GENOME RESEARCH
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Research

(continued)

Methods

Resource

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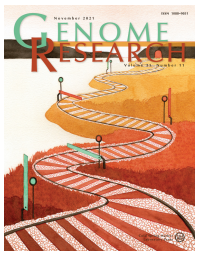

Cover Cell-free DNA in plasma consists of fragments of DNA and has been used for noninvasive prenatal testing, cancer liquid biopsies, and transplantation monitoring. In this issue, Han et al. demonstrate the interrelationships between nucleases, cell-free DNA fragmentation, and DNA methylation, which are depicted in this artistic illustration. The railroad (representing DNA) enters a red tunnel (representing a blood vessel) in the distant mountain. The railroad has red and green sign posts, denoting methylated cytosines and unmethylated cytosines on the DNA, respectively. Barriers of different colors are different nucleases, preferring to cleave (down position) or not cleave (up position) the DNA. DNASE1 (red barriers) prefers to cleave at unmethylated cytosines, while DNASE1L3 (green barriers) prefers to cleave at methylated cytosines. Thus, nuclease-mediated cell-free DNA fragmentation is informed by underlying DNA methylation. (Cover art using watercolor and colored pencils on paper by Carmen Ng [https://www.carmen-ng.com/], based on a concept from Dennis Lo. [For details, see Han et al., pp. 2008–2021.])