FIG. 1

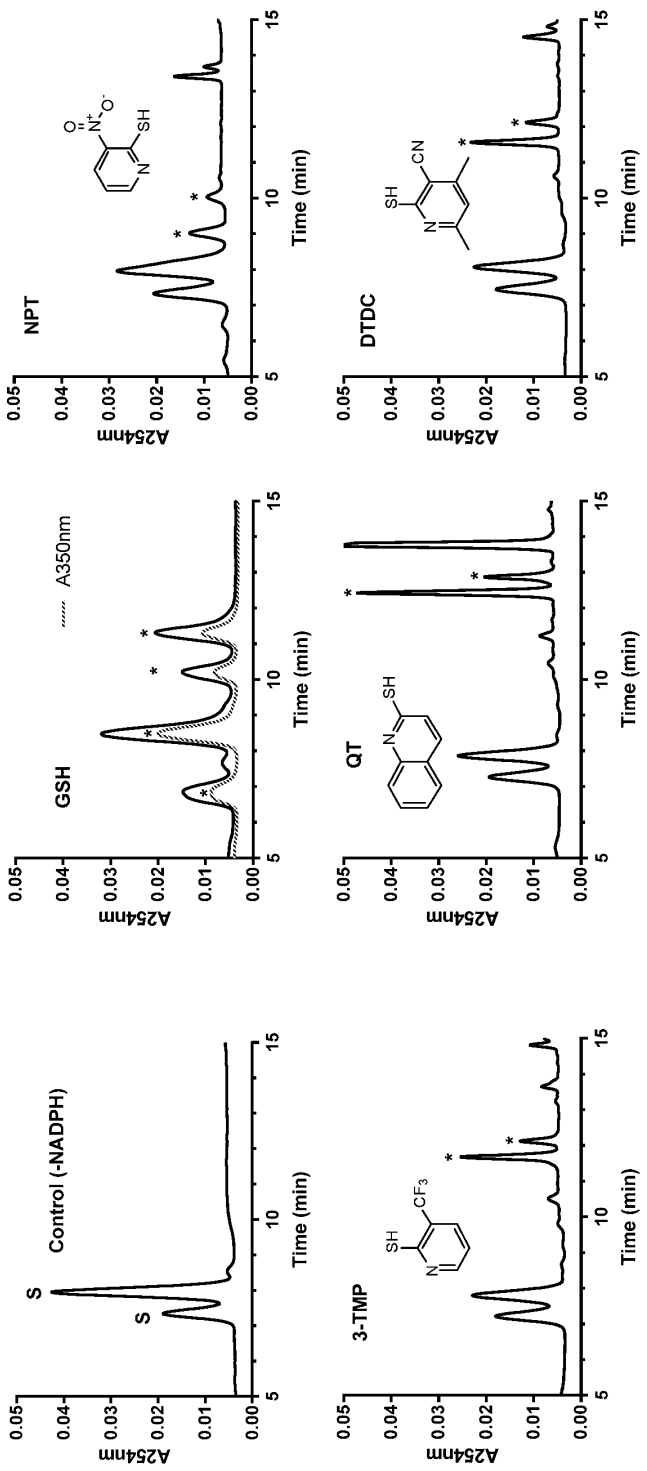

Control (-NADPH)
S
S
A254nm
Time (min)
GSH
A350nm
NPT
QT
DTDC
3-TMP
SH
CF3
CN
N
O
O
*

