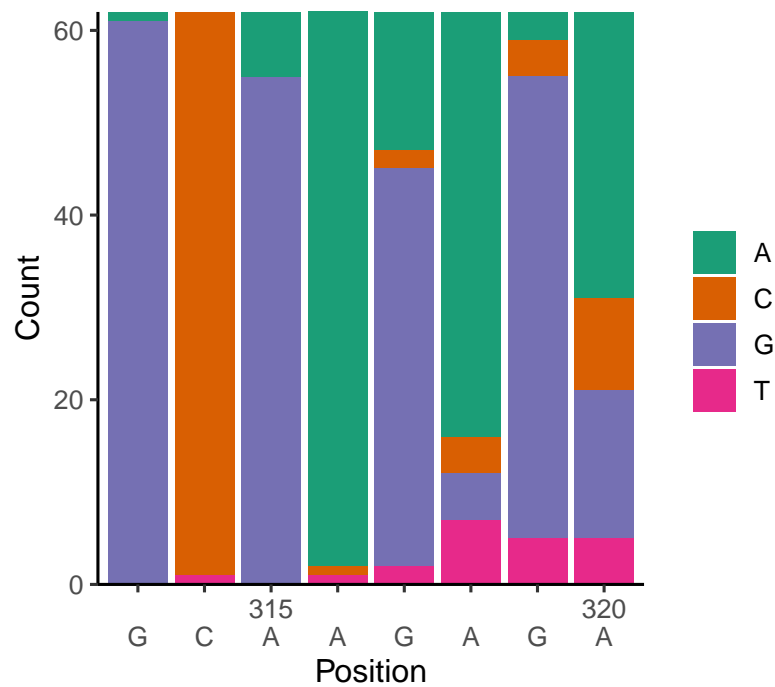
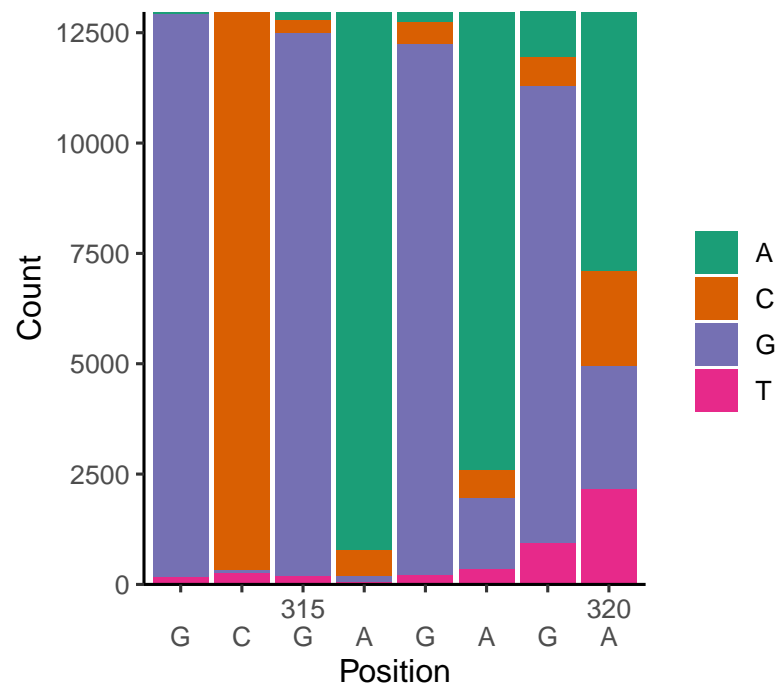


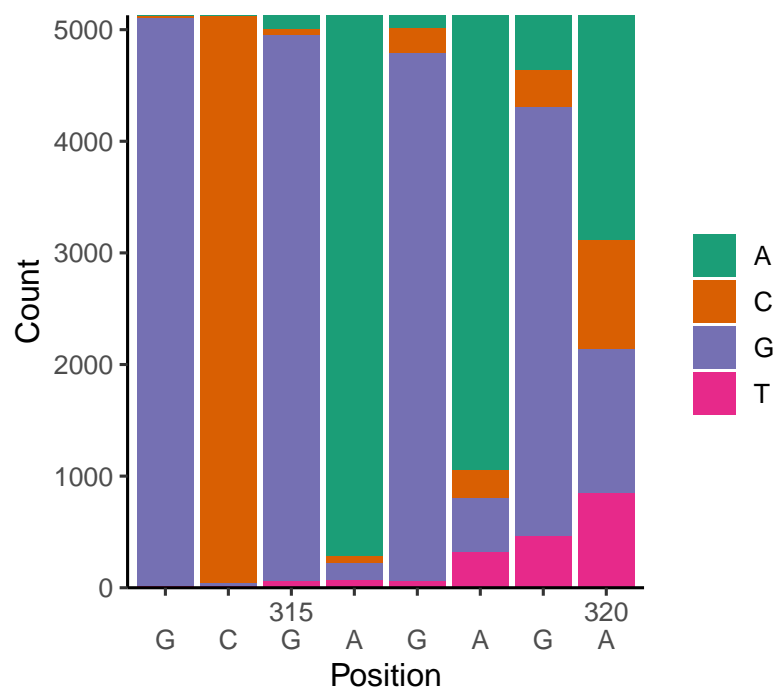
Gene IGHV3-13*01_A243C_T246C_C258



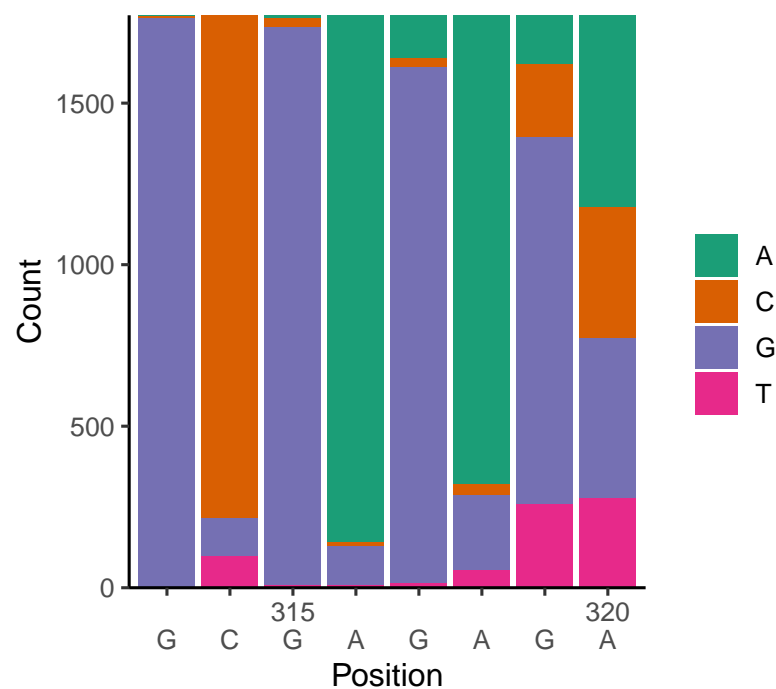
Gene IGHV1-18*01_A190G



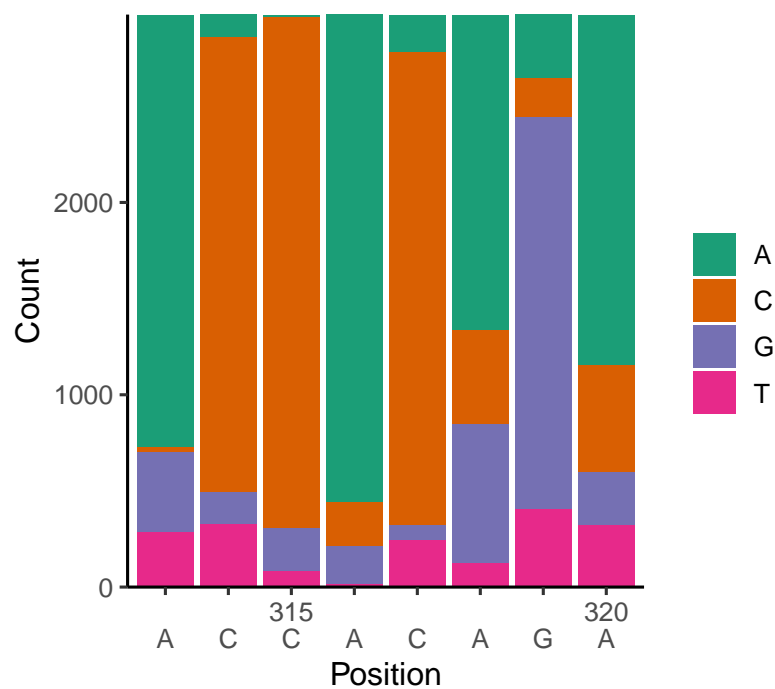
Gene IGHV1-69*10_A244G



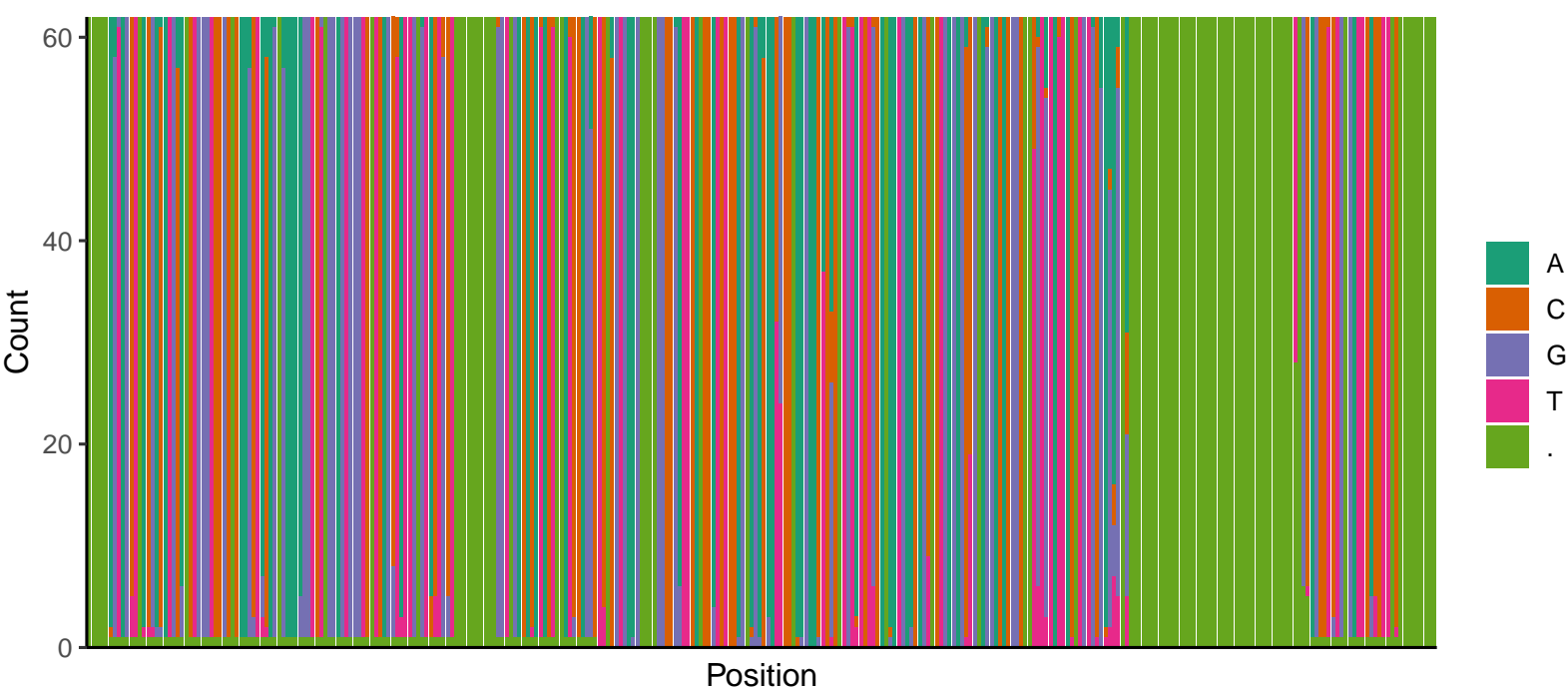
Gene IGHV4-31*02_C198T



Gene IGHV3-15*07_C159T



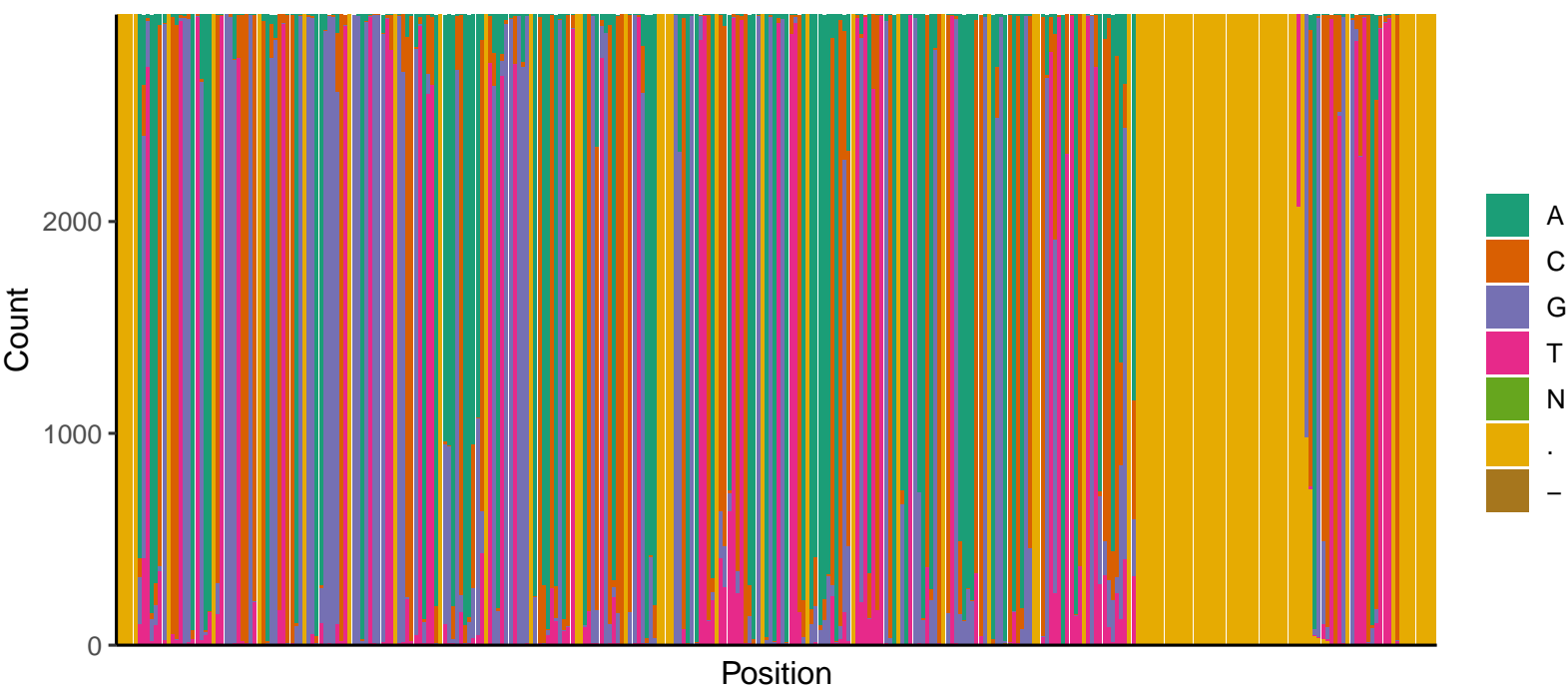
Gene IGHV3-13*01_A243C_T246C_C258A_T259C_T267G_G290A



