

7WhigXi fl cigdYj Xi dc

z L} , n, As-... "Ls-%L N Y-Hs- "pLA , , H>-H>L y-, E ~ N ^ ">-%o ^ -n, aynL- fl>Bp s-HsH Y> pL} , n, As-... "Ls- p>%N Y^ As-Hs-n %L%N ^ , aynL- " >-%, ~L } L >pL} , n, As-... "Ls- B>- p>CL >-%.L^ } Y"> , ~, N, aynL- } , LB Y L%A, Y-H", s s-BYHs-n ALS-n L} ...% , aynL- } , LB Y L%A, Y-H

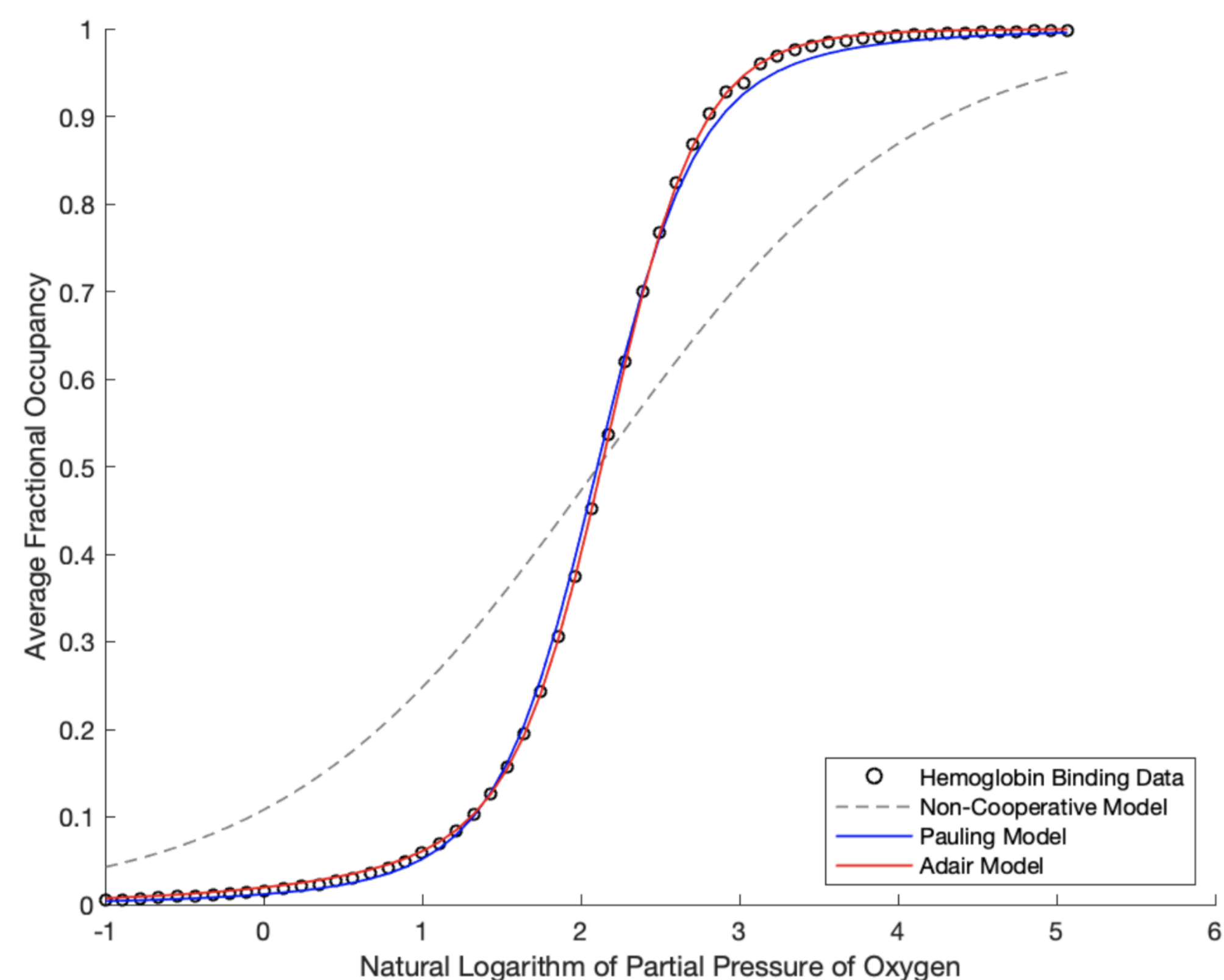


Figure 1. ... , HL %o ~ z L} , n, As-... , ..L^> , ~

...% s-n ~, ~ B, ..L^> CsY ...s B, ..L^> CsY />Y s-n >-H N B, ..L^> CsY ^ Hs E L T "pL L.L^s L~> H>> : L N Y-H "pL N , E s-n } L>- >A% Y "L L^, %o

Non-Cooperative Pauling Adair
) L>- ^ A%o Y "L fl^, ^

