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 cancer cells, 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. In this study, a reporter-gene system, enabling us to visualize PKM-switch by cell-autonomous fluorescence, was developed. Using the reporter-gene, we generated transgenic mice, and examined those for lung tumor model. Unfortunately, any fluorescent signals except for auto-fluorescence were detected in tissues examined including tumor of the Tg-mice. More improvement(s) of the Tg-construct and/or alternative methods for introducing it into the mouse genome might be needed.

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Timeline:

1 Nov. 2012 – 28 Feb. 2015

Topics:

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Publications: