

# *Molecular Recognition in Signaling Cascades*

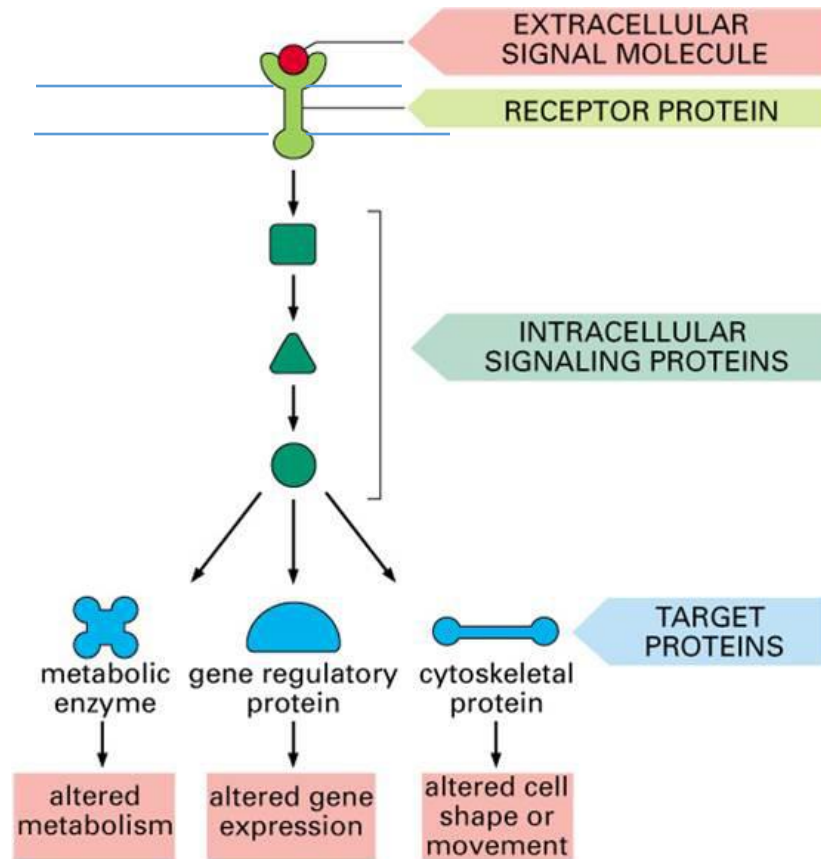
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08-29-2019