Table 1. fl^, ^ 2L% "o N^ , ~ , ..L^> CL />Y s-n >-H^ Hs } , HL %o

5pL H>>Y% H E >% B LB'LHN, } >...L^ AY% s, p s, " } >s

I J Z 8dad\ n

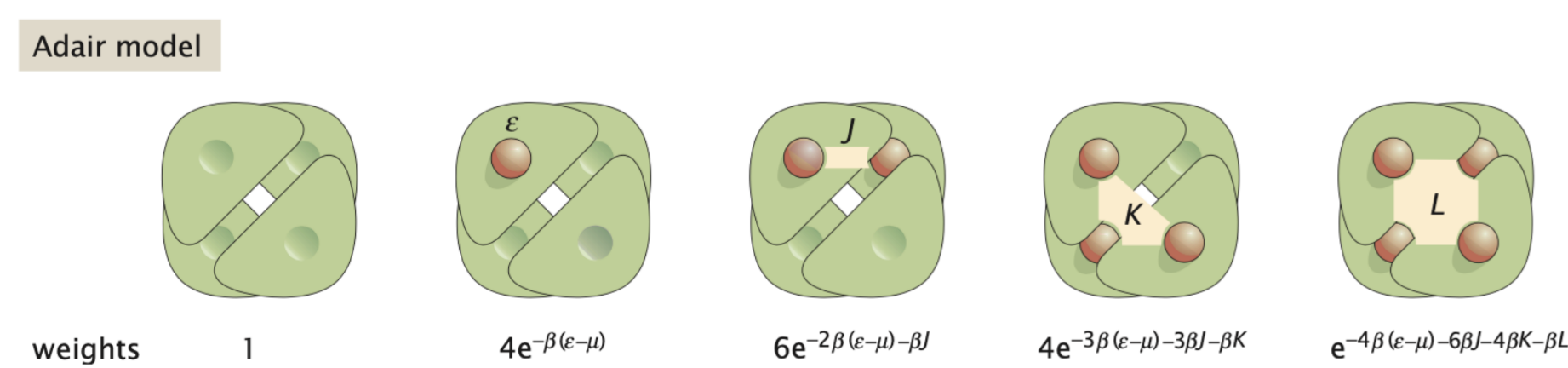


Figure 2. ~ " Y%o > , ~, N z L} , n, As- , aynL- , s-Hs-n 3sL%o/ps s.%o ... 1

5pL ^Lns ~% \$ % >-H & ^L..L%o- B , ..L^> CsY AL^ E LL~ , aynL- } , LB Y L%o L B>- >%o L J = K = L = 0 N ^ ~, ~ B, ..L^> CsY >-H K = L = 0 N ^ "pL />Y s-n } , HL 5p% s >L ^ ">-%o L " , j = k = l = 1 N ^ ~, ~ B, ..L^> CsY >-H k = l = 1 N ^ "pL />Y s-n } , HL N ^ ..> } L^L^T ~n : L E %o , Y-HL^>-H sNB , ..L^> CsY L s%o AL^ E LL~ "pL , aynL- } , LB Y L%A, Y-H", pL} , n, As-

