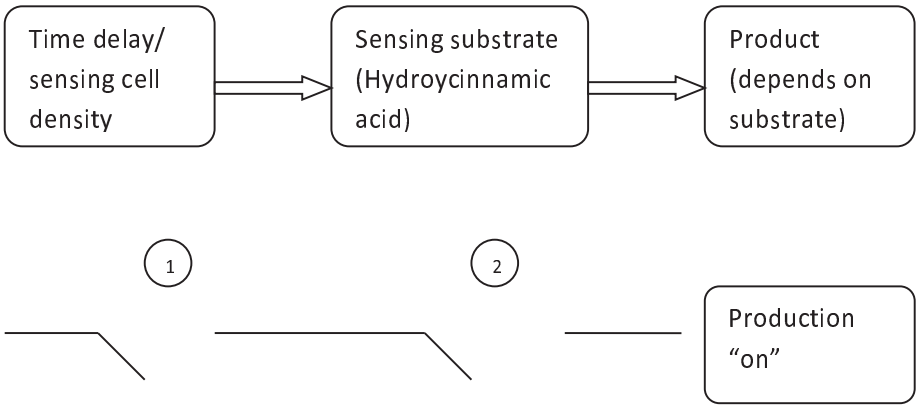
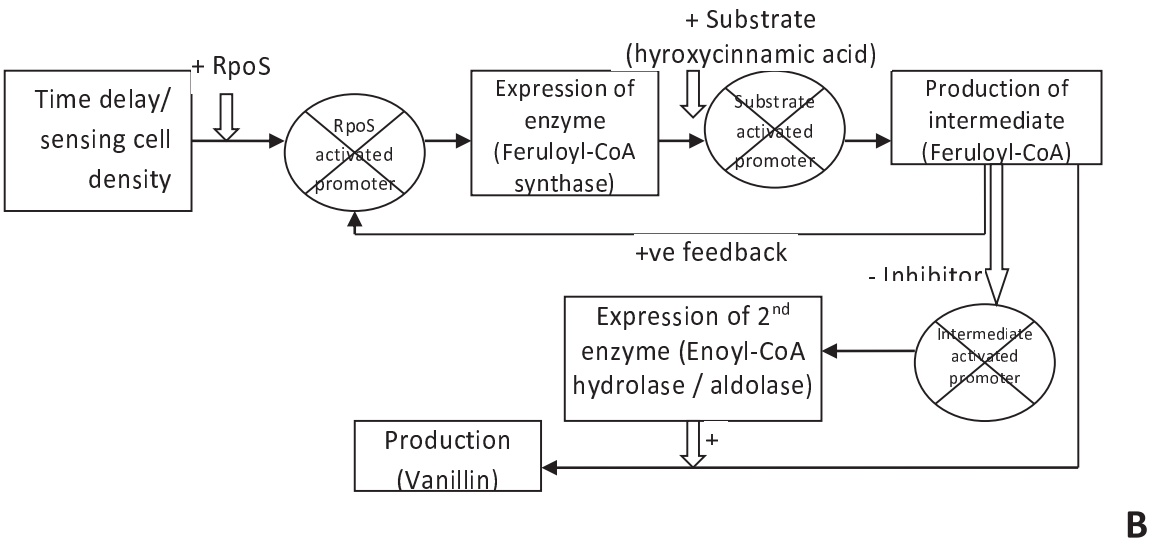

Time delay/ sensing cell density
Sensing substrate (Hydroycinnamic acid)
Product (depends on substrate)
1
2
Production "on"

A


+ Substrate (hyroxycinnamic acid)
+ RpoS
Time delay/ sensing cell density
RpoS activated promoter
Expression of enzyme (Feruloyl-CoA synthase)
Substrate activated promoter
Production of intermediate (Feruloyl-CoA)
+ve feedback
Expression of 2nd enzyme (Enoyl-CoA hydrolase / aldolase)
Intermediate activated promoter
Production (Vanillin)
+

