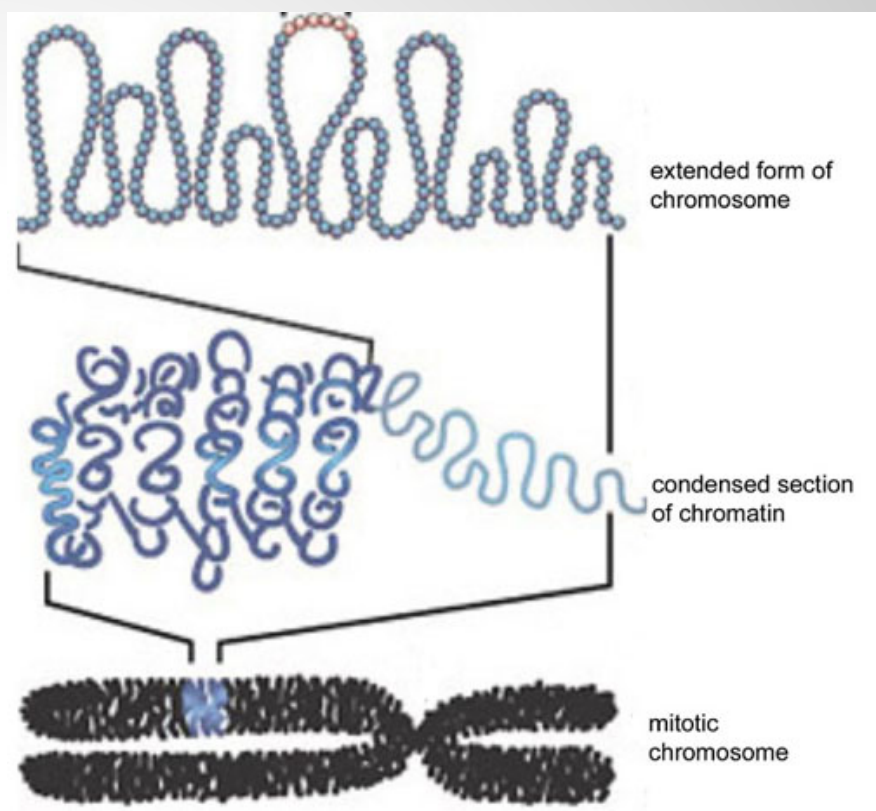
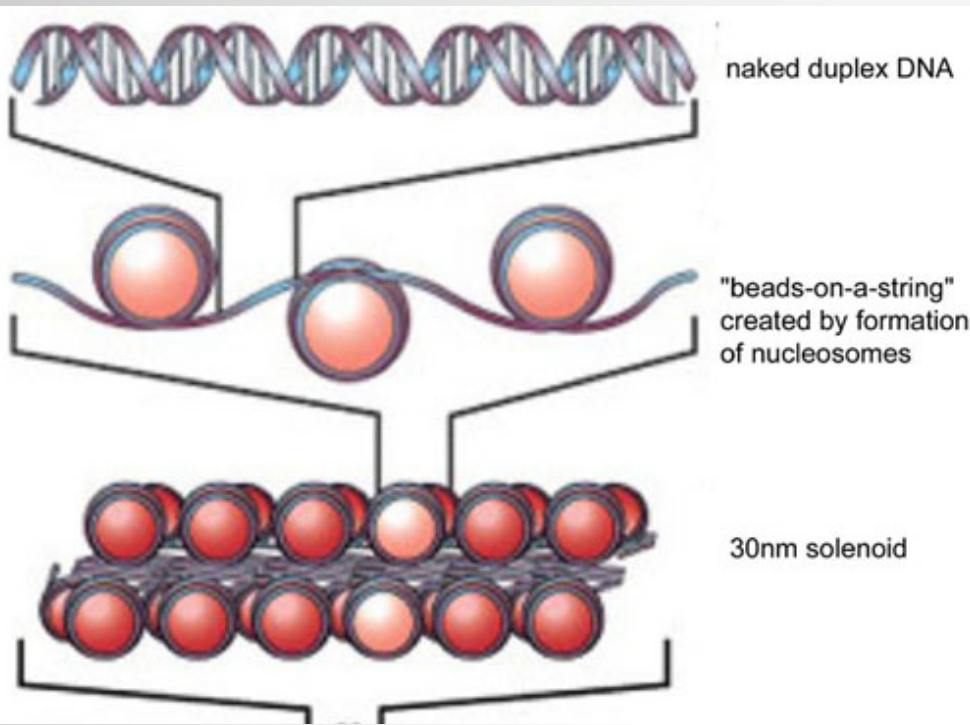
