Disrupting tumor onset and growth via in vivo cell tagging

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Keywords: Cell labeling; Cancer; Gold catalysis

This study presents the early framework of a methodology for selectively tagging cells in vivo with chemical moieties that can elicit a therapeutic response. Using glycosylated artificial metalloenzyme (GArM)-based protein labeling, this study reports two separate functional strategies.

In one approach, early tumor onset can be suppressed by tagging cancer cells in living mice with an integrin-blocking cRGD moiety, thereby disrupting cell adhesion onto the extracellular matrix (ECM). In another approach, tumor growth in mice can be reduced by tagging with a cytotoxic doxorubicin moiety. Subsequent cell death occurs following internalization and drug release. Overall, experiments have shown that mouse populations receiving the mixture of SeCT labeling reagents exhibited a significant delay/reduction in tumor onset and growth compared to controls. Highlighting the adaptability for GArM-based cell labeling, this work represents a foundational step for further development of SeCT therapy and its potential therapeutic applications.