SUPPLEMENTARY MATERIALS

to the article V.G. Levitsky, T.Yu. Vatolina, V.V. Raditsa
"Linking hierarchical classification of transcription factors to their binding motif variability"

Table S1. List of TF that break down human TFs by the similarity of TFBS motifs according to the hierarchical classification of the TFClass database

The analysis included TF from the seven large classes: Basic leucine zipper factors (bZIP) {1.1}, Basic helix-loop-helix factors (bHLH) {1.2}, Nuclear receptors with C4 zinc fingers {2.1}, C2H2 zinc finger factors {2.3}, Homeo domain factors {3.1}, Fork head / winged helix factors {3.3} and Tryptophan cluster factors {3.5}. The column "Branch" shows the branch identifier, which includes the numerical designation of the highest (parent) level of the hierarchy, in which the branch is located completely or partially, as well as letters in the alphabetical order A, B, C,..., Z, AA, AB, etc. mark different branches belonging to the one such parent level. The column «List of classes/families/subfamilies/TFs» contains a list of specific classification units united by a branch; the list consists the units of a classification level one step lower than that of the parent level. The similarity column displays the value of the TF similarity metric Q2 based on binding site motifs for a branch. For branches consisting of two or more TFs, calculations are performed using the formulas (2) and (4). For branches consisting of one TF with two or more motifs → according to the formula (3). The symbol «#» means that the branch has one TF with one motif of binding sites, so similarity calculations were not made.

Branch	List of classes/families/subfamilies/TFs	Similarity
{1.1} A	Jun-related {1.1.1}, Fos-related {1.1.2}, B-ATF-related {1.1.4}	4.631
{1.1} B	Maf-related {1.1.3}	9.157
{1.1} C	XBP1-related {1.1.5}, CREB-related {1.1.7}	4.105
{1.1} D	ATF4-related {1.1.6}, C/EBP-related {1.1.8}	4.719
{1.2} A	E2A {1.2.1}	3.823
{1.2} B	MyoD-ASC-related {1.2.2}	3.964
{1.2} C	Tal-related {1.2.3}	3.126
{1.2} D	Hairy-related {1.2.4}	4.086
{1.2} E	bHLH-ZIP {1.2.6}	3.22
{1.2.5} A	PAS-AHR {1.2.5.1}	3.763
{1.2.5} B	PAS-ARNT {1.2.5.2}	3.281
{1.2.5} C	NPAS4 {1.2.5.4}	#
{1.2.5} D	SOHLH {1.2.5.5}	#
{2.1} A	Thyroid hormone receptor-related {2.1.2}	3.401
{2.1} B	RXR-related receptors {2.1.3}, NGFI (NR4A) {2.1.4}, FTZF1-related (NR5A) {2.1.5}, GCNF (NR6) {2.1.6}	4.441
{2.1.1} A	GR-like (NR3C) {2.1.1.1}	6.409
{2.1.1} B	ER-like (NR3A) {2.1.1.2}	3.593
{2.3} A	Three-zinc finger Kruppel-related {2.3.1}	3.343
{2.3.3} A	GLI-lile {2.3.3.1}	3.71
{2.3.3} B	Snail-like {2.3.3.2}	3.935
{2.3.3} C	ZNF280-like {2.3.3.4}	#
{2.3.3} D	ZNF705 {2.3.3.7}, ZNF595-like {2.3.3.77}	3.292
{2.3.3} E	ZBTB7 {2.3.3.8}	3.533
{2.3.3} F	YY1-like {2.3.3.9}	6.016
{2.3.3} G	PRDM1-like {2.3.3.12}	7.046
{2.3.3} H	ZNF148-like {2.3.3.13}	6.165
{2.3.3} I	ZBTB20-like {2.3.3.14}	3.175
{2.3.3} J	ZNF524-like {2.3.3.15}	#
{2.3.3} K	ZNF238-like {2.3.3.16}	10.561
{2.3.3} L	OVOL {2.3.3.17}	4.136
{2.3.3} M	ZNF500-like {2.3.3.19}	4.174
{2.3.3} N	FEZF {2.3.3.20}	#
{2.3.3} O	GFI1 {2.3.3.21}	7.493
{2.3.3} P	BCL6 {2.3.3.22}, ZNF76-like {2.3.3.28}	4.617
{2.3.3} Q	ZNF3-like {2.3.3.34}	#
{2.3.3} R	ZNF324 {2.3.3.36}	#
{2.3.3} S	ZNF362-like {2.3.3.37}	3.003
{2.3.3} T	ZNF282-like {2.3.3.38}	#
{2.3.3} U	ZNF764-like {2.3.3.39}	#
{2.3.3} V	ZNF736-like {2.3.3.48}	#

