

1st Revolution 1953-66
 2nd " " last 10 years.

Genes - DNA (RNA) Backbone - S
 Base pairs - S
 Pairing - S
 Double Helix - S

Amount of DNA

Gene - c. 1 kb of DNA - RNA looking copies
 - ~~structured~~
 - Code for protein: 20 amino acids for typical length -

GAA → glutamic acid - GAA
 OK reading - S

How many distinct peaks
 { Virus 3-60 → 100
 E. coli 2,000 - 3,000
 Man 100,000 ???

4.5 x 10²¹ nucleotides

Recombination DNA

can cut, ST join, & transfer to other organisms!
 multiply, and recombine. The problem: only one (how) genes per cell.

cut + join - restriction enzymes. - S

join up the two join up new combinations.

transfer: main method of viruses → chromosome.
 biological mechanism, system (plasmid) vs.

multiply: biological apparatus e.g. example E. coli: 109 in 10 hours.
 virus: < 1 1/2 hours.

109
 30 ~ 10 hours

sequencing: new rapid methods & several hundred in a few days.
 74 enzymes, intops, chaperones
 An example of X 174 Taylor - S
 sequencing genes in man. in a super.

256
 28

2 - ... (AVG) AVG - ...
 2 - ...
 2 - ...
 2 - ...

AVG of ...

single ...
 ...
 ...
 ...

...
 ...
 ...

not ...

$$6 \times 10^{23} = 18 \text{ g}$$

$$\frac{1}{3} \times 10^{23} = 1 \text{ g}$$

$$\frac{1}{60} \times 10^{23} = \dots$$

$$\approx 10^{21} = \dots$$

cademic : to how far we have a lot of

- : how far, products are produced - grain
- : just DNA.

Applications

Make new proteins, in food

- eg. human protein, in lactose, or in yeast.
- insulin, growth hormone, interferon.
- many more that to follow.

(Embryology) APPLIED GENES

new methods of diagnosis

if a "probe" is available

can detect how far eg. visible cell.

Some money for human genetic research - for genetic diagnosis.

(We don't know what we are for do -)

New organisms eg. purple bacteria.

Degraded using enzymes for industrial purposes.

u to make common chemicals, alcohol (energy) : structure

how much more enzyme, like coal.

Context : (family trees)

my B. P. 100 is 2
Hengana descent.
how far it is like appear to be
Spanish. ~~Etymology~~

Genetic anthropology.

mitochondrial DNA ~ (woman?)
(15kb)

Other techniques

monoclonal antibodies.

3D recognition.

known to produce how many antibodies.

as tools showed body, for synthesis - clonings.
products

with evidence, method.

Second kinds

new technology, when possible.

eg. new synthesis.