MICROALGAE BIOFUEL

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INTRODUCTION

Microalgae are microscopic algae invisible to the naked eye. They are phytoplankton typically found in freshwater and marine systems, living in both the water column and sediment.They are unicellular species which exist individually, or in chains or groups. capable of performing photosynthesis, are important for life on earth.

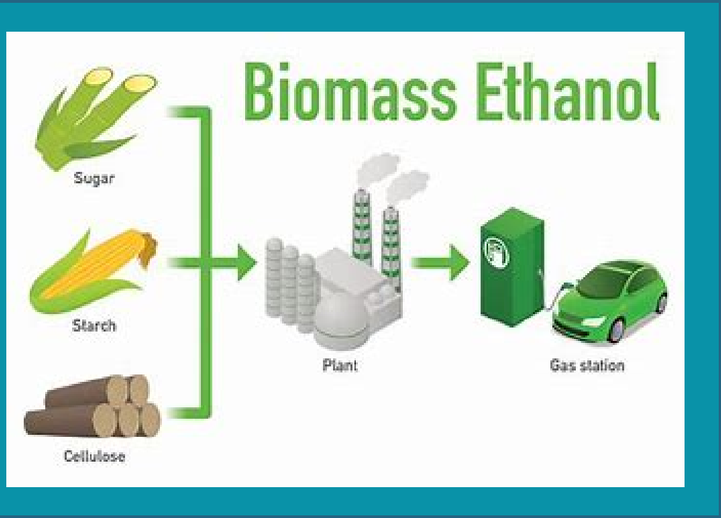
PRODUCTION OF BIOFUEL BY MICROALGAE

Selection of microalgae strains: Microalgae strains that are high in lipid and suitable for cultivation are selected.

Microalgae cultivation: Microalgae are grown in large volumes of water in ponds, lagoons. Conditions such as sunlight, temperature and aeration...

Microalgae harvesting: This step can be one of the most expensive in the process, since it involves separating the microalgae from the culture medium. They include sedimentation, filtration, centrifugation and flotation.

Lipid extraction: Microalgae undergo an extraction process to recover the lipids contained in the cells. It can be performed using physical, chemical, or biological methods.



Conversion of lipids into biofuels: In this process, lipids are combined with an alcohol (usually methanol or ethanol) in the presence of a catalyst, producing fatty acid ethyls, which are the main component of biodiesel.

Biofuel Refining: Biodiesel produced from microalgae may require additional refining processes to remove impurities and improve its quality and performance characteristics.

ADVANTATGES AND DISADVANTATGES

ADVANTATGES:

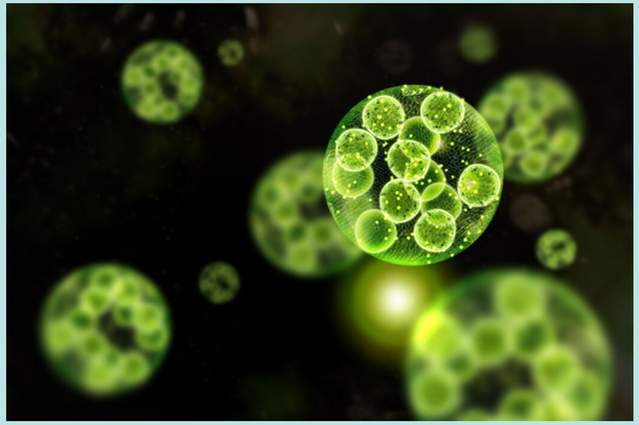
High productivity and rapid growth rate,Greater efficiency in land use, Low lignin and cellulose content,Flexibility in cultivation methods, Carbon dioxide absorption during growth,Species diversity and adaptability

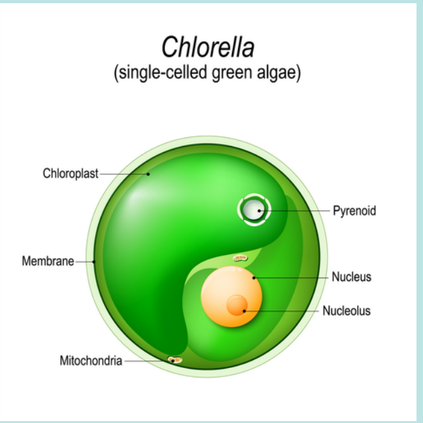
DISADVANTATGES:

High production costs, water requirements, nutrient requirements, competition with food, environmental effects and developing technology

