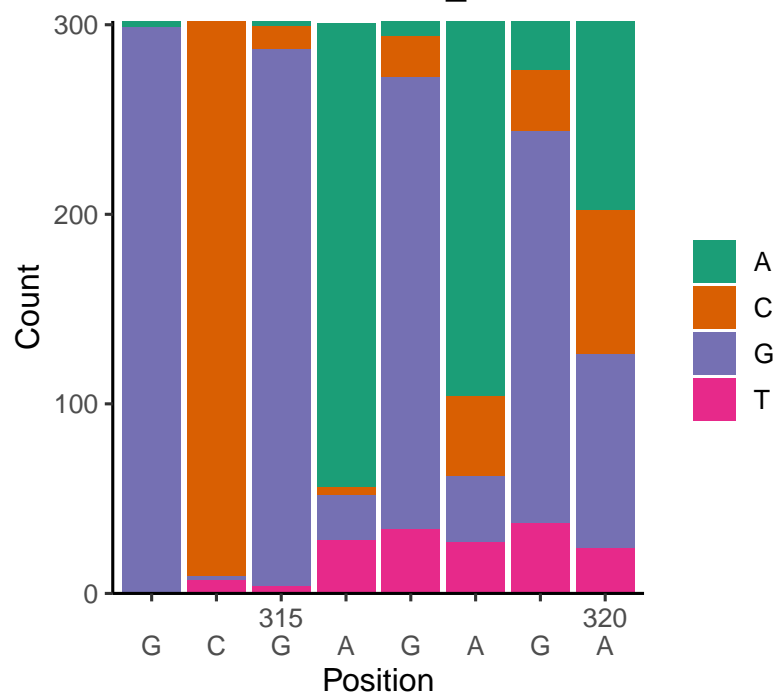
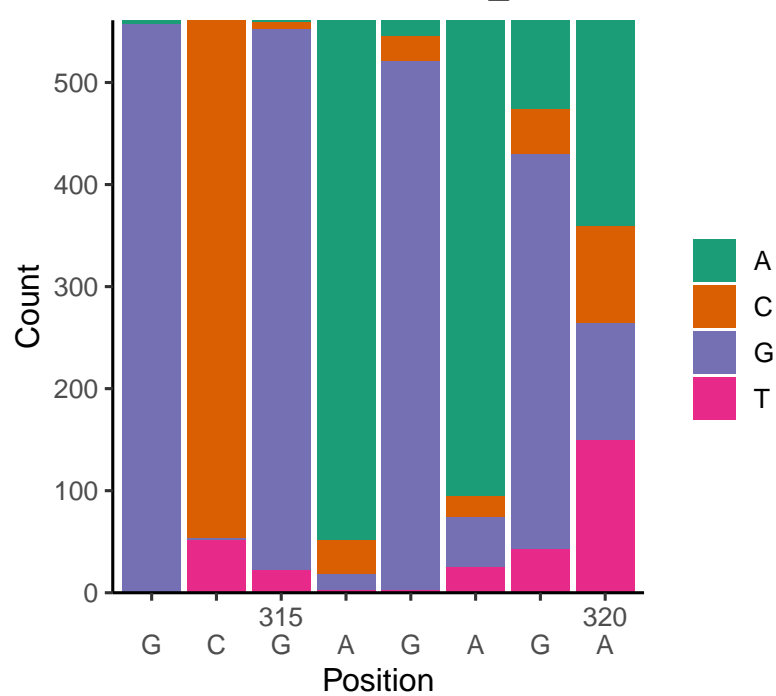


