

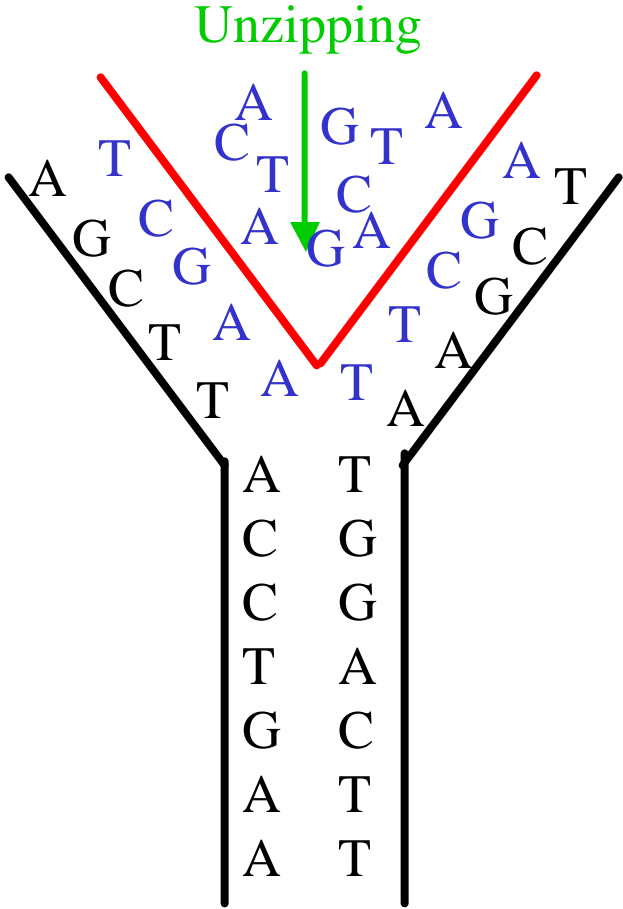
DNA is double-stranded

A goes with T or visa versa

G goes with C or visa versa

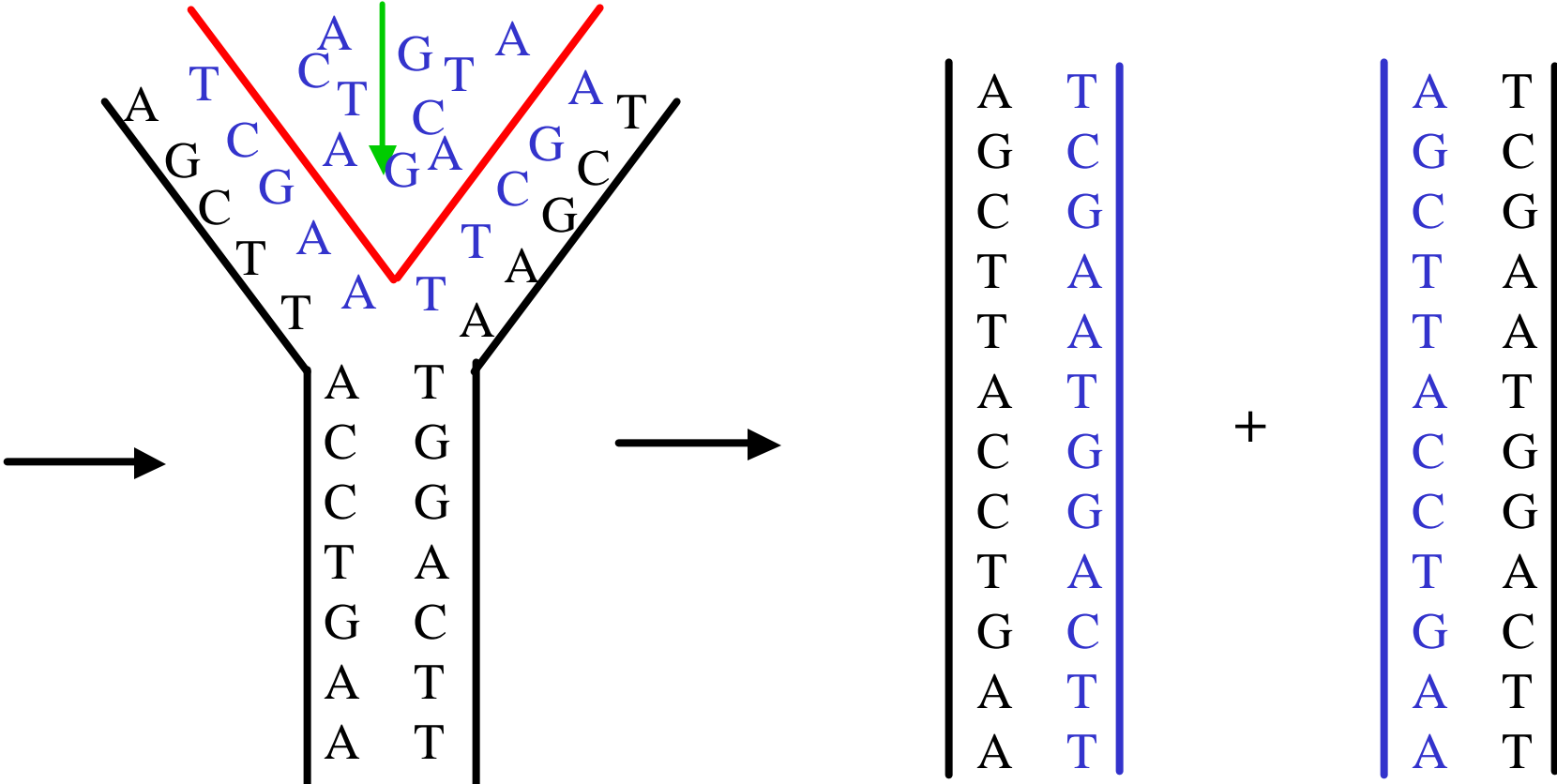
Replication of DNA

A T
G C
C G
T A
T A
A T
C G
C G
T A
G C