Table S1 (continued)

Branch	List of classes/families/subfamilies/TFs	Similarity
{2.3.3} W	CTCF-like {2.3.3.50}	7.533
{2.3.3} X	ZNF322-like {2.3.3.52}	#
{2.3.3} Y	ZNF146-like {2.3.3.55}	13.67
{2.3.3} Z	ZNF479-like {2.3.3.57}	5.144
{2.3.3} AA	ZNF98-like {2.3.3.60}	#
{2.3.3} AB	ZNF354A-like {2.3.3.64}	#
{2.3.3} AC	ZFX-ZFY {2.3.3.65}	#
{2.3.3} AD	ZNF26-like {2.3.3.70}	3.741
{2.3.3} AE	ZNF300-like {2.3.3.71}	#
{2.3.3} AF	ZNF816A-like {2.3.3.73}	6.564
{2.3.3} AG	ZNF665-like {2.3.3.76}	#
{2.3.3} AH	ZNF841-like {2.3.3.79}	#
{2.3.3} AI	ZNF12-like {2.3.3.81}	6.936
{2.3.2.1}A	ZBT22 {2.3.2.1.6}	#
{2.3.2.1}B	ZBT37 {2.3.2.1.9}	#
{2.3.2.1}C	ZBT43 {2.3.2.1.10}	#
{2.3.2.1}D	KAISO {2.3.2.1.12}	7.887
{2.3.2.3}A	ZSCA1 {2.3.2.3.1}	#
{2.3.2.3}B	ZN174 {2.3.2.3.2}	#
{2.3.2.4}A	ZN580 {2.3.2.4.3}	8.223
{2.3.2.4}B	ZN740 {2.3.2.4.5}	2.887
{2.3.2.4}C	OSR1 {2.3.2.4.7}	#
{2.3.3.0}B	ZBT14 {2.3.3.0.1}	4.073
{2.3.3.0}B	ZN274 {2.3.3.0.6}	4.075
{2.3.3.0}C	OSR2 {2.3.3.0.9}, ZN547 {2.3.3.0.97}, ZN502 {2.3.3.0.175}	3.004
{2.3.3.0}D	ZN713 {2.3.3.0.14}	#
{2.3.3.0}E	ZSC16 {2.3.3.0.15}	#
{2.3.3.0}F	ZN793 {2.3.3.0.16}, ZN749 {2.3.3.0.217}	3.643
{2.3.3.0}G	ZFP41 {2.3.3.0.17}	#
{2.3.3.0}H	ZNF18 {2.3.3.0.20}	#
{2.3.3.0}I	WT1 {2.3.3.0.21}, ZN263 {2.3.3.0.79}, ZN681 {2.3.3.0.200}, ZN444 {2.3.3.0.24}	3.351
{2.3.3.0}J	PRDM6 {2.3.3.0.23}	#
{2.3.3.0}K	ZBT44 {2.3.3.0.28}, ZN483 {2.3.3.0.101}	3.176
{2.3.3.0}L	ZN165 {2.3.3.0.32}	#
{2.3.3.0}M	PRD14 {2.3.3.0.35}	#
{2.3.3.0}N	ZBT49 {2.3.3.0.38}, ZN586 {2.3.3.0.115}	4.069
{2.3.3.0}O	ZN394 {2.3.3.0.40}	#
{2.3.3.0}P	ZN449 {2.3.3.0.41}, ZN331 {2.3.3.0.142}	3.06
{2.3.3.0}Q	ZSC21 {2.3.3.0.47}	#
{2.3.3.0}R	ZN707 {2.3.3.0.51}, ZN789 {2.3.3.0.61}	3.285
{2.3.3.0}S	MYNN {2.3.3.0.54}	#
{2.3.3.0}T	ZBT24 {2.3.3.0.55}	#
{2.3.3.0}U	ZN205 {2.3.3.0.58}	#
{2.3.3.0}V	ZN662 {2.3.3.0.62}	#
{2.3.3.0}W	ZN554 {2.3.3.0.63}, ZN682 {2.3.3.0.109}	3.136
{2.3.3.0}X	ZN506 {2.3.3.0.64}	#
{2.3.3.0}Y	ZN584 {2.3.3.0.67}	5.047
{2.3.3.0}Z	ZN684 {2.3.3.0.68}	6.398
{2.3.3.0}AA	ZSC22 {2.3.3.0.70}, ZNF10 {2.3.3.0.118}	3.218
{2.3.3.0}AB	ZN550 {2.3.3.0.71}	#
{2.3.3.0}AC	ZFP1 {2.3.3.0.72}	#
{2.3.3.0}AD	ZBT16 {2.3.3.0.74}	#
{2.3.3.0}AE	ZF64B {2.3.3.0.76}	5.419
{2.3.3.0}AF	ZKSC8 {2.3.3.0.81}, ZN664 {2.3.3.0.84}	3.634
{2.3.3.0}AG	ZN239 {2.3.3.0.83}	#

