A2.1 Origins of cells (HL)

What the Cell · DP Biology · note-taking sheet · HL statements A2.1.1–9

Name _____ **Date** _____

How to use this sheet: go through the slides and videos with it, then close them and write from memory. Use your own words and add page numbers from the book (pp. 34–47) where you want more detail.

Guiding questions. How could life have begun from non-living matter? What stages might lie between simple chemicals and the first cells?

A2.1.1–2 Early Earth and living cells

Feature	Early Earth	Today
Oxygen and ozone		
Carbon dioxide and methane		
Temperature and UV		

Why could carbon compounds form then but not now?

Why is a cell the smallest unit of self-sustaining life? Give two reasons viruses are classed as non-living.

A2.1.3–4 The challenge and Miller–Urey

How did Pasteur show that cells come only from cells?

The four requirements for the first cells:

Sketch the Miller–Urey apparatus. Label what each part represented, and write two limitations.

A2.1.5–6 Vesicles and the RNA world

How do vesicles form spontaneously, and why do they matter?

Three properties of RNA that support the RNA world hypothesis, and one relic of it in cells today.

A2.1.7–9 LUCA

What evidence shows that all life shares one ancestor, LUCA? Why might other early life forms have disappeared?

Dating method	How it works
Fossils	
Radiometric dating	
Molecular clock	

Evidence that LUCA lived near hydrothermal vents, and LUCA's likely features.

Before you finish

Tick the ones you can explain without notes. Circle anything to ask about.

☐ Early atmosphere
☐ Pre-biotic synthesis
☐ Self-sustaining cells
☐ Viruses
☐ Pasteur
☐ Four requirements
☐ Miller–Urey
☐ Vesicles
☐ RNA world
☐ LUCA
☐ Dating
☐ Hydrothermal vents