Tracking down the origin of leukemia relapse

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The cancer cells that reign during relapses of an aggressive human leukemia are different from those that dominated the original disease, according to a paper published online on April 4 in the *Journal of Experimental Medicine*.

By comparing the DNA of cancer cells taken at the time of diagnosis and relapse from patients with T cell acute lymphoblastic leukemia (T-ALL), Jean Soulier and co-workers found that the relapse cells arose from cells that were scarce at the time of diagnosis. The relapse cells had also picked up several new and dangerous mutations. Mimicking these mutations in cells isolated at diagnosis rendered them more cancerous after injection into immune-depleted mice.

Untouched cancer cells from diagnosis samples also caused leukemia when injected into mice. And once established, they bore a closer genetic resemblance to relapse cells than to their former selves, suggesting that the most aggressive cancer cells prevail in both mouse and man.

These findings suggest that tracking human leukemia development in immune-depleted mice might provide insight into the mechanisms underlying relapses of the human disease.

More information: Clappier, E., et al. 2011. J. Exp. Med. doi:10.1084/jem.20110105

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