

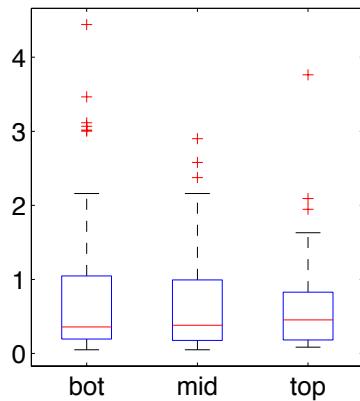
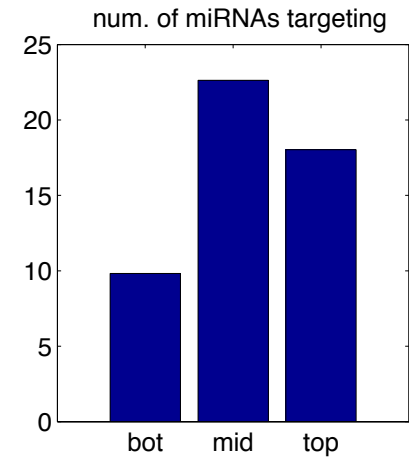
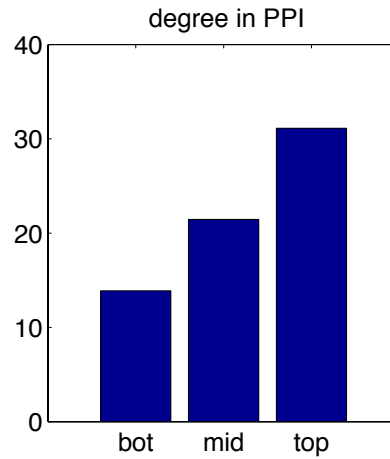
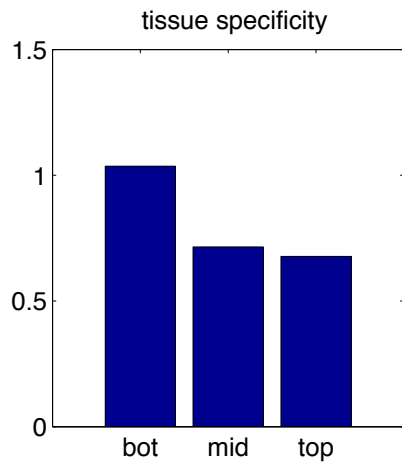
level-level	3->2	3->1	2->1	1->2	1->3	2->3	3->3	2->2	1->1
number of edges	77	81	87	9	8	13	12+8	11+9	19+10

