

!

L' # \$ 3' /TD!4' \$,)O*!

4\$)' *\$' !O#\$<2/O&*F!

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L3' !DJ*,3' D)D!OH!>/O,') *D!) *!#!' \$' ((!D!H#\$)0, #, ' F!UJ! A!!V3)(' !>/O,') *DJ*,3' D)D!D!O\$\$&/!) *25!

!\$3#) *D!2' ,!, /#HH)\$<' F!, O!#D&US\$' ((&#/(O\$#,)O*W(O\$#0-#,)O*)D!,J>)\$#((J!F)\$, #, ' F!UJ!

) *!,3' !>/)R# /J!D, /&\$, &' A!!L3' !/)UODOR' D!/' 2&#/(J!F0\$<1O*!,3' ! !#*F!

DJ*,3' D)-' !,3' !>O(J>' >,)F' !\$3#)*!,3/O&23!,3' !R' RU/#** !OH!,3' !XKA!!L3)D!#((O! D!HO!HO(F)*2!#*F!ROF)H)\$#,)O*!OH!

,3' !>O(J>' >,)F' !,O!O\$\$&A!!Y*\$' !,3' !>/O,') *!D!>/O>' /J!HO(F' F!#*F!\$OR>(' , ' (J!DJ*,3' D)-' F!),)D!RON' F!H/OR!,3' !

XK!,O!#*O,3' !/D&U\$' ((&#/(O\$R>#/,R' * ,!O!O&,!OH!,3' !'\$' ((!N)#! A!!GH!,3' !>/O,') *!D!) * , ' *F' F!HO!

' Z>O/,!H/OR!,3' !'\$' ((5!),!,J>)\$#((J!RON' D!H/OR!,3' !XK!,O!,3' ! !! 3' /' !H&/,3' /!ROF)H)\$#,)O*D!,#<' !

>(\$#' A!!L3' !>/O>' /!, /#HH)\$<)*2!OH!>/O,') *D!)D!N),#(HO!H&*\$,)O*) *2A!!4' N' /#(F)D' #D' D!)*\$(&F)*25!QC45!/' ,)*,)D!

>)2R' * ,OD#!#*F!V)(DO*!F)D' #D' !3#N' !U' ' *!#DDO\$)#, ' F!I),3!>/O,') *!R)DS(O\$#0-#,)O*!!),3)*!,3' !'\$' ((A?L3' !R)DS

(O\$#0-#,)O*!,3#,!O\$\$&/D!)*!,3' D' !F)D' #D' D!3#N' !U' ' *!#DDO\$)#, ' F!I),3!R&, #,)O*D!) *!D)2*#(D' %&' *\$' D!#D!I ' ((!#D!

)R>/O>' /!HO(F)*2!#*F!#DDO\$)#,)O*!! I),3!\$#/2O!>/O,') *DA!!4R)(#/(J5!,O!,3' D' !' //O/D!) *!,3' !*' /NO&D!#*F! Z\$/' ,O/J!

DJD, ' R!,3' !)RR&*! !DJD, ' R!\$#*!D&HH' /!)H!)R>O/,#*,!>/O,') *D!#/' !*O,!>/O>' /J!(O\$#0-' FA!!!

L3' !)RR&*! !DJD, ' R!)D!#!\$OR>(' Z!\$ORU)*#,)O*!OH!\$' ((D!#*F!O/2#*D!,3#,!/' D>O*F!,O! !)*N#D)O*!) *!

O/F' /!,O!>/' N' * ,!)((*' DD!) *!,3' !UOFJA!!L3' ! !OH!3&R#*D!\$O*,#)*D!UO,3!#!*O*SD>' \$)H!)RR&*! !

' / D>O*D' ![\!#*F!#D>' \$)H!)RR&*! !/' D>O*D' ![\A!!L3' !)* *#, ' !/' D>O*D' !O\$\$&/D!%&)\$<(J!#*F!

>/O,' \$,D!,3' !UOFJ!H/OR!R#*J!F)HH' /' * ,!>#,302' *D!UJ!&D)*2!#!\$ORU)*#,)O*!OH!>3JD)\$#(U#//) /D!#*F!>3#2O\$J,)\$!

\$' ((DA!!L3' !#F#>,)N' !/' D>O*D' !)D!F' N' (O>' F!HO!#!>#/,)\$&#(#!>#,302' *) !#*F!)D!D(O! ' /!,O!U' 2)*A!!L3' !