FIG. 2

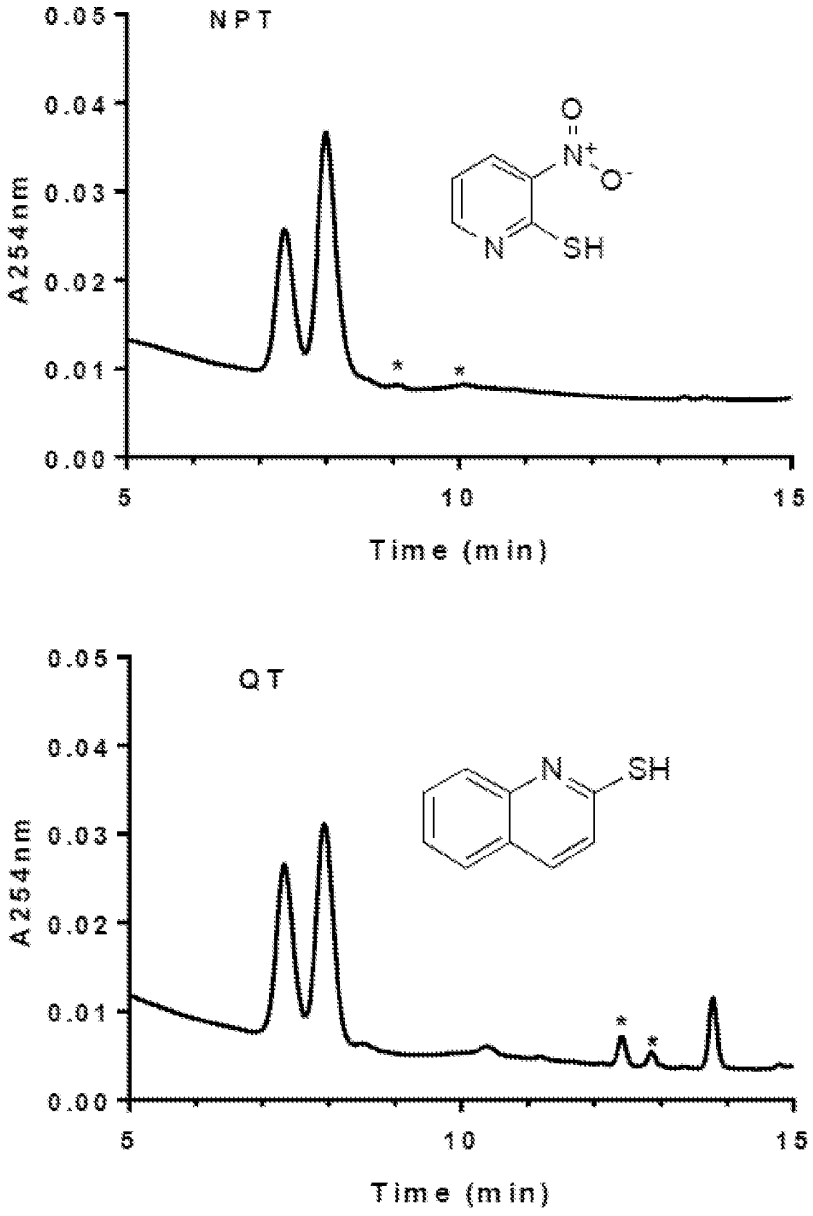

NPT
0.05
0.04
0.03
0.02
0.01
0.00
A254nm
5
10
15
Time (min)
O
N+
O-
N
SH
*
*
QT
0.05
0.04
0.03
0.02
0.01
0.00
A254nm
5
10
15
Time (min)
N
SH
*
*

