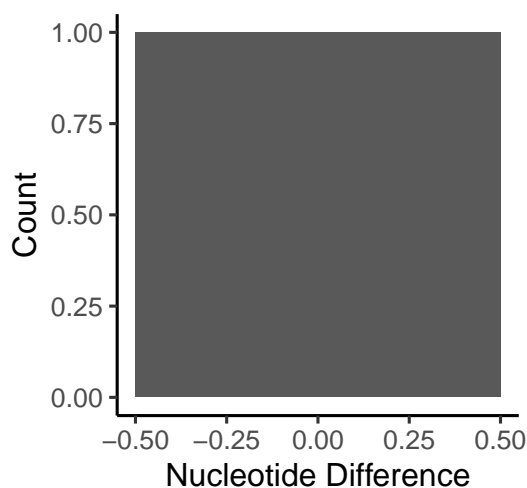
### IGHV2-5\*02

295 sequences assigned  
252 (85.4%) exact matches, in which:  
252 unique CDR3  
6 unique J



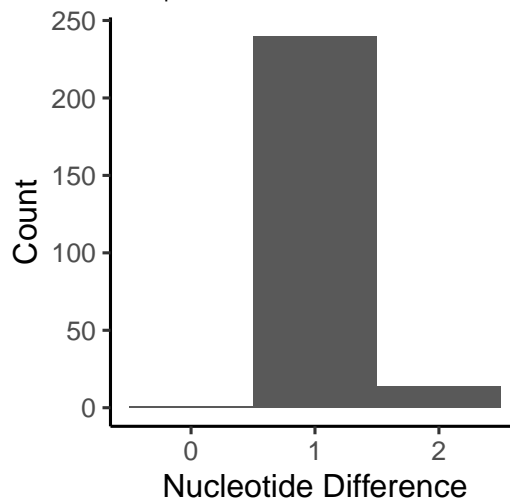
### IGHV1-69-2\*01

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



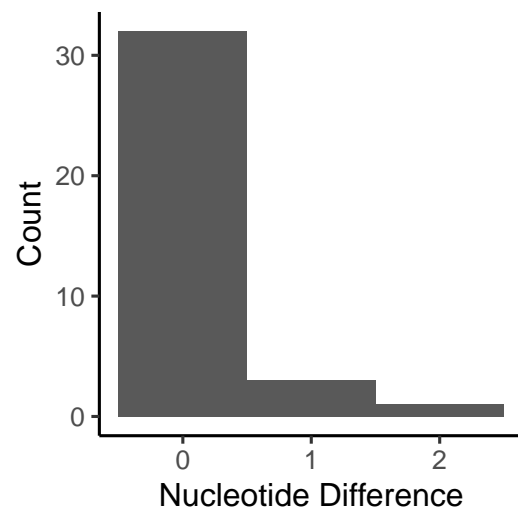
### IGHV1-69\*04\_09

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



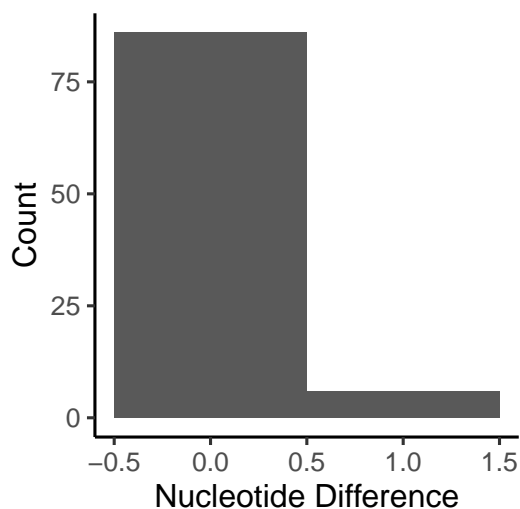
### IGHV2-26\*01

36 sequences assigned  
32 (88.9%) exact matches, in which:  
32 unique CDR3  
6 unique J



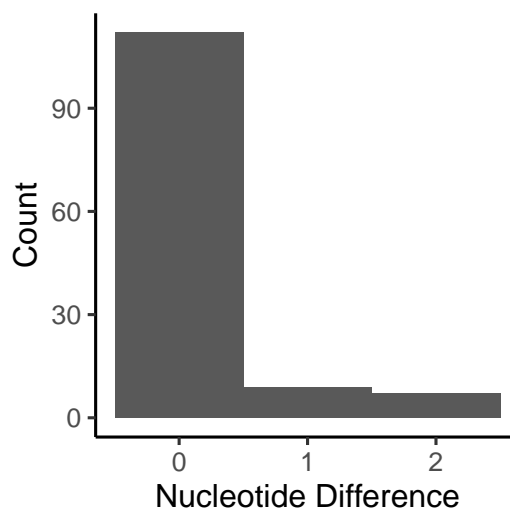
### IGHV1-69\*02

92 sequences assigned  
86 (93.5%) exact matches, in which:  
86 unique CDR3  
6 unique J



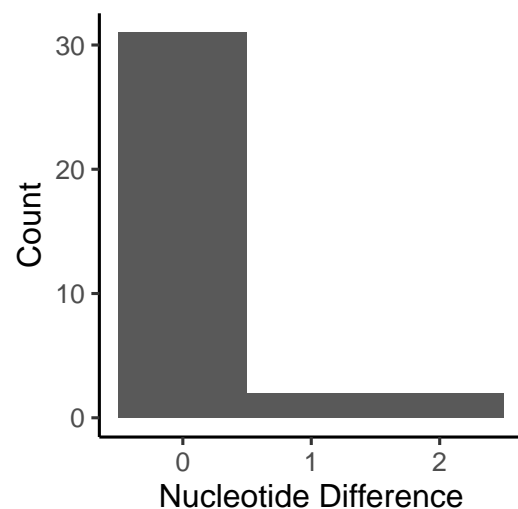
### IGHV2-5\*01

128 sequences assigned  
112 (87.5%) exact matches, in which:  
111 unique CDR3  
6 unique J



