

## Human Biology – Unit 3 checklist

### Endocrine system

- hypothalamus, pituitary, thyroid, parathyroid, pancreas, thymus, gonads, pineal and adrenal glands
- hormones secreted from the hypothalamus, pituitary, thyroid, parathyroid, pancreas and adrenal glands & target organs
- the secretions of the pituitary gland are controlled by the hypothalamus through transport of hormones, either via nerve cells or the vascular link between them
- hormones can be lipid-soluble or, water-soluble

### Central and peripheral nervous system

- structure and function of the divisions of the nervous system
  - central-peripheral
  - afferent-efferent
  - autonomic-somatic
  - sympathetic-parasympathetic
- the parts of the central nervous system including the brain & spinal cord
- thermoreceptors,
- osmoreceptors,
- chemoreceptors
- receptors for touch and pain
- the reflex arc
- transmission of nerve impulses
- the nervous and endocrine systems work together to co-ordinate functions of all body systems, but differ in terms of:
  - speed of action
  - duration of action
  - nature and transmission of the message

- specificity of message

### Homeostasis

- thermoregulation
- blood sugar levels
- body fluid concentrations
- gas concentrations

### Response to infection

- infectious diseases caused by invasion of pathogens in the form of viruses and bacteria transmission of pathogens occurs by various mechanisms, including through:
  - direct and indirect contact
  - transfer of body fluids
  - disease-specific vectors
  - contaminated food and water
- the body's external defence mechanisms:
  - skin
  - digestive tract
  - urogenital tract
  - respiratory system
  - the ear
  - the eye
- non-specific immune responses of inflammation and fever
- antiviral and antibiotic drugs
- passive immunity can be acquired as antibodies gained through the placenta, or antibody serum injections
- active immunity can be acquired through natural exposure to the pathogen, or the use of vaccines
- B lymphocytes and the provision of cell-mediated immunity by T lymphocytes; in both cases memory cells are produced

# Human Bio – Unit 4 Checklist

## Mutations

- mutations in genes and chromosomes
- different genotypes produce a variety of phenotypes
- mutations are the ultimate source of variation

## Gene pools

- populations can be represented as gene pools that reflect the frequency of alleles of a particular gene
- gene pools are dynamic, with changes in allele frequency caused by:
  - mutations
  - differing selection pressures
  - random genetic drift
- the incidence of genetic diseases (Tay-Sachs disease, thalassemia ( $\alpha$  and  $\beta$ ) and sickle-cell anaemia)
- natural selection
- the mechanisms underpinning the theory of evolution
  - inherited variation
  - struggle for existence
  - isolation and differential selection

## Evidence for evolution

- biotechnological techniques
- comparative studies of DNA (genomic and mitochondrial)
- factors that affect fossil formation, the persistence of fossils and accessibility to fossilised remains
- relative dating: stratigraphy and index fossils

- absolute dating: radiocarbon dating and potassium-argon dating

## Hominid evolutionary trends

- humans as primates are classified in the same taxonomic family as the great apes
  - relative size of cerebral cortex
  - mobility of the digits
  - locomotion – adaptations to bipedalism and quadrupedalism
  - prognathism and dentition
- relatedness and possible evolutionary pathways for hominins
  - *Australopithecus afarensis*
  - *Australopithecus africanus*
  - *Paranthropus robustus*
  - *Homo habilis*
  - *Homo erectus*
  - *Homo neanderthalensis*
  - *Homo sapiens*
- tool (Trends are seen in the changes in manufacturing techniques and the materials used) in the tool cultures of:
  - *Homo habilis*
  - *Homo erectus*
  - *Homo neanderthalensis*
  - *Homo sapiens*