

1  
- Š i Š 5

OY n 0Y Á L

Z ž T “

% F M ~~0~~ B W T \$ Z D M F

% F M ~~0~~ B

F  
F  
F  
F  
F  
F  
F  
F  
F

U•1 UŽ

' J H U • S F U Ž - J O F B S S B O H F B N Q M J G J D B U J P O D V S W F P G 4 G P M E H S B E J F

ISSN 1674-6929



V

V

# + ( %& # + + \$)

# + + \$# " # + + &# "

= S d a ^ [ ` e ] S

? 5 B Ž : 3 ? ? 3 @

3 T d S \_ e a `

: 4 H D @ 3

D @ 3 b Y D @ 3

: 4 H D @ 3

9 B ) %

9 B ) %

+ ) % \* ( %

@Wi 7 ` Y ^ S ` V < a g d > 5 g d `XS?^WAVX U Vb S

f a ^ a Wb S f ă Să UKWd D We WS d 4 \$ " E 5 ; / fi % # " "

# 分子诊断与治疗杂志

# ) + # "#p# ' # " ( \$ "  
" \$ "%\$ \$ + "\$)\*(% \$ \$ + "\$)\*#+ Ž  
\ \_ V ĩn [ #b(ž%ž U a \_  
; E E#@ ) (&ž\$ +  
5 @& &#Z( ' ( ! D  
& (\$ž\* %

& & " # " " # + " " ' )

\$ " # ++ # \*  
D ? 4# ' ž " "

Sun Yat sen University

China Family Doctors Magazine Publisher Co. Ltd.

DaAn Gene Co., Ltd. of Sun Yat sen University

SHEN Ziyu

LI Ming

JIANG Xiwen

LIU Yue

<JOURNAL OF MOLECULAR DIAGNOSTICS AND THERAPY> Editorial Office

LI Xiaolan LI Caizhen

China Family Doctors Magazine Publisher Co. Ltd.

10-11 Fl., Xianglong Building, 179# Tian he bei Lu, Guangzhou, China 510620

020 32290789- 206 32290789- 201

jmdt@vip.163.com

ISSN 1674- 6929

CN 44- 1656/R

TianYi Yofus Technology Co., Ltd.

2019.9.18

RMB 15.00

# 分子诊断与治疗杂志

---

: 4 H 6 @ 3 % & %

B 5 D % & \*  
% ' '

B 5 D % ( #

: 4 H 6 @ 3 % ( '   
% ( +  
) &

: 4 H 6 @ : 4 W 3 Y % ) +  
: 4 H 6 @ 3 % \* %  
: 5 H D @ 3 % \* )  
: 5 H D @ 3 % + #  
: 4 W 3 Y : 4 W % + (   
5 & " #  
F 3 5 7 & " \*

\_ [ # \* \$ & # &

: 5 H D @ : 5 H U I A 6 8 3 & # \*

\_ [ \$ \$ [ ' " & \$ \$

: 4 H 6 @ 3 & \$ \*

: 5 H D @ 3 & % &

---

## COMMENTS

WANG Jie YU Guangxin LU Fengmin 343

## ORIGINAL ARTICLES

XIA Qiao LIAO Lili DONG Zhiqiang YANG Honghui JIANG Xiwen 348

LI Baoqi CHEN Peisong HUANG Hao YU Xuegao HUANG Bin 355

LU Jianhua YANG Li ZHAO Zhaoxia LI Qianlin LI Minran LIU Yuzhen DAI Erhai CHEN Xiuli 361

ZHOU Ying ZHANG Junxia HUANG Shu LIU Liming GUO Wei 365

FENG Lei 369

WANG Shuang GUO Jie WANG Dagang SHI Jingren PAN Meichen YIN Shangqi HE Chaonan  
MENG Huan ZHANG Xiang WANG Yajie 374

HUANG Chengjun CHENG Shuquan 379

PENG Yabai PENG Yalan GUAN Jipeng WANG Min 383

LUO Lin ZHANG Tingchao LIU Shugang 387

---

SHAO Xiaomǎ YANG Yang HAN Lixia





---

m) # 7

rR " ! • 1 D"#p

---

dy# 7 "



0-3PUSZCZOTBON"ST O SAACRZOCUBHEDJ @ OPEUZE PISNJI.F@E@AASOZLNDOPEKTSNADP(A#A-@E@-@E@A I QU ñ 8 ð€ U I a •ñ2 QU

---

# B 5 D

6 @ 3  
F S c \_ S ` B 5 D  
B d [ ' \_ W d E 5  
# + '

6 @ 3: 4 H  
9 W` W4 S: ` 4 H 6 @ 3  
F S c \_ S `



'  
#žž+  
EerS CSre >[X EU[enLē  
: 4H I orlVi [Ve AUjEetFM PerXor  
\_ SnLē PSnel A 4 C 6 7 F : )  
#" "

r<sup>2</sup>  
"ž+8 #žž  
#žž#"  
: 4H P# P+ s

2' #' ' žž IG!\_>  
Ar[g[n E[g\_o[VSI F[t

#žž(

2' IG!\_> 2'  
z "ž >og<sub>r</sub> IG!\_>

#žž)  
: 4H #> #' + IG!