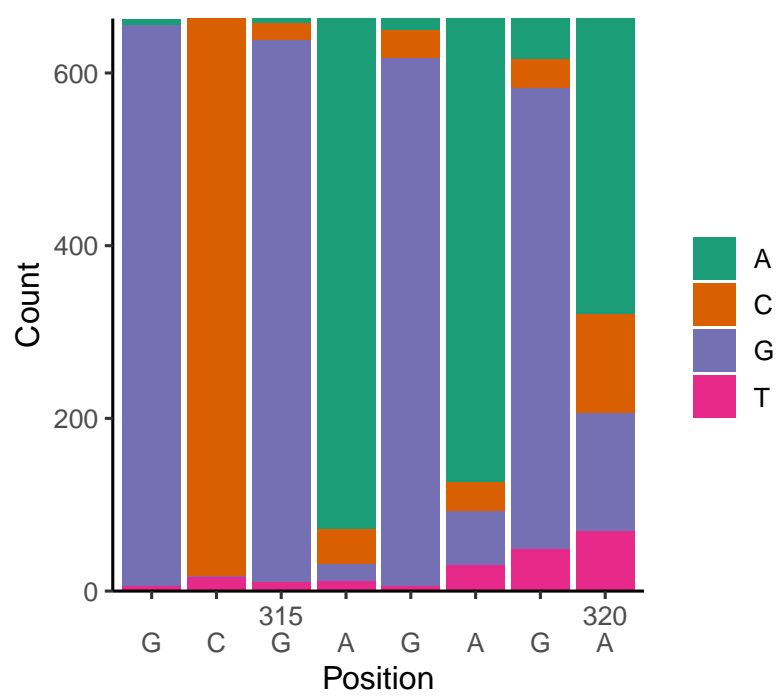
Gene IGHV1-69\*08\_C191T



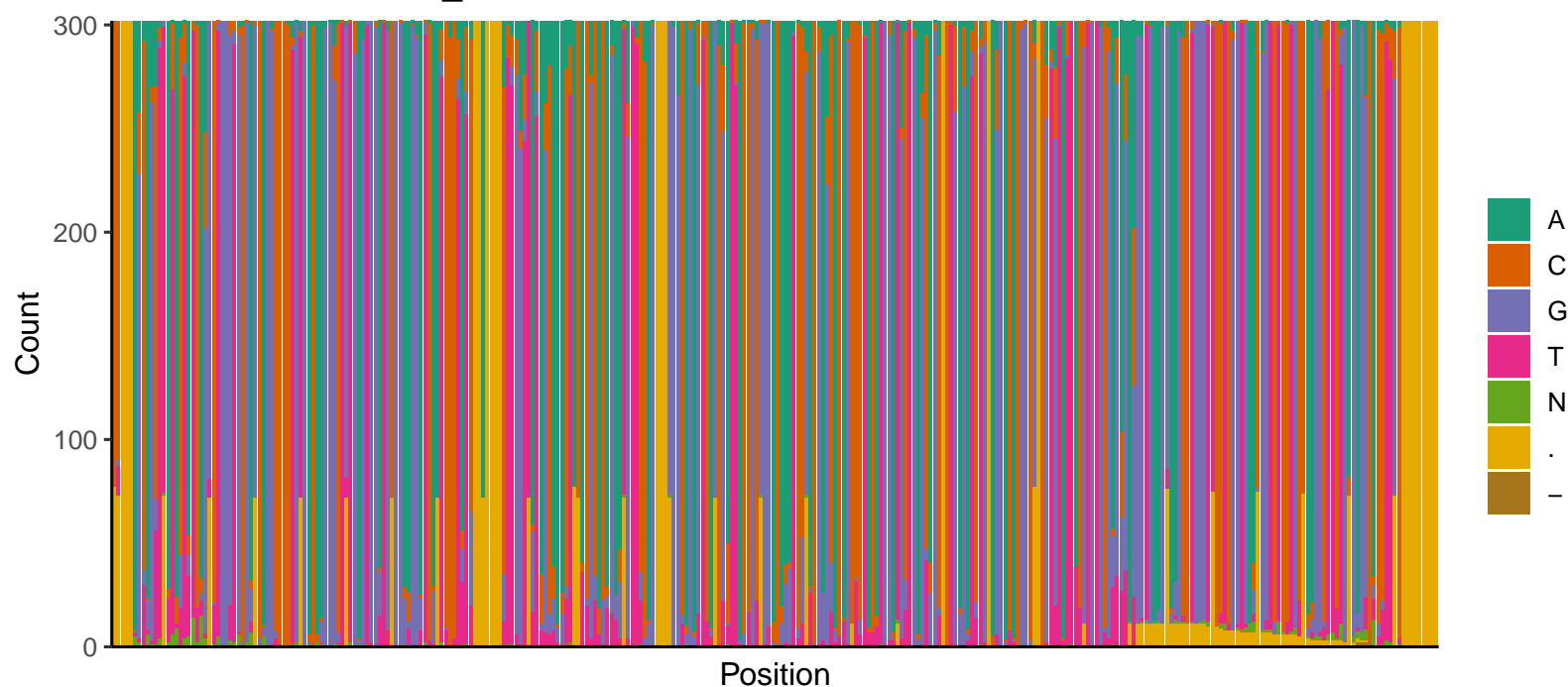
Gene IGHV4-38-2\*02\_A70G



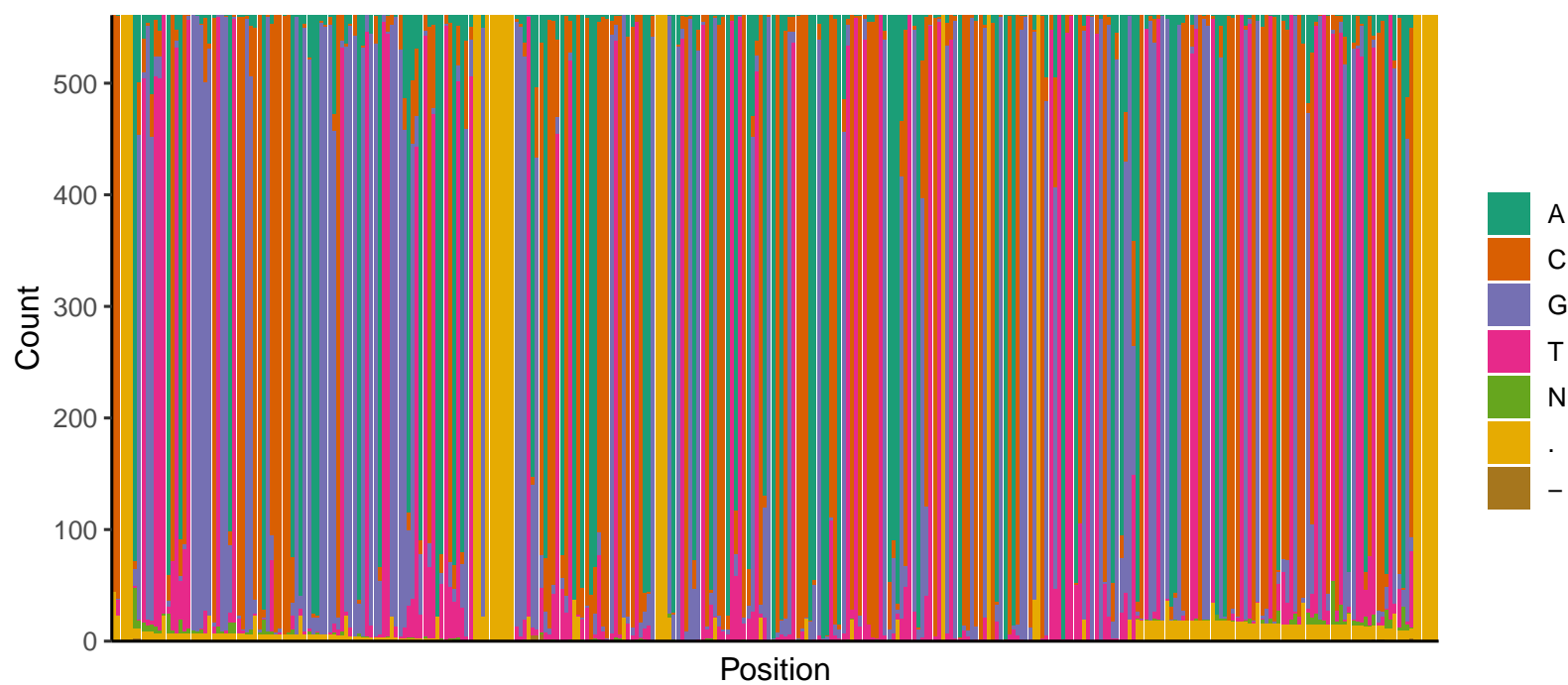
Gene IGHV4-61\*02\_A291G



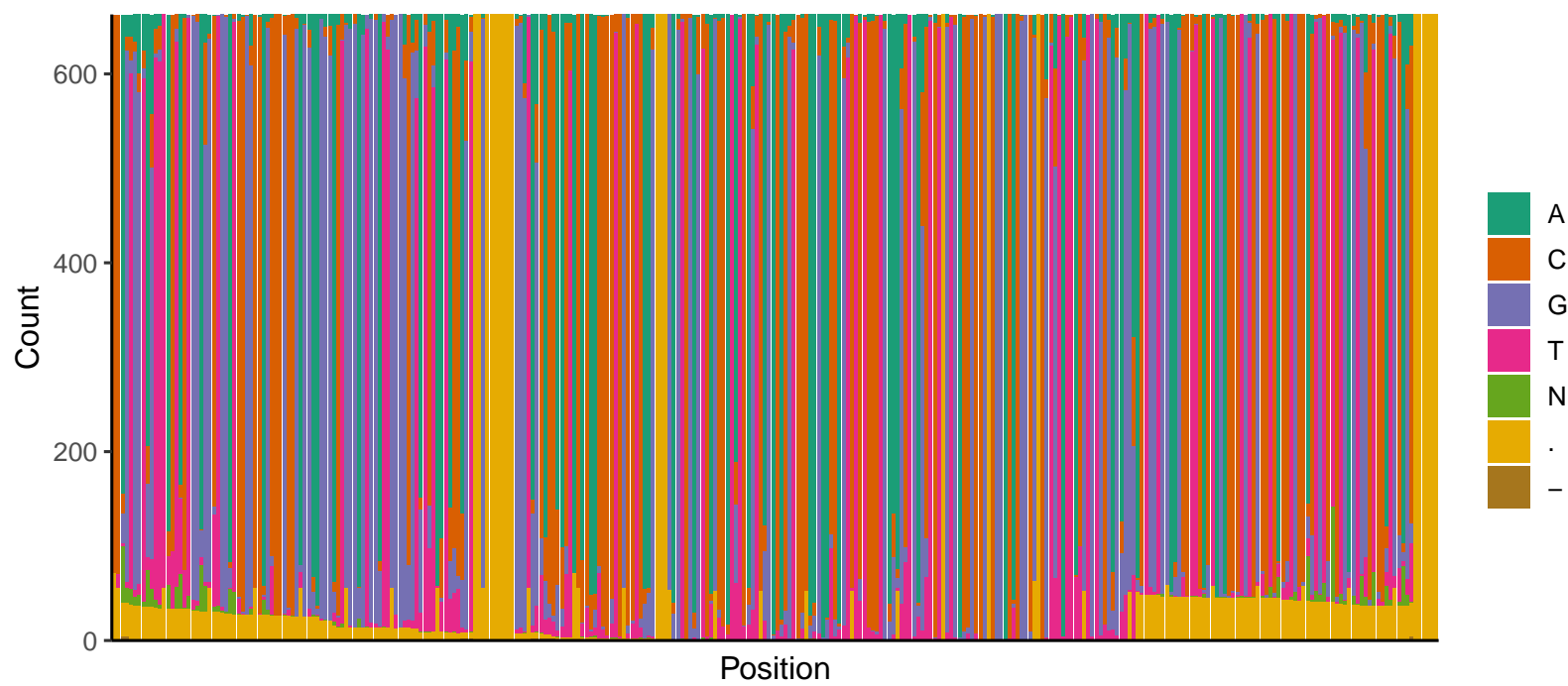
Gene IGHV1-69\*08\_C191T



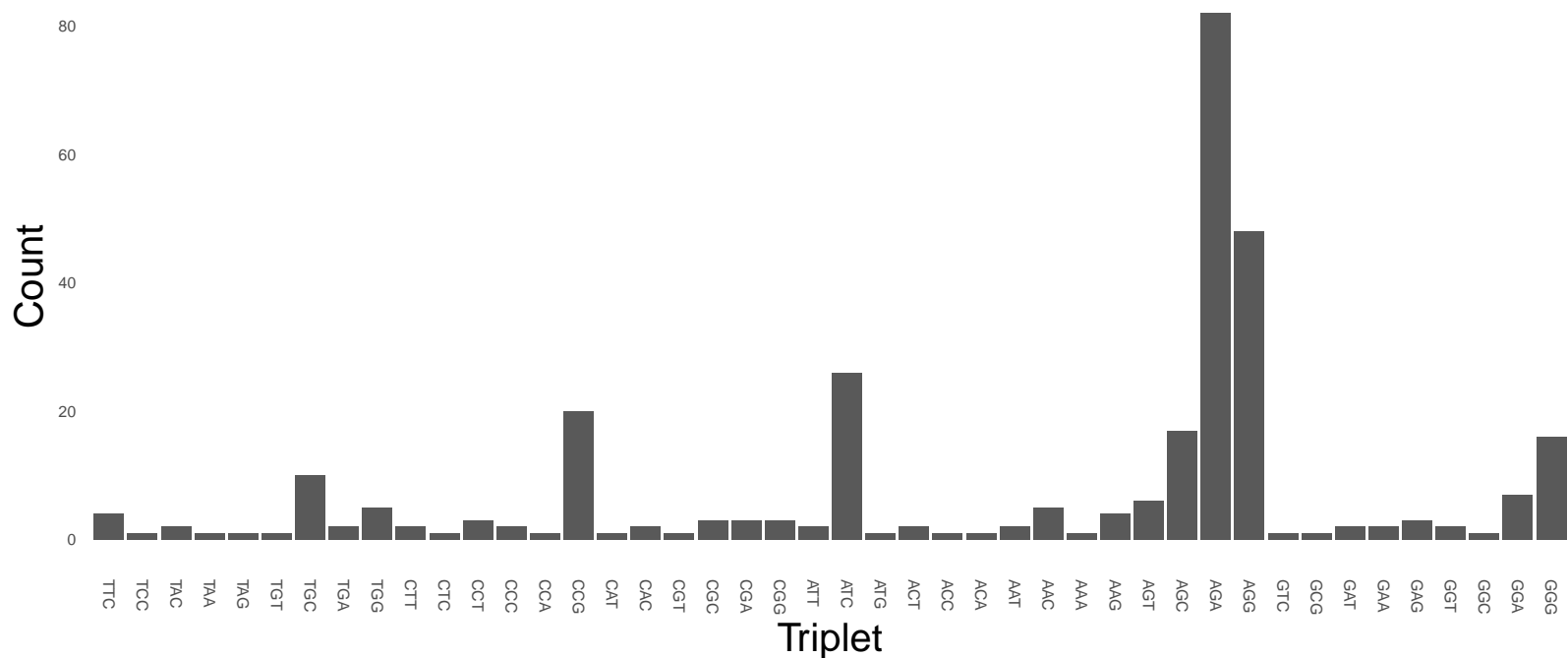
Gene IGHV4-38-2\*02\_A70G



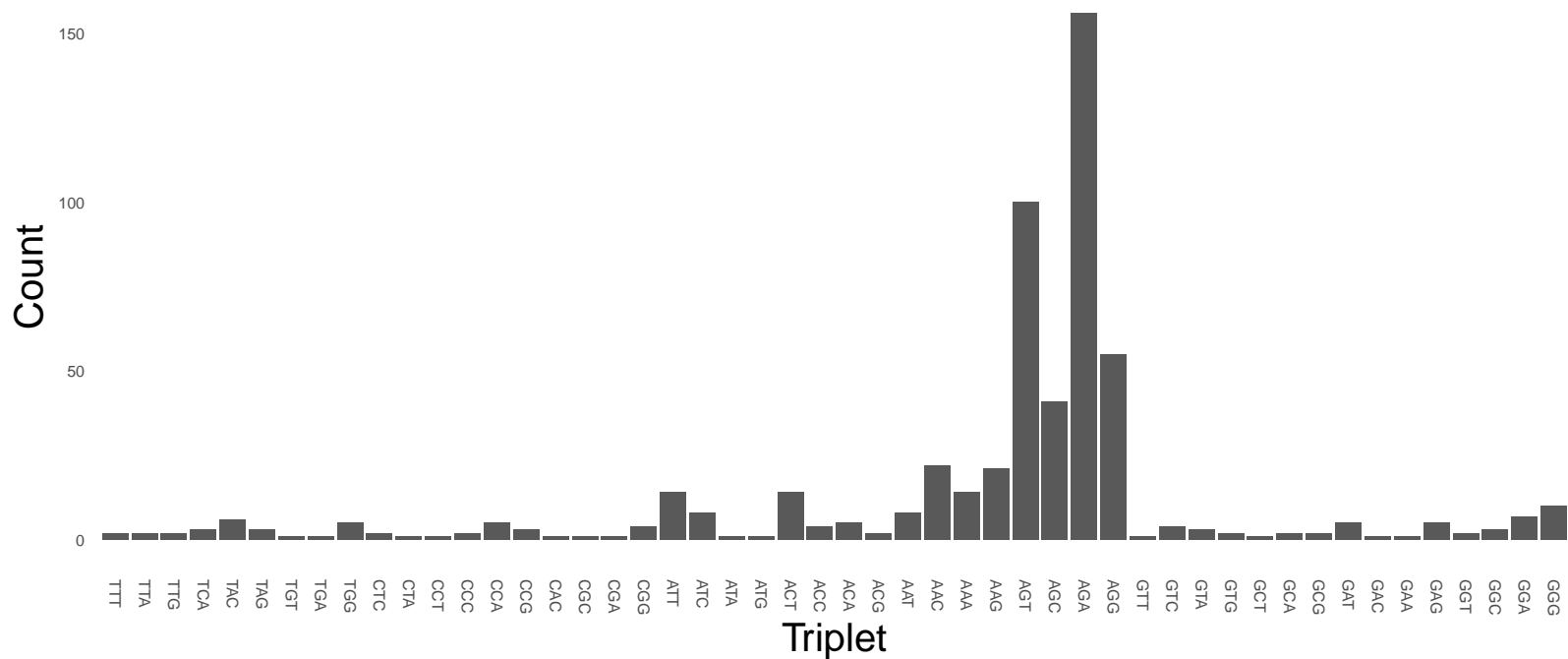
Gene IGHV4-61\*02\_A291G



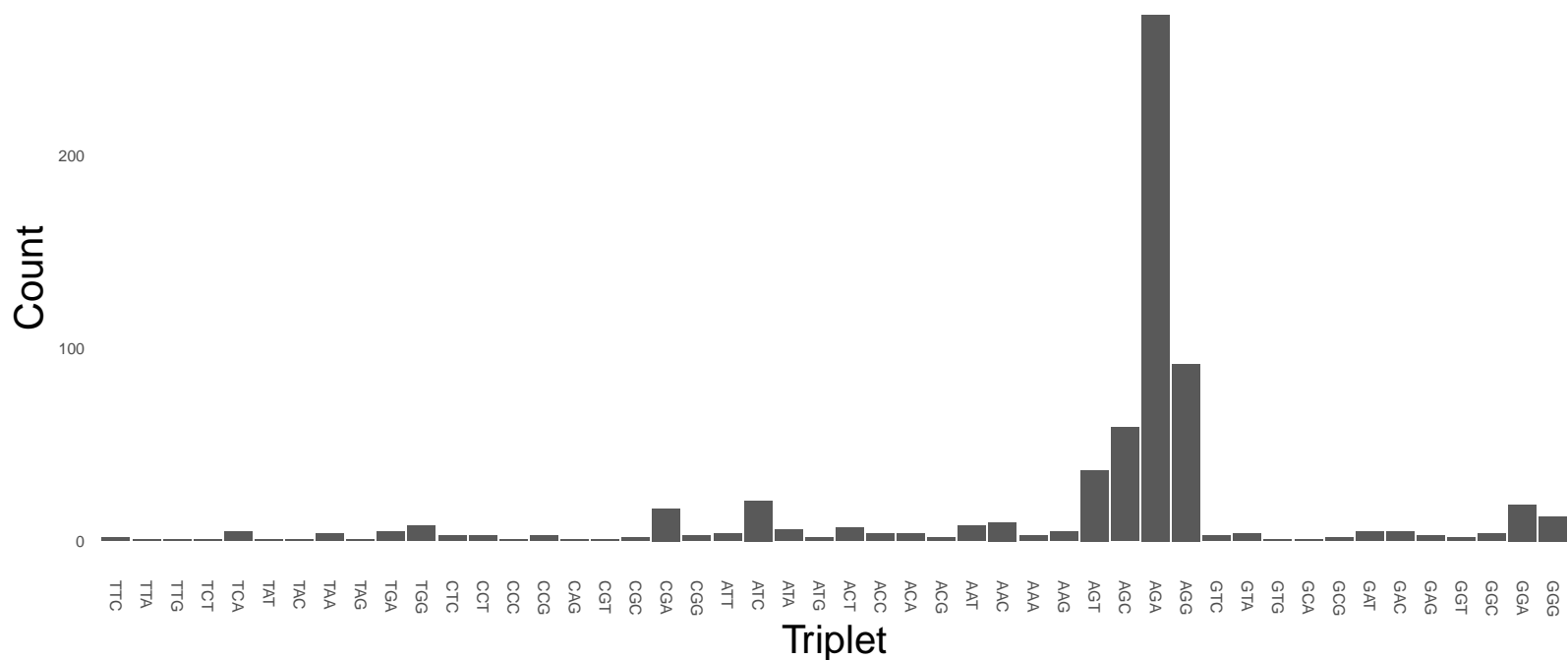
IGHV1-69\*08\_C191T- Final 3 nucleotides as a triplet



