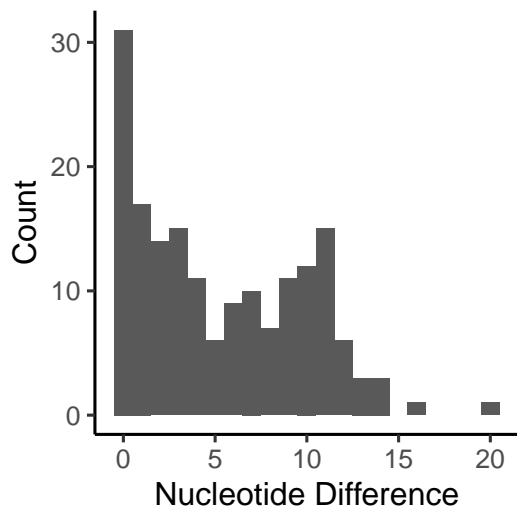


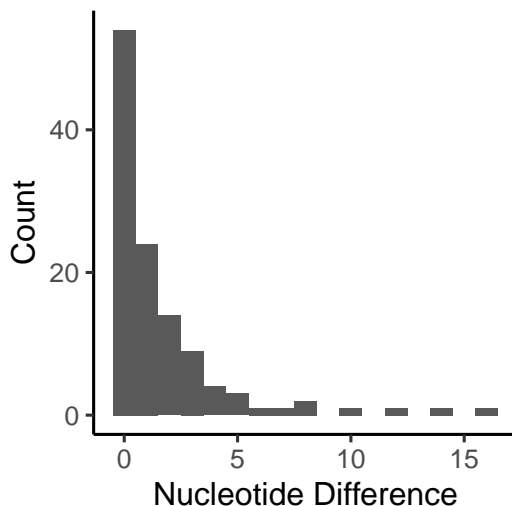
## IGHV1-60\*01\_S7602

180 sequences assigned  
31 (17.2%) exact matches, in which:  
27 unique CDR3  
6 unique J



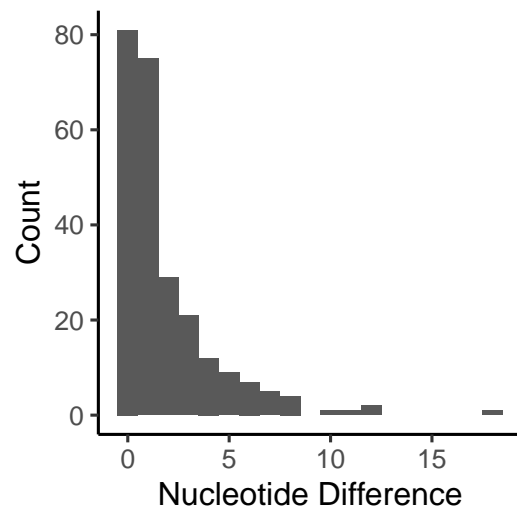
## IGHV1-105\*01\_S3660

119 sequences assigned  
54 (45.4%) exact matches, in which:  
31 unique CDR3  
6 unique J



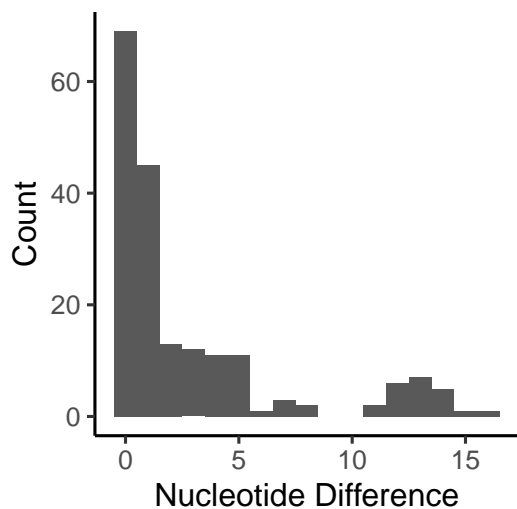
## IGHV1-138\*01\_S2121

248 sequences assigned  
81 (32.7%) exact matches, in which:  
58 unique CDR3  
7 unique J



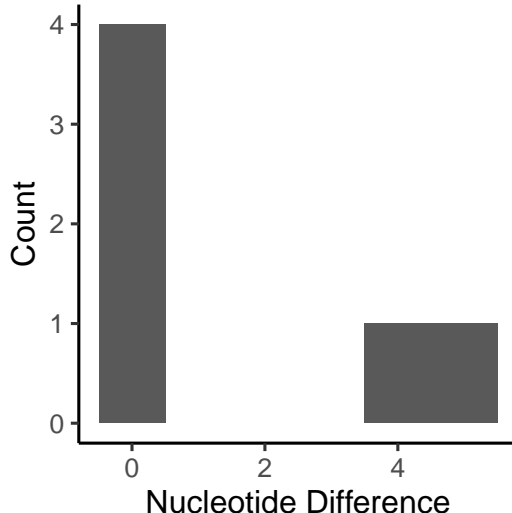
## IGHV1-84\*01\_S3729

191 sequences assigned  
69 (36.1%) exact matches, in which:  
27 unique CDR3  
6 unique J



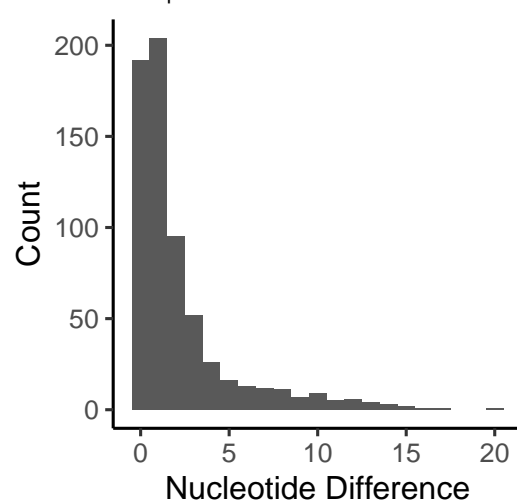
## IGHV1-124\*01\_S1287

9 sequences assigned  
4 (44.4%) exact matches, in which:  
3 unique CDR3  
2 unique J



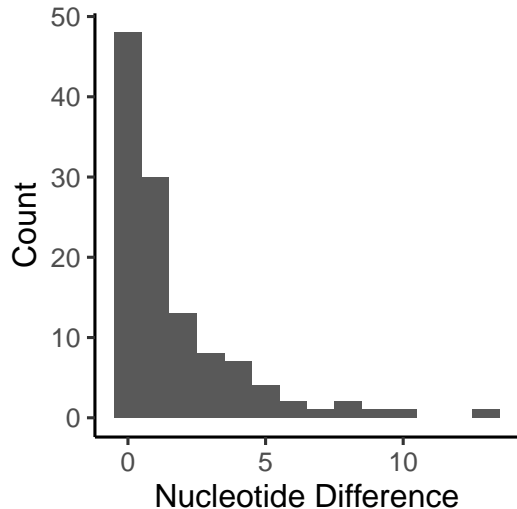
## IGHV1-138\*01\_S8860

667 sequences assigned  
192 (28.8%) exact matches, in which:  
133 unique CDR3  
7 unique J



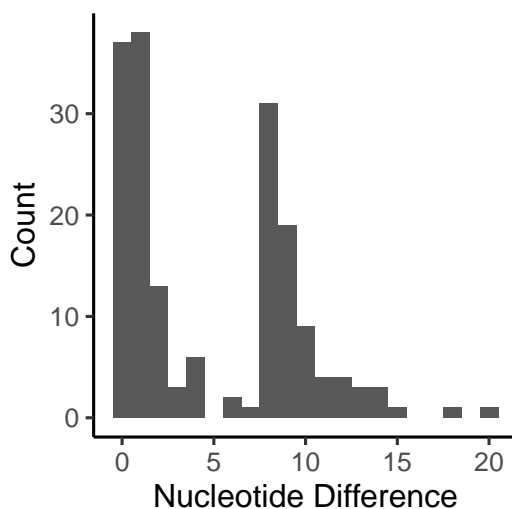
## IGHV1-84\*01\_S9762

118 sequences assigned  
48 (40.7%) exact matches, in which:  
20 unique CDR3  
7 unique J



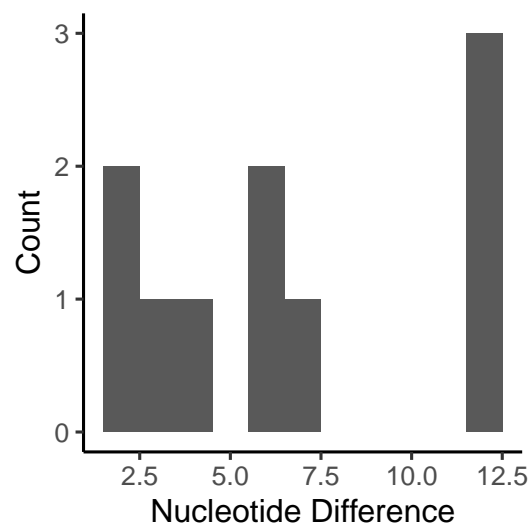
## IGHV1-138\*01\_S2054

178 sequences assigned  
37 (20.8%) exact matches, in which:  
30 unique CDR3  
6 unique J



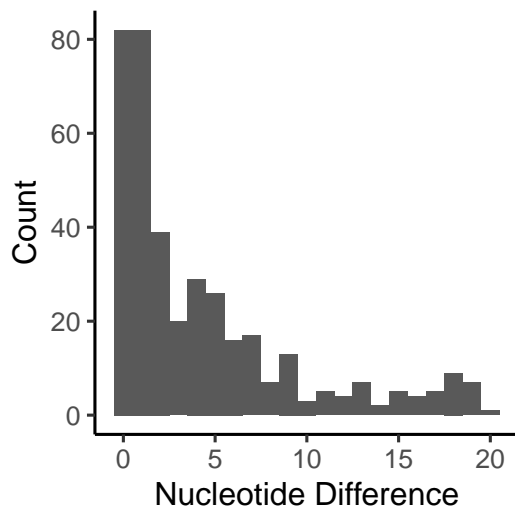
## IGHV1-170\*01\_S3055

10 sequences assigned  
No exact matches.



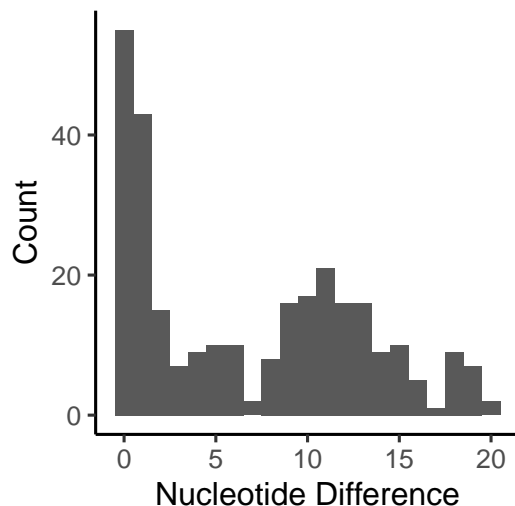
### IGHV1–NL\_1\*01\_S2052

404 sequences assigned  
82 (20.3%) exact matches, in which:  
45 unique CDR3  
7 unique J



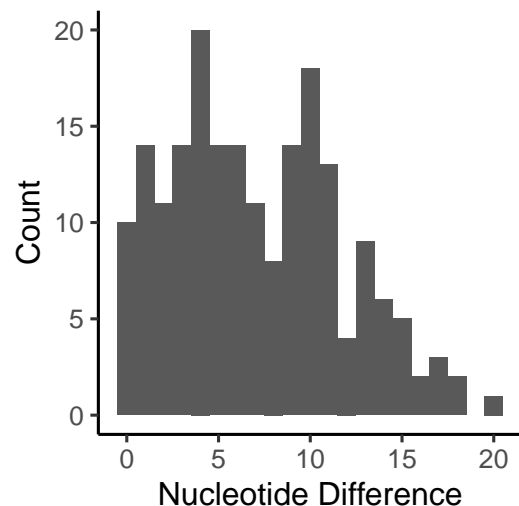
### IGHV1–NL\_2\*01\_S3304

396 sequences assigned  
55 (13.9%) exact matches, in which:  
23 unique CDR3  
6 unique J



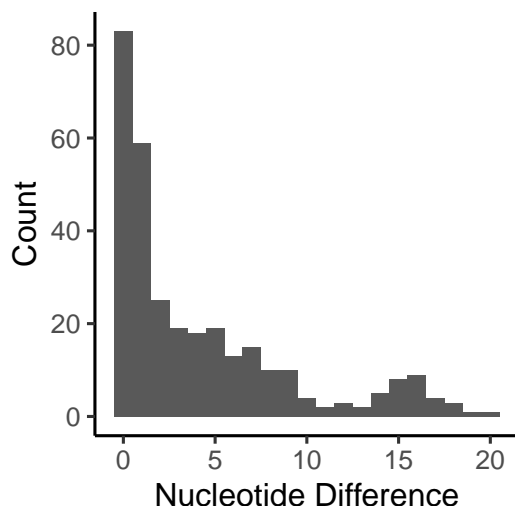
### IGHV2–7\*02\_S4285

193 sequences assigned  
10 (5.2%) exact matches, in which:  
6 unique CDR3  
2 unique J



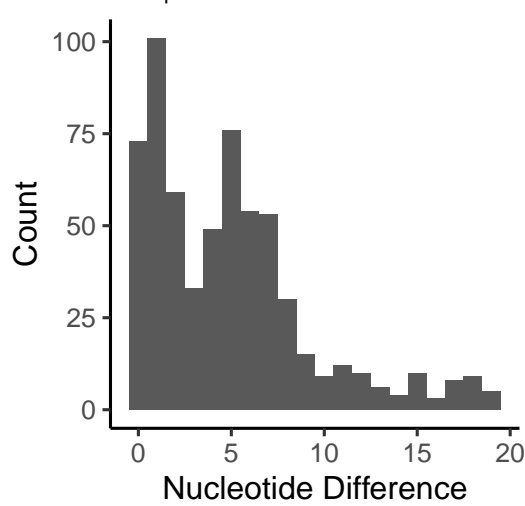
### IGHV1–NL\_1\*01\_S3125

322 sequences assigned  
83 (25.8%) exact matches, in which:  
52 unique CDR3  
4 unique J



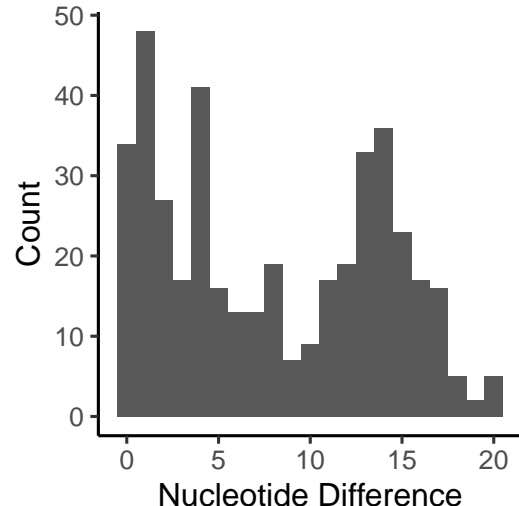
### IGHV2–7\*02\_S1732

629 sequences assigned  
73 (11.6%) exact matches, in which:  
53 unique CDR3  
7 unique J



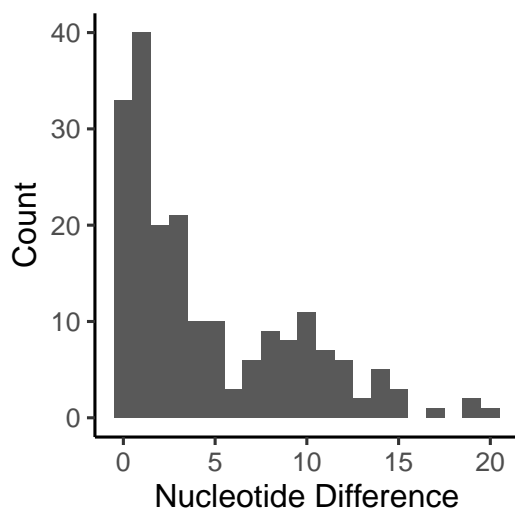
### IGHV2–69\*01\_C36G\_A10

626 sequences assigned  
34 (5.4%) exact matches, in which:  
24 unique CDR3  
6 unique J



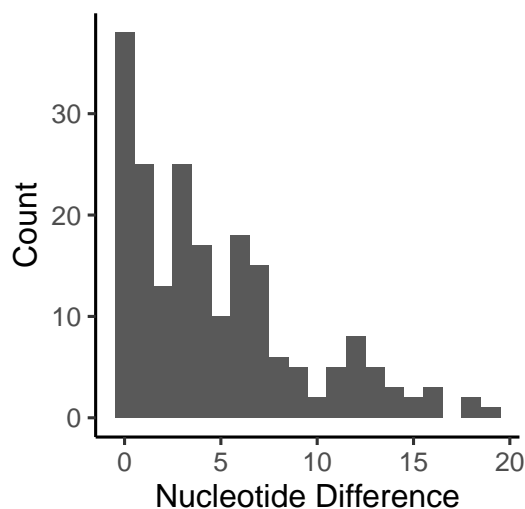
### IGHV1–NL\_1\*01\_S8759

210 sequences assigned  
33 (15.7%) exact matches, in which:  
20 unique CDR3  
6 unique J



