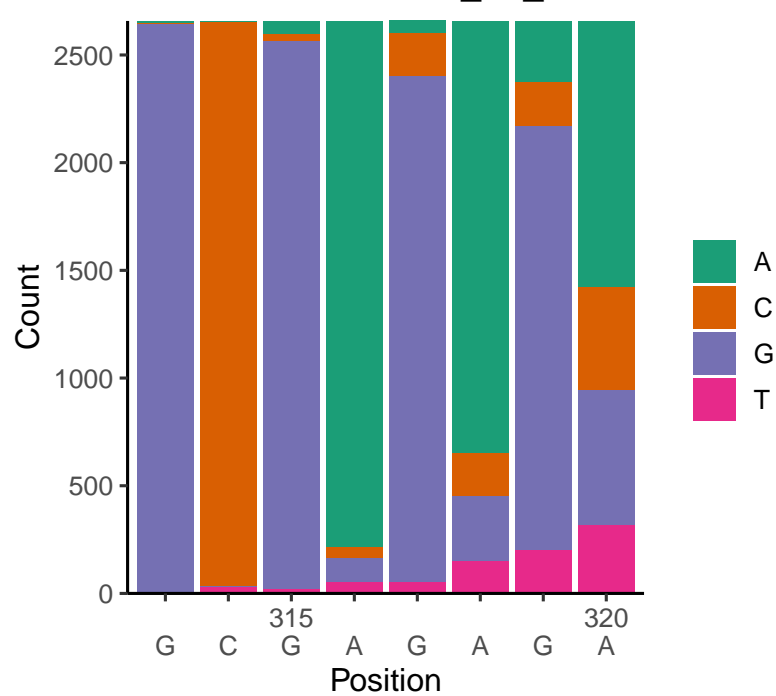
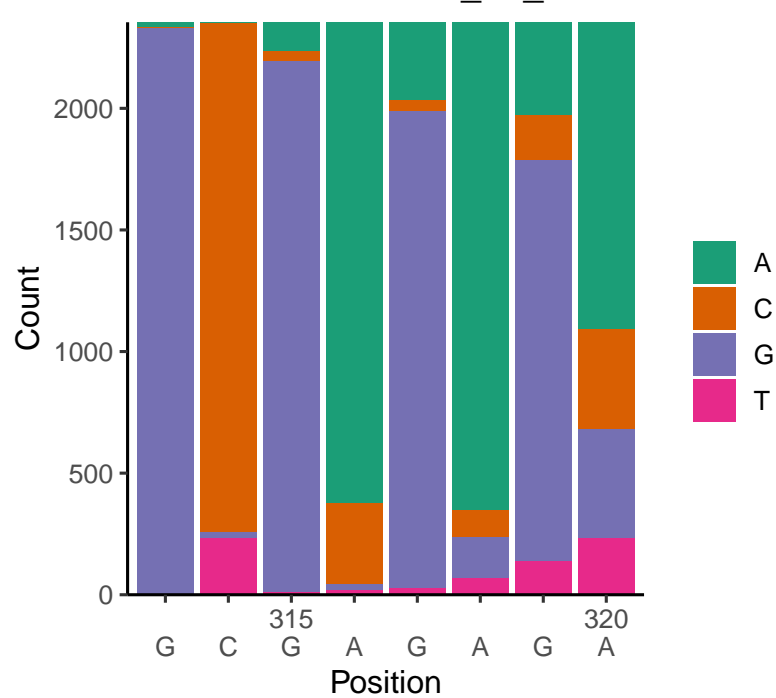


