

# Struttura del DNA

Anna Onofri

# Watson e Crick

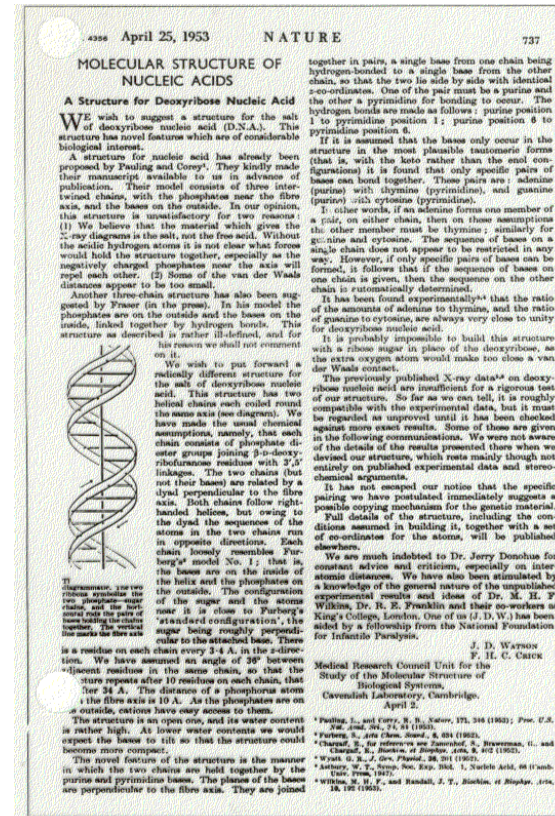
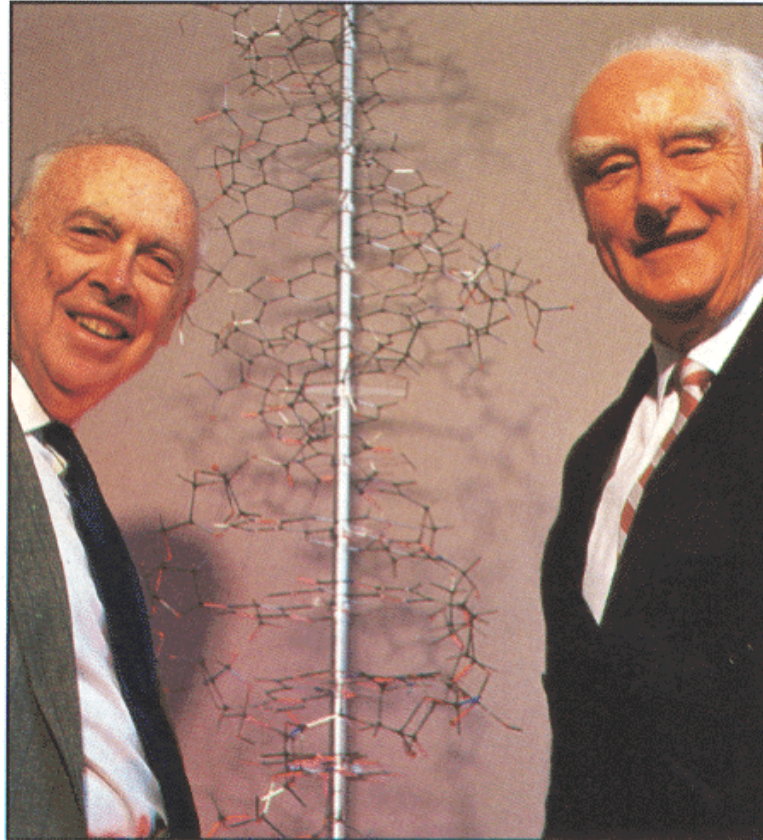


