

!" #&/

4;O <548G=>3> 70AB>AC20==O ;V:0@AL:>3> 70A>1C

&

(MEDOCIPRIN)

!;:04:

4VNG0 @5G>28=0: F8?@>D;>:A0F8=;

1 B01;5B:0, 2:@8B0 ?;V2:>2>N >1>;>=:>N, D;>:A0F8=C 3V4@>E;>@84C 583 <3 5:2V20;5=B=> F8?@>D;>:A0F8=C 500 <3;

4>?>28=8: F5;N;>70 :@8AB0;VG=0, :@>E<0;L :C:C@C470=89, :@>A?>2V4>=, <03=VN AB50@0B, :@5<=VN 4V>:A84 :>;>W4=89 1572>4=89, B0;L.; ?>;V5B8;5=3;V:>;L 6000, >?04@V 1V;89 Y-1-7000 (4> A;:04C 2E>4OBL 3V?@><5;>70, B8B0=C 4V>:A84 (171), ?>;V5B8;5=3;V:>;L 400).

V:0@AL:0 D>@<0. "01;5B:8, 2:@8BV ?;V2:>2>N >1>;>=:>N.

A=>2=V DV78:>-EVABV: 1V;V, 2 D>@2>N >1>;>=:>N, 7 ;V=VTN @>7;> =0?8A<< «!». >7

\$0@<0:>B5@0?52B8G=0 3@C?0. =B810:B5@V0;L=V 70A>18 4;O A8AB5<=>3> 70AB>AC20==O. @C?0 DB>@EV=>;>=V2. >4 "% J01M A02.

\$0@<0:>;>3VG=V 2;0AB82>ABV.

\$0@<0:>48=0

5E0=V7< 4VW.

0:B5@8F84=0 4VO F8?@>D;>:A0F8=C, O: DB>@EV=>;>=>2>3> 0=B810:B5@V0;L=>3> 70A>1C, 7C<>2;5=0 740B=VABN ?@83=VGC20B8 B>?>V7> <5@078 B8?C (-3V@07C B0 B>?>V7><5@07C IV), O:V T =5>1EV4=8<8 2 1030BL>E ?@>F5A0E 68BBT2>3> F8;;C , B0:8E O: @5?;V:0FVO, B@0=A:@8?FVO, @5?0@0FVO V @5:><1V=0FVO.

\$0@<0:>:V=5B8G=V/D0@<0:>48=0

D5:B82=VABL 3>;>2=8< G8=>< 70;568BL 2V4 A?V22V4=>H5==O C<sub>max</sub>) B0 AUC) V .

5E0=V7< @578AB5=B=>ABV.

578AB5=B=VABL 4> F8?@>D;>:A0F8=C Vn vitro 70728G09 ?>2070=0 7 ?>V7><5@07V IV V -3V@07V H;OE< 1030B>ABC?5=528E W

@578AB5=B=>ABV D;>:A0F8=>< B0 V=H8<8 DB>@EV=>;>=0<8, I> T =0A;V4:>< 28I5 2:070=>3>, 1C20T @V7=>N. 48=8G=V , =5 ?@872>4OBL 4>

::V=VG=>W @578AB5=B=>ABV, >4=0: <=>68==V :V;L:>E 01> 2AVE ?@54AB02=8:V2 ::0AC DB>@EV=>;>=V2.

"0:V <5E0=V7<8 @578AB5=B=>ABV, O: =5?@>=8:=VABL B0/01> 5D;N:A=89 =0A>A,<>6CBL A?@8G8=OB8 @V7=89 2?;82 =0 GCB;82VABL 4>

DB>@EV=>;>=V2, I> 70;568BL 2V4 DV7V>EVAB59 @V7=8E ?@54AB02=8:V2 2:070=>3> ::0AC B0 A?>@V4=5=>ABV B@0=A?>@B=8E A8AB5< 4;O

:>6=>W 4VNG>W @5G>28=8. AVin-vitro<5E0=V7<8 @578AB5=B=>ABV 7030;>< A?>AB5@V30NBLAO C ::V=VG=8E V7>;OB0E. 5E0=V7<8

@578AB5=B=>ABV, I> V=0:B82CNBL V=HV 0=B810:B5@V0;L=V 70A>18, B0:V O: 10@T@ ?@>=8:=>ABV (?@8B0<0==> 4;O Pseudomonas aeruginosa)

B0 5D;N:A=V <5E0=V7<8 <>6CBL 2?;820B8 =0 GCB;82VABL 4> F8?@>D;>:A0F8=C.

>2V4><;O;>AO ?@> @>728B>: ?;07?>A5@54:>20=>W @578AB5=B=>ABV, :>4>20=>W qnr 35=>

!75:B@ 0=B810:B5@V0;L=>W 0:B82=>ABV.

>=B@>;L=V B>G:8 2V44V;ONBL GCB;82V HB0<8 2V4 HB0N GCB;82VABN, 0 >AB0==V 2V4 @578AB5=B=8E HB0

5:><5=40FVW EUCAST

V:@>>@30=V7<8	'CB;82V	578AB5=B=V
<i>Enterobacteriaceae</i>	□ 0,5 <3/;	□ 1 <3/;
<i>Pseudomonas spp.</i>	□ 0,5 <3/;	□ 1 <3/;
<i>Acinetobacter spp.</i>	□ 1 <3/;	□ 1 <3/;
<i>Staphylococcus spp.</i> <sup>1</sup>	□ 1 <3/;	□ 1 <3/;
<i>Haemophilus influenzae</i> B0 <i>Moraxella catarrhalis</i> <sup>1</sup>	□ 0,5 <3/;	□ 0,5 <3/;
<i>Neisseria gonorrhoeae</i>	□ 0,03 <3/;	□ 0,06 <3/;
<i>Neisseria meningitidis</i> <sup>1</sup>	□ 0,03 <3/;	□ 0,06 <3/;
5 ?>2 O70=V 7 2840<8 :>=B@>;L=V B>G:8 *	□ 0,5 <3/;	□ 1 <3/;

<sup>1</sup> *Staphylococcus spp.* :>=B@>;L=V B>G:8 4;O F8?@>D;>:A0F8=C <0NBL 2V4=>H5==O 4> B5@0?VW V7 70AB>AC20==O< 28A>:8E 4>7.

\* 5 ?>2 O70=V 7 2840<8 :>=B@>;L=V B>G:8 1C;8 287=0G5=V 3>;>2=8< G8=>< =0 >A=>2V 40=8E A?V22V4=>H5==O D0@<0:>:V=5B8G=8E B0 D0@<0:>48=0V =5 70;560BL 2V4 4;O >:@5<8E 284V2. >=8 28:>@8AB>2CNBLAO BV;L:8 4;O 284V2, O:V =5 <0NBL 2;0A=8E :>=B@>;L=8E B>G>;, 0 =5 4;O B8E 284V2, C O:8E ?@>2545==O B5ABC =0 GCB;82VABL =5 @5:>5=4CTBLAO.

>H8@5=VABL =01CB>W @578AB5=B=>ABV 284V;5=8E 284V2<>65 20@VN20B8AO 70;56=> 2V4 ABV V G0AC, B>1EV4=0 ;>:0;L=0 V=D>@<0FVO ?@> @578AB5=B=VABL, >A>1;82> ?@8 ;V:C20==V B06:8E V=D5:FV9. # @07V =5>1EV4=>ABV A;V4 725@=CB8AO 70 :>=AC;LB0FVTN 4> A?5FV0;VABV2, :>;8H8@5=VABL @578AB5=B=>ABV =01C;0 B0:>3> @V2=O, I> :>@8ABL 2V4 70AB>AC20==O 70A>1C, ?@8=09<=V I>4> 45O:8E 284V2 V=D5:FV9, T AC<=V2=>N.

> F8?@>D;>:A0F8=C 7030;>< GCB;82V B0:V @>48 B0 2848 10:B5@V9 (4;O 284C *Streptococcus* 482. @>74V; «A>1;82>ABV 70AB>AC20==O»).

'CB;82V (70728G09) 2848 >30=V7
<u>5@&gt;1=V 3@078B82=V &gt;@30=V7&lt;8</u>
<i>Bacillus anthracis</i> (1)
<u>5@&gt;1=V 3@0&lt;=530B82=V &gt;@30=V7&lt;8</u>
<i>Aeromonas spp.</i>
<i>Brucella spp.</i>
<i>Citrobacter koseri</i>
<i>Francisella tularensis</i>
<i>Haemophilus ducreyi</i>
<i>Haemophilus influenzae</i> <sup>*</sup>
<i>Legionella spp.</i>
<i>Moraxella catarrhalis</i> <sup>*</sup>
<i>Neisseria meningitidis</i>
<i>Pasteurella spp.</i>
<i>Salmonella spp.</i> <sup>*</sup>
<i>Shigella spp.</i> <sup>*</sup>
<i>Vibrio spp.</i>

<p><i>Yersinia pestis</i> =05@&gt;1=V &gt;@30=V7&lt;8 <i>Mobiluncus</i></p>
<p>=HV &gt;@30=V7&lt;8 <i>Chlamydia trachomatis</i> (\$) <i>Chlamydia pneumoniae</i> (\$) <i>Mycoplasma hominis</i> (\$) <i>Mycoplasma pneumoniae</i> (\$)</p>
<p>848, 4;O O:8E &lt;&gt;6;8289 @&gt;728B&gt;: =01CB&gt;W @578AB5=B=&gt;ABV</p>
<p><u>5@&gt;1=V 3@078B82=V &gt;@30=V7&lt;8</u> <i>Enterococcus faecalis</i>(\$) <i>Staphylococcus spp.</i>* (2)</p>
<p><u>5@&gt;1=V 3@0&lt;=530B82=V &gt;@30=V7&lt;8</u> <i>Acinetobacter baumannii</i><sup>+</sup> <i>Burkholderia cepacia</i><sup>+ *</sup> <i>Campylobacter spp.</i><sup>+ *</sup> <i>Citrobacter freundii</i>* <i>Enterobacter aerogenes</i> <i>Enterobacter cloacae</i>* <i>Escherichia coli</i>* <i>Klebsiella oxytoca</i> <i>Klebsiella pneumoniae</i>* <i>Morganella morganii</i>* <i>Neisseria gonorrhoeae</i>* <i>Proteus mirabilis</i>* <i>Proteus vulgaris</i>* <i>Providencia spp.</i> <i>Pseudomonas aeruginosa</i>* <i>Pseudomonas fluorescens</i> <i>Serratia marcescens</i><sup>†</sup></p>
<p>=05@&gt;1=V &gt;@30=V7&lt;8 <i>Peptostreptococcus spp.</i> <i>Propionibacterium acnes</i></p>
<p>V:@&gt;&gt;@30=V7&lt;8, ?&gt;G0B:&gt;2&gt; @578AB5=B=V 4&gt; F8?@&gt;D;&gt;:A0F8=C</p>
<p><u>5@&gt;1=V 3@078B82=V &gt;@30=V7&lt;8</u> <i>Actinomyces</i> <i>Enterococcus faecium</i> <i>Listeria monocytogenes</i></p>

5@>1=V 3@0<=530B82=V >@30=V7<8

*Stenotrophomonas maltophilic:*

=05@>1=V >@30=V7<8

0 28=OB:>< 707=0G5=8E 28I5

=HV >@30=V7<8

*Mycoplasma genitalium*

*Ureaplasma urealitycum*

\* ;V=VG=0 5D5:B82=VABL ?@>45<>=AB@>20=0 4;O GCB;828E V7>;OBV2 70

70B25@465=8<8 ;;V=VG=8<8 ?>:070==O<8

+ >:07=8: @578AB5=B=>ABV ≥ 50 % 2 >4=V9 01> 1V;LH5 :@0W= !.

