Centurion
UNIVERSITY

NUTRITIONAL GENOMICS

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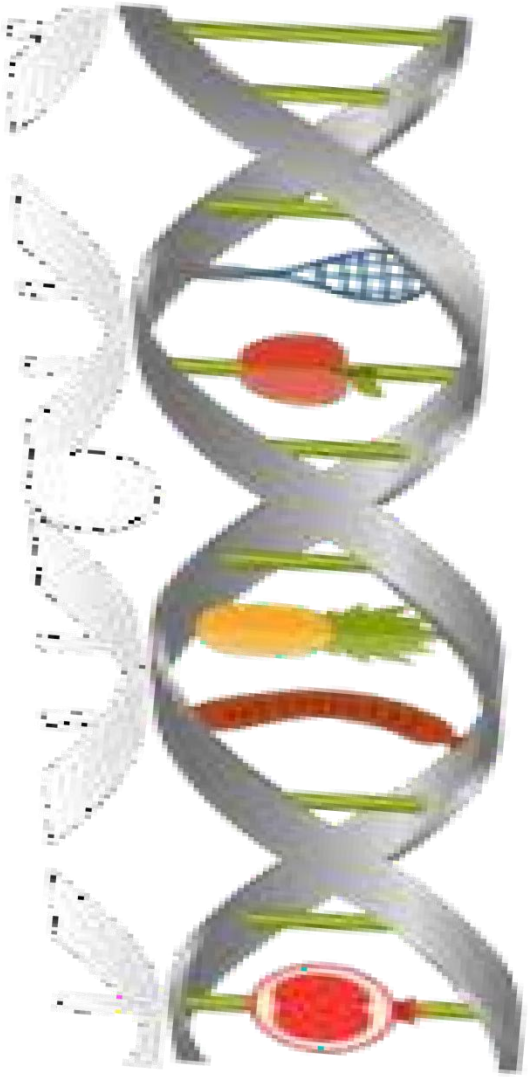
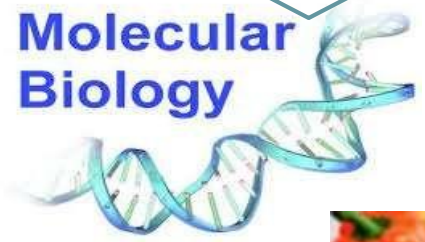


NUTRITIONAL GENOMICS

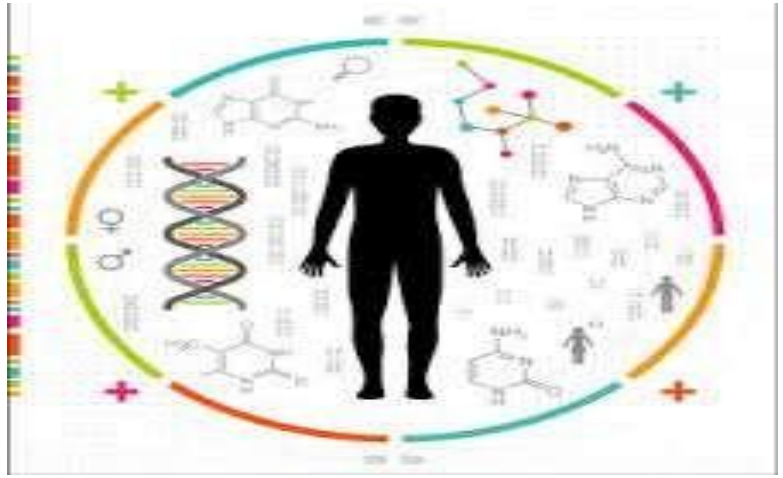
✓ **IT IS NEW AND FAST MOVING FIELD – COMBINES MOLECULAR BIOLOGY, GENETICS AND NUTRITION**