F' N' (O>R' * ,!OH!,3)D!D>' \$)H!)!/' D>O*D' !F' >' *FD!2/' #,(J!O*!,3' !>/OF&\$,)O*!OH!>/O,') *D!) *D)F' !

#*F! A!!!!

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@

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L)R' !K' %&)' R' *,D!

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(
4,&F' *,!. /)O/!+*O1 (' F2' !#*F14<)(D!
? 4,&F' *,D!D30&(F!3#N' !#!DO(F!&*F' /D,#*F)*2!OH!>/O,')*!DJ*,3' D)D5!>/O,')*!D,/&\$,&/' 5!#*F!,3' !O/2#*' (' D!
OH!,3' !\$' (A!!!!
@ G,!I O&(F!U' !U' *' H)\$#(!)H!D,&F' *,D!#/' !H#R)0#/'! ,)3!,3' !\$O*\$' >,!OH!\$' *,/)H&2#,)O*!#*F!2' (!
' (' \$,/O>30/' D)DA!!
b 4,&F' *,D!D30&(F!<*O1 !301 !,O!&D' !#!R)\$/O>)' ,,' !,O!,/#*DH' /!NO(&R' 5!O/!#*!)*,/OF&\$,0/J!(' DDO*!I)((!U' !
' %&)/' FA!!!!
!

Dail Le Pla

? B#J!?'Sbd!. /O,')*!L/#HH)\$<)*2!XZ>(O/#,)O*!
@ B#J!:' d!L3' !V305!V3#,5!V3J5!V3' /' 5!V3' *!#*F!101 !OH!,3' !GRR&*! !4JD,' R!
b B#J!9d!. /' S(#U!. /O\$' F&/' !G* ,/OF&\$,)O*!
: B#J!g\$?7d!XZ>' /)R' *,#(!Q*#(JD)D!OH! ^ 1E!L/#HH)\$<)*2!
9 B#J!??d!Q*#(JD)D!#*F!K' H(' \$,)O*!!

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F a i e A e e

?A 4,&F' *,D!I)((!\$/' #,' !#!ROF' (!OH!>/O,')*!,/#HH)\$<)*2!,O!\$OR>#/' !,3' !D' \$/' ,O/J!>#,3I #J!N' /D&D!,3' !
' *FODOR' !>#,3I #J!L3' !ROF' (!I)((!U' !#DD' DDR' *,!U#D' F!O*!,3' !#\$\$&/#,' !/' >/' D' *,#,)O*!OH!*' \$' DD#/J!
\$' ((&(#!\$OR>#/' ,R' *,D!#*F!,3' !' HH' \$,)N' *' DD!OH!,3' !2/O&>D!>/' D' *,#,)O*!OH!,3' !ROF' (A!!!
@A !4,&F' *,D!D30&(F!F' RO*D,/#,' !,3')/!&*F' /D,#*F)*2!OH! ' D, ' /!*U(O,')*2!#*F!\$' ((!H/#\$,)O*#,)O*!>/O/!,O!
>' /HO/R)*2!,3' !I ' ,!(#UA!!L3)D!\$*!U' !FO*!)*!,3' !HO/R#,!OH!#!%&)\$<!%&)-!O/!' Z),!,)\$<' ,A!!!
bA 4,&F' *,D!D30&(F!F' RO*D,/#,' !,3')/!&*F' /D,#*F)*2!OH!,3' !)RR&*! !DJ,D,' R!UJ!\$/' #,)*2!#H(OI !\$3#/,!#H,' /!
3' #/)*2!#*!)*,/OF&\$,)O*!&D)*2!oL3' !V305!V3#,5!V3J5!V3' *5!V3' /' 5!#*F!101 !OH!,3' !GRR&*! !4JD,' Rp!
.. LA!!!

!

4&RR#,)N' !QDD' DDR' *,!

? 4,&F' *,D!I)((!\$OR>OD' !#!(#U!/' >O/,!DJ*,3' D)-)*2!,3' !)*HO/R#,)O*!,3' J!(' #/' *' F!,3/O&230&!,3' !&*),!#*F!
#*#(J-)*2!,3' !F#,#!,3#,!,3' J!3#N' !\$O(('\$,' FA!!L3' !(#U!/' >O/,!I)((!)*\$(&F' !#!D' (H\$2' *' /#,' F!F)#2/#R!,3#,!
F)D>(#JD! ^ 1E!E(#DD!G!#*F!E(#DD!GG!,/#HH)\$<)*2!,3/O&23!,3' !\$' (A!!!!

