A Level Biology Bridging Work

Task

1. Complete the tasks on DNA and cells.

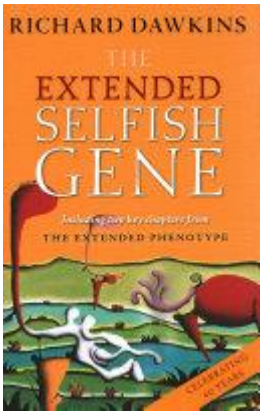
2. Complete the “A Level Biology Transition Baseline Assessment”

3. If you have time, you might want to start some wider reading. Suggested books are listed.

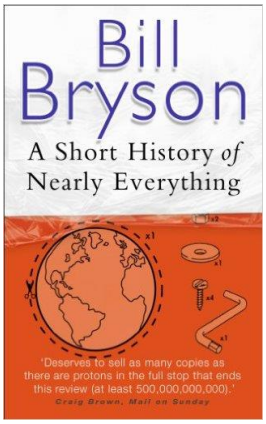
Work should be printed off and handed in to your teacher for the first lesson in September. We will then go through these in class.

Book Recommendations

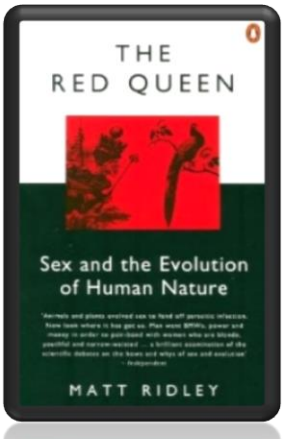
The books below are all popular science books and great for extending your understanding of Biology



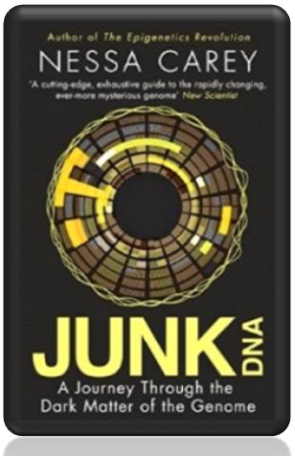
The Selfish Gene
This is the first and arguably most important of the many wonderful books written by Dawkins. A must for anyone interested in developing an understanding of why organisms behave in the way they do.



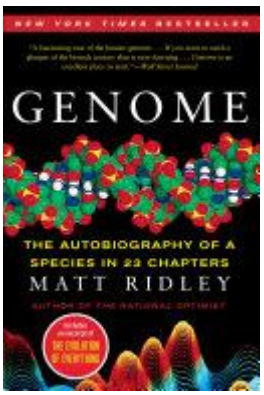
A Short History of Nearly Everything
A whistle-stop tour through many aspects of history from the Big Bang to now. This is a really accessible read that will re-familiarise you with common concepts and introduce you to some of the more colourful characters from the history of science!



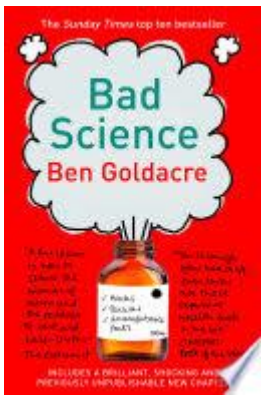
The Red Queen
Its all about sex. Or sexual selection at least. This book will really help your understanding of evolution and particularly the fascinating role of sex in evolution.



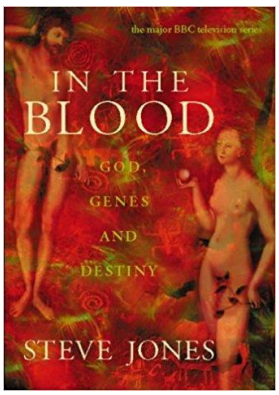
Junk DNA
Our DNA is so much more complex than you probably realize, this book will really deepen your understanding of all the work you will do on Genetics.



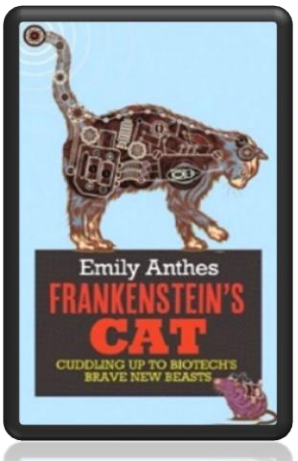
Genome
A fabulous read. Each chapter is related to a chromosome and a story about a gene found on that chromosome. Far far more interesting than it sounds!



