Escherichia coli

### ! ''!#\$%&'()#\*+,-.-/%0-12#

## 32%(45-5#1.#06)#5%&'()#-2#7\*!89:\$##

-/)\$\\"+&-'1234'>8:9\#\"790:\"\#\\")'-&\\$/>7\&-'/\\*\!?/0.:\&'=\(\bar{0}\)\\$\&\&-'.\\$\'78\&\\\#\/\\\"\\\+\\\\)\\\\ #&789-'(")'#9-/?/&-'")')89(\*'/\*'7"<\&'C'79')89:7&\*'78&':&7&\*7/9\*'7/#&'79'CD'#/\*.7&)@'E/0.:&'C' :&\$:&)&\*7)'78&'1234'>8:9#"790:"#'9<7"/\*&-'(/78'78&'#9-/?/&-'#&789-@''

! "#\$%\d'(\d') \*#+\$%\d, - ".\d\d'\0"1+\23.\d4.\H\d\\$\*0\d3-\d6\789:);\d,<.3\\=\d>\*2.+.3+2\d\*\*5\d?\d\d) +\\$\frac{1}{4} \tag{21}\d BC'D & 5\*0 = +> &''> + 1 &'' 21 & E & U'> % 3\*2 + 30 + \$ % U'' 21 & BC'D & 5\*0 = +> &''> + 1 & U'FB & = - & > \$4 = 2 & G'' & 4. % 1 & 4.

;-&)<&-2+0)5=#	>(1?<&(@&-2=#	3 A#	<b>B A</b> #
F*/7/''%'	G@H'	=GG'	G'
HG'	G@H'	HG'	IG'
HG@G='	G@H'	J'	KJ'
HD@G='	G@H'	J'	KJ'
HD@GC'	G@H'	=GG'	G'
LC@G='	G@H'	=GG'	G'

! "#\$%&H(&) \*#+\$%&, - ".%&/0"1+%23.&4.%1&5\*0&3-%&6789:); &.<.3%=&>\*2.+.3+2/&\*5&?&\) +\$\$+:A&"21& BC'D&5\*0=+>&">+1&"21&E&\*">%3\*2+30+\$%\"21&BC'D&5\*0=+>&">+1&"+1&\*B&==&\$\*\$4=2&G".&4.%10&

;-&)<&-2+0)5=#	>(1?<&(@&-2=#	3 A#	<b>B A</b> #
F*/7/''%'	G@D'	KJ'	J'
G@MG'	G@D'	KJ'	J'
C@GG'	G@D'	IG'	HG'
D@ <b>J</b> G'	G@D'	CJ'	IJ'
I@GG'	G@D'	J'	KJ'
M <b>0J</b> G'	G@D'	KJ'	J'