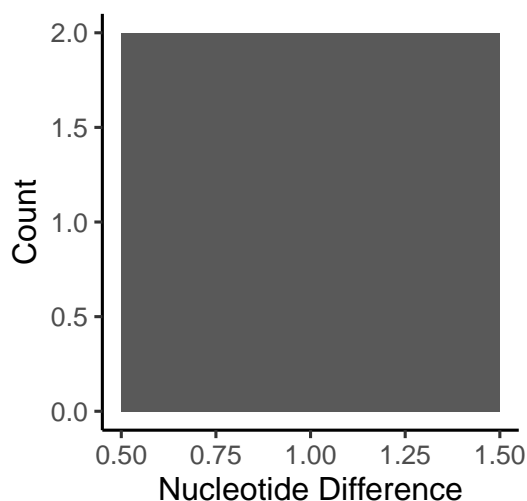
### IGHV2-70\*01

35 sequences assigned  
31 (88.6%) exact matches, in which:  
31 unique CDR3  
4 unique J



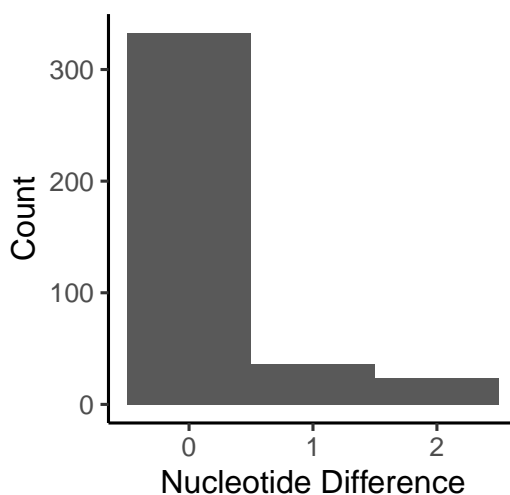
### IGHV2-70D\*04

2 sequences assigned  
No exact matches.



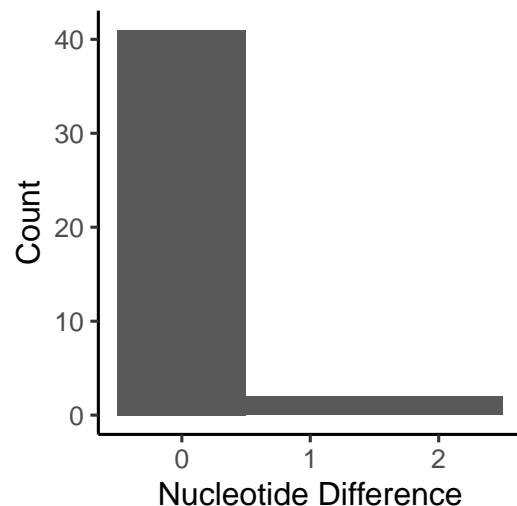
### IGHV3-11\*01

393 sequences assigned  
333 (84.7%) exact matches, in which:  
328 unique CDR3  
7 unique J



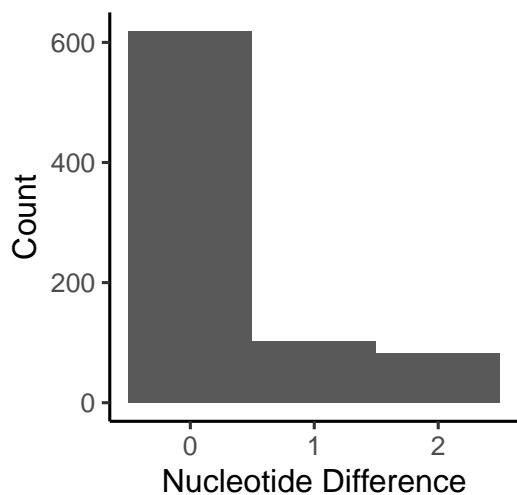
### IGHV3-20\*01\_02

45 sequences assigned  
41 (91.1%) exact matches, in which:  
40 unique CDR3  
6 unique J



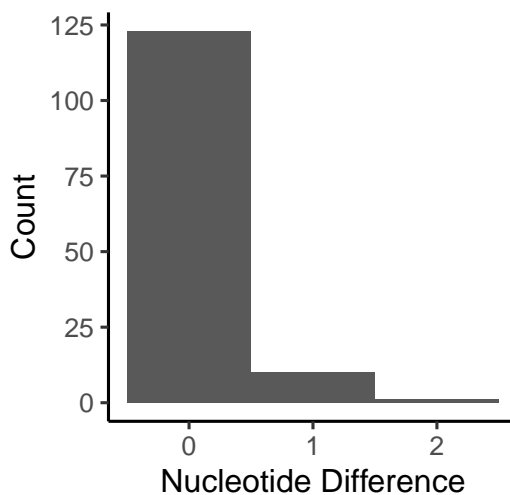
### IGHV3-7\*01

803 sequences assigned  
619 (77.1%) exact matches, in which:  
577 unique CDR3  
7 unique J



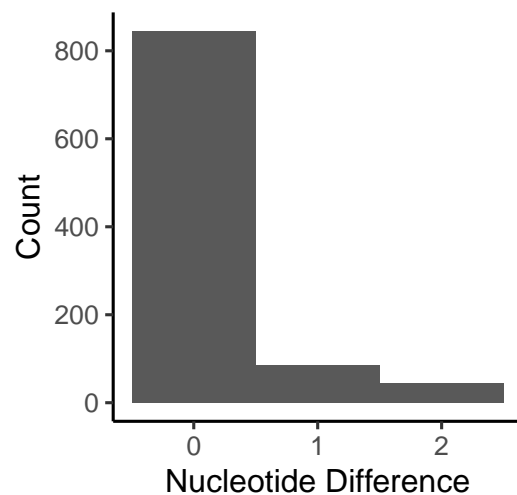
### IGHV3-13\*01

134 sequences assigned  
123 (91.8%) exact matches, in which:  
123 unique CDR3  
6 unique J



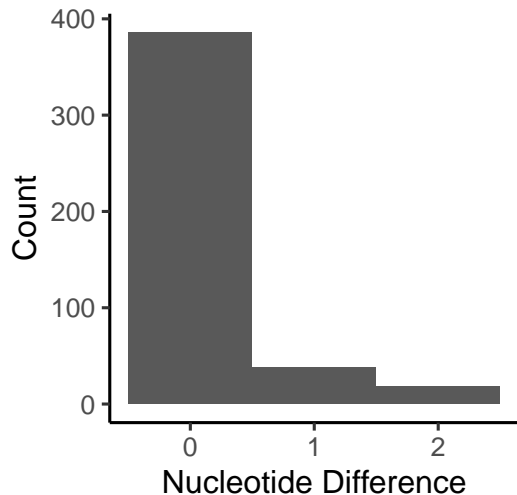
### IGHV3-21\*01\_02

975 sequences assigned  
845 (86.7%) exact matches, in which:  
814 unique CDR3  
7 unique J



