

## Discovery of Mer protein in leukemia cells' nuclei may be new, druggable target

March 13 2012

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Since the mid-1990s, doctors have had the protein Mer in their sights – it coats the outside of cancer cells, transmitting signals inside the cells that aid their uncontrolled growth.

A University of Colorado Cancer Center study, recently published in the journal *PLoS ONE*, found another home for Mer – inside cancer cells' nuclei – and perhaps another role for this [protein](#) that can point the way to novel, targeted treatments.

"We've known that leukemic B and [T cells](#) have a lot of Mer on their surface, while normal lymphocytes have none, and that this protein promotes cancer cell survival," says Justine Migdall, MD/PhD candidate working in the lab of Douglas Graham, MD, PhD, CU Cancer Center investigator and associate professor of pediatrics and immunology at the University of Colorado School of Medicine.

"But signaling from the cell surface may only be part of how Mer promotes leukemia. Our recent finding that Mer also resides in the [nucleus](#) suggests there may be additional ways that Mer is promoting cancer from within the cell," he says.

The question remains, What is Mer doing in the nucleus?

Migdall and Graham think it's likely that Mer in the nucleus may influence "gene expression" – helping to decide which parts of the cells' DNA are printed or expressed into proteins. If Mer is, in fact, altering

genes within cells, it may be one way in which healthy cells become cancerous – with the wrong genes expressed, a good cell may go bad. Or perhaps Mer in the nucleus may help existing [cancer cells](#) survive and thrive despite chemotherapy treatment, as is commonly the case in patients who relapse.

"This finding is especially exciting within the realm of drug development, which is currently focused on inhibiting Mer signaling," Migdall says. "Mer in the nucleus may offer another explanation of how Mer promotes cancer and thus may prove to be another druggable target."

A second use of this discovery may be in prognosis – Migdall and Graham hope to discover if the presence of MER in the nuclei of leukemia [cells](#) predicts a more aggressive form of the disease. The answer may help doctors deliver more accurate information as well as accurate treatments.

"If we truly have two distinct mechanisms through which Mer acts – cancer cell signaling and regulation of gene expression within the nucleus – then we would have additional ways to target this cancer-causing agent," Graham says.

Provided by University of Colorado Denver

Citation: Discovery of Mer protein in leukemia cells' nuclei may be new, druggable target (2012, March 13) retrieved 23 April 2024 from <https://medicalxpress.com/news/2012-03-discovery-mer-protein-leukemia-cells.html>

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