IGHV4-38-2\*02\_A70G- Final 3 nucleotides as a triplet

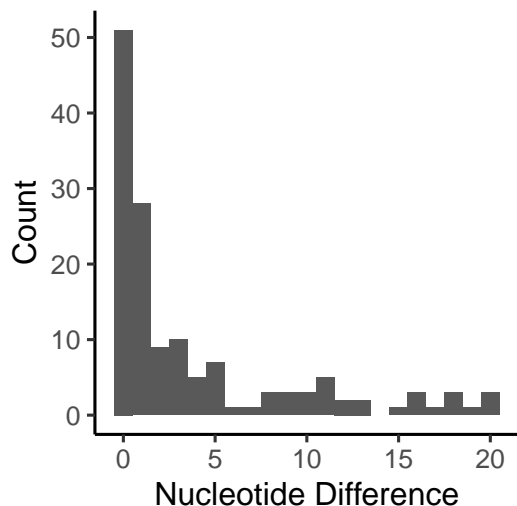


IGHV4-61\*02\_A291G- Final 3 nucleotides as a triplet



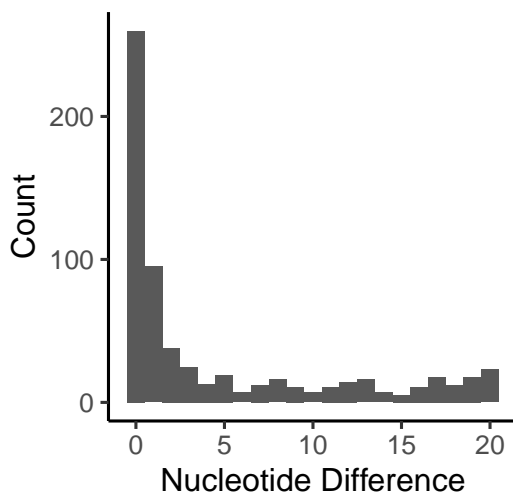
### IGHV1-2\*04

219 sequences assigned  
51 (23.3%) exact matches, in which:  
50 unique CDR3  
6 unique J



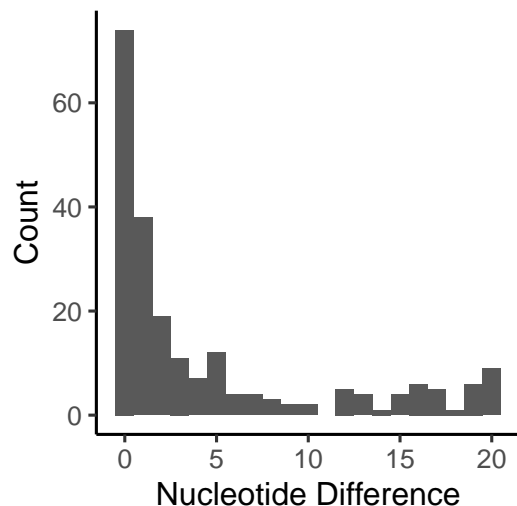
### IGHV1-18\*01

916 sequences assigned  
260 (28.4%) exact matches, in which:  
254 unique CDR3  
6 unique J



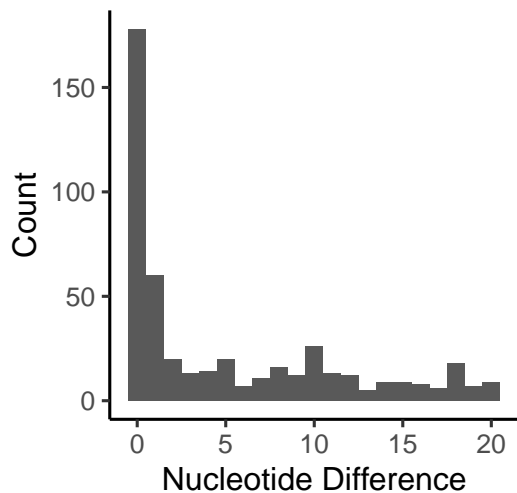
### IGHV1-46\*01

323 sequences assigned  
74 (22.9%) exact matches, in which:  
71 unique CDR3  
5 unique J



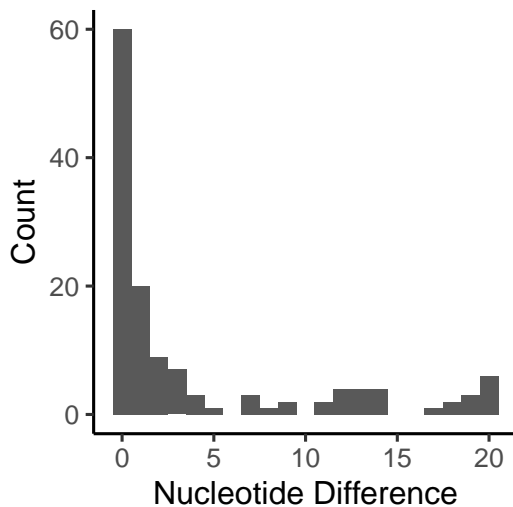
### IGHV1-3\*01

754 sequences assigned  
178 (23.6%) exact matches, in which:  
178 unique CDR3  
7 unique J



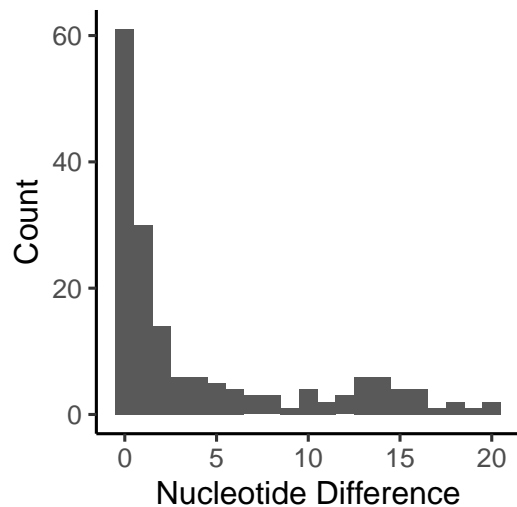
### IGHV1-24\*01

177 sequences assigned  
60 (33.9%) exact matches, in which:  
59 unique CDR3  
7 unique J



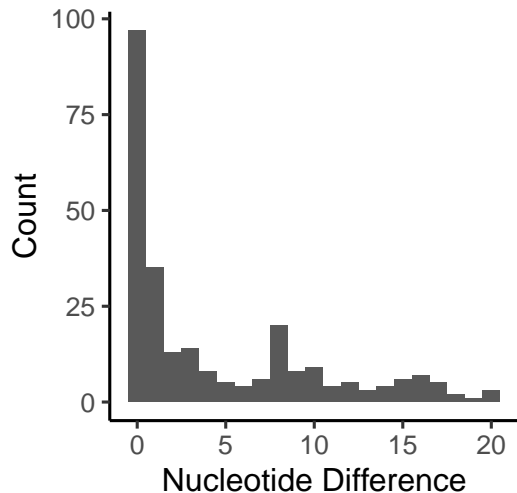
### IGHV1-46\*03

252 sequences assigned  
61 (24.2%) exact matches, in which:  
59 unique CDR3  
5 unique J



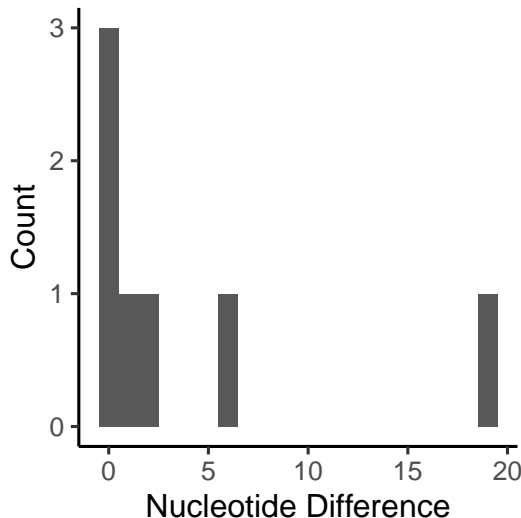
### IGHV1-8\*01

305 sequences assigned  
97 (31.8%) exact matches, in which:  
97 unique CDR3  
6 unique J



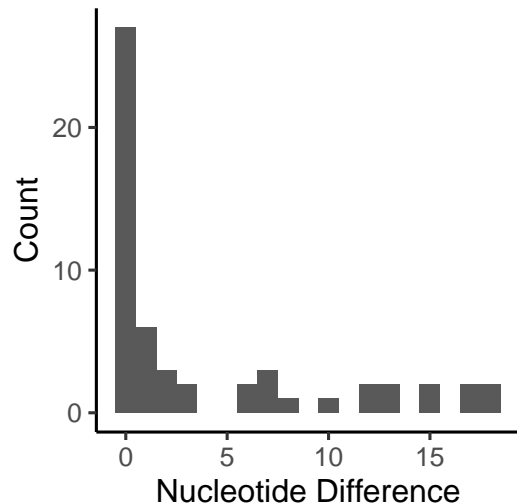
### IGHV1-45\*02

51 sequences assigned  
3 (5.9%) exact matches, in which:  
3 unique CDR3  
2 unique J



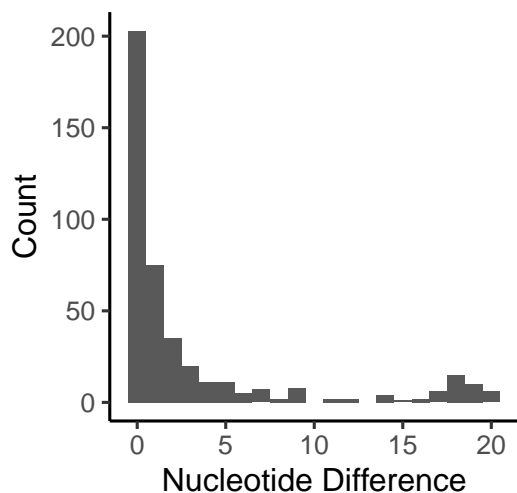
### IGHV1-58\*02

74 sequences assigned  
27 (36.5%) exact matches, in which:  
27 unique CDR3  
7 unique J



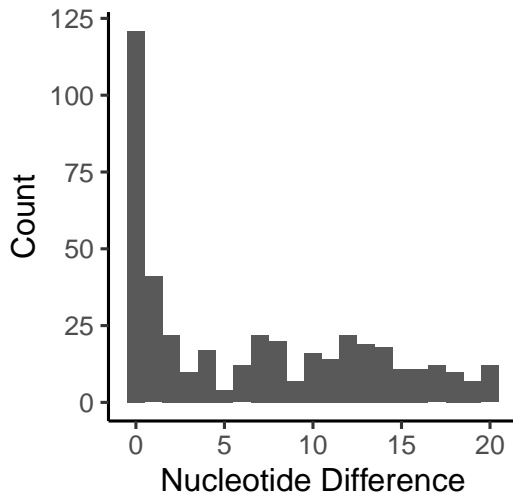
### IGHV1–69\*04

646 sequences assigned  
203 (31.4%) exact matches, in which:  
199 unique CDR3  
7 unique J



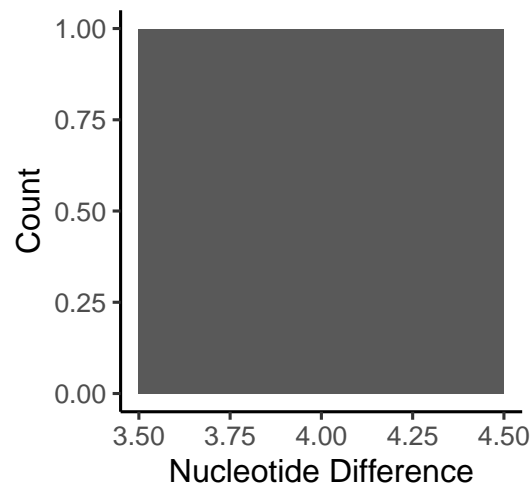
### IGHV2–5\*02

567 sequences assigned  
121 (21.3%) exact matches, in which:  
119 unique CDR3  
6 unique J



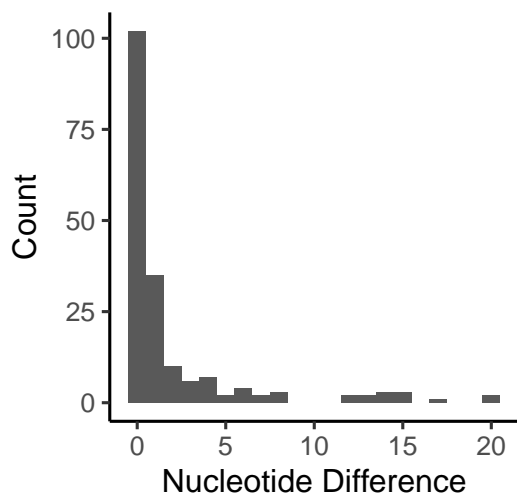
### IGHV2–70D\*04

1 sequences assigned  
No exact matches.



