

Post-transcriptional Modifications

Posttranscriptional modifications occur after the successful transcription from DNA to RNA.

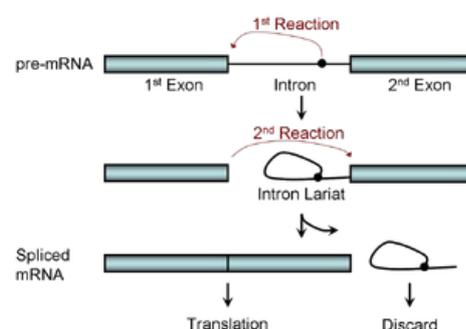
- RNA polymerase attaches in the promoter region to the working DNA strand
- An **RNA strand** is formed based on base complementarity in the **5' → 3'** direction
- In the case of *mRNA* a region approximately 100 bp long, lying before the beginning of the code for the sequence of amino acids in the polypeptide, is transcribed

Editing of the ends of the primary transcript

- **The primary transcript** is equipped with:
 - at the 5' end with a so-called *cap* formed by a special nucleotide (*7-methylguanosine triphosphate*)
 - at the 3' end by the so-called *polyadenylated end* (about *200 adenine residues*) ← this section is probably involved in the transport of mRNA from the nucleus to the cytoplasm

Splicing

- In most eukaryotic gene there are sections that do not contain information necessary for the function of the gene product – so-called **introns** (parts of the chain that do not code for any amino acids)
- On the other hand, sections carrying information for the function of the resulting product are called **exons**
- *By lasso-like twisting* (a loop containing an intron is created using snRNA) of the primary transcript, **introns are cut off** - so-called **splicing** → the coding sections (**exons**) are then enzymatically **linked** into the final chain and the cut-off introns are immediately degraded



Splicing.

Editing

- It is a process in which some nucleotides **are added** or chemically **changed to the mRNA**
- The number of introns is to some extent proportional to the size of the genome
- Introns can be divided into a number of different types:
 - **Classical introns**
 - are the most common
 - some base sequences occur regularly in these introns: the *GU sequence at the beginning* – the donor, and the *GA sequence at the end* – the acceptor
 - Some other types of introns are *specific to certain organisms* or cell *organelles*
 - eg *type II* occurs in mitochondrial and chloroplast DNA

Links

Related articles

- DNA
 - DNA structure
 - DNA replication
- Transcription
- Transcription Factors
- Translation
- Post-translational modifications
- RNA
 - mRNA

Source

ŠTEFÁNEK, Jiří. *stefajir : Medicine, diseases, studies at the 1st Faculty of Medicine, UK* [online]. [cit. 2009]. <<http://www.stefajir.cz>>.

Category:Biochemistry Category:Molecular Biology Category:Genetics