(\$) @8@>4=0 A5@54=O GCB;82VABL C @07V 2V4ACB=>ABV =01CB>3><5E0=V7ABV

(1) C;8 ?@>2545=V 4>A;V465==O =0 5:A?5@8<5=B0;L=8E B20@8=0E 7 V=DV:C20==O<

WE ?>2VB@O=>.:@0?5;L=8< H;OE< A?>@0<8 *Bacillus anthracis*; FV 4>A;V465==O

4>2>4OBL, I> ?@89>< 0=B81V>B8:V2 >4@07C ?VA;O :=B0:BC 7 ?0B>35=× 4>?><030T

C=8:=CB8 70E2>@N20==O, O:I> 240TBLAO 4>AO3B8 7<5=H5==O :V;L:>ABV A?>@ =86G5

V=DV:CNG>W 4>78. 5:×5=40FVW I>4> 70AB>AC20==O F8?@>D;>:A0F8=C 107CNBLAO

?5@5206=> =0 40=8E GCB;82>ABV *in vitrc* C B20@8= @07>< V7 >1<565=8<8 40=8<8, >B@8

<0=8<8 2 ;N459. V:C20==O B@820;VABN 2@0;L=>N D>@<N F8?@>D;>:A0F8=C C 4>7V

500 <3 42VGV =0 45=L 22060TBLAO 5D5:B82=8< 4;O ?>?5@5465==O V=DV:C20==O

A81V@AL:>N 28@07:>N C 4>@>A;8E. V:0@ ?>28=5= 725@=CB8AO 4> =0FV>=0;L=8E B0

/01> 4=8E ?@>B>:>;V2 ;V:C20==O A81V@AL:>W 28@07:8.

(2) 5B8F8;V=-@578AB5=B=89 *S. aureus* 4C65 G0AB> T >4=>G0A=> @578AB5=B=8< V

4> DB>@EV=>;>=V2. >:07=8: @578AB5=B=>ABV 4> <5B8F8;V=C A5@54 CAVE 284V2

AB0DV;>:>:C AB0=>28BL 1;87L:> 20-50 % V T 70728G09 28A>:8< C 3>A?VB0;L=8E

V7>;OBV2.

\$0@<0:>:V=5B8:0.

1A>@1FVO.

VA;O ?5@>@0;L=>3> 70AB>AC20==O B01;5B>: F8?@>D;>:A0F8=C C 4>7V 250<3, 500 <3 B0 750 <3 F8?@>D;>:A0F8= H284:> B0 4>1@5 2A

<>:BCTBLAO, ?5@5206=> V7 25@E=L>3> 2V44V;C B>=>:3> :8H5G=8:C. 0:A8<0;L=V :=F5=B@0FVW C A8@>20BFV :@>2V 4>AO30NBLAO G5@57

1-2 3>48=8.

4=>@07>2V 4>78 100- 750 <3 ?@872>48;8 4> 4>7>70;56=8E <0:A8<0;L=8E A8@>20B:>28E :=F5=B@0FV9 (C<sub>max</sub>)

1A>;NB=0 1V>4>ABC?=VABL ?@5?0@0BC AB0=>28BL 70-80 %. 5@>@0;L=0 4>70 F8?@>D;>:A0F8=C

500 <3 :=6=V 12 3>48= E0@0:B5@87C20;0AO 7030;L=>N ?;>I5N ?V4 :@82>N :=F5=B@0FVO/G0A (AUC), 5:2V20;5=B=>N B0:V9 ?VA;O

2=CB@VH=L>25==>W V=DC7VW 400 <3 F8?@>D;>:A0F8=C, O:C 74V9A=N20;8 C?@>4>26 60 E28;8= :=6=V 12 3>48=.

>7?>4V;.

V4A>B>: 7207C20==O F8?@>D;>:A0F8=C 7 1V;:0<8 =57=0G=89 (20-30 %). ?>:A0F8= 7=0E>48BLAO C ?;072V ?5@5206=> 2 =5V>=V7>20=V9 D>@2V.

V>B@0=AD>@<0FVO.

C;8 70DV:A>20=V =87L:V :=F5=B@0FVW B0:8E G>B8@L>E<5B01>;VBV2: 4575B8;5=F8?@>D;>:A0F8=C (M<sub>1</sub>), AC;LD>F8?@>D;>:A0F8=C (2), >:A>F8?@>D;>:A0F8=C (3) B0 D>@D;>:A0F8=C (M<sub>4</sub>). 5B01>;VB8 45<>=AB@CNBL *in vitro*0=B81=C 0:B82=VABL, 0;5<5=H>N N, =V6 28EV4=0 A?>;C:0.

V4><>, I> F8?@>D;>:A0F8= T ?>

82545==O.

?>:A0F8= 284V;OTBLAO 7451V;LH>3> C =57

82545==O F8?@>D;>:A0F8=C (% 4>78) ?@8 ?5@>@0;L=>AC20==V		
0720	(;OE8 282545==O	
	A5G5N	D5:0;VO<8
?>:A0F8=	44,7	25,0
5B01>;VB8 (M <sub>1</sub> -M <sub>4</sub> )	11,3	7,5

8@:>289 ;;V@5=A AB0=>28BL 180- 300 <:/:3/3>4, 0 7030;L=89 ;;V@5=A 480- 600 <:/:3/3>4. ?>:A0F8= ?V4;O30T ;;C1>G:>2V9 DV;LB@0FVW B0 :0=0;LF52V9 A5:@5FVW. @8 A5@9>7=>@CH5==V =8@:>2>W DC=:FVW ?5@V>4 =0?V282545==O F8?@>D;>:A0F8=C AB0=>28BL 4> 12 3>48=. 5=8@:>289 ;;V@5=A F8?@>D;>:A0F8=C ?>OA=NTBLAO, 2 ?5@HC G5@3C, B@0=AV=B5AB8=0;L=>N A5:@5FVTN B0<5B01>;V7<>78 284V;OTBLAO G5@57 6>2G=V H;OE8. ?>:A0F8= C 28A>:8E :=F5=B@0FVOE ?@8ACB=V9 C 6>2GV. VB8. \$0@<0:>:V=5B8G=V 40=V I>4> 4VB59 >1<565=V.

**;V=VG=V E0@0:B5@8AB8:8.**

**>:070==O.**

54>F8?@8= ?>:070=89 4;O ;V:C20==O =86G5707=0G5=8E V=D5:FV9 (482. @>74V;8 «A>1;82>ABV 70AB>AC20==O» B0 «\$0@<0:>;>3VG=V 2;0AB82>ABV»). 5@54 ?>G0B:<< B5@0?VW A;V4 725@=CB8 >A>1;82C C203C =0 2AN 4>ABC?=C V=D>@<0FVN I>4> @578AB5=B=>ABV 4> F8?@>D;>:A0F8=C.

!;V4 270B8 4> C2038 >DV9=V @5:<<5=40FVW 7 =0;56=>3> 70AB>AC20==O 0=B810:B5@V0;L=8E ?@5?0@0BV2.

>@>A;V.

" =D5:FVW =86=VE 48E0;L=8E H;OEV2, A?@8G8=5=V 3@0<=530B82=8<8 10:B5@VO<8:

- 703>AB@5==O E@>=VG=>3> >1AB@C:B82=>3> 70E2>@N20==O ;535=L;

- 1@>=E>;535=52V V=D5:FVW ?@8 :VAB>7=>7V 01> ?@8 1@>=E>5:B070E;

- ?=52<>=VO.

" %@>=VG=89 3=V9=89 >B8B A5@54=L>3> 2CE0.

" 03>AB@5==O E@>=VG=>3> A8=CA8BC, >A>1;82> O:I> 2V= A?@8G8=5=89 3@0<=530B82=8<8 10:B5@VO<8.

" =D5:FVW A5G>2>3> B@0:BC.

" =D5:FV9=V C@065==O AB0B52>W A8AB5<8:

- 3>=>:>:289 C@5B@8B V F5@2VF8B, A?@8G8=5=89 GCB;828<8 HB0<0<8 *Neisseria gonorrhoeae*;

- >@E>5?V4848:@5<0 A?@8G8=5=89 GCB;828<8 HB0<0<8 *Neisseria gonorrhoeae*;

- 70?0;L=V 70E2>@N20==O B07>28E >@30=V2, 7>:@5<0 A?@8G8=5=V GCB;828<8 HB0<0<8 *Neisseria gonorrhoeae*.

" =D5:FVW H;C=>2>-.8H:>2>3> B@0:BC (=0?@8:;04 4V0@50 <0=4@V2=8:V2).

" □=B@0014>  
" =D5:FVW H:V@8 B0 <O:8E B:0=8=, A?@8G8=5=V 3@0<=530B82=8<8 10:B5@VO<8.  
" 06:89 ?5@51V3 >B8BC 7>2=VH=L>3> 2CE0.  
" =D5:FVW :VAB>: B0 AC3;>1V2.  
" @>DV;0:B8:0 V=20782=8E V=D5:FV9, A?@8G8=5=8E *Neisseria meningitidis*.  
" 535=520 D>@<0 A81V@AL:>W 28@07:8 (?@>DV;0:B8:0 ?VA;O :>=B0:BC V @048:0;L=5 ;V:C20==O).  
?>:A0F8= <>6=0 70AB>A>2C20B8 4;O 2545==O ?0FVT=BV2 V7 =59B@>?5=VTN B0 3V?5@B5@7@8 I>4> 10:B5@V0;L=>3> V=D5:FV9=>3> 35=57C  
;8E><0=:8 C 2:070=>W :0B53>@VW ?0FVT=BV2.

