

Exercise walk-through

6.1

DNA and RNA Structure

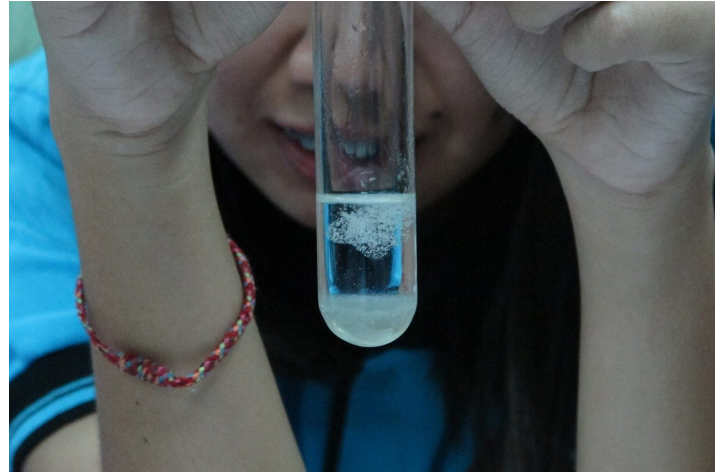
AP Biology

DNA and RNA structure

DNA is a **double helix** of **nucleotides** (sugar + phosphate + base).

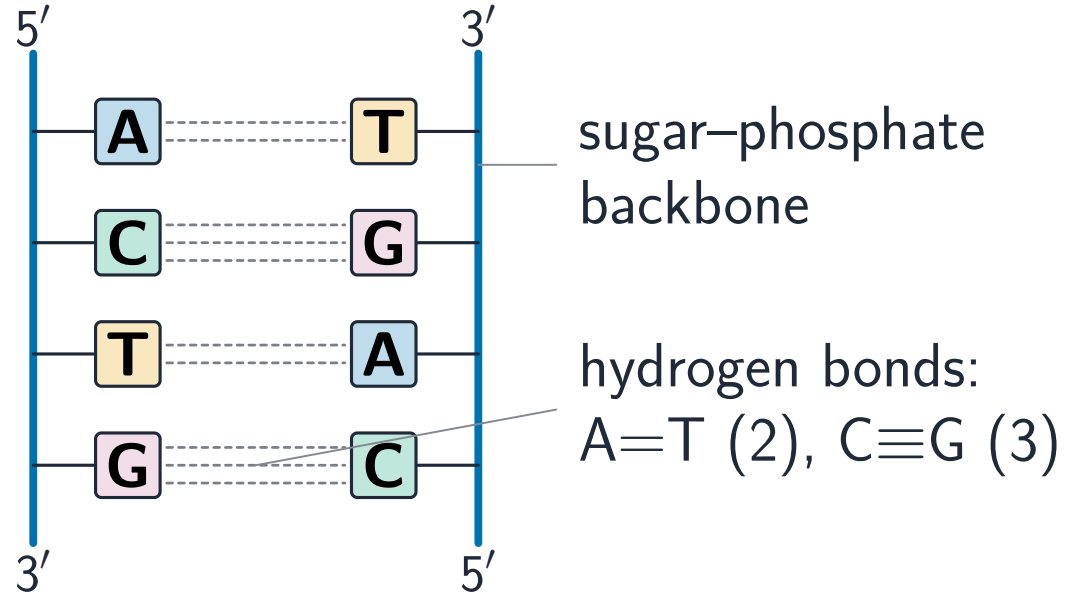
- strands are **antiparallel**
- **complementary pairing** : A–T, C–G
- RNA: ribose, single strand, U for T

One strand's **sequence** fully determines the other – the key to faithful copying.



DNA's sequence is the heritable code

DNA: two antiparallel strands held by complementary



the two strands run in opposite directions (antiparallel)

DNA: two antiparallel strands held by complementary base pairs

Exercises 2.1-2.3

2.1 Which base pairs with adenine in DNA?

[1]

2.2 Write the complementary DNA strand for 5'-AATGCC-3'.

[2]

2.3 Which base replaces thymine in RNA?

[1]

Exercises 2.1-2.3

2.1 Which base pairs with adenine in DNA? [1]

2.1

- Thymine
-

2.2 Write the complementary DNA strand for 5'-AATGCC-3'. [2]

2.2

- 3'-TTACGG-5'
-

2.3 Which base replaces thymine in RNA? [1]

2.3

- Uracil

Exercise 3.1

3.1 In DNA, cytosine pairs with

[1]

☐

A adenine

B thymine

C guanine

D uracil

Exercise 3.1

3.1 In DNA, cytosine pairs with

[1]

☐

A adenine

B thymine

C guanine

D uracil

3.1 C

- guanine

Exercise 3.2 (a)

3.2 A DNA strand reads 3'-TACGGA-5'.

(a) Write the complementary DNA strand.

[2]

Exercise 3.2 (a)

3.2 A DNA strand reads 3'-TACGGA-5'.

(a) Write the complementary DNA strand.

[2]

(a)

- 5'-ATGCCT-3'

Exercise 3.2 (b)

3.2 A DNA strand reads 3'-TACGGA-5'.

(b) Write the RNA sequence transcribed from the original strand.

[2]

Exercise 3.2 (b)

3.2 A DNA strand reads 3'-TACGGA-5'.

(b) Write the RNA sequence transcribed from the original strand.

[2]

(b)

- RNA from 3'-TACGGA-5': 5'-AUGCCU-3'

Exercise 3.3

3.3 Explain how complementary base pairing allows DNA to be copied accurately. [2]

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3.3 Explain how complementary base pairing allows DNA to be copied accurately. [2]

3.3

- Each base pairs only with its complement (A–T, C–G), so each strand acts as a template that specifies the exact sequence of the new strand