

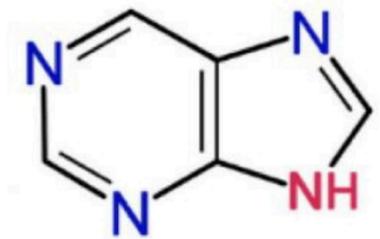
WHAT ARE
PURINES AND

PYRIMIDINES ?

BIOCHEMISTRY

INTRODUCTION TO NITROGENOUS BASES

- **DEFINITION:** NITROGENOUS BASES IN DNA AND RNA ARE CLASSIFIED INTO TWO MAIN GROUPS: PURINES AND PYRIMIDINES .
- **PURPOSE:** THESE ARE THE ESSENTIAL BUILDING BLOCKS FOR GENETIC MATERIAL.
- **KEY CONCEPT:** A PURINE ALWAYS PAIRS WITH A PYRIMIDINE TO MAINTAIN THE STRUCTURE OF THE GENETIC CODE.



Purine



Pyrimidine

→ 13

→ 13 A

→ 14

→ 14 A

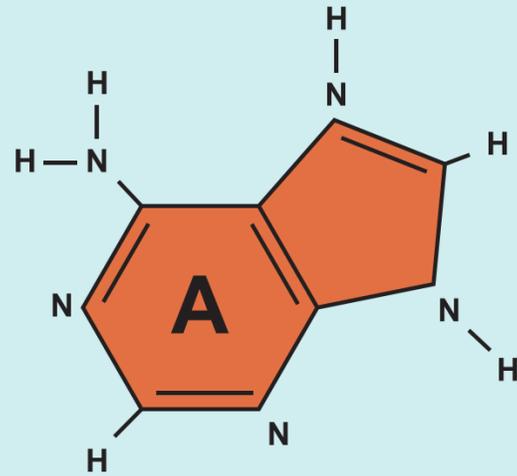
FILM NEGATIVE

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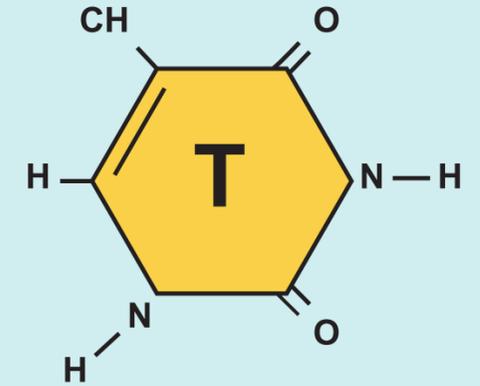
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NITROGEN BASES

