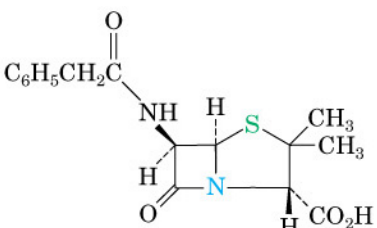
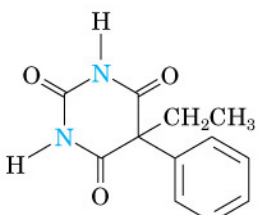


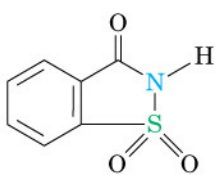
Penicillina G

antibiotico



Fenobarbitale

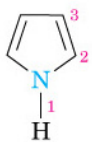
sedativo



Saccarina

edulcorante

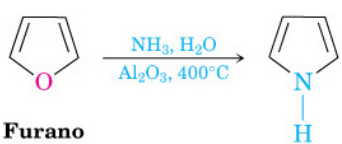
Eterocicli insaturi a 5 termini



Pirrolo

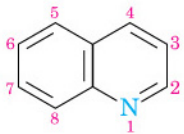
Furano

Tiofene

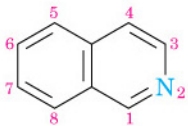


Furano **Pirrolo**

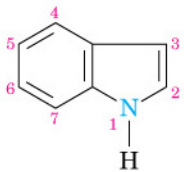
Eterocicli ad anelli condensati



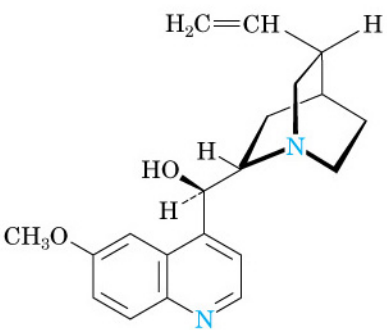
Chinolina



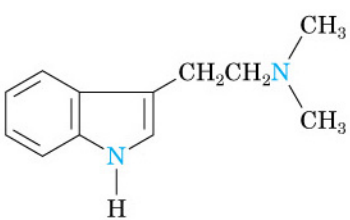
Isochinolina



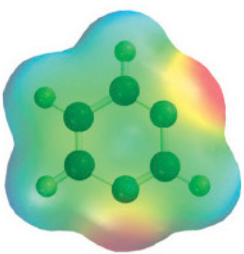
Indolo

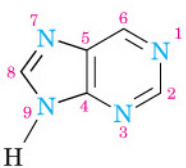


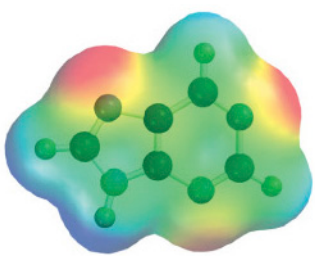
Chinino, un farmaco antimalarico (alcaloide chinolinico)



***N,N*-Dimetiltriptammina, un allucinogeno (alcaloide indolico)**



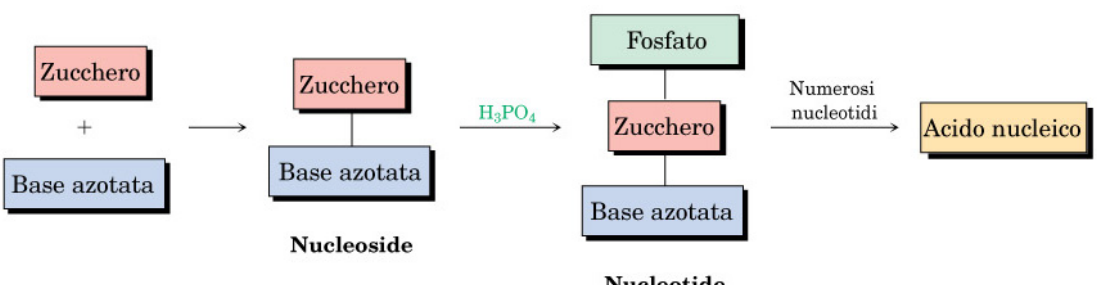




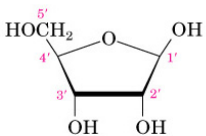
Pirimidina **Purina**

acido deossiribonucleico (DNA) e acido ribonucleico (RNA)
sono i portatori chimici dell'informazione genetica della cellula
ovvero l'informazione che determina la natura, crescita e divisione della cellula, biosintesi di proteine ed enzimi, …