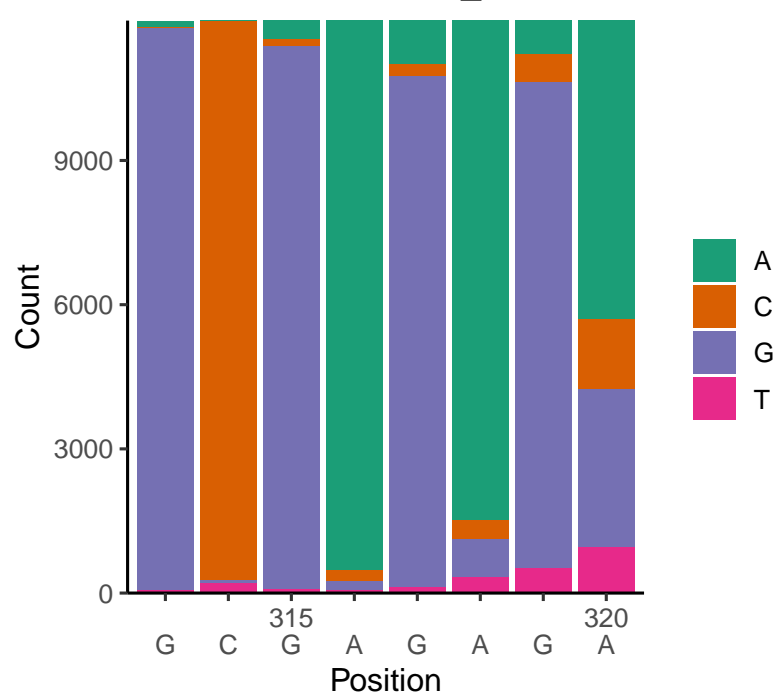
Gene IGHV1-69\*04\_09\_G112A



Gene IGHV3-20\*03\_04\_A104G



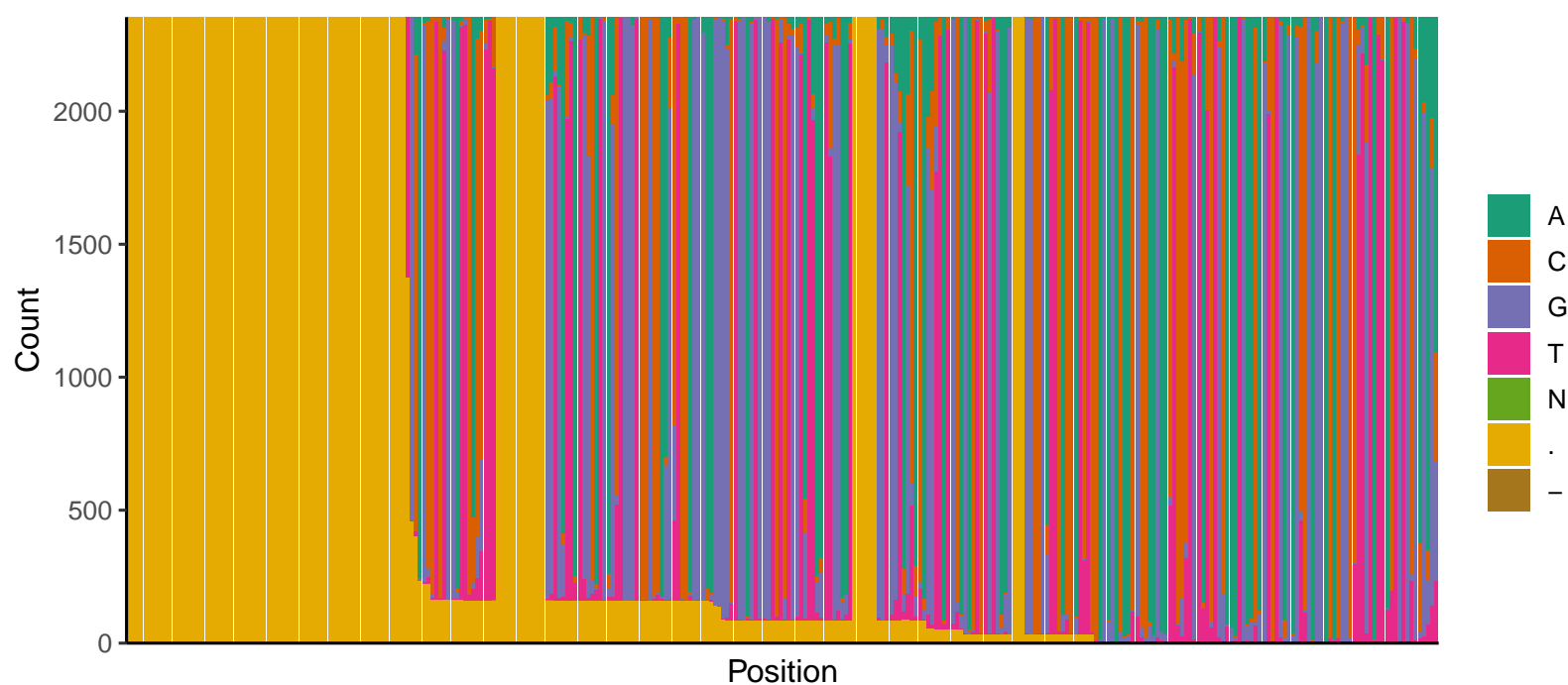
Gene IGHV3-30\*04\_C203T



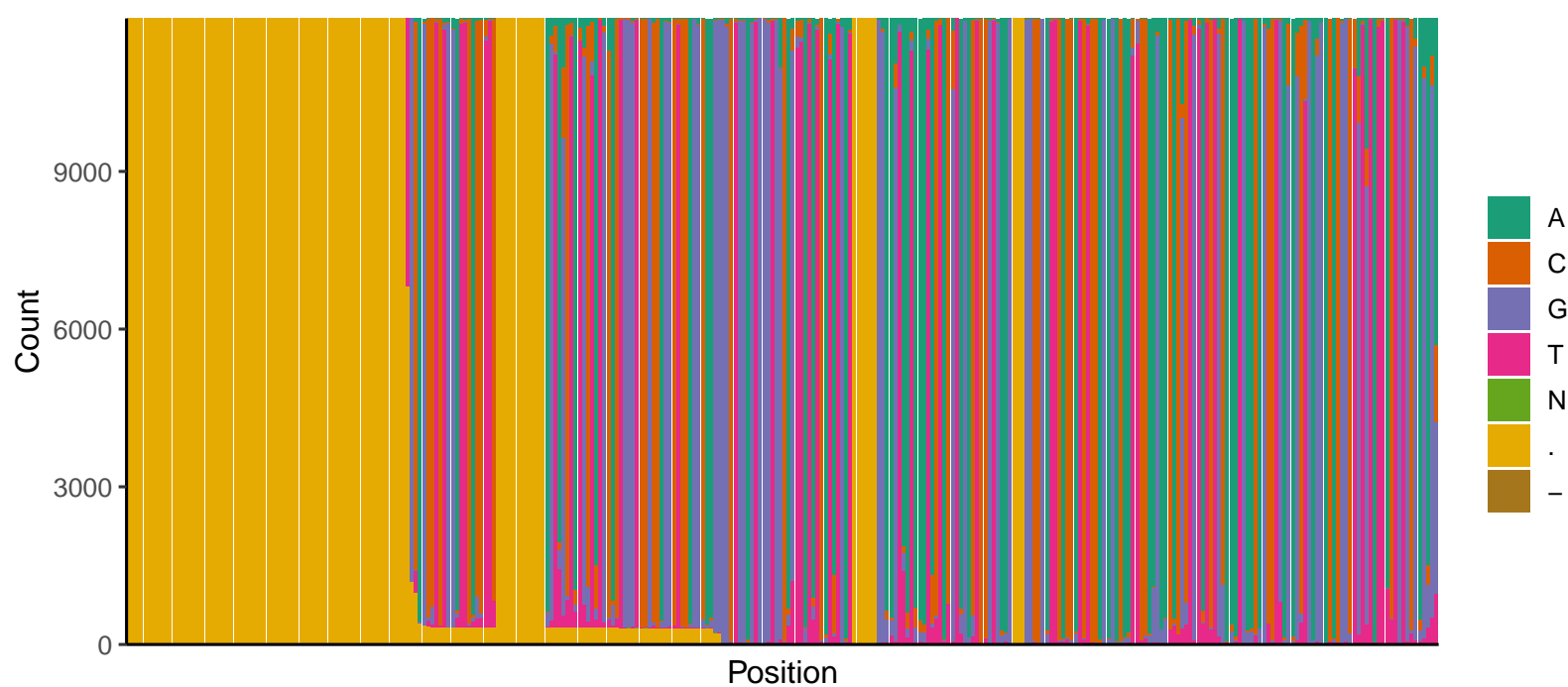
Gene IGHV1-69\*04\_09\_G112A



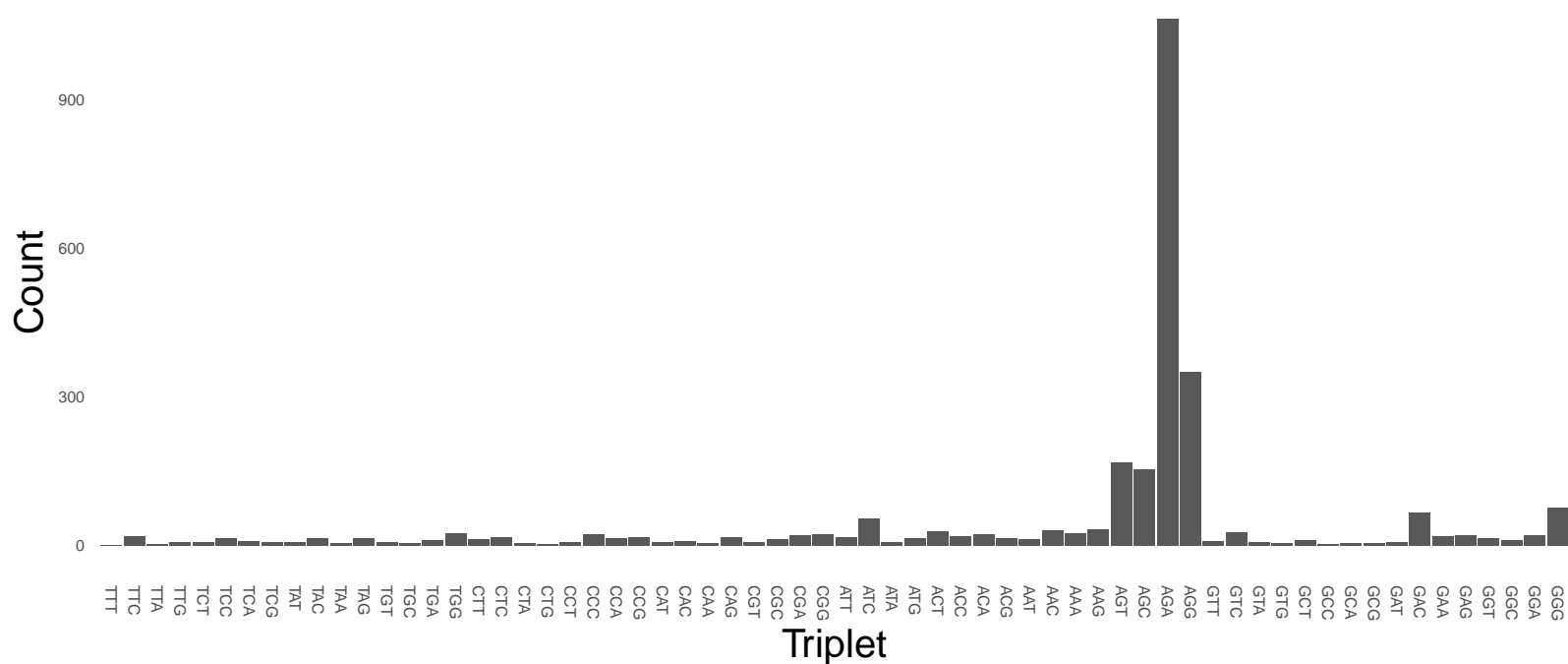
Gene IGHV3-20\*03\_04\_A104G



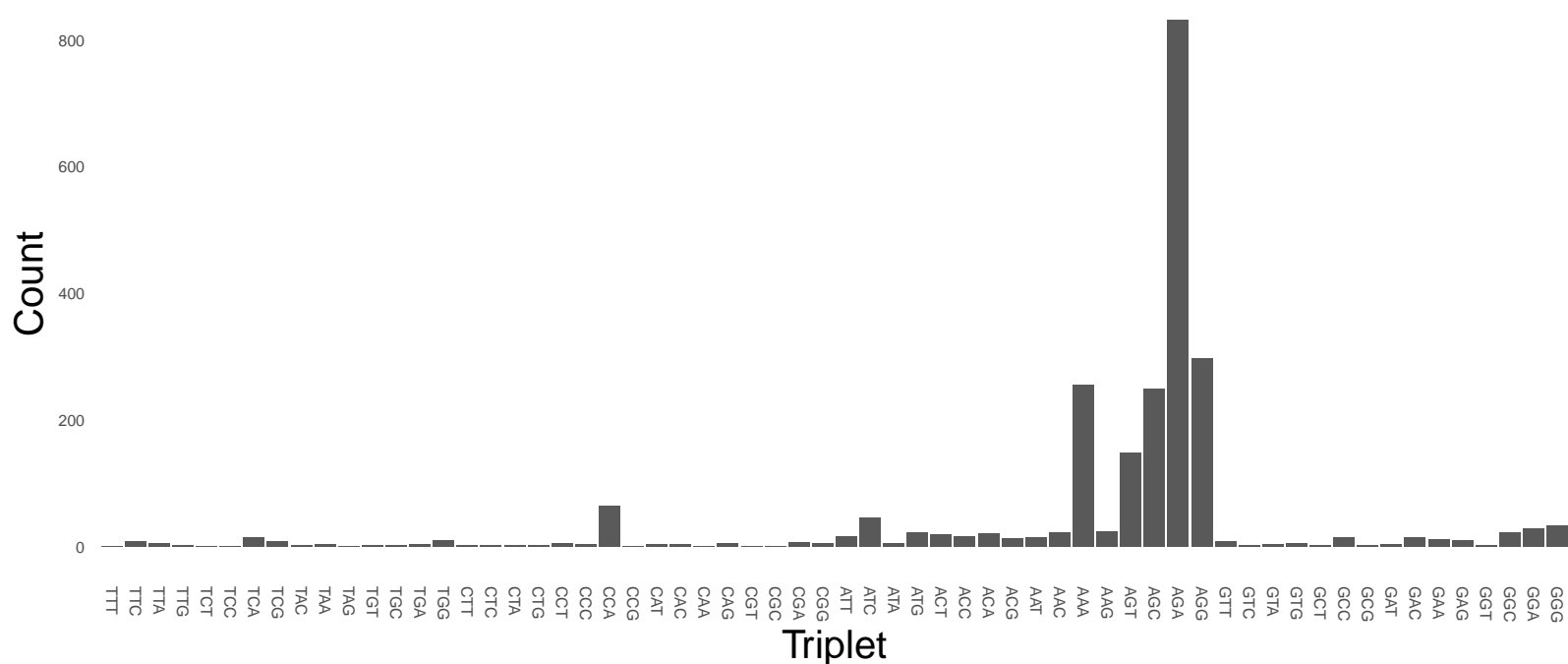
Gene IGHV3-30\*04\_C203T



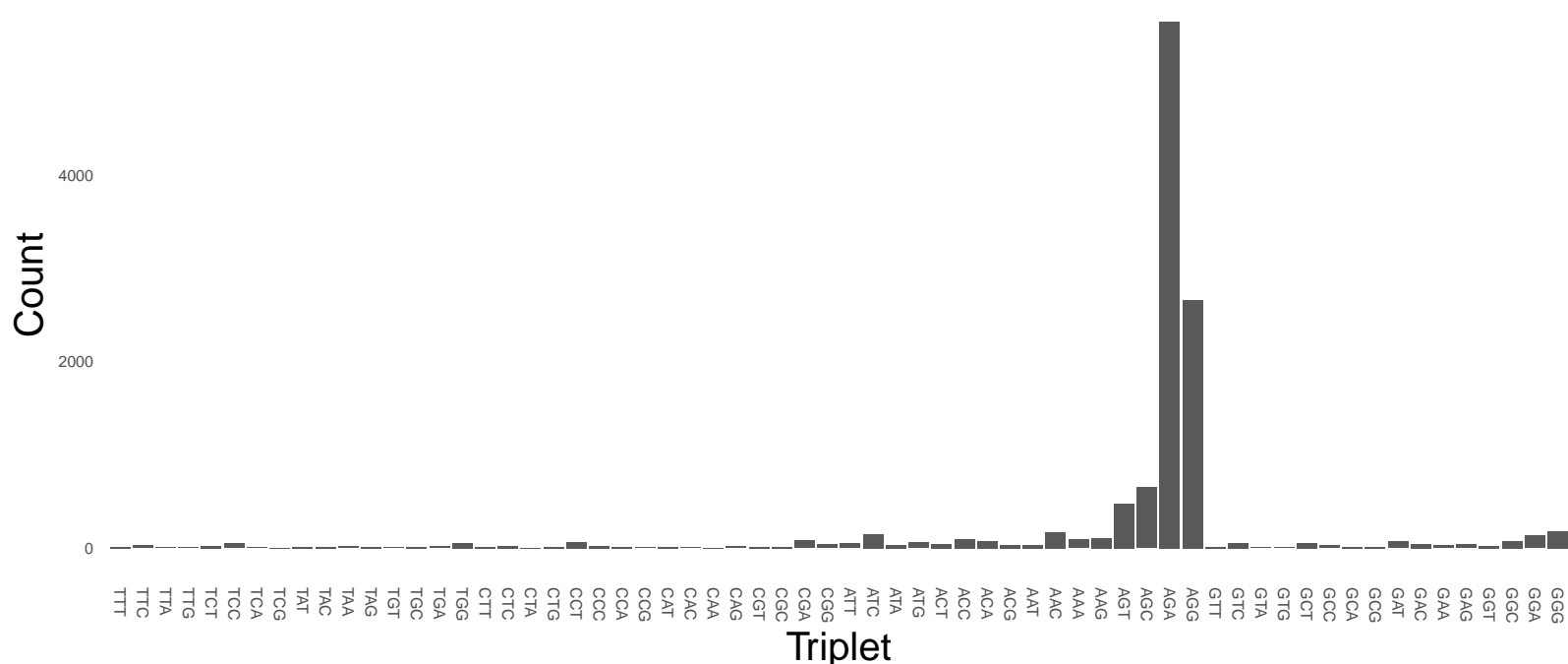
IGHV1-69\*04\_09\_G112A- Final 3 nucleotides as a triplet



IGHV3-20\*03\_04\_A104G- Final 3 nucleotides as a triplet

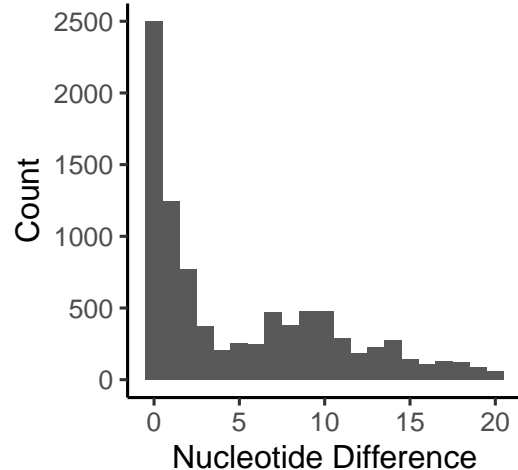


IGHV3-30\*04\_C203T- Final 3 nucleotides as a triplet



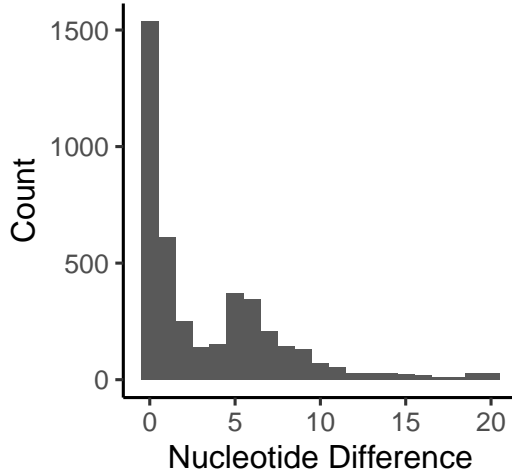
### IGHV1-2\*02

10371 sequences assigned  
2499 (24.1%) exact matches, in which:  
2361 unique CDR3  
6 unique J



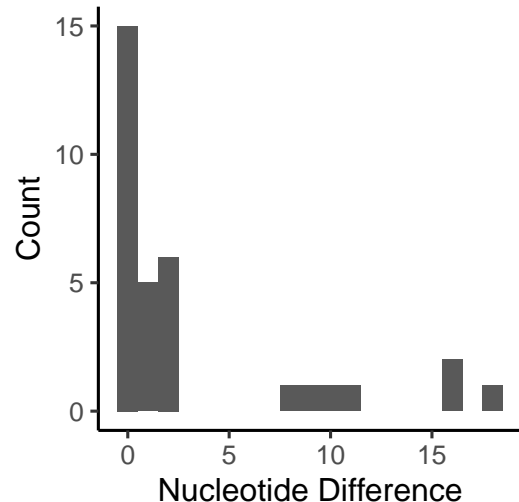
### IGHV1-8\*02

4326 sequences assigned  
1537 (35.5%) exact matches, in which:  
1476 unique CDR3  
6 unique J



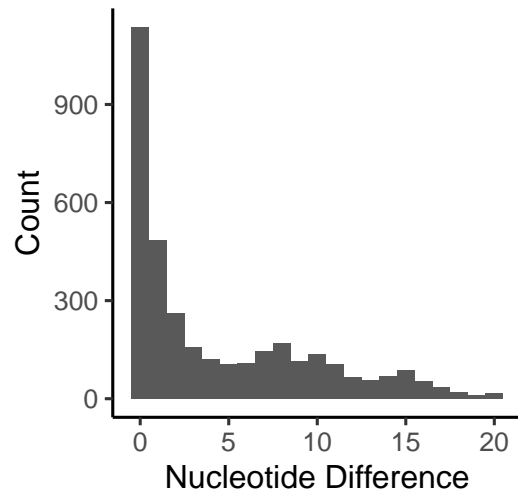
### IGHV1-45\*02

51 sequences assigned  
15 (29.4%) exact matches, in which:  
12 unique CDR3  
5 unique J



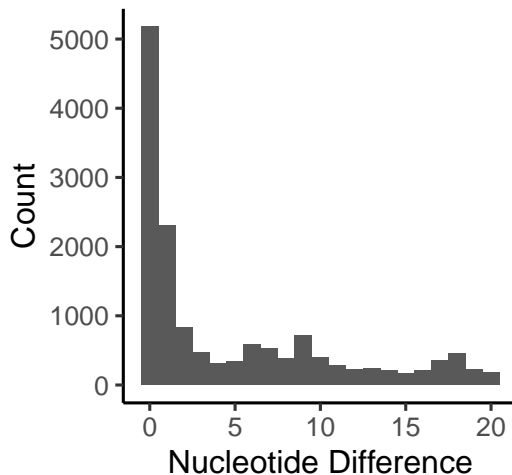
### IGHV1-3\*01\_05

3935 sequences assigned  
1137 (28.9%) exact matches, in which:  
1070 unique CDR3  
6 unique J



