The mRNA binds to the specific site on the small subunit of the ribosome at its start codon. A tRNA with the complementary anticodon binds to the MRNA start codon. This tRNA carries the specific amino acid from the codon. Another tRNA with the anticodon and corresponding amino acid binds to the next codon on the mRNA. A maximum of two tRNAs can be bound at the same time. The first amino acid formed is transferred to the second amino acid formed on the second tRNA by the formation of a peptide bond. This is catalysed by the enzyme peptidyl transferase, which is a tRNA component of the ribosome. The ribosome then moves along the mRNA, releasing the first tRNA. The second tRNA becomes the first.

The process keeps repeating until a stop codon is reached and the polypeptide is released.

As the amino acids are joined together forming the primary structure of the protein, they fold into the secondary and tertiary structures. This folding and the bonds that are formed are determined by the sequence of amino acids in the primary structure. The protein may undergo further modifications at the Golgi apparatus before it is fully functional and ready to carry out the specific role for which it has been synthesised.

RNA molecules exist in three forms:

- mRNA is the coding strand made complementary to the template strand.
- tRNA carries amino acids to the ribosomes, where they are bonded together to from polypeptides.
- rRNA is found in the ribosomes.