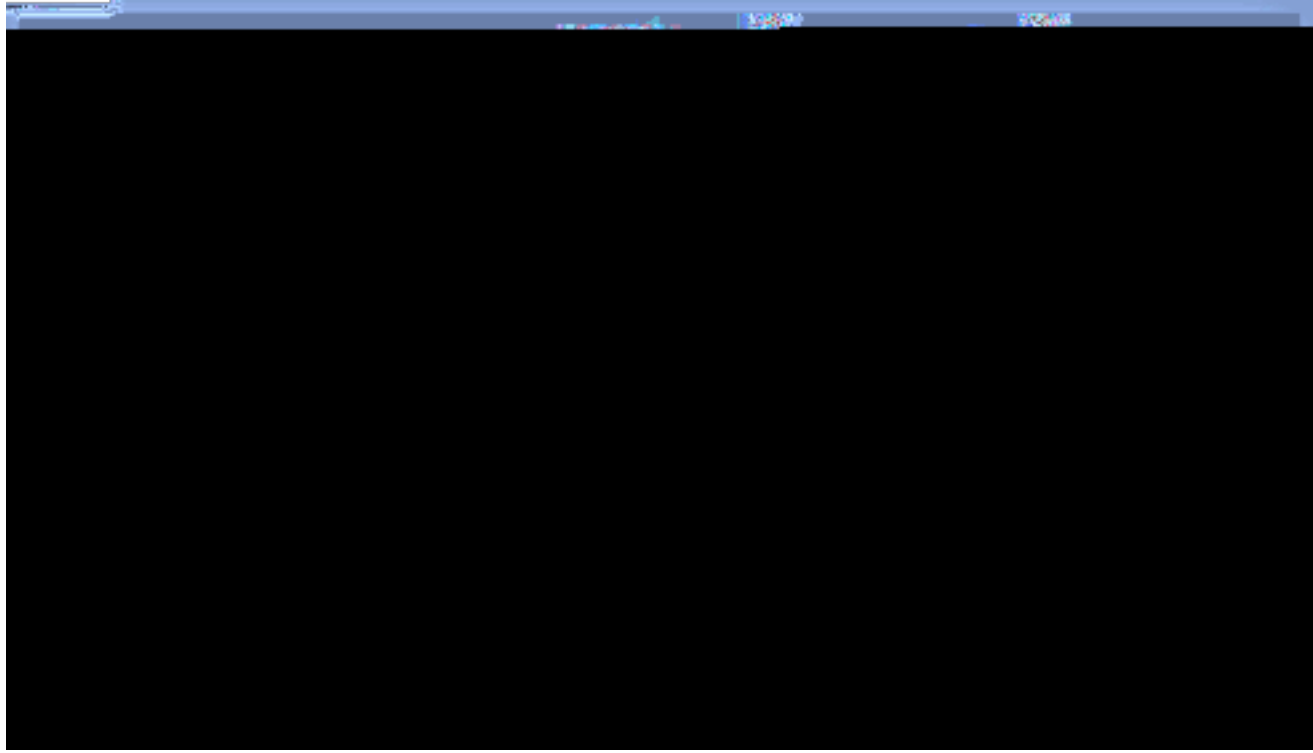
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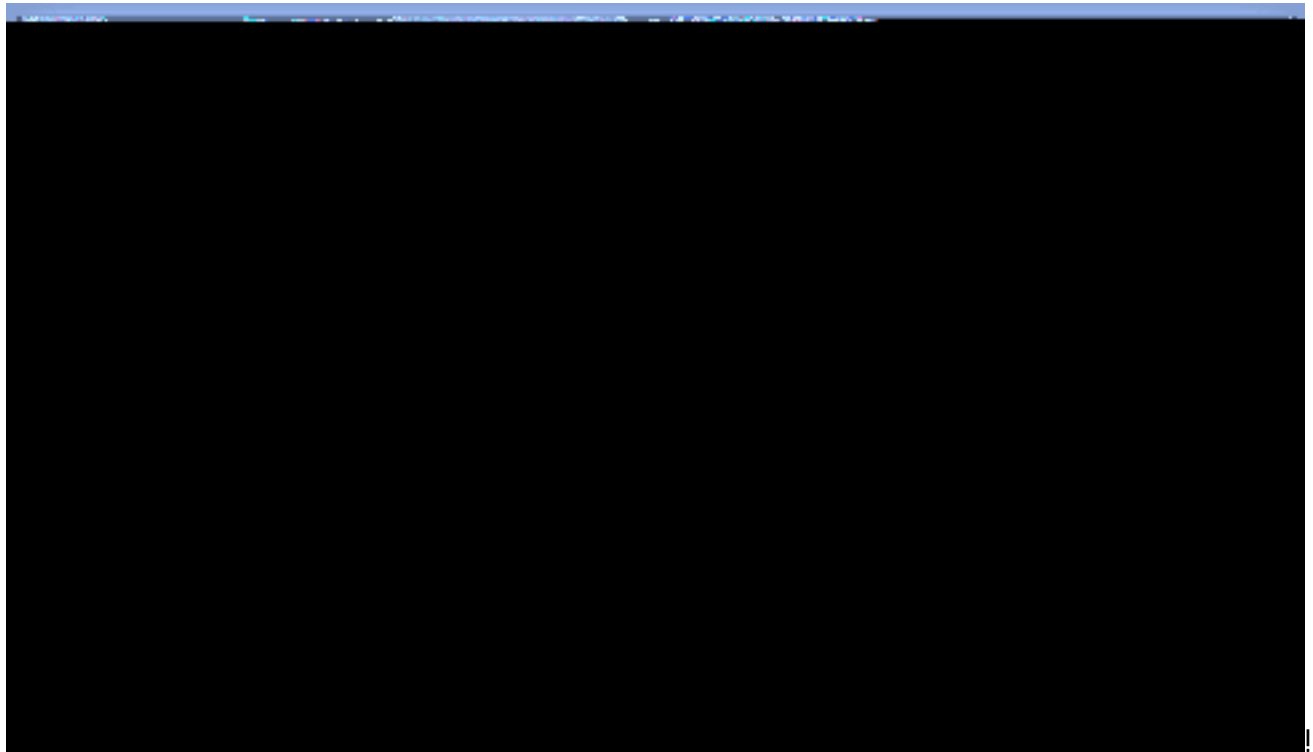
