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Allostery through protein-induced DNA bubbles

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The role of DNA is not limited only to carrying and protecting the genetic code. DNA may also play a very active role in its own functions. There is increasing experimental evidence that conformational and dynamic changes of the double strand may direct protein aggregations that are responsible for fundamental functions of DNA. Using a simple reaction-diffusion model, I will show that the coalescence of protein-induced DNA bubbles can mediate allosteric interactions that drive such protein aggregation. We will also discuss how this new type of allostery could regulate (a) the packaging of DNA and (b) the assembly of the transcription machinery.

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