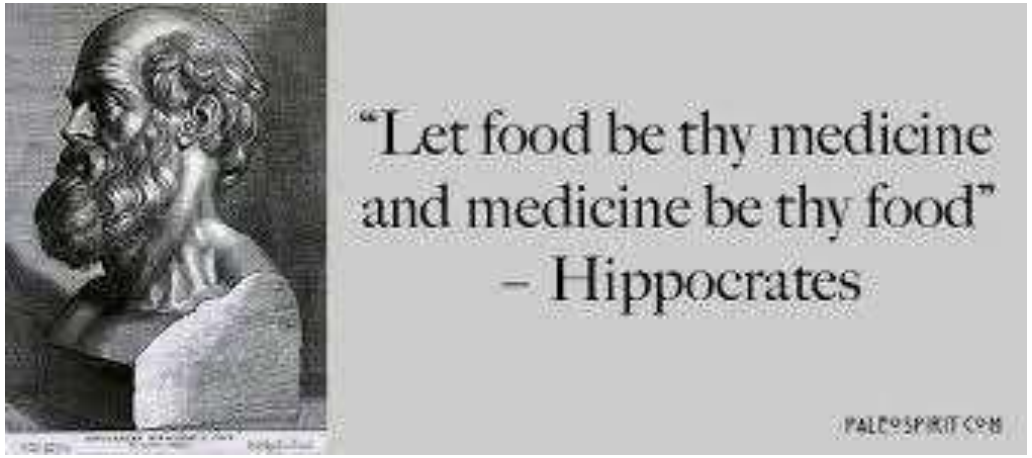


✓ **PROVIDES GENETIC UNDERSTANDING FOR HOW DIET, NUTRIENTS AND OTHER FOOD COMPONENTS AFFECT BALANCE BETWEEN HEALTH AND DISEASE BY ALTERING THE EXPRESSION / STRUCTURE OF INDIVIDUAL GENETIC MAKEUP**

NUTRITIONAL GENOMICS

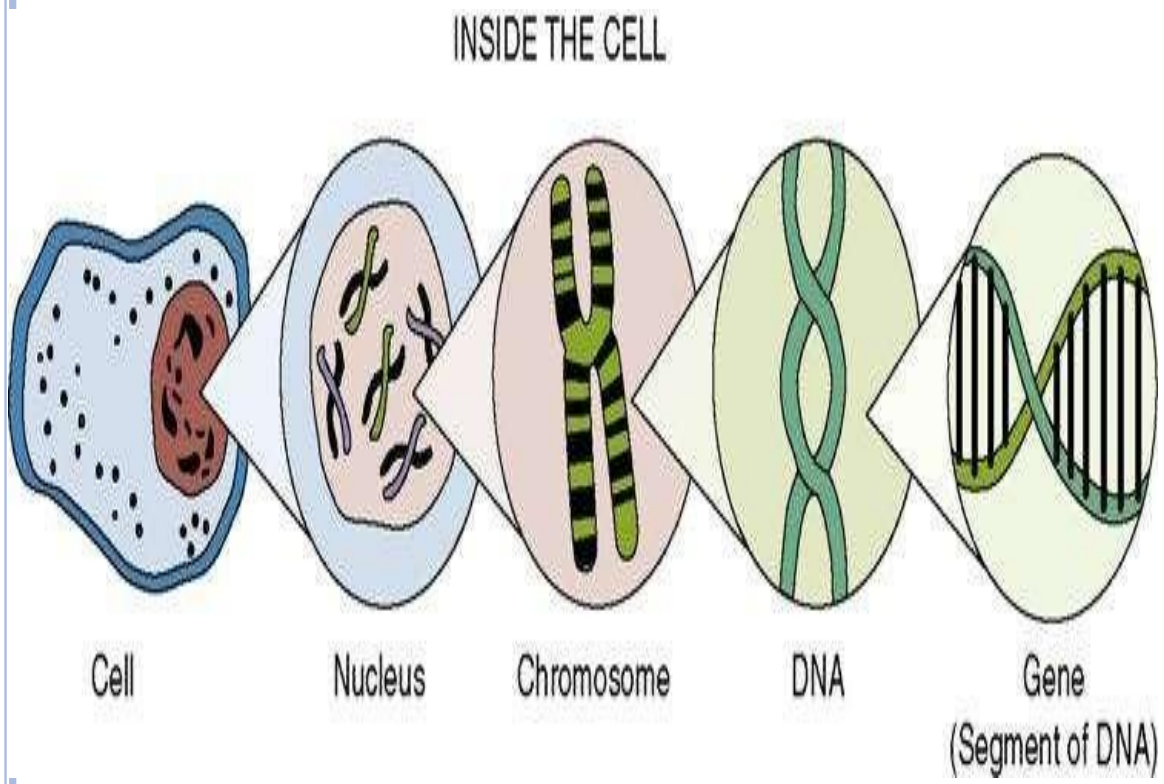
✓Nutritional Genomics Has Transformed Nutrition From Classical To Molecular Level