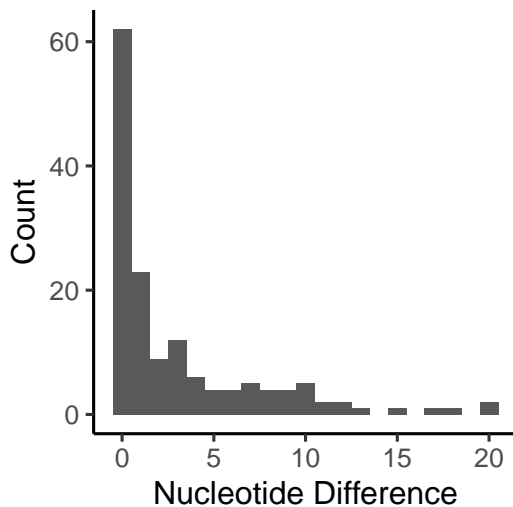
### IGHV1–69\*08\_C191T

302 sequences assigned  
102 (33.8%) exact matches, in which:  
101 unique CDR3  
6 unique J



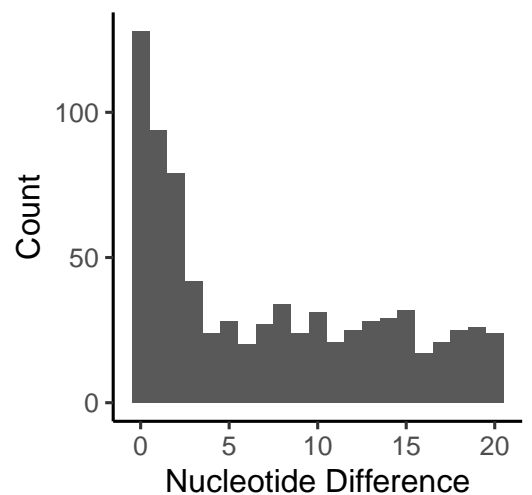
### IGHV2–26\*01

200 sequences assigned  
62 (31%) exact matches, in which:  
62 unique CDR3  
6 unique J



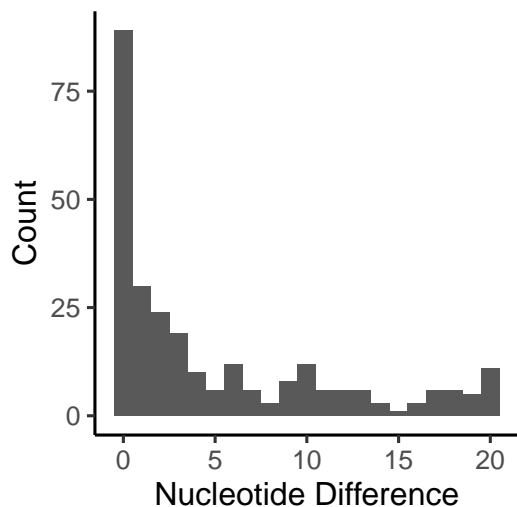
### IGHV3–7\*01

1019 sequences assigned  
128 (12.6%) exact matches, in which:  
126 unique CDR3  
7 unique J



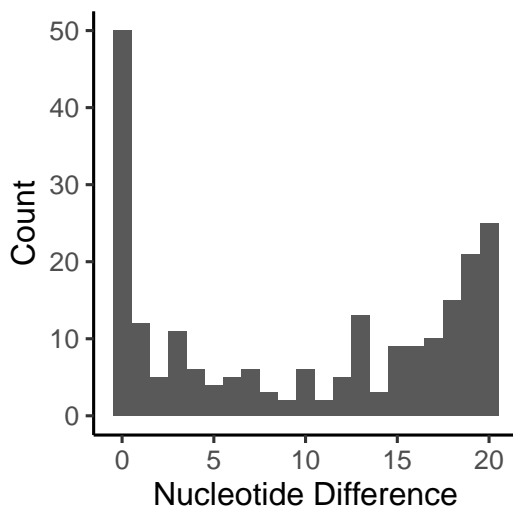
### IGHV2–5\*01

393 sequences assigned  
89 (22.6%) exact matches, in which:  
84 unique CDR3  
6 unique J



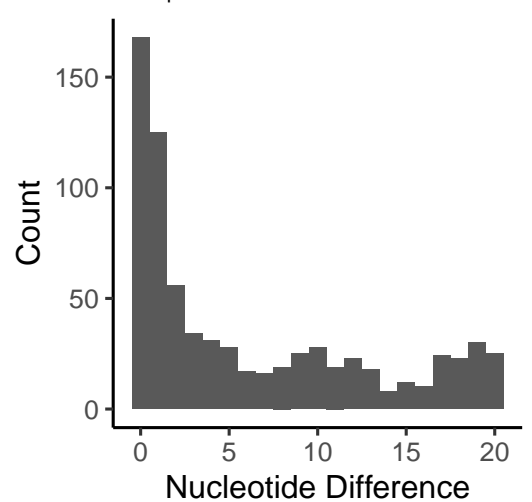
### IGHV2–70\*15

373 sequences assigned  
50 (13.4%) exact matches, in which:  
50 unique CDR3  
5 unique J



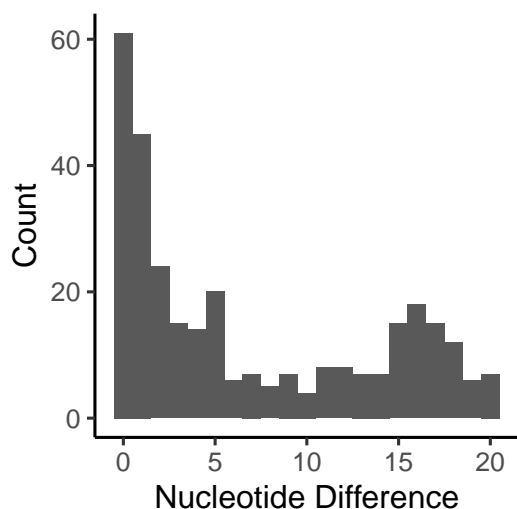
### IGHV3–9\*01

1167 sequences assigned  
168 (14.4%) exact matches, in which:  
165 unique CDR3  
6 unique J



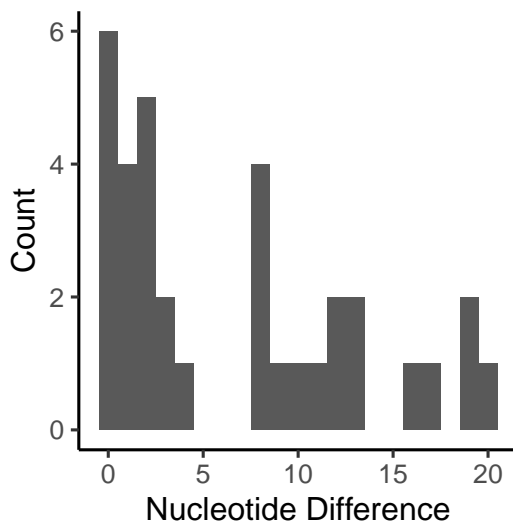
### IGHV3-11\*01

854 sequences assigned  
61 (7.1%) exact matches, in which:  
58 unique CDR3  
6 unique J



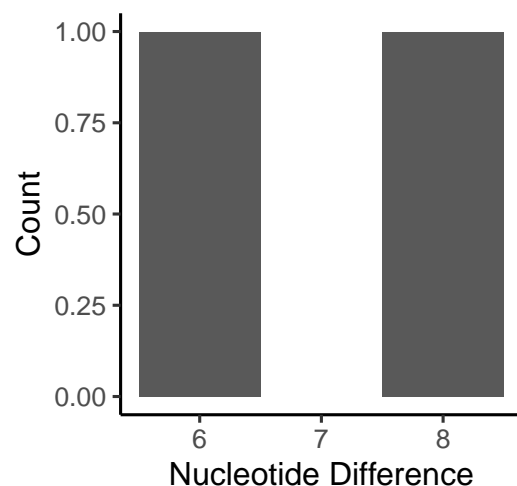
### IGHV3-13\*05

36 sequences assigned  
6 (16.7%) exact matches, in which:  
6 unique CDR3  
3 unique J



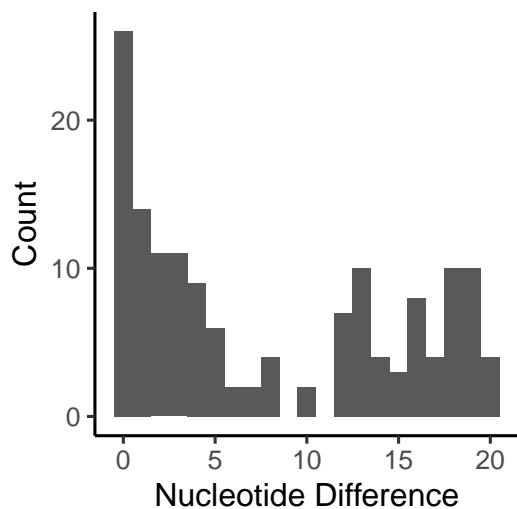
### IGHV3-20\*04

20 sequences assigned  
No exact matches.



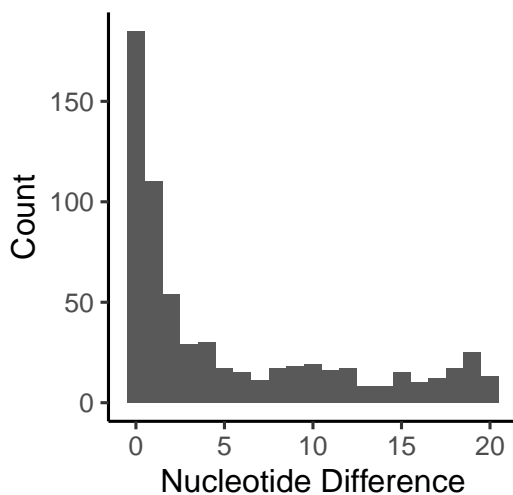
### IGHV3-11\*06

222 sequences assigned  
26 (11.7%) exact matches, in which:  
26 unique CDR3  
4 unique J



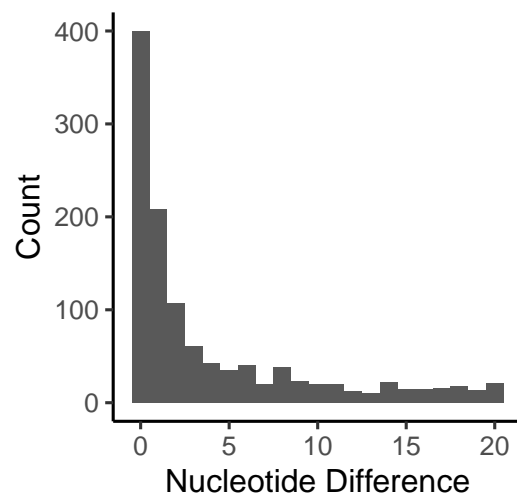
### IGHV3-15\*01

914 sequences assigned  
185 (20.2%) exact matches, in which:  
179 unique CDR3  
7 unique J



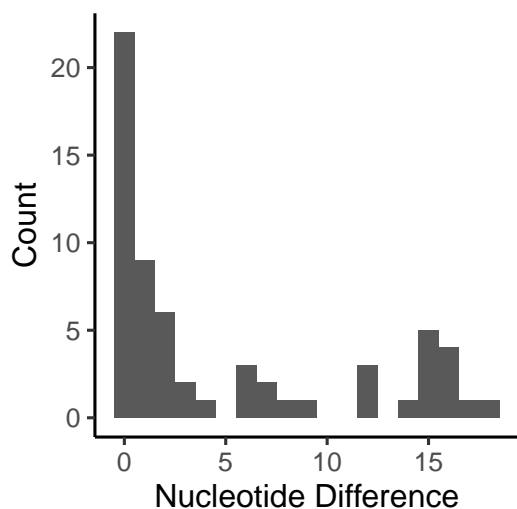
### IGHV3-21\*01

1435 sequences assigned  
400 (27.9%) exact matches, in which:  
393 unique CDR3  
7 unique J



