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Précis: Isogenic cell lines can be used to systematically map direct relationships between genetic alterations and drug responses and identify actionable interactions.
Aberrant Glycosylation Promotes Lung Cancer Metastasis through Adhesion to Galectins in the Metastatic Niche

N.E. Reticker-Flynn and S.N. Bhat

Précis: Changes in glycosyltransferase activity in lung cancer cells enhance surface presentation of the carbohydrate ligand T-antigen and potentiate metastasis via increased binding to tumor-mobilized galectin-3+ leukocytes.

See commentary, p. 109

NOTCH Decoys That Selectively Block DLL/NOTCH or JAG/NOTCH Disrupt Angiogenesis by Unique Mechanisms to Inhibit Tumor Growth


Précis: Specific inhibition of JAG- or DLL-mediated NOTCH signaling using synthetic NOTCH1 decoys inhibits tumor angiogenesis via distinct mechanisms.

See commentary, p. 112

Promotion of Colorectal Cancer Invasion and Metastasis through Activation of NOTCH–DAB1–ABL–RHOGEF Protein TRIO

M. Sonoshita, Y. Itatani, K. Sakima, T. Terashima, Y. Katsuyama, Y. Sakai, and M. M. Taketo

Précis: NOTCH–DAB1 signaling promotes colon cancer cell invasion and progression by stimulating ABL-mediated phosphorylation of the RHOGEF TRIO at tyrosine residue 2681.

See commentary, p. 115

Reticker-Flynn and Bhatia found that tumor-derived IL6 induced CD11b+ galectin-3+ leukocyte mobilization from the bone marrow in a mouse model of lung adenocarcinoma. Metastatic cell lines and human non–small cell lung cancer samples exhibited increased surface presentation of the galectin-3 ligand, Thomsen-Friedenreich Antigen (T-Antigen). Elevated T-Antigen surface presentation was mediated by altered expression of the glycosyltransferases C2GnT2 and St6GalNAc4, which prevented T-Antigen glycan elongation. Restoration of T-Antigen glycan chain elongation decreased T-Antigen presentation, reduced tumor-cell galectin-3 binding, and inhibited experimental metastases in vivo. These results indicate that aberrant glycosyltransferase activities play a critical role in the early metastatic niche to promote metastatic progression of lung tumors. For details, please see the article by Reticker-Flynn and Bhatia on page 168.