

NATURE REVIEWS

GENETICS ADVANCE ONLINE PUBLICATION
<http://dx.doi.org/10.1038/nrg.2016.106>

Epigenetic inheritance of acquired traits through sperm RNAs and sperm RNA modifications.

Qi Chen, Wei Yan and Enkui Duan

Abstract

Once deemed heretical, emerging evidence now supports the notion that the inheritance of acquired characteristics can occur through ancestral exposures or experiences and that certain paternally acquired traits can be ‘memorized’ in the sperm as epigenetic information. These arch for epigenetic factors in mammalian sperm that transmit acquired phenotypes has recently focused on RNAs and, more recently, RNA modifications. Here, we review in sights that have been gained from studying sperm RNAs and RNA modifications, and their roles in influencing offspring phenotypes. We discuss the possible mechanisms by which sperm become acquisitive following environmental–somatic–germ line interactions, and how they transmit paternally acquired phenotypes by shaping early embryonic development.