

LECTURE #9: MODULATION OF TRANSCRIPTION BY SIGNALING PATHWAYS

1. General considerations
 - Primary versus secondary response
 - *Cis*-acting sites
 - *Trans*-acting factors

2. Mechanisms of regulation
 - Conformational change
 - steroid hormone and other nuclear hormone receptors
 - Induction of a new partner for heterodimer formation
 - c-Jun & c-Fos; c-Myc & Max & Mad; PPAR γ & RxR
 - Induction of a new co-activator (or co-repressor)

3. Phosphorylation-induced events
 - Recruitment of a co-activator (or co-repressor)
 - CREB
 - Activation domain exposure
 - Ste12; SRF
 - Relief of repression
 - Ste12-Dig1/Dig2-Kss1 complexes; Tramtrack and Yan
 - Targeting for degradation
 - I κ B destruction and NF- κ B activation
 - Ejection from the nucleus
 - NF-AT; Pho4
 - Induced dimerization or heterodimerization
 - STATs; Smad's
 - Displacement of bound factors
 - E2F and Rb
 - Targeting to the nucleus
 - beta-catenin

4. Roles of other post-translational modifications
 - Acetylation, methylation, ubiquitination, SUMOylation, etc.
 - Modifications of pol II subunits and ancillary factors