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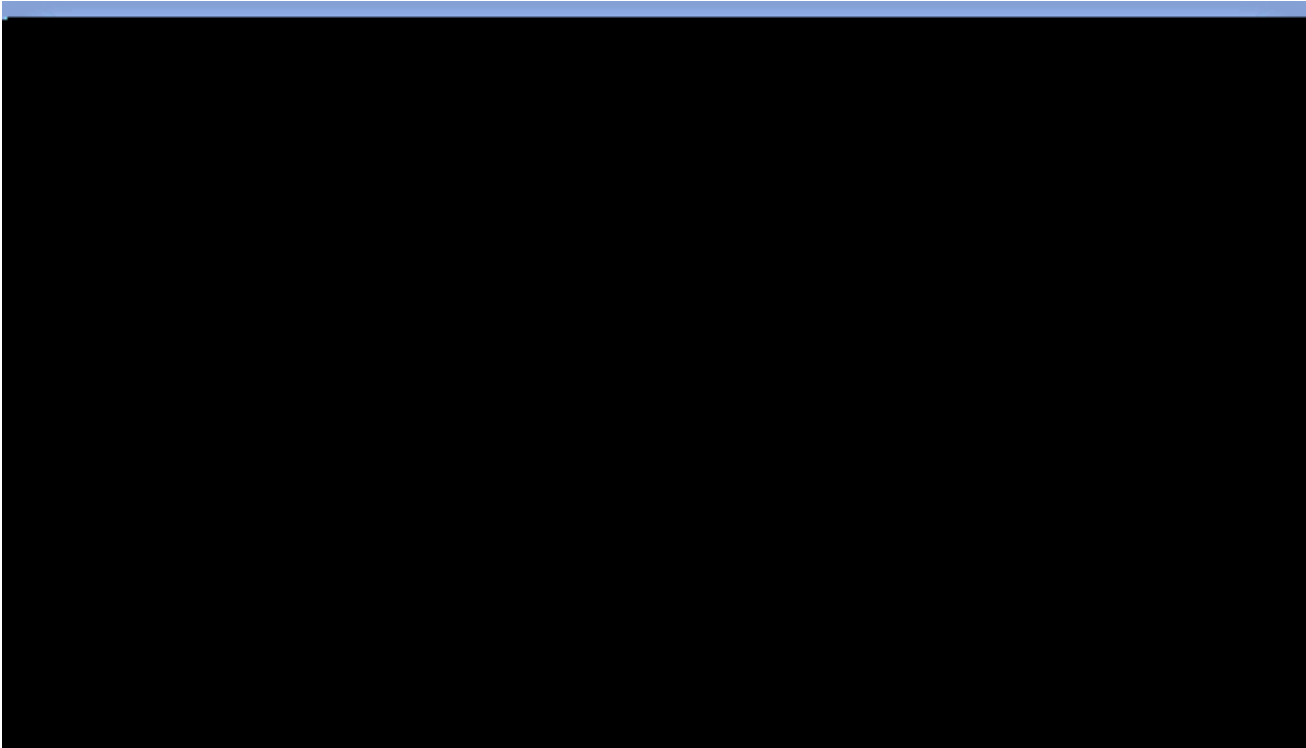
