0.050 - 0.025 0.000 -0.025	IGHD1-1		0.050 IGHD1-20  0.025  0.000  -0.025	0.050 IGHD1-26  0.025  0.000  -0.025	0.050 0.025 0.000	IGHD1-7	0.050 0.025 0.000 -0.025	IGHD2-15	IGHD2-2 1.00 T-test, p = 0.11  0.75  0.50  0.25	0.050 0.025 0.000	GHD2-21	IGHD2-8 2.0 T-test, p = Q.17  1.5  1.0  0.5	IGHD3-10  1.00  T-test, p = 0.26  0.75  0.50  0.25
-0.050 -1.00 0.75 0.50 0.25 0.00	1 – lest, μ = 0.16	0.00	-0.050 IGHD3-3 T-test, p = 0  0.75  0.50  0.25  0.00	-0.050 IGHD3-9  0.025  0.000  -0.025  -0.050	0.050 0.050 0.025 0.000 -0.025	IGHD4–11	0.050 0.050 0.025 0.000 -0.025	IGHD4–17	0.000 IGHD4-23  0.050  0.025  0.000  -0.025	0.050 0.050 0.025 0.000 -0.025		0.0	0.00   IGHD5-18   T-test, p = 0.36   0.75   0.50   0.25   0.00
0.050 0.025 0.000 -0.025	IGHD5-24	0.050 IGHD5-5 0.025 0.000 — —	0.050 IGHD6-13  0.025  0.000  -0.025  -0.050  IGHJ6		1.00 0.75 0.50 0.25	IGHD6−25  • IGHV1−2	2.0 1.5 1.0 0.5		0.050 IGHD7-27  0.050  0.025  -0.025  IGHV1-3	0.050 0.025 0.000	IGHJ1 0	.050 IGHJ2 .050 .025 .025 .050 IGHV1–46	1.00
1.00 0.75 0.50 0.25	IGHV1-68 T-test, p = 0,042	2.0 T-test, p = 0.36  1.5  1.0  0.5  0.0  IGHV1-69  T-test, p = 0.21	T-test, p = 0  4  3  2  1  IGHV1-69-2  T-test, p = 8.6	2 T-test, p = Q.07	4 3 2 1 0	IGHV2-26 T-test, p = 3e-06	6 4 2 0	T-test, p = 0.62	T-test, p = 0.76  10  IGHV2-70  T-test, p = 4.5e-1	2 1 0 IO	est, p = Q.73  GHV2-70D est, p = 0.013	T-test, p = 0,001  6  4  2  0  IGHV3-11  T-test, p = 0,51	3 8 T-test, p = 8e-05 6 • 4 • 2 0 IGHV3-13
6 4 2 0 L	IGHV3-15 T-test, p = 0.031	20 10 0 IGHV3-16 T-test, p = 0.00024	$ \begin{array}{c} 2 \\ 1 \\ 0 \end{array} $ $ \begin{array}{c} \text{IGHV3-19} \\ \text{T-test, p = Q} \end{array} $	4 2 0 IGHV3-20	2 0	IGHV3-21 T-test, p = 0.0005	7.5 5.0 2.5	IGHV3-22 T-test, p = 0 <sub>0</sub> 0026	10 5 0 IGHV3-23	7.5 5.0 2.5 0.0	GHV3-25	6 4 2 0 IGHV3-29	2 0 IGHV3-30 T-test, p = 2.6e-10
3 2 1 0 E	IGHV3-30-2 T-test, p = 0.00016	3  2  1  0  IGHV3-32  T-test, p = 0.32	3 2 1 0 IGHV3-33 T-test, p = Q	20 10 0 IGHV3-33-2	2 0	IGHV3-35 T-test, p = 0.013	30 20 10 0		15 10 5 0 IGHV3-41 T-test, p = 2.4e-08		11 GHV3-43 est, p = Q 18	.025 .000 .975 .950 IGHV3-47 T-test, p = 0.82	10 5 0 IGHV3-48
4 2 0 5	IGHV3-49 T-test, p = 8.2e-10	10 5 0 IGHV3-52 T-test, p = Q.71	10 5 0 IGHV3–53 T–test, p = 12		2 1 0 6	IGHV3-63 T-test, p = 0.00049	10 5	IGHV3-64	6 4 2 0 IGHV3-64D 2.0 T-test, p = Q 033		GHV3-66 est, p = 0.035	5.0 2.5 0.0 IGHV3-69-1 T-test, p = 0.41	6 3 0 IGHV3-7 T-test, p = 0.63 6 • •
3 2 1 0	IGHV3-71 T-test, p = 0.5	2  1  1  1  1  1  1  1  1  1  1  1  1  1	5.0 2.5 0.0 IGHV3-73 T-test, p < 25	10 5 0 IGHV3-74	2 0 20 15	IGHV4-28 T-test, p = 0.023	3 2 1 0 20	IGHV4-31 T-test, p = 0.12  • •	1.0 0.5 0.0 IGHV4-34 T-test, p = 5 7e-09		GHV4-39 st, p = 0,0027	2 1 0 IGHV4-4 T-test, p = 0.38	2 0 IGHV4-55 T-test, p = Q.65
7.5	IGHV4-59 T-test, p = 6e-04	2 1 0 IGHV4-61 T-test, p = 0.004 20	5  IGHV5-10-1  T-test, p = Q  6		10 5 0 4	IGHV5-78 T-test, p = 0.075	1.5	IGHV6-1 T-test, p = 0,053	20 10 0 IGHV7-34-1 3 T-test, p = 0.81		GHV7-4-1 est, p = Q.32	10 0 IGHV7-40 T-test, p = 0,031 7.5	2 1 0 IGHV7-81 T-test, p < 2.2e-10
2.5	1 – test, μ = 0.24	10 5 0 IGKJ1 0.050 0.000	2 IGKJ2 T-test, p = 0	2 IGKJ3 3 T-test, p = 0.15	2 1 0 2.0	IGKJ4 T-test, p = Q.56	0.5		1 0 IGKV1-12 5 T-test, $p = 5.8e-00$ 4		GKV1-13 est, p = 0.33	2.5 0.0 IGKV1–16 T–test, p = Q.51	7.5
1 0 6		-0.025 -0.050  IGKV1-33 T-test, p = 0,00042 3 2	1 IGKV1-37 T-test, p = 0	10.0 T-test, p = Q.12	0.5 0.0 20 15	IGKV1-5 T-test, p = Q.73	1 0 2.0 1.5		2 1 0 IGKV1-8 T-test, p = Q.65	6 T-te	IGKV1-9 est, p = 0.23	1 IGKV1D-12 T-test, p = 0.77 7.5 • • • • • • • • • • • • • • • • • • •	5.0 2.5 0.0 12.5 IGKV1D-13 T-test, p = Q 11 10.0 7.5 5.0
2 0 2 2	IGKV1D-16 T-test, p = 0.062	1	1	7e-1: 3 T-test, p = 0.0001	5 0 6 4	IGKV1D-39 T-test, p = 1.6e-0	0.5	IGKV1D-42 T-test, p = 3e-10	IGKV1D-43 T-test, p = 5e-04		GKV1D-8 st, p = 0 <sub>0</sub> 0061	2.5 0.0  IGKV2-18 T-test, p = 0.003	2.5 0.0  IGKV2-24 T-test, p = 0.04
0 L 4 3 2 1	IGKV2-28 T-test, p = 0.74	$ \begin{array}{c c}  & IGKV2-29 \\ \hline  & T-test, p = 2.5e-00 \end{array} $	1   IGKV2-30   T-test, p = 0   10	7 T-test, p = 0,031	0 L 4 3 2 1	IGKV2D-18 T-test, p = 0 00044	0 4 3 2	IGKV2D-24 T-test, p = Q.6	IGKV2D-26 T-test, p = 4.9e-0		GKV2D-28 st, p = 0,0007	9 • 6 3	$ \begin{array}{c c} 1 \\ 0 \\ \hline                                $
