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Discovering digestion

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Slide 2

What is your favourite food?

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Slide 3

The seven food groups

Carbohydrates (energy)

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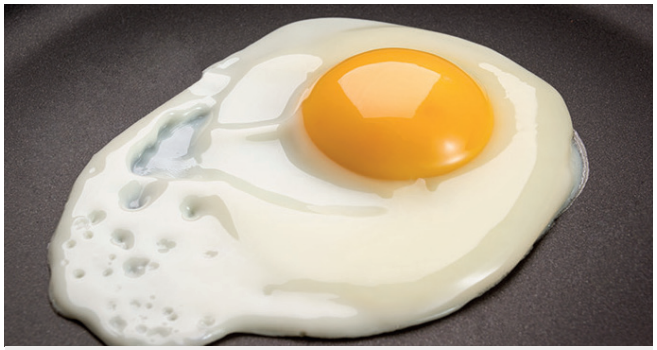
Slide 3

The seven food groups

Carbohydrates (energy)



Protein (growth and repair)

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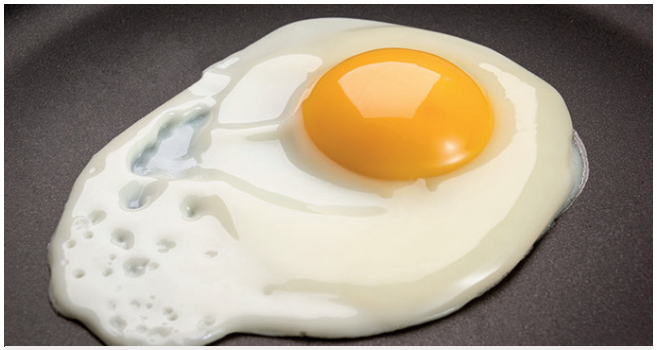
Slide 3

The seven food groups

Carbohydrates (energy)



Protein (growth and repair)

Lipids (energy and insulation)

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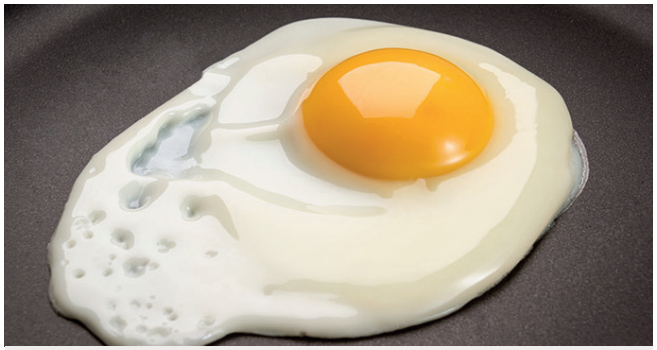
The seven food groups

Carbohydrates (energy)



Protein (growth and repair)

Lipids (energy and insulation)

Vitamins (health)

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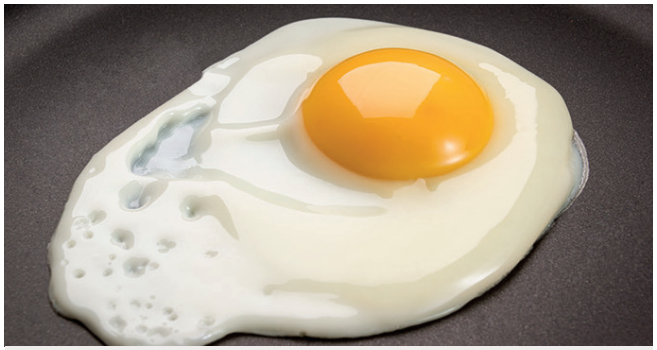
Slide 3

The seven food groups

Carbohydrates (energy)



Protein (growth and repair)

Lipids (energy and insulation)

Vitamins (health)

Minerals (health)

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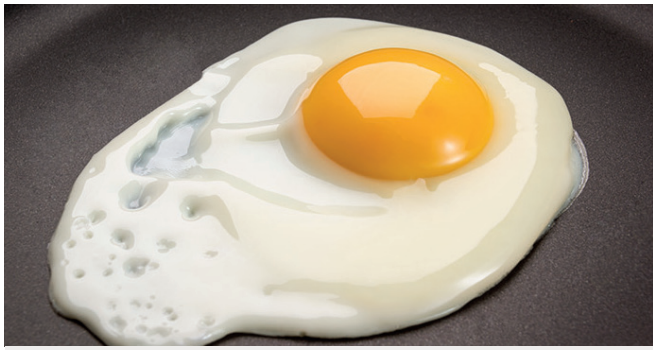
Slide 3

