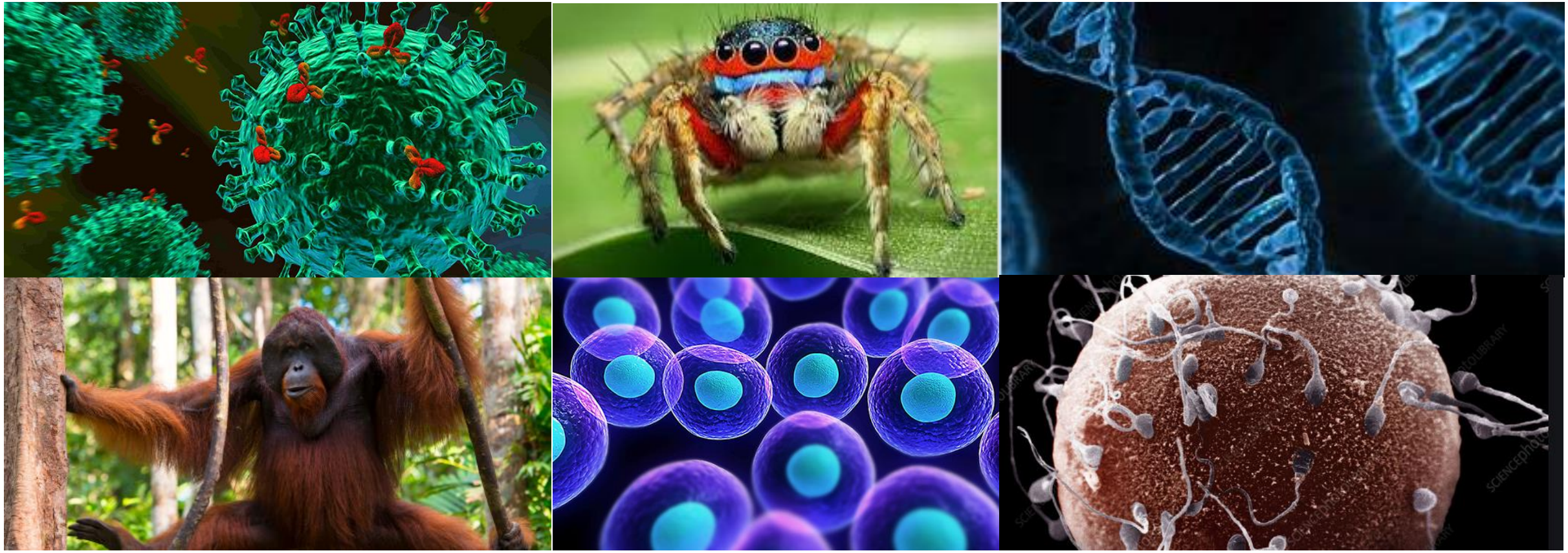
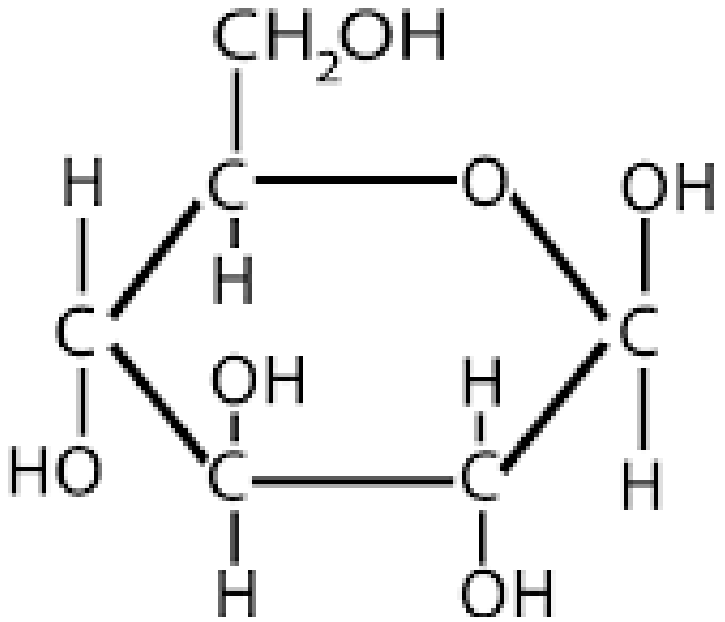
A-level Biology Induction



Welcome!

