

A newly defined dioxygenase system from *Mycobacterium vanbaalenii* PYR-1 endowed with an enhanced activity of dihydroxylation of high-molecular-weight polyaromatic hydrocarbons

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HIGHLIGHTS

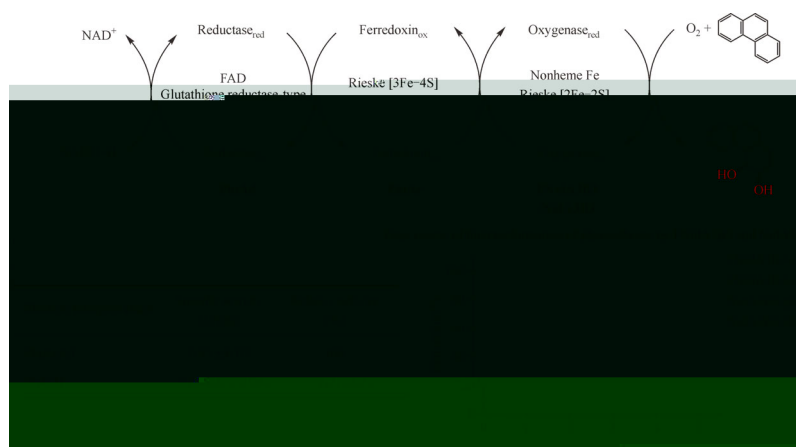
- *Mycobacterium vanbaalenii* PYR-1
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Keywords:

GRAPHIC ABSTRACT



ABSTRACT

Mycobacterium vanbaalenii ... *Nocardioides* ...

1 Introduction

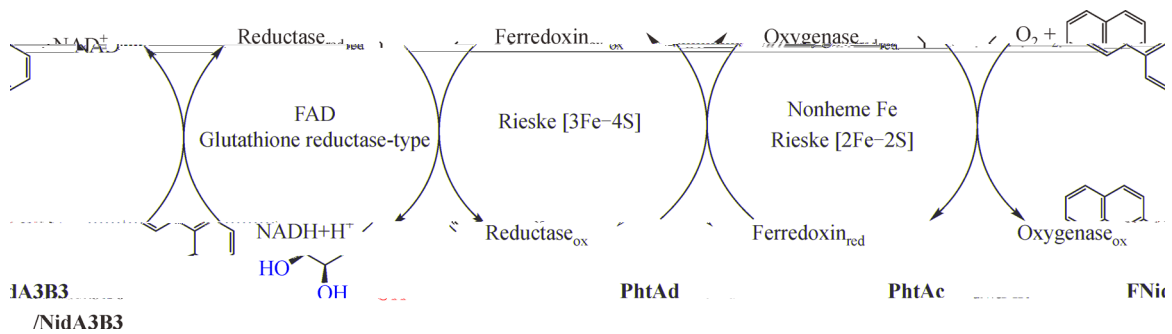
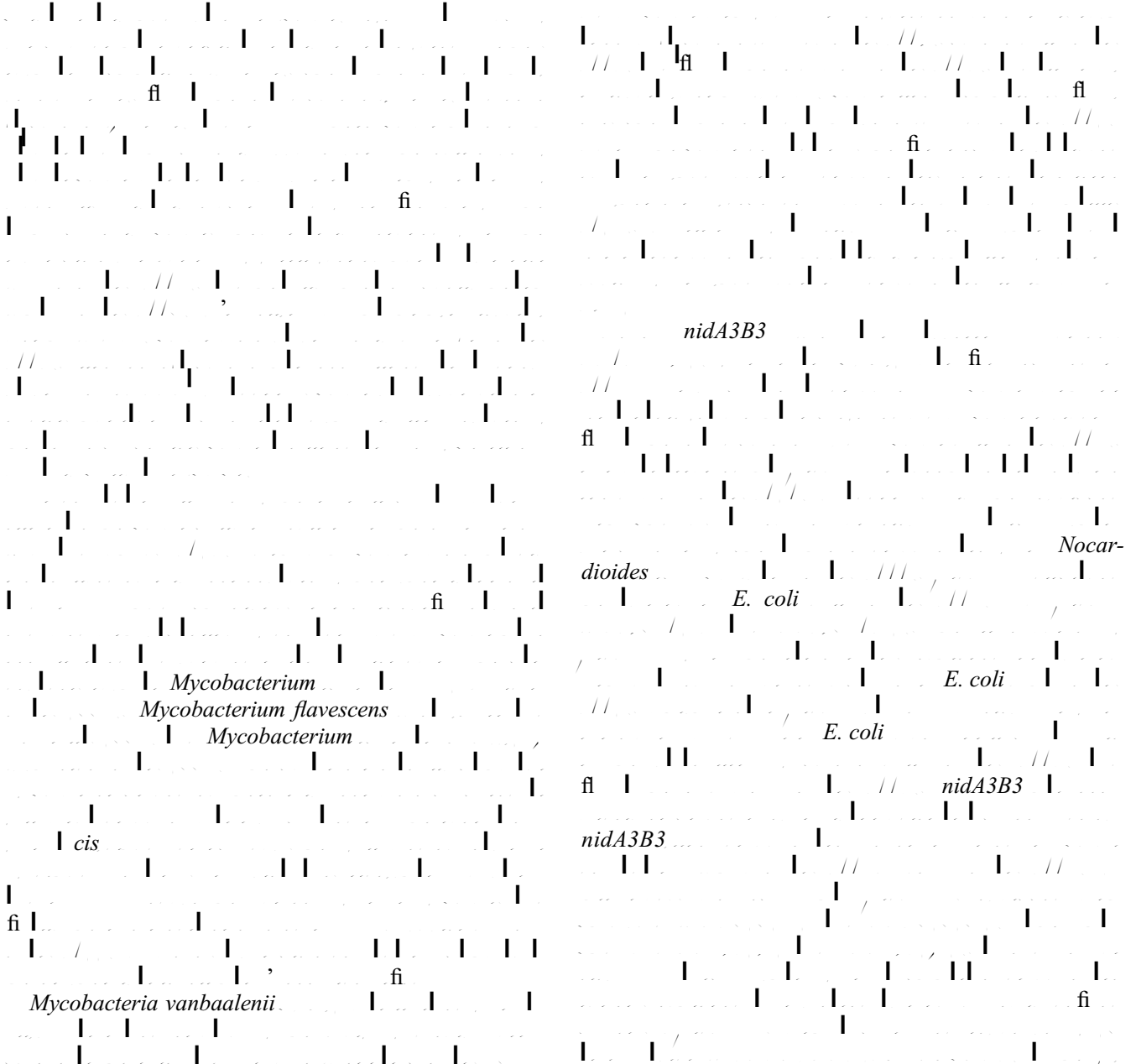


