Bridging Resources for Year 11 Applicants:

A Level Biology

St John Rigby College

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A Level Biology

Preparing for transition from Key Stage 4 to Key Stage 5

The AQA A Level Biology course is designed to interest and stimulate you from the start. The course will continue the development of skills and knowledge you have gained during your GCSE science studies. It also provides a solid foundation in traditional Biological concepts that enables students to pursue careers in a variety of fields such as dentistry, pharmacy, sports science, physiotherapy, biochemistry, nursing, medical science, scientific research, conservation and ecology, and botany.

We follow the A Level AQA Biology syllabus. You may view and use any documents relating to the course from the AQA website (including past exam papers and mark schemes) at the following link

http://www.aqa.org.uk/subjects/science/as-and-a-level/biology-7401-7402

In the first year you will cover the following topics:

- Biological molecules
- Cells and organelles
- Transport across cell membranes
- Cell recognition and the immune system
- Gas exchange and Surface area to volume ratio
- Digestion and absorption
- Mass transport
- Genetic information, DNA, variation, diversity and relationships between organisms.
- Protein synthesis
- Species and taxonomy.
- Biodiversity within a community

Bridging resources

The following bridging resources aim to review the underpinning skills and knowledge you have gained at GCSE ready for you start at SJR Sixth Form College.

- Please do not feel you have to complete all the tasks prior to you start at college.
- There are a wide variety of tasks: including review video lessons, PowerPoints, mini projects, revision links, quizzes and extra reading from which to choose.

1. Video lesson – Biochemistry with SJR Biology tutor

Aims

- Define the terms monomers and polymers
- Review the basic structures of all biological molecules Name enzymes which hydrolysis biological molecules
- Review food tests
- Review required practical activity 5: investigate the effect of pH on the rate of reaction of amylase enzyme

Resources

Follow the https://www.youtube.com/watch?v=IEzeTBr9N5E to video and follow the tutors instructions to complete the tasks outlined alongside the video. The PowerPoint than accompanies the video is available here

Following this lesson you can consolidate you knowledge further by completing the following tasks:

Food test videos – Review the food tests by watching the following videos

- Test for proteins https://www.youtube.com/watch?v=P8FZvZu6Kc4
- Test for lipids https://www.youtube.com/watch?v=81SpohOUHjA
- Test for reducing sugars (all monosaccharides and disaccharides with exception of sucrose) https://www.youtube.com/watch?v=Mqus-OtJTYI
- Test for non-reducing sugars https://www.youtube.com/watch?v=ucRXoOtRycM Test for starch https://www.youtube.com/watch?v=yAWMsPZ9M2Y

Kahoot Biochemistry quiz – Review your GCSE knowledge by playing game https://kahoot.it/challenge/06679431?challenge-id=4f5f7446-98fd-4209-8582883fe2e358f1_1588682612481

2. Video lesson – Cells with SJR Biology tutor

Aims

- To review GCSE knowledge of prokaryotic and eukaryotic cells
- To recap microscopes, viewing material with microscope and the features of biological drawing.
- To review calculations of magnification

Resources

Follow the https://youtu.be/7ZxuoaKv7yc to video and follow the tutors instructions to complete the tasks outlined alongside the video. The PowerPoint than accompanies the video is available here.

Following this lesson you can consolidate you knowledge further by completing the following tasks

GCSE cell quizlet revision set – quiz your background knowledge with this set of flash cards

https://quizlet.com/60089420/gcse-biology-cells-flash-cards/

Kahoot quiz – Review your GCSE knowledge by playing game below https://kahoot.it/challenge/01181283?challenge-id=4f5f7446-98fd-4209-8582883fe2e358f1_1588681989602

The Cell Explorer - Free online, interactive 3D model allowing students to explore sub-cellular structures and processes in detail.

https://scopegurdoninstitute.co.uk/digital-toolkit-1-investigate-the-cell-3d-model

The Welcome trust - The Cell

Published by the Wellcome Trust, the 'Big Picture' explores issues around biology and medicine.

This resource includes videos, activities, articles and a poster covering aspects of cell biology for post-16 students. The aspects of cell biology covered include: cell structure, cell signalling, cell division, apoptosis lysosomes and stem cell research
https://www.stem.org.uk/resources/elibrary/resource/34589/cell-suitable-home-teaching

Cells alive – interactive cell models https://www.cellsalive.com/cells/3dcell.htm

3. Video lesson – Movement of molecules across membranes with SJR Biology tutor

Aims

- Review key terms diffusion, osmosis, active transport
- Outline the factors which affect the rate of diffusion and link to gas exchange
- Apply osmosis knowledge to experimental results
- Explain the need for active transport in biological systems

Resources

Follow the https://www.youtube.com/watch?v=BsRPgdNM4rQ to video and follow the tutors instructions to complete the tasks outlined alongside the video. The PowerPoint than accompanies the video is available here.

Following this lesson you can consolidate you knowledge further by completing the following tasks

GCSE Osmosis and required practical revision - review the theory behind the osmosis practical
https://www.bbc.co.uk/bitesize/guides/zs63tv4/revision/4

Osmosis practical video - https://youtu.be/ef2Ts2AKhq8

GCSE Diffusion revision and quiz https://www.educationquizzes.com/gcse/biology/unit-2-diffusion/

Review GCSE movement of molecules across membranes in this knowledge quiz
https://www.thestudentroom.co.uk/g/revision-tests/biology_movement_of_molecules

4. Video lesson – Circulatory system with SJR Biology tutor

Aims

- To review the double circulatory action of the mammalian heart and explain the need for a closed double system
- To label all major blood vessels of the heart
- To give the similarities and differences in structure between arteries, capillaries and veins, then explain how this relates to their function.

