'Forbidden cloister echoes
Whisper to an unknown shrine
Where sits a fitted demi-God,
A hoard of apples in his desk,
Who calls the hooded masses
To crawl before a burnished throne
And cleave the air with nonsense
To benefit a future brood
Whose infant squalor reeks of sense
But only speaks of life as food'

Diet and Obesity:

Professor Keith Kendrick

Diet and Obesity:

Manna from the Gods or the food of destruction ?

How big is the problem ?

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In 25 years numbers of overweight and obese have doubled

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Numbers in the UK have increased by 400%

1 billion people worldwide are now overweight or obese

- 700 million overweight and 300 million obese

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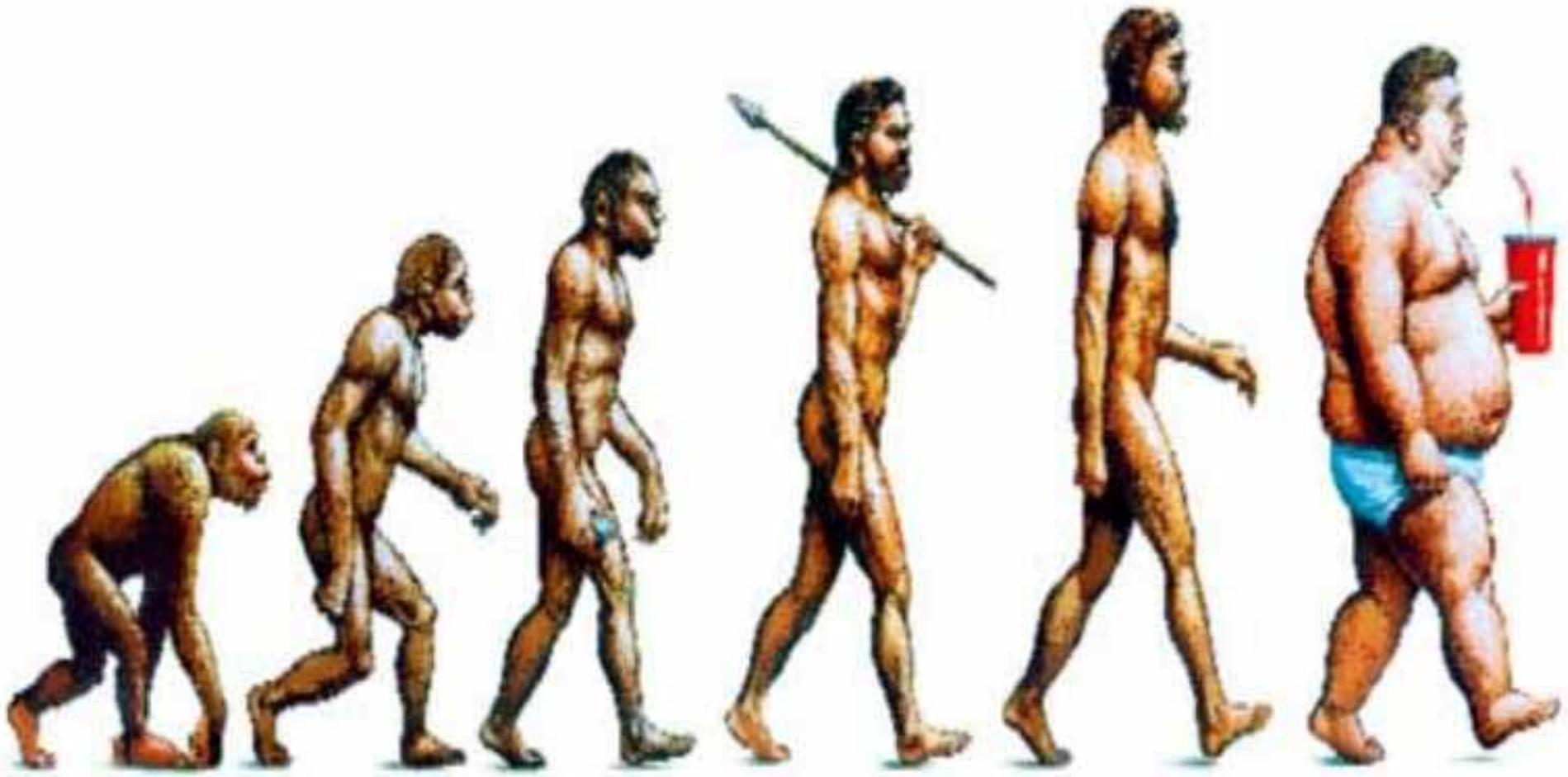
Numbers in the UK have increased by 400%

1 billion people worldwide are now overweight or obese

- 700 million overweight and 300 million obese

17.6 million children under 5 are affected

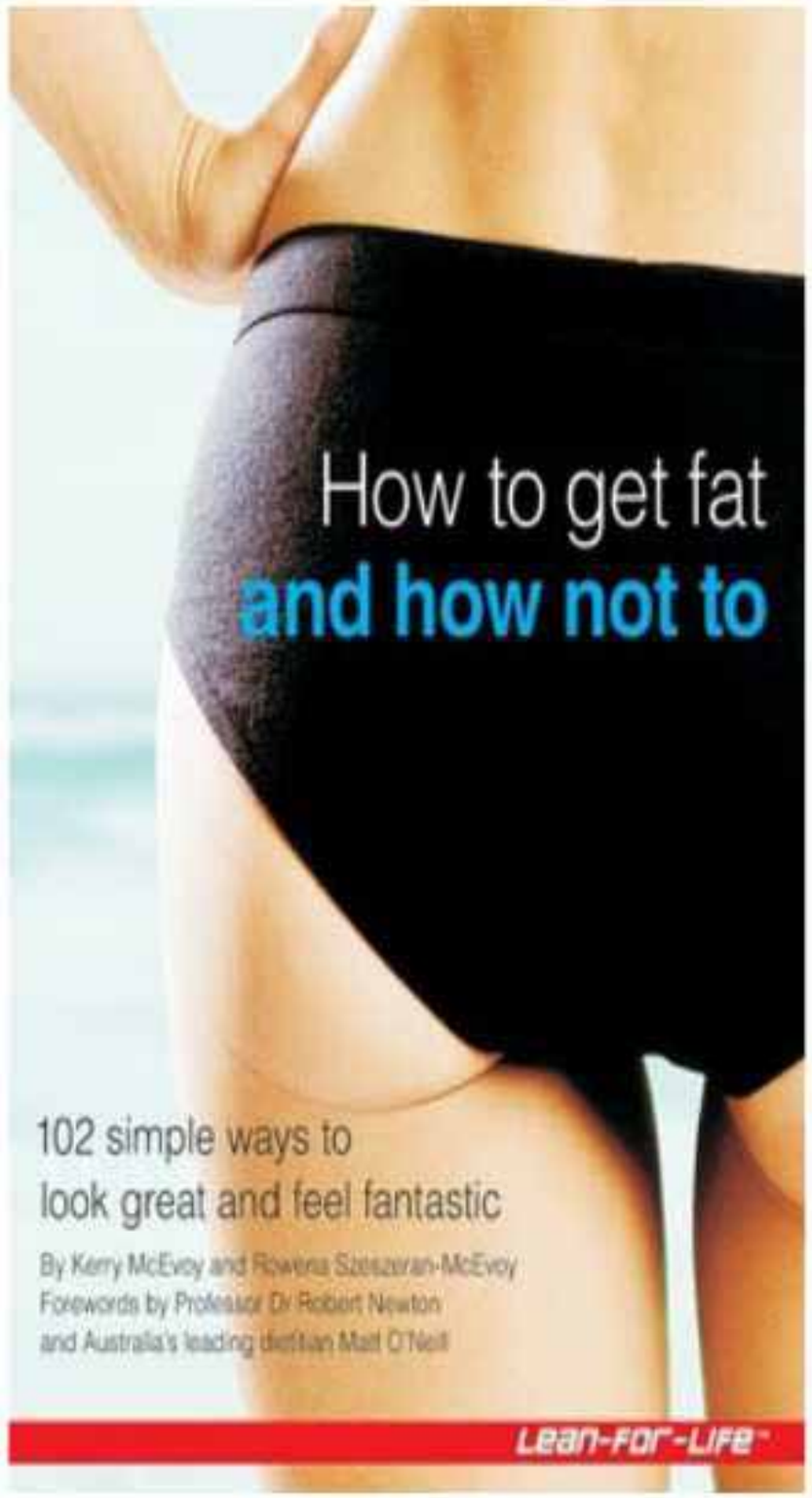
Are we destined to evolve into bloated fat-laden bodies ?



The shape of things to come - The Economist 2003

Questions

What should we be eating ?



Questions

What should we be eating ?

Is there really a problem ?

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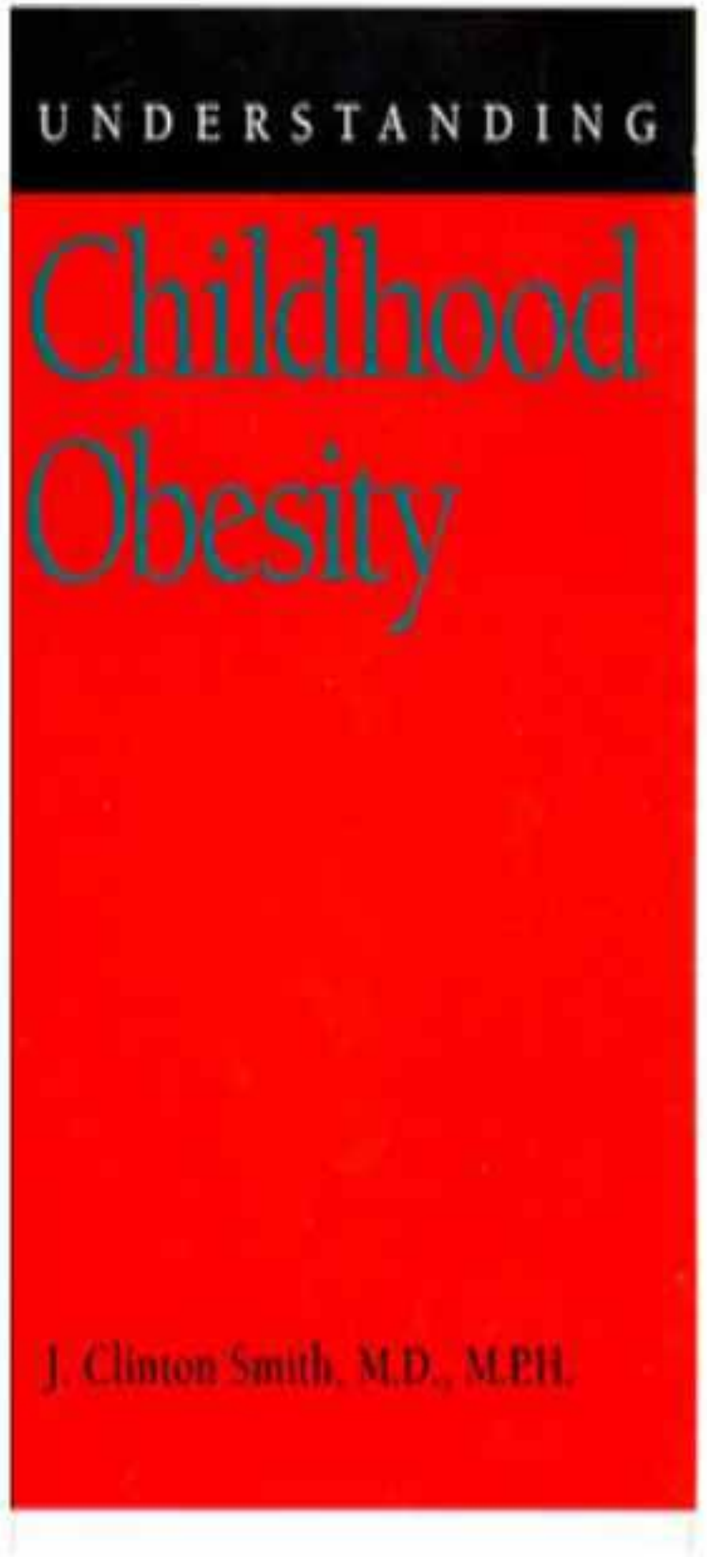
What should we be eating ?

Is there really a problem ?

If so, what has caused it ?



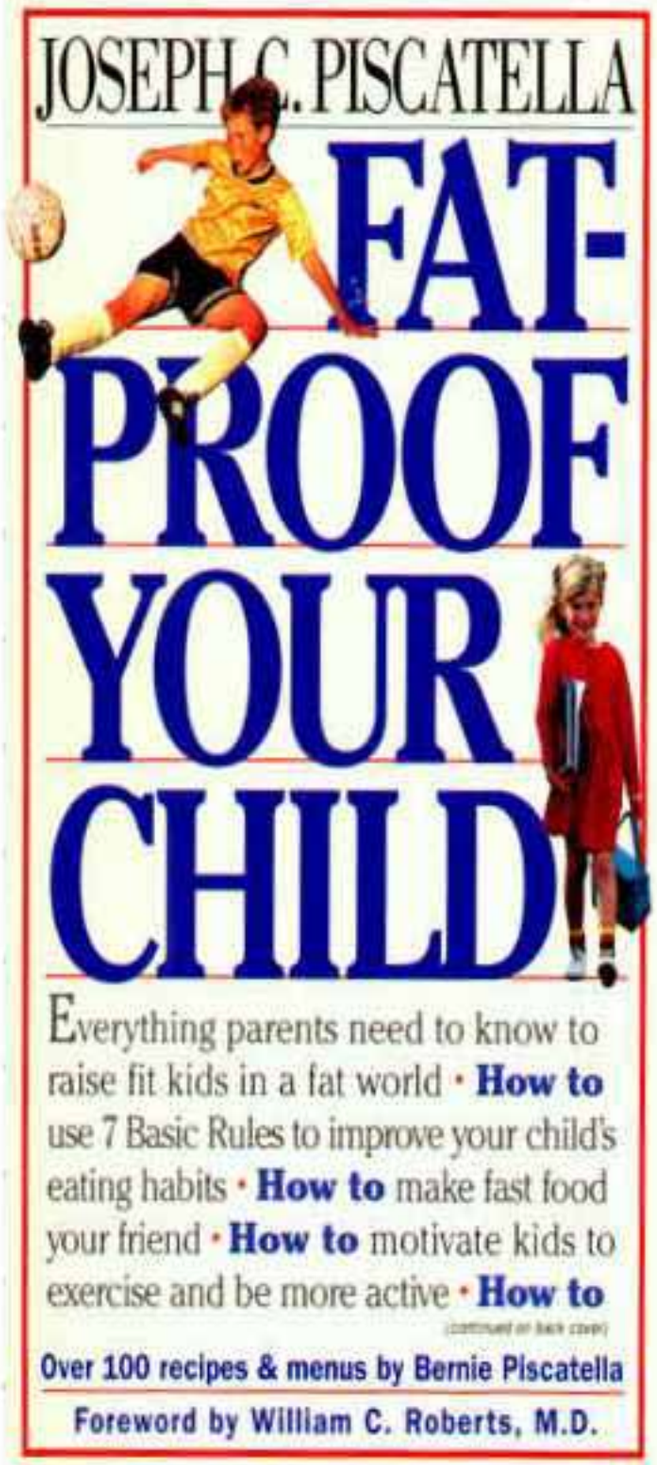
Questions

What should we be eating ?

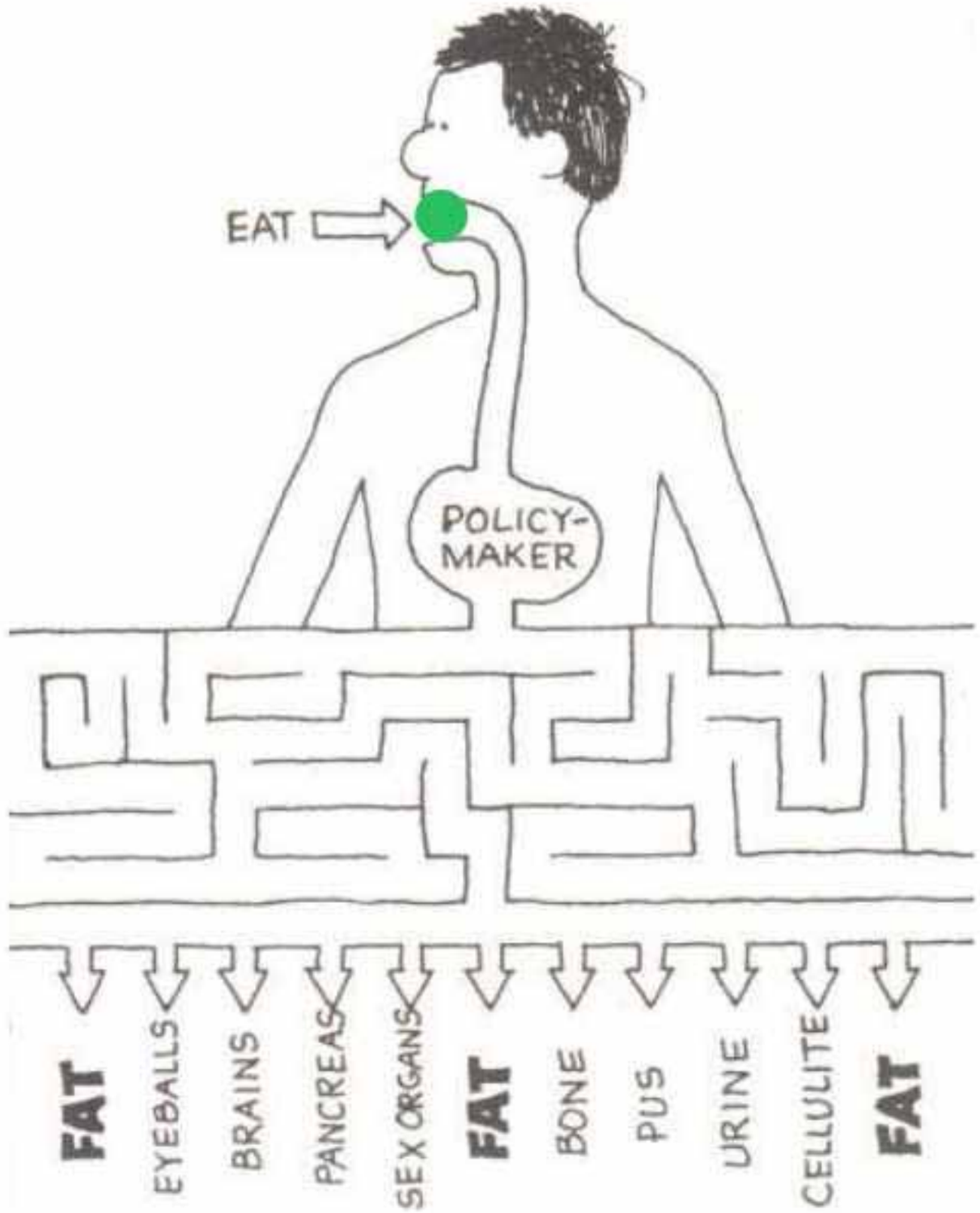
Is there really a problem ?

If so, what has caused it ?

What can we do about it ?

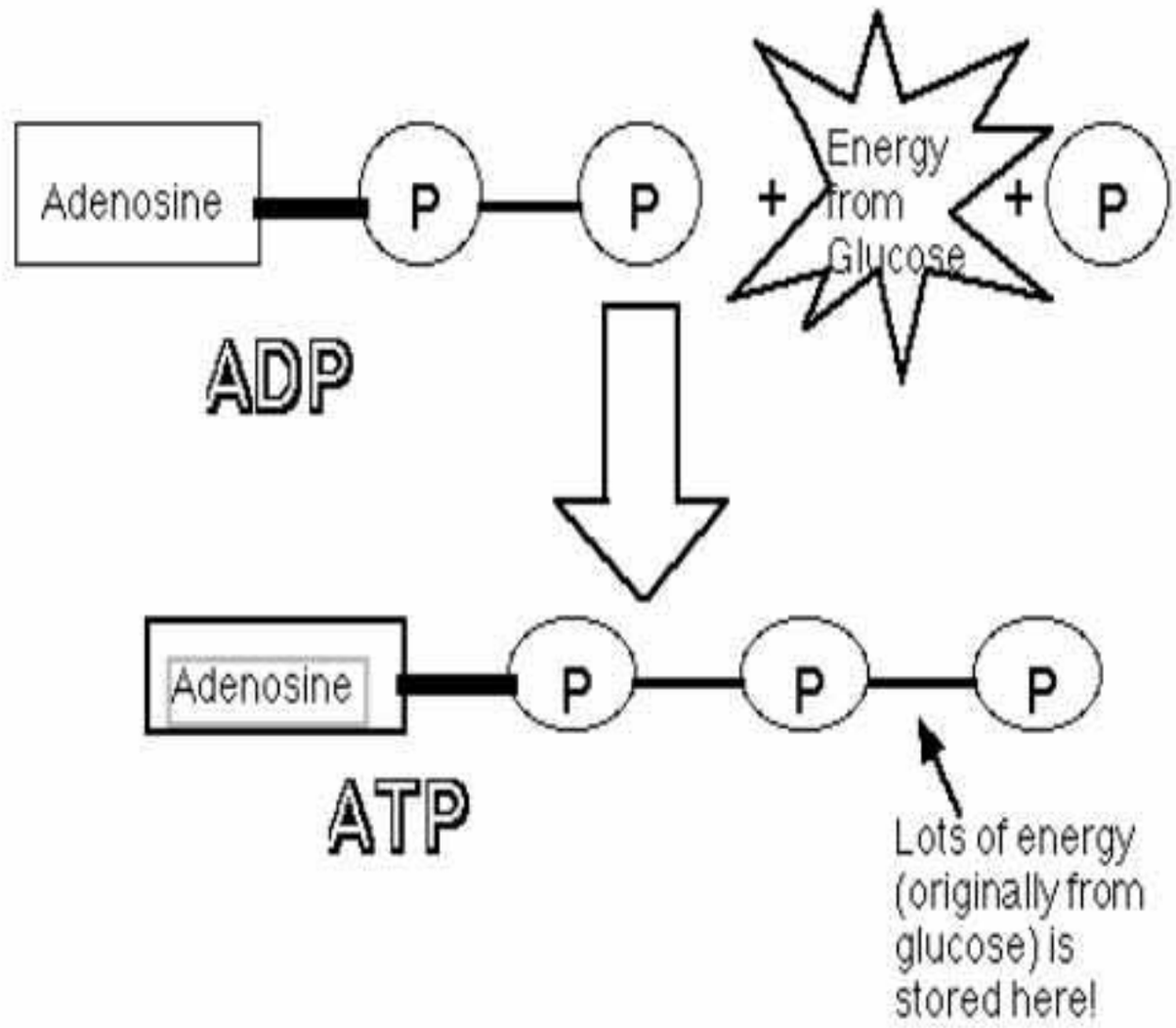


How does our body use food, and regulate our appetite ?



How does our body use food, and regulate our appetite ?

Food supplies energy for all cells in the body



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Most packaged foods express energy as
kilocalories (kcal or 'C' as opposed to 'c')

We take in our calories in food from three main sources:

Carbohydrates (4 kcal per gram)

- absorbed as, or broken down into, glucose and stored or burned in all cell types

We take in our calories in food from three main sources:

Carbohydrates (4 kcal per gram)

Protein (4 kcal per gram)
- broken down into amino acids and to build cells

We take in our calories in food from three main sources:

Carbohydrates (4 kcal per gram)

Protein (4 kcal per gram)

Fat (9 kcal per gram)

- stored or burned for energy in muscle and fat cells

We take in our calories in food from three main sources:

Carbohydrates (4 kcal per gram)

Protein (4 kcal per gram)

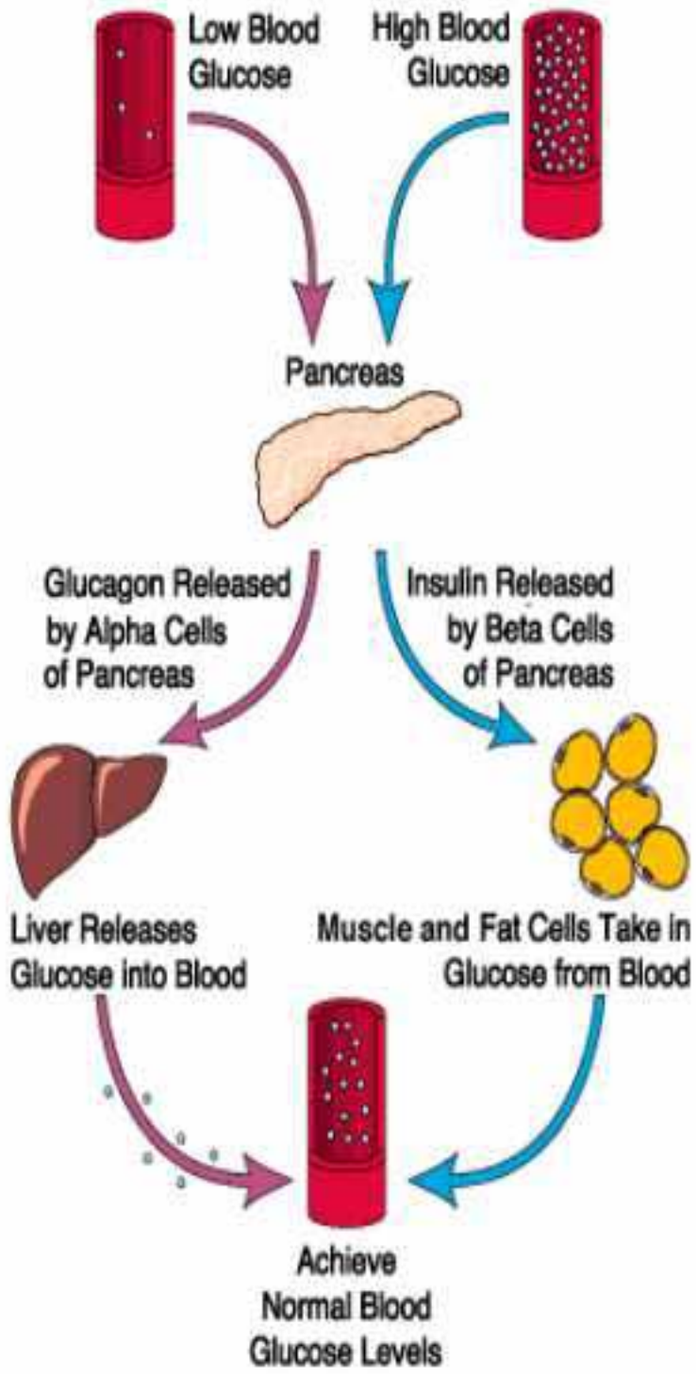
Fat (9 kcal per gram)

Alcohol also contributes 7 kcal per gram !

Store or burn ?

Store or burn ?

Careful regulation of blood glucose levels by insulin

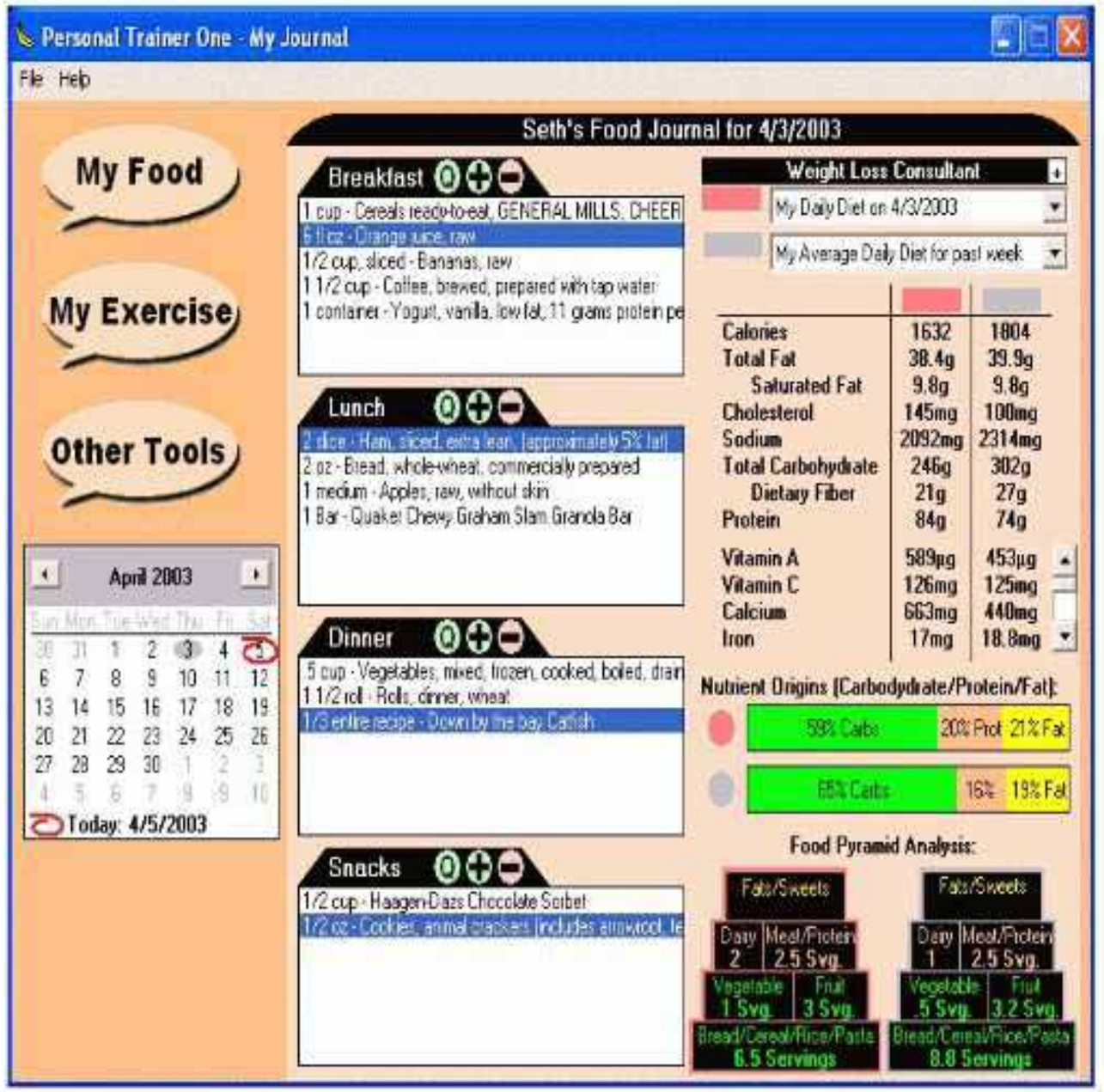


Insulin promotes storage of excess glucose in fat cells

How many calories do you need ?

How many calories do you need ?

Generally between 2000 and 3000
(average: men = 2550; women = 1940)

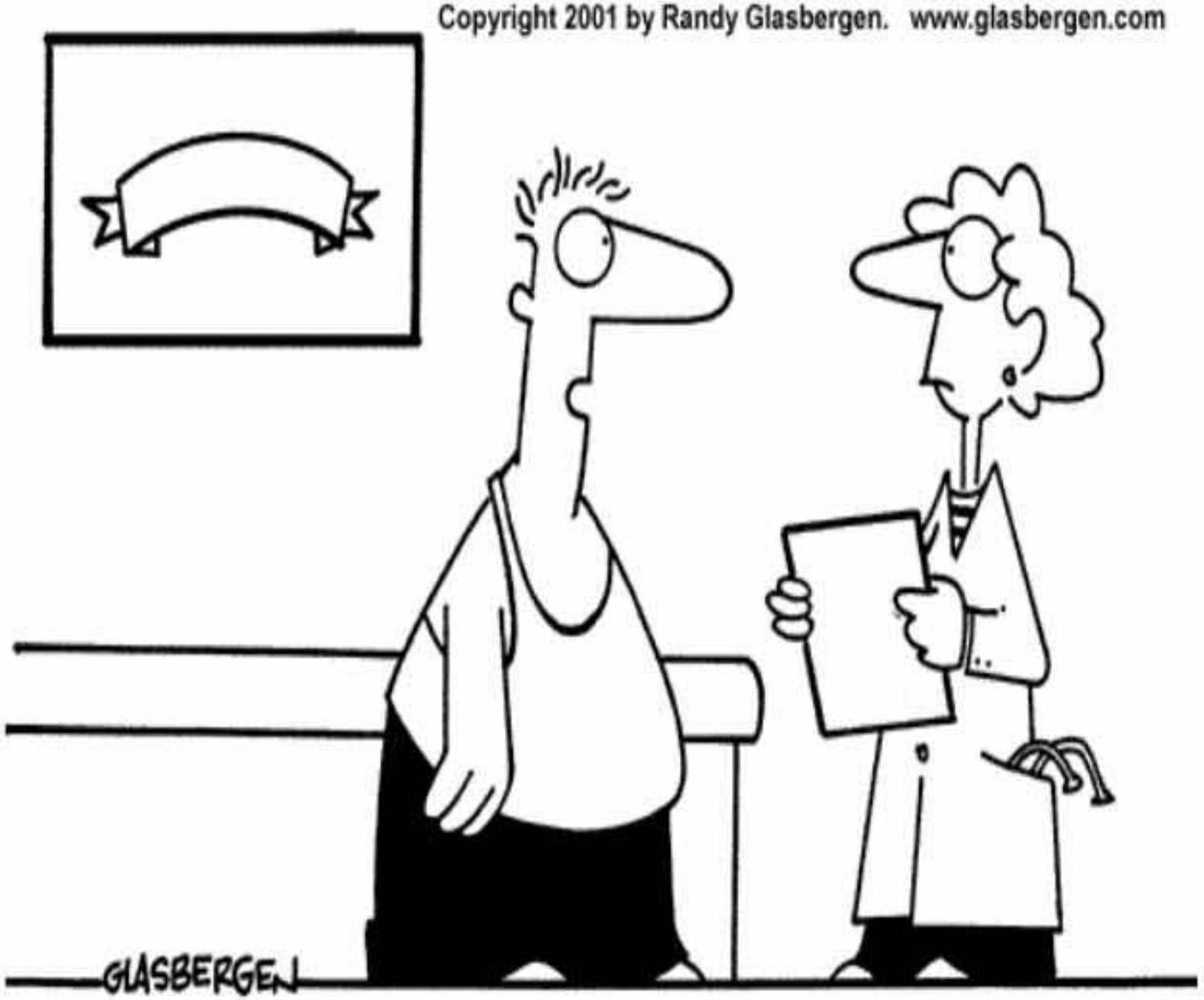


It can take a long time to burn off calories !

It can take a long time to burn off calories !

	Nutritional content:		Minutes required to bum off by activity:		
	Calories	*Fat grams*	*walking slowly*	*walking mod. quickly*	*strenuous activity*
Snack Food					
Mars Bar (65g)	294	11.4	98	59	39
Popcorn (100g)	405	7.7	135	81	54
Entrees					
Big Mac (215g)	492	23	164	98	66
Cheeseburger	379	18.9	126	76	51
Kentucky Fried Chicken (67g)	195	12	65	39	26
Pizza (‰ pizza/135g)	263	4.9	88	53	35
Potato Wedges (135g)	279	13	93	56	37
Beverages					
Can of coke (330ml)	139	0	46	28	19
Pint of beer	182	0	61	36	24
Gin, 40% alcohol (25ml)	55	0	18	11	7
Wine (1 glass/120ml)	87	0	29	17	12

Does it matter how you get your calories ?



"I must be eating right. I'm narrow at the top and wide at the bottom, just like the food pyramid."

Does it matter how you get your calories ?

