Supplementary Materials

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1 Development of the example system

In this section, the method of obtaining the model shown in Figure 1, which is the system of Figure 3 in Section 3, is explained. The model is obtained through both Conflicts Strategy (CS) and Nested Canalising Boolean Functions (NCBF).

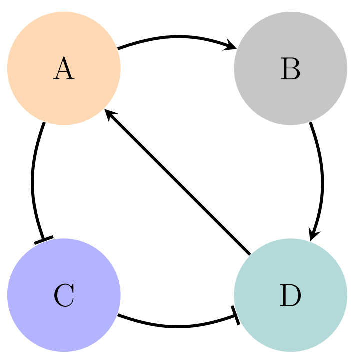

Figure 1: Directed graph exposed in Figure 3 of the article.

1.1 Conflicts Strategy

To obtain the solution through CS, firstly, it is represented in the graph in the form of independent pathways, as shown in Table 1.

Table 1: Pathways depicted in Figure 1. Every column gathers the pathways of a different node.

A	B	C	D
$D \xrightarrow{1:1,1} A$	$A \xrightarrow{1:1,1} B$	$A \xrightarrow{1:1,0} C$	$B \xrightarrow{1:1,1} D$
			$C \xrightarrow{1:1,0} D$

Once the pathways are represented, the conflicts can be detected, and the algorithm of Section 2.2 is applied. In Table 2, the conflicts handled are expressed in order of appearance to obtain the expressions described in the article. In this example, due to its simplicity, the order does not affect the result of the process, however, it could otherwise be in other graphs with a higher complexity. Regarding the priority of this example, the criterion is the following: $B > C$ and $BC > A$. These two are the only cases exposed in Table 2.

Table 2: Conflicts solved to obtain the model behind Figure 1. PP a is Prioritised Pathway, UNP is an Unmodified Non-prioritised Pathway, MNP is a Modified Non-prioritised Pathway, and SP is a Solution Pathway. Each row expresses a different conflict. All conflicts are shown from top to bottom in order of appearance.

Order	PP	UNP	MNP	SP
1	$B \xrightarrow{1:1,1} D$	$C \xrightarrow{1:1,0} D$	$\neg B \wedge C \xrightarrow{1:1,0} D$	$B \wedge C \xrightarrow{1:1,0} B$ $B \wedge C \xrightarrow{1:1,1} C$
2	$B \wedge C \xrightarrow{1:1,0} B$	$A \xrightarrow{1:1,1} B$	$A \wedge \neg B \xrightarrow{1:1,1} B$ $A \wedge \neg C \xrightarrow{1:1,1} B$	$A \wedge B \wedge C \xrightarrow{1:1,1} A$ $A \wedge B \wedge C \xrightarrow{1:1,0} B$
3	$B \wedge C \xrightarrow{1:1,1} D$	$A \xrightarrow{1:1,0} C$	$A \wedge \neg B \xrightarrow{1:1,0} C$ $A \wedge \neg C \xrightarrow{1:1,0} C$	$A \wedge B \wedge C \xrightarrow{1:1,1} A$ $A \wedge B \wedge C \xrightarrow{1:1,0} B$

Table 3: Pathways depicted in Figure 1. Every column gathers the pathways of a different node.

A	B	C	D
$D \xrightarrow{1:1,1} A$	$B \wedge C \xrightarrow{1:1,0} B$	$A \xrightarrow{1:1,0} C$	$B \xrightarrow{1:1,1} D$
$A \wedge B \wedge C \xrightarrow{1:1,1} A$	$A \wedge \neg B \xrightarrow{1:1,1} B$	$A \wedge \neg B \xrightarrow{1:1,0} C$	$\neg B \wedge C \xrightarrow{1:1,0} D$
	$A \wedge \neg C \xrightarrow{1:1,1} B$	$A \wedge \neg C \xrightarrow{1:1,0} C$	

In this way, the final pathways for each node are shown in Table 3. To obtain the final expression for every node, these pathways are to be introduced in a truth table, one for every node. The resulting truth tables are depicted in Figure 2. Notice, that what is depicted is just the result defined by the pathway, when the conditions given by the pathway are met. Consequently, if there is no information for all the possible conditions (arguments combinations), there will be undefined values (x) in the table (U column). These values are to be completed attending the maximum simplification of the function (column C).

