

Is there life beyond Earth?

with Dame Dr Maggie Aderin-Pocock

Royal Institution Christmas Lectures Activities

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In this year's CHRISTMAS LECTURES from the Royal Institution (Ri) supported by CGI, Dr Dame Maggie Aderin-Pocock will take us on an epic voyage through time and space.

Scientists in 2025 detected the 'strongest hint yet' of biological activity outside our solar system on exoplanet K2-18b, sparking growing excitement about the real possibility of extraterrestrial life. In this series of lectures, Maggie sets out on a journey to find it.



KS3 Space Debate “Planetary Ethics Forum”

This is a Key Stage 3 debate activity. Timing 45-60 minutes. Groups of 6 or less.

Learning Objectives:

- To take part in a debate by sharing ideas and listening to others.
- To use evidence and imagination to explain point of views about space exploration.
- Use scientific concepts to support arguments

Debate motion:

“Should humans build permanent colonies in space?”

The year is 2085. After decades of investment, humanity now has the technology to build permanent colonies beyond Earth—on the Moon, Mars, and in giant orbiting stations. These colonies could house thousands of people and grow into self-sustaining settlements. Supporters argue they will open new frontiers for science, exploration, and human survival. Critics warn that colonies could be expensive, risky, and repeat mistakes from Earth’s history.

Each faction develops its position using faction cards.

Debate Structure (50-minute lesson)

1. Introduction (5 mins)
2. Preparation (10 mins)
 - Read group fact sheet and prepare short arguments
 - Assign roles and select 2–3 key arguments
3. Debate Rounds (20 mins)
 - Opening Arguments: 2 mins maximum per group
 - Question Round: 2 mins maximum per group
 - Summary of perspective: 1 min per group
4. Voting (10 mins)
 - All vote

Optional Extensions

- Draft a Charter for Human Colonies in Space – what rules and laws should be in space?
- Research one real-world space policy and compare. Examples could include the Outer Space Treaty or Artemis Accords

Space Industry Syndicate
Core values: • Profit • Innovation • Expansion • Efficiency
Argument prompts • Colonies create new markets, jobs, and technological advances • Private investment can accelerate progress faster than governments • Mining and space trade could benefit Earth's economy
Key facts: • Cost – building a single large colony could cost trillions of pounds • Technology – new technologies e.g. recycling, robotics, could benefit both colonies and Earth • Wealth – space resources e.g. minerals, energy may provide wealth

Earth Protection Alliance

Core values:

- Responsibility
- Stewardship
- Protection
- Justice

Argument prompts

- Earth's urgent problems should be solved before investing in colonies
- Money spent on space could reduce poverty, inequality, and climate change on Earth instead
- Protect Earth's environment and societies first

Key facts:

- **Cost** – trillions spent in space could instead fund schools, hospitals, or climate action
- **Inequality** – colonies may mostly benefit wealthy nations or corporations

Cosmic sustainability council

Core values:

- Sustainability
- Conservation
- Precaution
- Safety

Argument prompts

- Unknown ecosystems (e.g. microbes) could be harmed by human activity
- Decisions today must consider future generations.

Key facts:

- **Survival** – these colonies could act as ‘lifeboats’ if Earth faces disaster
- **Risk** – space environments are dangerous: radiation, isolation, and supply shortages threaten lives