Carbohydrates (50%) - the preferred fuel for the body
- bread, rice, cereals, pasta, potatoes

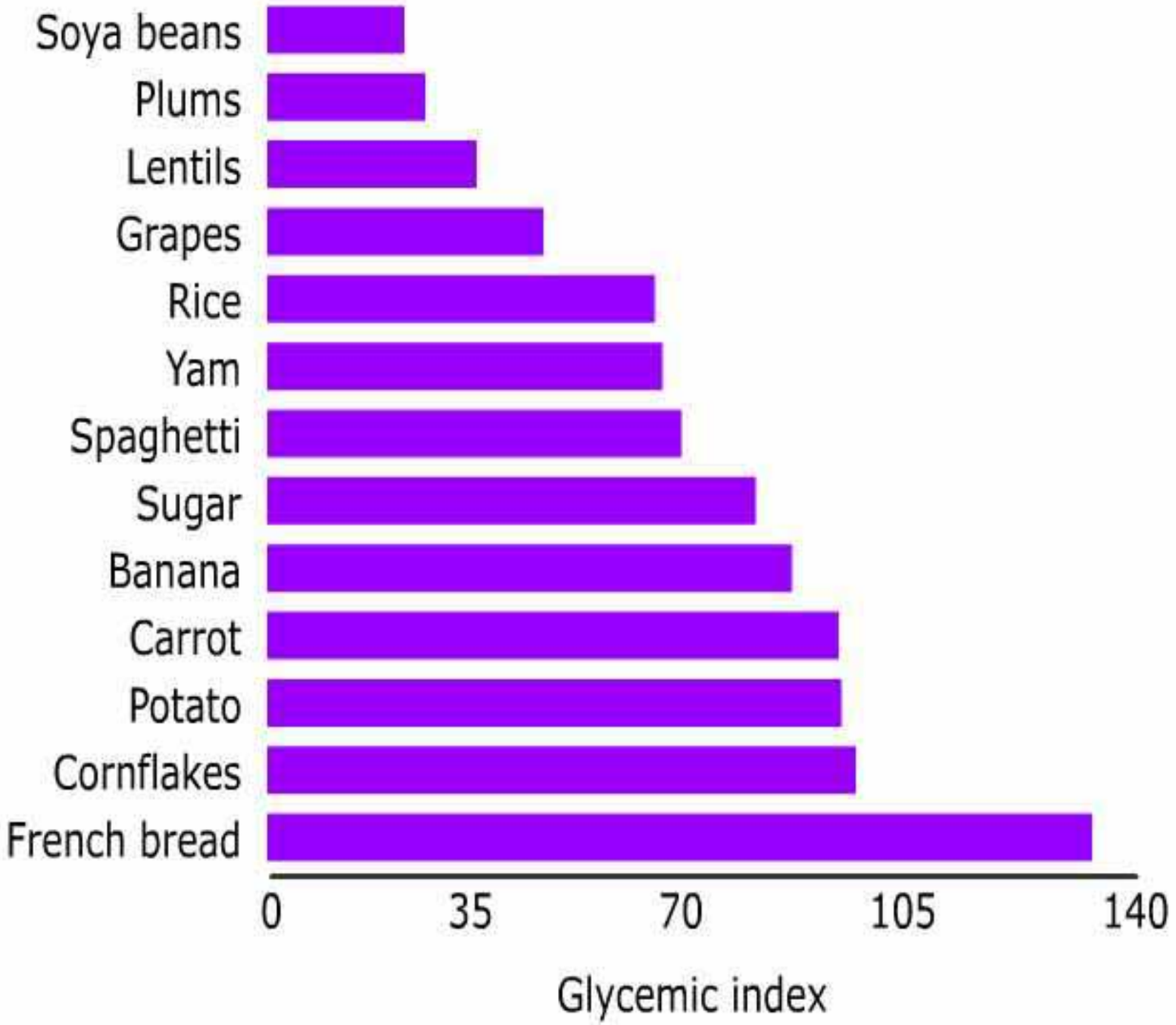
Sugars, starches and fibres

Simple (10%)
glucose, fructose, dextrose, sucrose

Complex (40%)
rice, wholegrains etc

Does it matter how you get your calories ?

Glycemic index (GI) – low-high GI and high-low GI foods

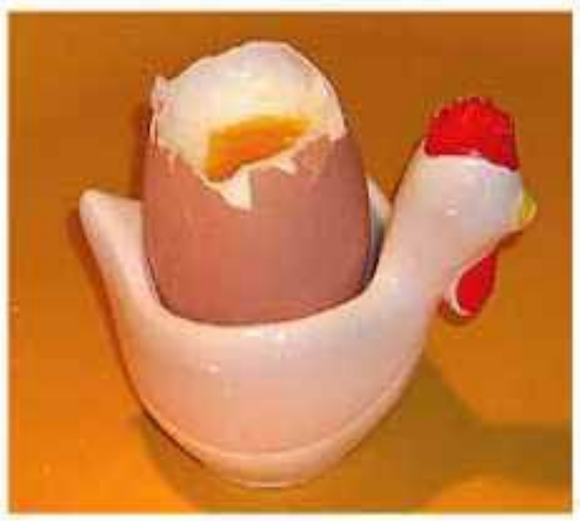


Does it matter how you get your calories ?

Proteins (15%)
- meat, fish, eggs or soya

Cell maintenance and energy

Balance of essential and non-essential amino acids



Does it matter how you get your calories ?

Fats (35%) – good balance of saturated and unsaturated fats required

Does it matter how you get your calories ?

Saturated (10%) bad fats - solid
- meat, milk, butter, lard or cheese

Provide energy only

Raise cholesterol

Stored easily in fat cells

Difficult to get rid of

Does it matter how you get your calories ?

Mono-unsaturated (12%) good fats - liquid
– olive oil, nuts, avocados

Provide energy and cell maintenance

Decrease LDL cholesterol

Increase HDL cholesterol

Easily mobilised by exercise

Does it matter how you get your calories ?

Poly-unsaturated (6%) OK but not perfect fats! - liquid
– seeds, vegetable and fish oils

Provide energy and cell maintenance (omega 3 fatty acids)

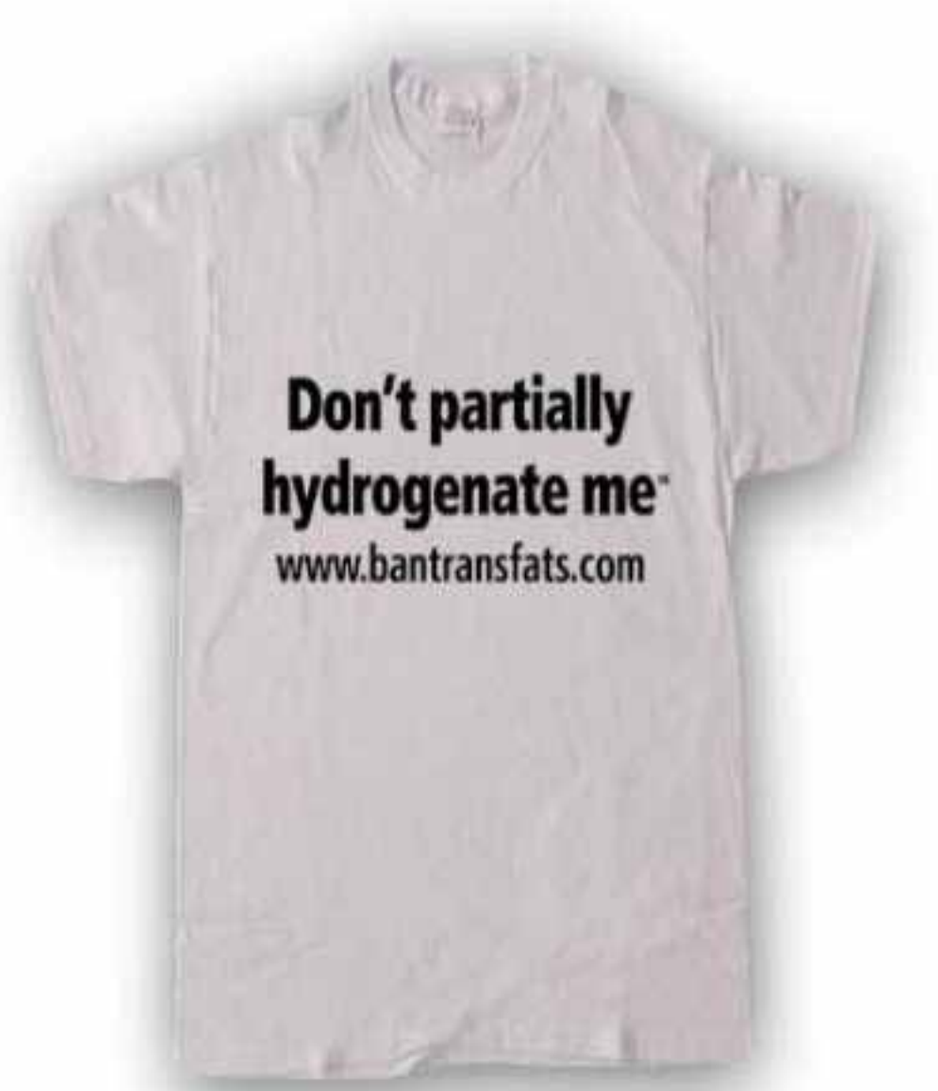
Decrease LDL and HDL cholesterol

Easily mobilised by exercise

Does it matter how you get your calories ?

Trans-fats (<2%) more bad ones !

- industrially produced for food preservation



How does the average British diet compare ?

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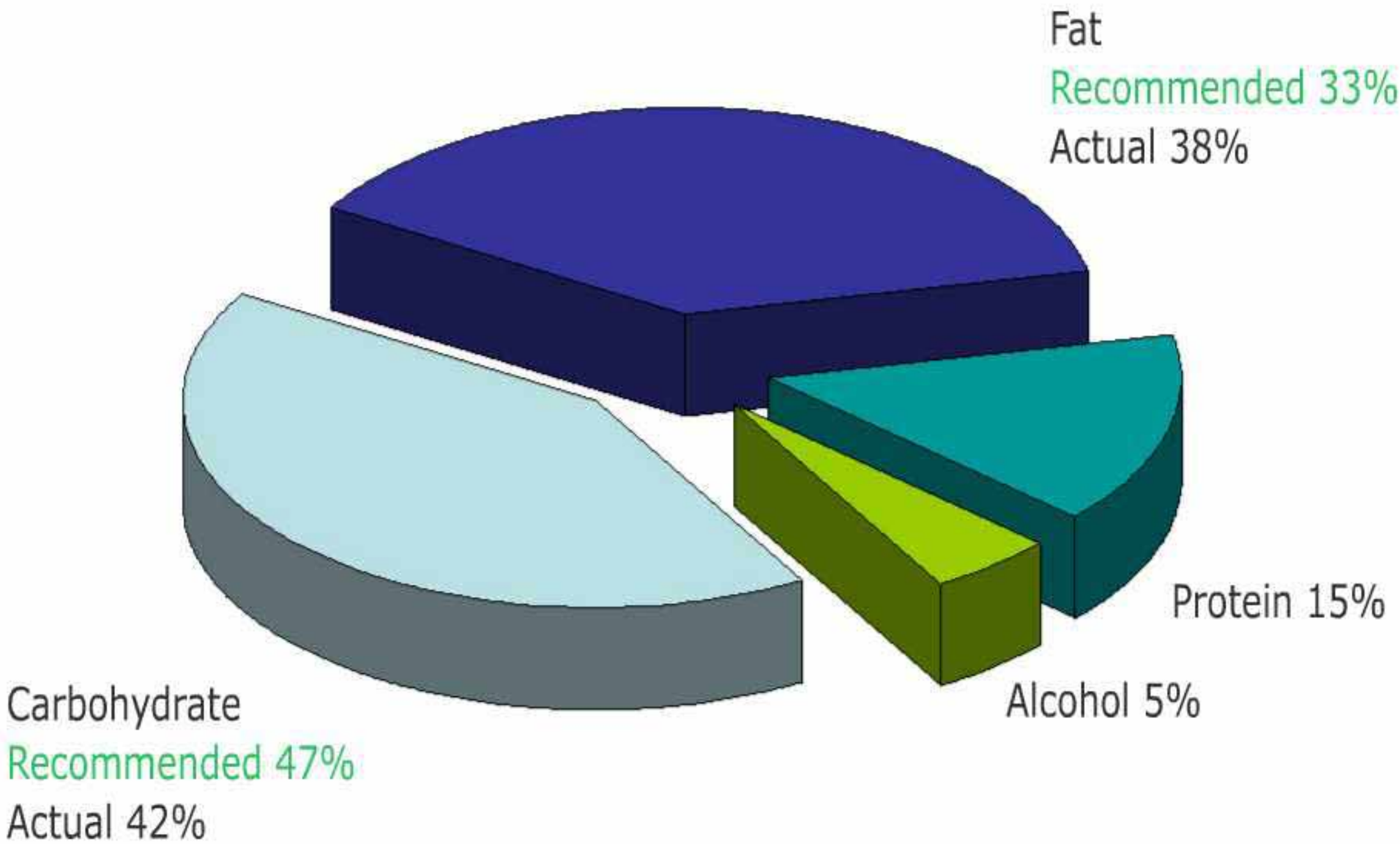

DEFRA & National Statistics (2001) National Food Survey

British Nutrition Foundation recommendations

Eat less fat

Eat more starchy foods i.e. bread, potatoes, rice and pasta

Eat more fruit and vegetables i.e. 5 portions of different fruits and vegetables a day (excluding potatoes)

Choose leaner meat and lower fat dairy products

British Nutrition Foundation recommendations

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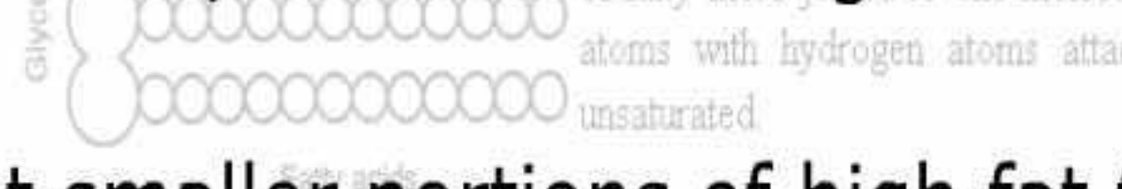


Eat more fruit and vegetables i.e. 5 portions of different fruits and vegetables a day (excluding potatoes)

Choose leaner meat and lower fat dairy products

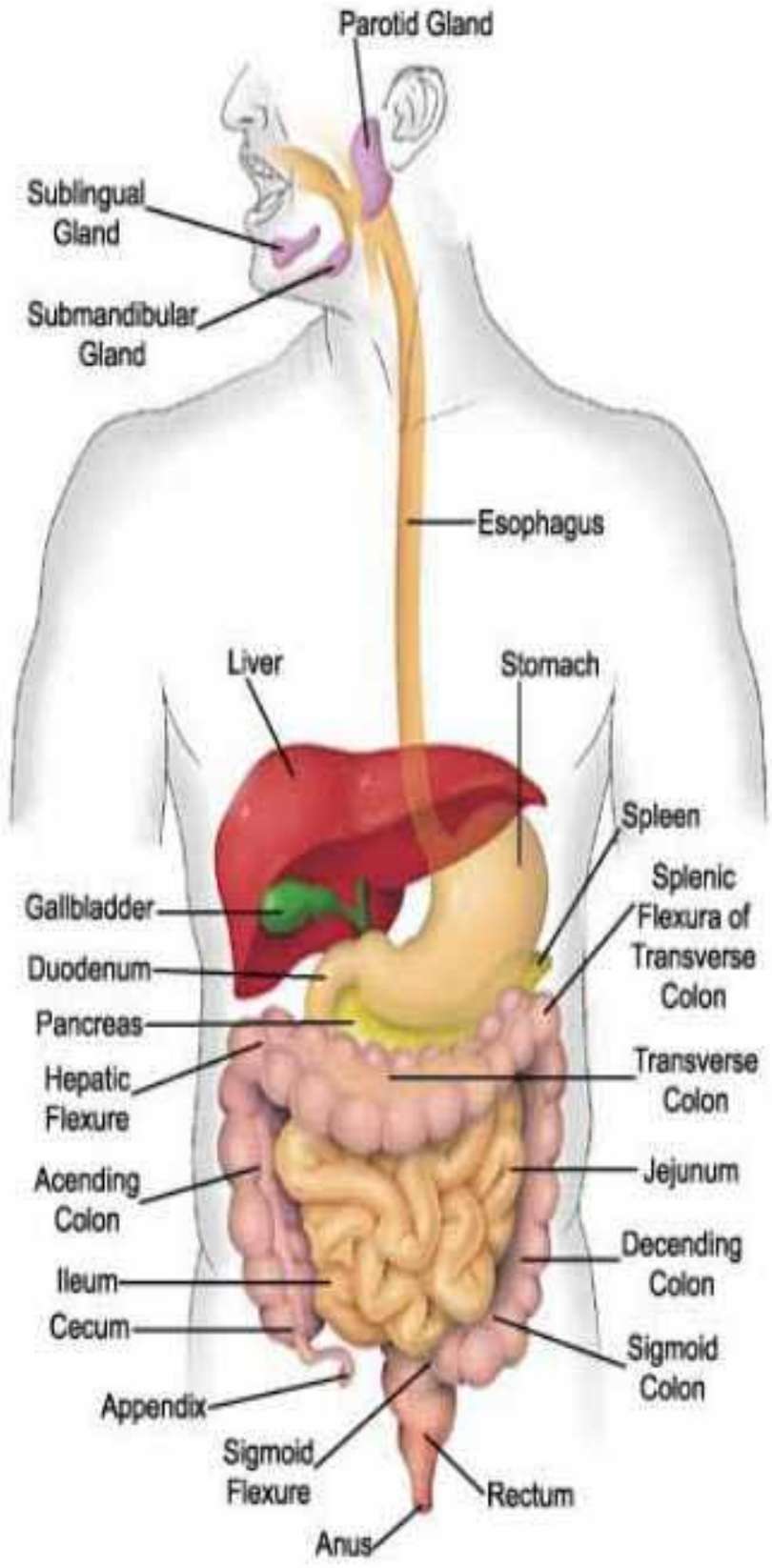
Trim fat, and use cooking methods with no added fat

Eat smaller portions of high fat foods

Feast or famine ?

Feast or famine ?

We have evolved highly efficient systems for using and storing energy from food



When food is not available:

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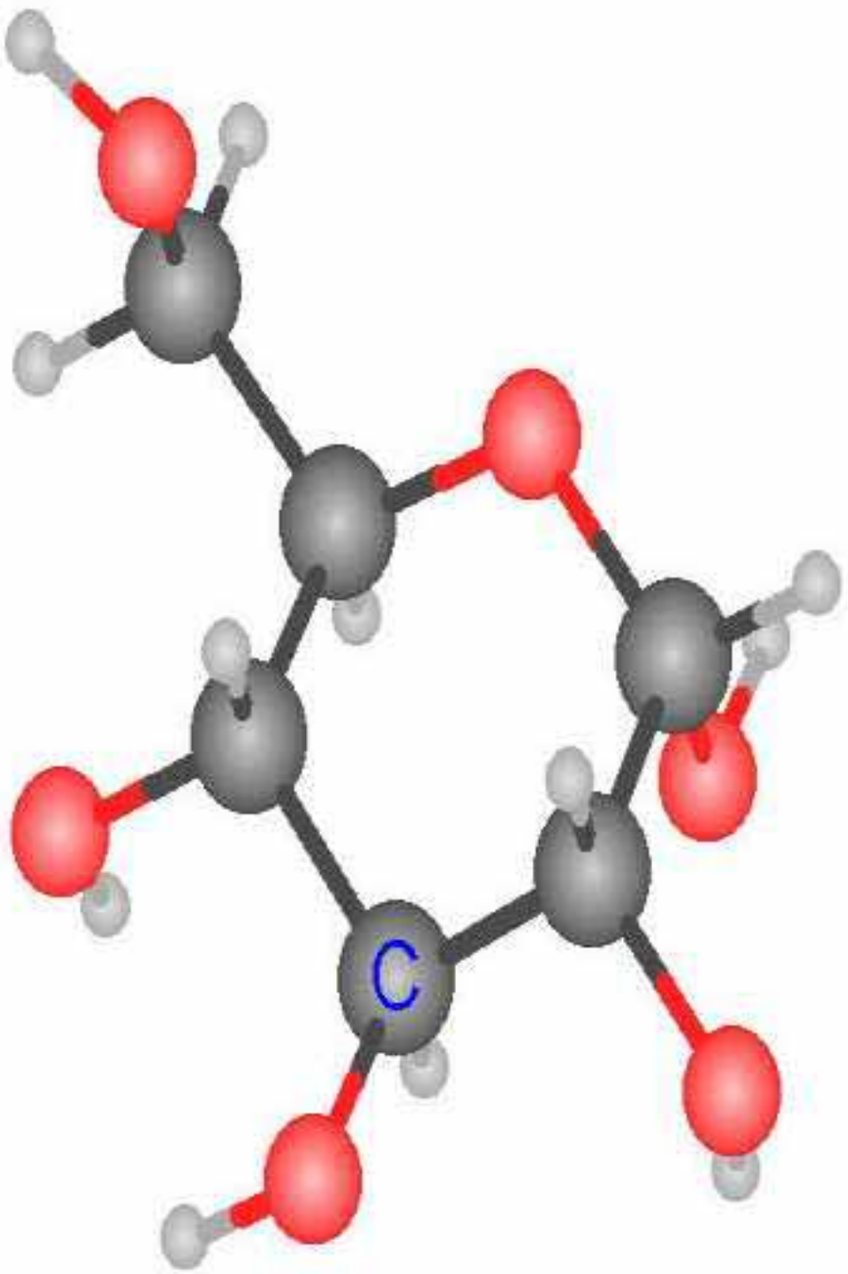
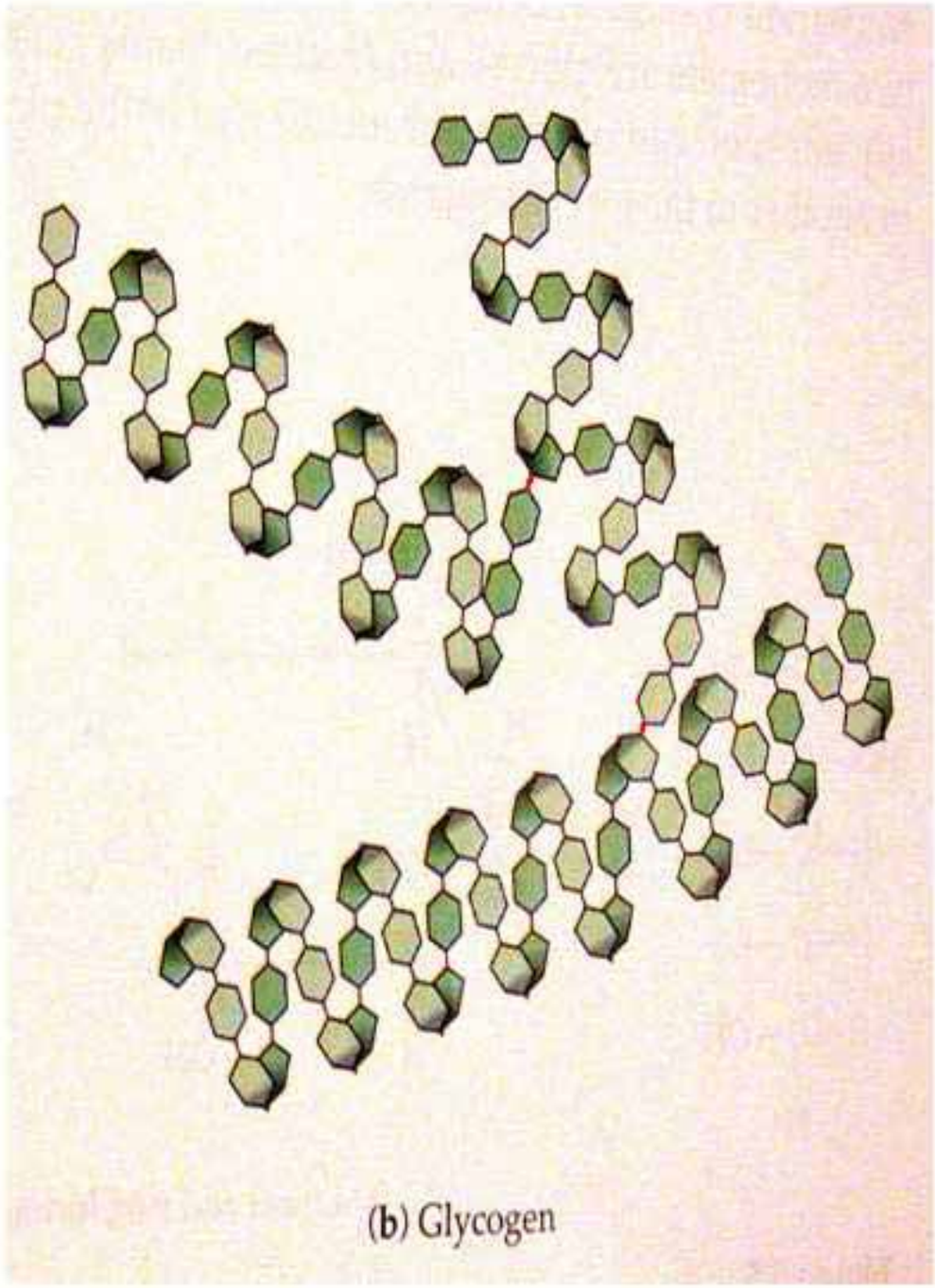
We have only 40 kcal of free glucose which lasts < 30min



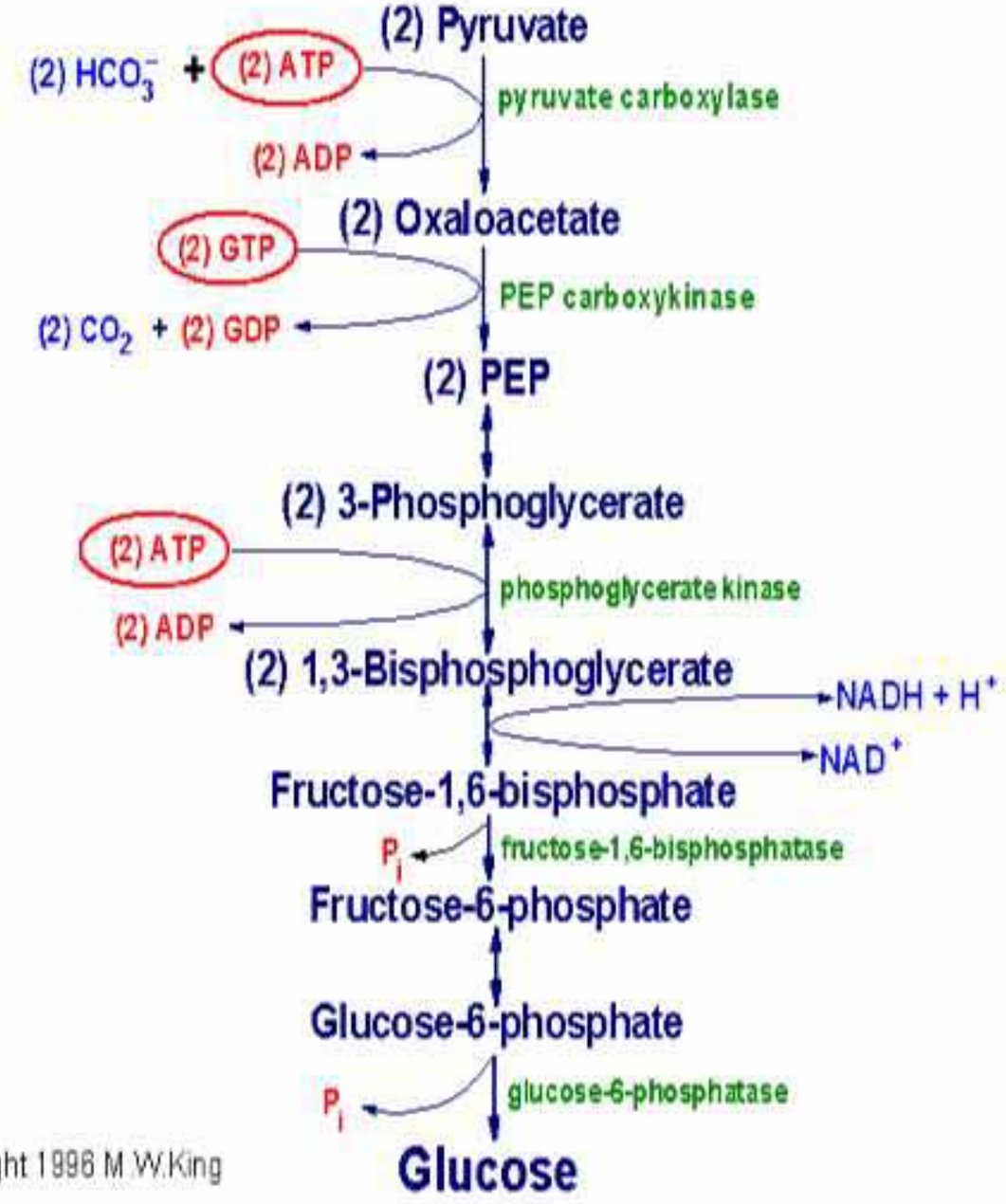
When food is not available:

For 24 hours stored glycogen in the liver is converted to glucose (2000kcal)



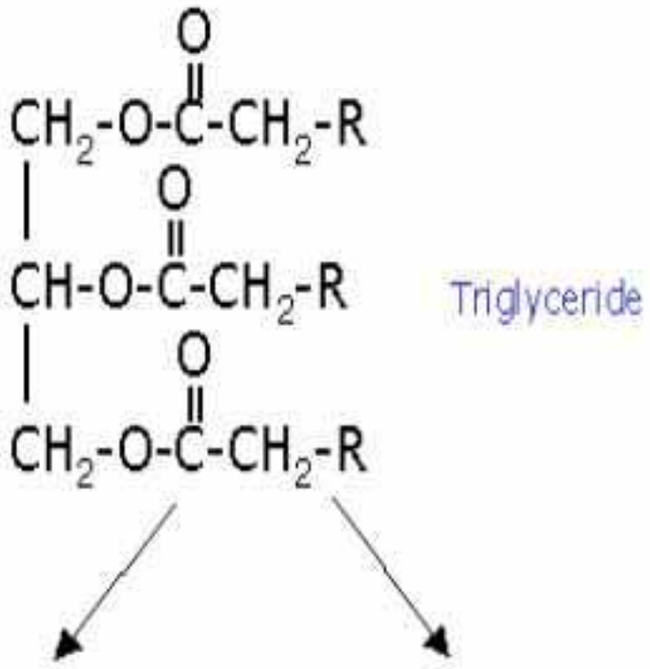
When food is not available:

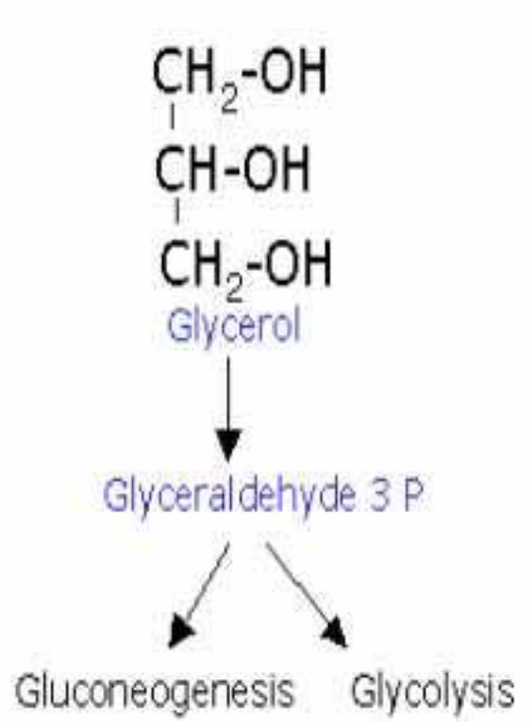
When the liver runs out of glycogen it converts amino acids into glucose (25,000 kcal)

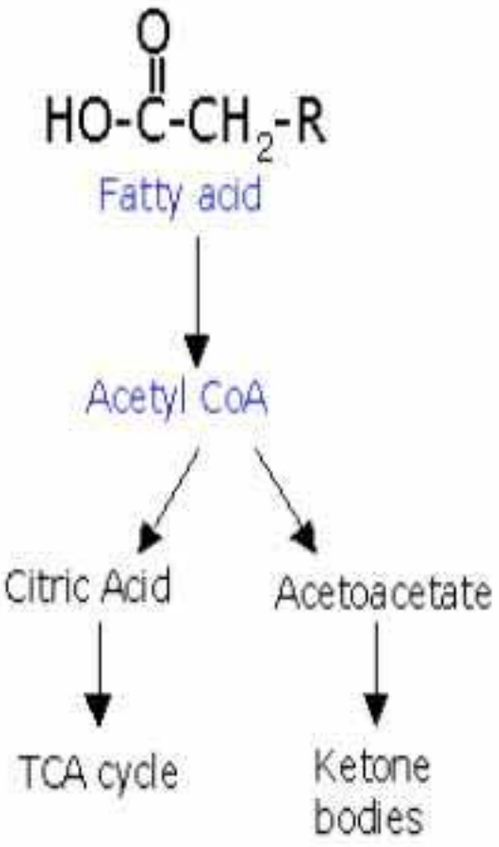


When food is not available:

Lipolysis breaks down the fat in fat cells to release fatty acids into the blood (100,000 kcal)

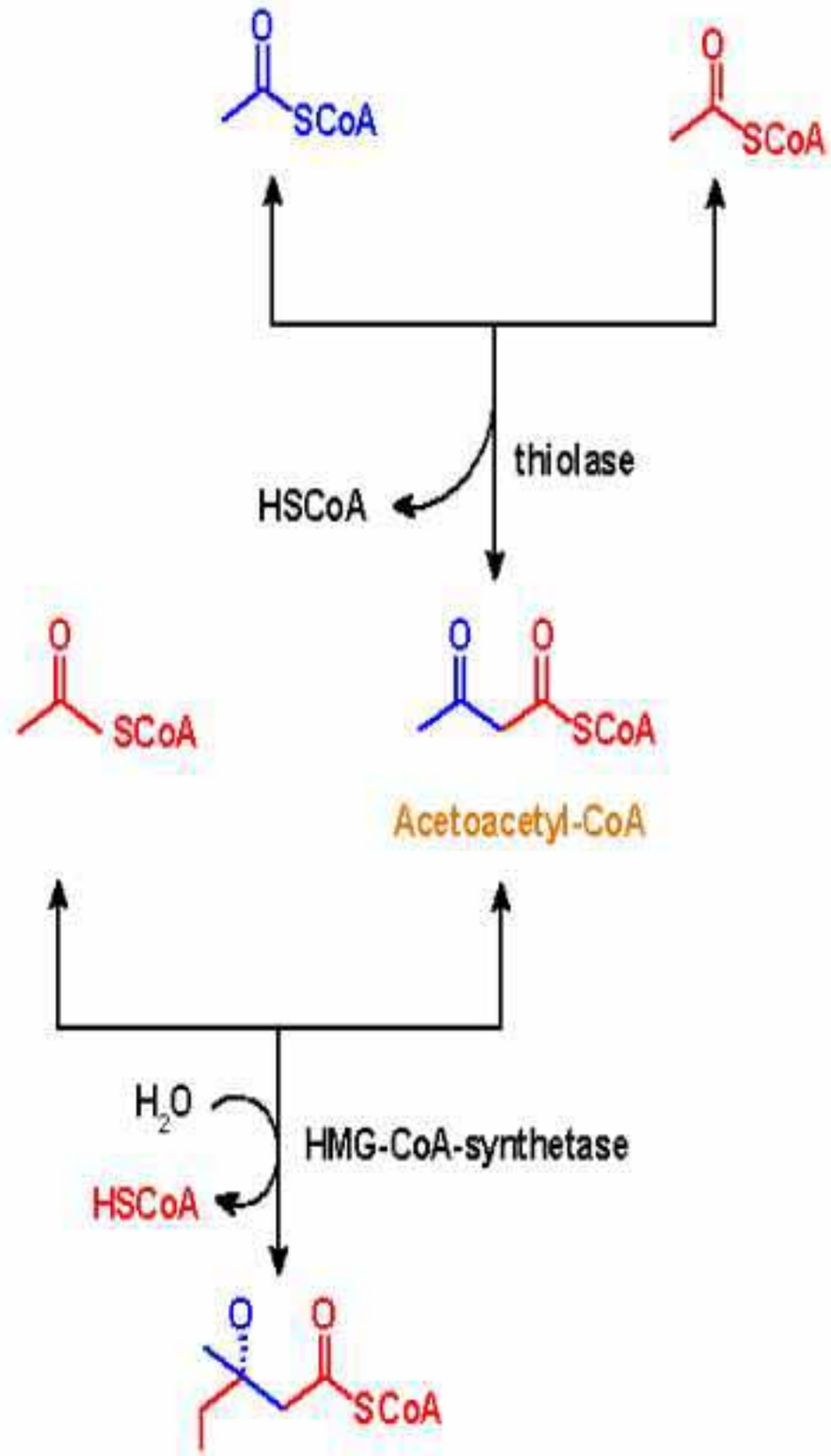






When food is not available:

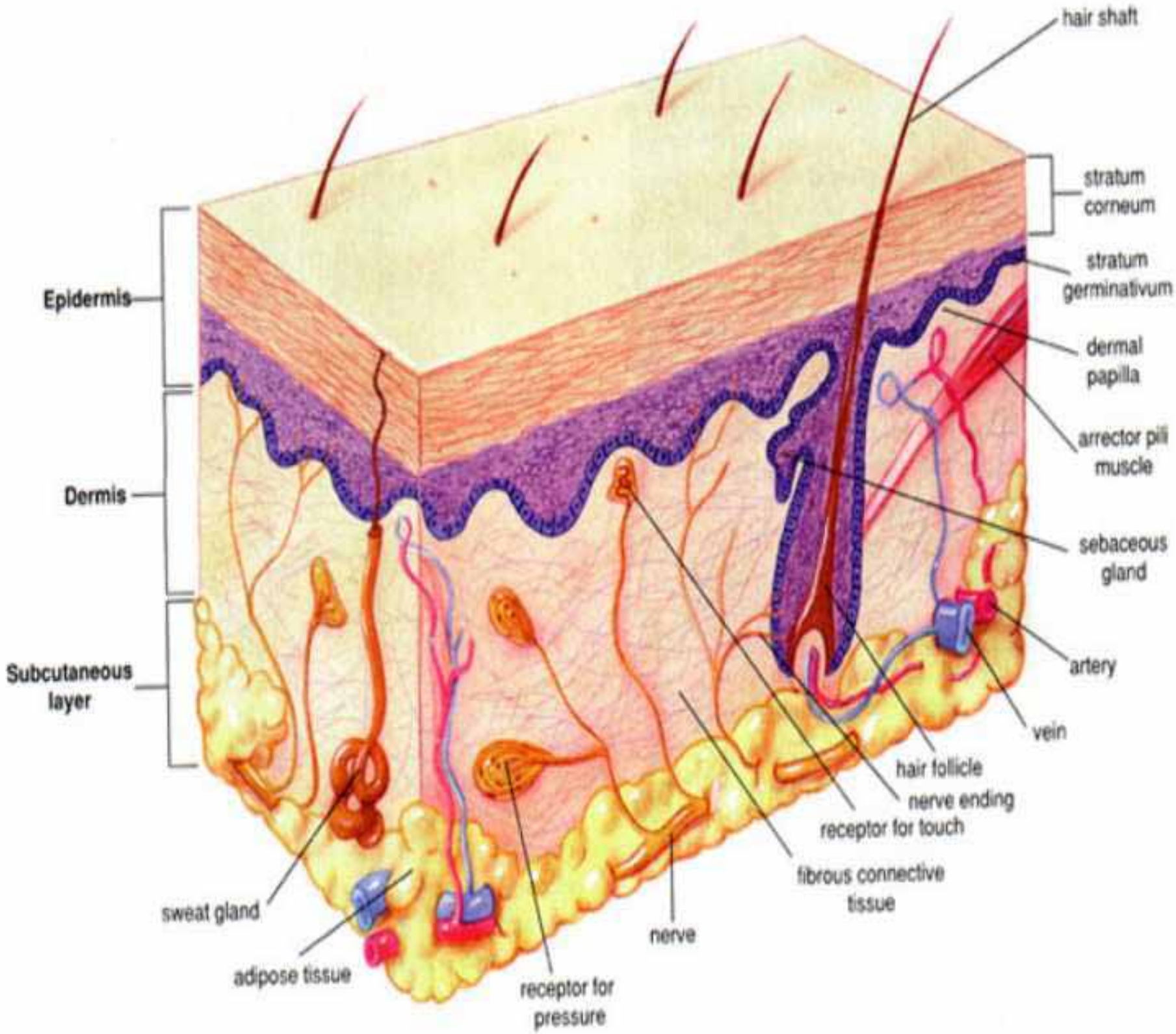
The liver can also turn fatty acids produced by lipolysis into ketone bodies



