



مدرسة القديسة مريم الكاثوليكية الثانوية – دبي
ST. MARY'S CATHOLIC HIGH SCHOOL, DUBAI

Lesson Plan

Subject	Biology
Class/ Section	Yr 9 A- F
Week	Week 2 : 5th Sept to 9th September,2021
Work send to students by	Google classroom
Total number of lessons per week	3
Unit/Topic	SB1- Key biological concepts:
Key Vocabulary	Eukaryotes, prokaryotes, haploid, diploid, ribosome, plasmid
Live Zoom lesson along with face to face instruction for students present on a particular day Work will be assigned in google classroom which will be matched to the students ability.	<u>Lesson 1: Topic SB 1b: Plant & Animal Cells</u> Specific Learning objectives: Explain how the sub-cellular structures of eukaryotic cells are related to their functions, including animal cells & plant cells. <u>Specific Intended Learning Outcomes:</u> <ul style="list-style-type: none">• Define a eukaryotic cell.• Describe the structure of a typical animal cell• Describe the structure of a typical plant cell• Explain the function of sub-cellular structures of eukaryotic cells <u>Tasks:</u> <ol style="list-style-type: none">1. Teacher introduces the term eukaryotic and asks students to find out its meaning.2. Students must watch the video link given below on https://www.youtube.com/watch?v=URUJD5NEXC83. Students find differences between plant and animal cells based on the video.4. Teacher discusses the functions of sub-cellular structures using resources listed.5. Students to complete the questions related to animal cell in the worksheet SB1b.4, turn in their work in GC.

Assessment Criteria/ Essential questions:

Support: Identify cell structures, including the nucleus, cytoplasm, cell membrane and vacuole in a given diagram.

Stretch: List differences between the structure of plant and animal cells.

Describe the function of different cell organelles- cell membrane, cytoplasm, cell wall, ribosomes, nucleus, mitochondria, vacuole & chloroplast.

Extend: Research about the scientist Robert Hooke and his contribution in cell biology.

Resources: PowerPoint /Board work, Textbook & Video link

Lesson 2: Topic SB 1c: Specialised Cells

Specific Learning objectives: Describe how specialised cells are adapted to their function including sperm cell, egg cell, ciliated epithelial cell, red blood cell, muscle cells, root hair cell, palisade and guard cells.

Specific Intended Learning Outcomes:

- Label the parts of a sperm and egg cell.
- Describe the adaptations of ciliated epithelial cells.
- Explain how the various parts of an egg and sperm cell help in fertilization & formation of an embryo.
- Describe the role of palisade cells & guard cell in plants.

Tasks:

1. Teacher introduces the topic and asks students to list some specialized cells.
2. Students must watch the video link given below on <https://www.youtube.com/watch?v=u87QpOOkdxI>
<https://www.youtube.com/watch?v=90RtlQeVkPo&t=1s>
3. Students work in groups to find out the adaptations of specialized cells and present their work.
4. Students write answers to textbook questions on Specialised cell Pgs.8-9, turn in their work in GC.

Assessment Criteria/ Essential questions:

Support: Label the various parts of a sperm cell and an egg cell in a given diagram.

Stretch: Describe the role of ciliated epithelial cell in humans.
Describe the adaptations of a red blood cell.

Extend: Explain how the various parts of a sperm cell help in fertilization.
Explain how the various parts of an egg cell help in fertilization & formation of an embryo.

Resources: PowerPoint /Board work, Textbook, Worksheet &Video link

Lesson 3: SB 1d: Inside Bacteria

Specific Learning objectives: Explain how the sub-cellular structures of bacteria are related to their functions, including chromosomal DNA, plasmid DNA, cell membrane, ribosomes and flagella.

Specific Intended Learning Outcomes:

- Define a prokaryotic cell.
- Describe the structure of a typical bacterial cell
- Explain the function of sub-cellular structures of bacterial cells

Tasks:

Teacher displays a picture of a bacterial cell and asks students to find how it is different from a eukaryotic cell and introduces the term prokaryotic.

Students must watch the video link given below on <https://www.youtube.com/watch?v=b15Hy3jCPDs>

Students to complete the questions related to bacterial cells in the worksheet SB1d.3, turn in their work in GC.

Assessment Criteria/ Essential questions:

Support: Label the major parts of a bacterial cell in a given diagram. State the functions of major parts of prokaryote cell.

Stretch: Differentiate between a bacterial cell and an animal cell. Describe the function of the components of a bacterial cell including chromosomal DNA, plasmids, flagella, cell wall, cell membrane, ribosomes & cytoplasm.

Extend: Some bacteria have structures called pili on their outer surfaces. These structures can allow two bacteria to join together in a process called conjugation. During this process some parts of the cytoplasm can be exchanged between the two bacteria. Explain what effect conjugation can have on the activities that occur inside a bacterial cell.

