

APOLLO

Origins of cells

HL

Biology

First assessment 2025

3 questions | questions

2. Which planet in the table falls within the “Goldilocks zone” and may be capable of sustaining extraterrestrial life?

	Planet	Temperature / °C	Atmosphere	Gravity / g
A.	Kepler-22b	–11 to 16	unknown	2.4
B.	WASP-39b	750	hydrogen, helium and other elements	25.0
C.	Gliese 876d	50 to 80	high levels of toxic gases	20.0
D.	Kepler-16b	–100	unknown	0.9

- 12.** The Miller–Urey experiment carried out in 1952 tested the hypothesis of the chemical origin of life. What were the key findings?
- A. Living cells could be produced from a mixture of chemicals.
 - B. Complex organic molecules could form under simulated primordial conditions.
 - C. Life could spontaneously emerge without external influence.
 - D. DNA and RNA could self-replicate in a prebiotic environment.

- 13.** How does the Miller-Urey experiment contribute to an explanation of the origin of life?
- A. It shows how phospholipids form protocells in specific laboratory conditions.
 - B. It explains how organic molecules arise from inorganic ones under certain environmental conditions.
 - C. It explains the synthesis of RNA, recreating deep sea vent conditions in the laboratory.
 - D. It shows how the last universal common ancestor (LUCA) evolved from vesicles.