VB8 B0 ?V4;VB:8.

" @>=E>;535=52V V=D5:FVW ?@8 :VAB>7=>7V, A?@8G8=5=V A8=L>3=V9=>N ?0;8G:>N (*Pseudomonas aeruginosa*).  
" #A:;04=5=V V=D5:FVW A5G>2>3> B@0:BC B0 ?VT;=>5D@8B.  
" 535=520 D>@<0 A81V@AL:>W 28@07:8 (?@>DV;0:B8:0 ?VA;O :>=B0:BC V @048:0;L=5 ;V:C20==O).  
?>:A0F8= <>6=0 B0:>6 70AB>A>2C20B8 4;O ;V:C20==O BO6:8E V=D5:FV9 C 4VB59 B0 ?V4;VB:V2, :>;8 ;V:0@ 22060T F5 =5>1EV4=8  
V:C20==O ?>28=5= @>7?>G8=0B8 ;V:0@, O:89<0T 4>A2V4 ;V:C20==O :VAB>7=>3> DV1@>7C B0/01> BO6:8E V=D5:FV9 C 4VB59 B0 ?V4;VB:V2  
(482. @>74V;8 «A>1;82>ABV 70AB>AC20==O» B0 «\$0@<0:>;>3VG=V 2;0AB82>ABV»).

@>B8?>:070==O.

V428I5=0 GCB;82VABL 4> 4VNG>W @5G>28=8 01> 4> V=H8E ?@5?0@0BV2 3@C?8 DB>@EV=>;>=V2, 01> 4> 1C4L-O:>W 7 4>?>28= ?@5?0@0BC.  
4=>G0A=5 70AB>AC20==O F8?@>D;>:A0F8=C B0 B870=V48=C ?@>B8?>:070=5 (482. @>74V; «70T<>4VO 7 V=H8<8 ;V:0@AL:8<8 70A>10<8 B0  
V=HV 2848 270T<>4V9»).

70T<>4VO 7 V=H8<8 ;V:0@AL:8<8 70A>10<8 B0 V=HV 2848 270T<>4V9.

?;82 V=H8E 70A>1V2 =0 F8?@>D;>:A0F8=.

@5?0@0B8, O:V ?>4>26CNBL V=B5@20; QT.

?>:A0F8=, O: V V=HV DB>@EV=>;>=8, A;V4 ?@87=0G0B8 7 >15@56=>ABN ?0FVT=B0<, O:V >B@8 ?>4>26CNBL V=B5@20; QT (=0?@8:;04  
0=B80@8B18 ;:0AC IA V III, B@8F8:;VG=V 0=B845?@5A0=B8, <0:@>;V48, 0=B8?A8E>B8:8) (482. @>74V; «A>1;82>ABV 70AB>AC20==O».  
\$>@3> :>  
@8>4=>G0A=>AC20==V F8?@>D;>:A0F8=C (?5@>@0;L=>) B0 ;V:0@AL:8E 70A>1V2, I> 20;5=B=V :0BV>=8 V 102:8 (=0?@8:;04 :0;LFFV9, <03=V9, 0;N  
) , D>AD0B72O7CNG8E ?>;V<5@V2 (=0?@8:;04 A525;0<5@ 01> :0@1>=0B ;0=B0=C), AC:@0;LD0BV2 01> 0=B0F84V2, 0 B0:>6 ?@5?0@0BV2 7  
25;8:>N 1CD5@=>N T<=VABN (B0:8E O: B01;5B:8 4840=>78=C), I> :0;LFFV9, 01A>@1FVO F8?@>D;>:A0F8=C 7=86CTBLAO. # 72 07:C 7 F8<  
F8?@>D;>:A0F8= A;V4 ?@89<0B8 01> 70 1-2 3>48=8 4>, 01> ?@8=09<=V G5@57  
4 3>48=8 ?VA;O ?@89>1<565==O =5 AB>ACTBLAO 0=B0F84V2, I> =0;560BL 4> ;:0AC 1;>:0B>@V2 H2-@5F5?B>@V2.  
%0@G>2V B0 <>;>G=V ?@>4C:B8.  
0;LFFV9 C A:;04V E0@G>28E ?@>4C:BV2 =57=0G=>NN 2?;820T =0 01A>@1FVN. 4=0: A;V4 C=8:0B8 >4=>G0A=>3> ?@89>D;>:A0F8=C V <>;>G=8E  
01> 71030G5=8E <:0;LFFVN), B> 01A>@1FVO F8?@>D;>:A0F8=C <>65 7=86C20B8AL.

@>15=5F84.

@>15=5F84 2?;820T =0 =8@:>2C A5:@5FVN F8?@>D;>:A0F8=C. 4=>G0A=5 70AB>AC20==O ?@>15=5F84C B0 F8?@>D;>:A0F8=C ?@872>48BL 4>  
?V428I5==O :>=F5=B@0FVW F8?@>D;>:A0F8=C C A8@>20BFV :@>2V.

5B>;>?@0

5B>;>?@0@NT 2A<>:BC20==O F8?@>D;>:A0F8=C (?5@>@0;L=>W D>@<8), 2 @57C;LB0BV G>3> 4>AO3=5==O <0:A8<0;L=>W :=F5=B@0FVW C ?;072V 2V41C20TBLAO H284H5. 5 2V47=0G5=> 2?;82C =0 1V>4>ABC?=VABL F8?@>D;>:A0F8=C.

<5?@07>;.

4=>G0A=5 70AB>AC20==O F8?@>D;>:A0F8=C V ;V:0@AL:8E 70A>1V2, I> <5?@07>;, ?@872>48BL 4> =57=0G=>3> 7=865==O C<sub>max</sub> V AUC F8?@>D;>:A0F8=C.

?;82 F8?@>D;>:A0F8=C =0 V=HV ;V:0@AL:V 70A>18.

"870=V48=.

"870=V48= =5 <>6=0 70AB>A>2C20B8 >4=>G0A=> 7 F8?@>D;>:A0F8=>< (482. @>74V; «@>B8?>:070==O»). # E>4V ;;V=VG=>3> 4>A;V465==O 7 CG0ABN 74>@>28E 4>1@>2>;LFFV2 ?@8 >4=>G0A=>AC20==V F8?@>D;>:A0F8=C V B870=V48=C 28O2;5=> 71V;LH5==O :=F5=B@0FVW B870=V48=C C ?;072V (71V;LH5==O !<sub>max</sub> C 7 @07V2, 4V0?07>= 4-21 @07; 71V;LH5==O ?>:07=8:0 AUC C 10 @07V2, 4V0?07>= 6-24 @078). V 71V;LH5==O< :=F5=B@0FVW B870=V48=C 2 A8@>20BFV :@>2V 0A>FVNNBLAO 3V?>B5=782=V B0 A540B82=V ?>1VG=V @50:FVW.

5B>B@5:A0B.

@8 >4=>G0A=>AC20==V F8?@>D;>:A0F8=C <>6;825 C?>2V;L=5==O BC1C;O@=>3> B@0=A?>@BC20==O <5B>B@5:A0BC, I> <>65 ?@872>48B8 4> ?V428I5==O :=F5=B@0FVW <5B>B@5:A0BC 2 ?;072V. @8 FL>4=>G0A=5 70AB>AC20==O =5 @5:><5=4CTBLAO (482. @>74V; «A>1;82>ABV 70AB>AC20==O»).

"5>DV;V=.

4=>G0A=5 70AB>AC20==O F8?@>D;>:A0F8=C B0 B5>DV;V=C <>65 ?@8725AB8 4> =51060=>3> ?V428I5==O :=F5=B@0FVW B5>DV;V=C 2 A8@>20BFV :@>2V, I> C A2>N G5@3C, <>65 A?@8G8=8B8 @>728B>: ?>1VG=8E @50:FV9. # ?>>48=>:8E 28?04:0E B0:V ?>1VG=V @50:FVW <>6CBL 703@>6C20B8 68BBN 01> <0B8 ;5B0;L=89 =0A;V4>:.. ">4=>G0A=>AC20==V F8?@>D;>:A0F8=C B0 B5>DV;V=C A;V4 :=B@>;N20B8 :=F5=B@0FVN B5>DV;V=C 2 A8@>20BFV :@>2V B0 ?@8 =5>1EV4=>ABV 7=86C20B8 9>3> 4>7C (482. @>74V; «A>1;82>ABV 70AB>AC20==O»). =HV ?>EV4=V :A0=B8=C.

VA;O >4=>G0A=>3> 70AB>AC20==OF8?@>D;>:A0F8=C B0 :=D5W=C 01> ?5=B>:A8DV;V=C (>:A?5=B8DV;V=C) ?>2V4<;O;>AO ?@> ?V428I5==O :=F5=B@0FV9 ?>EV4=8E F8E :A0=B8=V2 C A8@>20BFV :@>2V.

\$5=VB>W=.

4=>G0A=5 70AB>AC20==O F8?@>D;>:A0F8=C B0 D5=VB>W=C <>65 ?@8725AB8 4> ?V428I5==O 01> 7=865==O A8@>20B:>28E :=F5=B@0FV9 D5=VB>W=C, B><5=4CTBLAO <>=VB>@8=3 @V2=V2 ?@5?0@0BC.

?>A?>@8=.

C;> 287=0G5=> B@0=78B>@=5 ?V428I5==O :@50B8=V=C A8@>20B:8 :@>2V ?@8 >4=>G0A=>AC20==V F8?@>D;>:A0F8=C B0 ;V:0@AL:8E 70A>1V2, I> A?>@8=. ">1EV4=89 G0AB89 (2 @078 =0 B8645=L) :=B@>;L :=F5=B@0FVW :@50B8=V=C A8@>20B:8 :@>2V C F8E ?0FVT=BV2. =B03>=VAB8 2VB0

@8 >4=>G0A=>AC20==V F8?@>D;>:A0F8=C B0 0=B03>=VABV2 2VB0G=> >FV=8B8 2?;82 F8?@>D;>:A0F8=C =0 ?V428I5==O 7=0G5==O V6=0@>4=>3> =>@<0;V7>20=>3> 2V4=>H5==O () A.;04=>. !;V4 74V9A=N20B8 G0AB89 :=B@>;L ?V4 G0A B0 >4@07C ?VA;O >4=>G0A=>3> 70AB>AC20==O F8?@>D;>:A0F8=C B0 0=B03>=VABV2 2VB0C<0@>;C, D5=?@>:C<=>C, D;CW=4V>=C).

