

# Specification checklist

**How to use:** tick one box for each of the 179 spec points as you revise. Go back to the “Not yet” rows first, and keep going until every row is “Confident”.

The numbers are Edexcel's own spec references for YBI11, and each note title links to its note on [clockitwithsci.com](https://clockitwithsci.com). **A Level only** only in the full A Level, not the AS Level. AS Level students can skip it.

## 1 Molecules, Transport and Health

### Water, carbohydrates and lipids Spec 1.1-1.5

| Spec    | What to know (the note)                                  | Not yet                  | Nearly                   | Confident                |
|---------|----------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 1.1     | Water as a solvent in transport                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1.2     | Monosaccharides, disaccharides and polysaccharides       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1.3     | Core practical 1: Benedict's reagent and iodine solution | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1.4     | Glycosidic bonds: condensation and hydrolysis            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1.5(i)  | Triglycerides and ester bonds                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1.5(ii) | Saturated and unsaturated lipids                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### The heart, blood vessels and haemoglobin Spec 1.6-1.9

| Spec    | What to know (the note)                                              | Not yet                  | Nearly                   | Confident                |
|---------|----------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 1.6     | Why many animals have a heart and circulation                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1.7     | Arteries, veins and capillaries                                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1.8     | Structure of the mammalian heart; The cardiac cycle                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1.9(i)  | Haemoglobin and the transport of oxygen and carbon dioxide           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1.9(ii) | The oxygen dissociation curve, the Bohr effect and fetal haemoglobin | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### Cardiovascular disease and its causes Spec 1.10-1.14

| Spec | What to know (the note)                               | Not yet                  | Nearly                   | Confident                |
|------|-------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 1.10 | Atherosclerosis                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1.11 | Blood clotting and cardiovascular disease             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1.12 | Risk factors for cardiovascular disease               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1.13 | Dietary antioxidants and the risk of CVD              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1.14 | Core practical 2: vitamin C content of food and drink | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### Health risks, evidence and treatment Spec 1.15-1.20

| Spec     | What to know (the note)                              | Not yet                  | Nearly                   | Confident                |
|----------|------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 1.15     | Analysing data on illness and mortality              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1.16     | Evaluating the design of studies                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1.17     | Perception of risk                                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1.18(i)  | Blood cholesterol, HDL and LDL                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1.18(ii) | Evidence linking cholesterol and CVD                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1.19     | Using scientific knowledge to reduce the risk of CHD | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1.20     | Treatments for cardiovascular disease                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

## 2 Membranes, Proteins, DNA and Gene Expression

### Gas exchange, membranes and transport Spec 2.1-2.5

| Spec | What to know (the note)                                                                                                         | Not yet                  | Nearly                   | Confident                |
|------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 2.1  | Gas exchange surfaces and Fick's law; The mammalian lung                                                                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.2  | The structure and properties of cell membranes; Models of membrane structure and the evidence for them                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.3  | Core practical 3: membrane permeability, alcohol and temperature                                                                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.4  | Osmosis and water potential                                                                                                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.5  | Passive transport: diffusion, facilitated diffusion, channel and carrier proteins; Active transport, endocytosis and exocytosis | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### Proteins and enzymes Spec 2.6-2.8

| Spec | What to know (the note)                                                                                                                                  | Not yet                  | Nearly                   | Confident                |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 2.6  | Amino acids, peptide bonds and polypeptides; Levels of protein structure and the bonds involved; Globular and fibrous proteins: haemoglobin and collagen | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.7  | Enzymes: mode of action and specificity                                                                                                                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.8  | Factors affecting the rate of enzyme-catalysed reactions; Core practical 4: the initial rate of enzyme-catalysed reactions                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### DNA, the genetic code and gene expression Spec 2.9-2.14