A T
A T



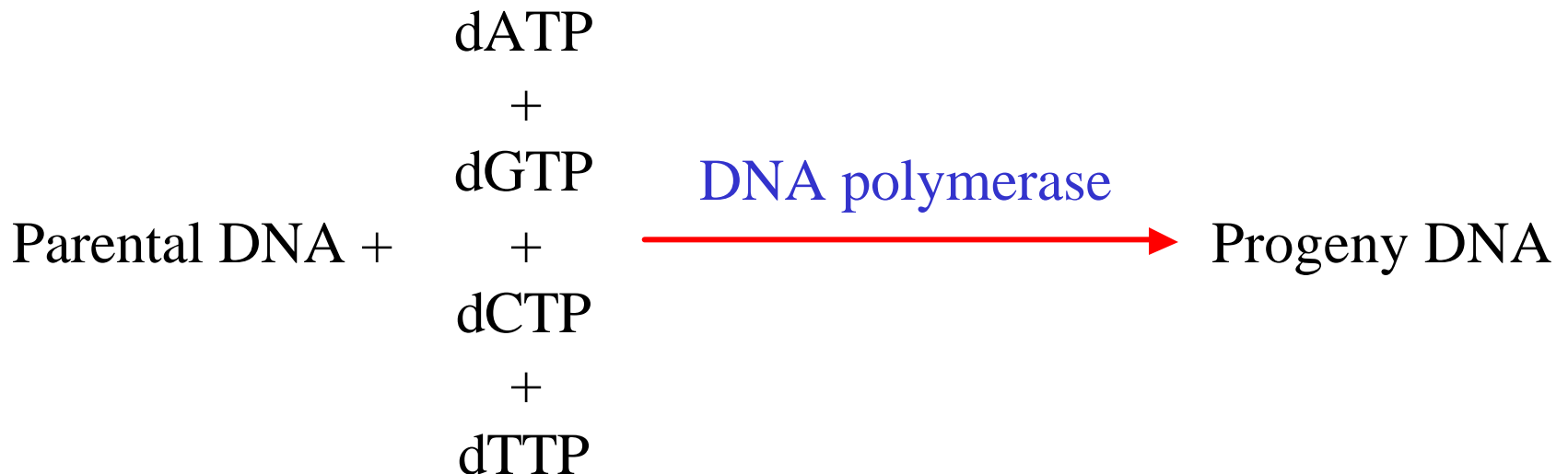
Replication of DNA

Unzipping



Replication of DNA

DNA replication is semi-conservative = Each double-stranded molecule is composed of one parental strand and one newly polymerized strand