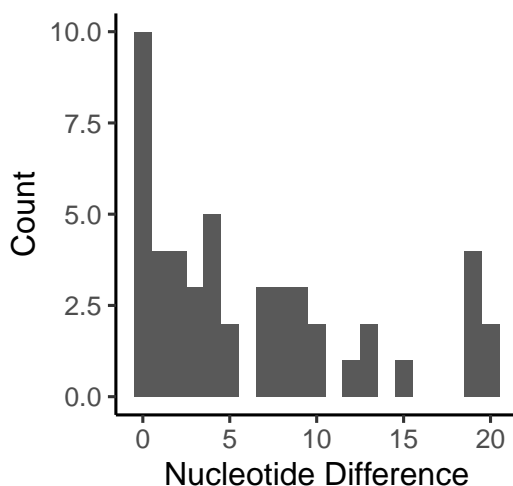
### IGHV3-13\*01

95 sequences assigned  
22 (23.2%) exact matches, in which:  
22 unique CDR3  
4 unique J



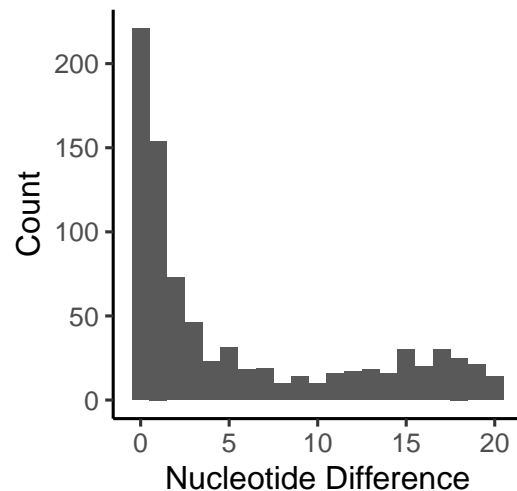
### IGHV3-20\*01

62 sequences assigned  
10 (16.1%) exact matches, in which:  
10 unique CDR3  
5 unique J



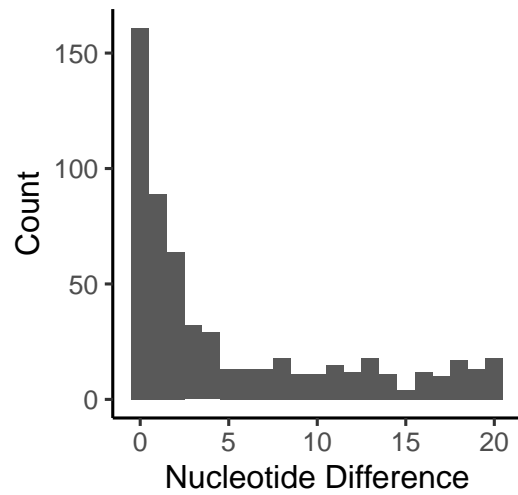
### IGHV3-23\*04

1198 sequences assigned  
221 (18.4%) exact matches, in which:  
209 unique CDR3  
6 unique J



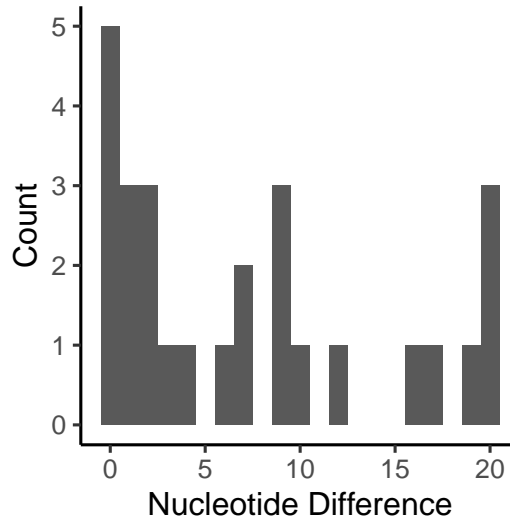
### IGHV3-30\*01

833 sequences assigned  
161 (19.3%) exact matches, in which:  
160 unique CDR3  
6 unique J



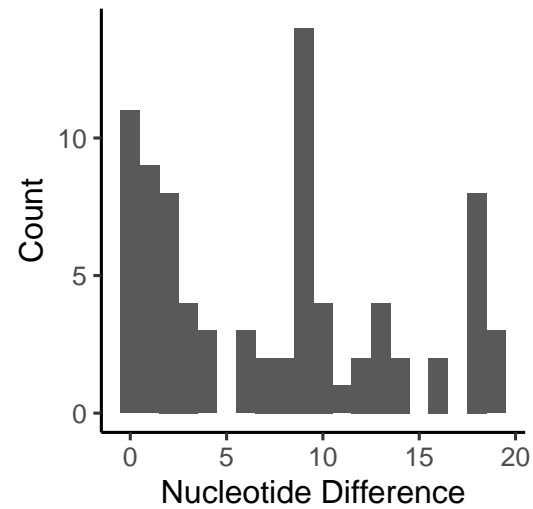
### IGHV3-43\*01

51 sequences assigned  
5 (9.8%) exact matches, in which:  
5 unique CDR3  
2 unique J



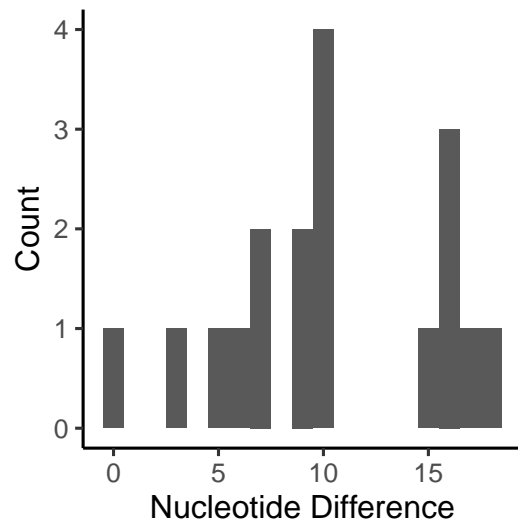
### IGHV3-49\*03

148 sequences assigned  
11 (7.4%) exact matches, in which:  
10 unique CDR3  
4 unique J



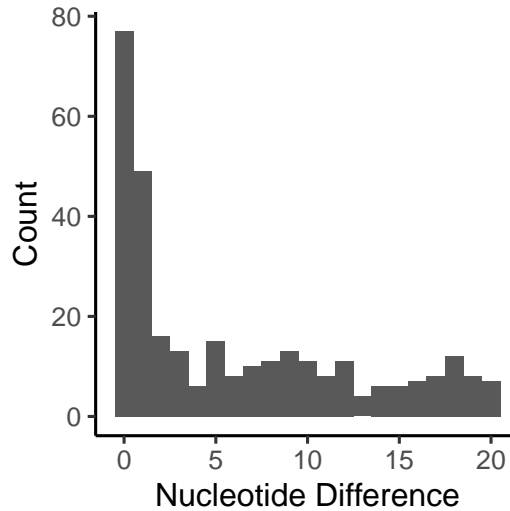
### IGHV3-30-3\*03

56 sequences assigned  
1 (1.8%) exact matches, in which:  
1 unique CDR3  
1 unique J



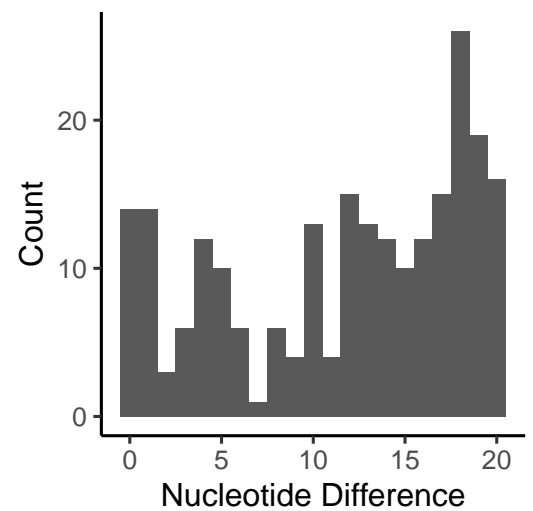
### IGHV3-48\*01

409 sequences assigned  
77 (18.8%) exact matches, in which:  
76 unique CDR3  
6 unique J



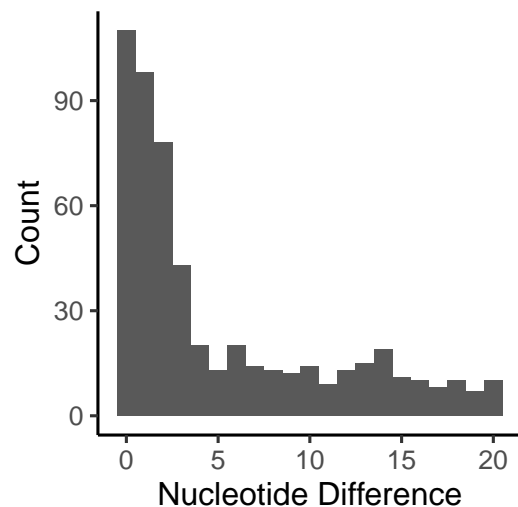
### IGHV3-49\*04

359 sequences assigned  
14 (3.9%) exact matches, in which:  
14 unique CDR3  
4 unique J



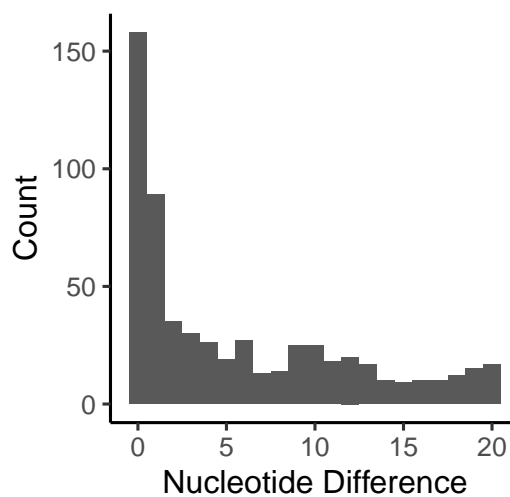
### IGHV3-33\*01

727 sequences assigned  
110 (15.1%) exact matches, in which:  
106 unique CDR3  
6 unique J



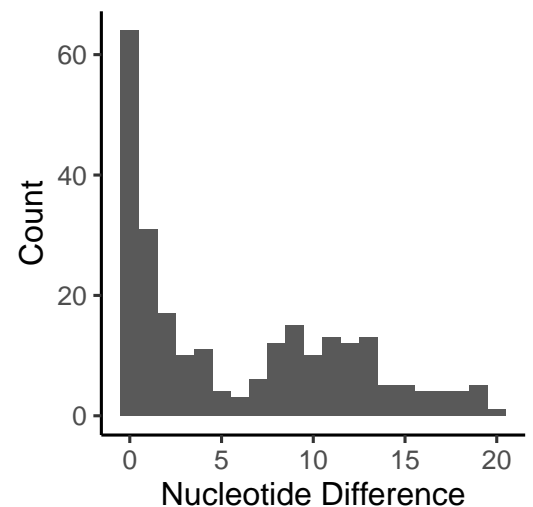
### IGHV3-48\*03

929 sequences assigned  
158 (17%) exact matches, in which:  
156 unique CDR3  
7 unique J



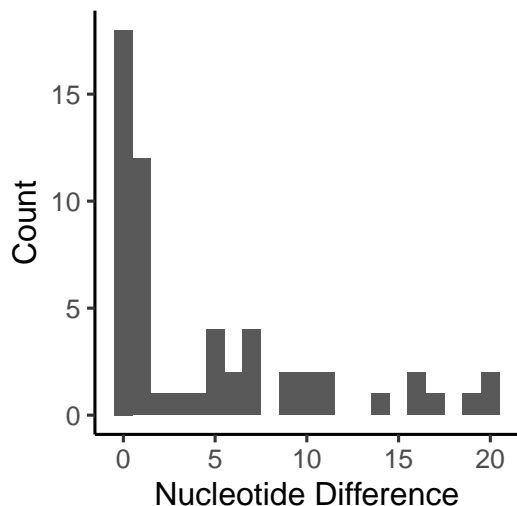
### IGHV3-53\*01

323 sequences assigned  
64 (19.8%) exact matches, in which:  
63 unique CDR3  
6 unique J



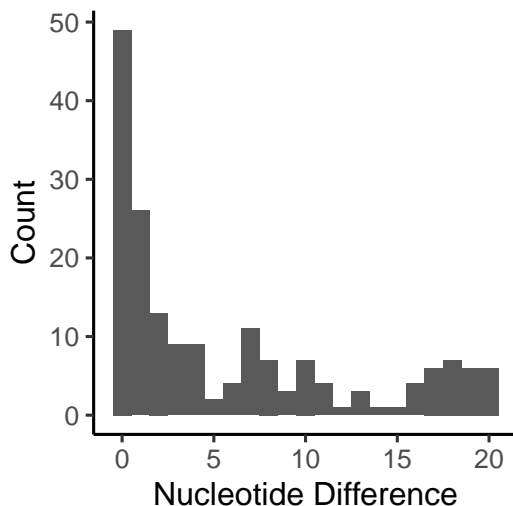
## IGHV3-53\*02

65 sequences assigned  
18 (27.7%) exact matches, in which:  
18 unique CDR3  
5 unique J