\_>  
#> #'  
#> #'<sup>8</sup> #> #'<sup>1</sup> #> #'<sup>(</sup> #> #'<sup>'</sup> #> #'<sup>&</sup> #> #'<sup>3</sup> #> #'<sup>2</sup>  
2' IG!\_>

r<sup>2</sup> "ž+8  
#žž8  
#> #'<sup>8</sup> IG!\_>  
: U# #> #'<sup>8</sup> IG!  
\_> MU# #> #'<sup>3</sup> IG!\_> >U#  
: 4H 2'" IG!\_>

2'  
CH CH ' ,  
#> #'<sup>8</sup>  
IG!\_> : U2 #>  
#'<sup>8</sup> IG!\_> MU2 #> #'<sup>3</sup> IG!\_> >U2  
: 4H 2'" IG!\_>

& CH

---

%2 (&#x2013; &#x2013;)''''z'''''''' Ugdca

#

8 [ Y # d F V W d We g ^ f e a X c g S ` f [ f S f [ h We f S ` V S d V  
S \_ b ^ [ X [ U S f [ a ` ^ [ ` W S d U g d h W

r<sup>2</sup>/" ž+&  
2' p# #' +IG!\_> &



'sD

U' U' U'



&

6 b d a T W F S c \_ S `
F S T & ^ W h S ^ g S f [ a ` a X U ^ [ ` [ U S ^ e S \_ b ^ W e a X Z k b W d e W ` e [ f [ h W
d W S Y W ` f e S ` V S V a \_ W e f [ U U W d f [ X [ W V d W S Y W ` f

# "; G! \_ > \$ " p#\$"

; G! \_ >

#82	#	#83
#	##	#2
#83	#2	#+'

K / ž + (" J% ž \$ \$ r / " ž ' 8 (

Ł#z+(E6	##8
Ł#E6	"ž 3
Ave	"z(
ž#E6	"ž"
ž#z+(E6	ž"ž#
	ž"ž(

#ž8 3ž8 ' ž8 )ž+ +ž+ #ž2 3ž( ' ž+ (ž+3 8ž(

\*

8 [ Y ž d W d d W ^ S f [ a ` S ` V U a ` e [ e f W ` U k S ` S ^ k e [ e d W e g ^ f e a X Z k b W d e W ` e [

---

# \$ # # # #  
: 4 H  
B 5 D B 5 D  
5 ? ; 3 : 4 H 6 @ 3 : 4 e 3 Y Da U Z W 5 a T S e  
3 \_ b ^ [ B d W b ! 5 a T S e F S c ? S ` : 4 H 6 @ 3 ' # + : 4 e 3 Y  
+ " # ) ž % : 4 e 3 Y ' ; 0 " " ; G ! \_ > ; # " " " p " ; G ! \_ > ; ;  
' " " p # ; G ! \_ > ; H # " " p ; G ! \_ > H " ž " ' p # ! \_ > : 4 H 6 @ 3 ; ; ; ; H H  
P < " ž ' + : 4 s A g # 3 : 4 H 6 @ A P C D  
# 8 ž : 4 H 6 @ A ) + # ž 2 : 4 s A g  
C M I A ž # D o U z e # 3  
: 4 H 6 @ A : 4 s A g : 4 H 6 @ A 2 : 4 H 6 @ A  
: 4 s A g : 4 H 6 @ A P C D : 4 H 6 @ A  
P P H @ P H # " ž C M I A : 4 s A g  
P P H @ P H + ) ž + ) ž 8 ž ++ ž P C D : 4 H P P H C M I A  
P < " ž ' P C D : 4 H 6 @ A C M I A  
: 4 H  
P C D : 4 H 6 @ A

---

\* # ' ) \$ " ' \*  
# ž ' # " " \* "  
\$ ž ' # " # \* "  
7 \_ S Z [ T ^ + " # ( ( 2 % ž U a \_

---



---

P' " P2 P)' = rglSI ~ I SII[s:  
MSnn I Z[tnek G  
c' P<"Z''