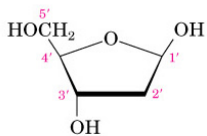
Si tratta di biopolimeri formati da nucleotidi



Gli zuccheri: aldopentosi

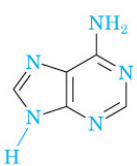


Ribosio

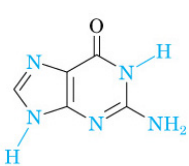


2′-Deossiribosio

Le basi azotate: purine sostituite …

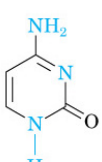


Adenina (A)
DNA
RNA

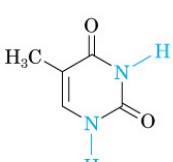


Guanina (G)
DNA
RNA

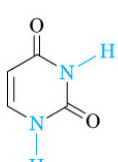
e pirimidine sostituite



Citosina (C)
DNA
RNA

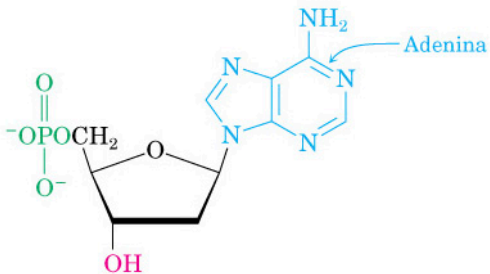


Timina (T)
DNA

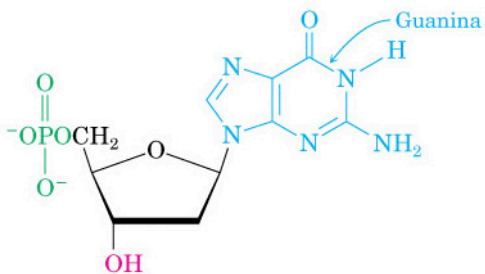


Uracile (U)
RNA

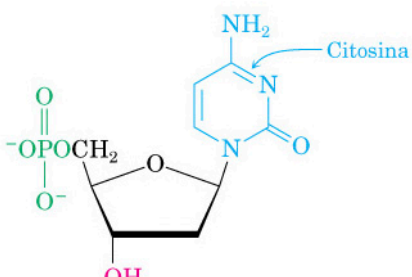
