

MUSC3706

HYfa 'C bY''##'&\$&%

7ci fgY[·]Cj Yfj]Yk

GhJZZ 7 cbhJWh 8 YhJ] `g

7cbj Ybcfg

B Ua Y	9a U]`	5j U]`UV]`]lm	@cWJhjcb	

7ci fgY 8YHJ] g

7 fYX]hDc]bhg'('

Gi a a UfmcZh\Y 7ci fgY

 $A \ I \ G7' + \$^* \cdot DYfZcfa \ UbW' \cdot @UVcfUrcfm7 \cdot fA \ i \ g]W7 \ fYUh]i \ Y \cdot DfUW]W' / A \ i \ g]WDYXU[\ c[\ mŁ']g'h\ Y'h\]fX \\ DYfZcfa \ UbW' \cdot @UVcfUrcfmWc i \ fgY \cdot Zcf'ghi \ XYbhg \cdot Ybfc \cdot `YX']b'h\ Y'A \ i \ g]W7 \ fYUh]i \ Y \cdot DfUW]W' \cdot UbX'A \ i \ g]W \\ DYXU[\ c[\ ma \ U'cfg'cZh\ Y'6UW\ Y'cf'cZA \ i \ g]Wdfc[\ fUa "'-f\ Wcbgc']XUhYg'h\ Y'a \] 'YghcbYg'UW\]Y \ YX']b'YUf]Yf \\ DYfZcfa \ UbW' \cdot @UVcfUrcfmWc i \ fgYgž \ Z \ fh\ Yf'XY j \ Y`cd]b['h\ Y'ghi \ XYbhg'h\ Wb]W'z'WYUh]i \ Y'UbX']bhYfdfYh]i \ Y \\ g_]``g'''H\ Y'Wc i \ fgY 'U'gc 'Vi]'Xg'cb'ghi \ XYbhg'' Uk \ UfYbYgg'cZU'fUb[Y'cZa i \ g]WU''[YbfYg'UbX'dfUW]W'g \ YbWc i \ bhYfYX']b'ch\ Yf'Wc i \ fgYg']b'h\ Y'a i \ g]Wdfc[fUa "'Ghi \ XYbhg'`YUfb'hc'Udd`mWf]h]WU''`]ghYb]b['UbX \ fYUX]b[g'cZdYfZcfa \ UbW'']hYfUhi \ fY'UbX'[U]b'Z \ fh\ Yf'g_]``g'UbX'YI \ dYf]YbW'']b'h\ Y'XYj Y`cda YbhcZYbgYa V'Y \ dYfZcfa \ UbW''g"$

7 ci fqY @YUfb]b['Ci hWca Yq

%" 5dd`mi\f\]h\]ga "UbX"UbU`mg]g`cZh\Y``]h\fUh fY`cb`d\fZcfa Ub\\f`\UbX`cZa Ugh\f`\\Ugg`df\g\b\Uh])

5ggYgga Ybh

; YbYfU``]bZcfa Uf]cb'UVci hYl Ua]bUf]cb'fYei]fYa Ybfg`]g'Uj U]`UV`Y'cb'f\\Y'A ccX`Y'g]fY'Zcf'f\\]g'Wci fgY"

5ggYgga Ybh HUg_g

5ggYgga Ybh'hUg_	K Y][\h	8i Y'8UHY	Gh XYbh@YUfb]b[Ci hWca Ygʻ5ggYggYX
9bgYa V`Y`Wcblf]Vi ljcbž dYfZcfa UbWYgždUfhWXYW_]b[lYgh	&\$I	9bgYa V`Y`dUfh'W\YW_]b[bcfa U``mhc`VY`Wca d`YhYX`Vm h\Y`YbX`cZk YY_`%%cZYUW\ hYfa	,
DYfZcfa UbWY dcfhZc`]c'	%) ।	GYWcbX'dUffiXi Y'&\$h\ Bcj Ya VYf	%
DfUWjWU`YI Ua]bUljcb'	' \$I	91 Ua]bUhjcbg'k]``VY'\Y'X']b Y]h\Yf'h\Y`Ughk YY_cZ Bcj Ya VYf'cf'h\Y'Zfghk YY_ cZ8YWa VYf7 ca dcg]hjcb DcfhZc`]cg'k]``VY'Xi Y'Uh'h\Y gUa Y'hja Y"	% <u>*</u> &
DYfZcfa UbW/#dfYgYbHJh]cb	')।	&-#\$%#&\$&\$`%%%-`5A	%

5ggYgga Ybh'8YhJ]`g

5ggYgga Ybh% '9bgYa V`Y'Wcblf]Vi h]cbždYfZcfa UbWgždUfhWXYW_]b['hYgh

8 YW] g.

 $8 fYWhiZYXVUW_Xi f]b[fYYUfgUgUbXkcf_g\cdgUbX'UZcfa U`fYdcfhUhhYWbWi g]cbcZhYgyg]cb'' Ghi XYbhgfWbhf]Vi h]cbhcYbgYa V`Y'dYfZcfa UbWgUbXkcf_g\cdg'k]``VY'UggYggYX'h\fci [\'U'dUfh WXYW]b[YI Ua]bUh]cb''$