B

Figure 1

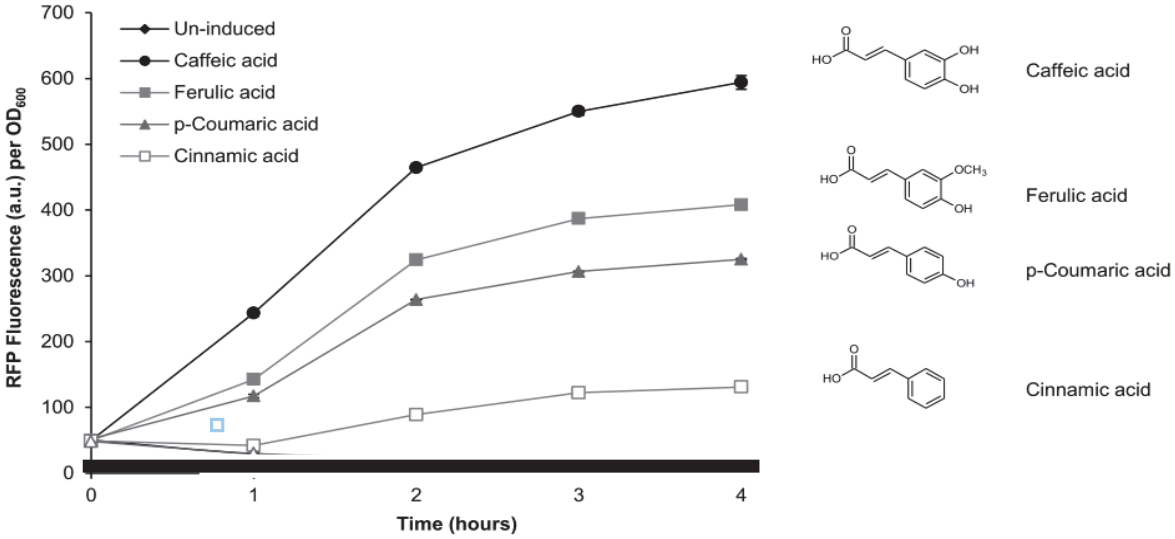


Figure 2

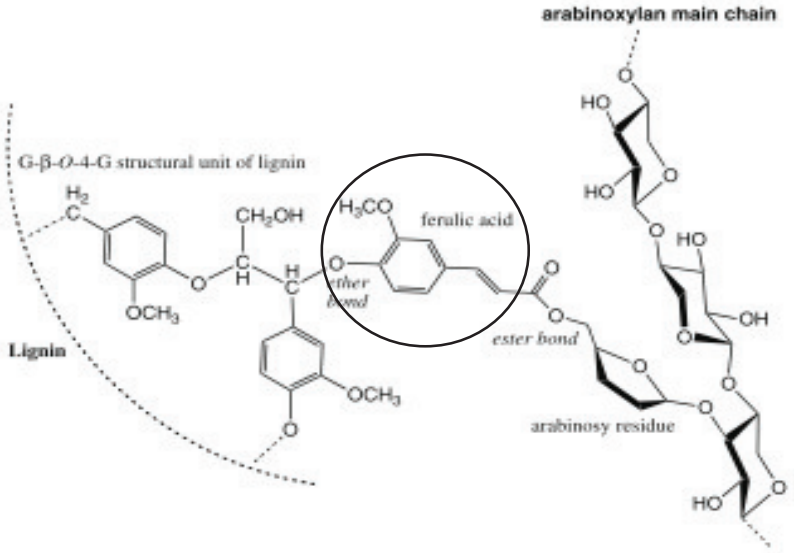