Deossiribonucleotidi



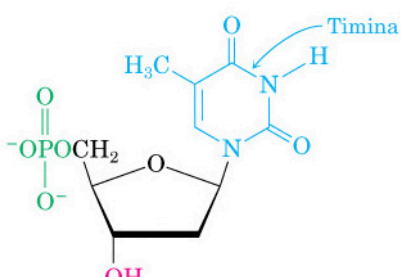
2′-Deossiadenosina 5′-fosfato



2′-Deossiguanosina 5′-fosfato

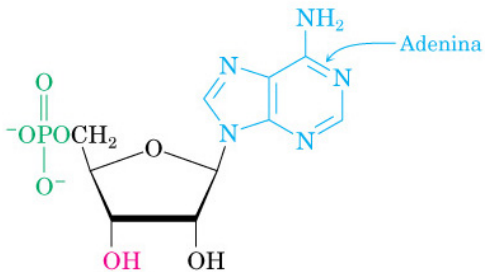


2′-Deossicitidina 5′-fosfato

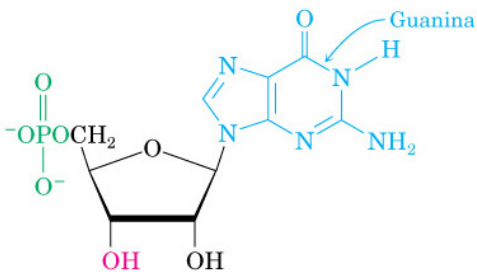


2′-Deossitimidina 5′-fosfato

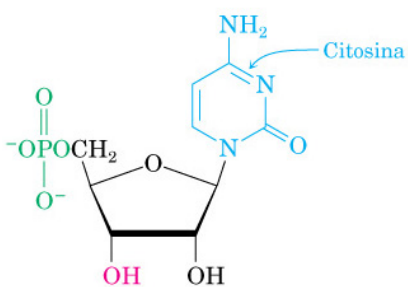
Ribonucleotidi



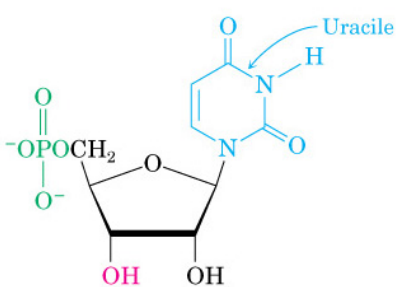
Adenosina 5′-fosfato



Guanosina 5′-fosfato

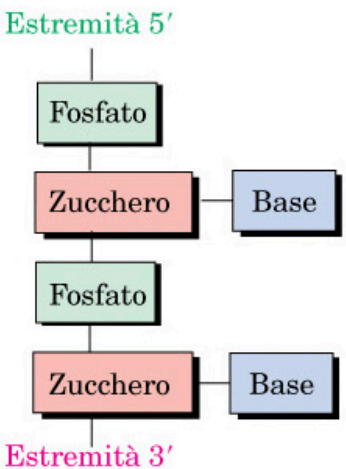


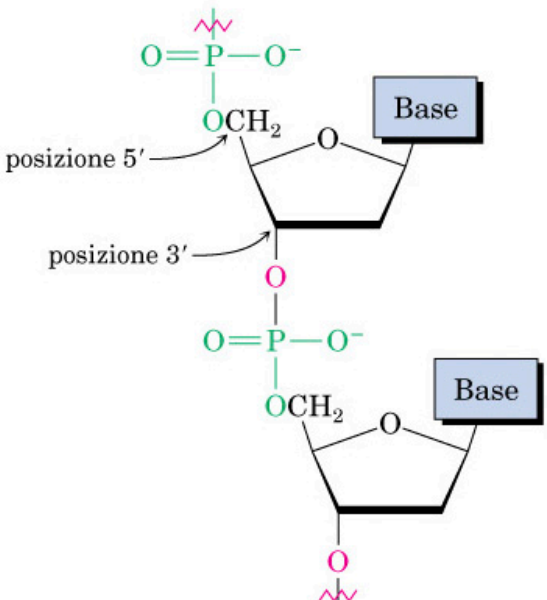
Citidina 5′-fosfato



Uridina 5′-fosfato

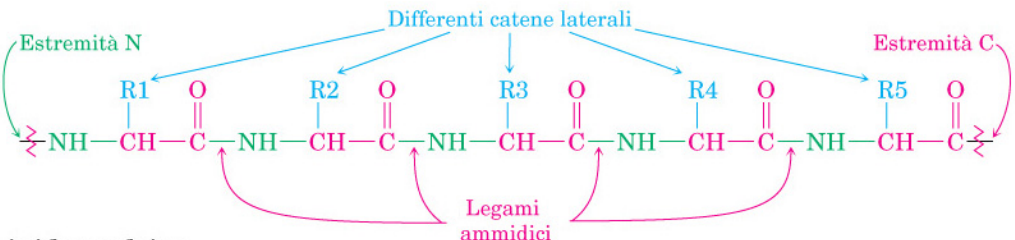
Struttura generale del DNA.