Quick Challenge!

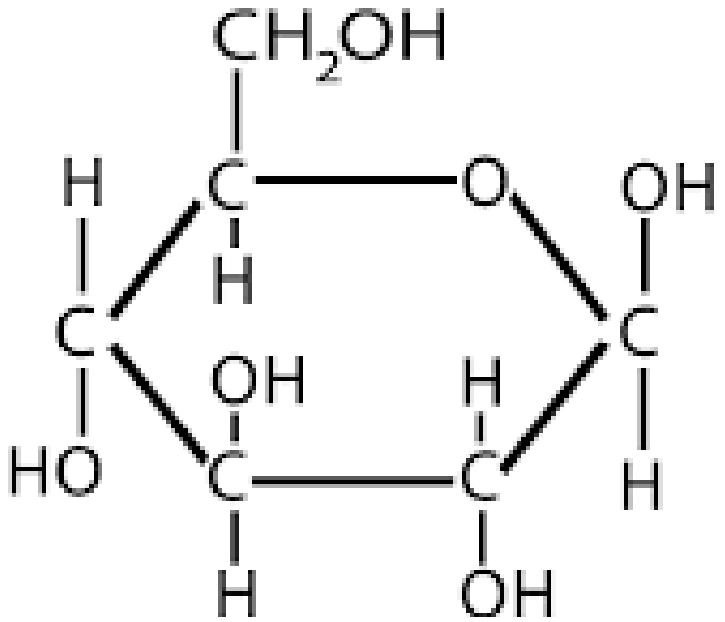
Use the molymods to build **glucose**



Molymods
Black = Carbon
White = Hydrogen
Red = Oxygen

Quick Challenge!

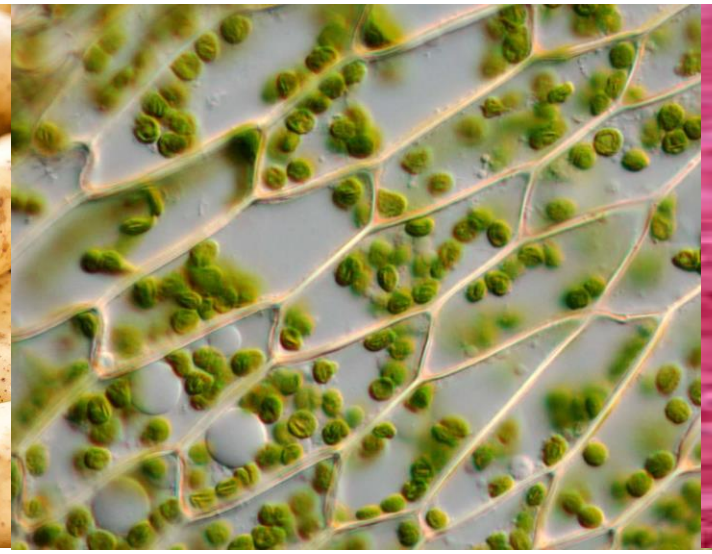
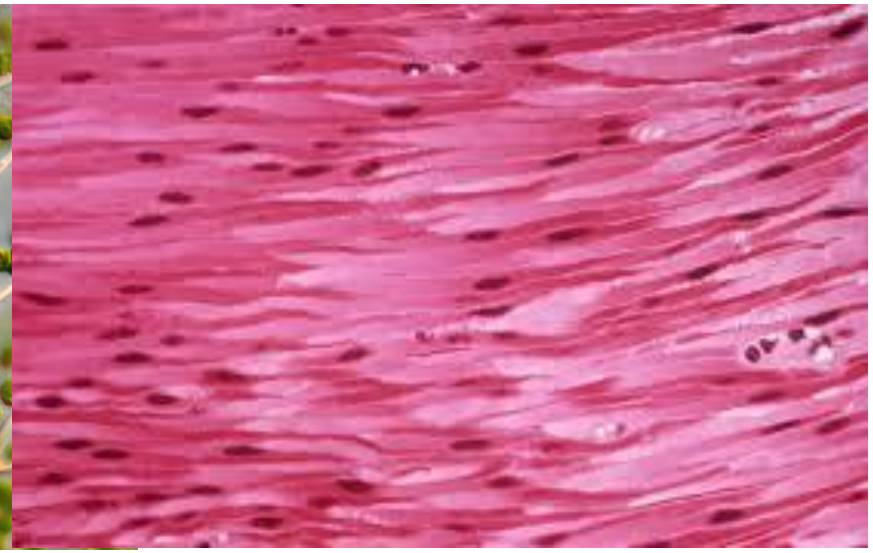
Use the molymods to build **glucose**