ABCD	U	C
0000	x	0
0001	1	1
0010	x	0
0011	1	1
0100	x	0
0101	1	1
0110	x	0
0111	1	1
1000	x	0
1001	1	1
1010	x	0
1011	1	1
1100	x	0
1101	1	1
1110	1	1
1111	1	1

(a) Node A.

ABCD	U	C
0000	x	0
0001	x	0
0010	x	0
0011	x	0
0100	x	0
0101	x	0
0110	0	0
0111	0	0
1000	1	1
1001	1	1
1010	1	1
1011	1	1
1100	1	1
1101	1	1
1110	0	0
1111	0	0

(b) Node B.

ABCD	U	C
0000	x	1
0001	x	1
0010	x	1
0011	x	1
0100	x	1
0101	x	1
0110	1	1
0111	1	1
1000	0	0
1001	0	0
1010	0	0
1011	0	0
1100	0	0
1101	0	0
1110	1	1
1111	1	1

(c) Node C.

ABCD	U	C
0000	x	1
0001	x	1
0010	0	0
0011	0	0
0100	1	1
0101	1	1
0110	1	1
0111	1	1
1000	x	1
1001	x	1
1010	0	0
1011	0	0
1100	1	1
1101	1	1
1110	1	1
1111	1	1

(d) Node D.

Figure 2: Truth tables of the functions of the networks obtained through Conflicts Strategy (CS). The letter x indicates an undefined value. The column U represents the truth table with just the information gathered in the pathways. The column C represents the truth table with the undefined values completed attending the maximum simplification.

Attending the completed truth tables of Figure 2, the final boolean network is conveyed in Equation 1:

$$\begin{gathered} A = D \vee (A \wedge B \wedge C) \\ B = A \wedge (\neg B \vee \neg C) \\ C = \neg A \vee (B \wedge C) \\ D = B \vee \neg C \end{gathered} . \tag{1}$$

1.2 Nested Canalising Boolean Networks

The approach to obtain the network through NCBF is based on combinatorics. Attending the relations of Figure 1, all the possible functions by node are shown in Table 4. It is assumed that every node depends exclusively on its incoming nodes.

Table 4: Possible Nested Canalising Boolean Functions (NCBF) for every node according to the definition given in the article.

A	B	C	D
$A = D$	$B = A$	$C = \neg A$	$D = B \land \neg C$
			$D = B \lor \neg C$

It is important to mention that there are more possible NCBF, however, given the biological sense described in the article, these are all the coherent NCBF for every node. Therefore, there are only two possible boolean networks. Due to its similarity, it was selected to compare with the network of Figure 3.

$$A = D$$
$$B = A$$
$$C = \neg A$$
$$D = B \land \neg C$$

(a) First result obtained through NCBF combinatorics,

$$A = D$$
$$B = A$$
$$C = \neg A$$
$$D = B \lor \neg C$$

(b) Second result obtained through NCBF combinatorics.

Figure 3: Expressions of the networks obtained through CS and NCBF.

