Specific sequence of DNA that codes for a functional protein or and RNA molecule (eg. mRNA, tRNA, rRNA) \* note that it is not just for making protein!!

= sugar (deoxy) + phosphate + base (ACTG) \* RNA = U for T

 [draw diagram]

 = bits of DNA that codes for something! These need to be kept and spliced together for translation to be useful

= these are cut out as ‘non-coding’ \*\*NOTE: you can splice out introns in different patterns giving different gene information to be translated!

KEY: pre-mRNA vs mature mRNA.

= in nucleus (euk) = DNA to mRNA (or some other form of RNA); then needs to be processed by splicing; \* free nucleotides floating in cell/nuc. Are used and added on by RNA polymerase! (DNA polymerase only used for DNA replication)

[diagrams] Note: template strand = ….

\*mature RNA exits nuc. Goes to ribosome (rRNA): tRNA brings one of the 20 aa. To ribosome. Correct order determined by anti-condo on tRNA matching codon on mRNA.

 >> redundancy in code = more than one codon per aa! So good = less mutation

aa chain = 1o structure (order)…. Folded into 2o by weak H bonds;

3o structure = more bonding between side chains; stronger bonds

4o = multiple separate aa chains joining together! – complex 3D shape!

Specificity = unique shape that is specific to some substrate that matches it

Active site - allosteric site –

Denature =

Examples [diagrams]:

Enzyme hormone + receptors antibodies

1.2 Structure and Function of Proteins

Gene

Nucleotide

Exons

Introns

Transcription

Translation

Levels of protein structure

3D Specificity

(structure – function)

ROUGH EXAMPLE

(not complete)

Proteins do many jobs in the cell, and this is largely due to their specific 3D shape. This shape has its origins in the actual DNA sequence – base order determines order of aa, which determines how the protein will fold and what shape it will end up having as a result. Various RNA molecules are required in the process of synthesising proteins. The structure of the protein has a direct impact on its function.