7b edgVci ; fj Vi dc hfl : ZgkVi dc h

5pL%o L^Y> , ~% E L^L Cs> s- } , HL s-n "pL L.L^s L~> H>> : s-y N ^ HL^s } , ~% H, ~L AY p>-H %N Y-Hs- "pL 2LNL^L-BL%o B , ~

Grand Partition Function 5p% B~B , ~%o } %o CL^ } >-% , " } >~ N B^ , ^%o pL E L s p " %o N L>Bp %o L , ~BL ~, ^ } >s LH "p% B~B , ~ B>- pL ...Y% B>BY >L "pL >CL^>nL N>B , ~> , BB Y...>BY

$$Z = \sum_s e^{- (E(s) - \mu N_s)}$$

System Energy 5p% B^Y> , ~L..L%o- "pL L~L^ nY , N^pL %o B } s- "pL />Y s-n } , HL 5pL^L %o- , "pL^ CL^%o- E s p %>-H & N ^ "pL ^ Hs } , HL ^ , ^ * , ~ , ..L^> CsY E L >%o } L J = 0

$$E = \sum_{i=1}^A + \frac{J}{2} \sum_{(i,j)}$$

Average Fractional Occupancy 5pL >CL^>nL N>B , ~> , BB Y...>BY , N, aynL- ...> BL%o A>% H, ~ "pL >A, CL Y~B , ~ "pL BpL } s> ... "L~ > \mu >-H >B ~%o-

$$N = \frac{1}{\mu} \ln(Z)$$

Parameter Modeling 5p% B^Y> , ~ pL ..% E s p "pL } , HL s-n , N^pL ~, ~ B, ..L^> CL >-H />Y s-n } , HL %d , ^ "pL ^L%o , N^p%o , WB^ E L Y% H>T" ...> } L^L^A s-% B>H, N^L^LH" , "pL B LB'LHH"> , N, aynL- ...> ^ ..L%o L

$$N = \frac{4x + 12x^2j + 12x^3j^2k + 4x^4j^3k^2}{1 + 4x + 6x^2j + 4x^3j^2k + x^4j^3k^2}$$

8g i Z#<dgXZ ; ggdgi ZVgX^ c\

5p% %p, E E L N Y-H , E L^ , ^ >... , s } , ~N ^ A >-H W ^ "pL />Y s-n } , HL ^ , ^ "pL * , ~ , ..L^> CL } , HL "p% } L^p, H %o B ...LH" , > , ~L H s L~%o ~> %o Bp, CL^ A

