molymod® miniDNA™

Protein Synthesis Kit
RNA – Ribonucleic Acid

RNA-24 Base Kit Art. Nr. AMRNA-24 p.s.

Contents:

6 (U) Uracil (light blue)
6 (A) Adenine (blue)

6 (G) Guanine (green)
6 (C) Cytosine (yellow)

12 (R) Ribose (claret)
12 (P) Phosphate (purple)

4 tRNA Transfer RNA part
4 Amino acid units

Assembly leaflet

Check the contents list and examine the parts before starting to assemble the model.

RNA – Ribonucleic Acid

RNA is a single-stranded molecule consisting of the 4 bases, C, G, A as in DNA and Uracil (U).

Uracil (U) replaces (T) Thymine present in DNA.

The other difference between RNA and DNA is the sugar group, which in RNA is RIBOSE compared with DEOXYRIBOSE in DNA.

Ribose has more oxygen in the form of an OH group. This is represented by the darker red used in the model piece of Ribose.

RNA is responsible for controlling the process of amino acid sequencing during the process of protein synthesis**.**

RNA is formed by the process known as **TRANSCRIPTION** whereby the DNA strand uncoils, opens up and unzips. Bases including Uracil present in the cycloplasm bind with the appropriate bases to form a single strand of RNA.

Note: To model the process of TRANSCRIPTION the user will require a 12 or 22 layer DNA kit. See www.molymod.com

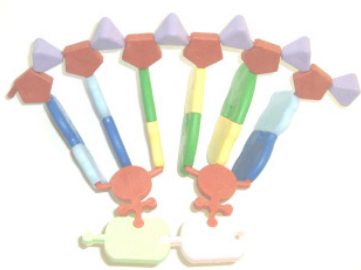
This chain of RNA detaches itself from the DNA to exist as a single-stranded molecule known as **MESSENGER mRNA,** and carries the **TRIPLET CODE.** This type of RNA consists of sequences of 3 bases known as CODONS.

The mRNA strand moves to the Ribosome, where it reacts with another type of RNA called **TRANSFER RNA (tRNA).**

Transfer RNA actually consists of about 90 bases and is often depicted in text books as “clover-shaped”, which is represented by the three-pronged unit. This kit uses the dark, red-coloured TRNA part attached to 3 active bases to represent TRNA.

TRNA carries with it an AMINO acid which is specific to the 3 bases shown, known as the ANTI-CODON.

During the process of **TRANSLATION, the mRNA** temporarily forms base-pairs between the Codons and Anticodons.



The attached amino acid forms a peptide link to an adjacent amino acid and subsequently a polypeptide chain of amino acids, i.e. a protein. This is known as protein synthesis.

It is possible from this kit to make all 64 different codons, however, not all at the same time.

For further AMINO acid parts contact your supplier, or, for information E-mail at: email@molymod.com

Manufactured and distributed by: SPIRING ENTERPRISES LTD.
Billingshurst, West Sussex, RH14 9EZ, England

COMMUNITY DESIGN
Registration No.000351325-0001 **www.molymod.com**