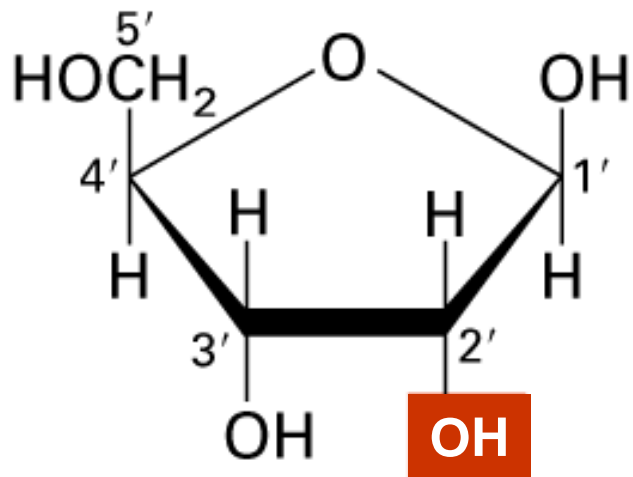
Figure 29.1 Watson and Crick's famous paper, in its entirety. (Watson, J. D., and Crick, F. H. C., 1953. *Nature* 171:737-738.)

# Composizione degli acidi nucleici

## **DNA (acido deossiribonucleico)**

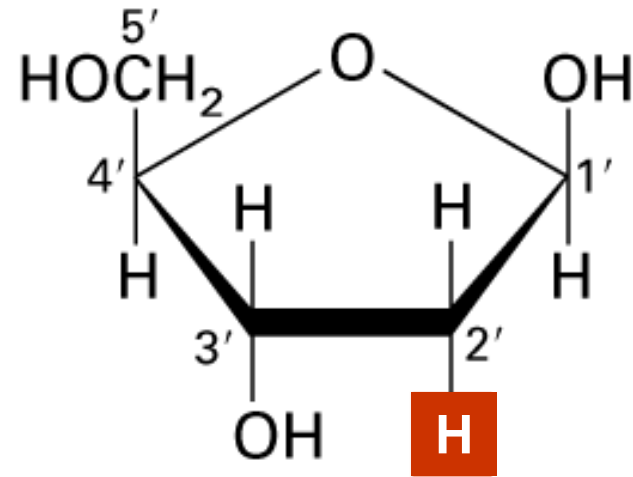
- 1) Acido fosforico**
- 2) Deossiribosio**
- 3) Basi azotate**
  - a) Adenina**
  - b) Guanina**
  - c) Citosina**
  - d) Timina**

# Zuccheri



ribosio

**RNA**

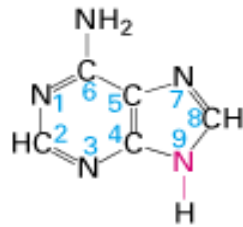


2-deossiribosio

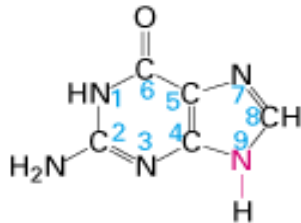
**DNA**

# Basi azotate

## PURINE

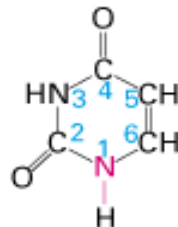


Adenina (A)

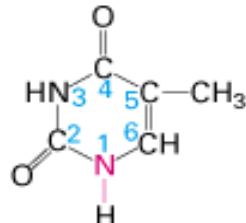


Guanina (G)

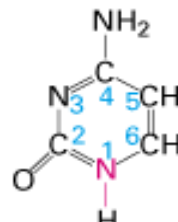
## PIRIMIDINE



Uracile (U)



Timina (T)



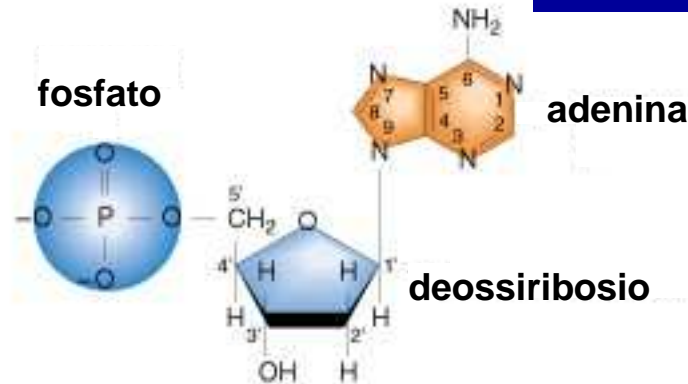
Citosina (C)

