

**Launch of Business to Offer Resources for
Protein Crystallization Experiment in Space
- Biotech Business using the International Space Station -**



Photo 1: Protein Crystal (Courtesy: JAXA)

Confocal Science, Inc.
Maruwa Foods and Biosciences, Inc.
Patcore, Inc.
Marubeni America Corporation

January 26, 2007

As a contractor of the Japan Aerospace Exploration Agency (hereinafter JAXA), Confocal Science, Inc. has launched a "Business to Offer Space Experiment Resources for Protein Crystallization Experiment in Space Using The International Space Station (Photo 2)" in collaboration with Maruwa Foods and Biosciences, Inc., Patcore, Inc., and Marubeni America Corp. This business is world's first and only commercial service to offer an experiment opportunity for atomic resolution protein crystallization under microgravity environment inside the International Space Station, using the Russian Service Module resource subcontracted through JAXA. Confocal Science, Inc., as an administrative manager, takes care of overall project management tasks including sample optimization and data management. Maruwa Foods and Biosciences, Inc. takes care of the experiments, Patcore, Inc. takes care of marketing in Japan, and Marubeni America Corp. takes care of marketing outside of Japan. Progress cargo spacecraft, carrying the first commercial samples for the space experiment, was launched from the Baikonur Cosmodrome in Kazakhstan on January 18, 2007.



Photo 2; International Space Station (Courtesy: NASA)

Completion of human genome mapping prompted the Structure-based Drug Design (SBDD) utilizing the 3D structure information of disease-related proteins, but the useful information may not be always available. The lack of high-quality crystal of such protein, which is necessary for high-precision

structure analysis, often becomes a bottleneck. Influence of gravity on the earth is considered to be one of the reasons for such a difficulty in protein crystallization. By conducting experiments in the ISS, where the influence of gravity is negligible, convection flow and gravitational sedimentation of the sample solution can be almost eliminated. The quality improvement of protein crystals have been confirmed through the past experiments (non-commercial base research) in the ISS. (Table 1)

Effects of Microgravity




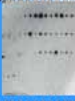



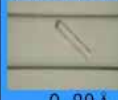

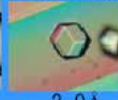





	On the ground	In space		
Suppression of cluster-like formation				
Improvement of Mosaicity	 0.523	 0.209		
Improvement of Resolution	 1.20Å  1.20Å  4Å	 0.89Å  0.9Å  2.0Å		
Overcoming twinning		21.8% → 1% 		
Different Space Groups	 P ₂ ₁ 2 ₁ 2 ₁ 50.8, 67.7, 130.1	 P ₂ ₁ 2 ₁ 2 ₁ 50.3, 65.9, 137.5	 P ₄ ₂ 2 ₁ 2 67.4, 67.4, 268.4	 P ₂ ₁ 67.5, 105.6, 76.1 104.7

Table 1: Data showing improvement in crystal quality when crystallized in the space (Courtesy: JAXA)

The precise structure information, made possible by the high quality crystals formed in the space, will enable the efficient research & development of useful drugs (drug discovery), and we believe there is a huge demand from universities, pharmaceutical companies and drug discovery ventures, and forecasting around US\$1 million for annual sales in the next fiscal year as being virtually the first year of operation.

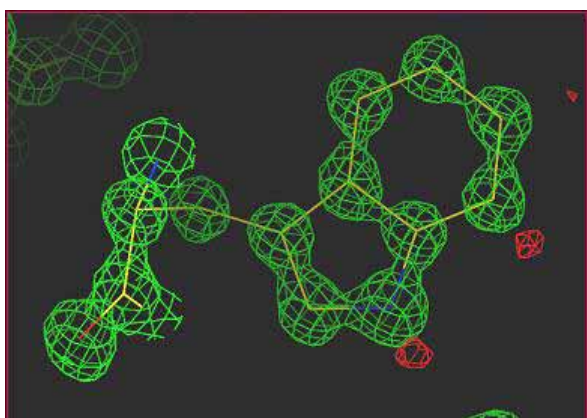


Photo 3: Result of atom arrangement analysis in protein molecule (Alpha- Amylase). Red marks show position of Hydrogen atoms, which usually cannot be seen otherwise. (Courtesy: JAXA)