Can we now connect them together to make a polymer (long chain)?

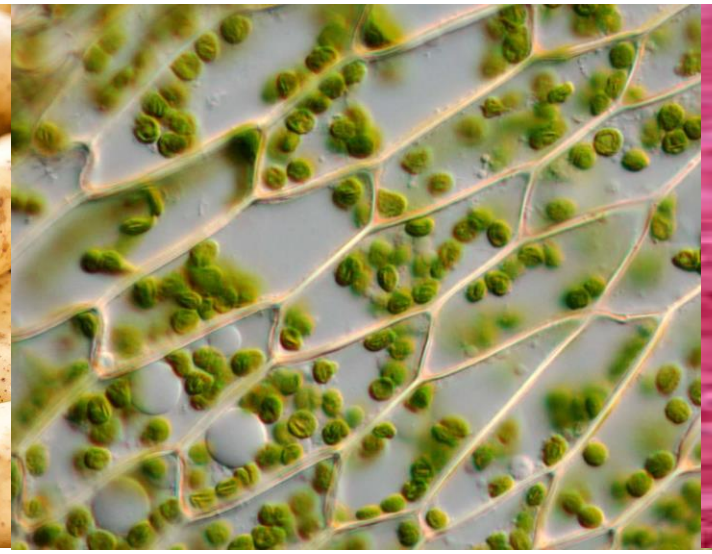
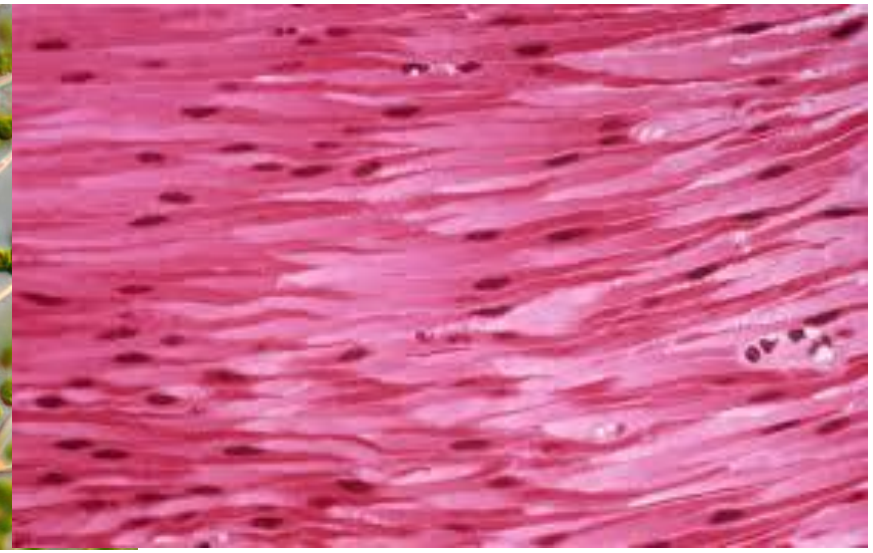
Why have we done this?