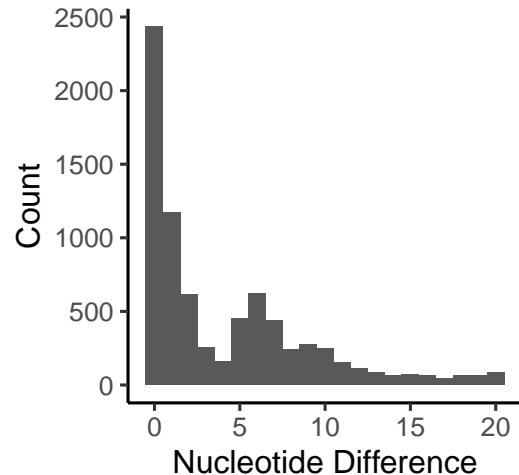
### IGHV1-18\*01

15903 sequences assigned  
5178 (32.6%) exact matches, in which:  
4836 unique CDR3  
6 unique J



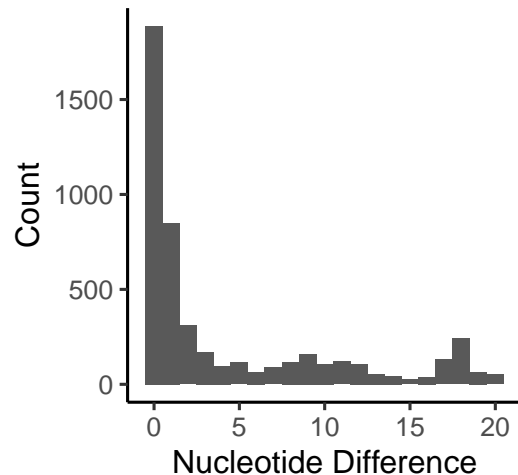
### IGHV1-46\*01

8287 sequences assigned  
2434 (29.4%) exact matches, in which:  
2319 unique CDR3  
6 unique J



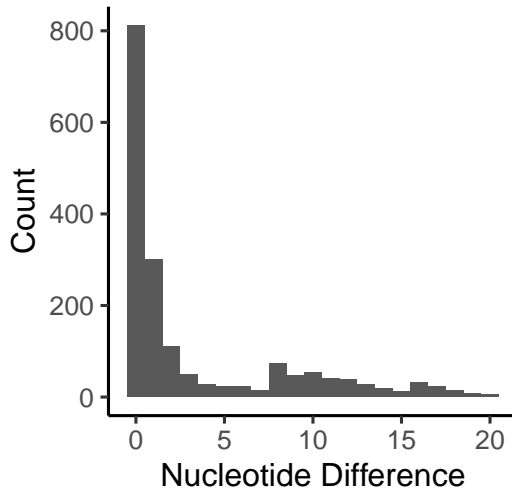
### IGHV1-8\*01

5134 sequences assigned  
1887 (36.8%) exact matches, in which:  
1806 unique CDR3  
6 unique J



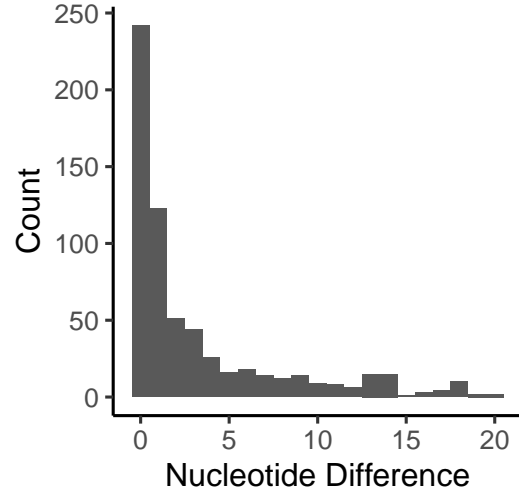
### IGHV1-24\*01

2184 sequences assigned  
812 (37.2%) exact matches, in which:  
779 unique CDR3  
6 unique J



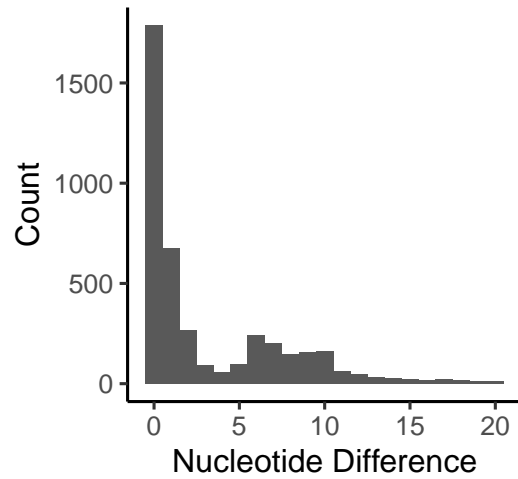
### IGHV1-58\*02

638 sequences assigned  
242 (37.9%) exact matches, in which:  
227 unique CDR3  
5 unique J



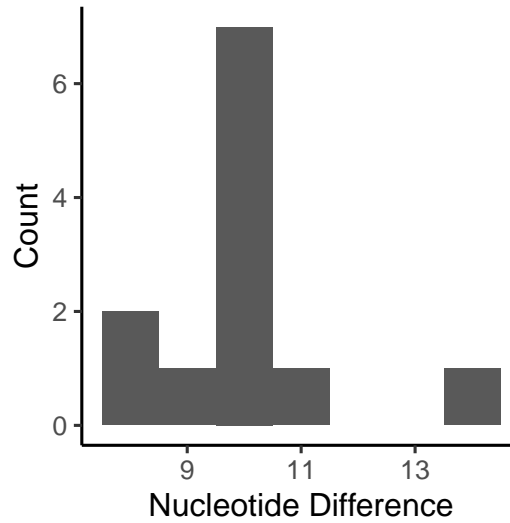
### IGHV1-69\*10

4453 sequences assigned  
1787 (40.1%) exact matches, in which:  
1727 unique CDR3  
6 unique J



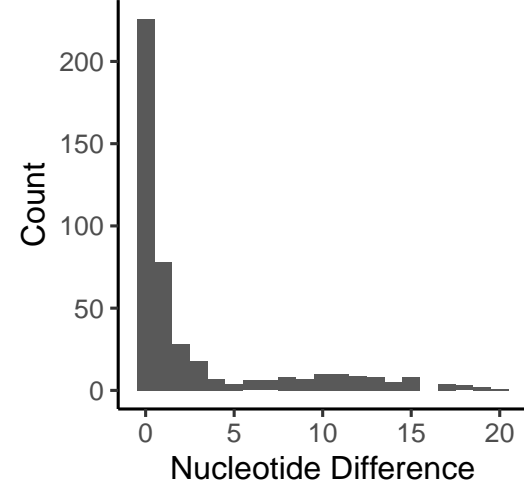
### IGHV1-NL1\*01

12 sequences assigned  
No exact matches.



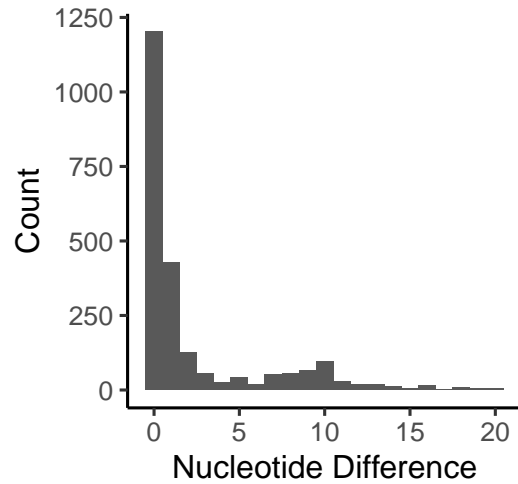
### IGHV2-26\*01

509 sequences assigned  
226 (44.4%) exact matches, in which:  
215 unique CDR3  
6 unique J



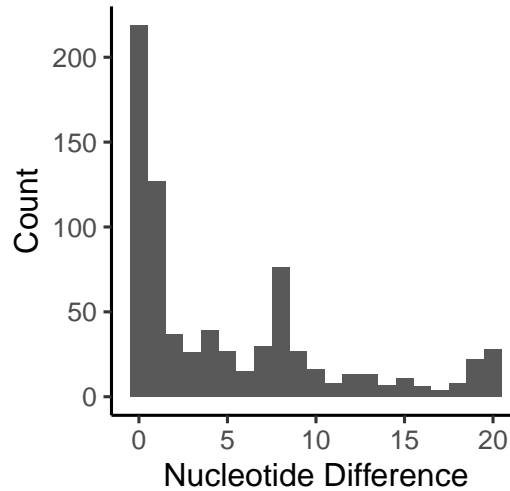
### IGHV1-69\*04\_09\_G112.

2658 sequences assigned  
1202 (45.2%) exact matches, in which:  
1164 unique CDR3  
6 unique J



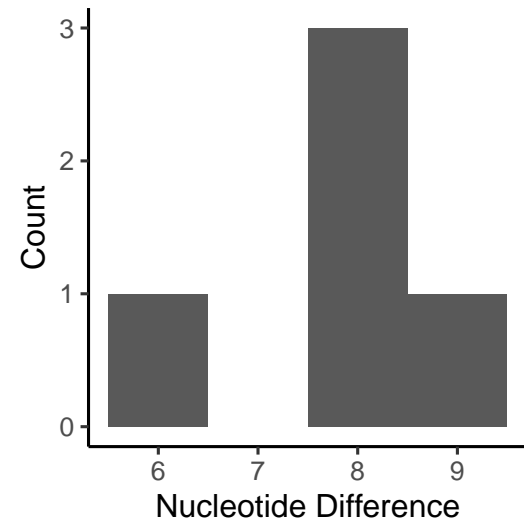
### IGHV2-5\*01

850 sequences assigned  
219 (25.8%) exact matches, in which:  
207 unique CDR3  
6 unique J



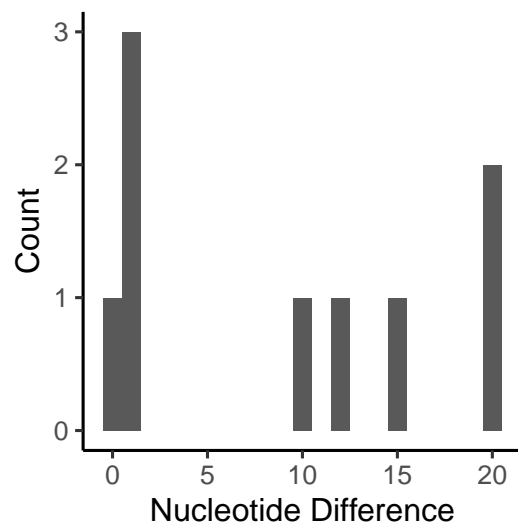
### IGHV2-70\*12

6 sequences assigned  
No exact matches.



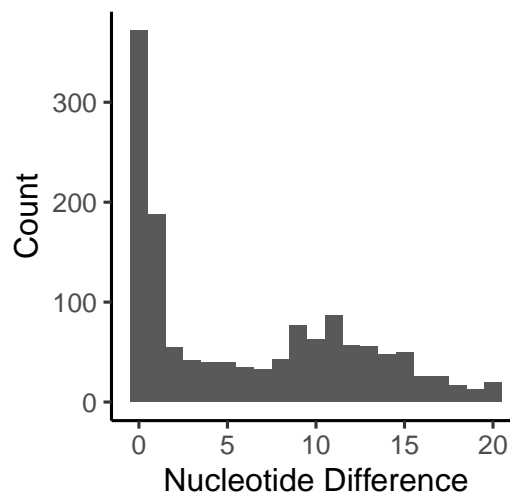
### IGHV1-69D\*01

26 sequences assigned  
1 (3.8%) exact matches, in which:  
1 unique CDR3  
1 unique J



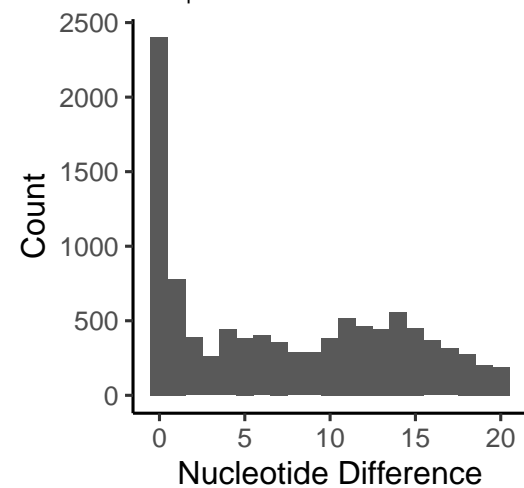
### IGHV2-5\*02

1540 sequences assigned  
372 (24.2%) exact matches, in which:  
345 unique CDR3  
6 unique J



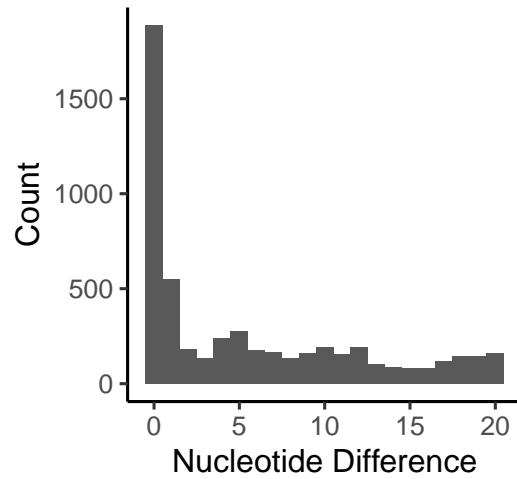
### IGHV3-7\*01

11448 sequences assigned  
2403 (21%) exact matches, in which:  
1943 unique CDR3  
6 unique J