The seven food groups

Carbohydrates (energy)



Protein (growth and repair)

Lipids (energy and insulation)

Vitamins (health)

Minerals (health)

Fibre (digestion)

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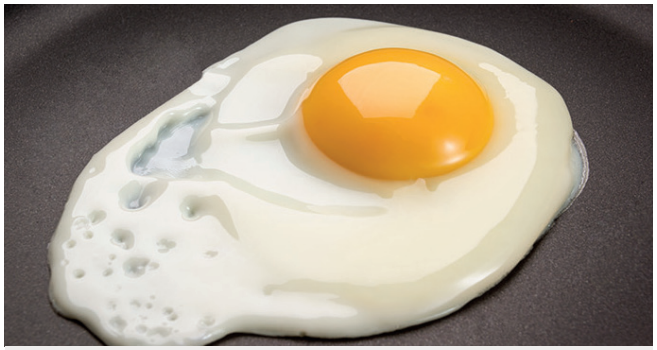
Slide 3

The seven food groups

Carbohydrates (energy)



Protein (growth and repair)

Lipids (energy and insulation)

Vitamins (health)

Minerals (health)

Fibre (digestion)

Water (cells and fluids)

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Slide 4

How much energy do we need?

Only **15-30%** of our energy is used up by physical activity. The rest is used in life processes like breathing and digesting

Slide 5

Experimenting with energy

$$\text{Energy (J) per gram of food} = \frac{\text{mass of water (g)} \times \text{temperature rise (°C)} \times 4.2}{\text{mass of food (g)}}$$

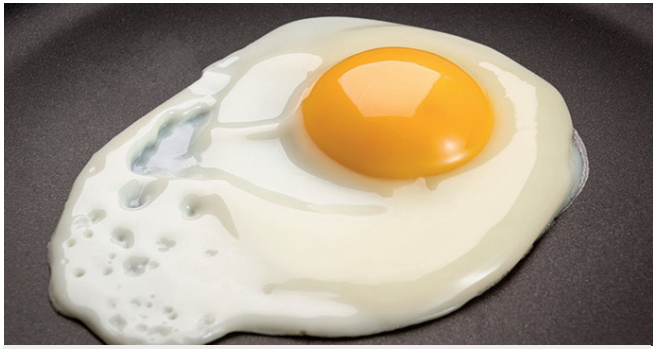
Slide 6

Which food has the highest energy content?

#2

Carbohydrates (energy)

#3



Protein (growth and repair)

#1

Lipids (energy and insulation)

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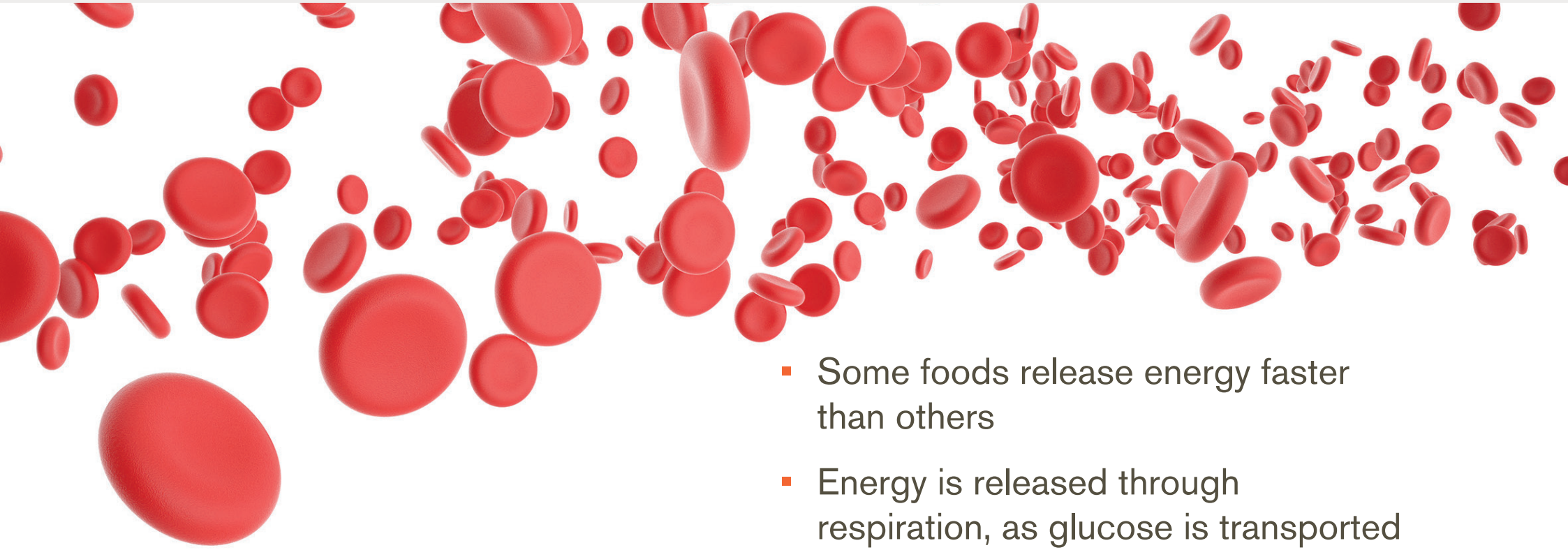
Slide 7

