

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

&□"□
(VINPOCETINE)

!::04:

4VNG0 @5G>28=0: vinctocetin;

1 <; ?@5?0@0BC

4>?>28=8: :8A;>B0 0A:@>1V=>20, =0B@VN <5B01VAC;LDVB (223), :8A;>B0 28==0, A?8@B
15=78;>289, A>@1VB (420), 2>40 4;O V=T:FV9.

V:0@AL:0 D>@<0. =>F5=B@0B 4;O @>7G8=C 4;O V=DC7V9.

A=>2=V DV78:>-EVABV: 15710@2=0 01> 7V 7;53:0 75;5=C20B8< 2V4BV=:<< ?@>7>@0 @V48=0.

\$0@<0:>B5@0?52B8G=0 3@C?0.

A8E>AB8@8 B0 =>>B@>?>V @5G>28=8. >4 "% N06B X18.

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

\$0@<0:>48=0

V=?>F5B8= ?@54AB02;OT A>1>N 7'T4=0==O 7 :<< 4VW, I> G8=8BL A?@8OB;8289 5D5:B =0
<5B01>;V7< 3>;>2=>3> <>7:C V ?>:@0ICT 9>3> :@>2>?>AB0G0==O, 0 B0:>6 ?>:@0ICT @5>;>3VG=V
2;0AB82>ABV :@>2V.

V=?>F5B8= 28O2;OT =59@>?@>B5:B82=V 5D5:B8: ?@5?0@0B ?>A;01;NT H:V4;82C 4VN
F8B>B>:A8G=8E @50:FV9, A?@8G8=5=8E AB8:8A;>B0<8. @5?0@0B V=3V1CT ?>B5=FV0;-70;56=V
Na+ V Ca2+ -:0=0;8, 0 B0:>6 @5F5?B>@8 NMDA V AMPA. @5?0@0B ?>A8;NT =59@>?@>B5:B82=89
5D5:B 045=>78=C.

V=?>F5B8= AB8?;5==O 3;N:>78 V :8A=N V A?>6820==O F8E @5G>28= B:0=8=>N 3>;>2=>3> <>7:C.
@5?0@0B ?V428ICT ABV9:VABL 3>;>2=>3> <>7:C 4> 3V?>:AVW; 71V;LHCT B@0=A?>@BC20==O
3;N:>78 28=OB:>2>3> 465@5;0 5=5@3VW 4;O 3>;>2=>3> <>7:C G5@57 35<0B>5=F5D0;VG=89
10@'T@; 7AC20T <5B01>;V7< 3;N:>78 C 1V: 5=5@35B8G=> 1V;LH A?@8OB;82>3> 05@>1=>3>
H;OEC; 281V@:>2> V=3V1CT Ca2+-.0;L<>4C;V=-70;56=89 D5@<5=B F\$-D>AD>4V5AB5@07C (\$);
?V428ICT @V25=L F\$ V F\$ C 3>;>2=>@04@5=5@3VG=C A8AB5;>4VT 0=B8>:A840=B=>N
0:B82=VABN; C @57C;LB0BV 4VW 2AVE ?5@5@0E>20=8E 28I5 5D5:BV2 2V=?>F5B8= G8=8BL
F5@51@>?@>B5:B82=C 4VN.

V=?>F5B8= ?>:@0ICT F8@:C;OFVN C 3>;>2=> V=3V1CT 70E>?;5==O 045=>78=C, ?>:@0ICT
B@0=A?>@BC20==O :8A=N C B:0=8=0E H;OE>< 7=865==O 0DV=VB5BC :8A=N 4> 5@8B@>F8BV2.
V=?>F5B8= A5;5:B82=> 71V;LHCT :@>2>BV: C 3>;>2=>N ?5@DC7VTN («72>@>B=89 5D5:B
>1:@040==O»).