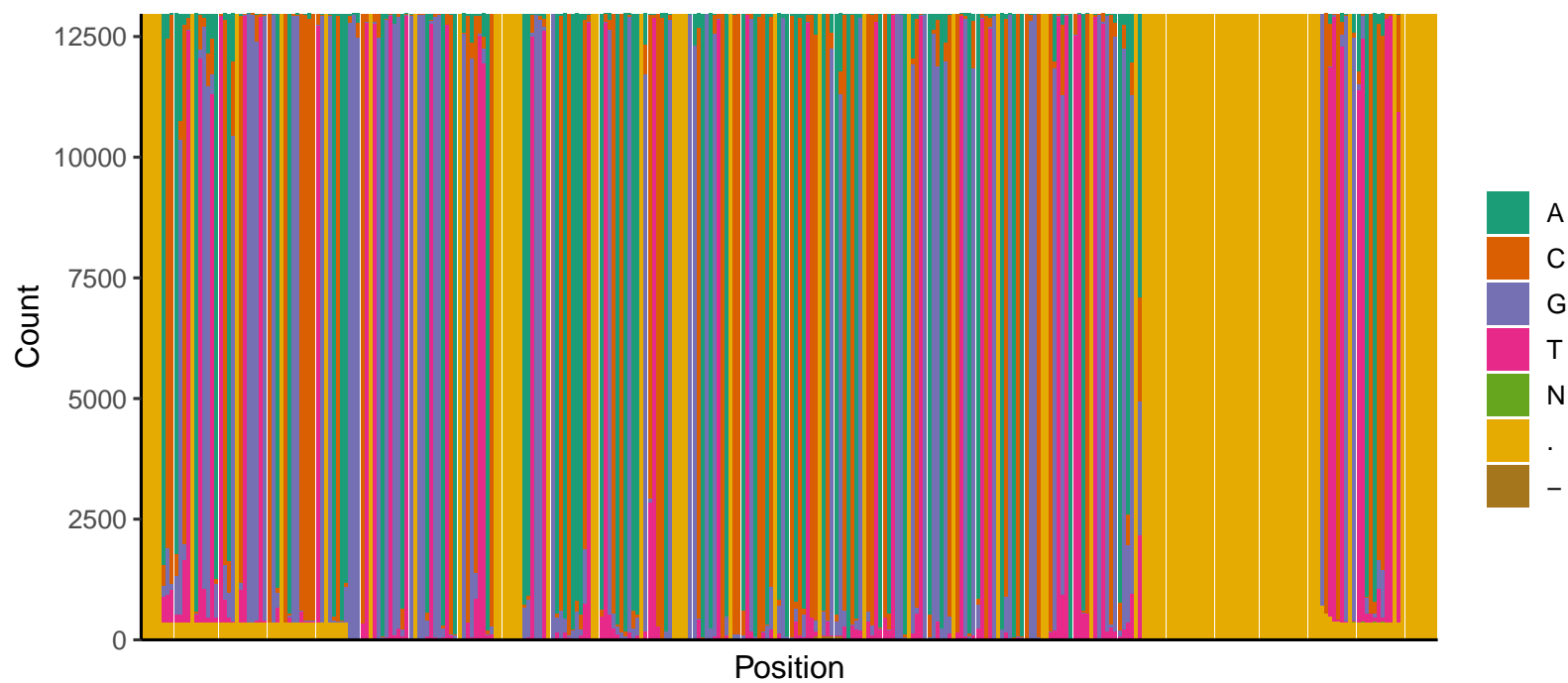
Gene IGHV1-69*10_A244G



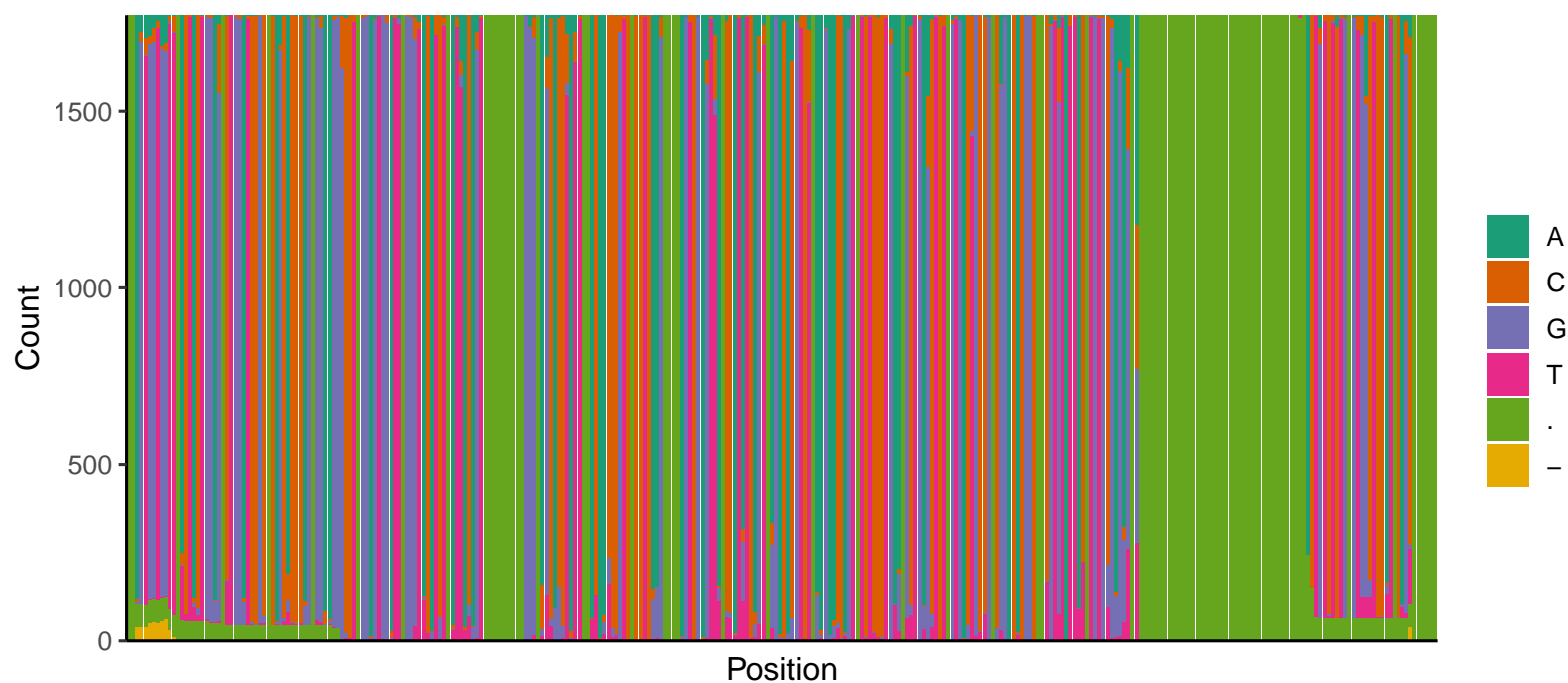
Gene IGHV3-15*07_C159T



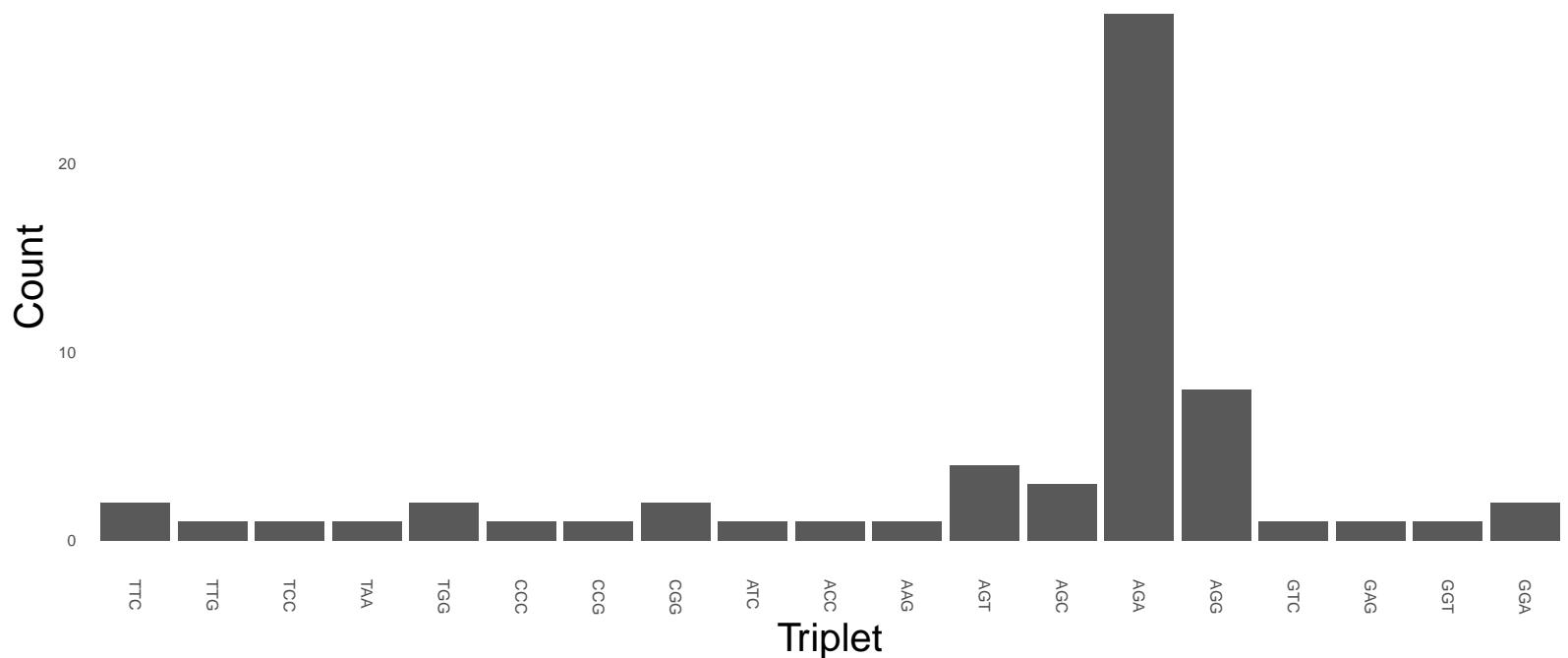
Gene IGHV1-18*01_A190G



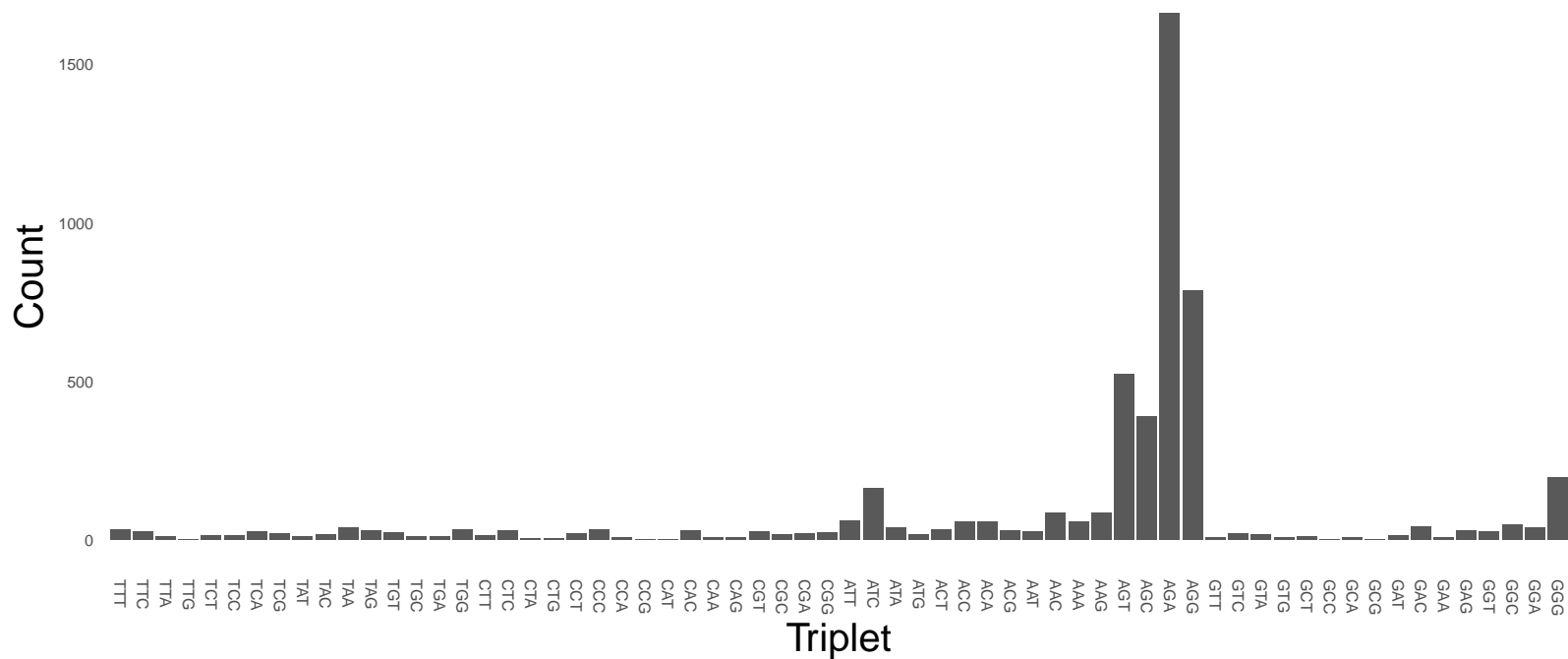
Gene IGHV4-31*02_C198T



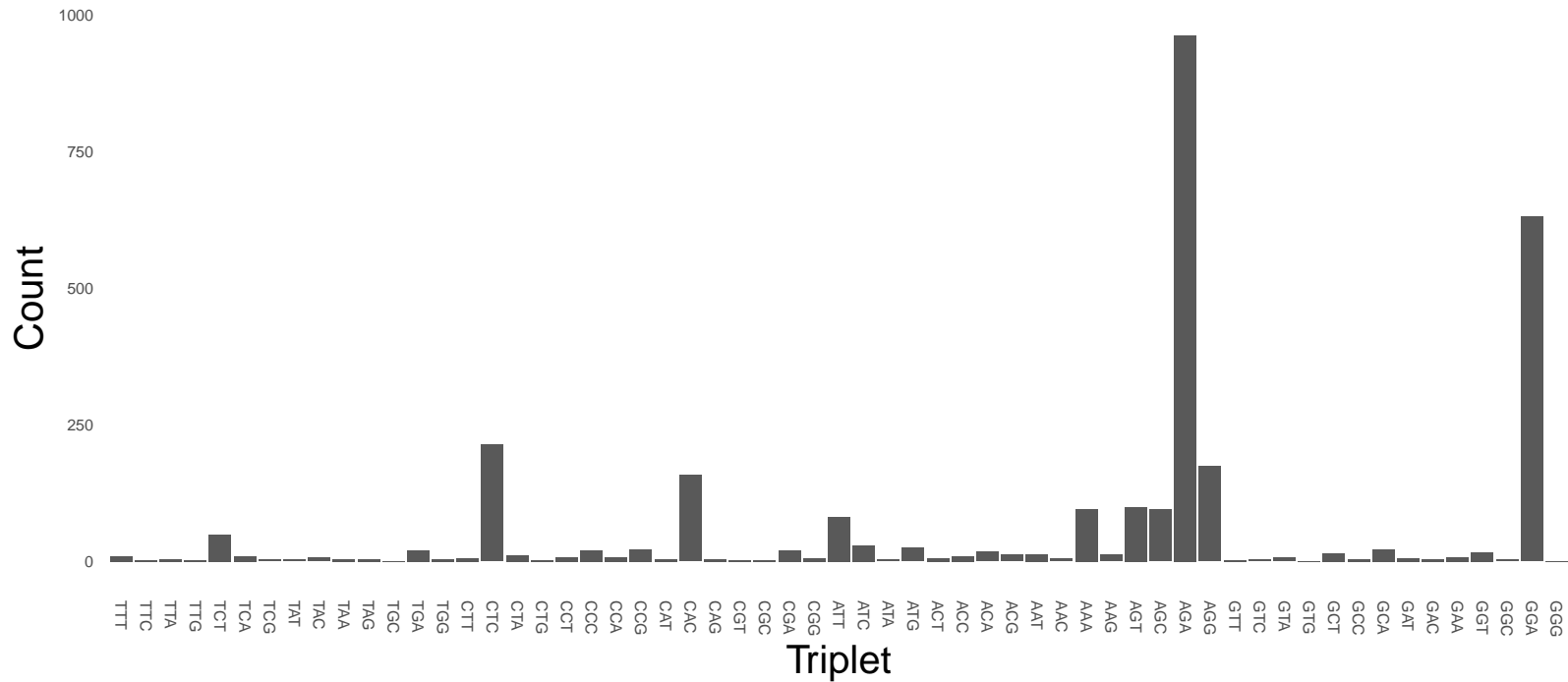
IGHV3-13*01_A243C_T246C_C258A_T259C_T267G_G290A- Final 3 nucleotides as a triplet



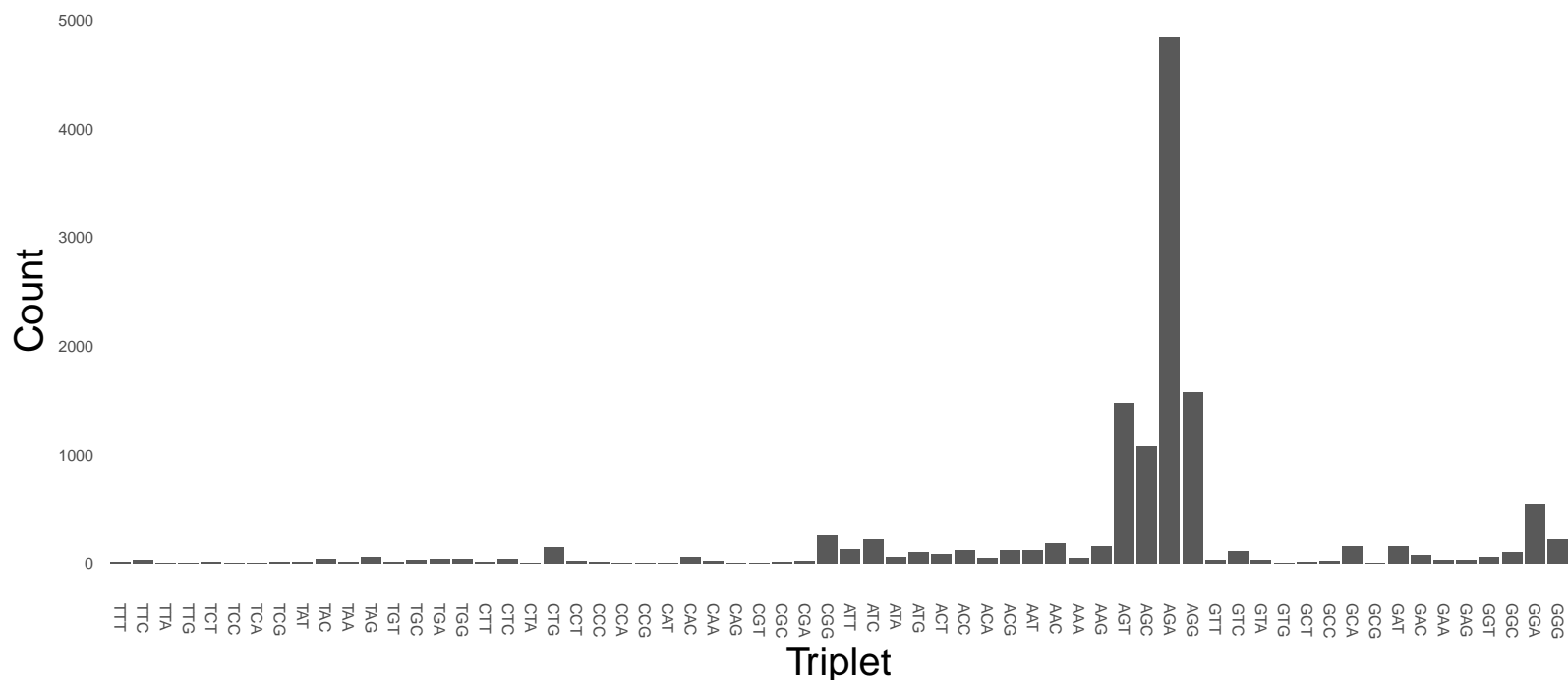
IGHV1-69*10_A244G- Final 3 nucleotides as a triplet