Figure 3

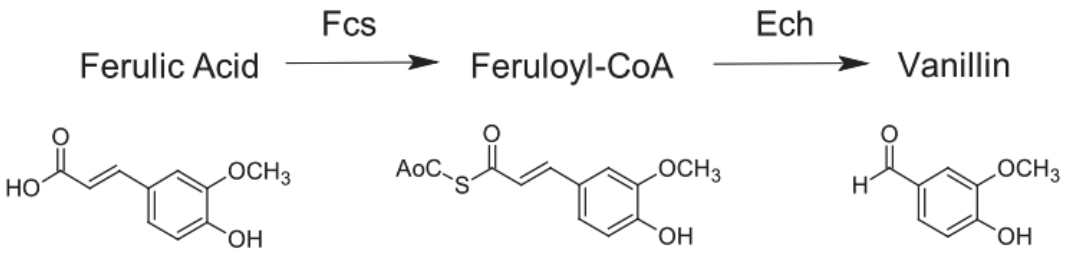
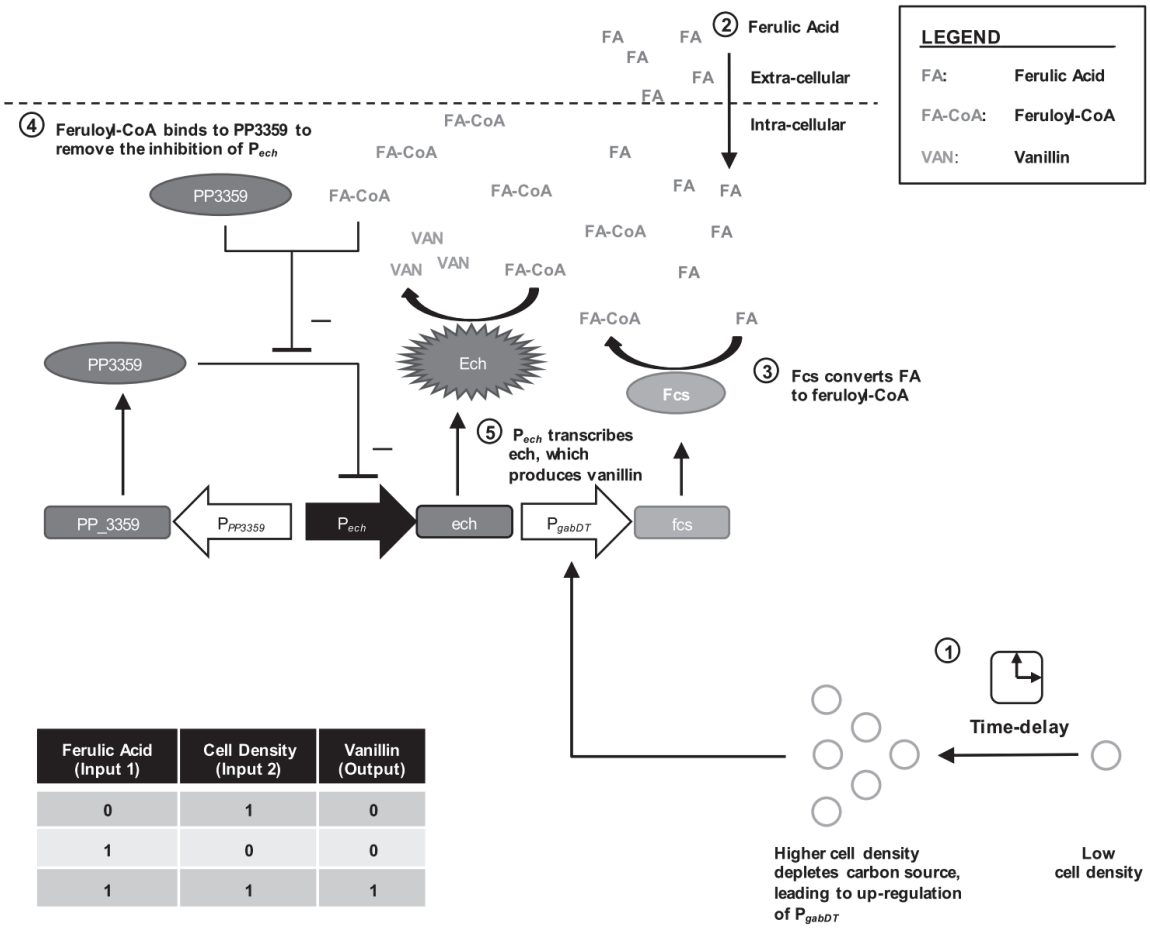