Fig. 1

vanbaalenii

E. coli

fi

/ %

M. vanbaalenii

M.

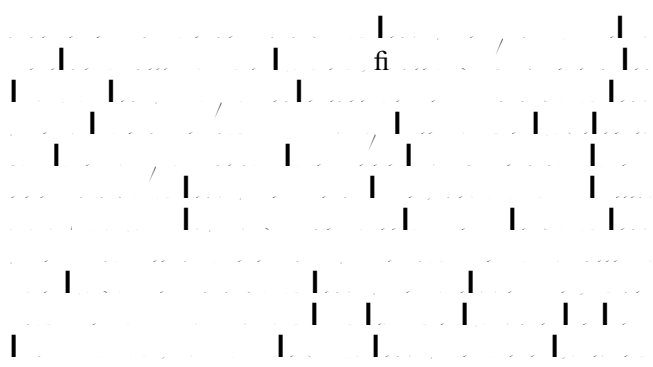
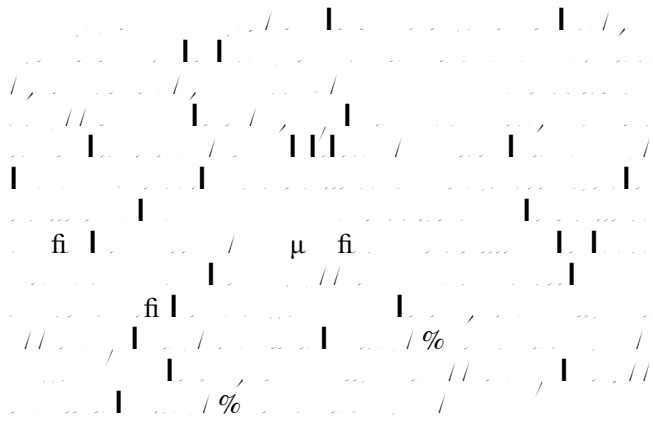
2 Materials and methods

