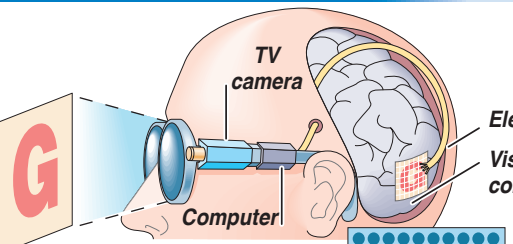


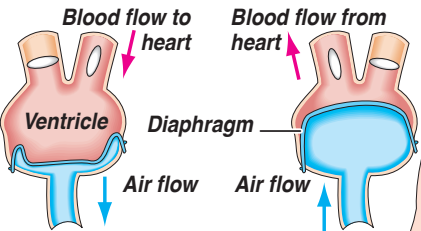
BIONIC MEDICINE

Spare parts help the body work

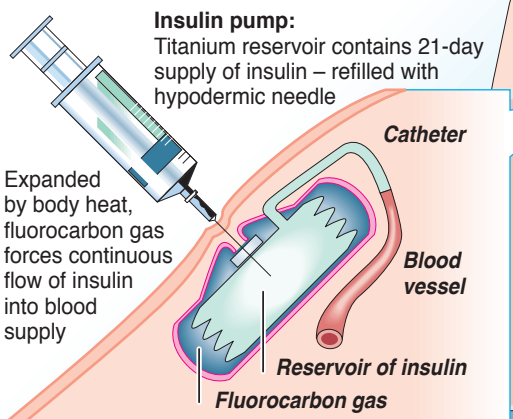
Transplants of live organs, such as heart, lungs, liver or kidneys can mean the gift of life to a dying patient, but advances in prosthetics have created an additional market for artificial body parts, including replacements designed to interact directly with the nervous system



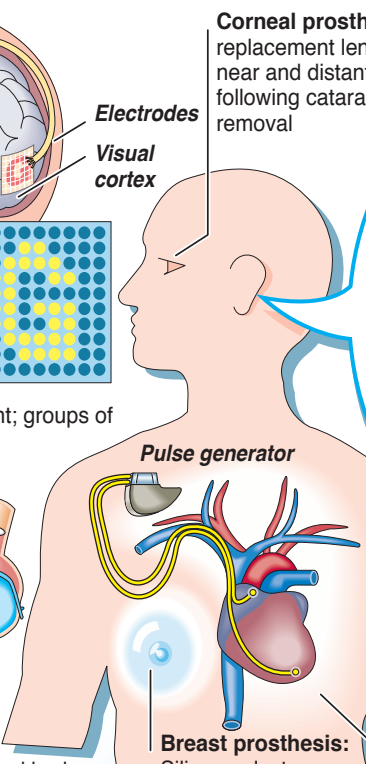
Visual prosthesis: Video camera linked via computer sends signal to receiver implanted under scalp. Receiver is wired to array of electrodes covering visual cortex – area of brain responsible for sight. With each signal, person ‘sees’ dot of light; groups of dots produce recognisable visual images



Artificial heart: Made of biocompatible synthetic materials. External supply of compressed air used to pump blood around body



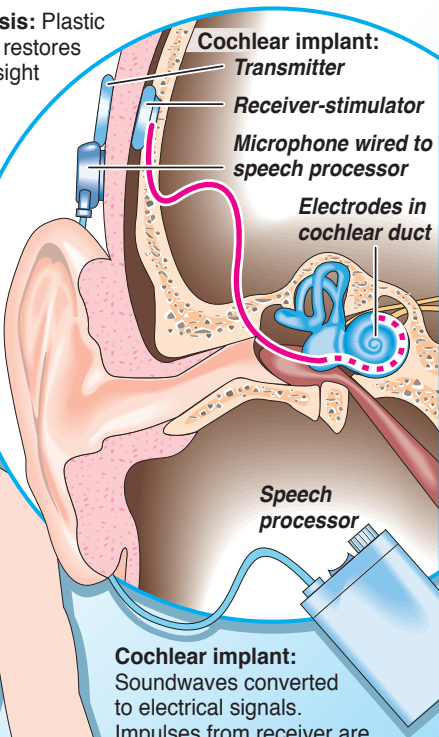
Insulin pump: Titanium reservoir contains 21-day supply of insulin – refilled with hypodermic needle



Corneal prosthesis: Plastic replacement lens restores near and distant sight following cataract removal

Pulse generator

Breast prosthesis: Silicone elastomer implants used for cosmetic enlargement or rebuilding following surgical removal



Cochlear implant: Transmitter, Receiver-stimulator, Microphone wired to speech processor, Electrodes in cochlear duct

Cochlear implant: Soundwaves converted to electrical signals. Impulses from receiver are interpreted by brain as ‘sounds’. Used to stimulate auditory nerve in cases of deafness

Heart pacemaker: Implanted electronic pulse generator stimulates muscle contractions to regulate heartbeat

Synthetic blood vessels: To replace arteries following loss of elasticity and narrowing due mainly to cholesterol build-up

Artificial joints: Titanium used for ball and socket replacements such as hips. Small joints, complete with flexible hinges, made from silicone elastomer