- Clues:

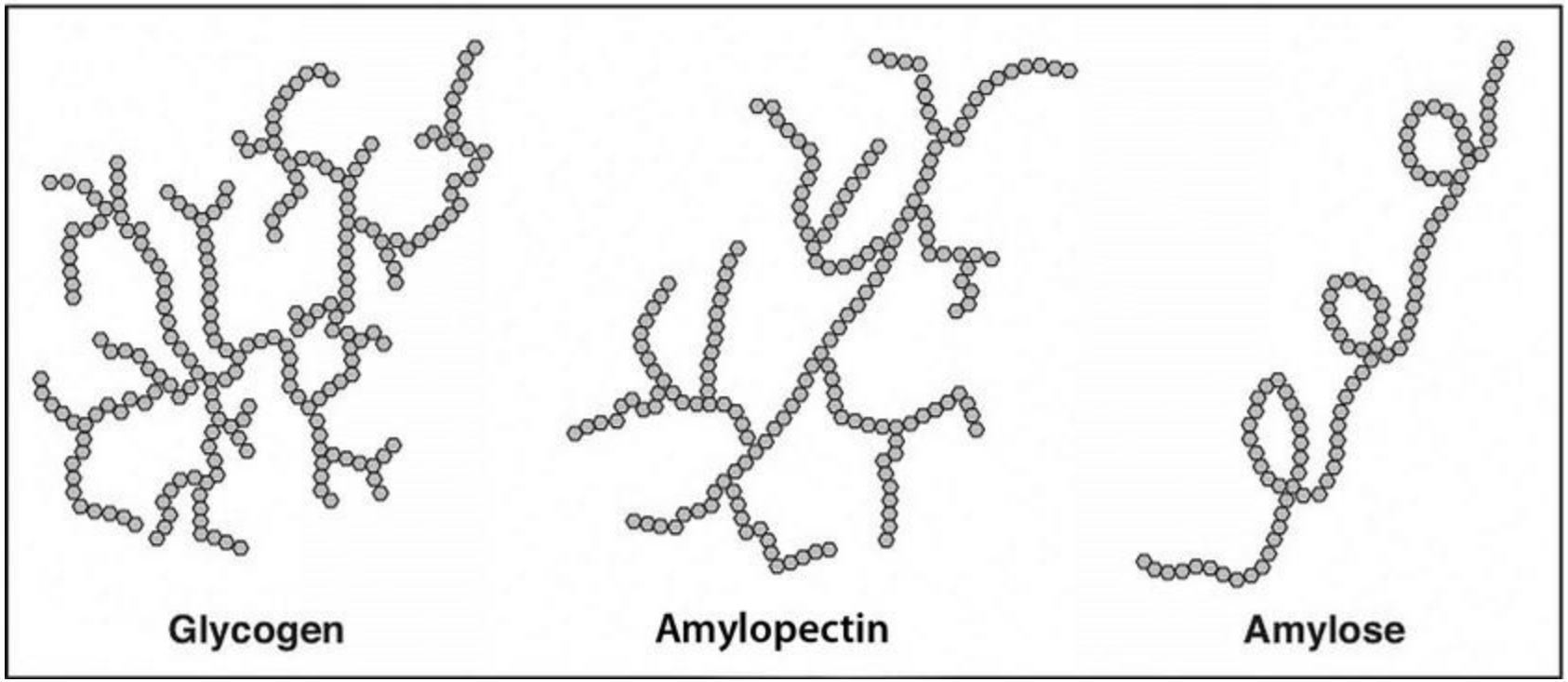




Why have we done this?

- They are all storage molecules!

Application



Today's Session

- Why biology?
- Options beyond LSST and A level
- Course Structure
- Transition for GCSE to A level
- Summer Preparations
- Resources

Why Biology?

What A-levels have you chosen?

What do you want to do?

Why have you chosen biology?

Biology and Beyond at LSST

What courses are you interested in?

Courses our students have gone on to do:

- Biology
- Sport Science
- Nursing
- Pharmacology
- Medicine
- Pathology
- Ecology
- Biochemistry
- Neuroscience

Possible Careers

Medical

Doctor

Nurse

Midwife

Physio

Radiographer

Pharmacist

Health

Food Scientist

Pathology

Clinical Scientist

Education

Teacher

Lecturer

Animal/Environment

Vet

Agriculture Research

Conservation Officer

Soil/Water Scientist

Other

Science Journalist

Government Agency

Researcher

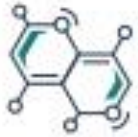
Bio Tech

Any thoughts on what you want to do?

