



REGIONAL CENTRE FOR BIOTECHNOLOGY
Journal Club

**“Cytoplasmic Volume Modulates Spindle Size During
Embryogenesis”**
Science 342, 856 (2013)

Megha Kumar, PhD

Wednesday, 19th February 2014 ,4.00 PM
Seminar room

Abstract

Rapid and reductive cell divisions during embryogenesis require that intracellular structures adapt to a wide range of cell sizes. The mitotic spindle presents a central example of this flexibility, scaling with the dimensions of the cell to mediate accurate chromosome segregation. To determine whether spindle size regulation is achieved through a developmental program or is intrinsically specified by cell size or shape, we developed a system to encapsulate cytoplasm from *Xenopus* eggs and embryos inside cell-like compartments of defined sizes. Spindle size was observed to shrink with decreasing compartment size, similar to what occurs during early embryogenesis, and this scaling trend depended on compartment volume rather than shape. Thus, the amount of cytoplasmic material provides a mechanism for regulating the size of intracellular structures.