FIG. 3

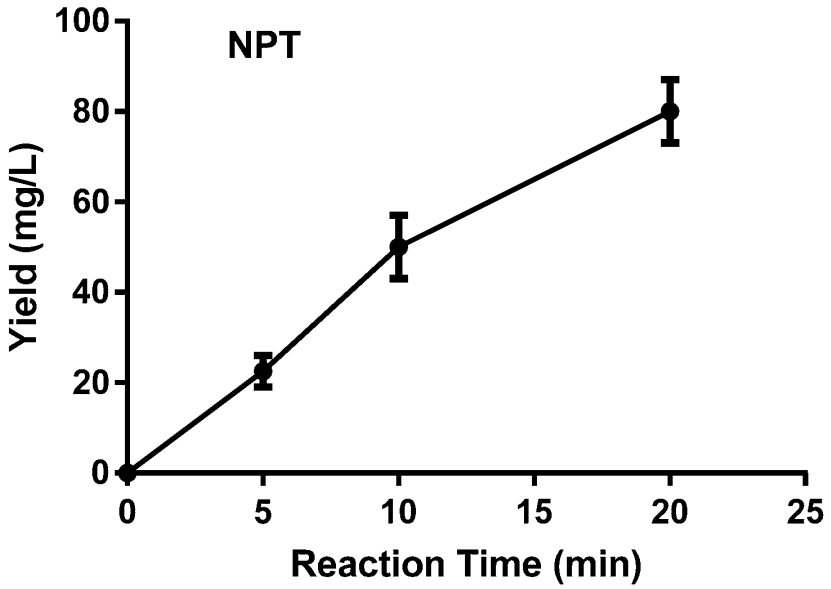


FIG. 4A

Wild Type cDNA of 1541 to 4690 of wild-type B.megaterium cytochrome P-450:NADPH-P-450 reductase gene (see,e.g., Accession J04832)

```
1501                                                atgacaatta aagaaatgcc
1561 tcagccaaaa acgtttggag agcttaaaaa tttaccgtta ttaaacacag ataaaccggt
1621 tcaagctttg atgaaaattg cggatgaatt aggagaaatc tttaaattcg aggcgcctgg
1681 tcgtgtaacg cgctacttat caagtcagcg tctaattaaa gaagcatgcg atgaatcacg
1741 ctttgataaa aacttaagtc aagcgcttaa atttgtacgt gattttgcag gagacgggtt
1801 atttacaagc tggacgcatg aaaaaaattg gaaaaaagcg cataatatct tacttccaag
1861 cttcagtcag caggcaatga aaggctatca tgcgatgatg gtcgatatcg ccgtgcagct
1921 tgttcaaaag tgggagcgtc taaatgcaga tgagcatatt gaagtaccgg aagacatgac
1981 acgtttaacg cttgatacaa ttggtctttg cggctttaac tatcgcttta acagctttta
2041 ccgagatcag cctcatccat ttattacaag tatggtccgt gcactggatg aagcaatgaa
2101 caagctgcag cgagcaaatc cagacgaccc agcttatgat gaaaacaagc gccagtttca
2161 agaagatatc aaggtgatga acgacctagt agataaaatt attgcagatc gcaaagcaag
2221 cggtgaacaa agcgatgatt tattaacgca tatgctaaac ggaaaagatc cagaaacggg
2281 tgagccgctt gatgacgaga acattcgcta tcaaattatt acattcttaa ttgcgggaca
2341 cgaaacaaca agtggtcttt tatcatttgc gctgtatttc ttagtgaaaa atccacatgt
2401 attacaaaaa gcagcagaag aagcagcacg agttctagta gatcctgttc caagctacaa
2461 acaagtcaaa cagcttaaat atgtcggcat ggtcttaaac gaagcgctgc gcttatggcc
2521 aactgctcct gcgttttccc tatatgcaaa agaagatacg gtgcttggag gagaatatcc
2581 tttagaaaaa ggcgacgaac taatggttct gattcctcag cttcaccgtg ataaaacaat
2641 ttggggagac gatgtggaag agttccgtcc agagcgtttt gaaaatccaa gtgcgattcc
2701 gcagcatgcg tttaaaccgt ttggaaacgg tcagcgtgcg tgtatcggtc agcagttcgc
2761 tcttcatgaa gcaacgctgg tacttggtat gatgctaaaa cactttgact ttgaagatca
2821 tacaaactac gagctggata ttaaagaaac tttaacgtta aaacctgaag gctttgtggt
2881 aaaagcaaaa tcgaaaaaaa ttccgcttgg cggtattcct tcacctagca ctgaacagtc
2941 tgctaaaaaa gtacgcaaaa aggcagaaaa cgctcataat acgccgctgc ttgtgctata
3001 cggttcaaat atgggaacag ctgaaggaac ggcgcgtgat ttagcagata ttgcaatgag
3061 caaaggattt gcaccgcagg tcgcaacgct tgattcacac gccggaaatc ttccgcgcga
3121 aggagctgta ttaattgtaa cggcgtctta taacggtcat ccgcctgata acgcaaagca
3181 atttgtcgac tggttagacc aagcgtctgc tgatgaagta aaaggcgttc gctactccgt
3241 atttggatgc ggcgataaaa actgggctac tacgtatcaa aaagtgcctg cttttatcga
3301 tgaaacgctt gccgctaaag gggcagaaaa catcgctgac cgcggtgaag cagatgcaag
3361 cgacgacttt gaaggcacat atgaagaatg gcgtgaacat atgtggagtg acgtagcagc
3421 ctactttaac ctcgacattg aaaacagtga agataataaa tctactcttt cacttcaatt
3481 tgtcgacagc gccgcggata tgccgcttgc gaaaatgcac ggtgcgtttt caacgaacgt
3541 cgtagcaagc aaagaacttc aacagccagg cagtgcacga agcacgcgac atcttgaaat
3601 tgaacttcca aaagaagctt cttatcaaga aggagatcat ttaggtgtta ttcctcgcaa
3661 ctatgaagga atagtaaacc gtgtaacagc aaggttcggc ctagatgcat cacagcaaat
3721 ccgtctggaa gcagaagaag aaaaattagc tcatttgcca ctcgctaaaa cagtatccgt
3781 agaagagctt ctgcaatacg tggagcttca agatcctgtt acgcgcacgc agcttcgcgc
3841 aatggctgct aaaacggtct gcccgccgca taaagtagag cttgaagcct tgcttgaaaa
3901 gcaagcctac aaagaacaag tgctggcaaa acgtttaaca atgcttgaac tgcttgaaaa
3961 atacccggcg tgtgaaatga aattcagcga atttatcgcc cttctgccaa gcatacgccc
4021 gcgctattac tcgatttctt catcacctcg tgtcgatgaa aaacaagcaa gcatcacggt
4081 cagcgttgtc tcaggagaag cgtggagcgg atatggagaa tataaaggaa ttgcgtcgaa
4141 ctatcttgcc gagctgcaag aaggagatac gattacgtgc tttatttcca caccgcagtc
4201 agaatttacg ctgccaaaag accctgaaac gccgcttatc atggtcggac cgggaacagg
4261 cgtcgcgccg tttagaggct ttgtgcaggc gcgcaaacag ctaaaagaac aaggacagtc
4321 acttggagaa gcacatttat acttcggctg ccgttcacct catgaagact atctgtatca
4381 agaagagctt gaaaacgccc aaagcgaagg catcattacg cttcataccg ctttttctcg
4441 catgccaaat cagccgaaaa catacgttca gcacgtaatg gaacaagacg gcaagaaatt
4501 gattgaactt cttgatcaag gagcgcactt ctatatttgc ggagacggaa gccaaatggc
4561 acctgccgtt gaagcaacgc ttatgaaaag ctatgctgac gttcaccaag tgagtgaagc
4621 agacgctcgc ttatggctgc agcagctaga agaaaaaggc cgatacgcaa aagacgtgtg
4681 ggctgggtaa
```

