

What is the future of aged-based innovation stratification strategies?

Dr Yiannis Mavrommatis



WHERE
ALL FOOD CHAIN
ACTORS CONVERGE



St Mary's
University
Twickenham
London

Outline



**Setting the scene
(definitions, current knowledge)**



Nutrition and genomics in ageing



Prevention in younger generation



Neophobia (?)

Outline



**Setting the scene (definitions,
current knowledge)**



Nutrition and genomics in ageing

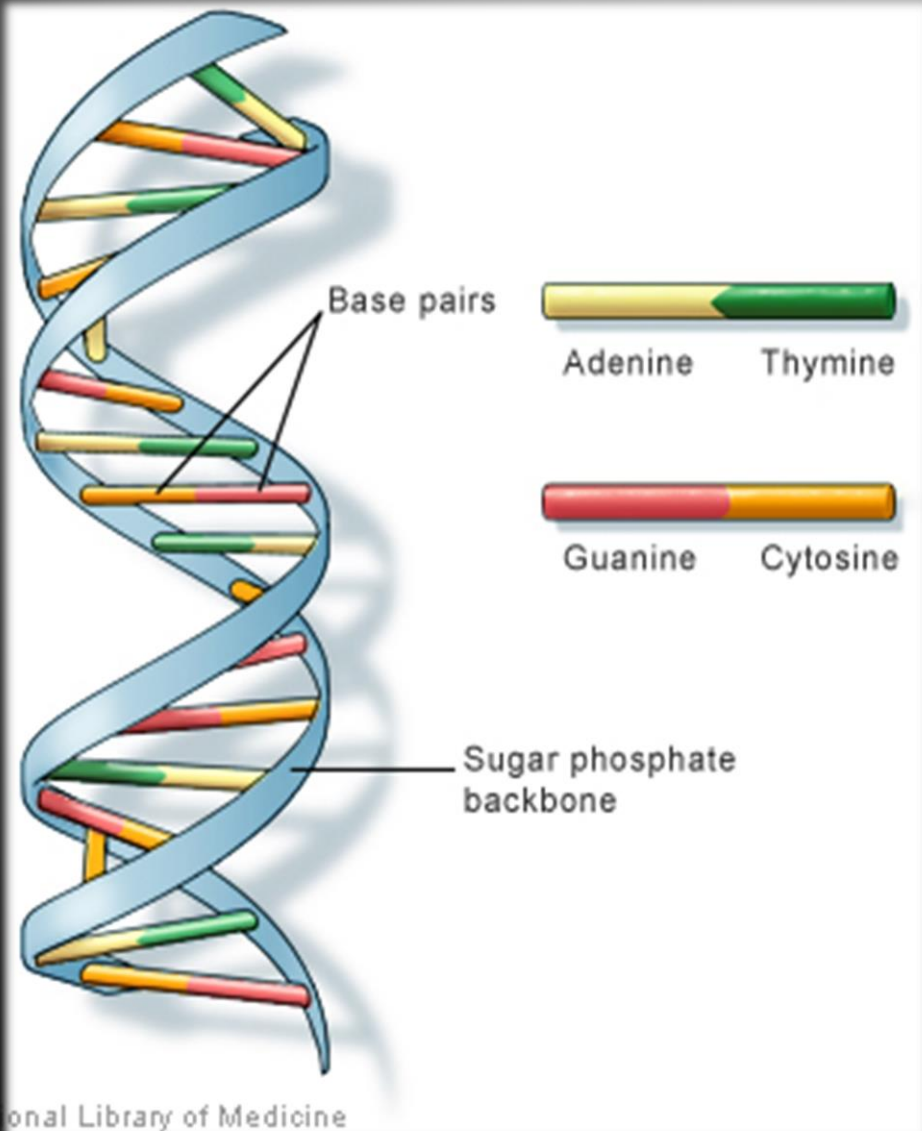


Prevention in younger generation



Neophobia (?)

Our DNA.. simplified



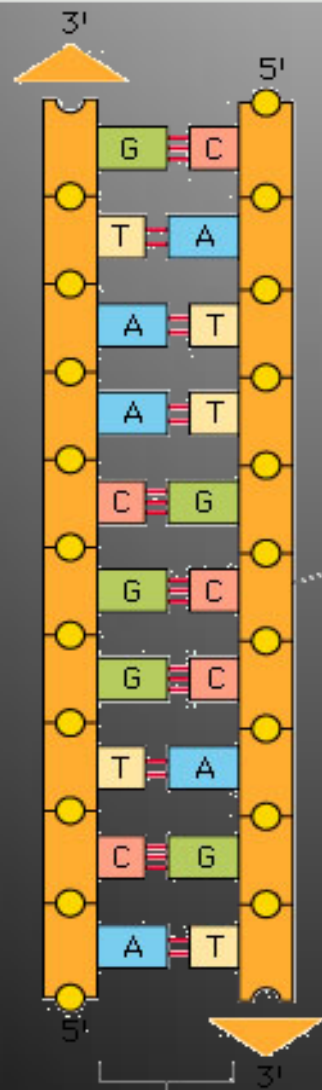
Deoxyribose - Nucleic –
Acid

Sugar phosphate backbone
4 chemical nitrogenous
bases (paired)