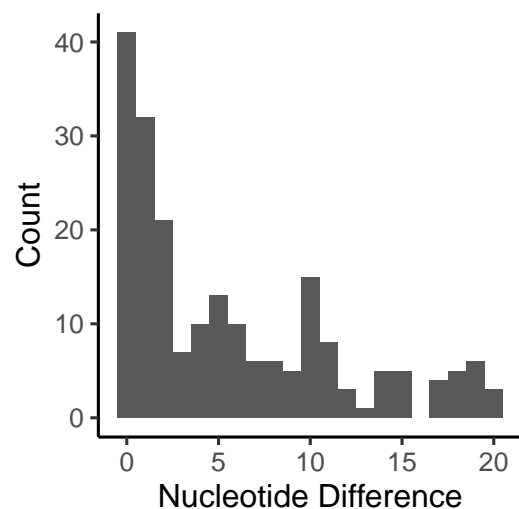
### IGHV2–7\*02\_S1732\_G292

206 sequences assigned  
38 (18.4%) exact matches, in which:  
34 unique CDR3  
6 unique J



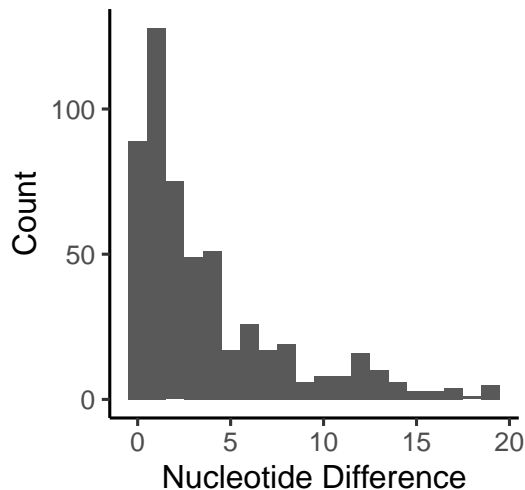
### IGHV2–69\*01\_S7500

215 sequences assigned  
41 (19.1%) exact matches, in which:  
23 unique CDR3  
5 unique J



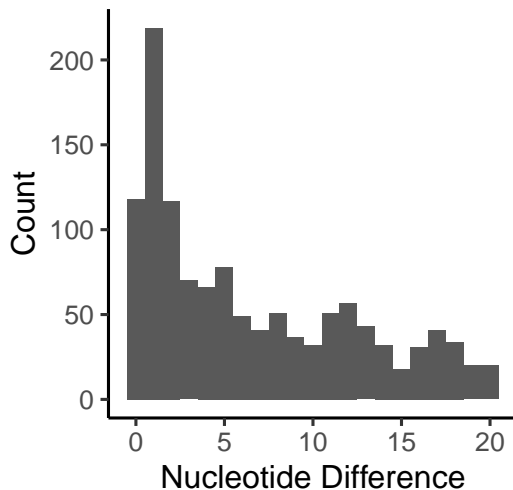
### IGHV2-118\*01\_S4632

544 sequences assigned  
89 (16.4%) exact matches, in which:  
53 unique CDR3  
5 unique J



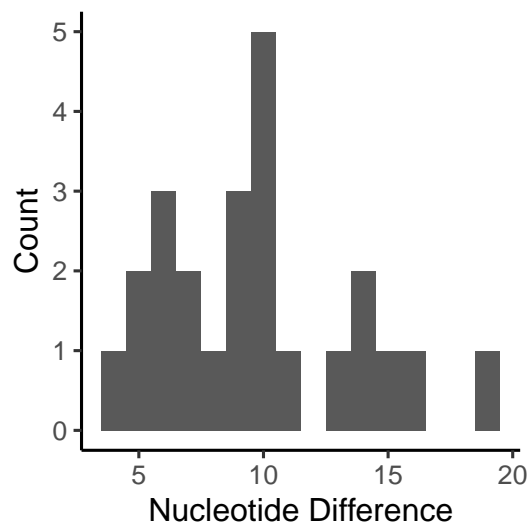
### IGHV2-NL\_1\*01\_S4120

2054 sequences assigned  
118 (5.7%) exact matches, in which:  
88 unique CDR3  
7 unique J



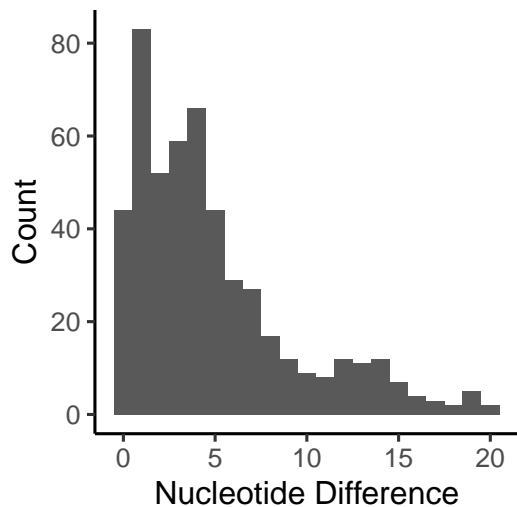
### IGHV3-28\*01\_S4621

30 sequences assigned  
No exact matches.



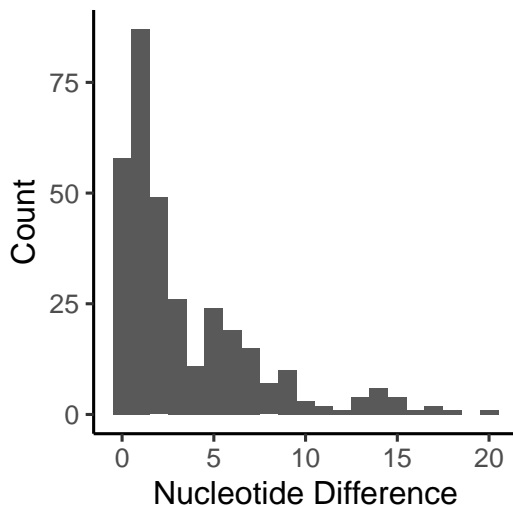
### IGHV2-118\*01\_S8501

517 sequences assigned  
44 (8.5%) exact matches, in which:  
19 unique CDR3  
4 unique J



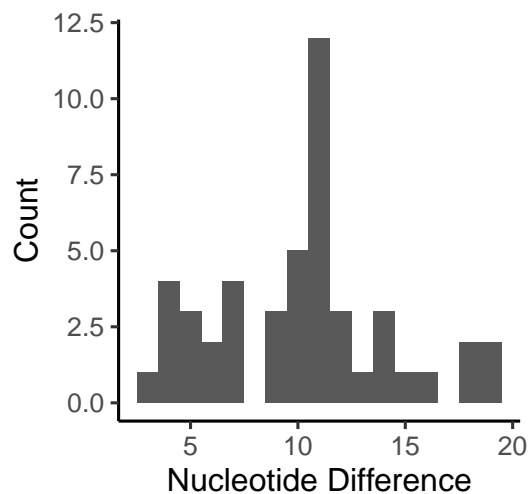
### IGHV2-NL\_2\*01\_S2193

334 sequences assigned  
58 (17.4%) exact matches, in which:  
28 unique CDR3  
6 unique J



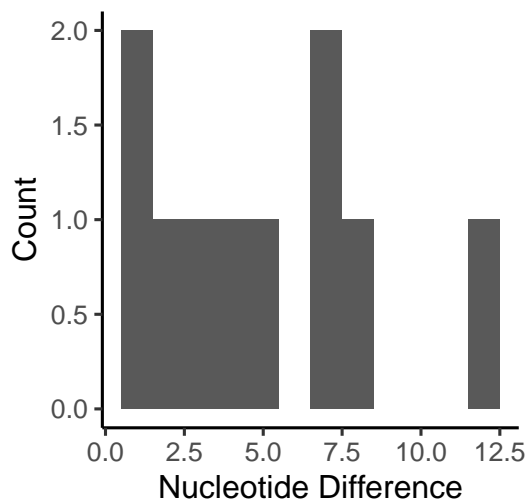
### IGHV3-28\*01\_S7540

48 sequences assigned  
No exact matches.



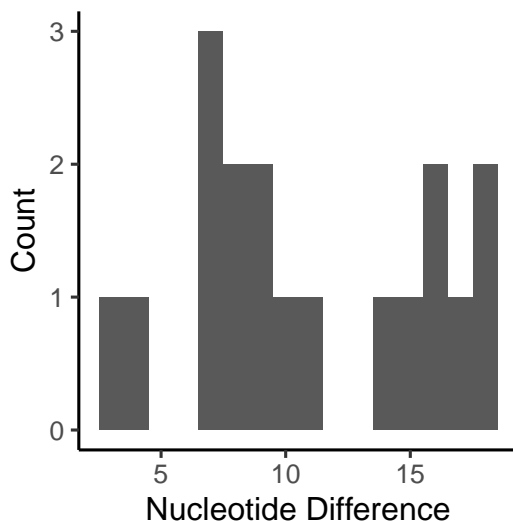
### IGHV2-173\*01\_S2781

12 sequences assigned  
No exact matches.



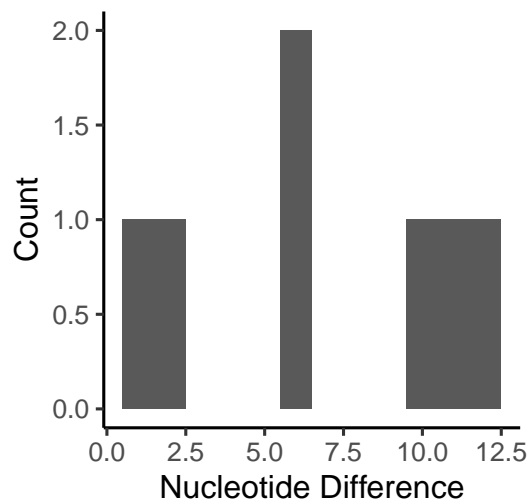
### IGHV3-28\*01\_S3617

39 sequences assigned  
No exact matches.



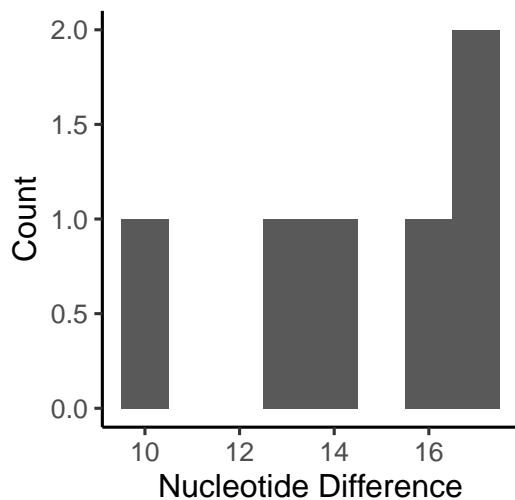
### IGHV3-34\*02\_S0799

7 sequences assigned  
No exact matches.



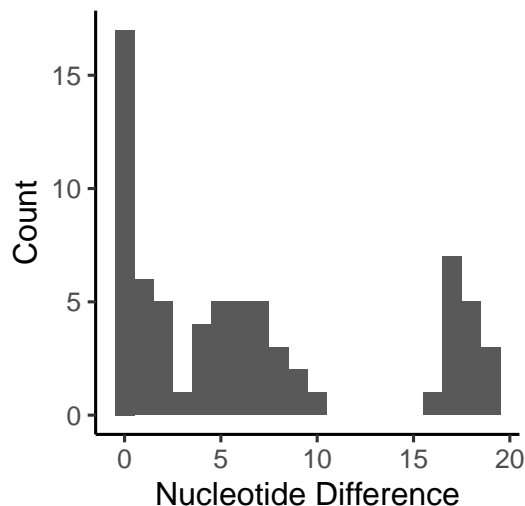
### IGHV3-37\*01\_S4016

291 sequences assigned  
No exact matches.



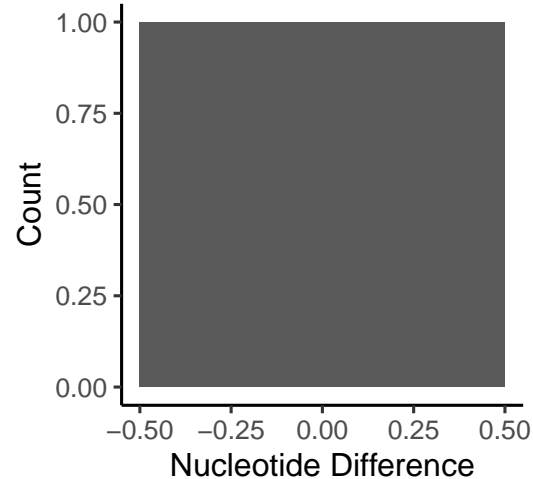
### IGHV3-73\*01\_S9948

74 sequences assigned  
17 (23%) exact matches, in which:  
9 unique CDR3  
5 unique J



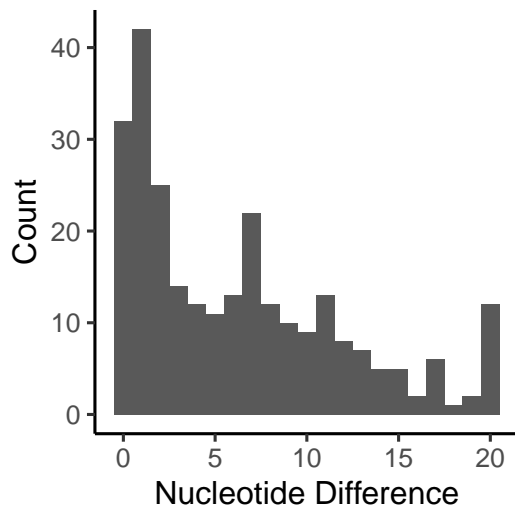
### IGHV3-83\*02\_S3229

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



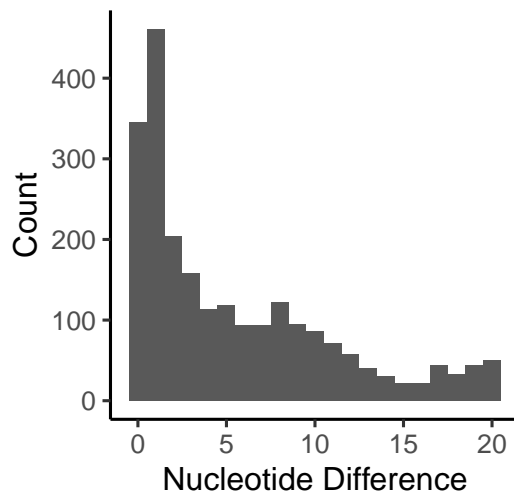
### IGHV3-53\*01\_S4772

424 sequences assigned  
32 (7.5%) exact matches, in which:  
21 unique CDR3  
4 unique J



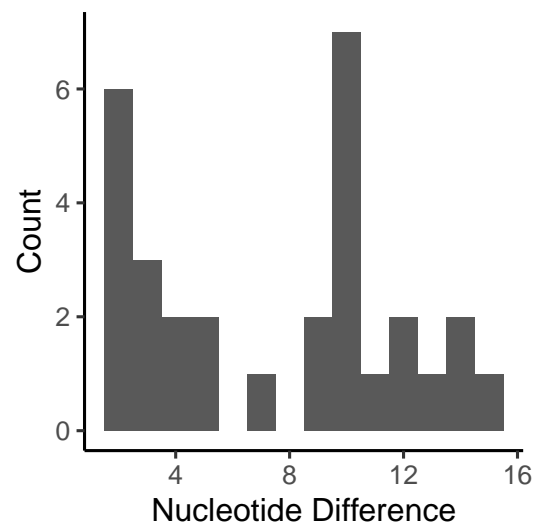
### IGHV3-76\*02\_S4190

2525 sequences assigned  
345 (13.7%) exact matches, in which:  
238 unique CDR3  
7 unique J



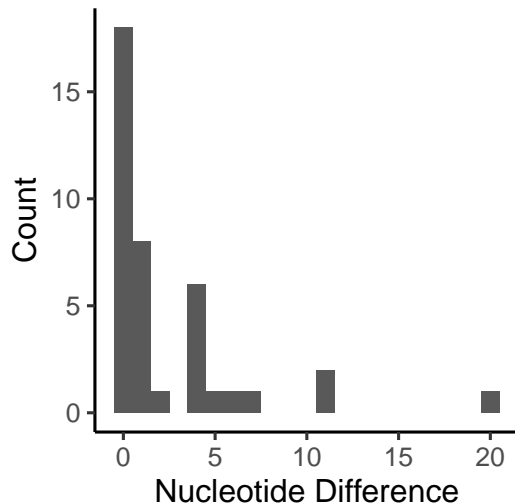
### IGHV3-87\*01\_S6311

80 sequences assigned  
No exact matches.