Course Outline

Year 12

AQA



Topic 1: Biological Molecules

A look at the chemicals of life: the molecules and ions that are fundamental to the structure and function of life

Topic 2: Cells

Explores the detailed structure of cellsbefore looking at transport mechanisms, cell division and cell recognition in the immune system

Topic 3: Exchange & Transport

A look at how key nutrients are transported into and around a range of different organisms

Topic 4: Genetic Information, Variation & Relationships

Studies DNA and how genetic variation arises and it's role in natural selection, taxonomy and biodiversity

Course Outline

Year 13

AQA

Topic 5: Energy Transfers In and Between Organisms

Explores the stages of respiration and photosynthesis in detail and their importance to ecosystems

Topic 6: Responding to Change

Studies nervous coordination in both plants and animals; you will discover detail on homeostasis, the kidney, heart and muscle coordination and the nervous system

Topic 7: Inheritance

A look at the inheritance of genes and alleles and how allele frequencies change within populations

Topic 8: Control of Gene Expression

Explores how organisms express genes and the techniques scientists are using and developing to manipulate this

As well as scientific content…

Practical Assessment

There are 12 core practicals that cover a range of techniques required for the practical competency measure.

Knowledge of all core practicals can be tested within exam papers.

To cover a range of topics and skills

e.g.

Microscopy

Observing mitosis

Testing membranes

Microbiology

Measuring respiration in maggots and yeast

Dissections

Sampling

Mathematical skils make up 10% of the assessment at AS Level and A Level

This will include things like basic calculations e.g. percentages and calculating magnification, converting units, interpreting data, drawing and interpreting graphs and use of statistical tests (we will guide you through these, don't worry!)

You will also sit tests at the end of each topic and your end of year

Taster task

Q1.

(a) What is a tissue?

(1)

(b) A student cut a thin section of tissue from a potato and examined it with an optical microscope.

(i) Starch was present in the cells of this tissue. Describe how the student could find out where in the cells the starch was present.

(2)

(ii) The student cut a thin section of the tissue. Explain why it was important that the section was thin.

(2)

Taster task

(a) (Group of) similar / identical cells / cells with a common origin;

Q *Ignore references to function*

1

(b) (i) Add iodine / stain specific for starch to the slide / cells / tissue / add iodine / stain specific for starch and examine under microscope;

Blue-black / blue / black / purple;

Reject sample

2

(ii) Need a single layer of cells / only a few cells thick / not too many layers / detail obscured by cells underneath;

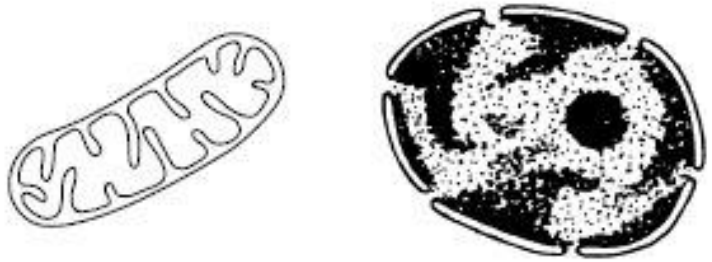
Light must be able to pass through;

2

Taster task

Q2.

(a) The diagram shows two organelles found in a eukaryotic cell.



A **B**

(i) Name the organelles.

A

B

(1)

(ii) Explain how the inner membrane is adapted to its function in organelle **A**.

(2)

(b) Give **one** feature of a prokaryotic cell that is not found in a eukaryotic cell.

