Supplementary Table 1. Factors affecting MSD calculations

Factors affecting MSD		Causes	Remedies	Ref.
Intrinsic imaging errors	Location Accuracy Errors	Convolution of the sample with the point spread function (PSF)	- Increase number of photons (exposure time) - Use objectives with high N.A. - Account for errors in MSD calculations	*Miné-Hattab et al., 2017;* *Michalet et al., 2012*
	Motion Blur	Repair foci move during exposure time	- Lower exposure time - Account for errors in MSD calculations	*Miné-Hattab et al., 2017;* *Michalet et al., 2012*
Experimental errors	Cell movement	Cell moves and nucleus rotates inside the cell	- Cell immobilization on imaging surface (i.e., agar plugs, ConA or Fibronectin coating) - Inactivation of the pathways responsible for nuclear movements - Registration of cells relative to 'fixed' structures inside the nucleus	*Caridi et al., 2018a,b;* *See et al., 2020;* *Amitai et al., 2017;* *Bystricky et al., 2005;* *Eckert-Boulet et al., 2011*
Heterogeneity of motion	Cell-to-cell variation	Motion is affected by cell cycle phases	- Include live cell cycle markers to distinguish between cell cycle phases, or arrest cells	*Smith et al., 2019;* *Schrank et al., 2018*
	Mixed trajectories	Foci undergo different types of motion over time	- Analyze individual MSD - Apply analysis methods that identify time points associated with each type of motion	*Cho et al., 2014;* *Caridi et al., 2018a,b;* *Lamm et al., 2018;* *Oshidari et al., 2018;*
	Asynchronous motions	Foci initiate modes of motion asynchronously in the cell population and/or for variable durations		
Scale of imaging	Short or long time points of imaging	Different levels of chromatin organization lead to chromatin mobility on different scales	- Image and perform MSD analyses across different time scales	*Bronstein et al., 2009;* *Miné-Hattab et al., 2017;* *Herbert et al., 2017*