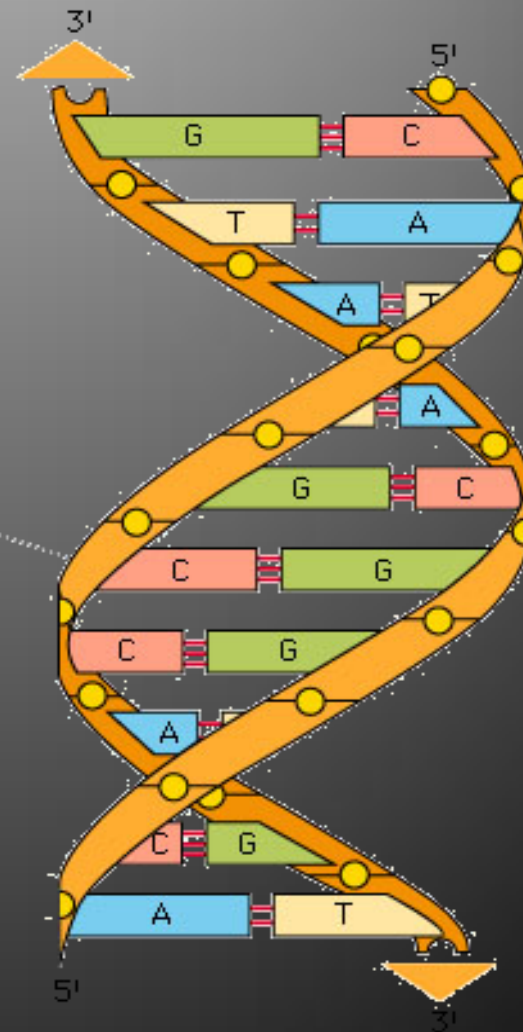
NUCLEOTIDE =
deoxyribose
+ phosphate
+ base