(1)

Taster task

(a) (i) A mitochondrion and B nucleus;
(need both for one mark)

1

(ii) increased surface area;
for respiration / enzymes;

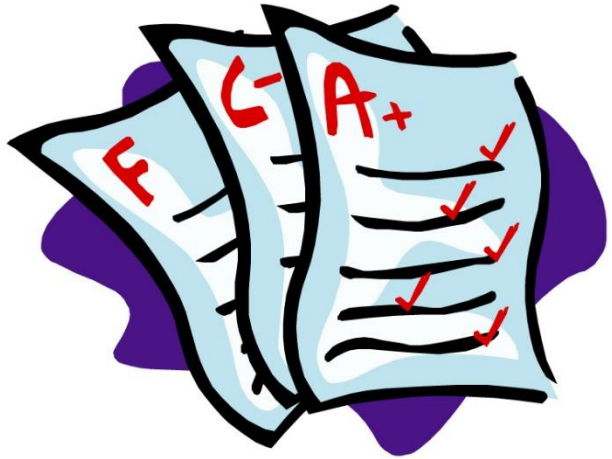
2

(b) *any suitable feature*
e.g. plasmid / capsule / 70S ribosomes / smaller ribosomes / complex cell wall / mesosome / no nucleus;

1

Transition from GCSE

- Grade 6 in Science/Biology at GCSE
- Demands at A-level are high and very skills based – like your GCSE (required practicals and data!)
- Maths demand – 10% (data, statistics, graphs, %s etc.)
- Independent learning, extra reading
- 4 periods + study time – where you are expected to complete set work!



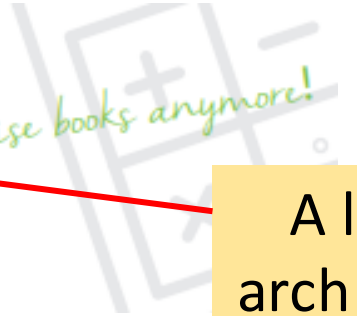
Preparing Over Summer!

The induction book can be found on the LSST website

It contains key information and tasks for you to complete at the back – you need to complete these by results day

- Get equipped (we'll do checks so no excuses)!

- ☐ Pens (different colours)
- ☐ Pencils
- ☐ Sharpener
- ☐ Ruler
- ☐ Rubber
- ☐ Calculator
- ☐ Paper/Notepad
- ☐ Folder
- ☐ Folder Dividers



A large lever arch one is best!

- You will be issued with an online text book in September
- Revision guides bought need to be **'AQA'**
- **Transition work:**
  - Induction booklet and tasks
  - Reading list

Very Important!

Tasks due on results day!

Transition work example…

Found at the end of the induction pack for Biology!

Maths practice also available – we highly advise you to do!

As well as the transition packs…

Wider reading around the subject helps you succeed at A level!

YouTube

Crash Coure
Amoeba Sisters
Ted Ed Biology
TED Talks

Magazines

New Scientist
The Biologist

Podcasts

60 Second Science
Nature Podcast
Words About Biology
Science Versus
Curioscity
Medical Stuff
The Science Hour

TV Shows

Anything by David Attenborough, especially his more recent conservation documentaries

Take a break from just reading and do something different!

Any Questions?

Quick WB Biology Quiz

What is the molecular formula for glucose?

