MICRO SEQUENCES WITH RELEVANT FUNCTIONS

Although often overlooked, “micro” elements in the genome can hide crucial biological functions.

Microproteins: Very small proteins encoded by short open reading frames (<100 amino acids) were long dismissed as noise by gene-finding algorithms. Recent ribosome profiling and CRISPR screening, however, have revealed that many are translated and play essential roles in cell growth and regulation (1).

Short tandem repeats (STRs): These repetitive DNA elements, especially those with sequence variability, have been underestimated because short-read sequencing technologies fail to capture them reliably. With long-read sequencing, their impact on gene regulation and phenotypic diversity has become clear (2).

Together, these cases illustrate that the “micro” fraction of the genome, once ignored, can encode key functional elements with significant roles in physiology and disease.

1. https://www.cell.com/trends/genetics/fulltext/S0168-9525(24)00298-1?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS0168952524002981%3Fshowall%3Dtrue
2. https://genomebiology.biomedcentral.com/articles/10.1186/s13059-025-03754-9