Our DNA.. simplified

double-stranded DNA



DNA double helix



sugar-phosphate
backbone

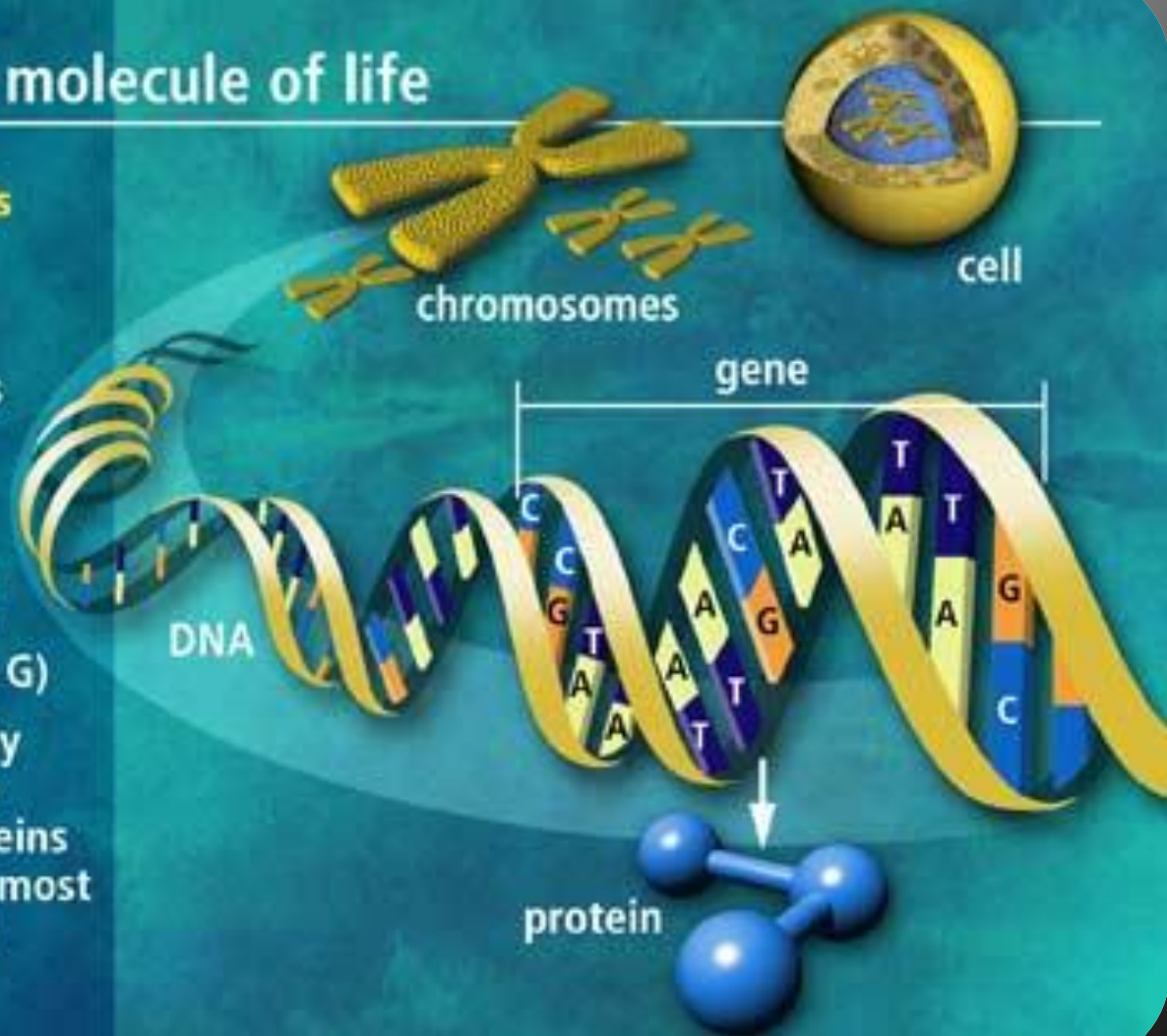
Our DNA.. simplified

DNA the molecule of life

Trillions of cells

Each cell:

- 46 human chromosomes
- 2 meters of DNA
- 3 billion DNA subunits (the bases: A, T, C, G)
- Approximately 30,000 genes code for proteins that perform most life functions



