Creation of innovative food production technologies in response to environmental changes in the future

Innovative cultured meat production system using algae and animal cells

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Summary :

The sustainability of meat production due to future environmental change is seriously obscured. Therefore, it is inevitable to create a new meat production system to replace livestock rearing using grain which becomes livestock feed. In this project, grain cultivation will be replaced with algae cultivation and livestock rearing will be replaced with animal cell cultivation and three-dimensional muscle tissue construction. It is essential to prepare muscle tissue that is sufficient as nutrient, delicious, and inexpensive. Nutrients extracted from algae and growth-related molecules secreted from combination of some animal cells are used for myoblast expansion without conventional culture media containing expensive serum / growth factors. Then, the expanded cells are matured and thickened to be three-dimensional muscle tissue by using novel tissue engineering technologies. These will demonstrate the innovative concept of "making meat by cell culture and tissue engineering". The cultured meat production system using algae and animal cells should contribute to the elimination of global food shortage and the sustainable supply of healthy and tasty meat.