Supplementary Information: Heterogeneous water dynamics in the Hyaluronan-DPPC Interfaces

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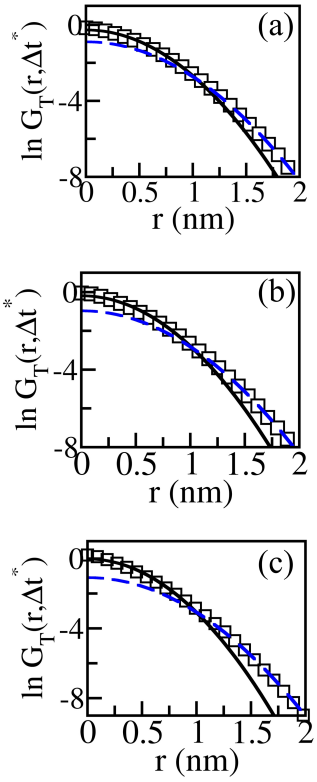

Figure S1: $\ln G_T(r, \Delta t^*)$ vs r plot for (a) n_{HA5}= 10, (b) n_{HA5}= 30, and (c) n_{HA5}= 50 at $\Delta t^* = 2.0$ in the diffusive interface. Solid *black* line implies fitted central Gaussian, broken *blue* line shows fitted Gaussian tail.

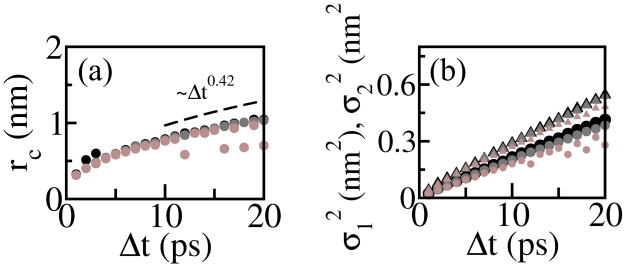

Figure S2: (a) Variation of r_c with time Δt in the diffusive interface for different n_{HA5}. (b) σ_1^2 vs Δt (*circles*) and σ_2^2 vs Δt (*triangles*) for different n_{HA5}. *Black*, *gray*, and *Brown* symbols imply n_{HA5}=10,30 and 50 respectively.

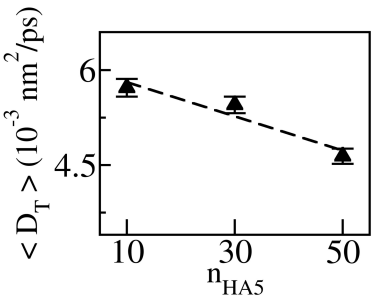

Figure S3: $\langle D_T \rangle$ for different n_{HA5}

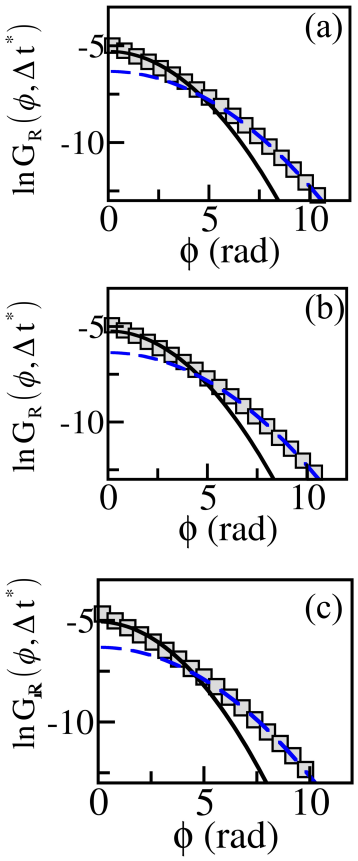

Figure S4: $\ln G_R(\phi, \Delta t^*)$ vs ϕ plot for (a) n_{HA5}= 10, (b) n_{HA5}= 30, and (c) n_{HA5}= 50 at $\Delta t^* = 2.0$ in the diffusive interface. Solid black line implies fitted central Gaussian, broken blue line shows fitted Gaussian tail.

