

NHSG Key Stage 3 Unit Overview for 1.2 DNA



Scheme of Learning DNA	Cell Structures	
Learning outcomes	Subject content:	Skill set:
	<ul style="list-style-type: none">Describe the structure of DNA.Describe DNA as being made up of two strands forming a double helix.Describe that DNA is made of 4 nucleotides each consisting of a common sugar and phosphate group with one of 4 bases attached to the sugar.Recall a simple description of protein synthesisExplain simply how the structure of DNA affects the protein made in protein synthesis.	<ul style="list-style-type: none">Extracting DNA from fruit.Making model DNA molecules
Key Question	How is the molecule of DNA structured and why it results in protein molecules being made.	
Knowledge	Key concepts and skills	Key terminology
	<ul style="list-style-type: none">The structure of DNA explained and all the components described.Modelling to help understand structure and its arrangementOutline the process of protein synthesis in two stepsTranscriptionTranslation	<ul style="list-style-type: none">➤ Nucleus➤ DNA➤ Gene➤ Chromosome➤ Nucleotide➤ Complementary➤ Transcription➤ Translation➤ Ribosome➤ RNA➤ Triplet code



Ongoing Assessment	<p>Retrieval questions at the start of every lesson. These questions refer to previous knowledge of enzymes and reactions from Y7 and 8 which will help them develop further knowledge in Y9.</p> <p>Assessment in the form of gap fill, questions and tasks in the topic book, including</p> <ul style="list-style-type: none"> ➤ Gap fills on DNA structure, ➤ Practice questions on DNA structure ➤ Annotating diagram on protein synthesis ➤ Questions on Kiwi extraction <p>Key misconception:</p> <ul style="list-style-type: none"> ➤ Amino acids are made <p>Homework:</p> <ul style="list-style-type: none"> ➤ Protein synthesis stop motion video <p>Revision checklist: Specification used as revision checklist in front of topic booklet.</p>
Key Assessment	<p>This topic is assessed in the end of year exam.</p> <p>Test will assess key skills and content from specification of this unit</p> <p>MCQs on this topic and longer answer and practical questions</p>
Clear sequencing of content	<p>Introduction to the nucleus in Y7 which is built upon in Y8 when they do inheritance, covering concepts such as chromosomes, genes and alleles. Due to the complexity of the topic, they have not been introduced to material relating directly to DNA and protein synthesis.</p> <p>In Y9 they cover the structure of DNA as well as a practice investigation to visualise it. They look at the process of protein synthesis.</p> <p>This topic underpins much of the content covered in Y10 and Y11 such as DNA replication and cell division (B2 Y10) and genetics and inheritance (B5 Y11)</p>
Links to Careers	<p>Article in booklet on Operation Wallacea: DNA labs and conservation.</p> <p>https://nationalcareers.service.gov.uk/job-profiles/food-scientist</p>

NHSG Key Stage 3 Unit Overview for 1.2 DNA



	https://career-advice.jobs.ac.uk/resources/job-profiles/biological-science-jobs/human-genomics-jobs-profile/ https://nationalcareers.service.gov.uk/job-profiles/forensic-scientist https://nationalcareers.service.gov.uk/job-profiles/geneticist Jobs possible with a genetics degree overview in the topic booklet.
Diversity and Inclusion	Article in booklet in Inuits and skin Extra reading articles on the link between Tay- Sachs and Askenazi Jewish people Further reading on vampires and a mutation- science or myth?
Additional support	Every student receives handout packs including specification PowerPoints for each lesson are on SharePoint to help catch up with missed lessons or for students to review content. Biology support club.- students attend if they wish but those who we think will benefit will be directed to attend through their class teacher. Online revision GCSE Biology (Single Science) - OCR Gateway - BBC Bitesize Amoeba sisters videos
Challenge	Article in booklet in Inuits and dark skin. Various science challenges- RSB Biology challenge for Y9/10 The Homerton college Cambridge challenge The imperial collegeFaculty of Natural Sciences: Science and innovation competition BioArtAttack 3d BioArtAttack 2D 2 stretch and challenge articles with questions to go alongside are provided at the back of the topic booklet.