Polymerase Chain Reaction (PCR)

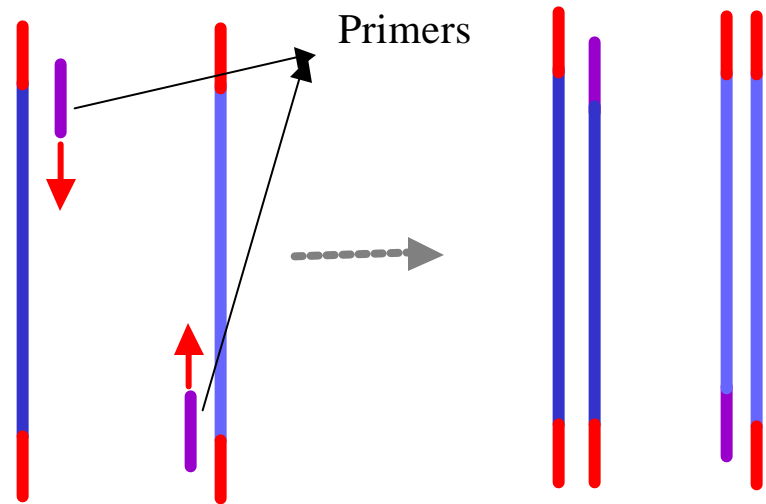
Targeted
sequence

5' 3'

3' 5'

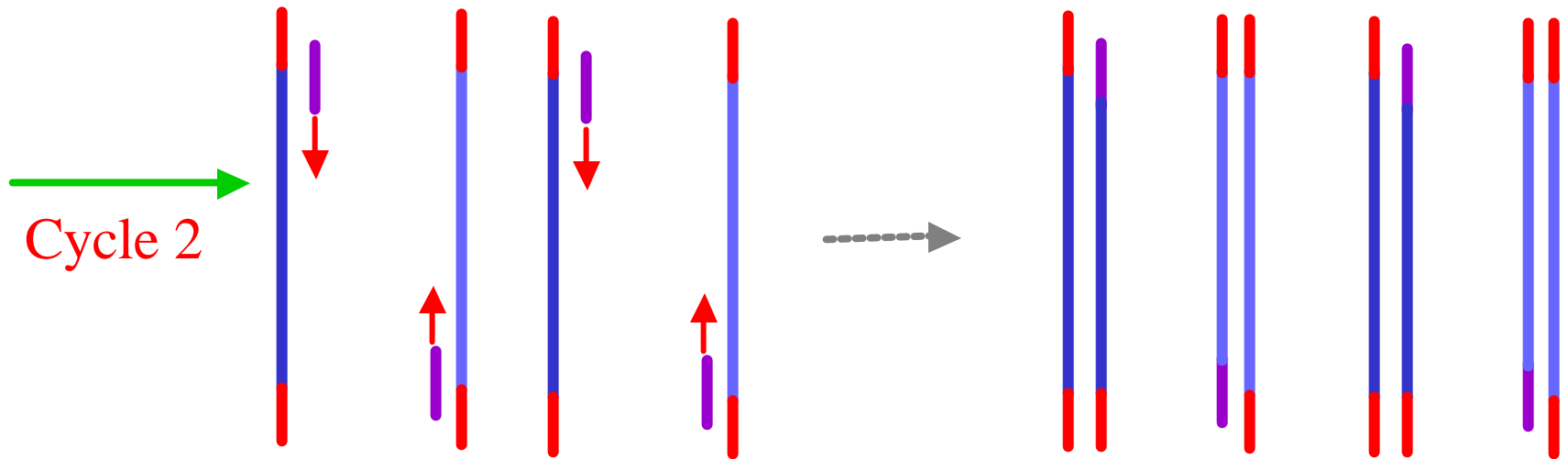
+ DNA Polymerase
+ dATP + dCTP
+ dGTP + dTTP
+ primers

