

FUNDING PROGRAM FOR NEXT GENERATION WORLD-LEADING RESEARCHERS

Project Title: Development of the evaluation system for cardiovascular effects of the environmental stresses

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1. Background of research

One of the aims on the medical sciences at the present time in Japan is to extend the healthy and productive human lifespan, that is to increase the number of the “healthy elderly people”. The decline or loss of activities of daily living (ADL) in the elderly people is almost due to the vascular diseases. Therefore, the immediate developments of the prevention or treatment system for vascular diseases including cardiovascular and cerebrovascular diseases are needed.

2. Research objectives

This project researches the damages of the hearts or blood vessels by the “environmental stress” including environmental chemicals or radiation and investigates the mechanism explaining pathogenesis of cardiovascular damages. Moreover, the reciprocal action of environmental-genetic factors for the pathogenesis of cardiovascular diseases is investigated in the cohort of Mie prefecture. In the present project, we identify the effective markers to diagnose the cardiovascular diseases at the early stage and then establish the evaluation and prevention systems for the cardiovascular diseases.

3. Research characteristics (incl. originality and creativity)

We have already established a cohort in Mie prefecture. The investigation to the effects of environmental stresses on the cardiovascular systems from various angles using human studies, animal studies, and studies using culture cells is one of the characteristics of this project. In recent years, it has been reported that regeneration system exists in the hearts. We turn our attention to the stem cell and regeneration of the cardiovascular system and investigate the effects of environmental stresses on the cardiac stem cells.

4. Anticipated effects and future applications of research

It is important to investigate scientifically the effects of environmental factors on the human because the health effects of environmental stresses may influence the health of next generation. This project contributes not only to development of the evaluation system for cardiovascular effects of the environmental stresses but also to establishment of the prevention or treatment system for cardiovascular diseases, leading to improvement of medical expense management and the realization of an aging society full of vitality.