

In-Ambulance Remote Image Acquisition System Based on New Data-Compression Technology

The Advanced Semiconductor Research Center (ASRC) of the National Institute of Advanced Industrial Science and Technology (AIST), an independent administrative institution, has developed in collaboration with the Tsukuba Medical Center Hospital (TMCH) and the Tsukuba City Fire Department (TCFD) under the Urban Area Tripartite (Industrial-Academic-Governmental) Collaboration Promotion Program of the Ministry of Education, Culture, Sports, Science and Technology (MEXT), a system named "In-Ambulance Remote Image Acquisition System" which allows doctors sitting in the emergency ward to monitor images, both moving and still, of medical scenes within an ambulance rushing back to the hospital, through their own camera operation. The system is expected to contribute to upgrading lifesaving performance of the emergency medical service requiring prompt treatment.

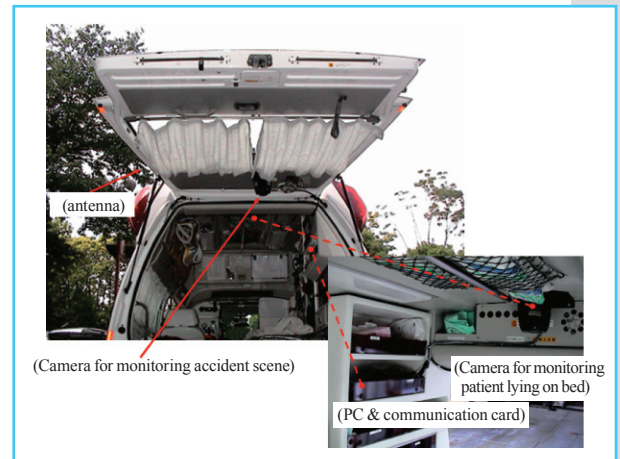


Fig. Overall view of the system installed on an ambulance with cameras and PC.

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New Road to Cancer Therapy Opened through Nanotechnology

Quantum dot refers to a particle of a few nanometer size, made of inorganic semiconductor. When irradiated with ultraviolet rays, it gives strong fluorescent emission. It has been regarded as a means for imaging genes and proteins in cells, as well as cancer cells within the body. The SMBL-AIST has developed technique to prepare the quantum dot in a simple way, and that for combining antibody or lectin identifying cancer cells with quantum dot. In this way, technology for distinguishing cancer cells from normal ones has been successfully developed. Moreover, it has been found that cancer cells selectively ingested quantum dots are readily killed by the irradiation with ultraviolet rays. This is the first achievement in the world to clearly show that quantum dots are applicable not only to molecular imaging but also to photodynamic cancer therapy.

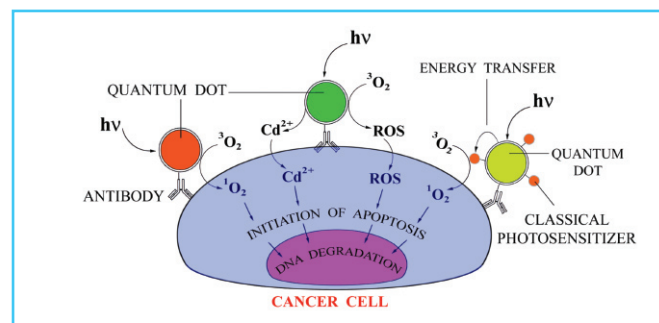


Fig. Potential mechanisms for photosensitizing activity of QDs in viable cancer cells.

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