10.0 7.5 5.0 2.5	IGKV2D-40 T-test, p = 2.5e-0	IGKV3-11 T-test, p = Q 17	7.5  IGKV3–15  T–test, p = 0	7.5 T-test, p = 0.047	6 4	IGKV3-7 T-test, p = 0.25  •	5 4 3 2		IGKV3D-15		GKV3D-20 st, p = 8.2e-0	IGKV3D-7 T-test, p = 0.013	IGKV4-1 T-test, p = 0.41  7.5  5.0  2.5
0.0 L 4 3 2 1	IGKV5-2 T-test, p = 0,0094	IGKV6-21 T-test, p = 0.52	0.0  IGKV6D-21  T-test, p = 0		2.0 1.5 1.0 0.5	IGKV7-3 T-test, p = 0 0004	2.0 1.5 1.0 0.5		IGLJ2 T-test, p = 0,00072  4  2  0	5 T-te	ο ο ο ο ο ο ο ο ο ο ο ο ο ο ο ο ο ο ο	.050 IGLJ4 .050 .025 .025	IGLJ5 T-test, p = 0,029
2.0 1.5 1.0 0.5	IGLJ6 T-test, p = 0.43	IGLJ7 T-test, p = 1-1e-0  1.5  1.0  0.5  IGLV11-55	IGLV1-36 T-test, p = 0  7.5  5.0  2.5  0.0  IGLV2-11	T-test, p = 0.019  4  3	6 4 2 0	IGLV1-41 T-test, p = 0.0029	5 4 3 2	IGLV1-44 T-test, p = 2e-11	IGLV1-47 T-test, p = 0.0001  4 3  IGLV2-33	5 T-te	est, p = 0.56	IGLV1-51 T-test, p = 0.0002  4 3  IGLV2-5	IGLV1-62 T-test, p = 2.9e-1
4 3 2 1 0 L	IGLV3-1 T-test, p = 4.9e-0:	T-test, p = 0.38  IGLV3-10  T-test, p = 0.0012	1.5  1.0  0.5  IGLV3-12  T-test, $p = 0$	20 15 10 5 0 IGLV3–13	5 4 3 2 1 0 5 5	IGLV3-16 T-test, p = 1.8e-0	5		3 T-test, p = 0,00029  1 1 0 IGLV3-21 T-test, p = 0.00029	1 0	est, p = 0,079	T-test, p = 0.26  3  •  IGLV3-25  T-test, p = 0.055	7.5 5.0 2.5 0.0
7.5 5.0 2.5	IGLV3-31 T-test, p = 0,00019	2 $1$ 0 $IGLV3-32$ $T-test, p = Q.15$	6 4 2 0 IGLV3-9 T-test, p = Q	3 2 1 0 IGLV4-3 T-test, p = Q.45	4 3 2 1 0	IGLV4-60 T-test, p = 0.2	2 0 5	IGLV4-69 T-test, p = 0.37	20 10 IGLV5-37 T-test, p = 0.2	7.5 5.0 2.5 0.0	eggLV5-45 est, p = 0,013	4 3 2 1 0 IGLV5-48 40 T-test, p = 0,006	2 1 0 IGLV5-52 T-test, p = 0.039
3 2 1 0 E	IGLV6-57 T-test, p = Q.5	3 2 • 1 • 0 IGLV7-43 T-test, p = 0.00048	3 2 1 0 IGLV7-46 T-test, p = 56	3 • • • • • • • • • • • • • • • • • • •	4 3 2 1 0	IGLV9-49 T-test, p = Q.61	4 3 2 1 0	TRAJ1 T-test, p = 0.48	15 10 5 0 TRAJ10 T-test, p = 0.024	1.00 T-te	TRAJ11 est, p = Q32	30 20 10 0 TRAJ12 T-test, p = Q 63	