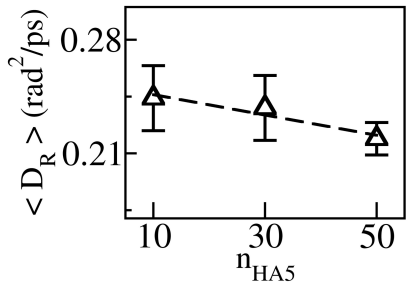

Figure S5: $\langle D_R \rangle$ for different n_{HA5}

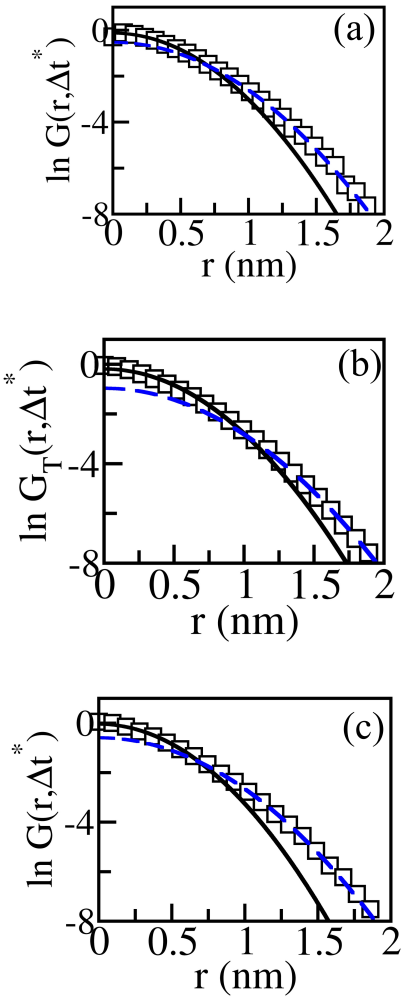

Figure S6: $\ln G_T(r, \Delta t^*)$ vs r plot for (a) N=1, (b) N=5, and (c) N=10 at $\Delta t^* = 2.0$ in the diffusive interface. *Solid* black line implies fitted central Gaussian, *broken* blue line shows fitted Gaussian tail.

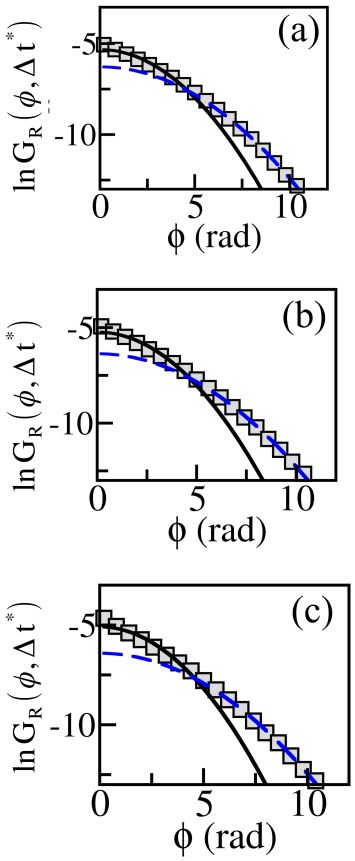

Figure S7: $\ln G_R(\phi, \Delta t^*)$ vs ϕ plot for (a) N=1, (b) N=5, and (c) N=10 at $\Delta t^* = 2.0$ in the diffusive interface. *Solid* black line implies fitted central Gaussian, *broken* blue line shows fitted Gaussian tail.

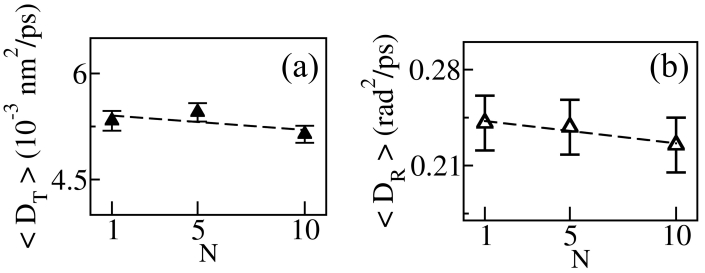

Figure S8: (a) $\langle D_T \rangle$ for different N (b) $\langle D_R \rangle$ for different N.

