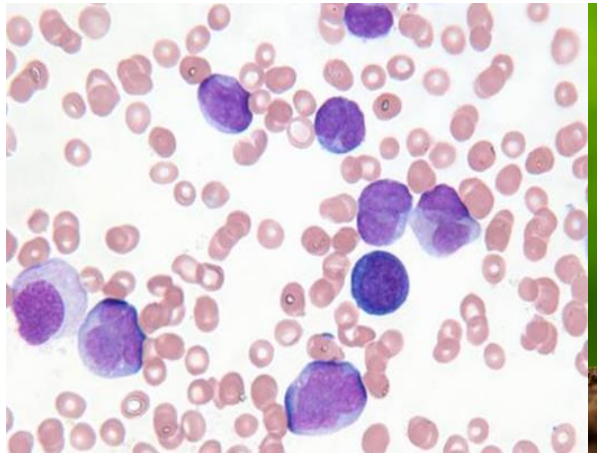
EAST LEAKE ACADEMY

Welcome to A-level biology!



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Why study biology?

Biologists are scientists who study the natural world and all the living things in it, from the largest mammals down to our very own microscopic DNA.

They try to understand how animals and organisms work (including humans), how we evolved and the things that can make us sick or improve our health.

Biologists use this knowledge to do things like try to stop the spread of disease, track down natural resources, improve public health, animal care and conservation and work out the true impacts of things like pollution.

Careers in Biology

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Where can BIOLOGY take you?

- Agricultural Industry
- Beauty Therapist
- Biochemist
- Biotechnologist
- Botanist
- Dietician
- Doctor
- Ecologist
- Environmental Health Officer
- Environmental Scientist
- Forestry
- Horticulturist
- Laboratory Technician
- Landscape Architect
- Marine Biologist
- Microbiologist
- Nurse
- Nutritionist
- Oceanographer
- Optometrist
- Orthoptist
- Paramedic
- Pathologist
- Pharmacist
- Physiotherapist
- Radiographer
- Teacher
- Veterinary Surgeon / Nurse
- Zoo Keeper

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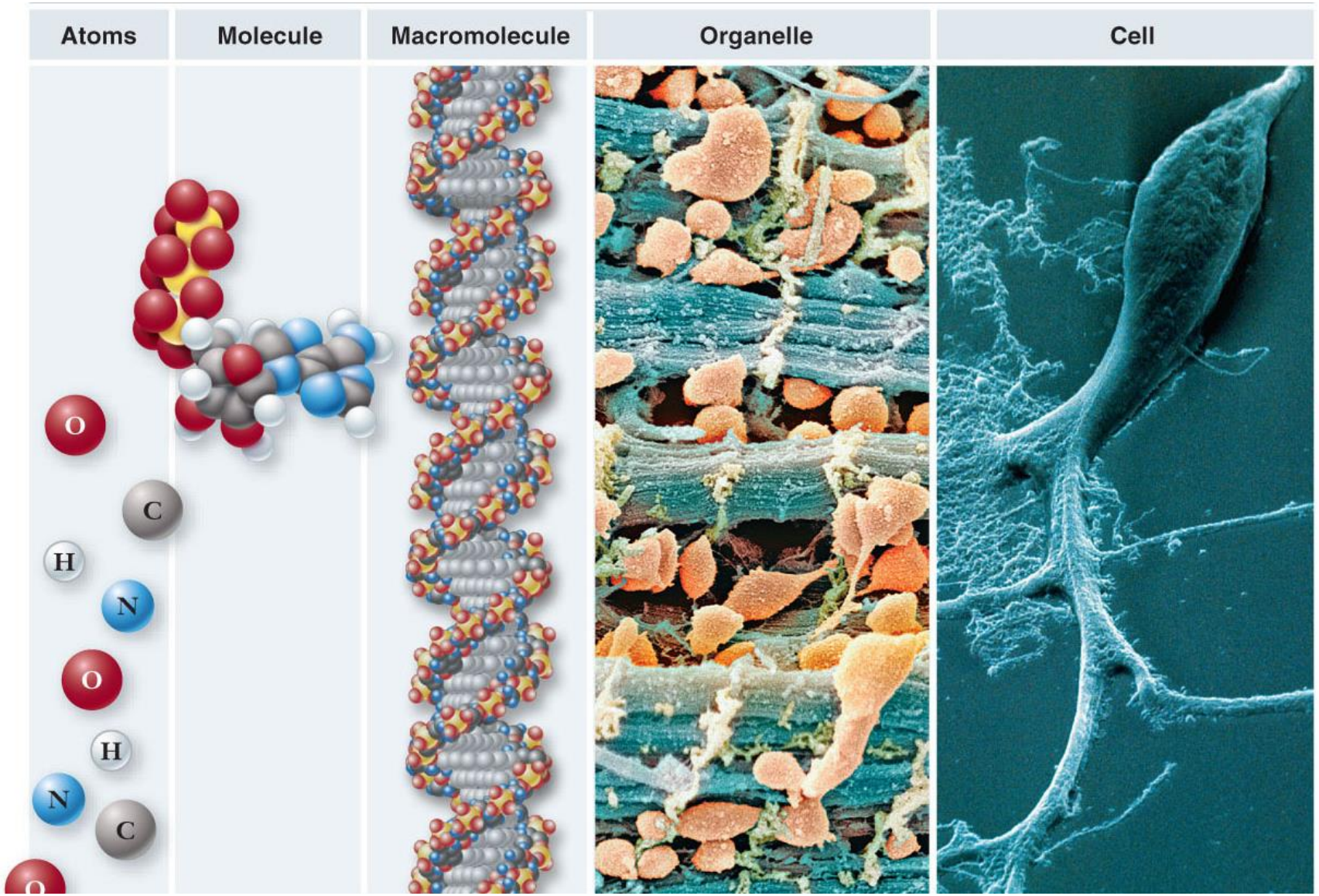
Cells and cell structures



