

The development of -omics and personalised nutrition

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Overview



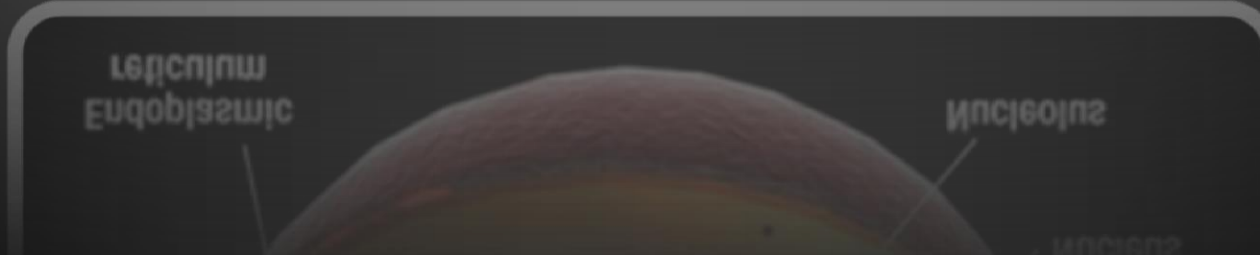
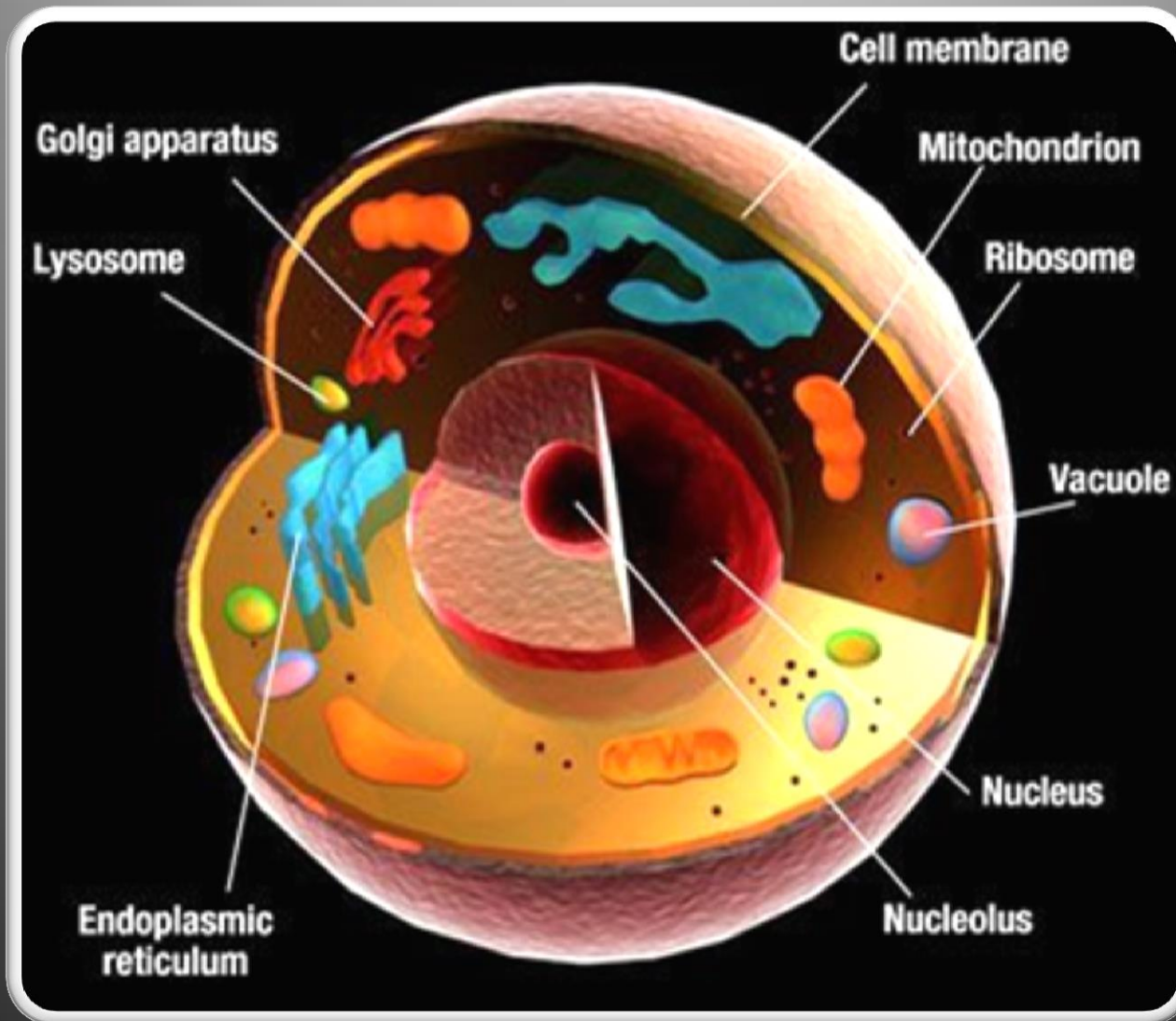
Basic description of DNA