245 forward edges

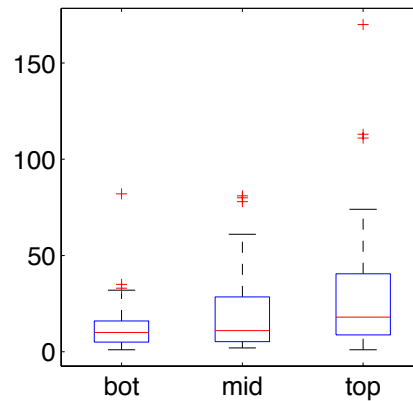
31 forward edges

42+27 auto

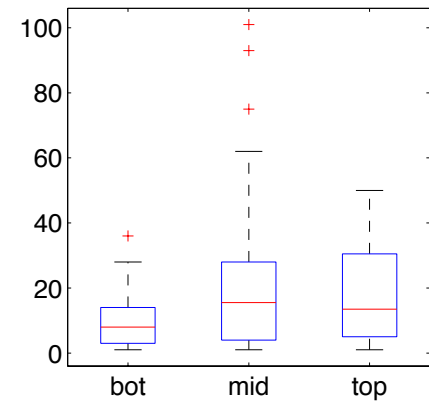
Levels vs TF properties



Not sig

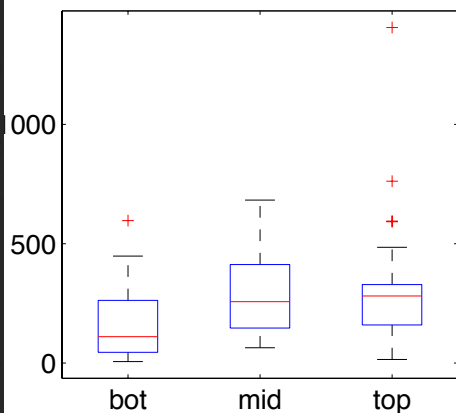
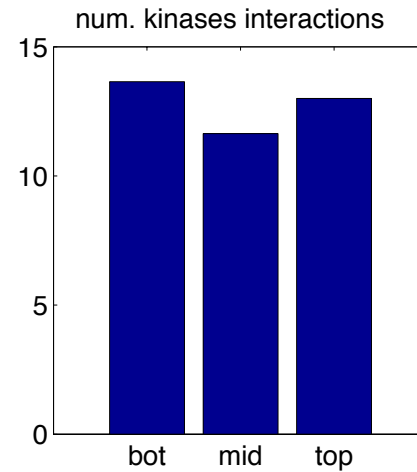
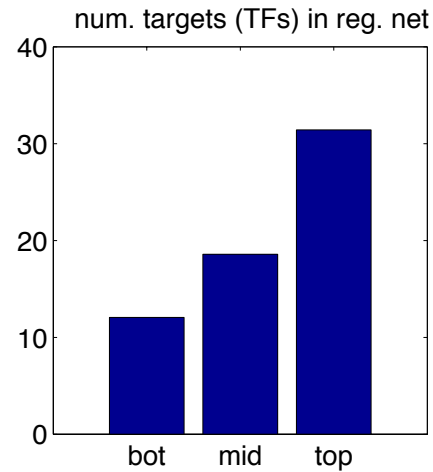
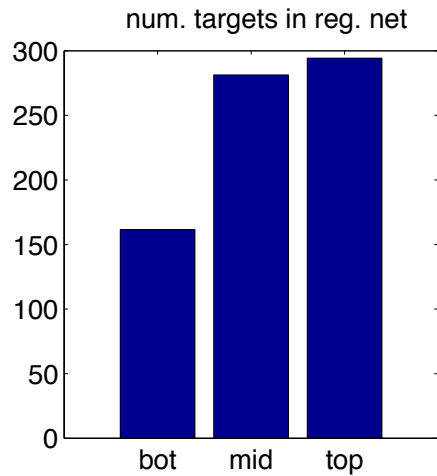