✓ It Helps Us To Dertermine Which Nutritional Component Are Most Beneficial For Individual's Health.

GENES



- **DNA- Long Thread Like Molecule Provide Blueprint Of Instruction For Our Body's**

50 Trillion Cells

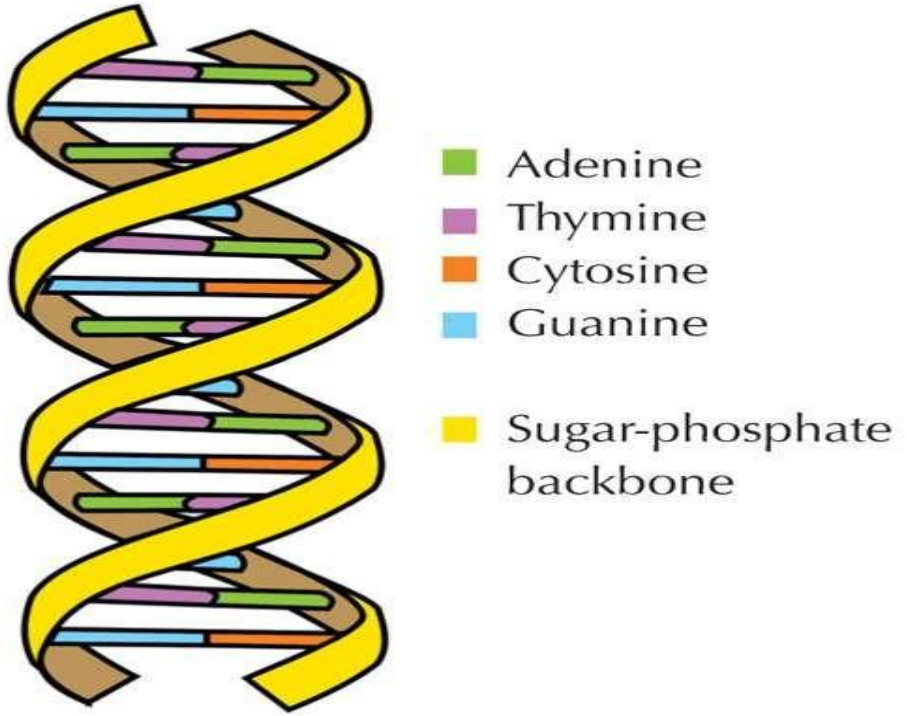
- **DNA → CHROMOSOMES**
- **Chromosomes Located In Nucleus Of Cells**
- **Gene Is A Region / Segment Of Dna That Contain Specific Code**

