A

Primary Literature
Ingenuity Systems
Pathway Studio

2183 interaction links
1287 target genes

Link filter: found in >1 knowledge-bases

306 interaction links
219 target genes

Gene filter: significant expression change ($p < 0.01$)

149 interaction links
99 target genes

B

Raw Data

Microarray Gene Expression Data [$E$]
Regulatory Network [$S^{(0)}$]

NCA Algorithm

$$[E] \approx [S] \cdot [A]$$

$$A^{(k)} \leftarrow \arg \min_A \|E - S^{(k-1)}A\|^2$$

$$S^{(k)} \leftarrow \arg \min_S \|E - SA^{(k)}\|^2 + \lambda \|S\|^2$$

Numerical Results

TF Activities [$A^*$]
TF Influences [$S^*$]

2183 interaction links
1287 target genes

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