What are growth factors and what do they do?

- Via transmembrane receptors that transduce growth factor binding to a cascade of intracellular signaling events that culminate in both transcription-independent and transcription-dependent changes in target cell behavior.

- A number of growth factor superfamilies' have been recognized along with their specific transmembrane receptors.

Growth factor families and their receptors

- There are multiple "superfamilies" of growth factors that contain multiple subfamilies of proteins, all with related primary sequences.

EXAMPLES OF "CLASSICAL" GROWTH FACTORS

- EGF - EPIDERMAL GROWTH FACTOR
- FGF - FIBROBLAST GROWTH FACTOR
- NGF - NERVE GROWTH FACTOR
- TGFβ - TRANSFORMING GROWTH FACTOR BETA
- INSULIN & IGF'S (INSULIN-LIKE GROWTH FACTORS)
- PDGF- PLATELET DERIVED GROWTH FACTOR

Growth factors

- Epidermal growth factor
- Endothelial growth factor
- Fibroblast growth factor
- Platelet-derived growth factor
- Nerve growth factor
- Insulin-like growth factors
- Hepatocyte growth factor
- Transforming growth factor
- Interleukins 1-7

- **(D)FETAL GROWTH FACTORS:**
- Secreted by fetal tissue &act by autocrine/paracrine mechanism.
- Most imp is **IGF –I & IGF – II**(Insulin like growth factor).
- *GROWTH PROMOTING-*

  EGF(Epidermal growth factor), **TGFα**(Transforming growth factor) , **PDGF**(Platelet derived growth factor) , **FGF**(Fibroblast like growth factor) , **NGF** (Nerve growth factor).
- *GROWTH INHIBITING-*

  TGFβ, MIS (Mullerian inhibiting substance), **Inhibin.**

Example of a Growth Factor

- **Platelet Derived Growth Factor (PDGF)**
  - made by platelets in blood clots
  - binding of PDGF to cell receptors stimulates cell division in connective tissue
    - heal wounds