2 Data of the obtained models

2.1 Epithelial-Mesenchymal Transition

Conflicts

PP	UNP	MNP	SP
$\neg \mathit{Snail} \xrightarrow{1} \mathit{Snail}$	$\neg \mathit{Input} \xrightarrow{0} \mathit{Snail}$	$\neg \mathit{Input} \wedge \neg(\neg \mathit{Snail}) \xrightarrow{0} \mathit{Snail}$	$\neg \mathit{Snail} \wedge \neg \mathit{Input} \xrightarrow{1} \mathit{Snail}$ $\neg \mathit{Snail} \wedge \neg \mathit{Input} \xrightarrow{0} \mathit{Input}$
$\neg \mu 34 \xrightarrow{1} \mathit{Snail}$	$\neg \mathit{Input} \wedge \mathit{Snail} \xrightarrow{0} \mathit{Snail}$	$\neg \mathit{Input} \wedge \mathit{Snail} \wedge \neg(\neg \mu 34) \xrightarrow{0} \mathit{Snail}$	$\mathit{Snail} \wedge \neg \mu 34 \wedge \neg \mathit{Input} \xrightarrow{0} \mathit{Input}$ $\mathit{Snail} \wedge \neg \mu 34 \wedge \neg \mathit{Input} \xrightarrow{1} \mathit{Snail}$ $\mathit{Snail} \wedge \neg \mu 34 \wedge \neg \mathit{Input} \xrightarrow{1} \mu 34$
$\mathit{Zeb} \xrightarrow{0} \mu 34$	$\neg \mathit{Snail} \xrightarrow{1} \mu 34$	$\neg \mathit{Snail} \wedge \neg(\mathit{Zeb}) \xrightarrow{1} \mu 34$	$\neg \mathit{Snail} \wedge \mathit{Zeb} \xrightarrow{0} \mathit{Zeb}$
$\mathit{Snail} \wedge \neg \mu 34 \wedge \neg \mathit{Input} \xrightarrow{1} \mu 34$	$\mathit{Zeb} \xrightarrow{0} \mu 34$	$\mathit{Zeb} \wedge \neg(\mathit{Snail} \wedge \neg \mu 34 \wedge \neg \mathit{Input}) \xrightarrow{0} \mu 34$	$\mathit{Zeb} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \neg \mathit{Input} \xrightarrow{0} \mathit{Snail}$ $\mathit{Zeb} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \neg \mathit{Input} \xrightarrow{1} \mathit{Zeb}$
$\mathit{Zeb} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \neg \mathit{Input} \xrightarrow{1} \mathit{Zeb}$	$D \xrightarrow{0} \mathit{Zeb}$	$D \wedge \neg(\mathit{Zeb} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \neg \mathit{Input}) \xrightarrow{0} \mathit{Zeb}$	$\mu 200 \wedge \mathit{Zeb} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \neg \mathit{Input} \xrightarrow{1} \mu 200$ $\mu 200 \wedge \mathit{Zeb} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \neg \mathit{Input} \xrightarrow{1} \mu 34$
$\mathit{Zeb} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \neg \mathit{Input} \xrightarrow{0} \mathit{Snail}$	$\mathit{Snail} \wedge \neg \mu 34 \wedge \neg \mathit{Input} \xrightarrow{1} \mathit{Snail}$	$\mathit{Snail} \wedge \neg \mu 34 \wedge \neg \mathit{Input} \wedge \neg(\mathit{Zeb} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \neg \mathit{Input}) \xrightarrow{1} \mathit{Snail}$	$\mathit{Zeb} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \neg \mathit{Input} \xrightarrow{0} \mathit{Snail}$
$\mathit{Zeb} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \neg \mathit{Input} \xrightarrow{0} \mathit{Snail}$	$\neg \mu 34 \xrightarrow{1} \mathit{Snail}$	$\neg \mu 34 \wedge \neg(\mathit{Zeb} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \neg \mathit{Input}) \xrightarrow{1} \mathit{Snail}$	$\mathit{Zeb} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \neg \mathit{Input} \xrightarrow{0} \mu 34$ $\mathit{Zeb} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \neg \mathit{Input} \xrightarrow{0} \mathit{Zeb}$
