

***In silico* characterization of Tomato Leaf Curl New Delhi Virus in Manipur: Evidence for its global expansion and future threat**

**Journal Name: Phytoparasitica**

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Caption:Supplementary file for the Haplotype data used in the study and abbreviations of their names

#NEXUS

[File generated by DnaSP Ver. 5.10.01; January 20, 2022]  
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| [1259] | nt_2542 | [1260] | nt_2543 |        |         |
| [1261] | nt_2544 | [1262] | nt_2546 | [1263] | nt_2548 |
| [1264] | nt_2549 | [1265] | nt_2550 |        |         |
| [1266] | nt_2551 | [1267] | nt_2552 | [1268] | nt_2553 |
| [1269] | nt_2554 | [1270] | nt_2555 |        |         |
| [1271] | nt_2556 | [1272] | nt_2557 | [1273] | nt_2558 |
| [1274] | nt_2560 | [1275] | nt_2562 |        |         |
| [1276] | nt_2564 | [1277] | nt_2587 | [1278] | nt_2589 |
| [1279] | nt_2591 | [1280] | nt_2592 |        |         |
| [1281] | nt_2593 | [1282] | nt_2594 | [1283] | nt_2596 |
| [1284] | nt_2598 | [1285] | nt_2602 |        |         |
| [1286] | nt_2603 | [1287] | nt_2605 | [1288] | nt_2630 |
| [1289] | nt_2632 | [1290] | nt_2633 |        |         |
| [1291] | nt_2635 | [1292] | nt_2636 | [1293] | nt_2638 |
| [1294] | nt_2639 | [1295] | nt_2640 |        |         |
| [1296] | nt_2653 | [1297] | nt_2654 | [1298] | nt_2656 |
| [1299] | nt_2657 | [1300] | nt_2658 |        |         |
| [1301] | nt_2660 | [1302] | nt_2661 | [1303] | nt_2662 |
| [1304] | nt_2663 | [1305] | nt_2664 |        |         |
| [1306] | nt_2665 | [1307] | nt_2666 | [1308] | nt_2669 |
| [1309] | nt_2670 | [1310] | nt_2671 |        |         |

|        |         |        |         |        |         |
|--------|---------|--------|---------|--------|---------|
| [1311] | nt_2672 | [1312] | nt_2675 | [1313] | nt_2676 |
| [1314] | nt_2678 | [1315] | nt_2680 |        |         |
| [1316] | nt_2681 | [1317] | nt_2682 | [1318] | nt_2684 |
| [1319] | nt_2685 | [1320] | nt_2686 |        |         |
| [1321] | nt_2687 | [1322] | nt_2688 | [1323] | nt_2689 |
| [1324] | nt_2690 | [1325] | nt_2691 |        |         |
| [1326] | nt_2700 | [1327] | nt_2701 | [1328] | nt_2702 |
| [1329] | nt_2703 | [1330] | nt_2708 |        |         |
| [1331] | nt_2711 | [1332] | nt_2715 | [1333] | nt_2717 |
| [1334] | nt_2719 | [1335] | nt_2734 |        |         |
| [1336] | nt_2735 | [1337] | nt_2736 | [1338] | nt_2737 |
| [1339] | nt_2739 | [1340] | nt_2757 |        |         |
| [1341] | nt_2760 | [1342] | nt_2761 | [1343] | nt_2762 |
| [1344] | nt_2763 | [1345] | nt_2764 |        |         |
| [1346] | nt_2765 | [1347] | nt_2766 | [1348] | nt_2769 |
| [1349] | nt_2771 | [1350] | nt_2772 |        |         |
| [1351] | nt_2774 | [1352] | nt_2775 | [1353] | nt_2777 |
| [1354] | nt_2778 | [1355] | nt_2779 |        |         |
| [1356] | nt_2780 | [1357] | nt_2781 | [1358] | nt_2782 |
| [1359] | nt_2784 | [1360] | nt_2793 |        |         |
| [1361] | nt_2796 | [1362] | nt_2797 | [1363] | nt_2798 |
| [1364] | nt_2799 | [1365] | nt_2801 |        |         |
| [1366] | nt_2802 | [1367] | nt_2803 | [1368] | nt_2804 |
| [1369] | nt_2805 | [1370] | nt_2807 |        |         |
| [1371] | nt_2808 | [1372] | nt_2810 | [1373] | nt_2813 |
| [1374] | nt_2815 | [1375] | nt_2818 |        |         |
| [1376] | nt_2819 | [1377] | nt_2820 | [1378] | nt_2831 |
| [1379] | nt_2832 | [1380] | nt_2833 |        |         |
| [1381] | nt_2834 | [1382] | nt_2835 | [1383] | nt_2837 |
| [1384] | nt_2838 | [1385] | nt_2839 |        |         |
| [1386] | nt_2840 | [1387] | nt_2841 | [1388] | nt_2843 |
| [1389] | nt_2844 | [1390] | nt_2856 |        |         |
| [1391] | nt_2857 | [1392] | nt_2858 | [1393] | nt_2859 |
| [1394] | nt_2860 | [1395] | nt_2861 |        |         |
| [1396] | nt_2863 | [1397] | nt_2864 | [1398] | nt_2865 |
| [1399] | nt_2866 | [1400] | nt_2867 |        |         |
| [1401] | nt_2868 | [1402] | nt_2869 | [1403] | nt_2870 |
| [1404] | nt_2873 | [1405] | nt_2875 |        |         |
| [1406] | nt_2876 | [1407] | nt_2877 | [1408] | nt_2878 |
| [1409] | nt_2879 | [1410] | nt_2880 |        |         |
| [1411] | nt_2881 | [1412] | nt_2882 | [1413] | nt_2883 |
| [1414] | nt_2885 | [1415] | nt_2887 |        |         |
| [1416] | nt_2888 | [1417] | nt_2891 | [1418] | nt_2892 |
| [1419] | nt_2893 | [1420] | nt_2894 |        |         |
| [1421] | nt_2895 | [1422] | nt_2899 | [1423] | nt_2900 |
| [1424] | nt_2901 | [1425] | nt_2902 |        |         |
| [1426] | nt_2903 | [1427] | nt_2905 | [1428] | nt_2906 |
| [1429] | nt_2912 | [1430] | nt_2915 |        |         |
| [1431] | nt_2917 | [1432] | nt_2918 | [1433] | nt_2922 |
| [1434] | nt_2923 | [1435] | nt_2924 |        |         |
| [1436] | nt_2925 | [1437] | nt_2926 | [1438] | nt_2927 |
| [1439] | nt_2928 | [1440] | nt_2929 |        |         |
| [1441] | nt_2931 | [1442] | nt_2932 | [1443] | nt_2933 |
| [1444] | nt_2934 | [1445] | nt_2935 |        |         |
| [1446] | nt_2936 | [1447] | nt_2937 | [1448] | nt_2938 |
| [1449] | nt_2940 | [1450] | nt_2941 |        |         |
| [1451] | nt_2943 | [1452] | nt_2944 | [1453] | nt_2946 |
| [1454] | nt_2951 | [1455] | nt_2952 |        |         |

|        |         |        |         |        |         |
|--------|---------|--------|---------|--------|---------|
| [1456] | nt_2954 | [1457] | nt_2956 | [1458] | nt_2958 |
| [1459] | nt_2960 | [1460] | nt_2962 |        |         |
| [1461] | nt_2963 | [1462] | nt_2964 | [1463] | nt_2966 |
| [1464] | nt_2968 | [1465] | nt_2969 |        |         |
| [1466] | nt_2977 | [1467] | nt_2978 | [1468] | nt_2979 |
| [1469] | nt_2980 | [1470] | nt_2993 |        |         |
| [1471] | nt_2994 | [1472] | nt_2995 | [1473] | nt_2996 |
| [1474] | nt_2997 | [1475] | nt_3001 |        |         |
| [1476] | nt_3020 | [1477] | nt_3022 | [1478] | nt_3024 |
| [1479] | nt_3025 | [1480] | nt_3029 |        |         |
| [1481] | nt_3030 | [1482] | nt_3031 | [1483] | nt_3032 |
| [1484] | nt_3033 | [1485] | nt_3034 |        |         |
| [1486] | nt_3036 | [1487] | nt_3037 | [1488] | nt_3040 |
| [1489] | nt_3041 | [1490] | nt_3042 |        |         |
| [1491] | nt_3045 | [1492] | nt_3046 | [1493] | nt_3047 |
| [1494] | nt_3049 | [1495] | nt_3051 |        |         |
| [1496] | nt_3052 | [1497] | nt_3054 | [1498] | nt_3057 |
| [1499] | nt_3058 | [1500] | nt_3059 |        |         |
| [1501] | nt_3060 | [1502] | nt_3062 | [1503] | nt_3063 |
| [1504] | nt_3064 | [1505] | nt_3065 |        |         |
| [1506] | nt_3067 | [1507] | nt_3068 | [1508] | nt_3074 |
| [1509] | nt_3075 | [1510] | nt_3076 |        |         |
| [1511] | nt_3078 | [1512] | nt_3079 | [1513] | nt_3082 |
| [1514] | nt_3083 | [1515] | nt_3085 |        |         |
| [1516] | nt_3087 | [1517] | nt_3088 | [1518] | nt_3091 |
| [1519] | nt_3096 | [1520] | nt_3097 |        |         |
| [1521] | nt_3098 | [1522] | nt_3105 | [1523] | nt_3106 |
| [1524] | nt_3108 | [1525] | nt_3109 |        |         |
| [1526] | nt_3110 | [1527] | nt_3111 | [1528] | nt_3112 |
| [1529] | nt_3114 | [1530] | nt_3115 |        |         |
| [1531] | nt_3116 | [1532] | nt_3118 | [1533] | nt_3120 |
| [1534] | nt_3122 | [1535] | nt_3123 |        |         |
| [1536] | nt_3128 | [1537] | nt_3129 | [1538] | nt_3130 |
| [1539] | nt_3132 | [1540] | nt_3133 |        |         |
| [1541] | nt_3135 | [1542] | nt_3136 | [1543] | nt_3137 |
| [1544] | nt_3138 | [1545] | nt_3139 |        |         |
| [1546] | nt_3143 | [1547] | nt_3144 | [1548] | nt_3145 |
| [1549] | nt_3146 |        |         |        |         |

;

# MATRIX

Hap\_1

ACGAATTTTAGGGGCCCCACCCAATGAAATTCAATACATGGCTTATTAGTGCCTGCGGGGCGAATAATATTGGA  
TCCCAACAGATCATATGCCGAATTCAGAAAGCGTCATGTGTAAGGGGCGCTAGCTAAACTCAAGAGATAGAG  
AAGAACATTCACAGGCTCGATCTGCCAGCCTCTTGTCTCCAGCAAAGCGCAGACAGCATAACATCACCGCCG  
CATCGGACCCGACTCCCTGCCAGGAGTCGGAGTGCCACCGGCTAAAGCAGCGACAGGCGATAAAAAAGATGC  
TGAAAAGCCCACGCAGGCTGAGGCCCTTTAGGTGACTGTATTGCAAAGTCTGTTATTGTTACCCCTCATCGAG  
GGGTGTCTGTCTATGTGCTGGGAACAAAGAAAACCAGCAGTGCGTTTTTATCTAAGGATCGAAGTGAGTTTTA  
CATTACAATGAACGCGACACTCTATGTTCTACGGTGTCATGCGGGGATTGTTTATTATAATAATATCAAAGGGC  
GGGCAAGACACTAATATAAGTTGATACCTTACTCCGCATCAATCTTATATCCTTGATCCGTTTTTGATCGTAA  
TACTATCAGTCTGTACATCAAATCCAAAACAGATAAAACATAATTCCTTTAACCCAGGTCTTAGGCGTTTTTG  
GATCTCGAAATCCAACCTGAGGCGAAGCCCGCAGTTTTGAAGTAGAACCTAGCCGGGCTTTTCGGTACGTTTGAC  
TGGATGCGTGCGTGTGGAGGGGCTGCTGTCGGTTTTTTTGACGGATCGATTTGTATACCTCGTACGCAGGTGTA  
CTCCCCCTGGCGGAACGTGAAGGCGTGGATATGTAACCCGCCCTCTTTTTCTTCGGAGCATGCGAAGGTTTCGG  
TGATGAGACTCTCTGATTCCCTCTTCGGCTGCATTTTTTTTTCTTGTGTTTGCACACAGGAAGTGGCACTT  
CATGACCGTCAGCTGGCCTATTTTAAAGTCAATGTGGGGACGACATGACTTGACAGCACTGCACCTTGCCAGT  
CAAGTTAGAATGTGGTCCAGCGAGGAGCAATGTGCCTTACTTCCCCCTATGACTTGTTCAAAAAGCCCCCACA  
CACCACAGGACGAGACCAATCGACGGGCTGCCGAATTGAGGTGATTGAAAAAGGAAACATAACCCGGAAGGAG

GTTGAAATGCGATAAGGTATTTAAGTGAACCGAATATCTGTAATCTTACACATCATCTTTATTTCTATACGC  
TTTATTAGTGGCTCGCTGACACACGAGCAGATGCAGTTGGAACCCCTGGCGCTCGGCCTGTCGATGTGGTGAG  
CCGTGCTGATTAGCTGTCGTCGACAGTCTGTTACTGACGGTATTCTGATGGAACAGGTGCAGACCTCGGAAGC  
CTCGACAGTCTTGATGTTCTTCGAAGCGGTTCTATTTGCATATCCTTCCTTTGAAGAGAGCCCTTGATGGAATG  
TTTGGTCTAGAAGCATGCGCCTCAATTATCTGTATGTTCTGAGTCTAAGGAACACATTGAAATTTGAAAAGAA  
TAAATCAATTCCTATA

Hap\_2

.....T..A.....C.....C.....ATC.....  
.....T.....AT.....C.....T.....GA  
.....T.....AT.....A.....A.....  
.....G.....C.....  
.....G.C.....  
.....C.....A.....G.....C.G.....G..  
T.....G.....  
C.....C.....T.....G.....C.....  
.....CA.....G.....  
.....  
..T.....C.....CT.....  
T.....A.....G.....  
.....C.....G.....  
.....T.....A.....T.....T.....  
.....G...T...ATC.....A.....  
.....T.....T.....  
...G.....G.....AG..G.....G.....  
..GG.....C...T.T.....G.....A.....C..T.....TTC...  
..C.....T.....T...T.....  
..T...T.....CTC...A.....T.CA.T.....  
.....TT.....  
.....A.

