مدرسة القديسة مريم الكاثوليكية الثانوية – دبي

ST. MARY'S CATHOLIC HIGH SCHOOL, DUBAI

Lesson Plan

Subject	**Biology**
Class/ Section	**Yr 9**
Week	**Week 4 : 19th September to 23rd September**
Work send to students by	**Google classroom**
Total number of lessons per week	**3**
Unit/Topic	**SB1- Key biological concepts:SB1a:Microscopes & SB1f:Testing Foods**
Key Vocabulary	**Calorimeter, reagent, precipitate, emulsion**
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.**	**Lesson 1: Topic SB 1a: Microscopes** **Specific Learning objectives:** Demonstrate an understanding of size and scale in relation to microscopy, including magnification calculations. **Specific Intended Learning Outcomes:** • Calculate the magnification of an image. • Calculate the actual size of an image using the magnification • Convert between mm, micrometer and nanometer. • Write actual size in standard form. **Tasks:** Teacher reviews the formulae that can be used to calculate magnification using triangle and the conversion between standard units using a chart. Students must watch the video link given below on examples magnification numericals https://www.youtube.com/watch?v=brb-Qy7KCYc Students try out questions of the given worksheet in groups and discuss their answers looking out for errors and correcting them. **Assessment Criteria/ Essential questions:** **Support:** Calculate the magnification using given object and image size. **Stretch:** The pores of a diatom are about 1 µm in diameter. Give this value in millimetres, nanometres and picometres.

	Extend: The resolution of microscope X is 0.2 µm. The resolution of microscope Y is 20 000 pm and that of microscope Z is 1 nm. a Which microscope will be best at showing the finest details inside a cell? Explain your answer. **Resources:** PowerPoint /Board work, Textbook &Video link
	Lesson 2: Topic SB 1f: Testing Foods, **Specific Learning objectives**: Describe the use of chemical reagents to identify starch, reducing sugars, proteins and fats. **Specific Intended Learning Outcomes:** • Describe how to test for starch, reducing sugars and lipids in food. **Tasks:** Provide students with a range of examples of food, or images of food from the Internet. They group the foods according to the major nutrients they contain. Discussion on the method and results through **ALDS** slideshow *SB1f Food tests* describing a different food test. Questions at the end, on the results of tests on different foods, to be used to help reinforce learning. Students work in groups and must watch the video link given below on https://www.youtube.com/watch?v=DvAIZ-WIUps They create a table for the method, positive and negative results for each test. Challenge students to describe how much information about a food each of the tests gives. This can lead to a comparison of qualitative, semi-quantitative and quantitative information, and the value of each. **Assessment Criteria/ Essential questions:** **Support:** Identify the reagents used to test the presence of starch, reducing sugars, proteins and fats in food substances. **Stretch:** Describe the method to identify starch, reducing sugars, proteins and fats in food substances. **Extend:** Analyze & interpret the results obtained for a food sample**.** **Resources:** PowerPoint /Board work, Textbook, Worksheet &Video link

	Lesson 3: Topic SB 1f: Testing Foods, **Specific Learning objectives**: Explain how the energy contained in food can be measured using calorimetry. **Specific Intended Learning Outcomes:** • Explain how calorimetry can be used to measure the energy in food. • Evaluate calorimetry tests for accuracy. **Tasks:** Ask students how is energy stored in food and how can it be measured. Students must watch the video link given below on https://www.youtube.com/watch?v=dZB7kzKUZlc&t=4s Teacher discusses the apparatus and working of a calorimeter. Students to complete the Textbook questions 4,5 & E1 related to calorimeter on pgs 15 and turn in their work on GC. **Assessment Criteria/ Essential questions:** **Support:** Label the diagram of a calorimeter. **Stretch:** How can the energy stored in food be measured using a calorimeter? Identify the sources of error. **Extend:** Compare what happens when food is burnt in a calorimeter with respiration in a cell. **Resources**: PowerPoint /Board work, Textbook &Video link