Table S1 (continued)

Branch	List of classes/families/subfamilies/TFs	Similarity
{2.3.3.0}AH	ZN610 {2.3.3.0.89}, ZNF16 {2.3.3.0.204}	3.731
{2.3.3.0}AI	ZN660 {2.3.3.0.91}	#
{2.3.3.0}AJ	ZN768 {2.3.3.0.95}	2.531
{2.3.3.0}AK	ZN766 {2.3.3.0.98}	6.323
{2.3.3.0}AL	ZN677 {2.3.3.0.99}	#
{2.3.3.0}AM	ZNF35 {2.3.3.0.100}	2.377
{2.3.3.0}AN	TZAP {2.3.3.0.102}	#
{2.3.3.0}AO	ZIM3 {2.3.3.0.104}, ZN527 {2.3.3.0.144}	4.802
{2.3.3.0}AP	ZN141 {2.3.3.0.110}	#
{2.3.3.0}AQ	ZN121 {2.3.3.0.112}	#
{2.3.3.0}AR	ZN485 {2.3.3.0.113}	#
{2.3.3.0}AS	ZNF79 {2.3.3.0.122}, ZN528 {2.3.3.0.189}	3.324
{2.3.3.0}AT	ZBT40 {2.3.3.0.123}	#
{2.3.3.0}AU	ZN454 {2.3.3.0.125}	1.645
{2.3.3.0}AV	ZN154 {2.3.3.0.126}	#
{2.3.3.0}AW	ZN416 {2.3.3.0.127}	#
{2.3.3.0}AX	ZNF34 {2.3.3.0.130}	#
{2.3.3.0}AY	ZNF74 {2.3.3.0.132}	#
{2.3.3.0}AZ	ZN480 {2.3.3.0.134}	5.596
{2.3.3.0}BA	ZN578 {2.3.3.0.135}	#
{2.3.3.0}BB	ZN320 {2.3.3.0.136}	5.637
{2.3.3.0}BC	ZN626 {2.3.3.0.137}	#
{2.3.3.0}BD	ZN257 {2.3.3.0.139}	#
{2.3.3.0}BE	ZN680 {2.3.3.0.140}	#
{2.3.3.0}BF	ZN529 {2.3.3.0.145}	#
{2.3.3.0}BG	ZN565 {2.3.3.0.146}	#
{2.3.3.0}BH	ZN329 {2.3.3.0.148}	7.327
{2.3.3.0}BI	ZFP90 {2.3.3.0.149}	9.635
{2.3.3.0}BJ	ZN317 {2.3.3.0.150}	1.234
{2.3.3.0}BK	MZF1 {2.3.3.0.152}	#
{2.3.3.0}BL	ZN530 {2.3.3.0.153}	#
{2.3.3.0}BM	ZN273 {2.3.3.0.155}	#
{2.3.3.0}BN	ZN879 {2.3.3.0.157}	#
{2.3.3.0}BO	ZN790 {2.3.3.0.158}	8.948
{2.3.3.0}BP	ZN250 {2.3.3.0.160}	0.07
{2.3.3.0}BQ	ZN623 {2.3.3.0.161}, ZN189 {2.3.3.0.197}	8.07
{2.3.3.0}BR	ZFP3 {2.3.3.0.162}	#
{2.3.3.0}BS	ZN266 {2.3.3.0.165}	#
{2.3.3.0}BT	ZN714 {2.3.3.0.170}	#
{2.3.3.0}BU	ZN880 {2.3.3.0.173}	#
{2.3.3.0}BV	ZN560 {2.3.3.0.177}	#
{2.3.3.0}BW	ZN667 {2.3.3.0.179}	10.852
{2.3.3.0}BX	ZN549 {2.3.3.0.180}	#
{2.3.3.0}BY	ZN708 {2.3.3.0.181}	7.127
{2.3.3.0}BZ	ZN254 {2.3.3.0.182}	#
{2.3.3.0}CA	ZNF90 {2.3.3.0.184}	#
{2.3.3.0}CB	ZN267 {2.3.3.0.186}	#
{2.3.3.0}CC	ZNF7 {2.3.3.0.190}, ZN184 {2.3.3.0.220}	8.102
{2.3.3.0}CD	ZFP28 {2.3.3.0.192}	#
{2.3.3.0}CE	PRDM5 {2.3.3.0.195}	6.375
{2.3.3.0}CF	ZNF85 {2.3.3.0.198}	16.339
{2.3.3.0}CG	ZN135 {2.3.3.0.202}	#
{2.3.3.0}CH	ZN534 {2.3.3.0.207}	9.464
{2.3.3.0}CI	ZN791 {2.3.3.0.209}	#

