Erratum: Polymer Reptation and Nucleosome Repositioning [Phys. Rev. Lett. 86, 4414 (2001)]

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In our Letter we calculated the diffusion constant of a nucleosome along DNA. When inserting numbers into Eq. (3) we used the wrong value of λ: It should read "$(1/7)k_BT/\text{Å}$" instead of "$(1/20)k_BT/\text{Å}$." The loop-formation energy for a ten base-pair loop is then $\Delta U \approx 23k_BT$. This leads to a diffusion constant D of the order of 10^{-17} cm^2/s, a value that is considerably lower than estimated in our Letter. Hence typical repositioning times are of the order of 1 h (instead of seconds as stated in our Letter). This is consistent with the experimental observation that nucleosomes are only partially redistributed after 1 h of incubation at elevated temperatures; cf. Fig. 1 in Ref. [1]. It might also explain the fact that nucleosome mobility is significantly suppressed when the temperature is lowered from 37 to 4 °C; indeed, no redistribution is observed after 1 h, as expected from the fact that $D \propto \exp(-\Delta U/k_BT)$ is $1/13$ for our new estimate of ΔU. Finally, the force required to move a nucleosome at the speed of RNA polymerase elongation is of the order of tens of nN, far more than the forces generated by the motor protein.

We thank I. Kulić for bringing this error to our attention.

[1] G. Meersseman, S. Pennings, and E. M. Bradbury, EMBO J. **11**, 2951 (1992).