مدرسة القديسة مريم الكاثوليكية الثانوية – دبي

ST. MARY'S CATHOLIC HIGH SCHOOL, DUBAI

Lesson Plan

Subject	**Biology**
Class/ Section	**Yr 10 A-F**
Week	**Week 4 : 19th September to 23rd September,2021**
Work send to students by	**Google classroom**
Total number of lessons per week	**4**
Unit/Topic	**SB3-GENETICS**
Key Vocabulary **Lessons 1,2,3 –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**	**Lesson 1: WORKSHEET ON SB3ci- DNA & SB3d-PROTEIN SYNTHESIS** **Specific Learning objectives:** 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 Describe the stages of protein synthesis-Transcription and Translation **Specific Intended Learning Outcomes:** ➢ Identify the basic components of DNA molecule – sugar, nitrogen base, phosphate. ➢ Differentiate the role of mRNA, t RNA & r RNA in protein synthesis. ➢ Identify the role of key components in transcription & translation. ➢ Describe the stages of translation & transcription in detail. ➢ Define and explain the significance of triplet codon, codon and anti-codon. **Tasks:** Students are required to complete Worksheet SB3c.3 on DNA and SB3d.3 on Protein Synthesis and turn in the work in GC. **Assessment Criteria/ Essential questions:** **Support:** Draw and label the structure of DNA. **Stretch:** How complementary base pairs help to form the structure of DNA. ***Extended:*** Draw a flow chart to explain how the code in a length of DNA is used to make a protein. **Resources:** Worksheet SB3c.3 on DNA and SB3d.3 on Protein Synthesis
	Lesson 2: SB3f-MENDEL **Specific Learning objectives:** Describe the work of Mendel in

	discovering the basis of genetics and recognize the difficulties of understanding inheritance before the mechanism was discovered **Specific Intended Learning Outcomes:** Recall the works of Mendel. Explain the work of Mendel in discovering the basis of genetics. Evaluate the difficulties in understanding inheritance before the mechanism was discovered. **Tasks:** 1. Review the Role of gene and an allele. 2. **Students must watch the video link given below on** https://www.youtube.com/watch?v=SOgVM904cPc https://www.youtube.com/watch?v=n3cXcDEveRc 3. Read Text book Page-62-63 4. Complete Qn 1-5 and Extend question (pg 62-63) 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**: What is a gene? What is an allele? Give one reason why Mendel's work was ignored. **Stretch**: Students answer exam style questions: In Mendel's time, many people thought that the characteristics of two parents blended in the offspring. Explain how Mendel's experiments provide evidence that this does not happen. State what might have happened if Mendel had not used true-breeding plants. They discuss their answers. **Extend:** Write a short paragraph on why they think Mendel is sometimes referred to as the father of genetics. **Resources:** The **ALDS** video *SB3f Mendel* Text Book, PowerPoint /Board work &Video link Edexcel GCSE(9-1) Biology Textbook Interactive power point from Board works
	Lesson 3: SB3g-ALLELES **Specific Learning objectives:** Explain why there are differences in the inherited characteristics as a result of alleles. Explain the terms: dominant, recessive, homozygous, heterozygous, genotype, phenotype and zygote **Specific Intended Learning Outcomes:** **Define** the terms: dominant, recessive, homozygous, heterozygous, genotype, phenotype, zygote and alleles. **Explain** the role of alleles in developing genetic variations **Describe** the relationship between a genotype and a phenotype. **Tasks:** 1. Differentiate a gene and an allele 2. **Students must watch the video link given below on** https://www.youtube.com/watch?v=reVLRjZIh3c https://www.youtube.com/watch?v=zNEtVaNQ0s8 3. Read Text book Page-64-65 Complete the questions Complete Qn 1-5 (pg 64-65) 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:** What is the difference between a gene and an allele? **Stretch:** Explain why the effects of some alleles in an organism's genotype are not seen in its phenotype. **Extended:** Students work on a question on genetic crosses such as: Eating asparagus often makes people's urine smell because sulfur compounds are excreted. The allele for excreting sulfur compounds after eating asparagus is dominant (A). The allele for non-smelly urine is a. Kevin's urine does not smell after eating asparagus. His wife, Jackie, does have smelly urine. They have five children, two of whom have non-smelly urine. Work out Jackie's genotype for this allele. **Resources:** The **ALDS** video *SB3g Alleles* Text Book, PowerPoint /Board work &Video link Edexcel GCSE(9-1) Biology Textbook Interactive power point from Board works
	Lesson 4: SB3f&g- MENDEL & ALLELES **Specific Learning objectives:** Explain monohybrid inheritance using genetic diagrams, Punnett squares and Monohybrid cross, Homozygous and Heterozygous cross. **Specific Intended Learning Outcomes:** Recall the works of Mendel. **Explain** the role of alleles in developing genetic variations**.** Construct a punnett square and make **simple** conclusions about monohybrid crosses **Tasks:** 1.Differentiate a gene and an allele **2.Students must watch the video link given below on** https://www.youtube.com/watch?v=mvWy5lbUoHA https://www.youtube.com/watch?v=Xld3-Fr9oUU https://www.youtube.com/watch?v=agQpPPQ5IVQ 3.Read Text book Page-63-65 Complete the questions Complete Qn 6-7 (pg 63) and Qn 7, S1 and E1question-Pg 65 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:** A Green pea plant Gg is being crossed with a green pea plant Gg. Predict the Genotype and Phenotype. **Stretch:** In pea plants , yellow seeds, Y are dominant and green seeds y are recessive. A pea plant with yellow seeds is crossed with a pea plant with green seeds. The resulting offspring have about equal number of yellow and green seeded plants. What are the genotypes of the parents? **Extended:** The phenotype for pea plant A is yellow pods and green pea coats. This plant has yellow pods because of a recessive allele for pod colour. The coat around its peas is green because the plant is heterozygous for the allele that causes pea coat colour. Pea plant B is homozygous for the dominant allele for pod colour, and so has green pods. It is homozygous for the recessive allele for pea coat colour, and so its peas have white coats. Plants A and B are crossed. Predict the ratio of phenotypes for the offspring **Resources:** The **ALDS** video *SB3g Alleles SB3f Mendel* Text Book, PowerPoint /Board work &Video link Edexcel GCSE(9-1) Biology Textbook Interactive power point from Board works

