



MUSC3705

DYfZcfa UbWV '@JVcfUhc fm'7

HYfa `Cby`#`&\$&\$

7 ci fgY'Cj Yfj JYk

'GHUZZ'7 cbhUW'i8YHUJ`g`

'7 cbj Ybcfg`

B Ua Y	9a Uj`	5j Uj'UVj]m	@cWUjcb	D\cbY
>c\b`B Ud]Yf	^bUd]Yf4 i bgk "YXi "Ui	: f]XUm%&!%ž'cfVm Uddc]bha Ybž'cf Xfcd`j]b	K YVgYf'%%	- ' ,) * -)'

GWXcc`7 cbhUW'i bZcfa Uhjcb

Fcca " %&ž`Yj Y`" `F cVYfhK YVgYf'6i]X]b[

D\cbY. f\$&ž'-' ,) '(,) *

9a Uj]: [gUa 4 i bgk "YXi "Ui](#)

K YVg]hY: [\hfdg.#gUa "Ufng"i bgk "YXi "Ui](#)

H\Y'GWXcc`cZhY`5fng`UbX'A YX]U`k ci `X`_Y`hc`F YgdYWz`m5W_bck`YX[Y`hY`HfUX]hcbU`7 i ghcX]Ubgž`hY`6YXY[U`fP`Ybg]b[hcb`WJa di gž; UX][U`f7]mUbX`5fhi`8Yg][b`7 Ua di gYgē`UbX`hY`B [i bbUk U`dYcd`Y`f5i gfu]Ub`8YZ'bvW : cfW`5WUXYa m]b`7 UbVYffUē`cZhY`UbXg`k \YfY`YUW`WJa di g'cZI`BGK`jg`cWUHYX"

7ci fgY'8YHJ]`g

7fYX]hDc]bHg`(`

Gi a a UfmicZhY'7ci fgY

Gi VYWh5fYU.? ge[U B W d_ S` UW ? ge[U 7` eW_ T`W

H\Y'UWēi]g]hcb'cZ\[\`mXYj Y'cdYX'Wē`UVcfU]j Y'UbX'dfYgYbU]hcb'g_]`g`]g`]bWYUg]b[`m]a dcfU]bh]b
WēbH'Ya dcfU]fma i g]Wa U_]b[`UbX'h'i g'fY'Yj UbhZ'f'hY'dfY]dfcZ]gg]cbU`'fU]b]b[`cZU`'gh' XYbHg`]b'U`
a U'ēfg'cZhY'6A i g'dfc[fUa "'A I G7' +\$) 'DYfZ'fa UbW'@UVcfU]hcfm'7]g'h\Y'h']fX'z'UbX'Z]bU'z'DYfZ'fa UbW
@UVcfU]hcfmWēi fgY'Z'f'gh' XYbHg`Ybfc`YX`]b'h\Y'A i g]Wē'c[mUbX'Gcb]W5fHg'a U'ēfg'cZhY'6UW'Y'cf'cZ
A i g]Wdfc[fUa "'H\]g'Wēi fgY'Vi]Xg'cb'h\Y'h'Wb]W]`UbX'WYU]h] Y'Z'ci bXU]h]cbg'XYj Y'cdYX`]b'YUf]Yf
DYfZ'fa UbW'@UVcfU]hcfmWēi fgYg'z'UbX'h\Y'Uk UfYbYgg'cZU'fU]b[Y'cZa i g]W]`[YbFyG'UbX'dfUW]Wg
YbWēi bh'fYX`]b'c'h\Y'f'Wēi fgYg`]b'h\Y'a i g]Wdfc[fUa "'Gh' XYbHg`YUfb'hc'Udd'mW]h]W]`]gh'Yb]b[`UbX
fYUX]b[g'cZdYfZ'fa UbW`]'h'fU]h' fYz'UbX'[U]b'g_]`g`]b'UbX'YI dYf]YbW'`]b'h\Y'XYj Y'cda YbhUbX'W'fU]h'fg\]d'cZ
]bcbj U]h] Y'[fci d'dYfZ'fa UbW'g"