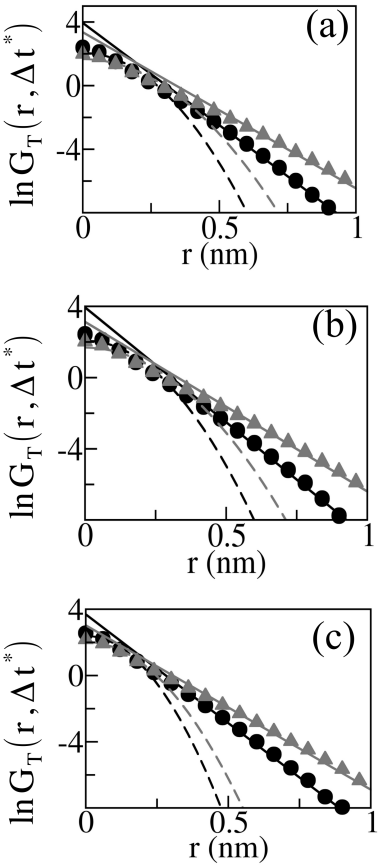

Figure S9: $\ln G_T(r, \Delta t^*)$ vs r plot for (a) n_{HA5}= 10, (b) n_{HA5}= 30, and (c) n_{HA5}= 50 at $\Delta t^* = 0.5$ (*circles*) and $\Delta t^* = 1.0$ (*triangles*) in the subdiffusive hydration layer. *Broken* and *solid* lines show the fitted central Gaussian and fitted exponential tail, respectively.

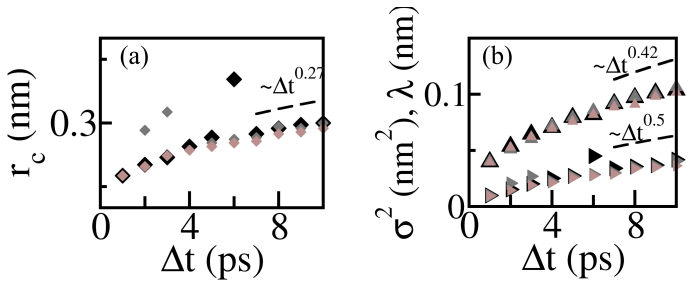

Figure S10: (a) Variation of r_c of $G_T(r, \Delta t)$ with time Δt for different n_{HA5} in the hydration layer. (b) σ^2 vs Δt (►) and λ vs Δt (▲) for different n_{HA5}. *Black*, *gray*, and *Brown* symbols imply n_{HA5}=10,30 and 50 respectively.

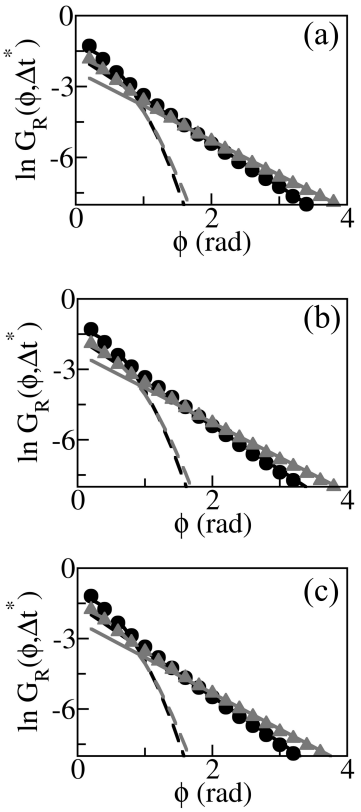

Figure S11: $\ln G_R(\phi, \Delta t^*)$ vs ϕ plot for (a) n_{HA5}= 10, (b) n_{HA5}= 30, and (c) n_{HA5}= 50 at $\Delta t^* = 0.5$ (*circles*) and $\Delta t^* = 1.0$ (*triangles*) in the subdiffusive hydration layer. *Broken* line shows central Gaussian, *solid* line implies exponential tail.

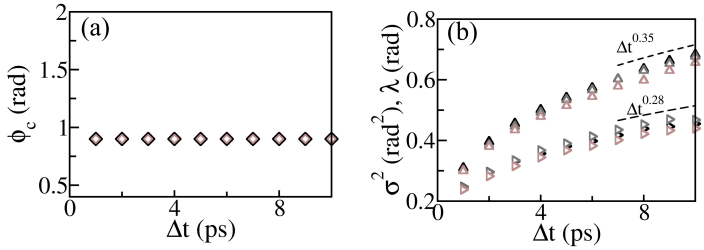

Figure S12: (a) Variation of crossover angle ϕ_c of $G_R(\phi, \Delta t)$ in the hydration layer with time Δt for different n_{HA5}. (b) σ^2 vs Δt ($\triangleright$) and λ vs Δt ($\triangle$) of of $G_R(\phi, \Delta t)$ for different n_{HA5}. *Black*, *gray*, and *Brown* symbols imply n_{HA5}=10, 30 and 50 respectively.