 $I + /40\% \ell' (\&6789 \& > -0* = "3*/0" = \&*\#3" + 2\%I \& G + 3 - \& 23 - *I \& = \%23 + *2\%I \& 4 - \& \ell' "\#\$\% \ell' \& \ell' FB \& = \& > *\$4 = 2\& G" . \&4.\%I \& "21 \& 3*3" \& 042 \& 3 + = \% G" . \&JH(B' \& = +243\% G + 3 - \& 5 * G \& 0"3\% * 5 \& B(K = \& 6, \%0 \& = +243\% \& 6 + 3 - \& 5 * G \& 0"3\% * 5 \& B(K = \& 6, \%0 \& = +243\% \& 6 + 3 - \& 5 * G \& 0"3\% * 5 \& B(K = \& 6, \%0 \& = +243\% \& 6 + 3 - \& 5 * G \& 0"3\% * 5 \& B(K = \& 6, \%0 \& = +243\% \& 6 + 3 - \& 5 * G \& 0"3\% * 5 \& B(K = \& 6, \%0 \& = +243\% \& 6 + 3 - \& 5 * G \& 0"3\% * 5 \& B(K = \& 6, \%0 \& = +243\% \& 6 + 3 - \& 5 * G \& 0"3\% * 5 \& B(K = \& 6, \%0 \& = +243\% \& 6 + 3 - \& 5 * G \& 0"3\% * 5 \& B(K = \& 6, \%0 \& = +243\% \& 6 + 3 - \& 5 * G \& 0"3\% * 5 \& B(K = \& 6, \%0 \& = +243\% \& 6 + 3 - \& 5 * G \& 0"3\% * 5 \& B(K = \& 6, \%0 \& = +243\% \& 6 + 3 - \& 5 * G \& 0"3\% * 5 \& B(K = \& 6, \%0 \& = +243\% \& 6 + 3 - \& 5 * G \& 0"3\% * 5 \& B(K = \& 6, \%0 \& = +243\% \& 6 + 3 - \& 5 * G \& 0"3\% * 5 \& B(K = \& 6, \%0 \& = +243\% \& 6 + 3 - \& 5 * G \& 0"3\% * 5 \& B(K = \& 6, \%0 \& = +243\% \& 6 + 3 - \& 5 * G \& 0"3\% * 5 \& B(K = \& 6, \%0 \& = +243\% \& 6 + 3 - \& 5 * G \& 0"3\% * 5 \& B(K = \& 6, \%0 \& = +243\% \& 6 + 3 - \& 5 * G \& 0"3\% * 5 \& B(K = \& 6, \%0 \& = +243\% \& 6 + 3 - \& 5 * G \& 0"3\% * 5 \& B(K = \& 6, \%0 \& = +243\% \& 6 + 3 - \& 5 * G \& 0"3\% \& 6 + 3 - \& 5 * G \& 0"3\% \& 6 + 3 - \& 5 * G \& 0"3\% \& 6 + 3 - \& 5 * G \& 0"3\% \& 6 + 3 - \& 5 * G \& 0"3\% \& 6 + 3 - \& 5 * G \& 0"3\% \& 6 + 3 - \& 5 * G \& 0"3\% \& 6 + 3 - \& 5 * G \& 0"3\% \& 6 + 3 - \& 5 * G \& 0"3\% \& 6 + 3 - \& 5 * G \& 0"3\% \& 6 + 3 - \& 5 * G \& 0"3\% \& 6 + 3 - \& 5 * G \& 0"3\% \& 6 + 3 - \& 5 * G \& 0"3\% \& 6 + 3 - \& 5 * G \& 0"3\% \& 0"$ 

 $I + /40\% H (\&6789\&, \%'' L\&G + 3 - \&3 - \%\& = \%3 - *1\& = *1 + 5 + \%1\&3 *\&0\%14 > \%3 - \%40\%3\%23 + *2\&3 + = \%3 *\&MCF\& = +2C\&FB\& = & \\ > *\$4 = 2\&G'' . \&4 . \%1\&'' 21\&3 *3'' \$\&042\&3 + = \%6G'' . \&MCF\& = +243\%G + 3 - \&5\$*G\&0'' 3\%\&*5\&BCN = \$\&, \%0\& = +243\%C\&1.$ 

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! "#\$%&K(&) \*#+\$%&, - ".%&/0"1+%23.&4.%1&5\*0&3-%&70%, :O789&>\*2.+.3+2/&\*5&?&&) +\$\$+:A&"21&BC'&! I?&
"21&E&">%3\*2+30+\$%&"21&BC'D&! I?&HFB&==&>\*\$4=2&G".&4.%1&

;-&)<&-2+0)5=#	>(1?<&(@&-2=#	3 A#	<b>B A</b> #
F*/7/''%'	L'	KJ'	J'
C'	L'	KJ'	J'
=C'	L'	LC'	JM'
CC'	L'	CJ'	IJ'
CC@G='	L'	G'	KJ'
CJ'	L'	G'	KJ'
CJ@G='	L'	KJ'	J'
CD'	L'	KJ'	J'

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I + /40% K (&9 - 0\* = "3\*/0" = &50\* = &70%, :O789 &P4% 3\*& - +/-&" = \*423. &\*5& > \*23" = 11.0 &23&, 0%. %23& +2&0&" = &50\* = &

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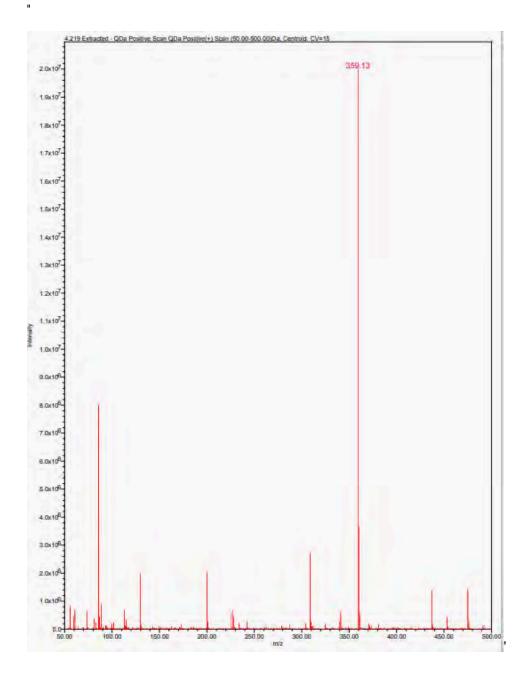
# \*,)0,)%0&)20#1.#06)#5%&'()#

