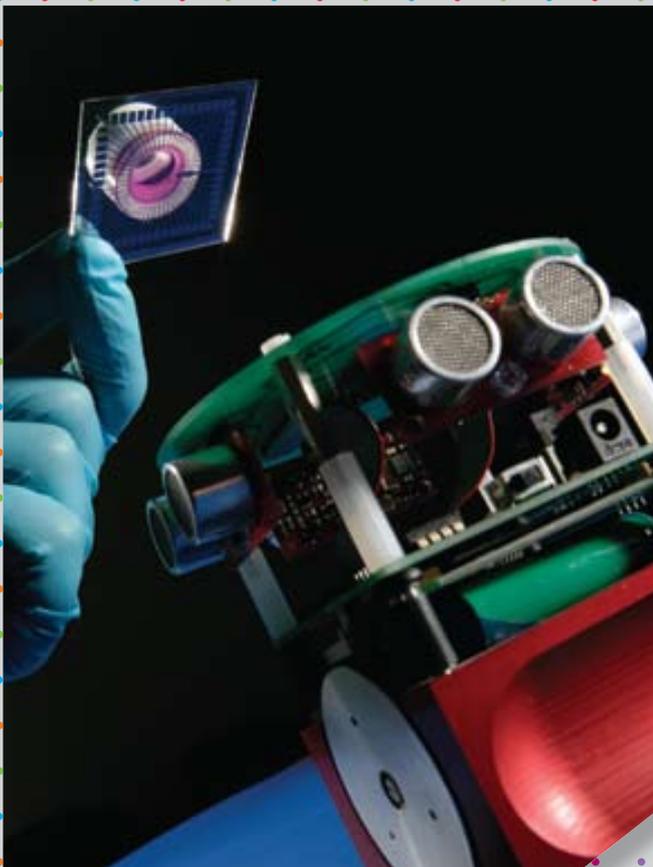


key information

Information about Gordon

- Gordon is a special type of robot that is controlled by a dish full of brain cells taken from rat **embryos**.
- These brain cells are called **neurons** (also known as **neurons**).
- Gordon's neurons are kept in a sterile chamber apart from the robotic body to prevent them from becoming infected.
- The neurons are kept at body temperature and are fed fresh mineral and nutrient solution every few days to keep them alive.
- The robotic body detects changes in its environment using **sonar**.
- Sonar sensors allow the robotic body to detect nearby objects.
- This sonar system sends information as an electrical pulse to the neurons.
- Electrical signals are sent between the neurons and the robotic body via a wireless link.
- The neurons respond and send signals back to the robotic body that tell it which way to turn.



Key science words explained

- An **embryo** is an organism that is in the very early stages of development. In humans, after the eighth week of pregnancy, the embryo is called a foetus.
- **Neurons** are specialised cells found in the **nervous system** of humans and other animals that transmit information as electrical impulses around the body.
- Your **nervous system** enables you to respond to changes in your environment.
- **Sonar** is a way of locating objects and judging how far away they are using sound waves.

key information

Extra science information

- Neurons are found in many different parts of the nervous system – not just in the brain.
- The **central nervous system** (CNS) in humans consists of the brain and spinal cord and coordinates how you respond to changes in your environment.
- **Neurons** transmit information as electrical impulses very quickly between the **central nervous system** and other parts of your body, for example to your muscles to make them move.
- **Neurons** do not make direct contact with other neurons.
- Information from one neuron flows to another neuron across a **synapse**.
- The **synapse** contains a tiny gap that separates the neurons.
- **Neurotransmitters** are chemical messengers that are released by neurons. They move across the gaps and stimulate other neurons to transmit electrical impulses.
- You have **sense organs** – eyes, ears, nose, tongue and skin – which all contain different **receptors** that detect changes in your environment.
- **Receptors** are groups of cells which are sensitive to a specific type of change called a stimulus.
- Your eyes contain light **receptors** that are sensitive to changes in light energy.



Bats use sonar to detect prey in the dark.