

# Introduction to Year 12 Medical Science

WJEC Level 3 Medical Science is the study of the scientific factors involving the study of human anatomy, disease (both infectious and non-infectious), treatment and diagnosis of disease and the skills involved in observing change in the human body.

In the course you will have to learn detailed information on the different organ systems of the human body including the anatomy, the function, and what happens when they aren't working at full capacity.

The following is an example of this. Using the data and link below explain whether the results prove or disprove the hypothesis.

Hypothesis –

“Older people between 40 and 50 years old are often less fit than younger people aged 16 to 17. This is because those aged 16-17 tend to have a higher metabolism.”

Data shown for the average levels for a group of ten 50 year old women.

Mean resting heart rate (BPM)	Mean heart rate after exercise (BPM)	Mean blood pressure at rest (mmHg)	Mean peak flow (L/min)	Mean blood oxygen LVs at rest	Mean blood oxygen LVs during exercise
65	130	120/80	450	95 – 99%	90-99%

Equipment available – peak flow devices, blood pressure cuffs, stethoscopes.

<https://www.youtube.com/watch?v=GSNZVaW1Wg4>

<https://www.youtube.com/watch?v=6oKupWgDu80>

Subject (name/age)	Resting heart rate (BPM)	Active heart rate (BPM)	Resting blood pressure (mmHg)	Peak flow (L/min)	blood oxygen LVs at rest (%)	blood oxygen LVs during exercise
P. A. (16)	51	180	120/80	450	95	92
B. R. (17)	43	130	110/75	600	98	97
T. R. (18)	32	167	100/78	650	95	92
S. W. (17)	65	156	130/90	300	89	85
P. Q. (17)	65	150	110/60	320	97	96
W. R. (17)	59	145	100/69	420	97	95
Mean						

**Factors to think about:**

Were the results completely accurate? If not, how could you improve?

What would be the limitations of your results?

Are heart rate, blood pressure and peak flow the only factors that could indicate a person's health?

Complete the following tasks:

1. A) Name 3 common symptoms for each of the following illness':

Anaemia, tuberculosis, diabetes and athletes' foot.

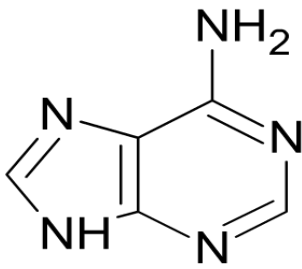
b) If diagnosed what would be the likely treatment and/or advice given by a health care professional for the illnesses shown above.

2. Copy & complete the following table:

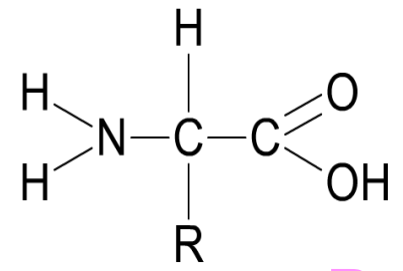
equipment	Procedure of use	function	Diagram (can be printed):
Echocardiogram			
Endoscope			
Microscope			
Pulse oximeter			
Sphygmomanometer			

3. Explain the job roles and common procedures of the following NHS professionals: phlebotomist, endoscopy technician and neonatal nurse.

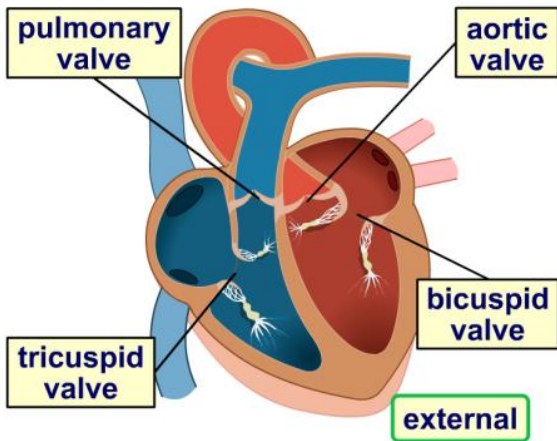
4. Research the following topics and identify the structures on the first page 'Fluid mosaic membrane, internal structure of the heart, chemical structure of an amino acid, translation of DNA in a cell and the structure of nucleic acids'. (A level standard)