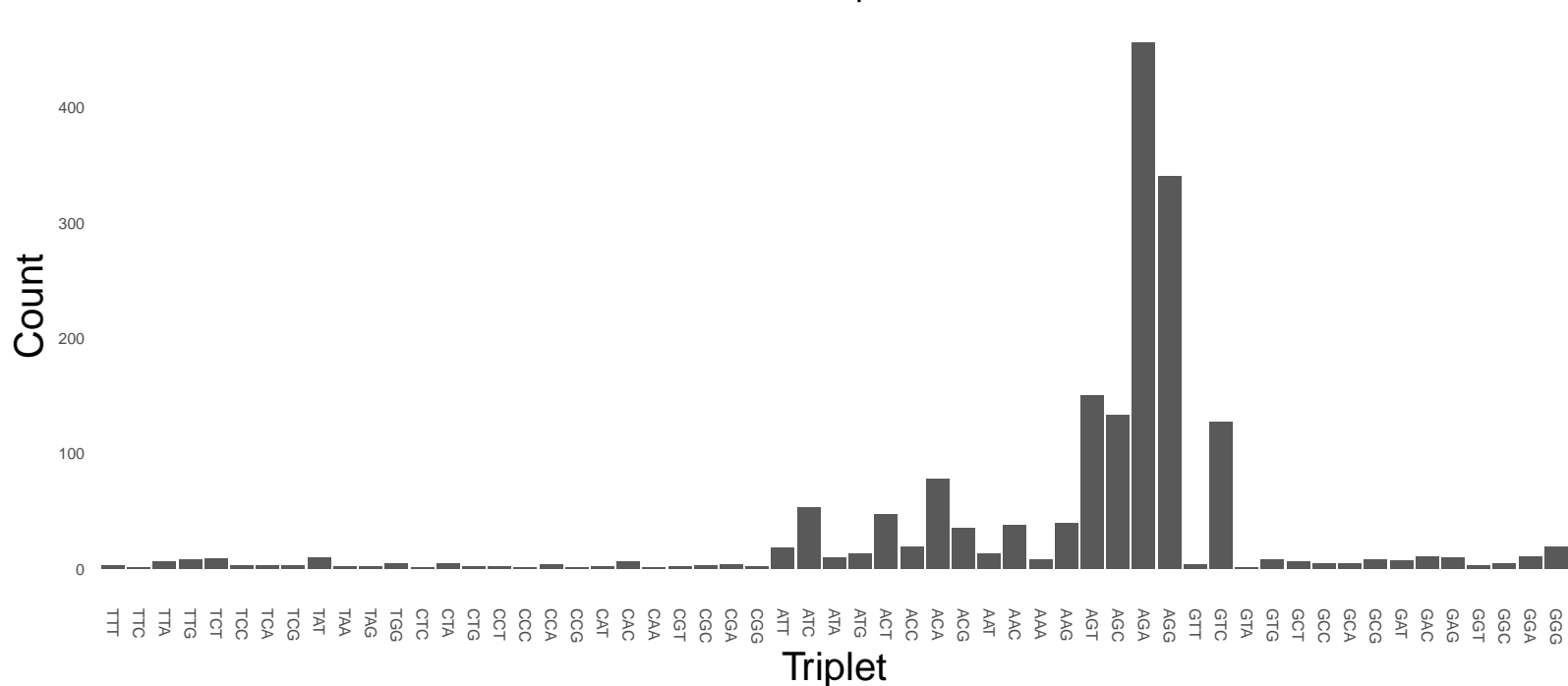
IGHV3-15*07_C159T- Final 3 nucleotides as a triplet



IGHV1-18*01_A190G- Final 3 nucleotides as a triplet

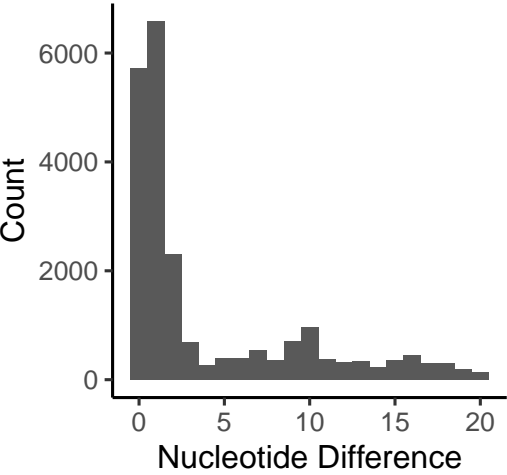


IGHV4-31*02_C198T- Final 3 nucleotides as a triplet



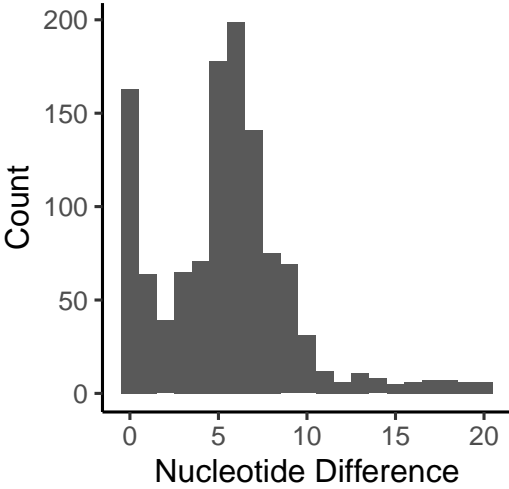
IGHV1-2*02

24271 sequences assigned
5714 (23.5%) exact matches, in which:
4662 unique CDR3
6 unique J



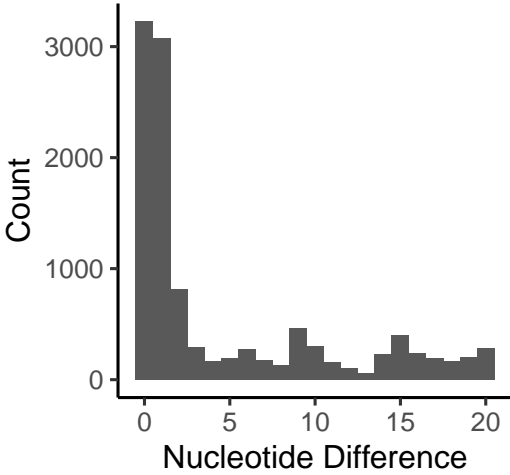
IGHV1-8*02

1181 sequences assigned
163 (13.8%) exact matches, in which:
161 unique CDR3
5 unique J



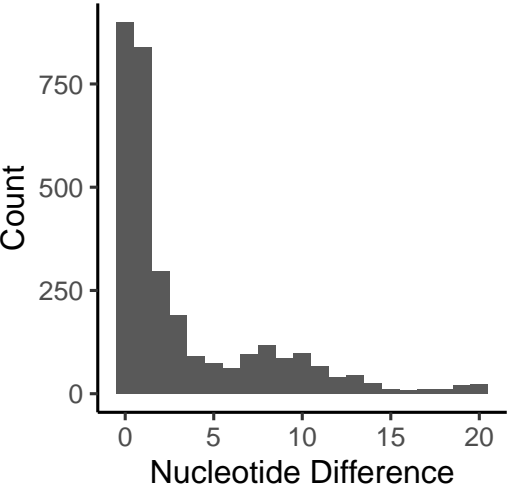
IGHV1-18*01_A190G

12971 sequences assigned
3227 (24.9%) exact matches, in which:
2722 unique CDR3
6 unique J



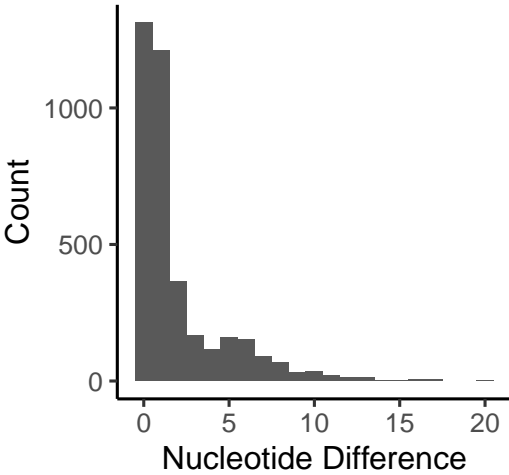
IGHV1-3*01_05

3465 sequences assigned
900 (26%) exact matches, in which:
759 unique CDR3
6 unique J



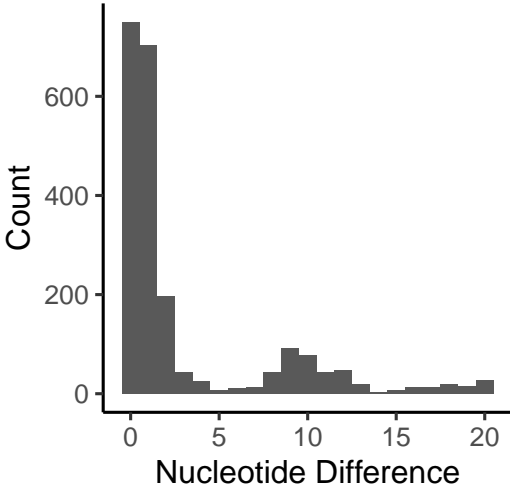
IGHV1-8*03

3820 sequences assigned
1312 (34.3%) exact matches, in which:
1129 unique CDR3
6 unique J



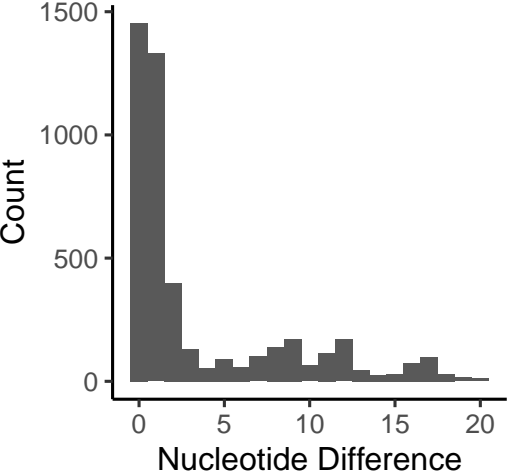
IGHV1-24*01

2853 sequences assigned
750 (26.3%) exact matches, in which:
638 unique CDR3
6 unique J



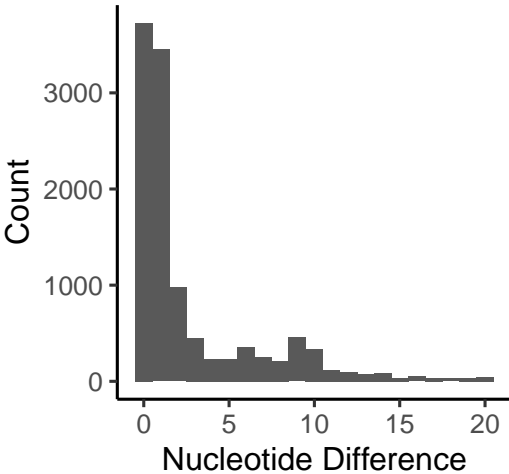
IGHV1-8*01

4674 sequences assigned
1454 (31.1%) exact matches, in which:
1275 unique CDR3
6 unique J



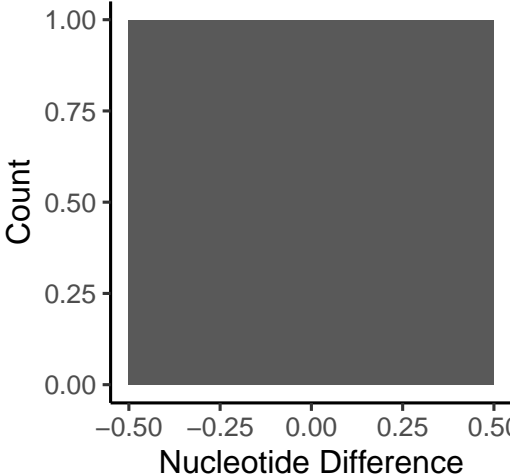
IGHV1-18*01

11925 sequences assigned
3726 (31.2%) exact matches, in which:
3165 unique CDR3
6 unique J



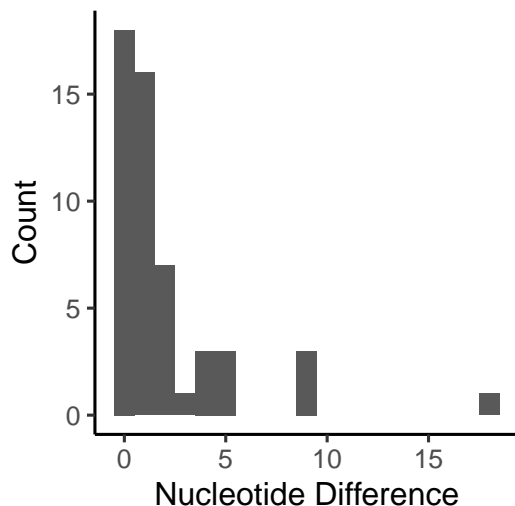
IGHV1-38-4*01

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



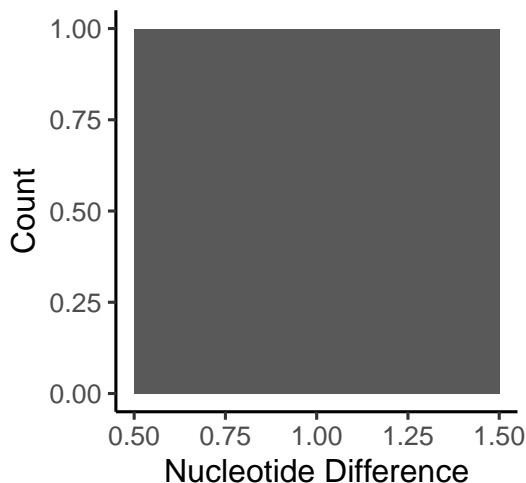
IGHV1-45*02

52 sequences assigned
18 (34.6%) exact matches, in which:
15 unique CDR3
2 unique J



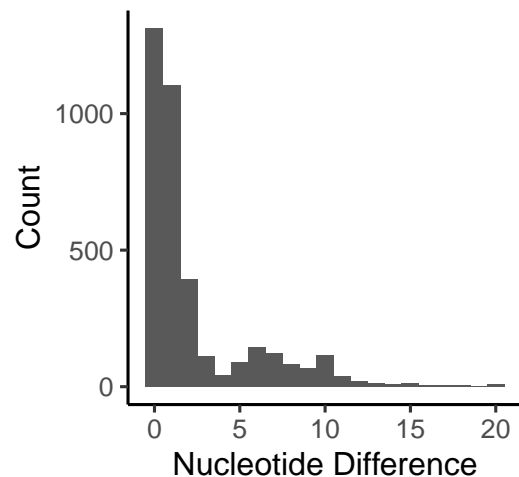
IGHV1-68*02_03

1 sequences assigned
No exact matches.



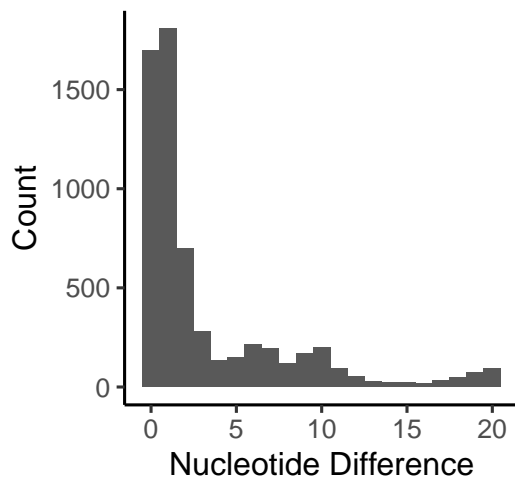
IGHV1-69*05

3902 sequences assigned
1312 (33.6%) exact matches, in which:
1174 unique CDR3
6 unique J



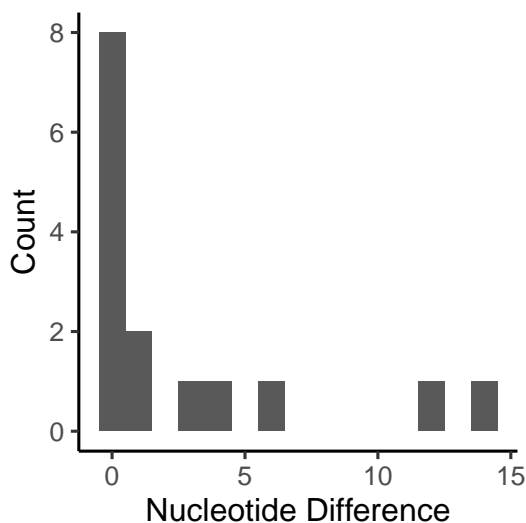
IGHV1-46*01

6612 sequences assigned
1696 (25.7%) exact matches, in which:
1434 unique CDR3
6 unique J



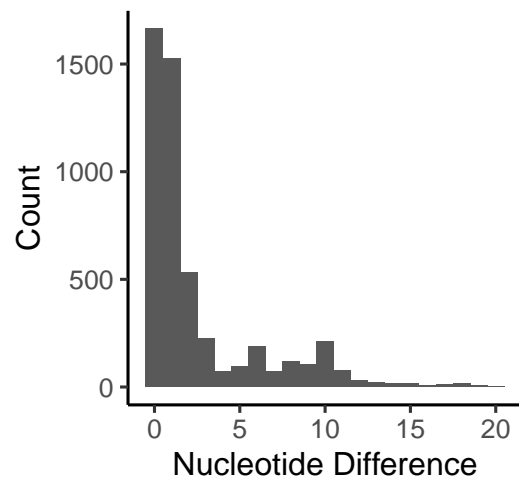
IGHV1-69-2*01

20 sequences assigned
8 (40%) exact matches, in which:
6 unique CDR3
4 unique J



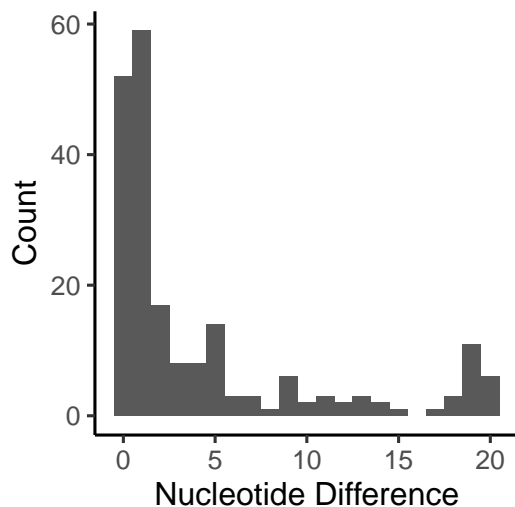
IGHV1-69*10_A244G

5129 sequences assigned
1664 (32.4%) exact matches, in which:
1484 unique CDR3
6 unique J