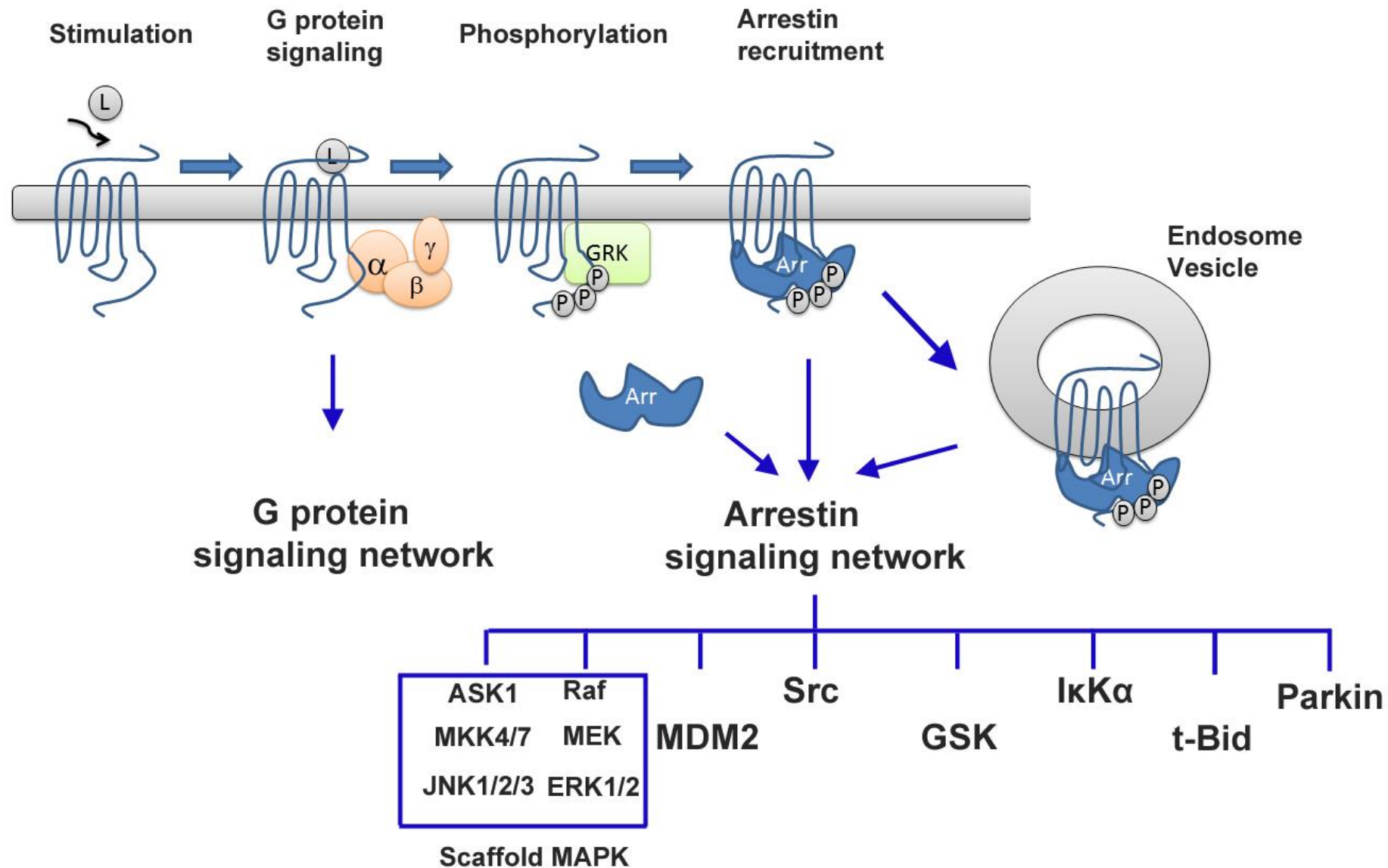
# Cell signaling: a complex system of communication



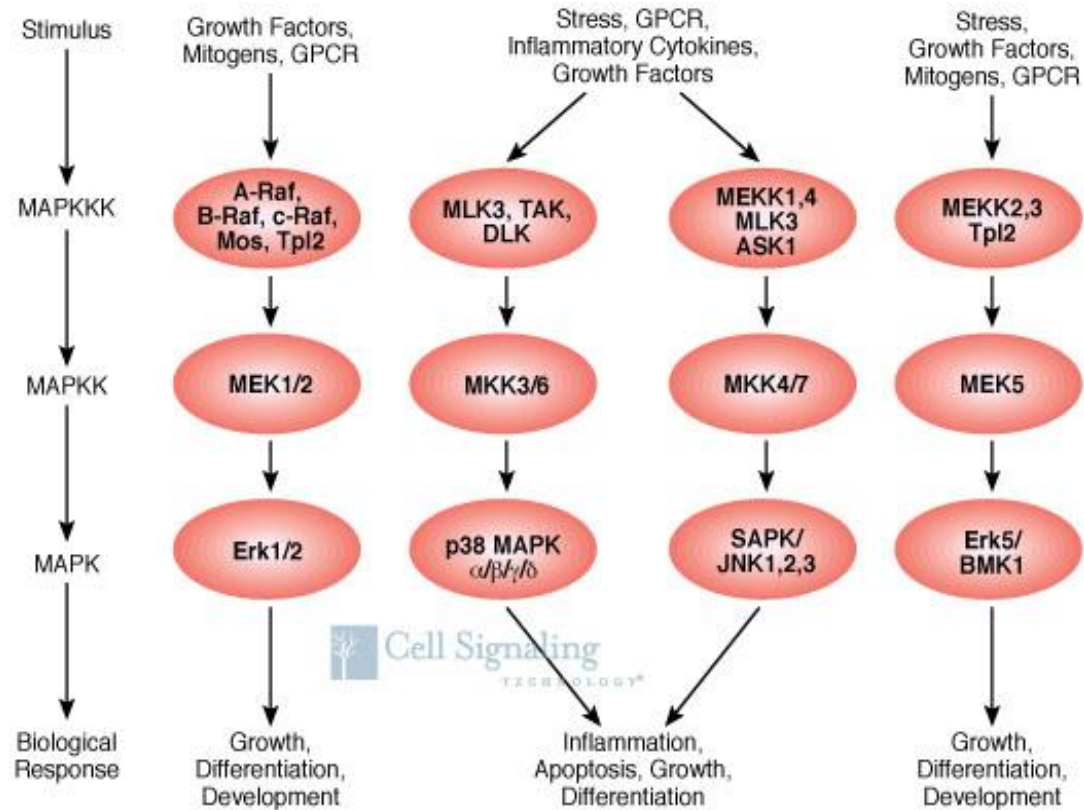
*Molecular Biology of the Cell, 4<sup>th</sup> edition*