Resources: PowerPoint /Board work, Worksheet, Textbook &Video link



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Lesson Plan

Subject	Biology
Class/ Section	Yr 10 A-F
Week	Week 2 : 5th Sept to 9th September,2021
Work send to students by	Google classroom
Total number of lessons per week	4
Unit/Topic	SB3-Genetics
<p>Key Vocabulary</p> <p>Lessons 1,2,3 –Live Zoom lesson along with face to face instruction for students present on a particular day</p> <p>Work will be assigned in google classroom which will be matched to the students ability.</p>	<p>DNA, Complementary base pairs, nucleotide, hydrogen bond, chromosomes</p> <p><u>Lesson 1: SB3ci- DNA</u></p> <p><u>Specific Learning objectives:</u> Describe the structure of DNA. Describe the genome as the entire DNA of an organism and a gene as a section of a DNA molecule that codes for a specific protein</p> <p><u>Specific Intended Learning Outcomes:</u></p> <ul style="list-style-type: none"> ➤ Identify the basic components of DNA molecule – sugar, nitrogen base, phosphate. ➤ Draw & label a DNA molecule. ➤ Describe DNA as a polymer made up of <ol style="list-style-type: none"> a .two strands coiled to form a double helix b .strands linked by a series of complementary base pairs joined together by weak hydrogen bonds c. nucleotides that consist of a sugar and phosphate group with one of the four different bases attached to the sugar <ul style="list-style-type: none"> ➤ Differentiate gene, chromosome and genome <p><u>Tasks:</u></p> <ol style="list-style-type: none"> 1. Recall that the nucleus of a cell contains chromosomes on which genes are located. 2. Understand that a gene is a section of a molecule of DNA and that genes exist in alternative forms called alleles which give rise to differences in inherited characteristics. 3. The ALDS presentation <i>DNA structure</i> starts with the way that

double helix DNA is arranged in chromosomes and then moves on to look at the detail of DNA structure. Ensure that students understand that the term ‘complementary’ means ‘fitting together’ between the bases and the sugar in DNA is deoxyribonucleic acid.

4. **Students must watch the video link given below on**

<https://www.youtube.com/watch?v=ictAm2wSwY>

<https://www.youtube.com/watch?v=o4LHU79fB3s>

5. Read Text book Page-54-55

6. Complete the questions 1-3,6,S1 (pg 54) assigned from the Biology text book in the notebook. Students will be put in break out rooms during Zoom lesson to encourage collaborative learning.

Assessment Criteria/ Essential questions: The ALDS presentation *DNA structure* starts with the way that double helix DNA is arranged in chromosomes and then moves on to look at the detail of DNA structure. Ensure that students understand that the term ‘complementary’ means ‘fitting together’ between the bases and the sugar in DNA is deoxyribonucleic acid.

Support: Label the DNA structure or Find the errors in the given DNA structure and explain it.

Stretch & Extended: a. Describe the structure of DNA molecule.

b. Scientists have found that it is easier to separate one pair of bases than it is the other pair. Explain this finding.

Resources: Text Book, PowerPoint /Board work & Video link
Edexcel GCSE(9-1) Biology Textbook
Interactive power point from Board works

Lesson 2: SB3cii- DNA EXTRACTION- STRAWBERRY

Specific Learning objectives: Explain how DNA can be extracted from fruit.

Specific Intended Learning Outcomes: Plan an expt. to isolate DNA from tissues.

Interpret data obtained from DNA analysis

Draw conclusions from the data obtained

Describe the process of extracting DNA.

Tasks:

1. **Recall** that the nucleus of a cell contains chromosomes on which genes are located.

	<p>2. Recall the terms gene, genome ,chromosome</p> <p>3. Students must watch the video link given below https://www.youtube.com/watch?v=vPGKv53zSRQ</p> <p>4. Read Text book Page-56</p> <p>5. Complete the questions1-7 (pg 57) assigned from the Biology text book in the notebook. Students will be put in break out rooms during Zoom lesson to encourage collaborative learning</p> <p><u>Assessment Criteria/ Essential questions:</u> Support: Write the plan for DNA extraction from fruit sample. Stretch : Write the importance of each step in the plan/explain why is it done. Extend: Ask students if the DNA found in a crime scene is only in small amounts, find out about preliminary steps before extraction and how can scientists use it for testing.</p> <p><u>Resources:</u> Video on <i>SB3c DNA Extraction</i> Power point presentation Edexcel GCSE(9-1) Biology Textbook Video-Link</p>
	<p><u>Lesson 3:DNA PROFILING/FINGERPRINTING</u></p> <p><u>Specific Learning objectives:</u> Define and explain the uses of DNA Profiling</p> <p><u>Specific Intended Learning Outcomes:</u></p> <ul style="list-style-type: none"> ➤ Define DNA Profiling ➤ Understand the uses of DNA Profiling <p><u>Tasks:</u></p> <ol style="list-style-type: none"> 1. Review the term DNA Profiling/Fingerprinting 2. Students must watch the video link given below on https://www.youtube.com/watch?v=AkBUriMK9u8 3. Students have to watch the video and note down the term and uses of DNA Profiling in the note book. <p><u>Assessment Criteria/ Essential questions:</u> Support: Define DNA Profiling. Stretch : <i>Describe the uses of DNA Profiling</i> Extend: Explain the stages of DNA Profiling/Fingerprinting</p> <p><u>Resources:</u> Video Link/ Word Document</p> <p>Research on DNA Profiling/Fingerprinting</p>

Lesson 4: SB 3d-PROTEIN SYNTHESIS-TYPES OF RNA

Specific Learning objectives: Explain how the order of bases in a section of DNA decides the order of amino acids in the protein and that these fold to produce specifically shaped proteins such as enzymes.

