

Description of Additional Supplementary Files

Supplementary Data 1 : Sequences of Genetic Parts. The data spreadsheet contains the DNA sequences and names of all genetic components used in this study, including promoters, ribozymes, Ribosome Binding Sites (RBS), degradation tags, genes, and terminators.

Supplementary Data 2 : Plasmid Names. The data spreadsheet lists all plasmids constructed for this study including their names, origin of replications, and a one-line summary of the genetic parts in their assembly order. For plasmids used as logic gate circuits, the corresponding Boolean logic operation is also specified.

Supplementary Data 3 : Enumeration Lookup Table. The data spreadsheet lists all 256 possible 3-input Boolean logic operations alongside their corresponding circuit topologies. The first column is the output truth table values for input combinations in the order: 000, 100, 010, 001, 110, 101, 011, 111. The second column shows the most compressed circuit topology for each logic function in a single-line notation, as generated by the enumeration software. The third column contains information of the number of constitutive promoters and regulated promoters used in the design. The spreadsheet also includes an analysis and comparison of promoter usage with two alternative design strategies: Cello and inversion-based logic (denoted as Generalized Cello).