$\mu 200 \wedge \mathit{Zeb} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \neg \mathit{Input} \xrightarrow{1} \mu 34$	$\neg \mu 34 \xrightarrow{0} \mu 34$	$\neg \mu 34 \wedge \neg(\mu 200 \wedge \mathit{Zeb} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \neg \mathit{Input}) \xrightarrow{0} \mu 34$	$\mu 200 \wedge \mathit{Zeb} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \neg \mathit{Input} \xrightarrow{0} \mathit{Snail}$ $\mu 200 \wedge \mathit{Zeb} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \neg \mathit{Input} \xrightarrow{1} \mathit{Zeb}$
$\neg \mu 200 \wedge \neg \mathit{Input} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \mathit{Zeb} \xrightarrow{0} \mu 34$	$\mathit{Snail} \wedge \neg \mu 34 \wedge \neg \mathit{Input} \xrightarrow{1} \mu 34$	$\mathit{Snail} \wedge \neg \mu 34 \wedge \neg \mathit{Input} \wedge \neg(\neg \mu 200 \wedge \neg \mathit{Input} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \mathit{Zeb}) \xrightarrow{1} \mu 34$	$\neg \mu 200 \wedge \neg \mathit{Input} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \mathit{Zeb} \xrightarrow{0} \mathit{Zeb}$
$\neg \mathit{Input} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \mathit{Zeb} \xrightarrow{1} \mathit{Zeb}$	$\neg \mu 200 \wedge \neg \mathit{Input} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \mathit{Zeb} \xrightarrow{0} \mathit{Zeb}$	$\neg \mu 200 \wedge \neg \mathit{Input} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \mathit{Zeb} \wedge \neg(\neg \mathit{Input} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \mathit{Zeb}) \xrightarrow{0} \mathit{Zeb}$	$\neg \mu 200 \wedge \neg \mathit{Input} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \mathit{Zeb} \xrightarrow{0} \mathit{Zeb}$
$\mu 200 \wedge \neg \mathit{Input} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \mathit{Zeb} \xrightarrow{1} \mathit{Zeb}$	$\neg \mathit{Input} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \mathit{Zeb} \xrightarrow{0} \mathit{Zeb}$	$\neg \mathit{Input} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \mathit{Zeb} \wedge \neg(\mu 200 \wedge \neg \mathit{Input} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \mathit{Zeb}) \xrightarrow{0} \mathit{Zeb}$	$\mu 200 \wedge \neg \mathit{Input} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \mathit{Zeb} \xrightarrow{0} \mathit{Snail}$
$\neg \mathit{Input} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \mathit{Zeb} \xrightarrow{1} \mathit{Zeb}$	$\neg \mu 200 \wedge \neg \mathit{Input} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \mathit{Zeb} \xrightarrow{0} \mathit{Zeb}$	$\neg \mu 200 \wedge \neg \mathit{Input} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \mathit{Zeb} \wedge \neg(\neg \mathit{Input} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \mathit{Zeb}) \xrightarrow{0} \mathit{Zeb}$	$\neg \mu 200 \wedge \neg \mathit{Input} \wedge \mathit{Snail} \wedge \neg \mu 34 \wedge \mathit{Zeb} \xrightarrow{0} \mathit{Snail}$

