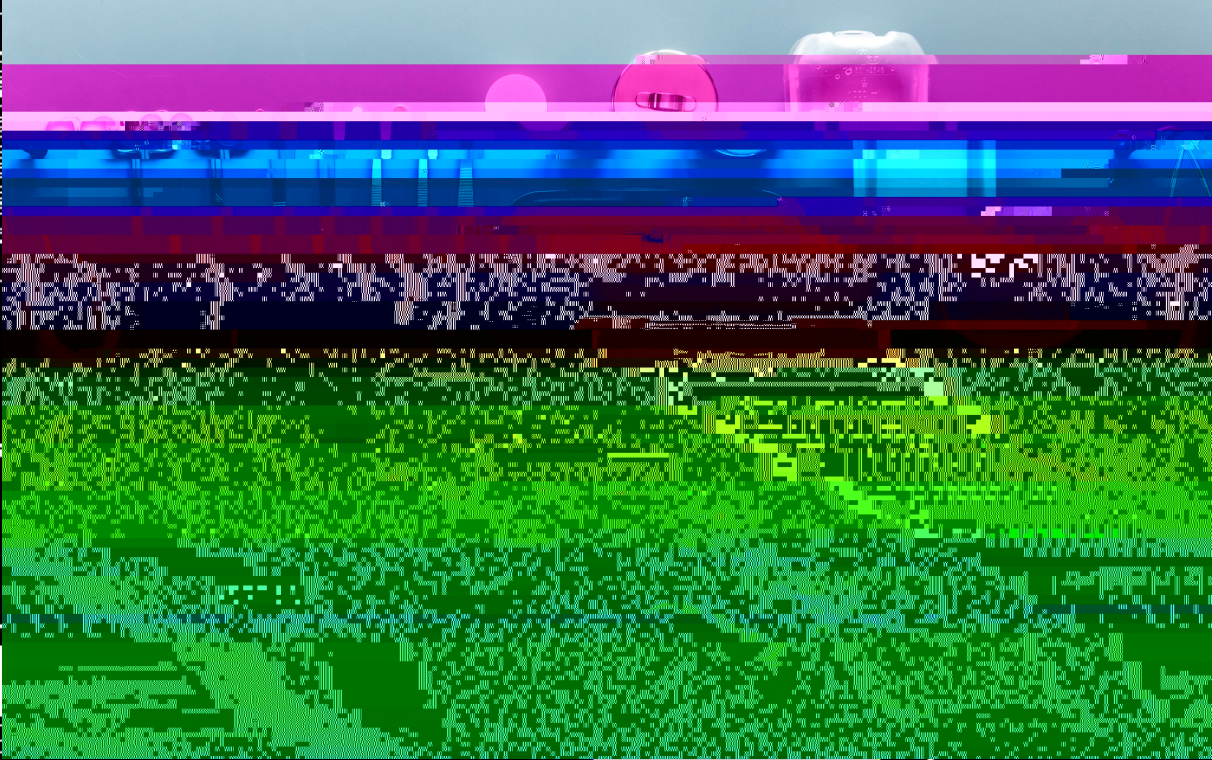


# BIOM9332

6]cWta dUh[V] ]lm

HYfa &Z&\$&



7ci fgY`Cj Yfj ]Yk

GHJZ`7cbHJW`8YHJ]`g

7cbj Ybcfg

BUa Y	9a U]`	5j U]`UV]`]m	@cW]h]cb	D\cbY
>Y`YbU`F b`U_! ?cj UW]bU	<a href="#">^fb`U ! .cj UW]bU4 i bgk "YXi "Ui</a>		GUa i Y`g') \$+	- ' , ) " - & \$
BcbU': UfVY\]	<a href="#">b"Z]fVY\]4 i bgk "YXi "Ui</a>			