مدرسة القديسة مريم الكاثوليكية الثانوية – دبي

ST. MARY'S CATHOLIC HIGH SCHOOL, DUBAI

Lesson Plan

Subject	**Biology**
Class/ Section	**Yr 11 A -F**
Week	**Week 4 : 19th September to 23rd September**
Work send to students by	**Google classroom**
Total number of lessons per week	**5**
Unit/Topic	**SB6-Plant structures and their functions.**
Key Vocabulary	**Phototropism, gravitropism, auxins, gibberellins, ethene, minerals,photoperiodism, short day ,long day and day neutral plants,taxis,kinesis,cuticle,physical barrier,chemical barrier,**
	Lesson 1 & 2 Topic: SB6 f &g-Plant hormones **Specific Learning objectives:** • Explain how plant hormones control and coordinate plant growth and development, including the role of auxins in phototropisms and gravitropisms. • Describe the commercial uses of auxins, gibberellins and ethene in plants, including:. auxins in weedkillers and rooting powders b. gibberellins in germination, fruit and flower formation and the production of seedless fruit c. ethene in fruit ripening **Specific Intended Learning Outcomes:** • Define the term tropism. • **Identify** negative and positive photo- and gravitropisms. • Explain how auxins cause phototropism in plant shoots and roots. • **Establish the link** between levels of auxins in roots and shoots have opposite effects. • State **few** commercial uses of auxins, gibberellins, cytokinins and ethane. • Suggest why weeds on a playing field are killed without destroying grass. • **Explain** why would a farmer use a selective weed killers on a lawn**.** • **Describe** the uses of auxins ,ethene & gibberellin by plant growers. **Tasks:** 1.Teacher shows the picture of some newly germinated cress seedlings that have been exposed to light from one side only, and another set of seedlings that have been illuminated from above. Ask students to describe how the bent seedlings have been grown and ask students to explain why this growth pattern may be an advantage for the plants. 2.Students go through the ALDS presentation *SB6f Plant hormones and* explain how auxins cause growth in response to light and gravity ***3.*** Give students lots of ways of remembering the different words in this