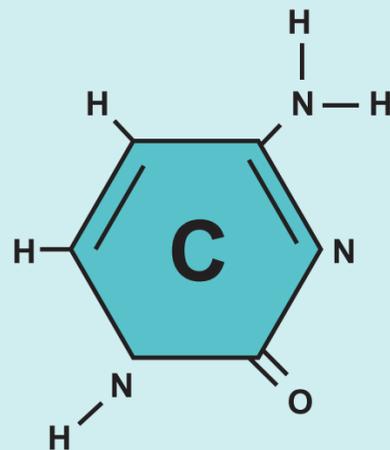
ADENINE



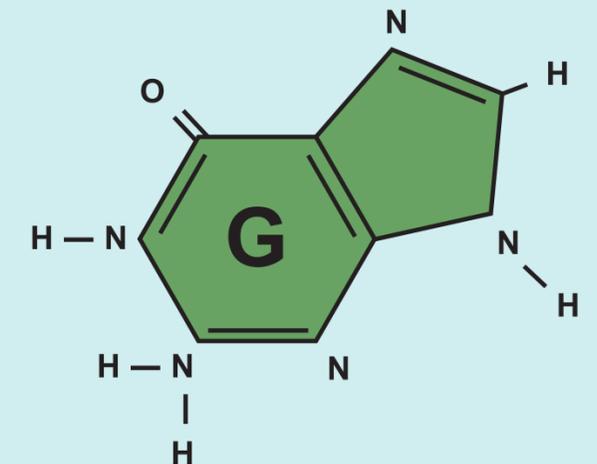
THYMINE



CYTOSINE

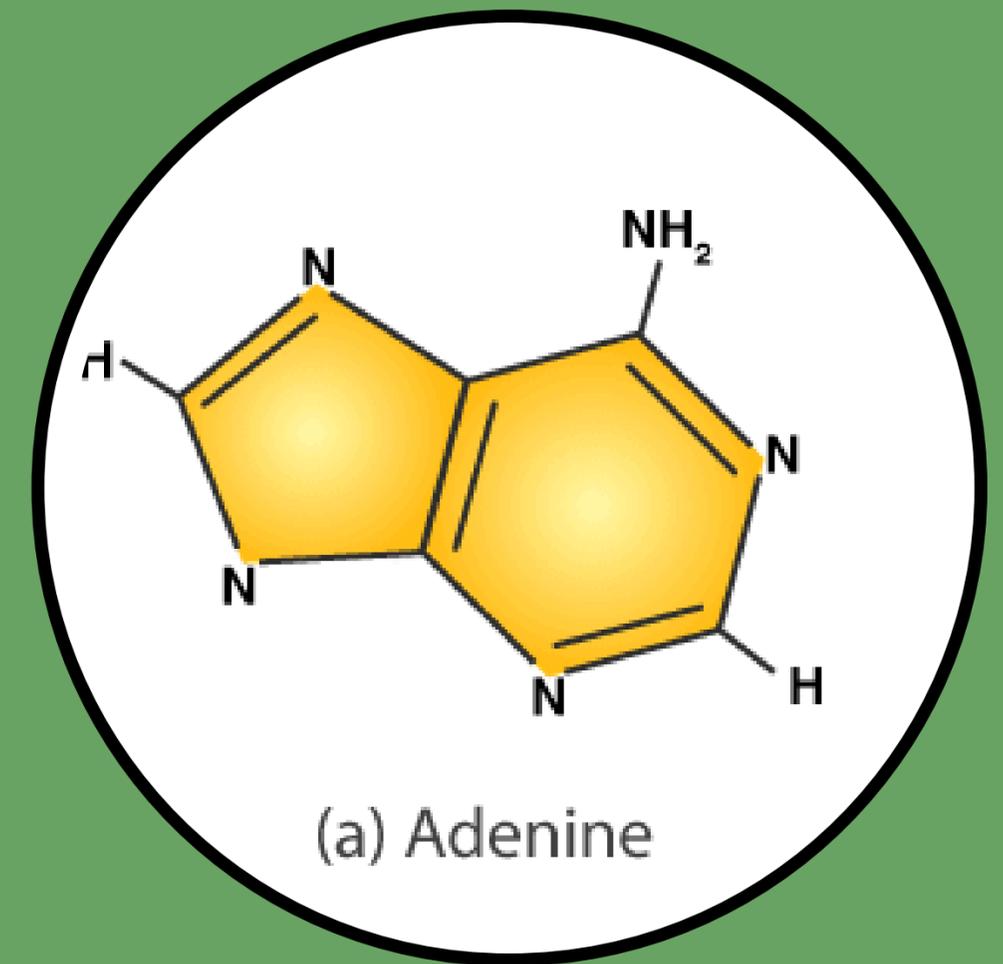


GUANINE



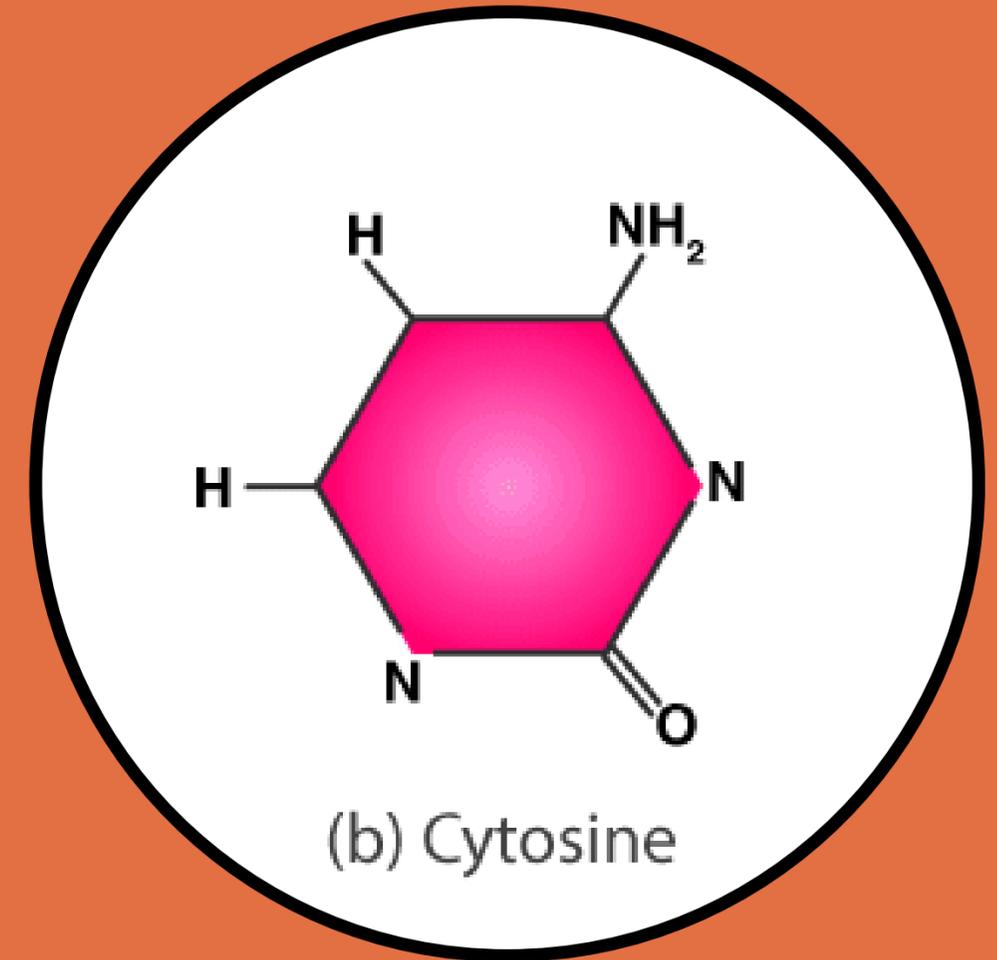
PURINES

- **THE BASES:** THE PURINES CONSIST OF ADENINE (A) AND GUANINE (G).
- **STRUCTURE:** THEY ARE COMPOSED OF A DOUBLE RING STRUCTURE.
- **SIZE:** PURINES ARE PHYSICALLY LARGER THAN PYRIMIDINES.
- **MNEMONIC:** USE THE PHRASE "PURE AS GOLD" TO REMEMBER THAT ADENINE AND GUANINE ARE PURINES.



PYRIMIDINES

- **THE BASES:** THE PYRIMIDINES CONSIST OF CYTOSINE (C), THYMINE (T), AND URACIL (U).
- THYMINE IS FOUND ONLY IN DNA.
- URACIL IS FOUND ONLY IN RNA.
- **STRUCTURE:** THEY ARE COMPOSED OF A SINGLE RING STRUCTURE.
- **SIZE:** PYRIMIDINES ARE SMALLER THAN PURINES.
- **MNEMONIC:** USE THE PHRASE "CUT THE PIE" TO REMEMBER THAT CYTOSINE, URACIL, AND THYMINE ARE PYRIMIDINES.





