| Homeodomain family – no indexing, $c_4$=20 | | | | | |
|---|---|---|---|---|---|
| Residue pair | | Relation | Fitness | nr matching | $C_\alpha - C_\alpha$ distance |
| 5 | 55 | (R,K)(R,R) | 66.94 | 253 | 15.8442 |
| 5 | 20 | (R,F)(R,Y) | 66.94 | 253 | 17.6961 |
| 5 | 50 | (R,Q)(R,S) | 66.90 | 250 | 12.1319 |
| 5 | 9 | (R,S)(R,T) | 66.80 | 240 | 12.5048 |
| 5 | 26 | (R,I)(R,L)(R,P)(R,V) | 66.77 | 252 | 17.7227 |
| 5 | 44 | (R,Q)(R,R)(R,V) | 66.77 | 245 | 6.3931 |
| 19 | 30 | (A,E)(A,T)(E,A)(E,K)(E,R)(K,E)(R,E)(Y,D) | 66.76 | 236 | 9.9505 |
| 5 | 34 | (R,F)(R,I)(R,L)(R,M)(R,V) | 66.70 | 252 | 16.4617 |
| 5 | 13 | (R,I)(R,L)(R,R)(R,T)(R,V) | 66.69 | 251 | 13.0901 |
| 44 | 46 | (Q,K)(R,Q) | 66.68 | 241 | 5.4951 |
| 5 | 52 | (Q,R)(R,A)(R,H)(R,K)(R,R) | 66.57 | 255 | 12.9870 |
| 35 | 44 | (A,Q)(S,Q) | 66.53 | 227 | 8.7301 |
| 26 | 44 | (I,Q)(L,Q)(P,R)(V,Q) | 66.52 | 241 | 12.3360 |
| 17 | 44 | (E,Q)(K,Q) | 66.51 | 225 | 13.9895 |
| 8 | 44 | (F,Q)(F,R)(F,T)(I,V)(Y,Q) | 66.51 | 252 | 9.3475 |
| 25 | 35 | (Y,A)(Y,S) | 66.49 | 245 | 14.9835 |
| 17 | 25 | (E,Y)(K,Y) | 66.47 | 243 | 12.3441 |
| 25 | 44 | (F,Q)(K,V)(Y,Q)(Y,R) | 66.44 | 251 | 14.3718 |
| 8 | 50 | (F,K)(F,Q)(F,S)(I,Q)(Y,Q) | 66.44 | 258 | 15.4328 |
| 26 | 46 | (I,K)(L,K)(P,Q)(V,K) | 66.43 | 253 | 7.5491 |
| 43 | 50 | (A,Q)(A,S)(E,K)(K,Q)(N,Q)(Q,Q)(R,Q)(S,Q)(T,Q)(V,Q) | 66.42 | 259 | 10.6959 |
| 10 | 25 | (A,K)(A,Y)(D,Y)(G,T)(G,Y)(H,N)(K,F)(K,Y)(N,Y)(P,Y)(Q,Y)(R,Y)(S,Y)(T,H)(T,Y)(Y,Y) | 66.41 | 259 | 21.5455 |
| 8 | 52 | (F,A)(F,H)(F,K)(F,R)(I,R)(Y,R) | 66.40 | 257 | 13.8194 |
| 10 | 31 | (A,R)(D,K)(D,R)(G,R)(H,L)(H,R)(K,R)(N,R)(P,R)(Q,R)(R,A)(R,R)(S,R)(T,R)(Y,R) | 66.36 | 259 | 18.8482 |
| 30 | 31 | (A,R)(D,L)(D,R)(E,R)(I,R)(K,R)(R,A)(R,K)(R,R)(T,R)(V,R) | 66.36 | 258 | 3.7984 |
| 6 | 15 | (A,E)(C,E)(I,E)(K,E)(P,L)(Q,E)(T,A)(T,E)(T,Q)(T,R)(T,S)(T,T)(V,E) | 66.35 | 250 | 15.7858 |
| 27 | 50 | (A,Q)(C,Q)(D,K)(D,Q)(D,S)(N,Q)(S,Q)(T,Q)(V,Q) | 66.35 | 258 | 12.5517 |
| 25 | 26 | (Y,I)(Y,L)(Y,P)(Y,V) | 66.34 | 245 | 3.7508 |
| 19 | 26 | (A,P)(E,I)(E,L)(E,P)(E,V)(K,L)(R,L) | 66.33 | 234 | 9.3049 |
| 11 | 50 | (A,Q)(D,Q)(E,K)(E,Q)(E,S)(F,Q)(H,Q)(K,Q)(L,Q)(P,Q)(Q,Q)(S,Q)(T,Q)(Y,Q) | 66.32 | 255 | 19.5769 |