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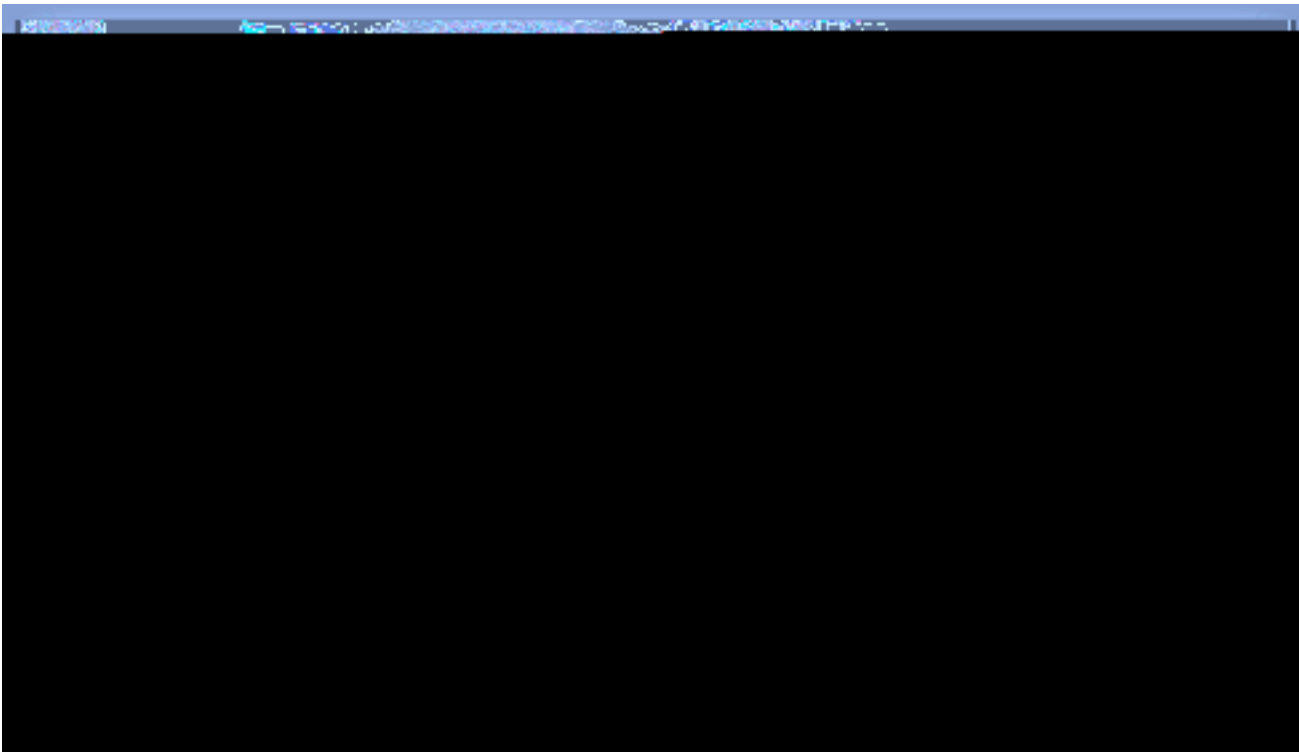
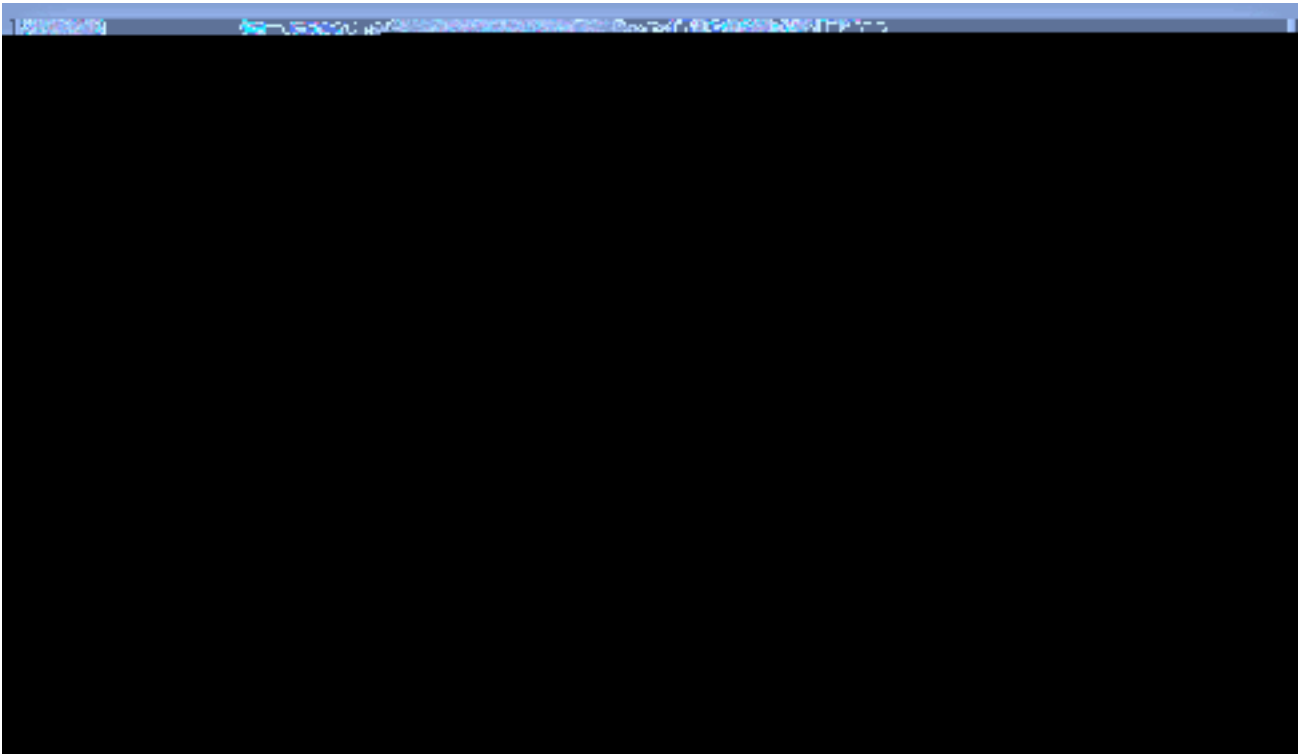