C;>:A5B8=.

# E>4V ;;V=VG=8E 4>A;V465=L 1C;> ?>:070=>, I> >4=>G0A=5 70AB>AC20==O 4C;>:A5B8=C V7 A8;L=8<8 V=3V1VB>@0<8 CYP450 1A2, B0:8<8 O: D;C2>:A0<sub>max</sub> 4C;>:A5B8=C. 572060NG8 =0 2V4ACB=VABL ;;V=VG=8E 40=8E ?@><>6;82C 270T<>4VN 7 F8?@>D;>:A0F8=><, <>6=0 >GV:C20B8 AE>68E 5D5:BV2 ?@8 >4=>G0A=>AC20==V 2:070=8E ?@5?0@0BV2 (482. @>74V; «A>1;82>ABV 70AB>AC20==VO»).

>?V=V@>;  
# E>4V ;;V=VG=8E 4>A;V465=L 1C;> 28O2;5=>, I> >4=>G0A=5 70AB>AC20==O @>?V=V@>;C 7 F8?@>D;>;:A0F8=><, V=3V1VB>@< V7>5=78W  
4VW, ?@872>48BL 4> ?V428I5==O !<sub>max</sub> V AUC @>?V=V@>;C =0 60 % B0 84 % 2V4?>2V4=>. >=VB>@8=3 ?>1VG=8E 5D5:BV2 @>?V=V@>;C B0  
2V4?>2V4=5 :>@53C20==O 4>78 @5:><5=4CNBLAO 74V9A=N20B8 ?V4 G0A B0 >4@07C ?VA;O >4=>G0A=>3> 70AB>AC20==O 7 F8?@>D;>;:A0F8=>  
< (482. @>74V; «A>1;82>ABV 70AB>AC20==O»).

V4>:0W=  
C;> ?>:070=>, I> C 74>@>28E >AV1 >4=>G0A=5 70AB>AC20==O F8?@>D;>;:A0F8=C, ?>3> V=3V1VB>@0 V7>D5@<5=BV2 F8B>E@>1V2, I> :0W=  
7=86CT ;;V@5=A 2=CB@VH=L>25==>3> ;V4>:0W=C =0 22 %. 572060NG8 =0 =>@<0;L=C ?5@5=>A8:0W=><, <>6;820 270T<>4VO 7  
F8?@>D;>;:A0F8=><, I> 0A>FVNTBLAO 7 ?>1VG=8<8 @50:FVO<8 ?@8 >4=>G0A=>AC20==V 2:070=8E ?@5?0@0BV2.

VA;O >4=>G0A=>3> 70AB>AC20==O 250<3 F8?@>D;>;:A0F8=C 7 ;;>70?V=>< C?@>4>26 7 4=V2 A8@>20B:>2V :>=F5=B@0FVW ;;>70?V=C VN-45A  
<5B8;;>70?V=C 1C;8 ?V428I5=V =0 29 % V 31 % 2V4?>2V4=>. 5:><5=4CTBLAO 74V9A=N20B8 ;;V=VG=89 =03;04 B0 2V4?>2V4=C :>@5:FN 4>78  
;;>70?V=C ?V4 G0A B0 >4@07C ?VA;O >4=>G0A=>3> 70AB>AC20==O 7 F8?@>D;>;:A0F8=>< (482. @>74V; «A>1;82>ABV 70AB>AC20==O»).

!8;45=0DV;  
C<sub>max</sub> V AUC A8;45=0DV;C 71V;LH8;8AO ?@81;87=> 2 2 @078 C 74>@>28E 4>1@>2>;LFV2 ?VA;O >4=>G0A=>3> ?5@>@0;L=>3> 70AB>AC20==O 50  
<3 A8;45=0DV;C B0 500<3 F8?@>D;>;:A0F8=C. ">B@815@56=>ABV ?@8 AC?CB=L>D;>;:A0F8=C V7 A8;45=0DV;>< B0 2@0E>2C20B8  
A?V22V4=>H5==O @878:/:>@8ABL.

**A>1;82>ABV 70AB>AC20==O.**

"O6:V V=D5:FVW B0/01> 7

?>;:A0F8= =5 70AB>A>2C20B8 O: <>=>B5@0?VN 4;O ;V:C20==O B06:8E V=D5:FV9 B0 V=D5:FV9, A?@8G8=5=8E 3@078B82=8<8 01> 0=05@>1=8<8  
10:B5@VO<8. ;O ;V:C20==O 2:070=8E V=D5:FV9 F8?@>D;>;:A0F8= A;V4 70AB>A>2C20B8 C :><1V=0FVW 7 2V4?>2V4=8<8 0=B810:B5@V0;L=8<8  
70A>10<8.

!B@5?B>:>:2V V=D5:FVW (2::NG0NG8 Streptococcus pneumoniae).

?>;:A0F8= =5 @5:><5=4CTBLAO 4;O ;V:C20==O AB@5?B>:>:28E V=D5:FV9 G5@57 =54>AB0B=N 5D5:B82=VABL.

=D5:FVW AB0B52>W A8AB5<8.

\$B>@EV=>;>=@578AB5=B=V HB0<8 Neisseria gonorrhoeae <>6CBL A?@8G8=8B8 3>=>:>:289 C@5B@8B, F5@2VF8B, >@E>5?V4848@N20==O  
B07>28E >@30=V2.

V4?>2V4=>, F8?@>D;>;:A0F8= A;V4 70AB>A>2C20B8 4;O ;V:C20==O 3>=>:>:2>3> C@5B@8BC 01> F5@2VF8BC BV;L:8 70 C>28 28;;NG5==O C  
Neisseria gonorrhoeae @578AB5=B=>ABV 4> F8?@>D;>;:A0F8=C.

D;>;:A0F8=>< ?@8 >@E>5?V4848@N20==OE >@30=V2 <0;>3> B070 <>6=0 70AB>A>2C20B8 ;8H5 C :><1V=0FVW 7 V=H8<8 2V4?>2V4=8<8  
0=B810:B5@V0;L=8<8 70A>10<8 (=0?@8;;04, F5D0;>A?>@8=0<8) 70 28=OB:>< ;V=VG=8E A8BC0FV9, :>;8 28;;NG5=> =0O2=VABL

F8?@>D;>;:A0F8=@578AB5=B=8E HB0Neisseria gonorrhoeae.

/:I> G5@57 3 4=V =5 =0AB0T ;;V=VG=5 ?>:@0I5==O, B5@0?VN A;V4 ?5@53;O=CB8.

=D5:FVW A5G>2>3> B@0:BC.

# :@0W=0E 2@>?59AL:>3> !>N7C A?>AB5@V30TBLAO @V7=0 @578AB5=B=VABL4> DB>@EV=>;>=V2 7 1>:C Escherichia coli,  
=09?>H8@5=VH>3> 71C4=8:0, I> A?@8G8=OT V=D5:FVW A5G>282V4=8E H;OE2. V4 G0A ?@87=0G5==O B5@0?VW ;V:0@G @5:><5=4CTBLAO  
2@0E>2C20B8 ;>:0;L=C ?>H8@5=VABL @578AB5=B=>ABV Escherichia coli4> DB>@EV=>;>=V2.



2060TBLAO, I> >4=>@07>2V 4>78 F8?@>D;>:A0F8=C, O:V <>6=0 70AB>A>2C20B8 ?@8 =5CA.;04=5=>: ?5@54.;V<0:B5@8G=>3> ?5@V>4C, T <5=H 5D5:B82=8<8, =V6 B@820;VH0 B5@0?VO ?@5?0@0B>1EV4=> 2@0E>2C20B8, 72060NG8 =0 7@>AB0NG89 @V25=L @578AB5=B=>ABV *Escherichia coli* 4> EV=>;>=V2.

=B@0014>

0=V I>4> 5D5:B82=>ABV F8?@>D;>:A0F8=C ?@8 ;V:C20==V ?>AB>?5@0FV9=8E V=B@0-014>1<565=V.

V0@5O <0=4@V2=8:V2.

@8 281>@V ?@5?0@0BC A;V4 27OB8 4> C2038 V=D>@<0FVN ?@> @578AB5=B=VABL 4> F8?@>D;>:A0F8=C 2V4?>2V4=8E>@30=V7

=D5:FVW :VAB>: B0 AC3;>1V2.

?>:A0F8= A;V4 70AB>A>2C20B8 2 :<1V=0FVW 7 V=H8<8 0=B81=8<8 70A>10<8 70;56=> 2V4 @57C;LB0BV2 1V>;>3VG=>3> 4>A;V465==O.

535=520 D>@<0 A81V@AL:>W 28@07:8.

0AB>AC20==O ;N4O< 3@C=BCTBLAO =0 40=8E 287=0G5==O GCB;82>ABV *in vitro*, 4>A;V4V2 =0 B20@8=0E B0 =0 >1<565=8E 40=8E, >B@8<0=8E ?V4 G0A 70AB>AC20==O ;N48=V. V:0@ ?>28=5= 4VOB8 2V4?>2V4=> 4> =0FV>=0;L=8E B0/01>4=8E ?@>B>;>V2 ;V:C20==O A81V@AL:>W 28@07:8.

@>=E>;535=52V V=D5:FVW ?@8 :VAB>7=>7V.

# :;V=VG=V 4>A;V465==O 1C;> 2;;NG5=> 4VB59 B0 ?V4;VB:V2 2V:< 5-17 @>:V2. V;LH >1<565=89 4>A2V4 ;V:C20==O 4VB59 2V:< 2V4 1 4> 5 @>:V2.

#A.;04=5=V V=D5:FVW A5G>2>3> B@0:BC B0 ?VT;>=5D@8B.

!;V4 @>73;O=CB8 <>6;82VABL ;V:C20==O V=D5:FV9 A5G>2>3> B@0:BC V7 70AB>AC20==O F8?@>D;>:A0F8=C, :>;8 V=H5 ;V:C20==O =5<>6;825. V:C20==O ?>28==> ' @C=BC20B8AO =0 @57C;LB0B0E 1V>;>3VG=>3> 4>A;V465==O.

0 40=8<8 ;;V=VG=8E 4>A;V465=L >FV=N20;8 70AB>AC20==O F8?@>D;>:A0F8=C 4VBO< B0 ?V4;VB:0< 2V:< 1-17 @>:V2.

=HV A?5F8DVG=V BO6:V V=D5:FVW.

