

NUTRAGENETICS



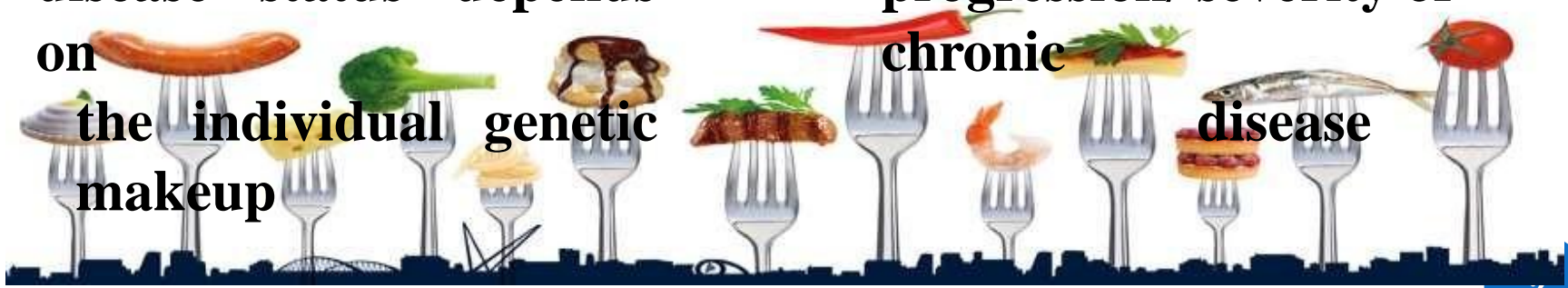
FOUR BASIC TENETS OF NUTRIGENOMICS

1. Improper diets are risk factor for disease

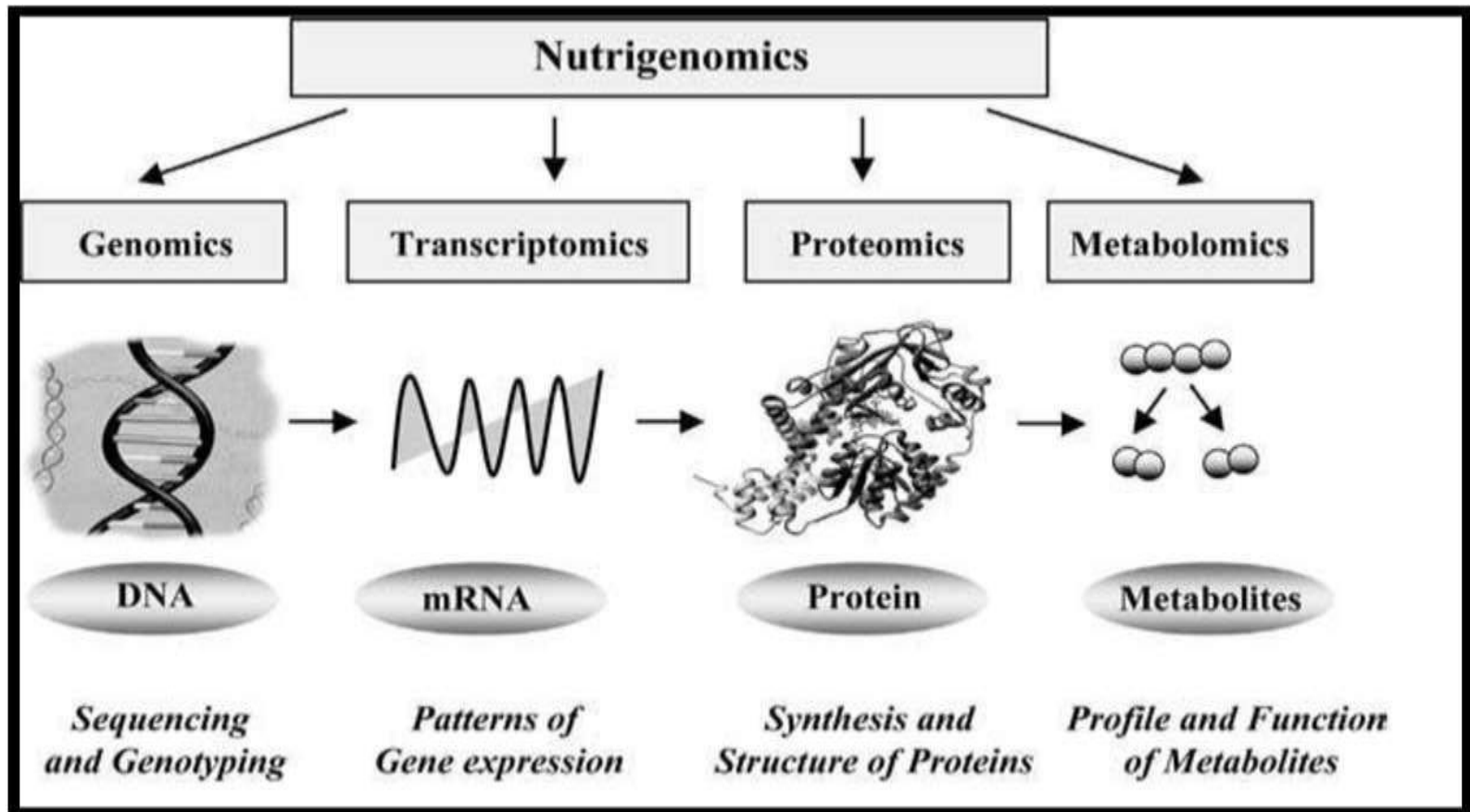
2. Dietary chemicals alter expression/ change gene structure