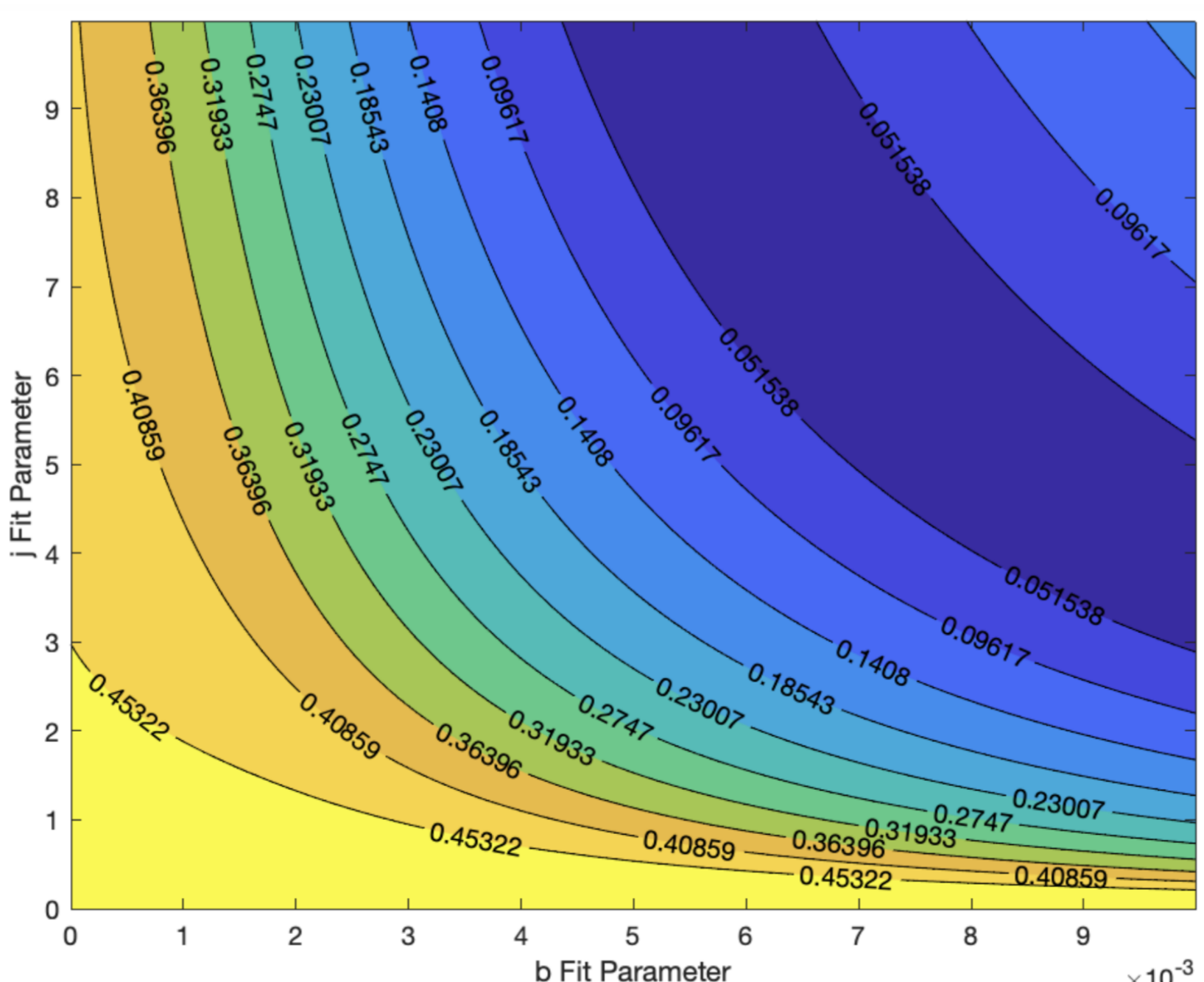


Figure 3. ~ , ^ , Y^ / , ^ , N fl^ , ^ N ^ />Y s-n } , HL

^ s-Hs-n "p% A>-H , N, E L%o >L> E >% N Y-H } >-Y> % AY% o Bps-n N ^ "pL , E L%o L^ , ^ , ~ >A>% B B ~, Y^ ... " >-H "pL~ Bp>-ns-n "pL ^>-nL , NA >-H w %o LLHLH ^ L^ "p%o- s- " >C>Y L , N b = 0.0100 >-H j = 5.2985 E >% Bp, %o- , Y%o s- "pL />Y s-n } , HL

I J Z C dci Z 9Vgd i b j a/i dc

^Y^L E , ^y B Y Hs-BYHL B } ..>s-n "pL B>BY >LHL L.L^s L~> A wy >-H C>Y L%o B } } , ~ sL^>Y L >-H %d s^pL } , HL s-n s-L%Y...

