Euglena Group

Trilateral Symposium on IP & Environmental Issues
- Contribution of Patent System towards Carbon Neutral

Towards Achieving Sustainable Society
- Initiatives on Next-Generation Renewable fuel

ユーグレナ

Introduction of Euglena Co., Ltd.

ユーグレナ

Overview

Euglena Co., Ltd. is:
Venture company originating from the University of Tokyo in December 2005, which is the world's first company succeeding in the outdoor mass cultivation of the microalgae Euglena for food use.

Listed on the Tokyo Stock Exchange (TSE) Mothers in 2012 and on the First Section of the TSE in 2014 as the first University of Tokyo originated venture company.

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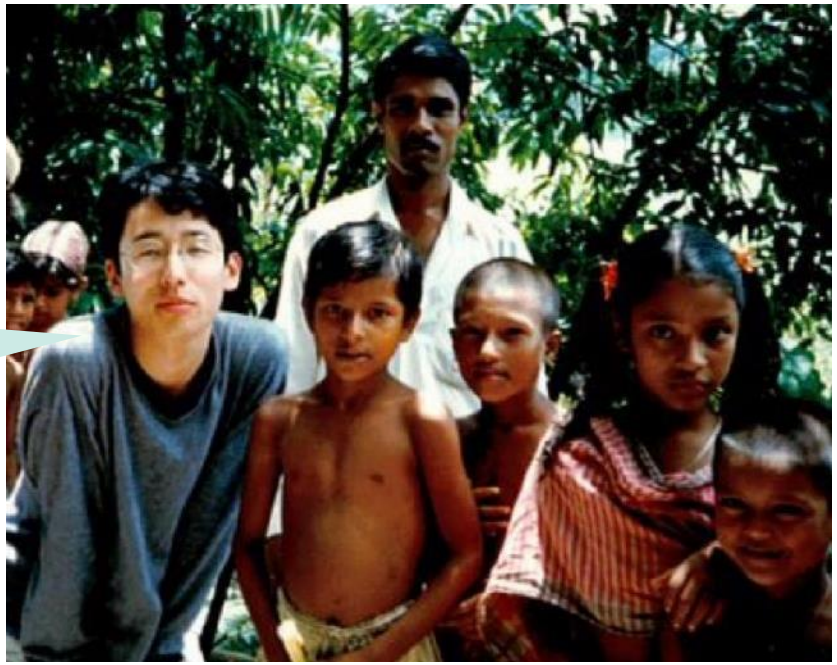
Euglena:
Livable, Playable, Sustainable.

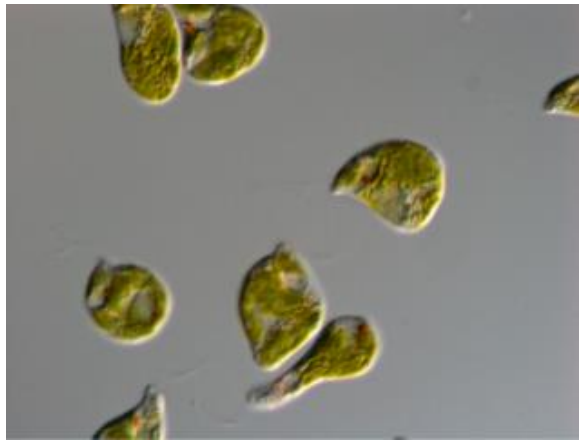
Passion at the time of founding

"When I witnessed children suffering from malnutrition in Bangladesh, I really hoped to solve the issue of malnutrition by highly nutritious food sources."



Euglena as Materials

Euglena is **a kind of microalgae and has characteristics capable of being used as resources**; it is being used as biofuel resources and health food.



Generic name: Euglena
Japanese name:
***Midorimushi* (Euglena)**

Characteristics as a living organism

- Generic name: Euglena
- Japanese name: *Midorimushi* (Euglena)
- The size is about half of the thickness of one hair.
- Performs **photosynthesis** like plants and **can move** like animals.

