

Abstract for an Invited Paper
for the MAR10 Meeting of
The American Physical Society

Coordination of cell growth and division in normal and cancer cells

SCOTT MANALIS, MIT

The replication and segregation of the genome (the cell cycle) and the increase in bio-mass of individual cells (cell growth) must be coordinated in all cells, but the mechanism(s) underlying this coordination are poorly understood, particularly in mammalian cells. Many tumor suppressors and oncogenes can alter the normal balance between growth and division and some cancers are characterized by aberrant cell size. The relationship between the cell cycle and cell growth is fundamental to cell proliferation and needs to be understood if we are to fully understand how cell proliferation is altered in cancers. We are developing microfluidic approaches that will enable precise measurements of mass, volume and density to be correlated to molecular measurements during the cell cycle. In this talk, I will present recent progress towards achieving this goal and describe how such approaches are being used to investigate the coordination of cell growth and division in normal and cancer cells.