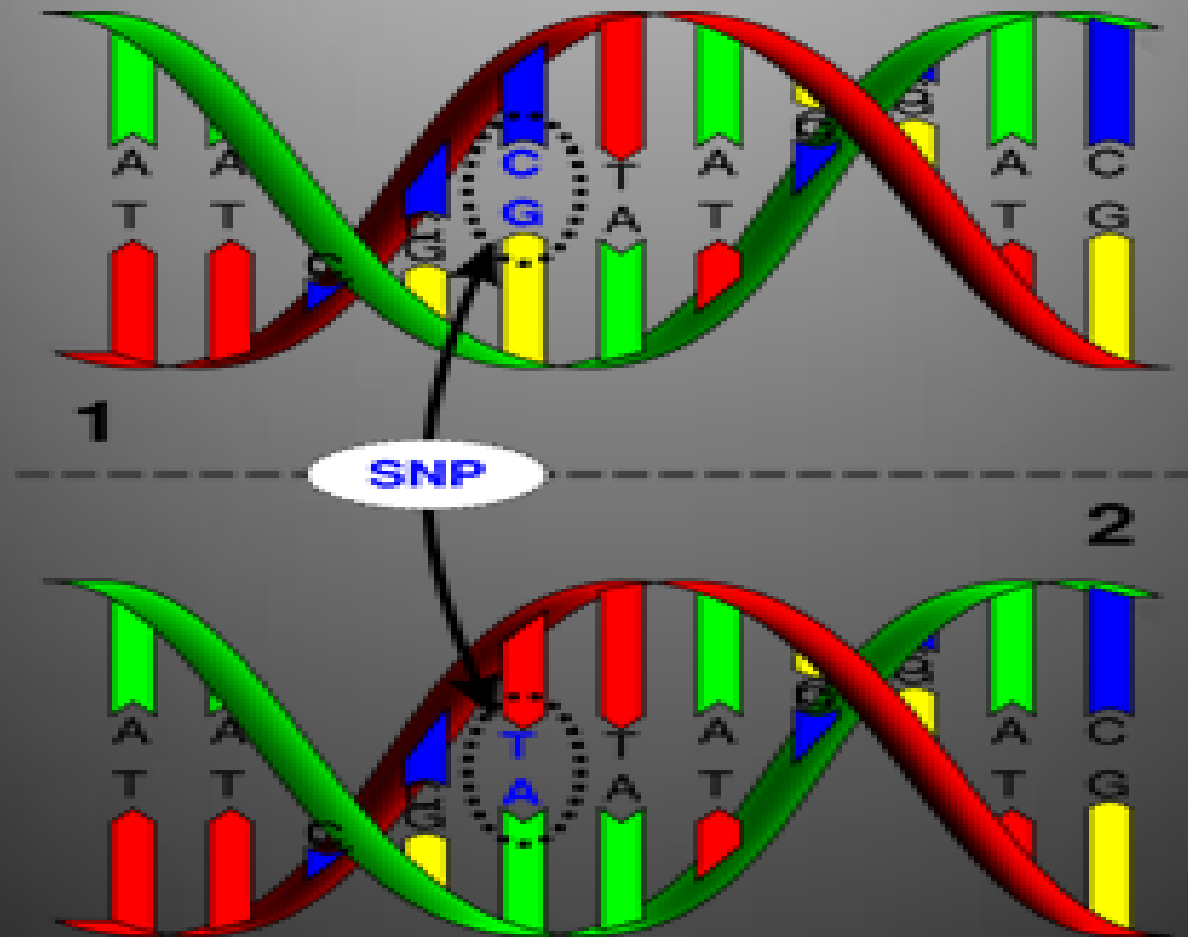
Our DNA.. simplified



Our DNA.. simplified

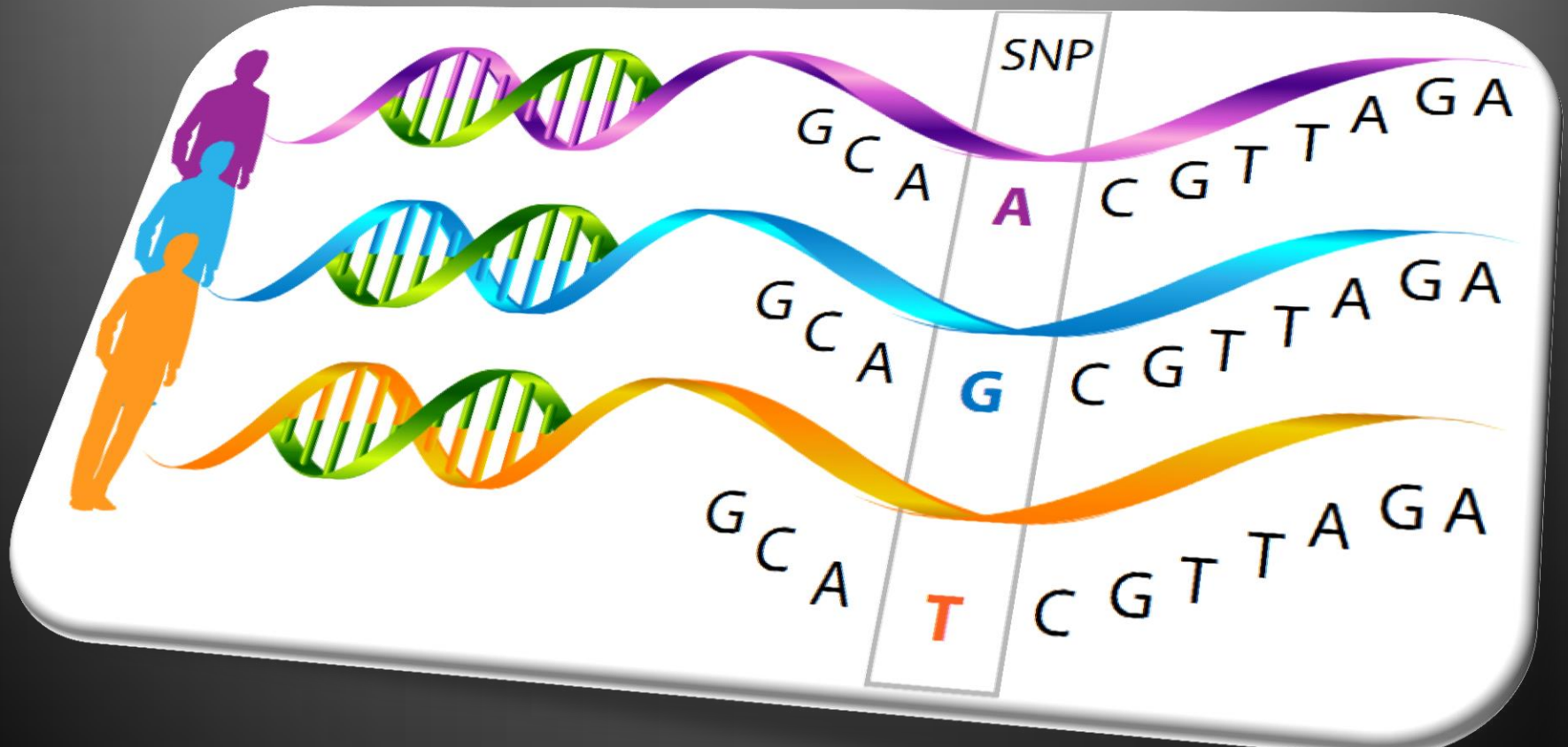


Our DNA.. simplified




SNP: Single Nucleotide Polymorphism

Our DNA.. simplified



~10 million SNPs. Most of them non-functional but some may have important effects on human health