BchY. 'H\]g`]g'U`%&'l C7'Wēi fgY"'Mēi 'k]`Ybfc`]b'(`'l C7`]b'YUW'cZh'fY'gi W'W'gg]j Y'h'fa g'k]h'U'fYgi `h
fYdcfYX'VmU'g]b[`Y'[fUXY'Uh'h\Y'YbX'cZh'Y'h']fX'(`'l C7'Wēi fgY"

7ci fgY'@YUfb]b[`Ci hWēa Yg

- % " 5dd'mW]h]W]ga `UbX'UbU'm]g]g'cZhY`]'h'fU]h' fY'cb'dYfZ'fa UbW'z'UbX'cZa UghY'f'WUgg'dfYgYbU]h]cbg'z
hc'h\Y'dfYdU]fU]h]cb'cZhY]f'ck b'dYfZ'fa UbW
- &" 8Yg][b'UbX'dfYgYbU]h]Z'Y'W]j Y'YbgYa V'Y'a U'h'f]U`UbX'dYfZ'fa UbW'g
- ' " 5dd'mdf]b]W]d'Yg'cZh'Ua k cf`_`hc'a i g]WYbgYa V'Y

HYUW]b[`G'fU]h[]Yg`

Gh' XYbHg]f]dYfgcbU`g_]`g`]b'dYfZ'fa UbW'cf'Wēa dcg]h]cb'k]`VY'XYj Y'cdYX'h'fci [`cbY'cb'cbY
Wēbgi `hU]h]cbg'k]h'gdYW]U]gh'h' h'cf'g'Q' l '%\ci f'YUW'h'f]a Ygh'f'Q'`'k cf_g\cdg'Q' l '%)`\ci fg'YUW
f]a Ygh'f'Q']bg]f]a YbhU`UbX'j cW]`gh' XYbHg'k]`[U]b'dYfZ'fa UbW'YI dYf]YbW'z'k \]Y'Wēa dcg]h]cb'gh' XYbHg
k]`VYWēa Y'Z]a]]Uf'k]h']ggi Yg'UZYW]b[`dYfZ'fa UbW'UbX'dYfZ'fa UbW' dfYdU]fU]h]cb"'K cf_g\cd'gY]h]b[g
k]`U'gc'gi ddcf]hYb[U[Ya Ybhk]h']ggi Yg'WēbW'fb]b[`a i g]W]U]bgf]YU'h' UbX'k Y`VY]b[z'h\Y'XYj Y'cda Ybh
cZg]U[Y'WēbXi W'z'UbX'Ub'Y'Ya Ybh'cZdY'f'cVgYf] U]h]cb'Z'f'gdYW]U]gh'dYfZ'fa UbW'UbX'Wēa dcg]h]cb
[fci dg"Gh' XYbHg'k]`U'h'YbX'a Ugh'f'WUggYg`YX'Vm]j]g]h]b[`YI dYfHg`]b'U'fU]b[Y'cZa i g]W]`]bg]f]a YbHg'z
j c]W]g'UbX'ghm]Yg'z'YbWēi fU[]b[`gh' XYbHg'hc'X'fUk`]'b_g'UbX'Wēa dU]f]gcbg'k]h'h\Y]f'dYfgcbU`'gh' X]Yg
Q'W'ccg]b[(`'l '&\ci fg'Z'ca `b]b]Y'a Ugh'f'WUggYg'U'W'f'cg'h\Y'm'U'f'Q'`'5`'gh' XYbHg'k]`dU]f]W]dU]h']b'X]fY'W'X
YbgYa V'Yg'z'W'ccg]b[`Z'ca `U'k]X'Y'fU]b[Y'cZa i g]W]`'ghm]Yg'UbX'W'h' fYg'UbX'dU]f]W]dU]h]b[`]b'U'Z]bU`
dYfZ'fa UbW`]b'YUW'h'f]a Ygh'f'Q' l '&\ci fg'fY\YUfgU'g`]b'YUW'h'f]a Ygh'f'Q'