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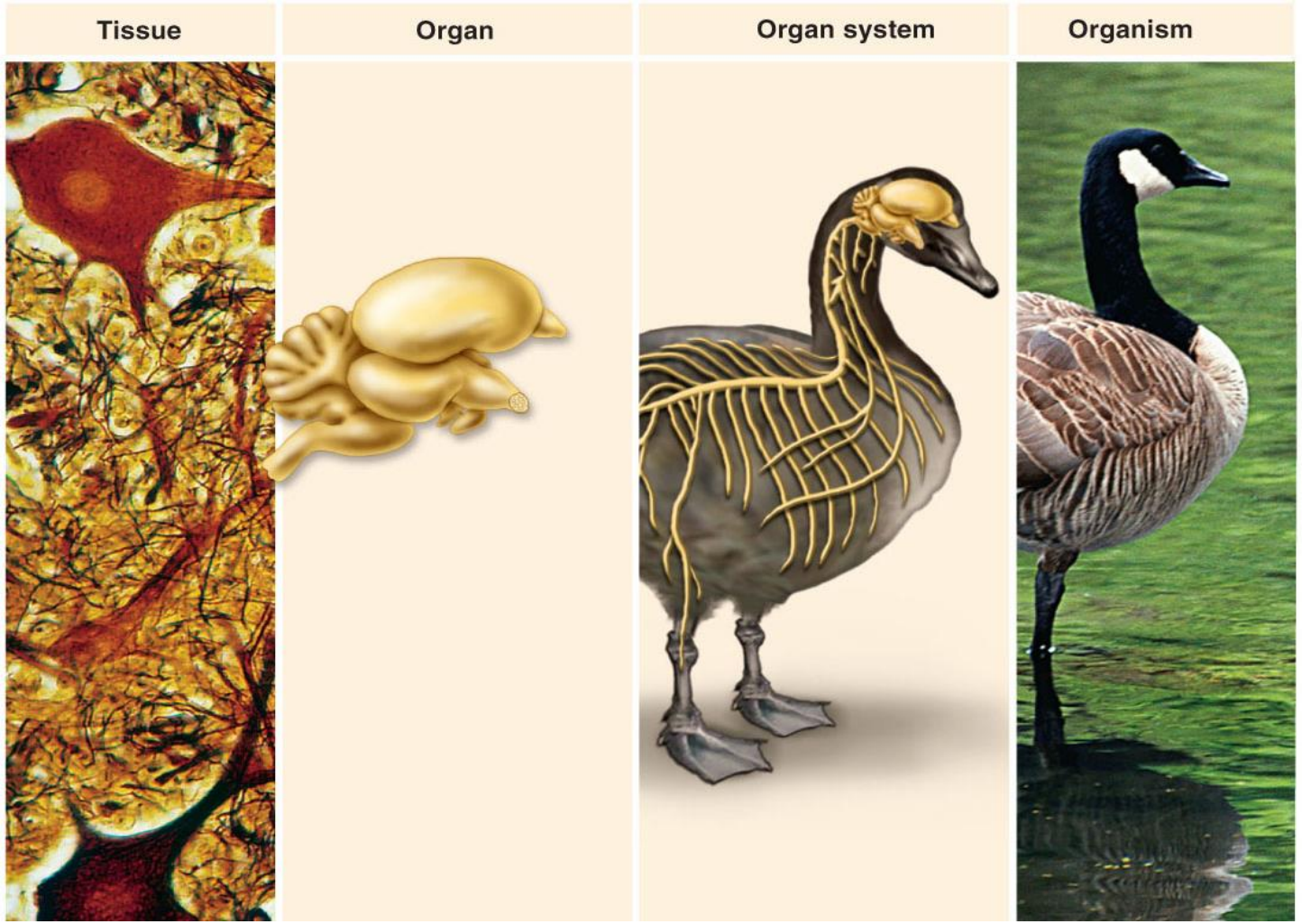
Linking systems to organisms