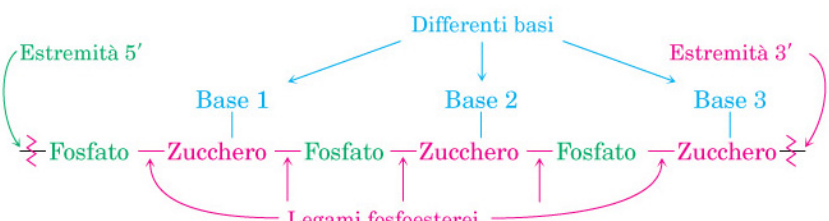


I nucleotidi si legano attraverso legami fosfoesterei

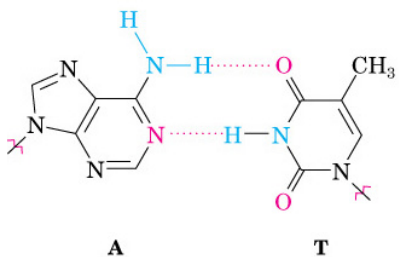
Proteina

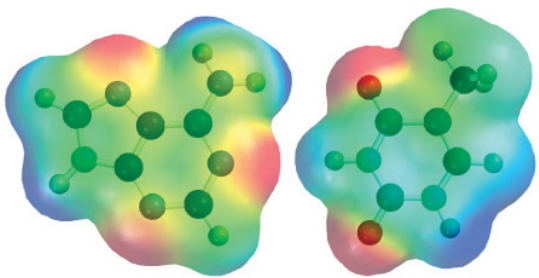


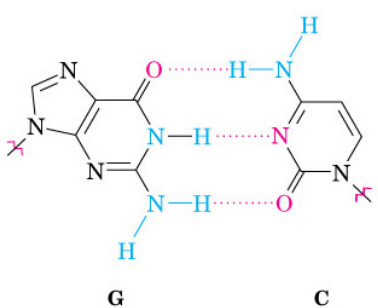
Acido nucleico

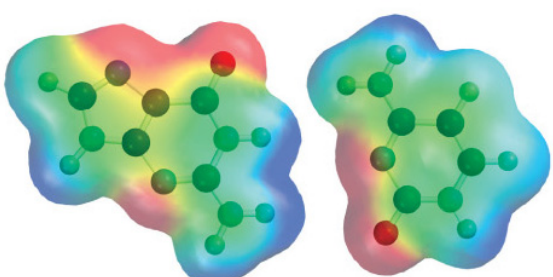


Il legame a idrogeno tra le coppie di basi nella doppia elica del DNA. Le mappe di potenziale elettrostatico mostrano che le facce delle basi sono relativamente neutre (verdi) mentre i bordi hanno regioni positive (blu) e negative (rosso). L'accoppiamento di G con C e di A con T tiene assieme regioni con carica opposta.

