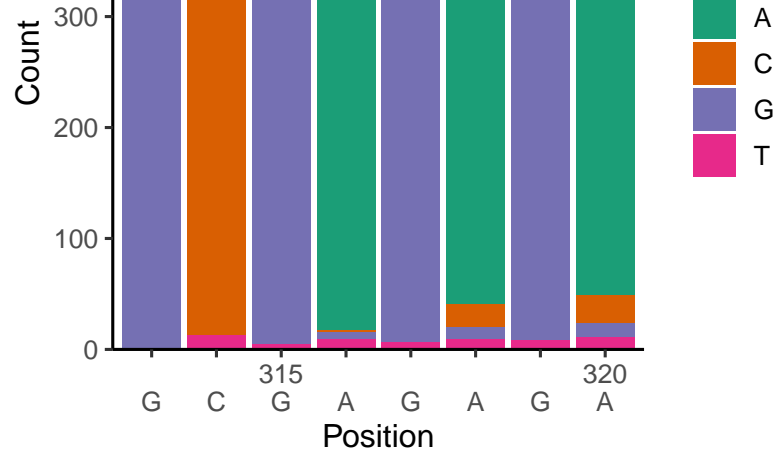
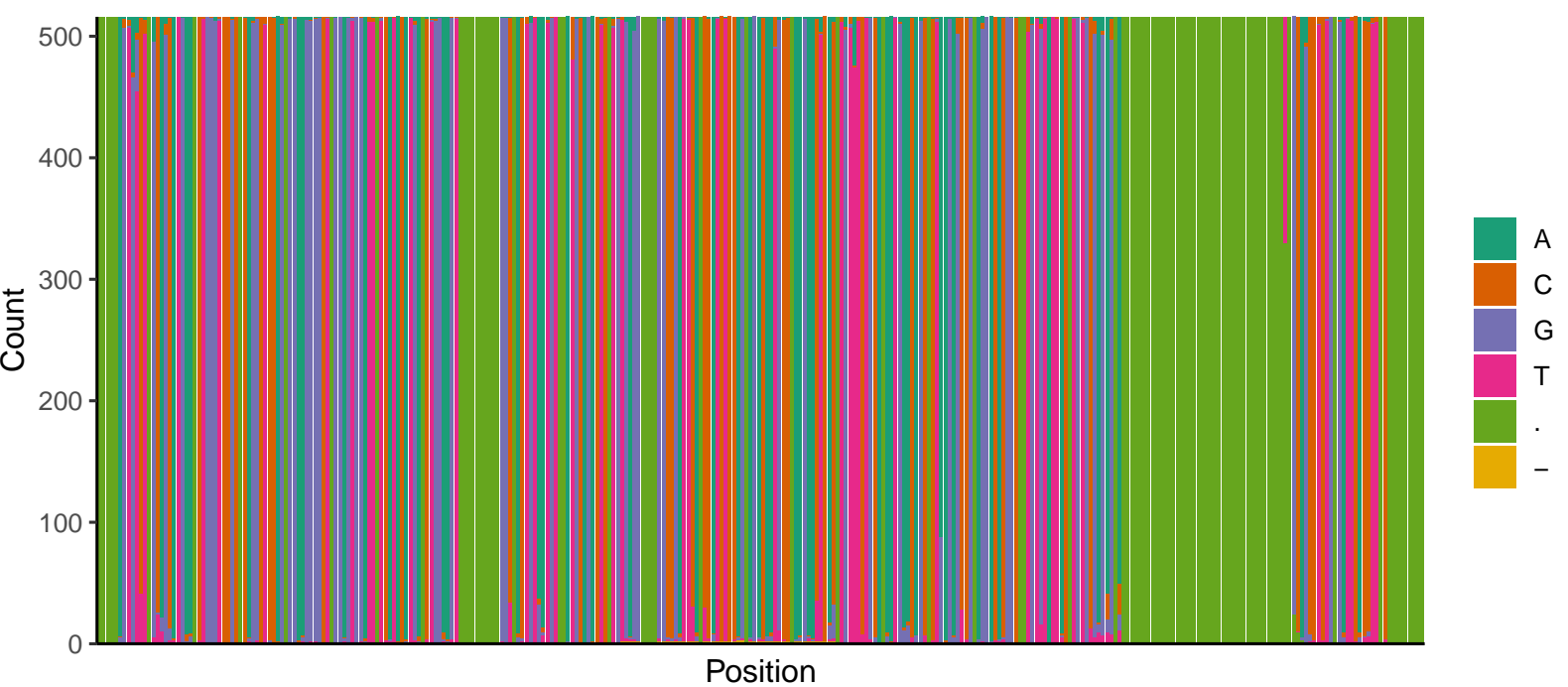
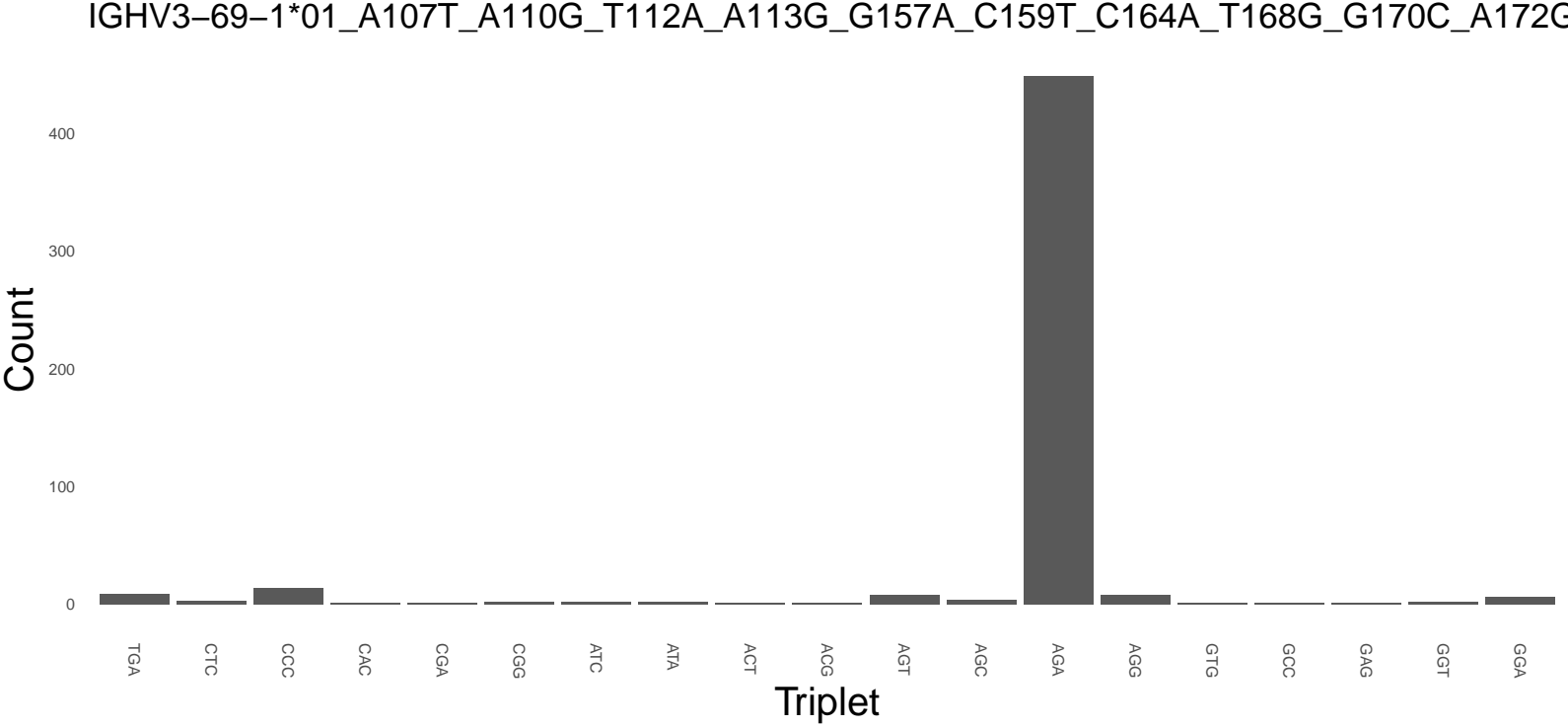


Gene IGHV3-69-1\*01\_A107T\_A110G\_T112A\_A113G\_G157A\_C159T\_C164A\_T168G\_G



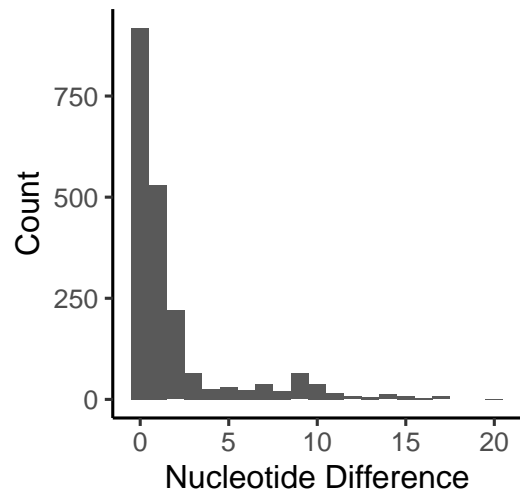
Gene IGHV3-69-1\*01\_A107T\_A110G\_T112A\_A113G\_G157A\_C159T\_C164A\_T168G\_G





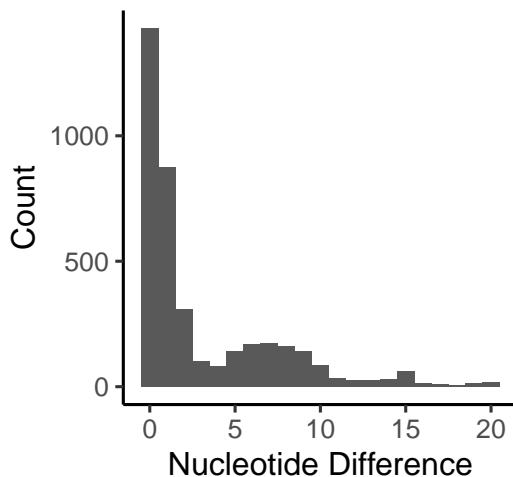
### IGHV1-2\*04

2213 sequences assigned  
919 (41.5%) exact matches, in which:  
847 unique CDR3  
6 unique J



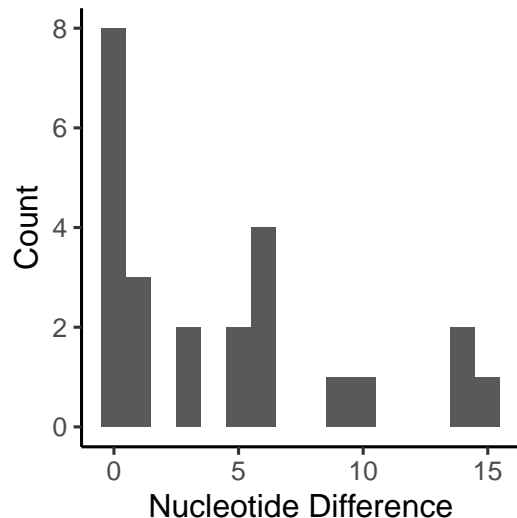
### IGHV1-8\*01

3932 sequences assigned  
1428 (36.3%) exact matches, in which:  
1305 unique CDR3  
6 unique J



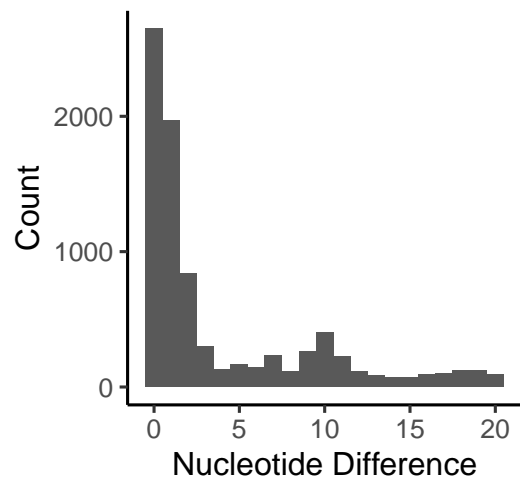
### IGHV1-45\*02

24 sequences assigned  
8 (33.3%) exact matches, in which:  
8 unique CDR3  
3 unique J