Features as food resources

- Contains **59 varieties** of abundant nutrients, including both phytonutrients and animal nutrients.
- Contains a kind of dietary fibers called **paramylon**, which is a special substance with various functions.

Characteristics as fuel resources

- Generates lipids in the body.
- Grows by inhaling carbon dioxide (CO2) and is expected to **reduce the amount of CO2 in the atmosphere**.
- Not compete with other types of food.

Award history of Euglena Co., Ltd.

2015 Ministry of Economy, Trade and Industry
At the "1st Japan Venture Awards"
Received the "Prime Minister's Award (Japan Venture Award)"

2018 Ministry of Economy, Trade and Industry and Patent Office
IP Achievement Award Minister of Economy, Trade and Industry Award

Euglena Co.,Ltd. has filed applications for basic technologies for biofuel production using Euglena in part in 14 countries worldwide that may produce biofuels in the future.
It was highly evaluated that the patent network was constructed by obtaining patents in Japan, the United States, China, Australia, Southeast Asian countries, etc.

Overview of Euglena Group's Business

In order to achieve the world in which the "sustainability" first becomes common, the Euglena Group aims to solve issues for ensuring a sustainable society through its businesses by utilizing advanced research and development (R&D) activities.

SUSTAINABLE DEVELOPMENT GOALS

Provide and implement specific measures for climate change

Achieve lifetime health

Solve the issue of malnutrition in developing countries

Euglena's Philosophy: Sustainability First

Renewable fuel business

Bioinformatics business

Health care business*

Social business

Outdoor mass cultivation of Euglena

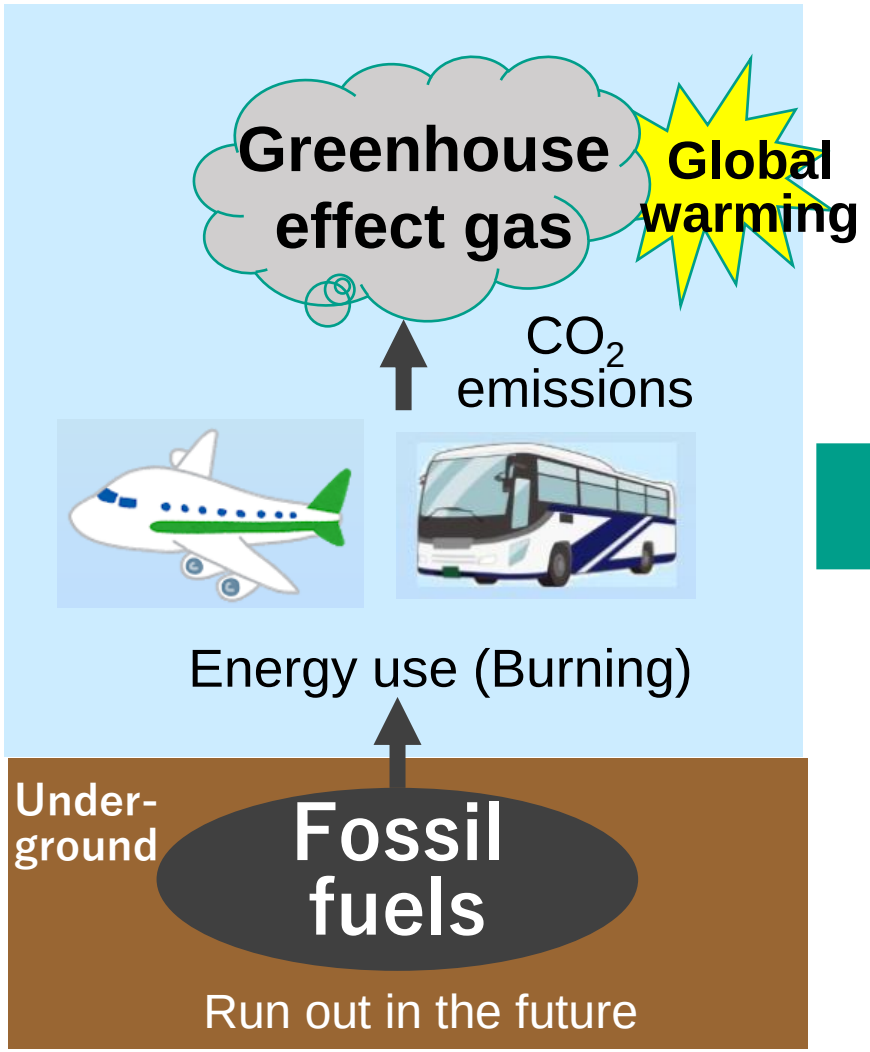
Gene analysis

Advanced technology research

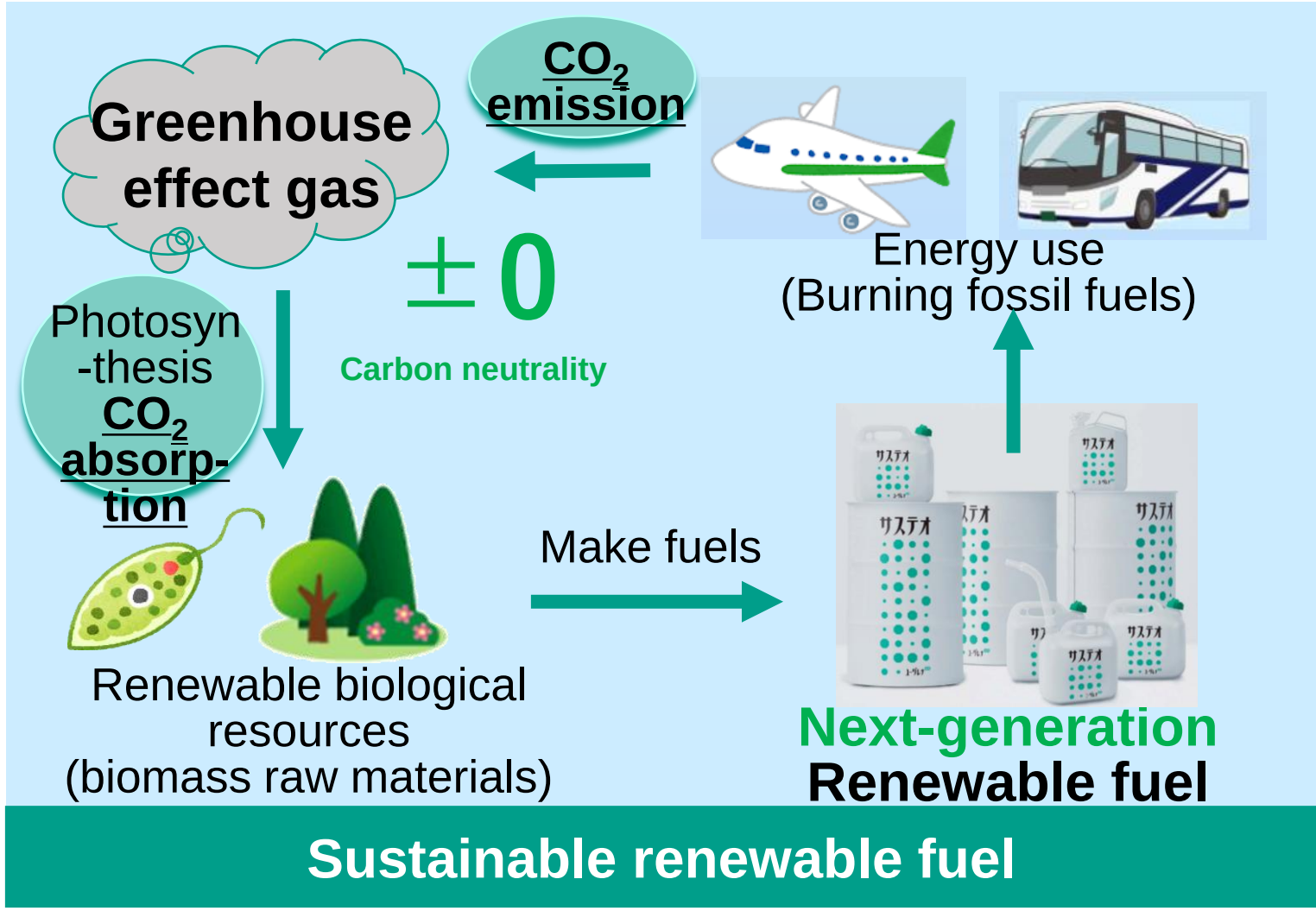
※* The business area is classified differently from the segment information of the securities report.