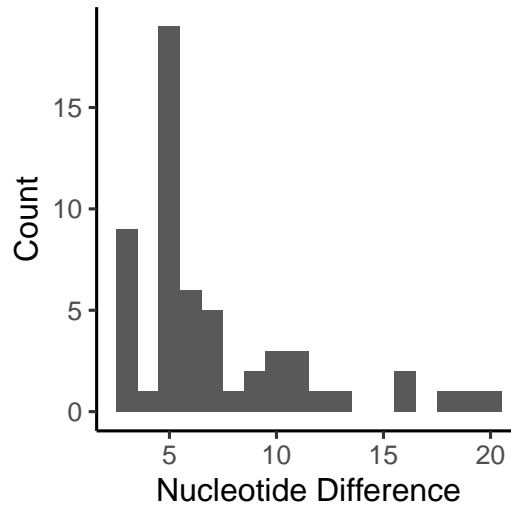
### IGHV3-9\*01

6415 sequences assigned  
1886 (29.4%) exact matches, in which:  
1511 unique CDR3  
6 unique J



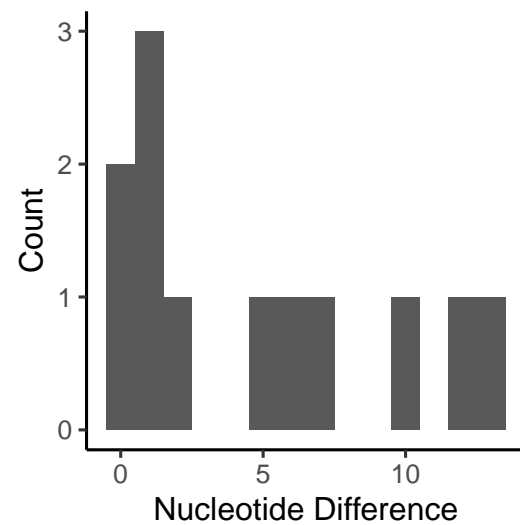
### IGHV3-11\*06

86 sequences assigned  
No exact matches.



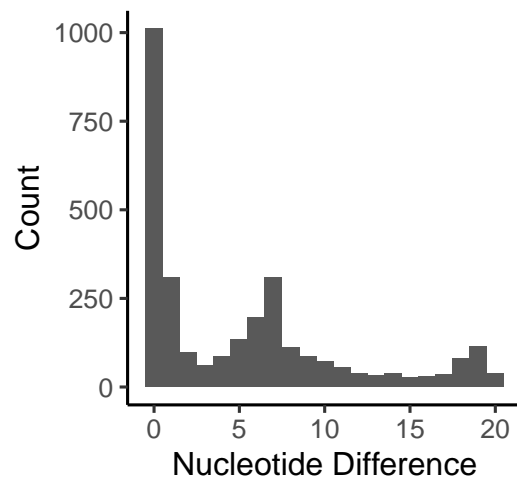
### IGHV3-19\*01

12 sequences assigned  
2 (16.7%) exact matches, in which:  
1 unique CDR3  
1 unique J



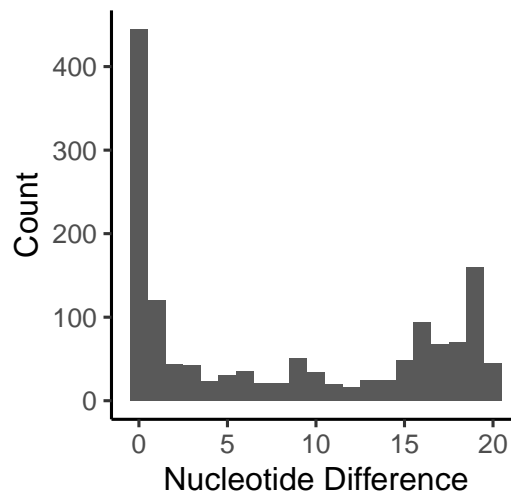
### IGHV3-11\*01

3721 sequences assigned  
1011 (27.2%) exact matches, in which:  
836 unique CDR3  
6 unique J



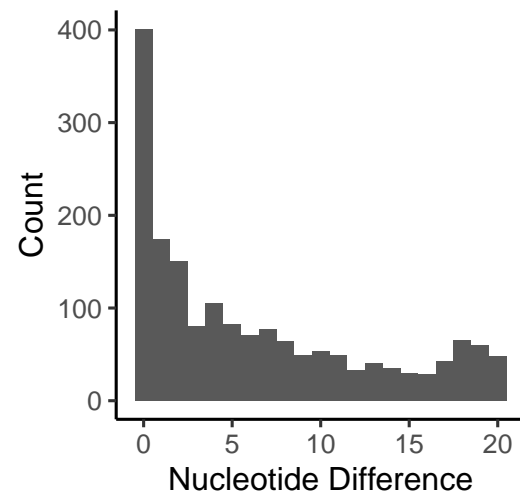
### IGHV3-13\*01

1847 sequences assigned  
445 (24.1%) exact matches, in which:  
358 unique CDR3  
6 unique J



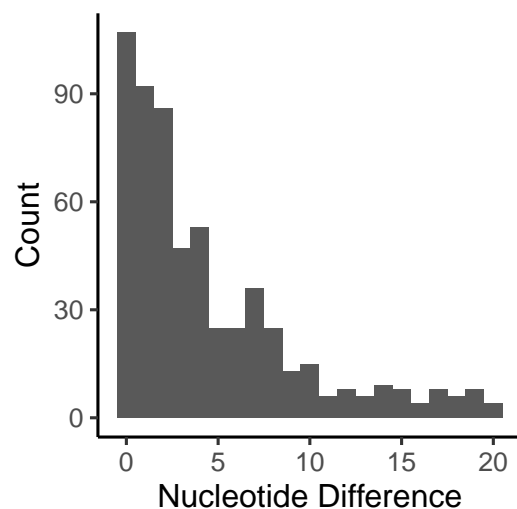
### IGHV3-20\*03\_04\_A104G

2354 sequences assigned  
401 (17%) exact matches, in which:  
338 unique CDR3  
5 unique J



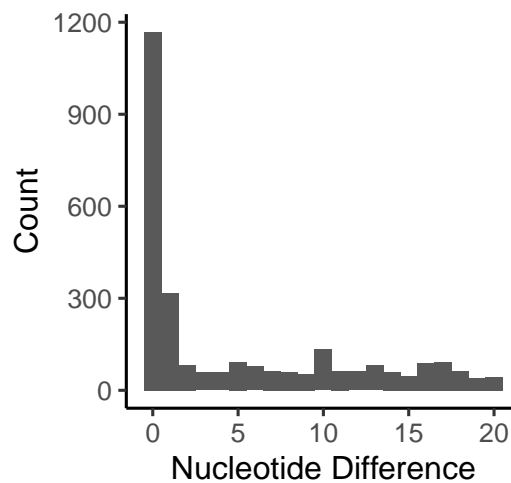
### IGHV3-11\*04

643 sequences assigned  
107 (16.6%) exact matches, in which:  
106 unique CDR3  
6 unique J



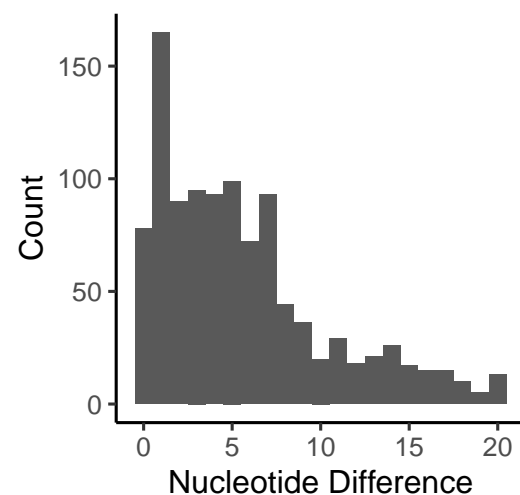
### IGHV3-15\*01\_02

3805 sequences assigned  
1168 (30.7%) exact matches, in which:  
981 unique CDR3  
6 unique J



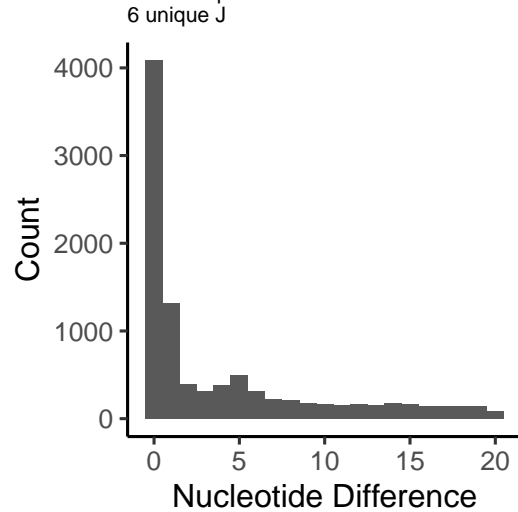
### IGHV3-21\*04

1206 sequences assigned  
78 (6.5%) exact matches, in which:  
77 unique CDR3  
5 unique J



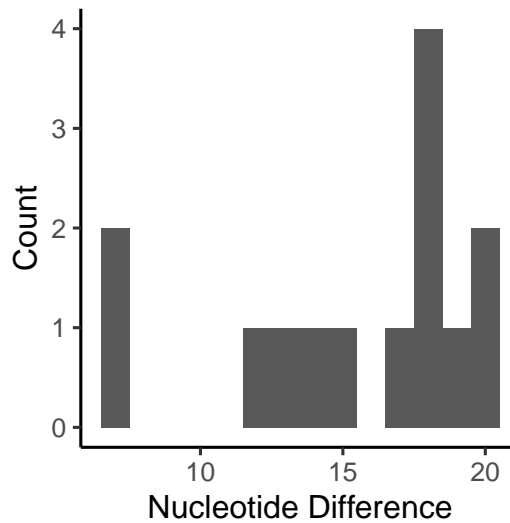
### IGHV3-21\*01\_02

10985 sequences assigned  
4085 (37.2%) exact matches, in which:  
3247 unique CDR3  
6 unique J



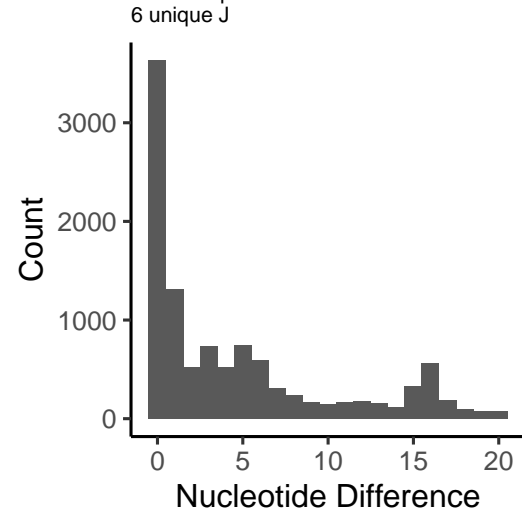
### IGHV3-30-3\*01

27 sequences assigned  
No exact matches.



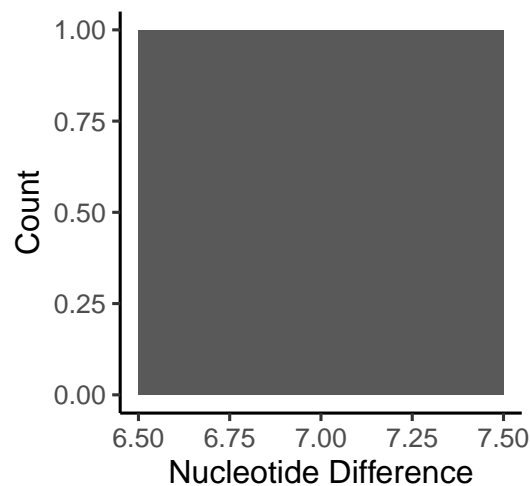
### IGHV3-30\*04\_C203T

11911 sequences assigned  
3632 (30.5%) exact matches, in which:  
2987 unique CDR3  
6 unique J



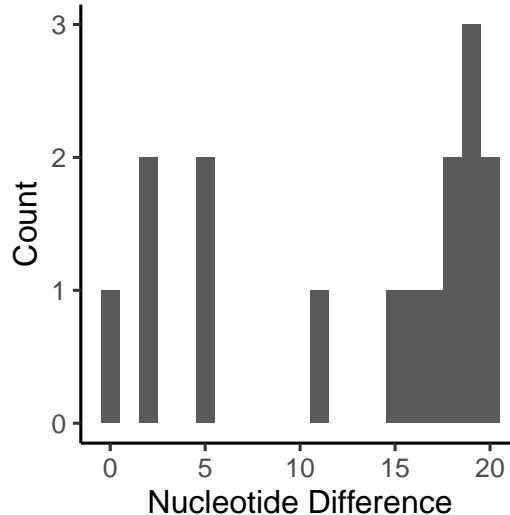
### IGHV3-22\*01\_02

1 sequences assigned  
No exact matches.



