

Review

Artificial intelligence and machine learning in cell-free-DNA-based diagnostics

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1^{OA}

Research

Post-transcriptional cross- and auto-regulation buffer expression of the human RNA helicases DDX3X and DDX3Y

Shruthi Rengarajan, Jason Derks, Daniel W. Bellott, Nikolai Slavov, and David C. Page

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Analysis of a cell-free DNA-based cancer screening cohort links fragmentomic profiles, nuclease levels, and plasma DNA concentrations

Yasine Malki, Guannan Kang, W.K. Jacky Lam, Qing Zhou, Suk Hang Cheng, Peter P.H. Cheung, Jinyue Bai, Ming Lok Chan, Chui Ting Lee, Wenlei Peng, Yiqiong Zhang, Wanxia Gai, Winsome W.S. Wong, Mary-Jane L. Ma, Wenshuo Li, Xinzhou Xu, Zhuoran Gao, Irene O.L. Tse, Huimin Shang, L.Y. Lois Choy, Peiyong Jiang, K.C. Allen Chan, and Y.M. Dennis Lo

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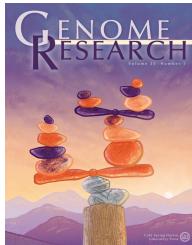
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Yujie Chen, Yiran Hou, Qinglin Zeng, Irene Wang, Meiru Shang, Kwangdeok Shin, Christopher Hemauer, Xiaoyun Xing, Junsu Kang, Guoyan Zhao, and Ting Wang

^{OA}Open Access paper



Cover The human *DDX3X* and *DDX3Y* genes on Chr X and Chr Y, respectively, encode RNA helicases critical for translation and other cellular processes. In this issue, it is shown that *DDX3X* and *DDX3Y* are negatively, post-transcriptionally cross-regulated in 46,XY cells, and that *DDX3X* is negatively, post-transcriptionally auto-regulated in 46,XX cells. This means that perturbations to one allele (of *DDX3X* or *DDX3Y*) are buffered by upregulation of the other allele, making this the first instance of an X-Y gene pair with cross-regulatory capabilities. The cover depicts this intricate buffering of *DDX3X* and *DDX3Y* dosage as orange and purple rocks balanced on beams (Chr X and Chr Y, respectively). This dynamic system rests on a representation of the ancestral *DDX3X* ortholog (in gray), the autosomal precursor from which these human X and Y genes evolved. (Cover illustration by Caitlin Rausch, <https://www.warblercreative.work/>. [For details, see Rengarajan et al., pp. 20–30.]