

EXTRA BLOOD IN PREGNANCY

Background.

In the beginning were the genes; the rest (representing the vast majority of the human genome) was junk DNA. The human genome sequencing project was not considered important, it was better to concentrate on genes! Slowly the attitudes began to change. Then came the ENCODE project (2012), which showed that about 80% of the human genome does have a function, i.e., it is involved in gene regulation. For more on this, see Science's take at the time (1).

Duplicated transposable elements, thought of as 'junk DNA', are usually inactivated due to potential danger they can cause (disruption of genes...). However, evolution has a funny way of repurposing everything. Here is a latest example of this phenomenon.

During pregnancy, a growing baby requires a lot of extra blood—about 20% more. We know that this is partially achieved by hormonal action but that is not all.

A paper just published in *Science* (2) on October 24, 2024, fills the gap. When there is a need of an increased activity of hematopoietic stem cells as in pregnancy (or in cases of excessive bleeding), the hematopoietic machinery is activated by derepression of retrotransposons, including endogenous retroviruses and LINE elements.

Note. Under severe stress, some organisms actually let transposons loose as a “do or die” move—hoping that, alongside the harmful effects, something helpful might emerge. (Apologies for the anthropomorphism. That is the way evolution works).

1. <https://www.science.org/doi/full/10.1126/science.337.6099.1159>
2. https://www.science.org/content/article/pregnancy-wakes-viruslike-jumping-genes-help-make-extra-blood?utm_source=sfmc&utm_medium=email&utm_content=alert&utm_campaign=DailyLatestNews&et rid=195247204&et_cid=5408080