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Interactions of organisms and their environment

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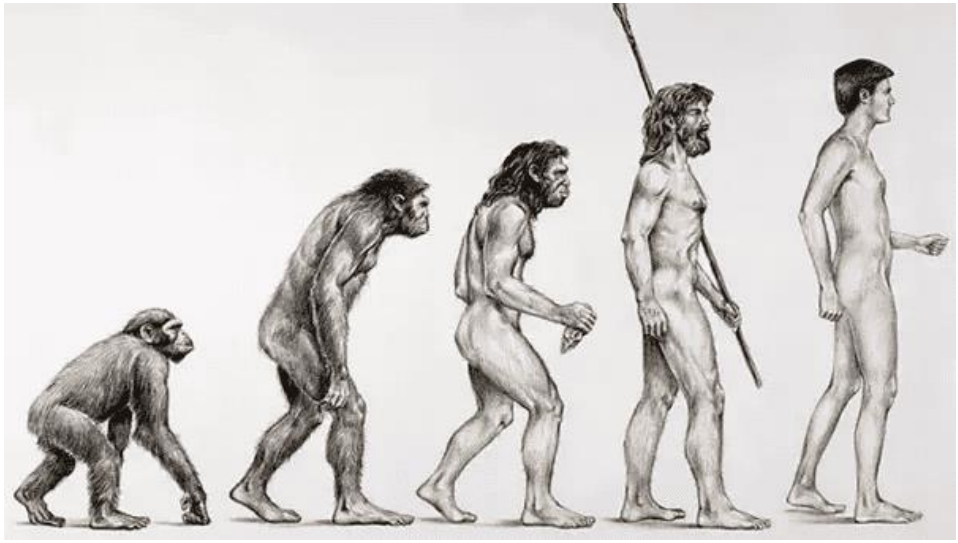
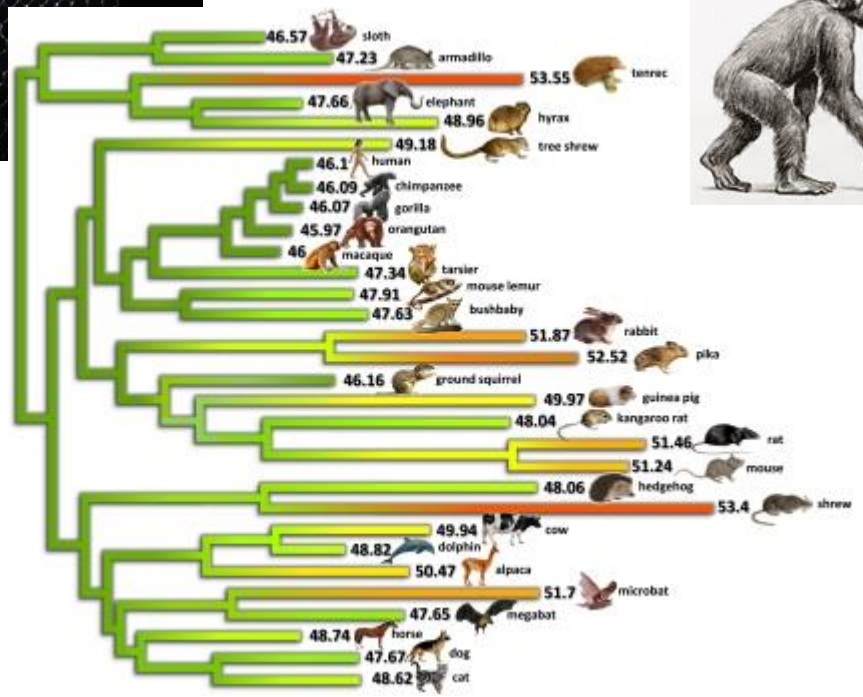
Evolution, natural selection and classification





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What does the course look like for A-level Biology?

Content Overview	Assessment Overview	
Content is split into six teaching modules: • Module 1 – Development of practical skills in biology • Module 2 – Foundations in biology • Module 3 – Exchange and transport • Module 4 – Biodiversity, evolution and disease • Module 5 – Communication, homeostasis and energy • Module 6 – Genetics, evolution and ecosystems Component 01 assesses content from modules 1, 2, 3 and 5. Component 02 assesses content from modules 1, 2, 4 and 6. Component 03 assesses content from all modules (1 to 6).	Biological processes (01) 100 marks 2 hour 15 minutes written paper	**37%** of total A level
	Biological diversity (02) 100 marks 2 hour 15 minutes written paper	**37%** of total A level
	Unified biology (03) 70 marks 1 hour 30 minutes written paper	**26%** of total A level
	Practical endorsement in biology (04)* (non exam assessment)	**Reported separately** (see section 5g)

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What is the practical endorsement?

