



# fi -mazF- Bacillus subtilis



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## ABSTRACT

MazF-  
Bacillus subtilis,  
mazF-  
B. subtilis  
Bacillus megaterium.  
-mazF-  
amyE  
B. subtilis 1  
-mazF-  
mazF-  
100%.  
fi  
Bacillus  
201\_

## 1. Introduction

Bacillus subtilis, ( ) , ( fi , 2011<sup>f</sup> , 200 ). fi  
( , 200 ). B. subtilis 1 , Bacillus ( , 2002), blaI ( , 200 ), AraR ( , 200 ),  
hewI ( , 2012) fi B. subtilis , . (200 )  
Escherichia coli mazF Bacillus fi ,  
fi ( , 200 ).  
E. coli) ( - , 200<sup>f</sup> )  
200 ).  
-fi  
(200 ) 12 ,

\* E-mail addresses: + 1 210<sup>f</sup> + 1 210 .  
1 ( . ) , fi ( . ) .









3.5. Construction of the strains with unmarked knock-in of green fluorescent protein (GFP) expression cassettes

*B. subtilis* *mazF*<sup>-</sup> (0.1%) *B. subtilis* 1 *amyE*<sup>-</sup> (0.1%), %  
*fl*<sup>-</sup> (0.1%),  
*-mazF*<sup>-</sup> (0.1%),  
*amyE* (1.0%)  
*amyE* (1.0%)

0.2% (0.1%, 0.1%)  
 2- / 2 *amyE* (0.1%), *fi*<sup>-</sup> 1  
 (0.1%) 10  
*amyE*

-mazF- amyE  
 0 fi  
 E. coli mazF  
 mazF-  
 ( , 200 )  
 B. subtilis  
 mazF  
 mazF- % ( , , , , )  
 fi ,  
 B. subtilis 2\_ / ( , , )  
 2001f , 2001).  
 B. subtilis B. subtilis  
 ,  
 fi  
 B. subtilis ( , 2001).  
 , (2010)  
 , (200 ) , -mazF-  
 , -mazF-

Conflict of interest

Acknowledgements

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100, –. 200. *Bacillus subtilis* 200. *Escherichia coli*. 1, 2–. 1 *Bacillus subtilis*. 22, 101–110. 200. *Bacillus subtilis* 1, 2 2–2 0. 1 *Lactobacillus pentosus*. 1, – 1–. 200. *Bacillus subtilis* 1 –1 . 200. *Bacillus subtilis* 2 1–2 . 1 011– 01 . 2001. *Bacillus/Clostridium* 20, 0 –1 . 1 1. *Bacillus megaterium* 1, – 2. *Bacillus* 200. 0, 1–1 . 2011. / / fi 1 . *Tetragenococcus halophila*. 2 1–2 1 . 2012. *Bacillus subtilis* 200. / – 2. *Bacillus subtilis*. 200. fi *Pichia pastoris*. 00– 0 . 2010. fi *Bacillus subtilis* 20, –. 200. *Bacillus subtilis*. 1.