Quick WB Biology Quiz

Name the 4 bases found in DNA

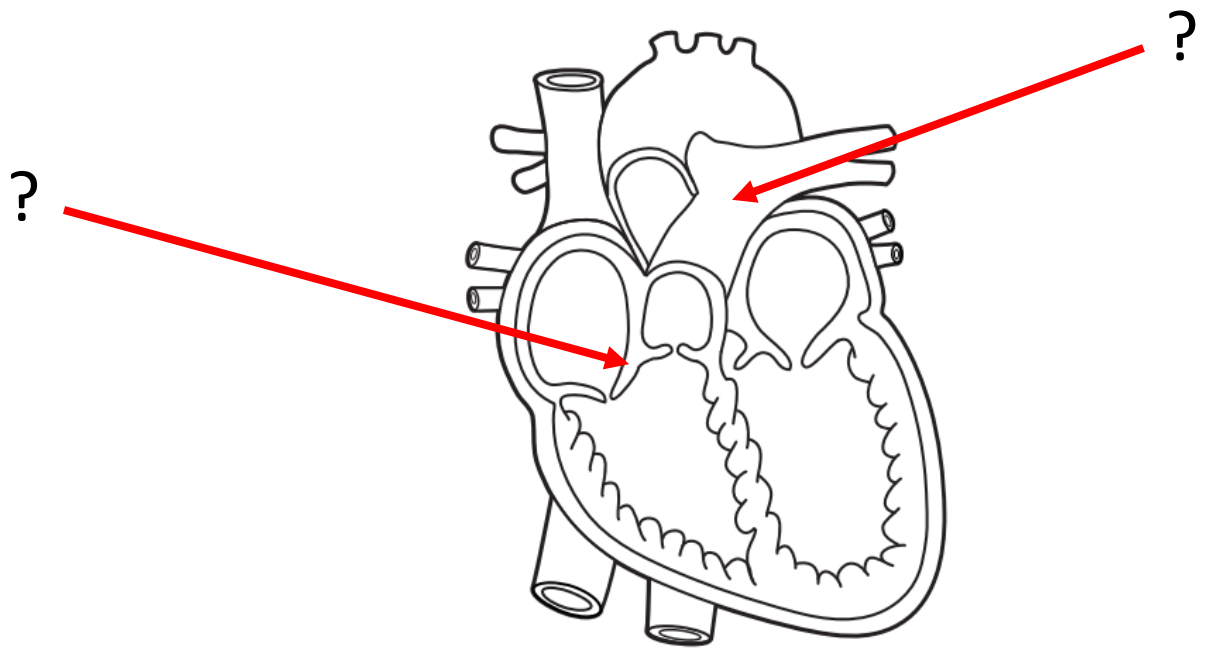
Quick WB Biology Quiz

What are proteins made up of?

Quick WB Biology Quiz

What makes up a lipid?

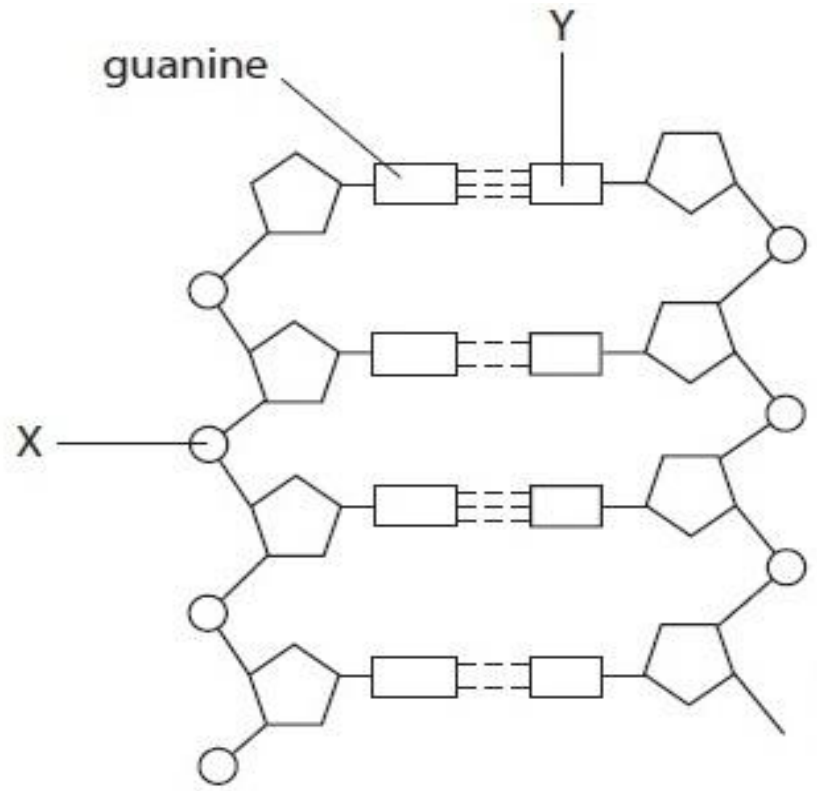
Quick WB Biology Quiz



Quick WB Biology Quiz

What is the role of a ribosome?

Quick WB Biology Quiz



Name X and Y

Quick WB Biology Quiz

What is the role of mitochondria?

Quick WB Biology Quiz

Write the balanced symbol equation for respiration

Quick WB Biology Quiz

Complete the list:

Kingdom

P_____

Class

O____

Family

G_____

Species

Quick WB Biology Quiz

What process is this?

How do you know?