Hap\_3

.....T..A.....GC.....C.A.C...A..T..A.C.....  
.....C.....T.....  
.....G.....T.....A.....  
...A..G.....C.....A.....G..  
.....C.C.A..G...C.T.....  
.....C.....G.....A.....A.C.G.....G..  
T.....AC...C.....T.....  
C..T.....C.....C.....  
.....AA.....T.....G.....  
.....  
GTT...T.C.....CC..C.....CT.A.....  
T.....G.....G.....CG..  
.....T.....G.....  
.....A.....  
.....T..AGC.....TC.....A..A..C..A.AC.T.....  
.....C.....T..G.....T.....T.A..C..  
.....T..A.....A.....C.....T.G...T  
..GA.....T.T.TT.....C.....C..T.....C.C..  
.....T.....T..T..A..T...A..T...T...A.....  
.....G.....C.....C.....T.....G..  
...T.....G...C.T.T.....C.....C.....T.....  
.....AG

Hap\_4

.....T..A.....GC.....C..GC.....A.C.....  
.....T.....T.....A

.....T.....T.....T..A.....  
T...A...G.T.....T.....G.C.....T.....  
.....G.....A.....G.....C.....T.....  
.....T.....T.....C.....  
C.....GC.....T.....G.....C.....  
.....CA.....T.....C.....T.....  
.....C.....T.....T.....G.....CT.....G.....  
.....T.....  
...A.....G..A.....G.....  
.....AG.....T...A.C.....G.....  
.....C.....T...G.....A...T.....T..A...A...  
.....G.....G.....  
.GA.....C...T.T.....T.....A...C.T.....CTT.....  
.....T.....T.....A..G.....  
...T.....A.....T...C.T.....C.G...GC...A.T.....  
.....G.T.....C.C.....A.....A.....  
.....A.

Hap\_5

.....T..A.....GC.....C..GC.....A.C.....  
.....T.....T.....A  
T...A...G.T.....T.....C.....T.....T.....T..A.....  
.....G.C.....  
.....G.....A.....G.....C.....  
.....T.....T...C.....T.  
C.....GC.....T.....G.....C.....  
G.....CA.....C.....T.....  
.....T.....A  
.....C.....T...T.....CT.....G.....  
.....G..GCA.....T.....  
...A.....A.G.....G.....  
.....AG.....T...A.C.....C.....  
.....C.....T...G.....T.....T..A.....  
.....G.....G.....  
.GA.....C...T.T.....T.....A...C.T.....CTT.....  
.....T.....T.....A..G.....  
...T...T...A.....T...C.T.....C.G...GC...A.T.....  
.....G.T.....CC.....T.....A.....T.  
.....

Hap\_6

.....T..A.....GC.....C..GC.....A.C.....  
.....T.....T.....A  
T...A...G.T.....T.....C.....T.....T.....T..A.....  
.....T.....G.C.....  
.....G...G...A.....G.....C.....  
.....T.....T...C.....  
C.....GC.....T.....G.....C.....  
.....CA.....C.....T.....  
.....C.....T...T.....CT.....G.....  
.....G.....T.....

```

...A.....G.....G.....
.....AG...T...A.C...A...T.....C.....
.....T...G.....T...T.A.....
.....T.....G.....G.....
GA.....C...T.T.....A...C...T.....CTT...
...C.C.....T.....T...A.....
...T.....T...CT.T.....G...TC...A.T...A.....
.....G.....C.....A.....
.....T...A.

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Hap\_7

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.....T.A.T.....G.C.G..AT....G.....G...A.C.T.....
.....C.....C...T.....G...G.....A
.....G.....C...C...T...G.....A.....
.....G.....C.....GG.T.....
.....T.....TG...C.....G.....C...A.....
.....C.....G.....G...A.....A.C.....
.....G.....T.....T.....
C...A...CT.....C.....
.....GCA.....G.....C.....
...G.....G.....GA.....
.T.....C...G.....A...T...CT.....
.....T.....A.....
.....A.....A...G.....T...
.....G...C.....T...G...
.T.....T...ACC.T...C.....A...CT...TT...A...
...A...C...A...TGA.GA.....T...CG.....GA.....
.....AT...G...A...AG...T.C.....T.....C...G.....
.A.....CG...TA.A...C...T.....T...A
.T.C...A.....T...A.T...AA.....A...T
.C...T.T...C.....C.....T.A.T...C...A.....
.....G.G...G.A.....C.....C...C...C...TG.GT.A.....T.....
A.....A.GC...

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Hap\_8

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.....T.A.....G.C...AT...C.....A.C.T.....
.....C...T.....G...T.GGA.A
.G.....C...C...T...G.....A.....
.....G.....A...C.....
.....G.....G.....C...A.....
.....C.A...C...A...C...A.....G.....A.C...C.....
.....C.....C.....C.....T.....T
C.....C.....C.....C.....
.....CA.....T.....G.....A
.T.....G.....
.T.....A...C.....CT.....
.....A...T.....
.TG...A...T.....A...G.....T...
.T.....G.T...ACC...CC.A.....T.....A...C.....
G..A...C...C...TGA.GA.....T...CG...A...C.....
.....C.A...A...T.....T...T...C...G.....
.A...G.....A...C...T.....C...A
.T.C...T.....T.....A.....
.....T...C...C.....T.A.T...GA.....T.....
.....G.G.....T...C...C...C...C...G.GT.A.....G.....
.....A.T.C...

```

Hap\_9

```
.....T.GA.G.....GG.C.....T.....A.....G....A.C.....
.....C.....C.....C.G..T.....C..A
...C.....A.....TA..C..T...G.....A.....
.....G...A.....A.....C.....
.....CA.T.....C.....T..A.....C.G.....A.C.G.C.....
.....C.....C.....G.C.....C.....
C.....C.....T.....G.....C.....
.....CA.....T.....T..T.....G.C.....T.....
...G.....G.....G.....C.....C.....
..T.....C..C.....C.....CT.....
.....T.....
..A.....AA.....C.....A...G...A.....G...
.....
.T.....G.T..ACC.....T.....CT.....
..A..G.....C.....TGC.GA.....T...CG...C...A.....
...G.....C..A...A.....T.....T..T.....C..G.....
..A...A.C.....A...C.C..T.....C..A
.T.C.....T.....T.....A.....
.C.....T.....C...A.G.....T...T..A.T...A.....T.....
.....G.G.....C.....C...C...C.....G.GT.A.....
..C....A...C...
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Hap\_10

```
...G...G.....T.GA.G.....G.C.....T.....A.....G....A.C.....
.....T.....C.G..T.....C..A
...C..C.....A.....C.....C..T...G.....A.....
.....G...A.....A.....C.....G.....
.....C.....A.T.....C.....T..A.....G.....A.C.....
.....C.....C.C.....T.....
C.....C.....G.....C.....
.....CA.....T.....G.....G.....
...G.....G.....G.....
..T.....C.....CT.....
.....A.....T.....
.....A...G...G...A.....T...
TT.A.....T..A.C.....T...A...G...
...G...C...C.....TG..GA.....CG.....A...
.....T...C..A...A...TA.....T.....T.C..TG.....A.G...
..A..C.....T.....A...CT.T.....TC..A
.G.C.....T.....A..T.....
...C...G.G.....A.....C.....C...TG..T.A.....C.....
.....A...G.A.
```

Hap\_11

```
.....T..A.G.....G.G.....T.....A.....G....A.C.....
.....C..C..T.....C..A
...C.....C..T...G.....A.....
.....G...A.....A.....C.....
.....C.....A.T.....C.....T..A.....G.....G.....A.C.....
.....C.....C.....G.....C.C.....T.....
C.....C.....C..G.....C.C.....T.....C.....
```

```

.....CA.....T.....G.....
...G.....G.....G.....
..T.....T.....CT.....
.....A.....T.....G.....T.....
.....C..G.....T.....
.G.....G.T..ACC.....T.....A..T.....
G..A.....C.....T.A.GA.....A.....T..CG.....A.....
...G.....C..A...A.....T.....T..T.....C..G.....
..A.....A.....A.....C..T.....C.C.A
.T.C.....T.....A.....A.T.....T.....
.....T.....C.....T..T.A.T.....T.....
.....G.G.....C.....C..C..C.....G.GT.A.....G.....
.....AC..C...

```

Hap\_12

```

.....T..A.G.....G.G.....T.....A.....G.....A.C.....
.....G.....C..C..T.....C..A
...C.....C..T...G.....A.....
.....G...A.....A.....C.....
.....GT.....G.....C..C..A.....
.....C.....A.T...C.....T..A.....G.....A.C.....
.....C..G.....C.C.....T.....
C.....C.....C.....C.....
.....CA.....T.....G.....
...G.A.....G.....G.....
..T.....T.....CT.....
.....A.....T.....G.....T.....
.....C..G.....T..T.....
.G.....G.T..ACC.....T.....A..T.....
G..A.....C.....T.A.GA.....A.....T..CG.....A.....
...G.....C..A...A.....T..C.....T..T.....C..G.....
..A.....A.....A.....C..T.....C..A
.T.C.....T.....A.....A.T.....T.....
.....T.....C.....T..T.A.T.....T.....
.....G.G..G.....C.....C..C..C.....G.GT.A.....G.....
.....AC..C...

```

Hap\_13

```

.....T..A.G.....G.C.....T.....A.....G.....A.C.....
.....C..C..T.....C..C..A
...C.....C..T...G.....A.....
.....G..A.....A.....C.....
.....G.....G.....C..C..A.....
.....C.....A.T...C.....T..A.....G.....A.C.....
.....C..G.....C.C.....T.....
C.....C.....C.....C.....
.....CA.....T.....G.....
...G.....G.....G.....
..T.....T.....T.....CT.....
.....A.....T.....G.....T.....
.....T.....C..G.....T..T.....
.G.....G.T..ACC.....T.....A..T.....
G..A.....C.....T.A.GA.....A.....T..CG.....A.....
...G.....C..A...A.....T.....T..T.....C..G.....
..A.....A.....A.....C..T.....C..A

```

```

.T.C.....T.....A.....T
.....T.....C.....C.....T.G.T.A.T.....T.....
.....G.G.....C.....C.....C.....G.GT.A.....G.....
.....AC..C...

```

Hap\_14

```

.....T.GA.G.....GG.C.....T.....A.....G.....A.C.....
.....C.....C.....C.G.....T.....T.....C.....
...C.....A.....A...A...C.T...G.....A.....
.....G...A.....A.....C.....A.....A.....
.....G.....G.....G.....C.C...A.....A...
.....C...CA.T.C.C.....T.A.....G.....A.C.....
.....C.....C.....C.C.....T.....
C.....C.....G.....G.....C.....
.....CA.....T.....G.....A.....
...G.....G.....G.....C.....C.....
.T.....C.C.....C.....C.....CT.....
.....T.C.....A.....T.....
.....T.C.....G.....A.A...G...G.....T...
.....C...A.....
.T.....C.G.T...ACC.....T...CG.....A.....
...A.....C.....TGC.GA.....T...CG.....A.....
...G.....C.A...A.....G...T.....T.....C.....
.A.....A.....C.T.....C.A
.T.C.....T.....A.....T.....
.C.....T.....C.....T...T.A.T...A.....A...A
.....G.G.....C.....C.....C.....G.GT.A.....CTG.....
.....AC..C...