Il **DNA** è un polinucleotide che contiene **A, G, T e C**

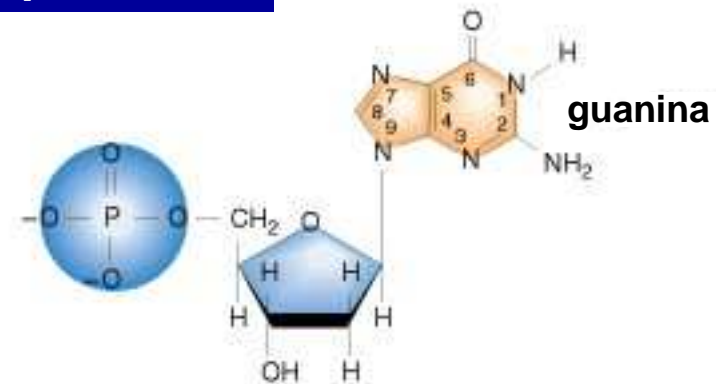
L' **RNA** è un polinucleotide che contiene **A, G, U e C**

# Nucleotidi

## Nucleotidi purinici

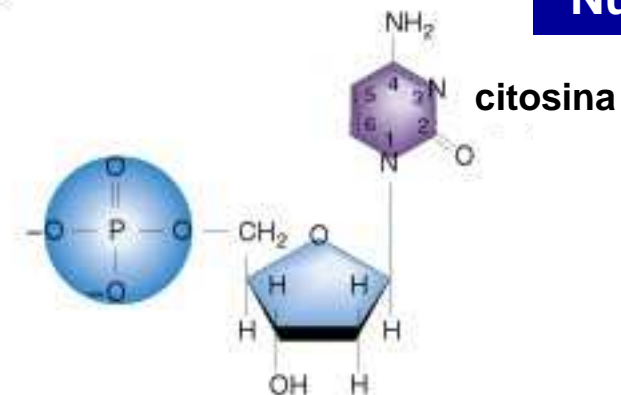


Deossiadenosina 5'-monofosfato (dAMP)

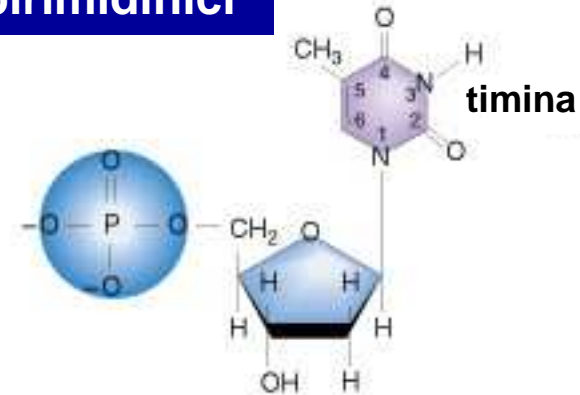


Deossiguanina 5'-monofosfato (dGMP)

## Nucleotidi pirimidinici

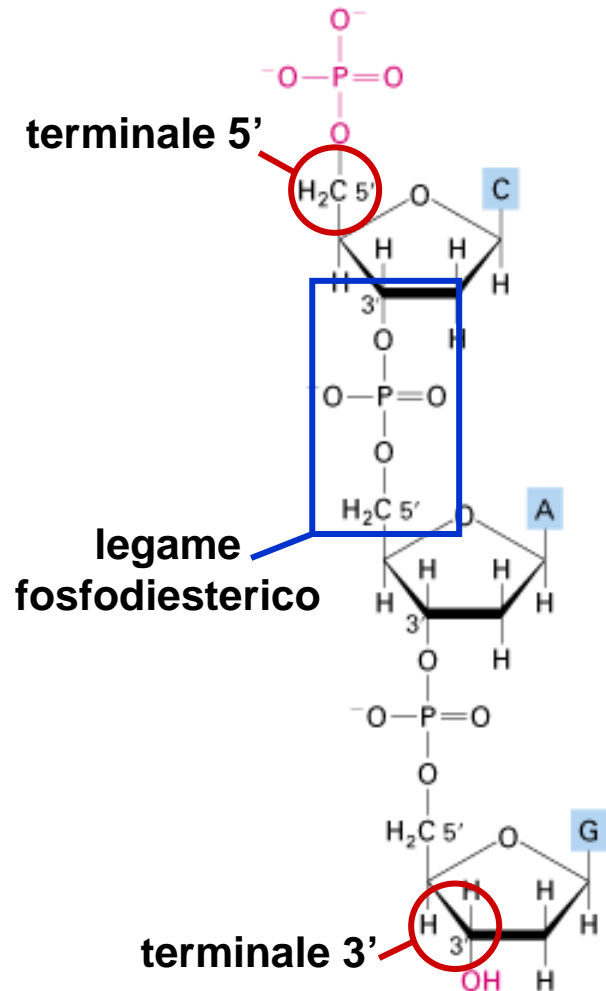


Deossicitosina 5'-monofosfato (dCMP)



