

## STUDIES OF A HUMAN TRANSPOSABLE ELEMENT

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Long Interspersed Element-1 (LINE-1 or L1) sequences represent an abundant class of non-long terminal repeat (also known as poly (A)) retrotransposons that occupy approximately one-fifth of the mass of the human genome<sup>1,2</sup>. Most L1s are 'dead' and can be thought of as molecular fossils. However, it is estimated that the genome of an average individual contains roughly 80-100 'active' L1s that are capable of retrotransposing to new genomic locations by a "copy and paste" mechanism termed target-site primed reverse transcription<sup>2,3</sup>. Indeed, L1-mediated processes continue to impact human genome evolution, and *de novo* L1 retrotransposition events can disrupt gene function, leading to disease<sup>2</sup>. During the past eleven years, my laboratory has developed and/or exploited genetic, biochemical, and modern genomic methodologies to gain insight into the molecular mechanism of L1 retrotransposition. Our collaborators and we also have identified potential mechanisms that may serve to protect the host genome from unabated L1 and/or L1-mediated retrotransposition events<sup>4,5</sup>. In this presentation, I will provide a brief background about human L1 biology, introduce the experimental systems my laboratory uses to study L1 retrotransposition, and then will present unpublished data, which suggest that retrotransposition indicator cassettes delivered by a variety of engineered LINE constructs are subject to epigenetic silencing either during or immediately after their integration in certain human embryonic carcinoma cell lines.

### Representative (but not exhaustive) References

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