bot vs top sig

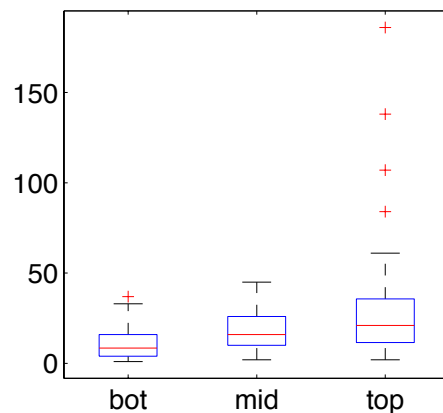


bot vs mid sig
bot vs top sig

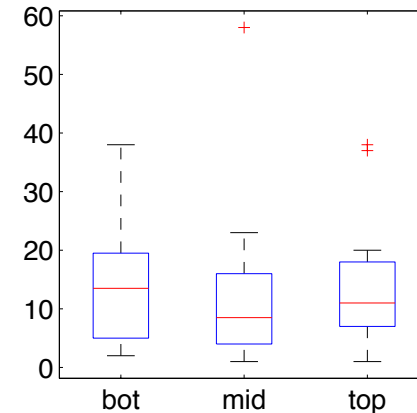
Levels vs TF properties



bot vs mid sig
bot vs top sig



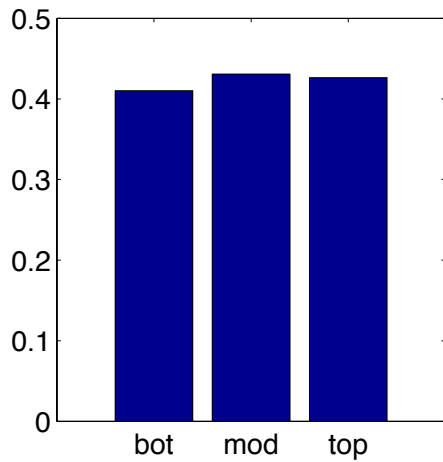
bot vs mid sig
bot vs top sig



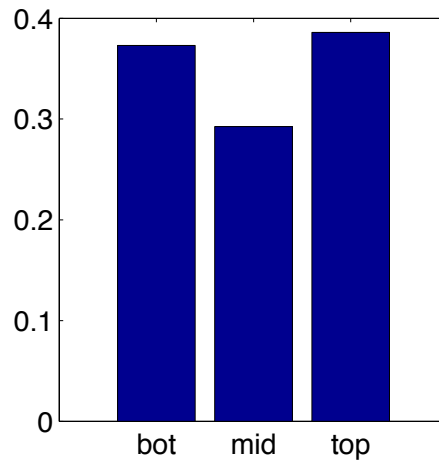
not sig

Levels vs TF properties

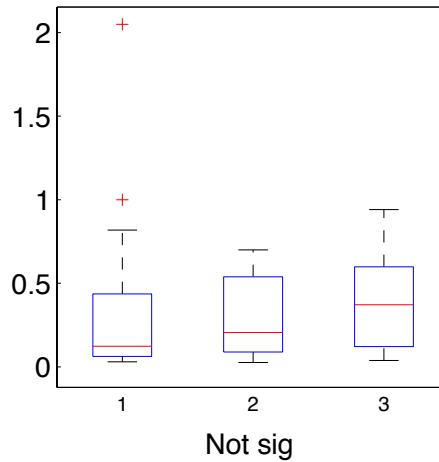
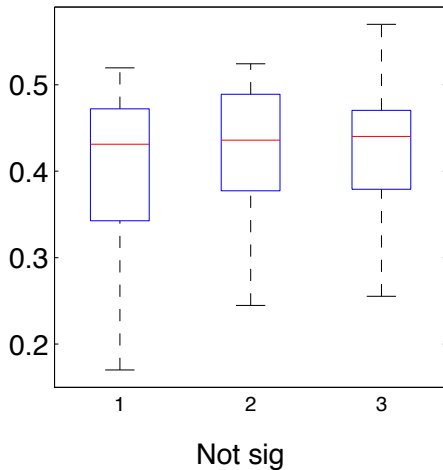
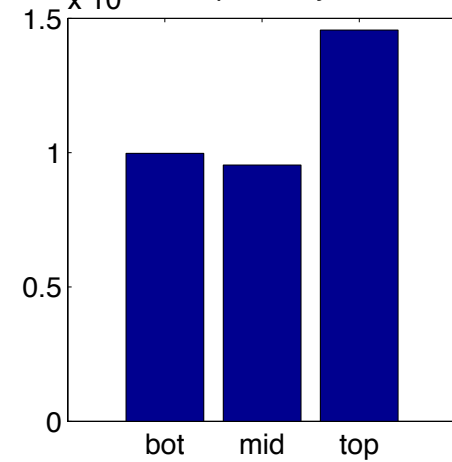
corr. between binding and exp