5ggYgga Ybh

D`YUgY`fYZf`h`h`Y`XcW`a`Ybhcb`h`Y`dYfZc`fa`UbW`fUg`_`cb`h`Y`A`ccX`Y`g`j`h`Zc`f`h`j`g`W`i`fgY`"

H`Y`fY`j`g`bc`dfc`j`g`cb`cf`f`YeI`j`fYa`YbhZc`f`df`j`U`h`h`j`h`cb`k`j`h`Ub`j`bg`f`i`a`YbhU`z`W`a`dcg`j`h`cb`U`cf`j`c`W`i`h`U`W`Y`f`j`b`h`j`g`W`i`fgY`"M`ci`U`fY`c`Z`W`i`fgY`k`Y`W`a`Y`h`c`i`b`XY`f`U`_`g`i`W`h`i`j`h`cb`z`Vi`h`j`h`j`g`b`Y`j`h`Y`f`U`gg`Y`gg`Y`X`bcf`Z`b`X`Y`X`"

5ggYgga YbhHUg_g`

5ggYgga YbhHUg_	K`Y`j`[`\`h`	8`i`Y`8`U`h`Y`	G`h`X`Y`b`h`@`Y`U`f`b`j`b`[C`i`h`W`a`Y`g`5`gg`Y`gg`Y`X`
9bgYa V`Y`W`c`b`f`j`Vi`h`j`cb`z`d`Y`f`Z`c`fa`Ub`W`g`z`d`U`f`h`W`X`Y`W`_`j`b`[`h`Y`g`h`i`	&\$i	9bgYa V`Y`d`U`f`h`W`X`Y`W`_`j`b`[`bc`f`a`U`m`h`c`V`Y`W`a`d`Y`h`X`V`m`h`Y`Y`b`X`c`Z`k`Y`Y`_`%%`c`Z`Y`U`W`h`Y`f`a`	.
D`Y`f`Z`c`fa`Ub`W`d`c`f`h`z`c`j`c`j`	%i	:`j`f`g`h`d`U`f`h`X`i`Y`+`h`5`i`[`i`g`h`G`Y`W`c`b`X`d`U`f`h`X`i`Y`&\$`h`B`c`j`Y`a`V`Y`f`	%
D`Y`f`Z`c`fa`Ub`W`#`d`f`Y`g`Y`b`h`U`h`j`cb`j`	'`j`i	h`U`g`g`j`[`b`Y`X`k`Y`Y`_`g`j`b`H`%`U`b`X`H`	%z&
:`j`b`U`d`f`c`Y`W`i`	'`\$i	g`Y`Y`X`Y`h`j`g`V`Y`c`k`	%z&

5ggYgga Ybh8YhUj`g`

5ggYgga Ybh%`9bgYa V`Y`W`c`b`f`j`Vi`h`j`cb`z`d`Y`f`Z`c`fa`Ub`W`g`z`d`U`f`h`W`X`Y`W`_`j`b`[`h`Y`g`h`i`

G`h`U`f`h`X`U`h`Y`j`

8`Y`h`U`j`g`9bgYa V`Y`d`U`f`h`W`X`Y`W`_`j`b`[`k`j`V`Y`i`b`X`Y`f`U`_`Y`b`j`b`H`%`z`H`&`U`b`X`H`"``h`X`j`j`X`i`U`m`c`f`j`b`g`a`U`m`[`f`c`i`d`g`z`g`h`X`Y`b`h`g`k`j`d`Y`f`Z`c`fa`k`c`f`_`g`z`c`f`Y`I`W`f`d`h`g`c`Z`k`c`f`_`g`z`g`h`X`j`Y`X`U`b`X`d`Y`f`Z`c`fa`Y`X`X`i`f`j`b`[`h`Y`i`f`j`a`Y`g`h`Y`f`"K`Y`f`Y`U`d`d`f`c`d`f`j`U`h`Y`z`Y`I`W`f`d`h`g`k`j`V`Y`g`Y`W`Y`X`V`m`h`Y`d`U`f`h`W`X`Y`W`_`j`b`[`Y`I`U`a`j`b`Y`f`8`j`f`Y`W`h`Z`Y`X`V`U`W`_`X`i`f`j`b`[`f`Y`Y`U`f`g`U`g`U`b`X`k`c`f`_`g`c`d`g`U`b`X`U`Z`c`fa`U`f`Y`d`c`f`h`U`h`h`Y`W`c`b`W`i`g`j`c`b`c`Z`h`Y`g`Y`g`g`j`c`b`"G`h`X`Y`b`h`g`f`W`c`b`f`j`Vi`h`j`cb`h`c`Y`bgYa V`Y`d`Y`f`Z`c`fa`Ub`W`g`U`b`X`k`c`f`_`g`c`d`g`k`j`V`Y`U`gg`Y`gg`Y`X`h`f`c`i`[`\`U`d`U`f`h`W`X`Y`W`_`j`b`[`Y`I`U`a`j`b`U`h`j`cb`"