0AB>AC20==O F8?@>D;>:A0F8=C <>65 1CB8 28?@0240=5 70 @57C;LB0B0<8 1V>;>3VG=>3> 4>A;V465==O C @07V V=H8E BO6:8E V=D5:FV9 73V4=> 7 >DV9=8<8 @5:<5=40FVO<8 01> ?VA;O @5B5;L=>W >FV=:8 :>@8ABL/@878.; :>;8 V=H5 ;V:C20==O 70AB>AC20B8 =5<>6=0, 01> :>;8 7030;L=>?@89=OB5 ;V:C20==O 28O28;>AO =55D5:B82=8

0AB>AC20==O F8?@>D;>:A0F8=C C @07V A?5F8DVG=8E BO6:8E V=D5:FV9, >:@V< 73040=8E 28I5, =5 >FV=N20;>AL C E>4V ;;V=VG=8E 4>A;V465=L, 0 ;;V=VG=89 4>A2V4 >1<565=89. B65, 4> ;V:C20==O ?0FVT=BV2 V7 B0:8<8 V=D5:FVO<8 @5:<5=4CTBLAO ?V4E>48B8 7 >15@56=VABN.

V428I5=0 GCB;82VABL 4> ?@5?0@0BC.

V?5@GCB;82VABL B0 0;5@3VG=V @50:FVW, 2;;NG0NG8 0=0DV;0:B8G=V/0=0DV;0:B>W4=V @50:FVW;<>6CBL A?>AB5@V30B8AO ?VA;O 70AB>AC20==O @07>2>W 4>78 F8?@>D;>:A0F8=C (482. @>74V; <<>1VG=V @50:FVW), B0 ?@54AB02;OB8 703@>7C 4;O 68BBO. # B0:>AC20==O F8?@>D;>:A0F8=C =5>1EV4=> ?@8?8=8B8 V, C @07V =5>1EV4=>ABV, ?@>25AB8 =0;56=5<548:0<5=B>7=5 ;V:C20==O.

!;5;5B=>-<□O7>20 A8AB5<0.

030;<< F8?@>D;>:A0F8= =5 <>6=0 70AB>A>2C20B8 ?0FVT=B0< V7 70E2>@N20==O<8 ACE>68;L/ @>7;040<8, ?>2O70=8<8 V7 70AB>AC20==O< EV=>;>=V2 2 0=0<=57V. >?@8 F5, C @V4:VA=8E 28?04:0E ?VA;O1V>;>3VG=>3> 4>A;V465==O 71C4=8:0 B0 >FV=:8 A?V22V4=>H5==O :>@8ABL /@878: F8< ?0FVT=B0< <>6=0 ?@87=0G0B8 F8?@>D;>:A0F8= 4;O ;V:C20==O >:@5<8E BO6:8E V=D5:FV9=8E ?@>F5AV2, 0 A0<5 C 28?04:C =55D5:B82=>ABV AB0=40@B=>W B5@0?VW 01> 10:B5@V0;L=>W @578AB5=B=>ABV, :>;8 @57C;LB0B81V>;>3VG=8E 4>A;V465=L 28?@024>2CNBL 70AB>AC20==O F8?@>D;>:A0F8=C. @8 70AB>AC20==V F8?@>D;>:A0F8=C <>65 28=8:=CB8 B5=48=VB 01> @>7@82 ACE>68;;O (>A>1;82> 0EV;;>2>3> ACE>68;;O), V=>4V 42>1VG=89, =02VBL C ?5@HV 48 3>48= ;V:C20==O. 0?0;5==O 01> @>7@82 ACE>68;L<>65 28=8:=CB8

=02VBL ?@>BO3<< :V;L:>E D;>:A0F8=>?0BVW <>65 1CB8 ?V428I5=8< C ?0FVT=BV2 ;VB=L>3> 2V:C 01> C ?0FVT=BV2, O:V >4=>G0A=>  
70AB>A>2CNBL :>@B8:>AB5@>W48 (482. @>74V; <<>1VG=V @50:FVW»). @8 28=8:=5==V 1C4L-O:8E >7=0: B5=48=VBC (B0:8E O: 1>;NG89 =01@O:,  
70?0;5==O) 70AB>AC20==O F8?@>D;>:A0F8=C A;V4 ?@8?8=8B8. #@065=V9 :V=FV2FV A;V4 70157?5G8B8 A?>:V9.  
?>:A0F8= 70AB>A>2C20B8 7 >15@56=VABN ?0FVT=B0< V7

\$>B>GCB;82VABL.

>2545=>, I> F8?@>D;>:A0F8= A?@8G8=OT @50:FVW D>B>GCB;82>ABV. 0FVT=B0<, O:V 70AB>A>2CNBL F8?@>D;>:A0F8=, @5:>5=4CTBLAO  
?V4 G0A ;V:C20==O C=8:0B8 ?@O<>3> A>=OG=>3> A2VB;0 01> #5-28?@>74V; <<>1VG=V @50:FVW»).

?L=0 =5@2>20 A8AB5<0.

V4<<>, I> F8?@>D;>:A0F8=, O: V V=HV EV=>;>=8, <>65 A?@8G8=OB8 AC4<<8 01> 7=86C20B8 ?>@V3 AC4<<=>W 3>B>2=>ABV.>2V4<<>;O;8 ?@>  
28?04:8 @>728B:C 5?V;5?B8G=>3> AB0BCAC. ?>:A0F8= 70AB>A>2C20B8 7 >15@56=VABN ?0FVT=B0< V7 @>7;040<8 &!, O:V <>6CBL <0B8  
AE8;L=VABL 4> 28=8:=5==O AC4<< ?@89<< F8?@>D;>:A0F8=C A;V4 ?@8?8=8B8 (482. @>74V; <<>1VG=V @50:FVW»). 02VBL ?VA;O ?5@H>3>  
70AB>AC20==O F8?@>D;>:A0F8=C <>6CBL 28=8:=CB8 ?A8E>B8G=V @50:FVW. # ?>>48=>:8E 28?04:0E 45?@5AVO 01> ?A8E>7<<6CBL  
?@>3@5AC20B8 4> ACWF840;L=8E 4C<<: B0 2G8=:V2, B0:8E O: A0<>3C1AB2> 01> 9>3> A?@>10. # F8E 28?04:0E 70AB>AC20==O  
F8?@>D;>:A0F8=C A;V4 ?@8?8=8B8.

# ?0FVT=BV2, O:V 70AB>A>2C20;8 F8?@>D;>:A0F8=, ?>2V4<<>;O;>AO ?@> 28?04:8 ?>;V=52@>?0BVW (=0 >A=>2V =52@>;>3VG=8E A8@=V  
@>7;048 01> <O7>20 A;01:VABL, >:@5<> 01> 2 :<1V=0FVW). 0AB>AC20==O F8?@>D;>:A0F8=C A;V4 ?@8?8=8B8 ?0FVT=B0<, O:V <0NBL A8<8  
=52@>?0BVW, 7>:@5<0 1V;L, ?5GV==O, 2V4GCBBO ?>I8?C20==O, 70=V A;01:VABL, 7<5B>N ?>?5@5465==O @>728B>:C =5>1>@>B=8E AB0=V2  
(482. @>74V; <<>1VG=V @50:FVW»).

!5@F52V @>7;048.

!;V4 7 >15@56=VABN 70AB>A>2C20B8 DB>@EV=>;>=8, 2 B>D;>:A0F8=, ?0FVT=B0< 7 2V4><8<8 D0:B>@0<8 @878:C ?>4>265==O V=B5@20;C QT,  
7>:@5<0:

- ?@8 A?04:>2>4>265==O V=B5@20;C QT;
- C 28?04:C >4=>G0A=>3> 70AB>AC20==O ?@5?0@0BV2, I> <>6CBL ?>4>26C20B8 V=B5@20; QT (=0?@8:;04, ?@>B80@8B18 ;:0AV2IA B0 III,  
B@8F8:;VG=V 0=B845?@5A0=B8, <0:@>;V48, =59@>;5?B8:8);
- ?@8 =52V4:>@83>20=>;VB=> (=0?@8:;04 3V?>:0;VT<03=VT);
- C @07V =0O2=>ABV 70E2>@N20=L A5@FO (=0?@8:;04 A5@F520 =54>AB0B=VABL, V=D0@:B:0@40, 1@048:0@4VO).

0FVT=B8 ;VB=L>3> 2V:C B0 6V=:8 <>6CBL 28O2;OB8 1V;LHC GCB;82VABL 4> ?@5?0@0BV2, I> ?>4>26CNBL QTc. "15@56=VABN  
70AB>A>2C20B8 DB>@EV=>;>=8, C B>D;>:A0F8=, C F8E 3@C?0E E2>@8E (482. @>74V;8 «!>AV1 70AB>AC20==O B0 4>78», «70T<>4VO 7 V=H8<8  
;V:0@AL:8<8 70A>10<8 B0 V=HV 2848 270T<>4V9», «>1VG=V @50:FVW», «5@54>7C20==O»).

V?>3:V:5

/: V ?@8 70AB>AC20==V V=H8E EV=>;>=V2, =09G0ABVH5 3V?>3;V:5@8E =0 4V015B, ?5@5206=> C ?0FVT=BV2 ;VB=L>3> 2V:C. 5:>5=4CTBLAO  
?@>2>48B8 @5B5;L=89 :>=B@>;L @V2=O 3;N:>78 :@>2V C 2AVE E2>@8E =0 4V015B (482. @>74V; <<>1VG=V @50:FVW»).

!C=:>2>-:8H:>289 B@0:B.

8=8:=5==O ?@>BO3<< 01> ?VA;O ;V:C20==O BO6:>W V ABV9:>W 4V0@5W (=02VBL G5@57 45:V;L:0 B86=V2 ?VA;O ;V:C20==O)>65 A2V4G8B8  
?@> @>728B>: 0=B81V>B8:0A>FV9>20=>3> :>;VBC (B0:>3>, I> 703@>6CT 68BBN 7 <>6;828< ;5B0;L=8< =0A;V4:><) B0 ?>B@51C20B8  
=52V4:;04=>3> ;V:C20==O (482. @>74V; <<>1VG=V @50:FVW»). # B0:8E 28?04:0E 70AB>AC20==O F8?@>D;>:A0F8=C =5>1EV4=> ?@8?8=8B8 V  
@>7?>G0B8 2V4?>2V4=C B5@0?VN. V:0@AL:V 70A>18, O:V ?@83=VGCNBL ?5@8AB0;LB8:C, ?@>B8?>:070=V C 2:070=V9 ;;V=VG=V9 A8BC0FVW.  
8@:8 B0 A5G>284V;L=0 A8AB5<0.