Definitions of –omics sciences

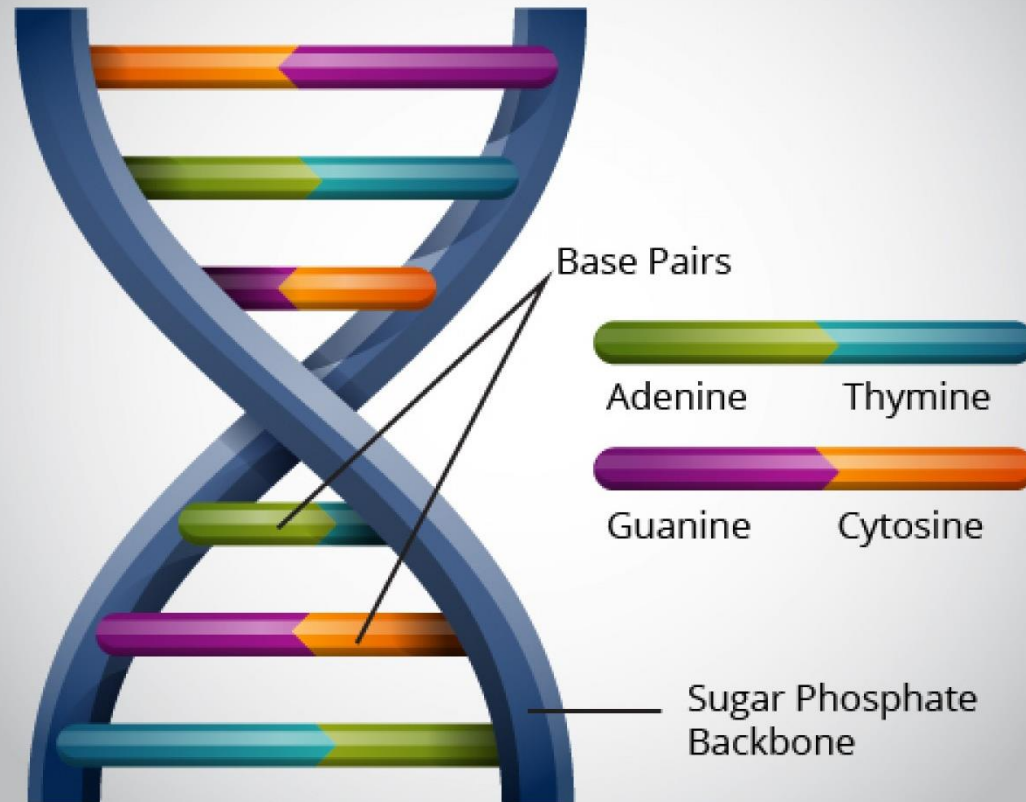
Definition of Personalised Nutrition