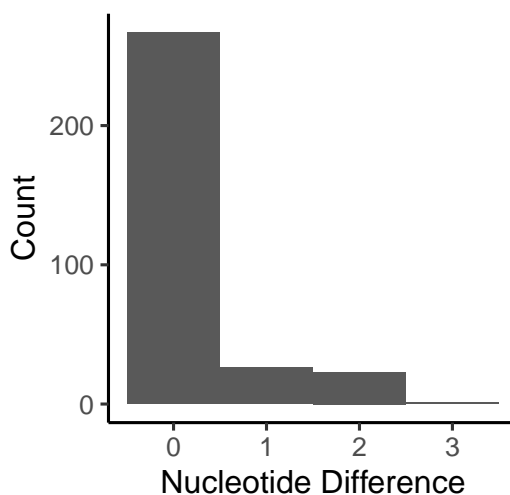
### IGHV3-9\*01

442 sequences assigned  
386 (87.3%) exact matches, in which:  
377 unique CDR3  
7 unique J



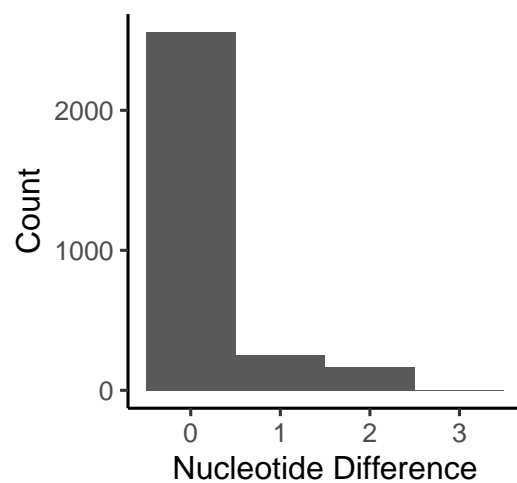
### IGHV3-15\*01\_02

317 sequences assigned  
267 (84.2%) exact matches, in which:  
257 unique CDR3  
7 unique J



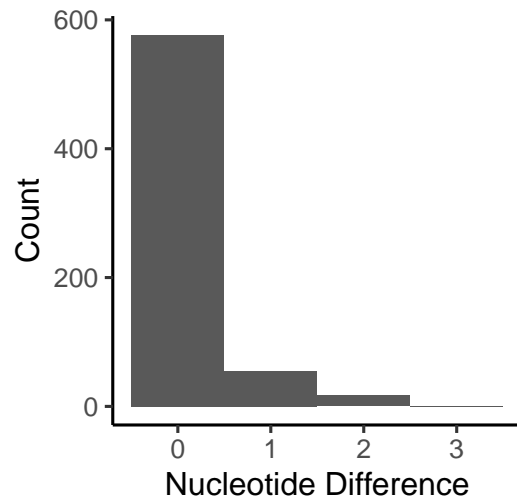
### IGHV3-23\*01\_04

2980 sequences assigned  
2559 (85.9%) exact matches, in which:  
2444 unique CDR3  
7 unique J



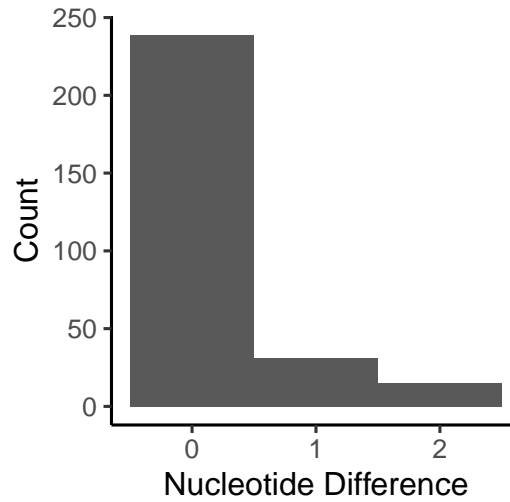
### IGHV3-30-3\*01

650 sequences assigned  
577 (88.8%) exact matches, in which:  
567 unique CDR3  
7 unique J



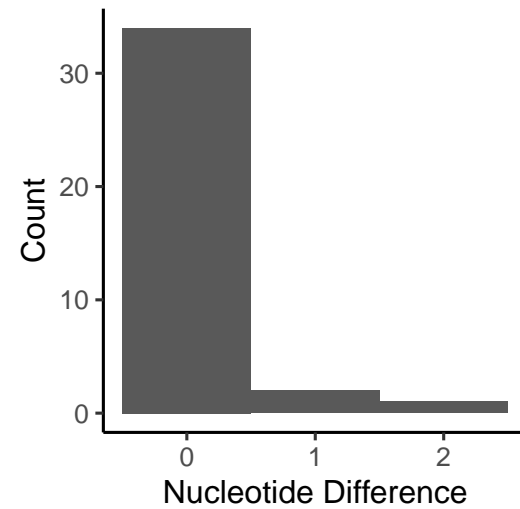
### IGHV3-48\*01

285 sequences assigned  
239 (83.9%) exact matches, in which:  
227 unique CDR3  
6 unique J



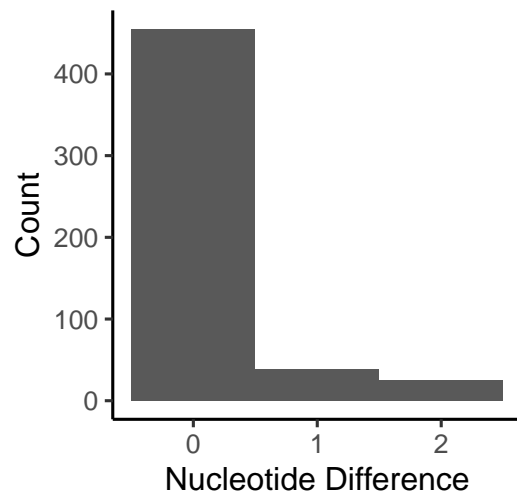
### IGHV3-49\*03\_05

37 sequences assigned  
34 (91.9%) exact matches, in which:  
34 unique CDR3  
5 unique J