Table 1

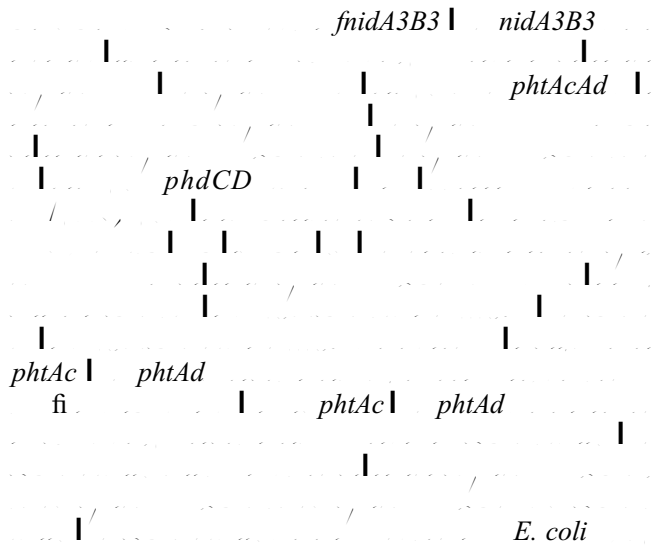
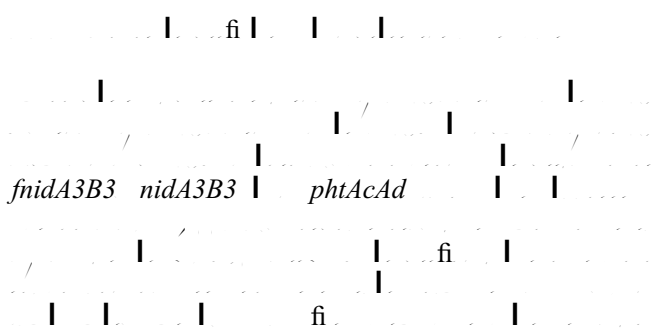
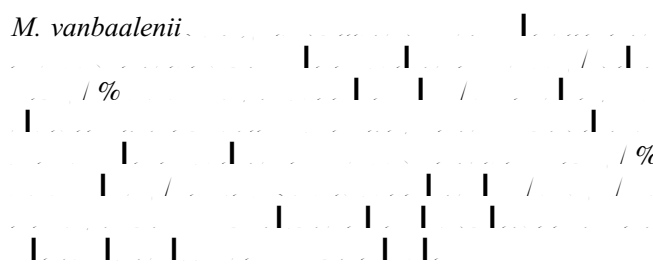
Strain	Genotype
<i>Mycobacterium vanbaalenii</i>	
<i>E. coli</i>	<i>ompT hsdSB (R^{b+} m^{B+}) gal (cI₈₅₇) ind1 Sam7 nin5 lacUV5 T7gene1 dcm ()</i>
<i>E. coli</i>	<i>lacZ⁺ (lacZYA-argF)U169 recA1 endA1 hsdR17 r^{k-} m^{k+} phoA supE44 l-thi-1 gyrA96 relA1 tonA</i>
	<i>fnidA3B3</i>
	<i>nidA3B3</i>
	<i>fnidA3B3 and phtAcAd</i>
	<i>nidA3B3 and phtAcAd</i>
	<i>nid and phdCD</i>
	<i>phtAc</i>
	<i>phtAd</i>

