

# Discovering the Heart

More than 1,800 years of questions, mistakes and experiments that revealed what the heart really does.

2nd  
century  
AD

### Galen's model

The Greek physician Galen teaches that the liver makes blood, the body uses it up, and some blood seeps through invisible pores in the septum.

13th  
century

### Ibn al-Nafis traces the lung circuit

Working in Cairo, Ibn al-Nafis writes that the septum has no pores: blood goes from the right side of the heart through the lungs to the left.

1555

### Vesalius doubts Galen

In a new edition of his anatomy book, Andreas Vesalius writes that he cannot see how any blood could pass through the septum.

1628

### Harvey proves circulation

William Harvey publishes *De Motu Cordis*. His experiments and sums show the heart pumps the same blood round the body again and again.

1661

### Malpighi sees capillaries

Looking at a frog's lung through a microscope, Marcello Malpighi sees tiny vessels joining arteries to veins: the missing link in Harvey's circuit.

1887

### First human ECG

Augustus Waller records the heart's electrical activity from the surface of a person's body for the first time.

1903

### Einthoven's string galvanometer

Willem Einthoven publishes a far more sensitive ECG recorder, the forerunner of today's machines. He wins the 1924 Nobel Prize for this work.

1967

### First heart transplant

On 3 December, Christiaan Barnard's team in Cape Town, South Africa, transplants a human heart. The patient, Louis Washkansky, lives for 18 days.



### Why it took so long

Blood moves through capillaries far too small to see with the naked eye, so the full circuit stayed hidden until experiments, careful arithmetic and the microscope revealed it.

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7. Heart Myths and the Real Science