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equilibrium density-gradient centrifugation

What physical property do you think this method is based on? _____

Equilibrium

The endoplasmic reticulum has a density of 1.20 g/cm^3 and the plasma membrane has a density of 1.12 g/cm^3 . Include arrows to show where these organelles would appear after centrifugation.

E e i e all D e e i e h e l a c e l l a P a h a a k e b M H C C l a I C l a II

Major Histocompatibility Complex

Part B: Blotting onto a Nitrocellulose Membrane

make sure there are no bubbles

Part C: Detect proteins

Part D: Develop Image

Analysis (Please type following)

Category	Total Points	Points Earned & Comments
who works in the field		

: A!V3#,!R)23,!U' !>/' D' *,!)*)!,3' !\$J,O>(#DR)\$!o,#)(p!OH!,3)D!>/O,')*m!!

|||||
|||||
|||||!!!

9A!V3#,!FO' D!,3' !/' F!oU(OUp!)*!,3' !' *FODOR' !/' >/' D' *,m!|||||

!
gA!10I !F)F!,3)D!/' F!oU(OUp!' *,' /!,3' !\$' (m!|||||

!
i A!V3' *!#*!' *FODOR' !#*F!#!_0(2)!N' D)\$(' !\$0*,#)*^2!^ 1E!E(#DD!GG!R' /2' !,3' J!#/' !/' H' //' F!,O!#D!^GGE![^ 1E!
E(#DD!GG!EOR>#/,R' *,\A!XZ>(#)*!I 3#,!)D!3#>>' *)*2!)*!,3)D!\$OR>#/,R' *,A!!!

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|||||!!!

8A!V3' /' !FO' D!^ 1E!E(#DD!GG!2O!#H,' /!,3' !^GGEm!|||||

!
PA!V3#,!I)(!I3#>>' *)*)!,3' !UOFJ!)H!^ 1E!E(#DD!GG!)D!>/' D' *,)*2!#!U#\$,' /)#(]N)/#(!>' >,)F' m!!

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?7A!