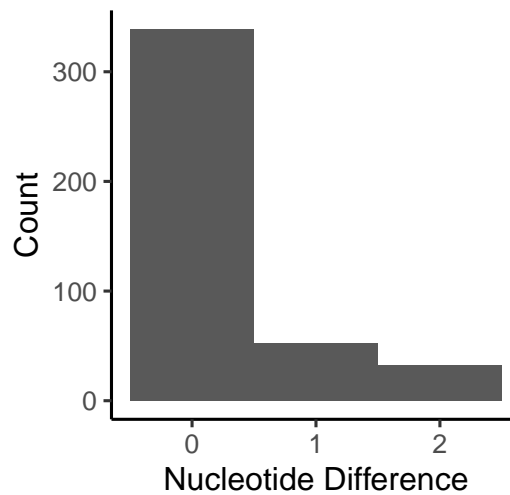
### IGHV3-33\*01

518 sequences assigned  
455 (87.8%) exact matches, in which:  
449 unique CDR3  
7 unique J



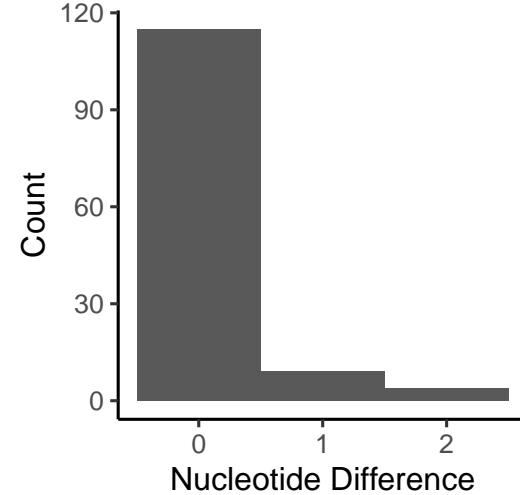
### IGHV3-48\*03

423 sequences assigned  
339 (80.1%) exact matches, in which:  
319 unique CDR3  
6 unique J



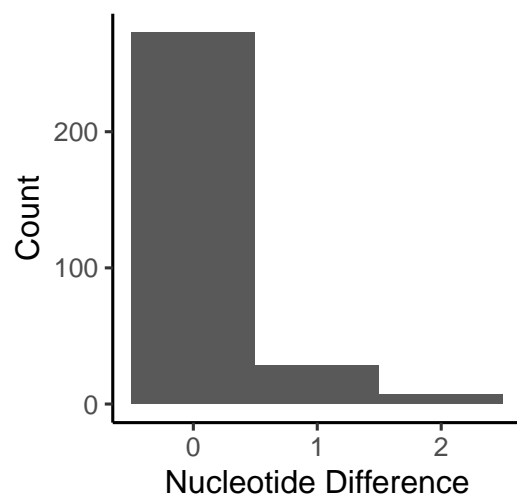
### IGHV3-53\*04

128 sequences assigned  
115 (89.8%) exact matches, in which:  
111 unique CDR3  
5 unique J



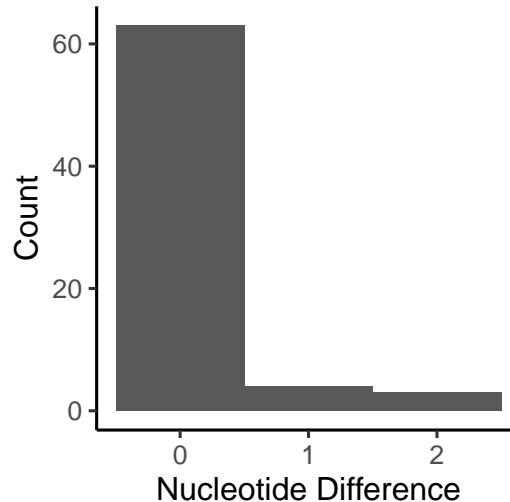
### IGHV3-43\*02

308 sequences assigned  
273 (88.6%) exact matches, in which:  
263 unique CDR3  
7 unique J



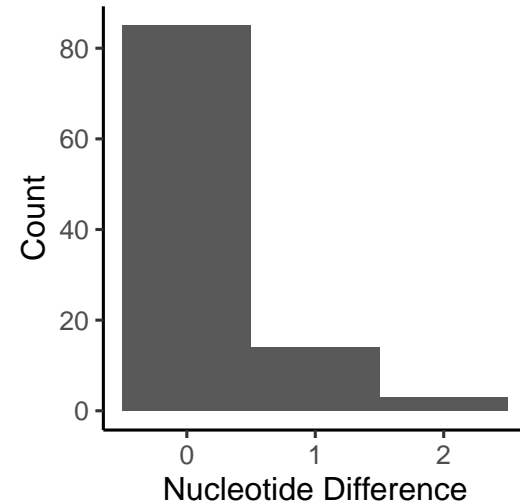
### IGHV3-49\*04

70 sequences assigned  
63 (90%) exact matches, in which:  
61 unique CDR3  
5 unique J



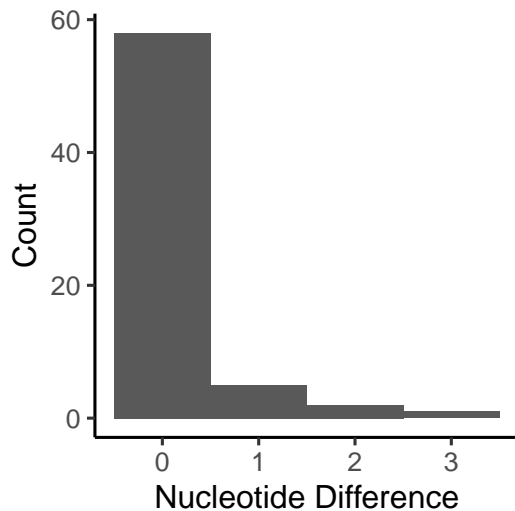
### IGHV3-53\*01\_02

102 sequences assigned  
85 (83.3%) exact matches, in which:  
83 unique CDR3  
6 unique J



