Comment on Ito et al, page 1499

The (miR)e of CTCL

Anjali Mishra1 and Ramiro Garzon1 ∗ THE OHIO STATE UNIVERSITY

In this issue of Blood, Ito et al demonstrate pathogenic implications of microRNA-150 (miR-150) repression in an aggressive form of cutaneous T-cell lymphoma (CTCL).1 Noncoding RNAs, such as microRNA, profoundly influence gene transcription and protein translation machinery to change hematopoietic cell fate in physiologic and pathologic conditions.

Among the hematopoietic cells, miR-150 is predominantly expressed in B, T, and natural killer cells through their development and maturation, except during the differentiation of naive T cells into the effector Th1 and Th2 cells.2,3 Importantly, miR-150–deficient mice lack lymphoid cell maturation and effector functions.2,3 In nonlymphoid lineages, miR-150 favors differentiation of megakaryocyte-erythrocyte progenitors to megakaryocytes at the expense of erythrocytes.5 In determining cell fate, miR-150 targets multiple downstream targets, including MYB, FLT3, CBL, EGR2, DKCI, AKT2, Myb and Notch3.6

While miR-150 functions as a tumor suppressor in acute leukemia and lymphoma, its role in altering the behavior of the malignant CTCL cells is largely unknown.6 Similar to data previously published by other groups,7,8 data in this study showed that miR-150 was significantly reduced in patients with advanced-stage CTCL who exhibited extensive nodal or visceral involvement. Ito et al1 report an interesting series of events initiated by miR-150 repression in CD4+ CTCL cells. By using CTCL cell lines, Ito et al identify chemokine receptor 6 (CCR6) as a novel target for miR-150, as evidenced by direct binding of miR-150 within the CCR6 regulatory region. Of note, CCR6+ cells migrate toward a chemokine ligand 20 (CCL20) gradient, and their activation by interleukin-22 (IL-22) causes cell proliferation and migration. Through comprehensive gain- and loss-of-function approaches, Ito et al show that miR-150 negatively regulates an IL-22–CCL20–CCR6 autocrine pathway in CTCL cells. These findings uncover a previously unknown miR-150–chemokine receptor pathway that may act widely to control metastatic potential of CTCL.

What determines whether malignant cells migrate to the skin is a riddle that has baffled scientists for long time. Since skin produces chemotactic signals and furthers our understanding of complex oncogenic pathways in T cells that can be extrapolated beyond CTCL.

REFERENCES

© 2014 by The American Society of Hematology

Comment on Rumi et al, page 1544, and on Rotunno et al, page 1552

Two faces of ET: CALR and JAK2

Mark P. Chao1,2 and Jason Gotlib2 ∗ INSTITUTE FOR STEM CELL BIOLOGY AND REGENERATIVE MEDICINE; 2STANFORD UNIVERSITY SCHOOL OF MEDICINE/STANFORD CANCER INSTITUTE

In this issue of Blood, Rumi et al and Rotunno et al demonstrate that essential thrombocythemia (ET) patients with calreticulin mutations exhibit lower leukocyte and hemoglobin values, higher platelet counts, and a lower thrombosis risk vs JAK2-mutated ET. Calreticulin-mutated ET appears to be a distinct entity with a more indolent course.1,2
The (miR)e of CTCL
Anjali Mishra and Ramiro Garzon

Updated information and services can be found at:
http://www.bloodjournal.org/content/123/10/1438.1.full.html
Articles on similar topics can be found in the following Blood collections
  Free Research Articles (4421 articles)

Information about reproducing this article in parts or in its entirety may be found online at:
http://www.bloodjournal.org/site/misc/rights.xhtml#repub_requests

Information about ordering reprints may be found online at:
http://www.bloodjournal.org/site/misc/rights.xhtml#reprints

Information about subscriptions and ASH membership may be found online at:
http://www.bloodjournal.org/site/subscriptions/index.xhtml