2 0 0.050	TRAJ14	1.5  1.0  0.5  0.0  TRAJ16  1.00  T-test, p = 0.41  0.75	3 2 1 0 TRAJ17 T-test, p = 0	2 0 TRAJ18	3 2 1 0 1.00	TRAJ19 T-test, p = 0.94	0.75 0.50 0.25 0.00 1.00	TRAJ2 T-test, p = 0.31	0.75  0.50  0.25  0.00  TRAJ20  1.00  T-test, p = 0.85	0.75  0.50  0.25  0.00  0.050		1.5  1.0  0.5  0.0  TRAJ22  T-test, p = 0.32  0.75	1.5  1.0  1.0  1.0  1.0  1.0  1.0  1.0
0.000 -0.025 -0.050 2.0	1-ιεςι, ρ < 2.26-11	0.50 0.25 0.00 TRAJ25 0.025	0.50  0.25  0.00  TRAJ26  T-test, p = 0	0.50 0.25 0.00 TRAJ27 0.025	0.50 0.25 0.00 2.0	TRAJ28 T-test, p = 0.35	0.50 0.25 0.00 1.00 0.75	TRAJ29 T-test, p = Q.32	0.50  0.25  0.00  TRAJ3  1.00  T-test, p = Q.32			0.50  0.25  0.00  TRAJ31  T-test, p = 0.53	0.50  0.25  0.00  TRAJ32  2.0  T-test, p = 3.4e-1
0.05 0.050 0.025		0.000 -0.025 -0.050 TRAJ34 T-test, p = 0.023  0.75  0.50	0.50  0.25  0.00  TRAJ35  T-test, p = 0  0.75  0.50	-0.025 -0.050 TRAJ36 T-test, p = Q.71 0.75	1.0 0.5 0.0 2.0	TRAJ37 T-test, p = 0.63	0.50 0.25 0.00 1.00 0.75	TRAJ38 T-test, p = 0.52	0.50  0.25  0.00  TRAJ39  0.025  0.000	0.50  0.25  0.00  1.00  T-te	TRAJ4 est, p = Q.16	1.0 •  0.5  0.0 TRAJ40  1.00 T-test, p = Q.16  0.75  0.50	1.0  0.5  0.0  TRAJ41  1.00  T-test, p = Q.8  0.75  0.50
-0.025 -0.050 0.050 0.025		0.25 0.00 TRAJ43 0.050 0.025 0.000 TRAJ43	0.25  0.00  TRAJ44  T-test, p = Q	0.025	0.5 0.0 2.0 1.5	TRAJ46 T-test, p = Q.84	0.25 0.00 2.0 1.5	TRAJ47 T-test, p = 1.7e-0:	-0.025 -0.050 TRAJ48 T-test, p = Q.32  0.75  0.50	0.25  0.00  1.00  T-te  0.75  0.50	TRAJ49 st, p = 0 0005	0.25  0.00  TRAJ5  T-test, p = Q 16  0.75  0.50	0.25  0.00  TRAJ50  1.00  T-test, p = 0.56  0.75  0.50
-0.025 -0.050 1.00 0.75 0.50		-0.025 -0.050 TRAJ52 1.00 T-test, p = Q.16  0.75 0.50 0.25	0 TRAJ53 1.00 T-test, p = 0  0.75  0.50  0.25	-0.025 -0.050	0.5 0.0 0.050 0.025	TRAJ55	0.5 0.0 1.00 0.75 0.50	TRAJ56 T-test, p = <b>Q</b> 32	0.25  0.00  TRAJ57  1.00  T-test, p = 0.93  0.75  0.50  0.25		TRAJ58 est, $p = Q_0072$	0.25 0.00 TRAJ59  .025 .025 .000	0.25  0.00  TRAJ6  1.00  T-test, p = Q.32  0.75  0.50  0.25