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Hap\_15

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.....C.....T.GA.G.....G.G.....T...C.....G.....A.C.....
.....C.T.....C.....T.....G.....
...TC.....C.....T...G.....A.....
.....G...A.....A.....C.....
.....C.....G.....G.....C.C...A.....
.....A.T...C...T...A.....G.....A.C.....C.C.
.....C.....T.C.....T.....
C.....C.....C.....C.....
.....CA.....T.....G.....A.....
...G.....G.....G.....T.....
.T.....T.T.....T.....CT.....
.....A.....C.....T.....
.....T.....A.....G.....T...
.G.....G.T...ACC.....T...C.....
...A...T...C...T...T.A.GA.....T...TG...T...A.....
.....A...C...GC...A.....T.....T.T...T...G.....
.A.....AT...C...T.....C.A
.T.C.....T.....A.....G.....
.C.....T.....C.....T...T.A.T...A.....G...
.....G.G.....T.C.C.....C.....C.....G.GT.A.T.....G.....
.....A...C...

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Hap\_16

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.....C.....T.GA.G.....GG.C.....T.....A.....G.....A.C.....
.....C.....C.....C.G.....T.T.....G.....C.A
...C.....A.....C...C...T...G.....A.....
.....G...A.....A.....C.....

```

.....G.....G.G.....C.....A.....  
.....C.....A.T.....C.....C.T.A.....G.....A.C.....C.C.....  
.....T.....C.....C.C.....T.....  
C.....CA.....T.....T.....G.....A.....C.....T.....  
.....CA.....T.....T.....G.....T.....  
.....A.....T.....G.....CT.....  
.....T.....A.....C.....AC.G.....T.....  
.....T.....C.....  
T.....G.T...ACC.....T.....G.....  
.....A.....C.....TGC.GA.....G.....T...CG.....A...C...  
.....T.A...A.....T.....T...T.....CG.G.....  
A.....T...T.....A.....C.T.....C...A  
T.C.....T.....T.A...T.....  
C.....T.....C...T.....T...T.A.T...A.....A  
.....G.G.....C.....C...C...C.....G.GT.A.A.....AG.....  
.....AC..C...

Hap\_17

.....T.A.....G.C.....T.....A.C.....  
.....C.....T.....G.....A  
.....C.....C.....T.....A.....  
.....G.....A.....C.....  
.....C.....C.....A.....G.....C.....  
.....C.....C.....C.....T.....  
C.....C.....T.....C.....  
.....CA.....T.....T.A...G.....A  
.....G.....  
T.....C.....CT.....  
.....A.....T.....  
.....A.A.G.....G...  
T.....G.T...ACC.....T.T...T...C.....T  
A.....A.T.A.GA.....T...CG.....A  
.....C.A...A...TG...T.....T...T...C...G...  
A.....A.....C...T.....C...A  
T.C.....T.....A.....  
.....G.....C.T.....T.A.T.....  
A.....G.....A.T...C.C.....CATG...T.A.....  
.....AC..C...

Hap\_18

.....T.A.....G.C.....T.....A.C.....  
.....C.....T.....G.....A  
.....C.....C.....T.....A.....  
.....G.....A.....C.....G.....C.....A.....  
.....C.....G.....A.....C.....  
.....C.....C.....T.....  
C.....C.....C.....T.....C.....  
.....CA.....A...G.....A  
.....G.....T.....  
T.....C.....CT.....  
.....A.....T.....  
.....A.A.G.....T...  
.....A.....

```

.T.....G.T...ACC.....T.....
..A.....C..AC.....T..G.....A...T.....A.....
.....C..AC.....T.....T..T.....C..G.....
..A.....T.....A.....C..T.....C..A
.T.C.....T.....A.....
.....C..T.....T..A.T.....
..A.....G.....A.T.....C.....CATG..T.A.....
.....C...

```

Hap\_19

```

.....T..A.....GC.....C.A.A...A.AT..AGC.....
.....C.....T.....T.....
.....T.....G.....T.....A.....
...A..G.....C.....A.....C.....
.....C..A..G.....C.T.....
.....A.....CG.....G.....A.....T.....G.....G..C.....
.....C.....G.....C.C.....
C.....C.....C.....T.....G.....T.....
.....C.....T.....G.....T.....
..T.....C.C.....C.....G.....CT.....
T.....C.C...A.....G.....C.....
.....C..C.....C.G.....
.....G...
.T.....T..T.A.A.C.....C.....CA.....
...A..G.....T.....T..G.....A.....T..G.....A..TC...
.....T..A.C.....A.G.T..T...T.....T.....
.GA.....T..T.....A.....AT...C..T.....C...
.....GT.....T..T..A..T...A.....T.....A...
.....G.....G...
...T.....G...C.T.T.....C.....C.....T.....CAG...A...
.....A..A.

```

Hap\_20

```

.....T..A.....G..C.....T.....A.C.....
.....C.....T.....G.....A
.....C..C.....T.....A.....
.....G.....A.....C.....
.....A.....G.C.C.....G.....C.....A.....
.....C.....G.....T..A.....C.....T.....
C.....C.....C.....C.....C.....
.....CA.....T.....G.....A
.....G.....T.....CT.....
..T.....C.....A.....T.....
.....C.....A..G.....T...
.....C.....
.....G.T...ACC.....T.....
...A..T.....T..GA.....A.....T..G.....A.....
.....C..A.....T.....T.....C.....C..G.....
..A.....T.....A.....C..T.....C..A
.T.C.....T.....A.....
...G.....C..T.....T..A.T.....
...A.....G.....A.T...C..C.....CATG..T.A.....
.....AC..C...

```

Hap\_21

```
.....T.A.....C.....A.C.....
.....C.....T.....A
.....G.....G.....C.....G.....A.A...
.....G.....AG.....C.....
.....G.C.....G.....C.....G.A.....
..C..C.....G.....A.....G.....C.....
.....C.....T..C.....
C.....C.....T.....C.....
.....CA.....A..G.....A
.....G.....
..T.....T.....CT.....
.....A.....T.....
.....C.....A.A.G.....T...
.....T.....A.....
.T.....G.T..ACC.....T.....C.....
..A.....T..G.....G..T..G.....A.....
.....C.A.....T.....T.....C.G.....
..A.....T.....A.....C.T.....C..A
.T.C.....T.....A.....
.....C.T.....T..T.A.T.....
..A.....G.....A.T.G.....C.....CATG..T.A.....
.....A..C...
```

Hap\_22

```
.....T.A.....G.C.....T.....A.C.....
.....C.....T.....G.....A
.....T.....C.....C.....T.....A.....
.....G.....A.....C.....
.....G.C.C.....G.....C.....A.....
.....C.....G.....A.....T..C.....
.....C.....T.....
C.....C.....C.....C.....C.....
.....CA.....T.....G.....A
.....G.....T.....CT.....
..T.....C.....A.A.....T.....T.....
.....A.....A.....G.....T...
.....C.....G.....
.....G.T..ACC.....T.....T.....
..A.....T..G.....T.....T.....A.....
.....C.A.....T.....T..TT.....C..G.....
..A.....T.....A.....C.T.....C..A
..C.....T..G.....A..T.....
.....C.T.....T.A.T.....A.....
.....G.G.....C.....C.....C.....G.GT.A.....
.....AC..C...
```

Hap\_23

```
.....GA.....GC.....A..C..A..A.....T.CTT.....
.....C.....T.....A
.....A..G..T.....C.....C.....A.....
.....A.....C.....G.C.....C.....
A.....A..T.....G.....G.....A.....T.....G.....G..C.....
.....C.....G.....C.C.....
C.....C.....C.....C.....C.....
.....T.....C.....T.....G.....T.....
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```

.....G.....T.....
.T.....C.C.....C.....G.....CT.....
T.....C.C.....A.....G.....C.....
.....C.C.....C.G.....G.....
.....T.T.A.A.C.....C.....CA.....
..A.G.....T.....T.G.....A.....T.G.....A.TC.....
.....T.A.C.....A.G.T.....T.....T.....T.....
.GA.....T.....T.....A.....AT.....C.T.....C.....
.....GT.....T.T.A..T.....
.....T.....T.....
..C.....G.....C.T.T.....C.....C.....G.....
.....A.

```

Hap\_24

```

.....G.GA.G.....C.....C...A...A.....A.CTT.....
G..T.....A.....C..C..T.....A
.....A.....A.T...
T.....G.....T...T.....C.....A.....
.....A.....C.....G.C.....C.....
A.....G.....G.....AT...T.....G.....C.....
.....C.....C.....C.....
C.....GC.....C.....
.....C.CA.....T.....T.G...G.....T.....
.....G.....T.....A..T.....
.T.....C.....C.....G.....CT.....
T.....A.....C.C.....A.....G.....
.....C.C.....C.G.....
.....C.....T.....G...
.T.....T..A.C.....AC.....CA.....
..AA...C...TC.....T..G.....A.....T..G.....T..C...
.....T..A.C.....A.G.T...TG...T.....T.G.....
.GA.....C.T.T.....AT...C..T.....C.....
.....T.....T..T..A..T.....
.....T.....T.....
..T.....G.....C.T.T.....C.....C.....
.....A.

```

Hap\_25

```

.....G.GA.G.....C.....C...A...A.....A.CTT.....
G..T.....A.....C..C..T.....A
.....A.....A.T...
.....G.....T.....C.....A.....
.....A.....C.....G.C.....C.....
A.....G.....AG...A...T.....G.....C.....
.....C.....C.....C.....
C.....GC.....C.....
.....C.CA.....T.....T.C...G.....T.....
T.....A.G.....T.....A..T.....
.T.....C.....C.....G.....CT.....
T.....C.C.....A.....G.....
.....C.C.....C.G.....
.....C.....T.....G...
.T.....T..A.C.....TC.....CA.....
..AA...CA.A.TC.....T..G.....A.....T..G.....T..C...
.....T..C.C.....T.....A.G.T...TG...G.....T.G.....
.GA.....T.T.T.....G.....AT...C..T.....C.....
.....T.....T..T..A..T.....

```

.....G.....T.....T.....  
...T.....G.....C.T.TT.....C.....C.....  
.....A.

#### Hap\_26

.....T.T.CT.GT.AT..T..C.CGC..T...TC.TACG...GCAA.AC.T.TATAC.CT.C. ATG  
CGAT..TGCTCTT...AT..TGG.C.GAC.T..T.TT.C.AC.TC.ATTTTGC.TGTGG.C.C..CAC..T.T  
..AGGTT.C.GT.AA.ATTGC..CTTCTA..T.GACGGT. ATG.ATTTGAGTGT.C.CT.G.CT.ATTAAA  
...TTTTAT.A.TCGAAGTATT.AA.A.GCA.TAAATTT..TTC.G..AT.TTC.CCCT.CCTTCGT. CA.  
.TGG....T..AAT.AA.GAGC..AA.CCGTA.CT.CACTC.T.C..CCGAC..G..TCA.T.TC.A.A. A  
.AC..CACAG.AGG.GT...A.TT.TTCC.C.T.GTATGACA.AG.CC....GGAAGA.C.GAC..CGAAAC  
.GCCTTCC.AT.TATAGTTACTG.CA.C.GT.AT.CG...TC.AA.A..ACACG.G.GC.CG.G.TCGGTAAT  
C.C....TTT..CGC..G.ACC.T.GA...TTGGTCTG.T.TGA.C.GGGAG.C..C.ATAG.GCTGCGAC..  
C..CG..C...AA....C.....T.G..CTGATC..G.AC.GC.....C.G.T...A.A....CA. CA  
..GAAG..G..AGTGAGTGACTION.TT..TC.GAA.GCATT.ATTTTT.G...GT.TACCCTA.CT.A..GA..  
.AT.CAT...A..A..A.T.CA..AGAAA.AT...CAT.ATTGCAA.....CCTTGAA.TG.. TTCA.T  
TGATTT.AA.ATGCTACAGTC.TA.ATG.CC.C.TT.TC..T.AA.CC.GC.TATGC.... TGCTCC.G.CC  
CAC.CG.TT.TGGCT.C.GTG.GACGAA..C.ATCCGA.G..G.CCGAC ..C.G.TCAGATTGCGCTG.TGC  
T...T..T.A.CTAAAATACGC.GTCT.CGG.GCCA.AA.T.GT.C.GTAATCTT.TCT.T. T.GTG.G.A  
TTC.C...CG.TCC.AGAC..TTCA.TTC.CA.AA...C...T.A...CCA.GG.T...TG..AAAATTTG..  
GGTTG...C.TTTT.TGG.ATTGT.AT.C..TTCC..A.TCC.C.GACC..CATT..TGGGC..GACTGC..T  
A...TCGC.T...TTCA.GCA.CTCCTC..GC.G.GCTC.AGCAG..GGGG..AT..AAC.CG.TTAGG..A.  
.ACCC.CA.TCT.TAT..GTGGCA.C....ACA..CCTAG...A..A.T.T.T..G.A.GATT.AATC.TCA  
GTC..TCT..G.ATACA.ACAT.TT.AAA.GA.GG.TG.TAT.A..ACATC.T..T..AT.AGTT.AATGG..  
G.T..A.AG.CCAT.ACGGCC.ATCA.AA..A.C...AA.CCC.T..ATA.GAGCT..C.AAG.A.A.ACGG..  
..CCT.....CA.....C.....C....C...C.....G.GT.A..G...G..G.....  
.....AC..C...

#### Hap\_27

.....T.GA.....C.....G....A.C.....  
.....T.....G.....C.G...T.....A  
.....A.....T.C.....T.....A.....  
...A..G.....C.....  
.....G.C.....C.....  
.....T.....A.....C..G.....C.G.....  
.....T.....T.....  
C..G.....C.....G.....G.....  
.....T.C.CA.....T.....C.....  
.....T.....T.....  
.....C.....G.....CT.....  
T.....A.....G.....T.....  
.....T.....G.....  
.....G.....T.A.ATC.....A.....  
.....T..G.....A..T.....A.....  
.....C.....GG.....G..T..  
.GA.....C..T.T.....C.....A.....C..T.....C.....  
.....T.....T.....A..T.....C.....  
...TG.T.....C..T.....T..A.T.....  
...T.....G.....A.T.....C.....G.....A.....  
.....G..A..A.

#### Hap\_28

.....C.....  
.....  
.....C.....  
.....

.....C.....  
.....  
.....  
.....  
.....C.....  
.....G.....  
.....C.....  
.....C.....C.....  
.....  
.....  
.....

Hap\_29

.....T.A.....C.....  
.....C.....C.....T.....A.....  
.....G.....C.....  
.....C.....  
.....C.....  
.....G.....  
.....C.....  
.....C.....C.....  
.....  
.....  
.....

Hap\_30

.....T.A.....C.....A.C.....  
.....C.....C.....T.....A.....  
.....A.G.....C.....G.....  
.....C.....G.C.....CG.....C.....G.....  
T.....A.....C.....T.C.....  
C.....T.C.....G.....C.....  
.....CA.....T.....G.....  
.....T.....C.....G.CC.AA.C.....  
T.....A.G.....C.....G.....  
.....CTT.....C.....G.....  
.....G.....ACC.....

