Title of Research:

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Development of mice visualizing "Metabolic reprograming" at early phase of tumorigenesis, and its application to caricinogenicity tests

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Summary of Research:

Increased flux of glycolysis is a common feature of tumors, and known as Warburg effect. Together with alterations of other pathways, it mediates metabolic reprograming, now recognized as a core hallmark of cancer. One of key molecules in such a reprograming is pyruvate kinase M (PKM) that exists as two isoforms, M1 and M2, generated by alternative splicing. Expression of these isoforms switches from M1- to M2-type during tumorigenesis so that normal differentiated and proliferating/tumor cells express M1 and M2, respectively. This PKM-switch (from M1 to M2) is shown to be essential to organize Warburg effect. We have developed a reporter-gene system, which enable us to visualize PKM-switch by cell-autonomous fluorescence derived from the reporter gene. In this study, the reporter-gene was introduced into mouse genome by BAC-transgenic method. We established three independent lines of transgenic mice harboring the reporter gene. These transgenic mice are expected to visualize "Metabolic reprograming" at early phase of tumorigenesis, and to be applied to caricinogenicity tests.

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Topics:

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