When food is not available:

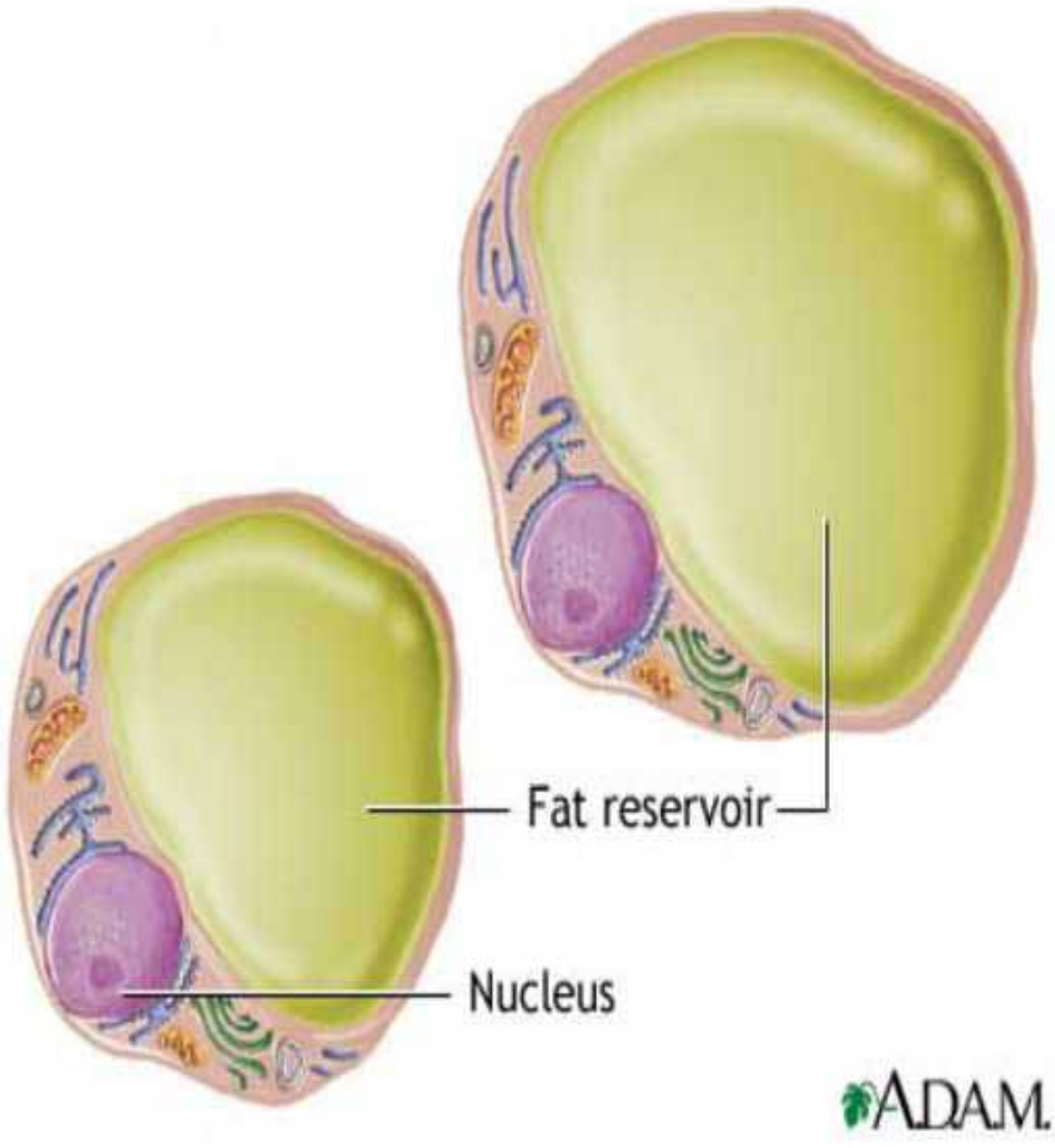
In this way we can survive without food for 30 - 40 days

Fat cells


hair shaft
stratum corneum
stratum germinativum
dermal papilla
arrector pili muscle
sebaceous gland
artery
vein
hair follicle
nerve ending
receptor for touch
fibrous connective tissue
nerve
receptor for pressure
adipose tissue
sweat gland
Epidermis
Dermis
Subcutaneous layer

Fat cells

Fat cells (adipocytes) are remarkable storage devices



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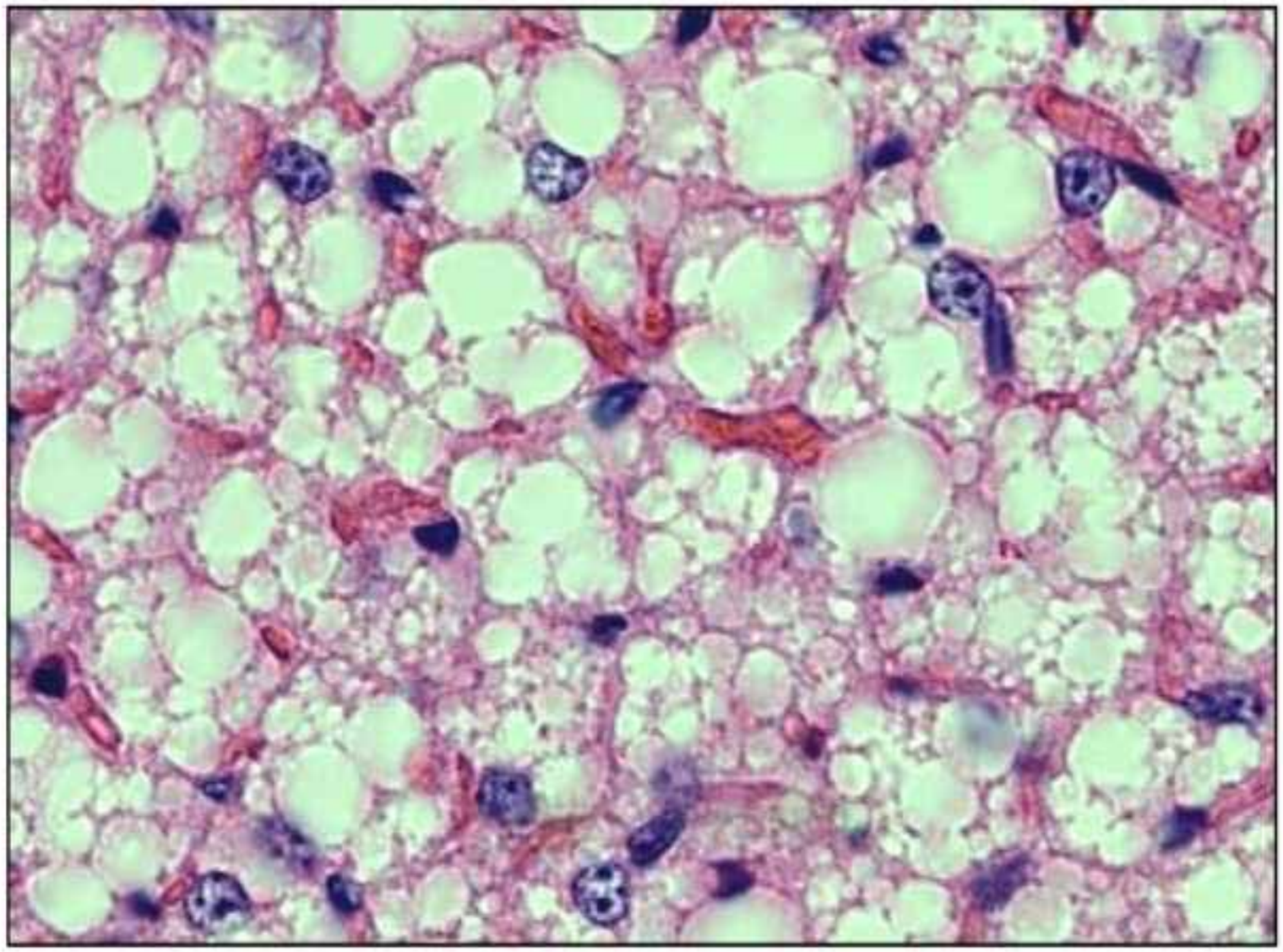
Fat cells (adipocytes) are remarkable storage devices

We are born with around 5 million of them



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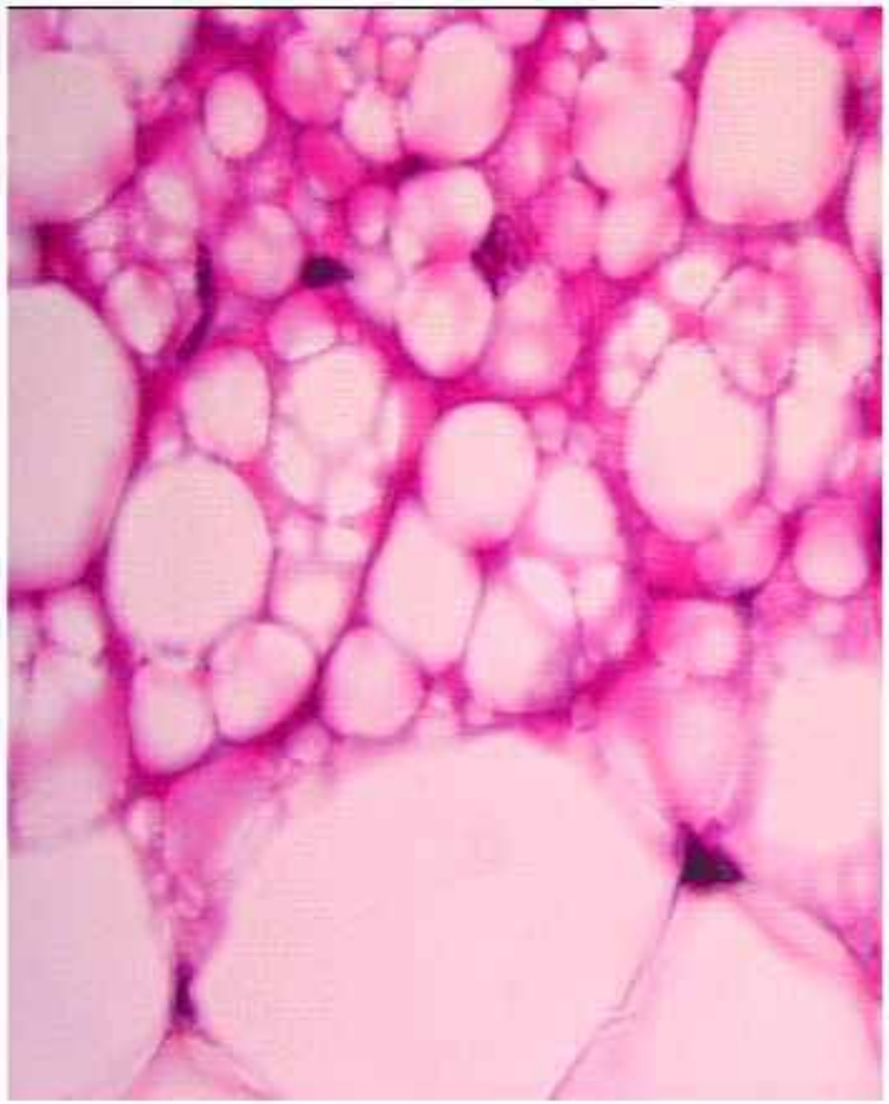
This increases to reach around 30-50 million in a normal weight adult



Fat cells

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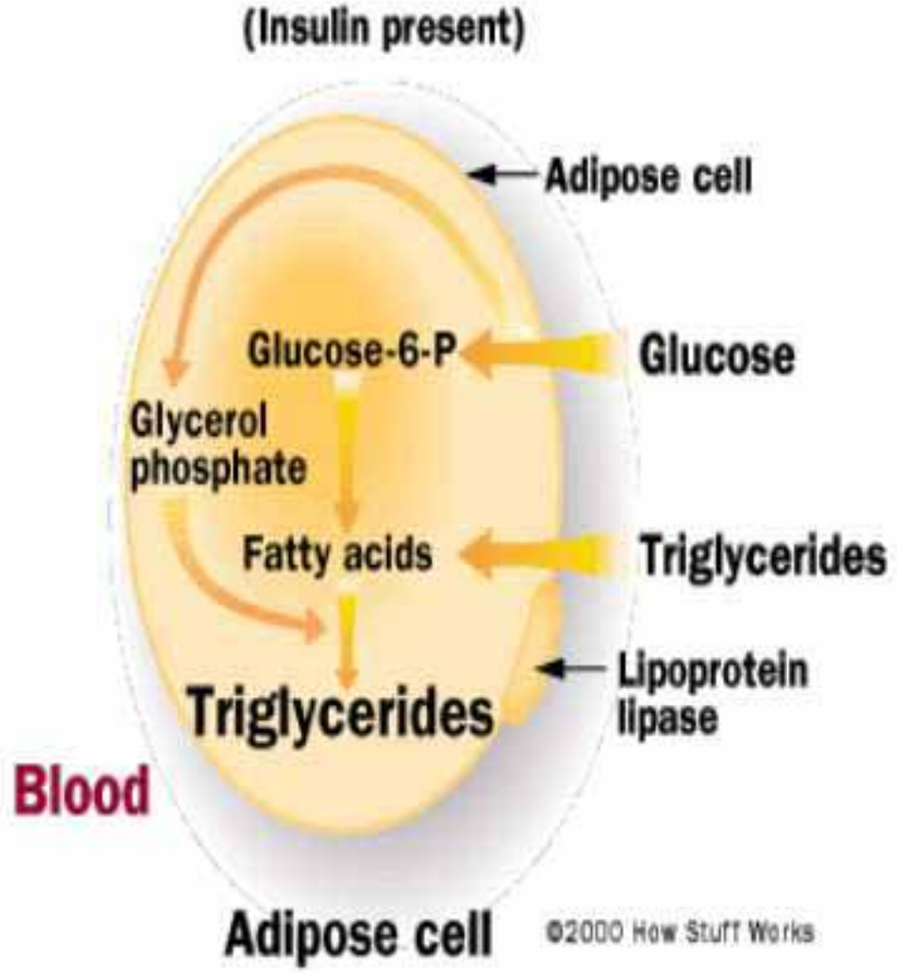
Around 100,000 kcal are stored in fat cells



So are fat cells just passive fat storage devices ?

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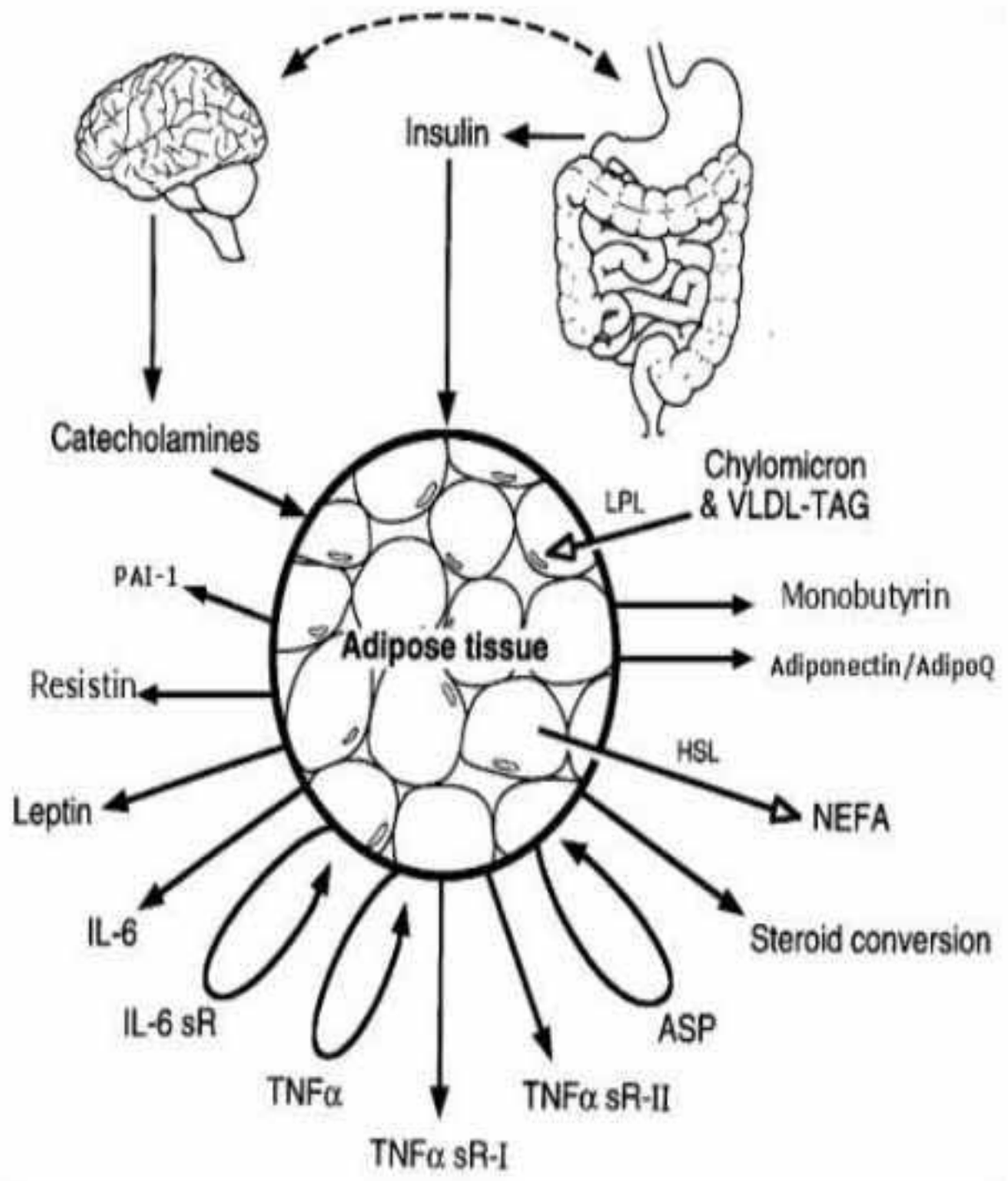
Without fat we could not utilise fat-soluble vitamins

- vitamins A, D, E and K

So are fat cells just passive fat storage devices ?

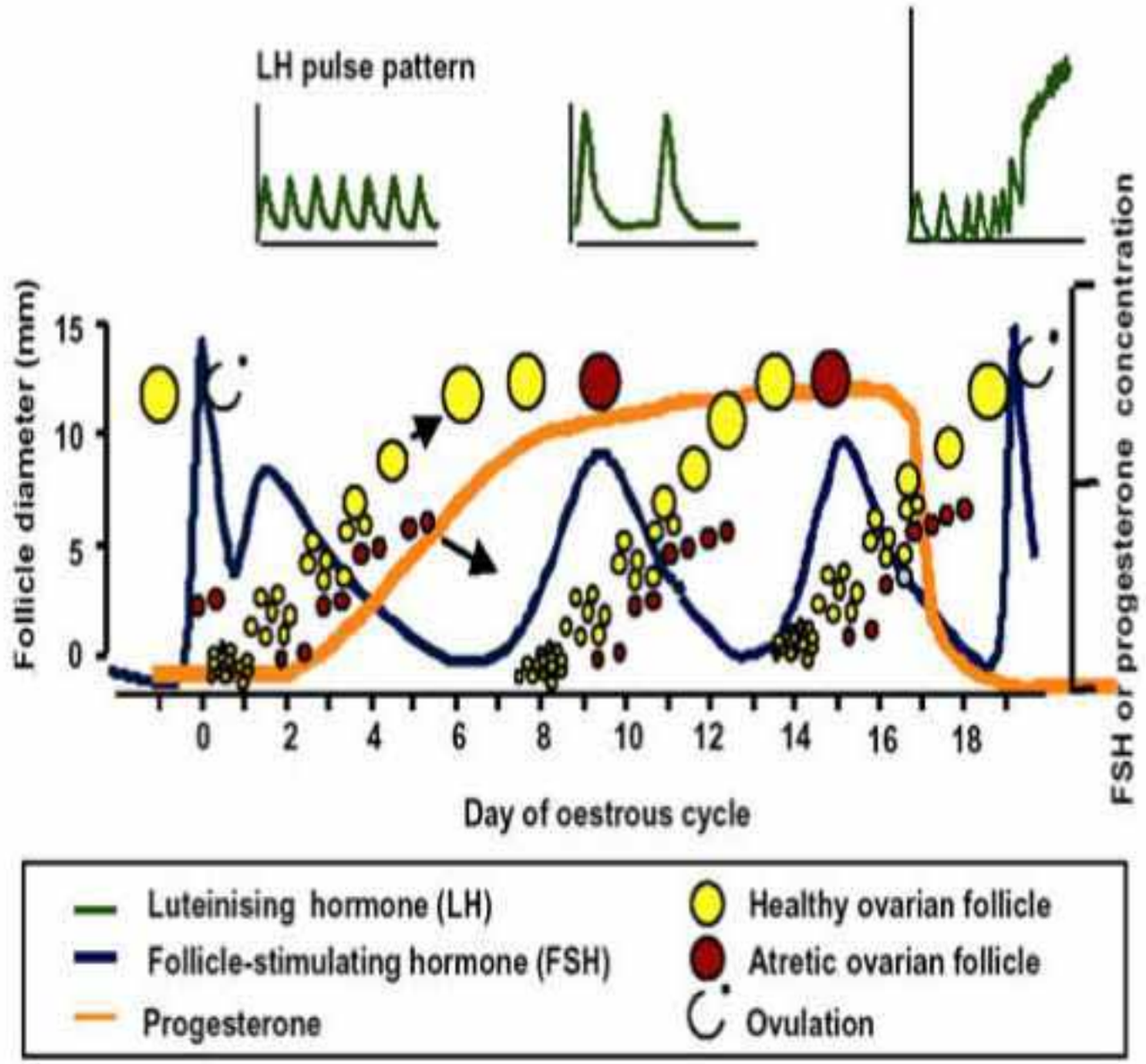
Fat cells produce at least 25 different hormones



So are fat cells just passive fat storage devices ?

Fat cells produce at least 25 different hormones

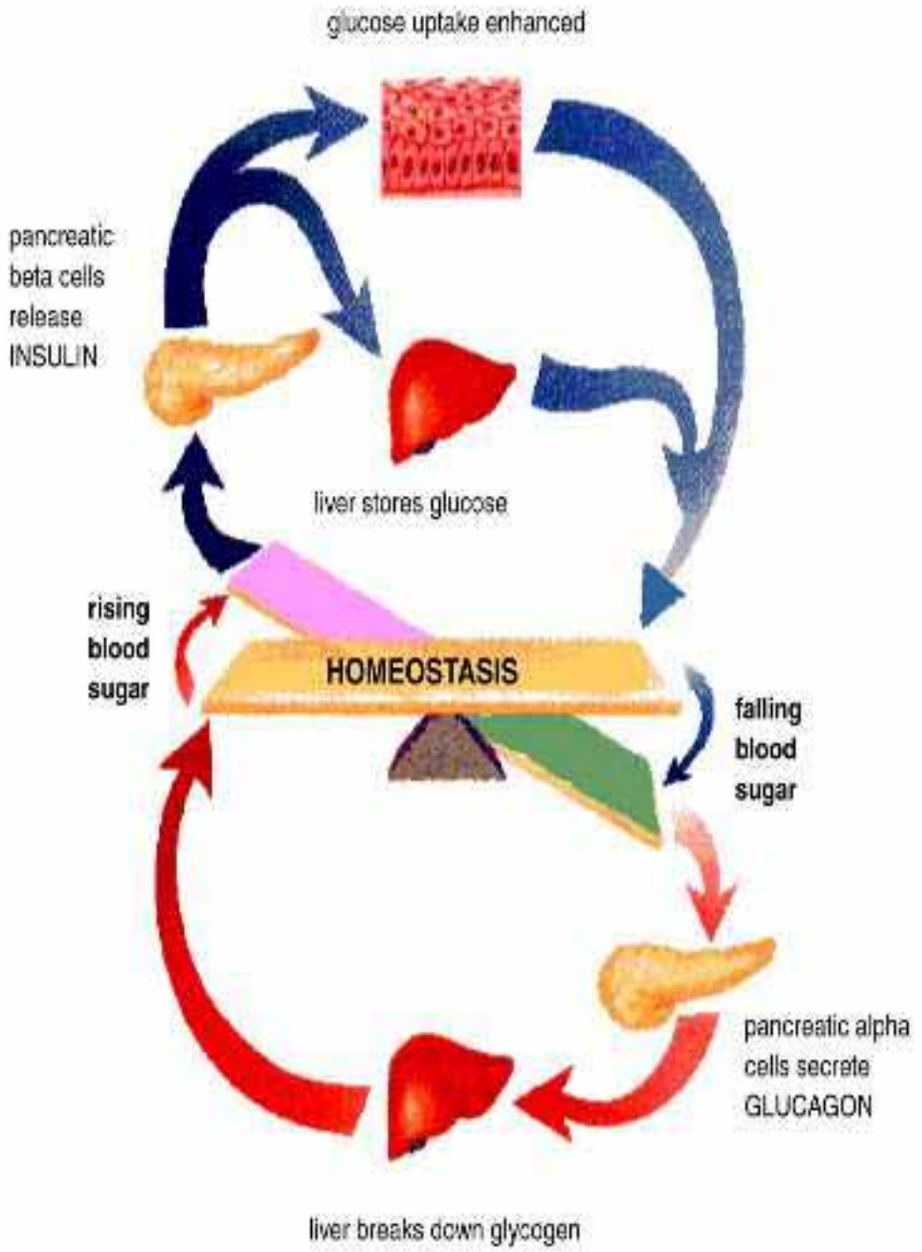
- vascular, immune and reproductive systems



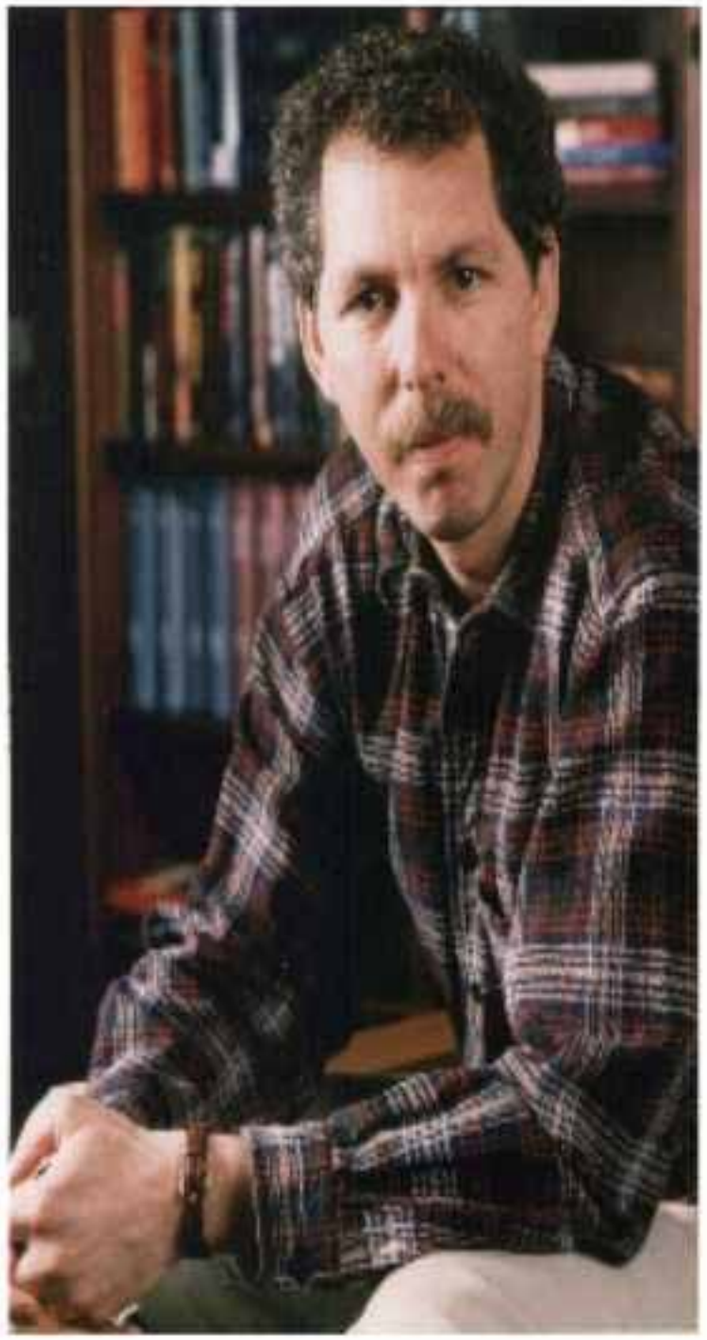
So are fat cells just passive fat storage devices ?

Fat cells produce at least 25 different hormones

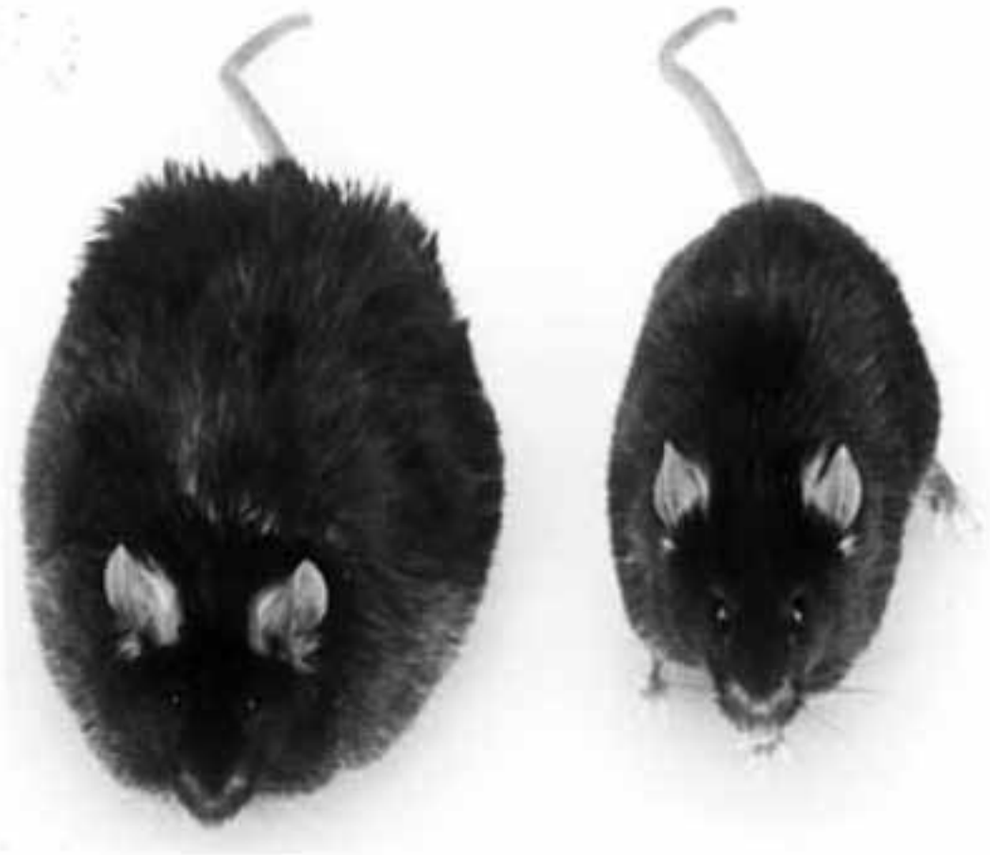
- sensitivity to insulin and control of hunger and satiety



The discovery of Leptin

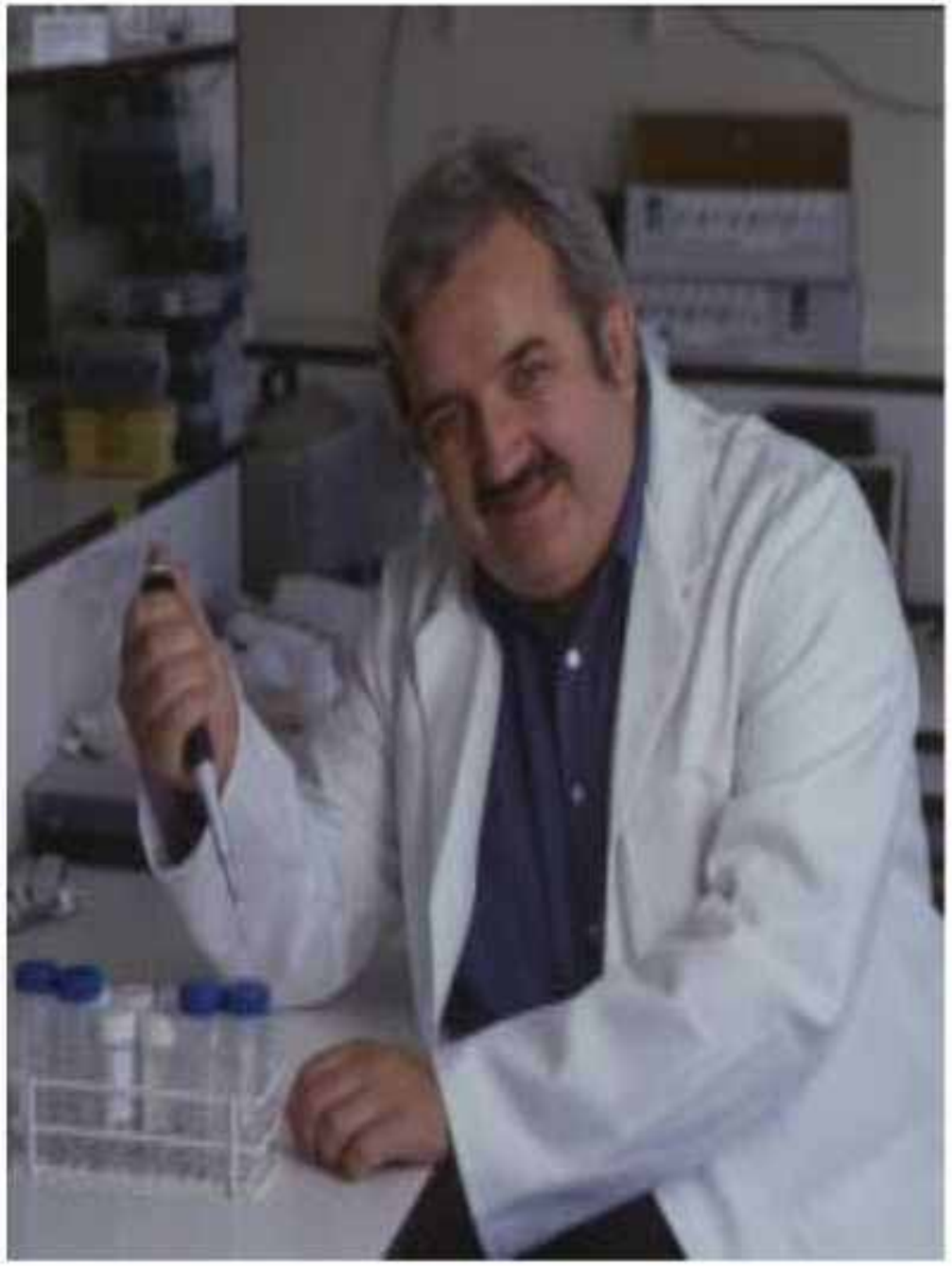


Jeffrey Friedman



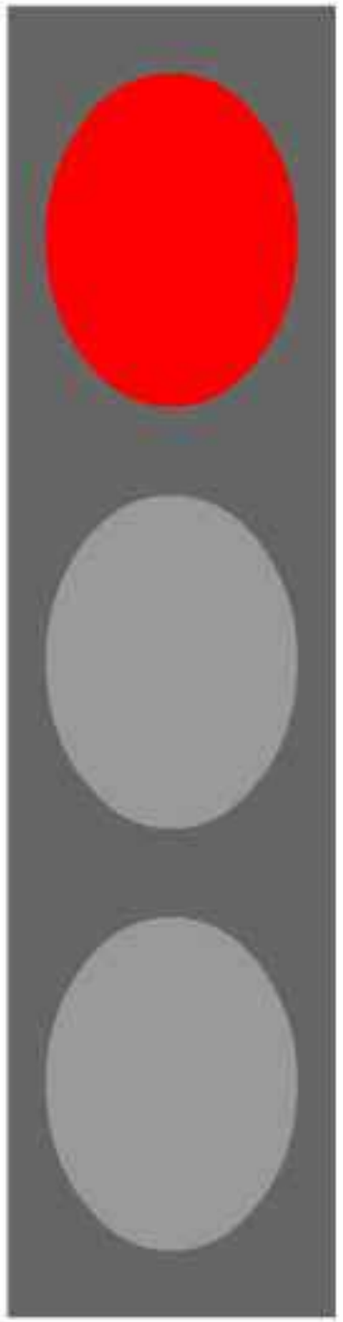
AMGEN®

Leptin-deficient humans



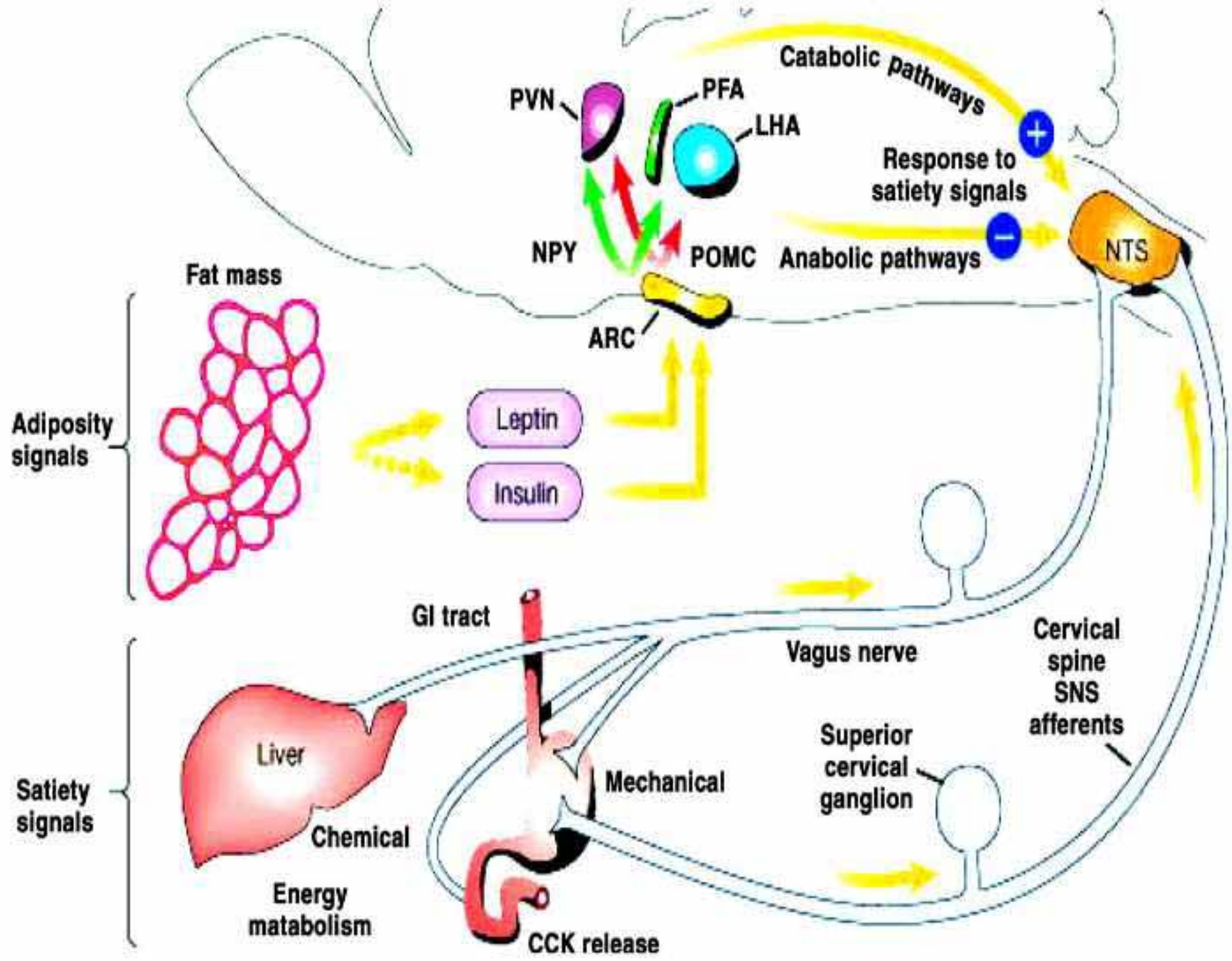
Stephen O'Rahilly

What controls feelings of hunger and satiety ?

