|  |
| --- |
| **Homeostasis** |
| Homeostasis | Maintenance of a constant internal environment. |
| 3 examples of conditions that need to be controlled. | Body temperature, blood glucose levels, water content. |
| Features of an automatic control system.  | Receptors, coordination centre, effector. |
| Negative feedback | A process that counteracts a change |

|  |
| --- |
| **The Nervous system** |
| Nervous System | A system that manages the body through negative feedback, hormones and effectors |
| Central Nervous System | The brain and spinal cord ; connected to the body by sensory neurones and motor neurones |
| Sensory Neurones | Carry signals from receptors to the CNS |
| Motor Neurones | Carry signals from the CNS to effectors |
| Stimulus | A change in the environment. |
| Effectors | Muscles or glands ; respond to receptors and bring about change |
| Receptors | Detect stimuli |
| Synapse | The gap between neurons. Information must be transmitted as a chemical message. |
| Neurotransmitter | Chemical messengers that cross the synaptic gaps between neurons. |
| Reflexes | Involuntary and often self-protective movements. Actions that do not require the CNS. |
| Reflex arc | A complete pathway through the nervous system from the stimulus to response. |
| Pathway of a reflex arc | stimulus -> receptor -> sensory neurone -> relay neurone -> motor neurone -> response |
| Reaction time | The time taken to respond to a stimulus. |
|  |  |

|  |
| --- |
| **The endocrine system** |
| Endocrine system | The collection of glands of an organism that secrete hormones into the blood.  |
| Hormones | Chemical messages that are sent through the blood; produced by various glands. |
| Pituitary gland | Sometimes called the 'master gland' as it secretes many different hormones, some of which affect other glands. |
| Ovaries | Produce oestrogen (females only) which is involved in the menstrual cycle. |
| Testes | Produce testosterone (males only) which controls puberty and sperm production. |
| Thyroid | Produces thyroxine. |
| Adrenal gland | Produces adrenaline. |
| Pancreas | Produces insulin and glucagon. |
| Adrenaline | A hormone that prepares for "fight or flight" |
| Thyroxine | A hormone that regulates metabolism |
| Metabolism | All the chemical reactions in an organism |

|  |
| --- |
| **Control of blood sugar** |
| Insulin | Added if blood sugar levels are too high |
| Glucagon | Added if blood sugar levels are too low |
| Pancreas | The organ that monitors and controls blood glucose levels. |
| Diabetes | A condition that affects your ability to control your blood sugar levels |
| Cause of type 1 diabetes | The pancreas produces little or no insulin. |
| Cause of type 2 diabetes | The body is resistant to its own insulin. Being overweight can increase your chance of developing type 2 diabetes. |
|  |  |

|  |
| --- |
| **Hormones in human reproduction** |
| Stages in the menstrual cycle | MenstruationThe uterus lining builds upAn egg develops and is releasedThe wall is maintained until day 28 |
| FSH (Follicle Stimulating Hormone) | Produced by the pituitary gland. Causes the egg to matureStimulates the ovaries to produce oestrogen |
| Oestrogen | Produced by the ovaries. Causes the uterus lining to regrow Stimulates the release of LH whilst inhibiting FSH |
| LH (Luteinising Hormone) | Produced by the pituitary gland. Stimulates the release of an egg at day 14 |
| Progesterone | Produced by the ovaries. Maintains the lining of the uterus and inhibits the release of FSH and LH. |

|  |
| --- |
| **Controlling Fertility** |
| Combined oral contraceptive pill | An oral contraceptive that contains oestrogen and progesterone. |
| Contraceptive patch | A small patch containing oestrogen and progesterone worn on the skin. |
| Contraceptive implant | Inserted under the skin of the arm and releases a continuous amount of progesterone which stops the ovaries releasing eggs. |
| Intrauterine device (IUD) | A T-shaped device inserted into the uterus to kill sperm and prevent implantation of a fertilised egg. |
| Barrier methods | Non-hormonal forms of contraception that are designed to stop the sperm getting to the egg. Examples: condoms and a diaphragm. |
| Sterilisation | Cutting of tying the fallopian tubes in a female or the sperm ducts in a male. |
| In vitro fertilisation (IVF) | The method of fertilising a human egg outside the body. |
| Stages in IVF | FSH and LH taken to stimulate egg productionEggs collected from the ovariesEggs fertilised in a lab.Fertilised eggs grown into embryosEmbryos transferred to the woman's uterus |