>2V4><;O;>AO ?@> :@8AB0;C@VN, ?>2O70=C V7 70AB>AC20==O< F8?@>D;>:A0F8=C (482. @>74V; <>1VG=V @50:FVW»). 0FVT=B8, O:V ?@89 <0NBL F8?@>D;>:A0F8=, ?>28==V >B@8AB0B=N :V;L:VABL @V48=8. !;V4 C=8:0B8 =04W ;C6=>ABV A5GV.

>@CH5==O DC=:FVW =8@>:.

A:V;L:8 F8?@>D;>:A0F8= 282>48BLAO ?5@5206=> C =57@

5?0B>1V;V0@=0 A8AB5<0.

@8 70AB>AC20==V F8?@>D;>:A0F8=C ?>2V4><;O;>AO ?@> 28?04:8 @>728B:C =5:@>7C ?5GV=:8 B0 ?5GV=:>2>W =54>AB0B=>ABV, I> 703@>6CT 68BBN ?0FVT=B0 (482. @>74V; <>1VG=V @50:FVW»). # 28?04:C ?>O28 1C4L-O:8E >7=0: V A8@N20==O ?5GV=:8 (B0:8E O: 0=>@5:AVO, 6>2BO=8FO, B5<=0 A5G0, A25@1V6 01> =0?@C65=VABL ?5@54=L>W G5@52=>W ABV=:8), ;V:C20==O A;V4 ?@8?8=8B8.

5DVF8B 3;N:>7>-6-D>AD0B 453V4@>35=078.

@8 70AB>AC20==V F8?@>D;>:A0F8=C ?>2V4><;O;>AO ?@> 35<>;VB8G=V @50:FVW C ?0FVT=BV2 V7 45DVF8B>< 3;N:>7>-6-D>AD0B453V4@>35=078. !;V4 C=8:0B8 70AB>AC20==O F8?@>D;>:A0F8=C B0:8< ?0FVT=B0<, 70 28=OB:>< 28?04:V2, :>;8 ?>B5=FV9=0 :>@8ABL ?5@52060T ?>B5=FV9=89 @878:. # B0:>AB5@V30B8 70 <>6;82>N ?>O2>N 35<>;V7C.

578AB5=B=VABL.

V4 G0A 01> ?VA;O :C@AC ;V:C20==O F8?@>D;>:A0F8=× @578AB5=B=V 10:B5@VW <>6CBL 1CB8 284V;5=V, 7 01> 157 ;:V=VG=> 287=0G5=>W AC?5@V=D5:FVW. >65 VA=C20B8 ?52=89 @878: 284V;5==O F8?@>D;>:A0F8=-@578AB5=B=8E 10:B5@V9 ?V4 G0A B@820;8E :C@AV2 ;V:C20==O B0 ?@8 ;V:C20==V 2=CB@VH=L>;V:0@=O=8E V=D5:FV9 B0/01> V=D5:FV9, A?@8G8=5=8E 2840<8 Staphylococcus V Pseudomonas.

&8B>E@>< 450.

?>:A0F8= ?@83=VGCT CYP1A2 V B>

5B>B@5:A0B.

4=>G0A=5 70AB>AC20==O F8?@>D;>:A0F8=C V <5B>B@5:A0BC =5 @5:><5=4CTBLAO (482. @>74V; <70T<>4VO 7 V=H8<8 ;V:0@AL:8<8 70A>10 <8 B0 V=HV 2848 270T<>4V9»).

?;82 =0 @57C;LB0B8 ;01>@0B>@=8E 0=0;V7V2.

?>:A0F8= *in vitro* <>65 ?;820B8 =0 @57C;LB0B8 ?>AV2C =0 Mycobacterium tuberculosisH;OE>< ?@83=VG5==O @>ABC :C;LBC@8 10:B5@V9, I> <>65 ?@8725AB8 4> E81=>-=530B82=8E @57C;LB0BV2 0=0;V7C ?>AV2C C ?0FVT=BV2, O:V ?@89<0NBL F8?@>D;>:A0F8=.

**0AB>AC20==O C ?5@V>4 203VB=>ABV 01> 3>4C20==O 3@C44N.**

03VB=VABL. 0=V I>4> 70AB>AC20==O F8?@>D;>:A0F8=C 203VB=8< 45<>=AB@CNBL 2V4ACB=VABL @>728B:C<0;LD>@<0FV9 01> D5B> />5>=0B0;L=>W B>:A8G=>ABV. >A;V48 =0 B20@8=0E =5 2:07CNBL =0 ?@O<89 01> =5?@O<89 B>:A8G=89 ?;82 =0 @5?@>4C:B82=C DC=:FVN. # <>;>48E B20@8= V B20@8=, O:V 1C;8 ?V440=V ?;82C EV=>;>=V2 4> =0@>465==O, A?>AB5@V302AO ?;82 =0 =57@V;C E@OI>2C B:0=8=C, B>4 203VB=>ABV 7 <5B>N 70?>1V30==O =51060=8E ?;82V2 =0 ?;V4 :@0I5 C=8:0B8 70AB>AC20==O F8?@>D;>:A0F8=C.

5@V>4 3>4C20==O 3@C44N. ?>:A0F8= ?@>=8:0T C 3@C4=5 <>;>. '5@57 ?>B5=FV9=89 @878: ?>H:>465==O AC3;>1>28E E@OIV2 C =>2>=0@>465=8E F8?@>D;>:A0F8= =5 A;V4 70AB>A>2C20B8 C ?5@V>4 3>4C20==O 3@C44N.

**40B=VABL 2?;820B8 =0 H284:VABL @50:FVW ?@8 :5@C20==V 02B>B@0=A?>@B× 01> V=H8<8 <5E0=V7<0<8.**

&8?@>D;>:A0F8= <>65 ?;820B8 =0 740B=VABL ?0FVT=B0 :5@C20B8 02B>B@0=A?>@B× V ?@0FN20B8 7 <5E0=V7<0<8 G5@57 @50:FVW 7 1>:C =5@2>2>W A8AB5<8 (482. @>74V; <>1VG=V @50:FVW»). ">B@0=A?>@B< 01> ?@0FN20B8 7 <5E0=V7<0<8 <>65 1CB8 ?>@CH5=0.

**! ?>AV1 70AB>AC20==O B0 4>78.**

>70 287=0G0TBLAO 73V4=> 7 ?>:070==O<, BO6:VABN B0

"@820;VABL ;V:C20==O 70;568BL 2V4 BO6:>ABV ?5@51V3C 70E2>@N20==O, >A>1;82>AB59 ;;V=VG=>W :0@B8=8 B0 B8?C 71C4=8:0.

V:C20==O V=D5:FV9, A?@8G8=5=8E ?52=8<8 10:B5@VO<8 (=0?@8::04 Pseudomonas aeruginosa, Acinetobacter 01> Staphylococci), <>65 28<030B8

70AB>AC20==O 28I8E 4>7 F8?@>D;>:A0F8=C B0 >4=>G0A=>3> 70AB>AC20==O V=H8E =5>1EV4=8E 0=B810:B5@V0;L=8E ?@5?0@0BV2.

V:C20==O 45O:8E V=D5:FV9 (=0?@8::04 70?0;L=8E 70E2>@N20=L>@30=V2 <0;>3> B070, V=B@0-014>?5=VTN, V=D5:FV9 :VAB>: B0 AC3;>1V2)

<>65 28<030B8 >4=>G0A=>3> 70AB>AC20==O V=H8E =5>1EV4=8E 0=B810:B5@V0;L=8E ?@5?0@0BV2 70;56=> 2V4 284C 28O2;5=8E ?0B>35=V2.

>@>A;V.

>:070==O		>1>20 4>70, <3	030;L=0 B@820;VABL ;V:C20==O(<>65 2::NG0B8 ?>G0B:>25 ?0@5=B5@0;L=5 70AB>AC20==O F8?@>D;>:A0F8=C)
=D5:FVW =86=VE 48E0;L=8E H;OEV2		V4 500 <3 42VGV =0 4>1C 4> 750 <3 42VGV =0 4>1C	7-14 4=V2
=D5:FVW 25@E=VE 48E0;L=8E H;OEV2	03>AB@5==O E@>=VG=>3> A8=CA8BC	V4 500 <3 42VGV =0 4>1C 4> 750 <3 42VGV =0 4>1C	7-14 4=V2
	%@>=VG=89 3=V9=89 >B8B A5@54=L>3> 2CE0	V4 500 <3 42VGV =0 4>1C 4> 750 <3 42VGV =0 4>1C	7-14 4=V2
	06:89 ?5@51V3 >B8BC 7>2=VH=L>3> 2CE0	750 <3 42VGV =0 4>1C	V4 28 4=V2 4> 3
=D5:FVW A5G>2>3> B@0:BC (482. @>74V; «A>1;82>ABV 70AB>AC20==O»)	5CA::04=5=89 F8AB8B	V4 250 <3 42VGV =0 4>1C 4> 500 <3 42VGV =0 4>1C	3 4=V
	V=:0< ?5@54 <5=>?0C7>N <>6=0 70AB>A>2C20B8 >4=>@07>2C 4>7C 500 <3		
	#A::04=5=89 F8AB8B, =5CA::04=5=89 ?VT;>=5D@8B	500 <3 42VGV =0 4>1C	7 4=V2
	#A::04=5=89 ?VT;>=5D@8B	V4 500 <3 42VGV =0 4>1C 4> 750 <3 42VGV =0 4>1C	5 <5=H5 10 4=V2, ?@8 45O:8E >A>1;828E ;;V=VG=8E 28?04:0E (B0:8E O: 01AF5A8) ;V:C20==O <>6=0 ?@>4>26C20B8 ?>=04 21 45=L
@>AB0B8B	V4 500 <3 42VGV =0 4>1C 4> 750 <3 42VGV =0 4>1C	V4 2 4> 4 B86=V2 (3>AB@89) V 2V4 4 4> 6 B86=V2 (E@>=VG=89)	
=D5:FVW AB0B528E >@30=V2	>=>.:>289 C@5B@8B V F5@2VF8B	07>20 4>70 500 <3	1 45=L (@07>20 4>70)