TYPE OF MICROALGAES

1. Chlorella: It is one of the most common microalgae used in the production of biofuels.

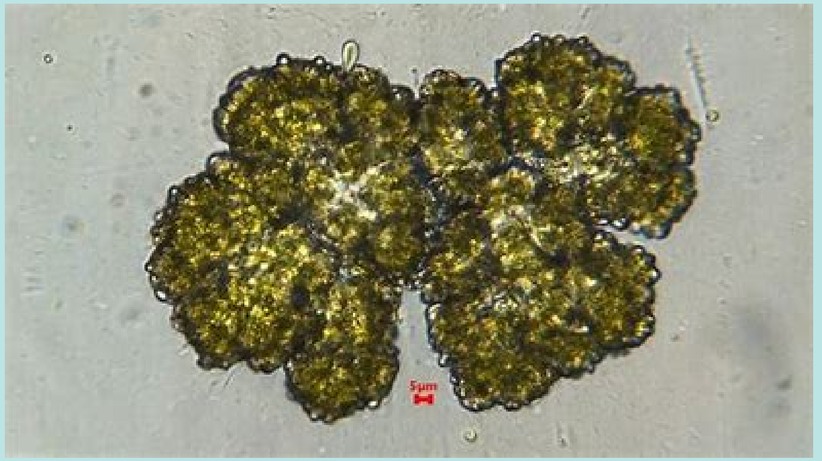




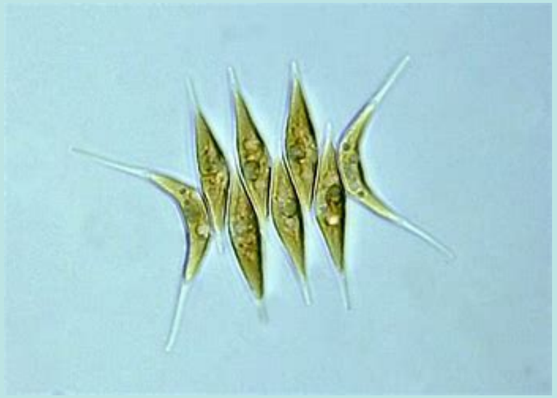
2. Nannochloropsis: This microalgae is known for its high lipid content, making it an attractive option for biofuel production.

TYPE OF MICROALGAES

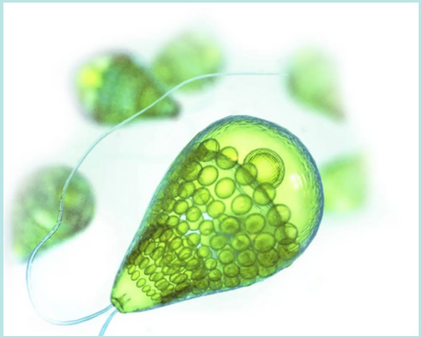
3. Botryococcus braunii: This species of microalgae produces large amounts of hydrocarbons, including long-chain hydrocarbons, which are useful for the production of biofuels.

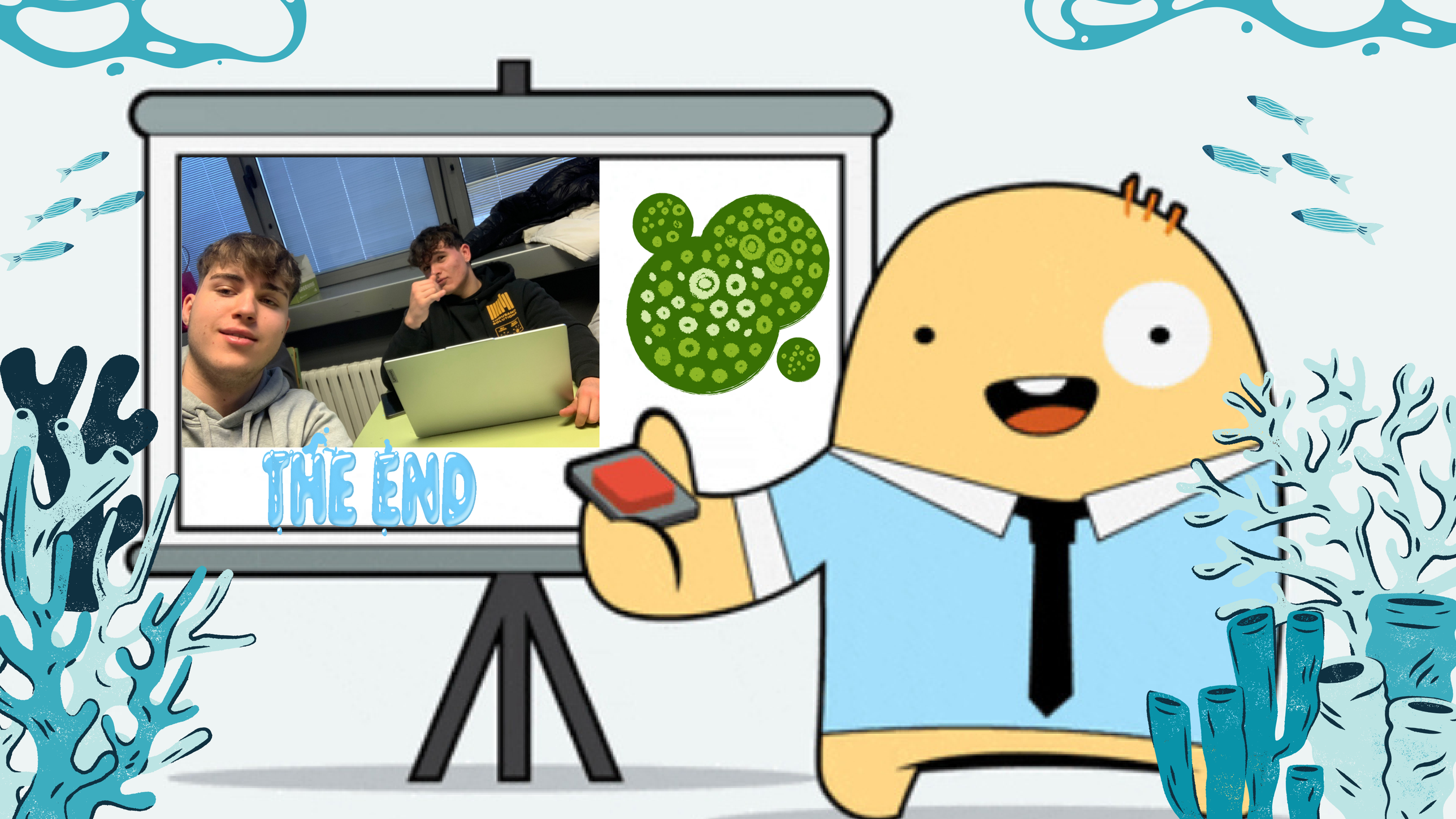


4. Scenedesmus: It is another microalgae commonly studied for biofuel production due to its ability to grow rapidly and lipid content.



5. Dunaliella: Although primarily known for its production of beta-carotene that its important to produce biofuel.

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