```

.....AG.....T..G...C....A.....T.....A...C...
.....T..AC.....A....T.....TC.....C.....T...T.T
.GG.....T...T.....A....C..T.....TTC..A
.T.C.....T.....T..T..A..T.....T..G.....T.....
...T.....C..T.....T..A.T.....C.....
.....G..T.....C.....C...C...C....G.GT.A.....
.....A...C...

```

Hap\_31

```

.....T..A.....GC.....C..GC.....A.C.....
.....T.....T.....A
.....T.....T.....T..A.....
T..A...G..T.....T.....C.....
.....G.C.....
.....G.....A.....G.....C.....
.....T.....T..C....T.
C.....GC.....T.....G.....C.....
G.....CA.....C...T.....
.....T.....A
.....C.....T...T.....CT.....G.
.....G..GCA.....T.....
...A.....A.G.....G.....
.....A.....T.....C.....
.....AG...T..A.C.....G.....
.....C.....T..G.....T.....T..A.....
.....G.....G.....
.GA.....C..T.T.....T.....A....C..T.....CTT...
.....T.....T.....A..G.....
...T...T...A...T...C..T.....C..G...GC...A.T.....
.....G..T.....CC.....
.....A.

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Hap\_32

```

.....T..A....A.....GC.....C..GC..T.C....A.C.....
.....T.....C..T.....A
.....A.....A.....T.....T.....T..A.....
...A..G.....T.....C.....A.
.....AC...T.....G.C.....T.....
.....G.....A.....G.....C.....
.....T.....T..C.....
C.....C.....T.....G.....C.....
.....ACA.....T.....C...T.....
.....C.....T..T.....CT.....G.
.....A.....G.....G.....G.....
.....A..T.....C.....
.....G...T.A.A.C.....
.....T.....T..G.....T.....T..A.....
.GA.....T..T.T.....A....C..T.....ACTT...
.T.....T.....T.....A.....
...T...T...A...T...C..T.....G...GC...A.T.....
.....G..A.....T.....T.....
.....A.

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Hap\_33

```

.....T..A.....C.....A.C.....G.....

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```

.....C.....T.....A
.....G.....G.....A.....
.....G.....C.....
.....G.C.....G.C.....G..
.....C.....G.....A.....G.....G.C.....G..
T.....T.....T.....T.....
C.....C.....C.....
.....CA.....T.....G.....
.....T.....C.....A.....G.....CT.....
T.....A.....G.....G.....C.....T.....
.....G.....C.....T.....
.....G.....T.....ACC.....
.....A.....T.....T.....G.....T.....G.....
.....G.....G.....A.....G.....G.....
.GG.....C.....T.....G.....A.....C.....T.....TT.....
.....C.....T.....T.....A.....T.....T.....
.....T.....TTC.T.....T.A.T.....
.....TT.....
.....A.

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Hap\_34

```

.....T.A.....C.....A.C.....
.....C.G...T.....A
.....T.G.....A.....
.....G.....C.....
.....G.....G.....A.....G.C.G.....
.....C.G.....G.....A.....G.C.G.....
T.....T.....
C.....C.....C.....
.....CA.....G.....T.....AC...TT....CG....C. C.A
A.C.....G.G.....G.....A.....C.TT
.....T.....GTG.G...T.T.G.....G.CC.AA.G.....CTT.G.A...
.....G.....A.....T.....T.....
.....G.....A.....G.....
.....A.....A.....T.....T.....
.....G.....T.A.A.C.....T.....
.....C.....T.G.....A.A...T.....A..C...
.....T.....AC.....A.G.....T.C.T.....C....G.....T.G..T..
.GA.....T.....T.....T.....A.A..C..T.....TTC.A
.T.C.....T.....T.....GT.....A.C.C.....
.....T.T.....T.....
.....T.....G.....C.T.T.....G.....T.C..T..
.....A.

```

Hap\_35

```

.....T.GA.....G.T.....T.C.....ATC.....
.....C...T.....A
.....G.....G.....A.....
.....G.....C.....
.....C.....G.C.....C.G.....A.C.G.....
.....C.....C.....C.....C.....
C.....C.....C.....
.....CA.....T.....G.....
.....T.....C.....CT.....

```

T.....A..G.....G.....  
.....C.....G.....T.....T.....  
.....A.....A.....T.....T.....  
..A.....G...T...A.C.....A.....T.....  
.....T.....GA.....G.....G.....  
..GG.....C...T.T...T...G.....A.....C..T.....TT.....  
..C.....T...A...T...A.....T.....T.....  
..T.....CTC.....T.A.T.....  
.....TT.....  
.....A.

Hap\_36

.....T..A.....C.....A.C.....  
.....C.....T.....A.....  
.....G...T.....G.....C.....  
...G.....T.....G.....G.....C.....T.....G.....  
.....G.....A.....G.....C.....  
.....A.....  
C.....A.....C..T.C.C.G.....C..G.A.....C.....A...  
G.A.TGATTGT.C....TC.CCAT..T.....C...G.T..A.TG.A.T..T.AA..A..TAT...C..A  
..C..T...CGA..G.G...CT.G..GT.A.....G..G.C.....T.TT..AT.....T...T..C.TG  
G.....GTCAG.A.T..C.G.T..G.....C.....G.....  
.....A.....G.....  
.....C...G..A....A..A.C.....C  
..G.....G...TC.T...A.CA.....CTG.C.ACC.....  
..A...CACACT.G...TCGAC.A.T...GA.....C.....GA..TT.....G.....A...TCGA  
..G.....C.TA.....T...T.....C..G...G  
..A...G.....A.....C..T.....AT..A  
..T.GCTG..C.T.....T.....A.....  
..T.....C..T.....T..A.T.....  
.....G.G.....C.....C...C...C.....G.GT.A.....  
.....A..C...

Hap\_37

.....T..A.....GC.....C.A.A...A.AT..AGC.....  
.....C.....T.....T.....  
.....T.....G.....T.....T.....G.....A.....  
..A..G.....C.....C.....TA.....  
.....C.C.A..G.....C.T...T.....  
.....C..A.....G.....AT.....A.C.....G...  
T.....AC...C.....T.....  
C.....C.....G.....C.....  
.....CA.....T.....G.....  
.....T.....C.G.....CT.A.....  
T.....G.....G.....C.....  
.....T.....G.....  
.....A.....G.....T.....  
..T.....T..A.C...C.....CA..T.....  
..T..C.....T..G...A.....T.....T.....C...  
.....T..A.....A.....G.....T..G.....  
..GA.....T.T.TT.....C.C...C..T.....C.C...  
.....T.....T..A..T...A.....T.....A.....  
..G.....G.....G.....G.....

...T.....G....C.T.T.....C.....C.....T.....CAG...A..  
.....A..A.

Hap\_38

...T.....T..A.....GC.....C..GC.....A.C.....  
.....C.....T.....A  
TT..A...G.....T.....C.....T.....T.....T..A.....  
.....G.C.....  
.....G.....A.....G.....C.....  
.....T.....T..C.....  
C.....GC.....T.....G.....C.....  
.....CA.....C.....T.....  
.....T.....A  
.....C.....T.....T.....CT.....G.  
.....G.....T.....  
...A.....G.....G.....  
.....A.....T.....C.....  
.....AG...T..A.C.....G.....  
.....C.....T..G.....T.....T..A.....  
.....G.....G.....  
.GA.....C...T.T...T.....A...C..T.....CTT.....  
.....T.....T.....A..G.....  
...T..A...A...T...C..T.....G...GC...A.T.....  
.....G..T.....C.....C.....  
.....A.

Hap\_39

.....T..A.....GC.....C..GC.....A.C.....  
.....C.....T...T.....A  
T...A...G.....T.....C.....T.....T.....T..A.....  
...T.....G.C.....  
.....G.....A.....G.....CG.....  
.....T.....T..C.....  
C.....GC.....T.....G.....C.....  
.....CA.....C.....T.....  
.....TA...A  
C.....C.....T...T.....CT.....G.  
.....T..T.....T..T.....  
...A.....G.....G.....  
.....A.....T.....C.....  
.....G...T.A.A.C.....G.....  
.....T..G.....T.....T..A.....  
.GA.....C...T.T...G.....A...CA.T.....CT.....  
.....T.....T.....A.....  
...T.....A...T...C..T.....G...GC...A.T.....C.....  
.....G..C.....T..T.....C.....  
.....A.

Hap\_40

.....GA.....GC.....A..C...A..A...T.CTT.....  
.....G.....C.....T.....A  
...C.....A  
...A..G..T.....C.....C.....A.....  
.....T.....A.....C.....G.C.....C.....  
A.....G.....G.....G.....A...T..C..G.....C.....

```

.....G.A.....C.C.....
C.....C.....C.....C.....
.....C..CA.....T.....T.....G.....
.....G.....T.....
..T.....C.....CT.....
T.....C.....G.....
.....G.....C.C.....C.G.....
.....G.G.....A.....G.....
.T.....T..A.C.....C.....CA..T.....
..A..T..T.....T..G.....A.....T..G.....A..C..
.....T..A.....A.G.T.....T.....T.....T
.GA.....C.T..T.....A.....CC.T.....C.....
.....T.....T..T.....T.....T.T.....
.....T.....T.....A.....
..T.....G..G.C.T.T.....C.....C.....
.....A.....A.

```

Hap\_41

```

.....T.....T..A.....C.....ATC.....
.....T.....C.....T..T.....A
.....A.....T.....A.....
.....G.....C.....C.....
.....A..G.C.....
.....C..G.....G...A.....G.....C.....G..
T.....
C.....C.....C..T.....C.....
.....CA.....T..T.....
.....T.....
G.T.....C.....T.....TTG.....
.....A.G.....A.....T.....
.....T.....C.....A...G.....C
T.....A.T..A.C.....A.A.....C
..A..T..TA.....T.....G.....T.....C.....
..GG.....C..T.T.....G.....A.....CA.T.....TT.....
..C.....C.....G.T.....T.....A.....T.....T.....
..T.....TTC.....T..A.T.....
.....TT.....
.....A.

```

Hap\_42

```

G.C.....G.GA.....C.....T.T.....A.C.....CTC.
..G.C.....G.....G.....C.G..T.....
..G.....C.....T.....A.....
T.....G.....C.....C.....
.....C.....G.....A.....G.....C.....A..A.....
.....C.....G.....A.....C.....
C.....C.....
C.....CA..T.....T.....T.....C.....T.....A
..T.....G.....G.....A..C.....A.....CT.....
..T.....C.....G..G.....A.....
.....A.C.....GA.....T.....C.....T.....G..G.....T...
.....C.....C.....T..A.....C.....T..T.....T.....
..GA....ACATTTG.....A.A.C.....CT..G...A.....T.....T..T.....A..C.....

```

..GT....C.TG...AC..AC.....T.TA..A..T..CTTCTC..GGGCG..GA...GGAC.TC..GT..  
.CG...G...AAT.GCA..T.T.T...T...T.....AAAAC.A...T..T.C..C.CAG.C...A  
.T.C..GCTC.....TGGT.....G.GA.TT.A..GC.....C..G.TG.ATTCTT...C.AT  
.C..TG.ACTCGA.....T.....T..A.T.....  
.....TG.TG..G...TAAAC.....GG...C.C..ATCATACTA....G.T..GA.T.....C..  
.....A.A.