Cycle 1



DNA polymerase is from *Thermus aquaticus* (hot-springs bacterium)

Polymerase Chain Reaction (PCR)



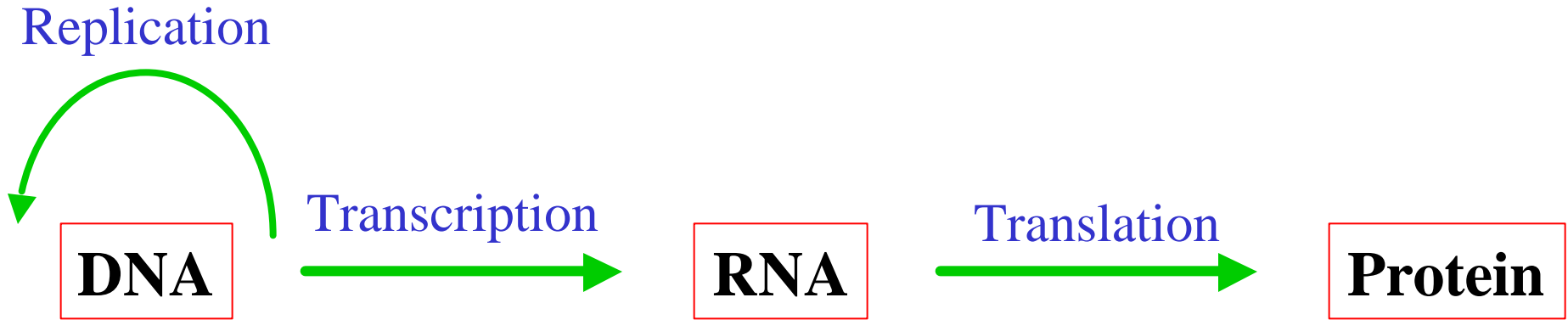
Polymerase Chain Reaction (PCR)

- In each cycle:
 - a) DNA is denatured,
 - b) primer binds
 - and
 - c) DNA is replicated.

These steps are controlled by changes in temperature.

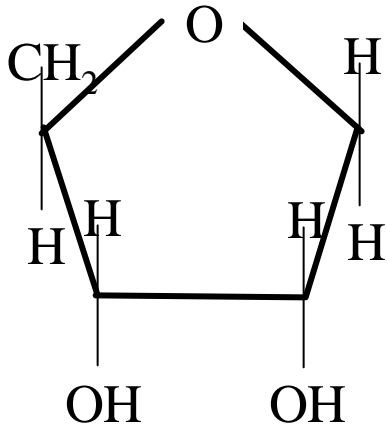
- In 30 cycles a billion copies of original DNA are made.