K ± M ± HB → A ° II c'  
P<"Z'' #

' ( ) ( +

---

: 4 H









# I orIV : eSlz ArgSn[] St[onž 9g[Vel[nes Xor tze preven  
 t[on UBre SnV treSt\_ent oXpersons i [tZ UZron[UZepSt[  
 t[is 4 [nXUt[onžI orIV : eSlz ArgSn[] St[on 2' #' ž  
 2 FerrSglit @A >o] AEF MUMSZon 4< et Slž GpVSte  
 on prevent[on V[Sgnos[s SnV treSt\_ent oX UZron[U  
 ZepSt[t[is 4 AAE>6 2' #8 ZepSt[t[is 4 gg[VSnUe < ž  
 : epStologk 2' #8 () & #' (" #' ++ž  
 3 7gropeSn Assou[St[on For FZe EtgMk AXFZe >[verz 7A  
 E> 2' #) Cl[n[USI PrSU[Ue 9g[Vel[nes on tze \_ SnSge  
 \_ent oXZepSt[t[is 4 v[rgs [nXUt[on < ž <ogrnSI oXZepS  
 tologk 2' #) () 2 3)" 3+8ž  
 & ESr[n E= = g\_Sr M >Sg 9= et Slž As[Sn PSU[XU  
 U[n[USI prSU[Ue gg[Vel[nes on tze \_ SnSge\_ent oXZepS  
 6 Q M P H Z UÀ+

P<"ž" : 4H 6@A  
 : 4eAg  
 : 4H 6@A  
 : 4eAg # "p2" IG!\_> >' ""  
 IG!\_> P<"ž" : 4H 6@A  
 C: 4  
 : 4H 6@A  
 : 4H  
 : 4H 6@A  
 2& : 4H 6@A  
 H D 2& : 4H 6@A <2ž log IG!\_>  
 3 H D +8ž 2& : 4H  
 6@A : 4eAg # 2& : 4H  
 6@A<(3 IG!\_> 2 : 4eAg  
 &3ž #  
 #2#3  
 : 4H 6@A  
 PCD  
 '"" IG!\_>  
 : 4H 6@A  
 )  
 2  
 : 4H 6@A

---

---

# ž

---

U• !@X'

U•

c<sup>7</sup>\_6 > 3P7k"ž' #

\$ : 4 H 6 @ 3

F S T \$ ^ W S [ W ` f e i [ f Z e W d g \_ Z [ Y Z e W ` e [ f [ h [ f k : 4 H 6 @ 3  
^ W h W ^ e S d W S e e a U [ S f W V i [ f Z U [ d d Z a e [ e S ` V S ` f [ h [ d S ^ f d W S f \_ W ` f

: 4 H : 4 H  
6 @ 3 6 @ 3

: 4 H % ( # + # + ž \* # ) # ) ž )

: 4 H

: 4 H ( " ' ' ' ) ž % ' ' ž \$

: 4 H 6 @ 3

: 4 H 6 @ 3

) % ( % ' ž ( # " # " ž &

: 4 H

\$ % # # # ž ' # \$ # \$ ž ' 6 @ 3 B 5 D

# " " ; " G ! \_ >

: 4 H 6 @ 3

2ž3 : 4H

6@A

+( : CC

) \*

3 : 4eAg : 4H 6@A>#" IG!

: 4 H 6 @ 3 B 5 D

\_> +ž( : 4eAg

: 4 H 6 @ 3

: 4H 6@A>#" IG!\_> )' .

+ # "

c<sup>7</sup>\_5 3 =P2>"ž'

: 4 H 6 @ 3 # " " ; " G ! \_ >

: 5 5

: 4 H 6 @ 3

+ ( ) ) ž # .

: 4 H 6 @ 3

: 4 H

6 @ 3

7 E 3 >

: 4 H B 5 D

/# " ; " G ! \_ >

##

: 4 H 6 @ 3

: 4 H

: 5 5

2ž& : 4H

6@A

# \$ # &

+( : CC

A>F 9F

: 4 W 3 Y

: 4 H

) 2

)' ž' A>F

9F

: 4 W 3 Y

: 4 H 6 @ 3

: 4H 6@A

: 4 H 6 @ 3

A>F

9F

&

: 4 W 3 Y

P<"ž'



---

: 4 H 6 @ 3

: 4 W3 Y

€ = ,=m

#!T J U H — R J ø\$› AÝ Ø •\$ 1 AU5Hp@ G@ )H#B@'Q\$ ST• QPG›0...ED%2T, ø\$› U P'U , 5 a\$ ÑA...5O›3a-

\$

# \* "

W : 4 W3 Y

: 4 H 6 @ 3

: 4 H 6 @ 3

: 4 H

# \* "

: 4 W3 Y

---

\* # & ( " % \$ (

6 \$ " # ( & &

( ' % # " "

7 \_ SX [ \$Y"\" #&(2%ž U a \_



---

# \$ : 4 H 6 @ 3 ; G ! \_ >  
F S T # ^ W W f W d \_ [ ` S f [ a ` a X : \$ H W 6 @ 3 W 6 W e g ^ f e T k

---

---

---

\$ \$ : 4 H 6 @ 3 n .  
FSTle 2 Co\_pSr[son oX: 4H 6@A pos[tive rStesVeteUteV  
Tk 2reSgents n .

