

# The Respiratory System

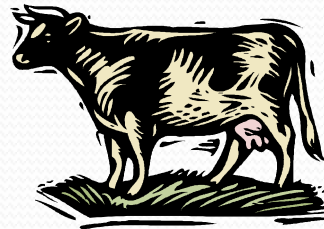
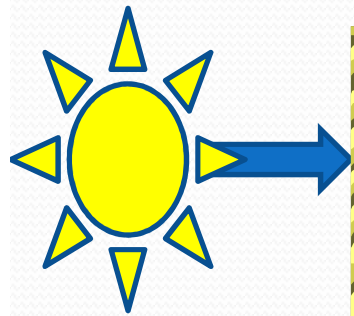
Aerobic and Anaerobic Respiration



# Objectives

- Understand how our cells respire
- Understand how energy is made available for physical activity
- Understand when, why and how Aerobic and Anaerobic respiration take place

# How humans obtain energy



- Physical Activity
- Feeding
- Reproduction
- Growth
- Maintain Temp
- Excretion
- Repair

# Energy from the food we eat



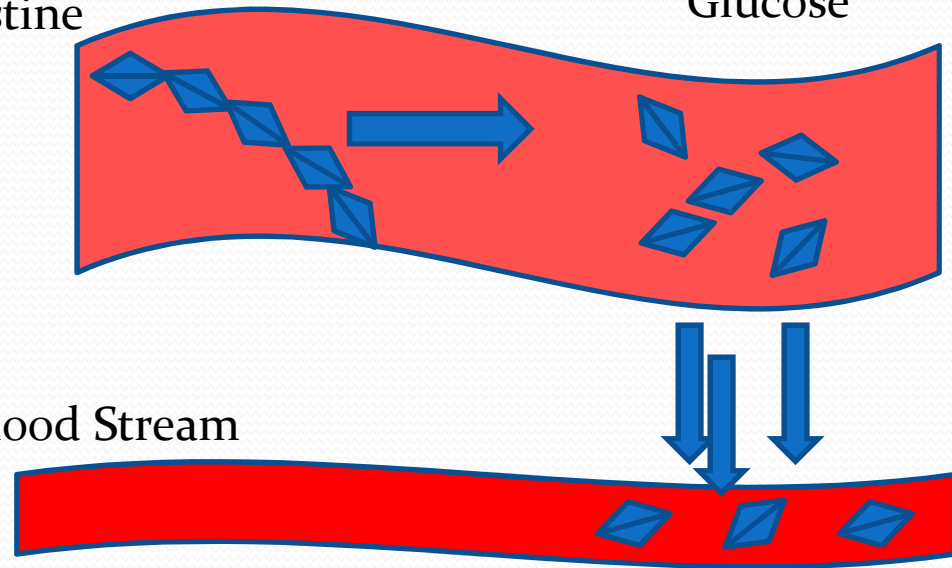
# Making Energy available for Physical Activity

- Carbohydrate in the form of starch from foods such as pasta, bread and potatoes
- Starch is digested into glucose molecules
- Pass through walls of intestine into the blood

Carbohydrate eg. Starch

Small Intestine

Glucose



Blood Stream

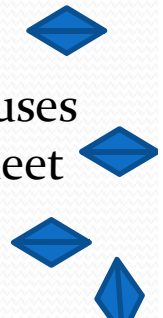
Liver- Joins the molecules up again to become GLYCOGEN



