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Protein Kinase A (PKA) is a kinase that functions in the regulation of many cellular behaviors, including proliferation and motility. PKA exists in cells as an inactive holoenzyme, consisting of two regulatory subunits and two catalytic subunits. In response to increases in intracellular cyclic adenosine monophosphate (cAMP), the catalytic activity of PKA is activated. The cAMP binds to the two regulatory subunits, leading to a conformational change that releases the catalytic subunits (PKA-C) allowing for the phosphorylation of intracellular substrates. PKA regulates cellular events during growth factor mediated signaling and our laboratory has recently reported that purified PKA-C is directly phosphorylated on tyrosine 330 by growth factor receptor tyrosine kinases. Moreover, endogenous PKA-C was shown to be phosphorylated on Y330 following stimulation of mammalian cells with a variety of growth factors (Caldwell et al., 2011). However, it remains uncertain whether this phosphorylation event occurs before or after activation of the PKA holoenzyme. Therefore, the goal of this research is to determine whether the growth factor-induced phosphorylation of PKA-C occurs following activation of the PKA holoenzyme. To investigate this, we have begun to compare fibroblast growth factor 2-induced phosphorylation of PKA-C in NIH3T3 cells that have been pre-treated with a solvent control or a drug (forskolin) which activates PKA holoenzymes. Western blot analysis using antibodies that specifically recognize Y330-phosphorylated PKA-C or total PKA-C, have initially revealed no difference in the amount of FGF2-induced phosphorylation of PKA-C when PKA is pre-activated with forskolin. We are currently investigating whether activation of PKA prior to stimulation with growth factors alters the kinetics of phosphorylation on tyrosine 330. Future experiments will also utilize *in vitro* kinase assays with purified proteins to determine whether growth factor receptor tyrosine kinases can phosphorylate PKA-C when it is in the holoenzyme complex, bound to the regulatory subunits.