- Many universities make offers including the practical endorsement section of biology

- Made up of a range of practical's over the course
- Completed during lesson time
- Kept in a practical folder
- Covers all practical skills required to answer the investigation questions in the final exams
- Examples: using equipment correctly, recording results, research, scientific drawing, aseptic techniques, chromatography, microscopes, dissection…

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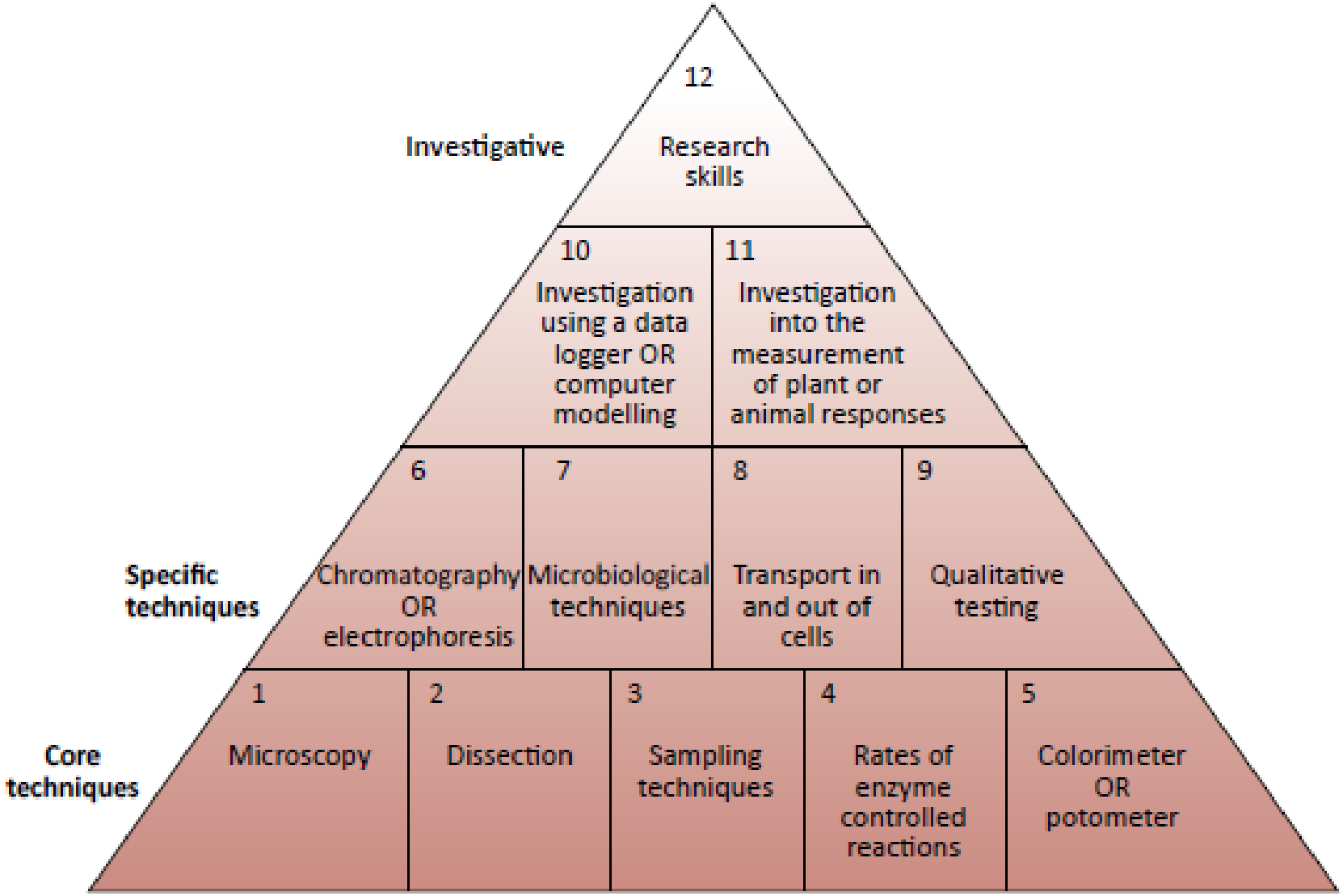
What is the practical endorsement?



