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Spatial autocorrelation in fractal and knotted globules MIRIAM HUNTLEY, EREZ LIEBERMAN AIDEN, Harvard University — The unknotted fractal globule is a model for the state of nuclear chromatin, and has properties that are distinct from those of knotted globules. One crucial property is a stronger correspondence between one-dimensional position along the polymer contour and three-dimensional position in the bulk. Here we introduce measures of spatial autocorrelation, such as Moran's I and Geary's C, and investigate spatial autocorrelation in both fractal and knotted globules. We show that fractal globules exhibit higher levels of spatial autocorrelation at both small and intermediate length scales. This autocorrelation may be relevant to the study of how proteins find their DNA targets inside the nucleus.

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