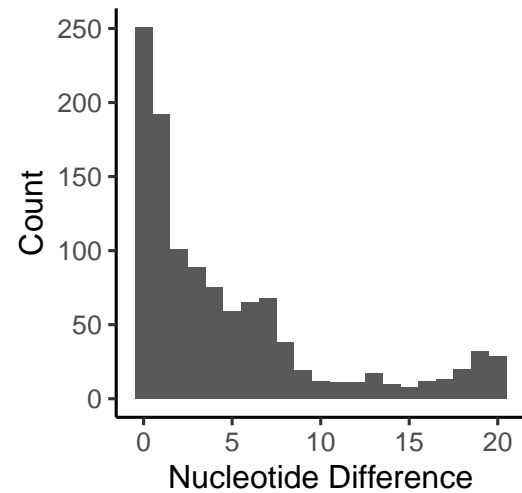
### IGHV3-30-3\*02

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



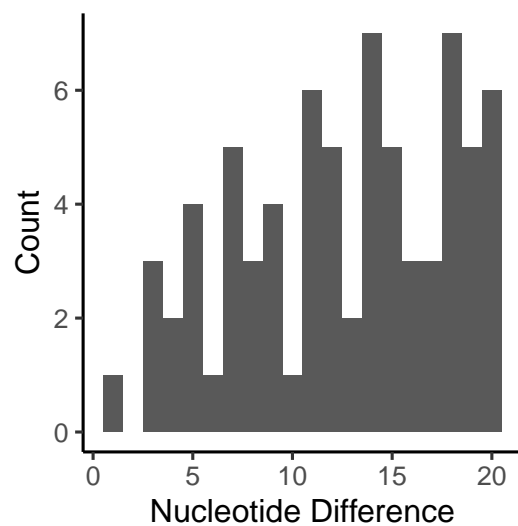
### IGHV3-33\*01

1314 sequences assigned  
251 (19.1%) exact matches, in which:  
242 unique CDR3  
5 unique J



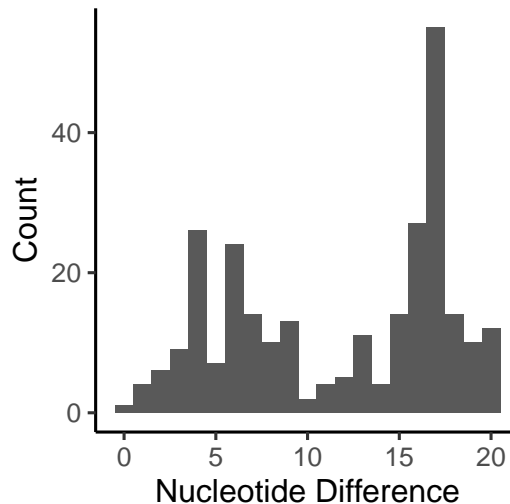
### IGHV3-30-5\*01

229 sequences assigned  
No exact matches.



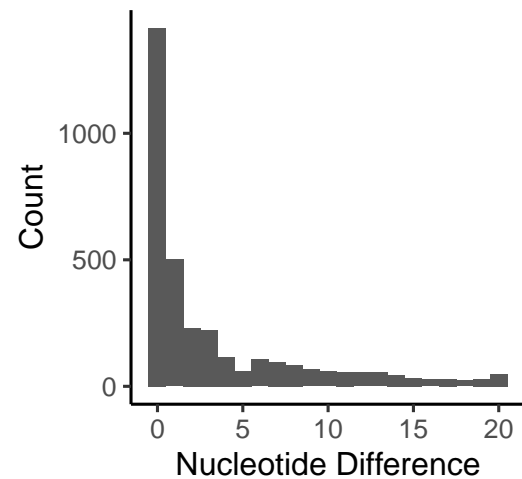
### IGHV3-30-3\*03

508 sequences assigned  
1 (0.2%) exact matches, in which:  
1 unique CDR3  
1 unique J



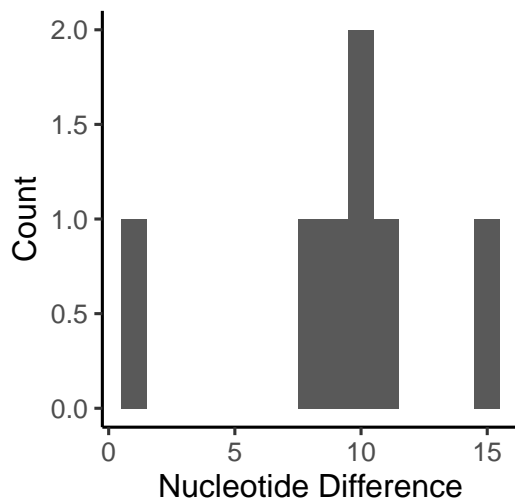
### IGHV3-33\*06

3971 sequences assigned  
1416 (35.7%) exact matches, in which:  
1176 unique CDR3  
6 unique J



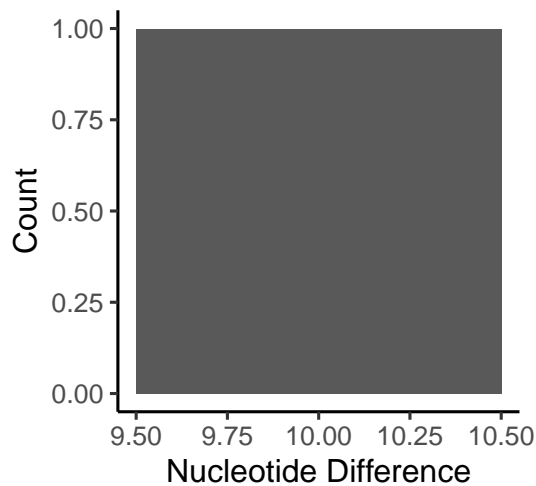
### IGHV3-35\*01

7 sequences assigned  
No exact matches.



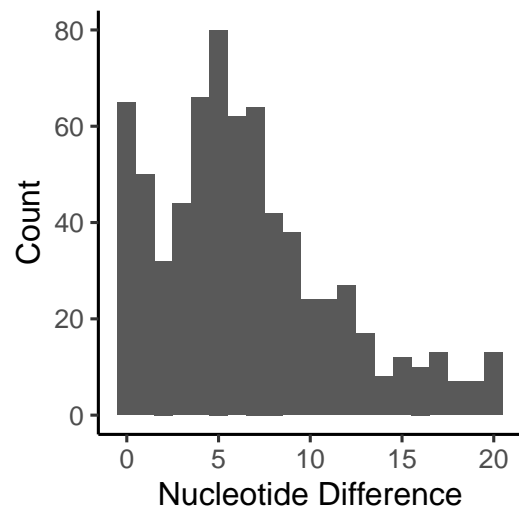
### IGHV3-41\*02

1 sequences assigned  
No exact matches.



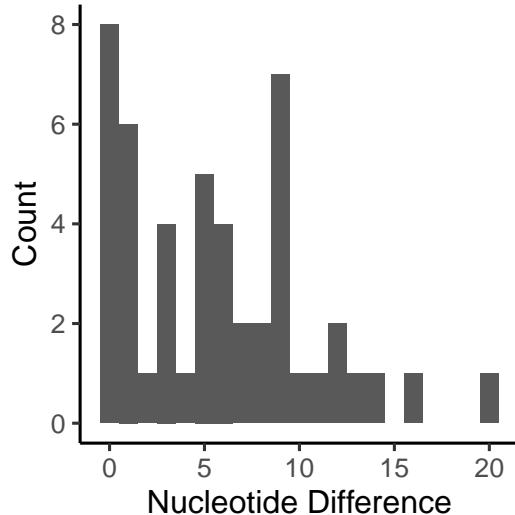
### IGHV3-48\*01

759 sequences assigned  
65 (8.6%) exact matches, in which:  
64 unique CDR3  
6 unique J



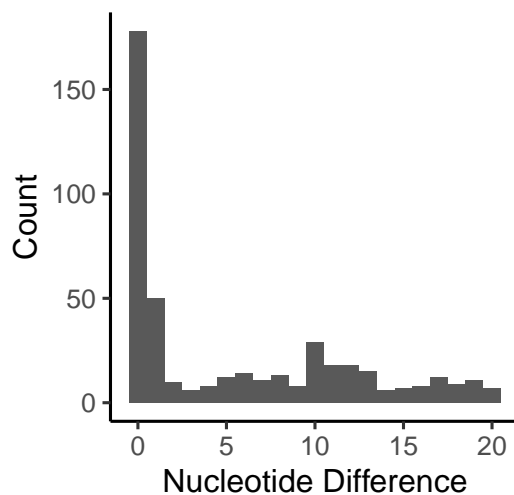
### IGHV3-38-3\*01

48 sequences assigned  
8 (16.7%) exact matches, in which:  
8 unique CDR3  
3 unique J



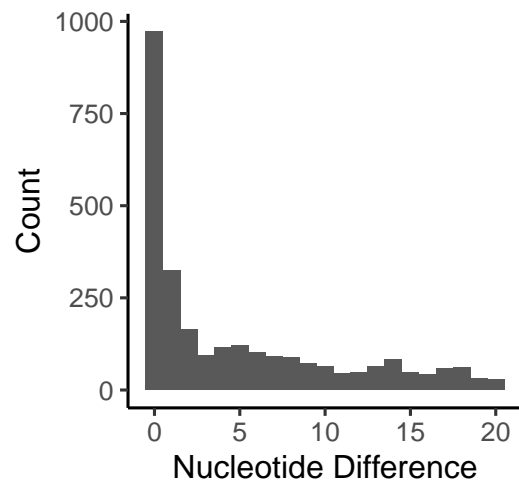
### IGHV3-43\*01

736 sequences assigned  
178 (24.2%) exact matches, in which:  
141 unique CDR3  
6 unique J



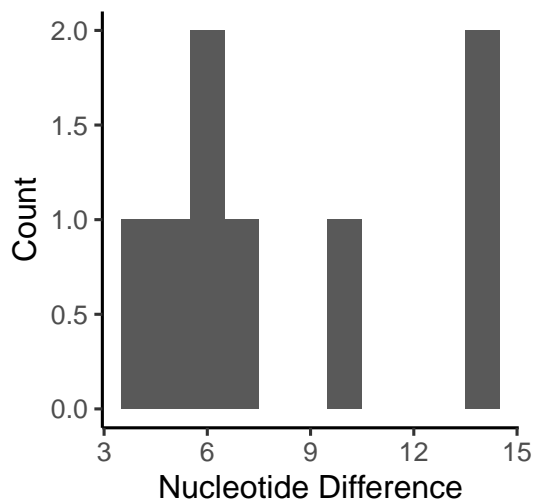
### IGHV3-48\*02

3113 sequences assigned  
972 (31.2%) exact matches, in which:  
798 unique CDR3  
6 unique J



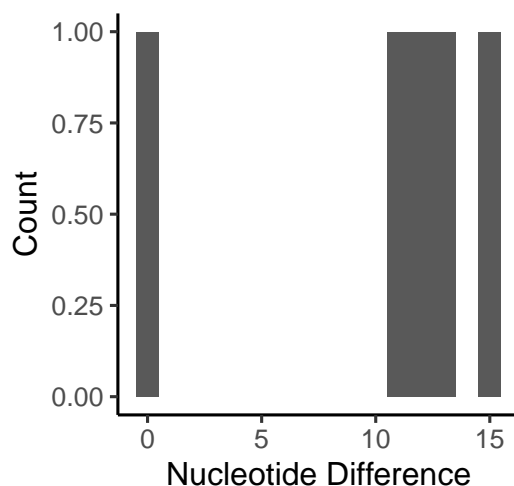
### IGHV3-38\*03

8 sequences assigned  
No exact matches.



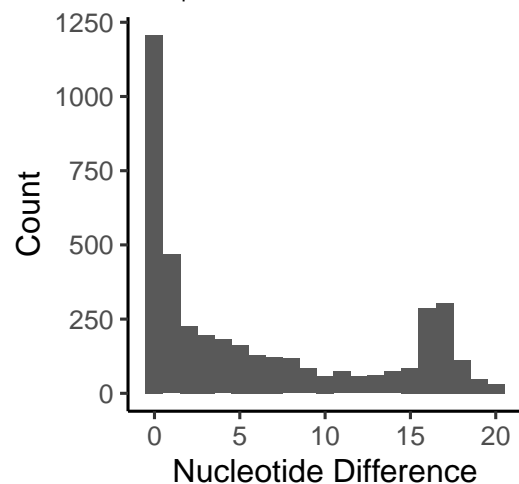
### IGHV3-47\*02

5 sequences assigned  
1 (20%) exact matches, in which:  
1 unique CDR3  
1 unique J



### IGHV3-48\*04

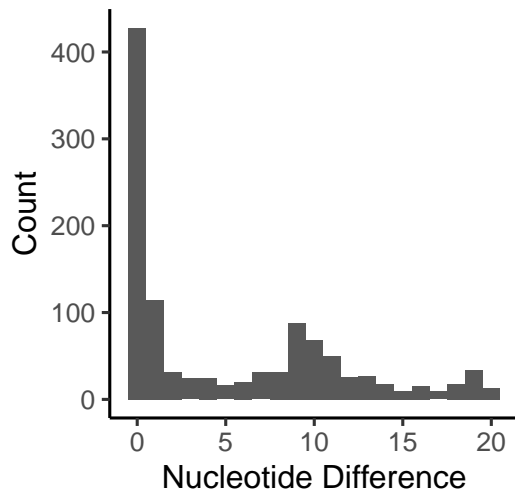
4315 sequences assigned  
1207 (28%) exact matches, in which:  
996 unique CDR3  
6 unique J





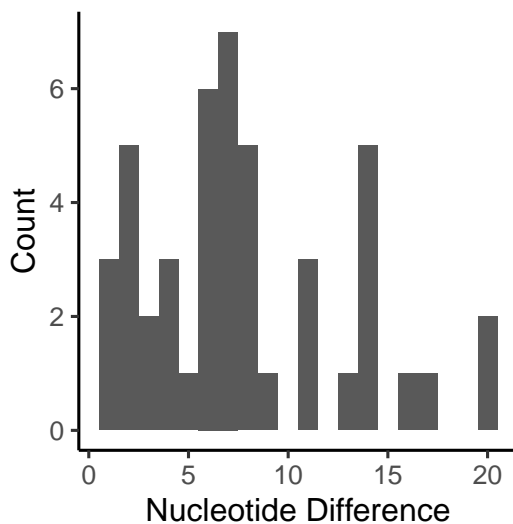
### IGHV3-49\*03\_05

1293 sequences assigned  
428 (33.1%) exact matches, in which:  
368 unique CDR3  
6 unique J



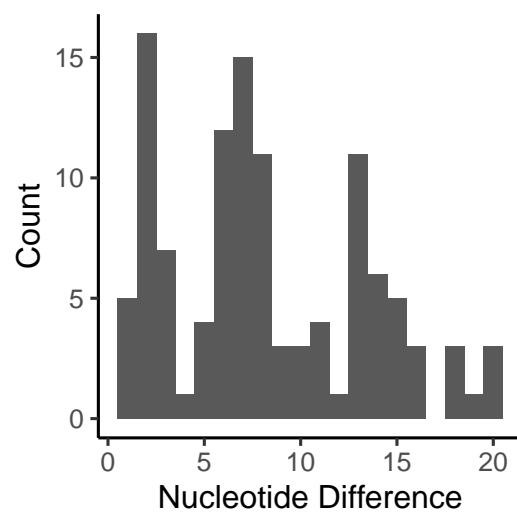
### IGHV3-53\*05

75 sequences assigned  
No exact matches.