- \$Y..Y^L^* , "LA , y / ^ , WB^ \$Y..Y^L^
-) ^ 5& (^) , L^) >p^ : , ^y% B>
- &>E : & &> ... ^"

^ L^ ^ Y^ ~s-n "p% %o Y> , ~ } >-% } L% E L n , " HQL^L~" } , HL T^%o , N^pL } , HL %p, E L CL^ p>H> , E L^L^ , ^ "p>- "pL />Y s-n } , HL

Iteration	1	2	3	4	5	Avg
fl^, ^						

Table 2. ^ Hs } , HL fl^ , ^ %o p , Ynp) , ~L^> , 3s } Y> , ~ "L^> , ~%o

~ nL~L^> s %o , %o L " , nL^> } , HL "p> p>%o p s p L^L^ , ^ "p>- "pL />Y s-n } , HL H Y L " , ^>-H } Bp>-BL ^ Y%o n > >nL ~Y^ AL^ , NSL^> , ~%o ^ L CL~ s-B^L>%o n "pL " , "> > } , Y~ E L B>- ^LHYBL "pL s L s p , H, N^p> p>...L~s-n 5pL^LNL^ E L nL~L^> %nL^> } , HL "p> p>%o , E L^L^ , ^ "p>- "pL />Y s-n , ~L

HZhj a h fl 9dcXj h dc

5p^ , Ynp "pL >>Y%o N^pL H>> E L N Y-H "p> "pL ^ Hs } , HL E s p N B , ..L^> CsY p>H "pL , E L%o L^ , ^ B } ..>LH" , "pL L.L^s L~> H>> , N0.0039 5pL~ "pL />Y s-n } , HL E s p B , ... L^> CsY , N, aynL- } , LB Y L ..>s%o p>H "pL ~L^ , E L%o L^ , ^ , N0.0077 >-H "pL ~, ~ B, ..L^> CL } , HL p>H "pL p s p L%o L^ , ^ , N0.1303 : s p "p% E L B>- B~BYHL "p> pL} , n, As- , aynL- ...> BL%o L B , ..L^> CL s- %o } L } >~L^

<j ij g L dg

^Y^L E , ^y B Y Hs-BYHL B } ..>s-n "pL B>BY >LHL L.L^s L~> A wy >-H C>Y L%o B } } , ~ sL^>Y L >-H %d s^pL } , HL s-n s-L%Y...

7X^ cdl aZY\Zb Zcih

: L E , Y H s L " , >By- , E LHN L , 37 %o E ~ / , >S%o L~ , ^ %o s. / ^ , n^> } "pL , 37 / L..>^> L~ , N / p% %o E p s p %o ... , ^ %o , >S%o >-H) L~ , ^ OBSCURED N ^ %o ~n Y... %o ... , ^ ~n >-H pL ..s-n E s p "p%o , WB^ >%o E p , L : L E , Y H >%o s L " , "p>-y "pL HL CL , ..L^%o N^pL N , E s-n %d E >L Y%o H

- \$Y..Y^L^* , "LA , y / ^ , WB^ \$Y..Y^L^
-) ^ 5& (^) , L^) >p^ : , ^y% B>
- &>E : & &> ... ^"

HZ[Zg^cXZh

2. A / ps s.%o > Physical Biology of the Cell Bp>..L^ Z^>-H 3B~BL
 * L s Z p Yn>L https://github.com/RandomKiddo/PolarisResearchProject
 %o p s, ^ } >s / LB%o HL^L^ } s> , ~ >-H Hs %o B } L >>Y%o N, aynL- L^Ys A^ } BY^CL%o NB ~BL~>LH pL } , n, As- %o Y , ~ %o B^L> s> , ~, N>Hs B ~%o- L C>Y> , ~ } L^p, H%o Biophysical Chemistry
 / >-L 9 3Bp, LHL^ An Introduction to Thermal Physics ^ H Hs%o- : L%o Y & ^-n) >