

Appendix: Effective Hill functions. Hill functions are often used to describe the nonlinearities present in gene regulatory networks [17]. Hill functions are sigmoidal step functions defined by

$$f_H(x) = \frac{1}{1 + (x/K)^{2h}} \quad (12)$$

where the steepness of the step is characterized by the exponent $2h$, and the inhibition threshold K is the concentration of repressor that halves the production rate, here scaled to unity, Fig. 7. Here we include an explicit factor 2 in the exponent to account for the dimerization of the transcriptional repressors. One advantage of Hill functions is that they are very simply parametrized. In the main text we fit Hill functions to the more complex regulatory functions Eqs. (8) and (11). Some fits of Eq. (8) in the case $N = 12$ are displayed in Fig. 8 for illustration.