---

\_\_\_\_\_ c<sup>2</sup> P

---

: 2 3 8 2 " ž " #

---

UÀ ž



8P Ò ð&€œE

UÂ  
UÀ

UŮŽŮ UŮŽŮ  
UŮŽŮ UŮŽŮ  
UŮŽŮ UŮŽŮ

TWU



---

Z Wb S f [ f [ : e 4 H h [ d g e  
\$ ž ' )

\* \* ž ) \$ ' .

# : 4 H

5 Z d a ` [ U Z Wb S f [ f [ e 4

\$ : 4 H 6 @ 3

: 4 H : 4 H 6 @ 3

% : 4 H 6 @ 3

: 4 H

&

B 5 D : 4 H 6 @ 3

: 4 H 6 @ 3

B 5 D

() : 4 H

: 4 H

t

\$

4ISnV Alt\_Sn

\$

c<sup>7</sup>

K]5 3 5 :

X`D X & 1@E

# \$

F S T # ^ W Z S d S U f W d [ I S f \$ d W S U a W ` b f S e d [ e a ` a X

---

---

---







---

---

\$ " # \$ % ' ( ) \* + , - . / : ; < = > ? @ [ \ ] ^ \_ ` { | } ~ " ' " " \$

---

P<"ž" ž For tZe #T Fkpe UZron[U: epSt[t]s C i Zo i ere treStev  
i [tZ Snt[v[rSl tZerSpk Xor 2 i ee] s nor\_Sl \_etZov ZSs VetelUteV ( USses #3, Ss pos[t]ive i Z[]e tZe Z[gZ  
sens[t]ve \_etZov ZSs VetelUteV &2 USses +##ž3, ž For tZose treStev Xor & i ee] s tZe nor\_Sl \_etZov ZSs  
VetelUteV " USses Xor pos[t]ive Z[gZ sens[t]ve \_etZov & USses 8ž), ž FZe #2 i [eg] wot-Sl \_etZov ZSs  
VetelUteV " USse Xor pos[t]ivež FZe Z[gZ sens[t]ve \_etZov ZSs VetelUteV # USse 2ž2, Xor pos[t]ivež FZe VetelUteV  
oXpos[t]ive rSte T oXpos[t]iv°





---

---

---

r/"ž+8 P<"ž""# žFZe V[XerenUe SnSlks[s sZoi eV tZSt tZe  
\_eSn V[XerenUe Teti een tZe c gSnt[tSt[ve vSlges oX[\_ porteV SnV Vo\_est[UreSgent reSgents i Ss Žž33 log#" IG!  
\_> SnV tZe +' Ubn[XVenUe [ntervSl i Ss Ž"ž+# (p"žZ log#" IG!\_>ž+(, #" +##& oXtZe sS\_ple vSlges  
i ere i [tZ[n tZe +' Ubn[XVenUe [ntervSlž ConUgs[on 6o\_est[U reSgent ZSs S Z[gZ UbrrelSt[on SnV  
Ubn[sstenLk i [tZ tZe [\_ porteV reSgentž  
= 7K I AD6E : epSt[t[s C v[rSl loSV UbrrelSt[on Ubn[sstenLk

### ZepSt[t[s

C v[r]gs : CH

D@A

3, #ž) : CH  
3ž #  
: CH <sup>2&</sup>  
: CH

: CH D@A  
: CH  
( #32  
: CH  
2  
2

---

t t/ 32  
P/"Z"# #  
<#"IG!\_> >#"IG!\_>  
t >#"IG!\_> r/  
2 t/ 2& P/ "z+8 P<"Z"#  
"Z'2 2 <#"IG!\_> &  
t/ 23" P/"Z'3 3 +( #" +!##& +'

qUE€q0E q tD3U= q& T q q q q

---

: 5 H D @ 3

# " # \$

: 5 H

# %

: 5 H

# &

# '

\$

B 5 D

# # &

(

+ " ž + # \$ " !

# % \$

---

: 4 W3 Y : 4 W

W : 4 W3 Y : 4:W4 W3 T  
\$ " # (# \$ " # )# \$ . " "  
: 4 W3 Y : 4 W # \$ \$ W # ) % W  
\$ " ' % : 4 W3 Y : 4:W4 H 6 @ 3 3 8 B  
( \* ž " : 4 W3 Y# p # 5 ž " " ž \* . 0# " "5A"; W  
P<"ž' (ž+ : 4e "p#ž' CAI #2ž. "p"ž# CAI e  
ed @ p HEd € 0B^!%\$€ „V@Ø

