**TITLE:**  Blocks of tightly coupled DNA methylation in human stem cells and cancers.

**AUTHORS**:  Shicheng Guo\*, Dinh Diep\*, Nongluk Plongthongkum\*, Ho-Lim Fung, Kang Zhang, Kun Zhang.

Some key points:

\*Blocks of tightly coupled DNA methylation are widely present in the human genome.  They are highly enriched in known functional elements, including enhancers and VMRs.

\*Based on a quantitative metric, called Methylation Haplotype Load (MHL), tissue-specific Methylation Haplotype Blocks (MHBs) were identified.

\*Analysis of germ-layer specific MHBs reveals two distinct mechanisms for developmental fate commitment.

\* A set of tissue-specific MHBs were used to trace tumor tissue of origin from circulating plasma DNA. Low level of cancer-specific methylation haplotypes were also detectable in ctDNA.

**KEYWORDS:** Tightly coupled DNA methylation; methylation haplotypes; tumor liquid biopsies; tumor tissue of origin