Releasing energy



- Some foods release energy faster than others
- Energy is released through respiration, as glucose is transported round the body via blood cells
- Foods rich in carbs need to be broken down to release the energy

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Slide 8

Glucose ($C_6H_{12}O_6$): the fastest energy

- Simple sugar $C_6H_{12}O_6$
- Fast fuel for our bodies
- Made by digesting carbohydrates
- Blood carries glucose and oxygen to all our cells
- Cells get the energy they need from glucose during respiration

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Slide 9

Protein: medium term energy

- The body uses proteins for growth, replacement and to repair body tissues
- All cells are made mainly from protein
- The enzymes that control all the body's chemical reactions are also proteins and are essential for everyone's diet
- Proteins cannot be stored in the body so are used straight away (fast energy but not as fast as glucose)

Slide 10

Starch: slow release energy

- Starch is a type of carbohydrate
- Starch is a white solid at room temperature, and does not dissolve in cold water
- The digestion of starch makes glucose
- Most plants store their energy as starch
- Starch takes longer to digest than glucose, so the sugar loading into the blood is more gradual, avoiding a spike in blood sugar level (slow energy)

Slide 11

Testing your food

Glucose

$(C_6H_{12}O_6)$

Clinistix® strips

Protein

Albustix® strips

Starch

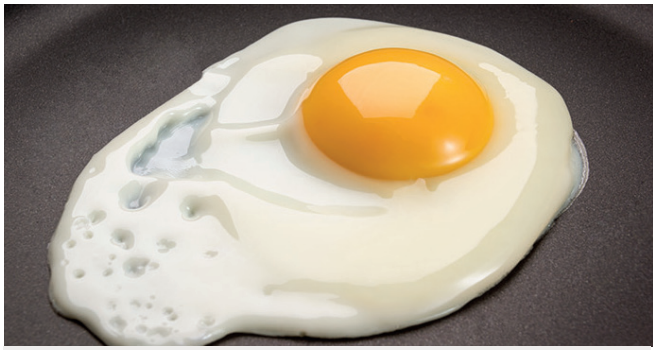
iodine solution

Slide 12

Evaluate results

Which foods had the highest glucose, proteins and starch?

Glucose: Sweets, fruits, honey



Protein: meat, eggs, milk and nuts

Starch: rice, potatoes, bread and pasta

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Slide 13

Quiz

1. What is the main reason we need protein in our diet?

Energy	Digestion	Growth and repair

2. Name two factors that affect how much energy someone needs.

3. What nutrient is found in pasta and rice?

Lipids	Carbohydrate	Protein

4. $C_6H_{12}O_6$ is the chemical symbol for what?

Starch	Glucose	Protein

5. Which of these contains the most protein?

Fish	Chips	Ketchup

Slide 14
Quiz

6. Through which process is energy released in the body?

Combustion	Respiration

7. Which of these contains the most fibre?

Cheese	Carrots	Yoghurt

8. Name all seven food groups.

9. Albustix® strips can be used to test for what?

Starch	Glucose	Protein

Slide 15

Answers

1. What is the main reason why we need protein in our diet? **Growth and repair**
2. Name two factors that affect how much energy someone needs. **Height, age, physical activity and gender**
3. What nutrient is found in pasta and rice? **Carbohydrate**
4. $C_6H_{12}O_6$ is the chemical symbol for what? **Glucose**
5. Which of these contains the most protein? **Fish**
6. Through which process is energy released in the body? **Respiration**
7. Which of these contains the most fibre? **Carrots**
8. Name all seven food groups. **Carbohydrates, lipids, proteins, vitamins, minerals, fibre and water**
9. Albustix® strips can be used to test for what? **Protein**

Find out more at:

GSKstemeducation.com