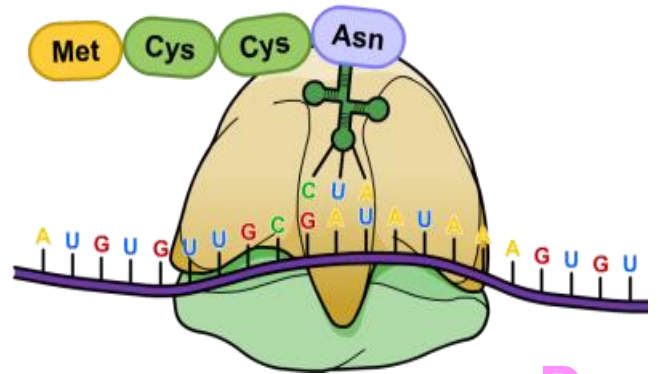
A



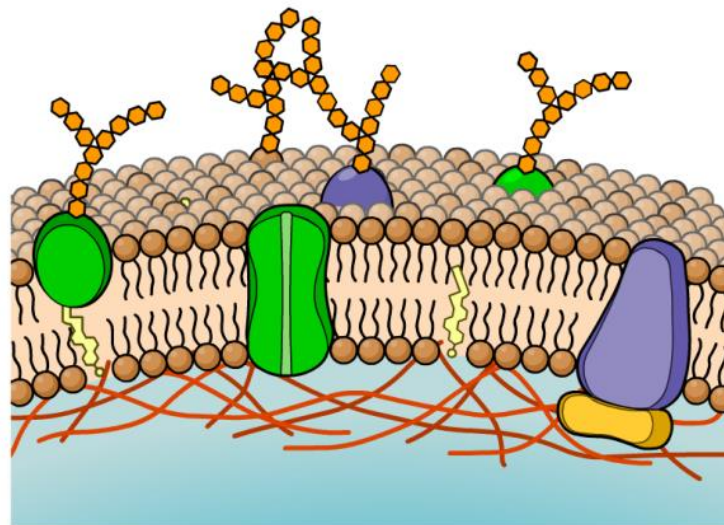
B



C



D



E

Help:

The following web sites may be useful:

<http://www.biologymad.com>

<http://www.s-cool.co.uk/a-level/biology/cells-and-organelles/revise-it/organelles>

<http://www.s-cool.co.uk/a-level/biology/transport>

<http://www.mrothery.co.uk/cells/cellnotes.htm>

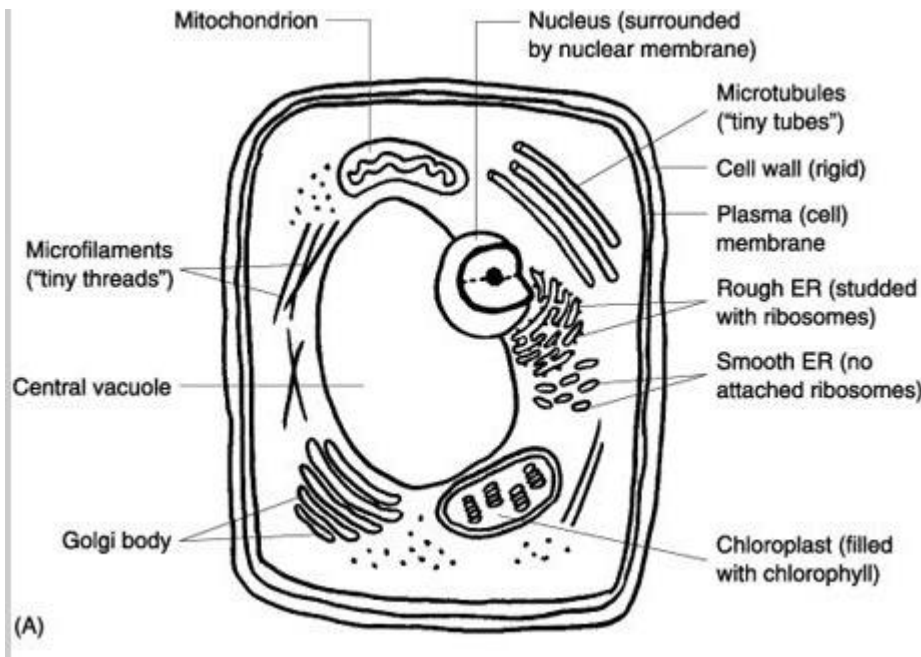


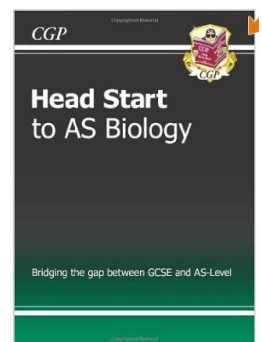
Figure 1: Example A-level biological drawing of a generic plant cell.