Table 2

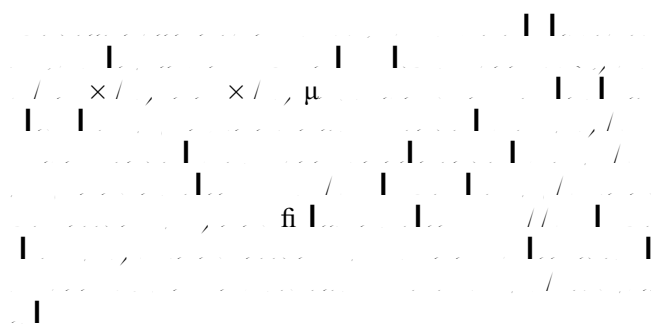
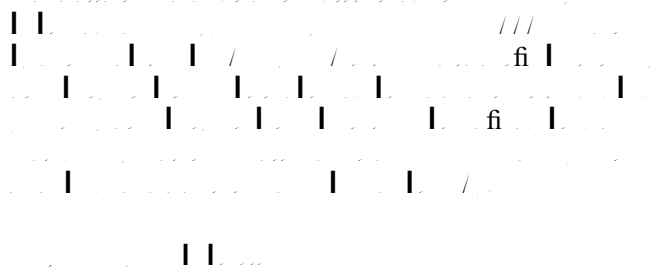
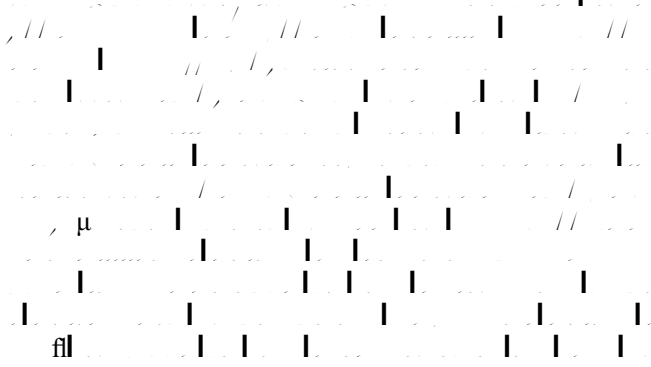
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	<u>GCCGAGCTCGAATTCGGATCC</u>
	<u>TAAGAAGGAGATATACCATGG</u>
	<u>TAAGAAGGAGATATACATATG</u>
	<u>TTTACCAGACTCGAGGGTACC</u>
	<u>TCATCACCACAGCCAGGATCC</u>
	<u>GCATTATGCGGCCGAAGCTT</u>
	<u>TCATCACCACAGCCAGGATCC</u>
	<u>GCATTATGCGGCCGAAGCTT</u>
	<u>TCATCACCACAGCCAGGATCC</u>