### \*+,-.-/%0-12#1.#7''),#\$+'),2%0%20#!%4),#+5-2D#\*,)'9C\*!8#

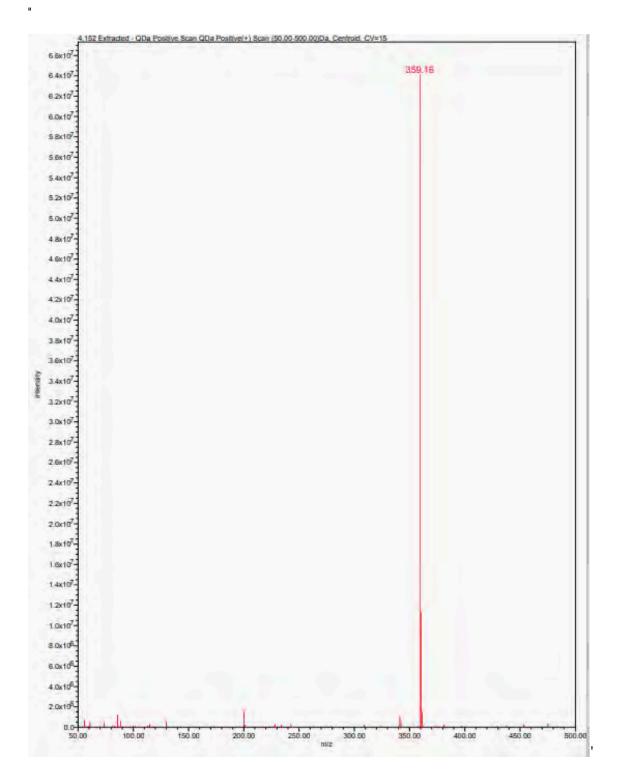
Y?7&:'>9\*?/: #/\*0' ( /78' 1 2 3 4 5 6 ! '78"7'9 .:')" #\$%&)'9?'/\*7&:&)7'8";&'<&&\*'>9 #\$%&7&%+':&>9;&:&-'/\*' .\$\$&:') .\$&:\*"7"\*7'%"+&:'"?7&:'?9 .:':9 .\*-)'9?' ( ")8/\*0B'/7' ( ")'78&\*'\$ .:/?/&-' .)/\*0'2:&\$5N2340' T":/9 .)'?:">7/9\*)' ( &:&'>9\\\&>7&-'"\*-' ( &:&'"\\)9'"\*"\\+,&-'9\*'78&'"\*"\\+7/>"\\'123456!'79' -&7&:#/\*&' ( 8/>8'?:">7/9\*)'79' .)&'?9:'? .:78&:'\$ .:/?/>"7/9\*'9?'78&'>9 #\$9 .\*-)'9?'/\*7&:&)70' !9 #&' ?:">7/9\*)'>9\*7"/\*&-'#9:&'78"\*'9\*&')" #\$\\&)'9?'/\*7&:&)7' ( 8/>8') .00&)7)'78"7')&>9\*-'\$ .:/?/>"7/9\*'/)' \*&&-&-0"'

I + /40% &M(&6789& > -0\* = "3\*/0" = &\*5&50" > 3+\*2&"&. -\*G+2/&, %"L&\*5& = TWZ&KF[C'KC&&C'] + /40% &M(&6789& > -0\* = "3\*/0" = &\*5&50" > 3+\*2&"&. -\*G+2/&, %"L&\*5& = TWZ&KF[C'KC&&C'] + /40% &M(&6789& > -0\* = "3\*/0" = &\*5&50" > 3+\*2&"&. -\*G+2/&, %"L&\*5& = TWZ&KF[C'KC&&C'] + /40% &M(&6789& > -0\* = "3\*/0" = &\*5&50" > 3+\*2&"&. -\*G+2/&, %"L&\*5& = TWZ&KF[C'KC&&C'] + /40% &M(&6789& > -0\* = "3\*/0" = &\*5&50" > 3+\*2&"&. -\*G+2/&, %"L&\*5& = TWZ&KF[C'KC&&C'] + /40% &M(&6789& > -0\* = "3\*/0" = &\*5&50" > 3+\*2&"&. -\*G+2/&, %"L&\*5& = TWZ&KF[C'KC&&C'] + /40% &M(&6789& > -0\* = -1) + /40% &M(&6789& > -0\* = -1)