>:070==O	>1>20 4>70, <3	030;L=0 B@820;VABL ;V:C20==O(<>65 2;;NG0B8 ?>G0B:>25 ?0@5=B5@0;L=5 70AB>AC20==O F8?@>D;>:A0F8=C)		
=D5:FVW H;C=>2>- :8H:>2>3> B@0:BC B0 V=B@0014>	@E>5?V4848 70?0;L=V 70E2>@N20==O >@30=V2 <0;>3> B070 V0@5O, A?@8G8=5=0 10:B5@V0;L=8<8 ?0B>35=0<8, 7>:@5<0 <i>Shigella</i> spp., >:@V< <i>Shigella dysenteriae</i> , B8? 1, V 5W 4V0@5W <0=4@V2=8:V2	V4 500 <3 42VGV =0 4>1C 4> 750 <3 42VGV =0 4>1C 500 <3 42VGV =0 4>1C	5 <5=H5 14 4=V2 1 45=L	
	V0@5O, A?@8G8=5=0 <i>Shigella dysenteriae</i> , B8? 1	500 <3 42VGV =0 4>1C	5 4=V2	
	V0@5O, A?@8G8=5=0 <i>Vibrio cholerae</i>	500 <3 42VGV =0 4>1C	3 4=V	
	"8D>W4=0 ;8E><0=:0	500 <3 42VGV =0 4>1C	7 4=V2	
	=B@0014>	500 <3 42VGV =0 4>1C 4> 750 <3 42VGV =0 4>1C	V4 5 4> 14 4=V2	
=D5:FVW H:V@8 B0 < O:8E B:0=8=	V4 500 <3 42VGV =0 4>1C 4> 750 <3 42VGV =0 4>1C	<3	V4 7 4> 14 4=V2	
=D5:FVW :VAB>: B0 AC3;>1V2	V4 500 <3 42VGV =0 4>1C 4> 750 <3 42VGV =0 4>1C	<3	0:A8<0;L=> 3	
0FVT=B8 V7 =59B@>?5=VTN B0 3V?5@B5@7@8 I>4> 10:B5@V0;L=>3> V=D5:FV9=>3> 35=57C ;8E><0=:8. ?>:A0F8= =5>1EV4=> 70AB>A>2C20B8 >4=>G0A=> 7 2V4?>2V4=8<8 0=B810:B5@V0;L=8<8 ?@5?0@0B0<8/?@5?0@0B>< 73V4=> 7 >DV9=8<8 @5:><5=40FVO<8	V4 500 <3 42VGV =0 4>1C 4> 750 <3 42VGV =0 4>1C	<3	"5@0?VN A;V4 ?@>4>26C20B8 C?@>4>26 CAL>3> ?5@V>4C =59B@>?5=VW	
@>DV;0:B8:0 V=20782=8E V=D5:FV9, A?@8G8=5=8E <i>Neisseria meningitidis</i>	07>20 4>70 500 <3		1 45=L (@07>20 4>70)	
@>DV;0:B8:0 ?VA;O :>=B0:BC V ;V:C20==O ;535=52>W D>@<8 A81V@AL:>W 28@07:8 2 >AV1, O:V <>6CBL >B@8@0;L=8< H;OE><, O:I> F5 T ;:V=VG=> =5>1EV4=8AC20==O ?@5?0@0BC A;V4 @>?>G8=0B8 O:><>30 A:>@VH5 ?VA;O ?V4>7@N20=>3> 01> ?V4B25@465=>3> :>=B0:BC.	500 <3 42VGV =0 4>1C		60 4=V2 7 4=O ?V4B25@465=>3> :>=B0:BC 7 <i>Bacillus anthracis</i>	

VB8 B0 ?V4;VB:8.

>:070==O	>1>20 4>70, <3	030;L=0 B@820;VABL ;V:C20==O (<>65 2;;NG0B8 ?>G0B:>25 ?0@5=B5@0;L=5 70AB>AC20==O F8?@>D;>:A0F8=C)
VAB>7=89 DV1@>7	20 <3/:3 <0A8 BV;0 42VGV =0 4>1C ?@8 <0:A8<0;L=V9 @07>2V9 4>7V 750 <3	V4 10 4> 14 4=V2
#A:;04=5=V V=D5:FVW A5G>2>3> B@0:BC B0 ?VT;>=5D@8B	V4 10 <3/:3 <0A8 BV;0 42VGV =0 4>1C 4> 20 <3/:3 <0A8 BV;0 42VGV =0 4>1C ?@8 <0:A8 <0;L=V9 @07>2V9 4>7V 750 <3	V4 10 4> 21 4=V2
@>DV;0:B8:0 ?VA;O :=B0:BC V ;V:C20==O ;535=52>W D>@ <8 A81V@AL:>W 28@07:8 C ?0FVT=BV2, O:V <>6CBL >B@8 @0;L=8< H;OE><, O:I> F5 T ;;V=VG=> =5>1EV4=8AC20==O ?@5?0@0BC A;V4 @>7?>G8=0B8 O:>>>30 A:>@VH5 ?VA;O ?V4>7@N20=>3> 01> ?V4B25@465-=>3> :=B0:BC	V4 10 <3/:3 <0A8 BV;0 42VGV =0 4>1C 4> 15 <3/:3 <0A8 BV;0 42VGV =0 4>1C ?@8 <0:A8 <0;L=V9 @07>2V9 4>7V 500 <3	60 4=V2 7 4=O ?V4B25@465=>3> :=B0:BC 7 <i>Bacillus anthracis</i>
=HV BO6:V V=D5:FVW	20 <3/:3 <0A8 BV;0 42VGV =0 4>1C, ?@8 <0:A8	V4?>2V4=> 4> B8?C V=D5:FV9

0FVT=B8 ;VB=L>3> 2V:C.

0FVT=B8 ;VB=L>3> 2V:C ?>28==V >B@87C, >1@0=C 73V4=> 7 BO6:VABN V=D5:FVW B0 ;;V@5=A< :@50B8=V=C ?0FVT=B0.

8@:>20 B0 ?5GV=:>20 =54>AB0B=VABL.

5:><5=4>20=V ?>G0B:>2V B0 ?V4B@878 4;O ?0FVT=BV2 V7 ?>@CH5=>N =8@:>2>N DC=:FVTN:

;V@5=A :@50B8=V=C [<:/E2/1,73 <2]	@50B8=V= A8@>20B:8 :@>2V [;/]	>70 4;O ?5@>@0;L=>3> ?@89>[<3]
> 60	< 124	82. 728G09=5 4>7C20==O
30- 60	124-168	250- 500 <3 :=6=V 12 3>48=
< 30	>169	250- 500 <3 :=6=V 24 3>48=
0FVT=B8 =0 35<>4V0;V7V	>169	250- 500 <3 :=6=V 24 3>48= (?VA;O 4V0;V7C)
0FVT=B8 =0 ?5@8B=>50;L=>	>169	250- 500 <3 :=6=V 24 3>48=

# ?0FVT=BV2 7 ?5GV=:>2>N =54>AB0B=VABN =5<0T ?>B@518 C 77C20==O F8?@>D;>:A0F8=C.

>A;V465=L I>4> 4>7C20==O F8?@>D;>:A0F8=C 4;O 4VB59 V7 ?>@CH5=>N =8@:>2>N B0/01> ?5GV=:>2>N DC=:FVO<8 =5 ?@>2>48;8.

!>AV1 70AB>AC20==O.

"01;5B:8 A;V4 :>2B0B8 =5 @>76>2CNG8 V 70?820B8 @V48=>N. E <>6=0 ?@89<0B8 =570;56=> 2V4 ?@89>28=0 2A<>:BCTBLAO H284H5. "01;5B:8 F8?@>D;>:A0F8=C =5 <>6=0 ?@89<0B8 @07<< V7 <>;>G=8<8 ?@>4C:B0<8 (=0?@8:;04 7 <>;>:×, 9>3C@B<<) 01> D@C:B>28<8 A>:0<8 7 4>4020==O< 28< A>:×, 71030G5=8< :0;LFVT<) (482. @>74V; «70T<>4VO 7 V=H8<8 ;V:0@AL:8<8 70A>10<8 B0 V=HV 2848 270T<>4V9»).

# BO6:8E 28?04:0E 01> O:I> ?0FVT=B =5740B=89 ?@89<0B8 B01;5B:8 (7>:@5<0 ?@8 5=B5@0;L=><5=4CTBLAO @>7?>G8=0B8 B5@0?VN V7 2=CB@VH=L>25==>3> 22545==O F8?@>D;>:A0F8=C, ?>:8 =5 1C45 <>6;828< ?5@5EV4 =0 ?5@>@0;L=89 ?@89>

**VB8.**

0AB>AC20==O F8?@>D;>:A0F8=C 4VBO< B0 ?V4;VB:0< =5>1EV4=> ?@>2>48B8 73V4=> 7 G8==8<8 >DV9V9=8<8 @5:×<5=40FVO<8. V:C20==O V7 70AB>AC20==O< F8?@>D;>:A0F8=C ?>28=5= ?@>2>48B8 ;V:0@ V7 4>A2V4× 2545==O 4VB59 B0 ?V4;VB:V2, E2>@8E =0 :VAB>7=89 DV1@>7 B0 /01> BO6:V V=D5:FVW.

?>:A0F8= A?@8G8=O2 0@B@>?0BVN >?>@=8E AC3;>1V2 C =57@V;8E B20@8=. @>AB0==O :V;L:>ABV 28?04:V2 0@B@>?0BV9, O:V ?>2O70=V V7 70AB>AC20==O< ?@5?0@0BC, 1C;> AB0B8AB8G=> =57=0GCI8D;>:A0F8=>< 4VB59 B0 ?V4;VB:V2 ?>B@V1=> @>7?>G8=0B8 BV;L:8 ?VA;O @5B5;L=>W >FV=:8 A?V22V4=>H5==O :>@8ABL/@878: G5@57 <>6;8289 @878: @>728B:C ?>1VG=8E @50:FV9, ?>2O70=8E V7 AC3;>10<8 B0/01> =02:>;8H=V<8 B:0=8=0<8.

**5@54>7C20==O.**

>2V4><<;O;>AO, I> ?5@54>7C20==O 2=0A;V4>: ?@89>48;> 4> A8W B>:A8G=>ABV. >AB@5 ?5@54>7C20==O 2 4>7V 16 3 ?@872>48;> 4> @>728B:C 3>AB@>W =8@:>2>W =54>AB0B=>ABV.

!8<8 ?5@54>7C20==O 2:;NG0;8 70?0<>@>G5==O, B@5<>@, 3>;>2=89 1V;L, ?V428I5=C 2B<<;N20=VABL, AC4×8, 30;NF8=0FVW, A?;CB0=VABL A2V4><>ABV, 014>@B, =8@:>2C B0 ?5GV=:>2C =54>AB0B=VABL, 0 B0:>6 :@8AB0;C@VN B0 35<0BC@VN. >2V4><<;O;>AO B0:>6 ?@> >1>@>B=C =8@:>2C B>:A8G=VABL.

