

# Enriched TFs in K562 feed-forward loops

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# FANMOD: a tool for fast network motif detection

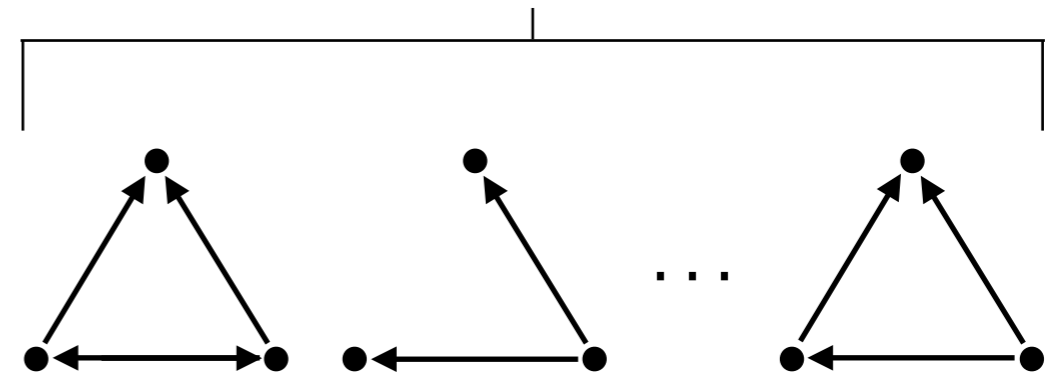
List of edges

TF	gene target
BHLHE40	ADSL
CEBPB	HMBS
CHD1	HIST2H3A

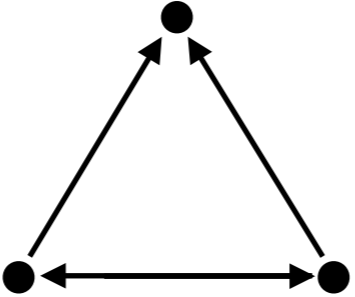
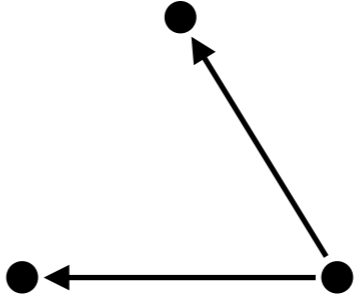
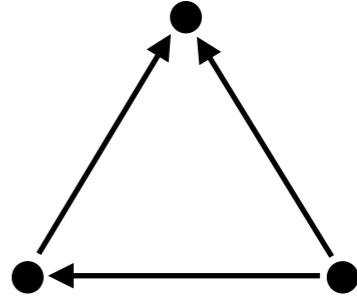
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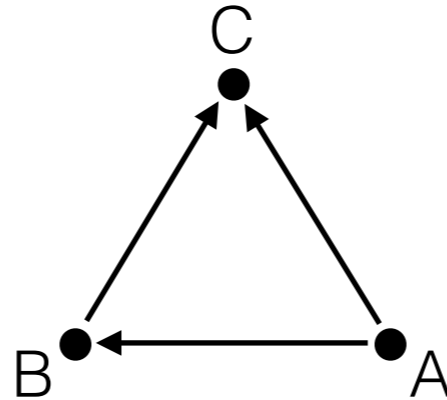
Enriched motifs



# Enriched 3-node motifs identified by FANMOD

			
K562	✓	✓	✓
GM12878	✓	✓	

# Identifying FFLs in K562 and GM12878



K562

A	B	C
MAZ	BHLHE40	UBE2Q1
E2F4	CTCF	MZT2A
SREBF1	MAZ	UBE2Q1

...

31,402 total

GM12878

A	B	C
BHLHE40	MAX	UBE2Q1
MYC	ZNF143	PMM2
SMAD5	ZBED1	ZNF706

...

29,940 total

## Top-five most common A-type TFs in K562 FFLs

TF	# FFLs (K562)	# FFLs (GM12878)
HDGF	2,439	1,597
SREBF1	2,358	735
MLLT1	2,332	262
ETV6	2,286	445
NBN	2,023	1,008

# Total number of 3-node motifs involving top-five TFs

TF	# motifs (K562)	# motifs (GM12878)
HDGF	875,385	1,061,811
SREBF1	1,212,241	286,545
MLLT1	620,582	138,543
ETV6	750,220	240,850
NBN	1,110,526	648,244

## Enrichment of TFs in FFLs

TF	FFL : non-FFL ratio (K562)	FFL : non-FFL ratio (GM12878)	P-value
HDGF	0.002802	0.001509	4.01E-84
SREBF1	0.001953	0.002578	1.60E-10
MLLT1	0.003786	0.001898	9.48E-31
ETV6	0.003066	0.001854	2.40E-24
NBN	0.001828	0.001560	3.66E-05

## Roles of top-5 TFs in cancer

TF	Role
HDGF	<u>Regulates wide range of cancer cell activities</u>
SREBF1	Unclear
MLLT1	<u>Overexpression in CLL</u>
ETV6	<u>Mutation associated with CLL</u>
NBN	<u>Mutation associated with leukemia and other cancers</u>