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

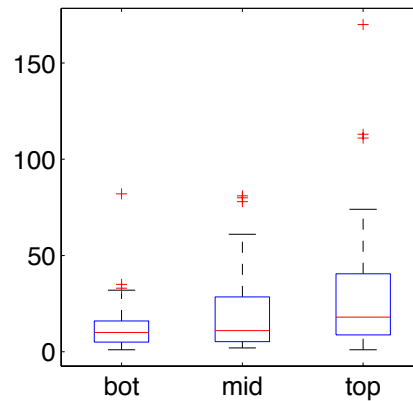245 forward edges   31 forward edges   42+27 auto

Levels vs TF properties
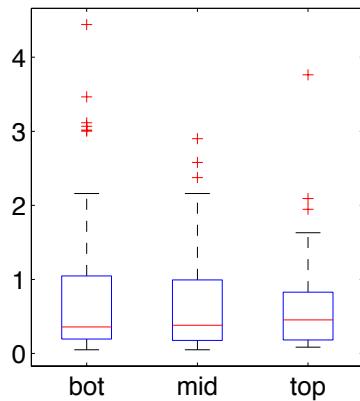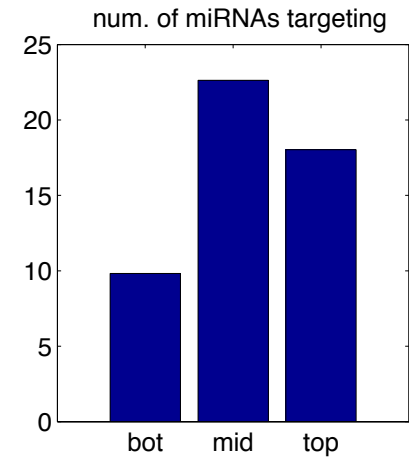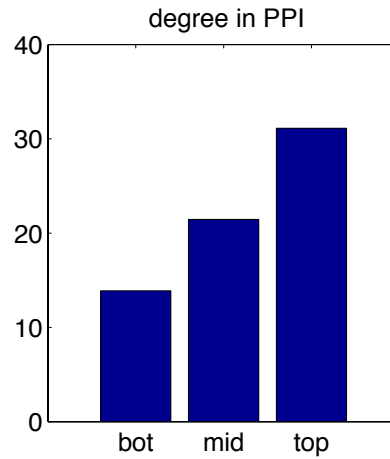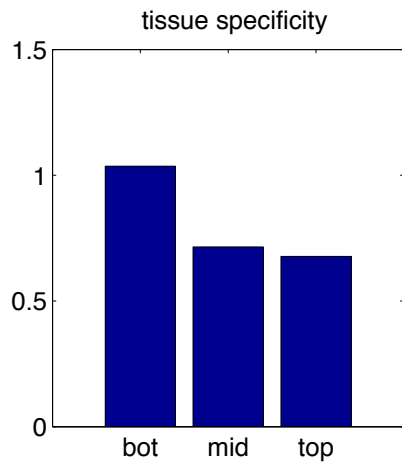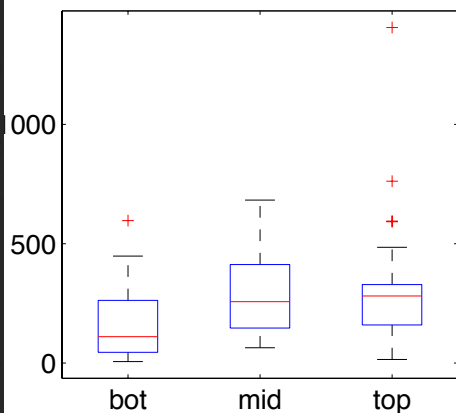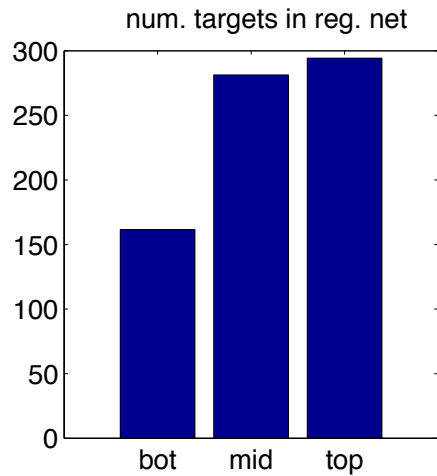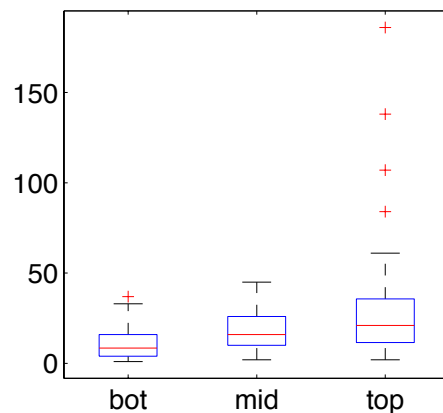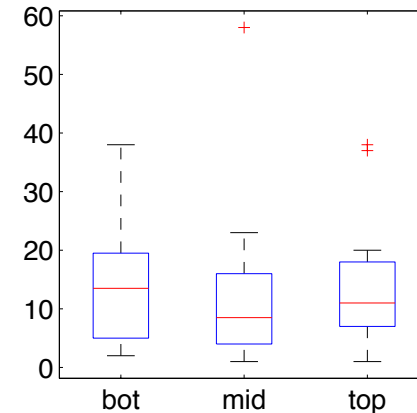
Levels vs TF properties