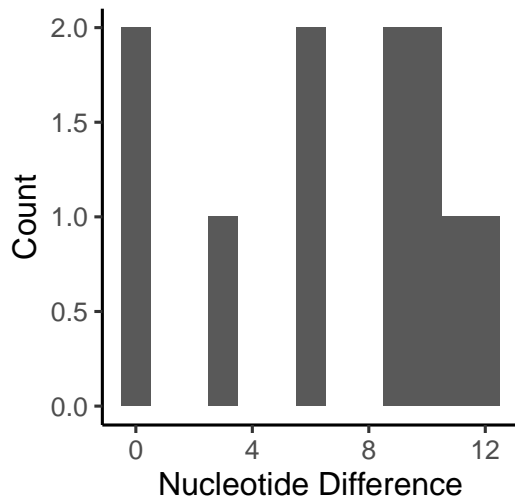
### IGHV3-66\*01

129 sequences assigned  
No exact matches.



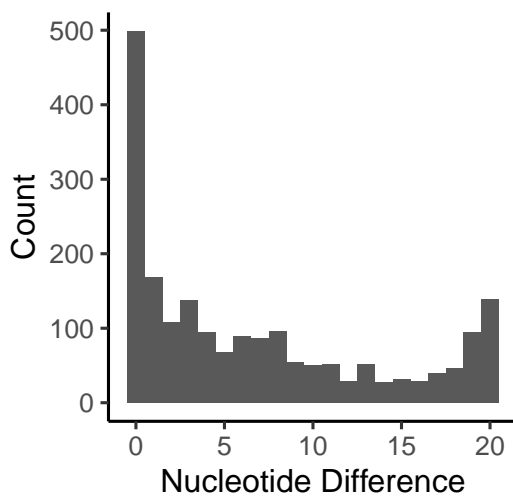
### IGHV3-52\*01\_03

11 sequences assigned  
2 (18.2%) exact matches, in which:  
1 unique CDR3  
1 unique J



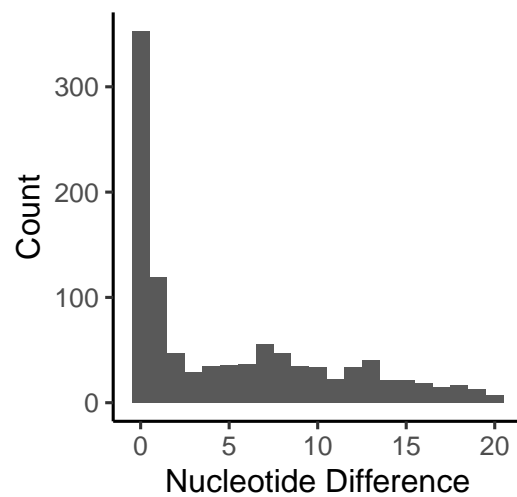
### IGHV3-53\*01\_02

2607 sequences assigned  
499 (19.1%) exact matches, in which:  
420 unique CDR3  
6 unique J



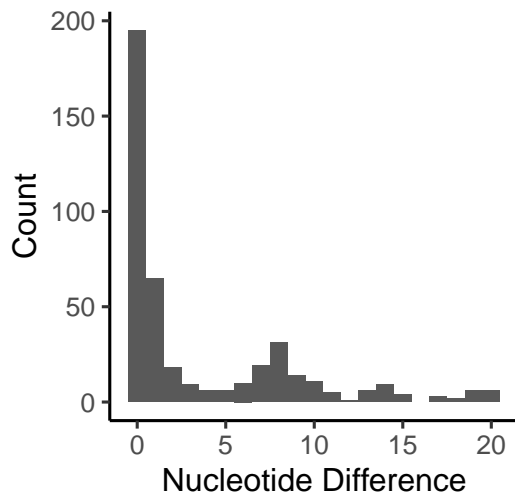
### IGHV3-66\*02

1210 sequences assigned  
353 (29.2%) exact matches, in which:  
291 unique CDR3  
6 unique J



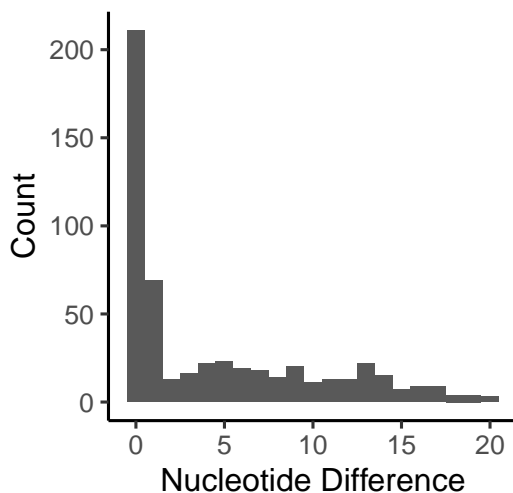
### IGHV3-53\*04

511 sequences assigned  
195 (38.2%) exact matches, in which:  
167 unique CDR3  
6 unique J



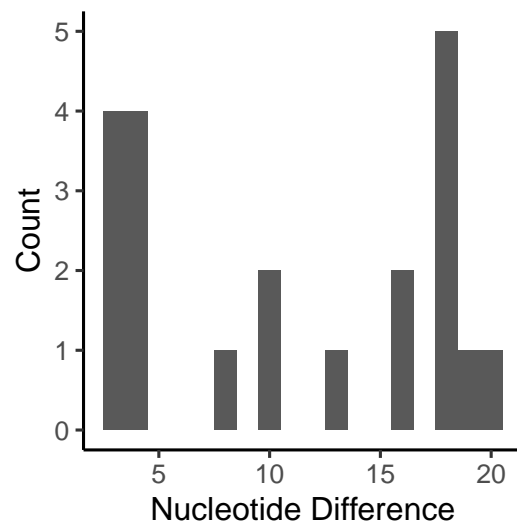
### IGHV3-64\*01

712 sequences assigned  
211 (29.6%) exact matches, in which:  
168 unique CDR3  
5 unique J



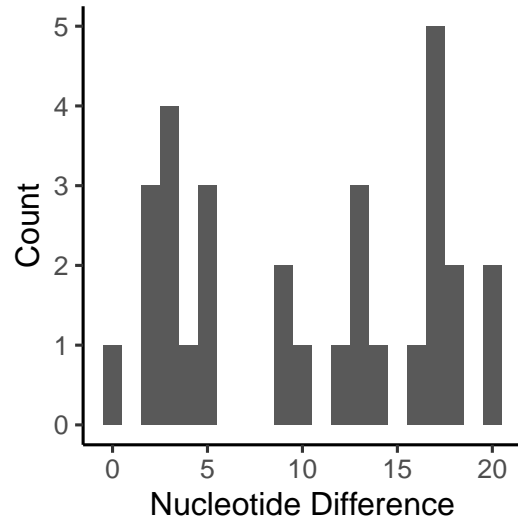
### IGHV3-66\*03

31 sequences assigned  
No exact matches.



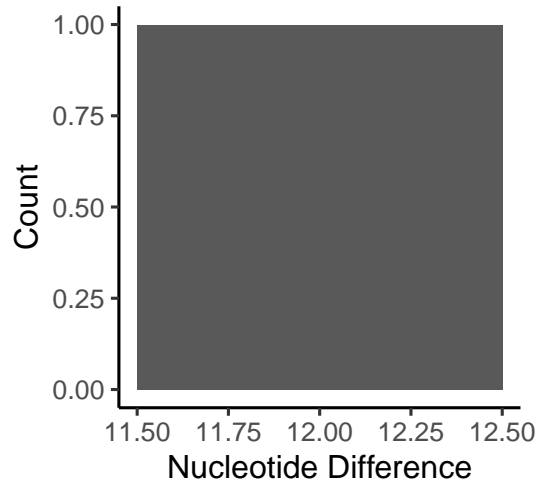
### IGHV3-69-1\*01

36 sequences assigned  
1 (2.8%) exact matches, in which:  
1 unique CDR3  
1 unique J



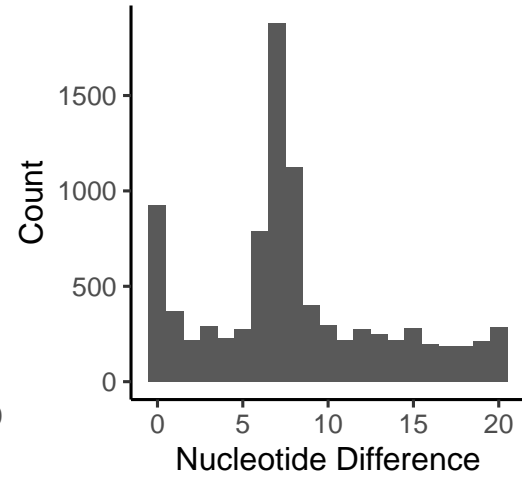
### IGHV3-71\*01\_04

1 sequences assigned  
No exact matches.



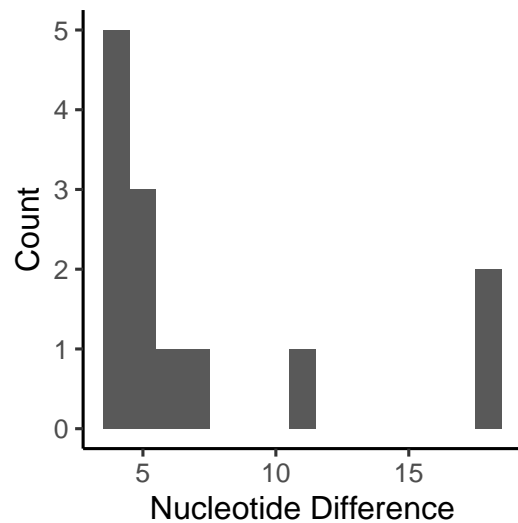
### IGHV3-74\*01\_02

10943 sequences assigned  
925 (8.5%) exact matches, in which:  
743 unique CDR3  
6 unique J



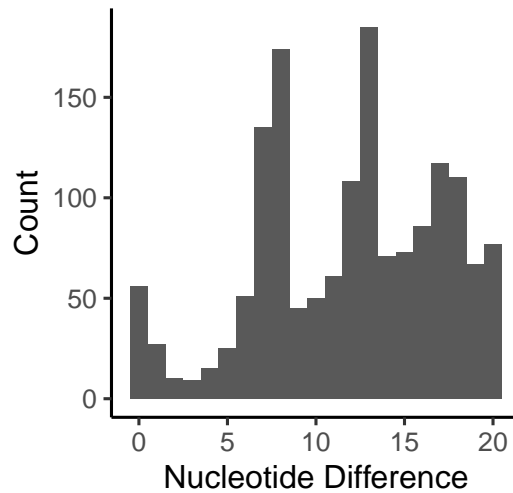
### IGHV3-69-1\*02

24 sequences assigned  
No exact matches.