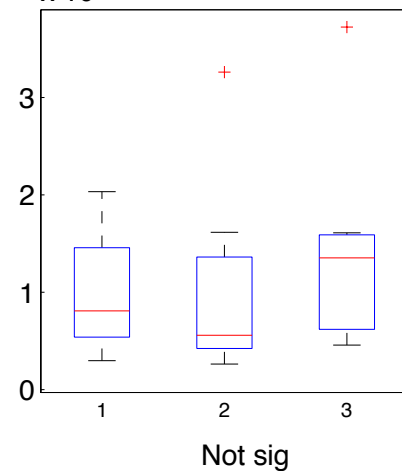
dn/ds



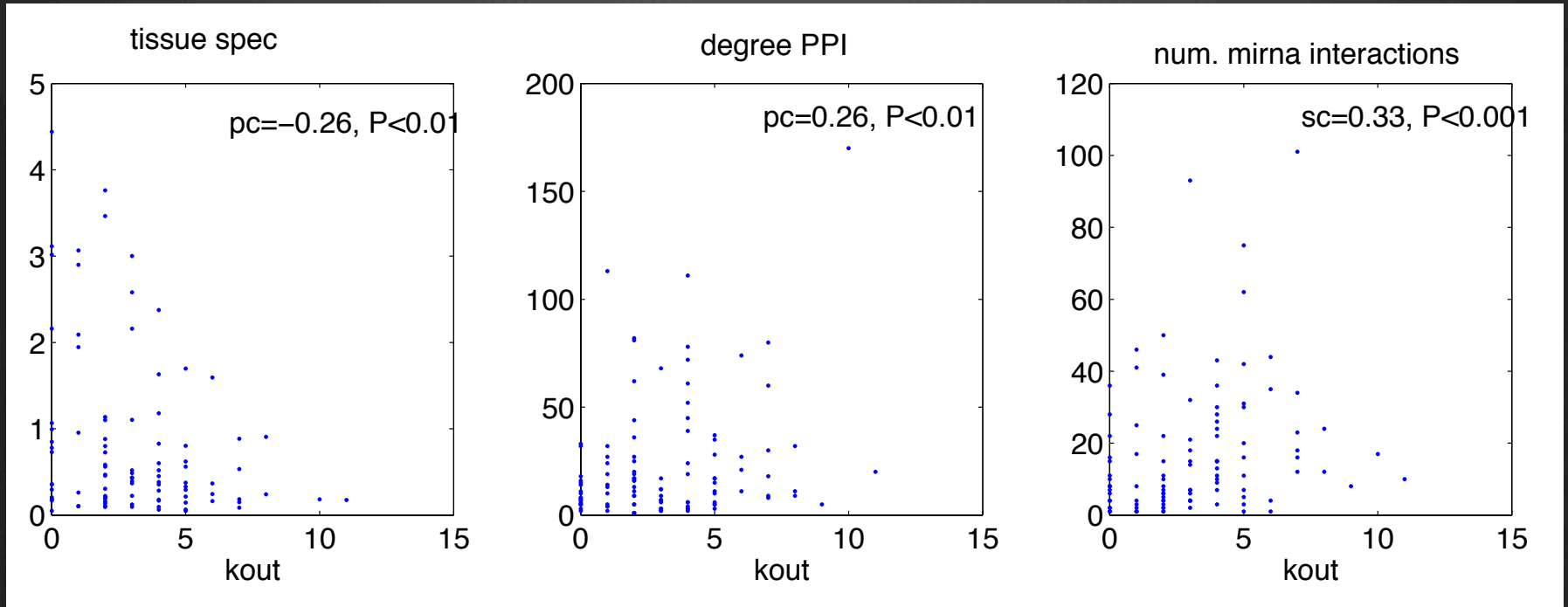
$\times 10^{-3}$ snp density



$\times 10^{-3}$

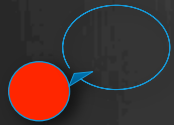


Corr. with out-degree



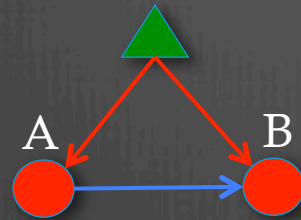
Mapping motifs to the hierarchy

autoregulator

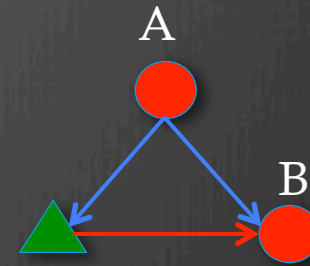


28

Auto-regulation is depleted at the top layer: 6 autoregulator out of 43 TFs (28 out of 119 in the whole system)



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LA->LB	Obs	Exp	P
11	0	3.7	3e-3
12	4	1.5	1e-3
13	0	1.5	0.06
21	15	14.7	0.89
22	2	2.4	0.68
23	2	2.8	0.46
31	17	16.3	0.79
32	14	14.5	0.85
33	5	1.7	1e-4

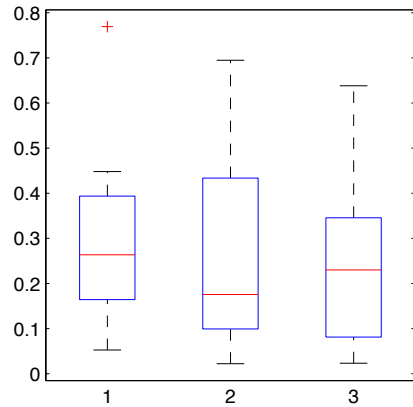
LA->LB	Obs	Exp	P
11	0	1.8	0.04
12	2	0.7	0.03
13	2	0.7	0.03
21	4	7.2	0.08
22	5	1.2	2e-7
23	0	1.4	0.08
31	2	8.0	0.002
32	11	7.1	0.03
33	3	0.8	4e-4

