# New study identifies new potential approaches to treat myelofibrosis

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(Medical Xpress) -- A new study conducted by a team of researchers at Boston University School of Medicine (BUSM) sheds light on a possible new approach to treat the bone marrow disease known as myelofibrosis by inhibiting an enzyme that connects extracellular fibers. The study, published online in the Journal of Biological Chemistry, was conducted under the direction of Katya Ravid, PhD, professor of medicine and biochemistry and director of the Evans Center for Interdisciplinary Biomedical Research at BUSM.

Myelofibroisis, which currently affects between 16,000 and 18,500 Americans, occurs when bone marrow is replaced by scar tissue, resulting in a disruption in blood cell production.

Blood cells originate from precursor stem cells, which typically reside in the bone marrow. Red and white blood cells are categorized as cells with a myeloid lineage, which also includes megakaryocytic cells that give rise to blood-clotting platelets. An excess proliferation of myeloid cells causes a surplus production of fibers outside of the cell, which forms a dense matrix within the bone marrow that disrupts the formation of these blood cells.

Previous research has shown that the enzyme lysyl oxidase links and stabilizes the extracellular fibers, but as of yet, a treatment aimed at inhibiting the formation of these fibers has not been successful. Ravid's team demonstrated that inhibiting that enzyme using pharmacologic agents resulted in a significant decrease in the burden of myelofibrosis.

The team's investigation, which used a mouse model with a dense matrix, showed that while the megakaryotic cells that proliferate express high levels of lysyl oxidase, the normal, mature megakaryotic cells express scarce levels of the enzyme. The group also determined that lysyl oxidase boosts the proliferation of these cells, and also identified the mechanism that causes that to happen.

"This study uncovers a potential new approach aimed at controlling and treating myelofibrosis," said senior author Ravid. "This discovery will allow additional research in the field of leukemia to follow a new avenue with the potential of finding new treatments against the disease."

Provided by Boston University Medical Center