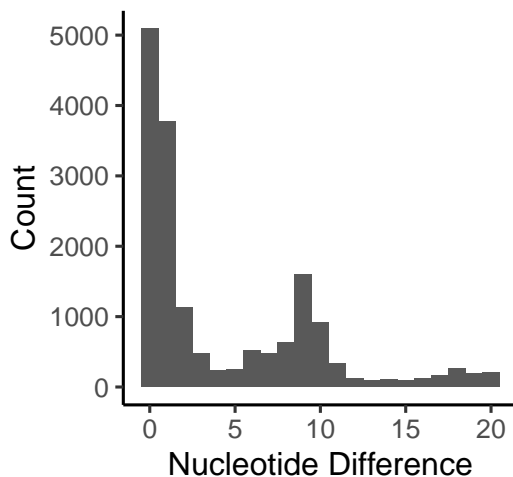
### IGHV1-2\*06

9343 sequences assigned  
2647 (28.3%) exact matches, in which:  
2385 unique CDR3  
6 unique J



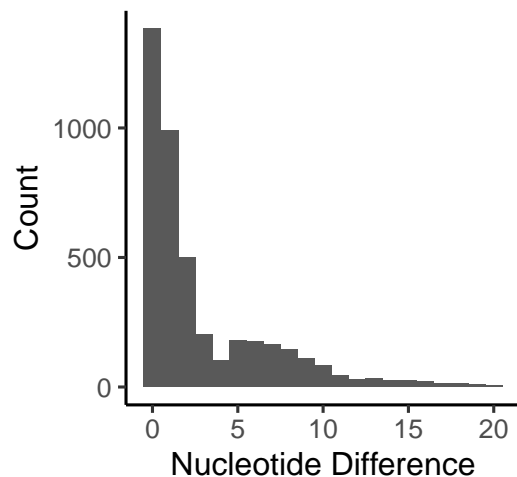
### IGHV1-18\*01

18078 sequences assigned  
5091 (28.2%) exact matches, in which:  
4510 unique CDR3  
6 unique J



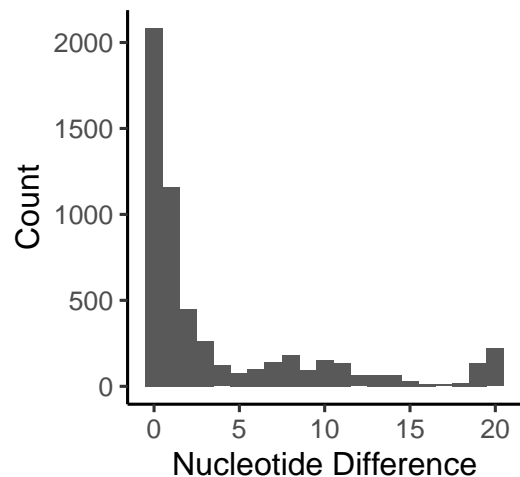
### IGHV1-46\*01

4773 sequences assigned  
1383 (29%) exact matches, in which:  
1278 unique CDR3  
6 unique J



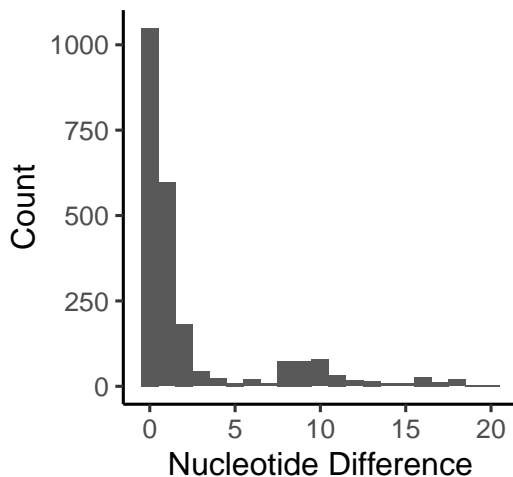
### IGHV1-3\*01\_05

6195 sequences assigned  
2084 (33.6%) exact matches, in which:  
1877 unique CDR3  
6 unique J



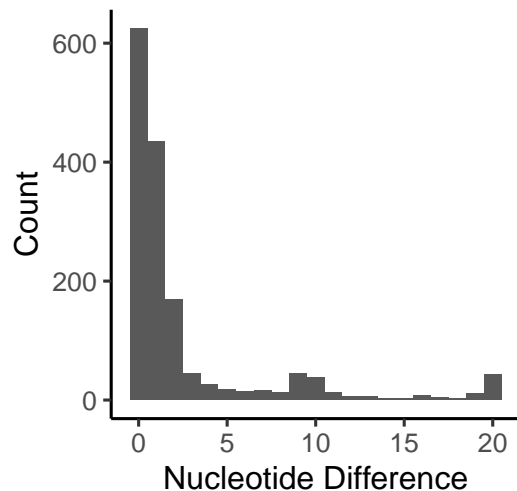
### IGHV1-24\*01

2378 sequences assigned  
1049 (44.1%) exact matches, in which:  
939 unique CDR3  
6 unique J



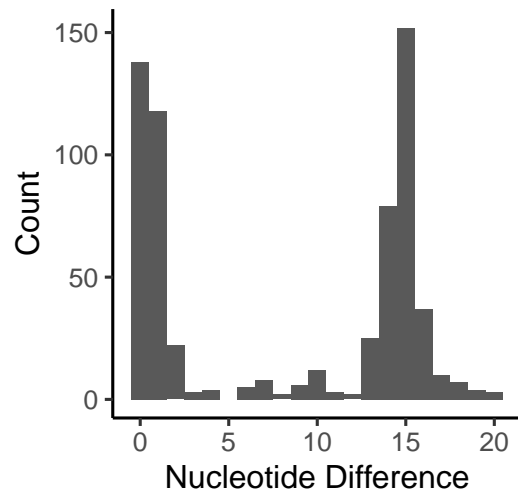
### IGHV1-46\*03

1741 sequences assigned  
625 (35.9%) exact matches, in which:  
548 unique CDR3  
6 unique J



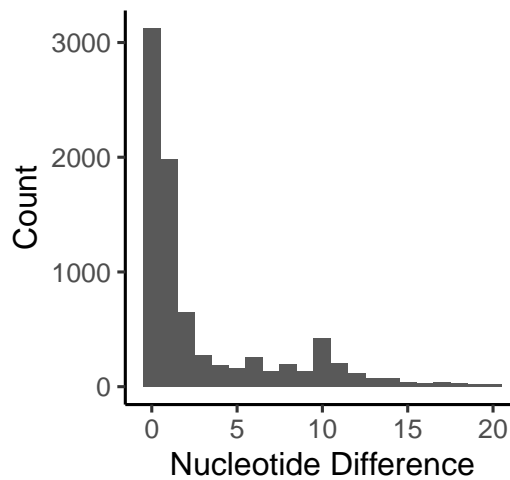
### IGHV1-58\*02

645 sequences assigned  
138 (21.4%) exact matches, in which:  
130 unique CDR3  
5 unique J



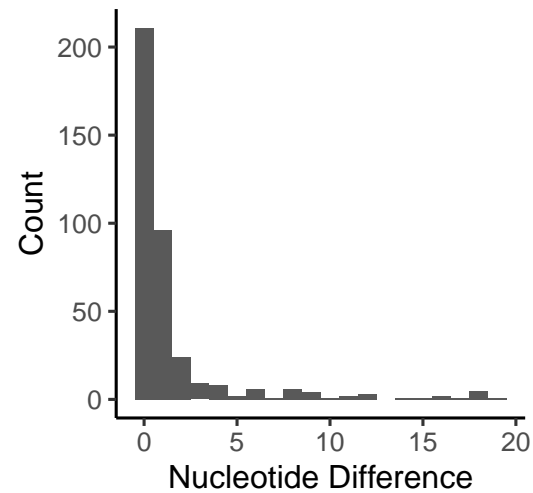
### IGHV1-69\*01\_12\_13

9100 sequences assigned  
3123 (34.3%) exact matches, in which:  
2924 unique CDR3  
6 unique J



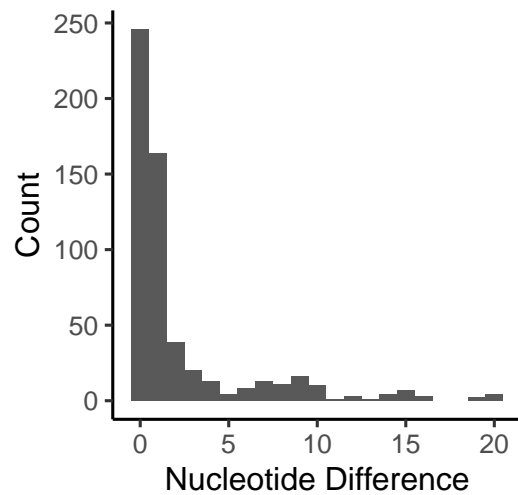
### IGHV2-26\*01

390 sequences assigned  
211 (54.1%) exact matches, in which:  
197 unique CDR3  
5 unique J



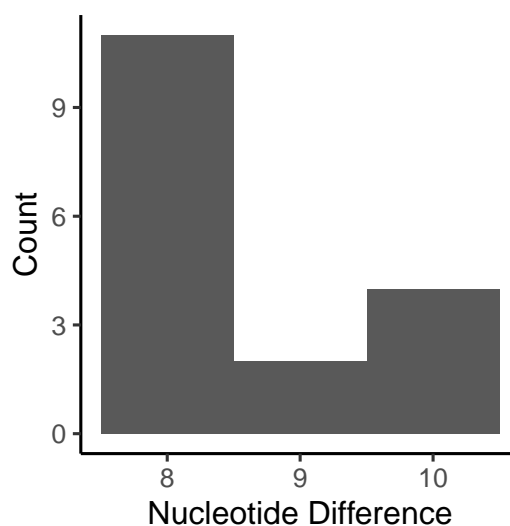
### IGHV1-58\*01\_03

747 sequences assigned  
246 (32.9%) exact matches, in which:  
221 unique CDR3  
6 unique J



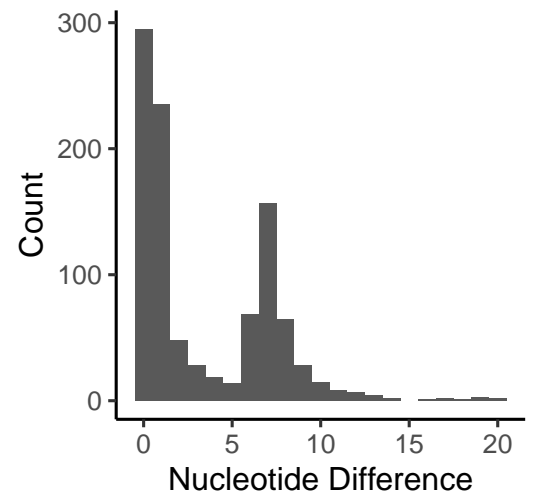
### IGHV1-NL1\*01

17 sequences assigned  
No exact matches.



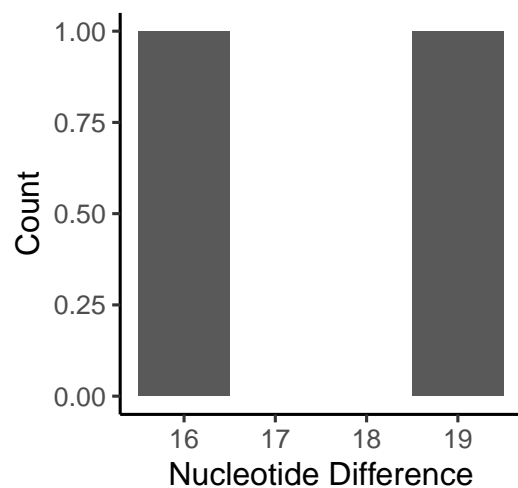
### IGHV2-70\*01

1032 sequences assigned  
295 (28.6%) exact matches, in which:  
263 unique CDR3  
6 unique J



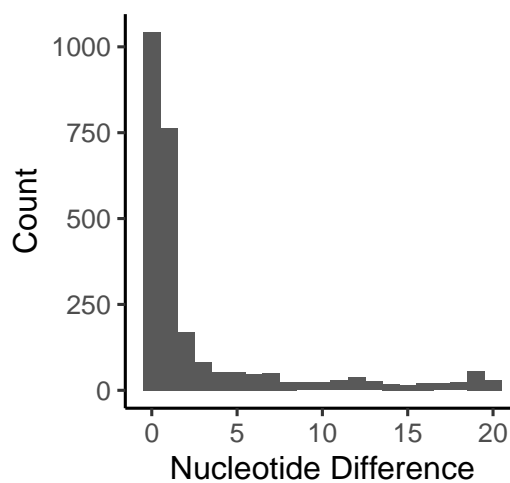
### IGHV1-69-2\*01

2 sequences assigned  
No exact matches.