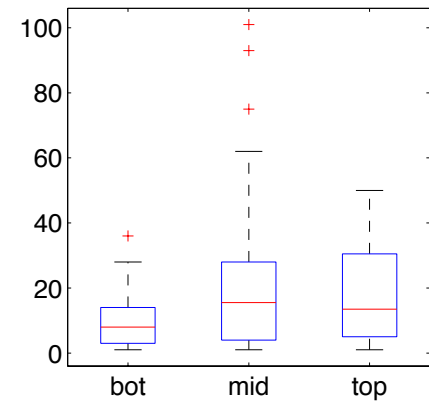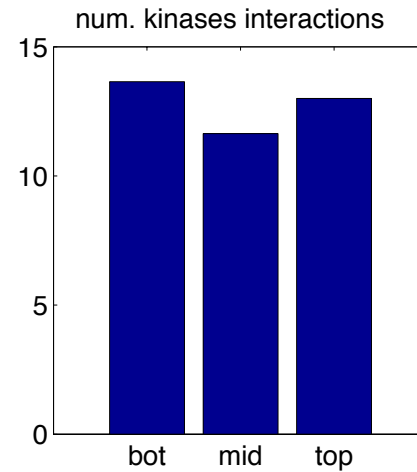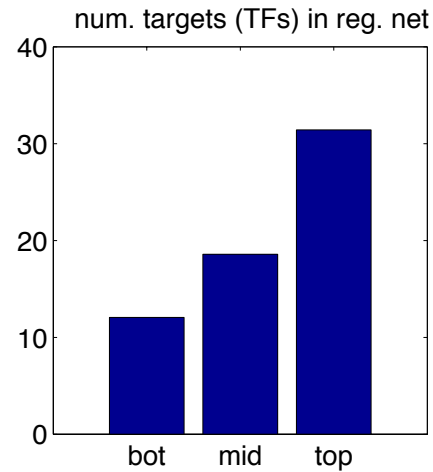# Levels vs TF properties
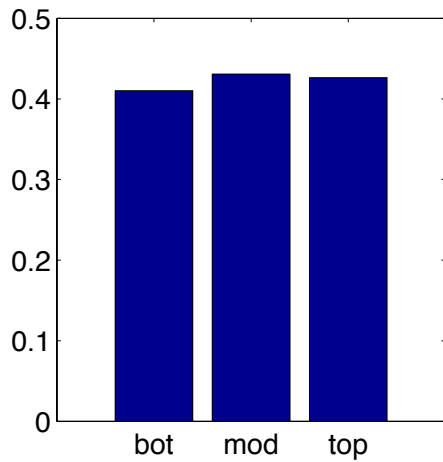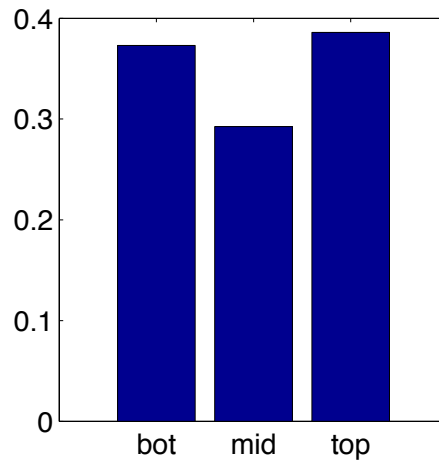