

Lab identifies new role for factor critical to transcription

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The Stowers Institute's Shilatifard Lab has identified a new role for the elongation factor ELL in gene transcription by RNA polymerase II (Pol II) — the enzyme that synthesizes messenger RNA to carry genetic information from DNA to the protein-synthesizing machinery of the cell.

Precise control of the timing and location of transcript elongation by Pol II is essential for development. In a paper published online in the Early Edition of the *Proceedings of the National Academy of Sciences* (PNAS), the team found that ELL plays a fundamental role in the regulation of gene expression by causing temporary interruptions of the action of Pol II in the fruit fly (*Drosophila melanogaster*).

"Biological mechanisms such as the 'pausing' of Pol II at nearby promoters have been found at many regulated genes," explained Ali Shilatifard, Ph.D., Investigator. "In this study, we wanted to determine whether the elongation factor ELL is required for the regulation of the temporary interruptions of Pol II transcription in a living organism."

"ELL is found in translocation with the MLL gene in childhood leukemia," said Edwin Smith, Ph.D., Research Scientist in the Shilatifard Lab. "We know very little about the role of these factors in the pathogenesis of leukemia and, therefore, understanding the molecular basis of ELL function will be instrumental for future studies aimed at developing targeted therapeutics for the treatment of translocation-based leukemia."

The Shilatifard Lab will continue to work with the reagents developed in this study to learn more about the molecular properties of ELL in the fruit fly in the hope of elucidating the role of ELL in human disease.

Source: Stowers Institute for Medical Research

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