Deossitimina 5'-monofosfato (dTMP)

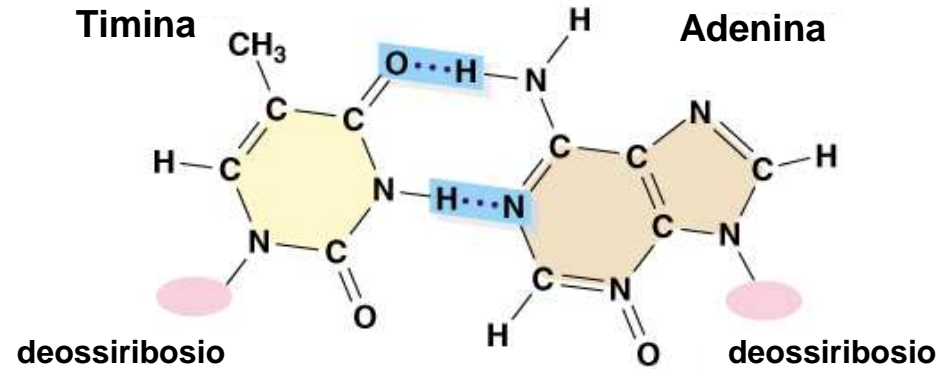
# Singolo filamento



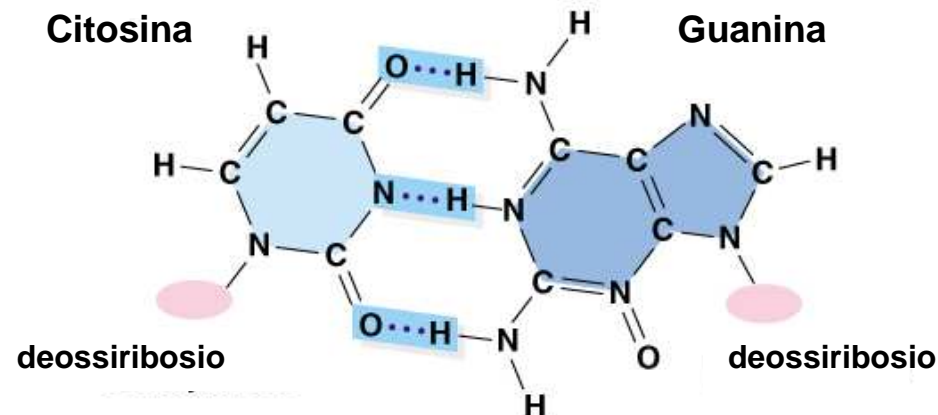
Legami covalenti tra deossiribosi e gruppi fosfati determinano la formazione del singolo filamento