M. vanbaalenii



E. coli



E. coli

g
μ

3 Results

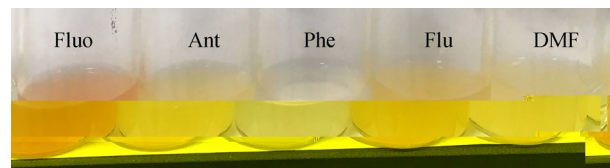


Fig. 2 *M. vanbaalenii*

fl NN

cis

m/z
cis
+

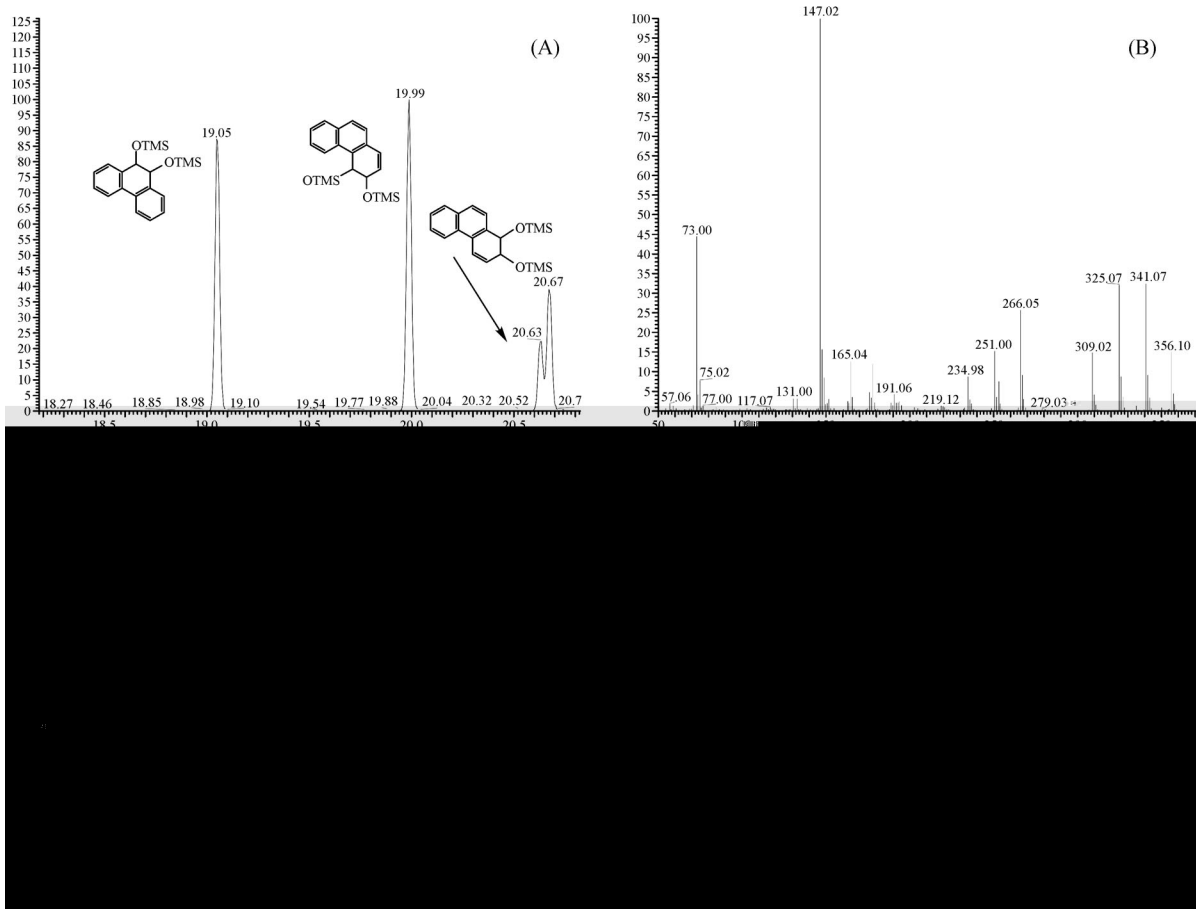
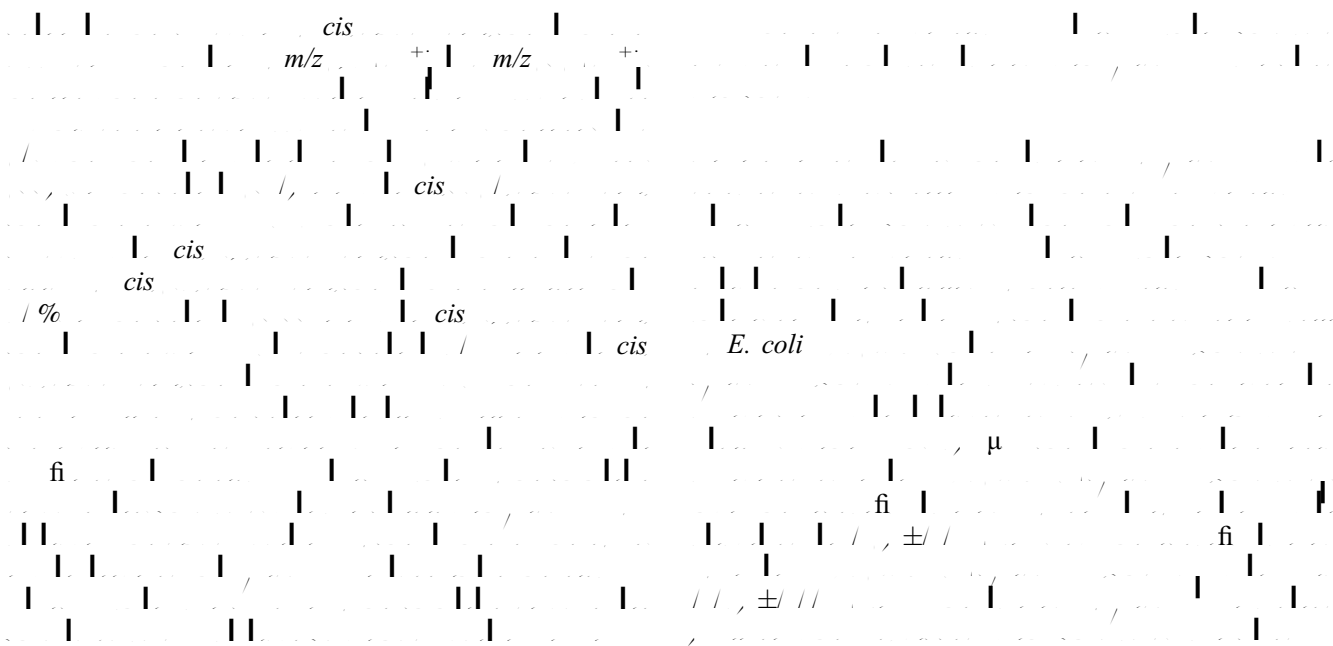