Specific Intended Learning Outcomes:

Recall what are proteins made of.

Describe what gives the specific nature of various proteins found in cells, To know why different parts of DNA produce different proteins.

Explain why the shapes formed by the amino acid chains in enzymes are important.

Differentiate the role of mRNA, t RNA & r RNA in protein synthesis.

Tasks:

1. Recall what proteins are made of.

2. **Students must watch the video link given below on**

<https://www.youtube.com/watch?v=1THyMOK3WU0>

<https://www.youtube.com/watch?v=Kf5NeG97-38>

3. Students will be able to understand the role of types of RNA in protein Synthesis.

4. Read Text book Page-58-59.

5. Complete the questions 1-7 (pg 58-59) assigned from the Biology text book in the notebook. Students will be put in break out rooms during Zoom lesson to encourage collaborative learning.

Assessment Criteria/ Essential questions:

Support: Ask students to work in pairs to answer question S1 in the Student Book . Or Students create a mind map/flow chart highlighting the stages and key points of transcription and translation.

Stretch: Ask students to look at the exam-style question at the end of SB3d Protein synthesis in the Student Book. Then ask students to pick out the other key terms and state what they mean ('template strand', 'sequence', 'amino acid'). After discussion, challenge students to answer the exam-style question.

Extend: Challenge students to find out about the structure of tRNA and the similarities and differences between it and mRNA (e.g. base pairing in tRNA; both having ribose sugars; both having uracil bases).

Resources: PowerPoint /Board work &Video link/ Text Book
Edexcel GCSE(9-1) Biology Textbook
Interactive power point from Board works .



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Lesson Plan

Subject	Biology
Class/ Section	Yr 11 A -F
Week	Week 2 : 5 th Sept to 9 th September,2021
Work send to students by	Google classroom
Total number of lessons per week	5
Unit/Topic	SB6-Plant structure and their functions
Key Vocabulary	Photosynthesis, producers, food chain, chloroplast, guard cells, limiting factors, diffusion, osmosis, active transport
	<u>Lesson 1 & 2 :SB6a-Photosynthesis</u> <u>Specific Learning objectives:</u> <ul style="list-style-type: none">Describe photosynthesis in plants and algae as an endothermic reaction that uses light energy to react carbon dioxide and water to produce glucose and oxygen. <u>Specific Intended Learning Outcomes:</u> <ul style="list-style-type: none">Describe increase in biomass in autotrophs happens mainly because of photosynthesis.Explain why photosynthetic organisms are producers of biomass.Define & write the word equation for photosynthesis.Describe the process of photosynthesisExplain why photosynthesis is an endothermic reaction.Draw & label the different parts of a leaf (external & internal).Explain major adaptive features of the leaf to favour photosynthesis- presence of chlorophyll, large surface area& stomata.Differentiate hydrophytes, mesophytes and xerophytes <u>Tasks:</u> <ol style="list-style-type: none">Students draw a simple food chain and to label as much as they can about the different organisms. Go through students' ideas, picking out and explaining the important words (such as producer,)and relate it to photosynthesis.Identify reactants and products of photosynthesis from the word equation given.Students prepare a short bullet-point list entitled 'Adaptations of a leaf for

	<p>photosynthesis’.</p> <p>4. Students create a matching activity of functions and adaptations of different types of plants.</p> <p>5. Complete the exam-style question in the student book page no.124. Students will be put in break out rooms during Zoom lesson to encourage collaborative learning.</p>
Assessment Criteria/ Essential questions	<p>Support: With the help of given picture write the reactants and products of photosynthesis..</p> <p>Stretch: Water Lilly leaves float on the surface of pond or lake. Suggest how their leaves must be different to the leaves in diagram C. Explain your reasoning.</p> <p>Extend: At what time of the day would the amount of starch in chloroplast be at its highest. Explain your reasoning.</p>
Resources	<p>ALDS video on rate of photosynthesis.</p> <p>Biology 9-1 student book b.6.1, b6.2, b6.9</p> <p>https://www.youtube.com/watch?v=X81OIkeuHJw</p> <p>https://www.youtube.com/watch?v=OraB6lxyaiM</p> <p>https://www.youtube.com/watch?v=M-TczeGvCCg&t=54s</p>
	<p><u>Lesson 3: SB9b-Factors affecting photosynthesis</u></p> <p><u>Specific Learning objectives:</u></p> <ul style="list-style-type: none"> • Explain the effect of temperature, light intensity and carbon dioxide concentration as limiting factors on the rate of photosynthesis. • Explain how the rate of photosynthesis is directly proportional to light intensity and inversely proportional to the distance from a light source, including the use of the inverse square law calculation <p><u>Specific Intended Learning Outcomes:</u></p> <ul style="list-style-type: none"> • Enlist few factors affecting rate of photosynthesis. • Identify few factors that could limit the rate of photosynthesis in a plant? • Describe the effects of temperature, light intensity and carbon dioxide concentration on the rate photosynthesis. • Explain the effects of limiting factors of photosynthesis. • Draw & label a graph showing the concepts of limiting factors. • Analyze & interpret the trends and patterns in the graphs related to light intensity and distance <p><u>Tasks:</u></p> <p>1. Draw a growth curve on the board (or download one from the Internet) and explain that it shows the growth of bacteria/yeast over time. Ask students to identify parts of the graph where microorganisms are growing fastest and where they are growing slowest. Then ask students to suggest why the population stops growing at the top of the line on the graph.</p> <p>2. Go through graph C in the Student Book with students, and ask them why the sloping part of the line shows that light intensity is the limiting factor. At each point on the sloping line, photosynthesis is progressing at its maximum rate and can only increase further when the light intensity is increase.</p> <p>3. Challenge students to design some questions using the inverse square law and</p>