Table 1: Homeodomain results.

| Homeodomain family – no indexing, $c_4$=40 | | | | | |
|---|---|---|---|---|---|
| Residue pair | | Relation | Fitness | nr matching | $C_\alpha - C_\alpha$ distance |
| 5 | 55 | (R,K)(R,R) | 66.79 | 253 | 15.8442 |
| 5 | 20 | (R,F)(R,Y) | 66.79 | 253 | 17.6961 |
| 5 | 40 | (R,L)(R,M) | 66.77 | 252 | 10.7653 |
| 5 | 50 | (R,Q)(R,S) | 66.75 | 250 | 12.1319 |
| 5 | 46 | (R,K)(R,Q) | 66.71 | 246 | 10.5123 |
| 5 | 47 | (R,I)(R,V) | 66.70 | 245 | 7.7964 |
| 5 | 25 | (R,F)(R,Y) | 66.70 | 245 | 18.8902 |
| 5 | 9 | (R,S)(R,T) | 66.64 | 240 | 12.5048 |
| 5 | 44 | (R,Q)(R,R) | 66.62 | 238 | 6.3931 |
| 5 | 52 | (R,H)(R,K)(R,R) | 66.60 | 250 | 12.9870 |
| 44 | 46 | (Q,K)(R,Q) | 66.52 | 241 | 5.4951 |
| 5 | 26 | (R,I)(R,L)(R,P) | 66.50 | 241 | 17.7227 |
| 5 | 38 | (R,I)(R,L)(R,T) | 66.48 | 239 | 15.1652 |
| 5 | 42 | (R,D)(R,E) | 66.46 | 223 | 11.6426 |
| 19 | 30 | (E,K)(E,R)(K,E)(R,E) | 66.44 | 215 | 9.9505 |
| 35 | 42 | (A,E)(S,E) | 66.38 | 204 | 5.2777 |
| 35 | 44 | (A,Q)(S,Q) | 66.38 | 227 | 8.7301 |
| 5 | 34 | (R,F)(R,I)(R,L)(R,V) | 66.36 | 242 | 16.4617 |
| 17 | 44 | (E,Q)(K,Q) | 66.36 | 225 | 13.9895 |
| 5 | 13 | (R,I)(R,L)(R,T)(R,V) | 66.35 | 241 | 13.0901 |
| 25 | 55 | (Y,K)(Y,R) | 66.35 | 246 | 14.1596 |
| 28 | 33 | (A,H)(I,E)(R,E) | 66.34 | 168 | 8.7099 |
| 25 | 35 | (Y,A)(Y,S) | 66.34 | 245 | 14.9835 |
| 30 | 43 | (E,T)(R,R) | 66.33 | 174 | 12.5098 |
| 8 | 25 | (F,Y)(I,K)(Y,Y) | 66.33 | 250 | 19.4160 |
| 19 | 23 | (E,N)(E,S)(K,K)(R,Q) | 66.33 | 191 | 6.3544 |
| 5 | 6 | (R,C)(R,Q)(R,T)(R,V) | 66.33 | 239 | 3.7948 |
| 15 | 35 | (E,A)(E,S) | 66.32 | 173 | 11.5289 |
| 17 | 25 | (E,Y)(K,Y) | 66.32 | 243 | 12.3441 |

Table 2: Homeodomain results.