---

\$ " # ) L 5%+6#K\$8  
( \$ \* " " "  
7 \_ S [ [ b [ # Y R%ž W a \_

---

Ä-€9@K9 #\*ò #Kdj © F"#5U'-A! F



& 3 8 B n . FSTle & >[ver XgnUt[on [nVej SnV AFP STnor_ Sl[tk rSten .									
	n	A>F	AEF	A>P	99F	F4I>	64I>	F4A	AFP
W	#22	&+ &" 72	3' 287)	2( 2#73	3' 287(	&# 337(	33 2) 7'	' 3 &37&	3+ 327'
W	#) 3	&# 237)	&+ 2873	28 # (72	&+ 2873	&+ 2873	&( 2(7(	' & 3#72	3' #) 73
W	2''	3) #87'	(2 3 78	2) #' 7(	(# 2+78	(8 3372	() 327)	' ) 2) 78	3& # (7(
c <sup>2</sup>		2' 7#8'	" 7#88	37) 3&	#7' 2(	#732'	27' &(	87) 8)	#27) 8#
P		<" 7'	>" 7'	>" 7'	>" 7'	>" 7'	>" 7'	<" 7'	<" 7'

2

: 4H

: 4eAg

: 4e

#

: 4H 6@A

---

# 5

# # \$

5 5 k e 5 : 3 D ;

\$ " # ( # \$ \$ " # \* + ( %

% "

5

P/"ž 3( "ž' z"ž' : ADI "ž) 3z"ž# P<"ž"#"

: ADI C r/"ž 3# P<"ž"#" DAC : ADI CksC

CZ[IV PggZ C P/"ž 3) C

C

P/"ž 3( ž Co\_pSreV i [tž tZe Ubntról grogp "ž' z"ž' tZe

\_eSn vSlge oX: ADI [n tZe stgVk grogp s[gn]X[USntk [nUreSseV "ž) 3z"ž# P<"ž"#" žFZere i Ss S s[gn]X[USnt

UbrrelSt[on Teti een : ADI SnV CkstSt[n C r/"ž 3# P<"ž"#" žFZe SreS oX: ADI [nVej gnVer tZe DAC Ugrve

i Ss \_glZ Z[gZer tZSn tZSt oXCkstSt[n Cž FZe CZ[IV PggZ stSg[ng pZSse i Ss UbrrelSteV i [tž UkstSt[n C levels

P/"ž 3) ž ConUgs[on FZe ZepSt[U Srterk res[stSnUe [nVej : ADI [s S \_ore SUgrSte pSrS\_eter Xor

pSt[ents i [tž I[ver X[Tros[s tZSn CkstSt[n C SnV CkstSt[n C [s S Tetter [nV[Ustor oXU[rrZos[sž

= 7KI AD6E CkstSt[n C : epSt[U Srterk res[stSnUe [nVej C[rrZos[s : epSt[U X[Tros[s

---

> 6 " # " # " \*

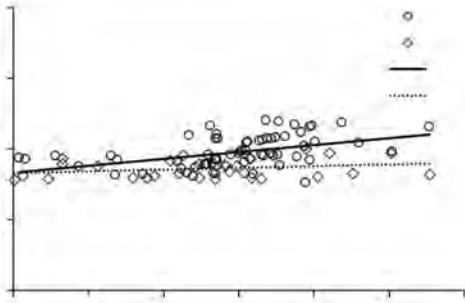
# ž # # " " % \$

\$ ž # # ( " & &

7 \_ \$ [\* # " \$ & '#\*( "%)ž \*Už \_







vs : ADI

#

5

8 [3Y gSdi Vke n a "

T W" Wq` : 3 D; 3 p 5 k e 5 ° `









$x \pm s$        $t$   
 $c^7$

		' \$		x±s G! >	
FST'W		5a_bSq[san aX'fh WlXgnU[an TWi Wm tZW \$ Ydagbs		x±s G! >	
A>F		AEF		99F	
&		&		&	
83z&z' 3z82	&2z' 3z 2(z' s	#2&22z (#z&	' 2z' 3z 2' z' s	#8 z&z ##8z+#	#' 2z' 3z &' z' s
8#z 3z ' ' z'	(' z#z' " z'	#2&28z' 8z+'	) 3z2#z 3' z' 2	#8) z) z#2&z38	##' #z2+' z' 2
t #z' ('	&z 2+	#z' &8	) z' 2#	" ##(	(z#2)
P<" z'					

: 4 H 6 @ 3

) z : 4 H : 5 5

: 4 H : 4 H +  
F 3 5 7 : 4 H



---

\_ [ D% # \* \$

# \$ %

D @ 3% # \* \_ \$ [ D% # \* \$  
B 5 D I W e f W d ` T ^ a f  
\_ [ D% # \* \$ FAM83A  
\_ [D 3#82 \_ [ [ U s [ FAM83A M: CC+):  
\_ [D 3#82 FAM83A I estern Tlot  
4U 2 4Sj \_ [D 3#82 I estern  
Tlot \_ [D 3#82 FAM83A \_ [D 3#82  
FAM83A FAM83A 4U 2 4Sj \_ [D 3#82  
FAM83A FAM83A FAM83A \_ [D 3#82  
\_ [D 3#82 FAM83A  
\_ [D 3#82 FAM83A