:@V< 728G09=8E =52V4:;04=8E 70E>4V2, I> ?@>2>4OBLAO ?@8 ?5@54>7C20==V, @5:×<5=4>20=> <>=VB>@8=3 DC=:FVW =8@>;, 7>:@5<0 287=0G5==O @A5GV V 2 @07V =5>1EV4=>ABV ?V428I5==O WW :8A;>B=>ABV 4;O ?>?5@5465==O O28I :@8AB0;C@VW. 0FVT=B8 ?>28==V >B@8 AB0B=N :V;L:VABL @V48=8. =B0F848, I>T <03=V9, B5>@5B8G=> <0NBL 7=86C20B8 2A<>:BC20==O F8?@>D;>:A0F8=C ?@8 ?5@54>7C20==V. 0 4>?><<3>N 35<>4V0;V7C 01> ?5@8B>=50;L=>3> 4V0;V7C 282>48BLAO BV;L:8 =525;8:0 :V;L:VABL F8?@>D;>:A0F8=C (<10 %).

# 28?04:C ?5@54>7C20==O =5>1EV4=> ?@>2>48B8 A8<0B8G=5 ;V:C20==O. '5@57 <>6;825 ?>4>265==O V=B5@20;C QT 4>FV;L=8< B0:>6 T ?@>2545==O -<>=VB>@C20==O.

**>1VG=V @50:FVW.**

09G0ABVH5 ?>2V4><<;O;>AO ?@> B0:V ?>1VG=V @50:FVW O: =C4>B0 B0 4V0@5O. 0=V ?@> ?>1VG=V @50:FVW =02545=> =86G5.

;0A8 A8AB5< >@30=V2	>1VG=V @50:FVW
=D5:FVW B0 V=207VW	@81:>2V AC?5@V=D5:FVW, 0=B81V>B8:>-0A>FV9>20=89 :>;VB (4C65 @V4:> 7<>6;828< ;5B0;L=8< =0A;V4:><) (482. @>74V; «A>1;82>ABV 70AB>AC20==O»)
1>:C A8AB5<8 :@>2>B2>@5==O B0 ;VW A8AB5<8	>78=>DV;VO, ;59:>?5=VO, 0=5?5=VO, ;59:>F8B>7, B@><1>F8B>?5=VO, B@><1>F8B5F8B>7, ?0=F8B>?5=VO (I> 703@>6CT 68BBN ?0FVT=B0), ?@83=VG5==O DC=:FVW :VAB:>2>3><>7:C (I> 703@>6CT 68BBN ?0FVT=B0)

;0A8 A8AB5< >@30=V2	>1VG=V @50:FVW
1>:C VW A8AB5<8  >@CH5==O >128= B0 E0@GC20==O	;5@3VG=V @50:FVW, 0;5@3VG=89/ 0=3V>=52@>B8G=89 =01@O:, 0=0DV;0:B8G=V @50:FVW, 0=0DV;0:B8G=89 H>: (I> 703@>6CT 68BBN ?0FVT=B0) (482. @>74V; «A>1;82>ABV 70AB>AC20==O»), @50:FVW, ?>4V1=V 4> A8@>20B:>2>W E2>@>18 =865==O 0?5B8BC, 3V?5@3;V:53;V:574V; «A>1;82>ABV 70AB>AC20==O»)
A8EVG=V @>7;048	A8E><>B>@=0 71C4;82VABL/ B@82>6=VABL, A?;CB0=VABL A2V4>>ABV V 457>@VT=B0FVO, AB@82>65=VABL, ?0B>;>3VG=V A=>284V==O, 45?@5AVO (7<>6;828<8 ACWF840;L=8<8 V45O<8/4C
1>:C =5@2>2>W A8AB5<8	>;>2=89 1V;L, 70?0<>@>G5==O, @>7;048 A=C, ?>@CH5==O A<0:C, ?0@5AB57VW B0 4875AB57VW, 3V?5AB57VW, B@5<>@, AC4<8 (2::NG0NG8 5?V;5?B8G=89 AB0BCA 482. @>74V; «A>1;82>ABV 70AB>AC20==O»), 70?0<>@>G5==O, @CH5==O :>@48=0FVW, ?>@CH5==O E>48, ?>@CH5==O =NEC, 2=CB@VH=L>G5@5?>0 3V?5@B5=7VO B0 ?A524>?CE;8=8 <>7:C, ?5@8D5@8G=0 =59@>?0BVO B0 ?>;V=59@>?0BVO (482. @>74V; «A>1;82>ABV 70AB>AC20==O»)
1>:C >@30=V2 7>@C	>@CH5==O 7>@C (=0?@8::04 48?;>?VO), ?>@CH5==O A?@89=OBBO :>;L>@V2
1>:C >@30=V2 A;CEC B0 ;01V@8=BC	72V= C 2CE0E, 2B@0B0 A;CEC/ ?>@CH5==O A;CEC
1>:C A5@FO	"0EV:0@4VO, H;C=>G:>20 0@8B C ?0FVT=BV2 V7 D0:B>@0<8 @878:C I>4> ?>4>265==O V=B5@20;C QT), ?>4>265==O V=B5@20;C QT (482. @>74V;8 «A>1;82>ABV 70AB>AC20==O», «5@54>7C20==O»)
1>:C AC48=	07>48;0B0FVO, 0@B5@V0;L=0 3V?>B5=7VO, A8=:>?0;L=89 AB0=, 20A:C;VB
1>:C >@30=V2 48E0==O, B>@0:0;L=V B0 <54V0AB8=0;L=V @>7;048	8A?=>5 (2::NG0NG8 0AB<0B8G=V AB0=8)
1>:C H;C=:>2>-.8H:>2>3> B@0:BC	C4>B0, 4V0@5O, 1;N20==O, 1V;L C 4V;O=FV H;C=:0 B0 ?> E>4C :8H5G=8:C, 014>
1>:C 35?0B>-1V;V0@=>W A8AB5 <8	V428I5==O @V2=V2 B@0=A0@CH5==O DC=:FVW ?5GV=:8, E>;5AB0B8G=0 6>2BO=8FO, 35?0B8B, =5:@>7 ?5GV=:8 (I> C @V4:VA=8E 28?04:0E ?@>3@5ACT 4> ?5GV=:>2>W =54>AB0B=>ABV, O:0 703@>6CT 68BBN ?0FVT=B0) (482. @>74V; «A>1;82>ABV 70AB>AC20==O»)
1>:C H:V@=8E ?>:@82V2 B0 ?V4H:V@=>W ;;VB:>28=8	8A8?0==O, A25@1V6, :@>?82O=:0, @50:FVW D>B>GCB;82>ABV (482. @>74V; «A>1;82>ABV 70AB>AC20==O»), ?5B5EVW, @<=0 5@8B5<0, 2C7;8:>20 5@8B5<0, A8=4@< !BV25=A0-6>=A>=0 (I> ?>B5=FV9=> 703@>6CT 68BBN ?0FVT=B0), B>:A8G=89 5?V45@<0;L=89 =5:@>;V7 (I> ?>B5=FV9=> 703@>6CT 68BBN ?0FVT=B0), 3>AB@89 35=5@0;V7>20=89 5:70=B5<0B>7=89 ?CABC;L>7 ()
1>:C >?>@=>-@CE>2>3> 0?0@0BC B0 A?>;CG=>W B:0=8=8	O7>2>-A:5;5B=89 1V;L (=0?@8::04 1V;L C :V=FV2:0E, ?>?5@5:>2V9 4V;O=FV, 3@C4=V9 ;;VB8=V), 0@B@0;3VW, 74V; «A>1;82>ABV 70AB>AC20==O»)
1>:C =8@>: B0 A5G>284V;L=>W A8AB5<8	>@CH5==O DC=:FVW =8@>;, =8@:>20 =54>AB0B=VABL, 35<0BC@VO, :@8AB0;C@VO (482. @>74V; «A>1;82>ABV 70AB>AC20==O»), BC1C;>V=B5@AB8FV0;L=89 =5D@8B



;0A8 A8AB5< >@30=V2	>1VG=V @50:FVW
>7;048 7030;L=>3> AB0=C B0 @50:FVW C	AB5=VO, 30@OG:0, =01@O:8, ?V428I5=0 ?VB;82VABL (3V?5@3V4@>7)
01>@0B>@=V ?>:07=8:8	V428I5==O 0:B82=>ABV ;C6=>W D>AD0B078 :@>2V, ?V428I5==O 0:B82=>ABV 04=>G0A=> 70AB>A>2CNBL 0=B03>=VAB8 2VB0

**0AB>AC20==O 4VBO<**

'0AB>B0 28?04:V2 0@B@>?0BVW, 707=0G5=0 28I5, 3@C=BCTBLAO =0 40=8E, >45@60=8E C E>4V 4>A;V465=L 7 CG0ABN 4>@>A;8E ?0FVT=BV2.

# 4VB59 0@B@>?0BVO A?>AB5@V30TBLAO G0ABVH5 (482. @>74V; «A>1;82>ABV 70AB>AC20==O»).

>2V4><;5==O ?@> ?V4>7@N20=V ?>1VG=V @50:FVW

>2V4><;5==O ?@> ?V4>7@N20=V ?>1VG=V @50:FVW ?VA;O @5TAB@0FVW ;V:0@AL:>3> 70A>1C T 206;8288. >=8 4>72>;ONBL ?@>2>48B8

157?5@5@2=89 <=>VB>@8=3 A?V22V4=>H5==O :>@8ABL/@878: I>4> ?@5?0@0BC. 548G=V ?@0FV2=8:8 ?>28==V ?>2V4<;OB8 ?@> 1C4L-O:V  
?V4>7@N20=V ?>1VG=V @50:FVW.

**"5@ABV.**

3 @>:8.

**#<>28 715@V30==O.**

15@V30B8 ?@8 B5V =5 28I5 25 ?! 2 >@83V=0;L=V9 C?0:>2FV 2 =54>ABC?=><C 4;O 4VB59 <VAFV.

**#?0:>2:0.**

> 10 B01;5B>: C 1;VAB5@V; ?> 1 1;VAB5@C 2 :0@B>==V9 :>@>1FV.

**0B53>@VO 2V4?CA:C.**

0 @5F5?B>

**8@>1=8:.**

54>:5

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**VAF57=0E>465==O 28@>1=8:0 B0 9>3> 04@5A0 20465==O 4VO;L=>ABV.**

2 VE05; @0::5>A AB@VB, 68>A B0=0AV>A =4CAB@V0;L=0 7>=0, □V<0AA>;, 4101, V?@/

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