

Comparison of major features of DNA and RNA synthesis

A. Same for both:

Growth of new chains 5' → 3'.

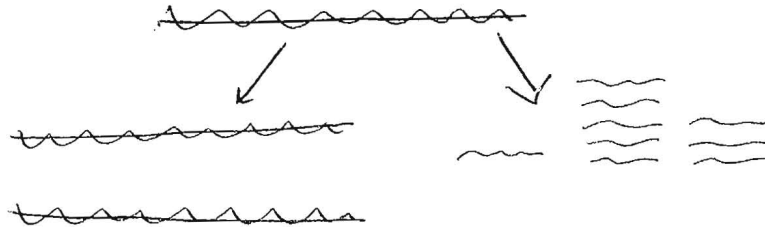
New chain made antiparallel to template.

Mechanism of addition

Use nucleoside tri-phosphates and break off 2 phosphates per nucleotide added to chain.

Need appropriate polymerase and pyrophosphatase.

B. Different:



Feature/Property	DNA	RNA
Nucleotides used	dXTP (deoxy)	XTP (ribo)
Bases used	A, T, G, C	A, U, G, C
Can polymerase start chains?	no	yes
Primer needed?	yes	no
Can polymerase proofread?	yes	no
Name of start	origin	promotor
Min. # of starts	one	many
Terminator necessary?	prob. not	yes
Template	Both strands	one strand per region
Ligase needed?	Yes	No
Length of product	Long as template	Relatively short
Type of product	Double stranded	Single stranded
Name of Synthesis	Replication	Transcription

