Anterior Pituitary Hormones:

- Adrenocorticotropic Hormone (ACTH) – Adrenal Cortex
- Thyrotropic Hormone (TSH) - Thyroid
- Follicle-Stimulating hormone (FSH) and Luteinizing hormone (LH) – Testes or Ovaries
- Prolactin (PRL) – Mammary Glands
- Growth Hormone (GH) – Bones and Muscles

GH being a major hormone affecting Postnatal Growth:

- Promotes bone lengthening
- Anabolic hormone – Increases Lean Body mass, Increases Organ size and function and Reduces Adiposity

Patterns of Release:

- Mean concentration of circulating GH varies throughout life
- Highest mean circulating concentration of GH during Puberty
- Daily secretions are higher in Childhood
- Lower concentrations in adulthood

Growth hormone exerts effects directly and indirectly:

- GH exerts most of its effects through release of IGF-1
- IGF-1 secreted by Liver and enters the blood to act as a hormone
- Growth hormone also stimulates synthesis and release of Insulin-like growth factor binding proteins which bind circulating IGFs providing reservoir of circulating IGFs
Advanced Endocrine Physiology (1st Year University notes)

- Increased Protein synthesis and strength in Skeletal Muscles

Restricted Growth:

- Decreased GH secretion and IGF-1 production
- Abnormally short stature

Childhood Onset growth hormone Deficiency:

- Babies born with GH deficiency have normal new-born size and show no signs of GHD
- Early and later childhood, GHD identified as slow growth compared to other children
- Early diagnosis and treatment may lead to children achieving normal height and development

Treatment:

- Made possible by availability of unlimited amounts of recombinant human growth hormone (rhGH)
- Years of administration of this agent proved its safety and efficacy in therapy of various conditions associated with short stature

Rejuvenating powers of Growth Hormone:

- Stronger bones
- Faster wound healing and recovery
- Younger, tighter skin
- Superior immune function
- Anti-aging
- Fat loss without diet
- Elimination of cellulite
- Higher energy levels, increased performance in exercise and athletic
- Re-growth of heart, liver, spleen, kidneys and other organs shrinking with age
- Greater heart output and lower BP
- Improved cholesterol profile with higher HDL cholesterol and lower LDL cholesterol
- Better kidney function

Detection:

- Detection of GH difficult as of short half-life and pulsatile secretion, pattern with highly variable concentrations
- Cannot differentiate between recombinant human GH and Pituitary-Derived GH
- One study from Early 1990s was based on Anonymous survey reported up to 5% of American high-school students experienced use of GH as an anabolic agent