3. The degree to which the diet influences the balance between healthy disease status depends on the individual genetic makeup

4. Some diet regulated genes likely to play a role in onset, incidence, progression/ severity of chronic disease



TOOLS OF NUTRIGENOMICS



NUTRIGENETICS



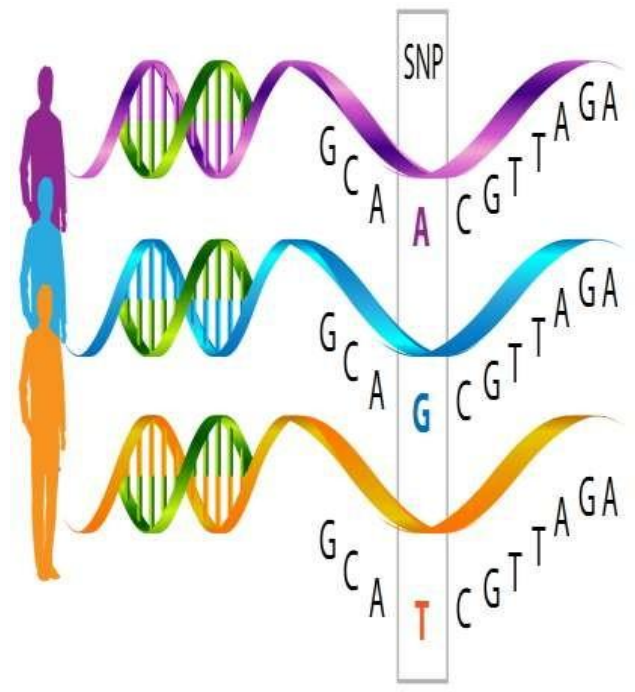
- **NUTRIGENETICS** identifies how the genetic makeup of a particular individual coordinates his/her response to various dietary nutrients
- It reveals why and how people respond differently to same

nutrient

**Ultimate goal-
provide**

GENE VARIATION

- ✓ All humans- 99.9% identical at gene sequence level
- ✓ 0.1% variation in sequence
- SING NUCLEOT POLYMORPHISM**



- ✓ **SNPs**- changes occur at single base
- ✓ **SNPs** make 90% of variation
- ✓ **Identified in human SNP** respond differently to same diet

phenotype

- ✓ Most common

Gene diet disease interaction

- Nutrigenetic diseases 97 per cent of the genes have known to be associated with human diseases result in monogenic diseases.
- Modifying the dietary intake can prevent some monogenetic diseases e.g., in phenylketonuria (PKU) food containing the amino acid phenylalanine,
--including high protein food such as fish, chicken, eggs, milk, cheese, dried beans, nuts and tofu must be avoided
- In case of defective aldehyde dehydrogenase enzyme, alcohol must be avoided
- Patients having galactosemia (lack of a liver enzyme to digest galactose) should avoid diets which contain lactose or galactose, including milk and milk products

Advantages of Nutrigenomics



- ✓ Increased focus on a healthy diet and lifestyle.
- ✓ Increased awareness of risk of certain conditions.
- ✓ Improved health quantity of life.
- ✓ Focus on prevention of diseases.
- ✓ Decreased morbidity and premature mortality.
- ✓ Reduced health care costs.
- ✓ Better understanding of the mechanisms involved in disease susceptibility .



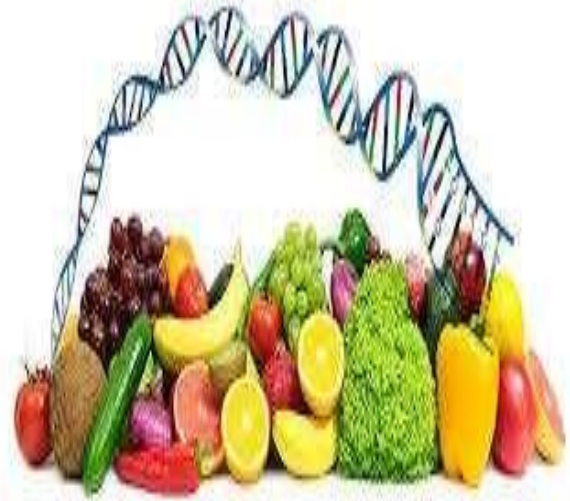
Disadvantages of Nutrigenomics



- Attention is drawn away from other modifiable risk factors.
- Focus only specific nutrients/foods.
- Misleading claims.
- Increased costs associated with personalized diets and designer foods.

CONCLUSION

- Nutritional genomics provides a great opportunity for dietitians as they will be able to provide reliable, science based evidence on how to improve one's gene expression through whole food consumption rather than relying on supplementation.
- Registered dietitians will be able to provide personalised nutrition information to help improve patients' overall health and minimize their risk for disease, which will be more accurate by knowing their unique genetic make up.



Thank You