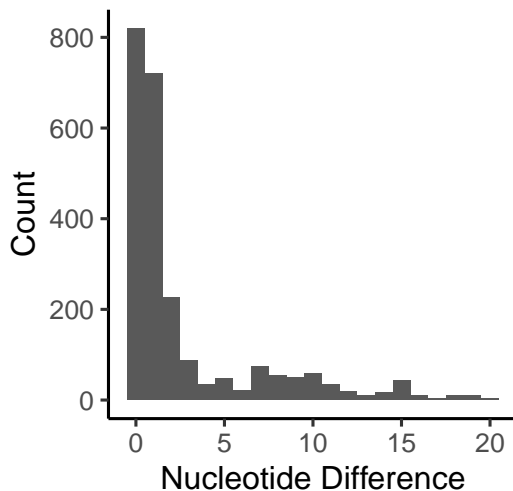
IGHV1-58*02

267 sequences assigned
52 (19.5%) exact matches, in which:
41 unique CDR3
5 unique J



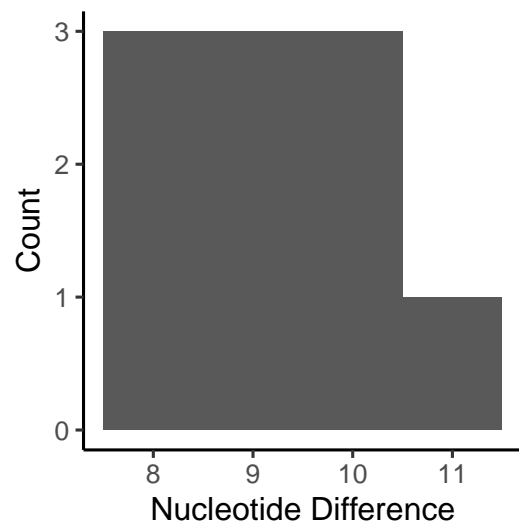
IGHV1-69*02

3112 sequences assigned
820 (26.3%) exact matches, in which:
730 unique CDR3
6 unique J



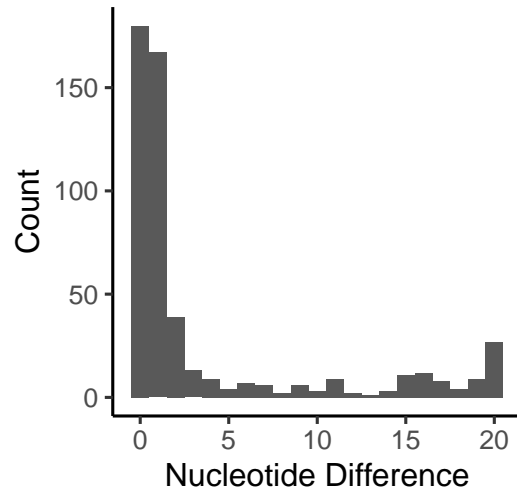
IGHV1-NL1*01

10 sequences assigned
No exact matches.



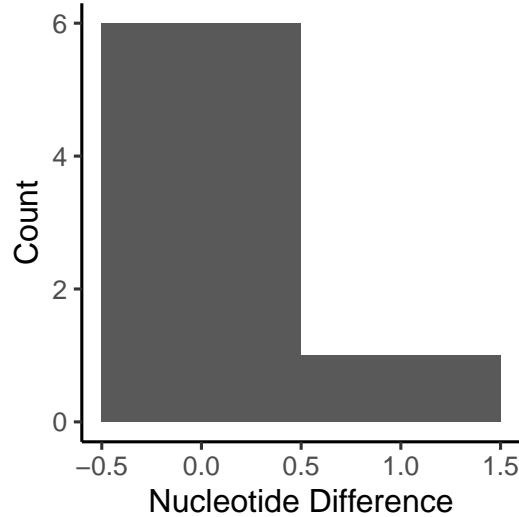
IGHV2-5*01

870 sequences assigned
180 (20.7%) exact matches, in which:
157 unique CDR3
6 unique J



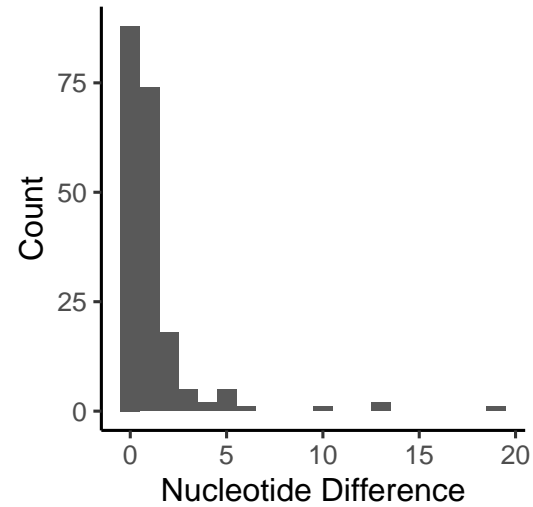
IGHV2-26*02

7 sequences assigned
6 (85.7%) exact matches, in which:
6 unique CDR3
3 unique J



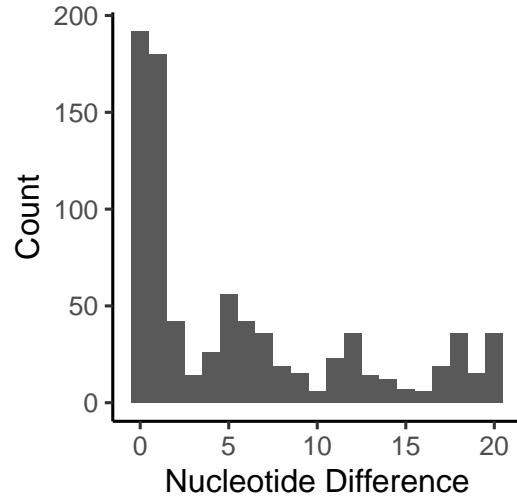
IGHV2-70*20

257 sequences assigned
88 (34.2%) exact matches, in which:
63 unique CDR3
5 unique J



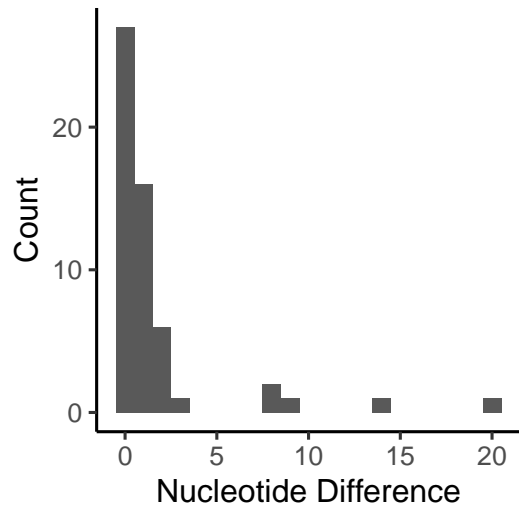
IGHV2-5*02

1102 sequences assigned
192 (17.4%) exact matches, in which:
169 unique CDR3
5 unique J



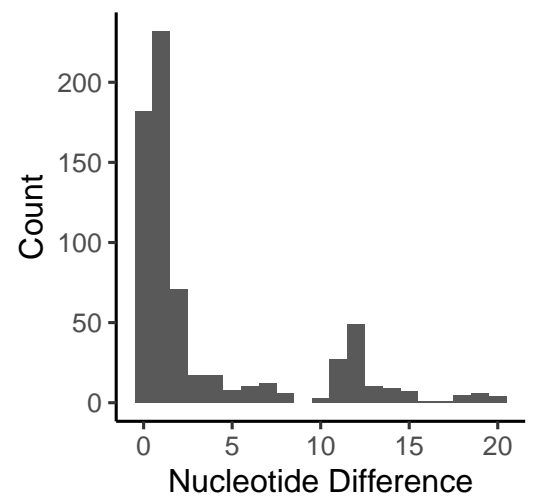
IGHV2-26*04

170 sequences assigned
27 (15.9%) exact matches, in which:
23 unique CDR3
4 unique J



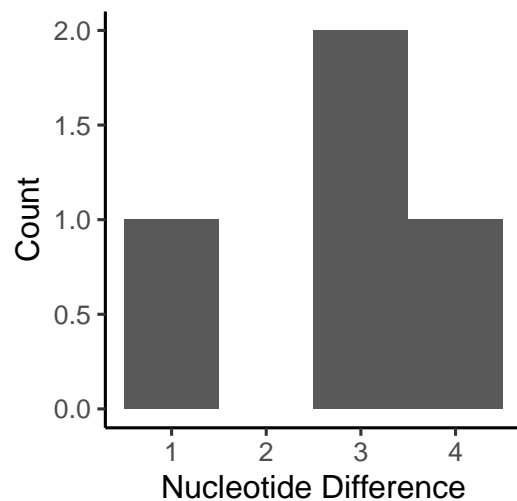
IGHV2-70*11_15

714 sequences assigned
182 (25.5%) exact matches, in which:
149 unique CDR3
6 unique J



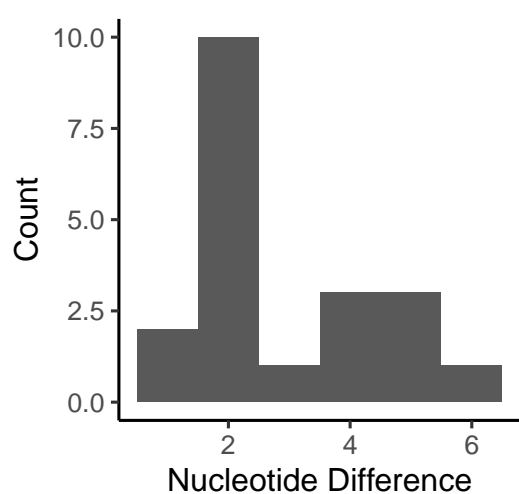
IGHV2-26*01

5 sequences assigned
No exact matches.



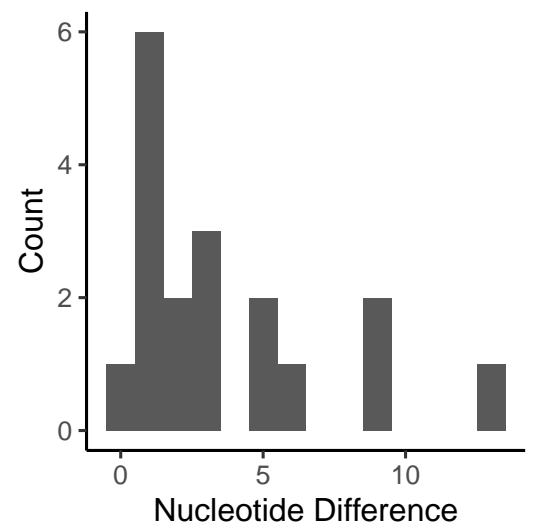
IGHV2-70*12

21 sequences assigned
No exact matches.



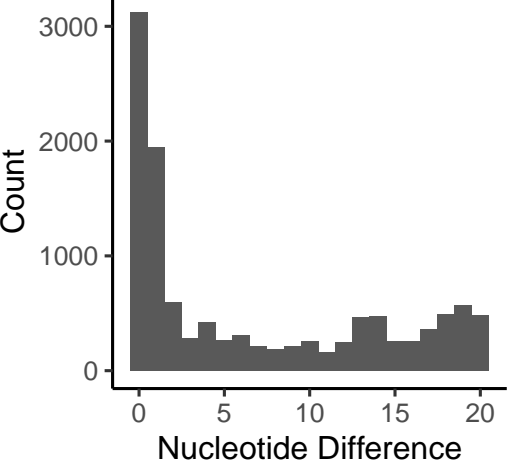
IGHV2-70D*04

19 sequences assigned
1 (5.3%) exact matches, in which:
1 unique CDR3
1 unique J



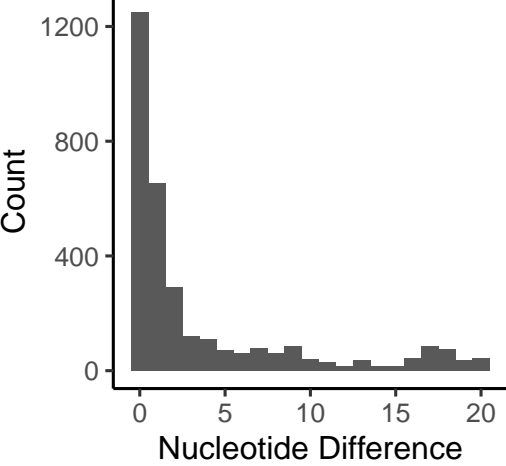
IGHV3-7*01

16484 sequences assigned
3121 (18.9%) exact matches, in which:
2050 unique CDR3
6 unique J



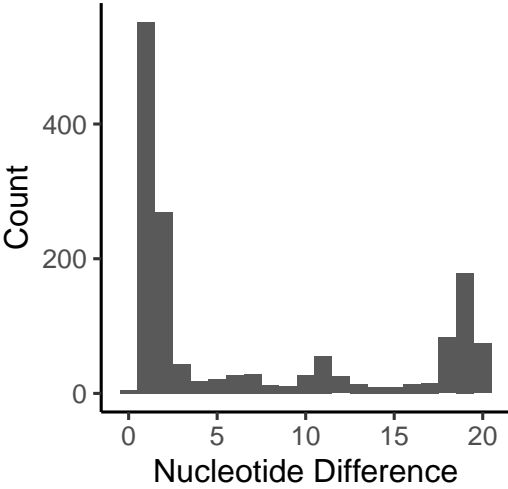
IGHV3-11*04

4671 sequences assigned
1249 (26.7%) exact matches, in which:
865 unique CDR3
6 unique J



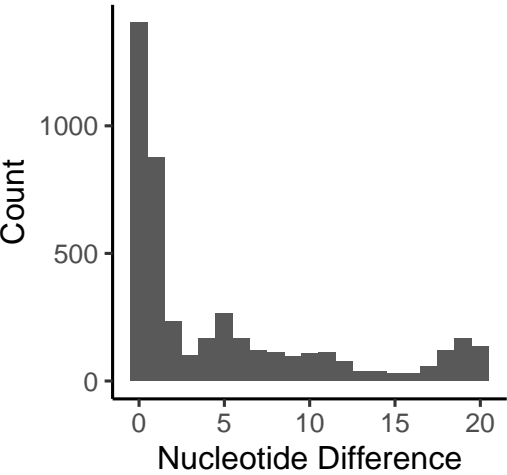
IGHV3-15*01_02

1925 sequences assigned
5 (0.3%) exact matches, in which:
5 unique CDR3
3 unique J



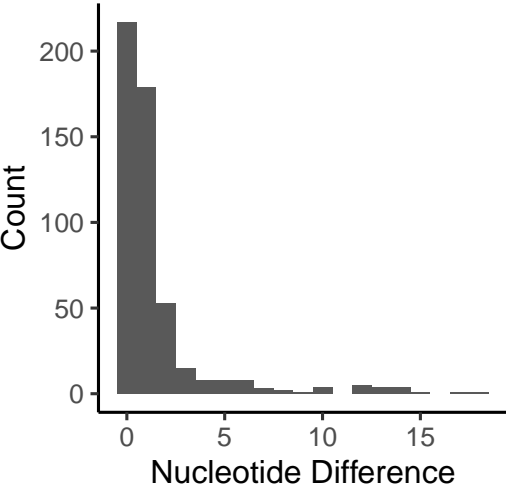
IGHV3-9*01

5167 sequences assigned
1404 (27.2%) exact matches, in which:
848 unique CDR3
6 unique J



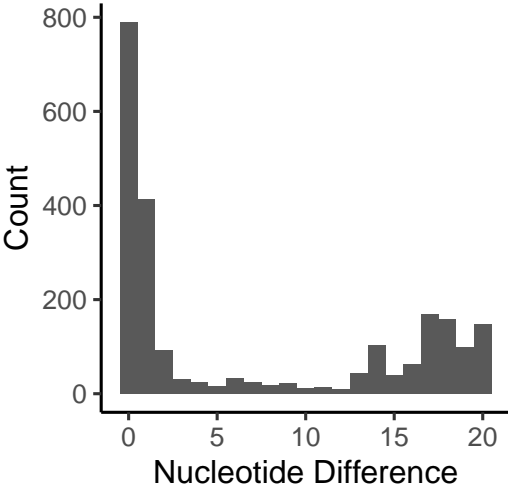
IGHV3-13*01

519 sequences assigned
217 (41.8%) exact matches, in which:
133 unique CDR3
6 unique J



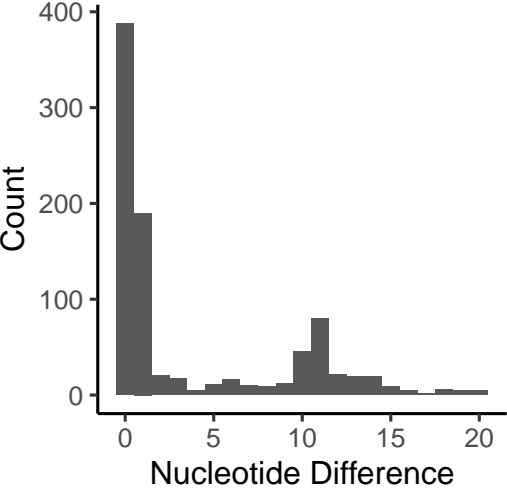
IGHV3-15*07_C159T

2977 sequences assigned
790 (26.5%) exact matches, in which:
526 unique CDR3
6 unique J



