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tRNA-derived small non-coding RNAs in human disease

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## Abstract

Besides attending protein synthesis, transfer RNA (tRNA) is an important regulatory non-coding RNA (ncRNA) that participates in various cellular processes, including cellular metabolism and cell death. Fragments generated from pre- or mature tRNAs by specific endonucleases cleavage (tRNA-derived small non-coding RNA [tsncRNAs]), rather than random degradation products, are newly defined functional small non-coding RNAs (sncRNAs). They can be regulated in bacteria, yeast, plants and animals to respond to stress conditions, resulting in regulation of gene expressions at both transcriptional and post-transcriptional level. Increasing evidence showed that the dysregulation of a series of tsncRNAs is associated with several types of human disease. In this review, we summarize the diversity and biogenesis of tsncRNAs in mammals and highlight the functions and mechanisms of different sub-classes of tsncRNAs in human disease.

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