5ggYgga Ybh&`D`Y`f`Z`c`fa`Ub`W`d`c`f`h`z`c`j`c`j`

G`h`U`f`h`X`U`h`Y`j`

8`Y`h`U`j`g`H`k`c`d`c`f`h`z`c`j`c`g`c`Z`U`b`b`c`h`U`h`X`g`c`i`f`W`a`U`h`Y`f`U`i`g`Y`X`j`b`d`Y`f`Z`c`fa`Ub`W`d`f`Y`d`U`f`U`h`j`c`b`f`W`j`V`j`c`[`f`U`d`m`z`X`j`g`W`c`[`f`U`d`m`z`j`X`Y`c`[`f`U`d`m`U`b`X`b`c`h`Y`g`c`b`U`h`Y`U`g`h`(`a`U`g`h`Y`f`l`W`U`g`g`Y`g`E`D`c`f`h`z`c`j`c`g`k`j`V`Y`g`i`V`a`j`h`Y`X`h`f`c`i`[`\`H`i`f`b`j`b`U`b`X`a`U`f`_`Y`X`V`m`h`Y`Y`W`i`f`Y`f`"

5ggYgga Ybh'`D`Y`f`Z`c`fa`Ub`W`#`d`f`Y`g`Y`b`h`U`h`j`cb`

G`h`U`f`h`X`U`h`Y`j`

8`Y`h`U`j`g`H`Y`f`Y`j`b`l`W`U`g`g`d`Y`f`Z`c`fa`Ub`W`g`U`b`X`U`b`j`b`l`W`U`g`g`W`c`b`X`i`W`j`b`[`h`Y`g`h`g`W`U`Z`c`X`j`b`[`U`gg`Y`gga`Y`bh`U`g`_`

("Gdc_Yb_ZYXVUW_k]~VY:[]j Yb_VmiH_Y~YWhi fYf"]b_WUggžUbX'k f]Hb_ZYXVUW_g\cfhmUZfF"

5XX]h]cbU`XYHJ]g.

H\]g`Wca dcbYbhk]~U`gc]bW`i XY`U`g\cfhWcbXi W]b[`YI Ua ž\Y`X`]b`h\Y`Z]bU`ghi X]c`cZH&"

Gh XYb]k]~Xc`U`a]b]a i a `cZ%]b!WUgg`dYfZcfa UbW`i]b`H%UbX`&]b!WUgg`dYfZcfa UbW`g]b`H&"H\YgY dYfZcfa UbW`g`UfY`[fci d`dYfZcfa UbW`gžUg`bcH`X`Zcf`UggYgga YbhiUg_("

5ggYgga Ybh(. :]bU`Dfc`YWh

GhUfhXUHY`.

8YHJ]g.; fci d`dYfZcfa UbW`cf`di V`]Wmig\ck bij]XYc"K f]Hb_ZYXVUW_k]~VY`dfcj]XYX`VmiH_Y YI Ua]bYff]g`H\]g]g`h\Y`Z]bU`UggYgga Ybh

5XX]h]cbU`XYHJ]g.