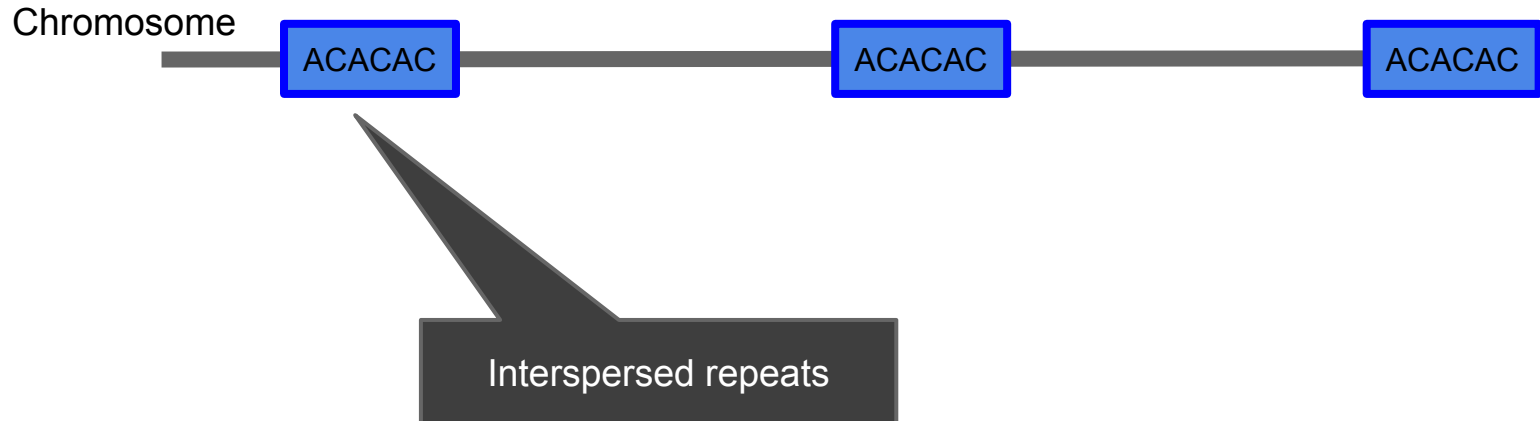
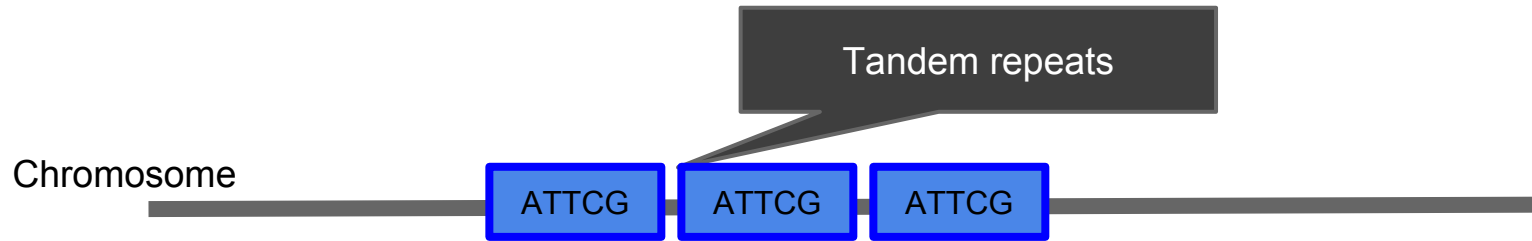