Table S1 (continued)

Branch	List of classes/families/subfamilies/TFs	Similarity
{2.3.3.0}CJ	ZNF23 {2.3.3.0.210}	#
{2.3.3.0}CK	ZN429 {2.3.3.0.214}	#
{2.3.3.0}CL	ZN425 {2.3.3.0.218}	#
{2.3.3.0}CM	ZN441 {2.3.3.0.221}	1.82
{2.3.3.0}CN	ZN433 {2.3.3.0.224}	21.139
{2.3.3.0}CO	ZN337 {2.3.3.0.225}	#
{2.3.3.0}CP	ZN197 {2.3.3.0.228}	#
{2.3.3.3}A	ZFP91 {2.3.3.3.1}	#
{2.3.3.3}B	ZN692 {2.3.3.3.2}	#
{2.3.3.3}C	ZN276 {2.3.3.3.3}	#
{2.3.3.5}A	ZSA5A {2.3.3.5.1}	#
{2.3.3.5}B	ZSA5C {2.3.3.5.3}	#
{2.3.3.5}C	ZSCA4 {2.3.3.5.5}	#
{2.3.3.6}A	ZN75A {2.3.3.6.1}, ZN75D {2.3.3.6.3}	3.446
{2.3.3.6}B	ZN213 {2.3.3.6.4}	#
{2.3.3.10}A	ZNF24 {2.3.3.10.1}	#
{2.3.3.10}B	ZSC23 {2.3.3.10.3}	#
{2.3.3.10}C	GLI4 {2.3.3.10.4}	#
{2.3.3.10}D	ZKSC1 {2.3.3.10.6}	#
{2.3.3.10}E	ZSC31 {2.3.3.10.7}	8.294
{2.3.3.11}A	ZBTB6 {2.3.3.11.1}	#
{2.3.3.11}B	ZBT26 {2.3.3.11.2}	2.411
{2.3.3.11}C	ZBT12 {2.3.3.11.3}	#
{2.3.3.24}A	MTF1 {2.3.3.24.1}	#
{2.3.3.24}B	ZN410 {2.3.3.24.2}	#
{2.3.3.27}A	ZN701 {2.3.3.27.2}	2.979
{2.3.3.27}B	ZN765 {2.3.3.27.3}	#
{2.3.3.27}C	ZN468 {2.3.3.27.4}	#
{2.3.3.30}A	ZN350 {2.3.3.30.1}	#
{2.3.3.30}B	ZN577 {2.3.3.30.2}	#
{2.3.3.30}C	ZN649 {2.3.3.30.3}	#
{2.3.3.30}D	ZN613 {2.3.3.30.4}	#
{2.3.3.30}E	ZN614 {2.3.3.30.5}	#
{2.3.3.31}A	ZFP69 {2.3.3.31.1}, ZF69B {2.3.3.31.2}	7.378
{2.3.3.31}B	ZN570 {2.3.3.31.3}	#
{2.3.3.33}A	ZN669 {2.3.3.33.4}	6.463
{2.3.3.33}B	ZN124 {2.3.3.33.6}	#
{2.3.3.33}C	ZN627 {2.3.3.33.7}	#
{2.3.3.33}D	ZN440 {2.3.3.33.9}	#
{2.3.3.33}E	ZNF77 {2.3.3.33.10}	#
{2.3.3.33}F	ZN490 {2.3.3.33.11}	#
{2.3.3.33}G	ZN563 {2.3.3.33.12}	2.67
{2.3.3.33}H	ZN136 {2.3.3.33.15}	#
{2.3.3.33}I	ZN564 {2.3.3.33.16}	#
{2.3.3.35}A	ZN621 {2.3.3.35.2}	#
{2.3.3.35}B	ZN566 {2.3.3.35.3}	#
{2.3.3.35}C	ZN383 {2.3.3.35.5}	#
{2.3.3.35}D	ZN582 {2.3.3.35.7}	#
{2.3.3.40}A	ZN177 {2.3.3.40.1}	#
{2.3.3.40}B	ZN891 {2.3.3.40.2}	#
{2.3.3.40}C	ZN333 {2.3.3.40.3}	#
{2.3.3.41}A	ZNF32 {2.3.3.41.1}	#
{2.3.3.41}B	ZIK1 {2.3.3.41.2}	#
{2.3.3.43}A	ZN558 {2.3.3.43.1}	#