0.00 L 1.00 0.75 0.50	TRAJ60 T-test, p = 0.28	0.00 TRAJ61  1.00 T-test, p = 0.29  0.75  0.50  0.25	0.00 TRAJ7 1.00 TRAJ7 0.75 0.50 0.50	0.00 TRAJ8	-0.025 -0.050 1.00 0.75 0.50	TRAJ9 T-test, p = Q 16	0.00	TRAV1-1 T-test, p = 2.5e-00	0.00 TRAV1-2	0.00		.050 TRAV11 T-test, p = 0.19	0.00
0.00	TRAV12–2 T–test, p = 0.4	0.00	0.00 TRAV13-1 T-test, p = 0		0.00 S	TRAV16 T-test, p = 0 0082	1.5		TRAV18 3 T-test, p = 0.028		TRAV19 est, p = Q.31	TRAV2 $ \begin{array}{c}                                     $	0 TRAV20
0	TRAV21 T-test, p = 0,0035	TRAV22 T-test, p = 0.079  6	TRAV24 T-test, p = Q		0	TRAV26-1 T-test, p = 0.033	5 4 3 2	TRAV26-2 T-test, p = 0.00019		3 • T-to	TRAV3 est, p = Q.8	TRAV30 T-test, p = 0.28	3 • • • • • • • • • • • • • • • • • • •
4 3 2 1 0	TRAV35 T-test, p = 0.0002	TRAV38-1 T-test, p = 4e-09  TRAV8-3	3 2 1 1 0 TRAV8-4	2 1 0 TRAV8-6	3 2 1 0 0	TRAV40 T-test, p = 0.64  TRAV8-7	2	TRAV41 T-test, p = 0,17	TRAV5  1.5  1.0  0.5  TRAV9-2	6 4 2 0	TRAV6 est, p = 0,015  TRBD1	TRAV7 T-test, p = 0.13  2  •  1  TRBJ1-1	3 • • • • • • • • • • • • • • • • • • •
12.5 - 10.0 7.5 5.0 2.5 0.0 L.00	TRAV8-2 T-test, p = 0.0009  TRBJ1-3 T-test, p = 0.83	TRAV8-3 T-test, p = 0.8  TRBJ1-4 T-test, p = $\mathbb{Q}.32$	TRAV8-4 T-test, p = 0  4 3 2 1 0 TRBJ1-5 T-test, p = 0	.36 T-test, p = 3,3e-0  TRBJ1-6	3 2 1 0	TRBJ2-1 T-test, p = 0,0034  TRBJ2-1 T-test, p = 0,0015	3 2 1 0	TRAV9-1 T-test, p = 2.1e-0  TRBJ2-2 T-test, p = 0.82	6 T-test, p = Q.15  4  •  TRBJ2-2P	0.050 0.025 0.000 -0.025	TRBJ2-3	TRBJ1-1 T-test, p = 0.32  0.75  0.50  0.25  0.00  TRBJ2-4  T-test, p = 0.88	1.00 T-test, p = 0.32  0.75  0.50  0.25  0.00  TRBJ2-5
0.75 0.50 0.25 0.00	TRBJ2-6 T-test, p = 0.56	1.00 1 - test, p = 0.32  0.75  0.50  0.25  0.00  TRBJ2-7  T-test, p = 1.8e-0	2.0 T-test, p = Q  1.5  1.0  0.5  0.0  TRBV1  T-test, p = Q	1.5 1.0 0.5 0.0 TRBV10-1	1.5 1.0 0.5 0.0	TRBV10-2 T-test, p = 0.091	2 1	TRBV10-3 T-test, p = 0.02	0.025  0.000  -0.025  -0.050  TRBV11-1  T-test, p = 0.016	0.75 0.50 0.25 0.00		1.00 T-test, p = 0.00  0.75  0.50  0.25  0.00  TRBV11-3  T-test, p = 0.12	0.75  0.50  0.25  0.00  TRBV12-1