Applications of Personalised Nutrition

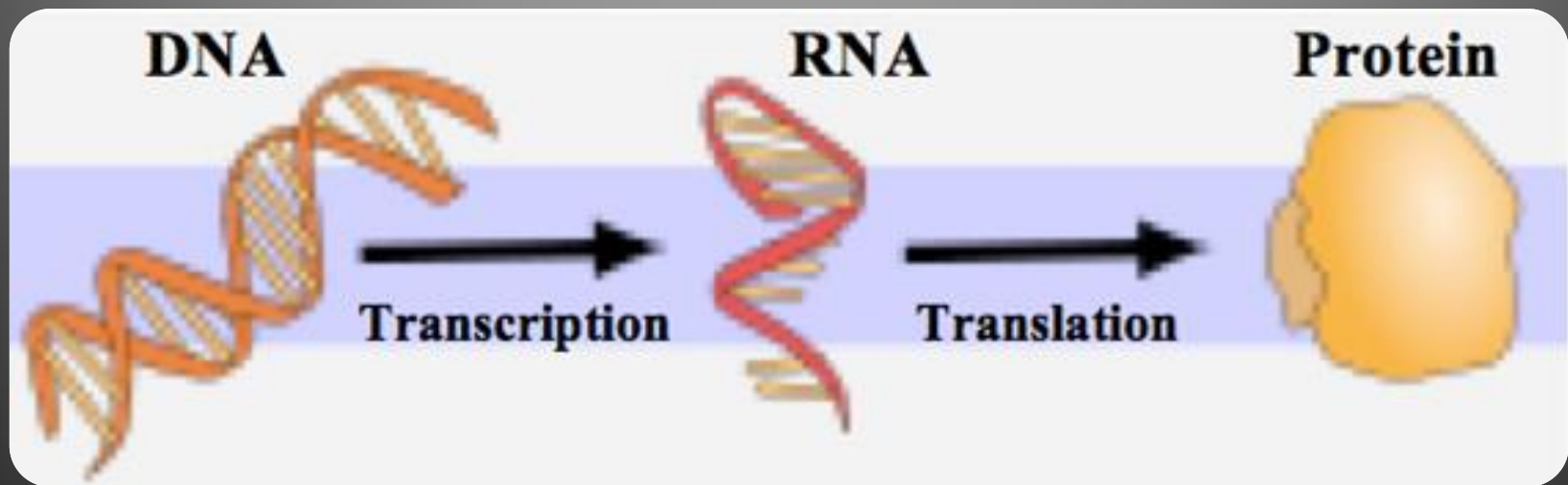
A message to the AfN and registrants

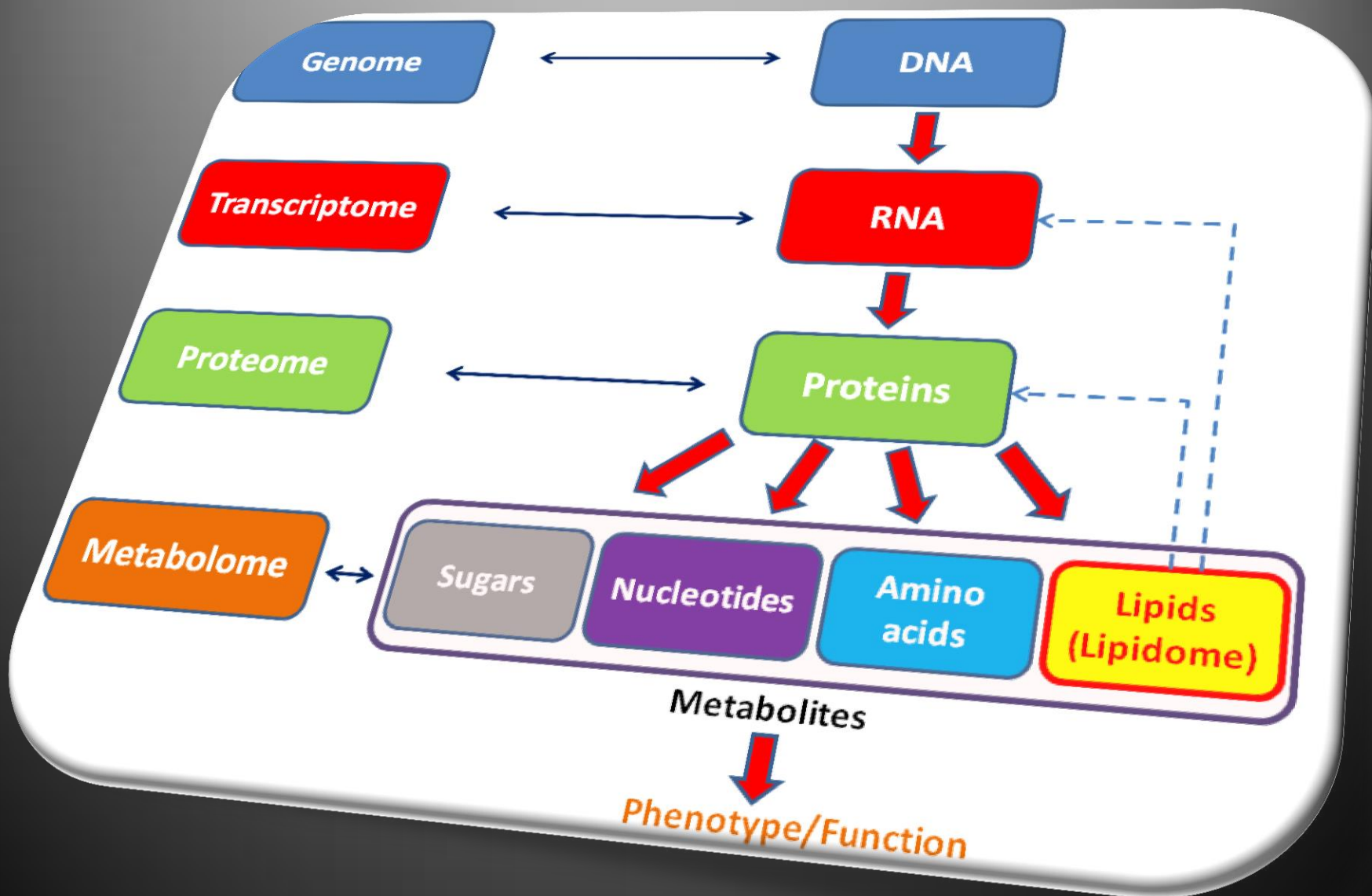