Molecular biology structures

Steven Salzberg

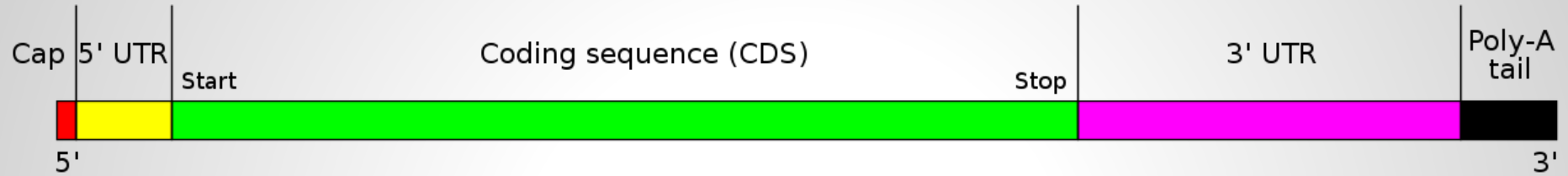
DNA structures

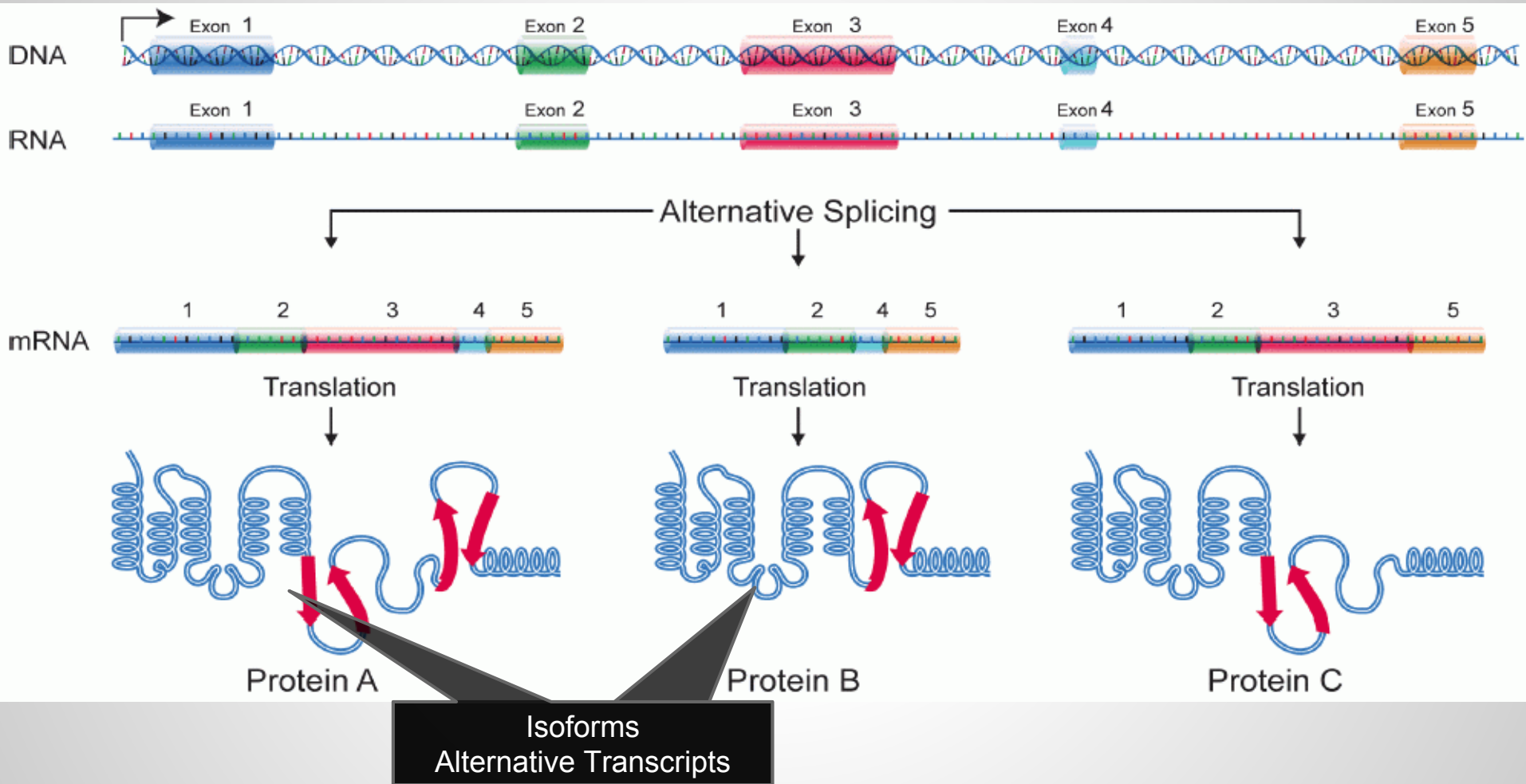




RNA structures

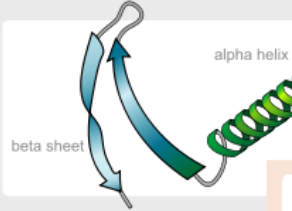
The structure of a typical human protein coding mRNA including the untranslated regions (UTRs)