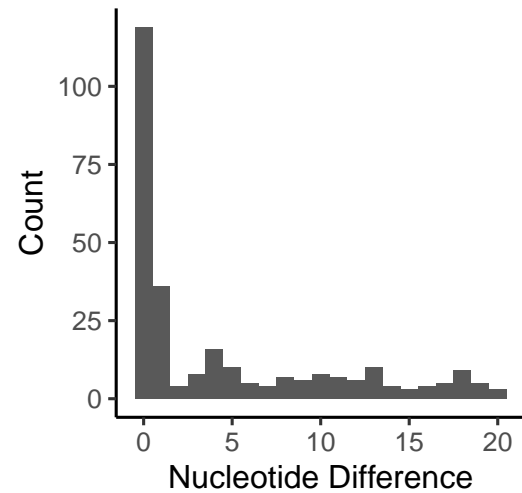
### IGHV3-72\*01

1856 sequences assigned  
56 (3%) exact matches, in which:  
49 unique CDR3  
4 unique J



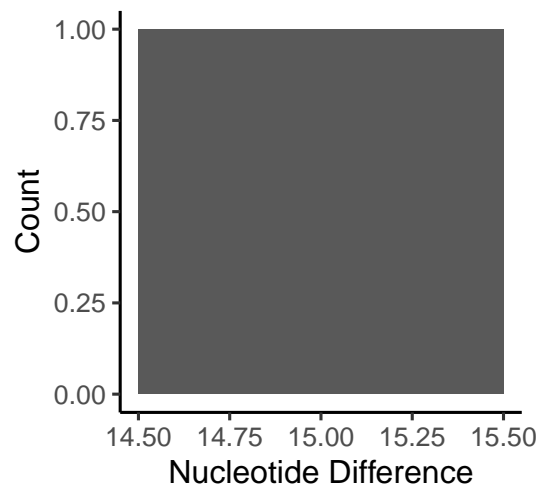
### IGHV3-43D\*03

314 sequences assigned  
119 (37.9%) exact matches, in which:  
95 unique CDR3  
5 unique J



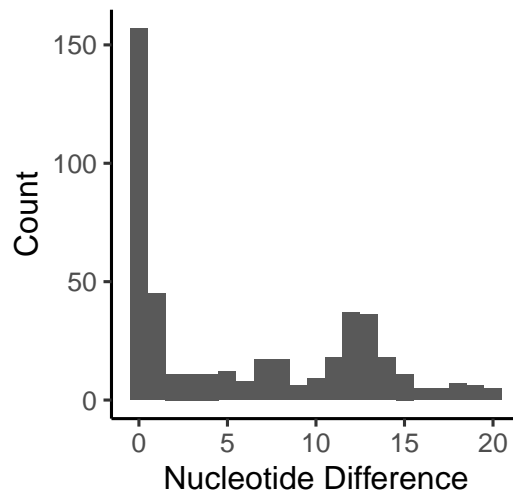
### IGHV3-71\*03

1 sequences assigned  
No exact matches.



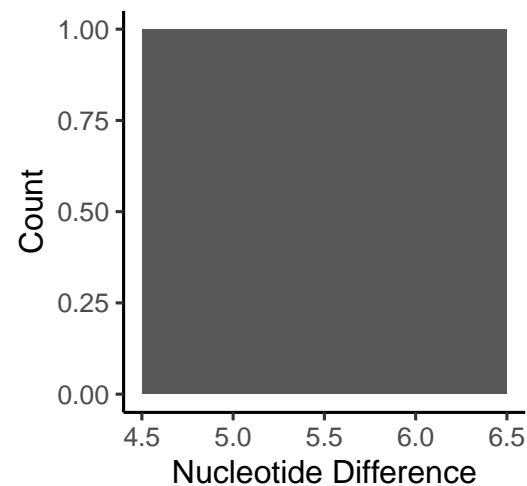
### IGHV3-73\*01\_02

473 sequences assigned  
157 (33.2%) exact matches, in which:  
133 unique CDR3  
6 unique J



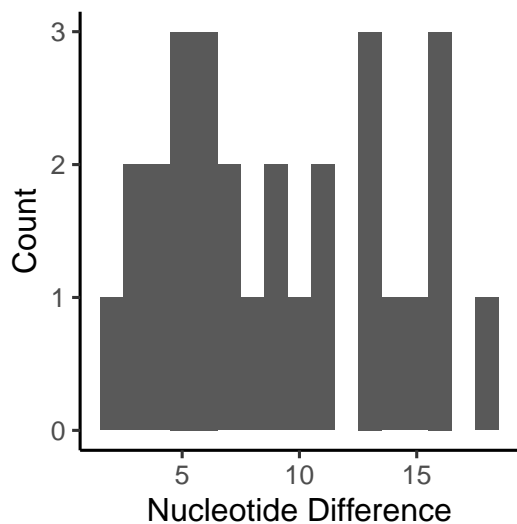
### IGHV3-64D\*06

12 sequences assigned  
No exact matches.



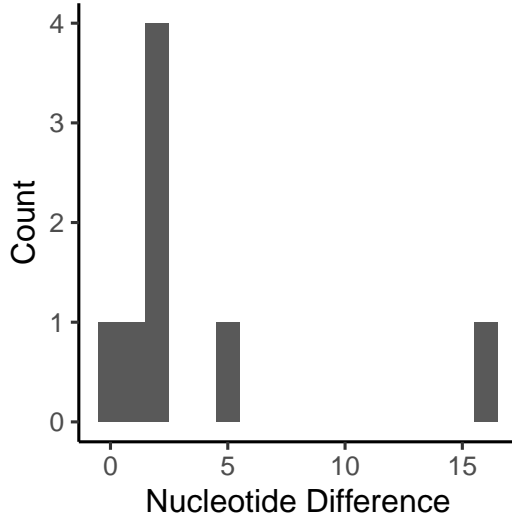
### IGHV3–NL1\*01

40 sequences assigned  
No exact matches.



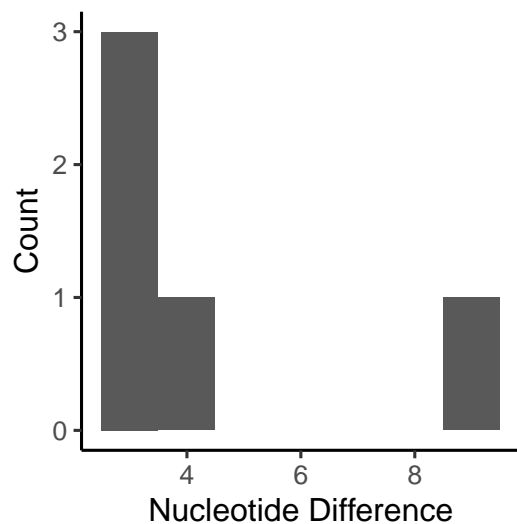
### IGHV4–28\*02\_05

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



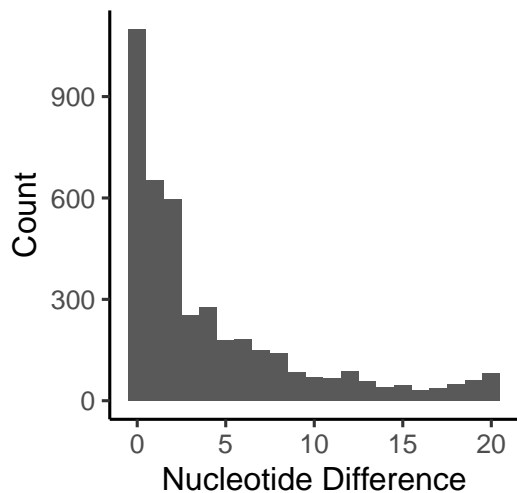
### IGHV4–30–2\*04

5 sequences assigned  
No exact matches.



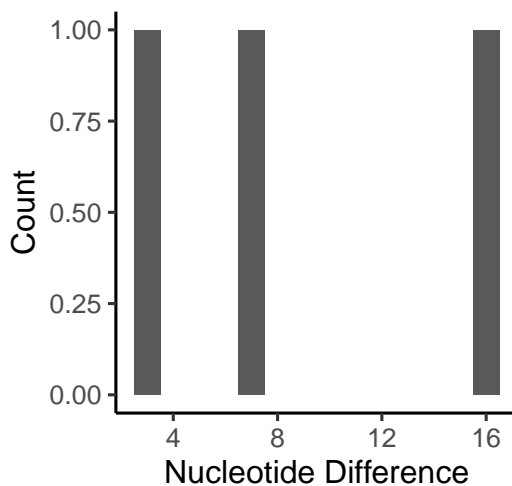
### IGHV4–4\*07

5130 sequences assigned  
1100 (21.4%) exact matches, in which:  
1051 unique CDR3  
6 unique J



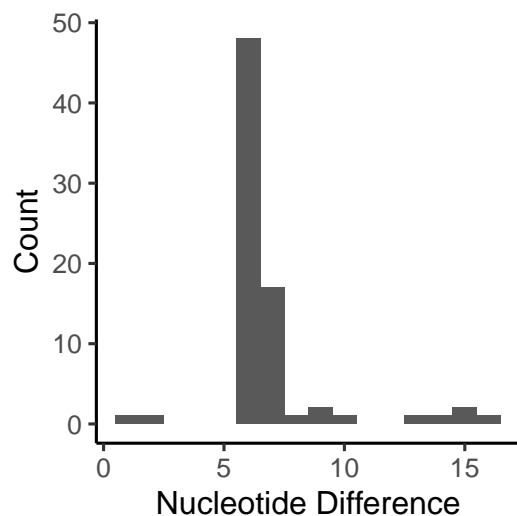
### IGHV4–30–4\*01

9 sequences assigned  
No exact matches.



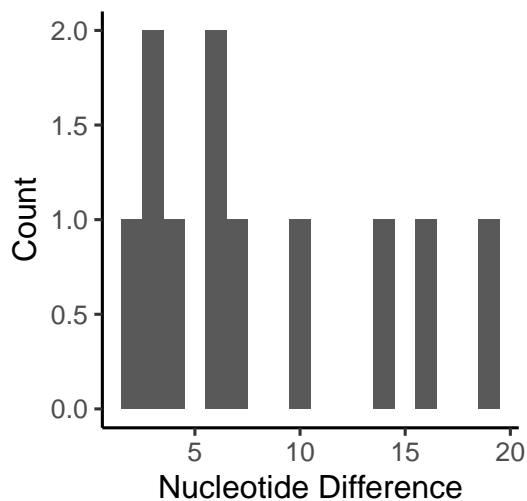
### IGHV4–30–4\*07

78 sequences assigned  
No exact matches.



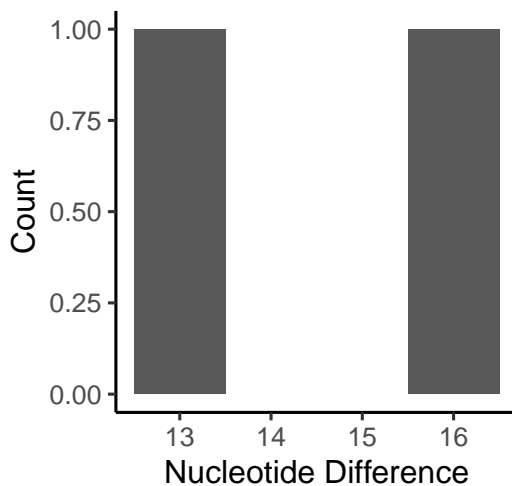
### IGHV4–28\*03

15 sequences assigned  
No exact matches.



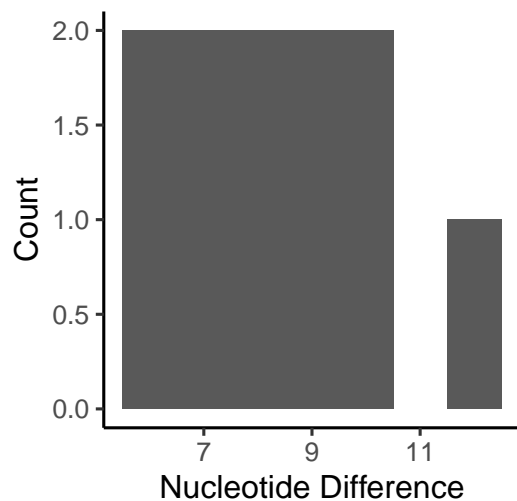
### IGHV4–30–2\*03

6 sequences assigned  
No exact matches.



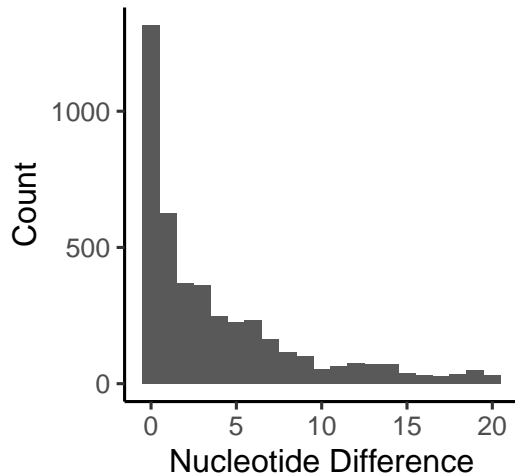
### IGHV4–30–4\*08

25 sequences assigned  
No exact matches.