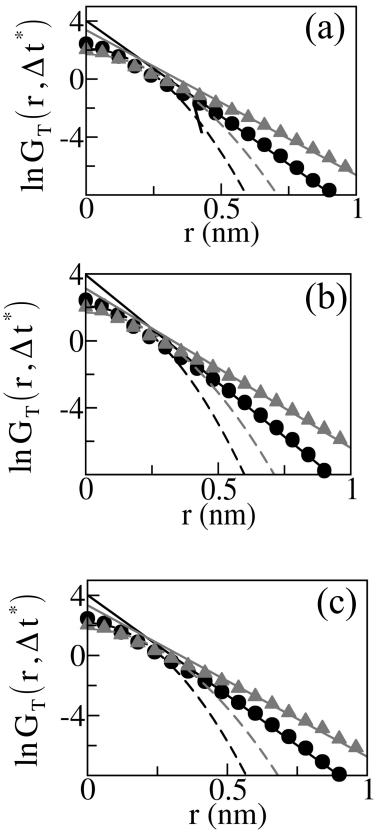

Figure S13: $\ln G_T(r, \Delta t^*)$ vs r plot for (a) N = 1, (b) N = 5, and (c) N = 10 at $\Delta t^* = 0.5$ (*circles*) and $\Delta t^* = 1.0$ (*triangles*) in the subdiffusive hydration layer. *Broken* line shows central Gaussian, *solid* line implies exponential tail.

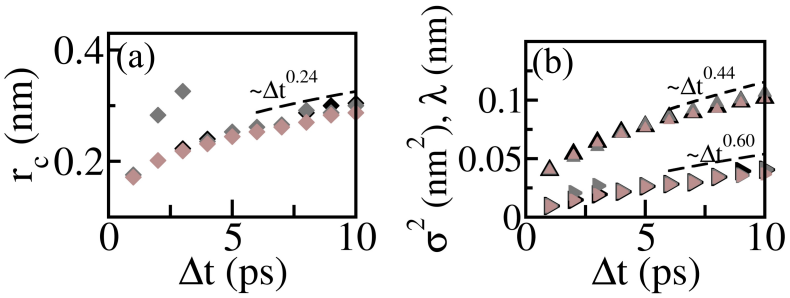

Figure S14: The crossover length r_c of $G_T(r, \Delta t)$ vs time Δt for different N in the hydration layer. (b) σ^2 vs Δt (►) and λ vs Δt (▲) for different N. *Black*, *gray*, and *Brown* symbols imply N=1,5 and 10 respectively.

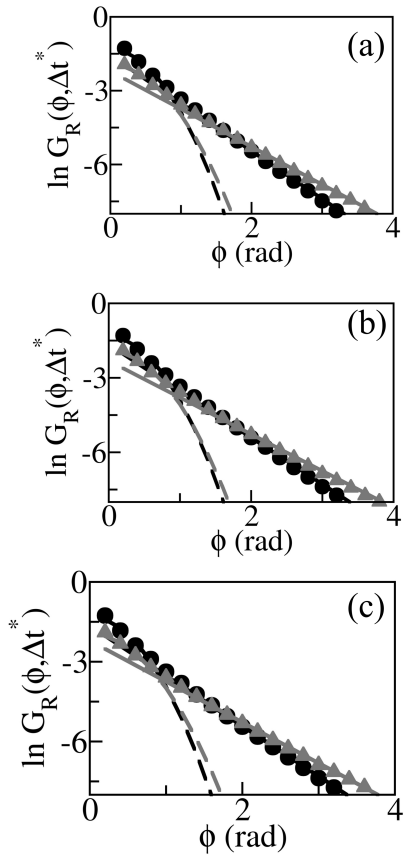

Figure S15: $\ln G_R(\phi, \Delta t^*)$ vs r plot for (a) N = 1, (b) N = 5, and (c) N = 10 at $\Delta t^* = 0.5$ (*circles*) and $\Delta t^* = 1.0$ (*triangles*) in the subdiffusive hydration layer. *Broken* line shows Gaussian tail, *solid* line implies exponential tail.