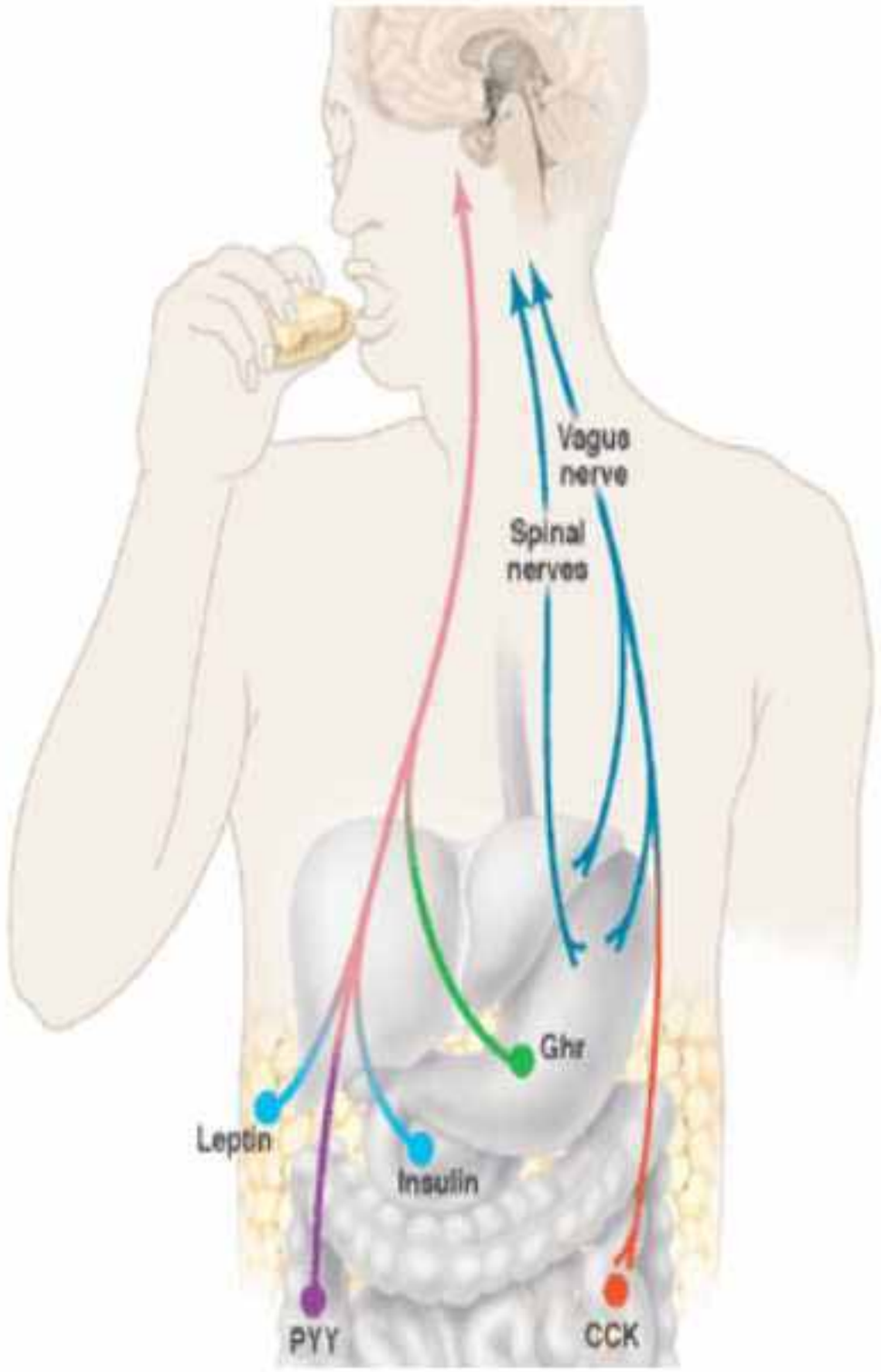


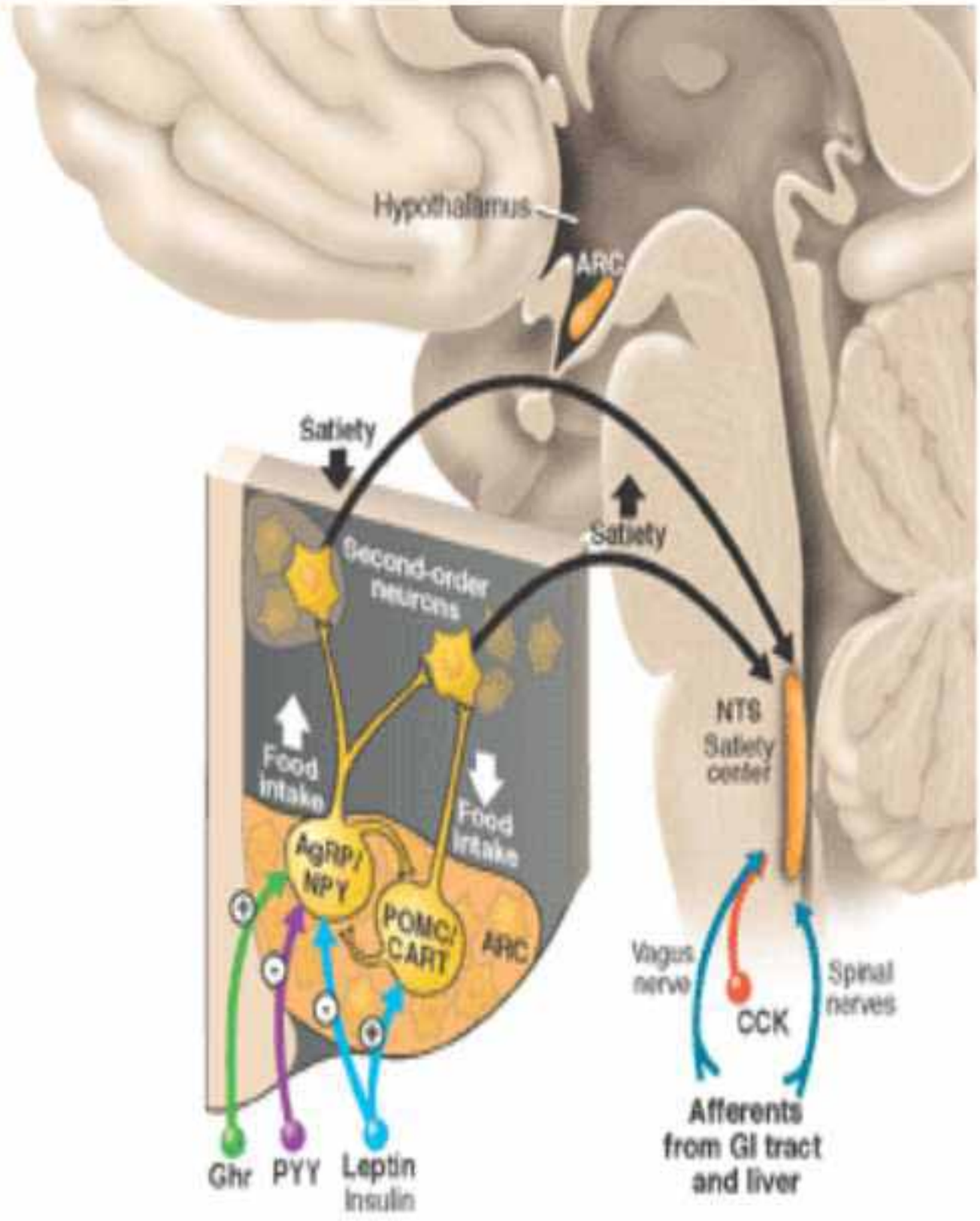
What controls feelings of hunger and satiety ?

Hunger and satiety pathways



What controls feelings of hunger and satiety ?





What controls feelings of hunger and satiety ?

What works in mice doesn't always work in humans

Both cognitive and reward components are important

Hunger, satiety and reward

We have not evolved to deal with high calorie-containing liquids

Hunger, satiety and reward

We have not evolved to deal with high calorie-containing liquids

Taking calories in liquid form can bypass satiety mechanisms

What defines obesity ?

Overview of adjective obese

1. corpulent, obese, weighty, rotund
   (excessively fat; "a weighty man")

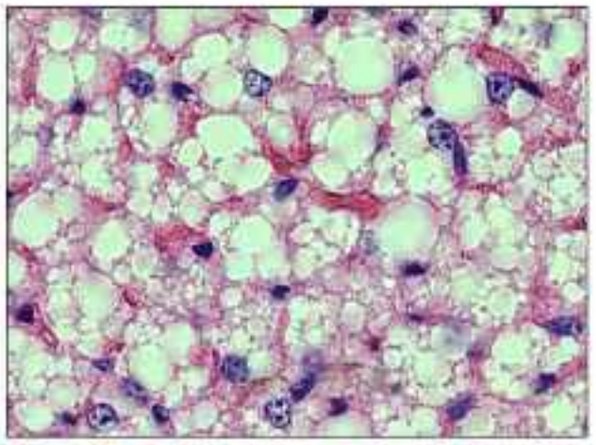
What defines obesity ?

If you don’t use it you’ll be wearing it

What defines obesity ?

If you don't use it you'll be wearing it

Fat cells don't just fill up they also proliferate



What defines obesity ?

50 million fat cells with 100,000 kcal
= normal

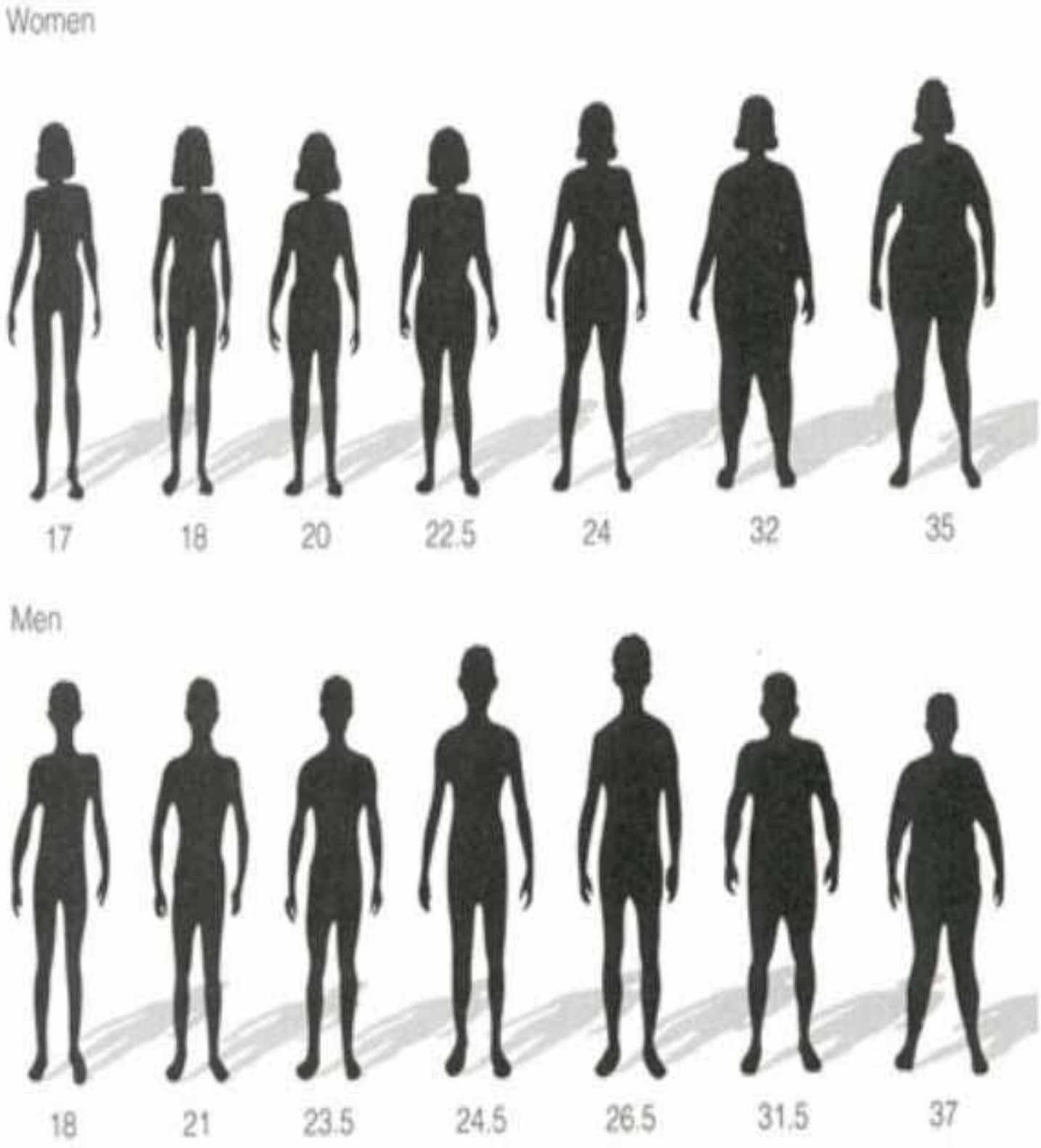
100 million fat cells with 200,000 kcal
= overweight

270 million fat cells with 540,000 kcal
= severe obesity

What defines obesity ?

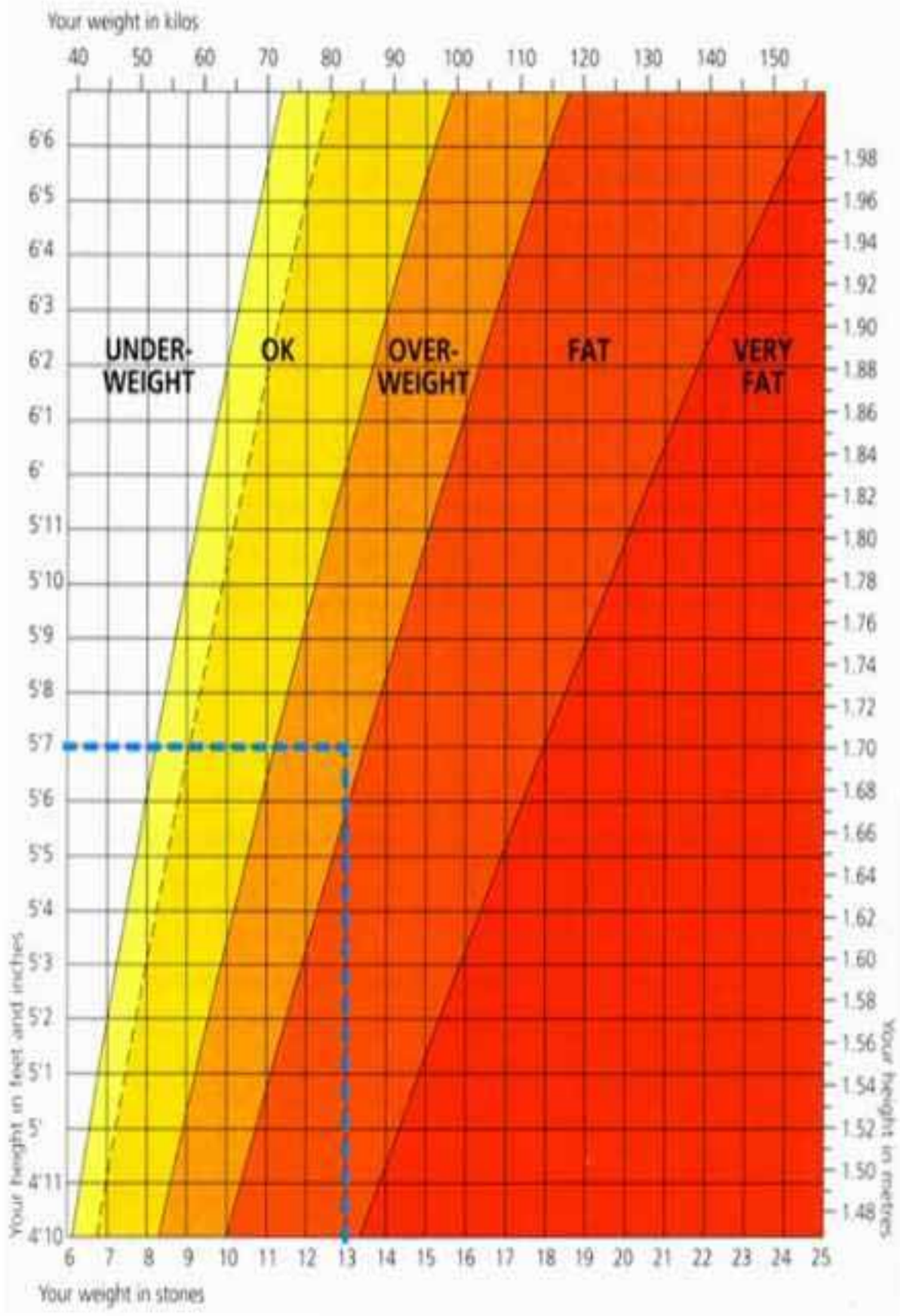
A fat cell is not just for Christmas - it is for life

The Body Mass Index (BMI)



The Body Mass Index (BMI)

$$BMI = weight(kg)/(height(m)^{2})$$



The Body Mass Index (BMI)

Classification	BMI (kg/m^2)	Risk of co-morbidities
Underweight	<18.5	Low
Normal range	18.5 - 24.9	Average
Overweight	25 - 29.9	Mildly increased
Obese	>30	
Class I	30 - 34.9	Moderate
Class II	35 - 39.9	Severe

International Obesity Task Force

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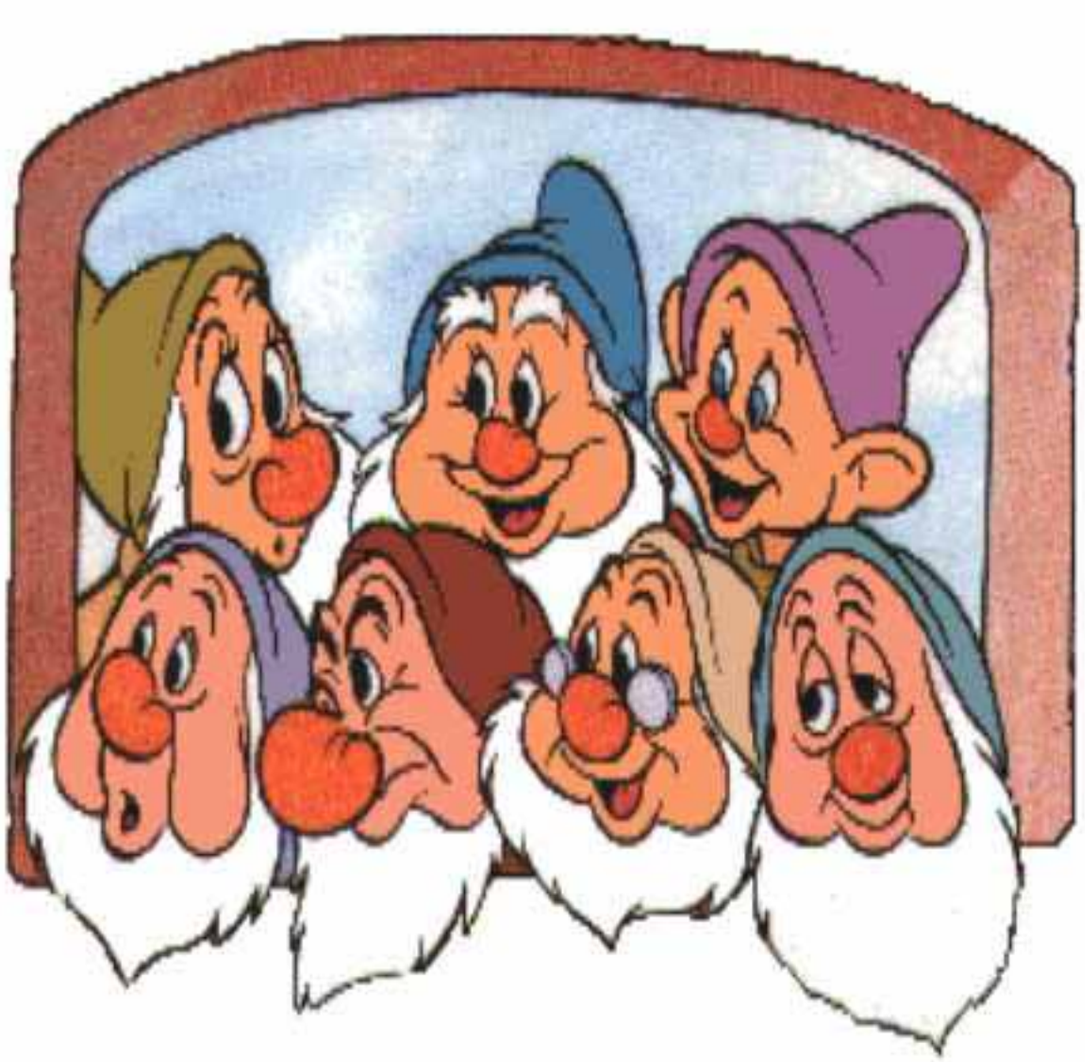
Class II	35 - 39.9	Severe
Class III*	>40	Very severe

(*severe, morbid or super obesity)

International Obesity Task Force

The Body Mass Index (BMI)

Not good for short or muscle-bound individuals



The Body Mass Index (BMI)

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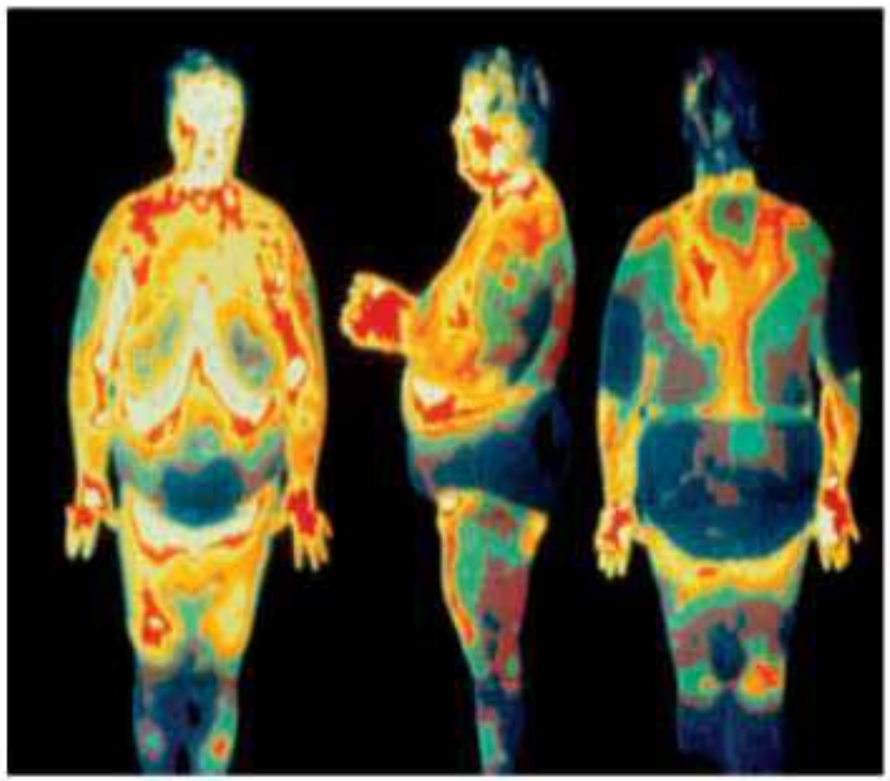
Waist-hip ratios

The Body Mass Index (BMI)

Not good for short or muscle-bound individuals

Waist-hip ratios

Imaging or bioelectric impedance measurement



So do we really have a problem and does it really matter?

So do we really have a problem and does it really matter?

The simple answer is yes

Failure to act now will jeopardise the quality of life of both current and future generations

House of Commons

Health Committee

Obesity

Third Report of Session 2003–04

Volume I

Report, together with formal minutes

Ordered by The House of Commons
to be printed 10 May 2004

House of Commons Health Committee report on Obesity

Around two-thirds of the population of England are overweight or obese

Obesity is projected to reach over 50% by 2025

On present trends it will soon surpass smoking as the greatest cause of premature loss of life

1 in 11 annual deaths in is attributable to excess weight

Estimated economic cost of obesity is £3.3–3.7 billion per year and of obesity plus overweight £6.6–7.4 billion

Regional differences

Hull is the chubbiest town in Britain
and Kingston-on-Thames the leanest

John Prescott MP

Jerome K. Jerome

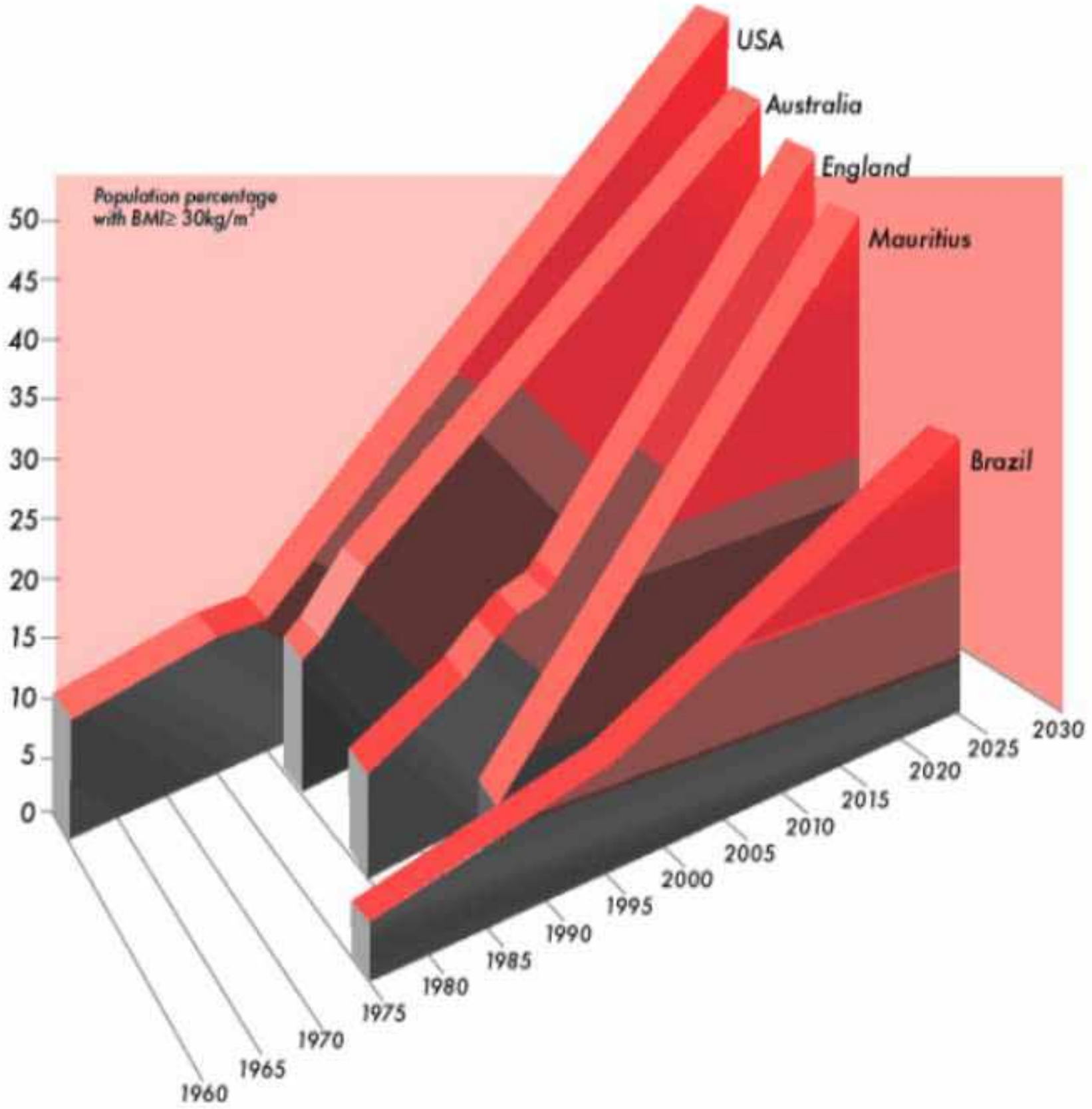
Regional differences

Hull is the chubbiest town in Britain
and Kingston-on-Thames the leanest

Most likely individuals to be overweight are white, working class families who have poor education and do little exercise

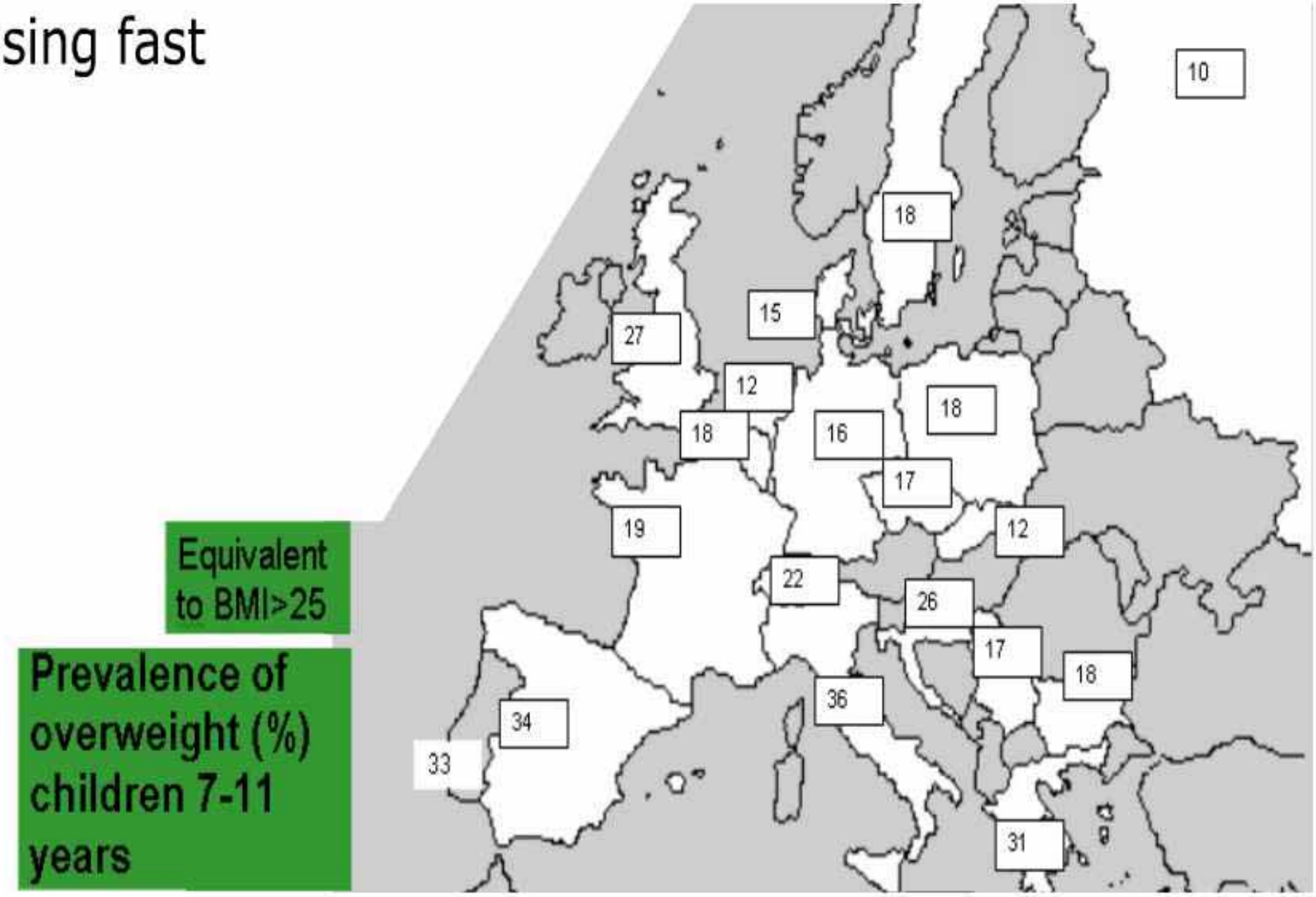
Lean towns are populated by a higher proportion of individuals who are well educated, have the money to eat well and exercise regularly