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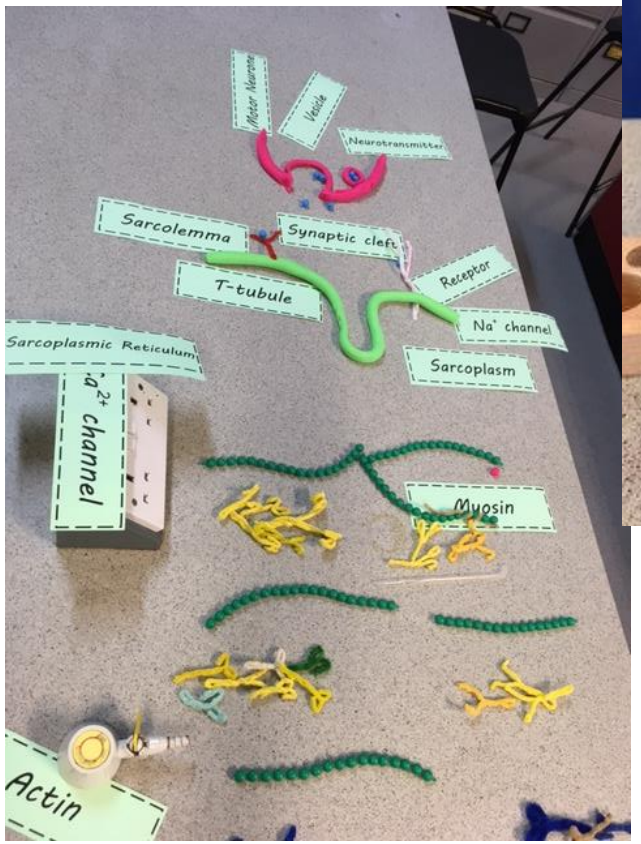