DNA structure



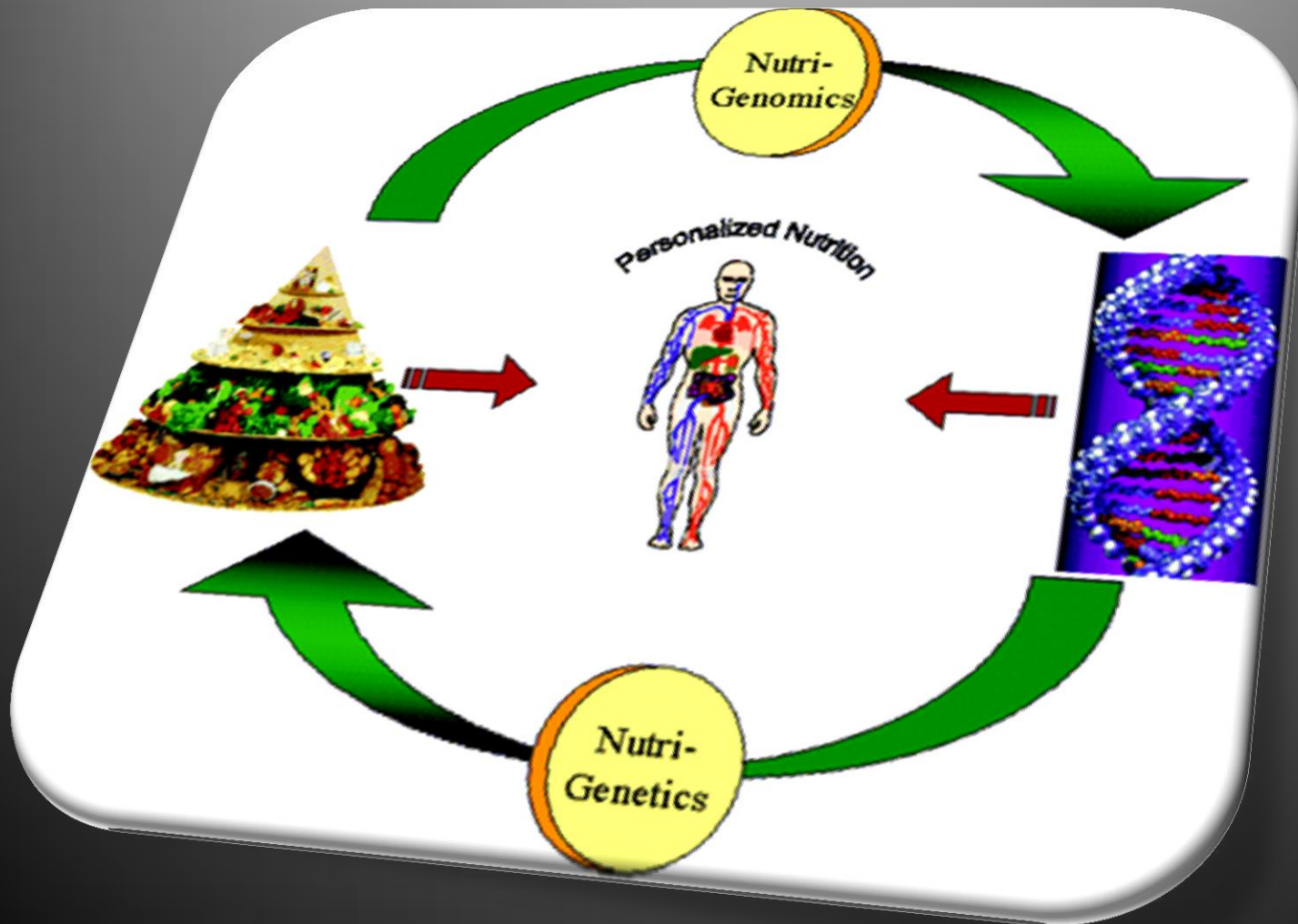
The central dogma of molecular biology