| Spec | What to know (the note)                                                       | Not yet                  | Nearly                   | Confident                |
|------|-------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 2.9  | The structure of mononucleotides, DNA and RNA                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.10 | DNA replication and the role of DNA polymerase; The Meselson-Stahl experiment | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.11 | The genetic code and the gene                                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.12 | The genetic code and the gene                                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.13 | Transcription; Translation, tRNA and ribosomes                                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.14 | Gene mutations                                                                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### Inheritance, cystic fibrosis and genetic screening Spec 2.15-2.18

| Spec | What to know (the note)                                                                                 | Not yet                  | Nearly                   | Confident                |
|------|---------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 2.15 | Genetic terms; Monohybrid inheritance and pedigree diagrams; Sex linkage and red-green colour blindness | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.16 | Cystic fibrosis                                                                                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.17 | Genetic screening: carriers, PGD and prenatal testing                                                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.18 | Ethical and social issues of genetic screening                                                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

## 3 Cell Structure, Reproduction and Development

### Cells, tissues and organelles Spec 3.1-3.6

| Spec | What to know (the note)                        | Not yet                  | Nearly                   | Confident                |
|------|------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 3.1  | Features common to all living cells            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.2  | Tissues, organs and organ systems              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.3  | Ultrastructure of eukaryotic cells             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.4  | Protein transport and extracellular enzymes    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.5  | Ultrastructure of prokaryotic cells            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.6  | Recognising organelles in electron micrographs | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**Microscopy and measuring cells** Spec 3.7, 3.8

| Spec | What to know (the note)                                  | Not yet                  | Nearly                   | Confident                |
|------|----------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 3.7  | Magnification and resolution; Staining specimens         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.8  | Core Practical 5: observing, drawing and measuring cells | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**Chromosomes, meiosis and gametes** Spec 3.9-3.13

| Spec | What to know (the note)           | Not yet                  | Nearly                   | Confident                |
|------|-----------------------------------|--------------------------|--------------------------|--------------------------|
| 3.9  | Gene loci and linkage             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.10 | Meiosis and genetic variation     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.11 | Specialised mammalian gametes     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.12 | Fertilisation in mammals          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.13 | Fertilisation in flowering plants | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**Mitosis and the cell cycle** Spec 3.14-3.16

| Spec | What to know (the note)           | Not yet                  | Nearly                   | Confident                |
|------|-----------------------------------|--------------------------|--------------------------|--------------------------|
| 3.14 | The cell cycle and mitosis        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.15 | Core Practical 6: root tip squash | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.16 | Calculating the mitotic index     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**Stem cells, gene expression and phenotype** Spec 3.17-3.21

| Spec | What to know (the note)                                       | Not yet                  | Nearly                   | Confident                |
|------|---------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 3.17 | Stem cells and potency; Using stem cells in medical therapies | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.18 | Differential gene expression and specialisation               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.19 | One gene, more than one protein                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.20 | Genotype, environment and epigenetics                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.21 | Multiple alleles, polygenic inheritance and variation         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**4 Plant Structure and Function, Biodiversity and Conservation****Plant cells and cell walls** Spec 4.1-4.4

| Spec | What to know (the note)                                    | Not yet                  | Nearly                   | Confident                |
|------|------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 4.1  | Plant cell ultrastructure and its functions                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.2  | Plant cell ultrastructure and its functions                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.3  | Starch and cellulose                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.4  | Cell wall structure, secondary thickening and plant fibres | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**Plant tissues, fibres and mineral nutrition** Spec 4.5-4.9

| Spec | What to know (the note)                                    | Not yet                  | Nearly                   | Confident                |
|------|------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 4.5  | Sclerenchyma fibres, xylem vessels and phloem              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.6  | Core practical 7: plant tissues under the light microscope | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.7  | Plant fibres, starch and sustainability                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.8  | Water and inorganic ions in plants                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.9  | Core practical 8: tensile strength of plant fibres         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**Bacterial growth, plant medicines and drug testing** Spec 4.10–4.13