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

>7?>4V;. # 4>A;V465==OE 7 ?5@>@0;L=8< 22545==O< ?@5?0@0BC C IC@V2 @04V>0:B82=>ABV C
3>;>2=>

;N48=8 72'O7C20==O 7 1V;:0<8 :@>2V AB0=>28BL 66%. 1A>;NB=0 ?5@>@0;L=0

1V>4>ABC?>VABL 2V=?>F5B8=C AB0=>28BL 7%. 1AO3 @>7?>4V;C AB0=>28BL 246,7 ± 88,5 ;, I>
>7=0G0T 28@065=5 72'O7C20==O @5G>28=8 C B:0=8=0E. =0G5==O ;V@5=AC 2V=?>F5B8=C (66,7 ;
/3>4) ?5@528ICT 7=0G5==O C ?;074), I> 2:07CT =0 ?>70?5GV=:>289 <5B01>;V7< 7'T4=0==O.

82545==O. @8 1030B>@07>2>@0;L=>AC20==V ?@5?0@0BC C 4>7V 5 <3 V 10 <3 2V=?>F5B8= 45
<=>AB@CT ;V=V9=C :V=5B8:C; @V2=>206=V :>=F5=B@0FVW C ?;072V AB0=>2;OBL 1,2 ± 0,27 =3/
<; V 2,1 ± 0,33 =3/<; 2V4?>2V4=>.

5@V>4 =0?V2282545==O C ;N48=8 AB0=>28BL 83 ± 1,29 3>48=8. # 4>A;V465==OE, ?@>2545=8E V7
28:>@8AB0==O< @04V>0:B82=>3> 7'T4=0==O, 1C;> 28O2;5=>, I> >A=>2=89 H;OE 282545==O
74V9A=NTBLAO G5@57 A5GC V :0; C A?V22V4=>H5==V 60:40. V;LH0 :V;L:VABL @04V>0:B82=>W
10: 28O2;O;0AO C 6>2GV, 0;5 VAB>B=>W 5=B5@>35?0B8G=>W F8@:C;OFVW =5 2V47=0G0;>AO.
?>2V=:020 :8A;>B0 284V;OTBLAO G5@57 =8@:8 H;OE<< ?@>AB>W ;;C1>G:>2>W DV;LB@0FVW,
?5@V>4 =0?V2282545==O FVTW @5G>28=8 7 2V4 4>78 V A?>A>1C 70AB>AC20==O 2V=?>F5B8=C.

5B01>;V7<. A=>2=8< <5B01>;VB<< 2V=?>F5B8=C T 0?>2V=:020 :8A;>B0 (), O:0 C ;N459
CB2>@NTBLAO C 25-30 %. VA;O ?5@>@0;L=>3> 70AB>AC20==O ?;>I0 ?V4 :@82>N («
:=F5=B@0FVO-G0A») 2 420 @078 ?5@528ICT B0:C ?VA;O 2=CB@VH=L>25==>3> 22545==O
?@5?0@0BC, I> 2:07CT =0 CB2>@5==O C ?@>F5AV ?@5A8AB5<=>3> <5B01>;V782V=?>F5B8=
3V4@>:A8-, 483V4@>:A8--3;VF8=0B B0 WE :=>N30B8 7 3;N:C@>=V40<8 B0/01> AC;LD0B0<8. #
:=6=>3> 7 282G5=8E 284V2 :V;L:VABL 2V=?>F5B8=C, O0 284V;O;0AO C =5728;0 ;8H5 :V;L:0
2V4A>B:V2 2V4 ?@89=OB>W 4>78 ?@5?0@0BC.

