Role and mechanisms of RNA G-quadruplexes in mRNA translation linked to cancer-relevant pathways

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Abstract

RNA G-quadruplexs (RG4s) are non-canonical four-stranded conformations formed by G-rich RNA sequences. Our work contributed to the notion that RG4s and their protein partners play a key role in the post-transcriptional regulation of gene expression of mRNAs encoding cancer-relevant proteins (Décorsiere (2011) Genes and Dev.; Herviou (2020) Nat. Comm.; Dumas (2021) TIBS). Here, I will provide an overview of the role and mechanisms of RG4s in mRNA translational regulation and present our results supporting a role for these structures in pathways linked to the cancer cell response to therapy.

Biography

Stefania Millevoi obtained her PhD in Biochemistry at the University of Rome (Italy) in 1993. She then moved to EMBL (Heidelberg, Germany) where she worked on the splicing of mRNAs encoding giant muscle proteins in the lab of A. Pastore/M. Saraste. Since 1998 she works in Toulouse (France), where she was first a Marie Curie/EMBO/FEBS post-doc fellow and then an INSERM research associate in Stephan Vagner’s lab on the role of RNA-binding proteins in coupling pre-mRNA splicing and polyadenylation. Since 2016 Stefania Millevoi leads the laboratory "RNA-binding proteins and the response to genotoxic stress in cancer".