| Spec | What to know (the note)                                                    | Not yet                  | Nearly                   | Confident                |
|------|----------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 4.10 | Conditions required for bacterial growth                                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.11 | Antimicrobial and therapeutic substances from plants                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.12 | Core practical 9: antimicrobial properties of plants and aseptic technique | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.13 | The development of drug testing                                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**Classification and biodiversity** Spec 4.14–4.18

| Spec | What to know (the note)                                           | Not yet                  | Nearly                   | Confident                |
|------|-------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 4.14 | Classification and the three-domain system                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.15 | Biodiversity, endemism and human threats                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.16 | Biodiversity, endemism and human threats                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.17 | Measuring biodiversity: species richness and heterozygosity index | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.18 | Comparing habitats: index of diversity (D)                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**Niche, allele frequency and conservation** Spec 4.19–4.21

| Spec      | What to know (the note)                                     | Not yet                  | Nearly                   | Confident                |
|-----------|-------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 4.19      | Niche and adaptations to the environment                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.20(i)   | The Hardy-Weinberg equation, mutation and natural selection | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.20(ii)  | The Hardy-Weinberg equation, mutation and natural selection | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.20(iii) | Reproductive isolation and the formation of new species     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.21      | Evaluating zoos and seed banks in conservation              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**5 Energy Flow, Ecosystems and the Environment****Photosynthesis** Spec 5.1–5.8

| Spec | What to know (the note)                                                             | Not yet                  | Nearly                   | Confident                |
|------|-------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 5.1  | The overall reaction and the role of ATP <b>A Level only</b>                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.2  | The overall reaction and the role of ATP <b>A Level only</b>                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.3  | The light-dependent reactions <b>A Level only</b>                                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.4  | The light-independent reactions (Calvin cycle) <b>A Level only</b>                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.5  | Chloroplast structure and function <b>A Level only</b>                              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.6  | Pigments, spectra and chromatography <b>A Level only</b>                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.7  | Pigments, spectra and chromatography <b>A Level only</b>                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.8  | Core practical 10: factors affecting the rate of photosynthesis <b>A Level only</b> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**Productivity and ecosystems** Spec 5.9–5.15

| Spec | What to know (the note)                                                                      | Not yet                  | Nearly                   | Confident                |
|------|----------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 5.9  | Gross and net primary productivity <b>A Level only</b>                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.10 | Efficiency of biomass and energy transfers <b>A Level only</b>                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.11 | Population, community, habitat and ecosystem; biotic and abiotic factors <b>A Level only</b> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.12 | Population, community, habitat and ecosystem; biotic and abiotic factors <b>A Level only</b> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.13 | The concept of niche <b>A Level only</b>                                                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.14 | Core practical 11: a study of the ecology of a habitat <b>A Level only</b>                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.15 | Succession <b>A Level only</b>                                                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

## Climate change Spec 5.16–5.20, 5.25–5.26

| Spec | What to know (the note)                                                       | Not yet                  | Nearly                   | Confident                |
|------|-------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 5.16 | Evidence for climate change A Level only                                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.17 | Causes of anthropogenic climate change and the greenhouse effect A Level only | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.18 | The carbon cycle and reducing atmospheric carbon dioxide A Level only         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.19 | Predicting climate change: extrapolation and models A Level only              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.20 | Effects of climate change on plants and animals A Level only                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.25 | Evaluating scientific conclusions on controversial issues A Level only        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.26 | Reforestation, sustainable resources and biofuels A Level only                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

## Temperature, evolution and speciation Spec 5.21–5.24

| Spec | What to know (the note)                                                      | Not yet                  | Nearly                   | Confident                |
|------|------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 5.21 | Temperature, enzyme activity and $Q_{10}$ A Level only                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.22 | Core practical 12: temperature and the development of organisms A Level only | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.23 | Evolution: mutation and natural selection A Level only                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.24 | Isolation and speciation A Level only                                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