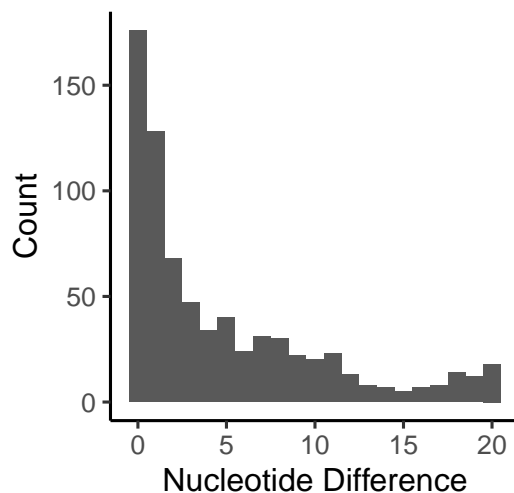
### IGHV3-73\*01\_S5345

39 sequences assigned  
18 (46.2%) exact matches, in which:  
13 unique CDR3  
5 unique J



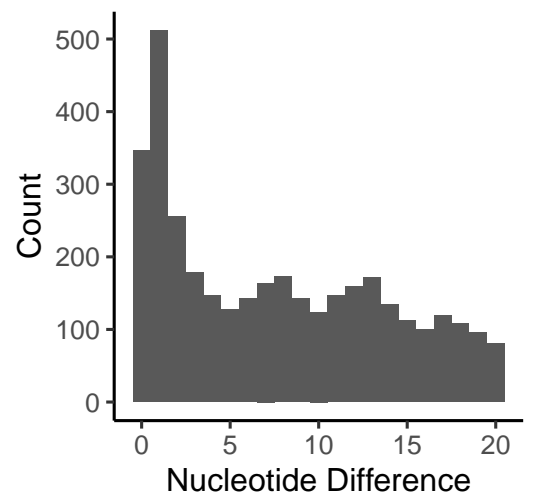
### IGHV3-76\*02\_S4190\_A2

811 sequences assigned  
176 (21.7%) exact matches, in which:  
156 unique CDR3  
9 unique J



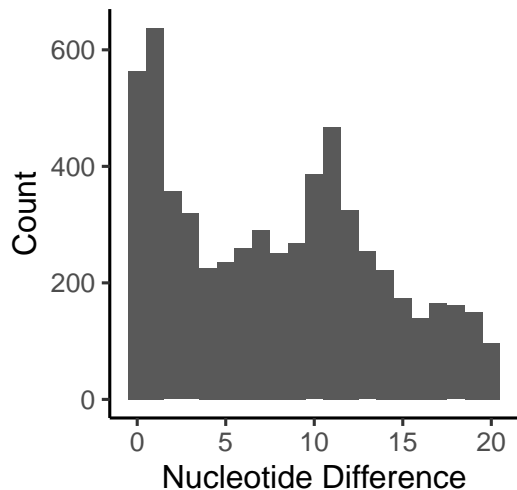
### IGHV3-88\*01\_S3750

4321 sequences assigned  
347 (8%) exact matches, in which:  
195 unique CDR3  
8 unique J



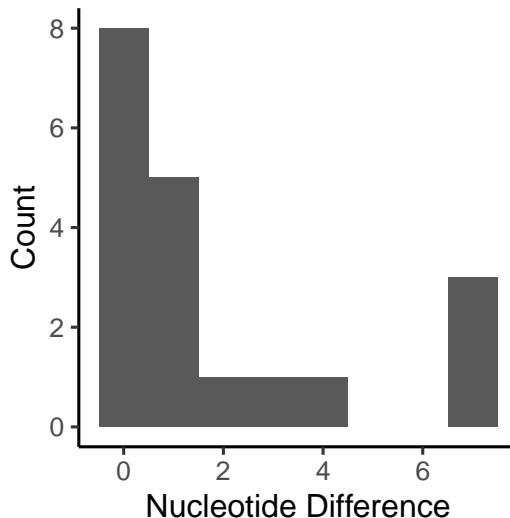
### IGHV3-88\*01\_S6871

6633 sequences assigned  
564 (8.5%) exact matches, in which:  
222 unique CDR3  
7 unique J



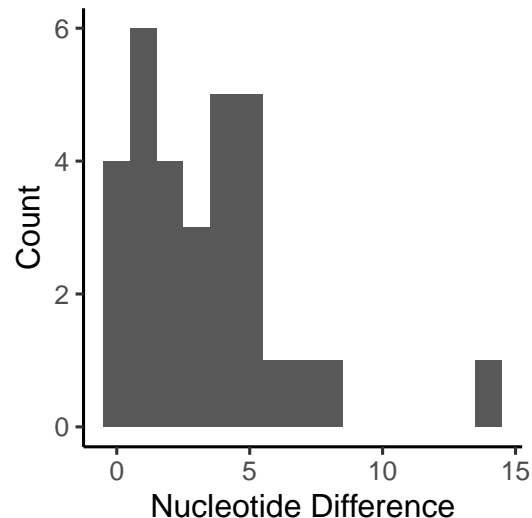
### IGHV3-100\*01\_S8697

19 sequences assigned  
8 (42.1%) exact matches, in which:  
3 unique CDR3  
1 unique J



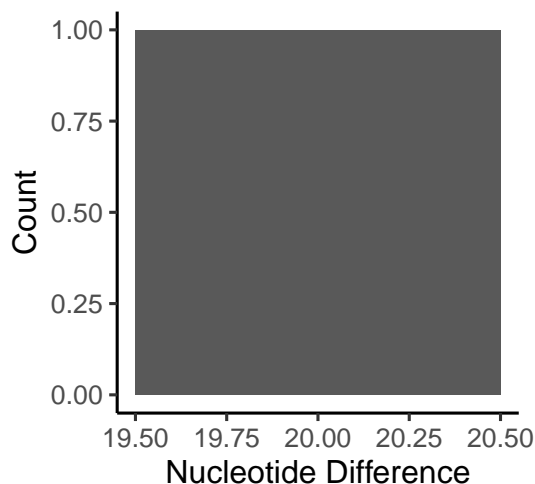
### IGHV3-120\*01\_S7674

31 sequences assigned  
4 (12.9%) exact matches, in which:  
2 unique CDR3  
1 unique J



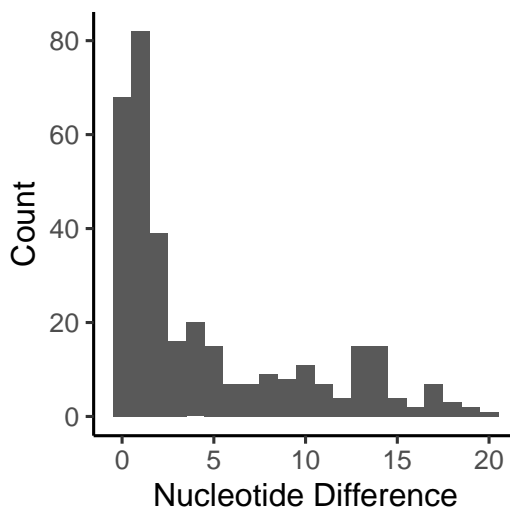
### IGHV3-94\*01\_S8766

2 sequences assigned  
No exact matches.



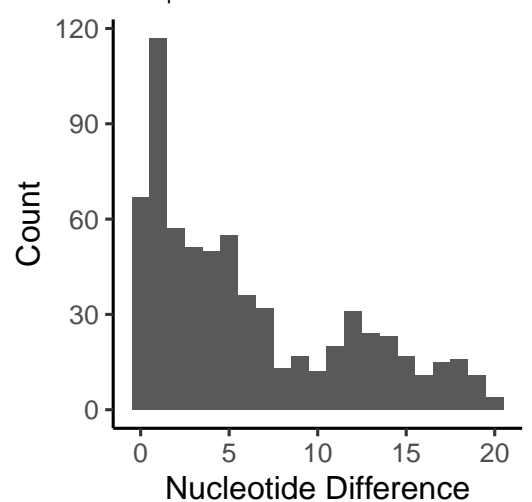
### IGHV3-103\*01\_S6076

396 sequences assigned  
68 (17.2%) exact matches, in which:  
39 unique CDR3  
7 unique J



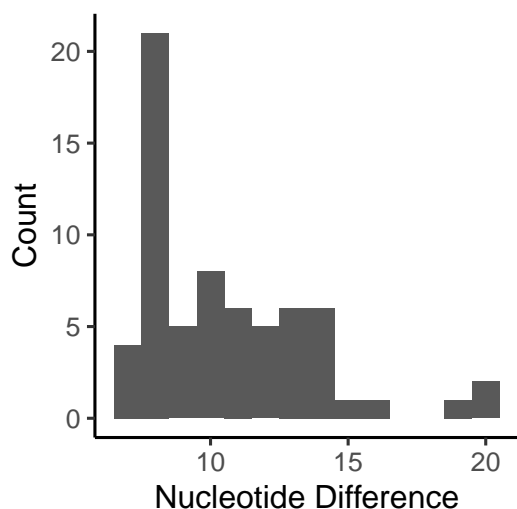
### IGHV3-122\*01\_S8388

761 sequences assigned  
67 (8.8%) exact matches, in which:  
49 unique CDR3  
7 unique J



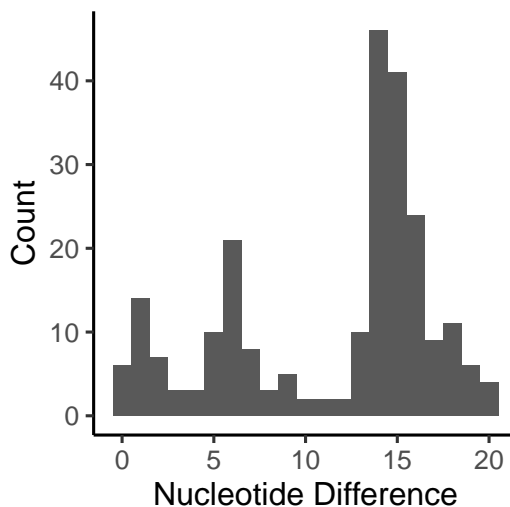
### IGHV3-100\*01\_S8172

121 sequences assigned  
No exact matches.



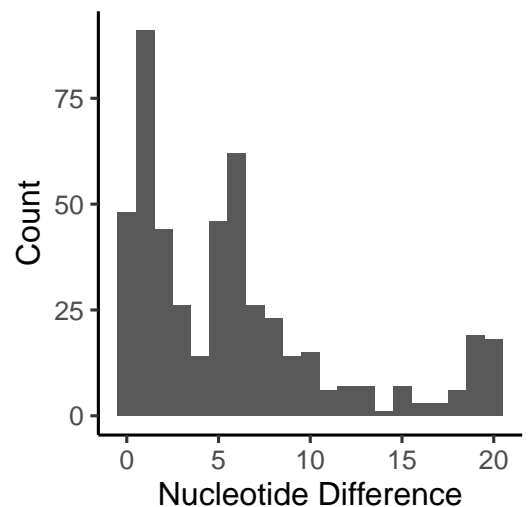
### IGHV3-119\*01\_S9769

258 sequences assigned  
6 (2.3%) exact matches, in which:  
4 unique CDR3  
2 unique J



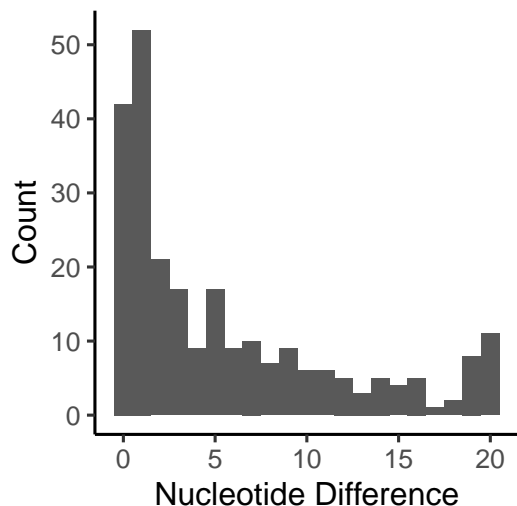
### IGHV3-127\*01\_S5510

520 sequences assigned  
48 (9.2%) exact matches, in which:  
32 unique CDR3  
5 unique J



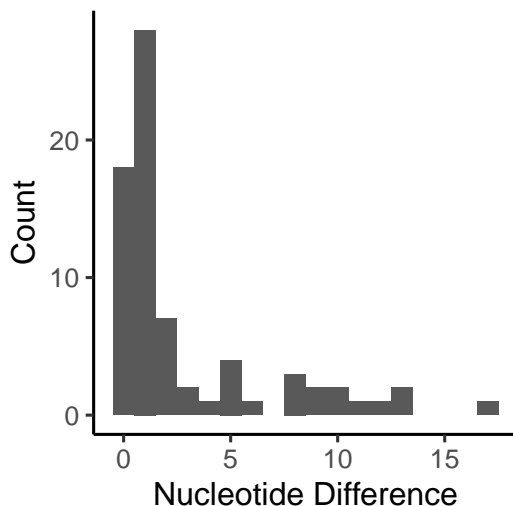
### IGHV3-128\*02\_S0832

309 sequences assigned  
42 (13.6%) exact matches, in which:  
27 unique CDR3  
6 unique J



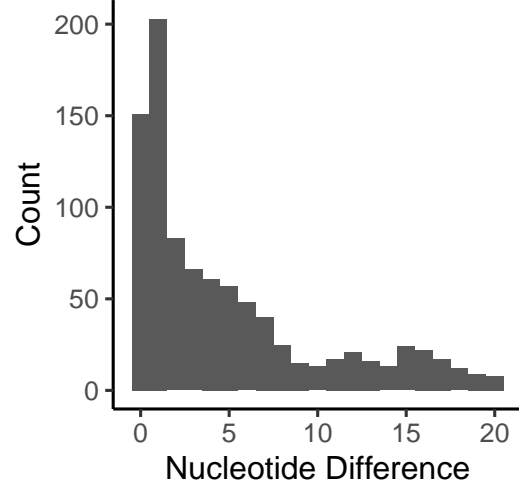
### IGHV3-141\*02\_S7574

76 sequences assigned  
18 (23.7%) exact matches, in which:  
15 unique CDR3  
6 unique J



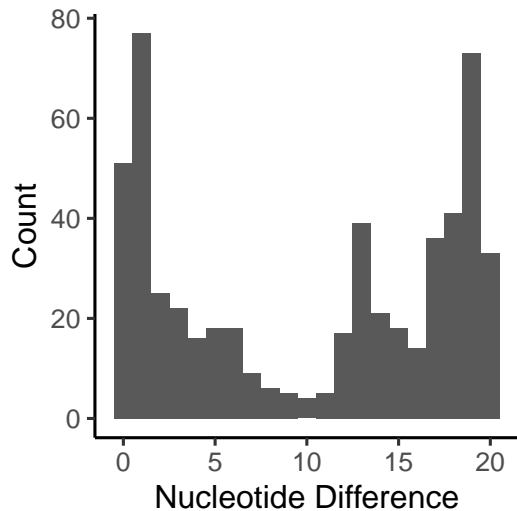
### IGHV3-187\*01\_S6398

947 sequences assigned  
151 (15.9%) exact matches, in which:  
95 unique CDR3  
9 unique J



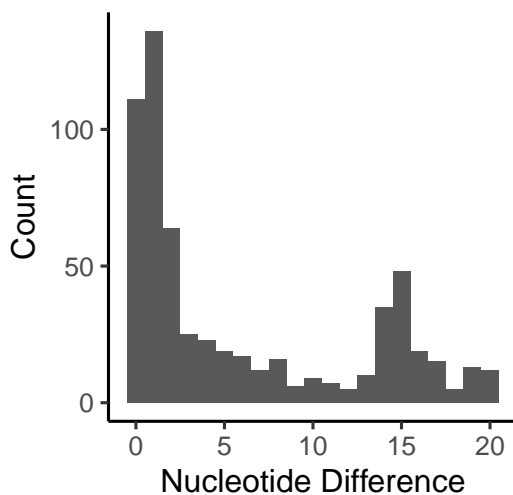
### IGHV3-128\*02\_S4192

628 sequences assigned  
51 (8.1%) exact matches, in which:  
36 unique CDR3  
6 unique J



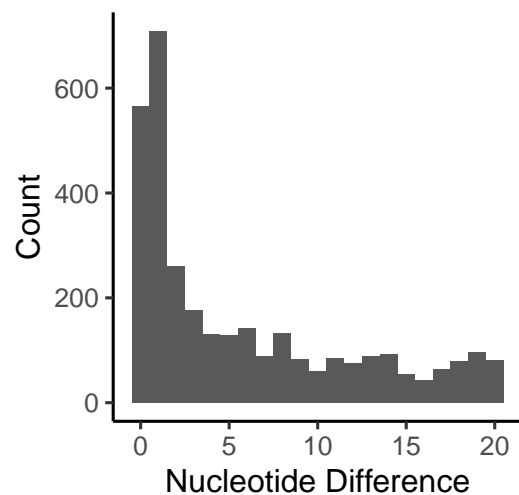
### IGHV3-172\*01\_S0796

647 sequences assigned  
111 (17.2%) exact matches, in which:  
62 unique CDR3  
8 unique J



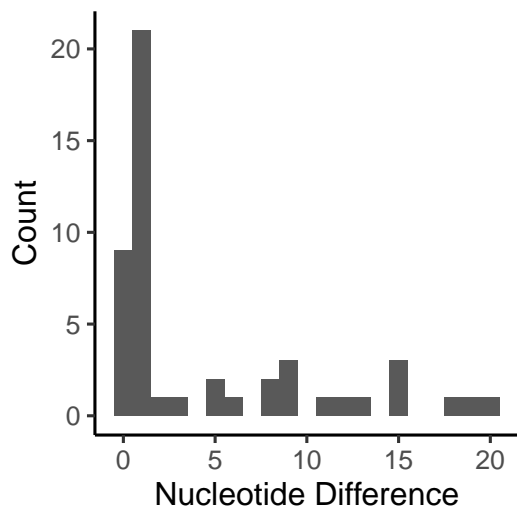
### IGHV3-187\*01\_S8341

3495 sequences assigned  
565 (16.2%) exact matches, in which:  
366 unique CDR3  
8 unique J



