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**Regulation of Cell Function by Enzymes**

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Genomics

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**Top-down versus Bottom-up Approaches to the Study of Physiology**

**Screening or Profiling as a Research Strategy**

**The Study of Gene Transcription: Transcriptomics**

Transcription profiling often identifies large numbers of genes that exhibit altered transcription in response to environmental or other conditions. Transcription profiling reveals that many genes routinely undergo daily cycles of transcription. Manipulations of protein synthesis can be used to clarify gene function.

**Proteomics**

**Metabolomics**

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**Epigenetics**

Two major mechanisms of epigenetic marking are DNA methylation and covalent modification of histone proteins. Epigenetic inheritance can be within an individual or transgenerational. Epigenetic marking plays a key role in tissue differentiation during ordinary development. Evidence increasingly points to epigenetic control of polyphenic development. Epigenetic marking may account for lifelong effects of early-life stress.
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A set of general principles helps elucidate O₂ transport by respiratory pigments.

The shape of the oxygen equilibrium curve depends on O₂-binding site cooperativity.

Respiratory pigments exhibit a wide range of affinities for O₂.

The Bohr effect: Oxygen affinity depends on the partial pressure of CO₂ and the pH.

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