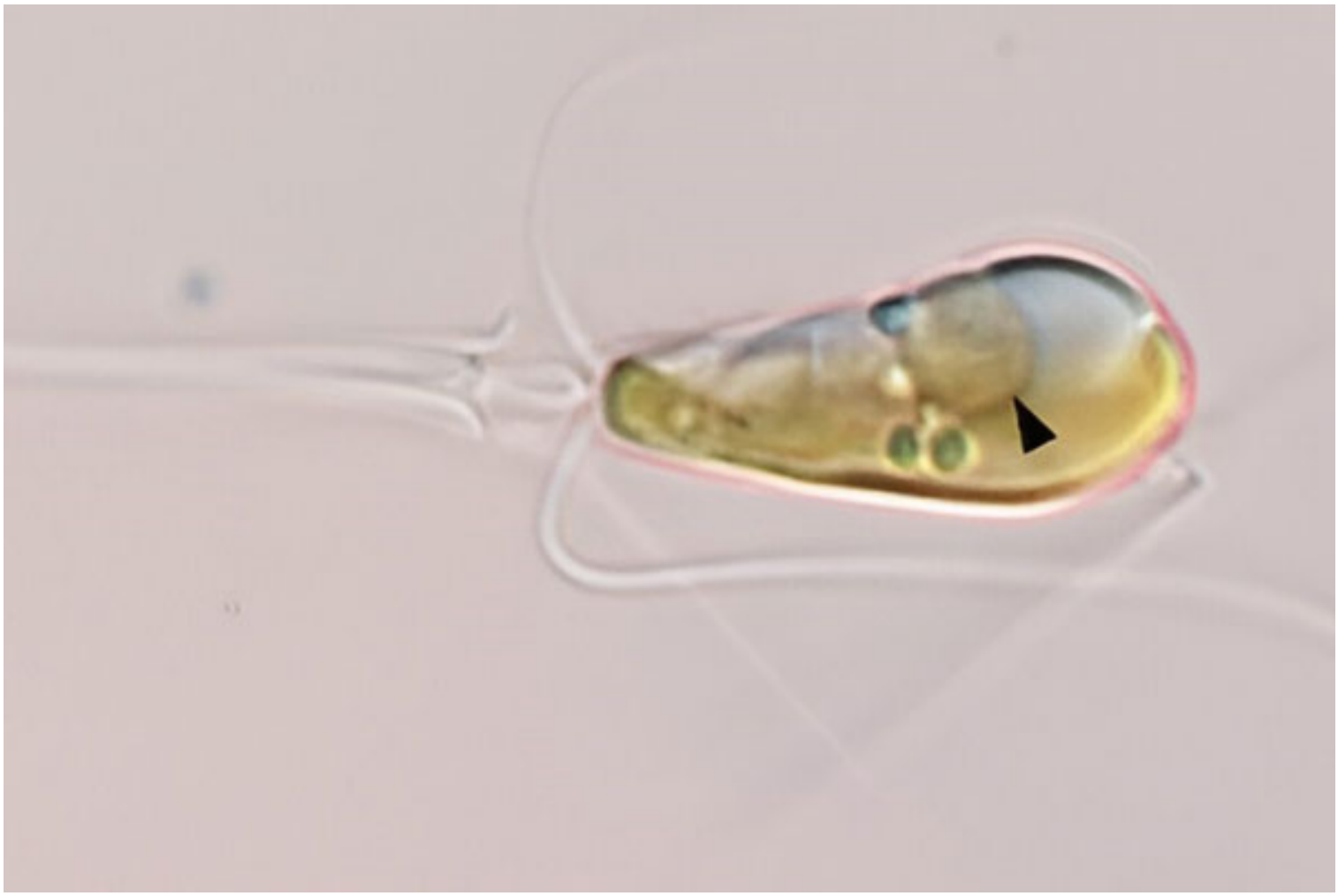
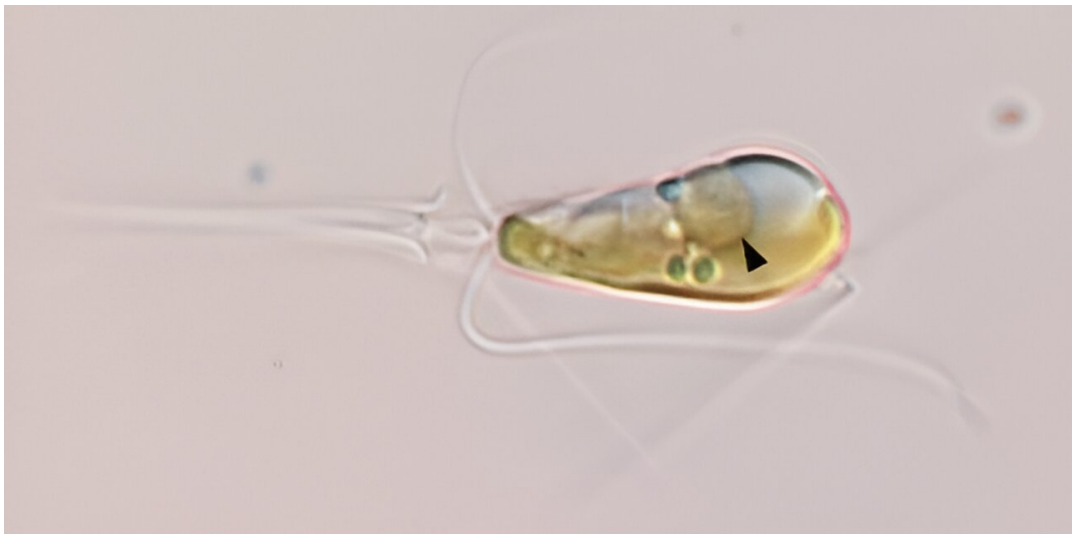
Nitroplast

By IASToppers | 2024-04-18 15:50:00



Nitroplast

Scientists have made a groundbreaking discovery by identifying the first **nitrogen-fixing organelle** called **nitroplast** in the marine algae **Braarudosphaera bigelowii**. This finding overturns long-held beliefs in the field of biology.



[Ref: Phys]

Key highlights of the Discovery:

- The identification of nitroplast marks the first known occurrence of a **nitrogen-fixing organelle** within a **eukaryotic cell**.
- The existence of nitroplast **challenges the traditional belief** that nitrogen fixation is an ability exclusive to prokaryotes, such as bacteria and archaea.
- This discovery provides a fresh perspective on nitrogen fixation, which could have significant implications for **sustainable agriculture** and **environmental management**. Specifically, it could help decrease dependence on **chemical fertilizers**.
- Nitroplast is considered a recent evolutionary development, having appeared approximately **100 million years ago**. This is a relatively new event in the context of organellogenesis, especially when compared to ancient organelles like **mitochondria** and **chloroplasts**.

About Nitrogen Fixation:

- Nitrogen fixation is a vital biological process where **nitrogen gas (N2)** from the atmosphere is transformed into **ammonia (NH3).**
- Ammonia is then utilized by living organisms to synthesize crucial molecules like **proteins** and **nucleic acids**.
- It was previously believed that only certain bacteria and archaea were capable of fixing nitrogen, often forming symbiotic relationships with plant species like legumes.