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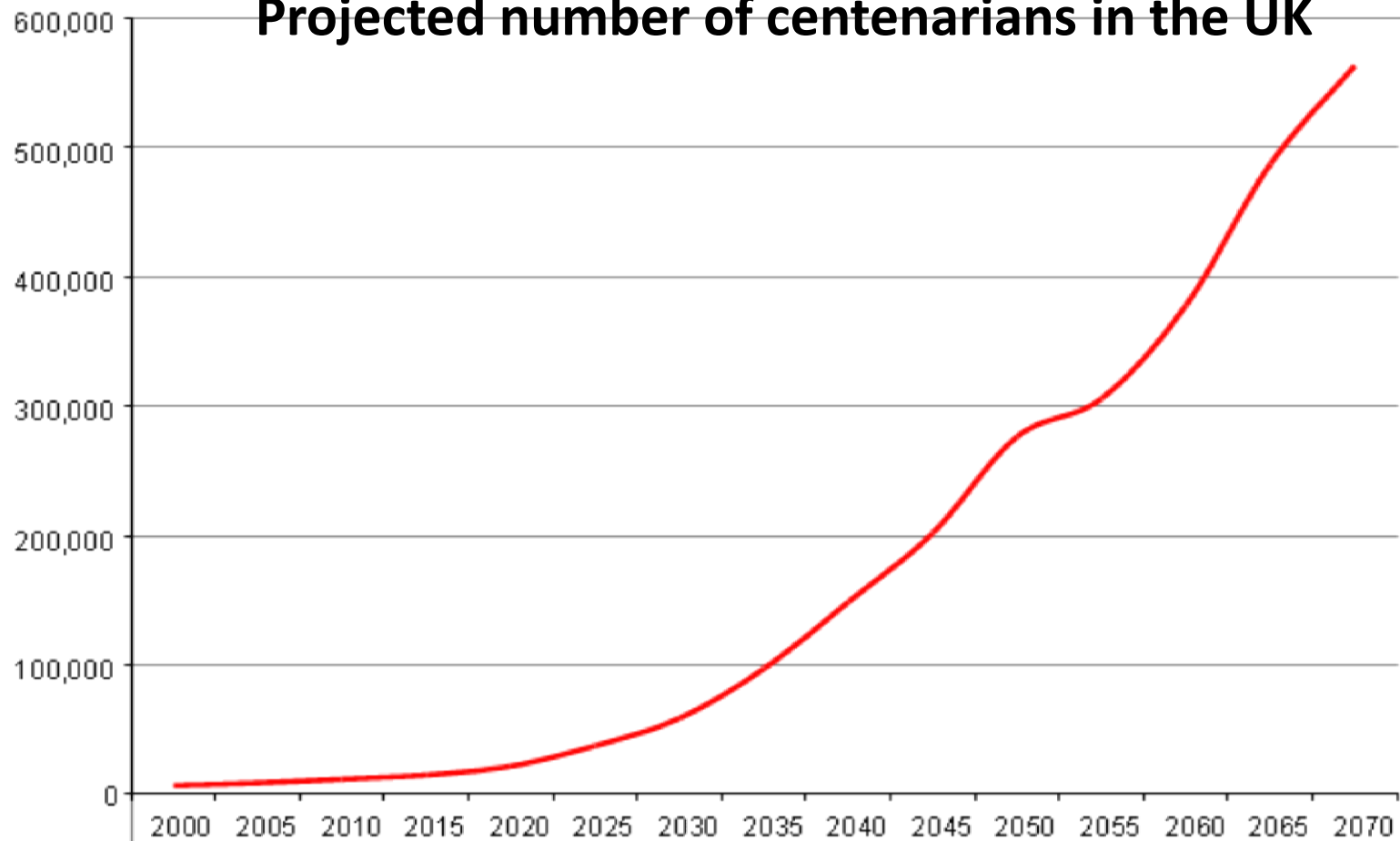
Prevention in younger generation



Neophobia (?)

