Physical Chemistry Chemical Physics

ARTICLE

# Estimation of the lag time in a subsequent monomer addition model for fibril elongation

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## Electronic Supplementary Information

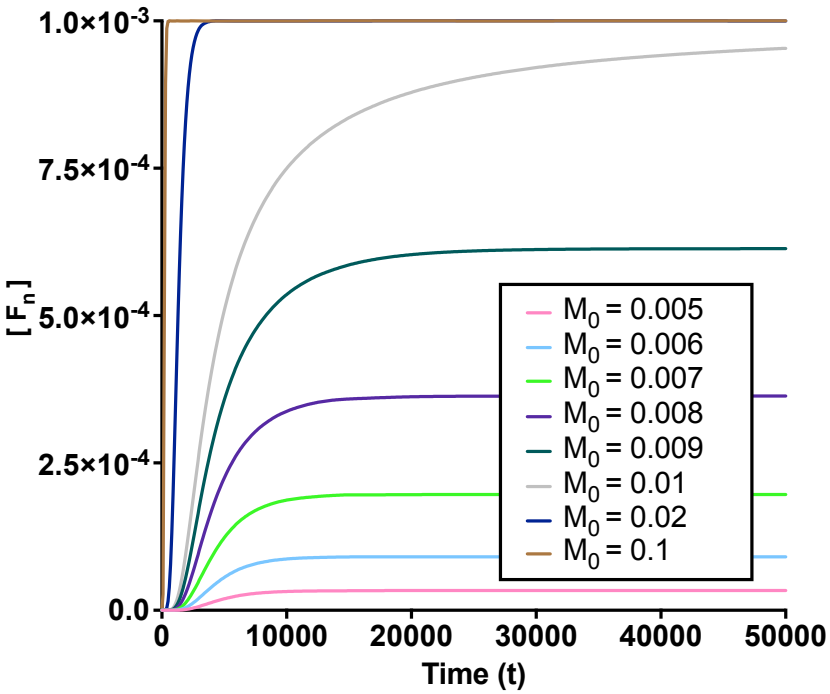


**Figure S1:** When the excess monomer condition is not met, our expression for the lag time is invalid. However, the rate laws still hold and the numerical solution to the ordinary differential equation system provides information about what would happen experimentally if the excess monomer condition is not met. If $m_0 = nf_0^*$ (gray), the lag time approaches infinity, but the maximum plateau reached for $[F_n]$ is $f_0^*$. At lower monomer concentrations, there is not sufficient monomer to react at a 1:1 ratio with the limiting reactant at every step of the reaction, so the maximum plateau reached is less than $f_0^*$. (Parameter values: $K_m^* = 1000$, $K_m = 500$, $k_+ = 1$, $n = 10$, and $f_0^* = 0.001$).

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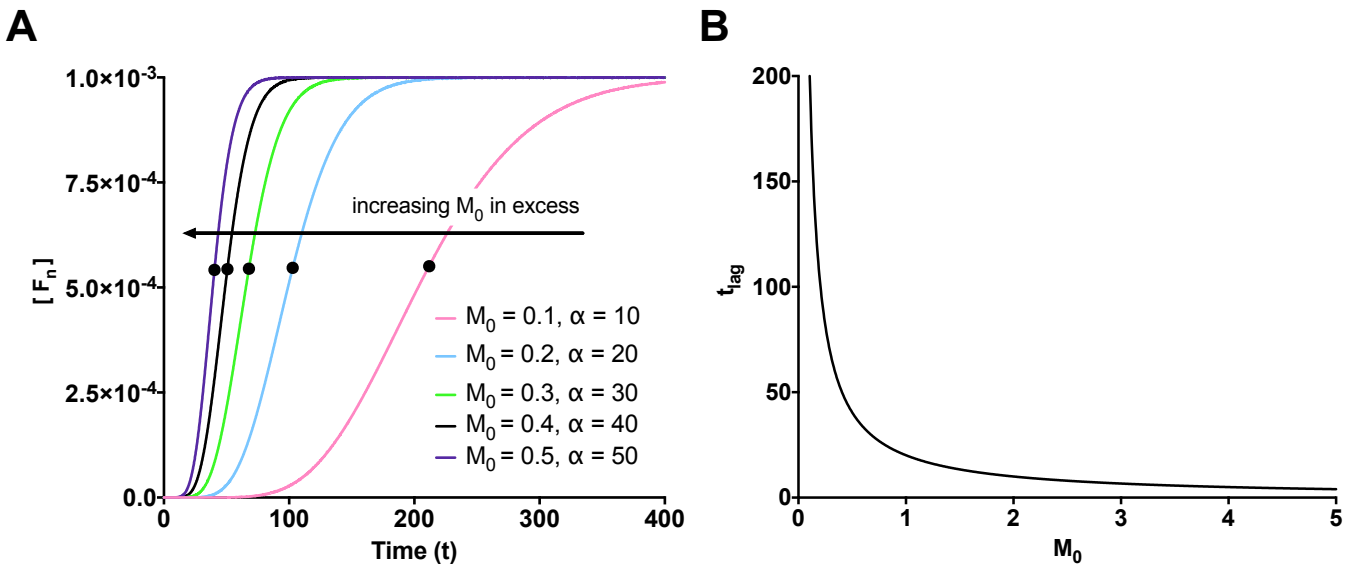


**Figure S2:** (A) The left shift in the progress curve for the concentration of the final fibril due to increasing monomer concentration reflects observed concentration dependencies of amyloid formation, as adding additional monomer is expected to push the reaction further and make more product (longer fibrils) more quickly. This happens at a decreasing rate because as the monomer becomes exceedingly in excess, increasing $M_0$ has less of an effect on the lag time. (B) The time lag decreases exponentially with increasing $M_0$ when the monomer is in excess. (Parameter values: $K_m^*$ = 1000, $K_m$ = 500, $k_+$ = 1, $n$ = 10, and $f_0^*$ = 0.001).