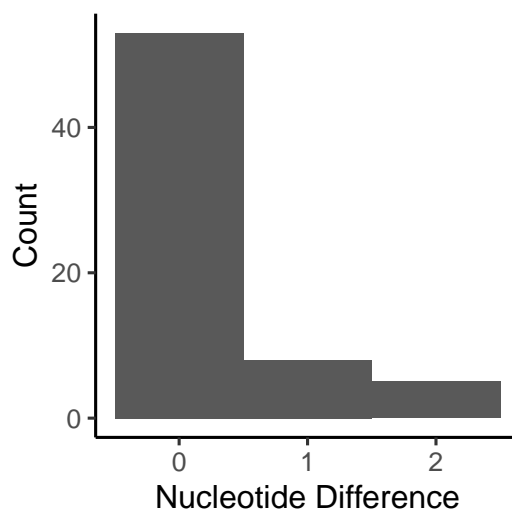
### IGHV3-64\*01

66 sequences assigned  
58 (87.9%) exact matches, in which:  
56 unique CDR3  
5 unique J



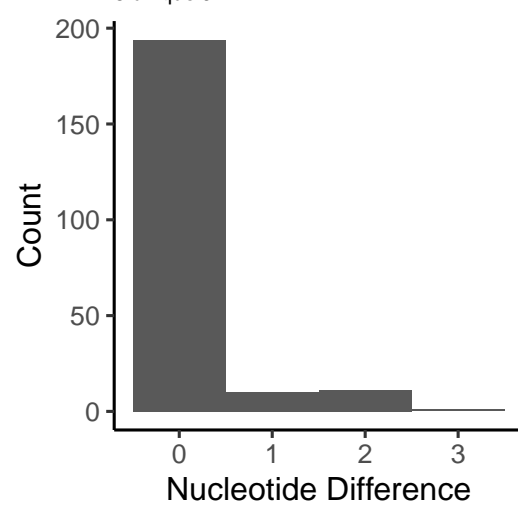
### IGHV3-73\*01\_02

66 sequences assigned  
53 (80.3%) exact matches, in which:  
51 unique CDR3  
6 unique J



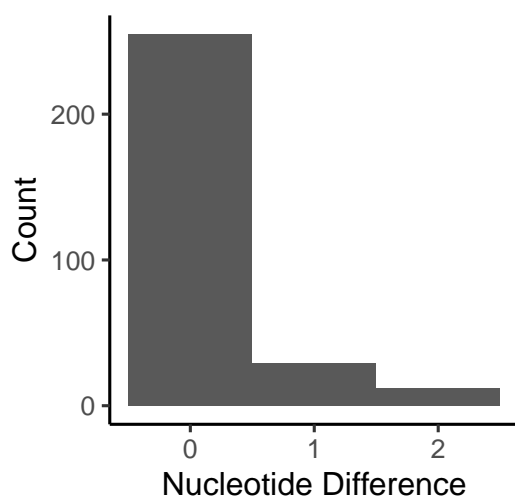
### IGHV4-4\*02\_03

216 sequences assigned  
194 (89.8%) exact matches, in which:  
190 unique CDR3  
5 unique J



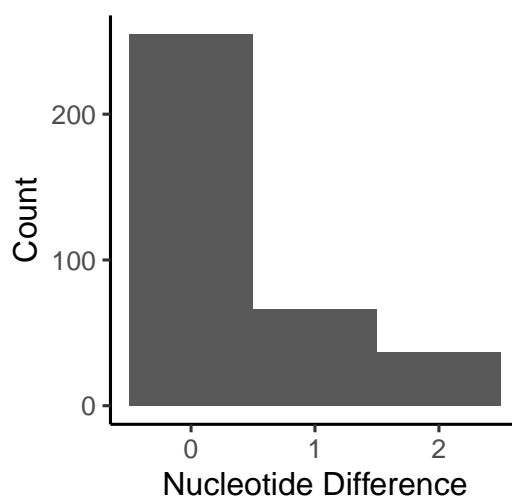
### IGHV3-66\*02

296 sequences assigned  
255 (86.1%) exact matches, in which:  
248 unique CDR3  
6 unique J



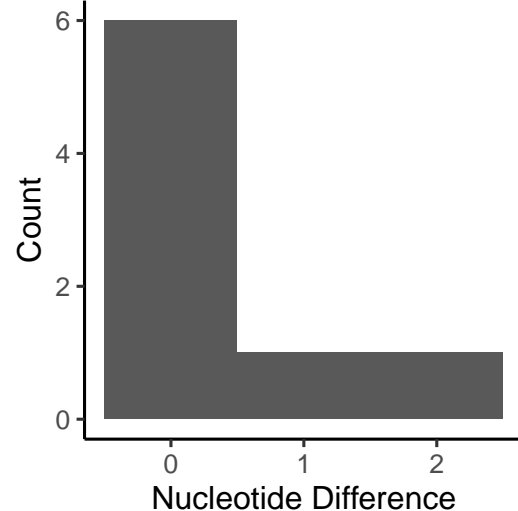
### IGHV3-74\*01\_02

358 sequences assigned  
255 (71.2%) exact matches, in which:  
241 unique CDR3  
7 unique J



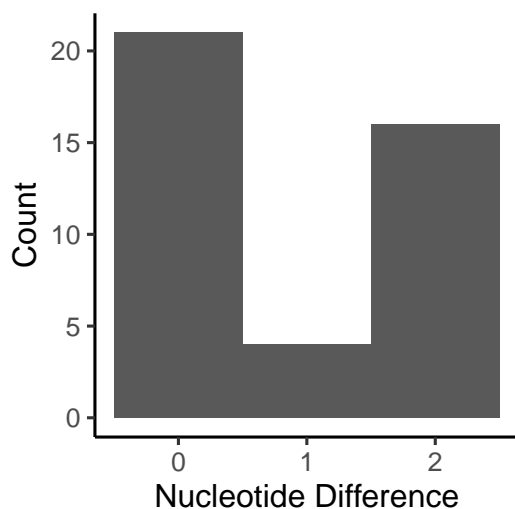
### IGHV4-28\*01\_07

8 sequences assigned  
6 (75%) exact matches, in which:  
6 unique CDR3  
3 unique J