Protein structures

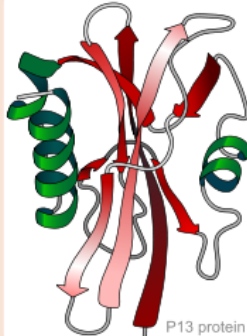
Primary structure amino acid sequence



Secondary structure regular sub-structures

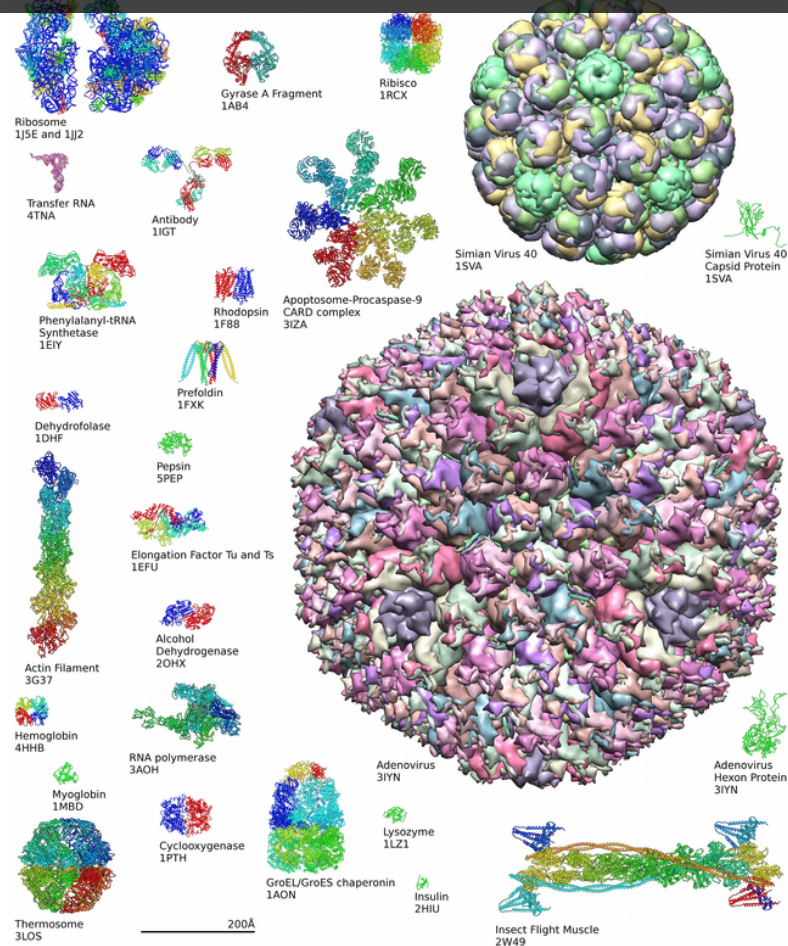


Quaternary structure complex of protein molecules



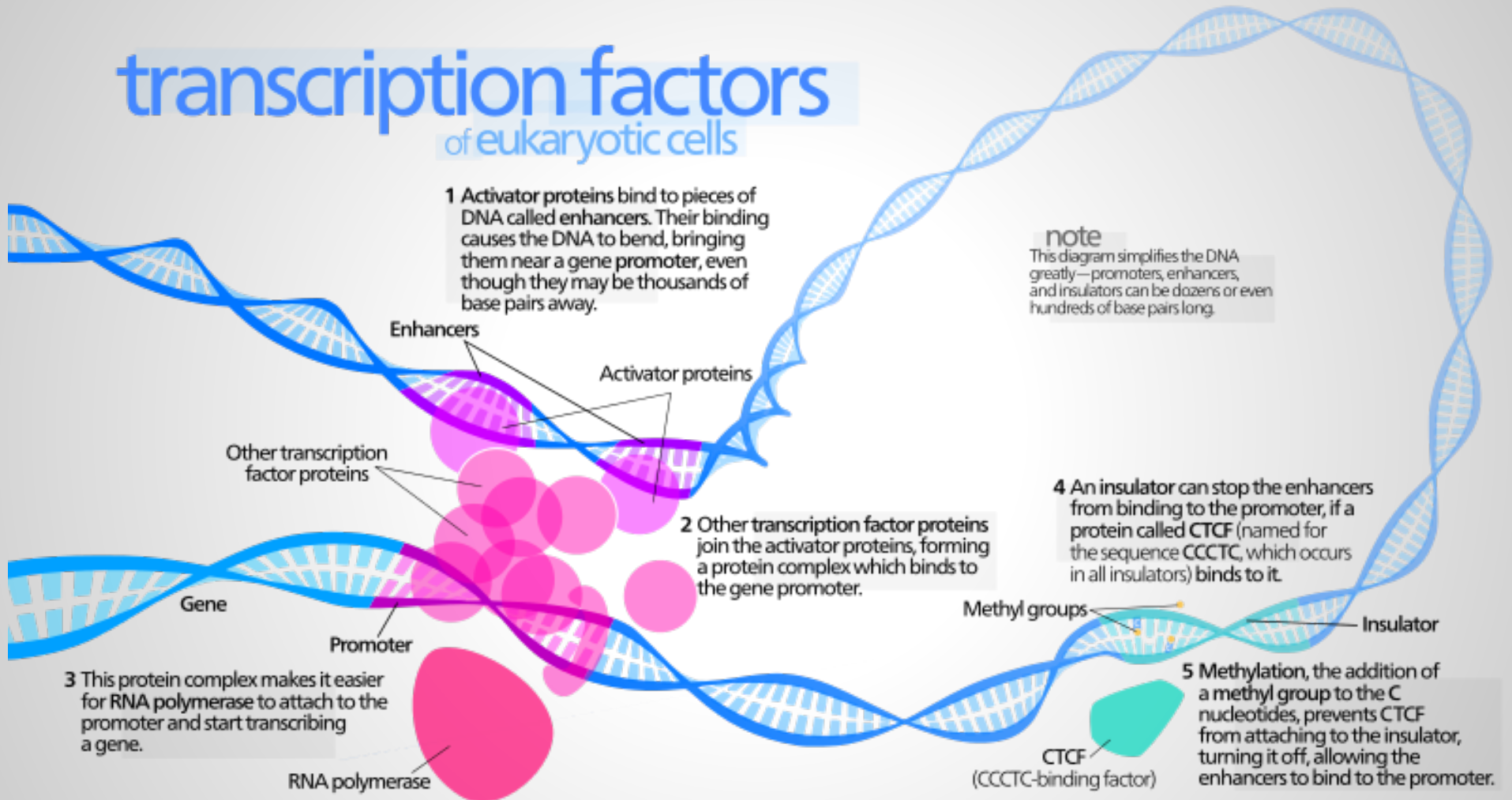
Tertiary structure three-dimensional structure

image credits: http://commons.wikimedia.org/wiki/File:Main_protein_structure_levels_en.svg
http://commons.wikimedia.org/wiki/File:Protein_structure_examples.png



transcription factors

of eukaryotic cells



Epigenetic structures

EPIGENETIC MECHANISMS
are affected by these factors and processes:

- **Development** (in utero, childhood)
- **Environmental chemicals**
- **Drugs/Pharmaceuticals**
- **Aging**
- **Diet**

HEALTH ENDPOINTS

- **Cancer**
- **Autoimmune disease**
- **Mental disorders**
- **Diabetes**

CHROMATIN

CHROMOSOME

DNA

METHYL GROUP

DNA methylation
Methyl group (an epigenetic factor found in some dietary sources) can tag DNA and activate or repress genes.

HIISTONE TAIL

HIISTONE

GENE

DNA inaccessible, gene inactive

DNA accessible, gene active

Histone modification
The binding of epigenetic factors to histone "tails" alters the extent to which DNA is wrapped around histones and the availability of genes in the DNA to be activated.

- ## HEALTH ENDPOINTS

- Cancer
- Autoimmune disease
- Mental disorders
- Diabetes

EPIGENETIC
FACTOR

HISTONE TAIL

DNA accessible, gene active

Histone modification

The binding of epigenetic factors to histone “tails” alters the extent to which DNA is wrapped around histones and the availability of genes in the DNA to be activated.

CHROMOSOME

CHROMATIN

DNA

METHYL GROUP

DNA methylation

Methyl group (an epigenetic factor found in some dietary sources) can tag DNA and activate or repress genes.

Histones are proteins around which DNA can wind for compaction and gene regulation.

GENE

HISTONE TAIL

HISTONE

DNA inaccessible, gene inactive