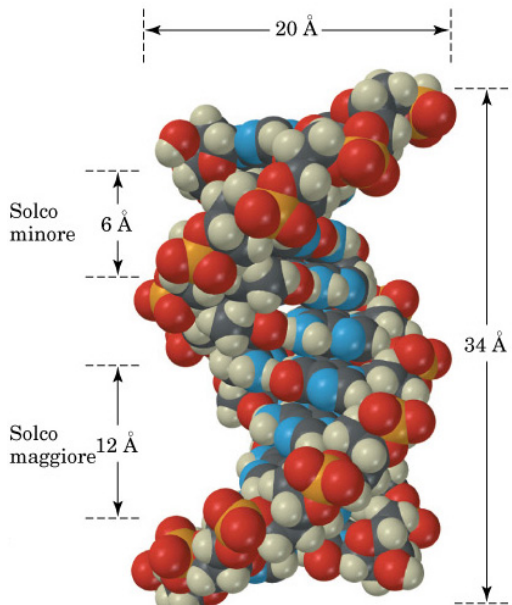


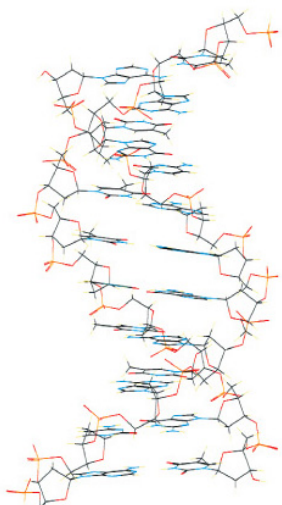






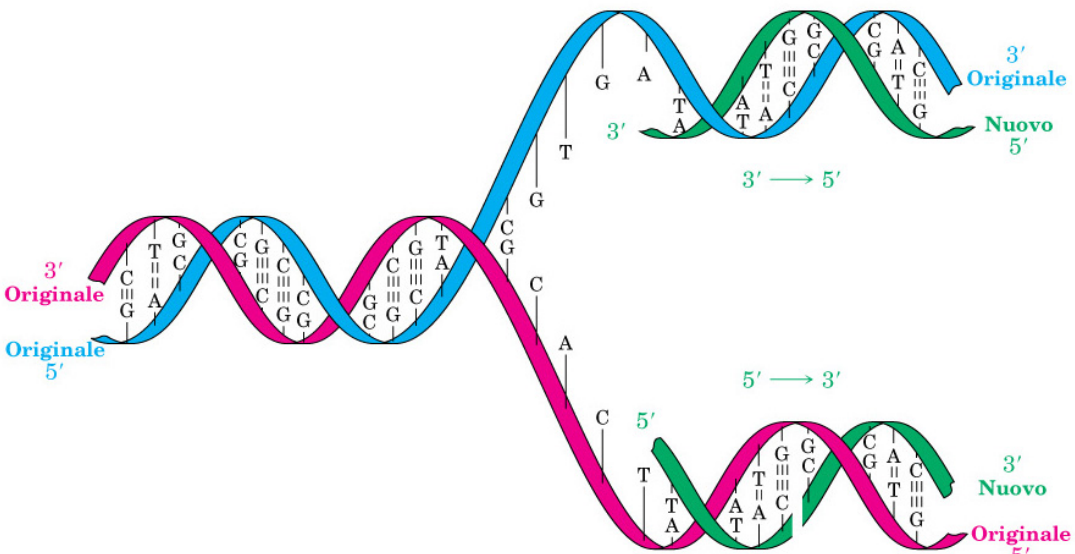
Un giro (360°) della doppia elica del DNA rappresentato nel formato space-filling e a bastoncino. Lo scheletro fosfozuccherino corre lungo la parte esterna dell'elica e le basi azotate si legano l'una all'altra nella parte interna. Sono visibili il solco maggiore e minore.

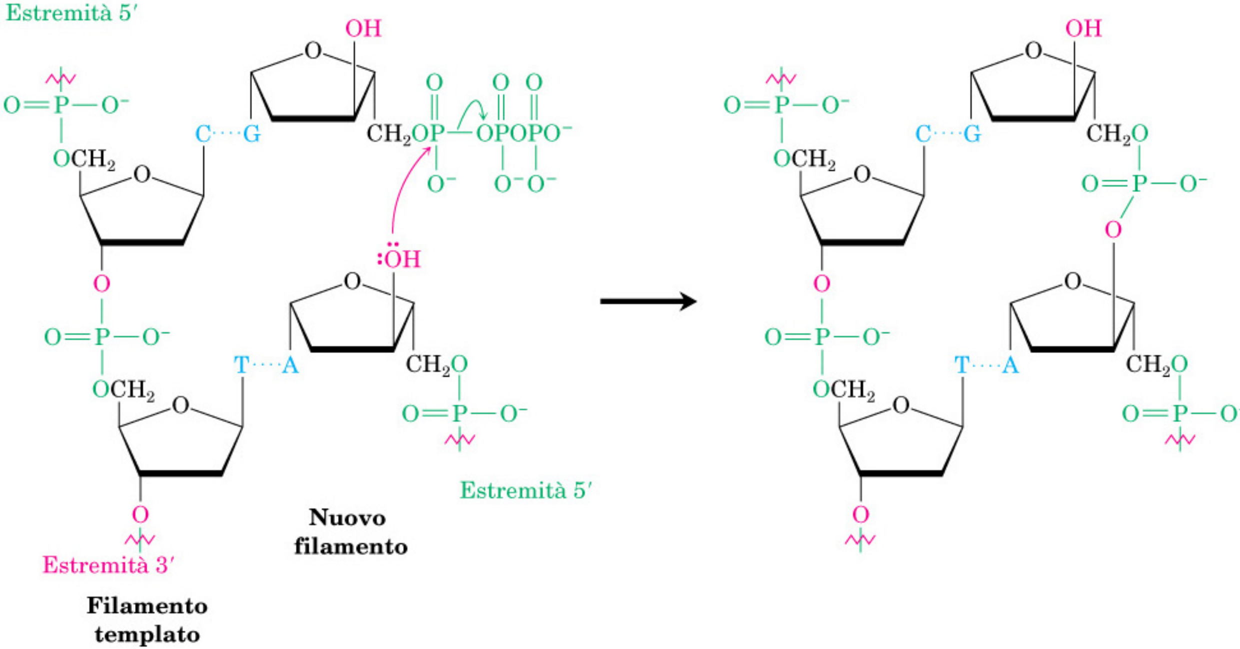




Molecole aromatiche policicliche planari possono inserirsi tra le basi impilate, p.es. agenti cancerogeni