	the equation given. Students will be put in break out rooms during Zoom lesson to encourage collaborative learning.
Assessment Criteria/ Essential questions	<p>Support: State two factors that affect the rate of photosynthesis in mountain areas.</p> <p>Stretch: How would you test the idea that temperature is the limiting factor in Graph C (student book page 126).</p> <p>Extend:The light intensity on a plant increases by 3 times and there are no other limiting factors. What is the effect on the rate of photosynthesis? Explain your reasoning</p>
Resources	<p>Biology 9-1 student book b6.3, b6.4,b6.6</p> <p>https://www.youtube.com/watch?v=kx7AeCx_6xQ&t=22shttps://www.youtube.com/watch?v=2a8FyieAYH4</p>
	<p><u>Lesson 4 & 5:Topic:SB6c-Absorbing water and mineral ions</u></p> <p><u>Specific Learning objectives:</u></p> <ul style="list-style-type: none"> • Explain how the structure of the root hair cells is adapted to absorb water and mineral ions <p><u>Specific Intended Learning Outcomes:</u></p> <ul style="list-style-type: none"> • Recall that substances can be transported by diffusion, osmosis, and active transport. • Draw & label a typical root hair cell. • Identify few features of the root hair cell to absorb water. • Explain how each feature identified helps root hair in absorption. • Describe how root hair cells are adapted to taking in water and mineral ions. • Evaluate the need for concentration gradient in uptake of water and nutrients. <p><u>Tasks:</u></p> <ol style="list-style-type: none"> 1.Show students some images of plant roots, including roots in soil and less conventional roots (e.g. prop roots of the banyan tree). Ask students to work in groups(in break out session) to discuss the functions of roots. 2.Teacher would share ALDS interactive <i>CB6c Adaptations of root hair cells</i> highlight the adaptations of root hair cells for their functions to remind students about the differences between these three transport methods and that cells use each method. 3.Students will write the differences between osmosis, diffusion, and active transport . 4.Challenge students to copy the right-hand part of diagram C from the Student Book (showing the cells leading from a root hair cell towards the xylem) and then to add labels about the passage of mineral ions from the soil to the xylem.Students will be put in break out rooms during Zoom lesson to encourage collaborative learning. 5.Students to complete the textbook questions(pages-124-125) <p>Completion of worksheet SB6a.4 and turn in the work in GC</p>

Assessment Criteria/ Essential questions:	Support: Explain why mineral ions do not diffuse into root hair cells? Stretch: Explain how water enters the a root hair cells by osmosis? Extend: Deciduous trees lose their leaves in winter .In the spring before their leaves emerge ,their roots start to grow and produce new root cells. Explain why it happens?
Resources	Biology 9-1 student book B1.15,B67 ALDS interactive <i>CB6c Adaptations of root hair cells</i> ALDS animation <i>CB1h Movement across membranes</i> https://www.youtube.com/watch?v=PRi6uHDKeW4&t=154s



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Lesson Plan

Subject	Biology
Class/ Section	Yr 12 – Batch A/B (Mrs. A. S.Honey)
Week	Week 2 : 5th September to 9th September, 2021
Work send to students by	Google classroom
Total number of lessons per week	3
Unit/Topic	1.1 -Biological Molecules
Key Vocabulary	<ul style="list-style-type: none"> • Macromolecule Deoxyribonucleic acid (DNA), Ribonucleic acid (RNA), Hexose sugar, Isomers, Disaccharide. Polysaccharide, Condensation reaction • Glycosidic bond, Reducing sugars, Non-reducing sugars, Monomer, Polymer, Starch, Sucrose, Glucose, Oligosaccharides Hydrolysis, Amylose, Amylopectin, Glycogen
Lesson 1,2,3 - Live Zoom lesson along with face	<u>Lesson -1and 2</u> <u>Specific Learning objectives:</u>

