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Correction: Combined SPT and FCS methods reveal a mechanism of RNAP II oversampling in cell nuclei

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Correction to: *Scientific Reports* <https://doi.org/10.1038/s41598-023-38668-8>, published online 05 September 2023

The original version of this Article contained errors.

In the Results section, under the subheading ‘Characterization of calibrated bead diffusion by ACF analysis of FCS measurements’

“Up to a glycerol content of 50% in water, the AutoCorrelation Function (ACF) analysis yielded an anomalous coefficient value very close to the theoretical value of 1 (between 0.96 and 1.02), as expected for Brownian diffusion (Fig. 1A). Only the diffusion of beads in the solution containing 80% glycerol was described as anomalous, with an alpha of 0.70 ± 0.02 .”

now reads:

“Up to a glycerol content of 50% in water, the AutoCorrelation Function (ACF) analysis yielded an anomalous coefficient value very close to the theoretical value of 1 (between 0.90 and 1.07), as expected for Brownian diffusion (Fig. 1A). Only the diffusion of beads in the solution containing 80% glycerol was described as anomalous, with an alpha of 0.81.”

Under the subheading ‘Characterization of calibrated bead diffusion by SPT analysis’,

“As observed in FCS, a high content of glycerol (80%) resulted in an alpha compute/d at 0.8, with this apparent anomaly probably associated with a certain heterogeneity of the mixture.”

now reads:

“As observed in FCS, a high content of glycerol (80%) resulted in an alpha computed at 0.72, with this apparent anomaly probably associated with a certain heterogeneity of the mixture.”

In addition, Figure 2A was inadvertently identical to Figure 1A. The original Figure 2 and accompanying legend appear below.

Furthermore, Table 1 contained erroneous values. The original Table 1 and accompanying legend appear below.

Finally, Supplementary Table 1 contained erroneous values. The original Supplementary Table 1 and accompanying legend appear below.

The original Article and accompanying Supplementary information file have been corrected.