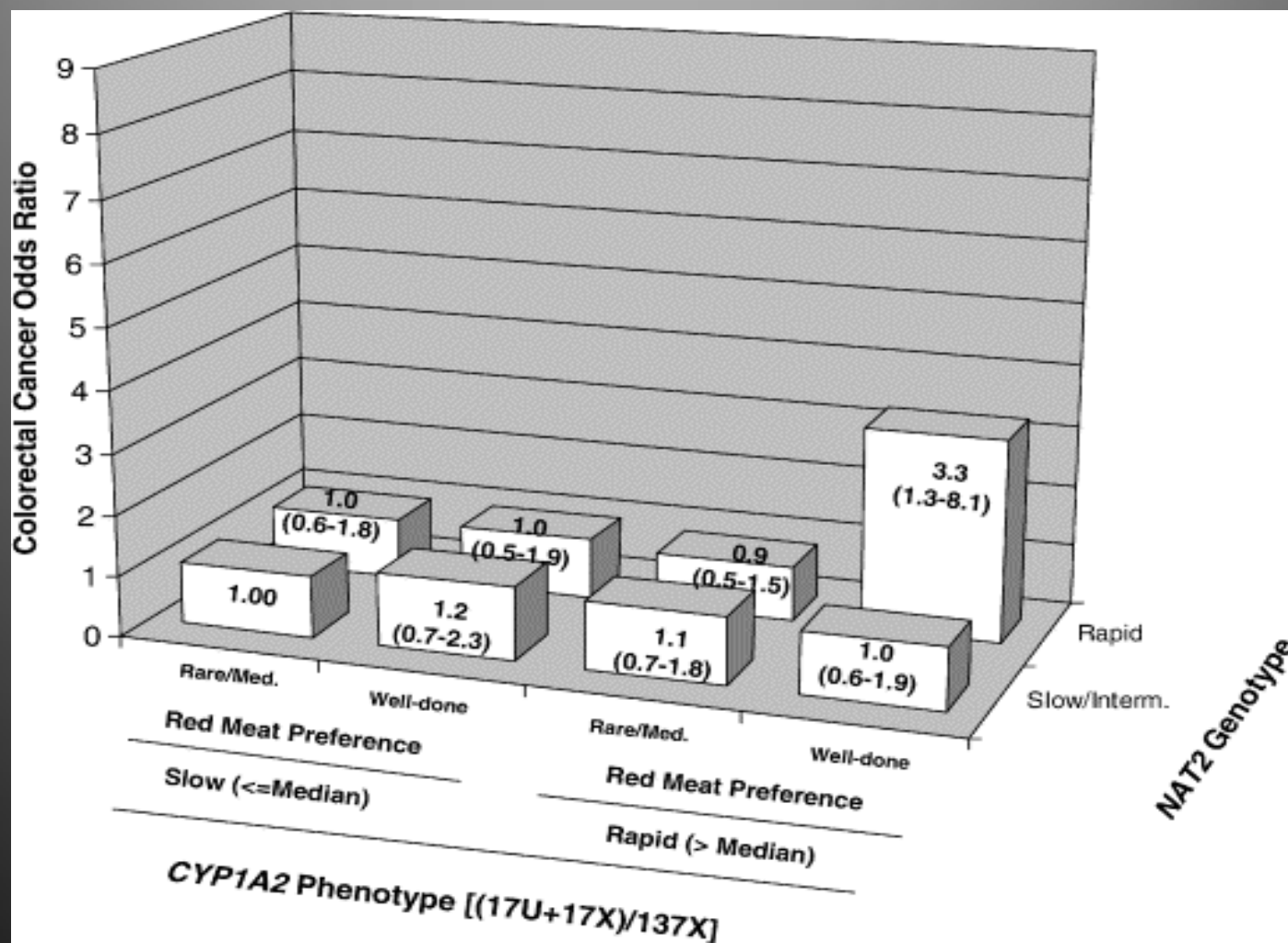
Ageing population

Projected number of centenarians in the UK