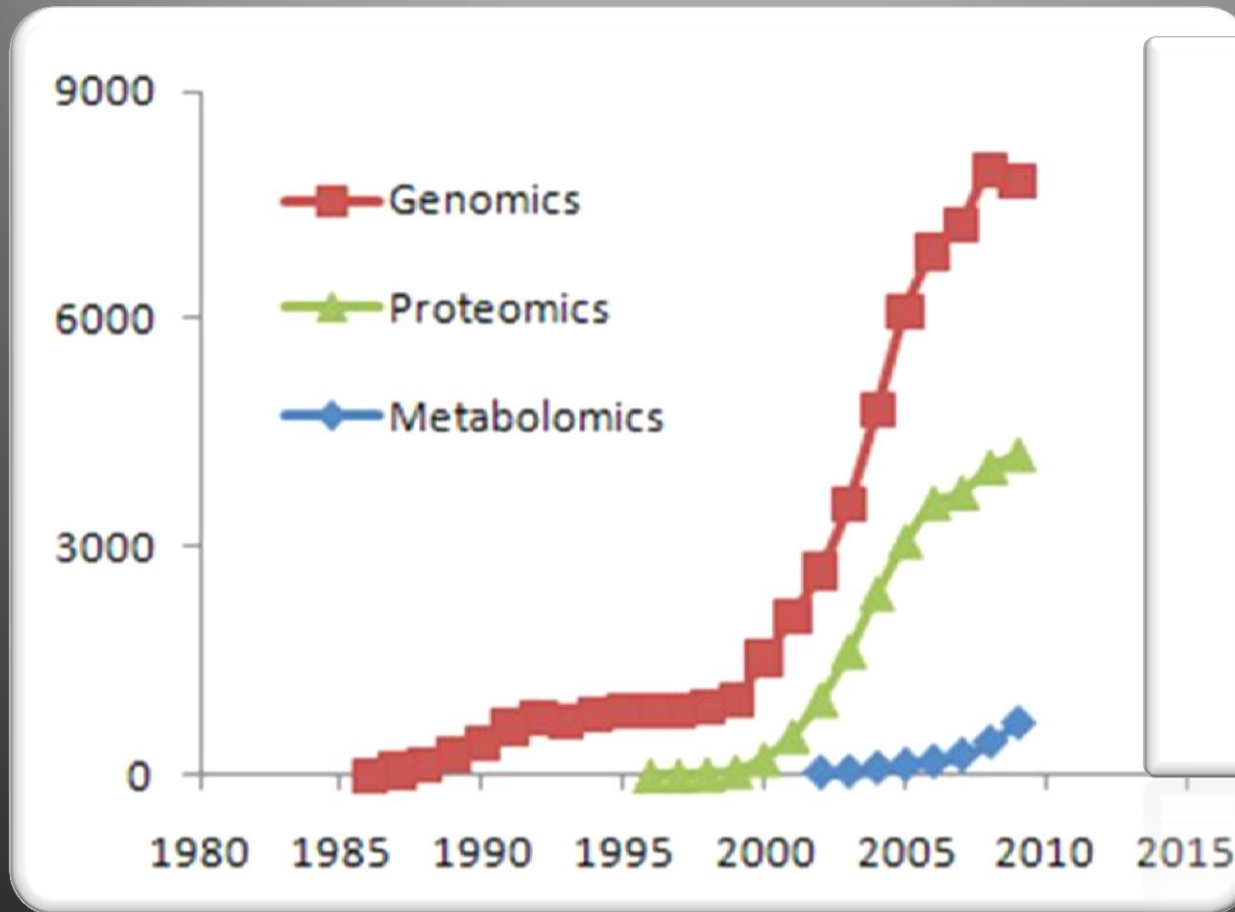




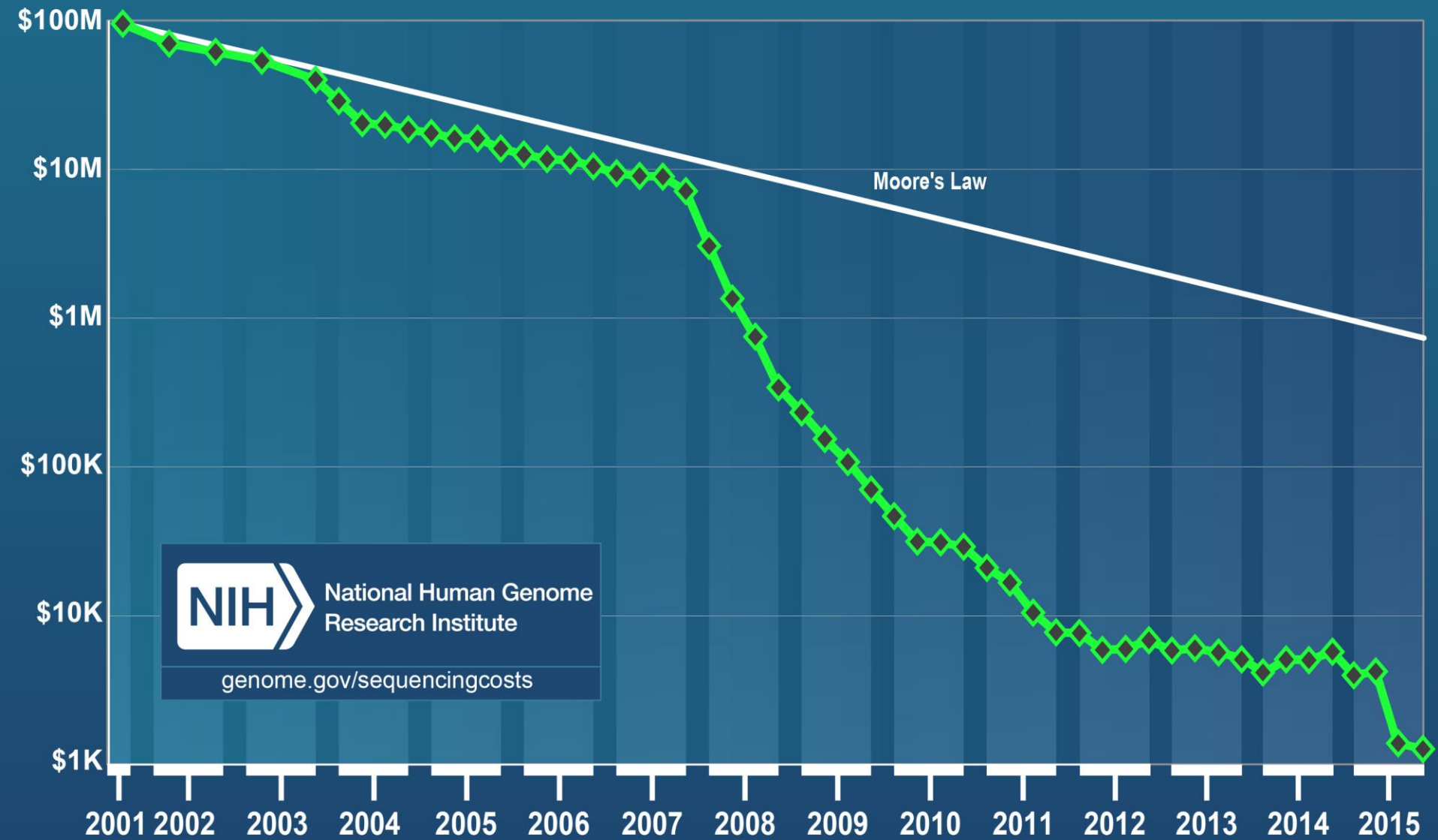
Nutrigenomics & Nutrigenetics: Two Sides of a Coin



