

Reproduction and inheritance

Reproduction in plants

Sexual vs asexual

Two parents or one Gametes fuse or not

Variation or clones

Fertilisation

Gametes fuse Zygote Embryo

Flowers and pollination

Insect-pollinated Wind-pollinated Anther to stigma

Seed and fruit formation

Pollen tube Ovule to seed Ovary to fruit

Germination

Water Oxygen Warmth Food reserves

Asexual reproduction

Runners Cuttings Clones

Human reproduction

Male system

Testes Spermat duct Prostate gland Penis

Female system

Ovary Oviduct Uterus Cervix and vagina

Menstrual cycle

Oestrogen repairs lining Progesterone maintains lining

Ovulation day 14

FSH and LH **Biology only**

FSH matures egg LH causes ovulation

Placenta

Diffusion of nutrients Villi Umbilical cord

Amniotic fluid

Absorbs shocks

Puberty

Oestrogen Testosterone

Secondary sexual characteristics

DNA and protein synthesis

Genome: all the DNA

entire DNA of organism

Gene

section of DNA codes for a protein

Chromosomes in nucleus

genes located on them

DNA structure **Biology only**

double helix A-T and C-G two strands

RNA **Biology only**

single stranded uracil replaces thymine

Transcription **Biology only**

in nucleus makes mRNA

Translation **Biology only**

at ribosome tRNA anticodons mRNA codons

polypeptide made

Inheritance

Alleles

alternative forms of gene

Terms

dominant, recessive homozygous, heterozygous

genotype, phenotype

Codominance **Biology only**

both alleles expressed roan cattle

Polygenic inheritance

many genes e.g. height

Monohybrid crosses

Punnett square 3 : 1 ratio

Pedigrees and probability

carriers 1 in 4 chance

Sex determination

XX female, XY male sperm decides 50% each

Cell division, variation and evolution

Mitosis

two identical cells diploid, 46

Uses of mitosis

growth repair cloning asexual reproduction

Meiosis

four different cells haploid, 23 makes gametes

Random fertilisation

genetic variation

Variation

genetic environmental or both

Mutation

rare, random change can be inherited source of variation

Mutation and phenotype **Biology only**

changes amino acid sequence most: no effect

Mutagens **Biology only**

ionising radiation tobacco chemicals

Natural selection

variation survive and reproduce alleles passed on

Antibiotic resistance

mutation selection pressure hard to control