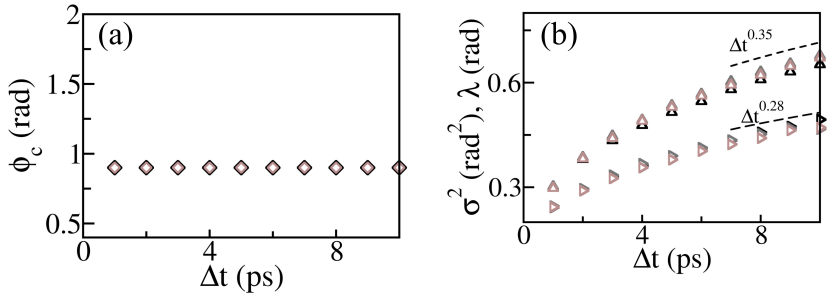

Figure S16: Crossover angle ϕ_c of $G_R(\phi, \Delta t)$ vs time Δt for different N in the hydration layer. (b) σ^2 vs Δt ($\triangleright$) and λ vs Δt ($\triangle$) for different N. *Black*, *gray*, and *Brown* symbols imply N=1,5 and 10 respectively.

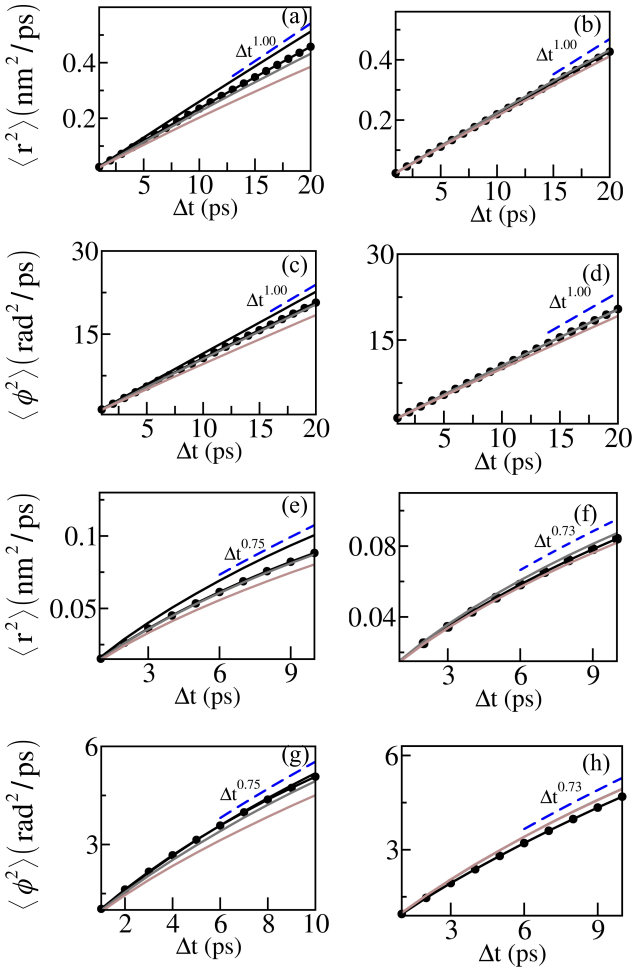

Figure S17: (a)Translational MSD of water $\langle r^2 \rangle$ in the diffusive interface for different n_{HA5} ($n_{HA5} = 0$ (*solid black line*), n_{HA5}=10 (*dotted black line*), n_{HA5} =30 (*gray line*), n_{HA5} = 50 (*brown line*) and (b) different N (N=1 (*dotted black line*), N=5 (*gray line*), N=10 (*brown line*).) (c) Rotational MSD of water $\langle \phi^2 \rangle$ in the diffusive interface for different n_{HA5} ($n_{HA5} = 0$ (*solid black line*), n_{HA5}=10 (*dotted black line*), n_{HA5} =30 (*gray line*), n_{HA5} = 50 (*brown line*) and (d) different N (N=1 (*dotted black line*), N=5 (*gray line*), N=10 (*brown line*)). (e)Translational MSD of water $\langle r^2 \rangle$ in the subdiffusive hydration layer for different n_{HA5} and (f) different N. Same linetypes are used as (a)-(b). (g) Rotational MSD of water $\langle \phi^2 \rangle$ in the subdiffusive hydration layer for different n_{HA5} and (h) different N. Same linetypes are used as (c)-(d).