06;82>N V 7=0G8<>N 2;0AB82VABN 2V=?>F5B8=C T 2V4ACB=VABL =5>1EV4=>ABV
A?5FV0;L=>3> ?V41>@C 4>78 ?@5?0@0BC C ?0FVT=BV2 V7 70E2>@N20==O<8 ?5GV=:8 01>
=8@>;, 72060NG8 =0 <5B01>;V7< ?@5?0@0BC V 2V4ACB=VABL 4> 0:C?8G5==O).
ABV AC?CB=VE 70E2>@N20=L). A;V;L:8 2V=?>F5B8= ?>:070=89 4;O B5@0?VW ?5@5206=>
?0FVT=BV2 ;VB=L>3> 2V:C, C O:8E A?>AB5@V30NBLAO 71V2 7=865==O 2A<>:BC20==O, V=H89
@>7?>4V; V <5B01>;V7<, 7=865==O 282545==O =5>1EV4=> 1C;> ?@>25AB8 4>A;V465==O 7 >FV=:8
:V=5B8:8 ?@5?0@0BC A0<5 C FV9 2V:>2V9 3@C?V, >A>1;82> ?@8 B@820;>AC20==V. 57C;LB0B8
B0:8E 4>A;V465=L ?@>45<=>AB@C20;8, I> :V=5B8:0 2V=?>F5B8=C C ;N459 ;VB=L>3> 2V:C
ACBBT2> =5 2V4@V7=OTBLAO 2V4 :V=5B8:8 2V=?>F5B8=C C <>;>48E ;N459, V, :@V<FL>3>,
2V4ACB=O 0:C@8 ?>@CH5==V DC=:FVW ?5GV=:8 01> =8@>; <>6=0 70AB>A>2C20B8 728G09=V
4>78 ?@5?0@0BC, >A:V;L:8 2V=?>F5B8= =5 =0:>?8GCTBLAO 2 >@30=V7 4>72>;OT B@820;89 G0A
?@89<0B8 ?@5?0@0B.

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

>:070==O.

52@>;>3VO. ;O ;V:C20==O @V7=8E D>@< F5@51@>20A:C;O@=>W ?0B>;>3VW: AB0=8 ?VA;O
?5@5=5A5=>3> ?>@CH5==O <>7:>2>3> :@>2>>1V3C (V=AC;LBC), 25@B51@>1078;O@=>W
=54>AB0B=>ABV, AC48==>W 45<5=FVW, F5@51@0;L=>3> 0B5@>A;;5@>7C, ?>ABB@02<0B8G=>W
V 3V?5@B5=782=>W 5=F5D0;>?0BVW. !?@8OT >A;01;5==N ?A8EVG=>W V =52@>;>3VG=>W A8
<0B8:8 ?@8 F5@51@>20A:C;O@=V9 ?0B>;>3VW.

DB0;L<>;>3VO. ;O ;V:C20==O E@>=VG=>W AC48==>W ?0B>;>3VW E>@V>V45W (AC48==>W
>1>;>:8 >:0) V AVB:V2:8 (=0?@8;;04 B@>1>7C, >1AB@C:FVW F5=B@0;L=>W 0@B5@VW 01>
25=8 AVB:V2:8).

B>@8=>;0@8=3>;>3VO. ;O ;V:C20==O AB0@5G>W BC3>2CE>ABV ?@8 3>AB@V9 AC48==V9
?0B>;>3VW, B>:A8G=>C@065==V V=H>3> E0@0:B5@C (V4V>?0B8G=>3>, 2=0A;V4>: HC<>2>3>
2?;82C), E2>@>18 5=LT@0 V HC

@>B8?>:070==O.

>AB@0 D070 35<>@03VG=>3> F5@51@0;L=>3> V=AC;LBC, BO6:0 VH5@>10 A5@FO, BO6:V D>@
<8 0@8B

V?5@GCB;82VABL 4> 0:B82=>W @5G>28=8 01> 4> 1C4L-O:>W 7 4>?>28=.

A>1;82V 70E>48 157?5:8.

@8 =0O2=>ABV C ?0FVT=B0 ?V428I5=>3> 2=CB@VH=L>G5@5?=>3> B8A:C, 0@8B A8=4@>
4>265=>3> V=B5@20;C QT, 0 B0:>6 =0 B;V 70AB>AC20==O 0=B80@8B< <>6=0 @>7?>G8=0B8
BV;L:8 ?VA;O @5B5;L=>3> 0=0;V7C :=>@8ABV B0 @878:V2, ?>2'O70=8E V7 70AB>AC20==O<
?@5?0@0BC.

5:><5=4CTBLAO -:=B@>;L ?@8 =0O2=>ABV A8=4@>4>265=>3> V=B5@20;C QT 01> ?@8
>4=>G0A=>3> 70A>1C, I> A?@8OT ?>4>265==N V=B5@20;C QT.