# Accoppiamenti tra basi azotate

## Base **adenina-timina** (due legami idrogeno)

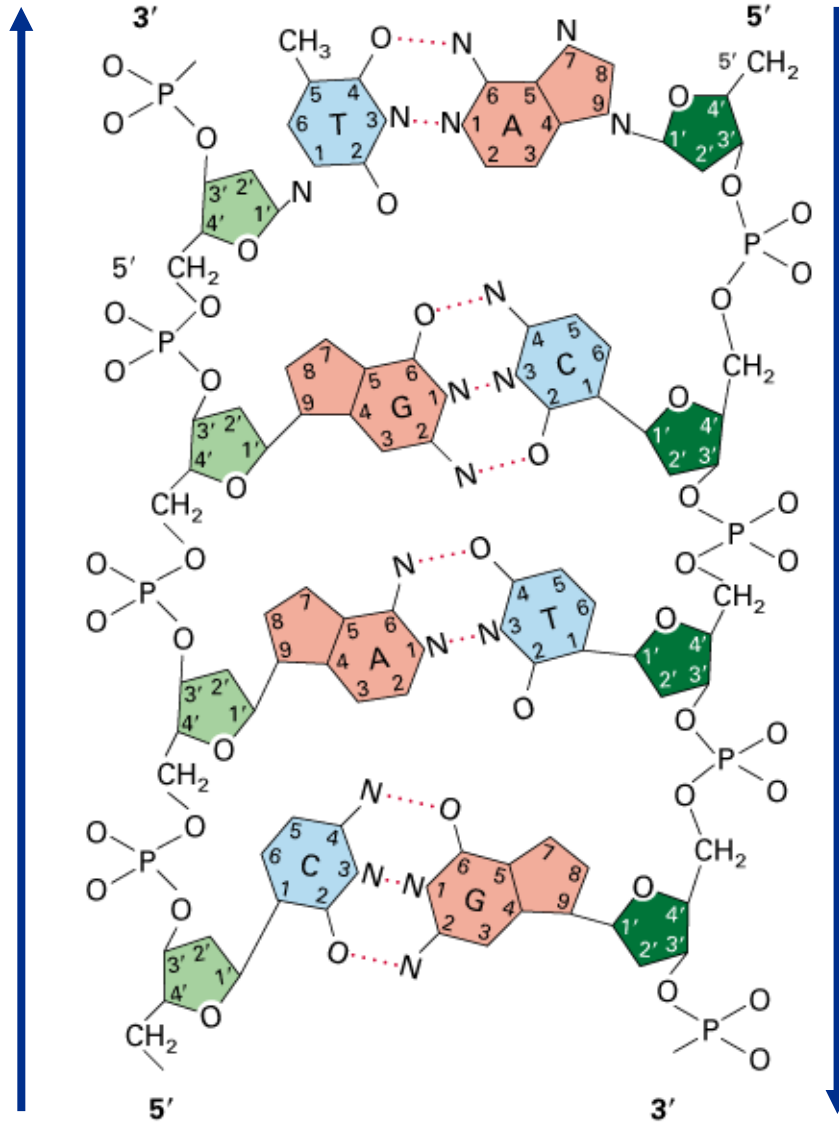


## Base **guanina-citosina** (tre legami idrogeno)





# Doppio filamento

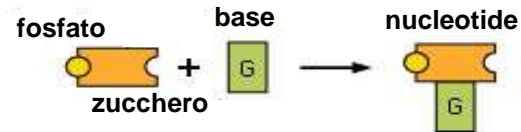


**I due filamenti polinucleotidici sono complementari e antiparalleli**

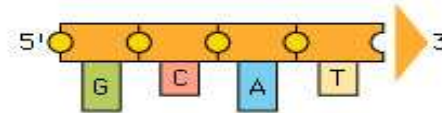
**Le basi sono situate perpendicolarmente all'asse del doppio filamento**