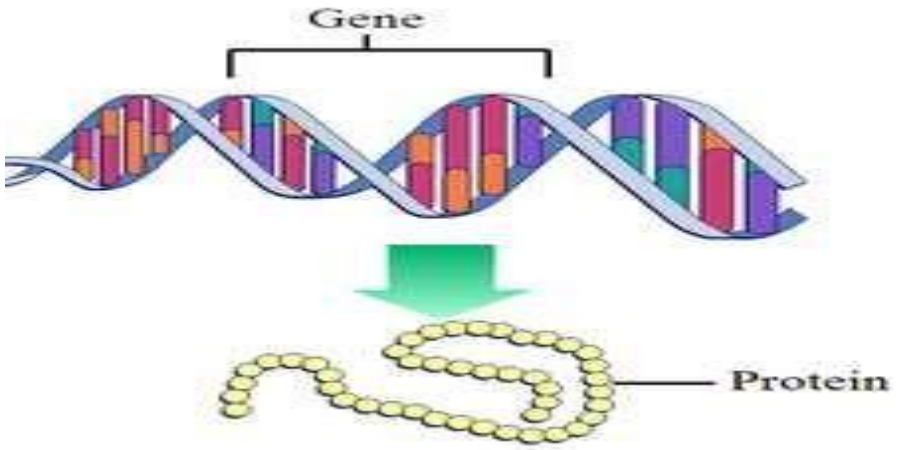
GENOME

- ✓ Gene Sequence Tells Cell How To Make Protein Molecule
- ✓ Protein Control Many Aspects

Cellular Anotomy, Physiology And Metabolism

- ✓ Proteins – Enzymes, Receptors, Peptide Hormones, Structural Building Blocks





- ✓ Genome- Total Set Of Genes In An Organism
- ✓ Human Genome- Consists Of 20,000 Genes

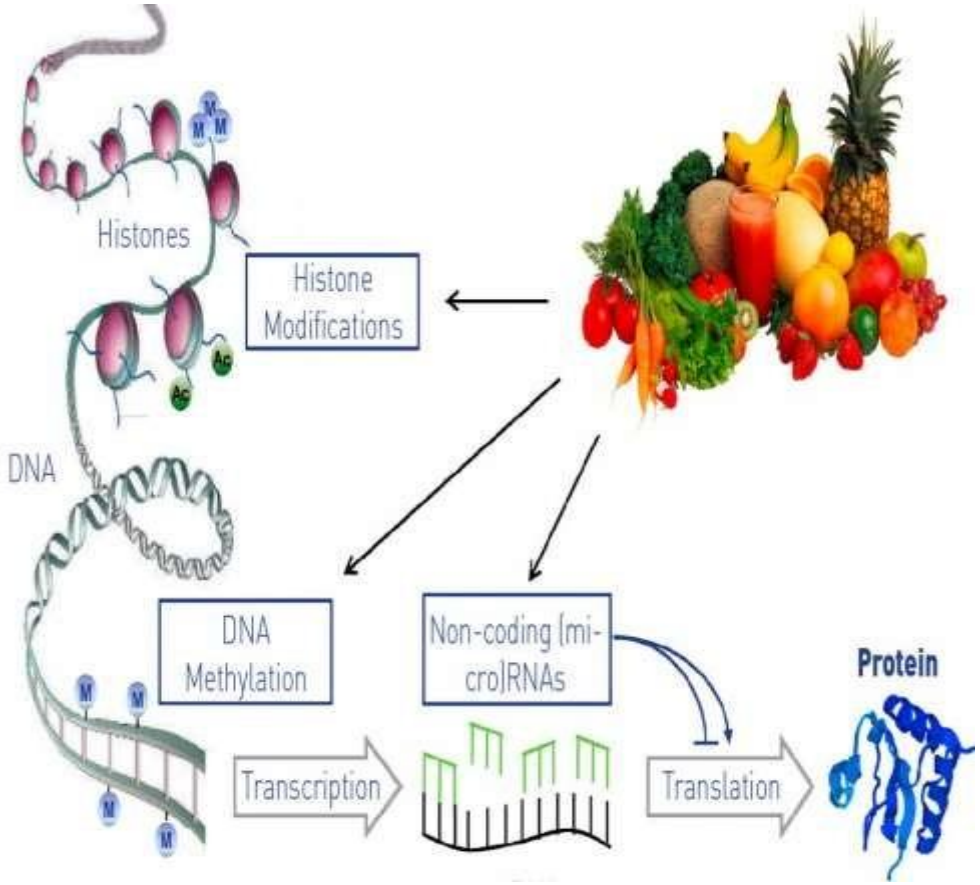
NUTRITIONAL GENOMICS

- **Nutritional Genomics Helps Explain The Different Individual Responses People Have When Given The Same Nutritional Treatment**

- **By Understanding How Each Individual Reacts To Specific Nutrient We Can Enhance Patient Care**

✓**Those Variation In Gene – Explain Why No Two People Are Same And Everyone Is Unique.**

INTERACTION BETWEEN NUTRIENT AND GENE



- 1. DIRECT INTERACTIONS

➢ Nutrients interact with receptor and behave as transcription factors which can

- bind at DNA level, causing acute
  - expression of gene.