Gh XYb]k]~k cf_]b`U`ga U`~[fci d`hc`WYUHY`U`dYfZcfa UbW`cZ%\$!%) `a]bi`H`gfIXi fUH]cb"~H\]g`a UmVY []j Yb`Ug`U`]j Y`dYfZcfa UbW`cf`Ug`U`j]XYc"~H\Y`dYfYgYbH]cbg`k]~VY`~Y`X`Y]h\Yf"]b`K`YY`_%\$ž]b`h\Y`i`gi`U`YWhi`fY`h]a`Yžcf"]b`U`gYdUfUHY`Yj`Yb]žgi`V`YWh`hc`UffUb[Ya`Ybhk]h`h\Y`7`fYU]j`Y`DfUW]W`@UVcfUhcfnž`cf`hc`gh`XYbhcf[Ub]nU]cb"

F Ygci fWg

DfYgWf]VYX`F Ygci fWg`

BchiUj U]UV`Y

F YWca a YbXYX`F Ygci fWg

BchiUj U]UV`Y

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

: YYXVUW`cb`hY`Wci fgY`k]`VY`a UXY`h`fci [\`hY`a m9l dYf]YbW`E i Ygh]cbU]fY`"H\]g`]g`U`bYk`Wci fgY`" #g
Wc`bH`bhUbX`h`UW]b[`a YhcXg`\Uj Y`VYYb`g\UdYX`dUfhm]b`fYgdcbgY`tc`Yj U`i Uh]cb`cZYUf]Yf`DYfZc`fa UbW

Gi Va]gg]cb`cZ5ggYgga YbhHUg_g

Gi Va]gg]cb`cZ5ggYgga YbhHUg_g

5 WUXYa]W<c bYghmUbX`D`U[]Uf]ga

D`U[]Uf]ga]g`i g]b[`hY`k cfXg`cf]XYUg`cZchYfg`UbX`dfYgYbh]b[`hYa`Ug`mci`f`ck`b" `hWUb`hU`Y`a`Ubm`Z`fa`g`z`Z`ca`XY`]VYfUHY`WX`YU]b[`hc`UW]XYbhU`mW`dm]b[`Z`ca`U`gci`fW`k`]h`ci`hUW`bck`YX[`Ya`Ybh`

I`BGK`[`fci`dg`d`U[]Uf]ga`]b`hc`hY`Z`ck`]b[`W]HY`[`cf]Yg.

7`cdm]b[`i`g]b[`hY`gUa`Y`cf`j`Yfmg]a`]Uf`k`cfXg`hc`hY`cf][]bU`hY`hcf`]XYU`k`]h`ci`hUW`bck`YX[]b[`hY`gci`fW`cf`i`g]b[`ei`chU]cb`a`Uf`g" `H`g`U`gc`Udd`Yg`hc`]a`U[`Yg`z`Uf`h`UbX`XYg][`b`dfc`YW`g`z`Ug`k`Y`U`g`dfYgYbhU]cbg`k`Y`fY`gca`YcbY`dfYgYbh]b[`Ubc`h`Y`f`g`]XYUg`cf`k`cfXg`k`]h`ci`hW`YX]h`

~~U~~ddfcdf]UHY`dUfUd`fUg]b[`7`U`b[]b[`U`Z`k`k`cfXg`UbX`d`fUgYg`k`Y`a`cghmi`fY]b]b[`hY`cf][]bU`g]fi`W`fY`UbX`#`f`dfc[`fYgg]cb`c`Z]XYUg`c`Z`h`Y`cf][]bU`z`UbX`]b`Z`ca`U]cb`k`]h`ci`hUW`bck`YX[`Ya`Ybh`H`g`U`gc`Udd`Yg`]b`dfYgYbhU]cbg`k`Y`fY`gca`YcbY`dUfUd`fUgYg`Ubch`Y`f`g`]XYUg`cf`k`cfXg`k`]h`ci`hW`YX]h`UbX`hc`d]Y]b[`hc[`Y`h`Y`f`ei`chYg`UbX`dUfUd`fUgYg`]b`hc`U`b`Y`k`k`Y`c`Y`z`k`]h`ci`hUddfcdf]UHY`fY`ZY`fY`b]b["

