The Effect of Insulin on Follicles

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Insulin

- **Rapid (seconds)**
  - Increase transport of glucose, amino acids and $K^+$ into insulin sensitive cells

- **Intermediate (minutes)**
  - Stimulation of protein synthesis, glycogen synthase and glycolytic enzymes
  - Inhibition of protein degradation, phosphorylase and gluconeogenic enzymes

- **Delayed (hours)**
  - Increase in mRNA for lipogenic and other enzymes, c-fos
**Insulin**

- **In vitro**
  - telogen onset if insulin omitted from the media
  - needed to maintain anabolic activity of the follicle
- Local injection has no effect