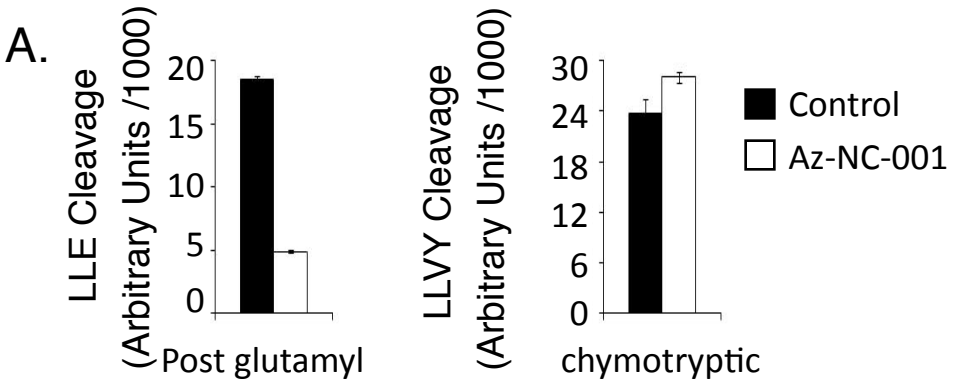
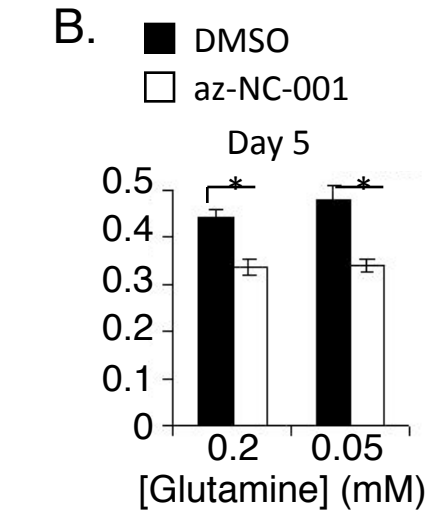
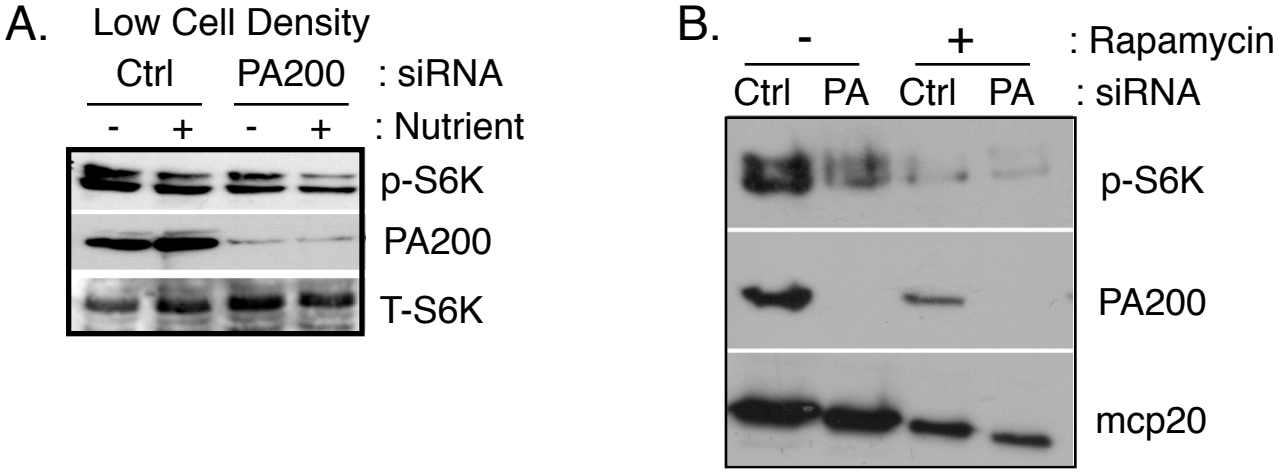


SI Figure 1. A. Specific Inhibition of LLE cleavage with Az-NC-001. Untransfected HeLa cells were plated at 1.5million per dish (15 cm diameter) and treated immediately with 4 micromolar az-NC-001 or the inactive variant D-Nle-az-NC-001 (control) for 48 hours. Cells were harvested and frozen for storage before post glutamyl and chymotryptic proteasome activity was assessed as described in the methods.



SI Figure 1.B. Long-term inhibition with Az-NC-001 impairs growth of HeLa cells. Untransfected HeLa cells were plated at $1x10^6$ cells per 10cm diameter dish in complete growth media in the presence of az-NC-001 at 4uM or DMSO. After 48 hours, cells were harvested and replated at 10,000 cells per well of a 96 well plate in fresh media containing inhibitor az-NC-001 or DMSO for 5 days. Cell growth was measured by Promega Proliferation Kit (MTS) (**left**). *p<0.005



SI Figure 2. At low cell density, p-S6K does not respond to media replacement. HeLa cells were transfected with PA200 specific siRNA or non-specific (Ctrl) siRNA. **A.** Immediately after transfection cells were plated ($3.33x10^4$ cells/cm^2) in fresh media containing 2mM glutamine. Nutrients were replenished by daily replacement of media (Nutrient +) or cells were left in the same media (Nutrient -). Three days after transfection, cells were harvested for western blot analysis. T-S6K is total S6 kinase. **B. Rapamycin diminishes p-S6K levels in PA200 knockdown cells.** One and a half hours prior to transfection, cells were treated with 100nM rapamycin or vehicle. After transfection with control siRNA or PA200 siRNA, cells were plated at 1.5 million cells per 10cm diameter dish and incubated for 48 hours in fresh media containing 2mM glutamine. Cells were then harvested and plated 0.75 million cells pwer well of a 6 well dish in fresh media containing rapamycin or vehicle. After 48 hours, cells were harvested for western blot analysis.

SI Figure 2. Blickwedehl et. al.