## Table S3: Probability of bistable behavior for arbitrary fold ratio

In Table 1, the percentage of parameter sets producing bistability is described for $n = 2, 3, 4, 5$, and different $K_M$ (or $K_M/B_{tot}$) ranges, assuming a fold ratio larger or equal than 5 between the largest and the smallest steady state of $B_n$, i.e. $r = B_n^{high}/B_n^{low} > 5$. In the following tables we relax this last assumption and allow for an arbitrarily difference between the multiple steady states. In order to ensure that the steady states found are actually different, we allow for a nominal error margin and require a fold ratio $r > 1.001$. Each entry in the table corresponds to 500 independent sample simulations. The parameter sets are conditioned with the restrictions described in the Methods section, namely $B_{tot} \geq S_{tot}$, $k_0^d \leq k_0^a$, and $k_n^d \geq k_0^a$.

Percentage of Bistable Parameter Sets, by $K_M$ range (arbitrary fold ratio $r$):

| | off scaffold | on scaffold | $K_M(\mu M)$ : $(10^{-1}, 1)$ | $(1, 10^1)$ | $(10^1, 10^2)$ | $(10^2, 10^3)$ |
|---|---|---|---|---|---|---|
| $n = 2$ | ph./deph. | | 9.0 | 0.8 | 0 | 0 |
| | deph. | ph./deph. | 8.2 | 6.6 | 8.2 | 8.6 |
| | deph. | ph. | 8.2 | 9.6 | 10.4 | 9.4 |
| $n = 3$ | ph./deph. | | 13.2 | 1.2 | 0 | 0 |
| | deph. | ph./deph. | 12.2 | 10.4 | 12.2 | 11.4 |
| | deph. | ph. | 13.2 | 13.2 | 18.2 | 20.6 |
| $n = 4$ | ph./deph. | | 15.0 | 2.8 | 0 | 0 |
| | deph. | ph./deph. | 16.2 | 14.4 | 14.6 | 19.8 |
| | deph. | ph. | 21.0 | 19.0 | 25.2 | 26.0 |
| $n = 5$ | ph./deph. | | 21.2 | 3.2 | 0 | 0 |
| | deph. | ph./deph. | 22.0 | 18.2 | 20.6 | 21.8 |
| | deph. | ph. | 22.6 | 25.6 | 32.2 | 34.6 |

We carry out similar simulations but classify them by the values of $K_m/B_{tot}$ instead:

Percentage of Bistable Parameter Sets, by $K_M/B_{tot}$ range (arbitrary fold ratio $r$):

| | off scaffold | on scaffold | $K_M/B_{tot}$ $(10^{-1}, 1)$ | $(1, 10^1)$ | $(10^1, 10^2)$ | $(10^2, 10^3)$ | $(10^3, 10^4)$ |
|---|---|---|---|---|---|---|---|
| $n = 2$ | ph./deph. | | 15.4 | 9.2 | 2.8 | 0.2 | 0.4 |
| | deph. | ph./deph. | 8.4 | 6.0 | 8.4 | 6.8 | 6.0 |
| | deph. | ph. | 11.6 | 10.4 | 9.0 | 10.8 | 12.8 |
| $n = 3$ | ph./deph. | | 22.6 | 9.6 | 3.2 | 0.4 | 0.2 |
| | deph. | ph./deph. | 13.0 | 11.8 | 12.6 | 14.0 | 11.0 |
| | deph. | ph. | 17.4 | 15.4 | 17.8 | 19.8 | 13.2 |
| $n = 4$ | ph./deph. | | 26.8 | 9.4 | 4.0 | 0.8 | 0.6 |
| | deph. | ph./deph. | 22.6 | 15.6 | 14.8 | 20.2 | 12.6 |
| | deph. | ph. | 20.0 | 20.0 | 21.0 | 22.2 | 21.8 |
| $n = 5$ | ph./deph. | | 22.6 | 11.2 | 6.2 | 0.4 | 2.0 |
| | deph. | ph./deph. | 21.2 | 18.2 | 21.6 | 22.2 | 12.8 |
| | deph. | ph. | 23.0 | 21.2 | 25.4 | 27.8 | 25.0 |

Notice that in all cases the same conclusion is found, that even though the scaffold doesn't promote bistability for low values of $K_M$ (or $K_M/B_{tot}$), after a certain threshold the likelihood of bistability is greatly enhanced by its addition.

Percentage of Bistable Parameter Sets, by $K_M$ range (fold ratio $r > 5$):

| | off scaffold | on scaffold | $K_M(\mu M)$ : $(10^{-1}, 1)$ | $(1, 10^1)$ | $(10^1, 10^2)$ | $(10^2, 10^3)$ |
|---|---|---|---|---|---|---|
| $n = 2$ | ph./deph. | | 2.8 | 0 | 0 | 0 |
| | deph. | ph./deph. | 5.6 | 3.4 | 3.6 | 3.0 |
| | deph. | ph. | 4.0 | 7.0 | 7.0 | 5.4 |
| $n = 3$ | ph./deph. | | 8.2 | 0.8 | 0 | 0 |
| | deph. | ph./deph. | 8.8 | 5.8 | 7.0 | 7.6 |
| | deph. | ph. | 9.4 | 10.6 | 12.8 | 14.8 |
| $n = 4$ | ph./deph. | | 11.4 | 1.6 | 0 | 0 |
| | deph. | ph./deph. | 12.4 | 8.6 | 10.4 | 14.6 |
| | deph. | ph. | 15.2 | 13.0 | 18.4 | 21.0 |
| $n = 5$ | ph./deph. | | 14.6 | 2.2 | 0 | 0 |
| | deph. | ph./deph. | 16.2 | 13.2 | 15.6 | 18.4 |
| | deph. | ph. | 18.6 | 20.4 | 25.6 | 29.8 |

Percentage of Bistable Parameter Sets, by $K_M/B_{tot}$ range (fold ratio $r > 5$):

| | off scaffold | on scaffold | $K_M/B_{tot}$ $(10^{-1}, 1)$ | $(1, 10^1)$ | $(10^1, 10^2)$ | $(10^2, 10^3)$ | $(10^3, 10^4)$ |
|---|---|---|---|---|---|---|---|
| $n = 2$ | ph./deph. | | 2.2 | 0 | 0 | 0 | 0 |
| | deph. | ph./deph. | 6.8 | 4.6 | 4.0 | 6.4 | 2.8 |
| | deph. | ph. | 4.2 | 2.8 | 4.0 | 3.0 | 4.8 |
| $n = 3$ | ph./deph. | | 6.2 | 0 | 0 | 0 | 0 |
| | deph. | ph./deph. | 5.0 | 7.4 | 8.4 | 9.0 | 7.8 |
| | deph. | ph. | 9.8 | 9.0 | 11.8 | 11.6 | 9.4 |
| $n = 4$ | ph./deph. | | 10.0 | 0 | 0 | 0 | 0 |
| | deph. | ph./deph. | 13.6 | 8.2 | 10.8 | 14.4 | 8.0 |
| | deph. | ph. | 13.0 | 12.2 | 15.8 | 16.4 | 17.4 |
| $n = 5$ | ph./deph. | | 8.6 | 0 | 0 | 0 | 0 |
| | deph. | ph./deph. | 13.6 | 11.2 | 14.4 | 17.2 | 10.2 |
| | deph. | ph. | 17.4 | 16.4 | 19.0 | 21.2 | 19.2 |