Table S1 (continued)

Branch	List of classes/families/subfamilies/TFs	Similarity
{2.3.3.43}B	ZN557 {2.3.3.43.2}	#
{2.3.3.44}A	ZN302 {2.3.3.44.1}	#
{2.3.3.44}B	ZNF2 {2.3.3.44.2}	#
{2.3.3.44}C	ZN140 {2.3.3.44.4}	7.248
{2.3.3.45}A	ZN562 {2.3.3.45.1}	#
{2.3.3.45}B	ZN561 {2.3.3.45.3}	#
{2.3.3.47}A	ZN222 {2.3.3.47.1}	#
{2.3.3.47}B	ZN223 {2.3.3.47.2}	#
{2.3.3.47}C	ZN224 {2.3.3.47.6}	#
{2.3.3.47}D	ZN284 {2.3.3.47.8}	#
{2.3.3.53}A	ZN548 {2.3.3.53.1}	#
{2.3.3.53}B	ZN776 {2.3.3.53.2}	#
{2.3.3.54}A	ZN460 {2.3.3.54.1}	#
{2.3.3.54}B	ZN264 {2.3.3.54.2}	#
{2.3.3.54}C	ZN805 {2.3.3.54.3}, ZN543 {2.3.3.54.4}	3.376
{2.3.3.56}A	ZN214 {2.3.3.56.1}	#
{2.3.3.56}B	ZN285 {2.3.3.56.2}	#
{2.3.3.58}A	ZN180 {2.3.3.58.1}	#
{2.3.3.58}B	ZN436 {2.3.3.58.3}	#
{2.3.3.59}A	ZN100 {2.3.3.59.1}, ZN430 {2.3.3.59.2}	6.535
{2.3.3.59}B	ZN431 {2.3.3.59.3}	#
{2.3.3.59}C	ZN730 {2.3.3.59.4}	#
{2.3.3.59}D	ZN675 {2.3.3.59.6}	#
{2.3.3.61}A	ZN343 {2.3.3.61.1}	#
{2.3.3.61}B	ZN875 {2.3.3.61.2}	#
{2.3.3.61}C	ZN133 {2.3.3.61.4}	#
{2.3.3.63}A	ZFP82 {2.3.3.63.2}	#
{2.3.3.63}B	ZFP14 {2.3.3.63.3}	#
{2.3.3.67}A	ZN283 {2.3.3.67.1}	#
{2.3.3.67}B	ZN540 {2.3.3.67.4}	#
{2.3.3.67}C	ZNF30 {2.3.3.67.6}	#
{2.3.3.67}D	ZN573 {2.3.3.67.8}	#
{2.3.3.67}E	Z780A {2.3.3.67.11}	#
{2.3.3.68}A	ZNF81 {2.3.3.68.1}	#
{2.3.3.68}B	ZNF41 {2.3.3.68.3}	3.559
{2.3.3.68}C	ZN484 {2.3.3.68.4}	#
{2.3.3.68}D	Z585B {2.3.3.68.5}	#
{2.3.3.68}E	Z585A {2.3.3.68.6}	#
{2.3.3.69}A	ZN157 {2.3.3.69.2}	#
{2.3.3.69}B	ZFP37 {2.3.3.69.3}	#
{2.3.3.69}C	ZN567 {2.3.3.69.4}	#
{2.3.3.69}D	ZN782 {2.3.3.69.5}	#
{2.3.3.69}E	ZN33B {2.3.3.69.7}	#
{2.3.3.72}A	ZN860 {2.3.3.72.2}	#
{2.3.3.72}B	ZN611 {2.3.3.72.3}	1.67
{2.3.3.74}A	ZN823 {2.3.3.74.2}, ZNF44 {2.3.3.74.3}	3.86
{2.3.3.74}B	ZN799 {2.3.3.74.4}	#
{2.3.3.74}C	ZN443 {2.3.3.74.5}	#
{2.3.3.75}A	ZN432 {2.3.3.75.1}	#
{2.3.3.75}B	ZN615 {2.3.3.75.2}	#
{2.3.4} A	SAL-like {2.3.4.3}	3.443
{2.3.4} B	ZBTB1-like {2.3.4.6}	#
{2.3.4} C	MAZ-like {2.3.4.8}	5.02
{2.3.4} D	ZNF423-like {2.3.4.12}, EVI1-like {2.3.4.14}	4.613

Table S1 (continued)