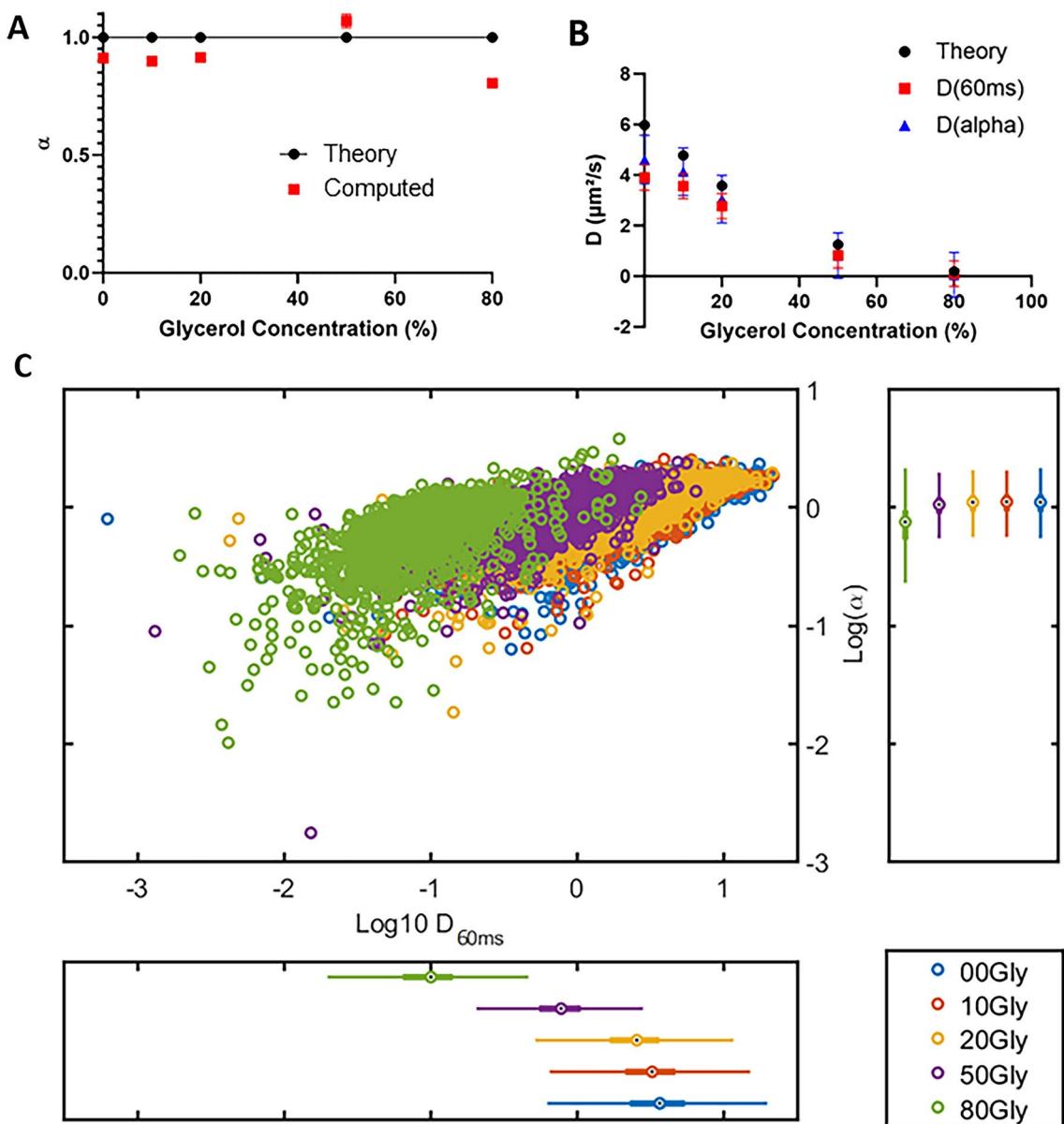


Fig. 2. Characterization of diffusion by Single Particle Tracking. Fluorescent microspheres were resuspended in water/glycerol mixtures, with proportions of glycerol ranging from 0 to 80%. SPT acquisitions were performed at a frame rate of 100 Hz. (A) The anomalous coefficient α is provided as a function of the glycerol proportion. Experimental values (red squares) can be compared to theoretical values (black dots). (B) The diffusion coefficients were computed by two methods: D_a (blue triangles) were obtained from the slopes of TEA-MSD (Time Ensemble Average Mean Square Displacement) expressed as log, while $D_{60\text{ms}}$ were calculated for each trajectory during the first 60 ms of its occurrence (red squares). These experimental values could be compared to theoretical values (black dots). Both methods yielded an asymptotic trend for high D values. (C) The distributions of $D_{60\text{ms}}$ and α from the different experimental conditions are represented with log scales in a scatter plot. Distinct subpopulations can be distinguished (green, purple, and yellow dots) within a limited range of parameters, whereas some others overlap (yellow, red, and blue dots). Data come from at least one hundred measurements per condition.

% Glycerol	Calculated D value ($\mu\text{m}^2/\text{s}$) for 40 nm beads	Calculated D value ($\mu\text{m}^2/\text{s}$) for 100 nm beads
0	15.1	5.98
10	12.1	4.78
20	9.05	3.58
50	1.25	1.25
80	0.19	0.19

Table 1. Diffusion coefficient values of glycerol in water solutions, at different ratios, calculated following²⁸.

(A) Anomaly coefficient		Experimental values		Theory
% glycerol	mean α	SD	α	
0	0.96	0.01	1	
10	0.94	0.02	1	
20	0.97	0.02	1	
50	1.02	0.02	1	
80	0.7	0.02	1	
(B) Diffusion coefficient		Experimental values		Theory
% glycerol	mean D_α ($\mu\text{m}^2/\text{s}$)	SD	D ($\mu\text{m}^2/\text{s}$)	
0	20,0	1.7	15.1	
10	12.7	1.8	12.1	
20	10.3	1.5	9.0	
50	2.7	0.8	1.2	
80	0.2	0.2	0.2	

Supplementary Table 1. Comparison of experimental vs theoretical values of anomaly coefficients (A) and diffusion coefficients (B) computed from the ACF of FCS measurements performed with fluorescent beads diffusing in aqueous solutions with different glycerol proportions.

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