Central Dogma

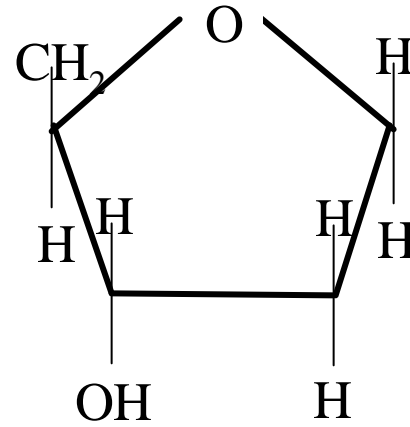


RNA = ribonucleic acid

RNA vs. DNA

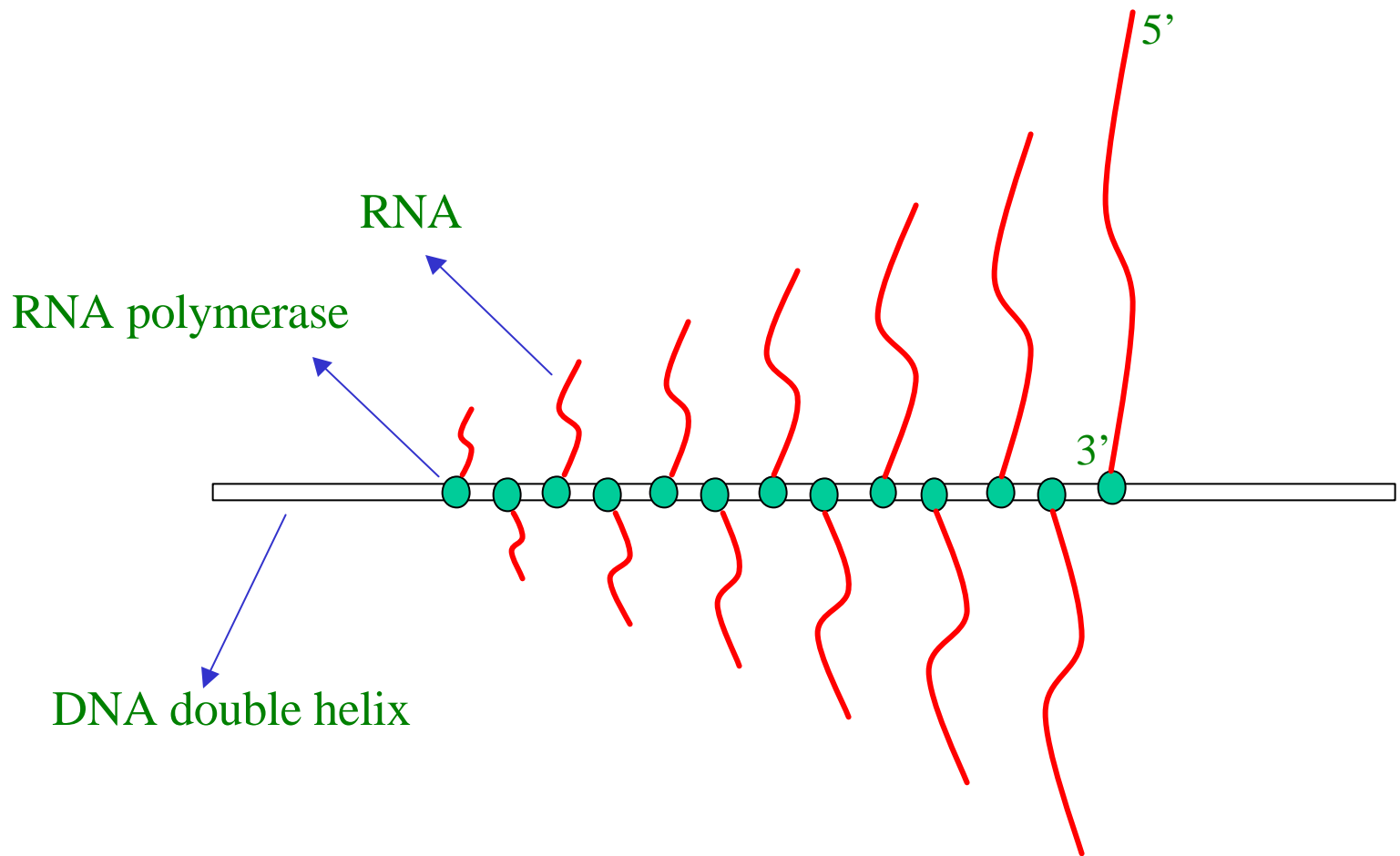


Ribose



Deoxyribose

- i. Ribose in place of Deoxyribose
- ii. U in place of T
- iii. Single-stranded instead of double-stranded



Transcription