Hap\_43

.....T..A.....GC.....C.A.A...A.AT..AGC.....  
.....C.....T.....  
...T.....T.....C.....A.....  
...A..G.....G.C.....G...A.....C.....  
...GA.....A.....A..C..A..G.....C.T.....  
.....C.....G.....A.....C.G.....G..  
T.....AC...C.....T.....  
C.....G.....C.....  
.....CA.....G.....G.....  
.....  
GTT.....T..T...C..C.....A.....C.....  
T.....G.....G.....C..  
.....T.....G.....  
.....C..A.....  
..T.....T..A.C.....AC.....C..T.....  
.....C.....T..G.....T.....T..C..  
.....T..A.....A.....G...T.....T.G..  
.GA.....T.T.TT.....C.C.....C..T.....C.C..  
.....T.....T..A..T...A.....T.....A..  
.....T.....CG.....G..  
...T.....G...C.T.T.....C.....C.....CAG...A..  
.....A..A.

Hap\_44

.....T..A.....GC.....C.A.A...A.AT..AGC.....  
.....C.....T.....T.....  
.....T.....G.....T.....T.....G...A.....  
...A..G.....C.....A.....  
.....C.C.A..G...C.T...T.....  
.....C.....T.....C.C...ATTCTG.G...CCTA.G...TAAC.....G..  
T.....C.....G.GA.A...AC...C.....T.C.....  
CA.....G.G.G..C.T...T..G.C.T.....G.....  
...CA.....T.....T..GA..G.....T..G...C..  
..C..T.G.....T.....G.....A.....  
..T.....C.G.....CT.A.....  
T.....A.....G.....G.....C..  
.....T.....G.....  
.....A.....G.....  
..T.....T..A.C.....C..T.....CA..T.....TC..  
...T...CTCA..T.....T..G.....A.....T.....TC..  
.....T..A.....C.CA.AGGC.....T.G..  
.GA.....T.T.T.....G..T...C..T.....C.C..  
.....T.....T..A..T...A.....T.....A..  
.....T.....  
...C.....G...C.T.T.....T.....C...G..T..T.....G..  
.....A.

Hap\_45

.....T..A.....GC.....C.A.A...A.AT..AGC.....  
.....C.....T.....T.....

```

.....T.....G.....CGA.....T.....G.....A.....
...A...G.....C.....C.C.A...G.....T.....T.....
.....C.....G.....AT.....CCT.....A.C.....G.....
T.....G.GA.....AC.....C.....
C.....C.G.....T.....
.....CA...T.....T.....T.....G.....
...T.....G.....G.....
GTT.....C.G.....G.....CT.A.....
T.....G.....G.....C.....
.....T.....G.....
.....A.....G.....
.T.....T...A.C.....C.....CA...T.....
...T...C.....T...G.....A.....T.....T...C.....
.....T...A.....CT.A.GGG.....T.G.....
.GA.....T.T.TT.....CAC.....C...T.....C.C.....
.....T.....T.A...T...A.....T.....A.....
.....G.....
...C.....C.T.T.....C.....C.....T.....CA...T.....
.....TC....A..A.

```

Hap\_46

```

G..GT.....GT..A.....GC.....C.A.A...A.AT..AGCG.....
.....C.....CGTA.....C.....T.....G.....T.....
.....T.....G.....T.....A.....
...A...G.....C.....A.....C.....
.....G..T...A.....C..A..G.....C.T.....A..G.....T...
.....C..A.....A.....G..G.....C.....
C.....C.....C.....G..G.....
...CA.....T.....G.....
...T.....G.....C.....
.T...C.....CA.....G..G.....CT.....
.....A.....A.....C...T.....
.....G.....CC...T...AA..G.GT..G.....
.....A.....G.....
.T.....T...A.C.....C...T.....CA...T.....
...T...CTCA..T.....T...G.....A.....T.....TC...
.....T...A.....C.CA.AGGC.....T.G.....
.GA.....T.T.T.....G..T...C...T.....C.C.....
.....T.....T.A...T...A.....T.....A.....
.....T.....
...C.....G...C.T.T.....T.....C...G...T...T.....G.....
.....A.

```

Hap\_47

```

.....T.TA.....GC.....C...A...A..T...CTT..C.....
.....C.....T.....T.....G.....A
...A...G..T...A...A.....C.....T.....A.....
.....A...G...A...G.....G.....
.....T.....T.....G...A.....G.....C.....G.....
T.....G.....G.....
C.....C.....T.....C.....
.....CA.C..AATC.....T.....C.....G.....C.....
.....
.T.....C.G.....G.....CT.A.....
T.....G.....G.....C.....

```

```

.....T.....G.....
.T.....A.....G.....T.....
.T.....T..A.C.....C.....CA..T.....
..T..C.....T.....T..G.....A.....T.....T.....C.....
.....T..A.....CT.A.AGG.....T.G.....
.GA.....T.T.TT.....CAC.....C..T.....C.C.....
.....T.....T..A..T.....A.....T.....A.....
..G.....G.....G.....C.....T.....C.....T.....CAG...A..
..T.....G...C.T.T.....C.....C.....T.....CAG...A..
.....A..A.

```

Hap\_48

```

.....T..A.....C.....C.....A.C.....
.....G.....C.....T..T.....A
.....A.T...
.....G.....C.....C.....
.....G.....C.....G.C.....C.....T.....
.....C.....G.....A.....G.....C.....
.....T..A.....C.....
C.....G.....A.....T.....C.....
.....T.....C.....
.....C.....C.....CT.....
T.....A..T.....G.....
.....C..C.....G.....
.....G...T...ATC.....A..T.....
...A...ACACT.G.....A.T...GA.....T.A...G.....AA..C...
...G.....C..C..A...A.....A.....C..T..T..C...C..G.....
..A.....A.....C..T.....C..A
.T.C.....T.....T.....A.....C...
..T.....C..T.....T..A.T.....G.....
..C...G.G.....C.....C...C...C...G.GT.A.....
.....A..C...

```

Hap\_49

```

.....T..A.....C.....C.....ATC.....
.....C.....T.....A
.....A.....AT.....A.....
.....G.....C.....G.
.....C.....AT.....CG.....C.G.....G...
T.....T.....
C.....C.....C.....
.....CA.....T.....
.....T.....
T.....C.....CT.....
T.....G.....A.....C.....
.....G.....G.....C.....
.....G...T.A.ACC.....T.....A..C.....
.....T..G.....T.....A..C.....
.GA.....C..T.T.....T.....A..C..T.....C.....
.....T.....T.....A.....
..T.....T.C..T.....T.....
..T.....G...C.T.T.....C.....T.....
.....A.

```

Hap\_50

```
.....T..A..C.....C.....C.....T.....TTC.....
.....AT.....C.....T.....A.....
.....G.....C.....
.....G..C.....CG.....C..G.....G...
.....C.....G.....A.....CG.....C..G.....G...
T.....G.....T.....
C.....C.....C.....C.....
.....CA.....T.....C.....G.....T.....
.....T.....C.....G.....CT.....
T.....G.....G.....
.....A.....G.....
.....T..ATC.....C.....
...A...A.....T.....T.....G.....
.....A.....G.....A..G.....G.....
.GG.....T..T.T.....CTTCTT.....A.....CA.T.....TTC...
...C.....GT.....T.....
...T...T.....CTC...A.....T..A.T.....
.....TT.....G.....
.....A.
```

Hap\_51

```
.....T.....T..A.....C.....ATC.....A.
.....T.....C.....T...T.....A
.....A.....T.....A.....
.....G.....C.....
.....A...G..C.....A.....
.....C.....A.....G.....C..G.....G...
T.....
C.....C.....C...T.....C.....
.....CA.....T.....T.....
G.T.....C.....A.G.....A..TTG.....T.....
.....A...G.....
.....G.....
.....A.T...A..C.....A.....
...A...T...TA.....T.....A.....
.GG.....C...T.T.....G.....A...CA.T.....TT...
...C.....C.....T...T.....A.....T.....T.....
...T.....TTC.....T..A.T.....
.....TT.....
.....A.
```

Hap\_52

```
.....T..A.....C.....C.....A..C.....
.....G.....T...T.....A
.....G.....C.....C.....A.....
.....C.....G..C.....C..C...T.....
.....G.....A.....G.....T..C.....
.....T.....T.....
C.....C.....G.....C.....
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```

.....CA.....T.....G.....
.....T.....
.....C.....C.....CT.....
.....A.....T.....C.....
.....C.....C.....G.....
.....
.....A...G...T...ATC.....T.....A.....
...A...ACACT.G.....A.T...GA.....T...G...A...C...
...G.....C...C.A...A.....T...T.....C...G...T
.A...A.....T.....A.....C.T.....C.A
.T.C.....T...T...A.....
...T.....C.T.....T.A.T.....
.....G.G.....C.....C...C...C...G.GT.A.....
.....A...C...

```

Hap\_53

```

.....T.....T.A.....C.....ATC.....A.
.....T...C.....C...T...T.....A
.....A.....T.....A.....
.....G.....C.....
.....A...G.C.....A.....
.....C.....A...G...C.G...G...
T.....T.....
C.....C.....C...T.....C.....
.....CA.....T.....
.....T.....
G.T.....C.....TTG.....
.....A.G.....A.....T.....
.....A...G.....
.....G.....T...
...A.T...A.C.....A...T.....G.....
...A...T...TA.....T...T.....C...
.....T...T...G...A.....G...
.GG...C...T.T...G...A...CA.T...TT...
...C.....C...G.T...T...A.....T...
...T.....TTC.....T.A.T.....
.....TT.....
.....A.

```

Hap\_54

```

.....T.A.....GC.....C.A.C...A.T...A.C.....
.....C...T.....
.....G...T.....A.....
...A...G.....C...A.....G...
.....C.C.A...G...C.T.....A.C.G...G...
.....C.....G...A...A.C.G...G...
T.....AC...C.....T.....
C..T.....C.....
.....AA.....T.....G.....
.....
GTT...T.C...CC...C.....CT.A...CG...
T.....G.....G.....CG...
.....T.....G.....
.....A.....
.....T...AGC...TC...A...A.C.A.AC.T...
.....C.....T...G...T...T.A...C...
...GA...T.T.TT...A...A...C...C...T.G...T
.GA...T.T.TT.....C...C...T...C.C...

```

.....T.....T...T..A...T...A...T.....T.....A.....  
.....G.....G.....G.....G.....G.....G.....G.....G.....  
...T.....G...C.T.T.....C.....C.....C.....T.....  
.....A.

Hap\_55

.....TA.....T..A.....GC.....C..GC.....A.C.....  
.....C.....T.....A.....  
.....T.....T.....T.T..A.....  
...A...G.....A...T.....C.....A.....  
.....A.....G.C.....C.....  
.....G.....A.....G.....C.....  
.....T.....T..C.....  
C.....C.....T.....G.....C.....  
.....CA.....T.....T.....C.....T.....  
.....C.....T.....T.....CT.....G.....  
.....T.....  
.....G.....G.....G.....  
.....T.....T.....C.....  
.....G...T.A.A.C.....G.....  
.....T..G.....T.....T..A.....  
.....G.....G.....C..G.....  
GA.....C...T.T.....A...C..T.....CT.....  
.....T.....T.....A.....  
...T.....A.....T...C..T.....G...GC...A.T.....  
.....G.....T..T.....C.....  
.....A.

Hap\_56

.....T..T..A.....C.....C.....A...G...A.C.....  
.....C.....T.T.....A.....  
.....G.....T.C.....  
.....A.....G.C.....C.G.....C...A.....  
.....G.....A.....C.G.....C.....A.....  
T.....C.....C.....T.....  
C.....C.....C.....C.....  
.....GCA.....T.....A.....  
.....T.....C.....C.....T.....CT.....  
T.....A..G.....AG.....AG.....  
.....A.....  
.....G.AG...T...ACC...A.....A.....A.....  
...T...C.....T..G.....T..G.....A...C.....  
.....T...C.C.....A.G.....G.....T.G.....  
GA.....T...T.....A.....C..T.....C.....  
.....TT.....T...T..A...T.....A.....  
.....A.....T...T.....  
...T.....G...C.T.T.....CC.....C.....  
.....A..A.

Hap\_57

.....T..A.....C.T.....T.....ATC.....A.....  
.....T.....C.....T.....A.....  
.....A.....T.....A.....  
.....G.....C.....A.....

```

.....A..G.C.....
.....C.....A.....G.....A.C.G..C.G..
T.....
C.....C.....C..T.....C.....
.....CA.....T.....
.....T.....
..T.....C.....T.....
.....A..A.G.G.....G.....
.....G.....
.....T.....T.....
.....G.T..A.C.....A.....T.....T.....
..A.....A.....T.T.....A.C.....
.....C..A.....A.....G.....A..G.....G.....
.GG.....C..T.T.....G.....C..A.....C..T.....TT.....
..C.....T.....A.....T.....
..T.....TTC.....T..A.T.....
....C.....A.....TA.TT.....
.....A.