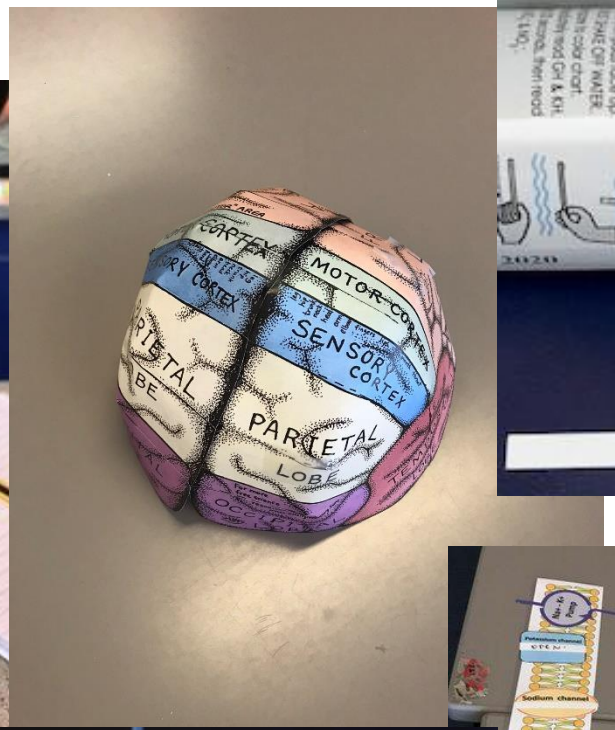

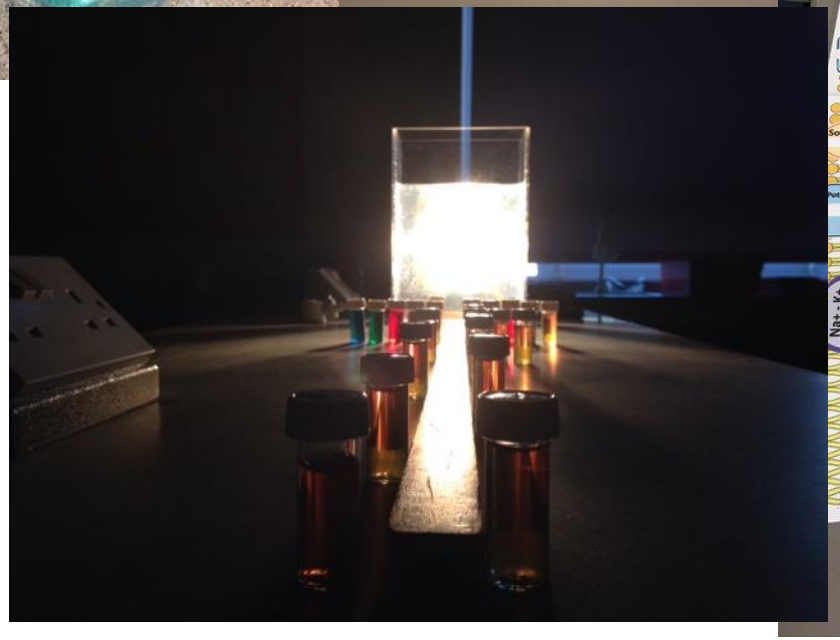

Lesson experiences

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Twycross Zoo

Field Trip

Trips and visits

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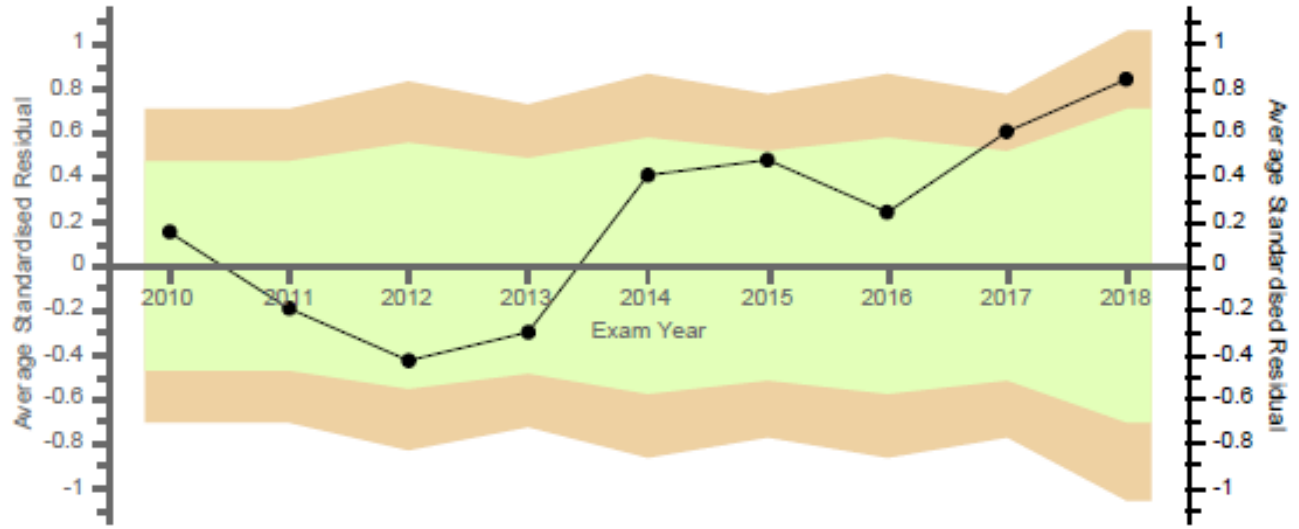
Biology

Statistical Process Control (SPC) Chart



Biology Results continue to show value- added

Many of our students go on to Science based degrees.

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What our students say

Olivia Y12: *"I knew I wanted to take biology for A-level as every new thing I learn within the subject, I start to understand how my body and the world around me works"*

Tara Y13: *"What I love about biology is that a lot of what we learn is happening right now inside of us. The subject offers a combination of both theoretical and practical learning. Understanding about the human anatomy and how it keeps us fit and healthy is so fascinating. My learning of biology may continue as I hope to study Dentistry at university."*

Kacey Y12: ' *The smaller class sizes really help focus the learning environment, making the class feel much more like a family!*'

Thea Y12: " *I am enjoying learning much more in-depth content, as well as all the pupils having an interest in the subject which leads to a much more focused learning environment.*"

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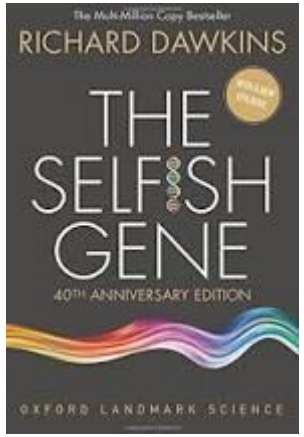
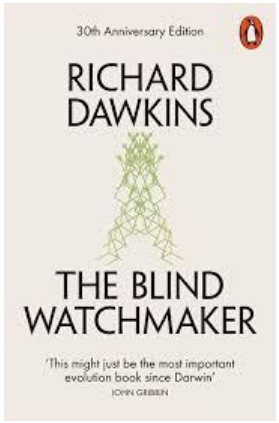
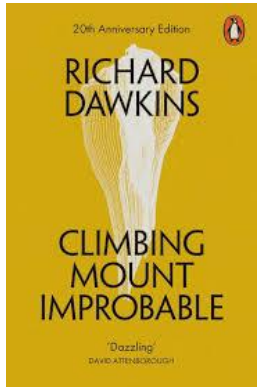
Biology Reading