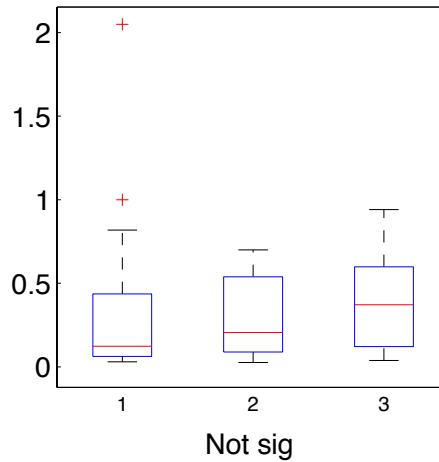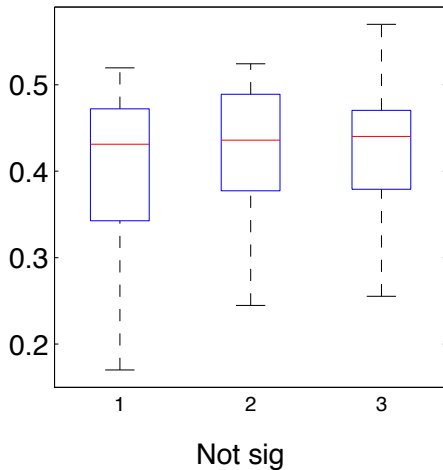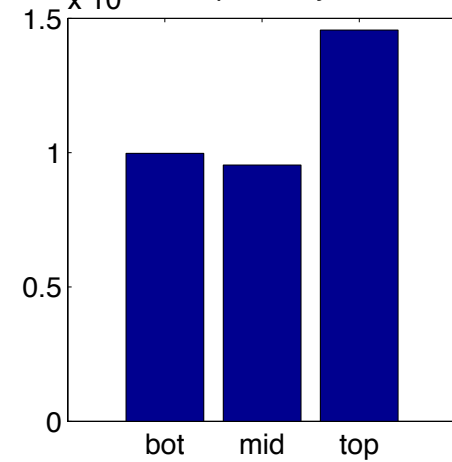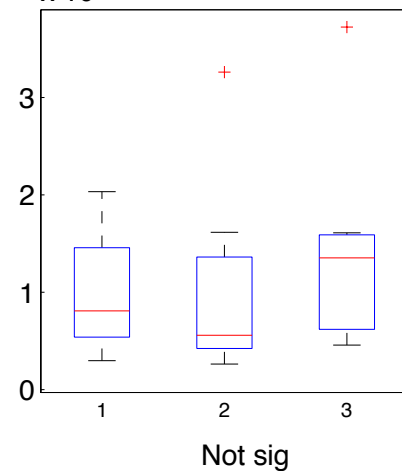
Corr. with out-degree
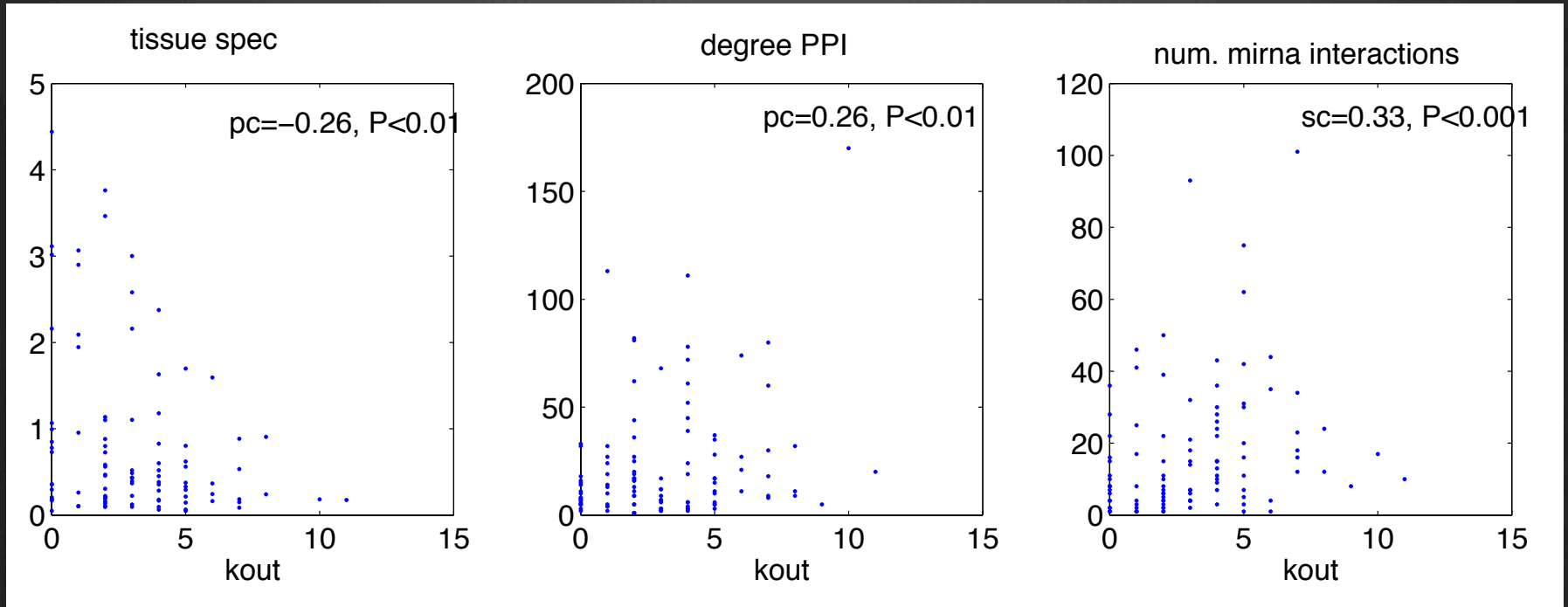
Mapping motifs to the hierarchy