GWXcc``7cbHJW`hZcfa Uh]cb

Gh XYbhGYfj ]W]g`WU]b`VY`WcbHJW`X]j ]U`i [i bgk "hc# YVZcfa g"](#)



fYgdcbgYg'hc'U'fUb[ Y'cZV]ca UHf]U'g'UbX'a YX]WJ'XYj ]Wg''H\Y'Wci fgY'Wcbg]ghg'cZ(\ 'cZJWV!hc!ZJW' hja Y  
dYf'k YY\_ž]bWi X]b[ 'YWi fYg'UbX'k cf\_g\cdg" K cf\_g\cd f&\# YY\_Ł'Uhh'bxUbVW' ]b!dYfgcb' ]g'YI dYWYX"  
5XX]hcbU' ]bXYdYbXYbh'YUfb]b[ ' ]g'YI dYWYX'VUgYX'cb' [ i ]XY' ]bYg'dfcj ]XYX'hfci [ \ci hH'Y'h'fa ž]bWi X]b[  
fYUX]b[ 'cZWci fgY'a UHf]U'gž'UXX]hcbU'fYWca a YbXYX'hUg\_gž'UbX'Wca d'Yhcb'cZUggYgga Ybh'Ug\_g"

H\]g'Wci fgY'Wca d'ja Ybhg'ch'Yf'6€A 'Wci fgYg' ]bWi X]b[ '7Y'i 'Uf'UbX'H]ggi Y'9b[ ]bYf]b[ ž'A YW'Ub]WJ'  
DfcdYf]Yg'cZ6]ca UHf]U'gž'F Y[ i 'U'cfmF Yei ]fYa Ybhg'Zcf'6]ca YX]WJ'HYW'bc'c[ mž'7' ]b]WJ' '@UVcfU'cfm  
GWYbW'UbX'W'fU]b'h'Yg]g'hc d]Wg"



cZa YX]WU`XYj ]Wg`H\]g`hUg\_]g`XYg][ bYX`hc`ZcghYf`hUa`k`cf`\_`UbX`di`h`h`Y`h`Ycfm]brc`UW]cb``DUfh&`]g  
gi Va ]hYX`Ug`U`[ fci`d`H\Y`[ fci`dg`k`]`VY`Zcfa`YX`]b`h`Y`Z]fghh`hcf]U`"

H\]g`]g`bchU`Hi`fb]h]b`Ugg][ ba`Ybh

5ggYgga`Ybh).`A`U`c`f`D`f`c`Y`W`h`!`D`U`f`h`'`f]`f`ci`d`k

8i`Y`X`U`h`Y`.`H68

H\Y`A`U`c`f`D`f`c`Y`W`h`h`U`h]b]c`j`Y`g`X`Y`j`Y`c`d]b[`U`W`c`b`W`d`h`U`Z`U`a`Y`k`c`f`\_`Z`c`f`]a`d`f`c`j`Y`X`V]c`W`c`a`d`U`h]V]`]m`h`Y`g`h]b[  
cZa`Y`X]W`U`X`Y`j`]W`g`H\]g`h`U`g`\_]g`X`Y`g][`b`Y`X`h`c`Z`c`g`h`Y`f`h`U`a`k`c`f`\_`U`b`X`d`i`h`h`Y`h`Y`c`f`m]b`r`c`U`W]c`b``D`U`f`h`'`]g  
g`i`V`a`]h`Y`X`U`g`U`[`f`c`i`d`H\Y`[`f`c`i`d`g`k`]`V`Y`Z`c`f`a`Y`X`]b`h`Y`Z]f`g`h`h`h`c`f]U`"