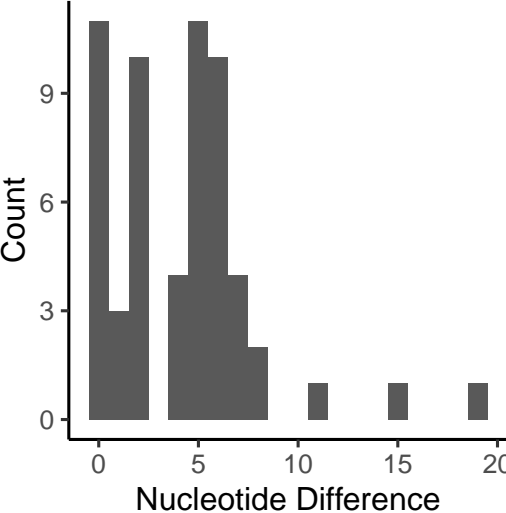
IGHV3-9*03

901 sequences assigned
388 (43.1%) exact matches, in which:
225 unique CDR3
6 unique J



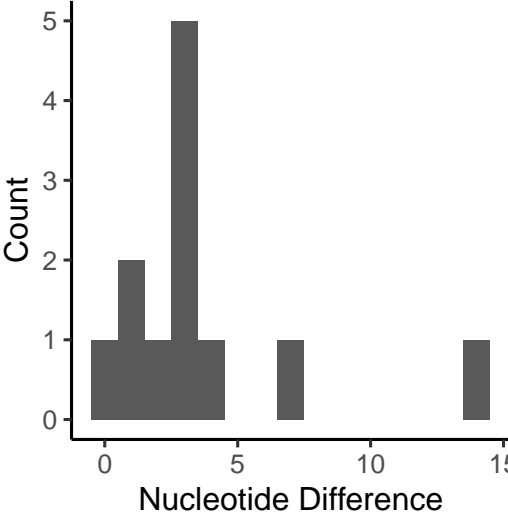
IGHV3-13*01_A243C_T244

62 sequences assigned
11 (17.7%) exact matches, in which:
11 unique CDR3
5 unique J



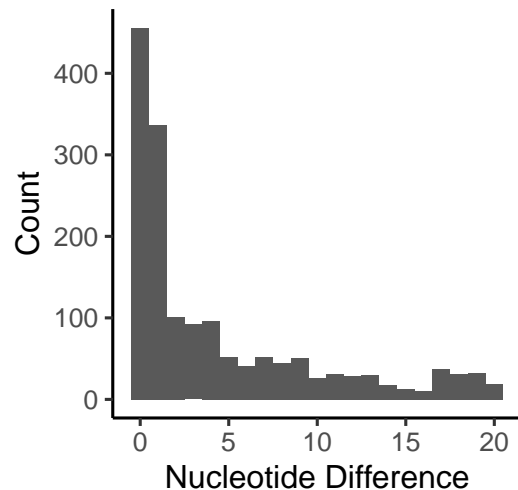
IGHV3-19*01

12 sequences assigned
1 (8.3%) exact matches, in which:
1 unique CDR3
0 unique J



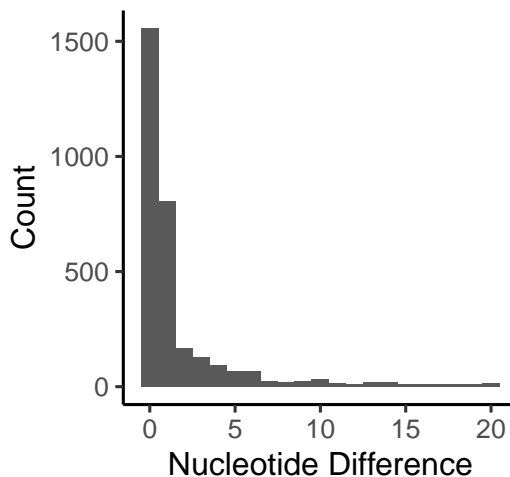
IGHV3-20*03_04

1785 sequences assigned
456 (25.5%) exact matches, in which:
294 unique CDR3
6 unique J



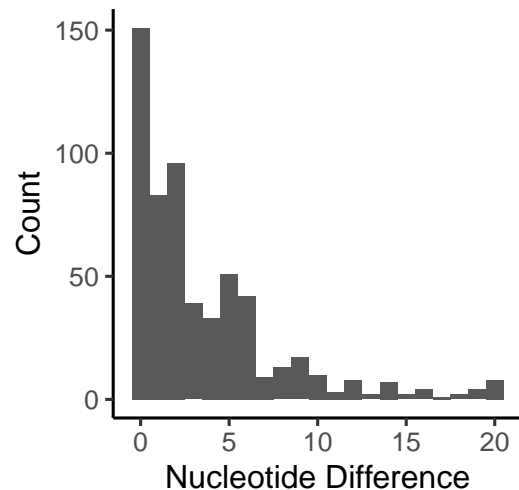
IGHV3-30-3*01

3765 sequences assigned
1556 (41.3%) exact matches, in which:
1029 unique CDR3
6 unique J



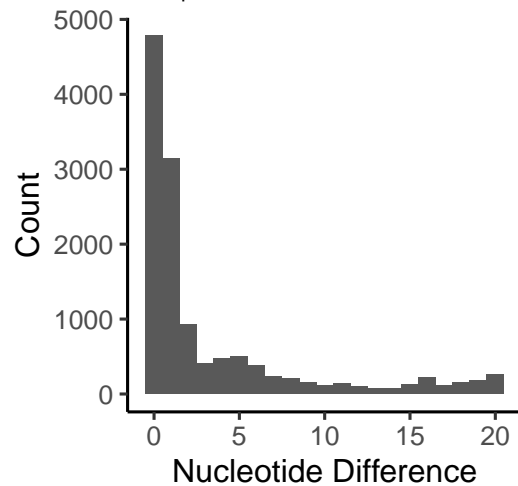
IGHV3-33*08

812 sequences assigned
151 (18.6%) exact matches, in which:
134 unique CDR3
6 unique J



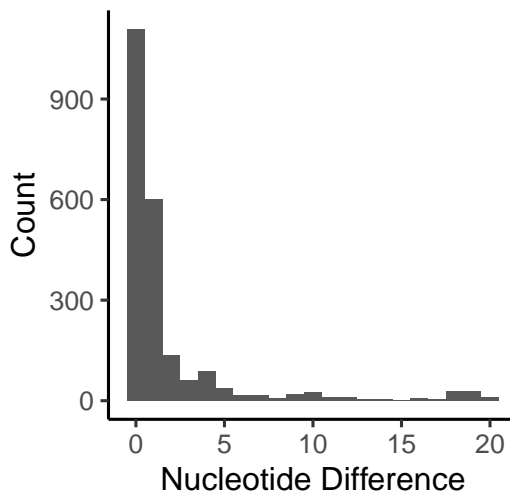
IGHV3-21*01_02

16124 sequences assigned
4782 (29.7%) exact matches, in which:
2984 unique CDR3
6 unique J



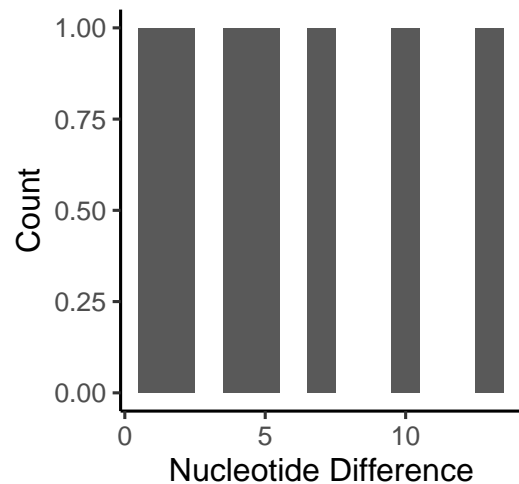
IGHV3-33*01

2493 sequences assigned
1109 (44.5%) exact matches, in which:
739 unique CDR3
6 unique J



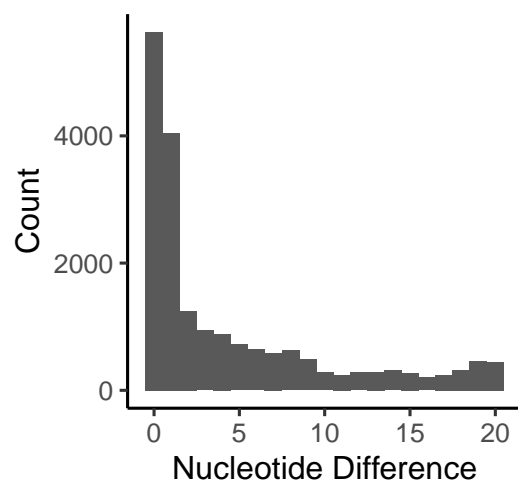
IGHV3-35*01

7 sequences assigned
No exact matches.



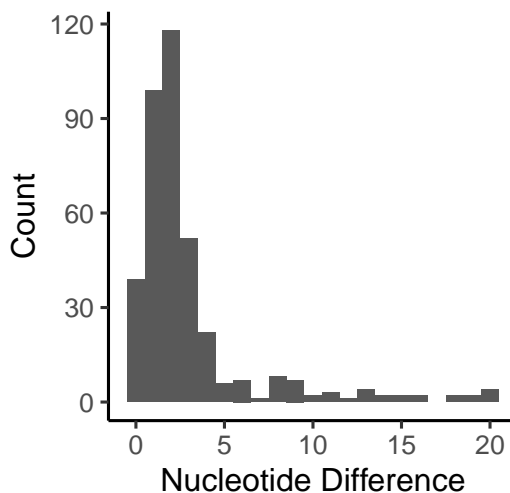
IGHV3-23*01_04

26922 sequences assigned
5632 (20.9%) exact matches, in which:
3237 unique CDR3
6 unique J



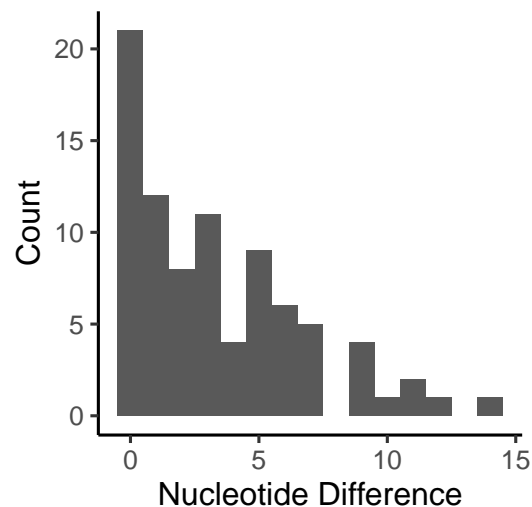
IGHV3-33*06

407 sequences assigned
39 (9.6%) exact matches, in which:
39 unique CDR3
5 unique J



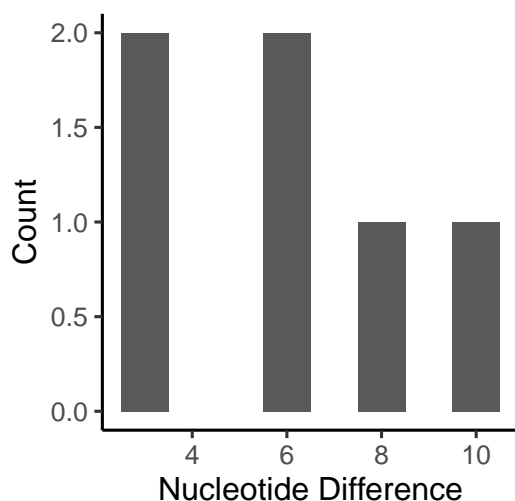
IGHV3-38-3*01

85 sequences assigned
21 (24.7%) exact matches, in which:
21 unique CDR3
5 unique J



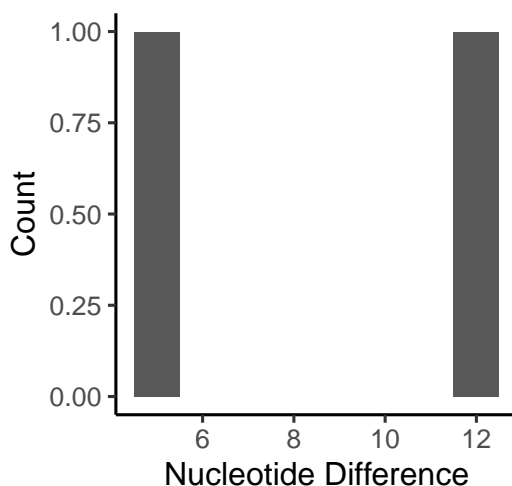
IGHV3-38*03

6 sequences assigned
No exact matches.



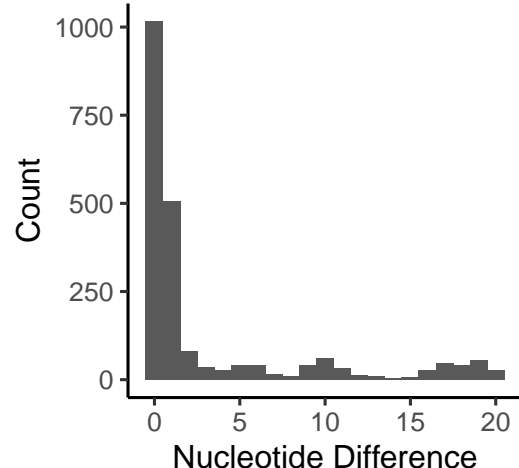
IGHV3-47*02

2 sequences assigned
No exact matches.



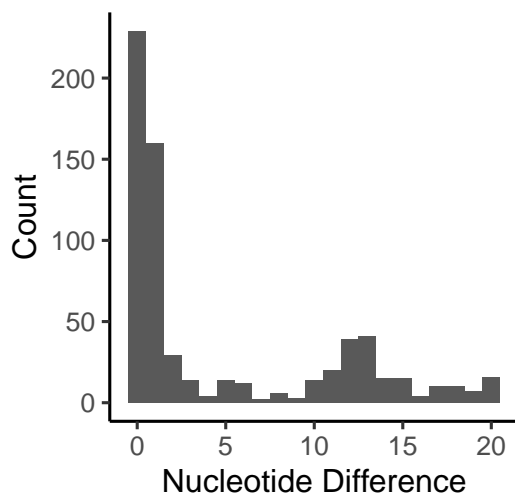
IGHV3-48*03

2243 sequences assigned
1016 (45.3%) exact matches, in which:
648 unique CDR3
6 unique J



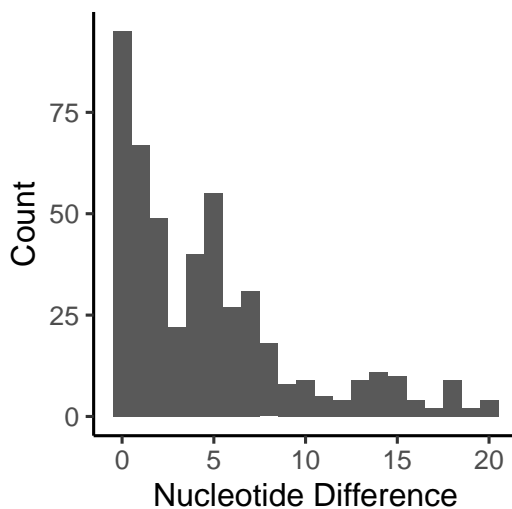
IGHV3-43*01

893 sequences assigned
229 (25.6%) exact matches, in which:
137 unique CDR3
5 unique J



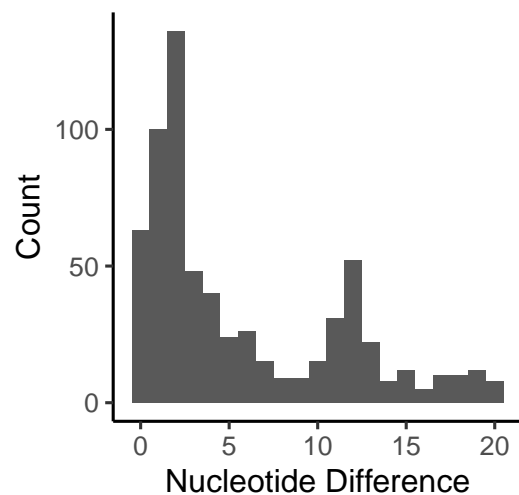
IGHV3-48*01

528 sequences assigned
95 (18%) exact matches, in which:
91 unique CDR3
6 unique J



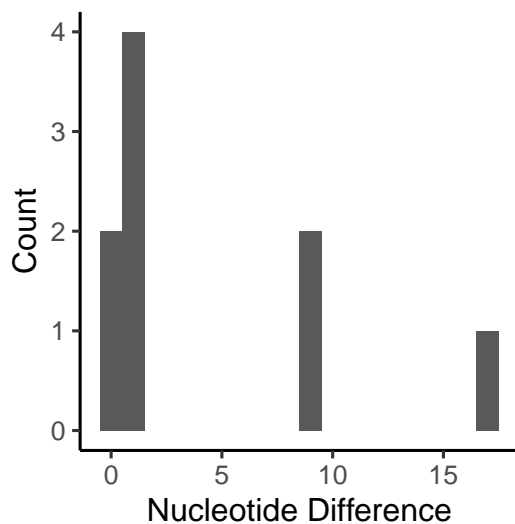
IGHV3-48*04

724 sequences assigned
63 (8.7%) exact matches, in which:
63 unique CDR3
5 unique J