BASE PAIRING RULES

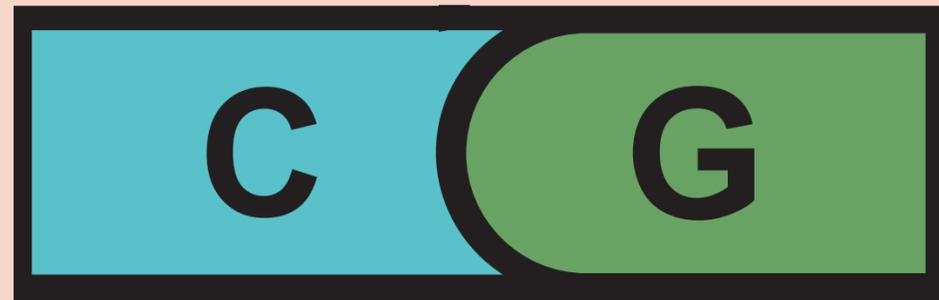
- **DNA PAIRING:**
- ADENINE (A) PAIRS WITH THYMINE (T).
- CYTOSINE (C) PAIRS WITH GUANINE (G).
- **RNA PAIRING:**
- ADENINE (A) PAIRS WITH URACIL (U).
- CYTOSINE (C) STILL PAIRS WITH GUANINE (G).
- STRUCTURAL MEMORY TRICK: REMEMBER THAT "PURINE" IS A SMALLER WORD BUT HAS THE LARGER DOUBLE RING. WHILE "PYRIMIDINE" IS A LARGER WORD BUT HAS THE SMALLER SINGLE RING.

BASE PAIRING



ADENINE

THYMINE



CYTOSINE

GUANINE

THE BASES OF DNA PAIR WITH
EACH OTHER IN A
PREDICTABLE WAY.

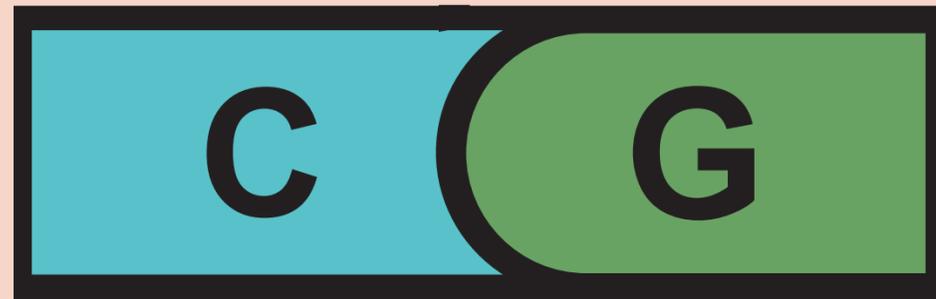
A ALWAYS PAIRS WITH T
C ALWAYS PAIRS WITH G

BASE PAIRING



ADENINE

URACIL



CYTOSINE

GUANINE

THE BASES OF RNA PAIR WITH
EACH OTHER IN A
PREDICTABLE WAY.

A ALWAYS PAIRS WITH U
C STILL PAIRS WITH G