Why are renewable fuel useful for environmental measures?

The use of fossil fuels has caused global warming.



Using renewable fuel will not increase the amount of CO_2 in the atmosphere.



History of Euglena's renewable fuel Manufacturing Demonstration Plant ユーグレナ

December 1, 2015 Release of the start of Japan's first "domestic renewable fuel plan"
November 2, 2018 Declaration of "GREEN OIL JAPAN" to make Japan an advanced renewable fuel nation

2015

May 30, 2015
Signed an agreement with CLG LLC*

December 1, 2015
Released the start of the domestic renewable fuel plan

2016

February 10, 2017
Signed a contract for construction work with Chiyoda Corporation.

2017

June 1, 2017
Began construction of a renweable fuel demonstration plant.

October 31, 2018
Completed construction of the demonstration plant

2018

November 2, 2018
Declared "GREEN OIL JAPAN"

Press conference (Dec. 1, 2015)

Press conference (Nov. 2, 2018)


2017/11


2017/12

2018/4


2018/7


2018/10

* Euglena signed a licensing and engineering agreement with Chevron Lummus Global LLC (CLG) on Biofuels ISOCONVERSION (BIC) Process technology.

Euglena's Original Product: Features of renewable fuel "SUSTEO"

Renewable-diesel fuel SUSTEO can be refueled for existing diesel engines. Changing fuels from fossil fuels to renewable-diesel fuels can contribute to low-carbon society without changing existing infrastructures.

Sustainable Aviation Fuel

- Acquired 1st QTR ASTM* standard in 2020.
- The first flights of a jet with biofuel "SUSTEO" was conducted in June 2021.

Next-generation Renewable diesel Fuel

- The molecular structure of next-generation renewable diesel fuel is same as that of commercial light oil.
- The results of vehicle emissions tests by Isuzu Motor confirmed that next-generation renewable diesel fuel can be used with the content rate of 100%, without putting any load on the engines of private passenger vehicles (PPVs).
- The supply started in 2020.

	Raw materials	Molecular structure	Quality	Features
Current type	• Used (waste) cooking oil • Microalgae (Euglena) lipids • Plant-derived oil	FAME (Fatty acid methyl ester)	Conforming to the domestic B5 standard (Can be mixed with commercial light oil by up to 5%)	Has features that are very similar to diesel fuels, but cannot be practically used 100%.
Next generation		Hydrocarbon that is same as commercial light oil	Conforming to the domestic light oil standards	Can be used for PPVs with the content rate of 100%.

Flight Using Sustainable Aviation Fuel (on June 29, 2021): “HondaJet Elite”

The first flight of a private jet “HondaJet Elite” using Euglena’s original sustainable aviation fuel “SUSTEO” was successfully conducted. Now, “SUSTEO” can be selected for private jets.

サステオ

- The brand name of Euglena Co. made biofuel was decided as ”SUSTEO.”*
- The Jet plane took off from Kagoshima Airport and landed at Tokyo International Airport after about the 90-minute flight.
- For public chartered flights with HondaJet Elite, which are planned to start service in autumn 2021, customers will be able to choose to use SUSTEO as an option when applying for their flight.

* The name SUSTEO is derived from “sustainable oil.” The raw materials for SUSTEO are used cooking oil and microalgae Euglena.

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