?@5?0@0BV @1VBC, B>ABV C E2>@>3> FC:@>2>3> 4V015BC =5>1EV4=> ?5@V>48G=>
:=B@>;N20B8 @V25=L FC:@C 2 :@>2V ?V4 G0A :C@AC B5@0?VW ?@5?0@0B>

28?04:C =5?5@5=>A8<>ABV ?0FVT=B<< D@C:B>78 01> 45DVF8BC 1,6-48D>AD0B078 D@C:B>78
A;V4 C=8:0B8 70AB>AC20==O ?@5?0@0BC.

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

@8 >4=>G0A=>AC20==V 2V=?>F5B8=C 7 15B0-1;>:0B>@0<8, B0:8<8 O: ;>@0=>;>; V ?V=4>;>;, 0
B0:>6 ?@8 >4=>G0A=>AC20==V 7 ;>?0<, 3;V15=:;0<, 483>:A8=><, 0F5=>:C<0@>;>< 01>
3V4@>E;>@BV0784>< =VO:>W 270T<>4VW AC20==V 0;LD0-<5B8;4>?8 V 2V=?>F5B8=C, B>

AC20==O FVTW :<1V=0FVW ?@5?0@0BV2 =5>1EV4=> 74V9A=N20B8 @53C;O@=89 :>=B@>;L
0@B5@V0;L=>3> B8A:C. 5:><5=4CTBLAO ?@>O2;OB8 >15@56=VABL ?@8 >4=>G0A=>B80@8B
0=B8:>03C;O=B=8<8 B0 DV1@8=>;VB8G=8<8 70A>10<8.

A>I;82>ABV 70AB>AC20==O.

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

?5@V>4 203VB=>ABV 01> 3>4C20==O 3@C44N 70AB>AC20==O 2V=?>F5B8=C ?@>B8?>:070=5.

03VB=VABL V=?>F5B8=?@>=8:0T G5@57 ?;0F5=BC, 0;5 C ?;0F5=BV V 2 :@>2V ?;>40

28O2;OTBLAO 2 =86G8E :>=F5=B@0FVOE, =V6 C :@>2V <0B5@V. "5@0B>35==>3> 01> 5

<1@V>B>:A8G=>3> 5D5:BC 2V47=0G5=> =5 1C;>. # 4>A;V465==OE =0 B20@8=0E 22545==O 25;8:8E

4>7 2V=?>F5B8=C AC?@>2>46C20;>AO C 45O:8E 28?04:0E ?;0F5=B0@=>N :@>2>B5G5N V 28:84=5

<, ?5@5206=> C @57C;LB0BV ?>A8;5==O ?;0F5=B0@=>3> :@>2>>1V3C.

>4C20==O 3@C44N. V=?>F5B8=?@>=8:0T C 3@C4=5 <>;>. # 4>A;V465==OE V7 70AB>AC20==O<

3> 2V=?>F5B8=C @04V>0:B82=VABL 3@C4=>3><>;>:0 1C;0 C 45AOBL @07V2 28I0, =V6 C :@>2V

<0B5@V. V;L:VABL, I> 284V;OTBLAO 7<>;>:< ?@>BO3< 1 3>48=8, AB0=>28BL 0,25% 2V4

22545=>W 4>78 ?@5?0@0BC. A:V;L:8 2V=?>F5B8=?@>=8:0T C <>;>:< 0B5@V, 0 40=8E ?@> 2?;82

=0 >@30=V7< =>2>=0@>465=>3> =5<0T, 70AB>AC20==O 2V=?>F5B8=C C ?5@V>4 3>4C20==O

3@C44N ?@>B8?>:070=5.