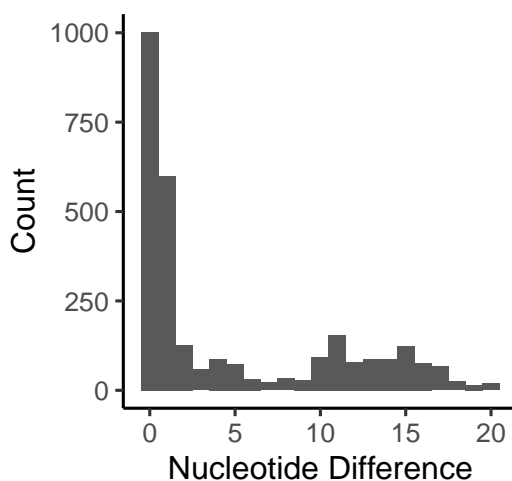
IGHV3-47*01

9 sequences assigned
2 (22.2%) exact matches, in which:
1 unique CDR3
1 unique J



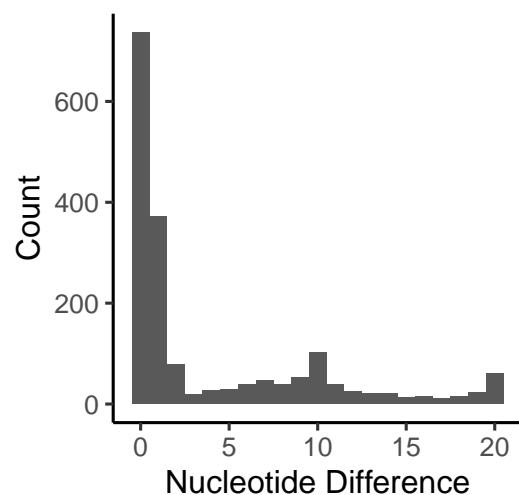
IGHV3-48*02

3898 sequences assigned
1002 (25.7%) exact matches, in which:
635 unique CDR3
6 unique J



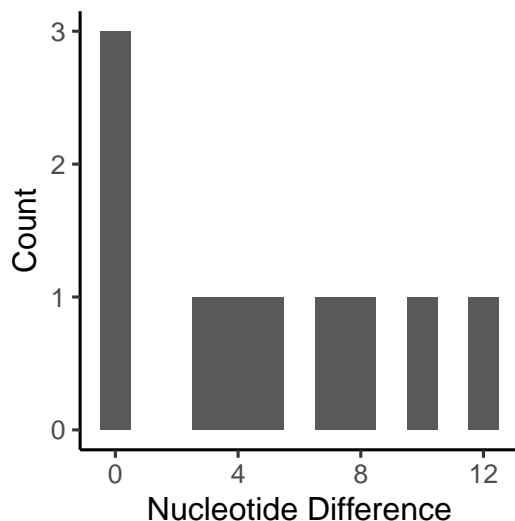
IGHV3-49*03_05

2204 sequences assigned
737 (33.4%) exact matches, in which:
472 unique CDR3
6 unique J



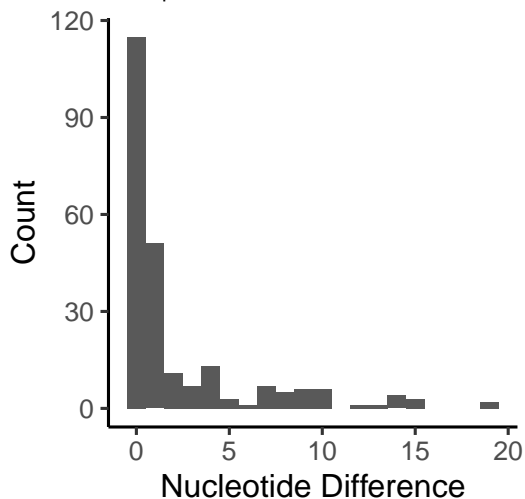
IGHV3-52*01_03

10 sequences assigned
3 (30%) exact matches, in which:
3 unique CDR3
2 unique J



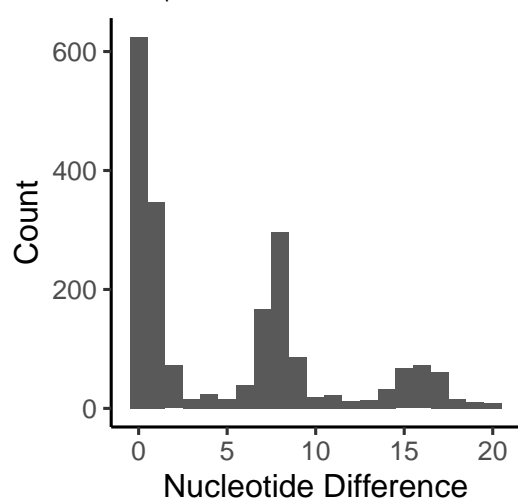
IGHV3-64*01

238 sequences assigned
115 (48.3%) exact matches, in which:
71 unique CDR3
5 unique J



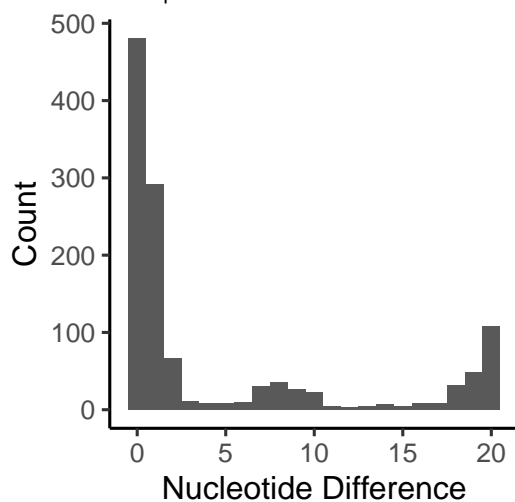
IGHV3-66*02

2238 sequences assigned
625 (27.9%) exact matches, in which:
394 unique CDR3
6 unique J



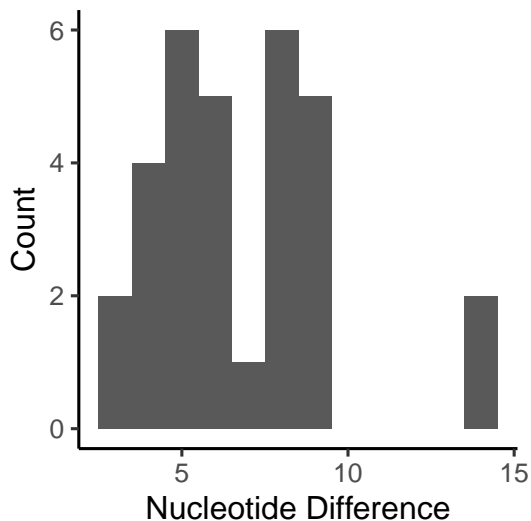
IGHV3-53*04

1682 sequences assigned
481 (28.6%) exact matches, in which:
302 unique CDR3
6 unique J



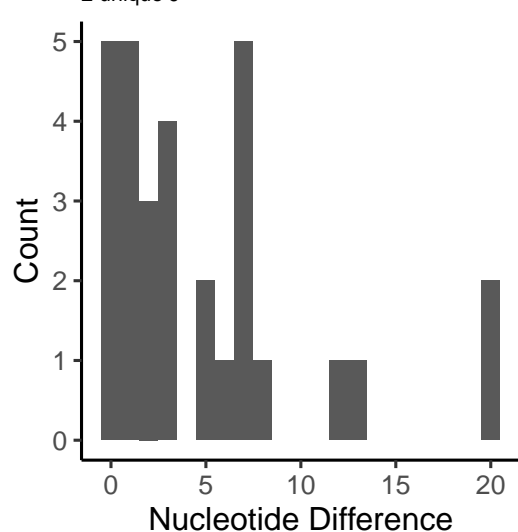
IGHV3-64*04

84 sequences assigned
No exact matches.



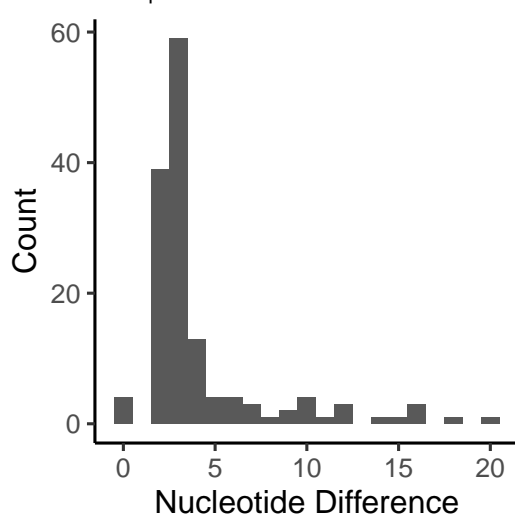
IGHV3-69-1*01

44 sequences assigned
5 (11.4%) exact matches, in which:
5 unique CDR3
2 unique J



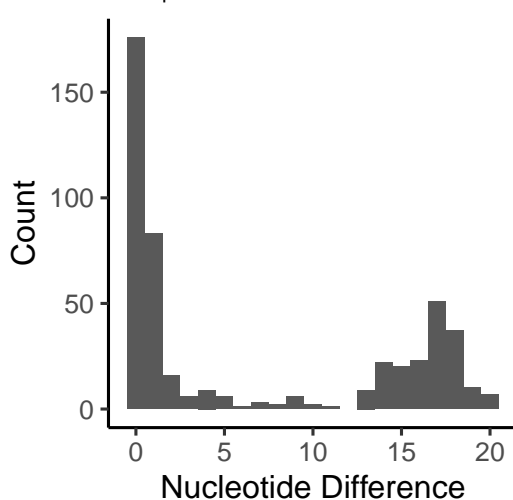
IGHV3-53*01_02

156 sequences assigned
4 (2.6%) exact matches, in which:
4 unique CDR3
2 unique J



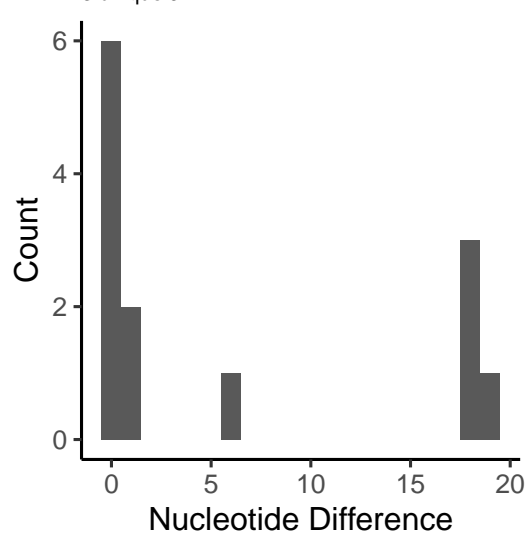
IGHV3-64*02_07

572 sequences assigned
176 (30.8%) exact matches, in which:
114 unique CDR3
6 unique J



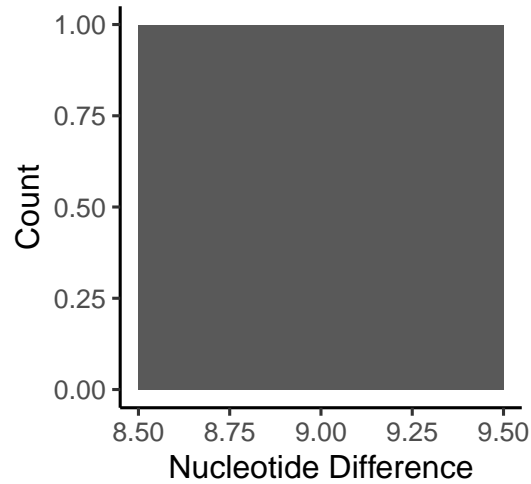
IGHV3-69-1*02

90 sequences assigned
6 (6.7%) exact matches, in which:
6 unique CDR3
3 unique J



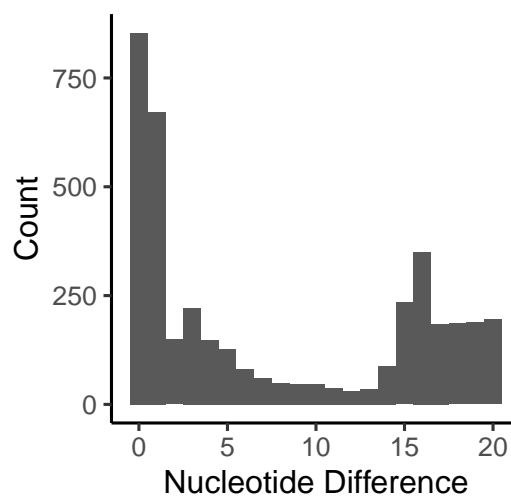
IGHV3-71*01_04

3 sequences assigned
No exact matches.



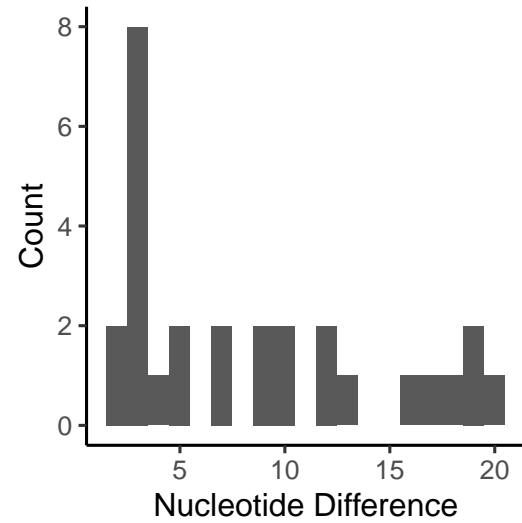
IGHV3-74*01_02

6451 sequences assigned
854 (13.2%) exact matches, in which:
531 unique CDR3
6 unique J



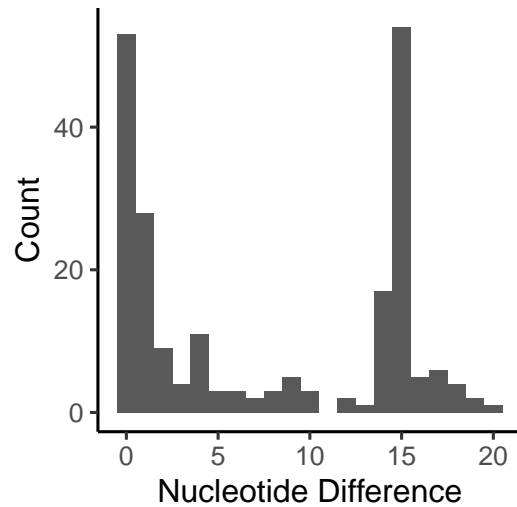
IGHV3-NL1*01

36 sequences assigned
No exact matches.



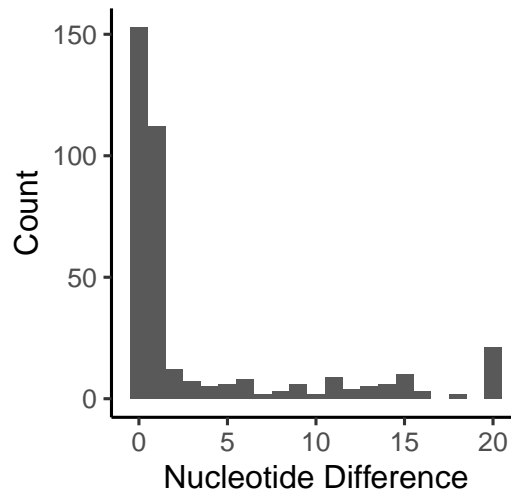
IGHV3-72*01

629 sequences assigned
53 (8.4%) exact matches, in which:
35 unique CDR3
5 unique J



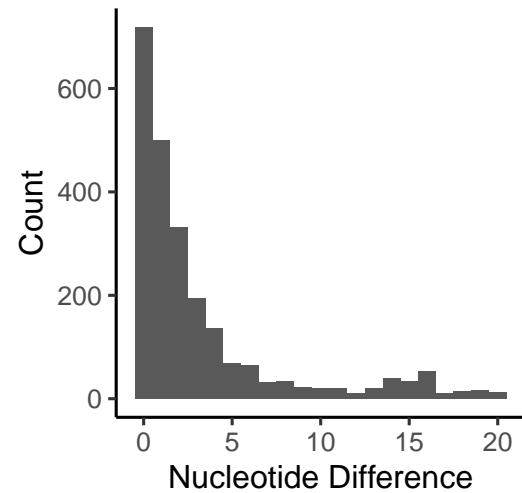
IGHV3-43D*03

429 sequences assigned
153 (35.7%) exact matches, in which:
95 unique CDR3
5 unique J



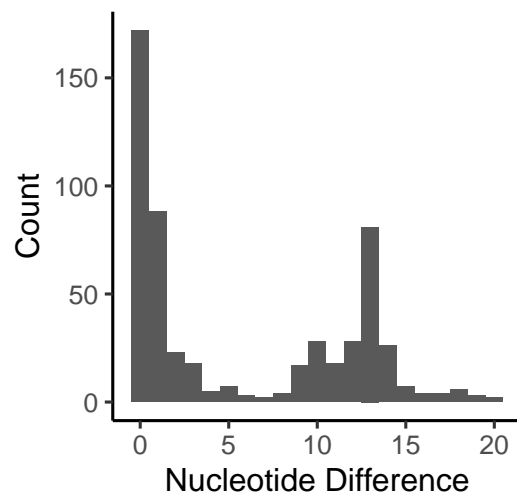
IGHV4-4*02_03

3121 sequences assigned
719 (23%) exact matches, in which:
592 unique CDR3
6 unique J



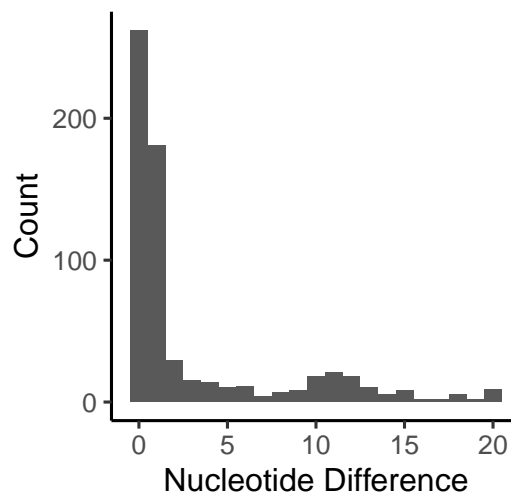
IGHV3-73*01_02

598 sequences assigned
172 (28.8%) exact matches, in which:
106 unique CDR3
6 unique J



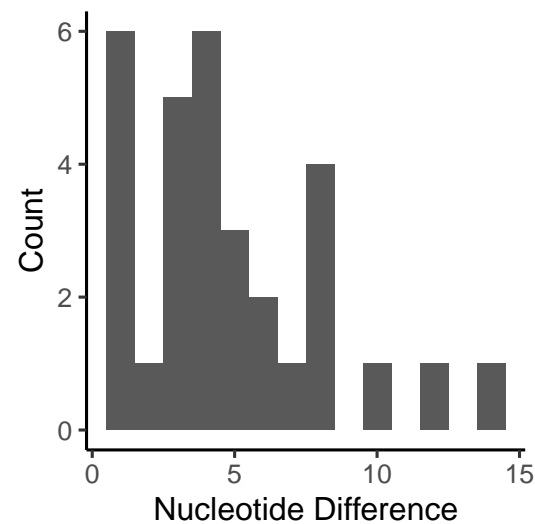
IGHV3-43D*04

704 sequences assigned
262 (37.2%) exact matches, in which:
154 unique CDR3
6 unique J



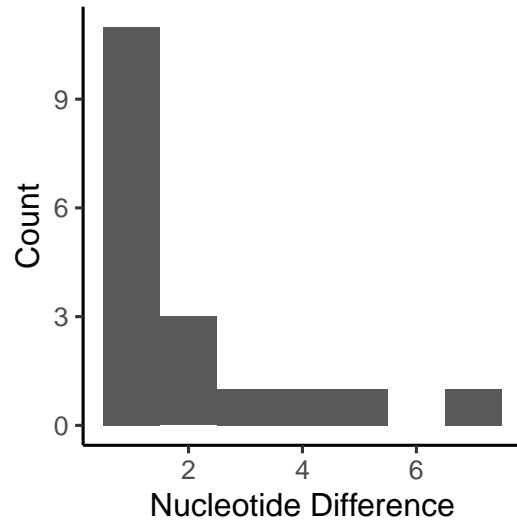
IGHV4-28*03

33 sequences assigned
No exact matches.