Branch	List of classes/families/subfamilies/TFs	Similarity
{2.3.4} E	ZNF639-like {2.3.4.13}	#
{2.3.4} F	BCL11 {2.3.4.15}	#
{2.3.4} G	HINFP-like {2.3.4.21}	3.076
{2.3.4} H	ZNF526-like {2.3.4.22}	#
{2.3.4} I	ZNF134-like {2.3.4.24}	8.647
{2.3.4.0}A	ZN335 {2.3.4.0.2}	4.712
{2.3.4.0}A	PRD13 {2.3.4.0.12}	#
{2.3.4.0}A	ZN770 {2.3.4.0.26}	5.178
{2.3.4.0}A	REST {2.3.4.0.27}	#
{2.3.4.0}A	ZFP57 {2.3.4.0.28}	#
{2.3.4.0}A	ZNF8 {2.3.4.0.29}	2.084
{2.3.4.0}A	PRDM4 {2.3.4.0.31}	#
{2.3.4.0}A	PRD15 {2.3.4.0.32}	#
{2.3.4.0}A	ZN341 {2.3.4.0.35}	4.961
{2.3.4.0}A	ZN784 {2.3.4.0.40}	#
{2.3.4.0}A	ZKSC5 {2.3.4.0.42}	#
{2.3.4.0}A	ZN316 {2.3.4.0.43}	#
{2.3.4.0}A	ZN467 {2.3.4.0.45}, ZN132 {2.3.4.0.70}, ZBT17 {2.3.4.0.72}	3.145
{2.3.4.0}A	ZN787 {2.3.4.0.46}	2.543
{2.3.4.0}A	ZN101 {2.3.4.0.51}	#
{2.3.4.0}A	ZN251 {2.3.4.0.52}	#
{2.3.4.0}A	ZN674 {2.3.4.0.57}	#
{2.3.4.0}A	ZN778 {2.3.4.0.63}	0.475
{2.3.4.0}A	ZN112 {2.3.4.0.65}	#
{2.3.4.0}A	ZN519 {2.3.4.0.68}	#
{2.3.4.0}A	ZN304 {2.3.4.0.69}	#
{2.3.4.0}A	PRDM9 {2.3.4.0.71}	#
{2.3.4.0}A	ZN407 {2.3.4.0.73}, E4F1 {2.3.4.0.74}	3.514
{2.3.4.1}A	ZN417 {2.3.4.1.1}, ZN587 {2.3.4.1.2}	5.091
{2.3.4.1}A	ZN418 {2.3.4.1.5}	#
{2.3.4.1}A	ZN211 {2.3.4.1.6}	10.916
{2.3.4.17}A	HIC1 {2.3.4.17.1}	#
{2.3.4.17}A	HIC2 {2.3.4.17.2}	#
{2.3.4.25}A	ZN37A {2.3.4.25.1}	#
{2.3.4.25}A	ZN248 {2.3.4.25.3}	#
{2.3.4.25}A	ZN382 {2.3.4.25.5}	#
{2.3.4.25}A	ZN510 {2.3.4.25.6}	6.576
{2.3.5.0}A	ZBED1 {2.3.5.0.1}	#
{2.3.5.0}A	ZBED5 {2.3.5.0.5}	#
{3.1} A	HOX-related {3.1.1}	3.709
{3.1} B	NK-related {3.1.2}, HD-LIM {3.1.5}	3.336
{3.1} C	TALE-type HD {3.1.4}	3.694
{3.1} D	HD-SINE {3.1.6}	6.083
{3.1} E	HD-PROS {3.1.7}	#
{3.1} F	HD-CUT {3.1.9}	4.566
{3.1.3} A	ALX {3.1.3.1}, DRGX {3.1.3.6}, ISX {3.1.3.12}, MIX {3.1.3.14}, ARGFX {3.1.3.2}, PRRX {3.1.3.21}, UNCX {3.1.3.27}, RAX {3.1.3.22}, ESX {3.1.3.8}, SHOX {3.1.3.25}, VSX {3.1.3.28}, HESX {3.1.3.10}	5.605
{3.1.3} B	DMBX {3.1.3.4}, GSC {3.1.3.9}, PITX {3.1.3.19}, RHOX {3.1.3.23}, OTX {3.1.3.17}, DPRX {3.1.3.5}	5.261
{3.1.3} C	DUX {3.1.3.7}	3.765
{3.1.3.3} A	ARX {3.1.3.3.1}	1.771
{3.1.3.18} A	PHX2A {3.1.3.18.1}	2.364
{3.1.3.18} B	PHX2B {3.1.3.18.2}	2.689
{3.1.3.20} A	PROP1 {3.1.3.20.1}	2.862
{3.1.8} A	ZEB {3.1.8.3}	4.407
{3.1.8} B	ZHX {3.1.8.5}	#

Table S1 (end)