autoregulator

28

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

59

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

29

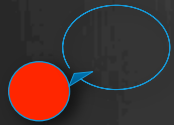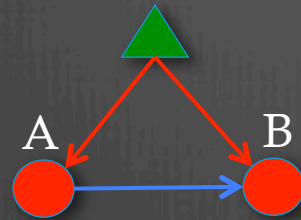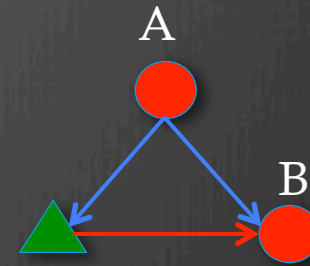| LA->LB	Obs	Exp	P
11	0	1.8	0.04
12	2	0.7	0.03
13	2	0.7	0.03
21	4	7.2	0.08
22	5	1.2	2e-7
23	0	1.4	0.08
31	2	8.0	0.002
32	11	7.1	0.03
33	3	0.8	4e-4

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
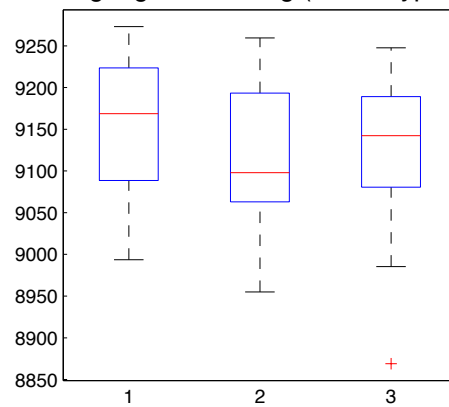 - Take into account the conservation of non-targets
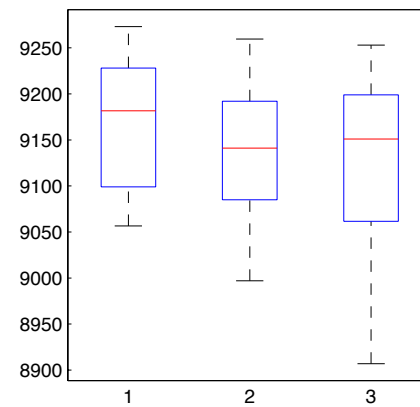
Rewiring vs levels

Rewiring genes vs mir