```

Hap\_58

```

.....T..A.T.....GC.....C...A...A....A.CTT.....
.....G.....C.....T.....A
.....A.....T.....A.....
.....G...A.....A.....C.....
.....G.....G.....C..C....A.....
A.....CA...G.....T.....T....T...G.A.....C.....
.....T...G...C.....G.T..A.....T.....T.....
A.....T.....G.....A.....TG
..TC...T...CA.....G..T..T.....G...T....ACA.....C...
A.....CG..G.....C.G..T.....T...C.T.....GT
GTA.....GTC...CA..T..CTC.....G..CG.AA.C.....CT.....
T.....T.T.....C...T.....C.....CC.....
.A.....C.A.....G.....C.....C.T...T.G..GG...A.....T...
..C.T.....A.....T.....T.....G...
..T.....T..A.C.....TC.....CA.....
..AA...C...T.....T..A.....G.....T...C.....A..C...
..GA...A...T.T...C.....T..A.G.T.C..TG...T.....T.....
.....T.....A..T...A.C.....T.T.....C.....
.....T.T.....T.....C.....T.....
....C.....G...C.T.T.....T.....C.....T.....
.....A...A.

```

Hap\_59

```

G.....G..T..T..A.....GC.....C.CGC..T.C..T.A.C.....A....
.....T.....A.....C..T.....C.....A
.....A.....A.....T.....T.TC.....T.....T..A..G.
...A...GG.....T.....GTC.....T.....A.
C.....AC.....C.C.G.....C.....C.....
.....C.....CA..T.....A.....G.....C.....
.....T.....T.....C.....
C.....C.....T.....T.....G.....C.....C.....
.....ACA.....T.....C.....T.....A
.....C.....T.....T.....CT.....G.
...A.....G.....G.....T.....G.....
.....T.....C.....

```

.....G..G..C.T.A.A.C.....  
.....T.....T..G.....T..G.....T..A.....  
.....G.....A.....G.....  
.GA.....T...T.T.....A.....C..T.....ACTT....  
.T.....T.....T.....A.....  
...T...T.....T...C..T.....G...GC.....A.T.....G..  
CA...G..G..A.....T...T..G..T.A.....C.G..C.T.T...T...C.....C  
.G.G.....

Hap\_60

.....T..A.....G..C.....T.....A.C.....  
.....C.....C...T.....A  
.....A.....A.....C.....T..C.....A.....  
.....G.....C...G.T.....A.....  
.....G.C.....G.....C.....A.....  
.....C.....T...C.....A.....C.....  
.....C.....C.....T.....  
C.....C.....C.....C.....  
.....GCA.....T.....G.....  
.....G.....T.....  
..T.....C.....CT.....  
.....A..T.....T.....  
.....A.....A...G.....T..  
.....C.....G.....  
.....G.T...ACC...G..A.....T.....T.....  
..A.....T.....T..G.....T...G.....AT.....  
.....CC.A...A.....T.....T.....C..G.....  
..A.....C.....A.....C..T.....C..A  
..C.....T.....A.....C.....CT..  
.....T.....C..T.....T..T.A.T.....  
...T...G.G...G..A.T.....C.....G.....CACG..T.A.....  
.....AC..C...

Hap\_61

.....T..A.....G..C.....T.....A.C.....  
.....C.....C...T.....A  
.....A.....A.....C.....T..C.....T..G.G.....A.....  
.....G.....C.....C...G.T.....A.....A.....  
.....A.....G.G.C.....G.....C.....A.....  
.....G.....C.....A.....C.....  
.....C.....C.....T.....  
C.....C.....G.....C.....C.....  
.....GCA.....T.....G.....  
.....G.....T.....  
..T.....C.....CT.....  
.....A..T.....T.....  
.....A.....A...G.....T..  
.....C.....G.....  
.....G.T...ACC...G..A.....T.....T.....  
..A.....T.....T..G.....T...G.....AT.....  
.....CC.A...A.....T.....T.....C..G.....  
..A.....C.....A.....C..T.....C..A  
..C.....T.....A.....C.....CT..  
.....TC.T.....T..T.A.T.....  
...T...G.G...G..A.T.....C.....G.....CACG..T.A...TA.....  
.....A...CA.

Hap\_62

```
.....T.....TG.A.....AG.....T.....A.C.....A..
.....G.....C.....C.....T..T.....T...
...TC.....T.A.....C.....T.....A.T...
.....G.....G.....AC..CTC.....C.....G.....G...C.....
.....T.....T.....G.....T.....
C.....A.....T..AT..T..AT...T..C..CT..A.C...A.C.....C.
T...T.....T.....T..G.....T.C.....
C.....T.....G.....T.
..TC...T...CA.....T.....C..G..GC...TT.....C..C.A
A.C.....G.G.....G.....A.....C..GT
..T.....ATG.C..CC..T.....C.....G.TCG.AA.G...TCT.....
.....A.....G.G.....T.....G.....T.....
.....T..A.....GT.....
.....T.....A.....G.....T..A...
.C...A.A...G...T.A.A.C.C.....C.....G..G.....TT.....A...
.....AC.TTT.G.....A...A.....C.....C..C...
TC..G.....AT..A...A.....T..G...T...TGTC..G...A.G..T..
.GA.....T.T.....A.....A...C..T.....CC...
..C.....T..T.....A.....C.....
..T.....T.....T.....C.....
.....G...C.T.T.....C.G.....C.....T.A.....G...
....A....T.A.A.
```

Hap\_63

```
.....T.....TG.A.....AG.....T.....A.C.....A..
.....G.....C.....C.....T..T.....T...
...TC.....T.A.....TC...T.....A.T...
.....G.....G.....AC..CTC.....C.....G.....G...C.....
.....T.....T.....G.....T.....
C.....A.....T..AT..T..AT...T..C..CT..A.C...A.C.....C.
T...T.....T.....T..G.....T.C.....
C.....T.....G.....T.
..TC...T...CA.....T.....C..G..GC...TT.....C..C.A
A.C.....G.G.....G.....A.....C..GT
..T.....ATG.C..CC..T.....C.....G.TCG.AA.G...CT.....
.....A.....G.G.....T.....G.....T.....
.....T..A.....GT.....
.....T.....A.....G.....T..A...
.C...A.A...G...T.A.A.C.C.....C.....G.....TT.....A...
.....AC.TTT.G.....A...A.....C.....C..C...
TC..G.....AT..A...A.....T..G...T...TGTC..G...A.G..T..
.GA.....T.T.....A.....A...C..T.....CC...
..C.....T..T.....A.....C.....
..T.....T.....T.....C.....
.....G...C.T.T.....C.G.....C.....T.A.....T...
.....T.A.A.
```

Hap\_64

```
.....T.....TG.A.....AG.....T.....A.C.....A..
.....G.....C.....C.....T..T.....T...
...TC.....T.A.....C.....T.....A.T...
.....G.....G.....AC..CTC.....C.....G.....G...C.....
.....T.....T.....G.....T.....
C.....A.....T..AT..T..AT...T..C..CT..A.C...A.C.....C.
T...T.....T.....T..G.....T.C.....
C.....T.....G.....T.
..TC...T...CA.....T.....C..G..GC...TT.....T..C..C.A
```

A.C.....G.G.....G.....A.....C..GT  
..T.....ATG.C.CC..T.....C.....G.TCG.AA.G.....TCT.....  
.....A.....G.G.....T.....G.....T.....  
.....T.....A.....GT.....  
.....T.....T.....A.....G.....T.....A..  
.C..A.A...G...T.A.A.C.C.....C.....G..G.....TT.....A..  
.....AC.TTT.G.....A..A.....C.....C..C..  
TC..G.....AT..A...A.....T...G.....T...TGTC..G...A.G..T..  
.GA.....T.T.....A.....A.....C..T.....CC..  
..C.....T..T.....A.....C.....  
..T.....T.....T.....T.....C.....  
.....G...C.T.T.....C.G.....C.....T.A.....G..  
....A....T.A.A.

Hap\_65

.....A.....G.GA.....C.....T...A...A.A...T.CTT.....  
.....T.....C.....T.....A..  
.....A.....G..T.....C.....A.....A..T..  
.....G..A.....C.....G.....C..C.....G.....  
A.....A.....G.....G.....A...T.....G.....C.....  
.....A.....T.....C.C.....  
C.....C.....C.....C.....  
.....C..CAC.T...G...T.....C.....T.A.T..G.....T.....  
.....G.....T.....  
.T.....C.....C.....G.....CT.....  
T.....C.C...A.....G.....  
.....C..C.....C.G.....  
.....A.....  
.T.....T..GA.C.....TC.....CA.....G..  
..AA...C...TC...G.....T..G.....A.....T..G.....A..C..  
.....T...A.C.....A.G.T...TG.....T.G.....  
.GA.....C.T.T.....CAT...C..T.....C..  
.....T.....T..T..A..T.....A.....  
.....G...T.....T.....G..  
..C.....G...C.T.T.....C.....C.....  
.....A.

Hap\_66

.....G.GA.....C.....C...A...A...T.CTT.....  
.....C.....T.....A..  
.....C.....G.....A.....A.....  
...A...G..T.....A.....C.....A.....  
.....A.....A.....C.....G.C.....C.....  
A...C..A.....G.....G.....A...T.....G.....C.....  
T.....G...T.....C.....  
C.....C.....C.....C.....  
.....C..CAC.T.....T.....C.....T.A.T..G.....T.....  
.....G.....C.....T.....  
.T.....C.CG...C.....C.....CT.....  
T.....C.....C.....G.....  
.....C..C.....C.G...G.....  
.....T.....T.....C.C.....T.....  
.T.....T...A.C.....CC.TC.....CA.....  
..AA.....TCC.....T..G.....G.....T.....  
..T.....T...A.C.....A.G.T...TG...T.....T.G.....  
.GA.....T.T.T...G.....CAT...C..T.....C..  
.....T.....T..T..A..T.....G.....

.....T.....T.....G.....T.....  
...C.....G...C.T.T.....C.....C.....  
.....A.....A.

Hap\_67

.....T.....TG.A.....AG.....T.....A.C.....A..  
.....G.....C.....C.....T..T.....T..  
..TC.....T.A.....C.....T.....A.T..  
.....G...G.....AC..CTC.....C.....G...G...C.....  
.....T.....T.....G.....T.....  
C.....A.....T..AT..T..AT...T..C..CT..A.C...A.C.....C..  
T...T.....T.....T..G.....T.C.....  
C.....T.....G.....T..  
..TC..T..CA.....T.....C..G..GC...TT.....C..C.A  
A.C.....G.G.....G.....A.....C..GT  
..T.....ATG.C.CCC..T.....C.....G.TCG.AA.G.....CT.....  
.....A.....G.G...T.....G.....T.....  
.....T..A.....GT.....  
.....T.....A.....G.....T..A..  
.C..A.A...G...T.A.A.C.C.....C.....G..G.....TT.....A..  
.....AC.TTT.G.....AT..A.....C.....C..C..  
TC..G.....AT..A...A.....T..G...T...TGTC..G...A.G..T..  
.GA.....T.T.....A.....A...C..T.....CC..  
..C.....T..T.....A.....C.....  
..T.....T.....T.....C.....  
.....G...C.T.T.....C.G.....C.....T.A.....G...  
.....T.A.A.

Hap\_68

.....T..A.....GC.....T..C.A.A...A..T..AGC.....  
.....C.....T.....  
.....G.....T.....G...TA..  
...A..G.....C.....TA..  
.....C.C.A...G...C.T...T.....  
.....C.....G...T..A...A.C.T...G..  
T.....AC...C.....T..  
A.....C.....  
.....CA.....T..T.....C...C.....C..  
.....T..  
..T.....G.....C.....A.....CT..  
T.....T.....C.....T.....C..  
.....A..G.....G..  
.....T.A.ACC.....TC.....G.....T..A.AC.T.....G..  
.....C.....T..G.....T.....T..A..C..  
.....T..A.....A.....G.....T.G..  
.GA.....T.T.TT.....C.....C..T.....C.C..  
.....T.....T..T..A..T...A...T..TC.A..  
.....G.....T..G..  
..T.....G...C.T.T.....C.....C.....T..  
.....A.

Hap\_69

.....T..A.....C.....A.C.....  
.....C.....C.....T.....A.A..  
...C.....C.....G.....C.....  
...A..G...G.....C.....  
.....G.....C.T..G.....

```

.....C.G.....G.....A.....G.....G.C.G.....
T.....T.....
C.....C.....C.....
.....CA.....G.....T.....C.....C.....
.....T.....T.....C.....C.....G.T.....CT.....C.....
.....G.....T.....G.....T.....
.....A.A.C.....
.....T.....
.....T.....C.....T.....G.....C.....G.....T.....
.GA.....T.....T.....T.....A.....C.....T.....ACTTC.A
.T.C.....T.....A.....
.....T.....C.T.....T.....T.A.T.....
.....G.....T.....C.....G.GT.A.....
.....AC.C...

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Hap\_70

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.....C.....T.A.....C.T..T..C.....ATC.....
.....C.....T.....A
.....A.....T.....A.....
.....G.....G.....C.....
.....A..G.C.....
.....C.....A.....CG.....C.....G.....
.....A.....C.....
C.....C.....
.G.....G.....C.....T.....
.....T.....C.....A.G.....A.....G.....T.....
.....A.....G.....T.....
.....A.T.....A.C.....A.....T.....T.T.....A.....
.GG.....C..T.T.....G.....C.A.....C..T.....TT.....
.....C.....T.....A.....T.....
.....T.....TTC.....T.A.T.....
.....C.....A.....TT.....
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Hap\_71

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G.....T.....AG.A.....C..T..GTC.CT..AA.....GA.AC..A..TTC.GCT.....
.T.....T.C..AA.....G..T.CG.....C.GT.TC.TT.T.....T.....T.G..CTTT.GTC.
C..G.T...T..GC.G...GTATA.G.TA.TG.A.T.A.CT.CCGTTT...GT..C..G.....T...C
ATG.....G.....T.....C.....C.....
.....G.....G.G.....GC.....A.....
.....C.....G.....T.....A.....G.....C.....
.....T.....T.....T.A.....T.C.C.....A..
C.....GG.G..G.C.....T.....TAGC.....G.....
.....GC.CA..GTCTG...T.....AC...TT....CG...C..C.A
A.C.....G.....G.....A.....C.TT
..T.....GTG.G...T..T.G.....G..CC.A.....CTT..G.....
.....A.....T.....T.....
.....G.....A.....A.....G.....
.....G...T.A.A.C.....T.....