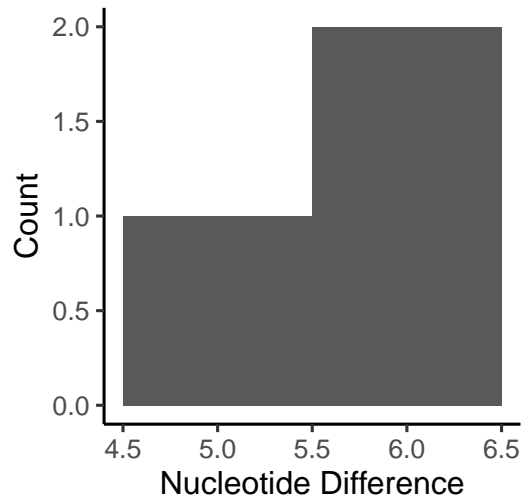
IGHV4-28*01_07

50 sequences assigned
No exact matches.



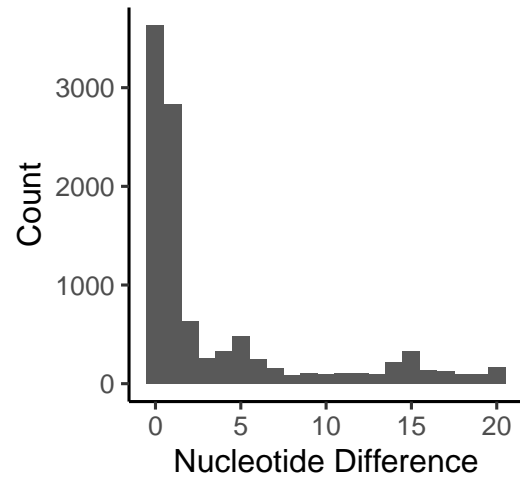
IGHV4-30-2*05

3 sequences assigned
No exact matches.



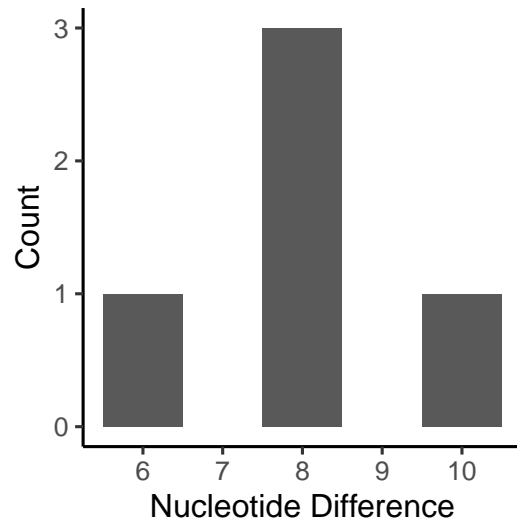
IGHV4-34*01_02

12545 sequences assigned
3631 (28.9%) exact matches, in which:
2717 unique CDR3
6 unique J



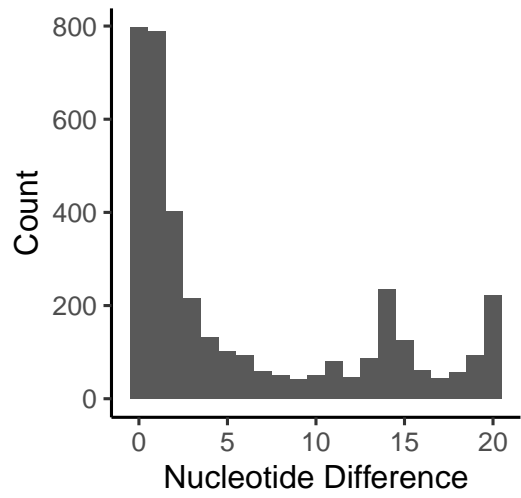
IGHV4-30-2*03

7 sequences assigned
No exact matches.



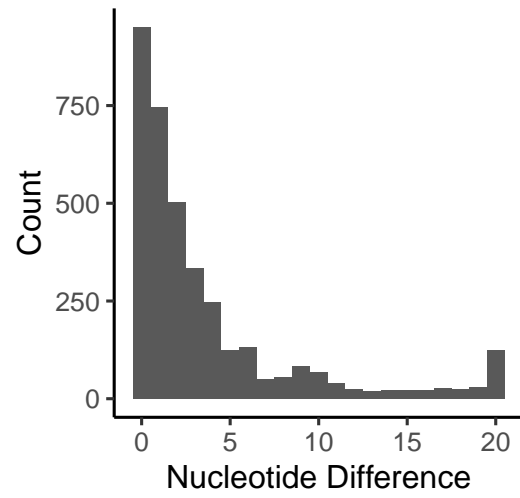
IGHV4-30-4*08

4947 sequences assigned
798 (16.1%) exact matches, in which:
690 unique CDR3
6 unique J



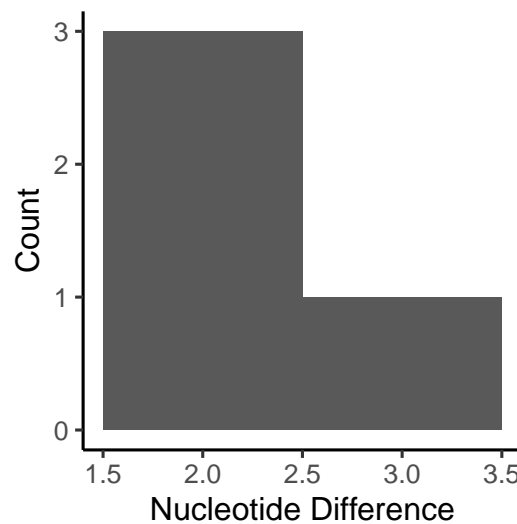
IGHV4-38-2*02

6385 sequences assigned
951 (14.9%) exact matches, in which:
891 unique CDR3
6 unique J



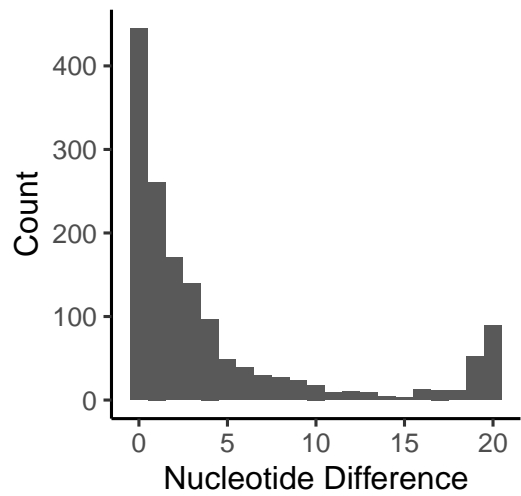
IGHV4-30-2*04

4 sequences assigned
No exact matches.



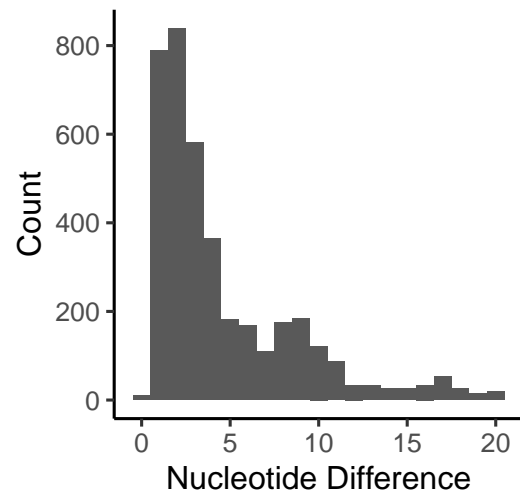
IGHV4-31*02_C198T

1772 sequences assigned
445 (25.1%) exact matches, in which:
400 unique CDR3
6 unique J



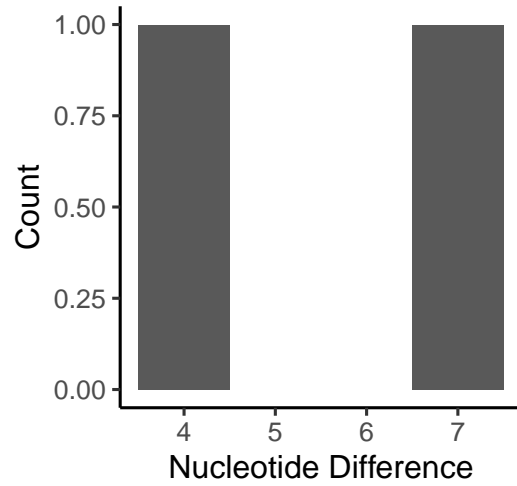
IGHV4-39*07

4890 sequences assigned
11 (0.2%) exact matches, in which:
11 unique CDR3
4 unique J



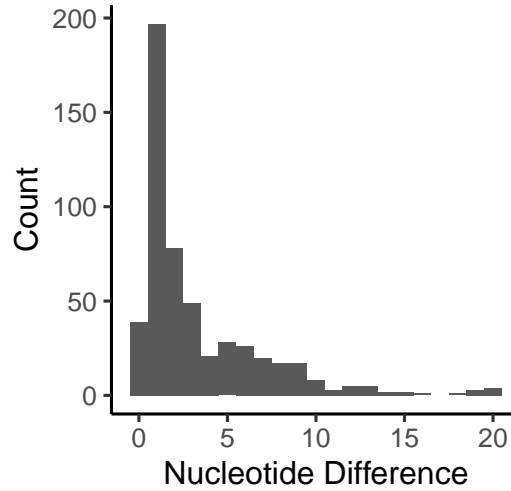
IGHV4-55*09

2 sequences assigned
No exact matches.



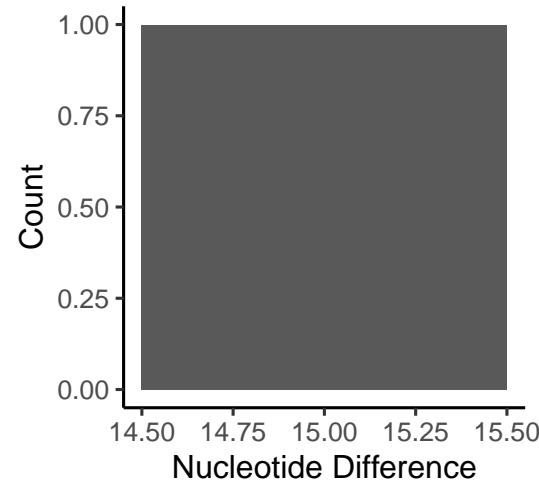
IGHV4-59*12

648 sequences assigned
39 (6%) exact matches, in which:
39 unique CDR3
5 unique J



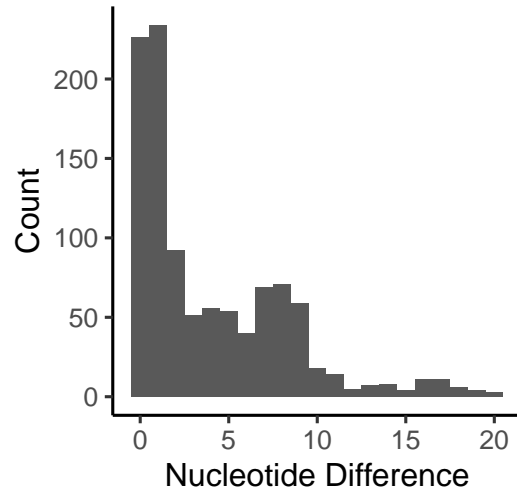
IGHV1/OR15-1*04

2 sequences assigned
No exact matches.



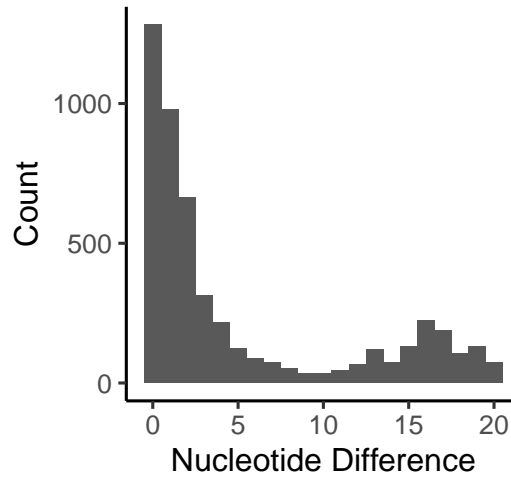
IGHV4-59*08

1132 sequences assigned
226 (20%) exact matches, in which:
223 unique CDR3
6 unique J



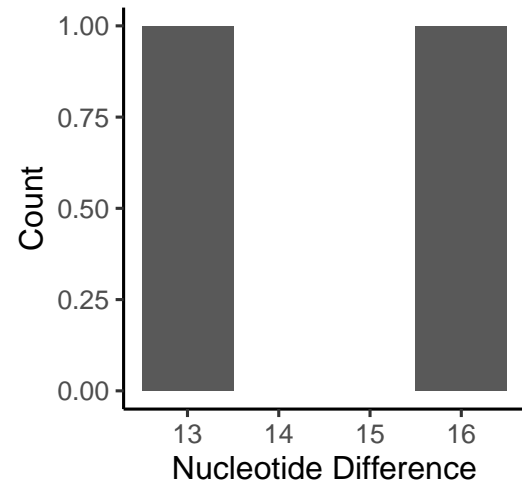
IGHV4-61*02

6636 sequences assigned
1282 (19.3%) exact matches, in which:
1167 unique CDR3
6 unique J



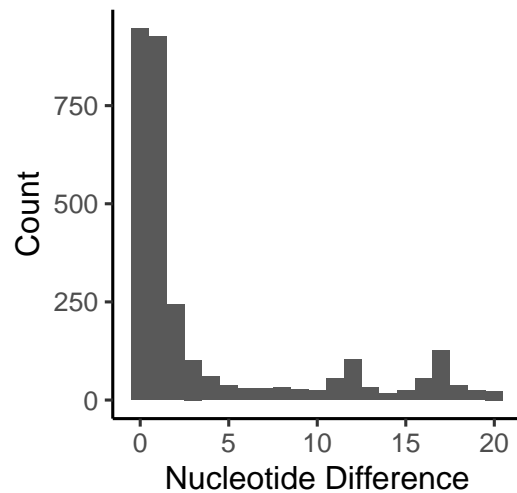
IGHV1/OR15-2*02_03

8 sequences assigned
No exact matches.



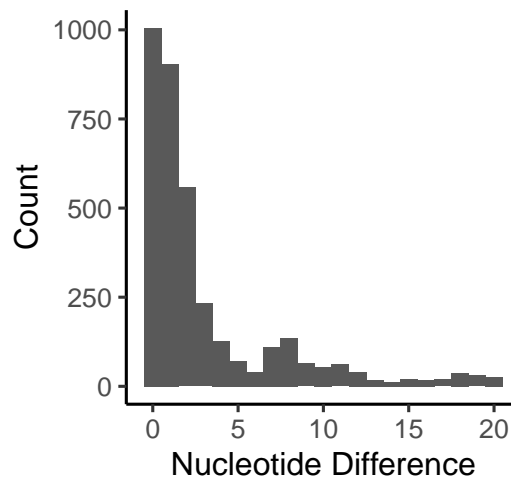
IGHV4-59*11

4082 sequences assigned
947 (23.2%) exact matches, in which:
781 unique CDR3
6 unique J



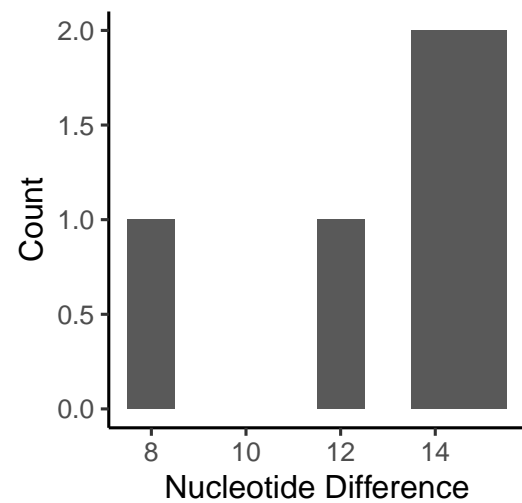
IGHV4-61*09

4496 sequences assigned
1005 (22.4%) exact matches, in which:
907 unique CDR3
6 unique J



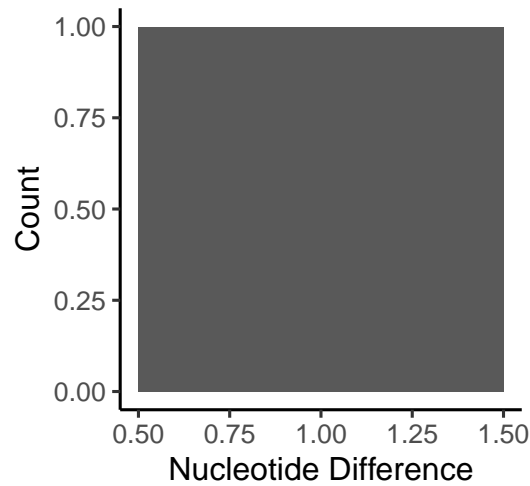
IGHV1/OR15-3*02

7 sequences assigned
No exact matches.