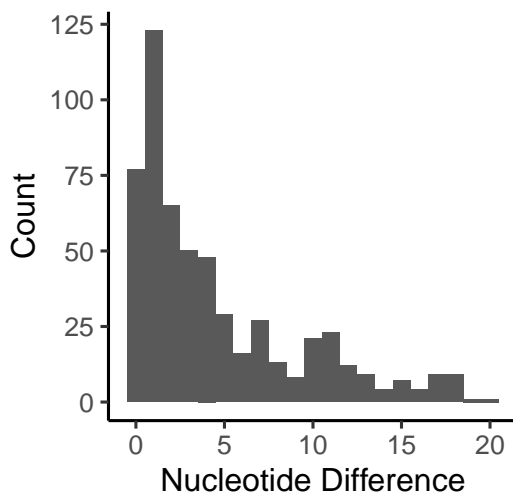
### IGHV3-141\*02\_S6589

50 sequences assigned  
9 (18%) exact matches, in which:  
8 unique CDR3  
5 unique J



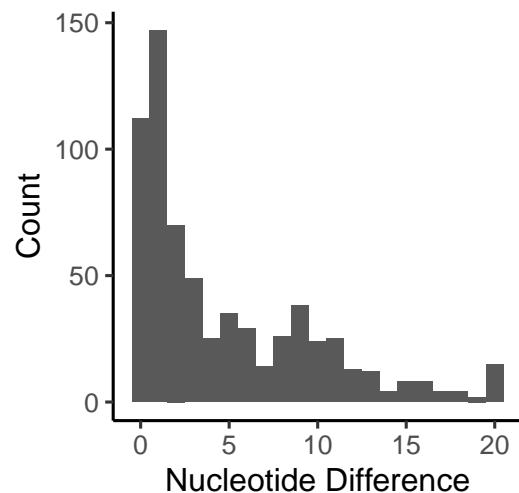
### IGHV3-172\*01\_S2175

565 sequences assigned  
77 (13.6%) exact matches, in which:  
47 unique CDR3  
6 unique J



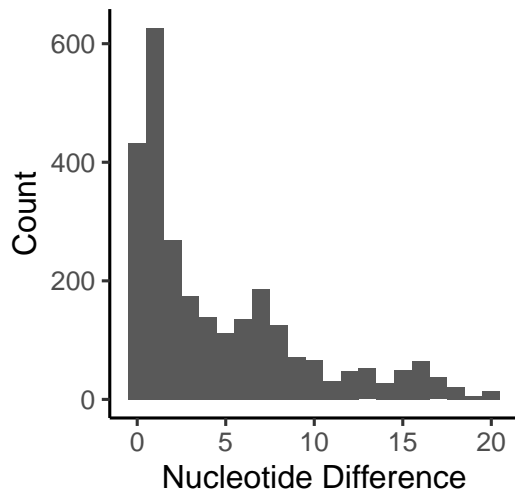
### IGHV3-NL\_1\*01\_S2594

713 sequences assigned  
112 (15.7%) exact matches, in which:  
72 unique CDR3  
7 unique J



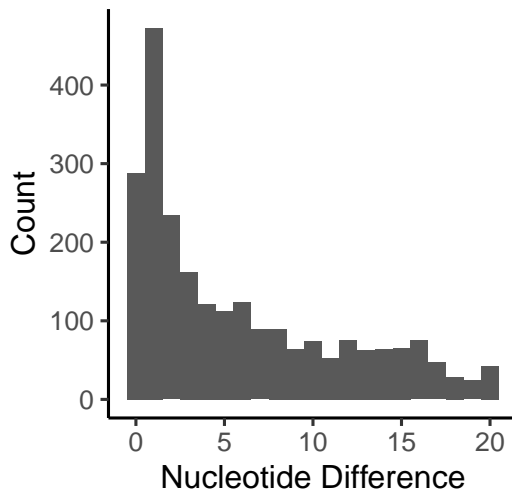
### IGHV3–NL\_1\*01\_S8831

2780 sequences assigned  
432 (15.5%) exact matches, in which:  
298 unique CDR3  
8 unique J



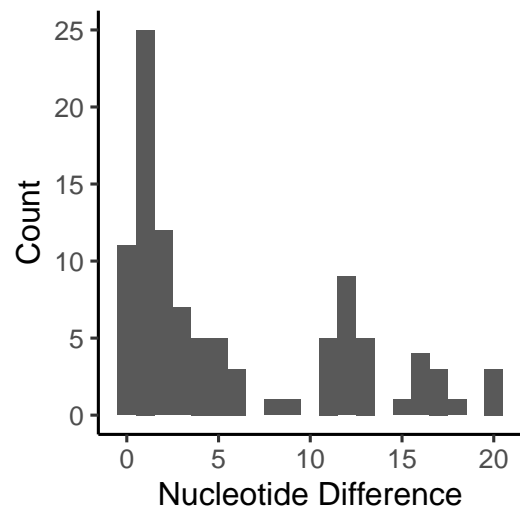
### IGHV3–NL\_11\*01\_S4619

5343 sequences assigned  
288 (5.4%) exact matches, in which:  
183 unique CDR3  
7 unique J



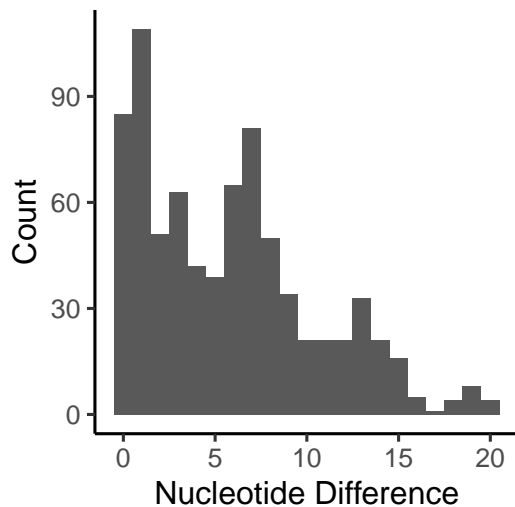
### IGHV3–NL\_13\*01\_S6424

103 sequences assigned  
11 (10.7%) exact matches, in which:  
9 unique CDR3  
3 unique J



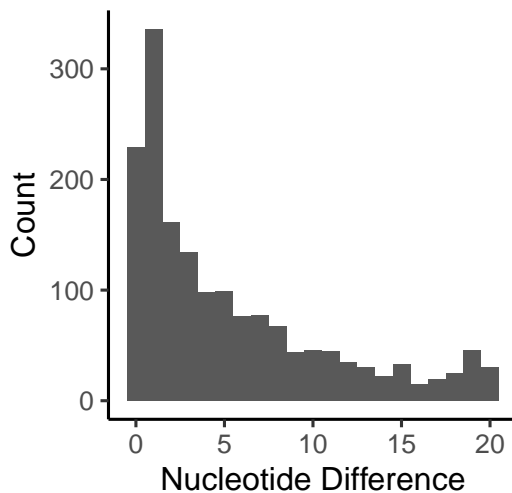
### IGHV3–NL\_1\*01\_S9422

787 sequences assigned  
85 (10.8%) exact matches, in which:  
63 unique CDR3  
6 unique J



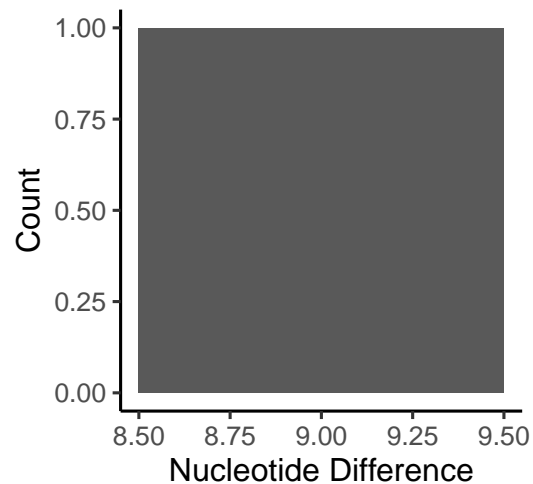
### IGHV3–NL\_11\*01\_S5714

2404 sequences assigned  
229 (9.5%) exact matches, in which:  
169 unique CDR3  
8 unique J



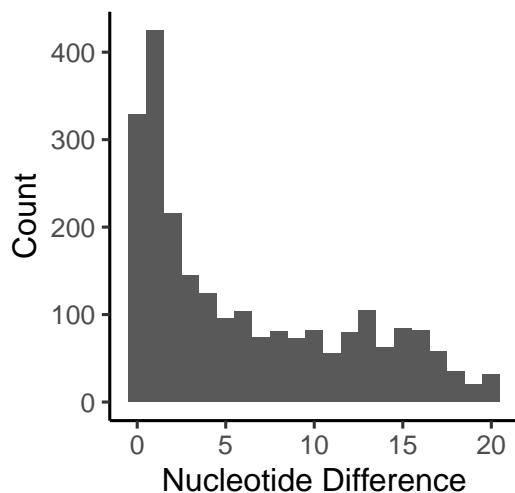
### IGHV3–NL\_14\*01\_S0414

1 sequences assigned  
No exact matches.



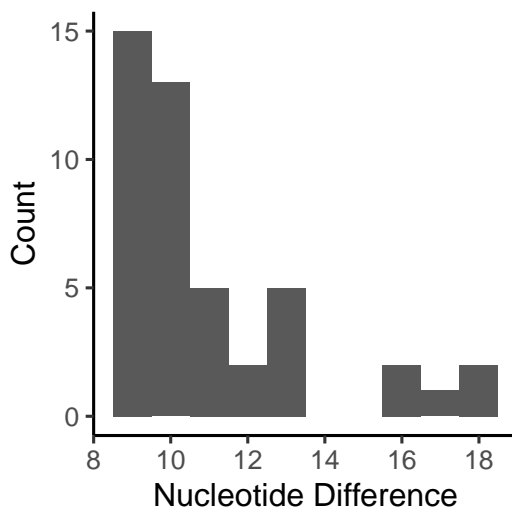
### IGHV3–NL\_10\*02\_S2212

2645 sequences assigned  
329 (12.4%) exact matches, in which:  
227 unique CDR3  
8 unique J



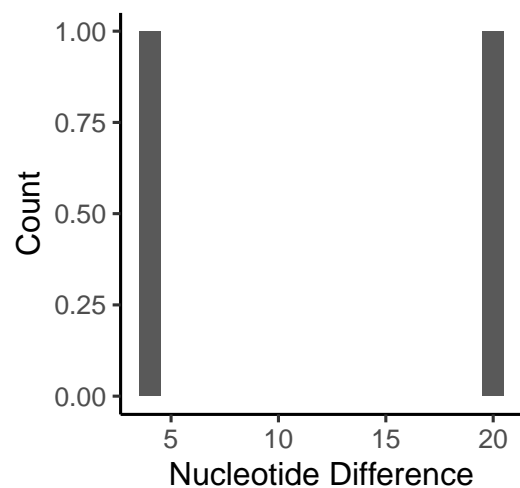
### IGHV3–NL\_12\*02\_S5358

48 sequences assigned  
No exact matches.



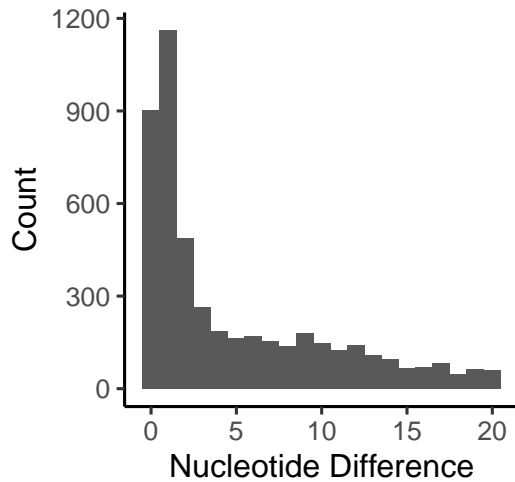
### IGHV3–NL\_16\*01\_S7825

1993 sequences assigned  
No exact matches.



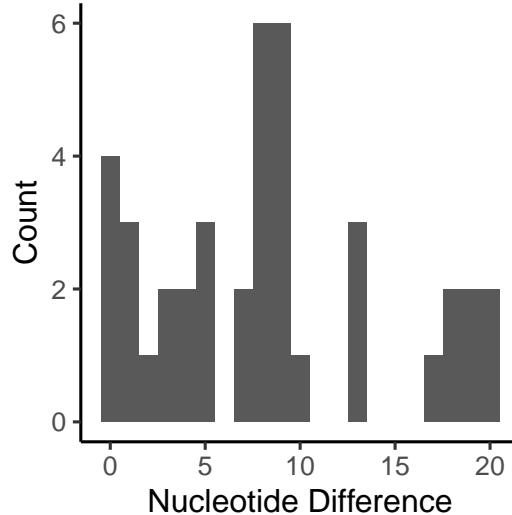
### IGHV3–NL\_17\*01\_S240

5318 sequences assigned  
902 (17%) exact matches, in which:  
559 unique CDR3  
8 unique J



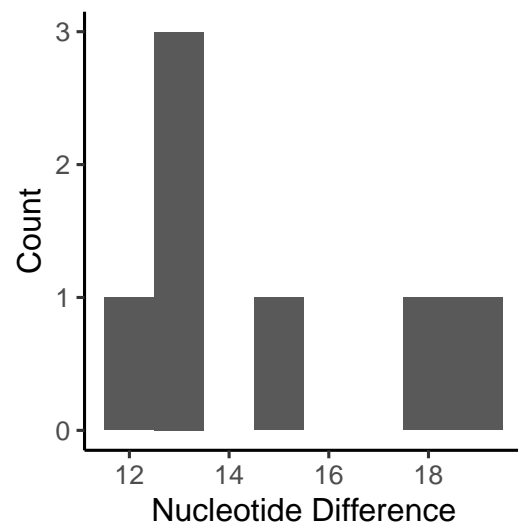
### IGHV3–NL\_2\*01\_S5821

41 sequences assigned  
4 (9.8%) exact matches, in which:  
4 unique CDR3  
2 unique J



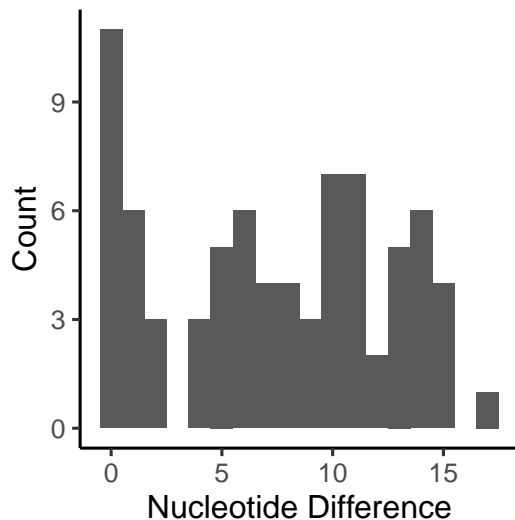
### IGHV3–NL\_5\*01\_S7761

10 sequences assigned  
No exact matches.



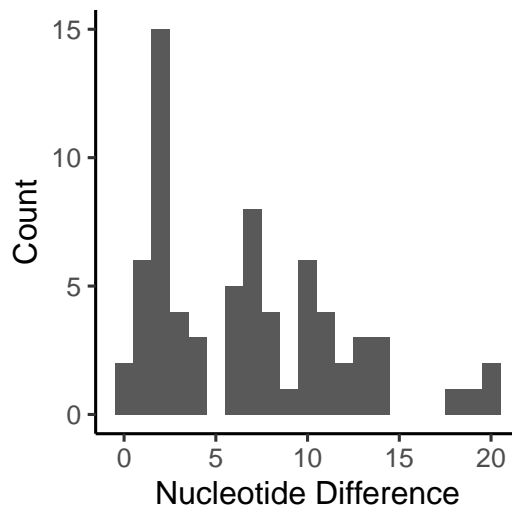
### IGHV3–NL\_18\*01\_S3886

82 sequences assigned  
11 (13.4%) exact matches, in which:  
11 unique CDR3  
3 unique J



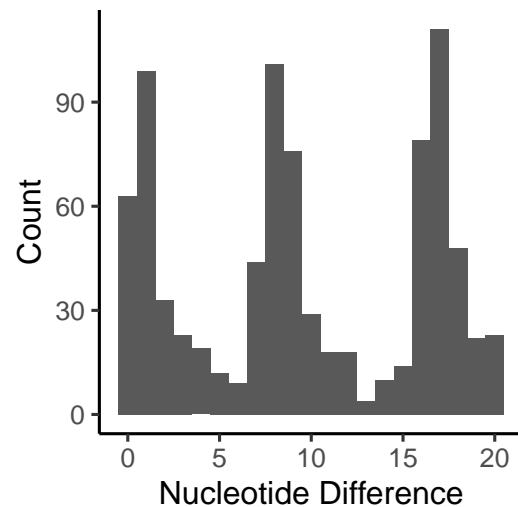
### IGHV3–NL\_2\*01\_S6231

86 sequences assigned  
2 (2.3%) exact matches, in which:  
1 unique CDR3  
0 unique J



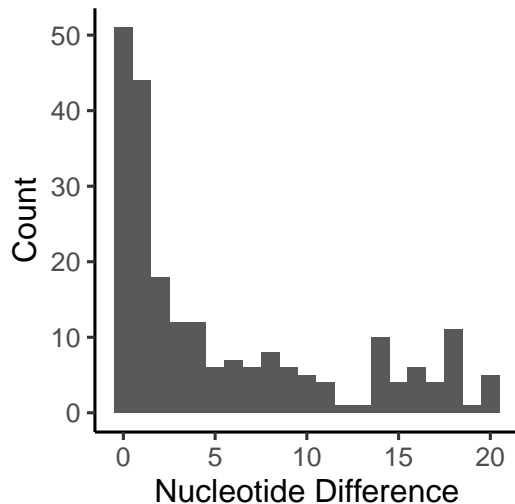
### IGHV3–NL\_8\*01\_S9584

1055 sequences assigned  
63 (6%) exact matches, in which:  
39 unique CDR3  
6 unique J