**40B=VABL 2?;820B8 =0 H284:VABL @50:FVW ?@8 :5@C20==V 02B>B@0=A?>@B< 01> @>1>BV 7
V=H8<8 <5E0=V7<0<8.**

5<0T 40=8E ?@> 2?;82 2V=?>F5B8=C =0 740B=VABL :5@C20B8 02B>B@0=A?>@B< B0 ?@0FN20B8

7 <5E0=V7<0<8, 0;5 A;V4 2@0E>2C20B8 V<>2V@=VABL 28=8:=5==O ?V4 G0A 70AB>AC20==O

?@5?0@0BC A>;82>ABV, 70?0<>@>G5==O.

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

@5?0@0B ?@87=0G5=89 BV;L:8 4;O 2=CB@VH=L>25==>W :@0?5;L=>W V=DC7VW, 22>48B8

?>2V;L=> (H284:VABL V=DC7VW =5 ?>28==0 ?5@528IC20B8 80 :@0?5;L 70 E2!)

5 22>48B8 ?@5?0@0B ?V4H:V@=>, 2=CB@VH=L<07>2>, 0 B0:>6 C :>=F5=B@>20=>25==> 157

@>72545==O!

>G0B:>20 4>1>20 4>70 4;O 4>@>A;8E 20 <3 (2 07G8=5=>3> C 500 <; @>7G8=C 4;O V=DC7VW. &O

4>70 <>65 1CB8 71V;LH5=0 4> 1 <3/:3 <0A8 BV;0 =0 4>1C, ?@>BO3< 2-3 4=V2, 70;56=> 2V4

?5@5=>A8<>ABV ?@5?0@0BC ?0FVT=B>

!5@54=O B@820;VABL :C@AC B5@0?VW AB0=>28BL 1014 4=V2, 728G09=0 4>1>20 4>70 50 <3/

4>1C (50 <3 C 500 <; @>7G8=C 4;O V=DC7VW) 7 @>7@0EC=:C =0 <0AC BV;0 70 :3.

VA;O 7025@H5==O :C@AC V=DC7V9=>W B5@0?VW @5:<5=4CTBLAO ?@>4>268B8 B5@0?VN

?0FVT=B0 ?@5?0@0B<< V=?>F5B8=C D>@:.

;O ?@83>BC20==O V=DC7V9=>3> @>7G8=C <>6=0 28:>@8AB>2C20B8 0,9 % @>7G8= =0B@VN

E;>@84C 01> @>7G8=8, I> 7C (=0?@8:;04 !0;A>;, @>7G8= V=35@0, V=45:A, 5<0:@>45:A). >B>289

@>7G8= 2V=?>F5B8=C =5>1EV4=> 70AB>AC20B8 ?@>BO3<< 3 3>48= ?VA;O ?@83>BC20==O.

0FVT=B0< V7 70E2>@N20==O<8 =8@>: 01> ?5GV=:8 :>@5:FVW 4>78 =5 ?>B@V1=>.

VB8.

0AB>AC20==O ?@5?0@0BC 4VBO< ?@>B8?>:070=> (G5@57 2V4ACB=VABL 40=8E 2V4?>2V4=8E

::V=VG=8E 4>A;V465=L).

5@54>7C20==O.

8?04:V2 ?5@54>7C20==O =5 2V47=0G0;>AO. 0 ?V4AB02V ;VB5@0BC@=8E 40=8E 22545==O

?@5?0@0BC C 4>7V 1 <3/:3 <0A8 BV;0 <>65 22060B8AO 157?5G=8C 4>70E, I> ?5@528ICNBL FN

4>7C, 22545==O ?@5?0@0BC C 28I8E 4>70E =5 4>?CA:0TBLAO.

>1VG=V @50:FVW.

I>:C A8AB5<8 :@>2V B0 ;VW A8AB5<8: B@<<1>F8B>?5=VO, 03;NB8=0FVO 5@8B@>F8BV2; 0=5

I>:C VW A8AB5<8: 3V?5@GCB;82VABL.

I28=, <5B01>;V7 3V?5@E>;5AB5@8=5289 4V015B; 0=>@5:AVO.