The warm welcome from the participants of the world academic conferences in 2006 (American Crystallographic Association: July/Hawaii, ECM23: August/Belgium, ICCBM21: August/Quebec, Canada) to our presentations made ourselves well realize the size of the market demand. In the US, we signed an Non-Disclosure Agreement with a famous biotech venture company and are having discussion on this business. We also had a presentation on benefits of the space experiment at an academic conference in South San Francisco, CA(Advance in Protein Crystallography) to the leading researchers of the world on January 24, 2007.

Confocal Science, Inc. is an expert of crystallization service in microgravity environment with accumulated know-how. The company totally supports customers' needs, from the entry to the space experiment to the X-ray diffraction data collection for protein structural analysis.

Maruwa Foods and Biosciences, Inc. is an expert in purification of proteins and its functional analysis and crystallization and X-ray diffraction structural analysis, with unique technology and empirical know-how. The company has been participating in many protein crystallization experiments using the ISS environment.

Patcore, Inc. provides variety of services to life science industry in Japan to support the drug discovery activities. This service accelerates drug discovery process more by combining the company's custom synthesis service for lead compounds or fragments.

Marubeni America Corporation's business focus, in the so-called biotech business, is life science equipment, reagents and software for drug discovery research. The company has the expertise in this field through the marketing of research tools for protein crystallography and through the operation of Structure-based Drug Discovery venture, Fazix Corp. (New York, NY). World's largest pharmaceuticals company and the drug discovery ventures are mostly located in the US or Europe, and Marubeni will execute an aggressive marketing campaign utilizing its business network.

[Confocal Science, Inc.]

- Established: 2004
- Capital: ¥3,000,000
- Chief Executive: Hiroaki Tanaka
- Address: 4-33-27-410, Tsurumaki, Setagaya-ku, Tokyo 154-0016 JAPAN
- Business: Confocal Science is a company of research design and consultation in the field of

nano-biotechnology research and development

1. High-resolution protein crystallization
2. Development, manufacturing and sales of research tools
3. Consulting for protein crystallization for structural analysis

- Home Page: <http://www.confsci.co.jp>

[Maruwa Foods and Biosciences, Inc.]

- Established: 1972
- Capital: ¥23,000,000
- Chief Executive: Koji INAKA, Ph.D.
- Address: 170, Tsutsui-cho, Yamatokoriyama, Nara 639-1123, Japan
- Business:
 1. Soft Seaweed candies, Soft Wakame Seaweed candies, Mannan Jelly. Development and production of other Seaweed related products.
 2. Protein crystallization and sample preparation. Structure analysis and data refinement.
- Home Page: <http://www.maruwafoods.jp>

[Patcore, Inc.]

Established: 2003

Capital: ¥5,000,000

Chief Executive: Masami Fujiki

Address: TOM Square, AioiSonpo Shinjuku Bld. 3-25-3, Yoyogi, Shibuya-ku, Tokyo 151-0053 JAPAN

Business:

1. Various services to support drug discovery activities such as custom synthesis of small molecules.
 2. Consultation and development of research IT systems.
- Home Page: <http://www.patcore.com>

[Marubeni America Corporation]

- Established: 1951
- Capital: US\$422.894,000 (100% Subsidiary of Marubeni Corp., Japan)
- Chief Executive Officer: Michio KUWAHARA
- Head Office: 450 Lexington Avenue, New York, NY 10017, USA
- Home Page: <http://www.marubeni-usa.com/main.html>
- Annual Sales: \$2,421 Million
- Business: Trading House. Distribution of goods and services, and Investment