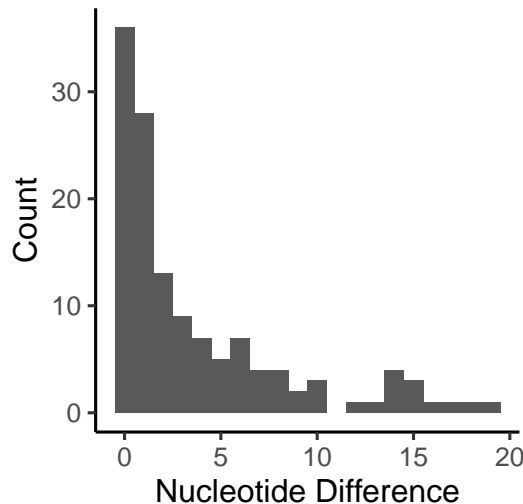
### IGHV3–NL\_19\*01\_S8136

255 sequences assigned  
51 (20%) exact matches, in which:  
36 unique CDR3  
5 unique J



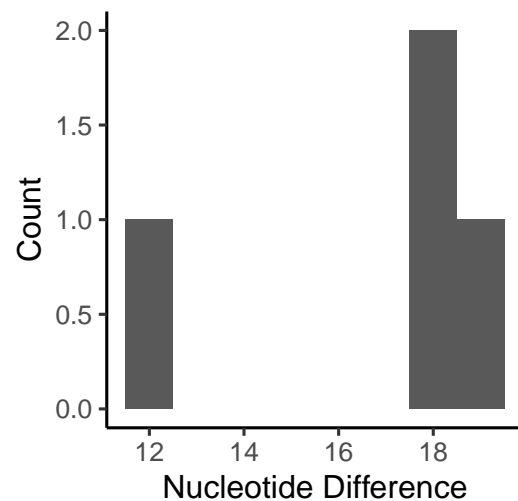
### IGHV3–NL\_4\*01\_S9635

135 sequences assigned  
36 (26.7%) exact matches, in which:  
22 unique CDR3  
6 unique J



### IGHV3–NL\_9\*01\_S1652

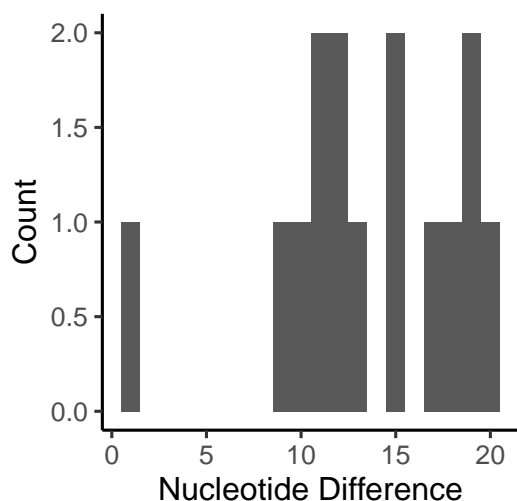
11 sequences assigned  
No exact matches.





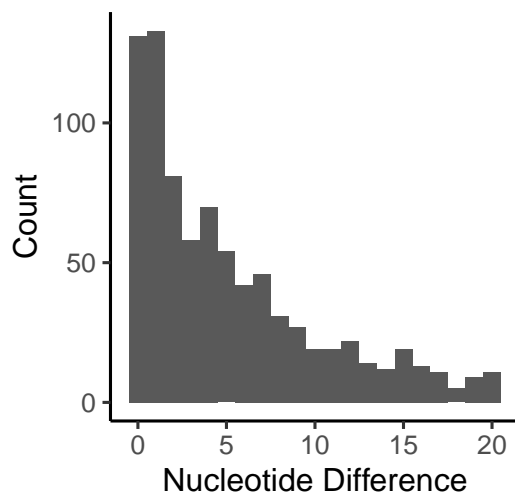
### IGHV3–NL\_9\*01\_S6098

28 sequences assigned  
No exact matches.



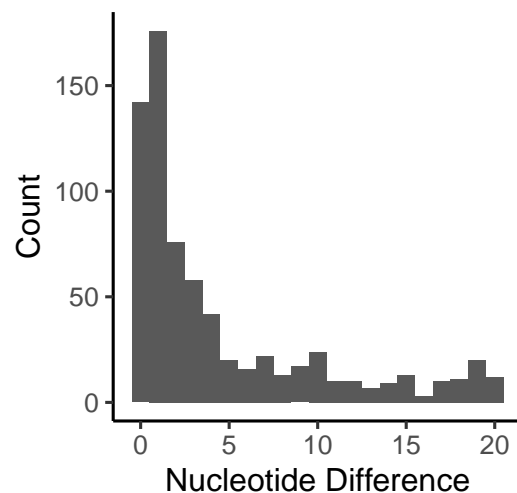
### IGHV4–93\*01\_S1164

889 sequences assigned  
131 (14.7%) exact matches, in which:  
94 unique CDR3  
8 unique J



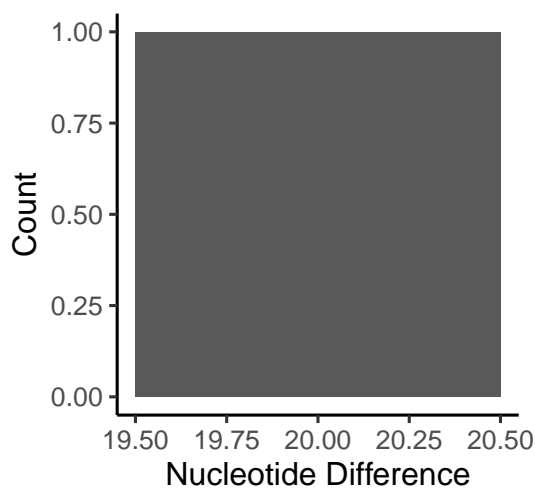
### IGHV4–117\*01\_S3417

899 sequences assigned  
142 (15.8%) exact matches, in which:  
105 unique CDR3  
8 unique J



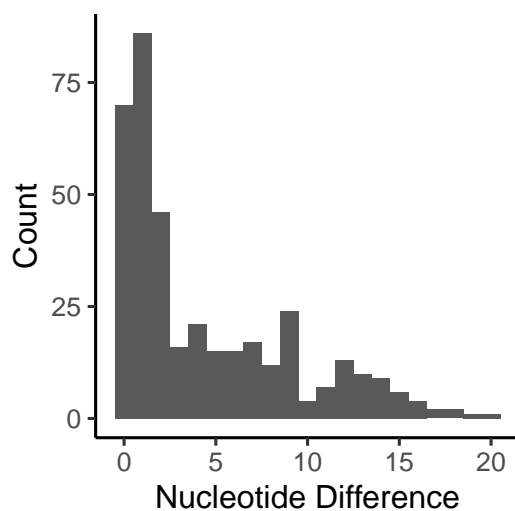
### IGHV4–67\*02\_S1312

275 sequences assigned  
No exact matches.



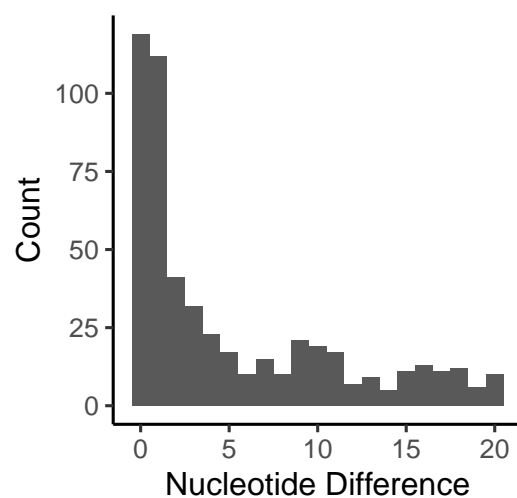
### IGHV4–93\*01\_S6658

436 sequences assigned  
70 (16.1%) exact matches, in which:  
50 unique CDR3  
7 unique J



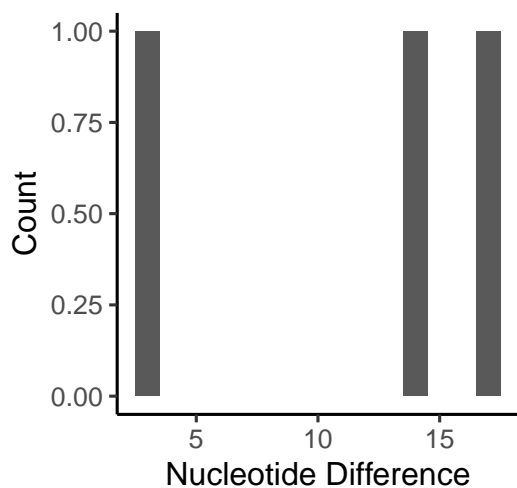
### IGHV4–144\*01\_S3008

649 sequences assigned  
119 (18.3%) exact matches, in which:  
102 unique CDR3  
7 unique J



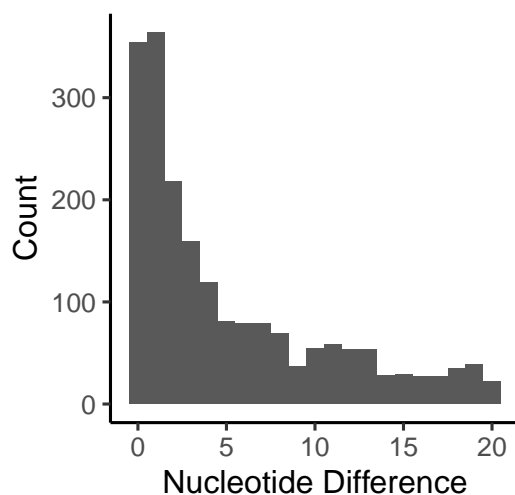
### IGHV4–72\*01\_S8261

4 sequences assigned  
No exact matches.



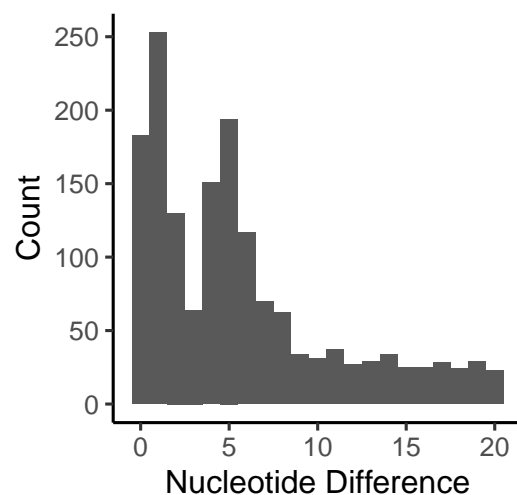
### IGHV4–117\*01\_S3378

2191 sequences assigned  
354 (16.2%) exact matches, in which:  
274 unique CDR3  
7 unique J



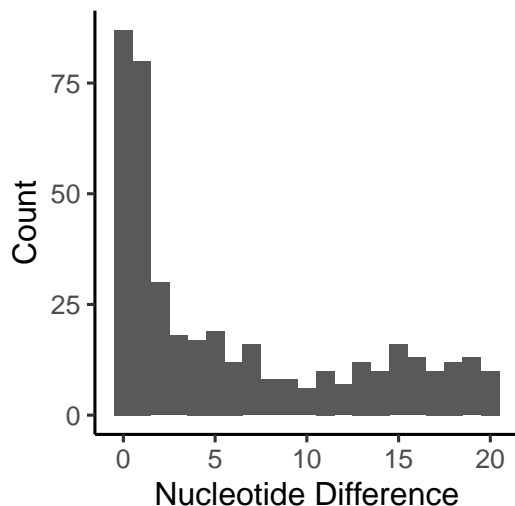
### IGHV4–144\*01\_S3577

1951 sequences assigned  
183 (9.4%) exact matches, in which:  
147 unique CDR3  
7 unique J



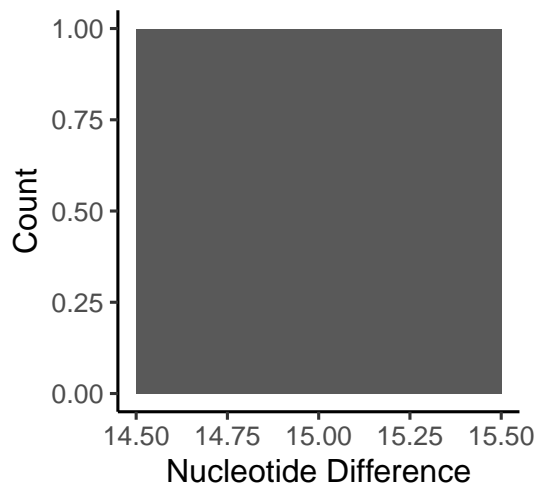
### IGHV4-149\*01\_S5969

553 sequences assigned  
87 (15.7%) exact matches, in which:  
77 unique CDR3  
7 unique J



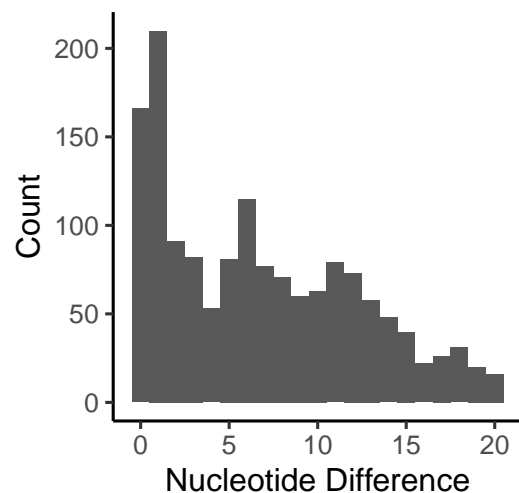
### IGHV4-174\*02\_S2437

3 sequences assigned  
No exact matches.



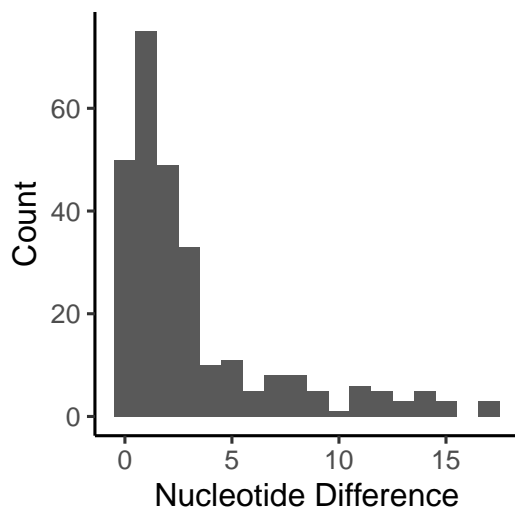
### IGHV4-NL\_1\*01\_S5208

1776 sequences assigned  
166 (9.3%) exact matches, in which:  
121 unique CDR3  
7 unique J



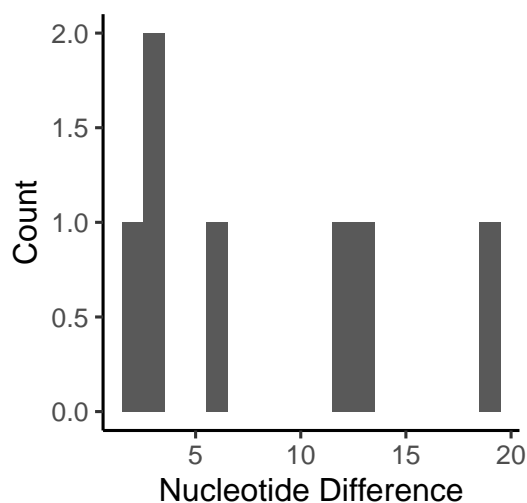
### IGHV4-150\*01\_S0749

314 sequences assigned  
50 (15.9%) exact matches, in which:  
36 unique CDR3  
5 unique J



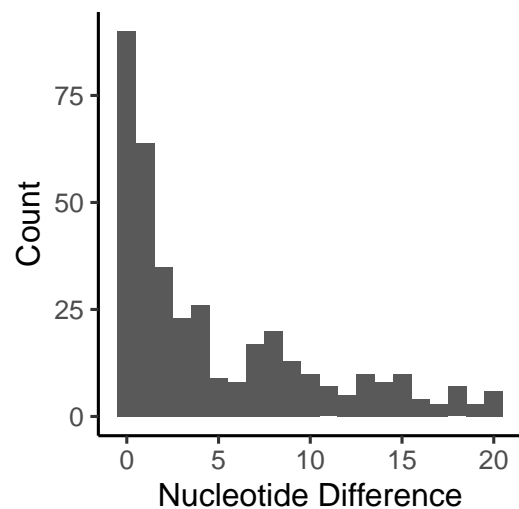
### IGHV4-174\*02\_S7573

7 sequences assigned  
No exact matches.