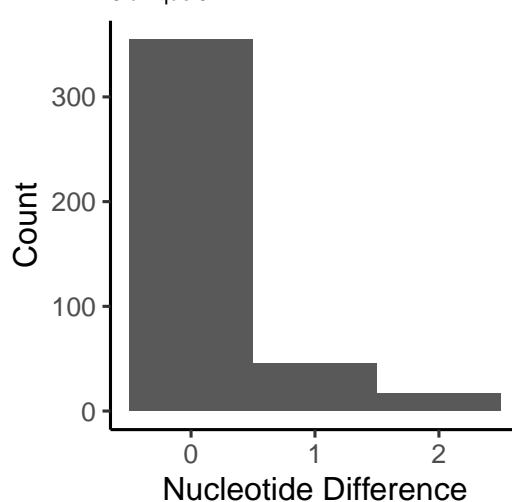
### IGHV3-72\*01

41 sequences assigned  
21 (51.2%) exact matches, in which:  
19 unique CDR3  
5 unique J



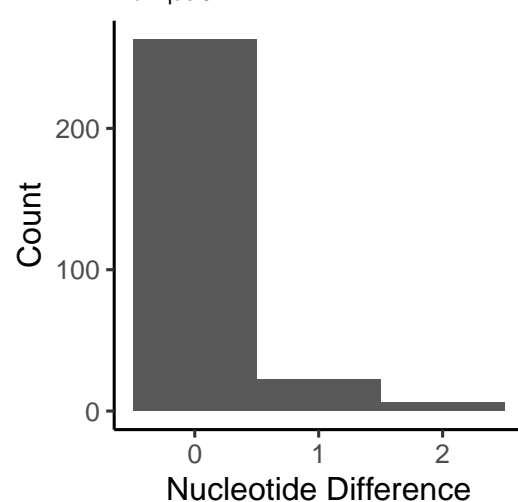
### IGHV4-4\*07

417 sequences assigned  
355 (85.1%) exact matches, in which:  
344 unique CDR3  
6 unique J



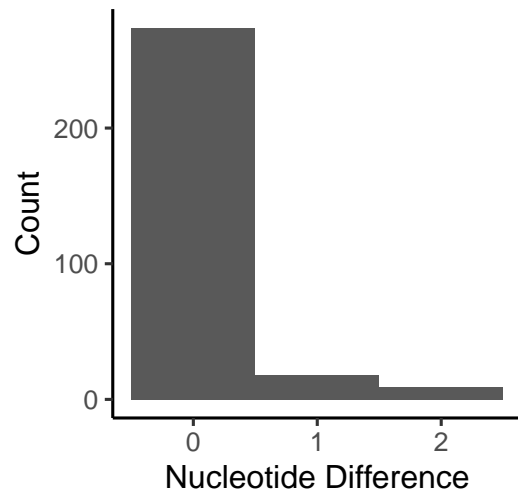
### IGHV4-30-2\*01

291 sequences assigned  
263 (90.4%) exact matches, in which:  
261 unique CDR3  
7 unique J



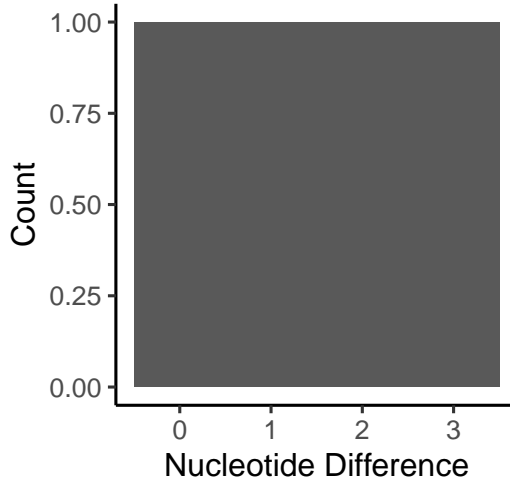
### IGHV4-30-4\*01

301 sequences assigned  
274 (91%) exact matches, in which:  
266 unique CDR3  
7 unique J



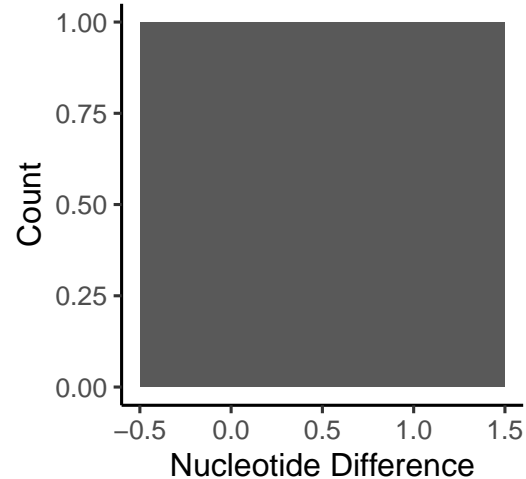
### IGHV4-39\*02

4 sequences assigned  
1 (25%) exact matches, in which:  
1 unique CDR3  
1 unique J



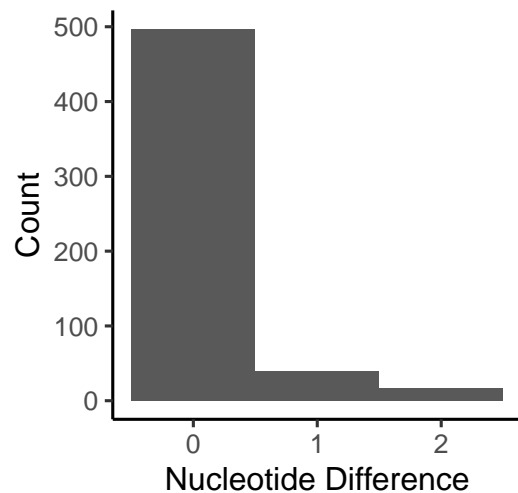
### IGHV4-59\*11

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



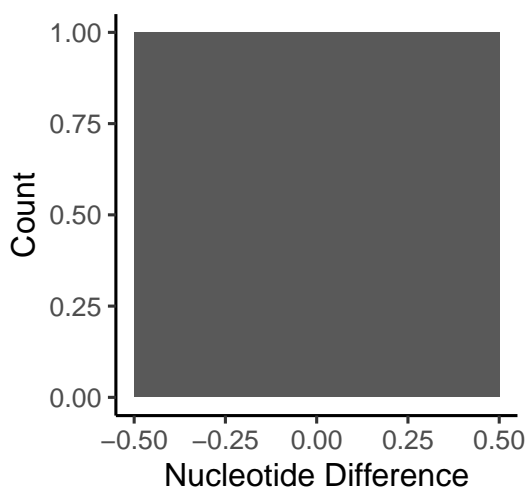
### IGHV4-31\*02

553 sequences assigned  
497 (89.9%) exact matches, in which:  
491 unique CDR3  
7 unique J