| Homeodomain family – charge indexing, $c_4$=10 | | | | | |
|---|---|---|---|---|---|
| Residue pair | | Relation | Fitness | nr matching | $C_\alpha - C_\alpha$ distance |
| 19 | 30 | (+,-)(-,+) | 66.85 | 216 | 9.9505 |
| 5 | 14 | (+,-)(+,0) | 66.84 | 237 | 16.8666 |
| 5 | 21 | (+,+)(+,0) | 66.76 | 230 | 21.0682 |
| 19 | 21 | (+,+)(-,+)(-,0)(0,-) | 66.73 | 227 | 5.3150 |
| 18 | 19 | (+,+)(+,-)(0,-) | 66.73 | 218 | 3.8292 |
| 5 | 15 | (+,+)(+,-)(+,0)(0,-) | 66.71 | 261 | 17.0564 |
| 5 | 29 | (+,+)(+,0) | 66.69 | 223 | 21.0879 |
| 5 | 19 | (+,+)(+,-)(+,0)(0,-) | 66.63 | 258 | 18.7310 |
| 15 | 19 | (+,-)(-,-) | 66.62 | 173 | 6.2041 |
| 15 | 42 | (+,-)(-,-)(-,0)(0,-) | 66.59 | 245 | 14.5383 |
| 15 | 36 | (-,+)(-,0) | 66.52 | 171 | 12.8666 |
| 33 | 53 | (+,+)(-,+)(-,0)(0,+) | 66.45 | 263 | 20.1476 |
| 15 | 21 | (-,+)(-,0) | 66.44 | 165 | 9.9140 |
| 21 | 46 | (+,+)(-,0)(0,+) | 66.38 | 233 | 15.0632 |
| 17 | 28 | (+,-)(-,+)(-,0) | 66.37 | 250 | 17.8003 |
| 30 | 32 | (+,0)(-,0)(0,-) | 66.36 | 219 | 5.2728 |
| 19 | 32 | (+,0)(-,0)(0,-) | 66.35 | 212 | 13.3369 |
| 32 | 46 | (-,0)(0,+) | 66.34 | 219 | 10.1260 |
| 17 | 19 | (+,-)(-,+)(-,-)(-,0) | 66.30 | 251 | 5.4314 |
| 15 | 17 | (+,+)(-,-)(0,-) | 66.30 | 237 | 5.5268 |
| 33 | 46 | (-,+)(0,+) | 66.26 | 211 | 12.4000 |
| 15 | 31 | (+,+)(-,+)(-,0)(0,+) | 66.26 | 261 | 12.7194 |
| 30 | 46 | (+,+)(-,+)(0,0) | 66.20 | 251 | 10.5773 |
| 21 | 30 | (+,+)(+,-)(-,0)(0,+) | 66.20 | 228 | 14.1344 |
| 19 | 43 | (+,0)(-,+) | 66.17 | 181 | 16.0506 |
| 5 | 43 | (+,+)(+,0)(0,+) | 66.17 | 260 | 9.1047 |
| 15 | 46 | (+,+)(-,+) | 66.15 | 200 | 14.1782 |
| 33 | 43 | (-,+)(-,0) | 66.15 | 174 | 12.6019 |
| 15 | 30 | (+,+)(-,+)(-,-)(0,-) | 66.14 | 229 | 13.1669 |
| 5 | 9 | (+,+)(+,0) | 66.13 | 254 | 12.5048 |

Table 3: Homeodomain results.

| Homeodomain family – charge indexing, $c_4$=20 | | | | | |
|---|---|---|---|---|---|
| Residue pair | | Relation | Fitness | nr matching | $C_\alpha - C_\alpha$ distance |
| 19 | 30 | (+,-)(-,+) | 66.78 | 216 | 9.9505 |
| 5 | 14 | (+,-)(+,0) | 66.76 | 237 | 16.8666 |
| 5 | 21 | (+,+)(+,0) | 66.69 | 230 | 21.0682 |
| 18 | 19 | (+,+)(+,-)(0,-) | 66.62 | 218 | 3.8292 |
| 5 | 29 | (+,+)(+,0) | 66.61 | 223 | 21.0879 |
| 19 | 21 | (+,+)(-,+)(-,0) | 66.61 | 209 | 5.3150 |
| 5 | 15 | (+,+)(+,-)(+,0)(0,-) | 66.56 | 261 | 17.0564 |
| 15 | 19 | (+,-)(-,-) | 66.54 | 173 | 6.2041 |
| 5 | 19 | (+,+)(+,-)(+,0)(0,-) | 66.48 | 258 | 18.7310 |
| 15 | 36 | (-,+)(-,0) | 66.45 | 171 | 12.8666 |
| 15 | 42 | (+,-)(-,-)(-,0)(0,-) | 66.44 | 245 | 14.5383 |
| 15 | 21 | (-,+)(-,0) | 66.37 | 165 | 9.9140 |
| 36 | 46 | (+,+)(0,+) | 66.30 | 223 | 13.7321 |
| 33 | 53 | (+,+)(-,+)(-,0)(0,+) | 66.30 | 263 | 20.1476 |
| 21 | 46 | (+,+)(-,0)(0,+) | 66.26 | 233 | 15.0632 |
| 32 | 46 | (-,0)(0,+) | 66.26 | 219 | 10.1260 |
| 17 | 28 | (+,-)(-,+)(-,0) | 66.26 | 250 | 17.8003 |
| 30 | 32 | (+,0)(-,0)(0,-) | 66.25 | 219 | 5.2728 |
| 19 | 32 | (+,0)(-,0)(0,-) | 66.24 | 212 | 13.3369 |
| 33 | 46 | (-,+)(0,+) | 66.18 | 211 | 12.4000 |
| 15 | 17 | (+,+)(-,-)(0,-) | 66.18 | 237 | 5.5268 |
| 17 | 19 | (+,-)(-,+)(-,-)(-,0) | 66.15 | 251 | 5.4314 |
| 15 | 31 | (+,+)(-,+)(-,0)(0,+) | 66.11 | 261 | 12.7194 |
| 19 | 43 | (+,0)(-,+) | 66.10 | 181 | 16.0506 |
| 30 | 46 | (+,+)(-,+)(0,0) | 66.09 | 251 | 10.5773 |
| 15 | 46 | (+,+)(-,+) | 66.08 | 200 | 14.1782 |
| 33 | 43 | (-,+)(-,0) | 66.07 | 174 | 12.6019 |
| 5 | 9 | (+,+)(+,0) | 66.06 | 254 | 12.5048 |
| 5 | 44 | (+,+)(+,0) | 66.06 | 254 | 6.3931 |
| 5 | 27 | (+,-)(+,0) | 66.06 | 254 | 20.1212 |