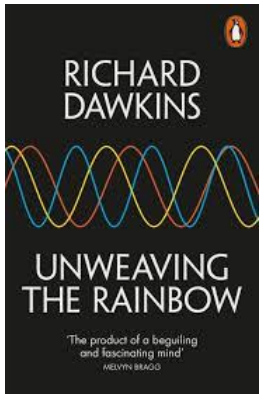
Biology Books

Richard Dawkins:
The Selfish Gene
The Blind Watchmaker.
Unweaving the Rainbow
Climbing Mount Improbable

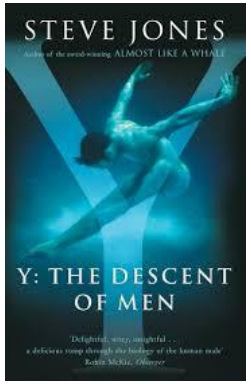


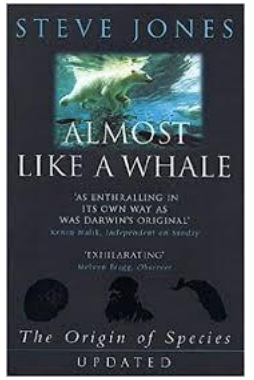






Steve Jones:
Y: The Descent of Men In the Blood: God, Genes
Destiny Almost Like a Whale: The 'Origin of Species'





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Biology Reading

Matt Ridley
- Genome: The Autobiography of a Species in 23 Chapters
- The Red Queen: Sex and the Evolution of Human Nature
- The Language of Genes
- Francis Crick: Discoverer of the Genetic Code
- Nature Via Nurture: Genes, Experience and What Makes Us Human

James Watson:
- DNA: The Secret of Life
- The Double Helix: Personal Account of the Discovery of the Structure of DNA

Lewis Thomas:
- The Lives of a Cell: Notes of a Biology Watcher.
- The Medusa and the Snail: More Notes of a Biology Watcher Barry Gibb: The Rough Guide to the Brain (Rough Guides Reference Titles)

Charles Darwin: The origin of species

Armand Marie Leroi: Mutants: On the Form, Varieties and Errors of the Human Body

David S. Goodsell: The Machinery of Life

Ernst Mayr: This Is Biology: The Science of the Living World

George C. Williams: Plan and Purpose in Nature

Steve Pinker: The Language Instinct

Edward O Wilson: The Diversity of Life

Richard Leaky: The Origin of Humankind

Bill Bryson: A Short History of Nearly Everything

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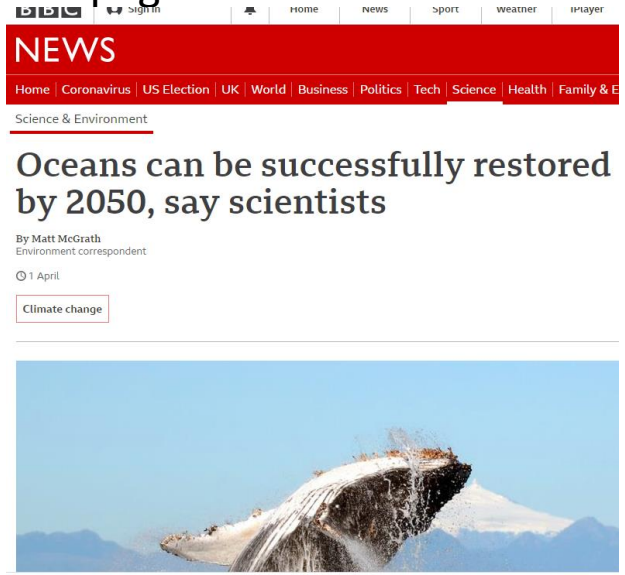
Biology Reading

Websites

1. http://www.ibiblio.org/virtualcell/index.htm – An interactive cell biology site
2. http://www.accessexcellence.org/RC/VL/GG – A web site showing illustrations of many processes of biotechnology
3. http://www.uq.oz.au/nanoworld – Visit the world of electron-microscopy
4. http://www.dnai.org/a/index.html – Explore the genetic code
5. http://nobelprize.org – Details of the history of the best scientific discoveries
6. http://nature.com – The site of the scientific journal
7. http://royalsociety.org – Podcasts, news and interviews with scientists about recent scientific developments
8. http://www.nhm.ac.uk – The London Natural History Museum's website with lots of interesting educational material
9. http://www.bmj.com – The website of the British Medical Journal
10. http://www.bbc.co.uk/news/science_and_environment - The BBC news page for Science and the Environment