The Global Epidemic



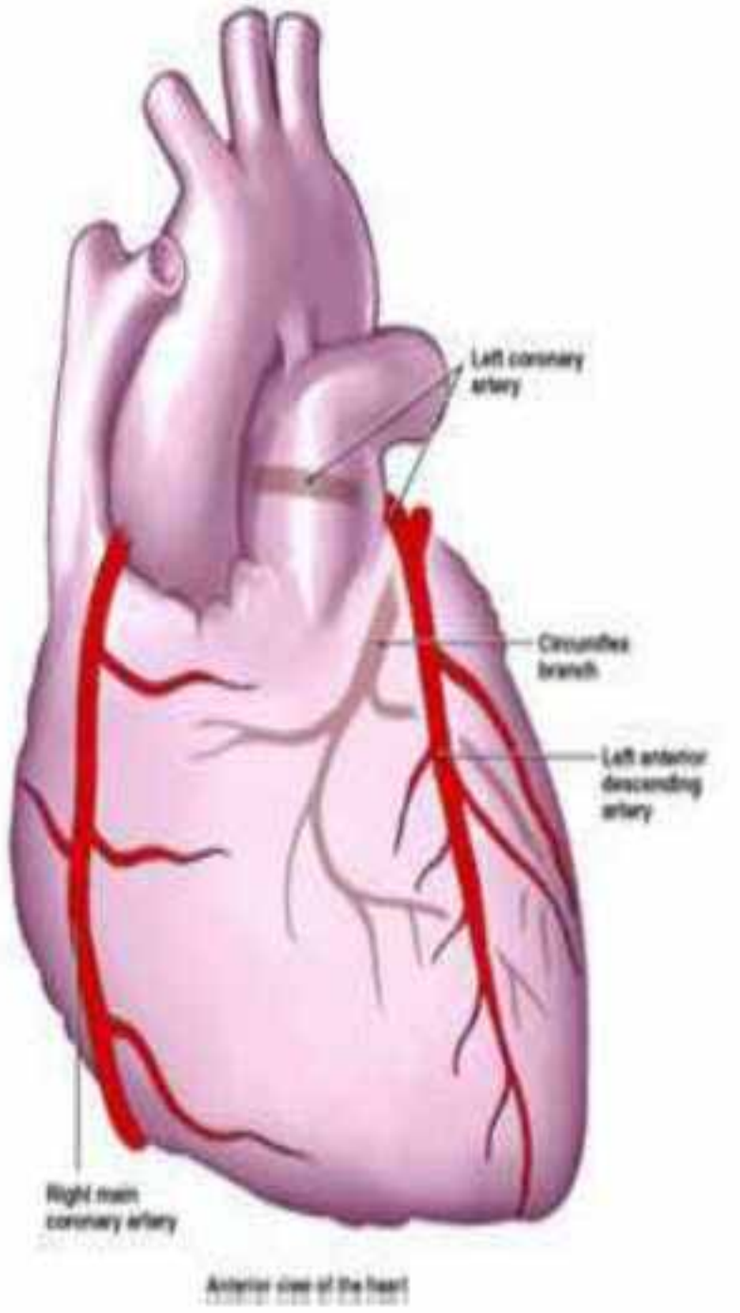
The Global Epidemic - childhood obesity

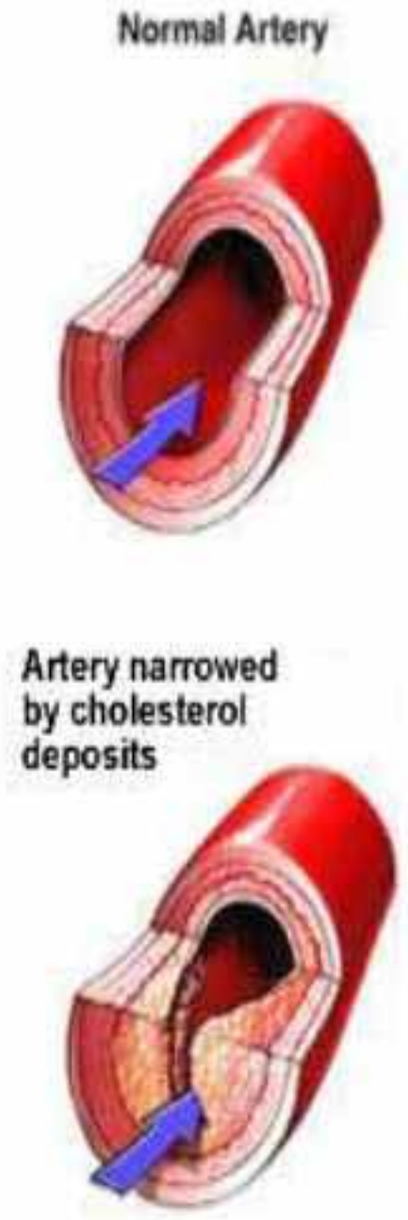
The proportion of children who are obese or overweight is increasing fast



Obesity and cardiovascular disease

BMI >30 = 3-fold increase in risk of heart disease

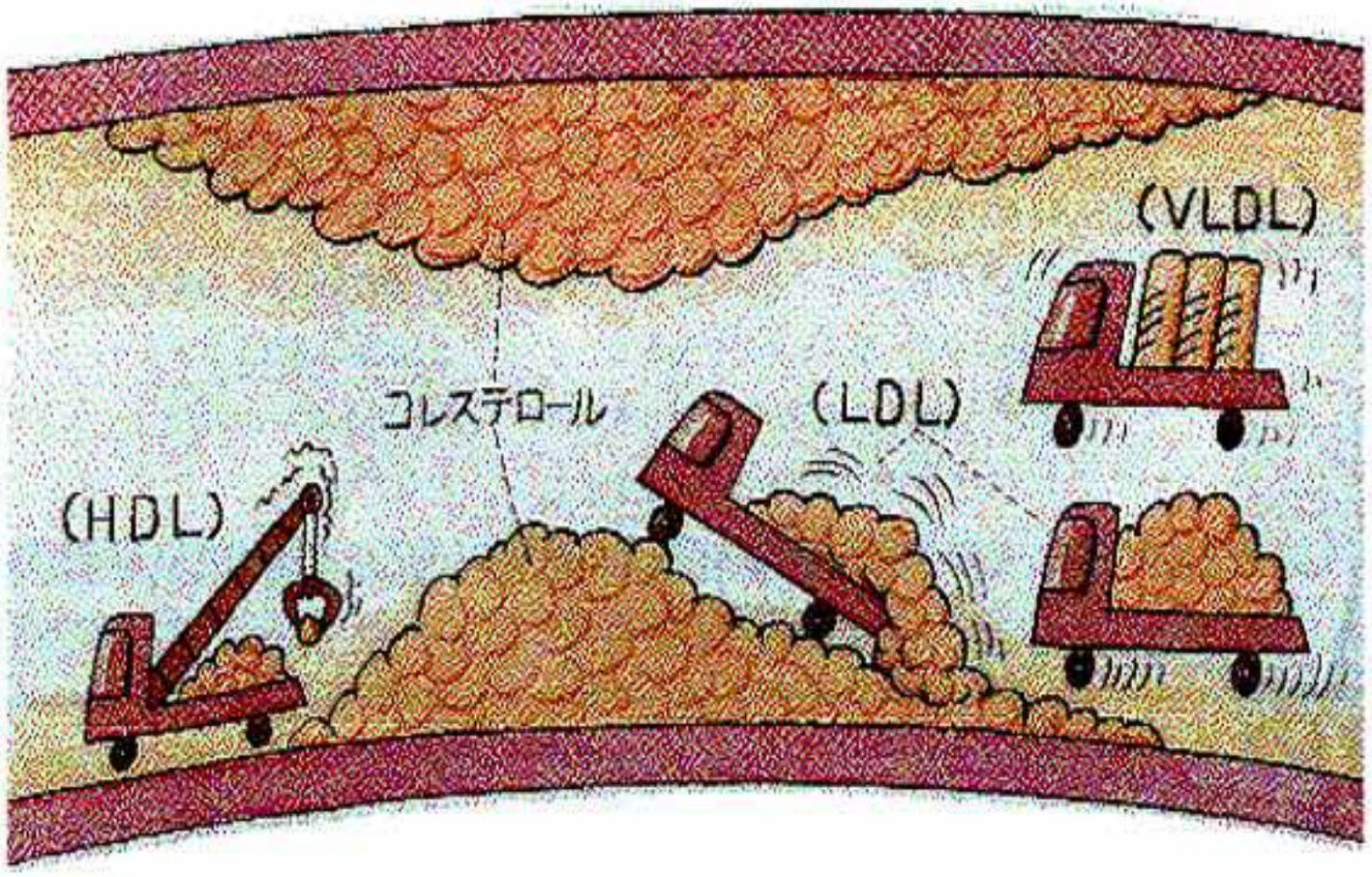




Obesity and cardiovascular disease

BMI >30 = 3-fold increase in risk of heart disease

Increased LDL and decreased HDL cholesterol



Obesity and cardiovascular disease

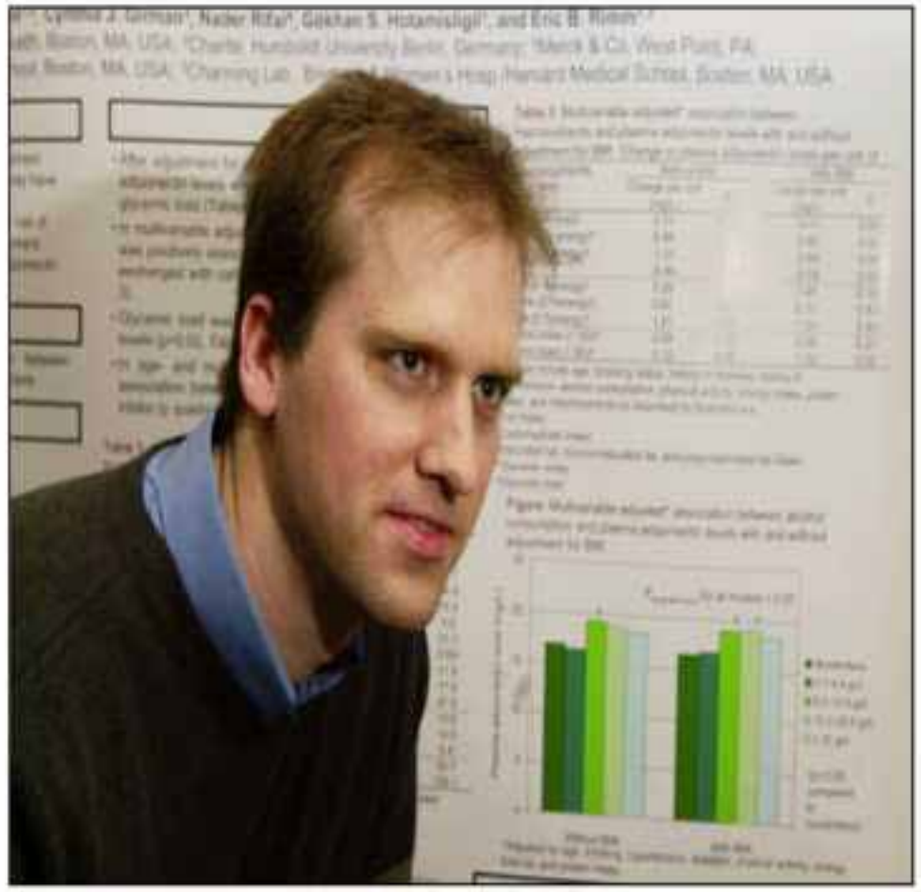
BMI >30 = 3-fold increase in risk of heart disease

Increased LDL and decreased HDL cholesterol

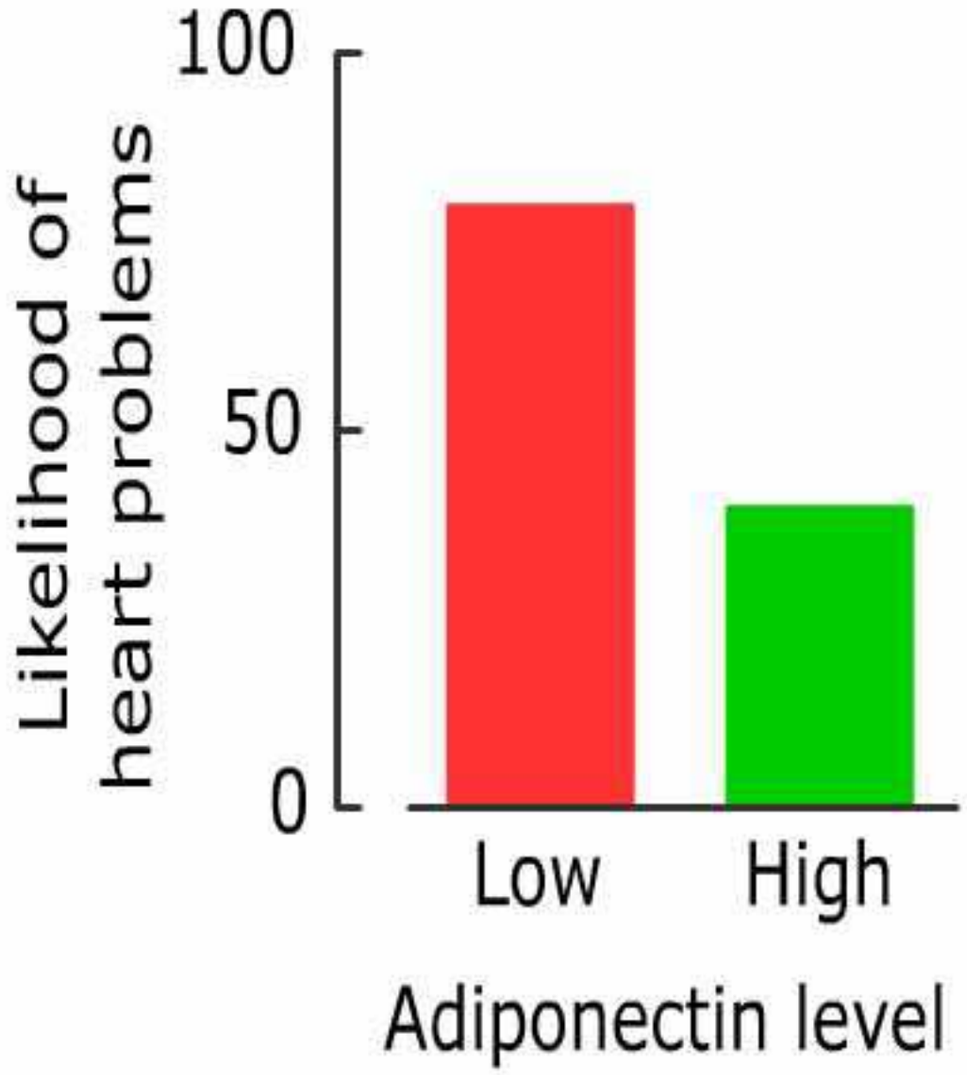
Increased angiotensinogen from fat constricts blood vessels and increases blood pressure

Obesity and cardiovascular disease

Decreased production of adiponectin from fat cells



Pischon *et al* JAMA 2004



Obesity, metabolic syndrome and diabetes - 'diabesity'

Type 2 diabetes affects 1.5 million in the UK

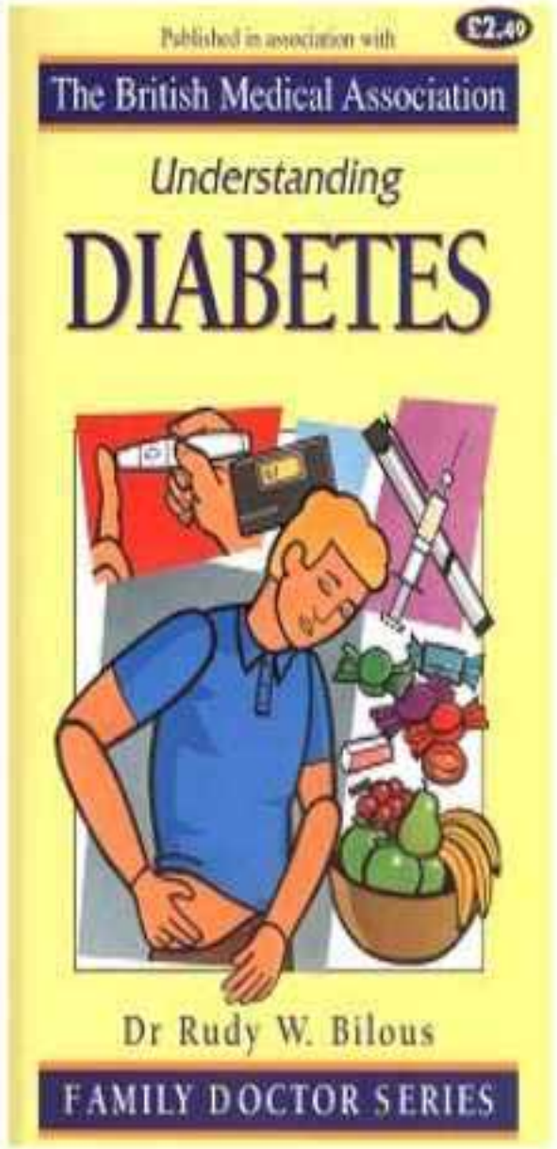
Affects 14.4 million in the USA

Insensitivity to insulin

Reduced ability to take in energy

High blood sugar levels

Damage to eyes, kidneys, nerves and heart etc.



Obesity, metabolic syndrome and diabetes - 'diabesity'

In the UK diabetes costs around 9% of the total NHS budget and is predicted to rise to 25% by 2025

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Thursday, 16 March, 2000, 18:56 GMT

Hidden billions spent on diabetes

Diabetic complications can lead to hospital

Caring for the UK's type II diabetics costs the health service £2bn a year, according to a report by an economic think tank.

The King's Fund says that too much is being spent on dealing with the complications of the type II disease, and not enough trying to prevent it.

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  Diabetic care 'inadequate'
- 09 Jul 99 | Health
  Diabetics ignore vital blood tests

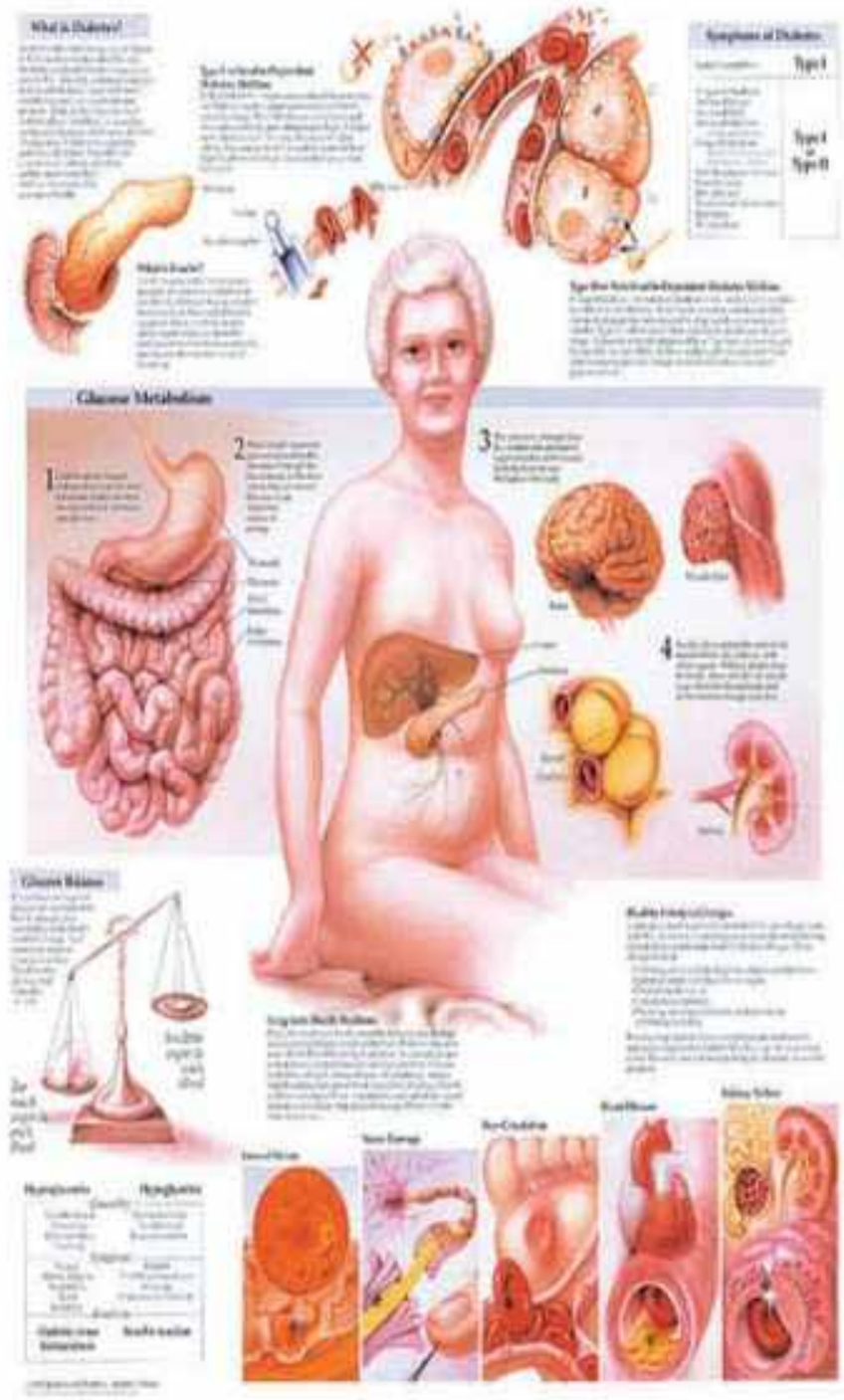
Obesity, metabolic syndrome and diabetes - 'diabesity'

At least 80% of individuals with type 2 diabetes are overweight or obese

The risk of becoming diabetic is increased even if overweight

For women with a BMI of 28 there is an 18-fold increase

For women with a BMI of 35 there is a 92-fold increase



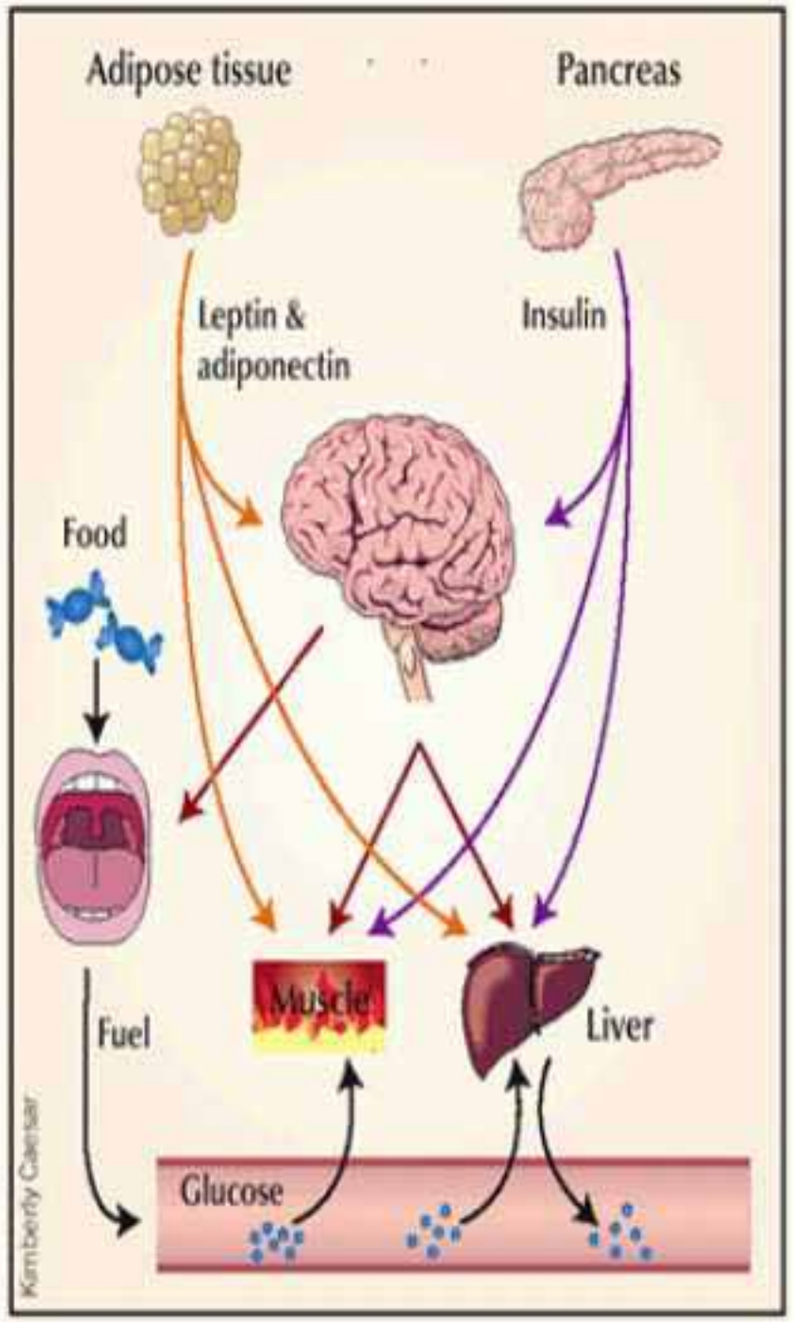
Obesity, metabolic syndrome and diabetes - 'diabesity'

Diabetes is 3-5 times more common in people of Africa and the Caribbean than in the UK

Obesity, metabolic syndrome and diabetes - 'diabesity'

Two hormones produced by fat cells are linked with insulin resistance:

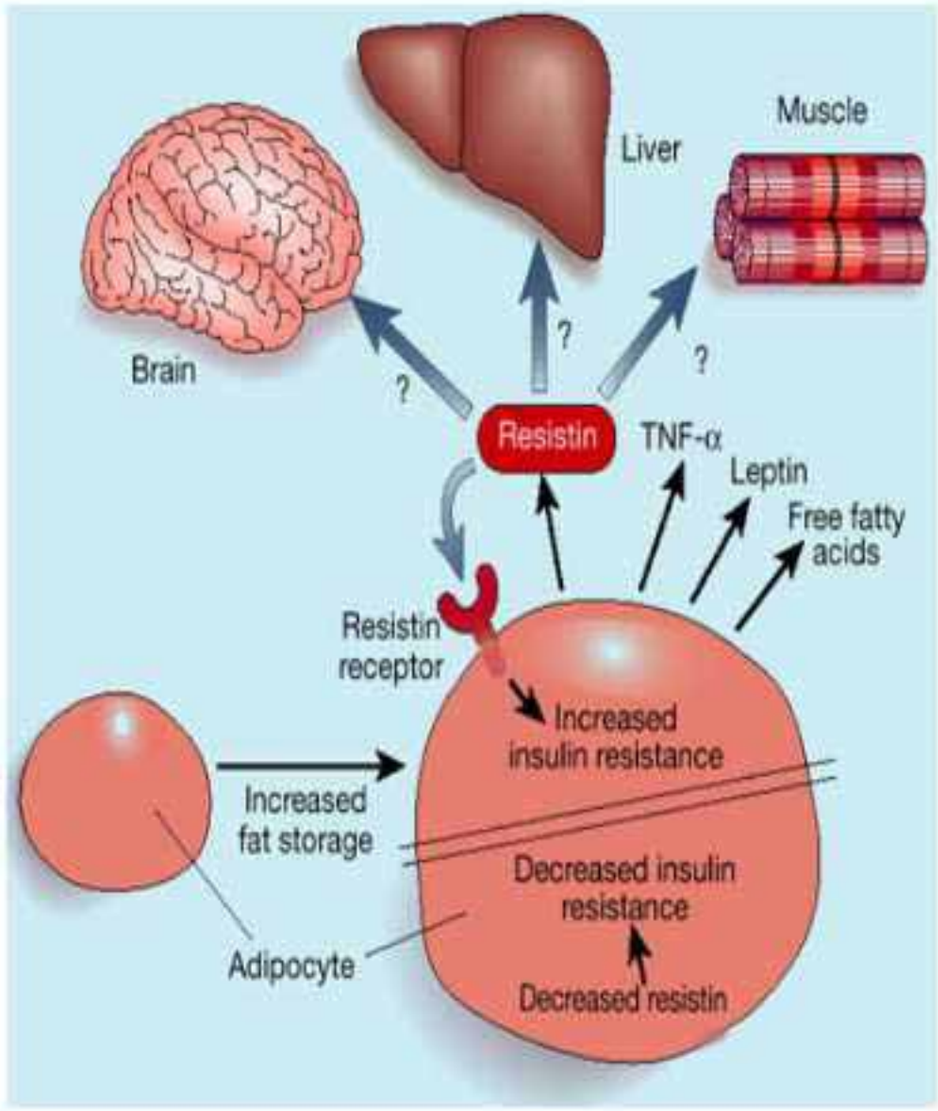
Adiponectin: lowered by obesity
- causes more efficient use of insulin



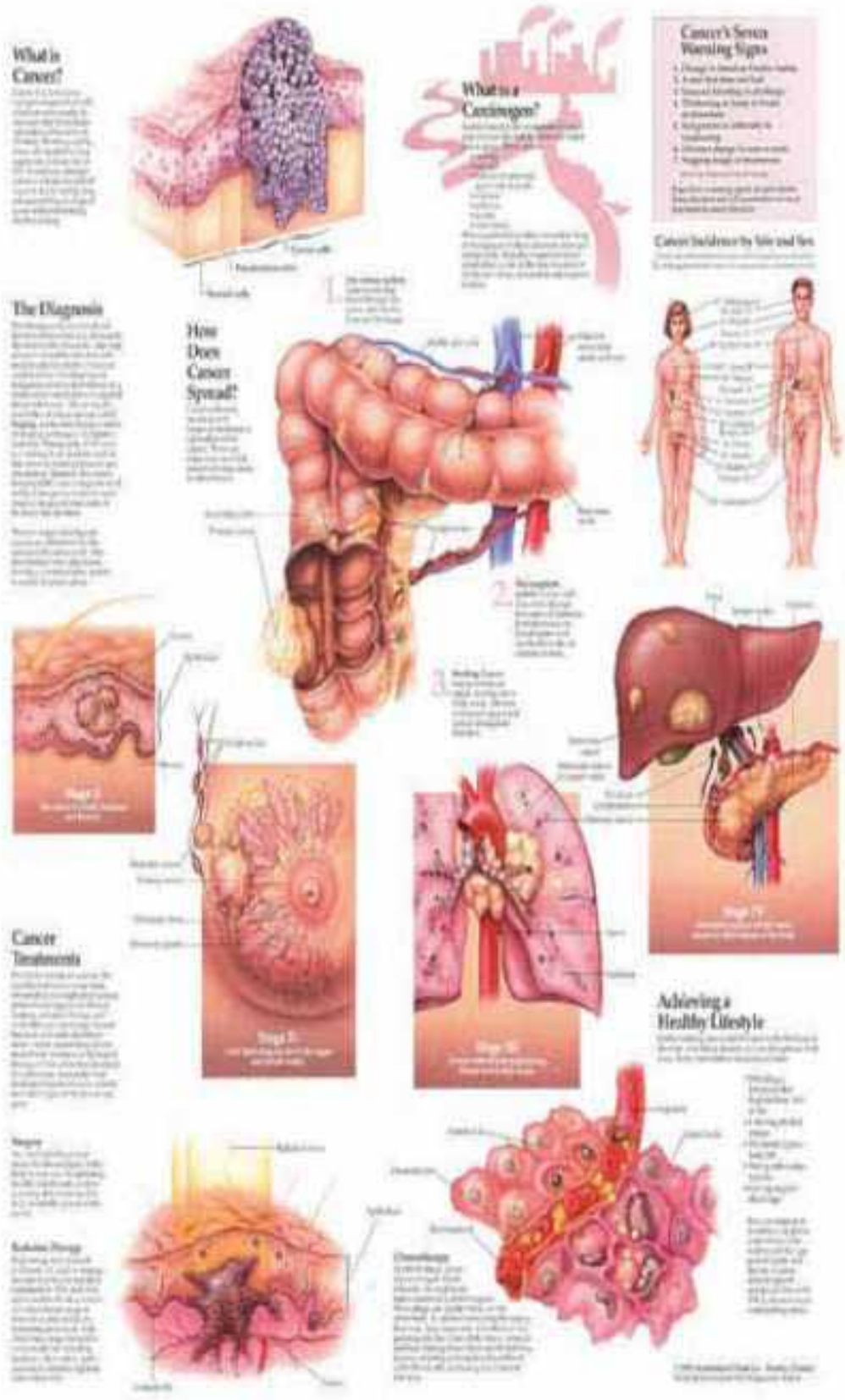
Obesity, metabolic syndrome and diabetes - 'diabesity'

Two hormones produced by fat cells are linked with insulin resistance:

Resistin: increased by obesity
- causes impaired insulin action and glucose intolerance in mice



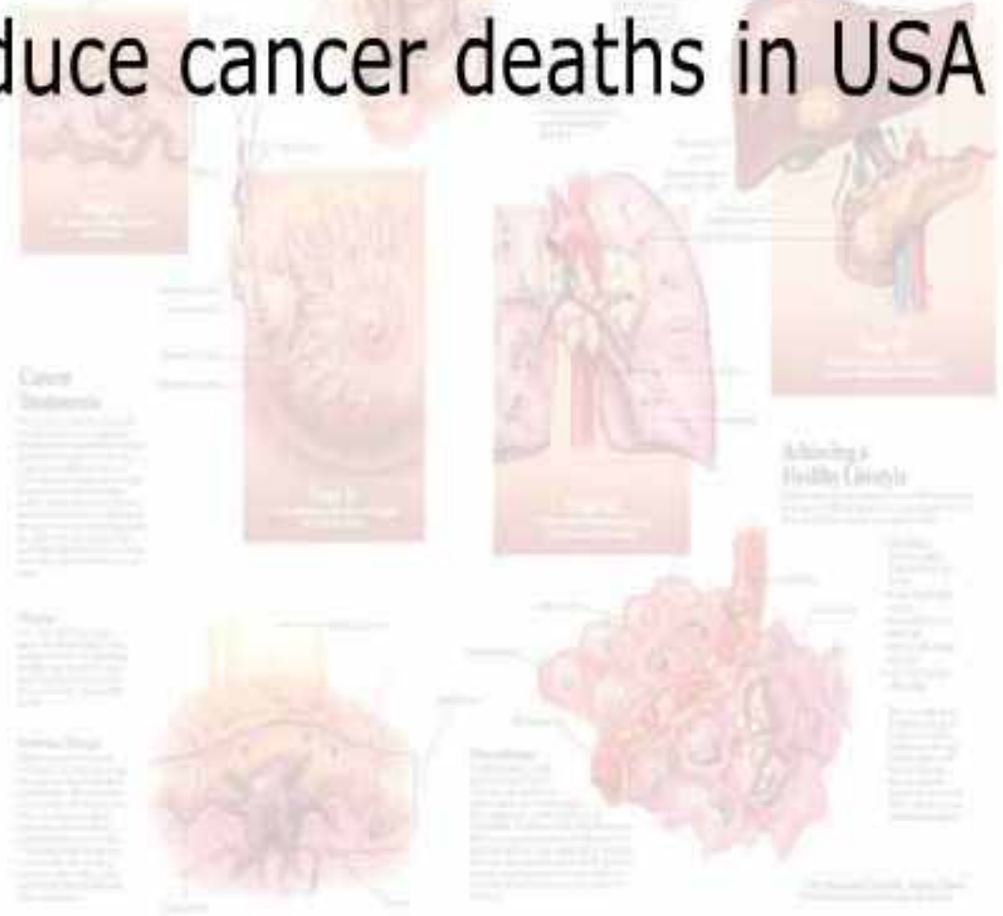
Obesity and cancer



Obesity and cancer

Obesity is linked to increased risk of 20 different cancers
- breast (post-menopausal), uterus, colon, kidney, oesophagus, pancreas and gallbladder

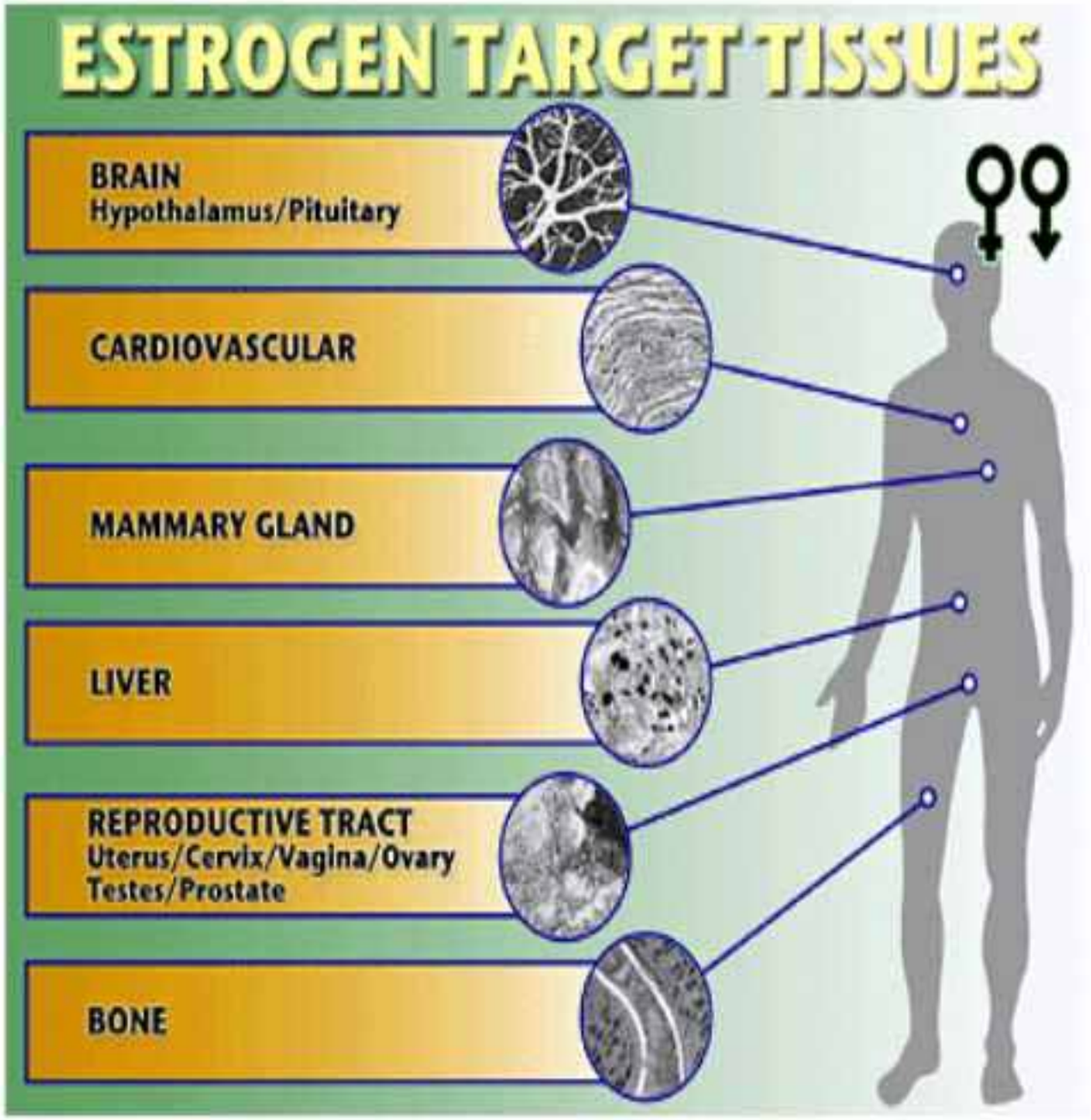
The American Cancer Society estimates that reducing levels obesity could reduce cancer deaths in USA by 90,000 pa



