

Don't move!



A thorough new genomic analysis seems to disprove, once and for all, the long-standing hypothesis that introns originate from recent transpositions.

When introns first came to light back in the 1970s, it was believed that they arose in the genome as transposable elements. However, evidence to support this has not been forthcoming, even though differences in intron profiles between closely related species seem to indicate that some introns have appeared recently.

Fedorov and colleagues now report on their extensive hunt for sequence similarity as evidence of recent intron transposition. The authors searched *in silico* for homology between all known human introns of similar lengths: an impressive 210 million comparisons. Although 13,435 of these intron

pairs showed significant similarity, most resided in homologous genes or were located on the same contig, and so were excluded from the analysis as they were unlikely to have been related by transposition. Closer inspection of the remaining homologous pairs — only 118 from the entire human genome — showed either that their similarity was the result of low-level DNA repeats or that their flanking exonic sequences were also homologous. In either case, these were clearly not examples of introns acting as mobile elements. So, not a single human intron provided evidence of a recent transposition event in this study.

The team continued their search throughout the genomes of *Drosophila*, *Arabidopsis* and *Caenorhabditis elegans*, scouring

for homologous introns in non-homologous genes. Once again, no trace of an intron transposition event was found.

The authors conclude that new introns are not generated by transposition in these organisms — at least not in recent evolution — and that an alternative mechanism of intron gain must therefore be at play. The identification of examples of recently acquired introns might be the next step in understanding their origins.

Ruth Kirby
Executive Editor, Heredity

References and links

ORIGINAL RESEARCH PAPER Fedorov, A., Roy, S., Fedorova, L. & Gilbert, W. Mystery of intron gain. *Genome Res.* **13**, 2236–2241 (2003)

WEB SITES

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