<p>to face instruction for students present on a particular day</p> <p>Work will be assigned in google classroom which will be matched to the students' ability.</p> <p><u>Assessment Criteria/ Essential questions:</u></p>	<ul style="list-style-type: none"> ♣ Define the term biological molecules and organic compounds. ♣ List the type of biological molecules and the significance. ♣ Differentiate organic and non-organic compounds. ♣ List the type of sugars and their significance ♣ Distinguish between monosaccharides, disaccharides and polysaccharides ♣ Recognize and identify the use of sugars <p><u>Specific Intended Learning Outcomes:</u></p> <ul style="list-style-type: none"> • Students will be able to <ul style="list-style-type: none"> • Give examples of organic compounds • Describe the role of chemical elements in plants and animals. • Draw the structure of methane, fatty acid and amino acid. • Compare the two types of bonds in organic compounds. • Relate the molecular structure of alpha-glucose as an example of a monosaccharide carbohydrate. • Identify the use of sugars • <u>Tasks:</u> <ul style="list-style-type: none"> ♣ Independent student-led activity: Recognize and make a separate list of elements, find out the significance in human body. Enlist the properties of carbon with examples. Recognize and differentiate, make a list of mono, di and polysaccharides. Students produce annotated diagrams to show how pairs of monosaccharides can link up to produce named disaccharides and then be broken apart again <p>Support –Draw and label the structure of glucose Ask students to make their own models of mono- and disaccharides <i>Stretch:</i> Draw and label the structure of glucose isomers</p> <ul style="list-style-type: none"> • Extended - Research other isomers of glucose and alternative ways of representing the shape of the glucose molecule. <p style="text-align: center;"><u>DIFFERENTIATION STRATEGIES TO ACHIEVE THE SUCCESS CRITERIA</u></p> <p>Support- Differentiate organic and non-organic compounds Compare- the two types of bonds in organic compounds Stretch- TB questions 1 and 2 –page no 20[Analyse the data given]</p> <p><i>Extended -</i> Enlist the properties of Monosaccharides, Produce a Venn diagram to compare the monosaccharides alpha glucose, beta glucose and ribose. -</p>
<p><u>Resources:</u></p>	<p>Edexcel AS/A level Biology 1 Textbook BOARD WORKS –Biological molecules-No 8,13-25] Video and PPT: Mono and Disaccharides :www.science.co.uk/biology/biologicalmolecules.html, www.internet4classrooms.com</p>

Lesson -3

♣ Specific Learning objectives:

- Explain how monosaccharides join to form polysaccharides through condensation reactions forming glycosidic bonds; and how these can be split through hydrolysis reactions.
- Describe how the structure of polysaccharides relates to their functions.

♣ Specific Intended Learning Outcomes:

• **Students will be able to**

- **Explain**, with the aid of diagrams, the structure of glycogen
- **Describe** the molecular structure of polysaccharides including starch (amylose and amylopectin), glycogen and cellulose and relate these structures to their functions in living organisms
- Compare and contrast the structure and functions of starch (amylose) and cellulose

♣ Tasks:

• **Independent student-led activity:**

Draw and label the structure of maltose, starch and glycogen. They compare the properties of polysaccharides

Give examples of the types of polysaccharides seen in plants and animals. Challenge groups to draw alpha and beta glucose and ribose from memory. Students peer mark then check against the textbook.

Support: Students produce a concept map including starch, cellulose and glycogen. They should highlight which structural and functional features these share and which they do not

Stretch: To find out more about carbohydrates and food health visit www.nhs.uk and search for 'carbohydrates – live well'

Extended -.

Write a short account of the differences between amylose and amylopectin on the glycaemic index of food and the possible implications for people with diabetes

DIFFERENTIATION STRATEGIES TO ACHIEVE THE SUCCESS CRITERIA

Support- Textbook-Q.NO -1-page no 24

Stretch- Textbook-Q.NO -2 -page no 24

Extended –

Exam style question-1—Page no-34

Resources:

Edexcel AS/A level Biology 1 Textbook
www.science.co.uk/biology/biologicalmolecules.html,
www.internet4classrooms.com
[BOARD WORKS –Biological molecules-No -9-12]



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Subject	Biology
Class/ Section	Yr 12 – Batch A&B (Mrs. Mary Augustine & Mrs. Deepa Varghese)
Week	Week 2 : 5th Sept to 9th Sept
Work send to students by	Google classroom
Total number of lessons per week	3
Unit/Topic	<u>Topic 2.2– Prokaryotes</u>
Key Vocabulary	Flagellum, Nucleoid, Glycocalyx , 70S & 80 S ribosome ,fimbriae ,Plasmid ,Pili
<p>Live Zoom lesson along with face to face instruction for students present on a particular day</p> <p>Work will be assigned in google classroom which will be matched to the students ability.</p>	<p><u>Lesson 1:</u></p> <p><u>Specific Learning objectives:</u> Recall concepts on Prokaryotic & eukaryotic organization</p> <p><u>Specific Intended Learning Outcomes:</u></p> <ul style="list-style-type: none"> ● Identify the differences & similarities of prokaryote cell with eukaryote cell. ● Draw& label the major parts of the prokaryote cell (bacteria). ● Enlist parts of prokaryote cell found in all and parts not found in all bacterial cells. <p><u>Tasks:</u></p> <ul style="list-style-type: none"> ● Review ideas related to cells use of . Board works- Cell structure ● Use of Board works to differentiate the term prokaryote & eukaryote with suitable examples <p>Students to</p> <ul style="list-style-type: none"> ● Summarise the key points on prokaryotes and eukaryotes from the boardworks

