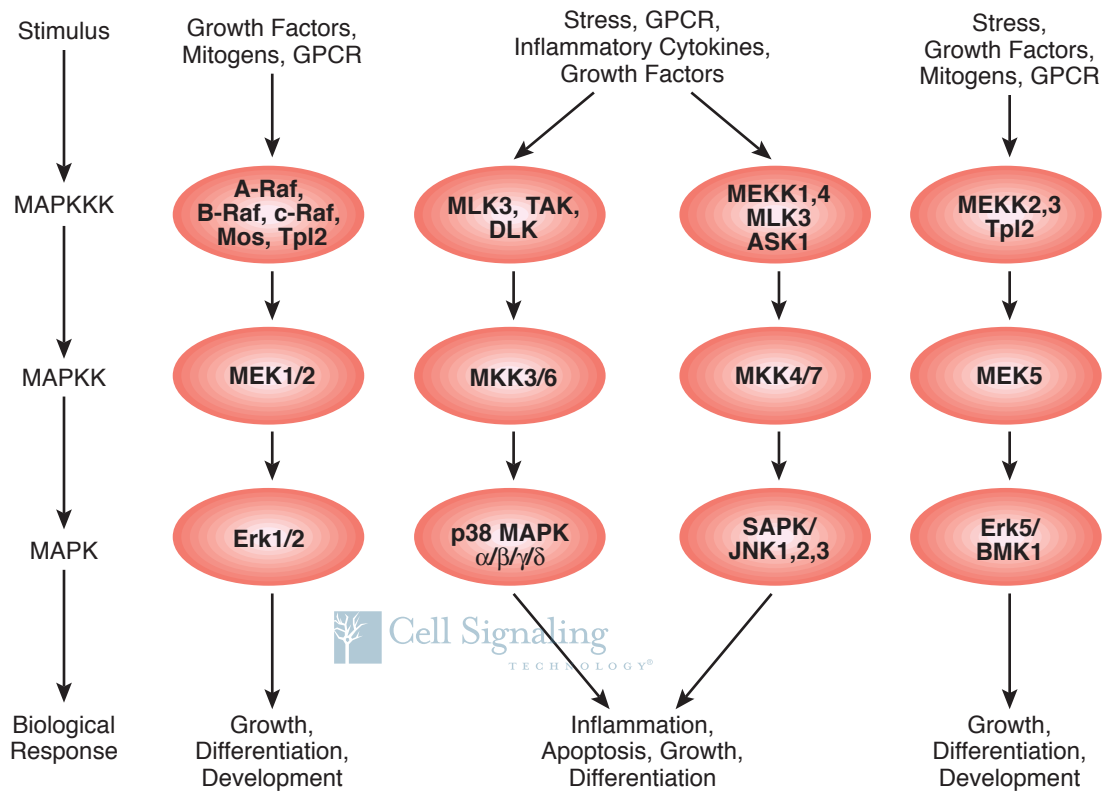


























## Mitogen-Activated Protein Kinase Signaling Cascades



## Signaling Pathways Key

 Kinase	 Direct Stimulatory Modification
 Phosphatase	 Direct Inhibitory Modification
 Transcription Factor	 Multistep Stimulatory Modification
 Caspase	 Multistep Inhibitory Modification
 Receptor	 Tentative Stimulatory Modification
 Enzyme	 Tentative Inhibitory Modification
 Cyclin, pro-apoptotic	 Transcriptional Stimulation
 pro-survival	 Transcriptional Inhibition
 GAP / GEF	 Translocation
 GTPase	 Separation of Subunits or Cleavage Products
 G-protein, ribosomal subunit	 Joining of Subunits
 Acetylase	
 Deacetylase	