

Cardiovascular Safety Tests for the Promotion of Drug Development in Academia

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Cardiac toxicity is the leading cause of attrition during drug development. International Consortium on Harmonization provides the guideline for evaluating the potential arrhythmogenicity of drug candidates based on *in vitro* assessment of I_{Kr} inhibition by hERG test and *in vivo* measurement of QT interval.

The purpose of this study is to support the drug development in Japanese non-profit research institutions through undertaking the cardiac safety tests that would be laborious to perform in each institution. For that purpose, we perform hERG test and *in vivo* QT assay using canines to assess the cardiovascular safety of drug candidates those developed in Japanese non-profit research institutions. Another purpose of this study is to develop the next-generation system to more accurately predict cardiovascular toxicity of drug candidates. For that purpose, we establish a novel *in vitro* assay using human induced pluripotent stem cell-derived cardiomyocytes to assess the toxicity that impair cardiac function. We also characterize *microminipigs* as the novel animal model for assessing the cardiovascular safety of drug candidates in the future world. We believe that our research would improve the quality and the safety of the drugs candidates those are developed in Japanese non-profit research institutions.