Skeletal Muscle- Converted to GLYCOGEN and stored ready for use

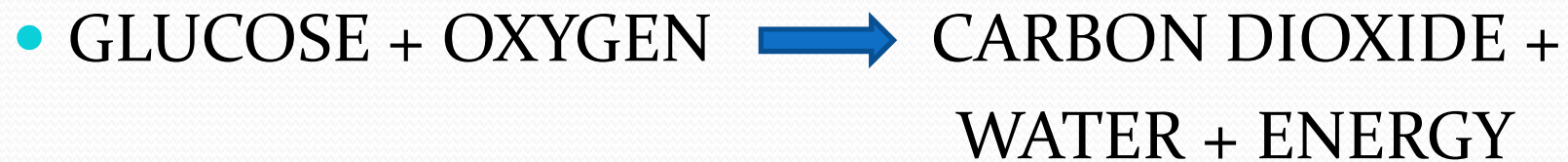


Body Cells- Glucose diffuses quickly to meet the energy demands



# AEROBIC RESPIRATION

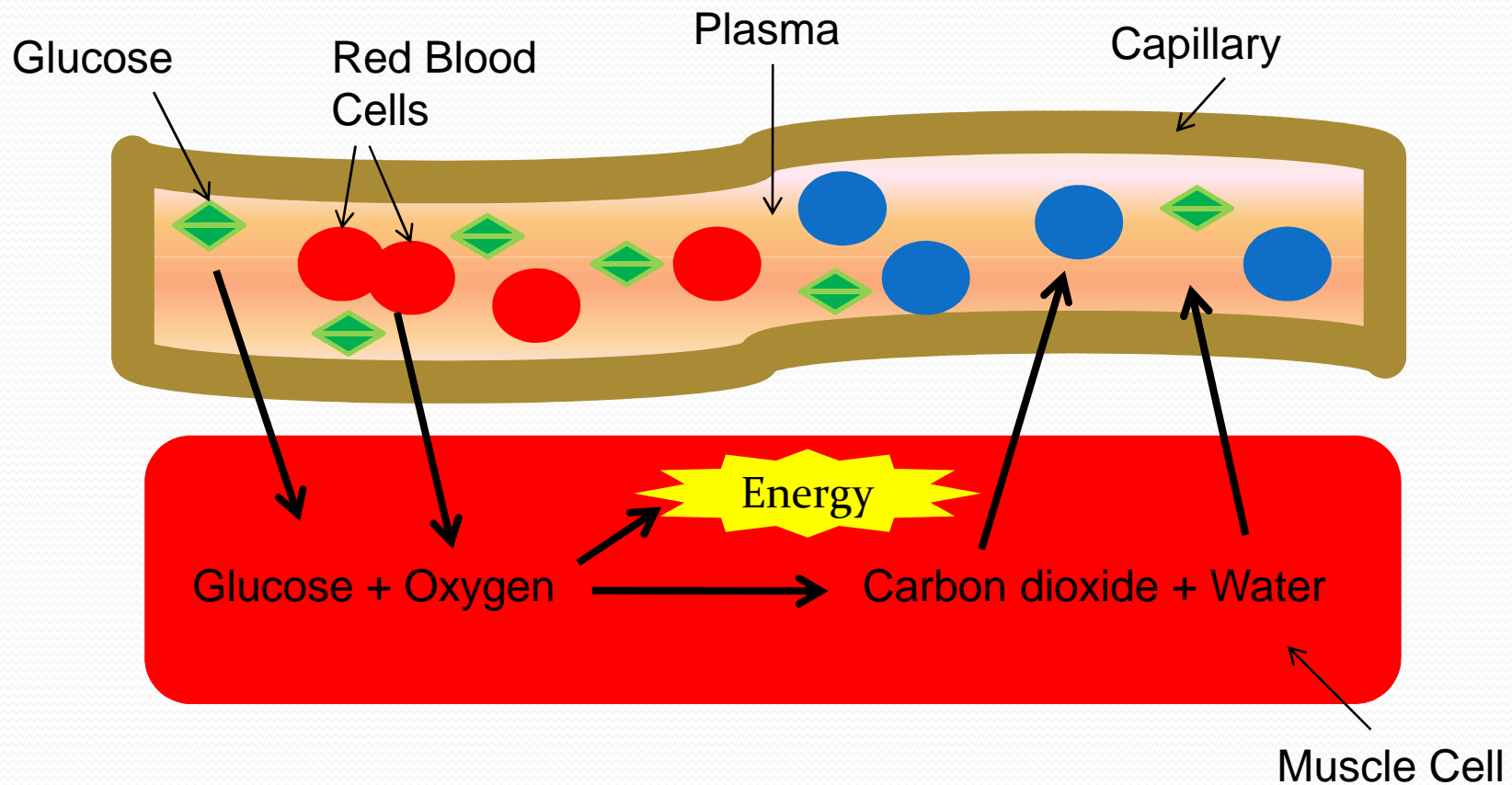
- The release of energy from the breakdown of glucose by combining it with Oxygen




Produces heat  
warming the  
body

Used for muscle  
contraction providing  
movement

# A Working Muscle Cell



# Anaerobic Respiration

- This gives far less energy than Aerobic Respiration
- When enough lactic acid builds up in your muscles it acts like a mild poison – it causes pain and fatigue and your muscles stop working
- GLUCOSE  ENERGY + Lactic Acid
- After about 1 minute the lactic acid stops the muscle working





# Lactic Acid and Oxygen Debt

- After strenuous activity such as sprinting the muscles need extra O<sub>2</sub> to get rid of the Lactic Acid
- The extra O<sub>2</sub> = Oxygen Debt
- You pay it off by gulping air into your lungs
- Most of the lactic acid is turned into CO<sub>2</sub> and H<sub>2</sub>O
- Some changed back to glucose and glycogen



# Replacing Glycogen

- During hard exercise muscle glycogen and some liver glycogen is used up
- These stores must be replaced
- Snack on bananas and other starchy foods when exercise over
- Can take marathon runners days to rebuild glycogen stores



# Homework

- P111 Q's 1-4
- 113 Q's 1-5
- End of unit questions p116