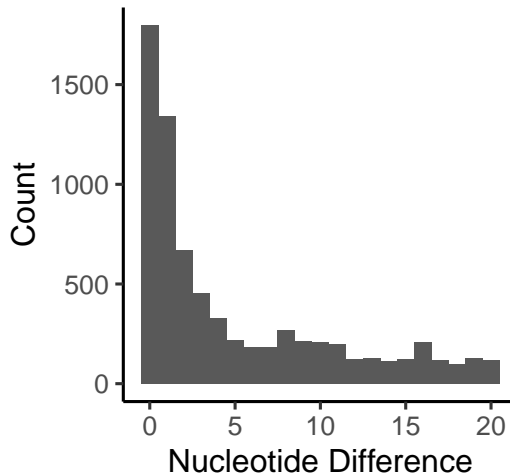
### IGHV4-31\*03\_04

5049 sequences assigned  
1315 (26%) exact matches, in which:  
1240 unique CDR3  
6 unique J



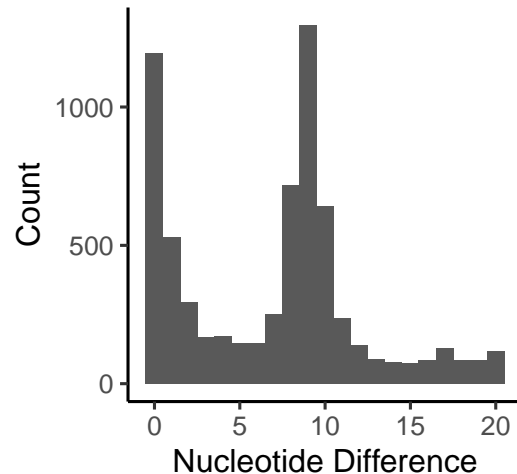
### IGHV4-39\*07

8315 sequences assigned  
1797 (21.6%) exact matches, in which:  
1683 unique CDR3  
6 unique J



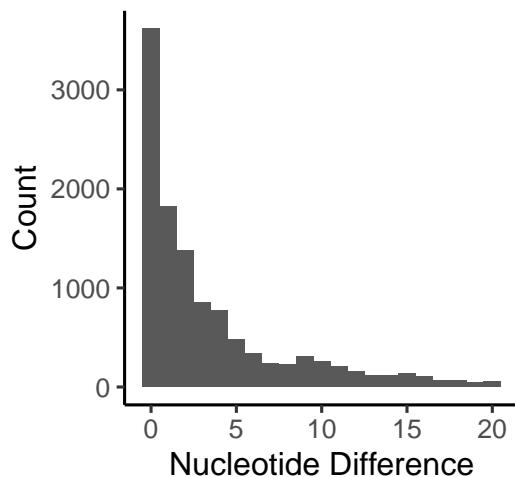
### IGHV4-59\*08

7680 sequences assigned  
1194 (15.5%) exact matches, in which:  
1137 unique CDR3  
6 unique J



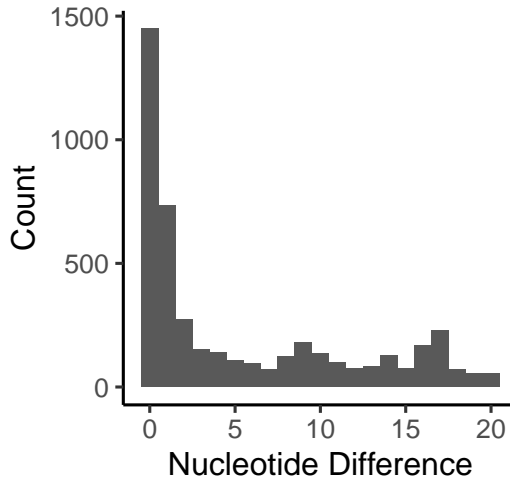
### IGHV4-34\*01\_02

13098 sequences assigned  
3617 (27.6%) exact matches, in which:  
3369 unique CDR3  
6 unique J



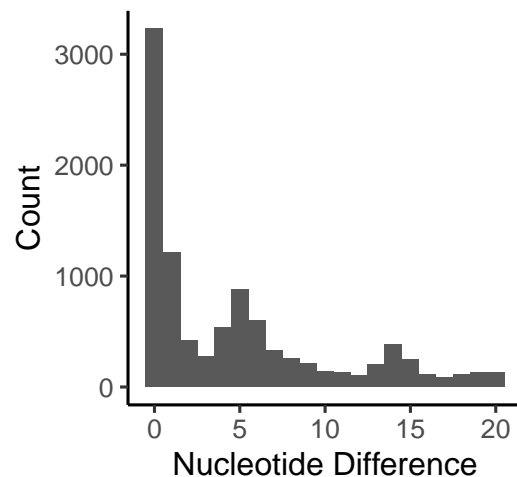
### IGHV4-39\*01\_05

5183 sequences assigned  
1449 (28%) exact matches, in which:  
1352 unique CDR3  
6 unique J



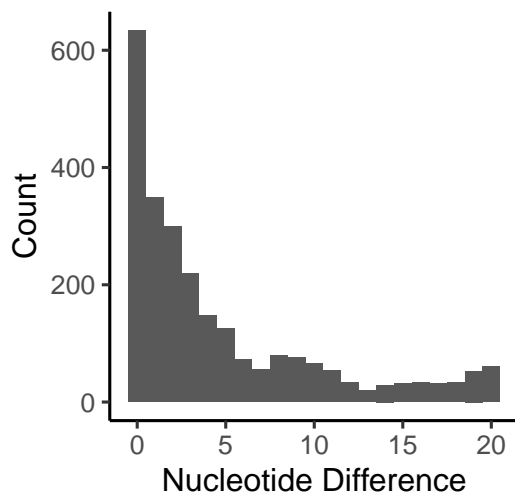
### IGHV4-59\*01\_07

11102 sequences assigned  
3230 (29.1%) exact matches, in which:  
2981 unique CDR3  
6 unique J



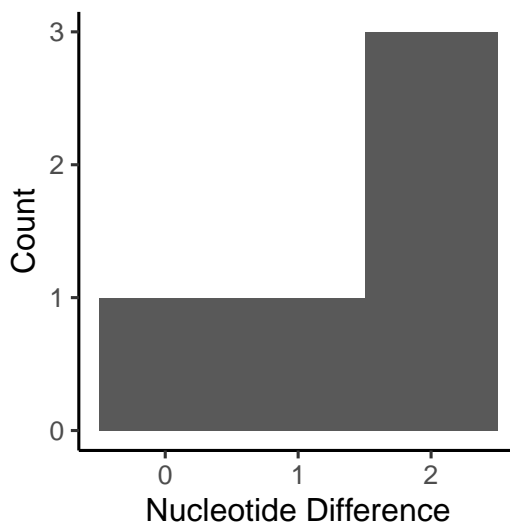
### IGHV4-38-2\*02

2871 sequences assigned  
634 (22.1%) exact matches, in which:  
615 unique CDR3  
6 unique J



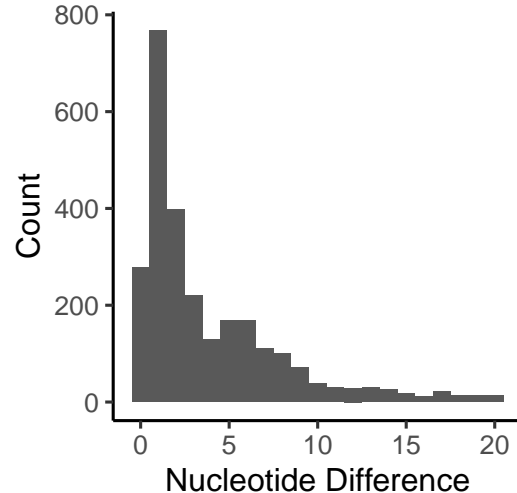
### IGHV4-55\*02\_04\_08

6 sequences assigned  
1 (16.7%) exact matches, in which:  
1 unique CDR3  
1 unique J



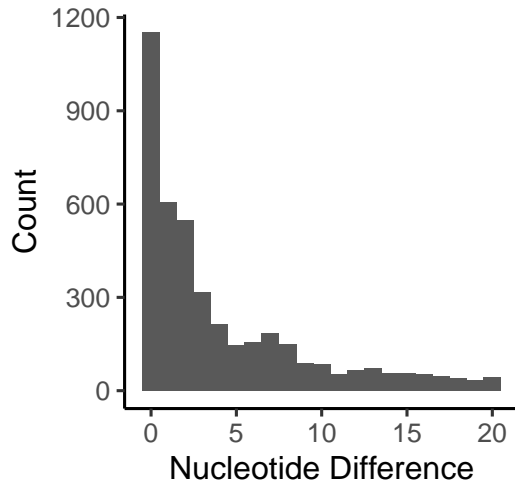
### IGHV4-59\*12

2908 sequences assigned  
278 (9.6%) exact matches, in which:  
275 unique CDR3  
6 unique J



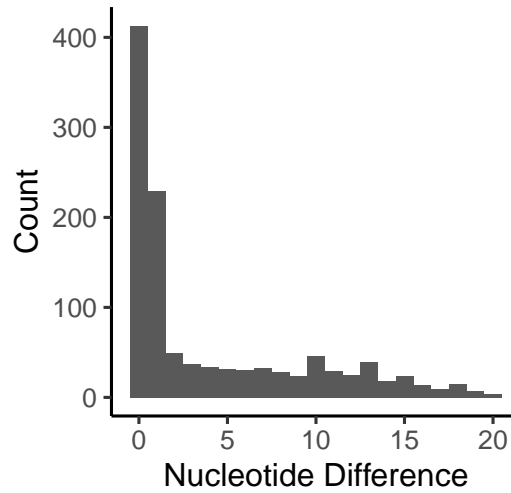
### IGHV4-61\*02

4900 sequences assigned  
1152 (23.5%) exact matches, in which:  
1104 unique CDR3  
6 unique J



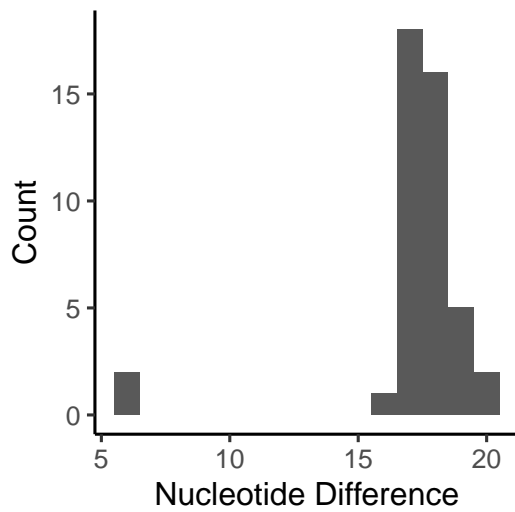
### IGHV6-1\*01\_02

1223 sequences assigned  
413 (33.8%) exact matches, in which:  
402 unique CDR3  
6 unique J



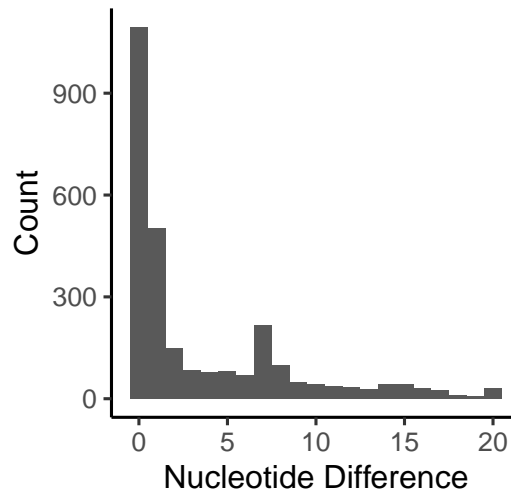
### IGHV5-10-1\*01\_03

47 sequences assigned  
No exact matches.



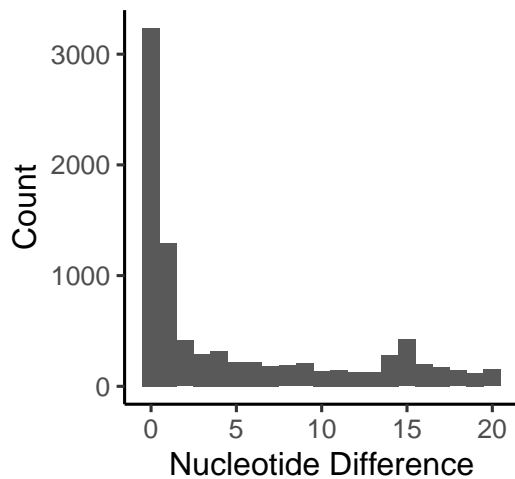
### IGHV7-4-1\*02

3393 sequences assigned  
1095 (32.3%) exact matches, in which:  
1050 unique CDR3  
6 unique J



### IGHV5-51\*01\_03

10220 sequences assigned  
3236 (31.7%) exact matches, in which:  
2663 unique CDR3  
6 unique J





Warning - no inferred sequences found.

Novel sequence(s) IGHV1-69\*04\_09\_G112A IGHV4-59\*02\_G88A IGHV5-10-1\*01\_03\_T258C IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Warning - no inferred sequences found.

Novel sequence(s) IGHV1-69\*08\_C191T IGHV3-48\*03\_T303G IGHV4-59\*02\_G88A IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Warning - no inferred sequences found.

Warning - no inferred sequences found.

Novel sequence(s) IGHV3-30\*03\_T288C IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Warning: IGHV4-31\*02, IGHV4-31\*03\_04 have identical germline sequences.

Novel sequence(s) IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Novel sequence(s) IGHV1-69\*04\_09\_G112A are not listed in the genotype and will be ignored.

Novel sequence(s) IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Warning - no inferred sequences found.

Novel sequence(s) IGHV1-69\*08\_C191T IGHV3-30\*03\_T288C IGHV3-30-3\*02\_G75C IGHV4-59\*02\_G88A IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Novel sequence(s) IGHV4-59\*02\_G88A IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Novel sequence(s) IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Novel sequence(s) IGHV4-4\*02\_03\_C300T IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Novel sequence(s) IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Warning - no inferred sequences found.

Novel sequence(s) IGHV4-59\*02\_G88A are not listed in the genotype and will be ignored.

Novel sequence(s) IGHV1-69\*08\_C191T IGHV3-11\*06\_T300C IGHV3-30\*03\_T288C IGHV4-59\*02\_G88A IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Novel sequence(s) IGHV4-59\*02\_G88A IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Novel sequence(s) IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Warning - no inferred sequences found.

Warning - no inferred sequences found.

Novel sequence(s) IGHV3-30\*03\_T288C IGHV3-30-3\*01\_T288C IGHV4-59\*02\_G88A IGHV5-10-1\*01\_03\_T258C IGHV5-51\*07\_A128G are not listed in the genotype and will be ignored.

Warning - no inferred sequences found.

Novel sequence(s) IGHV3-48\*04\_A193T\_C198T\_A200C\_C201T\_T210A are not listed in the genotype and will be ignored.