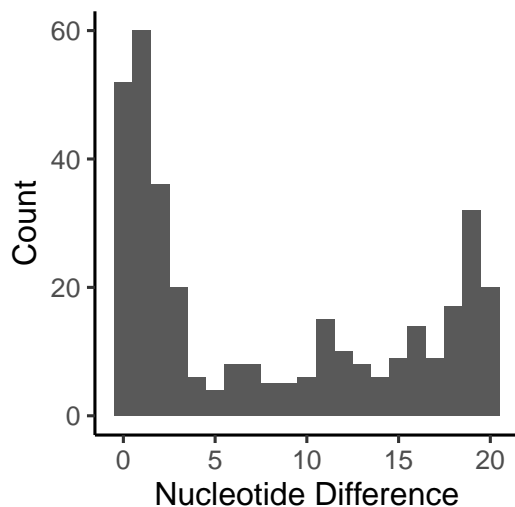
### IGHV4-NL\_1\*01\_S6224

390 sequences assigned  
90 (23.1%) exact matches, in which:  
80 unique CDR3  
7 unique J



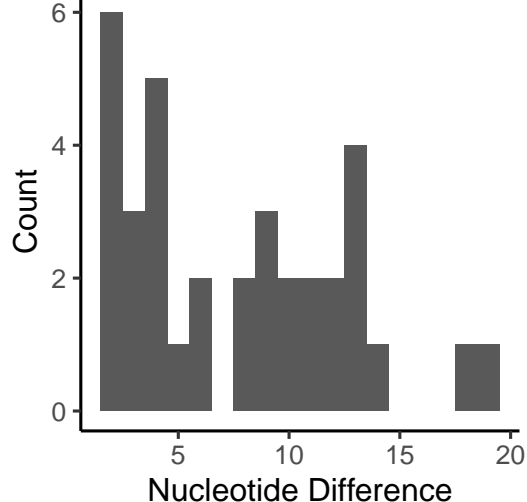
### IGHV4-150\*01\_S5380

484 sequences assigned  
52 (10.7%) exact matches, in which:  
44 unique CDR3  
7 unique J



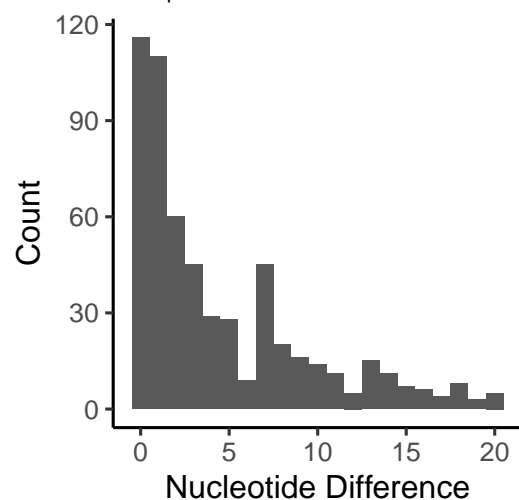
### IGHV4-174\*02\_S9172

45 sequences assigned  
No exact matches.



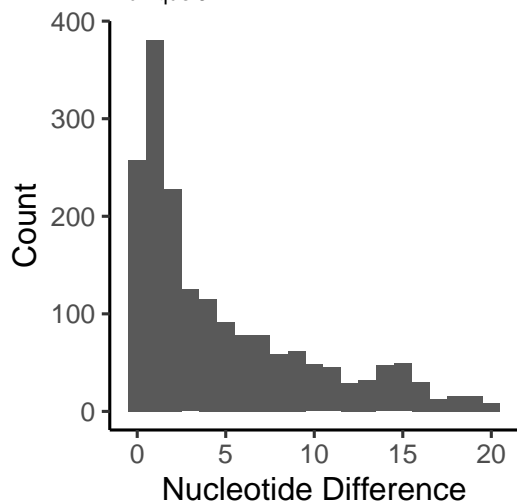
### IGHV4-NL\_1\*01\_S6224

584 sequences assigned  
116 (19.9%) exact matches, in which:  
98 unique CDR3  
7 unique J



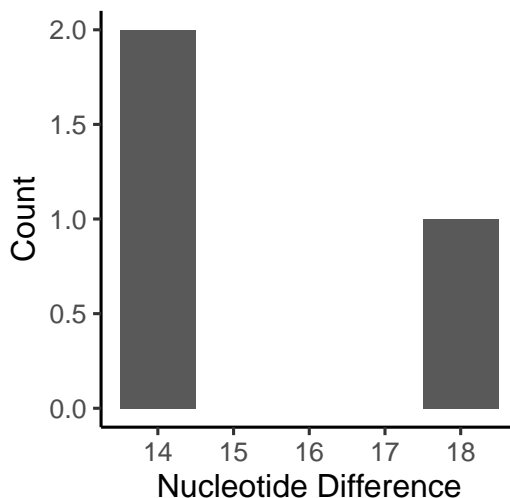
### IGHV4-NL\_12\*01\_S1049

1887 sequences assigned  
258 (13.7%) exact matches, in which:  
203 unique CDR3  
7 unique J



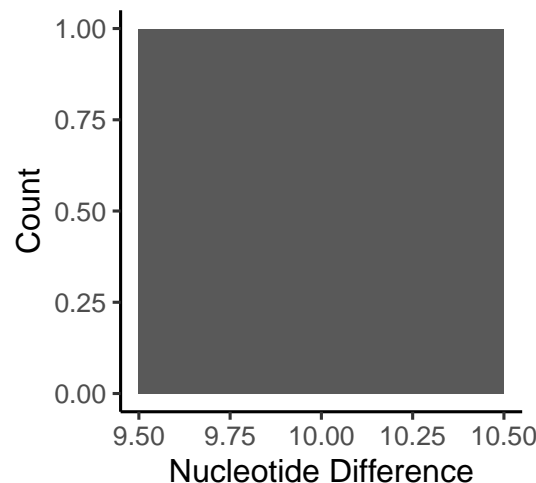
### IGHV4-NL\_14\*01\_S5312

3 sequences assigned  
No exact matches.



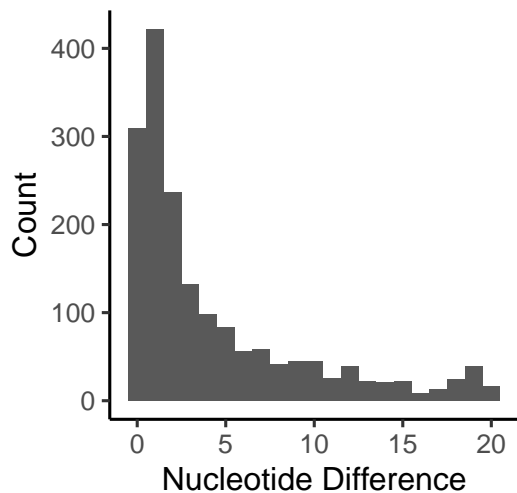
### IGHV4-NL\_18\*01\_S3907

5 sequences assigned  
No exact matches.



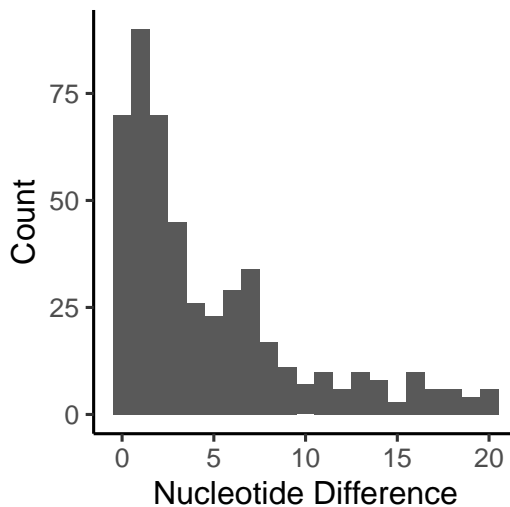
### IGHV4-NL\_12\*01\_S9315

1900 sequences assigned  
309 (16.3%) exact matches, in which:  
246 unique CDR3  
7 unique J



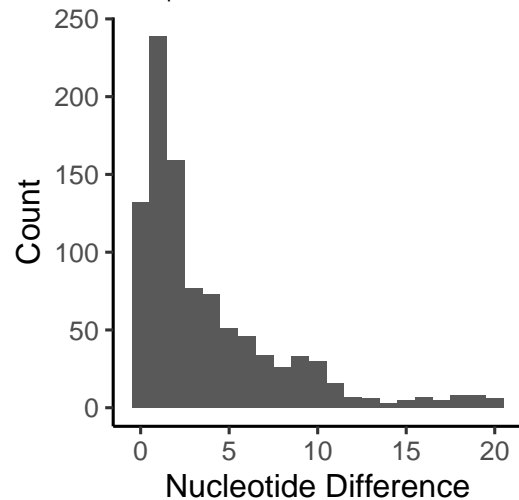
### IGHV4-NL\_16\*01\_S2324

540 sequences assigned  
70 (13%) exact matches, in which:  
56 unique CDR3  
7 unique J



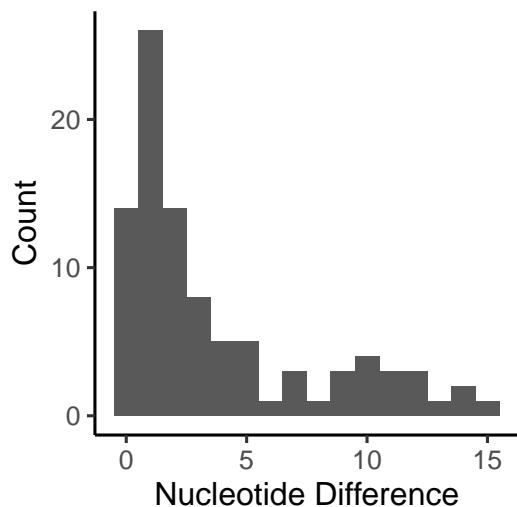
### IGHV4-NL\_21\*01\_S3940

1041 sequences assigned  
132 (12.7%) exact matches, in which:  
108 unique CDR3  
6 unique J



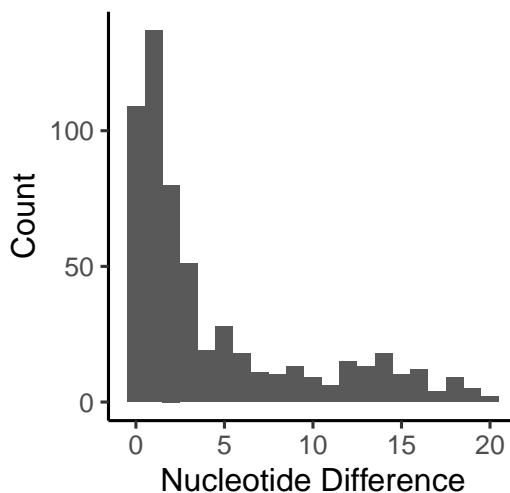
### IGHV4-NL\_13\*01\_S6521

95 sequences assigned  
14 (14.7%) exact matches, in which:  
12 unique CDR3  
4 unique J



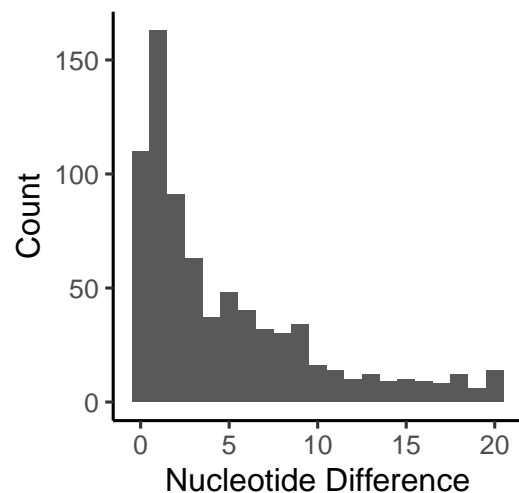
### IGHV4-NL\_17\*01\_S9085

592 sequences assigned  
109 (18.4%) exact matches, in which:  
90 unique CDR3  
7 unique J



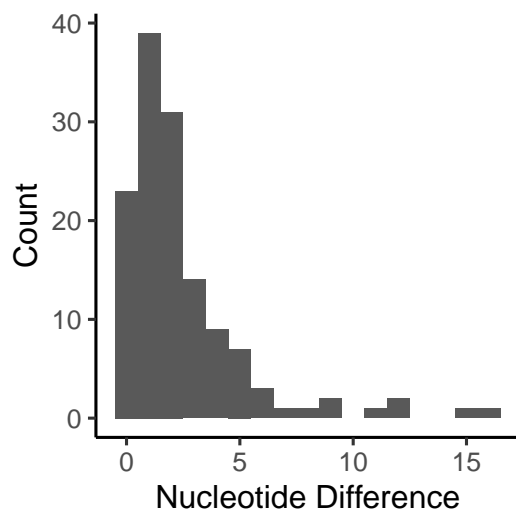
### IGHV4-NL\_22\*01\_S0411

842 sequences assigned  
110 (13.1%) exact matches, in which:  
98 unique CDR3  
7 unique J



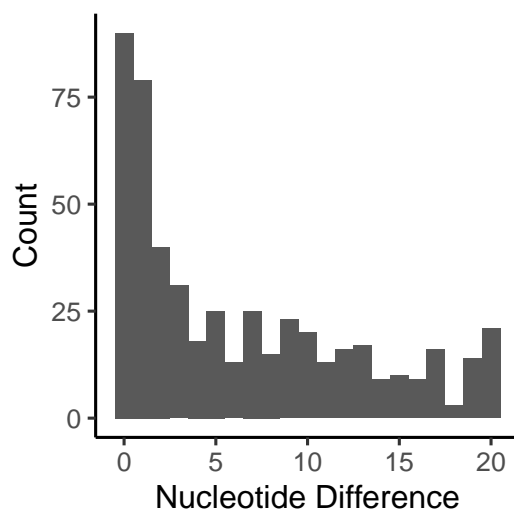
### IGHV4–NL\_24\*01\_S0522

138 sequences assigned  
23 (16.7%) exact matches, in which:  
19 unique CDR3  
5 unique J



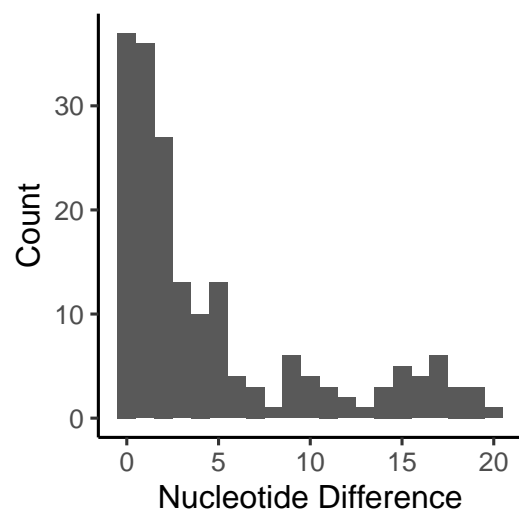
### IGHV4–NL\_28\*01\_S1039

625 sequences assigned  
90 (14.4%) exact matches, in which:  
74 unique CDR3  
7 unique J



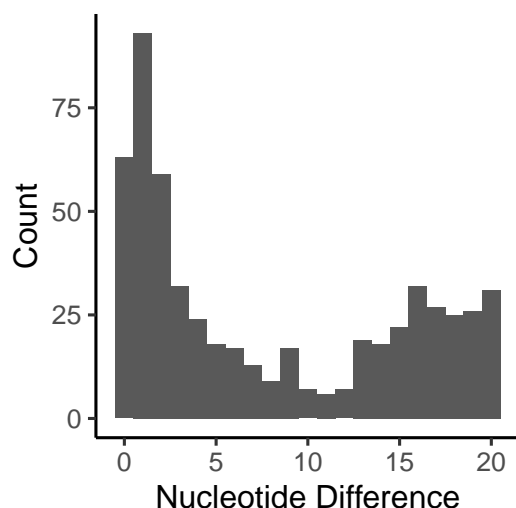
### IGHV4–NL\_28\*01\_S2610

228 sequences assigned  
37 (16.2%) exact matches, in which:  
33 unique CDR3  
5 unique J



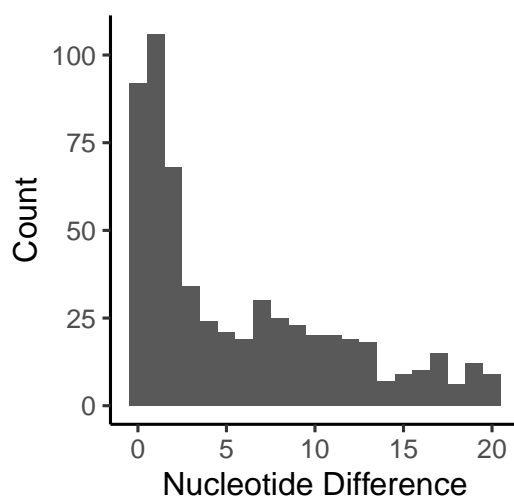
### IGHV4–NL\_25\*01\_S9955

645 sequences assigned  
63 (9.8%) exact matches, in which:  
53 unique CDR3  
6 unique J



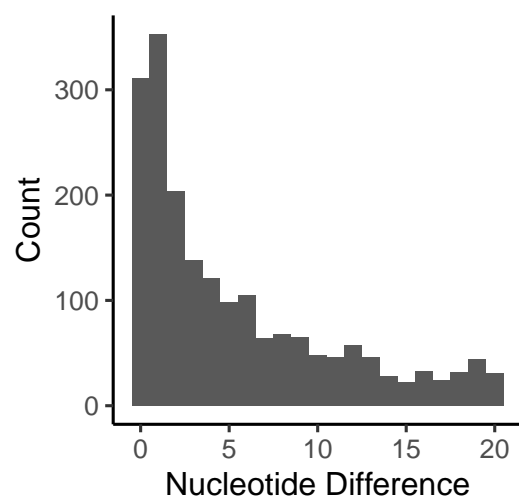
### IGHV4–NL\_28\*01\_S1039

694 sequences assigned  
92 (13.3%) exact matches, in which:  
79 unique CDR3  
8 unique J



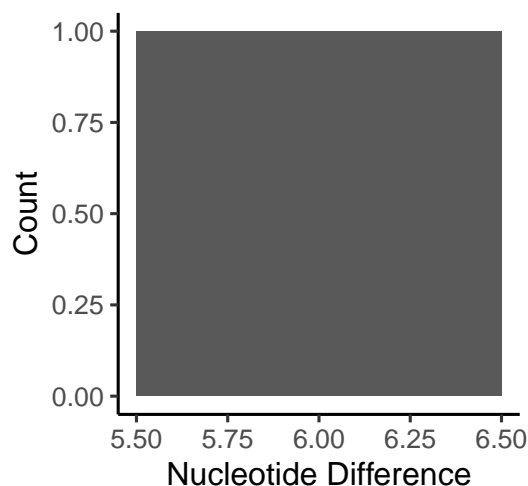
### IGHV4–NL\_29\*01\_S3761

2009 sequences assigned  
311 (15.5%) exact matches, in which:  
244 unique CDR3  
7 unique J



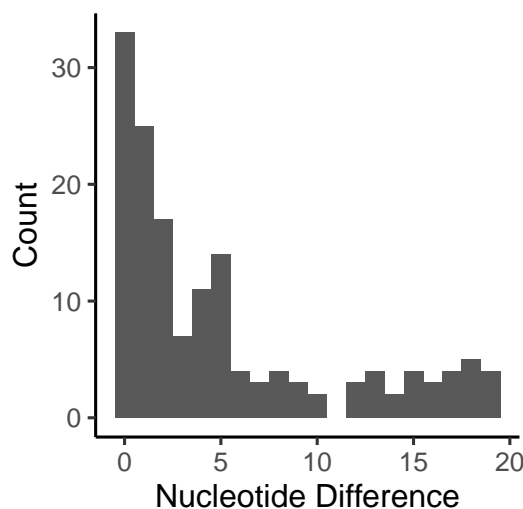
### IGHV4–NL\_27\*01\_S1515

1 sequences assigned  
No exact matches.