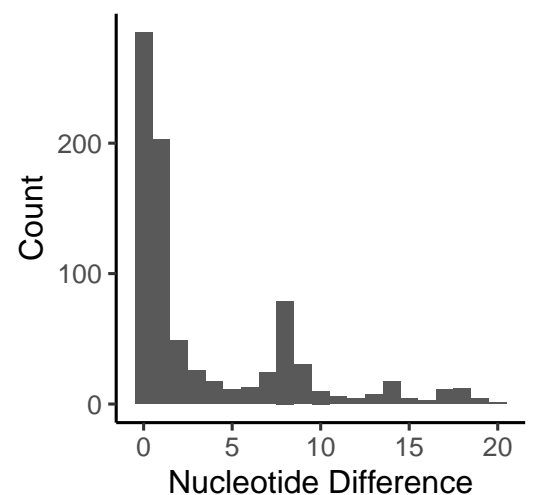
### IGHV2-5\*02

2971 sequences assigned  
1043 (35.1%) exact matches, in which:  
949 unique CDR3  
6 unique J



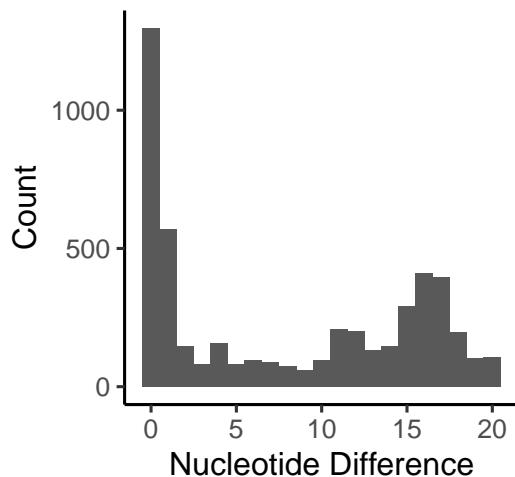
### IGHV2-70\*11\_15

842 sequences assigned  
285 (33.8%) exact matches, in which:  
258 unique CDR3  
6 unique J



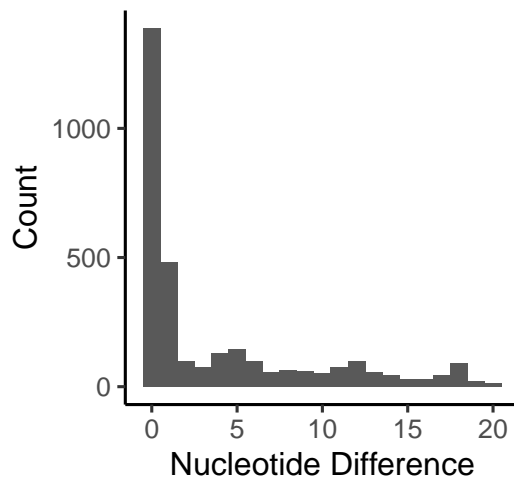
### IGHV3-7\*01

10627 sequences assigned  
1296 (12.2%) exact matches, in which:  
933 unique CDR3  
6 unique J



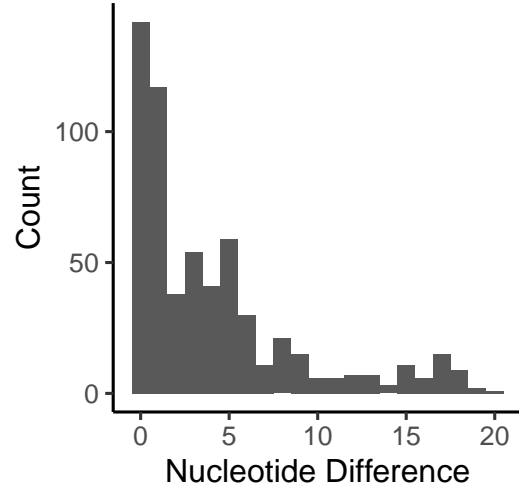
### IGHV3-9\*01

3493 sequences assigned  
1387 (39.7%) exact matches, in which:  
980 unique CDR3  
6 unique J



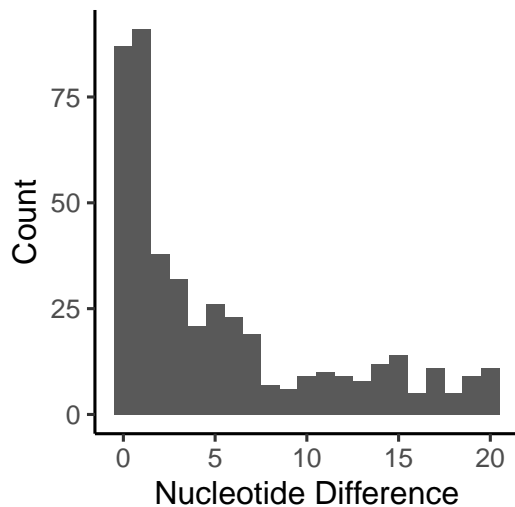
### IGHV3-11\*06

633 sequences assigned  
142 (22.4%) exact matches, in which:  
140 unique CDR3  
6 unique J



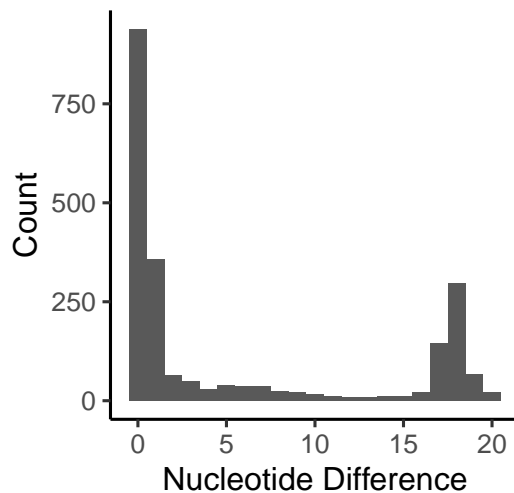
### IGHV3-7\*03

645 sequences assigned  
87 (13.5%) exact matches, in which:  
79 unique CDR3  
6 unique J



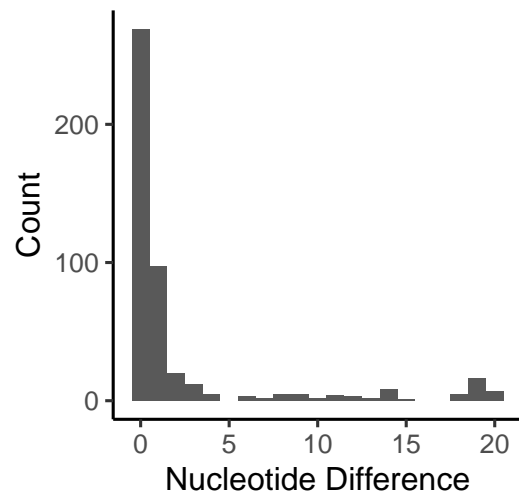
### IGHV3-11\*01

2375 sequences assigned  
939 (39.5%) exact matches, in which:  
690 unique CDR3  
6 unique J



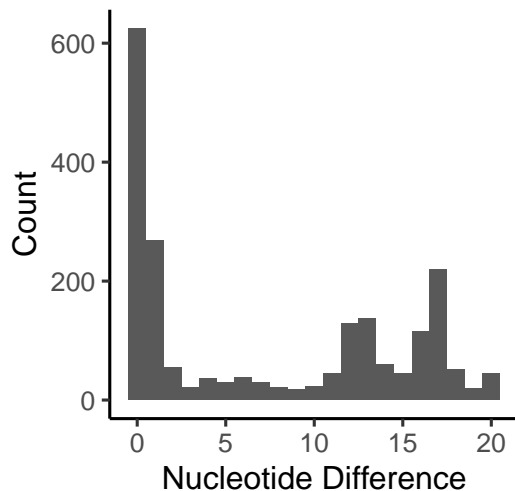
### IGHV3-13\*01

494 sequences assigned  
269 (54.5%) exact matches, in which:  
170 unique CDR3  
6 unique J



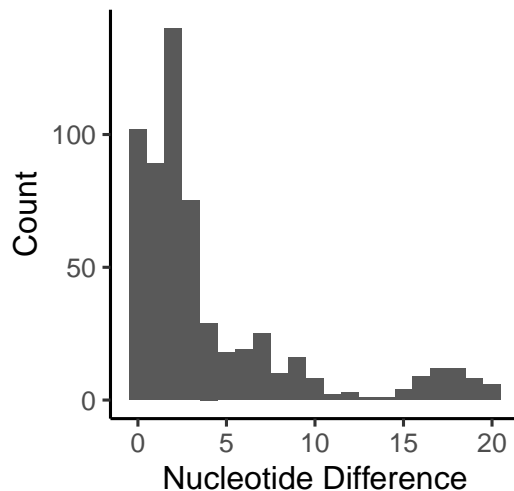
### IGHV3-7\*04

2260 sequences assigned  
625 (27.7%) exact matches, in which:  
424 unique CDR3  
6 unique J



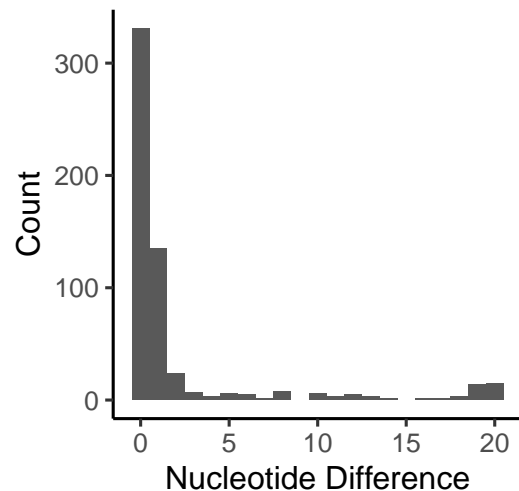
### IGHV3-11\*04

626 sequences assigned  
102 (16.3%) exact matches, in which:  
99 unique CDR3  
5 unique J



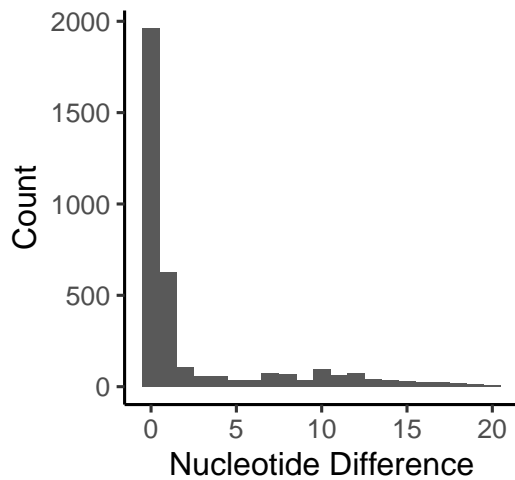
### IGHV3-13\*04

585 sequences assigned  
331 (56.6%) exact matches, in which:  
218 unique CDR3  
6 unique J



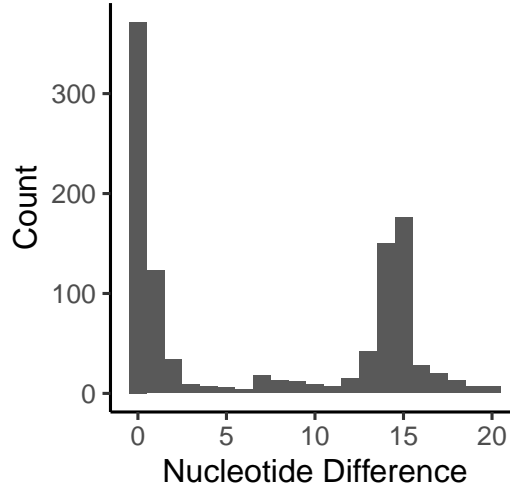
### IGHV3-15\*01\_02

4881 sequences assigned  
1961 (40.2%) exact matches, in which:  
1401 unique CDR3  
6 unique J



