

LECTURE #6: STRUCTURE AND REGULATION OF G PROTEINS

1. General considerations
 - The GTP-binding fold
 - GTPases as timers
 - Regulation (GEF's / GDS's, GDI's, GAP's)
2. Translation elongation factors, EF-Tu and EF-G
 - conformational coupling in protein synthesis
 - role of the regulator, EF-Ts
3. Ras and Ras-related GTPases
 - Discovery of Ras
 - Posttranslational modifications of Ras
 - Mechanism of Ras action
 - Regulation of Ras action
 - Other small GTPases (Sar, Arf, Rho, Cdc42, Rab, Rac, Ral, Ran, Rap, etc.)
4. Receptor-coupled heterotrimeric G proteins
 - G α subunits and their function
 - Roles of G $\beta\gamma$ complexes
 - Structure of G $\alpha\beta\gamma$ heterotrimers
 - Regulation (RGS proteins, GoLoco domains)
5. Other classes of GTPases
 - FtsZ
 - Dynamins
 - Septins
 - Tubulins