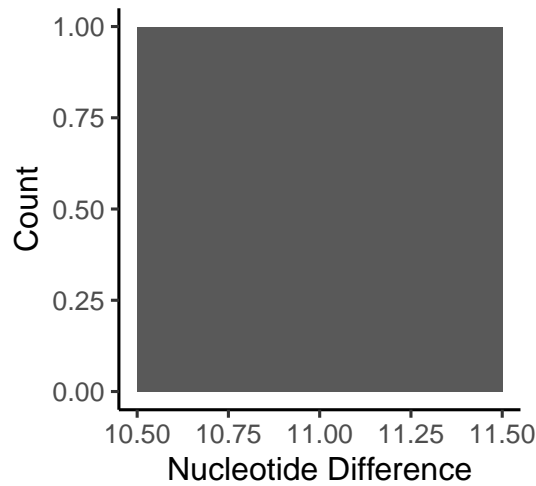
IGHV1/OR15-5*01

1 sequences assigned
No exact matches.



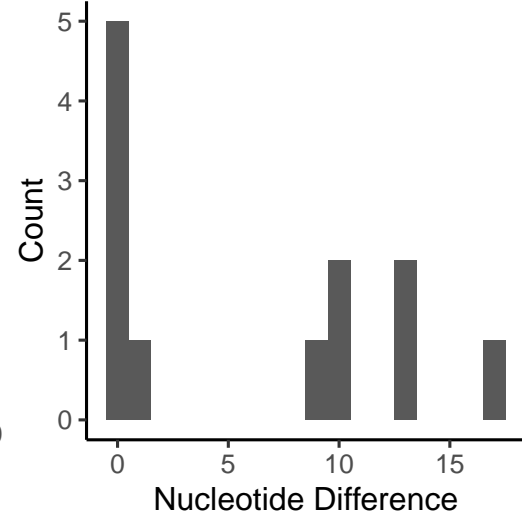
IGHV1/OR15-9*01

1 sequences assigned
No exact matches.



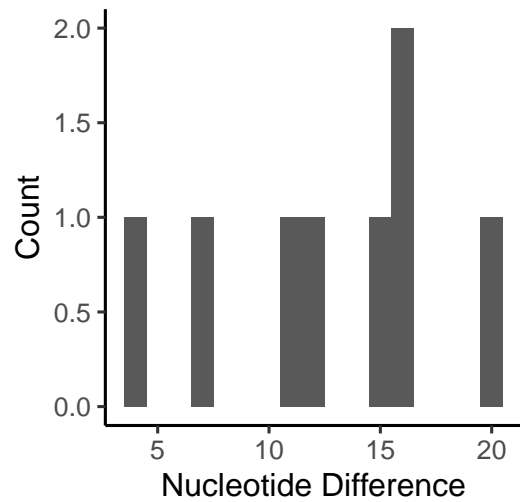
IGHV5-51*06

14 sequences assigned
5 (35.7%) exact matches, in which:
5 unique CDR3
3 unique J



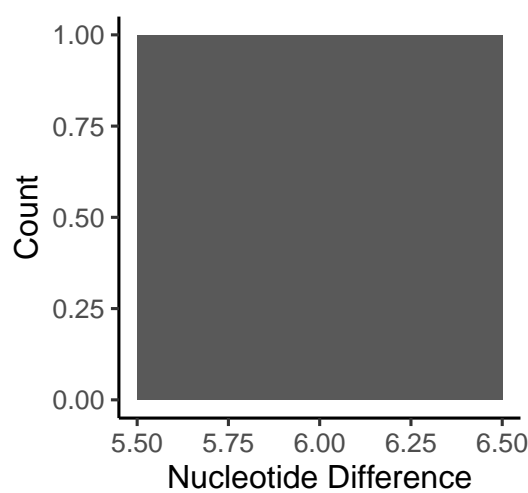
IGHV4/OR15-8*01

62 sequences assigned
No exact matches.



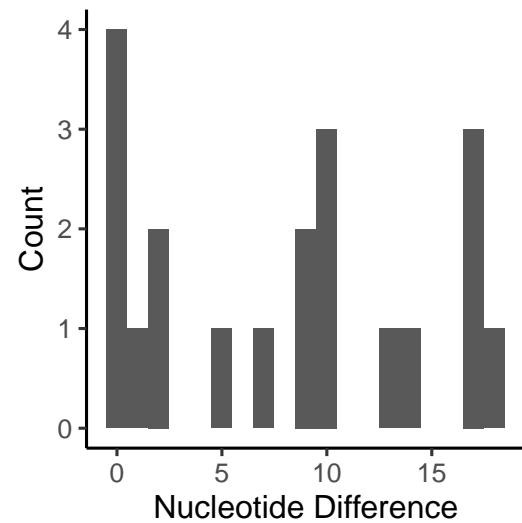
IGHV5-10-1*01_03

2 sequences assigned
No exact matches.



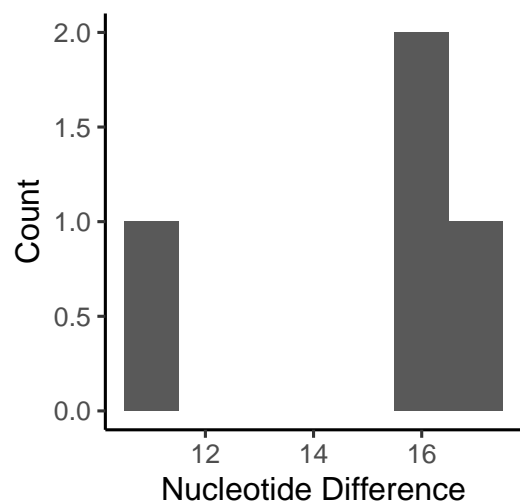
IGHV5-51*07

24 sequences assigned
4 (16.7%) exact matches, in which:
4 unique CDR3
3 unique J



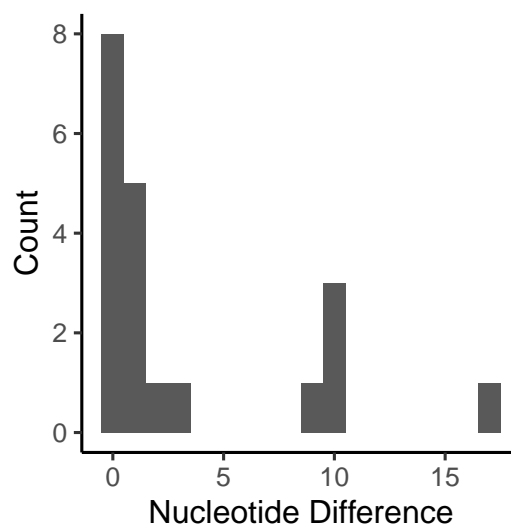
IGHV4/OR15-8*02

17 sequences assigned
No exact matches.



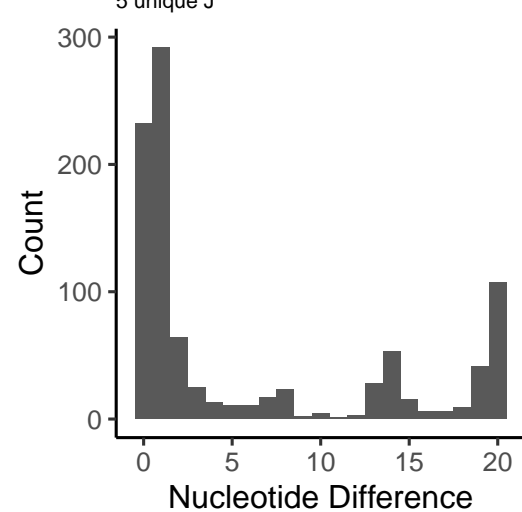
IGHV5-51*04

22 sequences assigned
8 (36.4%) exact matches, in which:
8 unique CDR3
2 unique J



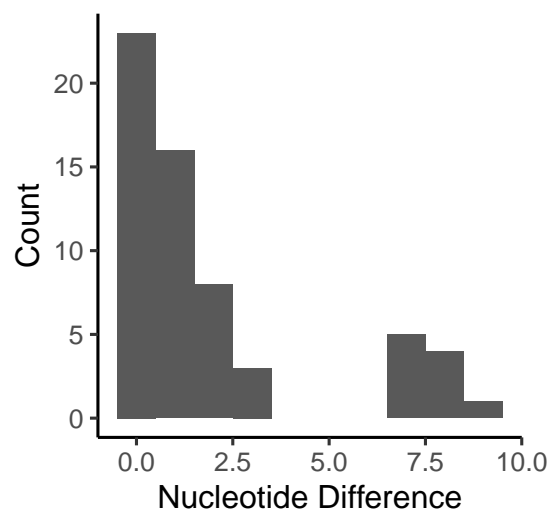
IGHV6-1*01_02

1815 sequences assigned
232 (12.8%) exact matches, in which:
206 unique CDR3
5 unique J



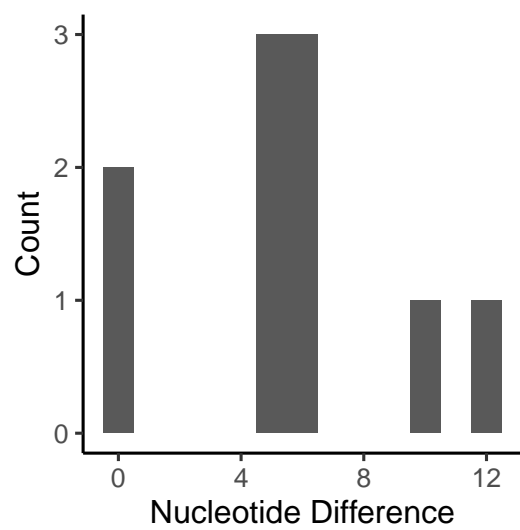
IGHV7-4-1*01

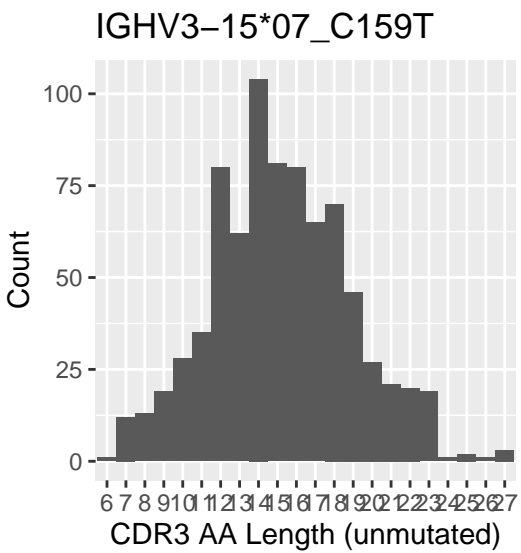
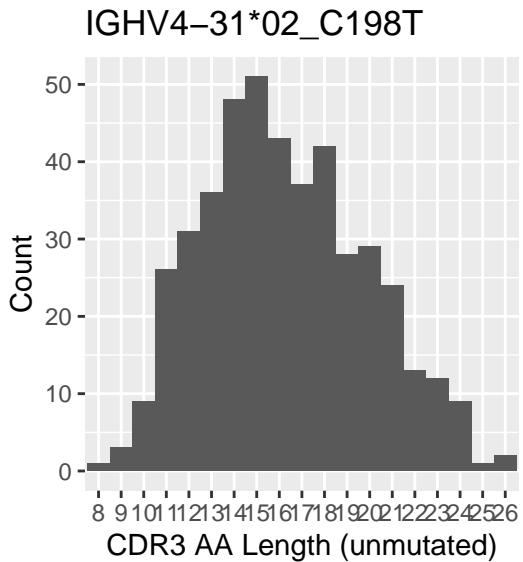
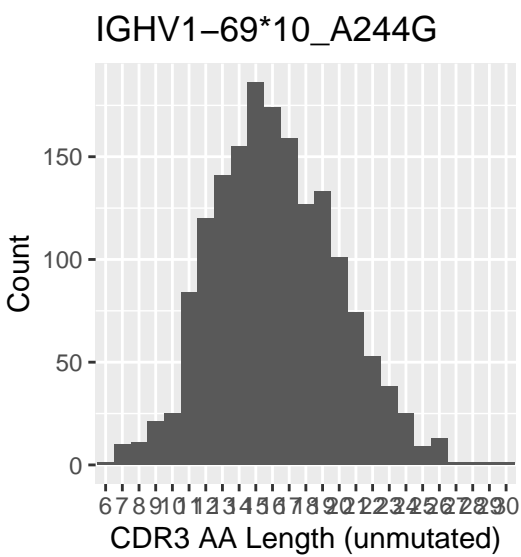
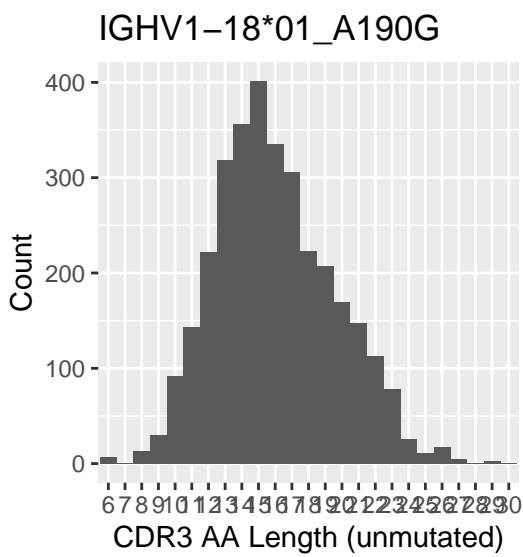
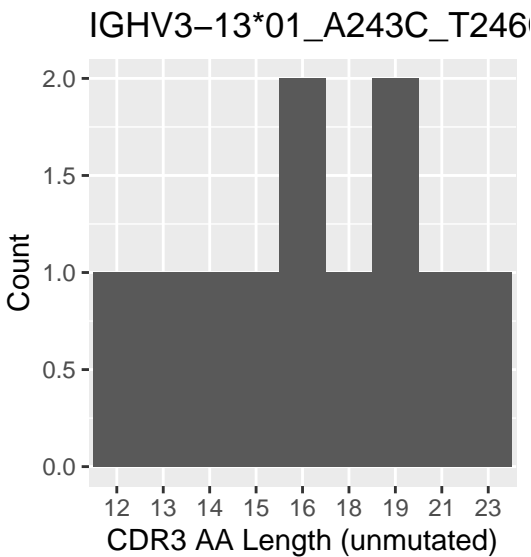
60 sequences assigned
23 (38.3%) exact matches, in which:
16 unique CDR3
4 unique J

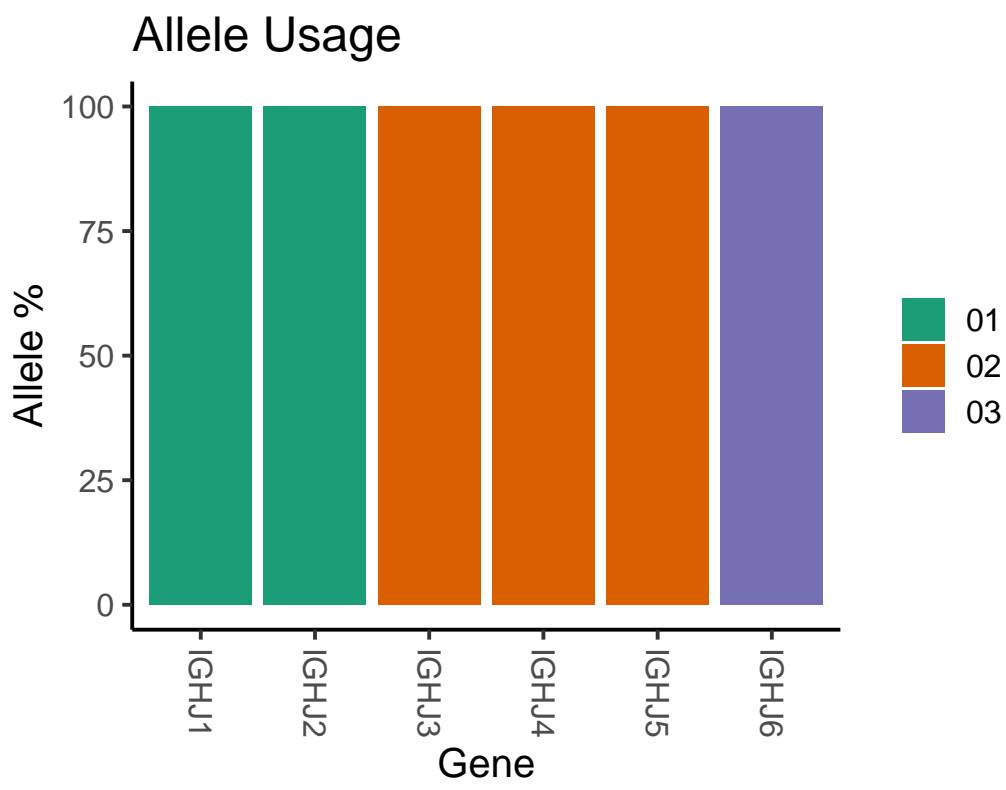


IGHV7-4-1*02

10 sequences assigned
2 (20%) exact matches, in which:
2 unique CDR3
1 unique J







[illegible]