- **Receptors:** Cell senses extra cellular signals:  
Hormones, heat, cold, light, osmotic pressure, concentration change of glucose, ions.
- **Signaling proteins:**  
Signal transduction involves molecular modifications: production and degradation of substances, phosphorylation, ubiquitination.....
- **Target proteins:**  
Transcription factors, metabolic enzymes...

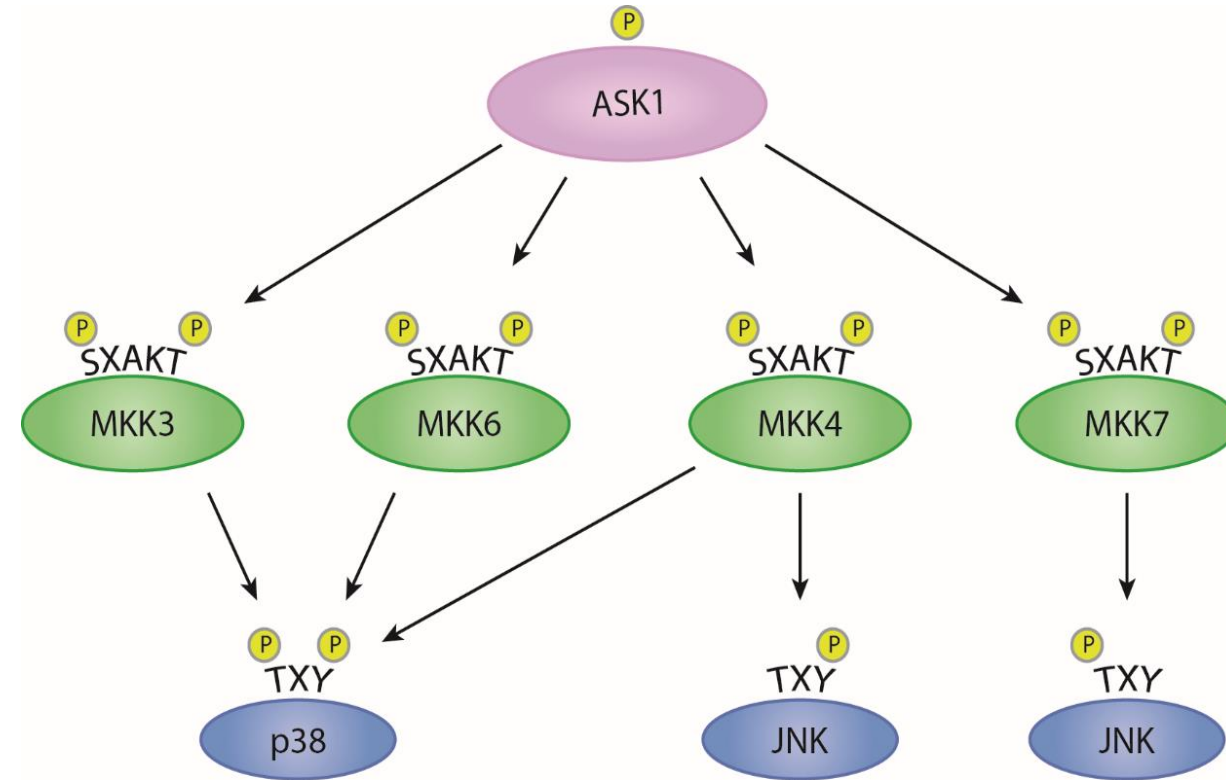
# *G protein coupled receptor (GPCR) and arrestin-mediated signaling*