Table 4: Homeodomain results.

| Homeodomain family – charge indexing, $c_4$=40 | | | | | |
|---|---|---|---|---|---|
| Residue pair | | Relation | Fitness | nr matching | $C_\alpha - C_\alpha$ distance |
| 19 | 30 | (+,-)(-,+) | 66.63 | 216 | 9.9505 |
| 5 | 14 | (+,-)(+,0) | 66.61 | 237 | 16.8666 |
| 5 | 21 | (+,+)(+,0) | 66.53 | 230 | 21.0682 |
| 5 | 29 | (+,+)(+,0) | 66.46 | 223 | 21.0879 |
| 4 | 19 | (+,-)(0,-) | 66.40 | 174 | 22.0984 |
| 18 | 19 | (+,+)(+,-)(0,-) | 66.39 | 218 | 3.8292 |
| 19 | 21 | (-,+)(-,0) | 66.39 | 173 | 5.3150 |
| 15 | 19 | (+,-)(-,-) | 66.39 | 173 | 6.2041 |
| 19 | 33 | (-,-)(-,0) | 66.37 | 172 | 11.7833 |
| 19 | 24 | (-,+)(-,0) | 66.37 | 172 | 7.4520 |
| 15 | 36 | (-,+)(-,0) | 66.29 | 171 | 12.8666 |
| 15 | 24 | (-,+)(-,0) | 66.28 | 170 | 12.8937 |
| 5 | 15 | (+,+)(+,-)(+,0)(0,-) | 66.25 | 261 | 17.0564 |
| 14 | 46 | (-,0)(0,+) | 66.25 | 234 | 15.8798 |
| 15 | 21 | (-,+)(-,0) | 66.21 | 165 | 9.9140 |
| 5 | 19 | (+,+)(+,-)(+,0)(0,-) | 66.17 | 258 | 18.7310 |
| 36 | 46 | (+,+)(0,+) | 66.15 | 223 | 13.7321 |
| 15 | 42 | (+,-)(-,-)(-,0)(0,-) | 66.13 | 245 | 14.5383 |
| 32 | 46 | (-,0)(0,+) | 66.11 | 219 | 10.1260 |
| 21 | 46 | (+,+)(0,+) | 66.10 | 218 | 15.0632 |
| 33 | 46 | (-,+)(0,+) | 66.03 | 211 | 12.4000 |
| 17 | 28 | (+,-)(-,+)(-,0) | 66.03 | 250 | 17.8003 |
| 30 | 32 | (+,0)(-,0)(0,-) | 66.02 | 219 | 5.2728 |
| 19 | 32 | (+,0)(-,0)(0,-) | 66.01 | 212 | 13.3369 |
| 33 | 53 | (+,+)(-,+)(-,0)(0,+) | 65.99 | 263 | 20.1476 |
| 15 | 17 | (+,+)(-,-)(0,-) | 65.95 | 237 | 5.5268 |
| 19 | 43 | (+,0)(-,+) | 65.94 | 181 | 16.0506 |
| 15 | 46 | (+,+)(-,+) | 65.93 | 200 | 14.1782 |
| 33 | 43 | (-,+)(-,0) | 65.92 | 174 | 12.6019 |
| 5 | 9 | (+,+)(+,0) | 65.91 | 254 | 12.5048 |

Table 5: Homeodomain results.