Additional File 1

The pseudocode for computing the state transition matrix (STM) of a context-sensitive stochastic Boolean network (CSSBN)

For a CSSBN of $n$ genes with $k$ contexts, given the number of predictor functions of each gene, the selection probability of each function, the perturbation rate, $p$, and context switching probability, $q$, as well as the stochastic sequences generated for the aforementioned probabilities, the STM of the CSSBN can be obtained as follows.

for $i = 1: 2^n$
  for $j = 1: k$
    
    Using the CSSBN to obtain the output stochastic sequences that denote the transition probabilities for input $i$ and context $j$:
    
    For context $j$, update the next state of genes for the present (input) gene state $i$;
    
    If gene perturbation is considered, then use the perturbation sub-network of the CSSBN with a multiplexer (MUX) to obtain the next gene state of the CSSBN with perturbation.
    
    Update the context, i.e., a new context is selected by determining the stochastic sequences that denote the selection probabilities of the new context.
    (This is done by 2-1 multiplexers with the original and current context selection sequences (probabilities) as inputs and the stochastic sequence denoting the context switching probability $q$ as the control sequence.)
    
    Determine the transition probability between the input state $i$ and context $j$ and every other state, from the obtained output stochastic sequences of the CSSBN.
  
end
end