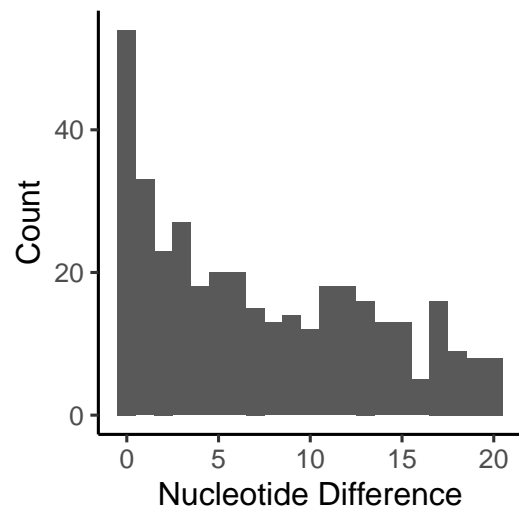
## IGHV3-66\*02

253 sequences assigned  
49 (19.4%) exact matches, in which:  
48 unique CDR3  
5 unique J



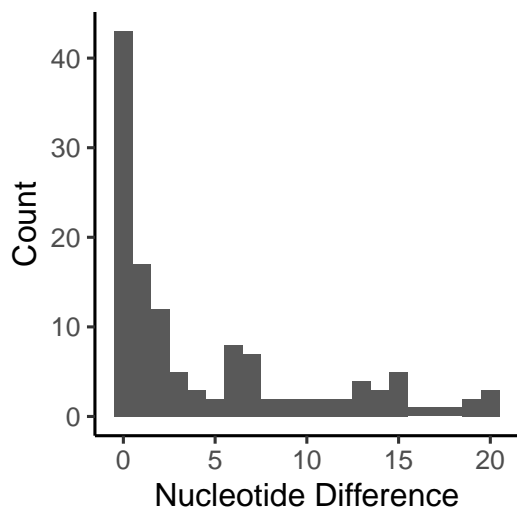
## IGHV3-74\*01

578 sequences assigned  
54 (9.3%) exact matches, in which:  
52 unique CDR3  
5 unique J



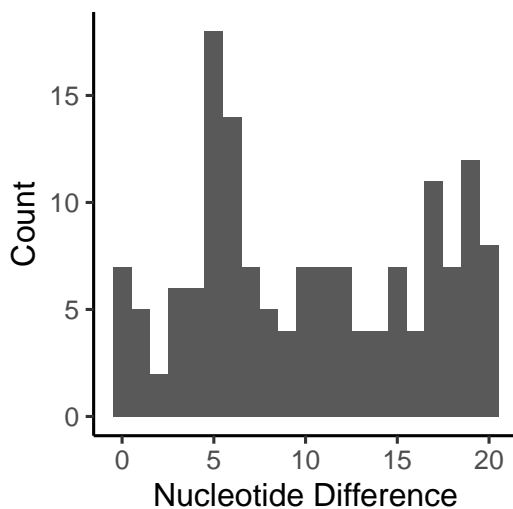
## IGHV3-64\*01

155 sequences assigned  
43 (27.7%) exact matches, in which:  
43 unique CDR3  
7 unique J



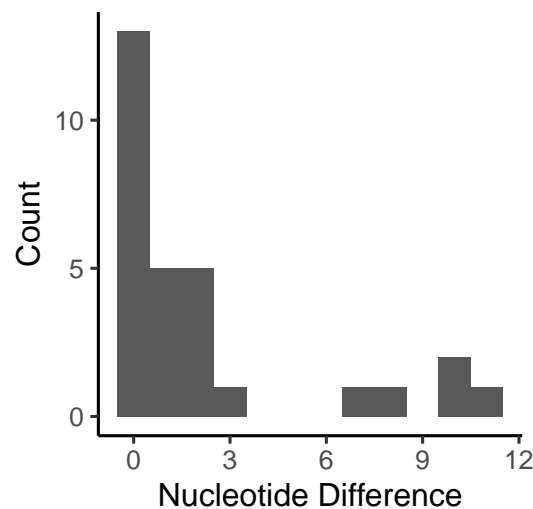
## IGHV3-72\*01

217 sequences assigned  
7 (3.2%) exact matches, in which:  
7 unique CDR3  
3 unique J



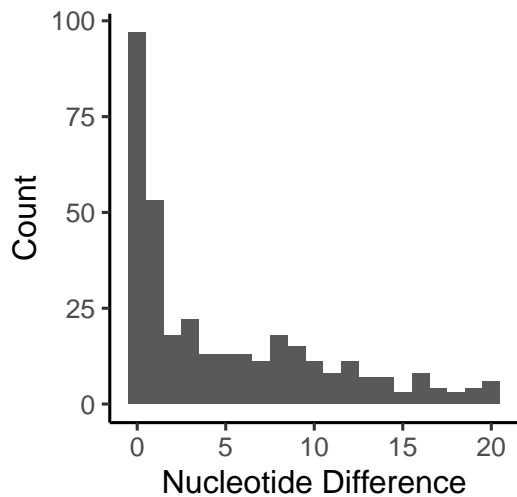
## IGHV3-43D\*04

48 sequences assigned  
13 (27.1%) exact matches, in which:  
8 unique CDR3  
2 unique J



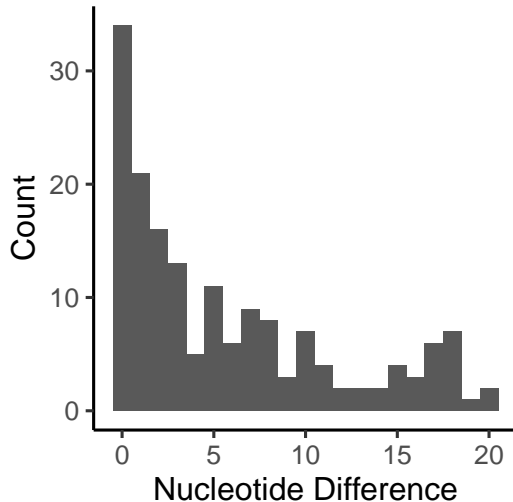
## IGHV3-66\*01

489 sequences assigned  
97 (19.8%) exact matches, in which:  
92 unique CDR3  
6 unique J



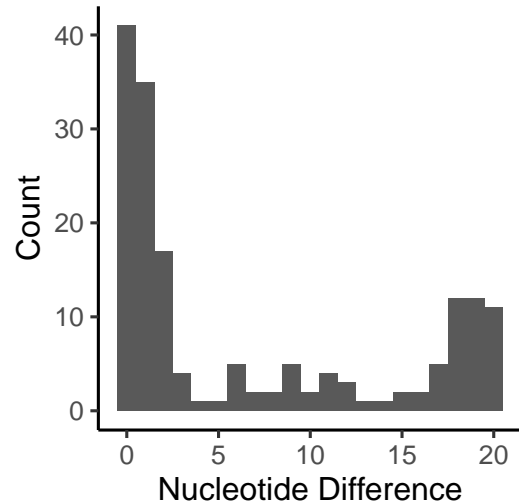
## IGHV3-73\*01

204 sequences assigned  
34 (16.7%) exact matches, in which:  
33 unique CDR3  
6 unique J



## IGHV3-64D\*06

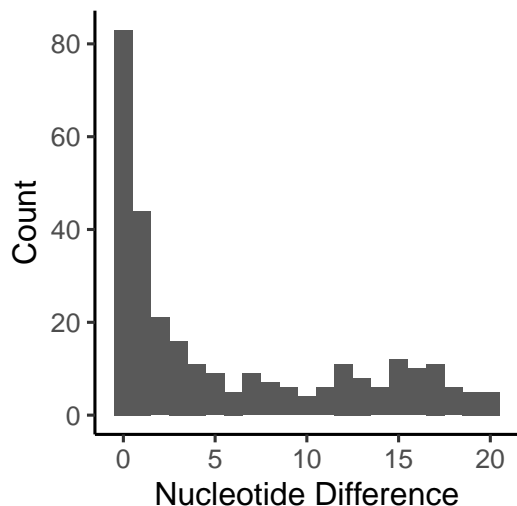
265 sequences assigned  
41 (15.5%) exact matches, in which:  
37 unique CDR3  
5 unique J





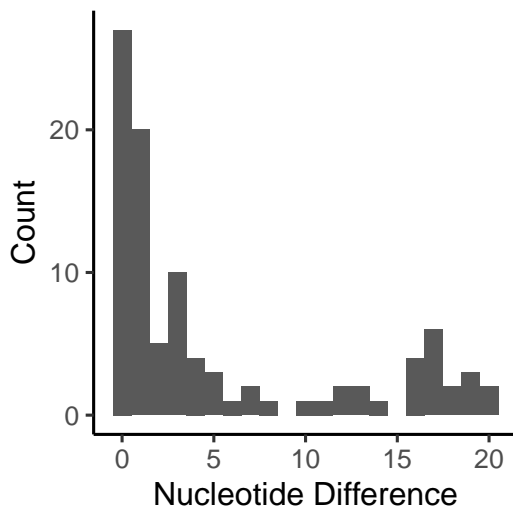
## IGHV4-4\*02

424 sequences assigned  
83 (19.6%) exact matches, in which:  
82 unique CDR3  
6 unique J



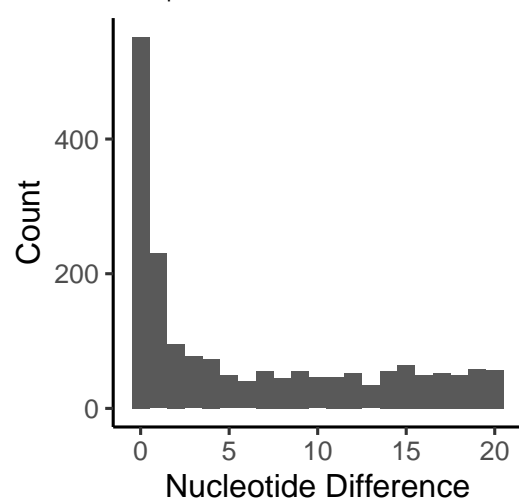
## IGHV4-30-2\*01

176 sequences assigned  
27 (15.3%) exact matches, in which:  
27 unique CDR3  
5 unique J



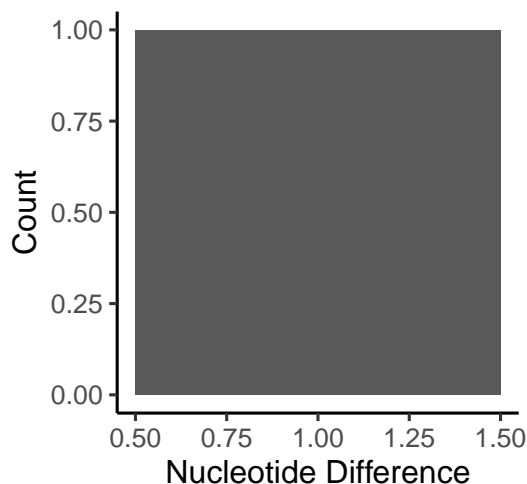
## IGHV4-34\*01

2917 sequences assigned  
552 (18.9%) exact matches, in which:  
545 unique CDR3  
7 unique J



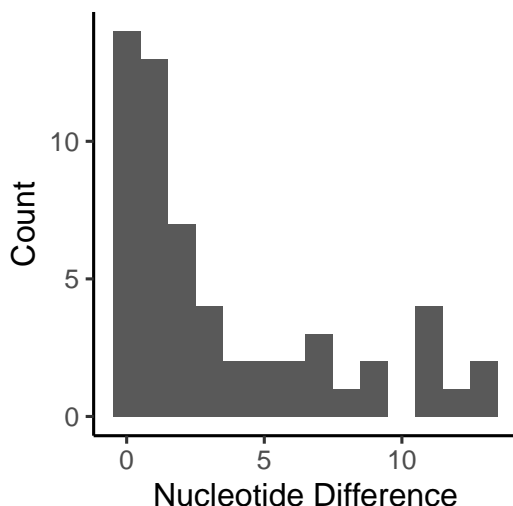
## IGHV4-28\*04

1 sequences assigned  
No exact matches.