Fig. 3

cis / *cis*

Table 3

fi	%
$1, \pm 1$	//
$11, \pm 11$	±

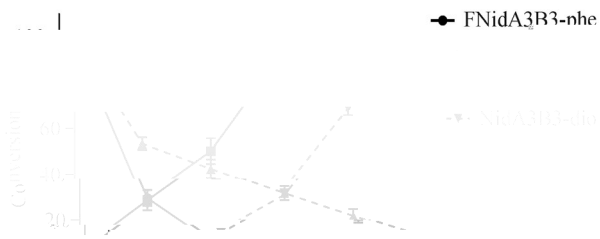


Fig. 4

//% fi //%

Mycobacterium

E. coli

Pseu-

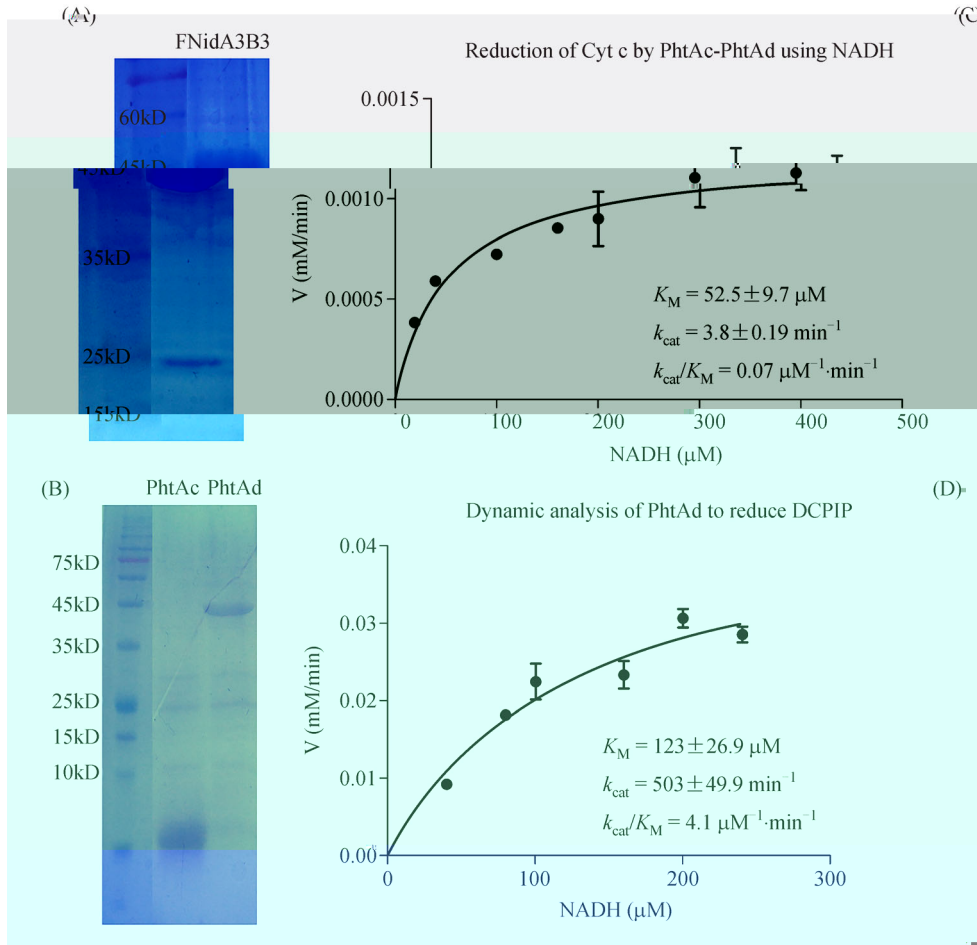
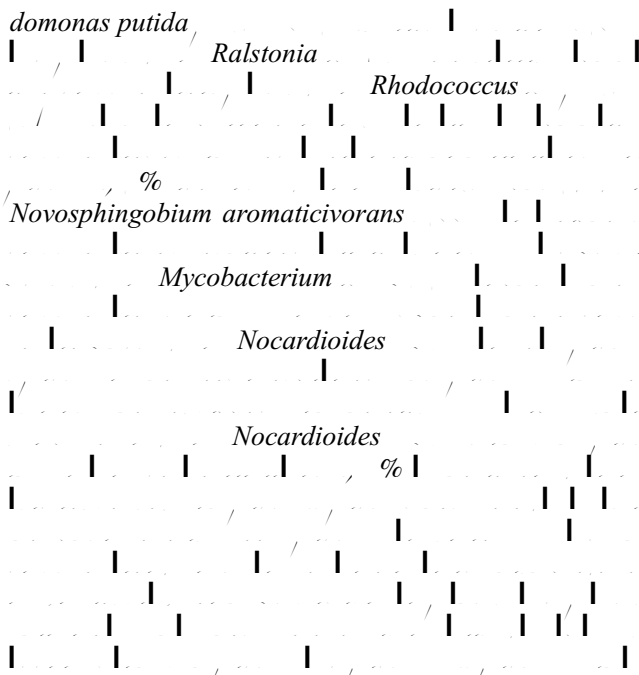
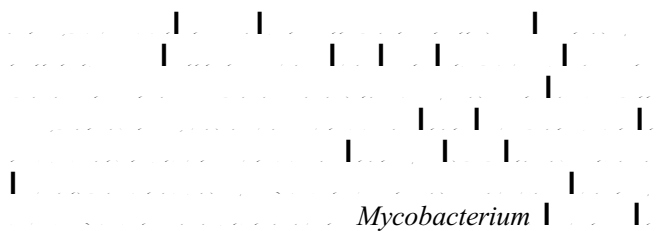