Obesity and cancer

Fat cells produce oestrogens

- obese post-menopausal women have 3-fold higher levels



Obesity and cancer

Fat cells produce oestrogens
- obese post-menopausal women have 3-fold higher levels

The heavier women are when diagnosed with breast cancer the more likely they are to die from it

A recent study reported a 2.5-fold increased risk of dying

Obesity and cancer

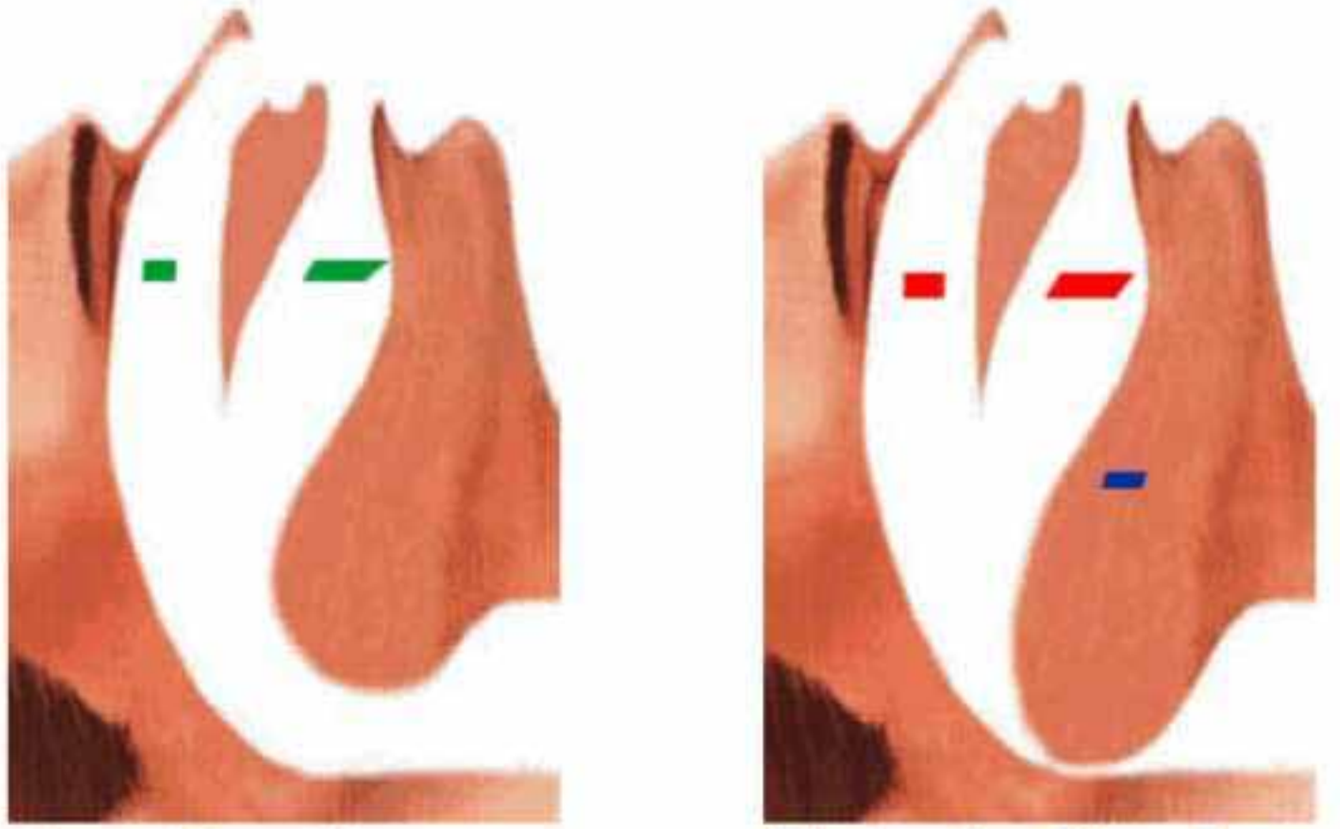
Hormones produced by fat (leptin) are linked with cell proliferation

Obese, leptin-deficient mice are less likely to develop tumours

Pro-inflammatory agents produced by fat cells may contribute

Other obesity-related health problems:

Sleep apnea



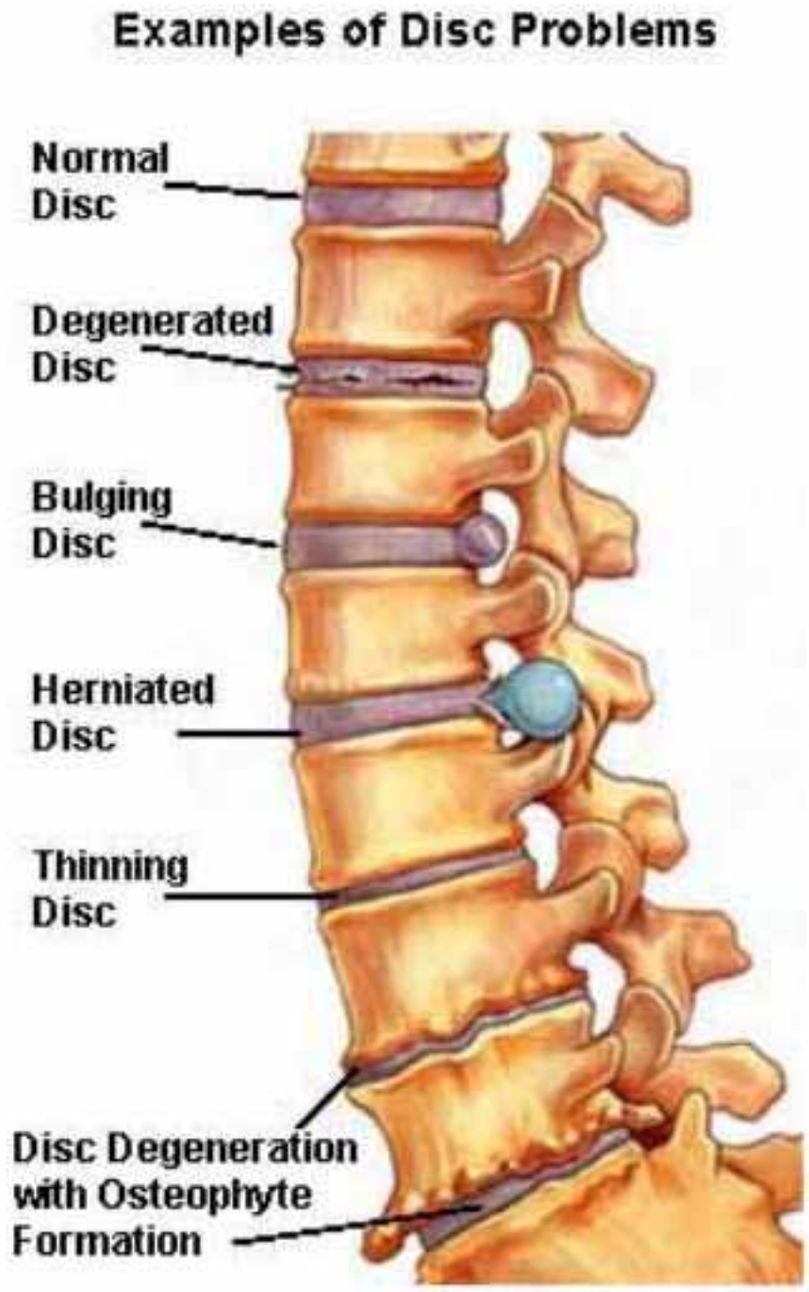
Normal Breathing
- Airway is open
- Air flows freely to lungs

Obstructive Sleep Apnea
- Airway collapses
- Blocked air flow to lungs

Other obesity-related health problems:

Sleep apnea

Osteoarthritis – load-bearing joints



Other obesity-related health problems:

Sleep apnea

Osteoarthritis – load-bearing joints

Psychological problems
– low self-esteem, depression, bullying

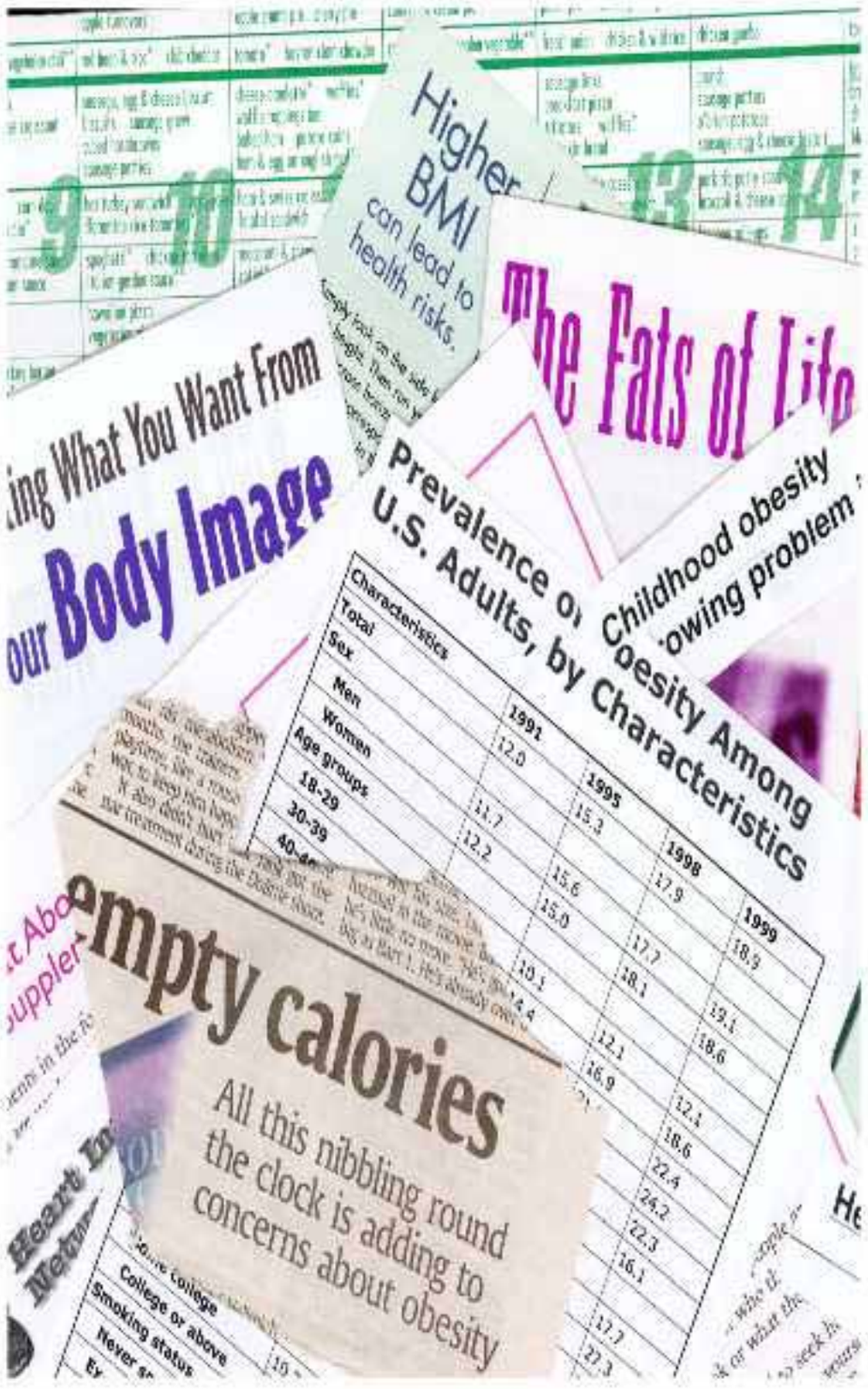
It's not just us.....

What has caused the problem ?

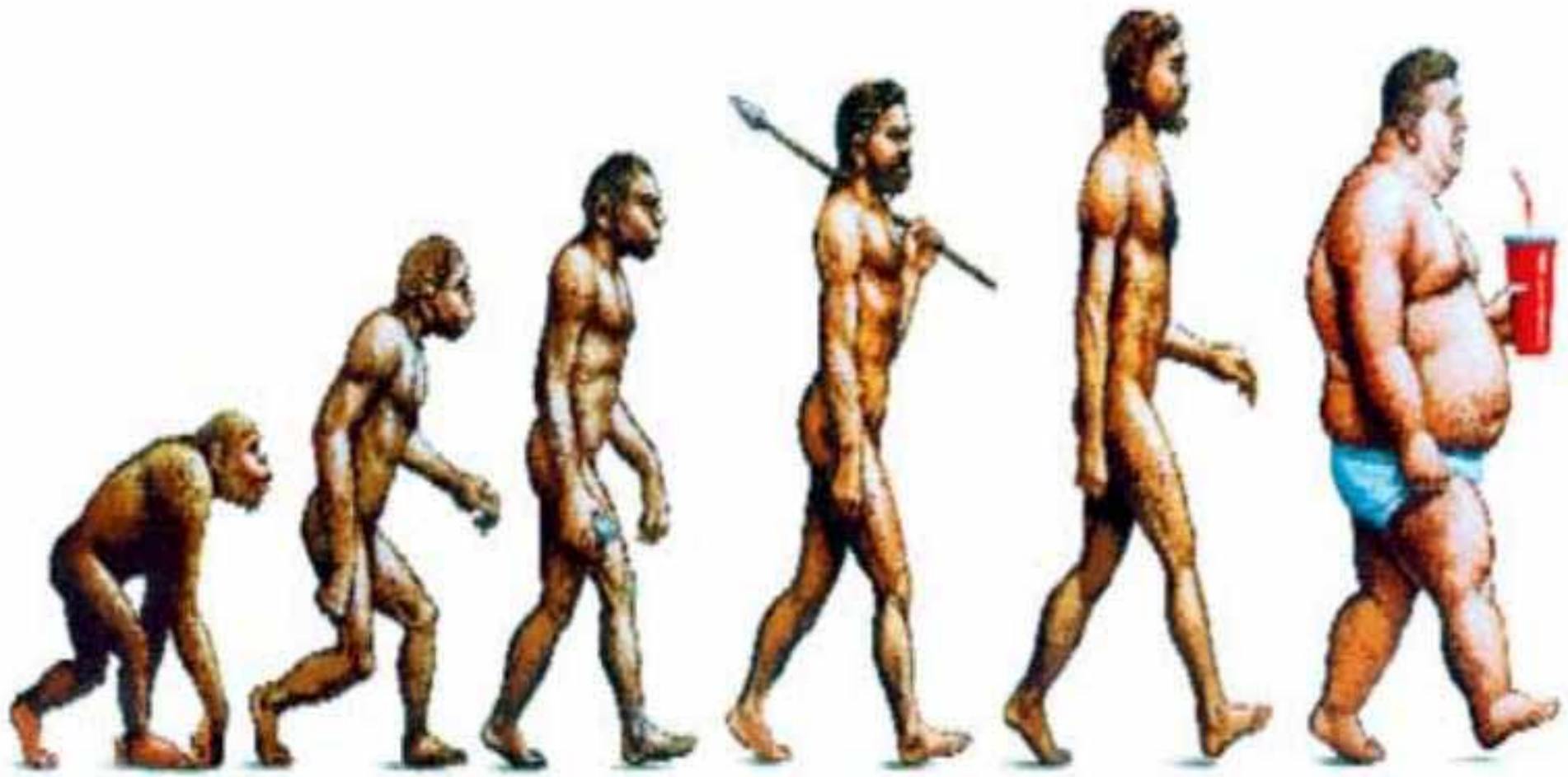
We eat more calories than we need and store them as fat

An excess of 50 kcal a day equates to 1kg/year weight gain

Once we have become overweight it is very hard to reverse

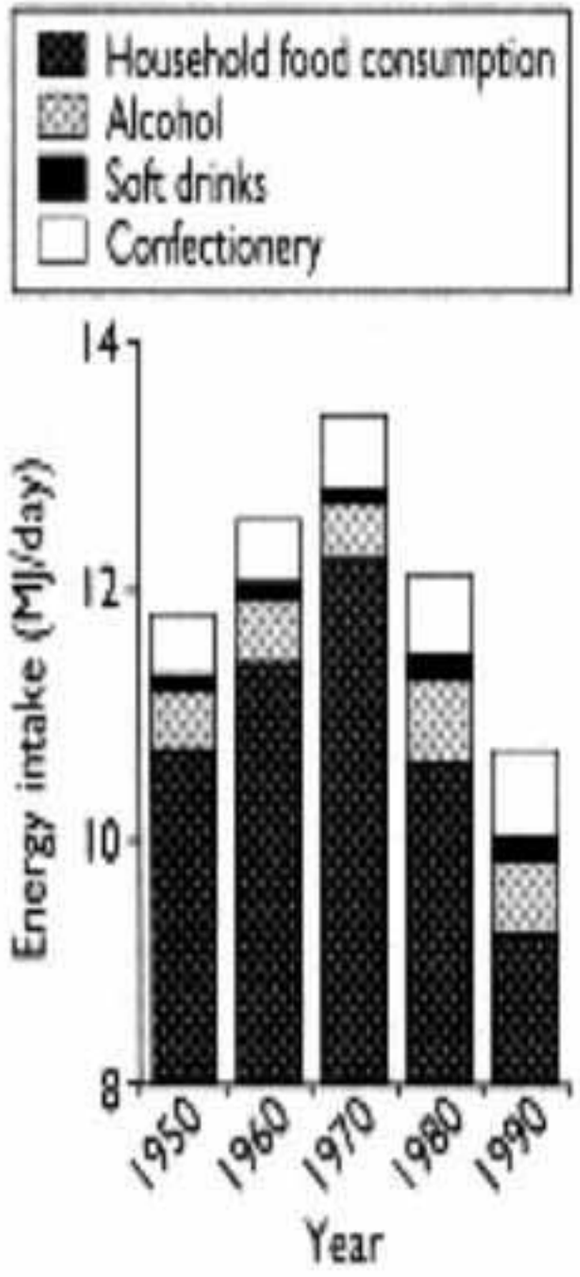


So have we simply become gluttons?



So have we simply become gluttons?

We eat less calories today than 50 years ago



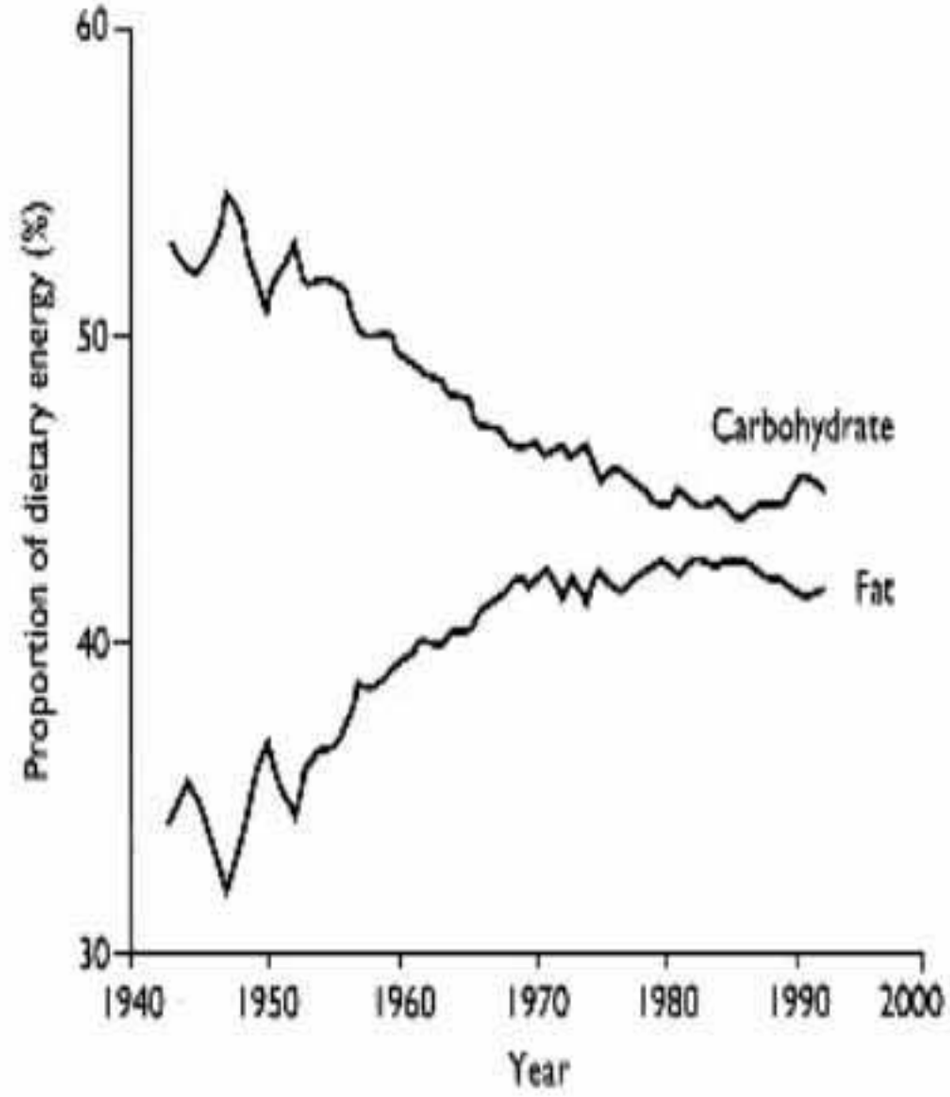
Prentice & Jebb BMJ 1995

So have we simply become gluttons?

We eat less calories today than 50 years ago

We eat more fat and simple sugars, and less complex carbohydrate

Prentice & Jebb BMJ 1995

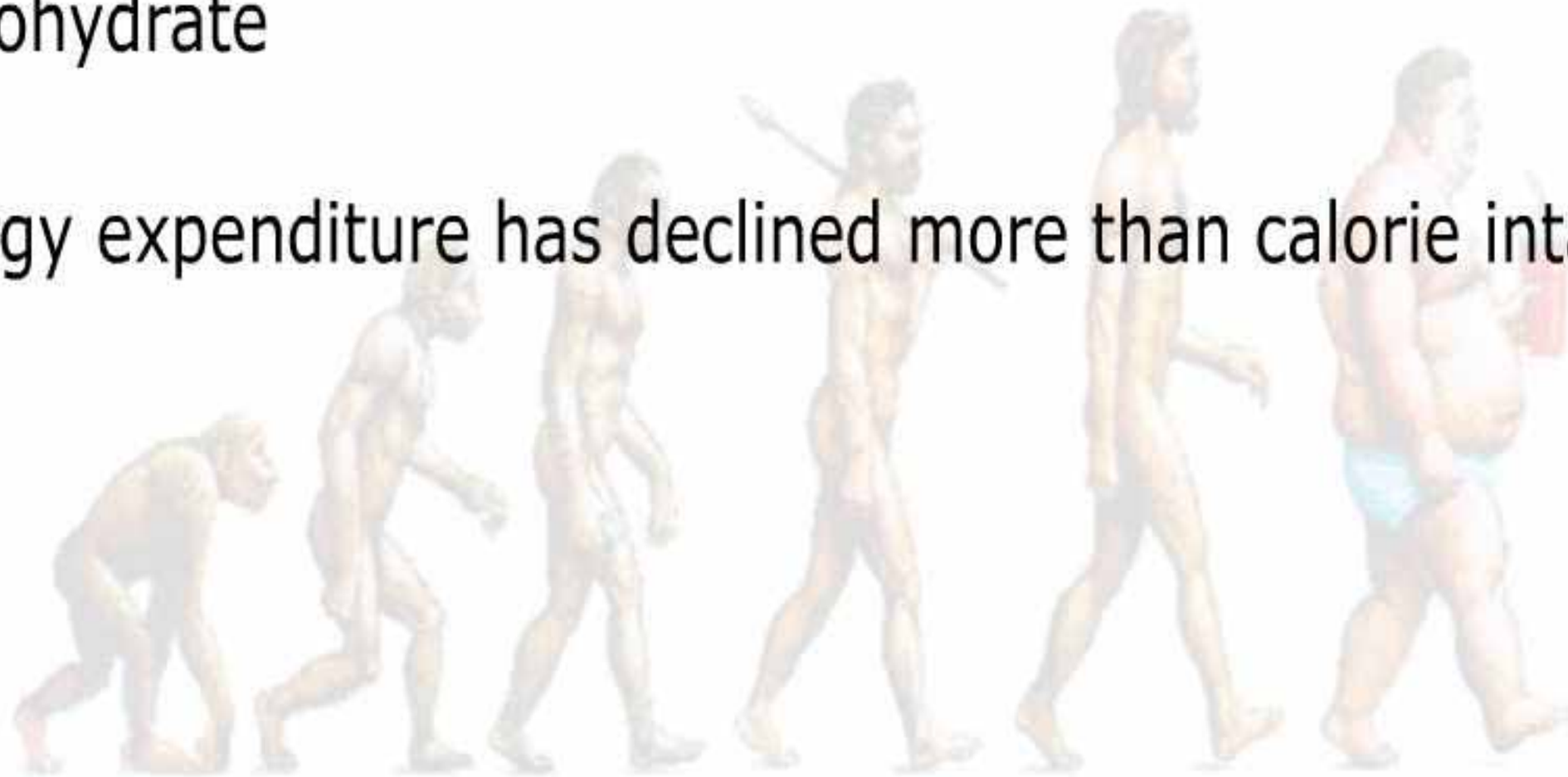


So have we simply become gluttons?

We eat less calories today than 50 years ago

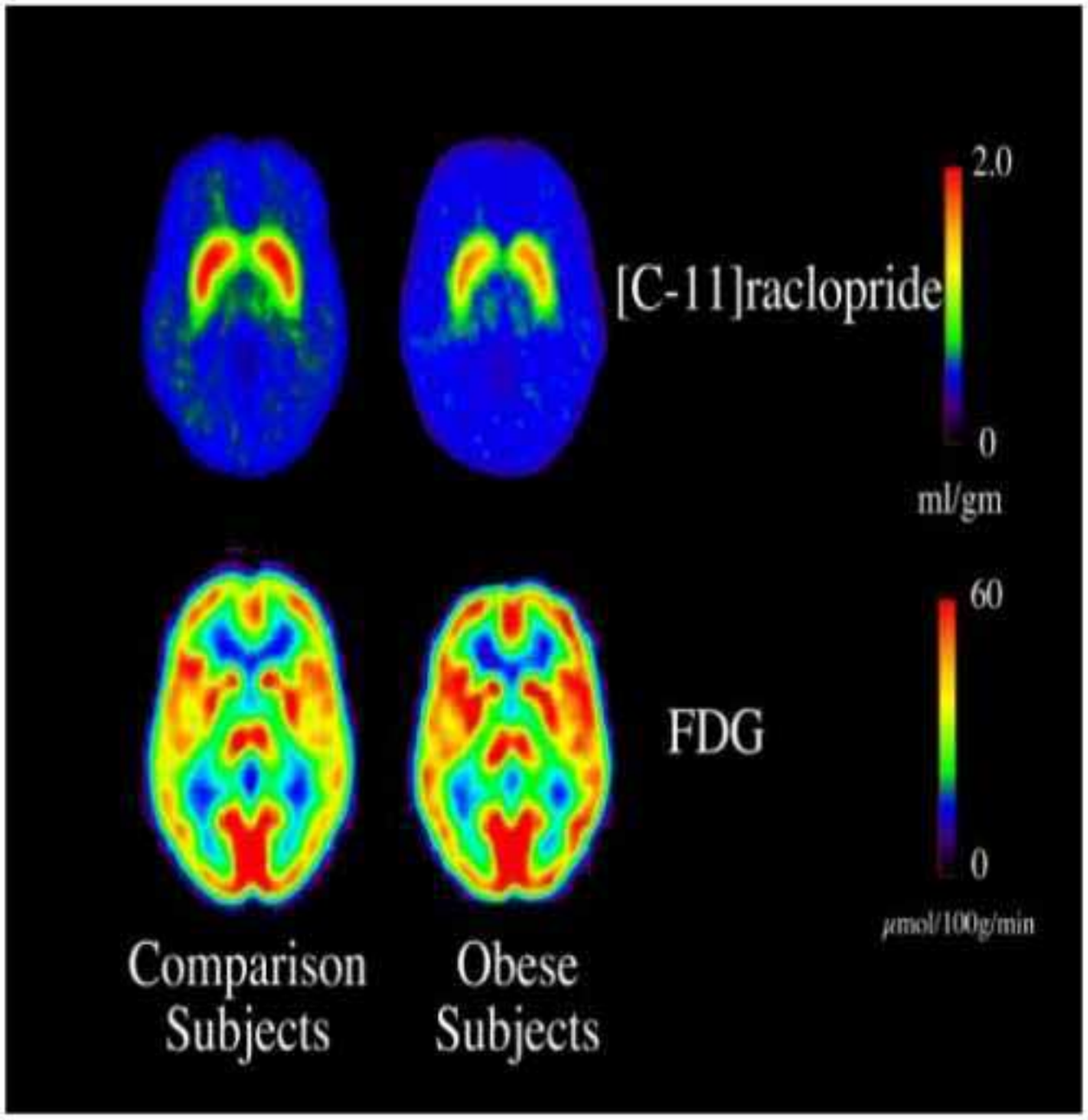
We eat more fat and simple sugars, and less complex carbohydrate

Energy expenditure has declined more than calorie intake



Food and pleasure

Obesity is associated with reduced activation in brain reward systems



Food and pleasure

Obesity is associated with reduced activation in brain reward systems

If you are obese you need to eat more to get pleasure from food

The power of advertising and the celebrity cult

Table 5: Advertising spend across the top ten advertised food brands in the UK (2002)

	Spend (£'s)	% of Total
MCDONALDS – Fast-food restaurant	41,973,066	9.3%
COCA COLA, ORIGINAL COKE – Soft-drink	15,531,274	3.4%
KENTUCKY FRIED CHICKEN – Fast-food restaurant	15,140,219	3.3%
BURGER KING – Fast-food restaurant	11,168,498	2.5%
PIZZA HUT – Fast-food restaurant	9,357,014	2.1%
COCA COLA, DIET COKE – Soft-drink	7,395,695	1.6%
PRINGLES, CRISPS – Savoury-snack	6,700,914	1.5%
KIT-KAT, CHOCOLATE BAR – Confectionery	6,469,021	1.4%
WEETABIX – Breakfast Cereal	6,366,666	1.4%
KELLOGG'S, CORN FLAKES – Breakfast Cereal	6,263,369	1.4%
TOTAL (all food brands)*	451,956,091	

Source: A C Nielsen cited in the Hastings Report (see below) 2003

The power of advertising and the celebrity cult

Report by the University of Strathclyde for the Food Standards Agency in September 2003

There is a lot of food advertising aimed directly at children

The advertised diet is less healthy than that recommended

Parents give in too easily !

UNIVERSITY OF STRATHCLYDE IN GLASGOW

the place of useful learning

FOOD STANDARDS AGENCY

Children's food advertising

Most children's food advertising concentrates on 'fun' and 'taste', rather than on health or nutrition

Children's food advertising

Most children's food advertising concentrates on 'fun' and 'taste', rather than on health or nutrition

The dominance of animation as a creative device illustrates this tendency

Fast-food advertising tends not to describe the product advertised but focuses on the experience of the meal and the brand

Children's food advertising

Celebrity endorsements and links with sport are often used

Children's food advertising

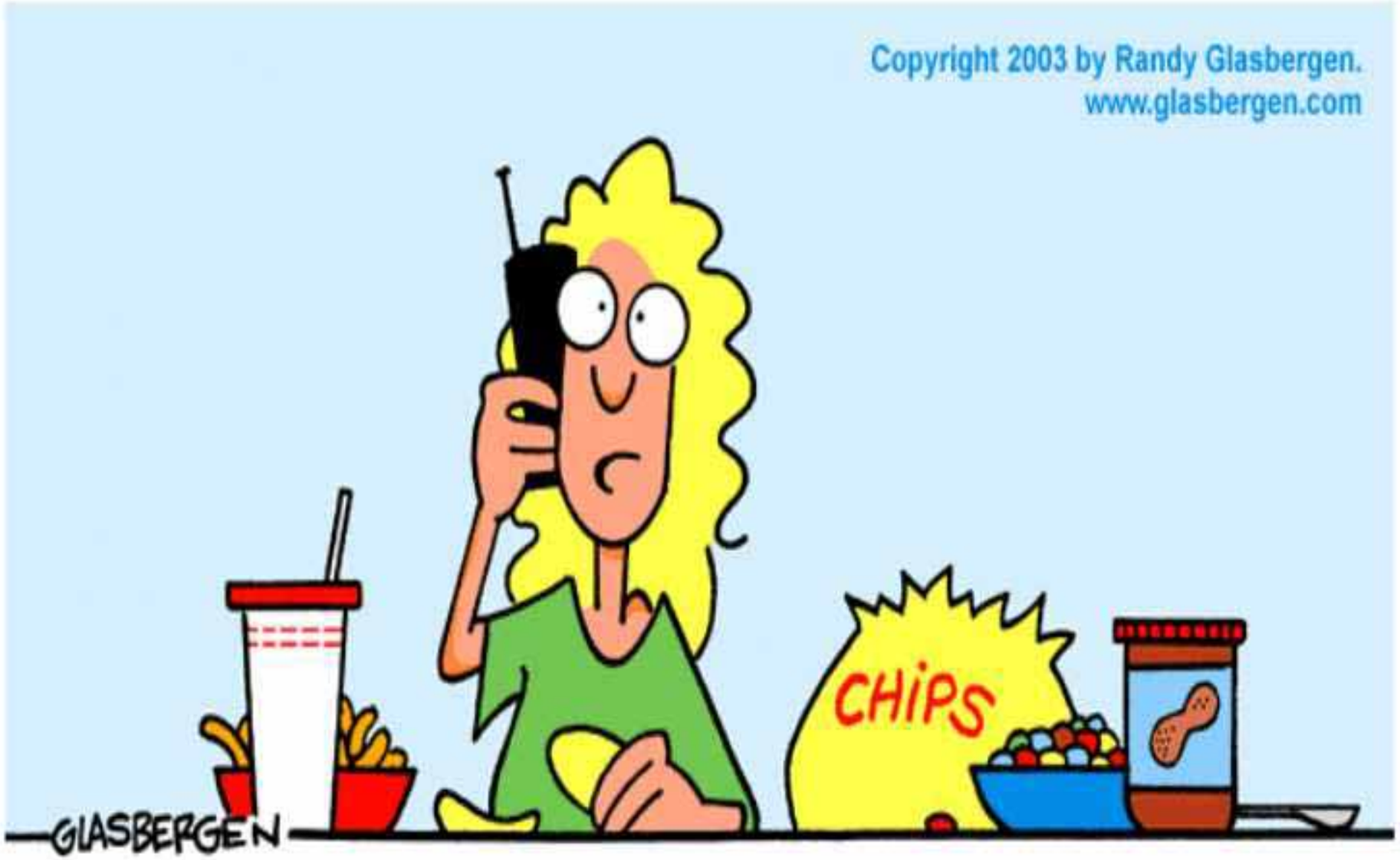
Celebrity endorsements and links with sport are often used

There is strong evidence that food promotion influences which foods and brands children buy

The average purchasing power of children has increased

About half is spent on sweets and snacks

Stress and depression

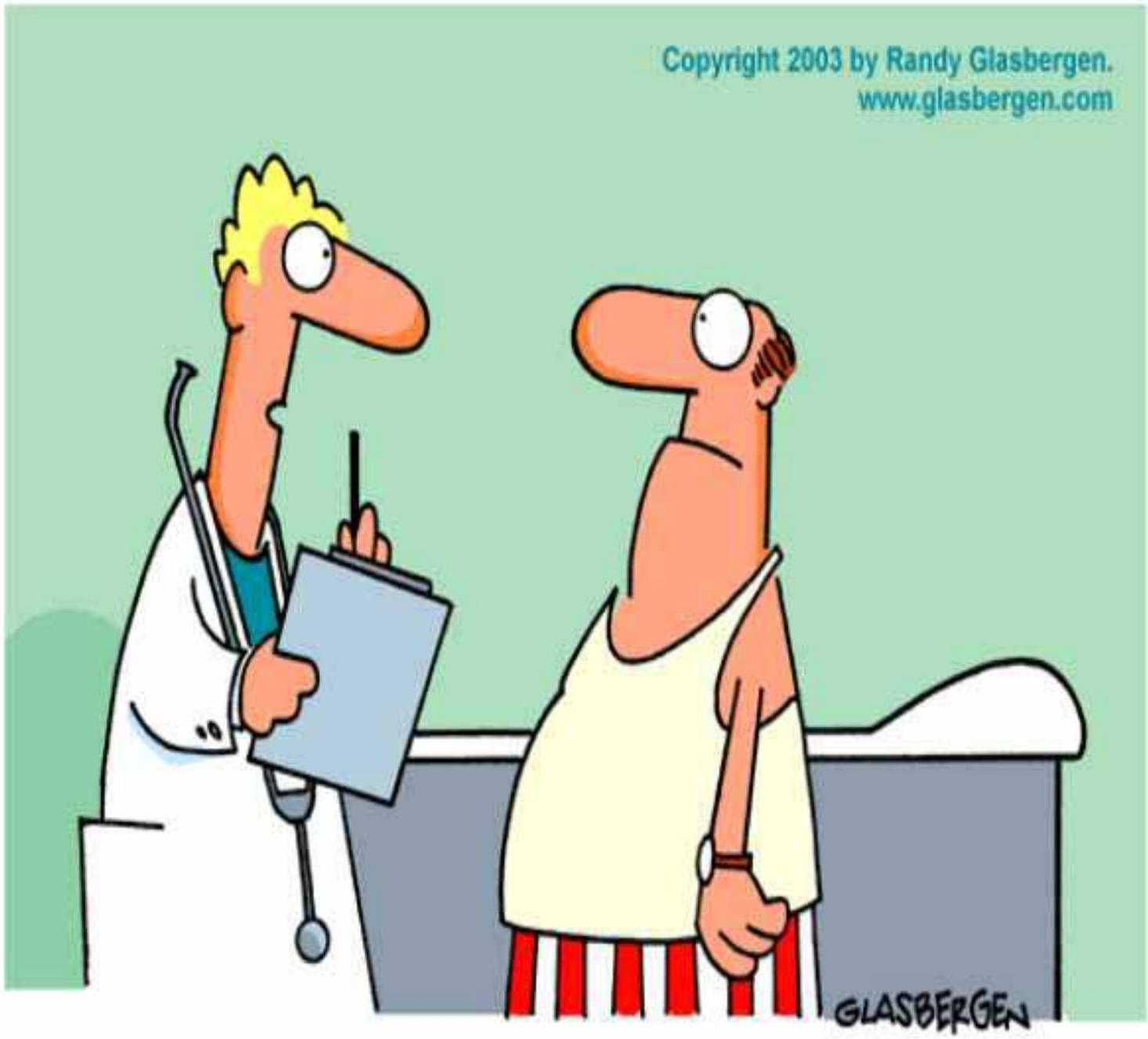


"I'm on a low-carb diet.
Whenever I feel low, I eat carbs!"