Table 5: Conflicts solved during the inference of the network of the epithelial-mesenchymal transition. PP a is Prioritised Pathway, UNP is an Unmodified Non-prioritised Pathway, MNP is a Modified Non-prioritised Pathway, and SP is a Solution Pathway. Each row expresses a different conflict. All the conflicts are shown from top to bottom in order of appearance.

Pathways

Initial pathways	Final pathways
$\neg Zeb \xrightarrow{1} D$	$\mu200 \wedge \neg Input \wedge Snail \wedge \neg\mu34 \wedge Zeb \xrightarrow{1} \mu200$
$\neg Snail \xrightarrow{1} D$	$\neg Snail \xrightarrow{1} \mu200$
$Input \xrightarrow{1} Input$	$\neg Zeb \xrightarrow{1} \mu200$
$\neg Input \xrightarrow{0} Snail$	$Input \xrightarrow{1} Input$
$\neg\mu34 \xrightarrow{1} Snail$	$\neg Snail \wedge \neg Input \xrightarrow{0} Input$
$\neg Snail \xrightarrow{1} Snail$	$Snail \wedge \neg Input \wedge \neg\mu34 \xrightarrow{0} Input$
$Zeb \xrightarrow{0} \mu34$	$\neg\mu34 \wedge \neg Zeb \xrightarrow{1} Snail$
$\neg Snail \xrightarrow{1} \mu34$	$\neg Snail \wedge \neg\mu34 \xrightarrow{1} Snail$
$\neg Zeb \xrightarrow{0} Zeb$	$\neg Snail \xrightarrow{1} Snail$
$\neg Snail \xrightarrow{0} Zeb$	$Input \wedge \neg\mu34 \xrightarrow{1} Snail$
$\mu200 \xrightarrow{0} Zeb$	$\neg Snail \wedge \neg Input \xrightarrow{1} Snail$
	$\neg Input \wedge Snail \wedge \neg\mu34 \wedge \neg Zeb \xrightarrow{1} Snail$
	$Zeb \wedge Snail \wedge \neg\mu34 \wedge \neg Input \xrightarrow{0} Snail$
	$\mu200 \wedge Zeb \wedge Snail \wedge \neg\mu34 \wedge \neg Input \xrightarrow{0} Snail$
	$\neg Input \wedge Snail \wedge \mu34 \xrightarrow{0} Snail$
	$Zeb \wedge \neg\mu200 \wedge Snail \wedge \neg\mu34 \wedge \neg Input \xrightarrow{0} Snail$
	$\neg Snail \wedge \neg Zeb \xrightarrow{1} \mu34$
	$Snail \wedge Zeb \wedge \mu200 \wedge \neg\mu34 \wedge \neg Input \xrightarrow{1} \mu34$
	$\neg Input \wedge Snail \wedge \neg\mu34 \wedge \neg Zeb \xrightarrow{1} \mu34$
	$\mu200 \wedge \neg Input \wedge Snail \wedge \neg\mu34 \xrightarrow{1} \mu34$
	$\mu34 \wedge Zeb \xrightarrow{0} \mu34$
	$\neg Input \wedge \neg\mu34 \wedge \neg\mu200 \wedge Snail \wedge Zeb \xrightarrow{0} \mu34$
	$Input \wedge Zeb \xrightarrow{0} \mu34$
	$\neg Snail \wedge Zeb \xrightarrow{0} \mu34$
	$\mu200 \wedge Snail \wedge Zeb \wedge \neg Input \wedge \neg\mu34 \xrightarrow{1} Zeb$
	$Snail \wedge Zeb \wedge \neg Input \wedge \neg\mu34 \xrightarrow{1} Zeb$
	$\mu200 \wedge \mu34 \xrightarrow{0} Zeb$
	$\neg Zeb \xrightarrow{0} Zeb$
	$\mu200 \wedge \neg Zeb \xrightarrow{0} Zeb$
	$\mu200 \wedge \neg Snail \xrightarrow{0} Zeb$
	$\neg Snail \xrightarrow{0} Zeb$
	$Zeb \wedge \neg Snail \xrightarrow{0} Zeb$
	$\mu200 \wedge Input \xrightarrow{0} Zeb$

Table 6: Pathways related to the inference of the network of the epithelial mesenchymal transition.

2.2 Lac operon

Conflicts

PP	UNP	MNP	SP
$\neg B \xrightarrow{1} A$	$\neg L \xrightarrow{0} A$	$\neg L \wedge B \xrightarrow{0} A$	$\neg B \wedge \neg L \xrightarrow{1} B$ $\neg B \wedge \neg L \xrightarrow{0} L$
$B \wedge \neg L \xrightarrow{0} A$	$B \xrightarrow{1} A$	$B \wedge \neg(B \wedge \neg L) \xrightarrow{1} A$	$B \wedge \neg L \xrightarrow{0} B$
$B \wedge \neg L \xrightarrow{0} A$	$\neg A \xrightarrow{1} A$	$\neg A \wedge \neg(B \wedge \neg L) \xrightarrow{1} A$	$\neg A \wedge B \wedge \neg L \xrightarrow{0} B$
$\neg M \xrightarrow{0} B$	$\neg B \wedge \neg L \xrightarrow{1} B$	$\neg B \wedge \neg L \wedge M \xrightarrow{1} B$	$\neg B \wedge \neg L \wedge \neg M \xrightarrow{1} M$
$\neg B \xrightarrow{1} B$	$\neg M \xrightarrow{0} B$	$\neg B \wedge \neg M \wedge B \xrightarrow{0} B$	$\neg B \wedge \neg M \xrightarrow{1} B$ $\neg B \wedge \neg M \xrightarrow{0} M$
$\neg M \xrightarrow{1} M$	$\neg B \wedge \neg M \xrightarrow{0} M$	$\neg B \wedge \neg M \wedge M \xrightarrow{0} M$	$\neg B \wedge \neg M \xrightarrow{0} A$ $\neg B \wedge \neg M \xrightarrow{1} M$
$\neg M \wedge \neg B \xrightarrow{0} A$	$\neg B \xrightarrow{1} A$	$\neg B \wedge \neg(\neg M \wedge \neg B) \xrightarrow{1} A$	$\neg B \wedge \neg M \xrightarrow{0} B$ $\neg B \wedge \neg M \xrightarrow{1} M$
$\neg M \wedge \neg B \xrightarrow{0} A$	$\neg A \wedge \neg B \xrightarrow{1} A$	$\neg A \wedge \neg B \wedge \neg(\neg M \wedge \neg B) \xrightarrow{1} A$	$\neg A \wedge \neg B \wedge \neg M \xrightarrow{0} B$ $\neg A \wedge \neg B \wedge \neg M \xrightarrow{1} M$
$\neg M \wedge \neg B \xrightarrow{0} A$	$\neg A \wedge L \xrightarrow{1} A$	$\neg A \wedge L \wedge \neg(\neg M \wedge \neg B) \xrightarrow{1} A$	$\neg A \wedge \neg B \wedge L \wedge \neg M \xrightarrow{0} B$ $\neg A \wedge \neg B \wedge L \wedge \neg M \xrightarrow{1} M$
$\neg B \wedge \neg M \xrightarrow{1} B$	$\neg B \wedge \neg M \xrightarrow{0} B$	$\neg B \wedge \neg M \wedge \neg(\neg B \wedge \neg M) \xrightarrow{0} B$	$\neg B \wedge \neg M \xrightarrow{1} B$ $\neg B \wedge \neg M \xrightarrow{0} M$
$\neg B \xrightarrow{1} B$	$\neg A \wedge \neg B \wedge \neg M \xrightarrow{0} B$	$\neg A \wedge \neg B \wedge \neg M \wedge B \xrightarrow{0} B$	$\neg A \wedge \neg B \wedge \neg M \xrightarrow{1} B$ $\neg A \wedge \neg B \wedge \neg M \xrightarrow{0} M$
$\neg B \wedge \neg M \xrightarrow{1} B$	$\neg A \wedge \neg B \wedge L \wedge \neg M \xrightarrow{0} B$	$\neg A \wedge \neg B \wedge L \wedge \neg M \wedge \neg(\neg B \wedge \neg M) \xrightarrow{0} B$	$\neg A \wedge \neg B \wedge L \wedge \neg M \xrightarrow{1} B$ $\neg A \wedge \neg B \wedge L \wedge \neg M \xrightarrow{0} M$
$\neg M \xrightarrow{1} M$	$\neg B \wedge \neg M \xrightarrow{0} M$	$\neg B \wedge \neg M \wedge M \xrightarrow{0} M$	$\neg B \wedge \neg M \xrightarrow{0} A$ $\neg B \wedge \neg M \xrightarrow{1} M$
$\neg A \wedge \neg B \wedge L \wedge \neg M \xrightarrow{1} M$	$\neg A \wedge \neg B \wedge \neg M \xrightarrow{0} M$	$\neg A \wedge \neg B \wedge \neg M \wedge \neg(\neg A \wedge \neg B \wedge L \wedge \neg M) \xrightarrow{0} M$	$\neg A \wedge \neg B \wedge L \wedge \neg M \xrightarrow{0} A$ $\neg A \wedge \neg B \wedge L \wedge \neg M \xrightarrow{1} M$
$\neg A \wedge \neg B \wedge \neg L \wedge \neg M \xrightarrow{0} M$	$\neg M \xrightarrow{1} M$	$\neg M \wedge (\neg A \wedge \neg B \wedge \neg L \wedge \neg M) \xrightarrow{1} M$	$\neg A \wedge \neg B \wedge \neg L \wedge \neg M \xrightarrow{1} B$ $\neg A \wedge \neg B \wedge \neg L \wedge \neg M \xrightarrow{0} M$
$\neg A \wedge \neg B \wedge L \wedge \neg M \xrightarrow{1} M$	$\neg A \wedge \neg B \wedge L \wedge \neg M \xrightarrow{0} M$	$\neg A \wedge \neg B \wedge L \wedge \neg M \wedge \neg(\neg A \wedge \neg B \wedge L \wedge \neg M) \xrightarrow{0} M$	$\neg A \wedge \neg B \wedge L \wedge \neg M \xrightarrow{0} A$ $\neg A \wedge \neg B \wedge L \wedge \neg M \xrightarrow{1} M$
$\neg B \wedge \neg M \xrightarrow{1} M$	$\neg A \wedge \neg B \wedge \neg L \wedge \neg M \xrightarrow{0} M$	$\neg A \wedge \neg B \wedge \neg L \wedge \neg M \wedge \neg(\neg B \wedge \neg M) \xrightarrow{0} M$	$\neg A \wedge \neg B \wedge \neg L \wedge \neg M \xrightarrow{0} A$ $\neg A \wedge \neg B \wedge L \wedge \neg M \xrightarrow{1} M$

Table 7: Conflicts solved during the inference of the lac-operon network.PP a is Prioritised Pathway, UNP is an Unmodified Non-prioritised Pathway, MNP is a Modified Non-prioritised Pathway, and SP is a Solution Pathway. Each row expresses a different conflict. All the conflicts are shown from top to bottom in order of appearance.

Pathways

Initial pathways	Final pathways
$\neg L \xrightarrow{0} A$	$\neg A \wedge \neg B \wedge M \xrightarrow{1} A$
$\neg A \xrightarrow{1} A$	$\neg A \wedge B \wedge \neg L \xrightarrow{1} A$
$\neg M \xrightarrow{0} B$	$\neg A \wedge L \wedge M \xrightarrow{1} A$
$\neg B \xrightarrow{1} B$	$B \wedge L \xrightarrow{1} A$
$L \xrightarrow{1} L$	$\neg B \wedge M \xrightarrow{1} A$
$A \xrightarrow{1} M$	$\neg A \wedge \neg B \wedge L \wedge \neg M \xrightarrow{0} A$
$\neg M \xrightarrow{1} M$	$\neg B \wedge \neg M \xrightarrow{0} A$
$B \xrightarrow{1} A$	$\neg A \wedge \neg B \wedge \neg L \wedge \neg M \xrightarrow{0} A$
$\neg B \xrightarrow{1} A$	$\neg B \wedge \neg M \xrightarrow{0} A$
	$\neg A \wedge \neg B \wedge \neg L \wedge \neg M \xrightarrow{1} B$
	$\neg B \wedge \neg M \xrightarrow{1} B$
	$\neg A \wedge \neg B \wedge L \wedge \neg M \xrightarrow{1} B$
	$\neg B \wedge \neg L \wedge M \xrightarrow{1} B$
	$\neg B \xrightarrow{1} B$
	$\neg A \wedge \neg B \wedge \neg M \xrightarrow{1} B$
	$B \wedge \neg M \xrightarrow{0} B$
	$B \wedge \neg L \xrightarrow{0} B$
	$\neg A \wedge B \wedge \neg L \xrightarrow{0} B$
	$\neg L \xrightarrow{1} L$
	$\neg B \wedge \neg L \xrightarrow{0} L$
	$A \wedge \neg M \xrightarrow{1} M$
	$A \xrightarrow{1} M$
	$B \wedge \neg M \xrightarrow{1} M$
	$\neg B \wedge \neg M \xrightarrow{1} M$
	$L \wedge \neg M \xrightarrow{1} M$
	$\neg B \wedge \neg L \wedge \neg M \xrightarrow{1} M$
	$\neg A \wedge \neg B \wedge \neg L \wedge \neg M \xrightarrow{1} M$
	$\neg A \wedge \neg B \wedge \neg M \xrightarrow{1} M$
	$\neg A \wedge \neg B \wedge L \wedge \neg M \xrightarrow{1} M$

Table 8: Pathways of the inference of the lac-operon network.