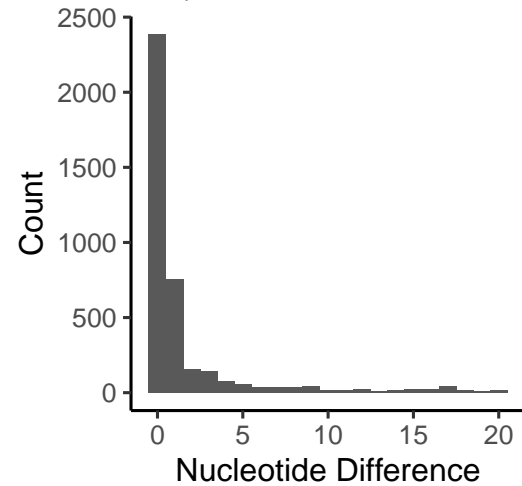
### IGHV3-20\*03\_04

1128 sequences assigned  
372 (33%) exact matches, in which:  
265 unique CDR3  
6 unique J



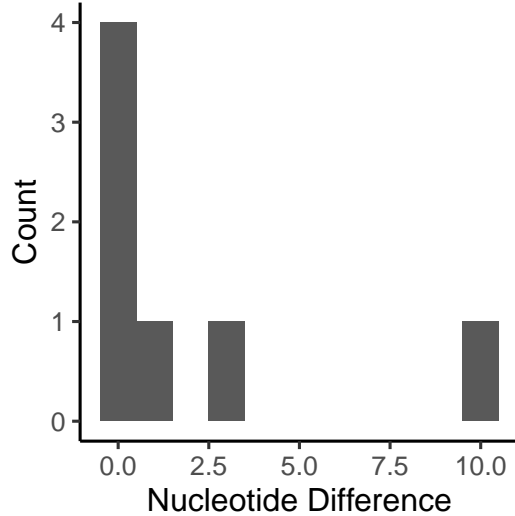
### IGHV3-30\*01

4062 sequences assigned  
2385 (58.7%) exact matches, in which:  
1714 unique CDR3  
6 unique J



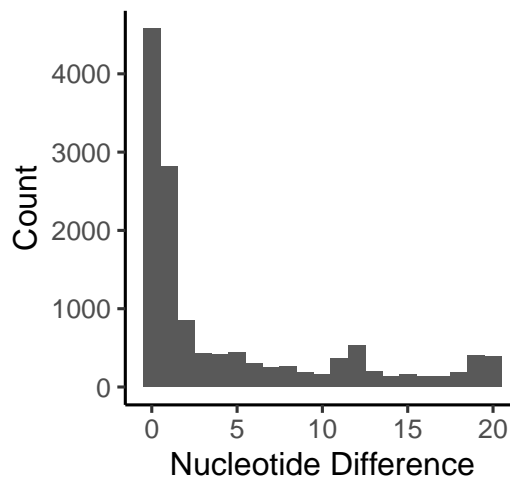
### IGHV3-19\*01

7 sequences assigned  
4 (57.1%) exact matches, in which:  
4 unique CDR3  
4 unique J



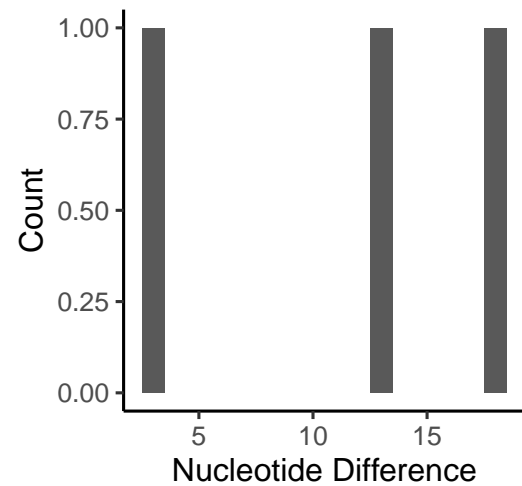
### IGHV3-21\*01\_02

15064 sequences assigned  
4576 (30.4%) exact matches, in which:  
3094 unique CDR3  
6 unique J



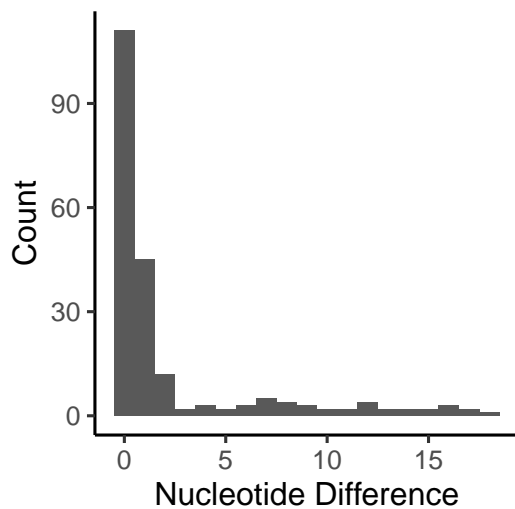
### IGHV3-30-3\*02

80 sequences assigned  
No exact matches.



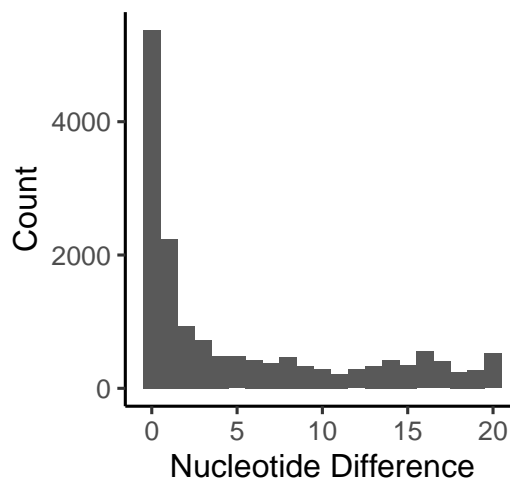
### IGHV3-20\*01\_02

223 sequences assigned  
111 (49.8%) exact matches, in which:  
81 unique CDR3  
5 unique J



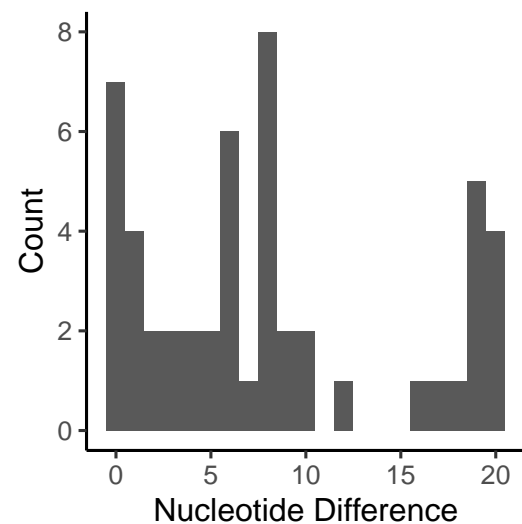
### IGHV3-23\*01\_04

21329 sequences assigned  
5375 (25.2%) exact matches, in which:  
3553 unique CDR3  
6 unique J



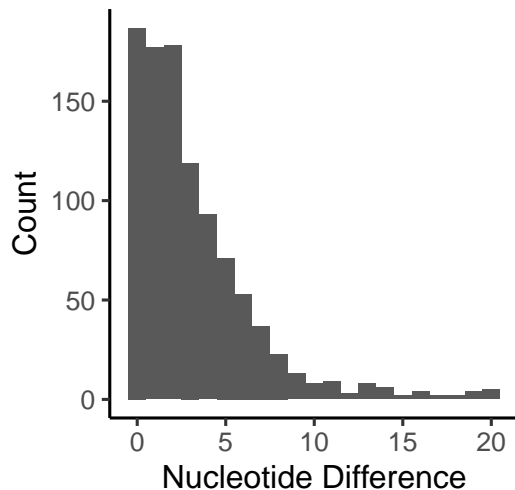
### IGHV3-30-3\*03

107 sequences assigned  
7 (6.5%) exact matches, in which:  
7 unique CDR3  
2 unique J



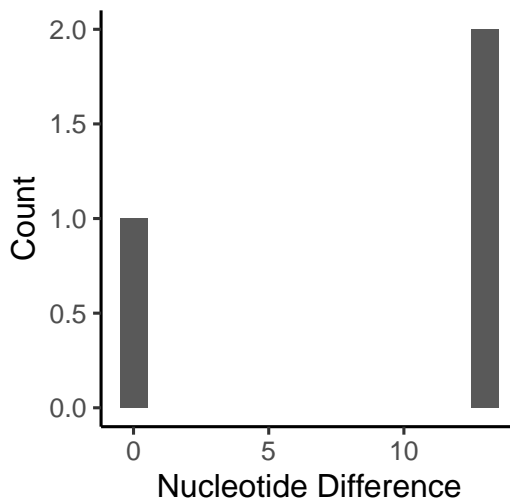
### IGHV3–30\*07

1030 sequences assigned  
187 (18.2%) exact matches, in which:  
183 unique CDR3  
6 unique J



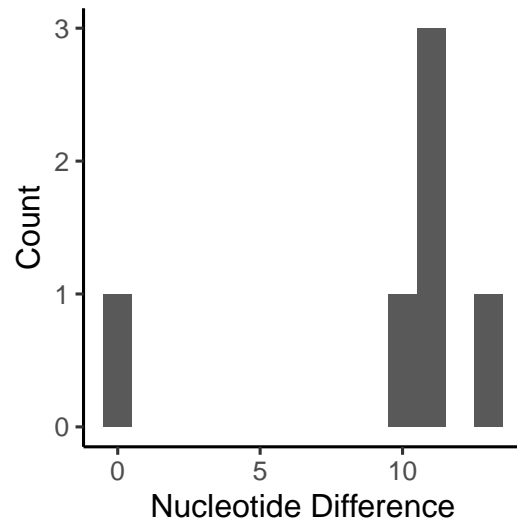
### IGHV3–35\*01

3 sequences assigned  
1 (33.3%) exact matches, in which:  
1 unique CDR3  
1 unique J



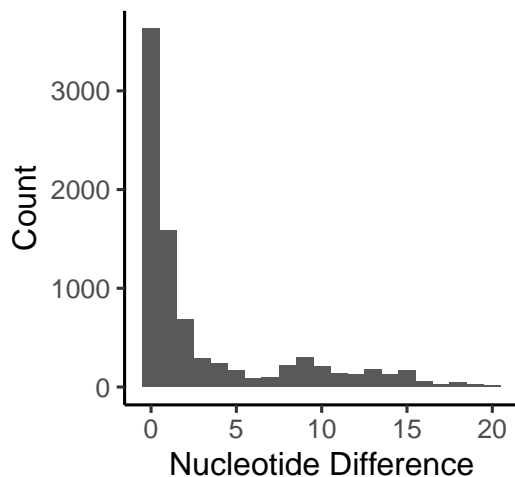
### IGHV3–47\*02

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



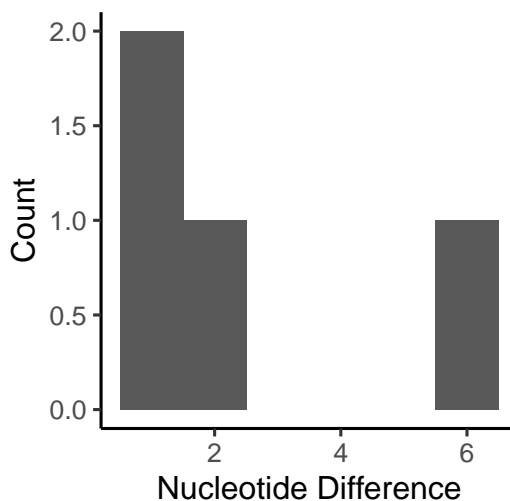
### IGHV3–33\*01

8754 sequences assigned  
3629 (41.5%) exact matches, in which:  
2676 unique CDR3  
6 unique J



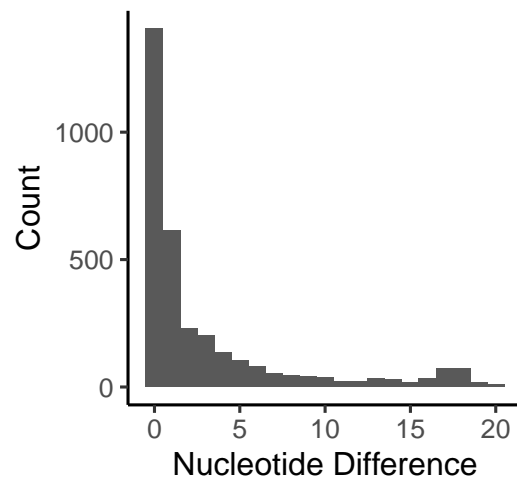
### IGHV3–43\*01

4 sequences assigned  
No exact matches.