# Doppia elica

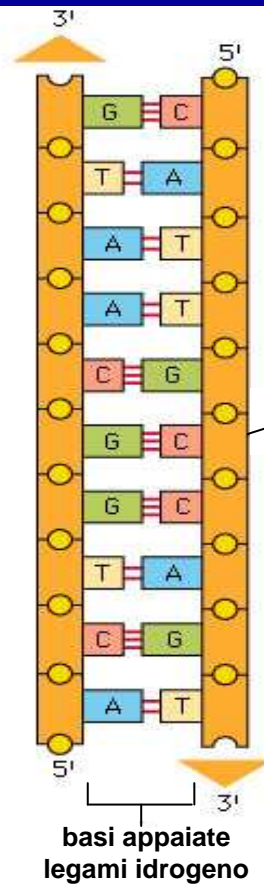
mattoni del DNA



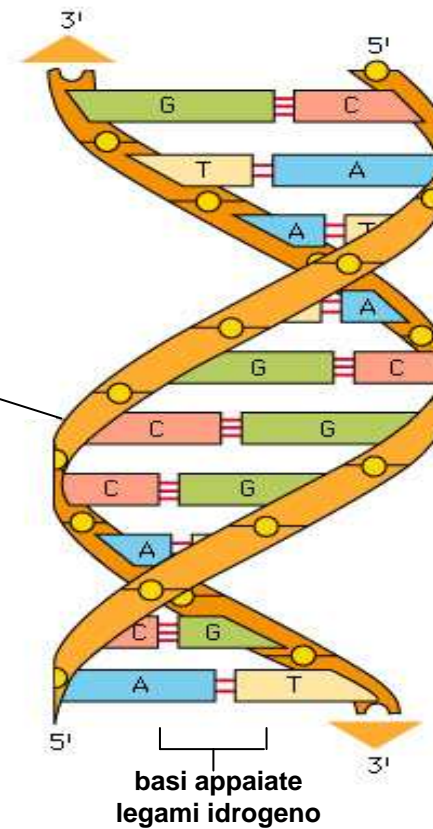
filamento di DNA



doppio filamento di DNA



doppia elica di DNA



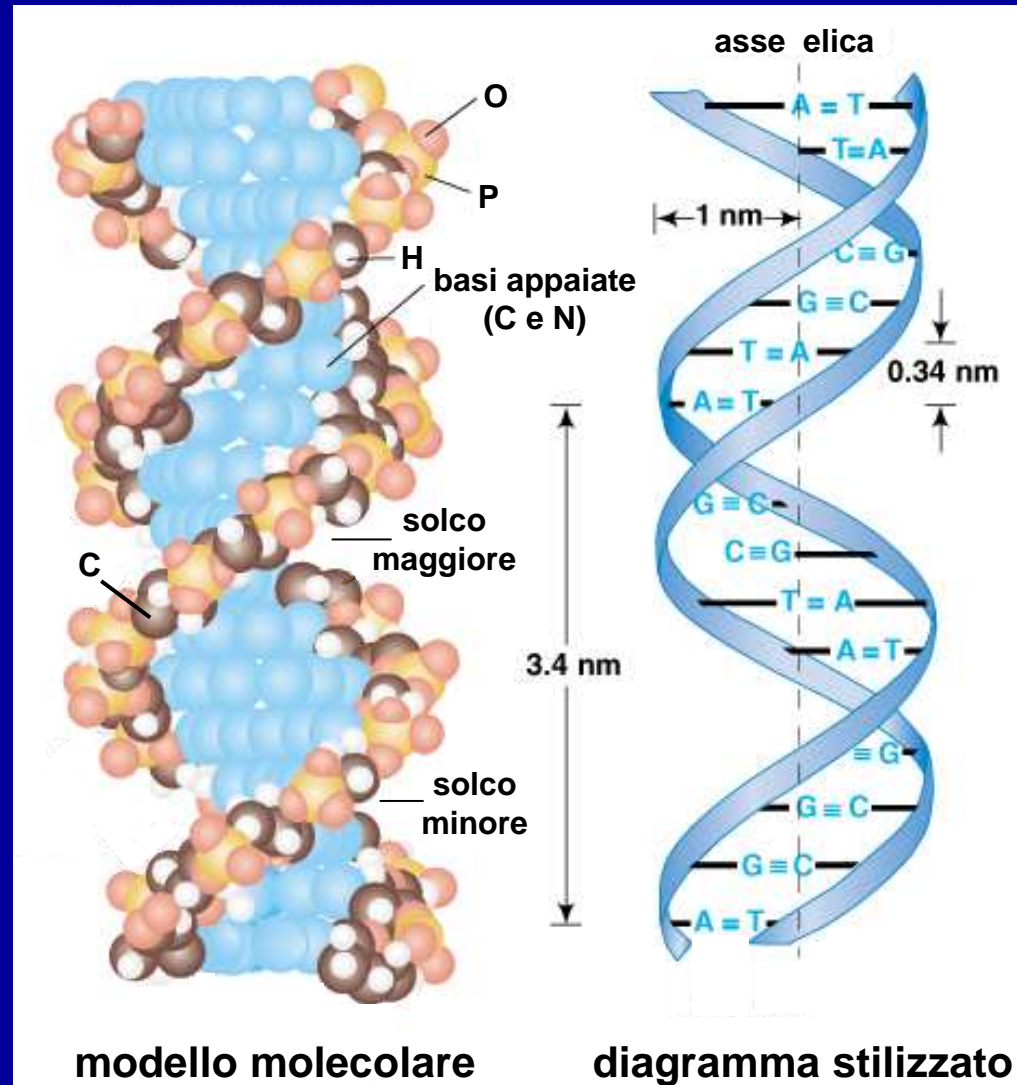
# Doppia elica

continua

ppia elica:

m

elica

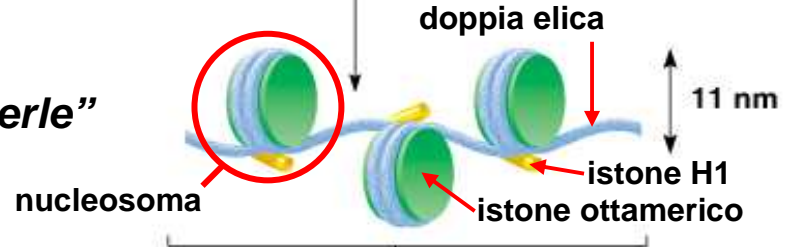


**Compattamento  
della doppia elica  
in cromosoma**

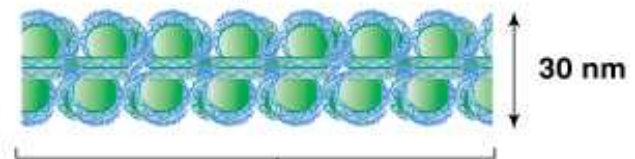
doppia elica



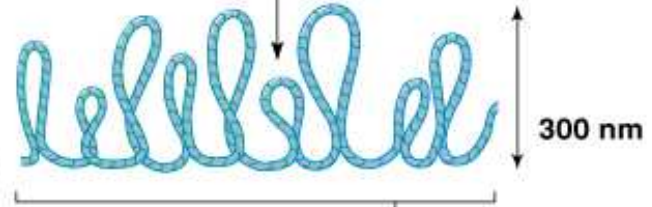
*“collana di perle”*



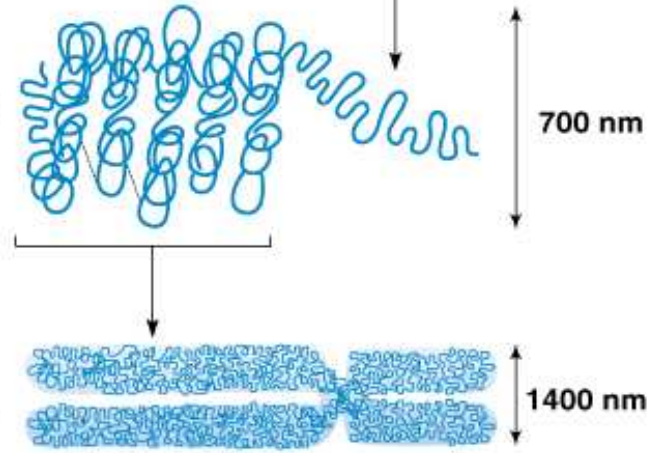