0.75 0.50 0.25 0.00	TRBV12-2 T-test, p = 0.77	1.5  1.0  0.5  0.0  TRBV12-3  T-test, p = 2.5e-06	1.5  1.0  0.5  0.0  TRBV12-4  T-test, p = 1.3	1 0 TRBV12–5	3 2 1 0	TRBV13 T-test, p = 1-1e-00	2 0 4	•	2 • • •  1 • •  TRBV15  T-test, p = 8.1e-12			1.5  1.0  0.5  0.0  TRBV17  T-test, p = 0.33	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
2 1 0 5 4	TRBV19 T-test, p = Q.9	TRBV2 T-test, p = 8.3e-0:	3 2 1 0 TRBV20-1 4 T-test, p = 0	2 1 0 TRBV21-1 T-test, p < 2.2e-1	2 1 0 5	TRBV23-1 T-test, p = 6.5e-09	3 2 1 0 4	TRBV24-1 T-test, p = 0.0019	2 1 0 TRBV25–1		TRBV26 st, p < 22e-10	6 4 2 0 TRBV27 T-test, p = 2,2e-0	2 1 0 TRBV28
3 2 1 0 2.0	TRBV29-1 T-test, p = 0.34	TRBV3-1 T-test, p = 0.34	TRBV30 T-test, p = 2.4	3 2 1 0 TRBV4-1 T-test, p = 0.032	3 2 1 0	TRBV4-2 T-test, p = 0.81	1 0	TRBV5-1 T-test, p = 7.9e-00	2 1 0 TRBV5-3 $T-test, p = 1.5e-00$ 4  4  3		TRBV5-4 st, p = 3.6e-10  •	2  1  TRBV5-5  T-test, $p = 8.9e^{-t}$	7.5
1.0 0.5 0.0	TRBV5-7 T-test, p = Q.91	10  TRBV6-1  T-test, p = 0.73	2 TRBV6-2 20 T-test, p = 0.		5 0 3	TRBV6-5 T-test, p = 0.07	40 30		3 2 1 0 TRBV6-7 T-test, p = Q.52		TRBV6-8 st, p = 0 <sub>0</sub> 0037	TRBV7-1 T-test, p = 0,002	5.0 2.5 0.0  TRBV7-2 T-test, p = 0.076
20 10 0 8 6	TRBV7-3 T-test, p = 1_6e-0	TRBV7-4 T-test, $p = 5 2e - 0$	5 0 TRBV7-6	7-test, p = 0.15	0	TRBV7-9 T-test, p = 0.69	20 10 0 4 3		0.050 TRDD1  0.025  0.000	10 5 0 0.050 0.025	TRDD2	1 TRDD3 2.0 TRDD3 1.5 1.0	2 1 0 TRDJ1 T-test, p = Q32  0.75  0.50
2 0 1.00 0.75	TRDJ2 T-test, p = 0.53	1 0 TRDJ3 T-test, p = 0.35  0.75  0.50	2 1.00 TRDJ4 T-test, p < 26 0.75 0.50	10 0 TRDV1	1 0 L 4 3 2 L 4 L 4 L 4 L 4 L 4 L 4 L 4 L 4 L 4 L	TRDV2 T-test, p = 5,9e-00	1 0 3	TRDV3 T-test, p = 1.8e-06	0.75	0.75		0.5  0.0  TRGJP  T-test, p = 0.32  0.75  0.50	0.75
0.25 0.00 1.00 0.75 0.50	TRGJP2 T-test, p = <b>Q</b> 045	0.25  0.00  TRGV1  T-test, p = 0.00028	0.25 0.00  TRGV10 T-test, p < 2.2	TRGV11 T-test, p = 0.0008	1 0 25 20 15 10	TRGV2 T-test, p = 0.54	1 0 25 20 15 10 5	•	0.25 0.00  TRGV4 T-test, p = 0,079  20  15  10			0.25  0.00  TRGV5P  T-test, p = 2•1e-  4  •  3  •  2  1	0.25  0.00  TRGV8  T-test, p = 6,5e-0
0.00	TRGV9 T-test, p = 0,0039	TRGVA T-test, p = 0.83  4  •  3  •  2  1			5 0		5			0			