Resources

Follow the https://www.youtube.com/watch?v=WNgy9ZC6RqM&t=1s to video and follow the tutors instructions to complete the tasks outlined alongside the video. The PowerPoint than accompanies the video is available here.

Following this lesson, you can consolidate you knowledge further by completing the following tasks

Introduction to the circulatory system video
https://www.bing.com/videos/search?q=circulatroy+system&docid=608000161447284402&mid=88E6D3D5B2DD8FBAA1CC88E6D3D5B2DD8FBAA1CC&view=detail&FORM=VIRE

Seneca learning – Heart session https://app.senecalearning.com/classroom/course/d0ce0c30-6417-11e8-8edc-d9cd1c890408/section/bfa5fd77-cf33-4381-81fe-9f691784d81b/session

5. Maths for A level Biology students

- To review basic GCSE maths concepts needed for A level Biology
- To introduce the idea of statistical comparisons in science

GCSE Maths skills review – link maths handout. Please review the maths for biological handout linked, if there are any mathematic concepts outlined on the sheet you feel you need to recap, please use the maths general GCSE maths revision resource links below:

GCSE Bitesize maths - https://www.bbc.co.uk/bitesize/subjects/z38pycw

Use of statistics in Biology –Watch the video at the following
https://www.stem.org.uk/resources/elibrary/resource/34085/number-crunching

6. Mini project 1 – Developing a Vaccine – Fact finder

For this project we would like you use the following resources and others of your choosing to create your mini project 'Finding a Vaccine for the Coronavirus'.

Completed projects should be sent to Victoria Brown via email – victoria.brown@sjr.ac.uk

This project is a written report, although pictures can be included to illustrate you ideas, and you should include references to your sources, if you know how to do this.

Your report should address the following:

1. What is COVID-19 and why are scientists working to develop a vaccine?
2. What is a vaccine and how does it work?
3. What are the obstacles to developing a successful vaccine?
4. What are the challenges faced by scientists partially in relation to the Coronavirus?

GCSE Biology – how does vaccination work? Review your GCSE background knowledge
https://www.bbc.co.uk/bitesize/guides/z8fkmsg/revision/1

A level biology vaccine session with Seneca learning -
https://app.senecalearning.com/classroom/course/d0ce0c30-6417-11e8-8edcd9cd1c890408/section/0238cde3-68cd-4c73-bef4-3d527320c344/session

World Health Organisation, Coronavirus disease (COVID-19) -
https://www.who.int/healthtopics/coronavirus#tab=tab_1

Video from American Society for Microbiology about COVID-19 **- https://youtu.be/MV55IHziLNI**

Lecture by Chris Whitty - What is COVID-19, how has it been managed and what role will science play in combating it? Gresham Professor of Physic (and Chief Medical Officer for England) Chris Whitty, explains what we know - and what we don't.
https://www.youtube.com/watch?v=3BdPKpWbxTg

7. Mini project 2 – Exploring the structure of DNA – engage your creativity

For this project we would like you first use the following resources and others of you our choosing to create your mini project **'DNA the most important biological molecule'**.
Your project presentation can take any format, you can produce a Video, PowerPoint, Animation or even a song. For inspiration I have included some examples at the end of this section

Completed projects should be sent to Victoria Brown via email – victoria.brown@sjr.ac.uk

How to extract your own DNA at home and PDF fact book
https://www.instructables.com/id/Howto-extract-your-own-DNA-at-home/

GCSE bitesize review genetic code and DNA https://www.s-cool.co.uk/gcse/biology/genes-andgenetics/revise-it/the-genetic-code

A level DNA session on Seneca learning
https://app.senecalearning.com/classroom/course/d0ce0c30-6417-11e8-8edcd9cd1c890408/section/777d1920-7928-11e8-ac16-bfb3f8a36d17/session

How to make a DNA sweetie model video

https://www.bing.com/videos/search?q=how+to+make+a+DNA+sweety+model&docid=608017 4 27204738583&mid=3F039269F25F18323FFB3F039269F25F18323FFB&view=detail&FORM=VIRE

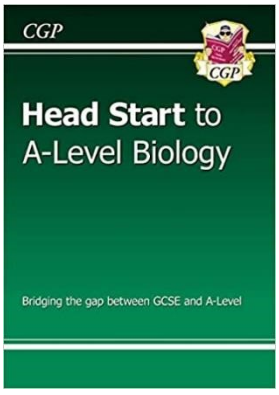
Some examples follow but you can be as creative as you like: **Song examples**

https://www.bing.com/videos/search?q=biology+songs+dna+song&docid=6080193040869641 95&mid=48441FCA1B139C50CCC948441FCA1B139C50CCC9&view=detail&FORM=VIRE

https://www.bing.com/videos/search?q=biology+songs+dna+song&&view=detail&mid=783FAF88110808A32A64783FAF88110808A32A64&&FORM=VDRVRV **Video presentation example**

https://www.bing.com/videos/search?q=video+students+dna&docid=607987315224412936&mid=E07B568B5A6DD16EFCBDE07B568B5A6DD16EFCBD&view=detail&FORM=VIRE

Extra resources



Head Start to A Level Biology

For background reading before the start of you're a level biology course try 'Head Start' to A Level Biology

- It recaps all the tricky topics from GCSE that AS builds on. It is ideal preparation for September no matter what GCSE option you have followed. It will also be useful for reference throughout the course.

- Buy on line at: https://www.amazon.co.uk/Head-Start-level-Biology-Levelebook/dp/B00VE2NIOI/ref=tmm_kin_swatch_0?_encoding=UTF8&qid=1588671862&sr=1-1 OR download the Kindle version for free

KHAN ACADEMY

Free video-based learning for students to work through at their own pace.
https://www.khanacademy.org/science/high-school-biology