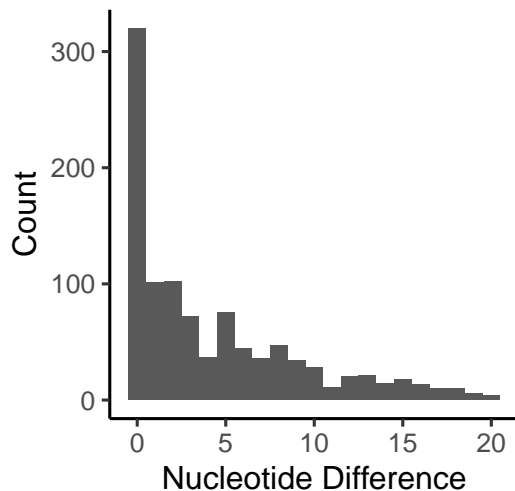
### IGHV3–48\*01

3361 sequences assigned  
1406 (41.8%) exact matches, in which:  
994 unique CDR3  
6 unique J



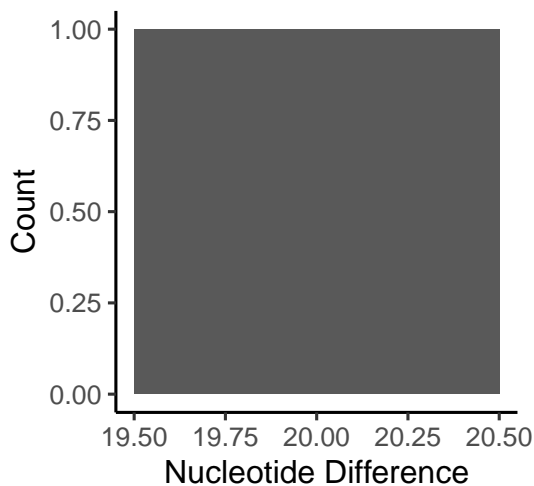
### IGHV3–33\*08

1076 sequences assigned  
320 (29.7%) exact matches, in which:  
299 unique CDR3  
6 unique J



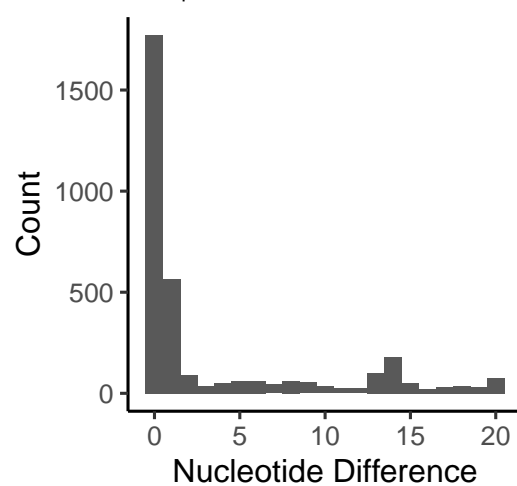
### IGHV3–43\*02

1 sequences assigned  
No exact matches.



### IGHV3–48\*03

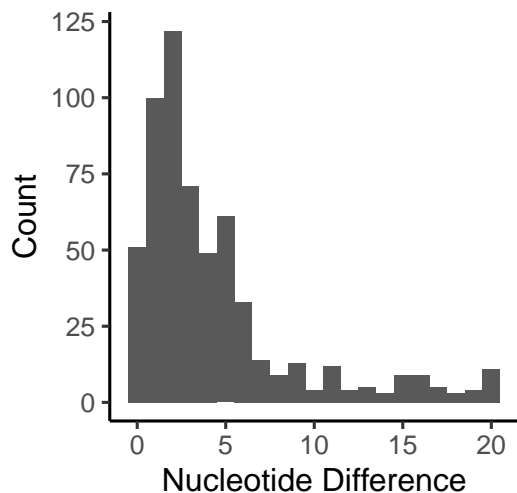
4551 sequences assigned  
1772 (38.9%) exact matches, in which:  
1265 unique CDR3  
6 unique J





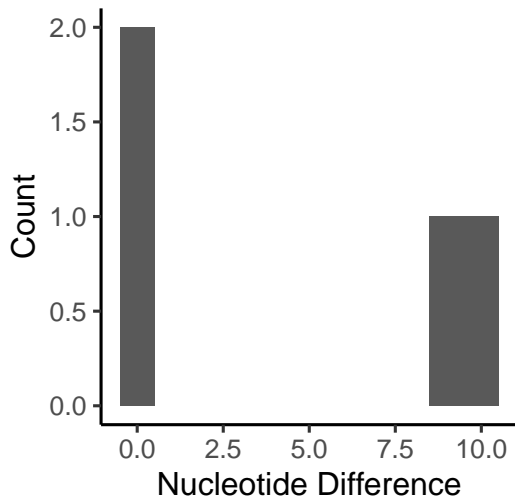
### IGHV3-48\*04

670 sequences assigned  
51 (7.6%) exact matches, in which:  
51 unique CDR3  
5 unique J



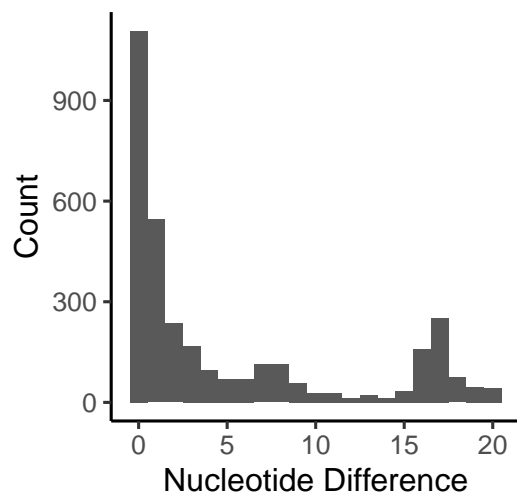
### IGHV3-52\*02

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



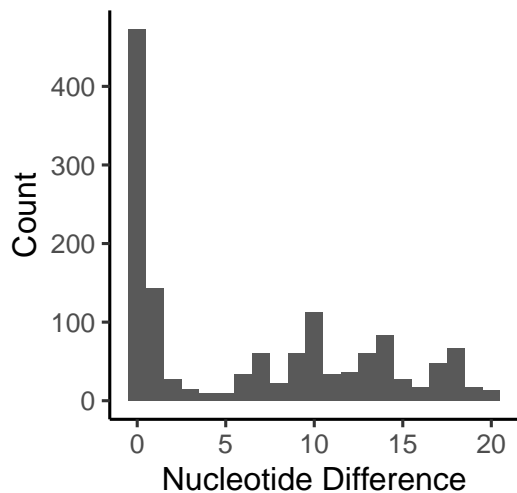
### IGHV3-53\*01\_02

4433 sequences assigned  
1108 (25%) exact matches, in which:  
770 unique CDR3  
6 unique J



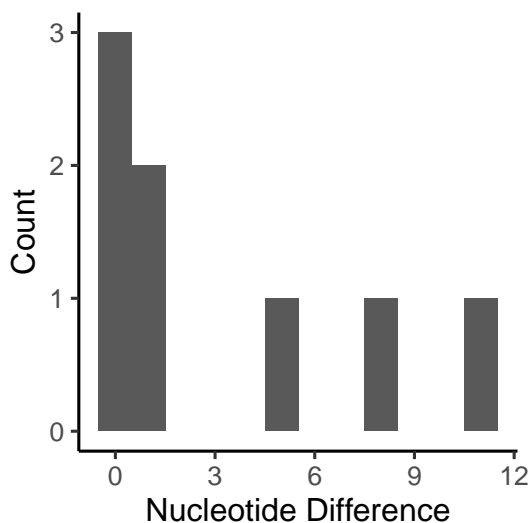
### IGHV3-49\*04

1411 sequences assigned  
473 (33.5%) exact matches, in which:  
346 unique CDR3  
6 unique J



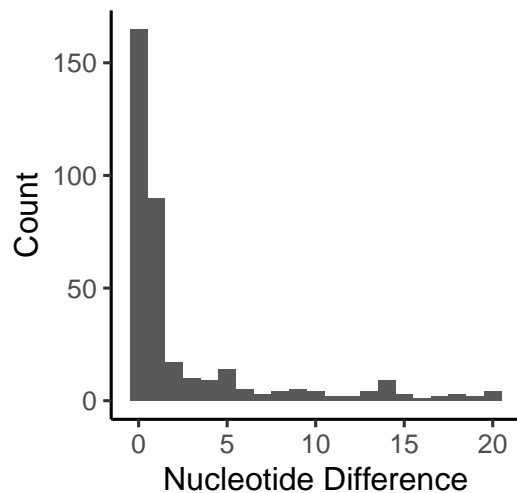
### IGHV3-52\*01\_03

8 sequences assigned  
3 (37.5%) exact matches, in which:  
2 unique CDR3  
1 unique J



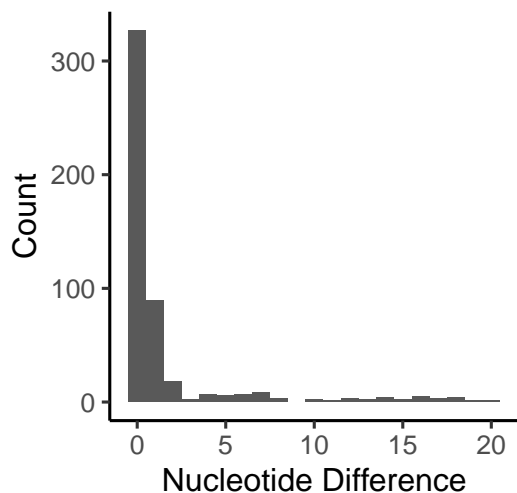
### IGHV3-64\*01

589 sequences assigned  
165 (28%) exact matches, in which:  
112 unique CDR3  
6 unique J



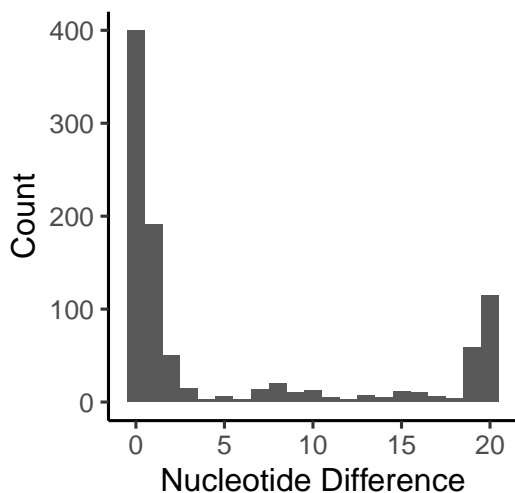
### IGHV3-49\*03\_05

503 sequences assigned  
327 (65%) exact matches, in which:  
243 unique CDR3  
6 unique J



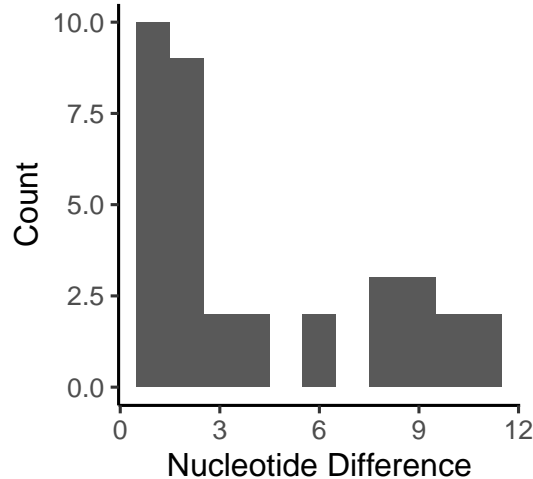
### IGHV3-53\*04

1016 sequences assigned  
400 (39.4%) exact matches, in which:  
277 unique CDR3  
6 unique J



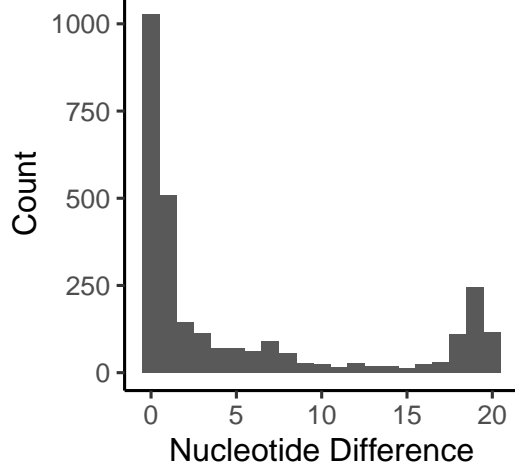
### IGHV3-64\*04

37 sequences assigned  
No exact matches.