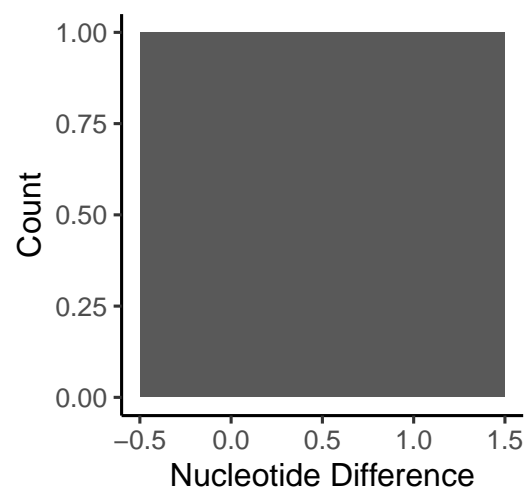
### IGHV4-59\*02

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



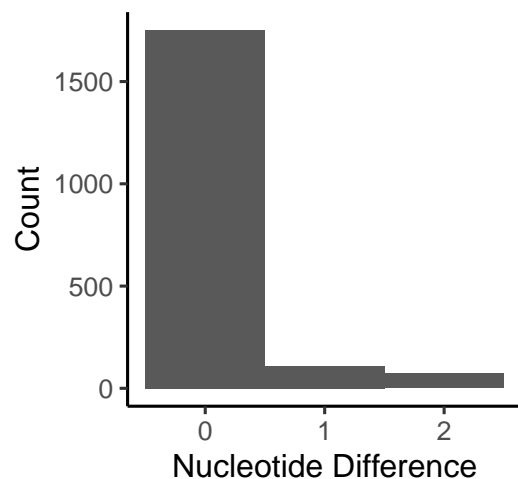
### IGHV4-59\*12

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



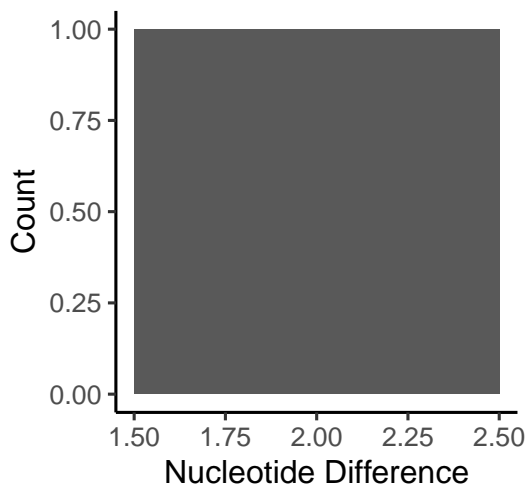
### IGHV4-34\*01\_02

1935 sequences assigned  
1752 (90.5%) exact matches, in which:  
1729 unique CDR3  
7 unique J



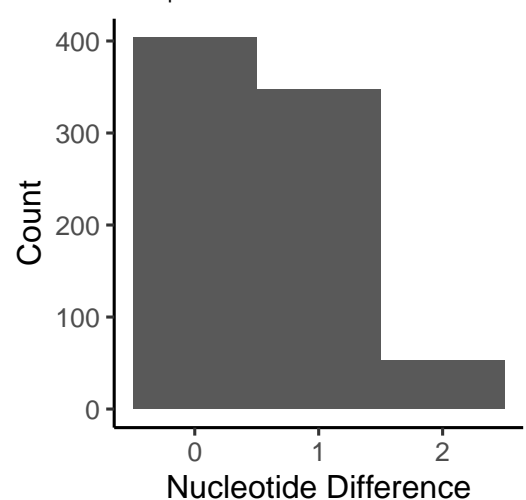
### IGHV4-59\*04

1 sequences assigned  
No exact matches.



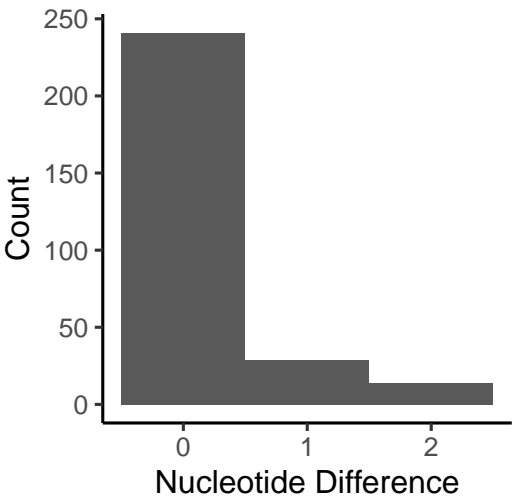
### IGHV4-61\*02

804 sequences assigned  
404 (50.2%) exact matches, in which:  
389 unique CDR3  
6 unique J



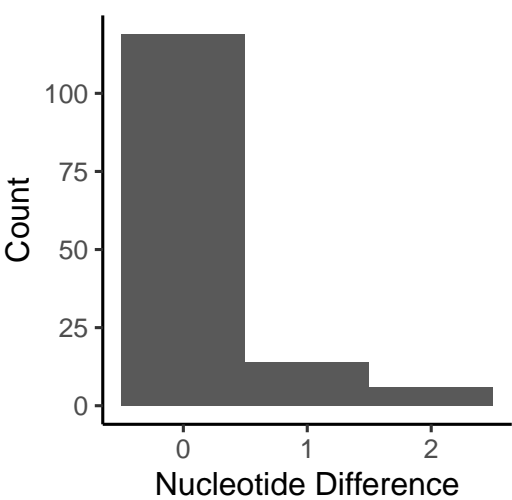
IGHV6-1\*01\_02

284 sequences assigned  
241 (84.9%) exact matches, in which:  
238 unique CDR3  
6 unique J