Stress and depression

Increased levels of stress and depression – comfort food

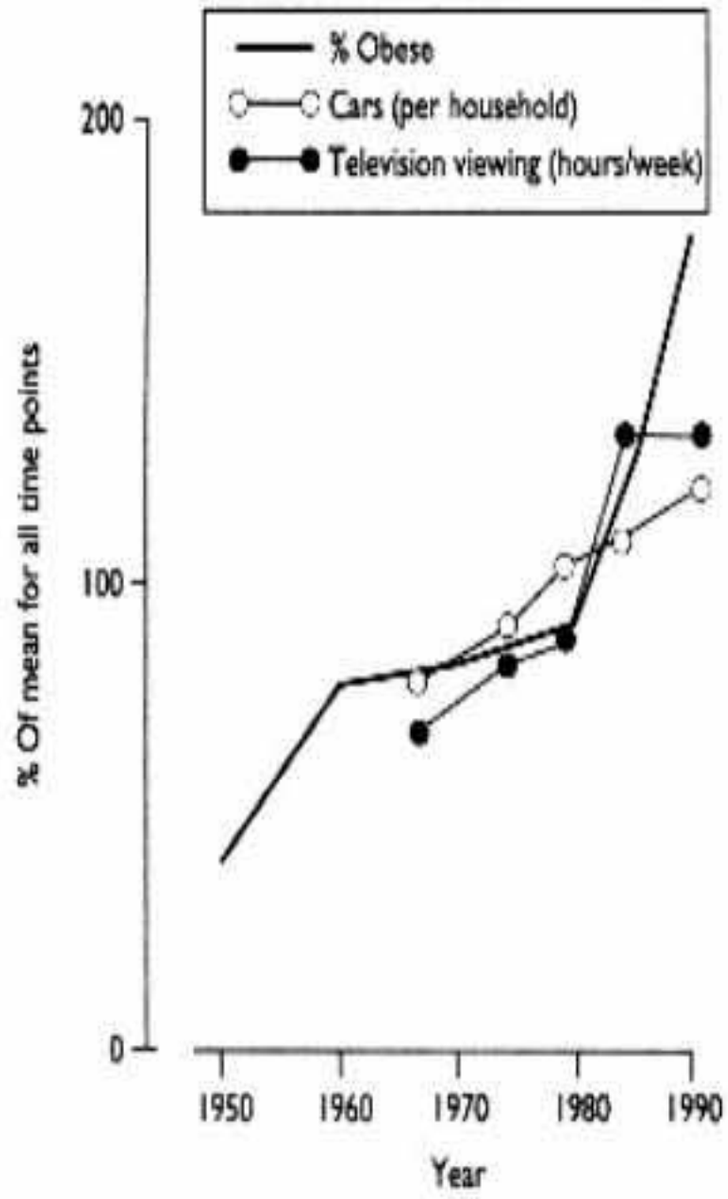
Decreased levels of physical exercise



"What fits your busy schedule better, exercising one hour a day or being dead 24 hours a day?"

Decreased levels of physical exercise

TV viewing hours correlate with rise in obesity



Prentice & Jebb BMJ 1995

Decreased levels of physical exercise

TV viewing hours correlate with rise in obesity

Number of manual labour jobs reduced

Decreased levels of physical exercise

TV viewing hours correlate with rise in obesity

Number of manual labour jobs reduced

Large number of domestic labour-saving devices

Decreased levels of physical exercise

TV viewing hours correlate with rise in obesity

Number of manual labour jobs reduced

Large number of domestic labour-saving devices

Compulsory physical education time reduced in schools

Decreased levels of physical exercise

TV viewing hours correlate with rise in obesity

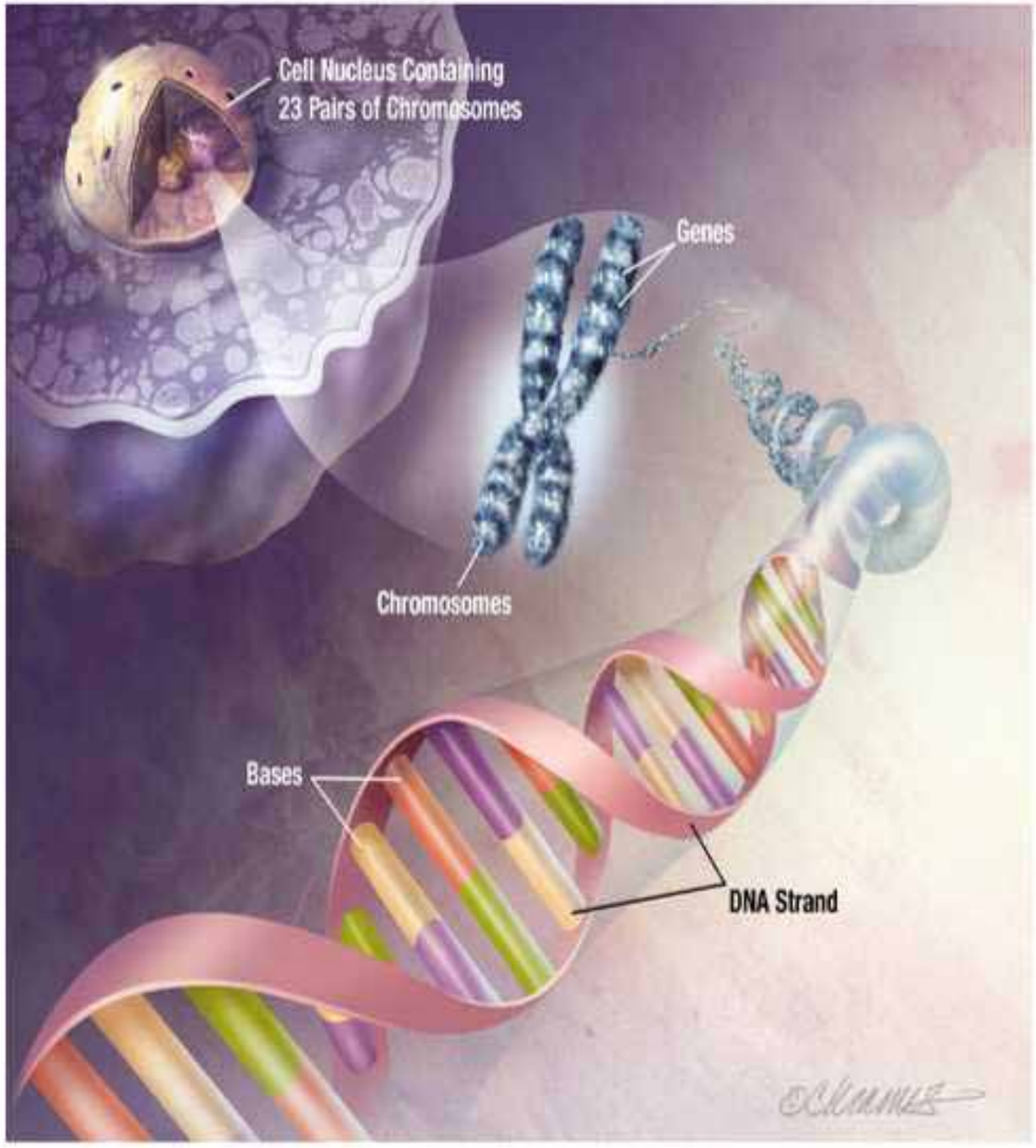
Number of manual labour jobs reduced

Large number of domestic labour-saving devices

Compulsory physical education time reduced in schools

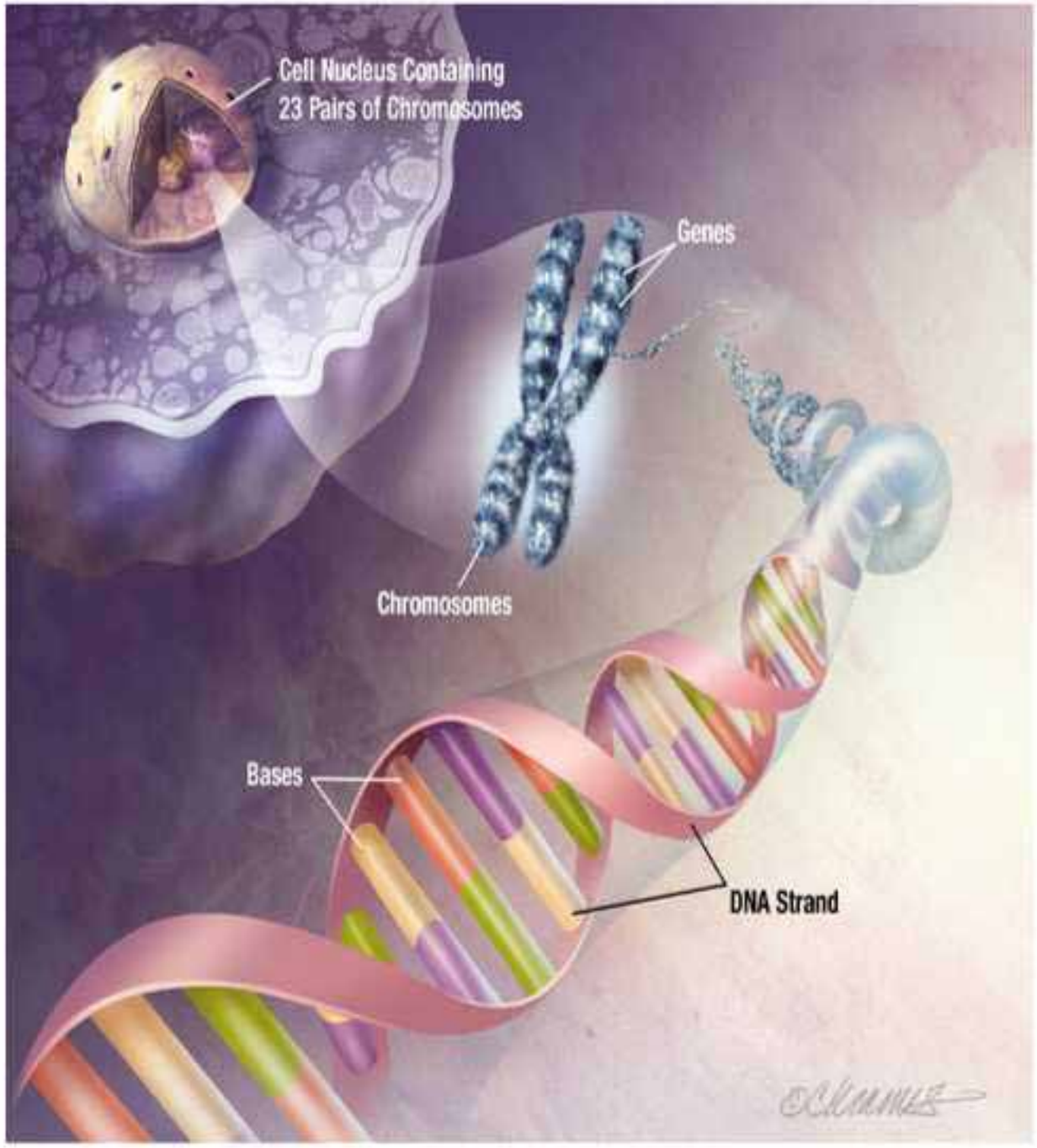
Few children walk or ride bicycles to school

Is the problem down to genes or environment ?



Is the problem down to genes or environment ?

The recent rise in obesity cannot be due to genetic changes

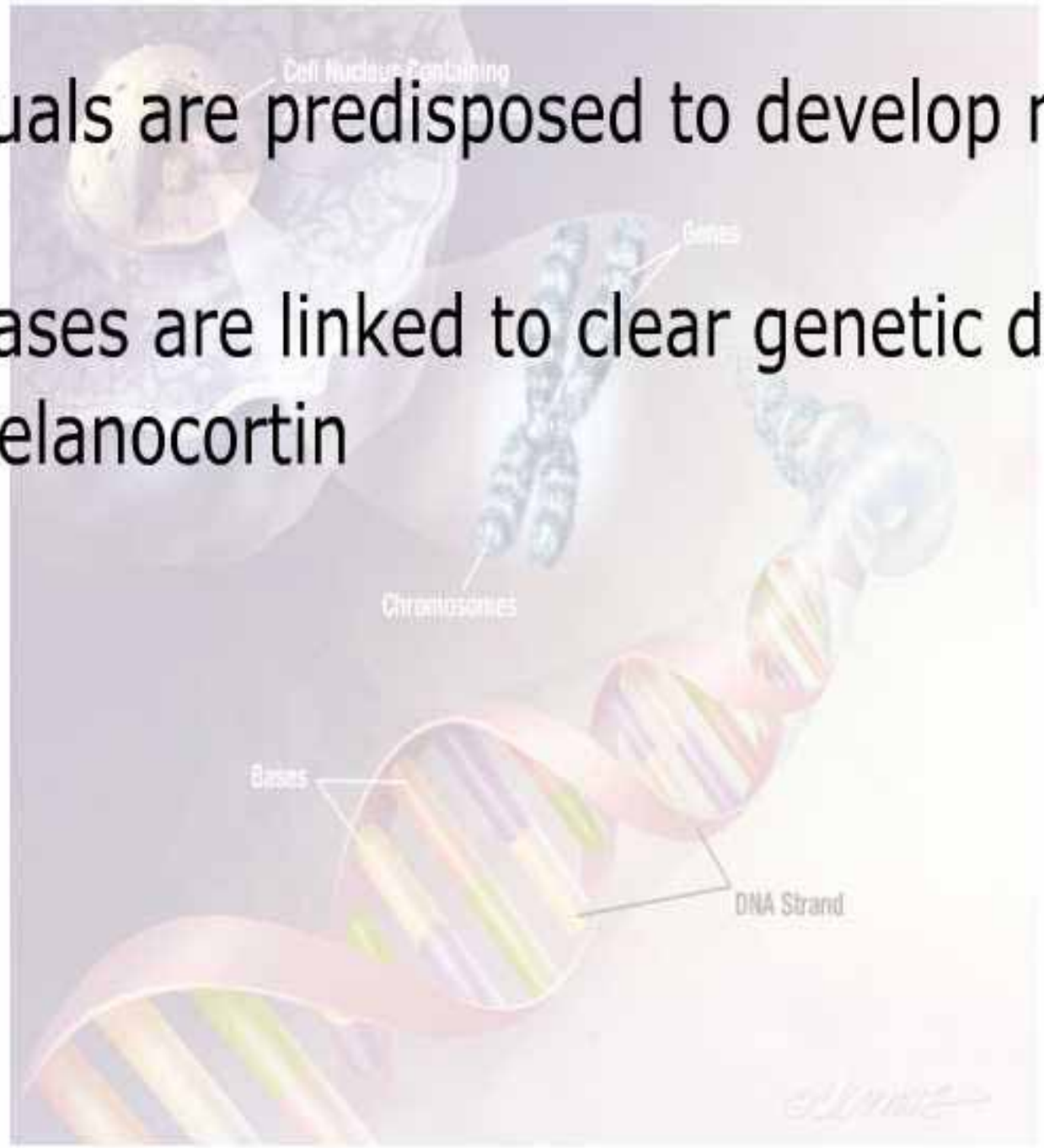


Is the problem down to genes or environment ?

The recent rise in obesity cannot be due to genetic changes

Some individuals are predisposed to develop more fat cells

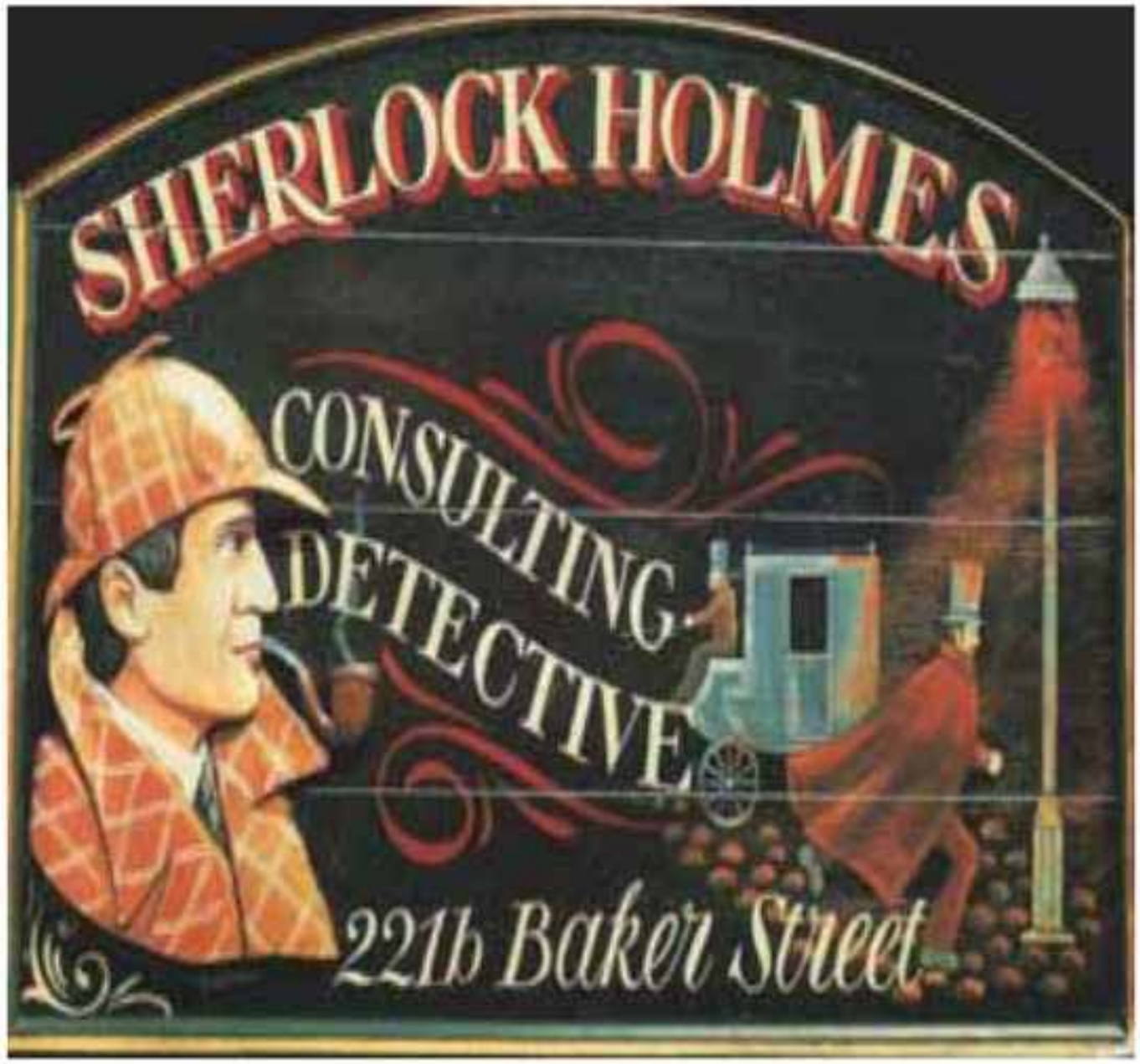
Only 5% of cases are linked to clear genetic disorder
- leptin or melanocortin



Is the problem down to genes or environment ?

The evolutionary concept of 'thrifty genes'

Do we want a solution, and where can we find one ?



Do we want a solution, and where can we find one ?

The size of the diet industry around the world says "yes we want a solution"

Do we want a solution, and where can we find one ?

The size of the diet industry around the world says "yes we want a solution"

Americans are estimated to spend around $40 billion a year trying to lose weight

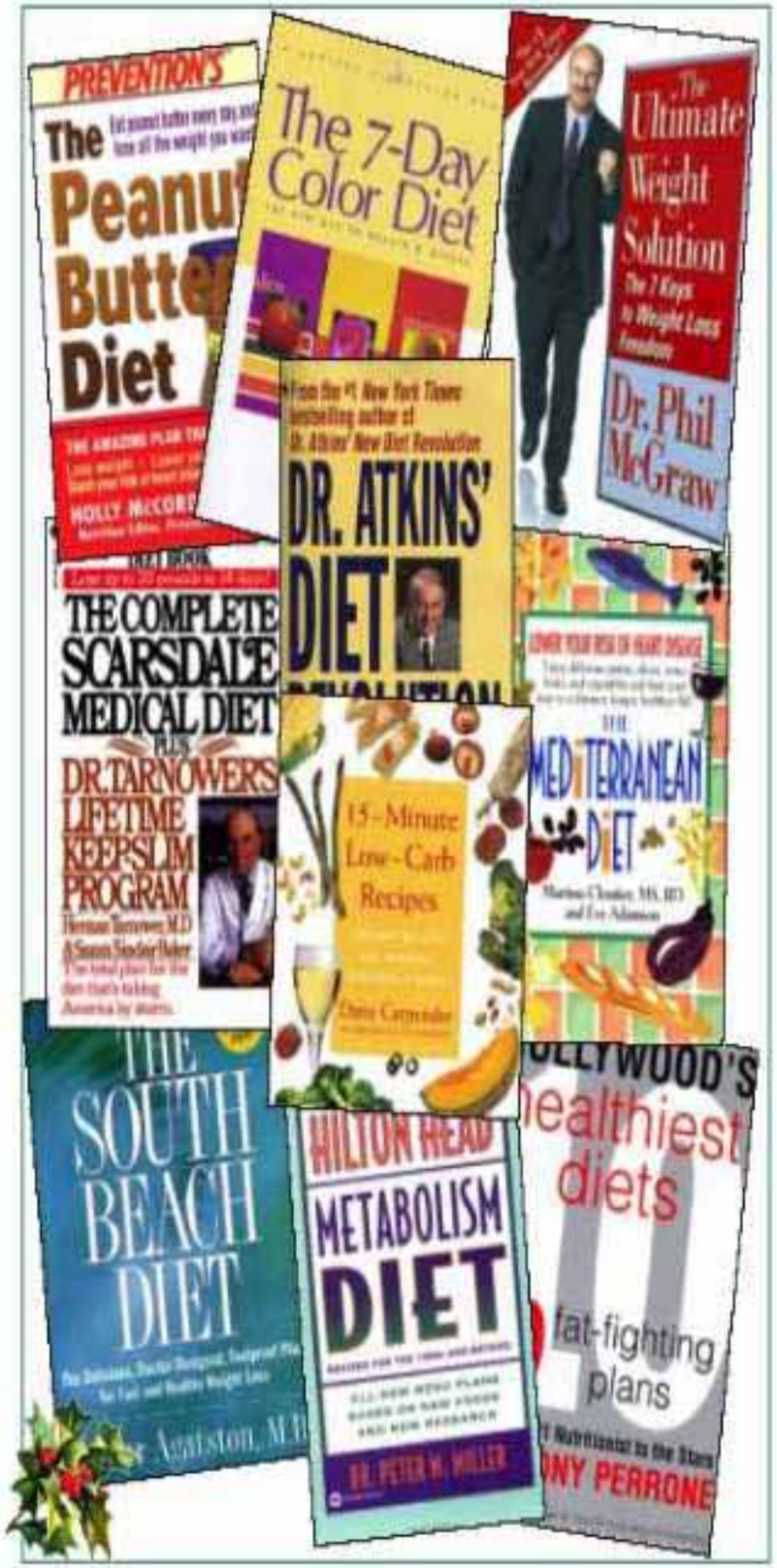
Do we want a solution, and where can we find one ?

Dieting is not necessarily a recognition of the health risks of obesity but that many cultures equate beauty with thinness

Dieting

The size of the dieting industry proves that:

'what comes off soon goes back on again' – often worse than before

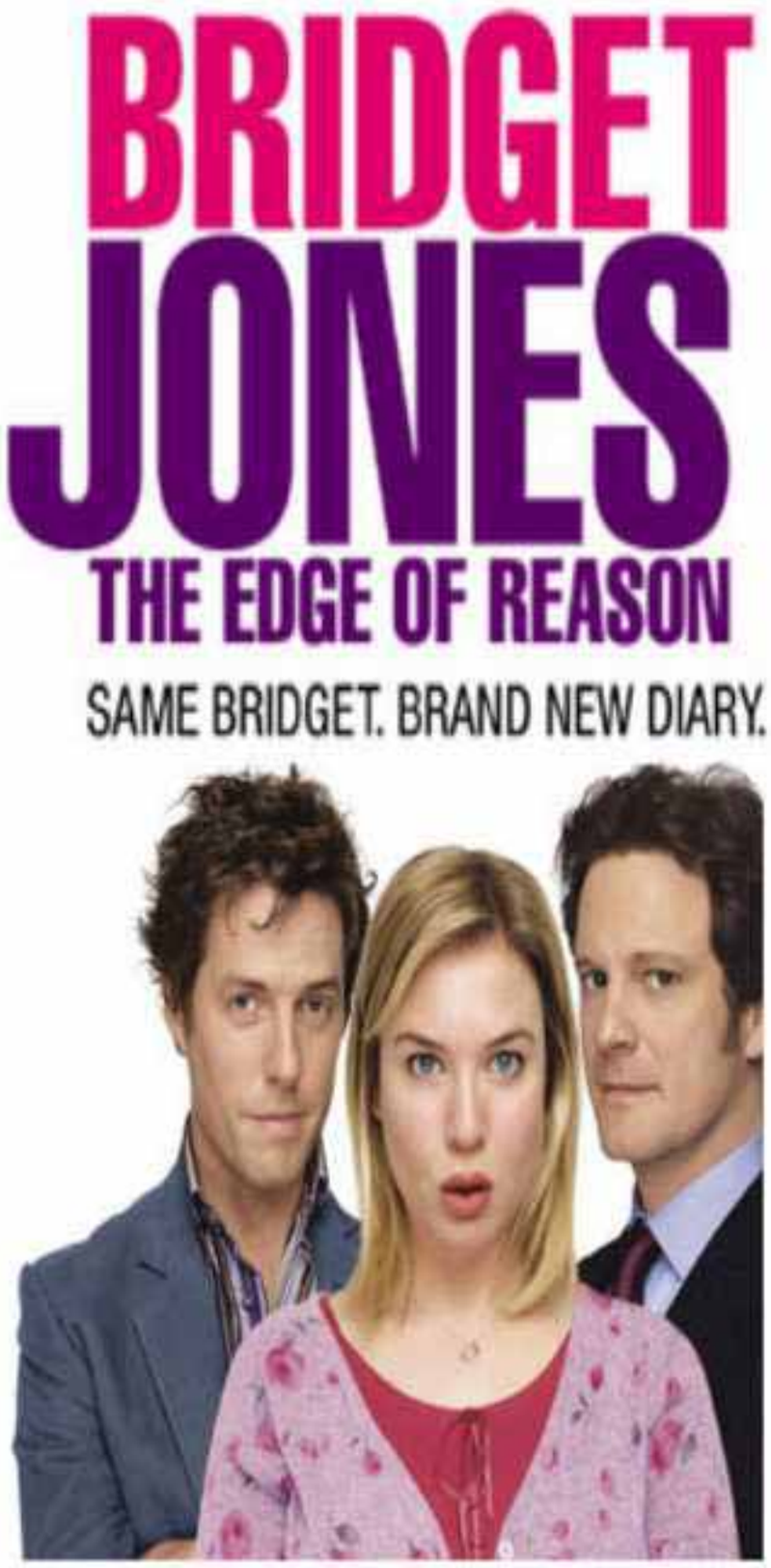


Dieting

The size of the dieting industry proves that:

'what comes off soon goes back on again' – often worse than before

Yo-yo dieting can impair your immune system

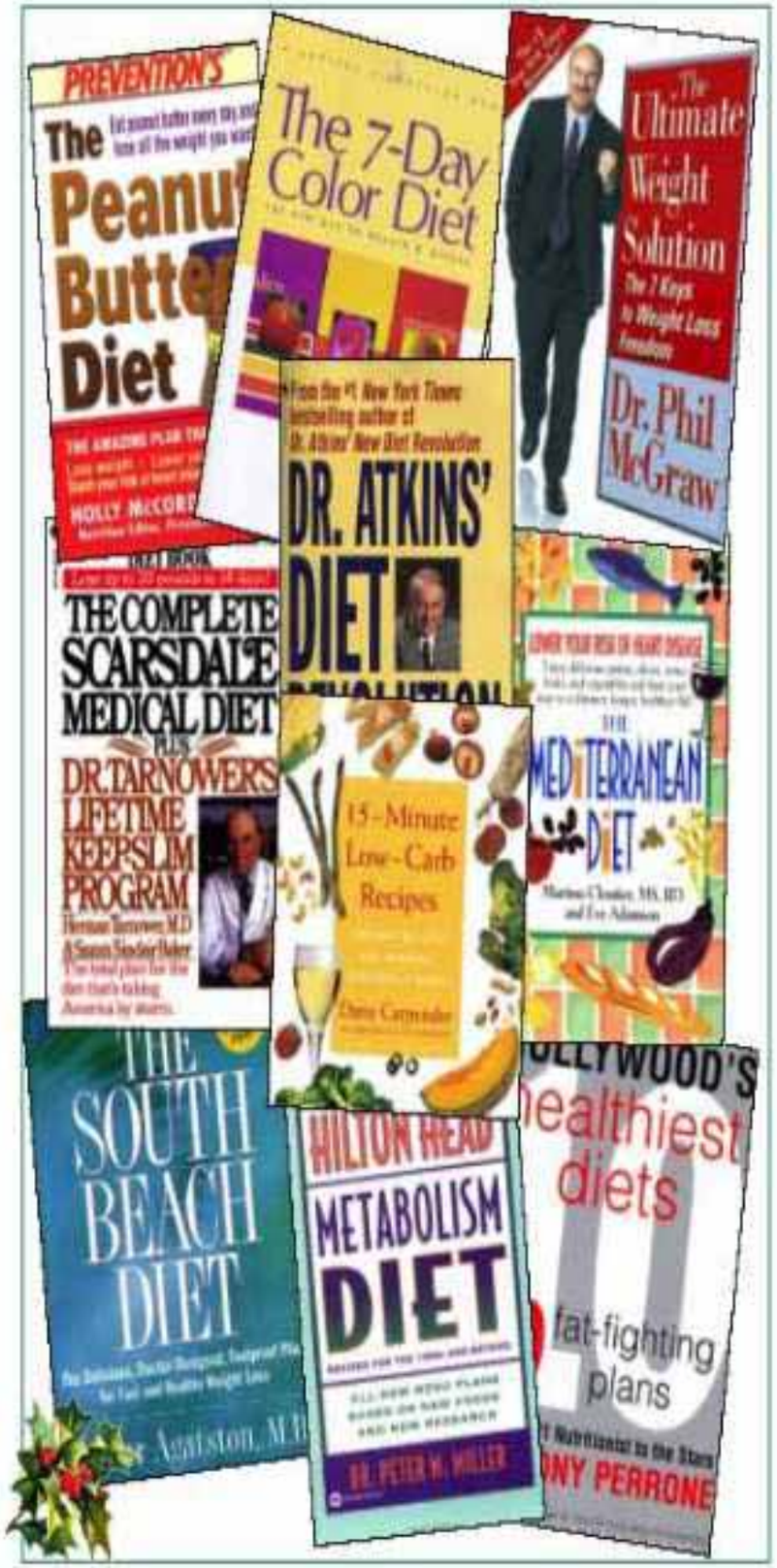


Dieting

Despite large amounts of hype associated with many of these diets they all do the same thing:

Significantly reduce your caloric intake...