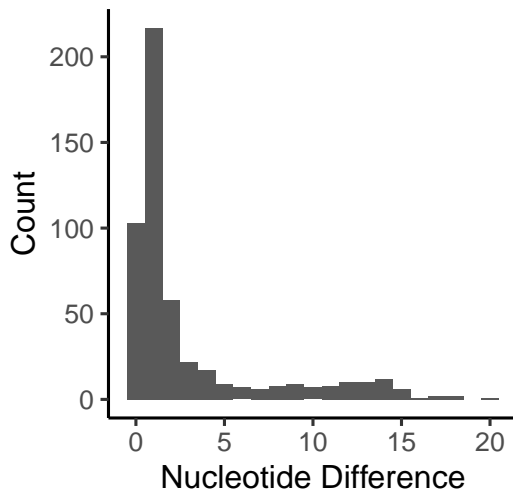
### IGHV3-66\*01

3740 sequences assigned  
1027 (27.5%) exact matches, in which:  
711 unique CDR3  
6 unique J



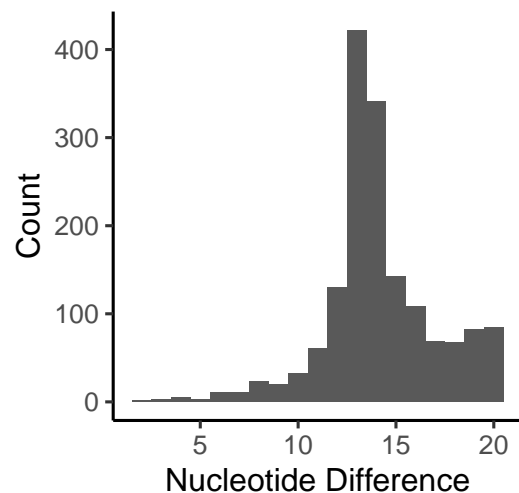
### IGHV3-69-1\*01\_A107T\_

516 sequences assigned  
103 (20%) exact matches, in which:  
57 unique CDR3  
4 unique J



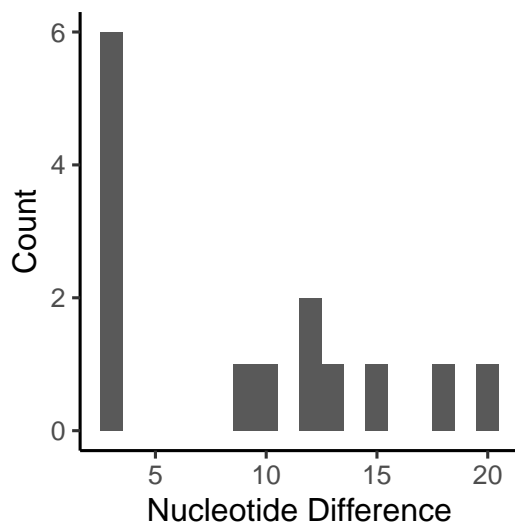
### IGHV3-74\*03

2949 sequences assigned  
No exact matches.



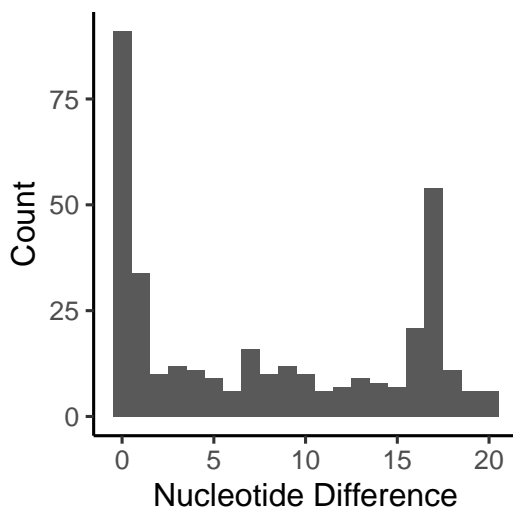
### IGHV3-69-1\*01

37 sequences assigned  
No exact matches.



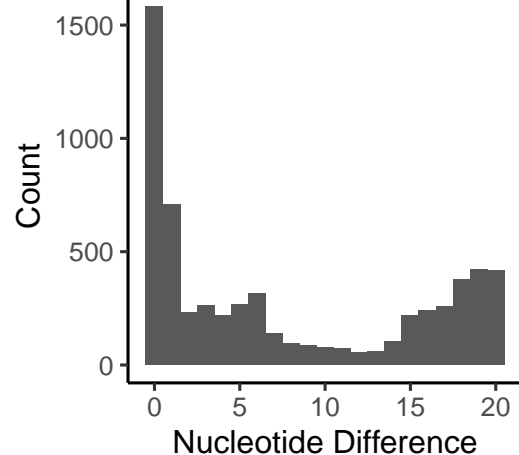
### IGHV3-72\*01

619 sequences assigned  
91 (14.7%) exact matches, in which:  
63 unique CDR3  
5 unique J



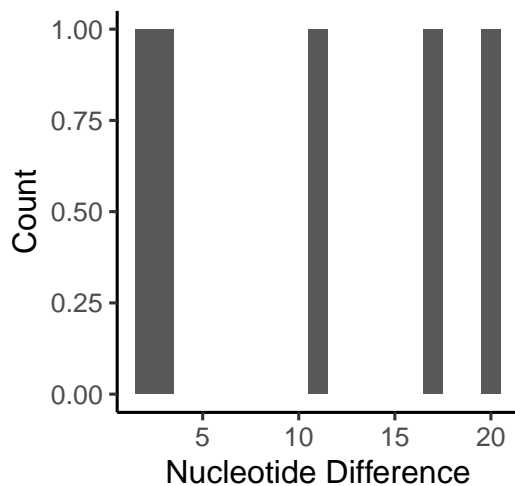
### IGHV3-74\*01\_02

7576 sequences assigned  
1581 (20.9%) exact matches, in which:  
1098 unique CDR3  
6 unique J



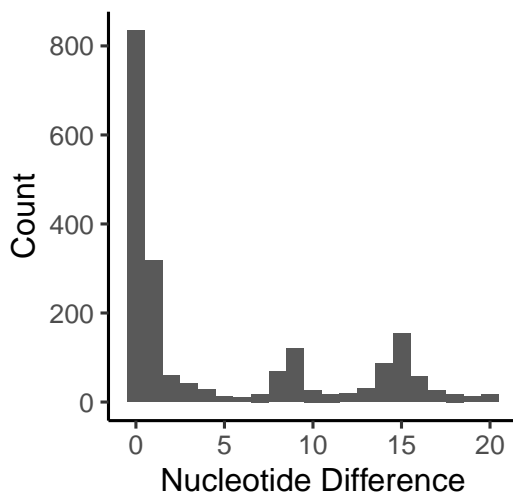
### IGHV3-69-1\*02

5 sequences assigned  
No exact matches.



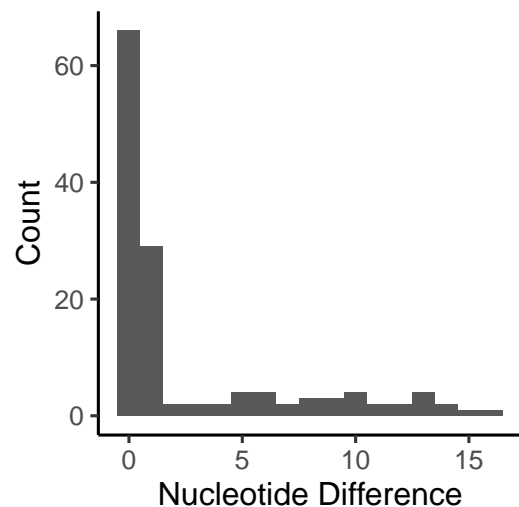
### IGHV3-73\*01\_02

2288 sequences assigned  
835 (36.5%) exact matches, in which:  
593 unique CDR3  
6 unique J



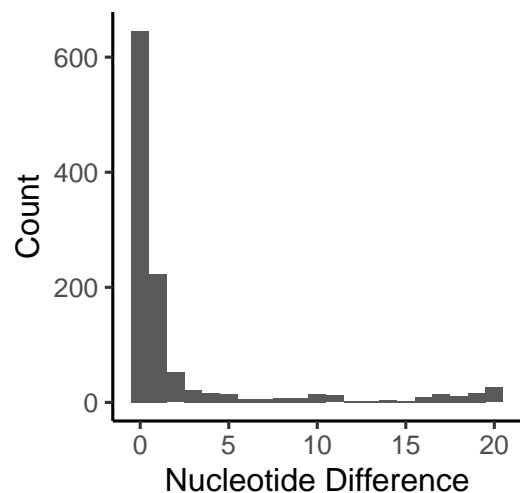
### IGHV3-43D\*04

137 sequences assigned  
66 (48.2%) exact matches, in which:  
53 unique CDR3  
4 unique J



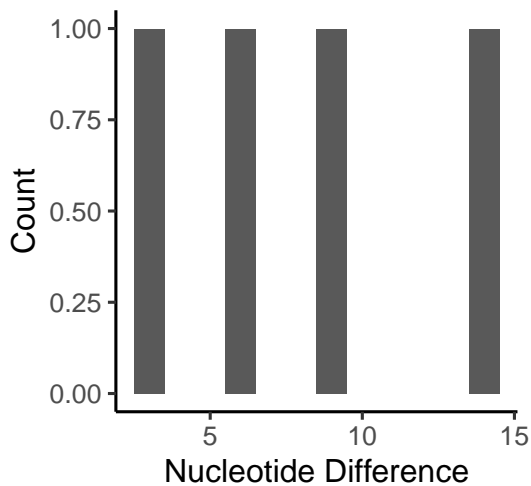
### IGHV3–64D\*06

1256 sequences assigned  
646 (51.4%) exact matches, in which:  
427 unique CDR3  
6 unique J



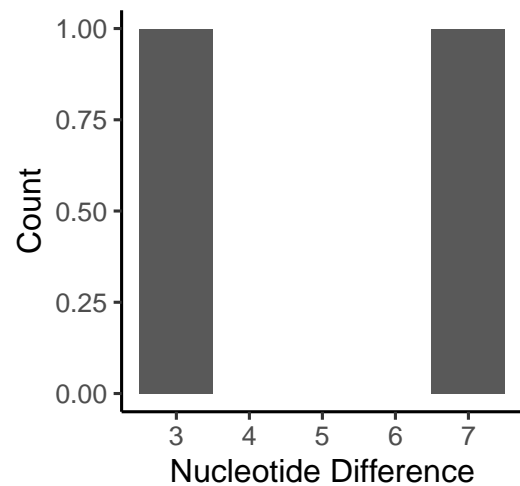
### IGHV4–28\*03

7 sequences assigned  
No exact matches.



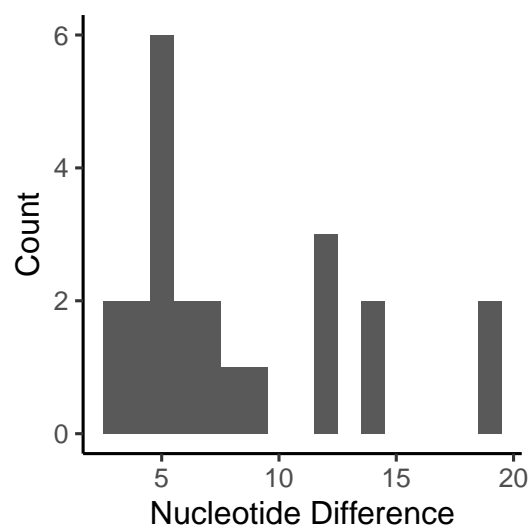
### IGHV4–30–4\*05

2 sequences assigned  
No exact matches.



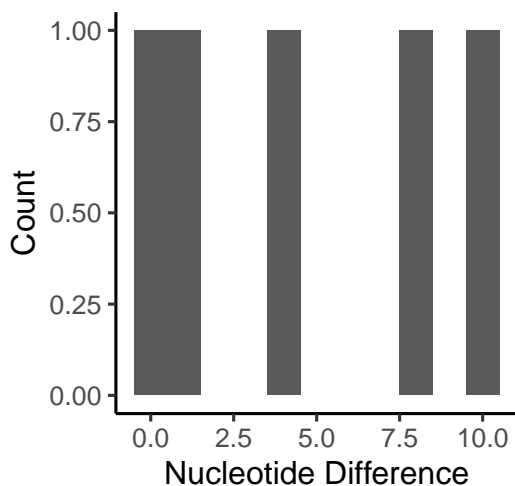
### IGHV3–NL1\*01

38 sequences assigned  
No exact matches.