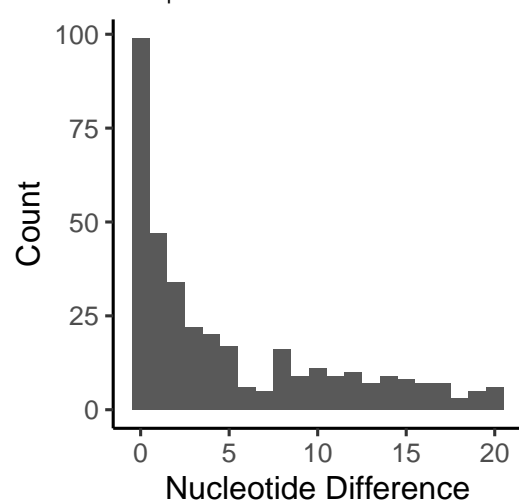
## IGHV4-31\*01

63 sequences assigned  
14 (22.2%) exact matches, in which:  
12 unique CDR3  
5 unique J



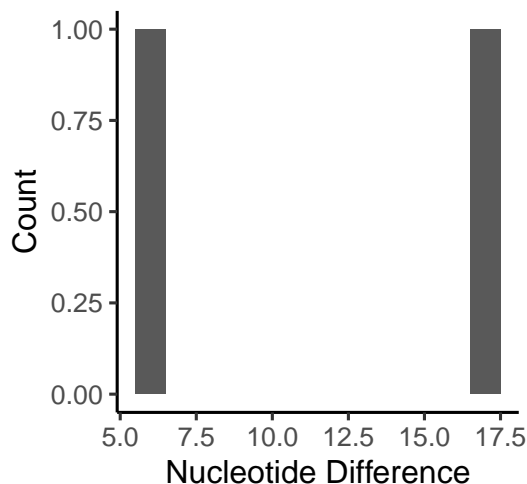
## IGHV4-38-2\*02\_A70G

561 sequences assigned  
99 (17.6%) exact matches, in which:  
97 unique CDR3  
5 unique J



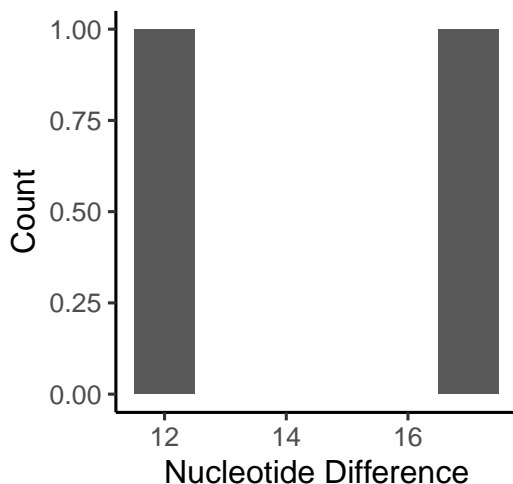
## IGHV4-28\*07

3 sequences assigned  
No exact matches.



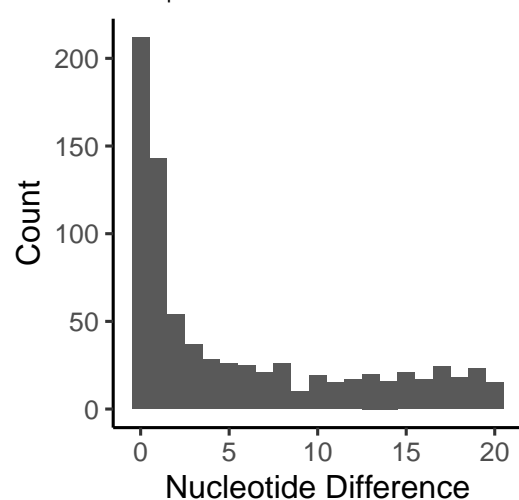
## IGHV4-31\*03

19 sequences assigned  
No exact matches.



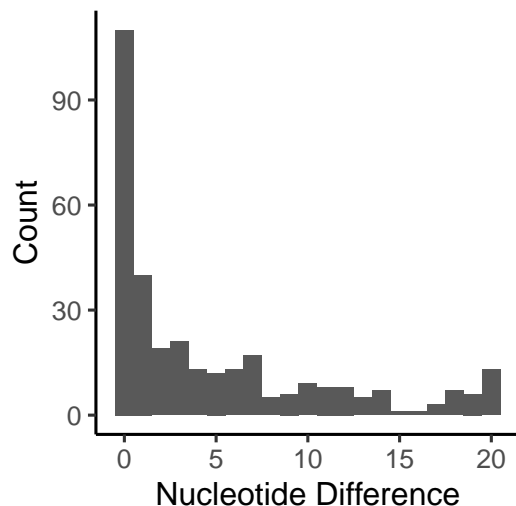
## IGHV4-39\*01

1288 sequences assigned  
212 (16.5%) exact matches, in which:  
212 unique CDR3  
6 unique J



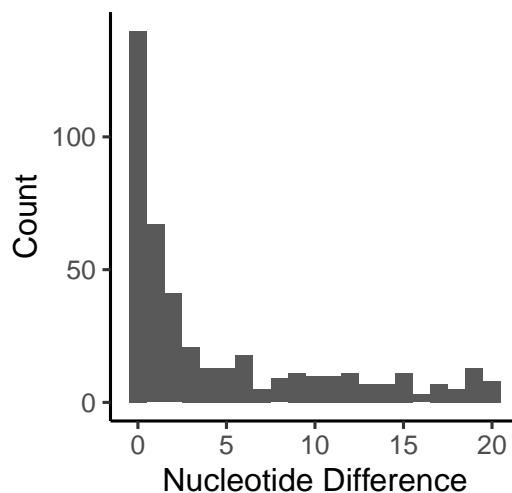
### IGHV4-59\*01

512 sequences assigned  
110 (21.5%) exact matches, in which:  
110 unique CDR3  
5 unique J



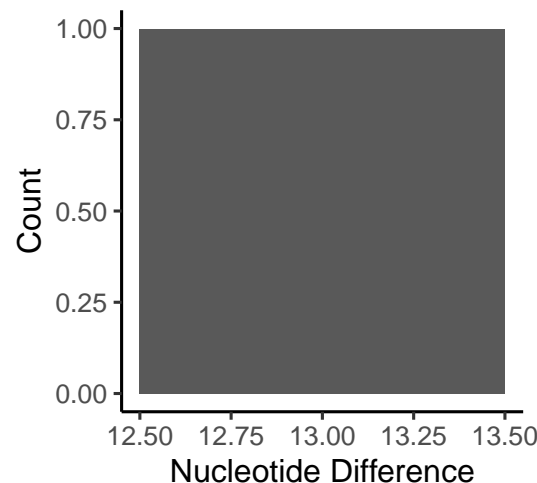
### IGHV4-61\*02\_A291G

663 sequences assigned  
140 (21.1%) exact matches, in which:  
137 unique CDR3  
5 unique J



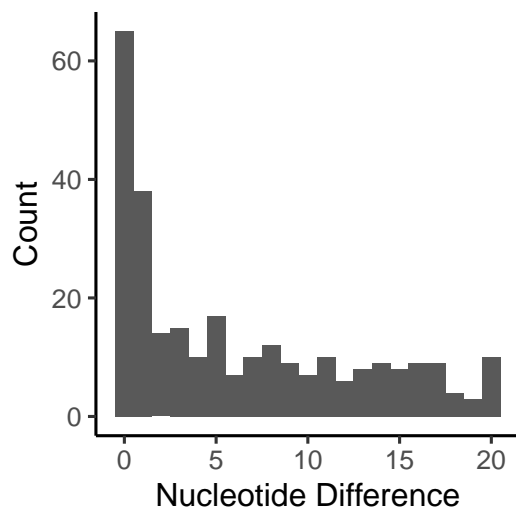
### IGHV1/OR15-9\*01

1 sequences assigned  
No exact matches.



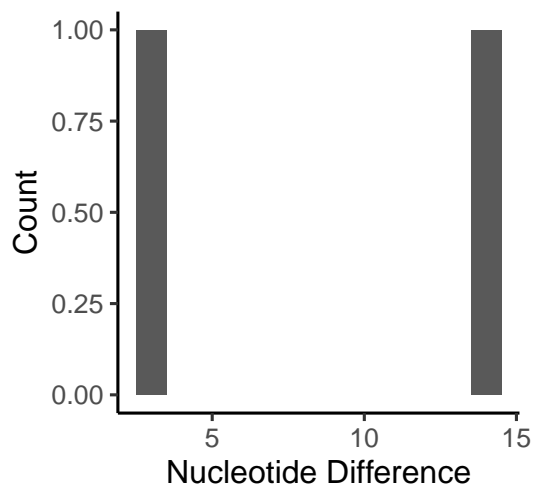
### IGHV4-59\*08

385 sequences assigned  
65 (16.9%) exact matches, in which:  
65 unique CDR3  
6 unique J



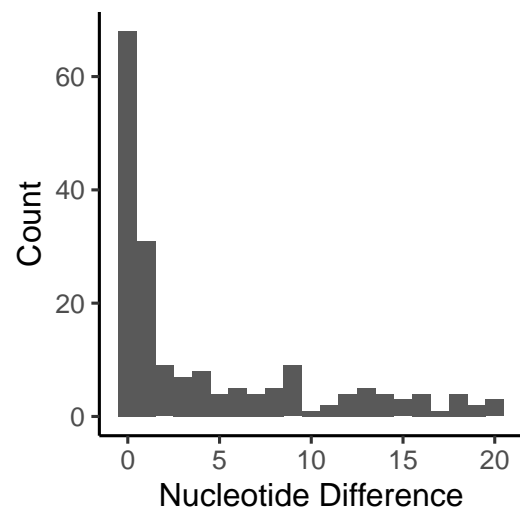
### IGHV1/OR15-1\*04

3 sequences assigned  
No exact matches.



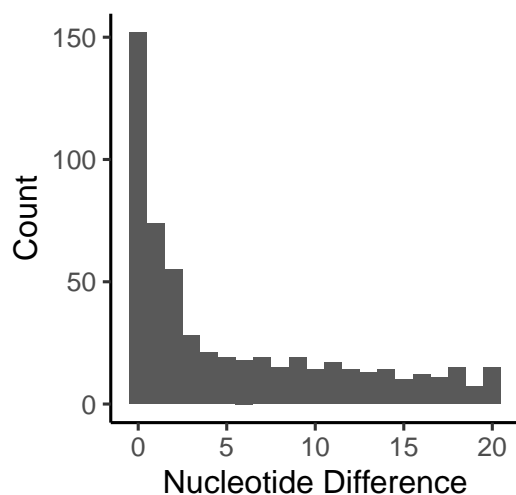
### IGHV5-10-1\*03

304 sequences assigned  
68 (22.4%) exact matches, in which:  
68 unique CDR3  
5 unique J



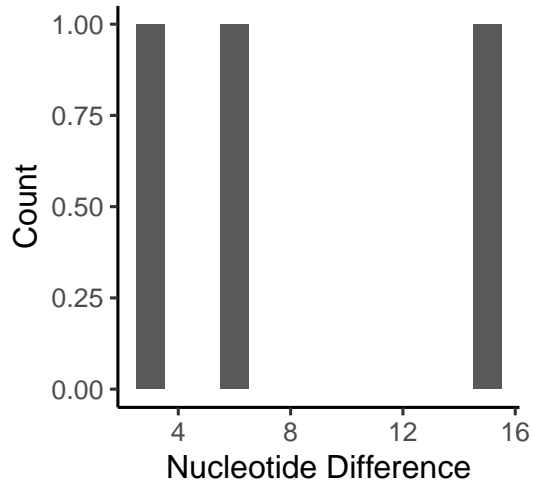
### IGHV4-61\*02

823 sequences assigned  
152 (18.5%) exact matches, in which:  
151 unique CDR3  
6 unique J



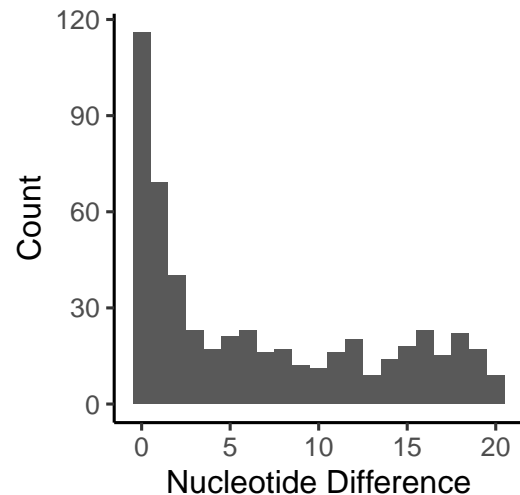
### IGHV4/OR15-8\*02

3 sequences assigned  
No exact matches.