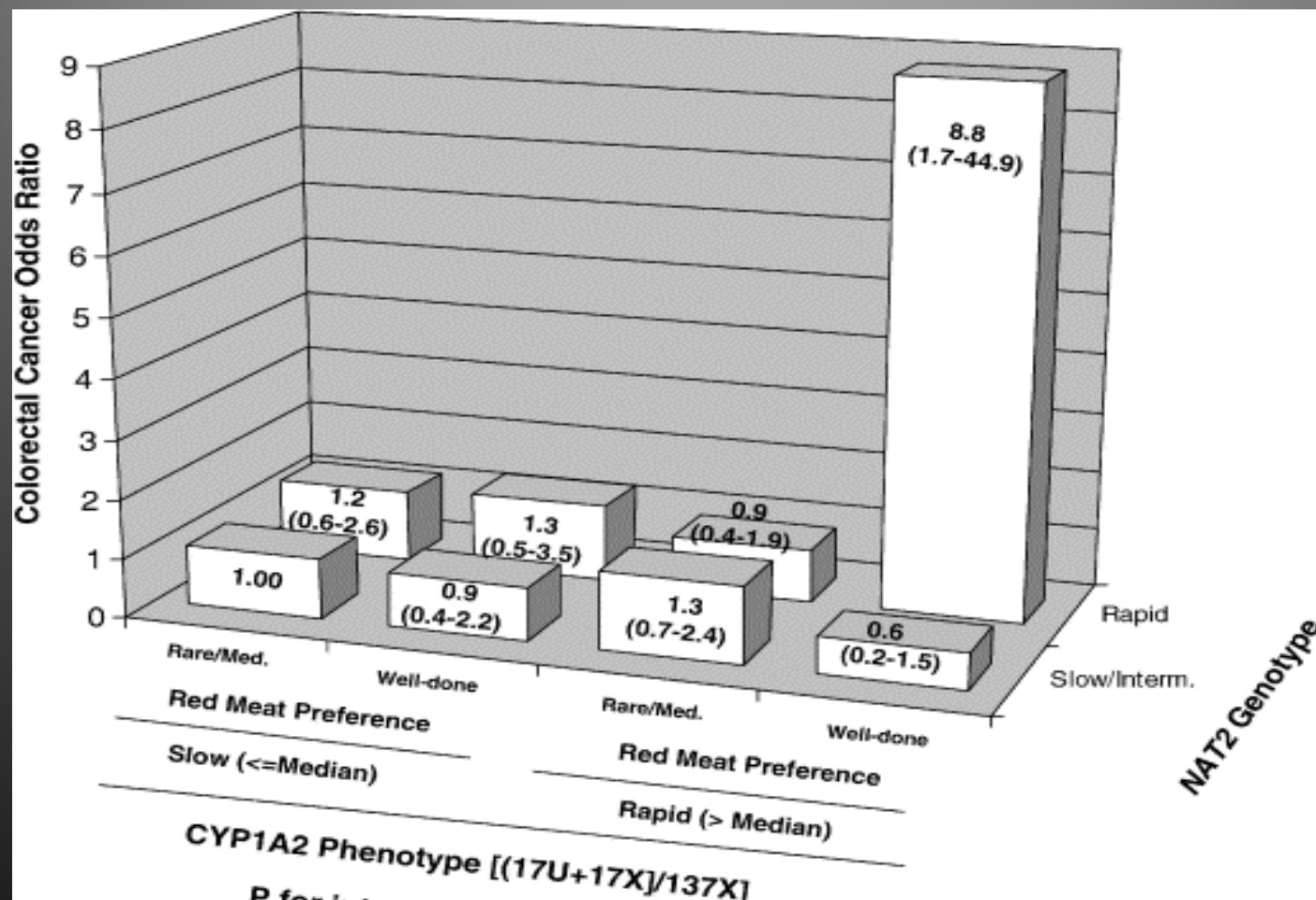


Source: Office for National Statistics, 2008-based Population Projections (UK)