---

: 3 \$ " # ( # &

# ž \$ \$ % " " \$  
\$ ž \$ \$ % " " \$  
% ž \$ \$ # " "

7 \_ \$ [ [ " e \$ \$ " # { 2% ž U a \_



---

FAM83A\_D@A

\$ x±s n/+  
 FSTle 2 6gSl lglUerSse reporter ej per[\_entx±s n/+

	I F FAM83A	MGF FAM83A
	#Z' 2z " Z' +	#Z' &z " Z' 8
	" z3&z " Z' &!	#Z' 3z " Z' +
t	#+z&+!	" z2&+
P	" z' ""	" zB' (

\_ [D @C fl R" z'

] 6S  
 2"  
 #&  
 #"  
 8'  
 ("  
 &  
 3'  
 2'  
 #"

-ID @C  
 -ID 3f&2  
 Snt -ID @C  
 Snt -ID 3f&2

FAM83A  
 9AP6:





	FAM83A prote[n]	Apoptos[s rSte .	4U 2 prote[n]	4Sj prote[n	6-/ 9kfi6.c/ 9kfi @	EF <sub>2</sub>				
	"(z"z' (	8z' (z"z') +	"z' &z"z')	"z2(z"z' 3	2z 88 #z"2 #z8 )	"z(83				
	"z3#z"z' 3'	2"z' z2#)'	"z3 z"z' 3'	"z(#z"z' ('	#z3&3 "z" #z (+ "z33"					
	"z28z"z' 3	22z) #z 2#3	"z33z"z' 3	"z(3z"z' 3	#z22) "z' & #z )#	"z2+"				
	"z (z"z' ' #2z(+z#z3(	"z&z"z' (	"z3&z"z' 3	2z2 ' "z28( #z#3	"z& 3					
F	#(' z&#8	#&&z' #"	#&8z))	#8 z 2&		#z8 )	z'	z2+"	z&	
P	"z'"	"z'"	"z'"	"z'"						

!



UĚ

U•

---

# #

---

# ž \$( " " "  
\$ ž \$( " %'  
7 \_ \$ (\$) " ) " " " ( ' 2 c c ž U a \_

---

P>"ž" ž 7j Uept Xor F9F otZer Ukto] [nes i ere  
s[gn[XUSntik V]Xerent [n V]Xerent stSges P<"ž" ž 1> & 1> ( SnV 1> 8 i ere s[gn[XUSntik loi er [n tZe IC  
grogp tZSn [n tZe treSt\_ent grogp TeXore treSt\_ent P<"ž" 1> #) SnV IF@ i ere s[gn[XUSntik Z[gZer tZSn  
TeXore treSt\_ent P<"ž" SnV F9F sZoi eV no s[gn[XUSnt LZSnges P>"ž" ž ConUgs[on Per[pZerSI  
TlooV Ukto] [nes 1>& 1> ( 1> 8 1> #) SnV IF@ ZSve S UertS[n UbrrelSt[on i [tZ A>F : 4sAg 6@A SnV  
UZron[U ZepSt[t[s 4 [nXU[on stSg[ng i Z[UZ USn Te gseV Ss potent[SI evSlgSt[on [nV[UStors Xor treSt\_ent oX  
UZron[U ZepSt[t[s 4ž

= 7KI AD6E CZron[U: 4H [nXU[on Ckto] [nes : 4H 6@A A>F

: epSt[t[s 4 v[rgs : 4H

2ž&

: 4H ("

: 4H : 4H

#Z3 : 4H [

\_gne tolerSnUe IF [\_\_gne UeSr  
SnUe IC [nSU[ve v[rgs USrr[  
er IA

&'

: 4H

()

A>F 9lgtS\_Ste pkrqvSte trSnsS\_[nSse  
6@A : 4H 6@A

A>F : 4H 6@A

---

P<"ž'

I> 8

P<"ž' I> #)

2

IF@ >"ž'

++ /, @P49w\snjw4l@í@H4 x/E! I +

$\bar{x} \pm s$

$t$

9dbZ

PSV Pd(s) P<"ž'

P<"ž'

I> 8

P>"ž'

1 PPS41 00E8Z (a T' 06) 059 #ap 04 EŽTfWDE 4 :

L1 uD T0# \* 9



\$ 3 > F: 4 H 6 @ 3  
8 [ Y 5 V S ` Y We a X B > 5 @ 3 S ` V U k f a ] [ ` We T W X a d W S ` V S X f W d S ` f [ h

; & ; \ F # ) ; # )  
; \* F 9 8 ; \ 5 & L F  
# ) F # )

; \ 3 > F ; 8 @  
; \ F 9 8 : 4 e 3 Y 6 @ 3 > F  
; & ; \ ; \* ; # ) ; 8 @

F 9 8 F 9 8 F # ) F 9 8 w \$ 0 t %

; \ 5 & L F F # )  
F # ) ; # ) ; \

F 9 8  
3 > F

F 9 8

; # ) ; 8 @  
: 4 H 6 @ 3

3 > F

F 9 8

---

L'aÒ\$cS\$qr&c`r`3juC1Q9^~ )94`Kc~ â ! 4Wè~† # +±`=•l,N~;` <l€7ls ŒY U'ÂÂ ñ „ØpóÂ òW Đ•5\$` \*l€ÂÔ~ æv  
L'aÒ\$cS\$`g#b-„cSÑv\$•Q9^~ ) 4 •ÄÄp~7 ' ,f2p~D™4 •Gòp~,%' €j\$ •lâp~ ú' €ÀÒp~2M' ,» p~-A' ,ú2p~E @~ , y2=U'U'ÂÂ ñ „,  
\*/FH

8 8 3

: 5 H D @ 3 : 5 H U 3EYA 6

# # # \$ # #

D@3: 5 H D@3  
 : 5 H U 3 Y E A 6 8 8 3 \$ " # '#  
 \$ " # +\$ # " ' : 5 H D@3 : 5 H U 3EYA 6 8 8 3  
 : 5 H D@3 : 5 H U 3EYA 6 8 8 3 : 5 H D@3  
 : 5 H U 3 Y P<"ž' : CH D@A  
 EA6 P<"ž' EA6 : CH D@A  
 FFA P>"ž'  
 P<"ž' : CH UAg : CH D@A  
 EA6 FFA  
 : CH D@A

P<"ž' FZe EA6 level i Ss negStive  
 SsoUSt[on i [tZ tZe: CH D@A P<"ž' tZogZ tZere i Ss no s[gn]USnt V[XerenLe oXtZe: CH D@A IoSV  
 Teti een tZe loi SnV\_eV[g\_ level oXFFA grogops P>"ž' Zoi ever tZere i Ss S stSt[st]USIk s[gn]USnt  
 V[XerenLe Teti een Z[gZ IoSV grogp SnV tZe re\_S[n]nQ grogops P<"ž' ž  
 r

\$ " # "&% " % # % " ) "  
 # ž ' # " # \$ "  
 \$ ž ' # # & % (  
 7 \_ \$ ) \$ ' " # \$ ž U a \_







UUUŽŸ 2 2 Xy1 0 @

UAÁŸ) Ctdp0 M M pd¥P ‡ `€ Đ dG †# £p 5" 5" 5" U \$\$\$7\$Q=)R U O u ĐP ]•" \$ M TR T QE ZU JU Z T5"òè@ €

---

\_ [ \$ \$ [ ' "

# \$

D@3\_ [ D# \$ \$ \_ [ ' "

\$ " # \*% \$ " # +\$ & ' 3 ( "

4 ' " 5 \_ [ \$ \$ \$

\_ [ ' " \_ [ \$ \$ \$ \_ [ # ' " 5 f

DA 5 \_ [ \$ \$ \$ \_ [ ' "

DA 5

3 4 \_ [ \$ \$ \$ \_ [ ' " 5 f 5 P < " ž ' A

4 P > " ž ' \_ [ D # 22 AGC " ž + & + ' , Cl " ž " 3p " ž + #

Ct/28 + ' ž (

887 " ,

---

# ž " ( & & " "

\$ ž " ( & & " "

7 \_ S Ć [ ` & & (a' #' Ÿ 2% ž U a \_

---

N=205: PSE @Q 80iG, Pj 0% » f k' AtÉB(A1': PSE @yáin p FPAaY\$06900 006PQD•"SF=QVnU d•"»Ù ` 'UB LÙ ĐỒỒ @•Õ i) 9•x

---

g # \_[n Ž8'

#žžž2 \_[D #22 \_[D # "   
D@A : [Pgre >[c g[V D@A!\_ [D   
@A = [t 2 " > D@A U6@A   
F[rst EtrSnV U6@A EkntZes[s = [t   
D@A U6@A D@A pr[\_er   
Mlj D@A # g 2 " \_ol!> ol[go VF pr[\_er #   
> #3 > ' > DF DeSut[on 4gX   
Xer ' > 2' \_\_ol!> V@FP # > 2' G! > D@Sse   
[nZ[T[tor # > 2" G! > M M>H DFSs# >   
& >



---

\$ " # )# ' # " % " " ' .