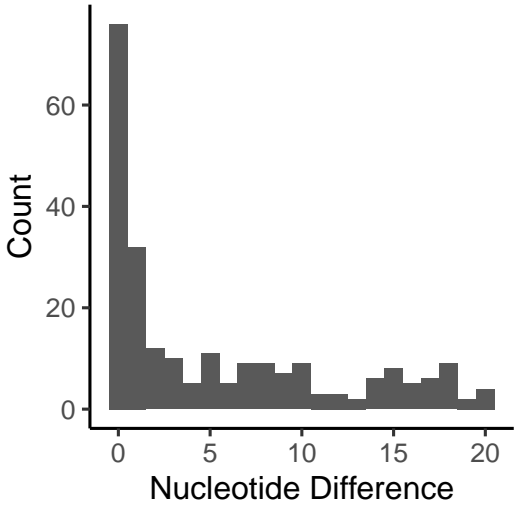
### IGHV5-51\*01

774 sequences assigned  
116 (15%) exact matches, in which:  
116 unique CDR3  
7 unique J



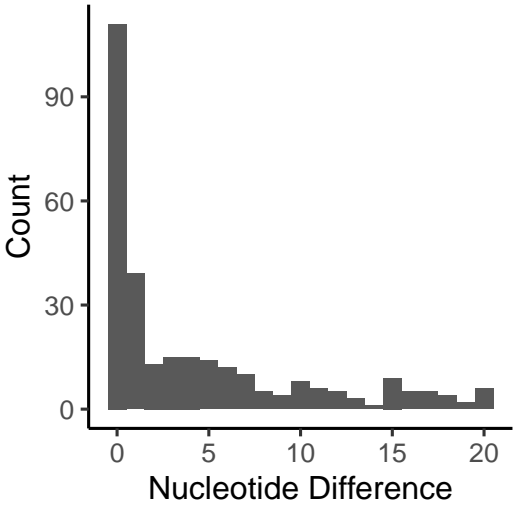
IGHV5–51\*03

350 sequences assigned  
76 (21.7%) exact matches, in which:  
73 unique CDR3  
5 unique J



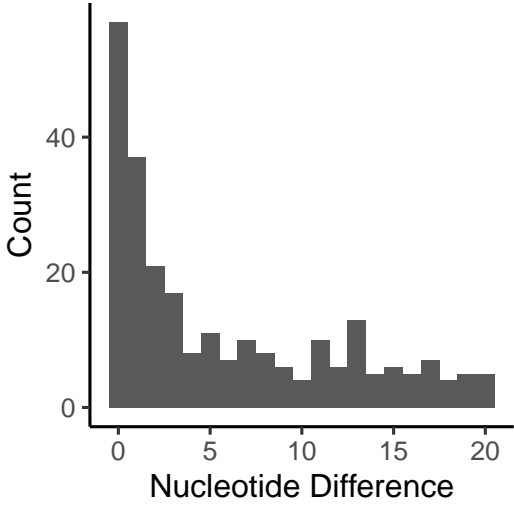
IGHV7–4–1\*02

379 sequences assigned  
111 (29.3%) exact matches, in which:  
108 unique CDR3  
6 unique J



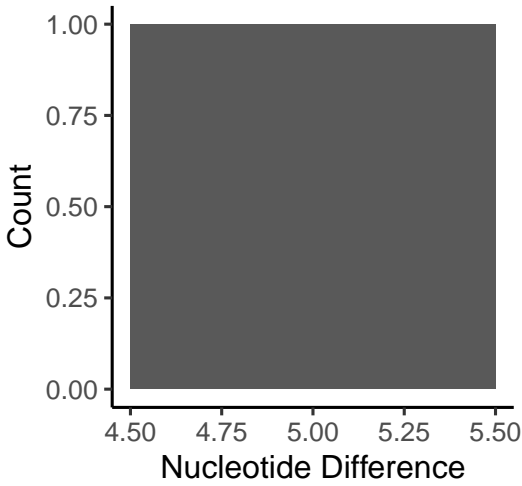
IGHV6–1\*01

355 sequences assigned  
57 (16.1%) exact matches, in which:  
50 unique CDR3  
5 unique J

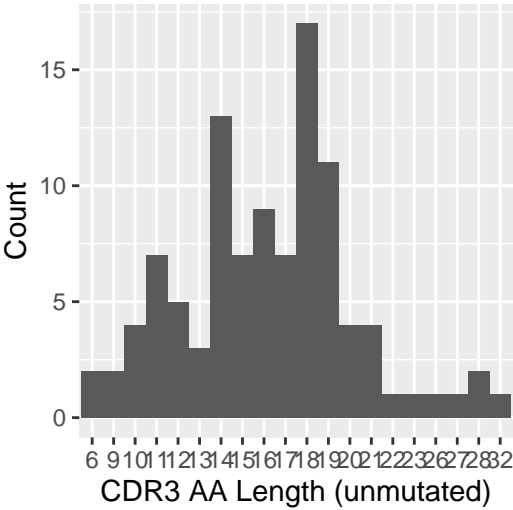


IGHV3/OR16–15\*02

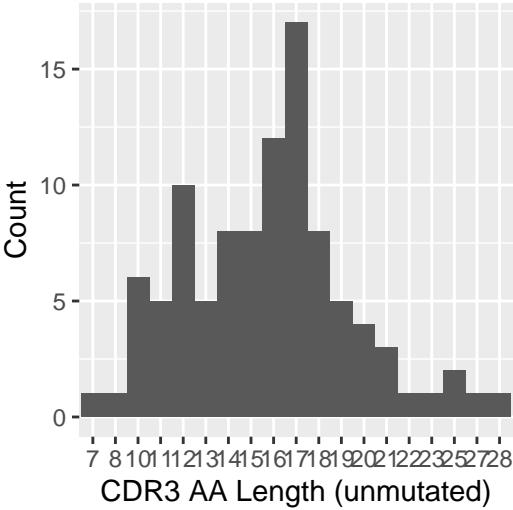
1 sequences assigned  
No exact matches.



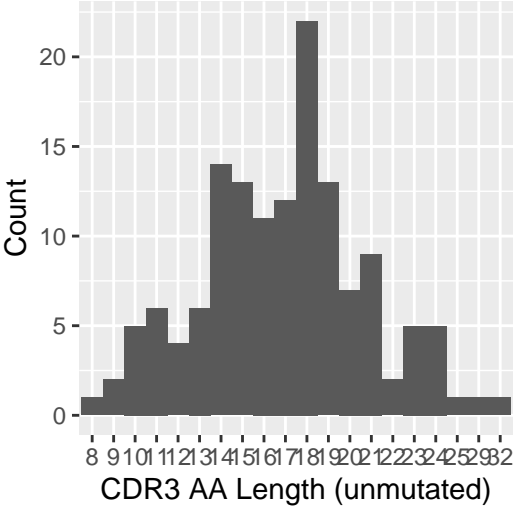
IGHV1-69\*08\_C191T



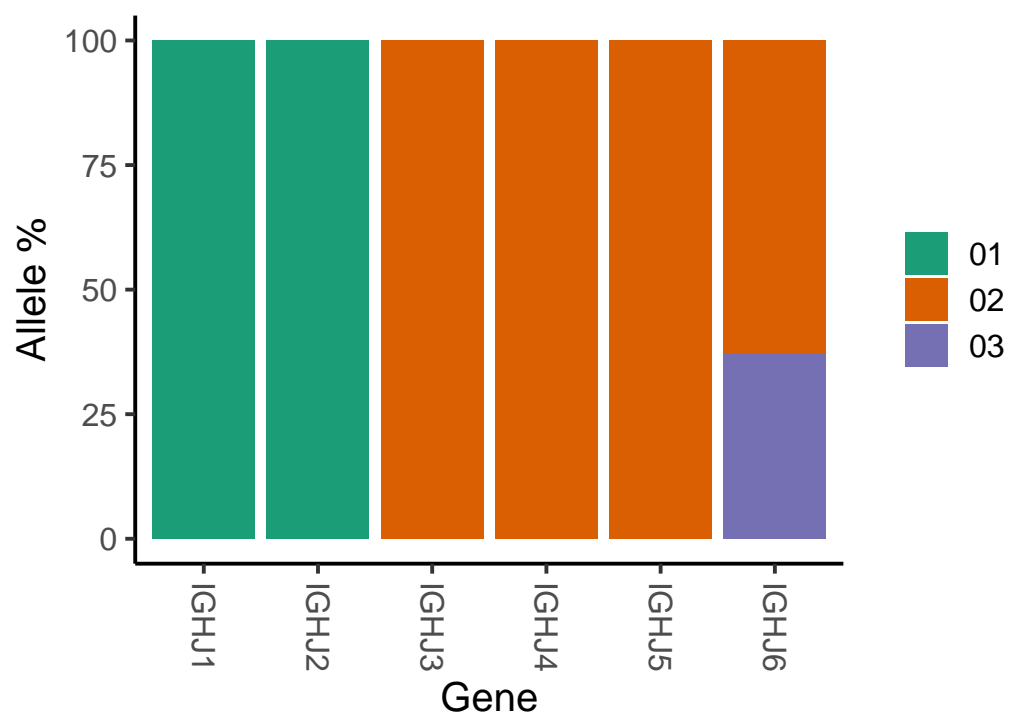
IGHV4-38-2\*02\_A70G



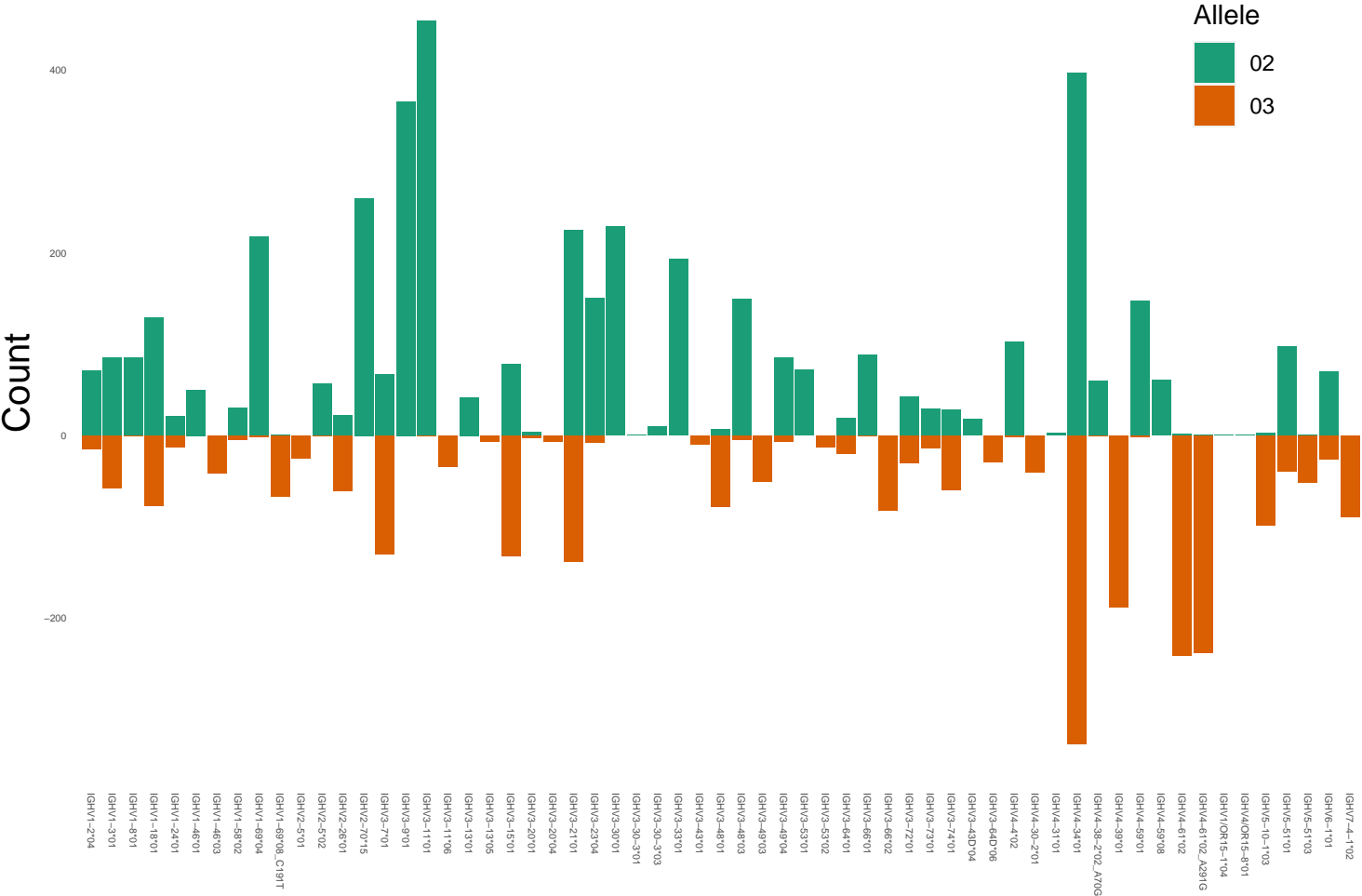
IGHV4-61\*02\_A291G



Allele Usage



Sequence Count by IGHJ6 allele usage



[illegible]