H\]g`]g`bchU`Hi`fb]h]b`Ugg][ ba`Ybh

5ggYgga`Ybh\*.`A`U`c`f`D`f`c`Y`W`h`!`D`U`f`h`(`

8i`Y`X`U`h`Y`.`H68

H\Y`A`U`c`f`D`f`c`Y`W`h`h`U`h]b]c`j`Y`g`X`Y`j`Y`c`d]b[`U`W`c`b`W`d`h`U`Z`U`a`Y`k`c`f`\_`Z`c`f`]a`d`f`c`j`Y`X`V]c`W`c`a`d`U`h]V]`]m`h`Y`g`h]b[  
cZa`Y`X]W`U`X`Y`j`]W`g`H\]g`h`U`g`\_]g`X`Y`g][`b`Y`X`h`c`Z`c`g`h`Y`f`h`U`a`k`c`f`\_`U`b`X`d`i`h`h`Y`h`Y`c`f`m]b`r`c`U`W]c`b``D`U`f`h`('`]g  
g`i`V`a`]h`Y`X`]b`X]j`]X`i`U`m`"


5i [i gh

K cf\_g\cd



# Gi Va ]gg]cb'cZ5ggYgga YbhiHUg\_g

@UVcfUhcfmfYdcfng'UbX'a U'cf'Ugg][ ba Ybht'k ]''fYei ]fY'U' [Bcb'D'U\[ \]Uflga'8YWUfUhc'7cj Yf'G\YYH'](#)

5gg][ ba Ybht'g\ci 'X'VY'gi Va ]H'X'cb'h'a Y''5'XU]mdYbU'micZ) i 'cZ'hY'a Uf\_g'Uj U]'UV'Y'Zcf'hUh  
Ugg][ ba Ybhk ]''Udd'mZcf'k cf\_'fYW'j YX'UZ'Yf'h'Y'Xi Y'XUH''5bmiUgg][ ba Ybhia cfY'h'Ub') 'XUmg''UH'k ]''bch  
VY'UW'W'dh'X''H\Y'cb'mYI Ya dh]cb'k ]''VY'k \Yb'df]cf'dYfa ]gg]cb'Zcf''UH'gi Va ]gg]cb'\Ug'VYYb'[ fUbh'X'Vm  
h'Y'7ci fgY'W'cfX]bUhc'f''9I h'bg]cbg'k ]''VY'[ fUbh'X'cb'mcb'a YX]W'cf'W'a dUgg]cbUH'[ fci bXg'i bXYf  
YI hfYa Y'W'fW'a ghUb'W'g"

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

D@5; ≠F ≠GA

6Yk UFY`5b`Ugg][ ba YbhñUh]bWñ XYg`d`U[ ]Uf]gYX`a Uñf]U`k ]`fYWñ]j Y`U`\$3]žUbX`gh XYbñg`k \c`d`U[ ]Uf]gY`a UmZU]`ñY`W`i fgY`Gñ XYbñg`k \c`d`U[ ]Uf]gY`k ]`Uj Y`ñY]f`bUa Yg`YbñfYX`cb`U`d`U[ ]Uf]ga`fY[ ]gñf`UbX`k ]`VY`UV`Y`ñ`X]gW]d`]bUfmiUW]cbž]bWñ X]b[ `YI Wñ g]cb`Zca`Ybfc`a Ybñ

5WUXYa ]W=Zcfa Uh]cb

7CI FG9'9J5@! 5H€B'5B8'89J9@CDA 9BH

Gh XYbhZYXVUW\_\Ug\Y'dYX'hc'g\UdY'UbX'XYj Y'cd'h.]g'Wci fgYz]bWi X]b[ 'ZYXVUW\_cVHU]bYX'Zca 'cb!

K Y'UW\_bck`YX[ Y'hY'6YXY[ U'dYcd`Y`k \c`UfY`hY`hfUX]hcbU`W gfcX]Ubg`cZhY`UbXg`cb`k \]W`I`BGK  
? Ybg]b[ hcb`Wla`di`g`]g`cWU`hYX"

5ddYbX]l . '9b[ ]bYYfg'5i ghfU`U'f95E'DfcZYgg]cbU`'9b[ ]bYYf'7ca dYhYbWm  
GHUbXUfX