Omics publication trends



Cost per Genome





Advances in genetics

MinION



Personalised Nutrition

0

General healthy eating guidelines



1

Individualised dietary analysis



2

Phenotype (Biochemical profile)



3

Genotype (Genetic profile)

ANDREW SULLIVAN ON BLIND FAITH ■ LEO & JACK & MATT & MARTY

TIME

HOW WE BECAME HUMAN

Chimps and humans
share almost 99%
of their DNA. New
discoveries reveal how
we can be so alike—
and yet so different

000001X *****CAR-ET LOT**006
#2467 5583 870470 712564305 0 MOV06
NELISSA COONE 0617
802156
267 WOODLEY RD PO033A
WEST MILFORD NJ 07480-1001

The genetic similarity
between a **human** and
a **human** is...

99.9%

SOURCE: National Human Genome Research Institute



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76		6 Weeks	Lab Located in Slovenia	£ 201.48 ?	★★★★☆ (3) Read Reviews >	Visit Website > Compare Tests >
77		3 Weeks	Lab Located in Canada	£ 147.77 ?	★★★★☆ (2) Read Reviews >	Visit Website > Compare Tests >
78		6 Weeks	Lab Located in UK	£ 85.00	★★★★☆ (1) Read Reviews >	Visit Website > Compare Tests >

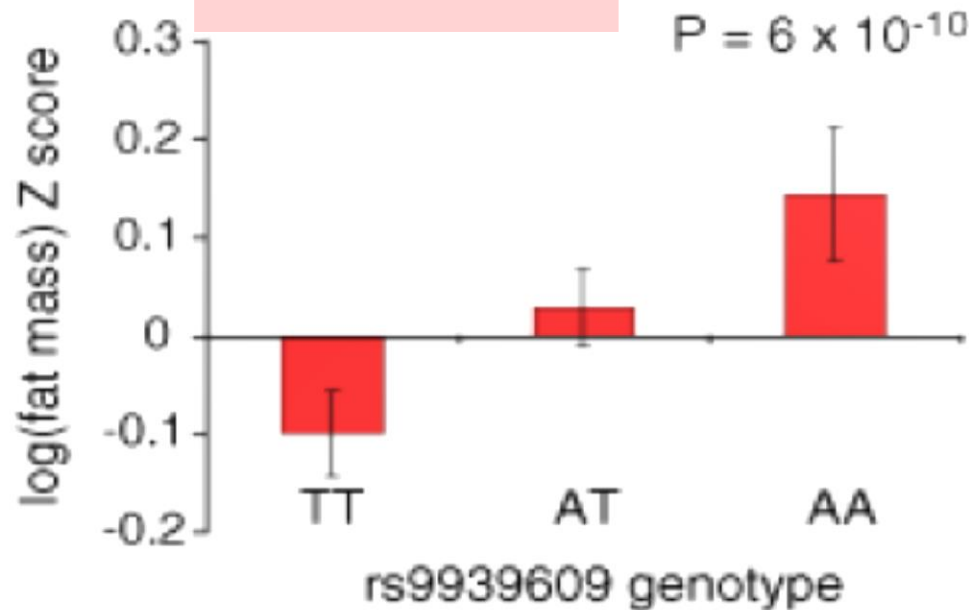


A Common Variant in the *FTO* Gene Is Associated with Body Mass Index and Predisposes to Childhood and Adult Obesity

Timothy M. Frayling^{1,2,*}, Nicholas J. Timpson^{3,4,*}, Michael N. Weedon^{1,2,*}, Eleftheria Zeggini^{3,5,*}, Rachel M. Freathy^{1,2}, Cecilia M. Lindgren^{3,5}, John R. B. Perry^{1,2}, Katherine S. Elliott³, Hana Lango^{1,2}, Nigel W. Rayner^{3,5}, Beverley Shields², Lorna W. Harries², Jeffrey

C

9 year old fat
mass via
DEXA scan



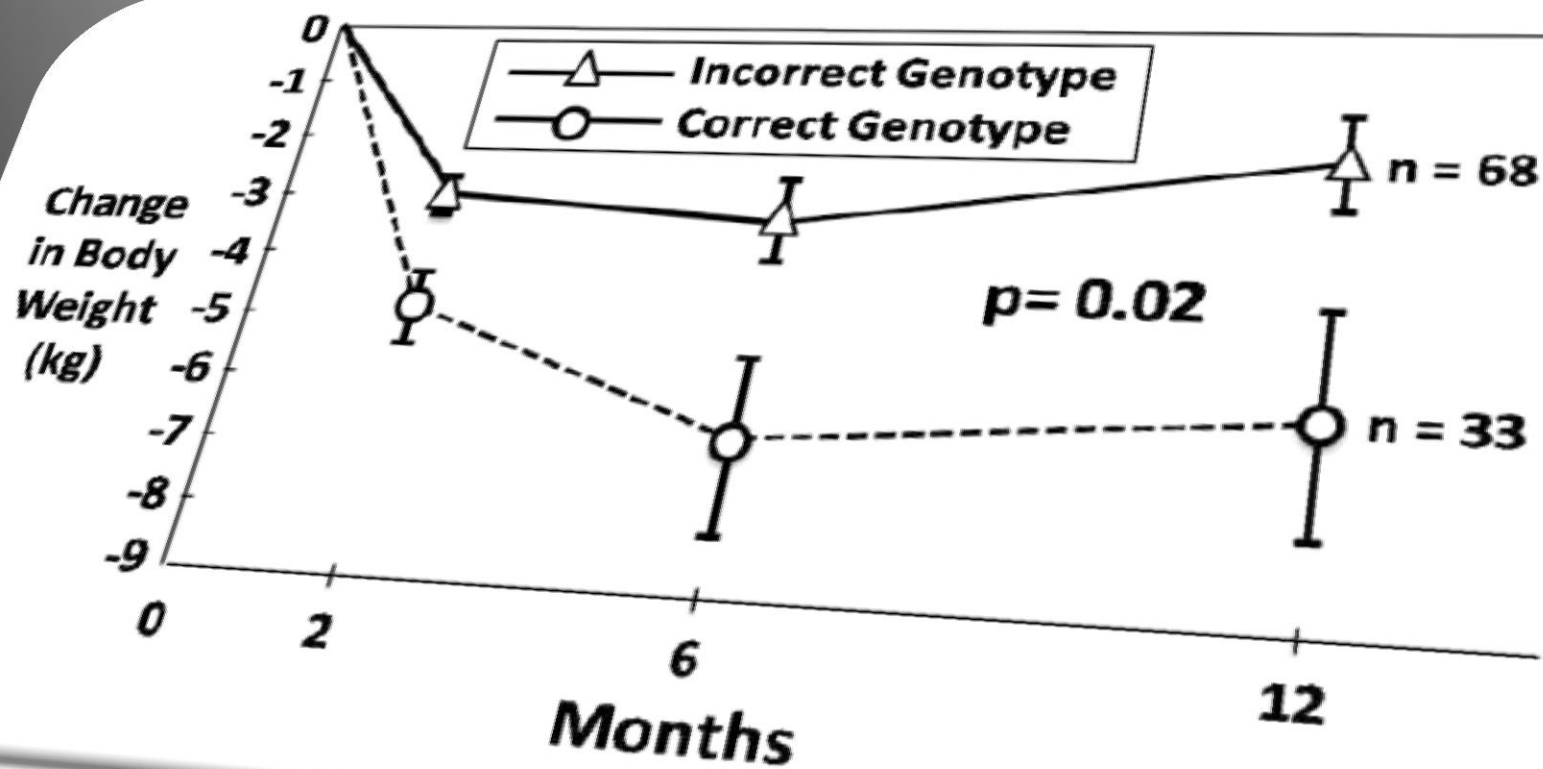
Genetic Phenotype Predicts Weight Loss Success: The Right Diet Does Matter

4

Genetic Phenotypes Predict Weight Loss Success: The Right Diet Does Matter

Mindy Dopler Nelson, Stanford Univ, Palo Alto, CA; **Prakash Prabhakar**, Venkateswarlu Kondragunta, Interleukin Genetics, Waltham, MA; **Kenneth S Kornman**, Interleukin Genetics, Waltham, CA; **Christopher Gardner**, Stanford Univ, Palo Alto, CA

Background/Introduction: Recent evidence demonstrates there is no one weight loss diet that is most effective for everyone. Genetic heterogeneity may offer a partial explanation to differential responses to different diets. Genotype patterns of single nucleotide polymorphisms (SNPs) associated with obesity and weight loss have been identified. **Objective:** To determine whether genotype patterns associated with macronutrient metabolism will predict weight loss success in response to low-carbohydrate vs. low-fat diets. **Design:** This is a secondary analysis of data from 101 Caucasian women in the A TO Z weight loss study who provided DNA from buccal cells. The analysis included diet assignments, weight loss results, and anthropometric and lipid panel values. Functional SNPs relevant to weight loss and responsive to macronutrient composition in the diet were analyzed. Women in the original A TO Z study were

