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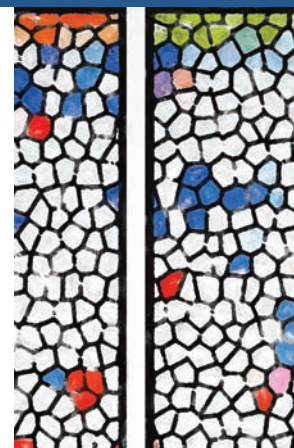
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Précis: Genetic patterns underlying resistance to Flt3-targeted therapies in AML reveal distinct drivers associated with relapse on type 1 versus type 2 inhibitors and link mutation emergence with clinical outcomes.
See commentary, p. 113

Ectopic Humanized Mesenchymal Niche in Mice Enables Robust Engraftment of Myelodysplastic Stem Cells

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S.A. Mian, A. Abarrategi, K.L. Kong, K. Rouault-Pierre, H. Wood, C.A. Oedekoven, A.E. Smith, A. Batsivari, L. Ariza-McNaughton, P. Johnson, T. Snoeks, G.J. Mufti, and D. Bonnet

Précis: Human bone marrow stromal niche engineering in mice supports long-term engraftment of primary patient MDS cells with preserved disease characteristics.



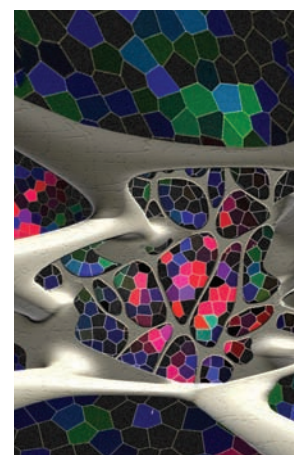
RESEARCH ARTICLES

A Therapeutic Strategy for Preferential Targeting of TET2-Mutant and TET Dioxygenase-Deficient Cells in Myeloid Neoplasms

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Y. Guan, A.D. Tiwari, J.G. Phillips, M. Hasipek, D.R. Grabowski, S. Pagliuca, P. Gopal, C.M. Kerr, V. Adema, T. Radivoyevitch, Y. Parker, D.J. Lindner, M. Meggendorfer, M. Abazeed, M.A. Sekeres, O.Y. Mian, T. Haferlach, J.P. Maciejewski, and B.K. Jha

Précis: 2HG accumulation from IDH1/2 mutation induces synthetic lethality in TET2-mutant cells by reducing TET activity below essentially required. A new TET inhibitor mimics 2HG and selectively restricts clonal evolution of TET2-mutant cells *in vitro* and *in vivo*.

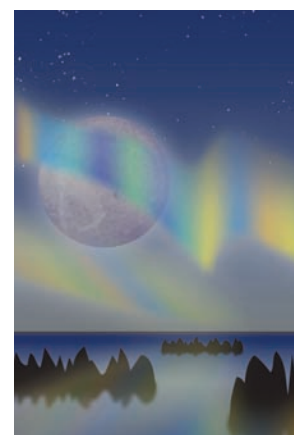


TFEB Links MYC Signaling to Epigenetic Control of Myeloid Differentiation and Acute Myeloid Leukemia

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S. Yun, N.D. Vincelette, X. Yu, G.W. Watson, M.R. Fernandez, C. Yang, T. Hitosugi, C.-H. Cheng, A.R. Freischel, L. Zhang, W. Li, H. Hou, F.X. Schaub, A.R. Vedder, L. Cen, K.L. McGraw, J. Moon, D.J. Murphy, A. Ballabio, S.H. Kaufmann, A.E. Berglund, and J.L. Cleveland

Précis: MYC directly inhibits expression of TFEB, which serves as a tumor suppressor in AML via promoting myeloid differentiation and cell death. TFEB induces IDH1/2 expression to establish myeloid epigenetic programs, and it is a druggable target in AML.
See commentary, p. 116





ON THE COVER TET dioxygenases initiate DNA demethylation and are commonly inactivated in myeloid neoplasms by somatic mutations or metabolically by 2-hydroxyglutarate (2HG) product of mutant IDH1/2 enzymes. In this issue, the team of Jha, Maciejewski, and colleagues shows that minimal TET activity is essential for neoplastic cell survival and underlies synthetic lethality of TET and IDH mutations. To prove the concept and harness it for therapy, the authors develop TETi76 as a mimetic of 2HG. TETi76 inhibits TET activity and mimics synthetic lethality of IDH mutation in TET-deficient cells while sparing normal hematopoiesis. TETi76 selectively restricts clonal expansion of TET2-mutant cancer cells in mouse xenografts. For details, please see the article on page 146.



BLOOD CANCER DISCOVERY

2 (2)

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