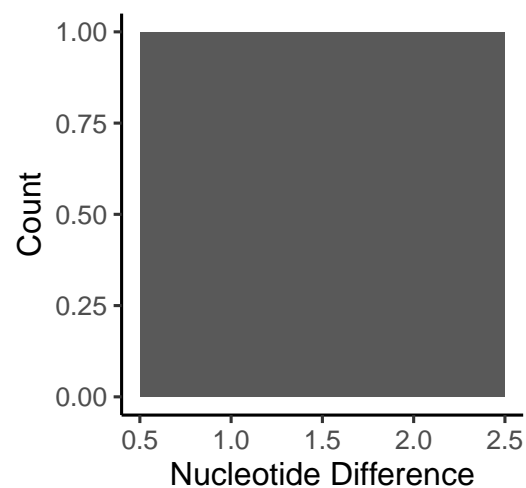
### IGHV4–28\*01\_07

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



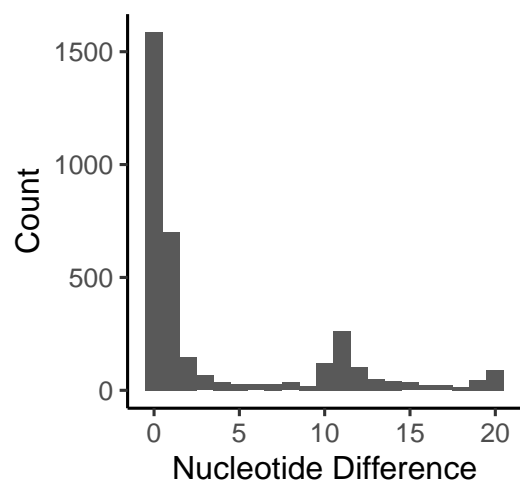
### IGHV4–30–4\*07

2 sequences assigned  
No exact matches.



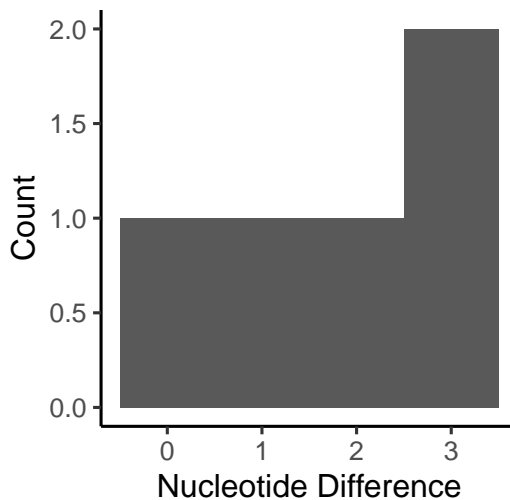
### IGHV4–4\*02\_03

5340 sequences assigned  
1587 (29.7%) exact matches, in which:  
1376 unique CDR3  
6 unique J



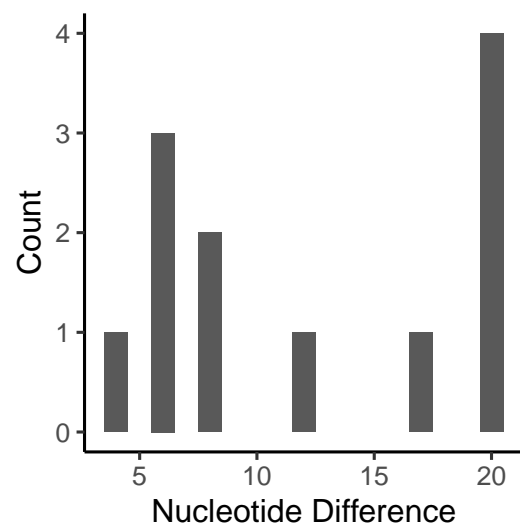
### IGHV4–28\*02\_05

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



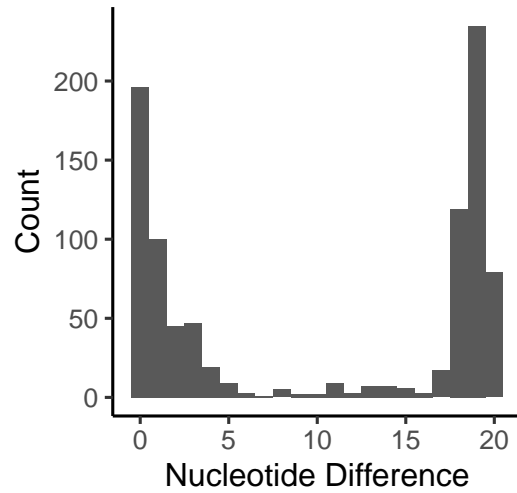
### IGHV4–30–4\*08

24 sequences assigned  
No exact matches.



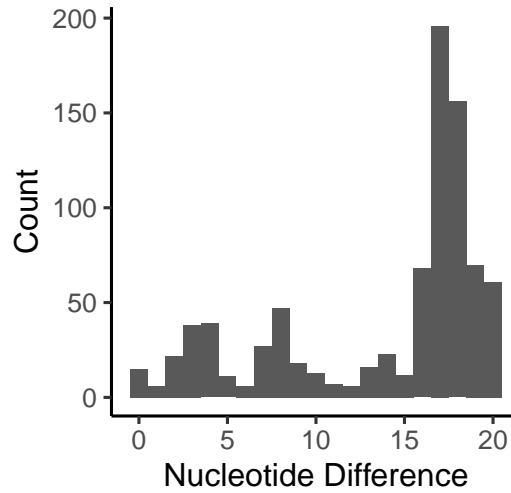
### IGHV4-31\*01

995 sequences assigned  
196 (19.7%) exact matches, in which:  
190 unique CDR3  
6 unique J



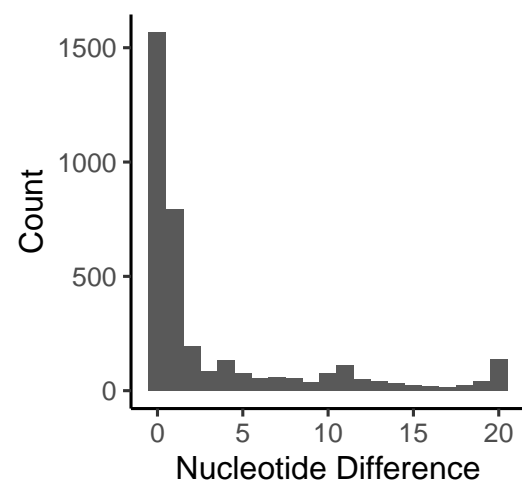
### IGHV4-38-2\*02

1146 sequences assigned  
15 (1.3%) exact matches, in which:  
15 unique CDR3  
5 unique J



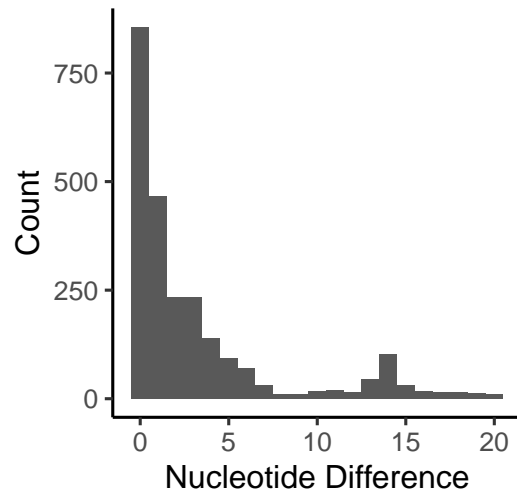
### IGHV4-59\*08

4347 sequences assigned  
1567 (36%) exact matches, in which:  
1414 unique CDR3  
6 unique J



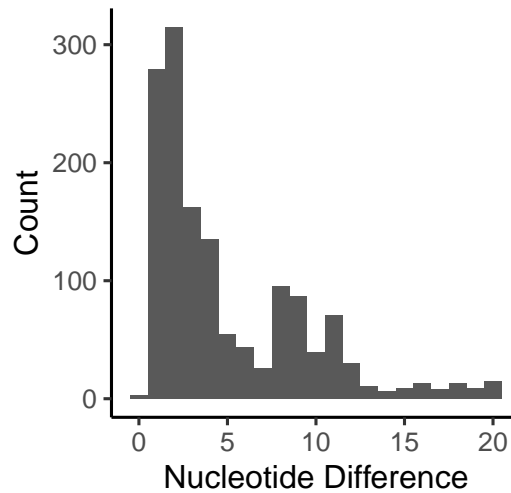
### IGHV4-31\*02

3315 sequences assigned  
856 (25.8%) exact matches, in which:  
785 unique CDR3  
6 unique J



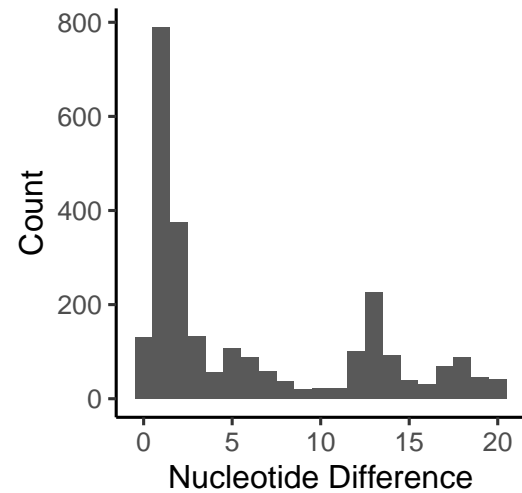
### IGHV4-39\*07

2471 sequences assigned  
3 (0.1%) exact matches, in which:  
3 unique CDR3  
1 unique J



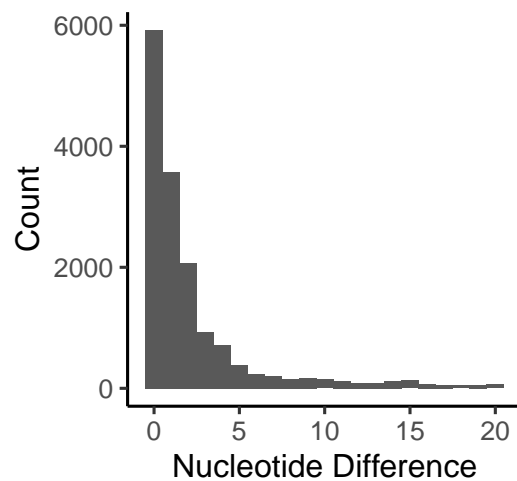
### IGHV4-59\*12

3121 sequences assigned  
130 (4.2%) exact matches, in which:  
130 unique CDR3  
6 unique J



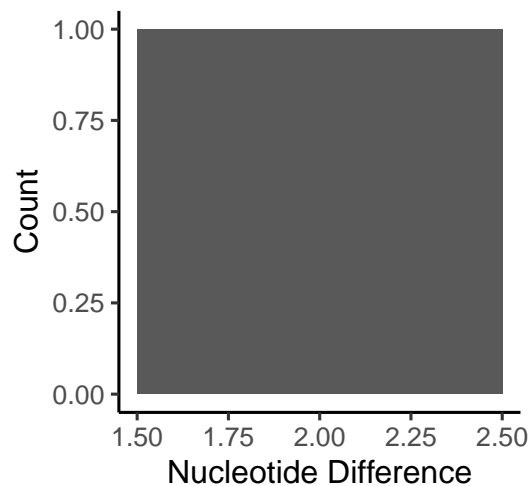
### IGHV4-34\*01\_02

18295 sequences assigned  
5921 (32.4%) exact matches, in which:  
4867 unique CDR3  
6 unique J



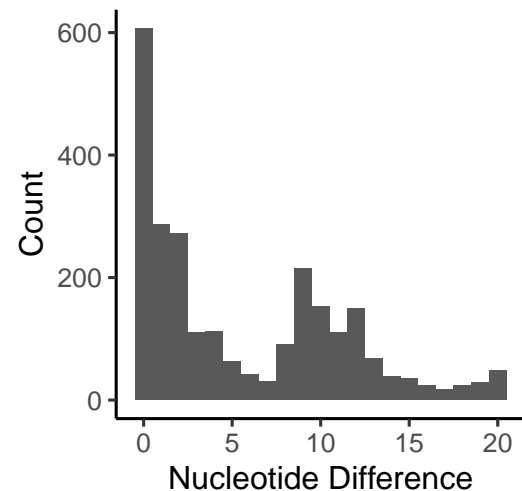
### IGHV4-55\*09

1 sequences assigned  
No exact matches.