fibra di 30 nm

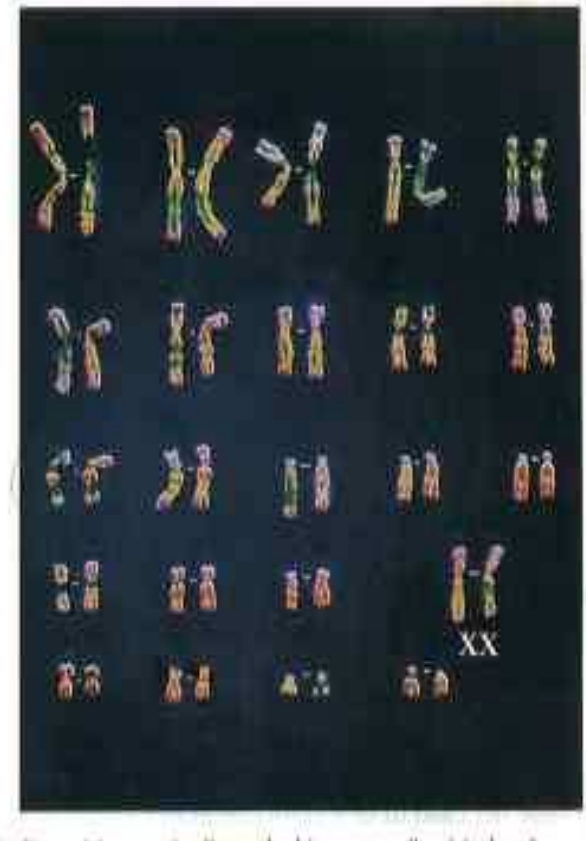
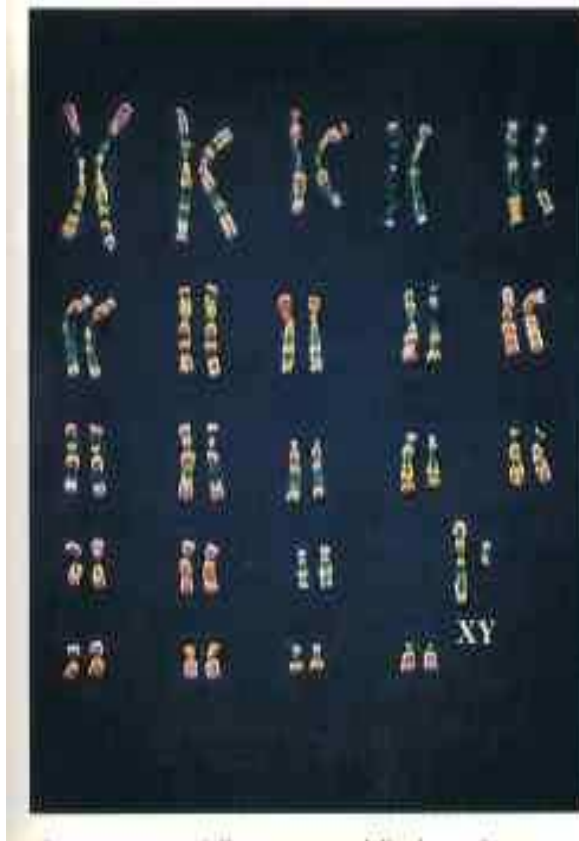
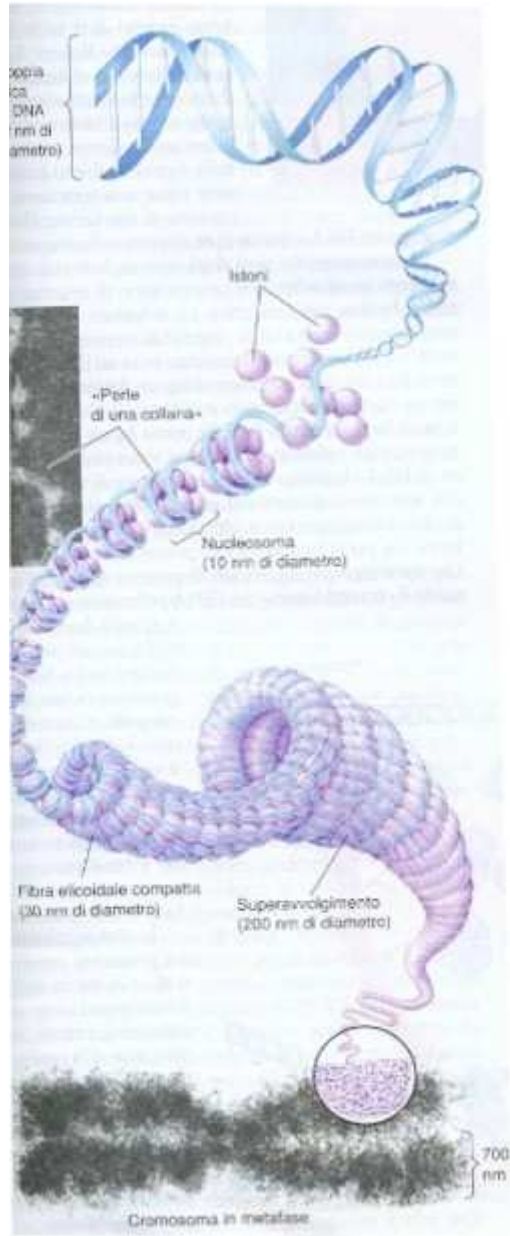


domini ad ansa



cromosoma  
metafasico





# Compattamento della doppia elica in cromosoma