## 6 Microbiology, Immunity and Forensics

### Culturing and measuring microorganisms Spec 6.1–6.4

| Spec | What to know (the note)                                           | Not yet                  | Nearly                   | Confident                |
|------|-------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 6.1  | Culturing microorganisms using aseptic technique A Level only     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.2  | Measuring the growth of microorganisms A Level only               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.3  | The bacterial growth curve and growth rate constants A Level only | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.4  | Core practical 13: rate of growth in liquid culture A Level only  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### Bacteria, viruses and infection Spec 6.5–6.7

| Spec    | What to know (the note)                                           | Not yet                  | Nearly                   | Confident                |
|---------|-------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 6.5(i)  | Structure of bacteria and viruses A Level only                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.5(ii) | The terms lytic and latency A Level only                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.6     | How Mycobacterium tuberculosis and HIV cause disease A Level only | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.7     | Routes of entry and protective barriers A Level only              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### The immune response Spec 6.8–6.12

| Spec | What to know (the note)                                        | Not yet                  | Nearly                   | Confident                |
|------|----------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 6.8  | Non-specific responses to infection A Level only               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.9  | Antigens, antibodies and antigen-presenting cells A Level only | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.10 | B cells and T cells in the immune response A Level only        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.11 | Natural, artificial, active and passive immunity A Level only  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.12 | The evolutionary race between pathogens and hosts A Level only | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### Antibiotics and infection control Spec 6.13–6.15

| Spec | What to know (the note)                                           | Not yet                  | Nearly                   | Confident                |
|------|-------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 6.13 | Bacteriostatic and bactericidal antibiotics A Level only          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.14 | Core practical 14: effect of antibiotics on bacteria A Level only | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.15 | Hospital-acquired infections and codes of practice A Level only   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**Decay, DNA techniques and forensics** Spec 6.16–6.20

| Spec | What to know (the note)                                                | Not yet                  | Nearly                   | Confident                |
|------|------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 6.16 | Microorganisms, decomposition and recycling carbon <b>A Level only</b> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.17 | Amplifying DNA by the polymerase chain reaction <b>A Level only</b>    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.18 | Separating DNA fragments by gel electrophoresis <b>A Level only</b>    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.19 | DNA profiling <b>A Level only</b>                                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.20 | Estimating time of death <b>A Level only</b>                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**7 Respiration, Muscles and the Internal Environment****Stages of respiration** Spec 7.1–7.5

| Spec | What to know (the note)                                           | Not yet                  | Nearly                   | Confident                |
|------|-------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 7.1  | Aerobic respiration: the overall reaction <b>A Level only</b>     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.2  | Glycolysis; Anaerobic respiration and lactate <b>A Level only</b> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.3  | The link reaction and the Krebs cycle <b>A Level only</b>         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.4  | Oxidative phosphorylation <b>A Level only</b>                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.5  | Anaerobic respiration and lactate <b>A Level only</b>             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**Respiratory quotient and respiration practicals** Spec 7.6–7.8

| Spec | What to know (the note)                                          | Not yet                  | Nearly                   | Confident                |
|------|------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 7.6  | Respiratory quotient (RQ) <b>A Level only</b>                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.7  | Core practical 15: redox indicator and yeast <b>A Level only</b> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.8  | Core practical 16: respirometer and RQ <b>A Level only</b>       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**Muscles and movement** Spec 7.9–7.11

| Spec     | What to know (the note)                                          | Not yet                  | Nearly                   | Confident                |
|----------|------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 7.9      | Muscles, tendons, the skeleton and ligaments <b>A Level only</b> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.10(i)  | Structure of a skeletal muscle fibre <b>A Level only</b>         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.10(ii) | Fast and slow twitch muscle fibres <b>A Level only</b>           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.11     | Contraction and the sliding filament theory <b>A Level only</b>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**The heart, ventilation and exercise** Spec 7.12–7.15