Bad science
Can you spot bad science? Are you tricked by media headlines? Bad Science is a wonderful book helping you to understand what science actually is and how the scientific method works.



In the blood
Any book by Steve Jones is a worthwhile read. In this you will discover more on how genes shape the things we do and the way we are.



An easy read..
Frankenstein's cat
Discover how glow in the dark fish are made and more great Biotechnology breakthroughs.

Pre-Knowledge Topics

DNA and the Genetic Code

All living organisms contain the nucleic acids, DNA and RNA. These molecules form the basis of the genetic code, and are information storage molecules. They contain the information to assemble proteins, which have a vast variety of functions within organisms.

http://www.bbc.co.uk/education/guides/z36mmp3/revision
http://www.s-cool.co.uk/a-level/biology/dna-and-genetic-code

And take a look at these videos:
http://ed.ted.com/lessons/the-twisting-tale-of-dna-judith-hauck
http://ed.ted.com/lessons/where-do-genes-come-from-carl-zimmer
https://www.youtube.com/watch?v=8kK2zwjRV0M

Task:

Produce a display to put up in your classroom in September. This is to be an A4 or A3 using powerpoint or other presentation package, and will include the following:

Define these key terms: gene, chromosome, DNA and base pair
Describe the structure and function of DNA and RNA
Briefly explain how DNA is copied in the body
Outline some of the problems that occur with DNA replication and what the consequences of this might be.

Cells

The cell is a core concept in biology, you will come across it many times during your two years of A level study. Prokaryotic and eukaryotic cells can be distinguished on the basis of their structure and ultrastructure.

Read the information on these websites
http://www.s-cool.co.uk/a-level/biology/cells-and-organelles
http://www.bbc.co.uk/education/guides/zvjycdm/revision

And take a look at these videos:
https://www.youtube.com/watch?v=cj8dDTHGJBY
https://www.youtube.com/watch?v=9UvlqAVCoqY

Task:

Produce a one page revision guide to share with your class in September summarising : Animal and plant Cell Ultrastructure

Your revision guide page should include:
Key words and definitions
Clearly labelled diagrams
A short explanation on the function of different cell organelles.

A Level Biology Transition Assessment – answer the following short recall questions from your GCSE notes / other sources. Some questions you will need to look up, being slightly beyond the GCSE course.

1. What is the primary structure of a protein?
2. What bonds hold amino acids together?
3. Name 2 polysaccharides.
4. Name 2 monosaccharides.
5. What are the components of a triglyceride?
6. What is the main component of a cell membrane?
7. Describe the principle behind how an enzyme works.
8. Why is an enzyme described as specific?
9. Describe and explain the effect of changing temperature on the function of an enzyme.
10. List 3 differences between a prokaryotic and eukaryotic cell.
11. What is the symbol equation for respiration?
12. Where does respiration take place?
13. What molecule are plant cell walls made of?
14. What is the difference between diffusion and active transport?
15. How many types of base are there in DNA and what is meant by complementary base pairing?
16. What are the roles of mRNA and tRNA in protein synthesis?
17. How many bases code for 1 amino acid?
18. What is a mutagen?
19. What is the relationship between size of organism and its surface area to volume ratio?
20. Name 3 differences between mitosis and meiosis.
21. Name 3 materials which are exchanged across a cell's membrane.
22. Describe the process of inhalation.
23. What is a pathogen?
24. What is a phagocyte?
25. What cell produces antibodies?
26. What are the 2 main types of T cell and what is their role?
27. Where precisely is the sino atrial node found?
28. Name the blood vessel that supplies the heart muscle with blood.
29. Describe 3 differences between veins and arteries
30. What molecule is found in red blood cells and how many oxygen molecules can it bind to?
31. What is an allele?
32. How many copies of each gene do you have in a normal cell?
33. What is meant by the term recessive?
34. Briefly describe the process of natural selection.
35. Name the 3 domains of life.
36. What type of evidence is used to classify organisms into different groups?
37. List the hierarchy of groups in organism classification, from the group with the most organisms in, to the group with the least.
38. What is meant by the following words: transpiration, translocation, translation, transcription
39. In an experiment investigating the effect of pH on the rate of an enzyme reaction, what is the independent variable, the dependent variable and name 2 control variables.
40. What is meant by a negative correlation?