Fig. 5



4 Discussion



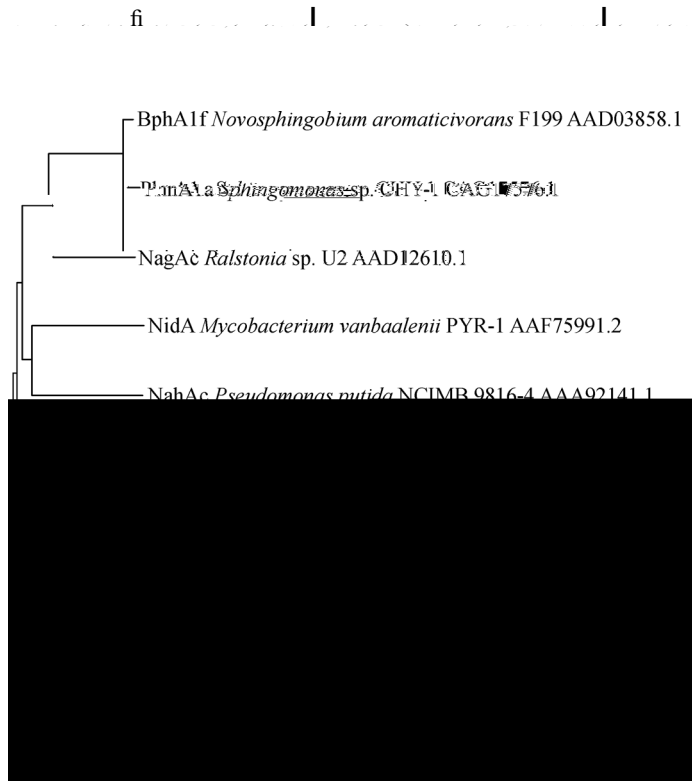
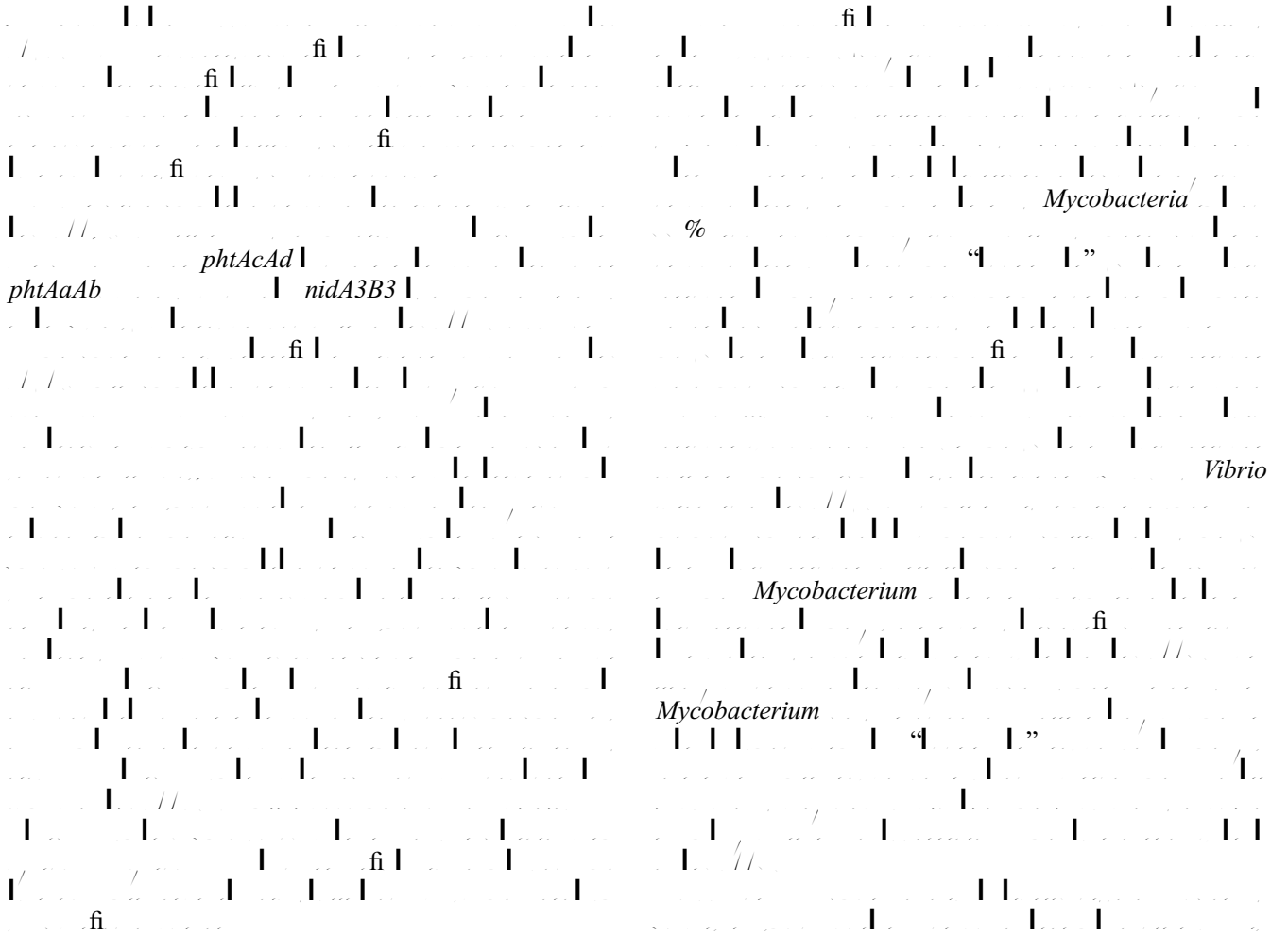


Fig. 6



Mycobacterium Rhodococcus Nocardioiodes
Pseudomonas, Sphingomonas
P. putida
Ralstonia
Sphingobium yanokuyae
 fi
 fi

5 Conclusions

fi
 fi
 fi
 fi

Mycobacterium vanbaalenii

Mycobacterium vanbaalenii

Mycobacterium vanbaalenii

Mycobacterium vanbaalenii

Pseudomonas stutzeri

Mycobacterium vanbaalenii

Mycobacterium tuberculosis

Mycobacterium tuberculosis

Sphingobium yanoikuyae

Mycobacterium

Mycobacterium vanbaalenii

Nocardioides

Escherichia coli

Ralstonia

Mycobacterium

fi