9bgYa V`Y`dUfhlW\YW_]b['k]```VY`i bXYfhU_Yb`]b`H%z`H&`UbX`H' "`±bX]j]Xi U``mcf`]b`ga U```[fci dgz'ghi XYbhg`k]`` dYfZcfa 'k cf_g'cf`Yl Wfdhg`cZk cf_gz'ghi X]YX`UbX`dYfZcfa YX`Xi f]b['h\Y`hf]a YghYf"``K \YfY`Uddfcdf]UhYz Yl Wfdhg`k]```VY`gY`YWhYX`Vmh\Y`dUfhlW\YW_]b['Yl Ua]bYf"

5ggYgga Ybh'& DYfZcfa UbWY'dcfhZc`]c

@Yb[h.") \$\$ k cfXg dYf dUfh! a]b]a i a

8 YW] g.

Dcfhzc`]cg'k]``VY'gi Va]hhYX'h\fci [\'Hi fb]h]b UbX'ZYYXVUW_i]]U'@A G

5XX]h]cbU`'XYhU]`g.

FYZYf'hc'h\Y'bchYg'Zcf'h\]g'hUg_'cb'AccX`Y

5ggYgga Ybh' . DfUWhJWU`Yl Ua]bUhJcb

8 YW] g.

H\Y'YI Ua]bUh]cb'cZdYfZcfa UbW'\Ug'tk c'fY`UhYX'dUfhg"' \phigfi a YbhU``UbX'j cWU``ghi XYbhg`k]```VY'YI Ua]bYX cb'hYW\b]WU``fYdYfhc]fY'UbX'g][\h'fYUX]b['Uddfcdf]UhY'hc'h\Y]f']bghfi a YbhU``cf'j cWU``gdYW]U']gUh]cb'fJ | \leq Xi f]b['H\8"'5hih\Y'YbX'cZH' \tilde{z}\tilde{y}\]!a]bi hYgficZfYdYfhc]fY'k]``VY'dYfZcfa YX']b'U'gYa]!Zcfa U``WcbWfh Ybj]fcba Ybhfk\& \leq \tilde{z}\tilde{y}\]fcba Ybhfk\& \leq \tilde{z}\forall fgh'Uhih\Y'YbX'cZH\&/h\Y'gYWcbX'Uhih\Y'YbX'cZH' "'

 $: YYXVUW\underline{\hspace{-0.05cm}/}\underline{\hspace{-0.05cm}}. K f] \underline{\hspace{-0.05cm}/}\underline{\hspace{-0.05cm}}\underline{\hspace{-0.05cm}/}\underline$

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5XX]h]cbU`XYhU]`g.

5 hh\]g'dc]bhk Y'Ybj]gU[Y'`]j Y'Yl Ua]bUh]cbgž'ZJVW'hc'ZJVW'''

5ggYgga Ybh(. DYfZcfa UbWY#dfYgYbHUh]cb

8YHJ]`g.

H\fYY`dYfZcfa UbWY#dfYgYbhUhjcbg`k]```VY`WcbXi WhYX`Xi f]b[`kcf_g\cd`gYgg]cbg`]b`H%z`H&`UbX`H' "`

Gdc_Yb^ZYXVUW_k]``VY^[]j Yb^Vmh\Y^YWf fYf^]b^WUggž'UbX`k f]thYb^ZYXVUW_j]U^@A G

5XX]h]cbU`XYhU]`g.

 $H\[g'WcadcbYbhk\]^{\"}U'gc'\]bWi\ XY'U'g\cfhWcbXi\ Wf]b[\ 'YI\ Ua\ z'\Y'X'\]b'h\Y'Z]bU'''YWi\ fY\#gh\ X]c'cZH\'''fH\]g'k\]^{\"}VY'U''cb[\ Yf'h\Ub'i\ gi\ U'''YWi\ fY\#gh\ X]c'\]b'cfXYf'hc'UXYei\ UhY'mUWVcaacXUhY'h\Y'UggYggaYbhidfc\WggL$

Ghi XYbhgʻk]``XcʻUʻa]b]a i a ʻcZ&ʻ]b!WUggʻdYfZcfa UbWʻgʻ]bʻH&ʻUbXʻ%`]b!WUggʻdYfZcfa UbWʻ]bʻH'ʻ!'h\]g cjYff]XYgʻh\Yʻ]bZcfa Uhjcbʻ]bʻh\Y`XYgf]dch|cbʻUVcjY"

FYgci fWfg

DfYgWf]VYX F Ygci fWYg

Bookchulf U] UV Yb[Ywcgdchyb Y '] E 'gdcb['cZ] E cfm Wk] Y Y UbX'h Y a YU]f hybhcZh Y ']bhy]b[