	<p>& research on</p> <ul style="list-style-type: none"> ● Ultrastructure of Prokaryotes ● Recall the basic differences of a prokaryote & eukaryote cell ● Students will be put in break out rooms during Zoom lesson to encourage collaborative learning.
<p><u>Assessment Criteria/ Essential questions:</u></p>	<p>Support : Complete the table – cellular structures of prokaryote and eukaryotes- Worksheet Q.2& 5</p> <p>Stretch: Compare cellular organization in prokaryotes & eukaryotes .</p> <p>Extension: Describes the differences in prokaryotes & eukaryotes from the research work carried out in class.</p>
<p><u>Resources:</u></p>	<ul style="list-style-type: none"> ● Boardworks : AS Biology , cell structure & ppt. on cell structure ● Video link : https://www.youtube.com/watch?v=zZtcMBTQaS4 https://www.youtube.com/watch?v=RQ-SMCmWB1s <p>AS Biology student book: Text book : 2.2.1</p> <ul style="list-style-type: none"> ● Worksheets on cell structure
	<p><u>Lesson 2:</u></p> <p><u>Specific Learning objectives:</u> Describe the ultra structure of prokaryotic cells .</p> <p><u>Specific Intended Learning Outcomes:</u></p> <ul style="list-style-type: none"> ● Describe the structure & functions of the various parts of the prokaryote cell – cell wall, cell membrane, plasmid, circular DNA ,flagella, capsule , ribosome ,food reserves. ● Explain the functions of capsule , pili & plasmid found in prokaryotes. <p><u>Tasks:</u></p> <ul style="list-style-type: none"> ● Use of video to show the ultrastructure of prokaryotes. ● Use of Board works / ppt. to show various parts of prokaryotes& Explain the function of various parts of prokaryotes ● Students made to write down structures found in all bacteria and not found in all . <p>Students to research on Cell wall structure of Prokaryotes & Gram Staining technique</p> <ul style="list-style-type: none"> ● Complete exam style questions on prokaryotes . ● Students will be put in break out rooms during Zoom lesson to encourage collaborative learning.
<p><u>Assessment Criteria/ Essential questions:</u></p>	<p>Support : Label the various parts of a typical prokaryote cell</p> <p>Stretch: Differentiate 70s & 80s ribosomes .</p> <p>Extension : Compare the structure of pili ,fimbriae & flagella</p>

<p><u>Resources:</u></p>	<ul style="list-style-type: none"> ●Boardworks : AS Biology , cell structure & ppt. on prokaryote structure ●Video link : https://www.youtube.com/watch?v=W_geqbT3KUc <p>AS Biology student book: Text book : 2.2.1</p> <ul style="list-style-type: none"> ●Worksheets on cell structure
	<p><u>Lesson 3:</u></p> <p><u>Specific Learning objectives:</u> Explain Gram Staining technique</p> <p><u>Specific Intended Learning Outcomes:</u></p> <ul style="list-style-type: none"> ●Distinguish between Gram positive and Gram negative bacterial cell walls and understand why each type reacts differently to some antibiotics. ●Describe the procedure used for gram staining used to identify bacterial cells <p><u>Tasks:</u></p> <ul style="list-style-type: none"> ● Use of video to show the cell wall structure of prokaryotes. ● Use of ppt. to show various components of cell wall of prokaryotes& Explain the role of each component found in the cell wall ● Students made to compare the structure of cell wall of gram positive and gram negative bacteria <p>Students to research on Classification of bacteria based on cell wall structure ,shape & mode of respiration & write a detailed procedure involved for gram staining bacteria</p> <ul style="list-style-type: none"> ●Students will be put in break out rooms during Zoom lesson to encourage collaborative learning.
<p><u>Assessment Criteria/ Essential questions:</u></p>	<p>Support : Identify components of cell wall of bacteria</p> <p>Stretch: Differentiate cell wall structure of gram positive & negative bacteria .</p> <p>Extension : Co relate how the structure of bacterial cell wall gives difference when stained with gram stain</p>
<p><u>Resources:</u></p>	<ul style="list-style-type: none"> ●Boardworks : AS Biology , cell structure & ppt. on cell wall structure in bacteria ●Video link : https://www.youtube.com/watch?v=Jvo6IGKTvxA <p>AS Biology student book: Text book : 2.2.1</p> <ul style="list-style-type: none"> ●Worksheets on cell structure