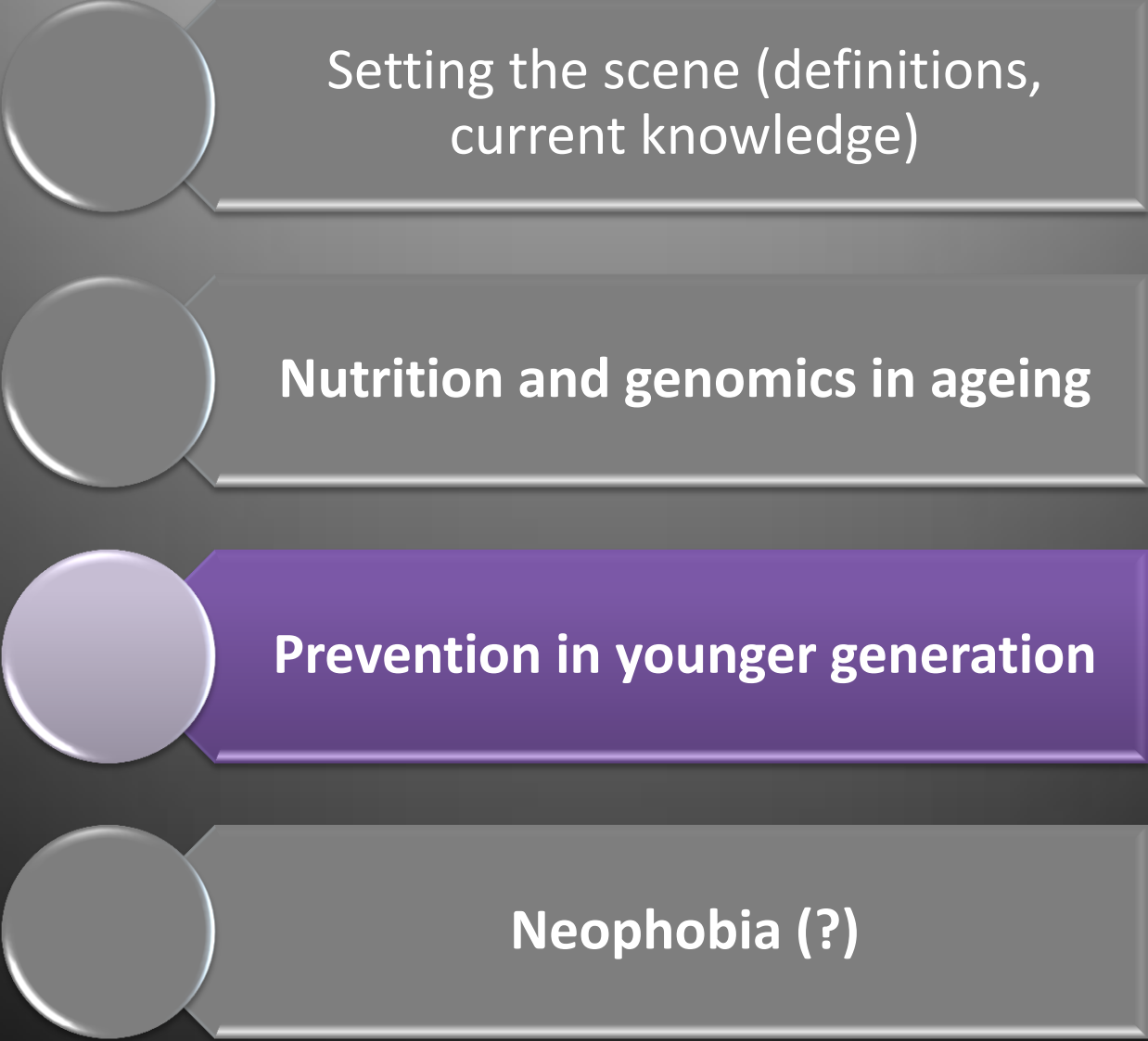
3-way interaction of red meat preference, *NAT2* genotype & CYP1A2 phenotype on the risk of colorectal cancer (348 cases and 466 controls).



3-way interaction of red meat preference, *NAT2* genotype & CYP1A2 phenotype on the risk of colorectal cancer among smokers (149 cases and 216 controls).



Outline



Setting the scene (definitions,
current knowledge)

The diagram consists of four horizontal bars, each preceded by a circle. The circles and the first, third, and fourth bars are grey, while the second bar and the circle preceding it are purple. The text is white on all bars.

Nutrition and genomics in ageing

Prevention in younger generation

Neophobia (?)

The NHS point of view

“The NHS is launching a triple prevention strategy, which includes initiatives for patients, staff, and the public. This strategy aims to set an example for other sectors in England, as well as for other health systems worldwide.”


Why the NHS?

The World's Biggest Employers

The employers with the largest workforces worldwide in 2015



Outline



Setting the scene (definitions,
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Neophobia (?)

Neophobia (?)

	Sex		<i>P</i>	Age		<i>P</i>
	Male	Female		<45 years	≥45 years	
Total (<i>n</i>)	1971	3591	—	3484	1956	—
Sex—female (%)	—	—	—	67.5	35.5	<0.001
Age (years) ^a	41.6 (13.1)	39.2 (12.4)	<0.001	32.1 (7.0)	54.2 (6.98)	0.001

Eur J Nutr

Table 2 Characteristics of individuals by country; data obtained from the first screening questionnaire

	All	Country						
		UK	IRE	GER	NED	ESP	POL	GRE
Total (<i>n</i>)	5562	599	586	788	721	1839	458	571
Sex—female (%)	64.6	70.6**	65.0	70.6**	48.7***	61.9*	77.3***	68.0
Age (years) ^a	40.0 (12.7)	37.2 (9.6)*	38.0 (12.4)*	44.5 (13.9)*	49.3 (13.9)*	38.4 (9.6)*	36.0 (12.6)*	37.7 (11.5)*
Age range (years)	15–87	17–87	15–72	15–80	18–79	18–78	17–73	18–70
Age categories								
<45 years (%)	64.0	70.3**	68.3*	44.5***	45.0***	76.1***	71.0**	70.6**
≥45 years (%)	36.0	29.7**	31.7*	55.5***	55.0***	23.9***	29.0**	29.4**

Uses of genetics technologies

In the United States and the European Union alike it is shown that educational approaches do not prepare students to practise in a health-care environment that will be increasingly influenced by genetics and genomics”

In the ENTIRE Europe, in ALL BSc and MSc courses, there is only ONE that is dedicated to genetics in nutrition:

(MSc Nutrition and Genetics) !

Are we ready?

Most popular
news item in
the world



Not interesting

Twitter trends on 21st September 2016

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