FYWca a YbXYX FYgci fWYg

Bch'Uj U]`UV`Y

7ci fgY 9j U`i Uh]cb UbX 8Yj Y`cda Ybh

: YYXVUW_cb'h\Y'Wci fgY'k]``VY'a UXY'h\fci [\'h\Y'a m9I dYf]YbW'E i Ygh]cbU]fY"'H\]g']g'U'bYk 'Wci fgY"' ≢g
WcbhYbhUbX'hYUW\]b['a Yh\cXg'\Uj Y'VYYb'g\UdYX'dUfhm]b'fYgdcbgY'hc'Yj U'i Uh]cb'cZYUf]Yf'DYfZcfa UbW\
@UVcfUhcfm7 ci fgYg'Uhh\]g'`Yj Y`"'7\Ub[Yg']bWi XY'U'ga U``Yf'WUgg'g]nYžYb\UbW\X']b!WUgg'dYfZcfa UbW\
cddcfhi b]h]Ygžh\Y'd`Ubb]b['cZ]bZcfa U fY" b]b['dYfZcfa Ub]g'] E i Y Y'U'

Gi Va]gg]cb cZ5ggYgga YbhHUg_g

Hi fb]h]b Gi Va]gg]cb

Image: Ybwei bhyfu'dfcv'ya k \yb'uhhya dhjb['hc'gi va]hmci f'Ugg][ba Ybhh\fci [\ 'Hi fb]h]bž'd'YUgY

Hy'Yd\cby'9| hy'fbu''Gi ddcfhcb'-',) "''' %cf'Ya U] hya 'cb'Yl hy'fbu'hy'ngi ddcfh4 i bgk "YXi "Ui "''Gi ddcfh
\ci fg'UfY', .\$\$Ua '-'%\$.\$\$da 'cb'k YY_XUmg'UbX'-.\$\$Ua '-').\$\$da 'cb'k YY_YbXg'fl *) 'XUmg'U'mYUft"'=Z'mci
UfY'i bUV'Y'hc'gi va]hmci f'Ugg][ba YbhXi Y'hc'U'ZJi 'hk]h\ 'Hi fb]h]b'mci 'a Um'Udd'mZcf'Ub'Yl hy'bg]cbž'Vi hmci
a i ghfYhJ]b'mci f'h]W_Yhbi a VYf'Zfca '9| hy'fbu''Gi ddcfhfU'cb['k]h\ 'Ubmch\Yf'fy'Yj UbhXcW a Ybhgthc
]bWi XY'Ug'Yj]XYbW' hc'gi ddcfhmci f'Yl hy'bg]cb'Udd']WUh]cb"'=Zmci 'Ya U]''9| hy'fbu''Gi ddcfhmci 'k]'`
Ui hca Uh]WJ'`mfYW']j Y'U'h]W_Yhbi a VYf'Zfvi h]Zmci 'hy'Yd\cby'mci 'k]``bYYX'hc'gdYW]ZJWJ'`mUg_'Zcf'cby''
Hi fb]h]b'U'gc'dfcj]XYg'i dXUhy'g'cb'h\Y]f'gmghYa 'ghUh' g'cb'Hk]hYf''

; YbYfU`mž'UggYgga YbhiHug_g'a i ghVY'gi Va]hhYX'Y`YVWfcb]\WJ``mij]U'Y]h\Yf'Hi fb]h]b'cf'U'A ccX`Y Ugg][ba Ybh''=b']bgHJb\W'g'k \YfY'h\]g']g'bchdcgg]V`Yž']hk]```VY'gHJhYX'cb'mci f'\\circ i fgY'g'A ccX`Y'g]hY'k]h\U`hYfbUh]j Y'gi Va]gg]cb'XYHJ]`g"

cfi]bZcfa Uhjcbicbi\ckihcigi Va]hUgg][ba Ybhgicbi]bYij]UiA ccXiY.i\hdg.#gh XYbhi bgk "YXi "Ui #\ck! gi Va]hUgg][ba Ybha ccXiY

5 WUXYa]W<cbYghmUbX D`U[]Uf]ga

D`U[]Uf]ga `]g`i g]b['h\Y`k cfXg`cf`]XYUg`cZch\Yfg`UbX`dfYgYbh]b['h\Ya `Ug`mci f`ck b"`±hWJb`hU_Y`a Ubm Zcfa gžZfca `XY`]VYfUhY`W\YUh]b['hc`UWW]XYbhJ``mWcdm]b['Zfca `U`gci fWY`k]h\ci hUW_bck `YX[Ya Ybh'

IBGK [fcidg'd'U[]Uf]ga]bhc'h\Y'Zc``ck]b['WUhY[cf]Yg.

 $7 \text{ cdm}b[...i g]b[...h\Y.gUa Y.cf.j Yfmig]a] \Uf'k cfXg'hc'h\Y.cf][]bU''hYl h'cf']XYU'k]h\ci h'U\V_bck `YX[]b[...h\Y.cf][]bU''hYl h'cf']XYU'k]h'cf']$