مدرسة القديسة مريم الكاثوليكية الثانوية – دبي

ST. MARY'S CATHOLIC HIGH SCHOOL, DUBAI

Lesson Plan

Subject	Biology
Class/ Section	Yr 13 – Batch A/B (Mrs. A.S.Honey & Mrs.Avita Franco)
Week	Week 2 : 5 th September to 9 th September, 2021
Work send to students by	Google classroom
Total number of lessons per week	3
Unit/Topic	8.1-Genetic information
Key Vocabulary	<ul style="list-style-type: none"> • Homozygote, Heterozygote, Dominance, Recessive, Polygenic Monogenic cross
<p>Lesson 1,2,3 - Live Zoom lesson along with face to face instruction for students present on a particular day</p> <p>Work will be assigned in google classroom which will be matched to the students' ability.</p>	<p><u>Lesson -1and 2</u></p> <p><u>Specific Learning objectives:</u></p> <ul style="list-style-type: none"> • explain how mutations are the source of new variations and that the process of random assortment and crossing over during meiosis gives rise to new combinations of alleles in gametes • explain how random fertilisation during sexual reproduction brings about genetic variation • explain the terms genotype and phenotype, homozygous and heterozygous, dominance, recessive, codominance, and multiple alleles • construct genetic crosses and pedigree diagrams. <p><u>Specific Intended Learning Outcomes:</u></p> <ul style="list-style-type: none"> • Define the terms <i>locus, allele, dominant, recessive, codominant, homozygous, heterozygous, phenotype</i> and <i>genotype</i> • Use genetic diagrams to solve problems involving monohybrid and dihybrid crosses, including those involving sex linkage, codominance and multiple alleles • Analyse the genetic diagrams and solve problems involving test crosses <p>• <u>Tasks:</u></p> <ul style="list-style-type: none"> ♠ Independent student-led activity:

<p><u>Assessment Criteria/ Essential questions:</u></p>	<p>Give an example of a plant or animal displaying a dominant characteristic with an unknown genotype. Show the three possible genotypes for cross breeding (for example, AA, Aa, aa). Students choose which cross would be best to determine the genotype of the unknown individual and explain their choice.</p> <p><i>Support:</i> Differentiate continuous and discontinuous variation. Draw and define monohybrid cross and test cross</p> <p><i>Stretch:</i> Explain the structure of chromosomes, karyotype</p> <p>Extended – Read about how the fruit fly <i>Drosophila melanogaster</i> has been used as a model organism in genetics</p> <p>TB—Exam style question –5—Page no--159</p>
<p><u>Resources:</u></p>	<p>Edexcel AS/A level Biology 2 Textbook BOARD WORKS –Inheritance -No-3-20]</p> <p>Video and PPT: : Continuous and discontinuous variation Gene and chromosome mutations</p> <p>:www.science.co.uk/biology/genetics.html, www.internet4classrooms.com</p>
	<p><u>Lesson -3</u></p> <p>♠ <u>Specific Learning objectives:</u></p> <ul style="list-style-type: none"> ♠ Codominance and multiple alleles. ♠ Inheritance of two non-interacting unlinked genes. ♠ Use chisquared (χ^2) tests to test the significance of the difference between observed and expected results <p>♠ <u>Specific Intended Learning Outcomes:</u></p> <ul style="list-style-type: none"> • Students will be able to <p>Analyse genetic diagrams to solve problems involving co-dominance ,multiple alleles crosses</p> <p>Apply the chi-squared test to test the significance of differences between observed and expected results</p> <p>♠ <u>Tasks:</u></p> <ul style="list-style-type: none"> • Independent student-led activity: Display the numbers of offspring of different phenotypes for example crosses. Ask students to calculate the ratios of each phenotype in the offspring. Use this activity to introduce and explain the idea of chi squared. If the ratios are close to a predicted pattern, how close is good enough to accept that our prediction is correct? <p><i>Support:</i> Outline the effects of mutant alleles on the phenotype in the following human conditions: haemophilia and Huntington’s disease</p> <p><i>Stretch:</i> – Practice exam-style questions involving chi squared. Finish with an exercise in which students take it in turns to instruct you on how to complete the next step in a calculation written on the board</p> <p>Extended – Find out more about how eye colour is inherited. What</p>

	<p>genes and alleles are involved?</p> <p>How to apply chi- squared test in genetic disorders</p> <p><u>DIFFERENTIATION STRATEGIES TO ACHIEVE THE SUCCESS CRITERIA</u></p> <p>Support- TB questions 1 and 4 –page no 145[Students draw genetic diagrams for multiple alleles and co-dominance]</p> <p>Stretch- TB questions 1 -2 page no 149[Students use the probability to predict the outcome of complex crosses]</p> <p>Extended – TB questions 3 page no 149[Students use the chi-square test to analyse the results,]</p>
<u>Resources:</u>	<p>Edexcel AS/A level Biology 2 Textbook</p> <p>BOARD WORKS –Inheritance -No-3-20]</p> <p>Video and PPT: : Co dominance,multiple alleles,chi-squared test</p> <p>:www.science.co.uk/biology/genetics.html, www.internet4classrooms.com</p> <p>Visit www.nobelprize.org and search for 'blood typing game' for an interactive activity.</p>



مدرسة القديسة مريم الكاثوليكية الثانوية – دبي

ST. MARY'S CATHOLIC HIGH SCHOOL, DUBAI

Lesson Plan

Subject	Biology
Class/ Section	Yr 13 Batch A/B (Mrs. Mary Augustine)
Week	Week 2 : 5th Sept to 9th Sept
Work send to students by	Google classroom
Total number of lessons per week	3