	spread. Photo- (to do with light; think of cameras), gravi- (to do with the ground; think of gravity), positive (something that is 'good' for the shoot/root, so plants will grow towards it); negative (something that is 'bad' for the shoot/root, so plants will grow away from it). 4.Students explain two reasons why a newly germinated root on the surface of the soil will grow downwards. **5.**Identify the roles of different plant hormones in the life cycle of an apple tree.
Assessment Criteria/ Essential questions	**Assessment Criteria/ Essential questions:** **Support**: Explain how auxins cause plant shoots to grow towards the source of light. **Stretch**: Explain how the use of selective weedkillers allows grass on the playing field tobe killed without affecting the grass. **Extend:** Wood lice move away from light .Explain why this is not an example of negative phototropism
Resources	ALDS PPT presentation on uses of plant hormones. IGCSE slides-plant hormones Biology 9-1 student book b.6.15 https://www.youtube.com/watch?v=_Bf5WKEMB5o https://www.youtube.com/watch?v=fEo21LbnJJM
	Lesson 3-Photoperiodism,Taxis aand kinesis **Specific Learning objectives:** Describe photoperiodism as the physiological reaction of organisms to the length of night or a dark period and its impacts on plants and animals in the environment **Specific Intended Learning Outcomes:** • Define the term photoperiodism. • Explain short day ,long day and day neutral plants • Identify some examples of short day ,long day and day neutral plants • Differentiate taxis and kinesis **Tasks:** 1. Ask students, "How can sunlight impact plants and animals?" Follow up with the question, "Can darkness also impact plants and animals?". 2. Students to think about the length of day (amount of light vs darkness) in the spring and summer compared to the length of day in the fall and winter. Is there a difference Have students record in their notebooks that spring and summer have long days and short nights while fall and winter have short days and long nights. 3. Explain the differences between short day ,long day and day neutral plant. 4. Students complete research on taxis and kinesis. 4.Students complete the work sheet on photoperiodism.

<table>
<tr><td>Assessment Criteria/ Essential questions</td><td>
Support:What is photoperiodism?
The table shows the results from an investigation into the amount of light and dark a plant needs to make it flower.
<table>
<tr><th>Length of day</th><th>Length of night</th><th>Does the plant flower?</th></tr>
<tr><td>24</td><td>0</td><td>no</td></tr>
<tr><td>20</td><td>4</td><td>no</td></tr>
<tr><td>16</td><td>8</td><td>no</td></tr>
<tr><td>12</td><td>12</td><td>yes</td></tr>
<tr><td>8</td><td>16</td><td>yes</td></tr>
</table>
Stretch: Choose the best conclusion from these results and explain your choice.
• This plant needs long days and short nights to stimulate flowering.
• This plant needs equal-length days and nights to stimulate flowering.
• This plant needs short days and long nights to stimulate flowering.
• Flowering is unaffected by the length of day.
• Flowering is only one response controlled by light. Others include germinating and growing.
Extend: Why might a flower grower want a plant to produce flowers all year round?
</td></tr>
<tr><td>Resources</td><td>https://www.youtube.com/watch?v=UW1NH02jV0Q
https://www.youtube.com/watch?v=kiap213j238</td></tr>
<tr><td></td><td>
Lesson 4-Role of mineral ions in plant growth

Specific Learning objectives:
Describe the role of different mineral ions in plant growth.
Specific Intended Learning Outcomes:
• Explains nitrogen is used to produce amino acids for protein production, and for the production of nucleic acids DNA, ATP
• Describe that phosphate is used to make all cell membranes .
• Explains magnesium is needed to form the chlorophyll molecule

Tasks:
1.Review the absorption of mineral ions by the plants.
2. Teacher highlights the role of different mineral ions in the plant growth.
3. Students identify the different mineral deficiency diseases and their symptoms.
4. Complete the questions assigned in the notebook. Students will be put in break out rooms during Zoom lesson to encourage collaborative learning.
</td></tr>
<tr><td>Assessment Criteria/ Essential questions</td><td>
Support: Explain the role of mineral ions, nitrate and magnesium in the plant growth.
Stretch: Seedlings grown without nitrogen are smaller than others. Give reason.
Extended : Farmers or gardeners can add chemical or natural fertilisers, such as manure to increase magnesium levels. why?
</td></tr>
</table>

Resources	Biology 9-1 student book b7.1 **https://www.youtube.com/watch?v=RUXBYlMSWuw**
	Lesson 5-Plant defence **Specific Learning objectives:** Describe how some plants defend themselves against attack from pests and pathogens by physical barriers, including the leaf cuticle and cell wall **Specific Intended Learning Outcomes:** • Differentiate the terms pest & pathogen • **Describe** the physical barriers in plants to defend themselves from pathogens / pests. • Identify the role of poisonous chemicals in young lupin leaves. • **Describe** the role of digoxin, quinine& aspirin to cure disease in humans along with their source. • **Describe** some chemical defences of plants to pests and pathogens. • **Explain** how plant protective chemicals are used to treat human diseases or symptoms **Tasks:** **1.**Review the function of cuticle in plants. **2.** Teacher highlights the role of different defence mechanisms in plants. **3. Students identify some of the chemicals plants make to protect themselves.** **4.** Complete the questions assigned in the notebook. Students will be put in break out rooms during Zoom lesson to encourage collaborative learning
Assessment Criteria/ Essential questions	Support: Explain how some fungi overcome plant defence to infect the plants. Stretch: Descibe two ways in which substances from plants are used medically. Extend: Suggest one advantage to the potato plant of only producing a substance when it is attacked.
Resources	Biology 9-1 student book b.5.9B,B5.10B.17B https://www.youtube.com/watch?v=oVg6ycY3eXQ