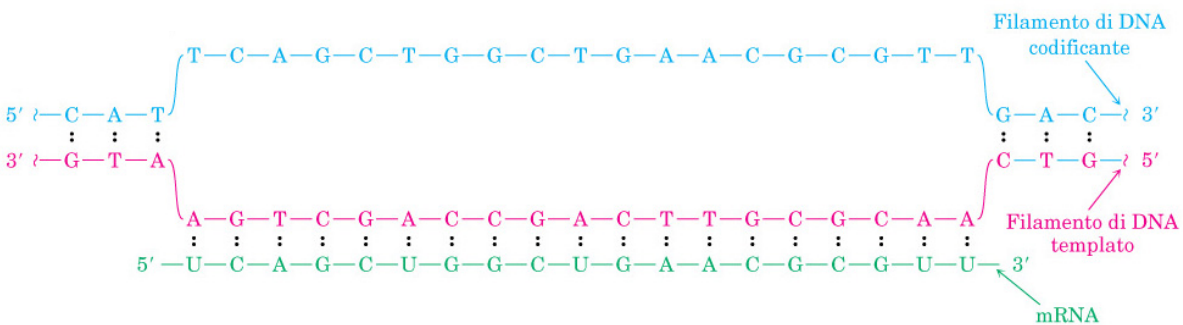
Rappresentazione della **replicazione** del DNA. Il DNA a doppio filamento si svolge parzialmente, le basi vengono esposte, i nucleotidi si allineano su ciascun filamento in modo complementare e due nuovi filamenti cominciano a crescere. Entrambi i filamenti sono sintetizzati nella medesima direzione 5' > 3'.



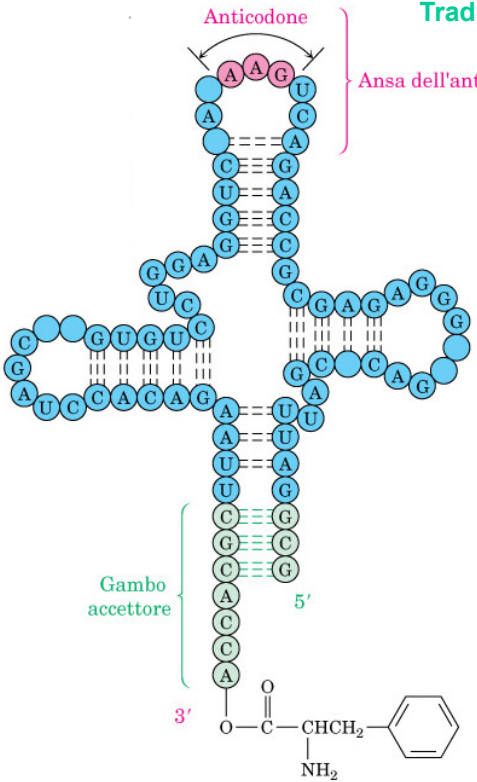

Estremità 5′
OH
O
O=P—O⁻
C···G
CH₂OP—OPOPO⁻
OCH₂
O⁻ O⁻ O⁻
:ÖH
O
O=P—O⁻
T···A
CH₂O
OCH₂
O=P—O⁻
Estremità 5′
O
Estremità 3′
Nuovo filamento
Filamento templato

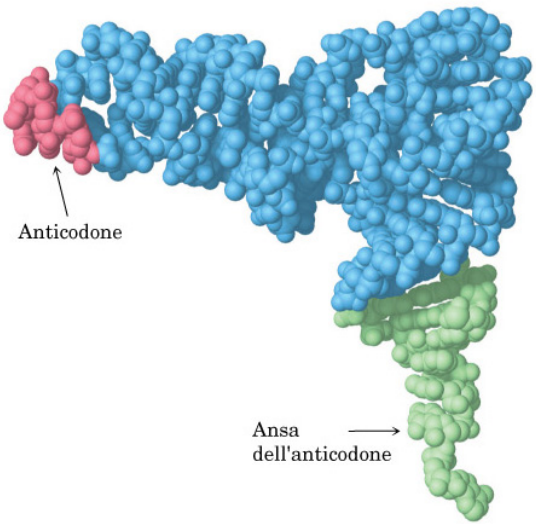
trascrizione

La biosintesi dell'RNA su un segmento di DNA che funge da stampo.



Traduzione: t-RNA





Rappresentazione schematica della biosintesi delle proteine. Le sequenze di basi del codone sull'mRNA vengono lette dai tRNA con la sequenza di basi dell'anticodone complementare. Gli RNA di trasferimento riuniscono i giusti amminoacidi nella posizione idonea per l'incorporazione nel peptide in accrescimento.