

In vitro tissue models using microscale technologies for drug development

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In drug development process, a lot of drug candidates are failed during clinical test because of low efficacy, adverse effects, etc. Low reliability of preclinical tests using animal models or cultured cells is seen as one of the reasons of this failure. Thus, new methods and systems of preclinical tests which more accurately represent human physiological response is required.

We have developed *in vitro* tissue models by using microscale technologies aiming to use as new preclinical tests. In this presentation, we will introduce our *in vitro* tissue models as follows.

1. *In vitro* skeletal muscle tissue models. Contraction is one of the key functional features of skeletal muscle cells/tissues. We have developed several systems to quantify their contraction by using microscale technologies.
2. *In vitro* cancer models. Metastasis leads to low survival rate of patients. We developed 3-dimensional *in vitro* co-culture models of cancer cells and vascular endothelial cells by using our original magnetic cell patterning method. This model might be used for developing anti-metastatic drugs.