مدرسة القديسة مريم الكاثوليكية الثانوية – دبي

ST. MARY'S CATHOLIC HIGH SCHOOL, DUBAI

Lesson Plan

Subject	Biology
Class/ Section	Yr 12 (Mrs.A.S.Honey)
Week	Week 2 : 19th September to 23rd September, 2021
Work send to students by	Google classroom
Total number of lessons per week	3
Unit/Topic	1.2 -Biological Molecules
Key Vocabulary	• Amino acids , Haemoglobin, Collagen, Denaturation, Prosthetic group, Glycoprotein, Protease, Lipoprotein, Peptide bond, Dipeptide, Polypeptide, Fibrous proteins, Disulfide bond, Globular proteins, Nucleotides, Adenosine triphosphate (ATP), Purine base, Pyrimidine base, Adenine, Guanine, Cytosine, Thymine, Uracil, ATPase, Adenosine diphosphate (ADP), Reduction/oxidation (redox) reactions, Nucleic acids, Phosphodiester bond, Genome
Lesson 1,2,3 - 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.**	**Lesson -1&2** **Specific Learning objectives:** • Describe the basic structure of an amino acid and the formation of polypeptides and proteins • Explain the significance of a protein's primary structure in determining its three-dimensional structure and properties • Recognise and identify primary, secondary, tertiary and quarternary structure of proteins. **Specific Intended Learning Outcomes:** • **Students will be able to** • **Explain**, with the aid of diagrams, the term primary structure; • Compare with the aid of diagrams, the term secondary structure with reference to hydrogen bonding; • **Describe**, with the aid of diagrams, the structure of a collagen molecule; • Compare the structure and function of haemoglobin (as an example of a globular protein) and collagen (as an example of a fibrous protein) • Identify the structure of an amino acid and the formation and breakage of a peptide bond; **Tasks:** • **Independent student-led activity:** Draw diagrams and write the significance of these bonds, Make a table to compare the structure of keratin and haemoglobin, ***Support***:Identify the factors for denaturation of protein. ***Stretch***: In groups, use molecular models to build the amino acids glycine and alanine. Join together to make a dipeptide.

Assessment Criteria/ Essential questions:	**DIFFERENTIATION STRATEGIES TO ACHIEVE THE SUCCESS CRITERIA** **Support-** TB questions 1 and 2 –page no31 **Stretch-** TB questions 3–page no 31 ***Extended*** - Explain condensation and hydrolysis reaction. Summarise the adaptations of structural and functional proteins
Resources:	Edexcel AS/A level Biologty 1 Textbook **BOARD WORKS –PROTEINS-No -3-15]** **Video and PPT: Structure of proteins primary,secondary,tertiary and quarternary** **Websites:**www.science.co.uk/biology/proteins.html, www.internet4classrooms.com
	Lesson -3 ♠ **Specific Learning objectives:** Relate the structure and properties of ATP to its function in the cell Identify the structure and importance of nucleic acids Explain the detailed structure of DNA Describe complementary base pairing Compare the structure of DNA and RNA. Recognize and identify the three types of RNA. ♠ **Specific Intended Learning Outcomes:** • **Students will be able to** **Describe** the structure of RNA and DNA and explain the importance of base pairing and hydrogen bonding; **Explain** the role of RNA in protein synthesis **Compare** the structure of DNA and RNA State that deoxyribonucleic acid (DNA) is a polynucleotide, usually double stranded, made up of nucleotides **Tasks:** • **Independent student-led activity:** Students Differentiate nucleotide and polynucleotide. Main difference between RNA & DNA ***Support***: Provide a list of keywords and a basic framework for main activities in the text book Students who are struggling may need a recap of GCSE knowledge. Use of GCSE worksheets or a review of GCSE revision websites may improve confidence and foundation knowledge ***Stretch***: Research the topic of ATP-related diseases. Describe and explain the symptoms of these conditions **Extended** -. Search online for 'DNA structure tutorial UMass' and follow the link to the *University of Massachusetts* DNA tutorial. **DIFFERENTIATION STRATEGIES TO ACHIEVE THE SUCCESS CRITERIA** Support- **Summary-structure of mononucleotides** **Stretch**- Textbook-Q.NO -1 and 2-page no 43 ***Extended* – Exam style question-1 and 2 Page no-52**