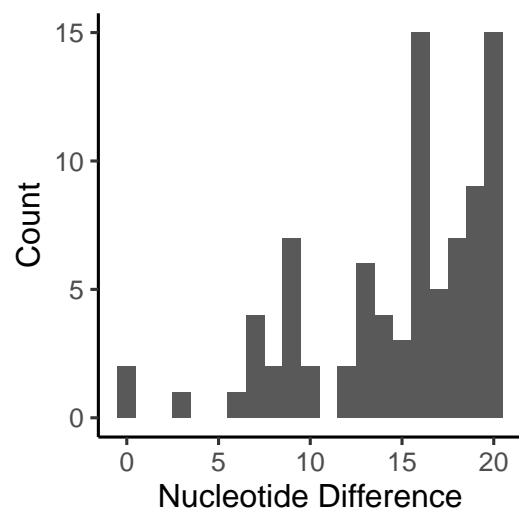
### IGHV4–NL\_28\*01\_S2610

193 sequences assigned  
33 (17.1%) exact matches, in which:  
29 unique CDR3  
6 unique J



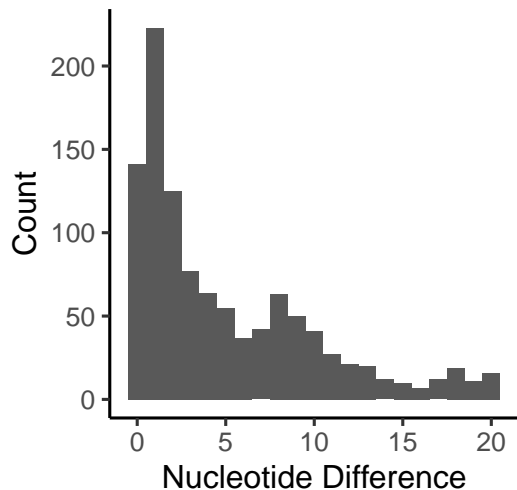
### IGHV4–NL\_3\*01\_S3122

220 sequences assigned  
2 (0.9%) exact matches, in which:  
2 unique CDR3  
1 unique J



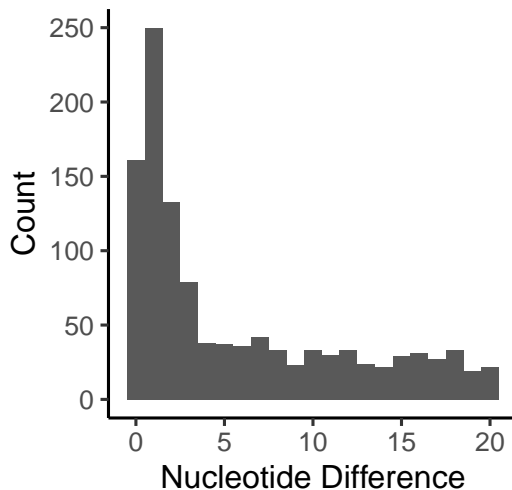
### IGHV4–NL\_3\*01\_S5200

1153 sequences assigned  
141 (12.2%) exact matches, in which:  
105 unique CDR3  
7 unique J



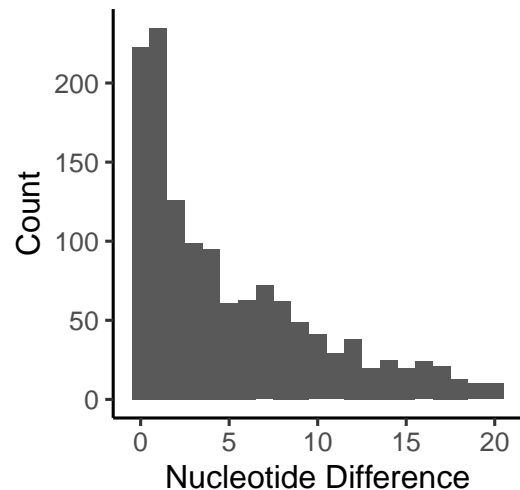
### IGHV4–NL\_33\*01\_S4287

1653 sequences assigned  
161 (9.7%) exact matches, in which:  
136 unique CDR3  
7 unique J



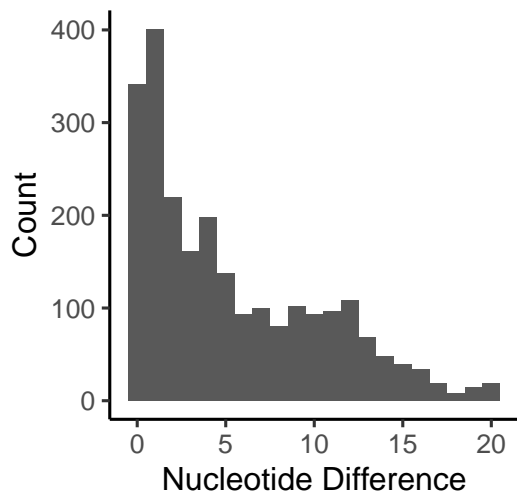
### IGHV4–NL\_37\*01\_S0997

1399 sequences assigned  
223 (15.9%) exact matches, in which:  
170 unique CDR3  
7 unique J



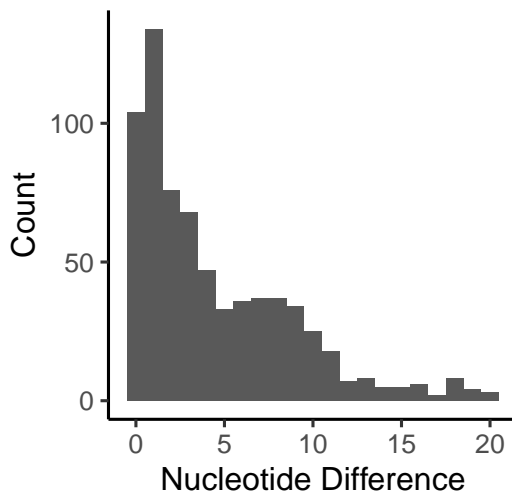
### IGHV4–NL\_31\*01\_S7693

2640 sequences assigned  
341 (12.9%) exact matches, in which:  
266 unique CDR3  
7 unique J



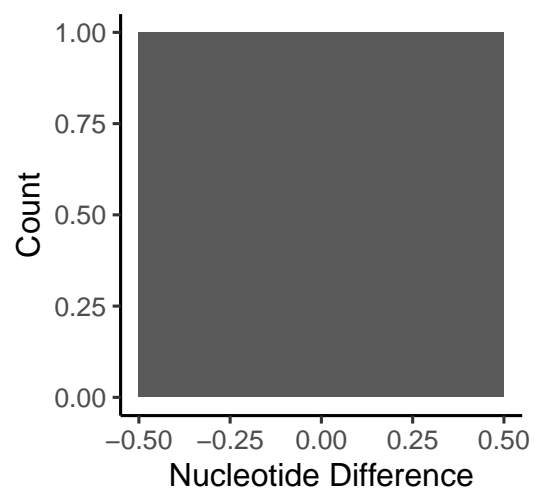
### IGHV4–NL\_36\*01\_S3597

726 sequences assigned  
104 (14.3%) exact matches, in which:  
82 unique CDR3  
7 unique J



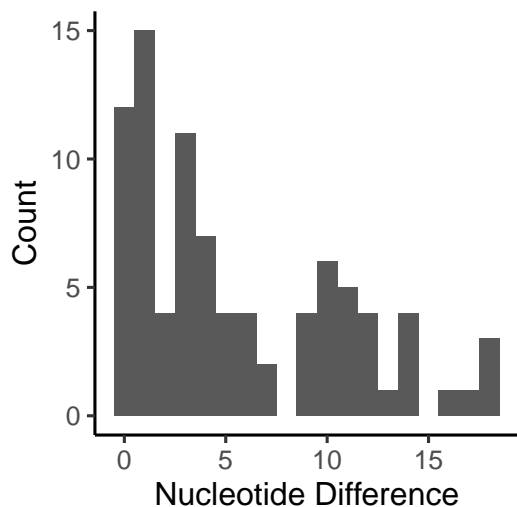
### IGHV4–NL\_38\*01\_S8437

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



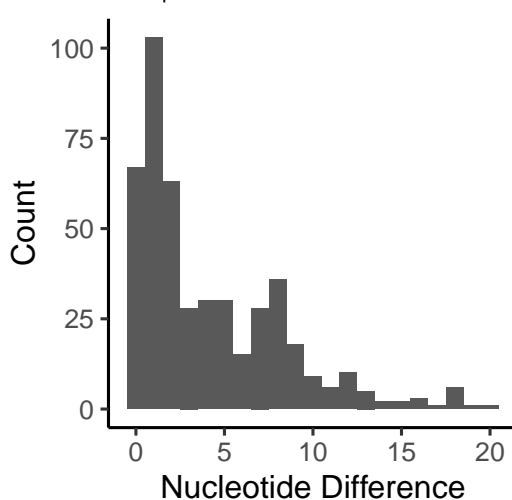
### IGHV4–NL\_32\*01\_S0782

101 sequences assigned  
12 (11.9%) exact matches, in which:  
11 unique CDR3  
4 unique J



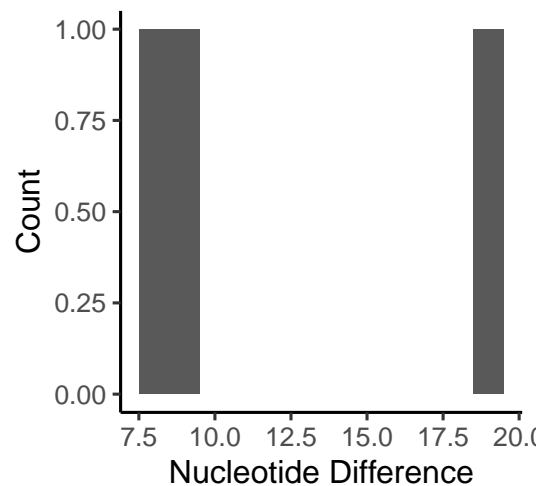
### IGHV4–NL\_36\*01\_S4591

471 sequences assigned  
67 (14.2%) exact matches, in which:  
59 unique CDR3  
6 unique J



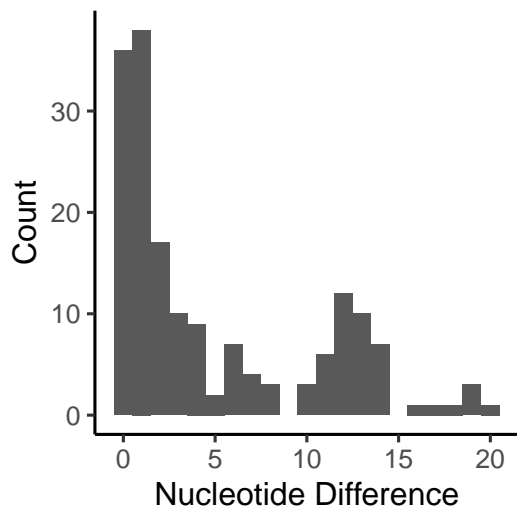
### IGHV4–NL\_38\*01\_S9225

3 sequences assigned  
No exact matches.



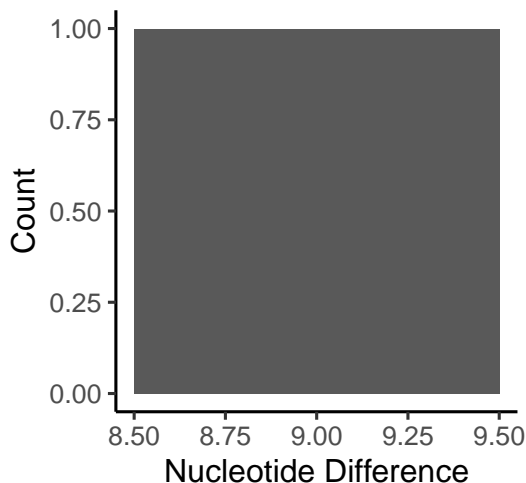
## IGHV4–NL\_39\*01\_S0397

188 sequences assigned  
36 (19.1%) exact matches, in which:  
28 unique CDR3  
5 unique J



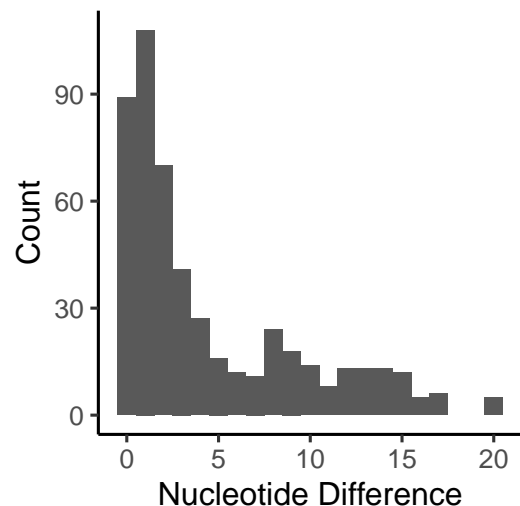
## IGHV4–NL\_40\*01\_S9020

1 sequences assigned  
No exact matches.



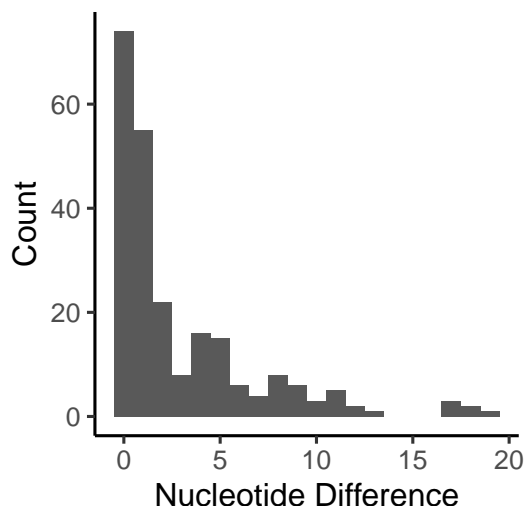
## IGHV4–NL\_42\*01\_S3572

562 sequences assigned  
89 (15.8%) exact matches, in which:  
63 unique CDR3  
7 unique J



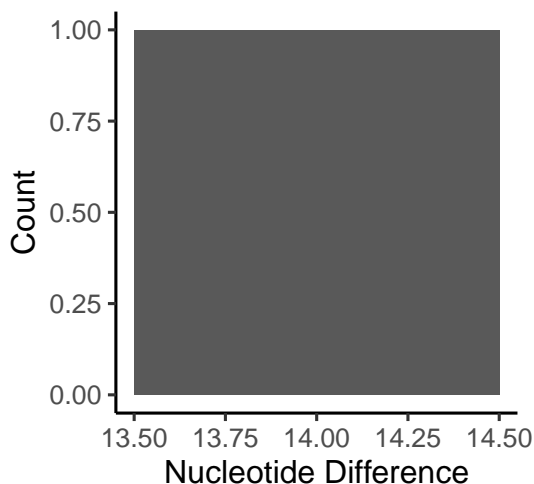
## IGHV4–NL\_4\*01\_S7226

240 sequences assigned  
74 (30.8%) exact matches, in which:  
64 unique CDR3  
7 unique J



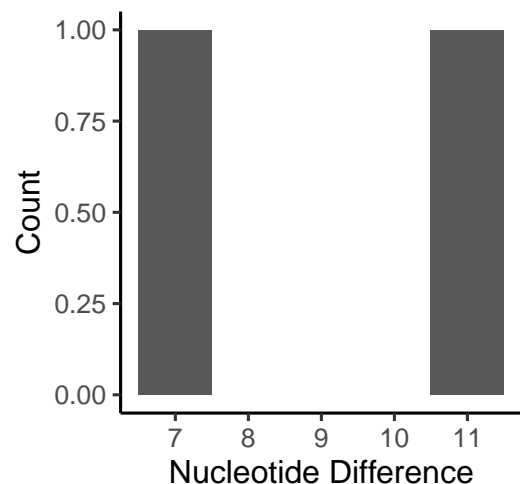
## IGHV4–NL\_41\*01\_S6920

18 sequences assigned  
No exact matches.