FIG. 4B – Wild type amino acid sequence for B.megaterium cytochrome P-450:NADPH-P-450 reductase gene (see,e.g., Accession J04832) (SED ID NO: 2)

```
tikempqpkt fgelknlpll ntdkpvqalm kiadelgeif kfeapgrvtr ylssqrlike      60
acdesrfdkn lsqalkfvrd fagdglftsw theknwkkah nillpsfsqq amkgyhammv     120
diavqlvqkw erlnadehie vpedmtrltl dtiglcgfny rfnsfyrdqp hpfitsmvra     180
ldeamnklqr anpddpayde nkrqfqedik vmndlvdkii adrkasgeqs ddllthmlng     240
kdpetgepld deniryqiit fliaghetts gllsfalyfl vknphvlqka aeeaarvlvd     300
pvpsykqvkq lkyvgmvlne alrlwptapa fslyakedtv lggeyplekg delmvlipql     360
hrdktiwgdd veefrperfe npsaipqhaf kpfgngqrac igqqfalhea tlvlgmmlkh     420
fdfedhtnye ldiketltlk pegfvvkaks kkiplggips psteqsakkv rkkaenahnt     480
pllvlygsnm gtaegtardl adiamskgfa pqvatldsha gnlpregavl ivtasynghp     540
pdnakqfvdw ldqasadevk gvrysvfgcg dknwattyqk vpafidetla akgaeniadr     600
geadasddfe gtyeewrehm wsdvaayfnl diensednks tlslqfvdsa admplakmhg     660
afstnvvask elqqpgsars trhleielpk easyqegdhl gviprnyegi vnrvtarfgl     720
dasqqirlea eeeklahlpl aktvsveell qyvelqdpvt rtqlramaak tvcpphkvel     780
eallekqayk eqvlakrltm lellekypac emkfsefial lpsirpryys issprvdek      840
qasitvsvvs geawsgygey kgiasnylae lqegdtitcf istpqseftl pkdpetplim     900
vgpgtgvapf rgfvqarkql keqgqslgea hlyfgcrsph edylyqeele naqsegiitl     960
htafsrmpnq pktyvqhvme qdgkkliell dqgahfyicg dgsqmapave atlmksyadv    1020
hqvseadarl wlqqleekgr yakdvwag                                       1048
```