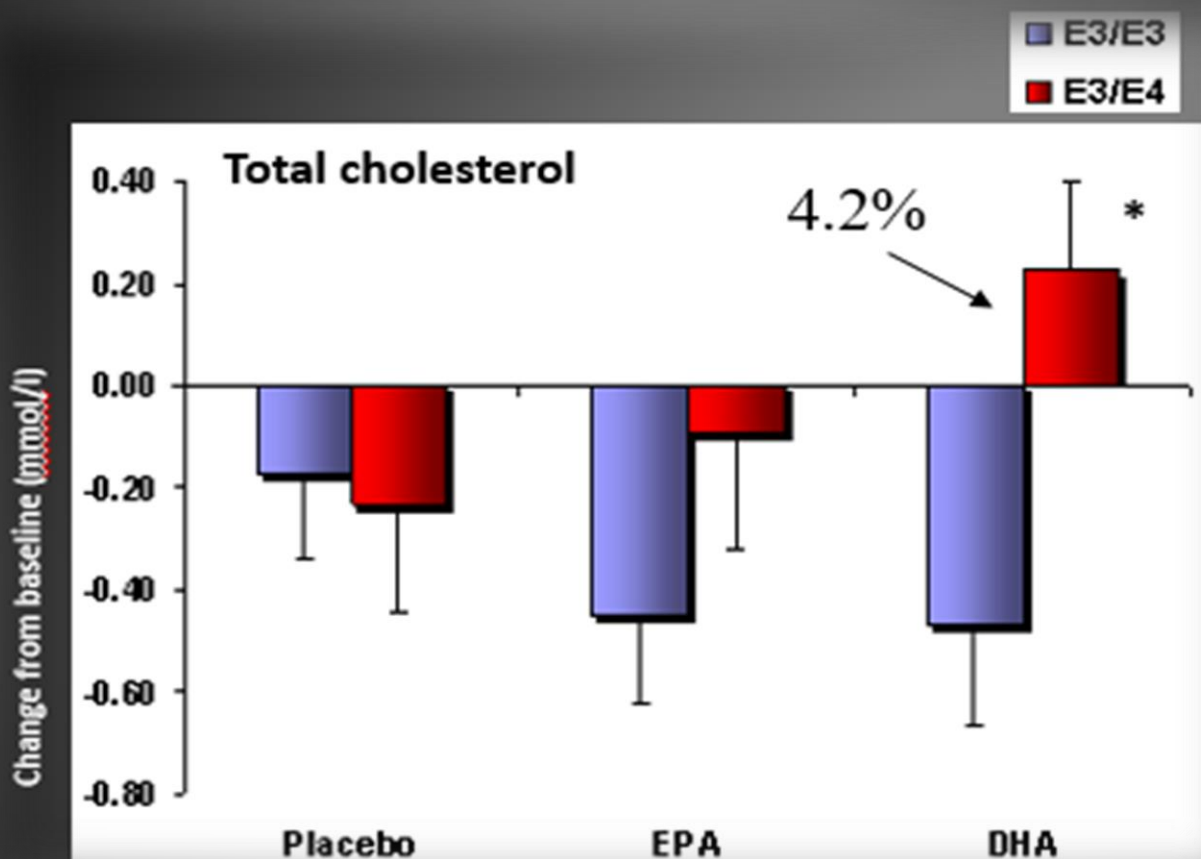


Prevalence of salt sensitivity

BLOOD PRESSURE	POPULATION	
	WHITE	BLACK
Normal	15%	27%
Hypertension	29%	50%

Sullivan JM.1991. Salt sensitivity. Definition, conception, methodology, and long-term issues. Hypertension. 17(1 Suppl):161-8. PMID:1987013.

apoE4 individuals are particularly sensitive to dietary fat

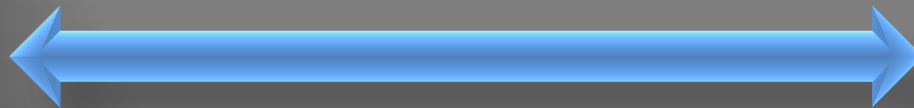


Note: negative response in E4 carriers following high dose DHA intake

“..how Registrants are at the front of the queue and looking to the future”

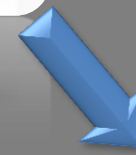
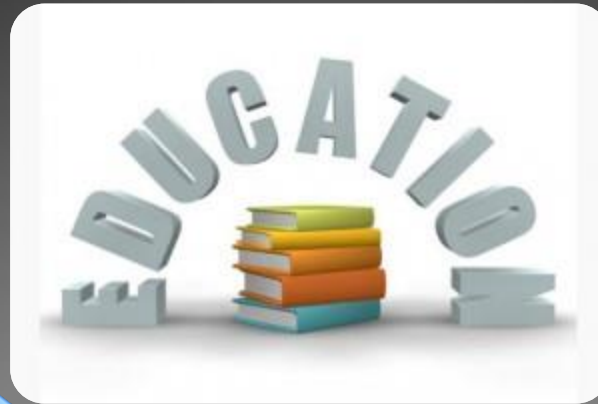
Personalised nutrition is:

- Research driven
- Evolving...Rapidly!!!
- Abused by opportunists



Diet





Nutrition genetics in
degree competences

Seminars, webinars etc



Read the literature, attend
seminars, webinars etc

Choose carefully (most
resources are unregulated
and questionable)

The development of -omics and personalised nutrition

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