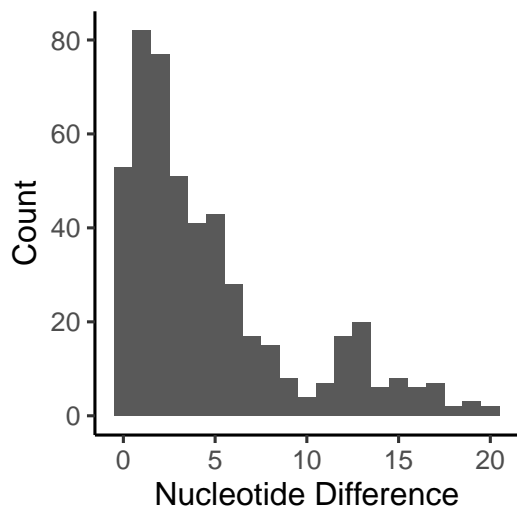
## IGHV4–NL\_43\*01\_S3820

4 sequences assigned  
No exact matches.



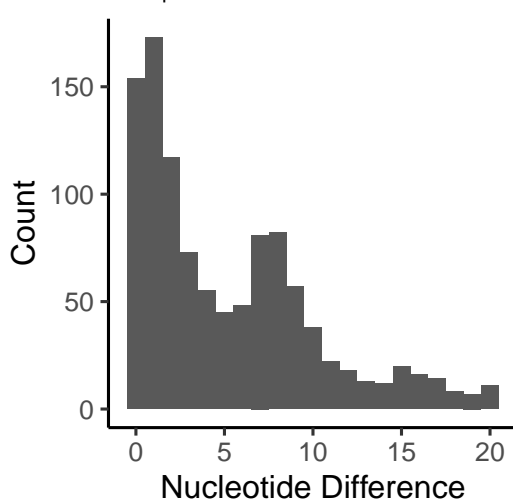
## IGHV4–NL\_4\*01\_S8866

520 sequences assigned  
53 (10.2%) exact matches, in which:  
42 unique CDR3  
6 unique J



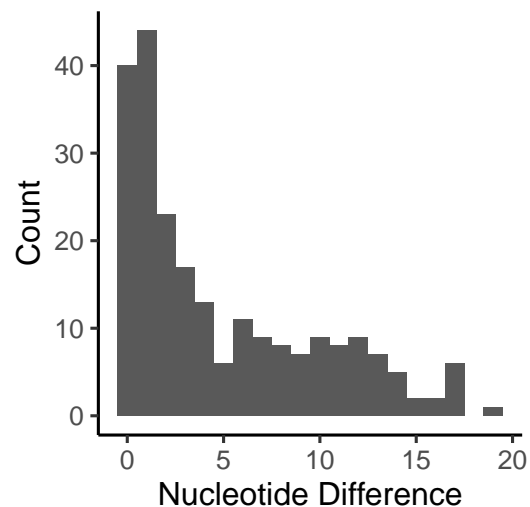
## IGHV4–NL\_42\*01\_S1512

1096 sequences assigned  
154 (14.1%) exact matches, in which:  
118 unique CDR3  
7 unique J



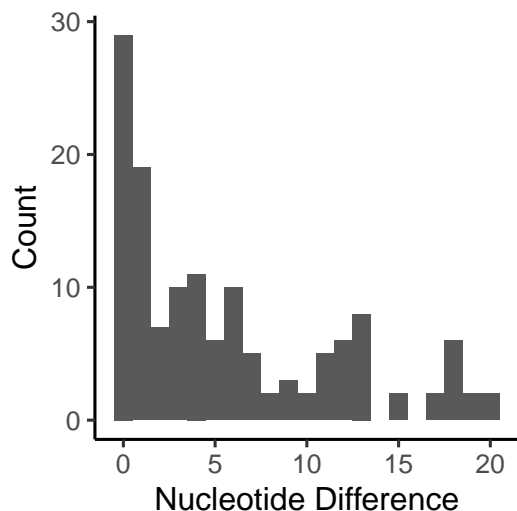
## IGHV4–NL\_5\*01\_S9644

233 sequences assigned  
40 (17.2%) exact matches, in which:  
32 unique CDR3  
6 unique J



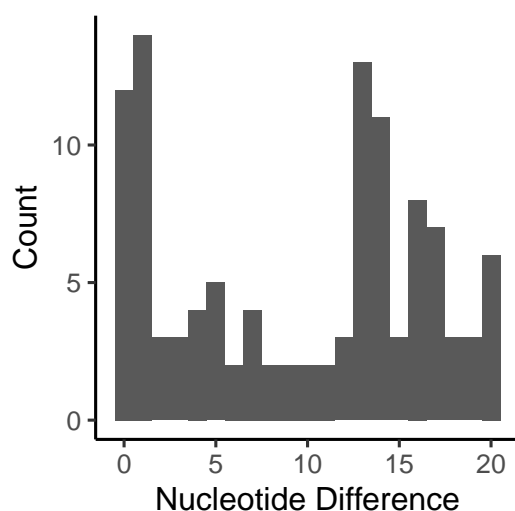
### IGHV4–NL\_7\*02\_S8742

149 sequences assigned  
29 (19.5%) exact matches, in which:  
23 unique CDR3  
6 unique J



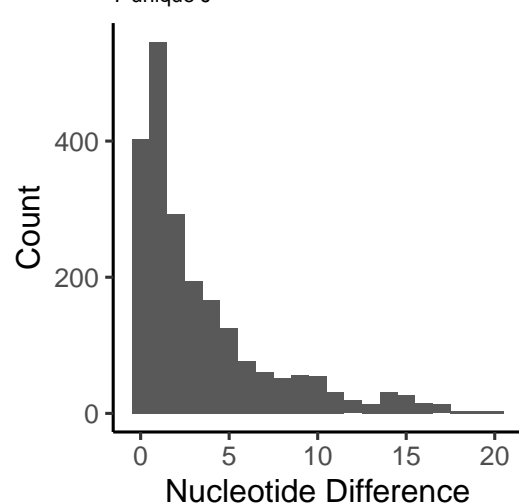
### IGHV4–NL\_9\*01\_S6608

133 sequences assigned  
12 (9%) exact matches, in which:  
11 unique CDR3  
4 unique J



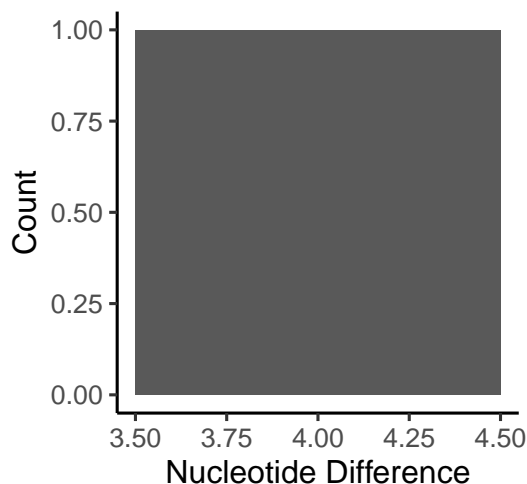
### IGHV5–157\*01\_S5960

2224 sequences assigned  
403 (18.1%) exact matches, in which:  
218 unique CDR3  
7 unique J



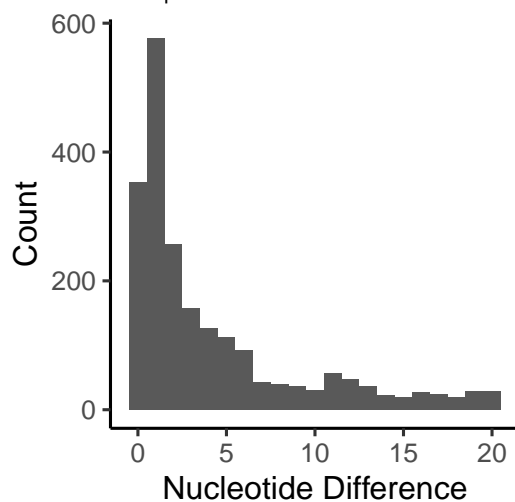
### IGHV4–NL\_8\*02\_S1704

1 sequences assigned  
No exact matches.



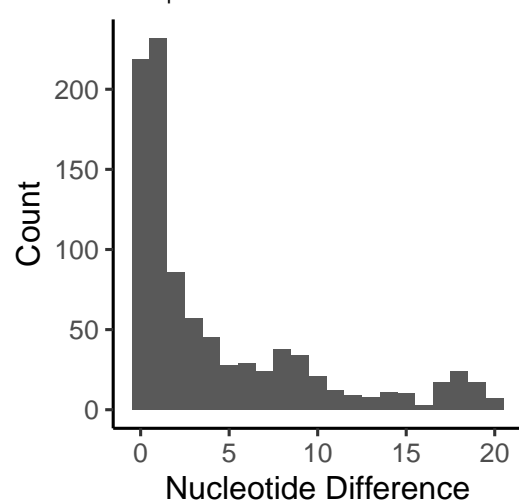
### IGHV5–15\*01\_S8767

2596 sequences assigned  
353 (13.6%) exact matches, in which:  
214 unique CDR3  
8 unique J



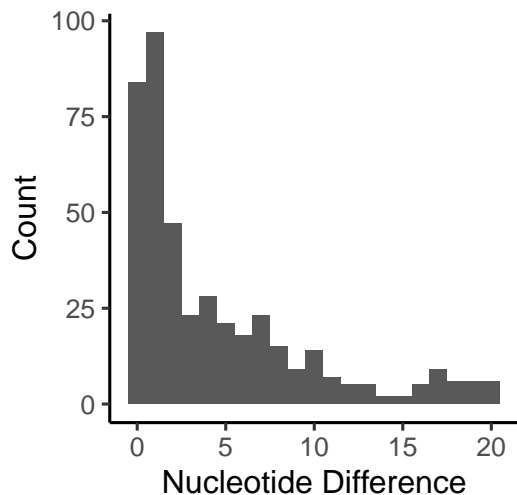
### IGHV7–86\*01\_S8793

980 sequences assigned  
219 (22.3%) exact matches, in which:  
121 unique CDR3  
7 unique J



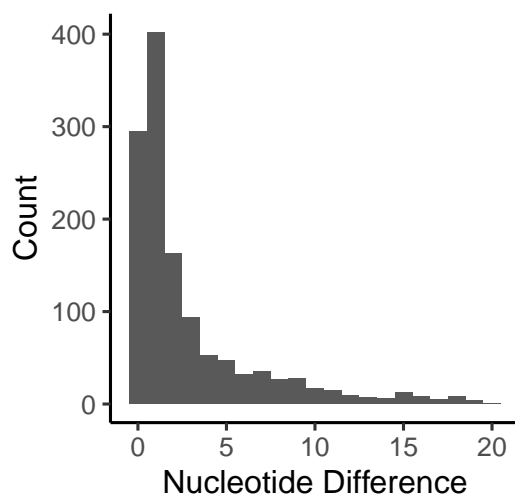
### IGHV4–NL\_9\*01\_S4804

479 sequences assigned  
84 (17.5%) exact matches, in which:  
65 unique CDR3  
8 unique J

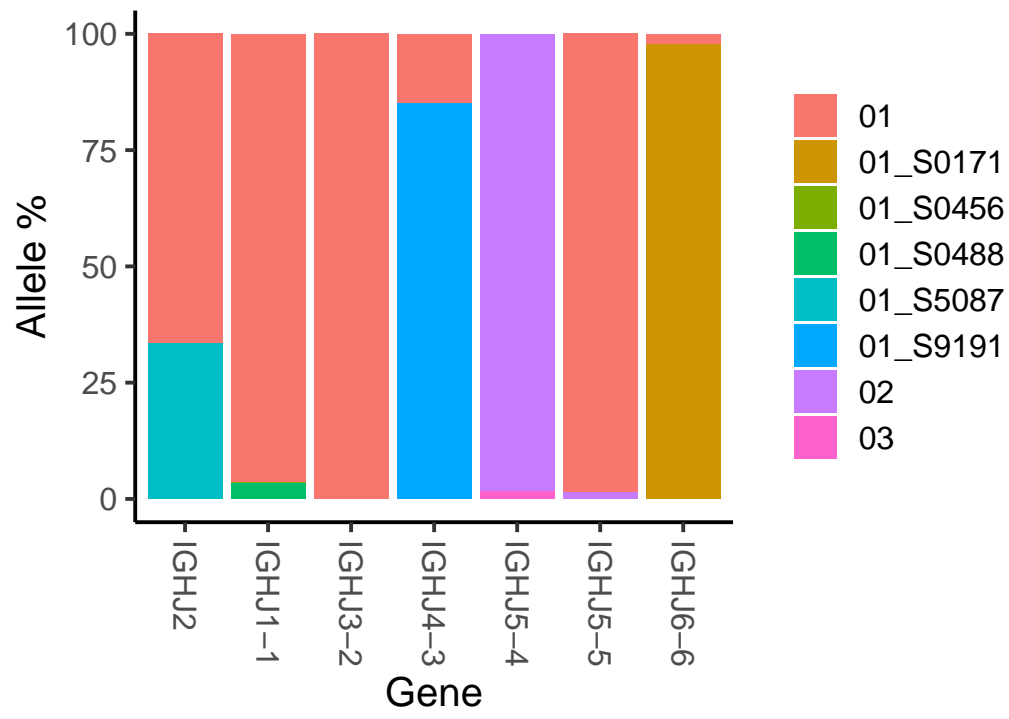


### IGHV5–15\*01\_S9061

1295 sequences assigned  
295 (22.8%) exact matches, in which:  
164 unique CDR3  
8 unique J

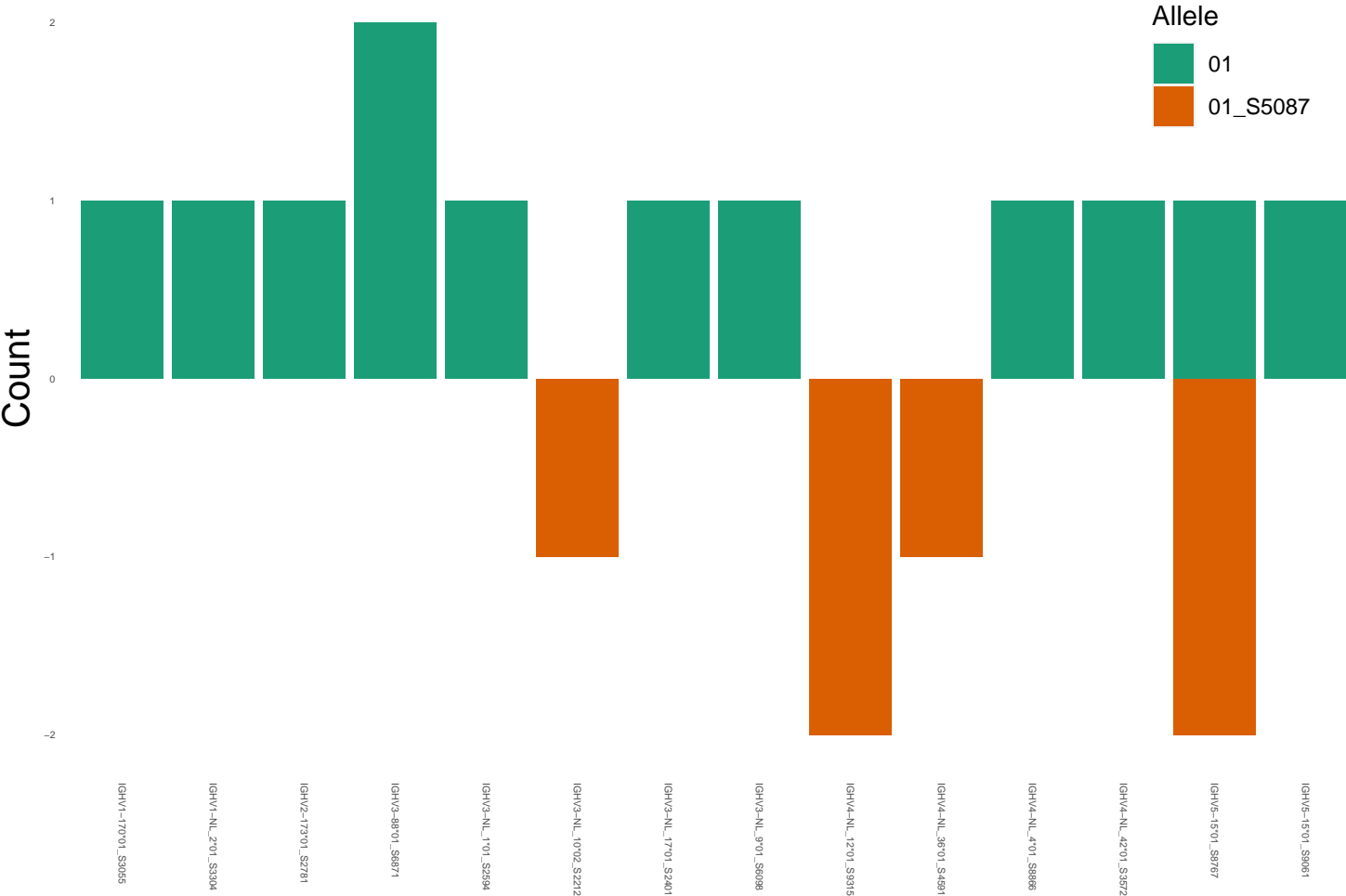


# Allele Usage





Sequence Count by IGHJ2 allele usage



Warning – no inferred sequences found.