FIG. 4C

Optimized CDNA sequence of BM3 (The underlined section indicates hexaHistag)(SEQ ID NO: 3)

ATGCACCATCATCATCATCATATTAAGGAGATGCCGCAGCCAAAAACATTCGGCGAA
CTCAAAAACTTACCATTACTGAATACCGACAAACCGGTCCAAGCACTGATGAAAATT
GCGGACGAATTAGGTGAAATCTTCAAATTCGAGGCGCCCGGTCGCGTAACACGTTAT
TTATCCAGTCAGCGCCTTATCAAAGAAGCGTGTGATGAAAGTCGTTTTGATAAAAAT
CTGTCCCAGGCACTTAAATTTGTTCGTGACTTTTTCGGTGATGGCCTGTTTACCTCT
TGGACTCATGAAAAAAACTGGAAAAAAGCGCATAATATCTTGCTTCCGTCGTTTTCG
CAGCAGGCAATGAAAGGTTACCATGCCATGATGGTCGATATTGCCGTCCAGCTGGTG
CAAAAATGGGAACGTCTTAACGCTGATGAACATATTGAAGTGCCCGAAGACATGACC
CGTCTGACGCTGGATACTATTGGACTGTGCGGGTTCAACTATCGTTTCAACTCCTTC
TACCGTGATCAGCCACATCCGTTTATTACTTCTATGGTCCGCGCCTTAGACGAAGCC
ATGAACAAACTGCAGCGCGCCAACCCAGACGACCCAGCTTATGATGAGAATAAACGT
CAGTTTCAAGAAGACATCAAAGTCATGAACGACTTAGTGGATAAAATTATTGCAGAC
CGTAAAGCGAGCGGCGAACAGAGTGATGACCTGCTTACCCACATGCTGAATGGTAAA
GATCCAGAGACCGGCGAGCCGTTAGATGATGAAAATATTCGCTACCAGATCATTACC
TTTTTAATCGCAGGACACGAAACAACAAGTGGACTGCTCAGCTTTGCACTCTACTTT
CTGGTTAAAAACCCGCATGTTCTGCAAAAAGCAGCGGAAGAGGCCGCCCGTGTGCTG
GTCGATCCGGTTCCCAGCTATAAACAGGTCAAACAGTTAAAATACGTGGGCATGGTC
TTAAACGAGGCTCTGCGCTTATGGCCAACAGCACCAGCATTTTCGTTATATGCAAAA
GAAGATACCGTTCTGGGAGGAGAATACCCGTTAGAAAAAGGCGACGAGCTTATGGTG
CTGATCCCACAGTTACACCGTGATAAAACCATTTGGGGCGACGATGTGGAAGAATTT
CGCCCAGAACGTTTCGAGAACCCTAGCGCAATTCCACAGCATGCCTTCAAACCCTTC
GGGAACGGTCAGCGCGCGTGCATTGGGCAGCAGTTCGCGCTGCATGAAGCAACTTTG
GTGTTAGGCATGATGCTGAAACACTTTGATTTTGAAGACCACACGAATTATGAACTG
GATATTAAAGAAACCCTGACACTGAAACCAGAAGGATTCGTAGTTAAAGCGAAAAGC
AAAAAGATTCCGCTGGGTGGCATTCCGAGCCCATCCACCGAACAGAGCGCGAAAAAA
GTTCGGAAAAAGGCGGAAAATGCGCACAATACCCCCTTGTTAGTCCTTTACGGCTCA
AATATGGGCACAGCAGAAGGCACCGCACGTGACTTAGCCGATATTGCAATGAGCAAG
GGTTTCGCGCCCCAAGTCGCGACCTTGGATTCACACGCTGGAAACCTGCCGCGGGAA
GGCGCCGTCCTTATCGTTACTGCCTCATATAACGGTCACCCTCCGGACAATGCGAAA
CAATTTGTGGACTGGTTAGATCAAGCCTCGGCCGACGAAGTGAAAGGCGTTCGTTAT
TCTGTTTTTGGATGTGGGGATAAAAACTGGGCGACGACGTACCAAAAAGTCCCTGCT
TTTATTGATGAAACGTTGGCTGCAAAAGGTGCAGAAAACATTGCAGACCGTGGCGAA
GCAGACGCGAGCGACGACTTTGAAGGTACCTATGAGGAATGGCGTGAACACATGTGG
AGTGATGTCGCCGCTTACTTCAACTTAGATATTGAAAATTCCGAAGATAATAAAAGT
ACCCTGAGCTTGCAATTCGTGGACTCGGCTGCCGACATGCCGCTCGCTAAAATGCAC
GGGGCGTTTAGTACGAATGTAGTGGCTTCCAAAGAGTTGCAACAACCCGGTAGCGCA
CGCTCGACCCGGCACCTGGAAATTGAATTACCGAAGGAAGCGTCTTATCAGGAAGGA