| Spec      | What to know (the note)                                                          | Not yet                  | Nearly                   | Confident                |
|-----------|----------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 7.12(i)   | Cardiac muscle and the coordination of the heartbeat <b>A Level only</b>         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.12(ii)  | Cardiac muscle and the coordination of the heartbeat <b>A Level only</b>         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.12(iii) | Electrocardiograms (ECGs) <b>A Level only</b>                                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.13      | Cardiac output and the control of heart rate and ventilation <b>A Level only</b> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.14      | Adrenaline and the fight or flight response <b>A Level only</b>                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.15      | Core practical 17: exercise and spirometer traces <b>A Level only</b>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**Homeostasis, hormones and the kidney** Spec 7.16–7.22

| Spec | What to know (the note)                                          | Not yet                  | Nearly                   | Confident                |
|------|------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 7.16 | Negative and positive feedback <b>A Level only</b>               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.17 | Homeostasis and thermoregulation <b>A Level only</b>             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.18 | Structure of the mammalian kidney <b>A Level only</b>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.19 | Urea production and ultrafiltration <b>A Level only</b>          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.20 | Selective reabsorption and the loop of Henle <b>A Level only</b> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.21 | ADH and the control of plasma concentration <b>A Level only</b>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Spec | What to know (the note)                                | Not yet                  | Nearly                   | Confident                |
|------|--------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 7.22 | Hormones and transcription factors <b>A Level only</b> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

## 8 Coordination, Response and Gene Technology

### Neurones, reflexes and the nervous system **Spec 8.1-8.3, 8.10**

| Spec | What to know (the note)                                  | Not yet                  | Nearly                   | Confident                |
|------|----------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 8.1  | Sensory, relay and motor neurones <b>A Level only</b>    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.2  | The nervous system and its effectors <b>A Level only</b> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.3  | The spinal reflex arc <b>A Level only</b>                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.10 | The nervous system and its effectors <b>A Level only</b> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### Impulses, synapses and receptors **Spec 8.4-8.9**

| Spec | What to know (the note)                                                                  | Not yet                  | Nearly                   | Confident                |
|------|------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 8.4  | Resting potential and action potentials <b>A Level only</b>                              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.5  | Myelination and saltatory conduction <b>A Level only</b>                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.6  | Synapses and neurotransmitters; How the pupil dilates and constricts <b>A Level only</b> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.7  | Drugs and nerve impulse transmission <b>A Level only</b>                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.8  | Rods, rhodopsin and the optic neurone <b>A Level only</b>                                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.9  | Habituation <b>A Level only</b>                                                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### Plant responses **Spec 8.11, 8.12**

| Spec | What to know (the note)                                                     | Not yet                  | Nearly                   | Confident                |
|------|-----------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 8.11 | Phytochrome; Auxin (IAA); Gibberellins <b>A Level only</b>                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.12 | Core practical 18: amylase in germinating cereal grains <b>A Level only</b> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### The brain and hormonal control **Spec 8.13-8.16**

| Spec | What to know (the note)                                      | Not yet                  | Nearly                   | Confident                |
|------|--------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 8.13 | Nervous and hormonal coordination <b>A Level only</b>        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.14 | Regions of the human brain <b>A Level only</b>               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.15 | Imaging the brain: CT, MRI, fMRI and PET <b>A Level only</b> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.16 | Brain chemicals and ill health <b>A Level only</b>           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### Gene technology **Spec 8.17-8.22**

| Spec | What to know (the note)                                       | Not yet                  | Nearly                   | Confident                |
|------|---------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 8.17 | Drugs from genetically modified organisms <b>A Level only</b> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.18 | Making recombinant DNA <b>A Level only</b>                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.19 | Inserting recombinant DNA into cells <b>A Level only</b>      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.20 | Microarrays and bioinformatics <b>A Level only</b>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.21 | Microarrays and bioinformatics <b>A Level only</b>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.22 | Risks and benefits of GMOs <b>A Level only</b>                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |