

**Table S2 Data for calculating conserved syntenies among gar (Loc), human (Hsa), zebrafish (Dre), and stickleback (Gac).**

	Hsa	Loc	Dre	Gac
Hsa	0	0.1589205	0.3408696	0.310559
Loc	0.1589205	0	0.24	0.2492163
Dre	0.3408696	0.24	0	0.1942857
Gac	0.310559	0.2492163	0.1942857	0

**Dre vs Loc**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	LG	Count	Probability
1	0	1	1	11	0	2	0	2	0	0	0	4	2	0	0	4	3	0	0	0	0	0	0	0	0	0	0	0	0	9	0.3103448
2	1	0	0	0	4	2	0	0	11	10	0	0	2	2	2	0	0	0	8	0	0	0	0	0	0	0	0	0	0	9	0.3103448
3	1	0	0	0	3	5	0	3	0	13	0	4	11	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0.2758621
4	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0344828
5	2	10	1	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	11	12	3	0	0	0	0	0	1	0	9	0.3103448
6	0	1	0	1	1	0	0	0	0	6	0	2	2	4	1	1	3	5	0	0	0	0	0	0	0	0	0	0	0	11	0.3793103
7	0	2	5	6	3	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	2	0	0	0	8	3	0	10	0.3448276
8	11	2	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	2	2	5	3	0	0	0	7	0	0	0	0	9	0.3103448
9	0	0	0	1	0	0	0	0	1	0	0	14	0	2	3	0	4	0	0	0	0	0	0	0	0	0	0	0	0	6	0.2068966
10	2	9	5	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	3	0	0	0	0	0	0	0	7	0.2413793
11	0	0	2	0	6	0	0	0	0	0	0	0	0	3	0	0	0	2	3	0	0	0	0	0	2	0	0	0	0	6	0.2068966
12	0	0	0	0	3	0	0	0	1	6	0	1	5	0	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0.2413793
13	1	0	0	2	17	0	4	0	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0.1724138
14	0	0	0	2	0	11	5	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	5	0.1724138
15	0	5	1	0	1	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	10	0	0	0	0	3	0	0	0	6	0.2068966
16	1	0	0	0	0	3	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	11	0	1	0	0	0	5	0.1724138
17	5	0	0	0	2	3	5	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	6	0.2068966
18	0	3	3	0	0	0	0	3	0	0	0	0	0	1	0	0	0	0	0	0	0	1	5	1	0	3	2	0	0	9	0.3103448
19	0	0	0	0	1	8	0	0	0	0	12	0	0	0	1	1	0	0	0	0	0	0	0	8	0	0	0	0	1	7	0.2413793
20	7	0	0	3	0	0	2	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0.1724138
21	1	0	3	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	7	1	0	0	0	0	0	0	2	0	6	0.2068966
22	1	0	0	1	6	0	0	1	0	0	0	3	0	1	0	4	0	0	4	0	0	0	0	0	1	0	0	0	0	9	0.3103448
23	3	0	3	8	1	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	9	0	0	0	0	0	6	0.2068966
24	0	0	2	0	0	2	0	1	7	0	0	0	6	1	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	8	0.2758621
25	0	0	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	7	0	0	0	4	0	0	5	0.1724138
	36	33	26	37	51	42	18	21	23	36	23	28	28	17	25	22	11	17	17	20	23	19	7	20	19	7	10	7	1		

**Avg Prob**  
0.24

Hsa vs Loc

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	LG	Count	Probability
1	1	0	3	0	0	17	0	0	0	11	0	0	0	0	0	11	1	1	0	0	0	1	0	11	19	0	0	1	0	11	0.3793103
2	6	1	0	6	0	0	0	0	1	0	0	12	0	6	0	7	1	0	0	0	0	0	1	0	0	0	0	0	0	9	0.3103448
3	0	0	2	0	14	0	0	0	0	0	2	3	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0.1724138
4	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0344828
5	0	8	0	0	0	15	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0.1034483
6	10	0	0	0	0	0	0	1	3	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0.1724138
7	0	1	0	0	0	0	0	5	2	0	5	0	5	0	0	0	0	0	0	0	0	0	4	1	0	0	0	0	0	7	0.2413793
8	5	0	0	0	0	0	0	0	5	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0.1034483
9	0	5	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0	3	0.1034483
10	0	0	0	1	18	0	0	2	3	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0.1724138
11	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	6	12	5	0	6	0.2068966
12	0	0	0	10	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	3	0.1034483
13	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3	0.1034483
14	0	0	0	0	7	0	8	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0.1034483
15	0	0	8	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	4	0.137931
16	1	0	0	0	2	0	2	0	0	0	0	0	14	0	0	0	0	0	0	0	0	1	12	0	0	0	0	0	0	6	0.2068966
17	0	7	0	0	0	0	0	0	0	14	1	0	0	0	17	0	0	0	0	0	0	0	8	0	0	0	1	0	0	6	0.2068966
18	0	0	0	0	0	0	0	0	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.0689655
19	0	8	0	0	0	7	1	1	0	3	0	0	0	0	0	0	0	0	10	0	0	0	0	1	0	0	0	0	7	0.2413793	
20	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	12	0	0	0	0	0	0	0	0	0	0	0	3	0.1034483
21	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.0689655
22	0	0	0	0	2	0	0	2	0	0	0	9	1	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	5	0.1724138
X	5	0	2	0	0	0	4	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	4	0.137931	
Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	28	30	23	32	43	39	16	20	21	28	16	24	20	16	19	21	9	13	10	18	20	15	14	13	19	7	12	6	0		

Avg Prob  
0.1589205

Gac vs Loc

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	LG	Count	Probability
I	0	10	4	0	1	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	10	1	1	0	4	0	0	0	9	0.3103448
II	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3	0	0	0	10	0	0	5	0.1724138
III	0	0	0	1	3	0	0	0	14	10	0	0	0	1	0	0	0	1	5	0	0	0	0	0	0	0	0	0	0	7	0.2413793
IV	0	0	0	4	0	11	5	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0.137931
V	1	0	0	0	4	0	0	0	0	4	0	1	5	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0.2068966
VI	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	11	2	0	0	0	0	0	0	0	0	0	0	0	0	3	0.1034483
VII	0	7	5	5	4	3	2	1	1	0	0	0	0	0	0	0	1	0	0	0	0	3	0	0	0	2	0	6	0	12	0.4137931
VIII	0	0	0	3	0	0	0	0	2	8	0	0	0	5	0	0	2	0	9	0	0	0	0	0	0	0	0	0	0	6	0.2068966
IX	0	0	0	10	2	7	0	2	0	4	0	3	4	0	2	7	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0.3103448
X	0	0	0	0	0	7	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	3	0.1034483
XI	1	0	0	0	2	6	0	2	0	8	0	7	9	0	12	0	0	0	0	0	1	0	0	0	0	0	0	0	0	9	0.3103448
XII	3	1	4	8	2	0	0	1	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	17	0	0	0	0	8	0.2758621
XIII	10	7	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	6	0	0	0	0	0	0	0	0	5	0.1724138
XIV	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	13	0	0	0	0	0	0	0	0	4	0.137931
XV	6	0	0	3	0	4	9	0	0	0	1	0	0	1	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	9	0.3103448
XVI	0	0	0	1	0	0	1	0	0	0	0	13	0	2	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	5	0.1724138
XVII	0	0	1	2	7	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	1	0	0	0	0	5	0.1724138
XVIII	13	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.0689655
XIX	1	0	4	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	1	9	0	0	0	4	0	0	6	0.2068966
XX	1	0	0	0	0	5	0	0	0	0	11	0	0	0	0	0	0	0	0	1	0	1	0	7	0	2	0	1	0	8	0.2758621
XXI	0	0	1	0	1	0	0	0	8	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	6	0.2068966
	38	31	24	37	41	43	19	29	25	35	23	26	18	12	23	19	10	13	14	18	20	16	13	13	18	8	14	7	0	28	0.9655172

Avg Prob  
0.2492163

Dre vs Hsa

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	X	Y	LG	Count	Probability
1	1	4	0	6	0	0	1	0	1	1	0	0	2	0	0	1	0	0	1	1	2	2	0	0	12	0.5217391
2	7	0	2	0	1	2	1	3	0	3	0	0	0	4	0	0	1	2	6	0	0	0	0	0	11	0.4782609
3	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	8	19	0	5	0	0	6	0	0	5	0.2173913
4	0	0	0	0	0	0	1	0	0	1	0	7	0	0	0	0	0	0	0	0	0	1	0	0	4	0.173913
5	0	1	0	0	2	1	1	1	11	0	1	6	1	0	0	2	3	0	0	0	0	3	1	0	13	0.5652174
6	4	4	3	0	0	0	0	0	0	0	0	1	0	0	1	2	3	0	1	5	0	1	1	0	11	0.4782609
7	0	3	0	0	0	0	0	0	2	0	11	1	0	1	4	2	3	0	0	0	0	0	0	0	8	0.3478261
8	4	2	2	0	1	0	0	2	3	0	0	3	0	0	0	0	0	0	2	1	0	2	2	0	11	0.4782609
9	1	14	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	5	0.2173913
10	0	1	0	0	3	0	2	1	4	0	0	1	1	0	0	0	3	0	0	0	0	3	2	0	10	0.4347826
11	2	0	8	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	1	0	0	0	0	5	0.2173913
12	1	1	0	0	0	0	3	1	0	3	0	0	0	0	0	3	7	0	0	0	0	1	0	0	8	0.3478261
13	4	4	0	1	0	1	0	0	0	13	0	0	0	5	0	0	0	0	0	0	0	0	0	0	6	0.2608696
14	1	1	0	1	10	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	4	0	7	0.3043478
15	0	2	0	0	0	0	2	0	0	0	0	3	0	0	0	0	5	0	3	0	1	0	0	0	6	0.2608696
16	9	0	2	0	0	1	2	3	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	7	0.3043478
17	4	2	0	0	0	1	0	2	0	1	0	0	0	3	1	0	0	0	0	0	0	0	0	0	7	0.3043478
18	0	1	1	0	0	0	1	0	0	0	7	0	0	0	3	3	0	0	3	0	0	1	0	0	8	0.3478261
19	11	0	2	0	0	2	4	2	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	8	0.3478261
20	2	0	0	2	0	7	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	5	0.2173913
21	1	0	0	0	4	0	0	0	6	0	2	0	0	0	1	0	0	0	0	0	0	0	2	0	6	0.2608696
22	3	2	4	0	0	1	0	0	0	2	0	1	0	0	0	1	0	0	4	0	0	1	0	0	9	0.3913043
23	10	0	1	0	0	1	0	0	0	0	0	4	0	0	0	0	0	0	0	4	0	0	2	0	6	0.2608696
24	1	0	2	0	2	0	2	1	0	1	0	0	0	1	0	2	1	1	0	0	0	0	1	0	11	0.4782609
25	0	0	0	0	0	0	1	0	0	1	3	2	0	0	1	6	0	0	0	0	0	1	0	0	7	0.3043478
	66	42	29	10	23	17	25	16	27	26	27	27	7	15	11	30	48	5	28	13	6	21	14	0		

**Avg Prob**  
0.3408696

Gac vs Hsa

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	X	Y	LG	Count	Probability
I	0	4	1	0	0	0	3	0	0	0	7	0	1	0	0	0	5	0	6	0	1	0	0	0	8	0.3478261
II	0	1	0	0	0	0	0	0	0	0	8	0	1	0	5	3	0	0	0	0	0	0	0	0	5	0.2173913
III	7	0	1	0	0	2	1	2	0	2	0	0	0	3	0	0	0	3	4	0	0	0	0	0	9	0.3913043
IV	0	1	0	2	10	0	1	0	0	1	0	5	0	0	0	0	0	0	0	0	0	1	4	0	8	0.3478261
V	0	0	0	0	0	0	2	0	0	4	0	0	0	0	5	9	0	0	0	0	0	1	0	0	5	0.2173913
VI	4	3	0	0	0	1	0	0	0	11	0	0	1	1	0	0	0	0	0	0	1	0	0	0	7	0.3043478
VII	1	2	0	0	3	0	1	0	2	0	8	1	1	1	0	2	6	0	0	0	2	0	1	0	13	0.5652174
VIII	3	2	2	2	0	2	0	0	0	0	0	0	0	0	1	0	0	0	8	0	0	0	1	0	8	0.3478261
IX	4	1	0	5	0	0	1	0	1	3	0	0	0	0	0	3	4	0	2	1	0	3	0	0	11	0.4782609
X	10	0	2	0	0	2	2	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	7	0.3043478
XI	0	0	0	0	0	0	3	0	1	0	0	0	0	0	0	7	14	0	5	0	0	7	0	0	6	0.2608696
XII	14	0	2	0	0	1	0	0	1	0	0	4	0	0	0	0	0	0	0	5	0	0	2	0	7	0.3043478
XIII	0	3	0	0	3	0	0	2	7	0	0	7	0	0	0	0	0	0	0	0	0	5	1	0	7	0.3043478
XIV	0	1	0	0	2	0	0	0	14	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	4	0.173913
XV	5	3	1	1	0	3	0	1	0	0	0	0	0	7	1	0	0	0	0	0	0	0	0	0	8	0.3478261
XVI	1	12	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	6	0.2608696
XVII	1	0	7	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	3	1	0	0	0	5	0.2173913
XVIII	0	0	0	0	0	6	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3	0.1304348
XIX	0	0	0	0	0	0	2	0	0	1	4	3	0	0	3	8	0	0	0	0	0	1	1	0	8	0.3478261
XX	9	0	2	0	0	0	4	3	0	0	0	1	0	0	0	0	2	1	1	0	0	0	0	0	8	0.3478261
XXI	1	0	2	0	3	0	1	2	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	7	0.3043478
	60	33	21	10	21	17	21	12	26	23	27	24	5	16	10	28	40	5	27	10	5	18	11	0		

**Avg Prob**  
0.310559