TF binding dynamics

- ⊗ 119 TFs in total 73 cell lines
- ⊗ 75 TFs which have targets in more than 1 cell line
- ⊗ 58 TFs which have targets in at least two of the major cell lines: K562, Gm12878, H1hesc, Helas3, Hepg2
- ⊗ Quantify the dynamics:
 - ⊗ For a given TF with binding profile in n cell types, consider all the $n(n-1)/2$ pairs, and for each pair of cell lines, calculate the ratio between interaction and union of their targets
 - ⊗ Take into account the conservation of non-targets

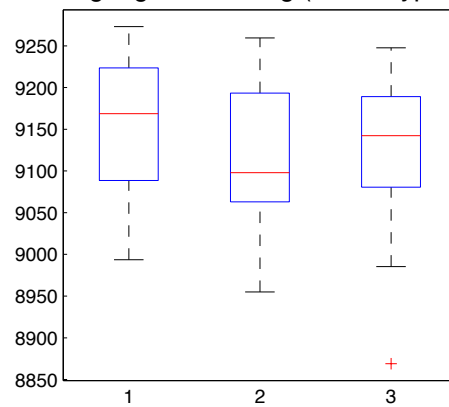
Rewiring vs levels

target gene rewiring (all cell types)



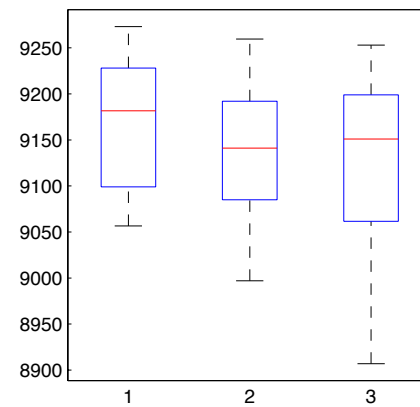
not sig

target gene rewiring (all cell types)



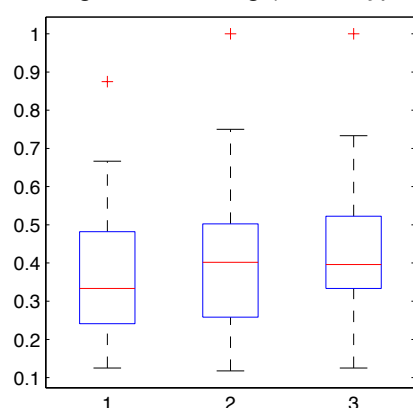
bot vs mid sig

target gene rewiring (5 cell types)



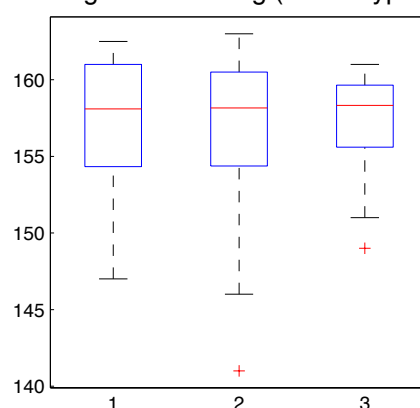
bot vs mid sig
bot vs top sig

target mir rewiring (all cell types)



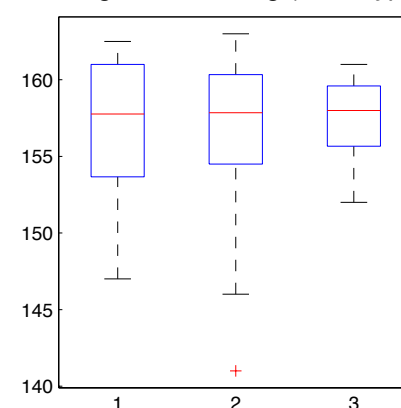
not sig

target mir rewiring (all cell types)



not sig

target mir rewiring (5 cell types)



not sig

Rewiring genes vs mir

