

## SUPPORTING INFORMATION

### Stochasticity, Bistability and the Wisdom of Crowds: a Model for Associative Learning in Genetic Regulatory Networks

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**Table S1 - Kinetic Parameters used in simulations**

A table of all the kinetic parameters used to derive the parameters of the numerical simulations of the approximate dynamics.

The single pathway model:

Parameter	Value
$[P_T^1]$	1 nM
$[P_T^2]$	1 nM
$[P_T^{R,1}]$	1 nM
$[P_T^{R,2}]$	1 nM
$n$	4
$\mu_R$	0.1388 $\frac{1}{min}$
$\mu_M$	0.1388 $\frac{1}{min}$
$\frac{\beta}{\delta}$	100
$\frac{\beta_R}{\delta_R}$	100
$\alpha_1$	0.1818 $\frac{1}{min}$
$\alpha_2$	8 $\frac{1}{min}$
$\alpha_3$	0.658 $\frac{1}{min}$
$\alpha_4$	6.1926 $\frac{1}{min}$
$K_1^{-1}$	110 ( $\mu M$ ) <sup>4</sup>
$K_2^{-1}$	0.0273 $\mu M$
$K_3^{-1}$	3.66 $\mu M$
$\alpha_1^R$	0 $\frac{1}{min}$
$\alpha_2^R$	3 $\frac{1}{min}$
$\alpha_3^R$	0 $\frac{1}{min}$
$\alpha_4^R$	0 $\frac{1}{min}$
$\alpha_5^R$	0 $\frac{1}{min}$
$\alpha_6^R$	3 $\frac{1}{min}$

$K_{1,R}^{-1}$	1 $\mu M$
$K_{2,R}^{-1}$	1 $\mu M$
$K_{3,R}^{-1}$	100 $(\mu M)^4$
$K_{4,R}^{-1}$	100 $(\mu M)^4$

The generalized model:

Parameter	Value
$\alpha_1^R$	0 $\frac{1}{min}$
$\alpha_2^R$	0.2 $\frac{1}{min}$
$\alpha_3^R$	0.001 $\frac{1}{min}$
$\alpha_4^R$	0 $\frac{1}{min}$
$\alpha_5^R$	0 $\frac{1}{min}$
$\alpha_6^R$	0.375 $\frac{1}{min}$
$K_{1,R}^{-1}$	10 $\mu M$
$K_{2,R}^{-1}$	0.5064 $\mu M$
$K_{3,R}^{-1}$	534.2 $(\mu M)^4$
$K_{4,R}^{-1}$	19745 $(\mu M)^4$
f	0.5

All other parameters of the generalized model are the same as for the single pathway model.