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IN THIS ISSUE
Highlighted research articles ......................... 239

NEWS IN BRIEF
Important news stories affecting the community ............... 242

NEWS IN DEPTH
Q&A: Rajeshwari Sridhara, Robert Temple on Trial Design ... 245
Going Global against Cervical Cancer ..................... 246

RESEARCH WATCH
Selected highlights of recent articles of exceptional significance from the cancer literature ............... 247

ONLINE
For more News and Research Watch, visit Cancer Discovery online at http://CDnews.aacrjournals.org.

IN THIS ISSUE

REVIEW
Fibroblast Growth Factor Receptor Inhibitors as a Cancer Treatment: From a Biologic Rationale to Medical Perspectives ............. 264
M.V. Dieci, M. Arnedos, F. Andre, and J.C. Soria

OUTLIER KINASE EXPRESSION BY RNA SEQUENCING AS TARGETS FOR PRECISION THERAPY

Mutant N-RAS Protects Colorectal Cancer Cells from Stress-Induced Apoptosis and Contributes to Cancer Development and Progression ............. 294
Précis: Activated NRAS triggers noncanonical MAPK signaling via RAF-1 and STAT3 to inhibit cell death and promote colorectal tumorigenesis in the context of inflammation.

Looking for the Outliers: Cancer Precision Medicine through Targeting Kinases with Extreme Expression ............... 252
S. Yegnasubramanian and A. Maitra
See article, p. 280

Targeting MYCN: A Good BET for Improving Neuroblastoma Therapy? ............... 255
R.W. Schnepp and J.M. Maris
See article, p. 308

Bcl-2 Inhibition or FBXW7 Mutation Sensitizes Solid Tumor Cells to HDAC Inhibition In Vitro but Could Prove Difficult to Validate in Patients ............... 258
C.R. Pickering and J.N. Myers
See article, p. 324

Aiming for the Outliers: Cancer Precision Medicine through Targeting Kinases with Extreme Expression ............... 252
S. Yegnasubramanian and A. Maitra
See article, p. 280

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Targeting MYCN in Neuroblastoma by BET Bromodomain Inhibition .......... 308
Précis: MYCN amplification is a predictor of BET bromodomain inhibitor sensitivity, providing a rationale for development of BET inhibitors in MYCN-amplified neuroblastoma.
See commentary, p. 255

Mcl-1 and FBW7 Control a Dominant Survival Pathway Underlying HDAC and Bcl-2 Inhibitor Synergy in Squamous Cell Carcinoma ............... 324
Précis: Tissue-specific BCL-2 family member expression in squamous cell carcinoma underlies resistance to HDAC and BCL-2 inhibitors and imparts sensitivity to combination therapy.
See commentary, p. 258

Elucidating Distinct Roles for NF1 in Melanomagenesis ................. 338
Précis: NF1 mutations prevent BRAF-induced senescence and promote melanoma growth via activation of PI3K and ERK signaling, conferring resistance to BRAF inhibitors.
See commentary, p. 260

A Genome-Scale RNA Interference Screen Implicates NF1 Loss in Resistance to RAF Inhibition .......... 350
Précis: BRAF-mutant melanoma cells lacking NF1 develop resistance to RAF and MEK blockade via sustained MAPK signaling but retain sensitivity to both ERK and irreversible RAF inhibitors.
See commentary, p. 260

Puissant and colleagues screened a compendium of cancer cell lines to identify those most sensitive to the bromodomain and extraterminal domain (BET) protein inhibitor JQ1. Neuroblastoma cell lines were among the most JQ1-sensitive cell lines, and MYCN amplification, which is commonly observed in high-risk neuroblastoma, was the feature most predictive of JQ1 sensitivity. JQ1 displaced the BET family member BRD4 from the MYCN promoter, leading to decreased expression of MYCN and MYCN target genes, and significantly prolonged survival in several MYCN-amplified neuroblastoma models. These findings thus implicate MYCN amplification as a genetic predictor of BET inhibitor sensitivity and provide support for the development of BET inhibitors in MYCN-amplified neuroblastoma. For details, please see the article by Puissant and colleagues on page 308.