Branch	List of classes/families/subfamilies/TFs	Similarity
{3.1.10} A	POU2 {3.1.10.2}, POU3 {3.1.10.3}, POU5 {3.1.10.5}	5.727
{3.1.10} B	POU4 {3.1.10.4}	7.097
{3.1.10} C	POU6 {3.1.10.6}	3.81
{3.1.10} D	HNF1-like {3.1.10.7}	3.091
{3.1.10.1}	APIT1 {3.1.10.1.1}	1.375
{3.3} A	E2F {3.3.2}	5.726
{3.3} B	RFX {3.3.3}	7.804
{3.3.1} A	FOXA {3.3.1.1}, FOXB {3.3.1.2}, FOXM {3.3.1.13}, FOXC {3.3.1.3}	5.736
{3.3.1} B	FOXF {3.3.1.6}, FOXG {3.3.1.7}, FOXP {3.3.1.16}, FOXK {3.3.1.11}, FOXO {3.3.1.15}	3.823
{3.3.1} C	FOXH {3.3.1.8}	#
{3.3.1} D	FOXI {3.3.1.9}, FOXJ {3.3.1.10}	4.895
{3.3.1} E	FOXR {3.3.1.18}	#
{3.3.1.4} A	FOXD2 {3.3.1.4.2}	1.557
{3.3.1.4} B	FOXD3 {3.3.1.4.3}	2.187
{3.3.1.5} A	FOXE1 {3.3.1.5.1}	2.477
{3.3.1.12} A	FOXL1 {3.3.1.12.1}	#
{3.3.1.12} B	FOXL2 {3.3.1.12.2}	#
{3} A	Tryptophan cluster factors {3.5}	3.68

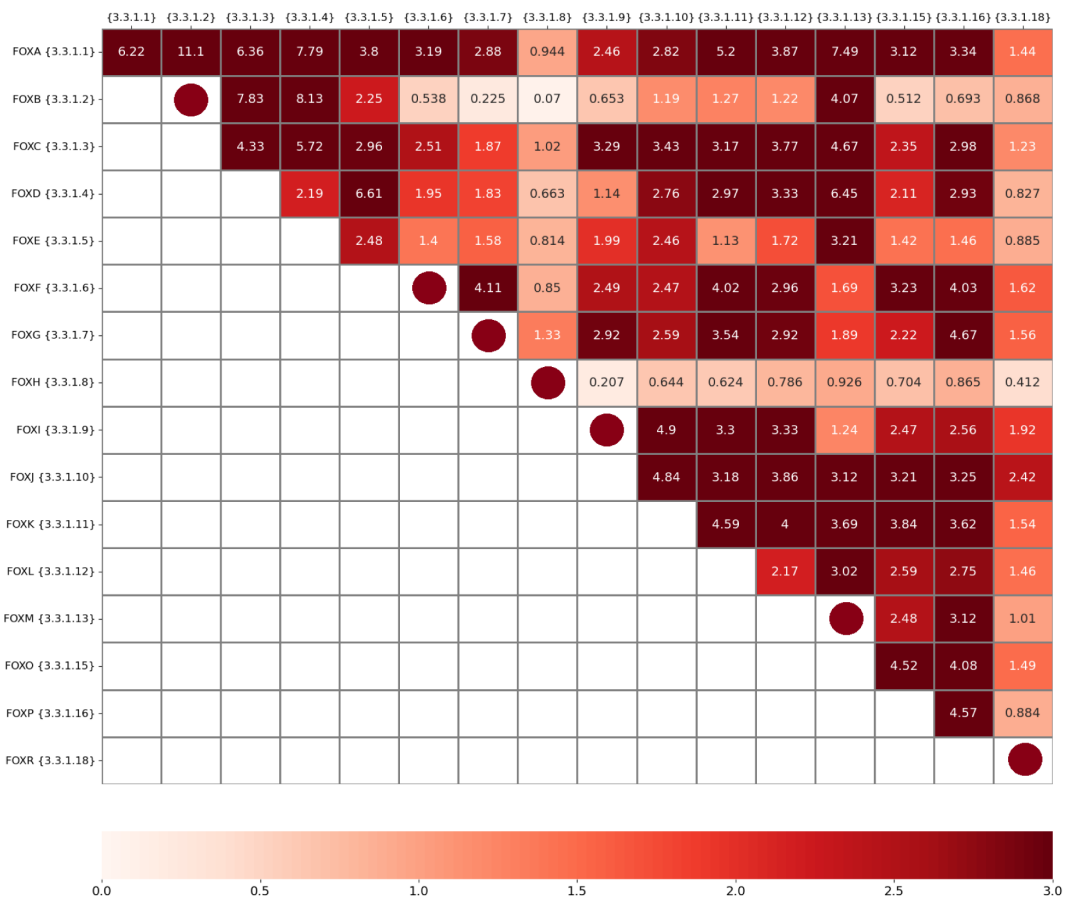

Fig. S1. Heatmap showing the similarity of TFs by TFBS motifs for the family FOX {3.3.1}.

