

Force exertion on the cell nucleus

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Cells actively generate force on the cell nucleus. In this talk I will focus on force exerted on the nucleus during cell migration. Active gel theory has proved a useful paradigm for modelling the cell cytoskeleton and applications to cell migration. Given that the cytoskeleton is connected to the nucleus via LINC complex proteins, how does this affect the nucleus? Here I will treat the nucleus as a passive mechanical object and describe how it is moved by an active gel model of the cytoskeleton.

I will then consider the deformation of nuclei during cell migration through constrictions. Starting from experimental images and a simple elastic model of the nucleus I will describe the forces required to deform the nucleus to pass it through constrictions smaller than its usual size.