	Edexcel AS/A level Biologty 1 Textbook **BOARD WORKS- Nucleic acids-No -3-12]** **Video and PPT:** Types of RNA **Video and PPT:** Structure of DNA **Websites:** www.science.co.uk/biology/nucleicacids.html, www.internet4classrooms.com

مدرسة القديسة مريم الكاثوليكية الثانوية – دبي

ST. MARY'S CATHOLIC HIGH SCHOOL, DUBAI

Lesson Plan

Subject	**Biology**
Class/ Section	**Yr 12 (Mrs.Mary Augustine /Mrs.Deepa Varghese)**
Week	**Week 4 : 19th September to 23rd September**
Work send to students by	**Google classroom**
Total number of lessons per week	**3**
Unit/Topic	**Topic 2 .1– Eukaryotes- Common Cellular structures & Protein transport**
Key Vocabulary	**Centrioles ,Spindle ,Cytoskeleton ,Microfilaments ,Microtubules**
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.**	**Lesson 1:** **Specific Learning objectives:** Describe the ultra structure of Cytoskeletal structures **Specific Intended Learning Outcomes:** **Students able to** ●Identify various cytoskeletal structures in eukaryotes ●Differentiate structure of microtubules, microfilaments & intermediate filaments ●Compare structure of flagella in prokaryotes & eukaryotes

	Tasks: ● Watch video link posted in GC . ● Use of board works & ppt. to discuss structural details of cytoskelatal structures **Students to research on** Research and read about the endosymbiotic theory that mitochondria & chloroplas originated from primitive bacterial cells ●Students will be put in break out rooms during Zoom lesson to encourage collaborative learning.
Assessment Criteria/ Essential questions:	**Support :** Identify role of cytoskelatal structures in cells **Stretch : Describe how each cytoskeltal structure is linked to its function** **Extension:** Compare cytoskeletal structures found in eukaryote cells
Resources:	AS Board works ,PowerPoint on cytoskeletal structures & Video link **https://www.youtube.com/watch?v=YTv9ItGd050** Worksheet file question on cell structure . Exam style questions from students book AS Biology student book: **Text book : 2.1- pg 79**
	Lesson 2: **Specific Learning objectives:** Describe the ultra structure of Centrioles . **Specific Intended Learning Outcomes:** ●Draw & label the centrioles . ●Describe the role of centrioles . ●Compare structure of centrioles, cilia & flagella. **Tasks:** ● Watch a short animation on role of centrioles in cell division and students should record one fact they already know and one thing they have learned from the video. ● Use of board works & ppt. to discuss centriole structure **Students to research on ultra structure of ribosomes & endoplasmic reticulum** ●Students will be put in break out rooms during Zoom lesson to encourage collaborative learning.

Assessment Criteria/ Essential questions:	**Support :** Identify the components of centriole **Stretch :** From the video & ppt. students to describe the role of centrioles in cell division **Extension:** Research and compare role of centrioles in eukaryotes and mesosomes in prokaryotes related to cell division
Resources:	As Board works ,Power Point on centrioles & Video link **https://www.youtube.com/watch?v=VC1zbUEEw9k** Worksheet file question on cell structure AS Biology student book: **Text book : 2.1 pg.79**
	Lesson 3: **Specific Learning objectives:** Describe the ultra structure of Ribosomes & Endoplasmic reticulum . **Specific Intended Learning Outcomes:** ●Differentiate 70 S & 80 S ribosomes ●Draw & label RER & SER ●Describe functions of RER & SER related to their the structure **Tasks:** ● Watch the video link posted in GC and students write down three facts about ribosomes & RER related to protein Synthesis. ● Use of board works & ppt. to discuss and compare structure of 70 S & 80S ribosome and RER & SER **Students to research on Protein trafficking in cells** ●Students will be put in break out rooms during Zoom lesson to encourage collaborative learning.
Assessment Criteria/ Essential questions:	**Support :** Identify chemical contents of 70 S & 80 S ribosomes **Stretch :** From the video & ppt. students to differentiate the structure of RER & SER **Extension:** Explain how structure of RER & SER related to their key role in cells .
Resources:	AS Board works ,PowerPoint on Ribosomes & ER & Video link **https://www.youtube.com/watch?v=xCbNXJHV5R8** **https://www.youtube.com/watch?v=an7tpWR16mo** Worksheet file question on cell structure . Exam style questions from students book AS Biology student book: **Text book : 2.2 Exam style questions pg. 108 & 109**