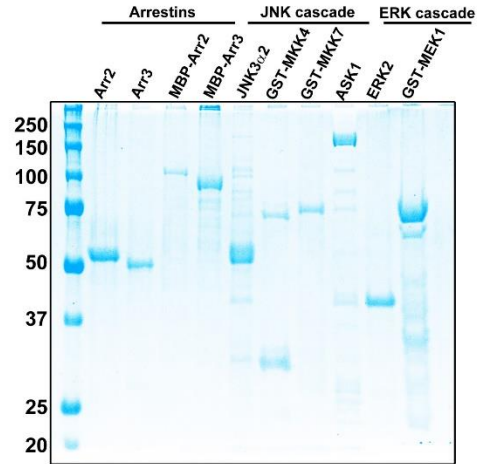
# MAPK cascades (Mitogen-Activated Protein kinase) & ASK1-MAPK cascades



Scaffold proteins



# Research focuses and expertise of our group



**Reconstitution of MAPK cascades: protein purification and characterization**



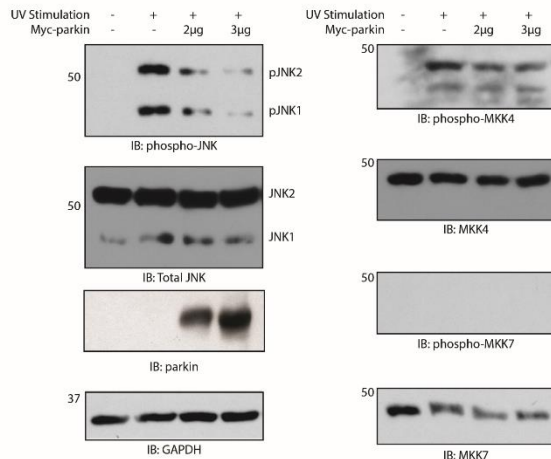
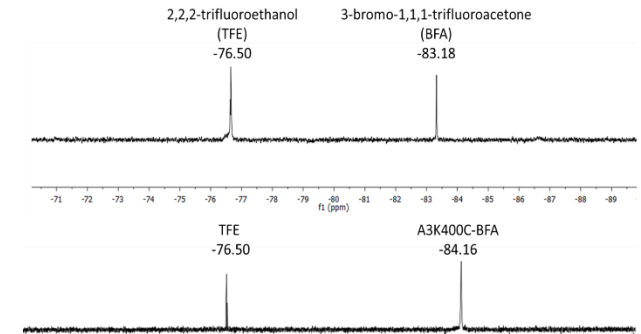
**Cellular based assay**



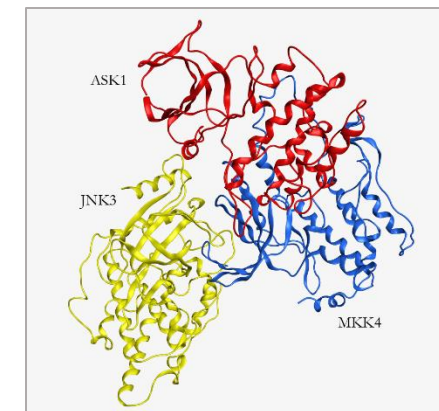
**Structure and function of MAPK cascades**



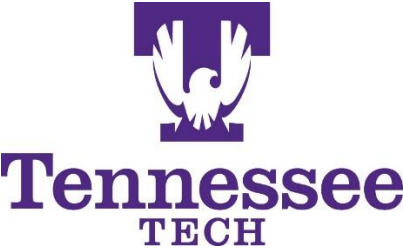
**Biophysical analysis  
Collaborating with  
Dr. William Carroll/Dr. Jeff Boles**



**Computational docking of protein complexes  
Collaborating with Dr. Dereck Cashman**







*Faculty Research Grant, Track II*  
**CISE**



*Student Research Grant*