Dfc[ fUa 'hYbXYX'@YUfb]b[ 'Ci hWta Yg	
? bck `YX[ Y'UbX'g_]`VUgY	
D9%"%7 ca dfY\Ybg]j YzhYcfmVUgYX'i bXYfghUbX]b[ 'cZhY'i bXYfd]bb]b[ 'bUh fU`UbX d\mg]WU`gWYbWg'UbX'hY'Yb[ ]bYYf]b[ 'Z bXUa YbH'g'Udd']WUV'Y'hc'hY'Yb[ ]bYYf]b[ 'X]gWd`]bY	
D9%"&'7 cbWdh U`i bXYfghUbX]b[ 'cZhY'a UhYa Uh]Wg'z'bi a Yf]WU`UbU'mg]g'ghUhgh]Wg'z'UbX Wta di h'f'UbX']bZ'fa Uh]cb'gWYbWg'k \]W' i bXYfd]b'hY'Yb[ ]bYYf]b[ 'X]gWd`]bY	
D9%" " 'h!XYdh'i bXYfghUbX]b[ 'cZgdYWU`]ghVcX]Yg'cZ_bck `YX[ Y'k ]h]b'hY'Yb[ ]bYYf]b[ X]gWd`]bY	
D9%"('8]gWfba YbhcZ_bck `YX[ Y'XYj Y`cda YbhUbX'fYgYUfW'X]fYW]cbg'k ]h]b'hY Yb[ ]bYYf]b[ 'X]gWd`]bY	
D9%" ) ? bck `YX[ Y'cZYb[ ]bYYf]b[ 'XYg][ b'dfUW]W'UbX'WcbhYi h U`ZUW'c'fg]a dUW]b[ 'hY Yb[ ]bYYf]b[ 'X]gWd`]bY	
D9%"* 'i bXYfghUbX]b[ 'cZhY'gW'cdY'z'df]bWd`Yg'z'bcfa g'z'UW'W'ci bHUV']h]Yg'UbX'Vci bXg'cZ gi gh]bUV'Y'Yb[ ]bYYf]b[ 'dfUW]W' ]b'hY'gdYW]ZWX]gWd`]bY	
9b[ ]bYYf]b[ 'Udd']WU]h]cb'UV']]m	
D9%"%5dd`]WU]h]cb'cZYghUV]g\YX'Yb[ ]bYYf]b[ 'a Yh'cXg'hc'Wta d'Yi'Yb[ ]bYYf]b[ 'dfcV'Ya gc']b[	
D9%"&'&'i YbhUdd']WU]h]cb'cZYb[ ]bYYf]b[ 'h'W]b]ei Yg'z'hc'g'UbX'fYgci fW'g	
D9%" " '5dd`]WU]h]cb'cZgmg]Ya Uh]WYb[ ]bYYf]b[ 'gmb'hYg]g'UbX'XYg][ b'dfcW'ggYg	
D9%"('5dd`]WU]h]cb'cZgmg]Ya Uh]WUdd'fcUW]Yg'hc'hY'WcbXi W'h]UbX'a UbU[ Ya YbhcZYb[ ]bYYf]b[ dfc'YW'g	
DfcZYgg]cbU`UbX'dYfgcbU`Uhf]Vi hYg	
D9' "%9h]WU`WcbXi W'h]UbX'dfcZYgg]cbU`UW'W'ci bHUV']]m	
D9' "&'9ZYW]j Y'cfU`UbX'k f]hYb'Wta a i b]WU]h]cb']b'dfcZYgg]cbU`UbX`UmXca U]bg	
D9' "' '7fYUh]j Y'z']bbcj Uh]j Y'UbX'dfc!UW]j Y'XYa YUbcif	
D9' "( 'DfcZYgg]cbU`i gY'UbX'a UbU[ Ya YbhcZ]bZ'fa Uh]cb	
D9' )" 'C fXYf'ma UbU[ Ya YbhcZgY'z'UbX'dfcZYgg]cbU`WcbXi W'h	
D9' "*" '9ZYW]j Y'hYUa 'a Ya VYfg\]d'UbX'hYUa ``YUXYfg\]d	