```

.....C.....T..G.....A..A.....T.....A..C...  
.....T..AC.....A.G.....T..G.G..C.....G...T.G..T..  
.GA.....T.....T.....T.....GT.....A..C..C.....TTC..A  
.T.C.....T.....T.....GT.....A.C..C.....  
.....T..T.....T.....  
...T.....G...C.T.T.....G.....T.C..T..  
.....A.

Hap\_72

.....T..A.....C.....C.....ATC.....  
.....A.....A.....C.....T.....A  
.....A.....AT.....A.....  
.....G.....C.....  
.....G.C.....G.  
.....C.....AT.....CG.....C.G.....G..  
T.....T.....  
C.....C.....C.....  
.....CA.....T.....  
.....TT.....T.....  
..T.....C.....CT.....  
T.....G.....A.....  
.....G.....C.....  
.....  
.....G...T.A.ACC.....  
.....T..G.....T.....A..C..  
.....T..A.C.....G.....A.G..  
.GA.....C..T.T.....T.....A.....C..T.....C..  
.....T.....T.....A.....  
..T.....T.C..T.....  
..T.....G...C.T.T.....C.....T..  
.....A.

Hap\_73

.....T.....TG.A.....AG.....T.....A.C.....A..  
.....G.....C.....C.....T..T.....T..  
..TC.....T.A.....C.....T.....A.T..  
.....G..G.....AC..CTC.....C.....G..G...C..  
.....T.....T.....G.....T.....  
C.....A.....T..AT..T..AT...T..C..CT..A.C...A.C.....C.  
T...T.....T.....T..G.....T.C.....  
C.....T.....G.....T..  
..TC...T..CA.....T.....C..G..GC...TT.....C..C.A  
A.C.....G.G.....G.....A.....C..GT  
..T.....ATG.C..CC..T.....T.....C.....G.TCG.AA.G...TCT.....  
.....A.....G.G.....T..A.....G.....T.....  
.....T.....A.....G.....T..A..  
.C...A.A...G...T.A.A.C.C.....C.....G..G.....TT.....A..  
.....AC.TTT.G.....A..A.....C.....C.....C..C..  
TC..G.....AT..A...A.....T..G.....T.....TGTC..G...A.G..T..  
.GA.....T.T.....A.....A.....C..T.....CC..  
..C.....T..T.....A.....C.....  
..T.....T.....T.....C.....C.....  
.....G...C.T.T.....C.G.....C.....T.A.....G..  
....A....T.A.A.

Hap\_74

.....T..A.....C.....C.....A.C.....

```

.....T.....C.....T.....T.....A
.....T.....A.....
.....G.....C.....C.....
.....C.....G.C.....T.....C.....C.G.....
.....A.....C.G.....C.G.....
C.....A.....C.....T.....
.....T.....C.....C.....
.....T.....C.....A.T.....G.....
.....C.....A.T.....G.....
.....G.....T.....ATC.....A.....
...A...T...A.....T.....T.T.....T.....
...G.....G.....A.....C.....G.....
.GG.....C...T.T.....G.....A.....C.T.....TT...
...C.....T.....T...T.A.....T.....
...T.....TTC...T.....T.A.T.....
.....TT.....
.....A.

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Hap\_75

```

.....T.A.....C.....C.....A.C.....
.....C.....T.....A.....
.....G.....C.....G.....A.....C.....
.....T.....C.....G.....C.....T.....
.....G.....A.....G.....C.....
.....A.....T.....C.....
C.....A.....T.....C.....
.....C.....
.....G.....T.....T.....
.....C.....CA.....CT.....
T.....A.....C.....
.....TT.....C.....G.....
.....G.....T.....ATC.....A.....
...A...ACACT.G.....A.T...GA.....A.....T.....G.....A...C...
...G.....C...C.A...GA.....T...T.....C...G...
.A...A.....A.....C...T.....C.C. A
.T.C.....T.....T.....A...T.....T.....
...TG...T.....T...T.....T.....T.A.T.....
...T...G.G.....T.T...C...T.G.TA.....G.....C...CT.A.T.....AG.G.T...
.....C.....

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Hap\_76

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.....T.A.....C.....G.....A.C.....
.....C.G...T.....A.....
...A...G.....T.G.....G.....
.....G.C.....G.....
.....C.....G.....A.....G.....C...G.C.G.....
T.....T.....T.....
C.....C.....C.....
.....CA.....T.....AC...TT...CG...C...C.A
A.C.....G.....G.....A.....C.TT
...T.....ATG.G...TT.T.G.....G.....G...CC.AA.C.....CT.....

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```

.....G.....TT.....C.....
.....A.....G.....
.....A.....C.....T.....
.....G.....T.....ACC.....T.....
..A.....TG.....T.....G.....A.....G.....T.....T.A..C...
.....T.....A.....G.....T.C.....C.....T.G..T.T
.GA.....T.....T.....T.....A.....C.....T.....TTC..A
.T.C.....T.....T.....A.....T.....
.....C.....T.....T.A.T.....C.....T.....
.....G.....C.....C.....C.....C.....G.GT.A.....
.....A..C...

```

Hap\_77

```

.....T..A.....C.....G.....A.C.....
.....C.G...T.....A
.....G.....T.G.....A.....
...A..G.....C.....G.....
.....G.C.....
.....C.....G.....A.....G.....C...G.C.G.....
T.....T.....T.....
C.....C.....C.....C.....
.....CA.....T.....AC...TT....CG....C..C.A
A.C.....G.....G.....A.....C.TT
..T.....ATG.G...T..T.G.....G..CC.AA.C.....CT.....
.....G.....TT.....C.....C.....
.....A.....G.....T.....
.....A.....C.....T.....
.....G.....T...ACCT.....T.....
..A.....TG.....T.....G.....A.....G.....T.....T.A..C...
.....T.....A.....G.....T.C.....C.....T.G..T.T
.GA.....T.....T.....T.....A.....C.....T.....TTC..A
.T.C.....T.....T.....A.....T.....
.....C.....T.....T.A.T.....C.....T.....
.....G.....C.....C.....C.....C.....G.GT.A.....
.....A..C...

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Hap\_78

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.....T.....TG.A....AG.....T.T.....A.C.....A..
.....G.....C.....C.....T..T.....T...
..TC.....T.A.....C.....T.....A.T...
.....G.....G.....AC..CTC.....C.....G.....G...C.....
.....T.....T.....G.....T.....
C.....A.....T..AT..T..AT...T..C..CT..A.C...A.C.....C.
T...T.....T.....T.....G.....T.C.....
C.....T.....G.....T.....
..TC...T..CA.....T.....C..G..GC...TT.....C..C.A
A.C.....G.G.....G.....A.....C..GT
..T.....ATG.C..CC..T.....C.....G.TCG.AA.G.....CT.....
.....A.....G.G.....T.....G.....T.....
.....T.....A.....GT.....
.....T.....A.....G.....T.....A...
.C...A.A..G...T.A.A.C.C.....C.....G..G.....TT.....A...
.....AC.TTT.G.....A.....A.....C.....C.....C.....
TC..G.....AT..A...A.....T.....G.....T.....TGTC..G...A.G..T...
.GA.....T.T.....A.....A.....C.....T.....CC...
..C.....T.....T.....A.....C.....
..T.....T.....T.....T.....C.....

```

.....G....C.T.T.....C.G.....C.....T.A.....G....  
.....T.A.A.

Hap\_79

.....T.A.....GC.....T.....A...A.C.....  
.....C.....C.G..T.....A  
.....A.....A.....A.T...  
...A...G.....C.....  
.....T.....G.C..C.....  
A.....T...A...T...G.....C.....  
T.....A.T..A...CT.....T.....  
C.....TC.....T.....  
..TC...T.C.CA.....T...G.....G.AC...TT...C...C..C.A  
A.C.....G.G.....G.....T..A.....C.GT  
..T.....ATG.G...T..T.G.....G.CC.AA.C.....CT.....  
.....G.....T.....T.....  
.....G.....G.....A.....A.C..G....A.....  
.....A.....T.....A.  
...A...G...T..ACC.....C.....A.....T.....  
.....C.....T.....A.TG.....T.....A..C...  
.....T..A.....A.G..T...T.C.....C.....A.G....  
..GA.....T...T..C.T.....A...C..T.....TTC..A  
..T.C.....T.....T.....T.....T..G.....  
..T...T..A.....C..T.....T..A.G.....A.....  
.....G...CC.....C.....C...C...C...G.GT.A.....GT.CT..  
.....A..C...

Hap\_80

.....G.....T..A.....C.....T..A.C.....  
.....C.....T.....A  
.....T.T.....A.....  
...A...G.....C...G.....  
.....G.C.....G.....  
C.....A.....G.....G.C.G.....G...  
T.....T.....  
C.....C.....C.....  
.....CA.....T.....A.  
.....T.....  
.....C.....CT.....  
T.....GA..T...T...C...G....A.....T...  
.....T.C.....T.C.....  
...A...GT...T..A.C.....A.....AT.T.....  
.....T..G.....A.....C.....AAG.....  
..GA.....C..T.T.....AA...C..T..T...TT...  
..T.....T...T...A.....  
..T.....CTT.T..A.....T..T..A.T..TT...  
..A.C.....G.TT.A.T.....  
.....A.A.

Hap\_81

.A..A.....T..A.....C.....A.C.....  
.....C.....C.....T.....A  
.....C...G.....A.....  
...A...G.....C...G.....  
.....G.C.....  
.....C.....T.....A...T...G.....G.C.....

T.....T  
C...GT.....C.....  
.....CA.....T.....T.....AC.....C.....  
.....G.....G.....G.....CC.AA.C.....CT.....T.....  
.....G.....A.....C.....G.....G.....G.....CT.....  
T.....T.....G.....  
C...A.....A.....G.....  
.....A.....T.....  
.....G.....T.....ACC.....T.....  
.....AG.....T.....G.....A.....T.....A.....A.....C.....  
.....T.....AC.....A.G.....T.....T.C.....C.....T.....T.T  
.GG.....T.....T.....T.....A.....C.....T.....TTC.A  
.T.C.....T.....T.....T.A.....T.....T.....G.....T.....  
.....T.....T.....C.....T.....T.A.T.....C.....  
.....G.....C.....C.....C.....C.....CG.GT.A.....  
.....A.....C.....

Hap\_82

.....G.GA.....C.....T.....A.....A.....T.CTT.....  
.....C.....T.....A  
.....C.....G.....C.....A.....  
.....A.....G.....T.....A.....C.....C.....A.....  
.....TT.....A.....C.....G.C.....C.....  
A.....A.....G.....G.....A.....T.....G.....C.....G.....  
.....G.....C.....C.....  
C.....C.....C.....C.....C.....T.....  
.....C.CAC.T.....T.....T.....CG.....T.A.T.G.....G.....T.....  
.....G.....C.....T.....  
.A.....C.CG.....A.....T.....G.....C.....G.....T.....CT.....  
T.....C.....A.....  
.....C.....C.....C.....C.....G.....T.....  
.....T.....C.....C.....T.....  
.....T.....T.....A.C.....CC.TC.....CA.....  
.AA.....C.....TCC.....T.....G.....G.....T.....  
.T.....T.....A.C.....A.G.T.....TT.....T.....T.G.....  
CGA.....T.T.T.....G.....CAT.....C.....T.....C.....  
.....T.....T.....T.....A.....T.....  
.....T.....G.....T.....T.....A.....  
.....C.....G.....C.T.T.....C.....C.....T.....G.....  
.....A.....A.....

Hap\_83

.....T.A.....C.T.....C.....ATC.....  
T.....T.....T.....C.....T.....A  
.....A.....T.....A.....  
.....G.....C.....A.....  
.....A.....G.C.....A.....G.....A.C.G.....C.G.....  
.....C.....A.....  
T.....  
C.....C.....C.....T.....C.....  
.....CA.....T.....T.....T.....  
.....T.....  
.....C.....C.....  
.....A.G.T.....  
.....G.....G.....  
.....A.....G.....G.....T.....  
.....G.T.....A.C.....A.G.....T.....T.....  
.....A.....T.....T.....T.C.....A.....

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.....A.....G.....A.....A.G....
.GG.....C..T.T.....T.....C..A.....C..T.....TT....
..C.....T.....A.....T.....
..T.....TTC.....T..A.T.....
....C.....A.....TA.TT.....
.....A.

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Hap\_84

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.....T.....TG.A.....AG.....T.....A.C.....A..
.....G.....C.....C.....T..T.....T...
..TC.....T.A.....C.....T.....A.T...
.....G...G.....AC..CTC.....C.....G...G...C.....
.....T.....T.....G.....T.....
C.....A.....T..AT..T..AT...T..C..CT..A.C...A.C.....C.
T...T.....T.....T..G.....T.C.....
C.....T.....G.....T.
..TC..T..CA.....T.....C..G..GC...TT.....C..C.A
A.C.....G.G.....G.....A.....C..GT
..T.....ATG.C..CC..T.....C.....G.TCG.AA.G....CT.....
.....A.....G.G...T.....G.....T.....
.....T..A.....GT.....
.....T.....A.....G.....T..A..
.C...AGA...G...T.A.A.C.C.....C.....G.....T.....TG.....A..
.....AC.TTT.G.....A...A.....C.....C..C...
TC..G.....AT..A...A.....T..G.....T....TGTC..G...A.G..T..
.GA.....T.T.....A.....A.....C..T.....CC...
..C.....T..T.....A.....C.....
..T.....T.....T.....T.....C.....
.....G...C.T.T.....C.G.....C.....T.A.....G....
.....GT.A.A.

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Hap\_85

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.....T.....TGTA.....AG.....T.....A.C.....A..
.....G.....C.....C.....T..T.....T...
..TC.....T.A.....C.....T.....A.T...
.....G...G.....AC..CTC.....C.....G...G...C.....
.....T.....T.....G.....T.....
C.....A.....T..AT..T..AT...T..C..CT..A.C...A.C.....C.
T...T.....T.....T..G.....T.C.....
C.....T.....G.....T.
..TC..T..CA.....T.....C..G..GC...TT.....C..C.A
A.C.....G.G.....G.....A.....C..GT
..T.....ATG.C..CC..T.....C.....G.TCG.AA.G....CT.....
.....A.....G.G...T.....G.....T.....
.....T..A.....GT.....
.....T.....A.....G.....T..A..
.C...A.A...G...T.A.A.C.C.....C.....G.....TG.....A..
.....AC.TTT.G.....A...A.....C..C.....C..CA..
TC..G.....AT..A...A.....T..G.....T....TGTC..G...A.G..T..
.GA.....T.T.....A.....A.....C..T.....CC...
..C.....T..T.....A.....C.....
..T.....T.....T.....T.....C.....
.....G...C.T.T.....C.G.....C.....T.A.....G....
.....T.A.A.

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Hap\_86

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.....T.....TG.A.....AG.....T.....A.C.....A..
.....G.....C.....C.....T..T.....T...

