A Hub for *Corynebacterium glutamicum* Research

Launching a New Platform Business with *Corynebacterium glutamicum* ATCC 13032

Utilization of Carbon Dioxide Institute Co., Ltd. (Minato-ku, Tokyo; President & CEO: Dr. Hideaki Yukawa) is launching a new platform (contract research) business based on *Corynebacterium glutamicum* strain ATCC 13032 to run alongside its core business of CO_2 utilization using hydrogen bacteria.

Dr. Yukawa developed the ingenious "growth-arrested bioprocess" using a different strain, *Corynebacterium glutamicum* R. Over the years, the bioprocess has demonstrated superiority over conventional fermentation methods in multiple instances.

The growth-arrested bioprocess is a totally different approach to chemical production: microbial growth is halted during the production phase. In contrast to conventional fermentations therefore, only the catalytic power of microorganisms is harnessed—much like chemical catalysts. The benefits are fascinating:

- Highly efficient production
- High tolerance to fermentation inhibitors
- Simultaneous utilization of multiple substrates

This breakthrough innovation was highly acclaimed and the basis upon which Green Earth Institute, Inc., a bio-manufacturing startup, was founded in 2011. In the same year, Dr. Yukawa was honored with a Society for Industrial Microbiology Fellow Award, one of the highest honors in applied microbiology. Since then, the concept of growth arrested bioprocess has expanded far and wide, particularly in Europe and America.

From R Strain to the Global Standard ATCC 13032

Research on the growth-arrested bioprocess with *Corynebacterium glutamicum* was initiated and developed using a strain with a scant record of industrial use. Concerns over bioprocess scale-up therefore worked against broader corporate interest.

The R strain and the globally much more widely utilized ATCC 13032 strain differ enough at the DNA level to result in significant structural differences. These reasons motivated a shift of focus at UCDI to ATCC 13032 strain upon which a recalibrated next-generation growth-arrested bioprocess with further enhancements in economic production was established.

Pursuing Extensive Collaboration

Through this next-generation growth-arrested bioprocess, we are opening new horizons for an industrial platform utilizing *Corynebacterium glutamicum*. We welcome R&D partners, both domestic and international, and call upon companies that have focused only on the R strain to date to join us in driving industrialization on a global scale.

As the "Liangshan Marsh" of *Corynebacterium glutamicum* research, we will actively seek to co-develop with researchers worldwide and continue our challenge to raise the profile of Japan-born technology to a global pedestal.

Utilization of Carbon Dioxide Institute Co., Ltd. (UCDI)

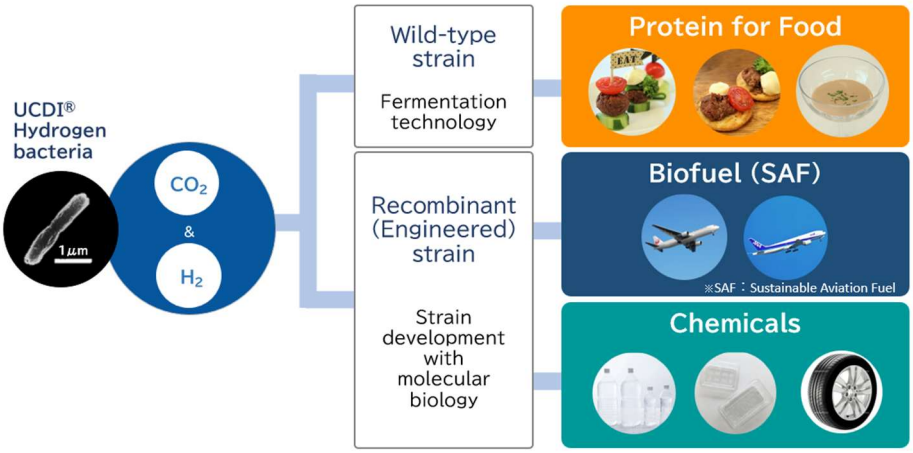
＜Company Profile＞

Head Office/ Research Institute	14F, Tradepia Odaiba, 2-3-1 Daiba, Minato-ku, Tokyo, Japan
Representative	Dr. Hideaki Yukawa（CEO／CSO）
Established	August 12, 2015
Paid-in Capital	¥247 million
HP	https://www.co2.co.jp/en/top/

＜Business Fields＞

UCDI pursues research, development, and commercialization of innovative biotechnologies based on the capacity of UCDI® Hydrogen Bacteria to utilize CO_2 as a nutrient. 1 cell can multiply to 16 million individuals in 24 hours (1 gram of cells grows 16 tonnes of cell mass in 24 hours).

Within the three business fields of Protein (for human consumption), Bioenergy and SAF, and Chemicals (various chemical products), the company aims to contribute solutions that address problems of food shortage and dependence on fossil resources.



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