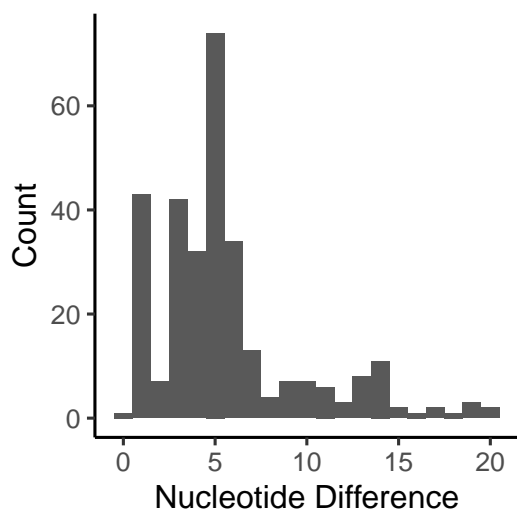
### IGHV4-61\*01

2769 sequences assigned  
607 (21.9%) exact matches, in which:  
576 unique CDR3  
6 unique J



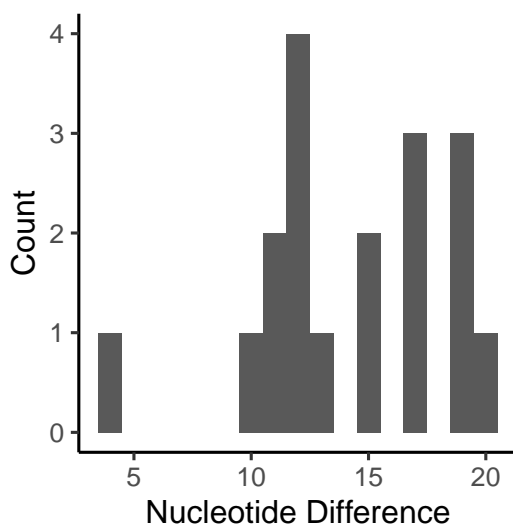
### IGHV4-61\*08

376 sequences assigned  
1 (0.3%) exact matches, in which:  
1 unique CDR3  
1 unique J



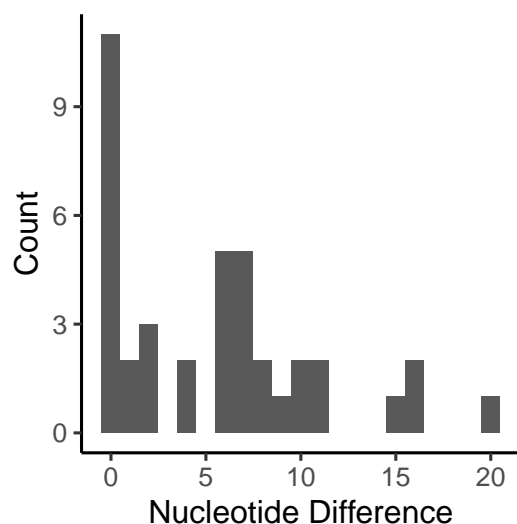
### IGHV4/OR15-8\*01

39 sequences assigned  
No exact matches.



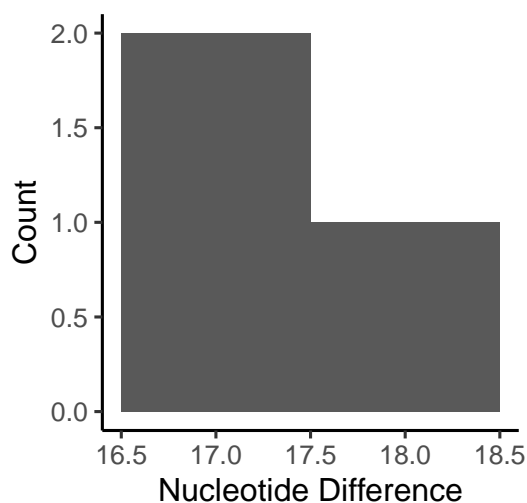
### IGHV5-51\*04

50 sequences assigned  
11 (22%) exact matches, in which:  
11 unique CDR3  
5 unique J



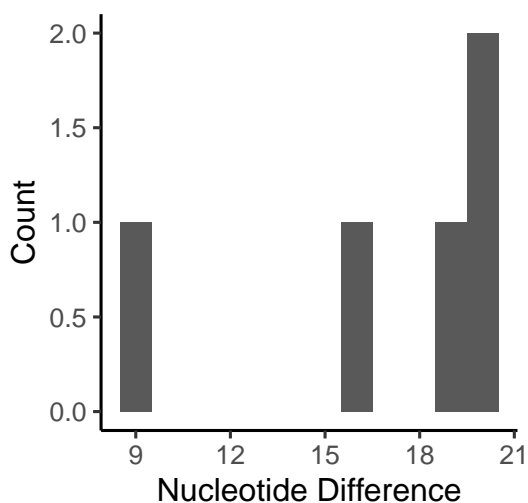
### IGHV1/OR15-2\*02\_03

3 sequences assigned  
No exact matches.



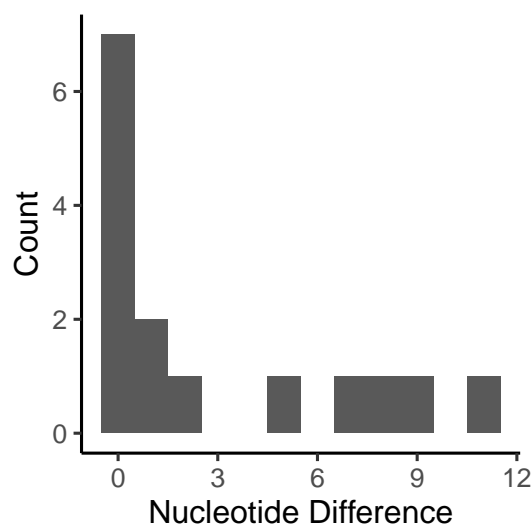
### IGHV4/OR15-8\*02

21 sequences assigned  
No exact matches.



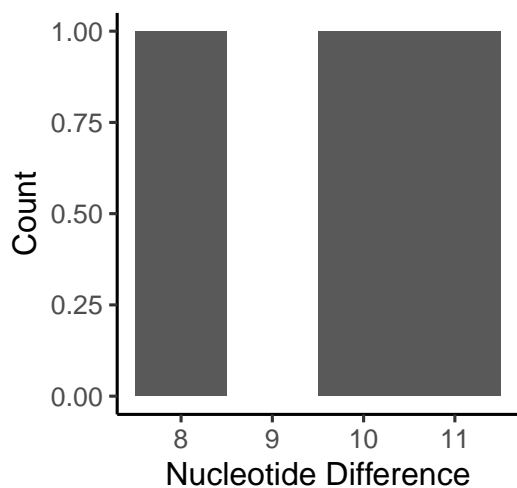
### IGHV5-51\*06

20 sequences assigned  
7 (35%) exact matches, in which:  
7 unique CDR3  
3 unique J



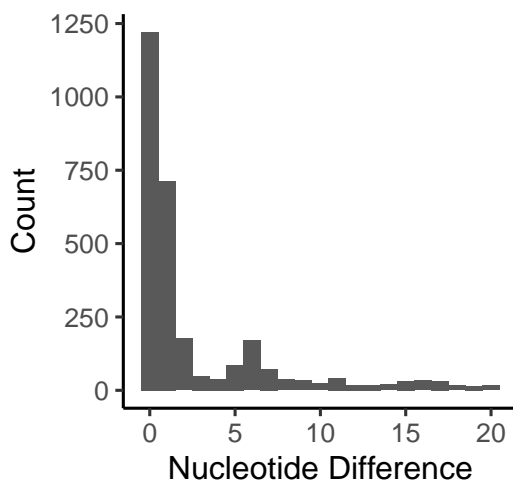
### IGHV1/OR15-3\*02

3 sequences assigned  
No exact matches.



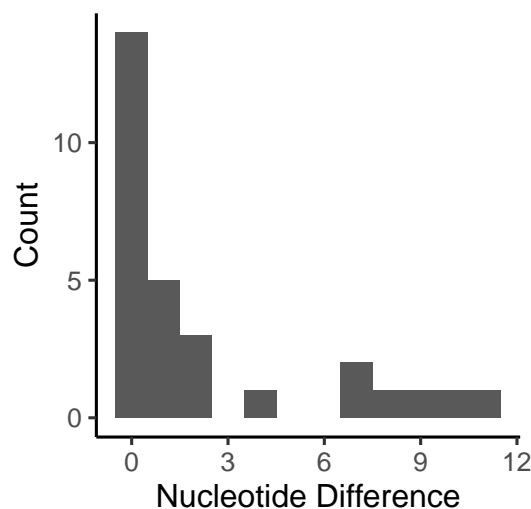
### IGHV5-10-1\*01\_03

3894 sequences assigned  
1221 (31.4%) exact matches, in which:  
899 unique CDR3  
6 unique J



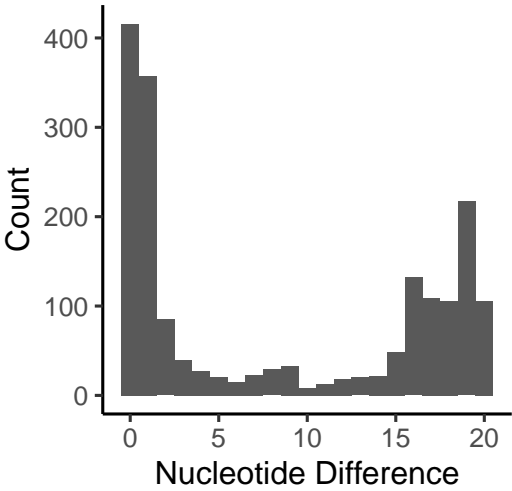
### IGHV5-51\*07

34 sequences assigned  
14 (41.2%) exact matches, in which:  
14 unique CDR3  
4 unique J



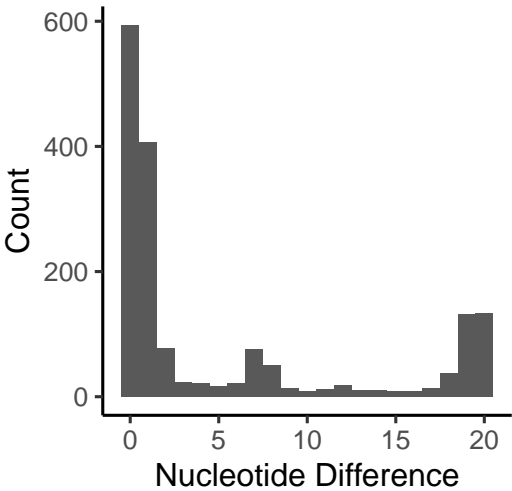
# IGHV6-1\*01\_02

3372 sequences assigned  
416 (12.3%) exact matches, in which:  
389 unique CDR3  
6 unique J

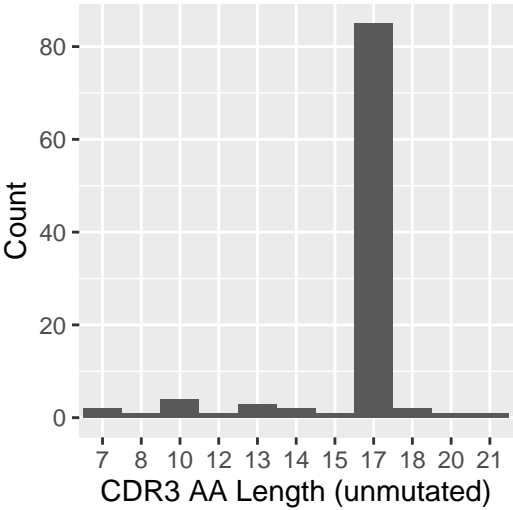


# IGHV7-4-1\*02

1892 sequences assigned  
594 (31.4%) exact matches, in which:  
550 unique CDR3  
6 unique J



IGHV3-69-1\*01\_A107T\_A110G\_T112A\_A113G\_G157A\_C159T\_C164A\_T168G\_G170C\_A172G\_







[illegible]