

The Genetic control of protein synthesis

Why are proteins important? enzymes.

Why are genes important? Agents of natural selection.

What are proteins made of? polypeptide chains
amino acids - 20
folding defined sequence.

What are genes made of?
folding up. Myosin
don't fully know
nucleic acid.
exp DNA
Structure of DNA. 4 bases
2 chains.

Overall relationship - one gene - one enzyme.

many cases, exp in Neurospora. (also S. cerevisiae, etc)

i.e. cloning of ~~the~~ mutant which often one enzymatic step.

better way one cistron - one polypeptide chain.

- a.a order, folding, rate

detailed relationship

- Abnormal human haemoglobin

- one amino acid altered. Slide

β -sickle. S.C. - two chain two genes?

fetal haemoglobin $\alpha_2\gamma_2$.

The frequency hypothesis

note

Freese mapping of genes

many sites in one gene.

Φ (phage), Pan 2 etc in neurospora, his loci in *Salmonella*.
etc.

The sequence hypothesis

- System to test on.

Coding problem

diff. due to variation in composition.

Specific mutagenesis

aim to map gene by mutagenesis
and genetics.

hot spots.

high back mutation rates.

Neventhalen, Freese generalisation.

Acridines

Base Analogues

Explanation:

need for specific mutagen.

Site of protein synthesis

ribosomes 2S
~~aminoacyl~~

- composition

- distribution

flux experiments.

early steps

(activating enzymes, soluble RNA)

③

how does genetic message get to ribosomes : evidence; heterogeneity.

old picture ^{new} fixed ribosomes - picture: X or messenger RNA.

phage infected cell
(special example)

protein synthesis continues.

RNA - - - no net

removal.

Volkin

same composition.

Brenner

new RNA goes into old

ribosomes. ~~heterogeneous~~

two peaks in density centrifuge.

P^{32} goes into one (removal?)

S^{35} goes into same one. (was he not)

15 second work here.

new picture : ^{for all cells}

size of RNA?

stability of RNA?

what does the other RNA do?

Rate of protein synthesis exp. induced enzyme formation.
place of action. ~~1 hr~~

β -galactosidase gene into all for

Pauline
Jacob
provid
(+ Ribey)

suggest ~~was~~ unstable intermediate

and rate control or gene rather than

or ribosome.