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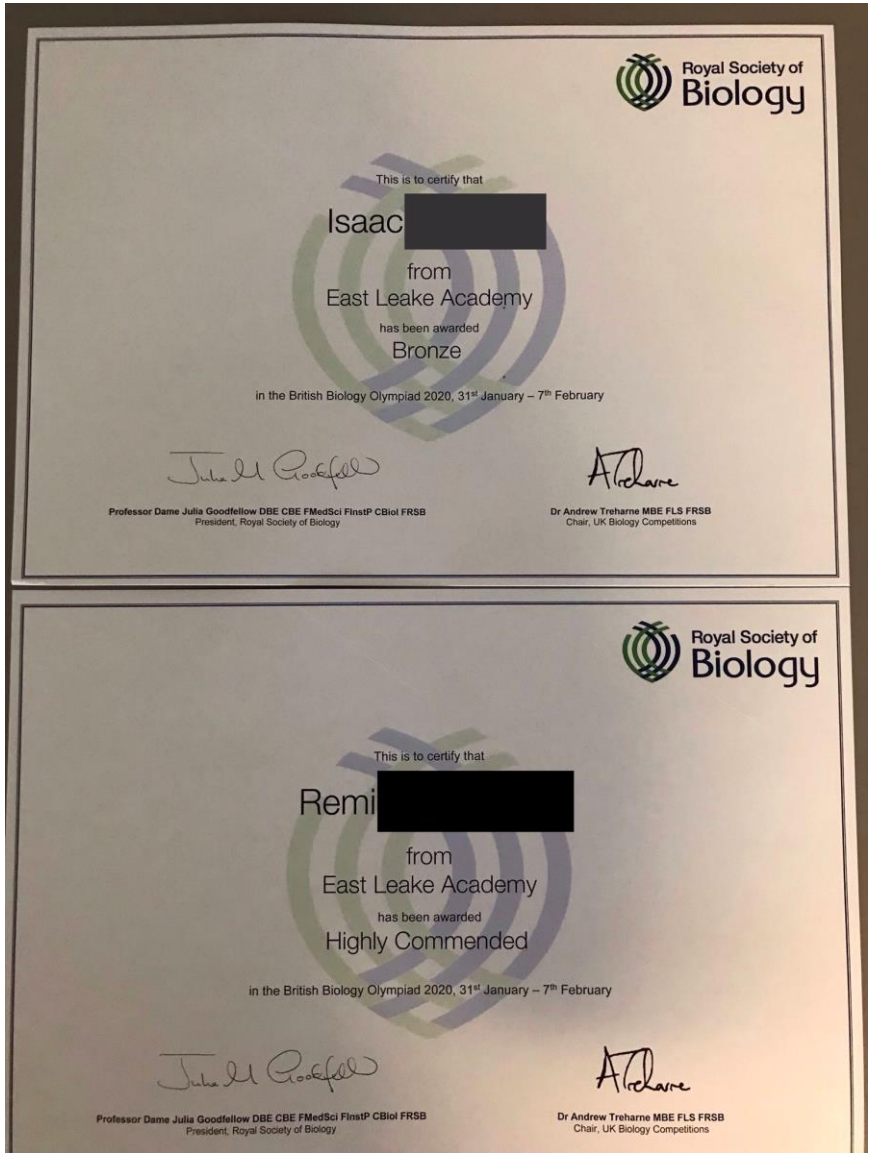
Biology Olympiad

British Biology Olympiad

The BBO challenges and stimulates students with an interest in biology to expand and extend their talents. It enables students to demonstrate their knowledge and to be suitably rewarded with publicly recognised certificates and medals.

The BBO is open to students in post-16 education studying at school or college. The competition consists of two, 45-minute multiple choice papers to be taken online under staff supervised exam conditions.



Royal Society of Biology

This is to certify that

Isaac [redacted]

from

East Leake Academy

has been awarded

Bronze

in the British Biology Olympiad 2020, 31st January – 7th February

Professor Dame Julia Goodfellow DBE CBE FMedSci FInstP CBiol FRSB
President, Royal Society of Biology

Dr Andrew Treharne MBE FLS FRSB
Chair, UK Biology Competitions

Royal Society of Biology

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from

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has been awarded

Highly Commended

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Professor Dame Julia Goodfellow DBE CBE FMedSci FInstP CBiol FRSB
President, Royal Society of Biology

Dr Andrew Treharne MBE FLS FRSB
Chair, UK Biology Competitions

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STRETCH & CHALLENGE

Suggest how movement of bees within a swarm and air movement through the swarm can help to maintain the temperature of the swarm

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STRETCH & CHALLENGE

Explain why drinking brandy is not a good idea for someone who is lost or injured and exposed to cold weather.

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STRETCH & CHALLENGE

Suggest why the fairy penguin of Australia grows to about 25cm in height whilst the emperor penguin grows to a metre in height.

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STRETCH & CHALLENGE

If an athlete is running a marathon the core temperature will rise. What effect will this have on other homeostatic mechanisms in the body

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Staff Contacts for Biology A-level

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Miss Aldridge- Maldridge@eastleake-ac.org.uk