A brown circle on the heatmap diagonal means that the subfamily has only one TF in with one TFBS motif. The color reflects the value of the Q2 similarity metric.

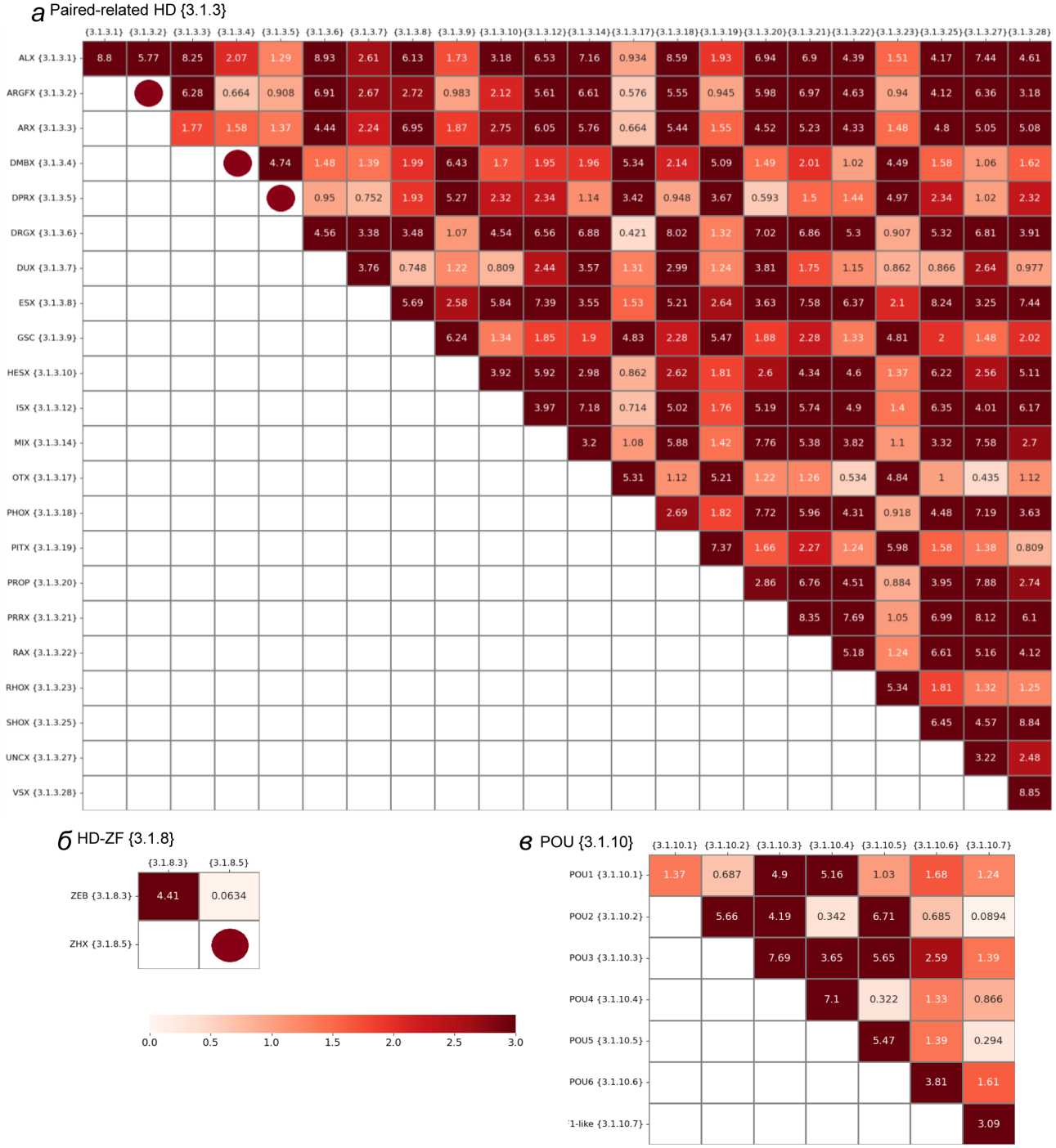

Fig. S2. Heatmap showing the similarity of TFs by TFBS motifs for three families of the Homeo domain factors {3.1} class, each family splitting into two or more branches.

Panels *a*, *b* and *c* represent the Paired-related HD {3.1.3}, HD-ZF {3.1.8} and POU {3.1.10} families.