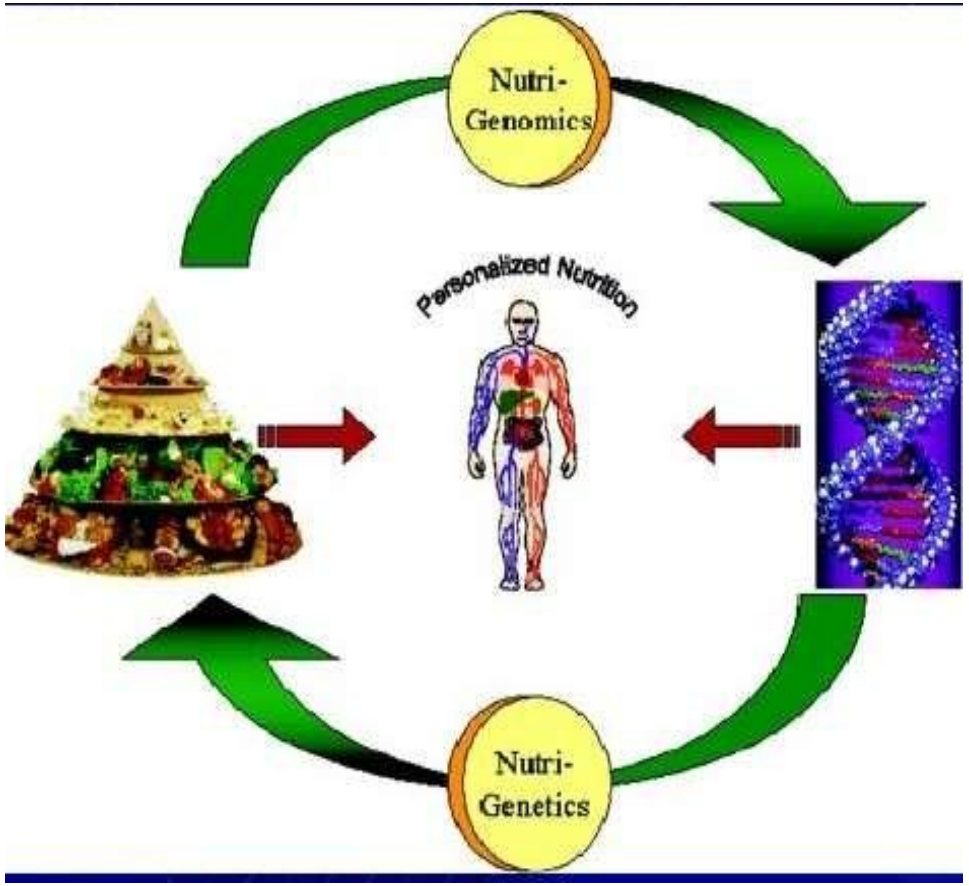
2. EPIGENETIC INTERACTIONS

➢ **Nutrients modify DNA structure –which alters the particular gene expression and become chronic**

CLASSIFICATION

1. NUTRIGENOMICS

- **Focuses on the effect of nutrients and other food components on GENES, PROTEINS AND OTHER METABOLIC PROCESS**



2. NUTRIGENETICS

- **It determines the mechanism by which individual genetic variation affects interaction between diet and disease**

NUTRIGENOMICS

- **From a nutrigenomic perspective- bioactive food components are dietary signals detected by cellular sensory systems, that influence gene expression, protein synthesis and metabolic production**

  ✓ **Genes are dietary targets**

- **Nutrigenomics seeks to examine these dietary signals in specific cells, tissues and helps to understand how it affect gene expression**

Thank You