A8EVG=V @>7;048: 59D>@VO, 70=5?>:>T==O, 71C465==O; 45?@5AVO.
I>:C =5@2>2>W A8AB5<8 B0 >@30=V2 GCBBO: 3>;>2=89 1V;L, 70?0<>@>G5==O, 35 A>=;82VABL;
B@5<>@, 2B@0B0 A2V4<>ABV, AB0= ?5@54 2B@0B>N A2V4<>ABV, A;01:VABL, 2V4GCBBO
60@C.
I>:C >@30=V2 7>@C: 3VD5<0, 3V?5@<5B@>?VO, 7=865==O 3>AB@>B8 7>@C, ?VO; 3V?5@5
:=N:B828, =01@O: A>A:0 7>@>2>3> =5@20, 48?;>?VO.
I>:C >@30=V2 A;CEC B0 25AB81C;O@=>3> 0?0@0BC: ?>@CH5==O A;CEC, 3V?5@0:C7VO,
3V?>0:C7VO, 25@B83>; HC< C 2CE0E.
I>:C A5@FO: VH5:0@40, AB5=>:0@4VO, 0@8B;VO, 2V4GCBBO A5@F518BBO; A5@F520
=54>AB0B=VABL, DV1@8;OFVO ?5@54A5@4L.
I>:C AC48==>W A8AB5<8: 0@B5@V0;L=0 3V?>B5=7VO, 0@B5@V0;L=0 3V?5@B5=7VO, ?@8?;828;
:>;820==O 0@B5@V0;L=>3> B8A:C, B@<<1>D;51VB, 25=>7=0 =54>AB0B=VABL.
I>:C B@02=>3> B@0:BC: 48A:>@B C 682>BV, ACEVABL C @>BV, =C4>B0; 1;N20==O,
3V?5@A5:@5FVO A;8=8.
I>:C H:V@8 V?V4H:V@=>W ;:VB:>28=8: 5@8B5<0, 3V?5@3V4@>7, :@>?82O=0; A25@1V6, 45@
<0B8B.
030;L=V @>7;048: 2V4GCBBO 60@C; 0AB5=VO, 48A:>@B C 3@C4=V9 ;:VBFV, 70?0;5==O, B@>
<1>7 C □T:FWW.
57C;LB0B8 4>A;V465=L: 7=865==O 0@B5@V0;L=>3> B8A:C, ?V428I5==O 0@B5@V0;L=>3> B8A:C,
45?@5AVO A53<5=B0 ST B0 ?>4>265==O V=B5@20;C QT, ?V428I5==O @V2=O A5G>28=8 C :@>2V,
?V428I5==O @V2=O ;0:B0B453V4@>35=078, ?>4>265==O V=B5@20;C PR =0, 7

"5@ABV.
5 @>:V2.

#<>28 715@V30==O.
15@V30B8 ?@8 B5□ 2 >@83V=0;L=V9 C?0:>2FV.
15@V30B8 C =54>ABC?=>

5AC
>7G8= ?@5?0@0BC V=?>F5B8= EV =5AC<, B>4=>@>=OTBLAO. 07>< 7 B8< C @07V
=5>1EV4=>ABV 4>?CA:0TBLAO >4=>G0A=5 70AB>AC20==O 0=B8:>03C;O=BV2 V V=?>F5B8=C.
>7G8= ?@5?0@0BC V=>?>F5B8= EV =5AC:8A;>B8, B>

#?0:>2:0.
> 2 <; 2 0 5 01> 10 0 5 01> 10 0 1 1;VAB5@C C ?0GFV; ?> 5 02 1;VAB5@8 C ?0GFV.# ?0G:C
2;:040TBLAO A:0@8DV:0B>@ 01> 48A: @V6CG89 (4;O 07 B>G:>N 7;0@ 01> 48A: @V6CG89
4>?CA:0TBLAO =5 2;:040B8).

0B53>@VO 2V4?CA:C.
0 @5F5?B>

8@>1=8:.
"«>A;V4=89 702>4 «&!».

002=8:." «>A;V4=89 702>4 «&!».

VAF57=0E>465==O 28@>1=8:0/70O2=8:0 B0 9>3> 04@5A020465==O 4VO;L=>ABV.
#:@0W=0, 61057, @>19>20, 8.