& % " " ) #

7 \_ S^[[ ^k [ 0% # 2 % ž U a \_

---





---

U

U

U

U

U

U

%

F S T% WZ W d WU a \_ \_ W` V S f [ a ` e X a d S ` f [ h [ d S ^ f d W S f \_ W ` f a X U Z d a ` [ U

: 4 W3 Y

: 4 H 6 @3

: 4 H 6 @ \$ " " ; " G ! \_ : > 4 W3 Y

: 4 H 6 @ \$ " " ; " G ! \_ >

: 4 W3 Y

: 4 H 6 @ \$ " 0 " ; " G ! \_ >

s' 2(

%

: 4 H 6 @3

: 4 H 6 @3

: 4 H 6 @ \$ " 0 " ; " G ! \_ >

: 4 H 6 @3

: 4 H

6 @3 ! . " ; " G ! \_ > : 4 H 6 @3

: 4 H 6 @3

: 4 H 6 @3

: 4 H 6 @3

# l a d ^ V : W S ^ f Z A d Y S ` [ B S f [ a A ž : W b S f  
8 S U f E G W W S f W W " # ž ^ k  
\$ ž  
\$ " # ' < ž  
\$ " # # + ' # # \* ž  
% > S [ ? 卜 [ ` F F K e S a W S ^ ž ; ` U d W S e W V e W d  
S ^ W ` U W a X : 4 H 6 @3 i [ f Z \_ g f S f [ a ` e  
S \_ a ` Y [ ` V [ h [ V g S \* R W S d e V a ^ W d S K Z S V d U a  
b ^ W f W h S U U [ ` 9 S f e f a l a W ` S f " W d a & % a Y k  
\$ & " " & " ) ž  
& 5 S ` V a f 4 a [ 6 W S > g b W d U Z W E ž A U U g ^ f Z W  
4 [ ` X W U f [ a ` S ` V f d S ` d e X e ž e [ a ` f d  
F d S ` e X g e \$ ^ # \$ ) & % [ # a ^ + # + '  
' : i S ` Y 3 ` B ` S E 8 > ž ? S ` S Y W \_ W ` f a X b S  
Z W b S f [ f [ e 4 i Z a d W c g [ d W [ \_ \_ g ` a e g  
< ž @ S f D W h 9 S e f d a W ` f # W d # a ^ : W b S f a ^  
\$ " + ž  
( > a a \_ T S > P S ` Y F < ž : W b S f [ f [ e 4 D W S U f [ f  
S f W V I [ f Z ; \_ \_ g ` W E g b b d W e e [ h W S ` V .  
W d F Z W d S d d W ` f 5 a S ` U S W b W e W ` f E f d S f V  
Y [ W e ` V 8 g f g d W & ž d W S e f [ d a W ` f W d a ^ a  
\$ " # # ' \$ # \$ + ) # % " + ž

















: 4 H

5: 4

: 5 5

: 4 H

: 4 H

: 4 H

: 4 H



' \$ \* " " "

7 \_ & [%\* %\$ " " ) + 2 c c ž U a \_

---

: 4 H : 4 H : 4 H : 4 H  
@3 e 8 6 3  
: 4 H : 4 H 8 a a V S ` V 6 d g Y 3 V \_ [ ` [ e f d S f [ a ` ^ S \_ [ h g ? ` W  
: 4 H S V W X 3 6 H d W ` f W U S h [ d  
@ g U ^ M a V S ` S @ 3 5 g W e ; ` f W F H f W ^ T [ f g V [ ` W  
X W d ; a 8 @ f ` W a X a F h [ 8 d F 3 8 ` )  
@ 3 e : 4 H  
: 4 H : 4 H #  
d W h W d e W f d S ` e U d [ F b f [ a ` b a ^ : k 4 W d S e W @ 3 e : 4 H  
& F 6 8  
: 4 H : 4 H : 4 H \$ & " \* @ 3 e  
: 4 H 6 @ 3 @ 3 e  
# @ 3 e  
F S T # ^ W ` f [ h [ d S ^ \_ W U Z S ` [ e \_ a X h S d [ a g e @ 3 e

---

---

: 4 H  
@ F B e : 4 H 6 @ 3  
V 9 F B : 4 H 6 @ 3  
: 4 H  
6 @ 3 % A :  
6 @ 3

---

; 8 @  
; 8 @ %  
; 8 @  
+ : 4 H  
; 8 @  
S ` f [ h [ d S ^ b d a f W [ ` e  
3 H B B = D b d a f W [ ` = [  
` S e B B D \$ ' \$ ' a ^ [ : 4 H  
Y a S V W ` k ^ S f W e k ` f A Z 3 V f S e W  
### B = D \_ D @ 3 \$  
' A 3 E  
; 8 @  
F  
; 8 @  
\$ ( .  
# \$





---

)           \$ " %"







% \*

%

%

%

(

#

\$

: 4 H

: 4 H D @ 3

D @ 3

: 4 H

: 4 H D @ 3

9 B ) %

,

