

# Non-coding RNA

As a "non-coding" (understand "protein-non-coding") RNA (**ncRNA**), we denote all functional RNA molecules that are not translated into protein during the translation process. In general, they belong into two categories, distinguishable by size:

- Less than 200 nucleotides
- Longer than 200 nucleotides

## RNA less than 200 nucleotides

This group includes, for example:

- **Transfer RNA (tRNA)** — RNA involved in the translation process. We distinguish 49 types / families of tRNA. In the nuclear genome, there are 497 genes for tRNA (many of which are on chromosomes 1 and 6), transcribed by RNA polymerase III (another 22 tRNA is coded by the mitochondrial genome).
- **Ribosomal RNA (rRNA)** – forming part of ribosomes, there are 4 different types – 5S rRNA, 18S rRNA, 5,8S rRNA and 28S rRNA
- **Small Nuclear RNA (snRNA)** – is involved in the process of so-called splicing – processing of hnRNA, splitting of introns
- **Small nucleolar RNA (snoRNA)** – plays an important role in the synthesis and maturation (post-transcription chemical modification) of rRNA, snRNA and tRNA. A cluster of snoRNA in the 15q chromosome area leads to a manifestation of Prader-Willi syndrome.
- A number of regulatory types of RNA such as:
  - **microRNA** – involved in the regulation of gene expression – are complementary and bound to certain parts of mRNA, thus regulating their translation
  - Small interfering RNA (**siRNA**)
  - **piRNA** (piwi-interacting RNA) – RNA that interacts with PIWI family proteins.

 For more information see *RNA*.

## RNA longer than 200 nucleotides

This group bears the common name **long non-coding RNA (lncRNA)**. Probably the best-known representative of lncRNA is the **XIST** gene (*X Inactivation Specific Transcript*; Xq13.2; OMIM: 314670 (<https://omim.org/entry/314670>)) applied in the X-chromosome inactivation process.

## Links

### Related articles

- RNA

### Bibliography

- GOETZ, Petr, et al. *Vybrané kapitoly z lékařské biologie, díl 2*. 1. edition. Praha : Karolinum, 2002. 139 pp. ISBN 80-246-0320-9.