Unit/Topic	<u>Topic 7.2:- Factors affecting Gene Expression</u>
Key Vocabulary	Cell determination , Cell differentiation, Gene Expression, regulator, promoter & structural genes, RNA splicing
<p>Live Zoom lesson along with face to face instruction for students present on a particular day</p> <p>Work will be assigned in google classroom which will be matched to the students ability.</p>	<p><u>Lesson 1:</u></p> <p><u>Specific Learning objectives:</u> Explain how cells become specialised through differential gene expression, producing active mRNA leading to synthesis of proteins, which in turn control cell processes or determine cell structure in animals and plants</p> <p><u>Specific Intended Learning Outcomes:</u></p> <p>Students able to Differentiate cell determination & cell differentiation in organisms. Suggest the cause of determination & differentiation of cells.</p> <p><u>Tasks:</u></p> <ul style="list-style-type: none"> ● Watch a video on the control of control of growth & development in animals Students should record one fact they already know and one thing they have learned from the video. ● Use of board works & ppt. to discuss the concept of control of growth & development in animals <p>Students to research on Gene Expression in Prokaryote</p> <ul style="list-style-type: none"> ● Students will be put in break out rooms during Zoom lesson to encourage collaborative learning.
<u>Assessment Criteria/ Essential questions:</u>	<p>Support : Identify role of cell division , Cell determination & differentiation for growth & development in organisms</p> <p>Stretch : Define Cell determination & differentiation</p> <p>Extension: Describe the role of cell division , Cell determination & differentiation for growth & development in organisms</p>
<u>Resources:</u>	<p>A2 Board works ,PowerPoint on growth & development in organisms & Video link https://www.youtube.com/watch?v=jp6L5emD8rw Worksheet file question on gene expression . Exam style questions from students book A2 Biology student book: Text book : 7.2.1</p>

	<p><u>Lesson 2:</u></p> <p><u>Specific Learning objectives:</u> Explain how cells become specialised through differential gene expression, producing active mRNA leading to synthesis of proteins, which in turn control cell processes or determine cell structure in animals and plants</p> <p><u>Specific Intended Learning Outcomes:</u> Identify the role of regulator, promoter & structural genes in gene expression prokaryotes Explain the role of transcription factors in regulating gene expression</p> <p><u>Tasks:</u></p> <ul style="list-style-type: none"> ● Watch a short video clip on the control of gene expression and transcription factors. Students should record one fact they already know and one thing they have learned from the video. ● Use of board works & ppt. to discuss the concept of gene expression in prokaryotes ● Give each group one topic area, such as promoter gene ,transcription factor and repressor molecules . Each group to link it to process of gene expression . Limit the preparation time to a maximum of 10 minutes <p>Students to research on Gene Expression in Eukaryotes</p> <ul style="list-style-type: none"> ● Students will be put in break out rooms during Zoom lesson to encourage collaborative learning.
<p><u>Assessment Criteria/ Essential questions:</u></p>	<p>Support : Identify the components of gene expression in prokaryote from the video & ppt. used by the teacher. Worksheet question 1 & 3</p> <p>Stretch : From the video & ppt. students to describe the mechanism of gene expression in prokaryotes Worksheet question 2 & 4</p> <p>Extension: Explain the role of regulator, promoter & structural genes in gene expression in prokaryote.</p>
<p><u>Resources:</u></p>	<p>A2 Board works ,PowerPointon gene expression & Video link https://www.youtube.com/watch?v=10YWgqmAEsQ Worksheet file question on gene expression . Exam style questions from students book A2 Biology student book: Text book : 7.2.1</p>

	<p><u>Lesson 3:</u></p> <p><u>Specific Learning objectives:</u> Explain how cells become specialised through differential gene expression, producing active mRNA leading to synthesis of proteins, which in turn control cell processes or determine cell structure in animals and plants</p> <p><u>Specific Intended Learning Outcomes:</u> Compare the stages of gene expression in prokaryote and eukaryote. Describe how post-transcription modification of mRNA in eukaryotic cells(RNA splicing) can result in different products from a single gene</p> <p><u>Tasks:</u></p> <ul style="list-style-type: none"> ● Watch a short video clip on the control of gene expression and transcription factors. Students should identify & compare gene expression in prokaryotes & eukaryotes they have learned from the video. ● Use of board works & ppt. to discuss the concept of gene expression in Eukaryotes ● Give each group one topic area, such as promoter sequences, enhancer sequences, transcription initiation complexes, RNA polymerase , activator and repressor molecules . Each group to link it to process of gene expression . Limit the preparation time to a maximum of 10 minutes <p>Students to research on Epigenetics</p> <ul style="list-style-type: none"> ● Students will be put in break out rooms during Zoom lesson to encourage collaborative learning.
<p><u>Assessment Criteria/ Essential questions:</u></p>	<p>Support : Identify the components of gene expression in eukaryote from the video & ppt. used by the teacher. Worksheet question 1 & 3</p> <p>Stretch : From the video & ppt. students to differentiate the mechanism of gene expression in prokaryotes & eukaryotes Worksheet question 2 & 4</p> <p>Extension: Compare the stages of gene expression in prokaryote and eukaryote.</p>
<p><u>Resources:</u></p>	<p>A2 Board works ,PowerPoint on gene expression & Video link https://www.youtube.com/watch?v=DHRRj06xdkA https://www.youtube.com/watch?v=KTKzsee5-jE Worksheet file question on gene expression . Exam style questions from students book</p> <p>A2 Biology student book: Text book : 7.2.1</p>