Figure 4



Ferulic Acid (Input 1)	Cell Density (Input 2)	Vanillin (Output)
0	1	0
1	0	0
1	1	1

Figure 5

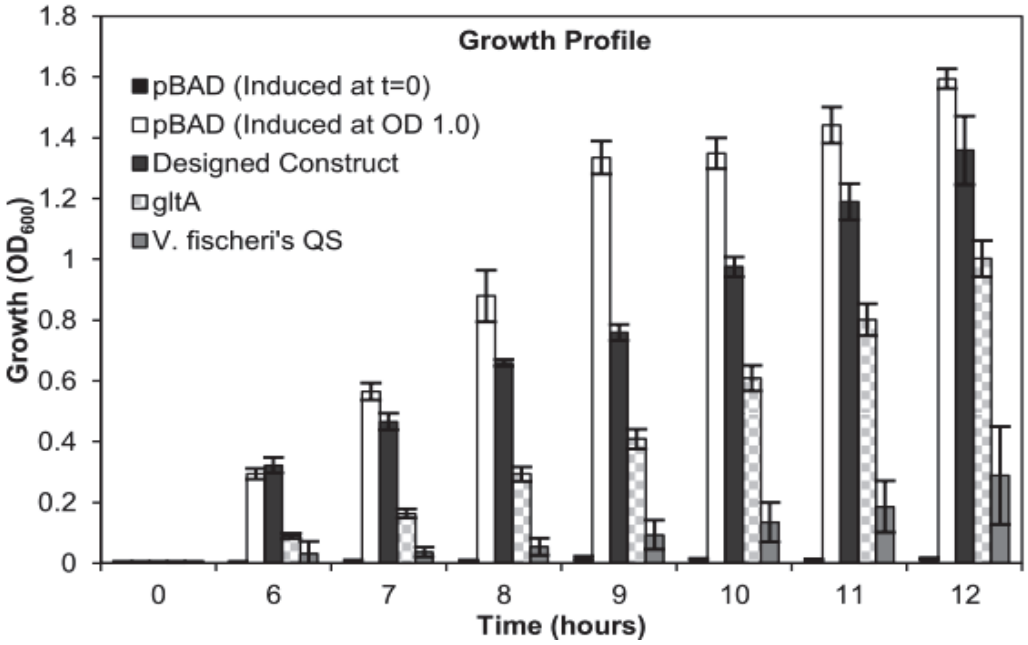


Figure 6

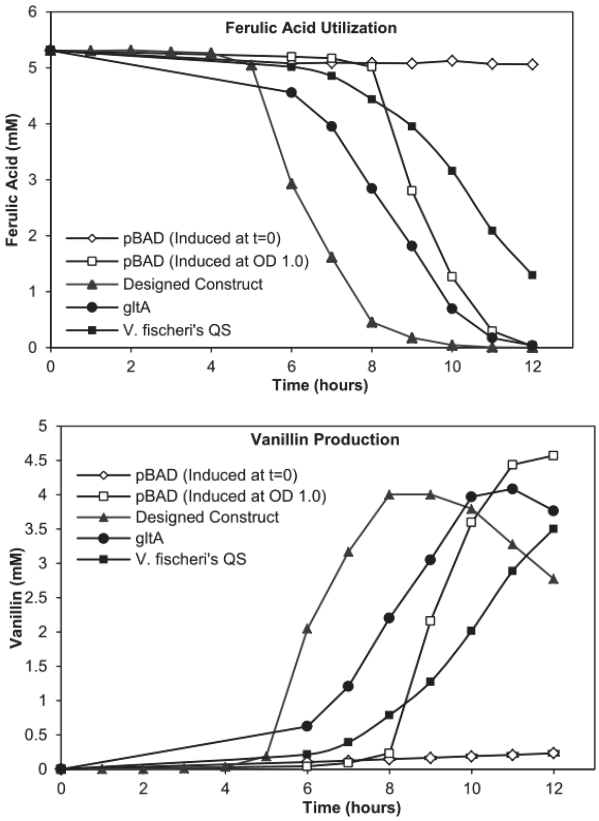


Figure 7