....even the famous Atkins diet

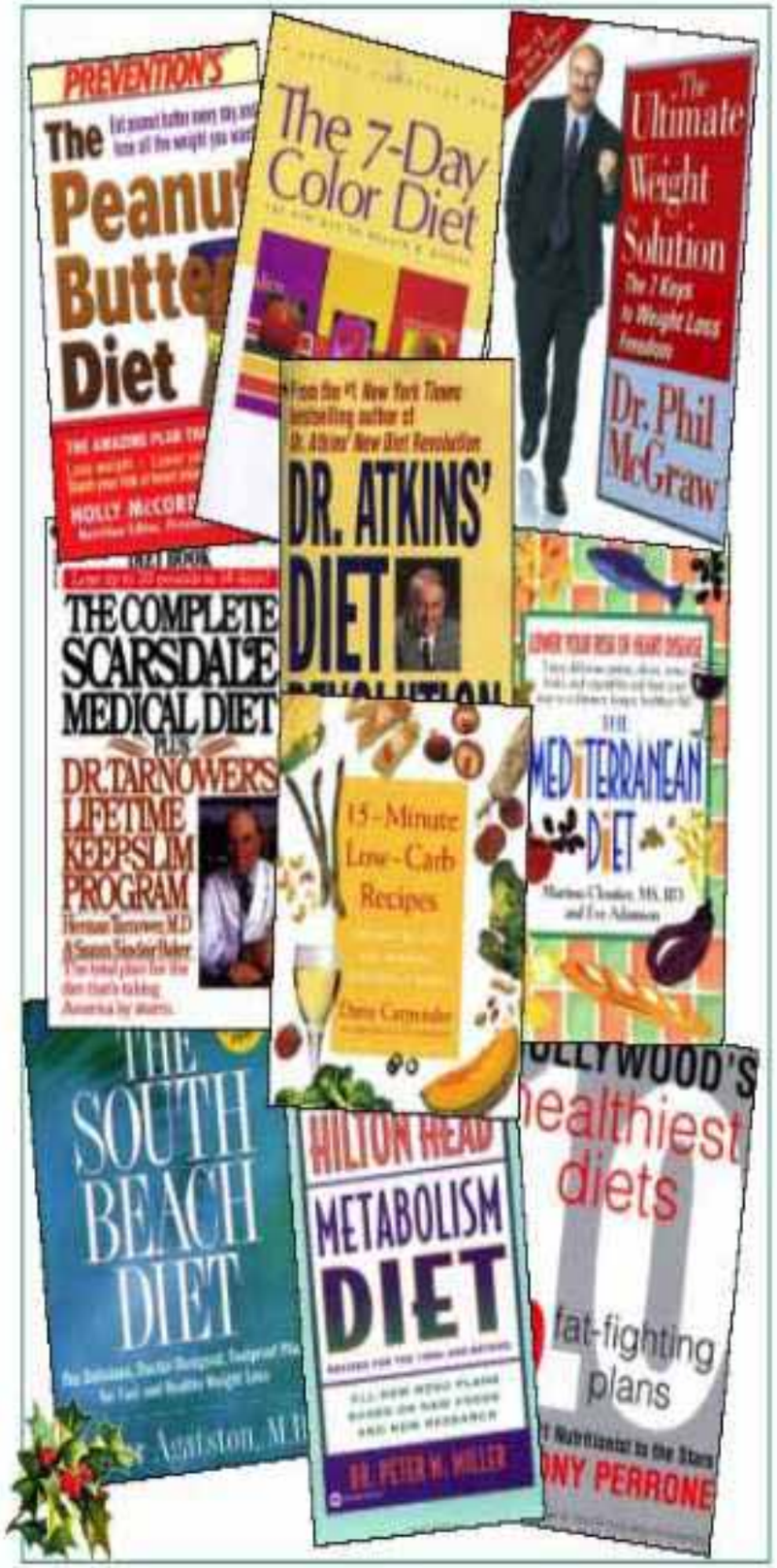


Dieting

At the end of a diet people tend to resume their original bad habits

Diets can also cause muscle loss

A better approach is to adapt your routine diet slightly



Anti-obesity drugs

A wonder fat-busting drug is simply not on the horizon

Best expectation at present is a modest 5-10% weight loss in 50% of patients

This is enough to significantly reduce increased health risks

Anti-obesity drugs

Orlistat (Xenical)

Inhibits pancreatic lipases and blocks absorption of around one-third of fat consumed

Can cause mild to moderate gastrointestinal upset

Anti-obesity drugs

Sibutramine
(Meridia, Reductil)

Inhibits noradrenaline, serotonin and dopamine re-uptake in the brain and seems to act by reducing hunger cravings

Side effects include increased blood pressure, insomnia, constipation and a dry mouth

Anti-obesity drugs

Metformin

Improves glucose utilisation by raised sensitivity to insulin

Prescribed for T2 diabetes and polycystic ovarian syndrome

Anti-obesity drugs

Rimonabant (Accomplia)

Cannabinoid receptor blocker - claimed to offer combined therapy for obesity, drinking and smoking

Bariatric surgery

Bariatric surgery

For treatment of morbid obesity surgery has the best success but carries significant risk

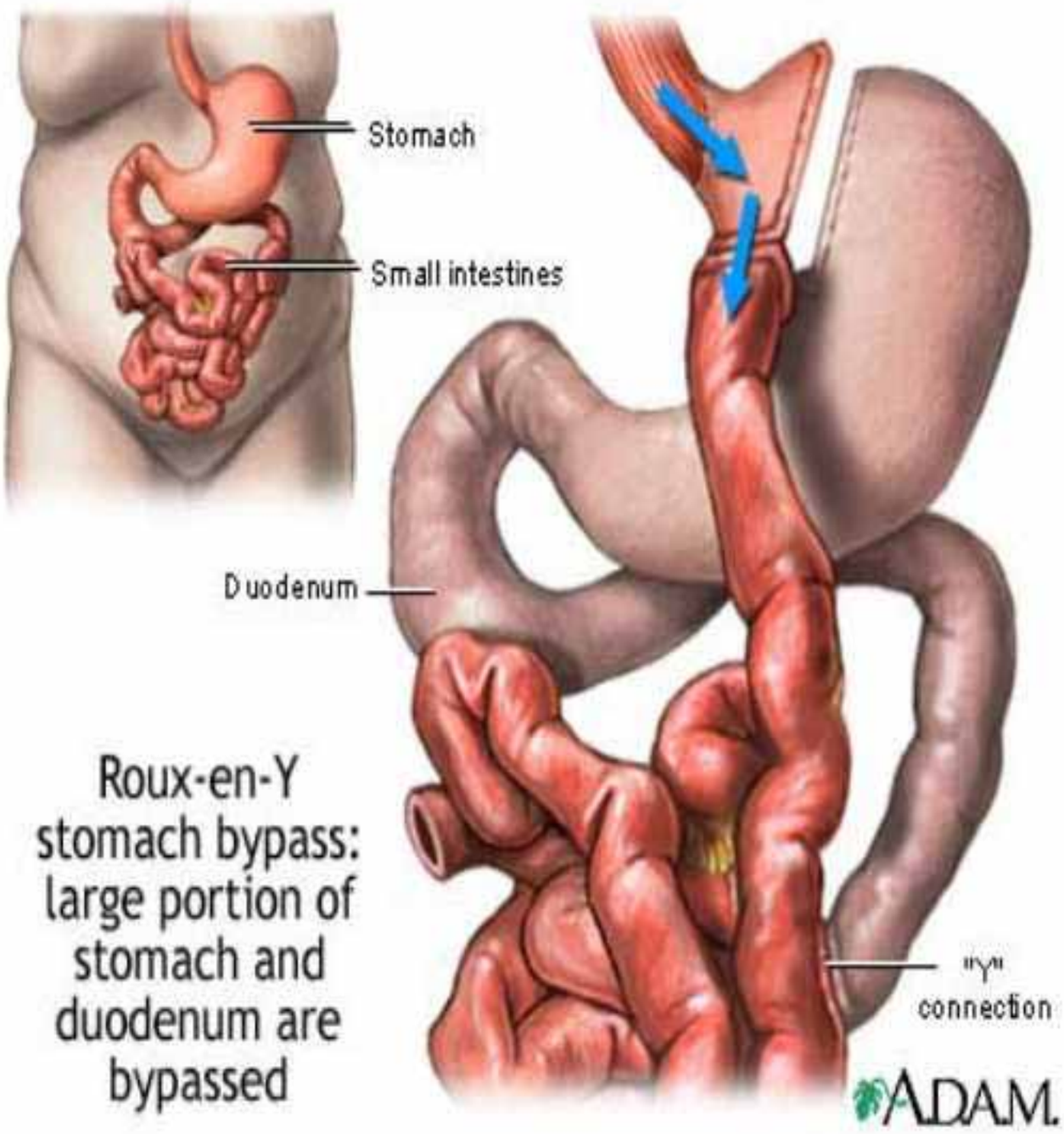
Patients can lose 70% of excess weight in 6-12 months

Weight loss is maintained for over 14 years

Bariatric surgery

Roux-en-Y gastric bypass

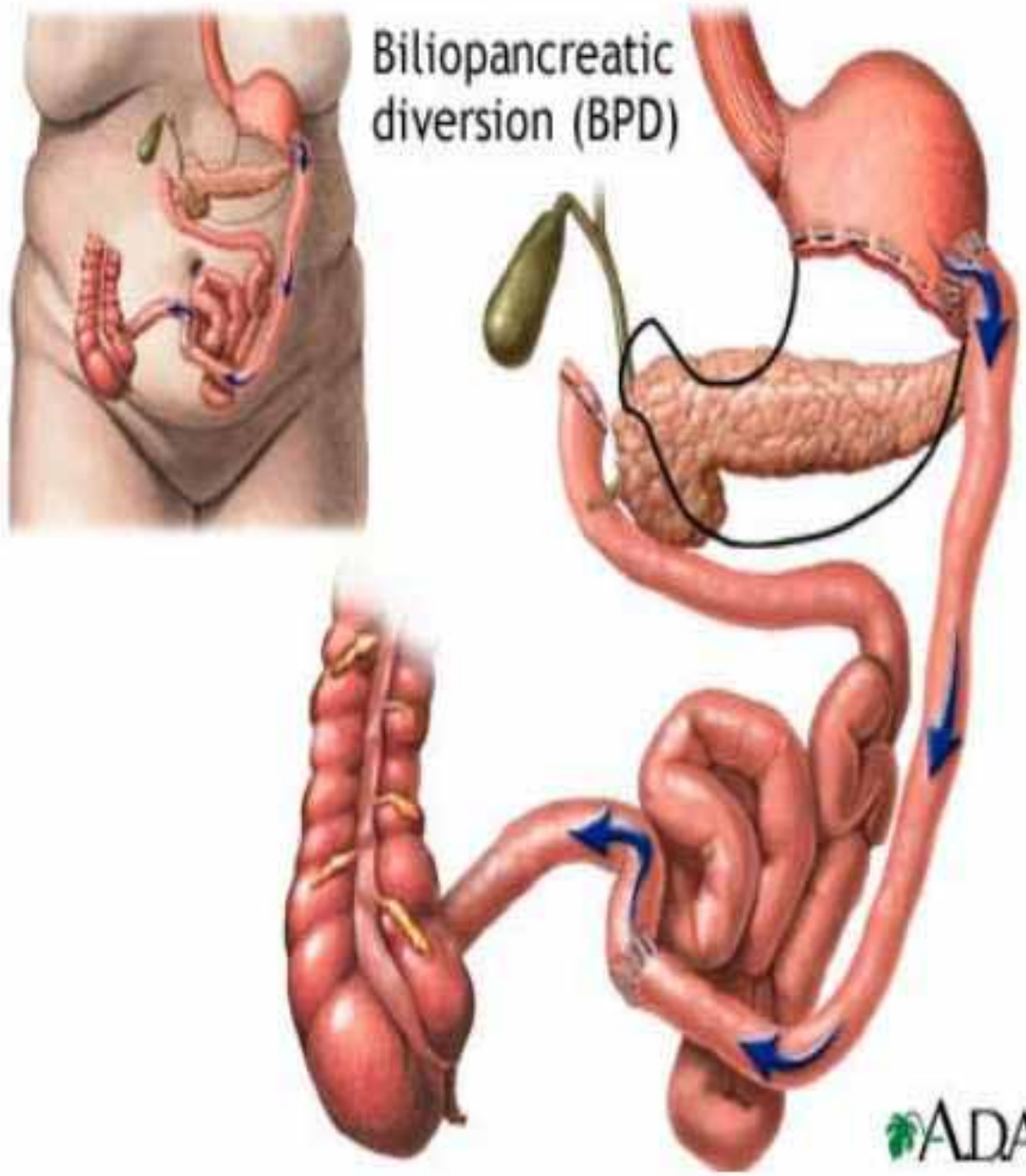
Reduces the size of the stomach so individuals feel full quickly and vomit if they overeat



Roux-en-Y stomach bypass: large portion of stomach and duodenum are bypassed

Bariatric surgery

Another approach used is to shorten the intestine to decrease nutrient absorption



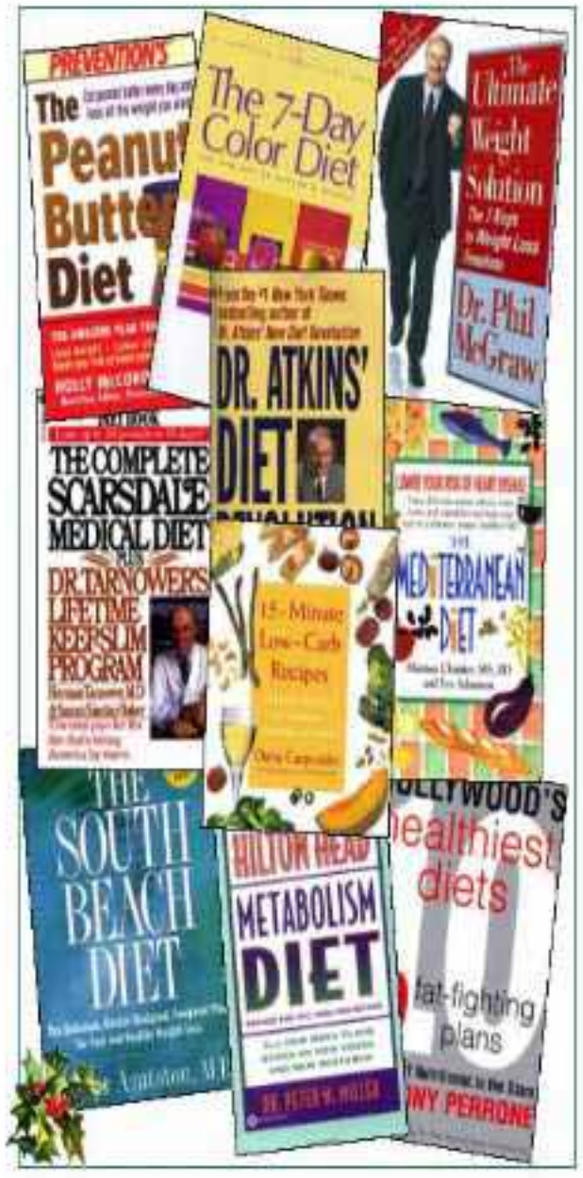
Bariatric surgery

Last year there were 100,000 operations in the USA but only 200 on the NHS in the UK

Welcome to NHS Direct Online

Solutions

Global strategies that rely on surgery, drugs or crash diets are clearly untenable



Solutions

Global strategies that rely on surgery, drugs or crash diets are clearly untenable

We need to adapt our routine diet to our chosen lifestyle

Solutions

Global strategies that rely on surgery, drugs or crash diets are clearly untenable

We need to adapt our routine diet to our chosen lifestyle

Government intervention is essential

House of Commons

Health Committee

Obesity

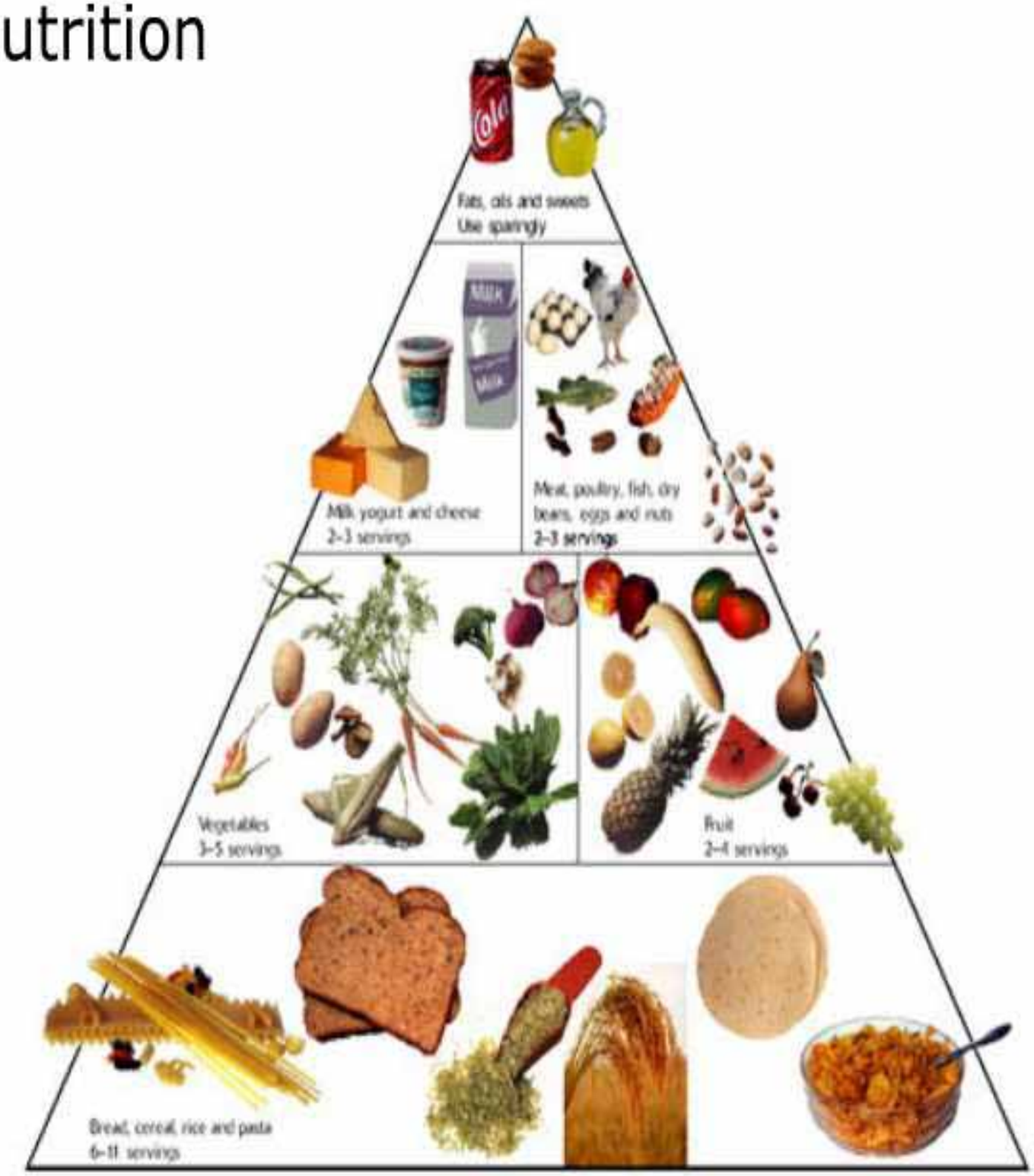
Third Report of Session 2003–04

Volume I

Report, together with formal minutes

Government intervention is essential:

Better education: Nutrition



Government intervention is essential:

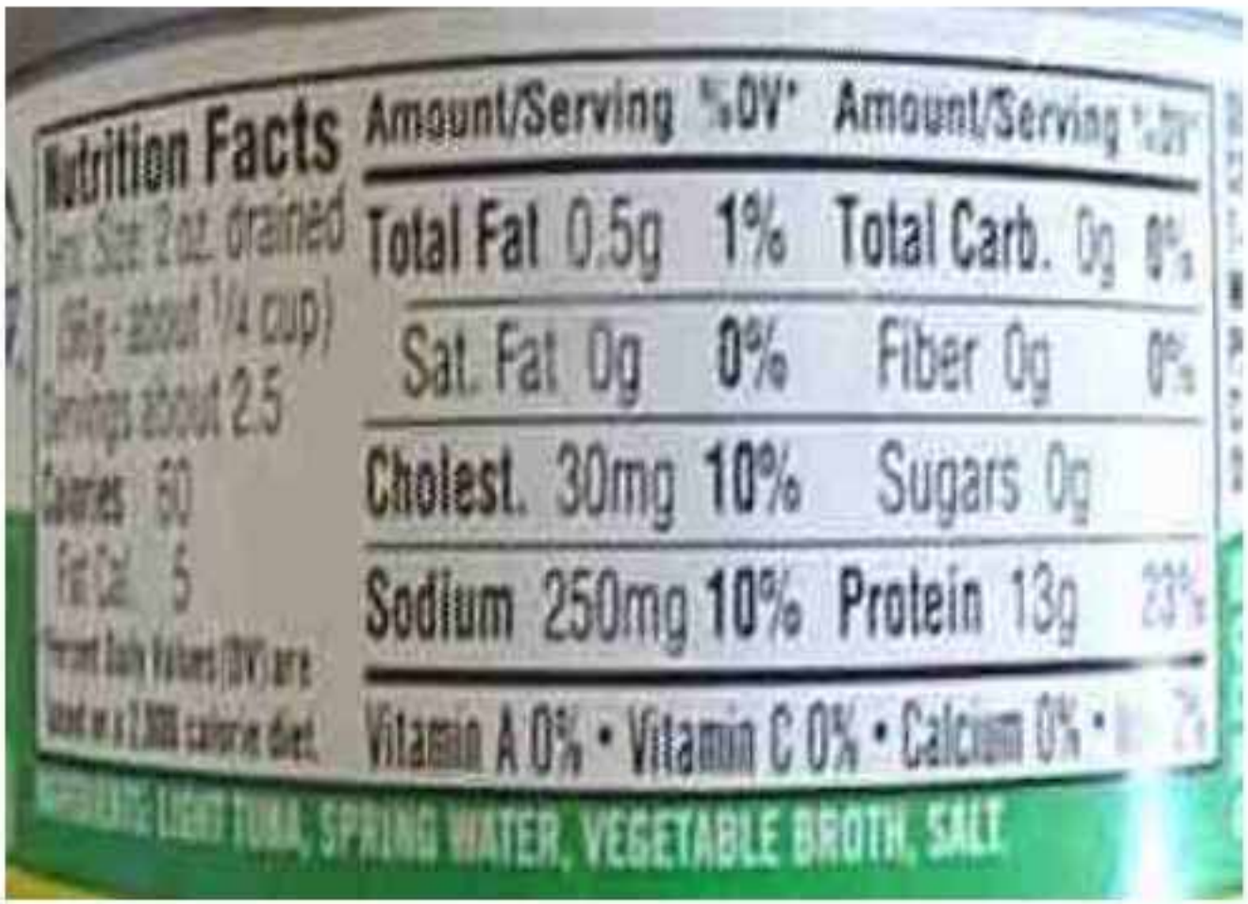
Better education: Nutrition

How to prepare meals from basic ingredients

Required by both children and adults

Government intervention is essential:

Better food labelling: No more small print !



Government intervention is essential:

Better food labelling: No more small print !

Simple visual guide to calorie and nutritional content

Traffic light system: Red = bad; amber = OK; green = good

Total:	Snack	Meal
Calories	xx Kcal	xx Kcal
Fat	xx gm	xx gm
Protein	xx gm	xx gm
Sugar	xx gm	xx gm
Salt	xx gm	xx gm

Government intervention is essential:

Better information: On content of prepared meals

Nutritional information			
	Per Meal Microwaved provides:	As sold 100g provides:	Ingredients Chunky Chicken Casserole with Vegetables: (Water, Vegetables (20%) (Peas, Carrots)*, Chicken (10%) (Contains Salt), Sweetcorn (10%), Tomato Purée (1%), Onions (1%), Maize Starch, Wheat Flour, Natural Flavouring, Caramelised Sugar, Salt, Reduced Sodium Salt, Yeast Extract), Potato Wedges: 29% (Potatoes, Sunflower Oil)
Energy	950k / 230kcal (Calories)	320k / 76kcal	
Protein	15.0g	5.1g	
Carbohydrate	32.0g	10.7g	
(of which sugars)	4.5g	1.5g	
Fat	4.2g	1.4g	
(of which saturates)	0.6g	0.2g	
Fibre	4.8g	1.6g	
Sodium	0.4g	0.1g	

Government intervention is essential:

Better information: On content of prepared meals

Better menus in fast-food outlets

Food: facts and figures
Updated May 2004

our **food**

MENU ITEM	ENERGY		PROTEIN		CARBOHYDRAT		Of Sugars		Saturates					
	(Kjoules)		(Kcalories)		(grams)		(grams)		(grams)		(grams)		(grams)	
	Per Portion	Per 100g	Per Portion	Per 100g	Per Portion	Per 100g	Per Portion	Per 100g	Per Portion	Per 100g	Per Portion	Per 100g	Per Portion	Per 100g
Bacon and Egg McMuffin	1451	1027	346	245	20.0	14.2	26.1	18.5	1.1	0.8	18.0	12.8	8.9	6.3	1.9	1.3	2	1.5
Double Bacon and Egg McMuffin	1722	1110	412	265	24.5	15.8	26.3	16.9	1.0	0.7	23.2	14.9	11.0	7.1	1.9	1.2	2.5	1.75
Big Breakfast	2468	965	591	231	26.2	10.2	39.8	15.6	1.4	0.6	36.3	14.2	13.4	5.3	4.0	1.6	2.75	1
Big Breakfast Bun	2385	984	571	236	31.6	13.0	36.5	15.1	5.0	2.1	32.2	13.3	11.9	4.9	2.1	0.9	3.5	1.5
Egg McMuffin	1180	927	281	221	15.5	12.2	25.9	20.4	1.1	0.9	12.8	10.1	6.8	5.3	2.5	3.2	1.25	1
Hash Brown	577	1034	138	247	1.4	2.5	15.8	28.3	0.2	0.3	7.7	13.8	1.7	3.1	1.7	3.1	1	2
McBacon Roll	1466	1202	349	286	16.5	13.5	37.3	30.5	4.8	4.0	14.0	11.5	3.8	3.1	2.1	1.7	2.5	2
English Muffin (Buttered)	665	1056	157	250	5.4	8.6	25.7	40.7	0.8	1.3	3.7	5.9	2.0	3.2	1.9	2.9	0.5	0.75
English Muffin (Buttered) and Preserve	991	1066	234	252	5.5	5.9	44.7	48.1	19.8	21.3	3.7	4.0	2.0	2.2	1.9	2.0	0.5	0.5
Pancakes and Sausage	2838	1095	678	262	14.0	5.4	87.7	33.8	58.0	22.4	28.1	10.8	12.7	4.9	1.2	0.5	1.25	0.5
Pancakes and Syrup	2232	1066	532	254	5.1	2.4	87.7	41.9	57.8	27.6	15.9	7.6	8.2	3.9	1.2	0.6	0.5	0.25
Sausage and Egg McMuffin	1786	1009	427	242	24.4	13.8	25.9	14.7	1.3	0.7	25.0	14.1	11.3	6.4	1.9	1.0	2.25	1.25
Double Sausage and Egg McMuffin	2391	1055	573	253	33.3	14.7	25.9	11.4	1.5	0.7	37.2	16.4	15.9	7.0	1.9	0.8	2.75	1.25

Government intervention is essential:

Better information: On content of prepared meals

Better menus in fast-food outlets

Also in restaurants, schools and hospitals

Government intervention is essential:

Stronger encouragement: To increase levels of physical exercise

10,000 steps a day


GOOD HEALTH

HOW TO GET HEALTHY.. IN 10,000 EASY STEPS

Experts promise that if you walk 10,000 steps every day you won't need to diet (or go to the gym) ever again. Can it really be that simple?

SO, HOW MANY STEPS DOES IT TAKE TO BURN OFF ONE DOUGHNUT?

FOR THE AVERAGE PERSON, 2,000 STEPS = ONE MILE

Government intervention is essential:

Stronger encouragement: To increase levels of physical exercise

10,000 steps a day

30-60 min exercise for 5 days a week




Government intervention is essential:

Stronger encouragement: To increase levels of physical exercise

10,000 steps a day

30-60 min exercise for 5 days a week

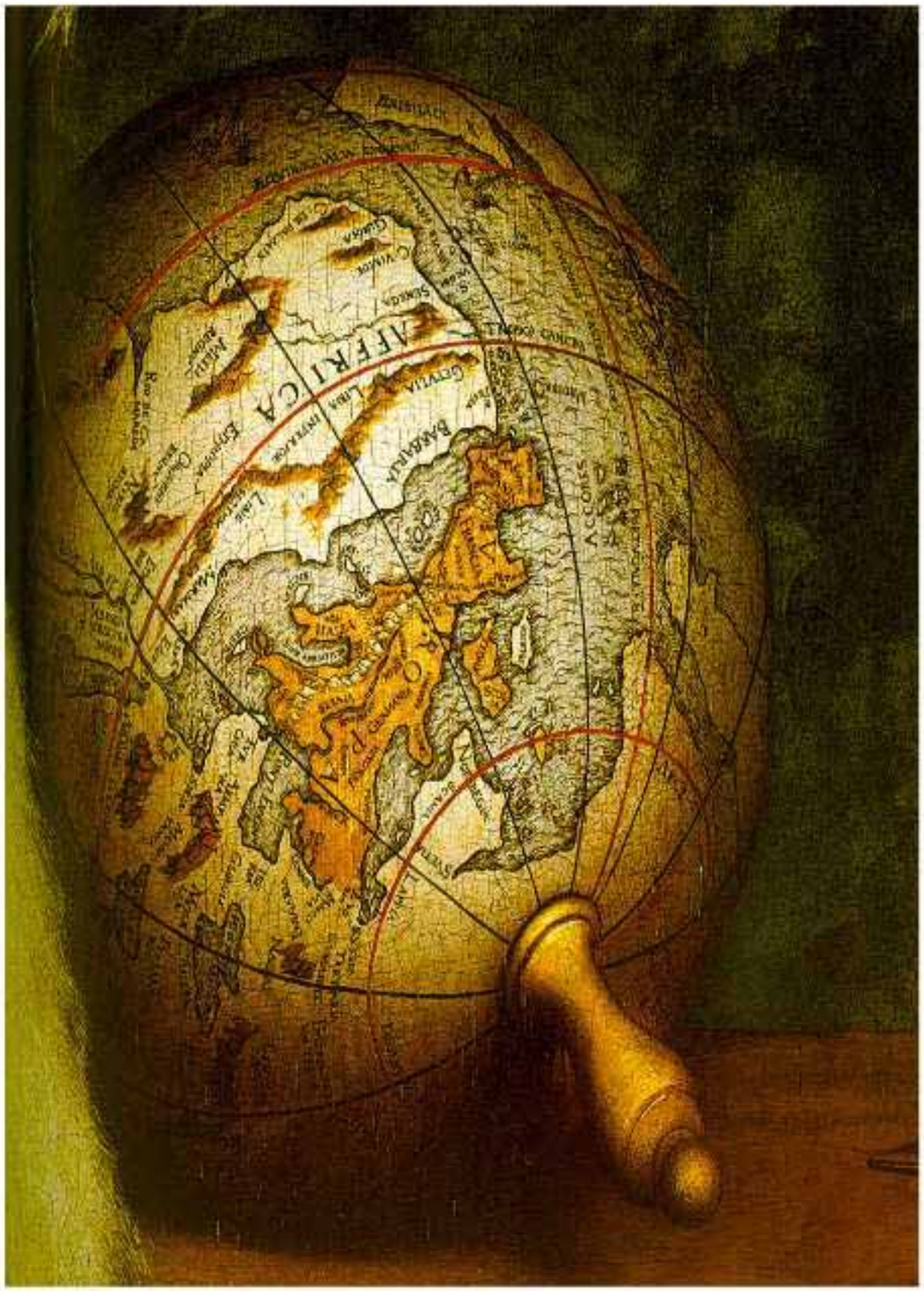
Going to the gym and playing sport can be positive social experiences too

Government intervention is essential:

Try to do more active forms of routine tasks

	Kcalories
Using TV remote control	<1
Getting up to change TV channel	**3**
Letting dog out of the back door	2
Walking the dog, 30 minutes	***125***
Using auto car wash	18
Washing and waxing car, 1 hour	***300***
Using a lift, 3 floors	<1
Walking up 3 floors	**15**
Sending email to colleague, 4 min	2
Walking and talking to colleague, 4 min	***6***
Shopping on-line, 1 hour	30
Shopping, pushing trolley, 1 hour	***200***
Source: Mayo Clinic Proceedings (77) 2002	

Global solution: reduce childhood obesity ?



Global solution: reduce childhood obesity ?

If both your parents are obese there is a 70% likelihood you will be too

If you are obese as a child you are likely to have weight problems for life

Treatment of childhood obesity works best if whole family involved

Routine measurements of children's fat levels (BMI etc)

Global solution: reduce childhood obesity ?

Incentives for food industry to produce healthy options

Incentives for consumers to purchase healthy options

Tighter regulation on food advertising

Better quality children's meals in schools and restaurants

Global solution: reduce childhood obesity ?

School vending machines only sell healthy snacks/drinks

Global solution: reduce childhood obesity ?

School vending machines only sell healthy snacks/drinks

More relevant outlets for children's exercise

Global solution: reduce childhood obesity ?

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More relevant outlets for children's exercise

More encouragement from TV programmes and celebrities to exercise

Global solution: reduce childhood obesity ?

School vending machines only sell healthy snacks/drinks

More relevant outlets for children's exercise

More encouragement from TV programmes and celebrities to exercise

Increase number of physical activity periods in school curriculum

Some final 'take-away' messages

Some final 'take-away' messages

Obesity is caused by taking in more calories than we use

An extra 50 kcal a day will add a kilo that stays

We eat too much fat, salt and added sugar

Reduced activity is more responsible than increased calories

Some final 'take-away' messages

Obesity is linked with heart disease, diabetes, cancer, osteo-arthritis, sleep apnea and psychological problems

Fat cells are hormone factories that in excess can damage health

Extra fat cells may be for life, not just for Christmas !

Dieting, surgery and drugs all have drawbacks

Some final 'take-away' messages

Only effective National strategy requires Government intervention

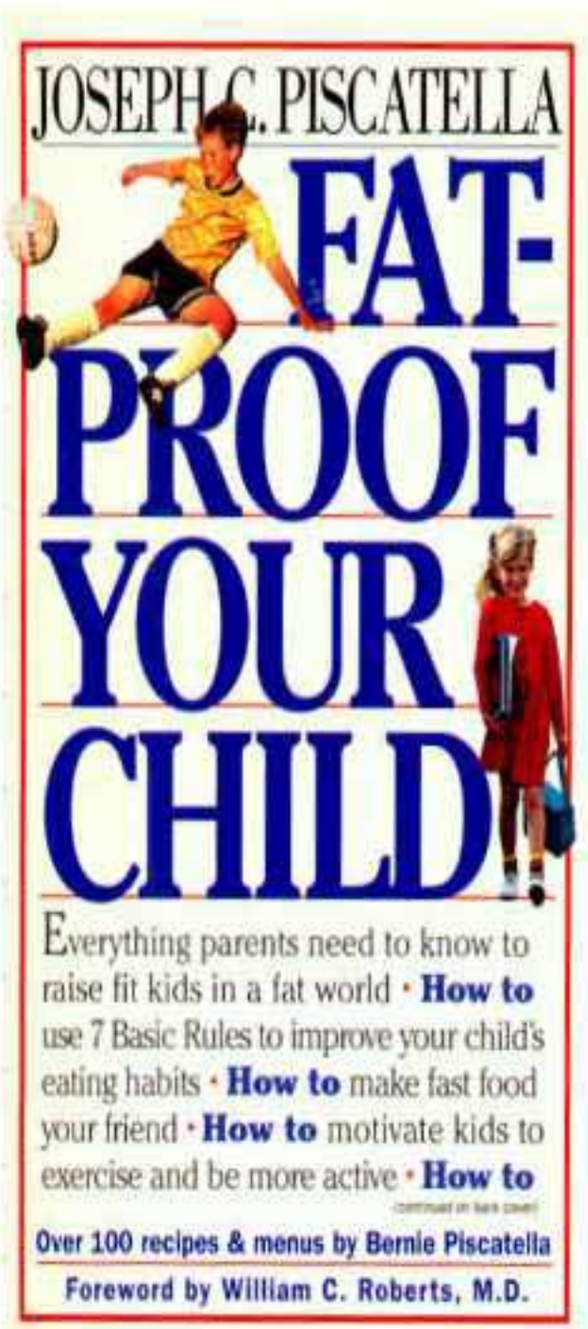
Food industry needs encouragement to produce more healthy options

Food advertising needs better regulation

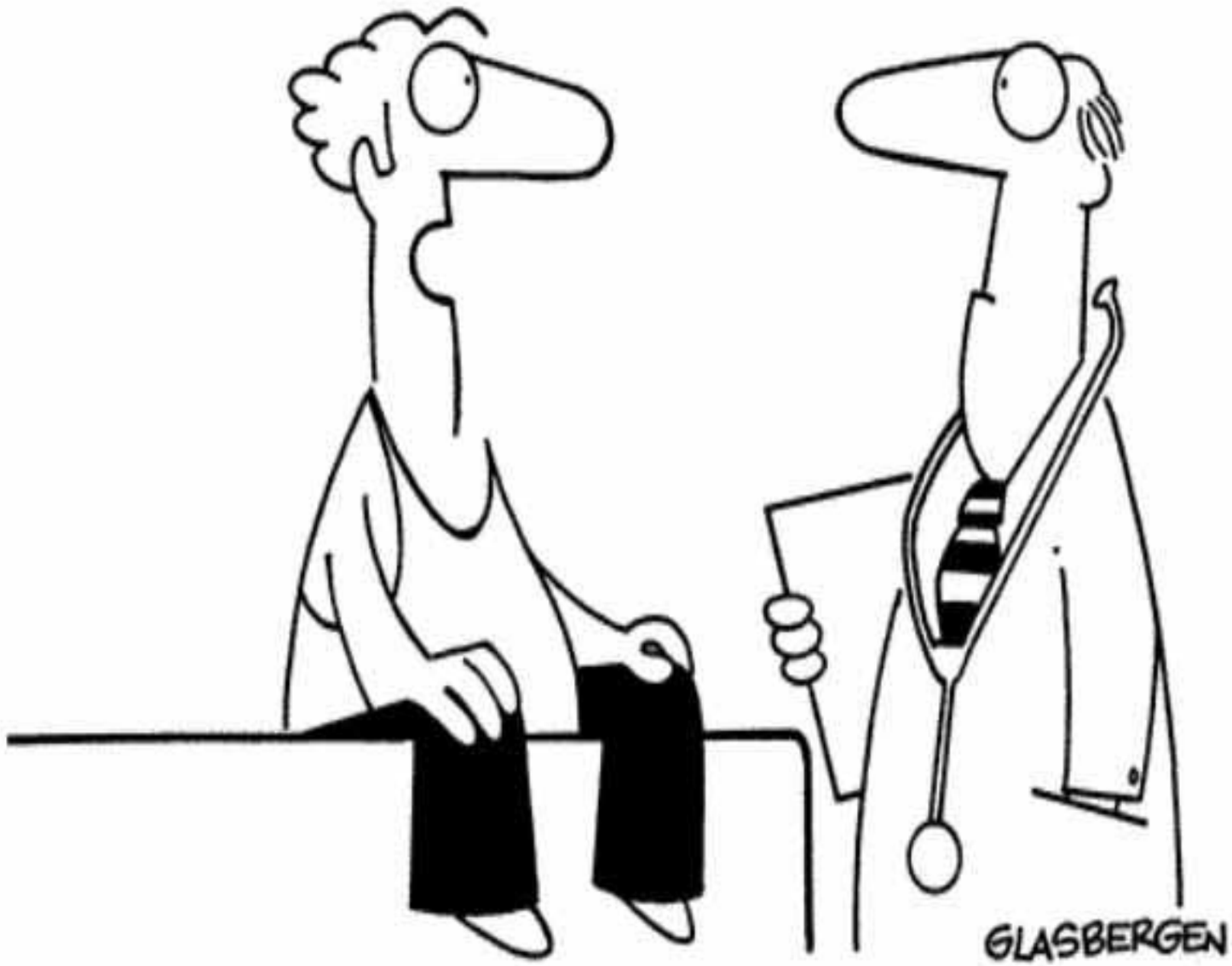
We need to get up and exercise more

Some final 'take-away' messages

The key battleground is dealing with childhood obesity



Some final 'take-away' messages



"Eat less and exercise more? That's the most ridiculous fad diet I've heard of yet!"