



Endogenized viral sequences in mammals

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Highlights

Endogenous retroviruses (ERVs) make up 25% of the genome of mammals yet sequenced.

Different ERVs are involved in placenta formation in different mammalian lineages.

ERVs can mediate resistance to closely related exogenous viruses.

ERVs modulate the innate immune system and help maintain pluripotency.

Studies on the role of ERVs in adaptive immunity and somatic mosaicism are needed.

Reverse-transcribed RNA molecules compose a significant portion of the human genome. Many of these RNA molecules were retrovirus genomes either infecting germline cells or having done so in a previous generation but retaining transcriptional activity. This mechanism itself accounts for a quarter of the genomic sequence information of mammals for which there is data. We understand relatively little about the causes and consequences of retroviral endogenization. This review highlights functions ascribed to sequences of viral origin endogenized into mammalian genomes and suggests some of the most pressing questions raised by these observations.