مدرسة القديسة مريم الكاثوليكية الثانوية – دبي

ST. MARY'S CATHOLIC HIGH SCHOOL, DUBAI

Lesson Plan

Subject	**Biology**
Class/ Section	**Yr 13 – Batch 1 (Mrs.A.S.Honey/Mrs.Avita Franco)**
Week	**Week 2 : 19th September to 23rd September, 2021**
Work send to students by	**Google classroom**
Total number of lessons per week	**3**
Unit/Topic	**8.1-Genetic information & 6.1-Bacteria and Disease**
Key Vocabulary	Autosomal linkage.,crossing over,chromosome map, Pathogens, Culture, Sterile, Nutrient medium, Nutrient broth, Nutrient agar, Selective medium, Inoculation
Lesson 1,2,3 - 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.**	**Lesson -1** **Specific Learning objectives:** ▪ Explain how autosomal gene linkage results from the presence of alleles on the same chromosome, and that the results of the crosses can be ▪ explained by the events of meiosis ▪ Construct genetic crosses and pedigree diagrams. **Specific Intended Learning Outcomes:** **Students will be able to** • **Describe** chromosome mapping. • **Predict** the results of autosomal linkage diagrams. • **Explain** the difference between genetic diagrams and genetic pedigree diagrams. • **Interpret** the significant difference between the expected frequencies and the observed frequencies in color and texture, analyseand evaluate the quantitative data. **Tasks:** **Independent student-led activity:** • Compare autosomal linked disorders and sex linked disorders, homogametic and heterogametic, • An interactive *Drosophila* breeding activity to show linkage can be found at www.kscience.co.uk.. **DIFFERENTIATION STRATEGIES TO ACHIEVE THE SUCCESS CRITERIA** **Support**- TB questions 1 and 2 –page no 152 **Stretch**- TB questions 1 -3 –page no 155 ***Extended*** –Research how genetic markers are used to produce genetic maps.

Assessment Criteria/ Essential questions:	**Complete the 'Thinking Bigger' activity at the end of Chapter 8.1 in the Student Book.** • Complete the questions at the end of Section 8.1.5 and Section 8.1.6 in the Student Book.
Resources:	Edexcel AS/A level Biologty 2 Textbook **BOARD WORKS –[Inheritance 3-20]** **Video and PPT:** Autosomal linlage and sex linkage. **:**www.science.co.uk/biology/linkageandcrossover..html, www.internet4classrooms.com
	Lesson -2&3 **Specific Learning objectives:** • Understand the principles and describe the basic aseptic techniques used in culturing microorganisms • Analyse the use of different media including broth cultures, agar and selective media **Specific Intended Learning Outcomes:** **Students will be able to** ♠ **Identify** the use of different media including broth culturesagar and selective media. ♠ **Describe** three safety precautions that should always be taken when culturing microorganisms. ♠ Compare how different media may be used to produce a pure sample of microorganisms for culturing. ♠ **Explain** the different method of measuring bacterial growth of bacterial cultures by cell counts ,dilution plating ,mass and optical methods(turbidity) **Tasks:** **Independent student-led activity:** **Independent student-led activity:** In pairs, students discuss how a mixed culture of bacteria may be separated to achieve a pure culture. They then join together in groups of four to share their ideas ***Support***: The importance of staining specimens in microscopy ***Stretch***: **Explain** the principles and describe the basic aseptic techniques used in culturing organisms **DIFFERENTIATION STRATEGIES TO ACHIEVE THE SUCCESS CRITERIA** ***Support***: **Explain** the principles and describe the basic aseptic techniques used in culturing organisms. You could provide a risk assessment template if students have not carried out the pre-unit homework suggestion. Some students may need to be reminded of the ultrastructure of bacteria and their previous knowledge of Gram staining ***Stretch***: The response of the body to infection, including the action of the macrophages, neutrophils and lymphocytes **Extended** - How other organisms can act as pathogens, including fungi, viruses and protozoa. **Extension task**