FIG. 4C (cont'd)

GATCATCTGGGTGTAATCCCACGCAATTACGAAGGTATTGTTAATCGCGTTACCGCG
CGTTTTGGTTTAGATGCCTCCCAACAAATCCGTTTAGAAGCAGAAGAAGAAAAACTC
GCGCATTTACCCTTAGCCAAAACCGTTTCGGTCGAAGAACTGCTGCAATATGTTGAA
CTTCAGGACCCTGTGACCCGTACCCAGCTCCGTGCCATGGCCGCGAAAACAGTATGC
CCACCCCACAAAGTTGAATTAGAGGCGCTGTTAGAGAAACAAGCATACAAAGAACAA
GTGTTAGCTAAGCGTCTGACCATGTTAGAGTTACTGGAGAAATATCCGGCGTGCGAG
ATGAAATTCTCAGAATTCATTGCATTGTTGCCGAGCATTCGTCCGCGGTATTACAGT
ATCTCGAGCTCACCGCGCGTTGATGAAAAACAGGCCTCTATTACGGTCTCCGTAGTT
TCCGGCGAAGCCTGGAGCGGGTATGGAGAATATAAAGGAATTGCTAGCAACTATCTC
GCGGAGCTGCAAGAGGGCGACACTATTACATGCTTCATTTCTACGCCGCAATCCGAA
TTTACACTGCCGAAAGACCCGGAAACGCCACTCATTATGGTAGGCCCAGGTACTGGC
GTAGCGCCATTTCGCGGATTCGTTCAGGCTCGTAAACAGTTGAAAGAACAAGGTCAA
AGTCTTGGCGAAGCACATTTATACTTCGGCTGCCGCTCGCCGCATGAGGACTATCTC
TATCAGGAAGAATTGGAGAACGCACAGAGTGAGGGCATTATCACCTTGCATACGGCT
TTTTCTCGCATGCCTAATCAACCTAAAACCTATGTCCAACATGTGATGGAGCAGGAT
GGAAAAAAATTGATCGAGCTGTTGGATCAGGGCGCGCATTTTTACATTTGCGGGGAT
GGTTCGCAGATGGCACCCGCCGTGGAGGCCACCCTTATGAAAAGCTATGCAGATGTG
CACCAGGTAAGCGAAGCGGATGCCCGTCTGTGGCTGCAACAGTTGGAAGAAAAAGGT
CGCTATGCAAAAGACGTGTGGGCAGGT