 $I + /40\% \{ (\&) ; \&., \%>30 \text{``l}\% \text{V30''}>3\% 1 \text{$l50$}*= \text{$l50$''}>3+*2 \text{$l$''} \text{$l*5} \text{$l>*}=, *421 \text{$l$G}+3-\text{$l3-\%} \text{$l0\%3\%23}+*2 \text{$l3+=\%} \text{$l*5} \text{$l$} \text{$ 



 $I + /40\% \text{ '' (l. )}; \text{ l. , } \%>30\text{ ''l}\%V30\text{ ''}>3\%1\text{ ll}50* = \text{ ll}50\text{ ''}>3+*2\text{ lH}\text{ ll}*5\text{ ll}>*= \text{ , } *421\text{ ll}G+3-\text{ ll}3-\text{ ll}60\%3\%23+*2\text{ ll}3+=\text{ ll}43\%\text{ ll}450* = \text{ ll}450* = \text{$ 

 $I + /40\% \ 'H(\&\ )\ ; \&.\ , \%>30 \ ''\&\%V30 \ ''>3\%1\&50 \ *=\&50 \ ''>3+*2\&H\&*5\&>*=\ , *421\&G+3-\&3-\%\&0\%3\%23+*2\&3+=\%\&*5\&JCJFX\&=+243\%C\&$ 

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 $I + /40\% \ 'J(\&\ )\ ; \&.\ , \%>30'' \&\%V30''>3\%I\&50*=\&50''>3+*2\&K\&*5\&>*=\ , *42I\&G+3-\&3-\%\&0\%3\%23+*2\&3+=\%\&*5\&J'F[\&\ =+243\%\&6]$ 

 $I + /40\% \ 'F(\&) \ ; \&.\ , \%>30 \ ''\&\%V30 \ ''>3\%1\&50 \ *=\&50 \ ''>3+*2\&K\&*5\&>*= \ , *421\&G+3-\&3-\%\&0\%3\%23+*2\&3+=\%\&*5\&JCJ \ 'J\&=+243\%\&$ 

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I + /40% 'M( ) ; &. , %>30 ''&W30 ''>3%1&50 \*= &50 ''>3 + \*2&J&\*5&> \*= , \*421&G+3-&3-%&0%3%23 + \*2&3 + = %&\*5&JCMNK& = +243%&6

 $I + /40\% \ ' \ [(\&\ )\ ;\&.\ ,\%>30''\&\%V30''>3\%1\&50*=\&50''>3+*2\&J\&*5\&>*=\ ,*421\&G+3-\&3-\%\&0\%3\%23+*2\&3+=\%*5\&FCBNN\&=+243\%\&0$ 

I + /40% H'(&); &., %>30'' & %V30''>3% I & 50\* = & 50''>3+\*2 & F & \*5 & > \*=, \*421 & G+3-& 3-% & 0%3%23+\*2 & 3+=% & \*5 & F & BJF & =+243% & 60'' &

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- Y\\\')"#\$\\&\)'(/\\\'78\&\*'<&').<\\Z\&>7\&-'79'\\'?9:\&#\&\*7/9\*\&-'\\$:9>\&\)\'79'\\$.:/?+'9.:')\"#\\&\)'9?'
  /\*7\&:\&\)7\\\'
- 1 \$\$&:'"\*-'39 ( &:'\"+&:' ( /\\178&\*'<&'"\+,&-' ( /78\78&'\\9\*0' # &789-'78"7' ( &'8"; &'79' >9\*?/: #'>9 # \$\\878': &>9; &:+'9?'9.:')" # \$\\8\)'9?'/\*7&:&)70'
- A (9')7&\$'\$.:/?/&-'?:">7/9\*)' (/\\'?/\*"\\+'<&'"\*"\\+,&-'9\*'123456!'.)/\*0'\\9\*0'#&789-'79' 8";&'<&77&:')&\$":"7/9\*'9?'78&'\$&"Q)'"\*-'\$.:/7+'>9\*?/:#"7/9\*0'

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