	Bacterial contamination can spoil beer, giving it a sour flavour. Brewers traditionally tested for contamination using streak plating methods. Carry out research to find out how these standard tests were performed and how they are being replaced with modern methods (DNA testing**).**
Resources	Edexcel AS/A level Biologty 2 Textbook www.science.co.uk/biology/culture techniques..html, www.internet4classrooms.com **Video and ppt-** Basic aseptic techniques used in culturing microorganisms

مدرسة القديسة مريم الكاثوليكية الثانوية – دبي

ST. MARY'S CATHOLIC HIGH SCHOOL, DUBAI

Lesson Plan

Subject	**Biology**
Class/ Section	**Yr 13 (Mrs.Mary Augustine)**
Week	**Week 4 : 19th September to 23rd September**
Work send to students by	**Google classroom**
Total number of lessons per week	**3**
Unit/Topic	**Topic 7.2:- Factors affecting Gene Expression –Stem Cells ,Differentiation & therapeutic uses of stem cells**
Key Vocabulary	**Totipotent ,Embryonic stem cell ,Pluripotent ,Somatic stem cell, adult stem cell, Multipotent, Therapeutic cloning, Induced pluripotent stem cell (iPS cell)**

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.**	**Lesson 1 & 2 :** **Specific Learning objectives:** Explain what is meant by the terms stem cell, pleuripotency and totipotency and discuss the way society uses scientific knowledge to make decisions about the use of stem cells in medical therapies **Specific Intended Learning Outcomes:** **Students able to** ●Differentiate terms pleuripotent, multipotent and totipotent giving suitable examples. ● Describe technique of Therapeutic cloning & its uses ●Describe the use of stem cells in curing diseases – Diabetes, Parkinsons disease, organ transplants. **Tasks:** ●A video shown on stem cells. Split the class into expert groups on 'epigenetic effects on cell potency', 'stem cells from embryos', 'therapeutic cloning' or 'iPS cell ●Use of boardworks/ppt to discuss concepts related to stem cells ● Students present the ppt on stem cells prepared in groups allotted **Students to complete text book questions** **Pg.115 Q.1&2 and Pg.119 Q.1-3** **●Students will be put in break out rooms during Zoom lesson to encourage collaborative learning for working out the text book questions .**
Assessment Criteria/ Essential questions:	**Support :** Define the key terms introduced related to stem cells **.** **Stretch : Differentiate role of embryonic & adult stem cell** **Extension:** Compare and contrast a. embryonic stem cells & adult stem cells b. cloning and therapeutic cloning.
Resources:	A2 Board works ,PowerPoint on stem cells & Video link **https://www.youtube.com/watch?v=i2pyDBMglfM** **https://www.youtube.com/watch?v=xCqstdeWl2Y** A2 Biology student book: **Text book : 7.2.2**
	Lesson 3: **Specific Learning objectives:** Explain what is meant by the terms stem cell, pleuripotency and totipotency and discuss the way society uses scientific knowledge to make decisions about the use of stem cells in medical therapies **Specific Intended Learning Outcomes:** ●Compare embryonic stem cells & adult stem cells ● Identify what are induced pleuripotent stem cells & their uses ●Discuss the ethics of the use of stem cells.

	Tasks: ● Teacher shows a video on advancement in use of stem cell in medicine ● Students find out more about how stem cells have been used therapeutically. Search online for 'stem cell success' and read about several case studies. ● Students present the ppt on uses of stem cells in medicine prepared in groups allotted ●**Students to complete exam style questions on stem cells text book Pg.120& 121** ●**Students will be put in break out rooms during Zoom lesson to encourage collaborative *learning.***
Assessment Criteria/ Essential questions:	**Support :** Identify role of stem cells in medicine **Stretch : Explain how various human diseases can be cured by use of stem cells** **Extension:** Find out more about the research of Shinya Yamanaka on iPS cells, for which he won a Nobel prize.
Resources:	A2 Board works ,PowerPoint on stem cells & Video link **https://www.youtube.com/watch?v=1izm50V5qzg** **https://www.youtube.com/watch?v=3JutPkiKvOM** A2 Biology student book: **Text book : 7.2.2**