All diagrams must be hand drawn & in pencil

**YOU WILL NEED TO PURCHASE A WHITE LABORATORY COAT, TO ALLOW YOU TO PARTICIPATE IN PRACTICAL LESSONS**

You will need to purchase a copy of Head Start to AS Biology. If you haven't got one go to the CGP web site or Amazon and order. It retails at £5 and has an ISBN: 978 -1847621177.

It recaps all the tricky content topics from GCSE that medical science builds on... so you won't have to! Ideal preparation for September no matter what GCSE option you have followed. It will also be useful for reference throughout the course.



### **Structure of year 12:**

#### **Unit 1 (25%) external examination May.**

Involving content on human physiology, cell structure, biological molecules used in the human body, DNA and external factors on the body.

#### **Unit 2 (12.5%) internal assessment later part of first year.**

Investigation of a given hypothesis using different physiological measurement techniques to collect a range of data from volunteer subjects.

#### **Unit 3 (12.5%) internal assessment throughout first year.**

Development of a personal hypothesis to gather data and draw conclusions through experimental practice.

## Five rules for exam technique

1. Read the question twice

'Read once... then read it again to make sure you know what it says'

2. Underline any command words and key information you see in the question, that's what you need to answer

Membranes contain a variety of proteins. Some of these proteins are combined with carbohydrates to form glycoproteins.

Describe the functions of glycoproteins in the cell surface membrane.

Here are some of the common command words. Try to match up the command word with the appropriate definition:

<u>Command word</u>	<u>What to do</u>
<b>Give/name/state</b>	Work out the solution to a mathematical problem
<b>Describe</b>	Give a brief one/two-word answer/short sentence
<b>Explain</b>	Write out the main points in a topic
<b>Outline</b>	Use your scientific knowledge to work out what the answer might be
<b>Suggest</b>	Write about the advantages and disadvantages of something
<b>Discuss</b>	Give reasons or causes for something
<b>Calculate</b>	Write about what somethings like in detail

3. Look at the number of marks available - that tells you how much information you need to include.

- A question worth 2 marks means the examiner wants a short straight forward answer involving two key things.

- A question worth 6 marks will be expected to have a much longer answer and it will be marked using levels (based on quality). For the highest level you need to give answers, explain them and give examples to back it up.

4. Use the space given as a guide for how much to write.

'If you've left a lot of space/line, you've probably left a lot of answers out.'

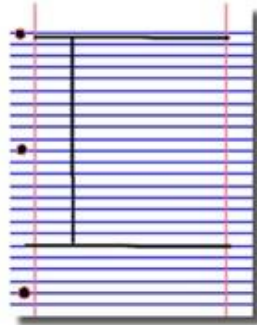
5. For longer questions take time to think and plan your answers (spider diagrams, flow charts, key words)

If appropriate look over and think about whatever key words or data you have before trying to answer

Writing notes pointers - **Cornell Notes**

Research, reading and note making are essential skills for A level Biology study. For the following task you are going to produce 'Cornell Notes' to summarise your reading.

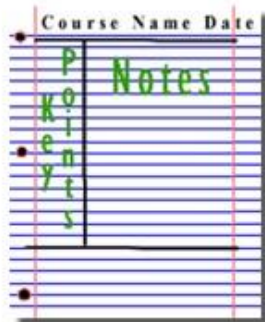
1. Divide your page into three sections like this



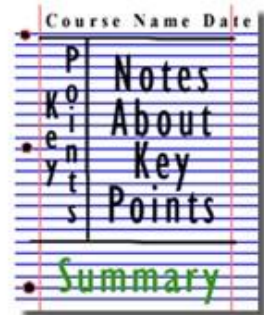
2. Write the name, date and topic at the top of the page



3. Use the large box to make notes. Leave a space between separate idea. Abbreviate where possible.



4. Review and identify the key points in the left hand box



5. Write a summary of the main ideas in the bottom space

