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### RESEARCH BRIEF

Histone H3.3 Mutations Drive Pediatric Glioblastoma through Upregulation of MYCN .......... 512
Précis: Histone variant H3.3 glycine-34 mutations induce differential genome-wide histone H3 lysine 36 trimethylation and lead to upregulation of MYCN in the developing forebrain.
See commentary, p. 484

### RESEARCH ARTICLES

Relief of Feedback Inhibition of HER3 Transcription by RAF and MEK Inhibitors Attenuates Their Antitumor Effects in BRAF-Mutant Thyroid Carcinomas .......... 520
Précis: Lineage-specific HER3 upregulation and ligand-dependent HER2/HER3 activation confer resistance to MAPK pathway inhibitors in BRAF-mutant thyroid cancer cells.
See commentary, p. 487

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**Source:** Cancer Discovery, May 2013, Volume 3, Number 5
De-Repression of PDGFRβ Transcription Promotes Acquired Resistance to EGFR Tyrosine Kinase Inhibitors in Glioblastoma Patients .......................... 534
Précis: Transcriptional derepression of PDGFRβ in response to EGFR inhibition renders EGFR-mutant glioblastomas dependent on PDGFRβ for survival.

Coordinate Direct Input of Both KRAS and IGF1 Receptor to Activation of PI3 Kinase in KRAS-Mutant Lung Cancer .......................... 548
M. Molina-Arcas, D.C. Hancock, C. Sheridan, M.S. Kumar, and J. Downward
Précis: KRAS-mutant NSCLC cells are selectively sensitive to inhibition of IGF1R, which is required for KRAS-mediated activation of PI3K signaling.
See commentary, p. 491

TYK2–STAT1–BCL2 Pathway Dependence in T-cell Acute Lymphoblastic Leukemia ............... 564
Précis: Activation of tyrosine kinase 2 (TYK2) by mutation or autocrine interleukin-10 signaling promotes T-ALL cell survival through activation of STAT1 and upregulation of BCL2.
See commentary, p. 494

Bone Marrow–Derived Gr1+ Cells Can Generate a Metastasis-Resistant Microenvironment Via Induced Secretion of Thrombospondin-1 .......................... 578
Précis: Metastasis-incompetent tumors systemically reprogram bone marrow–derived myeloid cells in the premetastatic niche to produce TSP-1 to suppress metastatic outgrowth.

Montero-Conde and colleagues show that BRAF-mutant thyroid cancer cells are resistant to RAF and MAP/ERK (MEK) inhibitors. Reactivation of RAS signaling in these cells was associated with de-repression of HER3 transcription due to decreased binding of C-terminal binding protein 1 and 2 (CTBP1/CTBP2) to the HER3 promoter. RAF/MEK inhibition also triggered increased HER3 phosphorylation and activation of HER2/HER3 heterodimers specifically in BRAF-mutant thyroid cancer cells. This effect was dependent on autocrine production of the HER3 ligand neuregulin 1 in thyroid cancer cells, identifying a lineage-specific mechanism of MAPK inhibitor resistance. Treatment with lapatinib sensitized thyroid cancer cells to RAF/MEK blockade and inhibited the growth of murine thyroid tumors, suggesting that this combination may overcome resistance in patients with thyroid cancer. For details, please see the article by Montero-Conde and colleagues on page 520.