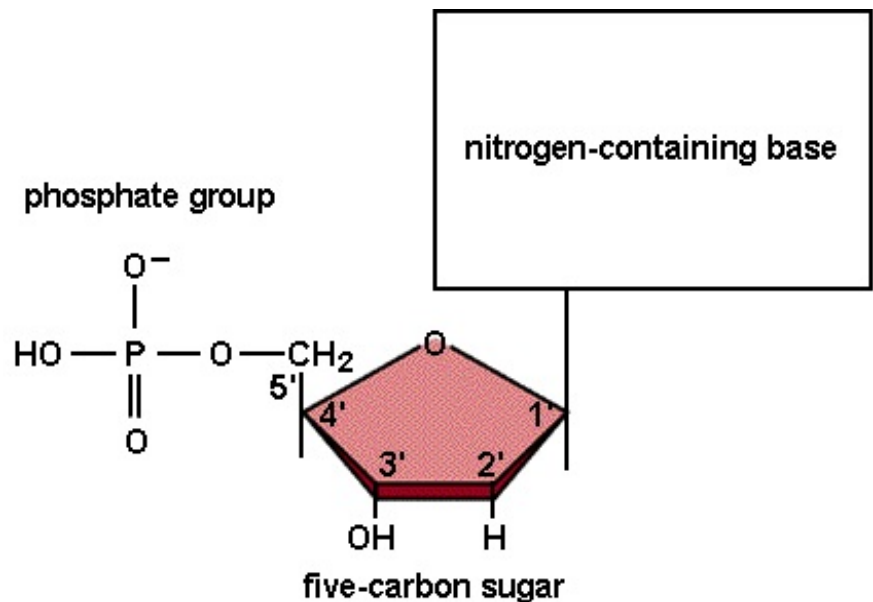


Discovering the Structure of Nucleic Acids...

(573-576)

By 1952, we knew...

- DNA was a long strand of “nucleotides”
- Each nucleotide had 3 parts



- DNA was the material of heredity

We *didn't* know how everything in a DNA molecule was connected. An international science race was on to determine DNA's structure.

Rosalind Franklin -

Used X rays passing through crystallized DNA to discover a pattern of nitrogen bases on the inside of the DNA molecule. She concluded the bases must be in the middle, and the sugars and phosphates must be on the outside.

Maurice Wilkins -

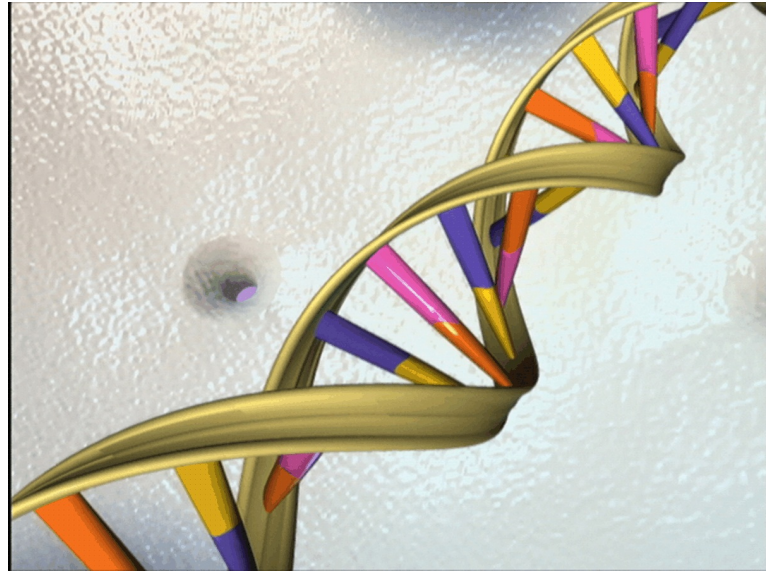
Similar work, concluding DNA has a helical structure...a spiral of some sort.

James Watson & Francis Crick...

“The Double Helix” model....1953

A “twisted ladder”
(double helix)
shape...

sugars and
phosphates make
up two side rails,



pairs of nitrogen bases make up the
middle rungs.

**Why is it the same width all the way
along ?**

A and G bases are “purines”, they are
bigger molecules. C and T are
pyrimidines, smaller molecules. One
purine and one pyrimidine make up

each pair of bases in the middle. This is called complementary base pairing.

“A” always pairs with “T” (in DNA) or “U” (in RNA) (2 H bonds). “C” always pairs with “G” (3 H bonds)

RNA...the other nucleic acid

- has a different sugar, ribose
- is only single stranded, so its $\frac{1}{2}$ the size of DNA
- there is no “thymine” base, it is substituted with “uracil”

All eukaryotic cells rely on DNA to code for all of their protein products. Prokaryotic cells may use DNA or RNA as their genetic code carrier.

(S a m e w i t h v i r u s e s)