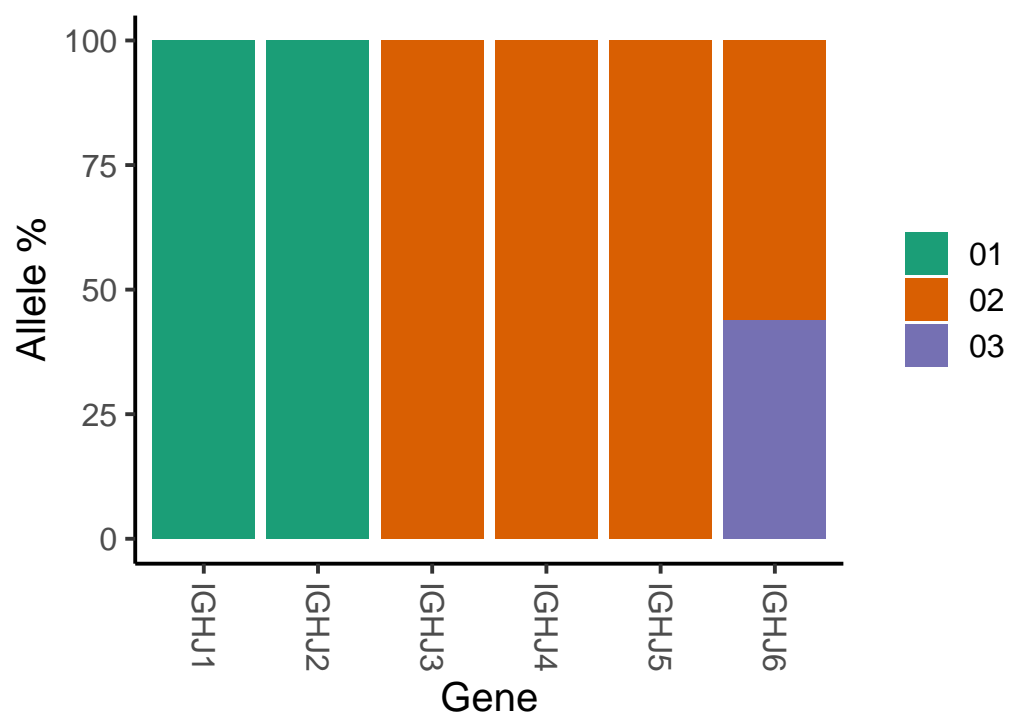


IGHV7-4-1\*02

139 sequences assigned  
119 (85.6%) exact matches, in which:  
119 unique CDR3  
7 unique J

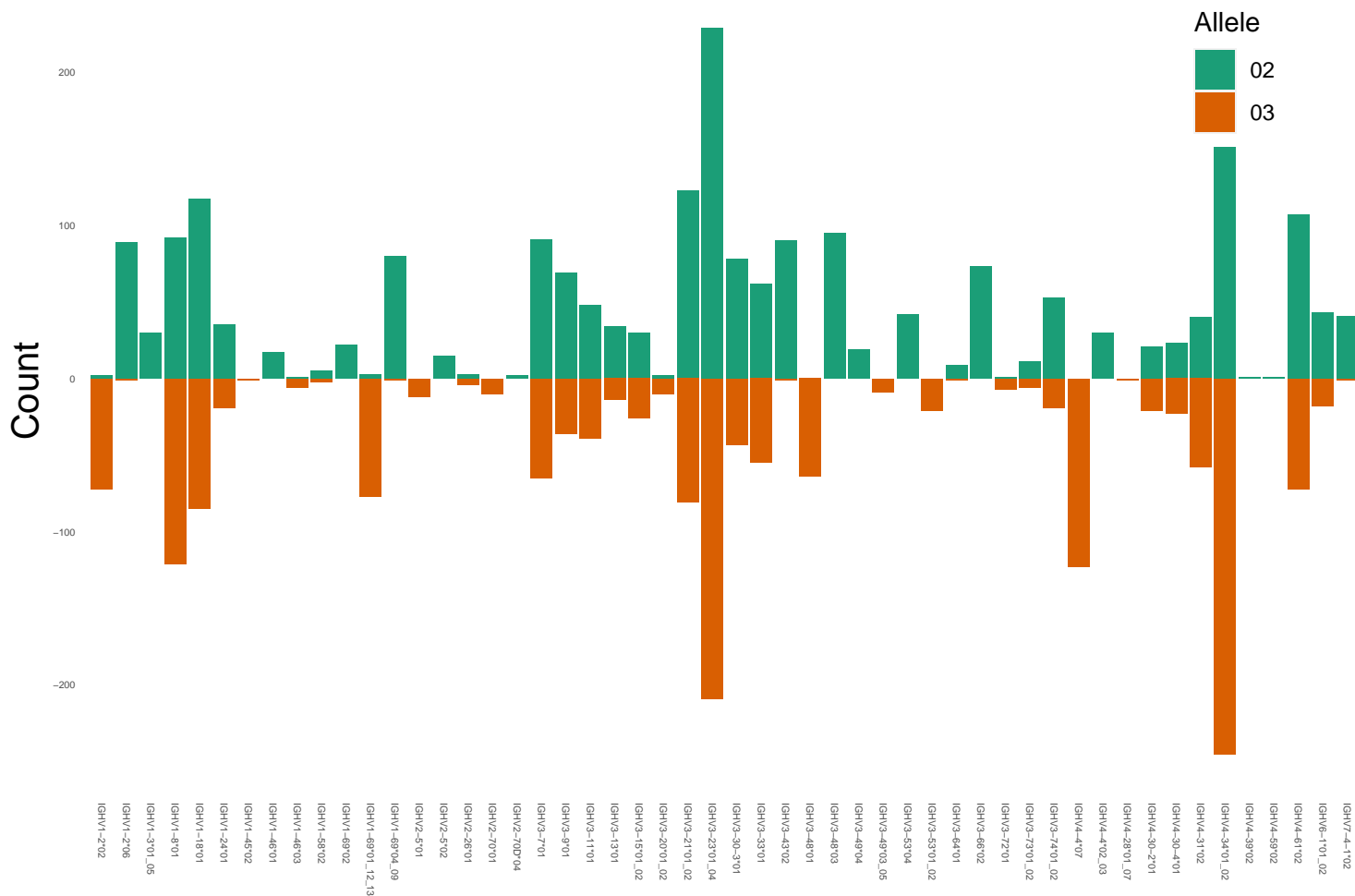


Allele Usage





Sequence Count by IGHJ6 allele usage



[illegible]