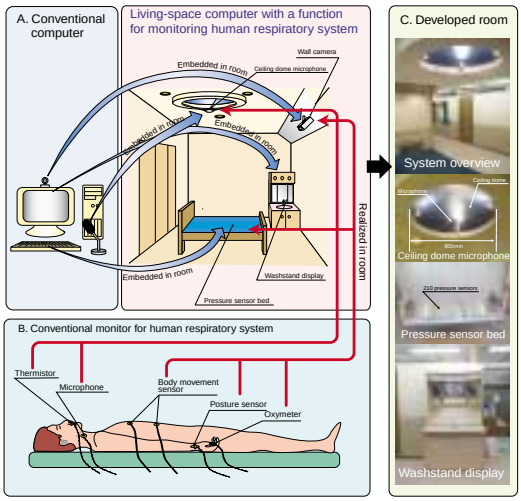
Daily-Living-Space Computer with a Model of Human Functions

In Digital Human Laboratory, we are developing a daily-living-space computer with a model of human functions. In our system, the daily living space is sensorized so that the living space can digitize daily activities of inhabitants without any explicit human operation. Moreover, using a digital human model, the system can monitor physiological conditions of him or her without any contact-type sensors. This system is useful for supporting healthcare at home.



Daily-Living-Space computer with a model of human functions

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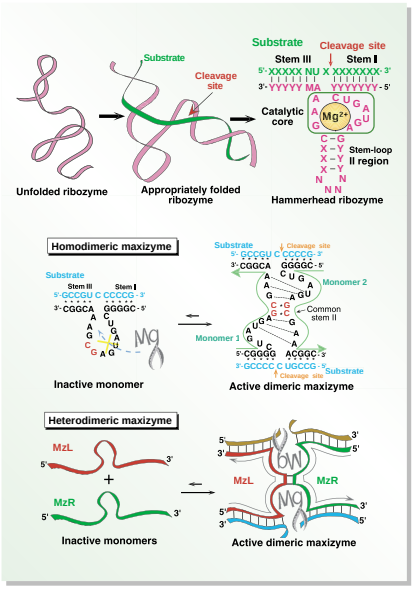
Gene Discovery by Nobel Hybrid-Ribozymes

Appropriate folding of catalytic RNA is the prerequisite for the effective catalysis. We succeeded in controlling the structure of a ribozyme at will and created an allosterically controllable ribozyme, the maxizyme. The maxizymes work not only in vitro, but also in vivo including mice indicating the potential utility of this novel class of ribozyme as a gene-inactivating agent with a biosensor function. Moreover, we have also created novel hybrid enzymes that couple the site specific cleavage activity of the hammerhead ribozyme with the unwinding activity of endogenous RNA helicases. This ribozyme technology represents a powerful tool for the development of gene-inactivating reagents of both therapeutic and general importance and for the rapid identification of functional genes in the post-genome era.



Creation of dimeric maxizymes (center, bottom) from a catalytic RNA, ribozyme (top)

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