7`c`i`g]cb.`k`cf_]b[`k`]h`ch`Y`fg`Vi`hdUgg]b[`c`Z`h`Y`k`cf_]Ug`U`d`Y`fgcb`g`]bX]j`]Xi`U`k`cf_"`7`c`i`g]cb`U`gc`]bW`i`XYg`dfcj`X]b[`mci`f`k`cf_]hc`Ubch`Y`f`gh`XYbh`VY`Z`fY`h`Y`Xi`Y`XU]h`z`cf`Z`f`h`Y`di`fdcgY`c`Z`h`Ya`d`U[]Uf]g]b[`Uh`Ubm]h]a`Y`z`dUm]b[`Ubch`Y`f`d`Y`fgcb`hc`d`Y`Z`ca`Ub`UW`X`Ya`]W]Ug`z`gh`U`]b[`cf`UW`i`]f]b[`Ubch`Y`f`d`Y`fgcb`g`UW`X`Ya`]W`k`cf_]UbX`W`dm]b[`]h`z`c`Z`f]b[`hc`W`ca`d`Y`h`Ubch`Y`f`d`Y`fgcb`g`k`cf_]cf`g`Y`Y_]b[`dU`ma`Y`bh`Z`f`W`ca`d`Y`h]b[`UW`X`Ya`]W`k`cf_"

~~U~~ddfcdf]UHY`W]h]cb.`7`h]b[`gci`fW`g`k`]W`U`j`Y`bch`V`Y`Y`b`f`Y`U`X`z`k`]h`ci`hUW`bck`YX[]b[`hY`"gY`W`b`X`U`f`m`gci`fW`Z`ca`k`]W`_`bck`YX[`Y`c`Z`h`Ya``U`g`V`Y`Y`b`c`V`h]b]YX"

8`i`d`]W]h]cb`f`f`gY`Z`d`U[]Uf]ga`"L`gi`Va`]h]b[`mci`f`ck`b`k`cf`z`]b`k`Y`cf`]b`d`U`f`z`k`Y`fY`]h`U`g`d`fYj`]ci`g`m`V`Y`Y`b`d`fY`d`U`f`Y`X`c`f`gi`Va`]h]Y`X`Z`f`Ubch`Y`f`U`ggY`gga`Y`bhcf`W`ci`fgY`Uh`I`BGK`cf`Ubch`Y`f`i`b]j`Y`fg]m`

7`c`f`f`Y`W`i`f`Y`Z`f`Y`b]b[`d`f`U`W`]W`g.

- D`U`f`U`d`f`U`g]b[`z`gi`a`a`U`f]g]b[`z`Y`gg`U`mk`f]h]b[`UbX`h]a`Y`a`UbU[`Ya`Ybh`

5 WUXYa]WbZcfa Uh]cb`

: cf`YggYbh]U`ghi XYbh]bZcfa Uh]cb`fY`Uh]b[`hc.

- fYei Yghg`ZcfYI hYbg]cb/
- `UhY`gi Va]gg]cbg`[i]XY`]bYg/
- fYj]Yk `cZa Uf_g/
- I B GK `<YU`h`UbX`GUZY`midc`]WYg/
- YI Ua]bUh]cb`dfcVWXi fYg/
- gdYW]U`Vc]bg]XYfUh]cb`]b`hY`Yj Ybhcz]`bYgg`cf`a]gUXj Ybh fY/
- ghi XYbhYei]m]UbX`X]gUV`]m/
- UbX`chYf`YggYbh]U`UWUXYa]W]bZcfa Uh]cbz`gYY

[\h\]dg.#k k k "Ufmg"i b\]gk "YXi "Ui #W ffYbh\]ghi XYbh\]bZcfa Uh\]cb`#dfc\]cVc`g!\[i \]XY`\]bYg#](#)

⇒ U[Y`7 fYX]h

H\]g`]a U[Y`]g`a mick b`dfcdYffm

7F ⇒ CG

7F ⇒ CG`Dfcj]XYf`7cXY.`\$\$\$- ;