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### Third Presentation of Foundation-Assisted Research Results in Japan

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Time: September 8, 1995 1:00pm to 5:40pm

Place: Tsuda Hall, Tokyo

Theme: Recent Progress in the Molecular Biology and Biological Engineering Fields

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1. Tasuku Honjo, Director, Institute for Molecular Biology and Genetics, Kyoto University

"Organization of Human Immunoglobulin"

To shed light on the causes of diseases such as chronic articular rheumatism and muscle asthenia, Professor Honjo generated transgenic mice with anemia. In specific organs such as the mouse's intestines, where diseased cells were present, antibodies against anemia were detected and the presence of the disease confirmed.



2. Hiroto Okayama, Professor, Department of Biochemistry, Faculty of Medicine, University of Tokyo

"Highly Complex Mammalian Regulatory Systems and the Regulation of Growth"

The cells of almost all living things replicate through similar cell cycles, including cellular fission. Distortions in the cell cycle can cause cells to become cancerous or undergo aging. Professor Okayama and his associates have discovered the substances that affect when the cell cycle begins and the replication of genetic material by studying yeasts, which have nearly the same cell cycle as mammals. The research technique used in this project is expected to be useful in determining why and how cells become cancerous.



3. Hiroshi Hamada, Professor, Institute for Molecular and Cellular Biology, Osaka University

"Cell Specialization and Differentiation in Embryonic Development"

Professor Hamada's research is helping solve the mystery of how embryonic cells differentiate into specialized cells, such as those of the heart or stomach. For a short time during the cell reproduction process in a fertilized egg, a given cell has the potential to become a part of any organ of the body. Professor Hamada has identified the transcription function that influences cell division during this crucial time, in addition to a morphogenic substance related to the determination of the left-right axis necessary in organisms with bilateral symmetry.



4. Tairo Oshima, Professor of Biochemistry, Department of Molecular Biology, Tokyo University of Pharmacy and Life Science

"Thermophilic Bacteria Provide Clues to Designing Stable Proteins"

Professor Oshima has elucidated the molecular structure of proteins in a thermophilic bacteria that grows at temperatures of more than 90 degrees C - a temperature at which the protein molecules in most bacteria have broken down or are unstable. If the stable protein in this thermophilic bacteria can be produced synthetically, then it will have major implications for applications in protein engineering and pharmaceuticals.



5. Junichi Kobayashi, Professor, Laboratory of Pharmacognosy, Faculty of Pharmaceutical Sciences, Hokkaido University

"Pharmaceuticals from Symbiotic Marine Microorganisms"

Professor Kobayashi has conducted studies on plants and microorganisms of the sea, searching for substances of medicinal value to humans. Already, he has found treatments for leukemia, angina pectoris, and senile dementia.