```

...TC.....T.A.....C.....T.....A.T...  
...G...G.....AC...CTC.....C.....G...G...C.....  
...T.....T.....G.....T.....  
C.....A.....T...AT...T...AT...T...C...CT...A.C...A.C.....C...  
T...T.....T.....T...G.....T.C.....  
C.....T.....G.....T...  
...TC...T...CA.....T.G.....C...G...GC...TT.....C...C.A  
A.C.....G.G.....G.....A.....C...GT  
...T.....ATG.C.CC...T.....G.TCG.AA.G.....CT.....  
.....A.....G.G...T.....CG.....T.....  
.....T...A.....GT.....  
.....T.....A.....G.....T...A...  
.C...A.A...G...T.A.A.C.C.....C.....G.....TT.....A...  
.....AC.TTT.G.....A...A.....C.....C...C...  
TC.G.....AT...A...A.....G...T...G...T...TGTC...G...A.G...T...  
.GA.....T.T.....A.....A...C...T.....CC...  
...C.....T...T.....A.....C.....  
...T.....T.....T.....C.....  
.....G...C.T.T.....C.G.....C.....T.A.....G...  
.....T.A.A.

Hap\_87

.....TT.A.....GC.....C.....A.C.....  
.....C.....C.G...T.....T.G.....A  
.....A...G.....C.....A.....  
.....G.....G.C.....C.....  
C.....T.....A.....T.....G.....C.....  
T.....A.T.....CT.....T.....  
C.....TC.....T...  
...TC...T.C.CA.....T...G.....G...AC...TT...C...C...C.A  
A.C.....G.G.....G.....T...A.....C.GT  
...T.....ATG.G...T...T.G.....G...CC.AA.C.....CT.....  
.....G.....T...T.....  
.....G...G.....A...A...C...G...A.....  
.....A.....A.....T...A...  
...A...G...T...ACC.....C.....A.....T.....  
.....C.....T.....A.TG.....T.....A...C...  
.....T...A.....A.G...T...T.C...C.....A.G...  
.GA...T...T...C.T.....A.....C...T.....TTC...A  
T.C.....T.....T.....T.....T...G...  
...T...T.A.....T.....T.A.G.....T...A...  
.....G...C.....C...C...C...G.GT.A.....GT.CT...  
.....A...C...

Hap\_88

.....T.A.....C.....A...G...A.C.....  
.....C.....C.G...T.....A  
.....A...G.....C.....  
...G.....G.C.....  
T...G.....A...C...G...G...C.G...  
C.....C.....G.....  
.....CA.....T...T.....T...G.....  
.C.....T.G...  
.....C...G...CT...  
T.....A...G...T...

.....T.....G.....  
.....G.....T.A.ATC.....A.....  
.....C.....T..G.....A...T...GG.....A..G..T..  
.....C.....GG.....G..T..  
.GA.....C...T.T.....C.....T.....A.....C..T.....C.....  
.....T.....T.....A...T.....C.....  
...TG.T.....C..T.....T..A.T.....  
...T.....G.....A.T.....C.....G.....A.....  
.....G..A..A.

Hap\_89

.....T..A.....C.....A.....G...A.C.....  
.....C.....C.G...T.....A  
.....A.T..  
...A...G.....C.....  
...G.....G.C.....  
.....A.....C...G...G.....C.G.....  
T...G.....A.....T..C.....  
C.....C.....G.....  
.....CA.....T..T.....T.....G.....  
.C.....T.G.....  
G.....C.....G.....G.....CT.....  
T.....A.....G.....T.....  
.....T.....G.....  
.....G.....T.A.ATC.....A.....  
.....T..G.....A...T.....A.....  
.....C.....GG.....G..T..  
.GA.....C...T.T.....C.....T.....A.....C..T.....C.....  
.....T.....T.....A...T.....C.....  
...TG.T.....C..T.....T..A.T.....  
...T.....G.....A.T.....C.....G.....A.....  
.....G..A..A.

Hap\_90

.....A.GA.....C..T.....C...A...A.A...T.CTT.....  
.....G.....T.....C...T.....A  
.....T.....A.....  
...A...G..T.....C.....A.....  
.....T.....C.....G.C.....C.....  
A.....A.....G.....G.....A...T.....G.....C.....  
.....G.....C.C.....  
C.....C.....T.....C.....  
.....C.CAC.T.....T.....C.....T.G.T.G.....T.....  
...T.....TC.CG...C.....G.....CG.....CT.....  
T.....C.....G.....  
.....A.....C..C.....G.....  
.....T.....  
.T.....G.....T..GA.C.....TC.....CA.....  
..AA...C...TCC.....T..G.....T..G.....T.....  
...T.....T..A.C..A.....A.....A.G.T.C.TG...T.....G...T  
.GA.....C.T.T.....A.....A.....C..T.....C.....  
.....T.....T.....A...T.....  
.....GA.....T.....C.....  
...C.....G...C.T.T.....C.....C.....  
.....T..A...A.

Hap\_91

```
.....T.A.....G.C.....T.....TG....A.C.....
.....C.....T.....A
.....G.....A.....
...A...G.....C...G.....
.....G.C.....
.....C.A.....G.....A.....G.....G.C.G.....G...
T.....C.....T.....T.....
C.....C.....C.....
.....CA.....T.T.....
.....T.....CT.....T.....
.....T.....A.C.....G.....
T.....G.A.G.....G.....
.....A.....G.....
.....A.....T.....
.....G...T...A.C.....
.....T...G.....A.C.....T.....A.....
..GA.....C...T.T...C.....A.....A...C.T.....CTT...
..C.....T.....T.....A.....
..TG.....CTG.T.....T.A.T.....C.....
..A.....C.....G.TT.A.T.....
.....T..A.
```

Hap\_92

```
.....T.A.....G.C.....T.....TG....A.C.....
.....C.....T.....A
.....G.....A.....
...A...G.....C...G.....
.....G.C.....
.....C.A.....G.....A.....G.....G.C.G.....G...
T.....C.....T.....
C.....C.....C.....
.....CA.....T.T.....
.....T.....CT.....T.....
.....T.....C.....G.....
T.....G.A.G.....G.....
.....A.....G.....
.....A.....T.....
.....G...T...A.C.....
.....T...G.....A.C.....T.....A.....
..GA.....C...T.T...C.....A.....A...C.T.....CTT...
..C.....T.....T.....A.....
..TG.....CTG.T.....T.A.T.....C.....
..A.....C.....G.TT.A.T.....A..
.....T..A.
```

Hap\_93

```
.....T.A.....G.C.....T.....TG....A.C.....
.....C.....T.....A
.....G.....A.....
...A...G.....C...G.....
.....C.....
.....C.A.....G.....A.....G.....G.C.G.....G...
T.....C.....T.....
C.....C.....C.....
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```

.....CA.....T.T.....
.....T.....C.....CTT.....
T.....G.A.G.....G.....
.....A.....G.....
.....A.....T.....
.....G...T..A.C.....
.....T..G.....A.C.....T...T...C...G...
.GA.....C...T.T...C.....A...C..T.....CTT...
..C.....T.....T...A.....T.A.T.....C.....
..TG.....CTG.T.....T.A.T.....C.....
..A.....C.....G.TT.A.T.....
.....T..A.

```

Hap\_94

```

.....T.A.....G.C.....T.....TG...A.C.....
.....C...T.....A
.....G.....A.....
...A..G.....G.C...G.....
.....G.C.....
.....C.A.....G.....A.....G.....G.C.G...G...
T.....C.....T.....
C.....C.....C.....
.....CA.....T.T.....
.....T.....CTT.....
T.....C.....G.A.G.....G.....
.....A.....G.....
.....A.....T.....
.....G...T..A.C.....
.....T..G.....A.C.....T...T...C...G...
.GA.....C...T.T...C.....A...C..T.....CTT...
..C.....T.....T...A.....T.A.T.....C.....
..TG.....CTG.T.....T.A.T.....C.....
..A.....C.....G.TT.A.T.....
.....T..A.

```

Hap\_95

```

.....T.A.....G.C.....T.....TG...A.C.....
.....C...T.....A
.....G.....A.....
...A..G.....C...G.....
.....G.C.....
.....C.A.....G.....A.....G.....G.C.G...G...
T.....C.....T.....
C.....C.....C.....
.....CA.....T.T.....
.....T.....CTT.....
T.....C.....G.A.G.....G.....
.....A.....G.....
.....A.....T.....
.....G...T..A.C.....
.....T..G.....A.C.....T...T...C...G...
.GA.....C...T.T...C.....A...C..T.....CTT...

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```

...C.....T.....T.....A.....
...TG.....CTG.T.....T.A.T.....C.....
...A.....C.....G.TT.A.T.....
.....T..A.

```

Hap\_96

```

.....T.A.....G.C.....T.....TG....A.C.....
.....C.....T.....A
.....A.....G.....A.....
...A..G.....C.....G.....
.....C.A.....G.C.....G.C.G.....G...
T.....C.....T.....
C.....C.....C.....
.....CA.....T.T.....
.....T.....CT.....
T.....G.A..G.....G.....
.....A.....G.....
.....A.....T.....
.....G...T..A.C.....
.....T..G.....A.C.....T.....A.....
.....T...C...G.....
.GA....C...T.T...C.....A...C.T.....CTT...
...C.....T.....T.....A.....
...TG.....CTG.T.....T.A.T.....C.....
...A.....C.....G.TT.A.T.....
.....T..A.

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Hap\_97

```

.....T.TA.....C.....A.C.....
.....G.....C.....T.....A.....
.....T.....
.....G.....C.....
.....C..G.....G..C.....T.....
.....A.....G.....C.....
.....A.....T.....
C.....C.....G.....C.....
.....C.....C.....CT..GG.....
T.....A..T.....G.....G.....
.....T.....T.....
.....G...T..ATC..A.....A..T.T.....T.....
...A.....A.....T.T.....T.....
...G.....T..G.....A.....G.....
.GG....T..T.T.....G.....A..C..T.....TT..A
...C.....T.....T.....A.....T.....
...TG.....T..TTC.....T.A.T.....
.....TT.....
.....A.

```

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END;

```

BEGIN DnaSP;

```
Genome= Haploid;  
VariationType= Haplotypes;  
DnaSPversion= Ver. 5.10.01;  
END;
```